City Council
Regular Meeting
December 16, 2024 - 7:00 PM
City Hall Council Chambers

AGENDA

CALL TO ORDER

LAND ACKNOWLEDGEMENT

We would like to acknowledge the Federally Recognized Muckleshoot Indian Tribe, the ancestral keepers of the land we are gathered on today. We thank them for their immense contributions to our state and local history, culture, economy, and identity as Washingtonians.

PUBLIC PARTICIPATION

A. The Auburn City Council Meeting scheduled for Monday, December 16, 2024, at 7:00 p.m. will be held in person and virtually.

Virtual Participation Link:
To view the meeting virtually please click the below link, or call into the meeting at the phone number listed below. The link to the Virtual Meeting is:
https://www.youtube.com/user/watchauburn/live/?nomobile=1

To listen to the meeting by phone or Zoom, please call the number below or click the link:

Telephone: 253 205 0468
Toll Free: 888 475 4499
Zoom: https://us06web.zoom.us/j/89411960852

PLEDGE OF ALLEGIANCE

ROLL CALL

ANNOUNCEMENTS, MAYOR'S PROCLAMATIONS, AND PRESENTATIONS

A. National Foundation of Women Legislators Woman of Excellence Award Presentation

AGENDA MODIFICATIONS

AUDIENCE PARTICIPATION

This is the place on the agenda where the public is invited to speak to the City Council on any issue.

A. The public can participate in-person or submit written comments in advance.

Participants can submit written comments via mail, fax, or email. All written comments

must be received prior to 5:00 p.m. on the day of the scheduled meeting and must be 350 words or less.
Please mail written comments to:
City of Auburn
Attn: Shawn Campbell, City Clerk
25 W Main St
Auburn, WA 98001

Please fax written comments to:
Attn: Shawn Campbell, City Clerk
Fax number: 253-804-3116

Email written comments to: publiccomment@auburnwa.gov

If an individual requires accommodation to allow for remote oral comment because of a difficulty attending a meeting of the governing body, the City requests notice of the need for accommodation by 5:00 p.m. on the day of the scheduled meeting. Participants can request accommodation to be able to provide a remote oral comment by contacting the City Clerk's Office in person, by phone (253) 931-3039, or by email (publiccomment@auburnwa.gov).

CORRESPONDENCE

CONSENT AGENDA

All matters listed on the Consent Agenda are considered by the City Council to be routine and will be enacted by one motion in the form listed.

A. Minutes of the December 2, 2024, Special City Council Meeting

B. Minutes of the November 25, 2024, and December 9, 2024, Study Session Meetings

C. Claims Vouchers (Thomas)
Claims voucher list dated December 11, 2024, which includes voucher numbers 478306 through voucher 478435, in the amount of $5,306,112.88, nine electronic fund transfers in the amount of $1,981.22 and nine wire transfers in the amount of $791,627.00

D. Payroll Voucher (Thomas)
Payroll check numbers 539627 through 539629 in the amount of $81,214.00, electronic deposit transmissions in the amount of $2,913,016.94, for a grand total of $2,994,230.94 for the period covering November 28, 2024, to December 11, 2024

E. Setting the date for the Public Hearing for City of Kent Franchise Agreement (Gaub)
City Council to set the date of the Public Hearing for Franchise Agreement No. FRN24-0003 for City of Kent

(RECOMMENDED ACTION: Move to approve the Consent Agenda.)

UNFINISHED BUSINESS

ORDINANCES

A. Ordinance No. 6959 (Krum)
An Ordinance relating to the Subdivision Code, Zoning Code, and the Comprehensive Plan, amending Chapters 14.22, 17.01, 17.04, 17.12, 17.14, 18.02, 18.04, 18.07, 18.09, 18.21, 18.23, 18.25, 18.29, 18.31, 18.32, 18.35, 18.49, 18.50, 18.52, 18.55, 18.56, 18.57, and creating new Chapter 17.27 of the Auburn City Code

(RECOMMENDED ACTION: Move to approve Ordinance No. 6959.)

B. Ordinance No. 6960 (Krum)
An Ordinance relating to completion of the 2024 Periodic Comprehensive Plan Update requirements under the Washington State Growth Management Act and adoption of the updated Elements, Appendices, Plans incorporated by reference, Land Use Map, and Zoning Map

(RECOMMENDED ACTION: Move to approve Ordinance No. 6960.)

RESOLUTIONS

A. Resolution No. 5801 (Gaub)
A Resolution authorizing the Mayor to execute and administer an agreement accepting Grants from the Washington State Transportation Improvement Board for the Auburn Way South Widening and Regional Growth Center Improvement Projects

(RECOMMENDED ACTION: Move to adopt Resolution No. 5801.)

NEW BUSINESS

A. Selection of Deputy Mayor (Council)

MAYOR AND COUNCILMEMBER REPORTS

At this time the Mayor and City Council may report on significant items associated with their appointed positions on federal, state, regional and local organizations.

A. From the Council

B. From the Mayor

ADJOURNMENT

Agendas and minutes are available to the public at the City Clerk's Office and on the City website (http://www.auburnwa.gov).

CITY OF AUBURN WASHINGTON

AGENDA BILL APPROVAL FORM

Agenda Subject:
Minutes of the December 2, 2024, Special City Council Meeting

Meeting Date:
December 16, 2024

Department:
City Council

Attachments:
12-02-2024 Minutes

Budget Impact:

Administrative Recommendation:

Background for Motion:

Background Summary:

Councilmember:

Staff:

City Council
Special Meeting
December 2, 2024 - 5:30 PM
City Hall Council Chambers

MINUTES

CALL TO ORDER

Mayor Backus called the Special Meeting to order at 5:30 p.m. in the Council Chambers of Auburn City Hall, 25 West Main Street.

LAND ACKNOWLEDGEMENT

Mayor Backus acknowledged the Federally Recognized Muckleshoot Indian Tribe as the ancestral keepers of the land we are gathered on today.

PUBLIC PARTICIPATION

The meeting was held in person and virtually.

PLEDGE OF ALLEGIANCE

Mayor Backus led those in attendance in the Pledge of Allegiance.

ROLL CALL

Councilmembers present: Acting Deputy Mayor Yolanda Trout-Manuel, Hanan Amer, Kate Baldwin, Cheryl Rakes, Tracy Taylor, and Clinton Taylor. Deputy Mayor Larry Brown was excused.

Mayor Nancy Backus and the following staff members present included: Senior City Staff Attorney Taryn Jones, Police Commander Chris Burger, Director of Public Works Ingrid Gaub, Director of Community Development Jason Krum, Director of Finance Jamie Thomas, and City Clerk Shawn Campbell.

APPOINTMENTS

A. Airport Advisory Board
City Council to approve the reappointments of Justin Heater, Jay Miner, and Wayne Osborne to the Airport Advisory Board for a three-year term expiring December 31, 2027

Acting Deputy Mayor Trout-Manuel moved and Councilmember Rakes seconded to approve the reappointments of Justin Heater, Jay Miner, and Wayne Osborne to the Airport Advisory Board for a three-year term expiring December 31, 2027.

MOTION CARRIED UNANIMOUSLY. 6-0

B. Human Services Committee
City Council to approve the reappointments of Susan Miller, Suzanne Pak, and Erica Thomas to the Human Services Committee for a three-year term expiring December 31, 2027

Acting Deputy Mayor Trout-Manuel moved and Councilmember Amer seconded to approve the reappointments of Susan Miller, Suzanne Pak, and Erica Thomas to the Human Services Committee for a three-year term expiring December 31, 2027

MOTION CARRIED UNANIMOUSLY. 6-0

C. Parks & Recreation Board
City Council to approve the reappointments of Matt Jennings and Wayne Osborne to the Parks & Recreation Board for a three-year term expiring December 31, 2027

Councilmember Rakes moved and Acting Deputy Mayor Trout-Manuel seconded to approve the reappointments of Matt Jennings and Wayne Osborne to the Parks & Recreation Board for a three-year term expiring December 31, 2027

MOTION CARRIED UNANIMOUSLY. 6-0

D. Planning Commission
City Council to approve the reappointment of Julie Berry to the Planning Commission for a three-year term expiring December 31, 2027

Councilmember Amer moved and Councilmember Baldwin seconded to approve the reappointment of Julie Berry to the Planning Commission for a three-year term expiring December 31, 2027

MOTION CARRIED UNANIMOUSLY. 6-0

E. Salary Commission
City Council to approve the reappointment of Grantley Martelly to the Salary Commission for a four-year term expiring December 31, 2028

Councilmember T. Talylor moved and Councilmember Rakes seconded to approve the reappointment of Grantley Martelly to the Salary Commission for a four-year term expiring December 31, 2028

MOTION CARRIED UNANIMOUSLY. 6-0

F. Transportation Advisory Board
City Council to approve the new appointment of Keila Cassia Yagumyum and the reappointments of Emmanuel Dolo and Michael Harbin Jr., to the Transportation Advisory Board for a three-year term expiring December 31, 2027

Councilmember Baldwin moved and Councilmember C. Taylor seconded to approve the new appointment of Keila Cassia Yagumyum and the reappointments of Emmanuel Dolo and Michael Harbin Jr., to the Transportation Advisory Board for a three-year term expiring December 31, 2027.

MOTION CARRIED UNANIMOUSLY. 6-0

G. Urban Tree Board
City Council to approve the reappointment of James Tourangeau to the Urban Tree Board for a three-year term expiring December 31, 2027

Acting Deputy Mayor Trout-Manuel moved and Councilmember Rakes seconded to approve the reappointment of James Tourangeau to the Urban Tree Board for a three-year term expiring December 31, 2027

MOTION CARRIED UNANIMOUSLY. 6-0

AUDIENCE PARTICIPATION

Courtney Doherty, Auburn WA
Courtney expressed concerns regarding the Traffic Impact Fees assessed to Circle Creek Therapy Clinic.

Stephen Doherty, Auburn WA
Stephen shared a story regarding the services at Circle Creek Therapy Clinic.

CONSENT AGENDA

A. Minutes from the November 18, 2024, City Council Meeting

B. Claims Vouchers (Thomas)
Claims voucher list dated November 26, 2024, which includes voucher numbers 478201 through voucher 478305, in the amount of $2,124,000.65,

three electronic fund transfers in the amount of $325.71, and six wire transfers in the amount of $804,183.64

C. Payroll Voucher (Thomas)
Payroll check numbers 539625 through 539626 in the amount of $611,495.87, electronic deposit transmissions in the amount of $2,698,061.25, for a grand total of $3,309,557.12 for the period covering November 14, 2024, to November 27, 2024

Acting Deputy Mayor Trout-Manuel moved and Councilmember C. Taylor seconded to approve the consent agenda.

MOTION CARRIED UNANIMOUSLY. 6-0

ORDINANCES

A. Ordinance No. 6954 (Krum)
An Ordinance relating to Planning; adopting 2024 Annual Comprehensive Plan Text Amendments pursuant to the provisions of RCW Chapter 36.70A

Councilmember T. Taylor moved and Councilmember Rakes seconded to approve Ordinance No. 6954.

MOTION CARRIED UNANIMOUSLY. 6-0

B. Ordinance No. 6955 (Krum)
An Ordinance amending Sections 19.02.115, 19.02.120, 19.02.130 and 19.02.140 of Auburn City Code relating to School Impact Fees

Councilmember T. Taylor moved and Councilmember Amer seconded to approve Ordinance No. 6955.

MOTION CARRIED UNANIMOUSLY. 6-0

C. Ordinance No. 6961 (Thomas)
An Ordinance amending the City's 2023-2024 Biennial Operating and Capital Budgets

Councilmember Baldwin moved and Councilmember Amer seconded to approve Ordinance No. 6961.

MOTION CARRIED UNANIMOUSLY. 6-0

RESOLUTIONS

A. Resolution No. 5800 (Hinman)
A Resolution adopting the 2025 State Legislative Agenda

Councilmember Baldwin moved and Acting Deputy Mayor Trout-Manuel seconded to adopt Resolution No. 5800.

MOTION CARRIED UNANIMOUSLY. 6-0

DISCUSSION ITEMS

A. Jurassic Parliament Training

Ann Macfarlane, from Jurassic Parliament, provided the Council with training on parliamentary procedures.

ADJOURNMENT

There being no further business to come before the Council, the meeting was adjourned at 8:32 p.m.

APPROVED this 16th day of December, 2024.

_____	_____
NANCY BACKUS, MAYOR	Shawn Campbell, City Clerk

CITY OF AUBURN WASHINGTON

AGENDA BILL APPROVAL FORM

Agenda Subject:
Minutes of the November 25, 2024, and December 9, 2024, Study Session Meetings

Meeting Date:
December 16, 2024

Department:
City Council

Attachments:
11-25-2024 Minutes, 12-09-2024 Minutes

Budget Impact:

Administrative Recommendation:

Background for Motion:

Background Summary:

Councilmember:

Staff:

City Council
Study Session
November 25, 2024 - 5:30 PM
City Hall Council Chambers

MINUTES

CALL TO ORDER

Acting Deputy Mayor Yolanda Trout-Manuel called the meeting to order at 5:30 p.m. in the Council Chambers of Auburn City Hall, 25 West Main Street.

PUBLIC PARTICIPATION

The Meeting was held in person and virtually.

ROLL CALL

Councilmembers present: Hanan Amer, Cheryl Rakes, Clinton Taylor, Tracy Taylor, and Yolonda Trout-Manuel. Councilmember Kate Baldwin arrived at 5:37 p.m. and Deputy Mayor Larry Brown was excused.

Mayor Nancy Backus and the following staff members present included: Deputy City Attorney Paul Byrne, Assistant Chief of Police Samuel Betz, Assistant Director of Community Development Steven Sturza, Director of Parks, Arts, and Recreation Daryl Faber, Director of Administration Dana Hinman, Director of Finance Jamie Thomas, Planner II Gabriel Clark, Planning Services Manager Alexandria Teague, and Deputy City Clerk Hannah Scholl.

AGENDA MODIFICATIONS

There were no modifications to the agenda.

ANNOUNCEMENTS, REPORTS, AND PRESENTATIONS

There were no announcements, reports, or presentations.

PUBLIC WORKS AND COMMUNITY DEVELOPMENT DISCUSSION ITEMS

A. Ordinance No. 6954 (Krum) (15 Minutes)
An Ordinance relating to Planning; Adopting 2024 Annual Comprehensive Plan Text Amendments pursuant to the provisions of RCW Chapter 36.70A and

adopting corresponding Rezones related to certain Map Amendments

Councilmember T. Taylor Chaired this portion of the meeting.

Planner Clark provided Council with an overview of Ordinance No. 6954 including the purpose of the Plan and Amendments, and the periodic update process. He discussed the Capital Facilities Plans for the Auburn School District, Dieringer School District, Federal Way Public Schools, and Kent School District.

Council discussed public comments received by the Department for the 2024 Comprehensive Plan.

B. Ordinance No. 6955 (Krum) (5 Minutes)
An Ordinance amending Sections 19.02.115, 19.02.120, 19.02.130 and 19.02.140 of the Auburn City Code relating to School Impact Fees

Planner Clark provided Council with an overview of Ordinance No. 6955 including a review of the proposed amendments to Title 19 of the Auburn City Code related to School Impact Fees.

Council discussed future revisions to the School Impact Fees.

C. Ordinance No. 6959 (Krum) (30 Minutes)
An Ordinance relating to the Subdivision Code, Zoning Code, and the Comprehensive Plan, amending Chapters 14.22, 17.01, 17.04, 17.12, 17.14, 18.02, 18.04, 18.07, 18.09, 18.21, 18.23, 18.25, 18.29, 18.31, 18.32, 18.35, 18.49, 18.50, 18.52, 18.55, 18.56, 18.57, and creating new Chapter 17.27 of the Auburn City Code

Manager Teague provided Council with an overview of Ordinance No. 6959 including key changes and implementation for Middle Housing, Accessory Dwelling Units (ADU's), and Residential Parking Amendments.

Council discussed residential parking, unit lot subdivisions, ADU's, Residential Development Density, and adult family homes.

AGENDA ITEMS FOR COUNCIL DISCUSSION

A. Ordinance No. 6961 (Thomas) (30 Minutes)
An Ordinance amending the City's 2023-2024 Biennial Operating and Capital Budgets

Director Thomas provided Council with an overview of Ordinance No. 6961 including new programs, Capital Project adjustments, and the American Rescue Plan Act (ARPA) Funds realignment.

Council discussed the Auburn Golf Course Driving Range, Traffic Impact Fees, Capital Projects, ARPA funds, and the Resource Center.

B. Resolution No. 5800 (Hinman) (15 Minutes)
A Resolution adopting the 2025 State Legislative Agenda

Director Hinman provided Council with an overview of Resolution No. 5800 including the City of Auburn's State Legislative Priorities related to Public Safety, Regulatory Land Use, Public Works, Transportation, Infrastructure, Social Services, Parks and Open Spaces, and Budget & Finance.

Council discussed the Opioid Epidemic and addiction.

ADJOURNMENT

There being no further business to come before the Council, the meeting was adjourned at 6:57 p.m.

APPROVED this 16th day of December 2024.

_____ _____
LARRY BROWN, DEPUTY MAYOR Hannah Scholl, Deputy City Clerk

City Council
Study Session
December 9, 2024 - 5:30 PM
City Hall Council Chambers

MINUTES

CALL TO ORDER

Acting Deputy Mayor Yolanda Trout-Manuel called the meeting to order at 5:30 p.m. in the Council Chambers of Auburn City Hall, 25 West Main Street.

PUBLIC PARTICIPATION

The Study Session Meeting was held in person and virutally.

ROLL CALL

Councilmembers present: Hanan Amer, Kate Baldwin, Cheryl Rakes, Clinton Taylor, Tracy Taylor, and Yolonda Trout-Manuel. Deputy Mayor Larry Brown was excused.

Mayor Nancy Backus and the following staff members present included: Assistant Chief of Police Samuel Betz, Deputy City Attorney Paul Byrne, Director of Human Resources and Risk Management Candis Martinson, Director of Finance Jamie Thomas, Director of Public Works Ingrid Gaub, Director of Community Development Jason Krum, Water Utility Engineer Senait Gebreeyesus, Planning Services Manager Alexandria Teague, Senior Planner Alyssa Tatro, and City Clerk Shawn Campbell.

AGENDA MODIFICATIONS

There were no modifications to the agenda.

ANNOUNCEMENTS, REPORTS, AND PRESENTATIONS

There were no announcements, reports, or presentations.

MUNICIPAL SERVICES DISCUSSION ITEMS

A. Municipal Court Study (Martinson) (30 Minutes)
Phase II Presentation by National Center for State Courts

Councilmember Rakes Chaired this portion of the meeting.

Director Martinson, Deputy Managing Director John Doerner and Abby Kuschel with National Center for State Courts provided Council with a presentation on the Phase II Municipal Court Study including the project overview, the King County District Court Interlocal Agreement, the Study Methodology for Phase 1 and Phase 2 of the Study, the initial reviews and analysis reviewed, the Comparison Cost Analysis for both Phase 1 and Phase 2, costs paid to King County for District Court Services, case filing overview and summary, court staffing, annual expenditure overview, estimated cost overview, and the pros and cons of establishing a City operated Municipal Court.

Director Martinson explained the scope of Phase 2 of the Study, and options for additional data.

Judge Robertson explained how Judges are assigned to the City of Auburn, improvements in relations between the City and the County, King Counties Priority Case Management System, and the Studies pros and cons list.

Council discussed the changes between King County Court and the City of Auburn, annual expenditure overview, accomplishments between King County and the City, requests for pros and cons for staying with King County District Court, impact on the community, cases on each calendar, and anticipated organizational changes.

AGENDA ITEMS FOR COUNCIL DISCUSSION

A. 3rd Quarter 2024 Financial Report (Thomas) (20 Minutes)

Mayor Backus informed the Council that anyone who wishes to make a statement prior to the Deputy Mayor election they will be be given that opportunity at the beginning of the meeting.

Director Thomas provided Council with an overview of the 2024 3rd Quarter Financial Report including the General Fund Revenue Overview, tax revenue, Licenses and Permits revenue, Intergovernmental revenues, Charges for Services, fines, penalties, interest and investment earnings, the General Fund expenditures, American Rescue Plan Act (ARPA) update, and the Non-General Fund highlights.

Council discussed the Real Estate Excise Tax (REET) revenue, and businesses out of compliance.

B. Comprehensive Water Plan (Gaub) (45 Minutes)

Engineer Gebreeyesus provided the Council with an overview and update of the 2024 Comprehensive Water Plan including an overview of the 2024 Water Plan, and development progress and milestones. She provided an overview of the Water Utility in the City of Auburn, the key Elements in the 2024 Water

Comprehensive Plan, and the Chapters within the Plan. She reviewed the key takeaways of the Plan, and the next steps for adoption.

Council discussed the languages the Plan is available in, language to cover wholesale customers, engagement with property owners, and volume of water in current and future resources.

C. Ordinance No. 6960 (Krum) (20 Minutes)
An Ordinance adopting the 2024 Periodic Comprehensive Plan

Manager Teague and Planner Tatro provided Council with a 2024 Comprehensive Plan Update including a list of the 2024 Periodic comprehensive Plan elements. They reviewed the Capital Facilities Element, Utilities Element, Parks Element, Transportation Element, Systems Plans, the Appendices and supporting documents within the Plan, Comprehensive Use and Zoning Maps, and the remaining process to complete the 2024 Comprehensive Plan.

Council thanked staff and the Planning Commission for their work on the 2024 Periodic Comprehensive Plan.

ADJOURNMENT

There being no further business to come before the Council, the meeting was adjourned at 7:55 p.m.

APPROVED this 16th day of December 2024.

_____ _____
LARRY BROWN, DEPUTY MAYOR Shawn Campbell, City Clerk

CITY OF AUBURN WASHINGTON

AGENDA BILL APPROVAL FORM

Agenda Subject:
Claims Vouchers (Thomas)
Claims voucher list dated December 11, 2024, which includes voucher numbers 478306 through voucher 478435, in the amount of $5,306,112.88, nine electronic fund transfers in the amount of $1,981.22 and nine wire transfers in the amount of $791,627.00

Meeting Date:
December 16, 2024

Department:
Finance

Attachments:
None

Budget Impact:

Administrative Recommendation:
City Council to approve Claims Vouchers.

Background for Motion:

Background Summary:
Claims voucher list dated December 11, 2024, which includes voucher numbers 478306 through voucher 478435, in the amount of $5,306,112.88, nine electronic fund transfers in the amount of $1,981.22 and nine wire transfers in the amount of $791,627.00.

Councilmember: Kate Baldwin

Staff: Jamie Thomas

CITY OF AUBURN WASHINGTON

AGENDA BILL APPROVAL FORM

Agenda Subject:
Payroll Voucher (Thomas)
Payroll check numbers 539627 through 539629 in the amount of $81,214.00, electronic deposit transmissions in the amount of $2,913,016.94, for a grand total of $2,994,230.94 for the period covering November 28, 2024, to December 11, 2024

Meeting Date:
December 16, 2024

Department:

Attachments:
None

Budget Impact:

Administrative Recommendation:
City Council to approve Payroll Vouchers.

Background for Motion:

Background Summary:
Payroll check numbers 539627 through 539629 in the amount of $$81,214.00, electronic deposit transmissions in the amount of $2,913,016.94, for a grand total of $2,994,230.94 for the period covering November 25, 2024, to December 11, 2024.

Councilmember: Kate Baldwin

Staff: Jamie Thomas

AGENDA BILL APPROVAL FORM

Agenda Subject: **Meeting Date:**
Setting the date for the Public Hearing for City of Kent Franchise Agreement (Gaub) December 16, 2024
City Council to set the date of the Public Hearing for Franchise Agreement No. FRN24-0003 for City of Kent

(RECOMMENDED ACTION: Move to approve the Consent Agenda.)

Department: **Attachments:** **Budget Impact:**
Public Works None

Administrative Recommendation:
City Council to set the date of the Public Hearing for Franchise Agreement No. FRN24-0003 for City of Kent for a Water Franchise as January 21, 2025, at 7:00 pm.

Background for Motion:

Background Summary:
Section 20.04.040 of the Auburn City Code (ACC) requires the City to hold a Public Hearing before granting or denying a Franchise Agreement. Staff requests that the City Council set the date of the Public Hearing for the proposed Franchise Agreement No. FRN24-0003, for City of Kent for a Water Franchise, as January 21, 2025, at 7:00 pm.

Section 20.02.040 of the ACC requires a franchise for any utility or telecommunications carrier or operator to use public ways of the City and to provide service to persons or areas inside or outside of the City.

City of Kent has applied for a new Franchise Agreement to continue to operate their existing water facilities in the public ways within the Auburn City limits. Kent currently provides potable water service for human consumption or other domestic use, including residential, commercial and wholesale use and fire suppression purposes within the portion of Kent's water service boundary area that is within the Auburn City limits. The proposed agreement is consistent with the City's standard Franchise Agreement language.

Councilmember: Tracy Taylor

Staff: Ingrid Gaub

CITY OF AUBURN WASHINGTON

AGENDA BILL APPROVAL FORM

Agenda Subject:
Ordinance No. 6959 (Krum)
An Ordinance relating to the Subdivision Code, Zoning Code, and the Comprehensive Plan, amending Chapters 14.22, 17.01, 17.04, 17.12, 17.14, 18.02, 18.04, 18.07, 18.09, 18.21, 18.23, 18.25, 18.29, 18.31, 18.32, 18.35, 18.49, 18.50, 18.52, 18.55, 18.56, 18.57, and creating new Chapter 17.27 of the Auburn City Code

Meeting Date:
December 16, 2024

(RECOMMENDED ACTION: Move to approve Ordinance No. 6959.)

Department:
Community Development

Attachments:
Ordinance No. 6959, Exhibit A – Ordinance No. 6959 Text Amendment

Budget Impact:
Current Budget: $0
Proposed Revision: $0
Revised Budget: $0

Administrative Recommendation:
City Council to approve Ordinance No. 6959.

Background for Motion:
This Ordinance updates Auburn City Code to be consistent with the Periodic Comprehensive Plan Update, recently adopted House and Senate Bills, as well as help the City meet the new housing and job targets set forth in the respective King County and Pierce County Countywide Planning Policies.

Background Summary:
The City of Auburn has reviewed its development regulations for consistency with the 2024 Periodic Comprehensive Plan Update and therefore has proposed Amendments to City Code to implement the goals, policies, and strategies identified in the 2024 Periodic Comprehensive Plan. Accommodating growth in central to 2024 Periodic Comprehensive Plan update.

The goal of the proposed Text Amendment to City Code is to comply with new State Laws; including RCW 36.70A.681 (HB 1337), RCW 36.80A.622 (SB 6015), and RCW 36.70A.635 (HB 1110 & HB 2321), as well as help the City meet the new housing and job targets set forth in the King County Countywide Planning Policies (King County Ordinance No. 19660) and Pierce County Countywide Planning Policies (Pierce County Ordinance No. 2023-22s).

The City is proposing to amend Chapter 14.22 of Title of 14 “Project Review”, Chapters 17.01, 17.04, 17.12, 17.14 of Title 17 “Land Adjustments and Divisions”, and Chapters 18.02, 18.04, 18.07, 18.09,

18.21, 18.23, 18.25, 18.29, 18.31, 18.32, 18.35, 18.49, 18.50, 18.52, 18.55, 18.56, 18.57 of Title 18 “Zoning”; and create a new Chapter, 17.27 of Title 17.

Councilmember: Tracy Taylor

Staff: Jason Krum

ORDINANCE NO. 6959

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, RELATING TO THE SUBDIVISION CODE, ZONING CODE, AND THE COMPREHENSIVE PLAN, AMENDING CHAPTERS 14.22, 17.01, 17.04, 17.12, 17.14, 18.02, 18.04, 18.07, 18.09, 18.21, 18.23, 18.25, 18.29, 18.31, 18.32, 18.35, 18.49, 18.50, 18.52, 18.55, 18.56, 18.57, AND CREATING NEW CHAPTER 17.27 OF THE AUBURN CITY CODE

WHEREAS, the Washington State Growth Management Act (under Revised Code Washington (RCW) 36.70A.130) requires that all cities and counties periodically take legislative action to review and, if needed, revise its comprehensive land use plan and development regulations to ensure the plan and regulations comply with the requirements of the Washington State Growth Management Act, and;

WHEREAS, the City of Auburn has reviewed its development regulations for consistency with the 2024 Periodic Comprehensive Plan Update and therefore has proposed amendments to city code to implement the goals, policies, and strategies identified in the 2024 Periodic Comprehensive Plan; and

WHEREAS, accommodating growth is central to the 2024 Periodic Comprehensive Plan update. The King County Countywide Planning Policies (King County Ordinance No. 19660) identifies the housing and jobs targets that Auburn (city-wide) needs to achieve--12,000 net new residential units and 19,520 net new jobs by 2044. The Pierce County Countywide Planning Policies (Pierce County Ordinance No. 2023-22s) identified a housing target of 112 net new residential units and 0 net new jobs; and

WHEREAS, the proposed amendments to city code are also intended to comply with new state laws, including RCW 36.70A.681 (HB 1337) related to expanding housing options by easing barriers to the construction and use of accessory dwelling units; RCW 36.80A.622 (SB 6015) related to residential parking configurations; and RCW 36.70A.635 (HB 1110 & HB 2321) related to increasing middle housing in areas traditionally dedicated to single-family detached housing and unit lot subdivisions; and

WHEREAS, pursuant to Chapter 36.70A RCW, the proposed amendments to city code were transmitted to the Washington State Department of Commerce on September 23, 2024; the 60-day notice period ended November 11, 2024. Staff received comments from Commerce staff regarding middle housing regulations; and

WHEREAS, on October 18, 2024, the City issued a Notice of Adoption of the 2024 Comprehensive Plan Final Environmental Impact Statement (FEIS). This adoption used the existing 2024 Periodic Comprehensive Plan Update FEIS to meet SEPA non-project action responsibilities required for the adoption of the development regulation update; and

WHEREAS, the City of Auburn Planning Commission scheduled and held a public meeting on October 8, 2024 for the purposes of staff presentation and discussion on the proposed amendments to city code; and

WHEREAS, the Planning Commission scheduled and held a public hearing on October 23, 2024, to receive public testimony on the proposed amendments to city code; and

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, DO ORDAIN as follows:

Section 1. Amendment to City Code. Chapters 14.22, 17.01, 17.04, 17.12, 17.14, 18.02, 18.04, 18.07, 18.09, 18.21, 18.23, 18.25, 18.29, 18.31, 18.32, 18.35, 18.49, 18.50, 18.52, 18.55, 18.56, 18.57, and 17.27 of the Auburn City Code are amended to read as shown in Exhibit A.

Section 2. Implementation. The Mayor is authorized to implement those administrative procedures necessary to carry out the directives of this legislation.

Section 3. Severability. The provisions of this ordinance are declared to be separate and severable. The invalidity of any clause, sentence, paragraph, subdivision, section, or portion of this ordinance, or the invalidity of the application of it to any person or circumstance, will not affect the validity of the remainder of this ordinance, or the validity of its application to other persons or circumstances.

Section 4. Effective date. This Ordinance will take effect and be in force five days from and after its passage, approval, and publication as provided by law.

INTRODUCED: _____

PASSED: _____

APPROVED: _____

_____
NANCY BACKUS, MAYOR

ATTEST:

_____
Shawn Campbell, MMC, City Clerk

APPROVED AS TO FORM:

_____
Jason Whalen, City Attorney

Published: _____

Chapter 14.22
COMPREHENSIVE PLAN

Sections:

14.22.010 Purpose.
14.22.020 Comprehensive plan adopted.
14.22.030 Early and continuous public participation.
14.22.040 Definitions.
14.22.050 Conformance and consistency.
14.22.060 Amendments and exceptions.
14.22.070 Periodic assessment.
14.22.080 Docketing.
14.22.090 Proposals for amendments.
14.22.100 Public hearing required by planning commission.
14.22.110 Decision criteria for plan amendments.

14.22.010 Purpose.

The city of Auburn comprehensive plan establishes the principles, goals, objectives and policies guiding future development of the city in compliance with Chapter 36.70A RCW, the Washington State Growth Management Act. The purpose of this chapter is to establish procedures and review criteria for amending the comprehensive plan and to provide provisions for public participation in the planning process. (Ord. 6172 § 1, 2008.)

14.22.020 Comprehensive plan adopted.

The city of Auburn comprehensive plan, as amended in April 1995 to comply with the Growth Management Act and as may subsequently be amended thereafter, consisting of the following elements, is hereby adopted by reference:

A. *Chapters of the Comprehensive Plan.*

1. Core Comprehensive Plan.

2. ~~The~~ Land Use Element.

3. ~~The~~ Housing Element.

4. ~~The~~ Capital Facilities Element.

5. ~~The~~ Utilities Element.

6. ~~The~~ Transportation Element.

7. ~~The~~ Economic Development Element.

8. ~~The~~ Parks and Recreation Element.

8. Historic Preservation Element

9. Climate Element

10~~9~~. Comprehensive Plan Map.

~~Appendix A – Auburn Community Vision Report.~~

Appendix A~~B~~ – ~~Auburn~~ Housing Needs and Characteristics Assessment.

Appendix B~~C~~ – Agency Checklists~~uburn Housing Element Checklist.~~

Appendix C~~D~~ – ~~Auburn Health Impact Assessment.~~Public Participation Plan

Appendix D~~E~~ – ~~Auburn Public Participation Plan.~~Airport Master Plan

Appendix E.1~~F.1~~ – King County Buildable Lands Analysis.

Appendix E~~F~~.2 – Pierce County Buildable Lands Analysis.

Appendix F~~G~~ – ~~Auburn Airport Master Plan.~~Parks PROS Plan

Appendix G~~H~~ – ~~Auburn Community Profile.~~Comprehensive Transportation Plan

~~Appendix I – Auburn Greenhouse Gas Inventory.~~

~~Appendix J – Parks, Arts and Recreation Open Space Plan.~~Appendix K – Climate Change Framework

Appendix H – Auburn Greenhouse Gas Inventory

Appendix I – City of Auburn Ten-Year Economic Development Strategic Plan

Appendix J – Auburn Community Vision Report

B. *Additional Documents of the Comprehensive Plan, That Are Incorporated by Reference.*

~~1. Comprehensive Transportation Plan.~~

2. Capital Facilities Plan.

3. Shorelines Management Program.

4. Comprehensive Water Plan.

5. Comprehensive Sewer Plan.

6. Comprehensive Storm Drainage Plan.

7. Auburn Downtown Plan (May 2001).

8. Lakeland Hills Plan (1988).

9. Auburn Adventist Academy Plan (1991).

10. Auburn North Business Area Plan (1992). (Ord. 6612 § 1, 2016; Ord. 6329 § 1, 2010; Ord. 6172 § 1, 2008.)

11. Housing Action Plan (2020).

14.22.03~~0~~ Early and continuous public participation.

A. The city of Auburn encourages early and continuous public participation in the comprehensive planning process, and in other city-initiated planning programs that may be carried out under the overall framework of the plan. This chapter contains procedures for the consideration of potential amendments to any chapter or element of the comprehensive plan.

B. The director shall broadly disseminate information regarding the annual docketing and amendment process and identify a deadline for submittal of applications for inclusion in the

annual amendment cycle. Applications submitted after the established deadline will be considered during the following annual amendment process. (Ord. 6172 § 1, 2008.)

14.22.040 Definitions.

A. "Amendment" means any change in the wording, context or substance of the comprehensive plan or a change to the comprehensive land use map or any other map contained or referenced within any plan chapter or element.

B. "Area-wide map amendment" means an amendment to the comprehensive land use map involving four or more contiguous or adjacent parcels under different ownership that would be similarly affected by a proposed map amendment.

C. "City-initiated planning program" means a planning program begun by resolution of the city council, or the planning commission, addressing a geographic sub-area of the city's urban growth area (such as a special area plan) or addressing a specific functional area (such as a utility plan).

D. "Director" means the director of the department of planning and development or designee.

E. "Docket" means a list of suggested amendments to the comprehensive plan maintained by the director.

F. "Planning commission" is an appointed group serving in an advisory capacity to the city council as specified in Chapter 2.45 ACC. (Ord. 6532 § 23, 2014; Ord. 6287 § 2, 2010; Ord. 6172 § 1, 2008.)

14.22.050 Conformance and consistency.

The zoning, land division and other development codes contained or referenced within Auburn City Code shall be consistent with and implement the intent of the comprehensive plan. Capital budget decisions shall be made in conformity with the comprehensive plan. (Ord. 6172 § 1, 2008.)

14.22.060 Amendments and exceptions.

A. The comprehensive plan may only be amended pursuant to this chapter, no more frequently than once each calendar year as part of the annual cycle established herein, except as provided in subsection C of this section.

B. All amendments shall be considered concurrently so as to assess their cumulative impact.

C. *Exceptions.* Pursuant to Chapter 35A.70 RCW, under the following circumstances, amendments may be processed separately and in addition to the annual amendment cycle:

1. If an emergency exists, which is defined as an issue of community-wide significance that addresses the public health, safety, and general welfare;

2. To resolve an appeal of a comprehensive plan filed with the Growth Management Hearings Board or with the court;

3. To adopt or amend a shoreline master program under the procedures set forth in Chapter 90.58 RCW;

4. The initial adoption of a subarea plan or new element to the comprehensive plan;

5. The amendment of the capital facilities plan may occur concurrently with the adoption or amendment of the city budget;

6. Amendments of the comprehensive plan that are conducted in conjunction with an annexation as set forth in Titles 35 and 35A RCW. (Ord. 6853 § 1 (Exh. A), 2022; Ord. 6172 § 1, 2008.)

14.22.070 Periodic assessment.

A. The director will periodically monitor the comprehensive plan and development regulations that implement the plan, assess the need for any amendments, and may add potential changes to the docket as specified in ACC 14.22.080. The assessment shall be based on, at a minimum:

1. Whether growth and development are occurring at a faster or slower rate than envisioned in the plan;

2. Whether the capacity to provide adequate services has diminished or increased;

3. The availability of land to meet demand;

4. Whether the assumptions on which the plan is based remain valid;

5. The effect of the plan on land values and housing is contrary to plan goals;

6. Whether sufficient change or lack of change in circumstances dictates the need for an amendment.

B. The city shall complete a comprehensive review of the comprehensive plan and development regulations in order to update it as appropriate and to ensure continued compliance with the Growth Management Act pursuant to RCW 36.70A.130. (Ord. 6329 § 2, 2010; Ord. 6172 § 1, 2008.)

14.22.080 Docketing.

A. In accordance with RCW 36.70A.470, suggested changes to the comprehensive plan which are not specific to any site may be submitted by any individual, organization or general or special purpose government and shall be coordinated by the director. The director shall create appropriate forms for such submittals that require the submittal to address the criteria outlined in subsection C of this section. The list shall be known as the "docket" and is the means to suggest a change or identify a deficiency in the comprehensive plan. An item may be submitted to the docket at any time during the calendar year. There is no fee associated with submitting an item to the docket.

B. Annually, the director shall review such suggestions with the city council and determine whether to direct them to the planning commission for consideration. The city council may decline to consider any item from the docket.

C. Proposed amendments on the docket may be considered appropriate for action if the following criteria are met:

1. A proposed comprehensive plan text amendment addresses a matter appropriate for inclusion in the plan;

2. The proposal demonstrates a strong potential to serve the public interest by implementing specifically identified goals and policies of the plan;

3. The proposal addresses the interests and changed needs of the entire city as identified in the plan;

4. The proposal does not raise policy or land use issues that are more appropriately addressed by an ongoing work program approved by the city council;

5. The proposal can be reasonably reviewed and evaluated, given existing staff and budget resources; and

6. The proposal has not been voted on by the city council in the last three years. This time limit may be waived by the city council if it is demonstrated that there exists either an obvious technical error or a change in circumstances that justifies the need for the amendment.

D. Any item on the docket that is not determined to be appropriate for action may be proposed under ACC 14.22.090, provided it is timely and properly filed. (Ord. 6532 § 24, 2014; Ord. 6172 § 1, 2008.)

14.22.090 Proposals for amendments.

A. *Privately Initiated Amendments.* A proposed amendment to the comprehensive plan, other than docketing pursuant to ACC 14.22.080, may be submitted by any individual, organization, corporation or partnership; general or special purpose government other than the city; or entity of any kind; provided, that if the proposal involves specific real property, the property owner has provided written consent to the proposal.

B. *City – Initiated Amendments.* The city council or the planning commission may initiate a planning program or any type of amendment to the comprehensive plan, regardless of whether site-specific or area-wide in scope.

C. *Application.* Except for city-initiated planning programs or individual amendments, all proposed amendments shall be submitted to the director on an approved form, together with required filing fees. An environmental checklist shall also be submitted if required. A proposed amendment request shall include the following information:

1. Name, address, phone number and e-mail address of the applicant and contact person and written consent of the property owner if the proposal affects specific property;

2. If the amendment concerns specific property, both a general description and legal description of the property;

3. A description of the plan amendment being requested;

4. Written statements addressing the purpose of the amendment, why it is being requested, and how it is consistent with the criteria listed in ACC 14.22.110;

5. If the request is for an amendment to the comprehensive land use map, an indication of what concurrent change in zoning is also being requested.

D. *Department Report.* The director shall prepare an assessment and recommendation on all proposed amendment requests and include this within a report that evaluates all requests concurrently. (Ord. 6532 § 25, 2014; Ord. 6172 § 1, 2008.)

14.22.100 Public hearing required by planning commission.

A. The planning commission shall hold at least one public hearing on all proposed amendments to the comprehensive plan. Notice of such public hearing shall be given pursuant to Chapter 1.27 ACC and, at a minimum, include the following:

1. For site-specific plan map amendments:

   a. Notice shall be published once in the official newspaper of the city not less than 10 calendar days prior to the date of public hearing;

   b. Notice shall be mailed by first class mail to all property owners of record within a radius of 300 feet of the proposed map amendment request, not less than 10 calendar days prior to the public hearing;

2. For area-wide plan map amendments:

   a. Notice shall be published once in the official newspaper of the city not less than 10 calendar days prior to the date of public hearing;

b. Notice shall be mailed by first class mail to all property owners of record within the area subject to the proposed amendment;

c. Notice shall be posted in at least two conspicuous locations in the area subject to the proposed amendment not less than 10 calendar days prior to the date of the public hearing.

B. Notwithstanding the above, the director may expand the minimum noticing provisions noted above as deemed necessary.

C. *Planning Commission Recommendation.* The planning commission shall conduct a public hearing on all potential comprehensive plan amendments and shall make and forward a recommendation on each to the city council. The planning commission shall adopt written findings and make a recommendation consistent with those findings to the city council.

D. The city council, if it elects to amend the comprehensive plan, shall adopt written findings and adopt said amendments by ordinance.

E. *State Review.* All comprehensive plan amendments considered by the planning commission shall be forwarded for state agency review consistent with RCW 36.70A.106.

F. Any appeal of an amendment to the comprehensive plan shall be made in accordance with Chapter 36.70A RCW. (Ord. 6172 § 1, 2008.)

14.22.110 Decision criteria for plan amendments.

A. The comprehensive plan was developed and adopted after significant study and public participation. The principles, goals, objectives and policies contained therein shall be granted substantial weight when considering a proposed amendment. Therefore, the burden of proof for justifying a proposed amendment rests with the applicant, who must demonstrate that the request complies with and/or relates to the following decision criteria:

1. The proposed change will further and be consistent with the goals and objectives of the plan and the plan will remain internally consistent;

2. Whether the capacity to provide adequate services is diminished or increased;

3. Assumptions upon which the comprehensive plan is based are found to be invalid;

4. A determination of change or lack of change in conditions or circumstances has occurred since the adoption of the latest amendment to the specific section of the comprehensive plan that dictates the need for a proposed amendment;

5. If applicable, a determination that a question of consistency exists between the comprehensive plan and Chapter 36.70A RCW, the countywide planning policies for either King and/or Pierce County, as appropriate, and Vision 2050~~: Growth and Transportation Strategy for the Puget Sound Region~~;

6. If the request is to change the land use designation of a specific property on the comprehensive land use map, the applicant must demonstrate one of the following:

a. The current land use designation was clearly made in error or due to an oversight;

b. The proposed land use designation is adjacent to property having a similar or compatible designation, or other conditions are present to ensure compatibility with surrounding properties;

c. There has been a change in conditions since the current land use designation came into effect. (Ord. 6172 § 1, 2008.)

The Auburn City Code is current through Ordinance 6940, passed April 15, 2024.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

City Website: www.auburnwa.gov

Hosted by Code Publishing Company, A General Code Company.

Chapter 17.01
USER GUIDE

Sections:

17.01.010 Introduction.
17.01.020 What is a subdivision?
17.01.030 How is a plat reviewed?
17.01.040 What are the criteria for approval?
17.01.050 What happens after a plat is approved?
17.01.060 What about a simple boundary line adjustment or elimination?
17.01.070 How do you modify an existing subdivision?
17.01.080 How do you change a recorded subdivision?
17.01.090 How do you eliminate a recorded subdivision?
17.01.100 Is there another process by which you can subdivide land?
17.01.110 Can you cluster lots within a subdivision?

17.01.010 Introduction.

This title contains standards, regulations and processes for the division of land and adjustment of property boundaries within the city. (Ord. 6239 § 1, 2009.)

17.01.020 What is a subdivision?

The process of dividing land into smaller lots is often generically referred to as a subdivision. However, in this title, the term "subdivision" refers specifically to the division of land into ten ~~five~~ or more lots, while the division of land into nine ~~four~~ or fewer lots is called a "short subdivision." Most of the regulations for subdivisions and short subdivisions are the same, but a short subdivision is an administrative process where an application is reviewed and decided upon by city staff whereas a subdivision is reviewed and decided upon by the city's hearing examiner. A plat is the drawing or map which shows the subdivision or short subdivision. (Ord. 6239 § 1, 2009.)

17.01.030 How is a plat reviewed?

The plat review process for a short subdivision, including the infrastructure improvement requirements for approval, is set forth in Chapter 17.09 ACC. The plat review process for a subdivision, from the pre-application conference to preliminary approval by the hearing examiner, is set forth in Chapter 17.10 ACC. Chapter 17.16 ACC includes additional requirements for planning and other studies to be submitted for review along with the preliminary plat. (Ord. 6239 § 1, 2009.)

17.01.040 What are the criteria for approval?

A plat must be laid out in accordance with the standards and specifications set forth in Chapter 17.14 ACC. (Ord. 6239 § 1, 2009.)

17.01.050 What happens after a plat is approved?

Once the layout of a subdivision has been approved by the city, it is said to have preliminary approval. Then the applicant must submit construction drawings of the infrastructure that was proposed in the preliminary plat. Once these construction drawings are approved by the city and the infrastructure has been built, inspected and accepted by the city, the plat has final approval and can be recorded with the appropriate county. In the case of a subdivision, an additional application, review and approval process is required for this final approval. This final plat process is set forth in Chapter 17.12 ACC. (Ord. 6239 § 1, 2009.)

17.01.060 What about a simple boundary line adjustment or elimination?

Other land adjustment tools are also outlined in this title, including boundary line adjustments (Chapter 17.06 ACC) and boundary line eliminations (Chapter 17.08 ACC). Boundary line adjustments are the movement of a boundary line that does not result in the creation of a new

lot. Boundary line eliminations are the merging of two or more lots by eliminating one or more lot lines. (Ord. 6239 § 1, 2009.)

17.01.070 How do you modify an existing subdivision?

The applicant can request a modification of subdivision standards and specifications through the process set forth in Chapter 17.18 ACC. (Ord. 6239 § 1, 2009.)

17.01.080 How do you change a recorded subdivision?

After a subdivision has been recorded with the county in which it is located, any proposed change to the subdivision is called a subdivision alteration. The alteration process is set forth in Chapter 17.20 ACC. If the applicant proposes to make a change to an approved preliminary plat before final plat approval and recording, then the applicant may request an adjustment to the preliminary plat through the process set forth in ACC 17.10.100. (Ord. 6239 § 1, 2009.)

17.01.090 How do you eliminate a recorded subdivision?

A plat may also be vacated, or eliminated, after recording. Chapter 17.22 ACC outlines the process by which a plat may be vacated, and to whom the title to the vacated property shall vest. (Ord. 6239 § 1, 2009.)

17.01.100 Is there another process by which you can subdivide land?

The binding site plan process is an alternative form of land division. It may be used for the division of land for commercially or industrially zoned property, or for certain types of residential development. This process is set forth in Chapter 17.24 ACC. (Ord. 6239 § 1, 2009.)

17.01.110 Can you cluster lots within a subdivision?

The city of Auburn allows clustering of lots within a subdivision onto a portion of the site, while maintaining the density of the residential zone. Clustering allows future development to occur at an appropriate density for infrastructure services; it also protects environmentally sensitive areas or cultural/historic features by clustering lots away from these areas. The standards by which clustering is allowed are set forth in Chapter 17.26 ACC. (Ord. 6239 § 1, 2009.)

The Auburn City Code is current through Ordinance 6944, passed July 15, 2024.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

City Website: www.auburnwa.gov

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Chapter 17.04
DEFINITIONS

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17.04.040	Application.
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17.04.190	Land division.
17.04.200	Lot.
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17.04.210	*Repealed.*
17.04.220	Lot of record.
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17.04.225 Monument.
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17.04.235 Owner.
17.04.240 Panhandle.
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17.04.250 Planning agency.
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17.04.390 USC and GS.
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17.04.405 Zero lot line development.
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17.04.410 Zoning ordinance.

17.04.010 General definitions.

Except where specifically defined in this chapter, all words used in this title shall carry their customary meanings. Words used in the present tense include the future, and the plural includes the singular; the word “shall” is always mandatory, the word “may” denotes a use of discretion in making a decision, the words “used” or “occupied” shall be considered as though followed by the words “or intended, arranged or designed to be used or occupied.” (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.020 ACC.

“ACC” means the Auburn City Code. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.025 Alley.

“Alley” means a public travel way or other public right-of-way under the jurisdiction and control of the city and not designated for general travel and used primarily as a means of access to the rear of residential and/or business establishments. (Ord. 6239 § 1, 2009.)

17.04.030 Applicant.

“Applicant” means the owner or owners of record of the property subject to an application for land division or lot line adjustment, or the authorized representative of such owner or owners. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.040 Application.

“Application” means all of the application forms, plans and accompanying documents required by this title for any particular land division, boundary line adjustment or boundary line

elimination request. The city shall not be considered to be in receipt of an application under this title until the planning director has verified that an application is complete. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.045 Area of special flood hazard.

Repealed by Ord. 6295. **17.04.050 Binding site plan.**

"Binding site plan" means a drawing prepared pursuant to Chapter 17.24 ACC and showing the location and general characteristics of streets, utilities and other physical features of property divided under the procedures of Chapter 17.24 ACC. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.055 Boundary line adjustment.

"Boundary line adjustment" means the relocation of the boundaries of a lot, which relocation does not result in the creation of any additional lot or lots. (Ord. 6239 § 1, 2009.)

17.04.060 Boundary line elimination.

"Boundary line elimination" means the removal of one or more interior lot lines of two or more separate lots with contiguous ownership. (Ord. 6239 § 1, 2009.)

17.04.065 City.

"City" means the city of Auburn, Washington. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988. Formerly 17.04.060.)

17.04.070 Code.

"Code" means the Auburn City Code. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.080 Commission.

"Commission" means the planning commission of the city as established by Chapter 2.45 ACC. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.090 Comprehensive plan.

"Comprehensive plan" means the comprehensive plan for the Auburn planning area, as now constituted or hereafter amended, or its successor. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.100 Council.

"Council" means the Auburn city council. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.110 Dedication.

"Dedication" means the deliberate conveyance of fee ownership of land, or the granting of a right-of-way, easement, or other interest in land, by an owner or owners of the land to the city for any general and public uses, reserving to the owner or owners no other rights than such as are compatible with the full exercise and enjoyment of the public uses to which the property has been devoted. The intention to dedicate shall be evidenced by the owner or owners presenting for filing a final plat showing the dedication thereon. Acceptance by the city shall be indicated by the approval of the city, as evidenced by the presence of the director's signature on the face of the final plat. (Ord. 6654 § 2, 2017; Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.120 Department.

"Department" means the city department of planning and development, or its successor, unless otherwise specified. (Ord. 6287 § 2, 2010; Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.130 Development permit.

"Development permit" means any permit issued by the city allowing the physical alteration of real property, including but not limited to building construction or alteration, street construction, utility construction or installation, grading, filling or excavating. Approval of a subdivision, short subdivision, binding site plan, boundary line adjustment or boundary line elimination shall not be considered a development permit for the purposes of this title. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.140 Director, planning.

See "Planning director," ACC 17.04.265. (Ord. 6287 § 2, 2010; Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.150 EIS or environmental impact statement.

"EIS" or "environmental impact statement" means a document prepared to assess the environmental impacts of a proposal which has been judged to have, or likely to have, a significant adverse effect upon the quality of the environment pursuant to the State Environmental Policy Act of 1971 (Chapter 43.21C RCW), as now constituted or hereafter amended. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.160 Final plat.

"Final plat" means the final drawing of a subdivision and dedication prepared for filing for record with the county auditor, and containing all elements and requirements as set forth in Chapter 17.12 ACC and as set forth in Chapter 58.17 RCW. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.170 Hearing examiner.

"Hearing examiner" means the city hearing examiner, as established by Chapter 2.46 ACC. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.180 Improvements.

"Improvements" means the street/transportation, utilities, and other facilities required by this title, other titles of the Auburn City Code, or the city design and construction standards to be constructed in conjunction with any particular land division. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.190 Land division.

"Land division" means the creation of any new lot or lots for the purpose of sale, lease or transfer of ownership, whether such lot or lots is created by subdivision, short subdivision, or binding site plan. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.200 Lot.

"Lot" means an area of land under single or common ownership, which has been created by any of the various land division methods for the purpose of lease, sale or transfer of ownership, defined by fixed and definite boundaries, and having sufficient area and dimension to accommodate development allowed by the zone in which it is located. As per RCW 58.17.020(9), the term "lot" shall include tracts or parcels. The term shall not include those tracts or parcels which are not buildable, but are created for common or public use, such as road and utility tracts. (Ord. 6239 § 1, 2009; Ord. 6006 § 1, 2006; Ord. 4296 § 2, 1988.)

17.04.202 Lot, parent.

"Lot, parent" means a lot which is subdivided into unit lots through the unit lot subdivision process.

17.04.203 Lot, unit.

"Lot, unit" means a subdivided lot created from a parent lot and approved through the unit lot subdivision process.

17.04.205 Lot area.

"Lot area" means the total horizontal area within the boundary lines of a lot, however, the area contained in access easements, tracts, or panhandles shall not be included in the lot area or any other lot size computation. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.210 Lot line adjustment.

Repealed by Ord. 6239

17.04.220 Lot of record.

"Lot of record" means a lot which has been recorded by the county and appears on the official maps of the county assessor. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.221 Lot Splitting.

"Lot splitting" means unit lot subdivisions or and condominiums as a means of creating separate ownership of each housing unit.

17.04.225 Monument.

"Monument" means a permanent type survey marker which conforms to the city's design and construction standards, in accordance with Chapter 58.09 RCW, Surveys – Recording. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.230 Original tract.

"Original tract" means a unit of unplatted land held under single or unified ownership, the configuration of which may be determined by the fact that all land abutting said tract is separately owned by others, not including an applicant or applicants; provided, that where a husband and wife own contiguous lots in separate or community ownership, said contiguous lots shall constitute the original tract. (Ord. 6239 § 1, 2009; Ord. 6006 § 2, 2006. Formerly 17.04.235.)

17.04.235 Owner.

"Owner" means the vested owners of the property and the beneficiaries of deeds of trust (owners of financial interest) as indicated in a current title report covering the property. (Ord. 6239 § 1, 2009.)

17.04.240 Panhandle.

"Panhandle" means a lot with access to a street by means of a portion of the lot having less than the required lot width, and situated so that another lot is located between the main portion of the lot and the street. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.245 Parcel.

"Parcel" means an area of land for which rights or ownership and use can be bought. For purposes of this title, see ACC 17.04.200, Lot. (Ord. 6239 § 1, 2009.)

17.04.250 Planning agency.

"Planning agency" means the Auburn department of planning and development, or its successor. (Ord. 6287 § 2, 2010; Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.260 Planning commission.

"Planning commission" means that body created by Chapter 2.45 ACC. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.265 Planning director.

"Planning director" means the director of the Auburn department of planning and development, or its successor, unless otherwise specified. (Ord. 6287 § 2, 2010; Ord. 6239 § 1, 2009.)

17.04.270 Preliminary plat.

"Preliminary plat" means a neat and approximate drawing of a proposed subdivision showing the general layout of streets and alleys, lots, blocks, utilities and other elements of a subdivision consistent with the provisions of Chapter 17.10 ACC. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.280 Public way.

"Public way" means the surface, the air space above the surface, and the space below the surface of any public street, including, but not limited to, any public alley, bridge, land path,

trail, court, circle, roundabout, boulevard, drive, tract, right-of-way or sidewalk under the jurisdiction of the city as is now, or in the future, laid out, improved or unimproved within the limits of the city presently and as such limits may be hereafter extended. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.290 RCW.

"RCW" means the Revised Code of Washington, as now constituted or hereafter amended. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.300 Regulatory floodway.

"Regulatory floodway" means the channel of a stream or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot at any point. (Ord. 6295 § 5, 2010; Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.305 Regulatory floodplain.

"Regulatory floodplain" means the area of the special flood hazard area and all protected areas within the city of Auburn. It also includes newly designated special flood hazard areas and protected areas that are delineated pursuant to city ordinance. (Ord. 6295 § 8, 2010.)

17.04.310 Reserved.

(Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.320 Short plat.

"Short plat" means a neat and accurate drawing of a short subdivision, prepared for filing for record with the county auditor, and containing all elements and requirements as set forth by Chapter 17.09 ACC. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.330 Short subdivision.

"Short subdivision" means the division or redivision of land into nine or fewer lots, tracts, parcels, sites or divisions for the purpose of sale, lease or transfer of ownership, consistent with the provisions of Chapter 17.09 ACC. (Ord. 6654 § 3, 2017; Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.335 Special flood hazard area (SFHA).

"Special flood hazard area (SFHA)" means the land subject to inundation by the base flood. Special flood hazard areas are identified by the Federal Emergency Management Agency in the scientific and engineering reports entitled "Flood Insurance Study for King County, Washington and Incorporated Areas" dated April 19, 2005, and any revisions thereto, and "Flood Insurance Study for Pierce County, Washington and Unincorporated Areas" dated August 19, 1987, and any revisions thereto, and designated on associated flood insurance rate maps with the letter "A" including AE, AO, AH, A1 – 99. (Ord. 6295 § 9, 2010.)

17.04.340 Street.

"Street," comprised of a public or private street, means any land legally dedicated or reserved for the purpose of providing for public travel and access to real property. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.350 Street, half.

"Half street" means a street with improvements built only from the centerline to one edge of the ultimate right-of-way, or to a minimum width as defined in the city's design and construction standards, designed and built in accordance with all applicable ordinances, standards and requirements; provided, that appropriate measures shall be taken to protect the structural integrity of the exposed edge of pavement, as determined by the city engineer. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.360 Street, private.

"Private street" means any street which is not a public street. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.370 Street, public.

"Public street" means any highway, street, or other public right-of-way for motorized or nonmotorized travel under the jurisdiction and control of the city. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.380 Subdivision.

"Subdivision" means the division or redivision of land into five or more lots, tracts, parcels, sites or divisions for the purpose of sale, lease or transfer of ownership, consistent with the provisions of this title; provided, that the term "subdivision" shall also include the redivision of land into four or fewer lots, tracts, parcels, sites or divisions for the purpose of sale, lease or

transfer of ownership where such land has been short subdivided within the previous five years and does not meet the criteria of ACC 17.09.010(B). (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.385 Tract.

"Tract" means a piece of land created and designated as part of a land division that is not a lot of record, or a street or public right-of-way. Tracts are created and designed for a specific purpose. Land uses within a tract are restricted to those uses consistent with the stated purpose as described on the plat, or in the maintenance agreements. Examples include but are not limited to stormwater management tracts, private street or alley tracts, tree preservation tracts, environmental resource tracts, and open space tracts. (Ord. 6239 § 1, 2009.)

17.04.387 Unit lot subdivision.

"Unit lot subdivision" means the division of a parent lot into two or more unit lots within a development and approved through the unit lot subdivision process.

17.04.390 USC and GS.

"USC and GS" means the United States Coastal and Geodetic Survey. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.400 USGS.

"USGS" means the United States Geological Survey. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

17.04.405 Zero lot line development.

"Zero lot line development" means a development containing one or more dwelling units which have no yard on one or more of the side lot lines. Dwelling units in zero lot line developments are located in such a manner that one or more of a building's sides rest directly on a side lot

line and each dwelling unit is located exclusively on one lot, except for the common wall which is separated by the property line. Zero lot line developments may include attached or detached dwelling units. Zero lot line development is created through the unit lot subdivision process.

17.04.407 Zero lot line.

"Zero lot line" means a side lot line which has no yard.

17.04.410 Zoning ordinance.

"Zoning ordinance" means the Auburn comprehensive zoning ordinance, codified as ACC Title 18, as now constituted or hereafter amended. (Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988.)

The Auburn City Code is current through Ordinance 6940, passed April 15, 2024.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

City Website: www.auburnwa.gov

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Chapter 17.12
FINAL SUBDIVISIONS

Sections:

17.12.005 Purpose.
17.12.010 Application submittal and contents.
17.12.015 Review process.
17.12.020 Administrative review.
17.12.030 Administrative decision action.
17.12.040 Terms of approval.
17.12.050 Distribution and filing.
17.12.060 Transfer of ownership.
17.12.070 Building, occupancy and model home permits.
17.12.080 Release of improvement guarantee.
17.12.090 Survey requirements.

17.12.005 Purpose.

This chapter establishes specific application materials, review processes and requirements, and terms of approval for final subdivisions. (Ord. 6654 § 5, 2017; Ord. 6239 § 1, 2009.)

17.12.010 Application submittal and contents.

A. *Application.* An application for final subdivision approval meeting all requirements of Chapter 58.17 RCW and this title shall be submitted to the planning department, accompanied by the following:

1. Application materials consistent with the requirements of ACC 17.02.065;

2. A copy of the approved preliminary plat;

3. A final plat meeting the requirements of Chapter 58.17 RCW, including certifications, dedications, and title reports;

4. Agency recommendations pursuant to RCW 58.17.150;

5. A recordable survey and surveyor's signature meeting the requirements of Chapter 58.09 RCW and RCW 58.17.250;

6. Proposed list of public improvements that will be incomplete at the time of final plat approval and the associated cost to complete the work. The list shall be used to determine the financial security required as part of the final plat review process. The engineer's certification is required prior to the director's approval of the final plat. The engineer's certification will not be issued until the requirements of ACC 17.14.010 have been met.

B. *Preparation.* The final plat shall be prepared by a professional land surveyor licensed by the state of Washington. The preparer shall, by placing their signature and stamp upon the face of the plat, certify that the plat is a true and correct representation of the land actually surveyed by the preparer, that the existing monuments shown thereon exist as located and that all dimensional and geodetic details are correct.

C. *Scale and Format.* The final plat shall be drawn with reproducible ink on any standard material consistent with and conforming to Chapter 58.09 RCW and WAC 332-130-150 and acceptable to the city measuring 18 inches by 24 inches in size. The final plat shall be accurate, legible and drawn to an engineering (decimal) scale of 100 feet or fewer to the inch. If more than one sheet is required, an index sheet showing the entire subdivision with street and highway names and block numbers (if any) shall be provided. Each sheet, including the index sheet, shall be of the above-specified size and conform to, and compatible with, the Pierce County auditor's or King County recorder's recording standards and guidelines. All signatures or certifications appearing on a final plat shall be in reproducible black ink.

D. *Final Plat Contents.* A final plat shall contain the following information:

1. The name of the subdivision;

2. Legal description of the property being subdivided;

3. Numeric scale, graphic scale, true north point and date of preparation of the final plat;

4. The boundary line of the plat, referenced to city datum in accordance with the city design and construction standards and based on an accurate traverse, with angular and linear dimensions and bearings;

5. The exact location, width and assigned name of all streets, alleys and other public ways within and adjacent to the subdivision;

6. A table depicting the assigned address for each lot within the subdivision;

7. The exact location, width and purpose of all easements and dedications for rights-of-way provided for public and private services and utilities;

8. True courses and distances to the nearest established street lines, or section or quarter section corner monuments which shall accurately locate the subdivision;

9. Municipal, township, county or section lines accurately tied to the lines of the plat by distances and courses;

10. All lot and block numbers and lines, with accurate dimensions in feet and hundredths of feet;

11. The radii, internal angles, points of curvature, tangent bearings and lengths of all arcs;

12. The accurate location of each permanent control monument. One such monument shall be located at each and every controlling corner on the boundaries of the parcel of land being subdivided; at each street centerline intersection, each point of curvature (PC), each point of tangency (PT), and each point of reverse curve (PRC); and at each intersection of a street centerline with a plat boundary. All permanent control monuments shall be marked with the land surveyor's registration number;

13. All plat meander lines or reference lines along bodies of water shall be established above, but not farther than 20 feet from, the high water line of such body;

14. Accurate outlines and legal descriptions of any areas to be dedicated or reserved for public use, with the purposes of such dedication or reservation and any limitations indicated thereon and in the dedication;

15. Accurate outlines of any areas to be reserved by deed covenant for common use of owners of property within the subdivision, together with the purposes of such reservation;

16. Any restrictions or conditions on the lots or tracts within the subdivision, as required by the hearing examiner, or at the discretion of the property owner;

17. The final recorded subdivision plat shall include a notice to the individual property owners and/or the homeowners' association of the location, responsibilities, and requirements associated with storm water low impact development and management facilities;

18. The name and seal of the licensed land surveyor responsible for preparation of the final plat, and a signed certification on the plat by said surveyor to the effect that it is a true and correct representation of the land actually surveyed by them, that the existing monuments shown thereon exist as located and that all dimensional and geodetic details are correct;

19. A signed certification stating that the subdivision has been made with the free consent, and in accordance with the desires, of the owner or owners. If the plat includes a dedication, the certificate or a separate written instrument shall contain the dedication of all streets and other areas to the public, any individual or individuals, religious society or societies, or to any corporation, public or private, as shown on the plat, and a waiver of all claims for damages against any governmental authority which may be occasioned to the adjacent land by the established construction, drainage or maintenance of said street or other areas so dedicated. Such certificate or instrument shall be signed and acknowledged before a notary public by all parties having any interest in the lands subdivided. An offer of dedication may include a waiver of right of direct access to any street from any property. Such waiver may be required by the city engineer as a condition of approval. Roads not dedicated to the public must be clearly marked on the face of the plat. Any dedication, donation or grant as shown on the face of the plat shall be considered as a quit claim deed to the said donee or grantee for use for the purpose intended by the donation or grant. At the discretion of the city engineer conveyances of right-of-way may be required to be by statutory warranty deed. The acceptance of right-of-way by the city shall not obligate the city to improve or develop the lands in the right-of-way;

20. Forms for the appropriate certifications of the finance director, city engineer and director, as follows:

FINANCE DIRECTOR'S CERTIFICATE

I hereby certify that there are no delinquent special assessments for which the property subject to this subdivision may be liable to the city, and that all special assessments on any property

herein contained dedicated as streets, alleys or for any other public use have been duly paid, satisfied or discharged, this _____ day of _____, 20___.

_____

Auburn Director of Finance

CITY ENGINEER'S CERTIFICATE

I hereby certify that this final plat is in compliance with the certificate of improvements issued pursuant to ACC 17.14.015, and is consistent with all applicable City improvement standards and requirements in force on the date of preliminary plat approval, this _____ day of _____, 20___.

_____

Auburn City Engineer

COMMUNITY DEVELOPMENT ~~ASSISTANT~~ DIRECTOR'S CERTIFICATE

I hereby certify on this _____ day of _____, 20___, that this final plat is in substantial conformance with the preliminary plat and any conditions attached thereto, which preliminary plat was approved by the Hearing Examiner for the City of Auburn on the _____ day of _____, 20____.

_____

Auburn ~~Assistant~~ Director of Community Development

21. A form for the certificate of the applicable (King/Pierce) county finance division, as follows, or as required by the applicable county, if different:

FINANCE DIVISION CERTIFICATE

I hereby certify that all property taxes are paid, that there are no delinquent special assessments certified to this office for collection, and that all special assessments certified to this office for collection on any of the property herein contained dedicated as streets, alleys or for other public use are paid in full this ___ day of _____, 20___.

_____

Manager

_____

Deputy

22. A form for the approval of the applicable (King/Pierce) county assessor, as follows, or as required by the applicable county, if different:

ASSESSOR'S APPROVAL

Examined and approved this _____ day of _____, 20___.

_____

County Assessor

_____

Deputy County Assessor

_____

Account number

23. A form for the certificate of the applicable (King/Pierce) county recorder, as follows, or as required by the applicable county, if different:

RECORDING CERTIFICATE

Filed for record at the request of the City of Auburn this _____ day of _____, 20___ at _____ minutes past _____ __.M., and recorded in Volume _____ of Plats, page _____ Records of (King or Pierce) County, Washington.

County Recording Number _____.

_____

Manager

_____

Superintendent of Records

24. Any additional pertinent information as required at the discretion of the city engineer or director as defined in this title. (Ord. 6654 § 5, 2017; Ord. 6617 § 27, 2016; Ord. 6239 § 1, 2009; Ord. 6186 § 7, 2008; Ord. 6061 § 1, 2006; Ord. 5170 § 1, 1998; Ord. 4296 § 2, 1988. Formerly 17.10.010.)

17.12.015 Review process.

A. final plat shall be reviewed in accordance with ACC Title 14 as a Type I decision. (Ord. 6654 § 5, 2017; Ord. 6239 § 1, 2009.)

17.12.020 Administrative review.

A. The director shall forward the plat to the city engineer and to other city departments for review. The city engineer shall review the final plat and determine if it is in compliance with the certificate of improvements issued under ACC 17.14.015, is consistent with all applicable city improvement standards and requirements in effect on the date of preliminary plat approval.

B. The director, or designee, shall review the final plat for consistency with the terms and conditions of the preliminary plat approval; the requirements of Chapter 58.17 RCW and other applicable state laws in effect at the time of preliminary plat approval; and the requirements of this title in effect at the time of preliminary plat approval. (Ord. 6654 § 5, 2017; Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988. Formerly 17.10.020.)

17.12.030 Administrative decision action.

The director shall approve, disapprove, or return to the applicant for modification or correction a proposed final plat within 30 days of the date of filing a complete application unless the applicant agrees, in writing, to an extension of the time period provided by RCW 58.17.140. If the director finds that the subdivision proposed for final plat approval conforms to all terms of the preliminary plat approval, and the said subdivision meets the requirements of Chapter 58.17 RCW, other applicable state laws, and this title, which requirements were in effect on the date of preliminary plat approval, the director shall inscribe and execute a written approval on the face of the final plat. (Ord. 6654 § 5, 2017; Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988. Formerly 17.10.030.)

17.12.040 Terms of approval.

A. subdivision shall be governed by the terms of approval of the final plat, and the zoning ordinance and regulations in effect on the date of preliminary plat approval for a period of five years after final plat approval unless the hearing examiner finds that a change in conditions creates a serious threat to the public health or safety in the subdivision; provided, that for any final plat approved before January 1, 2015, it is vested for a period of seven years from final plat approval and if approved prior to January 1, 2008, it is vested for a period of 10 years from final plat approval. (Ord. 6654 § 5, 2017; Ord. 6317 § 4, 2010; Ord. 6239 § 1, 2009; Ord. 6186 § 8, 2008; Ord. 4296 § 2, 1988. Formerly 17.10.040.)

17.12.050 Distribution and filing.

An original of the plat must be recorded with the appropriate county office within 30 days or the plat shall become null and void. A recorded certified copy on any standard material acceptable to the city shall be returned to the city and kept with the city's records. (Ord. 6654 § 5, 2017; Ord. 6239 § 1, 2009; Ord. 6061 § 2, 2006; Ord. 4296 § 2, 1988. Formerly 17.10.050.)

17.12.060 Transfer of ownership.

Whenever any parcel of land lying within the city is divided under the provisions of this title, no person, firm or corporation shall sell or transfer, or offer or advertise for sale or transfer, any such lot, tract or parcel without having first had an approved final plat of such subdivision filed for record, except as provided by ACC 17.10.090. (Ord. 6654 § 5, 2017; Ord. 6239 § 1, 2009; Ord. 4296 § 2, 1988. Formerly 17.10.060.)

17.12.070 Building, occupancy and model home permits.

A. No building permit for a structure other than a temporary contractor's office or temporary storage building shall be issued for a lot or parcel within an approved subdivision prior to a determination by the fire marshal that adequate fire protection for construction needs exists.

B. No building permit for a structure other than a temporary contractor's office or temporary storage building shall be issued for a lot or parcel within an approved subdivision until:

1. The minimum required improvements which will serve the subject lot or parcel have been constructed in accordance with ACC 17.14.070; and

2. All remaining improvements have been financially guaranteed under the requirements of ACC 17.14.010.

C. Prior to final plat approval of an approved preliminary plat, building permits for model homes may be granted by the building official subject to the following conditions:

1. Model homes are ~~single-family~~ dwellings as defined by ACC 18.04.340(A). The purpose of a model home is for sales promotion and display of homes that will be typically built within a subdivision and are open to the public for viewing.

2. Up to two model homes may be allowed for preliminary plats up to 20 lots. Up to four model homes may be allowed for preliminary plats in excess of 20 lots.

3. All model homes shall be served by an all weather surface access as approved by the city engineer and fire marshal.

4. All model homes shall be located within 300 feet of an operating fire hydrant as determined and approved by the fire marshal.

5. Prior to the public being allowed to access a model home, written permission must be received from the building official.

6. Information must be submitted with the final plat application that indicates the model home meets all applicable zoning code standards of the lot on which it is located.

D. Where a plat is approved subject to conditions, no building permit shall be issued for property subject to the subdivision prior to the conditions either being fulfilled or guarantees provided to ensure the conditions are met. (Ord. 6654 § 5, 2017; Ord. 6239 § 1, 2009; Ord. 5094 § 1, 1998; Ord. 4296 § 2, 1988. Formerly 17.10.070.)

17.12.080 Release of improvement guarantee.

A. If a financial security for the improvements has been submitted under ACC 17.12.070 or 17.14.010, such guarantee shall only be released upon acceptance by the city of a properly executed bill of sale for such improvements and submittal of adequate record drawings for which the guarantee was submitted.

B. A portion of the guarantee equivalent to 10 percent of the value of the public improvements guaranteed shall be retained as a maintenance guarantee by the city for a minimum period of one year from the date the city engineer certifies the completion of the plat improvements have been satisfied, to ensure the adequate operation of such improvements, following which any unused portion of such guarantee shall be released. This shall be consistent with the facility extension provisions of ACC Title 13 (Water, Sewers and Public Utilities). (Ord. 6654 § 5, 2017; Ord. 6239 § 1, 2009; Ord. 5094 § 1, 1998; Ord. 4296 § 2, 1988. Formerly 17.10.080.)

17.12.090 Survey requirements.

A. A licensed professional land surveyor shall complete all lot staking prior to the recording of the final subdivision.

B. All lot corners, including interior lot corners, shall be marked with a permanent marker that bears the land surveyor's registration number. When the boundary lines follow a meandering line, the corners shall be set as directed by the city of Auburn.

C. When the legal description of the final subdivision utilizes partial or complete section subdivisional breakdown to establish the boundaries, section subdivision survey information shall be shown in accordance with the requirements of WAC 332-130-030.

D. All reference monuments used in the establishment of the final subdivision corners shall be identified, described and noted as set or found. When appropriate, the survey shall reference previous surveys that served as the basis for the survey.

E. When the final subdivision is adjacent to a constructed public right-of-way and the plat corners or its offset represent a quarter corner, section corner or donation land claim that is not of record or has been lost (or obliterated), a standard monument shall be placed.

F. Whenever a final subdivision is adjacent to existing right-of-way, the centerline of the right-of-way shall be located on the plat drawing. If the constructed improvements fall outside of the documented right-of-way, the surveyor shall identify the existing edge of the pavement and limits of the maintained right-of-way section on the drawing and show its relationship to said centerline.

G. All requirements of Chapter 58.09 RCW and Chapter 332-130 WAC governing minimum standards for land boundary surveys shall be met and a note shall be placed that reads:

> THIS SURVEY COMPLIES WITH ALL THE STANDARDS AND GUIDELINES OF THE "SURVEY RECORDING ACT" CHAPTER 58.09 RCW AND WAC 332-130.

H. The side lot lines of each lot, which if extended would intersect with the curb, shall be marked on the curb. The offset distance from the curb mark to the property corner shall be noted on the face of the plat. Curb pins shall be marked with a permanent marker bearing the land surveyor's registration number. (Ord. 6654 § 5, 2017; Ord. 6239 § 1, 2009.)

The Auburn City Code is current through Ordinance 6944, passed July 15, 2024.

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Chapter 17.14
IMPROVEMENT REQUIREMENTS – SUBDIVISIONS

Sections:

17.14.005 Plan preparation, submittal and approval.
17.14.010 Improvement methods.
17.14.015 City engineer's certificate of improvements.
17.14.020 Street, utilities and grading plans.
17.14.030 Public water service.
17.14.040 Public sanitary sewer service.
17.14.050 Street requirements.
17.14.060 Block requirements.
17.14.070 Minimum improvement requirements for approval of subdivisions and short subdivisions.
17.14.080 Underground utilities.
17.14.090 Lot requirements.
17.14.100 Parks and playgrounds.
17.14.110 Floods and flood control.
17.14.120 Additional requirements.

17.14.005 Plan preparation, submittal and approval.

A. Plans for improvements shall be prepared, signed, dated and stamped by a professional civil engineer registered in the state of Washington and shall be in accordance with city standards and specifications. Plans shall be submitted to the city, following preliminary plat approval, for circulation and review. No construction permit or approval shall be issued and no construction activity shall commence relating to subdivision improvements until the plans required by this chapter have been approved and signed by the city engineer. Plans shall be consistent with the approved preliminary plat. All sanitary sewer, water, drainage and street improvements to be dedicated to the city shall be covered by a public facilities extension agreement, as required by ACC Titles 12 and 13.

B. For preliminary plats that were approved, but not constructed, prior to the effective date of the amendments to this chapter as adopted by the ordinance codified in this chapter, the owner/developer may choose to use the standards in effect at the time of the preliminary plat approval or, if approved by the city engineer, use the standards adopted pursuant to this chapter.

C. Notwithstanding the previous requirement that civil plans for improvements shall be submitted following approval of the preliminary plat, the city may, in its sole discretion, allow an applicant/developer to submit plans after the department issues its recommendation to the hearing examiner and prior to preliminary plat approval; provided, that the applicant/developer recognizes and acknowledges that the city's willingness to receive civil plans in advance of preliminary plat approval does not constitute a submittal which would vest any rights for the applicant/developer, and that the applicant/developer bears all risks of submitting plans in advance of preliminary plat approval. Furthermore, early submittal shall be allowed by the city only upon the applicant/developer entering into an agreement with the city whereby the applicant/developer agrees to the following:

1. That the application shall not be considered "complete" for any purpose under federal, state, or city law until after the preliminary plat is approved, and all possible appeal periods of that approval have expired.

2. That since the application is not "complete," an early submitted application is not vested. Further, that the applicant/developer has no vested rights based on the filing of these plans, and that any comprehensive plan provisions, development regulations, or administrative regulations adopted prior to the date the preliminary plat is approved shall apply to the application.

3. That the applicant/developer waives, on behalf of itself, heirs, assigns, successors, etc., any claim based on the city agreeing to allow plan submission and review before preliminary plat approval.

4. That the applicant/developer will defend, indemnify, and hold the city harmless against any and all claims based on the city's agreement to allow submission and review before preliminary plat approval.

5. That the city's acceptance of plans before preliminary plat approval does not create an obligation upon the city to accept plans prior to plat approval in the future. (Ord. 6611 § 1,

2016; Ord. 6239 § 1, 2009; Ord. 6186 § 9, 2008; Ord. 5164 § 1, 1998; Ord. 4296 § 2, 1988. Formerly 17.12.010.)

17.14.010 Improvement methods.

Following preliminary plat approval and approval of all plans required by this chapter, and prior to final plat approval, the applicant/plat developer shall guarantee the public improvements required for the plat are completed by one of the following methods:

A. By completion of construction of the minimum required plat improvements in conformance with ACC 17.14.070 (minimum improvement requirements) and furnishing to the city an assignment of funds or an irrevocable letter of credit or guarantee bond or other similar security satisfactory to the city engineer, in which assurance is given the city that the installation of the remaining required public improvements will be carried out as provided by plans submitted and approved pursuant to this chapter and in accordance with the city's design and construction standards, and under the supervision of the city engineer.

1. The amount of the assignment of funds or irrevocable letter of credit or other security shall be 150 percent of the estimated construction cost of all remaining required public improvements, as determined by the applicant and approved by the city engineer. A substantial portion of the remaining required public improvements, subject to the satisfactory security, shall be completed within the initial 12-month period of the satisfactory security for the plat improvements. The remainder of the improvements shall be completed within six months. During construction, the city engineer may allow a partial release of the financial security as construction progresses:

a. The city engineer shall allow not more than one partial release of the financial security during plat construction;

b. The sequencing of the partial release of the financial security is to be determined by the city engineer prior to the acceptance of the security.

2. The city engineer may allow a single incremental six-month extension of the satisfactory security time frame, beyond the initial 18-month period, if there are unforeseen circumstances, beyond the control of the plat developer, that do not allow the completion of the public improvements.

3. As a condition of the plat improvement permitting approval, the developer shall agree that in the case of the developer's default or failure to complete the improvements as per the approved plans and conditions, including time schedules, the city shall have the authority to complete the construction of public improvements utilizing the above-described satisfactory security.

4. The city engineer may further agree to allow the developer to utilize assignment of funds or irrevocable letter of credit or other security acceptable to the city engineer to cover the minimum warranty period.

B. By the formation of a local improvement district consistent with the provisions of Chapter 3.20 ACC and any other applicable requirement of the city and the state.

C. By actual installation of the required improvements in accordance with the provisions of this chapter, and in accordance with the city's design and construction standards and under the supervision of the city engineer.

D. By a combination of these methods.

E. For any of the above combinations of methods, other than subsection C of this section, the plat developer shall execute and record against the plat properties a statement approved by the city attorney which holds the city harmless and limits the city's financial obligation to construct any defaulted private utility facilities and public infrastructure for streets, water utility, sanitary sewer utility, or storm water utility systems to the face value of the bond shall be memorialized on the plat documents. The statement shall also recognize the city's reserved, unilateral rights to establish the schedule for construction of defaulted plat infrastructure. Such statements shall be legally binding upon the heirs and assigns of the developer, subsequent property owners and their the and assigns. (Ord. 6654 § 6, 2017; Ord. 6239 § 1, 2009; Ord. 5093 § 1, 1998; Ord. 4296 § 2, 1988. Formerly 17.08.010.)

17.14.015 City engineer's certificate of improvements.

Prior to final approval and after completion of all required improvements and/or the financial guarantee of the construction of all required improvements, the city engineer shall provide a certificate stating the required improvements, in accordance with the provisions of this title and in accordance with city design and construction standards, have been completed or guaranteed

or a combination to the satisfaction of the city engineer. (Ord. 6239 § 1, 2009; Ord. 5093 § 1, 1998; Ord. 4296 § 2, 1988. Formerly 17.08.020.)

17.14.020 Street, utilities and grading plans.

Street, water, sanitary sewer, storm drainage and grading plans shall be prepared in conformance with the city's design and construction standards. (Ord. 6239 § 1, 2009; Ord. 5164 § 1, 1998; Ord. 4296 § 2, 1988. Formerly 17.12.020.)

17.14.030 Public water service.

Each lot in a subdivision created under this title shall be served by a public water system owned and operated by the city unless the city finds that:

A. City water service is not practical due to topography, distance from city water facilities of adequate capacity, extreme low proposed developmental density, or similar factor; and

B. Private water service will not be detrimental to the implementation of the adopted comprehensive water plan; and

C. Private water service will not pose a threat to the public health, safety or welfare; and

D. Private water service is necessary to accomplish the purposes of this title.

If private water service is approved, preliminary plat approval shall be conditioned on the ability of the subdivider to obtain all necessary approvals for the private water system or systems, and the final plat shall not be approved until the subdivider demonstrates, to the satisfaction of the city engineer, that the proposed water system or systems will adequately serve the domestic water needs of future owners of property within the subdivision. (Ord. 6239 § 1, 2009; Ord. 5164 § 1, 1998; Ord. 4296 § 2, 1988. Formerly 17.12.040.)

17.14.040 Public sanitary sewer service.

Each lot in a subdivision created under this title shall be served by the Auburn sanitary sewer system, consistent with the sewer comprehensive plan, unless the city finds that:

A. City sanitary sewer service is not practical due to topography, distance from city sanitary sewer facilities, extreme low proposed developmental density, or similar factor; and

B. On-site sewage disposal systems will not pose a threat to the public health, safety or welfare; and

C. On-site sewage disposal systems are necessary to accomplish the purposes of this title; and

D. The city engineer has reported favorably on the use of on-site sewage disposal systems.
(Ord. 6239 § 1, 2009; Ord. 5164 § 1, 1998; Ord. 4296 § 2, 1988. Formerly 17.12.050.)

17.14.050 Street requirements.

The subdivision shall abut on and/or be served by an open, maintained public street(s) and the street and block layout shall conform to the most advantageous development of adjoining areas, the entire neighborhood, and shall meet the requirements of Chapter 12.64A and~~the~~ city design and construction standards. (Ord. 6239 § 1, 2009; Ord. 5164 § 1, 1998; Ord. 4296 § 2, 1988. Formerly 17.12.060.)

17.14.060 Block requirements.

A block shall consist of any two or more contiguous lots which are not separated by a street. Blocks shall meet the requirements of the city design and construction standards. (Ord. 6239 § 1, 2009; Ord. 5164 § 1, 1998; Ord. 4296 § 2, 1988. Formerly 17.12.070.)

17.14.070 Minimum improvement requirements for approval of subdivisions and short subdivisions.

A. Prior to final approval of a subdivision or short subdivision, the following minimum improvements shall be constructed consistent with the approved plans, except that the city engineer may allow posting of a financial guarantee and/or the execution of a delay of improvement agreement, based on a finding that the deferral of the required improvements is in the best interests of the city.

1. Drainage facilities and erosion control measures consistent with the approved plans;

2. Water mains, services, and hydrant installed, operational, and fire flow available, if required, consistent with the approved plans;

3. Underground electrical and telecommunication improvements required for all public or private utilities and public illumination or traffic signal systems, if required, consistent with the approved plans;

4. Sewer facilities installed and operational, if required, consistent with the approved plans;

5. All curbs and gutters installed in all streets within the subdivision or short subdivision consistent with the approved plans;

6. All streets paved up to the final lift of pavement to all lots within the subdivision or short subdivision, consistent with the approved plans;

7. Street name signage installed consistent with the approved plans;

8. Specific site improvements required by the preliminary plat approval ordinance or preliminary short plat approval decision, if the decision requires completion prior to plat recording;

9. Delineation of critical areas that are to remain undeveloped and protected by easement or placement in a separate tract pursuant to ACC Title 16 (Environment);

10. Temporary control monuments set by a land surveyor licensed in the state of Washington, located in conformance with this title, and in place prior to final approval of the subdivision or short subdivision. Permanent monuments and control points shall be set

and verified by a land surveyor licensed in the state of Washington within 90 days of the final lift of pavement; and

11. Improvements without which the director determines a safety hazard would exist.

B. The city shall have right of entry onto any lot, tract, easement or parcel that is part of the final plat or short plat to ensure compliance with the minimum subdivision improvements required in subsection A of this section. (Ord. 6239 § 1, 2009.)

17.14.080 Underground utilities.

A. Consistent with ACC Titles 12 and 13 and the city's engineering design and construction standards, all utility lines serving the subdivision, including but not limited to power, telephone and television cables, shall be installed underground. Adequate easements shall be provided for all such utility lines which will not be located within public way. Television conduit and miscellaneous hardware shall be installed according to the requirements of Chapter 20.06 ACC.

B. Whenever an intersection of an arterial and any other street is constructed or improved under the requirements of this title, and when the city engineer has determined that traffic signalization of such intersection will be needed in the future, the city engineer may require the installation, at the applicant's expense, of underground conduit which will be necessary for and will facilitate such future signalization. (Ord. 6799 § 1 (Exh. A), 2020; Ord. 6239 § 1, 2009; Ord. 5164 § 1, 1998; Ord. 4296 § 2, 1988. Formerly 17.12.240.)

17.14.090 Lot requirements.

A. The area, width and depth of lots shall conform to the requirements of ACC Title 18, except for development utilizing cluster subdivision, as provided for in Chapter 17.26 ACC. The area within a panhandle access to a lot shall not be considered for the purpose of determining conformance with lot requirements.

B. The size, shape and orientation of lots shall be appropriate for the location, topography and other natural features of the site and for the type of development contemplated.

C. Every lot shall have a minimum of frontage on an improved public street or private access tract, as provided in ACC Title 18, unless otherwise approved by this title.

D. Corner lots designated for residential uses shall be platted at least five feet wider than required by the zoning ordinance.

E. Every lot shall border on an opened, improved and maintained public street or private access tract. (Ord. 6239 § 1, 2009; Ord. 5542 § 1, 2001; Ord. 5164 § 1, 1998; Ord. 4296 § 2, 1988. Formerly 17.12.250.)

17.14.100 Parks and playgrounds.

Where dedication of land for park and recreation purposes is required, the hearing examiner shall be guided by the policies and recommended standards of the Auburn parks, recreation, and open space plan. It is the policy of the city to require park land dedication where a proposed subdivision will result in a substantial increase in demand for park land or is needed to prevent or abate public nuisances. Generally, this will occur where a subdivision will result in the creation of lots capable of supporting 50 or more residential dwelling units; however, where it is determined that the proposed subdivision, together with any reasonably anticipated future development on adjacent or nearby land, will act in a cumulative manner to substantially increase demand for park land, dedication may be required of smaller subdivisions. The acceptability of the size, configuration and location of land proposed for park dedication shall be determined by the hearing examiner based upon such factors as topography, drainage, natural amenities and access. (Ord. 6239 § 1, 2009; Ord. 6186 § 10, 2008; Ord. 5164 § 1, 1998; Ord. 4772 § 1, 1995; Ord. 4296 § 2, 1988. Formerly 17.12.260.)

17.14.110 Floods and flood control.

The city may disapprove a proposed subdivision because of flood, inundation or swamp condition if the city finds that such condition poses a threat to the public health, safety or general welfare or causes a public nuisance.

Where any portion of the proposed subdivision lies within the regulatory floodplain, the hearing examiner shall impose a condition on the preliminary plat requiring the subdivider to

conform to the city's floodplain development requirements as set forth in Chapter 15.68 ACC. In such cases, no development permit associated with the proposed subdivision shall be issued by the city until said flood hazard area regulations have been met.

The city may require dedication of land to any public body and/or the construction of improvements and may impose other conditions necessary to protect against flooding or inundation. (Ord. 6295 § 7, 2010; Ord. 6239 § 1, 2009; Ord. 6186 § 11, 2008; Ord. 5164 § 1, 1998; Ord. 4772 § 1, 1995; Ord. 4296 § 2, 1988. Formerly 17.12.270.)

17.14.120 Additional requirements.

The standards and requirements established or referenced by this chapter are minimum requirements. These standards may be increased, and additional requirements may be imposed for the purpose of preventing or abating public nuisances or mitigating identified adverse environmental impacts pursuant to the State Environmental Policy Act of 1971 (Chapter 43.21C RCW) as now established or hereafter modified. Such additional requirements may include but shall not be limited to off-site improvements to any public facility, the dedication and/or improvement of parks and open spaces, and monetary contributions to any city fund established to finance the provision of public services required by the subdivision. (Ord. 6239 § 1, 2009; Ord. 5164 § 1, 1998; Ord. 4772 § 1, 1995; Ord. 4296 § 2, 1988. Formerly 17.12.280.)

The Auburn City Code is current through Ordinance 6944, passed July 15, 2024.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

City Website: www.auburnwa.gov

Hosted by General Code.

Chapter 17.27
UNIT LOT SUBDIVISONS

Sections:

17.27.010 Purpose.
17.27.020 Scope.
17.27.025 Process.
17.27.030 Requirements.

17.27.010 Purpose.

The purpose of this chapter is to provide for the creation of residential ownership opportunities in conjunction with development of middle housing and accessory dwelling units.

17.27.020 Scope.

Any lot conforming to the standards of Chapter 18.07 ACC which will be or has been developed with middle housing, detached single-family residences, accessory dwelling units or some combination thereof and in which no dwelling units are stacked on another dwelling unit or other use may be subdivided into individual unit lots as provided herein.

17.27.025 Process.

A. Unit lot subdivisions shall follow the application, review, and approval procedures as outlined in Chapter 17.09 ACC (short subdivision) or Chapters 17.10 and 17.12 ACC (formal subdivision), based upon the number of lots being created. (Ord. 6239 § 1, 2009.)

B. Effect of Preliminary Approval. Preliminary approval constitutes authorization for the applicant to develop the required facilities and improvements, upon review and approval of

construction drawings by the public works department. All development shall be subject to any conditions imposed by the city on the preliminary approval.

C. Revision and Expiration. Unit lot subdivisions follow the revision and expiration procedures for a short subdivision.

17.27.030 Requirements.

A. Development as a whole on the parent lot, rather than individual unit lots, shall comply with applicable design, development, and off-street parking standards of ACC Title 18.

B. Subsequent platting actions and additions or modifications to structure(s) may not create or increase any nonconformity of the parent lot.

C. Access easements, joint use and maintenance agreements, and covenants, conditions and restrictions (CC&Rs) identifying the rights and responsibilities of property owners and/or the homeowners' association shall be executed for use and maintenance of common garage, parking, and vehicle access areas; bike parking; solid waste collection areas; underground utilities; common open space; shared interior walls; exterior building facades and roofs; and other similar features shall be recorded with the county auditor.

D. Portions of the parent lot not subdivided for individual unit lots shall be owned in common by the owners of the individual unit lots, or by a homeowners' association comprised of the owners of the individual unit lots.

F. Notes shall be placed on the face of the plat or short plat as recorded with the county auditor to state the following:

1. The title of the plat shall include the phrase "Unit Lot Subdivision."
2. Approval of the development on each unit lot was granted by the review of the development, as a whole, on the parent lot.

Chapter 18.02
GENERAL PROVISIONS

Sections:

18.02.010	Short title.
18.02.020	Authority to adopt code.
18.02.030	Purpose.
18.02.040	Applicability.
18.02.050	Minimum requirements.
18.02.060	Rules for administrative interpretations.
18.02.065	Methods of calculating density.
18.02.067	Units allowed per lot.
18.02.070	Establishment of zones.
18.02.080	Zoning map.
18.02.090	Zone boundary interpretation.
18.02.100	Zoning for annexed land.
18.02.110	Zoning for property influenced by Auburn Municipal Airport.
18.02.120	Permitted land uses established.
18.02.130	Neighborhood review meeting.

18.02.010 Short title.

This title shall be known as “the comprehensive zoning ordinance” of the city, which shall constitute Title 18 of the Auburn City Code and shall hereafter be referred to as “this title.” (Ord. 6245 § 2, 2009; Ord. 5026 § 1, 1997; Ord. 4229 § 2, 1987.)

18.02.020 Authority to adopt code.

A. The city of Auburn comprehensive zoning ordinance is adopted by city of Auburn ordinance, pursuant to Article XI, Section 11 of the Washington State Constitution, the State Growth Management Act, RCW Title 35A, Optional Municipal Code, and Chapter 36.70B RCW. In accordance with ACC 1.04.060.

B. Notwithstanding any provisions otherwise, this title does not permit or allow any action, use or conduct which is in violation of or prohibited by any state or federal laws, regulations or codes. Any action, use or conduct which is prohibited by state or federal law is prohibited hereby. It is provided, however, that the provisions of this subsection B do not apply to any person or persons who has/have a valid, lawful license issued by the state of Washington to produce, process or sell marijuana, marijuana concentrates, usable marijuana and/or marijuana-infused products and is acting in full conformity with the requirements of the state of Washington related to such license pursuant to RCW 69.50.301 through 69.50.369, and WAC 314-55-005 through 314-55-540. In such instances, the state of Washington, not the city, is the permitting and licensing entity. It is provided, however, that this provision does not preclude the city from taking enforcement action in instances where conduct or activity that is licensed or permitted under RCW 69.50.301 through 69.50.369, and WAC 314-55-005 through 314-55-540 occurs within the city of Auburn but is not in compliance with or violates the requirements of such state licensing or permitting. For the purposes of this section only, the provisions of RCW 69.50.325 through 69.50.369, and WAC 314-55-515 through 314-55-535 are hereby adopted by reference and incorporated herein. (Ord. 6525 § 5, 2014; Ord. 6416 § 4, 2012; Ord. 6245 § 2, 2009.)

18.02.030 Purpose.

A. The purpose of this title is to implement the city's comprehensive plan. This title will be used to further the growth and development of the city consistent with the adopted comprehensive plan and its implementing elements. This title will also further the purpose of promoting the health, safety, morals, convenience, comfort, prosperity, and general welfare of the city's population and to prevent and abate public nuisances.

B. The specific zones and regulations set out in this title are designed to:

1. Provide adequate public facilities and services, including utilities, roads, schools, and parks in conjunction with development;

2. Provide housing with essential light, air, privacy, and open space;

3. Facilitate the safe and efficient movement of traffic on the city's streets;

4. Stabilize and enhance property values;

5. Facilitate adequate provisions for doing public and private business and thereby safeguard the community's economic structure upon which the prosperity and welfare of all depends; and

6. Through such achievements, help ensure the safety and security of home life, foster good citizenship, and create and preserve a more healthful, serviceable and attractive municipality and environment in which to live.

C. To most effectively accomplish these purposes, this title divides the city into zones wherein the location, height and use of buildings, the use of land, the size of setback areas and other open space, and the provision of off-street parking and loading are regulated and restricted in accordance with the comprehensive plan for the city. These zones and regulations are deemed necessary and are made with reasonable consideration, among other things, as to the character of each zone and its particular suitability for specific uses, the need for such uses, the common rights and interests of all within the zone as well as those of the general public, and with the view of conserving and encouraging the most appropriate use of land throughout the city and to prevent and abate public nuisances. (Ord. 6245 § 2, 2009; Ord. 5026 § 1, 1997; Ord. 4773 § 1, 1995; Ord. 4229 § 2, 1987. Formerly 18.02.020.)

18.02.040 Applicability.

A. The provisions of this title shall apply to both public and private use of land within the corporate limits of the city.

B. Hereafter, no use shall be conducted, and no building, structure and appurtenance shall be erected, relocated, remodeled, reconstructed, altered or enlarged, unless in compliance with the provisions of this title, and then only after securing all permits and approvals required hereby. It shall be unlawful to build or use any building or structure or to use premises in the city for any purpose or use other than the uses listed as being permitted in the zone in which such building, land, or premises is located.

C. Any building, structure or use lawfully existing at the time of passage of this title, although not in compliance herewith, may continue as provided in Chapter 18.54 ACC.

D. No division of land shall occur unless in compliance with the provisions of this title and ACC Title 17, Land Adjustments and Divisions.

E. This title is not intended to regulate the public ways as defined in ACC 20.02.020. (Ord. 6799 § 3 (Exh. C), 2020; Ord. 6245 § 2, 2009; Ord. 5026 § 1, 1997; Ord. 4773 § 1, 1995; Ord. 4229 § 2, 1987. Formerly 18.02.030.)

18.02.050 Minimum requirements.

A. In interpretation and application, the requirements set forth in this title shall be considered the minimum requirements necessary to accomplish the purpose of this title.

B. It is not the intent of this title to interfere with, abrogate or annul any easements, covenants or other agreements between private parties. However, where this title imposes a greater restriction upon the use of land and/or buildings or in general requires higher standards than other ordinances, rules, or private agreements, the provisions of this title shall govern. (Ord. 6245 § 2, 2009.)

18.02.060 Rules for administrative interpretations.

A. The planning director shall be authorized to interpret the meaning of words, phrases and sentences which relate to the determining of uses permitted in the various zones, approval or disapproval of development plans, or other related zoning actions. Any interpretations regarding implementation of this title shall be made in accordance with the intent or purpose statement of the specific regulation and the comprehensive plan. Life, safety and public health regulations are assumed to prevail over all other regulations.

B. The planning director may authorize uses in a zone other than those which are listed, if the planning director determines the use is consistent with the intent of the zone and is of the same general character of the uses permitted within the zone. Further guidance on administrative interpretations of land uses can be found in ACC 18.02.120.

C. Administrative interpretations may be appealed to the hearing examiner as prescribed in Chapter 18.70 ACC.

D. Administrative interpretations made by the planning director shall be documented, made available for public review, and docketed for inclusion to this title, when consistent with the title format and level of detail required. The city shall incorporate administrative interpretations

upon approval of the legislative authority. (Ord. 6245 § 2, 2009; Ord. 5026 § 1, 1997; Ord. 4229 § 2, 1987. Formerly 18.02.040.)

18.02.065 Methods of calculating density.

For subdivision purposes, ~~T~~the ~~permitted number~~permitted number of dwelling units or lots shall be determined as follows:

A. Gross Site Area. The gross site area shall be used to calculate both the minimum and maximum number of allowed dwelling units or lots.

1. When calculations result in a fraction, the fraction shall be rounded to the nearest whole number as follows:

a. Fractions of one-half or above shall be rounded up; and

b. Fractions below one-half shall be rounded down.

~~2. Calculating Base Density. Base density is calculated by multiplying the gross site area by the upper limit of units or lots allowed within the zone. For example, in the R-5 zone, where the density range allows up to five dwelling units per acre:~~

~~4.3 acres gross site area x 5 units per acre = 21.5 (rounded up to 22)~~

~~3~~2. Calculating Minimum Density. Minimum density is calculated by multiplying the gross site area by the minimum units or lots per acre ~~lower limit of units or lots~~ allowed within the zone. For example, in the R-~~2~~5 zone, 7 units or lots per acre are allowed: ~~where the density range allows as few as four dwelling units per acre:~~

4.3 acres gross site area x ~~4~~ 7 units per acre = ~~17.2~~30.1 (rounded down to 30~~17~~)

~~4~~3. Each lot shall meet the requirements established in Chapter 18.07 ACC for lot area, dimensions, setbacks, and other development standards.

~~5~~4. Where a proposed area for subdivision cannot meet the minimum density due to encumbrance by critical areas, critical area buffers, or other similar types of features that preclude development, the applicant may seek to deviate from the minimum density which will be reviewed as an administrative decision as part of the subdivision application. If the

applicant seeks a variance from the development standards in Chapter 18.07 ACC the variance shall be processed utilizing the provisions of ACC 18.70.010. Alterations of a critical area or its buffer shall be processed in accordance with Chapter 16.10 ACC. Compliance with the density requirements of the underlying zone shall not be used as justification for alteration of a critical area.

B. The minimum density requirements shall not apply to short plats that are processed under Chapter 17.09 ACC.

C. Bonus density, where applicable, shall be computed by adding the bonus units authorized by Chapter 18.25 ~~or 18.49~~ ACC to the base units computed under this section. (Ord. 6661 § 1, 2018; Ord. 6245 § 2, 2009.)

18.02.067 Units allowed per lot.

A. *Applicability.* The standards in this section apply to all residential uses in residential and mixed-use zones.

B. *Units.* For the purposes of this section, "units" refer to dwelling units, including accessory dwelling units (ADUs).

C. *Base units allowed per lot.* All lots in residential zones greater than 1,000 sf in area may be developed with up to the number of units shown in 18.07.030(D)(1) when in compliance with all other relevant standards of this chapter and ACC 18.25. Example: If 4 units are the base units on a given lot, and a fourplex has been developed, no ADUs may be added.

D. *Middle Housing Base units per lot allowed with transit or affordability bonus. Unit bonuses specific to middle housing are required to comply with RCW 36.70A.635.*

1. All lots in residential zones may be developed with up to the number of middle housing units shown in 18.07.030(D)(2) under the following conditions:

a. The lot is within one-quarter mile walking distance of a major transit stop (as defined in ACC 18.04.597), or

b. At least two units on the lot are affordable housing meeting the requirements of subsections (D)(2) through (D)(6) below.

Note: Bonus units for (a) and (b) above are not cumulative. Single-unit detached housing lots are not eligible for bonuses and are not allowed as a component of the bonus development. ~~.~~

2. To qualify for additional units under the affordable housing provisions, applicant shall commit to renting or selling the required number of units as affordable housing.

3. Dwelling units that qualify as affordable housing shall have costs, including utilities other than telephone, that do not exceed 30 percent of the monthly income of a household whose income does not exceed the following percentages of median household income adjusted for household size, for the county where the household is located, as reported by the United States Department of Housing and Urban Development:

a. Rental housing: 60 percent.

b. Owner-occupied housing: 80 percent.

4. The units shall be maintained as affordable for a term of at least 50 years, and the property shall satisfy that commitment and all required affordability and income eligibility conditions.

5. The applicant shall record a covenant or deed restriction that ensures the continuing rental or ownership of units subject to these affordability requirements consistent with the conditions in chapter 84.14 RCW for a period of no less than 50 years. The covenant or deed restriction must address the following:

a. How affordability will be defined, managed, and controlled under scenarios for both ownership and rental housing. The covenant must commit to renting or selling the required number of units as affordable housing and, for rental units, ensure the continuing rental of units consistent with Chapter 84.14 RCW.

b. Criteria and policies to maintain public benefit if the property is converted to a use other than that which continues to provide for permanently affordable housing.

6. The units dedicated as affordable housing shall:

a. Be provided in a range of sizes comparable to other units in the development.

b. The number of bedrooms in affordable units shall be in the same proportion as the number of bedrooms in units within the entire development.

c. Generally, be distributed throughout the development and have substantially the same functionality as the other units in the development.

E. *Lot area per unit above base allowance.* Additional units beyond what is allowed under 18.25.040(A) are allowed based on lot area above the minimum lot size threshold. One additional unit is allowed above the base for each interval of the value shown in 18.07.030(D)(3) up to the maximum number of units per lot (18.07.030)(D)(4), except for courtyard housing. For

example: a lot with an area of 5,650 sf in the R-2 zone may have one additional unit above the base of four because it is 1,250 ft larger than the minimum lot size.

F. *Maximum units per lot.*

1. Except for courtyard housing, the total number of units shall not exceed the value listed in 18.07.030)(D)(4).

2. The maximum number of units for courtyard housing is two times the number of units listed in 18.07.030)(D)(4).

18.02.070 Establishment of zones.

A. The city is divided into the following classes of zones:

1. RC, residential conservancy zone (one dwelling unit per four acres);

2. R-1, residential one unit per acre zone ~~(one dwelling unit per acre);~~

3. R-~~5~~2, residential low zone ~~(five dwelling units per acre);~~

~~4. R-7, residential zone (seven dwelling units per acre);~~

~~4~~5. R-~~3~~10, residential moderate zone ~~(10 dwelling units per acre);~~

~~6. R-16, residential zone (16 dwelling units per acre);~~

~~5~~7. R-~~4~~20, residential high zone ~~(20 dwelling units per acre);~~

~~6~~8. R-MHC, manufactured/mobile home community zone;

~~7~~9. R~~O~~F, residential flex~~office~~ zone~~, and RO-H, residential office-hospital zone;~~

8. R-NM, residential neighborhood mixed-use zone

~~10. C-N, neighborhood shopping zone;~~

~~9~~11. C-1, light commercial zone;

~~12. C-2, central business zone;~~

130. C-32, heavy commercial zone;

~~14. C-4, mixed-use commercial zone;~~

115. M-1, light industrial zone;

126. M-2, heavy industrial zone;

173. LF, airport landing field zone;

184. P-1, public use zone;

195. UNC, unclassified use zone;

1620. I, institutional use zone;

1721. DUC, downtown urban center – 125 district~~zone;~~

18. DUC, downtown urban center - 75 District

19. DUC, downtown urban center - 55 District

20. DUC, neighborhood residential district

21. DUC, health and wellness district

22. DUC, residential-flex district

23. DUC, light commercial district

24. DUC, heavy commercial district

25. DUC, light industrial district

226. OS, open space zone.

B. The zones set out in subsection A of this section are established as the designations, locations, and boundaries thereof as set forth and indicated on the zoning map.

C. The intent statement for each zone set forth in this title shall be used to guide the application of the zones to all lands in the city of Auburn. The intent statements shall guide

interpretation and application of land use regulations within the zones, and any change to the range of allowed uses within each zone through amendment to this title. (Ord. 6885 § 1 (Exh. A), 2022; Ord. 6677 § 1, 2018; Ord. 6245 § 2, 2009.)

18.02.080 Zoning map.

A. "Zoning map," as used in this title, is that certain map, three copies of which are on file in the office of the city clerk, labeled "Comprehensive Zoning Map of the city of Auburn, Washington," dated June 1, 1987, and adopted by Ordinance No. 4230 and signed by the mayor and city clerk, along with all amendments thereto. The types of zoning map amendments are listed in ACC 18.68.030(A).

B. Current copies of the zoning map are available for examination and/or purchase at the community development department. The zoning map is adopted and made a part of the comprehensive zoning ordinance, with the most current amended copy serving as the official zoning map. (Ord. 6779 § 2, 2020; Ord. 6287 § 2, 2010; Ord. 6245 § 2, 2009.)

18.02.090 Zone boundary interpretation.

Where uncertainty exists as to the boundaries of zones as shown on the official zoning map, the following rules shall apply:

A. Boundaries indicated as approximately following the center lines of streets, highways, or alleys shall be construed to follow such lines;

B. Boundaries indicated as approximately following platted lot lines shall be construed as following such lot lines;

C. Boundaries indicated as approximately following city limits shall be construed as following city limits;

D. Boundaries indicated as following railroad lines shall be construed as to be midway between the main tracks;

E. Boundaries indicated as parallel to or extensions of features indicated in subsections A through D of this section shall be so construed. Distances not specifically indicated on the official zoning map shall be determined by the scale of the map;

F. Where physical or cultural features existing on the ground are at a variance with those shown on the official zoning map, or in other circumstances not covered by subsections A through E of this section, the planning director shall interpret the zone boundaries;

G. When the city vacates a street or alley, the vacated property will be zoned consistent with the adjacent property it is being vacated to. (Ord. 6245 § 2, 2009.)

18.02.100 Zoning for annexed land.

Prior to any parcel of land being annexed to the city, the property may be zoned consistent with the rezone requirements of this title and the comprehensive plan may be amended if necessary.

Application for the rezone and any necessary amendment may be done simultaneously with the request for annexation.

For property that is not assigned a zone classification by the city of Auburn at annexation, the property shall assume the UNC unclassified use designation upon annexation.

In such case, the planning director shall initiate an application to rezone from the UNC unclassified use designation to a zone compatible with the comprehensive plan within six months of the date of annexation. (Ord. 6245 § 2, 2009; Ord. 5354 § 2, 2000; Ord. 5026 § 1, 1997; Ord. 4229 § 2, 1987. Formerly 18.02.050.)

18.02.110 Zoning for property influenced by Auburn Municipal Airport.

Refer to Chapter 18.38 ACC to determine if property will be required to comply with additional regulations that are associated with the airport. (Ord. 6245 § 2, 2009; Ord. 5026 § 1, 1997. Formerly 18.02.060.)

18.02.120 Permitted land uses established.

A. Categories of Uses Established. Chapters 18.07 through 18.44 ACC establish permitted, administrative, conditional, and prohibited uses, by zone, for all properties within the Auburn city limits. All principal uses in a given zone are one of four types:

1. Permitted use (see ACC 18.04.696);
2. Administrative use (see ACC 18.04.025);
3. Conditional use (see ACC 18.04.260);
4. Prohibited use (see ACC 18.04.752).

Uses which are incidental and customary to a principal use may be considered an accessory use as defined in ACC 18.04.020.

Uses not specifically identified as principal uses or determined to be an accessory use shall be classified utilizing the procedures outlined in subsection (C)(6) of this section.

B. Zoning Use Tables Established for Residential Zones. The zone use tables in ACC 18.07.020 and 18.09.020 establish whether a specific use is permitted in a zone and whether the use is allowed as a permitted, administrative, conditional, or prohibited use. The zone is located on the horizontal row and the specific use is located on the vertical column of these tables.

C. Interpretation of Zone Use Tables.

1. *Legend.* The following letters have the following meanings when they appear in the box at the intersection of the column and the row on the zone use tables:

Symbol	Description
P	Permitted Use
A	Administrative Use
C	Conditional Use

Symbol	Description
X	Prohibited Use

2. *Other Requirements Applicable.* The above uses are subject to the other application requirements, citywide property development standards, and applicable overlay district regulations specified in the zoning code, the project review procedures specified in ACC Title 14, the building and construction standards of ACC Title 15, the environmental review procedures and regulations specified in ACC Title 16, and the regulations for the division of land in ACC Title 17.

3. *Additional Use-Related Conditions.* If a number also appears at the intersection of the column and the row, the use is also subject to the additional requirements as listed in the corresponding endnote immediately following the use table in the specified code chapter. All applicable requirements shall govern a use whether specifically identified in the zone chapter or not.

4. Accessory Use Interpretation. The planning director or designee may determine if a use that is not specifically described as accessory is permitted as an accessory to a principal use in a zone. Upon inquiry by an applicant, an administrative interpretation shall be made by the planning director or designee to determine if a proposed use is allowed as an accessory use within the zone utilizing the purpose and intent of the zone, comprehensive plan policy guidance, and the definition of accessory use contained in Chapter 18.04 ACC.

5. *Prohibited Uses.* If an "X" appears in the box at the intersection of the column and the row, the use is prohibited in that zone. Similarly, if a use is listed in one zone use table but not another zone use table, it shall be considered prohibited in the zone use table in which it is not listed. For example, a use listed in the industrial zone use table of Chapter 18.16 ACC, but not listed in the residential zone use table of Chapter 18.07 ACC, shall be considered prohibited in the residential zones listed in Chapter 18.07 ACC even though the land use does not appear with an "X" in the use table.

6. *Unclassified Uses.* Upon inquiry by an applicant, an administrative interpretation shall be made by the planning director or designee to determine if a proposed use not specifically listed in any zone use table is allowed within a specific zone utilizing the criteria in this subsection. Should an interpretation be made that a proposed, unlisted use not be allowed

in a specific zone, the planning director or designee shall indicate which zones, if any, do permit the use.

a. Criteria for Unclassified Uses. In order to make a determination that an unclassified use is permitted, administratively permitted, conditionally permitted, or accessory, the planning director or designee must find that the use is:

i. In keeping with the intent of the zone, and consistent with Auburn comprehensive plan policies; and

ii. Similar in nature to, and no more intense than, specifically listed permitted, conditional or accessory uses; and

iii. Consistent with subsection (C)(4) of this section, if determined to be permissible as an accessory use. (Ord. 6269 § 1, 2009; Ord. 6245 § 2, 2009.)

18.02.130 Neighborhood review meeting.

A. *Purpose.* The purpose of the neighborhood review meeting is for a developer/applicant of a proposed project to hold a meeting with surrounding and adjacent neighboring residents, property owners, homeowners' associations, residents and businesses (hereinafter collectively referred to as "neighbors") prior to submitting an application to the city. The neighbors would have an early opportunity to become familiar with either a residential subdivision, multifamily or mixed development proposal of a certain size and scale early in the development review process and to identify any associated issues. The neighborhood review meeting is intended to assist in producing applications that are responsive to neighborhood concerns, and to reduce the likelihood of delays and appeals. The city expects an applicant to take into consideration the reasonable concerns and recommendations of the neighbors and other interested persons when preparing an application.

B. *Applicability.* A neighborhood review meeting shall be required for the following types of new land use application in any applicable zoning district within the city:

1. A residential subdivision project comprising 40 or more lots or units; or

2. A multifamily residential project comprising 40 or more units; or

3. A mixed-use development project comprising 40 or more units.

C. *Time Frames.*

1. Prior to submittal of an application, an applicant shall provide an opportunity to meet with neighboring residents, property owners, homeowners' associations, residents and businesses (hereinafter collectively referred to as "neighbors") within the city-specified notice radius to review the proposal.

2. The applicant shall not be required to hold more than one neighborhood review meeting.

D. *Procedures.*

1. The applicant shall select the meeting time and place. The starting time selected shall be limited to a weekday evening after 6:00 p.m. or a weekend at any reasonable time and shall not occur on a federally recognized holiday. The meeting shall be held at a location open to the public and in compliance with the Americans with Disabilities Act. The public meeting shall be held within the Auburn city limits, at a location no further than two miles from the project site, unless an alternate meeting location is approved by the planning director. A sign at least 22 inches by 28 inches in size with minimum two-inch lettering shall be placed at the main entrance of the building where the meeting will take place at least one hour prior to the meeting. Such sign will announce the meeting purpose, that the meeting is open to the public and that interested persons are invited to attend. This sign shall be removed upon conclusion of the meeting by the applicant.

2. The applicant shall send by regular mail a written notice announcing the neighborhood review meeting to the director of the city of Auburn planning and development department and property owners within 300 feet of the property(ies) involved in the development review application. The notice shall include the date, time and location of the meeting and briefly discuss the nature and location of the proposal. The notice shall be mailed not less than 20 calendar days prior to the meeting date. The mailing list shall be obtained by the applicant and based on the most recent property tax assessment rolls of the King County department of assessments or the Pierce County assessor-treasurer's office, whichever is applicable.

3. Not less than 20 calendar days prior to the neighborhood review meeting, the applicant shall post a notice on the property which is the subject of the proposed application. The notice shall be posted at the property in a visible and accessible location. The notice shall state that the site may be subject to a proposed development and shall set forth the name of the applicant and a telephone number where the applicant or applicant's contact person can be reached for additional information. The site shall remain posted until the conclusion of the neighborhood review meeting. The city will not be responsible for posting of any signs.

4. The sign at the building entrance under subsection (D)(1) of this section, the notices sent by mail under subsection (D)(2) of this section and the site posting under subsection (D)(3) of this section shall each contain the following statement:

> The intent of this meeting is to facilitate an early informal discussion between the project developer and the neighbors regarding the project. While required by the City of Auburn, this meeting is not conducted by the City of Auburn and is in addition to any future hearings or public comment opportunities available under city development review processes.

5. At the neighborhood review meeting, the applicant shall describe the proposed application to persons in attendance. The attendees may identify any issues that they believe should be addressed in the application and recommend that those issues be submitted for city consideration and analysis.

6. The applicant shall prepare and make available the following materials for review and discussion at the public meeting:

a. Total number of dwelling units/lots expected to be built;

b. Conceptual site plan/plat layout showing buildings, road layout, landscape, parking, topography and open space areas, and adjacent properties; and

c. Aerial photograph showing the subject property and adjacent properties.

7. At the neighborhood review meeting, a sign-in sheet shall be distributed to all meeting attendees that specifies the date, time and location of the neighborhood review meeting

and asks for the name, address, phone number and electronic mail address of each meeting attendee.

8. At the neighborhood review meeting, the applicant shall take notes of the discussion on the proposed application for eventual submittal to the city.

E. *Submittal Requirements.* The applicant shall submit the following information with the submittal of a development application:

1. A copy of the notice provided to surrounding property owners within 300 feet of the proposed development site.

2. A copy of the mailing list used to send out meeting notices.

3. A written statement containing the information posted on the property.

4. An affidavit of mailing and posting notices.

5. A copy of the meeting sign-in sheet.

6. Copies of written materials and eight-and-one-half-inch by 11-inch size plans presented at the neighborhood review meeting.

7. Notes of the meeting including a summary of oral and written comments received.

8. If responses to the meeting notice were not received by the applicant and no one attended the neighborhood review meeting or persons in attendance made no comments, the applicant shall submit evidence as indicated above, with the notes reflecting the absence of comment, attendance, or both.

F. *Notice.*

1. All property owners who receive notice of the neighborhood review meeting shall be eligible to receive a copy of the written city decision for the development proposal.

2. All neighbors receiving notice of or attending the neighborhood review meeting shall be eligible to receive a copy of the written city decision for the development proposal through a request made to the city.

G. *Consideration.* The city shall consider as part of the development review process the concerns and issues raised by the neighbors and applicant at the neighborhood review

meeting, including any agreed-upon solutions or resolutions to outstanding issues or areas of contention. The city, however, shall not be bound in its decision-making by any agreements or understandings made between the neighbors and applicants. Nothing in this section shall be construed to delegate design or project review decision-making authority to the participants in the public meeting.

H. *City Involvement.* The neighborhood review meeting is intended to be a developer-neighborhood interaction. City staff are not required to attend and/or participate in neighborhood review meetings. There will be other official opportunities for residents and neighbors to make comment during the development review process that would follow the neighborhood review meeting. The director of the planning and development department or designee shall be notified a minimum of seven calendar days prior to the scheduled date of the neighborhood review meeting. Any city staff attendance at a neighborhood review meeting is for informational purposes only, does not represent the city's position on the merits of the development proposal and does not constitute an approval or denial of an application, now or submitted in the future. (Ord. 6287 § 2, 2010; Ord. 6245 § 2, 2009.)

The Auburn City Code is current through Ordinance 6940, passed April 15, 2024.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

City Website: www.auburnwa.gov

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Chapter 18.04
DEFINITIONS

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18.04.010 General definitions.

Except where specifically defined in this chapter, all words used in this title shall carry their customary meanings. Words used in the present tense include the future, and the plural includes the singular, the word "shall" is always mandatory, the word "may" denotes a use of discretion in making a decision, and the words "used" or "occupied" shall be considered as though followed by the words "or intended, arranged or designed to be used or occupied." (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.018 Accessory dwelling unit.

An "accessory dwelling unit" is a self-contained residential unit that is accessory to a ~~single-family home~~single-unit detached housing or middle housing units located on individually owned lots, where the accessory dwelling unit is located on the same lot. An accessory dwelling unit has its own bathroom, kitchen facilities, living and sleeping areas, though it can share other features with the ~~single-family home~~primary unit including the yard, parking, storage or laundry facilities. The accessory dwelling unit may be attached or detached to the single-unit detached housing or middle housing unit(s). An accessory dwelling unit excludes accessory residential uses as defined in ACC 18.04.023. (Ord. 6245 § 3, 2009; Ord. 5399 § 1, 2000.)

18.04.019 Accessible electric vehicle charging station.

"Accessible electric vehicle charging station" means an electric vehicle charging station where the battery charging station equipment is located within accessible reach of a barrier-free access aisle (minimum 44-inch width) and the electric vehicle. (Ord. 6365 § 1, 2011.)

18.04.020 Accessory use.

"Accessory use" means a use, a building or structure, part of a building or other structure, which is subordinate to and the use of which is incidental to that of the main building, structure or use on the same lot, including a residential garage. If an accessory building is attached to the main building by a common wall or roof, such accessory building shall be considered a part of the main building. Parking areas will not be considered an accessory use under this definition. See related definitions for "Accessory use, manufactured home community" and "Accessory use, residential." (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.021 Accessory use, manufactured home community.

“Manufactured home community accessory use” is a subordinate use which supports the principal manufactured home community use without displacing it. Manufactured home community accessory uses include but are not limited to recreation facilities, clubhouses, park offices, and utility rooms to serve the residents of the park only. (Ord. 6245 § 3, 2009.)

18.04.022 Adult book and video establishment. *Repealed by Ord. 5835.*

18.04.023 Accessory use, residential.

“Residential accessory use” means a subordinate use which supports the principal residential use without displacing it. The accessory residential use is typically located on the same lot occupied by the principal residential use. Residential accessory uses include residential garage, guest cottage, recreation room, tool shed, swimming pool, noncommercial greenhouse, private stable, barn, pen, coop, or similar structure. This use excludes accessory dwelling units, as defined in ACC 18.04.018, and manufactured home community accessory uses. (Ord. 6245 § 3, 2009.)

18.04.024 Adult entertainment establishment. *Repealed by Ord. 5835.*

18.04.025 Administrative use.

“Administrative use” means a use permitted in a zone only after review and approval by the planning director or designee. Administrative uses are those which typically have some potential for impacts to neighboring properties, but which may be permitted within a zone following review by the city to establish conditions mitigating impacts of the use and to assure compatibility with other uses in the zone. (Ord. 6269 § 27, 2009.)

18.04.027 Adult entertainment. *Repealed by Ord. 5835.*

18.04.030 Adult motion picture theater. *Repealed by Ord. 5835.*

18.04.031 Adult family home.

"Adult family home" means a residential home licensed by the state in which a person or persons provide personal care, special care, room, and board to more than one but not more than six adults who are not related by blood or marriage to the person or persons providing the services. Adult family homes are not communal residences. (Ord. 6560 § 1, 2015; Ord. 6245 § 3, 2009.)

18.04.032 Adult uses. *Repealed by Ord. 5835.*

18.04.035 Agricultural enterprise.

"Agricultural enterprise" means a business enterprise which is engaged in, or related to, farming or agricultural production and other businesses and services supporting and promoting agriculture practices and the practice of locally and regionally grown foods. The term shall include the following:

A. "Agritourism" means a business enterprise activity that includes operation of a working farm or any agricultural or horticultural operation that, while not an exclusive function, is open to the public on a seasonal basis for enjoyment, recreation, personal entertainment, or education.

B. "Agricultural entertainment" means any event or activity that allows for recreation, entertainment, education and tourism associated with agricultural activities. (Ord. 6363 § 1, 2011.)

18.04.036 Agricultural store.

"Agricultural store" means a retail food establishment, housed in a permanent structure, whose primary economic activity is the sale of local and regional agricultural products directly to consumers. An agricultural store may also include the sale of sundries, prepackaged food, bottled or canned beverages and freshly prepared food and beverages for consumption on site. (Ord. 6363 § 1, 2011.)

18.04.039 Aircraft operations.

“Aircraft operations” means the movement of aircraft operating in the airport traffic pattern or within sight of the airport. A landing or takeoff is one operation. An aircraft that takes off and then lands creates two aircraft operations. (Ord. 6838 § 1 (Exh. A), 2021.)

18.04.040 Airport, heliport or aircraft landing field.

“Airport,” “heliport,” or “aircraft landing field” means any runway, landing area or other facility whether publicly or privately owned or operated, and which is designed, used or intended to be used either by public carriers or by private aircraft for landing and taking off of aircraft. This definition includes all necessary taxiways, aircraft storage and tie-down areas, hangars and other necessary buildings and open spaces. This definition does not include manufacturing, servicing or testing facilities located in the vicinity of any landing area associated with the manufacturing or testing of commercial or military aircraft or activities associated therewith. (Ord. 6838 § 1 (Exh. A), 2021; Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.050 Airport elevation.

“Airport elevation” means the established elevation of the highest point on the usable landing area. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.060 Airport hazard.

“Airport hazard” means any structure, tree or use of land which obstructs the airspace required for, or is otherwise hazardous to, the flight of aircraft in landing or taking off at the airport. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.070 Airport landing area.

“Airport landing area” means the area of the airport used for the landing, taking off or taxiing of aircraft. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.072 Airport manager.

Airport Manager. See definition in Chapter 12.56 ACC. (Ord. 6838 § 1 (Exh. A), 2021.)

18.04.080 Airport reference point.

“Airport reference point” means the point established as the approximate geographic center of the airport landing area and so designated. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.090 Alley.

“Alley” means a public travel way or other public right-of-way under the jurisdiction and control of the city and not designated for general travel and used primarily as a means of access to the rear of residential and/or business establishments. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.100 Amusement device, mechanical.

“Mechanical amusement device” means any machine which, upon the insertion of a coin, slug, token, plate, disk, monetary bill or credit card, may be operated by the public generally for use as a game, entertainment or amusement, whether or not registering a score. It includes such devices as marble machines, pinball machines, skill ball, mechanical grab machines, video games and all games, operations or transactions similar thereto under whatever name they may be indicated to specify. “Mechanical amusement device” does not include pool tables. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.105 Animal shelter, public.

“Animal shelter, public” means a facility that is used to temporarily house or contain stray, homeless, abandoned or unwanted animals. The facility must be owned, operated, or maintained by one or more of the following: an animal care and control agency; humane society, or society for the prevention of cruelty to animals registered under Chapter 16.52 RCW, or another nonprofit organization devoted to the welfare, protection, and humane treatment of animals, when such society or organization is then under contract with an animal care and control agency. An animal shelter, public may provide supporting services, including medical care. (Ord. 6407 § 2, 2012.)

18.04.1100 Apartment Bbuilding.

"Apartment Building" means:

(a) A building containing seven or more attached dwelling units, including a building containing nonresidential units if the building also contains seven or more attached dwelling units, but excluding the following classes of buildings:

(i) Hotels and motels;
(ii) Dormitories;
(iii) Care facilities;
(iv) Floating homes;
(v) Middle Housing
(vi) A building that contains attached dwelling units that are each located on a single platted lot;
(vi) A building in which all of the dwelling units are held under one ownership and is subject to a recorded irrevocable sale prohibition covenant;
(viii) A building with six or fewer units that is no more than three stories; and
(iv) A building with six or fewer units that is no more than three stories so long as one story is utilized for parking, either above or below ground, or retail space.

18.04.115 Apiary.

"Apiary" ("apiaries") means a place where honey bees (Apis mellifera) are kept; a collection of beehives. "Beekeeping" is included under this definition. (Ord. 6600 § 1, 2016.)

18.04.120 Arcade.

"Arcade" means an entertainment venue featuring primarily video games, simulators, and/or other amusement devices where persons under 21 years of age are not restricted. (Ord. 6642 § 14, 2017; Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.125 Assisted living facility.

"Assisted living facility" means a combination of housing, supportive services, personalized assistance, and health care designed to respond to the individual needs of those who need help with activities of daily living. An establishment with a central or private kitchen, dining, recreational, and other facilities, with separate bedrooms or living quarters, where the emphasis of the facility remains residential. An assisted living facility is not a communal residence. (Ord. 6560 § 2, 2015; Ord. 6245 § 3, 2009; Ord. 6140 § 1, 2007.)

18.04.130 Automobile repair.

“Automobile repair” includes fixing, incidental body or fender work, painting, and upholstering, engine tune-up, adjusting lights, installation/repair of electrical or electronic components, brakes, supplying and installing replacement parts to passenger vehicles and trucks. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.140 Automobile service station. *Repealed by Ord. 6433.*

18.04.150 Automobile wrecking.

“Automobile wrecking” means the dismantling or disassembling of used motor vehicles or trailers, the storage, sale or dumping of dismantled, obsolete, or wrecked vehicles or their parts, and the towing of such vehicles or parts in connection with such activity. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.160 Automobile wrecking yard.

“Automobile wrecking yard” means any premises devoted to automobile wrecking. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.170 Automobile, trailer, equipment sales area.

“Automobile, trailer and equipment sales area” means an open area, other than a street or alley, used for the display, sale or rental of new or used automobiles, trucks, trailers or other equipment. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.171 Battery charging station.

“Battery charging station” means an electrical component assembly or cluster of component assemblies designed specifically to charge batteries within electric vehicles, which meet or exceed any standards, codes, and regulations set forth by Chapter 19.28 RCW and consistent with rules adopted under RCW 19.27.540. (Ord. 6365 § 1, 2011.)

18.04.172 Battery electric vehicle (bev).

“Battery electric vehicle (BEV)” means any vehicle that operates exclusively on electrical energy from an off-board source that is stored in the vehicle’s batteries, and produces zero tailpipe emissions or pollution when stationary or operating. (Ord. 6365 § 1, 2011.)

18.04.173 Battery exchange station.

“Battery exchange station” means a fully automated facility that will enable an electric vehicle with a swappable battery to enter a drive lane and exchange the depleted battery with a fully charged battery through a fully automated process, which meets or exceeds any standards, codes, and regulations set forth by Chapter 19.27 RCW and consistent with rules adopted under RCW 19.27.540. (Ord. 6365 § 1, 2011.)

18.04.175 Bed and breakfast.

“Bed and breakfast” means a residential home maintained by an on-premises owner that provides no more than six guest rooms which are used, rented, or hired out to guests to be occupied for sleeping purposes, and which may also offer communal dining services. (Ord. 6245 § 3, 2009.)

18.04.180 Boardinghouse. *Repealed by Ord. 6477.*

18.04.185 Brew pub. *Repealed by Ord. 6368.*

18.04.190 Building.

“Building” means any structure having a roof supported by columns or walls used or intended to be used for the shelter or enclosure of persons, animals or property of any kind. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.192 Building and landscape materials sales.

“Building and landscape material sales” means a retail or wholesale establishment selling hardware, lumber and other large building materials, plant materials, and other landscaping materials. (Ord. 6433 § 3, 2012.)

18.04.194 Building contractor, heavy.

“Building contractor, heavy” means businesses relating to the heavy construction trades including but not limited to: excavation work, highway and street construction; heavy construction, masonry and concrete work and water well drilling. These types of businesses generally have heavy equipment that may be stored outside. (Ord. 6433 § 4, 2012.)

18.04.195 Building contractor, light.

“Building contractor, light” means businesses relating to the building trades including but not limited to: plumbing, heating, air conditioning; painting, paperhanging and decorating; electrical; carpentry and flooring; roofing and sheet metal. These types of businesses generally do not have heavy equipment or building materials stored outside. (Ord. 6433 § 5, 2012.)

18.04.200 Building height.

“Height of building” means the vertical distance measured from the finished grade to the highest point of the roof for flat roofs, to the deck line of mansard roofs, and to the mean height between eaves and ridge for gable, hip and gambrel roofs. If a structure has none of the above features then the height shall be measured from the finished grade to the highest portion of the structure. See Figure 18.04.200. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

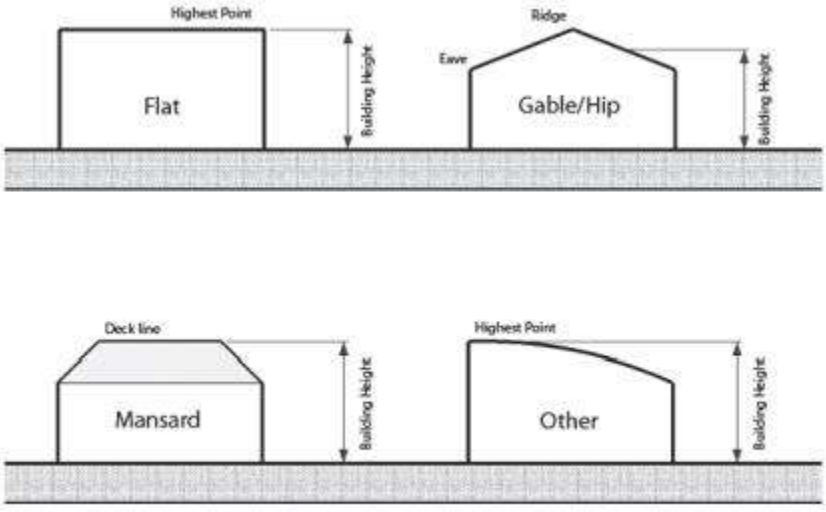


Figure 18.04.200 Building Height

18.04.210 Building, main.

“Main building” means the principal building or buildings on a lot or building site designed or used to accommodate the primary use to which the premises are devoted. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.220 Building official. *Repealed by Ord. 6245.*

18.04.230 Building site.

“Building site” means a parcel of land assigned to a use, to a main building, or to a main building and its accessory buildings, together with all yards and open spaces required by this title. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.235 Built green.

“Built green” means an environmental building program locally administered by the Master Builders Association of King and Snohomish Counties which provides rating systems which quantify environmentally friendly building practices for remodeling and new residential construction. The construction must qualify for a minimum number of points in order to be certified as “built green.” Each building receives a one – to five-star rating based on the builder’s ability to meet the sustainable design standards. (Ord. 6245 § 3, 2009; Ord. 6036 § 5, 2006.)

18.04.235.1 Caretaker apartment.

“Caretaker apartment” means an accessory housing unit that is permitted in association with a commercial or industrial use where no residential dwelling exists, for the express purpose of providing a housing unit for on-site security or operations personnel. (Ord. 6433 § 6, 2012.)

18.04.236 Charging levels.

“Charging levels” means the standardized indicators of electrical force, or voltage, at which an electric vehicle’s battery is recharged. The terms “1,” “2,” and “3” are the most common EV charging levels, and include the following specifications:

A. Level 1 is considered slow charging.

B. Level 2 is considered medium charging.

C. Level 3 is considered fast or rapid charging. (Ord. 6365 § 1, 2011.)

18.04.237 Chicken coop.

“Chicken coop” means a building for housing and weather protection for domestic fowl. The chicken coop is treated as an accessory structure. (Ord. 6600 § 2, 2016.)

18.04.238 Chicken run.

“Chicken run” or “chicken pen” means an area enclosed by fencing or netting which may or may not be connected to a coop within which domestic fowl can move about freely within a limited portion of the property or site. (Ord. 6600 § 3, 2016.)

18.04.240 Commercial use.

“Commercial use” shall mean any activity or use of land which involves the buying, selling, processing or improving of things not produced on the land and having financial gain as the primary aim of the activity or use; whether or not such activity or use be for hire or on account of the buyer, seller, processor, or improver. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.245 Commercial vehicle.

“Commercial vehicle” means semi-truck tractors and/or semi-trailers (over 26,001 pounds gross vehicle weight rating) used in any commercial enterprise. (Ord. 6245 § 3, 2009; Ord. 6019 § 1, 2006.)

18.04.246 Commercial recreation facility, indoor.

“Commercial recreation facility, indoor” means a private for-profit or nonprofit establishment offering recreation or providing entertainment or games of skill to the general public for a fee or charge and wholly enclosed in the building. Typical uses include athletic and health club, pool or billiard hall, indoor swimming pool, bowling alley, skating rink or climbing gyms. (Ord. 6433 § 7, 2012.)

18.04.247 Commercial recreation facility, outdoor.

“Commercial recreation facility, outdoor” means a private for-profit or nonprofit establishment offering recreation or providing entertainment or games of skill to the general public for a fee or charge where any portion of the activity takes place in the open, excluding public parks. Typical uses include: racetracks; miniature golf; skateboard park; swimming and wading, therapeutic facilities; and tennis, handball, basketball courts; batting cages, trampoline facilities. (Ord. 6433 § 8, 2012.)

18.04.248 Community retail establishment.

“Community retail establishment” means stores, shops and businesses either individually or in a shared space setting serving a geographic area of the city that engage in merchandise sales. (Ord. 6433 § 9, 2012.)

18.04.249 Communal residence.

“Communal residence” is a business operated out of a single residential home without an owner occupant residing therein, where the residential home, or portions thereof, is/are rented to more than one individual through separate, unrelated lease or rental agreements. The fact that the individuals rent the residence or a portion thereof through separate, unrelated lease or rental agreements shall be prima facie evidence that the individuals are unrelated and do not meet the definition of “family” per ACC 18.04.360. Adult family homes, foster care homes, group residence facilities, special needs housing, and supportive housing are not communal residences. (Ord. 6560 § 3, 2015; Ord. 6477 § 10, 2013.)

18.04.250 Comprehensive plan.

“Comprehensive plan” means the comprehensive plan for the Auburn planning area, as now constituted, or hereafter amended, or its successor. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.260 Conditional use.

“Conditional use” means a use permitted in a zone only after review and approval by the hearing examiner. Conditional uses are such that they may be compatible only on certain conditions in specific locations in a zone, or if the site is regulated in a certain manner in order to achieve the purposes of this title. (Ord. 6245 § 3, 2009; Ord. 6185 § 1, 2008; Ord. 4229 § 2, 1987.)

18.04.265 Condominium.

“Condominium” means a form of ownership in which individuals purchase and own individual units in a multi-unit complex and jointly own and share financial responsibility for certain common areas. Residential condominiums in ~~Middle Housing and~~ multifamily buildings differ from apartments in that each unit is individually owned, and any land in the project is owned in common by all householders. (Ord. 6245 § 3, 2009.)

18.04.270 Conforming use.

“Conforming use” means an activity the nature and type of which is permitted in the zone in which the property on which it is established is located. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.280 Contract rezone. *Repealed by Ord. 6245.*

18.04.282 Convenience store.

“Convenience store” means a small retail establishment that offers convenience goods for sale, such as prepackaged food items, beverages, tobacco, personal care items, and other household goods and often characterized by 24 hours a day operations. These stores can be part of a fueling station or an independent facility. (Ord. 6433 § 10, 2012.)

18.04.283 Crematorium.

“Crematorium” means a facility for the burning of corpses, human or animal, to ashes either as a principal use or as an accessory use. Crematoriums do not include establishments where incinerators are used to dispose of toxic or hazardous materials, infectious materials or narcotics. (Ord. 6433 § 11, 2012.)

18.04.285 Dangerous waste.

“Dangerous waste” means those solid wastes designated in WAC 173-303-070 through 173-303-103 as dangerous waste. (Ord. 6245 § 3, 2009; Ord. 4294 § 2, 1988.)

18.04.290 Daycare center, nursery school, preschool.

“Daycare center,” “nursery school,” or “preschool” means any type of group daycare programs, for children or adults, including nursery schools for children under minimum age for education in public schools, parent cooperative nursery schools, playgroups for preschool children, covering afterschool care for school children, and programs which provide organized learning and education experiences, provided such establishments are licensed by the state and conducted in accordance with state requirements. For the purpose of this title the following shall also apply to daycare center, nursery schools or preschools:

A. “Babysitting care” means a dwelling which provides occasional custodial care to children, for periods of less than 24 hours, who do not reside within the residence of the person providing the care. Babysitting care is not necessarily provided in exchange for compensation.

B. “Home based daycare” means a licensed daycare that regularly provides daycare for not more than 12 children or adults in the provider’s home in the family living quarters, for periods of less than 24 hours.

C. “Mini daycare center” means a place, other than the home of the provider, which provides regular custodial care for one to 12 children, for periods of less than 24 hours.

D. “Daycare center” means a place, other than the home of the provider, which provides regular custodial care for 12 or more children, for periods of less than 24 hours.

E. “Preschool/nursery school” means a place, other than the home of the provider, which provides regular custodial care and/or organized learning and educational experiences for children. (Ord. 6245 § 3, 2009; Ord. 4705 § 2, 1994; Ord. 4229 § 2, 1987.)

18.04.294 Designated accessible space.

“Designated accessible space” means a required accessible parking space designated for the exclusive use of parking vehicles with a state disabled parking permit, in accordance with WAC 51-50-005, the International Building Code requirements for barrier-free accessibility. (Ord. 6365 § 1, 2011.)

18.04.295 Designated facility zone.

“Designated facility zone” means a zone in which hazardous waste treatment and storage facilities are allowed uses, subject to the state siting criteria designated in Chapter 70.105 RCW. (Ord. 6245 § 3, 2009; Ord. 4294 § 2, 1988.)

18.04.300 Density.

"Density" is a measure of population, housing units, or building area related to land area, and is expressed as a ratio, e.g., units per acre or square feet of lot area per unit ~~one dwelling unit per acre~~. See ACC 18.02.065 for the methodology for calculating density. (Ord. 6661 § 2, 2018; Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

~~18.04.301 Density, base.~~

~~"Base density" refers to the greatest number of dwelling units allowed without application of the bonus density provisions of Chapter 18.25 or 18.49 ACC per land area in a specific zone expressed as a ratio. For example, in a zone with a maximum density of four units per acre, the maximum number of housing units allowed on a one-quarter-acre lot is one unit. (Ord. 6245 § 3, 2009.)~~

18.04.302 Density bonus.

"Density bonus" refers to residential units allowed in excess of the base density of a particular zone. Density bonuses may be granted to residential developers within a certain distance of a high capacity transit stop, inclusion of affordable housing, or in exchange for recognized public benefits pursuant to Chapter 18.02 and Chapter 18.25 ~~or 18.49~~ ACC. (Ord. 6245 § 3, 2009.)

18.04.303 Density, minimum.

"Minimum density" refers to the least number of dwelling units or lots allowed per land area in a specific zone, expressed as a ratio. For example, in a zone with a minimum density of 12 units per acre, development of a two-acre lot would require a minimum of 24 units. (Ord. 6245 § 3, 2009.)

18.04.310 Development standards.

"Development standards" means regulations pertaining to setbacks, landscaping, height, site coverage, signs, building layout, site design and related features of land use. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.318 Dripline.

"Dripline" means an area encircling the base of a tree, the minimum extent of which is delineated by a vertical line extending from the outer limit of a tree's branch tips down to the ground. (Ord. 6387 § 2, 2011.)

18.04.320 District. *Repealed by Ord. 6245.*

18.04.325 Domestic fowl and poultry.

"Domestic fowl and poultry" includes all species of chickens, turkeys, geese, ducks, pigeons or other fowl or poultry of similar size and character. Roosters and peafowl are not included in this definition and are not permitted. (Ord. 6600 § 6, 2016; Ord. 6369 § 5, 2011.)

18.04.330 Dwelling.

"Dwelling" means a building designed exclusively for residential purposes for occupancy by a person, family, or unrelated group with one or more rooms for living and sleeping purposes, containing kitchen facilities and rooms with internal accessibility, including ~~single-family~~single-unit detached housing, middle housing, apartments, ~~two-family, multiple-family dwellings, and townhouse dwelling,~~ and accessory dwelling units,~~s~~ but not including recreational vehicles, or hotels or motel units without kitchens. (Ord. 6565 § 1, 2015; Ord. 6477 § 3, 2013; Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.340 Dwellings, types of.

"Types of dwellings" means:

A. Dwelling, ~~Single-Family~~Single-Unit Detached. "Single-unit detached" dwelling~~family dwelling"~~ means a detached building, not connected to another building, designed exclusively for occupancy by one family or communal residence and containing one dwelling unit that is permanently attached to the ground. A manufactured home may be considered a ~~single-family~~single-unit detached dwelling if sited per ACC 18.31.050. This dwelling-type was previously called "Single Family" and is synonymous with "Single-unit detached housing".

B. Dwelling, ~~Dwelling, Two-Family (Duplex). "Two-family dwelling" or "duplex" means a building designed exclusively for occupancy by two families or communal residence living independently of each other,~~

~~and containing two dwelling units.~~Middle Housing. "Middle Housing" dwellings" includes the following housing types:

~~13~~. ~~–~~"Townhouse" means a detached structure~~buildings~~ that contains three~~wo~~ or more attached ~~single-family~~ dwelling units that extend from foundation to roof and that have a yard or public way on not less than two sides, each with its own front and rear access to the outside.

2. "Duplex" means a detached structure consisting of two individual dwelling units that is in a horizontal or stacked layout, does not have interior openings between dwelling units, and which dwelling units share common walls.

3. "Triplex" means a detached structure consisting of three individual dwelling units that is in a horizontal or stacked layout, does not have interior openings between dwelling units, and which dwelling units share common walls.

4. "Fourplex" means a detached structure consisting of four individual dwelling units that is in a horizontal or stacked layout, does not have interior openings between dwelling units, and which dwelling units share common walls.

5. "Fiveplex" means a detached structure consisting of five individual dwelling units that is in a horizontal or stacked layout, does not have interior openings between dwelling units, and which dwelling units share common walls.

6. "Sixplex" means a detached structure consisting of six individual dwelling units that is in a horizontal or stacked layout, does not have interior openings between dwelling units, and which dwelling units share common walls.

7~~3~~2. "Stacked flat" ~~,~~ means dwelling units in a residential building of no more than three stories on a lot in which each floor may be separately rented or owned. Duplexes and triplexes may be arranged as stacked flats.

~~3. "Townhouse" means buildings that contain two or more attached single-family dwelling units that extend from foundation to roof and that have a yard or public way on not less than two sides.~~

8~~4~~4. "Cottage housing"~~,~~ means residential units on a lot with a common open space that either: (a) Is owned in common; or (b) has units owned as condominium units with property owned in common and a minimum of 20 percent of the lot size as open space. Courtyard housing standards in 18.25.050 apply to cottage housing. This definition of cottage housing does not apply to "guest cottages" of ACC 18.04.450.

~~5~~9. "Courtyard apartments"~~.~~ means a residential structure consisting of multiple attached side-by-side and/or stacked dwelling units oriented around a yard or court on two or three sides.

C. Dwelling, ~~Multiple-Family~~Apartment. "~~Multiple-family dwelling~~Apartment" ~~means a building~~ means a building designed for occupancy by ~~three~~ seven or more families or communal residences living independently of ~~each other, and~~each other and containing seven~~three~~ or more dwelling units. Apartment units may be located in a mixed-use development. This dwelling-type was previously called "Multiple-Family" dwellings.

~~D. Dwelling, Townhouse. "Townhouse dwelling" means a building designed exclusively for occupancy by one family or communal residence, occupying space from the ground to the roof and not lying vertically under or over adjacent units, and attached to one or more other dwelling units by common walls.~~ (Ord. 6477 § 4, 2013; Ord. 6245 § 3, 2009; Ord. 6162 § 1, 2008; Ord. 4229 § 2, 1987.)

18.04.350 Dwelling unit.

"Dwelling unit" means one or more rooms designed for or occupied by one family or communal residence for living or sleeping purposes and containing kitchen facilities. All rooms comprising a dwelling unit shall have access through an interior door to other parts of the dwelling unit. An efficiency apartment, also known as a studio apartment, constitutes a dwelling unit within the meaning of this title. (Ord. 6477 § 5, 2013; Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.351 Electric scooters and motorcycles.

"Electric scooters and motorcycles" means any two – or three-wheel vehicle or scooter or motorcycle under state law that operates exclusively on electrical energy from an off-board source that is stored in the vehicle's batteries and produces zero emissions or pollution when stationary or operating. (Ord. 6365 § 1, 2011.)

18.04.352 Electric vehicle.

"Electric vehicle" means any vehicle that operates, either partially or exclusively, on electrical energy from the grid, or an off-board source, that is stored on-board for motive purpose. "Electric vehicle" includes: (1) a battery electric vehicle; (2) a plug-in hybrid electric vehicle; (3) a neighborhood electric vehicle; and (4) a medium-speed electric vehicle. (Ord. 6365 § 1, 2011.)

18.04.353 Electric vehicle charging station.

"Electric vehicle charging station" means a public or private parking space that is served by battery charging station equipment that has as its primary purpose the transfer of electric energy (by conductive or inductive means) to a battery or other energy storage device in an electric vehicle. An electric vehicle charging station

equipped with Level 1 or Level 2 charging equipment is permitted outright as an accessory use to any principal use. (Ord. 6365 § 1, 2011.)

18.04.354 Electric vehicle charging station – Restricted.

"Electric vehicle charging station – restricted" means an electric vehicle charging station that is (1) privately owned and restricted access (e.g., single-family home, executive parking, designated employee parking) or (2) publicly owned and restricted (e.g., fleet parking with no access to the general public). (Ord. 6365 § 1, 2011.)

18.04.355 Extremely hazardous waste.

"Extremely hazardous waste" means those solid wastes designated in WAC 173-303-070 through 173-303-103 as extremely hazardous waste. (Ord. 6245 § 3, 2009; Ord. 4294 § 2, 1988.)

18.04.356 Electric vehicle charging station – Public.

"Electric vehicle charging station – public" means an electric vehicle charging station that is (1) publicly owned and publicly available (e.g., park and ride parking, public library parking lot, on-street parking) or (2) privately owned and publicly available (e.g., shopping center parking, nonreserved parking in multifamily parking lots). (Ord. 6365 § 1, 2011.)

18.04.357 Electric vehicle infrastructure.

"Electric vehicle infrastructure" means structures, machinery, and equipment necessary and integral to support an electric vehicle, including battery charging stations, rapid charging stations, and battery exchange stations. (Ord. 6365 § 1, 2011.)

18.04.358 Electric vehicle parking space.

"Electric vehicle parking space" means any marked parking space that identifies the use to be exclusively for the parking of an electric vehicle. (Ord. 6365 § 1, 2011.)

18.04.359 Emergency Housing

"Emergency housing" means temporary indoor accommodations for individuals or families who are homeless or at imminent risk of becoming homeless that is intended to address the basic health, food, clothing, and personal hygiene needs of individuals or families. Emergency housing may or may not require occupants to enter into a lease or an occupancy agreement.

18.04.360 Emergency Shelter

"Emergency shelter" means a facility that provides a temporary shelter for individuals or families who are currently homeless. Emergency shelter may not require occupants to enter into a lease or an occupancy agreement. Emergency shelter facilities may include day and warming centers that do not provide overnight accommodations.

18.04.3615~~9~~ Entertainment, commercial.

"Entertainment, commercial" means spectator entertainment for commercial purposes. This use includes theaters, concert halls, nightclubs, or comedy clubs, but does not include cabarets, licensed under ACC 5.20.130(B), and adult entertainment, licensed under Chapter 5.30 ACC. (Ord. 6433 § 12, 2012.)

18.04.3620~~0~~ Family.

"Family" means a person living alone, two or more persons related by blood or marriage, or any other analogous family union recognized under federal and/or state statute, as distinguished from a group occupying a hotel, club, or communal residence. For the purposes of this definition, minors living with a parent shall not be counted as part of the maximum number of residents. The purpose of defining family is to assist in the regulation of occupancy standards within dwelling units and to define different types of structures; it is not intended to interfere with the civil rights of individuals who establish relationships under the terms of state and federal laws. (Ord. 6477 § 6, 2013; Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.365 FAR Part 77 surfaces.

FAR Part 77 Surfaces. The Federal Aviation Administration's Federal Aviation Regulations (FAR) Part 77 surfaces are the imaginary airspace surfaces established with any relation to each runway of an airport. There are five types of surfaces: (A) primary, (B) approach, (C) transitional, (D) horizontal, and (E) conical. These surfaces are above and around airports and require protection from potential obstructions that might interfere

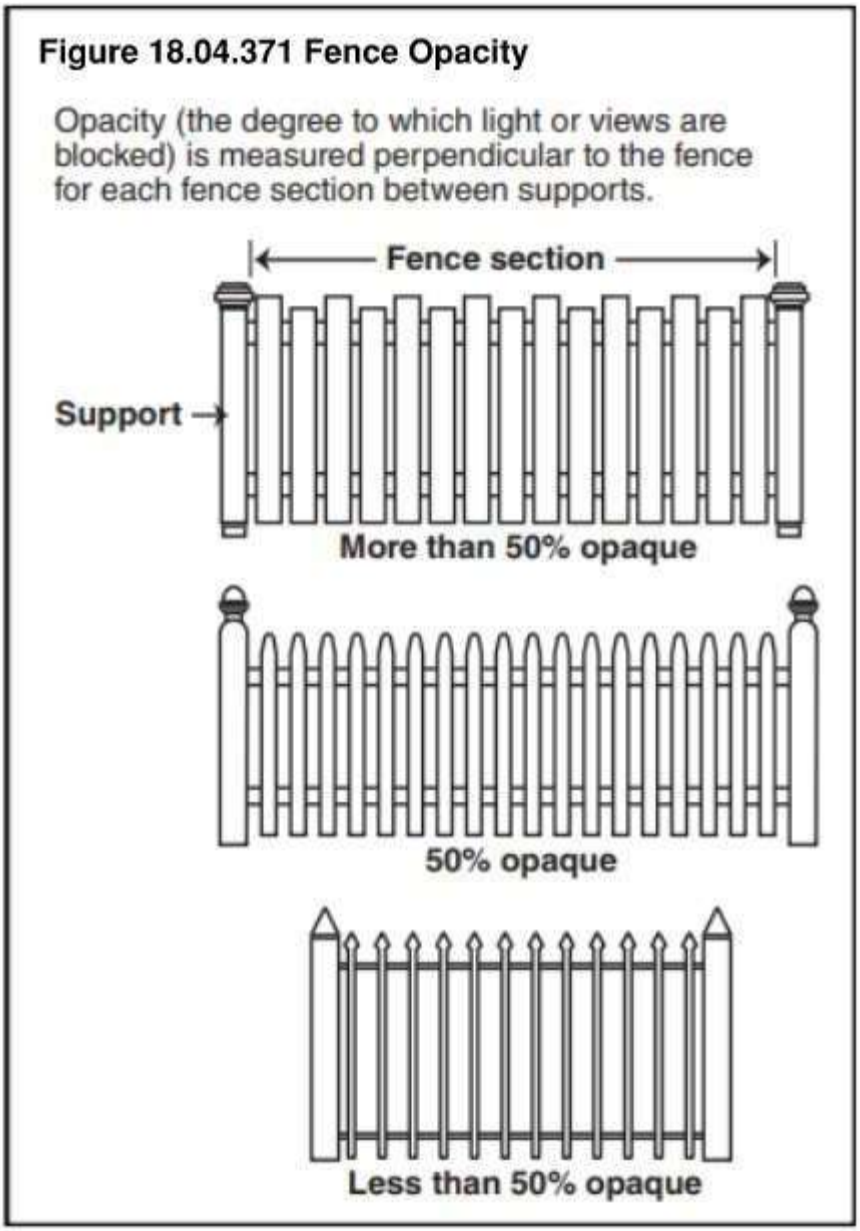
with airport traffic and potentially create a safety risk to aircraft occupants and persons on the ground. An object or structure with an elevation higher than the FAR Part 77 surface elevation is considered to penetrate the FAR Part 77 surfaces and constitutes an obstruction to navigable airspace. “Navigable airspace” is defined by the FAA pursuant to CFR Title 14, Part 77, imaginary surfaces. (Ord. 6838 § 1 (Exh. A), 2021.)

18.04.370 Fence.

“Fence” means a masonry wall or a barrier generally composed of posts connected by boards, rails, panels, or wire for the purpose of enclosing space, functional areas, or separating parcels of land. The term “fence” does not include retaining walls or rockeries when a separate structure. The term also does not include hedges, trees, or other natural growth. (Ord. 6884 § 1 (Exh. 1), 2022; Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.371 Fence, opacity.

“Fence opacity” is the degree to which light or views are blocked. Opacity is measured perpendicular to the fence for each fence section between supports.



(Ord. 6884 § 1 (Exh. 1), 2022.)

18.04.372 Fence, screened.

“Screened fence” means a fence that is between 70 to 100 percent opaque, and provides a high degree of visual buffering between two areas. A screened fence may consist of wood, vinyl, or metal. A chain link fence interwoven with slats in every row or available space is considered a screened fence. (Ord. 6884 § 1 (Exh. 1), 2022; Ord. 6245 § 3, 2009.)

18.04.373 Fence, visibility.

A fence that is 50 percent or less opaque is generally considered to provide visibility. (Ord. 6884 § 1 (Exh. 1), 2022.)

18.04.374 Fence, 100 percent sight-obscuring.

“One hundred percent sight-obscuring fence” means a fence that is 100 percent opaque, completely obstructs view between two areas or completely obstructs view between two adjoining uses. A sight-obscuring fence shall be constructed of solid wood, metal, concrete, or other appropriate material which totally conceals the subject use from adjoining uses. (Ord. 6884 § 1 (Exh. 1), 2022; Ord. 6245 § 3, 2009.)

18.04.376 Retaining wall.

“Retaining wall” means a structure designed and constructed to hold soil, earth, or like material in place, or to resist lateral pressure of materials to create or maintain a change in ground elevation. Such walls can be of various types including gravity, cantilevered, anchored, or piling walls and can be comprised of various materials including concrete, stone, or masonry units. The term “retaining wall” does not include fences. (Ord. 6884 § 1 (Exh. 1), 2022.)

18.04.380 Floor area.

“Floor area” means total floor area within the walls of all buildings on a lot or building site, except for the spaces therein devoted to vents, shafts and light courts and except for the area devoted exclusively to loading and unloading facilities and to parking of motor vehicles. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.390 Foster care home.

“Foster care home” means a home which provides regular care for up to four developmentally disabled adults, or up to four adults who are recipients of state or federal financial assistance services, or up to four foster children under the age of 18, or up to three expectant mothers in a residential structure of the person or persons under whose direct care and supervision the people are placed. A foster care home is not a communal residence. (Ord. 6560 § 4, 2015; Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.395 Fueling station.

“Fueling station” means a retail business selling gasoline or other motor vehicle fuels primarily to passenger vehicles. Includes alternative fuels and recharging facilities which are commercial facilities offering motor vehicle fuels not customarily offered by commercial refueling stations (e.g., liquid propane gas) as well as equipment to recharge electric powered vehicles. This classification includes customary incidental activities when performed in conjunction with the sale of fuel, such as vehicle maintenance and repair, vehicle washing, and electric vehicle battery swap-out, but excludes body and fender work or repair of heavy trucks or vehicles. (Ord. 6433 § 13, 2012.)

18.04.400 Garage or carport, residential.

“Residential garage or carport” means a building or a portion of a building principally used for vehicular equipment such as automobiles, boats, etc., in which only motor vehicles used by the tenants of the building or buildings on the premises are stored or kept. (Ord. 6245 § 3, 2009; Ord. 4304 § 1(1), 1988; Ord. 4229 § 2, 1987.)

18.04.410 Garage, commercial.

“Commercial garage” means any garage not a residential garage, and which is used for storage, repair, rental, servicing or supplying of gasoline or oil to motor vehicles. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.411 Golf course.

See ACC 18.04.746, Private country clubs and golf courses, excluding driving ranges. (Ord. 6245 § 3, 2009.)

18.04.412 Governmental facilities.

“Governmental facilities” means facilities of any unit of city, county, state, federal, or special district government. Types of facilities include community centers, vehicle and driver licensing offices, public works maintenance and operations facilities, courts of law, school support facilities, and other types of city, county, state, school district, special district, or federal facilities. This definition excludes jails, municipal parks, transit facilities, sewage treatment plants, schools, municipally owned airports, libraries, and utility facilities and substations as defined in this chapter. (Ord. 6245 § 3, 2009.)

18.04.420 Grade.

“Grade” means the average of the finished ground level at the center of all exterior walls of a building. In case walls are within five feet of a public sidewalk, alley or other public way, the grade shall be the elevation of the sidewalk, alley or public way. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.425 Green building practices.

“Green building practices” (as defined by the U.S. Green Building Council, Leadership in Energy and Environmental Design [LEED] Program) means practices that conserve resources, use recycled content materials, maximize energy efficiency, and otherwise consider environmental, economic, and social benefits in the design and construction of a building project. See ACC 18.04.525 for more information on LEED. (Ord. 6245 § 3, 2009; Ord. 6036 § 6, 2006.)

18.04.430 Gross floor area.

“Gross floor area” includes all floor area within the exterior walls of the building including area in halls, storage, and partitions, but excluding furnace and similar utility space used solely to maintain the building for occupancy. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.440 Group residence facility.

“Group residence facility” means a facility licensed by the state and operated with full-time supervision for housing resident persons who, by reason of their mental or physical disability, addiction to drugs or alcohol, or family and social adjustment problems, require a transitional nonmedical treatment program for rehabilitation and social readjustment. For the purposes of this title, a nonmedical treatment program consists of counseling, vocational guidance, training, group therapy and other similar rehabilitative services but does not include drug and/or alcohol detoxification. Monitoring the taking of prescription medication shall be permitted. The use of medication by any resident shall be incidental to that person’s residence in the facility and shall not be a criterion for residence in the facility. This definition does not include residential dwellings which meet all other requirements of this title, that provide programs related to this definition or which provide services of a nursing home as defined by ACC 18.04.660. A group residence facility is not a communal residence. (Ord. 6560 § 5, 2015; Ord. 6245 § 3, 2009; Ord. 4590 § 2 (Exh. A), 1992; Ord. 4304 § 1(2), 1988; Ord. 4229 § 2, 1987.)

18.04.445 Growth Center

"Growth Centers" are walkable, pedestrian-oriented, compact, areas of the city and are the basis for achieving neighborhoods where residents can meet more of their everyday needs within an easy walk of their home. They are complete neighborhoods with commercial development (grocery stores, restaurants, markets, shops, etc.), housing options, a variety of employment types, open space and parks, and other public gathering places. They are located adjacent to the public transit network. Growth Centers allow for a mix of commercial and residential uses in vertical or horizontal configurations, with the central core of a Growth Center.

18.04.450 Guest cottage.

"Guest cottage" means an accessory, detached building with bathroom, living and sleeping areas without any kitchen facilities designed for and used to house ~~transient visitors or~~ nonpaying guests of the occupants of the main dwelling. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.452 Hazardous material.

"Hazardous material" means a substance or materials in a quantity or form that may pose an unreasonable risk to health, safety or property when stored, transported or used in commerce. For specific definitions of hazardous materials see Code of Federal Regulations, Title 49, as amended; the International Fire Code, as amended; and the Valley Regional Fire Authority General Hazardous Materials Guidelines, as amended. (Ord. 6245 § 3, 2009; Ord. 4294 § 2, 1988; Ord. 4229 § 2, 1987.)

18.04.453 Hazardous substance.

"Hazardous substance" means any liquid, solid, gas or sludge, including any material, substance, product, commodity or waste, regardless of quantity, that exhibits any of the characteristics or criteria of hazardous waste as defined by Chapter 713-303 WAC. (Ord. 6245 § 3, 2009; Ord. 4294 § 2, 1988.)

18.04.454 Hazardous substance processing or handling.

"Hazardous waste processing or handling" means the use, storage, manufacture, production or other land use activity involving hazardous substances. Hazardous substances processing and handling activities do not include individually packaged household consumer products or quantities of hazardous substances of less than five gallons in volume per container. (Ord. 6245 § 3, 2009; Ord. 4294 § 2, 1988.)

18.04.455 Hazardous waste.

“Hazardous waste” means and includes all dangerous (see ACC 18.04.285) and extremely hazardous waste (see ACC 18.04.355). (Ord. 6245 § 3, 2009; Ord. 4294 § 2, 1988.)

18.04.456 Hazardous waste storage.

“Hazardous waste storage” means the holding of hazardous waste for a temporary period. Accumulation of waste on the site of generation is not storage as long as the storage complies with applicable requirements of Chapter 173-303 WAC. (Ord. 6245 § 3, 2009; Ord. 4294 § 2, 1988.)

18.04.457 Hazardous waste treatment.

“Hazardous waste treatment” means the physical, chemical or biological processing of dangerous waste to make such wastes nondangerous or less dangerous, safer for transport, or amenable for energy or material resource recovery. (Ord. 6245 § 3, 2009; Ord. 4294 § 2, 1988.)

18.04.458 Hazardous waste treatment and storage facility, off-site.

“Off-site hazardous waste treatment and storage facility” means the treatment and storage of hazardous wastes from generators on properties other than that on which the off-site facility is located. (Ord. 6245 § 3, 2009; Ord. 4294 § 2, 1988.)

18.04.459 Hazardous waste treatment and storage facility, on-site.

“On-site hazardous waste treatment and storage facility” means the treatment and storage of hazardous wastes generated on the same site. (Ord. 6245 § 3, 2009; Ord. 4294 § 2, 1988.)

18.04.460 Home occupation.

“Home occupation” means any activity undertaken for gain or profit and carried on in a dwelling, or building accessory to a dwelling. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.465 Homeless encampment.

“Homeless encampment” means an emergency homeless encampment hosted by a church or other organization, which provides temporary housing to homeless persons. (Ord. 6245 § 3, 2009; Ord. 6014 § 2, 2006.)

18.04.466 Horse riding, commercial.

“Commercial horse riding” means a land use established for the purpose of providing equestrian trails or other facilities for riding and keeping horses for a fee. This use includes bridle trails. (Ord. 6245 § 3, 2009.)

18.04.470 Hospital.

“Hospital” means an institution specializing in giving clinical, temporary and emergency services of a medical or surgical nature to human patients and which is licensed by state law to provide facilities including overnight accommodations and services in surgery, obstetrics and general medical practice. This definition does not include small animal hospitals or clinics, or veterinary clinics, as defined in ACC 18.04.480. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.480 Hospital or clinic, small animal.

“Small animal hospital or clinic” means an establishment in which veterinary medical services and/or clipping, bathing and similar services are rendered to dogs, cats and other small animals and domestic pets, not including kennels. This definition does not include hospitals as defined in ACC 18.04.470. (Ord. 6245 § 3, 2009; Ord. 4304 § 1(3), 1988; Ord. 4229 § 2, 1987.)

18.04.485 Host agency.

“Host agency” means the owner of the property, being a religious institution or other organization, that joins a sponsoring agency in an application for a temporary use permit for providing basic services and support to homeless encampment residents, such as hot meals, coordination of other needed donations and services, etc. (Ord. 6245 § 3, 2009; Ord. 6014 § 3, 2006.)

18.04.490 Hotel.

“Hotel” means any building containing six or more guest rooms intended or designed to be used, or which are used, rented, or hired out to be occupied, or which are occupied for sleeping purposes by guests, and includes additional amenities such as banquet halls and meeting facilities. Hotels include but are not limited to motels and extended stay hotel accommodations. Hotels do not include renting of rooms, boardinghouses, or bed and breakfast accommodations. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.495 Household pet.

Recodified to ACC 18.04.823by Ord. 6600. (Ord. 6369 § 1, 2011; Ord. 6245 § 3, 2009; Ord. 5777 § 1, 2003; Ord. 4229 § 2, 1987. Formerly 18.04.720.)

18.04.496 Housing rehabilitation.

“Housing rehabilitation” means the renovation of an existing housing unit for the purpose of preserving existing housing stock, often as a means to provide affordable housing within an established residential neighborhood. See Chapter 18.49 ACC. (Ord. 6245 § 3, 2009.)

18.04.497 Impervious surface.

“Impervious surface” means a hard surface area which either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development. A hard surface which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. (Ord. 6245 § 3, 2009.)

18.04.498 Incidental.

“Incidental” means reasonably related, as determined by the planning director. One use is incidental to another when it is reasonably related to another (i.e., a garage is incidental to the single-family dwelling unit). (Ord. 6245 § 3, 2009.)

18.04.499 Intensity.

“Intensity” refers to the level of development or activity on a site, in terms of both the nature of uses and the concentration of those uses as indicated by residential density (dwelling units per acre) or floor area ratio. For example, a site with a mixed-use complex with a commercial retail component and a high density multifamily residential component would display a higher level of intensity than the same sized property with a low density, single-family residential development. (Ord. 6245 § 3, 2009.)

18.04.500 Junkyard.

“Junkyard” includes automobile wrecking yards and salvage yards or any premises devoted wholly or in part to the storage, buying or selling of, or otherwise handling or dealing in, old rags, sacks, bottles, cans, papers, metal, rubber or other articles commonly known as junk. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.510 Kennel.

“Kennel” means a place where four or more adult dogs or cats or any combination thereof are kept, whether by owners of the dogs or cats or by persons providing facilities and care, whether or not for compensation, but not including a small animal hospital or clinic. An “adult dog or cat” is one of either sex, altered or unaltered, that has reached the age of four months. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.515 Kitchen.

“Kitchen” means any room or portion of a room designed to be used for cooking or the preparation of food, having a kitchen-type sink and provisions available for an installed gas or electric stove or range. (Ord. 6245 § 3, 2009; Ord. 4304 § 1(4), 1988.)

18.04.520 Landscaping.

“Landscaping” means vegetative cover including shrubs, trees, flowers, seeded lawn or sod, ivy and other similar plant material. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.522 Reserved.

Reserved. (Ord. 6245 § 3, 2009; Ord. 5354 § 2, 2000.)

18.04.523 Large domestic animal.

“Large domestic animal” means horses, ponies, donkeys, cows, standard size goats, llamas, oxen, standard size pigs, and other similar sized animals. (Ord. 6600 § 4, 2016.)

18.04.525 Leadership in energy and environmental design (leed).

“Leadership in energy and environmental design (LEED)” means a national standard for developing high-performance, sustainable buildings. (Ord. 6245 § 3, 2009; Ord. 6036 § 7, 2006.)

18.04.527 Live/work unit.

“Live/work unit” means an integrated housing unit and working space, occupied and utilized by a single household in a structure~~, either single dwelling or multi-unit dwelling,~~ that has been designed or structurally modified to accommodate joint residential occupancy and work activity, ~~and which includes:~~and includes a complete dwelling unit and working space reserved for and regularly used by one or more occupants of the dwelling unit. Within a live/work unit the “work” component of a live/work unit is secondary to its residential use. Live/work units are allowed within mixed-use developments.

~~A. A complete dwelling unit; and~~

~~B. Working space reserved for and regularly used by one or more occupants of the dwelling unit.~~

~~The difference between a live/work unit and a work/live unit (defined in ACC 18.04.913) is that the “work” component of a live/work unit is secondary to its residential use, and may include only commercial activities and pursuits that are compatible with the character of a quiet residential environment, while the work component of a work/live unit is the primary use, to which the residential component is secondary. (Ord. 6433 § 14, 2012.)~~

18.04.530 Lot.

“Lot” is defined in ACC 17.04.200. (Ord. 6245 § 3, 2009; Ord. 5170 § 1, 1998; Ord. 4229 § 2, 1987.)

18.04.540 Lot area.

“Lot area” means the total horizontal area within the boundary lines of a lot; however, the area contained in access easements, tracts or panhandles shall not be included in the lot area or any other lot size computation. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.550 Lot coverage.

“Lot coverage” means that percentage of the plot or lot area covered by all buildings including accessory buildings and uses. Coverage is determined by measuring along a horizontal plane from the outermost edge of eaves, cornices, overhangs, or areas covered by a weathertight roof. The first two feet of an eave overhang will, however, not be used in the lot coverage calculation. See Figure 18.04.550.

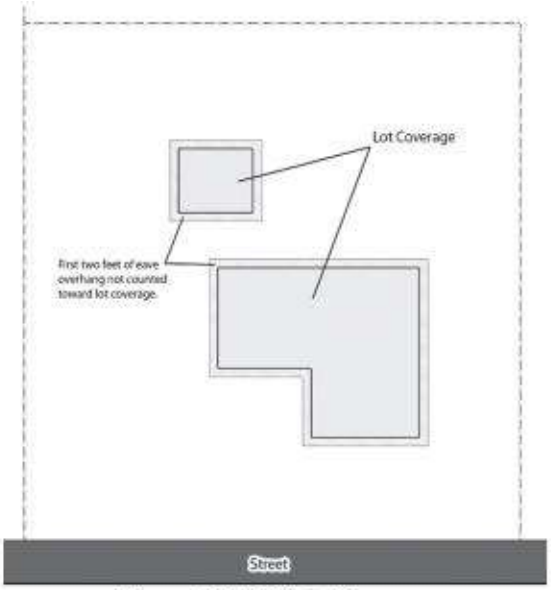


Figure 18.04.550 Lot Coverage

(Ord. 6245 § 3, 2009; Ord. 4705 § 2, 1994; Ord. 4229 § 2, 1987.)

18.04.560 Lot dimensions.

A. “Lot depth” means:

1. If the front and rear lines are parallel, the shortest distance between such lines;

2. If the front and rear lines are not parallel, the distance between the midpoint of the front lot line and the midpoint of the rear lot line. See Figure 18.04.560(A).

B. “Lot width” means the horizontal distance between the lot side lines measured at right angles to the line comprising the depth of the lot at a point midway between the lot front line and the lot rear line. See Figure 18.04.560(B).

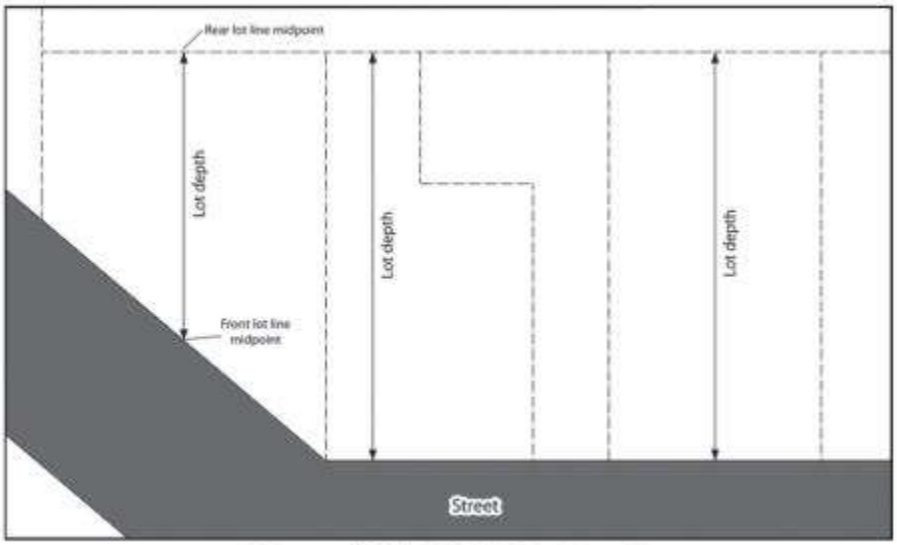


Figure 18.04.560(A) Lot Depth

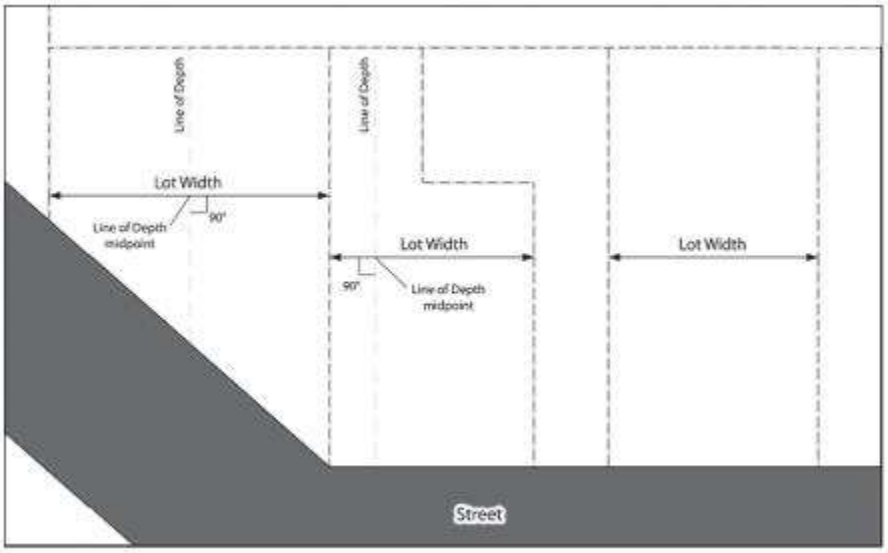


Figure 18.04.560(B) Lot Width

(Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.570 Lot lines.

"Lot lines" means the lines bounding the lot. For purposes of establishing a setback line for a lot, "lot lines" shall also mean the limits of a private street, when such a street is located on the lot. See Figures 18.04.570(A) and (B).

A. *Front Lot Line.*

1. For an interior lot, the front lot line shall be that lot line which abuts the street right-of-way.

2. For a corner lot, the front lot line shall be that lot line which abuts a street right-of-way and bests conforms to the pattern of existing site development and/or the pattern of adjacent development, as determined by the planning director.

3. For a through lot, the front lot line shall be that lot line which abuts a nonarterial street or from which primary access is provided.

B. *Rear Lot Line.* The line opposite, most distant and most parallel with the front lot line. For a biangular or gore-shaped lot, a line 10 feet in length within the lot and farthest removed from the front lot line and at right angles to the line comprising the depth of the lot shall be used as the rear lot line.

C. *Side Lot Line.* All lot lines which do not qualify as a rear or front lot line.

D. *Panhandle Lot Lines.* For a panhandle lot, the lot lines shall be approved by the planning director. The lot lines shall be most consistent with the adjoining lot lines and shall take into consideration any unique physical characteristics of the property.

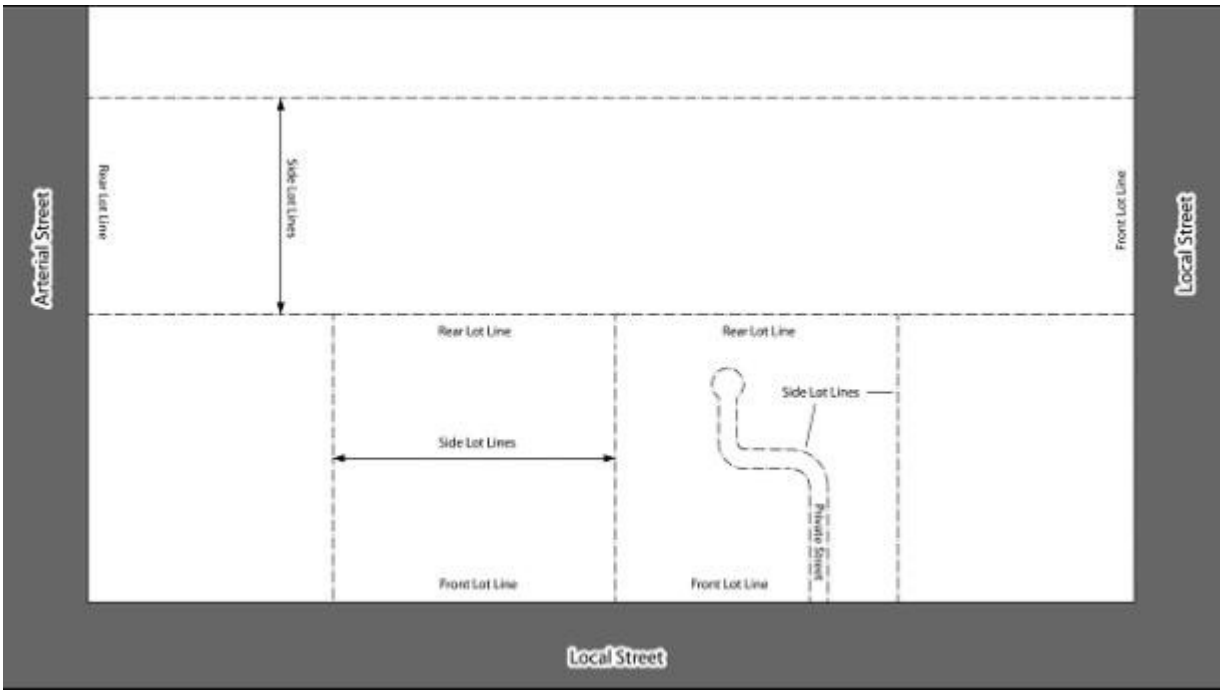
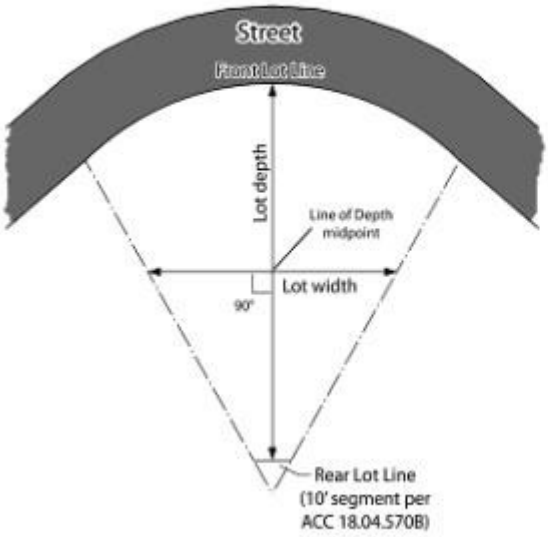


Figure 18.04.570(A). Lot Lines



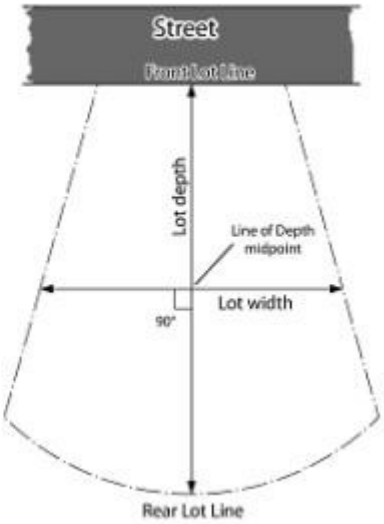


Figure 18.04.570(B). Lot Dimensions and Lot Lines for Gore-Shaped Lots

(Ord. 6245 § 3, 2009; Ord. 6031 § 1, 2006; Ord. 4503 § 1, 1991; Ord. 4229 § 2, 1987.)

18.04.580 Lot of record.

"Lot of record" is defined in ACC 17.04.220. (Ord. 6245 § 3, 2009; Ord. 5170 § 1, 1998; Ord. 4503 § 1, 1991; Ord. 4229 § 2, 1987.)

18.04.590 Lot types.

A. "Corner lot" means a lot situated at the intersection of two or more streets.

B. "Interior lot" means a lot that is neither a corner or through lot.

C. "Through lot" means a lot other than a corner lot which abuts two streets.

D. "Panhandle lot" means a lot accessed from the abutting street by a narrow corridor of land within the same lot.

The area within the panhandle access shall not be included in any lot size calculation including lot area, lot width, lot depth or lot coverage.

No buildings shall be erected within the panhandle access.

See ACC 17.10.120 for development standards for panhandle lots. See Figure 18.04.590.

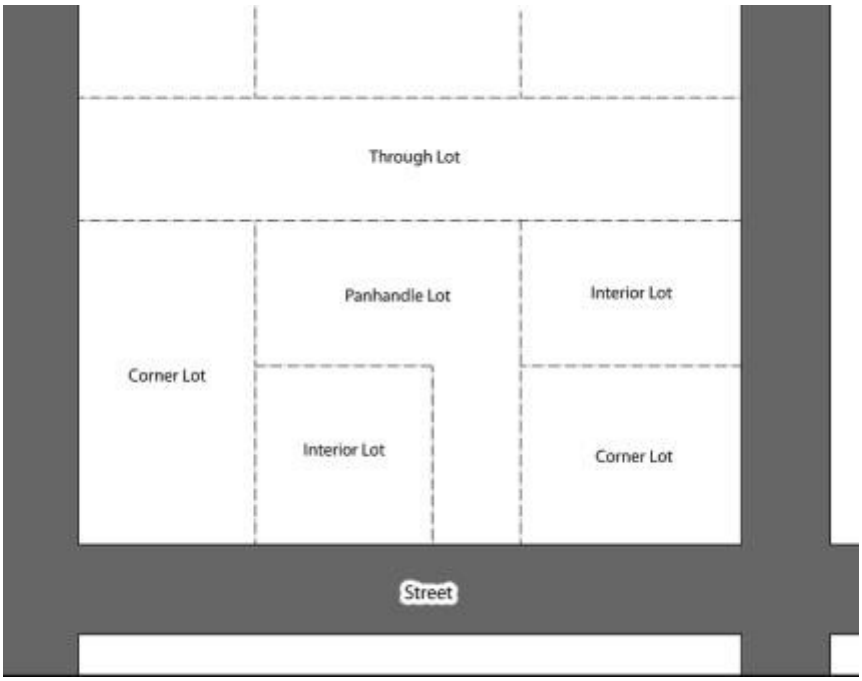


Figure 18.04.590. Lot Types

(Ord. 6245 § 3, 2009; Ord. 5543 § 1, 2001; Ord. 4503 § 1, 1991; Ord. 4229 § 2, 1987.)

18.04.595 Low impact development.

“Low impact development” means a stormwater management and land development strategy that emphasizes conservation and use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely mimic pre-development hydrology. The goal is to prevent measurable harm to streams, lakes, wetlands, and other natural aquatic systems from commercial, residential or industrial development sites. (Ord. 6245 § 3, 2009; Ord. 6036 § 8, 2006.)

18.04.597 Major transit stop.

A "major transit stop" means:

(a) A stop on a high capacity transportation system funded or expanded under the provisions of chapter 81.104 RCW;

(b) Commuter rail stops;

(c) Stops on rail or fixed guideway systems; or

(d) Stops on bus rapid transit routes.

18.04.600 Manufactured home.

"Manufactured home" means a single-family dwelling which:

A. Is comprised of at least two fully enclosed parallel sections each of not less than 12 feet wide by 36 feet long;

B. Was originally constructed with and now has a composition or wood shake or shingle, coated metal, or similar roof of nominal 3:12 pitch; and

C. Has exterior siding similar in appearance to siding materials commonly used on site-built single-family homes built in accordance with the International Building Code (IBC).

This definition does not include a mobile home as defined by ACC 18.04.630 or a recreational vehicle as defined by ACC 18.04.780. A manufactured home may be considered a single-family dwelling if sited per ACC 18.31.050. (Ord. 6245 § 3, 2009; Ord. 6162 § 2, 2008; Ord. 4350 § 2, 1989; Ord. 4229 § 2, 1987.)

18.04.610 Manufactured home community.

"Manufactured home community" means an area of not less than five acres designed to accommodate individual manufactured homes within the approved community boundaries. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.612 Manufacturing, assembling and packaging – Heavy intensity.

"Manufacturing, assembling and packaging – heavy intensity" means a facility accommodating manufacturing processes that involve and/or produce basic metals, building materials, chemicals, fabricated metals, paper products, machinery, textiles, and/or transportation equipment, where the intensity, scale, and/or characteristics of operation and materials used have the potential to result in externalities or effects on surrounding land uses or the community. Examples of heavy intensity manufacturing uses include, but are not limited to, chemical

products manufacturing, paving and roofing materials manufacturing and glass products manufacturing. (Ord. 6433 § 15, 2012.)

18.04.614 Manufacturing, assembling and packaging – Light intensity.

“Manufacturing, assembling and packaging – light intensity” means a facility accommodating manufacturing processes involving and/or producing: apparel; food and beverage products; electronic, optical, and instrumentation products; ice; jewelry; and musical instruments. Light manufacturing also includes other establishments engaged in the assembly, fabrication, and conversion of already processed raw materials into products, where the intensity, scale, and/or characteristics of operation and materials used are unlikely to result in externalities or effects on surrounding land uses or the community because they can be controlled within the building. Examples of light intensity manufacturing uses include, but are not limited to, clothing and fabric product manufacturing and food and beverage products. (Ord. 6433 § 16, 2012.)

18.04.616 Manufacturing, assembling and packaging – Medium intensity.

“Manufacturing, assembling and packaging – medium intensity” means a facility accommodating manufacturing processes that involve and/or produce building materials, fabricated metal products, machinery, and/or transportation equipment, where the intensity, scale, and/or characteristics of operation and materials used are greater than those classified under “Manufacturing, assembling and packaging – light intensity,” but where externalities or effects on surrounding land uses or the community can typically be reduced or avoided when appropriately located and developed. Examples of medium intensity manufacturing uses include lumber and wood product manufacturing and stone and cut stone product manufacturing. (Ord. 6433 § 17, 2012.)

18.04.617 Medium domestic animal.

“Medium domestic animal” means potbelly pigs, miniature goats, miniature horses, and other similar sized animals that are larger than a small domestic animal and smaller than a large domestic animal. (Ord. 6600 § 5, 2016.)

18.04.619 Medium-speed electric vehicle.

“Medium-speed electric vehicle” means a self-propelled, electrically powered four-wheeled motor vehicle, equipped with a roll cage or crush-proof body design, whose speed attainable in one mile is more than 25 miles

per hour but not more than 35 miles per hour and otherwise meets or exceeds the federal regulations set forth in 49 CFR 571.500. (Ord. 6365 § 1, 2011.)

18.04.620 Medical-dental clinic.

“Medical-dental clinic” means an establishment for treatment of outpatients, and providing no overnight care for patients. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.621 Middle Housing.

"Middle housing" means buildings that are compatible in scale, form, and character with single-unit detached dwellings and contain two or more attached, stacked, or clustered homes including duplexes, triplexes, fourplexes, fiveplexes, sixplexes, townhouses, stacked flats, courtyard apartments, cottage housing, and accessory dwelling units.

18.04.622 Miniature goat.

“Miniature goats” include species of goats commonly known as pygmy (Capra hircus hircus pygmy) or Nigerian dwarf (Capra hircus hircus nigerian dwarf). (Ord. 6600 § 7, 2016; Ord. 6369 § 6, 2011.)

18.04.623 Microbrewery or a small craft brewery.

“Microbrewery or a small craft brewery” means a production facility that manufactures beer. A microbrewery may sell beer of its own production at retail for on – and off-premises consumption, and may act as a distributor for beer of its own production. (Ord. 6368 § 2, 2011.)

18.04.625 Mixed-use development.

“Mixed-use development” means a single unified development that incorporates the planned integration of two or more different land uses consisting of some combination of office, light industrial, hotel, retail, entertainment, public uses, along with residential uses. Mixed-use development may be vertically oriented in one or more buildings, or horizontally distributed on a development site. When horizontally distributed, the

different uses may be constructed concurrently and in separate phases, and should incorporate common and/or complementary features and/or elements such as pedestrian walkways, access driveways, parking areas, architectural themes, or other techniques that provide integration between uses on the site. (Ord. 6644 § 1, 2017; Ord. 6253 § 2, 2009.)

18.04.630 Mobile home.

“Mobile home” means a factory-constructed residential unit with its own independent sanitary facilities, that is intended for year-round occupancy, and is composed of one or more major components which are mobile in that they can be supported by wheels attached to their own integral frame or structure and towed by an attachment to that frame or structure over the public highway under license or by special permit. This definition does not include a manufactured home as defined by ACC 18.04.600 or a recreational vehicle as defined by ACC 18.04.780. (Ord. 6245 § 3, 2009; Ord. 6162 § 3, 2008; Ord. 4350 § 2, 1989; Ord. 4229 § 2, 1987.)

18.04.635 Motor freight terminal.

“Motor freight terminal” means a facility with more than one dock per 5,000 square feet of warehouse, storage, or related use and used for either (A) the loading, unloading, dispensing, receiving, interchanging, gathering, or otherwise physically handling freight for shipment or (B) any other location at which freight is exchanged by motor carriers between vehicles. This includes but is not limited to cross-dock operations and does not include a package delivery service. Excludes buildings with six or fewer loading docks. (Ord. 6433 § 18, 2012.)

18.04.640 Motel.

“Motel” or “motor hotel” means a group of buildings containing individual sleeping or living units, designed for use by automobile tourists or transients, with garage attached or parking space conveniently located to each unit. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.641 Multimodal transportation corridor.

“Multimodal transportation corridor” refers to a transportation route that accommodates and contains facilities for more than a single form or mode of transportation. Multimodal corridors provide opportunities for travel by automobile, transit, and nonmotorized transportation and include relevant infrastructure improvements, such as dedicated bicycle lanes, sidewalks, and transit stations and shelters. (Ord. 6245 § 3, 2009.)

18.04.642 Municipal park.

“Municipal park” means a parcel or tract of land provided by a unit of government to meet the active and/or passive recreational needs of people. This definition includes associated playgrounds and active recreation areas. (Ord. 6245 § 3, 2009.)

18.04.643 Museum.

“Museum” is a cultural facility established and used for the education and enjoyment of the public through exhibits and displays of historical, cultural, or other related subjects. (Ord. 6245 § 3, 2009.)

18.04.643.1 Neighborhood electric vehicle.

“Neighborhood electric vehicle” means a self-propelled, electrically powered four-wheeled motor vehicle whose speed attainable in one mile is more than 20 miles per hour and not more than 25 miles per hour and conforms to federal regulations under 49 CFR 571.500. (Ord. 6433 § 1, 2012; Ord. 6365 § 1, 2011. Formerly 18.04.643A.)

Code reviser’s note: Ordinance 6365 adds these provisions as Section 18.04.643. The section has been renumbered to avoid duplication of numbering.

18.04.644 Neighborhood recreation buildings.

“Neighborhood recreation buildings” means facilities owned and managed by a neighborhood homeowners’ association for recreational and community gatherings. (Ord. 6245 § 3, 2009.)

18.04.644.1 Neighborhood retail establishment.

“Neighborhood retail establishment” means stores and shops serving the immediate surrounding neighborhood in which they are located, including but not limited to a beauty shop, laundry and dry cleaning, sales of retail goods and such others of a similar nature. (Ord. 6433 § 19, 2012.)

18.04.645 Neighborhood services.

“Neighborhood services” as listed herein are intended to include commercial establishments that provide goods and services that are considered to be basic to the needs of a local neighborhood, and the provision of which would typically be primarily within the local market area. For the purposes of Chapter 18.49 ACC, neighborhood services establishments include: bakery and pastry shops (products made must be sold at retail on the premises); produce markets; retail grocery stores; delicatessens, restaurants or sandwich shops, limited to a seating area of 25 seats; hardware stores; retail banks or bank branches; pharmacies; daycare facilities; or other services subject to the approval of the planning director. See Chapter 18.49 ACC. (Ord. 6245 § 3, 2009.)

18.04.648 Net density.

“Net density” is a measure of the net site area as defined in ACC 18.02.065. (Ord. 6245 § 3, 2009.)

18.04.649 Nonelectric vehicle.

“Nonelectric vehicle” means any motor vehicle that does not meet the definition of “electric vehicle.” (Ord. 6365 § 1, 2011.)

18.04.650 Nonconforming use.

“Nonconforming use” means a use which when commenced, complied with use regulations applicable at the time when such use was commenced, and which does not conform to the existing use regulations of the zone where the use is now being conducted or carried on. The term “nonconforming use” shall be applicable to uses of buildings, structures, and land. This definition does not include those uses existing in the zone, prior to the adoption of this title, which would now require an administrative or conditional use permit to operate in the zone. Any expansion of the space, volume or area of the use would then require an administrative or conditional use permit as this title may require. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.660 Nursing home.

“Nursing home,” “rest home,” “convalescent home,” “guest home” and “home for the aged” mean a home operated similarly to a boardinghouse but not restricted to any number of guests or guest rooms, the operator of which is licensed by the state or county to give special care and cure to their charges, and in which nursing, dietary and other personal services are furnished to convalescents, invalids and aged persons, and in which homes are performed no surgery, maternity or any other primary treatments such as customarily provided in

hospitals, and in which no persons are kept or served who normally would be admitted to a mental hospital or to a group residence facility. This definition does not include group residence facilities as defined in this title. A nursing home is not a communal residence. (Ord. 6560 § 6, 2015; Ord. 6245 § 3, 2009; Ord. 4304 § 1(5), 1988; Ord. 4229 § 2, 1987.)

18.04.670 Occupancy.

“Occupancy” means the purpose for which a building is used or intended to be used. The term shall also include the building or room housing such use. Change of occupancy is not intended to include change of tenants or proprietors. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.672 Outdoor sales.

“Outdoor sales” means an open area used for the display, sale, or rental of goods and/or materials that are actively marketed and readily available for general public consumption. This does not include storage areas of materials that are sold elsewhere on the premises or junkyards as defined by ACC 18.04.500. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.676 Outdoor storage.

“Outdoor storage” means the keeping of materials, supplies, equipment, machinery and vehicles which are not currently licensed or capable to operate on public streets or highways, in an open, uncovered yard or nonwalled buildings. This definition includes junkyards as defined by ACC 18.04.500, but excludes outdoor sales as defined by ACC 18.04.672. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.676.1 Overlay zone.

“Overlay zone” is supplemental to the underlying zoning district and may establish additional or stricter standards and criteria for properties in addition to those of the underlying zoning district. (Ord. 6838 § 1 (Exh. A), 2021.)

18.04.677 Owner occupied unit.

“Owner occupied unit” means a dwelling unit in which the owner resides on a regular, permanent basis. (Ord. 6477 § 11, 2013.)

18.04.678 Panoram or peepshow. *Repealed by Ord. 5835.*

18.04.680 Parking area.

“Parking area” includes an off-street parking area together with driveways and the access to a public street. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.690 Parking space or stall.

A. parking space” is any off-street space intended for the use of vehicular parking with ingress or egress to the space which is easily identifiable. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.692 Parking structure.

“Parking structure” means a single or multi-level structure intended for the use of vehicular parking, as opposed to an uncovered surface parking lot. This definition includes both stand-alone parking garages and structured parking as incorporated into a building, the primary purpose of which is not parking (i.e., rooftop or basement parking areas). (Ord. 6245 § 3, 2009.)

18.04.694 Permanent Supportive Housing.

“Permanent Supportive Housing” is subsidized, leased housing with no limit on length of stay that prioritizes people who need comprehensive support services to retain tenancy and utilizes admissions practices designed to use lower barriers to entry than would be typical for other subsidized or unsubsidized rental housing, especially related to rental history, criminal history, and personal behaviors. Permanent supportive housing is paired with on-site or off-site voluntary services designed to support a person living with a complex and disabling behavioral health or physical health condition who was experiencing homelessness or was at imminent risk of homelessness prior to moving into housing to retain their housing and be a successful tenant in a housing arrangement, improve the resident's health status, and connect the resident of the housing with

community-based health care, treatment, or employment services. Permanent supportive housing is subject to all of the rights and responsibilities defined in chapter 59.18 RCW.

18.04.696 Permitted use.

“Permitted use” means a land use that is allowed outright within a zone. (Ord. 6245 § 3, 2009.)

18.04.700 Person.

“Person” means natural person, joint venture, joint stock company, partnership, association, club, company, corporation, business, trust, organization, or the manager, lessee, agent, servant, officer or employee of any of them. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.710 Personal service shop.

“Personal service shop” means premises devoted to hair styling, cutting or permanents, manicurists, custom tailoring, and similar related uses. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.730 Planning commission.

“Planning commission” means that body created by Chapter 2.45 ACC. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.740 Planning director.

“Planning director” means the director of the Auburn department of planning and development, or its successor, unless otherwise specified. (Ord. 6287 § 2, 2010; Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.741 Plug-in hybrid electric vehicle (PHEV).

“Plug-in hybrid electric vehicle (PHEV)” means an electric vehicle that (1) contains an internal combustion engine and also allows power to be delivered to drive wheels by an electric motor; (2) charges its battery primarily by connecting to the grid or other off-board electrical source; (3) may additionally be able to sustain

battery charge using an on-board internal-combustion-driven generator; and (4) has the ability to travel powered by electricity. (Ord. 6365 § 1, 2011.)

18.04.742 Potbelly pig.

Miniature “potbelly pigs” are that type of swine commonly known as Vietnamese, Chinese, or Asian potbelly pig (Sus scrofa bittatus). (Ord. 6369 § 7, 2011.)

18.04.744 Prerelease facility.

“Prerelease facility” has the same meaning as “work release facility” for the purposes of this title. See ACC 18.04.914. (Ord. 6245 § 3, 2009; Ord. 4590 § 3 (Exh. B), 1992.)

18.04.745 Print and copy shop.

“Print and copy shop” means a facility for the custom reproduction of written or graphic materials on a custom order basis for individuals or businesses. Typical processes include, but are not limited to, photocopying, blueprint, facsimile sending and receiving, and including offset printing. (Ord. 6433 § 20, 2012.)

18.04.746 Private country clubs and golf courses, excluding driving ranges.

“Private country club and golf course, excluding driving range” means an area designed and used for playing golf, including all accessory uses incidental to the operation of the facility. This definition may include private country clubs or golf courses open to the general public. This definition excludes other outdoor recreational facilities such as driving ranges, municipal parks, or commercial horse riding and bridle trails. (Ord. 6245 § 3, 2009.)

18.04.748 Privately owned and operated parks and playgrounds.

“Privately owned and operated park and playground” means a parcel or tract of land provided by a private entity to meet the active and/or passive recreational needs of people. This definition includes associated playgrounds and active recreation areas. This use excludes municipal parks. (Ord. 6245 § 3, 2009.)

18.04.750 Professional offices.

"Professional offices" means offices maintained and used as places of business conducted by ~~persons engaged~~professionals including ~~in health services for human beings, such as doctors and dentists, and by~~ engineers, attorneys, realtors, architects, accountants, clerical, and other recognized general office ~~and medical~~ occupations. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.752 Prohibited use.

"Prohibited use" means any use which is not specifically enumerated or interpreted by the city as allowable in that zone. Any use not specifically listed as a permitted, administrative, conditional, or accessory use is prohibited, except those determined to be unclassified and permitted by the planning director pursuant to ACC 18.02.120(C)(6). Any prohibited use is illegal. (Ord. 6269 § 2, 2009; Ord. 6245 § 3, 2009.)

18.04.754 Public art.

"Public art" refers to works of art, regardless of medium, that are primarily designed for, and presented in, the public domain, including work displayed in common areas of publicly accessible buildings. (Ord. 6245 § 3, 2009.)

18.04.756 Public recreational amenity.

"Public recreational amenity" is any recreational facility that is incorporated into a development for public use including but not limited to children's playgrounds, tennis, basketball, or other sport courts or fields. (Ord. 6245 § 3, 2009.)

18.04.760 Public use.

"Public use" means a use operated exclusively by a public body, such use having the purpose of serving the public health, safety, or general welfare, and including uses such as public schools, parks, playgrounds, and administrative and service facilities. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.770 Quasi-public use.

“Quasi-public use” means a use operated by a private nonprofit educational, religious, recreational, charitable, or medical institution having the purpose primarily of serving the general public, and including uses such as churches, private schools and universities, community, youth and senior citizen recreational facilities, private hospitals, and the like. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.779 Rapid charging station.

“Rapid charging station” means an industrial grade electrical outlet that allows for faster recharging of electric vehicle batteries through higher power levels and that meets or exceeds any standards, codes, and regulations set forth by Chapter 19.28 RCW and consistent with rules adopted under RCW 19.27.540. (Ord. 6365 § 1, 2011.)

18.04.780 Recreational vehicle, camping trailer, travel trailer, motor home and truck camper.

“Recreational vehicle,” “camping trailer,” “travel trailer,” “motor home” and “truck camper” mean vehicular-type units primarily designed as temporary living quarters for recreational, camping or travel use, with or without motive power, being of such size or weight as not to require a special highway movement permit and licensed by the state as a recreational vehicle. (Ord. 6245 § 3, 2009; Ord. 4350 § 2, 1989; Ord. 4229 § 2, 1987.)

18.04.790 Recreational vehicle park.

“Recreational vehicle park” means a parcel of land designed and improved to accommodate two or more recreational vehicles on a temporary basis. Spaces are typically rented for overnight use, not to exceed 120 days. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.791 Regional retail establishment.

“Regional retail establishment” means a large-scale retail establishment intended to serve customers within and outside the city. A regional retailer may accommodate a wide range of retail commodities (e.g., apparel and accessories, consumer electronics, hardware, building materials, sporting goods and automotive supplies). (Ord. 6433 § 21, 2012.)

18.04.792 Religious institution.

“Religious institution” means an establishment that provides religious worship, religious services or religious ceremonies as its principal use with the sanctuary or principal place of worship contained within a principal building. Incidental and accessory uses that include chapels or subordinate places of worship, school rooms, daycares, classrooms, kitchens, library rooms or reading rooms, recreation halls or offices are permitted in the principal building or in separate buildings. Caretaker’s quarters or living quarters for employees are also permissible as an accessory use. The following incidental and accessory uses to a religious institution are not permitted unless allowed under a valid temporary use permit issued pursuant to ACC 18.46A.070: (A) facilities for training of religious orders; (B) nonemployee rooms for rent, boarding rooms or similar facilities; or (C) public showers or other public health services. (Ord. 6245 § 3, 2009; Ord. 6014 § 1, 2006; Ord. 5550 § 1, 2001.)

18.04.794 Renting of rooms.

“Renting of rooms” means the provision of rooms for lodging purposes to not more than two persons in addition to the owner occupied unit, and/or family who lives in the residence. (Ord. 6477 § 7, 2013; Ord. 6245 § 3, 2009.)

18.04.796 Repair services – Equipment, appliances.

“Repair services – equipment, appliances” means repair of products, not to include vehicles or heavy equipment. These uses include consumer repair services for individuals and households for items such as household appliances, musical instruments, cameras, household electronic equipment, and similar uses. (Ord. 6433 § 22, 2012.)

18.04.800 Residence.

“Residence” means a building or structure, or portion thereof, which is designed for and used to provide a place of abode for human beings, but not including hotels or motel units having no kitchens. The term “residence” includes the term “residential” as referring to the type of, or intended use of a building or a structure. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.804 Restaurant, full-service.

“Full-service restaurant” means a public eating place that is used, maintained, advertised and held out to the public as a place that has a full dinner and/or lunch menu serving full course meals, daily prepared in its own kitchen, that are typically served at a table or counter. Food prepared to go or for take-out is allowed as an accessory use as long as the same menu and kitchen are used as for the full-service restaurant. This definition excludes fast food, drive-in types of restaurants, which have characteristics including but not limited to a drive-through window, counter-only service and no waiters or waitresses.

A. full-service restaurant may serve alcoholic beverages that are incidental and complementary to the serving of food. A full-service restaurant may contain a lounge where the primary function is the sale, serving and consumption of alcoholic beverages, but the size of this lounge may not exceed 30 percent of the total gross floor area of the establishment. Any eating place that serves alcoholic beverages and does not meet the requirements of this definition will be considered a tavern as defined by ACC 18.04.895. (Ord. 6245 § 3, 2009; Ord. 5382 § 1, 2000. Formerly 18.04.805.)

18.04.805 Right-of-way.

“Right-of-way” is property in which the city has any form of ownership or title and which is held for public purposes as provided for under ACC Title 12 and the city design and construction standards. (Ord. 6245 § 3, 2009.)

18.04.806 Schools, elementary and middle/junior high.

“Schools, elementary and middle/junior high” are institutions of learning offering instruction in the several branches of learning and study required by the education code of the state of Washington in grades kindergarten through nine, including associated meeting rooms, auditoriums and athletic facilities. (Ord. 6245 § 3, 2009.)

18.04.807 Schools, secondary or high school.

“Schools, secondary or high school” are institutions of learning offering instruction in the several branches of learning and study required by the education code of the state of Washington in grades nine through 12, including associated meeting rooms, auditoriums and athletic facilities. (Ord. 6245 § 3, 2009.)

18.04.808 Secure community transition facility.

“Secure community transition facility” means a residential facility for persons civilly committed under Chapter 71.09 RCW, Sexually Violent Predators, who are conditionally released under said chapter to a less restrictive alternative (to total confinement or imprisonment). A secure community transition facility has supervision and security, and either provides or ensures the provision of sex offender treatment services. Secure community transition facilities include but are not limited to the facilities established pursuant to RCW 71.09.250 and any community-based facilities established under this chapter and operated by or under contract with the Washington State Department of Social and Health Services. (Ord. 6245 § 3, 2009; Ord. 5690 § 3, 2002.)

18.04.809 Senior housing.

“Senior housing” refers to housing stock, whether rental or occupant-owned, that specifically caters to residents aged 55 years and older, either through age requirements or through the provision of specialized care, such as nursing or dietary and personal care. This definition shall include, at a minimum, all facilities that qualify as housing for older persons under the Fair Housing Act. (Ord. 6245 § 3, 2009.)

18.04.810 Setback.

“Setback” means the distance between a lot line and the corresponding parallel setback line. (Ord. 6245 § 3, 2009.)

18.04.811 Setback area.

“Setback area” means that area of a lot bounded on opposite sides by a lot line and the corresponding setback line that is unoccupied and unobstructed from the ground upward unless specifically permitted in this title. See Figure 18.04.811.

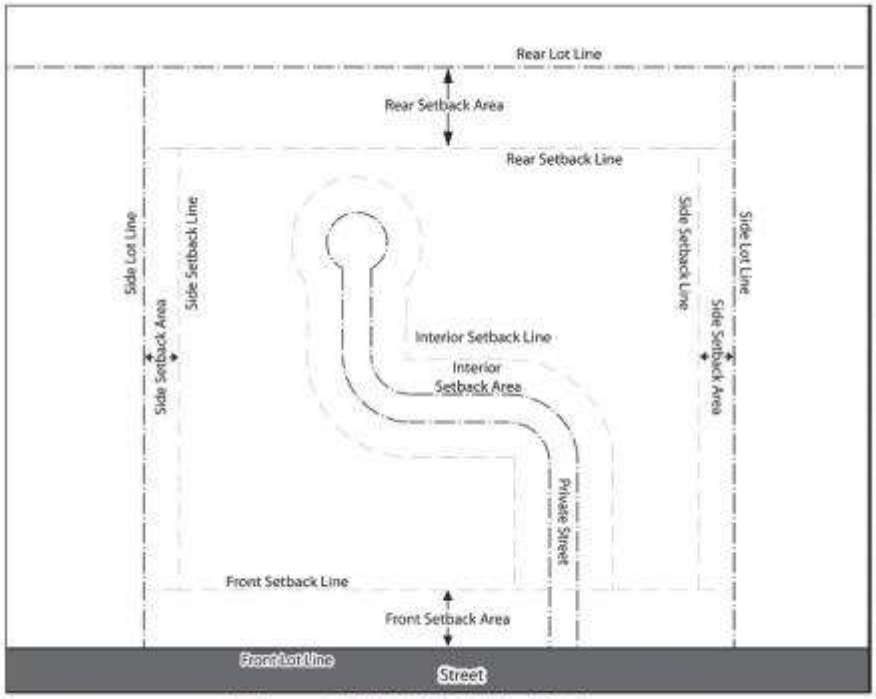


Figure 18.04.811 Setback Areas

(Ord. 6245 § 3, 2009.)

18.04.812 Setback, front.

“Front setback” means the distance between a front lot line and the corresponding parallel setback line. (Ord. 6245 § 3, 2009.)

18.04.813 Setback, rear.

“Rear setback” means the distance between a rear lot line and the corresponding parallel setback line. (Ord. 6245 § 3, 2009.)

18.04.814 Setback, side.

“Side setback” means the distance between a side lot line and the corresponding parallel setback line. (Ord. 6245 § 3, 2009.)

18.04.815 Setback line.

“Setback line” means a line which defines a setback as required by this title, which is parallel to but other than a lot line, between which no building, structure, or portion thereof shall be permitted, erected, constructed, or placed unless specifically permitted by this title. (Ord. 6245 § 3, 2009.)

18.04.816 Shop.

“Shop” means a small retail establishment or a department in a large one offering a specified line of goods or services. (Ord. 6433 § 23, 2012.)

18.04.818 Shopping center.

“Shopping center” means a series of unified commercial establishments which provide retail, business, entertainment or professional services, share the same parking facilities and contain in excess of 100,000 square feet of gross floor area. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987. Formerly 18.04.810.)

18.04.820 Sign.

“Sign” means any visual communication device, structure, or fixture which is visible from any right-of-way intended to aid the business establishment in question in promoting the sale of a product, goods or service using graphics, symbols or written copy. It shall be restricted solely to graphics, symbols or written copy that is meant to be used in the aforementioned way. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.821 Site.

“Site” is an area comprised of one or more legally created lots or parcels used for a development proposal in order to calculate compliance with the standards and regulations of this title. (Ord. 6245 § 3, 2009.)

18.04.822 Site area.

“Site area” is the total horizontal area of a project site. (Ord. 6245 § 3, 2009.)

18.04.823 Small domestic animal.

“Small domestic animal” means a domesticated animal of ordinary species that lives, or is commonly known to be capable of living, within the confines of a residence such as dogs, cats, common rabbits, ferrets, or other similar sized animals. Other indoor animals weighing less than 10 pounds, such as, but not limited to, caged birds, small rodents, fish, and nonvenomous reptiles or amphibians, and not kept for commercial purposes, are not regulated under this title. Any endangered or exotic species are prohibited. (Ord. 6600 § 8, 2016; Ord. 6369 § 1, 2011; Ord. 6245 § 3, 2009; Ord. 5777 § 1, 2003; Ord. 4229 § 2, 1987. Formerly 18.04.495.)

18.04.824 Social and service organizations.

“Social and service organizations” refers to incorporated or unincorporated nongovernmental or private associations of persons organized for social, education, literary or charitable purposes. This definition also includes community meeting halls, philanthropic institutions, private clubs, fraternal or nonprofit organizations, and social service organizations. This definition excludes religious institutions and government facilities. (Ord. 6245 § 3, 2009.)

18.04.825 Solid waste.

“Solid waste” means all putrescible and nonputrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, demolition and construction wastes, abandoned vehicles or parts thereof, and discarded commodities. (Ord. 6245 § 3, 2009; Ord. 4262 § 1, 1988. Formerly 18.04.023.)

18.04.826 Solid waste processing facility.

“Solid waste processing facility” means the management, collection, transportation, temporary storage, treatment, utilization, and processing of solid wastes by means of pyrolysis, refuse-derived fuel, or mass incineration within an enclosed structure. These processes may include source separation and recovery of recyclable materials from solid wastes, the recovery of energy resources from such wastes or the conversion of the energy in such wastes to more useful forms or combinations thereof. This definition refers to citywide or regional scale operations and does not include solid waste handling which is accessory to an individual principal use. (Ord. 6245 § 3, 2009; Ord. 4262 § 1, 1988. Formerly 18.04.025.)

18.04.827 Special events.

“Special events” means incidental use of a facility, which use is otherwise allowed or permitted in the zoning district, as a venue for hire for social gatherings. Special events do not include marketing or promotional events that are part of the normal operation of an agricultural enterprise or winery and directly related to products sourced from that operation. (Ord. 6363 § 1, 2011.)

18.04.828 Sponsoring agency.

“Sponsoring agency” means an organization that joins in an application with a host agency for a temporary use permit and assumes responsibility for providing basic services and support to homeless encampment residents, such as hot meals, coordination of other needed donations and services, etc. (Ord. 6245 § 3, 2009; Ord. 6014 § 4, 2006.)

18.04.829 Store.

“Store” means a business establishment where usually diversified goods are kept for retail sale. (Ord. 6433 § 24, 2012.)

18.04.830 Specified anatomical areas. *Repealed by Ord. 5835.*

18.04.835 Special needs housing.

“Special needs housing” is housing that meets the definition of nursing home, group home, or other housing that meets the needs of special populations that need assistance or special accommodation in housing. See Chapter 18.49 ACC. Special needs housing is not a communal residence. (Ord. 6560 § 7, 2015; Ord. 6245 § 3, 2009.)

18.04.840 Specified sexual activities. *Repealed by Ord. 5835.*

18.04.850 Reserved.

Reserved. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.855 Small craft distillery.

“Small craft distillery” means a production facility that manufactures distilled spirits that can contract distilled spirits for, and sell distilled spirits to, holders of distillery licenses, manufacturer’s licenses and grower’s licenses. (Ord. 6368 § 3, 2011.)

18.04.860 Story.

“Story” means that portion of a building, included between the surface of any floor and the surface of the floor next above it, or if there is no floor above it, then the space between the floor and the ceiling next above it. If the finished floor level directly above a usable or unused under-floor space is more than six feet above grade as defined in this chapter for more than 50 percent of the total perimeter or is more than 12 feet above grade as defined in this chapter at any point, such usable or unused underfloor space shall be considered as a story. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.870 Street, private.

“Private street” means any street which is not a public street. For the purposes of this title a private street will be considered as being a public street for determining setback provisions only. Driveways which are not part of an easement, tract, alley or street shall not be considered a street. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.880 Street, public.

“Public street” is defined in ACC 17.04.370. (Ord. 6245 § 3, 2009; Ord. 4304 § 1(6), 1988; Ord. 4229 § 2, 1987.)

18.04.890 Structure.

“Structure” is that which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner, except benches, statuary, planter boxes less than 42 inches in height, and fences 72 inches or under in height, or paved areas. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.891 Supportive housing.

“Supportive housing” means a multiple-family dwelling owned or sponsored by a nonprofit corporation or government entity, designed for occupancy by individual adults that are either (A) homeless or at risk of homelessness; (B) are experiencing a disability that presents barriers to employment and housing stability; or (C) generally require structured supportive services to be successful living in the community; is permitted at a greater unit density than otherwise allowed within a particular zone; and is intended to provide long-term, rather than transitional, housing. Long-term housing is approximately longer than two years, whereas transitional housing is no more than two years. Supportive housing is not a communal residence. (Ord. 6560 § 8, 2015; Ord. 6245 § 3, 2009; Ord. 6167 § 1, 2008.)

18.04.892 Sustainable design.

“Sustainable design” means design in which the impact of a building on the environment will be minimal over the lifetime of that building. Structures should incorporate the principles of energy and resource efficiency, practical applications of waste reduction and pollution prevention, good indoor air quality and natural light to promote occupant health and productivity, and transportation efficiency in design and construction, during use and reuse. (Ord. 6245 § 3, 2009; Ord. 6036 § 9, 2006.)

18.04.894 Tasting room.

“Tasting room” means a location separate from, or on the same site as, the production/manufacturing site, that allows customers to taste samples of wine, beer, or other alcoholic beverage and has a state of Washington issued liquor license to operate a tasting room. In addition to sampling of alcoholic beverages, a tasting room may include retail sales for off-premises consumption. (Ord. 6368 § 4, 2011; Ord. 6363 § 1, 2011.)

18.04.895 Tavern.

“Tavern” means an establishment operated primarily for the sale of wine, beer or other alcoholic beverages that may or may not include the service of food as an accessory use. (Ord. 6245 § 3, 2009; Ord. 5382 § 1, 2000.)

18.04.896 Transmitting tower.

“Transmitting tower” means any freestanding structure whose primary purpose is the transmission and/or reception of radio signals for personal or hobby purposes. (Ord. 6245 § 3, 2009.)

18.04.897 Unclassified use.

"Unclassified use" means a land use which does not appear in a list of permitted, conditionally permitted, or accessory uses, but which is interpreted by the planning director as similar to a listed permitted, conditionally permitted or accessory use, and not otherwise prohibited, pursuant to ACC 18.02.120. (Ord. 6245 § 3, 2009.)

18.04.900 Use.

"Use" means an activity or purpose for which land or premises or a building thereon is designed, arranged, intended, or for which it is occupied or maintained, let or leased. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.901 Utility facilities and substations.

"Utility facility and substation" is any utility facility or substation that is not included in ACC 18.02.040(E). (Ord. 6245 § 3, 2009.)

18.04.910 Variance.

"Variance" means an adjustment in the application of the specific regulations of this title to a particular piece of property. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.911 Walking distance.

"Walking distance" means an area without physical space impediments for a walkable pathway without ADA obstruction..

18.04.912.1 Wine production facility.

"Wine production facility" means a production facility that manufactures wine. A wine production facility may sell wine of its own production at retail for on – and off-premises consumption, and may act as a distributor for wine of its own production. (Ord. 6368 § 5, 2011.)

18.04.911~~1~~2.1 Winery.

"Winery" means a facility licensed as a domestic winery under RCW 66.04.010 where fruit or other ingredients are processed (i.e., crushed, fermented, blended, aged, and/or stored, bottled) and may include as incidental and/or accessory to the principal use a tasting room, food and beverage service, places of public/private assembly and/or retail sales area. (Ord. 6433 § 2, 2012; Ord. 6363 § 1, 2011. Formerly 18.04.911A.)

Code reviser's note: Ordinance 6363 adds these provisions as Section 18.04.911. The section has been renumbered to avoid duplication of numbering.

18.04.912 Wireless communications.

A. "Alternative tower structure" means manmade trees, clock towers, bell steeples, light poles, buildings, and similar alternative design mounting structures that are compatible with the natural setting and surrounding structures, and camouflage or conceal the presence of antennas or towers so as to make them architecturally compatible with the surrounding area pursuant to this title. This term also includes any antenna or antenna array attached to an alternative tower structure. A stand-alone pole that that accommodates small wireless facilities is considered an alternative tower structure to the extent it meets the concealment standards of this code.

B. "Antenna" means any device used to transmit and/or receive radio or electromagnetic waves such as, but not limited to, panel antennas, reflecting discs, microwave dishes, whip antennas, directional and nondirectional antennas consisting of one or more elements, multiple antenna configurations, or other similar devices and configurations, and exterior apparatus designed for telephone, radio, or television communications through the sending and/or receiving of wireless communications signals.

C. "Attached wireless communications facility" means a wireless communications facility that is affixed to an existing structure other than a tower. Examples of attached wireless communications facilities include antennas affixed to or erected upon existing buildings, water tanks, or other existing structures or replacement structures (such as in the case of a replacement stadium/ballfield light pole or a parking lot light standard).

D. "Base station" means the structure or equipment at a fixed location that enables wireless communications, licensed or authorized by the FCC, between user equipment and a communications network. By way of example, a building, ballfield structure or a utility pole becomes a base station once wireless facilities are permitted and attached. The term does not encompass a wireless communications tower as defined in this title or any equipment associated with a wireless communications tower.

E. "Concealment" or "concealment design techniques" means that a wireless communications facility is concealed or utilizes concealment when any measures are used in the design and siting of wireless communications facilities intended to make the facility look like something other than a wireless tower or base

station. For example, a wireless communications facility site utilizes concealment design techniques when it (1) is integrated in an outdoor fixture such as a flagpole, or (2) uses a design which mimics and is consistent with the nearby natural or architectural features (such as an artificial tree), or (3) is incorporated into (including, without limitation, being attached to the exterior of such facilities and painted to match it, such as a belvedere or a dormer), or replaces existing permitted facilities (including, without limitation, freestanding light standards) so that the presence of the wireless communications facility is not readily apparent. The terms do not include fencing and landscape screening that is used to enhance visual compatibility at ground level.

F. "Carrier" means a company providing wireless communications services, also referred to as a wireless service provider.

G. "Co-location" means: (1) mounting or installing a WCF on a preexisting structure, and/or (2) modifying a structure for the purpose of mounting or installing a WCF on that structure. Provided that, for purposes of eligible facilities requests, "co-location" means the mounting or installation of transmission equipment on an eligible support structure for the purpose of transmitting and/or receiving radio frequency signals for communications purposes.

H. "Eligible facilities request (EFR)" means any request for modification of an existing wireless communications tower or base station that was previously authorized by the local permitting jurisdiction and that does not substantially change, as defined in this section, the physical dimensions of such wireless communications tower or base station from the original authorization involving: (1) co-location of new transmission equipment, (2) removal of transmission equipment, or (3) replacement of transmission equipment.

I. "Eligible support structure means an existing wireless communications tower or base station as defined in this title and that has proposed alterations that meet the standards of an eligible facilities request.

J. "Equipment facility" means a structure used to contain ancillary equipment for a WCF which may include cabinets, shelters, an addition to an existing structure, pedestals and other similar structures.

K. "Emergency wireless communications facility (EWCF)" means any structure not entirely within an enclosed building or vehicle, including antennas, guy wires, microwave dishes or horns, structures or towers to support receiving and/or transmitting devices, accessory buildings, i.e., equipment storage buildings, energy power generating housing, and the leased or owned property surrounding the wireless communications tower and any access or utility easements, that is used for the transmission or reception of electromagnetic waves for emergency communication purposes, operated by a local public agency responsible for providing emergency services.

L. "Existing" means a constructed tower or base station if it has been reviewed and approved under the applicable zoning or siting process, or under another state or local regulatory review process; provided, that a tower that has not been reviewed and approved because it was not in a zoned area when it was built, but was lawfully constructed, is existing for purposes of this definition.

M. “Microcells” are small wireless facilities consisting of an antenna that is either: (1) no more than four feet in height and with an area of not more than 580 square inches; or (2) if a tubular antenna, no more than four inches in diameter and no more than six feet in height.

N. “Monopole” means a single, freestanding pole-type structure supporting one or more antennas.

O. “Separation” means minimum distance required by city regulation between the base of towers.

P. “Site” for purposes of this chapter means, for wireless communications towers other than wireless communications towers in the public way, the current boundaries of the leased or owned property surrounding the wireless communications tower and any access or utility easements currently related to the site, and, for other eligible support structures, further restricted to that area in proximity to the structure and to other transmission equipment already deployed on the ground. The current boundaries of a site are the boundaries that existed as of the date that the original support structure or a modification to that structure was last reviewed and approved by a state or local government, if the approval of the modification occurred prior to February 22, 2012, or otherwise outside of the Spectrum Act’s Section 6409(a) process.

Q. “Small wireless facilities” shall mean the definition contained in Chapter 20.14 ACC, including microcells, and may be permitted either within or outside of the public way, in accordance with applicable law.

R. “Substantial change” for purposes of this chapter means a modification that alters the physical dimensions of an eligible support structure if, after the modification, the structure meets any of the following criteria:

1. For towers other than towers in the public way, it increases the height of the tower by more than 10 percent or by the height of one additional antenna array with separation from the top of nearest existing antenna to the bottom of the new antenna, not to exceed 20 feet, whichever is greater; for other eligible support structures, it increases the height of the structure by more than 10 percent or more than 10 feet, whichever is greater;

2. For towers other than towers in the public way, it involves adding an appurtenance to the body of the tower that would protrude from the edge of the tower more than 20 feet, or more than the width of the tower structure at the level of the appurtenance, whichever is greater; for other eligible support structures, it involves adding an appurtenance to the body of the structure that would protrude from the edge of the structure by more than six feet;

3. For any eligible support structure, it involves installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets; or, for base stations, it involves installation of any new equipment cabinets on the ground if there are no preexisting ground cabinets associated with the structure, or else involves installation of ground cabinets that are more than 10 percent larger in height or overall volume than any other ground cabinets associated with the structure;

4. It entails any excavation or deployment outside the current site as that term is defined in this section except that, for towers other than towers in the public way, it entails any excavation or deployment of transmission equipment outside of the current site by more than 30 feet in any direction. The site

boundary from which the 30 feet is measured excludes any access or utility easements currently related to the site;

5. It would defeat the concealment elements of the eligible support structure; or

6. It does not comply with conditions associated with the original approval of the construction or modification of the eligible support structure or base station equipment, unless noncompliance is only in a manner that would exceed the thresholds identified in subsections (R)(1) through (4) of this section.

For purposes of determining whether a substantial change exists, changes in height are measured from the original support structure as it existed at the time the first eligible facilities request was approved for that structure in cases where facilities are or will be separated horizontally; in other circumstances, changes in height are measured from the dimensions of the wireless communications tower or base station, inclusive of originally approved appurtenances and any modifications that were approved prior to February 22, 2012.

S. "Support structure" means a structure designed to support WCFs including, but not limited to, towers, alternative tower structures, replacement poles, and other freestanding self-supporting pole structures.

T. "Toll" and "tolling" mean to delay, suspend or hold off on the imposition of a deadline, statute of limitations or time limit.

U. "Tower" means any structure that is designed and constructed primarily for the purpose of supporting one or more antennas for telephone, radio, and similar communication purposes, including self-supporting lattice towers, guyed towers, or monopole towers. The term includes radio and television transmission towers, microwave towers, common-carrier towers, cellular telephone towers, alternative tower structures, and the like. The term includes the structure and any support thereto.

V. "Wireless communications" means the provision of any personal wireless service, as defined in the Telecommunications Act of 1996, as amended, or wireless information services provided to the public or to such classes of users as to be effectively available directly to the public via licensed or unlicensed frequencies; or wireless utility monitoring and control services.

W. "Wireless communications facility (WCF)" means a facility used to provide personal wireless services as defined at 47 U.S.C. Section 332(c)(7)(C); or wireless information services provided to the public or to such classes of users as to be effectively available directly to the public via licensed or unlicensed frequencies; or wireless utility monitoring and control services. A WCF does not include a facility entirely enclosed within a permitted building where the installation does not require a modification of the exterior of the building; nor does it include an accessory wireless communications antenna, used for serving that building only and that is otherwise permitted under other provisions of the ACC. A WCF includes an antenna or antennas, including, without limitation, directional, omni-directional and parabolic antennas, support equipment, alternative tower structures, and wireless communications towers. It does not include the support structure to which the WCF or its components are attached if the use of such structures for WCFs is not the primary use. The term does not include mobile transmitting devices used by wireless service subscribers, such as vehicle or hand-held radios

or telephones and their associated transmitting antennas, nor does it include other facilities specifically exempted from the coverage of this title. (Ord. 6799 § 4 (Exh. D), 2020; Ord. 6716 § 1 (Exh. A), 2019; Ord. 6245 § 3, 2009; Ord. 5777 § 1, 2003; Ord. 5645 § 1, 2002; Ord. 5020 § 1, 1997.)

18.04.913 Work/live unit.

"Work/live unit" means an integrated housing unit and working space, occupied and utilized by a single household in a structure ~~, either single dwelling or multi-unit dwelling,~~ that has been designed or structurally modified to accommodate joint residential occupancy and work activity, and ~~which includes:~~includes a complete dwelling unit and working space reserved for and regularly used by one or more occupants of the dwelling unit. Within a work/live unit the "work" component is the primary use, to which the residential use is secondary. While the work component of a live/work unit is secondary to its residential use. Work/live units are allowed within mixed-use developments.

~~A. A complete dwelling unit; and~~

~~B. Working space reserved for and regularly used by one or more occupants of the dwelling unit.~~

~~The difference between a work/live unit and a live/work unit (defined in ACC 18.04.527) is that the "work" component of a work/live unit is primary use, to which the residential use is secondary, while the work component of a live/work unit is secondary to its residential use, and may include only commercial activities and pursuits that are compatible with the character of a quiet residential environment. (Ord. 6433 § 25, 2012.)~~

18.04.914 Work release facility.

"Work release facility" means a residential alternative to imprisonment, including work/training release and prerelease programs which are under the supervision of a court, federal, state or local agency. This definition excludes at-home electronic surveillance. (Ord. 6245 § 3, 2009; Ord. 4590 § 4 (Exh. C), 1992.)

18.04.920 Yard.

See ACC 18.04.811, Setback area. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.930 Yard, front.

See ACC 18.04.812, Setback, front. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.940 Yard, rear.

See ACC 18.04.813, Setback, rear. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.950 Yard, side.

See ACC 18.04.814, Setback, side. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.954 Youth community support facility.

"Youth community support facility" means a building, or a group of buildings within a campus setting, owned and operated by a nonprofit corporation or government entity that provides supportive services to children and young adults (under the age of 26) and families (with a child or young adult under the age of 26), who are homeless, at risk of homelessness, at risk of exploitation, experiencing a disability that presents barriers to employment and housing stability; or generally require structured supportive services to be successful living in the community; by providing counseling and case management, transitional housing (housing for no more than two years), temporary housing (i.e., limited to overnight stay), and daytime drop-in services (e.g., meals, showers, counseling, etc.). This definition does not include facilities providing housing for criminal justice, parole, or probation programs. Youth community support facilities are not stand-alone "supportive housing" or "communal residences." (Ord. 6688 § 1 (Exh. 1), 2018.)

18.04.960 Zone.

"Zone" means an area accurately defined as to boundaries and location on an official map to which a uniform set of regulations applies controlling the types and intensities of land uses, as set forth in this title. (Ord. 6245 § 3, 2009; Ord. 4229 § 2, 1987.)

18.04.1001 Child care center.

"Child care center" means an entity that regularly provides child day care and early learning services for a group of children for periods of less than 24 hours licensed by the Washington State Department of Early Learning under Chapter 170-295 WAC. (Ord. 6642 § 15, 2017.)

18.04.1005 Marijuana or marihuana.

“Marijuana” or “marihuana” means all parts of the plant Cannabis, whether growing or not, with a THC concentration greater than 0.3 percent on a dry weight basis; the seeds thereof; the resin extracted from any part of the plant; and every compound, manufacture, salt, derivative, mixture, or preparation of the plant, its seeds or resin. The term does not include the mature stalks of the plant, fiber produced from the stalks, oil or cake made from the seeds of the plant, any other compound, manufacture, salt, derivative, mixture, or preparation of the mature stalks (except the resin extracted therefrom), fiber, oil, or cake, or the sterilized seed of the plant which is incapable of germination. (Ord. 6642 § 16, 2017.)

18.04.1007 Marijuana cooperative.

“Marijuana cooperative” means up to four qualifying patients, as defined by RCW 69.51A.010(19), who share responsibility for acquiring and supplying the resources needed to produce and process marijuana, including tetrahydrocannabinols or cannabimimetic agents, only for the medical use of members of the cooperative and not for profit. (Ord. 6642 § 17, 2017.)

18.04.1009 Marijuana-infused products.

“Marijuana-infused products” means products that contain marijuana or marijuana extracts and are intended for human use. The term “marijuana-infused products” does not include usable marijuana. (Ord. 6642 § 18, 2017.)

18.04.1011 Marijuana processor.

“Marijuana processor” means any person or entity licensed by the Washington State Liquor and Cannabis Board to process, package, and label marijuana concentrates, including tetrahydrocannabinols or cannabimimetic agents, in accordance with the provisions of Chapters 65.50 and 69.51A RCW and Chapter 314-55 WAC. (Ord. 6642 § 19, 2017.)

18.04.1013 Marijuana producer.

“Marijuana producer” means any person or entity licensed by the Washington State Liquor and Cannabis Board to produce marijuana, including tetrahydrocannabinols or cannabimimetic agents, for wholesale to marijuana processors and other marijuana producers pursuant to RCW 69.50.325. (Ord. 6642 § 20, 2017.)

18.04.1015 Marijuana related business.

“Marijuana related business” means a person or entity engaged in for-profit activity that includes the possession, cultivation, production, processing, distribution, dispensation, or sale of tetrahydrocannabinols or cannabimimetic agents, as defined by the Controlled Substances Act, codified at 21 USC Section 812, including marijuana retailers, marijuana processors, and marijuana producers, as defined herein. (Ord. 6642 § 21, 2017.)

18.04.1017 Marijuana retailer.

“Marijuana retailer” means any person or entity established for the purpose of making marijuana concentrates, usable marijuana and marijuana-infused products, including tetrahydrocannabinols or cannabimimetic agents, available for sale to adults aged 21 and over. (Ord. 6642 § 22, 2017.)

18.04.1019 Marijuana researcher.

“Marijuana researcher” is a position licensed by the Washington State Liquor and Cannabis Board that permits a licensee to produce, process, and possess marijuana for the limited research purposes set forth in RCW 69.50.372. (Ord. 6642 § 23, 2017.)

18.04.1021 Marijuana transporter.

“Marijuana transporter” is a position licensed by the Washington State Liquor and Cannabis Board pursuant to WAC 314-55-310 that allows a licensee to physically transport or deliver marijuana, marijuana concentrates, and marijuana-infused products between licensed marijuana businesses within Washington State. (Ord. 6642 § 24, 2017.)

18.04.1023 Public or private park.

“Public or private park” means an area of land for the enjoyment of the public or private parties, having facilities for rest and/or recreation, such as a baseball diamond or basketball court, owned and/or managed by a private for-profit entity, a nonprofit entity, a homeowners’ association, city, county, state, federal government, sovereign nation or metropolitan park district. Public park does not include trails. (Ord. 6642 § 25, 2017.)

18.04.1025 Public or private playground.

“Public or private playground” means a public or private outdoor recreation area for children, usually equipped with swings, slides, and other playground equipment, owned and/or managed by a private business, a nonprofit entity, city, county, state, or federal government or sovereign nation. (Ord. 6642 § 26, 2017.)

18.04.1027 Public or private recreational center.

“Public or private recreation center or facility” means a supervised center that provides a broad range of activities and events intended primarily for use by persons under 21 years of age, owned and/or managed by a private business, charitable nonprofit organization, sovereign nation, city, county, state, or federal government. (Ord. 6642 § 27, 2017.)

18.04.1029 Public transit center.

“Public transit center” means a facility located outside of the public right-of-way that is owned and managed by a transit agency or city, county, state, or federal government for the express purpose of staging people and vehicles where several bus or other transit routes converge. They serve as efficient hubs to allow bus riders from various locations to assemble at a central point to take advantage of express trips or other route to route transfers. (Ord. 6642 § 28, 2017.)

The Auburn City Code is current through Ordinance 6904, passed February 21, 2023.

Disclaimer: The city clerk’s office has the official version of the Auburn City Code. Users should contact the city clerk’s office for ordinances passed subsequent to the ordinance cited above.

City Website: www.auburnwa.gov
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Chapter 18.07
RESIDENTIAL ZONES

Sections:

18.07.010 Intent.
18.07.020 Uses.
18.07.030 Development standards.

18.07.010 Intent.

A. *General.* This section describes the intent for each of the city's residential zones. These intent statements may be used to guide the interpretation of the regulations associated with each zone.

B. RC Residential Conservancy Zone. ~~– One Dwelling Unit per Four Acres.~~

~~The~~ 1. RC residential conservancy zone is intended primarily to provide for low-intensity single-family residential uses with characteristics of an agricultural environment; provided, that the agricultural uses are secondary to the single-family uses. These areas allow for a lifestyle similar to that of rural areas that includes allowance of farm animals and streets without sidewalks. This zone is intended to protect areas with significant environmental constraints or values from impacts typically associated with urban levels of development while allowing low-intensity development designed to minimize impacts on the natural environmental features designated for conservation.

2. Public improvements required within the RC zone will be less than is normally required for the higher intensity residential zones within the city and are not subject to the city's complete streets policies.

3. This zone shall only be applied in areas designated as residential conservancy on the comprehensive plan. ~~This zone shall allow one dwelling unit per four acres minimum lot area.~~

C. R-1 Residential Zone. ~~– One Dwelling Unit per Acre.~~

1. The intent of the R-1 residential zone is to provide areas for estate-type residential development on large lots in areas that are intended to create an open space separation between existing urban areas that are unique from each other and where limited public utilities and transportation infrastructure are present. ~~. This zone would normally be located in the areas particularly suited for such development.~~

Appropriate development standards required of other urban areas shall be required to serve this zone.

2. R-1 implements the Neighborhood Residential One comprehensive plan land use designation.

D. R-2 Residential Low Zone.

1. The R-2 Residential Low zone is intended lower intensity residential development consisting of single-unit detached houses, townhouse, duplex, triplex, fourplex, two-story stacked flats, courtyard apartments, cottage housing on lot sizes typical of suburban and urban development. This residential zone allows flexibility in the types and densities of housing permitted while at the same time maintaining a desirable family living environment by establishing minimum usable open spaces, maximum impervious coverage, and maximum units per lot area with the character and scale of traditional single-unit detached neighborhoods.

2. A related consideration of this zone is to provide a transition between low-intensity residential development areas and higher- and lower-intensity designations. Small-scale, community-based commercial development that provides services to the local neighborhood will be considered through the administrative use permit process.

3. R-2 implements the Neighborhood Residential Two comprehensive plan land use designation.

E. R-3 Residential Moderate Zone.

1. The intent of the R-3 Residential Moderate zone is to allow all residential and commercial types and uses provided in the R-2 Residential zone, while allowing additional intensity through allowing stacked flats up to three stories, fiveplexes, and sixplexes. Single-unit detached houses are not permitted in the R-3 zone. Apartment buildings and Mixed-Use development consisting of no more than 20 units and 3-stories

per lot is permitted. Supportive Housing and residential care developments are permitted in this zone to provide additional needed housing options but must still adhere to the residential density and unit limitations established within this category. Small-scale commercial development providing services to the area is encouraged in this zone and implemented through the administrative use permit process.

2. R-3 implements the Neighborhood Residential Two comprehensive plan land use designation.

F. R-4 Residential High Zone.

1. The R-4 Residential High zone is intended to maximize residential density opportunities and is further intended as a residential zone primarily of Middle Housing and multiple-story apartment and mixed-use development. This zone is characterized by a more active living environment near transit, urban services and commercial uses. The R-4 Residential zone allows for all uses allowed in the R-3 zone, plus apartment and mixed-use development of more than 20 units and 3-stories per lot is permitted. Small-scale commercial development providing services to the area is encouraged in this zone and implemented through the administrative use permit process.

2. R-4 implements the Neighborhood Residential Three comprehensive plan land use designation.

G. R-NM Residential Neighborhood Mixed-Use Zone.

1. The intent of the R-NM Residential Mixed-Use zone is to provide a flexible approach that achieves a mix of dense residential development and light commercial uses in either a vertical or horizontal configuration. Within this zone there will be a mix of retail, office, middle housing, and multi-story residential uses, with attractive design and accessible spaces for people to live, work, and visit. This zoning designation is served primarily by a combination of transit, pedestrian, and/or bicycle facilities allowing people to access amenities without needing a personal vehicle. Uses and densities allowed within this zone will be consistent with the uses permitted in the C-1 Light Commercial and the densities of the R4 - Residential High zone. New development and redevelopment will incorporate a mix of residential and commercial uses. In addition, parks and open spaces are encouraged and may be permitted through the administrative use permit process.

2. Street-level development is encouraged to be retail or higher traffic local businesses or offices, and residential is encouraged on the upper levels of buildings. This zoning district should walkable and bikeable to neighborhood commercial services and transit facilities and have a high level of street activation and amenities.

H. R-F – Residential Flex Zone.

1. The R-F Residential-Flex zone is intended primarily to accommodate small-scale business and professional offices, medical and dental clinics, salons and other personal services, eating and drinking establishments, and banks and similar financial institutions at locations where they are compatible with residential uses. Accessory retail may be permitted if supplemental to the other uses allowed in the zone. This zone is intended for those areas that are in transition from residential to commercial uses along corridors serving lower density residential land uses. Conversion of residential uses to commercial uses is geared towards encouraging adaptive reuse of existing single-unit structures that continue to appear in accord with the single-unit residential character. New development in the RF – Residential-Flex zone should not exceed two-stories or footprint that is designed to maintain a character and a scale smaller than the R-NM Residential Mixed-use Residential zone.

~~D. R-5 Residential Zone – Five Dwelling Units per Acre. The R-5 single-family residential zones are intended to create a living environment of optimum standards for single-family dwellings. It is further intended to achieve development densities of four to five dwelling units per net acre. This zone will provide for the development of single-family detached dwellings and for such accessory uses as are related, incidental and not detrimental to the single-family residential environment.~~

~~E. R-7 Residential Zone – Seven Dwelling Units per Acre. The R-7 single-family residential zones are intended to create a living environment of optimum standards for single-family dwellings. It is further intended to achieve development densities of five to seven dwelling units per net acre. This zone will provide for the development of single-family detached dwellings and for such accessory uses as are related, incidental and not detrimental to the residential environment.~~

~~F. R-10 Residential Zone – 10 Dwelling Units per Acre. The R-10 residential zones are intended to permit some increase in population density in those areas to which this classification applies by permitting single-family dwellings and duplexes on a minimum size lot while at the same time, by means of the standards and requirements set forth in this chapter, maintaining a desirable family living environment by establishing minimum lot areas, yards and open spaces. A related consideration is to provide a transition between single-family areas and other intensive designations or activities which reduce the suitability for single-family uses.~~

~~G. R-16 Residential Zone – 16 Dwelling Units per Acre. The R-16 zone is intended to provide for medium density multiple-family residential development as designated in the comprehensive plan, and is further intended as a residential zone of single, duplex and multiple-family residences, except as specifically provided elsewhere in this chapter.~~

~~H. R-20 Residential Zone – 20 Dwelling Units per Acre. The R-20 zone is intended to provide for multiple-family residential development and is further intended as a residential zone primarily of multiple-family residences, except as specifically provided elsewhere in this chapter. A related consideration is to make it possible to more efficiently and economically design and install all physical public service facilities in terms of size and capacity to adequately and permanently meet needs resulting from a defined intensity of land use.~~

~~I. Except as specifically provided in the city code, no business or commercial use shall be allowed in a residential district of the city that does not have a city of Auburn business license. (Ord. 6525 § 6, 2014; Ord. 6245 § 5, 2009.)~~

18.07.020 Uses.

Table 18.07.020. Permitted Use Table – Residential Zones

P = Permitted A = Administrative C = Conditional Use X = Not Permitted							
Land Uses	**Zoning Designations**						
	RC	**R-1**	**R-25**	**R-37**	**R-410**	**R-NM16**	**R-F20**
A. Residential Uses.							
Accessory dwelling units subject to the provisions contains in Chapter 18.32	P[1]	P[1]	P[1]	P[1]	PX[1]	PX[1]	XP[1]
Accessory use, residential	P	P	P	P	P	P	P
Adult family home	P	P	P	P	P	P[1]	P
Apartments (7 units or more)	X	X	X	P[11]	P	P	X
Bed and breakfast or short-term rentals	P	P	P	P	P	XP	P

Caretaker apartment	X	X	X	X	X	P	X
Communal residence four or less individuals	P	P	P	P	P	XP	P
~~Duplexes; provided, that minimum lot size of zoning designation is met and subject to compliance with Chapter 18.25 ACC (Infill Residential Development Standards)~~	~~X~~	~~X~~	~~A~~	~~P~~	~~P~~	~~P~~	~~X~~
Foster care homes	P	P	P	P	P	XP	P
Group residence facilities (7 or more residents)	X	X	X	PX	PC	PC	PC
Group residence facilities (6 or fewer residents)	P	P	P	P	P	P	P
Keeping of animals[4]	P[2]	P[2]	P[2]	P[2]	P[2]	P[2]	P[2]
~~Multiple-family dwellings~~Middle housing subject to the provisions in Chapter 18.25 (2 to 6 units)	PX	XP	XP	XP	AP	PP	PP
Neighborhood recreational buildings and facilities owned and managed by the neighborhood homeowners' association	A[6]	A[6]	A[6]	A[6]	A[6]	P	P
Use as dwelling units of (1) recreational vehicles that are not part of an approved recreational vehicle park, (2) boats, (3) automobiles, and (4) other vehicles	X	X	X	X	X	X	X
Renting of rooms, for lodging purposes only, to accommodate not more than two persons in addition to the family or owner occupied unit[8]	P	P	P	P	P	P	P

Residential care facilities including but not limited to assisted living facilities, convalescent homes, continuing care retirement facilities	P	P	~~X~~P	~~X~~P	~~A~~P	P	P
Single-unit~~family~~ detached dwellings, new	P	P	P	~~P~~X	~~P~~X	~~P~~X	P
Supportive housing, subject to the provisions of ACC 18.31.160	X	X	X	P~~X~~	~~X~~P	P	P
Swimming pools, tennis courts and similar outdoor recreation uses only accessory to residential or park uses	P	P	P	P	P	P	P
Townhouses (attached)	X	X	X	X	P	P	P
B. Commercial Uses.							
Commercial horse riding and bridle trails	A	X	X	X	X	X	X
Commercial recreation facility, indoor	X	X	X	X	P	P	X
Commercial retail establishment~~, included as part of mixed-use development and not a home occupation in compliance with Chapter 18.60 ACC~~	~~X~~X	~~X~~X	A~~X~~	A~~X~~	P~~A~~	P~~A~~	A~~A~~
Convenience store	X	X	X	X	P	P	X
Daycare, limited to a mini daycare center. Daycare center, preschool or nursery school may also be permitted but must be located on an arterial	X	P~~A~~	~~A~~P	~~A~~P	~~A~~P	~~A~~P	~~A~~P
Grocery or specialty food store	X	X	X	A	P	P	A
Home-based daycare as regulated by RCW 35.63.185 and through receipt of	P	P	P	P	P	P	P

approved city business license							
Home occupations subject to compliance with Chapter 18.60 ACC	P	P	P	P	P	P	P
Marijuana cooperative	X	X	X	X	X	X	X
Marijuana processor	X	X	X	X	X	X	X
Marijuana producer	X	X	X	X	X	X	X
Marijuana related business	X	X	X	X	X	X	X
Marijuana researcher	X	X	X	X	X	X	X
Marijuana retailer	X	X	X	X	X	X	X
Marijuana transporter business	X	X	X	X	X	X	X
Mixed-use development[3, 10]	X	X	X	P~~X~~	P	P	P
Personal service shop	X	X	A	P	P	P	P
Nursing homes	X	X	X	X	C	C	C
~~Private country clubs and golf courses, excluding driving ranges~~	~~X~~	~~X~~	~~C~~	~~C~~	~~C~~	~~X~~	~~X~~
Privately owned and operated parks and playgrounds and not homeowners' association-owned recreational area	X	A	A	A	A	P	P
Professional offices~~, included as part of mixed-use development and not a home occupation in compliance with Chapter 18.60 ACC~~	X	X	A~~X~~	~~X~~A	~~A~~P[9]	A~~P~~	~~A~~P
Restaurant, café, or coffee shop	X	X	A	A	P	P	A
Neighborhood retail establishment	X	X	A	A	P	P	P

C. Resource Uses.							
Agricultural enterprise:[7]							
When 50 percent, or more, of the total site area is dedicated to active agricultural production during the growing season, and with 52 or less special events per calendar year	A[7]	X	X	X	X	X	X
When less than 50 percent of the total site area is dedicated to active agricultural production during the growing season, or with more than 52 special events per calendar year	C[7]	X	X	X	X	X	X
Agricultural type uses are permitted provided they are incidental and secondary to the single-family use:							
Agricultural crops and open field growing (commercial)	P	X	X	X	X	X	X
Barns, silos and related structures	P	X	X	X	X	X	X
Commercial greenhouses	P	X	X	X	X	X	X
Pasturing and grazing[4]	P	X	X	X	X	X	X
Public and private stables[4]	P	X	X	X	X	X	X
Roadside stands, for the sale of agricultural products raised on the premises. The stand cannot exceed 300 square feet in area and must meet the applicable setback requirements	P	X	X	X	X	X	X
Fish hatcheries	C	X	X	X	X	X	X

D. Government, Institutional, and Utility Uses.							
Civic, social and fraternal clubs	X	X	X	X	A	A	A
Government facilities	A	A	A	A	A	A	A
Hospitals (except animal hospitals)	X	X	X	X	X	C	C
Municipal parks and playgrounds	A	P	P	P	P	P	P
Museums	X	X	X	X	A	A	A
Religious institutions, less than one acre lot size	A	A	A	A	A	A	A
Religious institutions, one acre or larger lot size	C	C	C	C	C	C	C
Transmitting towers	C	C	C	C	C	C	C
Type 1-D wireless communications facility (see ACC 18.04.912(W) and ACC 18.31.100)	P	P	P	P	P	P	P
Eligible facilities request (EFR) (wireless communications facility – See ACC 18.04.912(H))	P	P	P	P	P	P	P
Utility facilities and substations	C[5]	C[5]	C[5]	C[5]	C[5]	C[5]	C[5]
Small wireless facilities (ACC 18.04.912(Q))	P	P	P	P	P	P	P

1 An accessory dwelling unit may be permitted with an existing single-family residence pursuant to ACC 18.31.120.

2 Please see the supplemental development standards for animals in ACC 18.31.220.

3 Individual uses that make up a mixed-use development must be permitted within the zone. If a use making up part of a mixed-use development requires an administrative or conditional use permit, the individual use must apply for and receive the administrative or conditional use approval, as applicable.

4 Proximity of pasture or livestock roaming area to wells, surface waters, and aquifer recharge zones is regulated by the King or Pierce County board of health, and property owners shall comply with the provisions of the board of health code.

5 Excludes all public and private utility facilities addressed under ACC 18.02.040(E).

6 Administrative use permit not required when approved as part of a subdivision or binding site plan.

7 Agricultural enterprise uses are subject to supplemental development standards under ACC 18.31.210, Agricultural enterprises development standards.

8 An owner occupant that rents to more than two persons but no more than four persons is required to obtain a city of Auburn rental housing business license and shall meet the standards of the International Property Maintenance Code.

9 As component of Mixed-use developments and/or office ground floor uses permitted up to 5,000 square feet.

10 Commercial uses permitted outright, or allowed administratively or conditionally in this table may be allowed as part of mixed-use development.

11 Apartment buildings and Mixed-use development consisting of no more than 20 units and 3-stories per lot is permitted.

(Ord. 6799 § 5 (Exh. E), 2020; Ord. 6642 § 4, 2017; Ord. 6600 § 9, 2016; Ord. 6565 § 2, 2015; Ord. 6560 § 9, 2015; Ord. 6477 § 8, 2013; Ord. 6369 § 2, 2011; Ord. 6363 § 3, 2011; Ord. 6269 § 3, 2009; Ord. 6245 § 5, 2009.)

18.07.030 Development standards.

Table 18.07.030. Residential Development Standards

	Standard	RC	R-1	R-25	R-37	R-410	R-NM16	R-F20

~~A~~	~~Base density (units per net acre)~~	~~0.25~~	~~1~~	~~5~~	~~7~~	~~10~~	~~16~~	~~20~~
A ~~B~~	Minimum density, units or lots per acre (lot area per unit~~units per net acre~~)[1, 5]	0.25 (174,000 sf of lot area per unit)	1 (43,500 sf of lot area per unit)	~~4~~7 (6,222 sf lot area per unit)	~~5~~12 (3,630 sf lot area per unit)	~~8~~ 16 (2,723 sf lot area per unit)	~~12~~30 (1,452 sf lot area per unit)	~~15~~7 (6,222 sf lot area per unit)
B ~~C~~	Minimum lot ~~area per dwelling unit~~ size (square feet)[8]	~~174,240~~ 174,000	~~35,000~~43,500	~~4,500~~4,400	~~4,300~~2,700	~~2,000~~2,200	~~2,000~~2,200	~~2,000~~4,400
C ~~D~~	Minimum lot width (feet)[2, 5, 7]	125	125	~~50~~40	20 for interior lots; 35 for exterior ~~lots~~40	20 for interior lots; 35 for exterior lots	20 for interior lots; 35 for exterior lots	~~20 for interior lots; 35 for exterior lots~~40
D	Units allowed							
1	Base units allowed per lot[6]	4	4	4	4	4	4	4

2	Base units per lot allowed with transit or affordability bonus[6]	6	6	6	6	6	6	6
3	Lot area per unit above base (B1 or B2 as applicable) allowance (square feet)[6]	X	X	1,250	750	N/A	N/A	1,250
4	Maximum units per lot[6]	6	6	6	20	N/A	N/A	6
E	Minimum setbacks (feet)[2,3]							
1	Residence front setback[3]	35	35	10	10	10	10	10
2	Garage (minimum front setback required from street	20	20	20	20	20	20	20 unless alley-loaded then 15 provided there are

	access)[3]							20 feet from any garage
3	Setback to any property line for barns, stables, or similar structures for enclosure of large domestic animals For other animals, see the supplemental development standards for animals in ACC 18.31.220	75	X	X	X	X	X	X
4	Setback to any property line for any corral,	35	X	X	X	X	X	X

	exercise yard, or arena for large domestic animals For other animals, see the supplemental development standards for animals in ACC 18.31.220							
5	Interior side setback	20	10	5	5	5	5	5
6	Street side setback[3] In all zones, 20 feet minimum street side setback required from street access.	35	20	10	10	10	10	10

7	Rear setback[3]	35	2035	1520	1520	1020	1020	1520
8	Rear setback, detached structure[3, 8] In all zones, 20 feet minimum street side setback required from street access.In all zones, 20 feet for structure with vehicular entrance oriented toward street or public alley[3]	15	15	10	5	5	5	105
F	Maximum lot coverage (%)	25	35	40	50	60	70	70
F	Maximum impervious	25	50	6575	7580	N/A90	N/A90	N/A75

~~G~~	area (%)							
G ~~H~~	Maximum building height (feet)	35	35	35	~~45~~35	~~45~~75	~~45~~75	~~50~~45
H~~I~~	Maximum height of accessory buildings and structures	35[4]	35	~~24~~16	~~24~~16	~~24~~16	~~24~~N/A	~~24~~N/A
I~~J~~	Minimum front setback area landscape strip (feet)	N/A	N/A	N/A~~5~~	5	10	10	~~10~~N/A
J~~K~~	Minimum side setback area landscape strip (feet)	N/A	N/A	~~5~~N/A	5	10	10	~~10~~N/A
K~~L~~	Minimum landscaped open space (%)	N/A	N/A	~~N/A~~ See Chapter 18.50 ACC	See Chapter 18.50 ACC~~N/A~~	See Chapter 18.50 ACC~~20~~	See Chapter 18.50 ACC~~20~~	~~20~~N/A

1 See ACC 18.02.065 for calculating density.

2 All minimum lot widths, setbacks, and landscaping strips are subject to demonstration to the satisfaction of the city engineer that all required utility infrastructure, access requirements,

and street elements can be accommodated in accordance with the design and construction standards.

3 In addition to meeting setback requirements, all structures must meet sight distance requirements in accordance with city design and construction standards.

4 Barns and other specialized structures used for agricultural purposes may exceed the height limits.

5 Provision applicable to residential subdivision.

6 See ACC 18.02.067 for calculating units allowed per lot.

7 Applies to new parent lots within a unit lot subdivision.

8 When abutting an alley, detached accessory dwelling units are allowed within the rear setback.

(Ord. 6661 § 3, 2018; Ord. 6600 § 10, 2016; Ord. 6245 § 5, 2009.)

The Auburn City Code is current through Ordinance 6944, passed July 15, 2024.

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City Website: www.auburnwa.gov

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Chapter 18.09
R-MHC MANUFACTURED/MOBILE HOME COMMUNITY ZONE

Sections:

18.09.010 Intent.
18.09.020 Uses.
18.09.030 Development standards.

18.09.010 Intent.

The intent of the R-MHC manufactured/mobile home community zone is to provide a residential zone of single-~~family~~ unit manufactured homes exclusively within a planned community. It is further intended that the R-MHC zone shall only be prescribed in those areas that are bordered on, contain physical features, or shall be planned and designed as part of a larger development incorporating other housing types in a manner which limits further expansion into adjacent areas. (Ord. 6245 § 6, 2009.)

18.09.020 Uses.

Permitted Use Table – Residential Zoning Designations

	Land Use	R-MHC Zone
A	Manufactured/mobile home community	P
B	Residential accessory use	P
C	Manufactured/mobile home	P

	Land Use	R-MHC Zone
	community accessory use	
D	Keeping of not more than six household pets. This limit shall not apply to birds, fish, or suckling young of pets.	P
E	Home-based daycare	P
F	Daycare limited to a mini daycare center, daycare center, or preschool/nursery school	A
G	Marijuana cooperative	X
H	Marijuana processor	X
I	Marijuana producer	X
J	Marijuana related business	X
K	Marijuana researcher	X
L	Marijuana retailer	X
M	Marijuana transport business	X

P = Permitted Use

A = Use may be permitted in district when an administrative use permit has been issued pursuant to the provisions of Chapter 18.64 ACC.

C = Use may be permitted in district when a conditional use permit has been issued pursuant to the provisions of Chapter 18.64 ACC.

X = Prohibited

Also see ACC 18.02.120 for further rules on interpretation.

(Ord. 6642 § 5, 2017; Ord. 6269 § 4, 2009; Ord. 6245 § 6, 2009.)

18.09.030 Development standards.

Table 18.09.030. Development Standards

	Development Standard[1]	R-MHC Zone
A	Base density (units per net acre)	10
B	Minimum density (units per net acre)	8
C	Minimum lot area (square feet)	217,800[2]
D	Minimum lot area per dwelling unit (square feet)	2,500
E	Minimum average lot area per dwelling unit (square feet)	4,300
F	Minimum front setback (feet)	Manufactured home community street: 8 Public or other private street: 20
G	Minimum interior side setback (feet)	Minimum distance between any manufactured home and/or accessory building and the manufactured home and/or accessory building on the adjoining space: 10
H	Minimum street side setback (feet)	Manufactured home community street: 5 Public or other private street: 10

	Development Standard[1]	R-MHC Zone
I	Minimum rear setback (feet)	Minimum distance between any manufactured home and/or accessory building and the manufactured home and/or accessory building on the adjoining space: 10 Manufactured home community street: 8 Public or other private street: 20
J	Accessory structure setbacks	There shall be a minimum of 10 feet between any two manufactured homes, between any manufactured home and accessory building on adjoining spaces, and between any other accessory buildings on adjoining spaces
K	Special setbacks for manufactured homes structures that abut another zoning district	Setbacks shall be the same as provided for in the adjoining zone. However, in no case shall the setbacks be less than as prescribed in this subsection.
L	Maximum building height (feet)	Main building: 30 feet Accessory building: 16 feet
M	Fences and hedges	A six-foot high screened fence shall be constructed around the perimeter of the community. For those community boundaries that abut a public street the fence shall set back 20 feet and the 20-foot setback area landscaped with Type III landscaping (see ACC 18.50 for landscaping type).
N	Supplemental R-MHC development standards	See ACC 18.31.190

	Development Standard[1]	R-MHC Zone
O	Landscaping	See Chapter 18.50 ACC
P	Parking	See Chapter 18.52 ACC
Q	Signs	See Chapter 18.56 ACC

1 All minimum lot widths, setbacks, and landscaping strips are subject to demonstration that all required utility infrastructure, access requirements, and street elements are provided for in accordance with city design and construction standards.

2 Minimum site area for development of the manufactured home park or community.

(Ord. 6245 § 6, 2009.)

The Auburn City Code is current through Ordinance 6940, passed April 15, 2024.

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Chapter 18.21
OVERLAYS

Sections:

18.21.010 Lea Hill overlay.
18.21.020 West Hill overlay.
18.21.030 Urban separator overlay.

18.21.010 Lea Hill overlay.

A. *Purpose.* The purpose of this section is to provide for additional development standards to address the area commonly referred to as the Lea Hill annexation area, as annexed under city of Auburn Ordinance Nos. 5346 and 6121, and identified on the city of Auburn comprehensive zoning map. While the intent is that the development standards for zones in the Lea Hill annexation area will be similar to (if not the same as) corresponding zones in other areas of the city, some variations are needed to recognize previous development allowed by King County zoning. Unless otherwise provided for in this section, all other provisions and requirements of this title shall apply to properties within the Lea Hill overlay.

B. Development Standards – Lots Previously Approved.

1. For any residential lot that had received final plat approval, final short plat approval, or preliminary plat approval or that King County had received and determined the application complete for a preliminary plat or short plat, prior to the effective date of annexation into the city of Auburn, the development standards in the following table shall apply. The property owner/applicant shall be responsible to provide to the city evidence of these previous approvals.

2. Any further subdivision of any lot and its subsequent use must conform to the permitted uses and standards referenced in the applicable zoning chapters of this title, except as modified by this section. For farm animals, subsection E of this section or ACC 18.31.220 shall apply.

Zone	Min Lot Area (Sq. Ft.)	Min Lot Area (Sq. Ft. per Unit)	Min Lot Width (Ft.)	Max Lot Coverage (%)	Setbacks[1*]				Building Height	
					Front (Ft.)	Rear (Ft.)	Side, Interior (Ft.)	Side, Street (Ft.)	Main (Ft.)	Accessory (Ft.)
R-1	8,000	N/A	35	35	20	5	5	10	35	35
R-25[2]	2,500	N/A	30	35	10	5	5	10	35	16
R-27[3]	2,500	6,000	30	35	10	5	5	10	35	16
R-310[4]	2,500	4,300	30	40	10	5	5	10	35	35
R-316[5]	2,500	2,700	30	55	10	5	5	10	35	35
R-420[6]	2,500	2,175	30	55	10	5	5	10	35	35

1* Garages and other similar structures with a vehicular access require a 20-foot setback from any street.

2 Annexed as R-5 zone under city of Auburn Ordinance Nos. 5346 and 6121.

3 Annexed as R-7 zone under city of Auburn Ordinance Nos. 5346 and 6121.

4 Annexed as R-10 zone under city of Auburn Ordinance Nos. 5346 and 6121.

5 Annexed as R-16 zone under city of Auburn Ordinance Nos. 5346 and 6121.

6 Annexed as R-20 zone under city of Auburn Ordinance Nos. 5346 and 6121.

C. *Prior King County Approvals.* The city of Auburn will recognize the terms of any King County-approved plat, PUD, conditional use permit, contract rezone or similar contractual obligations that may have been approved prior to the effective date of the annexation of the subject property. The conditions of any project that was approved by King County shall be required to be fulfilled in the city of Auburn.

D. *Planning Director Authorization.* The planning director shall be authorized to interpret the language of any King County permit, plat or condition thereof and effectuate the implementation of same to the fullest extent possible. If there is a conflict between a previous

King County approval and the Auburn regulation then the most restrictive provision shall apply as determined by the planning director.

E. *Farm Animals.*

1. For properties greater than an acre in the R-1, R-5 and R-7 zones, it is permissible to keep farm animals (excluding goats and swine in the R-5 and R-7 zones); provided, there shall not be more than one horse, cow, donkey or other similar large animal, or four small animals such as sheep, or 12 poultry, rabbits, or similar size animals per each acre of enclosed usable pasture or roaming area. This acreage requirement is in addition to the minimum lot size requirements of the zone. Property owners of more than an acre in the Lea Hill overlay may choose to apply these standards or the standards in ACC 18.31.220.

2. Shelters provided for farm animals shall be constructed no closer than 50 feet from any adjoining lot and shall be 100 feet from any public street or alley. Any corral, exercise yard, or arena shall maintain a distance of 35 feet from any property line. This excludes pasture area.

3. For those properties that do not meet the requirements of subsection (E)(1) of this section, and farm animals were present prior to annexation, the farm animals may remain as legal nonconforming uses. In such case the number of farm animals allowed may be the same as what the county zoning provisions had allowed prior to the effective date of the annexation of the subject property.

F. Lot Averaging – R-1 Zone. It may be possible to subdivide land in the R-1 zone into lots smaller than 35,000 square feet if the property has a significant amount of nonbuildable land due to steep slopes, wetlands or similar features that would be in the public's best interest to maintain. The following regulations shall apply in situations where lot averaging is permitted or required:

1. At least 50 percent of the subdivision must be set aside as open space. Critical areas (i.e., steep slopes, wetlands) can count towards the 50 percent requirement. Maintenance of the open space tract or easement shall be the responsibility of the property owner and/or a homeowners' association.

2. The number of allowable lots in a subdivision shall be determined by multiplying the total number of acres in the subdivision by one. Any fraction shall be rounded to the nearest whole number with one-half being rounded up.

3. The minimum size of any lot shall be 8,000 square feet. For lots less than 35,000 square feet, the minimum lot width shall be consistent with the requirements of the R-5 zone (Chapter 18.07 ACC). All other applicable development standards related to the R-1 zone will continue to apply.

4. Lots within the subdivision shall be clustered so as to provide for continuity of open space within the subdivision and, where possible, with adjoining parcels.

5. Each lot within a subdivision shall illustrate a building area within which the house, accessory structures, and parking areas shall be constructed. The building area shall be exclusive of setbacks, nonbuildable areas or any required buffers from the nonbuildable areas. Any preliminary plat, final plat or short plat shall illustrate the building area for each lot. Any future construction will be limited to the identified building area.

6. A native growth protection easement or similar device, which may include provisions for the limited removal of vegetation and passive use of the easement, that perpetually protects the nonbuildable areas must be recorded with the final plat or short plat.

G. All marijuana related businesses and marijuana cooperatives are prohibited land uses within the Lea Hill overlay. (Ord. 6642 § 6, 2017; Ord. 6369 § 3, 2011; Ord. 6245 § 13, 2009.)

18.21.020 West Hill overlay.

A. *Purpose.* The purpose of this section is to provide for additional development standards to address the area commonly referred to as the West Hill annexation area, as annexed under city of Auburn Ordinance No. 6122 and identified on the city of Auburn comprehensive zoning map. While the intent is that the development standards for zones in the West Hill annexation area will be similar to (if not the same as) corresponding zones in other areas of the city, some variations are needed to recognize previous development allowed by King County zoning. Unless otherwise provided for in this section, all other provisions and requirements of this title shall apply to properties within the West Hill overlay.

B. Development Standards – Lots Previously Approved.

1. For any residential lot that had received final plat approval, final short plat approval, preliminary plat approval or that King County had received and determined the application complete for a preliminary plat or short plat, prior to the effective date of annexation, the development standards in the following table shall apply. The property owner/applicant shall be responsible to provide evidence of these previous approvals/decisions.

2. Any further subdivision of any lot and its subsequent use must conform to the permitted uses and standards referenced in the applicable zoning chapters of this title, except as modified by this section. For farm animals, subsection E of this section or ACC 18.31.220 shall apply.

Zone	Min Lot Area (Sq. Ft.)	Min Lot Area (Sq. Ft. per Unit)	Min Lot Width (Ft.)	Max Lot Coverage (%)	Setbacks[1]*				Building Height	
					Front (Ft.)	Rear (Ft.)	Side, Interior (Ft.)	Side, Street (Ft.)	Main (Ft.)	Accessory (Ft.)
R-1	8,000	N/A	35	35	20	5	5	10	35	35
R-25[2]	2,500	N/A	30	35	10	5	5	10	35	16
R-72[3]	2,500	6,000	30	35	10	5	5	10	35	16

* 1 Garages and other similar structures with a vehicular access require a 20-foot setback from any street.

2 Annexed as R-5 zone under city of Auburn Ordinance No. 6122.

3 Annexed as R-7 zone under city of Auburn Ordinance No. 6122.

C. *Prior King County Approvals.* The city of Auburn will recognize the terms of any King County-approved plat, PUD, conditional use permit, contract rezone or similar contractual obligations that may have been approved prior to the effective date of the annexation of the subject property. The conditions of any project that was approved by King County shall be required to be fulfilled in the city of Auburn.

D. *Planning Director Authorization.* The planning director shall be authorized to interpret the language of any King County permit, plat or condition thereof and effectuate the implementation of same to the fullest extent possible. If there is a conflict between a previous King County approval and the Auburn regulation, then the most restrictive provision shall apply as determined by the planning director.

E. *Farm Animals.*

1. For properties greater than an acre in the R-1, R-5 and R-7 zones within the West Hill overlay, it is permissible to keep farm animals (excluding goats and swine in the R-5 and R-7 zones); provided, there shall not be more than one horse, cow, donkey or other similar large animal, or four small animals such as sheep, or 12 poultry, rabbits, or similar size animals per each acre of enclosed usable pasture or roaming area. This acreage requirement is in addition to the minimum lot size requirements of the applicable zone. Property owners of more than an acre in the West Hill overlay district may choose to apply these standards, or the standards in ACC 18.31.220.

2. Shelters provided for farm animals shall be constructed no closer than 50 feet from any adjoining lot and no closer than 100 feet from any public street or alley. Any corral, exercise yard, or arena shall maintain a distance of 35 feet from any property line. This excludes pasture areas.

3. For those properties that do not meet the requirements of subsection (E)(1) of this section, and farm animals were present prior to annexation, the farm animals may remain as legal nonconforming uses. In such case, the number of farm animals allowed may be the same as what the county zoning provisions had allowed prior to the effective date of the annexation of the subject property.

F. All marijuana related businesses and marijuana cooperatives are prohibited land uses within the West Hill overlay. (Ord. 6642 § 7, 2017; Ord. 6369 § 4, 2011; Ord. 6245 § 13, 2009.)

18.21.030 Urban separator overlay.

A. *Purpose.* The purpose of this section is to provide for additional development standards to address the area designated as urban separator in the city's comprehensive plan, as prescribed in the interlocal agreement between the city and King County approved under city of Auburn

Resolution No. 4113 and identified on the city of Auburn comprehensive land use map. Unless otherwise provided for in this section, all other provisions and requirements of this title shall apply to properties within the urban separator overlay.

B. *Development Standards.* For property located within a designated urban separator, lot averaging shall be required. The regulations of ACC 18.21.010(F) shall apply in situations where lot averaging is used.

C. All marijuana related businesses and marijuana cooperatives are prohibited land uses within the urban separator overlay. (Ord. 6642 § 8, 2017; Ord. 6245 § 13, 2009.)

The Auburn City Code is current through Ordinance 6928, passed December 4, 2023.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

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Chapter 18.23
COMMERCIAL AND INDUSTRIAL ZONES

Sections:

18.23.010 Purpose.
18.23.020 Intent of commercial and industrial zones.
18.23.030 Uses.
18.23.040 Development standards.
~~**18.23.050 Additional development standards for C-2, central business zone.**~~
18.23.060 Additional development standards for the ~~C-N,~~ C-1, C-2, ~~C-3, C-~~ C-AG4, and M-1 zones.

18.23.010 Purpose.

This chapter lists the land uses that may be allowed within the commercial and industrial zones established by ACC 18.02.070 (Establishment of zones), determines the type of land use approval required for each use, and provides basic and additional development standards for sites, buildings, and associated improvements. (Ord. 6728 § 3 (Exh. C), 2019; Ord. 6433 § 26, 2012.)

18.23.020 Intent of commercial and industrial zones.

A. *General.* This section describes the intent for each of the city's commercial and industrial zones. These intent statements are to be used to guide the interpretation of the regulations associated with each zone. The planning director is authorized to make interpretations of these regulations based on their analysis of them together with clear and objective reasons for such interpretation.

~~B. *C-N, Neighborhood Shopping Center Zone.* The C-N zone is intended to provide areas appropriate for neighborhood shopping establishments which provide limited retail business, service and office facilities for the convenience of residents of the neighborhood. A neighborhood shopping center is designed and located so as to minimize traffic congestion on public highways and streets in its vicinity and to best fit the general land use pattern of the area~~

~~to be served by the center. The protective standards contained in this chapter are intended to minimize any adverse effect of the neighborhood shopping center on nearby property values and to provide for safe and efficient use of the neighborhood shopping center itself.~~

C. *C-1, Light Commercial Zone.* The C-1 Light Commercial zone is intended for lower intensity commercial adjacent to residential neighborhoods. This zone generally serves as a transition zone between higher and lower intensity land uses, providing retail and professional services. This zone represents the primary commercial designation for small- to moderate-scale commercial activities compatible by having similar performance standards and should be developed in a manner which is consistent with and attracts pedestrian-oriented activities. This zone encourages a broad mix of small scale uses such as leisure shopping, office, eating and drinking establishments, entertainment and assembly uses and provides amenities conducive to attracting shoppers and pedestrians. Building height, size, and orientation are the primary standards that will be used to maintain the smaller more pedestrian scale uses within this zone.

~~The C-1 zone is intended for lower intensity commercial adjacent to residential neighborhoods. This zone generally serves as a transition zone between higher and lower intensity land uses, providing retail and professional services. This zone represents the primary commercial designation for small- to moderate-scale commercial activities compatible by having similar performance standards and should be developed in a manner which is consistent with and attracts pedestrian-oriented activities. This zone encourages leisure shopping and provides amenities conducive to attracting shoppers and pedestrians.~~

~~D. *C-2 Central Business District Zone.* The intent of the C-2 zone is to set apart the portion of the city proximate to the center for financial, commercial, governmental, professional, and cultural activities. Uses in the C-2 zone have common or similar performance standards in that they represent types of enterprises involving the rendering of services, both professional or to the person, or on-premises retail activities. This zone encourages and provides amenities conducive to attracting pedestrians.~~

E. *C-~~2~~3, Heavy Commercial Zone.* The intent of the C-2 Heavy Commercial zone is to allow for medium to high intensity uses consisting of a wide range of retail, commercial, entertainment, office, services, and professional uses. This zone is intended to accommodate uses which are oriented to automobiles either as a mode or target of the commercial service while fostering a pedestrian orientation. The uses allowed can include outside activities, display, fabrication or service features when not the predominant portion of the use. The uses enumerated in this

classification may be larger in scale and building size and have more potential for impacts to surrounding properties and street systems than those uses permitted in the more restrictive commercial classifications.

~~The intent of the C-3 zone is to allow for medium to high intensity uses consisting of a wide range of retail, commercial, entertainment, office, services, and professional uses. This zone is intended to accommodate uses which are oriented to automobiles either as a mode or target of the commercial service while fostering a pedestrian orientation. The uses allowed can include outside activities, display, fabrication or service features when not the predominant portion of the use. The uses enumerated in this classification have more potential for impacts to surrounding properties and street systems than those uses permitted in the more restrictive commercial classifications.~~

~~F. *C-4, Mixed-Use Commercial Zone.* The intent of the C-4 zone is to provide for a pedestrian-oriented mix of retail, office, and limited multifamily residential uses. This classification is also intended to allow flexibility in design and the combination of uses that is responsive to market demands. The uses enumerated in this classification anticipate a mix of multifamily residential, retail, and office uses that are coordinated through a site-specific planning process. The multiple-family residential must be located in a multi-story building. Certain heavy commercial uses permitted in other commercial classifications are not permitted in this zone because of the potential for conflicts with multifamily residential uses, in order to achieve a quality of environment that is conducive to this mix of uses.~~

C-AG, Auburn Gateway Zone. The intent of the C-AG - Auburn Gateway Zone is to provide for a pedestrian-oriented mix of retail, office, middle housing, and multifamily residential uses in the Northeast Auburn Special Area Plan and Auburn Gateway Planned Action area, as described in Chapter 18.08 ACC. This classification is also intended to allow flexibility in design and the combination of uses that is responsive to market demands. The uses enumerated in this classification anticipate a mix of multifamily residential, middle housing, retail, and office uses that are coordinated through a site-specific planning process. The multiple-family residential must be located in a multi-story building. Certain heavy commercial uses permitted in other commercial classifications are not permitted in this zone because of the potential for conflicts with multifamily residential uses, in order to achieve a quality of environment that is conducive to this mix of uses.

G. *M-1, Light Industrial Zone.* The intent of the M-1 Light Industrial zone is to accommodate a variety of industrial, manufacturing, commercial, and limited residential uses in an industrial environment, and to preserve land primarily for industrial and commercial uses, and to implement the economic goals of the comprehensive plan, and to provide a greater flexibility within the zoning regulations for those uses which are non-nuisance in terms of air and water pollution, noise, vibration, glare or odor. The industrial/commercial character of this zone is intended to address the way in which industrial and commercial uses are carried out rather than the actual types of products made. An essential aspect of this zone is the need to maintain a quality of development that attracts rather than discourages further investment in industrial and commercial development. While allowed, outdoor storage will be regulated in a manner that mitigates visual impacts ~~in a manner that takes~~taking surrounding uses and vehicular corridors into consideration.

~~The intent of the M-1 zone is to accommodate a variety of industrial, commercial, and limited residential uses in an industrial park environment, to preserve land primarily for light industrial and commercial uses, to implement the economic goals of the comprehensive plan and to provide a greater flexibility within the zoning regulations for those uses which are nonnuisance in terms of air and water pollution, noise, vibration, glare or odor. The light industrial/commercial character of this zone is intended to address the way in which industrial and commercial uses are carried out rather than the actual types of products made.~~

~~The character of this zone will limit the type of primary activities which may be conducted outside of enclosed buildings to outdoor displays and sales. Uses which are not customarily conducted indoors or involve hazardous materials are considered heavy industrial uses under this title and are not appropriate for the M-1 zone. An essential aspect of this zone is the need to maintain a quality of development that attracts rather than discourages further investment in light industrial and commercial development. Consequently, site activities which could distract from the visual quality of development of those areas, such as outdoor storage, should be strictly regulated within this zone.~~

H. *M-2, Heavy Industrial Zone.* The M-2 Heavy Industrial is intended to accommodate a broad range of manufacturing and industrial uses. Permitted activity may vary from medium to higher intensity uses that involve the manufacture, fabrication, assembly, or processing of raw and/or finished materials. Heavy industrial uses should not be located near residential development.

While other uses may be sited within this zone, permits for such uses should not be issued if such uses will discourage use of adjacent sites for heavy industry, interrupt the continuity of industrial sites, or produce traffic in conflict with the industrial uses. (Ord. 6885 § 1 (Exh. A), 2022; Ord. 6728 § 3 (Exh. C), 2019; Ord. 6433 § 26, 2012.)

~~The M-2 zone is intended to accommodate a broad range of manufacturing and industrial uses. Permitted activity may vary from medium to higher intensity uses that involve the manufacture, fabrication, assembly, or processing of raw and/or finished materials. Heavy industrial uses should not be located near residential development.~~

~~While other uses may be sited within this zone, permits for such uses should not be issued if such uses will discourage use of adjacent sites for heavy industry, interrupt the continuity of industrial sites, or produce traffic in conflict with the industrial uses. (Ord. 6885 § 1 (Exh. A), 2022; Ord. 6728 § 3 (Exh. C), 2019; Ord. 6433 § 26, 2012.)~~

18.23.030 Uses.

A. *General Permit Requirements.* Table 18.23.030 identifies the uses of land allowed in each commercial and industrial zone and the land use approval process required to establish each use.

B. *Requirements for Certain Specific Land Uses.* Where the last column in Table 18.23.030 ("Standards for Specific Land Uses") includes a reference to a code section number, the referenced section determines other requirements and standards applicable to the use regardless of whether it is permitted outright or requires an administrative or conditional use permit.

C. *Uses Affected by the Airport Overlay.* Refer to Chapter 18.38 ACC to determine whether uses are separately prohibited by that chapter or will be required to comply with additional regulations that are associated with the airport overlay.

Table 18.23.030. Permitted, Administrative, Conditional and Prohibited Uses by Zone, Commercial and Industrial Zones

PERMITTED, ADMINISTRATIVE, CONDITIONAL AND PROHIBITED USES BY ZONE								P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designation**							**Standards for Specific Land Uses**
	~~C-N~~	C-1	~~C-2~~	C-~~2~~3	C-AG~~4~~	M-1	M-2	
INDUSTRIAL, MANUFACTURING AND PROCESSING, WHOLESALING								
Building contractor, light	~~X~~	X	~~X~~	P	X	P	P	
Building contractor, heavy	~~X~~	X	~~X~~	X	X	A	P	
Manufacturing, assembling and packaging – Light intensity	~~X~~	X	~~X~~	P	X	P	P	ACC 18.31.180
Manufacturing, assembling and packaging – Medium intensity	~~X~~	X	~~X~~	A	X	P	P	ACC 18.31.180
Manufacturing, assembling and packaging – Heavy intensity	~~X~~	X	~~X~~	X	X	X	A	ACC 18.31.180
Marijuana processor	~~X~~	X	~~X~~	X	X	C	C	Chapter 18.59 ACC
Marijuana producer	~~X~~	X	~~X~~	X	X	C	C	Chapter 18.59 ACC
Marijuana researcher	~~X~~	X	~~X~~	X	X	C	C	Chapter 18.59 ACC
Marijuana retailer	~~X~~	X	~~X~~	C	X	C	C	Chapter 18.59 ACC

PERMITTED, ADMINISTRATIVE, CONDITIONAL AND PROHIBITED USES BY ZONE								P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designation**							**Standards for Specific Land Uses**
	~~C-N~~	C-1	~~C-2~~	C-~~2~~3	C-AG4	M-1	M-2	
Marijuana transporter business	~~X~~	X	~~X~~	X	X	C	C	Chapter 18.59 ACC
Outdoor storage, incidental to principal permitted use on property	~~X~~	X	~~X~~	P	X	P	P	ACC 18.57.020(A)
Storage – Personal household storage facility (mini-storage)	~~X~~	P	~~X~~	P	X	P	P	ACC 18.57.020(B)
Warehousing and distribution	~~X~~	X	~~X~~	X	X	P	C	ACC 18.57.020(C)
Warehousing and distribution, bonded and located within a designated foreign trade zone	~~X~~	X	~~X~~	P	X	P	P	
Wholesaling with on-site retail as an incidental use (e.g., coffee, bakery)	~~X~~	X	~~X~~	P	X	P	P	
RECREATION, EDUCATION AND PUBLIC ASSEMBLY USES								
Commercial recreation	~~X~~	P	~~P~~	P	P	P	A	

PERMITTED, ADMINISTRATIVE, CONDITIONAL AND PROHIBITED USES BY ZONE								P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	Zoning Designation							Standards for Specific Land Uses
	~~C-N~~	C-1	~~C-2~~	C-~~2~~3	C-AG~~4~~	M-1	M-2	
facility, indoor								
Commercial recreation facility, outdoor	~~X~~	X	~~X~~	A	A	P	A	ACC 18.57.025(A)
Conference/convention facility	~~X~~	X	~~A~~	A	X	A	X	
Library, museum	~~X~~	A	~~A~~	A	X	A	X	
Meeting facility, public or private	~~A~~	P	~~P~~	P	X	A	A	
Movie theater, except drive-in	~~X~~	P	~~P~~	P	P	X	X	
Private school – Specialized education/training (for profit)	~~A~~	A	~~P~~	P	P	P	P	
Religious institutions, lot size less than one acre	~~A~~	P	~~P~~	P	A	A	A	
Religious institutions, lot size more than one acre	~~C~~	P	~~P~~	P	A	A	A	

PERMITTED, ADMINISTRATIVE, CONDITIONAL AND PROHIBITED USES BY ZONE								P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designation**							**Standards for Specific Land Uses**
	~~C-N~~	C-1	~~C-2~~	C-~~2~~3	C-AG~~4~~	M-1	M-2	
Sexually oriented businesses	~~X~~	X	~~X~~	P	X	P	P	Chapter 18.74 ACC
Sports and entertainment assembly facility	~~X~~	X	~~A~~	A	X	A	A	
Studio – Art, dance, martial arts, music, etc.	~~P~~	P	~~P~~	P	P	P	A	
RESIDENTIAL								
Apartment units, as part of a mixed-use development[2]	X	X	X	P	P	P	X	ACC 18.57.030
Apartments, stand-alone	X	X	X	X	X	X	X	
Caretaker apartment	~~X~~	P	~~P~~	P	X	P	P	
Live/work unit, as part of a mixed-use development[2]	~~X~~	X	~~P~~	P	P	P	X	
Live/work unit, stand-alone[3]	X	X	X	X	X	X	X	
Work/live unit, as part of a mixed-use development[2]	~~X~~	P	~~P~~	P	P	P	X	

PERMITTED, ADMINISTRATIVE, CONDITIONAL AND PROHIBITED USES BY ZONE								P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designation**							**Standards for Specific Land Uses**
	~~C-N~~	C-1	~~C-2~~	C-~~2~~3	C-AG4	M-1	M-2	
Work/live unit, stand-alone[3]	X	X	X	X	X	X	X	
Marijuana cooperative	~~X~~	X	~~X~~	X	X	X	X	
~~Multiple-family dwellings as part of a mixed-use development[2]~~	~~X~~	~~X~~	~~P~~	~~P~~	~~P~~	~~P~~	~~X~~	~~ACC 18.57.030~~
~~Multiple-family dwellings, stand-alone~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	
Nursing home, assisted living facility	X	P	P	P	C	X	X	
Senior housing[2]	X	X	A	A	X	X	X	
RETAIL								
Building and landscape materials sales	X	X	X	P	X	P	P	ACC 18.57.035(A)
Construction and heavy equipment sales and rental	X	X	X	X	X	A	P	
Convenience store	A	A	P	P	X	P	P	

PERMITTED, ADMINISTRATIVE, CONDITIONAL AND PROHIBITED USES BY ZONE								P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	Zoning Designation							Standards for Specific Land Uses
	~~C-N~~	C-1	~~C-2~~	C-~~2~~3	C-AG~~4~~	M-1	M-2	
Drive-through espresso stands	A	A	A	P	A	P	A	
Drive-through facility, including banks and restaurants	A	A	A	P	P	P	P	ACC 18.52.040
Entertainment, commercial	X	A	P	P	X	A	A	
Groceries, specialty food stores	P	P	P	P	P	P	X	
Nursery	X	X	X	P	A	P	P	ACC 18.57.035(C)
Outdoor displays and sales associated with a permitted use (auto/vehicle sales not included in this category)	P	P	P	P	P	P	P	ACC 18.57.035(D)
Restaurant, cafe, coffee shop	P	P	P	P	P	P	P	
Retail								
Community retail establishment	A	P	P	P	P	P	P	

PERMITTED, ADMINISTRATIVE, CONDITIONAL AND PROHIBITED USES BY ZONE								P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designation**							**Standards for Specific Land Uses**
	~~C-N~~	**C-1**	**~~C-2~~**	**C-~~2~~3**	**C-AG~~4~~**	**M-1**	**M-2**	
Neighborhood retail establishment	P	P	P	P	P	P	P	
Regional retail establishment	X	X	X	P	P	P	A	
Tasting room	P	P	P	P	P	P	P	
Tavern	P	P	X	P	P	P	A	
Wine production facility, small craft distillery, small craft brewery	A	P	P	P	P	P	P	
SERVICES								
Animal daycare (excluding kennels and animal boarding)	A	A	A	P	A	P	P	ACC 18.57.040(A)
Animal sales and services (excluding kennels and veterinary clinics)	P	P	P	P	P	P	P	ACC 18.57.040(B)
Banking and related financial institutions, excluding drive-through	P	P	P	P	P	P	P	

PERMITTED, ADMINISTRATIVE, CONDITIONAL AND PROHIBITED USES BY ZONE								P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designation**							**Standards for Specific Land Uses**
	~~C-N~~	**C-1**	**~~C-2~~**	**C-~~2~~3**	**C-AG~~4~~**	**M-1**	**M-2**	
facilities								
Catering service	P	P	P	P	A	P	P	
Daycare, including mini daycare, daycare center, preschools or nursery schools	A	P	P	P	P	P	X	
Dry cleaning and laundry service (personal)	P	P	P	P	P	P	P	
Equipment rental and leasing	X	X	X	P	X	P	P	
Kennel, animal boarding	X	X	X	A	X	A	A	ACC 18.57.040(C)
Government facilities; this excludes offices and related uses that are permitted outright	A	A	A	A	A	A	A	
Hospital	X	P	P	P	X	P	P	
Lodging – Hotel or motel	X	P	P	P	P	A	A	

PERMITTED, ADMINISTRATIVE, CONDITIONAL AND PROHIBITED USES BY ZONE								P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designation**							**Standards for Specific Land Uses**
	~~C-N~~	C-1	~~C-2~~	C-~~2~~3	C-AG4	M-1	M-2	
Medical – Dental clinic	P	P	P	P	P	P	X	
Mortuary, funeral home, crematorium	A	P	X	P	X	P	X	
Personal service shops	P	P	P	P	P	P	X	
Pharmacies	P	P	P	P	P	X	X	
Print and copy shop	P	P	P	P	P	P	X	
Printing and publishing (of books, newspaper and other printed matter)	X	A	P	P	P	P	P	
Professional offices	P	P	P	P	P	P	P	
Repair service – Equipment, appliances	X	A	P	P	P	P	P	ACC 18.57.040(D)
Veterinary clinic, animal hospital	A	P	P	P	P	P	X	
Youth community support facility	X	P	X	X	X	X	X	ACC 18.57.040(E)

PERMITTED, ADMINISTRATIVE, CONDITIONAL AND PROHIBITED USES BY ZONE								P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designation**							**Standards for Specific Land Uses**
	~~C-N~~	C-1	~~C-2~~	C-~~2~~3	C-AG4	M-1	M-2	
TRANSPORTATION, COMMUNICATIONS AND INFRASTRUCTURE								
Ambulance, taxi, and specialized transportation facility	X	X	X	A	X	P	P	
Broadcasting studio	X	P	X	P	X	P	P	
Heliport	X	X	X	C	X	C	C	
Motor freight terminal[1]	X	X	X	X	X	X	X	See Footnote No. 1
Parking facility, public or commercial, surface	X	P	P	P	P	P	X	
Parking facility, public or commercial, structured	X	P	P	P	P	P	X	
Towing storage yard	X	X	X	X	X	A	P	ACC 18.57.045(A)
Utility transmission or distribution line or substation	A	A	A	A	A	A	A	
Wireless communications facility (WCF) (See ACC	*	*	*	*	*	*	*	*See ACC 18.31.100 for use regulations and zoning

PERMITTED, ADMINISTRATIVE, CONDITIONAL AND PROHIBITED USES BY ZONE								P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designation**							**Standards for Specific Land Uses**
	~~C-N~~	C-1	~~C-2~~	C-~~2~~3	C-AG4	M-1	M-2	
18.04.912(W))								development standards.
Eligible facilities request (EFR) (wireless communications facility) (See ACC 18.04.912(H))	P	P	P	P	P	P	P	
Small wireless facilities (ACC 18.04.912(Q))	P	P	P	P	P	P	P	
VEHICLE SALES AND SERVICES								
Automobile washes (automatic, full or self-service)	X	A	X	P	P	P	P	ACC 18.57.050(A)
Auto parts sales with installation services	X	A	A	P	P	P	P	
Auto/vehicle sales and rental	X	A	X	P	X	P	P	ACC 18.57.050(B)
Fueling station	X	A	A	P	P	P	P	ACC 18.57.050(C)
Mobile home, boat, or RV sales	X	X	X	P	X	P	P	

PERMITTED, ADMINISTRATIVE, CONDITIONAL AND PROHIBITED USES BY ZONE								P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designation**							**Standards for Specific Land Uses**
	~~C-N~~	**C-1**	**~~C-2~~**	**C-~~2~~3**	**C-AG~~4~~**	**M-1**	**M-2**	
Vehicle services – Repair/body work	X	X	A	P	X	P	P	ACC 18.57.050(D)
OTHER								
Any commercial use abutting a residential zone which has hours of operation outside of the following: Sunday: 9:00 a.m. to 10:00 p.m. or Monday – Saturday: 7:00 a.m. to 10:00 p.m.	A	A	A	A	A	A	A	
Other uses may be permitted by the planning director or designee if the use is determined to be consistent with the intent of the zone and is of the same general character of the uses permitted. See ACC 18.02.120(C)(6), Unclassified Uses.	P	P	P	P	P	P	P	

1 Any motor freight terminal, as defined by ACC 18.04.635, in existence as of the effective date of the ordinance codified in this section, is an outright permitted use in the M-1 and M-2 zones. Any maintenance,

alterations and additions to an existing motor freight terminal which are consistent with ACC 18.23.040, Development standards, are allowed.

2 Any mixed-use development or senior housing project vested prior to Resolution No. 5187 (December 7, 2015) is an outright permitted use in the C-1 zone. Subsequently, if a nonresidential use within a vested mixed-use development changes, then the nonresidential use shall maintain a minimum of 10 percent of the cumulative building ground floor square footage consisting of the uses permitted outright, administratively, or conditionally, listed under "Recreation, Education, and Public Assembly," "Retail," or "Services" of the C-1 zone.

3 Any stand-alone live/work units or stand-alone work/live units vested prior to the effective date of the ordinance codified in this chapter are outright permitted uses.

(Ord. 6885 § 1 (Exh. A), 2022; Ord. 6838 § 1 (Exh. A), 2021; Ord. 6799 § 6 (Exh. F), 2020; Ord. 6728 § 3 (Exh. C), 2019; Ord. 6688 § 1 (Exh. 1), 2018; Ord. 6644 § 2, 2017; Ord. 6642 § 9, 2017; Ord. 6508 § 1, 2014; Ord. 6433 § 26, 2012.)

18.23.040 Development standards.

A. Hereafter, no use shall be conducted and no building, structure and appurtenance shall be erected, relocated, remodeled, reconstructed, altered or enlarged unless in compliance with the requirements in Tables 18.23.040A (~~C-N,~~ C-1, ~~C-2,~~ C-23, and C-AG4 Zone Development Standards) and 18.23.040B (M-1 and M-2 Zone Development Standards) and in compliance with the provisions of this title, and then only after securing all permits and approvals required hereby. These standards may be modified through either an administrative variance or variance, subject to the procedures of Chapter 18.70 ACC.

Table 18.23.040A. ~~C-N,~~ C-1, C-2, ~~C-3,~~ and C-AG4 Zone Development Standards

Development Standard	Requirement by Zone				
	~~C-N Neighborhood Shopping Center~~	C-1 Light Commercial	~~C-2 Central Business~~	C-23 Heavy Commercial	C- C-AG 4 Mixed-Use Commercial
Minimum lot area	~~2 acres~~	None	~~None~~	None	None[1]

Development Standard	Requirement by Zone				
	~~C-N~~ ~~Neighborhood Shopping Center~~	C-1 Light Commercial	~~C-2~~ ~~Central Business~~	C-~~2~~3 Heavy Commercial	C- C-AG ~~4~~ Mixed-Use Commercial
Minimum lot width, depth	~~None~~	None	~~None~~	None	None
Maximum lot coverage	~~55 percent~~	None	~~None~~	None	None
Minimum setbacks	*Minimum setbacks required for structures. See also ACC 18.31.070 for specific exceptions to these setback standards.*				
Front	~~50 ft~~	20 ft	~~None~~	20 ft	20 ft
Side – Interior	~~None~~[2]	None[2]	~~None~~	None[2]	None[2]
Side – Street	~~50 ft~~	15 ft	~~None~~	15 ft	15 ft
Rear	~~None~~[2]	None[2]	~~None~~	None[2]	None[2]
Height limit	Maximum *allowable height of structures. See also ACC 18.31.030 (Height limitations – Exceptions) for specific height limit exceptions.*				
Maximum height	~~30 ft~~	45 ft[3]	~~ACC 18.23.050~~	75 ft	75 ft
Additional development standards	~~None~~	None	~~ACC 18.23.050~~	None	None
Fences and hedges	See Chapter 18.31 ACC				
Landscaping	See Chapter 18.50 ACC				
Parking	See Chapter 18.52 ACC				

Development Standard	Requirement by Zone				
	~~C-N~~ ~~Neighborhood Shopping Center~~	C-1 Light Commercial	~~C-2~~ ~~Central Business~~	C-~~2~~3 Heavy Commercial	C- C-AG ~~4~~ Mixed-Use Commercial
Signs	See Chapter 18.56 ACC				
Lighting	See Chapter 18.55 ACC				
Nonconforming structures, land and uses	See Chapter 18.54 ACC				

Notes:

1 Residential uses: no minimum lot size; provided, that residential density does not exceed 20 units per gross acre (this includes privately owned open space tracts but excludes dedicated public roads).

2 A 25-foot setback is required when adjacent to a residential zone.

3 Buildings within the Auburn north business area, as established by Resolution No. 2283, may exceed 45 feet if one additional foot of setback is provided from each property line (or required minimum setback) for each foot the building exceeds 45 feet in height.

Table 18.23.040B. M-1 and M-2 Zone Development Standards

Development Standard	Requirement by Zone	
	M-1 Light Industrial	M-2 Heavy Industrial
Minimum lot area	None	None
Minimum lot width, depth	None	None

Development Standard	Requirement by Zone	
	M-1 **Light Industrial**	**M-2** **Heavy Industrial**
Maximum lot coverage	None	None
Minimum setbacks	*Minimum setbacks required for structures. See also ACC 18.31.070 for specific exceptions to these standards.*	
Front	20 ft	30 ft
Side – Interior	None[1]	None[1]
Side – Corner	20 ft	30 ft
Rear	None[1]	None[1]
Height limit	*Maximum allowable height of structures. See also ACC 18.31.030 (Height limitations – Exceptions) for specific height limit exceptions*	
Maximum height	45 ft[2]	45 ft[2]
Additional development standards	None	None
Fences and hedges	See Chapter 18.31 ACC	
Landscaping	See Chapter 18.50 ACC	
Parking	See Chapter 18.52 ACC	
Signs	See Chapter 18.56 ACC	

Development Standard	Requirement by Zone	
	M-1 Light Industrial	M-2 Heavy Industrial
Lighting	See Chapter 18.55 ACC	
Nonconforming structures, land and uses	See Chapter 18.54 ACC	

Notes:

1 A 25-foot setback is required when adjacent to a residential zone.

2 Buildings may exceed 45 feet if one foot of setback is provided from each property line (or required minimum setback) for each foot the building exceeds 45 feet.

(Ord. 6885 § 1 (Exh. A), 2022; Ord. 6728 § 3 (Exh. C), 2019; Ord. 6433 § 26, 2012.)

~~18.23.050 Additional development standards for C-2, central business zone.~~

~~A. *Maximum Building Height.*~~

~~1. The maximum height of that portion of a building that abuts a street(s) shall be no higher than the right-of-way width of the abutting street(s). Building height may increase; provided, that the building is stepped back one foot (from the abutting street right(s)-of-way) for each foot of increased building height.~~

~~2. If the building abuts more than one street and the abutting streets have different right-of-way widths, then the height of the building allowed at any street frontage shall be the average of the abutting street right-of-way widths.~~

~~3. The following rooftop features may extend up to 15 feet above the maximum height limit: stair towers, elevator penthouses, and screened mechanical equipment.~~

B. Minimum setbacks: none required, see subsection D of this section for specific building orientation requirements.

C. Fences shall be decorative and relate architecturally to the associated building. Acceptable materials are brick, wood, stone, metal, or textured concrete. Typical galvanized wire mesh (chain link), barbed wire or razor wire are not permitted. For further information see Chapter 18.31 ACC.

The provisions of this section shall not apply to temporary fences required during construction projects permitted by the city.

D. *Building Orientation Requirements.* The following requirements apply to the construction of all new buildings or structures:

1. Existing buildings or structures, including facades, that do not have setbacks or otherwise cannot comply are exempt from these requirements regardless of the amount of improvements made to the building, structure or facade as long as any alteration does not make the existing facade more nonconforming.

2. Existing buildings, structures, or facades that are set back and within 20 feet of a street shall comply to the fullest extent possible as determined by the planning director, with the following requirements when any cumulative structural improvements are made that exceed 50 percent of the assessed value of the existing building, structure, or facade.

3. Any addition to an existing building, regardless of value, that will be within 20 feet of a street shall also comply to the fullest extent possible, as determined by the planning director, with the following requirements:

a. For each lineal foot of frontage a building has on a street, there shall be provided an area(s) for pedestrian amenities at the rate of one square foot of ground area for each lineal foot of building frontage. Pedestrian amenities shall consist of such features as landscaping, benches, entryways with accents such as brick pavers, artwork, or a combination of these or similar features. The pedestrian amenities shall be located on the property between the street right-of-way and the building. The planning director shall approve the amount and type of the pedestrian amenities.

b. For buildings that have a street frontage that exceeds 50 feet, then at least 25 percent of the building's frontage shall be immediately adjacent to the street right-of-way.

c. For buildings that have a street frontage that is less than 25 feet, then no pedestrian amenities will be required and the building may be located at the property line. There shall, however, be provided a landing in front of each door that opens to a street that is large enough such that no part of any door will encroach into the street right-of-way when the door is being opened or closed.

d. For buildings that provide additional setbacks, except as restricted by subsection (D)(3)(b) of this section, the area between the street right-of-way and the building shall only contain pedestrian amenities.

e. If a building has more than two street frontages, then at least two of the frontages shall comply with subsections (D)(3)(b) and (g) of this section and contain pedestrian amenities between the building and the street right-of-way. Any remaining frontages shall either have pedestrian amenities, windows, murals, flat surfaced artwork or other similar architectural features that would avoid large blank walls.

f. For new buildings that will infill between two other existing buildings, the new building shall be set back no further than either of the adjacent buildings unless additional setback is required to comply with subsection (D)(3)(a) of this section. The proposed setback shall be reviewed by the planning director to ensure the setback will maintain building continuity along the street.

g. Buildings shall have windows that encompass at least 60 percent of the first floor facade and at least 40 percent of the facade of each additional floor. At least 50 percent of the area of the first floor windows of nonresidential buildings shall provide visibility to the inside of the building. This subsection shall only apply to the facades of new buildings with street frontage and shall not lessen the requirements of the Uniform Building or Fire Codes.

h. The building's principal pedestrian entrance shall be oriented to the street. If the building is at a corner, either street or alley, then the principal pedestrian entrance shall be at the corner unless a better architectural design is attained at another location and approved by the planning director.

i. Buildings that are at the intersection of either two streets or a street and an alley shall provide for a sight distance triangular setback as required by Chapter 18.31 ACC. These triangular areas may contain pedestrian amenities that satisfy the requirements of subsection (D)(3)(a) of this section.

j. A site plan shall be prepared by the proponent which addresses compliance with the requirements as outlined in subsections (D)(3)(a) through (i) of this section. The site plan shall be approved by the planning director prior to the submittal of any building permit.

k. For the sole purposes of this subsection D the term "street" shall include the right-of-way of private and public streets. The term shall also include pedestrian walkways, encumbered by an easement or similar means, that are used by the general public to travel from one property to another.

E. Mechanical equipment on rooftops shall be sited and designed to minimize noise and effectively screen the equipment from view from adjacent properties and rights-of-way. The following methods, or a combination thereof, may be used:

1. Set back from the roof edge to obscure visibility from below;

2. Integration into the building architecture, using building walls, roof wells or roof parapets to conceal the equipment;

3. Equipment enclosure or sight-obscuring fencing or landscaping;

4. Overhead trellis or roof to obscure visibility from above.

Materials used to screen mechanical equipment shall be the same as or compatible with the design of the principal structure.

F. Stair towers and elevator penthouses shall be designed to be architecturally integrated into the principal structure. This may include using the same building materials, repeating common building forms, colors or elements, or incorporating the roof and wall of the stair tower or elevator penthouse into the upper wall of the structure. (Ord. 6433 § 26, 2012.)

18.23.060 Additional development standards for the ~~C-N~~, C-1, C-2, ~~C-3, C-4~~C-AG, and M-1 zones.

A. Loading and unloading docks shall not be visible from the street.

B. Mechanical equipment on rooftops shall be sited and designed to minimize noise and effectively screen the equipment from view from adjacent properties and rights-of-way. The following methods, or a combination thereof, may be used:

1. Set back from the roof edge to obscure visibility from below;

2. Integration into the building architecture, using building walls, roof wells or roof parapets to conceal the equipment;

3. Equipment enclosure or sight-obscuring fencing or landscaping;

4. Overhead trellis or roof to obscure visibility from above.

Materials used to screen mechanical equipment shall be the same as or compatible with the design of the principal structure. (Ord. 6885 § 1 (Exh. A), 2022; Ord. 6433 § 26, 2012.)

The Auburn City Code is current through Ordinance 6912, passed July 17, 2023.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

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Chapter 18.25

~~INFILL RESIDENTIAL~~MIDDLE HOUSING DEVELOPMENT STANDARDS

Sections:

18.25.010 Purpose and intent.

18.25.020 Applicability.

18.25.030 Procedures.

18.25.040 Middle housing types.~~Infill residential standards.~~

18.25.050 Calculating parking requirements.

18.25.060 Accessory Dwelling Units.

18.25.070 Middle housing design standards.

18.25.080 Usable open space.

18.25.090 Courtyard housing standards.

18.25.0100 Lot splitting.

18.25.010 Purpose and intent.

The purpose of this chapter is to encourage the development of underutilized parcels in zones which, through Auburn comprehensive plan goals and policies, have been identified as areas where ~~infill residential development~~middle housing should be encouraged. Middle h~~H~~ousing shall be compatible in scale, form, and character with ~~single-family~~single-unit detached houses that are allowed within the underlying zoning designation. This chapter identifies the standards for middle housing development. ~~conditions under which infill development is supported and relaxes certain development requirements in those instances in an effort to promote the construction of infill development in appropriate areas of the city.~~ (Ord. 6245 § 14, 2009.)

18.25.020 Applicability.

A. *Eligibility Criteria.* This chapter may be applied to development or redevelopment that meets ~~all of~~ the following criteria:

1. The lot is within one of the following zones: RC, R-1, R-2, R-3, R-4, R-NM ~~R-5, R-7, R-10, R-16, or R-20.~~

B. *Exceptions.* This chapter may be applied to development or redevelopment, except for the following below:

1. Middle Housing is not permitted within Urban Separators.

2. – Middle Housing is not permitted in the R-HMC zone.

3. Middle Housing is not permitted on lots smaller than one thousand (1,000) square feet.

4. Middle Housing shall not be used to justify alteration of a regulated critical area per Chapter 16.10 ACC.

~~2. Adjacent properties abutting at least 50 percent of the nonstreet perimeter of the subject property (i.e., side and/or rear lot lines) are developed with single-family dwellings or higher intensity uses.~~

~~3. For lots located in the R-5 or R-7 zones, the development or redevelopment creates a maximum of one new lot or dwelling unit.~~

~~4. For properties located in the R-10, R-16, or R-20 zones, the lot or parcel size shall be one acre or less. (Ord. 6245 § 14, 2009.)~~

18.25.030 Procedures.

Development proposals desiring to utilize the middle housing ~~infill~~ standards of this chapter shall be subject to one or more of the permit types found in ACC Title 14 and shall be processed in a manner consistent with the underlying land use application pursuant to ACC Title 14. (Ord. 6245 § 14, 2009.)

18.25.040 ~~Infill residential standards.~~Middle housing types.

A. For the purposes of this chapter middle housing refers to all housing consisting of between two and six units per lot, defined in ACC 18.04.340(B).

18.25.050 ~~Calculating parking~~Parking Requirements.

A. Within one-half mile walking distance of a Major Transit Stop no on-site parking is required.

B. On lots that that are more than one-half mile walking distance of a Major Transit Stop, (1) one on-site parking space shall be required for each dwelling unit.

C. On-site parking spaces shall include garage and/or driveway parking spaces.

D. When calculating parking relative to the above referenced lot sizes, the calculation shall occur prior to zero lot line land divisions.

18.25.060 Accessory Dwelling Units.

A. An ADU is considered a dwelling unit when calculating the number of units allowed on a lot or as part of a development proposal. Example: If 4 units are the base units on a given lot, and a fourplex has been developed, no ADUs may be added.

B. ADUs must be ~~an~~ accessory to a single-unit detached unit or middle housing unit.

~~C~~C. ADUs are subject to the standards contained in Chapter 18.32 ACC.

For the purposes of total number of units allowed on a lot pursuant to ACC 18.020.067, "dwelling units", includes accessory dwelling units (ADUs). Example: If 4 units are the base units on a given lot, and a fourplex has been developed, no ADUs may be added."

18.25.070 Middle housing design standards.

A. Applicability.

1. Standards in this section apply to all development between two and six units per lot.

2. For the purposes of this section, a "street" refers to any public or private street.

3. These design standards do not apply to the conversion of a structure to a middle housing type with up to four attached units, if the floor area of the structure does not increase more than 50 percent.

B. Purpose. The purpose of these standards is to:

1. Promote compatibility of middle housing with other residential uses, including single-unit detached dwellings.

2. De-emphasize garages and driveways as major visual elements along the street.

3. Provide clear and accessible pedestrian routes between buildings and streets.

4. Implement the definitions of cottage housing and courtyard apartments provided by state law.

C. Pedestrian access. A private, paved pedestrian connection that is a minimum of three feet wide required between each middle housing building and the public sidewalk (or the public street if there is no sidewalk). Driveways may be used to meet this requirement.

D. Vehicle access, carports, garages, and driveways.

1. Garages, driveways, and off-street parking areas shall not be located between a building and a street, except when either of the following conditions are met:

a. The combined width of all garages, driveways, and off-street parking areas does not exceed a total of 60 percent of the length of the street frontage property line. This standard applies to buildings and not individual units; or

b. The garage, driveway, or off-street parking area is separated from the street property line by a dwelling; or

c. The garage, driveway, or off-street parking is located more than 100 feet from a street.

E. Landscaping. See ACC Table 18.50.040(A) "Minimum Landscape Requirements by Zoning District" for landscaping requirements.

F. Entries. Each building shall incorporate a primary building entry or one or more private unit entries, such as a covered porch or recessed entry. Each entry shall feature minimum weather protection of three feet by three feet.

G. Windows and doors. A minimum of 15 percent of the area of the street-facing façade elevation shall include windows or doors. Facades separated from the street by a dwelling or located more than 100 feet from a street are exempt from this standard.

H. Unit articulation

1. Applicability.

a. Each attached unit featuring a separate ground level entrance in a multi-unit building facing the street shall include at least one of the articulation options listed in subsection (I)(2) below.

b. Facades separated from the street by a dwelling or located more than 100 feet from a street are exempt from this standard.

2. Articulation options:

Option 1. Roofline change or a roof dormer with a minimum of four feet in width.

Option 2. A balcony a minimum of two feet in depth and four feet in width and accessible from an interior room.

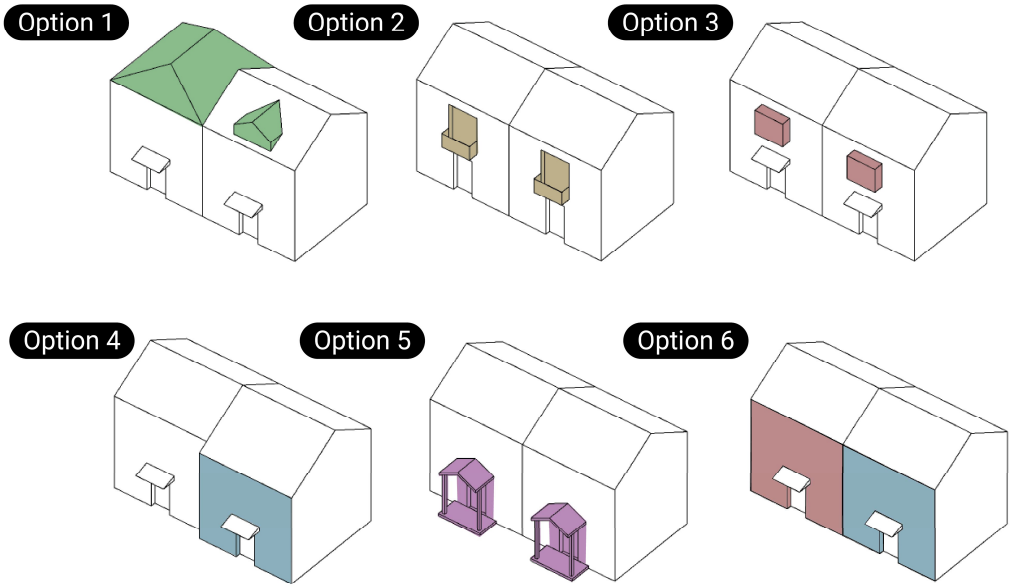
Option 3. A bay window that extends from the façade a minimum of two feet.

Option 4. An offset of the façade of a minimum of two feet in depth from the neighboring unit.

Option 5. A roofed porch at least 50 square feet in size.

Option 6. Change in wall color.

Figure 18.25.050(I)



I. Middle Housing Design Review Submittal Requirements. In addition to other documentation required for submittal of a complete application for building permit or discretionary land use approvals/permits the following items, (1) and (2) below, shall be required for review of building design. Middle housing design review is subject to administrative design review that shall be completed through the building permit and/or discretionary land use approvals/permits.

1. Elevation drawings prepared by an architect licensed in the state of Washington of all proposed construction including dimensional drawings at one-eighth inch equals one foot or comparable scale showing the type of exterior materials, color, exterior finishes (including for accessory structures, where applicable), articulation, fenestration details, and the location, elevations, type, style and model of any exterior lighting fixtures (where applicable).

2. As applicable, a to-scale landscape plan consistent with Chapter 18.50 ACC.

18.25.080 Courtyard housing standards.

A. Applicability. Standards in this section apply to courtyard housing, which includes cottage housing (detached units) and courtyard apartments (attached units).

B. Open space. Open space shall be provided equal to a minimum 20 percent of the lot size. This may include common open space, private open space, setbacks, critical areas, and other open space.

C. Common open space.

1. At least one outdoor common open space is required.

2. Common open space shall be provided equal to a minimum of 300 square feet per unit. Each common open space shall have a minimum dimension of 15 feet on any side.

3. Orientation. Common open space shall be bordered by dwellings on at least two sides. At least half of all units in the development shall abut a common open space and have the primary entrance facing the common open space.

4. Parking areas and vehicular areas shall not qualify as common open space.

5. Critical areas and their buffers, including steep slopes, shall not quality as common open space.

D. Community building.

1. A courtyard housing development shall contain no more than one community building.

2. A community building shall have no more than 2,400 square feet of net floor area, excluding attached garages.

3. A community building shall have no minimum off-street parking requirement.

18.25.090 Usable open space.

A. All middle housing development must include usable open space.

B. Usable open space must occupy at least 10% of the lot with a minimum dimension of at least 10 feet. Usable open space may be a single large space or several separate spaces. Unenclosed porches, patios, and entries may count towards usable open space if contiguous with a space that meets the standards of this section. Areas of usable open space with no unenclosed porches, patios, and entries or other similar features may overlap with the required landscaped areas within Table 18.50.040(A).

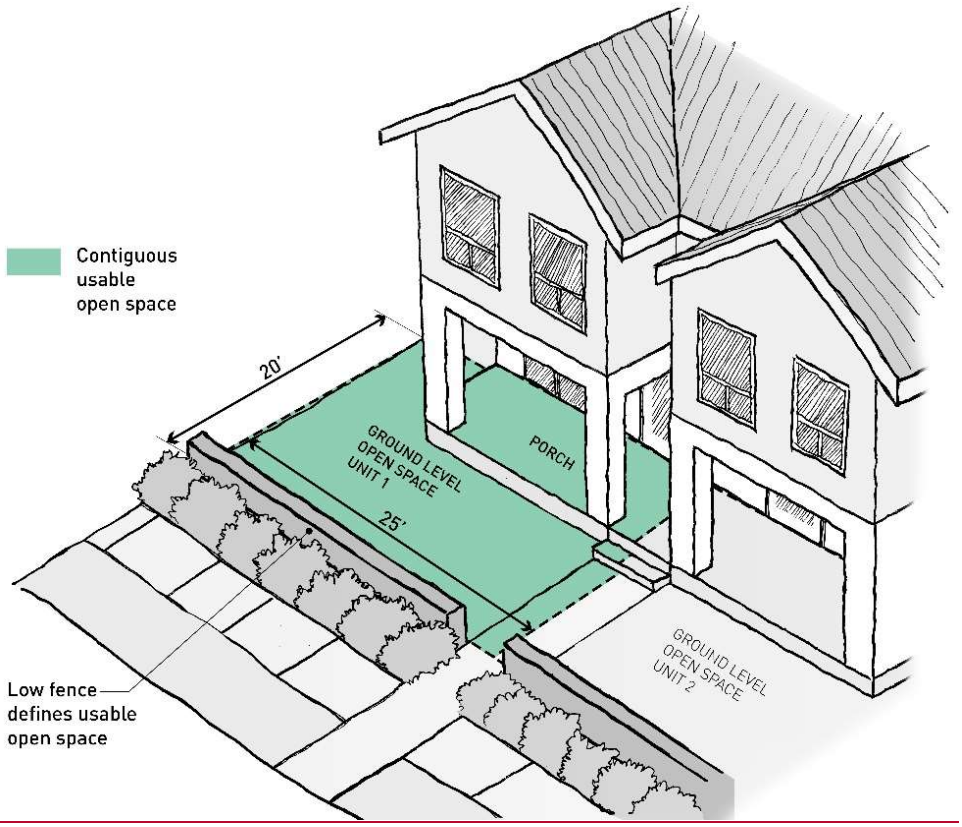
C. Driveways and parking areas may not count towards usable open space.

D. Where usable open space is located within the front setback, the open space must be defined with a fence, hedge, or wall, at least 24 inches tall.

E. LID stormwater BMPs, like rain gardens, may be integrated in up to 25 percent of the minimum required usable open space area.

F. Additions must not create or increase any nonconformity with this standard.

Figure 18.25.060 Usable Open Space



18.25.100 Lot splitting.

Lot splitting as defined in ACC 17.04.221 is permitted as a means of creating separate ownership of each housing unit. See zero lot line subdivision standards contained in Chapter 17.29 ACC.

Chapter 18.29
DUC DOWNTOWN URBAN CENTER DISTRICT

Sections:

18.29.010 Intent.
18.29.020 Scope.
18.29.030 Process.
18.29.040 Definitions.
18.29.050 Use limitations.
18.29.053 Uses/activities requiring an administrative use permit.
18.29.055 ~~Uses/activities requiring a conditional use permit.~~Deviation from development standards
18.29.057 Implementing districts.
18.29.060 Development standards.
18.29.070 Design standards.

18.29.010 Intent.

The downtown urban center zone is intended to create a distinct and strong identity for downtown Auburn by establishing land use and design standards for review of development proposals within the core area of the city of Auburn's designated urban center, in order to implement the city of Auburn downtown plan and the goals, policies and objectives of the Auburn comprehensive plan. This zone is intended to produce a concentration and mixture of commercial, office, medical, retail, residential and civic uses within the downtown area; to encourage private and public investment, attract shoppers and visitors, and appeal to existing and new residents; to provide a development pattern that supports pedestrian movement, bicycles and use of public transit; and to provide opportunities to increase the city's tax base, thereby helping to fund public improvements and public services. (Ord. 6071 § 6 (Exh. A), 2007.)

18.29.020 Scope.

A. The downtown urban center zone may be applied to any property designated as "Downtown" on the Auburn comprehensive plan map.

B. Site plan and building design review and approval shall be required for all public and private development activities requiring permits within the downtown urban center zone unless exempted under subsection C of this section. The planning and development director is given the authority to require building design and site plans consistent with the design standards contained or referenced herein and to require revisions as necessary in order to ensure development is consistent with the purpose of this chapter.

C. The following activities, as determined by the director, shall be exempt from the provisions of this chapter if the property has frontage on a pedestrian street as defined in the downtown urban center design standards:

1. Interior alterations that do not alter the exterior appearance of a structure or modify an existing site condition;

2. Normal or routine building and site maintenance/repair that is exempt from permit requirements; and

3. Any remodeling or expansion of existing single-~~family~~ unit detached residences with no change in use or addition of dwelling units involved.

D. The following activities, as determined by the director, shall be exempt from the provisions of this chapter if the property does not have frontage on a pedestrian street as defined in the downtown urban center design standards:

1. Interior alterations that do not alter the exterior appearance of a structure or modify an existing site condition;

2. Site and exterior alterations that do not exceed 10 percent of the assessed valuation of the property (building or land) per the most recent county records;

3. Building additions that are less than 10 percent of the existing floor area of the existing building(s). Any cumulative floor area increase (from the adoption date of the ordinance codified in this chapter) that totals more than 10 percent shall not be exempt; unless the

director determines compliance with these standards would be unfeasible and/or unreasonable;

4. Normal or routine building and site maintenance/repair that is exempt from permit requirements;

5. Any remodeling or expansion of existing single-family residences with no change in use or addition of dwelling units involved. (Ord. 6287 § 2, 2010; Ord. 6230 § 1, 2009; Ord. 6071 § 6 (Exh. A), 2007.)

18.29.030 Process.

A. Compliance with all development and design standards contained or referenced herein shall occur in conjunction with any required permit process. The director shall provide appropriate forms that shall accompany a permit application. The director may approve, approve with conditions, or deny a building or site development permit application to ensure compliance with these standards. Any decision regarding a permit application shall be set forth in writing and contain findings of fact and conclusions that support the decision made.

B. The decision of the director shall be final unless the applicant or any affected party appeals the decision to the hearing examiner. All appeals shall be in accordance with ACC 18.70.050(B) through (E). (Ord. 6071 § 6 (Exh. A), 2007.)

18.29.040 Definitions.

These words shall have the following meanings for the purposes of this chapter:

A. “Canopy” means a cover over a sidewalk providing protection from the rain, which is constructed of durable, permanent materials.

B. “Director” means the director of the Auburn department of planning and development.

C. “Green roof” means a roof designed with principles of environmental sustainability, involving the use of vegetation and storm water collection and cleaning. It may or may not be accessible.

D. "Health club" means a use that offers exercise and recreational activities for tenants and/or the general public, either with or without a fee.

E. "Parking, below grade" means any portion of a structure containing parking that is located below the average finished grade around a building.

F. "Parking, structured" means parking contained within an enclosed building, designed to appear like it is part of the larger building complex, or a freestanding structure devoted exclusively to above-grade parking.

G. "Performing space" means any interior or exterior area designated for live performing and entertainment.

H. "Public art" means any form of painting, mural, mosaic, sculpture, or other work of art, so long as it can be appraised as a work of art and its value as such documented, displayed on the exterior of a building, at or near the pedestrian entrance, or on a public plaza, and visible to users of the public right-of-way at all times.

I. "Public meeting room" means a space that can be used by the general public and having a capacity of at least 50 people. It may operate under a reservation or nominal fee system and must be easily accessible from a lobby or plaza.

J. "Public plaza" means an open space that is visible and accessible to the public at all times, predominantly open to the sky, and for use principally by people, as opposed to merely a setting for the building.

K. "Street level retail" means uses providing goods and services, including food and drink, adjacent to, visible from, and directly accessible from the public sidewalk.

L. "Water feature" means a fountain, cascade, stream, fall, pond of water, or combination thereof, that serves as a focal point, located outside of a building, publicly visible and accessible, and active during daylight hours. (Ord. 6287 § 2, 2010; Ord. 6071 § 6 (Exh. A), 2007.)

18.29.050 Use limitations.

Hereafter, all buildings, structures or properties may be used for any use, unless specifically prohibited herein. Ground floor retail, restaurants and/or office use is required for all building

frontages facing Main Street. All uses shall be subject to review and approval by the director. The following uses are prohibited:

A. Sexually oriented businesses as defined in Chapter 18.74 ACC.

~~B. Taverns.~~

BC. All industrial uses as defined in the North American Industrial Classification System (20221997 Edition), categories 48 – 49 (transportation), 31 – 33 (manufacturing) and 42 (wholesale trade).

CD. Outdoor storage of materials and equipment (except during active construction projects).

DE. New automobile maintenance and repair businesses.

EF. Work release facilities; secure community transition facilities.

FG. Wrecking yards.

GH. Solid waste transfer stations.

HI. Car washes.

IJ. New gasoline stations.

JK. Street-level ministorage.

KL. Outdoor sales of vehicles, boats or equipment.

LM. Drive-in/drive-through facilities with direct vehicular driveway access onto Main Street.

MN. All marijuana related businesses and marijuana cooperatives.

NO. New single-unit detached dwellings; except for DUC Neighborhood Residential District.

OOP. Other uses may be prohibited by the director if the use is determined to be inconsistent with the intent of this zone or is of the same general character of the other prohibited uses listed in this section. (Ord. 6642 § 10, 2017; Ord. 6071 § 6 (Exh. A), 2007.)

18.29.053 Uses/activities requiring an administrative use permit.

The following uses/activities may be permitted when an administrative use permit has been issued pursuant to the provisions of Chapter 18.64 ACC:

A. Expansions of existing automobile maintenance and repair businesses;

B. Expansions of existing gasoline stations;

C. Animal daycare businesses that feature outdoor exercise areas and/or kennels;

D. Wine production facility; small craft distillery; small craft brewery; and a tasting room is an outright allowed use in the DUC zone. (Ord. 6368 § 8, 2011; Ord. 6269 § 32, 2009.)

18.29.055 Deviation from development standards. ~~Uses/activities requiring a conditional use permit.~~

~~The following uses/activities may be permitted when a conditional use permit has been issued pursuant to the provisions of Chapter 18.64 ACC:~~

A. Any development project that seeks to deviate from any development standard listed in ACC 18.29.060 must be granted a variance pursuant to the provisions of Chapter 18.70 ACC ~~.~~ (Ord. 6269 § 12, 2009; Ord. 6071 § 6 (Exh. A), 2007.)

18.29.057 Implementing districts.

Downtown Urban Center zone is intended to create a distinct and strong identity for downtown Auburn by establishing land use and design standards for review of development proposals within the core area of the city of Auburn's designated urban center.~~, in order to implement the city of Auburn Downtown Plan and the goals, policies and objectives of the Auburn Comprehensive Plan.~~ This zone is intended to produce a concentration and mixture of commercial, office, medical, retail, entertainment, residential and civic uses within the downtown area; to encourage private and public investment, attract shoppers and visitors, and appeal to existing and new residents; to provide a development pattern that supports pedestrian movement, bicycles and use of public transit; and to provide opportunities to

increase the city's tax base, thereby helping to fund public improvements and public services. In order to implement the city of Auburn Downtown Plan and the goals, policies and objectives of the Auburn Comprehensive Plan, the zone is divided into the following districts:

A. DUC Downtown Core -125 District. DUC-125 is implemented only in the Downtown Urban Center and is subject to uses and development standards of this chapter and the Downtown Urban Design Guidelines. ~~DUC-specific development regulations, guidelines, and design requirements as found in Appendix A - Downtown Urban Design Guidelines, this Comprehensive Plan, and Auburn City Code.~~ Development in the DUC Downtown Core – 125 district shall not exceed 125 feet in vertical height and is subject to other applicable height restrictions found in Chapter 18.38 ACC.

B. DUC Downtown Core -75 District. The DUC Downtown Core – 75 zone is consistent with requirements described in the DUC Downtown Core – 125' except a maximum 75 vertical foot height limit shall apply.

C. DUC Downtown Core - 55 District. The DUC Downtown Core – 55 zone is consistent with the requirements described in the DUC Downtown Core – 125' except a maximum 55 vertical foot height limit shall apply.

D. DUC Neighborhood Residential District. R-2 uses per ACC Table 18.07.020 allowed, subject to the development standards of this chapter and the Downtown Urban Design Guidelines.

E. DUC Health and Wellness District. This district is to be used exclusively for the hospital area, located in the vicinity of 2nd Street NE and Auburn Avenue, and is intended to be used for medical and related uses and those uses compatible with the medical community. Residential may be included as part of vertical mixed-use development with medical being the primary development use. This district is subject to the uses and development standards of this chapter and the Downtown Urban Design Guidelines.

F. DUC M-1 Light Industrial District. M-1 zone uses allowed per ACC Table 18.23.030, subject to the development standards of this chapter and the Downtown Urban Design Guidelines.

G. DUC Flex-Residential District. This zone is intended to promote craft industrial/commercial uses that are compatible with residential area (i.e., workshop, brewery, etc.). R-F zone uses allowed per ACC Table 18.07.020, subject to the development standards of this chapter and the Downtown Urban Design Guidelines.

18.29.060 Development standards.

A. Minimum lot area: none.

B. Minimum lot width: none.

C. Minimum lot depth: none.

D. *Floor Area Ratio.* Floor area ratio is the cumulative amount of floor area within a building as a multiple of the lot area.

Floor Area Ratio (FAR)[1]

Basic Allowable "As of Right"		Maximum Allowable with Bonuses		
Nonresidential[2]	Residential[2]	Nonresidential	Residential[3]	Combined[4]
3.0	2.0	4.0	3.5	5.0

1 Floor area is measured to the inside face of exterior walls. The following shall be excluded from floor area calculation:

a All space below finished grade.

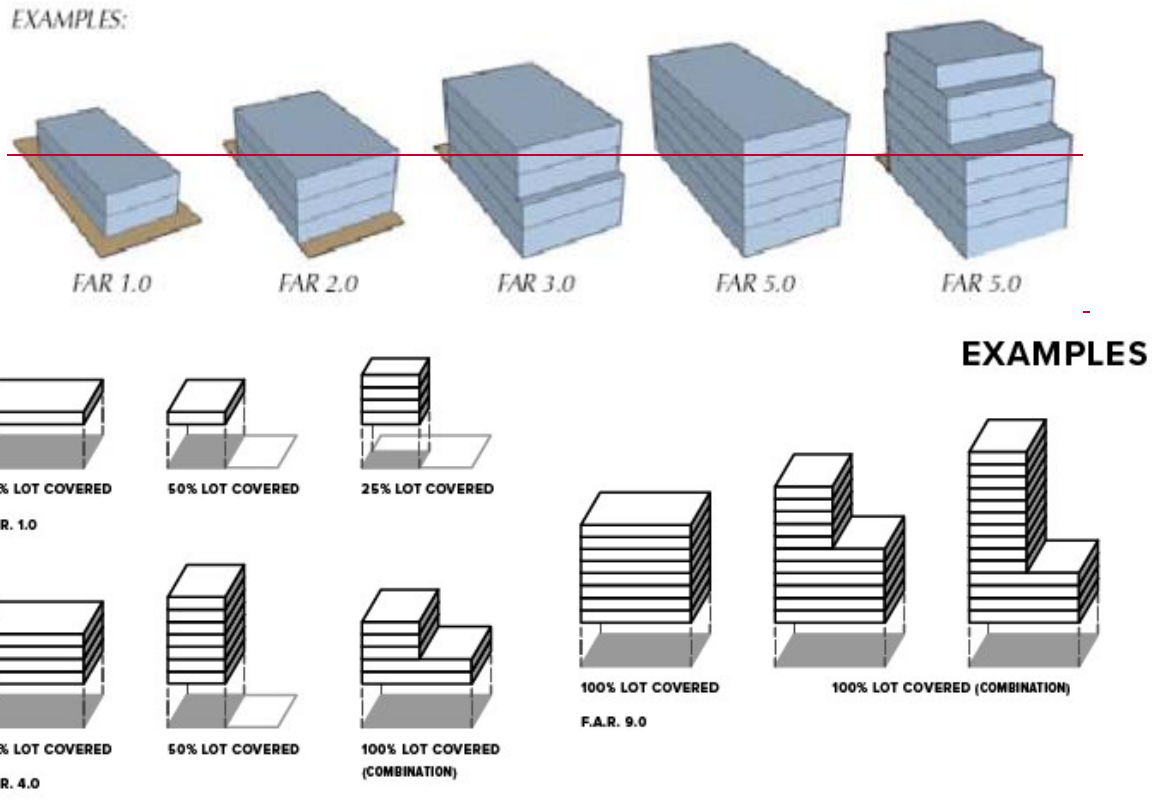
b Space dedicated to structured parking.

c Space used for any bonus feature listed in subsection E of this section.

2 Minimum required FAR is 0.75; basic allowable FAR is 1.0.

3 Hotels, nursing homes, assisted living centers, etc. shall be considered residential for the purpose of calculating FAR.

4 Allowable FAR for nonresidential and residential uses may be added together within a project, for a combined total.



E. Bonus Features Allowing Increased Floor Area Ratio.

Feature	Additional Gross Floor Area for Each Feature
Street level retail	100 sf of floor area for each linear foot of retail frontage
Restaurant	100 sf of floor area for each linear foot of restaurant frontage
Public plaza	5 sf of floor area for each sf of plaza
Widening public	4 sf of floor area for each sf of sidewalk

Feature	Additional Gross Floor Area for Each Feature
sidewalk	made available for public use
Canopy	4 sf of floor area for each sf of canopy
Daycare	4 sf of floor area for each sf of daycare
Health club	2 sf of floor area for each sf of health club
Performing space	2 sf of floor area for each sf of performing space
Public meeting room	5 sf of floor area for each sf of meeting room
Public art (arts commission approval required)	10 sf of floor area for each $100 of valuation
Water feature	10 sf of floor area for each $100 of valuation
Structured parking	0.5 sf of floor area for each sf of required parking above grade
Below grade parking	1 sf of floor area for each sf of required

Feature	Additional Gross Floor Area for Each Feature
	parking below grade (including half-level plate below grade)
Green roof	2 sf of floor area for each sf of green roof
Public restrooms	10 sf of floor area for each sf of public restroom
Contribution to a public park or cultural facility such as a library, museum or theater within 0.5 miles of the DUC zone; also, any project including a performance or entertainment venue is eligible for these bonuses, based upon the value of construction	10 sf of floor area for each $100 of contribution towards acquisition or development. This can be used to exceed both maximum FAR and maximum building height by up to 25%
Development of open space such as open roof decks, balconies, lanais or parts of the building and improved for outdoor living; including rooftop daycare play areas, dog walking areas, etc.	5 sf of floor area for each sf of open space

An applicant may be required to provide a legally binding agreement or easement to ensure any of the above features is maintained over the life of the project.

F. *Maximum Building Height.* Maximum building height within the DUC zone shall be 75 feet, unless bonus height is permitted per subsection E of this section.

1. If retail uses occupy the ground floor, the minimum height for that floor shall be 14 feet.

2. Mechanical penthouses, stair/elevator overruns, and antennas may be excluded from building height calculation provided they extend no more than 20 feet above the roof deck.

3. Maximum building height may be increased by up to 20 percent if the top is designed as a nonhabitable, architectural element. This element may extend above the increased height limit.

G. *Minimum Building Height.* The minimum height for any new structure within the DUC zone shall be two stories for the full extent of the building footprint.

H. *Parking Ratios.* The following parking standards shall apply within the DUC zone in lieu of any standard noted in ACC 18.52.020 or provision of ACC 18.52.030:

Use Type	Minimum Required	Maximum Allowed for Surface Parking Lots
Retail	2 stalls/1,000 nsf	4 stalls/1,000 nsf[1]
Office	2 stalls/1,000 nsf	4 stalls/1,000 nsf
Residential (mixed-use, apartment, live/work, work/live)	1 stall per dwelling unit	2 per dwelling unit
Residential	1 stall per	2 stalls per dwelling

Use Type	Minimum Required	Maximum Allowed for Surface Parking Lots
(middle housing)	dwelling unit outside of one-half mile walking distance of a Major Transit Stop	unit outside of one-half mile walking distance of a Major Transit Stop
Restaurant	0.5 stall per 4 seats	1 stall per 4 seats

1 nsf = net square feet

1. Parking requirements for uses not listed shall be determined by a study of parking demand for that use, as prepared by a qualified professional and as accepted by the director.

2. Retail and restaurant uses less than 3,000 nsf in area shall be exempt from parking requirements.

3. Uses sharing a common parking facility may reduce the required number of stalls by 25 percent.

4. Required parking may be located off site, so long as it is: (a) located within the DUC zone, (b) within 1,000 feet of the property, (c) connected to the property by streets improved with sidewalks or walkways, and (d) tied to the site by a contractual agreement reviewed and approved by the city attorney that is filed with the city and deed of record at the county.

5. On-street parking that is located directly adjacent to a development site may be used to satisfy minimum parking requirements and shall not be included in determining maximum surface parking allowances.

6. Dedicated off-site parking provided within a parking structure may be used to provide FAR bonuses for a project on a separate site, provided the parking structure is located consistent with this chapter.

7. The maximum standards noted in the table above may be exceeded if all stalls above the maximum limit are provided within a parking structure.

8. Compliance with these standards is not required for a change of use within an existing building or whenever there is an expansion of an existing building or a new building replaces an existing building that does not increase the floor area by more than 25 percent.

9. In lieu of providing the minimum parking required by this section, an applicant may request to pay for each required parking stall into a special fund that will be used to provide and upgrade municipal parking to serve the DUC zone. The per-stall fee shall be as specified in the city's fee schedule.

I. *Signs.* The design of all signs shall be in conformance with the design standards referenced in ACC 18.29.070. Allowable types, numbers and sizes of signs shall be as follows:

1. Freestanding: not allowed, except for monument signs as described within the "Downtown Auburn Design Standards"; no more than one per street frontage; maximum size: 64 square feet, calculated at a rate of one square foot of sign area per lineal foot of site frontage; minimum entitlement shall be 32 square feet; maximum height: five feet.

2. Wall signs: maximum area of 150 square feet per building facade, calculated at a rate of one square foot of sign area for every lineal foot of facade; minimum entitlement shall be 16 square feet.

3. Suspended signs attached under a marquee or canopy: one double-faced sign, no greater than three square feet per face allowed for each building entrance; minimum clearance above grade: eight feet.

4. *Portable Signs.* Portable signs may be allowed for each business entrance, subject to the following:

a. Signs may be placed within the public right-of-way, within 12 feet of a business entrance, subject to the guidelines provided by the director in consultation with the city engineer such that sign placement does not interfere with pedestrian or vehicular

traffic, does not create a sight hazard, and conforms to the requirements of the Americans with Disabilities Act. Additional portable signage may be authorized in order to support downtown events that are permitted or sanctioned by the city.

b. The sign shall be in accordance with the provisions of ACC 18.56.030(L).

c. The sign area cannot exceed 42 inches in height, 32 inches in width, and be limited to two faces.

d. Portable signs are not permitted to be affixed to city infrastructure located within the right-of-way (e.g., street lights, fire hydrants, public art). This includes a prohibition of chaining or otherwise securing portable signs to such infrastructure.

e. Signs may be displayed during business hours and shall not be displayed when the business is closed.

f. No landscaping may be covered, cut, damaged, or modified to accommodate a portable sign. The city may require replacement of any damaged landscaping pursuant to Chapter 18.50 ACC.

g. All portable signs shall have the permit number affixed to the back of the sign.

J. Landscaping. Landscaping shall be provided as defined in the Downtown Auburn Design Standards. (Ord. 6828 § 1 (Exh. A), 2021; Ord. 6534 § 1, 2014; Ord. 6419 § 1, 2012; Ord. 6071 § 6 (Exh. A), 2007.)

18.29.070 Design standards.

Adopted by reference are the “Downtown Auburn Design Standards” and the “Auburn Junction Design Standards,” a copy of which shall be maintained by the city clerk. These documents contain standards for development of the built environment in the DUC zone. The director shall have the authority to apply the standards to specific development proposals. These standards may be amended upon approval by the community development director. (Ord. 6828 § 1 (Exh. A), 2021; Ord. 6532 § 29, 2014; Ord. 6419 § 2, 2012; Ord. 6287 § 2, 2010; Ord. 6190 § 1, 2008; Ord. 6071 § 6 (Exh. A), 2007.)

The Auburn City Code is current through Ordinance 6912, passed July 17, 2023.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

City Website: www.auburnwa.gov

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Chapter 18.31
SUPPLEMENTAL DEVELOPMENT STANDARDS

Sections:

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18.31.010 Daycare standards.

A. The following performance standards shall apply to all child daycares but shall not apply to adult daycare:

1. If applicable, must be properly licensed with the state of Washington;

2. Daycare, preschool and nursery school services shall not be conducted before 5:00 a.m. or after 9:00 p.m. in the following zones: RC, R-1, R-~~5~~2, R-~~7~~2.

B. The provisions of subsection A of this section are not intended to reduce the requirements of any other licensing agency or department. (Ord. 6245 § 15, 2009.)

18.31.020 Fences.

A. *Purpose.* The fencing requirements in this section are intended to advance public safety, maintain and protect property values, to enhance the city's appearance, and to visually unify the city and its neighborhoods. This section contains general standards applicable to all fences (regardless of zoning district), and specific standards for fences within the residential, commercial, and institutional use zoning districts.

B. *Fence Height Regulations.* The minimum or maximum height requirements as stipulated throughout this chapter shall be considered to be met if the height of the fence is within six percent of the height required. The height of the fence shall be determined from the existing, established grade on the property to the highest point of the fence.

1. Notwithstanding any other provisions regarding fence height, the height of any portion of a fence may not reduce the sight distances established by the engineering design standards for vehicular and nonmotorized transportation facilities.

2. Fences and walls built interior of the required setback areas may be as high as the maximum building height allowed within the applicable zone.

3. Building permits are required for fences exceeding 84 inches in height.

4. The addition of lattice, trellis, and other similar features of a fence shall count towards the overall height and opaqueness of a fence.

5. If a fence sits upon or is elevated by a retaining wall, the height of the fence is measured from the base of the retaining wall. Building permits may be required for fences erected on retaining walls.

C. *Fence Height Regulations by Zoning District.* The following regulations shall apply in the R-1, R-~~5~~2, R-~~7~~2, R-3~~1~~0, R-3~~1~~6, R-4~~2~~0, R-MHC, R-FO~~,~~ ~~RO H,~~ I, ~~C N~~, C-1, C-2, C-AG4, and DUC zones:

1. Fence heights shall not exceed the following in each of the required setback areas, as regulated per each zone:

a. Front setback[1]: 42 inches; provided, that fences constructed of chain link, wrought iron or similar materials that provide visibility, as defined herein, may be 72 inches in height;

b. Side setback: 72 inches;

c. Rear setback: 72 inches;

d. Street side setback: 72 inches.

1 The front setback for residential zones pertains to the front setback for ~~single-family~~single-unit detached dwelling ~~residence~~ per box E1 of the table shown in ACC 18.07.030.

D. *Screened Fences and Sight-Obscuring Fences.*

1. Fence visibility is defined per ACC 18.04.373. In certain circumstances, the city engineer may determine that a fence that is 50 percent or less opaque does not provide visibility if the angle through which the fence is being viewed for sight distance analysis increases the perceived opacity of the fence to 50 percent or higher.

2. Screened fences are defined per ACC 18.04.372.

3. Sight-obscuring fences are defined per ACC 18.04.374.

E.

1. When landscaping is required along the property line and the property line abuts the right-of-way, the fence shall be placed interior to the required landscaping. The fence may not obscure such landscaping unless authorized through the land use or architectural and site design review process.

2. At other property lines, the landscaping shall be located to serve the greatest public benefit.

3. Fencing shall be placed such that it does not damage existing landscaping.

F. *Access and Obstructions.*

1. If a fence includes a gate or similar feature to allow vehicle passage, the gate shall be placed within the interior of the lot a sufficient distance to provide a vehicle refuge area within the driveway exterior of the fence to avoid blocking the street. The vehicle refuge area shall have a length that is sufficient for a waiting vehicle and not block the street, sidewalk, or right-of-way, in accordance with the engineering design standards.

2. Any fence located within a front yard setback that features a locking gate or similar security device, that cannot be opened from the exterior, shall provide emergency access in a manner acceptable to the fire marshal.

3. In no case shall any fence, hedge, or other obstruction be constructed, grown, or located, such that it deters or hinders the fire authority from gaining access to any fire authority connection, fire protection control valve, fire hydrant, or fire authority appliance or device. Minimum clearance requirements for fire hydrants shall be in accordance with the engineering design standards.

4. In no case shall any fence, hedge, or other obstruction be constructed, grown, or located, such that it obstructs the visibility of any fire hydrant from a distance of 150 feet, in any direction, of vehicular approach to the hydrant.

5. In no case shall any fence, hedge, or other obstruction be constructed, grown, or located in a manner which interferes with access to water, storm, or sanitary sewer manholes, and utility meters, and other city appurtenances which require access for maintenance purposes.

6. Unless explicitly permitted by easement language, fences are prohibited within city utility easements except as may be authorized by the city engineer.

G. Other than in the P-1, M-1, or M-2 zones, no fence may include the use of barbed wire, including concertina, razor, or similar wire; provided, that pasture areas a minimum of one acre in area may be fenced with barbed wire in any zone. Barbed wire may be attached to the top of, and in addition to, the height of a 84-inch fence in the above zones, provided it does not extend more than 12 inches in height.

H. Electrically charged fences shall only be allowed within the RC, R-1, C-23, M-1, M-2, LF, or I zones and shall adhere to the following standards. These standards shall not apply to underground or invisible pet fences that are used to contain small domestic animals.

1. Within the RC and R-1 zones the electrical charge of an electric fence must be noncontinuous and the electric fence controller shall be approved by Underwriters Laboratories (UL) or meet the testing standards of Underwriters Laboratories. It is further provided that electric fences in the RC and R-1 zones that abut any public street or right-of-way shall include warning signs consistent with subsection (H)(2)(e) of this section.

2. Within the C-23, M-1, M-2, LF, or I zones, the construction and use of electric fences shall be allowed in the city only as provided in this section and subject to the following:

a. *Electrification.*

i. The energy source (energizer) for electric fences must be provided by a storage battery not to exceed 12 volts DC. The storage battery is charged primarily by a solar panel. However, the solar panel may be augmented by a trickle charger.

ii. The electric charge produced by the fence upon contact shall not exceed energizer characteristics set forth in the International Electrotechnical Commission (IEC) standards.

b. *Perimeter Nonelectric Fence or Wall.* No electric fence shall be installed or used unless it is completely surrounded by a nonelectrical fence or wall that is not less than 72 inches.

c. *Location.* Electric fences shall only be permitted around outdoor storage areas. Electric fences and perimeter fencing are allowed in the setback areas provided the applicable requirements of this section are met.

d. *Height.* Electric fences shall not exceed 10 feet in height.

e. *Warning Signs.* Electric fences shall be clearly identified with warning signs that read "Warning – Electric Fence" at intervals of 50 feet or less. Signs shall also contain imagery or symbols of or similar to the International Organization for Standardization (ISO) warning symbol for electric hazard to alert individuals that the fence is electrically charged (e.g., lightning bolts).

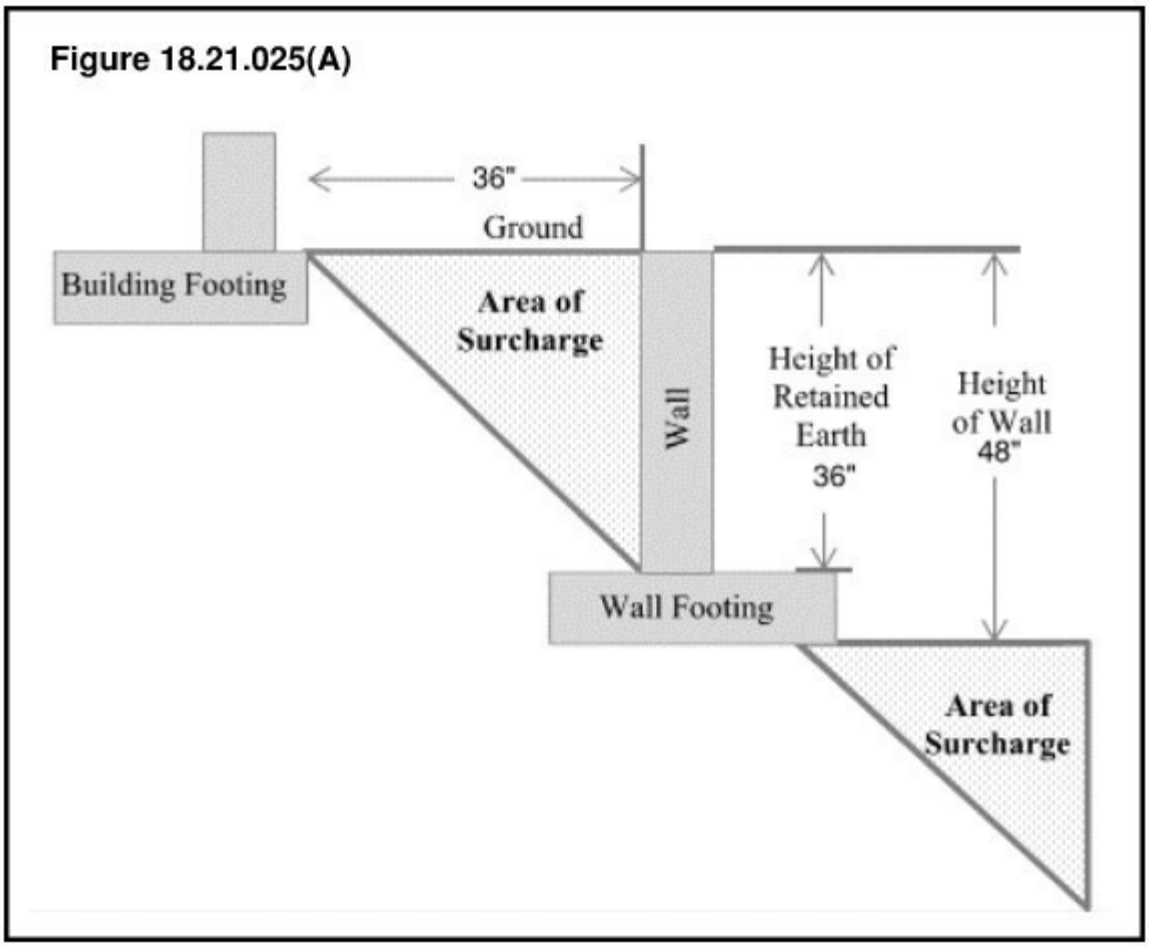
f. Electric fences shall be governed and regulated in accordance with the regulations for alarm permits contained in Chapter 9.30 ACC.

g. Electric fences and gates must also meet all applicable International Fire Code standards. (Ord. 6884 § 1 (Exh. 1), 2022; Ord. 6461 § 2, 2013; Ord. 6419 § 3, 2012; Ord. 6245 § 15, 2009.)

18.31.025 Retaining walls.

A. *Retaining Wall General Regulations.*

1. Retaining walls must be designed and located per the adopted IBC and IRC design standards. See Figure 18.21.025(A).



2. Notwithstanding any other provisions regarding retaining wall height, the height of any portion of a retaining wall may not reduce sight distance established by the Engineering Design Standards for vehicular and nonmotorized facilities.

3. Any grading work shall be in compliance with Chapter 15.74 ACC.

4. All portions of retaining walls, including subsurface elements such as footings, anchors, and cantilevers, shall not encroach or be located within the right-of-way or public utility easements unless explicitly permitted by the city engineer and/or by the easement language.

5. The requirements of this chapter do not apply to retaining walls in rights-of-way.

6. Additional requirements apply to retaining walls that provide support to rights-of-way as specified in the Engineering Design Standards.

7. Retaining walls designed as part of an approved preliminary plat, and located prior to recordation of the final plat, are not subject to the setback area requirements contained in this section.

B. *Residential Lots.*

1. Retaining walls are not permitted in the required setback areas, unless meeting one of the following criteria. The height of a wall shall be measured from the bottom of a footing to the top of the wall.

a. Retaining walls that are under 48 inches and constructed in accordance with the IRC, whether supporting a surcharge or not, are allowed in all setback areas, as regulated per each zone.

b. Retaining walls over 48 and under 84 inches and constructed in accordance with the IRC, whether supporting a surcharge or not, are allowed in all setback areas except the front and street-side setback, as regulated per each zone.

c. Retaining walls over 84 inches, constructed in accordance with the IRC, whether supporting a surcharge or not, are not allowed in the setback areas, as regulated per each zone.

2. Retaining walls visible from the right-of-way or adjacent property must be composed of rock, textured or patterned concrete, masonry, composite, or other products that complement the existing residential or neighborhood character. Products such as "ecology blocks" or plain smooth concrete are not permitted. Materials other than those listed may be used with approval from the planning director or designee.

C. *Nonresidential Lots/Tracts.*

1. Retaining walls visible from the right-of-way or adjacent property shall be composed of rock, textured or patterned colored concrete, masonry, or composite. Products such as "ecology blocks" are not permitted. Materials other than those listed may be used with approval from the planning director or designee.

2. For retaining walls over 48 inches in height or supporting a surcharge, the area between the right-of-way and the retaining wall shall be landscaped and maintained per Chapter 18.50 ACC.

3. Terraces created between retaining walls shall be permanently landscaped and revegetated pursuant to a mitigation or landscape plan developed by a qualified professional.

4. Notwithstanding the requirements contained in this section, retaining walls may still require a building permit if trees or other landscape features will potentially impact (e.g., tree roots) or impose a surcharge on the wall.

5. The width of the retaining wall or walls support shall not be included in any landscaping calculations or measurements. (Ord. 6884 § 1 (Exh. 1), 2022.)

18.31.030 Height limitations – Exceptions.

The following buildings and/or structures are exempt from the height requirements of this title; in no case does this lessen any height restrictions that relate to the municipal airport:

A. Cupolas, provided they do not extend more than three feet above the roof line;

B. Church spires or steeples, provided they conform to elevations as approved under a conditional use permit;

C. Transmission line towers, including telephone line towers and similar types of other line towers, located within public street rights-of-way, easements, or on private property, and which are constructed in accordance with other regulations as required by the city;

D. Residential television antennas, provided they are used in conjunction with the reception of commercial television station signals and are not used for transmission purposes;

E. Elevated reservoirs, water tanks or standpipes under the jurisdiction of the city or other water district;

F. *Athletic Field or Playground Lighting Under the Jurisdiction of the City or Other Public Agency.* This exemption is limited to the P-1 public use zone only. (Ord. 6245 § 15, 2009.)

18.31.040 Lots.

A. All lots shall meet the lot area and width requirements set forth in the applicable zone, except that for parcels created prior to June 1, 2009, the following standards shall apply. For any residentially zoned parcel of land created prior to June 1, 2009, with an area and/or a width or depth less than that prescribed for a lot in any residential zone, the fact that the parcel of land does not meet the area and/or width requirements as set forth in this title shall not prohibit the property from being utilized for ~~single-family~~single-unit detached dwelling~~residential~~ purposes; provided, that all other regulations of this title are complied with.

1. For single-unit detached~~family~~ homes on substandard lots, the following special provisions for lot coverage and setbacks may apply; provided, that the requirements for access, utility infrastructure, and minimum sight distance as provided for in the city design construction standards, and the requirements for private utilities, can be met:

a. *Lot Coverage.* Lot coverage may be determined by using the following formula:

(A/B) * C = D(%)

A = Lot area required by zoning code.

B = Lot area of existing lot.

C = Percentage of lot coverage allowed by zoning code.

D = Percentage of lot coverage allowed for the substandard lot.

In no case shall the lot coverage exceed 60 percent, unless otherwise allowed by this title.

b. *Front and Rear Setbacks.* Either the front or rear setback may be determined by using the following formula:

(A/B) * C = D

A = Lot area of existing lot.

B = Lot area required by zoning code.

C = Front or rear setback required by zoning code.

D = Front or rear setback allowed for the substandard lot.

In no case shall the front or rear setback be less than 10 feet, unless otherwise allowed by this title.

c. *Side Setbacks.* Side setbacks may be determined by using the following formula:

(A/B) * C = D

A = Width of the existing lot.

B = Lot width required by zoning code.

C = Side setback required by zoning code.

D = Side setback allowed for the substandard lot.

In no case shall the interior side setback be less than five feet or the street side setback less than 10 feet, unless otherwise allowed by this title.

B. Lots created by the King County assessor's office shall not be considered as building lots or lots that can be further subdivided unless in accordance with this title and land division ordinance, except those lots created prior to August 24, 1968, which was the adoption date of the previous subdivision ordinance, No. 2204. See ACC 17.04.220 for definition of "lot of record."

C. Lots created by the Pierce County assessor's office shall not be considered as building lots or lots that can be further subdivided unless in accordance with this title and land division ordinance, except those lots legally created prior to any land being annexed to the city of Auburn. See ACC 17.04.220 for definition of "lot of record." (Ord. 6245 § 15, 2009.)

18.31.050 Single-~~family dwelling siting~~unit detached siting and design standards.

A. All single-unit detached~~family~~ dwellings (including manufactured homes) located in residential zones shall meet all of the following criteria:

1. May not have previously had a title granted to a retail purchaser and may not be a used mobile home as defined by RCW 82.45.032(2), now or hereafter amended.

2. Be built to meet or exceed the standards established by federal law 42 USC 5401 through 5403, now or hereafter amended.

3. Be thermally equivalent or better to that required by the state energy code for new residential structures, now or hereafter amended.

4. Be set on and securely attached to a permanent foundation as specified by the manufacturer.

5. Proof of title elimination is required prior to building occupancy.

6. Be connected to required utilities that include plumbing, heating and electrical systems.

B. Single-unit detached siting standards. All single-unit~~family~~ dwellings (including manufactured homes) shall comply with the following siting ~~and design~~ standards:

1. The design and construction of the foundation must meet the requirements of the International Building Code, now or hereafter amended;

2. The gap from the bottom of the structure to the ground, around the entire perimeter of the structure, shall be enclosed by concrete or other concrete product as approved by the building official, which may or may not be load-bearing.

C. Single-unit detached design standards. In addition to any other documentation required for submittal of a complete application for building permit or discretionary land use approvals/permits, the following items shall be required for the review of building design:

1. Elevation drawings prepared by an architect licensed in the state of Washington of all proposed construction including dimensional drawings at one-eighth inch equals one foot or comparable scale showing the type of exterior materials, color, exterior finishes (including for accessory structures, where applicable), articulation, fenestration details, and the location, elevations, type, style and model of any exterior lighting fixtures (where applicable).

2. As applicable, a to-scale landscape plan consistent with Chapter 18.50 ACC.

~~C~~D. The above requirements do not apply to single-~~family~~ unit detached dwellings sited within the R-MHC residential manufactured/mobile home community zone. (Ord. 6245 § 15, 2009.)

18.31.060 Recreational vehicle parks.

A. The following performance standards shall apply to all recreational vehicle parks:

1. Minimum size of the recreational vehicle park: 100,000 square feet;

2. Maximum gross density: one recreational vehicle space per each 2,000 square feet of land area;

3. Recreational space: eight percent of the total site area shall be provided as defined recreation space. The recreation space shall be easily accessible and shall be improved and maintained in such a manner so as to provide adequate recreational facilities for the residents of the recreational vehicle park;

4. Minimum width: each recreational vehicle space shall have a minimum width of 25 feet;

5. Interior private streets:

a. Twelve feet of width per each travel lane and 10 feet of width per each parking lane. A minimum of 20 feet shall be provided for one-way systems;

b. The streets shall be improved in accordance with this title. In addition, all streets shall be well-drained, well-lighted, and continuously maintained in operable condition;

6. Spacing between units: there shall be a minimum side-to-side dimension of 12 feet between units and a minimum end-to-end dimension of 10 feet between units;

7. Minimum setbacks required: the following setback requirements shall apply:

a. Twenty-five feet from a public street;

b. Five feet from an interior private street;

c. Fifteen feet from the park boundary;

8. Off-street parking: a minimum of one off-street parking space shall be required for each recreational vehicle space. It shall be located within the recreational vehicle space. In addition, one off-street parking space per each three recreational vehicle spaces shall be required for guest parking. The guest parking spaces shall be grouped and distributed evenly throughout the park;

9. Pedestrian walkways: pedestrian walkways having a width of not less than three feet shall be provided from the recreational vehicle spaces to all service buildings, and facilities, refuse collection areas, and recreation areas. The walkways shall be hard-surfaced, well-drained, and well-lighted;

10. Landscaping: see Chapter 18.50 ACC;

11. Limit of stay: no recreational vehicle shall remain within in a recreational vehicle park for more than 120 days in any one-year period;

12. Solid waste disposal: the storage, collection and disposal of solid waste in recreational vehicle parks shall be so conducted as to create no health hazards, rodent harborage, insect breeding areas, or accident or fire hazards. Individual or grouped refuse containers must be screened from view except on collection day;

13. Utilities: the following requirements for utilities shall apply:

a. A water supply system shall be provided in the recreational vehicle park for each recreational vehicle space designed to accommodate the park user occupying a self-contained recreational vehicle, the water system for a recreational vehicle park shall be constructed and maintained in accordance with all applicable state and local codes and regulations;

b. Watering stations: each recreational vehicle park shall be provided with one or more accessible water supply outlets for filling recreational vehicle water storage tanks;

c. Sewage disposal system: an adequate and safe sewage disposal system shall be provided in a recreational vehicle park for each recreational vehicle space designed to accommodate the park user occupying a self-contained vehicle and shall be connected to the public sewage system. The sewage disposal system in a recreational vehicle park shall be constructed and maintained in accordance with all applicable state and local codes and regulations;

d. Sanitary stations: each recreational vehicle park shall be provided with sanitary dumping stations in the ratio of one for every 100 recreational vehicle spaces or fractional part thereof. The construction of the sanitary station shall be in accordance with the appropriate county department of health. Sanitary stations shall be screened from other activities by a visual barrier such as fences, walls, or natural growth and shall be separated from any recreational vehicle space by a distance of not less than 50 feet;

e. Electrical supply system: each recreational vehicle park shall be provided with an underground electrical system which shall be installed and maintained in accordance with all applicable state and local codes and regulations;

f. Other utility systems: if other utility systems such as natural gas, television cable, or telephone are installed in a recreational vehicle park, such installation shall be in accordance with state and local codes and regulations;

14. All recreational vehicle spaces shall be well marked and numbered.

B. The planning director shall approve the site plan for all recreational vehicle parks with concurrence of the city engineer. The site plan shall contain the following:

1. Name of the owner and operator, with address and phone number, and the name of the proposed recreational vehicle park or campground;

2. Legal description of the subject tract of land;

3. Name, address and phone number of the person or firm preparing the site plan;

4. Scale of the drawing and north arrow;

5. The area and dimensions of the tract of land;

6. The number, size and location of all recreational vehicle spaces;

7. The number, location and size of all off-street automobile parking spaces;

8. The location and width of all streets and walkways;

9. The location of service buildings, sanitary stations, recreation area and any other proposed facilities or structures;

10. Location of all utility lines and easements;

11. Indication of the water supply, sewage disposal, electrical supply, and refuse collection systems;

12. Indication of all buildings, recreation uses, and other facilities to be constructed;

13. Landscaping specifications;

14. A vicinity map indicating the names and location of all streets within at least a quarter-mile radius of the subject site;

15. Location and specifications of the manager’s office and dwelling unit;

16. The site plan shall be properly dimensioned and drawn at a scale not less than one inch equals 40 feet and on a sheet size 24 inches by 36 inches; more sheets may be allowed if necessary. (Ord. 6245 § 15, 2009.)

18.31.070 Setbacks.

A. The following may project from a building into a required setback; provided, that such projection does not interfere with required utility easements or sight distance requirements pursuant to city design and construction standards:

1. Fireplace structures, bay windows, garden windows, enclosed stair landings, closets, framed fireplace shafts, wireless communications facilities or similar projections not wider than eight feet measured in the general direction of the wall of which it is a part: 18 inches into any setback; provided, that such

projection does not interfere with required utilities easements or sight distance requirements pursuant to city design and construction standards;

2. *Porches and Platforms.*

a. Uncovered porches and platforms which do not extend above the floor level of the first floor: 18 inches into side setbacks and six feet into the front setback and rear setback; provided, that they may extend three feet into the side setback when they do not exceed 18 inches in height above the finished grade;

b. Covered but unenclosed porches and platforms which do not extend above the floor level of the first floor and which are no wider than 50 percent of the building's frontage: five feet into the front setback;

3. Planting boxes or masonry planter not exceeding 42 inches in height may intrude into any setback;

4. Eaves shall not protrude more than 24 inches into any minimum required setback;

5. Awnings, canopies, marquees and similar structures designed to primarily protect pedestrians from the weather elements. They shall be attached to and supported entirely by the building. The maximum projection shall be seven feet from the building. The projection, if approved by the city, must comply with the International Building Code (IBC) and International Fire Code (IFC), and an approved right-of-way use permit subject to the requirements of Chapter 12.60 ACC.

B. *Special Front Setback Depth.* If buildings existing on July 6, 1964, occupy 50 percent or more of the frontage in any block, and are on one side of the street, then the depth of the front setback required by this title shall be disregarded on that side of the street in such block, and in lieu thereof the depth of front setback required on each lot therein shall be not less than the average depth of the front setbacks existing on July 6, 1964. This shall apply to residentially zoned property only.

C. *Lots with Significant Slopes.* To encourage the preservation of natural features on lots with significant slopes, platted residential lots with an average slope of 15 percent or more may reduce the front setback by up to 20 percent; provided, however, that all structures must comply with applicable sight distance triangle requirements of the city design and construction standards. This provision shall only apply to lots developed for a single-~~family~~ unit detached dwelling~~residence~~ but shall not apply to property zoned RC (residential conservancy).

For the purposes of this section, the average slope shall be measured by taking the difference between the average elevations of the rear and the front lot lines. This provision is not intended to waive any other requirements of geotechnical reports or studies that may be necessary to ensure the suitability of a lot for development.

Development under this provision may also implement the setback exemptions identified in subsections (A)(1) through (A)(5) of this section. (Ord. 6245 § 15, 2009.)

18.31.080 Heliports.

The following development standards shall apply to all heliports, excluding those developed as part of the Auburn Airport:

A. Meet the Federal Aviation Administration (FAA) requirements;

B. Meet the current National Fire Protection Agency 403 requirements;

C. Be consistent with the Auburn Municipal Airport requirements;

D. The size of the landing pad must be one and one-half times the size of the largest helicopter to use the site;

E. The landing pad must be paved, and a source of water available to keep the pad clean, additional fences and/or screens may also be required to reduce any flying debris;

F. The location of the heliport shall be compatible with adjacent uses and should be located away from schools and populated areas to include residential, commercial, industrial and other public use areas;

G. Additional requirements may also be assessed with regard to fences, hours of operation, lighting, setbacks or easements. (Ord. 6245 § 15, 2009.)

18.31.090 Work release, prerelease and similar facilities.

The following siting and performance standards shall apply to all work release, prerelease and similar facilities offering alternatives to imprisonment:

A. *Maximum Number of Residents.* No work release, prerelease or similar facility shall house more than 50 persons, excluding resident staff.

B. *Dispersion Criteria.*

1. The lot line of any new or expanding work release, prerelease or similar facility shall be located:

a. One thousand (1,000) feet or more from any residential zone; and

b. One thousand (1,000) feet or more from any group residence facility as defined by ACC 18.04.440; and

c. One thousand (1,000) feet or more from any accredited public, private or parochial school, excluding commercial schools such as business, vocational or technical schools; and

d. One thousand (1,000) feet or more from any religious institution meeting the requirements of a conforming use and meeting all other requirements of the Auburn City Code; and

e. One thousand (1,000) feet or more from any public park; and

f. One thousand (1,000) feet or more from any licensed daycare center, nursery school or preschool as defined by ACC 18.04.290; and

g. One mile or more from any other work release, prerelease or similar facility.

2. The distances provided in this subsection shall be measured by following a straight line, without regard to intervening buildings, from the nearest point of the property parcel upon which the proposed use is to be located or expanded to the nearest point of the parcel of property or the land use district boundary line from which the proposed land use is to be separated.

C. Each facility shall provide on-site dining, on-site laundry or laundry service, and on-site recreation facilities to serve the residents.

D. A conditional use permit application for a work release, prerelease or similar facility shall be accompanied by proposed operating rules for the facility. These proposed rules shall be reviewed by the planning director in consultation with the chief of police and the city attorney. The planning director shall include in any recommendation on the requested conditional use permit an analysis of the proposed rules as they may relate to the findings of fact required under ACC 18.64.040. (Ord. 6245 § 15, 2009.)

18.31.100 Wireless communications facilities siting standards.

The following siting standards are intended to guide the location and development of wireless communications facilities (WCF as defined by ACC 18.04.912(W)) on properties regulated under this title. The siting of small wireless facilities shall also be in accordance with ACC 18.31.110:

A. *Types of Wireless Communications Facilities (WCFs).* For the purposes of determining in which zones wireless communications facilities are to be permitted, and which land use approval process applies, they will be classified pursuant to the following types. Refer to the table in subsection L of this section to determine which zones allow for the following types of facilities:

1. *Type 1.* Type 1 is a new wireless communications facility (WCF) that is affixed to an existing structure other than a "wireless communications support structure" (also known as an "attached wireless communications facility"). Examples of attached wireless communications facilities include antennas affixed to or erected upon existing buildings, water tanks, or other existing structures. There are four separate Type 1 categories described as follows:

a. *1-A.* The combined height of the WCF together with the height of the existing structure cannot be 25 percent greater than the existing structure or exceed the height limitation of the zone in which the structure is located.

b. *1-B.* The combined height of the WCF together with the height of the existing structure cannot be 50 percent greater than the existing structure or exceed the height limitation of the zone in which the structure is located.

c. *1-C.* The combined height of the WCF together with the height of the existing structure is 50 percent greater than the existing structure or exceeds the height limitation of the zone in which the structure is located. The height limitation of the zone can only be exceeded by 25 percent.

d. *1-D.* The WCF is located on an existing nonhabitable structure such as a water tower, athletic field light pole, or similar public utility infrastructure not located within a public way or that is located on an existing nonresidential structure such as a fire station, school, church or other similar type of institutional use whose site does not contain dwellings. The height limitation of the WCF will be 10 percent of the existing structure height, but may be increased to a maximum of 20 percent with an administrative use permit and may be increased to a maximum of 30 percent with a conditional use permit. The height limitation of the zone may be exceeded relative to the above provisions allowed for a 1-D facility.

Any increases in height above the limits of the zoning district, as permitted for Type 1 facilities, must include concealment techniques approved by the city.

2. *Type 2.* Type 2 is new equipment erected on existing towers that have previous approvals. There are two separate Type 2 categories described as follows:

a. *2-A.* Any request for modification of an existing wireless communication tower or base station that was previously authorized by the local permitting jurisdiction and that would exceed a "substantial change," and the combined height of the WCF and structure cannot be 20 percent greater than the existing structure and is limited to 50 percent total (cumulative) expansion of equipment area.

b. *2-B.* Any request for modification of an existing wireless communication tower or base station that was previously authorized by the local permitting jurisdiction and that would exceed a "substantial change," and the combined height of the WCF and structure cannot be 50 percent greater than the existing structure and allow for more than 50 percent (cumulative) expansion of equipment area.

Any increases in height above the limits of a particular zone, as permitted for Type 2 facilities, must include concealment techniques approved by the city.

3. *Type 3.* Type 3 is the erection of a new "tower." There are three separate Type 3 categories described as follows:

a. *3-A.* "Towers" that are 75 feet or less in height.

b. *3-B.* "Towers" that are more than 75 feet in height or lattice towers of any height.

c. *3-C.* "Towers" that meet the definition of an emergency wireless communication facility (EWCF) and are 185 feet or less in height.

B. *Separation between Facilities.*

1. *New, Freestanding Towers.*

a. The minimum separation, i.e., distance, between a proposed tower (that is 75 feet or less in height) and any other existing tower, of any height, shall be the height of the proposed tower, including antenna, multiplied by a factor of 10.

b. The minimum separation, i.e., distance, between a proposed tower (that is more than 75 feet in height, or lattice towers of any height) and any other existing tower, of any height, shall be the height of the proposed tower, including antenna, multiplied by a factor of 20.

c. The community development director may exempt an applicant from these separation requirements if (i) the applicant demonstrates to the city's satisfaction that despite diligent efforts, other options are neither available to lease nor technologically feasible to address a service provider's demonstrated gap in coverage or demonstrated lack of system capacity. Documentation regarding inability to lease shall include names and addresses of owners contacted, date of contact, method of contact and owner response, and failure to approve the exemption would be an effective prohibition of the applicant being able to provide wireless communications, or (ii) the director determines, when considering the surrounding topography; the nature of adjacent uses and nearby properties; and the height of existing structures in the vicinity, that placement of a tower at a distance less than the minimum separation from another tower will reduce visibility and reduce visual clutter to a greater extent.

2. The distance between towers shall be measured by following a straight line, without regard to intervening buildings, from the base of one tower to the base of the other tower(s).

3. A tower would be considered "existing" if it was reviewed, approved, and lawfully constructed in accordance with all requirements of applicable law as of the time it was built. For example, a tower that exists as a legal, nonconforming use and was lawfully constructed is existing. It shall be the applicant's responsibility to provide evidence of lawful construction. Subsequent city permitted modifications of a tower that qualify as an eligible facilities request, and do not amount to a "substantial change," do not make an existing tower nonconforming.

C. *Co-Location Requirements.*

1. For towers that are more than 75 feet in height and lattice towers of any height, the owner of the tower shall execute and provide evidence of a nonexclusive lease with the underlying property owner, if the property owner is different, that allows for other carriers to place antennas and equipment on the structure unless specific approval not to is provided in accordance with subsection (C)(3) of this section.

2. Any application for Type 3-B or 3-C towers that are more than 75 feet in height or lattice towers of any height shall include technical, environmental, or regulatory justification that an existing WCF with a nonexclusive lease could not be used instead of constructing a new tower.

3. Towers shall be designed and constructed to allow the tower to accommodate WCFs from at least two carriers on the same tower; one in addition to the original. No property owner or carrier shall unreasonably exclude another carrier from using the same facility or location. Design and construction for co-location shall not be required when it would materially compromise the camouflage design intent of the tower, or when, in the reasonable discretion of the community development director, such construction is not technically feasible based upon construction, engineering and design standards of the industry, or based upon evidence provided, a tower designed for co-location will not be commercially viable. An applicant, owner, or operator seeking community development director approval to waive the co-location requirements described herein shall provide evidence explaining why co-location is not possible at a particular tower.

D. *Height.*

1. Unless otherwise provided for, the height of any tower with appurtenances shall not exceed the height limitations of the zone.

2. The maximum height of any tower shall not exceed 120 feet except as an eligible facility request.

3. There shall be no variances allowed to the height limitations.

4. The applicant shall provide evidence that the Federal Aviation Administration (FAA) has approved the location and the city shall condition the same of any future increases in height or other modifications that would otherwise be permissible as an eligible facilities request (EFR) for any tower relative to the Auburn Municipal Airport.

5. Unless otherwise restricted by this section, building- or structure-mounted antennas may extend a maximum of 15 feet above the maximum height permitted for structures within the zone.

6. Antennas that are mounted on structures that do not otherwise have a height restriction may be allowed to increase the overall height of the structure by no more than 10 percent of the height of the structure unless additional approvals are obtained.

E. *Setbacks.*

1. All equipment shelters, cabinets, support structures or other above-ground facilities shall meet the setback requirements of the zone in which located except as follows. All equipment shelters, cabinets, or other above-ground facilities used to support WCFs shall be set back the same distance required of the WCF except as an eligible facility request. All equipment shelters, cabinets, or other above-ground facilities within a nonresidential zone shall be set back a minimum of 50 feet from any adjacent residential zone except as an eligible facility request.

2. The minimum distance from any tower, of any height, to any residentially zoned parcel of property, including mixed-use zones that include residential uses, shall be a distance equal to the overall height of the tower (including antennas) multiplied by a factor of two.

3. Where technically feasible, roof-mounted antennas and equipment shelters and/or cabinets are to be placed towards the center of the building, or away from public views. Equipment shelters and/or cabinets shall be screened by a parapet or similar architectural feature.

F. *Fencing and Landscaping.*

1. *Fencing.* Fencing is required to enclose all above-ground support equipment that is associated with towers. Fencing will be 100 percent sight-obscuring, as defined in ACC 18.04.374, if visible from a public way or from a less intense zone. Equipment shelters and/or cabinets shall be enclosed by fencing a minimum of six feet in height. Fencing shall meet the sight distance requirements of the city engineering design and construction standards.

2. *Landscaping.*

a. Where above-ground support equipment is visible from a public way, a minimum width of five feet of landscaping will be provided on the exterior of the enclosing fence in order to effectively screen the equipment from the public way. The landscaping shall consist of evergreen and deciduous trees with no more than 50 percent being deciduous, and shrubs and groundcover shall be provided. Landscaping shall meet the sight distance requirements of the city engineering design and construction standards.

b. Where facilities are visible from adjacent residential or mixed-use zoning districts, a minimum width of five feet of landscaping will be provided on the exterior of the enclosing fence in order to effectively screen the equipment from the adjacent residential uses. The landscaping shall consist of evergreen trees or tall shrubs, a minimum of six feet in height at planting which will provide a 100 percent sight-obscuring screen within three years from the time of planting; or a combination of evergreen and deciduous trees with no more than 30 percent being deciduous, backed with a 100 percent sight-obscuring fence, as defined in ACC 18.04.374, with shrubs and groundcover provided.

c. Existing mature tree growth and natural landforms on the site shall be preserved to the maximum extent possible. Existing on-site vegetation may be used to meet the landscape requirements if approved by the community development director.

G. *Aesthetics.*

1. *Concealment Design Techniques.* All WCFs and any transmission equipment shall, to the extent technically feasible, use concealment design techniques including, but not limited to, the use of materials, colors, textures, screening, undergrounding, or other design options that will blend the components of the WCF and the WCF to the surrounding natural setting and/or built environment. Design, materials, and

colors of WCFs shall be compatible with the surrounding environment. Designs shall be compatible with structures and vegetation located on the site and parcel and on adjacent parcels.

a. At a minimum, all tower-mounted WCF equipment shall be colored to match the tower color.

b. Concealment design may be of heightened importance where findings of particular sensitivity are made (e.g., proximity to historic or aesthetically significant structures and/or natural or community features). Should the community development director determine that WCFs are located adjacent to or viewable from impression corridors as defined by the comprehensive plan, they shall (where possible) be designed (including but not limited to placement underground, depressed, or located behind earth berms) to minimize aesthetic impacts at the request of the community development director.

c. The concealment design may include the use of alternative tower structures should the community development director determine that such design meets the intent of this section and the community is better served.

d. All WCFs shall be constructed out of or finished with nonreflective materials (visible exterior surfaces only).

2. In order to minimize any potential negative aesthetic impacts from new WCFs including protecting views to and from residential neighborhoods, mitigation may be required to blend the facilities in with the adjacent natural setting and/or built environment. Typical solutions for concealment design might include: an extension of the building, a component of a sign structure, disguising the facility as a tree, planting of tall trees, moving the location of the facility, painting or texturing the facility, etc.

WCFs shall be additionally sited in a manner that is sensitive to the proximity of the facility to residential structures. When placed near a residential or mixed-use zoned property, the WCF shall be placed adjacent to the common side yard property line between adjoining residential properties, such that the WCF minimizes visual impacts equitably among adjacent properties. In the case of a corner lot, the WCF may be placed adjacent to the common side yard property line between adjoining residential or mixed-use zoned properties, or on the corner formed by two intersecting streets. If these requirements are not reasonably feasible from a construction, engineering, or design perspective, the applicant may submit a written statement to the community development director requesting the WCF be exempt from these requirements using the procedure for an administrative waiver elsewhere in this chapter.

3. Building- or roof-mounted antennas will be painted or textured to blend with the adjacent surfaces.

4. No lettering, symbols, images or trademarks large enough to be legible to occupants of vehicular traffic on any adjacent street shall be placed on or affixed to any part of the WCF, unless required by the FCC or FAA.

5. Except as specifically required by the FAA (but must be approved by the city), freestanding towers shall be painted a color that best allows them to blend into the surroundings. The use of grays, blues and greens might be appropriate; however, each application shall be evaluated individually.

6. *Concealment Design Standards for Accessory Equipment and Transmission Equipment.* Accessory equipment and transmission equipment for all WCFs shall meet the following requirements:

a. All transmission equipment and accessory equipment shall be grouped as closely together as technically possible.

b. Transmission equipment and accessory equipment shall be located out of sight whenever possible by locating within equipment enclosures. Where such alternate locations are not available, the transmission equipment and accessory equipment shall be concealed.

c. Transmission equipment and accessory equipment shall be of a neutral, nonreflective color that is identical to, or closely compatible with, the color of the supporting structure or use other concealment design techniques so as to make the equipment as visually unobtrusive as possible, including, for example, painting the equipment to match the structure.

7. *Administrative Waiver.*

a. An administrative waiver of any of the above concealment design standards may be requested of the community development director by filing a written application form provided by the city and payment of an application fee. The application will be evaluated for, and must demonstrate conformance with, the following waiver criteria for approval:

i. The concealment design standard prohibits or has the effect of prohibiting the provision of wireless communication service through the proposed WCF at the location because the standard will not allow the technology to function at that location; and

ii. The applicant demonstrates to the city's satisfaction that despite diligent efforts, other options are neither available to lease nor technologically feasible to address a service provider's demonstrated gap in coverage or demonstrated lack of system capacity. Documentation regarding inability to lease shall include names and addresses of owners contacted, date of contact, method of contact and owner response; and

iii. The proposal for varying from the design standard represents a reasonable and best approximation of achieving the same objective as the specific standard sought to be waived; and

iv. The proposed alternative does not and will not conflict with public health, safety, or welfare.

b. If any concealment design standard is approved for waiver, the WCF proposed shall nevertheless meet all other applicable design standards not approved for waiver.

c. If a waiver request is denied for failure to meet any of the criteria specified above and there is no alternative for installation of the WCF at the particular location in a manner that meets the applicable design standards, then such application for the WCF for such specific location shall be denied.

H. *Lighting.*

1. Freestanding support structures shall not be artificially lighted, unless required by the FAA or other applicable authority, or the WCF is mounted on a light pole or other similar structure primarily used for lighting purposes on property located outside of the public way. If lighting is required, the city may review lighting alternatives and approve the design that would cause the least illumination disturbance to the surrounding views. Any proposed lighting shall, at a minimum, comply with the standards of Chapter 18.55 ACC (Outdoor Lighting) and shall be submitted at the time of the initial application. Any lighting must be reviewed and approved by the city.

2. Security lighting used to light the equipment facility shall be directed downward, shielded and kept within the boundaries of the site.

I. *Abandoned Facilities.*

1. Any WCF which is not utilized for a period of nine months or more will be considered abandoned.

2. Any WCF which falls into a state of disrepair as determined by the community development director will be considered abandoned.

3. Any WCF considered to be abandoned must be removed completely within 90 days from the date of notification by the city to the owner, owner's agent and/or the operator of the WCF, based upon the contact information that has previously been provided to the city. The city may extend the 90-day period should a valid application for use of the facility be submitted to the city. The owner of such WCF shall remove the same within 90 days of receipt of written notice from the city. If such WCF is not removed within 90 days, the city may remove it at the owner's expense and any approved permits for the WCF shall be deemed to have expired.

J. *Noise.* For the purposes of this section, WCF will be considered a Class B, commercial, noise source pursuant to WAC 173-60-040.

K. *Supplemental Information Required for Applications.* In addition to the information that is otherwise required for an application for a permit for a WCF, the following is also required:

1. For all new WCFs, the applicant shall provide the carrier's master network plan for the city showing the carrier's existing WCF locations and narrative explaining the potential WCF locations over the next year, if known. The applicant shall also provide technical justification supporting the need for the height of the WCF and for any new tower and why a shorter support structure could not be utilized. Any application for a new tower greater than 75 feet in height shall provide technical justification as to why a tower of 75 feet or less in height could not be utilized instead to adequately serve the Auburn community.

2. Narrative description of the facility including whether there is capacity on the proposed structure for more antennas. The applicant shall provide evidence of the ability to execute a nonexclusive lease between the carrier and the underlying property owner, if the property owner is different, that allows for other carriers to place antennas and equipment on the structure. This ability for co-location must be demonstrated, unless relief from this requirement is requested and ultimately approved in accordance with the provisions in this chapter.

3. A color sample for the proposed tower.

4. Narrative description of proposed concealment design techniques intended to make the facility look like something other than a tower or base station. Photographs, photo simulations, or similar illustrations that show a reasonable likeness of the proposed facility including the antennas and above-ground support equipment.

L. *Zones in Which WCFs Are Permitted.* The following table illustrates which zones the types of facilities as defined by ACC 18.04.912(K) and (W) and subsection A of this section are allowed in and which land use approval process, if any, is required. Microcells, as defined by ACC 18.04.912(M) (not located in public ways), are allowed only in residential zones and shall be permitted outright pursuant to the provisions of ACC 18.04.912(M).

	Type of Permit Required		
Zone	**Permitted Outright**	**Administrative Use Permit**	**Conditional Use Permit**
All Zones	1-D	1-D[1]	1-D[2]
R-FO, RO H	1-A	1-B	1-C
C-N	1-A	1-B	1-C
C-1	1-A	1-B	1-C
C-2, DUC	1-A	1-B	1-C
C-32,	1-B, 2-A	1-C, 2-B, 3-A	3-B

Zone	Type of Permit Required		
	Permitted Outright	**Administrative Use Permit**	**Conditional Use Permit**
C-AG4			
M-1	1-B, 2-A	1-C, 2-B, 3-A	3-B
M-2	1-B, 2-A	1-C, 2-B, 3-A	3-B
P-1	1-B, 2-A	1-C, 2-B	3-A[3]
I	1-A	1-B	1-C
LF	1-A	1-B	1-C

1 Allowance for the WCF to extend to a height of 20 percent of the supporting structure.

2 Allowance for the WCF to extend to a height of 30 percent of the supporting structure.

3 The maximum height allowed, including antennas, is 45 feet.

M. *Exemptions.*

1. Unless otherwise provided for, the mobile testing facilities/equipment used to test network limitations are exempt from the provisions of this section.

The facilities/equipment shall not be at any one location for more than 14 days and shall otherwise meet the requirements of any other ordinance, regulation or code provision.

2. EWCFs are exempt from the provisions of subsections B, Separation between Facilities; (C)(1), Co-Location Requirements; D, Height (except (D)(4)); and E, Setbacks, of this section.

N. *Eligible Facilities Requests (EFR).*

1. *Application and Review Requirement for Eligible Facilities Requests.* Applicants seeking approval of eligible facility requests must complete an application form furnished by the city and comply with any requirements set forth in applicable city ordinances. The application form shall be limited to the information necessary for the city to consider whether an application is an eligible facilities request. The application may not require the applicant to demonstrate a need or business case for the proposed modification or co-location. Such information may include, without limitation, whether the project:

a. Would result in a substantial change, as defined in ACC 18.04.912(R);

b. Violates a generally applicable law, regulations, or other rule codifying objective standards reasonably related to public health, safety, and welfare.

2. *Review Procedures for Eligible Facilities Requests.* This section applies to any eligible facilities requests for co-location on or modification to an existing tower or base station that does not substantially change the physical dimensions of such tower or base station.

a. *Review Required for Eligible Facilities.* No co-location or modification to any existing tower or base station may occur except after a written request from an applicant is reviewed and approved by the director. Upon receipt of an application for an eligible facilities request pursuant to this section, the city shall review such application to determine whether the application so qualifies.

b. *Review Criteria.* Upon receipt of an application for an eligible facilities request pursuant to this section, the city shall administratively review such application to determine whether the application meets the following criteria for an eligible facilities request:

i. Does not result in a substantial change, as defined in ACC 18.04.912(R);

ii. Does not violate a generally applicable law, regulation, or other rule reasonably related to public health, safety, and welfare and complies with generally applicable building, structural, electrical, and safety codes; and

iii. Complies with the original application concealment design techniques or conditions of approval, including but not limited to colors, textures, surfaces, scale, character, and siting, or any approved amendments thereto, subject to the thresholds established in the definition of substantial change.

3. *Time Frame for Reviewing and Deciding Eligible Facilities Requests.* Subject to the tolling provisions below, within 60 days of the date on which an applicant submits a complete application, as determined by the director, the city shall approve the application unless it determines that the application does not qualify as an “eligible facilities request,” or does not comply with other applicable code requirements.

a. *Tolling of the Time Frame for Review.* The 60-day review period deadline begins to run when the application is filed and may be tolled (halted) only by mutual agreement of the city and the applicant, or in cases where the director determines that the application is “incomplete”;

b. To toll the time frame for incompleteness, the city must provide written notice to the applicant within 30 days of receipt of the application, specifically delineating all missing documents or information required in the application;

c. The time frame for review continues running again the following business day after the applicant makes a supplemental written submission in response to the city’s notice of incompleteness; and

d. Following a supplemental submission, the city will notify the applicant within 10 days that the supplemental submission did not provide the information identified in the original notice delineating missing information. The time frame is tolled in the case of second or subsequent notices pursuant to the procedures identified in subsections (N)(3)(a) and (b) of this section. In the case of a second or subsequent notice of incompleteness, the city may not specify missing information or documents that were not delineated in the original notice of incompleteness.

4. *Interaction with Telecommunications Act Section 332(c)(7).* If the city determines that the applicant's request is not an eligible facilities request as delineated in this section, the presumptively reasonable time frame under Section 332(c)(7), as prescribed by the FCC's Shot Clock order in WT Docket No. 08-165 (Adopted November 18, 2009), will begin to run from the issuance of the city's decision that the application is not a covered request. To the extent such information is necessary, the city may request additional information from the applicant to evaluate the application under Section 332(c)(7) reviews. (Ord. 6885 § 1 (Exh. A), 2022; Ord. 6799 § 7 (Exh. G), 2020; Ord. 6716 § 1 (Exh. A), 2019; Ord. 6245 § 15, 2009.)

18.31.110 Siting of small wireless facilities.

The following siting standards are intended to guide the location and development of small wireless facilities as defined by ACC 18.04.912(Q) but not including other wireless communications facilities (WCF). The siting of other wireless communications facilities shall be in accordance with siting of wireless communications facilities found in ACC 18.31.100.

A. *Siting Criteria for Small Wireless Facilities (Not Located in Public Ways).*

1. Panel antennas shall be incorporated into the design of the existing structure using painting, flush mounting or other concealment methods.

2. The equipment cabinets and other ground support equipment shall be located in an area that is no larger than 17 cubic feet in volume, except that the following associated equipment may be located outside the primary equipment enclosure and, if so located, are not included in the calculation of equipment volume: electric meter, concealment, telecom demarcation box, ground-based enclosures, battery back-up power systems, grounding equipment, power transfer switch, and cut-off switch. The height of the equipment shall be no more than four feet. The equipment shall be designed to be compatible with the residential neighborhood. The project shall provide a minimum width of five feet of landscaping or fencing or a combination of these or similar features. The landscaping shall consist of evergreen and deciduous trees with no more than 50 percent being deciduous, and shrubs and groundcover shall be provided.

3. There shall be a 300-foot separation between any small wireless facilities used by the same carrier.

4. Anyone wishing to establish a small wireless facility or associated components shall make application to the community development director upon application forms provided by the director. The director shall review each application and may be empowered to approve, deny or modify the proposal. (Ord. 6799 § 8 (Exh. H), 2020; Ord. 6245 § 15, 2009.)

18.31.115 Wetland mitigation.

The following siting criteria shall apply to all wetland mitigation site construction within the city of Auburn, the purpose of which is to mitigate the impacts of a project that is not located within the city of Auburn. Off-site wetland mitigation construction that is associated with a project that is located within the city of Auburn shall be reviewed concurrently with that proposal and will not be subject to the following:

A. *Definitions.* "Wetland mitigation site construction," for the purposes of this section, means the construction of new wetlands on existing nonwetland property and/or the enhancement of existing wetlands.

B. *Siting Criteria.* Wetland mitigation site construction may be allowed within any zone within the city of Auburn subject to all of the following criteria. At a minimum the proponent of wetland mitigation site construction shall apply for and receive from the city of Auburn a grading permit before said construction begins.

1. The wetland mitigation site must be linked to and be compatible with a comparable naturally occurring ecosystem, e.g., another wetland, river, stream, etc. The constructed wetland mitigation site cannot be an isolated mitigation site.

2. Only a public agency may propose a wetland mitigation site pursuant to this section. Before starting construction the public agency proposing the wetland construction must have an approved budget that has sufficient financial capability to construct the wetland mitigation project. The public agency must also provide the city a written commitment to complete the project, to the city's satisfaction, once construction starts.

3. The project, outside of Auburn, that is creating the need for the wetland mitigation shall be a public project of a regional or statewide significance and shall be a benefit to the general public. The proponent shall demonstrate to the city's satisfaction that it is impractical to mitigate wetland impacts in the jurisdiction and/or drainage basin where the wetland impact occurs.

4. There must not be a loss of buildable upland property such that it would be a financial burden to other properties in the area, or the city, with regard to funding capital improvement projects. This would include, but not be limited to, the participation or potential participation in local improvement districts (LIDs), the financial participation in city of Auburn capital improvement projects, or system development charges. Financial contributions may be used to offset the loss of the financial participation and shall require a separate legal binding contract to be executed between the city and the public agency.

5. There must not be a loss of buildable upland property that would diminish the city's ability to meet its responsibilities with regard to the Growth Management Act or comprehensive plan. (Ord. 6245 § 15, 2009.)

~~18.31.120 Accessory dwelling units (ADU).~~

~~Accessory dwelling units are permitted outright in all residential zones that permit single-family homes, and may be developed with new or existing single-family homes. The development standards of the underlying zone and the following siting and performance standards shall apply to all accessory dwelling units as defined by ACC 18.04.018.~~

~~A. The home or accessory dwelling unit must be the principal place of residence for the homeowner.~~

~~BA. Only oneTwo accessory dwelling unitADUs may be permitted per single-family residence on lots that meet the minimum lot size of the zone in which the property is located.~~

~~B. The two ADUs may be attached, detached, or any combination thereof.~~

~~C. An accessory dwelling unitADU shall not be larger than 50 percent of the square footage of the single-family home with garage space not being included in the calculation. In no case shall the accessory dwelling unit be more than 9501,000 square feet, nor less than 300 square feet, nor have more than two bedrooms. Garage space shall not be included in this calculation.~~

~~D. Exterior Appearance/Modifications.~~

~~1. Any alterations shall not change the appearance from that of a single-family residence, as determined by the planning director.~~

~~2. Only one exterior entrance is allowed to the accessory dwelling unitADU and it can be located no closer than 10 feet to an adjoining property line.~~

~~3. Any exterior stairs shall be placed in the rear or side setback and no closer than 10 feet to an adjoining property line.~~

~~4. Where garage space is converted to living space, the garage door shall be replaced with materials that match the exterior of the house. If a detached garage is converted, its appearance must still be that of a detached garage and the detached garage must be able to be used for parking of at least one vehicle.~~

~~E. *Parking Requirements.*~~

~~1. The parking required for the existing single-family home must meet all requirements of the zoning code including amount, size and setback requirements in order for an accessory dwelling unit to be~~

allowed.Additional on site parking is not required for ADU's that are located within one half mile walking distance of a Major Transit Stop.

2. One additional parking space, beyond those required for the single-family home, is required for an accessory dwelling unit. The additional parking space must also meet all requirements of the zoning code.For ADUs located more than one-half mile walking distance from a Major Transit Stop, and sited upon lots that are greater than 6,000 square feet, two on-site parking spaces are required per ADU.

3. Newly created parking shall make use of existing curb cuts, when possible. For ADUs located more than one-half mile walking distance from a Major Transit Stop, and sited upon lots that are less than or equal to 6,000 square feet, one on-site parking spaces is required per ADU.

F. An accessory dwelling unitADU may not be sold as a separate piece of property, or as a condominium unit, unless allowed by the existing zoning on the property.

G. ADUs must be connected to municipal sewer.

H. ADUs may not be used as short-term rental lodging.

I. Creation of a new ADU shall not trigger street frontage improvements.

J. Conversion of legally established structures, that do not conform to current zoning and/or land use standards, to an ADU shall not be required to come into conformance.

G. Any home property owner seeking to establish an accessory dwelling unitADU shall apply for approval in accordance with the following procedures:

1. The homeowner shall apply for an accessory dwelling unitADU permit with the city. A complete application shall include a properly completed application form, floor and structural plans, and fees.

2. Before issuance of the certificate of occupancy for an accessory dwelling unitADU, the homeowner must provide a copy of a statement recorded with the county in which the subject property is located. The statement must read:

> An application for a permit for an accessory dwelling unit has been submitted to the city of Auburn by the owner of this property. Future owners are advised that the owner of the property must comply with all requirements of the Auburn Zoning Code, as amended, if the accessory dwelling unit is to be occupied or rented.

H. If an accessory dwelling unitADU is to be removed, appropriate permits and inspections must first be received from the city. If a homeowner wants to remove the statement as required by subsection (G)(2) of this section from the property's title, then the city shall issue an appropriate release upon evidence that the accessory dwelling unitADU has been removed. The release shall be recorded by the homeowner with the

~~county records and elections office and a copy of the recorded release shall be provided to the city. (Ord. 6419 § 4, 2012; Ord. 6245 § 15, 2009.)~~

18.31.130 Communal residence standards.

A. *Parking Requirements.* There must be one off-street parking stall that meets city standards of ACC 18.52.050, Parking design, development, and maintenance standards, per tenant. The applicant must demonstrate that each off-site parking space is under their ownership. In condominium or townhouse communities the applicant can also provide legal documentation that demonstrates that they have exclusive use of a common area parking space. The city shall reduce the off-street parking requirement if the property owner provides and maintains a notarized affidavit signed separately by each tenant, certifying that a tenant does not own a vehicle or have control of a vehicle while at the residence. A copy of the affidavit must be provided to the city upon request.

B. *Solid Waste Management Requirements.*

1. ACC 8.08.070 requires all occupied communal residences to have minimum garbage service. The landlord is required to provide tenants with adequate garbage and recycle receptacles meeting the minimum garbage service level of this section.

2. The landlord is responsible to provide each tenant with the solid waste collection schedule at the time of the tenant's initial occupancy and that schedule is to be posted within the unit.

C. *Periodic Inspection Required.* Upon written request, the communal rental housing owner or manager shall allow inspection of the communal rental housing residential units consistent with their ability to do so under the requirements of the landlord-tenant statutes of the state of Washington and the Auburn City Code, including ACC 5.22.050(C)(3). The city may, with the legally obtained consent of an occupant or owner or manager, or pursuant to a lawfully issued warrant, enter any building, structure or premises in the city to inspect or perform any duty imposed by this code.

D. *Occupancy Limits.*

1. International Property Maintenance Code occupancy requirements are applicable to a communal residence regardless of the number of individuals living in the residence.

2. The occupancy limit for a communal residence shall not exceed four people. (Ord. 6560 § 10, 2015; Ord. 6477 § 9, 2013; Ord. 6245 § 15, 2009.)

18.31.140 Gated residential subdivisions.

The street(s) within a residential subdivision may be allowed to be gated pursuant to the following:

A. Gated streets cannot adversely affect the automobile or pedestrian traffic of an existing or future neighborhood. This will be determined by (1) the use of gated streets would not cause discontinuity in the existing or proposed public street system (i.e., street layout) including pedestrian traffic, (2) the use of gated streets cannot preclude public street access to other properties, and (3) the use of gated streets would not distribute an unacceptable amount of traffic through an existing or future neighborhood than would otherwise result if through public streets were used.

B. Gated residential subdivisions of more than four lots can only be permitted as part of the plat process pursuant to Chapter 17.10 ACC. Existing plats, proposed to be gated, must go through a plat alteration process pursuant to Chapter 17.20 ACC as well as meet all the requirements of this section.

C. The gated streets are to be privately owned and maintained. The private streets must however meet the same design, construction, and public facility extension standards required of public streets, including approval of the construction by the city. Private streets are only allowed to serve more than six lots if part of a gated residential subdivision.

D. A legally incorporated property owners' association must be established and assume the responsibility and cost to repair and maintain the proposed private street(s) and gate(s). The property owners must also agree to maintain a policy of liability insurance in a minimum amount of $1,000,000 of which the city is named as insured to protect the city from any claims that may result from the property owners' utilization of a gated roadway, including but not limited to malfunctions of the gate.

If the association fails to maintain the street(s), the by-laws of the association must give the city the right to maintain the street(s) and charge the cost of the maintenance, including any administrative costs, to the association members.

The by-laws establishing the association must state that if future owners should request the private street(s) be changed to public then the owners fully agree that, before the acceptance of such streets by the city, the owners will bear the full expense of reconstruction or any other action necessary to make the streets substantially consistent with the requirements of public streets, applicable at the time.

If at any time the private streets are converted to public streets, then the gate(s) shall be removed at the expense of the association.

E. At the time of application for a preliminary plat or plat alteration the applicant shall address and provide evidence that those items as required in subsections A, B, C, D, and F of this section have been fulfilled. A preliminary plat or plat alteration shall not be approved unless it is found to meet the requirements of this section.

F. Design Standards for All Entry Gates to Residential Developments Including Residential Subdivisions, Apartment Complexes, Condominiums, and Mobile Home Parks.

1. A vehicle turnaround, turnout or similar mechanism shall be provided in front of the gate. The entrance to the proposed gate shall be designed and stamped by a professional civil engineer licensed in the state of Washington and shall allow for a safe turnaround for vehicles in front of the gate in cases where the vehicle is denied entry. The design for the gated entrance shall consider the abutting public roadway alignment and grade, sight distance, posted speeds and other engineering criteria relevant to designing the particular gated entrance. The proposal shall be reviewed for approval by the city engineer.

2. Gate construction shall be of wrought iron or similar material approved by the planning director and be constructed in such a manner to allow for viewing of obstructions located within the swing path of the gate. The swing path of the gate shall be away from or parallel with the vehicle approaching the gate. The gate and accessory equipment shall be coated to prevent corrosion.

3. If the entry gate(s) obstructs access to solid waste collection, public water, sewer, or storm water utilities owned and maintained by the city, then a property owner or homeowners' association will be required to meet all easement requirements and be responsible for assuring that 24-hour access is provided to the city. The city's public works director shall determine a specified number of activation keys, activation devices or receive the access code to the gate which shall be distributed to the appropriate city departments. If the access method to the gate is subsequently modified, then the property owner or homeowners' association shall notify the public works director and again provide to the public works director a specified number of activation keys, activation devices or the access code to the gate which shall be distributed to the appropriate city departments.

4. *Emergency Access Provisions.* Gates shall have rapid entry key capabilities as approved by the fire marshal. The gate shall provide for 20 feet of clear passage for emergency access with a minimum clear height of not less than 16 feet six inches in accordance with WSDOT Design Manual Section 1120.04, "Bridge Site Design Elements," paragraph 5(a)1. Electrically operated gates shall have the capability to automatically default to the unlocked (open) position in the event of a power outage. (Ord. 6245 § 15, 2009.)

18.31.150 Secure community transition facilities.

The following siting and performance standards shall apply to all secure community transition facilities (SCTFs) as defined in RCW 71.09.020:

A. *Maximum Number of Residents.* No SCTF shall house more than 15 persons, excluding resident staff.

B. *Siting Criteria.* As an essential public facility of regional or statewide importance, any SCTF shall be sited consistent with the essential public facilities process in the Auburn comprehensive plan and shall be located in

the region-serving area of Auburn, as defined and mapped in the Auburn comprehensive plan. Such facilities should be located in relationship to transportation facilities in a manner appropriate to their transportation needs. Extensive buffering from adjacent uses may be required.

C. *Dispersion Criteria.*

1. The lot line of any new or expanding SCTF shall be located:

a. One thousand (1,000) feet or more from any residential use; and

b. One thousand (1,000) feet or more from any group residence facility as defined by ACC 18.04.440; and

c. Not adjacent to a parcel containing nor within the line of sight of any of the following:

i. Any accredited public, private or parochial school;

ii. Any religious institution in existence as of the effective date of the ordinance codified in this section;

iii. Any public park, publicly dedicated trail, sports field, playground, or recreational or community center;

iv. Any licensed daycare center, nursery school or preschool as defined by ACC 18.04.290;

v. Any school bus stop in existence at the time the facility is proposed;

vi. Any public library; and

vii. Any other facilities as identified by the State of Washington Department of Social and Health Services following the hearings on a potential site as required in RCW 71.09.315;

d. One mile or more from any work release, prerelease or similar facility.

2. The distances provided in this subsection shall be measured by following a straight line, without regard to intervening buildings, from the nearest point of the property parcel upon which the proposed use is to be located or expanded to the nearest point of the parcel of property or the land use district boundary line from which the proposed land use is to be separated.

3. The “adjacent to a parcel containing nor within the line of sight” criterion is a minimal guideline established to minimize the access between an SCTF and a “risk potential activity” as defined in RCW 71.09.020. That criterion may be altered depending on topographic conditions, size of parcels, or substantial intervening barriers to access (e.g., a river).

D. A conditional use permit application for an SCTF shall be accompanied by the following:

1. The siting process used for the SCTF, including alternative locations considered;

2. An analysis showing that utmost consideration was given to potential sites such that siting of the facility will have no undue impact on any one racial, cultural, or socioeconomic group, and that there will not be a resulting concentration of similar facilities in a particular neighborhood, community, jurisdiction, or region;

3. Proposed mitigation measures;

4. A detailed plan that demonstrates how security for the facility and the residents will be addressed, and how the security plans will be coordinated with local emergency personnel;

5. A detailed plan on how the proposed operating rules for the facility will be developed and coordinated with local emergency personnel;

6. A schedule and analysis of all public input solicited or to be solicited during the siting process, including assurance that comments are reviewed and adequately responded to; and

7. A preliminary landscaping plan that shows how the proposal intends to meet the requirements of the zone in which it is located, in order to comply with state regulations for siting an SCTF and in order to provide appropriate visual separation between the SCTF and neighboring land uses such that impacts to residents of an SCTF by neighboring manufacturing uses are mitigated.

These proposed materials shall be reviewed by the planning director in consultation with the chief of police and the city attorney. The planning director shall include in any recommendation on the requested conditional use permit an analysis of the proposal as they may relate to the findings of fact required under ACC 18.64.040. (Ord. 6245 § 15, 2009.)

18.31.160 Supportive housing development standards.

A. Supportive housing projects allowed pursuant to ACC 18.07.020 shall comply with the following standards:

1. Minimum lot area per unit: 1,200 square feet.

2. For lots with an area of up to one acre, the maximum number of units allowed is 25; for lots with an area greater than one acre, the maximum number of units allowed is 50.

3. Maximum lot size: two acres.

4. Minimum separation from other supportive housing projects: five miles.

5. Maximum unit size: 450 square feet (on-site manager unit excepted).

6. Shall provide an on-site resident manager who is accountable to the owner or manager of the supportive housing project.

7. Appropriate off-site support services shall be available within 1,000 feet. Off-site support services shall provide residents with case management services, medication monitoring, help with vocational training and goals, access to chemical dependency services, assistance with activities of daily living, etc.

8. Registered sex offenders shall not be allowed to reside within supportive housing projects located within 880 feet of a school, church, daycare facility or public park.

9. A written management plan shall be provided for the review and approval of the planning director. At a minimum, a management plan shall address the following:

a. The specific nature of the supportive housing project and its intended occupants;

b. Its potential impact on nearby residential uses and proposed methods to mitigate those impacts;

c. Identification of the project management or agency to whom support staff are responsible and who will be available to resolve concerns pertaining to the facility;

d. Identification of staffing, supervision and security arrangements appropriate to the facility;

e. If the planning director determines at any time there is evidence of fraud in obtaining the permit; concealment or misrepresentation of any material fact on the application or on any subsequent applications or reports; or that the supportive housing project is found to be in violation of the approved plans, conditions of approvals, or the terms of the permit or management plan, and the owner has failed to correct the violation after proper notice thereof; then the planning director may order the closure of the project.

10. If a supportive housing project is discontinued or abandoned, future use of the property shall be in conformance with the use and development standards of the R-20 zone. (Ord. 6245 § 15, 2009.)

18.31.170 Reserved.

Reserved. (Ord. 6245 § 15, 2009.)

18.31.180 Performance standards.

A. *General.* The following performance standards specifically govern industrial, manufacturing, processing, assembly and similar type uses typically found within the industrial zones. These standards may also apply to

other uses and activities in other zones, which are not otherwise governed by other regulations of the Auburn City Code.

B. *Noise.* The noise emanating from the premises of commercial or industrial activities shall be muffled so as to not become objectionable due to intermittent beat, frequency or shrillness, and shall not exceed those standards as determined by Chapter 173-60 WAC, as amended.

C. *Glare.* Exterior lighting shall not be used in such a manner that it produces glare on public streets and neighboring property. This restriction also applies to any other nonresidential zone or use adjacent to ~~single-family~~ residential zones. Arc welding, acetylene torch cutting or similar processes shall be performed so as not to be seen from any point beyond the property line of the use creating the glare.

D. *Storage and Handling of Flammables.* In terms of fire and safety hazards, the storage and handling of flammable liquids, combustible liquids, liquefied petroleum gases and explosives shall comply with the rules and regulations of the International Fire Code, as amended.

E. *Electrical Interference.* Provisions must be made for necessary shielding or other preventive measures against interference occasioned by mechanical, electrical and nuclear equipment uses or processes with electrical apparatus in nearby buildings or land uses.

F. *Odorous Gases and Matter.* The emission of odorous gases or matter in such quantities as to be readily detectable, without special instruments, at any point beyond the property line of the use creating the odors is prohibited.

G. *Smoke and Particulate Matter Emissions.* No emissions shall exceed the allowances set forth by the Environmental Protection Agency, the Washington State Department of Ecology and/or the Puget Sound Air Pollution Control Agency.

H. *Dust, Dirt, Fly Ash, or Airborne Solids.* No observable dust, dirt, fly ash or other airborne solids shall be emitted except as related to construction activity or permitted in Chapter 18.62 ACC, Surface Mining.

I. *Waste Storage.* Storage of animal or vegetable wastes which attract insects or rodents or otherwise create a health hazard shall be prohibited. No waste products shall be exposed to view, from eye level, beyond the property line of the use storing the waste.

J. *Toxic Gases and Matter.* No emissions of toxic gases or matter shall be permitted.

K. *Vibration.* Vibration which is easily discernible, without special instruments at any point beyond the property line, is prohibited. This shall not apply to vibration caused by highway vehicles, trains, aircraft or construction activities.

L. *Hazardous Substance and Waste.* No hazardous substances or wastes shall be released into the environment so as to cause dangerous or offensive emission or contamination of any public or private water

supply, sewage treatment processes, watercourse or water body, the air or the ground, except in accordance with standards approved by provisions of federal, state and local laws and regulations. (Ord. 6245 § 15, 2009.)

18.31.190 Supplemental standards for residential mobile home communities.

Supplemental development standards for the R-MHC district are as follows:

A. *Recreational Vehicle Storage Area.* A fenced and screened storage area shall be provided, the size of which shall be 300 square feet of area for each 10 homes. The storage area shall not abut property other than that which is zoned R-MHC.

B. *Recreation Area.* A central recreation area shall be established in each community created pursuant to the provisions of this chapter. The size of the area shall be at least 200 square feet per home site. The recreation area may contain community clubhouses, swimming pools, shuffleboard courts and similar facilities. The planning director may permit decentralization of the recreation facilities in accordance with principles of good planning; provided, that the total recreation area meets the above stated minimum size.

C. *Space Identification.* Each manufactured home site shall be plainly marked and numbered for identification.

D. *Community Office.* Every community shall provide a permanent building to be used as an office for community management.

E. *Streets.* Internal private community streets shall be provided in such a pattern as to provide convenient traffic circulation, including fire and other equipment responding to emergencies, within the community. They shall be built to the following standards:

1. The width of all private community streets shall be not less than 34 feet including curbs. Street widths of 24 feet may be permitted in communities; provided, that adequate off-street parking is provided at the ratio of one off-street parking space for each manufactured home site within the community. The location and placement of the off-street parking spaces will be subject to approval by the planning director. No on-street parking will be permitted on street widths of less than 34 feet and signs designating “no parking” and “fire lane” must be placed on both sides of the street and so marked on the final plans.

2. All public streets abutting a community shall be improved in conformance with the city’s design and construction standards.

3. There shall be curbing constructed to city design and construction standards on each side of all private community streets.

4. The private community streets shall be paved in accordance with the city’s design and construction standards.

5. Private community streets shall be lighted in accordance with the city's design and construction standards.

6. Minimum radii on private community street curves shall not be less than 45 feet.

F. For those communities that had been approved prior to June 15, 1987, the adoption date of Zoning Ordinance No. 4229, the placement or replacement of any home shall either be in conformance with this chapter or the site plan which had been previously approved by the city. For those communities which do not have an approved site plan, the replacement of a home shall either be consistent with this chapter or the location of the previous home. In no case shall any applicable fire or building code requirements be lessened. (Ord. 6245 § 15, 2009.)

18.31.200 Architectural and site design review standards and regulations.

A. *Intent and Purpose.* The architectural and site design regulations provide an administrative review process for evaluating the design and arrangement of development. The architectural and site design regulations are intended to be consistent with and implement the policies of the comprehensive plan. The purposes of these design review regulations are to:

1. Foster good decision-making for development through architectural and site design within the context of the community's built and natural environmental character, scale and diversity;

2. Promote the use of appropriate scale of buildings and the configuration of open space and parking areas for development to safely and comfortably accommodate pedestrian activities;

3. Coordinate the interrelationship of buildings and public and private open space;

4. Discourage monotony in building design and arrangement, while promoting harmony among distinct building identities; and

5. Mitigate, through design and site plan measures, the visual impact of large building facades, particularly those which have high public visibility (encourage the creative use of architectural and landscape features in order to reduce the actual and perceived scale and bulk of structures).

B. *Applicability.* The following land uses, types of development activities, including all related site improvements, and geographic areas, are subject to the architectural and site design standards and the processes and regulations for conducting design review contained in this chapter:

1. ~~*Multiple-Family*~~*Apartments (formerly multiple-family) and Mixed-Use Developments.* The following land uses and types of development are subject to the city's ~~multiple-family~~apartment ~~-~~and mixed-use design standards document unless addressed by a different set of architectural and site design standards applicable to a specific geographic area:

a. ~~Multifamily~~ Apartments development inclusive of ~~triplexes and fourplexes~~seven or more units in all zones in the city where permitted outright or as a conditional use and not otherwise addressed through the city's residential infill development standards (Chapter 18.25 ACC); and

b. Mixed-use residential development. Mixed-use development containing residential living units in all zones in the city where permitted outright or as a conditional use; and

c. Retirement apartments, congregate living facilities and senior housing complexes in all zones in the city where permitted outright or as a conditional use.

2. *Downtown Urban Center.* The following locations of development activities are subject to the city's downtown urban center design standards document:

a. Properties located within the boundaries of the DUC, downtown urban center zoning district, as identified on the comprehensive zoning map.

3. *Auburn Junction.* The following locations of development activities are subject to the city's Auburn Junction design standards document:

a. Properties located within the boundaries of West Main Street, 2nd Street SE/SW, A Street SE, and A Street SW as identified with ACC 18.29.070, design standards of the DUC downtown urban center zone.

4. *Northeast Auburn Special Planning Area.* The following locations of development activities are subject to the city's Auburn Gateway architectural and site design standards document:

a. Properties located within the boundaries of the Auburn Gateway Project as defined by the development agreement approved by city Resolution No. 4756, or as may be subsequently amended. The Auburn Gateway architectural and site design is addressed in Section 4 of this resolution and provided as Attachment 4 to the resolution.

C. *Exemptions.* The following activities as determined by the community development director shall be exempt from the provisions of the design standards:

1. Any building activity that does not require a building permit; or

2. Interior construction work which does not alter the exterior of the structure; or

3. Normal or routine building and site maintenance/repair that is exempt from issuance of a permit including the repair or maintenance of structural members; or

4. Interior alterations that do not modify an existing site condition; or

5. Site and exterior alterations that do not exceed 10 percent of the assessed valuation of the property building or land per the most recent county records; or

6. Building additions that are less than 10 percent of the existing floor area of the existing building. Any cumulative floor area increase from the adoption date of the ordinance establishing the architectural and site design standard that totals more than 10 percent shall not be exempt unless the community development director determines compliance with these standards would be infeasible and/or unreasonable.

D. *Design Standard Documents.* Adopted by reference are the following architectural and site design documents, copies of which shall be maintained by the city clerk. These documents contain the standards for the design and development of the built environment. The community development director or designee shall have the authority to apply the standards to specific development proposals. The following specific architectural and design standards documents may be amended upon approval by the community development director:

1. Mixed-use and ~~multiple-family~~apartment (formerly multiple-family) development design standards.

2. Auburn Gateway architectural and site design standards.

3. Downtown urban center design standards.

4. Auburn Junction design standards.

E. *Timing of Administrative Design Review.*

1. Design review shall be conducted by the community development director or designee prior to or concurrent with the processing of building permits and/or review of discretionary land use approvals/permits.

2. The decision on the administrative design review shall be issued prior to issuance of the building permits and/or issuance of discretionary land use approvals/permits.

F. *Pre-Application Meeting – When Required Associated with a Design Review.*

1. A pre-application conference is required for the following instances:

a. For ~~multifamily~~ apartments ~~development~~ in the R-3~~10~~, R-3~~16~~, and R-4~~20~~ residential zones; and

b. For mixed-use development containing residential living units located within R-3~~10~~, R-~~16~~3 and R-4~~20~~ residential zones; and

c. For mixed-use development containing residential living units located within commercial zones; and

d. For retirement apartments, congregate living facilities and senior housing complexes located within R-3~~10~~, R-3~~16~~ and R-~~20~~4 residential zones, and all commercial zones.

2. A pre-application conference is strongly recommended for all other projects subject to the city's architectural and site design review but is not required.

G. *Design Review Submittal Requirements.* In addition to any other documentation required for submittal of a complete application for building permit or discretionary land use approvals/permits, the following items shall be required for the architectural and site design review:

1. Elevation drawings prepared by an architect licensed in the state of Washington of all proposed construction including dimensional drawings at one-eighth inch equals one foot or comparable scale showing the type of exterior materials, color (where applicable), exterior finishes for buildings and accessory structures, location and elevations of exterior lighting for buildings, the type, style and model of exterior lighting fixtures (where applicable), parking areas, and fenestration details;

2. A to-scale landscape plan prepared by a landscape architect licensed in the state of Washington showing existing vegetation to be retained and proposed vegetation to be installed inclusive of the common and botanical name of all vegetation, the location and quantity of vegetation, the initial planting size and methods of irrigation;

3. A context vicinity map that shows all structures on the property and within 200 feet in each direction of the subject property drawn approximately to scale;

4. A neighborhood circulation plan consistent with the provisions of Chapter 17.16 ACC (Neighborhood Circulation Plan); and

5. Conceptual plans for any public infrastructure, including roads, water, sewer, and storm facilities.

H. *Interpretations.*

1. The community development director shall be authorized to interpret the meaning of words, phrases and sentences which relate to the implementation of the specific architectural and design standards document. Any interpretations regarding implementation of the specific architectural and design standards document shall be made in accordance with its intent or purpose statements and the intent and purpose statements of this chapter. For interpretations, life safety and public health regulations shall be given priority over all other regulations.

2. Administrative interpretations may be appealed to the hearing examiner as prescribed in ACC 18.70.050.

I. *Design Review Adjustments.*

1. *Authority for Design Review Adjustments.* The community development director or designee shall have the authority, subject to the provisions of this section and upon such conditions as the community development director or designee may deem necessary to comply with the provisions of this section, to approve design adjustments as follows:

a. An adjustment to architectural or site design requirements such that no more than two of the total number of required menu items in the city of Auburn ~~multifamily~~apartment and mixed-use design standards are out of compliance.

b. An adjustment to required building wall and roof modulation standards, as contained in the city of Auburn ~~multifamily~~ apartment and mixed-use design standards, up to 20 percent of the amount of any quantified standards contained therein.

c. An adjustment to the architectural or site design requirements that remains consistent with the purpose and intent of the architectural and site design standards.

2. *Required Findings to Grant Design Review Adjustments.* Each determination granting an adjustment by the community development director or designee shall be supported by written findings showing specifically wherein all of the following conditions exist:

a. That the granting of such adjustment does not constitute a grant of special privilege inconsistent with the limitations upon uses of other properties in the vicinity and/or zone of the subject site; and

b. That the granting of such adjustment will not adversely affect the established character of the surrounding neighborhood, discourage maintenance or upgrades on surrounding properties, nor result in perpetuation of those design qualities and conditions which the comprehensive plan intends to eliminate or avoid; and

c. That the project incorporates alternate design characteristics that are equivalent or superior to those otherwise achieved by strict adherence to stated menu options; and

3. *Public Notification and Action on Design Review Adjustment Applications.* Upon the filing of a properly completed application and associated request for a design review adjustment, the community development director or designee shall comply with the city's Type II land use review requirements for issuance of a properly noticed and appealable land use decision.

4. *Appeal of Director's Decision on Design Review Adjustments.*

a. If a written objection to the initial determination notice is filed within 14 business days of said notification, the community development director or designee shall reconsider the initial determination in light of the objection(s) as raised and render a final decision on the permit. This final decision shall result in either the community development director's affirmation of the original determination of approval, the approval with additional modifications or denial.

b. Upon completion of the community development director's reconsideration, all parties notified of the original determination shall receive notification of the community development director's final decision. Any party aggrieved by the community development director's final decision may file an appeal of that decision to the hearing examiner in accordance with the city's land use appeal

provisions. Such appeals for hearing examiner review must be filed within 14 business days from the date the written decision was made and shall include the following:

i. The appeal shall be filed on forms provided by the department of planning and development.

ii. The appeal shall clearly state the decision being appealed, setting forth the specific reason, rationale, and/or basis for the appeal.

iii. Fees associated with the appeal shall be paid to the city upon filing of the appeal in accordance with a fee schedule established by resolution.

5. Upon filing of a timely and complete appeal, the hearing examiner shall conduct a public hearing to consider the merits of the appeal. This hearing shall be subject to the city's public noticing and public hearing requirements and shall include notification of all parties notified of the community development director's final decision. The hearing examiner may affirm the community development director's decision or may remand the matter to the community development director for further review in accord with the examiner's direction.

6. If no written objection is filed to the initial determination within the specified time limits, the community development director shall render a final decision on the permit in accord with the initial determination.

J. *Approval Criteria for Design Review.* The community development director or designee may approve, modify and approve, or deny an application for an administrative design review. Each determination granting approval or approval with modifications shall be supported by written findings showing the applicant satisfies all the following criteria:

1. The plans and supplemental materials submitted to support the plan meet the requirements of the specific architectural and site design documents;

2. The proposed development is consistent with the comprehensive plan;

3. The proposed development meets required setback, landscaping, architectural style and materials, such that the building walls have sufficient visual variety to mitigate the appearance of large facades, particularly from public rights-of-way and ~~single-family residential zones~~single-unit detached dwellings and middle housing.

4. In addition to the criteria in subsections (J)(1) through (3) of this section, for ~~multiple-family~~apartments ~~residential~~ and retirement apartment projects, the director or designee must determine that the following key review criteria have been met:

a. The proposed development is arranged in a manner that either:

i. Provides a courtyard space creating a cohesive identity for the building cluster and public open space furnished to facilitate its use; or

ii. Possesses a traditional streetscape orientation that provides clearly identifiable and visible entries from the street, views from residential units onto the street and reinforces pedestrian-oriented streetscape characteristics (e.g., building edge abutting sidewalk, entries onto the street); or

iii. Faces and facilitates views of a major open space system;

b. The proposed development provides a variety in architectural massing and articulation to reduce the apparent size of the buildings and to distinguish vertical and horizontal dimensions;

c. The proposed development contains a combination of elements such as architectural forms, massing, assortment of materials, colors, and color bands sufficient to distinguish distinct portions and stories of the building;

d. Residential buildings in large ~~multiple-family~~apartment projects or mixed-use projects are physically integrated into the complex possessing sufficiently different appearance or placement to be able to distinguish one building from another;

e. Unit entrances are individualized by use of design features that make each entrance distinct or which facilitate additional personalization by residents;

f. Areas dedicated to parking are sufficiently visually broken up and contain a complement of vegetative materials to project a landscaped appearance;

g. Where applicable, a transition is created that minimizes impacts from ~~multifamily~~ apartments and mixed-use development projects on neighboring lower density residential dwelling units ~~in abutting or adjacent single-family zones~~; and

h. Where applicable, in cases of granting density or height bonuses, the project has provided community benefits, facilities or improvements above and beyond those required in the municipal code and supports the goals, objectives and policies of the comprehensive plan. (Ord. 6728 § 4 (Exh. D), 2019; Ord. 6408 § 1, 2012; Ord. 6287 § 2, 2010; Ord. 6245 § 15, 2009.)

18.31.210 Agricultural enterprises development standards.

A. *Purpose.* The purpose of this section is to regulate the establishment and operation of agricultural enterprises in order to maintain and preserve the lower density residential character, integrity, environmental protection, and property values of the residential conservancy (RC) zone in which they are located and the surrounding areas.

B. *Applicability.* The permit requirements and standards provided in this section apply to agricultural enterprises where allowed in compliance with Chapter 18.07 ACC, Residential Zones, and meeting the

definition of agricultural enterprises as provided in ACC 18.04.035. The development standards of the RC zone shall apply unless a different standard is set forth in the supplemental development standards in subsection E of this section.

C. *Permit Required.* An administrative use permit is required when 50 percent or more of the total site area is dedicated to active agricultural production during the growing season, and with 52 or less special events per calendar year. A conditional use permit is required when less than 50 percent of the total site area is dedicated to active agricultural production during the growing season, or if the applicant intends to hold more than 52 special events per calendar year.

D. *Uses.* The following uses may be permitted as part of an agricultural enterprise under a unified management or ownership:

1. Agricultural crops and open field growing;

2. Agricultural store;

3. Barns, silos and related structures;

4. Caretaker quarters, not more than one per agricultural enterprise;

5. Catering facilities;

6. Delicatessens, restaurants or sandwich shops limited to a seating area of 25 seats;

7. Drive-through espresso and/or nonalcoholic beverage stands, freestanding;

8. Education facilities providing courses related to agricultural production and/or processing or promotion of locally and regionally grown food;

9. Farm stands, for the sale of agricultural products raised on the premises in addition to agricultural products that are raised off site;

10. Greenhouses;

11. Keeping of livestock, or fowl and rabbits or similar sized animals; provided, that an appropriate structure or enclosure is provided;

12. Museum and cultural facilities;

13. Outdoor musical entertainment (when it meets all requirements for the business licensing of ACC 5.20.200);

14. Small-scale food processing or packaging of agricultural products;

15. Special events. Special events include, but are not limited to, the following activities where attendance exceeds 200 persons or more:

a. Weddings;

b. Meetings;

c. Receptions;

d. Reunions;

e. Tasting events for food or beverage;

f. Private parties;

g. Concerts held within an enclosed building;

h. Retreats;

i. Other comparable events;

16. Tasting room;

17. Tourist and visitor services;

18. Winery; and

19. The planning director may authorize uses under this definition other than those which are listed, if the planning director determines the use is consistent with the intent of the zone and is of the same general character of the uses permitted within the zone. Further guidance on administrative interpretations of land uses can be found in ACC 18.02.120.

E. *Development Standards.*

1. *Minimum Area.* The minimum area devoted to an agricultural enterprise business shall be a single parcel with a minimum of 10 acres in total site area within the residential conservancy (RC) zone. Environmentally critical areas are not counted toward total site area when determining whether an administrative or conditional use permit is required.

2. *Location.* The proposed agricultural enterprise business shall have direct access onto a minor arterial or higher classification street.

3. *Maximum Building Size.* Nonresidential buildings, excluding greenhouses, shall not exceed 5,000 square feet in gross floor area.

4. *Lot Coverage.* The combination of all buildings, to include greenhouses, on a single site used in conjunction with the agricultural enterprise business shall not exceed 15 percent of the total site area.

5. *Maximum Impervious Area.* The maximum impervious area shall not exceed 25 percent.

6. Setbacks. Structures for agricultural enterprises shall be located as follows:

   a. Front setback: 35 feet.

   b. Rear setback: 20 feet.

   c. Interior side setback: 20 feet.

   d. Street side setback: 35 feet.

7. *Height.* Maximum building height: 35 feet. Buildings may exceed 35 feet if one additional foot of setback is provided from each property line for each foot the building exceeds 35 feet.

8. *Visual Impact.* Activities and uses conducted in conjunction with the agricultural enterprise must be located in such a manner that minimizes visual impacts to adjoining properties that are used or zoned for residential uses. In addition:

   a. A Type III landscape buffer 10 feet in width shall be provided on site in those areas between the buildings and the property line.

   b. Highly reflective building materials shall not be used on buildings.

9. *Responsible Party.* All components of the agricultural enterprise shall be operated or maintained by the property owner, lease holder, or occupant of the land upon which the primary associated agriculture, horticulture, or other use is being conducted.

10. *Hours of Operation.* Agricultural enterprise activities involving the employment of workers; outside activities; the generation of any noise, light, dust, odor, glare, or vibration detectable outside the business structure; or traffic, including deliveries, shall only be conducted on site between the hours of 7:00 a.m. and 10:00 p.m. or as may be specifically approved by a condition of approval of the administrative or conditional use permit.

11. *Parking and Outdoor Storage.* All parking and outdoor storage areas used exclusively for retail areas within 50 feet from a property line shall be screened from adjoining properties used or zoned for residential uses. If existing topography and natural vegetation does not provide an adequate visual barrier, additional screening may be required, to include installation of landscape materials, walls or fencing.

12. *Lighting.* No lighting shall be directed onto adjoining properties used or zoned for residential uses and no lighting shall exceed 0.5 foot-candle when measured at the property lines. Floodlights or other high-intensity lighting shall be prohibited, unless specifically approved as part of a special event or outdoor musical entertainment.

13. *Refuse and Recycling.* All refuse and recycling waste containers shall be within refuse enclosures located in the rear of the building and be completely screened from public view. All refuse enclosures shall be architecturally compatible with the building they serve.

14. Special Events. Special events or similar activities may be held as follows:

a. Up to 52 special events within a calendar year with the administrative use permit.

b. Fifty-two or more special events within a calendar year shall require a conditional use permit.

c. *Parking and Traffic Control.* A parking and traffic control plan shall be prepared by a licensed traffic engineer and required for all agricultural enterprises conducting special events (as defined by ACC 18.04.827). The parking and traffic control plan shall be submitted for review as part of the administrative use permit or conditional use permit application and, if satisfactory, must be approved by the planning and development director and city engineer prior to implementation. At a minimum, the parking and traffic control plan shall contain the following:

i. A parking plan showing how adequate on – and off-site parking will be available to the site, and that no substantial conflict will exist during the principal hours or periods of peak parking demands for any land use or special event which is proposed to share the parking.

ii. A traffic control plan showing how traffic to and from the land use and special events location(s) will be handled and what temporary traffic control measures will be used to facilitate safe access to and from the locations. The traffic control plan must include a written description of the plan as well as a traffic control diagram showing traffic control devices, directions of travel, and the location and type of authorized personnel to direct traffic.

iii. A contingency plan for weather changes (relocation or rescheduling of events; alternative parking areas; method of notifying the public of changes) and for unanticipated increases in traffic or parking.

iv. Other elements as determined necessary by the planning and development director and the city engineer based on the specific events, setting, and location.

15. *Wineries.* All wineries with or without tasting rooms shall:

a. Have adequate driveway access to a public street meeting the requirements of a commercial driveway.

b. Provide adequate on-site parking in the amount of one parking stall for every 500 square feet of gross floor area.

c. Shall not exceed 5,000 square feet gross floor area with the tasting room not exceeding 50 percent of the production area.

16. *Signs.* Notwithstanding the provisions of ACC 18.56.040(A), the following standards apply to signs for agricultural enterprise uses within the RC, residential conservancy zone. If not specified in this section, the other provisions of Chapter 18.56 ACC, Signs, apply.

a. *Freestanding Signs.*

i. Total number permitted:

(A) Two per frontage on a parcel having at least 500 feet of frontage on a state highway.

(B) One per frontage on a principal or minor arterial.

ii. Maximum height:

(A) Thirty feet on a state highway.

(B) Twenty-two feet on a principal or minor arterial.

iii. Maximum area: 200 square feet, calculated at a rate of one square foot of sign area for every two lineal feet of frontage. The minimum entitlement for freestanding signs is 32 square feet for those sites less than 64 feet of frontage.

iv. Multiple freestanding signs, if permitted, must be separated by at least 150 feet measured in a straight line distance.

b. *Wall Signs.*

i. Total number permitted: one sign per building frontage that fronts a public right-of-way.

ii. Maximum area: 100 square feet per building frontage that fronts a public right-of-way, calculated at a rate of one square foot of sign area for every one linear foot of building frontage.

iii. Signs may be directly or indirectly illuminated.

c. Changing message center signs are allowed as part of an agricultural enterprise if the sign complies with the sign regulations in ACC 18.56.030(F).

17. *Additional Permits and Approvals.* In addition to required land use permits, an agricultural enterprise may be required to obtain licenses and permits from other city and county departments (e.g., business licenses from the city, food service or sales licenses from the county department of public health, animal care licenses from the county department of public health, etc.). (Ord. 6363 § 2, 2011.)

18.31.220 Permitted animals.

The types and allowed number of animals permitted are listed as follows, provided the following requirements are met. The specified minimum lot size per animal are absolute requirements. No variances, waivers, and/or modifications under the Auburn City Code shall be granted. The keeping of animals that require no lot size or lesser lot size are allowed to be cumulative, when lot size requirements have been met. For example, on a 12,500-square-foot lot, the keeping of one miniature goat, one potbelly pig, and two dogs could be allowed. Licensing of pets and animal control is governed by ACC Title 6, Animals.

A. Small Domestic Animals. Small domestic animals may be kept if the owner complies with the following:

1. Small domestic animals are permitted as an accessory use to a residence or business.

2. Up to four small domestic animals, including foster animals, per dwelling or commercial building regardless of lot size. Offspring less than six months of age are not included in this number.

3. A pet license is required for each cat or dog in accordance with Chapter 6.04 ACC, Animal Licensing.

B. *Domestic Fowl.* Domestic fowl may be kept if the owner complies with the following:

1. Domestic fowl and poultry are permitted as an accessory use to a ~~single-family~~single-unit detached dwelling ~~residence~~.

2. Roosters and peafowl are not permitted.

3. Structures, or yard areas including chicken coops, pens or runs, housing or containing domestic fowl are only allowed in the rear yard (the area between the rear yard lot line and the extension of the rear facade of the principal structure) and shall be set back from the rear and side yard lot lines by a distance of at least 10 feet.

4. Up to a total of four domestic fowl and poultry can be kept on lots that are at least 6,000 square feet in size. On lots that are larger than 6,000 square feet, one additional domestic fowl or poultry may be kept per additional 2,000 square feet. The maximum number of domestic fowl allowed per lot is 10; this maximum does not apply to properties zoned RC, residential conservancy or R-1, residential one dwelling unit per acre.

5. The keeping conforms to ACC 8.28.010 regarding noise disturbance, ACC 8.12.020 regarding nuisances affecting public health and safety, and ACC 6.24.020 regarding slaughtering.

C. Miniature Goats. Miniature goats are medium domestic animals and may be kept if the owner complies with the following:

1. Miniature goats are permitted as accessory use to a ~~single-family~~single-unit detached dwelling ~~residence~~.

2. Male miniature goats must be neutered.

3. All miniature goats must be dehorned.

4. Nursing offspring of miniature goats may be kept until weaned, but no longer than 12 weeks from birth without meeting the requirements contained herein.

5. The location of structures housing miniature goats must comply with accessory structure setbacks applicable in the zoning district where the property is located.

6. Up to two miniature goats are allowed on lots that are at least 12,500 square feet in size. On lots that are greater than 12,500 square feet, one additional medium size domestic animal may be kept per additional 7,500 square feet.

7. The keeping conforms to ACC 8.28.010 regarding noise disturbance, ACC 8.12.020 regarding nuisances affecting public health and safety, and ACC 6.24.020 regarding slaughtering.

D. *Potbelly Pigs.* Miniature potbelly pigs are medium domestic animals and may be kept if the owner complies with the following:

1. Potbelly pigs are permitted as accessory use to a ~~single-family~~single-unit detached dwelling ~~residence~~.

2. Potbelly pigs are no greater than 24 inches in height at the shoulder and no more than 150 pounds.

3. Nursing offspring of potbelly pigs may be kept until weaned, but no longer than 12 weeks from birth without meeting the requirements contained herein.

4. The location of structures housing potbelly pigs must comply with accessory structure setbacks applicable in the zoning district where the property is located.

5. Two potbelly pigs can be kept on lots that are at least 12,500 square feet in size. On lots that are greater than 12,500 square feet, one additional medium size domestic animal may be kept per additional 7,500 square feet.

6. The keeping conforms to ACC 8.28.010 regarding noise disturbance, ACC 8.12.020 regarding nuisances affecting public health and safety, and ACC 6.24.020 regarding slaughtering.

E. Large Domestic Animals. Large domestic animals may be kept if the owner complies with the following:

1. Large domestic animals are allowed as an accessory use to a single-unit detached dwelling ~~single-family~~ residence.

2. Two large domestic animals can be kept on lots that are at least one acre in size.

3. On lots that are larger than one acre, one additional large domestic animal may be kept per additional 21,780 square feet.

4. The location and structures housing large domestic animals and any corral, exercise yard or arena must comply with the setbacks applicable in the zoning district where the property is located.

5. The keeping conforms to ACC 8.28.010 regarding noise disturbance, ACC 8.12.020 regarding nuisances affecting public health and safety, and ACC 6.24.020 regarding slaughtering.

F. Apiaries (keeping of honey bees (Apis mellifera)), also referred to as beekeeping, may be permitted if the owner complies with the following:

1. Beekeeping is allowed as an accessory use to a single-unit detached dwelling~~single-family~~ residence.

2. All hives are registered with the State Department of Agriculture.

3. No more than two hives, each with only one swarm, shall be kept on lots of less than 10,000 square feet.

4. Hives shall not be located within 25 feet of any property line with the hive(s) entrance(s) facing away from the nearest property line.

5. The keeping conforms to ACC 8.28.010 regarding noise disturbance and ACC 8.12.020 regarding nuisances affecting public health and safety.

G. Amortization of Preexisting, Nonconforming Structures Housing Animals and Runs or Pens. An individual who receives written notice from the city that a structure (coop) or yard area (runs or pens) housing animals regulated by this section, except small domestic animals, does not comply with setback requirements shall have 30 days from the date of notification to bring the property/structure into compliance. If any individual believes that their circumstances pose particular difficulty in meeting the 30-day time frame for compliance with the setback requirements of this section, the individual may request in writing of the community development and public works director (planning director) or designee additional time to bring their activity into conformity. Decisions of the community development and public works director (planning director) or designee to grant or deny the extension shall be final and conclusive. (Ord. 6600 § 11, 2016; Ord. 6369 § 8, 2011.)

Code reviser's note: Ordinance 6369 adds these provisions as Section 18.31.210. The section has been renumbered to avoid duplication of numbering.

18.31.230 Table of allowed districts.

Repealed by Ord. 6600. Code reviser's note: Ordinance 6369 adds these provisions as Section 18.31.211. The section has been renumbered to match the renumbering of the preceding section.

The Auburn City Code is current through Ordinance 6904, passed February 21, 2023.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

City Website: www.auburnwa.gov
Code Publishing Company, A General Code Company

Chapter 18.32~~1~~
ACCESSORY DWELLING UNIT~~SUPPLEMENTAL~~ DEVELOPMENT STANDARDS

A. ~~Accessory dwelling units~~ Accessory Dwelling Units (ADUs) are permitted outright in all residential zones that permit single-unit detached or ~~single-family homes, and~~middle housing, and may be developed with new or existing ~~single-family homes~~middle housingdevelopment. The development standards of the underlying zone and the following siting and performance standards shall apply to all accessory dwelling units as defined by ACC 18.04.018.

~~A. The home or accessory dwelling unit must be the principal place of residence for the homeowner.~~

~~B~~AB. ~~Only one~~Two ~~accessory dwelling unit~~ADUs may be permitted per ~~single-family residence~~ residential unit on individually owned lots ~~on lots~~ that meet the minimum lot size of the zone in which the property is located.

~~B~~C. The two ADUs may be attached, detached, or any combination thereof.

~~C~~D. An ~~accessory dwelling unit~~ADU shall not be larger ~~than 50 percent of the square footage of the single-family home with garage space not being included in the calculation. In no case shall the accessory dwelling unit be more~~ than ~~950~~1,000 square feet, nor less than 300 square feet, nor have more than two bedrooms. ~~–~~ Garage space shall not be included in this calculation.

~~D~~E. Exterior Appearance/Modifications.

1. Any alterations shall not change the appearance from that of a single-~~family residence~~unit detached, as determined by the planning director.

~~2. Only one exterior entrance is allowed to the accessory dwelling unit~~ADU ~~and it can be located no closer than 10 feet to an adjoining property line.~~

~~3~~2. Any exterior stairs shall be placed in the rear or side setback and no closer than 10 feet to an adjoining property line.

34. Where garage space is converted to living space, the garage door shall be replaced with materials that match the exterior of the house. ~~If a detached garage is converted, its appearance must still be that of a detached garage and the detached garage must be able to be used for parking of at least one vehicle.~~

~~E~~F. *Parking Requirements.*

1. ~~The parking required for the existing single-family home must meet all requirements of the zoning code including amount, size and setback requirements in order for an accessory dwelling unit to be~~

~~allowed.~~Additional ~~on site~~Off-street parking is not required for ADUs that are located within one-half mile walking distance of a Major Transit Stop.

2. For ADUs located more than one-half mile walking distance from a Major Transit Stop ~~, and sited upon lots that are less than or equal to 6,000 square feet,~~ one on-site parking space is required per ADU.

~~32. One additional parking space, beyond those required for the single-family home, is required for an accessory dwelling unit. The additional parking space must also meet all requirements of the zoning code.~~

~~3. Newly created parking shall make use of existing curb cuts, when possible.~~

~~F~~G. An ~~accessory dwelling unit~~ADU may ~~not~~ be sold as ~~a separate piece of property, or as~~ a condominium unit~~, unless allowed by the existing zoning on the property~~ or as a separate piece of property through the unit lot subdivision process. If the ADU is converted into a condominium unit or subdivided, a separate water and sewer connection is required.

~~G~~H. ADUs must be connected to municipal sewer or served by septic system.

I. An ADU is allowed in rear setbacks (on the rear lot line) if the lot line abuts a public alley, unless the city routinely plow snow within the alley.

J. Conversion of legally established structures, that do not conform to current zoning and/or land use standards to an ADU, shall not be required to come into conformance.

~~G~~K. Any ~~home~~ property owner seeking to establish an ~~accessory dwelling unit~~ADU shall apply for approval in accordance with the following procedures:

1. The ~~home~~owner shall apply for an ~~accessory dwelling unit~~ADU permit with the city. A complete application shall include a properly completed application form, floor and structural plans, and fees.

2. Before ~~issuance of the certificate of occupancy~~final ~~for~~ of an ~~accessory dwelling unit~~ADU, the ~~home~~owner must provide a copy of a statement recorded with the county in which the subject property is located. The statement must read:

> An application for a permit for an accessory dwelling unit has been submitted to the city of Auburn by the owner of this property. Future owners are advised that the owner of the property must comply with all requirements of the Auburn Zoning Code, as amended, if the accessory dwelling unit is to be occupied or rented.

L~~H~~. If an ~~accessory dwelling unit~~ADU is to be removed, appropriate permits and inspections must first be received from the city. If a homeowner wants to remove the statement as required by subsection (K~~G~~)(2) of this section from the property's title, then the city shall issue an appropriate release upon evidence that the ~~accessory dwelling unit~~ADU has been removed. The release shall be recorded by the homeowner with the

county records and elections office and a copy of the recorded release shall be provided to the city. (Ord. 6419 § 4, 2012; Ord. 6245 § 15, 2009.)

Chapter 18.35
SPECIAL PURPOSE ZONES

Sections:

18.35.010 Purpose.

18.35.020 Intent of special purpose zones.

18.35.030 Uses.

18.35.040 Development standards.

~~**18.35.050 Additional development standards for both the RO and RO-H zones.**~~

18.35.010 Purpose.

This chapter lists the land uses that may be allowed within the residential office, residential office-hospital, institutional, and public use zones established by ACC 18.02.070 (Establishment of zones), determines the type of land use approval required for each use, and provides basic standards for site layout and building size. (Ord. 6894 § 1 (Exh. B), 2022; Ord. 6434 § 1, 2012.)

18.35.020 Intent of special purpose zones.

A. *General.* This section describes the intent for each of the city's special purpose zones. These intent statements may be used to guide the interpretation of the regulations associated with each zone.

~~B. *RO and RO-H Residential Office and Residential Office-Hospital Zone.* The RO and RO-H are intended primarily to accommodate small-scale business and professional offices, medical and dental clinics, and banks and similar financial institutions at locations where they are compatible with residential uses. Some retail and personal services may be permitted if supplemental to the other uses allowed in the zone. This zone is intended for those areas that are in transition from residential to commercial uses along arterials or near the hospital. Conversion of residential uses to commercial uses is geared towards encouraging adaptive reuse of existing single-family structures that continue to appear in accord with the single-family residential character. The RO-H designation is to be used exclusively for the hospital~~

~~area, located in the vicinity of 2nd Street NE and Auburn Avenue, and is intended to be used for medical and related uses and those uses compatible with the medical community.~~

C. *P-1 Public Use Zone.* The P-1 Public Use Zone is intended to provide for the appropriate location and development of public uses that serve the cultural, educational, recreational, and public service needs of the community. A broader list of public and quasi-public uses may be allowed to develop.

~~The P-1 zone is intended to provide for the appropriate location and development of public uses that serve the cultural, educational, recreational, and public service needs of the community.~~

D. *I Institutional Zone.* The I Institutional zone is intended to provide an area wherein educational and theological uses in a campus-like setting are permitted, which may not be permitted outright within other zones. This district is not intended to include those smaller or singular public uses which are consistent with and permitted in the P-1 Public Use Zone.

~~The I zone is intended to provide an area wherein educational, governmental, theological, recreational, cultural and a broader list of public and quasi-public uses may be allowed to develop. It is further intended these areas feature a larger campus-like setting that includes a combination of uses and activities which may not be permitted outright within other zones. This district is not intended to include those smaller or singular public uses which are consistent with and permitted in other zones.~~

E. *OS Open Space Zone.* The OS Open Space zone is intended to provide for land uses that tend to be managed in a largely undeveloped character, including passive parks, watersheds, natural and urban conservancy shoreline areas, significant wildlife habitats, large storm water detention ponds or floodplain ponds, utility corridors with public access, and areas with significant development restrictions. Park lands included in the open space zone tend to be predominately passive in character and with relatively fewer developed facilities than parks included in the institutional zone provided that accessory uses such as supportive parking, boardwalks, kiosks, interpretive centers, trails, restrooms, and public access points are allowed. Private sites containing critical areas or shorelines may be included.

~~The OS zone is intended to provide for land uses that tend to be managed in a largely undeveloped character, including passive parks, watersheds, natural and urban conservancy shoreline areas, significant wildlife habitats, large storm water detention ponds or floodplain~~

~~ponds, utility corridors with public access, and areas with significant development restrictions. Park lands included in the open space zone tend to be predominately passive in character and with relatively fewer developed facilities than parks included in the institutional zone. Private sites containing critical areas or shorelines may be included. (Ord. 6894 § 1 (Exh. B), 2022; Ord. 6677 § 2, 2018; Ord. 6434 § 1, 2012.)~~

18.35.030 Uses.

A. *General Permit Requirements.* Table 18.35.030 identifies the uses of land allowed in each special purpose zone and the planning permit required to establish each use.

B. *Requirements for Certain Specific Land Uses.* Where the last column in Table 18.35.030 ("Standards for Specific Land Uses") includes a section number, the referenced section determines other requirements and standards applicable to the use regardless of whether it is permitted outright or requires an administrative or conditional use permit.

Table 18.35.030. Permitted, Administrative, Conditional and Prohibited Uses by Zone

Permitted, Administrative, Conditional and Prohibited Uses by Zone						**P – Permitted** **C – Conditional** **A – Administrative** **X – Prohibited**
LAND USE	**Zoning Designations**					**Standards for Specific Land Uses**
	~~RO~~	**~~RO-H~~**	**P-1**	**I**	**OS**	
MARIJUANA RELATED BUSINESSES						
Marijuana processor	~~X~~	~~X~~	X	X	X	
Marijuana producer	~~X~~	~~X~~	X	X	X	
Marijuana researcher	~~X~~	~~X~~	X	X	X	

Permitted, Administrative, Conditional and Prohibited Uses by Zone						P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designations**					**Standards for Specific Land Uses**
	~~**RO**~~	~~**RO-H**~~	**P-1**	**I**	**OS**	
Marijuana retailer	~~X~~	~~X~~	X	X	X	
Marijuana transporter business	~~X~~	~~X~~	X	X	X	
PUBLIC						
Animal shelter, public	~~X~~	~~X~~	P	X	X	
Government facilities; this excludes offices and related uses that are permitted outright	~~A~~	~~A~~	P	P	C	
Municipal parks and playgrounds	~~P~~	~~P~~	P	P	P	
RECREATION, EDUCATION AND PUBLIC ASSEMBLY						
Campgrounds	~~X~~	~~X~~	X	P	P	
Recreational vehicle parks, private	~~X~~	~~X~~	X	P	X	
Cemetery, public	~~X~~	~~X~~	P	A	X	
Cemetery, private	~~X~~	~~X~~	X	A	X	

Permitted, Administrative, Conditional and Prohibited Uses by Zone						P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designations**					**Standards for Specific Land Uses**
	~~**RO**~~	~~**RO-H**~~	**P-1**	**I**	**OS**	
College, university, public	~~X~~	~~X~~	A	A	X	
Commercial recreation facility – Indoor	~~X~~	~~X~~	X	P	X	
Commercial recreation facility – Outdoor	~~X~~	~~X~~	X	A	C	ACC 18.57.025(A)
Conference/convention facility	~~X~~	~~X~~	X	A	X	
Library, museum	~~X~~	~~X~~	P	P	A	
Meeting facility, public or private	~~A~~	~~A~~	P	P	A	
Private school – specialized education/training (for profit)	~~P~~	~~P~~	X	P	X	
Public schools (K-12) and related facilities	~~X~~	~~X~~	P	X	X	
Religious institutions, lot size less than one acre	~~A~~	~~P~~	X	P	X	

Permitted, Administrative, Conditional and Prohibited Uses by Zone						P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designations**					**Standards for Specific Land Uses**
	~~**RO**~~	~~**RO-H**~~	**P-1**	**I**	**OS**	
Religious institutions, lot size more than one acre	~~C~~	~~A~~	X	P	X	
Studio – Art, dance, martial arts, music, etc.	~~P~~	~~X~~	X	X	X	
RESIDENTIAL						
Middle housing subject to the provisions in Chapter 18.25 (2 to 6 units)~~Duplex,~~	~~P~~[1]	~~X~~	X	A[1]	X	
Home occupation	~~P~~	~~P~~	X	P	P	Chapter 18.60 ACC
Live/work, work/live unit	~~A~~	~~P~~	X	A	X	
Marijuana cooperative	~~X~~	~~X~~	X	X	X	
Apartments (7 or more units)~~Multiple-family dwellings, stand-alone~~	~~P~~[2]	~~A~~[3]	X	A[2]	X	
One ~~detached~~ single-unit~~family~~ detached dwelling	~~P~~	~~X~~	X	X	P[45]	

Permitted, Administrative, Conditional and Prohibited Uses by Zone						P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designations**					**Standards for Specific Land Uses**
	~~**RO**~~	~~**RO-H**~~	**P-1**	**I**	**OS**	
Nursing home, assisted living facility	~~A~~	~~A~~	X	P	X	
Senior housing	~~A~~	~~A~~	X	A	X	
RETAIL						
Restaurant, cafe, coffee shop, excluding drive-through facilities	~~A~~	~~A~~	P	A	X	
SERVICES						
Banking and related financial institutions, excluding drive-through facilities[34]	~~P~~	~~P~~	X	X	X	
Daycare, including mini daycare, daycare center, preschools or nursery schools	~~A~~	~~P~~	X	P	A	
Home-based daycare	~~P~~	~~P~~	X	P	P	
Medical services – Clinic or urgent care[34]	~~P~~	~~P~~	X	X	X	

Permitted, Administrative, Conditional and Prohibited Uses by Zone						P – Permitted C – Conditional A – Administrative X – Prohibited
LAND USE	**Zoning Designations**					**Standards for Specific Land Uses**
	~~**RO**~~	~~**RO-H**~~	**P-1**	**I**	**OS**	
Mortuary, funeral home, crematorium	~~X~~	~~P~~	X	X	X	
Professional offices	~~P~~	~~P~~	X	A	A	
Personal service shops	~~P~~	~~P~~	X	X	X	
Pharmacies	~~X~~	~~P~~	X	X	X	
TRANSPORTATION, COMMUNICATIONS AND INFRASTRUCTURE						
Utility facilities, substations, utility transmission or distribution line	~~X~~	~~X~~	X	X	A	See ACC 18.02.040(E)
Wireless communications facility (WCF) (See ACC 18.04.912(W))	~~*~~	~~*~~	*	*	*	*See ACC 18.31.100 for use regulations and zoning development standards.
Eligible facilities request (EFR) (Wireless communications facility) (See ACC 18.04.912(H))	~~P~~	~~P~~	P	P	P	

Permitted, Administrative, Conditional and Prohibited Uses by Zone						**P – Permitted** **C – Conditional** **A – Administrative** **X – Prohibited**
LAND USE	**Zoning Designations**					**Standards for Specific Land Uses**
	~~**RO**~~	~~**RO-H**~~	**P-1**	**I**	**OS**	
Small wireless facilities (ACC 18.04.912(Q))	~~P~~	~~P~~	P	P	P	
Emergency wireless communications facility (EWCF)	~~X~~	~~X~~	X	P	X	See ACC 18.04.912 and 18.31.100
OTHER USES THAT ARE NOT LISTED						
Other uses may be permitted by the planning director or designee if the use is determined to be consistent with the intent of the zone and is of the same general character of the uses permitted	~~P~~	~~P~~	P	P	P	

Notes:

1 Minimum lot area not applicable; Duplexes must meet other development standards of the I zone. ~~, 3,600 square feet of lot area per dwelling unit is required.~~

2 Minimum lot area not applicable; Apartments must meet other development standards of the I zone. ~~Multifamily~~ dwellings; provided, that 2,400 square feet of lot area is provided for each dwelling unit.

~~**3** Multifamily dwellings; provided 1,200 square feet of lot area is provided for each dwelling unit.~~

~~43~~ Permitted within a public college or university as an amenity or service provided to students: A stand-alone bank or medical services/clinic is not permitted.

~~54~~ One single-unit ~~family~~ detached dwelling unit per existing legal lot. No residential subdivisions permitted in the open space zone.

(Ord. 6894 § 1 (Exh. B), 2022; Ord. 6799 § 9 (Exh. I), 2020; Ord. 6716 § 1 (Exh. A), 2019; Ord. 6677 § 3, 2018; Ord. 6642 § 11, 2017; Ord. 6434 § 1, 2012.)

18.35.040 Development standards.

Hereafter, no use shall be conducted and no building, structure and appurtenance shall be erected, relocated, remodeled, reconstructed, altered or enlarged unless in compliance with the requirements in Table 18.35.040 (~~RO, RO-H,~~ P-1, I, OS Zone Development Standards) and in compliance with the provisions of this title, and then only after securing all permits and approvals required hereby. These standards may be modified through either an administrative variance or variance, subject to the procedures of Chapter 18.70 ACC.

Table 18.35.040. ~~RO, RO-H,~~ P-1, I, OS Zone Development Standards

Development ~~Feature~~Standards	Requirement by Zones				
	~~RO~~ ~~Residential Office~~	~~RO-H~~ ~~Residential Office-Hospital~~	P-1 Public Use	I Institutional	OS Open Space
Minimum lot area	~~7,200 sf~~	~~None~~	None	6,000 sf	None
Minimum lot width, depth	~~50 ft, 80 ft~~	~~None~~	None	60 ft, 80 ft	None
Maximum lot coverage	~~55 percent[1]~~	~~None~~	None	35 percent	5 percent
Maximum impervious area	~~NA~~	~~NA~~	NA	NA	20 percent~~[47]~~

Development ~~Feature~~Standards	Requirement by Zones				
	~~RO~~ ~~Residential Office~~	~~RO-H~~ ~~Residential Office-Hospital~~	P-1 Public Use	I Institutional	OS Open Space
Setbacks	*Minimum setbacks required for primary structures. See ACC 18.31.070 for exceptions to these requirements.*				
Front	~~20 ft~~[2]	~~10 ft~~	20 ft	20 ft	20 ft
Side – Interior	~~5 ft~~	~~None~~	5 ft[41]	5 ft	5 ft
Side – Corner	~~10 ft~~	~~10 ft~~	10 ft	10 ft	10 ft
Rear	~~25 ft~~[3]	~~None~~	25 ft	25 ft	25 ft
Accessory structure(s)	~~See note [5] below~~	~~NA~~	NA	See note ~~[25]~~ below	
Height limit	*Maximum allowable height of structures. See ACC 18.31.030 (Height limitations – Exceptions) for height limit exceptions.*				
Maximum height	~~35 ft~~	~~65 ft~~	45 ft	45 ft[36]	35 ft
Fences and hedges	See Chapter 18.31 ACC				
Landscaping	See Chapter 18.50 ACC				
Parking	See Chapter 18.52 ACC				
Signs	See Chapter 18.56 ACC				
Lighting	See Chapter 18.55 ACC				
Nonconforming structures, land and uses	See Chapter 18.54 ACC				

Notes:

~~1 New single-family residential or conversions of single-family residences to commercial uses with additions greater than a total or cumulative area of 200 square feet on the property since the adoption of Ordinance No. 6231, then the maximum lot coverage is 35 percent.~~

~~2 New single-family residential or conversions of single-family residences to commercial uses with additions of 200 square feet or less, then the front yard setback is 10 feet.~~

~~3 New single-family residential or conversions of single-family residences to commercial uses with additions of 200 square feet or less, then the rear yard setback is 15 feet.~~

41 A 25-foot setback is required when adjacent to a residential zone.

25 Accessory structures shall meet all the required setbacks of the zone with the exception that the rear yard setback may be reduced to five feet; provided, that any structure with a vehicle entrance from a street (public or private) or public alley shall be set back a minimum of 20 feet.

36 Maximum building height for residential dwellings: 350 feet. Accessory buildings to residential dwellings: 2416 feet.

74 Maximum impervious area includes all hard surfaces per ACC 13.48.010(L).

(Ord. 6894 § 1 (Exh. B), 2022; Ord. 6677 § 4, 2018; Ord. 6434 § 1, 2012.)

~~18.35.050 Additional development standards for both the RO and RO-H zones.~~

~~A. All uses shall be conducted entirely within an enclosed structure, except noncommercial municipal automobile parking facilities in the RO-H zone.~~

~~B. There shall be no outside storage of materials allowed.~~

~~C. Refuse cans, containers or dumpsters shall be screened from the view of adjoining properties.~~

~~D. No on-site hazardous substance processing and handling, or hazardous waste treatment and storage facilities, shall be permitted, unless clearly incidental and secondary to a permitted use. On-site hazardous waste treatment and storage facilities shall be subject to the state siting criteria (Chapter 70.105 RCW).~~

~~E. Any new construction, including additions and alterations, within the RO district shall utilize similar bulk, scale, and architectural and landscape elements of the existing site structure or those of the neighborhood in which the property is located. A site plan and building elevation plans shall be prepared by the applicant which address compliance with the requirements as outlined in this subsection. The plans shall be approved by the planning director or designee prior to the issuance of any building permits.~~

~~The planning director and the public works director or designees may deviate from the development standards under ACC 18.35.040 up to 10 percent, for example, reduce rear yard setback by one and one-half feet, to address unusual circumstances for conversions of single-family residential uses to nonresidential uses. (Ord. 6894 § 1 (Exh. B), 2022; Ord. 6434 § 1, 2012.)~~

The Auburn City Code is current through Ordinance 6912, passed July 17, 2023.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

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Chapter 18.49

FLEXIBLE DEVELOPMENT ALTERNATIVES - REPEALED

~~Sections:~~

~~**18.49.010 Intent.**~~
~~**18.49.020 Applicability – Residential development.**~~
~~**18.49.030 Applicability – Mixed-use development.**~~
~~***18.49.040 Applicability – Commercial/industrial developments.***~~
~~**18.49.050 Flexible development standards for residential development.**~~
~~**18.49.060 Flexible development standards for mixed-use development.**~~
~~***18.49.070 Flexible development standards for commercial/industrial.***~~
~~**18.49.080 Procedures.**~~
~~**18.49.090 Appeals.**~~

~~18.49.010 Intent.~~

~~The city of Auburn flexible development alternatives process is intended to allow greater flexibility and creativity to develop a site through the development review process via alternative development standards in exchange for public benefit to the citizens of Auburn that helps the city accomplish goals and policies outlined within its comprehensive plan. In exchange for the enhanced flexibility offered by these alternative standards, the city requires that the proposed development result in a significantly higher quality of design, generate more of a public benefit, and be more environmentally sensitive than would have been the case with the use of standard zoning or subdivision procedures.~~

~~This chapter describes standards and requirements to be used by the city of Auburn to determine whether a development proposal meets the city's minimum requirements to be eligible for review under the flexible development alternatives approval process. (Ord. 6245 § 19, 2009.)~~

18.49.020 Applicability – Residential development.

A. *Minimum Requirements for Residential Development.* In order to qualify for consideration under the residential development provisions of this chapter, a development proposal must meet all of the following requirements. Flexible development alternatives for residential development is a two-tiered process including minimum requirements (all of which must be met) and flexible criteria, which must score a minimum of 100 points in at least three categories, with not more than 40 points in any one category counting toward the 100-point minimum.

1. *Site Requirements.* Flexible development alternatives for residential development is a two-tiered process including minimum requirements (all of which must be met) and flexible criteria, which must score a minimum of 100 points in at least three categories.

a. *Location.* The site of the proposed project must be located entirely within one or more of the following zoning districts: R-1, R-5, R-7, R-10, R-16, R-20.

b. *Minimum Property Size.* The land on which the proposed development will be sited is a minimum of eight acres for the R-1 through R-7 zones; and a minimum of two acres for the R-10 through R-20 zones.

c. *Lot Configuration.* The tract(s) of land for which the project is proposed shall be a common site with sufficient width and depth to accommodate the proposed use.

d. Ownership/Control. All land included for the purpose of the development shall be owned by or be under the complete control of the applicant for such proposal, whether the applicant be an individual, partnership, corporation, group, or agency.

2. *Project Requirements.*

a. *Development Type.* The development proposal must constitute a residential development. For purposes of this chapter, a residential development may consist of single-family dwellings, multiple-family dwellings, or a combination thereof.

b. *Consistency with Intent of Flexible Development Alternative Regulations.* Applicant must demonstrate that the proposed development is consistent with the intent of the flexible development alternatives regulations as provided in ACC 18.49.010.

c. *Consistency with Auburn City Code.* The proposed development shall be consistent with all other requirements of the Auburn City Code.

d. *Consistency with Comprehensive Plan.* Applicant must demonstrate that the proposed development is consistent with the goals, objectives, and policies of the City of Auburn Comprehensive Plan.

e. *Arrangement of Uses.* Where nonresidential uses are proposed as a component of the overall residential development, nonresidential uses may not occupy more than 20 percent of the overall site.

B. *Eligibility – Flexible Development Alternatives Scoring Matrix for Residential Development.* Subsection C of this section shall be used to determine eligibility of a proposal for review under the city's flexible development alternatives approval process. To meet the requirements, a project must: (1) score at least 100 points total by providing any combination of features or amenities found in subsection C of this section; and (2) score points in any three or more of Categories 1 through 8 listed in the table, with not more than 40 points in any one category counting toward the 100-point minimum.

C. *Eligibility – Residential Flexible Development Matrix.* Development proposals will only be awarded points for improvements or project features that exceed the requirements of the other chapters of this title, the other titles of the city code, and the city design and construction standards.

Feature/Benefit	**Points Possible**
Category 1 – Sustainability	
a. Project design incorporates the use of one or more of the following low impact development (LID) techniques consistent with the city design and construction standards: bioretention, soil amendment, permeable paving, vegetated roofs, minimal excavation foundations, rooftop rainwater collection.	5 points per technique up to a maximum of 25 points
b. All residential units in the proposal meet the design requirements for one or more of the following	LEED: 15 points for certification, add the following points for applicable design level: 5 points for

Feature/Benefit	Points Possible
certifications: • Leadership in Energy and Efficient Design (LEED) Homes • LEED Neighborhood • Built Green single-family homes • Built Green multifamily • Built Green community.	Silver, 10 points for Gold, 15 points for Platinum Built Green single-family and multifamily: 5 points for 3-star design level, 10 points for 4-star design level, 15 points for 5-star design level Built Green community: 10 points for 2-star design level, 15 points for 3-star design
c. Project buildings and structures are constructed with at least 10% post-consumer content/recycled materials.	5 points, plus 1 point for each two percentage points in excess of 10%; up to a maximum of 10 points
d. Project implements a construction recycling program approved by the city of Auburn building division for construction, demolition and deconstruction projects that achieves a 90 percent landfill diversion rate.	5 points
e. Project design incorporates one or more water conservation and management features (i.e., low-flow toilets, Energy Star-rated dishwashers and clothes-washing machines, drip irrigation system, etc.).	5 points, plus one point for each type of water conservation/management feature
f. Project design incorporates one or more energy conservation/efficiency features (i.e., orienting buildings for passive cooling and optimal use of natural lighting, high efficiency lighting with occupancy sensors for common areas, Energy Star-rated appliances, use of solar panels, etc.).	5 points, plus one point for each type of energy conservation/efficiency feature
g. Applicant has provided an assessment of project's carbon footprint prepared by a qualified consultant defined as an individual or firm with specialized knowledge or expertise in the assessment of greenhouse	10 points

Feature/Benefit	Points Possible
gas and carbon impacts of development.	
Category 2 – Urban Design	
a. Project incorporates public art features that reflect the community's values, history, economy or people in accordance with the city of Auburn comprehensive plan.	5 points
b. Project facilitates access by bicyclists in accordance with the city of Auburn comprehensive plan, and project does not contain barriers such as fences or walls that unnecessarily limit or block bicyclist access.	5 points
c. Project involves the voluntary undergrounding of existing above ground utilities in accordance with the city of Auburn comprehensive plan, where such undergrounding would not otherwise be required.	5 points + 1 point for every 25 feet of frontage up to a maximum of 10 points
d. Project incorporates beautification of a designated primary travel corridor (pursuant to the adopted city transportation plan, and subject to the approval of the city engineer) in accordance with the city of Auburn comprehensive plan.	10 points
e. Project incorporates pedestrian- or transit-friendly design features such as rear or side setback area parking, wider sidewalks, street furniture, and building awnings in accordance with the city of Auburn comprehensive plan.	5 points + 1 point per non-repeated design feature up to a maximum of 15 points
Category 3 – Community Cohesion and Neighborhood Safety	
a. Project incorporates crime prevention through environmental design principles.	5 points, plus 1 point for each CPTED technique incorporated in design

Feature/Benefit	Points Possible
b. Project design incorporates features or design elements to minimize interfaces between pedestrians and vehicular traffic (i.e., elevated walkway, de-linking walkways and streets, etc.).	5 points
c. Project design provides for well defined neighborhood gateways and community/common open spaces.	5 points
d. Project provides secure and observable play spaces for children.	5 points
e. Project provides for outdoor seating/gathering areas for passive social activities (i.e., reading, conversing, or playing chess, etc.).	3 points
Category 4 – Housing	
a. Senior Housing – Project creates or rehabilitates a minimum of 10 percent or 2 units (whichever is greater) of proposed housing meeting the definition of "senior housing" as provided in Chapter 18.04 ACC.	2 points per senior housing unit up to a maximum of 15 points
b. Special Needs Housing – Project creates or rehabilitates a minimum of 10 percent or 2 units (whichever is greater) of proposed housing meeting the definition of "special needs housing" as provided in Chapter 18.04 ACC.	2 points per senior housing unit up to a maximum of 15 points
c. Rehabilitation – Project rehabilitates one or more existing housing units. Rehabilitation must meet the definition of "housing rehabilitation" as defined in Chapter 18.04 ACC.	2 points per rehabilitated housing unit, to a maximum of 50 pts
d. Housing Variety – Project creates or rehabilitates units representing 2 or more housing types as allowed in ACC	2 points per max of housing type up to a

Feature/Benefit	Points Possible
18.07.020 in the zone in which the development is proposed.	maximum of 10 points
Category 5 – Open Space and Recreation	
a. Projects incorporating residential units provide for individual unit private open space area through the provision of a balcony, covered porch or similar architectural feature.	3 points
b. Projects incorporating residential units provide for common open space area that equates to 250 square feet of common open space per unit or 10 percent of the total gross site area, whichever is greater.	5 points
c. The director, in consultation with the city parks department, determines that the project creates a neighborhood park, trail, or other public recreational amenity as listed in Chapter 18.04 ACC not otherwise required by city development regulations that furthers the goals and objectives of an adopted city parks, recreation, and/or open space plan.	2 points for each 0.25-acre of area or 200 linear feet of trail up to a maximum of 15 points
d. Project provides one or more common gardening spaces or community "pea patch" areas for residents of the development or surrounding neighborhood.	5 points, plus 1 point for each 250 square feet of gardening space.
Category 6 – Natural Resources Protection	
a. Project retains and provides a superior level of protection and/or enhancement for sensitive natural features on site, including: wetlands, surface waters, geological hazardous areas, sensitive plant and animal species, etc. For purposes of this category, superior level	15 points

Feature/Benefit	Points Possible
of protection and/or enhancement includes incorporation of additional protections and/or restoration projects that enhance protection of or restore critical functions and values of the natural feature.	
b. The project design demonstrates a superior level of protection and/or enhancement for elements of the environment, including: air quality, water quality, natural topography, native vegetation, etc. For purposes of this category, superior level of protection and/or enhancement includes incorporation of additional protections and/or restoration projects that enhance protection of or restore critical functions and values of the environmental element.	15 points
c. The project design demonstrates a superior level of mitigation for impacts associated with the proposed development (or abatement of existing environmental conditions in the neighborhood) such as noise, light and glare, odors, vibration, etc. For purposes of this section, "superior level of mitigation" shall mean mitigation that alleviates existing condition issues in addition to mitigating for project impacts.	15 points
Category 7 – Cultural/Historic	
a. Project preserves a site, structure or feature of cultural or historic significance. For purposes of this section, a site, structure or feature of cultural or historic significance is one that is listed on the federal, state, or local register of historic or cultural properties.	25 points
b. Project restores or enhances a site, structure or feature of cultural or historic significance as defined under subsection (7)(a) of this table.	40 points

Feature/Benefit	Points Possible
c. Project is located in any district designated in accordance with the city of Auburn historic preservation code, Chapter 15.76 ACC, or any other district designated by city of Auburn ordinance or resolution intended to preserve, protect, enhance, and/or perpetuate those sites, buildings, districts, structures or objects which possess notable features or reflect significant elements of Auburn's, the county's, state's and nation's cultural, aesthetic, social, economic, political, architectural, ethnic, archaeological, engineering, historic, or other heritage. Applicant must demonstrate that project design advances the stated intent of the district designation.	15 points
Category 8 – Transportation and Mobility	
a. Project demonstrates coordination with local and regional transit agencies and includes new transit facilities or features.	15 points
b. Project design includes nonmotorized transportation features and amenities not otherwise required by the city code. For purposes of this requirement, nonmotorized transportation features include but are not limited to pedestrian walkways, multi-use paths, bicycle racks/lockable storage, connections with other local/regional trails, walkways, paths.	5 points for each feature, up to a maximum of 25
c. Project improves the public street(s) adjacent to the project site using a complete streets design to provide accommodation for pedestrians, bicyclists, transit riders, and persons of all abilities, where such improvements are not otherwise required by city development regulations.	25 points
d. Project design includes one or more transportation demand management features including but not limited to	5 points for each feature, up to a maximum of 15

Feature/Benefit	Points Possible
preferential parking for high-occupancy vehicles, improved access for transit vehicles.	
e. Project provides for one or more transportation alternatives which include but are not limited to car share, bike share or other method of providing alternatives to individual automobile ownership.	5 points for each alternative, up to a maximum of 15
Design Innovation Bonus	
a. Project demonstrates a high degree of innovation by providing one or more design features not listed elsewhere in this rating instrument or otherwise required by city development regulations that promote(s) sustainability, energy/water conservation or efficiency, community cohesion, neighborhood safety, adaptive reuse of existing development, or enhanced transportation circulation/mobility.	10 points

(Ord. 6245 § 19, 2009.)

18.49.030 Applicability – Mixed-use development.

Flexible development alternatives for mixed-use development is a two-tiered process including minimum requirements (all of which must be met) and flexible criteria, which must score a minimum of 100 points in at least three categories, with not more than 40 points in any one category counting toward the 100-point minimum.

A. Minimum Requirements for Mixed-Use Development. In order to qualify for consideration under the mixed-use development provisions of this chapter, a development proposal must meet all of the following requirements:

1. *Site Requirements.*

a. *Location.* The site of the proposed project must be located entirely within one or more of the following zoning districts: R-10, R-16, R-20, C, C1, C2, C3, CN, RO, RO-H, M1.

b. *Lot Configuration.* The tract(s) of land for which the project is proposed shall be a common site with sufficient width and depth to accommodate the proposed use.

c. Ownership/Control. All land included for the purpose of the development shall be owned by or be under the complete control of the applicant for such proposal, whether the applicant be an individual, partnership, corporation, group, or agency.

d. *Proximity to a Multimodal Transportation Corridor.* The site of the proposed development shall be located a maximum of one quarter mile from a multimodal transportation corridor within the city of Auburn. The proposed development shall provide vehicular, transit, bicycle or pedestrian access to the corridor.

e. *Proximity to Public Street System.* The site of the proposed development shall abut one or more public streets having a current functional street classification of principal arterial, minor arterial, residential collector, or nonresidential collector as designated by the Auburn comprehensive transportation plan.

2. *Project Requirements.*

a. *Development Type.* The development proposal must constitute a mixed-use development. For purposes of this chapter, a mixed-use development is a single unified development that incorporates the planned integration of two or more different land uses consisting of some combination of office, light industrial (if allowed in underlying zone), hotel, retail, public entertainment and public uses, and/or housing. Mixed-use projects may be vertically oriented in one or more buildings, or geographically distributed on a development site.

b. *Consistency with Intent of Flexible Development Alternative Regulations.* Applicant must demonstrate that the proposed development is consistent with the intent of the flexible development alternatives regulations as provided in ACC 18.49.010.

c. *Consistency with Auburn City Code.* The proposed development shall be consistent with all other requirements of the Auburn City Code.

d. *Consistency with Comprehensive Plan.* Applicant must demonstrate that the proposed development is consistent with the goals, objectives, and policies of the city of Auburn comprehensive plan.

e. *Arrangement of Uses.* No residential use may occupy more than 25 percent of the first floor of a building with two or more uses.

B. Eligibility – Flexible Development Alternatives Scoring Matrix for Mixed-Use Development. Subsection C of this section shall be used to determine eligibility of a proposal for review under the city's flexible development alternatives approval process. To meet the requirements, a project must: (1) score at least 100 points total by providing any combination of features or amenities found in subsection C of this section; and (2) score points in any three or more of Categories 1 through 9 listed in the table. For each development proposal requesting evaluation through the flexible development alternatives process, the planning director shall determine: (1) whether the proposal meets the criteria for each feature in the flexible development matrix in subsection C of this section; and (2) the number of points awarded for each qualifying feature consistent with the matrix.

Development proposals will only be awarded points for improvements or project features that exceed the requirements of the other chapters of this title, the other titles of the city code, and the city design and construction standards.

C. Eligibility – Mixed-Use Flexible Development Matrix.

Feature/Benefit	**Points Possible**
Category 1 – Sustainability	
a. Project design incorporates the use of one or more of the following low impact development (LID) techniques consistent with the city design and construction standards: bioretention, soil amendment, permeable paving, vegetated roofs, minimal excavation foundations, rooftop rainwater collection.	5 points per technique up to a maximum of 25 points
b. Residential portion of project (all residential units) meets the design requirements for one or more of the	LEED: 15 points for certification, add the following points for applicable design level: 5 points for

Feature/Benefit	Points Possible
following LEED or Built Green certifications: • Leadership in Energy and Efficient Design (LEED) Homes • LEED Neighborhood • Built Green single-family homes • Built Green multifamily • Built Green community.	Silver, 10 points for Gold, 15 points for Platinum Built Green single-family and multifamily: 5 points for 3-star design level, 10 points for 4-star design level, 15 points for 5-star design level Built Green community: 10 points for 2-star design level, 15 points for 3-star design
c. Nonresidential portion of project (all nonresidential buildings, structures, or spaces) meets the design requirements for one or more of the following LEED certifications: • LEED Core and Shell • LEED New Construction • LEED Commercial Interiors • LEED Retail	15 points for certification, add the following points for applicable design level: 5 points for silver, 10 points for gold, 15 points for platinum
d. Project buildings and structures are constructed with at least 10 percent post-consumer content/recycled materials.	5 points, plus 1 point for each two percentage points in excess of 10 percent; up to a maximum of 10 points
e. Project implements a construction recycling program approved by the city of Auburn building division for construction, demolition and deconstruction projects that achieves a 90 percent landfill diversion rate.	5 points
f. Project design incorporates one or more water conservation and management features not otherwise required by other city development regulations or standards (i.e., low-flow toilets, Energy Star-rated	5 points, plus one point for each type of water conservation/management feature

Feature/Benefit	Points Possible
dishwashers and clothes-washing machines, drip irrigation system, etc.).	
g. Project design incorporates one or more energy conservation/efficiency features (i.e., orienting buildings for passive cooling and optimal use of natural lighting, high efficiency lighting with occupancy sensors for common areas, Energy Star-rated appliances, use of solar panels, etc.).	5 points, plus one point for each type of energy conservation/efficiency feature
h. Applicant has provided an assessment of project's carbon footprint prepared by a qualified consultant, defined as an individual or firm with specialized knowledge or expertise in the assessment of greenhouse gas and carbon impacts of development.	10 points
Category 2 – Urban Design	
a. Project incorporates public art features that reflect the community's values, history, economy or people in accordance with the city of Auburn comprehensive plan.	5 points
b. Project facilitates access by bicyclists in accordance with the city of Auburn comprehensive plan, and project does not contain barriers such as fences or walls that unnecessarily limit or block bicyclist access.	5 points
c. Project involves the voluntary undergrounding of existing above-ground private utility distribution, service, and telecommunication lines not otherwise required by the city.	5 points + 1 point for every 25 feet of frontage up to a maximum of 10 points
d. Project incorporates landscaping; design features such as decorative, textured, or pigmented concrete; historical	10 points

Feature/Benefit	Points Possible
signage; or other features not otherwise required by other city codes that enhance the visual appearance of the streets adjacent to the project (pursuant to the adopted city transportation plan) in accordance with the city of Auburn comprehensive plan. Any such features that would be located in the public right-of-way would be subject to the approval of the city engineer.	
e. Project incorporates transit-friendly design features such as rear or side setback area parking, wider sidewalks, street furniture, and building awnings in accordance with the city of Auburn comprehensive plan.	5 points + 1 point per non-repeated design feature up to a maximum of 15 points
Category 3 – Community Cohesion and Neighborhood Safety	
a. Project incorporates crime prevention through environmental design principles.	5 points, plus 1 point for each CPTED technique incorporated in design
b. Project design incorporates features or design elements to minimize interfaces between pedestrians and vehicular traffic (i.e., elevated walkway, de-linking walkways and streets, etc.).	5 points
c. Planning director finds that project design provides for well defined neighborhood gateways and community/common open spaces.	5 points
d. Project provides secure and observable play spaces for children.	5 points
e. Project provides for outdoor seating/gathering areas for passive social activities (i.e., reading, conversing, or playing chess, etc.).	3 points

Feature/Benefit	Points Possible
Category 4 – Housing	
a. Senior Housing – Project creates or rehabilitates a minimum of 10 percent or 2 units (whichever is greater) of proposed housing meeting the definition of "senior housing" as provided in Chapter 18.04 ACC.	2 points per senior housing unit up to a maximum of 15 points
b. Special Needs Housing – Project creates or rehabilitates a minimum of 10 percent or 2 units (whichever is greater) of proposed housing meeting the definition of "special needs housing" as provided in Chapter 18.04 ACC.	2 points per senior housing unit up to a maximum of 15 points
c. Rehabilitation – Project rehabilitates one or more existing housing units. Rehabilitation must meet the definition of "housing rehabilitation" as defined in Chapter 18.04 ACC.	2 points per rehabilitated housing unit, to a maximum of 50 pts
d. Housing Variety – Project creates or rehabilitates units representing 2 or more housing types as allowed in ACC 18.07.020 in the zone in which the development is proposed.	2 points per max of housing type up to a maximum of 10 points
Category 5 – Open Space and Recreation	
a. Projects incorporating residential units provide for individual unit private open space area through the provision of a balcony, covered porch or similar architectural feature.	3 points
b. Projects incorporating residential units provide for common open space area adjacent to the mixed-use building(s) that equates to 250 square feet of common open space per unit or 10 percent of the total gross site area, whichever is greater.	5 points

Feature/Benefit	Points Possible
c. The director, in consultation with the city parks department, determines that the project creates a neighborhood park, trail, or other public recreational amenity as listed in Chapter 18.04 ACC, not otherwise required by city development regulations, that furthers the goals and objectives of an adopted city parks, recreation, and/or open space plan.	2 points for each 0.25-acre of area or 200 linear feet of trail up to a maximum of 15 points
d. Project provides one or more common gardening spaces or community "pea patch" areas for residents of the development or surrounding neighborhood.	5 points, plus 1 point for each 250 square feet of gardening space.
Category 6 – Natural Resources Protection	
a. Project retains and provides a superior level of protection and/or enhancement for sensitive natural features on site, including: wetlands, surface waters, geological hazardous areas, sensitive plant and animal species, etc. For purposes of this category, superior level of protection and/or enhancement includes incorporation of additional protections and/or restoration projects that enhance protection of or restore critical functions and values of the natural feature.	15 points
b. The project design demonstrates a superior level of protection and/or enhancement for elements of the environment, including: air quality, water quality, natural topography, native vegetation, etc. For purposes of this category, superior level of protection and/or enhancement includes incorporation of additional protections and/or restoration projects that enhance protection of or restore critical functions and values of the natural feature.	15 points
c. The project design demonstrates a superior level of mitigation for impacts associated with the proposed	15 points

Feature/Benefit	Points Possible
development (or abatement of existing environmental conditions in the neighborhood) such as noise, light and glare, odors, vibration, etc. For purposes of this section, "superior level of mitigation" shall mean mitigation that alleviates existing condition issues in addition to mitigating for project impacts.	
Category 7 – Cultural/Historic	
a. Project preserves a site, structure or feature of cultural or historic significance. For purposes of this section, a site, structure or feature of cultural or historic significance is one that is listed on the federal, state, or local register of historic or cultural properties.	25 points
b. Project restores or enhances a site, structure or feature of cultural or historic significance as defined under subsection (7)(a) of this table.	40 points
c. Project is located in any district designated in accordance with the city of Auburn historic preservation code, Chapter 15.76 ACC, or any other district designated by city of Auburn ordinance or resolution intended to preserve, protect, enhance, and/or perpetuate those sites, buildings, districts, structures or objects which possess notable features or reflect significant elements of Auburn's, the county's, state's and nation's cultural, aesthetic, social, economic, political, architectural, ethnic, archaeological, engineering, historic, or other heritage. Applicant must demonstrate that project design advances the stated intent of the district designation.	15 points
Category 8 – Transportation and Mobility	

Feature/Benefit	Points Possible
a. Project demonstrates coordination with local and regional transit agencies and includes new transit facilities or features.	15 points
b. Project design includes nonmotorized transportation features and amenities not otherwise required by the city code. For purposes of this requirement, nonmotorized transportation features include but are not limited to pedestrian walkways, multi-use paths, bicycle racks/lockable storage, connections with other local/regional trails, walkways, paths.).	5 points for each feature, up to a maximum of 25
c. Project improves the public street(s) adjacent to the project site using a complete streets design to provide accommodation for pedestrians, bicyclists, transit riders, and persons of all abilities, where such improvements are not otherwise required by city development regulations.	25 points
d. Project design includes one or more transportation demand management features including but not limited to preferential parking for high-occupancy vehicles, improved access for transit vehicles.	5 points for each feature, up to a maximum of 15
e. Project provides for one or more transportation alternatives which include but are not limited to car share, bike share or other method of providing alternatives to individual automobile ownership.	5 points for each alternative, up to a maximum of 15
Category 9 – Economic Development	
a. Project creates or retains a minimum of 10 permanent family wage jobs. For purposes of this section, a permanent family wage job shall be a full-time job that, including benefits, earns at least 250 percent of the federal poverty guideline for a family of four as listed in the latest	2 points per job created up to a maximum of 40

Feature/Benefit	Points Possible
Federal Poverty Guidelines published by the U.S. Department of Health and Human Services.	
b. Project creates or retains a minimum of 10 permanent higher wage jobs. For purposes of this section, a permanent family wage job shall be a full-time job that, including benefits, earns at least 350 percent of the federal poverty guideline for a family of four as listed in the latest Federal Poverty Guidelines published by the U.S. Department of Health and Human Services.	4 points per job created up to a maximum of 40
c. Project provides one or more neighborhood services listed in Chapter 18.04 ACC.	3 points per neighborhood service up to a maximum of 15 points
d. Project revitalizes (i.e., proposes more intensive and active development than exists) commercial or industrial sites incorporating current adopted design standards producing commercial uses in accordance with the city of Auburn comprehensive plan.	10 points
Design Innovation Bonus	
a. Project demonstrates a high degree of innovation by providing one or more design features not listed elsewhere in this rating instrument or otherwise required by city development regulations that promote(s) sustainability, energy/water conservation or efficiency, community cohesion, neighborhood safety, adaptive reuse of existing development, or enhanced transportation circulation/mobility.	10 points

(Ord. 6245 § 19, 2009.)

18.49.040 Applicability – Commercial/industrial developments.

Reserved. (Ord. 6245 § 19, 2009.)

18.49.050 Flexible development standards for residential development.

Residential development that meets the minimum eligibility requirements of ACC 18.49.020 is able to utilize the flexible development standards outlined in this section.

A. *General Development Standards.* The following general flexible development standards would be applicable to residential development that meets the eligibility criteria for residential development as outlined in ACC 18.49.020(A).

1. Alternative Lot Dimension Requirements. Lot area, lot frontage and width, and setback requirements otherwise required under this title shall not apply to individual lots within a flexible development authorized under this chapter; provided, that the director has approved the proposed alternative lot dimensions for the development subject to the following limitations:

a. Lots having primary frontage on a street other than a street created by the development shall not have reduced frontage or front setbacks unless the director determines that doing so improves consistency of building spacing and bulk with the character of the existing facility; and

b. At least 50 percent of the required front, side and rear setback areas for the district shall be maintained in the development. In no case shall any side yard setback be less than five feet.

c. In no case shall required lot widths be reduced below 50 percent of the underlying zone requirement, or below 30 feet as the absolute minimum required lot width within residential zones.

2. Alternative Parking Lot Landscaping Requirements. Parking lot landscaping type, location, frontage, and area requirements under ACC 18.50.060 shall not apply to off-street parking areas in a flexible development authorized under this chapter; provided, that the

director has approved an alternative landscape design for the development subject to the following limitations:

a. Total proposed parking lot landscape area is greater than or equal to parking lot landscape area required under ACC 18.50.060(H); and

b. No sight-obscuring plants will be allowed whenever safe sight clearance is necessary for ingress and egress from a public street.

3. *Alternative Engineering Design Standards.* Residential flexible development projects authorized under this chapter shall be eligible to deviate from the city of Auburn engineering design standards; provided, that the city engineer has determined that the proposed design (a) meets or exceeds the technical requirements otherwise required by the engineering design standards with respect to functionality, safety, and maintenance and operation, (b) is consistent with the city comprehensive plan and applicable capital facilities and comprehensive utility plans, and (c) is consistent with the purpose and intent of the flexible development regulations under this chapter. The project applicant is responsible for providing information in sufficient detail to allow the city engineer to make such determination.

4. *Expedited Permitting Process of 90 Days or Less.* Flexible development projects authorized under this chapter shall receive expedited permit review for city land use approvals and building permits associated with the project. For such development permits, the city shall strive to limit the city's processing time to not more than 90 days after receipt of a complete permit application, including SEPA environmental review information as required by Chapter 16.06 ACC, as stated in a letter from the city acknowledging receipt of said complete application or 75 percent of the standard processing time for such application, whichever is greater. Time during which applicants are providing revisions and/or otherwise amending a permit application shall not be counted against the 90-day permit processing timeline.

5. *Density Bonus.*

a. One Hundred Thirty-Five Percent Residential Density Bonus. A density bonus allowing up to 135 percent of the base density of the underlying zone shall be allowed for developments that meet the minimum eligibility criteria of ACC 18.49.020 of 100 points.

b. One Hundred Fifty Percent Residential Density Bonus. A density bonus allowing up to 150 percent of the base density of the underlying zone shall be allowed for development projects that show exceptional merit as measured by scoring up to 150 points on the eligibility criteria matrix of ACC 18.49.020.

B. Feature-Specific Residential Development Standards.

1. *Alternative Minimum off-Street Parking.* Development projects that incorporate at least two of the following features as part of the multifamily residential portion of the development may reduce the number of off-street parking spaces otherwise required under Chapter 18.52 ACC for that/those portion(s) of the development by 25 percent:

a. Within one-half mile of transit stops serving transit routes that provide service six or more days per week;

b. Improved access for transit vehicles;

c. Alternative transportation elements (i.e., car share, bicycle parking facilities, etc.); and

d. Connections with other local/regional trails, walkways, paths, etc. (Ord. 6245 § 19, 2009.)

18.49.060 Flexible development standards for mixed-use development.

Development that meets the minimum eligibility requirements of ACC 18.49.030 is able to utilize the flexible development standards outlined in this section.

A. *General Development Standards.* The following general flexible development standards would be applicable to development that meets the eligibility criteria for mixed-use development as outlined in ACC 18.49.030.

1. Alternative Lot Dimension Requirements. Lot area, lot frontage and width, and setback requirements otherwise required under this title shall not apply to individual lots within a flexible development authorized under this chapter; provided, that the director has

approved the proposed alternative lot dimensions for the development subject to the following limitations:

a. Lots having primary frontage on a street other than a street created by the development shall not have reduced frontage or front setbacks unless the director determines that doing so improves consistency of building spacing and bulk with the character of the existing facility; and

b. At least 50 percent of the required front, side, and rear setbacks for the underlying zone shall be maintained in the development. In no case shall any side yard setback be less than five feet.

2. Alternative Parking Lot Landscaping Requirements. Parking lot landscaping type, location, frontage, and area requirements under ACC 18.50.060(H) shall not apply to off-street parking areas in a flexible development authorized under this chapter; provided, that the director has approved an alternative landscape design for the development subject to the following limitations:

a. Total proposed parking lot landscape area is greater than or equal to parking lot landscape area required under ACC 18.50.060(H); and

b. No sight-obscuring plants will be allowed whenever safe sight clearance is necessary for ingress and egress from a public street.

3. *Alternative Engineering Design Standards.* Mixed-use flexible development projects authorized under this chapter shall be eligible to deviate from the city of Auburn engineering design standards consistent with the city of Auburn construction and design standards process; provided, that the city engineer has determined that the proposed design: (a) meets or exceeds the technical requirements otherwise required by the engineering design standards with respect to functionality, safety, and maintenance and operation, (b) is consistent with the city comprehensive plan and applicable capital facilities and comprehensive utility plans, and (c) is consistent with the purpose and intent of the flexible development regulations under this chapter. The project applicant is responsible for providing information in sufficient detail to allow the city engineer to make such determination.

4. *Expedited Permitting Process of 90 Days or Less.* Flexible development projects authorized under this chapter shall receive expedited permit review for city land use approvals and building permits associated with the project. For such development permits, the city shall strive to limit the city's processing time to not more than 90 days after receipt of a complete permit application, including SEPA environmental review information as required by Chapter 16.06 ACC, as stated in a letter from the city acknowledging receipt of said complete application or 75 percent of the standard processing time for such application, whichever is greater. Time during which applicants are providing revisions and/or otherwise amending a permit application shall not be counted against the 90-day permit processing timeline.

5. *Density Bonus.*

a. One Hundred Thirty-Five Percent Density Bonus. A residential density bonus allowing up to 135 percent of the base density of the underlying zone shall be allowed for developments that meet the minimum eligibility criteria of ACC 18.49.030 of 100 points.

b. *One Hundred Fifty Percent Density Bonus.* A residential density bonus allowing up to 150 percent of the base density of the underlying zone shall be allowed for development projects that show exceptional merit as measured by meeting up to 150 points on the eligibility criteria matrix of ACC 18.49.030(C).

B. Feature-Specific Mixed-Use Development Standards.

1. *Alternative Minimum off-Street Parking.* Development can qualify for either subsection (B)(1)(a) or (b) of this section, but not both.

a. Development projects that incorporate shared parking areas for two or more nonresidential principal uses may reduce the total number of off-street parking spaces otherwise required for those uses under Chapter 18.52 ACC by 25 percent.

b. Development projects that incorporate any of the following features as part of the residential and/or nonresidential portions of the development may reduce the number of off-street parking spaces otherwise required under Chapter 18.52 ACC for that/those portion(s) of the development by 25 percent; developments also providing for shared parking for two or more nonresidential principal uses may reduce the

number of nonresidential off-street parking spaces otherwise required under Chapter 18.52 ACC by 35 percent:

i. Transit stops;

ii. Improved access for transit vehicles;

iii. Alternative transportation elements (i.e., car share, bicycle parking facilities, etc.); and

iv. Connections with other local/regional trails, walkways, paths, etc.

2. *Structured Parking Bonus.* A development that includes all of its proposed parking within a parking structure (as defined in Chapter 18.04 ACC) that is screened from surrounding public streets and public spaces may be allowed to reduce minimum garage setbacks to zero inches for portions of the parking structure that are underground. Any portion of such improvements that would be located in the public right-of-way would be subject to the approval of the city engineer and may require a right-of-way use permit.

3. *Use of Hardscape for Open Space.* A mixed-use development may be allowed to provide up to 75 percent of its required on-site open space as hardscape such as decorative paving, rock outcroppings, fountains, plant containers for features such as plazas, courtyards, and other public gathering spaces. Hardscape is encouraged to be provided in the form of pervious surfaces meeting city design and construction standards.

4. Maximum Height Bonus. Mixed-use development that includes required on-site parking within a parking structure may provide an additional 10 feet of height to the building; provided, that a portion of that height is used to provide roof forms that provide distinctive roof forms such as:

a. Pitched or sloped roof;

b. Extended parapets; or

c. Projecting cornices. (Ord. 6245 § 19, 2009.)

18.49.070 Flexible development standards for commercial/industrial.

Reserved. (Ord. 6245 § 19, 2009.)

18.49.080 Procedures.

A. Project proponents interested in applying for flexible development under this chapter must follow the requirements of the underlying permit process as outlined in ACC Title 14 with the following exceptions:

1. Prior to submittal of an application that incorporates proposed flexible development standards, the applicant must first submit:

a. A checklist on a form provided by the city of Auburn outlining the features that the development proposal will utilize to reach the required minimum 100-point eligibility needed to utilize flexible development standards.

b. A conceptual site plan (including conceptual design of all public utility facilities and road design) and narrative that identifies the features that meet the 100-point requirement of ACC 18.49.020, 18.49.030, or 18.49.040 based on development type, and that identifies the flexible development features of ACC 18.49.050, 18.49.060, and 18.49.070 based on development type that the applicant proposes to utilize for the development proposal.

B. The city of Auburn shall evaluate flexible development submittals provided pursuant to subsection A of this section and provide a written statement identifying whether or not the applicant met the required minimum score and is allowed to utilize flexible development standards outlined in this chapter.

C. A flexible development proposal must demonstrate its compliance with the city of Auburn design and construction standards and any modifications to those standards that the city engineer allows through application of this chapter.

D. *Modifications.* Any proposed modifications to development projects that have been accepted as flexible development proposals, and that include amendment to a flexible development eligibility feature or flexible development standard called out in the application

materials submitted as part of the requirements of subsection A of this section, must be reevaluated through revised application submittals that provide information consistent with the requirements of subsections (A)(1)(a) through (b) of this section.

E. *Eligibility Criteria Review and Amendment.* The city shall conduct a review of eligibility criteria contained in this chapter one year after adoption of the implementing ordinance. After the initial review, the city may elect to review and modify eligibility criteria contained within this chapter as part of the city's annual docket process through a legislative nonproject decision pursuant to ACC 14.03.060. (Ord. 6245 § 19, 2009.)

18.49.090 Appeals.

Appeals of administrative decisions regarding eligibility for flexible development shall be made to the hearing examiner as outlined in Chapters 2.46 and 18.70 ACC. (Ord. 6442 § 21, 2012; Ord. 6245 § 19, 2009.)

The Auburn City Code is current through Ordinance 6912, passed July 17, 2023.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

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Chapter 18.50
LANDSCAPING AND SCREENING

Sections:

18.50.010 Intent.
18.50.020 Applicability.
18.50.030 Repealed.
18.50.040 Landscape development standards.
18.50.045 Preservation of significant trees.
18.50.050 Repealed.
18.50.060 Landscaping plan requirements.
18.50.070 Administration and enforcement.
18.50.080 Alternative landscaping plan.

18.50.010 Intent.

The intent of this chapter is to provide minimum landscaping and screening requirements in order to maintain and protect property values, to enhance the city's appearance, to visually unify the city and its neighborhoods, to improve the character of certain areas of the city, to reduce erosion and storm water runoff, to interrupt expanses of impervious surfaces, to reduce CO_2 emissions, improve air quality, and to maintain or replace existing vegetation and to prevent and abate public nuisances. (Ord. 6617 § 28, 2016; Ord. 6387 § 1, 2011; Ord. 4914 § 1, 1996; Ord. 4773 § 1, 1995; Ord. 4229 § 2, 1987.)

18.50.020 Applicability.

A. This chapter applies to all uses and activities developed in the city ~~excluding single-family and duplex units on individual lots.~~.

B. When additions, alterations, or repairs of any existing building or structure exceed 50 percent of the value of the building or structure, or a residential use is converted to a nonresidential use, then such building or structure shall be considered to be a new use and site

landscaping provided in accordance with this chapter; provided, that if any existing foundation or fence layout precludes full compliance herewith, then the landscaping requirements may be modified by the planning director in approved landscape plans. (Ord. 6387 § 1, 2011; Ord. 4914 § 1, 1996; Ord. 4304 § 1(33), 1988; Ord. 4229 § 2, 1987.)

18.50.030 Definitions.

Repealed by Ord. 6387.

18.50.040 Landscape development standards.

A. *General Location for Landscape Improvements.* Landscaping shall be provided in the following locations for all types of development, unless the city determines that the required landscape is not necessary to fulfill the purposes of this chapter:

1. *Perimeter Areas.* All areas that abut a street or residential property shall be landscaped in compliance with this chapter, except where occupied by a primary building, walk or driveway. Minimum landscape areas are listed in Tables 18.50.040(A) and (B).

2. *Unused Areas.* All areas of a ~~multifamily~~ apartments or nonresidential project site not intended for a specific use (including areas planned for future phases of a phased development) shall be landscaped with existing natural vegetation, native grasses or similar.

3. *Parking/Loading Areas.* Parking lots, and where loading areas are visible from a public street, shall be landscaped in compliance with this chapter.

4. *Outdoor Storage Areas, Recreational Vehicle Parking, and Refuse Areas.* All outdoor storage areas, recreational vehicle parking, and refuse areas, when visible from adjoining properties or public streets, shall be landscaped in compliance with this chapter.

5. *Storm Water Low Impact Development (LID) Facilities.* Areas of vegetation planted in storm water LID facilities (not permanently inundated or ponded areas) and for which there is a city-approved maintenance plan as prescribed in the city's Engineering Design Standards

Manual shall count towards the minimum landscape coverage areas outlined in subsection B of this section.

B. *Landscape Area Requirements by Zones.* Minimum landscape area requirements are listed below by zones consistent with ACC 18.02.070.

Table 18.50.040(A). Minimum Landscape Requirements by Zoning District

Zones	Minimum Landscape Coverage[1]	Minimum Landscape Planter Width – Perimeter Areas[2]	
		Abutting Street[3]	Abutting Residential Property
Residential Zones			
RC and, R-1 ~~, R-5, and R-7 Residential~~ Zones[4]	N/A	N/A	N/A
R-2 and R-3 Zones[5]	10%	N/A	N/A
~~R-10, R-16 and R-20~~R-4 and R-NM Zones[5]	10~~20~~%	6 ft.	6~~10~~ ft.
Nonresidential Zones			
~~C-2~~	~~10%~~	~~0 ft.~~	~~6 ft.~~
C-1~~, C-N~~	10%	6 ft.	10 ft.
C-2~~3~~, I, P-1	15%	6 ft.	10 ft.
M-1	10%	10 ft.	10 ft.
M-2	10%	10 ft.	25 ft.
Other			

Zones	Minimum Landscape Coverage[1]	Minimum Landscape Planter Width – Perimeter Areas[2]	
		Abutting Street[3]	Abutting Residential Property
R~~O~~-F[6]/~~RO-H~~[6]	N/A	N/A	N/A
DUC districts[7]	N/A	N/A	N/A

Notes:

1 Minimum landscape coverage required is the minimum percentage of net lot area that must be maintained with a vegetated pervious surface. Vegetated bioretention cells or water quality treatment swales (not permanently inundated or ponded areas) may be included in the required landscape coverage percentage. Preference shall first be given to retention of areas of existing native coniferous vegetation. For sites that do not have existing native coniferous vegetation, landscape coverage can be achieved through planting of native species.

2 Listed planter widths shall be located entirely on private property.

3 The minimum landscape planter abutting a street may be reduced in size using the provision contained in ACC 18.50.080, Alternative landscaping plan. The reduced landscape planter shall have an average width of the requirement contained in Table 18.50.040(A).

4 Landscaping shall only be required in conjunction with an administrative or conditional use permit. The type and amount of landscaping shall be determined at that time the administrative or conditional use permit is approved.

5 Refer to ACC 18.31.200, Architectural and site design review standards and regulations, for additional requirements.

6 Landscaping within the ~~RO/RO-~~R-F~~H~~ zone is not required unless site development includes the demolition of existing structure(s) together with new construction. Under this scenario the minimum landscape requirements of the C-1 zone shall be met.

7 Landscaping within the DUC zone shall be provided as defined in the Downtown Urban Center Design Standards; see reference to ACC 18.29.070.

C. *Landscape Design and Planting Requirements.* Landscape design and construction for new development or redevelopment shall be compatible with the surrounding urban and natural

environment. Landscape plantings shall comply with the plant type, size, and spacing provisions listed below.

1. *Landscape Design.* Landscaping shall be designed as an integral part of the overall site plan with the purpose of enhancing building design, public views and spaces, supporting storm water low impact development facilities, and providing buffers, transitions, and screening.

a. All required planting areas shall be covered with a mixture of trees, shrubs, and groundcover plants. Sodded lawn (not seed) may be substituted for some but not all of shrubs or groundcover plants. If sodded lawn is used it cannot cover more than 20 percent of the site and those portions of the lawn area must be served by an automatic irrigation system.

b. Planting design shall have focal points at project entries, plaza areas, and other areas of interest using distinct planting and/or landscape features.

c. As appropriate, building and site design shall include the use of landscaping against buildings to visually break up expanses of wall, soften appearance, and create visual interest through the use of planting areas, wall planters, hanging gardens, and/or raised planters. Loose rock, gravel, decorative rock or stone shall not exceed 20 percent of the planting area.

2. *Plant Types.* Landscape planting shall be compatible with the character and climate of the Pacific Northwest and complement the architectural design of structures on the site.

a. Native Landscaping. Landscaping materials installed shall include species native to the Puget Sound lowland region of the Pacific Northwest or noninvasive species that have adapted to the climactic conditions of the region in the following minimum amounts:

i. Fifty percent of trees.

ii. Fifty percent of groundcover and shrubs.

b. *Trees.* Trees planted within 10 feet of a public street, sidewalk, paved trail, or walkway shall be a deep-rooted species and shall be separated from hardscapes by a root barrier to prevent physical damage to public improvements.

3. *Planting Size and Spacing.* In order to balance both an immediate effect of a landscape installation and to allow sustained growth of planting materials, minimum plant material sizes and plant spacing are as follows:

a. *Trees.* Trees shall be a minimum of one and one-half inches in diameter breast height (dbh) at the time of planting. Evergreen trees shall be a minimum of four to six feet in height at the time of planting and may include either broadleaf or conifer. Tree spacing within the perimeter planters along streets and abutting residential property shall be planted no further apart on center than the mature diameter of the proposed species.

b. *Shrubs.* Shrubs shall be a minimum of 18 inches in height, or two-gallon size containers, at the time of planting.

c. *Groundcover.* Groundcover means low evergreen or deciduous plantings and shall be planted from either four-inch pot with 12-inch spacing or one-gallon pot with 18-inch spacing. Alternative spacing of particular species may be approved by the city if documentation concerning the effectiveness of the groundcover is submitted with the landscape plan.

d. *Additional Spacing Provisions.*

i. Tree size and spacing at installation shall be increased by the city where needed to ensure visual access for vehicles and pedestrians and provide clear vision at street, access tracts and driveway intersections (sight distance triangles).

ii. Trees or shrubs with a full-grown height equal to or greater than 30 inches shall not be planted in any sight distance triangle. Sight distance triangles are determined in conformance with the city of Auburn engineering design standards, Chapter 10.

iii. A minimum distance of 15 feet is required from the mature diameter of trees and the center of street light standards.

4. Landscaping Requirements for Parking Areas.

a. General Parking Lot Landscaping Standards.

i. All parking lot landscape areas shall be protected with vertical or extruded concrete curbs, or equivalent barriers. Tire blocks shall not be used as a substitute for curbing and boundary around the landscaped area unless they are integral to a storm water LID facility design as approved by the city engineer or designee.

ii. All parking lot landscaping must be located between parking stalls, at the end of rows of parking, or between the end of rows of stalls and the property line.

iii. The maximum distance between any parking stall and required parking area landscaping shall be no more than 50 feet.

iv. Shrubs, groundcover or lawn shall be planted to cover each parking lot planting area using the planting size and spacing requirements specific in subsection (C)(3) of this section. All groundcover shall have a mature height of not more than 24 inches.

v. Modifications to protect drainage features, easements, or utility facilities may be allowed. Modifications that reduce landscape area or plant material shall be made up elsewhere on site, if possible.

vi. The requirements of this section shall not apply to parking garages or to display areas for automotive and equipment sales and rentals that are specifically designed, approved and constructed for the display purpose and that do not reduce required landscape areas.

b. Specific Parking Lot Landscaping Standards.

Table 18.50.040(B). Specific Parking Lot Landscaping Standards

	Landscaped Area Required	**Planting Area Design Requirements**	**Plantings Required**
12 parking stalls or less	No requirement		
13 – 75 parking stalls	7% of surface parking stalls (exclusive of	Minimum planter	Trees shall be provided at the rate of a minimum of one per planter

	Landscaped Area Required	Planting Area Design Requirements	Plantings Required
	circulation)	width: 6 feet	and/or one per 100 square feet of planter.
76 parking stalls or more	10% of surface parking stalls (exclusive of circulation)	Minimum planter width: 6 feet	Trees shall be provided at the rate of a minimum of one per planter and/or one per 100 square feet of planter.

5. Landscaping for Outdoor Storage Areas, Recreational Vehicle Parking and Refuse Areas.

a. Outdoor storage areas and recreational vehicle parking areas must be screened from view from adjacent streets and from all residentially zoned land by a minimum six-foot-wide landscape buffer. This landscape buffer shall contain evergreen trees or tall shrubs, a minimum of six feet in height at the time of planting, which will provide a 100 percent sight-obscuring screen within three years from the time of planting is required; or a combination of evergreen trees or deciduous trees, planted 20 feet on center with no more than 30 percent being deciduous and backed by a 100 percent sight-obscuring fence. In addition to the trees, shrubs shall be planted at four-foot spacing, in all directions, and groundcover provided.

b. Outdoor storage areas abutting the Interurban Trail (regardless of the zoning of the Interurban Trail) and other future trails connecting to the Interurban Trail shall have a minimum 10-foot-wide landscape buffer containing the planting materials specified in subsection (C)(5)(a) of this section.

c. Trash containers, dumpsters, trash compactors, and recycling bins associated with multiplex, multi-unit residential, and nonresidential uses must be screened from public view on all sides with a solid fence, wall, or gate constructed of cedar, redwood, masonry, or other similar building material reflecting the overall design of the site, and be appropriately landscaped (e.g., climbing vines, arborvitae, etc.).

6. *Irrigation.* No portion of any landscaped area shall be located further away than 50 feet from a source of water adequate to irrigate the landscaping. The source of water may be a

manual (hose connection) or an automatic irrigation system. (Ord. 6885 § 1 (Exh. A), 2022; Ord. 6617 § 29, 2016; Ord. 6387 § 1, 2011; Ord. 4914 § 1, 1996; Ord. 4304 § 1(34), (35), 1988; Ord. 4229 § 2, 1987.)

18.50.045 Preservation of significant trees.

A. *Retention.* In the required perimeter landscaping area, applicants shall retain all significant trees. A significant tree means a healthy evergreen tree, six inches or more in diameter measured four feet above grade, or a healthy deciduous tree four inches or more in diameter measured four feet above grade. Alders and cottonwoods are excluded from this definition. If the grade level adjoining a tree to be retained is to be altered to a degree that would endanger the viability of a tree or trees, then the applicant shall construct a dry rock wall or rock well around the tree. The diameter of this wall or well must be capable of protecting the tree.

Areas devoted to driveways, curb cuts, and sight distance requirements, utilities and storm drainage facilities may be exempted from this requirement. Significant trees may also be exempted from this requirement if it is determined by the planning director based on satisfactory evidence pursuant to report prepared by a consulting arborist certified by the International Society of Arboriculture. The report submitted to the city shall demonstrate the significant tree is:

1. Damaged; or
2. Diseased; or
3. Has weak structural integrity that poses a safety hazard.

If additional significant trees are to be removed, the applicant shall seek approval of an "alternative landscape plan" from the planning director under ACC 18.50.080.

B. *Encroachment into Dripline.* No construction activities shall take place within the dripline of a tree to be retained without extra precautions as recommended by a certified arborist. The applicant may install impervious or compactable surface within the area defined by the dripline when a qualified arborist determines that such activities will not endanger the tree or trees. (See the definition of "dripline" in ACC 18.04.318.)

C. *Tree Protection.* All significant trees that are to be retained must be protected during construction by installation of a protective barricade or fence. This will require preliminary identification of the proposed area of disturbance for staff inspection and approval, then installation of a protective barricade or fence before major excavation with heavy equipment begins. (Ord. 6387 § 1, 2011.)

18.50.050 Regulations by zone.

Repealed by Ord. 6387. **18.50.060 Landscaping plan requirements.**

A. *Persons Qualified to Prepare Landscape Plan.* A landscape plan signed by a licensed landscape architect is not required. However, if the plan is determined by the city to be illegible or inadequate for review the landscape plan shall be prepared by a landscape architect licensed in the state of Washington, a nursery professional certified pursuant to the Washington certified nursery professional program, or a Washington State certified landscape technician.

B. *Application.* A landscape plan shall be required and shall be accurately drawn using an appropriate engineering scale and contain all information specified by the planning director in the application form and accompanying checklist provided by the city. (Ord. 6387 § 1, 2011; Ord. 6287 § 2, 2010; Ord. 6231 § 5, 2009; Ord. 4914 § 1, 1996; Ord. 4229 § 2, 1987.)

18.50.070 Administration and enforcement.

A. *Performance Assurance.*

1. The required landscaping must be installed prior to the issuance of the certificate of occupancy unless the planning director determines that a performance assurance device will adequately protect the interests of the city;

2. The performance assurance device shall only be valid for a 120-day period and shall have a value of 100 percent of the estimated cost of the landscaping to be performed, inclusive of planting materials and installation. If the landscaping has not been installed after the 120 days then the assurance device may be used by the city to perform any

necessary work to implement the landscape plan. This time period can be extended if the city determines that:

a. Installation of the landscaping would not be successful due to weather; or

b. Product is not available due to the time of year;

3. The performance assurance device shall be accompanied by an agreement granting the city and its agents the right to enter the property and perform work. The agreement shall also hold the city harmless from all claims and expenses, including attorney's fees;

4. Upon completion of the required landscaping by the property owner the city shall release the performance assurance device.

B. *Initial Maintenance Period and Maintenance Assurance Device.* After installation of the required landscaping, the property owner shall complete an initial maintenance period lasting one year. The property owner shall comply with the provisions below:

1. The property owner shall be responsible for replacing any unhealthy or dead plants for a period of one year after the initial planting.

2. The planning director shall require a maintenance assurance device, unless converting a single-~~family~~ unit detached dwelling~~residence~~ to a nonresidential use within the R-F ~~RO~~ zone~~district~~, for a period of one year from the completion of planting in order to ensure compliance with the requirements of this section. The value of the maintenance assurance device shall equal at least 100 percent of the total landscape materials plus installation.

3. If the landscaping is not being properly maintained, the property owner shall be so notified by the city. If after 30 days from the city's notification the landscaping is still not being maintained then the maintenance device may be used by the city to perform any type of maintenance necessary to ensure compliance with this chapter.

4. The maintenance assurance device shall be accompanied by an agreement granting the city and its agents the right to enter the property and perform any necessary work. The agreement shall also hold the city harmless from all claims and expenses, including attorney's fees.

5. Upon completion of the one-year maintenance period, and if maintenance has not been performed by the city, the city shall release the maintenance assurance device.

C. Maintenance of Landscape Area (On-Going). Landscaping, including trees, shrubs, groundcover, or grass, planted as a requirement pursuant to this title or ACC Title 16 or 17 shall be maintained in a healthy, living condition. All landscaping which, due to accident, damage, disease, lack of maintenance, or other cause, fails to show a healthy appearance and growth shall be replaced. Replacement plants shall conform to all standards that govern the original planting installation, approved landscaping plan, or as approved by the planning director. If the landscaping is not replaced the property owner or designee shall be subject to the enforcement provisions contained in subsection D of this section.

1. *Tree and Shrub Pruning.* A permit is not required to prune trees and shrubs on private property. Pruning which results in the removal of at least half of the live crown will be considered tree removal and subject to the provisions in subsection D of this section. Tree pruning should be performed by a landscape contractor, one that is certified by the International Society of Arboriculture as a certified tree trimmer or certified arborist or other qualified tree expert.

2. *Limitations on Allowable Pruning.* Tree and shrub pruning shall be allowed only for the following purposes:

a. Removal of dead wood and diseased, crowded, and weakly attached trunks and branches that create a hazard to private property and citizens;

b. Providing adequate clearance and visibility for safe use of parking stalls, travel ways and walkways for the passage of persons and vehicles;

c. Eliminating traffic sign visibility obstructions;

d. Providing adequate visibility for security patrols;

e. Repairing split trees and limbs in order to save a tree and its appearance;

f. Removing or severing tree roots that are causing damage to public or private property, including curbs, gutters, sidewalk, drainage lines and parking lot surfaces; or

g. Providing visibility for merchant signs and increasing parking lot lighting only when the aesthetics of the tree or shrub will not be reduced.

3. *Tree Topping.* Tree topping is prohibited, except under the following circumstances:

a. Branches interfering with utility lines;

b. Significant canopy dieback has occurred;

c. Storm damage or prior incorrect pruning requires correction.

D. *Enforcement.* Violation of these provisions shall be processed in accordance with the procedures defined under Chapter 1.25 ACC. The property owner or designee responsible for correcting the violation shall provide a corrective action plan that defines how and when the infraction will be corrected within the time provisions defined by Chapter 1.25 ACC.

1. The corrective action plan shall be subject to the following replacement ratios:

a. For plants that have died, replacement vegetation shall be at least 150 percent of the planting size required of the subject plant material at the time of planting. The plants shall be of the same or similar species to those plants being replaced, unless alternate species are approved by the planning director.

b. For trees or shrubs that have been excessively pruned, replacement vegetation shall be at least 200 percent of the size of the tree or shrub that was required by city regulations at the time of planting. The trees or shrubs shall be of the same or similar species of the plants being replaced, unless alternate species are approved by the planning director.

2. The property owner or designee shall correct the infraction or provide a schedule that defines how and when the infraction will be corrected within the time provisions defined by Chapter 1.25 ACC. (Ord. 6387 § 1, 2011; Ord. 5777 § 1, 2003.)

18.50.080 Alternative landscaping plan.

The planning director may authorize modification of the landscape requirements when alternative plans comply with the intent of this chapter and:

A. The proposed landscaping provides for creative landscape design; or

B. Incorporates the increased retention of significant trees and naturally occurring undergrowth; or

C. Incorporates historic or architectural features such as fountains, sculptures, structures and the like. (Ord. 6387 § 1, 2011; Ord. 6287 § 2, 2010; Ord. 6231 § 6, 2009.)

The Auburn City Code is current through Ordinance 6940, passed April 15, 2024.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

City Website: www.auburnwa.gov

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Chapter 18.52
OFF-STREET PARKING AND LOADING

Sections:

18.52.005 Intent.
18.52.010 Applicability.
18.52.020 Number of off-street parking spaces required.
18.52.025 Disabled/handicapped parking requirements.
18.52.030 Reductions of the quantity of required parking.
18.52.040 Drive-through facilities.
18.52.050 Parking design, development, and maintenance standards.
~~*18.52.060 Repealed.*~~
18.52.065 Commercial vehicles in residential zones.
18.52.070 Repealed.
18.52.080 Repealed.
18.52.090 Repealed.
18.52.100 Repealed.
18.52.110 Fractional spaces.
18.52.120 Repealed.
18.52.125 Stacked parking.
18.52.130 Off-street loading space.
18.52.135 Alternate parking layouts.

18.52.005 Intent.

This chapter establishes regulations which provide for ~~safe,~~ attractive~~,~~ and convenient off-street parking and loading and to ensure that parking areas are compatible with surrounding land uses. ~~The city discourages providing parking in excess of that required by this chapter.~~ (Ord. 6388 § 1, 2011.)

18.52.010 Applicability.

Except as otherwise provided in adopted contract rezones, development agreements, design standards and guidelines, or similar more specific process, off-street parking and loading provisions of this chapter shall apply as follows:

A. *New Development.* For all buildings or structures erected and all uses of land (property) established, parking and loading facilities shall be provided as required by this chapter.

B. *Change in Use.* When the use of any building, structure, or land is changed, increasing the intensity such that the change creates an increase of five or less parking spaces required by the change, additional off-street parking spaces need not be provided in accordance with the requirements of this chapter.

1. Special Provisions for the R-FO, Residential ~~Office District~~Flex Zone.

a. Within the R-FO, residential office zoning district, if any existing, nonresidential use is changed to another use, the requirements of this chapter shall apply in full to the new use if and only if the change in parking requirements between the old and new uses is greater than two spaces; except that if the applicant submits an alternate parking plan sufficiently justifying that the existing parking meets the needs of the new use, the planning director may authorize the satisfaction of parking through the special exception process.

b. Whenever there is a change from a residential use to a nonresidential use in an existing building within the R-FO, residential office zoning district, the requirements of this chapter shall apply in full to the new use; except if the structure is being used as both a residence and business, then if the applicant submits an alternate parking plan sufficiently justifying that the parking meets the needs of both uses, the planning director may authorize the satisfaction of parking through the special exception process.

C. Modification to Existing Structures or Uses of Land. Whenever an existing building or structure is modified or uses of land are modified such that the modification would require an increase of more than five off-street parking spaces, additional off-street parking spaces shall be provided in accordance with the requirements of this chapter.

D. Modification to Existing Parking Lots.

1. Any parking lot hereafter physically altered shall comply with all of the provisions of this chapter, except that such lot which provides five percent of its area in landscaping and the landscaping is healthy and in good maintenance shall be deemed to comply with ACC 18.50.040(C)(4).

2. For existing parking lots that are resurfaced in excess of 50 percent of their area, then at least five percent of the entire parking area shall be landscaped consistent with Chapter 18.50 ACC.

3. If existing parking lots are restriped, then the new layout of the parking spaces shall be the same as the previous layout or, if changed, then the changed layout shall conform to the existing dimensional requirements of this chapter. (Ord. 6388 § 1, 2011; Ord. 6287 § 2, 2010; Ord. 6231 § 7, 2009; Ord. 4949 § 1, 1997; Ord. 4229 § 2, 1987.)

18.52.020 Number of off-street parking spaces required.

Each principal use of the land, building, or structure shall provide the number of off-street parking spaces required by this section. The following standards are not applicable in the DUC, downtown urban center zone; refer to Chapter 18.29 ACC for specific requirements for that zone.

A. Parking Requirements by Land Use.

1. *Minimum Number of Parking Spaces.* Each land use shall provide the minimum number of off-street parking spaces required by Table 18.52.020, except where a greater number of spaces are required through a more specific approval process such as an administrative use permit or conditional use permit approval.

2. *Uses Not Listed.* Where a use is not listed in Table 18.52.020, the planning director shall determine the number of required parking and/or loading spaces. The planning director shall use the requirements in Table 18.52.020 as a guide in determining the number of off-street parking spaces required based on the similarity of uses or may consider a parking generation study.

B. *Maximum Number of Parking Spaces.* Except for required parking spaces for persons with disabilities, spaces provided in park and ride lots operated by a public transit agency, spaces for carpools, spaces for electric vehicle charging and spaces within structured parking with two or more levels, the maximum number of parking spaces for nonresidential uses shall not exceed 125 percent of the minimum spaces required by Table 18.52.020.

C. *Measurement of Floor Area.* In any case where Table 18.52.020 establishes a parking requirement based on floor area in square feet (for example: two spaces per 1,000 square feet (sf) of floor area), the floor area shall be construed to mean gross floor area (defined in ACC 18.04.430).

D. *Use with Accessory Components.* A single use with accessory components shall provide parking for the primary use, and each component. For example, a hotel with a meeting room may be required to provide the parking spaces required by Table 18.52.020 for a hotel (i.e., the guest rooms), and for a meeting room.

E. *Obstruction.* Removal of required parking or loading spaces from practical use by obstruction, erection of buildings, or other actions as to reduce the parking or loading capacity or usefulness thereof below the minimum requirements established in this chapter is prohibited.

F. *Existing legally nonconforming gravel spaces.* Up to six legally nonconforming gravel parking spaces may be used to meet off-street parking requirement for residential development.

Table 18.52.020. Off-Street Parking Requirements by Land Use

Land Use Type:	Unit of Measure:	Required Parking Rate (spaces per unit of measure):
Residential Categories		
~~Single-~~Single-unit~~family ,~~ detached dwelling, adult family home, home based daycares	Dwelling unit	2.00
~~Two-family dwelling (duplex)~~	~~Dwelling unit~~	~~2.00~~
Middle h~~H~~ousing (2 to 6 units)	See ACC 18.25~~31.240~~ for Middle Housing parking requirements.	
~~Multifamily dwelling (one- and two-bedroom units)~~	~~Dwelling unit~~	~~1.50~~
~~Multifamily dwelling (three-bedroom units or more~~> 6 ~~units))~~Apartments (7 or more units)	Dwelling unit	1~~2~~.00
Mobile home dwellings[1]	Dwelling unit	2.00
Assisted living facilities	4 bedrooms	1.00 Plus one space for each two employees
Group living (includes supportive housing, boardinghouse)	~~2~~4 bedrooms	1.00
Commercial Categories		
~~Auto, boat, or recreational vehicle sales or leasing, new or used~~	~~5,000 square feet of outdoor sales area~~	~~1.00~~
Auto sales and motorcycle, new	1,000 sf of floor area	2.29
Auto sales and motorcycle, used	1,000 sf of floor area	3.08
Daycare centers	Each 10 children in care	2.00
Eating and drinking establishments	1,000 square feet of floor area	8~~10~~.00
Food retail stores and markets	1,000 square feet of floor area	5.00
Health and fitness clubs	1,000 square feet of floor area	~~10.00~~5.00

Land Use Type:	Unit of Measure:	Required Parking Rate (spaces per unit of measure):
Hotel or motel	Guest room or rental unit	1.00
Mini-marts and ~~self service~~self service ~~-~~gas stations	1,000 square feet of floor area	5.00
Mortuaries or funeral homes	25 square feet of floor space~~Seat~~[2]	0.25
Motor vehicle repair and services	1,000 square feet of floor area	2.50
Personal service shops	1,000 square feet of floor area	2.50
Retail commercial establishments, less than 15,000 square feet of floor area	1,000 square feet of floor area	2.50
Retail commercial establishments, greater than 15,000 square feet of floor area	1,000 square feet of floor area	4.00
Shopping centers[4]	1,000 square feet of floor area	4.00
Office Categories		
Business and professional offices	1,000 square feet of floor area	2.00
~~Medical, dental, and other doctor's offices~~Medical-dental clinic; urgent care	1,000 square feet of floor area	3.00~~5.00~~
Manufacturing Processing and Warehousing Categories ***(See also ACC 18.52.020(D))***		
All manufacturing, industrial, and processing uses, except the following:	1,000 square feet of floor area	1.00
Warehousing	2,000 square feet of floor area	1.00
Storage – Personal storage/mini-storage facilities	1,000 square feet of floor area~~Storage unit~~[3]	0.10~~Minimum of 2 spaces~~
Recreation, Education, Public Assembly Categories		

Land Use Type:	Unit of Measure:	Required Parking Rate (spaces per unit of measure):
Auditoriums, stadiums, and theaters	25 square feet of floor space~~Seat~~[2]	0.25
Commercial recreation facilities – Indoor, except for the following:	1,000 square feet of floor area	5.00
Bowling alleys	Lanes	5.00
Pool and billiard rooms	Table	2.00
Skating rinks	1,000 square feet of floor area	5.00
Commercial recreation facilities – Outdoor	1,000 square feet of usable recreational area	3.00
Hospitals	Bed	1.75
Library, museum	1,000 square feet of floor area	2.50
Meeting facility, public or private	25 square feet of floor space~~Seat~~[2]	0.25
Religious assembly	~~Seat~~[2]25 square feet of floor space	0.20
Schools (public and private)		
Preschool~~Kindergarten~~ schools	Employee[43]	1.00
Elementary/middle schools	Teaching station	1.20
Secondary (high) schools	Student	0.40
College or university (including trade and business schools)	Student	0.75
Studios (dance, martial arts, etc.)	1,000 square feet of floor area	5.00
Tennis/racquetball/handball or other sport courts	Court	2.00

Land Use Type:	Unit of Measure:	Required Parking Rate (spaces per unit of measure):
	Each 300 sf of floor area for accessory uses	1.00
Recreational uses not listed elsewhere	Same as retail, based on size	

Notes:

1 Within mobile home parks, parking space shall not be allowed within the required setbacks. Guest parking shall be provided within the development: five percent of total requirement.

~~2 Seat, 18 inches of bench, or 25 square feet of floor space.~~

~~3~~2 Includes total on-site building square feet. ~~Parking shall be provided by parking/driving lanes adjacent to buildings. Two parking spaces shall be provided adjacent to the manager's quarters.~~

~~4~~3 There shall be two visitor-parking stalls provided for each 10 required employee stalls.

4 Compliance with these standards is not required for a change of use within an existing building.

5 Employee and customer parking only.

(Ord. 6419 § 5, 2012; Ord. 6388 § 1, 2011; Ord. 6167 § 4, 2008; Ord. 6140 § 2, 2007; Ord. 6071 § 3, 2007; Ord. 5777 § 1, 2003; Ord. 5556 § 1, 2001; Ord. 5170 § 1, 1998; Ord. 4949 § 1, 1997; Ord. 4304 § 1(40), (41), 1988; Ord. 4229 § 2, 1987.)

18.52.025 Disabled/handicapped parking requirements.

A. Accessible parking spaces for the handicapped/disabled shall be provided in compliance with the International Building Code (IBC), the Federal Accessibility Guidelines, and Washington Administrative Code, as applicable. These spaces shall count towards fulfilling the off-street parking requirements of this chapter.

B. Accessible car and van parking space size shall be as follows:

1. Car parking spaces shall be eight feet (96 inches) minimum in width.

2. Van parking spaces shall be 11 feet (132 inches) minimum in width.

C. *Exception.* Van parking spaces shall be permitted to be eight feet (96 inches) minimum in width where the adjacent access aisle is eight feet (96 inches) minimum in width.

Table 18.52.025. Accessible Parking Spaces Required

Total Parking Spaces Provided	Minimum Number of Accessible Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1,000	2% of total
More than 1,000	20, plus one for each 100 over 1,000

(Ord. 6388 § 1, 2011.)

18.52.030 Reductions of the quantity of required parking.

Except within the DUC zone, reductions of the quantity of required parking may be allowed based upon the provisions in Table 18.52.030, Parking Quantity Reductions.

Table 18.52.030. Parking Quantity Reductions

1. Joint Use of Parking Facilities	A reduction in the total number of required parking spaces may be allowed when two or more uses with different peak parking demands will share a parking facility. In order for the reduction to occur the planning director must determine, based on satisfactory evidence provided by the applicant, that there is no substantial conflict in the principal operating hours and no substantial conflict in peak parking demand of the uses for which the sharing of parking is proposed. To evaluate the peak parking demand characteristics or differences in hours and/or days of operation, evidence including, but not limited to, a description of the uses and their operational characteristics, and a development plan shall be provided by the applicant and accompany the request. If approved, a binding agreement providing for the shared use of parking areas shall be executed by the parties involved, and must be filed with the city in a form approved by the planning director and be recorded. Shared parking privileges will continue in effect only as long as the agreement, binding on all parties, remains in force. Agreements must guarantee long-term availability of the parking, commensurate with the use served by the parking. If a shared parking agreement lapses or is no longer valid, then parking must be provided as otherwise required by this chapter.
2. Reduction of Parking for a Use with Low Parking Demand	A reduction of up to 50 percent of the total number of required parking allowed for the re-use of an existing building, based on quantitative information provided by the applicant that documents the need for fewer spaces (e.g., sales receipts, documentation of customer frequency, information on parking standards required for the property land use by other cities). In order for the reduction to occur the planning director must find satisfactory evidence has been provided by the applicant.
3. Mixed Occupancies and Shared Uses	In the case of two or more principal uses in the same building, the total requirements for off-street parking facilities shall be 75 percent of the sum of the requirements for the principal uses computed separately. In order for a use to be considered a separate principal use under the terms of this section, the uses must be physically and managerially separate in a manner which clearly sets the principal uses apart as separate businesses or operations. Various activities associated with single businesses shall not be considered separate uses.
4. Transit Access	A reduction in the total number of required parking spaces may be reduced by 25 percent for sites located within a 1/4 mile (walking distance) of a public transit stop. A public transit stop includes but is not limited to a bus stop, commuter train stop, or park and ride lot. Applicants requesting this reduction must provide a map identifying the site and transit service schedules for all transit routes within 1/4 mile of the site.

5. Trip Reduction Plan	A reduction of up to 25 percent in the total number of required parking spaces may be allowed for a business or other use that creates and implements a site-specific trip reduction plan and program. The trip reduction plan and program shall be reviewed and approved by the city and yearly reports shall be provided to evaluate the effectiveness of the program and ensure its continued maintenance and operation.
6. Credit for On-Street Parking – Nonresidential	All multifamily uses and nonresidential uses located adjacent to a public right-of-way where on-street parking is permitted may receive credit for one off-street parking stall for each 22 linear feet of abutting right-of-way for parallel parking, excluding curb cuts. This provision shall be applied for on-street parking on the same side of the street as the proposed land use. All parking for employees must be provided on-site.
7. Valet Service	A reduction of up to 25 percent in the amount of required parking per Table 18.52.020 may be permitted, depending on the size and type of the use if approved by the planning director.
8. Tree retention	If retention of significant trees as required under 18.50.045 makes it infeasible to accommodate parking required under 18.52.020, required parking may be reduced, as long as all other standards in this title are met and approved by the planning director.

(Ord. 6388 § 1, 2011; Ord. 6071 § 4, 2007; Ord. 5556 § 1, 2001; Ord. 5170 § 1, 1998; Ord. 4949 § 1, 1997; Ord. 4229 § 2, 1987.)

18.52.040 Drive-through facilities.

All banks, savings and loan associations, food dispensing establishments, and other businesses which maintain drive-through facilities which are intended to serve customers who remain in their motor vehicles during business transactions, or are designed in such a manner that customers must leave their automobiles temporarily in a driving lane located adjacent to the facility, shall provide on-site stacking space for the stacking of motor vehicles as follows:

A. *Stacking Space.* The drive-through facility shall be so located that sufficient stacking space is provided to accommodate the types of motor vehicles using such facility during peak business hours of such a facility.

B. *Driveway Location.* The location of entrances and exits shall be determined by the city engineer.

C. *Shopping Centers.* When located in a shopping center, drive-through facilities shall provide sufficient stacking space to handle peak business demands and shall not in any way obstruct the normal circulation

pattern of the shopping center and not unreasonably interfere with nonmotorized circulation. (Ord. 6388 § 1, 2011; Ord. 4949 § 1, 1997; Ord. 4229 § 2, 1987.)

18.52.050 Parking design, development, and maintenance standards.

Required parking areas shall be designed, constructed and maintained in compliance with this section:

A. *Location of Parking.* Off-street parking areas shall be located as follows:

1. *Residential Parking.* Residential parking shall be located on the same site as each residential dwelling unit served; except for a mixed-use development as defined by ACC 18.04.625. No required residential parking space shall occupy any unimproved area within the required front setback, or side and rear setback, except as allowed by subsection E of this section, Surfacing of Parking Areas.

2. *Nonresidential Parking.* Nonresidential parking shall be located on the same site as the use served, or off site. If parking is to be located off site it is subject to the following requirements:

a. The lot or area to be utilized for parking shall be legally encumbered by an easement or other appropriate means to ensure continuous use of the parking facilities following the procedure contained in Table 18.52.030(1), Joint Use of Parking Facilities.

b. Whenever required parking facilities are located off site, sidewalks, or an approved pedestrian facility, shall be provided connecting the satellite parking facility to the development being served.

B. *Access to Parking.* Access to parking shall be provided as follows for all parking areas other than for ~~individual single-family dwellings and duplexes~~single-unit detached dwellings and middle housing:

1. The location, design and construction of entrances and exits from the street right-of-way shall be determined by the city engineer.

2. A commercial or industrial use shall have access driveways from the public or private street that are not intersected by a parking aisle, parking space, or another access driveway for a minimum distance of 40 feet from the street right-of-way, to provide a queuing area for vehicles entering and exiting the parking area. The city engineer may require an increase or a decrease of this as determined by criteria set forth in the engineering design standards.

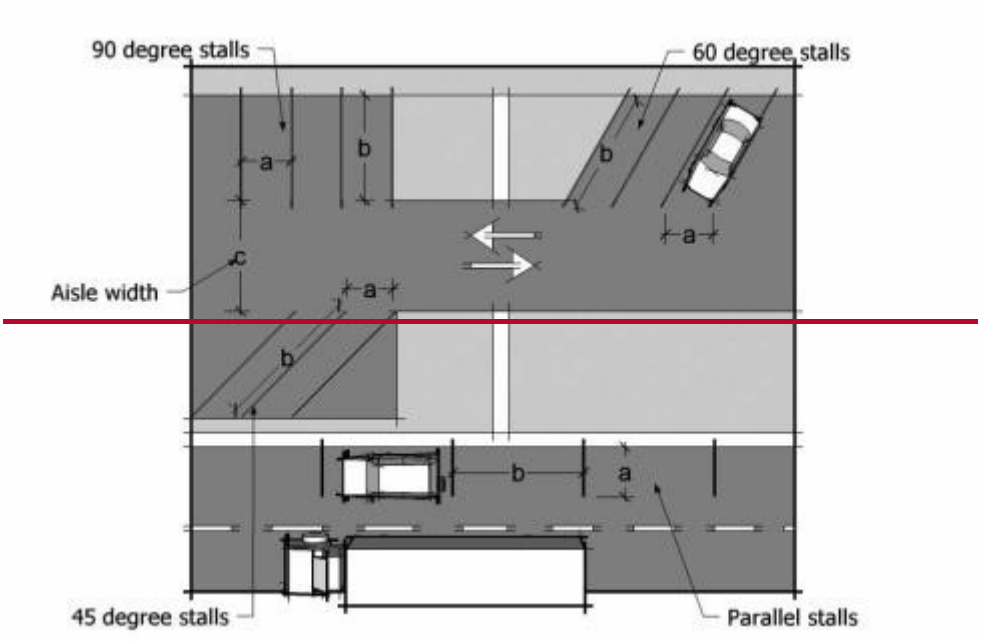
C. *Access to Adjacent Sites.* The city may require that the design of a parking area to provide vehicle and pedestrian connections to parking areas on adjacent properties or to connect with adjoining public walkways (when a reciprocal access easement is available or can reasonably be provided).

D. *Parking Stall and Aisle Dimensional Standards.*

1. *Minimum Dimensions.* Each parking space and parking lot aisle shall comply with the minimum dimension requirements in Table 18.52.050 and further displayed in Figure 18.52.050.

Table 18.52.050. Parking Space and Drive Aisle Dimensions

Parking Stall Type (A)	Minimum Stall Dimensions		Minimum Width for Drive Aisle with Parking(eD)	
	Width(aC)	Length(bB)	One-Way	Two-Way
Standard parallel	98 ft.	220 ft.	12 ft.	20 ft.
Standard 45-degree	98 ft.	19 ft.	15 ft.	20 ft.
Standard 60-degree	98 ft.	19 ft.	18 ft.	20 ft.
Standard 90-degree	98 ft.	19 ft.	20 ft.	24 ft.
Compact	8 ft.	16 ft.	20 ft.	22 ft.



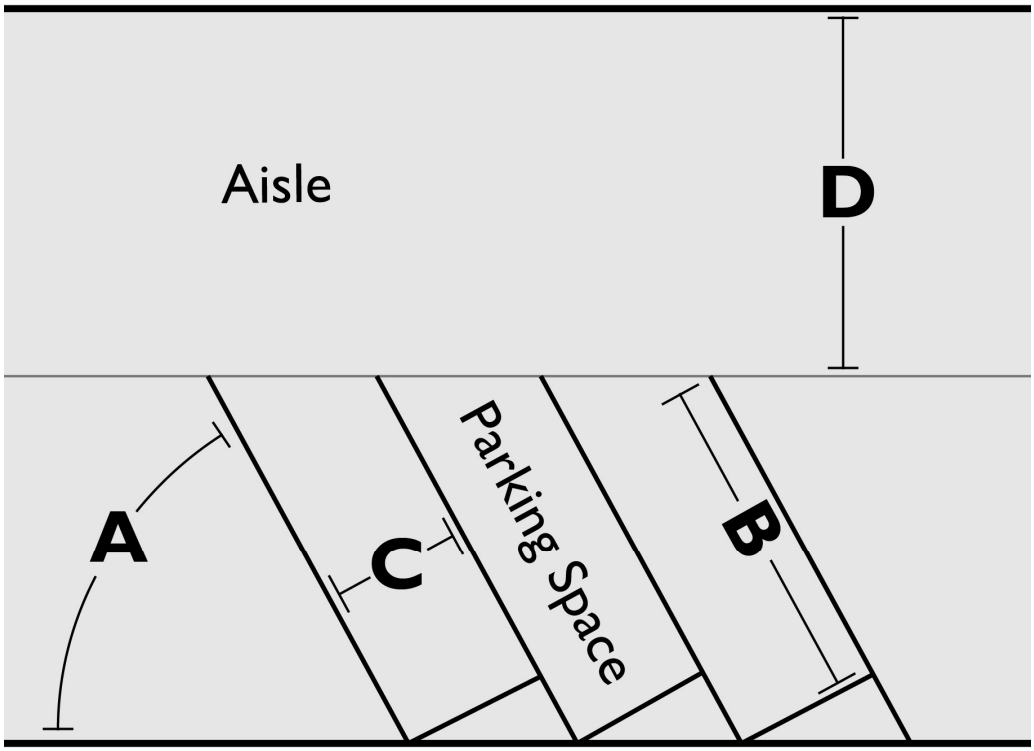


Figure 18.52.050. Parking Space and Drive Aisle Dimensions

2. *Compact Parking.* Compact spaces may be allowed within a parking lot up to a maximum of 30 percent of the total number of spaces. This maximum percentage can be increased to 50 percent when approval is obtained by the planning director following the procedures contained in ACC 18.52.135, Alternative parking layouts. Compact spaces can be clustered or dispersed throughout the parking lot. Every compact parking space created pursuant to this section shall be clearly identified as such by painting the word "COMPACT" in upper case block letters, using white paint, on the pavement within the space or through the use of signage.

3. *Vehicle Overhang.* Vehicular overhang of up to two feet is permitted, provided no vehicle shall overhang into a sidewalk or walkway which would reduce the unencumbered width of a sidewalk or walkway to less than four feet. A vehicle is permitted to overhang into a landscaped area by two feet; provided, that the required landscape area of trees and shrubs are not reduced in quantity and not subject to potential damage.

4. *Tandem Parking.* Tandem parking spaces (parking of one vehicle in front of another such that only the outer vehicle is immediately accessible) may count towards parking requirements for residential uses under 18.52.020.

E. *Surfacing of Parking Areas.* Areas used for parking on private property, including interior driveways and access to a public street, shall be paved with asphalt concrete, cement concrete pavement, grass block pavers, or pervious pavement and shall have appropriate bumper guards where needed. Paving is not required for temporary parking facilities that have obtained a temporary use permit pursuant to the requirements of Chapter 18.46A ACC, Temporary Uses; however, dust mitigation is required. Where a driveway crosses an improved public right-of-way, it shall be constructed with cement concrete. All pavement sections shall be designed to support the post development traffic loads anticipated due to the intended use as approved by the city engineer.

1. Alternative paving systems may be provided subject to the approval of the city. The alternative must provide results equivalent to paving.

2. For parking areas serving single-family dwellings and duplexes when located on individual lots, this section shall apply:

a. Each off-street parking space shall be connected to an improved street or alley by a driveway a minimum of 11 feet in width.

b. Not more than 50 percent of the front yard or 800 square feet, whichever is smaller, can be used as off-street parking surface. For the purposes of calculating the allowable area under this section, the front yard shall be the area between the right-of-way and the portion of the single-family dwelling's front facade farthest from the right-of-way. The width of the front yard shall extend to each side property line.

c. Driveways that exclusively serve nonrequired off-street parking spaces are also subject to the surfacing requirement.

d. Off-street vehicle parking spaces, including those for trailers, recreational vehicles, and boats on trailers, that are provided in addition to those required pursuant to Table 18.52.020 shall be paved with one of the surfaces listed above (subsection E of this section), or gravel; provided, that weeds, mud or other fine material do not work their way to the surface of the gravel; and provided, that loose gravel is contained on the subject property.

e. Boats not on trailers shall not be stored in the front yard.

F. *Grades of Access Driveways.* The grade of access driveways for off-street parking areas shall be subject to the driveway regulations contained in Chapter 10.04 of the engineering design standards.

G. *Sidewalks or Pedestrian Walkways.* Sidewalks or pedestrian walkways shall be visibly marked with differentiated pavement or other methods such as reflective/LED markers, double row of landscaping, or raised pavement.

H. *Landscaping.* See Chapter 18.50 ACC.

I. *Lighting.* See Chapter 18.55 ACC. (Ord. 6657 § 2, 2017; Ord. 6388 § 1, 2011; Ord. 6231 § 7, 2009; Ord. 4949 § 1, 1997; Ord. 4229 § 2, 1987.)

~~18.52.060 Development of off-street parking spaces for single-family dwellings and duplexes~~middle housing~~.~~

Repealed by Ord. 6388. 18.52.065 Commercial vehicles in residential zones.

A. No person shall park any commercial vehicle on any property within the following zoning districts in the city: residential zones ~~R-25,~~ R-72, ~~R-103,~~ R-163, and R-~~20~~ 4 and ~~(PUD) P~~planned U~~u~~nit D~~d~~evelopment (PUD).

B. No person shall park more than one commercial vehicle on any property within the R-1 residential zoning district in the city, and no person shall park more than two commercial vehicles on any property within the residential conservancy RC zoning district in the city. (Ord. 6388 § 1, 2011; Ord. 6019 § 2, 2006.)

~~18.52.070 Off-street parking lots—Location.~~

Repealed by Ord. 6388. 18.52.080 Off-street parking – In-lieu of fees.

Repealed by Ord. 4949. 18.52.090 Parking space dimensional requirements.

Repealed by Ord. 6388. 18.52.100 Existing off-street parking reduction.

Repealed by Ord. 6388. 18.52.110 Fractional spaces.

When units or measurements determining the number of required parking spaces result in requirements of a fractional space, any fraction up to one-half shall be disregarded, and fractions of one-half or over shall require one parking space. (Ord. 6388 § 1, 2011; Ord. 4949 § 1, 1997; Ord. 4229 § 2, 1987.)

18.52.120 Parking in front or side yards – Prohibited generally.

~~*Repealed by Ord. 6388.*~~ 18.52.125 Stacked parking.

Stacked parking ~~,~~ i.e., parking one car behind another, is permitted for funeral homes, ~~single-family homes on individual lots~~single-unit detached and middle housing dwelling units, and for designated employee parking within the ~~RO~~R-F zone~~, residential office district only~~, unless the use has complied with the requirements of Table 18.52.030(7), Parking Quantity Reductions (Valet Service). (Ord. 6388 § 1, 2011; Ord. 6231 § 9, 2009; Ord. 4949 § 1, 1997.)

18.52.130 Off-street loading space.

Buildings devoted to retail trade, retail and wholesale food markets, warehouses, supply houses, wholesale and manufacturing trade, hotels, hospitals, laundry, dry cleaning establishments or other buildings where large amounts of goods are received or shipped shall provide loading and unloading space on the same premises as the building as follows:

A. Buildings of 6,000 square feet or more of floor area, one off-street loading and unloading space plus one additional off-street loading space for each 20,000 square feet of floor area;

B. Each loading space shall be not less than 10 feet in width, 25 feet in length and 14 feet in height;

C. Loading space, exclusive of driveways and/or corridors leading thereto, shall not be considered as providing off-street parking space. (Ord. 6388 § 1, 2011; Ord. 4949 § 1, 1997; Ord. 4229 § 2, 1987.)

18.52.135 Alternate parking layouts.

Layouts and dimensions of off-street parking spaces, maneuvering aisles, driveways, driveway openings, and other related features different from those prescribed in ACC 18.52.050 may be approved by the planning director upon written findings that demonstrate:

A. The number of off-street parking spaces required by ACC 18.52.020 (unless reductions are permitted under ACC 18.52.030) are provided;

B. There is substantial reason for varying the standard; and

C. Ingress and egress is approved by the city engineer where they ensure that adequate ingress to and egress from each required off-street parking space is provided for a vehicle of the appropriate size, and that ingress to

and egress from the off-street parking facility is possible with minimal disruption of traffic on the adjacent street. (Ord. 6388 § 1, 2011.)

The Auburn City Code is current through Ordinance 6904, passed February 21, 2023.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

City Website: www.auburnwa.gov
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Chapter 18.55
OUTDOOR LIGHTING

Sections:

18.55.010 Intent.
18.55.020 Applicability.
18.55.030 General requirements.
18.55.040 Prohibited lights.
18.55.050 Exceptions.

18.55.010 Intent.

To discourage excessive lighting of outdoor spaces, encourage energy conservation and promote exterior lighting that promotes safe vehicular and pedestrian access to and within a development while minimizing impacts on adjacent properties. Decorative lighting that is architecturally integrated with the character of the associated structures, site design and landscape is encouraged. (Ord. 6390 § 1, 2011.)

18.55.020 Applicability.

A. A lighting plan shall be required for projects as follows:

1. When an exterior lighting installation is part of a new development proposal requiring site plan review, an administrative or conditional use permit, or other development application that requires outside lighting or is a commercial project adjacent to property zoned residential; and

2. For projects undergoing redevelopment, expansion or remodel when the redevelopment requires site plan approval, or for tenant improvements or other minor building improvements when exterior lighting is proposed to be installed or modified.

B. These regulations do not apply to subdivisions or individual dwelling units, with the exception of common areas. Examples of common areas include, but are not limited to, pathways, clubhouses, parking lots and play areas.

C. These regulations are not applicable to public rights-of-way.

D. These regulations do not apply to lighting necessary for emergency equipment and work conducted in the interests of law enforcement or for the safety, health, or welfare of the public. (Ord. 6390 § 1, 2011.)

18.55.030 General requirements.

A. *Shielding Required.* Except as otherwise exempt, all outdoor lighting fixtures shall be constructed with shielding on all sides. The outdoor light source (bulb or element) shall not be visible at or beyond the property line.

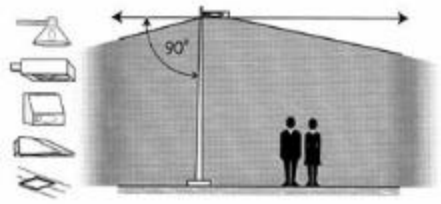


Figure 18.55.030. Examples of light fixtures with shielding on all sides

B. *Fixture Heights.* Lighting fixtures shall not exceed the following maximum heights:

Table 18.55.030.

Outdoor Lighting Location	Fixture Height (Maximum as measured to the top of the fixture from grade)
Within 50' of a residential zoning	16 ft

Outdoor Lighting Location	Fixture Height (Maximum as measured to the top of the fixture from grade)
district	
Surface Parking Area	30 ft
C-1, C-~~2~~3, M-1, M-2	24 ft
All other districts	

C. *Photometric Plan Requirements.* A photometric plan shall be prepared and submitted for review and approval when required under ACC 18.55.020, Applicability. The required elements of the plan shall be specified in application forms to be provided by the city. The photometric plan will be reviewed to ensure compliance with the provisions in this chapter.

D. *Level of Illumination.*

1. Parking lots, driveways, and trash enclosures/areas shall be illuminated with a minimum maintained one foot-candle of light and an average not to exceed four foot-candles of light.

2. Pedestrian walkways shall be illuminated with a minimum maintained one-half foot-candle of light and an average not to exceed two foot-candles of light.

3. In order to minimize light spillage on abutting residential property, illumination measured at the nearest residential structure or rear yard setback line shall not exceed one-tenth foot-candle.

E. *Accent Lighting.* Lighting used to accent architectural features, landscaping or art is permitted to be directed upward; provided, that the fixture shall be located, aimed, or shielded to minimize light spill. No permit is required for this type of lighting.

F. *Periods of Illumination.*

1. All outdoor lighting systems shall be equipped with automatic switches conforming to the requirements of Section C405.2.9.4 ~~1513.6.2~~ of the Washington State Energy Code.

2. The use of sensor technologies, timers or other means to activate lighting during times when it will be needed is encouraged to conserve energy, provide safety and promote compatibility between different land uses. Lower lighting levels at off-peak times are encouraged as a safety measure.

3. However, outdoor lights may remain on during the required off hours when:

   a. Illuminating flags representing country, state, or other civic entity;

   b. Functioning as security lighting (e.g., illuminating a pathway, building entry, etc.);

   c. Associated with special events, etc. (Ord. 6885 § 1 (Exh. A), 2022; Ord. 6390 § 1, 2011.)

18.55.040 Prohibited lights.

The following lights are prohibited unless a temporary use permit is obtained for specific events with specific times of operation:

A. Strobe lights, search lights, laser source lights, or any similar high-intensity light except for emergency use by police and fire personnel or at their direction.

B. Roof-mounted lights except for security purposes with motion detection and full shielding so that the glare of the light source is not visible from any public right-of-way or a neighboring residence.

C. Any light that imitates or causes visual interference with a traffic signal or other necessary safety or emergency light. (Ord. 6390 § 1, 2011.)

18.55.050 Exceptions.

The following light sources are exempt from the requirements of this chapter:

A. Navigation and airport lighting required for the safe operation of boats and airplanes.

B. Temporary lights used for holiday decorations.

C. Emergency lighting required by police, fire, and rescue authorities.

D. Lighting for state and federal highways authorized by the Washington State Department of Transportation.

E. Internal lighting of permitted signs.

F. Outdoor lighting for public monuments.

G. Temporary lighting in use during active construction projects.

H. Stadium and field lighting. (Ord. 6390 § 1, 2011.)

The Auburn City Code is current through Ordinance 6940, passed April 15, 2024.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

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Chapter 18.56
SIGNS

Sections:

18.56.010 Intent.
18.56.020 Definitions.
18.56.025 Real estate signs.
18.56.030 General provisions, all districts.
18.56.040 Regulation by district.
18.56.050 Administrative provisions.
18.56.060 Deviations, variances and appeals.
18.56.070 Liability.
18.56.080 Conflicts repealed.

18.56.010 Intent.

The overall purpose of this chapter is to enhance and maintain the aesthetic character, to promote the public health, safety and general welfare, and to increase the effectiveness of visual communication in the city. This chapter is also intended to avoid visual clutter that may adversely impact traffic and pedestrian safety, or be adverse to property values, business opportunities and the city's appearance and to prevent and abate public nuisances. The purpose of this chapter is implemented by controlling the construction, location, use and maintenance of all signs and sign structures. It is also the intent of this chapter to afford noncommercial speech the same or greater protection afforded commercial speech and to not regulate noncommercial speech to a stricter standard than commercial speech. (Ord. 6591 § 2, 2016; Ord. 6501 § 2, 2014; Ord. 5993 § 1, 2006; Ord. 4773 § 1, 1995; Ord. 4229 § 2, 1987.)

18.56.020 Definitions.

The following definitions are specific to this chapter and are to be used only for the implementation of this chapter:

A. “Animated sign” means any sign that flashes or simulates motion with an electronic or manufactured source of supply or contains wind-actuated motion (except for flags and banners). An animated sign may also be a sign that meets the definition of “changing message center” or “revolving sign.”

B. “Banner” means a temporary sign constructed of fabric, vinyl, or other durable material; which is not the primary identification for the organization, event or product advertised; and which is primarily promotional in nature.

C. “Billboard” means a large outdoor advertising sign containing a message, commercial or otherwise, unrelated to the use or activity on the property on which the sign is located and/or to any use or activity in the immediate area (such as is the case with an off-premises sign) and which is customarily leased for commercial purposes. The approximate sizes of the billboard faces range from 12 to 14 feet in height and 24 to 48 feet in width.

D. “Changing message center” means an electronically controlled message center that displays different copy changes on the same lamp bank.

E. “Directional sign” means a sign which is located to guide or direct pedestrian or vehicular traffic to parking entrances, exits, and service areas, and may not exceed six square feet in area or 10 feet in height. For projects that have parking lots in excess of 500 spaces, the sign area may be 10 square feet and the sign height 15 feet.

F. “Double-faced sign” means a sign with two faces.

G. “Electrical sign” means a sign or sign structure in which electrical wiring, connections, and/or fixtures are used as part of the sign proper.

H. “Facade” means the entire building front, or street wall face, including grade to the top of the parapet or eaves, and the entire width of the building elevation.

I. “Flashing sign” means an electrical sign or a portion thereof which changes light intensity in a sudden transitory burst, or which switches on and off in a constant pattern in which more than one-third of the nonconstant light source is off at any one time.

J. “Freestanding sign” means a sign that meets the definition of “ground sign” (also commonly referred to as a monument sign) or “pole sign.” Signs attached to fences or other structures that are not defined as buildings will be considered freestanding signs.

K. “Frontage” means the measurement, in linear feet, of the length of the property line for a single-tenant building or length of leased building frontage for multitenant buildings or multibuilding complexes.

L. “Grade” means the relative existing ground level in the immediate vicinity of the sign.

M. “Ground sign” means a sign attached to the ground and supported by the ground or a built-up landscaped area such that the sign appears solid with the ground. The height of a ground sign shall be measured from the surrounding grade. Also commonly referred to as a monument sign.

N. “Identification sign” means a sign containing the name of the business establishment, occupant of the building or tenant space and/or address of the premises.

O. “Incidental sign” means a sign that is generally informational and of a noncommercial nature intended primarily for the convenience of the public and having a maximum area of two square feet. Incidental signs include, but are not limited to: signs designating restrooms, hours of operation, entrances and exits to buildings and parking lots, help wanted, public telephones, etc. Also included are property control and warning signs such as “no trespassing,” “no dumping,” etc., and plaques, tablets or inscriptions which are an integral part of a building.

P. “Mansard roof” means a sloped roof or roof-like facade architecturally able to be treated as a building wall.

Q. “Marquee” means a permanent structure attached to, supported by, and projecting from a building and providing protection from the weather elements. For the purpose of this chapter, a freestanding, permanent roof-like structure providing protection from the elements, such as a service station gas pump canopy, will also be considered a marquee. The term “marquee” also includes canopy.

R. “Marquee sign” means any sign which forms part of or is integrated into a marquee and which does not extend horizontally beyond the limits of such marquee. For the purpose of this chapter, a marquee sign will be considered as a wall sign.

S. “Median sign” means a sign that is placed within the median of a public street.

T. “Multiple-building complex” means a group of commercial or industrial structures, developed as a group either simultaneously or in phases, with more than one building per parcel.

U. “Multiple-tenant building” means a single structure housing more than one retail business, office or commercial venture but not including residential apartment buildings, which share the same lot, access and/or parking facilities.

V. “On-premises sign” means a sign which carries advertisements incidental to a lawful use of the premises on which it is located, including signs indicating the business transacted, services rendered, goods sold or produced on the premises, name of the person, firm or corporation occupying the premises.

W. “Off-premises sign” means any sign which advertises an establishment, merchandise, service, goods, or entertainment which is sold, produced, and manufactured or furnished at a place other than on the property on which said sign is located.

X. “Parapet” means a false front or wall extension above the roofline.

Y. “Perimeter” means a square or rectangle required to enclose the sign area.

Z. “Portable sign” means any sign made of any material, including paper, cardboard, wood or metal, which is capable of being moved easily and is not permanently affixed to the ground, structure or building. This also includes sidewalk or sandwich board signs, except those worn by a person.

AA. “Premises” means the real estate as a unit, which is involved by the sign or signs mentioned in this chapter.

BB. “Projecting sign” means a sign which is attached to a structure or building wall in such a manner that the leading edge extends more than 16 inches beyond the surface of said structure or wall but does not extend more than five feet beyond the property line, extends no more than six inches above any roofline, and meets all standards for ground clearance. Signs that meet the definition of “marquee sign” or “suspended sign” will not be considered a “projecting sign.”

CC. “Real estate sign” means a portable sign erected by the owner, or the owner’s agent, advertising the real estate upon which the sign is located for rent, lease or sale.

DD. "Revolving sign" means any sign that rotates or turns in motion by electrical or mechanical means in a circular pattern.

EE. "Roof sign" means a sign erected upon or above a roof or parapet of a building or structure. Mansard roof signs shall be considered as wall signs. Roof signs may not extend more than five feet in height above the roof.

FF. "Sign" means any visual communication device, structure, or fixture which is visible from any right-of-way intended to aid a land use in promoting the sale or identification of a product, good or service using graphics, symbols, or written copy. For the purpose of this chapter, a sign shall not be considered to be building or structural design. It shall be restricted solely to graphics, symbols, or written copy that is meant to be used in the aforementioned way. This definition shall include inflatable signs, balloons or other similar devices.

GG. "Sign area" means:

1. The total area of a sign visible from any one viewpoint or direction, excluding the sign support structure, architectural embellishments, or framework that contains no written copy, and includes only one side of a double-faced sign.

2. Individual letter signs using a wall as the background without added decoration or change in wall color shall be calculated by measuring the perimeter enclosing each letter. The combined total area of each individual letter shall be considered the total area of the sign.

3. Module signs consisting of more than one sign cabinet shall be computed by adding together the total area of each module.

4. Perimeter of sign area shall be established by the smallest rectangle enclosing the extreme limits of the letter module or advertising message being measured.

HH. "Sign height" means the vertical distance measured from the adjacent grade to the highest point of the sign.

II. "Sign structure" means any structure that supports or is capable of supporting any sign as defined in this chapter. A sign structure may be a single pole or may or may not be an integral part of the building or structure.

JJ. "Single-tenant building" means a commercial building or structure that contains one enterprise or occupant. Buildings within a multibuilding complex may not be considered a single-tenant building.

KK. "Special event signage" means temporary signs including posters, flags, pennants, and inflatable materials; which are not the primary identification for the organization, event or product advertised; and which are primarily intended for very short-term promotional periods.

LL. "Suspended sign" means a sign that is attached to and suspended from a marquee or canopy, and subject to right-of-way and clearance regulations.

MM. "Temporary sign" means any sign or advertising display constructed of wood, vinyl, cloth, canvas, light fabric, paper, cardboard, or other light materials, with or without frames, intended to be displayed for a limited time only. This definition shall include inflatable signs.

NN. "Traffic hazard" means any sign which does not meet city standards for clear zone or sight distance or which does not meet the requirements of the Americans with Disabilities Act.

OO. "Wall sign" means a sign attached or erected parallel to and extending not more than 16 inches from the facade or face of any building to which it is attached and supported through its entire length, with the exposed face of the sign parallel to the plane of said wall or facade. "Window signs" which do not meet the definition of a "temporary sign" shall be considered as wall signs.

PP. "Window sign" means a sign located inside or affixed to windows of a building, whether temporary or permanent, lighted or unlighted, which may be viewed from the exterior of the building. (Ord. 6591 § 4, 2016; Ord. 6501 § 4, 2014; Ord. 5993 § 1, 2006; Ord. 4705 § 2, 1994; Ord. 4229 § 2, 1987.)

18.56.025 Real estate signs.

No sign permit is required, except as provided in subsection F of this section. All exterior real estate signs must be of wood or plastic or other durable material.

The permitted signs are as follows:

A. *Residential "For Sale" and "Sold" Signs.* Such signs shall be limited to one sign per street frontage not to exceed five square feet in sign area per side, placed entirely on the property for sale, and not to exceed a height of seven feet.

B. *Residential Directional "Open House" Signs.* Such signs shall be limited to one sign per street frontage on the premises for sale and three off-premises signs. However, if a broker/agent has more than one house open for inspection in a single development or subdivision, they are limited to four off-premises "open house" signs in the entire development or subdivision. Such signs are permitted only during daylight hours and when the broker/agent or seller or an agent is in attendance at the property for sale. No such sign shall exceed five square feet in sign area per side. The sign may be placed along the periphery of a public right-of-way, provided it does not interfere with traffic safety, but it may not be attached to a utility pole or traffic safety device.

C. *Undeveloped Commercial and Industrial Property "For Sale or Rent" Signs.* One sign per street frontage advertising undeveloped commercial and industrial property for sale or for rent is permitted while the property is actually for sale or rent. The sign shall not exceed 32 square feet in sign area per side and eight feet in height.

D. *Developed Commercial and Industrial Property "For Sale or Rent" Signs.* One sign per street frontage advertising a commercial or industrial building for rent or sale is permitted while the building is actually for rent or sale. If one face of the building is less than 10 feet from the building line, the sign shall be placed on the building or in a window. The sign shall not exceed eight feet in height; if freestanding, it shall be located more than 15 feet from any abutting property line and a public right-of-way line. Said sign shall not exceed 32 square feet in sign area per side.

E. *Undeveloped Residential Property "For Sale" Signs.* One sign per street frontage advertising undeveloped residential property for sale is permitted not exceeding 32 square feet in area per side, nor exceeding a height of eight feet. If the sign is greater than five square feet in area, it must be placed more than 30 feet from the abutting property line.

F. *Additional Signs.* The planning, building and community director may grant a special permit to allow temporary off-premises signs in addition to those permitted above, not to exceed five square feet in size per side, or 42 inches in height. Notice of adjacent property owners shall not be required. Such additional signs may be used to advertise open houses, to provide directions to new developments, or similar purposes. Such signs may be placed along the periphery of the

public right-of-way, provided they do not interfere with traffic safety, but they may not be attached to utility poles or traffic safety devices. The planning, building and community director shall determine the number and locations of such signs, and the period during which they may be displayed. The planning, building and community director shall take into account the number of existing signs in any proposed location, and shall limit or prohibit new ones so as to prevent a traffic safety hazard or a detrimental effect on neighboring property. (Ord. 5993 § 1, 2006.)

18.56.030 General provisions, all districts.

A. *Community Signs.* The planning, building and community director may approve and permit to be erected entrance signs, at or near the city limits, on city public right-of-way or on privately owned parcels with the owner's permission, on which may be listed institutional names, service clubs or organizations or points of interest or similar public information. Right-of-way use permits may be required for signs located in the public right-of-way.

B. *Temporary Signs.*

1. Special event signage may be allowed subject to the following:

    a. Use of such signage is limited to 10 days per display, not to exceed 10 days in any 90-day period;

    b. The area of any single sign shall not exceed 30 square feet;

2. Banners may be allowed subject to the following:

    a. No more than two such signs may be used per site at any given time;

    b. Use of such signs is limited to 90 consecutive days, and may not exceed 90 days in any 120-day period;

    c. The area of any single banner used by a single business on a site shall not exceed 32 square feet;

3. Signs which are placed upon or within a window and which are intended to be viewed from the right-of-way shall not exceed 50 percent of the window area;

4. Permits are not required, except that signs exceeding the allowable size and time duration must receive a permit issued by the planning, building and community director if special circumstances exist that warrant the additional signage.

C. *Civic Events.* Street banners may be permitted subject to approval and installation in accordance with rules and procedures established by the city of Auburn public works department.

D. *Sign Lighting Provisions.*

1. All lighting shall be arranged to reflect away from any residential zone. No person shall construct, establish, create or maintain any stationary exterior lighting or illumination system or any interior system which is intended to be viewed from a street, highway or other public thoroughfare used for vehicular traffic which system contains or utilizes:

a. Any exposed incandescent lamp with wattage in excess of 25 watts;

b. Any exposed incandescent lamp with a metallic reflector;

c. Any exposed incandescent lamp with an external reflector;

d. Any revolving beacon light;

e. Any continuous or sequential flashing operation, except as allowed for changing message center signs in subsection F of this section;

2. The provisions of subsection (D)(1) of this section shall not apply to:

a. Lighting systems owned or controlled by any public agency for the purpose of directing or controlling navigation, traffic, or highway or street illumination;

b. Aircraft warning lights.

E. *Construction Provisions, Sight Distance, Exposed Angle Iron and Wire.*

1. Each sign shall be adequately constructed in accordance with the requirements of the International Building Code, as amended;

2. Signs containing electrical circuitry shall meet the requirements of the National Electrical Code and all state laws, and shall include an approved testing lab sticker;

3. Signs must meet vehicular sight distance requirements established by the city engineer pursuant to the city of Auburn engineering design standards;

4. When a projecting sign is used, no angle irons, guy wires or braces shall be visible, except those that are an integral part of the overall design, such as decorative metals or woods, or unless they are required for safety.

F. *Changing Message Center Signs.* Where permitted under this chapter, changing message center signs shall comply with the following requirements; provided, that changing message center signs that only display time and temperature or similar public service information shall be exempt from these requirements.

1. *Where Allowed.* Changing message center signs shall only be allowed in the I, P-1, C-1, C-2, DUC, C-3, M-1 and M-2 zones.

a. In the I and C-1 zones, changing message center signs shall only be allowed on frontages along a collector, minor or principal arterial street.

b. In the I zone, no changing message center sign shall operate between the hours of 10:00 p.m. and 6:00 a.m.

c. In the DUC zone, changing message center signs shall only be allowed when located adjacent and oriented to Auburn Way North/Auburn Way South street frontages. (For other sign standards for the DUC zone, see ACC 18.29.060(I).)

2. *Number.* No more than one changing message center sign per street frontage shall be permitted on each property.

3. *Sign Face Area.* Except in the I and P-1 zones, the changing message center shall not constitute more than 75 percent of a sign's total sign face area.

4. *Display.*

a. The display of the sign shall not change more rapidly than once every one and one-half seconds.

b. No scrolling message shall require more than five seconds to be displayed in its entirety.

5. *Light Levels.*

a. Changing message center signs shall have installed ambient light monitors and shall at all times allow such monitors to automatically adjust the brightness level of the sign based on ambient light conditions.

b. At no time shall a changing message center sign be operated at a brightness level greater than the manufacturer's recommended levels.

c. All lighting shall be arranged to reflect away from any residential zone. The director shall have the authority to require a sign permit application to include information to ensure the intent of this requirement is met.

d. The brightness level shall not exceed 8,000 nits when measured from the sign's face at its maximum brightness during daylight hours and 500 nits when measured from the sign's face at its maximum brightness between dusk and dawn.

6. *On-Premises Advertising Only.* Changing message center signs shall only advertise on-premises products and services, or display public service messages or messages on behalf of not-for-profit organizations.

7. *Additional Requirements.* A copy of the manufacturer's operating manual shall be provided to the city upon request.

8. *Amortization.* All changing message center signs that do not comply with the requirements of subsections (F)(4) and (5) of this section shall be brought into compliance with those requirements by April 1, 2009.

G. *Change of Copy.* The holder of a permit, for the duration thereof, shall have the right to change the advertising copy on the structure or sign for which the permit was issued without being required to pay any additional fees.

H. *Exemptions.* Unless otherwise specified or unless expressly prohibited, it is not the intent of this chapter to regulate the following signs:

1. The flag of a government or noncommercial institutions such as schools, with the poles treated as structures;

2. Official public notices, official court notices;

3. Incidental signs (see ACC 18.56.020(O), definitions);

4. Signs not visible from public right-of-way;

5. Lettering or symbols painted directly onto or flush-mounted magnetically onto an operable vehicle;

6. Painting, repainting, cleaning, repairing, and other normal maintenance unless structural or electrical changes are made;

7. Religious symbols not attached to a permitted sign;

8. Memorial signs or tablets, names of buildings, dates of erection and the like, which are incorporated into the building material and facade;

9. Signs required by law, traffic or pedestrian control signs, signs indicating scenic or historic points of interest, which are erected by or on the order of a public officer in the performance of their public duty;

10. Sculptures, fountains, mosaics, and design features which do not incorporate advertising or identification;

11. Temporary signs limited exclusively to noncommercial speech.

I. *Prohibited Signs.* From and after the effective date of the ordinance codified in this chapter it shall be unlawful for any person to erect or place within the city, except as otherwise authorized:

1. A swinging projecting sign;

2. Portable signs, except as permitted by ACC 18.56.025 (Real estate signs), ACC 18.56.040(E) ~~(C-2 Zoning District),~~ and ACC 18.29.060(I) (Signs);

3. Banners, pennants, ribbons, streamers, spinners, rotating or blinking lights, strings of lights, or similar devices, except as permitted by subsection B of this section (Temporary Signs);

4. Flashing signs, except as permitted in subsection D of this section (Sign Lighting Provisions);

5. Changing message center signs, except as allowed in the I, P-1, C-1, C-2, ~~C-3~~, M-1 and M-2 zones;

6. Signs attached to, or placed on, a vehicle or trailer parked on private or public property that is not associated with the business advertised on said sign(s). This provision is not to be construed as prohibiting the identification of a firm or its principal products on a vehicle used in the normal course of business. This does not include automobile for sale signs or signs attached to franchised buses or taxis;

7. Private signs placed in or on a public right-of-way, except for as expressly permitted by this chapter;

8. Any sign which constitutes a traffic hazard or detriment to traffic safety by reason of its size, location, movement, coloring, or method of illumination, or by obstructing the vision of drivers, or detracting from the visibility of any official traffic control device by diverting or tending to divert the attention of drivers of moving vehicles from traffic movement on streets, roads, intersections, or access facilities. No sign shall be erected so that it obstructs the vision of pedestrians by glare or method of illumination or constitutes a hazard to traffic. No sign may use words, phrases, symbols or characters in such a manner as to interfere with, mislead, or confuse traffic;

9. Any sign or advertising structure or supporting structure that is torn, damaged, defaced or destroyed;

10. Signs attached to poles installed by governmental agencies, utility poles, trees, rocks or other natural features;

11. Signs attached to benches, garbage cans, or other street furniture located within the public right-of-way;

12. Rotating signs;

13. Billboards;

14. Any sign which does not structurally or materially conform to the requirements of the city's adopted International Building Code.

J. *Nonconforming Signs.* Permanent signs established legally prior to the adoption of the ordinance codified in this chapter that do not conform to the regulations of this chapter with regard to number, size, height or location shall be allowed to remain as legal nonconforming signs except as follows:

1. Whenever a new building replaces the principal building.

2. When there is an expansion of an existing building, the requirements of this section shall apply only if there is an increase in floor area of 25 percent or more (including the cumulative increase of previous expansions after the effective date of the ordinance amending this section).

3. Whenever a nonconforming use is replaced by a conforming use, the requirements of this section shall apply in full to the new use if and only if there is a change in required signage due to the zoning district.

4. Any sign, including the sign structure, now or hereafter existing which no longer advertises a bona fide business conducted or a product sold. Such sign(s) shall be taken down and removed by the owner, agent or person having the beneficial use of the land, building or structure upon which such sign may be found within 90 days after written notification from the building official.

K. *Master Sign Plans Authorized.* The planning, building and community director has the authority to require a master sign plan to ensure a consistent and coordinated signage scheme for development proposals. In approving master sign plans under the provisions of this subsection, the director has the authority to approve signage schemes that allow for signs greater in area and height than allowed in the particular zone in which the development is located when a coordinated signage scheme is used. Master signage plans shall be recorded.

L. *Maintenance and Safety.* All permanent, temporary and portable signs and components thereof must be maintained in good repair and in a safe, neat, clean and attractive condition. Failure to maintain a sign(s) in accordance with this subsection shall be subject to the code compliance provisions of the Auburn City Code. (Ord. 6828 § 1 (Exh. A), 2021; Ord. 6591 § 6, 2016; Ord. 6501 § 6, 2014; Ord. 5993 § 1, 2006; Ord. 5342 § 2, 2000; Ord. 4705 § 2, 1994; Ord. 4229 § 2, 1987.)

18.56.040 Regulation by district.

A. RC, R-1, R-2, R-3, R-4, and ~~R-R, R-S, LHRS, R-1, LHR-1, R-2, LHR-2, R-3, LHR-3, R-4, LHR-4,~~ R-MHP~~,~~ Zones ~~LHRMHP Zoning Districts~~ (Nonresidential Uses, Except As Noted).

1. *Residential Entry Monument.* A cumulative area of 50 square feet or 10 feet in height (highest point of sign structure) not to exceed two per entrance; provided, that no sign exceeds 32 square feet in area.

2. Maximum sign area of all signs is 40 square feet per frontage.

3. *Freestanding Signs.*

   a. Total number permitted: One per frontage not to exceed two total freestanding signs per property.

   b. Maximum height: 10 feet.

   c. Maximum area: 32 square feet per face, calculated at a rate of one square foot of sign area for every three lineal feet of frontage. The minimum entitlement for freestanding signs shall be one 16-square-foot sign for those sites with frontages less than 48 feet.

4. *Wall Signs (for Building or Tenant Space).*

   a. Total number permitted: One per frontage not to exceed two total wall signs per building.

   b. Maximum area: 32 square feet, calculated at a rate of one square foot of sign area for every three lineal feet of frontage. The minimum entitlement for wall signs shall be one 16-square-foot sign for those sites with frontages less than 48 feet.

5. Signs may be indirectly illuminated only.

B. *R-FO, R-NMO-H, and C-N, C-1 , LHC-1 and B-P Zoning DistrictsZones (Nonresidential Uses).*

1. Maximum sign area of all signs is 150 square feet per frontage.

2. *Freestanding Signs.*

   a. Total number permitted: One per frontage not to exceed two total.

   b. Maximum height: 22 feet, 10 feet in the R-FO zone.

   c. Maximum area: 100 square feet per face, 75 square feet per face in the RO zone, calculated at a rate of one square foot of sign area for every two lineal feet of frontage.

Minimum entitlement for freestanding signs shall be one sign at 32 square feet for those sites with less than 64 feet of frontage.

d. If permitted, the second freestanding sign shall not exceed 50 percent of the area allowed for a single freestanding sign and 150 feet measured in a straight-line distance must separate multiple pole signs.

3. *Wall Signs (for Building or Tenant Space).*

a. Total number permitted: One per frontage.

b. Maximum area: 100 square feet, calculated at a rate of one square foot of sign area for every one and one-half lineal feet of frontage. For multitenant buildings where freestanding signage contains the name of not more than one tenant business (e.g., a prime tenant name or a shopping center name), an additional 25 percent of wall signage per tenant space shall be allowed. This increase in signage shall not apply to minimum entitlement for wall signs, which shall be one sign at 16 square feet.

c. Signs may be directly or indirectly illuminated.

4. *Suspended Signs.*

a. Total number permitted: One per entrance.

b. Maximum area: Six square feet per face.

c. Minimum clearance is eight feet from sign to grade.

5. *Projecting Signs.*

a. Not permitted in ~~C-N,~~ R-FO ~~or~~ R-NMO-~~H~~.

b. Total number permitted: One in lieu of a permitted freestanding sign.

c. Maximum height: Height requirement of the zoning district.

d. Maximum area: 50 percent of the area allowed for single freestanding sign.

C. *P-1 and, ~~LHP-1,~~ I ~~and LHI~~ Zones.*

1. *Freestanding Signs.*

a. Total number permitted: One per frontage not to exceed two total.

b. Maximum height: 18 feet.

c. Maximum area: 80 square feet per face, calculated at a rate of one square foot of sign area for every two lineal feet of frontage. The minimum entitlement for freestanding signs is one sign at 32 square feet.

d. If permitted, the second freestanding sign shall not exceed 50 percent of the area allowed for a single freestanding sign and 150 feet measured in a straight-line distance must separate multiple pole signs.

e. For projects, parcels or complexes that have a single street frontage and more than 300 feet of street frontage, a changing message center sign may be permitted for a total of two signs per frontage subject to the following:

i. Only one changing message center is provided.

ii. Multiple signs are separated by at least 150 feet.

iii. The combined area of the two signs does not exceed 120 square feet in size and neither sign is greater than 80 square feet in size.

2. *Wall Signs (for Building or Tenant Space).*

a. Total number permitted: Two per street frontage.

b. Maximum area: 50 square feet for total of all wall signs per frontage.

c. Signs may be directly or indirectly illuminated.

D. *L-F, M-1 and M-2 ~~Zoning Districts~~Zones.*

1. Maximum sign area of all signs is 150 square feet per frontage.

2. *Freestanding Signs.*

a. Total number permitted: Two per frontage not to exceed four total.

b. Maximum height: 30 feet.

c. Maximum area: 125 square feet per face, calculated at a rate of one square foot of sign area for every two lineal feet of frontage. Minimum entitlement for freestanding signs is 32 square feet for those sites without 64 feet of frontage.

d. The total area of freestanding signs on any given frontage shall not exceed the area allowed for a single freestanding sign.

e. The maximum height of signs located on a second or third frontage shall be 20 feet.

f. Multiple freestanding signs must be separated by 150 feet measured in a straight-line distance.

3. *Wall Signs (for Building or Tenant Space).*

a. Total number permitted: One per frontage.

b. Maximum area: 100 square feet, calculated at a rate of one square foot of sign area for every one and one-half lineal feet of frontage.

4. *Projecting Signs.*

a. Total number permitted: One in lieu of a permitted freestanding sign.

b. Maximum height: Height requirement of the zoning district.

c. Maximum area: 50 percent of the area allowed for single freestanding sign.

~~E~~E. ~~*C-2 Zoning District.*~~

~~1. Maximum sign area of all signs is 200 square feet.~~

~~2. Hanging signs that are designed to display the availability of a specific product in a business, limited to three square feet and no more than two such signs per business, shall be considered permanent signs, but shall not be calculated as part of the maximum allowed signage.~~

~~3. *Freestanding Signs.*~~

~~a. Freestanding signs are not allowed on properties abutting or oriented toward Main Street.~~

b. Total number permitted: One per frontage not to exceed two total.

c. Maximum height: 20 feet.

d. Maximum area: 75 square feet per face, calculated at a rate of one square foot of sign area for each lineal foot of frontage. Minimum entitlement for freestanding signs shall be one sign at 32 square feet.

4. *Wall Signs.*

a. Total number permitted: One per frontage.

b. Maximum area: 150 square feet, calculated at a rate of one square foot of sign area for every one lineal foot of frontage. For multitenant buildings where freestanding signage contains the name of not more than one tenant business (e.g., a prime tenant name or a shopping center name), an additional 25 percent of wall signage per tenant space shall be allowed. This increase in signage shall not apply to minimum entitlement for wall signs, which shall be one sign at 16 square feet.

5. *Suspended Sign.* One double-face suspended sign, not exceeding three square feet per face, may be allowed for each business entrance. There shall be a minimum of eight feet of clearance between the grade and the sign.

6. *Portable Signs.* One portable sign may be allowed for each business entrance, not to exceed one portable sign per building frontage, subject to the following:

a. May be placed within public right-of-way subject to the guidelines provided by the planning, building and community director in consultation with the city engineer such that sign does not interfere with pedestrian or vehicular traffic and conforms to the requirements of the Americans with Disabilities Act.

b. May not exceed 36 inches in height and 30 inches in width and be limited to two faces.

c. May be displayed during business hours only.

d. Must be constructed of either wood or another sturdy material to ensure stability in the wind.

e. May not move, spin, flash, or otherwise be animated.

~~f. Shall meet applicable supplemental design requirements of the Auburn downtown association.~~

~~7. Supplemental Sign Standards, C2 Zone.~~

~~a. *Sign Design and Construction.*~~

~~i. All signs, other than temporary signs, shall be made of professional, durable materials such as wood, metal, and/or glass.~~

~~ii. Signs that are indirectly illuminated shall have their light sources shielded from view.~~

~~iii. Internally illuminated signs are not permitted abutting or oriented toward Main Street.~~

~~b. *Sign Placement.*~~

~~i. Signs shall be oriented toward pedestrian visibility and shall be positioned at such a height as to be readable by pedestrians.~~

~~ii. Externally mounted wall signs shall not be mounted so as to block building windows.~~

~~F~~. *C-~~3~~2 ~~Zoning District.~~Zone.*

1. *Freestanding Signs.*

a. Total number permitted: Two per frontage not to exceed four total.

b. Maximum height: 30 feet.

c. Maximum area: 200 square feet, calculated at a rate of one square foot of sign area for every two lineal feet of frontage; provided, that the maximum size of any sign does not exceed 125 square feet per face. The minimum entitlement for freestanding signs is 32 square feet for those sites without 64 feet of frontage.

d. The total area of freestanding signs on any given frontage shall not exceed the area allowed for a single freestanding sign.

e. The maximum height of signs located on a second or third frontage shall be 20 feet.

2. *Wall Signs (for Building or Tenant Space).* Maximum area: 125 square feet, calculated at a rate of one square foot of sign area for every one and one-half lineal feet of frontage.

3. *Projecting Signs.*

   a. Total number permitted: One in lieu of a permitted freestanding sign.

   b. Maximum height: Height requirement of the zoning district.

   c. Maximum area: 50 percent of the area allowed for single freestanding sign.

4. *Suspended Signs.*

   a. Total number permitted: One.

   b. Maximum placement height: 25 feet.

   c. Maximum area: Six square feet per face.

   d. Minimum clearance is eight feet from sign to grade.

5. *Off-Premises Signs.*

   a. Total number permitted: One per business and one per parcel.

   b. Location: Off-premises sign must be located in zone that permits off-premises signs.

   c. Maximum height: 20 feet.

   d. Maximum area: 50 percent of the area allowed for single freestanding sign, calculated using the feet of frontage of the site where the sign is located.

   e. Must be within 750 feet of the business being advertised.

   f. Must be separated from any existing pole sign a minimum distance of 150 feet measured in a straight-line distance.

   g. Sign can be no more than two faces.

   h. Signs may be directly or indirectly illuminated. (Ord. 5993 § 1, 2006; Ord. 4229 § 2, 1987.)

18.56.050 Administrative provisions.

A. *Permits Required.* Except as provided in subsection B of this section, no signs shall hereafter be erected, re-erected, constructed, altered, or maintained, except as provided by this chapter and, when required, a building permit for the same has been issued by the building official. A separate permit shall be required for a sign or signs for each business entity and/or a separate permit shall be required for each group of signs on a single supporting structure.

1. *Application for Permits.* Application for sign permits shall be made to the building official on a form as provided by the building division. Such application shall require:

a. Name of business and address where work is to be performed.

b. Name and address of property owner.

c. Name and title of the person completing the application.

d. Name, address and telephone number of the person or firm doing the work and preferably the owner of said establishment.

e. Washington contractor's registration number, industrial use permit number, sales tax number.

f. A site plan showing location of the sign in relation to buildings, property lines and street right-of-way including the size and location of all existing signs on the property.

g. A scale drawing of the proposed sign or sign revision showing size, height, copy, structural and footing details, and material specifications.

h. A description of work to be performed and type of sign.

i. Electrical load with name of electrical contractor responsible for installation of service feed wires if other than sign contractor.

j. Structural engineer's stamp required on those signs and sign structures subject to wind and seismic forces.

2. *Revocation of Permit.* The building official may, in writing, suspend or revoke a permit issued under provisions of this chapter whenever the permit is issued in error or on the

basis of incorrect information supplied, or in violation of any ordinance or regulation or any of the provisions of this chapter.

3. *Permit Fee Schedule.* The fees prescribed in the city's fee schedule must be paid to the city for each sign installation for which a permit is required by this chapter and must be paid before any such permit is issued by the building official. Fees for building permits for each sign erected, installed, affixed, structurally altered, relocated, or created by painting shall be set in accordance with the city's fee schedule.

4. Sign permits shall be processed in accordance with the relevant timelines and procedures identified in ACC Title 14, Project Review.

B. *Interpretation.* In all applications for permits where a matter of interpretation arises, the most restrictive definition shall prevail. (Ord. 5993 § 1, 2006; Ord. 4705 § 2, 1994; Ord. 4229 § 2, 1987.)

18.56.060 Deviations, variances and appeals.

A. The planning, building and community director may grant up to a 50 percent deviation to the provisions of this sign code related to sign height and sign area. In a petition for a deviation, the planning, building and community director shall have the power and duty to review, decide, grant, grant with conditions or deny the requested deviation. The planning, building and community director may grant a deviation from the provisions of this chapter only when the deviation is within 50 percent of the entitlement and all of the following findings of fact are met:

1. The literal interpretation and strict application of the provisions and requirements would cause undue and unnecessary hardship because of unique or unusual conditions pertaining to the specific building, parcel or property in question; and

2. The granting of the requested deviation would not be materially detrimental to the public welfare or injurious to the property or property owners in the vicinity; and

3. The granting of the deviation would not be contrary to the general objective and intent of this chapter, this title, or the comprehensive plan.

B. An applicant requesting an administrative deviation under the provisions of this chapter shall submit the following, along with the required filing fee:

1. A letter in memorandum format outlining how the request is consistent with the criteria of this subsection.

2. A site plan that accurately drawn to an engineered scale of one inch equals 40 feet, one inch equals 20 feet or one inch equals 10 feet that includes the following information:

a. Boundaries and dimensions of the site;

b. Location of buildings, parking areas and adjacent streets;

c. Graphic representations of all existing signs including their size, height and placement on the site;

d. Graphic representation of the proposed sign(s) subject to the request;

e. Building elevation showing the placement of the sign on that elevation, if applicable.

C. The action of the planning, building and community director rejecting, approving or modifying any decision or application is a final administrative decision subject to appeal to the city's hearing examiner. Appeals of administrative decisions with regard to this chapter shall be processed consistent with ACC 18.70.050.

D. The planning, building and community director shall render a written decision on the requested deviation request within seven business days of submittal of all required elements and filing fee.

E. Requests that exceed the 50 percent deviation or those not related to allowable sign height or sign area shall be processed as a variance in accordance with ACC 18.70.010.

F. The planning, building and community director may allow for the repair or replacement of nonconforming signs that have a significant historical or cultural element or are integral components of a building roof or facade that has a significant historical or cultural element to which the sign is a contributing component. (Ord. 5993 § 1, 2006; Ord. 4229 § 2, 1987.)

18.56.070 Liability.

This chapter shall not be constituted to relieve from or lessen the responsibility of any person owning, building, altering, constructing, removing or moving any sign in the city for damages to anyone injured or damaged either in person or property by any defect therein; nor shall the city, or any agent thereof, be held as assuming such liability by reason of permit or inspection authorized herein or a certificate of inspection issued by the city or any of its agents. (Ord. 5993 § 1, 2006; Ord. 4229 § 2, 1987. Formerly 18.56.110.)

18.56.080 Conflicts repealed.

All sections or parts of sections of the municipal code, all ordinances and all resolutions or parts of resolutions, in conflict herewith, be and the same are repealed to the extent of such conflict. (Ord. 5993 § 1, 2006; Ord. 4229 § 2, 1987. Formerly 18.56.120.)

The Auburn City Code is current through Ordinance 6940, passed April 15, 2024.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

City Website: www.auburnwa.gov

Hosted by Code Publishing Company, A General Code Company.

Chapter 18.57
STANDARDS FOR SPECIFIC LAND USES

Sections:

18.57.010 Intent.
18.57.015 Applicability.
18.57.020 Industrial, manufacturing and processing, wholesaling.
18.57.025 Recreation, education and public assembly.
18.57.030 Mixed-use development.
18.57.035 Retail.
18.57.040 Services.
18.57.045 Transportation, communication and infrastructure.
18.57.050 Vehicle sales and services.

18.57.010 Intent.

This chapter provides site planning, development, and/or operating standards for certain land uses that are allowed by individual or multiple zoning districts, and for activities that require special standards to mitigate their potential adverse impacts. (Ord. 6435 § 1, 2012.)

18.57.015 Applicability.

The land uses and activities covered by this chapter shall comply with the provisions of the sections applicable to the specific use, in addition to all other applicable provisions of this zoning code. The standards for specific land uses in this chapter supplement and are required in addition to those in ACC 18.23.040 and 18.35.040, Development standards. (Ord. 6435 § 1, 2012.)

18.57.020 Industrial, manufacturing and processing, wholesaling.

A. *Outdoor Storage, Incidental to Principal Permitted Use on Property.*

1. *C-2~~3~~ Zone.* Outdoor storage is subject to the following requirements:

   a. Outdoor storage shall be limited to an area no greater than 10 percent of the lot.

   b. Outdoor storage shall be located between the rear lot line and the extension of the front facade of the principal structure; provided also, that for corner lots no outdoor storage is allowed between a building and a side street lot line. For through lots, the location for outdoor storage shall be determined by the planning director.

   c. Outdoor storage shall not be located in a required yard/setback area.

   d. Outdoor storage shall not be permitted on undeveloped lots.

   e. Outdoor storage shall be limited to 15 feet in height. The planning director may authorize an increase in height, up to 50 percent, through an administrative variance, subject to the procedures of ACC 18.70.015(A)(2).

   f. Outdoor storage areas shall be landscaped in accordance with ACC 18.50.040(C)(5).

   g. Outdoor storage areas shall consist of a hard surface material of either gravel or paving.

   h. Outdoor storage shall consist of supplies, materials, and/or equipment that are in working and usable condition.

   i. Outdoor storage of unworkable and/or unusable equipment, supplies or materials is not permitted.

2. *M-1 Zone.* Outdoor storage is subject to the following requirements:

   a. Outdoor storage shall be limited to an area no greater than 50 percent of the lot.

   b. Meet requirements of subsections (A)(1)(b) through (i) of this section.

3. *M-2 Zone.* Outdoor storage is subject to the following requirements:

   a. Outdoor storage shall be landscaped in accordance with ACC 18.50.040(C)(5).

   b. Outdoor storage shall not be permitted on undeveloped lots.

   c. Outdoor storage shall be limited to 30 feet in height.

B. *Storage – Personal Storage Facility (Mini-Storage).*

1. *All Zones Where Permitted.*

a. The design of facades, landscaping and lighting of premises shall be compatible with the intent of the applicable district.

b. Storage unit doors shall be screened or located so as to not be visible from residential property.

c. There shall be no outside storage of goods or materials of any type at the personal storage facility except that of wheeled vehicles (recreational vehicles, campers, trailers, trailer-mounted boats, motorized vehicles, etc. – but not inoperable motor vehicles). Such vehicles may be stored in areas that have been specifically designated and set aside for such use, in accordance with the following:

i. Vehicles shall be screened from view of public, residential and other commercial property with sight-obscuring fencing or berms at least eight feet in height. When berms are used they shall be landscaped with shrubbery and/or trees.

ii. Storage of recreational vehicles and trailer-mounted boats shall not occur in required parking spaces, drives and/or lanes between storage buildings, parking lanes, or within required building setbacks.

iii. No vehicle or boat maintenance, washing, or repair shall be permitted.

d. Storage units shall not be used for manufacturing, fabrication, processing of goods, conducting servicing or repair; nor used to conduct garage sales or retail sales; nor conduct any other commercial or industrial activity.

C. *Warehousing and Distribution.*

1. *All Zones Where Permitted.*

a. Motor freight transportation is permitted but only as an incidental use to the principal use of the property.

b. Loading and unloading docks shall not be visible from the street. If this requirement cannot be met, an additional 10-foot width of landscaping along the

abutting street, meeting the provisions of ACC 18.50.040(C) (Landscape Design and Planting Requirements), is required.

c. All odors, noise, vibrations, heat, glare, or other emissions shall be controlled within the confines of a building unless specifically permitted elsewhere by this title.

d. No on-site hazardous substance processing and handling, or hazardous waste treatment and storage facilities, shall be permitted, unless clearly incidental and secondary to a permitted use. On-site hazardous waste treatment and storage facilities shall be subject to the state siting criteria (Chapter 70.105 RCW). (Ord. 6885 § 1 (Exh. A), 2022; Ord. 6435 § 1, 2012.)

18.57.025 Recreation, education and public assembly.

A. *Commercial Recreation Facility, Outdoor.*

1. *All Zones Where Permitted.*

a. Facility shall not be located within 300 feet of an existing residential zone. The planning director may allow a reduction in this setback, not to exceed a minimum setback of 50 feet, after review of an acoustic study completed by a licensed professional showing that the facility would not exceed maximum noise levels permissible in identified environments as determined by Chapter 173-60 WAC, as amended.

b. The planning director may require an acoustic study for any proposed facility which could have or create a noise exposure greater than that deemed acceptable. Upon review of the study, increased setbacks, noise avoidance or mitigation measures may be imposed.

c. Outdoor speakers and sound amplification shall not be permitted for uses immediately next to residential uses.

d. Access to such facilities shall be from a public arterial or collector road as defined on the currently adopted City of Auburn Street Functional Classification Map. (Ord. 6435 § 1, 2012.)

18.57.030 Mixed-use development.

A. *All Zones Where Permitted.*

1. Multiple-family dwellings shall only occur concurrent with or subsequent to the development and construction of the nonresidential components of the mixed-use development unless a different sequence is allowed in the following code sections.

2. *Vertical Mixed-Use.*

a. Mixed-use development comprised of a maximum of one building on a development site shall have a minimum of 50 percent of the ground floor comprised of one or more of the uses permitted outright, administratively, or conditionally, listed under "Recreation, Education, and Public Assembly," "Retail," or "Services" in Table 18.23.030; provided, that uses normal and incidental to the building including, but not limited to, interior entrance areas, elevators, waiting/lobby areas, mechanical rooms, mail areas, garbage/recycling/compost storage areas, and vehicle parking areas located on the ground floor shall occupy a maximum of 50 percent of the ground floor space.

3. *Horizontal Mixed-Use.*

a. Mixed-use development comprised of two or more buildings shall have a minimum of 25 percent of the cumulative building ground floor square footage comprised of one or more of the uses permitted outright, administratively, or conditionally, listed under "Recreation, Education, and Public Assembly," "Retail," or "Services" in Table 18.23.030; provided, that uses normal and incidental to the building including, but not limited to, interior entrance areas, elevators, waiting/lobby areas, mechanical rooms, mail areas, garbage/recycling/compost storage areas, and vehicle parking areas located on the ground floor shall not be included in this 25 percent requirement.

b. Mixed-use development comprised of two or more buildings (horizontal mixed-use) shall be arranged with the required nonresidential building(s) located adjacent to the public street or private street and the residential building located behind. For a corner lot or through lot, the nonresidential building(s) shall be located adjacent to the higher classification street.

~~B. *C-2 Zone.*~~

~~1. Vertical mixed-use development is required.~~

~~2. All other requirements of subsection A of this section shall apply.~~

BC. *C-~~3~~2 Zone.*

1. One thousand two hundred (1,200) square feet of lot area is required for each dwelling unit.

2. All other requirements of subsection A of this section shall apply.

CD. *C-AG~~4~~ Zone.*

1. Vertical or horizontal mixed-use is allowed.

2. Multiple-family dwellings may be constructed prior to the development and construction of the nonresidential components of the mixed-use development; provided, that the nonresidential components of the master plan are development ready (i.e., wet and dry utilities are extended to future commercial pads) and required frontage improvements as determined by the community development director are completed.

DE. *M-1 Zone.*

1. Vertical mixed-use development is required.

2. Ground floor uses shall be comprised of one or more of the uses permitted outright, administratively, or conditionally, listed under "Retail" or "Services" in Table 18.23.030. All other requirements of subsection A of this section shall apply. (Ord. 6885 § 1 (Exh. A), 2022; Ord. 6728 § 5 (Exh. E), 2019; Ord. 6644 § 3, 2017; Ord. 6478 § 1, 2013; Ord. 6435 § 1, 2012.)

18.57.035 Retail.

A. *Building and Landscape Materials Sales.*

1. *All Zones Where Permitted.*

a. Landscape materials displayed outdoors are limited to plants, soils, gravel, and fertilizer. No soil mixing is allowed.

b. Stored materials other than landscape plant materials shall be completely screened by walls or buildings and shall not protrude above the height of the enclosing walls or buildings or be visible from a public right-of-way or adjacent residential zone or use and shall not be located in any of the required setbacks.

c. Stored building supplies and landscaping materials shall be limited to 15 feet in height. The planning director may authorize an increase in height, up to 50 percent, through an administrative variance, subject to the procedures of ACC 18.70.015(A)(2).

B. *Repealed by Ord. 6885.*

C. *Nursery.*

1. *All Zones Where Permitted.*

a. Aerial application of any pesticides, fungicides, fertilizer or any other chemical shall be prohibited.

b. Operation of heavy equipment is prohibited.

c. Outdoor storage and display of landscape plant materials (excluding elements such as mulch, pebbles, gravel stone, fertilizer, wood, sculptures, furniture, etc.) is permitted, but shall not be located in the required setbacks. Chain link fences, with black or green vinyl covering, are permitted for security purposes.

d. Stored materials other than landscape plant materials shall be completely screened by walls or buildings and shall not protrude above the height of the enclosing walls or buildings or be visible from a public right-of-way or adjacent residential districts or use and shall not be located in any of the required setbacks.

D. *Outdoor Displays and Sales.*

1. *All Zones Where Permitted.*

a. Only the business or entity occupying the principal use or structure shall sell merchandise in the outdoor display areas. Other off-site businesses or vendors may be allowed to sell merchandise or hold a temporary event in the outdoor display areas provided the sale/event is conducted for three days or less, not visible from a public street, does not block required pedestrian or vehicle access, and a party submits a

written description of their intended use of the property to the city a minimum of seven calendar days prior to use and abides by any written conditions of use required by the city. If any of the aforementioned requirements cannot be met, a temporary use permit subject to the provisions of Chapter 18.46A ACC is required.

b. All outdoor displays must be located on the same lot as the principal use.

c. Such outdoor display is permitted in any front or side yard, subject to a minimum setback of 20 feet from an adjoining property line.

d. Merchandise shall not be placed or located where it will interfere with pedestrian or building access or egress, required vehicular parking and handicapped parking, aisles, access or egress, loading space parking or access, public or private utilities, services or drainage systems, fire lanes, alarms, hydrants, standpipes, or other fire protection equipment, or emergency access or egress.

e. The height of displayed merchandise shall not exceed the height of any fence or wall or 10 feet, whichever is less.

f. Outdoor display areas shall not be located on any parking spaces needed to comply with the minimum parking ratios in Chapter 18.52 ACC, Off-Street Parking and Loading. Outdoor display areas shall be considered part of the floor area of the principal use or structure for purposes of computing the minimum number of parking spaces required.
(Ord. 6885 § 1 (Exh. A), 2022; Ord. 6435 § 1, 2012.)

18.57.040 Services.

A. *Animal Daycare.*

1. *All Zones Where Permitted.*

a. All pets shall be properly licensed.

b. For any dog that has been designated as a “dangerous dog” or “potentially dangerous dog” as defined by the Auburn City Code (ACC), the operator shall verify that the owner has complied with the regulations (on noticing, licensing, certificate of registration, restraining, etc.) contained in Chapter 6.35 ACC, Dangerous Dogs. The

owner shall ensure the facility meets the requirements for a “proper enclosure” as set forth in ACC 6.01.010(A)(27).

c. All fenced exercise areas must be at least 50 feet from a habitable residential structure.

d. Adequate screening shall be required when abutting any residential use.

e. General care of pets must be confined to inside of building and under supervision.

f. Pets are permitted to be walked or exercised outside of building only under supervision and in accordance with all other applicable ordinances and laws.

g. The exterior appearance of an animal daycare building must be compatible with the appearance of neighboring properties.

B. *Animal Sales and Services.*

1. *All Zones Where Permitted.*

a. All sales and services shall be for household pets only.

b. Overnight boarding is allowed within a completely enclosed building; however, animal services or sales uses over 20,000 square feet in gross floor area that use a majority of their gross floor area for retail sales shall have no more than 15 percent of their gross floor area devoted to overnight boarding.

c. Animal sales and services use must be completely enclosed except that outdoor animal runs or other areas in which dogs will be allowed outside of an enclosed structure off leash (hereinafter “outdoor run”) are allowed subject to compliance with the following conditions:

i. Outdoor runs shall not be permitted within 50 feet of a habitable residential structure.

ii. The outdoor run may operate only between the hours of 8:00 a.m. and 6:00 p.m.

iii. The facilities shall be constructed, maintained and operated so that neither the sound nor smell of any animals boarded or kept on the premises during the time that full enclosure is required can be discerned on other lots.

C. *Kennels, Animal Boarding.*

1. *All Zones Where Permitted.*

a. All pens shall be enclosed in an enclosed building.

b. The property on which the kennel is to be located shall be no closer than 100 feet to any residential zone.

c. Limited outdoor exercise runs or facilities shall be permitted so long as their hours of use are restricted to the hours between 8:00 a.m. and 6:00 p.m.

d. The facility must be air conditioned.

e. Exercise runs or facilities shall be a minimum of four feet by 10 feet.

f. The facility shall maintain a minimum total of 25 square feet of kennel area per animal. This area may be comprised of cage area, runs, or exercise facilities.

g. Any outdoor areas used for animal containment or exercise shall be maintained by removing animal waste on a daily basis for proper disposal as solid waste.

h. Any runoff, wash-down water, or waste from any animal pen, kennel, containment, or exercise area shall be collected and disposed of in the sanitary sewer after straining of solids and hair and shall not be allowed to enter the stormwater drainage or surface water disposal system.

i. Strained solids and hair shall be properly disposed of as solid waste.

D. *Repair Service – Equipment, Appliances.*

1. *C-1 ~~, C-2,~~ and C-AG~~4~~ Zones.*

a. Any repairing done on the premises shall be incidental only and limited to custom repairing of the types of merchandise sold on the premises at retail. The floor area devoted to such repairing shall not exceed 30 percent of the total floor area occupied by the particular enterprises.

E. *Youth Community Support Facility.*

1. Youth community support facilities shall be located within 500 feet (walking distance) of a transit stop and connected via sidewalks or an approved pedestrian facility. (Ord. 6688 § 1 (Exh. 1), 2018; Ord. 6435 § 1, 2012.)

18.57.045 Transportation, communication and infrastructure.

A. *Towing Storage Yard.*

1. *M-1 and M-2 Zone.*

a. Motor vehicle(s) shall not remain on the property for more than 120 days.

b. Motor vehicle(s) may not be repaired, restored, rebuilt, or otherwise altered on the property.

c. Motor vehicle(s) shall not be stacked vertically.

d. Vehicle parts and scrap metal shall not be stored on the property.

e. The sale of motor vehicles shall not be permitted.

f. The towing storage yard shall be landscaped in accordance with ACC 18.50.040(C)(5).

g. Any motor vehicles which are damaged so as to be leaking fluid shall be brought to a impervious surface where all fluids shall be contained and disposed of in conformance with all state and federal regulations.

h. The applicant shall install a separator or other generally accepted industry device or practice that provides equal protection to prevent any leaking fluids from the motor vehicles from entering the soil or surface waters. (Ord. 6435 § 1, 2012.)

18.57.050 Vehicle sales and services.

A. *Automobile Washes (Automatic, Full or Self-Service).*

1. *All Zones where Allowed.* An automatic, full – or self-service car wash shall comply with the following standards:

a. Proper functioning of the site as related to vehicular stacking, circulation, and turning movements.

b. The use of outdoor speakers is prohibited.

c. Car washes/detailing shall be located at least 50 feet from any residential zone, use, or structure.

d. Car wash openings must be oriented away from residential zones, use or structures.

B. *Auto/Vehicle Sales and Rental.*

1. *C-1 Zone.*

a. The business shall be located on a principal or minor arterial as defined by the comprehensive transportation plan;

b. No repairing, painting or body work shall be conducted outside of a building;

c. If abutting an R zone, a sight-obscuring fence or landscape screen shall be required;

d. A minimum of a 25-foot setback shall be required of any building from any R zone;

e. Other landscaping or architectural improvements may be required to ensure compatibility with present and potential C-1 uses in the vicinity.

C. *Fueling Station.*

~~1. *C-2 Zone.*~~

~~a. The fueling station must be accessory to an existing retail/service establishment in which the principal tenant has a minimum floor area of at least 25,000 square feet. The principal tenant must own and/or manage the station. The station must be located on the same parcel of property as the principal tenant and the property must be at least 100,000 square feet in area.~~

~~b. The station must be located on the property to minimize the amount of conflict to the pedestrian traffic.~~

~~c. The station must be located on and have direct access to an arterial using existing curb cuts and driveways whenever practical. If the curb cuts and driveways do not meet current city standards, then they shall be brought up to such standards.~~

~~d. The station cannot interfere with the existing parking and/or traffic circulation on the property. There shall be enough room on the property to allow for adequate stacking space for vehicles waiting for fuel in order to avoid cars interfering with vehicles on the street. The facility cannot reduce the amount of parking required by the zoning code.~~

~~e. The station shall have a roof that covers all activities including the pay window, refuse containers, fuel pumps and the adjacent parking area for the cars being fueled. The area that is covered by the roof of the facility shall be no larger than 6,000 square feet. The number of pumps shall be limited to five such that no more than 10 vehicles may be fueled at any one time.~~

~~f. Columns or similar architectural features shall be provided that screen the visibility of the pump islands as well as give the visible impression of enclosing the structure. If necessary, provisions must be made to avoid a safety issue of enclosing any fumes associated with the fueling of the vehicles. The overall height of the facility shall not exceed 20 feet.~~

~~g. The design, architectural treatment and streetscape features of the station must be consistent with the design concepts as outlined in paragraph "P" of Section 1.4 of the downtown plan as well as provide some design continuity between the facility and primary structure.~~

~~h. Any other products for sale shall only be displayed within the building containing the pay window and any such products shall be incidental to automobile care/maintenance, or snacks and beverages. No sales of alcoholic beverages will be allowed.~~

~~i. Signs shall be limited to permanent wall signs, attached to the face of the canopy, only.~~

~~j. The application for the administrative use permit shall illustrate how it complies with these standards.~~

~~2~~1. ~~*Other* *All* Zones Where Permitted.~~

a. Fueling station canopies shall not exceed 20 feet in height or the height of the principal building, whichever is less.

b. Canopies shall be architecturally integrated with the principal building and all other accessory structures on the site through the use of the same or compatible materials, colors, and roof pitch.

c. Any lighting fixtures or sources of light that are a part of the underside of the canopy shall be recessed into the underside of the canopy so as not to protrude below the canopy ceiling surface more than two inches.

d. All surfaces for exterior building facades or canopies shall be finished to match the surfaces of the principal structure.

D. *Vehicle Services – Repair/Body Work.*

~~1. *C-2 Zone.*~~

~~a. No vehicles stored outside that are not operable unless such vehicles are contained within a fenced and paved area. The entire perimeter of the outdoor storage area shall be landscaped with landscaping pursuant to ACC 18.50.040(C)(5). The maximum size of the outdoor storage area shall be no more than 25 percent of the associated building area.~~

2. ~~*Other* *All* Zones Where Permitted.~~

a. Outdoor work areas shall be fenced, walled or screened to minimize on – and off-site noise, glare, odor, or other impacts.

b. All repair work or lubrication shall be conducted within the principal building. All permanent storage of materials, merchandise, or repair and servicing equipment shall be contained within the principal building.

c. All body work and painting shall be conducted within fully enclosed buildings.

d. No operator shall permit the storage of motor vehicles for a period in excess of 24 hours unless the vehicles are enclosed in the principal building. (Ord. 6435 § 1, 2012.)

The Auburn City Code is current through Ordinance 6940, passed April 15, 2024.

Disclaimer: The city clerk's office has the official version of the Auburn City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

City Website: www.auburnwa.gov

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CITY OF AUBURN WASHINGTON

AGENDA BILL APPROVAL FORM

Agenda Subject:
Ordinance No. 6960 (Krum)
An Ordinance relating to completion of the 2024 Periodic Comprehensive Plan Update requirements under the Washington State Growth Management Act and adoption of the updated Elements, Appendices, Plans incorporated by reference, Land Use Map, and Zoning Map

Meeting Date:
December 16, 2024

(RECOMMENDED ACTION: Move to approve Ordinance No. 6960.)

Department:
Community Development

Attachments:
Ordinance No. 6960, Exhibit 1 - Volume 1 - Land Use Element, Exhibit 2 - Volume 2 - Housing Element, Exhibit 3 - Volume 3 - Capital Facilities Element, Exhibit 4 - Volume 4 - Utilities Element, Exhibit 5 - Volume 5 - Transportation Element, Exhibit 6 - Volume 6 - Economic Development Element, Exhibit 7 - Volume 7 - Parks and Recreation Element, Exhibit 8 - Volume 8 - Historic Preservation Element, Exhibit 9 - Volume 9 - Climate Element, Exhibit 10 - Comprehensive Land Use Map, Exhibit 11 - Appendix A - Housing Needs Assessment Update, Exhibit 12 - Appendix B - Agency Checklists, Exhibit 13 - Appendix C - Public Participation Plan, Exhibit 14 - Appendix E.1 - King County Buildable Lands Report, Exhibit 15 - Appendix E.2 - Pierce County Buildable Lands Report, Exhibit 16 - Appendix F - Parks, Recreation, and Open Space (PROS) Plan, Exhibit 17 - Appendix G - Comprehensive Transportation Plan , Exhibit 18 -

Budget Impact:
Current Budget: $0
Proposed Revision: $0
Revised Budget: $0

Appendix K - Climate Element Framework, Exhibit 19 - Comprehensive Water System Plan, Exhibit 20 - Comprehensive Sewer Plan, Exhibit 21 - Comprehensive Storm Drainage Plan, Exhibit 22 - Comprehensive Zoning Map, Exhibit 23 - Public Comments, Exhibit 24 - Agency Comments

Administrative Recommendation:
City Council to approve Ordinance No. 6960.

Background for Motion:
This Ordinance adopts the revised chapters, documents incorporated by reference, and supplementary reports of 2024 Periodic Comprehensive Plan update.

Background Summary:
The Washington State Growth Management Act (RCW 36.70A.130) requires that all cities and counties periodically take legislative action to review and, if needed, revise their Comprehensive Land Use Plan and Development Regulations to ensure the Plan and Regulations comply with the requirements of the Growth Management Act (GMA). The City has determined that the Comprehensive Plan is consistent with the GMA, the King County County-Wide Planning Policies, Pierce County County-Wide Planning Policies, and the Puget Sound Regional Council Vision 2050. By adoption of this Ordinance, the City of Auburn has completed the mandatory Periodic Comprehensive Plan review process that is set forth in RCW 36.70A.130.

Councilmember: Tracy Taylor **Staff:** Jason Krum

ORDINANCE NO. 6960

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, RELATING TO COMPLETION OF THE 2024 PERIODIC COMPREHENSIVE PLAN UPDATE REQUIREMENTS UNDER THE WASHINGTON STATE GROWTH MANAGEMENT ACT AND ADOPTION OF THE UPDATED ELEMENTS, APPENDICES, PLANS INCORPORATED BY REFERENCE, LAND USE MAP, AND ZONING MAP

WHEREAS, the Washington State Growth Management Act (Revised Code of Washington (RCW) 36.70A.130) requires that all cities and counties periodically take legislative action to review and, if needed, revise its comprehensive land use plan and development regulations to ensure the plan and regulations comply with the requirements of the Washington State Growth Management Act; and

WHEREAS, RCW 36.70A.70 describes required and optional Elements of the Comprehensive Plan (the Plan). The Plan shall be an internally consistent document, and all elements shall be consistent with a future land use map; and

WHEREAS, RCW 36.70A.140 indicates that a comprehensive plan shall be adopted and amended with public participation. Auburn City Code (ACC) 14.22.030 required early and continuous public participation in the comprehensive plan process; and

WHEREAS, ACC 14.22.010 provides a description of the purpose of the comprehensive plan. The city of Auburn comprehensive plan establishes the principles, goals, objectives and policies guiding future development of the city in compliance with Chapter 36.70A RCW, the Washington State Growth Management Act. The purpose of this chapter is to establish procedures and review criteria for amending the

comprehensive plan and to provide provisions for public participation in the planning process; and

WHEREAS, pursuant to Chapter 36.70A RCW, the Environmental Impact Statement (EIS) Scoping Notice was transmitted to the Washington State Department of Commerce on October 23, 2023; and

WHEREAS, Pursuant to Revised Code of Washington (RCW) 36.70A, the draft Comprehensive Plan was transmitted to the Washington State Department of Commerce on April 9, 2024. The 60-day notice period ended June 9, 2024; and

WHEREAS, pursuant to Chapter 36.70A RCW, the Draft Environmental Impact Statement (DEIS) was transmitted to the Washington State Department of Commerce on May 20, 2024; and

WHEREAS, Agencies, affected tribes, and members of the public were invited to comment on the proposed contents of the DEIS. Comments were accepted up to the 60-day notice period on 5:00 p.m. PST on June 19, 2024; and

WHEREAS, Pursuant to Chapter 36.70A RCW, the Final Environmental Impact Statement (FEIS) was transmitted to the Department of Commerce on October 18, 2024. The City did not act upon the FEIS until November 8, 2024; and

WHEREAS, the City of Auburn provided its draft Comprehensive Plan to the Puget Sound Regional Council (PSRC) on May 20, 2024 to provide comment on the draft Comprehensive Plan prior to PSCR's certification of the plan; and

WHEREAS, the City of Auburn also provided its draft Comprehensive Plan to the King County Affordable Housing Committee to provide comment on the draft Comprehensive Plan; and

WHEREAS, the City held an in-person public meeting on June 5, 2024 at 6:00 p.m. PST in City Council Chambers and a virtual meeting (or telephonically) meeting on June 6, 2024 at 6:00 p.m. PST to discuss the DEIS and draft Comprehensive Plan.

WHEREAS, the City of Auburn Planning Commission scheduled and held public meetings on April 2, 2024, April 16, 2024, April 30, 2024, May 21, 2024, June 4, 2024, June 18, 2024, July 2, 2024, April 30, 2024, September 17, 2024, October 8, 2024, December 3, 2024, for the purposes of staff presentations and discussion on the various components of the plan; and

WHEREAS, the Planning Commission scheduled and held public hearings on April 16, 2024, April 30, 2024, May 7, 2024, June 4, 2024, June 18, 2024, July 2, 2024, July 16, 2024, October 8, 2024, December 3, 2024, to receive public testimony on the proposed Plan; and

WHEREAS, the Auburn City Council finds it appropriate and in the best interest of the City to adopt the Auburn Comprehensive Plan, which includes the Land Use Element, the Housing Element, the Capital Facilities Element, the Utilities Element, the Transportation Element, the Economic Development Element, the Parks and Recreation Element, the Appendices listed within and the referenced functional plans listed in the Capital Facilities Element; and

WHEREAS, the Auburn City Council determines that the adoption of the Comprehensive Plan meets the criteria set forth in the Auburn City Code and all other applicable legal criteria; and

WHEREAS, the Auburn City Council determines that the Comprehensive Plan is consistent with the Growth Management Act, the King County and Pierce County

County-Wide Planning Policies, and the Puget Sound Regional Council Vision 2050; and

WHEREAS, by adoption of this ordinance, the City of Auburn has completed the mandatory periodic comprehensive plan review process that is set forth in RCW 36.70A.130.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, DO ORDAIN as follows:

Section 1. Adoption of Comprehensive Plan. The City of Auburn 2024 Comprehensive Plan, its updated Chapters of the Comprehensive Plan, updated Additional Documents of the Comprehensive Plan, that are incorporated by reference, and Supplementary Reports Documents of the Periodic Comprehensive Plan Update, set forth in Exhibits 1 through 24, is on file with the office of the City Clerk is adopted and is available for inspection therein.

Section 2. Implementation. The Mayor is authorized to implement those administrative procedures necessary to carry out the directives of this legislation.

Section 3. Severability. The provisions of this ordinance are declared to be separate and severable. The invalidity of any clause, sentence, paragraph, subdivision, section, or portion of this ordinance, or the invalidity of the application of it to any person or circumstance, will not affect the validity of the remainder of this ordinance, or the validity of its application to other persons or circumstances.

Section 4. Effective date. This Ordinance will take effect and be in force five days from and after its passage, approval, and publication as provided by law.

INTRODUCED: _____

PASSED: _____

APPROVED: _____

_____
NANCY BACKUS, MAYOR

ATTEST:

_____
Shawn Campbell, MMC, City Clerk

APPROVED AS TO FORM:

_____
Jason Whalen, City Attorney

Published: _____

City of Auburn

Land Use Element



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Land Use Element

Introduction

All land within the City of Auburn is assigned a land use designation and implementing zoning district, which builds from previously adopted Comprehensive Plan Maps, the existing land use pattern, adopted subarea plans, topography, natural features, and targeted goals for shifting the character of specified areas. This chapter provides a description for each designation, general criteria for how to assign the designation, and a series of goals and policies that govern land use within each designation.

The Comprehensive Plan Land Use Map shows the location and boundaries for each designation. This map should be consulted together with the written policies of this Plan when decisions about zoning designations, land use activities, and development of public infrastructure are considered.

The Land Use Element explains the reasoning and intention behind the land use designations. This should be useful in:

- Developing and implementing tools (such as zoning provisions)
- Interpreting the Land Use Map as it applies to specific regulatory decisions or development proposals
- Adjusting or amending the Land Use Map when changing conditions or land use markets warrant
- Planning for public services and infrastructure

Finally, this Element sets forth special policies intended to address the unique challenges and opportunities of specific locations within Auburn. These specific policies supplement the general goals, objectives and policies found in other Elements of the comprehensive plan.

Vision

The Auburn community is both physically and socially connected. We take pride in the quality of our built environment as well as the beauty and function of our natural environment. Land use patterns are supported by a complete and efficient transportation and utility infrastructure system. Neighborhoods, commercial centers, and parks are attractive, interesting, accessible, and well maintained. Natural riverine and forested corridors are interspersed throughout the city, offering sanctuaries where fish and wildlife reside, and providing opportunities for people to observe and learn about the environment. Residents have a strong association with their neighborhoods, are engaged and involved in the decisions that steer Auburn into the future.

Planning Framework

The Growth Management Act (GMA), codified as RCW 36.70A, is the enabling legislation that renders this Comprehensive Plan a legally recognized document by the State of Washington. This plan is a policy document only; the policies are required by GMA to be implemented through the use of such regulatory tools as zoning and subdivision ordinances, as well as other innovative techniques. The implementing regulations must be developed and maintained in accordance with the goals and policies of this Comprehensive Plan, and as set forth in the Growth Management Act, as amended, and consistent with King and Pierce County, Countywide Planning Policies (CPP).

In 1991, the State Legislature amended the GMA to require that counties adopt CPP's in cooperation with their municipalities. The purpose of these policies is to establish a coordinated, countywide framework within which to develop comprehensive plans. The CPP must guide the subsequent adoption of comprehensive plans without overly constraining with excessive detail. The Countywide Planning Policies shall, at a minimum, address the following:

1. Policies to implement RCW 36.70A.110;
2. Policies for promotion of contiguous and orderly development and provision of urban services to such development;
3. Policies for siting public capital facilities of a countywide or statewide nature, including transportation facilities of statewide significance as defined in RCW 47.06.140;
4. Policies for countywide transportation facilities and strategies;
5. Policies that consider the need for affordable housing, such as housing for all economic segments of the population and parameters for its distribution;
6. Policies for joint county and municipality planning within urban growth areas;
7. Policies for countywide economic development and employment, which must include consideration of the future development of commercial and industrial facilities; and
8. An analysis of the fiscal impact.
9. Policies that address the protection of tribal cultural resources in collaboration with federally recognized Indian tribes that are invited pursuant to subsection (4) of this section, provided that a tribe, or more than one tribe, chooses to participate in the process.

Land Use Patterns

For the first 100 years of Auburn's existence, the land use pattern developed in a relatively logical manner. Auburn was fully contained to the valley floor with a

traditional downtown urban center, several north/south heavy commercial and industrial corridors paralleling Highway 167, and a surrounding housing stock that was built primarily between 1910 and 1960. In the last 30 years, the land use pattern of Auburn has changed, primarily from incorporation of areas to the south, east, and west. Each newly incorporated area has its own identity and land use pattern.

Because a significant portion of today's Auburn was settled prior to incorporation, the basic land use patterns and infrastructure have already been established. Furthermore, much of today's Auburn land use pattern was established in either Auburn, the Muckleshoot Reservation, or prior to incorporation in King County or Pierce County. Given the mix of jurisdictional oversight, myriad land use policies, regulations, infrastructure standards, and investments have been applied in these areas. This has resulted in a relatively uncoordinated and random land use pattern. It also means that the various communities lack connectivity to each other, have a mix of identities, and are experiencing a change in their character from rural to more urban.

Auburn has a strong mix of housing and industry. Auburn's residential land use pattern includes a variety of densities, ages, and housing type. Auburn's nonresidential land use pattern includes a mix of local and regional retail, entertainment, services, manufacturing, warehousing, and distribution centers. This mix of land use is a strength because it exemplifies social, economic, and cultural diversity.

Auburn's natural resources include the Green River and its tributaries, the White River and its tributaries, a robust inventory of wetlands, floodplains, steep slopes, and mature open spaces. With a strong base to work from, the city and its partners can be strategic about how to better connect and preserve natural areas so that the overall system is enhanced for future generations to enjoy.

Future Land Use

The City of Auburn conducted a process to determine the preferred alternative for Auburn's future land use. Alternatives are different options to achieve the project's purpose and needs, and they serve as the basis for analyses related to environmental elements. The alternatives considered provide a range of capacities to accommodate growth for housing and employment, housing types, and citywide infrastructure investments. The Preferred Alternative, which is adopted as the future Zoning and Land Use maps, incorporate feedback from the community regarding where household and growth should occur as well as modelling to determine how growth may affect local infrastructure such as transportation and utilities. The Land Use and Zoning maps and assumptions described in the Land Use Element are assumed in each of the Comprehensive Plan Element and related systems plans. Future land use and zoning decisions were based on modelling results and calculations to demonstrate that there is adequate zoned capacity to accommodate the city's required future housing and employment targets.

Future Land Use Housing and Employment Capacity

A residential land capacity analysis evaluates whether jurisdictions have sufficient land capacity available to allow for the types and amount of new housing needed to meet identified housing needs is required as part of HB 1220 requirements. The 2021 Housing Element updates amended RCW 36.70A.070(2)(c) of the Growth Management Act to require the Housing Element to include explicit consideration of capacity for the following household needs and building types:

- Moderate, low, very low, and extremely low-income households;
- Permanent supportive housing;
- Emergency housing and emergency shelters; and
- Duplexes, triplexes and townhomes (within an urban growth area boundary

The intent of this analysis is to assess the City of Auburn's current capacity to accommodate different housing income brackets and whether that capacity is sufficient to meet Auburn's housing targets established by King and Pierce counties. In addition, this analysis considers implementing a preferred land use alternative through zoning changes and provides updated capacity calculations to ensure sufficient capacity of suitable land to meet growth targets.

Full analysis of housing and employment capacities and future need is described in *Appendix A - Housing Needs and Characteristics Assessment*.

Preferred Alternative Implementation

To address an anticipated deficit of zoned capacity to accommodate future growth targets of 12,112 new housing units and 19,520 new jobs based on current zoning, Auburn is consolidated zoning districts, developing dedicated Growth Centers, increasing densities, and permitting additional housing types. The changes in zoning are based on a preferred alternative completed as part of the land use scenario process where select centers and nodes were identified for increased density. This preferred alternative is reflected in the Comprehensive Plan Land Use and Comprehensive Plan Zoning maps. Results of the zoning changes pertaining to housing unit and employment growth are summarized below. The full zoning analysis is described in *Appendix A - Housing Needs and Characteristics Assessment*.

Residential and Employment Zoned Capacity

Residential and employment capacity by zone is based primarily on the assumptions outlined Buildable Lands Report process in 2021, updates to reflect

changes to zoning and density assumptions since that time. Downtown Urban Center mixed-use development assumes a distribution of 75% residential and 25% commercial, whereas the R-NM Neighborhood Mixed Use assumes a 50-50% split for mixed uses both vertically and horizontally. The residential capacity estimates accommodating 47,922 housing units at max buildable capacity and 35,507 net new housing units, exceeding the 12,112 net new housing unit target. This increase is due largely to Middle Housing policies consistent with HB 1110 which allows for Middle Housing in all residentially zoned areas. Four middle housing units per lot are permitted in moving forward, with up to two additional units permitted if within ¼ mile of a major transit stop or of those units are dedicated to affordable housing. Specific information on middle housing development regulations and requirements are found in city code. The R2 – Residential Low zone is found widely throughout the city.

Table 1. Residential Capacity by Zone

Residential & Mixed-Use Zoning Districts	Zone category	Developable Acres	Net zoning changes (acres)	Assumed Density - DU/Acres	Residential Capacity (units)	Net New (Units)
King County						
Residential Conservancy (RC)	Low Density	745	0	1	745	-
R-1 Residential	Low Density	275	0	4	1,471	-
R2 – Residential Low	Moderate Density	294	1158	25	37,789	28,950
R3 – Residential Moderate	Moderate Density	0	22	30	660	660
R4 – Residential High	High Density	79	-1	50	3,890	-50
Neighborhood Mixed-Use (R-NM)	High Density Mixed-Use	0	89	30	2,670	2,670
Manufacture Home/Community (R-MHC)	Low Density	27	0	10	273	
DUC Downtown Urban Center - 125	High Density Mixed-Use	0	5	100	125	500
DUC Downtown Urban Center - 75	High Density Mixed-Use	0	5	95	119	475
DUC Downtown Urban Center - 55	High Density Mixed-Use	0	4	90	90	360
DUC Neighborhood Residential	High Density Mixed-Use	0	3	30	90	90
Total		1,420	1,285	-	47.422	35,310
Pierce County						

R2 – Residential Low	Moderate Density	20	20	**25**	500	500
Total		20	20	-	500	500
			Total New (2044) Housing Capacity		47,922	35,810

Table 2. Adjusted Employment Development Capacity by Zone

Non-Residential Districts	Developable Acres	Net zoning changes (acres)	Assumed Density – DU/Acres	Employment Capacity (units)
Light Commercial (C-1)	32	-13	845,391	2,254
Heavy Commercial District (C-2)	8	-8	-	-
Auburn Gateway District (C-AG)	0	15	653,400	653
Light Industrial (M-1)	132	-41	3,945,338	3,945
Heavy Industrial (M-2)	81	-9	3,122,925	3,123
Airport Landing Field (AF)	5	0	233,038	233
Mixed-Use Districts	**Developable Acres**	**Net zoning changes (acres)**	**Assumed Density – DU/Acres**	**Employment Capacity (units)**
DUC Downtown Urban Center – 125	0	5	163,350	408
DUC Downtown Urban Center – 75	0	5	163,350	408
DUC Downtown Urban Center – 55	0	4	130,680	327
DUC Neighborhood Residential	0	3	98,010	245
DUC Health and Wellness – 125	0	2	87,120	218
DUC C-1	0	13	566,280	1,510
DUC C-2	0	12	522,720	1,394
DUC M-1	0	39	1,698,840	1,699
Neighborhood Mixed-Use (R-NM)	0	89	1,938,420	5,169
		Total New (2044) Jobs Capacity		**21,587**

The employment capacity estimates accommodating 20,701 new jobs at max buildable capacity by 2044, exceeding the city's target of 19,520. Growth is located in the Downtown Urban Center (DUC) and in Growth Centers, whose core is primarily R-NM Neighborhood Mixed-Use. Additional growth in commercial space is anticipated, following a recent trend in industry job growth in Auburn.

Housing Affordability by Average Median Income (AMI)

Income Level (% AMI)	Zone Categories Servicing these Needs	Housing Needs	Capacity prior to Zoning Adjustment	Post-Rezone Capacity	Capacity surplus or deficit
King County					
0-30% PSH	High Density-Mixed Use	2,389	566	3,004	**615**
0-30% Other					
>30-50%	High-Density, ADU	962	1,532	4,823	**3,861**
>50-80%					
>80-100%	Moderate Density, ADU	2,458	5,058	37,379	**35,33**
>100-120%					
>120%	Low-Density, ADU	6,303	348	2,217	***(4,086)***
Pierce County					
>80-100%	Moderate Density, ADU	112	100	500	***388***
Aggregated Total	-	12,112	7,504	46,070	*35,810*

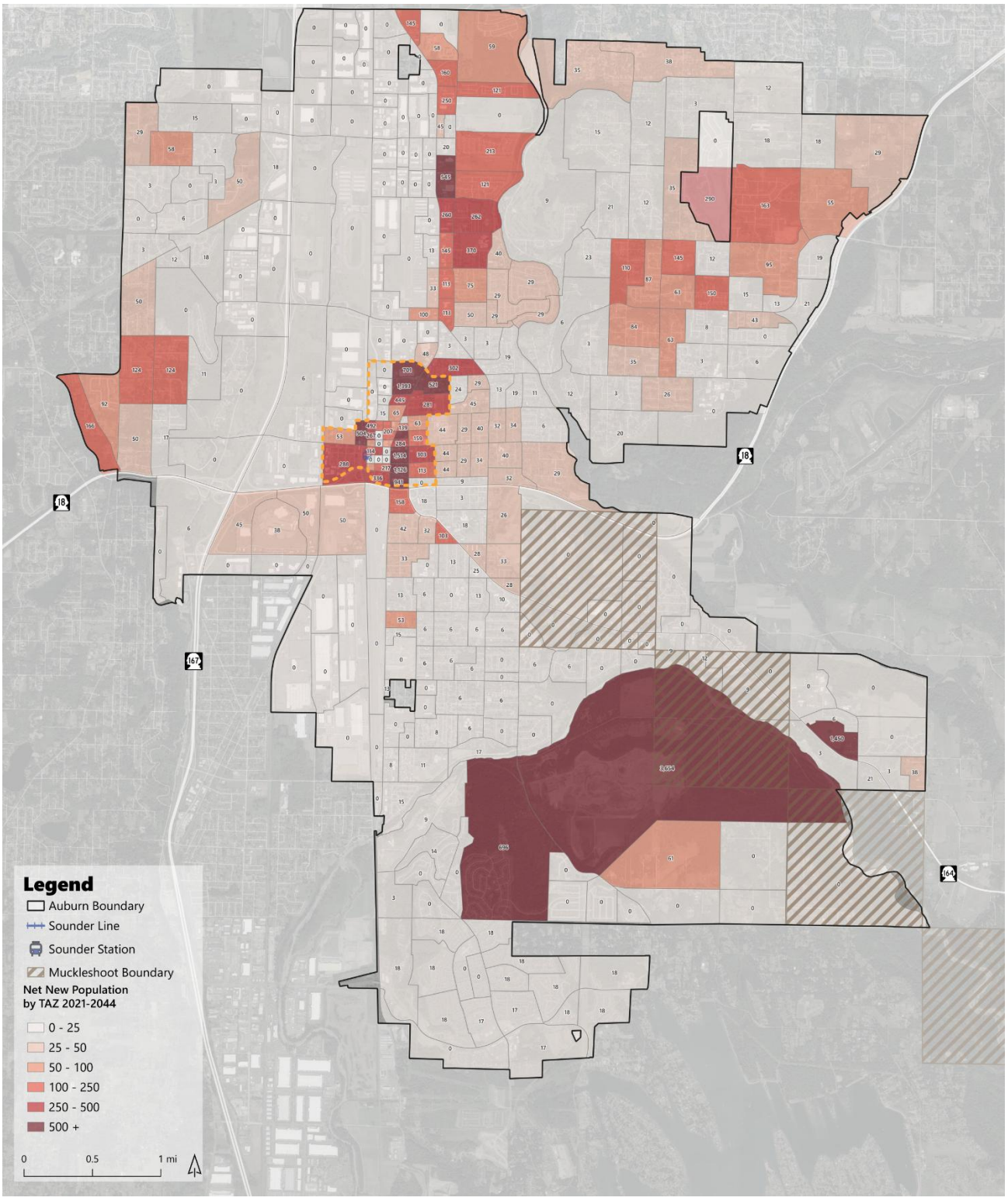
In addition to meeting the residential and employment capacity targets through zoning and policy decisions, the city meets the aggregate King and Pierce County housing needs for income level groups. The only exception is the >120% Average Median Income (AMI) category, which includes primarily low-density housing in the R-1 and RC zones. However, this AMI category is not required to be met under HB 1220 requirements as high-income earners are represented in this group and can also purchase moderate density housing options as well.

In Pierce County, the City's primary residential zone is R-2 Residential Moderate which for purposes of this capacity analysis aligns with the 80-120% AMI range. This zone can adequately accommodate the total housing need of 112, however AMI below 80% is not accounted for in this analysis. As indicated earlier, the housing target for the Pierce County portion of Auburn is only 112 housing units and as a result the city does not intend to rezone small areas of land in order to satisfy AMI requirements since actual development is unpredictable. The R-2 Residential Moderate zone can accommodate middle housing, single unit detached housing, and ADUs that can realistically serve a range of incomes, and the city will continue to provide flexibility in the development types allowed in this part of the city to best accommodate the full range of AMI levels.

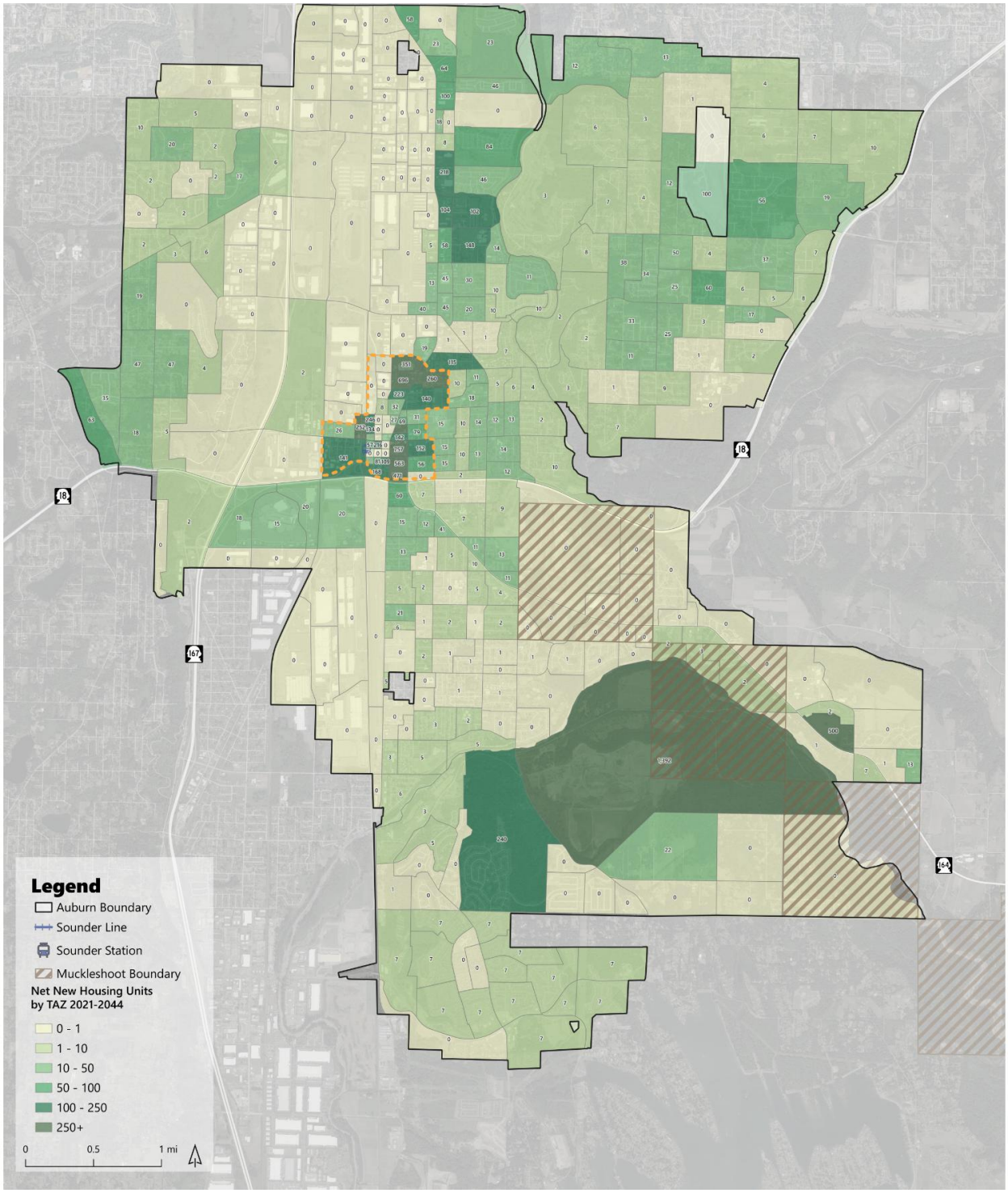
An estimated 1,852 new Accessory Dwelling Units (ADUs) are accounted for prior to rezoning, as these developments are currently allowed in various zones are expected to occur naturally over the next 20-years. In total, 80% of new ADUs are planned for in the 80-120% AMI range, and 20% in the greater than 120% AMI range. ADUs are expected primarily in the low-density and moderate-density land uses found in throughout the city.

Map 1.1 below shows where future new population is anticipated based on new households. It is anticipated that Auburn will have a population of 100,000 by 2029 and approaching 130,000 by 2044.

Map 1.2 shows the allocation of net new housing units by 2044 throughout the city. The net new housing units are consistent with King County and Pierce County Countywide Planning Policies required household units for 2044. Many of the new housing units are allocated in the Downtown Urban Center and in designated Growth Corridors.



Map 1.1 – 2044 Population Estimates by Area



Map 1.2 – 2044 Net New Housing Units by Area

Goals, Policies, and Land Use Characteristics

Residential Land Use Designations

Character

Residential uses will comprise a diverse arrangement of multiple densities and housing types. The pattern of one single density in a zone or neighborhood will evolve into increased and mixed densities in exchange for amenities that enhance quality of life. There will be greater connectivity and stronger spatial relationships between neighborhoods through strategic locations of roadway, trail, park, and neighborhood-serving businesses. These amenities will help create localized identity while also linking one area to another. The design and build quality of the new construction and infill will be held to a high standard. The city will encourage projects to be unique, innovative, and provide the residents of Auburn with true choice.

Values

- *Character:* Residential neighborhoods will include amenities, features, and layouts that promote interaction amongst residents.
- *Wellness:* The design of residential neighborhoods will emphasize safety and nonmotorized connectivity.
- *Service:* Through outreach and engagement, individual residents and homeowners' associations are connected to and aware of municipal services, events, and activities.
- *Economy:* Neighborhoods have a physical and personal connection to Auburn's commercial centers and attractions. People want to move to Auburn because of the commercial and recreational opportunities it has to offer.
- *Celebration:* Districts and neighborhoods are identified, promoted, and celebrated.
- *Environment:* The built environment will fit into the natural landscape in a way that protects and respects ecosystem function and that preserves native vegetation and soils.
- *Sustainability:* Natural resources, economic prosperity, and cultural vibrancy are balanced in a way that builds and maintains a thriving and long-lasting community.

Policies

LU-1 Regulations for new developments and infill should address the following elements:

a. Connectivity by multiple means to adjacent subdivisions, nearby commercial hubs, and parks and recreation facilities.

b. Relationship to nearby existing or future transit service.

c. Usable community amenities and spaces.

d. Environmental protection and preservation of natural features.

e. Preservation of areas that can support low-impact development techniques.

f. Promote the use of energy and water conservation measures

g. Efficient and effective delivery of utility service.

h. Innovative design.

i. Crime prevention through environmental design.

j. Long-term maintenance considerations.

LU-2 As denser development continues to occur; standards should be developed to maximize density while preserving open space and critical areas.

LU-3 Programs should continue to be implemented to improve the quality of low-income neighborhoods and encourage rehabilitation of deteriorating structures and facilities.

LU-4 Public/Quasi-Public uses may be permitted as a conditional use if de signed in a manner that enhances the residential character of the area. Special care shall be given to ensuring appropriate levels of parking, landscaping, and traffic circulation to avoid conflict with residential uses.

LU-5 New residential development shall contribute to the creation, enhancement, and improvement of the transportation system, health and human services, emergency services, school system, and park system. This may be accomplished through the development of level-of-service standards, mitigation fees, impact fees, and/or construction contributions.

LU-6 Cluster development is the preferred form of residential development in all residential designations with the goal of preserving natural areas, critical areas, and areas that support low-impact development. Where clustering accomplishes these objectives, it should not come at the expense of lost development potential. Variances to lot size, lot dimensions, building height, and other bulk or dimensional standards should be utilized in order to create incentives that promote preservation.

LU-7 Ensure that new development in Growth Centers meets minimum development intensity thresholds to ensure that employment and housing growth will help achieve the desired levels of jobs and housing units.

LU-8 Designated Growth Centers and Downtown Urban Center shall promote physical activity and reduce per capita vehicle miles traveled within the jurisdiction, but without increasing greenhouse gas emissions elsewhere in the state.

LU-9 Consider land use patterns and development regulations to promote development that addresses potential environmental health disparities in coordination with the Climate Element.

LU-10 Identify and implement strategies to mitigate the risk to lives and property posed by wildfires. Risk identification and strategies should be aligned with Climate Element workplan through 2029.

LU-11 Coordinate land use choices with neighboring jurisdictions, agencies, and the Muckleshoot Indian Tribe to encourage consistency and predictability for regional planning and environmental considerations.

LU-12 Encourage inclusive engagement on land use decisions to ensure decisions do not negatively impact historically marginalized communities.

LU-13 Land Uses decisions should provide for protection of the quality and quantity of groundwater used for public water supplies.

Residential Conservancy Designation

Description

This designation should consist primarily of low-density residential uses (one dwelling unit per four acres is allowed) and accessory agricultural uses in areas featuring environmental constraints or requiring special protection such as the Coal Creek Springs watershed area, low-lying areas along the Green River, and areas that are isolated from the full complement of urban services. This designation will serve to both protect environmental features and hold areas for higher density development until such a time public facilities become available. Per HB 1110 requirements adopted in 2023, Middle Housing is permitted in this zone however adopted city development regulations still apply.

Designation Criteria

1. Areas with significant environmental constraints, intrinsic value, or that may pose environmental hazards if developed, such as areas tributary to public water sources;
2. Affords greater protections to environmental features than existing designation;
3. Level of service for property consistent with adjacent residential conservancy properties; or
4. Location, size of properties, and character is consistent with a residential conservancy use.

Implementation Zoning Designation

A. RC Residential Conservancy

Policies

LU-14 Densities and activities shall be of a very low intensity and shall not compromise environmental and watershed resources.

LU-15 In addition to single-family homes, these larger properties can also be developed with garages, accessory dwelling units, barns, and other accessory outbuildings. Home occupations, agricultural uses, and other allowed nonresidential activities may operate out of any type of permitted building, subject to intensity and use limitations.

LU-16 Until these areas are served by public utilities (water, sewer, storm services), existing and new development is not expected to be served by public infrastructure, such as urban streets, curbs, gutters, sidewalks, street lighting, and landscaping.

LU-17 As the market and utility availability enable denser development to occur, standards should be developed to maximize density while preserving open space and critical areas.

LU-18 Small-scale agricultural uses are allowed and encouraged. Commercial activities that are directly related to and support agricultural uses may also be allowed. The procedural standards may vary depending upon the type and scale of agricultural uses and supporting commercial activities. Small-scale agricultural uses are allowed and encouraged.

LU-19 Land use standards should adequately limit and control excessive accumulation of de bris. Where a permitted activity does allow outdoor storage, it should be adequately screened from adjacent properties and roads, as well as ensuring adequate soil and environmental protection.

LU-20 Public/Quasi-Public and resource extractive uses that are low-intensity and preserve the environment may be considered conditional uses.

Neighborhood Residential One Designation[1]

Description

Low density land use for detached single-unit detached housing with a density of one unit per acre. Neighborhood Residential One includes all properties zoned R1 -

[1] This designation was previously called “Single Family” prior to the 2024 Periodic Comprehensive Plan Update. However, the implementing zones may have changed.

Residential 1 du/acre including areas within the Urban Separator Overlay, as designated in King County Countywide Planning Policies. Per HB 1110 requirements adopted in 2023, Middle Housing is permitted in this zone however adopted city development regulations still apply.

Designation Criteria

1. Low density residential areas located within the Urban Separator Overlay that are also constrained by the presence of critical areas

Implementing Zoning Designations

A. R1 - Residential Zone (One Dwelling Unit Per Acre): All properties located within the Urban Separator Overlay are zoned R-1, as consistent with King County Countywide Planning Policies.

Policies

LU-21 Accessory dwelling units should play an integral part of promoting infill development and affordable housing and are therefore encouraged within this land use category.

LU-22 Home occupations, bed-and-breakfasts, day cares, and other appropriate uses should be encouraged as viable accessory uses.

LU-23 Manufactured homes shall be permitted on single-family lots provided they are sited and constructed in a manner that would blend with adjacent homes.

LU-24 Encourage the development of a variety of housing typologies to suit the needs of various potential residents.

LU-25 Density bonuses outside of the Urban Separator Overlay should be approved based on innovations in transportation, stormwater management, and public amenities proposed for the development or adjacent neighborhoods associated with the request. The onus is on the developer to justify density above baseline. Examples of amenities and concepts that justify density bonuses include park space, art, enhanced landscaping, trails that connect to adjacent properties, neighborhood commercial property set asides, use of low-impact development techniques beyond the minimum code requirements, incorporation of Crime Prevention Through Environmental Design (CPTED) (Public Comment, LU 2) concepts, and variation of architecture and housing typology.

Neighborhood Residential Two Designation[2]

[2] This designation was previously called “Moderate Density Residential” prior to the 2024 Periodic Comprehensive Plan Update. However, the implementing zones may have changed.

Description

Neighborhood Residential Two designated areas are planned to accommodate a variety of residential dwelling types. Varying intensities may be permitted to provide a transition between Neighborhood Residential One and other more intensive uses or activities (such as arterial streets) based on adjacent density, intensity, and/or character. Appropriate densities in these areas range from 25-30 dwelling units per acre, with between 4 and 6 Middle Housing units per lot permitted. Dwelling types generally range from single-unit detached dwellings to Middle Housing, and moderately sized mixed-use and apartment buildings that fit the size and character of traditional single-family neighborhoods. Low-impact, neighborhood scale business such as small-scale food stores, coffee shops, and cultural or recreational services in pre-existing structures, either separate from or as part of a mixed-use building, are allowed in Neighborhood Residential Two.

Designation Criteria

1. Previously developed Neighborhood Residential Two areas; or

2. Areas that provide a transition between Neighborhood Residential One and Neighborhood Residential Three, Neighborhood Residential One and nonresidential, Neighborhood Residential Three and nonresidential zones or development that are adjacent and meet the development parameters of the Neighborhood Residential Two designation.

Implementing Zoning Designations

A. R2 – Residential Low
B. R3 – Residential Moderate

Policies

LU-26 Density bonuses and flexible development standards should be considered an incentive for innovative neighborhood design.

LU-27 Carefully developed low-intensity commercial uses (such as day care centers, food and beverage establishments) can be compatible.

LU-28 Middle Housing and accessory dwelling units should play an integral part of promoting infill development and affordable housing and are therefore encouraged within this land use category.

Neighborhood Residential Three Designation[3]

Description

Neighborhood Residential Three encourages a mix of Middle Housing residential, apartment buildings and mixed-use development at a greater density compared to Neighborhood Residential Two. These communities are served by nearby high-capacity transit, have nonmotorized connections to surrounding amenities (parks, libraries, community centers, etc.) and services, or have access to on-site amenities. Small, local commercial development is allowed consistent with Neighborhood Resident Two.

Land use density standards are based on dwelling units per lot for all Middle Housing types, while base density of units per acre continues to apply for detached single-unit housing. This use includes Residential Manufactured Home communities, for which the City will be coordinating with the Department of Commerce for exception to compliance with middle housing requirements.

Designation Criteria

1. Previously developed high-density residential or manufactured/mobile home parks; or
2. Properties that are connected to Neighborhood Residential One and nonresidential designations by the Neighborhood Residential Two designation or are connected to a Mixed-Use District.

Implementing Zoning Designations

A. R4 - Residential High
B. R-MHC Residential Manufactured/Mobile Home Community

Policies (cont.)

LU-29 Development regulations should include density bonuses and flexible development standards that create incentives for innovative site and building design, incorporation of open space and public art, nonmotorized connectivity to parks and commercial areas, proximity to transit services, supplemental natural resource protection, supplemental use of Crime Prevention Through Environmental Design (CPTED) (Public Comment, LU 2), and supplemental use of low-impact development techniques.

LU-30 Home occupations and shared housing should be allowed in this designation; however, given their high densities, it is appropriate to establish

[3] This designation was previously called “Multiple-Family” prior to the 2024 Periodic Comprehensive Plan Update. However, the implementing zones may have changed.

additional restrictions, procedures, and requirements in order to ensure that they are compatible with their surroundings and do not adversely affect the community.

LU-31 Live–work units are encouraged in Neighborhood Residential Two and Neighborhood Residential Three designations.

LU-32 Improve the quality of low-income neighborhoods and implement programs that encourage rehabilitation of deteriorating structures and facilities the downtown area, areas between lower-density residential uses and more intense nonresidential activities, and areas with high levels of transit service and available high-quality services.

LU-33 Parking requirements for Middle Housing types of development shall be reduced within ½ mile walk of a major transit stop, consistent with state requirements.

LU-34 Middle Housing types are eligible for bonus of two dwelling units depending on proximity to a major transit stop or when two dwelling units are developed as affordable housing. Affordable housing bonus dwelling units shall remain affordable for a 50-year period and recorded on the covenant, per RCW 36.70A.030.

Mixed-Use Designation

Description

The Mixed-Use Designation permits a complementary mix of residential and commercial uses in a single land use designation. This designation encourages vertical mixed-use, horizontal-mixed use, conversion of existing residential to commercial, middle housing, and pedestrian and non-motorized travel, while allowing flexibility for how uses are combined within this area. Mixed-Use Districts align with areas where moderate and high-density development is served by transit, bicycle facilities and sidewalks, and amenities that create healthy and livable neighborhoods.

Designation Criteria

1. Mixed-Use Districts are primarily located within designated Growth Centers or other areas where it can be demonstrated that the Mixed-Use District provides local neighborhood benefits consistent with the description and intent of the Mixed-Use District and where orientation to walkable communities is desired.
2. Residential and commercial uses are encouraged to be integrated as a component in all development projects.
3. A variety of housing options and development types is encouraged within this designation.
4. Mixed-Use District is not intended for automobile oriented or businesses that rely on outdoor storage, or any other type of storage facility. Such uses will be not permitted.

5. Development within a Growth Center designation along major roadways between Mixed-Use zones should provide additional building setback from the street right of way and include areas for landscaping, open space, and pedestrian activity.

Implementing Zoning Designations

A. R-NM Neighborhood Mixed-Use
B. RO Residential Office District
C. Auburn Gateway District

LU-35 Apartment development should be subject to building and site design standards. These standards should address the appearance of buildings, compatibility with nearby uses, exterior lighting, connectivity with surrounding properties and uses, the relationship of ground floor spaces and entryways with the streetscape, and connectivity to nearby nonresidential hubs (shopping centers and schools). Protected bicycle parking should be provided.

LU-36 Provide a variety of housing typologies to suit the needs of various potential residents.

LU-37 Establish intensity limitations such as floor area ratios, density, building height, coverage ratios, setbacks, and other standards.

LU-38 Access to nearby amenities and health and human services should be considered when reviewing senior housing and STEP (shelters, transitional housing, emergency housing, and permanent supportive housing) developments.

LU-39 Encourage development of permanent supportive housing to address the homeless population and those with special needs.

LU-40 Encourage adaptive reuse, particularly of historic properties.

LU-41 Mixed-Use Districts should support cohesive, diverse, neighborhood mixed-use centers that allow vertical and horizontal mixed-use flexibility, as well as flexibility in uses, that provide for local housing, shopping, and employment options that also allows each center to foster it's own identity. (Public Comment, LU 2),

LU-42 Encourage sustainable transportation options by creating viable options for people to get to destinations by alternatives to personal vehicles in Mixed-Use Districts, Neighborhood Residential Three, and Neighborhood Residential Two designations.

LU-43 Support development of small-scale, local neighborhood serving commercial such as food and drink establishments and local services in Residential Two and Three designations.

LU-44 The residential uses permitted must be carefully regulated in regard to performance criteria to ensure alignment with the City's responsibility to accommodate required share of regional growth.

Commercial Land Use Designation

Character

Commercial uses will be wide ranging in terms of scale and type. A mix of businesses – local, regional, and national – will be among the businesses in the various designations and will be carefully located to create balance and maintain appropriateness based on adjacent uses. These commercial areas will be economically vibrant, unique, and active outside of traditional work hours. They will be accessible by foot, bike, car, and public transport.

Values

Character – Active gathering spaces, such as parks, plazas, cafes, concert venues, festivals and markets, will be distributed throughout the City; these spaces will be engaging and filled with people interacting, irrespective of culture, age, or income level.

Wellness: A variety of healthy food options will be physically and economically accessible to all members of the Auburn community.

Service: The City's resources and services are available and utilized by the business community. The business community finds the City approachable, empathetic, and responsive. An open and collaborative dialogue exists to help identify problems and find solutions.

Economy: A wide complement of retail, service, and dining options will cater to local needs, attract visitors, and encourage consistent patronage of local businesses.

Celebration: Auburn will have a thriving and expanding arts and culture community. There will be events, amenities, and attractions that draw people to congregate and socialize.

Environment: Local businesses benefit from Auburn's collection of natural resources and amenities because residents and visitors are choosing Auburn as their home or destination.

Sustainability: Local businesses benefit from, and contribute to, a sustainable economy because Auburn is an easy location to start up, maintains opportunity for growth, and has a business-friendly economic climate.

Policies

LU-45 The commercial uses permitted must be carefully regulated in regard to performance criteria and design to ensure alignment with the City's responsibility to accommodate required share of regional growth.

LU-46 Permitted uses in Residential designations would consist of local-serving and community-serving retail trade, offices, personal services, and eating establishments.

LU-47 Encourage uses that provide health and human services to the adjacent community.

LU-48 Encourage adaptive reuse, particularly of historic properties.

LU-49 Promote the use of energy and water conservation measures

LU-50 Ensure that legally established existing uses that may not conform with the underlying zone, but that are compatible with their surrounding uses, and are allowed to continue to evolve and operate without being classified as "nonconforming" uses.

LU-51 Consider commercial displacement when evaluating new development proposals and determine strategies to mitigate impacts when possible.

Description

Commercial land use designations are predominantly a mix of retail, office, service, hospitality, entertainment, and eating/drinking establishments. Some districts have a greater non-motorized emphasis where buildings and site features are scaled to a pedestrian level while other districts are more auto-centric. Extra design emphasis is placed on architecture, lighting, landscaping, accessory uses, landscaping, hours of operation, site layout, and transitions to adjacent uses.

Designation Criteria

1. Previously developed light commercial areas buffered from more intense commercial or industrial designations by landscaping or environmental features; or
2. Previously developed heavy commercial areas; or
3. Located along arterial or collector streets;
4. Properties that are buffered from the single-family designation by landscaping, or environmental features,; and
5. Meets the development parameters of the Light and Heavy Commercial designations.

Implementing Zoning Designations

A. C-1 Light Commercial
B. C-2 Heavy Commercial

Downtown Urban Center Designation

Description

The Downtown Urban Center (DUC) land use designation should be applied exclusively in the Downtown Auburn Subarea and Regional Growth center as identified in the Comprehensive Plan and 2024 Auburn Downtown Plan. As a Regional Growth Center, the DUC must maintain a planned target density of 45 activity units per acre minimum, per Puget Sound Regional Center Requirements. The Land Use Element assumes this target when considering future land use and zoning changes in the DUC. DUC zoning and land use in the Land Use Element and map are consistent with those in the draft 2024 Auburn Downtown Plan, which is under development with an anticipated 2025 adoption date. The DUC is implemented by zoning districts specific to Downtown Urban Center and the Downtown Design Guidelines. The ambiance of the downtown should encourage leisure shopping, provide amenities that attract regional visitors and shoppers, and provide housing and services to local residents and area employees.

Designation Criteria

1. Located within the Urban Center boundaries established by the King County Countywide planning policies or within the PSRC Regional Growth Center boundaries.

Implementing Zoning Designations

DUC Subarea-Specific Zoning classifications consisting of:

A. DUC Downtown Urban Center - 125’ District
B. DUC Downtown Urban Center - 75’ District
C. DUC Downtown Urban Center – 55’ District
D. DUC Downtown Urban Center – Health and Wellness District
E. DUC Downtown Urban Center - C1 Light Commercial District
F. DUC Downtown Urban Center - C2 Heavy Commercial District
G. DUC Downtown Urban Center - M1 Light Industrial District
H. DUC Downtown Urban Center - Flex-Residential District
I. DUC Downtown Urban Center - Neighborhood Residential District

Policies

LU-52 Vertical mixed-use should be encouraged; the location of retail sales and services should predominately be on the ground floor with residential or more retail or services above. However, small freestanding commercial spaces may be established as an accessory use to a larger vertical mixed-use development.

LU-53 Deviations of height, density or intensity limitations should be allowed when supplemental amenities are incorporated into site and building design. Examples of amenities include use of low-impact development, use of sustainable site and building techniques, public space and art, transit-oriented development (TOD),

landscaping and lighting, and bike shelters as well as the inclusion of affordable housing.

LU-54 Encourage a broad mix of uses within the downtown area. A wide range of consumer-oriented goods and services are compatible within this designation since creating an attractive shopping environment is a primary emphasis. Permitted uses include retail trade, offices, personal services, eating and drinking establishments, financial institutions, governmental offices, and similar uses. Legally established existing uses that do not fit within the range of desired new uses continue to be a valuable part of the downtown economy and character and should be allowed to evolve and operate in a manner that resembles listed permitted uses.

LU-55 Encourage residential dwellings within the upper stories of buildings and provide flexibility with how those spaces are organized and utilized.

LU-56 Drive-in windows shall not be permitted to maintain the area's pedestrian environment.

LU-57 Parking standards within the downtown should reflect the pedestrian orientation of the area, but also consider parking's impact for economic development.

LU-58 Discourage uses that rely on direct access by vehicles or involve heavy truck traffic (other than for merchandise delivery).

LU-59 Unsightly outdoor storage and similar activities should be prohibited.

LU-60 The downtown should capitalize on opportunities for multimodal transportation.

LU-61 Encourage adaptive reuse of existing buildings, particularly of historic properties.

LU-62 As a designated VISION 20 50 Regional Growth Center that contains a transit station, land use policies and regulations should encourage population and employment growth.

LU-63 The commercial uses permitted must be carefully regulated in regards to performance criteria and design. Architectural style, building height and size, lighting, and signage should be consistent with the surrounding residential properties.

LU-64 Permitted uses would consist of community and regional-serving retail trade, offices, personal services, and non-drive through eating establishments.

LU-65 Special emphasis will be directed at those accessory activities that can alter the character of these areas into heavier commercial areas. Examples include outdoor storage, location, and screening of trash receptacles, loading and unloading zones, and parking lots. Regulations and permit conditions will employ

techniques that mitigate light and noise impacts associated with surrounding residential properties.

LU-66 Commercial uses will have an orientation that is directed toward adjacent public streets while also providing pedestrian and bike-oriented access.

LU-67 Upzone requests to the next zone will be considered for approval based on the innovations in transportation and stormwater management and public amenities proposed for the development associated with the request.

LU-68 Encourage occupancy of storefront and other ground floor public-facing spaces to create a active environment downtown.

LU-69 Explore opportunities to increase the amount of public green space in downtown that provide spaces for recreation and activation.

LU-70 A wide range of consumer-oriented goods and services are compatible within this designation since creating an attractive shopping environment is a primary emphasis. Permitted uses would consist of local-serving and community-serving retail trade, offices, personal services, eating establishments, financial institutions, governmental offices, and similar uses.

LU-71 Parking lots must be located and designed in a manner that softens their appearance from adjacent public roads. This is accomplished through landscaping, pedestrian spaces, and the location of buildings on the property. Where practicable, low-impact development techniques and landscaping should be used to promote on site stormwater infiltration and shading of hard surfaces. Minimum and maximum parking ratios must be established for each type of permitted use.

LU-72 Development incentives should be established that encourage the creation of electric car charging stations, use of sustainable building and/or operational practices, development of nonmotorized infrastructure, and proximity and connection to public transit.

LU-73 Multiple family dwellings are only allowed as part of mixed-use developments where they do not interfere with the shopping character of the area, such as within the upper stories of buildings.

LU-74 Drive in windows should only be allowed accessory to a permitted use, and only when carefully sited under the administrative use process, in order to ensure that an area's pedestrian environment is not compromised

LU-75 Large-scale regional retail uses and uses that rely on direct access by vehicles or involve heavy truck traffic (other than for merchandise delivery) are not appropriate in this category.

LU-76 Unsightly outdoor storage and similar activities should be prohibited.

LU-77 Encourage adaptive reuse, particularly of historic properties.

LU-78 Upzone requests to the next zone should be approved based on the innovations in transportation and stormwater management and public amenities proposed for the development associated with the request.

LU-79 A wide variety of commercial-oriented services are appropriate within this category. This includes but is not limited to regional-scale retail and entertainment uses, commercial uses with outdoor sales areas, drive-in restaurant or other drive-in commercial businesses, and commercial services with outdoor storage as an accessory use.

LU-80 Parking lots must be located and designed in a manner that softens their appearance from adjacent public roads. This is accomplished through landscaping, pedestrian spaces, and the location of buildings on the property. Where practicable, low-impact development techniques and landscaping should be used to promote on site stormwater infiltration and shading of hard surfaces. Minimum and maximum parking ratios must be established for each type of permitted use.

LU-81 Development incentives should be established that encourage the creation of electric car charging stations, use of sustainable building and/or operational practices, development of nonmotorized infrastructure, and proximity and connection to public transit.

Industrial Land Use Designation

Character

Industrial uses will become a more integrated part of the physical and social life of the city. Since so many people work in these areas and these companies contribute so much to the financial life of the city, it is important that they are connected through paths, roads and by public transportation. Locations that have access to rail and highways that also encourage intelligent growth patterns will be prioritized. Innovation will be a key requirement of new and infill projects as the city looks to mitigate impacts of production and limit damage to the environment.

Values

Character: Buildings, landscaping, and outdoor spaces will be attractive, interesting, well designed, and well maintained.

Wellness: Risk to life and property from all hazards will be minimized. Properties and businesses are connected to nonmotorized corridors that offers alternative means to commute.

Service: The city works closely with individuals and organizations to fully understand the demands, needs, and concerns of the industrial community so that the city can sponsor initiatives that help aid in their success.

Economy: Cornerstone institutions will strategically expand in regional prominence. As industry grows, land use policy will support efforts to grow within Auburn.

Celebration: The Community will be made aware of and celebrate the accomplishments of our local, regional and international leaders in manufacturing, warehousing, and distribution.

Environment: The built environment will fit into the natural landscape in a way that protects and respects ecosystem function. Natural resource protection will be supported and celebrated by City leadership and the community.

Sustainability: Industrial uses are contributing to, and supportive of, efforts to build and maintain a transportation system that ensures the people and goods move safely throughout the city and beyond.

Description

Industrial lands allow for a mix of manufacturing, logistics, and warehousing along with the space needed to store materials and vehicles. These areas have a heavy reliance upon the transportation of goods by rail or truck which necessitates loading docks/bays, ample area for truck movement, and convenient access to robust rail and road infrastructure. These areas can also accommodate uses such as breweries and distilleries and their associated tasting rooms, restaurants and banquet halls, warehouse style retail outlets, and a modest level of integrated housing.

Designation Criteria

1. Previously developed light or heavy industrial areas; or
2. Light Industrial provides buffering for heavy industrial areas or is buffered from the single-family designation by landscaping, environmental features, and buffered from all other Residential designations;
3. Meets the development parameters of the Light and Heavy Industrial zoning districts.

1. Heavy Industrial districts should not located along high-visibility corridors serving non-industrial uses;
2. Properties identified as LF Airport Landing Field on the zoning map in the Airport Master Plan, and properties identified for future acquisition.

Implementing Zoning Designations

A. M-1 Light Industrial
B. M-2 Heavy Industrial
C. Airport Landing Field District

LU-82 A wide range of industrial uses may be permitted, subject to performance standards.

LU-83 Outside storage shall be permitted subject to performance criteria addressing its quantity and location.

LU-84 Development incentives should be established that encourage the creation of electric car charging stations, use of sustainable building and/or operational practices, development of nonmotorized infrastructure, and proximity and connection to public transit.

LU-85 Promote the use of energy and water conservation measures.

LU-86 A wide range of industrial uses may be permitted, subject to performance standards. Heavy commercial uses that serve the needs of workers in light industries are also appropriate. These uses include indoor manufacturing, processing, and assembling of materials from previously prepared or raw materials and ancillary and necessary warehousing and distribution of finished goods associated with manufacturing and industrial uses.

LU-87 Parking lots must be located and designed in a manner that softens their appearance from adjacent public roads. This is accomplished through landscaping, pedestrian spaces, and the location of buildings on the property. Where practicable, low-im pact development techniques and landscaping should be used to promote on site stormwater infiltration and shading of hard surfaces. Minimum and maximum parking ratios must be established for each type of permitted use.

LU-88 Landscaping, sidewalks, and bike paths will be integral parts of site design if a development is located on an impression corridor or located within or adjacent to an identified nonmotorized corridor.

LU-89 Outside storage shall be permitted subject to performance criteria addressing its quantity and location. This is to ensure compatibility with adjacent uses, so that such storage would not detract from the potential use of the area for light industry. In all cases, such storage shall be extensively screened.

LU-90 Where an Industrial use is located adjacent to a property with a less intense zoning designation, the light industrial use bears the burden of incorporating techniques that mitigate the visual, noise, dust, and odor impacts.

LU-91 Uses involving substantial storage or processing of hazardous materials, as well as substantial emissions, should not be permitted in these areas.

LU-92 A wide range of commercial activities may be allowed to provide increased opportunities for sales tax revenue.

LU-93 The Burlington Northern Santa Fe Railroad Auburn Yard located within the Railroad Special Plan Area is considered a compatible use at its current level of usage. It is not bound by the policies concerning outside storage under the existing light industrial designation as it was an existing use prior to the development of this policy. Should BNSF decide to reactivate its applications to upgrade the yard to

an intermodal facility, the proposal will be subject to the essential public facility siting process as defined in the Capital Facilities Element.

LU-94 Upzone requests to the next zone should be approved based on the innovations in transportation and stormwater management and public amenities proposed for the development associated with the request.

LU-95 While this zone should be reserved primarily for the heavier forms of industrial activities, a wide range of industrial activities may be permitted. These heavier forms of industrial activities may include outdoor or semi-enclosed manufacturing, processing, or assembling activities, significant outdoor storage, and uses involving substantial storage or processing of hazardous materials. Heavy commercial uses that serve the needs of workers in heavy industries are also appropriate.

LU-96 Landscaping, sidewalks, and bike paths will be integral parts of site design if a development is located on an impression corridor or located within or adjacent to an identified nonmotorized corridor.

LU-97 For the LF Airport Landing Field District, the Airport Master Plan (AMP) establishes the vision, policies, and implementation strategies that govern uses, management principles, and future planning efforts. The AMP is incorporated by reference in the Auburn Comprehensive Plan as an appendix.

LU-98 Auburn Municipal Airport is included in the federal airport system the National Plan of Integrated Airport Systems (NPIAS). Participation in the NPIAS is limited to public use airports that meet specific FAA criteria. NPIAS airports are eligible for federal funding of improvements through FAA programs. To maintain eligibility for funding through FAA programs, the Airport Master Plan should be periodically updated as conditions change.

LU-99 Uses, activities, and operations within the LF Airport Landing Field District must be coordinated and consistent with the Airport Master Plan.

LU-100 Future expansions of the LF Airport Landing Field District, for the purpose of airport uses, activities, and operations, should be coordinated and consistent with the Airport Master Plan.

LU-101 While the industrially designated area east of the Airport is highly suited for airport related activities, other industrial type uses are now located here. Therefore, the City will encourage use in this area to take advantage of its proximity to the Airport.

LU-102 New commercial land uses in proximity to the airport should be air related and/ or complementary to the airport.

LU-103 To protect the viability of the Auburn Municipal Airport the City shall create an airport overlay that is consistent with FAA regulations and WSDOT guidance.

LU-104 The City's zoning ordinance and other appropriate regulatory measures shall enforce the airport overlay and the FAR Part 77 surfaces.

LU-105 The airport overlay shall protect the operations of the Auburn Municipal Airport by establishing controls on incompatible land uses and development.

LU-106 The airport overlay should be implemented to manage land uses and development around the airport to ensure compatibility into the future and prevent incompatible future uses. The regulations applied to properties surrounding the airport should encourage land uses that are related to, and benefit from, proximity to the airport but not restricted exclusively to only these.

LU-107 The impact of development on air safety shall be assessed through the City zoning ordinance, FAA regulations, SEPA review, input from the Auburn Municipal Airport, and relevant technical guidance. Appropriate mitigation measures shall be required by the City.

LU-108 Uses in proximity to the airport that may create potential operational (e.g. height or noise) conflicts shall be reviewed for their consistency to airport operations and conformance with the FAA regulations.

LU-109 The airport should be protected from nonconforming uses and structures that pose a safety concern to airport operations.

LU-110 The City shall determine whether nonconforming uses and structures affect airport operations and require their minimization or elimination, at cost to owner, based on individualized study of proposals, City regulations, input from the Auburn Municipal Airport, and relevant technical guidance.

Public/Quasi-Public Designation

Character

This category includes those areas that are reserved for public or quasi-public uses. It is intended to include those of a significant extent, and not those smaller public uses that are consistent with and may be included in another designation. These public uses include public schools, developed parks, and uses of quasi-public character such as large churches and private schools. Public uses of an industrial character are included in the industrial designation, and small-scale religious institutions of a residential character are included in the residential designation. Streets, utilities, and other separate uses are not intended to be mapped separately as Public/Quasi-Public.

Values

Character: Community facilities and programs bring people together and connect residents and visitors to our natural resources.

Wellness: Multiple recreation options, and nearby trails, parks, activities, and events will be readily accessible to the entire community.

Service: Land use policy supports the provision of community, health and human services to all residents.

Economy: Residents and visitors seek Auburn as a residence or destination because of its natural resources, community events, and community pride.

Celebration: We utilize our open spaces and public facilities to promote who we are, our diversity, and our community pride.

Environment: Residents and visitors will enjoy open spaces and environmentally sensitive areas, while encouraging the appreciation of their importance and beauty. Impacts of new development on natural resources are considerate of their sensitivity and importance.

Sustainability: Public and private funds are used to make investments in land preservation, restoration and protection. Public investments in land and facilities are considered for their perpetual or generational value versus short-term motivations.

Policies

LU-111 The primary purpose of this designation is to address public needs while taking advantage of synergies with the adjacent areas where they are sited.

LU-112 Appropriate uses for this designation include facilities that serve the needs of the larger community such as public schools, active parks, city operated municipal facilities, police stations, and fire stations.

LU-113 Innovative strategies to integrate the uses and sites into the areas where they are sited is encouraged. These strategies should maximize use of the site while minimizing fiscal impacts and impacts to adjacent areas.

LU-114 Increase visibility of resources through public information campaigns.

LU-115 Appropriate uses include low-intensity recreational uses, passive use open areas, protected environmental habitat, stormwater detention facilities, and similar low-intensity uses.

LU-116 Promote the use of energy and water conservation measures.

LU-117 A responsible management entity and the purpose for Institutional districts should be identified for each property interest within this designation. Management policies and plans are appropriate for all lands in this designation.

LU-118 This designation permits a wide array of uses that tend to be located in the midst of other dissimilar uses. For this reason, special emphasis should be directed at the following:

a. The appropriateness of new requests for this designation and the impacts that it may have on the surrounding community.

b. Site-specific conditions that should be attached to the granting of new requests for this designation that are designed to mitigate impacts on the surrounding community.

c. Site-specific conditions that should be attached to development proposals that are designed to mitigate impacts on the surrounding community.

LU-119 Coordination with other Institutional entities is essential in the implementation of the Public/Quasi-Public land use designation.

LU-120 Industrial and commercial uses that are affiliated with and managed by educational institutions for vocational educational purposes may be classified as a Publican Public/Quasi-Public use and permitted on a conditional basis.

Designation Criteria

1. Previously developed institutional uses; or
2. Meets the development parameters of the Public/Quasi-Public designation.

Implementing Zoning Designations

A. *I Institutional*

B. P-1 Public Use District

Open Space Designation

Description

Open space lands are in public ownership or an otherwise permanently protected state that provide enhanced protection of floodplains, aquatic and/or wildlife corridors, wetlands, hazardous slopes, or that protect groundwater supplies. Open Space lands may be made available for public access and education which includes ancillary supportive uses such as bathrooms, trails, boardwalks, interpretive signs, parking, and picnic areas.

Designation Criteria

1. Passive parks or undeveloped Parks Department property;
2. Any site containing a significant developmental hazard; or
3. Any site containing open space value suitable for public protection without unduly encroaching on private property rights.
4. Sites that are permanently protected as a result of the terms of acquisition or a recorded instrument.

Implementing Zoning Designations

A. OS Open Space

Policies

LU-121 Active parks that provide sports field, activity and community centers, cemeteries, and public buildings should not be designated as open space.

LU-122 Open space lands are primarily designated to provide wildlife and aquatic habitat, flood detention, vegetation and soil preservation, and view shed protection. Land designated as open space may be used for public access to trails, interpretive centers, education opportunities, and other uses and facilities that support the purpose of their designation.

LU-123 Increase distribution of open space and increase access to open space amenities throughout Auburn.

LU-124 Enhance restoration, preservation and protection of natural resources and critical areas.

LU-125 Seek out opportunities to develop recreation and education opportunities on public lands or through public–private partnerships.

LU-126 Increase visibility of resources through public information campaigns. Continue to work with regional partners to develop and maintain trail systems that connect Auburn with regional destinations.

LU-127 Build on partnerships with school districts to expand public use of school facilities for recreation and exercise, and to improve public access to facilities for this purpose, as appropriate.

Overlays, Urban Growth Area, and Special Planning Land Use Designations

Character

These areas help control growth, protect the environment, and prevent urban sprawl conditions in our City. For a variety of reasons, specific areas exist within the City that require further specificity or focus of land use planning, policy, regulation, or investment. Overlays, urban growth areas, and special planning areas may be designated that help further enumerate a purpose. These areas are to be designated through the Comprehensive Plan and treated as a component of the Land Use Element of the Plan.

Values

Each area designated as an overlay, urban growth area, or special planning area shall reflect the values identified in the Core Comprehensive Plan.

General Policies

LU-128 These land use designations must be consistent with the Growth Management Act, Puget Sound Regional Council, and countywide planning policies.

LU-129 Any proposed changes to these designations must be pursued in coordination with applicable State, Regional and County agencies.

Urban Separator Designation

Description

Urban separators are areas designated for low-density uses in the King County Countywide planning policies. They are intended to "protect Resource Lands, the Rural Area, and environmentally sensitive areas, and create open space and wildlife corridors within and between communities while also providing public health, environmental, visual, and recreational benefits." There are two primary areas of urban separators, one on Lea Hill and one on West Hill.

Designation Criteria

Areas designated through the process of annexation.

Implementing Zoning Designations

A. Lea Hill Overlay
B. West Hill Overlay
C. Bridges Overlay
D. Urban Separator Overlay

Policies

LU-130 The City is obligated to maintain (and not redesignate) the Urban Separator designation until at least the year 2022, pursuant to countywide planning policies and an annexation agreement with King County. The City will coordinate with King County on redesignation of Urban Separators in 2025.

LU-131 Urban separators are deemed to be both a regional as well as local concern and no modifications to development regulations governing their use may be made without King County review and concurrence. Therefore, the areas designated as "urban separator" on the Comprehensive Land Use map, will be zoned for densities not to exceed one dwelling unit per acre, with lot clustering being required if a subdivision of land is proposed.

Urban Growth Area and Potential Annexation Area Designation

Description

Urban growth areas and potential annexation areas are areas located outside of the municipal city limits of Auburn. They are areas that are anticipated to be incorporated into the City within 10 years of their designation.

Designation Criteria

Potential annexation areas are jointly developed by cities and the County in which they are located. They are based upon countywide growth projections that are divided among all urban growth areas within each respective County. Urban growth areas and potential annexation areas are distinguished from each other by whether they have been assigned to a city or not. Urban growth areas have been identified but have not been assigned to a city. Potential annexation areas are urban growth areas that have been assigned to a specific city.

Implementing Zoning Designations

A. Urban Growth Area Potential Annexation Area

Policies

LU-132 Work with King and Pierce County, as well as nearby cities, to redesignate urban growth areas into potential annexation areas.

LU-133 Auburn's Potential Annexation Area is shown on the Comprehensive Plan Land Use Map (Map 1.1). Map 1.1 also depicts Growth Impact Areas. These Growth Impact Areas are generally adjacent to cities or unincorporated County lands in which development that occurs potentially impacts the city of Auburn.

LU-134 The Auburn City Council may revise the boundaries of the Potential Annexation Area in the future, in response to:

a. Amendments to King and Pierce County Urban Growth Areas as specified in the King and Pierce County countywide policies
b. Discussions between Auburn and adjacent jurisdictions regarding potential annexation area boundaries
c. Discussions with Pierce County concerning the designation of potential annexation area boundaries
d. Changed circumstances relating to population and employment growth and projections, urban service feasibility, or similar factors.

LU-135 Develop strategies and agreements for the review of development and provision of utilities within potential annexation areas that have yet to be annexed.

LU-136 Prior to annexation, develop strategies and agreements that address the orderly transition of areas into the city such as transfer of permit authority, infrastructure financing, financing of fire and police services, and interim development regulations.

Critical Area Overlay Land Use

Description

Under the Growth Management Act cities and counties are required to identify, designate and protect critical areas. Critical areas include (a) wetlands, (b) aquifer recharge areas (including areas with a critical recharging effect on aquifers used for potable water), (c) fish and wildlife habitat conservation areas, (d) frequently flooded areas, and (e) geologically hazardous areas.

Designation Criteria

Designation of critical areas includes both criteria that should be applied to the specific type of critical area as well as buffers and/or setbacks that are necessary for the protection of the critical area and/or life and property. Designation of critical areas is based on best available science as it applies to local conditions.

Implementing Zoning Designations

A. Wetlands
B. Aquifer Recharge Areas
C. Fish and Wildlife Habitat Conservation Areas
D. Frequently Flooded Areas
E. Geologically Hazardous Area

Policies

LU-137 Best available science will be utilized for the specific designation criteria and the associated adopted protection standards and development regulations.

LU-138 Reasonable use provisions will be included within the critical area regulations that ensure a property owner is not denied use of a preexisting parcel, lot or tract.

LU-139 Exemptions to the critical areas ordinance should be provided for very limited and justified circumstances such as maintenance of existing land uses, work within some types of human-made features, limited types of site investigation work, emergency activities, and certain types of invasive vegetation control.

LU-140 Critical area regulations will identify the process and standards for alteration of a critical area and criteria related to mitigation, performance, and monitoring.

Special Planning Area Designation

Description

“Special Planning Areas” consist of Districts, subareas, Impression Corridors, and Gateways within Auburn that warrant additional emphasis in planning, investments, and policy development. Each may be recognized separately within the Comprehensive Plan, as an Element of the Comprehensive Plan, or as an

subarea plan (discussed below). There are a variety of reasons for designating and distinguishing a special planning area, and once designated, a variety of potential outcomes. Reasons for designating a special planning area include:

- Growth Centers are areas of the city identified though the Comprehensive Planning process where a large share of growth is allocated. These areas provide a combination of Mixed-use, higher density residential, and higher density commercial uses which serve the local area. There will be a special focus on the performance of these Centers, including housing units and jobs created, to ensure the City accommodates the required share of regional growth by 2044. Growth Centers are shown in Map 1.4 and reflected in development regulations found in city code.
- Areas of high visibility and traffic. These areas create an impression or image of Auburn. It is therefore particularly important to ensure that they are attractive and well maintained. Examples include Auburn Way South and associated major highway on- and off-ramps.
- Land use activities that warrant joint planning between the city and owner/operator. In addition to developing approaches and strategies for the land use activity, there may be additional emphasis on ensuring compatibility with surrounding land uses. Examples include Green River College, the Auburn Municipal Airport, and Emerald Downs Thoroughbred Horse Racetrack.
- Neighborhoods in which a resident and merchant live and conduct daily business and leisure. Neighborhoods may also be distinguished by physical setting, physical separations, and similarity over an area. Examples include downtown, Lea Hill, and Lakeland.
- Areas with a focused desire to create greater physical and economic cohesiveness. These may be large, planned developments or clusters. Examples include the Auburn North Business Area and Mt. Rainier Vista.
- Areas with an existing built environment or an existing regulatory framework that does not, in itself, meet the expectations of the seven values that underscore the Comprehensive Plan. Examples include the need for multimodal connections between West Hill and Lea Hill to north and downtown Auburn.

Designation Criteria

1. **Districts:** The geographic limit of districts and areas that make up this category of Special Planning Areas extends beyond an alignment with any particular street, trail, river, stream, or other linear corridor. Districts may contain other smaller Special Planning Areas, such as subareas. Additionally, districts are generally consistent with the geography of one of the eight “neighborhoods” identified in the 2014 City of Auburn Community Vision

Report. Generally speaking, districts are identified for the purpose of creating identity. This means that the land use designations and overarching policies and implementing regulations are not going to change from one district to the next. Instead, Districts are important for event planning, establishing park and open space level-of-service standards, and promoting community identity.

Districts (see Map 1.4)

- West Hill
- North Auburn
- Lea Hill
- Downtown
- South Auburn
- Plateau
- Lakeland
- Southeast Auburn

2. **Subareas:** Subareas are smaller in geography than a district. Though relatively large, multiple subareas may be located within a single district. Subareas allow for the refinement and recognition of existing unique characteristics within a district. Subareas are intended to anticipate, support, and guide long-term growth and redevelopment through planned development and a unique vision for how that area should look and function in the future. It can also be used to provide flexibility when there is uncertainty regarding how an area may be most appropriately developed in the future.
3. Twenty-eight (28) subareas currently exist. These subareas are categorized into five different types of subareas:

- Identified Areas;
- Designated Areas;
- Economic Development Strategy Areas (a Designated Areas sub-category);
- Areas of Concern (another Designated Areas sub-category); and
- Adopted Areas.

Uses, intensities, and infrastructure development determined for each subarea or planned area through individual planning processes. Connectivity throughout the planned area, and connections to multimodal transportation opportunities outside of the planned area are also emphasized through the individual planning process.

The result of each individual planning process is the adoption of Comprehensive Plan element or subarea plan for the particular subarea by the City Council. Each Plan element must be consistent with the general goals, objectives, and policies of the Comprehensive Plan, and once adopted, subarea plans are intended to guide the future development of each respectively adopted subarea.

2a. **Identified Areas:** Identified areas are identified as a subarea within the Comprehensive Plan, but have not been established on the Comprehensive Plan Map. Therefore, the specific and detailed boundaries of an identified subarea have not been defined. Identification of a subarea within the Comprehensive Plan occurs by official action of the City Council.

Identified Areas

- Auburn Golf Course
- GSA/Boeing
- Green River College
- Mary Olsen Farm
- Les Gove Campus
- Emerald Downs
- Auburn High School

2b. **Designated Areas**: Designated Areas have been designated on the Comprehensive Plan Map, which defines the specific and detailed boundaries of the area. Designation of an area on the Comprehensive Plan Map occurs by official action of the Auburn City Council. It is intended that future development of these areas will be guided by individual Plan element or subarea plan of the Comprehensive Plan. The future subarea plan will either supplement existing goals, policies, and implement strategies, or replace existing Comprehensive Plan designations and policies for the area within the specific and detailed boundary.

Designated Areas (see Map 1.6):

- Auburn Municipal Airport
- BNSF Rail Yard
- Stuck River Road
- Mount Rainier Vista
- Lakeview

2b(1). Designated Areas - Areas of Concern: Areas of Concern are a specific type (or subcategory) of the designated area. Areas of Concern are established because they represent an area that features a lack in the infrastructure and services (e.g.

municipal water and sewer service, urban roads, traffic demand, and storm water management) necessary to support increase in density or other development. These areas require a close assessment of and an emphasis on infrastructure development and planning to support further development. While this Plan may not fully represent the intensity of uses that could ultimately be supported in these areas (in part due to the current weakness of the City's infrastructure to support future growth). Development intensification within the Area of Concern needs to be coordinated with the necessary infrastructure and services to support growth.

Designated Areas - Areas of Concern (see Map 1.6):

- AWS/Auburn Black Diamond Rd.
- Pike Street NE
- 8th Street NE

2b (2). Designated Areas - Economic Development Strategy Areas: The Economic Development Strategy Areas are a specific type (or subcategory) of designated area. In 2005, City Council adopted six Economic Development Strategy Areas under Resolution No. 3944. These areas, initially identified by a focus group of diverse business and community interests, are targeted for population and employment growth within the planning horizon of the City's 20-year growth target (204431). By 2012, the City Council added three additional economic development strategy areas, bringing the total to nine (9) strategy areas.

During the City's 2015 update of the Comprehensive Plan the list of economic development strategy areas reflects current conditions and status of these areas. As such, two of the original six economic development strategy areas were removed from the list. The Urban Center, one of the original six development strategy areas, was removed as it is no longer a designated area. The Urban Center, also known as "Downtown Auburn" or the "Downtown Urban Center" is an adopted area (since 2001) and features its own subarea plan. The Auburn Environmental Park (AEP)/Green Zone has also been removed as an economic development strategy area. The AEP/Green Zone economic development strategy area was previously zoned EP, Environmental Park Zone. The intent of this zone was to encourage economic development in the form of medical, biotech and "green" technologies including energy conservation, engineering, water quality and similar uses. Through Ordinance No. 6660 City Council rezoned the AEP/Green Zone from EP, Environmental Park Zone to M-1, Light Industrial, hereby effectively removing the need to designate the AEP/Green Zone as a specific economic development strategy area.

The current economic development strategy areas are included below. The boundaries of the economic development strategy areas are incorporated as designated sub-areas "Designated Areas – Special Planning Areas" map of the Land Use Element.

Designated Areas -Economic Development Strategy Areas (see Map 1.6)

- A St SE (corridor)
- Auburn Way South (AWS) Corridor
- Auburn Way North (AWN) Corridor
- M St SE (between AWN and AWS)
- SE 312th/124th Ave
- NW Manufacturing Village
- 15th St SW/West Valley Hwy N

2c. Adopted Areas: Adopted Areas include an Adopted Subarea Plan incorporated into the Comprehensive Plan that establishes the purpose of its designation, goals and policies, and implementation strategies. Adoption of a subarea plan occurs by official action of the City Council. As an adopted document of the Comprehensive Plan, the subarea Plans are subject to a review, and if necessary, revision to address changes in conditions, issues, or even characteristics of the planned areas. The review and revision of the Subarea Plan will also include the review and, if necessary, a revision of zoning regulations and architectural design standards.

Adopted Areas (see Map 1.7)

- Downtown (Ordinance No. 5549)
- Auburn Adventist Academy (Resolution No. 2254)
- Auburn North Business Area (Resolution No. 2283)
- Lakeland Hills (Resolution No. 1851)
- Lake Hills South (County H.E. Case Z15/UP70)
- Northeast Auburn (Ordinance N. 6183)

3. Impression Corridors: Impression corridors are aligned with a particular street, trail, river, stream, or specific linear corridor. Some corridors may be part of a subarea, in which case the Impression Corridor policies are additive to a subarea plan. Impression corridors enhance the areas in which residents, businesses, and visitors move throughout the city. The benefit of an impression corridor is two-fold: residents know that the city is invested in the aesthetic of main thoroughfares and businesses can build off of the design and aesthetic provided by the impression corridor. Improvements or modification to impression corridors consist of aesthetic signage, landscaping, and monument features, and the rehabilitation or removal of existing buildings and property. Impression Corridor boundaries and policies are formally designated by adoption of the Comprehensive Plan. Priority is given to the impression corridors that are a part of a subarea. Priority impression corridors are the thoroughfares in which residents,

businesses, visitors move throughout a specific subarea. The priority impression corridors are italicized below.

Impression Corridors (see Map 1.8)

- *Auburn Way North*
- *Auburn Way South*
- *Auburn Black Diamond Road*
- *A Street SE/Auburn Avenue*
- *C Street SW*
- *Division Street*
- *M Street/Harvey Road*
- *Main Street*
- *8th Street NE*
- *15th Street SW*
- *West Valley Highway*
- *15th Street NW/NE*
- 132nd Ave SE
- SE 320th Street
- SE 312th Street
- SE 304th Street
- R Street
- Lake Tapps Pkwy SE
- Green River Road
- 37th Street NW
- S 277th Street
- Interurban Trail
- Green River
- White River

- Mill Creek

4. Gateways: Gateways are specific places, intersections, or blocks within the city. These essential locations are established because they constitute the first impression into of Auburn. Gateways are intended to create a "welcome" into distinct areas of the city or into the city itself. They are therefore highly important to plan, construct, maintain, and enhance their appearance and function. Gateway locations and policies are formally designated by adoption of the Comprehensive Plan. Priority is given to those gateways that are along a priority impression corridor. Priority gateways function as an entrance to an impression corridor. The priority gateways are italicized below.

Gateways (see Map 1.9)

- *Auburn Way North and Auburn Avenue (where the roads converge)*
- *East Main Street and M Street NE/ SE (at the intersection)*
- *Auburn Way South and 4th Street SE*
- *Auburn Way S and 6th Street SE*
- *West Main Street between C Street NW and B Street NW*
- All roads with an entry into the city
- Hwy 167 Off Ramps
- SR 18 Off Ramps

Implementing Zoning Designations

A. Planned Unit Development (PUD) Master Plans

Special Plan Area Policies

District Policies.

LU-141 Through regulation, capital investment, and community planning, identify, promote and market district identity.

Subarea Policies.

LU-142 Each subarea will contain its own vision, goals, policies and strategies.

LU-143 BNSF Rail Yard - This approximately 150-acre Special Planning Area is located in the south-central portion of the city and surrounded by SR-18 to the North, Ellingson Road to the South, C Street SW to the west and A

Street SE to the East. The Special Planning Area should consider both sides of C Street and A Street. Consideration should be given to:

- The needs of Burlington Northern.
- Providing pedestrian, bicycle and vehicular access across the site to connect the southeast and southwest sides of the city.
- Providing a more visually appealing “entry corridor” into the city from the south along A and C Streets.
- Allowing for a mix of uses including single and multifamily development and commercial and industrial uses where appropriate.

LU-144 Stuck River Road - A portion of the Stuck River Road Special Planning Area is currently the site of a large sand and gravel mining operation. This area and other adjacent land comprising a total of approximately 664 acres has been designated as a long-term resource area (mineral resource area), so development of the Special Area Plan for this area should be a low priority as mining is expected to continue on this site for as long as 30 years. The land uses for the Stuck River Road Special Planning Area will be determined through the subarea planning process and the City Council’s adoption of the subarea plan. Potential land uses applied through the subarea planning process could include single-family residential, multi-family residential, commercial, institutional, and recreational. Some light industrial uses may be appropriate for consideration and designation through the subarea planning process if the uses are “industrial or business park” in character, conducted entirely within an enclosed building, and exhibit a high degree of performance standards and are non-nuisance in nature and if appropriately limited in extent and location. A mix of housing types ranging from single family residential to multi-family residential is appropriate for this planning area. The subarea plan should be adopted taking into consideration the period during which mining is expected and the intent of the ultimate development of the area. An active permit has been processed by the city with respect to the mining activity on a portion (approximately 664 acres) of the mineral extraction operation. The permit process should continue, however, any permit for mining in the mineral resource area should be granted for the life of the resource, with reviews conducted periodically (every five years) to determine whether changes in the originally proposed mineral extraction operation have arisen and give rise to the need for additional or revised permit conditions to address the new impacts (if any) of any such changes. Any permit applications for additional acreage within the mineral resource area shall be processed by the City.

Development of this area should not occur until adequate public facilities are available to support the development consistent with City concurrency policy.

The City recognizes the potential for expanding the Stuck River Road Special Planning Area to include additional land east of Kersey Way and north of the Covington-Chehalis power line easement and will consider a proposal by all affected property owners. If the area is expanded, the

number of non-multiple family, non-manufactured home park dwellings units may be increased proportionate to the increase in acreage. Any such proposal shall specifically apportion the types and quantities of development to occur within each separate ownership.

LU-145 Lakeview - The Lakeview subarea is currently the site of two independent sand and gravel mining operations. While mining activity continues in the eastern operation, indications in 1995 are that the western operation has ceased. Activity in the western portion is now limited to a concrete batch plant and future site reclamation. Following reclamation, the area should be developed as a primarily single-family residential neighborhood of low to moderate urban density. A planned development would be particularly appropriate for this approximately 235-acre site. The permitted development density of the site will depend heavily upon the ability of the transportation system near the site to handle the new uses. Consideration shall be given to the environmental, recreational and amenity value of White Lake, the historical and cultural significance, as well as tribal ownership and jurisdiction of the Muckleshoot Tribe in the development of the Lakeview Plan element. Permit applications have been accepted and are currently being processed by the city with respect to the mining activity in the eastern portion of the area. The permit process should continue, however, any permit for continued mining in this portion of the area should be limited to 10 years to encourage completion of the mining, and subsequent reclamation by the property owner in preparation for development. The Lakeview Plan element should be adopted prior to the City's acceptance or processing of any other permit applications for the mining operation in the Lakeview Special Planning Area. The environmental information and analysis included in the Final Environmental Impact Statement for Lakeview (November 1980), shall be considered in the development of the Lakeview Plan element. While heavy commercial or industrial uses would not be appropriate as permanent uses of this area, conversion of the area now zoned for heavy industry to office commercial (or similar) uses would be appropriate.

LU-146 Mt. Rainier Vista - This 145-acre subarea is located south of Coal Creek Springs Watershed. Overall development of the Mt. Rainier Vista subarea plan shall be consistent with the following conditions:

1. Primary consideration in the use and development of the property shall be given to protection of Coal Creek Springs' water quality. Development types, patterns and standards determined to pose a substantial risk to the public water source shall not be allowed.

2. The maximum number of dwelling units will be determined as part of any sub-area plan process. Dwelling units shall be located within portions of the property where development poses the least risk of contamination for Coal Creek Springs. Lands upon which any level of development would have a high risk for contaminating the water supply shall not be developed, but would be retained as open space. The development pattern shall provide for a logical transition between areas designated for rural uses and those designated for single family residential use. All dwelling units shall be served by municipal water and sanitary sewer service, and urban roads. If 53rd Street S.E. is the major access to serve the Special Planning Area, the

developer will be responsible for developing the street to urban standards, from the property owners' eastern property line that abuts 53rd Street, west to the intersection of 53rd and Kersey Way.

3. Percolation type storm sewer disposal systems shall not be permitted. All surface water drainage shall be conveyed consistent with the City's current storm drainage standards. Treatment of stormwater shall occur prior to its discharge to any surface water body, consistent with standard public works or other requirements in general effect at the time of development.

4. The site shall be zoned temporarily, at one unit per four acres, until the sub-area plan is completed, and the long-term urban zoning determined.

5. The Mt. Rainier Vista special planning area boundary may be modified through the development of the subarea plan.

6. The Mt. Rainier Vista and Stuck River Road Special Planning Areas shall be coordinated subarea plans.

Designated Areas - Areas of Concern Policies

LU-147 AWS/Auburn Black Diamond Rd – The area between Auburn-Black Diamond Road and the Burlington Northern Railroad currently lacks urban facilities necessary to support urban development. Major development proposals shall be carefully assessed under SEPA to ensure that the development can be supported by the available facilities. Once property owners are able to demonstrate to the City that they can provide urban services (municipal water and sewer service, urban roads and storm water management) necessary to support the intensity of development proposed within the entire area, the Plan designation and zoning for this area should be changed to an urban residential or commercial classification. The appropriate classification(s) shall be determined after a review of the development proposal and the pertinent Comprehensive Plan policies.

LU-148 Pike Street NE – The area located north of 8th NE, east of Harvey Road, and south of 22nd NE is inadequately served by residential arterials. No increase in density or other development which would increase traffic demand in this area should be approved.

LU-149 8th Street NE – The areas paralleling 8th Street NE located between Auburn Way and M Street are designated for multiple family residential while 8th Street NE is designated as a minor arterial. However, the road is not currently constructed to this standard and is not able to support current traffic demand adequately. The Plan designation would greatly increase traffic volumes. Implementation of the Plan designations should not occur until 8th Street NE is constructed to the adequate arterial standard and water service is upgraded. Up zones should not be granted from current zoning until these stems are upgraded or guaranteed.

Designated Areas - Economic Development Strategy Areas Policies

LU-150 The City should adopt a formal subarea plan for each of the seven economic development strategy areas (listed below) as an element of the Comprehensive Plan. Each economic development strategy area subarea plan should identify the uses, intensities, and infrastructure development necessary to support the types of business and activities that are most consistent with community aspirations. Each

subarea plan should address and include policies regarding the expected level of housing density (or residential growth targets) and employment growth targets.

- Auburn Way South Corridor
- Auburn Way North Corridor
- NW Auburn Manufacturing Village
- 15th St. SW/C St. SW/W Valley Hwy. N
- A St. SE
- SE 312th St. /124th Ave SE
- M St. SE between Auburn Way N and Auburn Way S

Adopted Areas Policies

LU-151 Adoption or revision of a subarea plan will be treated as a comprehensive plan amendment and will comply with the Growth Management Act, Countywide planning policies, Vision 20 50, and the Core Comprehensive Plan.

LU-152 Adventist Academy - Adopted under Resolution No. 2254 on November 14, 1991. The Auburn Adventist Academy is Special Planning Area (Adopted Area) is a multi-use campus operated by the Western Washington Conference of Seventh-Day Adventists. The Campus plays a large role in the Western Washington Conference of Seventh- Day Adventists' private elementary and secondary education system in Washington and hosts many community events as well as an annual regional camp meeting for Adventists from Washington and around the world. The Campus previously housed Harris Pine Mill, a furniture manufacturer, for many years. The Mill provided financial benefit to the Academy's budget and provided employment opportunities, learning experiences, and vocational education for Academy students. The Academy continues to include in its plan industrial uses that support the mission of the school financially. The reuse of existing mill buildings and redevelopment of buildings lost to a fire in 1989 are the focal points of the current industrial development. In addition to institutional and industrial uses, the Academy also operates a landing strip and associated aircraft hangars for student aviation and flight training. A single-family subdivision is located to the south of the airstrip. In addition to these uses, the Academy wishes to allow development of uses such a multi-family and senior housing and assisted living and memory care which will generate perpetual revenue through a long-term land lease on a portion of the Campus lying generally north of Auburn Way South and south of 32nd Street S.E. that will directly aid its mission. The financial benefit from these uses will allow funding an endowment, subsidize student tuition, provide financial aid for students needing tuition assistance, for new educational programs, for additional faculty, facility maintenance and upgrades, and other needs. The plan focuses on provides predictability to planning, zoning, subdivision, and development decisions within the Special Planning Area (Adopted Area) made by the city.

LU-153 Auburn North Business Area - Adopted under Resolution No. 2283 on March 2, 1992. The Auburn North Business Area Special Planning Area Plan was the result of a comprehensive planning study due to increased development pressure north of the Central Business District. Since the Central Business District, which contains Downtown, the core of Auburn, is adjacent to these areas, future development in this area is crucial. A comprehensive and cohesive direction was also needed based on increased development proposals and rezone requests. In addition to development concerns, many of the considerable undeveloped parcels contain wetlands. All of these factors made development controls beyond zoning and development regulations advisable.

LU-154 Lakeland Hills - Adopted under Resolution No. 1851 on April 18, 1988. Lakeland Hills area lies between the Stuck River and the southern City limits of Auburn in the most southwestern part of the city. The area consists of planned residential and commercial subdivisions, and is predominately residential in nature, offering a range of housing types, including single family and multi-family dwellings. The Lakeland Hills Plan was intended to provide long-term predictability to both the city and potential developers. As a planned community, development and design must be consistent with the policy guidance of the Lakeland Hills Plan.

LU-155 Lakeland Hills South - Approved under Pierce County Hearing Examiner Case Z15/UP70.Lakeland Hills South lies south of the Lakeland Hills special plan area and is the most southwestern part of the city. The area is predominately residential, allowing for a range of housing types, with commercial uses, including Lakeland Town Center, in the center. Nonresidential uses, including civic, religious, and municipal services are allowed throughout the area through an Administrative Use Permit. Unlike Lakeland Hills, Lakeland Hills South was accepted into Auburn was a Planned Unit Development (PUD). The Lakeland Hills PUD, originally the Lakeland Hills South Planned Development District (PDD), was approved under Pierce County Hearing Examiner Case no Z15-UP70 in 1990. Lakeland Hills South PUD is intended to provide enhanced flexibility to develop a site through innovative and alternative development standards. As a PUD, specific development and design standards are prescribed.

LU-156 Auburn Downtown Plan (Downtown Urban Center) – Adopted under Ordinance No. 5549 on May 21, 2001. Downtown Auburn is the business, governmental, and cultural hub of Auburn, its physical and cultural heart. Many stores, restaurants, service providers, and small offices are well-represented throughout this district. Downtown hosts many community events and activities, such as the weekly Auburn International Farmers Market in the summer, Soundbites! Concert Series (in the City Hall Plaza) and the Veterans Day Parade. Downtown features public art that includes temporary installations such as Pianos on Parade and a permanent outdoor Downtown Sculpture Gallery with rotating pieces. This dynamism is possible because the district is a collection of uses that coexist in close proximity to one another. Due to the value, importance, and

complexity of this district, The Auburn Downtown Plan identified four general needs to be addressed by the plan:

- Update of the existing plan in order to continue Downtown revitalization
- Concern over the reopening of Stampede Pass
- Multiple large projects proposed for Downtown
- Scarce private investment

In conjunction with project-based items, a regulatory element that emerged from the goals of the Auburn Downtown Plan was the Downtown Urban Center (DUC) zoning district, which was established in 2007. While the DUC zoning district is intended specifically to address the needs of downtown, though the implementation of policies identified by the Downtown Auburn Plan, many challenges related to public and private investment, development, and strategic planning have yet to be addressed as downtown has evolved.

The Auburn Downtown Plan is in the process of being updated and is expected to be considered for adoption in 2025, after this Periodic Comprehensive Plan update is adopted in 2024. The DUC zoning districts and DUC boundaries found in the Comprehensive Plan Land Use Map, related Zoning Map, and Implementing Zones is consistent with direction in the updated Auburn Downtown Plan.

LU-157 Northeast Auburn Special Plan Area – Adopted under Ordinance No. 6183 on June 5, 2008. The Plan was prepared in fulfillment of the policies included in the Comprehensive Plan for the area between Auburn Way North and the Green River, south of 277th Street (52nd Street NE) and north of approximately 37th Street NE in the City of Auburn (Map No. 14.2). The planning area was narrowed to an area covering approximately 120 acres, north of 45th Street NW and between Auburn Way North and the existing I Street NE right-of-way. The Northeast Auburn/ Robertson Properties Special Area Plan focuses on proposed develop of the Auburn Gateway project area, a 60-acre group of properties owned or under consideration for purchase by Robertson Properties Group, owners of the Valley 6 Drive-In Theater. The plan calls for a mix of office, retail, and multifamily development under a new zoning designation (C-AG Auburn Gateway) for the central portion of this planning area, created to accommodate mixed use development. The plan calls for phased development in coordination with the provision of new roads, stormwater and other utilities, and flood management measures.

Impression Corridor Policies.

LU-158 Create specific plans for each identified corridor, outlining development policies and regulations, necessary capital improvements, and implementation strategies. In the absence of any specific corridor plans, this section contains general policies that are to be applied within designated impression corridors.

LU-159 Coordinate corridor planning, design, construction, and maintenance with other agencies, such as BNSF, the Muckleshoot Indian Reservation, and the Washington State Department of Transportation. Where one agency may more effectively manage the corridor, management or ownership consolidation is appropriate.

LU-160 Promote the elimination or renovation of existing derelict or unmaintained structures, signs, fences, and properties along impression corridors through regulatory or enforcement mechanisms.

LU-161 Work with private and public property owners to educate, create incentives, and enforce regulations that are intended to improve the overall appearance of identified corridors.

LU-162 Emphasize the design, orientation, construction materials, landscaping, and site layout for development proposals of new and existing buildings along impression corridors. New construction and the renovation of existing buildings create important opportunities for enhancing the appearance of impression corridors.

LU-163 Establish regulations that ensure coordinated, attractive commercial signage is of an appropriate size and quantity. Signage regulations along these corridors may be different than those in other areas.

LU-164 Take advantage of opportunities to provide informational signs, wayfinding signs, and traffic control signs that are attractive, useful, and integrated into a larger citywide signage plan or policy.

LU-165 Outdoor storage of materials, inventory, and other goods and off-street surface parking should be located at the rear of the property. If outdoor storage cannot be located in the rear of the property, then it should be screened from view from adjacent rights-of-way.

LU-166 Design, construct, and enhance impression corridors to accommodate multimodal uses.

LU-167 Design and construct vehicular access points in a manner that consolidates access points serving multiple uses.

LU-168 Signage, landscaping, and monument features should be used to establish prominent access points.

LU-169 Discourage aerial utilities.

LU-170 Invest in impression corridors by acquiring rights-of-way, constructing and widening sidewalks, installing landscaping, building center medians, constructing parklets, providing street furniture, and constructing other improvements.

Gateway Policies

LU-171 Prioritize by ranking all gateways and develop potential opportunities and designs for each location.

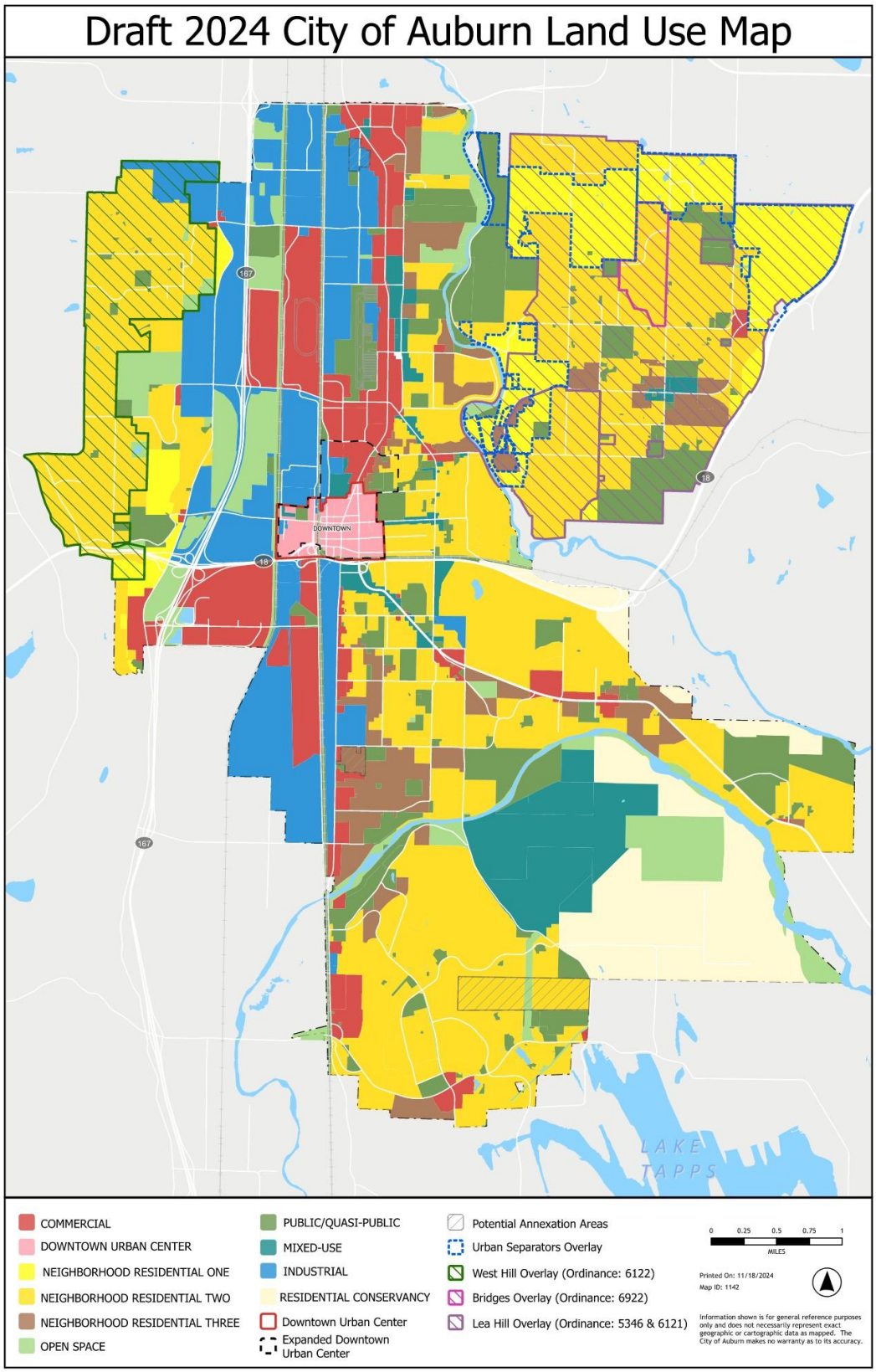
LU-172 Develop land use regulations that incorporate gateway priorities and concepts into private development proposals that are located at identified gateways.

LU-173 Coordinate with the Washington State Department of Transportation to understand options and implement actions at gateway location. Many of the gateway locations are within the WSDOT right-of-way.

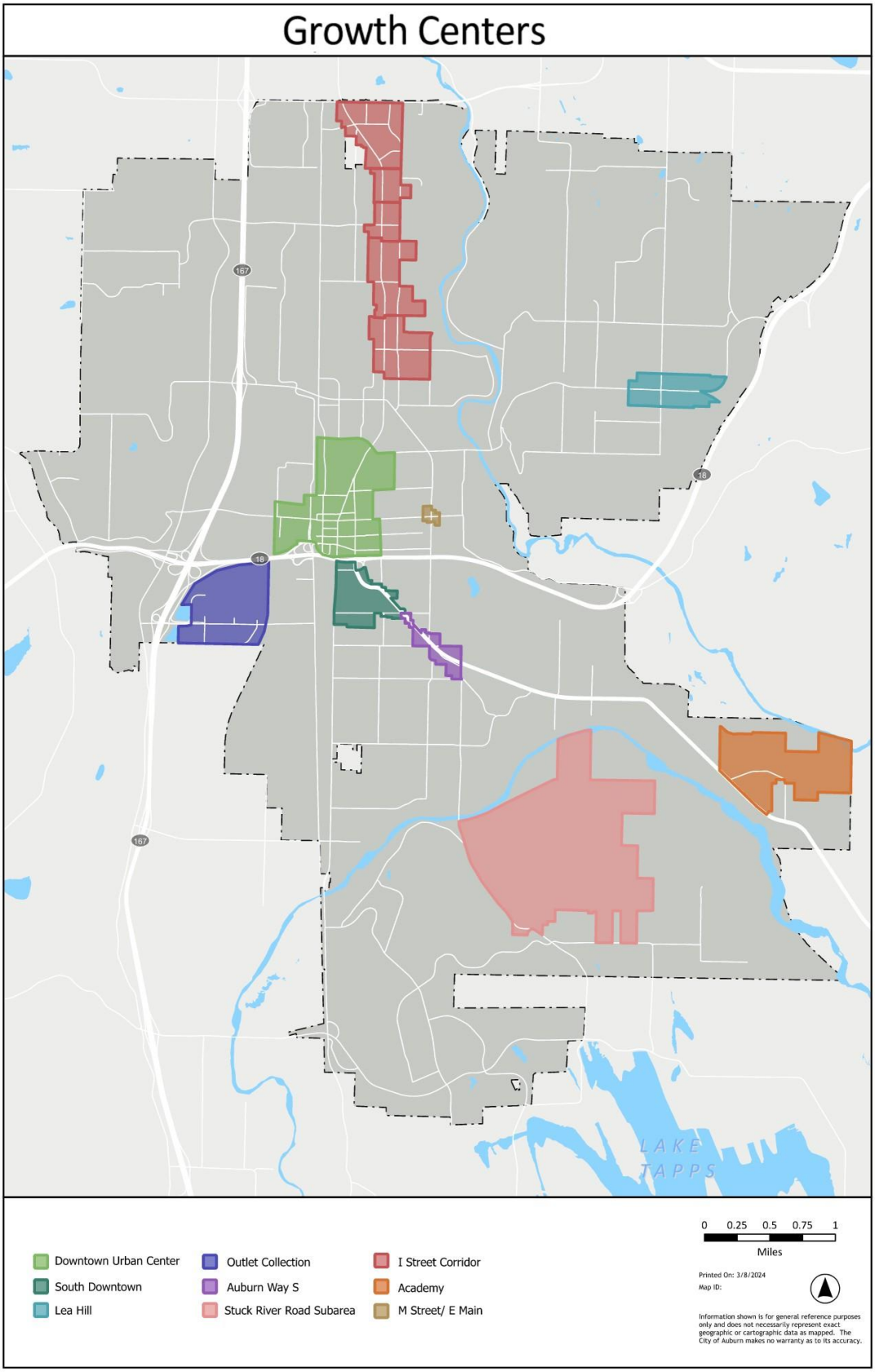
LU-174 Develop design layouts for gateway locations. Designs will identify key areas that greet residents and visitors as they enter the city or downtown center, opportunities for signage and monument features, and landscaping.

LU-175 Maintain established gateways.

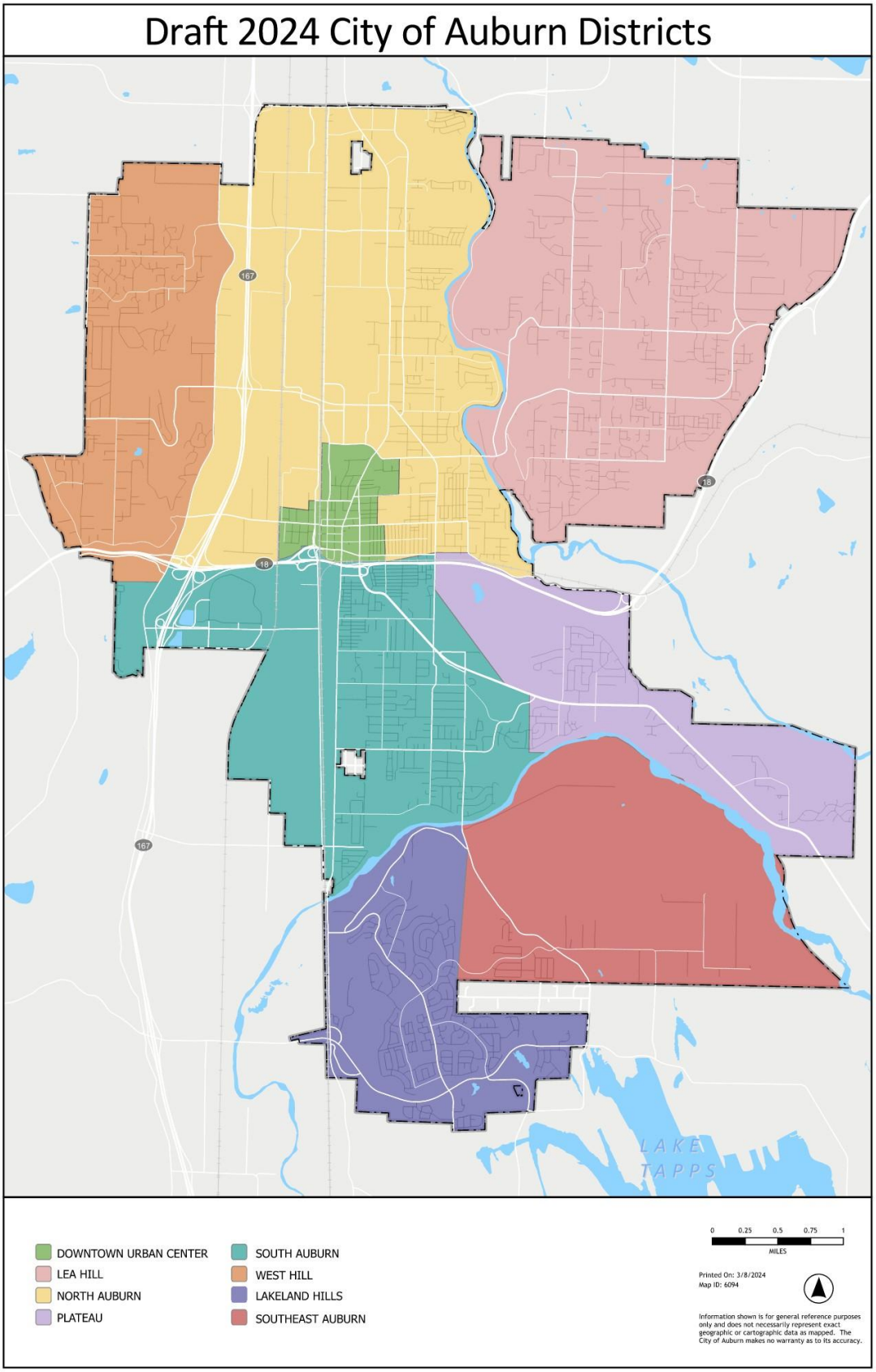
Map 1.3 - City of Auburn Comprehensive Land Use Map



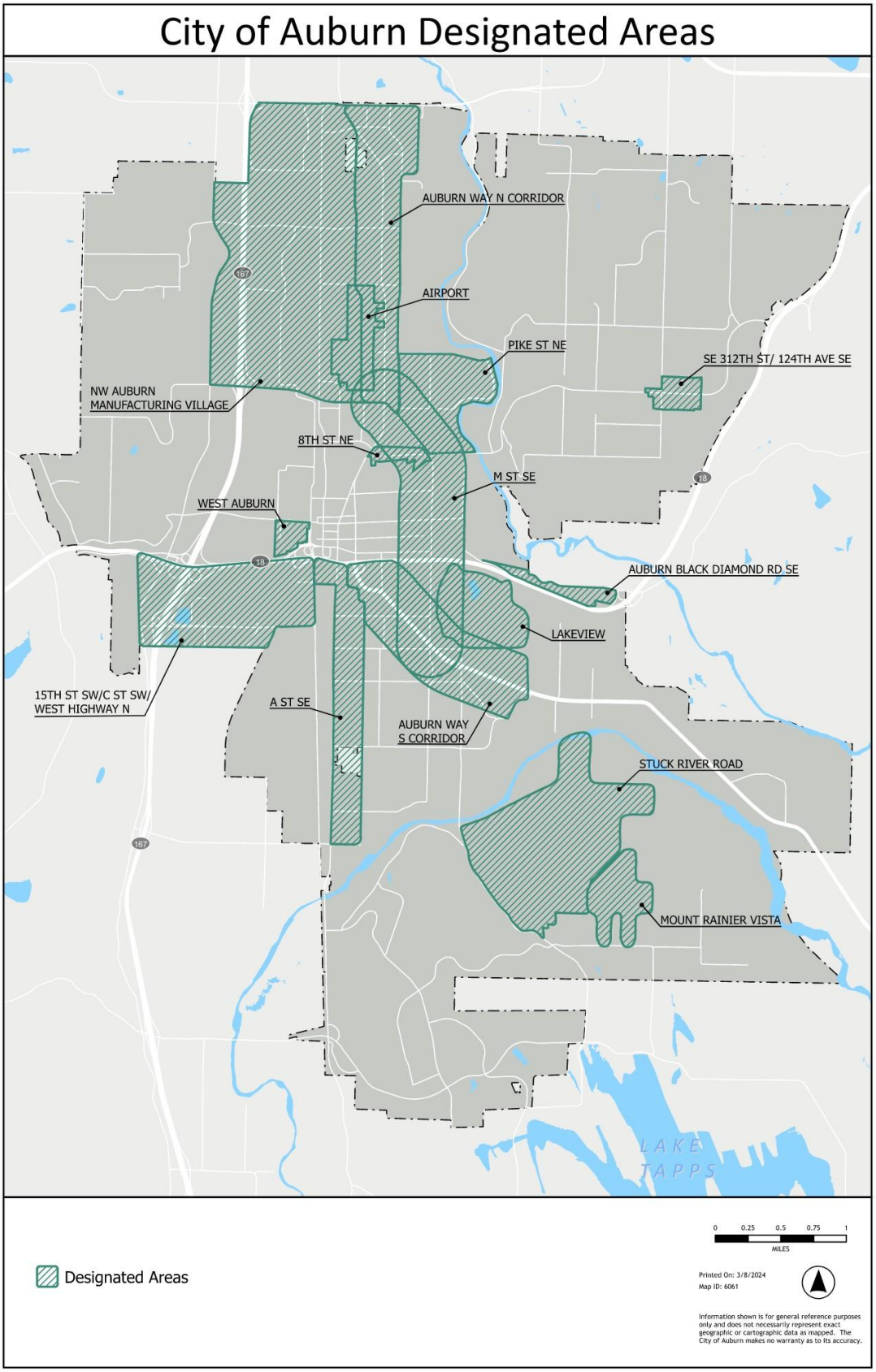
Map 1.4 - City of Auburn Comprehensive Growth Centers



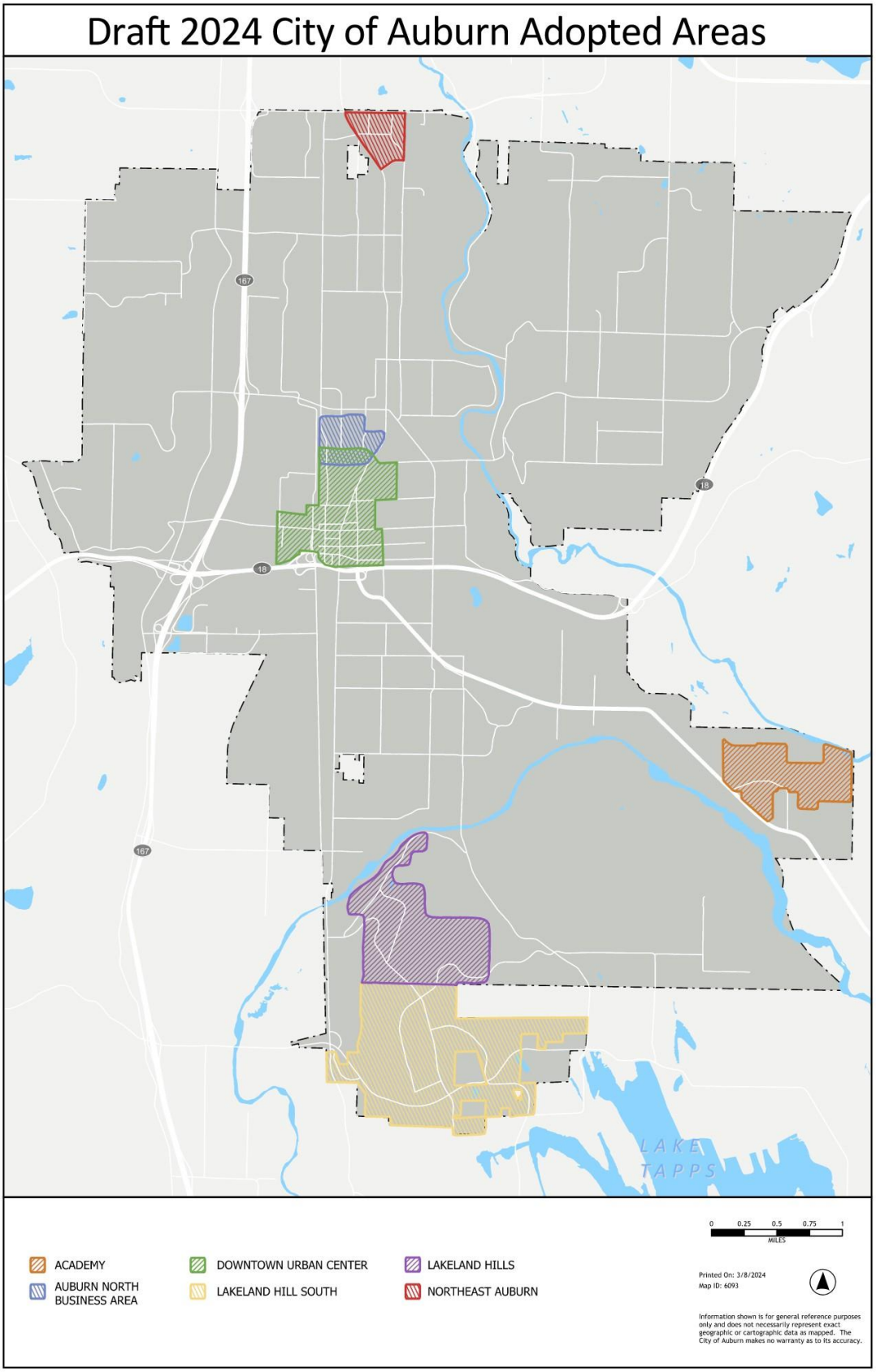
Map 1.5 - City of Auburn Districts Map



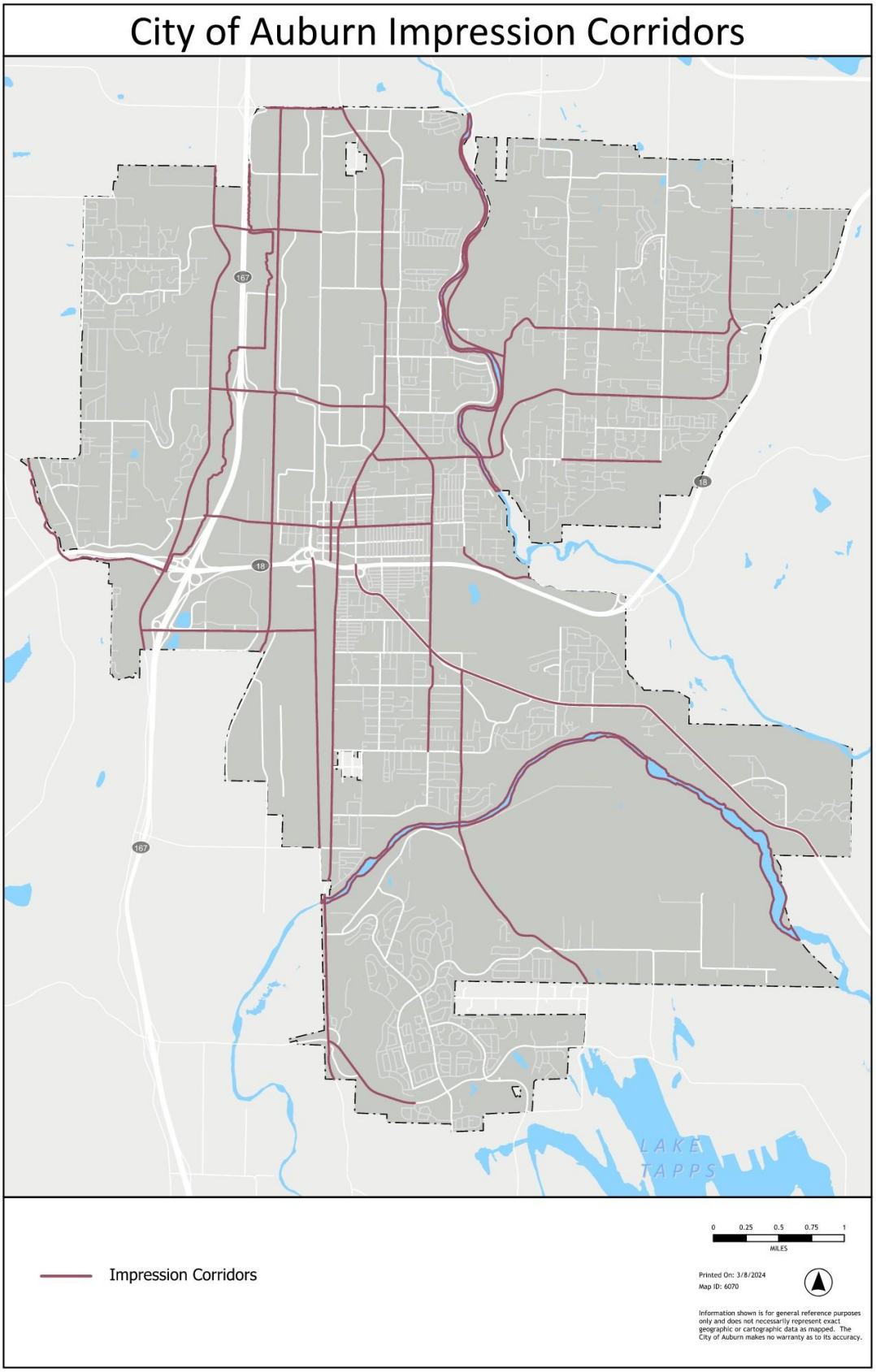
Map 1.6 - City of Auburn Designated Areas



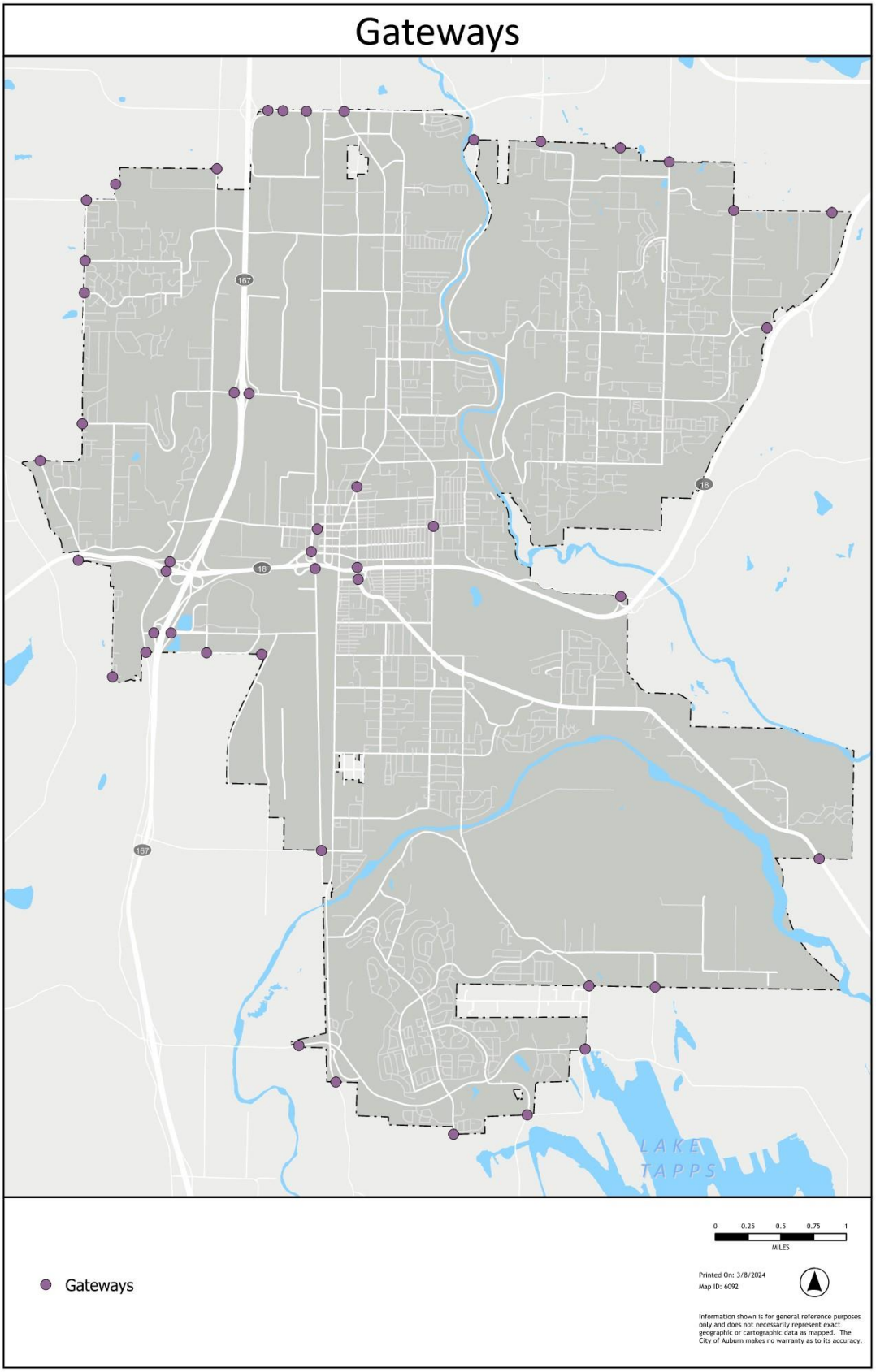
Map 1.7 - City of Auburn Adopted Areas



Map 1.8 - City of Auburn Impression Corridors



Map 1.9 - City of Auburn Gateways



City of Auburn

Housing Element



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Why is Housing Important to Auburn's Future?

The Housing Element can serve as a useful management tool to meet changing community needs for housing and address land use, economic development, transportation, environmental, and other concerns.

- A variety of housing choices can meet the needs of Auburn's current and future residents across all ages and affordability levels, help residents maintain and retain their homes, and promote services and amenities that improve neighborhood livability.
- Well-planned housing can support Auburn's economic goals by making it attractive and possible for residents to live near their jobs and by serving as a source of customers to support commercial districts.
- Housing in proximity to transit or mixed-use projects can help reduce the need for costly infrastructure such as roads and sewers, and reduce environmental impacts related to transportation. In addition, housing in proximity to a variety of transportation modes can increase a household's disposable income and savings by reducing household transportation costs.
- Well-designed and located housing can reduce energy and water consumption, and it can promote healthy lifestyles.

For these reasons, as well as others discussed or referenced in this Housing Element, an emphasis on encouraging Middle Housing, Mixed-Use, Transit-Oriented Development is core to planning for housing both in the near-term and by 2044.

Vision

Auburn is a place that those in our diverse community are proud to call home for a lifetime. Auburn provides opportunities for attainable housing in a variety of styles to meet the needs of all ages, abilities, cultures, and incomes. Our neighborhoods are safe and attractive, offer gathering places to meet friends and family, are connected by trails, streets, and transit, and are well kept. Our households are aware of the opportunities and services offered by governmental, educational, employment, health, and service providers that can enhance their quality of life. Volunteerism to improve our parks, schools, streets, and homes makes our neighborhoods and families stronger. Our quality housing and neighborhoods support our local economy.

Conditions and Trends

This section summarizes key findings of the Housing Needs and Characteristic Assessment (HNCA), which was updated in 2023. The HNCA provides a comprehensive picture of Auburn's housing conditions, needs, and regional context.

Analysis and data to support required analysis, policy choices, and to help illustrate the housing picture in Auburn was collected from a variety of sources. In 2021, the City of Auburn prepared and adopted a Housing Action Plan (HAP), funded by a state grant (authorized by HB 1923) for the purpose of identifying city strategies and recommendations to increase residential capacity. Findings in the HAP may vary slightly from those completed for the HNCA due to differences in horizon years. Both of these data sources, as well as others from the Washington State Department of Commerce, Puget Sound Regional Council, King and Pierce Counties, as well as other sources are referenced in the HNCA and this Housing Element. The Housing Needs and Characteristics Assessment can be found in Appendix X of the Comprehensive Plan.

The conditions and trends inform Housing Element goals and policies to address projected housing need in Auburn.

Affordability

The cost of housing in Auburn has substantially increased from 2010 to 2020. Between 2010 and 2020, the average monthly rent in Auburn increased by 49 percent ($459 per month). In this same period, the median sales price for a home increased by 88 percent ($195,550) based on 2017-2021 American Community Survey Data.

Of the approximate 15,507 renter households in Auburn, more than half (53 percent) are cost-burdened, and more than one-quarter (27 percent) are severely cost-burdened. About a quarter of households are considered unaffordable for renters and homeowners in Auburn according to state and federal affordability thresholds. While Auburn is more affordable than other cities in King County, housing is unaffordable for most households.

Household Size

Trends in household size indicate that Auburn will need to ensure the availability of a variety of housing types to match the needs of both small and large households. Auburn has both a larger household size (2.7) and a larger share of family households compared to King and Pierce Counties overall. Data on household composition indicates however, that 38% of the City's households are made up of single-person and two-person households without children, and Auburn also has a higher-than-average percentage (7%) of single-parent households compared to King and Pierce County (4% and 6%, respectively). Overall, 24% of Auburn

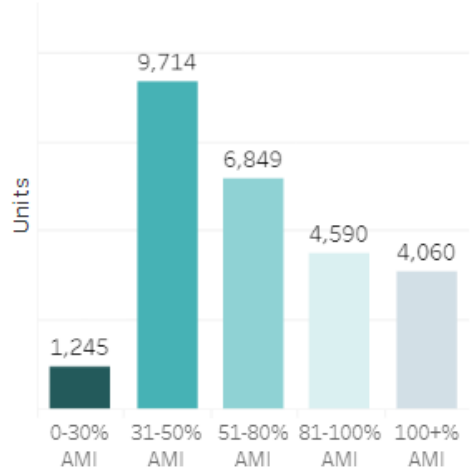
households are married with children, compared to 21% in King and Pierce Counties. The types of homes needed for smaller households may be different than those needed for larger households, putting an emphasis on planning for a variety of housing types and sizes in the future.

Housing Stock

Auburn's housing stock is older than average, and much of its rental housing stock is in fair or poor condition. Though housing is affordable in Auburn, the City could lose some of its most affordable rental housing as structures approach the end of their useful lives. About half of Auburn's housing stock is 2-3-bedroom units, accounting for 56.7% of housing units.

Most of the existing housing stock in Auburn accommodates the 31-50% AMI affordability levels, as shown in Figure 2. Preservation of this housing stock is discussed in policy H-23 and accommodating the city's share of housing growth at a range of affordability levels is addressed in policy H-32.

Figure 1. Total Existing Housing Units



Source: King County, CHAS 2015-2019

The city aims to preserve housing stock and create more opportunities for the creation of new homes through coordinated collaboration with regional organization such as South King County Housing and Homelessness Partners (SKHHP), Auburn's Housing Repair Program, and various Community Block Grant programs. Polices for the preservation and creation of homes is addressed in policies in this Element.

Existing Partnerships and Strategies for Housing Needs

To align with countywide goals and polices for meeting housing needs and eliminating disparities Auburn is a member of the South King Housing and

Homeless Partners (SKHHP). SKHHP is a joint board formed by an interlocal agreement between the jurisdictions of Auburn, Burien, Covington, Des Moines, Federal Way, Kent, Maple Valley, Normandy Park, Renton, SeaTac, Tukwila, and King County. Through SKHHP, South King County jurisdictions can take a coordinated and comprehensive approach to increasing housing stability and producing and preserving quality affordable housing in South King County. Auburn pools SHB 1406 funds with SKHHP for the development and preservation of affordable housing in South King County.

In addition, the City of Auburn administers the Housing Repair Program within the Building Division of the Department of Community Development. This program provides eligible homeowners grants up to $9,999 for emergency minor home repairs. Leaky roofs, unsafe stairs, floor repair, access for individuals with disabilities, and heating system repairs are examples of work funded with Minor Housing Repair grants. The Housing Repair program helps Auburn's low-income homeowners preserve and stay in safe and affordable housing.

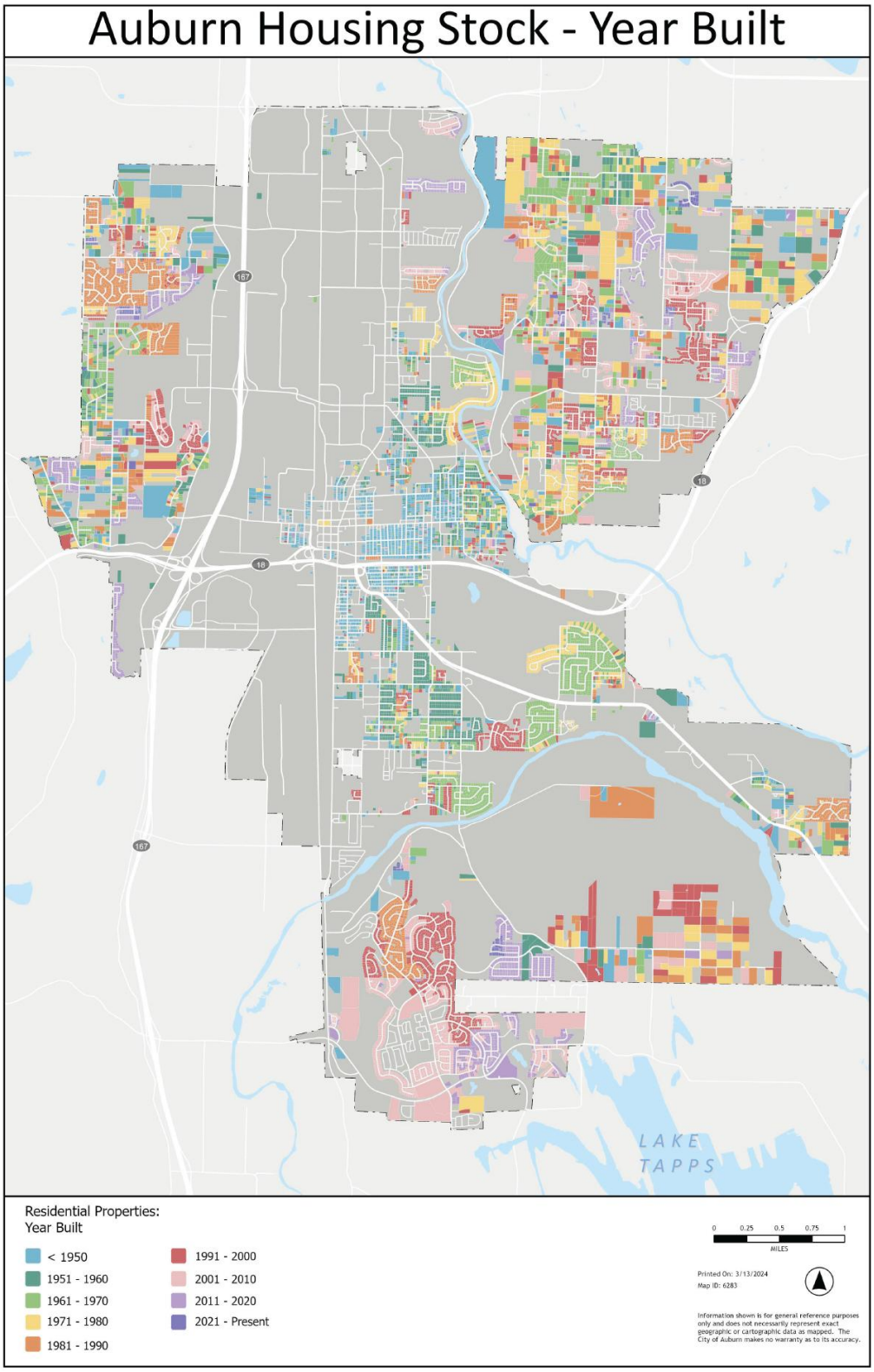


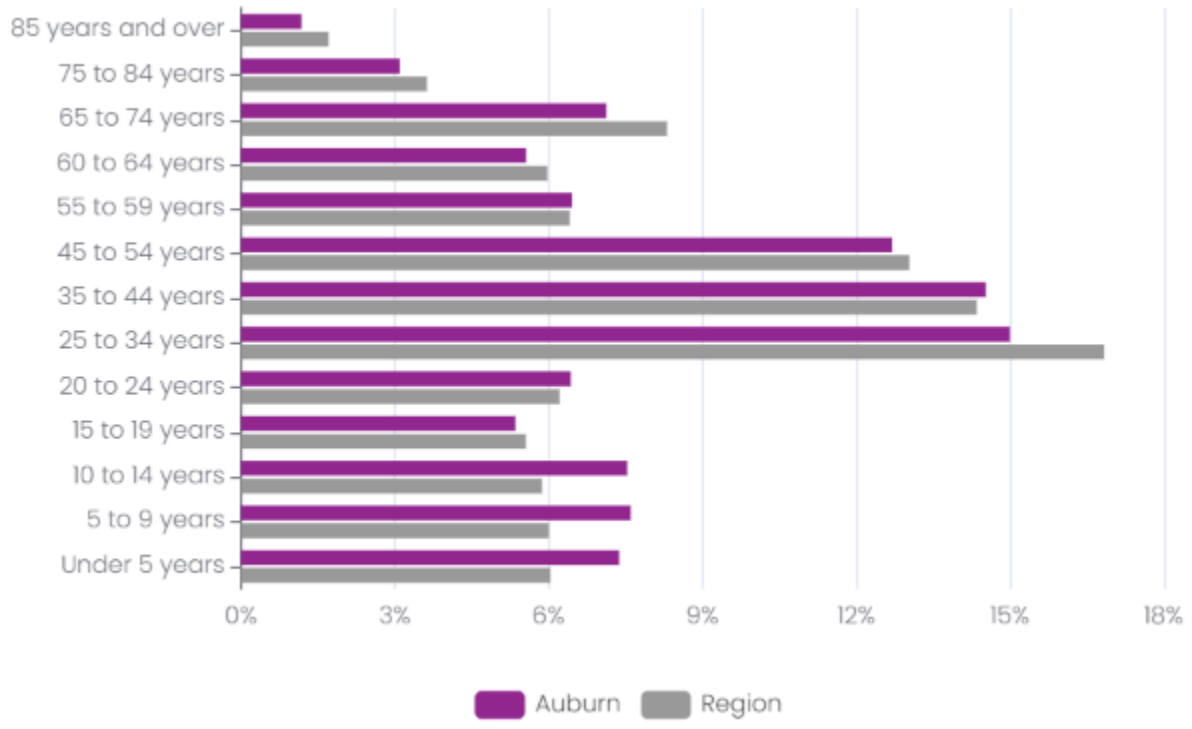
Figure 2 - Housing Stock by Year Built

Diversity

Auburn is diverse. Approximately 25% of Auburn residents speak a language other than English. Auburn's population generally follows regional trends for age distribution. Most of the city's population is between 25-54 years of age. Auburn's racial and ethnic makeup is more diverse than that of King County and Washington as a whole, with 48% of residents identifying as Black, Indigenous, or People of Color (BIPOC), compared with 42% in King County and 34% statewide.

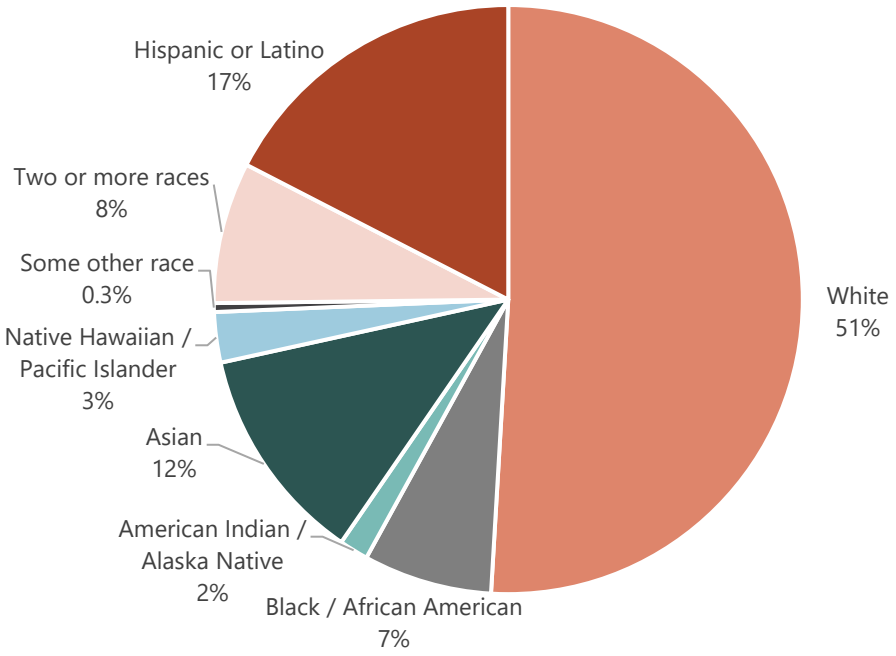
Auburn's diverse communities may have different housing, neighborhood amenities, and service needs. For example, outreach conducted with the Hispanic community has shown that most would recommend Auburn as a place to live for family and friends, and though residents wanted their children to grow up and remain in Auburn, they desired improved security and traffic calming. Outreach participants were interested in helping to improve their neighborhood and in volunteering.

Figure 3. Population by Age in Auburn and Region



Source: 2016-2020 ACS Data

Figure 4. Race and Ethnicity in Auburn (2021)



Source: 2020 ACS 5-Year Estimates, Table DP05

Trends

Overall, Auburn's housing market is characterized by strong growth in both the homeownership and multifamily rental markets. These trends are important to consider as the City works to encourage development to reach the 10,429 units needed by 2040. Key findings include the following:

- Multifamily rents in Auburn increased 47 percent from $1.14 per square foot in 2010 to $1.68 in 2020 Q3. Auburn did not see a dip in rents in 2011-2013 like many of its peer cities. In addition, thus far through 2020, multifamily rents are continuing to grow in Auburn, approaching levels in Kent and Tukwila which have started to level off.
- Auburn's rental vacancy rates are low, indicating continued demand for housing. Multifamily vacancy rates in Auburn increased by 2.7 percentage points from 8.3 percent in 2008 to 11.0 percent in 2020 Q3, spurred by the recent Copper Gate affordable apartment complex, which added 500 units to Auburn's housing market in late 2020. Although this increase in vacancy is reflected by an influx of new multifamily units that have yet to be rented, the mostly positive net absorption in the City from 2008 to 2019 indicates demand for multifamily housing is strong.
- About 60 percent of the new units developed in Auburn between 2010 and 2018 are for homeownership, while only about 40 percent are intended as

rentals. These ownership trends, coupled with strong price growth, indicate strength in the market.

- Auburn has not been producing enough housing to meet its demand from household formation (net in-migration and people forming new households, such as moving out of a family home). Over the 2010-2019 time period, only 7.8 housing units (of all types and sizes) were constructed for every 10 new households that formed. This translates into housing underproduction and is a contributor to Auburn's rent and price increases.
- An additional 12,112 housing units are needed in Auburn citywide by 2044 to accommodate growth.

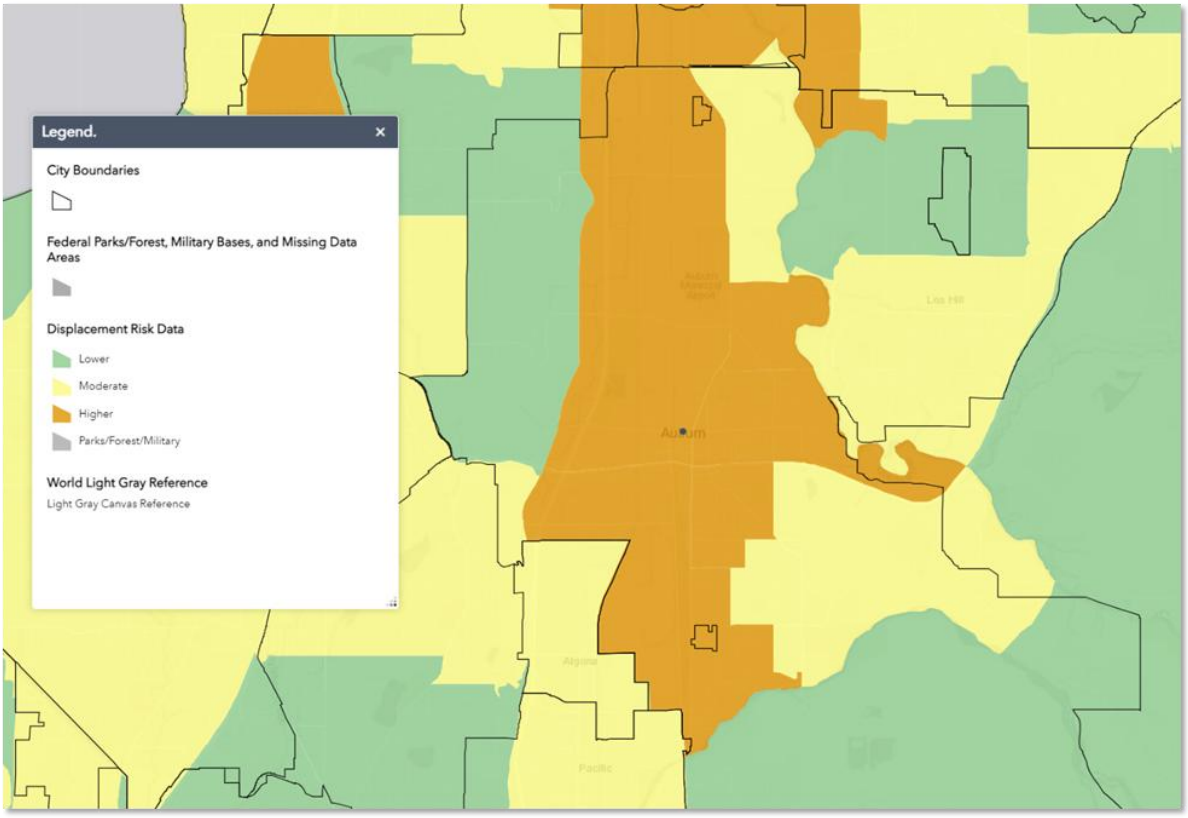
Racially Disparate Impacts

The Housing Element and Housing Needs and Characteristics Assessment (Appendix A) identifies data and strategies to undo local policies and regulations that result in racially disparate impacts. Racially Disparate Impacts were identified in Auburn such as potential for displacement due to the percentage of residents, especially renters, who are cost burdened and at high risk of displacement if market forces shift and historical records of restrictive housing covenants.

Considerations for displacement are also addressed in the Land Use Element when developing future land use goals. Where appropriate, goals, policies, actions, and overall strategies have been created or revised to address these issues as a first step towards undoing racially disparate impacts. This includes refinements to goals and policies to preserve existing housing stock, create opportunities for increased capacity for the development of multi-family, mixed-use, and middle housing throughout the city to accommodate a range of affordability levels, and regional coordination to address housing issues.

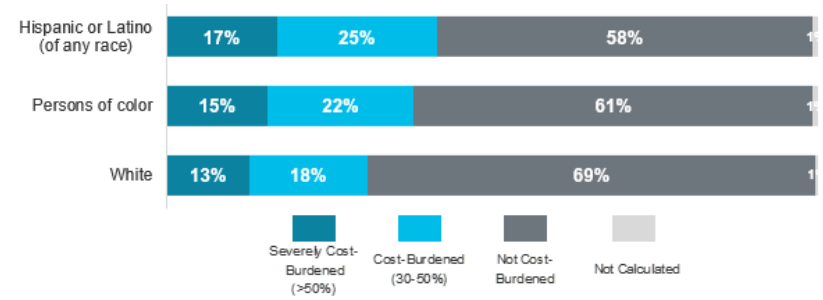
Displacement Risk

The highest displacement risk in Auburn is the few housing units located in southwest Auburn where mostly industrial and commercial is located. In particular, a mobile home park located in this block group is particularly vulnerable to displacement. Downtown Auburn is also susceptible to moderate to high displacement risk. The downtown area currently contains 426 subsidized affordable units in several developments, slightly more than a quarter of the housing units in the area. A full analysis is located in the Housing Needs and Characteristics Assessment.

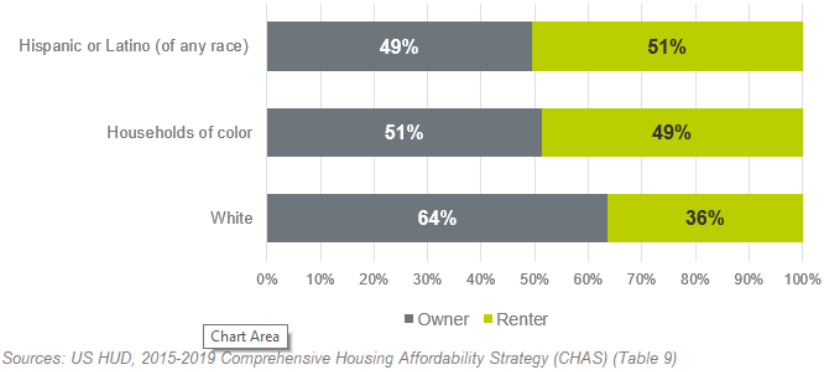


Source: Puget Sound Regional Council

As part of an evaluation of racially disparate impacts, the city identifies housing costs and cost-burdened households as especially vulnerable to displacement. In Auburn, 42 percent of the community identifying as Hispanic or Latino (of any race) is either cost-burdened or severely cost-burdened (<50% AMI) and persons of color are 37 percent cost-burdened or severely cost-burdened, compared to 31 percent identifying as white. These communities are about 50 percent renters and 50 percent homeowners, while those identifying as white are 64 percent homeowners in Auburn. The gap in homeownership is addressed through thoughtful and effective policy including increasing affordable ownership opportunities by encouraging diverse housing stock.

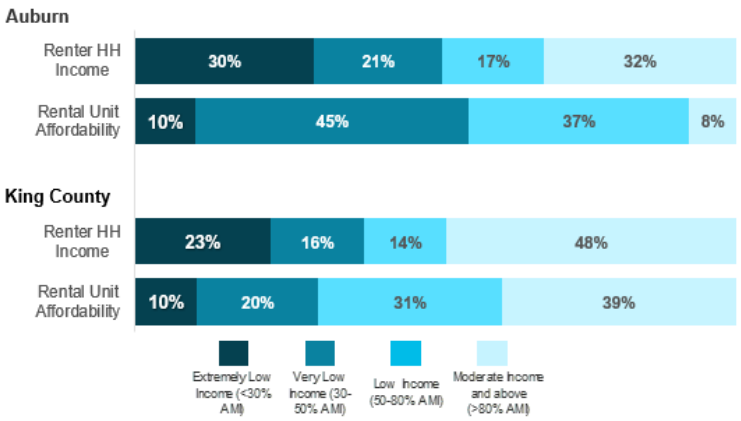


Source: US HUD, 2015-2019 Comprehensive Housing Affordability Strategy (CHAS) (Table 9); Washington Department of Commerce, 2023



Sources: US HUD, 2015-2019 Comprehensive Housing Affordability Strategy (CHAS) (Table 9)

Overall, the Auburn community spends a greater amount of income on rental housing costs compared to King County, with 51 percent of renters in the very low or extremely low-income bands (<50% AMI) in Auburn and 39 percent in King County. While Auburn has a naturally occurring affordable housing stock of 55 percent serving very-low and extremely-low incomes, this means there is only 11 percent additional capacity available to serve extremely-low and very low-incomes. If housing cost trends in King County continue, and Auburn housing prices in Auburn continue to rise, the amount of naturally affordable housing is expected to decrease. Again, preservation strategies and housing policies supporting a range of development types is key while encouraging housing growth.



Sources: US HUD, 2015-2019 Comprehensive Housing Affordability Strategy (CHAS) (Table 8)

Historically Restrictive Housing

The lands of Auburn have been historically utilized by many different groups of people. Year 1920 census records showed that Japanese farmers operated 25,320 acres and 699 farms. This number dropped to 7,030 acres and 246 farms in 1925 after the Alien Land Law of 1921 restricted “non-citizen aliens from sharecropping, leasing or renting land.” (It is important to note due to a series of Congress legislation (Naturalization Act of 1870, Chinese Exclusion Act of 1882, and The Immigrant Act of 1924) citizenship was a closed door for persons of Asian descent.

When considering historic and restrictive land use in Auburn, it is important to consider the official record keeping is very slim regarding restrictions as it wasn't until 1920 when Auburn's population rose above 2,500 (3,163) and was more detailed in its recording of population ratios in the census. (census 1920 vol 3 table 11, page 1092). 3096 persons of this population were recorded as white (Native white, foreign or mixed parentage, or foreign-born), with 67 persons being classified as non-white. As Auburn has grown certain covenants have been placed on plat maps and deeds within the county, with 759 recorded parcels containing/that have contained this restrictive language. These have been recorded on Auburn parcels from 1900 up to 1959, with many plat maps still containing the language. These restrictions were largely put in place by the developers, with many of them (464 or 61.1%) being placed by the Hillman Investment company, or Clarence Dayton Hillman.

These covenants were developed to only allow "members of the Caucasian race" the ability to purchase and use the land. There are different variations and verbiage depending on the plat or deed, but they all come to the same end, only white persons were eligible to own these properties. These restrictions shaped the sections of the city to where they are today, the growth in culture and development was stunted. The policies in this Housing Element create housing opportunities for all members of the community in an effort to undo historically documented racially disparate impacts and look forward to a more equitable Auburn.

Planning Approach

Auburn's preferred Comprehensive Plan Land Use Map sufficiently addresses housing needs for all economic segments of the Auburn community. The Comprehensive Land Use map considers adequate capacity for housing and employment targets and housing needs by income level through a Centers approach. Centers in Auburn are high-intensity and density cores characterized as primarily as mixed-use areas served by Middle Housing and commercial development. Most new housing is planned to be built in the neighborhood centers and downtown. More information on the Comprehensive Land Use Map and future land uses can be found in the Land Use Element, Chapter 1 of the Comprehensive Plan.

Housing Choices for All

Central to planning for future housing is providing a range of housing types to choose from which facilitates home ownership across a wide range of households and affordability levels. Consideration "Middle Housing" is key to increasing housing types in Auburn. Middle Housing, typically attached to one-another, provide options to increase residential density in existing residential neighborhoods and are designed at the scale and overall aesthetic of these areas. In 2023, the Washington State Legislature passed HB 1110 which requires jurisdictions to incorporate Middle Housing into Comprehensive Plans and related development regulations. This Housing Element, and updated city code, fully complies with HB 1110 requirements by allowing for townhomes, duplexes, triplexes, fourplexes, fiveplexes, sixplexes, stacked flats, cottage housing, courtyard housing in residential zones throughout the city. In addition, the City also acknowledges Accessory Dwelling Units (or ADUs) as an important piece of Middle Housing, complying with HB 1337 legislation allowing ADUs in residential zones throughout the City. Middle Housing, in combination with Mixed-Use Development, are critical development types that enable the City to meet future housing needs and provide a variety of housing options for current and future residents.

Housing and Employment Targets

Based on legislative changes, communities must plan for housing and employment targets allocated by Countywide Planning Policies (CPP). These growth targets are consistent with PSRC Vision 2025 requirements and originate at the state level. King County CPP, and the related 2021 King County Urban Growth Capacity Report, identifies targets of 12,000 net new residential units and 19,520 net new jobs between 2019-2044. Pierce County CPP identifies 112 net new residential units and 0 net new jobs targets by 2044. The Comprehensive Plan Land Use and Zoning Maps and policies adopted in the Comprehensive Plan demonstrate adequate capacity and strategies in order to accommodate these housing and employment targets.



Housing Need by Income Level

The Housing Needs and Characteristics Assessment projects housing need by income level using Area Median Income (AMI) bands. This assessment, as required by the Department of Commerce in coordination with counties, identifies the number of units necessary to serve varying AMI levels and for Emergency Housing. These figures were provided by both King and Pierce Counties using their own methodologies. The full methodology for the projections is provided in the assessment. As shown in Table 1, Auburn has a need for housing primarily at the 80% or greater AMI and for less than 30% AMI. Policies in this Element describe how Auburn plans to address these housing needs.

Table 1. Housing Need by Income and County

County	Total	0-30%	>30% to 50%	>50% to 80%	>80% to 100%	>120%	Net New Emergency

			Non-PSH	PSH				>100% to 120%		Housing Needs
King	Supply (2019)	28,049	1,076	237	8,029	8,075	4,427	3,302	2,903	58
	Net New Need (2044)	12,000	1,543	812	309	616	1,146	1,299	6,275	2,293
Pierce	Supply (2019)	3,963	0	33	134	493	1,141	680	1,482	8
	Net New Need (2044)	112	14	20	21	16	7	6	27	7
Total	Net New Need (2044)	12,112	1,557	892	330	632	1,153	1,235	6,302	2,300

Source: King County Ordinance 19660, Countywide Planning Policies; Pierce County Ordinance 2023-22s, Countywide Planning Policies

The overall housing need by 2044 in Auburn is 9,722 additional permanent units between 30% and greater than 125% AMI range, and 2,300 additional temporary/emergency housing beds totaling 12,112 new housing units.

Barriers that limit the development of affordable housing such as gaps in local funding and incompatible development regulations have been addressed in this Element and in Auburn City Code as part of the comprehensive plan update. Strategies to overcome these barriers include allowing appropriate housing types to serve various income levels, permitting a range of development serving all income levels in various zones, and development-related bonuses related to inclusion of affordable housing. The Housing Needs by Average Median Income (AMI) analysis discussed in the next section describes how the city is ensuring adequate zoned capacity and development types to accommodate a range of affordable housing.

STEP Housing

STEP housing (previously “supportive housing”, as defined HB 1220, includes emergency shelters, transitional housing, emergency housing, and permanent supportive housing. Households earning below 30% of the AMI are considered extremely low income and severely cost-burdened. In Auburn by 2044 the city needs an additional 2,389 supportive housing units for households earning below 30% AMI.

Permanent supportive housing includes supportive services such as health care and housing assistance. Auburn needs 812 additional permanent supportive housing units by 2044 in King County (King County CPPs) and another 20 in Pierce County (Pierce County CPPs).

Non-permanent supportive housing is to provide temporary or transitional shelter and supportive services to those struggling to stay housed. Auburn needs 1,543 additional non-permanent supportive housing units by 2044 in King County (King County CPPs) and 14 in Pierce County (Pierce County CPPs). Auburn also has a severe shortage of emergency housing beds compared to the projected need in

2044. As of 2020, there are 66 emergency/temporary housing beds citywide and 2,300 are needed by 2044 (King and Pierce CPPs). An additional 115 beds a year will need to be built between 2024-2044.

Housing Needs by AMI Capacity Analysis

In addition to meeting the residential and employment capacity targets through zoning and policy decisions, the city meets the aggregate King and Pierce County housing needs for income level groups. The only exception is the >120% Average Median Income (AMI) category, which includes primarily low-density housing in the R-1 and RC zones. However, this AMI category is not required to be met under HB 1220 requirements as high-income earners are represented in this group and can also purchase moderate density housing options as well.

Table 2. Housing Capacity by Income Level Future Surplus or Deficit

Income Level (% AMI)	Zone Categories Servicing these Needs	Housing Needs	Capacity prior to Zoning Adjustment	Post-Rezone Capacity	Capacity surplus or deficit
King County					
0-30% PSH	High Density-Mixed Use	2,389	566	3,004	**615**
0-30% Other					
>30-50%	High-Density, ADU	962	1,532	4,823	**3,861**
>50-80%					
>80-100%	Moderate Density, ADU	2,458	5,058	37,379	**35,033**
>100-120%					
>120%	Low-Density, ADU	6,303	348	2,217	***(4,086)***
Pierce County					
>80-100%	Moderate Density, ADU	112	100	500	***388***
Aggregated Total	-	12,112	7,504	46,070	*35,810*

In Pierce County, the City's primary residential zone is R-2 Residential Moderate which for purposes of this capacity analysis aligns with the 80-120% AMI range. This zone can adequately accommodate the total housing need of 112, however AMI below 80% is not accounted for in this analysis. As indicated earlier, the housing target for the Pierce County portion of Auburn is only 112 housing units and as a result the city does not intend to rezone small areas of land in order to satisfy AMI requirements since actual development is unpredictable. The R-2 Residential Moderate zone can accommodate middle housing, single unit detached housing, and ADUs that can realistically serve a range of incomes, and the city will continue to provide flexibility in the development types allowed in this part of the city to best accommodate the full range of AMI levels.

An estimated 1,852 new Accessory Dwelling Units (ADUs) are accounted for prior to rezoning, as these developments are currently allowed in various zones are expected to occur naturally over the next 20-years. In total, 80% of new ADUs are planned for in the 80-120% AMI range, and 20% in the greater than 120% AMI range. ADUs are expected primarily in the low-density and moderate-density land uses found in throughout the city.

Housing Capacity in Future Land Use

Total Housing Capacity

Residential capacity by zone is based primarily on the assumptions outlined Buildable Lands Report process in 2021, updates to reflect changes to zoning and density assumptions since that time. Downtown Urban Center mixed-use development assumes a distribution of 75% residential and 25% commercial, whereas the R-NM Neighborhood Mixed Use assumes a 50-50% split for mixed uses both vertically and horizontally. The residential capacity estimates accommodating 47,922 housing units at max buildable capacity and 35,507 net new housing units, exceeding the 12,112 net new housing unit target. This increase is due largely to Middle Housing policies consistent with HB 1110 which allow for Middle Housing in all residentially zoned areas. The R2 – Residential Low zone is found widely throughout the city. It is assumed that 32,889 housing units at max buildable capacity are located within a ½ mile walkshed of a major transit stop, including both Auburn Station and future (2025) RapidRide I-Line stops. This aligns with the comprehensive plan vision for encouraging dense residential development near transit facilities.

Table 3. Residential Capacity by Zone

Residential & Mixed-Use Zoning Districts	Zone category	Developable Acres	Net zoning changes (acres)	Assumed Density - DU/Acres	Residential Capacity (units)	Net New (Units)
King County						
Residential Conservancy (RC)	Low Density	745	0	1	745	-
R-1 Residential	Low Density	275	0	4	1,471	-
R2 – Residential Low	Moderate Density	294	1158	25	37,789	28,950
R3 – Residential Moderate	Moderate Density	0	22	30	660	660
R4 – Residential High	High Density	79	-1	50	3,890	-50
Neighborhood Mixed-Use (R-NM)	High Density Mixed-Use	0	89	30	2,670	2,670
Manufacture Home/Community (R-MHC)	Low Density	27	0	10	273	

DUC Downtown Urban Center - 125	High Density Mixed-Use	0	5	100	125	500
DUC Downtown Urban Center - 75	High Density Mixed-Use	0	5	95	119	475
DUC Downtown Urban Center - 55	High Density Mixed-Use	0	4	90	90	360
DUC Neighborhood Residential	High Density Mixed-Use	0	3	30	90	90
Total		1,420	1,285	-	47,422	35,310
Pierce County						
R2 – Residential Low	Moderate Density	20	20	**25**	500	500
Total		20	20	**-**	500	500
			Total New (2044) Housing Capacity		47,922	35,810

Goals and Policies

Goal 1: Healthy Homes and Neighborhoods

H-1 Recognize the important role of public improvements, facilities, and programs in providing a healthy home environment within the community.

H-2 Through integrated planning for land use, parks and recreation, transportation, housing, and jobs, support active living and healthy eating opportunities.

H-3 Promote safe and connected neighborhoods.

a. Continue to implement crime prevention programs such as neighborhood block watches.
b. Through the land use and building permit process, implement principles of crime prevention through environmental design.
c. Promote community volunteerism to increase the well-being and safety of residents.
d. Invest in transportation improvements that will create safe neighborhoods for walking, biking, and connecting to transit.

H-4 Promote housing that meets the needs of Auburn's workforce, is located near and designed to take advantage of affordable multimodal transportation options and contributes to a regional jobs–housing balance.

H-5 Improve streetscapes in developed neighborhoods. Continue to repair and/or replace deteriorated sidewalks and remove barriers to pedestrian traffic.

H-6 Seek and provide assistance for the reduction of lead-based paint hazards and measures to remove mold, improve energy conservation and provide for healthy indoor air quality.

H-7 Promote the City's neighborhood program. Connect residents to volunteer activities.

H-8 When evaluating proposed developments, apply site and building design standards, require quality streetscape, landscape, on-site recreational and open space, and low-impact development measures that will improve community character and environmental quality.

H-9 As neighborhoods change, work to eliminate the displacement of those who are under-served or under-represented.

H-10 Promote housing stability for the most vulnerable residents.

How can Auburn plan for Active Living and Healthy Eating?

- *Provide for a complete community with a variety of work, shopping, recreation, health and education, and home environments.*
- *Implement a connected nonmotorized trail and park system with neighborhood gathering spaces. Work with transit providers to connect neighborhoods to commercial and social services.*
- *Facilitate access to regional transportation and job centers in and near Auburn.*
- *Support art projects and cultural events to provide opportunities to build a sense of community investment, improve aesthetics, bring people together cross-culturally, and involve neighborhood youth. Support community gardens to improve access to healthy food and to build community relationships.*

Goal 2: Support Housing Growth

H-11 Provide a land use plan and zoning that offers opportunities to achieve a variety of housing styles and densities for private and nonprofit housing providers.

H-12 Support development of a variety of housing choices by allowing Middle Housing types in residential zones including townhomes, duplexes, triplexes, fourplexes, fiveplexes, sixplexes, cottage housing, courtyard apartments, and accessory dwelling units.

H-13 Provide dense housing choices downtown and other areas identified in the Comprehensive Plan where infrastructure is more available or can be improved with regional and local funds.

H-14 Encourage residential development downtown, particularly housing that is integrated with commercial development.

H-15 Allow accessory dwelling units as an affordable housing strategy and Middle Housing option.

H-16 Promote greater opportunities for home ownership for all incomes and ethnicities in the community through development of middle housing options and fee-simple development.

H-17 Implement incentives for developing underutilized parcels into new uses that allow them to function as pedestrian-oriented mixed-use neighborhoods. Existing uses that are complementary, economical, and physically viable shall integrate into the form and function of the neighborhood.

H-18 Use innovative zoning provisions to encourage infill development of underutilized parcels in zones that have been identified in the Comprehensive Plan as areas where infill residential development should be encouraged. Certain development requirements for infill development may be relaxed, while requiring adherence to specific design requirements to ensure compatibility with the character of nearby existing residential structures.

H-19 Allow appropriately designed manufactured housing within Neighborhood Residential areas, consistent with state law and city code.

H-20 Allow manufactured housing parks, transitional housing, supportive housing, and multiplex housing in appropriately zoned areas.

H-21 Adopt incentives, strategies, actions and regulations to create and sustain neighborhoods that provide equitable access to parks and open space, safe pedestrian and bicycle networks, clean air, soil and water, healthy foods, high-quality education, affordable and high-quality transit options and jobs.

H-22 Prioritize affordable housing when surplusing publicly owned land or property to provide opportunities for increased affordable housing.

Goal 3: Maintenance and Preservation

H-23 Conserve Auburn's existing housing stock because it is the most affordable form of housing.

H-24 Inventory and map dilapidated properties.

H-25 Organize, educate and assist property managers and owners in the creation and preservation of safe neighborhoods.

a. Offer an owner–landlord training program to better market, manage and maintain residential rental property.
b. Encourage retention of professional management assistance.
c. Recognize and publicize well-maintained apartment properties, such as by awarding a "multifamily property of the year."
d. Advise landlords with problem buildings about the benefits of donating their property or selling it below market cost to a specially designated nonprofit organization.

H-26 Promote housing improvements by property owners and building managers. Seek available assistance for housing rehabilitation. Assistance will include the development of residential infrastructure and the rehabilitation of individual properties.

a. Find public and private sources of capital and offer low-interest loans for rehabilitation.
b. Continue to participate in the Emergency Home Repair Program and consider partnering with nongovernmental organizations to maximize funds.
c. Encourage green lending for improved energy conservation, indoor air quality, and other measures.
d. Help identify professional volunteers at educational or professional associations to plan redesign or architectural upgrades of the properties.
e. Support additional healthy housing and preservation strategies, such as property tax exemptions to preserve affordable housing opportunities and utilizing community health workers to offer property owners and residents the education and resources needed to maintain housing.

H-27 Evaluate and update codes applicable to housing and provide effective and appropriate enforcement.

a. Enforce city ordinances regarding abandoned properties.
b. Consider a multifamily inspection program.
c. Consider public identification of landlords who are found to be out of compliance for extended time periods and unwilling to take steps to ameliorate substandard conditions.
d. Consider a landlord compliance program where code enforcement penalties can be reduced if attending landlord training programs.
e. Work with park owners, managers, and park tenants to develop policies and regulations to preserve manufactured home parks and the affordable housing they offer.
f. Consider an Auburn Housing Authority.

H-28 Ensure that rental housing units comply with life and fire safety standards and provide a safe place for tenants to live, including renters with disabilities.

H-29 Promote the maintenance, energy efficiency, and weatherization of existing affordable housing stock.

Goal 4: Housing Attainability and Affordability

H-30 Promote affordable housing that meets changing demographic needs.

H-31 Promote housing stability for the most vulnerable residents.

H-32 Work in partnership with King and Pierce Counties and other cities to plan for and accommodate its allocated share of countywide future housing needs for moderate-, low-, very low-, and extremely low-income households as well as emergency housing and permanent supportive housing, including those with special needs and our veterans.

a. Focus Auburn's efforts toward the countywide and community need for low- and moderate-income housing on preserving existing

affordable housing with robust maintenance and repair programs, minimizing displacement impacts, and ensuring long-term affordability of existing housing.

b. Act as a County leader in the exploration and implementation of new funding mechanisms and strategies to develop housing affordable at 30% AMI and below across King County and throughout South King County.

H-33 Encourage and assist in the renovation of surplus public and commercial buildings and land into affordable housing. Additionally, explore opportunities to dedicate revenues from sales of publicly owned properties, including tax title sales, to affordable housing projects.

H-34 Seek, encourage, and assist nonprofit organizations in acquiring depreciated apartment units for the purpose of maintaining and ensuring their long-term affordability.

H-35 Review and streamline development standards and regulations to advance their public benefit, provide flexibility, and minimize additional costs to housing.

H-36 Promote compliance with federal and state fair housing laws. Support fair housing opportunities for all regardless race, color, national origin, religion, sex, familial status, or disability.

H-37 Explore the use of density bonuses, parking reductions, multifamily tax exemptions (MFTE), fee waivers and exemptions, and permit expediting to encourage the development of housing affordable at below-market rate.

H-38 Where practical, ensure that housing created or preserved using local public resources or by regulation benefits low-income households and retains its affordability over time.

H-39 Partner with Affordable Housing Providers – partner with local affordable housing providers and services who have additional knowledge and resources that are not available to the city.

H-40 Support existing programs that provide emergency rental assistance for families facing homelessness due to temporary economic hardship.

H-41 Engage with communities disproportionately impacted by housing challenges in developing, implementing and monitoring policies that reduce and undo harm to these communities. Prioritize the needs and solutions expressed by these disproportionately impacted communities for implementation.

H-42 Support the long-term preservation of income-restricted affordable housing with expiring affordability covenants through acquisition by acting as a facilitator between affordable housing groups interested in purchasing the property and property owners.

H-43 Explore opportunities to implement a Community Preference policy or a first right to return policy that prioritizes members of the community in new affordable housing developments.

Goal 5: Supportive Services

H-44 Encourage and support human and health service organizations that offer programs and facilities for people with special needs. Support programs in particular that help people to remain within the community, including those that are veterans, disabled, seniors, single-parent households, and the homeless.

H-45 Assist low-income people, who are displaced as a result of redevelopment, find affordable housing in accordance with state and federal laws and regulations.

H-46 Develop strategies that seek to preserve naturally occurring affordable housing at-risk of redevelopment and/or in deteriorating physical condition.

H-47 Continue to ensure that funding becomes available to support youth, veterans, and social services in Auburn.

H-48 Support seniors who wish to age in place in their homes, such as with home rehabilitation services, adult day health and Senior Center activities.

H-49 Provide opportunities for transitional housing assisted living and retirement communities.

H-50 Promote universal design principles to ensure housing is designed to be compatible with surrounding neighborhoods.

H-51 usable by all people regardless of age or abilities.

H-52 Provide empowering training for residents who want to participate in civic activities and who would like to improve their knowledge and skills around community leadership.

H-53 Provide information in multiple languages to Auburn's diverse communities regarding services offered by local and regional governmental, educational, employment, health, and other providers to improve residents' quality of life and to promote resident engagement and household economic independence.

H-54 Offer financial and homebuyer education to encourage household saving and budgeting to consider home ownership.

H-55 Provide information and resources that educate and guide low-income persons toward affordable housing opportunities. Develop materials in multiple languages.

H-56 Review proposals to site facilities providing new or expanded human services within the City to determine their potential impacts and whether they meet the needs of the Auburn community. Important caveats in the City's consideration will include the following:

a. While Auburn will willingly accept its regional share of facilities that provide residential services, or influence residential location decisions, Auburn will expect other communities to accept their share as well.

b. The funding of human service centers sited in Auburn that serve an area larger than Auburn would rely on an equitable regional source of funding.
c. The siting of all facilities shall be based on sound land use planning principles and should establish working relationships with affected neighborhoods.

Goal 6: Implementation and Monitoring

H-57 Partner with South King County jurisdictions in ongoing efforts to coordinate the human, educational, and housing needs of our diverse cultural communities, such as through the Road Map Project, interjurisdictional housing and human services forums, and other efforts.

H-58 Pursue partnerships with non-profits, housing authorities, SKHHP, and other organizations to preserve existing unregulated and naturally occurring affordable housing including through acquisition.

H-59 Work with other jurisdictions and health and social service organizations to implement a coordinated, regional approach to homelessness.

H-60 Support national, state and especially regional efforts to address the housing and human service needs of the region and the City.

H-61 Explore all available federal, state and local programs and private options for financing affordable housing, removing or reducing risk factors, and preserving safe neighborhoods.

H-62 Work in partnership with public and private housing providers, businesses, and other agencies in the provision of housing assistance to Auburn residents and business employees.

H-63 Support nonprofit organizations during all stages of siting and project planning and when applying for county, state, and federal funding.

H-64 Through the building permit process, inventory and track affordable housing opportunities within Auburn. Distribute affordable housing information to nonprofit agencies serving the homeless and low-income people.

H-65 Monitor housing supply, affordability, and diversity in Auburn and its contribution to the countywide and regional housing need.

H-66 Explore options to identify and monitor unregulated affordable housing for the purpose of long-term preservation particularly in urban centers, near transit, and/or where most redevelopment pressure is anticipated.

H-67 Review and amend, a minimum every 5 years, local housing policies and strategies.

H-68 Consider opportunities to evaluate potential displacement risk for naturally occurring affordable housing and vulnerable communities, especially those with historical and cultural ties to the community in daily work, and mitigate or review actions that significantly increase this risk.

Housing Objectives and Implementation

The City has developed housing objective implementation strategies addressing housing diversity, condition, attainability, and programs to serve special needs. The City will monitor the objectives over time.

Figure 5. Housing Objectives and Tools

Outcomes	Indicators	Example Tools
Improve housing quality	Increased quality of rental housing	• Housing rehabilitation and repair loans • Loans for energy conservation and healthy indoor air quality • City-sponsored and nonprofit property manager programs • Housing inspection program Code enforcement • Community volunteer program
Meet demand for new housing units	Land capacity to meet or exceed housing target	• Land use plan and zoning • Variety of housing options
Promote housing ownership	Maintain or increase homeownership rates	• Accessory dwelling units • Middle Housing • Unit-Lot Subdivision
Allow for a variety of housing types to meet size, age, and cultural trends	Increased numbers of middle housing units and apartment units with neighborhood recreation and service amenities Retention of housing stock with larger units	• Middle Housing on small and infill lots • Accessory dwelling units • Mixed-use zoning • Incentivize infill development
Increase opportunities for housing to extremely-low, very-low, low-, and moderate-income households	Increased numbers of ownership dwellings available to moderate incomes Increased mixed-use development for all incomes Increased preservation and improvement of rental housing with long-term affordability commitments	• Accessory dwelling units Downtown and Growth Center incentives for apartment and mixed-use • Infill incentives • Permit and impact fee waivers • See also “improve housing quality” above • Expansion of MFTE program outside of Downtown

Improved opportunities for special needs housing and services	Greater match of housing to special needs including housing for all ages and abilities as well as the homeless	• Community services programs • Partnerships with nonprofit housing providers and nongovernmental organizations
Monitor housing supply, affordability, and diversity	Address achievement of indicators above	• Monitor in conjunction with regular and annual Comprehensive Plan updates and new countywide planning policy housing targets

City of Auburn

Capital Facilities Element

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Introduction

This volume provides overall policy direction for the different capital facility plans and programs provided by the City. Capital facilities belonging to privately owned utilities (electricity, natural gas lines, etc.) and those that are city-operated (water, sewer, stormwater, etc.) are covered in the Utilities Element (Volume 4). Certain City plans and programs are further refined in other sections of this volume, such as Parks, Recreation, and Open Space, and Transportation. Overall, however, this volume acts as a reference for all of the City's various capital facility plans except for those found in other Elements, including the City of Auburn Six-Year Capital Facilities Plan (a key component of and adopted with this plan), comprehensive plans, capital improvement and investment programs, inventories, and studies that together represent the planning and financing mechanisms required to serve the capital facility needs of Auburn. For more details on a particular capital facility or the City's overall capital facility plan, see the most recently adopted version of the following:

- City of Auburn Airport Master Plan
- City of Auburn Capital Facilities Plan
- City of Auburn Comprehensive Water Plan
- City of Auburn Comprehensive Sewer Plan
- City of Auburn Comprehensive Stormwater Plan
- City of Auburn Parks and Recreation Master Plan
- City of Auburn Comprehensive Transportation Plan
- Auburn School District Capital Facilities Plan
- Kent School District Capital Facilities Plan
- Dieringer School District Capital Facilities Plan
- Federal Way School District Capital Facilities Plan
- Valley Regional Fire Authority (VRFA) Capital Facilities Plan

Vision

Capital facilities in Auburn are planned, designed, and constructed in a manner that adequately supports the future growth scenarios in the City's Land Use Element and that meets the needs of residents, visitors, and businesses. Sustainability is a principle that guides decisions about where facilities are placed, how they are constructed, how they are operated and maintained, and how all aspects of design, construction, and operation are funded.

Conditions and Trends

Growth: The provision and sizing of public facilities such as streets or waterlines and sewer lines can influence the rate or timing of development and is an important means of managing growth. Timed provision of facilities also ensures that new development can be assimilated into the existing community without serious disruptions or adverse impacts. This Plan establishes policies to allow development when and where all public facilities are adequate or can be made adequate, but only if such development can be adequately served by public facilities and services consistent with the adopted level-of-service standards.

A key provision of the Growth Management Act is concurrency. In general, concurrency seeks to ensure that development is permitted only if adequate public facilities are, or can be guaranteed to be, available to support new development. Concurrency requires that facilities needed to maintain a locally adopted level of service be provided "concurrently" with development. Concurrency places the finance function of local government in a much more prominent role in the land use development process. While the concept of concurrency is new to many jurisdictions, it has been used in Auburn since the adoption of its 1986 Comprehensive Plan.

The Act requires concurrency only for transportation facilities, though if a jurisdiction desires, concurrency can be applied to other public facilities as well. With respect to transportation facilities, concurrent is defined within the Act as being provided at the time of or within 6 years of development (this is done to coincide with the six-year time frame of most capital facilities plans). If the facility is not available at the time of development, the funding to construct the facility must be included in the six-year capital facilities plan.

Regardless of whether a local jurisdiction applies concurrency to public facilities beyond those for transportation, new development must be coordinated with the provision of capital facilities. This ensures that all relevant public facilities and services are planned and available to serve the demands of new growth.

Planning Approach

The Capital Facilities planning approach is to manage growth in a manner that enhances from community quality and values by actively coordinating land use type and intensity with City facility and service development and provision.

Values

Character: Public buildings and spaces incorporate high-quality building and landscape design so that they positively impact the surrounding built environment.

Wellness: Public spaces that are purchased and developed for capital facilities also incorporate features and infrastructure that provide more complete nonmotorized connections.

Service: City utilities and buildings are of high quality and complete, reliable, and available to residents and business owners.

Economy: City utilities are available or planned to be available to serve allowed commercial, recreational, and residential uses.

Celebration: Capital facility spaces will be available, designed, and programmed in a manner that promotes public gathering.

Environment: Development of capital facilities will place a premium on environmental preservation and protection.

Sustainability: Our philosophy of designing, constructing, and maintaining utilities and buildings embraces a long-term investment horizon rather than concepts that only provide short-term benefits and outcomes.

Concurrency and Levels of Service

Levels of Service

Level of Service (LOS) is a common measure used to determine the efficiency or effectiveness of services. For the City of Auburn, LOS targets serve as a means to assess the adequacy of public facilities in meeting the needs of the population for which it serves. The GMA requires that LOS be established for certain transportation facilities for the purposes of applying concurrency to development proposals. The State GMA guidelines recommend the adoption of LOS standards for other capital facilities to measure the provision of adequate public facilities.

Typically, measures of level of service are expressed as ratios of facility capacity to demand (i.e., actual or potential users). For example, in the case of park space, when there is an increase in population without a corresponding increase in park acreage, the LOS unit of measure (acres per 1,000 population) will decline, indicating a potential need to increase the total amount of park acreage to keep pace with population growth. On the other hand, a slight increase in population, coupled with a large increase in facilities, will result in an increased LOS. For example, facilities such as buildings or burial plots may be constructed or expanded to keep pace with anticipated population growth. While this will have the effect of increasing LOS in the short-term, in the longer-term, the LOS will gradually decline to the targeted level based on forecasted population. The impact of population growth to the LOS for facilities will vary depending on the type of facility and long-range planning by the City.

Concurrency

The GMA requires that jurisdictions have certain capital facilities in place or available within a specified time frame when development occurs. This concept is called concurrency. Under the GMA, concurrency is required for transportation

facilities and is recommended by the State for certain other public facilities, namely potable water and sanitary sewer.

Concurrency has a direct relationship to level of service. The importance of concurrency to capital facilities planning is that development may be denied if it reduces the level of service for a capital facility below the locally adopted minimum. The level of service is unique for each type of facility and is presented in the subsequent sections. Concurrency has a direct relationship to level of service. The importance of concurrency to capital facilities planning is that development may be denied if it reduces the level of service for a capital facility below the locally adopted minimum. The level of service is unique for each type of facility and is presented in the subsequent sections.

The need for capital facilities is largely determined by a community's adopted LOS standards and whether or not the community has formally designated capital facilities, other than transportation, as necessary for development to meet the concurrency test. The CFP itself is therefore largely influenced by the selection of the level of service standards. Level of service standards are measures of the quality of life in the City. The standards should be based on the City's vision of its future and its values.

Level of Service Standards and Needs

Based on the proposed six-year capital projects and the projected population increase of 4,585 (5.1%) between 2023 and 2028, the LOS for the following City-owned public facilities will change as follows:

The LOS for the following facilities will be increased as a result of population projections described in the Capital Facilities Plan (CFP), comparing the 2023 LOS to the projected 2028 LOS.

Capital Facility	LOS Units	2023 LOS	2028 LOS (Projected)
Cemetery	Burial Plots per 1,000 population	29.00	56.00
Community Parks	Acres per 1,000 population	2.62	2.95
Linear Parks	Acres per 1,000 population	0.18	0.21
Neighborhood Parks	Acres per 1,000 population	0.72	0.78

The LOS for the following facilities will be maintained as a result of the CFP.

Capital Facility	LOS Units	2023 LOS	2028 LOS (Projected)
Transportation	See Comprehensive Transportation Plan		
Airport	% of Air Operations Support	100%	100%
Storm Drainage	N/A	N/A	N/A
Water	Residential GPCPD[1]	182.00	181.00

1 – GPCPD = Gallons per Customer per Day, or the equivalent of water used by a single-family residential unit per day.

The LOS for the following facilities will be decreased as a result of the CFP, comparing the 2023 LOS to the projected 2028 LOS.

Capital Facility	LOS Units	2023 LOS	2028 LOS (Projected)
General Municipal Buildings	Square Feet per 1,000 population	3,290.44	3,173.11
Open Space	Acres per 1,000 population	4.25	4.10
Senior Center	Square Feet per 1,000 population	135.70	129.12
Special Use Areas	Acres per 1,000 population	2.83	2.69

Other Level of Service metrics and thresholds related to specific capital facilities are located in the sections below.

Capital Facilities and Services

Municipal Facilities

The current inventory of City government administration and operations facilities include 207,629 square feet for general government operations, 66,469 square feet for police services, and 21,726 square feet for fire protection, for a total of 295,824 square feet. The table below lists the facilities along with their current capacity and location.

Community Facilities

Facilities Inventory

Facility Name	Location	Size
Community Center	910 9th St SE	19,804 sq ft
Senior Center	808 9th St SE	11,667 sq ft
Cemetery	2020 Mountain View Dr	4,011 sq ft (out buildings not included)
Golf Course	29630 Green River Rd	14,114 sq ft (out buildings not included)
Postmark Center for the Arts	20 Auburn Ave	8,744 sq ft
GSA	2905 C St SW	11,837 sq ft
4910 A Street	4910 A Street	5,920 sq ft
City Hall	25 W Main St	57, 316 sq ft
City Hall Annex	1 E Main St	47,000 sq ft
Justice Center	340 E Main St	36,000 sq ft
Maintenance & Operations	1305 C St SW	18,232 sq ft (out buildings not included)

Parks Maintenance	1403 C St SW	6,094 sq ft (out buildings not included)
Les Gove MPP Building	1040 Deal's Way	1,262 sq ft (out buildings not included)
R Street Building	2840 Riverwalk Drive SE	4,798 sq ft (out buildings not included)
Warren Building	411 E Street NE	1,813 sq ft (out buildings not included)
Herr Storage	1140 Auburn Way S	3,600 sq ft
Auburn Ave Theatre (scheduled for demolition)	10 Auburn Ave	7,590 sq ft
Auburn valley Humane Society	4910 A Street SE	5,920 sq ft

Level of Service

The current LOS of 3,290 square feet per 1,000 population is based on the existing inventory divided by the 2023 citywide population of 89,904. The proposed LOS of 3,173 square feet per 1,000 population is based on the projected inventory divided by the 2028-projected citywide population of 94,489.

Future Plans

As of 2024, the City is in the process of designing and constructing a replacement for the Auburn Ave Theatre, which was damaged when the adjacent historic mixed-use building on E Main Stret was damaged beyond repair due to fire. The new theatre is anticipated to be an activity anchor in downtown with its central location.

Public Library Facilities

The City of Auburn is served by the King County Library System in 15,000 square foot Auburn Library building at 1102 Auburn Way S. The library opened in 2000 after moving first from the Carnegie Library building in downtown (constructed in 1914), then from another facility in Les Gove Park (constructed in 1964). The current building has continued to be renovated and expanded over the past 25 years, with the last construction completed in 2012. Detailed information regarding the King County Library System is available at www.kcls.org.

Police

Facility Inventory

Name	Location	Size
Auburn Justice Center (Police)	340 E Main St	16,000 sq ft
Evidence Building	340 E Main St	4,400 sq ft

The Auburn Police Department has a staff of the Chief, Assistant Chief, 5 Commanders, 13 Sergeants, 57 Patrol Officers, 20 Detectives, 5 Traffic Officers, and multiple supervisors, specialists, technicians, and other staff as of 2023.

Police services are centered around the Auburn Justice Center that serves the entire City and supports the required staff, the majority of who are assigned to the patrol division. In 2004, the police department took occupancy of a portion of the Justice Center, primarily in the basement, with the Court located on the primary level. The police portion occupies just over 16,000 square feet. Currently the police facility houses 118 sworn police officers in addition to 22 civilian staff. Police headquarters provides both designated and temporary workspace, meeting rooms, common areas, locker rooms, storage space, utility space, electrical and utility space, and records storage space. A separate evidence building at the same site houses evidence storage, general equipment storage, and records archives. Additionally, the department maintains temporary evidence storage in the basement of city hall, utilizing approximately 200 square feet of space.

A facility needs assessment was completed in 2020 and was incorporated in the 2020 Facilities Master Plan.

Known Capacity Issues

Police facilities lack adequate space to support current staff and operations, and future growth.

- Suboptimal climate control, especially on ground floor as HVAC zone configuration does not align with current space configuration due to renovations.
- Facility too small to accommodate both Court and Police in long-term.
- Severely space-constrained, especially for Police, which grew 40% between 2004 and 2019.
- Undersized public lobby and soft interview space.
- Limited meeting/briefing space for all meeting types, including large groups, confidential discussions, and interviews.

Police office space is primarily in basement areas that have limited natural light.

- Defensive tactics and classroom training occur in a room with irregular column placement which impedes sightlines, creates barriers for physical training, and complicates furniture/mat reconfiguration.
- Evidence building is at capacity.
- Undersized parking; unsecured parking for marked vehicles.

Future Plans

A property located near the intersection of Auburn Way Sout & 12th Street Southeast has been acquired by the City. 2023-2024 budget allocated funding for facility planning at new location. Other than planning, there is no funding allocated for this project.

Fire Protection

The Valley Regional Fire Authority (VRFA) provides critical fire and life safety services to the approximately 97,000 citizens residing in the 37 square miles of Algona, Auburn, and Pacific. Oversight of the VRFA is provided by a nine-member Governance Board consisting of the Mayor and two council members from each participating city. Twenty personnel respond from five fire stations. These stations are staffed 24 hours a day, seven days a week, by four shifts. A battalion chief oversees each shift, and a deputy chief manages the entire division.

The Auburn Fire Department was formed over a century ago as a result of a devastating fire in August of 1890. The fire destroyed an entire city block of businesses in what was then known as the town of Slaughter. The original department, consisting of volunteer firefighters and a hand-drawn hose cart, was first named the Auburn Bucket Brigade. The name changed to the Auburn Volunteer Fire Department in 1908. On January 1, 2007, as a result of a voter-approved measure, the Auburn Fire Department combined with the Pacific Fire Department and the City of Algona to form the Valley Regional Fire Authority, which provides fire and EMS services to all three cities.

In an emergency, every second counts. The VRFA has established a Total Response Time (TRT) benchmark of seven minutes and 34 seconds (7:34) for EMS Calls and seven minutes and 49 seconds (7:49) for fire calls. TRT is the time it takes a unit to arrive at a scene once the call is received at the Fire Alarm Center. In 2022, we achieved those benchmarks 51% of the time for fire response and 57% for EMS response.

The VRFA's Capital Facilities Plan (CFP), which was adopted by the Board of Governance in 2021, made four recommendations:

- Priority 1: build an additional station in the northern part of VRFA's service area
- Priority 2: relocate and rebuild Station 38 in Pacific
- Priority 3: remodel or replace Station 31
- Priority 4: find a permanent location for Support Services

In 2022, the VRFA took several significant steps to implement the CFP, including:

- Purchasing property on 30th and I Street Northeast for a new north end fire station. Evaluating property on the Ellingson corridor in Pacific in order to relocate Station 38.
- Contracting with the leading architectural firm TCA to consult on land acquisition and complete preliminary design concepts on each element of the CFP.
- Initiating a discussion on the best way to fund these critical projects.

In 2022, 45% of revenue was from Property Taxes, 34% from Fire Benefit Charges, and 21% from other sources such as grants and permit fees. Expenditures in 2022

include 52% for wages, 15% for capital projects, 19% for benefits and 14% for other services and supplies.

Valley Regional Fire Authority Capital Facility Plans, Annual Reports, and other documents can be found at www.vrfa.org.

Level of Service

The current LOS of 0.20 fire apparatus per 1,000 population is based on the existing inventory (18 fire apparatus) divided by the 2023 citywide population estimate of 89,904. The proposed LOS of 0.20 fire apparatus per 1,000 is based on the 2028-planned inventory (19 fire apparatus) divided by the 2028-projected citywide population of 94,489.

Parking

Facilities Inventory

Facility Name	Location	Capacity	Condition
Kiss-n-Ride Parking Lot	Parcel #7815700172	21 Non-Handicap spaces; 1 accessible space	Fair
11 A Street NW Parking Lot	11 A Street NW	47 Non-Handicap spaces; 2 accessible spaces	Poor
B Street Parking Lot	137 E Main Street	60 Non-Handicap spaces; 13 accessible spaces	Fair
Safeway Parking Lot	Parcel #7331400135	122 Non-Handicap spaces; 4 accessible spaces	Poor
D Street Parking Lot	350 E Main St	20 Non-Handicap spaces; 0 accessible spaces	Very Poor
JC Employee Parking Lot	20 D Street SE	55 Non-Handicap spaces; 1 accessible spaces	Fair

Future Plans

On April 1, 2024, the City of Auburn relinquished possession and use of 113 off-site parking stalls to Sound Transit. The 113 parking stalls were code required parking stalls tied to two office-condominiums owned by the City and utilized as office space by City employees. The City will need to replace these 113 parking stalls within the code required 1,000/ft radius of the office condominiums with which they serve. Funding for the parking replacement will come in whole or in part from the monetary amount awarded to the City by the arbitrator who presided over the arbitration hearing.

Replacement of the 113 parking stalls relinquished to Sound Transit will likely need to be accomplished by constructing a multi-story parking garage.

Cemeteries

The City owns two cemeteries. The Mountain View Cemetery is a fully developed facility (60 acres and five buildings) that provides burial services and related merchandise for the community. The Pioneer Cemetery is a historic cemetery that is no longer used for burial purposes.

Level of Service

The current LOS of 29 burial plots/niches and cremation in ground plots per 1,000 population is based on the existing inventory divided by the estimated 2023 citywide population. The proposed LOS of 56 burial and plots/niches and cremation in ground plots per 1,000 population is based on the projected inventory divided by the 2028-projected citywide population.

Parks and Recreation

The Parks, Recreation, and Open Space (PROS) Plan is needed to meet legal requirements and secure funding for the City's parks and recreation areas for the next six to ten years. Developed with public involvement, city staff, and several city commissions, this plan provides a summary of the city's parks, recreation programs, and open spaces, and gathers information on the community's recreational needs through surveys, outreach, and online tools. This Plan establishes a vision, goals, and assesses the current level of service provided by city parks and open spaces. The Capital Improvement Plan (CIP) and its formal approval adoption completes the PROS Plan suggesting a series of recommended improvements to better serve the citizens of Auburn for the next six years and beyond, each tied to potential grant funding sources, serving to guide the City's response and priorities to the desired quality of life envisioned from its citizens.

Facilities Inventory

Currently, the City manages a diverse range of parks and recreation assets, including 23 neighborhood, or local, parks, 14 community parks, 7 parcels of dedicated open space including a golf course, trail systems, and 16 special use facilities. More information on parks and recreation assets can be found in Appendix F – PROS Plan of the Comprehensive Plan

Facility Type	Quantity	Location	Existing Inventory (Total Acres)	LOS (2015) Acres/1,000 Res.	LOS (2024)	Future Facilities	Future Capital Projects
Community Parks	14	City-Wide	283.3	4.5	3.5	Jacobsen Tree Farm & 104th Ave SE Property	Jacobsen Master Plan, Ph. 1, Ph. 2 Sunset Park Ph. 2, Ph. 3 Game Farm Rec. Courts & Field Imps. Brannan Field Conversions
Neighbor Parks	10	City-Wide	51.23	1.32	1	Auburndale 2	

Open Spaces	6	City-Wide	321.42	As Acquired	4	Lakeland Nature Area	Lakeland Nature Area Parking & Access Imps., Interpretive Trail
Special Use Areas	14	City-Wide	307.69	As Identified	N/A		Golf Course Maint. Building & Les Gove Pavilion
Tot Lots	13	City-Wide	16.71	N/A	.25		
Trails	N/A	City-Wide	26.87 Miles	0.21	.25 miles		White River Trail Reconstruction

Level of Service (LOS)

A 10-minute walk is considered an important park access metric for several reasons. A 10-minute walk (approximately 1/2 mile on level ground) as a park access metric is important because it promotes physical activity, equity, sustainability, social interaction, and overall community well-being. It aligns with various health, environmental, and social goals the City has and should encourage staff and policymakers to prioritize accessible green spaces as a fundamental part of Auburn's development and the community's desired quality of life.

Future Plans

A Needs Analysis and Capital Improvement Program (CIP) project list can be found in Appendix F – PROS Plan of the Comprehensive Plan.

Transportation

Roadways: The City's street system consists of a network of approximately 249 miles of arterials, collectors, local streets and alleys. Existing nonmotorized facilities include a mix of trails, sidewalks, and both dedicated and shared bicycle facilities.

Signals and ITS: The City's transportation system also includes 95 traffic signals, a Traffic Control Center employing Intelligent Transportation Systems (ITS), which centrally directs the signals, 89 traffic cameras, and various traffic beacons all communicating on a network of copper wire and fiber optic cable. The City also has three roundabouts.

Transit: King County Metro Transit, Sound Transit and Pierce Transit serve the Auburn area. Auburn is currently served by six Metro, two Sound Transit, and one Pierce Transit bus route. In addition, Sound Transit "Sounder" commuter trains provide peak hour and midday service at the Auburn Station. The Sounder also provides special event service to selected sporting events. Park and Ride facilities and the Auburn Station support bus and rail service.

Facilities Inventory

Quantity	Description
249	Miles of Streets
17	Bridges
11,000	Street Signs
13,389	Feet of Guardrail
96	Traffic Signals
31	Rapid Rectangular Flashing Beacons
3.684	Street Lights - City Owned
2,261	Street Lights - PSE Owned
53	School Zone Flashing Beacons
19	Speed Radar Feedback Signs
89	Traffic Cameras
12	Speed Photo Enforcement Locations (School Zones)
4	Dynamic Message Signs
43.86	Miles of Fiber Optic Systems
2	Community Banner Locations
22.62	Miles of Class I Bikeways
1.29	Miles of Class II Bikeway with Buffer (Both Sides of Roadway)
15.95	Miles of Class II Bikeway (Both Sides of Roadway)
4.21	Miles of Class II Bikeway (Intermittent or 1 Side of Roadway)
2.60	Miles of Class III Bikeway with Pavement Markings
298.21	Miles of City Sidewalk

Level of Service

The City's Comprehensive Transportation Plan (CTP) establishes multimodal level of service standards for City streets, active transportation facilities, and access to transit service, and freight movement to provide guidance to evaluate the multimodal facilities, identify deficiencies, and prioritize projects to eventually reach a complete multimodal network that can support and promote mode shift, reducing the vehicle capacity demand on the roadways. The following policies relate to vehicle level of service which the City primarily utilizes to evaluate transportation system capacity. Other level of service standards are utilized for concurrency and planning but generally focus on the existing or absence of facilities and services and the quality of those facilities and services rather than their capacity.

- Policy TR6-1-1: The City adopts the following Vehicle Level of Service (LOS) Standards for the AM and PM peak periods per the Highway Capacity Manual:

- Signalized: The LOS standard for signalized intersections is “D”, with the following exceptions: for signalized intersections of two principal arterial roads the LOS standard is “E”.
- Stop Controlled: The LOS standard stop controlled intersections is “D”.
- Roundabout: The LOS standard for roundabout controlled intersections is “D” with a V/C ratio for each lane group of less than 0.90.
- Queuing: The LOS standard for intersection queuing is the 95th percentile queue shall not extend across an adjacent driveway, alley, or street intersection, except if the driveway, alley, or street intersection is within the functional intersection boundary of the queue in which case the queue may extend to the limit of the functional intersection boundary. Additionally, queuing for a designated turn lane shall not exceed turn lane storage area and cause a blockage of through lane(s).

Known Capacity Issues

The City utilizes the vehicle intersection delay level of service standard to evaluate general transportation system capacity for concurrency. Of the 157 intersections evaluated with the CTP, the following 11 (or 8%) were operating below the City’s adopted level of service standard under existing conditions:

- Auburn Way North & 45th Street NE
- 116th Avenue SE & SE 304th Street
- 46th Place S/44th Avenue S & S 321st Street/51st Avenue S
- 51st Avenue S & 316th Avenue
- Henry Road NE/Pike Street NE & 8th Street NE
- C Street SW & 3rd Street NW
- M Street SE & Auburn Way South
- Auburn Way South & 17th Street SE
- A Street SE & 44th Street SE
- Lakeland Hills Way SE & Oravetz Road SE
- R Street SE & 33rd Street SE

Initial modeling of future conditions (2044) added another 10 intersections to the list of intersections that would be operating below the City’s adopted level of service standard:

- Auburn Way N & 42nd Street NE
- I Street NE & 37th Street NE
- 30th Street NE & I Street NE
- 112th Avenue SE & SE 304th Street
- SE 304th Street & 118th Avenue SE
- 56th Avenue S & S 316th Avenue
- 15th Street NE & M Street NW

- A Street SE & 12th Street SE
- A Street SE & 21st Street SE
- A Street SE & Ellingson Road/41st Street SE

Transportation Project List

The Comprehensive Transportation Plan (CTP) includes projects and programs to address the vehicle level of service issues at intersections identified in the existing and future conditions. Those projects include new traffic signals, new roundabouts, modified lane configurations, new roadways, and other measures intended to reduce intersection vehicle delays. The CTP also includes projects, programs, and other actions intended to address to address level of service issues related to active transportation (bicycle and pedestrian), transit, and freight movement. Please refer to the CTP for lists and summaries of the projects, programs, and actions.

Public Utilities

The City of Auburn manages sanitary sewer, water, and storm drainage utilities as well as solid waste collection. The sanitary sewer and water utilities serve the City and several areas outside the City limits. The efficient provision of these services can play a significant role in managing the growth of the City as well as affecting the quality of life for residents of Auburn and the surrounding areas. Public utilities can serve the following goals:

- To protect the public health and safety by providing efficient and cost-effective water, sanitary sewer, storm drainage, and solid waste services to the community.
- Ensure that development will only occur if the urban services necessary to support such development will be available when it is developed.

Water

The City provided water service to over 15,000 service connections as of 2024. The City's water sources include the Coal Creek Springs and West Hill Springs watersheds and are supplemented by a system of ten wells (6 active) and two connections to the regional water system operated by Tacoma Public Utilities. Storage facilities are found on the Enumclaw plateau, at Lakeland Hills, and at Lea Hill. For more background information, see the Comprehensive Water Plan.

Facilities Inventory

- Approximately 306 miles of Water Main
- Over 15,000 Service Connections
- 8 Pump Stations
- 8 Reservoirs
- 1 Satellite Water System
- 6 Active Wells
- 2 Springs

Levels of Service Standards

The System Policies included in Appendix A of the Comprehensive Water Plan and provide direction for City Staff in the management of the utility. The City of Auburn (City) manages the water utility in accordance with established water system policies that govern various facets of utility operations. City policies are established by the City to provide a vision or mission of the water utility and to provide a framework for the design, operation, and ongoing wellbeing of the City's water utility.

The policies included in Appendix A of the Comprehensive Water Plan are developed specifically for the City's multi-source municipal water system and seek to provide consistent treatment to all utility customers and to provide documentation to current water-system customers as well as those considering service from the City.

The City's Comprehensive Water Plan is based upon the following mission statement for the water utility:

"The City will provide for the efficient, environmentally sound and safe management of the existing and future water system within Auburn's service area."

The City's Water utility policies are grouped within goal statements that are headlined under the following categories:

- Business Practices
- Service Area
- Operations and Maintenance
- Financial
- Planning
- Environmental Stewardship
- Design and Construction

A few examples of policies related to level of service standards provided by the water system include:

- Policy 5.3 - System-Wide Reliability
  The City shall invest the resources necessary to construct, maintain, and renew water-system infrastructure and equipment to ensure that customers are provided consistent, reliable service in accordance with WAC 246-290-420 Reliability and Emergency Response. Wherever possible, the City should anticipate system interruptions and design and operate the system to minimize the impact of such interruptions to customers.

- Policy 5.8 - Water Supply Planning

The City's objective is to ensure a continuous, safe water supply to meet firm customer demands. Provision of water service must be consistent with the goals, objectives, and policies of the City of Auburn Comprehensive Water Plan. Effects of past water conservation will be considered when projecting future water needs. Future water demands will be estimated using existing water usage patterns and projected future populations developed by the City's comprehensive Plan and consistent with the Puget Sound Regional Council data.

- Policy 5.10 - Service Pressure
  The City should provide potable water to customers in sufficient quantity to meet maximum day demands at a pressure that meets or exceeds all minimum applicable regulations, except during emergency conditions. Property owners may install private booster pumps to achieve higher pressures under supervision of the City and in accordance with WAC 246-290-230 Distribution Systems.

Known Capacity Issues (based on Level of Service or other standards)

The preparation of the Comprehensive Water Plan included hydraulic modeling for existing and future conditions. Issues derived from the modeling with respect to pipeline improvements needed to meet fire flow conditions were ranked, with those locations ranked higher given more priority to be completed. The projects are anticipated to be completed under the Repair and Replacement program identified in Chapter 7 of the Comprehensive Water Plan. In addition, other known capacity issues with respect to water facilities and sources, include:

- Lea Hill Intertie Booster Pump Station - the Intertie Booster Pump Station (serves the Lea Hill 648 pressure zone) has a pumping capacity deficit, and the Pump Station lacks emergency power, impacting water supply during power outages.
- Lea Hill Service Area Storage - There is a reservoir/storage capacity shortage of 0.54 MG for the Lea Hill service area.
- Valley Service Area Storage - There is a reservoir/storage capacity shortage of 1.28 MG in the Valley service area.
- Wells 3A/3B - are offline due to high manganese levels.
- Wells 7 - is offline due to high manganese levels.
- Coal Creek Springs - is underutilizing its water right, leading to inefficiency.
- Well 5 - needs upgrades and property acquisition for expansion.
- Well 4 - requires facility and electrical improvements for efficient operation.
- Well 1 and Well 4 - Liquid chlorine degradation at the facilities affect water treatment during low winter demand periods.
- West Hill Springs - Aging chlorination building.
- Lea Hill Pump Station – pump station lacks redundancy.

- Game Farm Wilderness Park - pumps need replacement and building repairs.
- Reservoir 2 - Limited maintenance access to Reservoir 2 valves and lack of earthquake resiliency.
- Coal Creek Springs Transmission Main- 100+ year old pipe that needs to be replaced and is susceptible to leaks.
- West Hill Springs - Poor condition of existing cast iron transmission main.
- Howard Road Corrosion Control Treatment Facility (CCTF) - will exceed capacity after Coal Creek Springs Rehabilitation project completion.
- Howard Road Corrosion Control Treatment Facility (CCTF) - Existing liquid chlorine generating equipment reaching the end of its useful life at Fulmer CCTF.

Stormwater

The System consists of a combination of open ditches, closed conveyance pipes, water quality facilities, and pump stations. For more details, see the Comprehensive Storm Drainage Plan.

Facilities Inventory

- Over 240 miles of storm drainage pipe
- Over 40 miles of open channels and ditches
- Over 13,900 junction structures (catch basins, manholes)
- 167 detention ponds
- 7 pump stations.

Levels of Service Standards

The System Policies included in Chapter 3 of the Comprehensive Storm Drainage Plan provide direction for City Staff in the management of the utility. The following policies are specifically related to designed capacity level of service provided by the sewer conveyance system:

- Policy 1.1 -The City shall seek to manage stormwater runoff within the public Right of Way (ROW):
    - to provide access to and functionality of critical services.
    - to preserve mobility on major transportation routes (i.e., arterial roads) and residential roads.
    - to protect real property structures (e.g., residences and businesses.)
- Policy 1.2 - The City shall seek to provide pump redundancy and backup power generators or dual power feeds at City- owned and -operated drainage pump stations.
- Policy 1.3 - The City shall routinely assess the performance of pumped systems with a focus on capacity and vulnerability. This review aims to

ensure that these systems operate efficiently, meet their intended capacity, and remain resilient against potential risks.

Known Capacity Issues

The preparation of the Comprehensive Storm Drainage Plan included hydraulic modeling focused on updating models within locations of proposed capital projects. In addition, existing drainage problems have been observed by the staff and are known to cause flooding of roadways at the following locations:

- Auburn Way South/ SR 18 Underpass - minor roadway flooding causes disruptions to traffic during periods of certain intense rainfall events.
- I St NE between 33rd St NE and 35th St NE – minor flooding has been observed when the Green River flows are high, and the gravity discharge is impacted.
- There are areas within the city not served by the public storm system, such as paved alleys or residential streets where minor flooding is observed.

Future Plans

The 6-year capital improvements are discussed in detail in Chapter 7 and the implementation schedule presented in Chapter 8 of the Comprehensive Storm Drainage Plan.

Sewer

The system is primarily a collection system with treatment provided by Metro. The system includes approximately 205 miles of sewers and force mains and 17 sewer pump stations. Significant portions of the City's service area are currently on septic systems, although plans for future expansion of sewer service into these areas is included in the Comprehensive Sewer Plan. For more details, see the Comprehensive Sewer Plan.

Facilities Inventory

Sewer facilities in the City currently consist of:

- 205 miles of gravity sanitary sewer main
- 17 sewer pump stations
- 5 miles of force main associated with pump stations
- 3 siphons (1 single pipe, and one double pipe under the Green River
- 2,700 sewer service connections

Level of Service Standards

The System Policies included in Chapter 2 of the Comprehensive Sewer Plan provide direction for City Staff in the management of the utility. The following policies are specifically related to designed capacity level of service provided by the sewer conveyance system:

Policy 3.3 - Require the transport of sewage by gravity whenever feasible in order to increase reliability, sustainability, and long-term cost effectiveness.

Policy 4.5 - Size the sewer collection system for peak wet weather flow rates that include I/I flows. Gravity sewers will be sized to convey the once-per-20-year peak hour flow without surcharging.

Policy 4.6 - Size pump stations and force mains for peak wet weather flow rates that include I/I flows. Pump stations will be sized to convey the once per 5-year flow with one pump out of service and convey the once per 20-year flow with all pumps in service.

Known Capacity Issues

The preparation of the Comprehensive Sewer Plan included hydraulic modeling for three scenarios. The first used existing system wastewater flows and applied the expected additional flow during a design storm (with a 20-year recurrence). The second was to escalate wastewater base flows based on population and employment projections for the year 2044, and the last was to increase the intensity and duration of the design storm based on anticipated rainfall changes associated with climate change.

- The existing system is shown to have few deficient pipes, none of which cause overflows.
- For future scenarios (2044-both including and not including climate change effects) show the following deficiencies:
    - The Rainier Ridge Pump Station's capacity is anticipated to be under capacity; however, a project is currently underway to replace that station in 2025.
    - The Dogwood Pump Station is anticipated to be under capacity in 2044.
    - Approximately 4,000 feet of gravity sewer in Roegner Park is expected to be under capacity in 2044.
    - Individual pipe segments upstream of each of the Green River crossings are expected to be under capacity at various times throughout the 20-year planning period. The precise timing is dependent on the rate and distribution of population and employment growth.

Future Plans

Conceptual plans for future sewer extensions and facilities are shown on Figure 5.5 of the Comprehensive Sewer Plan. Those extensions are to be funded by the property owners of the parcels served by them, so the timing of their construction is unknown. The Capital Improvement Plan is described in detail in Chapter 7 of the Comprehensive Sewer Plan. The Plan includes projects related to system capacity, repair and replacement, and system evaluation.

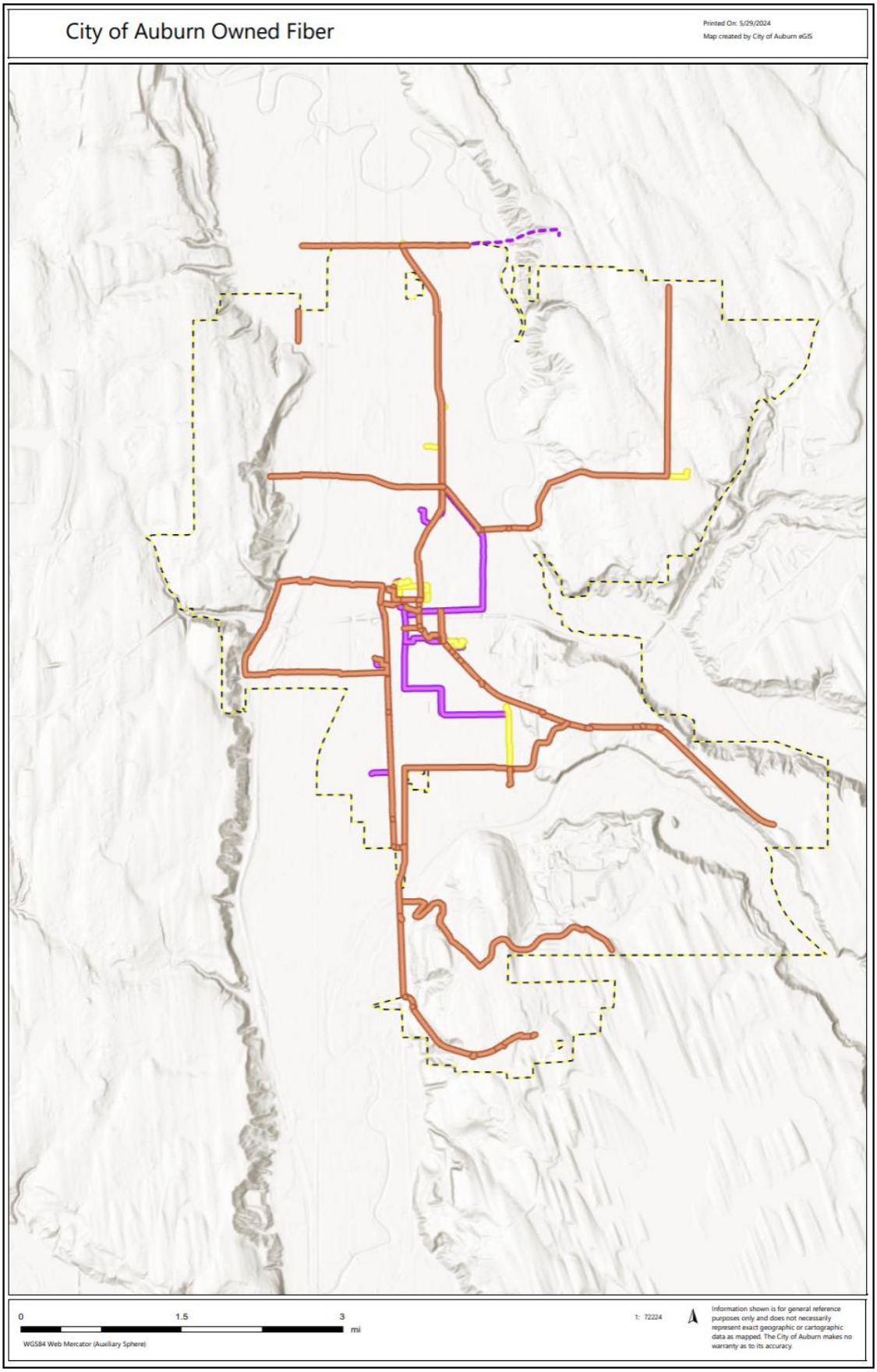
Solid Waste

The City of Auburn contracts with Waste Management (WM) for collection of municipal garbage, recycling, and yard waste. Waste Management disposes of Auburn's garbage at a King County Solid Waste transfer station. Recycling is processed at WM's material recycling facility in Tacoma, WA. WM takes the yard and food waste to either DTG in Tacoma, WA or Cedar Grove in Maple Valley, WA to be converted into compost. There is a small area of Auburn that was recently annexed. This area is serviced by Republic Services. Republic Services takes the garbage to a King County Solid Waste transfer station, the recycling is processed at their material recycling center in Seattle, WA, and yard and food waste is taken to Cedar Grove in Maple Valley, WA.

Telecommunications

The City of Auburn owns and maintains a robust fiber optic Metropolitan Area Network (MAN) that connects most City owned building facilities and traffic signals throughout the Auburn area. This infrastructure delivers secure, high-speed broadband capabilities essential for supporting various government functions, including public safety, public works, planning, permitting, and tourism.

Additionally, our fiber optic network enhances city operations by facilitating interconnections with regional partners and service providers such as City of Algona, City of Pacific, King County, The Community Connectivity Consortium, University of Washington, Valley Communications and Microsoft.


City of Auburn Owned Fiber
Printed On: 5/29/2024
Map created by City of Auburn eGIS
0
1.5
3
mi
WGS84 Web Mercator (Auxiliary Sphere)
1: 72224
Information shown is for general reference purposes only and does not necessarily represent exact geographic or cartographic data as mapped. The City of Auburn makes no warranty as to its accuracy.

Public Education Facilities

Auburn's residential areas are served by a combination of Auburn School District, Dieringer School District, Federal Way Public Schools, and Kent School District. Detailed inventories of school district capital facilities and levels-of-service are contained in the Capital Facilities Plan (CFP) of each school district. The CFPs of the four school districts serving Auburn residential areas and the associated school impact fees are adopted annually as part of the Annual Comprehensive Plan amendment process. Locations of schools and school districts within the City of Auburn which are illustrated in the map below.

Future Plans

To accommodate projected growth, the school districts have noted the following projects in their 2023 Capital Facilities Plans:

Auburn School District

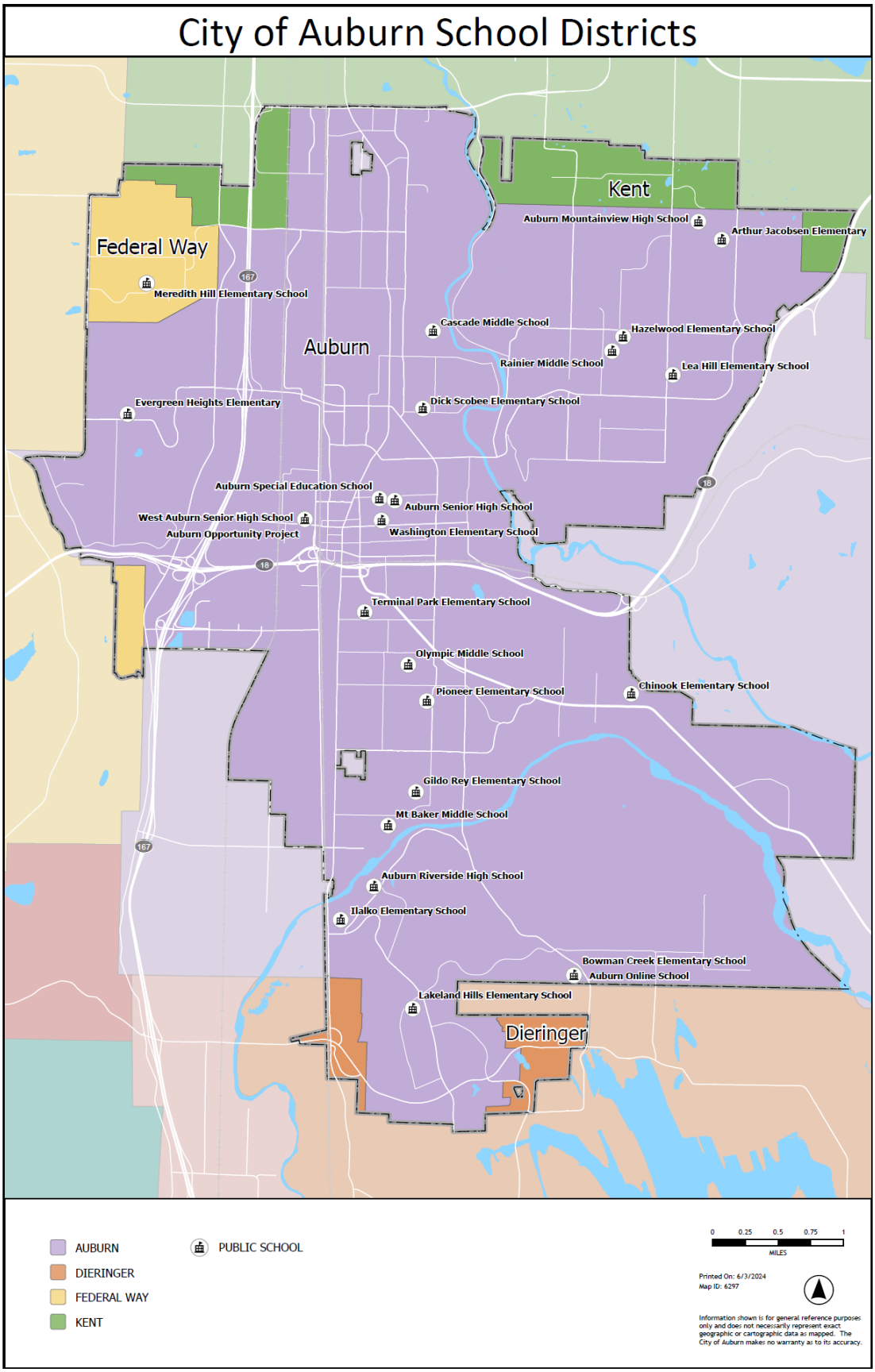
- Portable Relocation – Opens 2023-2024
- Middle School #5 – Opens 2027-2028

Dieringer School District

- Elementary School #3 – Opens 2027
- North Tapps Middle School Classroom Addition – Opens 2027

Federal Way Public Schools

- Illahee Middle School Modernization and Expansion – Opens 2024
- Former DeVry/ES 24 Site Acquisition – Opens 2028
- Portables Expansion – Through 2030


City of Auburn School Districts
Kent
Federal Way
Auburn
Dieringer
Auburn Mountainview High School
Arthur Jacobsen Elementary
Meredith Hill Elementary School
Cascade Middle School
Hazelwood Elementary School
Rainier Middle School
Lea Hill Elementary School
Evergreen Heights Elementary
Dick Scobee Elementary School
Auburn Special Education School
Auburn Senior High School
West Auburn Senior High School
Auburn Opportunity Project
Washington Elementary School
Terminal Park Elementary School
Olympic Middle School
Pioneer Elementary School
Chinook Elementary School
Gildo Rey Elementary School
Mt Baker Middle School
Auburn Riverside High School
Ilalko Elementary School
Bowman Creek Elementary School
Auburn Online School
Lakeland Hills Elementary School
AUBURN
DIERINGER
FEDERAL WAY
KENT
PUBLIC SCHOOL
0 0.25 0.5 0.75 1
MILES
Printed On: 6/3/2024
Map ID: 6297
Information shown is for general reference purposes only and does not necessarily represent exact geographic or cartographic data as mapped. The City of Auburn makes no warranty as to its accuracy.

Goals and Policies

Goal # 1 - Keeping Pace with Growth

Ensure that new development does not outpace the City's ability to provide and maintain adequate public facilities and services, by allowing new development to occur only when and where adequate facilities exist or will be provided, and by encouraging development types and locations that can support the public services they require.

Policies:

CF-1. Lands designated for urban growth by this Plan shall have public facilities (streets, sewer, water, storm drainage, and parks) that meet City standards prior to or concurrent with development.

CF-2. Encourage development where new public facilities can be provided in an efficient manner.

CF-3. If adequate facilities are currently unavailable and public funds are not committed to provide such facilities, developers must provide such facilities at their own expense to develop their proposed projects.

CF-4. The City shall encourage and approve development only where adequate public services including police protection, fire and emergency medical services, education, parks and other recreational facilities, solid waste collection, drinking water, storm drainage, roadway and nonmotorized and other governmental services are available or will be made available at acceptable levels of service prior to project occupancy or use.

CF-5. Provide additional public facility capacity when existing facilities are used to their maximum level of efficiency (consistent with adopted standards for level of service).

CF-6. Encourage development where new public facilities can be provided in an efficient manner.

CF-7. Public facilities shall be provided in accord with the guidance of the Capital Facilities Plan or, as may be appropriate a system plan for each type of facility designed to serve at an adequate level of service the locations and intensities of uses specified in this Comprehensive Plan.

CF-8. New development shall not be approved that is not supported by a minimum of facilities to support the development and that does not provide for its proportionate share of related system needs.

CF-9. The city will perform its activities and make capital budget decisions in conformity with the comprehensive plan. The Land Use Element of the

comprehensive plan shall be reassessed if probable funding falls short of meeting existing needs.

CF-10. Establish land use patterns that optimize the use of public facilities.

CF-11. Exempt the following from the concurrency management program:

- Development vested by RCW 19.27.095, 58.17.033 or 58.17.170.
- Development that creates no added impact on public facilities.
- Expansions of existing development that were disclosed and tested for concurrency as part of the original application.

Goal # 2 – Public Facilities and Funding

Provide needed public facilities that are within the ability of the City to fund or within the City's authority to require others to provide.

Policies:

CF-12. Establish level of service standards that are achievable with the financing plan of this Capital Facilities Plan.

CF-13. Base the financing plan for public facilities on realistic estimates of current local revenues and external revenues that are reasonably anticipated to be received by the City.

CF-14. Match revenue sources to capital projects based on sound fiscal policies.

- The City shall continue to fund utility costs through utility enterprise funds, based on user fees and grants. Public facilities included in utilities are sewer, solid waste, storm drainage, and water.
- Where feasible pursue joint venture facility construction, construction timing, and other facility coordination measures for City provided facilities, as well as with school districts and other potential partners in developing public facilities.
- The City shall continue to assist through direct participation, LIDs and payback agreements, where appropriate and financially feasible. Where funding is available, the City may participate in developer-initiated facility extensions or improvements, but only to the extent that the improvements benefit the broader public interest and are consistent with the policies of this Capital Facilities Plan.

CF-15. If the projected funding is inadequate to finance needed public facilities and utilities based on adopted level of service standards and forecasted growth, the City will do one or more of the following to achieve a balance between available revenue and needed public facilities:

- Lower the level of service standards;
- Increase the amount of revenue from existing sources;
- Adopt new sources of revenue;

- Require developers to provide such facilities at their own expense; and/or
- Amend the Land Use Element to reduce the need for additional public facilities.

CF-16. Both existing and future development will pay for the costs of needed capital improvements.

- Ensure that existing development pays for capital improvements that reduce or eliminate existing deficiencies and pays for some or all of the cost to replace obsolete or worn-out facilities. Existing development may also pay a portion of the cost of capital improvements needed by future development. Existing development's payments may take the form of user fees, charges for services, special assessments, and taxes.
- Ensure that future development pays a proportionate share of the cost of new facilities that it requires. Future development may also pay a portion of the cost to replace obsolete or worn-out facilities. Future development's payments may take the form of voluntary contributions for the benefit of any public facility, impact fees, mitigation payments, capacity fees, dedications of land, provision of public facilities, and future payments of user's fees, charges for services, special assessments, and taxes.

CF-17. The City will determine the priority of public facility capital improvements using the following criteria as general guidelines. Any revenue source that cannot be used for the highest priority will be used beginning with the highest priority for which the revenue can legally be expended.

- Projects that eliminate hazardous conditions.
- Refurbishment of existing facilities that contribute to achieving or maintaining standards for adopted level of service.
- New or expanded facilities that reduce or eliminate deficiencies in level of service for existing demand.
- New or expanded facilities that provide the adopted level of service for new development and redevelopment during the next six fiscal years.
- Capital improvements that significantly reduce the operating cost of providing a service or facility, or otherwise mitigate impacts of public facilities on future operating budgets.
- Capital improvements that contribute to stabilizing and developing the economy of the City.
- Project priorities may also involve additional criteria that are unique to each type of public facility, as described in other elements of this Comprehensive Plan.

CF-18. Ensure that the ongoing operating and maintenance costs of a capital facility are financially feasible prior to constructing the facility.

Goal # 3 – Public and Environmental Health

Protect public health, environmental quality, and neighborhood stability and viability through the appropriate design and installation of public facilities.

Policies:

CF-19. Promote conservation of energy, water and other natural resources in the location and design of public facilities.

CF-20. Require the separation of sanitary and storm sewer facilities wherever combined sewers may be discovered.

CF-21. Practice efficient and environmentally responsible maintenance and operating procedures.

CF-22. The siting, design, construction and improvement of all public buildings shall be done in full compliance with the Americans with Disabilities Act (ADA).

CF-23. Promote economic and community stability and growth through strategic investments in public facilities and public/private partnerships.

Goal # 4 – Community Benefits of Public Facilities

Provide public facilities that provide a sense of community that is inclusive of diverse populations.

Policies:

CF-24. Contribute to community pride and foster a sense of community through provision of public facilities that create a community-gathering place for neighbors, family and friends.

CF-25. Through provision of public facilities, offer a broad range of activities promoting social interactions especially with new residents.

CF-26. Provide maximum flexibility and multiple uses through design of public facilities that are adaptable to changing interests.

CF-27. Provide a community center facility that is financially feasible, affordable for participants, and can generate revenue to offset a portion of the operating costs.

Goal # 5 – Consistency with Other Adopted Plans

Make the Capital Facilities Plan consistent with other elements of the comprehensive plan, and with other city, county, regional and state adopted plans.

Policies:

CF-28. Ensure that the growth and development assumptions used in the Capital Facilities Plan are consistent with similar assumptions in other elements of the comprehensive plan.

CF-29. Coordinate with non-city providers of public facilities on a joint program for maintaining applicable level of service standards, concurrency requirements, funding, and construction of public facilities.

Goal #6 - Public and Institutional Buildings

To site public and institutional buildings in accord with their service function and the needs of the members of the public served by the facility.

Policies:

CF-30. All "people-oriented" City facilities should be located near high-amenity sites. Les Grove Park and downtown are particularly appropriate sites for senior services, community centers, libraries, museums, etc.

CF-31. City park buildings should be developed in accordance with the Parks, Recreation, and Open Space Element.

CF-32. Public and institutional facilities should incorporate practices that reduce energy consumption, reduce the emission of greenhouse gases, conserve water, provide electric vehicle infrastructure, and preserve native vegetation.

CF-33. Public and institutional facilities that attract a large number of visitors (City Hall, museums, libraries, educational facilities, permit and license offices, health and similar facilities, etc.) should be sited in areas that are accessible (within 1/4 mile) by transit.

CF-34. The City shall encourage other agencies to follow these siting principles in considering new sites for public buildings.

CF-35. The location of religious institutions, private schools, community centers, parks and similar public or institutional facilities shall be related to the size of the facility and the area served. Citywide facilities should be sited in visible and accessible locations.

CF-36. Small public or institutional facilities intended to serve one or two residential neighborhoods may be located within a neighborhood. Larger public or institutional facilities intended to serve mainly Auburn residents or businesses shall be located along major arterial roads within the community-serving area of Auburn; however, elementary schools should be given flexibility to locate along smaller roads. Buffering from adjacent land uses may be required.

CF-37. The location of utility facilities is often dependent upon the physical requirements of the utility system. Sewage lift stations, pump stations, water

reservoirs, and other similar facilities should be sited, designed, and buffered (through extensive screening and/or landscaping) to fit in harmoniously with their surroundings. When sited within or adjacent to residential areas, special attention should be given to minimizing noise, light, and glare impacts.

CF-38. Public facilities of an industrial or heavy commercial character should be confined to the region-serving area of Auburn, unless no other reasonable siting opportunity exists, in which case siting still must comply with applicable zoning standards. Examples of such facilities are the City maintenance and operations facility, state and regional solid waste facilities, and the Auburn School District bus barn.

CF-39. The siting and relocation of City maintenance and operation facilities shall be responsive to growing demands for utility, transportation, and fleet services, and shall also account for the City's role in emergency preparedness and response.

Goal # 7 - Essential Public Facilities

Essential public facilities include those facilities that are typically difficult to site such as airports, state education facilities, state or regional transportation facilities as defined in RCW 47.06.140, state and local correctional facilities, solid waste handling facilities, and in-patient facilities including substance abuse facilities, mental health facilities, group homes, and secure community transition facilities as defined in RCW 71.09.020."

More generally, essential public facilities are facilities, conveyances, or sites that meet the following definition: (1) the facility, conveyance or site is used to provide services to the public; (2) these services are delivered by government agencies, or private or nonprofit organizations that are under contract to or with substantial funding from government agencies, or by private firms or organizations subject to public service obligations; and (3) the facility or use of the site is necessary to adequately provide a public service.

The Growth Management Act requires that a local comprehensive plan include a process for siting essential public facilities. The Growth Management Act includes these provisions because siting certain public facilities has become difficult due to the impacts many of these facilities have on the adjacent community. Many factors contribute to this problem, including increased demand for facilities to serve a growing population, increased competition for land as the state becomes more urbanized, problems with siting processes, and judicial decisions that compel jurisdictions to provide certain facilities. By including a process for siting essential facilities in the Comprehensive Plan, deficiencies in the siting process can be minimized.

This section contains Auburn's process for siting essential public facilities. This is an interim process until development regulations are incorporated into city code.

When that process is developed, Auburn may modify these procedures to reflect the Council's recommendation.

Policies:

CF-40. Essential Public Facility Siting Process.

1. The City will review proposals through the process outlined in Policies 3 through 8 below, if the essential public facility largely serves a regional, countywide, statewide, or national need, and is included in a policy sense within an adopted state or regional plan that meets both of the following criteria:

a. The state or regional plan was developed through an appropriate public process (including at least one local public hearing) and has undergone a NEPA and/or SEPA review.

b. A clear policy statement supporting the type of facility proposed must be included. The plan should also include, in a policy sense, a set of siting guidelines to be used for such a facility. Such criteria may include but are not limited to the type and sufficiency of transportation access, colocation requirements, preferred adjacent land uses, on- or off-site security and/or mitigation, and required public facilities and services.

2. If the essential public facility largely serves a regional, countywide, statewide or national need and is not part of an adopted state or regional plan, the proponent will be required to request that the appropriate state or regional plan be amended to include the proposal meeting the criteria contained in Part 1 above. The proposal will also be reviewed following the process outlined in Parts 3 through 8.

Essential Public Facilities of a regional, countywide, statewide, or national nature:

3. Essential public facilities of a regional, countywide, statewide or national nature will be reviewed by the City through the special area plan process. The boundaries of the special area plan will be set at a scale directly related to the size and magnitude of the proposal. For facilities of regional, state, and national need, an alternative analysis will be performed, but will not be limited to, the guidelines described in Part 1 above. Auburn staff shall participate in the review process of Part 1 above, and use the data, analysis, and environmental documents prepared in that process to aid the City's special area plan review, if Auburn determines that those documents are adequate. If the facility requires other development permits, those approvals also shall be considered within the review process.

4. Impacts of the proposed essential public facility must be identified and an appropriate mitigation plan developed. Unless otherwise governed by state law, the financing strategy for the mitigation plan shall be structured so that the costs of the plan shall be allocated proportionally on a benefit basis using nonlocal sources of funding, although local sources of funding may also be used.

5. The special area plan process to be used for essential public facilities of a regional, countywide, statewide or national nature shall follow the City's Comprehensive Plan amendment process that includes multiple opportunities for public involvement.

6. An analysis of the facility's impact on City finances shall be undertaken. If the study shows that locating a facility in a community would result in a disproportionate financial burden on the City of Auburn, an agreement with the project's proponents must be executed to mitigate the adverse financial impact or the approval shall be denied.

Essential Public Facilities of primarily local nature:

7. If the essential public facility meets largely local needs (for example, in-patient facilities, including substance abuse facilities, mental health facilities and group homes), the facility shall be considered based upon Section 8 below.

All Essential Public Facilities:

8. The following criteria shall be used to evaluate all applications to site essential public facilities:

a. Whether there is a public need for the facility

b. The impact of the facility on the surrounding uses and environment, the City and the region

c. Whether the design of the facility or the operation of the facility can be conditioned, or the impacts mitigated, in a manner similar to those used in traditional private development, in order to make the facility compatible with the affected area and the environment

d. Whether a package of mitigating measures can be developed that would make siting the facility within the community more acceptable.

e. Whether the factors that make the facility difficult to site can be modified to increase the range of available sites or to minimize impacts on affected areas and the environment.

f. Whether the proposed essential public facility is consistent with the Auburn Comprehensive Plan.

g. Essential public facilities shall comply with any applicable state siting and permitting requirements (e.g., hazardous waste facilities).

h. Whether the State proves by clear, cogent, and convincing evidence that (1) a sufficient and reasonable number of alternative sites have been fully, fairly, and competently considered, and (2) such sites were found to be unsuitable for an SCTF for reasons other than the cost of property.

i. Whether careful analysis has been completed to show that siting of the facility will have no undue impact on any one racial, cultural, or socioeconomic group, and that there will not be a resulting concentration of similar facilities in a particular neighborhood, community, jurisdiction or region.

CF-41. The Planning Director or designee shall determine whether a development application will result in a significant change of use or a significant change in the intensity of use of an existing essential public facility. If the Planning Director or designee determines that the proposed changes are significant, the proposal will be subject to the essential public facility siting process as defined in Goal #4, Policy CF-10. If the Planning Director or designee determines that the proposed changes are insignificant, the application shall be reviewed through the City's standard development review procedures. The Planning Director or designee's determination shall be based upon:

a. The proposal's impacts on the surrounding area.

b. The likelihood that there will be future additions, expansions, or further activity related to or connected with the proposal.

CF-42. One of the difficulties of siting essential public facilities is that they are allowed in some but not all appropriate areas. To help address this problem, Auburn shall allow essential public facilities in all zones where they would be compatible. The types of facilities that are compatible will vary with the impacts likely from the facility and the zoning district. Essential public facilities are likely most compatible in the M-2 Heavy Industrial Zoning District. Uses within the zone may generate more externalities to the surrounding area.

CF-43. Essential public facilities shall be allowed in those zoning districts in which they would be compatible, and impacts can be mitigated. In situations where specific development standards cannot be met, but it is determined that the facility can be made compatible, the City Council can waive those specific standards with the requirement that appropriate mitigation is provided. The M-2 Zoning District should include broad use categories that allow all essential public facilities that are difficult to site as permitted or conditional uses as appropriate.

CF-44. Essential public facilities should be equitably located throughout the City, county and state. No jurisdiction should absorb a disproportionate share.

CF-45. Essential public facilities of a regional, countywide, statewide, or national nature should be restricted to the region-serving area of Auburn. Such facilities should be located in relationship to transportation facilities in a manner appropriate to their transportation needs. Extensive buffering from adjacent uses may be required. Facilities that generate a significant amount of truck traffic should be located such that they are served by existing truck routes or mitigation provided to address impacts on the street network.

CF-46. Infrastructure investments should consider equity and plan for any potential displacement impacts.

City of Auburn

Utilities Element

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Intent of the Utilities Element

The Utilities Element required by the Department of Commerce per RCW 36.70A.070, and consists of the general location, proposed location, and capacity of all existing and proposed utilities including electrical, telecommunications, and natural gas systems. This Element generally describes these “privately-owned” services, and solid waste services, provided within the city, however Auburn does not own or operate these services and relies on outside service providers such as Puget Sound Energy and Waste Management to provide these services.

This Element includes descriptions those “privately-owned” utilities note above as well as summaries of city-owned and operated utilities such as water, sewer, and stormwater. Detailed information for both privately-owned and city-owned utilities can primarily found in the Water, Sewer, and Stormwater Systems Plans adopted by the City and that are incorporated by reference in the Comprehensive Plan, and by contacting privately-owned utility providers.

Values

Character: Private utilities will provide a positive contribution to the quality, aesthetics, and functionality of the community.

Wellness: Utility infrastructure and systems support the delivery of safe and efficient electricity, gas, and telecommunications.

Service: Utility infrastructure and systems support the City’s goals of providing accessible and transparent government services and processes.

Economy: Businesses are served by utility infrastructure meeting or exceeding the needs for market entry and future growth.

Celebration: Telecommunication systems are fully utilized to reach a broader cross-section of the community in a way that brings people together for civic activities, cultural events, and social awareness.

Environment: Siting, installation, and maintenance of utilities will ensure protection, preservation, and respect of the wildlife habitat, water quality, and environmentally sensitive features.

Sustainability: When designing, constructing, and maintaining utilities, a long-term investment horizon is favored over concepts that only provide short-term benefits and outcomes.

City-Owned and Operated Utilities

Introduction

This section provides overall policy direction for the different utility services provided by the city, including water, sewer, and stormwater facilities. A key provision of the Growth Management Act is concurrency. In general, concurrency seeks to ensure that development is permitted only if adequate public facilities are, or can be guaranteed to be, available to support new development. Concurrency requires that facilities needed to maintain a locally adopted level of service be provided "concurrently" with development. Concurrency places the finance function of local government in a much more prominent role in the land use development process. While the concept of concurrency is new to many jurisdictions, it has been used in Auburn since the adoption of its 1986 Comprehensive Plan.

Conditions and Trends

Accommodating Growth

The provision and sizing of public facilities such as streets or waterlines and sewer lines can influence the rate or timing of development and is an important means of managing growth. Timed provision of facilities also ensures that new development can be assimilated into the existing community without serious disruptions or adverse impacts. This Plan establishes policies to allow development when and where all public facilities are adequate or can be made adequate, but only if such development can be adequately served by public facilities and services consistent with the adopted level-of-service standards.

Utility Services

The following services are owned and operated by the City of Auburn.

Water System

The City of Auburn (City) manages the water utility in accordance with established water- system policies that govern various facets of utility operations. City policies are established by the City in order to provide a vision or mission of the water utility and to provide a framework for the design, operation, and ongoing wellbeing of the City's water utility.

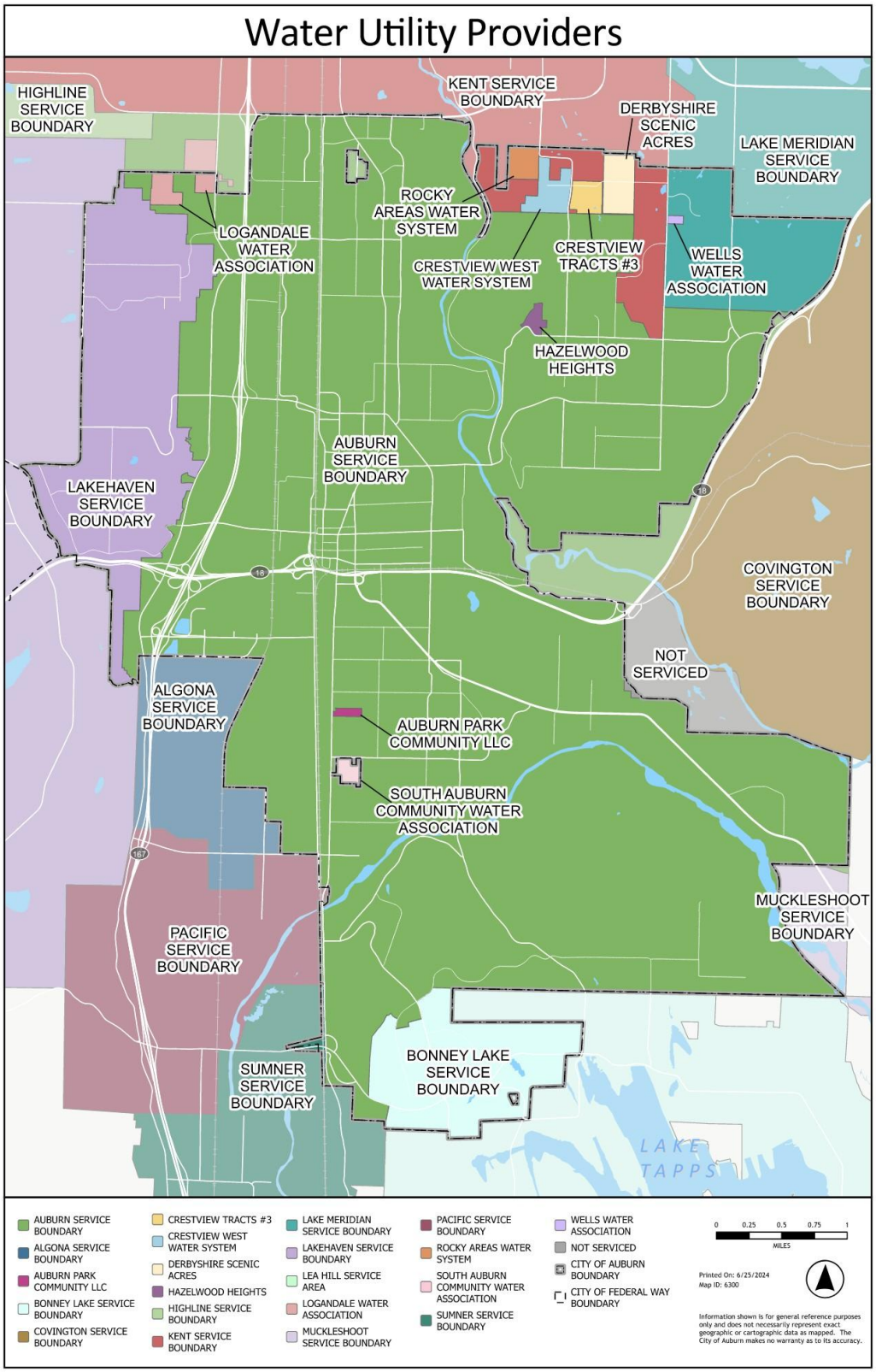
The policies included in this Water Comprehensive Plan are developed specifically for the City's multi-source municipal water system and seek to provide consistent treatment to all utility customers and to provide documentation to current water-system customers as well as those considering service from the City. It should be noted that what is included in these policies is limited to those things related to the water system and its design, maintenance, and operation. There are other policies and criteria that pertain to the water utility the City has in place regarding land use, development, and financial components, which are not directly addressed in this plan, that could still have an impact on the needs of the water system. These

policies and criteria may include factors such as zoning regulations, building codes, infrastructure requirements, and financing options. These additional factors will be considered when planning for the water system, to meet the needs of the community in a sustainable and effective matter.

The City's Water Comprehensive Plan is based upon the following mission statement for the water utility: "The City will provide for the efficient, environmentally sound and safe management of the existing and future water system within Auburn's service area."

- The City's Water utility policies are grouped within goal statements that are headlined under the following categories:
- Business Practices
- Service Area
- Operations and Maintenance
- Financial
- Planning
- Environmental Stewardship
- Design and Construction

Map U-1 – Water Utility Providers



Stormwater Systems

This chapter describes a set of overarching goals for the City's Storm Drainage Utility and policies for complying with these goals.

UE-83 City Comprehensive Plan Consistency

The City Comprehensive Plan is the City's growth management plan and contains policies for protecting critical areas and natural resource lands, designating urban growth areas, preparing comprehensive utility plans, and implementing them through capital investments and development regulations. Therefore, the City Comprehensive Plan provides a framework of policies for development, expansion, and maintenance of the Storm Drainage Utility reflected in this Storm Drainage Comprehensive Plan.

UE-84 Storm Drainage Comprehensive Plan Policy Goals

The City's Storm Drainage Utility policies are grouped within goal statements that are headlined under the following categories:

- System Planning
- Operations and Maintenance
- Fiscal Responsibility
- Environment and Regional Coordination

Taken together with the City Comprehensive Plan and Auburn City Code (ACC) these goals define how the Storm Drainage Utility shall be operated and maintained. Several policies have been developed within each goal, many of which are also based on the Washington Department of Ecology Stormwater Management Manual (SWMMWW) and the City's Phase II National Pollutant Discharge Elimination Stormwater Permit (NPDES).

Sewer Systems

The City desires to employ recognized best business practices that result in an efficient and cost-effective operation of the Sanitary Sewer Utility. The City shall identify the key business functions within the Sanitary Sewer Utility (e.g., billing, permitting, asset management, and planning) and develop supporting best business practices for each.

The City understands that defining and implementing best business practices is a long-term effort and will require a stepwise approach. Given that the Sanitary Sewer Utility is made up largely of physical assets that have the greatest value and deserve the greatest commitment to operate and maintain, the City shall continue to prioritize the business practice of asset management.

Asset management is a systematic approach to maintaining assets in good working order to minimize future costs of maintaining and replacing them, especially to avoid costly deferred maintenance. The best practices for asset management involve systematically basing choices on an understanding of asset condition and performance, risks, and costs in the long term. Asset best practices include:

- Having extensive knowledge about assets and their costs for maintenance and replacement (i.e., detailed inventories);
- Maintaining Levels of Service;
- Taking a life-cycle approach to asset management planning; and
- Implementing the planned solutions to provide a reliable, cost-effective service.

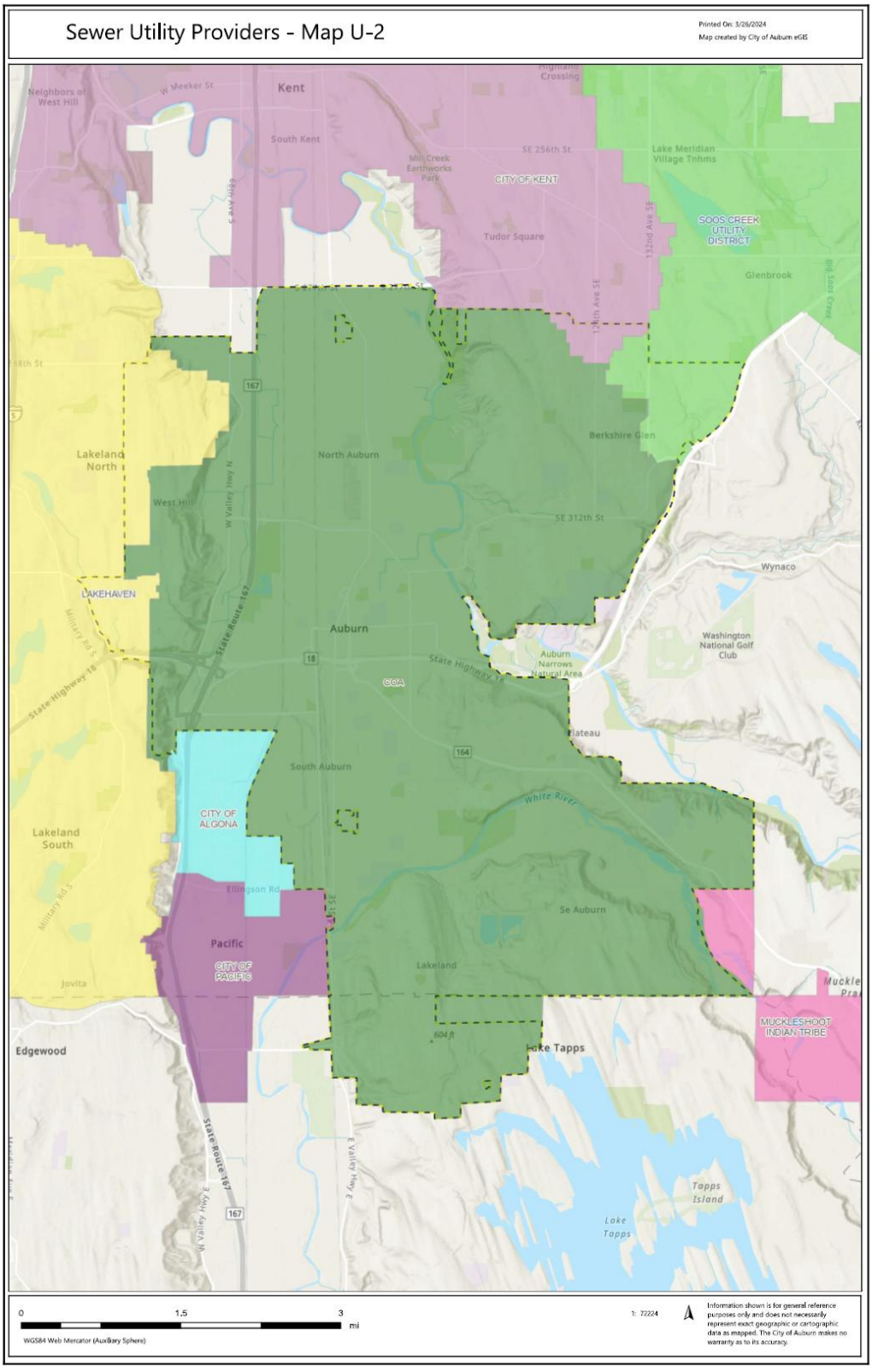
Since the adoption of the 2016 Comprehensive Sewer Plan, the Sanitary Sewer Utility has compiled an inventory of assets and their conditions for approximate 70% of its currents assets. The Sanitary Sewer Utility shall continue implementing the above best practices during the next planning period.

Sewer Comprehensive Plan Policies, Standards, and Guidelines

This Plan presents policies and standards related to system development, maintenance, funding, and generally how the Sanitary Sewer Utility should operate. These policies define limits and outline how the wastewater collection system should be operated and maintained and are grouped within goal statements that are headlined under the following categories:

- Service Area
- System Planning
- Operations and Maintenance
- Environmental Stewardship
- System Performance and Reliability
- Fiscal Responsibility

Map U-2 – Sewer Utility Providers



Private Utilities

Introduction

The Growth Management Act requires the City of Auburn to include a Private Utilities Element within its Comprehensive Plan. The element should pro- vide a framework for the efficient and predictable provision and siting of utility facilities and ser- vices within the City, consistent with each serving utility's public service obligations. This element covers private utilities (those not provided by the City of Auburn), and includes electricity, telecommunications, and natural gas. City-owned water, sewer, and stormwater utilities are described within the Capital Facilities Element (Chapter 3) of this Comprehensive Plan.

Investor-owned utilities in the state of Washington are regulated by the Washington Utilities and Transportation Commission. State law regulates the rates, charges, services facilities, and practices of utilities. Any changes in policies of these aspects of utility provision require WUTC approval.

The primary responsibility for the planning of private utilities rests with utility providers. Clearly, however, planning cannot take place without open lines of communication between the City and utility providers. The City acknowledges that some private utility providers are not willing to provide capacity or future construction plans, as some of this information may affect their competitiveness or be considered proprietary. Private utilities, however, must recognize that not pro- viding relevant information may hinder the City's ability to assist them in their projects.

Vision

Private utilities in Auburn are planned, designed, and constructed in a manner that adequately supports the future growth scenarios predicted in the City's Land Use Element and that meets the needs of residents, visitors, and businesses. Sustainability is a principle that guides decisions for where utilities are placed, how they are constructed, how they are operated and maintained, and how all aspects of design, construction, and operation are funded.

Electricity and Natural Gas

Puget Sound Energy provides electrical and natural gas service to the City of Auburn and its potential annexation area. PSE is an investor-owned private utility that provides service to approximately 1.2 million customers in a service area that covers 6,000 square miles.

Electricity

PSE builds, operates, and maintains an electrical system consisting of generation, transmission, and distribution facilities. Facility technology for electricity transmission may change in the future in order to respond to the need for more efficient facilities, address various electromagnetic field and health concerns, and diversify resources. Utility policies should be updated in the future to consider changes in technology, facilities, and services.

Natural Gas

The Northwest Pipeline Corporation and Enumclaw Natural Gas also have gas lines in the southeastern portion of the City. Northwest

Pipeline Corporation's only customer in Auburn is Enumclaw Natural Gas. Enumclaw Natural Gas serves Auburn residential customers in the area of the Auburn Adventist Academy.

Telecommunications

Telecommunications includes a wide range of services including conventional telephone, cellular telephone, and cable television. Telecommunications technology continues to change rapidly. The City of Auburn owns and maintains a robust fiber optic Metropolitan Area Network (MAN) that connects most City owned building facilities and traffic signals throughout the Auburn area.

Conventional Telephone

Conventional local telephone service to the City is provided by CenturyLink. CenturyLink is a global provider of telecommunications services.

Calls are switched at facilities called central offices. Typically, four main lines leave each central office – one in each direction. Auburn's central office is located in downtown Auburn.

Several carriers provide long distance service to the area. These providers have underground fiber-optic cables passing through the City of Auburn.

Cellular Telephone

Cellular telecommunications provide mobile telephone communications via radios that send and receive signals from a network of receivers mounted on utility poles, towers, buildings, or other structures on private property or within a right-of-way. Cellular communication companies offer digital voice, messaging, and high-speed wireless data services to customers.

Cellular telephone service within the City, its potential annexation areas, and the Puget Sound region overall is provided by multiple private companies. Cellular providers are regulated by the Federal Communications Commission. Technology and business practices in the area of telecommunications continue to change rapidly.

Cable Television

Cable television service is provided by Comcast through a combination of aerial and underground cables. The locations of existing and planned cable lines are shown on Map 6.4.

Solid Waste

The City of Auburn contracts with WM for collection of municipal garbage, recycling, and yard waste. Waste Management disposes of Auburn's garbage at a King County Solid Waste transfer station. Recycling is processed at WM's material recycling facility in Tacoma, WA. WM takes the yard and food waste to either DTG in Tacoma, WA or Cedar Grove in Maple Valley, WA to be converted into compost. There is a small area of Auburn that was recently annexed. This area is serviced by Republic Services. Republic Services takes the garbage to a King County Solid Waste transfer station, the recycling is processed at their material recycling center in Seattle, WA, and yard and food waste is taken to Cedar Grove in Maple Valley, WA. There are approximately 20,200 Waste Management accounts as of 2024.

Goals and Policies

Goal # 1 – Service Area

Allow the development of private utilities to meet the needs of the existing community and provide for its planned growth consistent with serving utilities' public service obligations.

Policies:

U-1. Private utility providers will utilize the City's Comprehensive Plan Map for guidance regarding future land uses and intensities in order to determine and plan for future service. Private utility facilities and systems should be consistent with the uses and densities allowed by the Comprehensive Plan and Zoning Code. The City will make this information easily available to utility providers. The City will also coordinate with utility providers on pending development proposals (both public and private). In return, the City expects a cooperative posture toward coordinated and timely expansion of infrastructure.

U-2. Private utility companies should strive to provide utility services to all segments of the Auburn population and areas of the community in an equitable manner that prioritizes easy access and that offers pricing structures that strive to reduce barriers that otherwise exclude portions of the community.

U-3. Construction of facilities and provision of services by private utility providers within the City of Auburn shall be in compliance with all of the goals and policies of this Comprehensive Plan.

Goal # 2 – Compatibility in the Community

Prioritize visual quality of private utility facilities consistent with the serving utilities' public service obligations.

U-4. The City shall require that new private utility distribution, service, and telecommunication lines be located underground within all new developments. The City will also work with utility companies to relocate existing distribution, service, and telecommunication lines underground as a part of new development whenever it is technologically feasible, and as part of City capital roadway projects whenever it is economically and technologically feasible. Expansions and upgrades completed by private utilities will be required to be underground unless they meet appropriate exemptions.

U-5. To reduce visual clutter, antennas, relay mechanisms, and similar structures should be located on existing poles, structures, or buildings whenever possible. When deemed feasible and necessary to minimize impacts on adjacent uses or views by the City, visual screening may be required.

U-6. The location of utility facilities is often dependent upon the physical requirements of the utility system. All utility facilities should be sited, designed, and buffered (through extensive screening and/or landscaping) to fit in with their surroundings harmoniously and safely. When sited within or adjacent to residential areas, special attention should be given to minimizing noise, light, and glare impacts.

U-7. Utility service boxes and cabinets should be designed, oriented and/or treated with in a manner intended to reduce the likelihood of graffiti tagging, contribute to Auburn's arts and culture programming, and to enhance the overall appearance of the community.

U-8. Generator and back up generators that are located within residential areas should be visually screened and incorporate techniques that mitigate noise impacts consistent with local and state requirements.

U-9. Substations and maintenance buildings within residential areas should be screened, landscaped and/or designed in a manner that provides visual compatibility.

Goal # 3 – Safety and Efficiency

Prioritize the safe and efficient installation, maintenance and operation of private utility facilities consistent with the serving utilities' public service obligations.

Policies:

U-10. Common utility trenches should be encouraged and coordinated by both private and public providers whenever possible.

U-11. Decisions regarding private utility facilities within Auburn should consider the safe, adequate, and efficient availability of these utilities to other jurisdictions.

Goals # 4 – Sustainability and Equity

Prioritize equitable access to the services offered by private utility facilities and ensure that the location, installation and maintenance of private utilities is carried our in an environmentally sensitive manner.

Policies:

U-12. The City shall consider the environmental impacts of proposed utility facilities as a part of its environmental review process. When requested by the City, the utility provider shall furnish documentation of current research results and/or provide additional information related to determination of the potential environmental impacts, if any, from the proposed facilities.

U-13. Private utility companies are recognized as providers of important services necessary for maintaining current and future lifestyles as well as contributing to equitable community outcomes.

U-14. Private utilities that are permitted to operate within Auburn offer various technological means for accessing information, education, services, and assistance. Because Auburn believes that all residents should be afforded equal access to education, information and services private utility providers should seek to recognize and reduce access barriers.

Table 1 - List of Utility Providers

Provider	Contact Info	Map #
City of Auburn Water	Customer Service Center 1 East Main Street 2nd Floor Auburn, WA 98002 253-931-3010	U-1
Lakehaven Water and Sewer	31627A 1st Ave S P.O. Box 4249 Federal Way, WA 98063 253-941-1516	U-1
Lake Meridian Water	27224 144th Ave SE Kent, WA 98042 253-631-3770 Office	U-1
City of Kent Water	Kent City Hall 220 4th Ave S, Kent, WA 98032 253-859-3373	U-1
Bonney Lake Water	Public Services Center 21719 96th ST E Buckley, WA 98321 253-447-4319	U-1
Logandale Water Assoc.	PO Box 1254 Auburn, WA 98071	U-1
Hazelwood Heights Water Assoc.	30224 108TH Ave SE Auburn, WA 98092	U-1

Rocky Acres Water System	28120 105TH Ave SE Auburn, WA, 98092-4075	U-1
Crestview West Water System	PO Box 194 Kent, WA 98035-0194	U-1
Crestview Tracts Water System	11237 SE 286th St Auburn, WA 98092	U-1
Derbyshire Scenic Acres Water System	11628 SE 282ND ST Auburn, WA 98092-4051	U-1
Wells Water Assoc.	28804 124th Ave SE Auburn, WA 98092	U-1
Auburn Park Community Assoc.		U-1
South Auburn Community Assoc.	3005 C ST SE Auburn, WA 98002-8829	U-1
City of Auburn Sewer	Customer Service Center 1 East Main Street 2nd Floor Auburn, WA 98002 253-931-3010	U-2
Lakehaven Water and Sewer	31627A 1st Ave S P.O. Box 4249 Federal Way, WA 98063 253-941-1516	U-2
City of Kent Sewer	Kent City Hall 220 4th Ave S, Kent, WA 98032 253-859-3373	U-2
Soos Creek Water and Sewer District	14616 SE 192nd St Renton, WA 98058 253-630-9900	U-2
City of Auburn Stormwater	Customer Service Center 1 East Main Street 2nd Floor Auburn, WA 98002 253-931-3010	N/A – Consistent with City boundary
Puget Sound Energy – Electricity and Gas	www.pse.com 1-888-321-7779	N/A – Consistent with City boundary
Comcast	www. business.comcast.com 1-855-237-7896	N/A – Consistent with City boundary

Goal # 4 - Solid Waste

To provide area residents and businesses with a universal and compulsory system for collection and disposal of all solid waste, including ample waste reduction and recycling opportunities intended to maximize diversion of the City's waste stream away from costly landfills, incineration, or other solid waste disposal facilities, and to conserve exhaustible resources.

Policies:

U-15. The King County Solid Waste Management Plan and Solid Waste Interlocal Forum, except as modified by City of Auburn Ordinance No. 4413 and this Plan shall form the basis for solid waste management activities within the City.

U-16. The City shall continue to fund solid waste collection, disposal and waste reduction and recycling programs and services through the existing solid waste utility, with supplemental funding provided through available grants.

U-17. The City shall implement solid waste management programs and services that provide ample opportunities and incentives to maximize the community's participation in local and regional waste reduction and recycling efforts.

U-18. The City's solid waste management programs shall be developed to make waste reduction and recycling efficient, reliable, cost-effective, and convenient for all residents and businesses.

U-19. The City encourages and should promote the use of products manufactured from recycled materials, and the use of materials that can be recycled. City Departments and contractors shall use recycled and recyclable products whenever and wherever feasible.

U-20. The City shall implement solid waste reduction and recycling programs that have the cumulative effect maintaining the 50 percent waste reduction and recycling goal (recycling tons/total solid waste stream).

U-21. The City shall periodically monitor and evaluate the effectiveness of Auburn's waste reduction and recycling programs to ensure that local and state goals and policies are being met.

U-22. The City shall promote the recycling of solid waste materials by providing opportunities for convenient recycling and by developing educational materials on recycling, composting and other waste reduction methods.

City of Auburn

Transportation Element



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Introduction

The transportation system is a vital component of Auburn's social, economic, and physical structure. The primary purposes of the transportation system is to support the movement of people and goods within the City and connect the City to the broader region. The transportation system influences patterns of growth, development, and economic activity by providing access to adjacent land uses. Planning for the development and maintenance of the transportation system is a critical activity promoting the efficient movement of people and goods, ensuring emergency access, and optimizing the role transportation plays in attaining other community objectives.

This chapter provides only a brief overview of the City's ***Comprehensive Transportation Plan***, located in Appendix G of the 2024 Periodic Comprehensive Plan.

Vision

The Comprehensive Transportation Plan reflects the current and future needs of the Auburn community and, in doing so, seeks to:

- Enhance the quality of life for all Auburn residents;
- Encourage healthy community principles through nonmotorized travel;
- Promote a transportation system that supports local businesses and enhances economic development opportunities;
- Create a transportation system that is efficient, uncomplicated, and welcoming to visitors; and
- Provide a balanced, multimodal transportation system that addresses both local and regional needs.

Planning Framework

The Comprehensive Transportation Plan (CTP) is the framework for transportation planning in Auburn. It functions as the overarching guide for changes to the transportation system. The CTP evaluates the existing system by identifying key assets and improvement needs. These findings are then incorporated into a needs assessment, which guides the future of the transportation system.

This CTP is multimodal, addressing multiple forms of transportation in Auburn including the street network, nonmotorized travel, and transit. Evaluating all modes enables the City to address its future transportation needs in a comprehensive and balanced manner.

Growth Management Act (GMA) and Puget Sound Regional Council (PSRC) Requirements

Washington State's 1990 Growth Management Act (GMA) requires that transportation planning be directly tied to the City's land use decisions and fiscal planning. This is traditionally accomplished through the adoption of the Transportation Element of the Comprehensive Plan. The City of Auburn is a member of the Puget Sound Regional Council (PSRC), the regions Metropolitan Planning Organization (MPO). As the MPO, PSRC is responsible for developing a long-range regional transportation plan and near-term regional transportation improvement program. PSRC establishes policies, procedures, and programs for award of Federal Highway Administration (FHWA) funding. PSRC has established requirements for agency comprehensive transportation plans that must be met to maintain eligibility for PSRC managed grant funding.

Transportation modelling and planning is consistent with the Land Use Element, including 2044 household and employment targets for both King and Pierce Counties.

How the City Uses the Plan

The Comprehensive Transportation Plan provides policy and technical direction for development of the City's transportation system through the year 2044. It updates and expands the 2015 Comprehensive Transportation Plan by recognizing network changes since the last plan, evaluating current needs, and identifying standards for future development and various infrastructure improvement scenarios.

Needs Assessment

A system-wide, multimodal needs assessment was conducted throughout plan development to ascertain which aspects of Auburn's existing transportation system work well and which ones need improvement. An evaluation of potential solutions and investment priorities was also conducted as part of this process. The end result is that Auburn has a more thorough understanding of system deficiencies, how best to address these deficiencies, and direction for expanding the system in a sustainable manner.

Multimodal Level of Service Standards

Prior to the 2024 Plan, as with comprehensive transportation plans for most other agencies in Washington, the City of Auburn's Comprehensive Transportation Plan only included LOS standards for motorized vehicles (vehicle LOS). Without adopted multimodal LOS standards (MMLOS), there were no metrics by which the effectiveness of the active transportation and transit systems could be measured and evaluated. With MMLOS, the City of Auburn can ensure that transportation system improvements are planned, funded, and implemented to develop a comprehensive, connected, and versatile transportation system. One of the main goals of MMLOS is to realize a transportation system that doesn't rely on adding more vehicular capacity alone to address growing needs to move people and goods. The MMLOS approach supports providing other transportation modes including walking, bicycling, and transit to address these needs. The City of

Auburn's MMLOS have been developed with the strategic and focused intent of maximizing potential mode shifts from driving cars to walking, biking, and riding transit. The standards work towards this by setting higher level of service standards for walking and biking in areas where doing so will best support existing and planned transit service.

These principles, many of which can be promoted by thoughtful transportation systems planning, encourage healthier communities by increasing physical activity and decreasing air pollution caused by vehicle emissions. Auburn has historically planned for a transportation system that incorporates many healthy community principles, such as transit facility planning and regional trail planning. In addition, the Downtown Plan calls for a mixed-use, high density, pedestrian-oriented downtown. In the future, Auburn shall continue to promote these principles through long-range planning efforts, capital facility improvements, development review, and community activities involving active lifestyle elements.

Capital Faciltites Plan and Transportation Improvement Program

The City uses the Transportation Improvement Program (TIP) and Capital Facilities Plan (CFP) to develop a financial plan for capital improvements in Auburn, thus enabling the City to fulfill the GMA requirement of having a multiyear financing plan based on the identified transportation needs. The TIP, is a financial planning tool used to implement the list of transportation improvement projects identified in the Transportation Plan. It is a six-year plan which is reviewed and updated annually by the City Council to reflect changes to project priorities and funding circumstances. The first three years of the plan are fiscally constrained. Traffic impact fees on new development are determined by the cost of the capacity projects included in the TIP. The Capital Facilities Plan is also an annually adopted six-year financing plan. However, it is fiscally constrained for all six years. Unlike the TIP, the CFP is an adopted element of the City's Comprehensive Plan.

Agency Coordination

In addition to being influenced by factors within the City's jurisdiction, Auburn's transportation system is influenced by what happens outside its jurisdiction and/or boundaries: growth in neighboring communities, infrastructure maintenance by regional agencies, the lack of funding for road maintenance, new capacity projects, and competing demands for transit service. The Plan calls for effective inter-jurisdictional actions to address cross-border issues and to mitigate the impact of new development. The Plan also recognizes that other jurisdictions, particularly state agencies and transit providers, are responsible for a major share of the transportation facilities serving Auburn. These jurisdictions include:

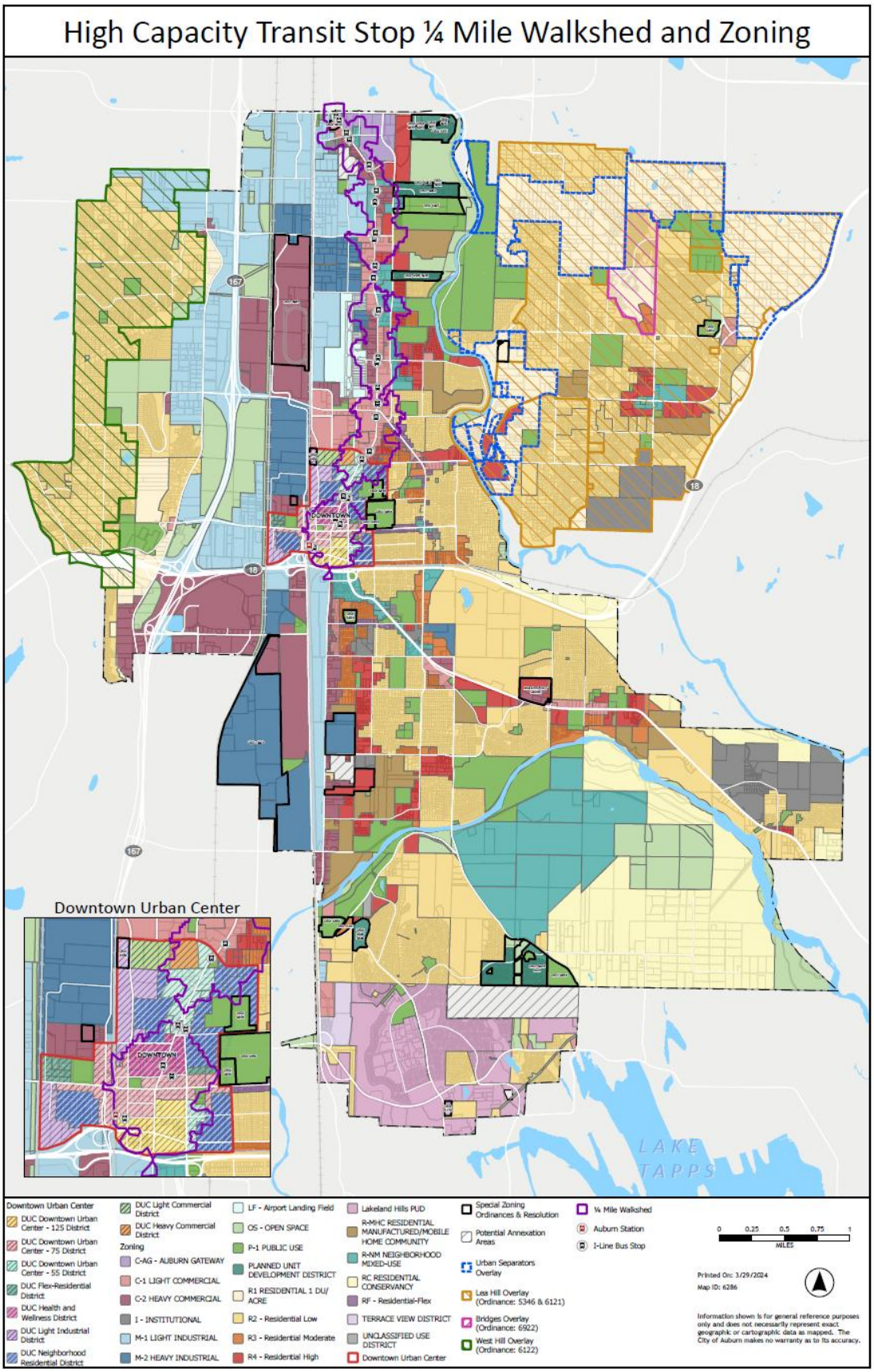
- Muckleshoot Indian Tribe (MIT)
- WSDOT
- Sound Transit
- King County Metro

- Pierce Transit
- King County
- Pierce County
- Puget Sound Regional Council (PSRC)
- Cities of Kent, Federal Way, Sumner, Pacific, Algona, and Bonney Lake

Land Use Characteristics and Transportation Systems

Based on the available land capacity as zoned in 2023, Auburn showed a deficit of capacity for both the 2044 housing unit and jobs targets. The future land use map developed with the 2024 Comprehensive Plan was developed to accommodate the 2044 housing and jobs targets through new zoning and land uses in various corridors and nodes throughout Auburn, and in the Downtown area in particular. Development of the future land use map involved evaluating alternative land use scenarios and testing them against various factors. Further information regarding this process is included in the Comprehensive Plan. This Comprehensive Transportation Plan is based on the Draft Preferred Land Use Alternative documented in the Comprehensive Plan. This land use alternative was a combination of two alternatives that each focused on centralizing housing and employment growth with either corridors or centers approach. Both alternatives included intense housing and employment growth focused in the Downtown area by expanding and increasing development density and intensity. The combined alternative targets employment and housing along the Auburn Way North and I Street NE corridors where frequent transit is planned to start operating in 2026. Focused growth in employment and housing was also identified at locations of known future development plans. These areas include the Outlet Collection Mall area along 15th Street SW, the Icon Materials mining operations and adjacent lands along the east side of Kersey Way (known as the Segale development area), and at vacant or underdeveloped land areas on Lea Hill and West Hill.

To comply with recent HB 1110 state legislation, middle housing is permitted in all residential zones in Auburn, which is incorporated into the Comprehensive Plan zoning map. Density increases in high-capacity transit station areas have also been assumed in the zoning map, which is implemented primarily by designated Growth Centers. Density has also been increased near future planned RapidRide high-capacity transit locations in Lea Hill and near the Outlet Collection. In addition, up to 6 middle housing units per lot will be permitted within ¼ mile of a high-capacity transit stop, which in Auburn includes future RapidRide I-Line stop locations as well as Auburn Station. The map below shows the area where the density bonus will be applied. Parking for middle housing is not required within ½ mile of these same stop locations. Middle housing considerations for density and parking is being addressed through updates to city code.


High Capacity Transit Stop ¼ Mile Walkshed and Zoning
Downtown Urban Center
LAKE TAPPS
Downtown Urban Center
DUC Downtown Urban Center - 125 District
DUC Downtown Urban Center - 75 District
DUC Downtown Urban Center - 55 District
DUC Flex-Residential District
DUC Health and Wellness District
DUC Light Industrial District
DUC Neighborhood Residential District
DUC Light Commercial District
DUC Heavy Commercial District
Zoning
C-AG - AUBURN GATEWAY
C-1 LIGHT COMMERCIAL
C-2 HEAVY COMMERCIAL
I - INSTITUTIONAL
M-1 LIGHT INDUSTRIAL
M-2 HEAVY INDUSTRIAL
LF - Airport Landing Field
OS - OPEN SPACE
P-1 PUBLIC USE
PLANNED UNIT DEVELOPMENT DISTRICT
R1 RESIDENTIAL 1 DU/ ACRE
R2 - Residential Low
R3 - Residential Moderate
R4 - Residential High
Lakeland Hills PUD
R-MHC RESIDENTIAL MANUFACTURED/MOBILE HOME COMMUNITY
R-NM NEIGHBORHOOD MIXED-USE
RC RESIDENTIAL CONSERVANCY
RF - Residential-Flex
TERRACE VIEW DISTRICT
UNCLASSIFIED USE DISTRICT
Downtown Urban Center
Special Zoning Ordinances & Resolution
Potential Annexation Areas
Urban Separators Overlay
Lea Hill Overlay (Ordinance: 5346 & 6121)
Bridges Overlay (Ordinance: 6922)
West Hill Overlay (Ordinance: 6122)
¼ Mile Walkshed
Auburn Station
I-Line Bus Stop
0 0.25 0.5 0.75 1
MILES
Printed On: 3/29/2024
Map ID: 6286
Information shown is for general reference purposes only and does not necessarily represent exact geographic or cartographic data as mapped. The City of Auburn makes no warranty as to its accuracy.

Goals and Policies

The City creates policies to state preferences for preservation of the existing system and development of the future transportation system. Policies can be qualitative in nature, but often they are quantitative and prescribe a specific standard.

Policies are also important for communicating the City's values and needs to neighboring jurisdictions and regional and state agencies. Having established policies in place enables the City to more effectively influence change in keeping with its needs and objectives.

Goals and Policies are housed in the ***Comprehensive Transportation Plan***, located in Appendix G of the 2024 Periodic Comprehensive Plan.

City of Auburn

Economic Development Element

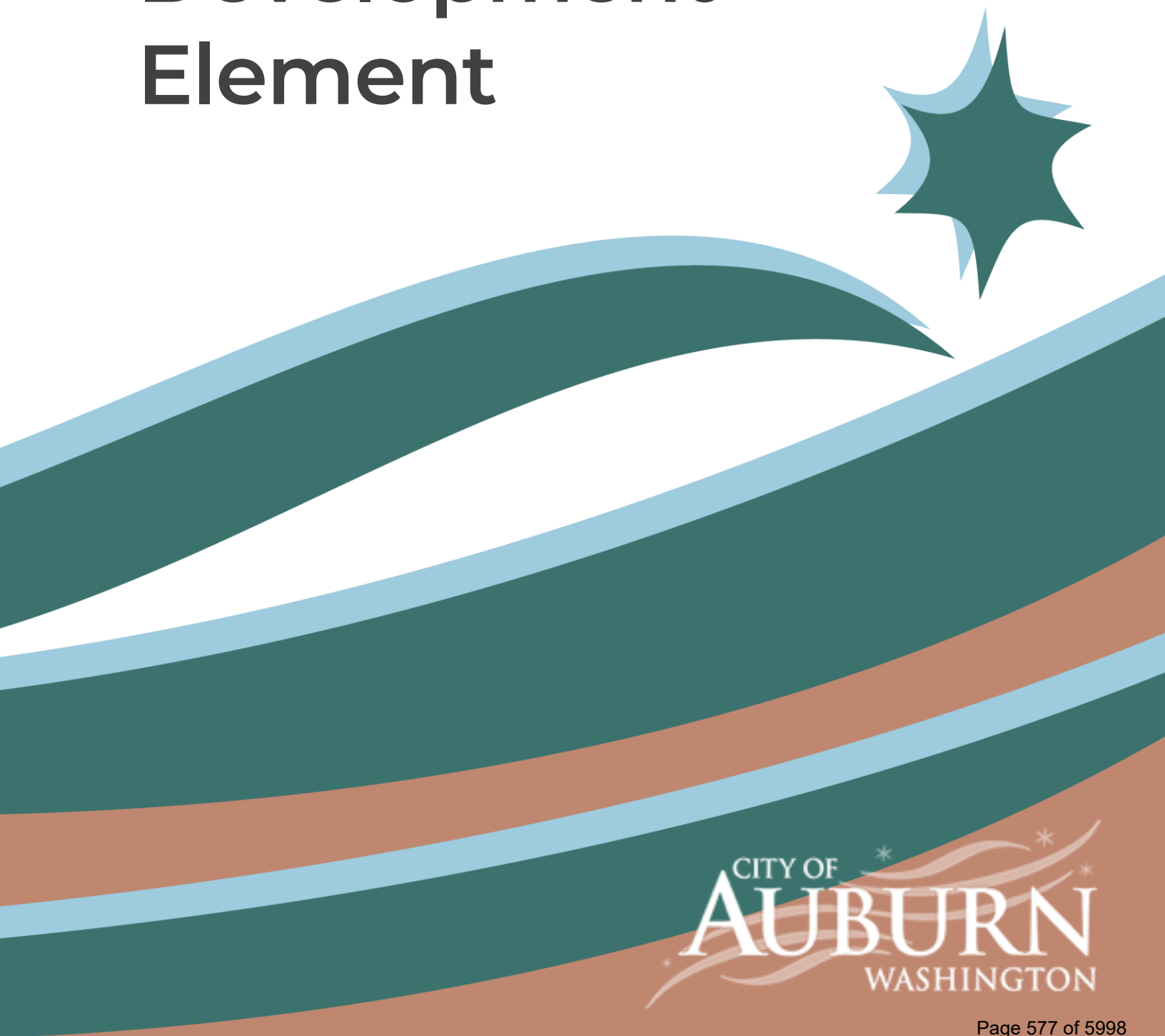


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Introduction

Economic development is a crucial aspect of the City of Auburn's overall well-being and quality of life. A strong and diverse economy provides opportunities for residents through job creation, business growth and a robust tax base that funds essential services such as police, streets, and parks.

The Economic Development Element of the Comprehensive Plan serves as a guide to attract, retain and grow businesses in the city, expand economic opportunity for everyone, ensure that economic expansion is carried out in a sustainable fashion, and drive regional economic growth. It recognizes that economic development is not a standalone endeavor but is closely linked to other key elements of the plan, including land use, infrastructure, transportation, housing, and sustainable resource management.

The Economic Development Element is designed to establish policies and strategies that promotes the implementation of Auburn's vision for a strong, inclusive, and diverse local and regional economy. The Economic Development Element therefore provides a comprehensive overview of Auburn's economy, sets policy direction for economic growth, and identifies strategies, programs, and projects to improve the local and regional economy

Vision

The City of Auburn is a diverse and inclusive economy that promotes prosperity for all members of the community. New business and industry desire to locate in Auburn and existing businesses are able to grow and prosper. The economic landscape is welcoming to large and small businesses as well as an array of different industry sectors. Economic growth is carried out in a climate friendly manner that effectively weathers economic volatility. A pathway to success exists for all residents and business owners regardless of their background or socioeconomic status.

Planning Framework

Vision for 2044

To achieve this vision, the city will focus on strategic partnerships, targeted investments, and inclusive policies and programs. In 2044, Auburn will be a city where people want to start their careers, raise their families, and enjoy all that life has to offer. It will be a place where businesses want to locate and visitors want to spend time.

Our vision for the future is one in which Auburn is a model of sustainable living, where residents, business owners, and workers enjoy a high quality of life while also

reducing their impact on the planet. We are working to create an efficient economy that minimizes waste and maximizes resource efficiency.

Conditions and Trends

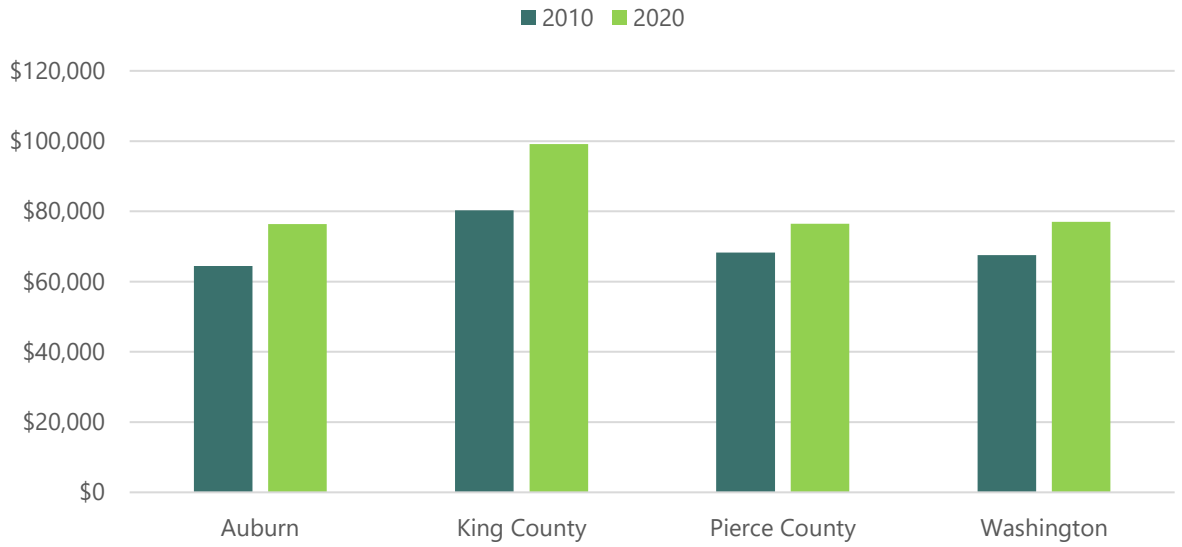
Auburn Profile

Auburn is a vibrant and growing city located in the Pacific Northwest region, situated about 15 miles north of Tacoma and 20 miles south of Seattle and is part of the greater Seattle metropolitan area. Most of the city is in King County, with a small portion extending into Pierce County. Auburn is currently ranked as the 14th largest city in Washington State and shares its borders with Federal Way, Kent, Pacific, Algona, Sumner and unincorporated King County. The Muckleshoot Indian Reservation lies partly within and partly adjacent to the City. Auburn is known for its natural beauty, strong economy, and diverse community, offering residents and visitors a high quality of life and a sense of belonging. The city boasts a thriving business community, top rated schools, and ample recreational opportunities, including access to the Green River, White River and the Cascade Mountains. Auburn also has a rich history and cultural diversity reflected in its many festivals, events, and community organizations. Auburn is a city that is constantly evolving and improving, yet always maintains its small-town charm and is a place where people come to start their careers, raise their families, and enjoy all that life has to offer.

Household and Income Characteristics

In 2020, Auburn was estimated to have 29,220 households, an increase of 12% since 2010. The average household size was 2.75, larger than the King County average of 2.43. This is likely due to the larger share of family households in Auburn, at 68%, compared with 59% in King County, and a smaller share of householders living alone. This reflects Auburn's suburban development patterns compared with some of the denser urban areas in Seattle and its closer-in suburbs. About 60% of Auburn's households are homeowners and 40% are renters, a slightly lower share of homeowners than Washington as a whole, but higher than the King County average.

Figure 1 - Inflation-Adjusted Median Household Income in Auburn with Regional Comparison (2020)

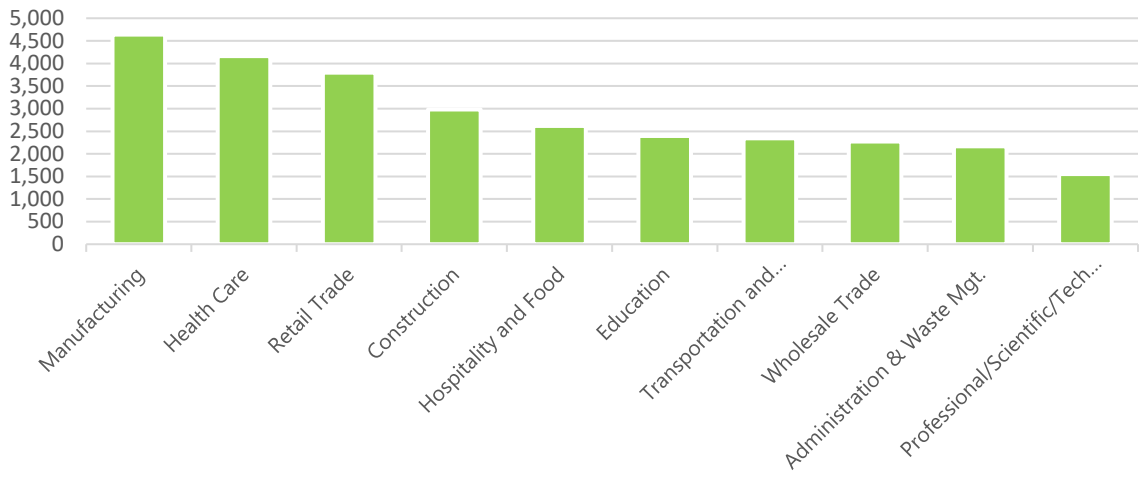


Source: 2020 ACS 5-Year Estimates, Table S2503, CPI Inflation Index

Auburn's median household income was $76,410 in 2020, an increase of 19% from $64,443 in 2010 (adjusted for inflation). As shown in Figure 1, Auburn's incomes are on par with statewide and Pierce County averages but lag behind the higher incomes of King County households primarily as a result of Seattle and Eastside residents. Rental households in Auburn earn significantly less than ownership households – the average renter household earns $54,396 compared with $98,153 for ownership households. Auburn's BIPOC households are more likely to be renters. Around 46% of renters are non-white residents, compared to 33% of homeowners. These types of intersections of income, race, access to housing and wealth-building are important considerations when planning to accommodate the needs of all Auburn residents.

Resident Labor Force and Employment Characteristics

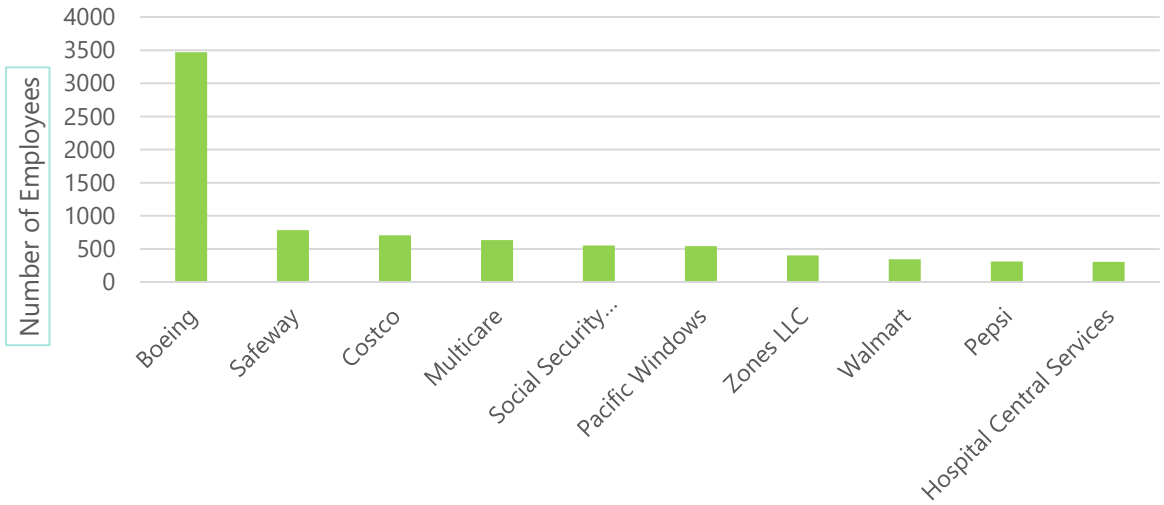
Figure 2 - Auburn Workforce Top Industry Sectors (2019)



Source: US Census On The Map

The top ten industry sectors in which Auburn residents were employed in 2019 is shown in Figure 2. Auburn has traditionally been a blue-collar community since its initial early 20th century population boom stemming from the construction of a railroad freight terminal. Despite a decrease in manufacturing employment in the 1990s and early 2000s, 13% of Auburn residents were currently employed in the industry in 2019. Since the recession of 2008, the number of Auburn residents employed in health care, retail, and construction have increased substantially and the overall diversity of jobs worked by Auburn residents has increased, reflecting the rapidly increasing population and shifts in demographics discussed previously.

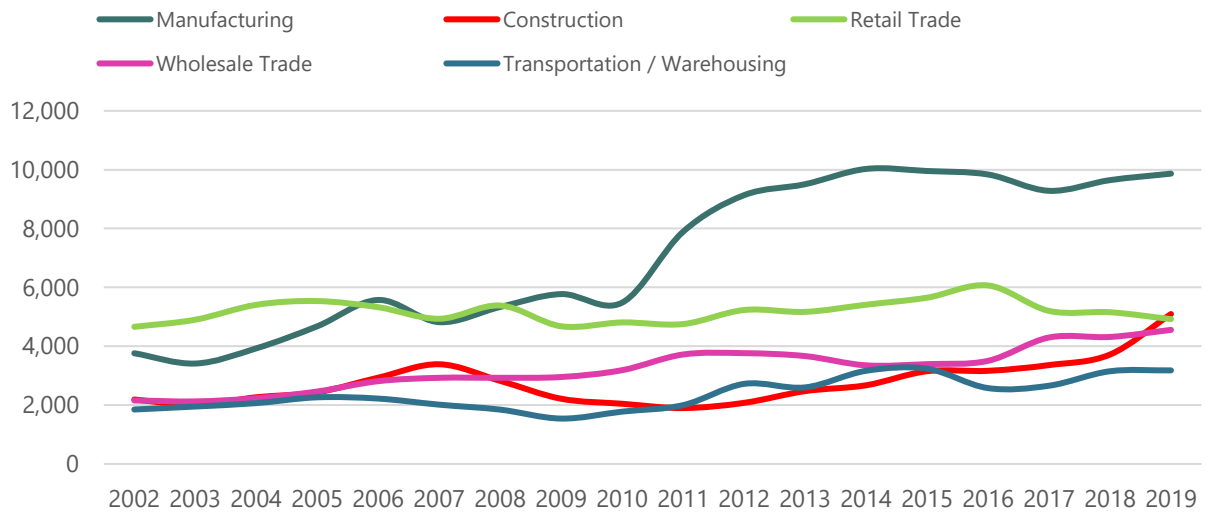
Figure 3 - Top Ten Employers in Auburn (2022)



Source: Washington Employment Security Department

The top employers in Auburn are shown in Figure 3. Boeing is the largest employer in the City, as it has been several decade, followed by a variety of retail, manufacturing, and wholesale businesses, as well as Multicare, the regional hospital and health care center in Downtown Auburn. The top ten employers in Auburn currently account for about 23% of the jobs in the City, down from 55% in 2011 and 85% in 2002, further demonstrating the increasing diversity of business activity in Auburn in recent decades

Figure 4 - Top Industry Sectors in Auburn (2002-2019)



Source: US Census On The Map

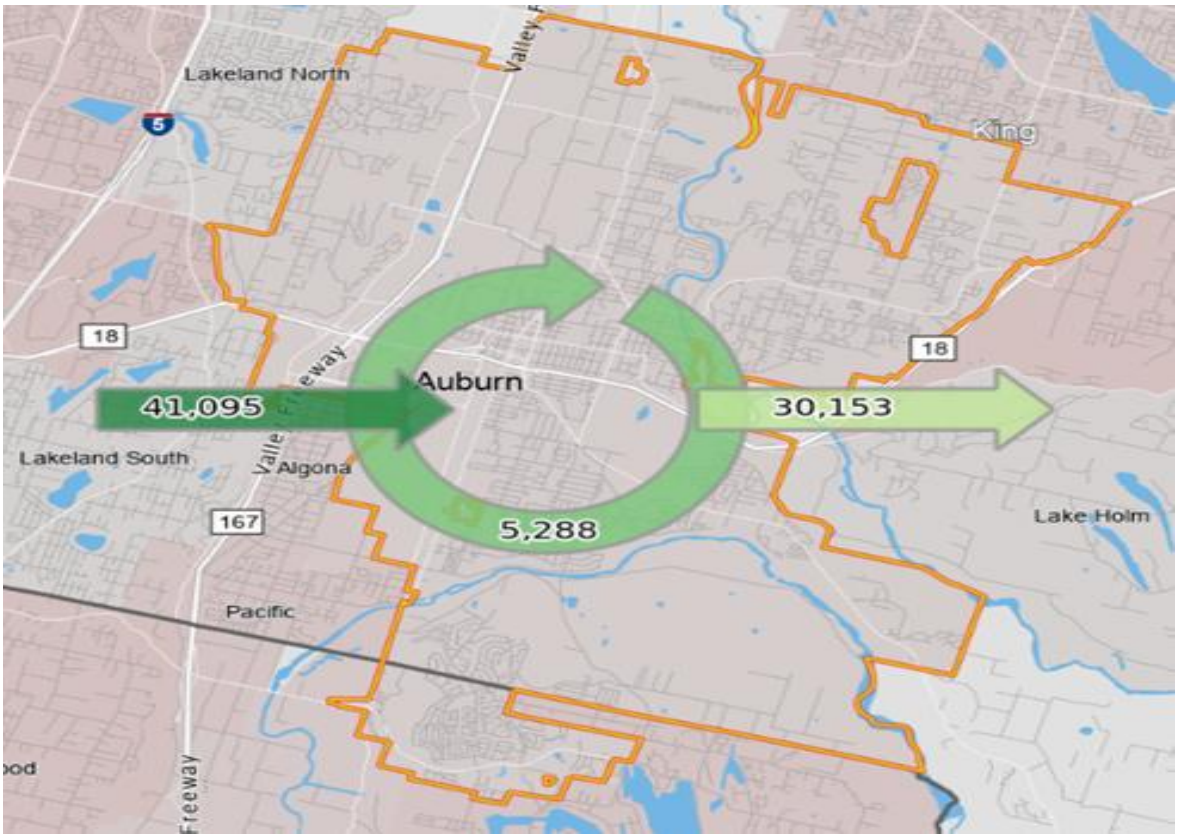
As of 2019, there were about 46,383 jobs located in Auburn. The top sectors are shown in Figure 4 along with their change over the past two decades. Despite decreases in the manufacturing industry from 1990 and 2000 noted in Auburn's previous (2014) comprehensive plan, the sector has seen rapid increases since the 2008 financial crisis and now accounts for over 20% of jobs in the City. Other notable shifts include a rapid increase in construction jobs over the past several years as well as a decrease in retail which corresponds to an increase in wholesale trade, perhaps reflecting increasing patterns of online rather than in-store shopping.

Daily Inflow and Outflow

As of 2019, 5,288 Auburn residents, or 15% of the population both lived and worked in the City. The remaining 85% of those who worked in Auburn commuted from outside the City. As shown in Figure 5, there are more people who work in Auburn

and live elsewhere than those who live in Auburn and work elsewhere. This results in an increased pool of residents and employees who engage with City services and businesses. Although this data predates the COVID-19 pandemic, the relatively large share of in-person manufacturing and retail jobs in the City suggests that the commuting patterns may have been less affected by the pandemic in Auburn compared with other areas which have a higher share of office jobs.

Figure 5 - Auburn Daily Commuting Patterns (2019)



Source: US Census On The Map

Growth Projections

Understanding future population and employment growth is essential for planning. King County, Pierce County, the Puget Sound Regional Council (PSRC) and the Washington State Office of Financial Management (OFM) are each involved in forecasting population and job growth in Auburn over the coming decades, and this section summarizes the current forecasts from these agencies which can be

used to inform future actions on land use, infrastructure, housing, economic development, and transportation in Auburn.

Planning Approach

Values

Character: Our community values the unique perspectives and experiences that our diverse population brings, and we strive to create inclusive spaces that celebrate our differences and foster a sense of belonging for all.

Wellness: We are a secure community with walkable commercial districts where the perception and reality are that crime activity is low.

We prioritize the health and well-being of our residents by investing in programs and infrastructure that promote active living, access to healthy food, and mental health support for all residents.

Service: Our economic development strategies are guided by a commitment to equitable growth, which means ensuring that all businesses and entrepreneurs have equal access to resources and opportunities to succeed.

Economy: We are working to create a resilient and equitable economy that benefits all members of our community, including those who have historically been marginalized or underrepresented.

Celebration: We actively promote our local businesses and have been successful at making our residents more aware of what is available locally as well as attracting visitors from beyond our City.

We take pride in our vibrant arts and culture scene, which serves as a cornerstone of our community and attracts visitors from around the region. We are committed to supporting and promoting local artists and cultural institutions.

Environment: Our economy is growing and diversifying because of our efforts to protect our rivers, streams, wetlands, and other environmental resources.

Sustainability: Residents are staying in Auburn to work and shop, and we are widely considered a regional dining, shopping, and entertainment destination.

Goals and Policies

Goal # 1 – Retention of Existing Businesses

Retain existing businesses by developing growth opportunities, cultivating local talent, promoting safety measures, and facilitating supportive expansion and relocation options.

Policies:

ED-1. Collaborate with local educational partners (e.g. Green River College & Auburn School District) and vocational centers to develop programs that are aligned with the skills needed by businesses in Auburn. This will necessitate a deep understanding of employer needs and educational/employment pipelines and includes fostering partnerships with businesses to provide internships, apprenticeships, and job placement opportunities for local talent.

ED-2. Implement and promote security measures in commercial areas, including physical improvements such as enhanced lighting, surveillance, and landscaping as well as strengthening communication amongst the business community and the City in order to create a secure environment that encourages businesses to succeed.

ED-3. Nurture/foster a collaborative environment by conducting regular gatherings and forums for businesses, community leaders and local government representatives to share their ideas, needs, strategies, and concerns.

ED-4. Develop and implement a support system for existing businesses within the city by assisting them in optimizing their operations and addressing challenges they may encounter during expansion or relocation within the city. Provide comprehensive information on available commercial properties, zoning regulations, and necessary permits. Offer proactive assistance to navigate local government procedures, ensuring a seamless transition for businesses committed to staying and growing in Auburn.

ED-5. Promote diversity and inclusion within the local business community by supporting initiatives that encourage greater participation and inclusion of minority owned businesses. Create resources and programs that provide equitable opportunity for businesses owned by underrepresented groups to be fully engaged in the local business community and the full array of resources and partnerships that exist.

ED-6. Establish a dedicated business retention program that proactively engages with local businesses to understand their needs, challenges, and opportunities. Identify and provide resources and support to address issues before they become significant barriers to continued operation and/or expansion.

Goal # 2 – Attract New Businesses

Attract new, high performing businesses by identifying market gaps, precisely defining the types of businesses Auburn seeks, strategically marketing Auburn's advantages, and optimizing available land and space.

ED-7. Perform regular market analyses to identify emerging trends, gaps, and opportunities in the local and regional markets. Conduct periodic research and collaboration with local education centers, research institutions and industry experts in order to stay updated on emerging needs and opportunities. Emphasize efforts and prioritize opportunities that attract businesses that are positively contributing to a more sustainable and climate-friendly operation. This can be in the form of businesses that are designing, creating, selling and distributing climate-friendly products and approaches or businesses that are seeking to incorporate sustainable development or building management practices.

ED-8. Clearly define the types of businesses that align with the city's economic development strategies, considering local strengths and market demands. Engage with local business associations and community stakeholders to gather input on desired business types. Develop industry profiles to guide prospective businesses in understanding the local market.

ED-9. Implement targeted marketing campaigns to showcase the city's advantages and attract businesses that fit the defined criteria. This includes developing a comprehensive marketing strategy highlighting Auburn's infrastructure, workforce, incentives, and quality of life. Leverage digital platforms, industry conferences, and targeted events to reach potential businesses and investors.

ED-10. Establish incentive programs to encourage desired businesses and industries to choose Auburn as their location. Collaborate with local and state governments to create tax incentives, grants, and other financial support mechanisms. Develop customized incentive packages based on the specific needs of target businesses. Build out a set of incentives that are specifically targeted towards attracting climate-friendly businesses to locate and grow in Auburn.

ED-11. Foster collaboration between the public and private sectors to create a supportive environment for attracting high-performing businesses. This includes establishing a platform for ongoing dialogue and collaboration between local government and business leaders and encouraging private sector participation in infrastructure development, workforce training, and other initiatives.

Goal # 3 – Missing or Underrepresented Industries

Identify and support emerging high performing business sectors with growth potential, contributing to a resilient and dynamic economic landscape, particularly in industries that are currently underrepresented.

Policies

ED-12. Identify and analyze emerging high performing business sectors with growth potential through ongoing collaboration with industry professionals, research institutions, and local business leaders. Develop a systematic process for monitoring market trends and assessing the viability of missing new economic sectors.

ED-13. Direct strategic investments and resources towards industries that are currently underrepresented in the local economy but show potential for growth. This involves creating incentive programs and support mechanisms tailored to the specific needs of these industries to foster their development.

ED-14. Establish programs to support entrepreneurs and startups within the identified high potential sectors. Provide mentorship, access to resources, and networking opportunities to nurture the growth of emerging businesses in underrepresented industries.

ED-15. Collaborate with educational institutions and industry partners to develop training programs and educational initiatives that align with the needs of emerging sectors. This ensures a skilled workforce is ready to contribute to the growth and development of underrepresent industries.

ED-16. Foster a collaborative economic ecosystem by encouraging partnerships between local businesses, startups, research institutions, and government agencies within the identified sectors. Facilitate networking events, conferences, and collaborative projects to strengthen the overall business environment.

Goal #4 – Supporting Industry Clusters

Implement strategies that support local and regional industry clusters which includes approaches that support Auburn specific clusters as well as regional clusters that represent the Highway 167 Corridor clusters, King and Pierce County identified clusters, and regionally identified Puget Sound clusters.

ED-17. Retain and recruit businesses that support an already robust aerospace industry by encouraging establishment and growth of manufacturing, innovation and design, and transport of materials and goods.

ED-18. Seek legislative solutions and private partnerships that are designed to offset the local impacts that occur as a result of logistics uses that are space consumptive, have high impacts on local street conditions, and that result in low performing ratio of jobs to square footage.

ED-19. Upon successful completion of Policy P.2, support the logistics needs that exist along the Highway 167 Corridor between the Port of Seattle and the Port of Tacoma.

ED-20. Expand upon opportunities to build out the local educational systems with the intention to create a stronger and more targeted employment pipeline that supports local industry clusters.

Goal #5 – Downtown Auburn

Develop downtown as a livable, walkable and drivable destination by fostering an active community through art, entertainment, and evening activity. Enhance building design, amenities and safety measures to create a welcoming environment that encourages residents and visitors to explore Auburn.

Policies:

ED-21. Implement public art initiatives and cultural programs in downtown Auburn to enhance the aesthetic appeal and cultural vibrancy of the area. This includes installing public art installations, organizing cultural events, and collaborating with local artists and performers.

ED-22. Foster an active downtown community by organizing regular events, festivals, and markets in downtown Auburn. This involves collaborating with local businesses, community groups, and event organizers to create a diverse calendar of activities that attract residents and visitors.

ED-23. Offer incentives for mixed use developments in the downtown area, encouraging the combination of residential, commercial, and entertainment spaces. This policy aims to create a vibrant and dynamic urban environment that supports both daytime and evening activities.

ED-24. Develop comprehensive parking and transportation plans to ensure convenient access to downtown. This involves strategically placing parking facilities, promoting public transportation options, and encouraging alternative modes of transportation to make the area both drivable and accessible.

ED-25. Enhance security measures, including increased police presence, improved lighting and surveillance systems, to ensure a secure environment for residents and visitors, especially during evening activities. Collaborate with local law enforcement agencies to address security concerns proactively.

ED-26. Improve and expand the existing facade improvement program to support local businesses in upgrading their storefronts, signage, and exterior aesthetics. This not only contributes to the overall visual appeal of downtown but also encourages economic growth.

ED-27. Develop a mix of incentives and penalties that seek to eliminate ongoing vacancy of ground floor commercial spaces.

Goal # 6 – High Standards

Promote high quality architectural design, pedestrian circulation, landscaping, lighting, public amenities, security investments, and signage that are customized to the various commercial and mixed-use areas of the city.

Policies:

ED-28. Implement lighting standards that contribute to the security and quality of commercial areas. This involves strategically placed lighting fixtures, street lighting, and architectural lighting to enhance visibility and create a secure and attractive environment during both day and night.

ED-29. Invest in infrastructure, such as improved multimodal transportation systems, electric vehicle charging stations, rideshare features, parks and open space, and enhanced security measures, to ensure the well-being of pedestrians and cyclists in commercial and mixed-used zones.

ED-30. Establish design standards and procedures within commercial and mixed-use areas. This ensures that development plans align with the preferences and needs of the local community.

ED-31. Establish a mechanism for regular design reviews to assess ongoing and proposed developments in commercial and mixed-use areas. This process ensures that projects align with established design standards and contribute positively to the overall urban beauty.

Goal #7 – Incentives

Develop and implement a comprehensive incentive program designed to attract and support business recruitment and retention. Incentives will include financial benefits, ease of access, community acceptance, strong connections to local goals, and maintaining support beyond initial opening.

Policies:

ED-32. Routinely provide workforce development, business assistance, and business development programs.

ED-33. Implement a streamlined permitting and approval process for businesses, reducing bureaucratic hurdles and ensuring a swift and efficient process. This policy aims to enhance ease of access for both new and existing businesses.

ED-34. Develop incentives that encourage local and regional businesses to actively engage with the local community. This includes supporting community events, participating in local initiatives, and fostering a positive relationship with residents to enhance community acceptance.

ED-35. Establish economic incentives that are geographically targeted and intended to attract specific local and regional businesses, brands, sectors, and amenities within the community.

Goal #8 – Partnership

Facilitate dynamic partnerships between the city, business community, educational institutions, event organizers and lodging providers.

Policies.

ED-36. Develop a comprehensive framework for promoting dynamic partnerships between the city, business community, educational institutions, and business associations. This framework will outline strategies for collaboration, communication channels, and shared goals.

ED-37. Conduct regular meetings and forums to bring together representatives from the city, business community, educational institutions, DAC, chamber. These meetings will serve as platforms for discussing opportunities for collaboration, addressing challenges, and sharing best practices.

ED-38. Encourage the development of collaborative initiatives that leverage the strengths and resources of each stakeholder group. This will include joint marketing campaigns, workforce development programs, community events, and infrastructure projects that benefit all parties involved.

ED-39. Collaborate with event organizers and lodging providers to coordinate and support events that drive economic activity and tourism in the city. This will involve providing logistical support, marketing assistance, and facilitating partnerships to enhance event experiences.

ED-40. Facilitate resource sharing and support services among stakeholders to maximize efficiency and effectiveness. This will involve sharing facilities, equipment, expertise, and access to networks to support mutual goals and initiatives.

ED-41. Acknowledge and appreciate the contributions of stakeholders in fostering dynamic partnerships and collaborative efforts. This could include awards, acknowledgments, and public recognition for exemplary partnerships and initiatives that benefit the city and its community.

Goal #9 – Tourism

Drive the growth of tourism by strategically investing in tourism related initiatives, fostering partnerships with key stakeholders and implementing effective promotional campaigns that are collectively designed to increase the number and length of hotel stays.

Policies

ED-42. Identify and prioritize strategic tourism initiatives, such as the development of tourist attractions, cultural events, and recreational facilities. Ensure these initiatives align with the city's unique offerings and contribute to an attractive and memorable visitor experience.

ED-43. Foster public private partnerships in the tourism sector to leverage the expertise and resources of both the public and private sectors. Encourage collaboration with local businesses, event organizers, and attractions to create a unified and compelling tourism experience,

ED-44. Develop and implement effective promotional campaigns and marketing strategies to increase the visibility of the city as a tourist destination. Utilize digital platforms, social media, and traditional marketing channels to reach target audiences and showcase the city's attractions.

ED-45. Maintain a strong level of communication and coordination with the lodging industry in order to cross promote events and amenities within the city and build Auburn's reputation as a destination.

Goal #9 – Diversity

All members of the community operate on a level playing field with equal access to services and where their participation is welcome and heard.

ED-46. All economic development goals, policies, and strategies will be designed around inclusiveness and with an intention to reach the entire business community.

ED-47. Intentionally identify and recruit missing or underrepresented ethnic and cultural groups to serve on economic development, tourism and downtown boards and commissions.

ED-48. Establish opportunities that enable broader engagement and listening from underserved communities within the city in the development of plans, strategies and decision making.

ED-49. Identify and eliminate barriers that have traditionally made it difficult to start or grow a business due to language. This includes providing translation and interpretation for non-English speaking people and accommodating individuals where a physical disability is eliminating adequate access to services.

Goal #10 – Displacement

In support of a stronger and more diverse economy the city will plan, protect, preserve and produce housing options that are intended to be attainable to all members of the community where the primary goal is to ensure that residents' choices about when, whether and under what circumstances to remain in their home or move.

ED-50. While the Economic Development Element places a heavy emphasis on the attraction of new businesses it is not the intent of this Plan to displace people, communities, populations, or affordable housing. Nor is it the intent of this Plan or any specific Goal or Policy to be considered higher priority in the event that there are conflicts.

ED-51. Establish zoning district boundaries that avoid a result where residential communities are designated as a non-conforming use.

ED-52. Avoid issuance of conditional use permits, variances, and other special land use approvals that convert existing residential uses into new commercial uses. This does not include the allowance of home-based businesses.

ED-53. Establish development standards that mitigate the impacts of noise, light, odor, and building massing generated on commercial sites that are adjacent to existing residential communities.

ED-54. Embrace housing policies that support the creation of more housing across the full spectrum of affordability ranges in order to stabilize housing prices and avoid rapid volatility in the housing market. A strong and stable housing market in all sectors of affordability is an important element of a strong, local, and diverse workforce.

City of Auburn

Parks and Recreation Element



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Introduction

Adequate parks and recreation facilities are an essential amenity to maintain a suitable quality of life in the community. As the population of Auburn grows, the demand for its parks and recreational programs will increase. To maintain Auburn's quality of life, the supply of these parks and programs must keep pace with the demand placed on them by a growing population.

Open space also plays a key role in the quality of life in an area. While many understand the concept of the attraction of the western United States and its "open spaces," the concept of open space becomes less clear when it comes to open space and its appropriateness to a city such as Auburn. The policies below provide a definition of open space as applied to Auburn and its surroundings and provide a framework for the identification and preservation of these areas.

Vision

A diverse mix of park and recreation amenities, open spaces, and trails are distributed throughout the city and accessible to the majority of the population. Nonmotorized trails and paths connect residential neighborhoods, commercial centers, and other attractions. People are visiting Auburn because of the robust inventory and quality of park spaces and associated event programming. Community facilities are accessible and are serving the needs of our seniors, youth, and the rest of the community.

Goals and Policies

The mission of the Auburn Parks, Arts and Recreation Department is to "Protect the City of Auburn's natural beauty through a vibrant system of parks, open space, and trails while enhancing the quality of life for our residents by providing outstanding recreational and cultural opportunities."

The goals and policies outlined in this chapter were developed from the following resources:

- 2015 City of Auburn Park, Arts and Recreation Open Space Plan
- 2023 City of Auburn Parks, Recreation and Open Space Survey
- 2023 Washington State Statewide Comprehensive Outdoor Recreation Plan (SCORP)
- Park and Recreation staff meetings
- Participation rates and interests
- Evaluation of existing park conditions.

Goal 1: Serve all residents and provide a broad range of programs and facilities in order to serve all residents regardless of age or ability.

The Auburn Parks, Arts, and Recreation Department is committed to offering leisure and recreational programs and facilities that are accessible to all residents in our community. We recognize the unique needs of certain groups within our population and are dedicated to continually improving our facilities and programs to cater to these needs. This includes increasing awareness of our facilities and programs by incorporating both innovative and traditional methods to engage our citizens.

Policies

PR-1. Incorporate diverse activities: Offer a range of recreational facilities and programs that cater to different age groups, interests, and fitness levels to improve the physical and mental well-being of community members.

PR-2. Promote accessibility: Develop a comprehensive system of neighborhood and community parks ensuring that every resident lives within a half-mile walking distance to a developed park.

PR-3. Adapt to trends: Regularly survey community members to understand changing recreational trends and develop multi-use facilities that can be adapted to meet these evolving needs.

PR-4. Identify and serve: Continually identify under-served segments of the population and develop targeted programs to satisfy their unmet needs.

PR-5. Expand reach: Utilize both traditional and digital marketing strategies to ensure the widest possible distribution of information concerning park facilities and recreation programs.

PR-6. Affordability: Strive to provide programs and facilities that are affordable to local residents, considering tiered pricing structures or discounts for certain groups where appropriate.

PR-7. Expand financial aid: Continue to improve and expand the Fee Waiver and Scholarship Programs, exploring partnerships with local businesses or grants to allow more low-income youth and seniors to participate at reduced rates.

PR-8. Improve accessibility: Continue to improve access for the disabled and seniors by providing wheelchair ramps and other appropriate facilities in parks where they do not currently exist and consider adding more sensory-friendly spaces.

PR-9. Encourage participation: Maintain an open decision-making process that allows for resident input, perhaps through regular town hall meetings or an online suggestion portal.

PR-10. Staffing and resources: Ensure that staffing levels are sufficient to maintain and improve existing cultural and recreation programs. As programs expand or additional parks are developed, evaluate the impact on current staff levels and the need for additional staff.

PR-11. The City shall evaluate the impacts of new development on parks and recreational resources through the SEPA environmental review process and shall take appropriate steps to mitigate significant adverse impacts.

PR-12. New developments shall contribute to the development of new parks at a level commensurate with their share of new facility needs as established by the PROS Plan. If the City determines that the development does not contain an acceptable park site, the City shall require the payment of cash in lieu of land. The funds shall be used to acquire land and/ or develop recreational facilities at a location deemed appropriate by the City. Criteria for site acceptability and appropriateness shall be environmental limitations, accessibility, maintenance costs, consistency with the PROS Plan and the ability to meet more of the Community's recreational needs by the coordinated development of parks located elsewhere

PR-13. The City shall explore all means of funding the purchase of park land including, but not limited to, bond issuance, the collection of cash in lieu of land and federal, state, or county grants.

PR-14. Park impact fees will be established that help fund the future development of new parks, park facilities, trails, and acquisition of open space that meet the needs of an increasing population.

Goal 2: Provide a balanced mix of passive and active recreation opportunities to promote healthy and balanced activities.

Historically, the Auburn Parks and Recreation Department placed an emphasis on sports and active recreation. While the Department and park facilities continue to be oriented towards active recreation, recent developments have included the addition of walking trails and appealing natural environments. These additions are more conducive to a quieter, more relaxed experience in our parks.

Policies

PR-15. Cultivate a comprehensive park system: Develop a park system that caters to a variety of needs by providing facilities for social gatherings, cultural events, and physical activities.

PR-16. Promote passive recreation: We aim to provide park areas that offer opportunities for passive recreation, such as picnicking, birdwatching, and walking, allowing residents to relax and enjoy nature.

PR-17. Facilitate active recreation: Our objective is to provide park areas equipped with facilities for active muscle-powered recreation, including ball fields, skate parks, spray parks, and sports courts, to promote physical fitness and community engagement.

PR-18. Adapt to changing trends: Annually review our recreation programs and compare them to evolving, state, and national trends. Respond with appropriate programs and facilities that meet these changing needs, within the constraints of available funding and budgets, and in line with the service expectations of Auburn's residents.

PR-19. Encourage healthy eating: Provide access to healthy foods by continuing to operate the Auburn Farmer's Market and Community Gardens, promoting local produce and encouraging sustainable living.

Goal 3: Establish a system of high-quality parks that are not only well-maintained but also aesthetically pleasing.

Ensure that Auburn's parks, open spaces, and trails, as one of the most prominent public features in a city, contribute positively to the community's perception. We are committed to the long-term maintenance, thoughtful design, and use of high-quality, durable materials in our parks. This commitment aims to create inviting, safe, and enjoyable spaces that appeal enduringly to all community members. Our overarching objective is to enhance the quality of life in our community through well-maintained and aesthetically pleasing parks.

Policies

PR-20. Develop Level of Service Standards: Establish standards that assure residents' expectations are met. This could involve surveys or public forums to understand community needs and expectations.

PR-21. Intentional design: Design parks to require low maintenance, and low water and energy consumption. Reserve higher maintenance features like fountains or annual beds for high visibility locations.

PR-22. Sustainable materials: Select materials that are not only durable and aesthetically pleasing, but also environmentally friendly.

PR-23. Maintenance and appearance: Ensure parks exhibit a "cared for" appearance through close attention to maintenance, including regular cleaning, landscape updates, and prompt facility repair.

PR-24. Staff evaluation: Regularly evaluate maintenance staff levels, especially when new parkland or facilities are added, to ensure parks remain in a safe and attractive condition.

PR-25. Renovation and redesign: Identify deteriorating features and conditions that require redesign or construction of new facilities. Schedule and budget necessary changes in the City's Capital Facilities Plan.

PR-26. Regular inspections: Conduct regularly scheduled inspections to identify necessary repairs and upgrades, ensuring safe conditions in all park facilities.

Goal 4: Provide a park system that not only enhances the quality of life for our residents but also contributes positively to the city's image.

Strive to develop recreational spaces in Auburn that are well-maintained, accessible, and diverse. These spaces should reflect Auburn's dedication to the well-being of its community, environmental sustainability, and aesthetic appeal. Through thoughtful park design, aim to improve Auburn's image and identity, thereby contributing to a positive perception of the city by creating a visually pleasing environment.

PR-27. Enhance park visibility: Select new park sites that are highly visible. Position at least one side of larger parks along arterial streets, making them more accessible, both physically and visually, and known to the broader community.

PR-28. Boost aesthetics and environment: Increase the quantity of trees, shrubs, and ground covers in parks. Enhance the ambiance of our parks and public spaces that improves the overall aesthetics of the city.

PR-29. Promote urban forestry: Continue to work towards Tree City USA goals for improved urban forestry design and tree preservation.

PR-30. Revitalize the downtown core: Create green spaces in the downtown core that serve as focal points for community activities and stimulate economic growth.

PR-31. Incorporate artwork: Incorporate artwork as part of new park developments or when upgrading existing parks or other public facilities.

Goal 5: Identify, acquire, and effectively manage significant open spaces within the City of Auburn, preserving these areas for their environmental, recreational, and aesthetic value to the community.

Undeveloped open spaces are invaluable assets to the City of Auburn, contributing significantly to the well-being of our community. These spaces serve as protective

buffers against urban encroachment, preserving the natural charm of our city while enhancing the quality of life for Auburn's residents.

Policies

PR-32. Preserve Natural Buffers: Maintain and protect a system of forested corridors and buffers to provide a natural separation between urban land uses and natural areas.

PR-33. Target Open Spaces: Prioritize significant open space areas in the city for planning and acquisition. These target areas include lands along the Green and White Rivers, steep hillsides, the Mill Creek Corridor, and the West Hill Watershed.

PR-34. Secure Funding: Explore all possible funding mechanisms to enable regular acquisition of open space, allowing for the identification and purchase of properties as they become available.

PR-35. Ensure Accessibility: Make city-owned open space lands accessible to the public wherever possible and appropriate, promoting community engagement with nature.

PR-36. Manage and Maintain Spaces: Provide adequate management and maintenance of public open spaces, ensuring their ability to provide environmental benefits and serve as wildlife habitats.

PR-37. Engage the Community: Involve the community in habitat restoration activities through the city's annual Clean Sweep event, community service days, and the adopt-a-park program.

PR-38. Evaluate Ecosystem Services: Determine the ecosystem service value of each open space and park space, ensuring that these areas continue to address climate resiliency goals.

Goal 6: Develop an inclusive network of trails designed for all, accommodating pedestrians, cyclists, and individuals of all mobility levels.

To develop an inclusive network of trails, we will prioritize the needs of all residents. We will create a comprehensive multi-use trail system that facilitates movement throughout the city and region without the need for a car. This approach is not only environmentally friendly, reducing pollution and traffic congestion, but also promotes a healthier lifestyle. The objectives that follow are designed to enhance our trail system, transforming it into a truly multi-modal environment that caters to pedestrians, cyclists, and individuals of all mobility levels.

Policies

PR-39. Expand the trail network: Develop and extend a network of trails to provide comprehensive coverage for both commuting and recreational cyclists, while creating stronger East/West connections throughout the city.

PR-40. Prioritize the Green River Trail: Continue prioritizing the acquisition of land for the proposed Green River Trail.

PR-41. Leverage natural locations: Design and layout trails to take advantage of unique natural locations, providing access to a variety of landscapes and habitats.

PR-42. Regional collaboration: Actively participate in planning activities for regional trails in South King County and North Pierce County.

PR-43. Explore New Connections: Investigate possibilities for new trail connections between Auburn and neighboring communities.

PR-44. Ensure Accessibility: Develop and maintain trails in compliance with the Americans with Disabilities Act, ensuring accessibility for all.

PR-45. Promote Safety: Foster a safe trail system by discouraging crime through environmental design concepts.

PR-46. Standardize Wayfinding: Continue to implement an interpretive and way-finding program for use throughout our trail system.

PR-47. Secure funding: Identify and secure funding to maintain existing trail systems.

Goal 7: Enhance our existing park portfolio by addressing areas where service standards are currently not met, prioritizing improvements, particularly in the West Hill and Lea Hill regions of the city.

Provide unique opportunities for the community to shape the city in ways that benefit everyone, especially the underserved areas.

Policies

PR-48. Prioritize community parks: Prioritize the development of community parks and linear parks with trail systems over small neighborhood parks when possible and appropriate.

PR-49. Secure funding: Apply for grants from King County Conservation Futures and the Recreation & Conservation Office, among other available funding sources, to acquire and preserve parkland and natural areas.

PR-50. Acquire community amenities: Emphasize the acquisition of community amenities, such as shoreline property, to preserve these special places and provide public access.

PR-51. Minimize land use conflicts: Minimize conflicts between parks and other land uses, and employ sensitive design measures when locating parks in residential neighborhoods.

PR-52. Ensure quality design: Establish criteria for new park development to ensure consistent high-quality design that meets the needs of the community.

PR-53. Develop master plans: Develop Master Plans for undeveloped park properties and incorporate future park development costs into the Capital Facilities Plan as appropriate.

PR-54. Engage the community: Schedule public meetings as part of the Master Planning process to ensure residents' voices are heard and their needs are met when developing new parks.

PR-55. Create public gathering spaces: Develop public gathering spaces in the downtown core to foster community interaction and engagement.

City of Auburn

Historic Preservation Element



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INTRODUCTION AND BACKGROUND

Through the recognition and preservation of its past, Auburn can ensure its uniqueness and strengthen its identity as it moves into the future. The City recognizes the importance of maintaining this connection with its past by including policies which address the enhancement and maintenance of historic resources within this Comprehensive Plan. This importance is also recognized by both the State and the County by the inclusion of historic preservation as one of the goals of the Growth Management Act (GMA) and in the King County Countywide policies.

Planning Approach to maintain, preserve, and enhance the City's historic, cultural and archaeological resources to provide a sense of local identity and history to the visitors and residents of the community.

In 2010 the United States Census Bureau identified Auburn's population as being 70,180 residents. Auburn grew in population to 84,858 residents in 2022, a 20% increase in 12 years but has since gone down in population to 82,657 in 2024... The growth applied substantial development pressure onto the city and enabled new businesses and services to prosper, but without the proper management of growth and development, these forces have potential to negatively impact the historic sites and cultural practices that exist in Auburn, and which contribute to the reason why residents and visitors are drawn to Auburn in the first place.

Proper identification and stewardship of historic and cultural assets is critical as the city works to balance competing demands on space, housing, services, and resources, because said assets help to create an identifiable identity for Auburn and often enable residents to better connect with their community. These assets may be historically significant structures, landmarks, and places and practices of tribal importance.

Vision

Unlike many cities within the Puget Sound Region, Auburn has a long and established history. Auburn has been a vibrant and freestanding community for over 100 years. As a result, Auburn developed its own downtown as the focus of business and community life. The downtown in particular, and the community as a whole, were linked to the railroads, which were the major mode of transportation throughout the region for decades. In the past several decades, the region has experienced significant population growth. Due to the nature of this growth, the differences between one community and another have blurred, and communities are becoming more and more alike. If Auburn is to retain its identity as a unique community, it must seek to emphasize its differences and celebrate them. Auburn's history is a part of its identity that is unique to Auburn.

VALUES

Auburn's history is identifiable and unique, contributing to an evident community identity. By preserving where this community has already been, we better inform where it's going. Under pressure to grow its economy while simultaneously meeting the emerging needs of its residents, Auburn's municipal policies aimed at preserving the city's historic and cultural assets will be shaped by our shared values. These values are:

Character

Historic structures and culturally significant sites are protected, ensuring that Auburn's community identity is grounded in its historic legacy.

Wellness

Efforts to support the livability of historic neighborhoods and structures are supported through city programs, projects, and collaboration with communities.

Service

The ongoing function and operations of historic structures and places are supported through the investment into, and maintenance of, the utilities that serve them.

Economy

One-of-a-kind historic structures and places are revitalized, enhancing property values, and encouraging consumers to remain in place and purchase goods.

Celebration

Auburn's history and local culture is actively promoted to residents and visitors in collaboration with city-supported organizations and official programs.

Environment

Investment, maintenance, and restoration of existing buildings and places are prioritized, disincentivizing urban sprawl into natural and open spaces.

Sustainability

Growth and business activity in Auburn does not damage local historic sites and culturally important practices continue to be emphasized and supported.

CONDITIONS AND TRENDS

Main Street

In 2017 the Heritage Building, a structure which housed apartments and local storefronts since 1924, tragically burned down, creating a gap in Auburn's otherwise well-defined and preserved Main Street. Four years later, in 2021, the Max House Apartments, another mature Main Street-defining structure also caught fire, eventually spreading to the historic and beloved Auburn Avenue Theater, rendering both buildings unsalvageable. Today, the city and stakeholders continue work to reimagine the sites of the three lost Main Street structures, and though their absence serve as an opportunity to imagine a new direction, their loss nonetheless remains an important reminder of the importance of historic preservation, because many culturally and historic assets cannot be replaced so easily once gone.

Historic Registry

There are currently six properties in the city of Auburn listed on either the King County Landmarks List or the National Register of Historic Places. When a property is added to either of these lists it means that their historic status is secured and they are now subject to a number of legal protections to prevent their removal, destruction, or alteration.

The six properties are:



- *Auburn Masonic Temple* – Designated 2002

  In the late 1800s, settlers in Auburn formed King Solomon Lodge No. 60, becoming the town's second fraternal order. They built the Auburn Masonic Temple in 1924, a historic Italian Renaissance Revival-style building listed on the King County Landmarks List in 2002 and National Register of Historic Places in 2015. It is located at 10 Auburn Way S.

- ***Auburn Pioneer Cemetery*** – Designated 2016



Auburn Pioneer Cemetery, established in the 1860s, is the city's oldest cemetery. It underwent various name changes and was designated a landmark in 2016. In 2019, the restored cemetery was officially dedicated, featuring new walkways, signage, and the Tora Kato monument's restoration. It is located at 850 Auburn Way N.

- ***Auburn Post Office*** – Designated 2000



Built in 1937, the Auburn Post Office transitioned to King County's use in the 1960s. In 2016, the City of Auburn acquired the building to create the Auburn Postmark Center for the Arts & Culture Center preserving its character for diverse community arts activities. It is located at 20 Auburn Ave.

- ***Auburn Public Library*** – Designated 1995



- In 1914, Auburn celebrated the opening of its Carnegie Library, located at 3rd Street NE and Auburn Avenue. Designed by architect David J. Myers and funded by a $9,000 grant from the Carnegie Corporation, the 5,000 square-foot brick building featured a central librarian's desk, a children's section, and an adult section, serving the city for 50 years. It is located at 306 Auburn Ave.

- ***Mary Olson Farm*** – Designated 2000



Mary Olson Farm, a partnership between the White River Valley Museum and City of Auburn, is a fully restored 1880s subsistence farm, known for its preservation and conservation awards. This historic 67-acre site includes seven wooden buildings, an orchard, and meadows, offering a glimpse into early 1900s farm life. It is located at 28728 Green River Road.

- ***Oscar Blomeen House*** – Designated 1991



Built by owner Oscar Blomeen in 1914, the Oscar Blomeen House features a corner turret and a rich history. It served as Auburn's first hospital during the 1917-1919 influenza epidemic, a maternity hospital, and a surgical center. It's also an example of post-Victorian architecture with Craftsman influences. It is located at 324 B St NE.

GOALS AND POLICIES

Goal 1. To enhance and maintain the quality of historical resources in the region.

HP-1 - Encourage the protection, preservation, recovery and rehabilitation of significant archaeological resources and historic sites in Auburn

HP-2 – Educate City staff to recognize significant resources and structures or provide City staff with access to professionals who specialize in historic preservation.

HP-3 - Seek grant opportunities to conduct historic building inventories of neighborhoods.

HP-4 - Develop an Historic Preservation Plan to identify and protect Auburn's historic resources.

HP-5 - Update the historic site and building inventory as part of this plan to include additional buildings, signage, corridors, and public spaces of historical significance.

HP-6 - Amend existing historic preservation codes and incentives as needed to implement the Historic Preservation Plan.

HP-7 - The City should consider the impacts of new development on existing historic buildings and resources as a part of its environmental review process and encourage alternatives to demolition.

HP-8 - Propose adaptive reuse ideas to encourage the rehabilitation of sites and buildings with unique or significant historic characteristics.

HP-9 - Archival quality historical documentation should be required when a historical building cannot be preserved. Buildings eligible for landmark status shall require the most detailed level of archival documentation and/or measured drawings.

HP-10 - Require appropriate mitigation measures if demolition is imminent, such as establishing a mitigation fund that could be used to further preservation elsewhere in the City.

HP-11 - Future development in the Downtown area should be sensitive to the character of surrounding buildings and the historical context of the area.

HP-12 - Retain existing buildings with historic characteristics and research the potential for placing additional buildings on the historic register.

HP-13 - Modifications of existing buildings shall consider the appropriate treatment or restoration of historic architectural features.

HP-14 - Make restoration of historic buildings known to the public through publication of projects to foster pride in downtown Auburn.

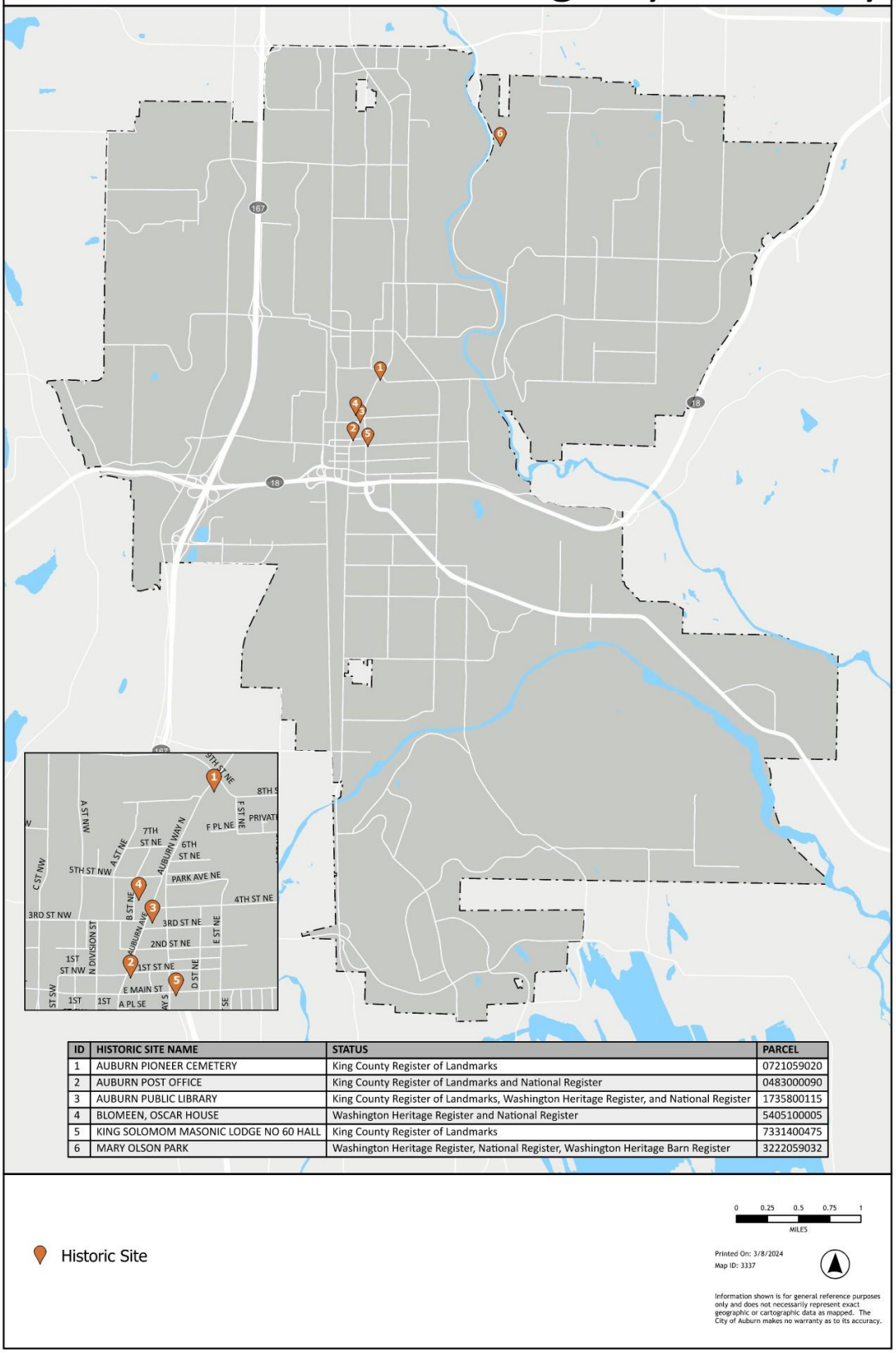
HP-15 - The White River Valley Historical Museum is recognized as the primary repository of historic artifacts which relate to the City's historic and cultural heritage.

HP-16 - Promote activities that create awareness and support cultivating the heritage of Auburn by offering walking or biking tours, festivals, and other means.

HP-17 - Recognize Auburn's past prior to the arrival of settlers by promoting Native American sites and artifacts.

HP-18 - Market the economic benefits to business owners and community groups when promoting cultural and historical events to gain a variety of involvement from various sectors in the City.

Historical Landmark & Registry Inventory



ID	HISTORIC SITE NAME	STATUS	PARCEL
1	AUBURN PIONEER CEMETERY	King County Register of Landmarks	0721059020
2	AUBURN POST OFFICE	King County Register of Landmarks and National Register	0483000090
3	AUBURN PUBLIC LIBRARY	King County Register of Landmarks, Washington Heritage Register, and National Register	1735800115
4	BLOMEEN, OSCAR HOUSE	Washington Heritage Register and National Register	5405100005
5	KING SOLOMOM MASONIC LODGE NO 60 HALL	King County Register of Landmarks	7331400475
6	MARY OLSON PARK	Washington Heritage Register, National Register, Washington Heritage Barn Register	3222059032

City of Auburn

Climate Element

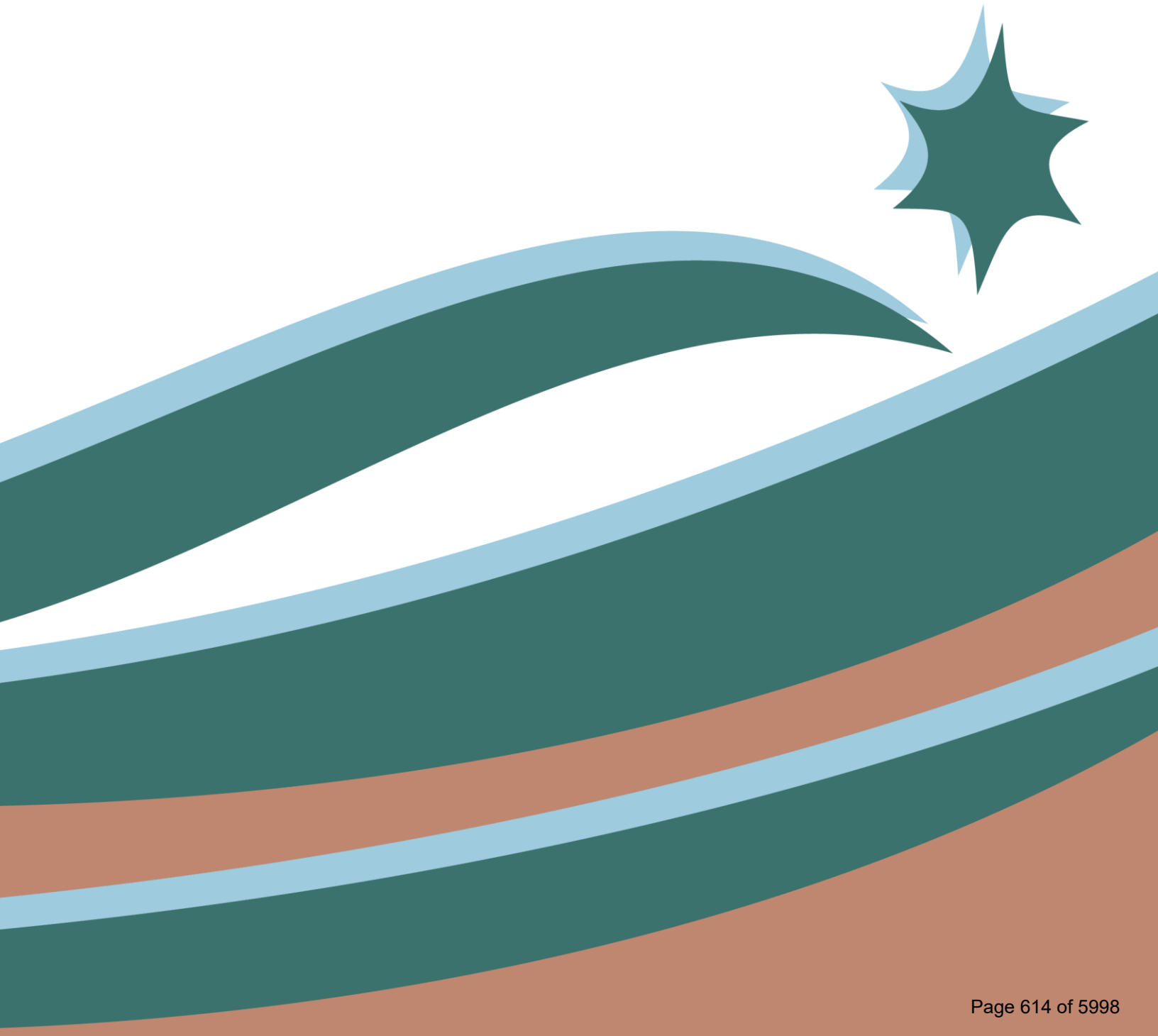


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Introduction

The Climate Element of the City of Auburn's comprehensive plan is a strategic document to guide policy implementation in Auburn as it pertains to addressing anticipated climate-related changes to the city's and region's local environment. The city is undertaking planning for climate change as a response to House Bill 1181, passed by the Washington State Legislature in July 2023, and which requires that the city adopt climate planning goals, policies, and actions into its comprehensive plan by 2029.

The City of Auburn is choosing to proactively engage in planning for climate change now, as opposed to by 2029. This is in part due to the immediate importance of preparing for climate change, and in anticipation of the expected long-term timelines of a number of climate response strategies.

What does the Climate Element do?

- Identify priority climate-driven natural hazards anticipated to impact Auburn
- Determine community vulnerability, resilience, and risk
- Provide policy guidance for ensuing 20 years of planning for climate change

The Climate Element is organized by two overarching principles: Resilience and Mitigation. The resilience sub-element will lay out policies and strategies devised to improve the health of Auburn's natural environment and citizens, while protecting local services and assets from negative impacts associated with climate change.

The mitigation sub-element will lay out policies and strategies directed at reducing city and community emissions contributions to global greenhouse gas levels and work to discourage other environmentally harmful actions.

Vision

Nestled in the heart of the Green River Valley with Mt. Rainer as a backdrop, Auburn is a historic and welcoming community with an innovative industrial-based economy and a wealth of outdoor and cultural activities at its doorstep. Yet the vitality, livelihoods, and surrounding environment that make up the fabric of Auburn's community are threatened by human-driven climate change as concentrations of carbon dioxide and other greenhouse gases in the atmosphere continue rising. By taking action to mitigate the worst impacts of climate change, Auburn is living out its commitment to its core community values of sustainability, environmental stewardship, and economic vibrancy and ensuring that it remains a livable, sustainable, and safe place to live, work, and visit.

Values

Auburn is a dynamic community with much to offer both residents and visitors. Here, people understand the value of protecting cherished community assets, both urban and natural. With severe climate-driven changes expected to come to Auburn over the coming decades, Auburn's shared community values will stand as clear directions which will shape and guide municipal climate policy. These values are:

Character

Auburn's surrounding natural environment is restored and investments in Auburn's resilience enhance the aesthetic and social qualities of the built environment.

Wellness

Resilience and emissions mitigation investments are grounded in environmental justice and target front-line communities who are most at risk of suffering adverse health impacts as a result of climate-related hazards.

Service

The city ensures the long-term maintenance and protection of vital infrastructure and services in order for residents to continue to rely on them in the face of extreme weather events.

Economy

Auburn is a leader in providing green job opportunities and training and ensures that it remains a vibrant and supportive community in which to conduct business.

Celebration

Places and assets of communal value are protected from degradation under extreme weather events and worsening climatic conditions.

Environment

The natural environment is protected and restored and the built environment appropriately safeguards natural lands.

Sustainability

Activity in Auburn does not deteriorate the local natural environment and its emission contributions continue to decline.

Conditions and Trends

Greenhouse Gas Emissions

In 2007 the City of Auburn joined the U.S. Mayors' Climate Protection Agreement, committing to reducing the city's greenhouse gas (GHG) emissions and subsequently conducted its first GHG emissions inventory, marking 2008 as the baseline year to compare future emissions against. That year, it was revealed that community activities in Auburn – transportation, residential and commercial building energy use, and waste – were responsible for 848,324 metric tons of Carbon Dioxide, CO2 (mtCO2e) emitted. Municipal emissions – emissions directly caused by City of Auburn activity – were revealed to contribute 10,373 mtCO2e that year.[1]

Figure 1 – Municipal Emissions Inventory by Sector ($MTCO_2e$) 2015. Source: Climate Action Plan of the City of Auburn

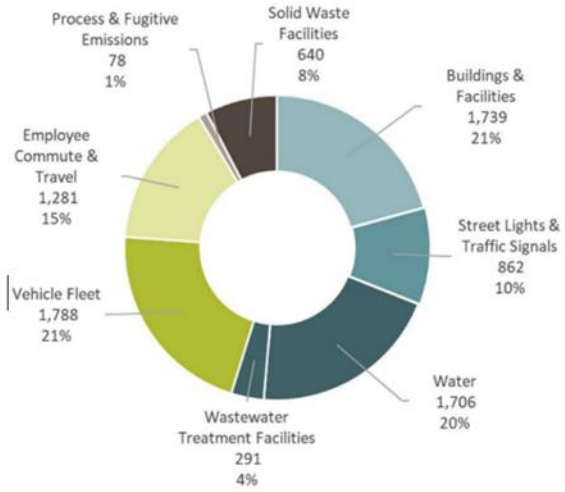
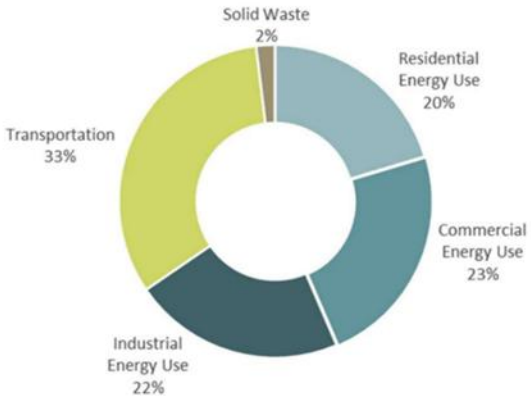


Figure 2 – Community Emissions Inventory by Sector ($MTCO_2e$) 2015. Source: Climate Action Plan of the City of Auburn



In 2018 the City commissioned its second greenhouse gas inventory and determined that community and municipal emissions had each declined since 2008 despite Auburn's population having grown during this same time period. Community emissions declined by 16% and municipal emissions declined by 19%.

Auburn was able to achieve these reductions through significant cuts to electricity demand on municipal buildings, lower diesel and gasoline community demand due to commute trip reduction plans, and the implementation of waste diversion programs.[2]

Nonetheless, the City's State and County partners have adopted ambitious emissions reductions timelines, and though Auburn has found success in its approach to emissions reduction, the City will have to take on a more aggressive

[1] Cascadia Consulting Group, Inc. Climate Action Plan of the City of Auburn, 2018

[2] Cascadia Consulting Group inc. Greenhouse Gas Inventory for the City of Auburn, Washington, 2018

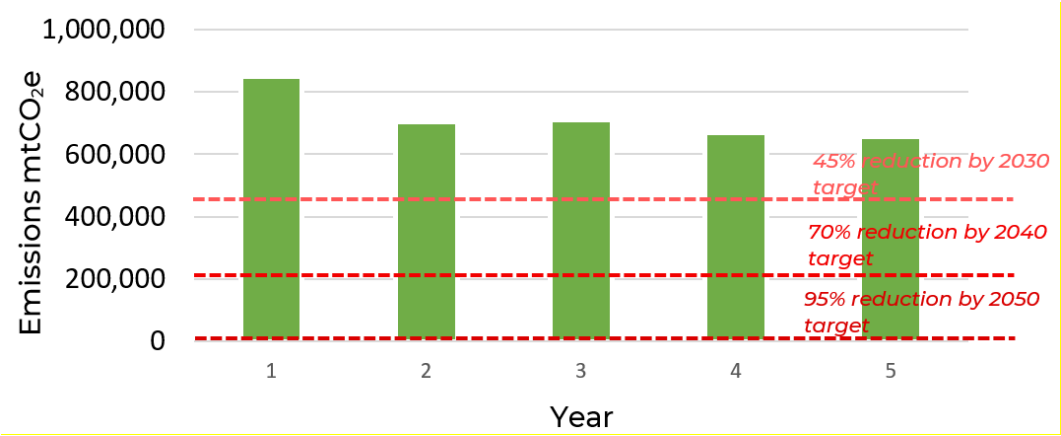
stance of curbing its emissions sources in order to meet its legally mandated reduction targets on time.

Table 1 – Greenhouse Gas Emissions Reductions Targets

	2030	2040	2050
Statewide*	-45%	-70%	-95%
PSRC**	-50%	-	-80%
King County**	-50%	-	-80%
Pierce County*	-45%	-70%	-95%

*Pierce county and statewide targets based on 1990 GHG emissions levels.
**PSRC and King County targets based on 2007 levels.

Figure 3 – Auburn Community Emissions Forecast and Reduction Goals. Source: Greenhouse Gas Inventory for the City of Auburn, Washington (2018)



Identified Priority Climate Hazards

Climate change-related hazards are not expected to impact communities and regions uniformly, some communities may get wetter, others drier, some may be impacted by significant sea-level rise while others will not. Some communities are also going to be more vulnerable to particular climate change-related hazards than others due to the presence or absence of particular infrastructure, its state of repair, and exposure to risk. A community's demographic characteristics may also contribute to its vulnerability; for example, a community with a notable degree of respiratory illness may find it valuable to prioritize preparing for worsening air quality. Each of these are things to keep in mind when identifying priority climate hazards of which are most important to prepare for.

The process of identifying priority climate hazards projected to afflict Auburn relied on the University of Washington's Climate Mapping for a Resilient Washington tool, a climate analysis tool developed to help jurisdictions across Washington

understand and visualize various climate change impacts and vulnerabilities across the next century and determine the specific affects.

Given the regional context, the characteristics of the city's infrastructure, and the economic and public health vulnerabilities of Auburn at large, the climate-change related hazards which are expected to present the greatest concern for the Auburn community are rising temperatures and exposure to extreme heat, increasingly severe storms and flooding, and more frequent droughts and wildfires.[3]

Priority Climate Hazards Anticipated to Impact Auburn Most

- Rising Temperatures and Extreme Heat
- Severe Storms and Flooding
- Drought and Wildfires

Rising Temperatures and Extreme Heat

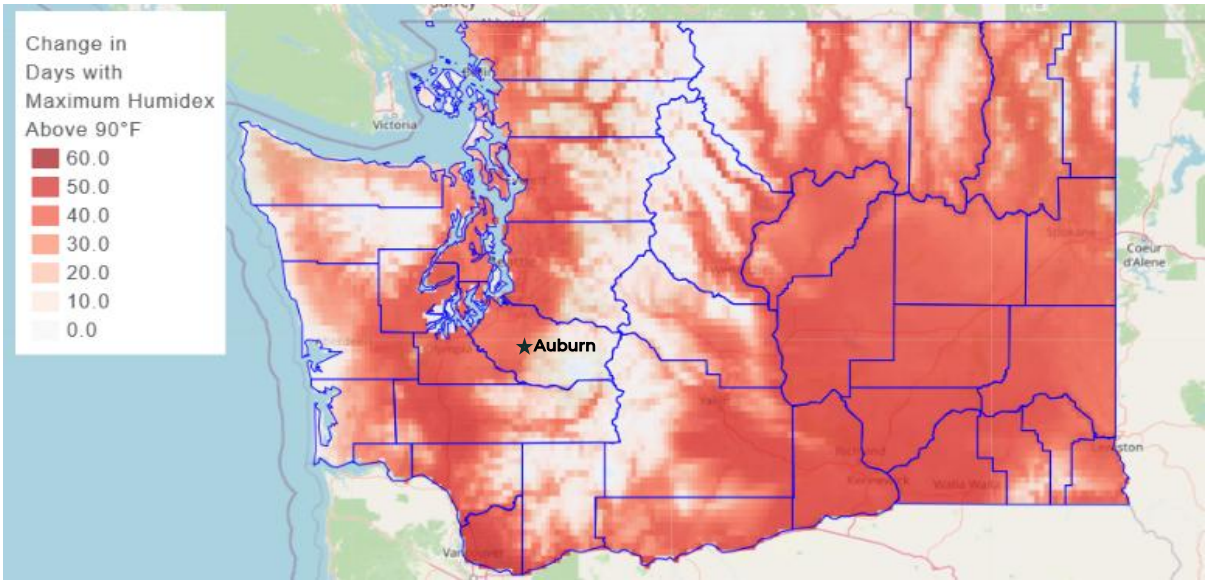
In the Pacific Northwest, average annual temperatures rose 1.5°F over the last century, resulting in a reduction of snowpack across the Cascade Mountains, more frequent droughts, and more extreme heat events. Left unaddressed, the impacts of rising temperatures will have tangible effects on public health and quality of life in Auburn. Warmer temperatures and extreme heat can increase heat stress and worsen air quality, heighten allergy symptoms, and exacerbate respiratory illness. Greater average annual temperatures are also expected to coincide with an increase in the number of very hot days – days over 90°F – which may result in greater health risks to those who work outdoors or vulnerable populations such as the elderly.

Rising temperatures also carry the potential to affect our region's bodies of water and negatively impact the quality of Auburn's natural environment. Warmer streams and lakes can harm fish stocks and produce harmful algal blooms; in 2012 for example, over 80 percent of surveyed streams in King County exceeded state standards for salmon habitat protection. Meanwhile higher temperatures can intensify droughts by reducing snowpack and water storage, leading to a drier landscape in and around Auburn.[4]

[3] Cascadia Consulting Group, Inc. Climate Element Comprehensive Plan Framework, 2023

[4] University of Washington Climate Impacts Group. Climate Mapping for a Resilient Washington, 2022

Figure 2 – Projected Change in Days with Maximum Humidex Above 90° in Washington by 2050-2079. Source: University of Washington Climate Impacts



Severe Storms and Flooding

Climate change is expected to cause precipitation patterns to shift into the extremes, with far less rainfall occurring in the summer months resulting in drought-like conditions for portions of the year, while heavier-than-normal rains are expected to increase the likelihood and frequency of flooding events the rest of the year.[5]

In Auburn this means greater likelihood for floods in low-lying areas surrounding the Green and White Rivers during severe storms, more potential for landslides along sloped areas of the city as a result of erosion and soil displacement caused by heavy rains, and water quality concerns in the event that runoff exceeds the capacity of existing stormwater management facilities and infiltrates polluted lands. Each of these potential impacts also carry additional concerns for public health, economic activity, the quality of Auburn's natural environment, and produce direct financial costs to Auburn residents.

[5] University of Washington Climate Impacts Group

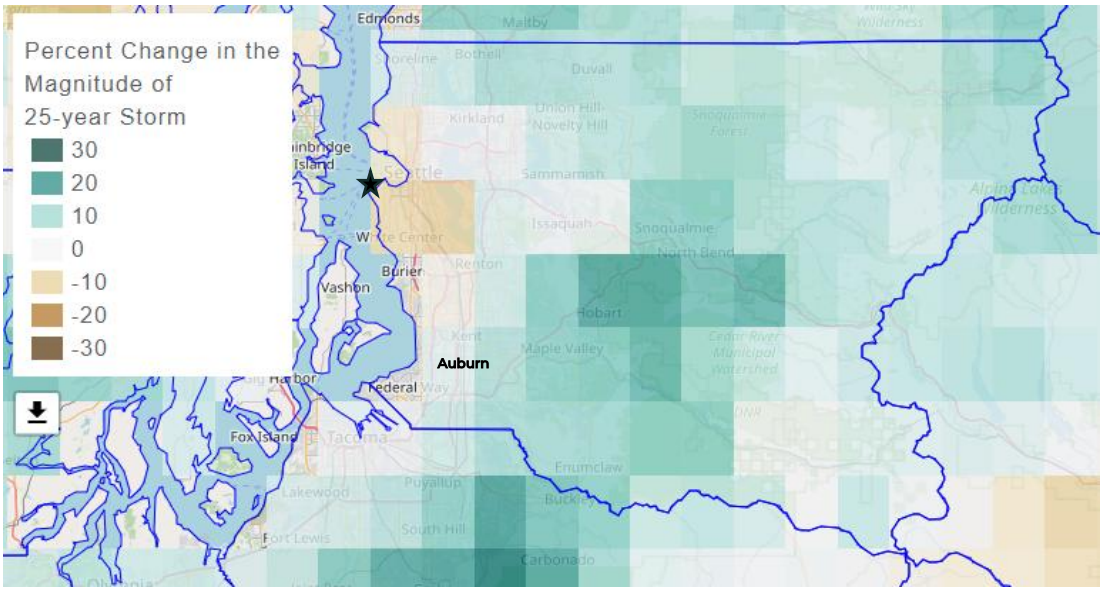


Figure 3 – Projected Percent Change in Magnitude of 25-year Storm inking County by 2020-2049. Source: University of Washington Climate Impacts Group (2023)

Drought and Wildfires

Places in Washington once thought to have minimal wildfire risk are increasingly becoming less so as global average annual temperatures continue to rise, drying out more and more Washington land which in turn serves as greater reserves of potential fuel for wildfires to spread.

Wildfire risk is expected to grow significantly in many neighboring counties, including King County, increasing the intensity and frequency of days with unhealthy levels of air quality in Auburn due to smoke. This will exacerbate respiratory illness, limit outdoor activities, and harm the natural environment.[6]

Likelihood of drought in any given year by 2100

(High Global Emissions Scenario)

- *Auburn – 32%*
- *King County – 34%*
- *Pierce County – 34%*

[6] King County Wildfire Risk Reduction Strategy

Figure 4 – Wildfire Smoke Seen in Seattle. Source Getty Images (2020)

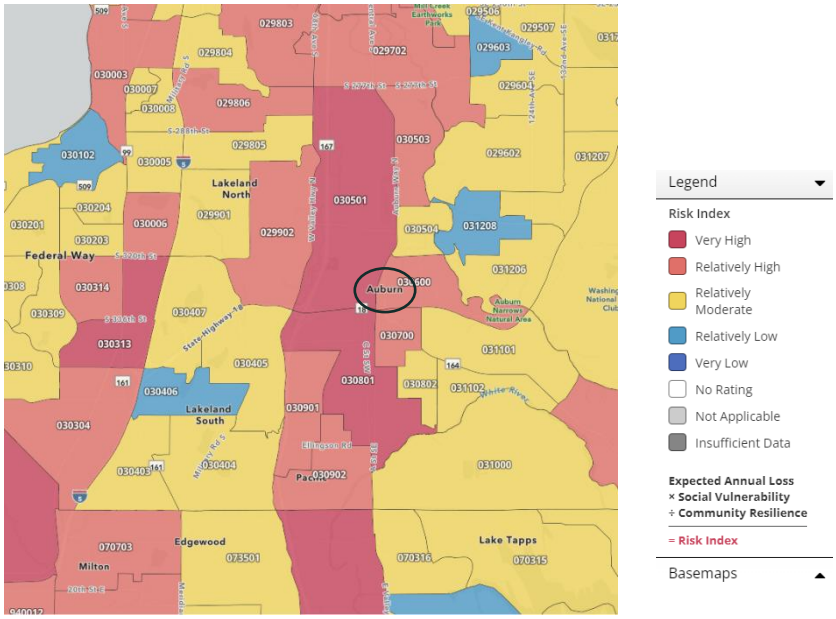


If current emissions trends continue, greater conservation of water during drought years will be necessary and increased demand on emergency services in response to reduced access to potable water will become more likely.

Risk Index

These identified priority climate hazards are expected to interact with Auburn's prevailing resiliency and vulnerability characteristics in such a way that FEMA has determined that much of Auburn is at relatively high or very high risk of negative impacts from climate change, underscoring the necessity to plan for climate change[7].

Figure 5 – Risk Index for Auburn and South King County. Source: Federal Emergency Management Agency (2023)



[7] Federal Emergency Management Agency. National Risk Index, 2023

Climate Policy at a Glance

The state legislature requires that Auburn's Climate Element include several components in order to be in compliance with the Growth Management Act. Likewise, the Climate Element will reflect the requirements set by the Puget Sound Regional Council and Auburn's King and Pierce County partners.



Sub-Elements

The Climate Element will feature goals, policies, objectives, and implementation strategies which will be organized into two sub-elements, one which addresses resilience and one which addresses greenhouse gas emissions mitigation.

Resilience Sub-Element

The first of two sub-elements, the Resilience sub-element will layout methods to address climate resilience, environmental justice, and equity. This section of the Climate element will also identify natural hazards which will be exacerbated by climate change, and the potential approaches to assess community vulnerability. The sub-element will also address conservation of natural areas and the introduction of green infrastructure investments, which will allow Auburn to overcome future hazards.

The Resilience Sub-Element will:

- **Take Stock of Assets**
- **Identify Vulnerabilities**
- **Assess Risks**
- **Recommend Protections**

Greenhouse Gas Emissions Mitigation Sub-Element

The Emissions Mitigation sub-element will identify significant sources of emissions, establish methods of measuring municipal and community emissions, and set emissions reduction targets to work toward. This is an important aspect of planning for climate change as greenhouse gas emissions are largely contributing to the projected change in global climate.

The Emissions Mitigation Sub-Element will:

- **Identify Community and Municipal Emissions**
- **Establish Reduction Targets**

- **Recommend Mitigation Efforts**

RESILIENCE SUB-ELEMENT

The Washington State Department of Commerce defines resilience as, "...the ongoing process of anticipating, preparing for, and adapting to changes in climate and minimizing negative impacts to our natural systems, infrastructure, and communities." Auburn can improve its resilience by introducing mitigation efforts against natural hazards, adapting to unpreventable impacts, protecting and restoring natural areas, and developing recovery responses. The goals, policies, and implementation strategies of the Resilience sub-element are organized into six key themes:

1. Public Health and Community Resilience
2. Infrastructure and Emergency Preparedness
3. Cultural Resources and Practices
4. Water Conservation and Stormwater Management
5. Natural Habitats and Urban Green Space
6. Economic Development

***** Policy developed for concurrency with King County's Strategic Climate Action Plan

****** Policy developed for concurrency with Washington Department of Commerce Climate Planning guidance

******* Policy developed for concurrency with Puget Sound Regional Council's Vision 2050

Goals, Policies, and Actions

Theme 1. Public Health and Community Resilience

Policies related to identifying climate vulnerable communities, investing in programs and services that reduce vulnerability in vulnerable and frontline communities, and prioritizing green affordable housing should be considered.

Goal 1. Conduct, and periodically update, a climate vulnerability and risk assessment

C-1 * Integrate a climate impacts risk assessment and policies into the local hazard mitigation plan.

C-2 ** Support enhanced data collection for hazard events of all magnitudes to provide a fuller understanding of the community's hazard characteristics — including those affected by climate change.

C-3 *** Promote the use of health impact assessments and other tools to address the potential impacts of health, equity, and climate change on vulnerable communities.

Goal 1 Actions

Action 1.1 *** Conduct, and periodically update, a climate vulnerability and risk assessment that includes a focus on the built environment, community, and natural systems. Support enhanced data collection for hazard events to provide a fuller understanding of the community's hazard characteristics—including identifying demographic groups/community members most vulnerable to climate impacts. Use assessment findings to evaluate changes to comprehensive plan goals and policies and enhance resilience.

Goal 2. Minimize disproportionate impacts of climate change on vulnerable and frontline communities and focus/maximize associated benefits

C-4 * Improve access to services throughout the community by investing in partnerships with frontline communities to co-identify and remove systemic and physical barriers to services that increase climate resilience such as green living environments and adequate public facilities.

C-5 * Identify those communities disproportionately impacted by extreme heat events and prioritize equitable access to emergency preparedness resources for vulnerable populations and areas. Develop and distribute tools and resources for the community to stay safe during extreme heat events.

Goal 3. Prioritize green, affordable housing to meet projected growth and needs of the community

C-6 Support projects that bring renewable energy and/or higher standard of energy efficiency to communities of color, low-income populations, and members of limited-English speaking communities, based on evaluation and assessment of barriers and challenges.

C-7 *** Uphold the Growth Management Act to prioritize dense, mixed use, transit-oriented development (TOD) and affordable housing by encouraging integrated site planning and green building, with a focus on early consideration of these in the site development process. Encourage the location of new green, affordable housing units near community amenities and services, such as transit and green space.

C-8 * Give consideration to and promote a local community response to homelessness with affordable, green housing and those which include supportive services.

Theme 2. Infrastructure and Emergency Preparedness

Policies related to and offering equitable access to adaptation resources (i.e., resilience hubs), developing strategies to aid community members ability to respond to extreme weather events (i.e., extreme heat, wildfire smoke events), and ensuring critical and non-critical infrastructure is resilient in the face of climate change should be considered.

Goal 4. Equitably protect public health and safety by identifying and planning for risks associated with climate change.

C-9 * ** Ensure that people, including the community's most vulnerable groups, are resilient to climate and weather-related hazards by better understanding hazard type and impact and equipping people and the community to prepare for and respond to emergency situations.

C-10 * ** Develop community-serving facilities augmented to support residents and that coordinate resource distribution and services before, during, and after a hazard event.

C-11 * ** Work toward a distribution of growth that promotes equitable access for frontline communities and reduces the potential for displacement through program services such as municipal emergency preparedness with consideration of climate impacts such as extreme heat, flooding, wildfire smoke, and drought.

C-12 * ** Factor climate impacts into the planning of operations and coordination of preparedness, response, and recovery activities among first responders and partners, including public health, law enforcement, fire, school, and emergency medical services (EMS) personnel.

Goal 4 Actions

**Action 4.1 ** ** Create evacuation plans and outreach materials to help residents plan and practice actions that make evacuation quicker and safer.

Goal 5. Protect the community from extreme heat impacts and wildfire smoke

**C-13 ** ** Prioritize at-risk community members for actions that mitigate wildfire smoke, including providing filter fans or incentivizing infrastructure updates that protect against wildfire smoke (e.g., HVAC updates and MERV 13 filters for air intake) for facilities that serve high-risk populations.

**C-14 * ** Review and update land use and development codes to encourage the use of passive cooling approaches to reduce urban heat island effects. Utilizing energy efficient cooling technologies, reflective and/or vegetated roofs, and the integration of trees where appropriate, landscaping, and green space should be implemented

to help reduce the health effects of extreme heat on frontline communities and vulnerable populations.

C-15 * Encourage the use of methods that contribute to improved indoor air quality during wildfire smoke events.

C-16 ** Develop and implement notification alerts within the community to reduce the risk of exposure to wildfire smoke and particulate matter.

C-17 ** Promote equitable access to green space within a half-mile of all community members.

C-18 ** Support programs to distribute cooling units and install heat pumps, prioritizing households with residents (e.g., low-income seniors) most vulnerable to extreme temperature events.

Goal 5 Actions

Action 5.1 * Develop and implement an urban heat resilience plan or strategy that includes heat mitigation and management actions to prepare for and respond to chronic and acute heat risk in the community. The strategy should be informed by urban heat island mapping and may include coordinated efforts such as cooling centers, early warning systems, development/land use codes, and energy grid resilience. Utilize the King County Extreme Heat Mitigation Strategy to align with county planning efforts.

Action 5.2 * Develop community wildfire preparedness, response, and recovery plans as part of local hazard mitigation plans.

Action 5.3* Provide community education and outreach on flood mitigation best management practices and expand household-level wildfire mitigation assistance.

Action 5.4 * Provide community education and outreach on wildfire smoke mitigation best management practices. Ensure outreach is accessible and prioritize frontline communities.

Action 5.5 ** Develop and implement a wildfire smoke resilience strategy in partnership with local residents, emergency management officials, regional clean air agency officials, and other stakeholders.

Action 5.6 ** Develop and implement an urban heat resilience strategy that includes land use, urban design, urban greening, and waste heat reduction actions.

Goal 6. Ensure that infrastructure (critical and noncritical) and utilities are resilient to climate change impacts (e.g., precipitation events and stormwater flooding)

C-19 * Integrate local climate impacts risk assessment into hazard mitigation planning.

C-20 *** Factor climate impacts into the planning of operations and coordination of preparedness, response, and recovery activities.

C-21 * Encourage coordination and support public education by utility providers that raises awareness of the need for water and energy conservation and empowers individuals across diverse audience segments to take action.

C-22 *** Account for climate change impacts in planning, designing, and operating stormwater management approaches, including stormwater infrastructure and stormwater best management practices.

C-23 * Identify areas prone to flooding and encourage the reduction of flooding through improvements to drainage systems, particularly in traditionally underserved areas.

C-24 ** Incorporate post-wildfire debris flow and flooding hazard information into critical area delineation in fire-prone communities.

Goal 6 Actions

Action 6.1 ** Develop and improve transportation network with consideration of infrastructure within floodplains and other critical areas to provide for alternate routes and network resiliency.

Action 6.2 ** Analyze how the municipal water system maintains adequate pressure during major drought events as well as under reasonably forecasted drought conditions.

Goal 7. Provide all residents an equitable opportunity to learn about climate impacts, influence policy decisions, and take action to enhance community resilience through community engagement efforts.

C-25 ** Create and implement culturally contextualized outreach and education initiatives and materials that will inform the community about near-term and longer-term climate change threats and ways that the community can prepare and build resilience to these changes.

C-26 ** Build and support partnerships with community organizations with the capacity and relationships to convene diverse coalitions of residents and to educate and empower them to implement climate resilience actions.

C-27 ** Cultivate relationships with climate justice coalitions that can help facilitate frontline community learning and engagement that links local issues with regional and statewide issues.

Theme 3. Cultural Resources and Practices

Additional policies related to assessing climate vulnerability of the city's historic resources and establishing and maintaining government-to-government relations with tribes related to preserving sites should be considered.

Goal 8. Protect and preserve cultural resources and practices to build resilient communities and ecosystems in the face of climate change

C-28 ** Promote or work with partners to establish a native plant nursery and seed bank to support long-term restoration and carbon sequestration efforts.

C-29 ** Maintain government-to-government relations with Native American tribes for the preservation of archaeological sites and traditional cultural properties that are vulnerable to climate impacts.

Theme 4. Water Conservation and Stormwater Management

Policies that link climate change with water conservation efforts and stormwater management should be considered.

Goal 9. Protect and preserve water quantity and quality from drought, extreme heat, and other hazards exacerbated by climate change consistent with the Utilities element

C-30 ** Utilize water conservation methods and technologies in development of irrigation infrastructure within parks and recreation areas to foster climate resilience.

C-31 *** Promote water conservation through management of water resources, including efficient irrigation, preventative maintenance, efficient plant selection, and landscape management.

C-32 Account for climate change impacts in planning, designing, and operating stormwater management approaches consistent with the Comprehensive Storm Drainage Plan.

C-33 *** Identify opportunities to retrofit undersized stormwater infrastructure and areas with uncontrolled runoff to improve flow control and water quality, with a priority on locations providing the most benefit, are identified to be most vulnerable to extreme precipitation climate impacts, and are communities that have been historically under-resourced.

Goal 9 Actions

Action 9.1 * Review and update development codes and design standards for requirements for stormwater facility sizing, low-impact development, adopt nature-based solutions, and minimize impervious surface areas in private development and city capital improvements to be consistent with the requirements of the City's NPDES Phase 2 Permit.

Theme 5. Natural Habitats and Urban Green Space

Additional policies that speak to tree management and link the protection of healthy habitats to climate resiliency should be considered.

Goal 10. Support preservation and access to green and open spaces

C-34 * Ensure equitable access to parks, green space, and recreational services for all residents consistent with the Land Use Element.

Goal 11. Protect and enhance the climate resilience of urban forests by implementing climate-smart forest management

C-35 ** Encourage participation in Washington's small forest landowner assistance cost-share and stewardship programs.

Goal 11 Actions

Action 11.1 * Review, update, and implement tree protection codes to increase tree retention. Encourage the protection, maintenance, and expansion of tree canopy throughout the community, prioritizing residential and mixed-use areas with the least current tree canopy to equitably distribute benefits.

Action 11.2 ** Adopt an urban forest master plan and implementing ordinances to maintain and expand tree canopy cover, improve tree and watershed health, prioritize carbon sequestration, and build climate resilience.

Goal 12. Ensure the protection and recovery of ecosystems to provide healthy habitat in a changing climate

C-36 ** Ensure no net loss of ecosystem composition, structure, and functions, especially in Critical Areas, and strive for net ecological gain to enhance climate resilience in accordance with the Land Use Element and as may be feasible.

C-37 ** Identify opportunities to expand habitat protection and improve habitat quality and connectivity to foster climate resilience using conservation area designations, buffers, and open space corridors.

C-38 ** Commensurate with resources provided the city should implement actions identified in restoration and salmon recovery plans to improve climate resilience of streams and watersheds.

C-39 ** Commensurate with resources provided the city should protect and restore riparian vegetation to reduce erosion, provide shade, and support other functions that improve the resilience of streams to climate change.

Theme 6. Economic Development

Policies related to developing a green job strategy, equitable access to green job training (including education and workforce training), and a just transition should be considered.

Goal 13. Increase access of green jobs, with special consideration to increasing access for frontline communities.

C-40 *** Develop a green workforce that is representative of the diversity of the city's communities and reflects the diverse skill sets, knowledge systems, and experiences of communities through targeted hiring, workforce development, community agreements, and creating intentional pathways for frontline communities across sectors and seniority levels. A Green Workforce refers to jobs that help advance toward a more sustainable society and help to transition from over-dependence on oil industries and reducing greenhouse gas emissions.

C-41 ** Ensure that the Comprehensive Emergency Management Plan responds to the impacts of climate change and identifies roles and responsibilities to support a sustainable economic recovery after a disaster.

C-42 ** Support local businesses' efforts to generate and store renewable electricity on-site, which can provide back-up power during emergencies and help ensure continuity of operations.

C-43 *** Promote local industrial development to support a circular economy that increases demand for recycled materials and reduces demand for new raw materials and their inherent carbon emissions.

Goal 13 Actions

Action 13.1 * Develop a green jobs strategy in partnership with community groups, community resources such as Green River College, frontline communities, and businesses that:

(1) supports sustainable practices, green skills development, and the low carbon transition of the city's impacted industries.

(2) develop pathways for youth and impacted workers to transition into green jobs.

(3) ensures opportunities (e.g., local hiring requirements) for these jobs.

EMISSIONS MITIGATION SUB-ELEMENT

Global climate change and its localized effects are an immediate consequence of overabundant levels of greenhouse gases permeating Earth's atmosphere and causing heat to be retained on our planet rather than radiate outward. This is why it is critical to eliminate the emission of greenhouse gases as part of widespread human activity. Actions taken to reduce or eliminate the emission of greenhouse gases constitute emissions mitigation. To mitigate its emissions, Auburn must update its municipal and community emissions inventories, identify reduction targets, and target policies and investments to meet them, considerate of available resources. The goals, policies, and implementation strategies of the Emissions Mitigation sub-element are organized into four key themes:

7. Transportation and Planned Development
8. Renewable Energy and Energy Efficiency
9. Waste Management and Circular Economy
10. Natural Habitats and Urban Green Space

***** Policy developed for concurrency with the King County Regional Hazard Mitigation Plan, including the City of Auburn annex

**Policy developed for concurrency with King County's Strategic Climate Action l1Plan

******* Policy developed for concurrency with Washington Department of Commerce l11climate planning guidance

******** Policy developed for concurrency with Puget Sound Regional Council's Vision 11112050

Goals, Policies, and Actions

Theme 7. Transportation and Planned Development

Additional policies related to electric vehicles (EVs) and EV infrastructure, reducing vehicle miles traveled, and supporting increased density in transit-oriented areas.

Goal 14. Reduce GHG emissions by prioritizing accessible multi-modal and low-carbon transportation options

C-44 *** Prioritize investments that expand and implement active transportation options, including bicycling and walking, that improve access to transit.

C-45 * Encourage the prevention of displacement of households and businesses from transit-oriented locations, with a focus on low-income households and small businesses, as appropriate.

Goal 14 Actions

Action 14.1 * Encourage increased density near transit-oriented locations to allow for a variety of housing types that support local business and residents. This can be accomplished through zoning regulations.

Goal 15. Increase the percentage of EV and other low-emission transportation modes operating within the city

C-46 * Work with utility providers and other partners (e.g. developers and EV companies) to encourage increased access to EV charging where it is needed and expand EV charging readiness for buildings by administering and enforcing the Washington State Building Code. Achievement will be commensurate with financial resources and availability of the vehicles, and associated infrastructure, where appropriate. Expansion of access and opportunity for EV charging will be achieved in part through enforcement of Washington State Building Code requirements. These requirements include:

- Installation of a dedicated circuit for EV charging at the time of construction of all new dwelling units
- Installation of EV Charging Stations, EV-Ready Parking Spaces, and EV-Capable Parking Spaces as a proportional quantity of total parking required for new commercial development projects
- Installation of EV Charging Stations, EV-Ready Parking Spaces, and EV-Capable Parking Spaces as a greater proportional quantity of total parking required for new developments that include multiple residential or sleeping units such as apartments, hotels, and congregate living facilities

C-47 * Support state and regional requirements for electric delivery vehicles and Transportation Network Corporations (TNC's).

Goal 16. Reduce greenhouse gas emissions by promoting densification and efficient land uses in mixed-use urban villages near transit corridors

C-48 * Prioritize dense, mixed use, transit-oriented development, and affordable housing in Auburn and the downtown regional growth center.

Goal 16 Actions

Action 16.1 * Adopt “missing middle” housing policies and codes to allow for broader housing types in single family zones, particularly near transit, to promote affordability for current and future residents.

Theme 8. Renewable Energy and Energy Efficiency

Policies aimed at transitioning to renewable energy sources, promoting energy conservation and efficiency measures, building grid resilience, and educating homeowners about energy efficiency upgrades should be considered.

Goal 17. Reduce greenhouse gas emissions by transitioning to renewable energy sources, decarbonizing buildings, and increasing energy efficiency

C-49 ** Retrofit municipal buildings for energy efficiency, as resources allow.

C-50 ** Promote improved energy efficiency in existing commercial and residential buildings by offering expedited permitting process, limiting administrative barriers, and reducing costs for residential solar projects.

C-51 *** Maximize renewable energy sources for the supply of electricity and heat to new and existing residential and commercial building construction through administration and enforcement of the Washington State Energy Codes, both commercial and residential. This will also ensure new development accounts for future solar systems and include solar readiness zones, structural integrity, and electrical service capacity in the design and planning of new commercial buildings.

C-52 ** Retrofit publicly owned buildings with solar panels and electric heat pumps, as structural stability and resources allow.

C-53 *** Support and expand building energy efficiency retrofit programs to reduce building energy use and improve energy resilience, including a focus on affordable housing.

C-54 * Explore and promote low interest loan options and incentive programs to finance energy efficiency upgrades for commercial and residential buildings, while seeking other finance mechanisms to fill in potential funding gaps. Investments and programs should be prioritized in historically underserved areas.

C-55 * Develop energy efficiency outreach programs for residents and businesses by partnering with Puget Sound Energy (PSE) and other local jurisdictions with the goals to identify and select appropriate and cost-effective energy improvements. This could involve supporting local schools in integrating climate and sustainability education into curriculum.

C-56 * Building on proposed WA state policy, strengthen energy efficiency codes to reflect best practices and meet established energy targets (e.g., require energy use disclosure and benchmarking for buildings, starting with commercial and multifamily buildings over a size threshold).

C-57 * Expand local onsite renewable energy production, such as through installation at municipal facilities, support of incentive programs, and coordination of community-based partnership projects and programs.

C-58 ** Encourage additional net-zero greenhouse gas emission features in all new residential and commercial structures.

C-59 * Incentivize electric heat pumps and restrict natural gas in new commercial and residential construction through administration and enforcement of the Washington State Energy Code.

C-60 ** Phase out natural gas use in existing publicly owned facilities by 2040 and retrofit with electric heat pumps as resources allow.

C-61 ** Encourage all new publicly owned buildings to be powered 100% by renewable energy as availability and resources allow, and evaluate opportunities to retrofit municipal buildings for energy efficiency as resources allow.

C-62 ** Develop low-energy-use requirements and building code compliance for residential buildings as incorporated in state building codes.

C-63 *** Educate community members about incentives for emerging alternative energy technology, such as tax exemptions for solar installations, and increase community awareness of existing solar arrays and water heating systems in the city.

Goal 18. Promote a diverse, clean, efficient grid that increases the grids reliability as demand increases

C-64 * Work with and encourage Puget Sound Energy (PSE) to plan, site, build and maintain an electrical system that meets the needs of existing and future development, and provides highly reliable service for City customers and coordinate with non-city utility providers to ensure planning for system growth consistent with the city's Comprehensive Plan and growth forecasts.

C-65 * Advocate for increased grid reliability through state and utility regulatory rulemaking and legislation that supports demand response and environmentally responsible storage technologies that reduce peak load and provide grid flexibility.

C-66 * Advocate for energy utilities to adopt efficient practices and explore alternative energy resources, in order to help meet long-term energy needs and reduce environmental impacts associated with traditional energy supplies.

Theme 9. Waste Management and Circular Economy

Policies aimed at supporting a circular economy, supporting urban agriculture and local food production, encouraging composting, enforcing sustainable construction

and demolition (C&D) practices, and environmentally friendly purchasing policies should be considered.

Goal 19. Reduce greenhouse gas emissions from materials and organic waste by minimizing waste generation

C-67 * Encourage local food production, processing, and distribution through the support of home and community gardens (i.e., P-Patches), farmers' markets, community kitchens, and other collaborative initiatives which provide healthy foods and promote food security.

C-68 * Promote prevention and redistribution of food waste, such as through expanding and encouraging community and school gardens, urban agriculture, and farmers markets and working with local grocery stores to support a food donation program to send surplus food.

C-69 * Support extended producer responsibility (EPR) related policies and actions that require companies that make consumer products fund the residential recycling system and that ensure that packaging and paper products actually get recycled.

Goal 19 Actions

Action 19.1 * Update municipal solid waste contract policies and programs to encourage waste prevention and take-back programs, maximize diversion, ensure efficient collection routes, and promote hybrid and electric vehicles to transport and collect waste.

Goal 20. Reduce greenhouse gas emissions from materials and organic waste by maximizing waste diversion

C-70 ** Encourage recycling of construction and demolition debris.

C-71 ** Use recycled materials in the construction of transportation and other infrastructure facilities, as resources allow and to the extent feasible.

Goal 20 Actions

Action 20.1 * Expand commercial recycling and organics collection and service, including making recycling and organics disposal as convenient as garbage service and adequate to serve the number of tenants. Implement compost requirements for food businesses in accordance with HB 1799. Consider the implications of implementing an organics disposal bans and/or requiring services.

Action 20.2 * Expand recycling and compost service for single-family and multifamily properties and provide technical assistance to help compost successfully. Consider the implications of implementing an organics disposal bans and/or requiring services.

Action 20.3 ** Support a business technical assistance program to increase recycling and reduce waste.

Action 20.4 ** Support a program that will enable recycling of all construction and demolition debris.

Action 20.5 * Support development, implementation, and enforcement of construction and demolition (C&D) recycling and deconstruction ordinances.

Theme 10. Natural Habitats and Urban Green Space

Protect and enhance carbon sinks like forests and urban green spaces, establish green belt of parks with connections to housing, schools, and businesses.

Goal 21. Protect and enhance land carbon sinks (e.g., trees, urban green space) to mitigate GHG emissions

C-72 ** Require open space set-asides (such as parks) for new development when appropriate.

C-73 *** Maximize tree canopy coverage in surface parking lots to mitigate the negative impacts of urban heat islands caused by excessive impervious surfacing.

C-74 ** Improve and expand urban forest management to maximize or conserve carbon storage.

C-75 *** Manage natural lands (forests, grasslands, wetlands) to maintain and/or increase their carbon concentrations. Avoid the conversion of carbon-rich ecosystems. Prioritize increasing tree canopy cover and open space in overburdened frontline communities.

C-76 * Increase resilience to flooding, protect, and where possible, enhance, and restore existing flood storage, conveyance, and ecological functions and values of floodplains, wetlands, and riparian corridors as resources allow.

Glossary of Terms

Algal bloom

A rapid growth of microscopic algae or cyanobacteria in water. Algal blooms can often be harmful to the surrounding environment and human health.

Adaptation

The process of adjusting to new (climate) conditions in order to reduce risks to valued assets.

Assets

People, resources, ecosystems, infrastructure, and the services they provide. Assets are the tangible and intangible things people or communities value.

Climate change

A change of climate attributed directly or indirectly to human activity that alters the composition of the global atmosphere.

*RCW 28B.30.640(3)

Drought

In Washington, the legal definition of drought is based on water availability. A drought emergency is declared when water supply conditions are expected to fall below 75 percent of average, and there is potential for undue hardships due to low water supply.

Ecosystem

A biological environment consisting of all the living organisms or biotic component in a particular area, and the nonliving, or abiotic component, with which the organisms interact such as air, soil, water, and sunlight.

Environmental justice

The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Erosion

The wearing away of rock or soil and the movement of the resulting particles by wind, water, ice, or gravity, usually excluding mass movements.

Exposure

The presence of people, assets, and ecosystems in places where they could be adversely affected by hazards.

Extreme heat

Summertime temperatures that are much hotter and/or humid than average.

Extreme weather event

A time and place in which weather, climate, or environmental conditions – such as temperature, precipitation, drought, or flooding – rank above a threshold value near the upper or lower ends of the range of historical measurements.

Frontline community

People who experience the first and worst consequences of climate change. Such residents' health and livelihoods are often highly vulnerable to climate-exacerbated hazards and economic disruptions, and their communities often lack basic support infrastructure and suffer disproportionately from the compounding impacts of pollution, discrimination, racism, and poverty.

Greenhouse gas

Gases such as carbon dioxide, methane, nitrous oxide, and certain synthetic chemicals which trap some of the Earth's outgoing energy, retaining heat in the atmosphere.

Hazard

An event or condition that may cause injury, illness, or death to people or damage to assets.

Mitigation

Actions taken to reduce or eliminate the emissions of greenhouse gases (present and future) in order to reduce the rate and extent of climate change damage.

Resilience

The ongoing process of anticipating, preparing for, an adapting to changes in climate and minimizing negative impacts to our natural systems, infrastructure, and communities.

Risk

The potential for negative consequences where something of value is at stake. In the context of climate change, this term is often used to refer to the potential for adverse consequences of a climate-related hazard. Risk can be assessed by multiplying the probability of a hazard by the magnitude of the negative consequences or loss.

Severe storm

A storm is classified as ‘severe’ when it produces hail one inch in size or greater, winds in excess of 57.5 miles per hour, or a tornado.

Stormwater runoff

Water originating from rainfall and other precipitation becomes surface flow or interflow.

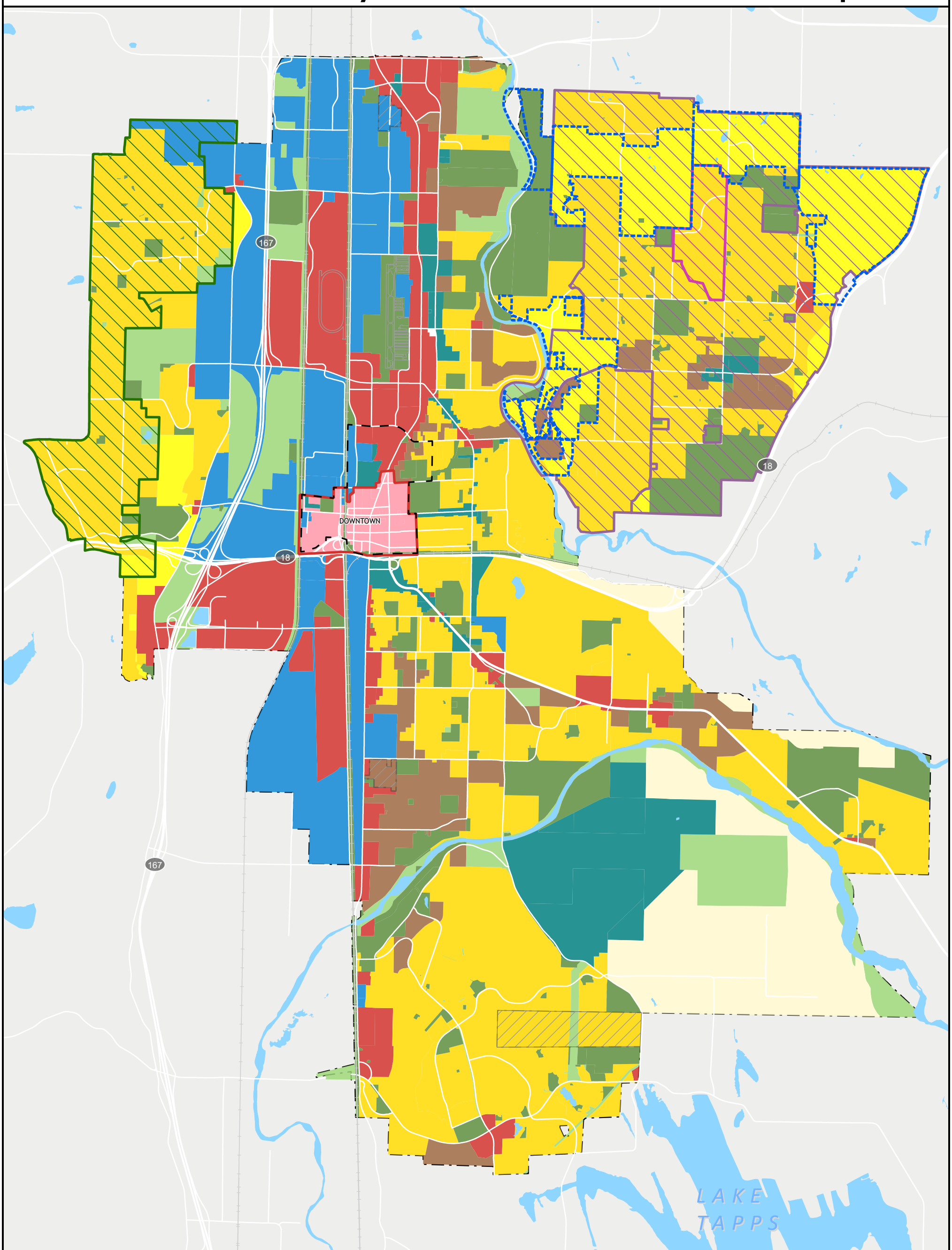
Vulnerability

The propensity of predisposition of assets to be adversely affected by hazards. Vulnerability encompasses exposure, sensitivity, potential impacts, and adaptive capacity.

Acronyms

CO2	Carbon Dioxide
C & D	Construction and Demolition
FEMA	Federal Emergency Management Agency
GHG	Greenhouse Gas
HVAC	Heating, Ventilation, and Air Conditioning
EMS	Emergency Medical Services
EPR	Extended Producer Responsibility
EV	Electric Vehicle
MERV	Minimum Efficiency Reporting Value
mtCO2e	Metric Ton CO2 Emission
TNC	Transportation Network Corporation
TOD	Transportation Oriented Development

Draft 2024 City of Auburn Land Use Map



- COMMERCIAL
- DOWNTOWN URBAN CENTER
- NEIGHBORHOOD RESIDENTIAL ONE
- NEIGHBORHOOD RESIDENTIAL TWO
- NEIGHBORHOOD RESIDENTIAL THREE
- OPEN SPACE
- PUBLIC/QUASI-PUBLIC
- MIXED-USE
- INDUSTRIAL
- RESIDENTIAL CONSERVANCY
- Downtown Urban Center
- Expanded Downtown Urban Center
- Potential Annexation Areas
- Urban Separators Overlay
- West Hill Overlay (Ordinance: 6122)
- Bridges Overlay (Ordinance: 6922)
- Lea Hill Overlay (Ordinance: 5346 & 6121)

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MILES

Printed On: 11/18/2024
Map ID: 1142

Information shown is for general reference purposes only and does not necessarily represent exact geographic or cartographic data as mapped. The City of Auburn makes no warranty as to its accuracy.

City of Auburn

Housing Needs & Characteristics Assessment Update

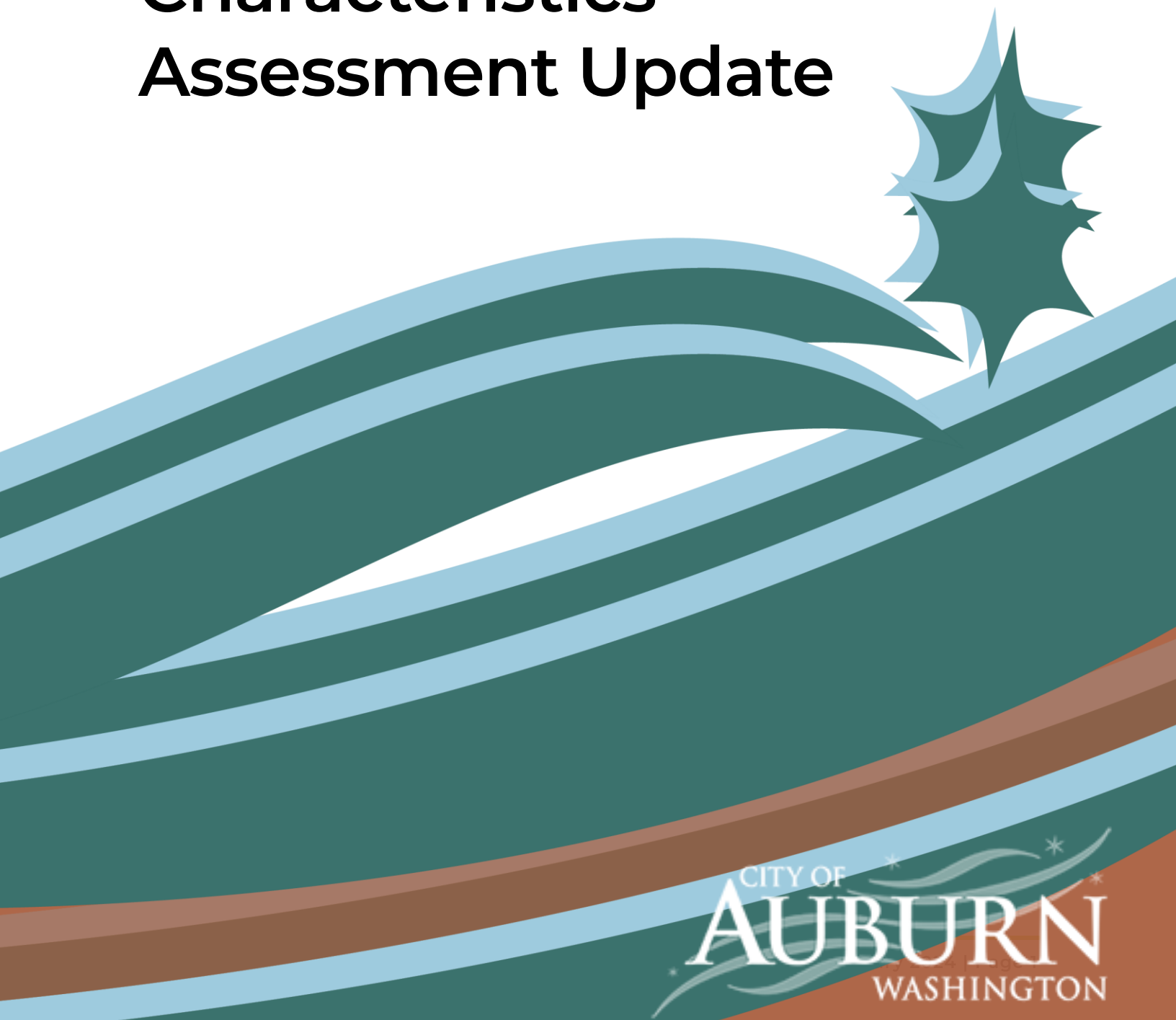


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Figure 57. Adjusted Employment Capacity by Zone 62

ABOUT THIS DOCUMENT

A housing element is a plan that addresses a community's current and projected needs for housing, including housing variety, attainability, and preservation. This document is intended to provide an assessment of housing needs and characteristics to support Auburn's Housing Element Update as part of the City's effort to update its Comprehensive Plan. This report also meets the requirements of the Countywide Planning Policies for King County (2023) to assess housing needs and conditions to help meet the countywide need for various housing types as well as the City's specific needs.

The report is structured in four parts:

- Housing Planning and Policy Context
- Population and Community Characteristics
- Household Economics
- Housing Inventory and Affordability

The conditions report draws on publicly available data from the following sources:

U.S. Census Bureau

- Decennial Census
- American Community Survey (5-year estimates)

Federal Agencies

- U.S. Department of Housing and Urban Development

Washington State Agencies

- Washington State Office of Financial Management
- The Office of Superintendent of Public Instruction

County and Regional Agencies

- King County Assessor's Office
- Puget Sound Regional Council
- Public Health of Seattle/King County
- Seattle/King County Coalition on Homelessness

Other

- Dupre and Scott
- Zillow.com

Qualitative information about housing and livability conditions based on community outreach is also considered in the housing element update and can be found in Part II of this document.

1 Housing Planning and Policy Context

This section provides housing planning and policy context regarding state and regional housing policy affecting Auburn. Auburn is located mid-way between Seattle and Tacoma, Washington's two largest cities, and is primarily situated within King County, with a small portion of the City extending into Pierce County. Both King and Pierce countywide planning policies apply to Auburn. In addition, multicounty planning policies established by the Puget Sound Regional Council (PSRC) apply to the city.

State Context

Growth Management Act

In Washington State, the Growth Management Act (GMA) requires fast-growing cities and counties to develop a comprehensive plan to manage their population growth[1]. The GMA establishes fourteen goals to guide planning in the state. One of these goals is to plan for and accommodate housing affordable to economic segments.

The GMA housing goal is addressed through the Housing Element and this assessment, which includes an inventory and analysis of existing and projected housing needs. The project needs include units for moderate, low, very low, and extremely low-income households and permanent supportive housing.

Recent Housing Legislation

Based on a 2022 opinion survey conducted by the Department of Commerce, housing costs are a statewide problem and the state needs more housing supply. Washington state needs 1.1 million new homes over the next year and 91,357 emergency housing beds. Since 2021, the Washington State legislature passed multiple bills to address the state's housing needs.

In 2021, the Legislature passed HB 1220, which substantially amended the housing-related provisions of the GMA. HB 1220 amended the GMA housing goal to require inventories of housing needs by income level, permanent supportive housing, and emergency housing, as well as identify sufficient land capacity for housing needs. New requirements include identifying local policies and regulations that result in racially disparate impact, displacement, and exclusion, and implement policies and regulations to undo them. Housing production should also be encouraged near employment centers and areas of planned employment growth.

HB 1110, passed in May 2023, builds from HB 1220 requirements and substantially changes the way many cities in Washington are to plan for housing. The bill requires cities of certain sizes and locations to allow multiple dwelling units (du/)

[1] Growth Management Act, MSRC https://mrsc.org/explore-topics/planning/general-planning-and-growth-management/growth-management-act

per lot in a middle housing type form. "Middle housing" is defined in the bill as “buildings that are compatible in scale, form, and character with single-family houses and contain two or more attached, stacked, or clustered homes including duplexes, triplexes, fourplexes, fiveplexes, sixplexes, townhouses, stacked flats, courtyard apartments, and cottage housing.” Cities must allow at least six of the nine types of middle housing to in all residential zones,. Auburn is considered “Tier 1” and must allow 4 middle housing du/on all lots zoned predominantly residential, 6 middle housing du/lot within ¼ of a major transit stop, and 6 middle housing du/lot if at least two are affordable. The bill also includes considerations for parking requirements and for the subdivision of land under single-unit attached middle housing options like townhomes allowing for ownership of the land under the unit.

HB 1337, also passed in May 2023, amends RCW 36.70A.696 expanding accessory dwelling unit (ADU) definitions and easing development regulations. Jurisdictions are now required to permit two ADUs per lot in city limits and within GMA urban growth areas. Cities may not require the owner to occupy the property, may not prohibit sales as an independent unit, must allow an ADU of at least 1,000 square feet and adjust zoning to be consistent, set consistent parking requirements, and may not charge more than 50% of impact fees charged for the principal unit.

HB 1042 permits the conversion of existing commercial office and mixed-use buildings for residences. Cities may not impose restrictions on housing unit density, parking requirements in excess of the current parking, additional permitting requirements, excess design standard requirements, exterior design or architectural requirements beyond health and safety, prohibitions on the additions of housing, current energy code requirements for unchanged portions of the building, and transportation concurrency or SEPA study.

Regional Planning and Growth Targets

PSRC VISION 2050 - Regional Housing Strategy

In 2022, Puget Sound Regional Council (PSRC) developed a Regional Housing Strategy to support local 2024 comprehensive plan updates. The strategy is part of the region’s plan for growth known as VISION 2050. The region’s vision for 2050 is to provide exceptional quality of life, opportunity for all, connected communities, a spectacular natural environment, and an innovative, thriving economy.

The goal of the Regional Housing Strategy is to ensure that all people have a range of safe and affordable housing choices to create a healthy and prosperous future for the region, including eliminating racial disparities in access to housing. The PSRC region is about two years behind in housing production, with an even greater deficit for affordable housing, and continues to face acute housing challenges. If we are to meet the region’s housing needs now and, in the future, cities, counties, agencies, coalitions, businesses, and other housing advocates need to begin to implement these strategies.

With a projected need for more than 800,000 new housing units and more than a third of households anticipated to be at moderate- and lower-income levels, VISION 2050 aims to substantially increase the construction of housing and to build more housing that is affordable to more families. The Regional Housing Needs Assessment concluded that about 34% of new housing will need some level of public incentive – ranging from flexible development standards to direct subsidy — to be affordable to households earning less than 80% area median income (AMI). In response to this need, the Regional Housing Strategy calls for three areas of action:

1. **Supply: Build more housing of different types.**
   To meet the region's vision for a more livable, prosperous, and equitable future, more housing is needed of different types, costs, and access to jobs, transit, and services.

2. **Stability: Provide opportunities for residents to live in housing that meets their needs**
   As the region grows and becomes a more expensive place to live, many households are under serious threat of being displaced from their communities. More housing options and strategies are needed to help people have the option to stay in their neighborhoods, with an emphasis on lower-income communities and Black, Indigenous, and People of Color (BIPOC) communities that have been systemically excluded from homeownership opportunities.

3. **Subsidy: Create and sustain long-term funding sources to create and preserve housing for very low-income households and unhoused residents**
   At the lowest income levels, the market is not capable of building housing at an affordable cost. Eliminating the cost burden for households will require a major increase in funding to subsidize housing costs and to build more housing affordable to households earning less than $50,000 per year.

PSRC VISION 2050 – Multicounty Planning Policies

The Multicounty Planning Policies (MPPs) contained in VISION 2050 and produced by the PSRC, include policies and actions as well as the Regional Growth Strategy, which promotes a focused regional growth pattern and serves as a guide for counties and cities as they set local growth targets through their countywide processes to implement the strategy. PSRC and local jurisdictions are expected to address these actions through their planning and work programs.

VISION 2050 establishes twelve multicounty planning policies in the PSRC region about housing. The policies aim to address an overarching goal where the region preserves, improves, and expands its housing stock to provide a range of affordable, accessible, healthy, and safe housing choices to every resident. The region continues to promote fair and equal access to housing for all people.

Housing Countywide Planning Policies

King County

King County established housing countywide planning policies (CPPs) in 2021 to reflect a commitment to address dramatic housing price increases, which resulted in 156,000 extremely low to low-income households cost-burdened by housing. The policies also address findings that Black, Hispanic, Indigenous, and extremely low-income households are among those most disproportionately impacted by housing cost burden.

The county's overarching goal is to provide a full range of affordable, accessible, healthy, and safe housing choices to every resident in King County. All jurisdictions work to:

- preserve, improve, and expand their housing stock;
- promote fair and equitable access to housing for all people; and
- take actions that eliminate race-, place-, ability-, and income-based housing disparities.

There are 27 housing CPPs as of August 7, 2023. On July 25, 2023, the Local Services and Land Use Committee recommended amendments to the housing CPPs. The amendments are intended to incorporate legislative required changes especially due to HB 1220, which substantively amended the Growth Management Act to require jurisdictions to plan for and accommodate housing needs and resulted in other substantive changes to how jurisdictions plan for housing in the housing element of their comprehensive plan.

Pierce County

In May 2022, Pierce County adopted eight affordable housing policies that shall at a minimum "consider the need for affordable housing, such as housing for all economic segments of the population and parameters for its distribution". Based on the adopted housing targets compared to the existing housing stock, there is a need for an additional 37,773 additional housing units within the 20-year planning period in unincorporated Pierce County.

Buildable Land Capacity

The 2021 King County and Pierce County Buildable Lands Reports analyzed parcel-level capacity for new jobs and housing units in Auburn, classifying parcels as Vacant, Redevelopable, or Constant (i.e. unlikely to change) based on land values, home values, zoning, and other data. As part of this comprehensive planning process, the data from these Buildable Lands Reports was further refined to take into account development since 2019 and other potential parcels deemed developable by the city and consultant team.

Based on the available land capacity as currently zoned, Auburn shows a deficit of capacity for both the 2044 housing unit and jobs targets, as detailed below. These figures differ from the total housing units and total job capacity described in the *2021 Urban Growth Capacity Report, Exhibit 31* because city zoning as of 2023 was

used for this analysis. The future land use map developed during this comprehensive plan is intended to accommodate these 2044 housing and jobs targets through new zoning and land uses in various corridors and nodes throughout Auburn, and in the Downtown area in particular. The housing unit targets set have since increased with amendments to both counties CPPs, which is explained further in the Land Capacity for Additional Housing section.

Figure 1. Auburn Housing Targets and Capacity

Housing Units	
King and Pierce Counties combined adopted housing unit growth target (per Countywide Planning Policies)	12,112 units (2019-2044) 11,141 units (adjusted to 2021-2044 based on existing and pipeline development from 2019-2021) *(Note: the Pierce County portion of Auburn has a 2020 to 2044 growth target of just 4 units and is thus ignored for this analysis.)*
2021 King County Urban Growth Capacity Report Capacity	7,927 units
2022 Pierce County Buildable Lands Report	656 units
Total Countywide Planning Policies Housing Capacity	8,583 jobs
Employment	
King County adopted employment growth target (per Countywide Planning Policies)	19,520 jobs (2019-2044) *(note: Pierce County has already exceeded their adopted job growth targets for 2035 and has no additional targeted growth)*
2021 King County Urban Growth Capacity Report Capacity	7,927 jobs
2022 Pierce County Buildable Lands Report	656 jobs
Total Countywide Planning Policies Employment Capacity	8,583 jobs
Estimated Capacity under current zoning	8,236 jobs

2 Population and Community Characteristics

This section describes who lives in Auburn, including total population, age distribution, household size, racial and ethnic composition, and languages spoken at home. This information allows the city an understanding of who the City serves and whether some people have special housing needs.

Auburn Population and Community Characteristics

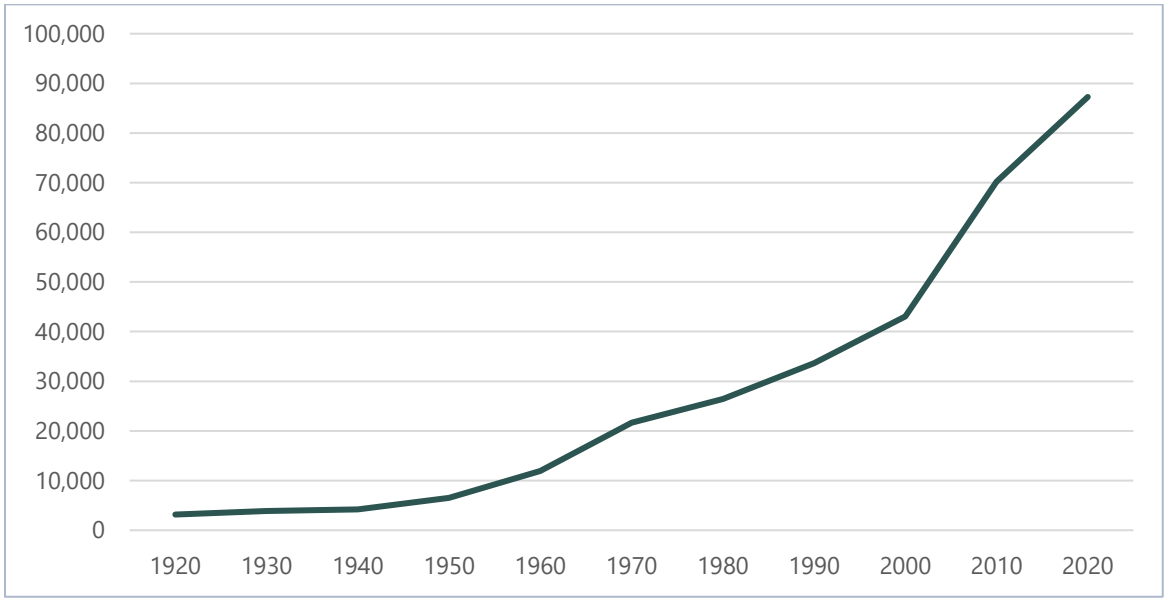
Figure 2. Population Growth Rate Comparison

	2019 Population **Estimate**	2020 Population **Census**	2021 Population Estimate	2022 Population Estimate	2023 Population Estimate	2019-2023 **Average** Annual Growth
Auburn	86,353	87,256	88,080	88,750	88,820	0.71%
King County	2,227,755	2,269,675	2,287,050	2,317,700	2,347,800	1.32%
Pierce County	905,841	920,393	928,200	937,400	946,300	1.10%

Source: OFM Forecasting and Research Division, 2023

Auburn is located mid-way between Seattle and Tacoma, Washington's two largest cities, and is primarily situated within King County, with a small portion of the City extending into Pierce County. As of 2023, it was ranked the 14th most populous city in Washington, with a population of 88,820.[2] Its location in the densely populated and urbanized area between Seattle and Tacoma has provided for substantial population growth since World War II and particularly since 2000, as shown in Figure 3.

Figure 3. Auburn Population (1920-2020)



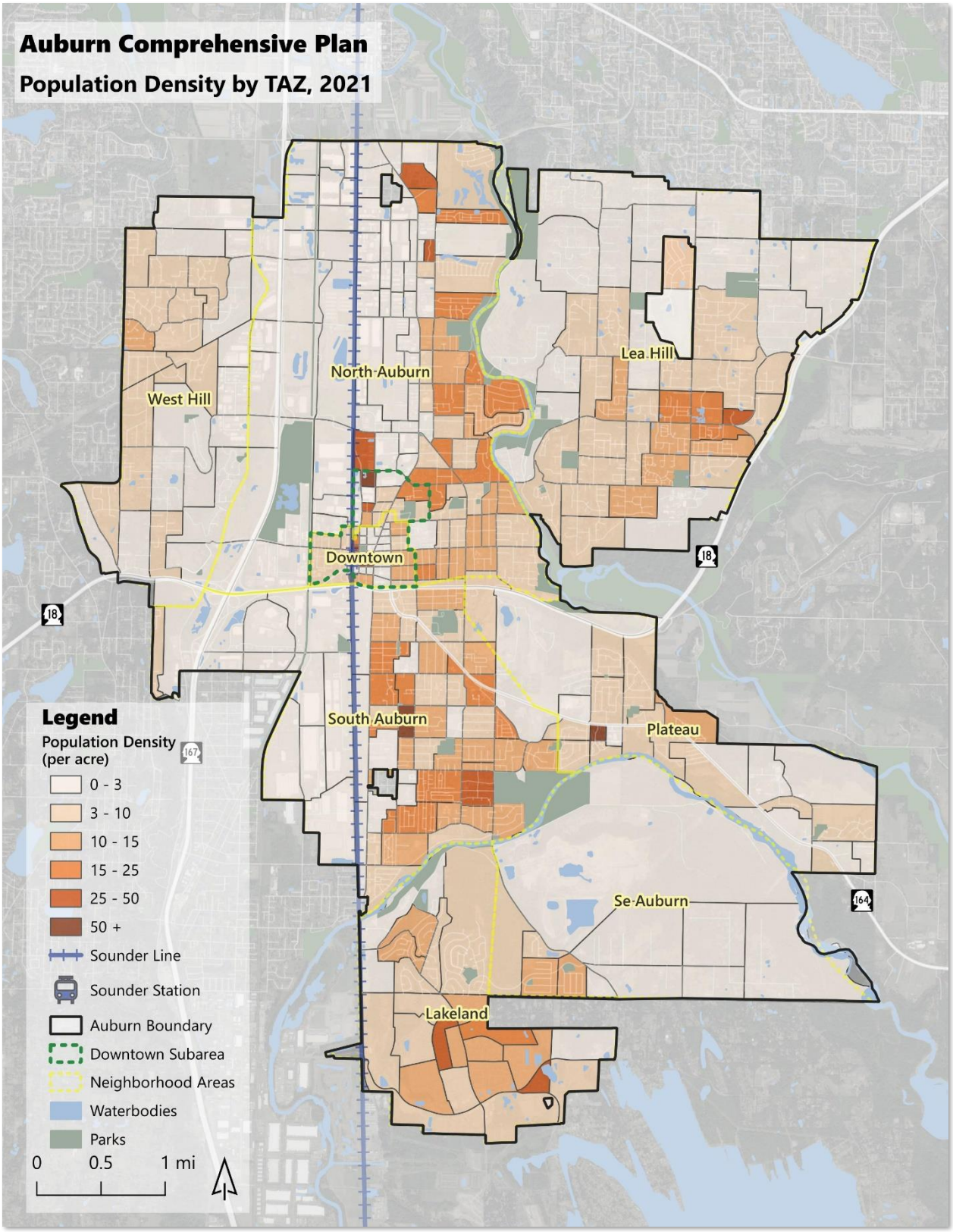
Source: Washington Office of Financial Management

In the 1950-2000 era, the City grew rapidly, with an average population increase of 4.2% per year and a total increase of 36,550 residents over the 50-year period. In the 22-year period since 2000, Auburn has grown by another 45,703 residents, outpacing the growth of the previous 50 years as well as annexing three areas with substantial development potential since 1990. Housing units increased by 12%

[2] Washington Office of Financial Management (OFM) April 1, 2023 Official Population Estimates

between 2010 and 2020, though population increased by 25% over the same period, suggesting that the supply of housing units may not be keeping up with demand. Rapidly increasing population can also have effects on many aspects of planning and city management, including infrastructure capacity, transportation and traffic, and school capacity.

Figure 4. Population Density



Source: King & Pierce County Buildable Lands Reports GIS Data, City of Auburn, Leland Consulting Group

- Population density is generally between 3-10 persons per acre across the City with greater nodes of density in North Auburn, South Auburn, Lea Hill, and Lakeland Hills; where there are smaller lots with single-family homes and attached housing.

Population by Age

Based on the 2020 Census, the last universal assessment of population structure, Auburn's population of 19 years old or younger made up 27.9% of the total population, and the senior population (ages 65 years and over) was 11.4% of the total population.

Figure 5 compares Auburn to King County and Pierce County averages using broad age categories.

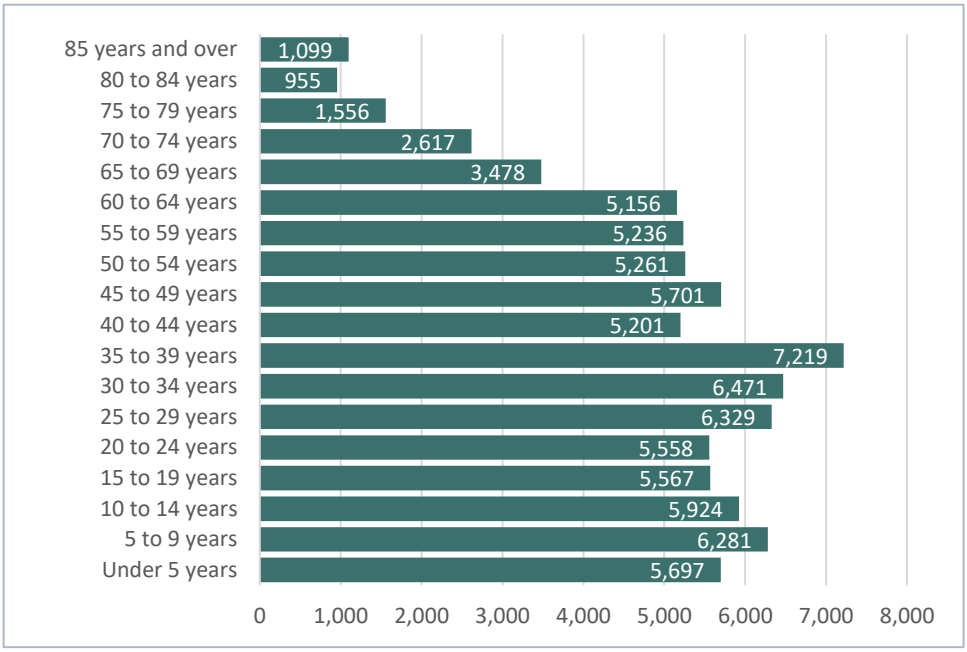
Figure 5. Auburn, King, and Pierce County Age Category Distributions, 2020

	19 and Younger	20 – 64 Years	65 Years and Over
Auburn	27.9%	60.7%	11.4%
King County	22.3%	64.5%	13.2%
Pierce County	25.9%	60.3%	13.8%

Source: US Decennial Census, 2020

- Auburn has a higher percentage of residents 19 years old and younger than both King and Pierce County averages, a similar percentage of residents between 20-64 years old as both counties, and a lower percentage of residents over 65 years old compared to both counties, but the differences are not substantial.

Figure 6. Age Category Distributions, 2020



Source: US Decennial Census, 2020

- The largest age group in Auburn is 35 to 39 years old, making up 8.5% of the population total. This group will start turning 65 by 2050.
- In the next ten years, another 10,392 individuals will be 65 years or older, adding another 12% to the retiree population.
- Auburn's growing population is becoming younger over the years with those under 20 years old making up over a quarter of the population.

Household Size

Figure 7. Average Household Size: Auburn, King County, and Pierce County

	Average Household Size	Average Family Size
Auburn	2.71	3.27
King County	2.40	3.02
Pierce County	2.61	3.10

Source: 2021 American Community Survey 1-Year Estimate

- According to American Community Survey estimates in 2021, Auburn has an average household size of 2.71 persons, a slight increase from 2.67 in 2010.
- The median household size is higher compared to King County which has an average household size of 2.40 persons, and higher than Pierce County which has an average household size of 2.61 persons.

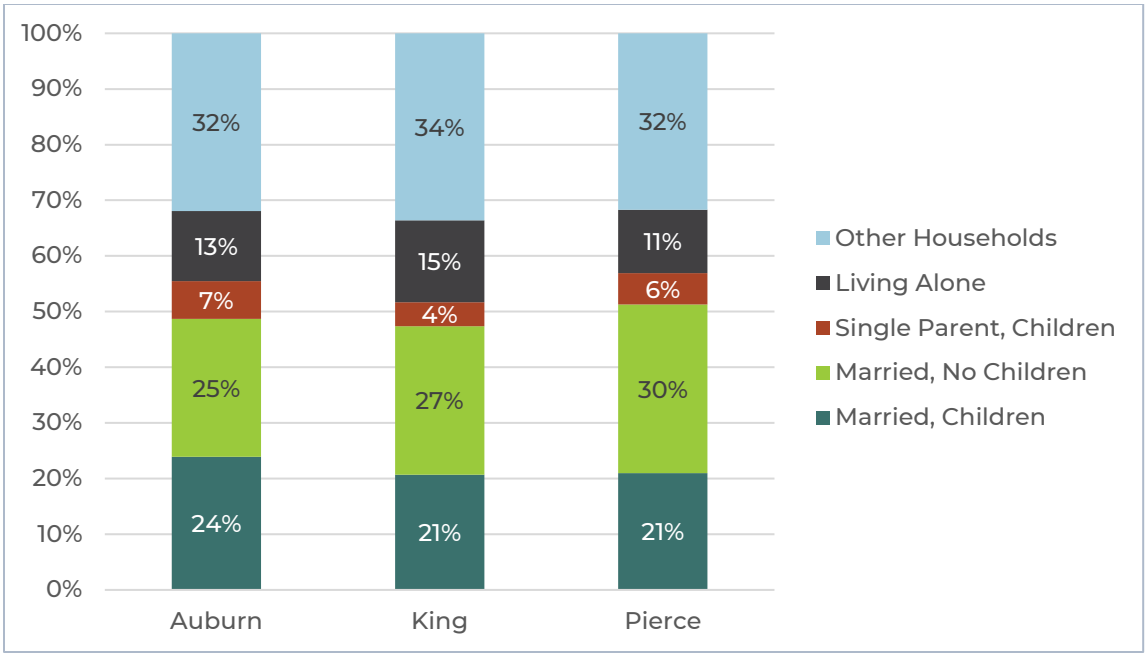
Figure 8. Household Size: Auburn, King County, and Pierce County

Household Size	Auburn	King	Pierce
1-person household	22.6%	29.9%	24.4%
2-person household	32.8%	34.0%	34.1%
3-person household	18.1%	15.1%	17.1%
4-or-more-person household	26.6%	21.1%	24.4%

Source: 2020 American Community Survey 5-Year Estimates, Table S2501

- Auburn has a lower percentage of 1-person households compared to King County but is similar to Pierce County.
- There is no significant difference in percentage between 2- and 3-person households in Auburn compared to King and Pierce counties.
- One-third of Auburn households are 2-person households.

Figure 9. Households and Families: Auburn, King County, and Pierce County



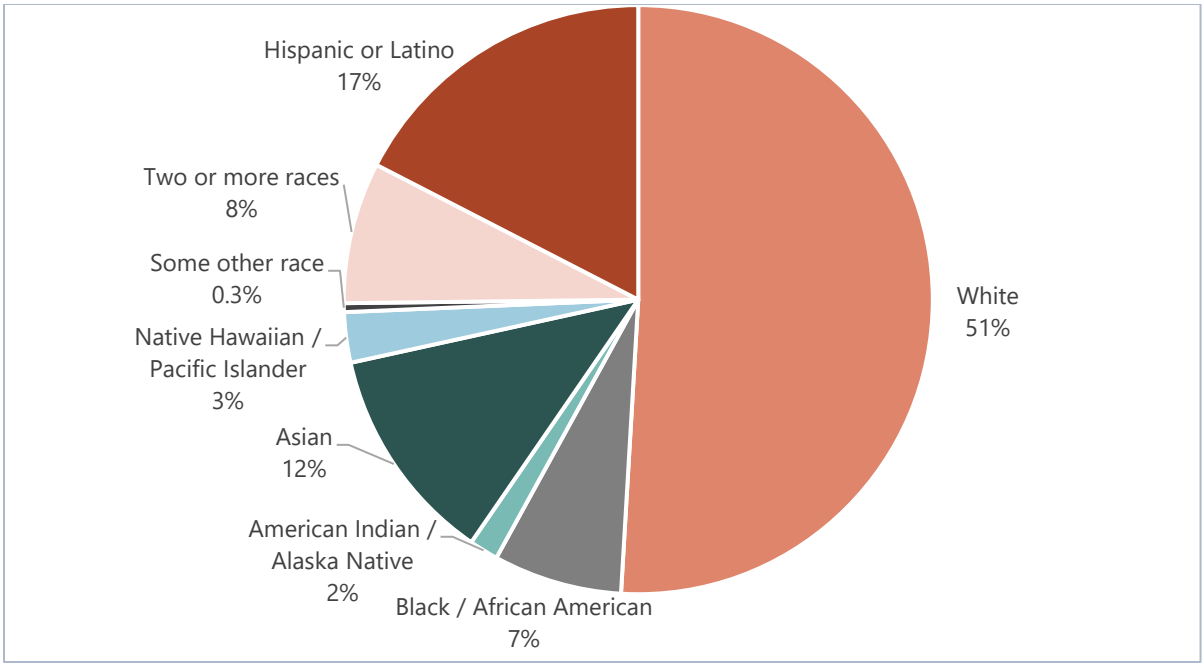
Source: 2017-2021 American Community Survey 5-Year Estimates, Table DP02

- A quarter of households in Auburn are married with no children.
- Auburn has a slightly higher percentage of those married with children compared to King and Pierce counties.
- In general, Auburn's household composition is similar to both King and Pierce Counties.
- Auburn has a slightly larger percentage of single parents with children households (7%) compared to King County (4%) and Pierce County (6%).

Racial Composition

Auburn's racial and ethnic makeup is more diverse than that of King County and of Washington as a whole, with 49% of residents identifying as BIPOC (Black, Indigenous, or People of Color), compared with 43% in King County and 34% statewide. The City has become increasingly diverse since 2010, with notable increases in the share of Hispanic/Latino residents from 10% to 17%, Black/African American residents from 5.7% to 7%, and Native American, Hawaiian, and Alaskan residents from 3% to 4.8%.

Figure 10. Race and Ethnicity in Auburn (2021)



Source: 2020 ACS 5-Year Estimates, Table DP05

An increasingly diverse population can present language accessibility issues. About 69% of Auburn residents speak only English at home, with 12% speaking Spanish, 9% speaking an Asian or Pacific Island language, 7% speaking other Indo-European languages, and 2% speaking other languages at home. Notably, around 45% of Auburn residents who speak a language other than English at home have limited English proficiency, an important consideration as the city continues to become more diverse.

	Auburn	King County	Pierce County
English Only	70.1%	71.6%	84.9%
Spanish	11.5%	6.6%	6.0%
LEP Spanish	42.6%	40.6%	33.7%
Other Indo-European Languages	7.1%	6.9%	2.7%
LEP Other Indo-European Languages	41.2%	26.0%	32.0%
Asian and Pacific Island Languages	9.2%	12.1%	5.5%
LEP Asian **and Pacific** Island Languages	47.1%	43.7%	44.5%
Other Languages	2.1%	2.8%	0.8%
LEP Other Languages	33.0%	38.0%	32.6%

Languages Spoken at Home

Figure 11. Languages Spoken at Home
Source: 2017-2021 American Community Survey 5-Year Estimates, Table S1601

- An increasingly diverse population can present language accessibility issues. About 70% of Auburn residents speak only English at home, with 11% speaking Spanish, 9% speaking an Asian or Pacific Island language, 7% speaking other Indo-European languages, and 2% speaking other languages at home.
- Notably, around 40% of Auburn residents who speak a language other than English at home have limited English proficiency (LEP), an important consideration as the City becomes more diverse.

Population Living with a Disability

Figure 12 compares Auburn, King County, and Pierce County populations living with a disability. Figure 13 shows characteristics of Auburn's population living with a disability.

Figure 12. Auburn, King County, Pierce County Population Living with a Disability

Total civilian non-institutionalized population		With Disability	% of Total
Auburn	84,846	10,160	**12.0%**
King County	2,238,712	216,031	**9.6%**
Pierce County	896,180	122,382	**13.7%**

Source: 2017-2021 American Community Survey 5-Year Estimates, Table S1810

Figure 13. Auburn's Estimated Population Living with a Disability

	Total	With a disability	Percent with a disability
Total civilian non-institutionalized population	84,846	10,160	12.0%
Population 5 to 17 years	16,204	1,345	8.3%
With a hearing difficulty	(X)	207	0.9%
With a vision difficulty	(X)	205	0.9%
With cognitive difficulty	(X)	731	4.5%
With ambulatory difficulty	(X)	46	0.3%
With a self-care difficulty	(X)	156	1.0%
Population 18 to 64 years	53,507	11,126	20.8%
With a hearing difficulty	(X)	920	1.7%
With a vision difficulty	(X)	1,008	1.9%
With cognitive difficulty	(X)	2,837	5.3%
With ambulatory difficulty	(X)	2,620	4.9%
With a self-care difficulty	(X)	1,374	2.6%
With an independent living difficult	(X)	2,367	4.4%
Population 65 years and over	9,439	6,709	71.1%
With a hearing difficulty	(X)	1,381	14.6%
With a vision difficulty	(X)	581	6.2%
With cognitive difficulty	(X)	834	8.8%

With ambulatory difficulty	(X)	2,385	25.3%
With a self-care difficulty	(X)	156	7.9%
With independent living difficulty	(X)	1,372	14.5%

Source: 2017-2021 American Community Survey 5-Year Estimates, S1810

- Approximately 12% of Auburn's total population is living with a disability. This is higher compared to King County (9.6%) and slightly lower than Pierce County (13.7%).
- About 20% of the adult population aged 18 to 64 are living with a disability.
- The most prevalent disability for those under 18 years is cognitive difficulty and also for those 18-64.
- A quarter of those over the age of 64 experience ambulatory difficulty (difficulty walking).

Workforce and Commuting Profile

Understanding future population and employment growth is essential for planning. King County, Pierce County, the Puget Sound Regional Council (PSRC), and the Washington State Office of Financial Management (OFM) are each involved in forecasting population and job growth in Auburn over the coming decades, and this section will summarize the currently available forecasts from these agencies which can be used to inform future actions on land use, infrastructure, housing, economic development, and transportation in Auburn.

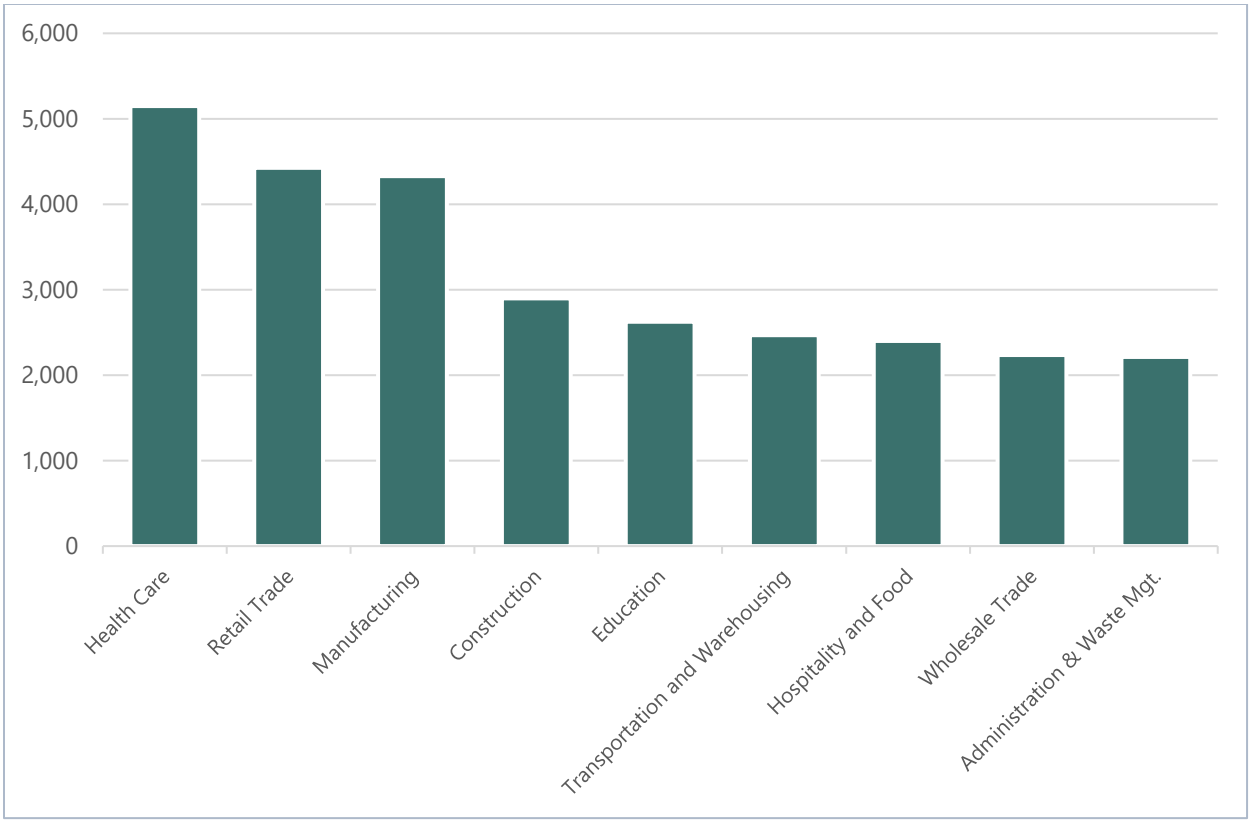
Jobs to Housing Ratio

The Jobs to Housing ratio in Auburn as of 2021 was 1.48. This is higher than the King County average of 1.34, showing Auburn's importance as a regional jobs center, particularly in Manufacturing and Health Care.

Major Employment Locations

The top ten industry sectors in which Auburn residents were employed in 2020 is shown in Figure 14. Auburn has traditionally been a blue collar community since its initial early 20th century population boom stemming from the construction of a railroad freight terminal. Despite a decrease in manufacturing employment in the 1990s and early 2000s, 12% of Auburn residents were currently employed in the industry in 2020. Since the recession of 2008, the number of Auburn residents employed in health care, retail, and construction have increased substantially and the overall diversity of jobs worked by Auburn residents has increased, reflecting the rapidly increasing population and shifts in demographics discussed previously. Between the 2019 and 2020 data, healthcare jobs overtook manufacturing for the highest share of jobs worked by Auburn residents.

Figure 14. Auburn Workforce Top Industry Sectors (2020)

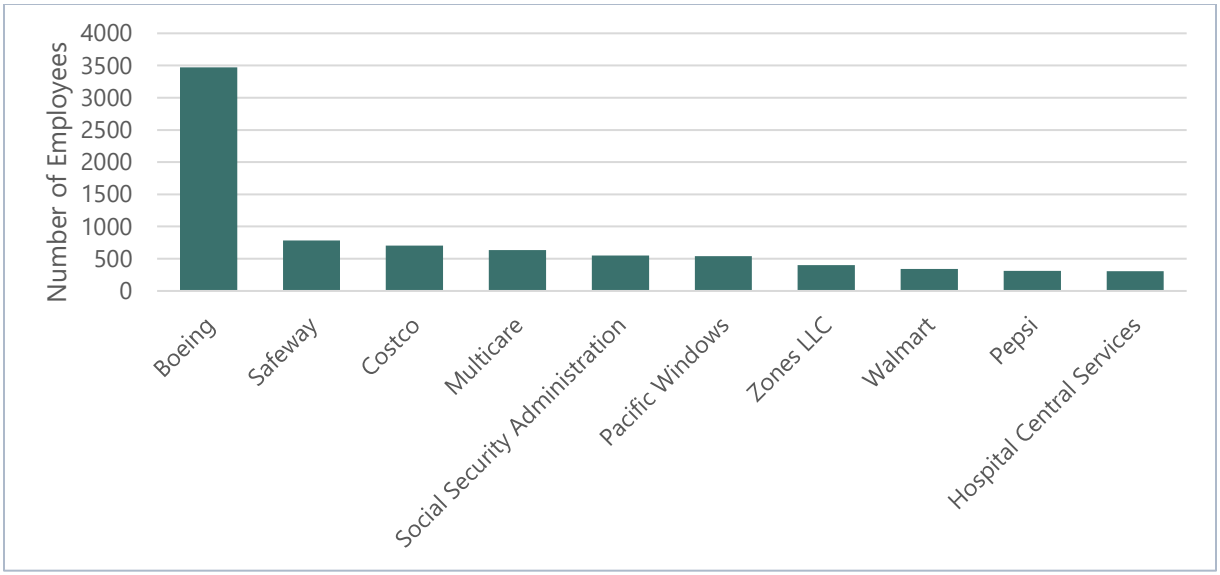


Source: US Census Longitudinal Employer Household Dynamics (LEHD), via Census On The Map

The top employers in Auburn are shown in Figure 15. Boeing is the largest employer in the City, as it has been for several decades, followed by a variety of retail, manufacturing, and wholesale businesses, as well as Multicare, the regional hospital and health care center in Downtown Auburn. The top ten employers in Auburn currently account for about 23% of the jobs in the City, down from 55% in 2011 and 85% in 2002,[3] further demonstrating the increasing diversity of business activity in Auburn in recent decades.

Figure 15. Top Ten Employers in Auburn (2022)

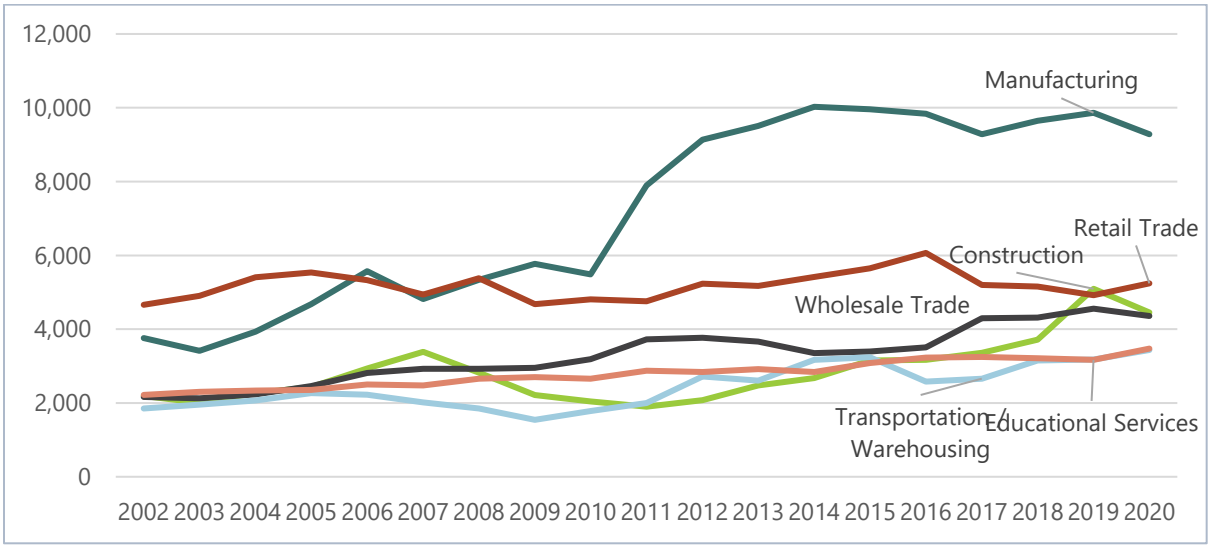
[3] 2015 Auburn Comprehensive Plan



Source: Washington Employment Security Department

As of 2020, there were 45,804 jobs located in Auburn. The top sectors are shown in Figure 16 along with their change over the past two decades. Despite decreases in the manufacturing industry from 1990 and 2000 noted in Auburn's previous (2014) comprehensive plan, the sector has seen rapid increases since the 2008 financial crisis and now accounts for over 20% of jobs in the City. There have been recent increases in construction jobs and interestingly in retail, even with the onset of the COVID-19 pandemic in the most recent data year. Full impacts of the pandemic on Auburn's job growth and distribution will become clearer when further years' data becomes available from the Census.

Figure 16. Top Industry Sectors in Auburn (2002-2020)

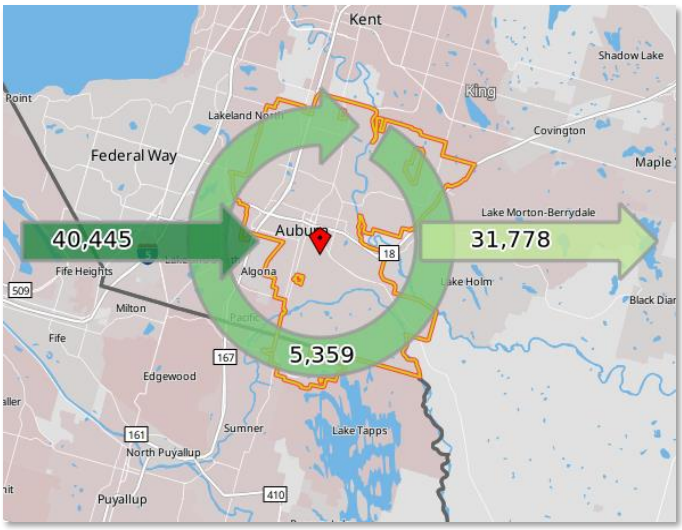


Source: US Census Longitudinal Employer Household Dynamics (LEHD), via Census On The Map

Daily Inflow and Outflow: The Auburn Commute

As of 2020, 5,359 Auburn residents, or 15% of the population both lived and worked in the City. The remaining 85% of those who worked in Auburn commuted from outside the City. As shown in Figure 17, there are more people who work in Auburn and live elsewhere than those who live in Auburn and work elsewhere. This results in an increased pool of residents and employees who engage with City services and businesses. Although this data predates the COVID-19 pandemic, the relatively large share of in-person manufacturing and retail jobs in the City suggests that the commuting patterns may have been less affected by the pandemic in Auburn compared with other areas which have a higher share of office jobs.

Figure 17. Auburn Daily Commuting Patterns (2020)



Source: US Census On The Map

Means of Transportation and Travel Time to Work

Means of transportation and travel time to work indicators provide a sense of how Auburn compares to both counties overall in terms of convenience and preference for using alternative modes of transportation (excluding car, truck, or van) and commute burden. Figure 18 shows the means of transportation for workers over 16 years old in Auburn, King County, and Pierce County, while Figure 19 provides mean travel time to work for workers over 16 years who do not work at home.

Figure 18. Means of Transportation to Work

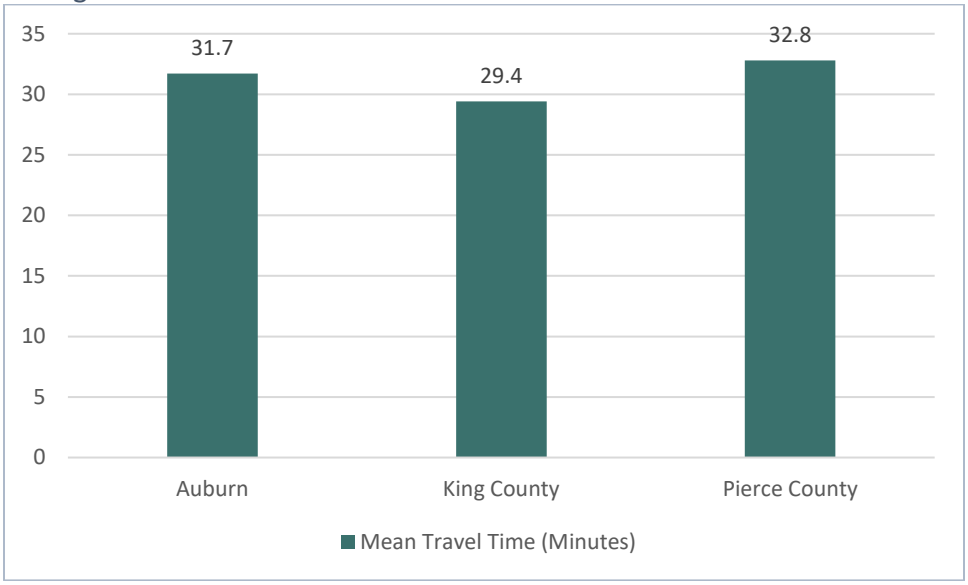
Total Workers 16 and Older	Auburn	King	Pierce
Total Workers 16 and Older	42,071	1,203,566	439,523
Car, truck, or van - drove alone	72%	55%	75%
Car, truck, or van - carpooled	12%	9%	10%
Public transportation	5%	11%	3%
Walked	2%	5%	2%
Other means (bicycle, motorcycle, taxi, etc.)	1%	3%	1%
Worked from home	9%	18%	9%

Source: 2017-2021 American Community Survey 5-Year Estimates, Table DP03

- The majority of workers in Auburn, King County, and Pierce County travel by car, truck, or van alone.

- More workers carpool in Auburn (12%) compared to King (9%) and Pierce (10%) counties.
- Only 1% of commuters travel by other means in Auburn such as by bicycle, motorcycle, or taxi.
- The mean travel time to work in Auburn is consistent with travel times in King and Pierce counties.

Figure 19. Mean Travel Time to Work



Source: 2017-2021 American Community Survey 5-Year Estimates, Table DP03

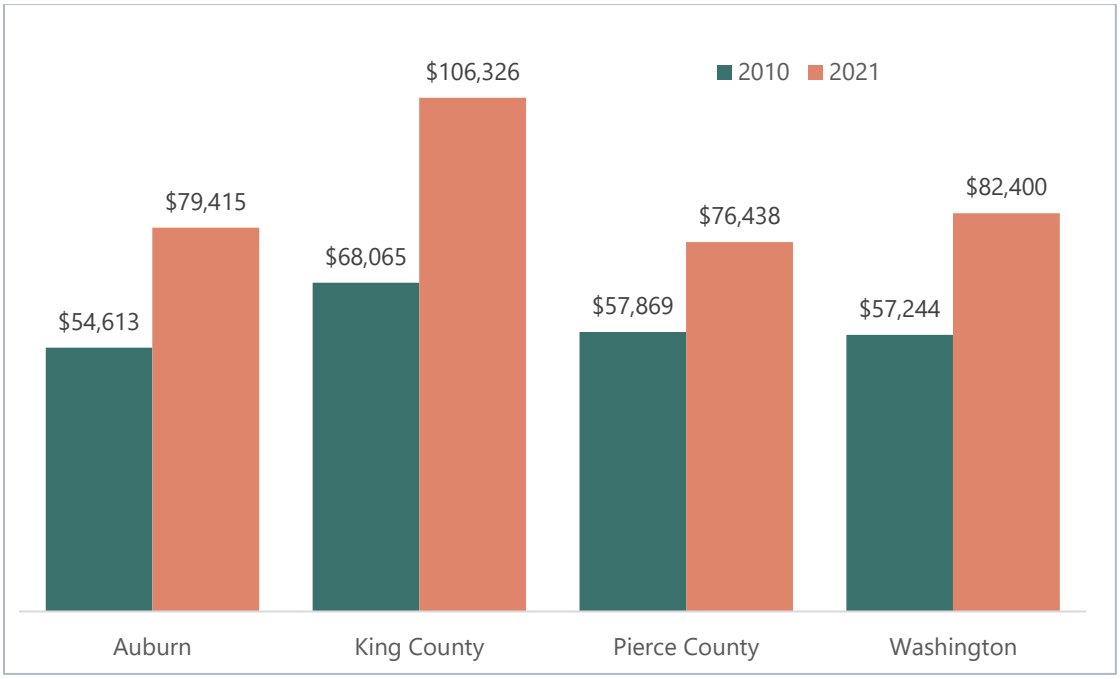
3 Household Economics

This section examines household incomes, and households' ability to provide food, shelter, and transportation. It helps estimate what portion of the population does not have the resources necessary to meet basic needs, as well as where assistance may be most beneficial.

Household Income

In 2021, Auburn was estimated to have 30,547 occupied households, an increase of 17% since 2010. The average household size was 2.77, larger than the King County average of 2.44. This is likely due to the larger share of family households in Auburn, at 72%, compared with 57% in King County, and a smaller share of householders living alone. This reflects Auburn's suburban development patterns compared with some of the denser urban areas in Seattle and its closer-in suburbs. About 59% of Auburn's households are homeowners and 41% are renters, a slightly lower share of homeowners than Washington as a whole, but higher than the King County average.

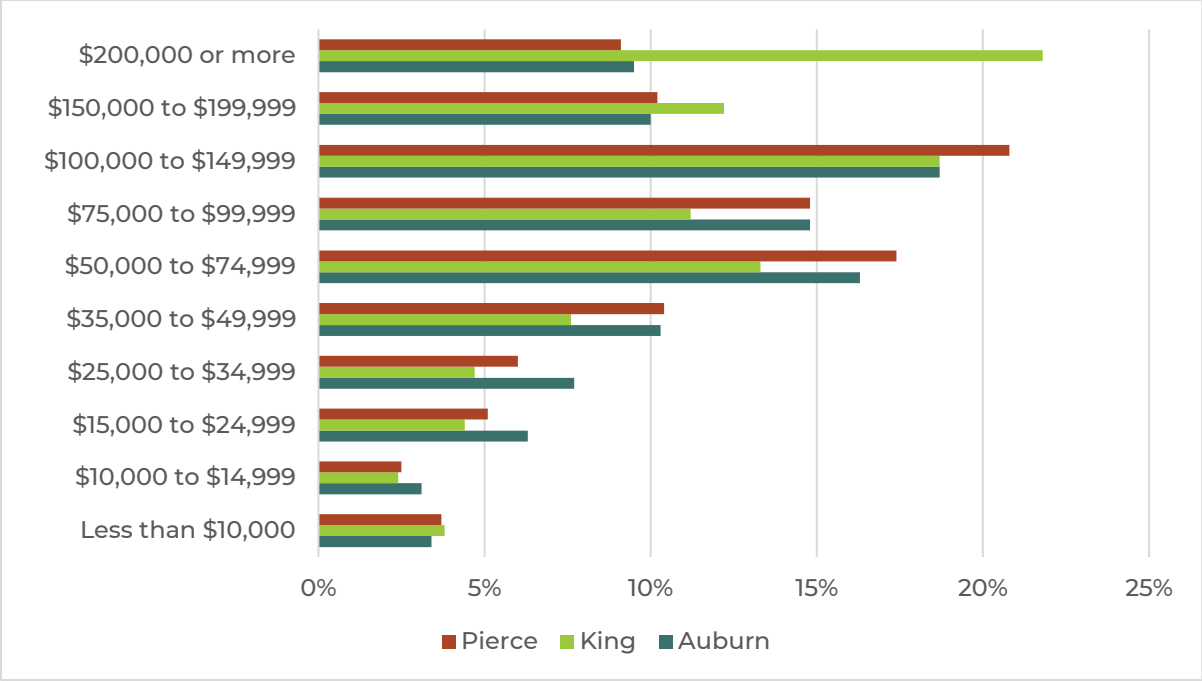
Figure 20. Inflation-Adjusted Median Household Income in Auburn with Regional Comparison (2021)



Source: 2010, 2021 ACS 5-Year Estimates, Table S2503

Auburn's median household income was $79,415 in 2021, an increase of 45% from $54,613 in 2010. As shown in Figure 20, Auburn's incomes are on par with statewide and Pierce County averages but lag behind the higher incomes of Seattle residents and other King County households. Rental households in Auburn earn significantly less than ownership households – the average renter household earns $50,091 compared with $106,521 for ownership households. Auburn's BIPOC households are more likely to be renters. Around 46% of renters are non-white residents, compared to 33% of homeowners. These types of intersections of income, race, and access to housing and wealth-building are important considerations when planning to accommodate the needs of all Auburn residents.

Figure 21. Household Income Segmentation



Source: 2017-2021 American Community Survey 5-Year Estimates, Table S1901

- Auburn is more similar to Pierce County in household income segmentation than it is to King County.
- 31% of households in Auburn earn less than $50,000 per year, compared to 28% in Pierce County and 23% in King County.
- The American Community Survey estimates that 9.6% of Auburn's population is below the poverty level (ACS 2017-2021). This is slightly higher than Pierce County (8.8%) and King County (8.4%).

Median Household Income by Size Estimates

Figure 22. Median Household Income by Household Size

	Auburn	King County	Pierce County
Average Median Income:	$79,415	$106,326	$82,574
1-person households	$36,164	$56,235	$43,374
2-person households	$81,881	$117,288	$86,479
3-person households	$103,806	$140,378	$101,655
4-person households	$111,504	$164,768	$109,688
5-person households	$102,773	$146,709	$111,186
6-person households	$114,849	$133,729	$116,300
7-or-more-person households	$102,332	$124,283	$132,707

Source: 2017-2021 American Community Survey 5-Year Estimates, Table B19019

- The average median household income across all households is lower in Auburn ($79,415) than in King ($106,326) and Pierce ($82,574) counties.
- In Auburn 7-or-more-person households have a lower median income than those with 5 or 6-person households.
- King County households have significantly higher median income than Auburn households regardless of household size.

Food Stamps/SNAP Program

- Approximately 15.6% of households in Auburn receive food stamps (ACS, 2017-2021 Estimates, Table DP03).
    - This is higher compared to the percentage of households receiving food stamps in King and Pierce Counties, where 8% of households in King County receive food stamps, and 11.7% of households in Pierce County receive food stamps.
- Approximately 54% of households in Auburn receiving food stamps have children under 18 years old.
    - This is significantly higher compared with King County, where 40% of households receiving food stamps have children under 18, and higher compared with Pierce County, where 45% of households receiving food stamps have children under 18 years.
- 16.8% of households receiving food stamps in Auburn identify as being Hispanic or of Latino origin.
- 35% of households receiving food stamps in Auburn have had 2 or more workers in the past 12 months.
- According to the Office of Superintendent of Public Instruction Washington State as of October 2022, 71.3% of the Auburn School District student population are eligible for Free or Reduced- Price meals. This is significantly higher than the Washington State percent of 52% eligible students out of the total enrolled population.
    - 12,312 Auburn School District students out of a total of 17,165 enrolled were eligible for free lunches as of October 2022 for the 2022-2023 school year.

Homeless Population

Estimating the total homeless population is difficult. The U.S. Department of Housing and Urban Development requires jurisdictions to conduct a Point in Time (PIT) count, which is an estimate of people experiencing sheltered and unsheltered homelessness on a single night. In King County, the 2022 PIT count estimated 13,368 individuals experiencing homelessness, a significant increase since the reported 2014 count of 3,123. In prior years, the unsheltered PIT was conducted by volunteers on one night in January, using a combination of a census and a survey.

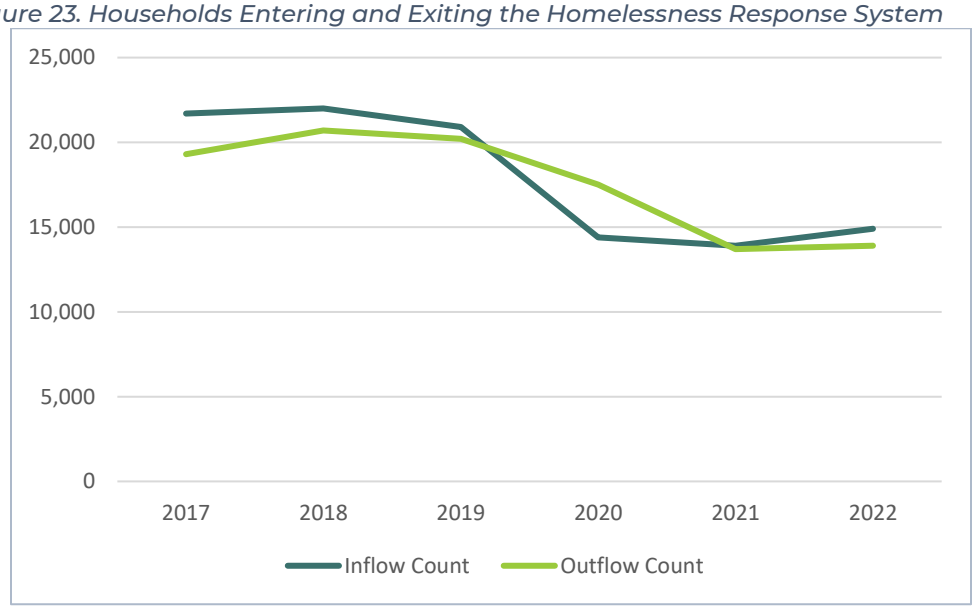
The PIT is widely understood to be an undercount, especially as it represents a single night rather than a full year. Some likely individuals and families are

improvising with camping, sleeping in their cars, rotating through weekly motels, and spending nights in someone's spare room or couch with no fixed living situation. The recent King County Department of Community and Human Services Cross Systems Homelessness Analysis found that at least 40,871 people experienced homelessness at some point in 2020 (KCRHA, 2022).

Unsheltered homeless counts illuminate the local gap in services for the homeless. Homelessness continues to have a disproportionate impact on communities of color. Based on the PIT analyses, 25% of people experiencing homelessness in King County identify as Black/African-American, but according to the 2020 U.S. Census, only 7% of King County's population identifies as Black/African-American. Similarly, 9% of people experiencing homelessness identify as American Indian, Alaskan Native, or Indigenous, but that group makes up only 1% of King County's population (KCRHA, 2022).

As shown in Figure 23. Households Entering and Exiting the Homelessness Response SystemFigure 23, in 2022 the number of households entering the homelessness response system was higher than the number of those exiting it, by about 1,000.

Figure 23. Households Entering and Exiting the Homelessness Response System



Source: Homeless Management Information System (HMIS) as of July 1, 2023

- According to the King County Regional Homelessness Authority (KRHA), when the number of households entering the homeless response system is higher than the number of those exiting it, the number of households becoming homeless and receiving services increases.
- More households are entering the system than exiting the system.
- Response efforts to COVID-19 decreased the number of those entering homelessness due to a combination of eviction moratoriums, stimulus

payments, unemployment insurance, emergency rental assistance, and drops in rental prices (King County DCHS, 2021).

Employment and Labor Force Participation

Figure 24. Labor Force Participation and Unemployment Rate

	Population 16+ Years Old	% in Civilian Labor Force	Unemployment rate	% of Civilian Labor Force Below the Poverty Level
Auburn	65,949	68.3%	5.0%	47.4%
King County	1,836,285	70.2%	4.6%	49.9%
Pierce County	718,566	66.1%	5.0%	43.8%

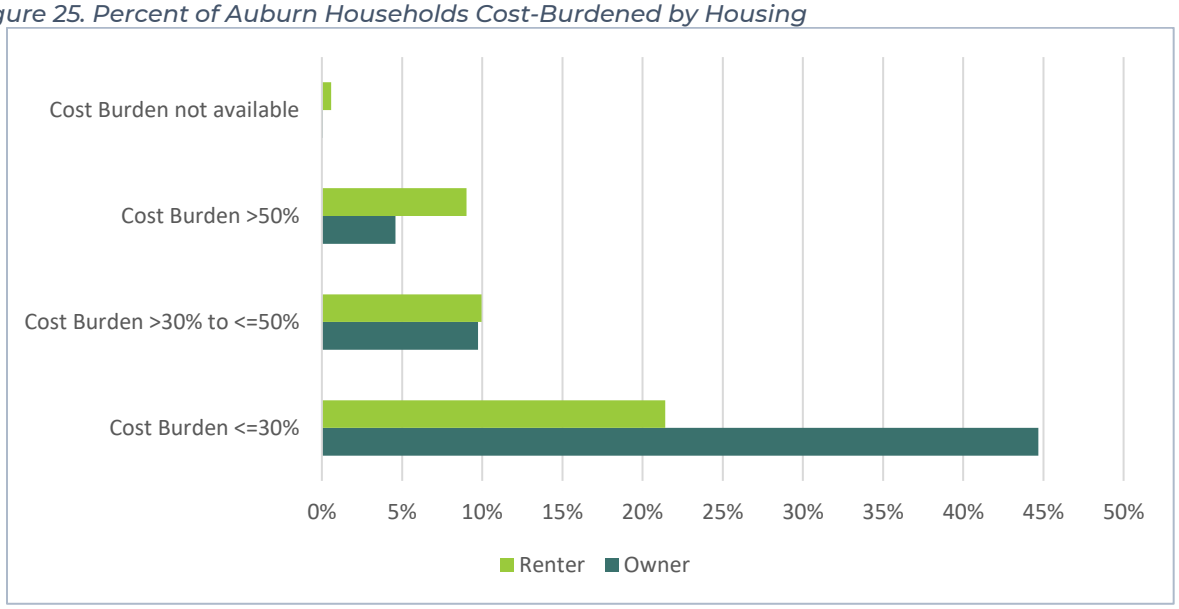
Source: 2017-2021 American Community Survey 5-Year Estimates, Table S2301

- Almost half (47.4%) of Auburn's labor force is below the poverty level. This is slightly lower than King County and slightly higher than Pierce County. This means about half of Auburn's population consists of the "working poor".
- Auburn's unemployment rate is consistent with King and Pierce counties and is exceptionally low at 5%.
- Historically, Auburn has had a higher percentage of labor force below the poverty level than King County, but this has changed in the past five years.

Housing Cost Burden

Households are considered "cost-burdened" if they spend more than 30 percent of their income on housing costs, including rent, mortgage, and utilities. Households that spend more than 30 percent of their monthly income on housing costs, including rent and utilities. A severely cost-burdened household spends more than 50 percent of its monthly income on housing costs. This metric can be used to analyze the gap between housing costs and affordability in Auburn.

Figure 25. Percent of Auburn Households Cost-Burdened by Housing



Source: 2006-2019 Comprehensive Housing Affordability Strategy, HUD

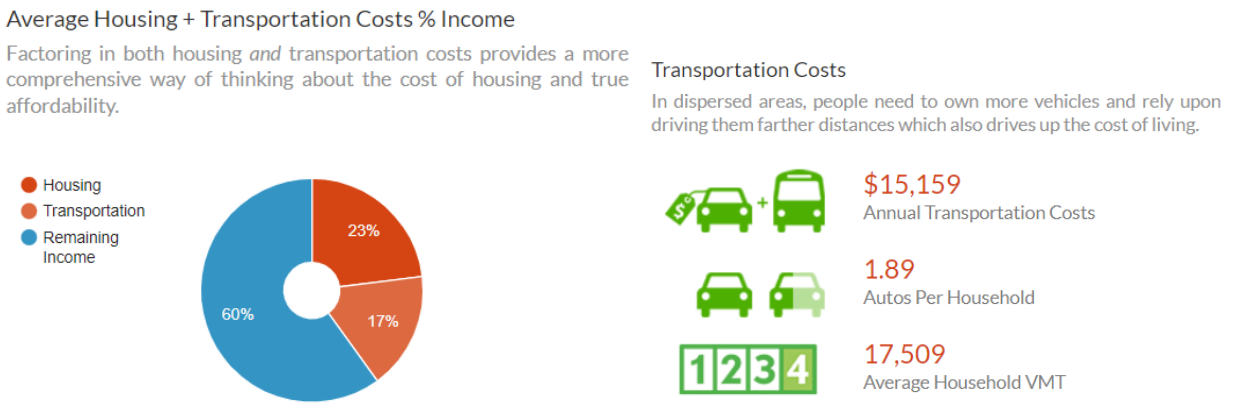
- About 45% of Auburn homeowners are not cost-burdened by housing costs compared to 21% of renters.
- One of every five renter households is either cost-burdened or severely cost-burdened by housing costs in Auburn.
- About 5% of Auburn homeowners are severely cost-burdened by housing.

Housing and Transportation Costs

The standard definition of cost burden does not factor in transportation costs. However, today, housing advocates and researchers stress the importance of considering transportation costs in affordability analyses, because many households relocate to the outer edges of metro areas in search of affordable housing, thereby increasing their transportation costs. Housing costs combined with transportation costs can exacerbate households' ability to meet their basic living needs within their means.

Center for Neighborhood Technology publishes a Housing+ Transportation Affordability Index (H&T Index) (most recently as of 2022), providing a ready-made data source for assessing the possible transportation cost burdening of Auburn residents. The H+ T Index calculates, through a series of statistical models, the transportation and housing costs for the "regional typical" and "regional moderate" household; "typical" means a household earning the regional AMI with the regional average number of commuting workers and persons per household, and "moderate" meaning a household earning 80% of AMI (but having the same number of workers and persons per household). Figure 26 shows that households in Auburn spend a combined 40% of their income on housing and transportation costs. Most households in Auburn spend about $15,000 annually on transportation costs.

Figure 26. Average Housing and Transportation Costs Graphics



Source: Housing and Transportation Affordability Index, http://htaindex.cnt.org/, October 2022

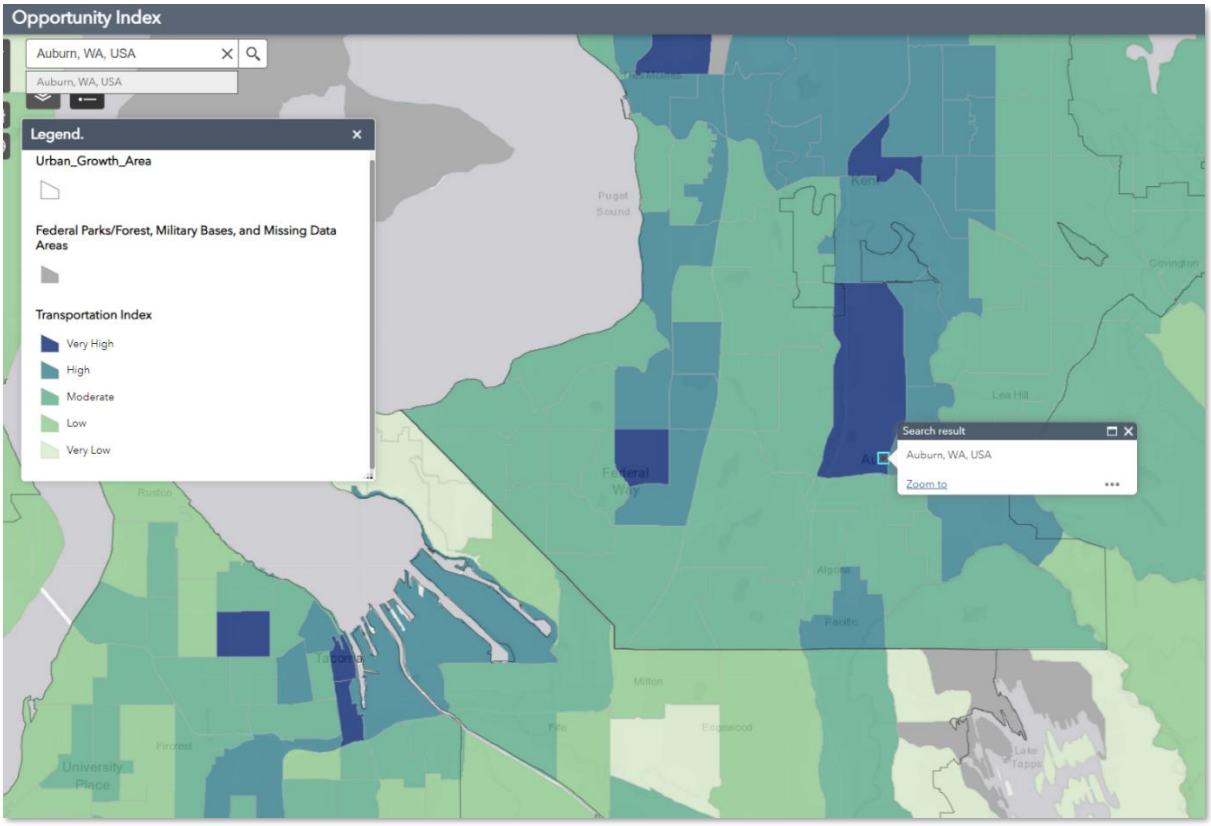
Placing housing near multiple modes of travel can help reduce travel costs to some degree and is supportive of recent legislation with HB 1110 permitting denser middle housing in proximity to transit stops.

Growth in areas of opportunity is based on an "Opportunity Index," which combines measures of five key elements of neighborhood opportunity and positive life outcomes: education, economic health, housing and neighborhood quality, mobility and transportation, and health and environment. The level of opportunity score (very low, low, moderate, high, very high) is determined by sorting all census tracts into quintiles based on their index scores. Areas of opportunity that experience greater proportions of growth may experience an increased risk of displacement.

The Puget Sound Regional Council created an opportunity mapping tool that assesses the amount of opportunity that exists in neighborhoods. Areas with lower opportunity are defined as places that score "Very Low to Low" – which represents the bottom 40% of scores in the region. Areas with higher opportunity are defined as places that score "Moderate to Very High Opportunity" – which represents the top 60% of scores among all tracts.

Figure 27 shows the opportunity index indicates there are high to very high opportunities for improved transportation in Auburn.

Figure 27. PSRC Opportunity Index, Transportation in Auburn



Source: Opportunity Mapping in Central Puget Sound Web App, PSRC, 2022

4 Housing Inventory and Affordability

This section describes the City's housing inventory including the proportion of housing that is affordable to segments of the City's population. The information shows information citywide and compares information to King County and Pierce County statistics.

Historically, the Growth Management Act, RCW 30.60A.070 required each fully planning city and county to prepare a housing element to meet the housing GMA goal. In 2022 with the passing of HB 1220, the housing GMA goal was amended to "plan for and accommodate housing affordable to all economic segments". With this change in the goal, the previous requirement to include an inventory and analysis of existing and projected housing needs was expanded to incorporate income-segment needs and emergency and permanent supportive housing.

VISION 2050, a regional growth strategy adopted by Auburn and PSRC jurisdictions, also identifies that the housing element should provide opportunities for a range of housing types and choices to meet the housing needs of all income levels and demographic groups.

Additionally, King County's Countywide Planning Policies provide a framework for all jurisdictions to plan for and promote a range of affordable, accessible, and healthy housing choices for current and future residents. In 2021, 76% of low-income households in King County spent more than 30% of their income on housing. Only 21 units are affordable and available for every 100 extremely low-income households in King County. The City of Auburn has about 500 income-restricted housing units through the King County Housing Authority.

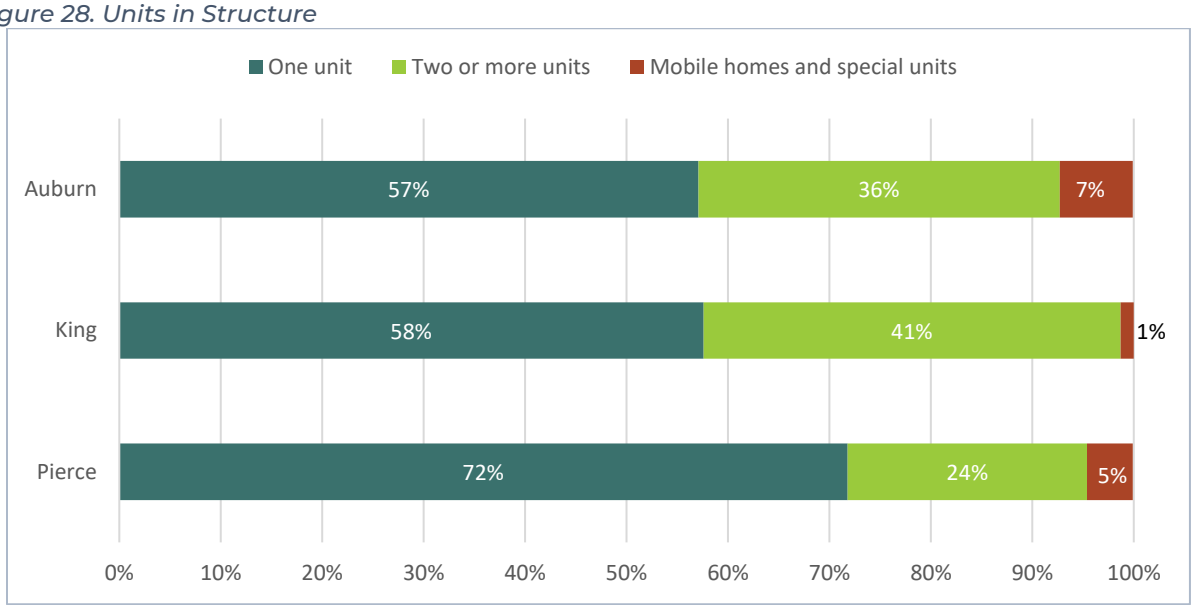
Housing Units

The housing inventory changes daily as new units are built and older units are torn down. The Washington State Office of Financial Management estimates current housing units for all Washington jurisdictions over time.

Figure 28 shows the proportion of housing units by unit type. The types include:

- One unit,
- Two or more units, and
- Mobile homes and special units.
    - Special units include permanent residents living in travel trailers, RVs, boats, sheds, tents, and others.

Figure 28. Units in Structure



Source: 2017-2021 American Community Survey 5-Year Estimates, Table DP04.

- The majority of housing units in Auburn, King County, and Pierce County are single-family units (one unit). Auburn has fewer single-family units than Pierce and King Counties.
- Auburn has a larger proportion of housing units in mobile homes and special units (7%) compared to King County (1%).

Housing Types and Sizes

Figure 29. Number of Bedrooms

	Auburn		King County	Pierce County
Bedrooms	*Housing Units*	*Percent*	*Percent*	*Percent*
No bedroom (studios)	774	2.4%	7.7%	2.5%
1 bedroom	4,572	12.4%	16.7%	9.2%
2 bedrooms	9,457	29.2%	23.9%	22.9%
3 bedrooms	8,930	27.5%	26.4%	41.6%
4 bedrooms	7,282	22.5%	19.1%	19.1%
5 or more bedrooms	1,405	4.3%	6.2%	4.7%
Total Housing Units	**32,420**	**100%**	**100%**	**100%**

- *Source: 2017-2021 American Community Survey 5-Year Estimates, Table DP04.*

- About half of Auburn's housing stock is 2-3-bedroom units, accounting for 56.7%

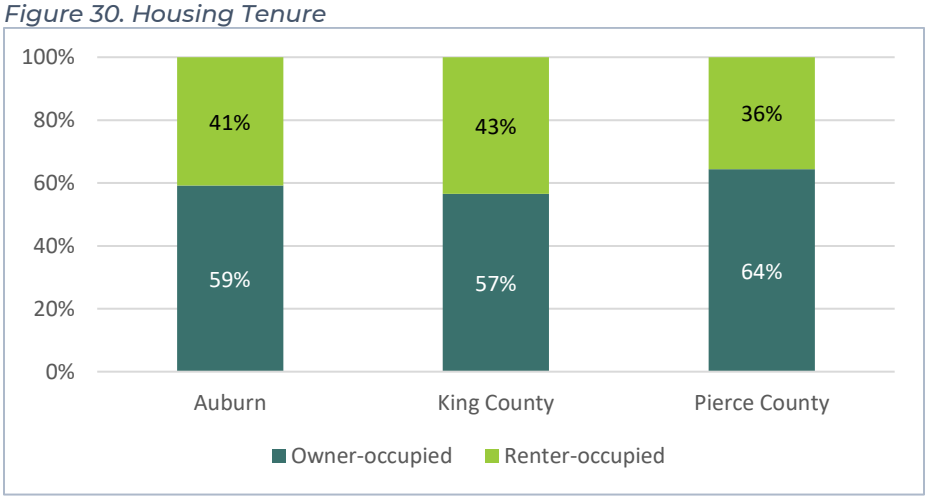
of housing units.

- Auburn's housing stock is about 26% large units with 4 or more bedrooms, which aligns with the approximately 26% of households with 4 or more persons (see Figure 8). This suggests Auburn does not have a shortage of larger units to accommodate its larger households.
- Auburn has a lower percentage of units with no bedrooms (studios) compared to King County, but similar in comparison with Pierce County.

Tenure

Tenure relates to the ownership status of a housing unit. A housing unit is "owned" if the owner or co-owner lives in the unit, even if it is mortgaged or not fully paid for. A cooperative or condominium unit is "owned" only if the owner or co-owner lives in it. All other occupied units are classified as "rented," including units rented for cash rent and those occupied without payment of cash rent.

Figure 30. Housing Tenure



Source: 2017-2021 American Community Survey 5-Year Estimates, Table DP04

- Auburn is similar to both King and Pierce Counties in housing tenure rates. Approximately 60% of housing units are owner-occupied and about 40% are renter-occupied.

Vacancy Rates

Vacancy rates are a leading indicator of a housing market, which can indicate future changes in housing prices and demand.

Figure 31. Vacancy Rates

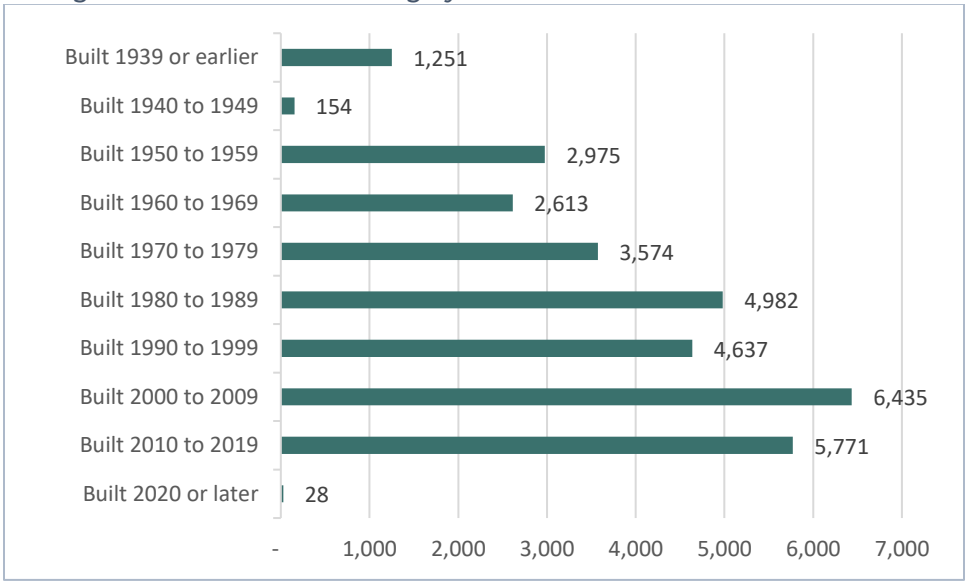
Unit Type	Auburn	King County	Pierce County
Homeowner	1.6%	0.8%	0.8%
Renter	5.5%	4.2%	3.7%
Vacant Housing Units	4.6%	5.7%	5.6%

Source 2017-2021 American Community Survey 5-Year Estimates, Table DP04

- Auburn's overall vacancy rate is 4.6%, which is lower than both King County and Pierce County and below the healthy market rate of 5-8%.
- Auburn's vacancy for owner-occupied units is 1.6%, higher than both King and Pierce counties. The homeowner vacancy rate is extraordinarily low for Auburn and both King and Pierce Counties, suggesting limited supply for those seeking to purchase a home.
- Auburn's renter vacancy rate is 5.5%. In general, a vacancy rate of 5% or less for rental units is considered a very tight market that will put upward pressure on prices and potentially stimulate investment in new housing stock.

Housing Units by Year Built

Figure 32. Residential Housing by Date Built in Auburn



Source: 2017-2021 American Community Survey 5-Year Estimates, Table DP04

Across all housing units, the age of structure is the single most important physical attribute in predicting the degree of structure quality. National research has demonstrated a negative correlation between the age of a unit and its condition. Generally speaking, a residential unit will have a functional life of around 40 years, at which point additional investments will be needed to maintain structural adequacy. Figure 32 presents the age of housing units for all residential structures in Auburn.

- Most of the new housing (built from 2001 to the present) has been concentrated mainly in the south and northeast regions of the city, particularly the Lakeland neighborhood and Lea Hill neighborhood.
- Most of the lots in the Downtown vicinity were developed before 1950. In South Auburn, housing was generally built in the 1950s. These structures are more than 50 years old, and many likely have structural deficiencies.

- There is some evidence of site-level redevelopment within these neighborhoods, which bodes well for future investment by property owners.
- Less than 20% of Auburn's housing stock was built in 2010 or later.

Housing Condition and Quality

Housing quality has many dimensions including structural integrity, energy efficiency, wear and tear, housing design, and relationship to amenities and services. There is no comprehensive data set that reports the quality of housing across all these domains. This analysis examines multiple dimensions of housing quality to ascertain the specific housing quality challenges experienced in Auburn.

County Assessors rate the building condition of each residential unit in their jurisdiction. The Building Condition values are rated relative to age and grade (that is, taking into account the age of the structure and the original building quality in terms of materials, craftsmanship, and design). They include:

1 = Poor- Worn out. Repair and overhaul needed on painted surfaces, roofing, plumbing, heating, and numerous functional inadequacies. Excessive deferred maintenance and abuse, limited value-in-use, approaching abandonment or major reconstruction; reuse or change in occupancy is imminent. Effective age is near the end of the scale regardless of the actual chronological age.

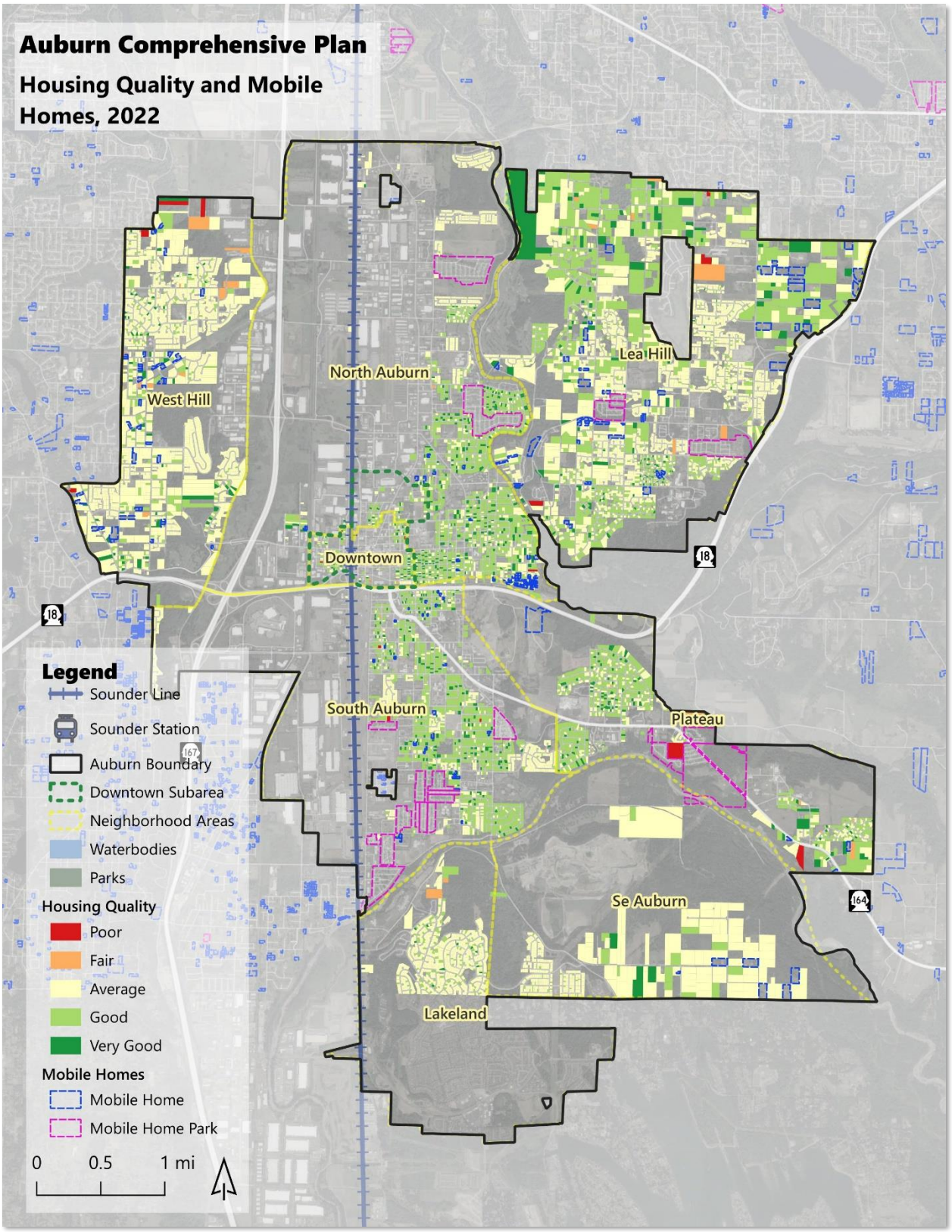
2 = Fair- Badly worn. Much repair is needed. Many items need refinishing or overhauling, deferred maintenance obvious, and inadequate building utility and systems all shortening the life expectancy and increasing the effective age.

3 = Average- Some evidence of deferred maintenance and normal obsolescence with age in that a few minor repairs are needed, along with some refinishing. All major components are still functional and contribute toward an extended life expectancy. Effective age and utility are standard for like properties of its class and usage.

4 = Good- No obvious maintenance required but neither is everything new. Appearance and utility are above the standard and the overall effective age will be lower than the typical property.

5 = Very Good- All items are well maintained, many having been overhauled and repaired as they have shown signs of wear, increasing the life expectancy and lowering the effective age with little deterioration or obsolescence evident with a high degree of utility.

Figure 33. Housing Quality and Mobile Homes in Auburn, 2022



Source: King County Assessor, Leland Consulting Group

- King County and Pierce County Assessors' ratings of residential structure quality show a large proportion of the residential structures are considered to have average conditions (depicted in yellow), suggesting Auburn has a significant amount of housing stock for which maintenance has been deferred. Much of the housing stock in Auburn is older than 40 years and many structures may be approaching the need for more comprehensive refurbishment and updates to keep structures in a useful condition.
- Areas close to the downtown are dominated by housing rated as "good" and show evidence of investment indicated by the intermixing of higher-rated quality buildings such as in the area around Auburn High School and Washington Elementary School. Areas that are both dominated by lower ratings (average and poor) and show more homogeneity (lacking newer or higher-rated- structures) are likely to have more significant housing quality deficiencies.
- Building conditions rated 'poor' represent housing that has the greatest quality deficiencies and may pose a health or safety risk to inhabitants. Exhibit 32 overlays the number of mobile homes, demonstrating areas with higher concentrations of mobile homes tend to show average to fair to poor conditions. Mobile homes differ from stick-on-site built homes and are more difficult to update incrementally due to both structural and financing constraints. As a result, full replacement is necessary for mobile units with deferred maintenance or outdated systems.

Code Enforcement

The City's Code Compliance is a division of the Department of Community Development. They are responsible for enforcing several City ordinances including property maintenance, public nuisance regulations which include junk vehicles and tall grass. The enforcement of these codes helps maintain the character and quality of neighborhoods. Approximately 2,500 complaints are received and investigated each year.

This also includes ensuring that the proper permits have been issued for construction of projects, land clearing, grading and filling of property, placement of signs, and that businesses are operating in compliance with the City of Auburn Zoning Code.

The City has also established more specific requirements for housing conditions, as City staff have seen tenants living in substandard conditions with mold, moisture, rodent, and insect problems.

Neighborhoods with Unique Housing Conditions or Amenities

The City is made up of several neighborhood districts, as described in the city's Comprehensive Plan. These districts indicate general geographic areas of the city and may not reflect the boundaries or naming conventions found in other sources, such as real estate records. A summary of housing conditions and amenities is included below.

Downtown

Downtown is the City's core and was developed in the late 1880s to early 1900s. Downtown is designated it as a Regional Growth Center by the Puget Sound Regional Council. It has a population of about 2,267 and an employment base of 3,162 as of 2022 (2024 Auburn Downtown Plan). About a quarter of the housing units downtown are single-unit detached homes, primarily in the western and eastern quadrants. Almost a third of housing units in the downtown are in large developments of 50 units or more. The share of multifamily units in Auburn's downtown is much higher than that in the city as a whole, which is about half of single-unit detached homes. In Auburn's downtown, there is a significantly higher age of housing when compared with the region. Almost a quarter of housing units downtown were built before 1940, compared with only 4 percent in the city as a whole. This reflects Auburn's longer history as a city at an important railway junction dating back to the early 20th century.

North Auburn

North Auburn has housing focused east of Auburn Way North. Many of the properties were developed prior to the 1950s, with others developed in the 1970s, and few after the year 2000. The majority of residential properties in North Auburn are in "good" or "average" condition (see Figure 34). There are a few concentrated areas of mobile home units in the northern part of the neighborhood near the river that are in "poor" condition. Park land is located in several locations, along the river, the freeway, as well as in the southern portions of this neighborhood.

South Auburn

South Auburn was largely developed before or during the 1950s and 1960s. The majority of residential properties in the South Auburn neighborhood are in "good" or "average" condition. There are large concentrated areas of mobile homes in the southern part of the neighborhood near the river that are in "poor", "fair" or "average" condition. The City's Les Gove Community Campus with the library and Senior Center, as well as other centers and play areas, is located in South Auburn.

West Hill

West Hill to the northwest has single-unit detached homes built in the 1980s predominantly, with some apartment complexes developed before the 1950s. Most of the residential properties in the West Hill neighborhood are in "average" condition. West Hill has few mobile home units dispersed throughout the neighborhood. There are a few properties near the northern city boundary that are

in “fair” or “poor” condition, representing units built in the 1950s. There is little park land in the West Hill Area, but there are some schools that provide some amount of open space and recreation opportunities.

Lea Hill

Lea Hill reflects development across many decades, with the central area developed pre-1950s to the present day. The northern area developed in the 1960s, and the northeast in the 1990s. The majority of residential properties in the Lea Hill neighborhood are in “good” or “average” condition.

Plateau

The Plateau neighborhood was developed in the 1960s and 1970s predominantly. The majority of residential properties in the Plateau neighborhood are in “good” or “average” condition.

Lakeland

Lakeland is a master-planned community at the City’s southern border and was developed between 1990 and 2010. The majority of residential properties in the Lakeland neighborhood are in “average” condition or are new. Parks are located in several places within the development.

Southeast Auburn

Southeast Auburn is more lightly populated than other areas of the City. Homes are focused to the south and were developed generally between 1950 and 1990. The majority of residential properties in Southeast Auburn neighborhood are in “average” condition. Open space is located along the river.

Source: Leland Consulting Group and City of Auburn, 2023

Projected Housing Needs by Income Band

Projected housing needs by income band in Auburn are set by both King and Pierce counties, respectively. Analysis describing how Comprhenisve Plan Land Use and Zoning adequately accommodates King and Pierce County housing units by income band is found in section 5 of this document.

King County

On August 15, 2023 the King County Council unanimously adopted the Housing-related Countywide Planning Policy amendments recommended by the Growth Management Planning Council in GMPC Motion 23-1. The amendments include implementation HB 1220 and housing availability by income band.

The County CPP states, “while significant new housing growth is necessary to reach overall King County housing growth targets, new housing growth will not sufficiently address the housing needs for lower-income households without

additional government support for the creation of units restricted to income-eligible households—both rent-restricted units and resale restricted homes ("income-restricted units"); and the preservation of homes currently affordable at or below 80 percent of area median income. Local jurisdictions can create enabling environments and generate local revenue to support new housing development and housing preservation, but successful implementation requires resources and involvement from other levels of government, nonprofits, and the private sector."

Figure 34 – Housing Need by Income and County

County		Total	0-30%		>30% to 50%	>50% to 80%	>80% to 100%	>100% to 120%	>120%	Net New Emergency Housing Needs
			Non-PSH	PSH						
King	Supply (2019)	28,049	1,076	237	8,029	8,075	4,427	3,302	2,903	58
	Net New Need (2044)	12,000	1,543	812	309	616	1,146	1,299	6,275	2,293
Pierce	Supply (2019)	3,963	0	33	134	493	1,141	680	1,482	8
	Net New Need (2044)	112	14	20	21	16	7	6	27	7
Total	Net New Need (2044)	12,112	1,557	892	330	632	1,153	1,235	6,302	2,300

Source: King County Ordinance 19660, Countywide Planning Policies; Pierce County Ordinance 2023-22s, Countywide Planning Policies

Auburn is required to supply housing capacity for 12,000 new housing units, including 2,293 units of emergency housing. As shown in Figure 34, the greatest need for housing by affordability level is in the "extremely low" and "moderate" income levels. In addition to creating adequate capacity to accommodate the new housing units by 2024, goals and policies of the Comprehensive Plan were evaluated and amended where appropriate to assist in creating these new units.

Pierce County

Pierce County Council adopted new growth target allocations for Cities, Towns, and Unincorporated areas of Pierce County on July 7, 2023. Countywide Pierce County needs to accommodate 111,511 new housing units by 2044. This includes 112 new housing in the Pierce County portion of Auburn which is already nearly built out per Pierce County Buildable Lands Analysis. The greatest need for housing is in the 0-30% AMI range, accounting for nearly half of the 112 total units.

Racially Disparate Impacts

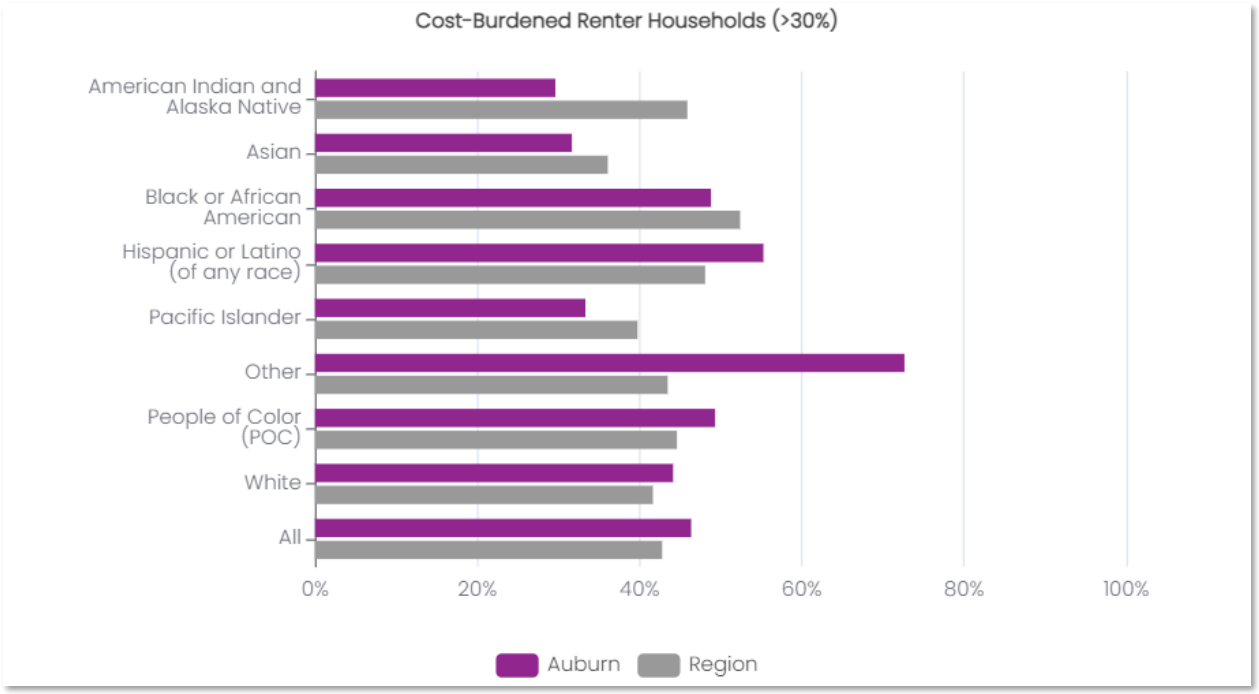
Racially Disparate Impacts

Racially disparate impacts occur when policies, practices, rules or other systems result in a disproportionate effect on one or more racial groups. The PSRC provides

community profiles for jurisdictions to keep a complete inventory of data from the U.S. Census Bureau. The profile includes housing and household level metrics to support analysis of racial disparate impacts in Auburn. As discussed in the demographics section and shown previously in Figure 10, Auburn is a highly-diverse city with 49% percent identifying as BIPOC.

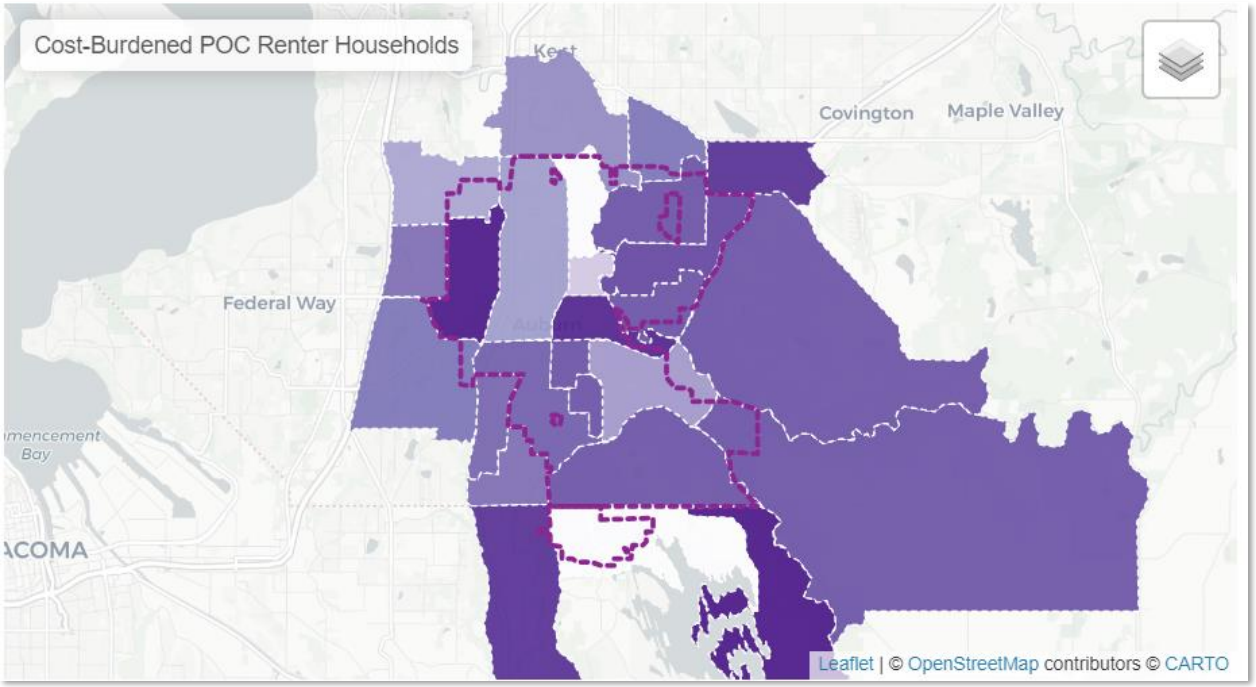
According to CHAS Across races and ethnic groups, rental households are relatively equally cost-burdened. The "other" category, which includes those identify as two or more races is the highest where 72% of those identifying and renters are cost-burdened (see Figure 35). Owner households are also similarly cost-burdened across races and ethnic groups with less overly burdened compared to renters.

Figure 35. Cost-Burdened Renter Households by Race



As shown in Figure 36, the highest concentration of cost-burdened persons of color renter households is located in downtown Auburn. This is also consistent with the displacement risk analysis that shows downtown residents are at the highest risk of displacement overall. Another neighborhood with a higher concentration of cost-burdened POC renter households is West Hill. The city should prioritize affordable and diverse housing options in downtown and West Hill to mitigate displacement risks and disparate impacts to BIPOC communities.

Figure 36. Cost-Burdened POC Renter Households Map



Overall, the diversity in Auburn increases the likelihood of racially disparate impacts, particularly displacement occurring citywide but especially in the downtown. The city has adopted several housing policies that aim to identify and prevent racially disparate impacts. Both the city's Downtown and Housing Action Plans propose actions that aim to promote equitable development and mitigate displacement risk, with consideration given to the preservation of historical and cultural communities as well as investments in low-, very low-, extremely low-, and moderate-income housing production and preservation.

Identification of Areas with Higher Risk of Displacement Potential

As described in the demographics section above, Auburn has a very diverse population – by age, race, ethnicity, and household composition (e.g., family or non-family household). The City has included housing preservation as a key goal driving this Housing Action Plan, particularly as it relates to preserving housing for low-income households. Housing preservation is an anti-displacement effort and can help mitigate and minimize the negative effects that often arise from new housing development.

The highest displacement risk in Auburn is the few housing units located in southwest Auburn where mostly industrial and commercial is located. In particular, a mobile home park located in this block group is particularly vulnerable to displacement. Downtown Auburn is also susceptible to moderate to high

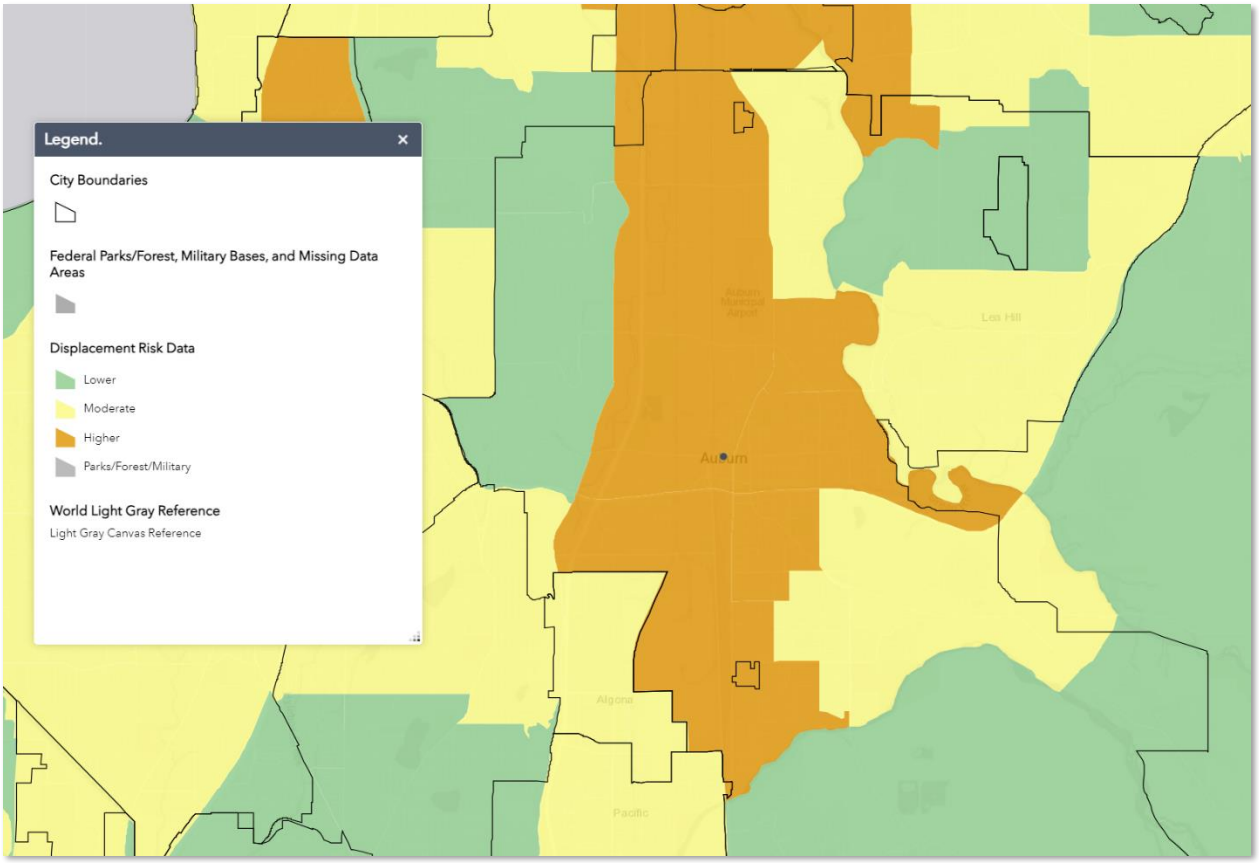
displacement risk. The downtown area currently contains 426 subsidized affordable units in several developments, slightly more than a quarter of the housing units in the area. A full analysis is located in the Housing Needs and Characteristics Assessment.

Areas of Risk

The Puget Sound Regional Council (PSRC) has taken steps to analyze and map displacement risk in the region. According to PSRC, "In the central Puget Sound region, communities of color, low-income households, small businesses, and renters are recognized as being at higher risk of displacement." To visualize and help plan to mitigate these pressures, PSRC developed five key categories of metrics which can be used to help identify populations at risk of displacement:

- Socio-demographic indicators, including race, ethnicity, linguistic isolation, educational attainment, housing tenure, cost burden, and household income.
- Transportation Indicators, including access to jobs by car and transit and proximity to current and future transit service.
- Neighborhood Characteristics, including proximity to grocery stores, restaurants, parks, and schools.
- Housing Indicators, including development capacity and rental costs
- Civic Engagement, measured by voter turnout.

Figure 37. PSRC Displacement Risk in Auburn (2023)



Source: Puget Sound Regional Council

PSRC developed a mapping tool that aggregates these indicators into high, medium, or low displacement risk areas. As shown in Figure 37 the neighborhoods of West Hill and Southeast Auburn are primarily at lower risk of displacement. The neighborhoods of Lea Hill and South Auburn are primarily at moderate risk of displacement. Central Auburn including downtown and North Auburn are at the highest risk of displacement.

A recent meta-analysis of anti-displacement by researchers at UC Berkeley and UCLA found that neighborhood stabilization and tenant protection strategies in the short term and the production of subsidized housing in the long term had the highest potential to prevent displacement.[4] The Auburn downtown area currently contains 426 subsidized affordable units in several developments, slightly more than a quarter of the housing units in the area.

Historically Restrictive Housing

The lands of Auburn have been historically utilized by many different groups of people. Year 1920 census records showed that Japanese farmers operated 25,320

[4] Chapple, Karen and Loukaitou-Sideris, Anastasia. "White Paper on Anti-Displacement Strategy Effectiveness." Prepared for the California Air Resources Board. February 28, 2021.

acres and 699 farms. This number dropped to 7,030 acres and 246 farms in 1925 after the Alien Land Law of 1921 restricted “non-citizen aliens from sharecropping, leasing or renting land.” (It is important to note due to a series of Congress legislation (Naturalization Act of 1870, Chinese Exclusion Act of 1882, and The Immigrant Act of 1924) citizenship was a closed door for persons of Asian descent.

When considering historic and restrictive land use in Auburn, it is important to consider the official record keeping is very slim regarding restrictions as it wasn’t until 1920 when Auburn’s population rose above 2,500 (3,163) and was more detailed in its recording of population ratios in the census. (census 1920 vol 3 table 11, page 1092). 3096 persons of this population were recorded as white (Native white, foreign or mixed parentage, or foreign-born), with 67 persons being classified as non-white. As Auburn has grown certain covenants have been placed on plat maps and deeds within the county, with 759 recorded parcels containing/that have contained this restrictive language. These have been recorded on Auburn parcels from 1900 up to 1959, with many plat maps still containing the language. These restrictions were largely put in place by the developers, with many of them (464 or 61.1%) being placed by the Hillman Investment company, or Clarence Dayton Hillman.

These covenants were developed to only allow “members of the Caucasian race” the ability to purchase and use the land. There are different variations and verbiage depending on the plat or deed, but they all come to the same end, only white persons were eligible to own these properties. These restrictions shaped the sections of the city to where they are today, the growth in culture and development was stunted. The policies in this Housing Element create housing opportunities for all members of the community in an effort to undo historically documented racially disparate impacts and look forward to a more equitable Auburn.

Housing Attainability

A primary determinant of whether housing is attainable for a household is whether the household’s income can support the cost of the housing. King County’s Countywide Planning policies require each jurisdiction to assess the affordability of its housing inventory and to plan for meeting local needs for affordable housing as well as accommodating a share of the countywide need for affordable housing.

The Countywide Planning Policies provide guidelines for determining housing affordability using Area Median Income (AMI) to establish housing market segments ranging from Very-Low Income Housing Needs to Moderate Housing Income Needs. Area Median Income is the midpoint of all household income so

that half the households earn more than the median income and half the households earn less than the median.

The HUD median family income is $146,500 for the Seattle-Bellevue HUD Metro FMR Area, which includes Auburn (2023). The American Community Survey five-year estimates a median household income of $106,326. For purposes of determining housing affordability, this analysis uses HUD income limits. While Auburn's AMI is also reported and is lower, it is not the basis for the income analysis that follows as the analysis keys on the countywide information.

The Countywide Planning Policies require jurisdictions to analyze housing affordability using 0-30%, 31-50%, 51-80% and over 80% ratios to the HUD-published Area Median Income (2021 King County Countywide Planning Policies. Figure 38 represents the income limits for families of four to afford housing in each need category without becoming cost-burdened.

Figure 38. Income Ranges and Area Median Income

Income Limits	Seattle-Bellevue HUD Metro
Area Median Income (HUD)	$146,500
Moderate Income Housing Need (80% of AMI)	$100,900
Low Income Housing Need (50% of AMI)	$68,500
Very-Low Income Housing Need (30% of AMI)	$41,100
Area Median Income (ACS)	$79,415

Source: HUD, 2023 and 2017-2021 American Community Survey

Affordability of Renter-Occupied Housing

In general, attached housing, such as apartments, is less expensive partly owing to the lower cost of land per unit, and thus serves a greater proportion of lower-income households. To improve understanding of housing attainability for households with lower incomes, we examine the income distribution of households who rent compared to the supply of available rental housing. Breaking out renter-occupied housing units according to income levels, households that rent housing in Auburn and King County tend to have lower incomes.

Figure 39. Cost-burdened and Severely Cost-burdened Renters, Auburn, 2018

Income Category	Total Renter Households	Cost-Burdened	Severely Cost-Burdened
0-30%	4407	88%	72%
30-50%	4009	71%	25%
50-80%	4299	33%	0%
80-100%	1381	0%	0%
100%+	1411	0%	0%
Total	15,507	53%	27%

Source: PUMS (2018)

- In 2018, 88 percent of renters earning less than 30% of AMI were cost-burdened and 71 percent of renters earning between 30% to 50% of AMI were cost-burdened (see Figure 26).
- Cost burdening tends to decline as incomes go up because a household has more income to spend on housing. In Auburn, 33 percent of renters earning between 50% and 80% of AMI were cost burdened.
- Of the approximate 15,507 renter households in Auburn, more than half (53 percent) are cost-burdened, and more than one-quarter (27 percent) are severely cost-burdened.

In 2020, the average market rent for an apartment in Auburn was $1,393 (Costar and Zillow, 2020). Using 2018 income data from Figure 40, this average rent for a two-bedroom apartment would be affordable to a four-person household earning 50% of the AMI (which would be a relatively tight space), or to a two-person household earning between 50% and 80% of AMI.

Figure 40. Median Home Sales Price and Average 2-Bedroom Rent

	2010	2020
Average Rent	$934	$1,393
Median Sales Price	$222,750	$418,300

Source: Costar and Zillow. Not adjusted for inflation

- The average rent for a two-bedroom apartment in Auburn increased by 49 percent from 2010 to 2020, reaching $1,393 per month.
- Between 2010 and 2020, the average monthly rent in Auburn increased by 49 percent ($459 per month). In this same period, the median sales price for a home increased by 88 percent ($195,550).

Overcrowding

HUD defines an overcrowded housing unit as one where there is an average of more than 1 person living per room. Figure 41 shows the percentage of rental units that are overcrowded in Auburn, King County, and Pierce County.

Figure 41. Percentage of Rental Units that are Overcrowded, 2008-2012 5-Year Average

	Auburn	King County	Pierce
Occupants per room	12,452	391,756	119,698
0.50 or less	6,637	210,767	70,925
0.51 to 1.00	4,462	153,539	42,364
1.01 to 1.50	855	13,787	3,955
1.51 to 2.00	335	11,535	2,047

2.01 or more	163	2,128	407
Number of Overcrowded Units (>1)	1,353	27,450	6,409
Percent of Overcrowded Units (>1)	10.9%	7.0%	5.4%

Source: U.S. Census Bureau, 2017-2021 American Community Survey.

Auburn has a higher percentage of overcrowded rental units (10.9%) than King County overall (7%) and Pierce County overall (5.4%). This is likely somewhat driven by the larger average household size in Auburn.

Affordability of Owner-Occupied Housing

Homeownership helps create stability in neighborhoods and has historically been a significant driver of personal and household wealth for individuals and families. A key aspect of addressing a community's housing needs is to ensure there are opportunities for home ownership for moderate-income levels and first-time homebuyers. The exhibits below assess the opportunity in Auburn's owner-occupied housing market based on housing need category.

Auburn's housing stock primarily consists of ownership units (it has a 56 percent homeownership rate) compared to only about 44 percent of rental units. Due to demand outpacing the supply of homes in Auburn, prices have been rising. Since 2010, home prices in Auburn rose by 88 percent, from a median sales price of $222,750 in 2010 to $418,300 in 2020. Over this time, Auburn has seen somewhat lower median home sales price growth than nearby cities (see Figure 42), and the median sales price in Auburn did not overtake that of another city in the 2010-2020 time period.

- For both Auburn and King County, there is owner-occupied housing across all income categories. Given the age and current condition of a significant portion of Auburn's housing stock, some very low-income households may struggle to maintain their homes.
- Generally, Auburn has more households in the moderate and middle-income levels that can own a home compared to King County, suggesting that Auburn offers more affordable homeownership opportunities than available in other parts of King County.

Figure 42 provides median sales prices in Auburn over the last nine years by housing type.

Figure 42. Auburn Median Sales Prices

Area	Median Sales Price 2010	Median Sales Price 2020	Median Sales Price 2023	Increase from 2020 to 2023 Price
Auburn	$222,750	$418,300	$577,641	38%
Burien	$233,450	$470,300	$619,490	32%

Federal Way	$211,600	$414,700	$564,448	36%
Kent	$237,750	$447,700	$611,760	37%
Renton	$269,950	$516,800	$717,804	39%
Tukwila	$182,500	$412,000	$536,522	30%

Source: Auburn Median Sales Price 2010-2023, Zillow.com

- In 2023, Auburn's median sales price for housing units, was $577,641, a 38% increase since 2020. The Auburn housing market is similar to surrounding areas such as Federal Way and Tukwila.

5 Future Housing and Employment Capacity

Buildable Lands Reports Analysis

The City is required to provide capacity for its fair share of the population as determined through countywide planning with King and Pierce Counties. King County and Pierce County targets address the year 2044. The city is projected to need 12,112 additional housing units to accommodate growth.

Every five years approximately, a buildable lands report (BLR) is prepared by both counties to determine progress towards targets. Figure 43 shows the combined remaining growth target for the years 2035-2044 and the City's estimated growth capacity.

Figure 43. Land Capacity and Growth Target

	Capacity and Target Number of Dwellings
Total Capacity (units), King and Pierce Counties	9,264
King County Housing Growth Target (2020-2044)	12,000
Pierce County Housing Growth Target (2020-2044)	112
Total Target	12,112
Surplus/Deficit Capacity by 2044	**-2,848**

Source: King County 2021, Pierce County 2021

The BLR indicates the City can meet its remaining housing targets by the year 2035. If growth is carried forward to the full planning period 2020-2044 the City will be unable to meet its new housing growth target based on available land capacity with a deficit of 2,848 units. Upzoning residential zoning districts to increase density will enable the city to meet new housing unit needs without the need for additional land.

- Based on buildable lands report information for the portion of Auburn in King County, about half of the City's housing capacity is in low-density zones.
- Based on buildable lands report information for the portion of Auburn in Pierce County, Auburn's capacity is for dwellings in the R-5 zoning district, particularly in the Lakeland PUD. Terrace View is at capacity.
- The Pierce County portion of the City of Auburn has sufficient capacity to accommodate the 2044 targets and the King County portion does not have sufficient capacity to accommodate 2044 targets.

Land Capacity for Affordability and Growth Targets

Land Capacity – No Action Alternative

Through a land use alternative process, the city underwent a no action alternative analysis to determine the land capacity for housing units without any changes to zoning or land inventory. This analysis was completed at the Traffic Analysis Zone (TAZ) level.

Building capacity within each TAZ relies on a buildable land inventory layer produced in GIS form at the parcel level by King County. That layer included parcels deemed to be either vacant or redevelopable, along with an estimate of the net new housing units of capacity for each parcel. For non-residential building capacity, each parcel in that layer had a lot square footage and expected/typical floor area ratio (FAR), yielding a potential new commercial building square footage. Those square footages were converted into potential future jobs for purposes of the allocation model, using different assumptions for average square footage per job for each neighborhood, to reflect differences in industry mix across Auburn.

For the Pierce County portion of Auburn, the methodology included breakouts for Auburn from the Pierce County Buildable Lands Report, Fourth Edition (published in September, 2021).

Capacity for both new housing units and new jobs was aggregated to the neighborhood (District) level for purposes of determining future allocations. Neighborhood capacity shares were weighted by recent neighborhood growth shares to determine initial allocations. TAZ level capacity is used again as a basis for distributing growth allocations within each neighborhood to the various TAZs.

Capacity estimates at the TAZ level were then revised based on staff comments and inputs from ongoing Auburn Downtown Plan Update efforts. In both cases, it is assumed that those inputs reflected more detailed knowledge of parcel-level zoning and land conditions in downtown, and thus reflected a more accurate picture of real development capacity.

Figure 44. Neighborhood (District) No Action Employment and Household Growth Capacity

	Employment and Household Neighborhood Capacities	
	Jobs	HUs
DOWNTOWN	1,195	1,948
LAKELAND	0	41
LAKELAND-PIERCE	0	48
LEA HILL	142	983
NORTH DOWNTOWN	308	340
NORTH AUBURN	3,463	504
PLATEAU	100	1,097
SE AUBURN	0	1,428
SOUTH AUBURN	2,220	2,706
WEST HILL	809	477
Total	8,236	9,572

Neighborhood-Level Projected Population and Employment Growth

To calculate each neighborhood's share of recent growth, 2010 to 2020 block-level Census counts of housing units and 2009 to 2019 Census LEHD block-level job counts were used. Because census block boundaries do not match well with neighborhood boundaries or TAZs, those estimates are necessarily approximations based on assigning blocks to TAZs containing their centroids.

Neighborhood level growth was considered irrelevant to employment growth allocation decisions, since projected citywide job growth far exceeded total land capacity for employment uses. In other words, if this TAZ allocation is intended to reflect a no-action growth scenario, then regardless of growth momentum, job growth would be limited to what could be built on known vacant and underutilized parcels subject to current zoning – meaning that each TAZ would simply receive as much job growth as their identified capacity can accommodate (with no need to weighting based on prior growth).

For housing unit growth allocations, there was excess available capacity to work with (9,572 units of estimated capacity versus 7,774 units of projected growth). So, some weighting was required to determine which neighborhoods should receive that growth. Because Downtown capacity and allocations remain consistent,

weighting was only applied to non-downtown neighborhoods to arrive at growth allocation totals.

Figure 45. Neighborhood (District) No Action Employment and Household Growth Allocations

	Employment and Household Neighborhood Allocations	
	Jobs	**HUs**
DOWNTOWN	1,195	1,948
LAKELAND	0	32
LAKELAND-PIERCE	0	36
LEA HILL	142	740
NORTH DOWNTOWN	308	340
NORTH AUBURN	3,463	380
PLATEAU	100	826
SE AUBURN	0	1,076
SOUTH AUBURN	2,220	2,038
WEST HILL	809	359
Total Allocated ***(to TAZs within neighborhoods based on revised TAZ capacities***	**8,236**	**7,774**
Comparisons		
Predictive Forecast (not capacity-constrained)	*22,623*	*7,774*
Adopted Growth Targets	*19,520*	*12,112*

No-Action Forecasts Compared to Adopted Policy Growth Targets

Predicted no-action housing growth is lower than adopted growth targets. According to the King County demographer, the adopted growth target for housing units from 2019 to 2044 was 12,000 units. Adjusting to 2021, this target calls for addition of 10,959 additional units by the 2044 horizon year. In contrast, the baseline, no-action predictive forecast is for 7,774 new units by 2044. Both King and Pierce Counties have since updated their projected housing unit allocations to an additional 12,112 housing units (July-August 2023).

For employment, the no-action growth forecast is for 22,623 new jobs by 2044, as compared to an adopted growth target of 19,520 jobs. However, because estimated capacity for new jobs is limited to 8,236 across Auburn's neighborhoods, the no-action TAZ allocations are constrained to that figure and will necessarily fall well short of the 19,520 target.

Draft Preferred Land Use Scenario

The future land use map accounts for housing and employment targets, legislative requirements, and growth centers in the city. The Draft Preferred scenario[5] is detailed in the Land Use Element.

Residential Capacity

A residential land capacity analysis evaluates whether jurisdictions have sufficient land capacity available to allow for the types and amount of new housing needed to meet identified housing needs is required as part of HB 1220 requirements. The 2021 Housing Element updates amended RCW 36.70A.070(2)(c) of the Growth Management Act to require the Housing Element to include explicit consideration of capacity for the following household needs and building types:

- Moderate, low, very low, and extremely low-income households;
- Permanent supportive housing;
- Emergency housing and emergency shelters; and
- Duplexes, triplexes and townhomes (within an urban growth area boundary

The intent of this analysis is to assess the City of Auburn's current capacity to accommodate different housing income brackets and whether that capacity is sufficient to meet Auburn's housing targets established by King and Pierce counties. In addition, this analysis considers implementing a preferred land use alternative through zoning changes and provides updated capacity calculations to ensure sufficient capacity of suitable land to meet growth targets.

Approach and Methodology

The Auburn Residential Land Capacity Analysis completed for the purpose of implementing HB 1220 requirements utilizes King County[6] and Pierce County[7] Buildable Lands Reports from 2021 as the baseline with minor adjustments based on input from city planning and departmental staff through the alternatives planning and growth allocations process. This analysis completes the following steps as outlined in the HB 1220 "Updating your Housing Element"[8] Book 2 guidance developed by the Department of Commerce:

[5] Draft preferred scenario represents city staff's intent to comply with all required regulations and serve as basis for modelling and evaluation used in the draft Comprehensive Plan. This scenario will be deemed "Preferred" after EIS process and Planning Commission evaluation and acceptance is complete.

[6] https://kingcounty.gov/en/dept/executive/governance-leadership/performance-strategy-budget/regional-planning/urban-growth-capacity-report

[7] https://www.piercecountywa.gov/923/Buildable-Lands

[8] https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/planning-for-housing/updating-gma-housing-elements/

Step 1. Summarize developable residential land capacity by zone.

The first step is to identify the gross developable land acreage by zoning designation to summarize. This portion of the analysis involves a jurisdiction-wide scan to quantify all land available for residential or commercial/industrial development for the next 20-year planning period. “Land supply” is the phrase used to refer to an inventory of land “suitable for development” (King County). The land supply includes vacant and redevelopable lands with land supply inventories recorded in 2019. For this approach, the land supply acres were drawn from the land inventory layer produced in GIS form at the parcel level by King County. That layer included parcels deemed to be either vacant or redevelopable, along with an estimate of the net new housing units of capacity for each parcel. For non-residential building capacity, each parcel in that layer had a lot square footage and expected/typical floor area ratio (FAR), yielding a potential new commercial building square footage. For the Pierce County portion of Auburn breakouts for Auburn from the Pierce County Buildable Lands Report, Fourth Edition (published in September, 2021).

The 2019 data was cross-checked with 2023 King County and Pierce County parcel assessor data which was combined into a singular dataset for the city. This data set was joined with the city’s zoning designation to ensure zoning accuracy. In order to determine “developable” parcels the King County Technical Memo B. Land Capacity Supply for Buildable Lands Report process was followed similarly to the original 2021 process with changes since 2023. This process identified vacant parcels through querying for vacant as the existing land use (PRESUSE_DES) and underutilized parcels with an improvement value of $10,000 or less or existing use surface parking lot (see Technical B memo criteria). To quantify the developable land supply, the process:

- Assembled necessary data for the entire jurisdiction, including parcel/assessor data, critical areas, and zoning.
- Defined vacant and developable lands using a density and/or value threshold
- Exclude lands or parcels unlikely to develop including critical areas, public use, capital infrastructure, and environmentally constrained
- Applied vacant and redevelopable land definitions to the parcel data
- Reviewed and refine the resulting developable land supply

The outcome of this analysis is similar to the original 2021 analysis with reductions in available land due to new building permits. The city estimates 156 single-family units were built between 2019 and 2021 as well as 726 single-family units that were accounted for in the analysis. The baseline data is adjusted from the 2019 Buildable Lands Report with changes since 2019, including the Bridges annexation in 2024 of 13 vacant acres zoned as Residential 5 du/acre.

Figure 46. Gross Residential Capacity by Zone

Zone	Gross developable land (acres)		Infrastructure and Land Availability Deduction	Net developable land (acres)		Assumed Density (unit/acre)	Gross residential capacity (units)
Residential Zoning Districts							
Residential Conservancy (RC)	Vacant	715	45%	393	400	0.25	100
	Under-developed	15	55%	7			
Residential 1 du/acre (R-1)	Vacant	159	35%	103	167	1	167
	Under-developed	115	45%	63			
Residential 5 du/acre (R-5)	Vacant	855	35%	555	592	4.4	2,603
	Under-developed	66	45%	36			
Residential 7 du/acre (R-7)	Vacant	241	35%	157	172	7	1,207
	Under-developed	29	45%	16			
Residential 10 du/acre (R-10)	Vacant	22	30%	15	15	10	153
	Under-developed	0	40%	0			
Residential 16 du/acre (R-16)	Vacant	38	30%	26	26	16	421
	Under-developed	0	40%	0			
Residential 20 du/acre (R-20)	Vacant	61	28%	44	49	21.1	1,044
	Under-developed	9	38%	5			
Mixed Use Commercial (C-4)	Vacant	1	28%	1	1	20	12
	Under-developed	0	38%	0			
	Under-developed	0	21%	0			
Downtown Urban Center (DUC)	Vacant	10	28%	8	11	100	1,123
	Under-developed	6	38%	4			
Residential Office District (RO)	Vacant	0	28%	0	1	18.15	14
	Under-developed	1	38%	1			
	Under-developed	0		0			
	Vacant	37	28%	27	27	10	273

Residential Manufactured/Mobile Home Community (R-MHC)	Under-developed	0	38%	0			
	Under-developed	0		0			
Lakeland Hills South PUD	Vacant	12	45%	7	7	6	40
	Under-developed	0	45%	0			
	Under-developed	0		0			

After determining the gross developable land an infrastructure and development deduction factor was implemented. The market factor deductions were:

- Vacant properties: 15%
- Under-developed properties: 25%

The public purpose and right of way factors for infrastructure were applied from the Urban Growth Report as part of the King County Buildable Analysis and did not differ for vacant and under-developed properties. For residential zones RC through R-7 both deductions were 20% and for R-10, 14% respectively. R-10 and mixed-use zones were 12.5% respectively. The deduction factors reduce the amount of buildable land to determine net developable land in acres. Finally, the total capacity is calculated by multiplying the net developable acreage by the assumed density level expressed in units per acre. The density is based on Auburn Municipal Code.

Figure 47. Gross Development Capacity by Zone

Zone	Net developable land (acres)	Assumed density	Gross residential capacity (units)	Existing units on developable land (units)	Net capacity
Residential Zoning Districts		**Units/Acre**			**Residential Units**
Residential Conservancy (RC)	745	0.25	100	75	25
Residential 1 du/acre (R-1)	275	1	167	29	138
Residential 5 du/acre (R-5)	1230	4.4	2,603	541	2,062
Residential 7 du/acre (R-7)	294	7	1,207	146	1,061
Residential 10 du/acre (R-10)	22	10	153	26	127
Residential 16 du/acre (R-16)	0	16	421	-	421
Residential 20 du/acre (R-20)	79	21.1	1,044	118	926
Non-Residential Zoning Districts					
Mixed Use Commercial (C-4)	1	20	12	-	6

Downtown Urban Center (DUC)	11	100	1,123	1	561
	0	0	-		
Residential Office District (RO)	1	18.15	14	-	14
Residential Manufactured/Mobile Home Community (R-MHC)	27	10	273	-	273
Lakeland Hills South PUD	7	6	40	-	40
				Total	**5,652**

Based on current zoning, density, deduction factors, and mixed-use considerations minus existing buildings the city has an estimated capacity for 5,652 additional units.

Changes to the housing element in 2021 call for jurisdictions to consider the role of accessory dwelling units (ADUs) in meeting housing needs. Changes in 2023 resulting from HB 1337 require jurisdictions to allow up to two ADUs per lot in urban growth areas, with the option for separate sale. Although capacity for ADUs has not typically been measured in a residential land capacity analysis, they are very likely to become important in meeting housing needs.

Auburn implemented the optional methodology for potential developed ADUs on residential lots. The city estimates that there are about 14,000 developable residential lots with a participation factor of 10%. This adds another estimated 1,852 units. However, these units are not considered as part of the housing total needed to accommodate the 12,112 housing unit growth target.

Figure 48. Potential ADU Capacity

Lots available for ADUs	Participation factor	Potential ADU lots	Average ADUs per lot	Total ADU capacity
14,818	10%	1,482	1.25	1,852

Step 2. Categorize zones by allowed housing types and density levels.

This step identifies which housing types are allowed in each zone to facilitate relating each zone category to potential affordability levels. City planning staff implemented assigned zone categories recommended in the Department of Commerce guidance as low density, moderate density, high-density, and high density mixed use.

Figure 49. Classifying Zones by Housing Types Allowed

Residential Zoning Districts	Typical housing types allowed	Max density level allowed	Assigned zone category
Residential Conservancy (R-1)	Detached single-family homes, ADUs	0.25 du/1	Low Density
Residential 1 du/acre (R-1)	Detached single-family homes, ADUs	1 du/1	Low Density
Residential 5 du/acre (R-5)	Detached single-family homes, ADUs	5 du/1	Low Density
Residential 7 du/acre (R-7)	Detached single-family homes, ADUs, duplex	7 du/1	Moderate Density
Residential 10 du/acre (R-10)	Detached single-family homes, duplex, townhomes	10 du/1	Moderate Density
Residential 16 du/acre (R-16)	Detached single-family homes, duplex, supportive housing, townhomes, multi-family	16 du/1	High Density
Residential 20 du/acre (R-20)	Duplex, supportive housing, townhomes, multi-family	20 du/1	High Density
Light Commercial District (C-1)	Live/work unit, work/live unit	20 du/1	Low Density
Central Business District (C-2)	Live/work unit, work/live unit, multi-family dwellings part of mixed use development	20 du/1	High Density Mixed-use
Heavy Commercial District (C-3)	Live/work unit, work/live unit, multi-family dwellings part of mixed use development	20 du/1	Low Density
Mixed Use Commercial (C-4)	Live/work unit, work/live unit, multi-family dwellings part of mixed use development	20 du/1	High Density Mixed-use
Light Industrial District (M-1)	Live/work unit, work/live unit	20 du/1	Low Density
Residential Office District (RO)	Duplex, home occupation live/work, work/live, multi-family stand alone, detached single-family	20 du/1	Moderate Density

Residential Office District – Hospital (RO-H)	Home occupation, live/work, work/live	25 du/1*	Moderate Density
Institutional Use (I)	Home occupation, nursing home	20 du/1*	Low Density
Residential Manufactured/Mobile Home Community (R-MHC)	Manufactured/mobile homes	10 du/1	Moderate Density R-MHC
Downtown Urban Center (DUC)	Mixed-use, townhomes, multi-family	100 du/1	High Density Mixed-use
Lakeland Hills South PUD	Single family, condos, townhomes, apartments, accessory uses, home occupations, senior housing	6 du/1	Moderate Density

Step 3. Relate zone categories to potential income levels and housing types served.

This step relates zone categories to potential income levels and housing types served. This step assumes which income levels are to be served by new market-rate housing production in each zone category as well as new income-qualified affordable housing projects. A detailed market analysis was not completed but the moderate cost default assumed affordability level was implemented with adjustments based on the market analysis completed as part of the City's Housing Action Plan.

Figure 50. Relating Zone Category to Housing Types and Income Levels

Zone Category	Typical housing types allowed	Lowest potential income level served		Assumed Affordability level for capacity analysis
		Market rate	With subsidies and/or incentives	
Low Density	Detached single family homes	Higher Income (>120% AMI)	Not typically feasible at scale	Higher Income (>120% AMI)
Moderate Density	Townhomes, duplex, triplex, quadplex	Moderate income (>80-120% AMI)	Not typically feasible at scale	Moderate income (>80-120% AMI)

High-Density	Townhomes, multi-family, walk-up apartments	Low income (>50-80% AMI)	Extremely low and very low income (0-50%)	Low income (>50-80% AMI)
High-Density Mixed Use	Mixed-use multifamily, townhomes, multifamily	Low income (>50-80% AMI)	Extremely low and very low income (0-50%)	Very Low income (>0-30% AMI)
ADUs	ADUs	Low-Higher Income (50-120% AMI)	N/A	Low to Higher Income (>50 to >120% AMI)

Step 4. Summarize capacity by zone category.

This step summarized the land capacity for housing unit production by zone category from the findings of Steps 1-4. The total housing capacity is estimated at 5,652 citywide with the majority of housing accounted for in the low-density zone category excluding ADUs. The total capacity including potential ADUs is 7,504 units.

Figure 51. Capacity by Zone

Zone Residential Zoning Districts	Unit Capacity	Assigned Zone Category	Capacity in zone category
Residential Conservancy (R-C)	25	Low Density	2,225
Residential 1 du/acre (R-1)	138	Low Density	
Residential 5 du/acre (R-5)	2,062	Low Density	
Light Commercial District (C-1)	-	Low Density	
Light Industrial District (M-1)	-	Low Density	
Heavy Commercial District (C-3)	-	Low Density	
Residential 7 du/acre (R-7)	1,061	Moderate Density	1,241
Residential 10 du/acre (R-	127	Moderate Density	
Central Business District (C-2)	-	Moderate Density	
Residential Office District (RO)	14	Moderate Density	
Residential Office District - Hospital (RO-H)	-	Moderate Density	
Lakeland Hills South PUD	40	Moderate Density	
Residential Manufactured/Mobile Home Community (R-MHC)	273	High Density R-MHC	273
Residential 16 du/acre (R-16)	421	High Density	1,347
Residential 20 du/acre (R-20)	926	High Density	
Mixed Use Commercial (C-4)	6	High Density Mixed-Use	566

Downtown Urban Center (DUC)	561	High Density Mixed-Use	
		ADUs	1,852
Total Housing Capacity (no ADUs)			**5,652**
Total (with ADUs)			**7,504**

Accessory Dwelling Units (ADUs) are assumed to be primarily located in Moderate and Lower Density zones serving the 80-120% AMI income brackets.

Step 5. Compare projected housing needs to capacity.

The city's growth target for housing units is 12,112 units citywide. Based on the residential land capacity analysis, the city can expect a capacity deficit of 4,608 total units with current zoning and density regulations. The most significant deficit is providing housing for the 0-30% (supportive housing) and >80-100% income level brackets. The deficit indicates a need to implement actions to increase capacity including density increases and zoning reallocation. In comparison, the 2021 Buildable Land Reports indicates a deficit of 2,800 units. Since this is a summarized high-level process with assumptions, it is likely the true deficit is somewhere between the 2,800 to 4,600 estimated units. However, the city should plan for accommodating the high-end of the deficit to ensure growth targets are met.

Figure 52. Capacity Compared to Housing Needs Income Level (% AMI)	Zone Categories Servicing these Needs	Housing Needs	Capacity prior to Zoning Adjustment	Post-Rezone Capacity	Capacity surplus or deficit
King County					
0-30% PSH	High Density-Mixed Use	2,389	566	3,004	**615**
0-30% Other					
>30-50%	High-Density, ADU	962	1,532	4,823	**3,861**
>50-80%					
>80-100%	Moderate Density, ADU	2,458	5,058	37,379	**35,033**
>100-120%					
>120%	Low-Density, ADU	6,303	348	2,217	***(4,086)***
Pierce County					
>80-100%	Moderate Density, ADU	112	100	500	***388***
Aggregated Total	-	12,112	7,504	46,070	*35,810*

Summary

The residential land capacity analysis is an estimate that projects future capacity for accommodating housing units based on current zoning and indicates there is a shortage in the land capacity availability for housing units needed. The city should plan for the highest capacity deficit to ensure adequate capacity to meet growth targets. The city needs to adjust zoning and density to account for an additional 4,608 units that the current capacity does not accommodate. Implementation actions to increase capacity and projected housing capacity changes are in the Housing and Land Use elements.

Assumptions and Limitations

The residential land capacity analysis process, as outlined by the Department of Commerce guidance, makes several assumptions regarding truly available developable land. The data is reliant upon accurate assessor data and estimated deduction factors for market, public purpose, and environmental considerations. The city assumes participation factors and markets, but these are variables outside of city control. The data used doesn't directly translate into specific Market Factor values, housing types, or income levels served. Instead, the process helps define ranges and suggest appropriate assignments. The King County and Pierce County Urban Growth Capacity reports also highlight limitations in conducting land capacity analyses.

Step 6. Implement actions to increase capacity to address deficiencies

Draft Preferred Alternative Implementation

To address the anticipated unit deficit of 4,600 Auburn has consolidated zoning districts, increased densities, and permitting additional housing types. The changes in zoning are based on the preferred alternative completed as part of the land use scenario process where centers and nodes are identified for increased density. The alternative also assumes citywide density increases to accommodate population, housing, and employment growth allocations at the TAZ level projected for 2044. The zoning changes are summarized below.

Figure 53. Draft Preferred Zoning Assumptions

Existing Zoning	Proposed Zoning	Typical development	Existing Density (du/acre)	Proposed New Density (DU/acre)	Assumed development
RC	*RC*	*Single-Unit Detached Houses (SUDs), Middle Housing,*	*0.25*	*1*	*Four units on 4ac*

R1	*R1*	*Single-Unit Detached Houses, Middle Housing,*	*1*	*4*	*Four units on 1ac*
R-5, R-7	*R2*	*SUD, Townhouse, Duplex, Triplex, Fourplex, Stacked Flats, Courtyard Apartments, Cottage Housing - 4-6 units/lot, ADUs*	*5, 7*	*25*	*Four townhomes on 8,000 sf*
R-10, R-16	*R3*	*R2 (No SF) + Fiveplex, Sixplex, Stacked Flats, Apartment Buildings and Mixed-Use up to 20 units, ADUs*	*10, 16*	*30*	*Ten units on 14,500 sf*
R-20	*R4*	*R3 + Apartment Buildings and Mixed-Use over 20 units, ADUs*	*20*	*50*	*100-unit complex on two acres*
N/A	*R-NM*	*R4 and C1 Uses + Mixed-Use (horizontal or vertical) Emphasis*	*N/A*	*30*	*Same as R4 but assumes 50% of parcels are non-residential*

Based on zoning data provided by the city that was provided by the city and understanding of the zoning shifts, particularly the creation of the new Neighborhood Mixed Use and DUC zoning designations, zoning changes were recorded. In summary:

- R-1 remains unchanged
- R-5 and R-7 become R-2 and 72 acres of R-7 is shifted to R-NM
- R-10 and R-16 become R-3
- R-20 shifts one acre to R-NM
- R-NM receives zone shifts from R-2, R-20, and Unclassified
- C-1 shifts 13 acres to DUC C-1
- C-2 shifts 8 acres to DUC C-2
- DUC is shifted into DUC-55, -75, and -125, and Flex Residential
- M-1 shifts 39 acres to DUC M-1 and 2 acres to DUC-75

In addition to the zoning shifts, densities were substantially increased for the zoning districts. With these adjustments the city's new capacity is estimated to accommodate 45,951 new housing units.

Figure 54. Adjusted Residential Capacity by Zone

Residential & Mixed-Use Zoning Districts	Zone category	Developable Acres	Net zoning changes (acres)	Assumed Density - DU/Acres	Residential Capacity (units)	Net New (Units)
King County						
Residential Conservancy (RC)	Low Density	745	0	1	745	-
R-1 Residential	Low Density	275	0	4	1,471	-
R2 – Residential Low	Moderate Density	294	1158	25	37,789	28,950
R3 – Residential Moderate	Moderate Density	0	22	30	660	660
R4 – Residential High	High Density	79	-1	50	3,890	-50
Neighborhood Mixed-Use (R-NM)	High Density Mixed-Use	0	89	30	2,670	2,670
Manufacture Home/Community (R-MHC)	Low Density	27	0	10	273	
DUC Downtown Urban Center - 125	High Density Mixed-Use	0	5	100	125	500
DUC Downtown Urban Center - 75	High Density Mixed-Use	0	5	95	119	475
DUC Downtown Urban Center - 55	High Density Mixed-Use	0	4	90	90	360
DUC Neighborhood Residential	High Density Mixed-Use	0	3	30	90	90
Total		1,420	1,285	-	47,422	35,310
Pierce County						
R2 – Residential Low	Moderate Density	20	20	**25**	500	500
Total		20	20	**-**	500	500
			Total New (2044) Housing Capacity		47,922	35,810

This analysis finds that there is sufficient residential zoned capacity in the Draft Preferred Alternative zoning map and related updates to accommodate the city's growth target of 12,112.

Geographic Distribution of Residential Zoning

Moderate and high-density residential zoning is prevalent throughout the city, with higher density residential occurring in downtown, in growth centers, and along key transit corridors. Moderate density residential zoning represents about 54% of total land zoned primarily for residential purposes, high-density represents 10%, around mixed-use 12% and around low-density 25%. Zones most suitable for the development of ADUs (moderate and low-density) represent 79% of total residential zoned areas, providing ample opportunities this type of housing.

Housing Capacity by Income Band

In addition to meeting the residential and employment capacity targets through zoning and policy decisions, the city meets the aggregate King and Pierce County housing needs for income level groups. The only exception is the >120% Average Median Income (AMI) category, which includes primarily low-density housing in the R-1 and RC zones. However, this AMI category is not required to be met under HB 1220 requirements as high-income earners are represented in this group and can also purchase moderate density housing options as well.

In Pierce County, the City's primary residential zone is R-2 Residential Moderate which for purposes of this capacity analysis aligns with the 80-120% AMI range. This zone can adequately accommodate the total housing need of 112, however AMI below 80% is not accounted for in this analysis. As indicated earlier, the housing target for the Pierce County portion of Auburn is only 112 housing units and as a result the city does not intend to rezone small areas of land in order to satisfy AMI requirements since actual development is unpredictable. The R-2 Residential Moderate zone can accommodate middle housing, single unit detached housing, and ADUs that can realistically serve a range of incomes, and the city will continue to provide flexibility in the development types allowed in this part of the city to best accommodate the full range of AMI levels.

An estimated 1,852 new Accessory Dwelling Units (ADUs) are accounted for prior to rezoning, as these developments are currently allowed in various zones are expected to occur naturally over the next 20-years. In total, 80% of new ADUs are planned for in the 80-120% AMI range, and 20% in the greater than 120% AMI range. ADUs are expected primarily in the low-density and moderate-density land uses found in throughout the city.

Figure 55. Adjusted Residential Capacity by Affordability Level

Income Level (% AMI)	Zone Categories Servicing these Needs	Housing Needs	Capacity prior to Zoning Adjustment	Post-Rezone Capacity	Capacity surplus or deficit
King County					
0-30% PSH	High Density-Mixed Use	2,389	566	3,004	**615**
0-30% Other					

>30-50%	High-Density, ADU	962	1,532	4,823	**3,861**
>50-80%					
>80-100%	Moderate Density, ADU	2,458	5,058	37,379	**35,033**
>100-120%					
>120%	Low-Density, ADU	6,303	348	2,217	***(4,086)***
Pierce County					
>80-100%	Moderate Density, ADU	112	100	500	***388***
Aggregated Total	-	12,112	7,504	46,070	*35,810*

Employment Capacity

The adjusted employment development capacity by zone is calculated by the square footage conversion from acres and then divided by the employment densities determined through the King County Buildable Lands Report process in 2021. Downtown mixed-uses expect a distribution of 75% residential and 25% commercial, whereas the Neighborhood Mixed Use expects a 50-50% split for mixed uses laterally and horizontally. The adjusted employment estimates accommodating 20,701 additional jobs at max buildable capacity. The city's employment target is 19,520 and these adjustments meet the growth target.

Figure 56. Adjusted Employment Capacity by Zone

Zone Non-Residential Zoning Districts	Zoning changes (developable acres)	Net zoning changes (acres)	Assumed density Max Buildable Area	Residential capacity adjustment (units) Jobs
Light Commercial (C-1)	32	-13	845,391	2,254
Heavy Commercial District (C-2)	8	-8	-	-
Auburn Gateway District	0	0	653,400	653
Light Industrial (M-1)	132	-41	3,945,338	3,945
Heavy Industrial (M-2)	81	-9	3,122,925	3,123
Airport Zone	5	0	233,038	233
Mixed-Use Districts	**Zoning changes (developable acres)**	**Net zoning changes (acres)**	**Max Buildable Area**	**Jobs**
Downtown Urban Center	11	-11	-	-
DUC Downtown Urban Center - 125	0	5	163,350	408

DUC Downtown Urban Center - 75	0	5	163,350	408
DUC Downtown Urban Center - 55	0	4	130,680	327
DUC Neighborhood Residential	0	3	98,010	245
DUC Health and Wellness - 125	0	2	87,120	218
DUC C-1	0	13	566,280	1,510
DUC C-2	0	12	522,720	1,394
DUC M-1	0	39	1,698,840	1,699
Neighborhood Mixed-Use (RNM)	0	89	1,938,420	5,169
			Total Jobs Capacity	**21,587**



2024 COMPRHENSIVE PLAN

Agency Checklists

Periodic Update Checklist for Fully-Planning Cities

Auburn
City

Alexandria Teague, Planning Services Manager, 253-931-3003, planning@auburnwa.gov
Staff contact, phone + email

Notice: This checklist has been updated with the new 2022-2023 GMA legislation. Rows that include new 2022-2023 legislative changes or updated Commerce guidance are marked with an orange dot ●. Statutory changes adopted since 2015 are emphasized in highlighted text to help identify new GMA requirements that may not have been addressed during the last periodic update or through other amendments outside of the required periodic update process. Additionally, amendments to the GMA, including those from the 2023 legislative session, are summarized in this document on Commerce's GMA Laws and Rules webpage.

Overview: This checklist is intended to help cities that are fully planning under the Growth Management Act (GMA) conduct the1 "periodic review and update" of ***comprehensive plans*** and ***development regulations*** required under RCW 36.70A.130 (5). This checklist identifies components of comprehensive plans and development regulations that may need updating to reflect the latest local conditions or to comply with GMA changes since the last periodic update cycle (2015-2018).

Local governments should review local comprehensive plan policies, countywide planning policies and multicounty planning policies (where applicable) to be consistent with the new requirements.

Checklist Instructions

With the most recent versions of your comprehensive plan and development regulations in hand, fill out each item in the checklist, answering the following questions:

Is this item addressed in your current plan or development regulations? If YES, fill in the form with citation(s) to where in the plan or regulation the item is addressed. Where possible, we recommend citing policy or goal numbers by element rather than page numbers, since these can change. If you have questions about the requirement, follow the hyperlinks to the relevant statutory provision or rules. If you still have questions, visit the Commerce Periodic Update webpage or contact the Commerce planner assigned to your region.

Is amendment needed to meet current statute? Check YES to indicate a change to your plan will be needed. Check NO to indicate that the GMA requirement has already been met. Local updates may not be needed if the statute hasn't changed since your previous update, if your jurisdiction has kept current with required inventories, or if there haven't been many changes in local circumstances.

Use the "Notes" column to add additional information to note where your city may elect to work on or amend sections of your plan or development regulations, to call out sections that are not strictly required by the GMA, or to indicate if the item is not applicable to your jurisdiction.

Submit your checklist! This will be the first deliverable under your periodic update grant.

PlanView system and instructions: Completed checklists can be submitted through Commerce's PlanView portal. The PlanView system allows cities and counties to submit and track amendments to comprehensive plans or development regulations online, with or without a user account. You can also submit via email: reviewteam@commerce.wa.gov Fill out and attach a cover sheet, a copy of your submittal and this checklist. *Please be advised that Commerce is no longer accepting paper submittals*.

For further information about the submittal process, please visit Commerce's Growth Management Act Laws and Rules webpage.

Need help?

Please visit Commerce's periodic update webpage for additional resources.

Or contact:

Suzanne Austin, AICP
Senior Planner
Growth Management Services
WA Department of Commerce
509.407.7955
Suzanne.Austin@commerce.wa.gov

Or, your assigned regional planner

Checklist Navigation

Section I: Comprehensive Plan	Section II: Development Regulations	Appendices
LAND USE	CRITICAL AREAS	APPENDIX A: HOUSING UNIT MINIMUMS PER POPULATION
HOUSING	ZONING CODE	APPENDIX B: ELEMENT UPDATES UNDER HB 1181
CAPITAL FACILITIES	SHORELINE MASTER PROGRAM	
UTILITIES	RESOURCE LANDS	
TRANSPORTATION	ESSENTIAL PUBLIC FACILITIES	
SHORELINE	SUBDIVISION CODE	
ESSENTIAL PUBLIC FACILITIES	STORMWATER	
TRIBAL PLANNING	ORGANIC MATERIALS MANAGEMENT	
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CONSISTENCY	PROJECT REVIEW PROCEDURES	
PUBLIC PARTICIPATION	PLAN & REGULATION AMENDMENTS	

Section I: Comprehensive Plan

Land Use Element

Consistent with countywide planning policies (CWPPs) and RCW 36.70A.070(1), amended in 2023

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
Notice: 2021-2022 legislation ESSB 5593: includes changes to RCW 36.70A.130 regarding UGA size, patterns of development, suitability and infrastructure. Coordinate these efforts with your county.	Yes. LU-128	No	Coordination with Pierce County on existing Potential Annexation Area occurred in 2023, with no changes necessary for the city. No other UGA boundaries have been identified or requested by King or Pierce County.	Completed: ☒Date: 2-28-2024
a. The element integrates relevant county-wide planning policies into the local planning process, and ensures local goals and policies are consistent. For jurisdictions in the central Puget Sound region, the plan is consistent with applicable multicounty planning policies. RCW 36.70A.210 WAC 365-196-305 Coordinate these efforts with your county.	Yes. Planning Framework. Page LUE-2	No	Planning framework notes alignment with CPPs and CPPs are referenced in relevant goals and policies though chapter.	Completed: ☒Date: 2-28-2024
b. A future land use map showing city limits and UGA boundaries. RCW 36.70A.070(1) amended in 2023 and RCW 36.70A.110(6), WAC 365-196-400(2)(d), WAC 365-196-405(2)(i)(ii)	Yes. Land Use Element Map 1.3	Yes	Draft map is shown, with potential changes expected as Plan moves through	Completed: ☒Date: 3/1/2024
c. Consideration of urban planning approaches that increase physical activity and reduce per capita vehicle miles 25 traveled within the jurisdiction, but without increasing greenhouse gas emissions elsewhere in the state. RCW 36.70A.070(1) (amended in 2023) and WAC 365-196-405(2)(j). Additional resources: Commerce's Climate guidance, Transportation Efficient Communities' guidance, and the WA Department of Health Washington State Plan for Healthy Communities and Active Community Environment Toolkit	Yes. LU-8.	No	New policy in compliance with RCW 36.70A.070. This was considered during development of future land use map.	Completed: ☒Date: 3/1/2024

Section I: Comprehensive Plan

d. A consistent population projection throughout the plan which should be consistent with the jurisdiction's allocation of countywide population and housing needs. RCW 36.70A.115, RCW 43.62.035 and WAC 365-196-405(f)	Yes. Map 1.1 and throughout comp plan.	No	Population projections incorporated in the Land Use Element and Core Plan	Completed: ☒ Date: 3/1/2024
e. Estimates of population densities and building intensities based on future land uses and housing needs. RCW 36.70A.070(1) (amended in 2023), WAC 365-196-405(2)(i) • For cities required to plan under the Buildable Lands Program, RCW 36.70A.215 amended in 2017, some jurisdictions may need to identify reasonable measures to reconcile inconsistencies. See Commerce's Buildable Lands Program page.	Yes. Map 1.1 and 1.2 align with Land Use Map. Housing Needs Assessment Figure 2 and Figure 3.	No	Planning for increased building density includes low-density designated residential areas that are projected to increase in density as market and availability of utilities increases. "The pattern of one single density in a zone or neighborhood will evolve into increased and mixed densities in exchange for amenities that enhance quality of life."	Completed: ☒ Date: 3/12024
f. Provisions for protection of the quality and quantity of groundwater used for public water supplies. RCW 36.70A.070(1) (amended in 2023), WAC 365-196-405(1)(c); WAC 365-196-485(1)(d)	Yes. In Utilities Element, Water Policy 6.4	No		Completed: ☒ Date: 3/1/2024
g. Identification of lands useful for public purposes such as utility corridors, transportation corridors, landfills, sewage treatment facilities, storm water management facilities, recreation, schools and other public uses. RCW 36.70A.150 and WAC 365-196-340	Yes. Land Use Element, pages LUE-28 Public/Quasi-Public Designation, plus Land Use Map 1.3. See also Utilities and Transportation Elements.	No	Land Use chapter highlights a lot of specific subarea plans and policies for those areas. More detailed information on some of these purposes will be found in other elements, like capital facilities, transportation, etc.	Completed: ☒ Date: 3/7/2024

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
h. Identification of open space corridors and green spaces within and between urban growth areas, including lands useful for recreation, wildlife habitat, trails and connection of critical areas, and urban and community forests within the UGA. RCW 36.70A.070(1) amended in 2023, RCW 36.70A.160 and WAC 365-196-335	Yes, page LUE-30 Open Space Designation. Map 1.3.	No	Open Space designation reflected on "Comprehensive Land Use" Map.	Completed: ☒ Date: 3/7/2024
i. If there is an airport within or adjacent to the city: policies, land use designations (and zoning) to discourage the siting of incompatible uses adjacent to general aviation airports. RCW 36.70A.510, RCW 36.70.547 Note: The plan (and associated regulations) must be filed with the Aviation Division of WSDOT. WAC 365-196-455	Yes, Policies LU-96-105	No.	Industrial Designation – airport specific policies Airport Master Plan is in appendix for further detail.	Completed: ☒ Date: 3/7/2024
j. Where applicable, a review of drainage, flooding and stormwater run-off in the area and nearby jurisdictions and provide guidance for corrective actions to mitigate or cleanse those discharges that pollute waters of the state. RCW 36.70A.070(1) (amended in 2023) and WAC 365-196-405(2)(e) Note: RCW 90.56.010(27) defines waters of the state. Additional resources: Commerce's climate guidance, Protect Puget Sound Watersheds, Building Cities in the Rain, Ecology Stormwater Manuals, Puget Sound Partnership Action Agenda	Yes. LUE-28 Open Space Designation and throughout document.	No	See Also Utilities Element, Utilities Systems Plans and Capital Facilities Element.	Completed: ☒ Date: 3/7/2024

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
k. Policies to designate and protect critical areas including wetlands, fish and wildlife habitat protection areas, frequently flooded areas, critical aquifer recharge areas and geologically hazardous areas. In developing these policies, the city must have included the best available science (BAS) to protect the functions and values of critical areas, and give "special consideration" to conservation or protection measures necessary to preserve or enhance anadromous fisheries. RCW 36.70A.030(6), RCW 36.70A.172, WAC 365-190-080. Best Available Science: see WAC 365-195-900 through -925	Yes. Critical Area Overlay Land Use specifically policies LU-136-139	No		Completed: ☒ Date: 3/7/2024
l. If forest or agricultural lands of long-term commercial significance are designated inside a city: a program authorizing Transfer (or Purchase) of Development Rights. RCW 36.70A.060(4), RCW 36.70A.170	N/A	N/A	N/A	Completed: ☒ Date: 3/7/2024
m. If there is a Military Base within or adjacent to the jurisdiction employing 100 or more personnel: policies, land use designations, (and consistent zoning) to discourage the siting of incompatible uses adjacent to military bases. RCW 36.70A.530(3), WAC 365-196-475	N/A	N/A	N/A	Completed: ☒ Date: 3/7/2024
n. New section RCW 36.70A.142 (2022), HB 1799: Development regulations newly developed, updated, or amended *after January 1, 2025* allow for the siting of organic materials (OM) management facilities as identified in local solid waste management plans (SWMP) to meet OM reduction and diversion goals. Siting must meet criteria described in RCW 70A.205.040(3). See also RCW 36.70.330. For applicability, see RCW 70A.205.540.	No	TBD	Addressed as appropriate in Utilities Element and related Systems Plans. Development regulations will be updated later in 2024.	Completed: ☒ Date: 3/7/2024

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
o. Give special consideration to achieving environmental justice in goals and policies, including efforts to avoid creating or worsening environmental health disparities. RCW 36.70A.070(1) amended in 2023.	Yes. LU-9 and Climate Element Goal 1 and 2	No	Described as a policy in Land Use Element and discussed at greater lengths in Climate Element.	Completed: ☒ Date: 3/7/2024
p. The land use element must reduce and mitigate the risk to lives and property posed by wildfires by using land use planning tools and through wildfire preparedness and fire adaptation measures. RCW 36.70A.070(1) amended in 2023. See also: International Wildland-Urban Interface Code	Yes. LU-10 and Climate Element Goal 4 and 5	No	Identified as policy in Land Use Element to incorporate into Climate Element work plan for 2029 deadline. Risk is assessed in Climate Element.	Completed: ☒ Date: 3/7/2024

Housing Element

New 2021 and 2022 legislation substantially amended the housing-related provisions of the Growth Management Act (GMA), RCW 36.70A.070 (2). Local governments should review local comprehensive plan policies and countywide planning policies to be consistent with the updated requirements. Please refer to Commerce's housing webpage for further information. See also Appendix A of this checklist for the new 2023 minimum housing unit requirements per city population.

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
Notice: For more information about what these housing element requirements involve and what Commerce staff will be reviewing for, please see the Expanded Housing Checklist located on the Updating GMA Housing Elements webpage.				
a. Goals, policies and objectives for: • the preservation, improvement and development of housing RCW 36.70A.070(2)(b); • moderate density housing options including, but not limited to, duplexes, triplexes, and townhomes, within an urban growth area boundary, RCW 36.70A.070(2)(b) and WAC 365-196-410(2)(a); and • Consideration of housing locations in relation to employment locations and the role of ADUs. RCW 36.70A.070(2)(d) new in 2021 Notice: *These items were separately listed in the previous version of the checklist. No content was changed.*	Yes. Throughout Housing Element and Housing Needs and Characteristics Assessment Update	No	These various bullets are addressed in the Housing Element and HNA. Preservation – HE Goal 3; Middle Housing – HE Planning Approach and Goals and Policies; ADUs - HE Planning Approach and Goals and Policies	Completed: ☒ Date:3/21/24
b. An inventory and analysis of existing and projected housing needs over the planning period, by income band, consistent with the jurisdiction's share of countywide housing need, as provided by Commerce. RCW 36.70A.070(2)(a) amended in 2021, WAC 365-196-410(2)(b) and (c)	Yes. HE-10	No	CPP sections are included in HE Housing Need by Income Level section	Completed: ☒ Date:3/21/24

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
c. Identification of capacity of land for housing including, but not limited to, government-assisted housing, housing for moderate, low, very low, and extremely low-income households, manufactured housing, multifamily housing, group homes, foster care facilities, emergency housing, emergency shelters and permanent supportive housing. RCW 36.70A.070(2)(c) amended in 2021, WAC 365-196-410(e) and (f)	Yes. HE Table 1 and Table 2. Section 5 of HNA.	No	Summary in Housing Element, technical evaluation of capacity in Housing Needs and Characteristics Assessment Update.	Completed: ☒ Date: 4/8/24
d. Adequate provisions for existing and projected housing needs for all economic segments of the community, including documenting barriers and actions needed to achieve housing availability. RCW 36.70A.070(2)(d) amended in 2021, WAC 365-196-010(g)(ii), WAC 365-196-300(f), WAC 365-196-410 and see Commerce's Housing Action Plan (HAP) guidance: Guidance for Developing a Housing Action Plan.	Yes. HE Table 2. HNA Section 5.	No	Summary in Housing Element, technical evaluation of capacity in Housing Needs and Characteristics Assessment Update.	Completed: ☒ Date: 4/8/24
e. Identify local policies and regulations that result in racially disparate impacts, displacement, and exclusion in housing, including: • Zoning that may have a discriminatory effect; • Disinvestment; and • Infrastructure availability RCW 36.70A.070 (2)(e) new in 2021	Yes. HE Racially Disparate Impacts section.	Yes.	Discussed in referenced section, goals and policies updated to reflect RDI findings. A lot of additional discussion and information in Housing Needs and Characteristics Assessment Update.	Completed: ☒ Date: 4/8/24
f. Establish policies and regulations to address and begin to undo racially disparate impacts, displacement, and exclusion in housing caused by local policies, plans, and actions. RCW 36.70A.070(2)(f) new in 2021	Yes. H-9, H10, H-16, H-21, H-22, H-28, H-41-43, H-68	No.	Addressed throughout policies. Certain policies are consistent with regional approach to housing preservation per SKHHP recommendations.	Completed: ☒ Date: 3/21/24

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
g. Identification of areas that may be at higher risk of displacement from market forces that occur with changes to zoning development regulations and capital investments. RCW 36.70A.070(2)(g) new in 2021 Establish anti-displacement policies, with consideration given to the preservation of historical and cultural communities as well as investments in low, very low, extremely low, and moderate-income housing; equitable development initiatives; inclusionary zoning; community planning requirements; tenant protections; land disposition policies; and consideration of land that may be used for affordable housing. RCW 36.70A.070(2)(h) new in 2021 See also: Support Materials for Racially Disparate Impacts, Exclusion and Displacement Work	Yes. HE-7 9 (Displacement Risk section) and HNA	No.	Located in Housing Element. Additional information in Housing Needs and Characteristics Assessment	Completed: ☒ Date: 3/21/24

Capital Facilities Plan (CFP) Element

To serve as a check on the practicality of achieving other elements of the plan, covering all capital facilities planned, provided and paid for by public entities including local government and special districts, etc. including water systems, sanitary sewer systems, storm water facilities, schools, parks and recreational facilities, police and fire protection facilities. Capital expenditures from park and recreation elements, if separate, should be included in the CFP Element. The CFP Element must be consistent with CWPPs, and RCW 36.70A.070(3) amended in 2023. Changes made to this element through HB 1181 (climate change and resiliency) are not required, although jurisdictions should make a good faith effort to incorporate these items to be consistent with the new legislation.

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
a. Policies or procedures to ensure capital budget decisions are in conformity with the comprehensive plan. RCW 36.70A.120	Yes. CFE-1	No	Note: Capital Facilities Plan is adopted by reference in CFE. A lot of information in this checklist is in CFP.	Completed: ☒ Date: 4/9/24
b. An inventory of existing capital facilities owned by public entities, including green infrastructure. RCW 36.70A.070(3)(a) amended in 2023 and WAC 365-196-415(1)(a)	No	Yes	This is included in Systems Plan and CFP, which are scheduled to be complete summer 2024.	Completed: ☐ Date:
c. A forecast of needed capital facilities. RCW 36.70A.070(3)(b) and WAC 365-196-415(1)(b) Note: The forecast of future need should be based on projected population and adopted levels of service (LOS) over the planning period.	No	Yes	This is included in Systems Plan and CFP, which are scheduled to be complete summer 2024.	Completed: ☐ Date:
d. Proposed locations and capacities of expanded or new capital facilities. RCW 36.70A.070(3)(c) and WAC 365-196-415 (1)(c) and (3)(c) Infrastructure investments should consider equity and plan for any potential displacement impacts.	No	Yes	This is included in Systems Plan and CFP, which are scheduled to be complete summer 2024.	Completed: ☐ Date:
e. A six-year plan (at minimum) that will finance such capital facilities within projected funding capacities and identify sources of public money to finance planned capital facilities. RCW 36.70A.070(3)(d), RCW 36.70A.120, WAC 365-196-415(1)(d)	No	Yes	See CFP.	Completed: ☒ Date: 4/9/24

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
f. A policy or procedure to reassess the Land Use Element if probable funding falls short of meeting existing needs. RCW 36.70A.070(3)(e) WAC 365-196-415(2)(d) Note: park and recreation facilities shall be included in the capital facilities plan element.	Yes CF-30	No		Completed: ☒ Date: 4/9/24
g. If impact fees are collected: identification of public facilities on which money is to be spent. RCW 82.02.050(5) and WAC 365-196-850(3)	Yes. CFP.	No	See CFP.	Completed: ☒ Date: 4/9/24
h. Identify and include information about all public entities, including special purpose districts that own capital facilities. RCW 36.70A.070 (3) amended in 2023	Yes. Utilities Element.		This is described in Utilities Element.	Completed: ☒ Date: 4/9/24
Utilities Element Consistent with relevant CWPPs and RCW 36.70A.070 (4) amended in 2023. Utilities include, but are not limited to: sanitary sewer systems, water lines, fire suppression, electrical lines, telecommunication lines, and natural gas lines. Changes made to this element through HB 1181 (climate change and resiliency) are not required, although jurisdictions should make a good faith effort to incorporate these items to be consistent with the new legislation.				
a. The general location, proposed location and capacity of all existing and proposed utilities, to include telecommunications. RCW 36.70A.070(4)(a) amended in 2023 and WAC 365-196-420	No	Yes	The current Utilities Element provides narratives for each of the utilities but does not provide location information. The new Utilities Element includes new graphical and narrative representations. The narratives are located in the Overview section of the Utilities Element. The graphical elements are shown immediately following the policy statements.	Completed: ☒ Date: 2/28/24
b. Identify and include information and contact information about all public entities, including special purpose districts that own utility systems. RCW 36.70A.070 (4)(b) new in 2023	No	Yes	The current Utilities Element does not provide contact information about all public entities or special purpose districts. The new Element includes this information. This information is located immediately following the policy statements.	Completed: ☒ Date: 2/28/24

Transportation Element

Consistent with relevant CWPPs and RCW 36.70A.070 (6) amended in 2023 by HB 1181. See also the new climate element below for jurisdictional requirements.

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
a. An inventory of air, water and ground transportation facilities and services, including transit alignments, active transportation facilities, state-owned transportation facilities and general aviation airports. RCW 36.70A.070(6)(a)(iii)(A) amended in 2023 and WAC 365-196-430(2)(c)	Chapter 2, Appendix A	No		Completed: ☒ Date: 3/21/24
b. Adopted multimodal levels of service standards for all locally owned arterials, locally and regionally operated transit routes that serve UGAs, state-owned or operated transit routes that serve urban areas if the department of transportation has prepared such standards, and active transportation facilities to serve as a gauge to judge performance of the system and success in helping to achieve environmental justice. RCW 36.70A.070(6)(a)(iii)(B) and (C) amended in 2023, WAC 365-196-430	Chapter 2	No		Completed: ☒ Date:3/21/24
c. Identification of specific actions to bring transportation facilities and services to established multimodal LOS. RCW 36.70A.070(6)(a)(iii)(D) amended in 2023, WAC 365-196-430	Chapter 2	No		Completed: ☒ Date:3/21/24
d. A forecast of multimodal transportation for at least 10 years including land use assumptions used in estimating travel. RCW 36.70A.070(6)(a)(i), RCW 36.70A.070 (6)(a)(iii)(E) amended in 2023, WAC 365-196-430(2)(f)	Chapter 2	No		Completed: ☒ Date:3/21/24

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
e. A projection of state and local system needs to equitably meet current and future demand and equitably implement the multimodal network. RCW 36.70A.070(6)(a)(iii)(F) amended in 2023, WAC 365-196-430(1)(c)(vi) and RCW 47.06	Chapter 2, Appendix B	No		Completed: ☒ Date:3/21/24
f. A transition plan for transportation as required in Title II of ADA. Perform self-evaluations of current facilities and develop a program access plan to address deficiencies and achieve the identification of physical obstacles, establish methods, perform modifications and identify leadership roles. RCW 36.70A.070(6)(a)(iii)(G) new in 2023.	Yes. CTP 1.4.2	No		Completed: ☒ Date: 4/9/24
g. An active transportation component to include collaborative efforts to identify and designate planned improvements for active transportation facilities and corridors that address and encourage enhanced community access and promote healthy lifestyles. RCW 36.70A.070(6)(a)(vii) amended in 2023, WAC 365-196-430(2)(j)	Chapter 2, Section 2.3	No		Completed: ☒ Date:3/21/24
h. A description of any existing and planned transportation demand management (TDM) strategies, such as HOV lanes or subsidy programs, parking policies, etc. RCW 36.70A.070(6)(a)(vi) and WAC 365-196-430(2)(i)(i)	Chapter 4, Goal 8	No		Completed: ☒ Date:3/21/24
i. An analysis of future funding capability to judge needs against probable funding resources. RCW 36.70A.070(6)(a)(iv)(A), WAC 365.196-430(2)(k)(iv)	Chapter 6, Section 6.1	No		Completed: ☒ Date:3/21/24

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
j. A multi-year financing plan based on needs identified in the comprehensive plan, the appropriate parts of which serve as the basis for the 6-year street, road or transit program. RCW 36.70A.070(6)(a)(iv)(B) and RCW 35.77.010, WAC 365-196-430(2)(k)(ii)	Chapter 6, Section 6.1			Completed: ☒ Date:3/21/24
k. If probable funding falls short of meeting identified needs of the transportation system, including state transportation facilities, a discussion of how additional funds will be raised, or how land use assumptions will be reassessed to ensure that LOS standards will be met. RCW 36.70A.070(6)(a)(iv)(C) amended in 2023, WAC 365-196-430(2)(l)(iii)	Chapter 6, Section 6.4			Completed: ☒ Date:3/21/24
l. A description of intergovernmental coordination efforts, including an assessment of the impacts of the transportation plan and land use assumptions on the transportation systems of adjacent jurisdictions and how it is consistent with the regional transportation plan. RCW 36.70A.070(6)(a)(v); WAC 365-196-430(1)(e) and 430(2)(a)(iii)	Chapter 1, Section 1.5			Completed: ☒ Date:3/21/24

Shoreline

For shorelines of the state, the goals and policies of the shoreline management act as set forth in RCW 90.58.020 are added as one of the goals of the Growth Management Act (GMA) as set forth in RCW 36.70A.480. The goals and policies of a shoreline master program for a county or city approved under RCW 90.58 shall be considered an element of the county or city's comprehensive plan.

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
a. The policies, goals, and provisions of RCW 90.58 and applicable guidelines shall be the sole basis for determining compliance of a shoreline master program with this chapter except as the shoreline master program is required to comply with the internal consistency provisions of RCW 36.70A.070, 36.70A.040(4), 35.63.125, 35A.63.105, 36.70A.480	N/A			Completed: ☐ Date:
b. Shoreline master programs shall provide a level of protection to critical areas located within shorelines of the state that assures no net loss of shoreline ecological functions necessary to sustain shoreline natural resources as defined by department of ecology guidelines adopted pursuant to RCW 90.58.060.	N/A			Completed: ☐ Date:
c. Shorelines of the state shall not be considered critical areas under this chapter except to the extent that specific areas located within shorelines of the state qualify for critical area designation based on the definition of critical areas provided by RCW 36.70A.030(5) and have been designated as such by a local government pursuant to RCW 36.70A.060(2)	N/A			Completed: ☐ Date:

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
d. If a local jurisdiction's master program does not include land necessary for buffers for critical areas that occur within shorelines of the state, as authorized by RCW 90.58.030(2)(f), then the local jurisdiction shall continue to regulate those critical areas and their required buffers pursuant to RCW 36.70A.060(2).	N/A			Completed: ☐ Date:
Provisions for siting essential public facilities (EPFs) Consistent with CWPPs and RCW 36.70A.200, amended 2021. This section can be included in the Capital Facilities Element, Land Use Element or in its own element. Sometimes the identification and siting process for EPFs is part of the CWPPs.				
a. A process or criteria for identifying and siting essential public facilities (EPFs). RCW 36.70A.200 and WAC 365-196-550(1) Notes: RCW 36.70A.200, amended 2021 regarding reentry and rehabilitation facilities. EPFs are defined in RCW 36.70A.200. Regional transit authority facilities are included in the list of essential public facilities.	Yes. CF Goal 5, CF-30-39	No	Addressed in Capital Facilities Element – Essential Public Facilities section.	Completed: ☒ Date: 4/8/24
b. Policies or procedures that ensure the comprehensive plan does not preclude the siting of EPFs. RCW 36.70A.200(5) Note: If the EPF siting process is in the CWPPs, this policy may be contained in the comprehensive plan as well. WAC 365-196-550(3)	Yes. CF 30, 31	No	Addressed in Capital Facilities Element – Essential Public Facilities section.	Completed: ☒ Date: 4/8/24

Tribal Participation in Planning new in 2022 (see HB 1717)

A federally recognized Indian tribe may voluntarily choose (opt-in) to participate in the local and regional planning processes.

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
a. Mutually agreeable memorandum of agreement between local governments and tribes in regard to collaboration and participation in the planning process unless otherwise agreed at the end of a mediation period. RCW 36.70A.040(8)(a) new in 2022, RCW 36.70A.190 new in 2022	No	No	Engagement with tribe on Comp Plan Elements and EIS will occur in April 2024 outside of Element goals and policies.	Completed: ☒ Date: 4/8/24
b. *Port elements*, if adopted, are developed collaboratively between the city, the applicable port and the applicable tribe(s), which shall comply with RCW 36.70A.040(8). RCW 36.70A.085 amended in 2022	N/A			Completed: ☐ Date:
c. *Urban Growth Areas:* counties and cities coordinate planning efforts for any areas planned for urban growth with applicable tribe(s). RCW 36.70A.110(1) amended 2022, RCW 36.70A.040(8)	No	No	Engagement with tribe on Comp Plan Elements and EIS will occur in April 2024 outside of Element goals and policies.	Completed: ☒ Date: 4/8/24

Climate Change and Resiliency

New in 2023, see HB 1181. RCW and WAC updates are forthcoming.
A new required element for comprehensive plans and new goal of the GMA. Designed to reduce greenhouse gas (GHG) emissions, plan for resiliency and support environmental justice. Climate elements must maximize economic, environmental and social co-benefits and prioritize environmental justice in order to avoid worsening environmental health disparities. A climate element can take the form of a single comprehensive plan chapter or be integrated into several chapters/elements such as housing, transportation and land use. Visit Commerce's Climate Program webpage for further guidance, grants, tools and staff contacts.

These requirements for GHG emission reductions and resiliency apply to the following counties and their cities with a population greater than 6,000 as of April 1, 2021. Please also review Appendix B for requirements due in the upcoming periodic update.

- June 30, 2025 Deadline: Clark, Skagit, Thurston, Whatcom
- June 30, 2026 Deadline: Benton, Franklin, Spokane
- June 30, 2029 Deadline: These jurisdictions are only required to update two elements this cycle – the transportation and climate elements

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
a. Greenhouse gas emissions reduction sub-element: must include goals and policies to reduce emissions and vehicle miles traveled. This sub-element is mandatory for the state's largest and fastest-growing counties and the cities within those counties. RCW 36.70A.070(9) new in 2023	Yes. C-43, C-45, C-47,	No		Completed: ☒ Date:3/21/24
b. Resiliency sub-element: must include goals and polices to improve climate preparedness, response and recovery efforts. This is mandatory for all counties and cities fully planning under the GMA and encouraged for others. RCW 36.70A.070(9) new in 2023	Yes. C-1, C-2, C-3, C-5, C-9, C-10, C-12	No		Completed: ☒ Date:3/21/24

Future required elements: pending state funding

As of 2022, these elements have not received state funding to aid local jurisdictions in implementation. Therefore, these elements are not required to be added to comprehensive plans at this time. Commerce encourages jurisdictions to begin planning for these elements, pending the future mandate.

	In Current Plan? Yes/No If yes, cite section	Notes	
Economic Development Although included in RCW 36.70A.070 "mandatory elements" an economic development element is not currently required because funding was not provided to assist in developing local elements when this element was added to the GMA. However, provisions for economic growth, vitality, and a high quality of life are important, and supporting strategies should be integrated with the land use, housing, utilities, and transportation elements. RCW 36.70A.070(7) amended in 2017	Yes	See Economic Development Element.	Completed: ☒ Date:3/21/24
Parks and Recreation Implements and is consistent with the capital facilities plan. Include a ten-year demand estimate, evaluation of service and facilities needs and evaluation of tree canopy coverage within UGAs. RCW 36.70A.070(8) amended in 2023 Although included in RCW 36.70A.070 "mandatory elements" a parks and recreation element is not currently required because the state did not provide funding to assist in developing local elements when this provision was added to the GMA. However, parks, recreation and open space planning are GMA goals, and it is important to plan for and fund these facilities.	Yes	See Parks Element and PROS Plan	Completed: ☒ Date:3/21/24

Optional Elements

Pursuant to RCW 36.70A.080, a comprehensive plan may include additional elements, items, or studies dealing with other subjects relating to the physical development within its jurisdiction, including, but not limited to:

	In Current Plan? Yes/No If yes, cite section	Notes	
Sub-Area Plans	Yes. LUE-39	Noted in Land Use Element	Completed: ☒ Date:3/21/24
Conservation			Completed: ☐ Date:
Recreation		See Parks and Recreation Element	Completed: ☒ Date: 4/8/24
Solar Energy			Completed: ☐ Date:

Consistency is required by the GMA

	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
a. All plan elements must be consistent with relevant county-wide planning policies (CWPPs) and, where applicable, multi-county planning policies (MPPs), and the GMA. RCW 36.70A.100 and 210, WAC 365-196-305; 400(2)(c); 510 and 520	Yes. LUE-2, for instance.	No.	All Elements policies and data are consistent. References to this are found through Elements.	Completed: ☒ Date:3/21/24
b. All plan elements must be consistent with each other. RCW 36.70A.070 (preamble) and WAC 365-197-040	Yes.	No.	All Elements policies and data are consistent. References to this are found through Elements.	Completed: ☒ Date:3/21/24
c. The plan must be coordinated with the plans of adjacent jurisdictions. RCW 36.70A.100 and WAC 365-196-520	Yes. LUE-2, for instance.	No.	Also referenced in various Elements.	Completed: ☒ Date:3/21/24

Public Participation

a. Plan ensures public participation in the comprehensive planning process. RCW 36.70A.020(11), .035, and .140, WAC 365-196-600(3) provide possible public participation choices.	Yes.	No.	Public Participation Plan, Comprehensive Transportation Plan, and other Elements describe public participation process for Comprehensive Plan.	Completed: ☒ Date:3/21/24
b. If the process for making amendments is included in the comprehensive plan: • The plan provides that amendments are to be considered no more often than once a year, not including the exceptions described in RCW 36.70A.130(2), WAC365-196-640 • The plan sets out a procedure for adopting emergency amendments and defines emergency. RCW 36.70A.130(2)(b) and RCW 36.70A.390, WAC 365-196-650(4)	N/A		This is found in ACC 14.22.	Completed: ☒ Date:3/21/24

Consistency is required by the GMA				
	In Current Plan? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
c. Plan or program for monitoring how well comprehensive plan policies, development regulations, and other implementation techniques are achieving the comp plan's goals and the goals of the GMA. WAC 365-196-660 discusses a potential review of growth management implementation on a systematic basis. New 2021-2022 legislation HB 1241 provides that those jurisdictions with a periodic update due in 2024 have until December 31, 2024 to submit. The legislation also changed the update cycle to every ten years after the 2024-2027 cycle. Jurisdictions that meet the new criteria described in RCW 36.70A.130(9) will be required to submit an implementation progress report five years after the review and revision of their comprehensive plan.	Yes. LU-7.	Yes	Staff will determine approach for incorporating monitoring program into city code in 2024. This is referenced in LU-7.	Completed: ☒ Date:3/21/24
d. Considerations for preserving property rights. Local governments must evaluate proposed regulatory or administrative actions to assure that such actions do not result in an unconstitutional taking of private property. RCW 36.70A.370. For further guidance see the 2018 Advisory Memo on the Unconstitutional Taking of Private Property	Yes.	No.	This is addressed through concurrency, critical areas mitigation, and in CTP.	Completed: ☒ Date: 4/9/24
e. Encourage the involvement of citizens in the planning process, including the participation of vulnerable populations and overburdened communities, and ensure coordination between communities and jurisdictions to reconcile conflicts. HB 1181 (2023) revised RCW 36.70A.020 *Planning Goals* for inclusion of	Yes.	No.	See Public Participation Plan. Also in code.	Completed: ☒ Date:3/21/24

Consistency is required by the GMA				
vulnerable populations and overburdened communities. RCW 36.70A.035 *Public Participation* was not amended under HB 1181.				

Section II: Development Regulations

Must be consistent with and implement the comprehensive plan. RCW 36.70A.040, WAC 365-196-800 and 810

Critical Areas

Regulations protecting critical areas are required by RCW 36.70A.060(2), RCW 36.70A.172(1), WAC 365-190-080 and WAC 365-195-900 through 925.

Please visit Commerce's **Critical Areas webpage** for resources and to complete the **Critical Areas Checklist**. Critical areas regulations must be reviewed and updated, as necessary, to incorporate legislative changes and best available science. Jurisdictions using periodic update grant funds to update critical areas regulations must submit the critical areas checklist as a first deliverable, in addition to this periodic update checklist.

Zoning Code

Note: Please review the new 2023 housing laws in the Washington State Housing Laws of 2019 through 2023 guidance, on Commerce's Planning for Housing webpage and Appendix A of this checklist.

	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
Notice: For more information about housing regulatory changes regarding supportive housing types, see Supportive Housing Types Review Checklist on the Updating GMA Housing Elements webpage. And for additional information on middle housing and ADU regulations, see the Middle Housing webpage.				
a. Zoning designations are consistent and implement land use designations that accommodate future housing needs by income bracket as allocated through the countywide planning process. (RCW 36.70A.070(2)(c) - amended in 2021 (HB 1220)		Yes	Yes zoning districts defined in Chapter 18.07 ACC. Middle housing and mobile/manufactured homes allowed within the zoning code (Title 18).	Completed: ☒ Date: **11/7/24**
b. Permanent supportive housing or transitional housing must be allowed where residences and hotels are allowed. RCW 36.70A.390 new in 2021, (HB 1220 sections 3-5) "permanent supportive housing" is defined in RCW 36.70A.030; "transitional housing" is defined in RCW 84.36.043(2)(c)		Yes	Permanent supportive housing has been defined in the Zoning Ordinance. Not yet included in the Residential or Commercial Use Tables.	Completed: ☐ Date:

	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
c. Indoor emergency shelters and indoor emergency housing must be allowed in any zones in which hotels are allowed, except in cities that have adopted an ordinance authorizing indoor emergency shelters and indoor emergency housing in a majority of zones within one-mile of transit. RCW 35A.21.430 amended in 2021, RCW 35.21.683, amended in 2021, (HB 1220 sections 3-5) "emergency housing" is defined in RCW 84.36.043(2)(b)		Yes	Indoor emergency shelters and indoor emergency housing have been defined in the Zoning Ordinance. Not yet included in the Residential or Commercial Use Tables.	Completed: ☐ Date:
d. The number of unrelated persons that occupy a household or dwelling unit except as provided in state law, for short-term rentals, or occupant load per square foot shall not be regulated or limited by cities. (HB 5235), RCW 35.21.682 new in 2021, RCW 35A.21.314 new in 2022, RCW 36.01.227 new in 2021		Yes		Completed: ☐ Date:
e. Limitations on the amount of parking local governments can require for low-income, senior, disabled and market-rate housing units located near high-quality transit service. RCW 36.70A.620 amended in 2020 and RCW 36.70A.600 amended in 2019		Yes		Completed: ☐ Date:
f. Family day care providers are allowed in all residential dwellings located in areas zoned for residential or commercial RCW 36.70A.450. Review RCW 43.216.010 for definition of family day care provider and WAC 365-196-865 for more information.		Yes		Completed: ☐ Date:

	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
g. Manufactured housing is regulated the same as site built housing. RCW 35.21.684 amended in 2019, RCW 35.63.160, RCW 35A.21.312 amended in 2019 and RCW 36.01.225 amended in 2019. A local government may require that manufactured homes: (1) are new, (2) are set on a permanent foundation, and (3) comply with local design standards applicable to other homes in the neighborhood, but may not discriminate against consumer choice in housing. See: National Manufactured Housing Construction and Safety Standards Act of 1974	Yes ACC 18.31.050	No		Completed: ☒ Date: **11/7/24**
h. Accessory dwelling units: cities (and counties) must adopt or amend by ordinance, and incorporate into their development regulations, zoning regulations and other official controls. RCW 36.70A.680 amended in 2023, RCW 36.70A.681 amended in 2023, RCW 36.70A.696 amended in 2023, RCW 36.70A.697 amended in 2020, RCW 36.70A.698 amended in 2020, RCW 36.70A.699 amended in 2020 See new Commerce guidance on the Middle Housing webpage	Yes ACC 18.31.120	Yes	Existing accessory dwelling units updated to comply with RCW 36.70A.681	Completed: ☒ Date: **11/7/24**
i. Residential structures occupied by persons with handicaps, and group care for children that meets the definition of "familial status" are regulated the same as a similar residential structure occupied by a family or other unrelated individuals. No city or county planning under the GMA may enact or maintain ordinances, development regulations, or administrative practices which treat a residential structure occupied by persons with handicaps differently than a similar residential structure occupied by a family or other unrelated individuals. RCW 36.70A.410, RCW 70.128.140 and 150, RCW 49.60.222-225 and WAC 365-196-860		Yes		Completed: ☐ Date:

	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
j. Affordable housing programs enacted or expanded under RCW 36.70A.540 amended in 2022 comply with the requirements of this section. Examples of such programs may include: density bonuses within urban growth areas, height and bulk bonuses, fee waivers or exemptions, parking reductions, expedited permitting conditioned on provision of low-income housing units, or mixed-use projects. WAC 365-196-300 See also RCW 36.70A.545 and WAC 365-196-410(2)(e)(i) "affordable housing" is defined in RCW 84.14.010 Review RCW 36.70A.620 amended in 2020, for minimum residential parking requirements.		Yes		Completed: ☐Date:
k. Limitations on regulating: outdoor encampments, safe parking efforts, indoor overnight shelters and temporary small houses on property owned or controlled by a religious organization. RCW 36.01.290 amended in 2020		Yes		Completed: ☐Date:
l. Regulations discourage incompatible uses around general aviation airports. RCW 36.70.547 and WAC 365-196-455. Incompatible uses include: high population intensity uses such as schools, community centers, tall structures, and hazardous wildlife attractants such as solid waste disposal sites, wastewater or stormwater treatment facilities, or stockyards. For more guidance, see WSDOT's Aviation Land Use Compatibility Program.	Yes Chapter 18.38 ACC			Completed: ☒Date: 11/7/24

	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
m. If a U.S. Department of Defense (DoD) military base employing 100 or more personnel is within or adjacent to the jurisdiction, zoning should discourage the siting of incompatible uses adjacent to military base. RCW 36.70A.530(3) and WAC 365-196-475. Visit Military One Source to locate any bases in your area and help make determination of applicability. If applicable, inform the commander of the base regarding amendments to the comprehensive plan and development regulations on lands adjacent to the base.	No.	No.	Not applicable.	Completed: ☐ Date:
n. Electric vehicle infrastructure (jurisdiction specified: adjacent to Interstates 5, 90, 405 or state route 520 and other criteria) must be allowed as a use in all areas except those zoned for residential, resource use or critical areas. RCW 36.70A.695	Yes Chapter 18.47 ACC	No.		Completed: ☐ Date:
Shoreline Master Program Consistent with RCW 90.58 Shoreline Management Act of 1971				
a. Zoning designations are consistent with Shoreline Master Program (SMP) environmental designations. RCW 36.70A.480	N/A		City's shoreline master program is adopted under Ordinance 6733	Completed: ☒ Date:3/**21/24**
b. If updated to meet RCW 36.70A.480 (2010), SMP regulations provide protection to critical areas in shorelines that is at least equal to the protection provided to critical areas by the critical areas ordinance. RCW 36.70A.480(4) and RCW 90.58.090(4) See Ecology's shoreline planners' toolbox for the SMP Checklist and other resources and Ecology's Shoreline Master Programs Handbook webpage	N/A			Completed: ☒ Date:3/**21/24**

Resource Lands

Defined in RCW 36.70A.030(3), (12) and (17) and consistent with RCW 36.70A.060 and RCW 36.70A.170

	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
a. Zoning is consistent with natural resource lands designations in the comprehensive plan and conserves natural resource lands. RCW 36.70A.060(3), WAC 365-196-815 and WAC 365-190-020(6). Consider innovative zoning techniques to conserve agricultural lands of long-term significance RCW 36.70A.177(2). See also WAC 365-196-815(3) for examples of innovative zoning techniques.	Yes. 16.10	No		Completed: ☒Date:3/21/24
b. Regulations to assure that use of lands adjacent to natural resource lands does not interfere with natural resource production. RCW 36.70A.060(1)(a) and WAC 365-190-040 Regulations require notice on all development permits and plats within 500 feet of designated natural resource lands that the property is within or near a designated natural resource land on which a variety of commercial activities may occur that are regulations to implement comprehensive plan	Yes. 16.10.090	No		Completed: ☒Date:3/21/24
c. For designated agricultural land, regulations encourage nonagricultural uses to be limited to lands with poor soils or otherwise not suitable for agricultural purposes. Accessory uses should be located, designed and operated to support the continuation of agricultural uses. RCW 36.70A.177(3)(b)	Yes. 18.070.10	No		Completed: ☒Date:3/21/24
d. Designate mineral lands and associated regulations as required by RCW 36.70A.131and WAC 365-190-040(5). For more information review the WA State Dept. of Natural Resources (DNR)'s Geology Division site	Yes. 18.62	No		Completed: ☒Date:3/21/24

Siting Essential Public Facilities

Regulations for siting essential public facilities should be consistent with RCW 36.70A.200 and consider WAC 365-196-550. Essential public facilities include those facilities that are typically difficult to site, such as airports, state education facilities, state or regional transportation facilities, state and local correctional facilities, solid waste handling facilities, and in-patient facilities including substance abuse facilities, mental health facilities, group homes, and secure community transition facilities. Regulations may be specific to a local jurisdiction, but may be part of county-wide planning policies (CWPPs).

	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
Regulations for CWPPs include a process for siting EPFs and ensure EPFs are not precluded. RCW 36.70A.200 amended in 2023, WAC 365-196-550(6) lists process for siting EPFs. WAC 365-196-550(3) details preclusions. EPFs should be located outside of known hazardous areas. Visit Commerce's Behavioral Health Facilities Program page for information on establishing or expanding new capacity for behavioral health EPFs. Note: RCW 36.70A.200 amended by SB 5536 to include EPFs for opioid treatment programs	Yes. See CFE and city code 14.11.02014.11.020.	Yes	References Capital Facilities Element Essential Public Facilities, which is aligned with RCW 36.70A.200. Text to be updated in CFE to align with 2023 RCW updates.	Completed: ☒Date:3/21/2024
Subdivision Code				
a. Subdivision regulations are consistent with and implement comprehensive plan policies. RCW 36.70A.030(8), RCW 36.70A.040(4)	Yes. Title 17.	No.		Completed: ☒Date: 11/7/24
b. Written findings to approve subdivisions establish adequacy of public facilities. RCW 58.17.110 amended in 2018 • Streets or roads, sidewalks, alleys, other public ways, transit stops, and other features that assure safe walking conditions for students. • Potable water supplies, sanitary wastes, and drainage ways. RCW 36.70A.590 amended 2018 • Open spaces, parks and recreation, and playgrounds • Schools and school grounds	Yes. Chapters 17.09, 17.10, 17.14, and 17.16	No.		Completed: ☒Date: 11/7/24

Other items related to the public health, safety and general welfare, WAC 365-196-820(1).				
	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
c. Preliminary subdivision approvals under RCW 58.17.140 and RCW 58.17.170 are valid for a period of five or seven years (previously five years). Note: preliminary plat approval is valid for: seven years if the date of preliminary plat approval is on or before December 31, 2014; five years if the preliminary plat approval is issued on or after January 1, 2015; and ten years if the project is located within city limits, not subject to the shoreline management act, and the preliminary plat is approved on or before December 31, 2007.	Yes. Chapters 17.09 and 17.10	No.		Completed: ☐Date:
d. Include in short plat regulations procedures for unit lot subdivisions allowing division of a parent lot into separately owned unit lots. RCW 58.17.060 (3) new in 2023 by SB 5258 - section 11		Yes	Propose new unit lot subdivisions in Title 17 (proposed Chapter 17.27).	Completed: ☒Date: 11/7/24

Stormwater				
	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
a. Regulations protect water quality and implement actions to mitigate or cleanse drainage, flooding, and storm water run-off that pollute waters of the state, including Puget Sound or waters entering Puget Sound. RCW 36.70A.070(1) Regulations may include: adoption of a stormwater manual consistent with Ecology's latest manual for Eastern or Western Washington, adoption of a clearing and grading ordinance –See Commerce's 2005 Technical Guidance Document for Clearing and Grading in Western Washington. Adoption of a low impact development ordinance. See Puget Sound Partnership's 2012 Low Impact Development guidance and Ecology's 2013 Eastern Washington Low Impact Development guidance. Additional Resources: Federal Grants to Protect Puget Sound Watersheds, Building Cities in the Rain, Ecology Stormwater Manuals, Puget Sound Partnership Action Agenda	Yes.13.48.210	No.		Completed: ☒Date:3/21/24
b. Provisions for corrective action for failing septic systems that pollute waters of the state. RCW 36.70A.070(1). See also: DOH Wastewater Management, Ecology On-Site Sewage System Projects & Funding	Yes.13.48.210	No.		Completed: ☒Date:3/21/24

Organic Materials Management Facilities

New in 2022, HB 1799 added a section to the GMA aimed at reducing the volumes of organic materials collected in conjunction with other solid waste and delivered to landfills, supporting productive uses of organic material waste and reduction of methane gas (a greenhouse gas).

	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
New section RCW 36.70A.142; new in 2022 legislation HB 1799: Development regulations newly developed, updated, or amended *after January 1, 2025* allow for the siting of organic materials (OM) management facilities as identified in local solid waste management plans (SWMP) to meet OM reduction and diversion goals. Siting to meet criteria described in RCW 70A.205.040(3) See also RCW 36.70.330. For applicability, see RCW 70A.205.540	No	**Yes**	To be updated concurrent with other Development Regulations and code updates to implement Comprehensive Plan.	Completed: ☐Date:

Impact Fees

May impose impact fees on development activity as part of the financing for public facilities, provided that the financing for system improvements to serve new development must provide for a balance between impact fees and other sources of public funds; cannot rely solely on impact fees.

a. If adopted, impact fees are applied consistent with RCW 82.02.050 amended in 2015, RCW 82.02.060 amended in 2023 by SB 5258, .070, .080, .090 amended in 2018 and .100. WAC 365-196-850 provides guidance on how impact fees should be implemented and spent.	Yes. ACC Title 19	No		Completed: ☒Date:3/**21/24**
b. Jurisdictions collecting impact fees must adopt and maintain a system for the deferred collection of impact fees for single-family detached and attached residential construction, consistent with RCW 82.02.050(3) amended in 2016	Yes. ACC Title 19	No		Completed: ☒Date:3/**21/24**
c. If adopted, limitations on impact fees for early learning facilities RCW 82.02.060 amended in 2021	No		To be updated concurrent with other Development Regulations and code updates to implement Comprehensive Plan.	Completed: ☐Date:

	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
d. If adopted, exemption of impact fees for low-income and emergency housing development RCW 82.02.060 amended in 2023. See also definition change in RCW 82.02.090(1)(b) amended in 2018	No	No	City will update as needed.	Completed: ☒Date:3/**21/24**
e. Ensure impact fees are not assessed on the construction of accessory dwelling units that are greater than 50 percent (50%) of the impact fees that would be imposed on the principal unit. RCW 36.70A.681 new in 2023 by HB 1337	**No**	Yes	To be updated concurrent with other Development Regulations and code updates to implement Comprehensive Plan.	Completed: ☐Date:
f. The schedule of impact fees reflects the proportionate impact of new housing units, including multifamily and condominium units, based on the square footage, number of bedrooms, or trips generated, in the housing unit in order to produce a proportionally lower impact fee for smaller housing units. RCW 82.02.060 amended in 2023 by SB 5258	**No**	Yes	To be updated concurrent with other Development Regulations and code updates to implement Comprehensive Plan.	Completed: ☐Date:
Concurrency and Transportation Demand Management (TDM) Ensures consistency in land use approval and the development of adequate public facilities as plans are implemented, maximizes the efficiency of existing transportation systems, limits the impacts of traffic and reduces pollution.				
a. The transportation concurrency requirement includes specific language that prohibits development when level of service standards for transportation facilities cannot be met. RCW 36.70A.070(6)(b) amended in 2023, WAC 365-196-840. Note: Concurrency is required for transportation, but may also be applied to park facilities, etc.	**Yes**	Yes	Mitigation may be provided by providing mode shift away from vehicles	Completed: ☒ Date:9/**1/23**

	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
b. Measures exist to bring into compliance locally owned, or locally or regionally operated, transportation facilities or services that are below the levels of service established in the comprehensive plan. RCW 36.70A.070(6)(a)(iii)(B) and (D), RCW 36.70A.070(6)(b) amended in 2023 Levels of service can be established for automobiles, pedestrians and bicycles. See WAC 365-196-840(3) on establishing an appropriate level of service.	**Yes**	**Yes**	Level of service standards expanded to include pedestrian, bike, transit, and freight.	Completed: ☒ Date:9/2/23
c. Highways of statewide significance (HSS) are exempt from the concurrency ordinance. RCW 36.70A.070(6)(a)(iii)(C)	**Yes**	No		Completed: ☐ Date:
d. Traffic demand management (TDM) requirements are consistent with the comprehensive plan. RCW 36.70A.070(6)(a)(vi) Examples may include requiring new development to be oriented towards transit streets, pedestrian-oriented site and building design, and requiring bicycle and pedestrian connections to street and trail networks. WAC 365-196-840(4) recommends adopting methodologies that analyze the transportation system from a comprehensive, multimodal perspective.	**Yes**	**Yes**	MMLOS added	Completed: ☒ Date:9/1/23
e. If required by RCW 82.70, a commute trip reduction (CTR) ordinance to achieve reductions in the proportion of single-occupant vehicle commute trips has been adopted. The ordinance should be consistent with comprehensive plan policies for CTR and Department of Transportation rules.	**Yes**	No		Completed: ☐ Date:

Tribal Participation in Planning new in 2022 (see HB 1717)

A federally recognized Indian tribe may voluntarily choose to participate in the county or regional planning process. See Commerce's new Tribal Planning Coordination for GMA webpage for guidance and staff contacts.

	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
a. Mutually agreeable memorandum of agreement between local governments and tribes in regard to collaboration and participation in the planning process unless otherwise agreed at the end of a mediation period RCW 36.70A.040(8)(a) new in 2022.	No	No	City did not receive notice in the form of a tribal resolution from a federally recognized Indian tribe whose reservation or ceded lands lie within the county, which indicates the tribe has a planning process or intends to initiate a parallel planning process, the county, cities, and other local governments conducting the planning under this chapter shall enter into good faith negotiations to develop a mutually agreeable memorandum of agreement	Completed: ☒Date: 3/21/24
b. Policies consistent with countywide planning policies that address the protection of tribal cultural resources in collaboration with federally recognized Indian tribes that are invited, provided that a tribe, or more than one tribe, chooses to participate in the process. RCW 36.70A.210(3)(j) new in 2022.	Yes. LUE-2	No.	Will consider if appropriate in code.	Completed: ☒Date:3/21/24
Regulations to Implement Optional Elements				
a. New fully contained communities are consistent with comprehensive plan policies, RCW 36.70A.350 and WAC 365-196-345	Yes. Land Use Element and Title 18.	No.		Completed: ☒Date:3/21/24
b. If applicable, master planned resorts are consistent with comprehensive plan policies, RCW 36.70A.360, RCW 36.70A.362 and WAC 365-196-460	N/A			Completed: ☐Date:
c. If applicable, major industrial developments and master planned locations outside of UGAs are consistent with comprehensive plan policies, RCW 36.70A.365, RCW 36.70A.367 and WAC 365-196-465	N/A			Completed: ☐Date:
d. Regulations include procedures to identify, preserve, and/or monitor historical or	Yes. ACC 15.76	No.		Completed: ☒Date:3/21/24

archaeological resources. RCW 36.70A.020(13), WAC 365-196-450				
	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
e. Other development regulations needed to implement comprehensive plan policies such as energy, sustainability or design are adopted. WAC 365-196-445	Yes. Various locations.	Yes	Appropriate updates to code will be made to address this in 2025.	Completed: ☐Date:
f. Design guidelines for new development are clear and easy to understand; administration procedures are clear and defensible	Yes.	Yes.	Updates proposed to Zoning Ordinance related to design standards for middle housing and single unit-detached residences. Multi-family and mixed-use standards to be updated in 2025.	Completed: ☐Date:
g. Local design review includes one or more ascertainable guideline, standard or criterion by which an applicant can determine whether a given building design is permissible under that development regulation. May not result in a reduction in density, height, bulk or scale below the generally applicable development regulations for a development proposal in the applicable zone. RCW 36.70A.630 new in 2023 by HB 1293	No	Yes	Work in progress to update.	Completed: ☐Date:
Project Review Procedures In 2023, SB 5290 substantially amended local permit review processes. Codification and additional resources from Commerce are forthcoming.				
Project review processes integrate permit and environmental review. RCW 36.70A.470, RCW 36.70B and RCW 43.21C. Also: WAC 365-196-845, WAC 197-11(SEPA Rules), WAC 365-197 (Project Consistency Rule, Commerce, 2001) and Ecology SEPA Handbook. Integrated permit and environmental review procedures for: • Notice of application • Notice of complete application • One open-record public hearing	Yes. Chapter 16.10 ACC and Title 14	Yes	Updated Title 14 to be consistent with SB 5290. Ordinance No. 6957 passed on 11/5/24.	Completed: ☒Date: 11/5/24

• Combining public hearings & decisions for multiple permits • Notice of decision • One closed-record appeal				

Plan & Regulation Amendments

If procedures governing comprehensive plan amendments are part of the code, then assure the following are true:

	In Current Regs? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
a. Regulations limit amendments to the comprehensive plan to once a year (with statutory exceptions). RCW 36.70A.130(2) and WAC 365-196-640(3)	Yes. 14.22	No		Completed: ☒ Date:3/21/24
b. Regulations define *emergency* for an emergency plan amendment. RCW 36.70A.130(2)(b) and WAC 365-196-640(4)	No.	Yes	Definition needs to be included in 14.22.060	Completed: ☐ Date:
c. Regulations include a docketing process for requesting and considering plan amendments. RCW 36.70A.130(2), RCW 36.70A.470, and WAC 365-196-640(6)	Yes. 14.22.080	No		Completed: ☒ Date:3/21/24
d. A process has been established for early and continuous public notification and participation in the planning process. RCW 36.70A.020(11), RCW 36.70A.035 and RCW 36.70A.140. See WAC 365-196-600 regarding public participation and WAC 365-196-610(2) listing recommendations for meeting requirements.	Yes. 14.22.030	No		Completed: ☒ Date:3/21/24
e. A process exists to assure that proposed regulatory or administrative actions do not result in an unconstitutional taking of private property RCW 36.70A.370. See the 2018 Advisory Memo on the Unconstitutional Taking of Private Property	Yes. Throughout code.	No.		Completed: ☒ Date: 4/9/24

f. Provisions ensure adequate enforcement of regulations, such as zoning and critical area ordinances (civil or criminal penalties). See implementation strategy in WAC 365-196-650(1).	Yes. 18.02.020	No		Completed: ☒ Date:3/21/24

Appendix A: Housing unit minimums per population

See Commerce's Middle Housing webpage for more information and the Middle Housing Fact Sheet for the list of cities that must comply with the following requirements.

Cities with a population less than 25,000 but within the Contiguous UGA with the largest city in a county with a population greater than 275,000				
	In Current zoning? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
Zoning and development regulations allow at least two residential units per lot on all lots zoned predominantly for residential use, unless the lot is smaller than 1,000 square feet. RCW 36.70A.635 (1) and (6) HB 1110	N/A			Completed: ☐ Date:

Cities with a population between 25,000 and 75,000				
	In Current zoning? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
a. Zoning and development regulations allow at least: • two residential units on each lot, • four residential units on each lot if at least one unit is affordable, unless the lot is smaller than 1,000 square feet.	N/A			Completed: ☐ Date:

Cities with a population between 25,000 and 75,000				
b. Zoning and development regulations allow at least four residential units on each lot, within ¼ mile walking distance of a major transit stop.	N/A			Completed: ☐ Date:

Cities with a population greater than 75,000				
	In Current zoning? Yes/No If yes, cite section	Changes needed to meet current statute? Yes/No	Notes	
a. Zoning and development regulations allow at least: • four residential units on each lot, • six residential units on each lot if at least two units are affordable, unless the lot is smaller than 1,000 square feet.	Yes. Land Use Element.	No	Included in Land Use Element and in Land Use Map. Updates to Development regulations will begin in June 2024.	Completed: ☒ Date: **3/21/2024**
b. Zoning and development regulations allow at least six residential units on each lot, within ¼ mile walking distance of a major transit stop.	No	Yes	Zoning Ordinance updated to address RCW 36.70A.635. Proposed in new middle housing chapter in Zoning Ordinance.	Completed: ☒ Date: 11/7/24

Appendix B: Element updates per HB 1181

GMA Periodic Update Due Dates	Required Updates to GMA Elements per HB 1181						
	Greenhouse Gas Reduction Sub-element	Climate Resilience Sub-element	Transportation Element	Land Use Element	Capital Facilities Element*	Utilities Element*	Parks & Recreation Element*
For jurisdictions with a 2024 deadline and subject to GHG Emissions Reduction [Sec. 15 (10)]	Due 2029	Due 2029	Due 2029	Due in 2034			
For jurisdictions with a 2025 & 2026 deadline and subject to GHG Emissions Reduction [Sec. 4 (1) and (2)]	X	X	X	X	X*	X*	X*
Jurisdictions not subject to GHG Emissions Reduction (all years) [Sec. 4 (3) and 9(e)(i)]	Optional	X See RCW 36.70A.070(9)(e)	**	Only counties over 20k pop.	X*	X*	X*

Table notes: "X" indicates a GMA update requirement. One asterisk (*) indicates jurisdictions should make a good faith effort to update their elements to be consistent; refer to HB 1181 (Chapter 228, Laws of 2023) for specifics. Two asterisks (**) indicates 22 cities that need to update their transportation element based on population, not whether or not their county is among those that must develop a GHG emissions element.

King County Affordable Housing Committee

Housing-Focused Draft Comprehensive Plan Review Program
Draft Countywide Planning Policies (CPP) Completeness Checklist

Please complete and submit this completeness checklist as part of your submission to the King County Affordable Housing Committee's Housing-focused Draft Comprehensive Plan Review Program. You can review the full text of each Housing Chapter CPP and the Housing Technical appendix here. The Housing-focused Draft Comprehensive Plan Review Guide provides additional information about the program and this checklist. Please send questions and your submission to AHCplanreview@kingcounty.gov. AHC staff are available to assist you as you prepare your submission.

Include the full text and page number of each draft comprehensive plan policy that addresses each King County Countywide Planning Policies (CPP) Housing Chapter policy. One draft comprehensive plan policy may address multiple CPPs, and multiple draft comprehensive plan policies may address one CPP. Jurisdiction staff are encouraged to include additional information for reviewers to consider in the "notes" column of the checklist.

CPP Housing Chapter Policy *Summarized*	**Comprehensive Plan** *Policy or Inventory and Analysis Section*	*Page #*	**Notes** *Optional*
Plan for and Accommodate Housing Need			
H-1 Plan for and accommodate the jurisdiction's allocated share of countywide future housing needs for moderate-, low-, very low-, and extremely low-income households as well as emergency housing, emergency shelters, and permanent supportive housing. Sufficient planning and accommodations are those that comply with the Growth Management Act requirements for housing elements in Revised Code of Washington 36.70A.020 and 36.70A.070, that outline regulatory and nonregulatory measures to implement the comprehensive plan (Washington Administrative Code 365-196-650), and that comply with policies articulated in this chapter. Projected countywide and jurisdictional net new housing needed to reach projected future need for the planning period is shown in Table H-1.	Land Use Element, LUE-6; Housing Element, Table 1. See also Housing Needs and Characteristics Assessment Update.	LUE-6, HE-12	
H-2 Prioritize the need for housing affordable to households less than or equal to 30 percent area median income (extremely low-income) by implementing tools such as: a) Increasing capital, operations, and maintenance funding; b) Adopting complementary land use regulations; c) Fostering welcoming communities, including people with behavioral health needs; d) Adopting supportive policies; and e) Supporting collaborative actions by all jurisdictions.	H-9, H-10, H-16, H-22, LU-8	HE-14, LUE-12	
Conduct a Housing Inventory and Analysis			
H-3 Conduct an inventory and analysis in each jurisdiction of existing and projected housing needs of all segments of the population and summarize the findings in the housing element. The inventory and analysis shall include:			
a) The number of existing and projected housing units necessary to plan for and accommodate projected growth and meet the projected housing needs articulated in Tables H-1 and H-2, including: 1) permanent housing needs, which includes units for moderate-, low-, very low-, and extremely low-income households and permanent supportive housing,	Housing Needs and Characteristics Assessment Update, Chapter 5	HNA 48-61	

CPP Housing Chapter Policy *Summarized*	Comprehensive Plan *Policy or Inventory and Analysis Section*	*Page #*	Notes *Optional*
2) emergency housing needs, which includes emergency housing and emergency shelters			
b) Number of existing housing units by housing type, age, number of bedrooms, condition, tenure, and area median income limit (for income-restricted units)	Housing Needs and Characteristics Assessment Update, Table 29; Housing Element Figure 1	HNA-28	
c) Number of existing emergency housing, emergency shelters, and permanent supportive housing facilities and units or beds, as applicable	Housing Element	HE-10	
d) Percentage and geographic distribution of residential land zoned for moderate- and high-density housing and accessory dwelling units in the jurisdiction	Data not available.		
e) Number of income-restricted units and, where feasible, total number of units, within a half-mile walkshed of high-capacity or frequent transit service where applicable and regional and countywide centers[1]	Data not available.		
f) Household characteristics, by race/ethnicity: 1) income (median and by area median income bracket), 2) tenure (renter or homeowner), 3) housing cost burden and severe housing cost burden	Housing Needs and Characteristics Assessment Update, Chapter 3	HNA-19	
g) Current population characteristics: 1) age by race/ethnicity, 2) disability	Housing Needs and Characteristics Assessment Update, Chapter 2	HNA-6	
h) Projected population growth	Housing Needs and Characteristics Assessment Update, Figure 3	HNA-7	
i) Housing development capacity within a half-mile walkshed of high-capacity or frequent transit service, if applicable[1]	Assumed in zoning map. Not calculated separately. Data not available.		
j) Ratio of housing to jobs in the jurisdiction	Housing Needs and Characteristics Assessment Update	HNA-15	
k) Summary of existing and proposed partnerships and strategies, including dedicated resources, for meeting housing needs, particularly for populations disparately impacted	Housing Element, Goal 6	HE-58	
l) The housing needs of people who need supportive services or accessible units, including but not limited to people experiencing homelessness, persons with disabilities, people with medical conditions, and older adults	Housing Needs and Characteristics Assessment Update, Chapter 5	HNA-60	
m) The housing needs of communities experiencing disproportionate harm of housing inequities including Black, Indigenous, and People of Color	Housing Element, Racially Disparate Impacts	HE-6	

[1] AHC staff can provide a shapefile of frequent and high-capacity transit in King County. Contact AHC staff at AHCplanreview@kingcounty.gov.

CPP Housing Chapter Policy *Summarized*	Comprehensive Plan *Policy or Inventory and Analysis Section*	*Page #*	Notes *Optional*
n) Areas in the jurisdiction that may be at higher risk of displacement from market forces that occur with changes to zoning development regulations and public capital investments			
H-4 Evaluate the effectiveness of existing housing policies and strategies to meet the jurisdiction's housing needs. Identify gaps in existing partnerships, policies, and dedicated resources for meeting housing needs and eliminating racial and other disparities in access to housing and neighborhoods of choice.	Housing Element, Racially Disparate Impacts	HE-6	
H-5 Document the local history of racially exclusive and discriminatory land use and housing practices, consistent with local and regional fair housing reports and other resources. Explain the extent to which that history is still reflected in current development patterns, housing conditions, tenure, and access to opportunity. Identify local policies and regulations that result in racially disparate impacts, displacement, and exclusion in housing, including zoning that may have a discriminatory effect, disinvestment, and infrastructure availability. Demonstrate how current strategies are addressing impacts of those racially exclusive and discriminatory policies and practices. The County will support jurisdictions in identifying and compiling resources to support this analysis.	Housing Element, Racially Disparate Impacts	HE-6	
Collaborate Regionally			
H-6 Collaborate with diverse partners (e.g., employers, financial institutions, philanthropic, faith, and community-based organizations) on provision of resources (e.g., funding, surplus property) and programs to meet countywide housing need.	Housing Element, Goal 6	HE-58	
H-7 Work cooperatively with the Puget Sound Regional Council, subregional collaborations and other entities that provide technical assistance to local jurisdictions to support the development, implementation, and monitoring of strategies that achieve the goals of this chapter.	Throughout Comp Plan process and noted in HNA.	N/A	
Implement Policies and Strategies to Meet Housing Needs Equitably **Equitable Processes and Outcomes**			
H-8 Collaborate with populations most disproportionately impacted by housing cost burden in developing, implementing, and monitoring strategies that achieve the goals of this chapter. Prioritize the needs and solutions articulated by these disproportionately impacted populations.	Public Engagement Plan	All	
H-9 Adopt intentional, targeted actions that repair harms to Black, Indigenous, and other People of Color households from past and current racially exclusive and discriminatory land use and housing practices (generally identified through Policy H-5). Promote equitable outcomes in partnership with communities most impacted.	Housing Element, Racially Disparate Impacts	HE-6	
Implement Policies and Strategies to Meet Housing Needs Equitably **Increased Housing Supply, Particularly for Households with the Greatest Needs**			

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CPP Housing Chapter Policy *Summarized*	Comprehensive Plan *Policy or Inventory and Analysis Section*	*Page #*	Notes *Optional*
H-10 Adopt policies, incentives, strategies, actions, and regulations that increase the supply of long-term income-restricted housing for extremely low-, very low-, and low-income households and households with special needs.	Housing Element, Housing Choices for All	HE-9	
H-11 Identify sufficient capacity of land for housing including, but not limited to income-restricted housing; housing for moderate-, low-, very low-, and extremely low-income households; manufactured housing; multifamily housing; group homes; foster care facilities; emergency housing; emergency shelters; permanent supportive housing; and within an urban growth area boundary, duplexes, triplexes, and townhomes.	HNA, Figure 56	HNA-60	
H-12 Adopt and implement policies that improve the effectiveness of existing housing policies and strategies and address gaps in partnerships, policies, and dedicated resources to meet the jurisdiction's housing needs.	Throughout Housing Element Goals and Policies.		
H-13 Implement strategies to overcome cost barriers to housing affordability. Strategies to do this vary but can include updating development standards and regulations, shortening permit timelines, implementing online permitting, optimizing residential densities, reducing parking requirements, and developing programs, policies, partnerships, and incentives to decrease costs to build and preserve affordable housing.	Housing Element	H-8-11	
H-14 Prioritize the use of local and regional resources (e.g., funding, surplus property) for income-restricted housing, particularly for extremely low-income households, populations with special needs, and others with disproportionately greater housing needs. Consider projects that promote access to opportunity, anti-displacement, and wealth building for Black, Indigenous, and People of Color communities to support implementation of policy H-9.	Housing Element	H-22	
Implement Policies and Strategies to Meet Housing Needs Equitably **Expanded Housing Options and Increased Affordability Accessible to Transit and Employment**			
H-15 Increase housing choices for everyone, particularly those earning lower wages, that is co-located with, accessible to, or within a reasonable commute to major employment centers and affordable to all income levels. Ensure there are zoning ordinances and development regulations in place that allow and encourage housing production at levels that improve jobs-housing balance throughout the county across all income levels.	Housing Element, Planning Approach	HE-9	
H-16 Expand the supply and range of housing types, including affordable units, at densities sufficient to maximize the benefits of transit investments throughout the county	Housing Element, Planning Approach	HE-9	
H-17 Support development and preservation of income-restricted affordable housing near high-capacity transit	Housing Element, Goal 3; H-26; H-42	HE-15, H-18	
Implement Policies and Strategies to Meet Housing Needs Equitably			

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CPP Housing Chapter Policy *Summarized*	Comprehensive Plan *Policy or Inventory and Analysis Section*	*Page #*	Notes *Optional*
Expanded Housing and Neighborhood Choice for All Residents			
H-18 Adopt inclusive planning tools and policies whose purpose is to increase the ability of all residents in jurisdictions throughout the county to live in the neighborhood of their choice, reduce disparities in access to opportunity areas, and meet the needs of the region's current and future residents by: a) Providing access to affordable housing to rent and own throughout the jurisdiction, with a focus on areas of high opportunity; b) Expanding capacity for moderate-density housing throughout the jurisdiction, especially in areas currently zoned for lower density single-family detached housing in the Urban Growth Area, and capacity for high-density housing, where appropriate, consistent with the Regional Growth Strategy; c) Evaluating the feasibility of, and implementing, where appropriate, inclusionary and incentive zoning to provide affordable housing; and d) Providing access to housing types that serve a range of household sizes, types, and incomes, including 2+ bedroom homes for families with children and/or adult roommates and accessory dwelling units, efficiency studios, and/or congregate residences for single adults	Housing Element, Planning Approach	HE-9	
H-19 Lower barriers to and promote access to affordable homeownership for extremely low-, very low-, and low--income, households. Emphasize: a) Supporting long-term affordable homeownership opportunities for households less than or equal to 80 percent area median income (which may require up-front initial public subsidy and policies that support diverse housing types); and b) Remedying historical inequities in and expanding access to homeownership opportunities for Black, Indigenous and People of Color communities.	Housing Element, Housing Choices for All; H-16, H-25, H-54	HE-9, HE-14, HE-15; HE-18	
H-20 Adopt and implement policies that address gaps in partnerships, policies, and dedicated resources to eliminate racial and other disparities in access to housing and neighborhoods of choice.	Housing Element, Racially Disparate Impacts	HE-6	
H-21 Adopt policies and strategies that promote equitable development and mitigate displacement risk, with consideration given to the preservation of historical and cultural communities as well as investments in low-, very low-, extremely low-, and moderate-income housing production and preservation; dedicated funds for land acquisition; manufactured housing community preservation, inclusionary zoning; community planning requirements; tenant protections; public land disposition policies; and land that may be used for affordable housing. Mitigate displacement that may result from planning efforts, large-scale private investments, and market pressure. Implement anti-displacement measures prior to or concurrent with development capacity increases and public capital investments.	Housing Element, Racially Disparate Impacts	HE-6	
H-22 Implement, promote, and enforce fair housing policies and practices so that every person in the county has equitable access and opportunity to thrive in their communities of choice, regardless of their race, gender identity, sexual identity, ability, use of a service animal, age, immigration status, national origin, familial	Housing Element, H-36	HE-17	

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CPP Housing Chapter Policy *Summarized*	Comprehensive Plan *Policy or Inventory and Analysis Section*	*Page #*	Notes *Optional*
status, religion, source of income, military status, or membership in any other relevant category of protected people.			
Expanded Housing and Neighborhood Choice for All Residents **Housing Stability, Healthy Homes, and Healthy Communities**			
H-23 Adopt and implement policies that protect housing stability for renter households; expand protections and supports for moderate-, low-, very low-, and extremely low-income renters and renters with disabilities.	Housing Element, H-28, H-32, H-38, H-42	HE-16, HE-17, HE-18	
H-24 Adopt and implement programs and policies that ensure healthy and safe homes.	Housing Element, Goal 1, Goal 3, H-1, H-2, H-6	HE-13-15	
H-25 Plan for residential neighborhoods that protect and promote the health and well-being of residents by supporting equitable access to parks and open space, safe pedestrian and bicycle routes, clean air, soil and water, fresh and healthy foods, high-quality education from early learning through K-12, affordable and high-quality transit options and living wage jobs and by avoiding or mitigating exposure to environmental hazards and pollutants.	Housing Element, H-2, H-21, Vision	HE-1, HE-15	

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VISION Consistency Tool for Local Comprehensive Plans

Note: The tool shown here is for illustrative purposes. To fill out the tool, visit www.psrc.org/our-work/plan-review.

This tool is intended to help cities and counties integrate VISION 2050 into their local comprehensive plans. VISION 2050's multicounty planning policies serve as the adopted regional guidelines and principles required in state law to guide both regional and local planning. The tool also identifies transportation planning requirements of the Growth Management Act (GMA). The tool may be used at various times in the local planning process:

Plan Update Scoping: Use checklist items as guidance for scoping the extent of plan element updates. New or expanded issue areas in VISION 2050 are identified to support this process.

Draft Plan Review: Submit draft plans to PSRC prior to Planning Commission and Council review. Completing and submitting this tool and providing early drafts to PSRC help identify potential consistency issues early in the process.

Certification Review: Along with the adopted plan, the tool will assist in PSRC's review of the plan. Demonstrating inclusion of the necessary information in the checklist helps facilitate certification. *Note: The PSRC Executive Board is the final decision-making body for plan certification.*

Regional Collaboration: The tool provides cities and counties an opportunity to highlight innovative policies and programs. This supports sharing of best practices across the region and benefits jurisdictions as they apply for planning grants and awards.

Updates made in September 2022 integrate the GMA requirements of HB 1220 and countywide housing needs into PSRC's plan review process, including housing for all income levels and addressing racially disparate impacts.

Resources

- Regional Plans: VISION 2050, Regional Transportation Plan, and Regional Economic Strategy
- VISION 2040 to VISION 2050 – summary of what changed in VISION 2050
- VISION 2050 Policy Matrix – a comparison of multicounty planning policies and actions from VISION 2040 to VISION 2050
- Plan Review webpage – access more information about the review and certification process and find PSRC guidance and other resources by policy area. See previous certification reports for areas for future work.

Discussion Questions | Innovation, Engagement, and Racial Equity

Questions provide an opportunity to highlight the most noteworthy aspects of the plan and the planning process. Responses help tell PSRC boards how the plan is working to implement VISION 2050 and how the plan meets certification requirements.

- What aspects of the updated plan would you like to highlight? What was especially innovative, challenging, or noteworthy?
- What innovative public engagement strategies were used in the update process? Did you use strategies to reach communities that have not typically been engaged in planning? How were other agencies and governments, such as tribes, ports, and special purpose districts, engaged through this process? (MPP-RC-1, DP-8)
- Racial equity and access to opportunity have been elevated as critical regional issues in VISION 2050. How has your community addressed racial equity in the comprehensive plan update? Do you have lessons learned from your experience about how to advance racial equity? (MPP-RC-3)

Checklist at a Glance

Support regional collaboration	Page/Policy Reference
✓ Include a statem… policies, VISION 2050, and plan…	
⊖ Coordinate with other jurisdictions, agencies, tribes, ports, military installations, special purpose districts, and adjacent regions (RCW 36.70A.070(6)(a)(v), MPP-RC-1, RC-4-5)	
⊖ Prioritize services and access to opportunity for people of color, people with low incomes, and his… le can attain the resources and opportunities to improve quality of life and address past inequities (MPP-RC-2)	

Indicates new or expanded emphasis in VISION 2050

Provides relevant VISION 2050 policies or actions

Indicate where to find the best or most complete example. It is not necessary to list all relevant policies.

Regional Collaboration

The plan supports **collaboration for a healthy environment, thriving communities, and opportunities for all**, including coordination with other jurisdictions and agencies, tribes, ports, military installations, and adjacent regions.

Policies and programs should:

Support regional collaboration	Page/Policy Reference
✓ Include a statement about how the plan relates to countywide planning policies, VISION 2050, and planning requirements of the Growth Management Act	**Page L**UE-2
⊖ Coordinate with other jurisdictions, agencies, tribes, ports, military installations, special purpose districts, and adjacent regions (RCW 36.70A.070(6)(a)(v), MPP-RC-1, RC-4-5)	**LU-11**
⊖ Prioritize services and access to opportunity for people of color, people with low incomes, and historically underserved communities to ensure all people can attain the resources and opportunities to improve quality of life and address past inequities (MPP-RC-2)	**This is an overarching goal and is incorporated into all Elements. Specific language will be mentioned in Core Plan.**
⊖ Address land use, transportation, and housing opportunities and challenges related to military installations, when applicable (MPP-RC-6)	**N/A**
✓ Prioritize investments in centers, including regional centers, countywide centers, high-capacity transit areas with a station area plan, and other local centers (MPP-RC-8-9)	**LU-7, 8**
✓ Explore funding sources, changes to regulatory, pricing, taxing, and expenditure practices, and other fiscal tools to meet infrastructure and other needs (MPP-RC-10-11, RC-Action-7, RC-Action-9)	**LU-5, CTP P. 50, TR5-4-7**

Additional comments on Regional Collaboration or additional documents to share [optional]: _____

Regional Growth Strategy

The plan **focuses growth in designated centers and near transit stations** to create healthy, equitable, vibrant communities well-served by infrastructure and services. The plan **supports rural and resource lands** as vital parts of the region that retain important cultural, economic, environmental, and rural lifestyle opportunities over the long term.

The plan should:

Implement the Regional Growth Strategy	Page/Policy Reference
✓ Incorporate housing and employment targets (MPP-RGS-1-2)	
✓ Use land use assumptions substantially consistent with countywide growth targets (RCW 36.70A.070, WAC 365-196-430, VISION 2050 Regional Growth Strategy)	**LUE-2-7, LU-7**
✓ Demonstrate sufficient zoned development capacity to accommodate targets (RCW 36.70A.115)	**Land Use Element, Housing Needs and Characteristics Assessment Update**
✓ Use consistent land use assumptions throughout plan (RCW 36.70A.070, WAC 365-196-430)[1]	**LU-5**

Note: see Growth Target Guidance for additional information.

Population, Employment, and Housing Growth

(add information from local plan and insert/delete rows as needed, based on regional centers or county regional geographies)

	Adopted Growth Target*	Land Use Assumptions for Travel Demand Modeling (numbers/notes, as applicable)	Zoned Development Capacity (can be greater than target)	Page Reference
County or citywide**				
Employment	19,520	Land Use growth allocations were developed in coordination with Public Works for use in Transportation and Utilities models. Growth allocations and land use for alternatives are consistent.	21,587	LUE-6
Housing	12,112		46,070	LUE-5

[1] The Transportation Element must be based on the land use assumptions in the Comprehensive Plan - A problem sometimes encountered in the certification of transportation-related provisions in local comprehensive plans is the use of different planning assumptions in the transportation element from the land use element. Comprehensive plans are to be internally consistent, which means that the same land use assumptions must be used for planning for housing, transportation, and other provisions in the plan.

		More information in respective Elements and technical documentation.		
Centers ***(as applicable)***				
Employment		Will be detailed as part of Downtown Plan update		
Housing		Will be detailed as part of Downtown Plan update		

*Include targets as applicable. Some counties adopt only housing and employment targets, and not population targets. If more explanation would be helpful, provide additional information about land use assumptions for modeling in space provided below.

**Counties: Attach additional tables or add rows to address multiple regional geographies.

Policies and programs should:

Maintain a stable urban growth area with densities and capacity that support the Regional Growth Strategy	Page/Policy Reference
✓ Encourage infill development and increased density in locations consistent with the Regional Growth Strategy (MPP-RGS-6)	**LU-1**
○ Avoid increasing development capacity inconsistent with the Regional Growth Strategy in regional geographies not served by high-capacity transit (MPP-RGS-12)	**LU-7**
○ **Metropolitan Cities:** Provide additional housing capacity in response to rapid employment growth, particularly through increased zoning for middle density housing (MPP-RGS-7)	**N/A**
✓ **Counties:** Accommodate the region's growth first and foremost in the urban growth area (MPP-RGS-4)	**N/A**
✓ **Counties:** Ensure long-term stability and sustainability of the urban growth area (MPP-RGS-5)	**N/A**
Support growth in designated centers and near high-capacity transit	**Page/Policy Reference**
○ Where applicable, focus a significant share of growth in designated regional growth centers, high-capacity transit station areas, manufacturing/industrial centers, and countywide centers (MPP-RGS-8-11)[2]	**LU-7, LU-56**
✓ Include growth targets for designated regional growth centers and manufacturing/industrial centers (MPP-RGS-2)	**Assumed in land use map. Details will be in Auburn Downtown Plan update.**

[2] The region has a goal to attract 65% of new residential growth and 75% of employment growth to regional growth centers and high-capacity transit station areas.

Manage and reduce rural growth and protect resource lands	Page/Policy Reference
✓ **Counties:** Identify steps to reduce rural growth over time to maintain rural landscapes and lifestyles and protect resource lands and the environment (MPP-DP-40-43)	**N/A**
✓ **Counties:** Include a full range of strategies, including zoning and development standards, incentives, infrastructure investments, funding for conservation easements, housing tools, and economic development to reduce rural growth rates and protect natural resource lands over time (MPP-RGS-14-15, RGS-4, RGS-Action-7)	**N/A**
✓ **Counties:** Locate commercial, retail, and community services that serve rural residents in neighboring cities and existing activity areas (MPP-RGS-13, DP-37)	**N/A**
○ **Counties:** Avoid growth that cannot be sufficiently served by roads, utilities, and services at rural levels of service (MPP-DP-45)	**N/A**
✓ **Counties:** Address vested development that conflicts with regional and local growth management objectives (MPP-DP-36)	**N/A**

Additional comments on the Regional Growth Strategy or additional documents to share [optional]: _____

Environment

Local plans support the natural environment through policies on **protecting and restoring natural systems, conserving habitat, improving water quality, and reducing air pollutants**. The health of all residents and the economy is connected to the health of the environment. Planning at all levels should consider the impacts of land use, development, and transportation on the ecosystem and use the best environmental information available.

Policies and programs should:

Protect and restore the environment	Page/Policy Reference
✓ Protect critical areas, habitat, and water quality and coordinate planning with adjacent jurisdictions, tribes, countywide planning groups, and watershed groups (MPP-En-1, En-6, En-11-12, En-14, En-16, En-Action-3)	**LUE-33, LU-11**

✓ Advance integrated and interdisciplinary approaches for environmental planning and assessments (MPP-En-2)	**LUE-10, LUE-31**
✓ Promote innovative and environmentally sensitive development practices in siting, design, materials selection, construction, and maintenance (MPP-En-5)	**LU-18**
○ Support programs to ensure that all residents, regardless of race, social, or economic status, have clean air, clean water, and other elements of a healthy environment and prioritize the reduction of impacts to vulnerable populations that have been disproportionately affected (MPP-En-3-4, En-7-8, En-21)	**LU-12**
○ Support and incentivize environmental stewardship on private and public lands (MPP-En-10)	**LU-11**
○ Identify open space, trail, and park resources and needs, and develop programs for protecting and enhancing these areas (MPP-En-11-12, En-15, En-Action-4)	**Parks Goal 5**
✓ Protect and restore native vegetation and tree canopy (MPP-En-9, En-13)	**C-72**
○ Protect and restore hydrological functions and water quality, including restoring shorelines and estuaries, removing fish-blocking culverts, reducing use of toxic products, and retrofitting basins to manage stormwater (MPP-En-16-20)	**Water Policy UE-11**
✓ Ensure all federal and state air quality standards are met and reduce emissions of air toxics and greenhouse gases (WAC 173-420-080, MPP-En-22)	**C-50, C-55, C-57, and throughout Climate Element**

Additional comments on Environment or additional documents to share [optional]: _____Critical Areas Checklist and Documentation_____

Commented [JS1]: Attach Dinah's materials for Critical Areas checklist

Climate Change

The plan supports substantially **reducing emissions of greenhouse gases** that contribute to climate change in accordance with the goals of the Puget Sound Clean Air Agency and **preparing for climate change impacts**.

Policies and programs should:

Reduce greenhouse gas emissions in support of state, regional, and local reduction goals	Page/Policy Reference
○ Support achieving regional greenhouse gas emission reduction goals by: ○ Electrifying the transportation system, • Reducing vehicle miles traveled through increasing alternatives to driving alone and using land use strategies that reduce trips and trip length, and • Expanding the use of conservation, alternative energy sources, and energy management technology (MPP-CC-1, CC-3, CC-5, CC-11-12, CC-Action-3)	**C-45, C-46, C-47 C-48, CTP P. 50**
✓ Reduce building energy use through green building and retrofit of existing buildings (MPP-CC-2, CC-Action-3, DP-46)	**C-48, C-51, C-52, C-59, C-60**
○ Protect and restore natural resources that sequester and store carbon (MPP-CC-4)	**C-72, C-73**
○ Address impacts to vulnerable populations and areas that have been or will be disproportionately affected by climate change (MPP-CC-6, CC-8, CC-Action-3, CC-Action-4)	**C-3, C-4, C-5, C-44**
○ Identify and address the impacts of climate change and natural hazards on the region to increase resilience (MPP-CC-7-10, CC-Action-4)	**C-12, C-13, C-31, C-35**
○ Address rising sea water by siting and planning for relocation of hazardous industries and essential public services away from the 500-year floodplain (MPP-CC-10)	**C-31**

Additional comments on Climate Change or additional documents to share [optional]: _____Information contained in goals and policies as well as supplemental text within Climate Element. Additional strategies outlined in Climate Change Framework._____

Land Use/Development Patterns

The plan supports the further development of **healthy, walkable, compact, and equitable transit-oriented communities** that maintain unique character and local culture. The plan supports **conserving rural areas and creating and preserving open space and natural areas**.

Policies and programs should:

Build thriving urban communities	Page/Policy Reference
○ Support inclusive community planning (MPP-DP-2, MPP-DP-8)	LU-11
✓ Support the development of compact urban communities and central places with densities that support the Regional Growth Strategy, transit, and walking (MPP-RGS-6, DP-1, DP-3)	LU-7, LU-8
○ Reduce disparities in access to opportunity and expand employment opportunities to improve the region's shared economic future (MPP-DP-2, Ec-8, Ec-13)	
✓ Coordinate with local, state, and federal agencies to identify underused lands such as surplus public lands or environmentally contaminated lands and: ✓ Promote infill or redevelopment in growth centers and existing neighborhoods in a manner that supports the Regional Growth Strategy (MPP-DP-4) ✓ Develop strategies for cleaning up brownfield and contaminated sites (DP-Action-7)	LU-1, LU-16, LU-123, LUE-23
○ Preserve historic, visual, and cultural resources and consider potential impacts to culturally significant sites and tribal treaty fishing, hunting, and gathering grounds (MPP-DP-5-7)	Historic Preservation Element addresses this throughout.
○ Support inclusive engagement to ensure land use decisions do not negatively impact historically marginalized communities (MPP-DP-8)	LU-12
✓ Support the design of transportation and infrastructure projects that achieve community development objectives and improve communities (MPP-DP-12-15, DP-17)	LU-5
Promote healthy communities	**Page/Policy Reference**
○ Reduce health disparities and improve health outcomes (MPP-RC-3, DP-18)	LU-8,9,
Support centers as connections to opportunity	**Page/Policy Reference**
✓ Identify one or more central places as locations for more compact, mixed-use development (MPP-DP-22, DP-25)	LU-7, LU Map 1.4

Commented [JS2]: Add page reference



⊖ **Jurisdictions with or planning for high-capacity transit stations:** Identify high-capacity station areas and plan for densities[3] that maximize benefits of transit investments (MPP-DP-22, DP-Action-8)	**Considered in LU Map 1.4 of Growth Centers, TE Map**
⊖ **Jurisdictions with or planning for light rail stations:** Support the adoption of subarea plans for light rail station areas (DP-Action-8)	**N/A**
✓ **Jurisdictions with regional centers**: Support the update of regional center subarea plans to be consistent with the revised Center Plan Tools (DP-Action-8)	**LUE-20**
⊖ Evaluate planning in areas for potential residential and commercial displacement and use a range of strategies to mitigate displacement impacts (MPP-DP-23, Ec-12)	**LU-46**
Support annexation and incorporation	**Page/Policy Reference**
✓ Work towards annexation and the orderly transition of unincorporated urban areas by: • Joint planning and urban development standards for urban unincorporated areas • Affiliating all unincorporated urban growth areas with adjacent cities ⊖ Planning for phased growth of communities to be economically viable, supported by planned urban infrastructure, and served by public transit (MPP-RGS-16, DP-27-30)	**LUE-31**
Preserve rural areas and natural resource lands	**Page/Policy Reference**
✓ **Counties**: Work to ensure that development in rural areas is rural in character (MPP-DP-32-35, DP-37-38)	**N/A**
✓ **Counties:** Work to ensure the sustainability of designated resource lands through programs that support economic vitality, encourage conservation, and avoid incompatible adjacent land uses (MPP-DP-39, DP-41-43)	**N/A**
Conserve and enhance important uses	**Page/Policy Reference**
✓ **As applicable,** limit incompatible uses adjacent to: • Military lands (MPP-DP-49) • Manufacturing/industrial centers (MICs) and industrial zoning (MPP-DP-50) ⊖ Tribal reservation lands (MPP-DP-51)	**LU-11**

[3] VISION 2050 calls for transit-oriented development near stations located in or near manufacturing/industrial centers to function differently with different uses than other centers to maintain a focus on protecting industrial zoning, jobs, and the region's overall economic vitality.

Additional comments on Land Use/Development Patterns or additional documents to share [optional]: _____

Housing

The plan guides the **preservation, improvement, and expansion of the housing stock** to provide a range of **affordable, accessible, healthy, and safe housing choices** to every resident. It continues to **promote fair and equal access to housing for all people**.

Policies and programs should:

Assess housing needs	Page/Policy Reference
○ Address affordable housing needs by developing a housing needs assessment and evaluating the effectiveness of existing housing policies, and documenting strategies to achieve housing targets and affordability goals. This includes documenting programs and actions needed to achieve housing availability including gaps in local funding, barriers such as development regulations, and other limitations (H-Action-4)	Housing Needs Assessment is referenced on H-2. HNA is an appendix to the Comp Plan.
Increase housing supply and choices	**Page/Policy Reference**
✓ Increase housing supply and densities to meet the region's current and projected needs at all income levels consistent with the Regional Growth Strategy (MPP-H-1)	**HE-8-13**
✓ Expand the diversity of housing types for all income levels and demographic groups, including low, very low, extremely low, and moderate-income households (MPP-H-2-6, H-9)	**HE-9**
○ Expand housing capacity for moderate density housing, i.e., "missing middle" (MPP-H-9)	**HE-9, H-12**
○ Promote jobs-housing balance by providing housing choices that are accessible and attainable to workers. Include jobs-housing balance in housing needs assessments to better support job centers with the needed housing supply (MPP-H-1, H-6, H-Action-4)	**Housing Element and Ec Dev Element. Supported by Growth Centers and DUC designations, H-4.**
✓ Expand housing choices in centers and near transit (MPP-H-7-8)	**LU-7**

✓ Promote flexible standards and innovative techniques to encourage housing productions that keeps pace with growth and need (MPP-H-10)	**H-4**
Support the development and preservation of affordable housing	**Page/Policy Reference**
○ Use inclusionary and incentive zoning to provide more affordable housing when creating additional housing capacity (H-Action-5)	**LU-21, LU-29, LUE-13-16**
○ **Jurisdictions planning for high-capacity transit stations**: Create and preserve affordable housing near high-capacity transit[4] (MPP-H-8, H-Action-1)	**Land Use and Housing Elements.**
Address inequities in access to housing	**Page/Policy Reference**
○ Identify potential physical, economic, and cultural displacement of low-income households and marginalized populations and work with communities to develop anti-displacement strategies in when planning for growth (MPP-H-12, H-Action-6)	**HE-6, H-9, H-31**
○ Promote homeownership opportunities while recognizing historic inequities in access to homeownership opportunities for communities of color (MPP-H-5)	**H-16, H-10**
○ Identify and begin to undo local policies and regulations that result in racially disparate impacts, displacement, and exclusion in housing, including zoning that may have a discriminatory effect and areas of disinvestment and infrastructure availability	**H-9**

Additional comments on Housing or additional documents to share [optional]: ___Technical and supplemental housing information is contained in the Housing Needs and Characteristics Assessment_____

Economy

The plan includes an **economic development element (Ec-Action-5)** that promotes a **prospering and sustainable economy** by supporting **businesses and job creation and investing in all people**.

Policies and programs should:

[4] Transit-oriented development near stations located in or near manufacturing/industrial centers need to function differently with different uses than other centers to maintain a focus on protecting industrial zoning, jobs, and the region's overall economic vitality.

Promote a prosperous and sustainable economy for all people	Page/Policy Reference
✓ Identify and enhance industry clusters, including those recognized in the Regional Economic Strategy that provide goods and services for export (MPP-Ec-3, Ec-4)	**Policies ED-17, ED-18, ED-19, and ED-20**
✓ Focus retention and recruitment efforts and activities to foster a positive business climate and diversify employment opportunities by specifically targeting: • Businesses that provide living wage jobs ○ Locally, women-, and minority-owned small businesses and start-up companies ○ Established and emerging industries, technologies, and services that promote environmental sustainability, especially those addressing climate change and resilience (MPP-Ec-1, Ec-3, Ec-4, Ec-7, Ec-9, Ec-16)	**Policies ED-5, ED-6, ED-7, ED-12, ED-13, ED-14, ED-50, ED-51, ED-52, ED-53, and ED-54**
○ Promote strategies and policies that expand access to opportunity and remove barriers for economically disconnected communities (MPP-Ec-13-14)	**Policies ED-5, ED-6, ED-22,**
○ Address and prevent potential physical, economic, and cultural displacement of existing businesses that may result from redevelopment and market pressure (MPP-Ec-12)	**Policies ED-46, ED-47, ED-48, and ED-49**
✓ Develop a range of employment opportunities to create a closer balance between jobs and housing (MPP-Ec-18)	**Policies ED-46, ED-47, ED-48, and ED-49**
○ Promote environmental and socially responsible business practices, especially those addressing climate change, resilience, and improved health outcomes (MPP-Ec-8, Ec-16)	**ED-7, ED-10**
○ Support, recognize, and empower the contributions of the region's culturally and ethnically diverse communities, institutions, and Native Tribes (MPP-Ec-15, Ec-17, Ec-20)	**Policies ED-3, ED-5, ED-22, ED-50, ED-51, ED-52, ED-53 and ED-54**

Additional comments on Economic Development or additional documents to share [optional]: _____

Transportation

The plan promotes a **sustainable, equitable, affordable, safe, and efficient multimodal transportation system**, with specific emphasis on an **integrated regional transit network that supports the Regional Growth Strategy** and promotes vitality of the economy, environment, and health.

Policies and programs should:

Implement the Regional Transportation Plan	Page/Policy Reference
✓ Promote the development of an efficient, multimodal transportation system that supports the Regional Growth Strategy in collaboration with other jurisdictions and agencies (MPP-T-7)	TR-4
✓ Work to develop and operate a safe and convenient system for all users and the movement of freight and goods (MPP-T-11)	TR-5-1-4
✓ Reduce the need for new capital improvements through investments in operations, pricing programs, demand management strategies, and system management activities that improve the efficiency of the current system (RCW 36.70A.070(6)(a)(vi), MPP-T-3)	TR8-3
✓ Emphasize transportation investments that provide alternatives to single occupancy vehicle travel, increase travel options, especially to and within centers, and support compact, pedestrian- and transit-oriented densities and development (MPP-T-12-13, T-15)	TR8-4
○ Increase the resilience of the transportation system and support security and emergency management (MPP-T-31)	TR5-2-15
○ Prepare for changes in transportation technologies and mobility patterns (MPP-T-33-34)	TR10-15
Support the Regional Growth Strategy	**Page/Policy Reference**
✓ Focus system improvements to connect centers and support existing and planned development as allocated by the Regional Growth Strategy (MPP-RC-7-9, T-7-8, T-15)	TR1-4
○ Prioritize multimodal investments in centers and high-capacity station areas (MPP-RC-7-10, T-12-13, T-19)	Chapter 2, Section 2.4.1, Chapter 4, Goal 1, 5, and 6,Policies TR1-3 and TR1-4; TR5-1-1; TR6-3-1 and TR6-3-2
✓ Promote the design of transportation facilities that support local and regional growth centers and high-capacity transit station areas and fit the community in which they are located (MPP-T-19-21)	Chapter 2, Section 2.4, Chapter 4, Goal 5, Multimodal Accessible Network Policies (Transit), Chapter 4, Goal 6, MMLOS Standards Policies (Transit)

✓ Support a safe and welcoming environment for walking and bicycling (MPP-DP-15): • Include a pedestrian and bicycle component and collaborative efforts to identify planned improvements for pedestrian and bicycle facilities and corridors (RCW 36.70A.070(6)(a)(vii)) • Improve local street patterns and design to promote walking and biking (MPP-T-16-17)	**Chapter 4, Goal 5 (page 62-66); Chapter 2, Section 2.3; Chapter 4, Goal 5**
✓ Support alternatives to driving alone, including walking, biking, and transit use, through design of local streets, land use development tools, and other practices (MPP-T-16-18)	**Chapter 4, Goal 8, Policy TR8-4**
✓ **Counties**: Avoid construction of major roads or capacity expansion on existing facilities in rural and resource areas (MPP-T-22, DP-38)	**N/A**
Support people	**Page/Policy Reference**
⊖ Identify racial and social equity as a core objective when planning and implementing transportation improvements, programs, and services (MPP-T-9)	**Chapter 4, Goal 2**
✓ Ensure mobility choices for people with special needs (MPP-T-10)	**Chapter 4, Goal 2**
Support the economy	**Page/Policy Reference**
✓ Recognize the critical role of safe, reliable, and efficient movement of people and goods (MPP-Ec-6, T-1, T-23)	**Chapter 4, Goal 5, Policy TR5-1-4**
✓ Identify and support key facilities and improvements that connect the region to major transportation hubs such as ports, airports, and designated freight routes (MPP-T-24-25)	**Appendix A**
✓ Promote coordination with providers of major regional infrastructure, such as freight rail and commercial aviation (MPP-Ec-4-5, T-27-28)	**Chapter 4, Goal 5, Multimodal Accessible Network Policies and Supporting Actions (Freight, Air Transportation)**
Protect the environment	**Page/Policy Reference**
⊖ Promote clean transportation programs and facilities, including actions to reduce air pollution and greenhouse gas emissions from transportation (MPP-CC-3, CC-12, T-29-30)	**Chapter 4, Goal 4, Policy TR4-2**
⊖ Reduce stormwater pollution from transportation facilities and improve fish passage (MPP-T-32)	**Chapter 4, Goal 4, Policy TR4-3**
✓ Incorporate environmental factors into transportation decision-making, including attention to human health and safety (MPP-DP-44, T-4-5, T-29-32)	**Chapter 4, Goal 4, Supporting Actions**

The plan should:

Provide facilities inventories and identify service needs	Page/Policy Reference
✓ Include mapped inventories for each element of the transportation system, including roadways, transit, cycling, walking, freight, airports, and ferries (RCW 36.70A.070, RCW 36.70A.108, MPP-T-7, T-15-17)	**Appendix A**
✓ Include state facilities and reflect related (regional/state) level-of-service standards (RCW 36.70A.070, RCW 36.70A.108)	Chapter 2, Section 2.2
✓ Develop a comprehensive concurrency program that addresses level-of-service standards for multimodal types of transportation and include implementation strategies (RCW 36.70A.070, RCW 36.70A.108, MPP-DP-52-54)	**Chapter 4, Goal 7**
✓ Provide travel demand forecasts and identify state and local system projects, programs, and management necessary to meet current and future demands and to improve safety and human health (RCW 36.70A.070, MPP-T-4-5)	**Chapter 2, Section 2.2.8**
✓ Identify maintenance and system preservation projects and programs necessary to maintain the ability of the transportation system to provide safe, efficient, and reliable movement of people, goods, and services (RCW 36.70A.070, MPP-T-1-2, T-4)	**Chapter 4, Goal 10, Chapter 6**
Finance transportation investments	**Page/Policy Reference**
✓ Identify stable and predictable funding sources for maintaining and preserving existing transportation facilities and services (MPP-RC-11-12, T-6)	**Chapter 6, Section 6.3**
✓ Pursue alternative transportation financing methods, such as user fees, tolls, and other pricing mechanisms (MPP-T-6)	**Chapter 6, Section 6.5**
✓ Include a 20-year financing plan, as well as an analysis of funding capability for all transportation modes (RCW 36.70A.070(3), RCW 36.70A.070(6)(a)(iv), WAC 365-196-415, WAC 365-196-430, MPP-RC-11-12, T-6, T-15)	**Chapter 6, Section 6.1**
✓ Include a reassessment strategy to address the event of a funding shortfall (RCW 36.70A.070(3), RCW 36.70A.070(6)(a)(iv), WAC 365-196-415, WAC 365-196-430, MPP-RC-11-12, T-6)	**Chapter 6, Section 6.4**
Address land uses adjacent to airports	**Page/Policy Reference**
✓ **Airport-adjacent communities:** Identify and address any airports within or adjacent to the jurisdiction (RCW 36.70.547, 36.70A.070(6)(a)(iii)(A), MPP-DP-48)	**Chapter 2, Section 2.5**
✓ **Airport-adjacent communities:** Describe existing and planned uses near the airport, as well as policies and regulations that discourage incompatible uses (RCW 36.70.547, 36.70A.070(6)(a)(iii)(A), MPP-DP-48)	**Existing and planned uses are described in Land Use Element. Chapter**

	4, Goal 5, lists an action under Actions to Support Multimodal Accessible Network Goal and Policies (Air Transportation) that calls the agency to do so
⊙ **Airport-adjacent communities:** Promote coordinated planning and effective management to optimize the region's aviation system in a manner that minimizes health, air quality, and noise impacts to communities, including historically marginalized communities (MPP-T-28)	**Chapter 4, Goal 5, Multimodal Accessible Network Policies (Air Transportation)**

Additional comments on Transportation or additional documents to share [optional]: _____

Public Services

The plan supports development with adequate **public facilities and services in a timely, coordinated, efficient, and cost-effective manner** that **supports local and regional growth planning objectives**.

Policies and programs should:

Provide adequate public facilities and services to support growth	Page/Policy Reference
✓ Protect and enhance the environment and public health and safety when providing services and facilities (MPP-PS-1)	**UE-11**
✓ Promote coordinated planning for services and facilities with counties, cities, tribes, and special purpose districts in a manner that supports the Regional Growth Strategy, including addressing long-term needs, supply, and the use of conservation and demand management (MPP-PS-3-4, PS-8-9, PS-13-14, PS-23-25)	**LU-11, LU-153,**

✓ Protect water quality by replacing failing septic systems and serving new urban development with sanitary sewer systems (MPP-PS-10-12)	**UE-3, UE-150, UE-172**
⊖ Consider the potential impacts of climate change on public facilities and support the necessary investments to move to low-carbon energy sources (MPP-PS-13-15, PS-20-21)	**Climate Element, Goal 2, 4**
⊖ Promote affordable and equitable access of public services, including drinking water and telecommunication infrastructure, to provide access to all communities, especially underserved communities (MPP-PS-2, PS-16, PS-22)	**UE-2**
✓ Encourage planning and coordination of emergency management and public safety programs (MPP-PS-17, T-31)	**CF-5, CF-29**
⊖ Locate community facilities and services, including civic places like parks, schools, and other public spaces, in centers and near transit, with consideration for climate change, economic, social and health impacts (MPP-PS-18, PS-20, PS-29, DP-11)	**CFE Goal 5**
⊖ Promote working with school districts on school siting and design to support safe, walkable access, including strategies to provide adequate urban capacity for new schools and to avoid serving urban students with schools in the rural area (MPP-PS-26-28)	**CFE Goal 5**
✓ **Counties**: Avoid providing urban services and regional facilities in rural areas. Facilities and utilities in rural areas should be at a size and scale appropriate for rural locations. (MPP-PS-5-7, PS-30)	**N/A**

Additional comments on Public Services or additional documents to share [optional]: _____

City of Auburn Periodic Update of the Comprehensive Plan

Public Participation Plan

INTRODUCTION

The City of Auburn is undergoing the periodic update of the Comprehensive Plan. Under the Washington State Growth Management Act (GMA) cities and counties in Washington are required to adopt and periodically update their comprehensive plans and development regulations. Auburn's comprehensive plan is required to be consistent with GMA, the Puget Sound Regional Council (PSRC), the King County Countywide Planning Policies, and the Pierce County Countywide Planning Policies.

Often referred to as the "Comp Plan" for short – the plan articulates a series of goals, policies, actions, and standards that are intended to guide local development regulations and the day-to-day decisions of elected officials and local government staff on how the community wishes to grow and develop. The Auburn comprehensive plan will be organized into the following elements:

1. Land Use
2. Housing
3. Capital Facilities
4. Private Utilities
5. Transportation
6. Economic Development
7. Parks and Recreation
8. Historic Preservation
9. Climate

The GMA requires that local governments encourage the involvement of residents in the planning process and provide opportunities for early and continuous public participation in the development of comprehensive land use plans and associated development regulations (RCW 36.70A.020(11); RCW 36.70A.140). A public participation program must involve the "opportunity for written comments, public meetings after effective notice, provision for open discussion, communication programs, information services, and consideration of and response to public comments" (RCW 36.70A.140). This document provides the approach for this effort and includes details on the different types of opportunities that will be available.

PUBLIC PARTICIPATION PLAN GOALS

The City of Auburn has the following public participation goals:

Inform residents of the comprehensive plan update, the planning process, and outcomes. Utilize outreach methods to inform residents and property owners of the variety of participation opportunities.

Exchange information by conducting collaborative events that engage in conversation and the exchange of ideas and information. By exchanging information, we can give participants more ownership in the outcome of planning processes leading to buy-in, a sense of ownership, and higher-quality planning documents.

Be inclusive of a range of perspectives, engaging residents in unique ways to reach a broader audience and understand their goals, needs, and desires that may be implemented through the comp plan process. The comp plan aims to include communities at risk, vulnerable populations, and groups who have historically been left out of community planning processes. Inclusivity includes things like, and is not limited to, lowering barriers to participation by offering food or childcare, translation of materials into a variety of languages, and outreach to groups who historically do not participate.

Diversity and equity, embrace a variety of perspectives, experience, backgrounds, and interests in the participation of public engagement and consideration of comments and feedback. Provide access to engagement opportunities, events, and participation online for disadvantaged groups, individuals, and all residents of Auburn.

Be transparent and openly reflect a variety of viewpoints within the community and the City's process for the development and implementation of the comp plan.

Build support for the comp plan and work with the community of Auburn, elected officials, and other agencies toward success in implementing its goals, policies, and actions.

This document outlines the public participation opportunities the City of Auburn will use to develop its Comprehensive Plan, including engagement methods, timeline, and implementation strategy. This is a working document that may be updated as needed to respond to community needs.

PUBLIC PARTICIPATION PLAN MESSAGING

The public participation plan program was founded on three messages:

1. The Auburn Comprehensive Plan is the long-range policy document that guides the City's evolution and growth over the next 20 years.
2. The city needs and values community input on the Comprehensive Plan, ensuring the Vision and Goals driving the Plan are consistent with the community's priorities.
3. The community's involvement helps ensure that the new plan reflects the needs of Auburn's families, neighborhoods, diversity, and the city as a whole.

COMMUNICATION CHANNELS, BARRIERS, & INCLUSIVITY

The City of Auburn is a diverse community, and the racial and ethnic makeup is more diverse than that of King County. For this reason, the channels by which we communicate and the events we hold need to incorporate an inclusive engagement approach.

The table below identifies the engagement options for this plan, including the barriers of each as well as how the method achieves inclusivity.

	**Project Website.** A central location for status updates, draft documents, meeting schedules and related information, official notices, and feedback/comment portal. Website: https://speakupauburn.org/comprehensive-plan	**Barrier(s).** ▪ Getting visitors to the website ▪ Reaching non-English-speaking residents ▪ Uploading materials in a timely manner ▪ Avoid static presentation	**Inclusivity Method.** ▪ Ease of access through virtual outreach on social media and email correspondence directing public to website. ▪ Providing materials in a variety of languages ▪ Materials prepared in advance and available to the client for publishing and distributing to the public ▪ Keep participants informed of results/progress. ▪ Display information in multiple formats (images, charts, graphs, videos, etc.)
	**Social Media.** Sharing of public events, surveys, and other opportunities to participate.	▪ Posting and noticing in a timely manner ▪ Creating postings that appeal to a wide audience ▪ Reaching non-English-speaking residents	▪ Materials provided in a variety of languages ▪ Links to surveys and other web-based platforms provided
	**Public Meetings, Civic Events, and Presentations.**	▪ Identifying appropriate events ▪ Availability of food/childcare ▪ Engaging non-English-speaking residents ▪ Requires high level of coordination	▪ Work with city departments to identify appropriate events to reach a diverse audience ▪ Designate 1–2-point people for coordination/communication to ensure clarity and efficiency ▪ Materials provided in a variety of languages

		and communication	▪ Host virtual Public Meetings with a 1-2 week open timeframe ▪ Tailor events to various size audiences ▪ Opportunities to use community ambassadors
	**Printed Materials.** describing the update process. • The city of Auburn magazine Press releases • Mailer	▪ Reaching non-English-speaking residents ▪ Potential for low participation	▪ Materials provided in a variety of languages ▪ Identify a variety of outlets with relevant contact information for notifying and distributing materials to (newspapers, neighborhoods, churches, and other community-oriented organizations/groups) ▪ Include website link and QR code for access
	**Community Workshops.**	▪ Engaging non-English speaking residents ▪ Potential for low participation	▪ Provide options for non-English speaking participants and ensure ADA accessibility ▪ Incentivize participation with food and/or childcare
	**Planning Commission and City Council Meetings and Hearings.**	▪ Reaching non-English speaking residents ▪ Potential for low public participation ▪ May be intimidating	▪ Provide ample time for the public to speak and/or provide written comments and questions ▪ Provide options for non-English speaking participants and ensure ADA accessibility

Engagement activities

This section dives deeper into each engagement method, describing the tool or activity, the implementation lead whether it's the City or SCJ, what the needs are to implement successfully, what success looks like, the anticipated timeframe for implementing each, and relevant resources.

Project Webpage

The project webpage is hosted through the Speak Up Auburn platform, which provides a secure way for the public to participate, engage, and provide feedback when and where it's convenient for Auburn's residents. The comp plan webpage was designed to be a clearinghouse- a central location for all interested parties to access the latest information related to the update. Planning staff need to routinely assure that webpage does not reduce in priority that it is difficult to access/locate.

The project webpages allow all interested parties to:

- access and review the project status and timeline
- review draft and final documents, comp plan deliverables, and community workshop materials
- provide background information concerning the update, including materials in multiple languages
- virtual public open houses will be accessible via a link
- see Planning Commission and City Council's schedules related specifically to the update process

Printed Materials

These materials include a Frequently Asked Question (FAQ) that was translated into Spanish, Russian, Ukrainian, and Taglog as well as a suite of postcards, including a set for mailing and a postcard to be used as a general handout, along with posterboards for the community workshops/events. Staff distributed the general handout postcard at key locations across the City including:

- Auburn YMCA
- Auburn City Hall & City Hall Annex
- Auburn Public Library
- Auburn Food Bank Multi-Service Center
- Auburn Youth Resources
- Auburn Senior Activity Center
- Parks Dept & Gymnasium at Les Gove Park
- Fred Meyer
- Lea Hill Market
- Marvel Food and Deli
- Lakeland Hills Community Center
- Valley Cities Counseling Services
- Outlet Collection Seattle Mall
- EuroDeli
- Downtown Auburn Cooperative & Chamber Offices
- Farmers Market
- Sounder Station
- Utility Bill Inserts

Social Media

Social media will be utilized to broadcast public events, surveys, and other engagement activities for the public to participate in. To run a successful social media campaign, materials must be published on time and updated regularly. There should also be regularly scheduled postings leading up to events, and each

post should include a clickable image that redirects people to the website or event link. Comments posted on social media posts should be compiled and delivered to City Staff and consultants regularly. Social media postings will correspond with the event dates listed under Public Events, Survey Series, and Community Workshops listed below.

Surveys

Two surveys conducted during the engagement window. Surveys include:

1. **Vision Mini Poll:** The purpose of the mini poll is to collect public comments on the vision for the City of Auburn.
2. **Community survey:** This survey will collect topical information from the public on various elements of the comprehensive plan. The survey may also include visual preferencing and the collection of comments and ideas on the land use scenarios/alternatives.

Citywide Comprehensive Plan Events

The comprehensive plan update process will include several City-wide Comp Plan Events that will inform residents of the update process and collect feedback on the plan. The Planning Department will coordinate with other city departments as necessary. The events will also incorporate public outreach as part of the EIS, details are specified below.

Four (4) City-wide events are planned as part of the update process and include.

1. **City-wide event 1:** Comp Plan Open House – April 2023

- ***Purpose:*** Present the comprehensive planning update and introduce the Draft EIS to the public, share alternatives two and three and collect public feedback.

2. **City-wide event 2:** Comp Plan Draft – April-July 2024

- ***Purpose:*** Each element can be presented to the public to inform and provide context regarding the future land use scenario, updates on each element update/element specific plan updates, input and feedback on each element of the comprehensive plan, and scoping meeting(s) for the EIS. Conducted with Planning Commission as Special Meetings.
- **EIS Objective:** The EIS process requires at least one (1) scoping meeting. The purpose of the scoping meeting is to provide the public the opportunity to give public input on the proposed changes and comprehensive plan.

i. ***EIS Scoping Meeting 1*** *– November 2023*

1. Provide the opportunity for the public to provide public input on what we should be analyzing on the EIS. Identifying pieces of alt 2 and 3.

3. **City-wide event 3:** Comp Plan DEIS Meeting Rollout –May 2024

- ***Purpose:*** Present the DEIS to the public.

i. EIS Objective:

1. Share with the public the findings from the scoping meeting(s)
2. Provide information on the Draft EIS.
3. The event should be scheduled within the public comment period and will provide the opportunity for the public to give comment(s).
4. Summarize all public comments, responses and then publish the comments along with the DEIS. Initiate the appeal period.

4. **City-wide event 4:** Comp Plan Rollout - December 2024

- ***Purpose:*** Present the Comprehensive Plan and FEIS to the public.

Events options include and are not limited to:

Comp Plan Event	Date	Community Event	Location	City Dept. Participation
Event 1 – Open House	April 2023	Comprehensive Plan Open House	Washington Elementary School	Planning Department
Event 2 – Comp Plan Draft	**SUMMER 2023 Mid-Late July**	Summer Concert Series runs July 6 – August 31	Sunset Park	Planning Department
Event 3 – Comp Plan Rollout	**FALL 2023 September (after Labor Day)**	Auburn Farmers Market runs from June 4-September 17 (Sunday's). Set-up from 9AM-11AM Tear-down from 1PM-3:30PM Application fee $20 regardless of acceptance Booth fees are $40 per 10'x10' space per Sunday	Les Grove Park	Planning Department
Event 4	**October 23**	Civics Academy – Education and Presentation Event	Les Gove Park	Community Development Department

Planning Commission and City Council Meetings and Hearings

The City of Auburn Planning Commission (a volunteer advisory body appointed by the City Council) is required to review amendments to the Comprehensive Plan and provide a recommendation to the City Council for consideration and potential adoption. The city planning staff will lead the workshops and public hearings with the Planning Commission and City Council.

1. **Planning Commission Workshops and Public Hearings – April to December 2024**

- ***Purpose:*** Present the draft Comprehensive Plan to the Planning Commission via 3 meetings per subject, consisting of a 1) Public Meeting, 2) Public Hearing, and 3) Action and Deliberation.

2. **City Council Workshops**

- ***Purpose:*** Hold City Council workshops to rollout the Planning Commission recommended draft of the City of Auburn Comprehensive Plan. Provide an overview of the planning process, public feedback and final draft of the plan, collect final feedback from Council and incorporate substantive comments into the final draft while achieving their buy-in and alignment of adoption at the final hearing.

Additional workshops and hearings will be held with the Planning Commission and City Council throughout the update timeframe and lead by the City Planning Department.

Summary of Public Engagement

Public engagement consisted of attending each of the events noted in the previous section in addition to drop-in sessions at various events. Information was shared at each of these events as well as on the project's website and Planning Commission public hearing dates were shared via citywide utility mailers. The following is a compilation of materials presented and feedback received. Feedback and information received for specific Elements, such as Transportation, is found in the respective document.

A - IMAGINE AUBURN 2044 COMPREHENSIVE PLAN VISION MINI-POLL

In one to two words, what makes Auburn great today?

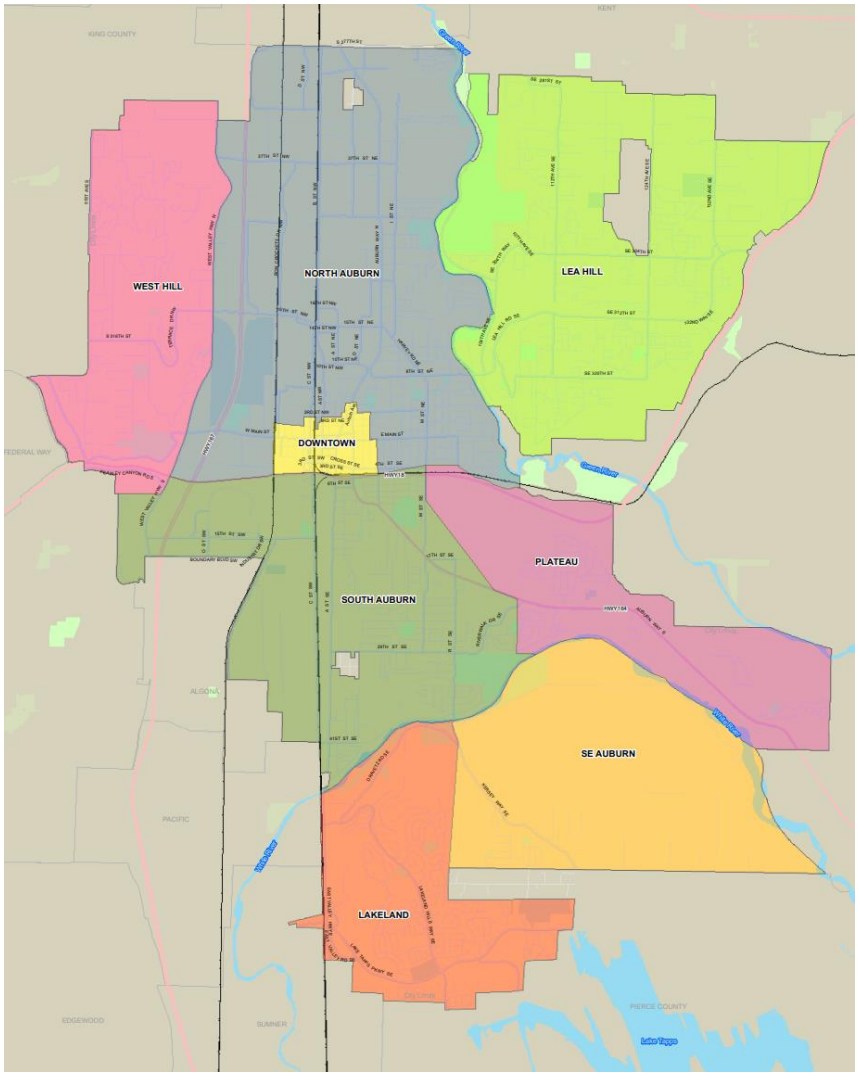
In the next 20 years, what would make Auburn even better?

Identify what you think the top five (5) priorities should be for Auburn in the next 20 years.

1. Increase bicycle and pedestrian amenities
2. Enhance regional transportation networks
3. Address roadway congestion
4. More affordable housing
5. More diverse types of housing
6. Continue to develop and improve downtown
7. Revitalize/ redevelop under used-vacant sites
8. Create strong neighborhood identities
9. Parks and natural lands areas maintained
10. More parks and recreation opportunities provided
11. Maintain a high level of public services and utilities
12. Maintain a safe community
13. Ensuring downtown and neighborhood cores are walkable
14. Quality education opportunities from pre-school to collegiate
15. Historic preservation
16. More opportunities for arts and culture
17. Keep the community engaged
18. Environmental stewardship
19. Providing affordable utilities
20. Other: _____

Where do you live or work in Auburn? (see map for reference)

- Downtown
- West Hill
- North Auburn
- Lea Hill
- South Auburn
- Plateau
- Lakeland
- Southeast Auburn



With the neighborhood you identified in mind, what could the City do to enhance your neighborhood area?

Please provide any other thoughts that you would like to share for the development of Auburn's Comprehensive Plan.

Report for Auburn Comprehensive Plan Poll

Response Counts

Completion Rate:	**50%**		
	Complete		16
	Partial		16

Totals: 32

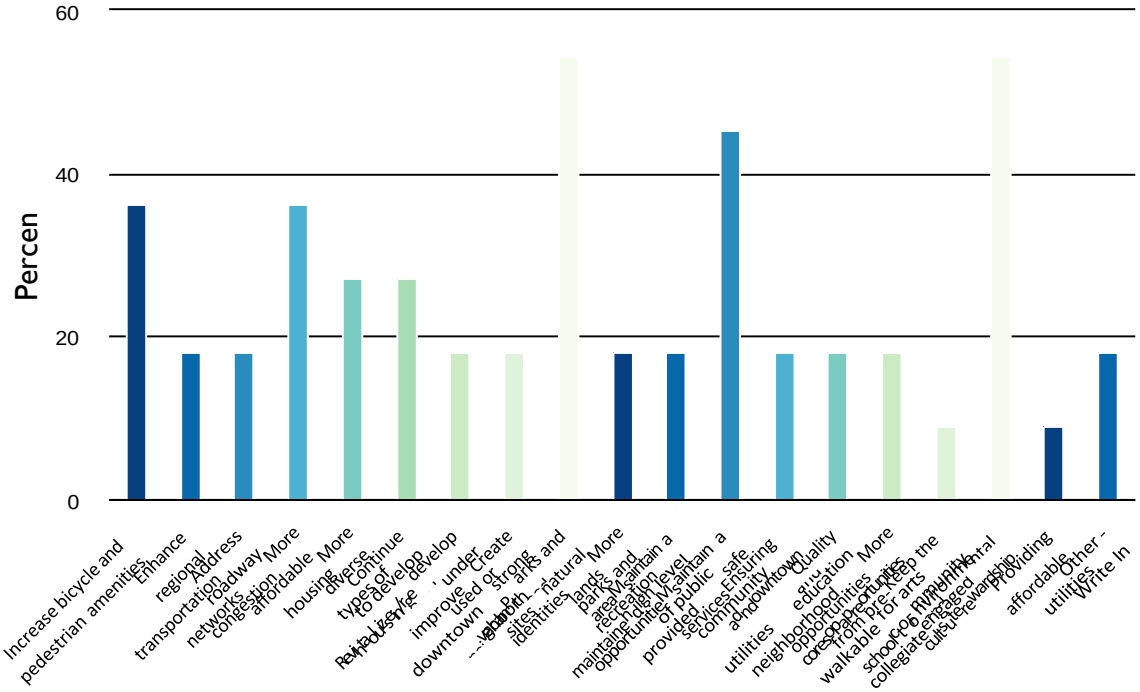
In one to two words, what makes Auburn great today?

Response ID	Response
13	safe environment
15	location & amenities
18	People; Services
20	Diversity
22	Affordable housing
23	Access to the two large parks, Game Farm & Game Farm Wilderness Park. Two large parks with many amenities.
24	Shopping
25	Access to the wilderness and the city
26	Rural community
34	History caring
35	People

1. In the next 20 years, what would make Auburn even better?

Response ID	Response
15	Active participation of residents in Auburn to live, work, play and thrive right here. By better communication and interaction with City operations. Better flow of citizens moving without cars in the city and connecting to neighboring cities.
18	Creating enough affordable and market-rate housing to accommodate population growth.
22	Keep living affordable
23	More trees. Protecting the existing urban forest and replanting for the future forest. The urban heat island effect is very high outside the natural areas.
24	More tree cover in industrial areas
25	More trees and tree canopy
26	Larger urban canopy coverage to mitigate heat
34	Preserve open space, trees, trails. Enhance gathering places. Work hard to ensure people with no place to live find shelter, food and opportunities for self help
35	Crime reduction - make it known Auburn is tough on criminals. Litter management, proactive maintained of public property bridge painting, litter removal, more public art murals, building sidewalks in critical missing areas directly in front of busy elementary schools. Further collaboration with Muckleshoot to enhance Auburn way south from Hwy 18 to the resort for the benefit of both communities.

2. Identify what you think the top five (5) priorities should be for Auburn in the next 20 years.

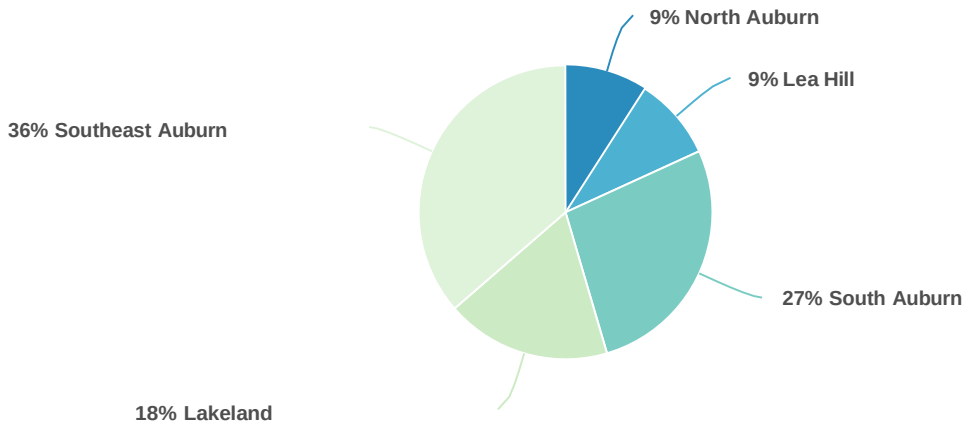


Value	Percent	Responses
Increase bicycle and pedestrian amenities	36.4%	4
Enhance regional transportation networks	18.2%	2
Address roadway congestion	18.2%	2
More affordable housing	36.4%	4
More diverse types of housing	27.3%	3
Continue to develop and improve downtown	27.3%	3
Revitalize/redevelop under used or vacant sites	18.2%	2
Create strong neighborhood identities	18.2%	2
Parks and natural lands areas maintained	54.5%	6

Value	Percent	Responses
More parks and recreation opportunities provided	18.2%	2
Maintain a high level of public services and utilities	18.2%	2
Maintain a safe community	45.5%	5
Ensuring downtown and neighborhood cores are walkable	18.2%	2
Quality education opportunities from pre-school to collegiate	18.2%	2
More opportunities for arts and culture	18.2%	2
Keep the community engaged	9.1%	1
Environmental stewardship	54.5%	6
Providing affordable utilities	9.1%	1
Other - Write In	18.2%	2

Other - Write In	Count
A robust tree ordinance that protects and increases tree canopy coverage throughout the city.	1
Urban forestry programs	1
Totals	2

3. Which neighborhood do you live/work in? Click here to see a neighborhood map.



Value	Percent	Responses
North Auburn	9.1%	1
Lea Hill	9.1%	1
South Auburn	27.3%	3
Lakeland	18.2%	2
Southeast Auburn	36.4%	4

Totals: 11

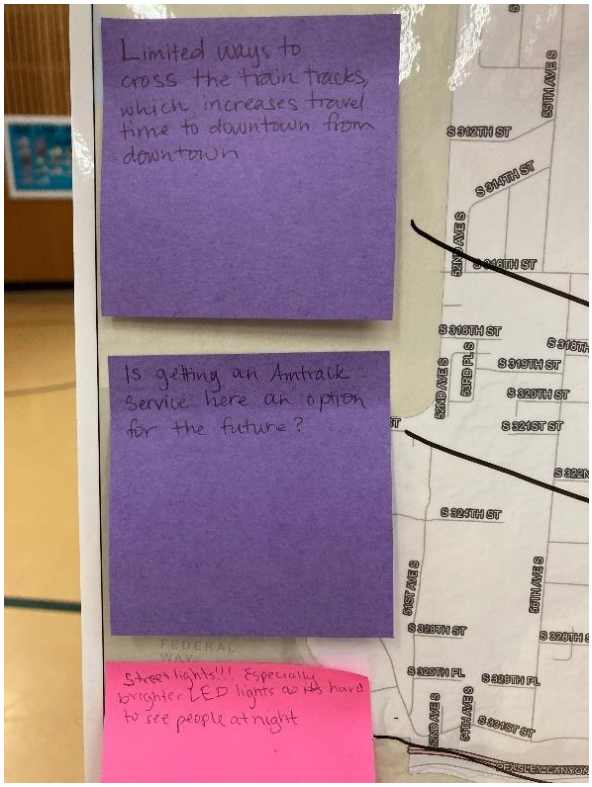
4. With the neighborhood you identified in mind, what could the City do to enhance your neighborhood area?

Response ID	Response
13	More public restrooms at parks and trails. More locations for picnics in parks, more walking trails, and more maintenance of trails and parks.
15	Improve safe road crossings. Encourage neighborhood cohesion and interaction with volunteer activities, benches, bulletin boards, signs.
20	Pedestrian and bike paths from Adventist Academy to M street. Better lighting along 164 for pedestrians. Improving traffic congestion and unsightly businesses/vacant lots along Auburn Way. Improve the visuals at the exit on Auburn Way.
22	Improve safety and reduce crime.
23	Proactive management of the trees. There are many aging and dying large trees that should be removed and pruned. Tree canopy is decreasing throughout the city and large healthy trees are being removed and not adequately replaced.
24	More trees
26	Plant more street trees
34	Preserve forest land with trails. Restore Bowman Creek Protect neighborhoods from traffic
35	Litter removal, more traffic calming, building sidewalks.

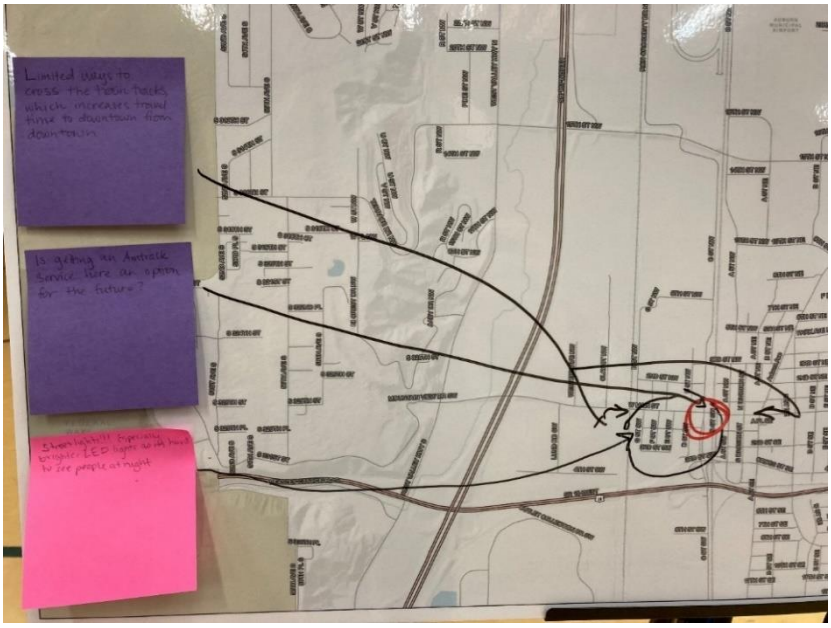
5. Please provide any other thoughts that you would like to share for the development of Auburn's Comprehensive Plan.

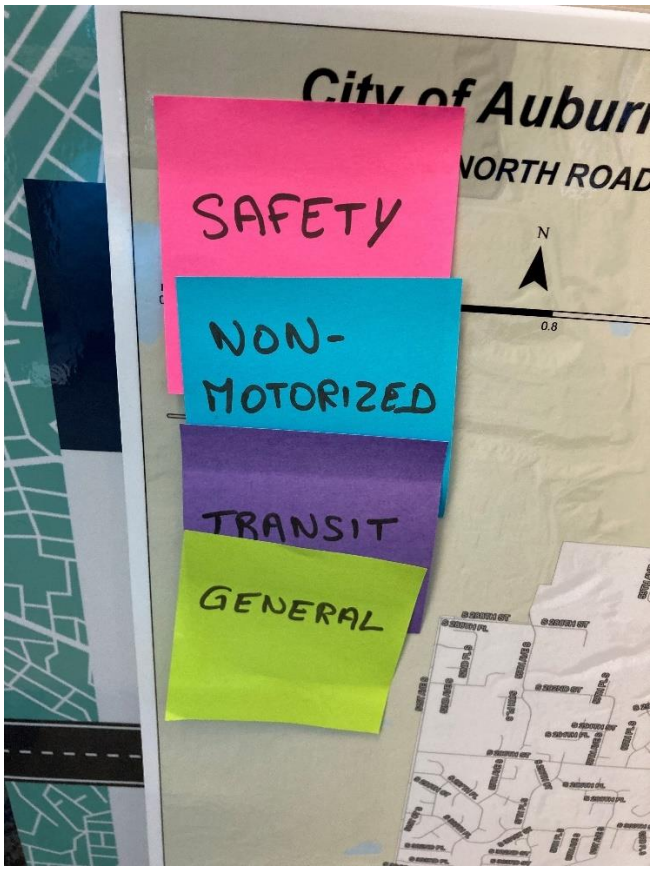
Response ID	
15	Find a way to house the homeless and remove them from the riverbanks. Become a model of creativity by creating transitional housing shelters that puts the residents to work in the area by maintaining open spaces ie: garbage collecting, blackberry and reed canary grass removal. There is a wonderful field near Brannon Park or near the Auburn Environmental Park where a "work camp" arrangement could serve the homeless who don't like restrictive housing, who like the outdoors and who just need basics and a job. By removing invasive species, cleaning up garbage and improving land with restoration plantings and remediation practices and maybe even producing food could provide value to the people and the environment.
18	Auburn should plan for more affordable housing, near transit and job centers to create more opportunities for people. More affordable housing for people near services will improve the overall wellbeing of the city.
22	More needs to be done to improve safety and reduce crime to keep this a family friendly neighborhood.
23	Auburn should acquire at least one full-time urban forestry specialist that can adequately maintain, enhance, and grow their urban forest.
24	Revisions to the tree ordinances
25	Please review and enhance the tree code for more tree protection and planting requirements. It takes decades to grow big trees.
26	Please consider growing the urban forestry program to include tree planting, watering, and maintenance. Have the city take ownership all ROW trees.
34	Continue to work with the region to ensure people living on the street find shelter, explore rent control, expand mass transit. Preserve history and open space. Vibrant recreation opportunities for all. Expand partnerships.
35	Listen to your citizens, continue to advocate us to state level agency's that the current status quo is not acceptable in regards to crime punishment and WSDOT maintenance issues within the city among other things.

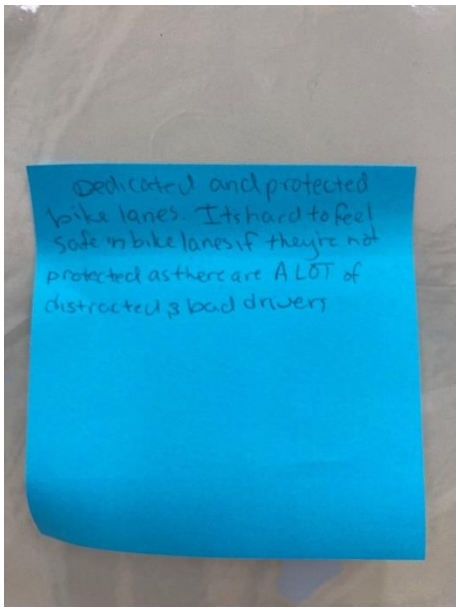
2 – April 2023 Comprehensive Plan Public Open House at Washington Elementary School








SAFETY
NON-
MOTORIZED
TRANSIT
GENERAL
NORTH ROAD
N
0.8


Dedicated and protected bike lanes. Its hard to feel safe in bike lanes if they're not protected as there are A LOT of distracted & bad drivers













IMAGINE AUBURN
~COMPREHENSIVE PLAN UPDATE 2024~

An Open House, free for all in the community to attend, is scheduled for **Tuesday, April 25th from 4-7 PM at Washington Elementary gymnasium** (20 E St NE), which is the first of multiple planned events in 2023.

2023 is shaping up to be a busy year for development of the Comprehensive Plan, with technical and policy analysis underway. The community's input and feedback on the Plan, policies, and vision is important, and public meetings and activities are currently being scheduled to meet the community where they are.

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For more information on the project, to sign up for updates, and to participate in a visioning survey, please visit the QR code or website link, or contact Josh Steiner, Senior Planner, at jsteiner@auburnwa.gov.

For residents with speech, sight or hearing disabilities wishing to review documents pertaining to this hearing, should contact the City of Auburn within 10 calendar days prior to the meeting, as to the type of service or equipment needed. Each request will be considered individually according to the type of request, the availability of resources, and the financial ability of the City to provide the requested services or equipment.



Plan Integral **Imagina Auburn** 2044

La ciudad de Auburn se está embarcando en la actualización periódica del Plan Integral Imagina Auburn, el cual deberá aprobarse en 2024. De conformidad con la Ley de Gestión del Crecimiento del estado de Washington (Growth Management Act, GMA), capítulo 36.70A del Código Revisado de Washington (Revised Code of Washington, RCW), las ciudades y condados de Washington deben aprobar y actualizar periódicamente sus planes integrales cada 8 años, y todas las ciudades de los condados de King, Pierce, Snohomish y Kitsap deben hacerlo en 2024.

IMAGINE AUBURN
~COMPREHENSIVE PLAN UPDATE 2024~

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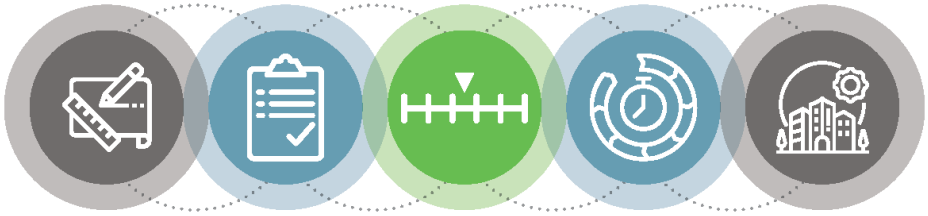
¿Qué es un Plan Integral?

La actualización del Plan Integral de la Ciudad de Auburn proporcionará una visión general del futuro de la comunidad y una hoja de ruta para los próximos veinte años. En él se describe el aspecto que la comunidad quiere que tenga de aquí a 2044 y cómo hacer realidad esa visión colectiva. El Plan también contempla los requisitos de crecimiento regional establecidos por el Consejo Regional del estrecho de Puget.

¿Por qué es importante una planificación a 20 años?

Se trata de un Plan "Integral", lo que significa que es amplio e inclusivo, tiene en cuenta múltiples temas, elementos, aportes de la comunidad, datos e historia. Si vive, trabaja o juega en Auburn, ahora es el momento de dar su opinión. A fin de cuentas, contribuirá a definir los objetivos del plan, lo que se reflejará en las políticas para alcanzarlos. Al disponer de un plan, se proporciona una guía para garantizar que las futuras decisiones sobre el uso del suelo, las viviendas, el transporte, los servicios públicos y la acción climática reflejen la visión reconocida de la comunidad, tal y como se identificó a través de la participación durante el proceso de planificación.

Un Plan Integral es:



GENERALIZADO

Proporciona orientación y pautas generales para el crecimiento y el desarrollo de la ciudad.

INTEGRAL

Abarca todos los elementos o componentes que se consideran determinantes para influir en las preocupaciones físicas, económicas y sociales de la Ciudad.

DE LARGO ALCANCE

Presenta una visión a largo plazo para la comunidad.

NO ES FIJO

Debe evolucionar con el tiempo mediante su revisión y actualización. Auburn cuenta con un proceso de revisión anual para modificar el Plan Integral.

NO ES UNA ORDENANZADE ZONIFICACIÓN

El Plan Integral no es una ordenanza, pero informa directamente sobre las decisiones relacionadas con los códigos de uso del suelo, los modelos de desarrollo y la priorización de los fondos municipales.



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CITY OF AUBURN WASHINGTON

«Auburn будущего» комплексный план до 2044 года

City of Auburn приступает к периодическому обновлению комплексного плана «Auburn будущего» (Imagine Auburn), которое должно быть принято в 2024 году. В соответствии с Законом штата Washington об управлении ростом (Growth Management Act, GMA), разделом 36.70A Свода законов штата Washington с поправками (Revised Code of Washington, RCW), города и округа штата Washington обязаны принять и периодически обновлять свои комплексные планы каждые 8 лет, причем все города в округах King, Pierce, Snohomish и Kitsap должны сделать это в 2024 году.

IMAGINE AUBURN
~COMPREHENSIVE PLAN UPDATE 2024~

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Что такое комплексный план?

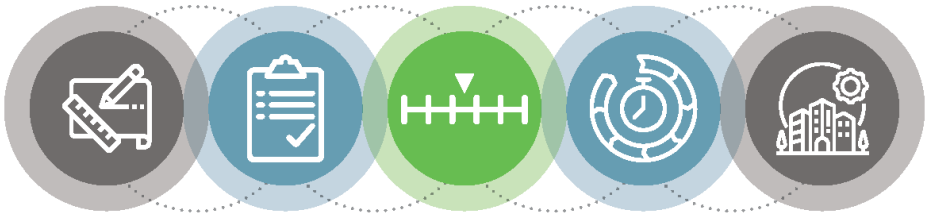
Обновление комплексного плана города Auburn обеспечит общее видение будущего сообщества и план действий на следующие двадцать лет. План определяет то, каким сообщество хочет видеть себя к 2044 году и как воплотить это коллективное видение в реальность. Он также учитывает требования по региональному росту, установленные региональным советом Puget Sound.

Почему важно планирование на 20 лет?

«Комплексность» означает, что этот план является широкомасштабным и инклюзивным, учитывает широкий спектр тем, элементов, вкладов сообщества, данных и истории. Если вы живете, работаете или отдыхаете в городе Auburn, сейчас самое время внести свой вклад. Вы поможете сформировать цели плана, которые будут воплощены в политике, направленной на достижение этих целей.

Наличие плана является ориентиром, который гарантирует, что будущие решения по землепользованию, жилью, транспорту, коммунальным услугам и мерам защиты от угроз, связанных с изменением климата, будут отражать общепризнанное видение сообщества, определенное в процессе планирования.

Комплексный план:



ОБОБЩЕННЫЙ

Дает общие рекомендации и определяет направление для роста и развития города.

КОМПЛЕКСНЫЙ

Охватывает все элементы или компоненты, которые считаются важными для решения физических, экономических и социальных проблем города.

ДОЛГОСРОЧНЫЙ

Представляет долгосрочное видение сообщества.

НЕ ЯВЛЯЕТСЯ НЕИЗМЕННЫМ

Должен развиваться со временем путем пересмотра и обновления. Город Auburn предусматривает ежегодный процесс пересмотра комплексного плана для внесения изменений.

НЕ ЯВЛЯЕТСЯ ДИРЕКТИВНЫМ РАСПОРЯЖЕНИЕМ

Комплексный план не является директивным документом, но непосредственно влияет на принятие решений относительно кодексов землепользования, схем застройки и определения приоритетов использования городских средств.

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CITY OF AUBURN WASHINGTON

Imagine Auburn
Komprehensibong Plano 2044

Sinisimulan na ng Lungsod ng Auburn ang pana-panahong pag-update nito ng Komprehensibong Plano – Imagine Auburn – na kailangang pagtibayin sa 2024. Sa ilalim ng Batas sa Pamamahala ng Paglago (Growth Management Act, GMA) ng Washington State Chapter 36.70A RCW, ang mga lungsod at lalawigan sa Washington ay kinakailangang magpatibay at pana-panahong mag-update ng kanilang mga komprehensibong plano bawat 8 taon, na ang lahat ng mga lungsod sa lalawigan ng King, Pierce, Snohomish, at Kitsap hanggang 2024.

IMAGINE AUBURN
~COMPREHENSIVE PLAN UPDATE 2024~

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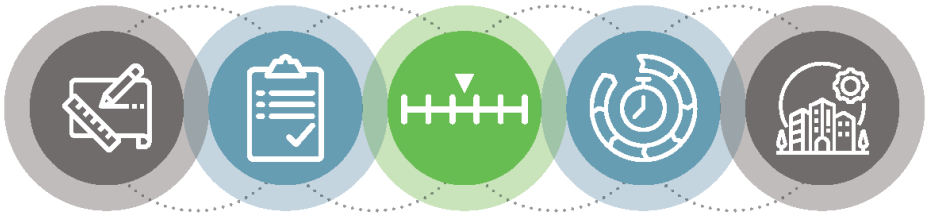
Ano ang Komprehensibong Plano?

Ang pag-update ng Komprehensibong Plano ng Lungsod ng Auburn ay magbibigay ng pangkalahatang pananaw para sa kinabukasan ng komunidad at landasin para sa susunod na dalawampung taon. Binabalangkas nito kung ano ang gustong hitsura ng komunidad sa pagsulong patungo sa 2044, at kung paano gagawing katotohanan ang kolektibong pananaw na iyon. Tinutugunan din ng Plano ang mga kinakailangan sa paglago ng rehiyon na ibinigay ng Puget Sound Regional Council.

Bakit mahalaga ang 20 taong pagpaplano?

Ito ay isang "Komprehensibong" Plano, ibig sabihin ito, malawak ang saklaw nito at sakop lahat, isinasaalang-alang ang maraming paksa, bahagi, input ng komunidad, data at kasaysayan. Nakatira ka man, nagtatrabaho o naglalaro sa Auburn, oras mo na para ibigay ang iyong input. Sa huli, tutulong kang hubugin ang mga layunin ng plano na isasalin sa mga patakaran para maabot ang mga layuning iyon. Sa pamamagitan ng pagkakaroon ng plano, nagbibigay ito ng patnubay para matiyak ang paggamit ng lupa sa hinaharap, pabahay, transportasyon, utility, at mga desisyon sa aksyon sa klima na sumasalamin sa kinikilalang pananaw para sa komunidad, na natukoy sa pamamagitan ng pagsisikap sa panahon ng proseso ng pagpaplano.

Ang komprehensibong plano ay:



PANGKALAHATAN

Nagbibigay ng pangkalahatang patnubay at direksyon para sa paglago at pag-unlad ng Lungsod.

KOMPREHENSIBO

Tinutugunan ang lahat ng mga elemento o bahaging nadama na mahalaga sa pag-apekto sa pisikal, pang-ekonomiya at panlipunang alalahanin ng Lungsod.

PANGMATAGALAN

Naglalahad ng pangmatagalang pananaw para sa komunidad.

NAGPAPATULOY

Dapat umunlad sa paglipas ng panahon sa pamamagitan ng pagsusuri at pag-update. May taunang proseso ng pagsusuring ang Auburn upang amyendahan ang Komprehensibong Plano.

HINDI PANSONANG ORDINANSA

Ang Komprehensibong Plano ay hindi isang ordinansa, ngunit direktang nagpapaalam sa mga desisyon sa mga kodigo sa paggamit ng lupa, parisan ng pagpapaunlad, at pagbibigay-priyoridad ng mga pondo ng lungsod.



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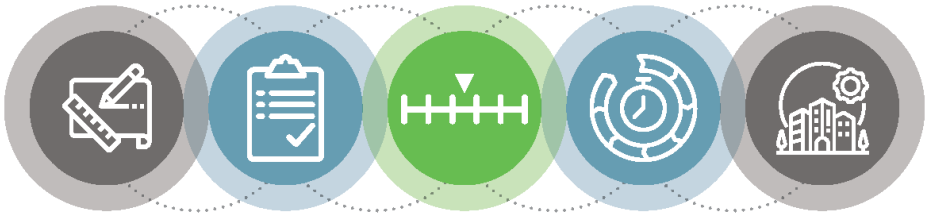
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CITY OF AUBURN WASHINGTON

Compilation of Comments from 4/25/23 Kick Off Open House at Washington Elementary School

- A lot of interest in housing and ensuring affordable housing for future generations of residents.
- Interest in ensuring that housing meets affordability needs of residents.
- Interest in greater range of type of housing types. Where does have available space for new housing?
- What is city doing to attract job opportunities at all levels—not just lower income levels. How is the city attracting higher income jobs?
- How to fill vacant store fronts downtown. What incentives can city provide?
- Need more businesses downtown to attract patrons. Restaurants close too early in the evening. Missing restaurants that were the subject to fire destruction in downtown and the Sunbreak.
- City needs stores that residents need to travel of other communities to frequent/use. Doggy day care, dog parks, Trader Joes, Target, were given as examples
- How to ensure residents fee safe. Currently it does not feel safe to walk downtown in Auburn, especially at night. Too much drug use and litter is visible.
- City needs to practice equity, to implement its vision statements (walk the talk) . As an example, public restrooms in parks near downtown (City Park) are locked but not in city parks in other neighborhoods, Sunset Park in lakeland was given as an example. This results in persons using other open public areas for bathroom purposes.
- City seeks to promote alternatives to single occupant vehicles such as non-motorized modes but police do not enforce traffic law violations such as vehicles observing stop signs so it is unsafe for bicycle use. Speaker has multiple examples of nearly being hit and has complained to city's Traffic division and been told that the intersection of East Main and D St SE . that cross walks would be marked. The speaker said this was a non-sensical response that does not help to add to safety. Bus stops are not maintained and safe and lack sitting areas. Recognized this is a METRO responsibility. There is too much drug use and litter in bus stops.
- Need dedicated bike lanes and vehicle observance of bike lanes.
- How is city helping residents is to age in place. Is there requirements to make units accessible or convertible to accessibility? Is there city restricting the number of persons who can live in a household? How does this relate to extended families needs in a the same household.
- What is city doing to make this comprehensive plan update effort accessible to underrepresented groups in the community? Will the city come out and discuss by visit underrepresented groups if requested ?
- Auburn needs a unique identity to draw people from outside the region which will increase economic development. It will also give people who live in Auburn more things to do so they'll spend their money in Auburn. Ideas for identity included:
  - Sports fields for regional competition purposes (soccer, etc.), possibly an ice rink.

- Make Auburn an entertainment area (build on White River Amphitheater) and add other venues.
- Market Auburn more as the gateway to outdoor recreation areas (Mt. Rainier, Green River natural areas, etc.)

- The north portion of the Green River that is within King County should be annexed by Auburn and that area along the river could be developed with camping spots, yurts, and cabins. A company to provide float trips along the river with shuttle services back to their cars would be a great attraction for Auburn.
- Suggestion that there should be a transportation service from local hotels to White River Amphitheater for safety purposes and to eliminate traffic congestion to the venue.
- The downtown needs more places to go after work and on weekends, restaurants need to stay open later in the evening (past 8:00 pm) to prevent people from driving to Federal Way and Kent to dine out.
- Suggestion that the maps provided should include adjacent jurisdictions to show connections to those cities, particularly driving routes.
- There needs to be a better transportation connection between West Hill and Lea Hill. The opinion was that it's very cumbersome to drive from one area of the city to the other so they never go to the Lea Hill area. 277th Street didn't seem to be a good route.
- The Green River College area needs a walkable commercial node of restaurants, shops and higher density housing.
- To provide for people living in the older single-family residential zones that are retired and wanting to age in place -- the suggestion was those neighborhoods be developed with neighborhood "home-care" businesses and senior centers, so that people do not need to drive to get care or to socialize, versus building senior housing.
- A Need for the city to find its identity and use that identity to guide how future growth is going to occur
- More activities and things to do in the city (strong emphasis on entertainment and restaurants)
- A desire for higher density residential developments to include some type of open green spaces for gathering
- Safety concerns especially in downtown area
- Improve walkability in neighborhoods

3 - Auburn Farmers Market – July 2023




Auburn Parks, Arts & Recreation
Existing Conditions


Auburn Parks, Arts & Recreation
Existing Conditions


Tupperware

3 – Other Materials



Imagine Auburn Comprehensive Plan 2044

The City of Auburn is embarking on its periodic update of the Comprehensive Plan – Imagine Auburn – required to be adopted in 2024. Under the Washington State Growth Management Act (GMA) Chapter 36.70A RCW, cities and counties in Washington are required to adopt and periodically update their comprehensive plans every 8 years, with all cities in King, Pierce, Snohomish, and Kitsap counties due in 2024.

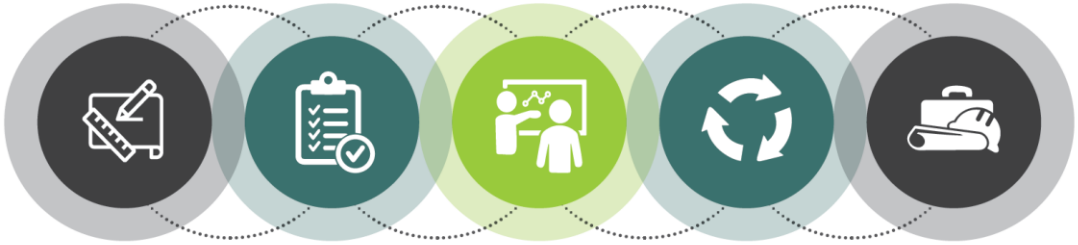
www.speakupauburn.org/comprehensive-plan

What is a Comprehensive Plan?
Why is 20-year planning important?

The City of Auburn's Comprehensive Plan update will provide a general vision for the future of the community and a roadmap for the next twenty years. It outlines what the community wants to look like moving forward towards 2044, and how to make that collective vision a reality. The Plan also addresses regional growth requirements provided by Puget Sound Regional Council.

This is a "Comprehensive" Plan, meaning it is wide ranging and inclusive, considering a multitude of topics, elements, community input, data and history. Whether you live, work or play in Auburn, now is your time to give your input. Ultimately, you will help shape the goals of the plan which will translate to policies to reach those goals. By having a plan in place, it provides a guideline to assure future land use, housing, transportation, utilities, and climate action decisions reflect the recognized vision for the community, as identified through outreach during the planning process.

A COMPREHENSIVE PLAN IS:



GENERALIZED: Provides general guidance and direction for City growth and development.

COMPREHENSIVE: Addresses all the elements or components felt to be important in affecting the physical, economic and social concerns of the City.

LONG RANGE: Presents a long-term vision for the community.

NOT STAGNANT: Should evolve through time through review and updating. Auburn has an annual review process to amend the Comprehensive Plan.

NOT A ZONING ORDINANCE: The Comprehensive Plan is not an ordinance, but directly informs decisions in land use codes, development patterns, and prioritization of city funds.



Plan Integral **Imagina Auburn** 2044

CITY OF AUBURN WASHINGTON

La ciudad de Auburn se está embarcando en la actualización periódica del Plan Integral Imagina Auburn, el cual deberá aprobarse en 2024. De conformidad con la Ley de Gestión del Crecimiento del estado de Washington (Growth Management Act, GMA), capítulo 36.70A del Código Revisado de Washington (Revised Code of Washington, RCW), las ciudades y condados de Washington deben aprobar y actualizar periódicamente sus planes integrales cada 8 años, y todas las ciudades de los condados de King, Pierce, Snohomish y Kitsap deben hacerlo en 2024.

IMAGINE AUBURN ~COMPREHENSIVE PLAN UPDATE 2024~

speakupauburn.org/comprehensive-plan

¿Qué es un Plan Integral?

La actualización del Plan Integral de la Ciudad de Auburn proporcionará una visión general del futuro de la comunidad y una hoja de ruta para los próximos veinte años. En él se describe el aspecto que la comunidad quiere que tenga de aquí a 2044 y cómo hacer realidad esa visión colectiva. El Plan también contempla los requisitos de crecimiento regional establecidos por el Consejo Regional del estrecho de Puget.

¿Por qué es importante una planificación a 20 años?

Se trata de un Plan "Integral", lo que significa que es amplio e inclusivo, tiene en cuenta múltiples temas, elementos, aportes de la comunidad, datos e historia. Si vive, trabaja o juega en Auburn, ahora es el momento de dar su opinión. A fin de cuentas, contribuirá a definir los objetivos del plan, lo que se reflejará en las políticas para alcanzarlos. Al disponer de un plan, se proporciona una guía para garantizar que las futuras decisiones sobre el uso del suelo, las viviendas, el transporte, los servicios públicos y la acción climática reflejen la visión reconocida de la comunidad, tal y como se identificó a través de la participación durante el proceso de planificación.

Translation services available

Предоставляются услуги переводчиков
Servicios de traducción disponibles
Available ang mga serbisyo sa pagsasalin
Доступні послуги перекладачів

Imagine Auburn
Komprehensibong Plano 2044

CITY OF AUBURN WASHINGTON

Sinisimulan na ng Lungsod ng Auburn ang pana-panahong pag-update nito ng Komprehensibong Plano – Imagine Auburn – na kailangang pagtibayin sa 2024. Sa ilalim ng Batas sa Pamamahala ng Paglago (Growth Management Act, GMA) ng Washington State Chapter 36.70A RCW, ang mga lungsod at lalawigan sa Washington ay kinakailangang magpatibay at pana-panahong mag-update ng kanilang mga komprehensibong plano bawat 8 taon, na ang lahat ng mga lungsod sa lalawigan ng King, Pierce, Snohomish, at Kitsap hanggang 2024.

IMAGINE AUBURN ~COMPREHENSIVE PLAN UPDATE 2024~

speakupauburn.org/comprehensive-plan

Ano ang Komprehensibong Plano?

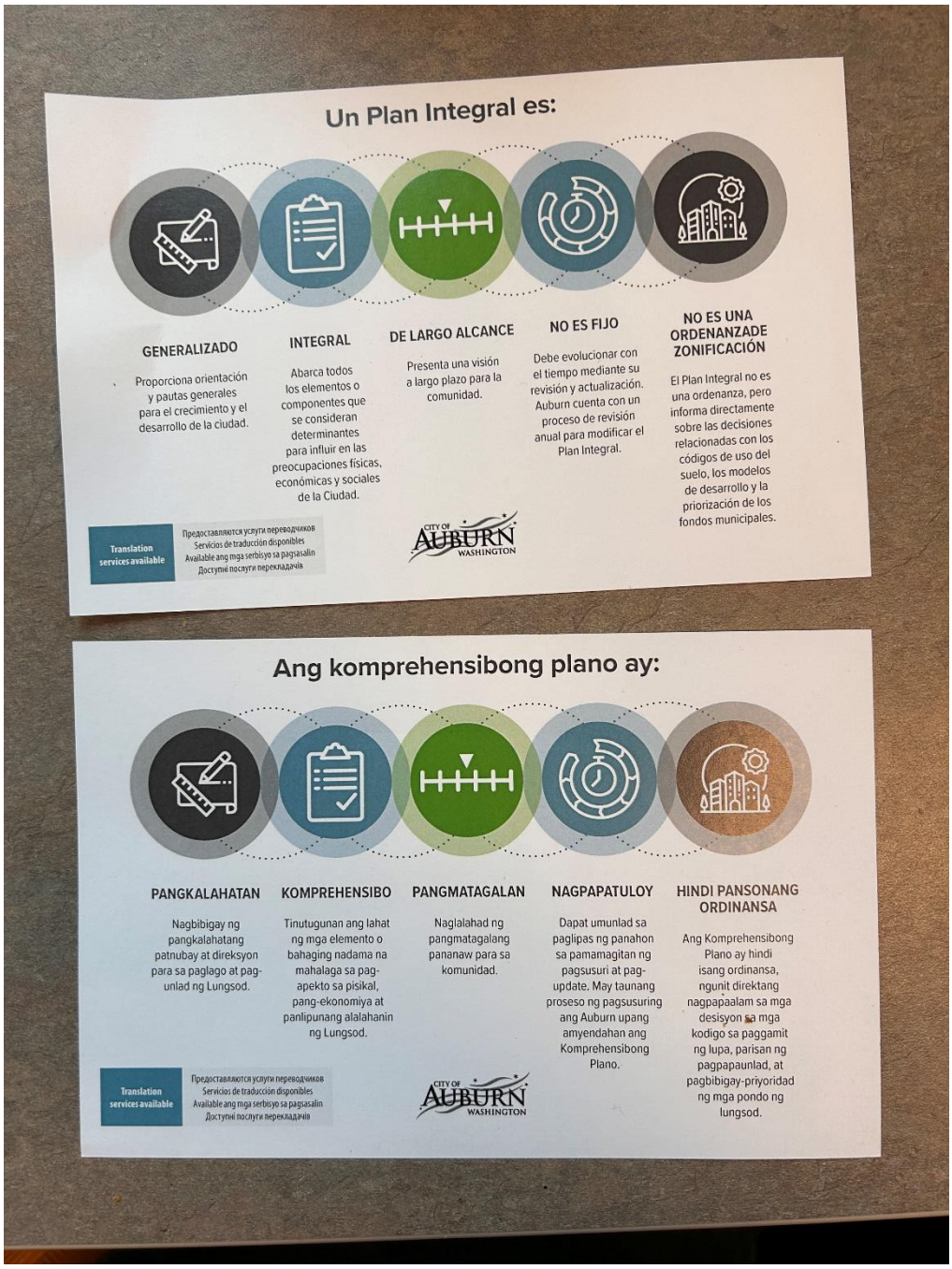
Ang pag-update ng Komprehensibong Plano ng Lungsod ng Auburn ay magbibigay ng pangkalahatang pananaw para sa kinabukasan ng komunidad at landasin para sa susunod na dalawampung taon. Binabalangkas nito kung ano ang gustong hitsura ng komunidad sa pagsulong patungo sa 2044, at kung paano gagawing katotohanan ang kolektibong pananaw na iyon. Tinutugunan din ng Plano ang mga kinakailangan sa paglago ng rehiyon na ibinigay ng Puget Sound Regional Council.

Bakit mahalaga ang 20 taong pagpaplano?

Ito ay isang "Komprehensibong" Plano, ibig sabihin ito, malawak ang saklaw nito at sakop lahat, isinasaalang-alang ang maraming paksa, bahagi, input ng komunidad, data at kasaysayan. Nakatira ka man, nagtatrabaho o naglalaro sa Auburn, oras mo na para ibigay ang iyong input. Sa huli, tutulong kang hubugin ang mga layunin ng plano na isasalin sa mga patakaran para maabot ang mga layuning iyon. Sa pamamagitan ng pagkakaroon ng plano, nagbibigay ito ng patnubay para matiyak ang paggamit ng lupa sa hinaharap, pabahay, transportasyon, utility, at mga desisyon sa aksyon sa klima na sumasalamin sa kinikilalang pananaw para sa komunidad, na natukoy sa pamamagitan ng pagsisikap sa panahon ng proseso ng pagpaplano.

Translation services available

Предоставляются услуги переводчиков
Servicios de traducción disponibles
Available ang mga serbisyo sa pagsasalin
Доступні послуги перекладачів


Un Plan Integral es:
GENERALIZADO
Proporciona orientación y pautas generales para el crecimiento y el desarrollo de la ciudad.
INTEGRAL
Abarca todos los elementos o componentes que se consideran determinantes para influir en las preocupaciones físicas, económicas y sociales de la Ciudad.
DE LARGO ALCANCE
Presenta una visión a largo plazo para la comunidad.
NO ES FIJO
Debe evolucionar con el tiempo mediante su revisión y actualización. Auburn cuenta con un proceso de revisión anual para modificar el Plan Integral.
NO ES UNA ORDENANZADE ZONIFICACIÓN
El Plan Integral no es una ordenanza, pero informa directamente sobre las decisiones relacionadas con los códigos de uso del suelo, los modelos de desarrollo y la priorización de los fondos municipales.
Translation services available
Предоставляются услуги переводчиков
Servicios de traducción disponibles
Available ang mga serbisyo sa pagsasalin
Доступні послуги перекладачів
CITY OF AUBURN WASHINGTON
Ang komprehensibong plano ay:
PANGKALAHATAN
Nagbibigay ng pangkalahatang patnubay at direksyon para sa paglago at pag-unlad ng Lungsod.
KOMPREHENSIBO
Tinutugunan ang lahat ng mga elemento o bahaging nadama na mahalaga sa pag-apekto sa pisikal, pang-ekonomiya at panlipunang alalahanin ng Lungsod.
PANGMATAGALAN
Naglalahad ng pangmatagalang pananaw para sa komunidad.
NAGPAPATULOY
Dapat umunlad sa paglipas ng panahon sa pamamagitan ng pagsusuri at pag-update. May taunang proseso ng pagsusuring ang Auburn upang amyendahan ang Komprehensibong Plano.
HINDI PANSONANG ORDINANSA
Ang Komprehensibong Plano ay hindi isang ordinansa, ngunit direktang nagpapaalam sa mga desisyon sa mga kodigo sa paggamit ng lupa, parisan ng pagpapaunlad, at pagbibigay-priyoridad ng mga pondo ng lungsod.
Translation services available
Предоставляются услуги переводчиков
Servicios de traducción disponibles
Available ang mga serbisyo sa pagsasalin
Доступні послуги перекладачів
CITY OF AUBURN WASHINGTON



Project Website – As of November 2024



Home / City of Auburn - 2024 Periodic Comprehensive Plan Update

City of Auburn - 2024 Periodic Comprehensive Plan Update



Planning Commission Public Meetings and Public Hearings Begin April 2024

The City of Auburn will be holding a series of Public Meeting presentations and Public Hearings to discuss the 2024 Periodic Comprehensive Plan Update. These Planning Commission meetings are held on Tuesday evenings beginning at 6:30 pm. The public meetings and hearings are expected to continue through October 2024. The presentations and hearings are open to the public and will be held in-person in the City Council Chambers, 25 W Main St., Auburn, WA, 98001. Each meeting generally consists of a Staff presentation on a specific Comprehensive Plan Element(s) or Plan, a Public Hearing on an Element(s) or Plan, and Planning Commission deliberation and action on an Element(s) or Plan.

The currently scheduled Public Meeting and Public Hearing dates are listed below:

Subject	Public Meeting	Public Hearing	PC Acceptance	Complete
Planning Commission - Package 1				
Land Use Element	April 2, 2024	April 16, 2024	April 16, 2024	Yes
Housing Element	April 2, 2024	April 16, 2024	April 16, 2024	Yes
Historic Preservation Element	April 16, 2024	April 30, 2024	April 30, 2024	Yes
Economic Development Element	April 16, 2024	April 30, 2024	April 30, 2024	Yes
Climate Element	April 30, 2024	May 7, 2024	May 7, 2024	Yes
Planning Commission - Package 2				
Sewer Plan	May 21, 2024	June 4, 2024	September 17, 2024	Yes
Stormwater Plan	June 4, 2024	June 18, 2024	June 18, 2024	Yes
Transportation Element	June 4, 2024	July 16, 2024	July 16, 2024	Yes
Capital Facilities Element	June 18, 2024	July 2, 2024	December, 2024	-
Water System Plan	July 2, 2024	December 3, 2024	December 3, 2024	
Utilities Element	July 2, 2024	July 16, 2024	October 23, 2024	-
Parks Element	April 30, 2024	May 7, 2024	May 7, 2024	Yes
Parks PROS Plan	September 17, 2024	October 8, 2024	October 23, 2024	Yes
Code Update	October 8, 2024	October 23, 2024	October 23, 2024	Yes
Planning Commission Action – Recommendation for Adoption to City Council				
Package 1 (Land Use, Housing, Historic Preservation, Economic Development, and Climate Elements)	-	-	July 16, 2024	Yes
Code Update	-	-	October 23, 2024	Yes
Package 2 (Capital Facilities Element, Utilities Element, Transportation Element, Parks Element, PROS Plan, Sewer Plan, Storm Plan, and Water Plan)			December 3, 2024	

Specific dates for each Element presentation, public hearing, and deliberation and action are subject to change. Any such change will be posted at least 10 days in advance of the scheduled meeting and can be found on this project website and here: https://www.auburnwa.gov/landuse(External link).

Planning Commission Public Meeting Materials

A Notice of Public Hearing, which contains information on how to participate in these meetings can be found in the Public Hearing Notices and Public Comments section to the right of this page. Public Comments can be submitted by emailing them to planning@auburnwa.gov(External link) or by attending the appropriate Public Hearing date. Please notify Planning Services Dept. prior to the meeting to provide comment virtually.

Agenda Packets containing meeting materials for each meeting are linked below. Packets include staff presentations, draft document updates, draft maps, and other relevant information being presented at the meeting.

- **Meeting 1: April 2, 2024 Special Meeting (Land Use and Housing): CLICK HERE FOR AGENDA PACKET**(External link)
- **Meeting 2: April 16, 2024 Special Meeting (Land Use, Housing, Economic Development, Historic Preservation): (External link)CLICK HERE FOR AGENDA PACKET**
- **Meeting 3: April 30, 2024 Special Meeting (Economic Development, Historic Preservation, Parks, Climate): (External link)CLICK HERE FOR AGENDA PACKET**
- **Meeting 4: May 7, 2024 Special Meeting (Parks, Climate): (External link)CLICK HERE FOR AGENDA PACKET**
- **Meeting 5: May 21, 2024 Special Meeting (Sewer): (External link)CLICK HERE FOR AGENDA PACKET(External link)**
- **Meeting 6: June 4, 2024 Special Meeting (Sewer, Transportation, PROS Plan, Stormwater): (External link)CLICK HERE FOR AGENDA PACKET(External link)**
- **Meeting 7: June 18, 2024 Regular Meeting (Stormwater, Capital Facilities): (External link)CLICK HERE FOR AGENDA PACKET**
- **Meeting 8: July 2, 2024 Regular Meeting (Capital Facilities, Water, Utilities): (External link)CLICK HERE FOR AGENDA PACKET**(External link)
- **Meeting 9: July 16, 2024 Regular Meeting (Transportation, Utilities, Package 1 (Land Use, Housing, Historic Preservation, Economic Development, and Climate Elements) Action): (External link)CLICK HERE FOR AGENDA PACKET**(External link)
- **Meeting 10: August 20, 2024 Regular Meeting (Code Update Overview): CLICK HERE FOR AGENDA PACKET**(External link)
- **Meeting 11: September 17, 2024 Regular Meeting (PROS Plan and Sewer Plan): CLICK HERE FOR AGENDA PACKET**(External link)
- **Meeting 12: October 8, 2024 Regular Meeting (PROS Plan and Code Update): CLICK HERE FOR AGENDA PACKET(External link)**
- **Meeting 13: October 23, 2024 Special Meeting (Code Update Action): CLICK HERE FOR AGENDA PACKET**

Other Comprehensive Plan News and Updates:

Final Environmental Impact Statement (FEIS) - October 18, 2024

The City of Auburn is issuing its Notice of Availability of the Final Environmental Impact Statement (DEIS). This notice of availability is provided in accordance with WAC 197-11-460. Appeals shall be commenced in accordance with ACC 16.06.220 “Environmental appeals”, ACC 16.06.230 “Time limitation on appeals”, and ACC 16.06.240 “Fee to accompany notice of appeal”. The city will not take action on the proposal for 7 days following this notice. The FEIS can be accessed under "Project Documents" on this website.

Adoption of Existing Document - October 18, 2024

Adoption of the FEIS for the 2024 Comprehensive Plan Update. This adoption uses the existing FEIS to meet SEPA non-project action responsibilities required for the adoption of the development regulation update (text amendment). The purpose of the development regulation is to implement the goals, policies, and strategies identified in the draft Periodic Comprehensive Plan Elements, including concepts as middle housing, accessory dwelling units, and unit lot subdivisions. The Notice of Adoption can be accessed under "Project Documents" on this website. The draft regulations can be accessed in the Planning Commission Meeting 13: October 23, 2024 Special Meeting Agenda(External link).

Draft Environmental Impact Statement (DEIS) - June 6, 2024

The City of Auburn is issuing its Draft Environmental Impact Statement (DEIS) for a 30-day public comment period (WAC 197-11-455) beginning May 20, 2024. Written comments are due by 5:00 p.m. PST on June 19th, 2024. The public mat attend an in-person public meeting scheduled for June 5, 2024 at 6:00 p.m. PST in City Council Chambers or virtually on June 6, 2024 at 6 p.m. For information on the application and instructions on how to participate and provide comment please visit HERE(External link). The DEIS and Notice of Availability can be accessed under "Project Documents" on this website. The June 6, 2024 DEIS Meeting presentation can be found HERE.

Climate Element Framework Available - November 29, 2023

As part of the 2024 Periodic Comprehensive Plan, the City of Auburn will be incorporating the city's first Climate Element. In May 2023, The Washington State Legislature passed HB 1181(External link) which requires cities to plan for climate change in comprehensive plans through adoption of a Climate Element and Transportation Element by 2029. To begin building a foundation for future climate planning, contracted with Cascadia Consulting to develop a Climate Element Framework which provides recommendations on information to include in our Climate Element as well as address future state requirements.

The Climate Element Framework is available to view under the "2023 Planning Commission Presentations" widget to the right of this page. The draft Climate Element, in addition to other Comprehensive Plan Elements, are scheduled to be out for public review in Q1/Q2 2024.

Environmental Impact Study (EIS) Scoping Notice Available - October 23, 2023

Invitation to Comment and Notice for the 2024 Auburn Comprehensive Plan. Scoping Period October 23, 2023 to November 13, 2023 for the 2024 Periodic Comprehensive Plan Update. The proposal is a non-project action to update the Comprehensive Plan per state requirements. The previous Periodic Comprehensive Plan was adopted in 2015 and has provided the framework for development of the city for the past 8-years. The revised 2024 Comprehensive Plan is envisioned to supplement the existing plan by providing a refreshed perspective of the land use, development, and transportation options serving the city while complying with state, regional, and county requirements.

More information on this Scoping Notice can be found here: https://www.auburnwa.gov/cms/one.aspx?portalId=11470638&pageId=19873246(External link)

Comprehensive Plan Public Open House - April 25, 2023

Staff will be at Washington Elementary gymnasium (20 E St NE) on April 25th from 4-7 PM presenting on the Comprehensive Plan, talking with residents on topics such as the vision for the city, plan goals, land use and housing, and other information. The community can drop-in at any point between 4-7 pm to learn more about the project and provide interactive feedback. This meeting is open to any and all who wish to attend. The community can drop-in at any point between 4-7 pm to learn more about the project and provide interactive feedback. For more information or questions, please contact Planning Services at planning@auburnwa.gov(External link).

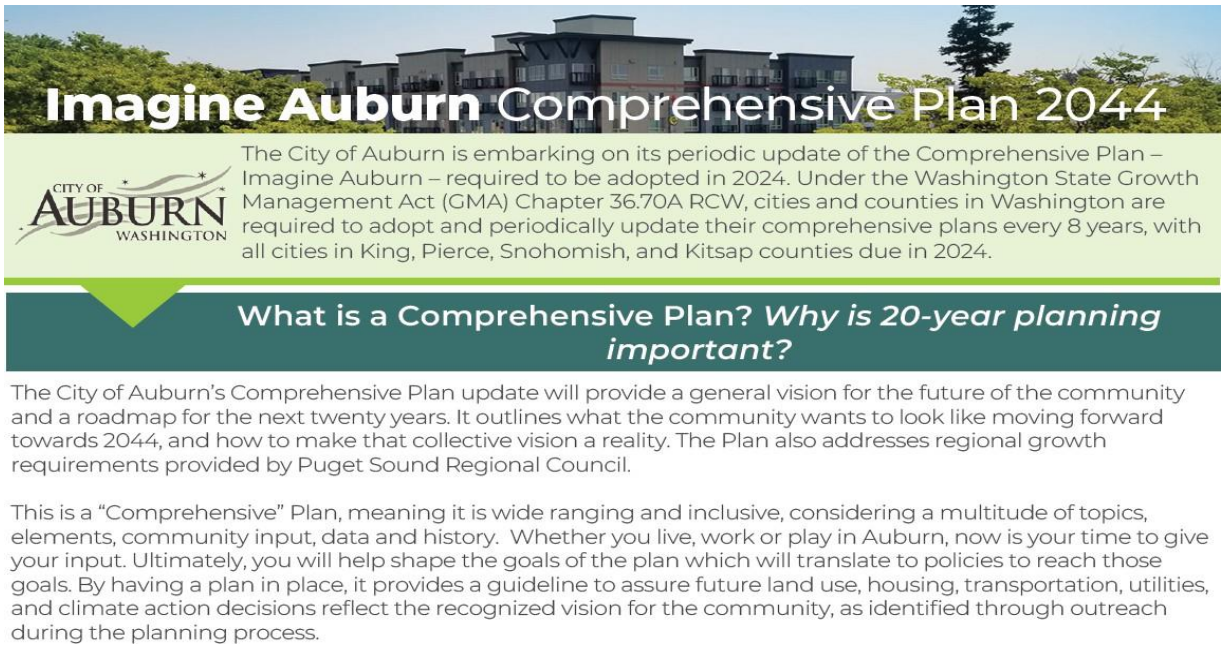
2024-2044 Periodic Comprehensive Plan Update Overview

The Growth Management Act requires that each city and county in Washington state conduct a periodic update of its comprehensive plan and development regulations per, RCW 36.70A.130 every eight (8) years. The City's previous plan was substantially revised in December 2015, and Community Development is beginning the process of leading the periodic Comprehensive Plan update, which is

currently due in June 2024. The Comprehensive Plan is a "long-range" 20-year plan that provides direction on how and where the city will grow through 2044. The City's is required to accommodate specific growth targets provided by regional and state authorities in the plan.

The City's Comprehensive Plan must be consistent with recently adopted regional documents such as as Puget Sound Regional Council Vision 2050, King County Urban Growth Capacity Report, King and Pierce County Countywide Planning Policies. In addition, the Plan must address any state requirements adopted since the previous periodic plan that has not yet been addressed during the yearly annual comprehensive plan amendment process.

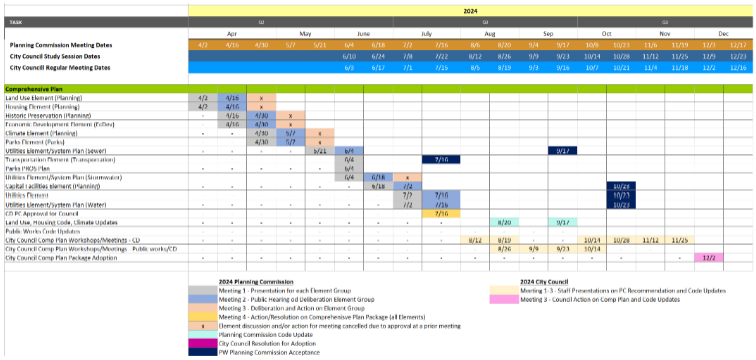
Concurrent with this process, Community Development staff is leading two other projects: the Auburn Downtown Plan & Planned Action project and Housing Action Plan (HAP) Implementation project, which will provide additional analysis to be included in the comprehensive plan.





What is the Timeline for the Comprehensive Plan Update?

In 2022-2024, the City is conducting a major update of the Comprehensive Plan, which is required to be adopted by December 2024. The City will be conducting community engagement throughout the update entire update process. A draft project timeline which covers anticipated efforts through 2023 can be seen below and will be refined as the project progresses. Dates are subject to change - please see table above for the most up-to-date meeting dates and subjects.



Current Comprehensive Plan Elements (External link)

The Comprehensive Plan consists of "Elements", which are similar to chapters in a book. City departments are responsible for updating each of their own respective Elements (Transportation, Parks, Utilities, Housing, etc.),

which are then combined into one cohesive document for adoption near the end of the project. Throughout the Comprehensive Plan Update process, data, plans, and other information are shared among the departments to ensure consistency across all of the Elements. In addition, the Comprehensive Planning team will look for opportunities to coordinate on public outreach opportunities to ensure the community is able to be informed, and heard, throughout the process. You can view the current Comprehensive Plan elements here(External link).

Core Comprehensive Plan (Executive Summary)

Land Use Element

Housing Element

Capital Facilities Element (includes water, sewer, and stormwater plans)

Utilities Element

Transportation Element - visit: www.auburnwa.gov/ctp(External link)

Economic Development Element

Parks and Recreation Element/Parks and Recreation Open Space Plan Update - visit: www.auburnwa.gov/PROS(External link)

Historic Preservation Element

Climate Element

Public Hearing Notices and Public Comments

- Notice of Public Hearing for Comprehensive Plan Update 3-12-24 (196 KB) (pdf)
- Notice of Public Hearing Mailing for Comprehensive Plan Update 3-12-24 (100 KB) (pdf)
- Re-Issuance of Notice of Public Hearing for Comprehensive Plan Update 5-3-24 (195 KB) (pdf)
- Re-Issuance of Notice of Public Hearing for Comprehensive Plan Update 6-8-24 (191 KB) (pdf)
- Re-Issuance of Notice of Public Hearing for Comprehensive Plan Update 9-24-24 (148 KB) (pdf)
- Notice of Public Hearing for Code Update 10-12-24 (127 KB) (pdf)
- Public Comments
  - LU 1 - Public Comment.pdf (236 KB) (pdf)
  - LU 2 - Public Comment.pdf (83.5 KB) (pdf)
  - LU 3 - Public Comment.pdf (577 KB) (pdf)
  - LU 4 - Public Comment.pdf (106 KB) (pdf)
  - CE 1 - Public Comment.pdf (679 KB) (pdf)
  - CE 2 - Public Comment.pdf (136 KB) (pdf)
  - PRE 1 - Public Comment.pdf (1.09 MB) (pdf)
  - GEN 1 - Public Comment.pdf (138 KB) (pdf)
  - GEN 2 - Public Comment.pdf (136 KB) (pdf)
  - GEN 3 - Public Comment.pdf (127 KB) (pdf)

Environmental Impact Statement

- Auburn Comprehensive Plan FEIS.pdf (4.88 MB) (pdf)
- FEIS Notice of Adoption.pdf (117 KB) (pdf)
- FEIS Notice of Availability.pdf (115 KB) (pdf)
- Draft Environmental Impact Statement - 2024 Periodic Comprehensive Plan .pdf (6.73 MB) (pdf)
- DEIS Presentation - 6-6-24.pdf (1.09 MB) (pdf)
- DEIS Notice of Availability.pdf (172 KB) (pdf)
- Auburn EIS Scoping Notice and Handout.pdf (345 KB) (pdf)

Council Presentations

- Council Study Session 8-12-24 Meeting (61.7 MB) (pdf)
- Council Study Session 3-14-22 Meeting.pdf (9.61 MB) (pdf)
- Council Study Session 4-10-23 Meeting.pdf (13.5 MB) (pdf)
- Council Study Session 8-12-24 Meeting Presentation.pdf (28 MB) (pdf)
- Council Study Session 8-12-24 Meeting Land Use Element.pdf (36 MB) (pdf)
- Council Study Session 8-12-24 Meeting Housing Element.pdf (15.1 MB) (pdf)
- Council Study Session 8-12-24 Meeting Historic Preservation Element.pdf (6.44 MB) (pdf)
- Council Study Session 8-12-24 Meeting Economic Development Element.pdf (10.5 MB) (pdf)
- Council Study Session 8-12-24 Meeting Climate Element.pdf (15.6 MB) (pdf)

2023 Planning Commission Presentations

- 2024 Comprehensive Plan Planning Commission Presentation 9-19-2023.pdf (3.11 MB) (pdf)
- 2024 Comprehensive Plan - Planning Commission Presentation 3-7-2023 (1.21 MB) (pdf)
- Auburn Climate Element Framework.pdf (921 KB) (pdf)

Important Links

- Auburn Comprehensive Plan Webpage
- 2015 Periodic Comprehensive Plan
- Comprehensive Plan Visioning Survey - Participate!
- Puget Sound Regional Council Vision 2050 Regional Growth Strategy
- King Countywide Planning Policies



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35 members of your community are following this project

Related projects

Live Projects

- Housing Action Plan (HAP)
- Auburn Downtown Plan & EIS Update

Who's Listening

Alexandria Teague

Planning Services Manager
City of Auburn

AT

Email planning@auburnwa.gov

2021 KING COUNTY URBAN GROWTH CAPACITY REPORT

June 2021 ▪ FINAL DRAFT

King County

Acknowledgements

This 2021 Urban Growth Capacity (UGC) Report was prepared by King County and its cities under RCW 36.70A.215 amendment to the Washington State Growth Management Act. Every jurisdiction in King County has participated in collecting and evaluating development information to prepare this Report. Thanks to the following cities and towns for participation:

City of Algona
City of Auburn
Town of Beaux Arts Village
City of Bellevue
City of Black Diamond
City of Bothell
City of Burien
City of Carnation
City of Clyde Hill
City of Covington
City of Des Moines
City of Duvall
City of Enumclaw
City of Federal Way
Town of Hunts Point
City of Issaquah
City of Kenmore
City of Kent
City of Kirkland
City of Lake Forest Park
City of Maple Valley
City of Medina
City of Mercer Island
City of Milton
City of Newcastle
City of Normandy Park
City of North Bend
City of Pacific
City of Redmond
City of Renton
City of Sammamish
City of SeaTac
City of Seattle
City of Shoreline
Town of Skykomish
City of Snoqualmie
City of Tukwila
City of Woodinville
Town of Yarrow Point

This Report was compiled by the King County Office of Performance, Strategy, and Budget in collaboration with BERK Consulting and Heartland LLC. Thanks to the following individuals and groups who contributed greatly to this effort.

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UGC Technical Committee:	Jeff Dixon, David Johanson, Miryam Laytner, Andrew Leon, Katherine Nesse, Kaelene Nobis, Chris Pasinetti, Jennifer Pettyjohn, Robin Proebsting, David Pyle, Aaron Raymond, Jaimie Reavis, Jesse Reynolds
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Executive Summary

About the Urban Growth Capacity Report

The 2021 Urban Growth Capacity Report is King County's periodic assessment of development capacity for future housing and employment. The report is a mid-planning cycle assessment on how jurisdictions are achieving the planning goals of their 2035 comprehensive plans. The report is a culmination of the county's Review and Evaluation Program, commonly referred to as "Buildable Lands," as required by the Growth Management Act in RCW 36.70A.215, and it is King County's fourth buildable lands report. It is a collaborative production of the 40 jurisdictions across King County, and analyzes the form, quantity, and density of residential and non-residential development observed between 2012 and 2018, to estimate capacity for accommodating 2035 growth targets, with consideration for market and infrastructure constraints.

Amendments to the Growth Management Act in 2017 expanded the purview of the report beyond measuring capacity for projected growth, requiring the seven buildable lands counties to more broadly examine how jurisdictions are achieving targets and density goals. A finding that a jurisdiction has insufficient capacity for its target, or that a jurisdiction is not achieving its growth targets or urban densities could necessitate Reasonable Measures to be adopted in the next periodic update of comprehensive plans. In response to this amendment, the 2021 Urban Growth Capacity Report compares estimated housing and employment growth from 2006-2018 relative to 2006-2035 growth targets, and the achieved densities of 2012-2018 development to the densities allowed in zoning and development regulations.

The 2017 GMA amendments also call for Buildable Lands counties to scrutinize market constraints, infrastructure gaps, and development regulation assumptions utilized in the report to ensure more meaningful market-based assumptions guide the capacity calculations.

Regional Planning Context

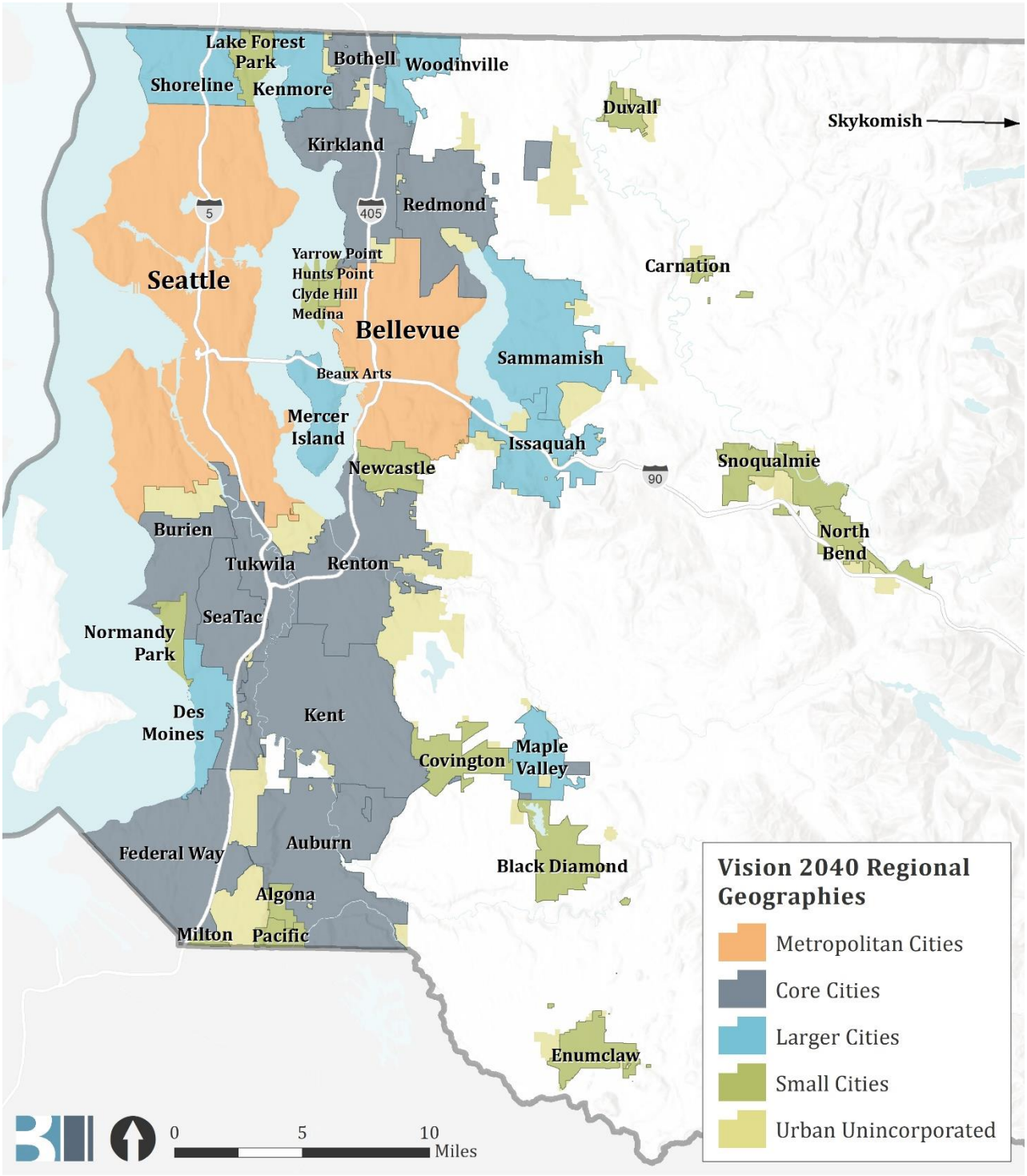
The 2021 Urban Growth Capacity Report implements King County's Review and Evaluation Program as set out in the King County Countywide Planning Policies. The Report analyzes King County jurisdictions' progress toward meeting adopted planning goals expressed in the 2012 King County Countywide Planning Policies growth targets and 2015 Comprehensive Plans. The Report examines capacity and growth assumptions for 2035, the 20-year planning period established by the 2015 comprehensive plans.

The 2015 comprehensive plans and 2012 Countywide Planning policies implement the VISION 2040

policy framework and Regional Growth Strategy, developed by the Puget Sound Regional Council (PSRC). While PSRC has since adopted VISION 2050 and a revised Regional Growth Strategy, because the Urban Growth Capacity Report looks back to the 2012 countywide planning policies and 2015 comprehensive plans implementing VISION 2040, most of the report's analysis is organized by the VISION 2040 Regional Geographies, shown in Exhibit 1. Final capacity results and city profiles are grouped by VISION 2050 Regional Geographies (shown in Exhibit 2), to emphasize how the data can be used while updating comprehensive plans for the 2024 periodic update.

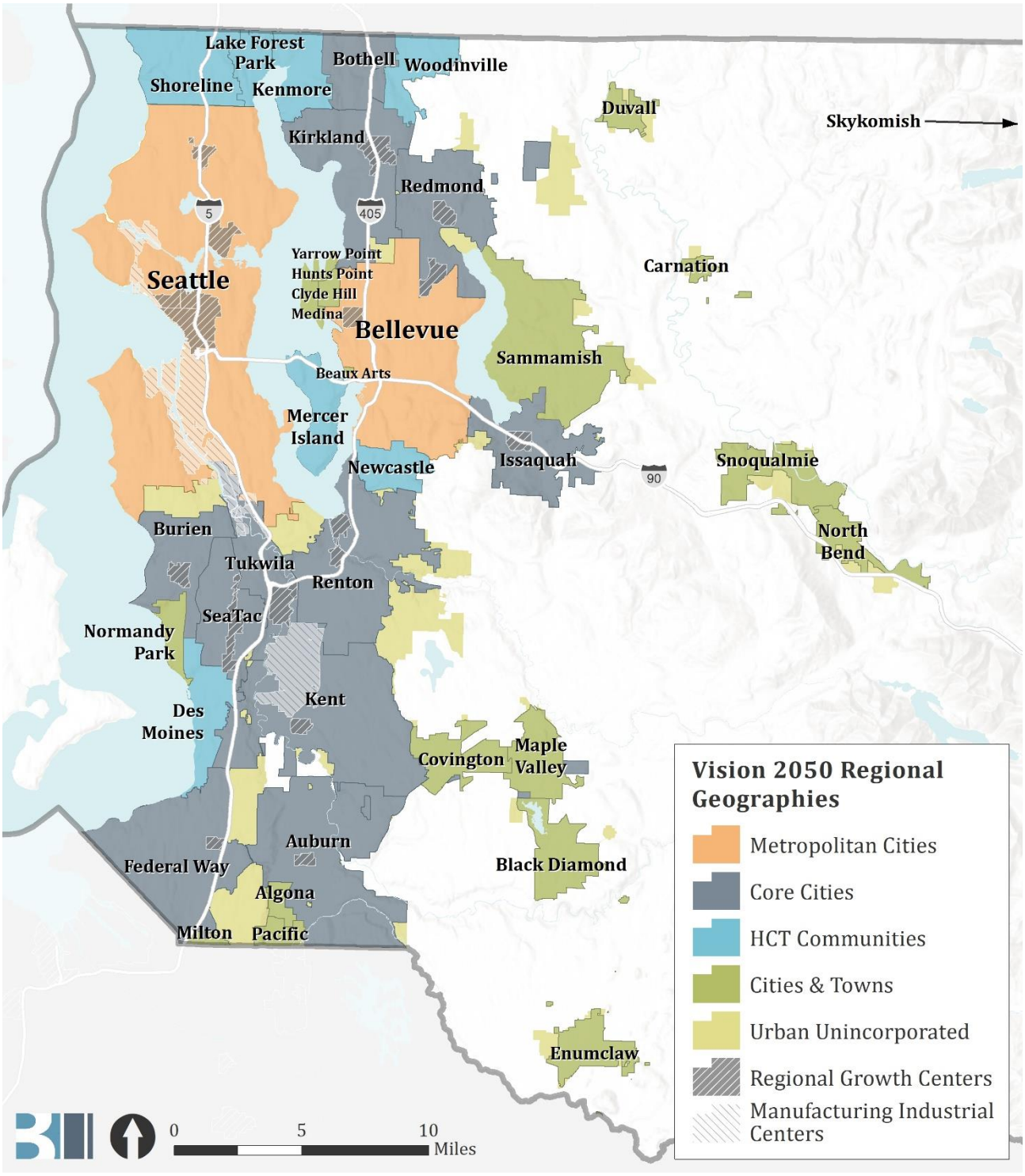
Findings from the Urban Growth Capacity Report underscore how cities and King County are planning for growth focused on a network of designated Regional Growth Centers and high capacity transit station areas. Growth patterns have been consistent with growth targets implementing the Regional Growth Strategy. Capacity exists to support new growth across the density spectrum, and much of it is concentrated in higher density areas in Metropolitan and Core Cities with Regional Growth Centers and Manufacturing/Industrial Centers. Development trends in the county have been evolving toward the higher densities many jurisdictions have planned for, as the high capacity transit network builds out and demand for higher density development expands to new communities.

Exhibit 1. PSRC VISION 2040 Regional Geographies Used for Summarizing Development Trends



Source: PSRC VISION 2040; BERK, 2021.

Exhibit 2. PSRC VISION 2050 Regional Geographies Used for Summarizing Growth Capacity



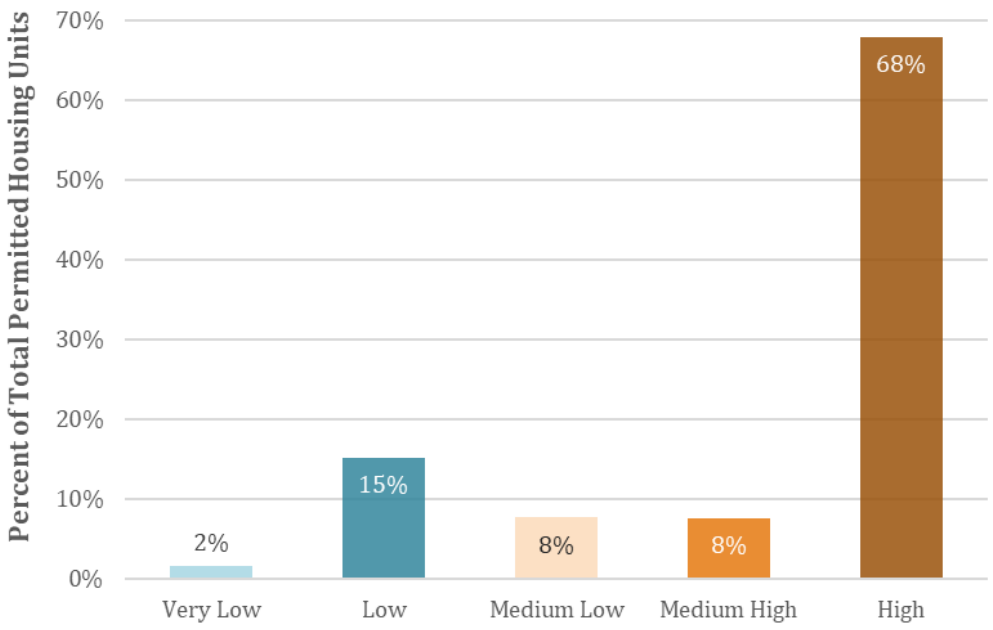
Sources: PSRC VISION 2050; BERK, 2021.

Summary of Findings

Development Activity

The Urban Growth Capacity Report summarizes the densities and locations of urban development between 2012-2018. This period was marked by significant multifamily and higher density development, reflecting King County's continued progress towards directing growth towards cities and efficient land uses. As shown in Exhibit 3, nearly 70% of the housing permitted during the evaluation period was developed at densities of at least 48 dwelling units per acre, and 17% of permitted housing during this period was constructed at below 10 dwelling units per acre. Development in middle density formats was much more limited. These findings demonstrate how residential development during this period trended towards the high and low ends of the density spectrum.

Exhibit 3. Permitted Housing Units by Achieved Density, 2012-2018



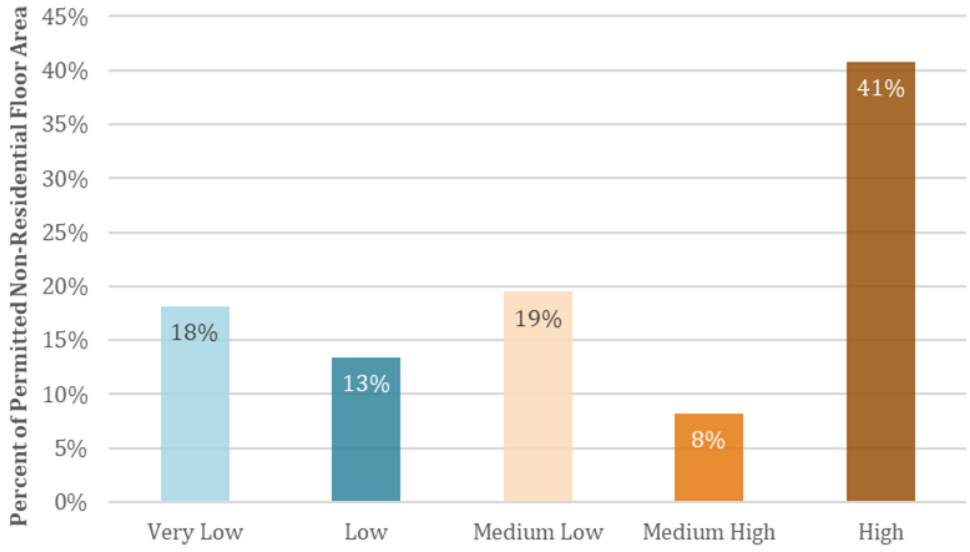
Density Level	Units per Net Acre
Very low	Less than 4
Low	4-10
Medium-Low	10-24
Medium-High	24-48
High	48+

Source: BERK, 2021, based on permit data summarized by King County jurisdictions.

Non-residential development was more evenly distributed across density levels. Just over 40%, of non-residential built space was developed at the highest density level, a reflection of the large volume of dense office and mixed use development during the time period. Half of observed non-residential

development developed at densities less than 1 FAR.[1]

Exhibit 4. Permitted Non-Residential Development by Achieved Density, 2012-2018



Density Level	FAR
Very low	<0.35
Low	0.35-0.5
Medium-Low	0.5-1.0
Medium-High	1.0-3.0
High	>3.0

Source: BERK, 2021, based on permit data summarized by King County jurisdictions.

This study also included analysis comparing the achieved densities to maximum as-of-right densities allowed by zoning. Findings varied significantly by jurisdiction. Some jurisdictions saw average achieved residential densities that were higher than their planned max within lower or middle density zones. Other saw achieved densities that were much lower than planned, particularly in zones that allow for the highest densities. This later finding was particularly true for non-residential development. One key reason for this outcome is communities that have zoned for higher density development in anticipate of future market shifts that had not yet occurred in the 2012-2018 evaluation period.

Progress Toward Growth Targets

King County has experienced historic population and economic growth in recovery from the Great Recession. Guided by the Regional Growth Strategy and adopted growth targets, this growth has been overwhelmingly urban; less than 3% of the population growth in King County since 2006 has occurred in the rural area. The Urban Growth Capacity Report analyzes progress cities and urban unincorporated King County have made towards achieving 2006-2035 growth targets. Because past buildable lands reports have not focused on this specific outcome before, the 2021 report examines growth since 2006 and through 2018.

[1] FAR stands for Floor Area Ratio, a measure comparing the area of built space to the land area of the associated lot or parcel. Higher FAR values reflect more dense development, and values higher than 1.0 indicate that the built space surpasses the land area of the associated parcel (as can occur in multi-story buildings).

Urban King County is growing at a rate to successfully achieve its adopted growth targets. Approximately 41% of the target period has elapsed 2006-2018. As a whole, urban King County has achieved 47% of its housing and employment targets, growing slightly faster than this prorated pace. These growth rates are particularly notable given that the time period spans the Great Recession, which diminished population and housing growth to a near standstill, and netted out most of the employment gained during the 2000s.

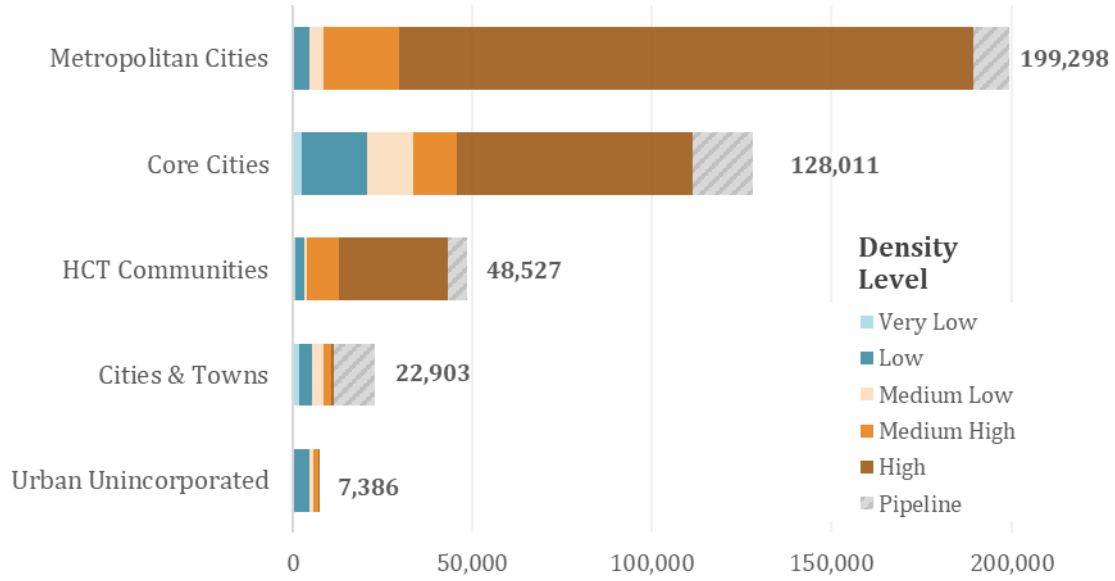
The effects of the recession and rates of recovery were not uniform across King County. At a Regional Geography level, Metropolitan, Larger, and Small Cities grew faster than the pace needed to achieve growth targets. Job growth compared to targets was also strong in Metropolitan and Small Cities. While housing growth has been less strong in Core Cities and the urban unincorporated area, these geographies are still on track to achieve their residential growth targets. Employment growth in Core and Larger Cities was slower than pace but meets the countywide definition of consistency with growth targets 2006-2018. The urban unincorporated area was slightly ahead of pace to achieve its employment growth target. More information on growth trends and achieving targets is in Chapter 3 of the Report.

Development Capacity

The 2021 Urban Growth Capacity Report finds that urban King County has capacity for over 400,000 housing units and 600,000 jobs, sufficient capacity to accommodate the remainder of its 2035 housing and employment growth targets, and looking ahead, for projected future growth during the next planning period. See Exhibit 5 and Exhibit 6 for summaries of residential and employment capacity by Regional Geography and density level.

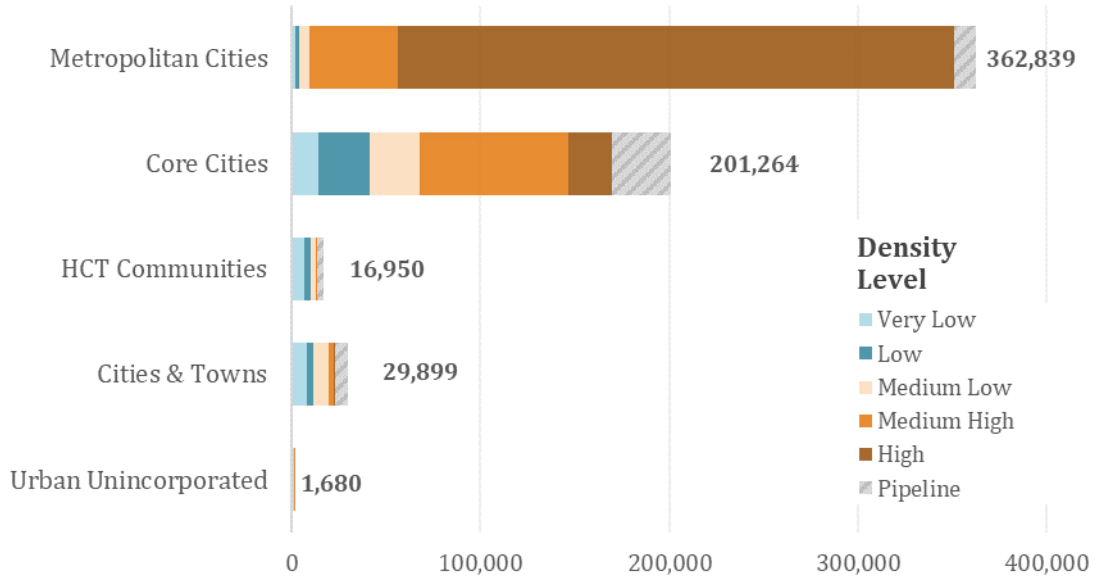
Approximately 50% of residential and 60% of employment capacity in King County is in Metropolitan Cities. Additionally, nearly a third of residential and non-residential developable capacity is in the eleven Core Cities. Residential capacity in Metropolitan and Core Cities is overwhelmingly at the county's highest density levels and drives the finding that 83% of the county's developable residential capacity exists at densities greater than 24 dwelling units per acre. Nearly 80% of King County's employment capacity is zoned at 1 FAR or higher. At the other end of the density spectrum, approximately two-thirds of King County's developable residential land is zoned for ten dwelling units or less, making up 10% of residential capacity. More findings and detail on capacity is contained in Chapters 4 and 7.

Exhibit 5. Dwelling Unit Capacity by Density Level



Source: BERK, 2021, based on capacity data summarized by King County jurisdictions.

Exhibit 6. Employment Capacity by Density Level



Source: BERK, 2021, based on capacity data summarized by King County jurisdictions.

Implementing Urban Growth Capacity Findings

As a mid-planning cycle check on development trends and achievement of growth management goals, the Urban Growth Capacity Report contains a host of information useful for the upcoming periodic 2024 comprehensive plan update. Most directly, the Urban Growth Capacity Report contains

recommendations that some jurisdictions adopt Reasonable Measures in their comprehensive plans to address specific inconsistencies identified in the report. More information about the evaluation of when and where Reasonable Measures may be necessary is provided in Chapter 5. Data about achieved density and capacity by density level can help jurisdictions identify where shortfalls in development capacity may impede achieving targeted planning goals, like encouraging the production of "missing middle" housing or mixed use development near transit station areas. Chapter 6 contains more information on applying or using Urban Growth Capacity Report data or findings for future planning efforts.

Ch. 1 Introduction

This report presents the findings of King County's Urban Growth Capacity Study. King County is a Growth Management Act (GMA) jurisdiction and must plan to accommodate projected growth within its boundaries, with most growth focused into urban growth areas (UGAs) where urban services are available or can be made available. The purpose of the Urban Growth Capacity Study is to provide a periodic evaluation to determine whether projected growth can be accommodated within the UGA. In previous cycles, this product was referred to as the King County Buildable Lands Report (BLR). Past Buildable Lands Reports were completed by King County in 2002, 2007, and 2014.

This report includes findings from three key components of King County's Buildable Lands Program which are required under RCW 36.70A.215 and WAC 365-196-315:

- Analysis of countywide and jurisdictional growth trends between 2006 and 2018 compared to 2035 growth targets.
- Analysis of achieved densities by jurisdiction based on growth that occurred between 2012 and 2018, and comparison to planned densities.
- Capacity for housing and job growth through the year 2035.

This report was developed by King County in collaboration with each of its 39 cities through the Growth Management Planning Council (GMPC). The findings are used to inform the development of new growth targets by jurisdiction for the 2019-2044 planning period. The data findings will also be used by cities to inform the next round of comprehensive plan updates and subsequent implementation work.

Regulatory and Policy Framework

The Washington State Growth Management Act (GMA) was adopted to address the need for rapidly growing cities and counties to adequately plan for future growth while protecting natural resource lands and environmentally sensitive areas. A key component of the GMA is the Review and Evaluation Program (also known as the Buildable Lands Program), a requirement which applies to King County and all of the cities within it. This program mandates the review and evaluation of urban growth capacity to ensure each jurisdiction has designated adequate supply of residential, commercial, and industrial lands to meet growth allocations developed by the counties in consultation with their cities.

In 2017, the Washington State Legislature passed the first major revision to the program (SB 5254). This update to GMA includes new requirements related to infrastructure gap analysis, market factor assumptions, and Reasonable Measures. This update to GMA specifies the following:

- Reasonable Measures: Under SB 5254, these measures that are adopted to address inconsistency between forecasted and experienced growth are no longer required to be monitored and adjusted annually by buildable lands counties and cities.

- Land Suitable for Development: Under SB 5254, the required evaluation of suitable land must include land use or zoning regulations, environmental regulations impacting development, other regulations that might inhibit the achievement of assigned densities, and infrastructure gaps. The evaluation of suitable land must also include development of a reasonable market supply factor that identifies reductions in land suitable for development and redevelopment.
- Buildable Lands Report Timing: Under SB 5254, the buildable lands report must be completed no later than 2 years prior to a jurisdiction's next comprehensive plan update for those comprehensive plans due to updated prior to 2024,

Countywide Planning Policies

The Proposed 2021 King County Countywide Planning Policies (CPPs) establish the county's Urban Growth Area (UGA) and allocate projected countywide growth in the form of growth targets for each city as well as urban and rural unincorporated areas. CPPs also establish the Review and Evaluation Program for King County and guide the development of the Urban Growth Capacity Study through policies DP-19, DP-20, and DP-X2.[2] Components of the Buildable Lands Program include annual data collection, periodic evaluation reports, and adoption of Reasonable Measures, where needed, to ensure sufficient capacity to accommodate projected growth within the county's UGA. These Reasonable Measures are to be adopted in comprehensive plans, and jurisdictions will collaborate to provide data periodically about the effectiveness of those measures.

In King County, growth targets are adopted in the King County Countywide Planning Policies.[3] Countywide growth targets are derived from population projections released by the State Office of Financial Management (OFM) and an economic forecast developed by the Puget Sound Regional Council. Population growth is converted to housing units and the projected housing and employment growth is then allocated to jurisdictions within the Regional Geographies established in the VISION 2050. Jurisdictions within Regional Geographies then collaboratively distribute their allocated growth to create city and urban unincorporated growth targets.

Local Comprehensive Plans

Under GMA, jurisdictions must plan and provide for both household and job growth to meet their targets through designation of sufficient land suitable for development in their comprehensive plans and regulations. This Urban Growth Capacity Report presents estimated capacity for housing and employment growth by jurisdictions based on a methodology informed by actual achieved densities from recent development activity. The results enable the evaluation of whether counties and cities can

[2] The Proposed 2021 CPPs include temporary numbering. Policy numbers could change when the final CPP are adopted.
[3] The Urban Growth Capacity Report evaluates the growth targets adopted in the 2012 Countywide Planning Policies. The adopted targets cover a period of 2006-2031. For the Urban Growth Capacity Report, these targets were updated for major annexations and extended on a pro rata basis to 2035, to be consistent with the 2015-2035 planning period for 2015 comprehensive plans. This method was recommended to jurisdictions to extend their 2031 targets to 2035, as the periodic comprehensive plan update deadline was delayed to 2015 after the Great Recession.

actually meet the adopted targets. Any deficiencies identified in this study must be addressed by the jurisdiction in their next comprehensive plan update.

Department of Commerce Guidelines

In 2017, the Washington State Legislature passed E2SSB 5254, which constituted the first major revision to the buildable lands program since its inception in 1997. In 2018, the Washington State Department of Commerce (Commerce) published a revised Buildable Lands Guidelines report for use by counties and cities responsible for carrying out a Review and Evaluation Program under GMA. These Guidelines summarize requirements of RCW 36.70A.215 and WAC 365-196-315, and provide best practices and methodologies for carrying out those requirements. King County used these Guidelines as a resource when developing its own policies and procedures for carrying out the Urban Growth Capacity Study.

Countywide Coordination

This report is the result of nearly two years of coordination and collaboration between King County and the 39 cities within King County. King County facilitated development of the report by establishing a methodology, creating standardized data collection and assumption guidelines, and completing the final report. King County also lead an interjurisdictional group of planners and data technicians through the Technical Committee, to develop and vet assumptions in the study methodology. Individual cities and King County supply development and land supply data and select assumptions appropriate to their jurisdictions to complete the report. Exhibit 7 below describes the roles and responsibilities for King County and cities in developing the Urban Growth Capacity Report.

Exhibit 7. Roles and Responsibilities

	King County	Individual Jurisdictions
Interjurisdictional coordination	Facilitator of the UGC and report preparation.	Volunteer and participate in Technical Committee methodology review.
Developing guidance for data collection and analysis	Develop standardized guidance and templates for data collection and analysis, with input from the UGC Technical Committee.	Review and offer feedback on draft guidance.
Conduct analysis of achieved densities	Review data shared by jurisdictions for consistency with guidance. Work with jurisdictions to resolve any inconsistencies.	Gather and analyze data in accordance with guidance and share results with County for review.
Conduct land capacity analysis	Review data shared by jurisdictions for consistency with guidance. Work with jurisdictions to resolve any inconsistencies.	Identify developable land supply, select local development assumptions to calculate capacity in accordance with guidance.
Reasonable Measures	Identify inconsistencies between growth, capacity, and planning goals using standard criterial.	Review inconsistencies and determine whether Reasonable Measures are necessary. Implement Reasonable Measures in 2024 comp plan updates.

Changes from the 2014 Buildable Lands Report

While the overall purpose of this report is identical to the 2014 King County Buildable Lands Report, there are several changes in the 2021 Urban Growth Capacity Report. Highlights of the primary changes are listed below.

- **New analysis of capacity and achieved density for all jurisdictions.** Unlike the 2014 Buildable Lands Report, which carried forward several key assumptions and findings from the previous 2007 edition, this study conducted a new and complete analysis of both development trends and growth capacity for all jurisdictions.
- **New regional geographies for summarizing capacity and growth targets.** VISION 2050 was adopted by PSRC in 2021. This regional plan updates the Regional Growth Strategy, including the organization of cities and unincorporated areas into five Regional Geographies each with population and employment growth targets for 2019-2044. Ch. 4 summarizes growth capacity for by these new VISION 2050 regional geographies. However, Ch. 3 summarized historic development

trends using the older VISION 2040 regional geographies because that growth is being compared to targets developed when those older geographies were in use.

- **Infrastructure gap analysis.** The methodology used in this study includes a formal evaluation of infrastructure gaps and their effects on urban growth capacity. While consideration of infrastructure availability had long been a component of King County's buildable lands analysis, this change included more specific guidance and up front analysis to address a new requirement added by the legislature in 2017.
- **Updated approach to "market factor" assumptions.** 2017 legislative changes also called for a more rigorous approach to developing "market factor" assumptions that account for the estimated percentage of developable land that is likely to remain undeveloped over the course of the planning period due to market barriers.
- **Reasonable Measures.** The 2017 legislative changes added additional points of analysis for which jurisdictions would need to adopt Reasonable Measures. Under past buildable lands analyses, jurisdictions experiencing a shortfall of capacity for their adopted target could be subject to Reasonable Measures. The 2017 legislation indicated that jurisdictions not achieving their growth targets or planned densities, and unlikely to achieve them by the planning horizon, would also be required to adopt Reasonable Measures to overcome these circumstances. The 2021 Urban Growth Capacity Report presents an analysis against the three Reasonable Measures tests and note jurisdictions that will adopt Reasonable Measures in their 2024 comprehensive plans.

Report Components and Organization

This report is organized into the following components.

- **Executive Summary**
- **Ch. 1. Introduction:** This chapter describes the regulatory and policy framework for Buildable Lands reporting in Washington State and King County. It provides an overview of the coordination process between the County and cities to prepare this report. It identifies key changes from the 2014 Buildable Lands Report. And it outlines the report components and organization.
- **Ch. 2. Methodology and Guidance Overview:** This is an overview of the methodologies used by individual jurisdictions for evaluating historic development trends as well as future growth capacity. The full guidance provided to jurisdictions are included in appendices to this report.
- **Ch. 3. Development Trends:** This chapter begins with a summary of residential and employment growth that occurred between 2006 and 2018. These trends are compared to adopted targets for jurisdictions and PSRC Vision 2040 Regional Geographies. This chapter also summarizes new development that occurred between 2012 and 2018 by achieved density level.
- **Ch. 4. Growth Capacity:** This is a summary and discussion of urban growth capacity within jurisdictions and aggregated by PSRC Vision 2050 Regional Geographies. Capacity is also summarized by assumed density level to provide an indicator of how much capacity may be available for different kinds of development and housing types – from new towers in dense downtown areas to lower density single family neighborhoods and middle-density typologies in between.

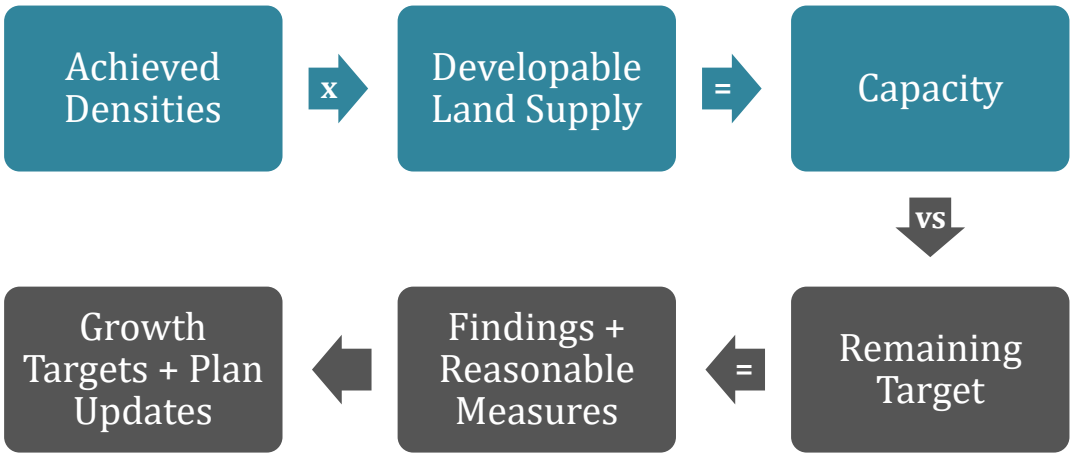
- **Ch. 5 Reasonable Measures:** This chapter explains how the county, in collaboration with cities, evaluated whether historic growth trends in each jurisdiction have been consistent with local comprehensive plans. It also presents the results of this assessment and a summary of jurisdiction responses that provide context for the quantitative assessment. Finally, this chapter identifies instances where "Reasonable Measures" are recommended to improve consistency.
- **Ch. 6 Applying Urban Growth Capacity Findings:** This chapter describes how jurisdictions can use this study and its findings to inform the next round of local comprehensive plan updates. It also presents a set of new population and employment growth targets by jurisdiction for the 2019-2044 period.
- **Ch. 7. Profiles of Cities and Unincorporated Areas:** This chapter presents detailed profiles summarizing growth trends and capacity findings for each individual jurisdiction, organized by PSRC Vision 2050 Regional Geographies.

Ch. 2 Methodology and Guidance Overview

Overview

This chapter provides an overview of the methodology used by King County and its cities to calculate urban growth capacity for residential and non-residential development. Exhibit 8 shows the three major steps in this process in blue, as well as three major steps following this process in grey. These steps highlight how capacity analysis results will be used to inform the development of potential Reasonable Measures, new growth targets for jurisdictions, and eventually comprehensive plan updates.

Exhibit 8. Urban Growth Capacity Analysis Overview



Source: Graphic adapted from King County Urban Growth Capacity Guidance, 2019.

This process for data collection to support urban growth capacity analysis was split into four phases:

- **Phase One** – Achieved Densities
- **Phase Two** – Land Supply
- **Phase Three** – Initial Capacity
- **Phase Four** – Final Capacity

Throughout the 2021 Urban Growth Capacity Report data development process, King County provided guidance documents to jurisdictions that walked through the analytical steps required in each phase, and when relevant, provided data to support the analysis. Along with the guidance documents, jurisdictions were asked to fill out standardized data tables to support data aggregation as well as comparisons across different jurisdictions and Regional Geographies. The remainder of this chapter

summarizes the process required of each jurisdiction throughout the phases of data collection and analysis. It also describes additional analyses King County and a consultant team developed to update and add rigor to data assumptions used in the analysis, or to develop new processes embedded in the data collection guidance. The individual guidance documents are attached to the end of this report in the Technical Appendices.

Phase 1 - Achieved Densities

The goal of this phase was to calculate the achieved densities of new development that occurred between 2012 and 2018. For residential development, density is typically measured in dwelling units per acre. For non-residential development, density is typically measured as floor-area ratio, or the amount of building floor area divided by the total parcel area. Achieved densities form the basis for determining the assumed density of future development in urban growth capacity calculations. That process is described in more detail in Phase 3.

During Phase 1, King County jurisdictions collected the necessary data to calculate achieved density for each zone where development occurred during the six-year review and evaluation period of 2012 to 2018. An initial parcel-based analysis by King County was supplied to the jurisdictions to streamline reporting on achieved densities, which was then supplemented by jurisdiction-led analysis. The portions of reporting are:

1. Reviewing and supplementing a parcel-based analysis of new residential development, and
2. Reporting on additional development permitted during the review period, particularly non-residential and mixed-use development.

The parcel-based analysis was the starting place for residential data collection in the Urban Growth Capacity Study. It was designed to replace the majority of plat and permit reporting by identifying new residential development on parcels that changed boundaries or added residential units during 2012-2018. Permit reporting on single family and multifamily/mixed-use development was still necessary for residential developments not identified in the parcel-based analysis data, and to review or supplement the parcel-based analysis with project data (for example, non-buildable critical areas area). New non-residential development was designed to be addressed through permit reporting.

Using the parcel-based analysis supplemented by permit data, jurisdictions filled out several data templates provided by King County to support the calculation of achieved densities in residential, non-residential, and mixed-use zones. For details see Appendix A: Guide for Local Government Reporting Template PART 1.

Data Review and Achieved Density Calculations

King County staff, with consultant support, reviewed permit data shared by jurisdictions for reliability and consistency with guidance. When necessary, jurisdictions were engaged to make corrections or refinements. This permit data provided the basis for calculating achieved densities for residential and non-residential development between 2012-2018.

Jurisdictions aggregated permits and reported residential and non-residential development by zone. For residential permits, this reported data included developed residential units, gross acreage, and several categories for acreage deductions: critical areas, public purpose area, and right of way area. After deducting these categories from gross acreage, jurisdictions reported net developed area for residential units within each zone. Residential achieved density is therefore measured as housing units per net acre, which accounts for area that is not suitable for residential development.

For non-residential development, achieved density is measured using floor area ratio (FAR). Jurisdictions calculated the gross developed non-residential area within each zone, and made similar deductions for critical areas, public purpose area, and right of way area. The total floor area of non-residential development within each zone was then divided by that zone's net developed area (in square feet), which produced a zone-wide achieved density for non-residential development.

Rural Development Trends Methodology

Residential development trends on rural and resource lands were measured by residential permits issued between 2012 and 2018. Permits were geocoded by their parcel identification number or address to identify their presence outside the Urban Growth Area.

Parcel quantities and area, and current use information was provided by the King County Assessor. Supplemental development related data (year built, residential units, and non-residential square feet), was derived from Assessor data on residential and commercial buildings. Parcels were identified as rural if their centroid was located outside of the Urban Growth Area. Parcels on resource land were identified by overlaying the parcels with current King County zoning shapefiles, and selecting parcels with centroids within Agriculture, Forest, or Mineral zoned land.

Phase 2 - Land Supply

The goal of Phase 2 was for jurisdictions to identify vacant and redevelopable land that has potential to see new development activity over the next 20 years. To quantify the developable land supply, jurisdictions followed the steps below. Results of this analysis were documented in standard data templates provided by King County.

- Assemble data, including parcel/assessor data, critical areas, and zoning (a set of 2019 parcel data and assessment information was provided to jurisdictions),
- Exclude land uses or parcels that are unlikely to develop for categorical reasons (e.g., parks, schools, public facilities, other institutions),
- Identify planned density by zone (see discussion below),
- Define thresholds for identifying vacant and redevelopable parcels (see discussion below),
- Identify vacant and redevelopable parcels using thresholds,
- Review and refine the resulting developable land supply,
- Remove area for environmentally sensitive lands (critical areas)
- Screen for infrastructure gaps, and

- Summarize developable land supply by zone.

Planned Density Reporting

Planned density typically refers to the maximum density allowed by zoning code and development regulations. Planned densities were collected for two reasons. First, as a part of new requirements to the Growth Management Act (GMA) buildable lands statute passed by the State Legislature in 2017, King County jurisdictions are required to evaluate whether planned densities are being achieved in the 2020 Urban Growth Capacity Study. Achieved densities (evaluated in Phase One reporting) are later compared to planned densities as one indicator of whether development is occurring as planned.

Second, planned densities are used in the identification of redevelopable lands. These are lands that have some development already, but which could reasonably be expected to see additional development during the planning period. Redevelopable parcels include **partially utilized** parcels, meaning the parcel is large enough to be subdivided to allow for the creation of additional residential lots. They can also include **under-utilized** parcels, which are parcels that could be converted to a more intensive use typically because the planned density is significantly higher than the existing density on the parcels. Since the 2007 Buildable Lands Report, King County has recommended jurisdictions identify both kinds of redevelopable lands by comparing the existing density of development to its planned, or potential, density (see additional discussion below).

Typically, planned densities for residential zones are reported in dwelling units per acre (du/acre), and in floor area ratio (FAR) for non-residential zones. In certain cases, residential planned density is reported in terms of FAR or minimum lot size. Non-residential planned density has more variation and is less frequently defined as explicitly as residential zones. For these zones, jurisdictions were asked to fill out a FAR calculator to assist with consistent comparisons later in the study.

Developable Land Supply Reporting

This portion of the analysis involved a jurisdiction-wide scan to quantify all land available for residential or commercial/industrial development for the next 20-year planning period. “Land supply” is the phrase used to refer to an inventory of land “suitable for development.” Land supply inventories for each jurisdiction ideally strive for a snapshot of land with development potential as of January 2019, approximating the end of the most recent evaluation period (2012-2018). The land supply is comprised of both vacant and redevelopable lands and is typically based on a parcel-based dataset provided by King County. In certain cases, individual jurisdictions maintain a land supply based on development site data in lieu of parcel data.

Vacant Definition

Vacant lands are devoid of development or contain only low value accessory structures. For this study, a recommended two-part test was used to determine if a parcel was vacant: query parcels with assessor present use codes indicating vacant land use *and* query parcels with improvement values less than $10,000. Selected parcels were then screened for known exclusions, such as school district land,

parking lots associated with condo buildings, government-owned land, and other land use types (see Appendix).

Redevelopable Definition (Residential)

For redevelopable residential land, a ratio of potential to existing density on a parcel was used to determine if a parcel was redevelopable. For example, if a city defined redevelopable land to be where existing development is less than two times the potential density for that property, then a single family property on an acre lot which is zoned for up to four units per acre, would be considered redevelopable.

Jurisdictions were recommended to choose a threshold between 2 to 3.5. The threshold a jurisdiction selected was influenced by development pressure and existing density, i.e., a lower threshold is more appropriate for denser, rapidly developing jurisdictions.

King County provided calculated residential density by parcel for this phase, and combined with planned density, jurisdictions were able to calculate the above ratio and test various thresholds. Once a given threshold was selected, results were queried and then screened through a variety of factors (for details see Appendix B: Phase 2 Guidance).

Redevelopable Definition (Non-Residential and Mixed-Use)

Two methods were provided to jurisdictions for identifying redevelopable non-residential and mixed-use parcels. While a density-based ratio, as is recommended for residential lands, can be informative in some areas, particularly those facing significant development pressure, an improvement-to-land-value based ratio may also accurately identify properties likely to redevelop.

Value-ratio method. In the parcel/assessor data table provided by King County, an improvement-to-land-value ratio was calculated for each parcel (appraised improvement value divided by land value). A low ratio indicates more potential for redevelopment. Theoretically, the ratio reflects the potential profitability of more intensive use of a site relative to the revenue generating potential of the existing use. Typical threshold ratios for determining redevelopability range from 0.25 to 1. A threshold of 0.5 was recommended for most areas within the county. Jurisdictions experiencing more intense development pressure were allowed to consider a higher ratio.

Density-ratio method. Since planned densities for all zones were being evaluated for this analysis, using a density-based filter is more possible than in past studies. The existing FAR-based density was calculated for every parcel (existing development divided by the parcel area) and included in the parcel data for each jurisdiction. Using the planned density of the parcel's related zoning, jurisdictions could calculate a potential density value for each parcel. By comparing the potential and existing densities, jurisdictions could create a ratio by which to judge a parcel's redevelopabllity. Starting with a ratio of 1.5 (potential-to-existing density) and testing a +/-0.5 tolerance was the recommended starting place for reviewing the redevelopable land supply results. Jurisdictions with less non-residential development

pressure were advised to set a higher threshold.

Screening

Regardless of method, queried parcels were screened and selectively removed from the analysis. Full documentation on the screening process can be found in Appendix B: Phase 2 Guidance. Two major factors in reducing land supply, critical areas and infrastructure gaps, bear additional description.

Critical Areas

Using the initial land supply, jurisdictions intersected and removed only non-buildable critical areas and critical area buffers in accordance with development standards, as described in Appendix B.

Infrastructure Gaps

Comporting with the new Department of Commerce Buildable Lands Guidance, the land supply was screened to remove or discount land supply experiencing significant water, sewer, stormwater, or transportation infrastructure gaps that would fully or partially impede development at planned levels. Jurisdictions were provided with a summary of infrastructure constraints identified in their comprehensive plan, and then performed a two-step analysis to further identify infrastructure constrained development: first identifying any areas with development potential outside existing service areas or affected by a significant, but unscheduled infrastructure need, and secondly removing or discounting specific parcels that were unserved and unlikely to be serviced in the next 20 years due to these gaps. Further detail on the infrastructure gaps guidance is contained in Appendix G.

Final Land Supply

After critical area deductions and infrastructure constrained lands were removed, each jurisdiction reported net vacant and net redevelopable land by zone. This is the final land supply.

Major Planned Development – Pipeline

The last section of Phase 2 asked each jurisdiction to fill out permitted development already in the pipeline, and when possible, the corresponding parcel number. Pipeline development was considered separately in the capacity analysis, and this step was to ensure that parcels with permitted development were not double counted towards future capacity as well.

Phases 3 and 4 – Capacity

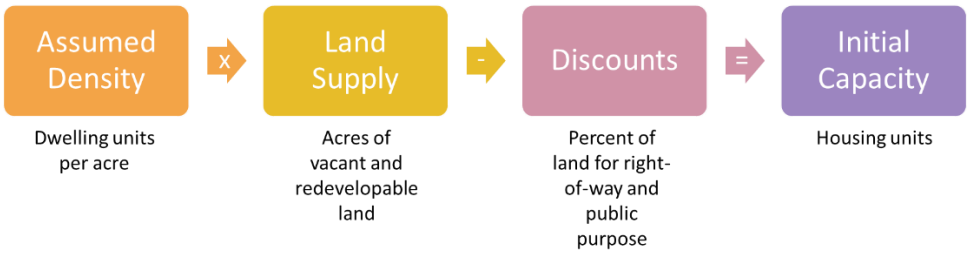
Calculating capacity was spread across two phases of data reporting. Phase 3 focused on an initial capacity calculation by zone, paired with local reporting on achieved growth and densities. Phase 4 data reporting finalized urban growth capacity calculations for each jurisdiction by applying market factor and employment density assumptions to the initial capacity calculated in Phase 3.

Capacity Overview

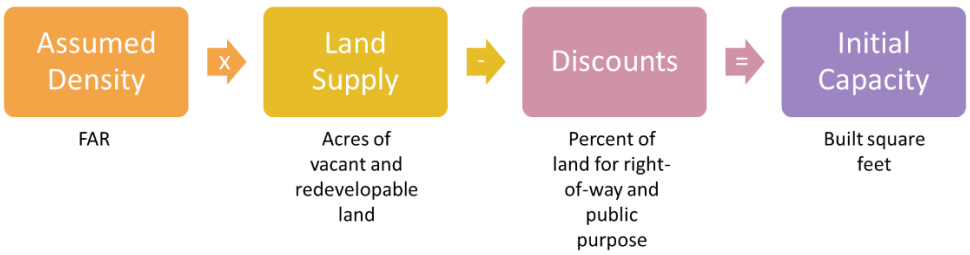
Generally, developable capacity is calculated by zone, and is the product of a zone's assumed density and the area of land supply, minus a percentage accounting for streets, sidewalks, and public purpose land. Achieved densities calculated in Phase 1 of data collection typically form the basis for the assumed densities, and the land supply was reported by zone in Phase 2. Jurisdictions selected discounts for right-of-way and public purpose lands, informed by recent development trends, to reduce the land supply for non-buildable, necessary infrastructure. This process is illustrated below in Exhibit 9.

Exhibit 9. Capacity Calculation Steps

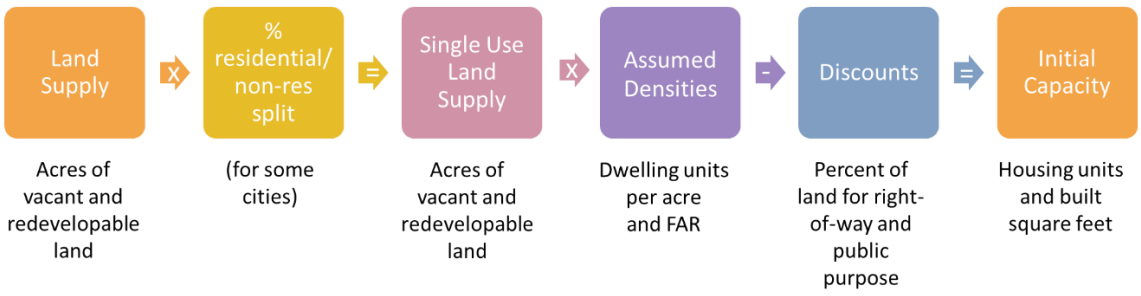
Calculating Residential Capacity



Calculating Non-Residential Capacity



Calculating Mixed-use Capacity



Source: King County Phase 3 Guidance Document, 2020.

Calculating Capacity

The steps for calculating capacity are broken down in the following sections: reporting assumed density, determining mixed-use splits, taking discounts, and calculating capacity.

Assumed Densities

Assumed densities are an important part of developing capacity calculations. They are reported for each zone where development can occur. Assumed densities, except in limited circumstances, must be based upon the achieved densities observed in the 2012-2018 evaluation period reported in Phase 1 of Urban Growth Capacity data collection. This is specifically called out in RCW 36.70A.215(3)a, e.

Deviation from achieved density is only permitted for zones in the following circumstances:

- **Insufficient observed development in the evaluation period**. Some zones may have experienced limited or no development to draw reasonable conclusions for anticipated development densities, either in the types of development allowed in a mixed-use zone, or in the quantity of development.
- **Changes in regulations**. Densities achieved in development permitted during the five-year review period may reflect zoning and development regulations that have since changed. Where regulations have changed to effectively increase or decrease achievable net densities, assumed future densities should reflect the impact of those regulatory changes, and the specific changes should be documented.
- **Trends over time**. A trend of increasing dwelling units per acre or FAR over time could justify an assumed future density higher than indicated in the zonal average reported as achieved density in Phase 1. Annual reporting in Phase 1 data would indicate this trend.
- **Infrastructure gaps.** "Partial infrastructure gaps," where infrastructure limitations affected portions of zones from achieving planned densities were identified in Phase 2 data reporting.

In such cases, jurisdictions may look to the planned density to inform the assumed density. Documentation of the specific development circumstances that demand deviation from the achieved density, and the rationale for the selected assumed density are required in the reporting tools.

Assumed densities are the basis for calculating initial capacity below.

Mixed-Use Zone Splits

Mixed-use zones are defined as zones with capacity for both residential and non-residential development. In some cities, mixed-use zones require the achieved use splits observed in Phase 1 to apportion area to residential and non-residential uses to calculate capacity, but all cities were asked to report on differences between achieved density and planned density for mixed-use development.

Some mixed-use zones did not see development in the evaluation period. In these instances, jurisdictions were advised to draw from additional sources:

- Observed splits in zones in comparable zones in or outside of the given jurisdiction
- Expressed vision for these areas in comprehensive and neighborhood plan policies, or development regulations
- Local knowledge of market conditions, demand for space, projects in the development pipeline, and developer interest
- Existing development similar to that envisioned for a zone

Defining these splits is a key component in understanding the breakdown in land supply available to residential and non-residential development on mixed-use land.

Discounts

To estimate the actual developable capacity, the area of vacant and redevelopable land supply must be reduced or "discounted" to account for land that gets utilized for rights-of-way and other public purpose uses where people do not live or work. Public purpose uses are generally stormwater facilities, parks, or other open space. These amounts vary by type and density of development. The starting place for approximating these discounts is the observed development data used to calculate achieved densities in Phase 1.

Past buildable lands reports provide additional reference points, built from the development observed during those evaluation periods. As development becomes denser and occurs as infill, these discount rates reduce, as right-of-way and public purpose uses are already built into the urban fabric.

Jurisdictions were encouraged to tailor discount selections to major land use types (e.g., multifamily, or non-residential development) and to vacant or redevelopable land. Some jurisdictions varied discounts by zone, based on future development conditions.

Initial Capacity

In this step, capacity is calculated by combining all portions of the analysis up until this point. From here, capacity was calculated by the following steps:

1. Report land supply area by vacant/redevelopable and by zone.
2. Deduct the selected percentages for rights-of-way and public purpose, determining the actual buildable area.
3. Calculate initial capacity by multiplying assumed density by buildable area, resulting in either initial dwelling unit calculations for residential capacity, or square feet of developable floor area for non-residential capacity.
4. Subtract and existing units/development on redevelopable parcels in order to obtain the net capacity by zone.

It is important to note that in Phase 1 data collection, achieved densities were separately calculated for the residential and non-residential components of mixed-use projects. These achieved densities were generally calculated from the number of residential units or commercial/office square footage over the entire parcel area. Calculating density in this manner factors in a split between residential and non-

residential uses into the achieved density, making a separate apportionment of mixed-use zoned land before the assumed density is applied unnecessary. Some jurisdictions preferred to apportion mixed use land to single uses to calculate achieved densities. For these jurisdictions, it was necessary to apply the achieved mixed-use land split to the land supply before applying their assumed densities.

Final Capacity

Creating the final urban growth capacity calculations for each jurisdiction involves applying market factor and employment density assumptions to the general capacity calculation process outlined in Phase 3. This section describes those assumptions.

Market Factor

Market Factor is the estimated percentage of developable land contained within an urban growth area that is likely to remain unavailable over the course of a 20-year planning period and is, in practice, the final non-developable land deduction when calculating lands suitable for development and redevelopment. Appendix E: Market Factor Guidance details considerations jurisdictions used when selecting appropriate assumptions to apply in each zone based on local market conditions or other factors.

Employment Density

Estimating employment densities is the final step in estimating total capacity for new job growth in a jurisdiction. While there are various ways to convert land capacity to capacity for new employment, King County selected to use an approach that converts non-residential development capacity measured in square feet of floor area to capacity for new employment. This conversion requires assumptions for the average number of built square feet of floor area for each job. The lower the square foot per job, the higher the density of use. The calculation is simply:

Total job capacity *= Gross square footage[4] of floor area capacity / gross square footage per job*

Square footage per job can vary widely by building type or employment sector. For example, warehouses devote a great deal of square footage to storing inventory or other goods, and therefore typically require considerably more square footage per job than office uses. Average employment density assumptions should reflect the types of job growth that are expected in an area.

Many jurisdictions selected different employment density assumptions for commercial and industrial zones to reflect different expectations for the type of development and job growth expected in those zones. Some jurisdictions even varied employment density assumptions among different commercial zones. For example, a city may assume that average square footage per job is lower in a downtown zone than in other commercial zones further from the core. This decision could reflect expectations that a higher proportion of the downtown floor area capacity will be used as office space, compared to other commercial zones where lower density retail uses may be more common.

Appendix F: Employment Density Guidance provides additional details about considerations jurisdictions could use when selecting the assumptions.

[4] Gross square footage simply refers to the total square footage of the building, including walls. Gross square footage capacity is calculated as the floor area ratio (FAR) * the parcel size in square feet.

Data Review, Land Supply, and Capacity Calculations

Throughout Phases 2 through 4, King County staff, with consultant support, reviewed and summarized data received from the jurisdictions for land supply and capacity. In certain cases, jurisdictions were asked to correct or recalculate portions of the analysis due to inconsistencies discovered in the review process. In other cases, King County staff along with the consultant team reviewed and corrected calculations and sent data back to the jurisdictions for review.

This was an important step for refining the data and providing greater consistency across the entire analysis. The jurisdictions were involved in all conversations when data was changed or corrected, and all data presented in this report have been reviewed and approved by each relevant jurisdiction.

Ch. 3 Development Trends

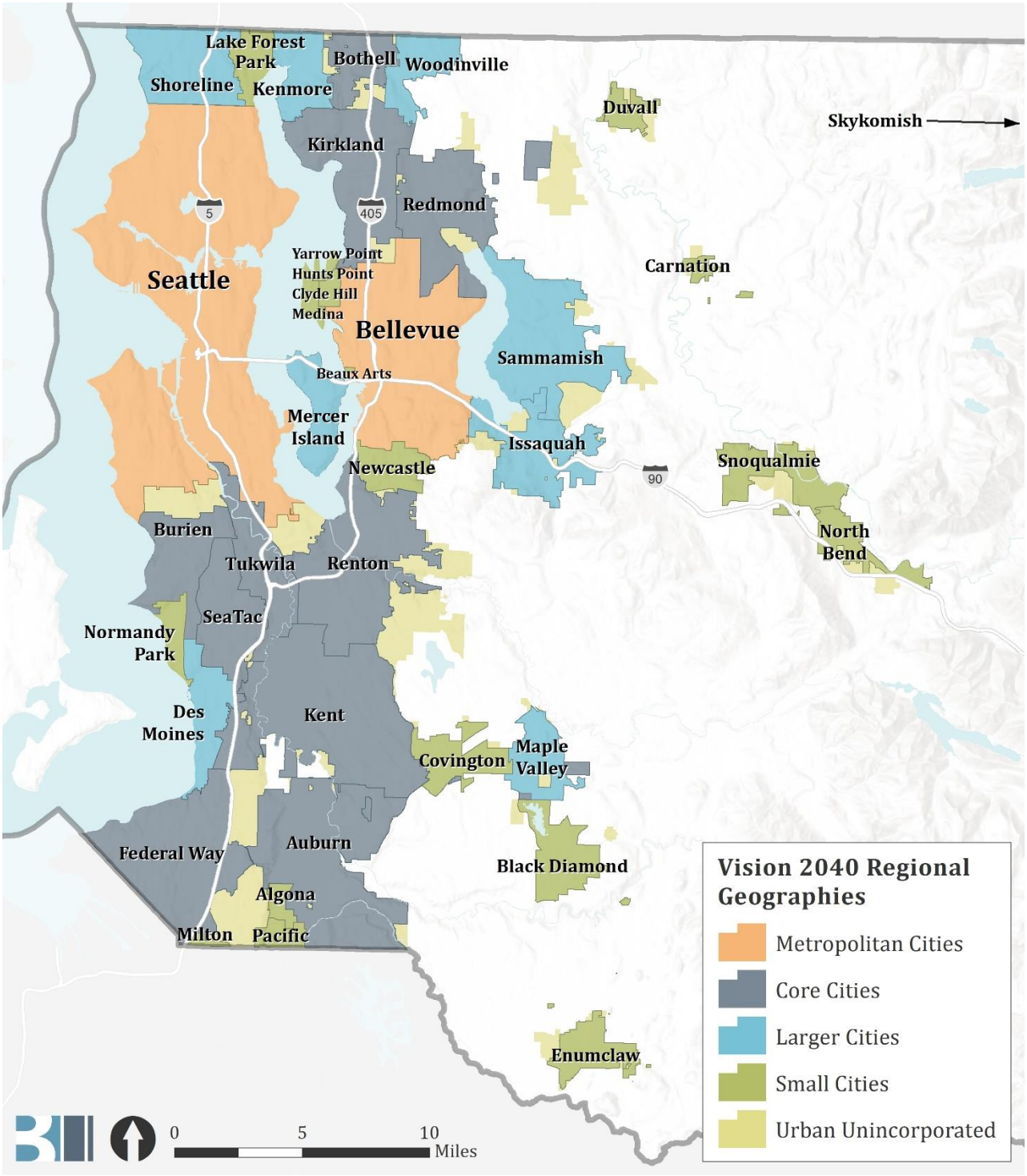
This chapter reviews residential and employment growth trends in King County between 2006 and 2018. It also compares these trends to growth targets set in the 2012 King County Countywide Planning Policies and subsequently extended to 2035.[5] These targets include growth for the Urban Growth Area as a whole, individual jurisdictions, and a set of five Regional Geographies for grouping individual jurisdictions: Metropolitan Cities, Core Cities, Larger Cities, Small Cities, and Urban Unincorporated areas (for a map, see Exhibit 10).

Regional Geographies used in this chapter are based on Puget Sound Regional Council's VISON 2040 regional plan, as the 2006-2035 targets were adopted using the VISION 2040 plan as a framework. They should not be confused with the new VISION 2050 Regional Geographies King County adopted in 2020. Chapter 6 will use the new Regional Geographies to summarize capacity with an eye towards planning for new 2019-2044 growth targets.

The final section of this chapter summarizes development trends in rural areas.

[5] King County extended the 2006-2031 growth targets out to 2035 using a linear projection based on continuing the same average annual growth rate. These 2035 targets may vary from land use assumptions used in local comprehensive plans for jurisdictions that selected a different method for extending their 2031 growth targets to 2035.

Exhibit 10. Map of VISION 2040 Regional Geographies Used for 2035 Growth Targets

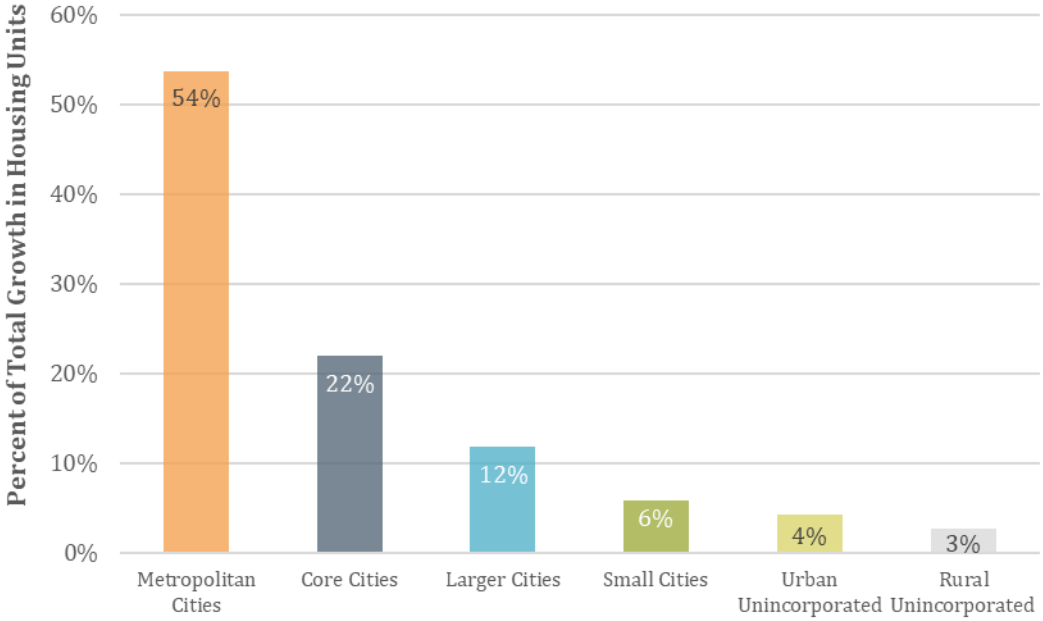


Source: PSRC VISION 2040; BERK, 2021.

Residential Growth Trends

Between 2006 and 2018, the county had a net gain of 415,591 new residents and 130,892 new housing units. The average annual rate of net new housing production was 1.4%. Exhibit 11 shows net new housing with break downs by Regional Geography. Over half of all new housing units were constructed in Metropolitan Cities, with the vast majority in the City of Seattle. During this period only 3% of all housing production was in rural unincorporated areas.

Exhibit 11. Net New Housing Units by Regional Geography, 2006-2018



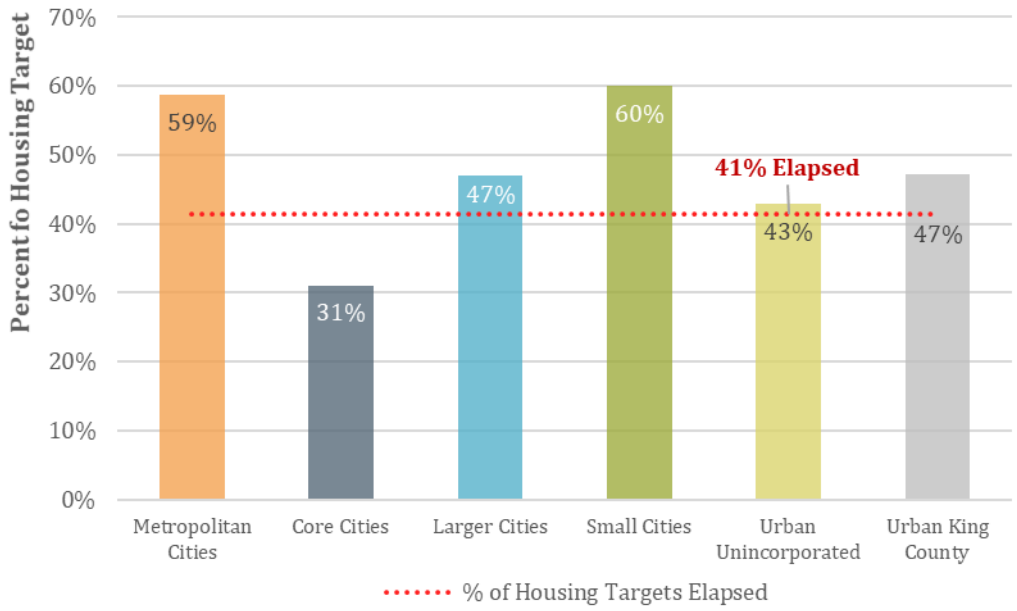
Source: King County, 2021, based on Washington State Office of Financial Management (OFM) Small Area Estimates[6].

Consistency of Residential Growth with Adopted Targets

As a whole, King County is on pace to meet the 2035 countywide growth target of 276,604 net new units. Exhibit 12 shows progress toward the 2035 housing growth targets. As of 2018, King County was 47% of the way to achieving the 2035 target, compared to 41% of the growth period having elapsed (12 out of 29 years). The exhibit shows that progress by Regional Geography has varied. Collectively, Metropolitan Cities, Larger Cities, and Small Cities have all growth at a faster pace than needed to achieve their targets in 2035. On the other hand, Core Cities have grown more slowly than needed to achieve their 2035 targets.

[6] All 2006 and 2018 city and urban unincorporated area estimates in this chapter are sourced from block-level data from the WA Office of Financial Management (OFM) Small Area Estimates Program. This source was used to develop jurisdictional estimates for both years that reflect approximate current municipal boundaries to control for growth due to annexation. Some variation from OFM official April 1st population estimates for jurisdictions will be evident.

Exhibit 12. Progress Towards 2035 Housing Targets, 2006-2018



Source: King County, 2021, based on OFM Small Area Estimates.

Exhibit 13 compares housing growth to targets for each jurisdiction. The column with colored cells (% of 2035 Target Pace) measures the progress of each city and urban unincorporated King County compared to the pace needed to achieve their 2035 target. A value of 100% indicates the jurisdiction was growing at exactly the right rate to meet their 2035 target, while lower values indicate the jurisdiction was growing at a slower rate than implied in the growth target. For jurisdictions growing slower than the target pace, the color of the cell indicates how close the pace of growth is to target. Jurisdictions very close to the target pace are shown in green, while those further from the pace are in yellow, orange, or red. The number of jurisdictions that grew significantly slower than the target pace are relatively few. Cities that have significantly over paced their target rate were generally affected by having very small residential targets. Note that data for cities that straddle two counties include only the King County portion.

Exhibit 13. Residential Growth Compared to Targets, 2006-2018

City/Jurisdiction	2006 Total Housing Units	2006-2035 Housing Target	2006-2018 Housing Production	2018 Total Housing Units	% of 2035 HU target pace	Remaining 2035 Target	Annual Growth Needed to Achieve Target
Metropolitan Cities							
Bellevue	55,107	20,056	6,591	61,698	79%	13,465	1.3%
Seattle	292,881	99,760	63,675	356,556	154%	36,085	0.6%
Subtotal	**347,988**	**119,816**	**70,266**	**418,254**	**142%**	**49,550**	**0.7%**
Core Cities							
Auburn	23,602	11,159	3,138	26,740	68%	8,021	1.8%
Bothell	9,522	4,420	2,204	11,726	121%	2,216	1.1%
Burien	19,584	5,150	1,225	20,809	57%	3,926	1.1%
Federal Way	34,560	9,396	2,525	37,085	65%	6,871	1.1%
Kent	43,552	10,753	4,259	47,811	96%	6,495	0.8%
Kirkland	35,556	9,941	3,100	38,656	75%	6,841	1.0%
Redmond	22,790	11,896	4,946	27,736	100%	6,950	1.5%
Renton	36,168	17,231	6,607	42,775	93%	10,623	1.5%
SeaTac	10,301	6,728	548	10,849	20%	6,180	3.4%
Tukwila	7,739	5,626	130	7,869	6%	5,496	4.1%
Subtotal	**243,374**	**92,300**	**28,683**	**272,057**	**75%**	**63,617**	**1.4%**
Larger Cities							
Des Moines	12,287	3,480	413	12,700	29%	3,067	1.4%
Issaquah	11,517	6,670	5,096	16,612	185%	1,574	0.6%
Kenmore	8,156	4,060	1,120	9,276	67%	2,940	1.9%
Maple Valley	6,765	2,088	2,061	8,826	239%	27	0.0%
Mercer Island	9,467	2,320	1,006	10,473	105%	1,314	0.7%
Sammamish	18,196	4,849	3,585	21,780	179%	1,264	0.3%
Shoreline	22,173	5,800	1,529	23,702	64%	4,271	1.1%
Woodinville	4,550	3,480	604	5,154	42%	2,876	3.3%
Subtotal	**93,110**	**32,747**	**15,413**	**108,523**	**114%**	**17,334**	**0.9%**
Small Cities							
Algona	960	220	89	1,049	97%	132	0.7%
Beaux Arts Village	119	3	1	120	82%	2	0.1%
Black Diamond	1,623	2,204	112	1,735	12%	2,092	7.1%
Carnation	739	383	141	880	89%	242	1.6%
Clyde Hill	1,083	12	8	1,091	176%	3	0.0%
Covington	5,470	1,705	1,564	7,034	222%	141	0.1%
Duvall	2,105	1,322	576	2,681	105%	746	1.6%
Enumclaw	5,048	1,653	278	5,326	41%	1,375	1.5%
Hunts Point	183	1	4	187	888%	-	Met Target
Lake Forest Park	5,226	551	201	5,427	88%	350	0.4%
Medina	1,162	22	72	1,234	795%	-	Met Target
Milton	337	58	271	608	1129%	-	Met Target
Newcastle	3,784	1,392	1,404	5,188	244%	-	Met Target
Normandy Park	2,794	139	83	2,877	144%	56	0.1%
North Bend	3,352	771	361	3,712	113%	411	0.7%
Pacific	2,146	331	316	2,462	231%	15	0.0%
Skykomish	166	12	7	173	144%	5	0.2%
Snoqualmie	2,864	1,873	2,087	4,951	269%	-	Met Target
Yarrow Point	401	16	25	426	375%	-	Met Target
Subtotal	**39,560**	**12,670**	**7,601**	**47,160**	**145%**	**5,069**	**0.6%**
Urban Unincoporated							
Urban Unincorporated	35,910	12,837	5,498	41,408	104%	7,339	1.0%
Subtotal	**35,910**	**12,837**	**5,498**	**41,408**	**104%**	**7,339**	**1.0%**
Urban King County	**759,942**	**270,370**	**127,461**	**887,403**	**114%**	**142,909**	**0.9%**

Source: King County, 2021, based on OFM Small Area Estimates.

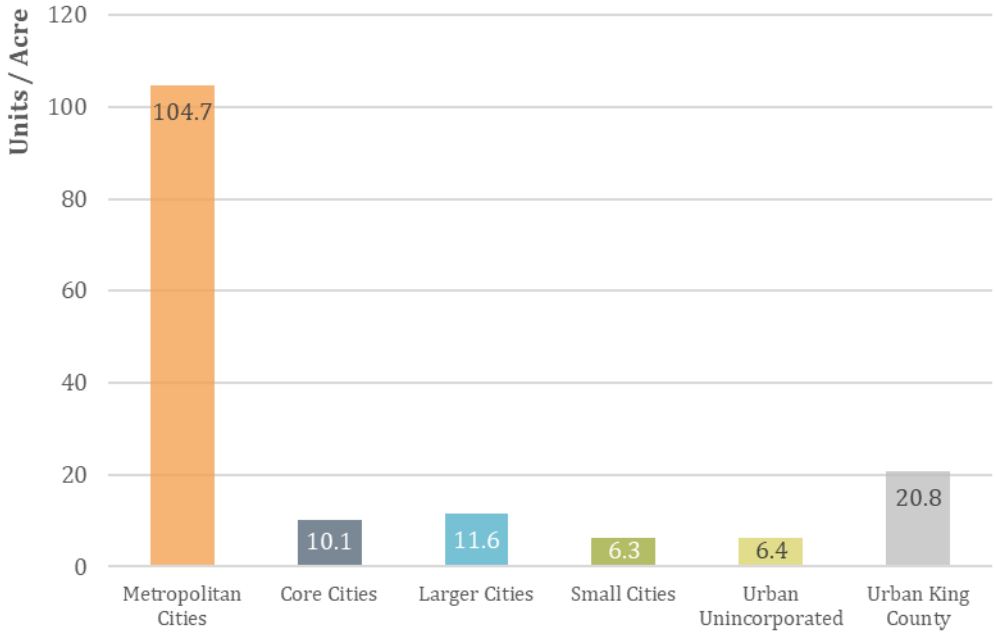
Percent of Target Pace

0% 100% +

Achieved Residential Density

This section evaluates achieved density in dwelling units per acre for residential construction that was permitted between 2012 and 2018. Achieved density varied significantly between Regional Geographies, as shown in Exhibit 14. Metropolitan Cities permitted housing at ~105 du/acre on average, while in the remainder of the county average density ranged between 6 and 21 units per acre.

Exhibit 14. Average Achieved Density of Permitted Housing Units, 2012-2018



Source: BERK, 2021, based on permit data summarized by King County jurisdictions.

The density of new housing development is strongly related to the types of housing that are provided. This study summarizes development by density level categories[7] that correspond to typical residential development styles. Exhibit 15 shows the categories used in the study, as well as examples of development in King County which fall into each category. Allowing for, and encouraging, new housing development in a variety of housing types is an important way to increase housing diversity. When a community provides a greater diversity of housing options it can meet the housing needs of a greater diversity of household types.

[7] Note that these density levels are based on dwelling units per *net* acre. In other words, net density measures units per acre on individual buildable lots. It excludes street right of ways and common areas.

Exhibit 15. Categories for Summarizing Achieved Residential Density

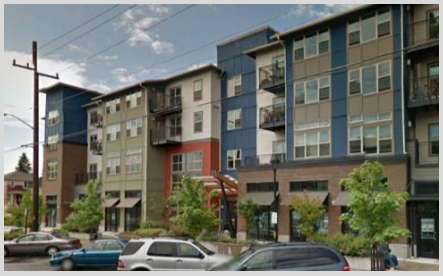
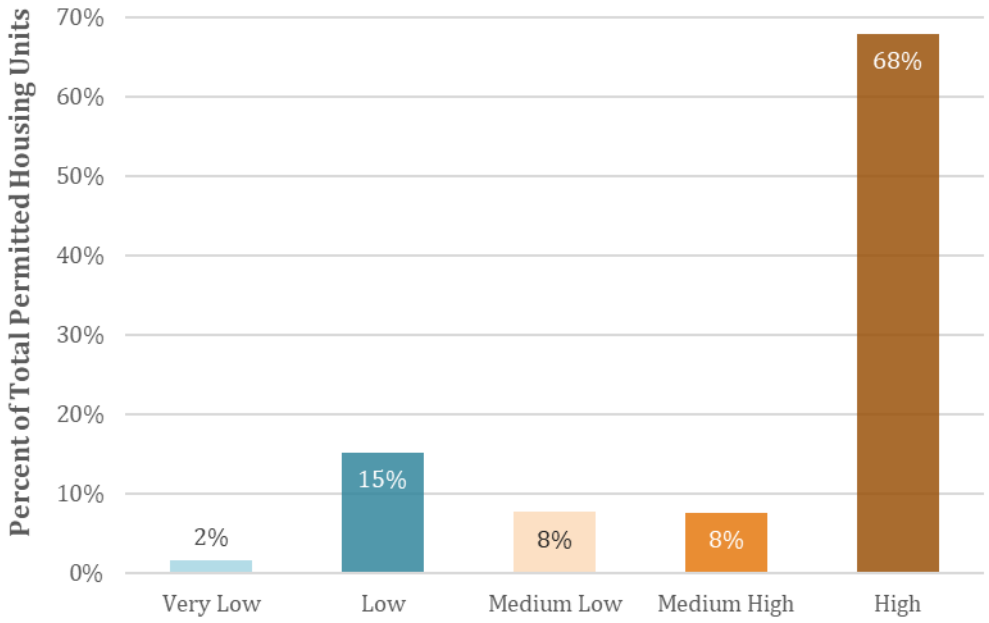
Density Level	Units per Net Acre	Description	Example
Very low	Less than 4	Detached single family homes on large lots	
Low	4-10	Detached single family homes at typical suburban density level Image: Single family neighborhood in Snoqualmie, WA	
Medium-Low	10-24	Small lot single family homes, duplex, triplex, & lower-density townhouses Image: Triplex in Issaquah Highlands, WA	
Medium-High	24-48	Low-rise apartments and condominiums; higher-density townhomes. Image: 5th Avenue condominiums in Kirkland, WA.	
High	48+	Mid- and high-rise apartments and condominiums. Image: Nia apartments in White Center (King County), WA.	

Image sources: mschellhase/flickr.com (Very Low) and Bob Bengford/Google Street View, 2017 (other categories).

Over two-thirds of all newly permitted housing units were High density (48+ units per acre), as shown in Exhibit 16. Housing in this category would almost exclusively be in multifamily buildings such as apartments or condominiums. About 17% of all housing development was in the Low or Very Low categories, indicating single-family housing built at 10 units per acre or less. Only 15% of all housing production was built at Medium densities between 10 and 48 units per acre. Residences in these categories could include "missing middle" formats such as small lot single family, multiplexes, townhomes, and some low-rise apartments or condominiums.

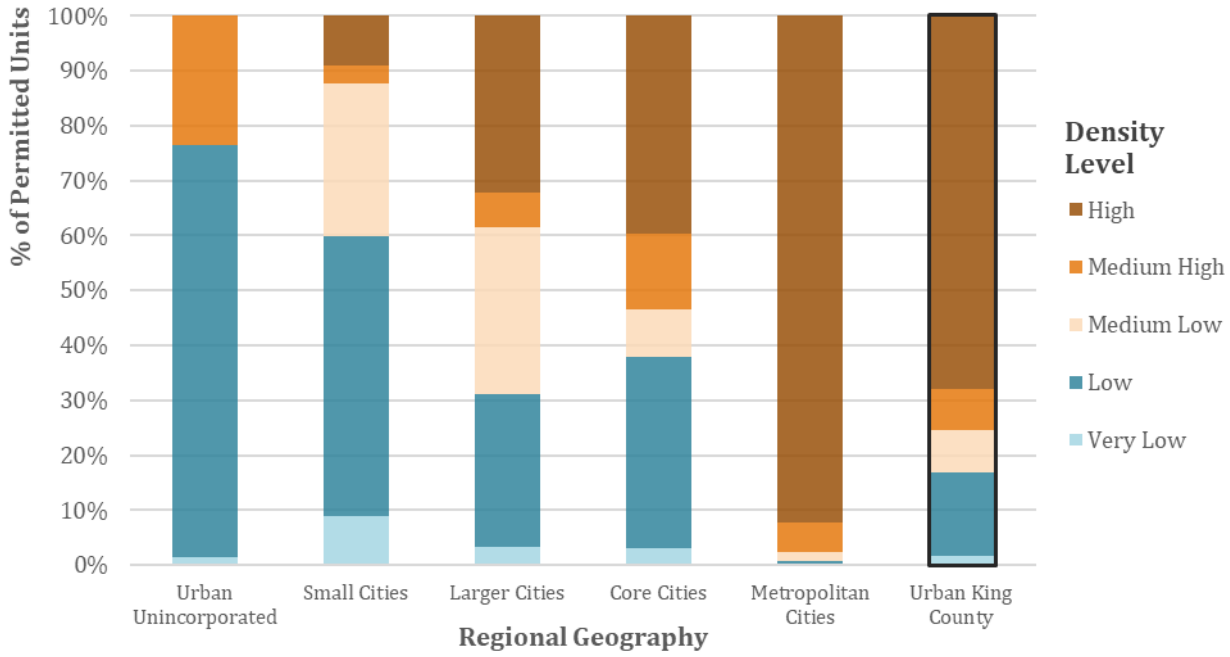
Exhibit 16. Countywide Permitted Housing Units by Achieved Density, 2012-2018



Source: BERK, 2021, based on permit data summarized by King County jurisdictions.

Exhibit 17 shows the distribution of achieved density for each Regional Geography. Over 90% of permitted units in Metropolitan Cities were in the High density housing range. High density housing also accounted for between 30% and 40% of permitted units in Core Cities and Larger Cities, both of which included a diversity of different density levels. In Urban Unincorporated and Small Cities, Low and Very Low density development was most common.

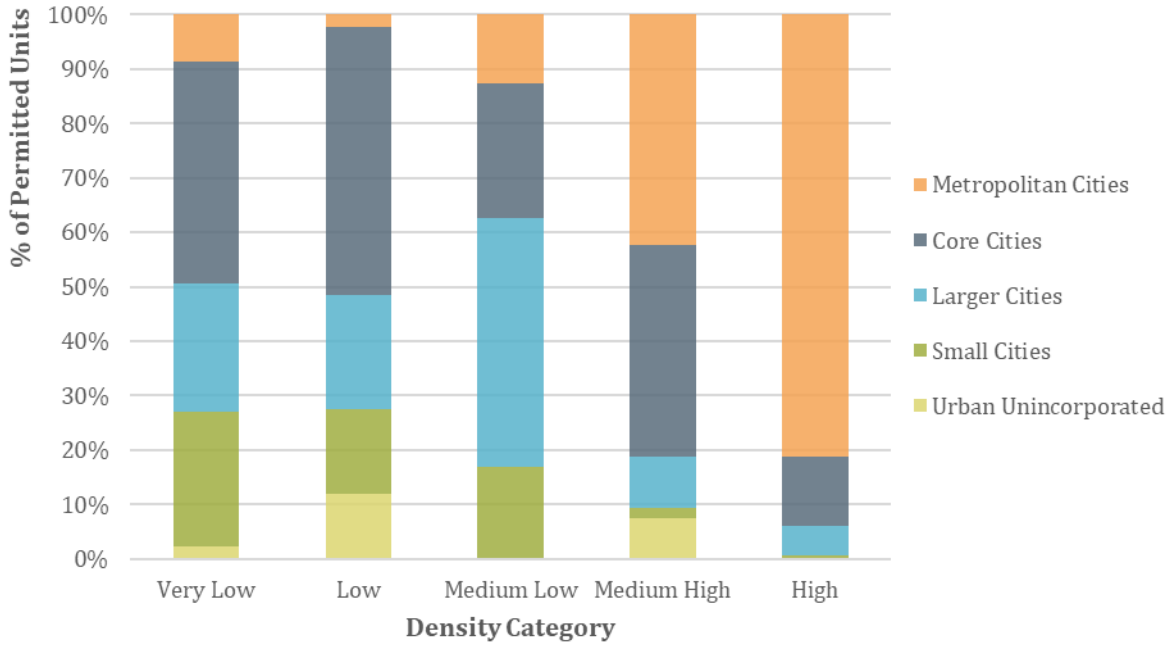
Exhibit 17. Permitted Housing Units by Regional Geography and Achieved Density, 2012-2018



Source: BERK, 2021, based on permit data summarized by King County jurisdictions.

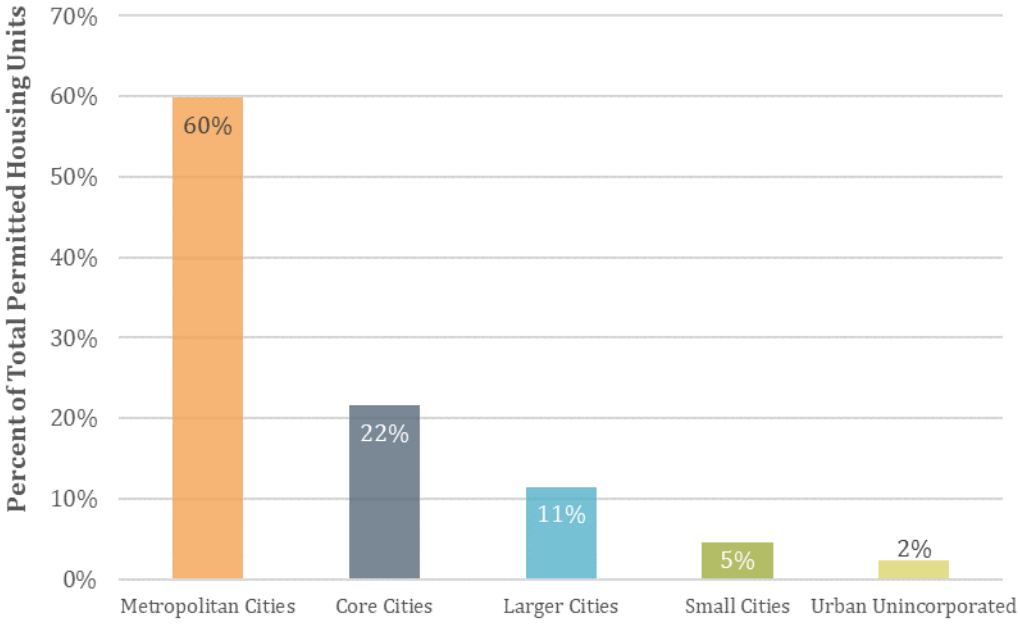
Exhibit 18 presents the same permit data transposed to show the distribution by Regional Geography for each achieved density level. Not surprisingly, the vast majority of the High density growth occurred in Metropolitan Cities. Most of the Medium-High density growth was split between Metropolitan Cities and Core Cities. About 70% of both Low and Medium-Low density growth occurred in Core Cities and Larger Cities.

Exhibit 18. Permitted Housing Units by Achieved Density and Regional Geography, 2012-2018



Source: BERK, 2021, based on permit data summarized by King County jurisdictions.

Exhibit 19. Permitted Housing Units by Regional Geography, 2006-2018

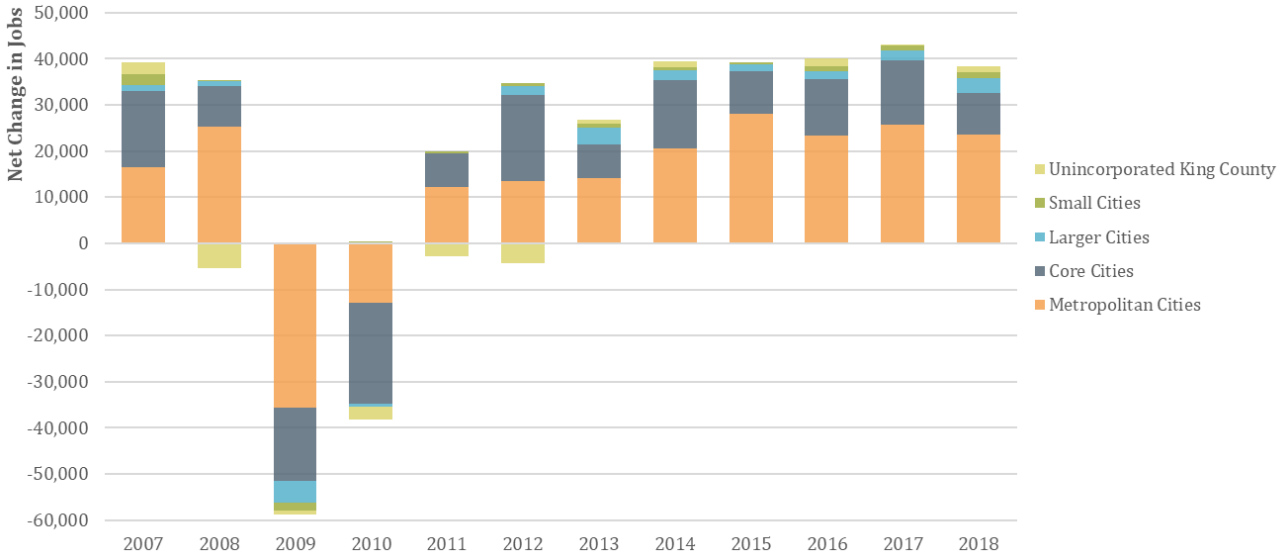


Source: BERK, 2021, based on permit data summarized by King County jurisdictions.

Employment Growth Trends

Between 2006 and 2018, the county had a net gain of 246,475 new jobs. The average annual rate of job growth was 1.8%. Exhibit 20 shows annual gain or loss of jobs by Regional Geography. It shows significant job losses during Great Recession in 2009 and 2010. It also shows smaller losses of jobs in Unincorporated King County in 2008, 2011, and 2012. These are likely due to annexations of unincorporated areas into cities, which would represent a shift of jobs from one Regional Geography category to another rather than actual job losses. With regards to job growth, these trends show annual gains highly concentrated in Metropolitan and Core Cities.

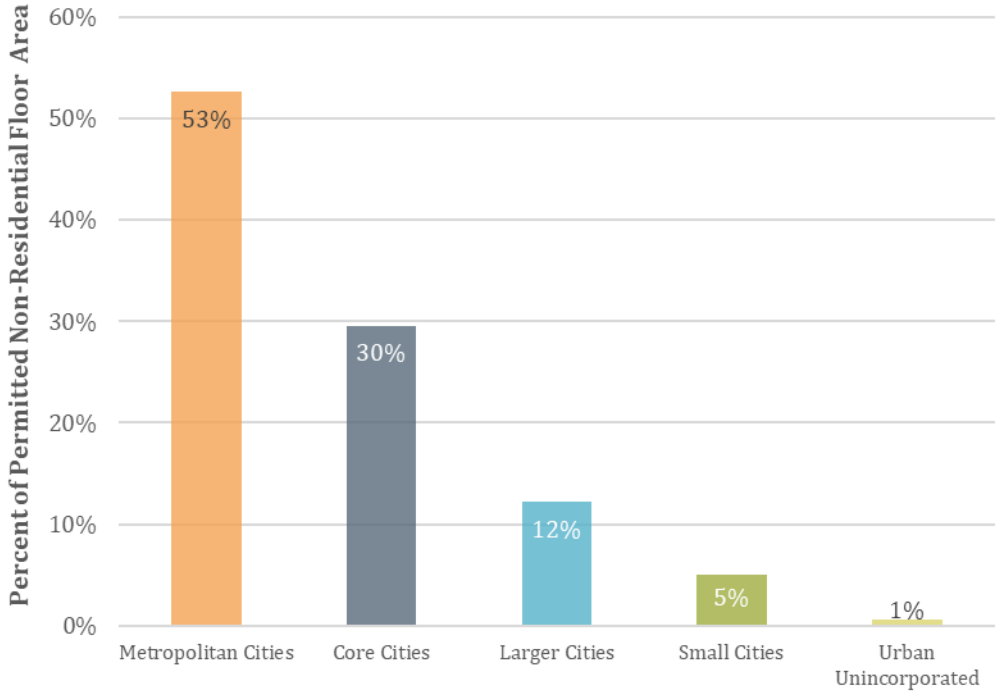
Exhibit 20: Annual Net Change in Jobs by Regional Geography, 2007-2018



Source: PSRC, 2020.

Exhibit 21 breaks down all non-residential development permitted in urban King County by Regional Geography. Over half of this growth was within Metropolitan Cities, and nearly a third was in Core Cities. The other geographies had much smaller shares.

Exhibit 21. Permitted Non-Residential Floor Area by Regional Geography, 2012-2018

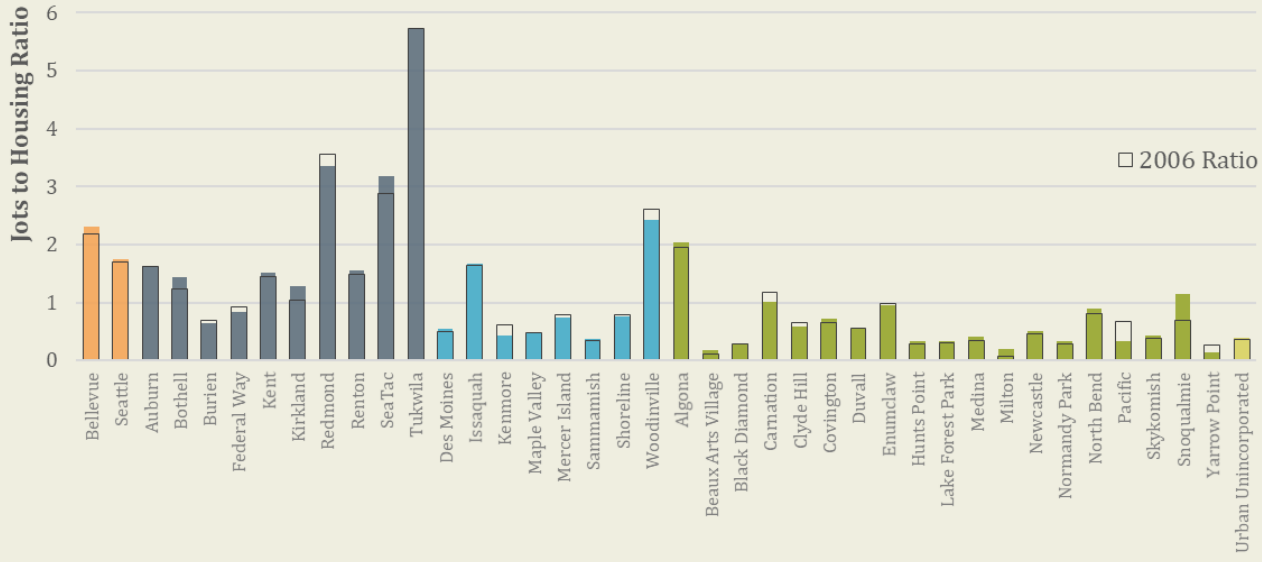


Source: BERK, 2021, based on permit data summarized by King County jurisdictions.

Jobs Housing Balance

The chart below shows the ratio of jobs to housing units for each Regional Geography. Metropolitan Cities and Core Cities are significantly higher than other geographies, reflecting their roles containing King County's primary employment centers. The following exhibit shows the same ratio calculated for each individual jurisdiction. There is significant variation, with Tukwila, SeaTac, and Redmond each standing out with relatively high ratios.

Exhibit 22. Jobs to Housing Ratio by Jurisdiction (2018 vs 2006)

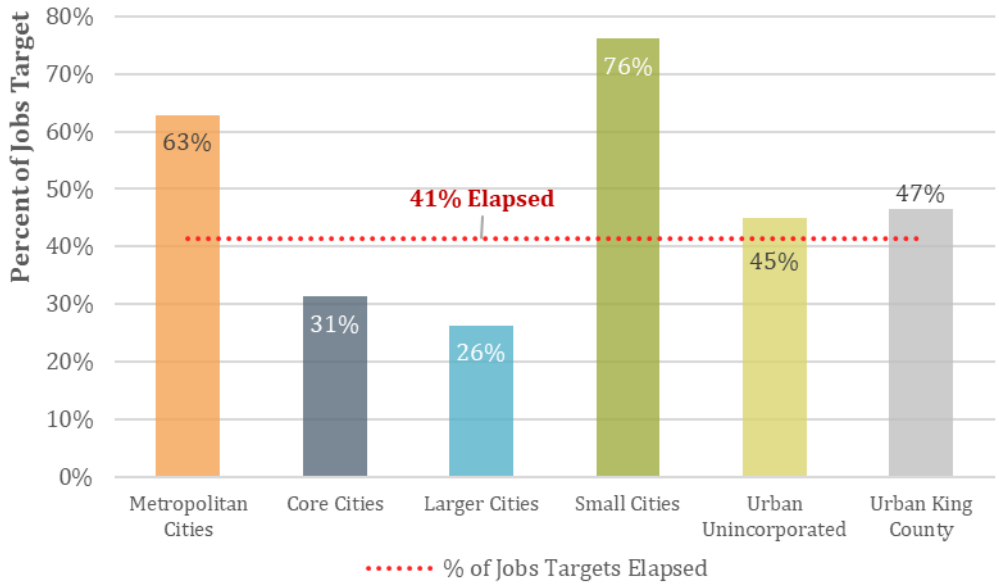


Source: PSRC, 2020; OFM, 2020.

Consistency of Employment Growth with Adopted Targets

As a whole, urban King County is on pace to hit the 2035 countywide growth target of 488,659 net new jobs. Exhibit 23 shows progress toward the 2035 job growth targets. As of 2018, King County was 47% of the way to achieving the 2035 target, compared to 41% of the growth period having elapsed (12 out of 29 years). The exhibit shows that progress by Regional Geography has varied. As a category, both Metropolitan Cities and Small Cities have grown at a faster pace than needed to achieve their targets in 2035. On the other hand, Core Cities and Large Cities have grown more slowly than needed to achieve their 2035 targets.

Exhibit 23. Progress Toward 2035 Jobs Target by Regional Geography, 2006-2018



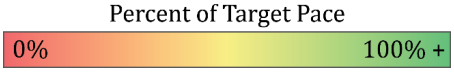
Source: King County, 2021; PSRC, 2020.

Exhibit 24 compares job growth to targets for each jurisdiction. The column with colored cells (% of Jobs Target Pace) measures the progress of each city and unincorporated urban King County compared to the pace needed to achieve their 2035 target. A value of 100% indicates the jurisdiction was growing at exactly the right rate to hit their 2035 target while lower values indicate the jurisdiction was growing at a slower rate than implied in the growth target. For jurisdictions growing slower than the target pace, the color of the cell indicates how close the pace of growth is to target. Jurisdictions close to the target pace are shown in green, while those further from the pace are in yellow, orange, or red.

Exhibit 24. Employment Growth Compared to Targets, 2006-2018

City	2006 Total Jobs	2006-2035 Jobs Target	2006-2018 Jobs Growth	2018 Total Jobs	% of Jobs Target Pace	Remaining 2035 Target	Annual Growth to Achieve 2035 Target
Metropolitan Cities							
Bellevue	120,494	61,480	22,529	143,023	89%	38,951	1.6%
Seattle	498,931	170,172	123,190	622,121	175%	46,982	0.4%
Subtotal	**619,425**	**231,652**	**145,719**	**765,144**	**152%**	**85,933**	**0.7%**
Core Cities							
Auburn	38,252	22,446	5,518	43,770	59%	16,928	2.3%
Bothell	11,757	5,800	5,023	16,780	209%	777	0.3%
Burien	13,371	5,754	(26)	13,345	-1%	5,754	2.5%
Federal Way	31,616	14,268	(468)	31,148	-8%	14,268	2.7%
Kent	63,299	15,405	9,061	72,360	142%	6,344	0.5%
Kirkland	36,698	24,186	12,582	49,280	126%	11,604	1.4%
Redmond	81,207	26,680	11,967	93,174	108%	14,713	0.9%
Renton	53,431	33,640	12,720	66,151	91%	20,920	1.9%
SeaTac	29,585	29,348	4,937	34,522	41%	24,411	4.2%
Tukwila	44,345	20,358	621	44,966	7%	19,737	2.6%
Subtotal	**403,561**	**197,884**	**61,935**	**465,496**	**76%**	**135,455**	**1.7%**
Large Cities							
Des Moines	6,206	5,800	859	7,065	36%	4,941	4.1%
Issaquah	18,889	23,200	8,950	27,839	93%	14,250	3.0%
Kenmore	5,062	3,480	(1,050)	4,012	-73%	3,480	5.1%
Maple Valley	3,297	2,320	893	4,190	93%	1,427	2.0%
Mercer Island	7,453	1,160	292	7,745	61%	868	0.7%
Sammamish	6,199	2,088	1,987	8,186	230%	101	0.1%
Shoreline	17,411	5,800	487	17,898	20%	5,313	1.7%
Woodinville	11,876	5,800	643	12,519	27%	5,157	2.4%
Subtotal	**76,393**	**49,648**	**13,061**	**89,454**	**64%**	**35,537**	**2.3%**
Small Cities							
Algona	1,879	244	263	2,142	261%	-	Met Target
Beaux Arts Village	13	4	9	22	595%	-	Met Target
Black Diamond	458	1,218	57	515	11%	1,161	13.3%
Carnation	871	429	15	886	8%	414	2.7%
Clyde Hill	713	-	(79)	634	N/A	N/A	N/A
Covington	3,528	1,531	1,485	5,013	234%	46	0.1%
Duvall	1,182	974	301	1,483	75%	673	2.7%
Enumclaw	4,960	853	96	5,056	27%	757	0.9%
Hunts Point	51	-	13	64	N/A	N/A	N/A
Lake Forest Park	1,612	244	165	1,777	164%	79	0.3%
Medina	409	-	110	519	N/A	N/A	N/A
Milton	22	186	98	120	128%	88	4.3%
Newcastle	1,736	853	891	2,627	253%	-	Met Target
Normandy Park	773	75	161	934	516%	-	Met Target
North Bend	2,707	1,218	590	3,297	117%	628	1.1%
Pacific	1,443	429	(609)	834	-343%	429	3.0%
Skykomish	64	-	12	76	N/A	N/A	N/A
Snoqualmie	2,004	1,218	3,684	5,688	731%	-	Met Target
Yarrow Point	109	-	(49)	60	N/A	N/A	N/A
Subtotal	**24,534**	**9,475**	**7,213**	**31,747**	**184%**	**4,275**	**0.8%**
Urban Unincorporated							
Urban Unincorporated	12,843	7,900	3,557	16,400	109%	4,343	1.6%
Subtotal	**12,843**	**7,900**	**3,557**	**16,400**	**109%**	**4,343**	**1.6%**
Urban King County	**1,136,756**	**496,559**	**231,485**	**1,368,241**	**113%**	**265,074**	**1.1%**

Source: King County 20211; PSRC, 2020.



Achieved Non-Residential Density

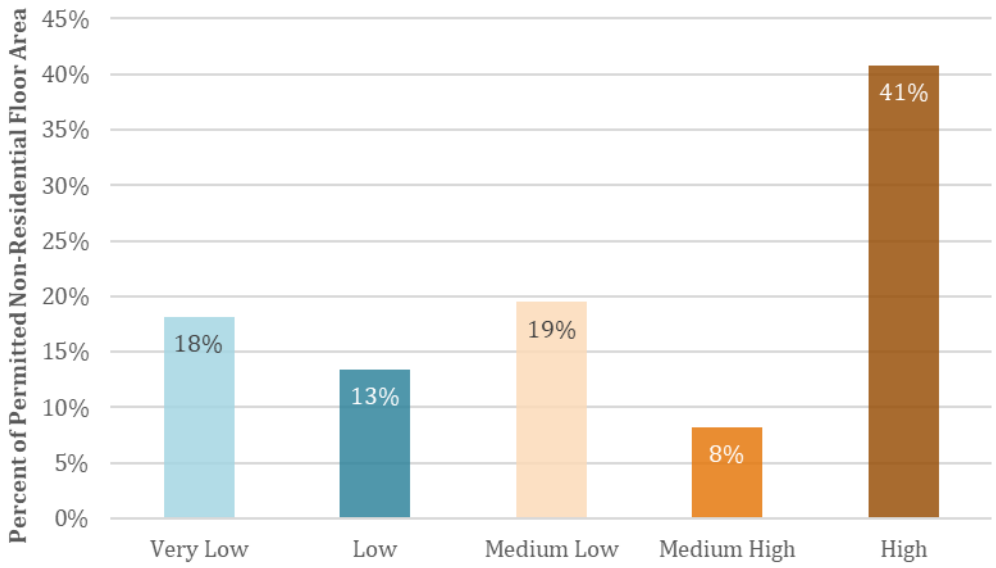
For non-residential construction that occurred between 2012 and 2018, jurisdictions evaluated achieved density in floor area ratio (FAR). This metric compares the built floor area of structures to the total area of the parcel. For multistory buildings, this method sums floor area on each story. This can result in floor area ratios greater than 1.0. When presenting the results of this analysis, this report summarizes achieved density in five density categories, shown in Exhibit 25.

Exhibit 25. Categories for Summarizing Achieved Non-Residential Density (FAR)

Very Low	Low	Medium-Low	Medium-High	High
Less than 0.35	0.35 – 0.5	0.5 – 1.0	1.0 – 3.0	Greater than 3.0

During the six-year analysis period, about 41% of all newly permitted non-residential development was High density (greater than 3 FAR), as shown in Exhibit 26. Medium-Low and Very Low were the two next common density levels. Medium-High was the least common with only 8% of all development.

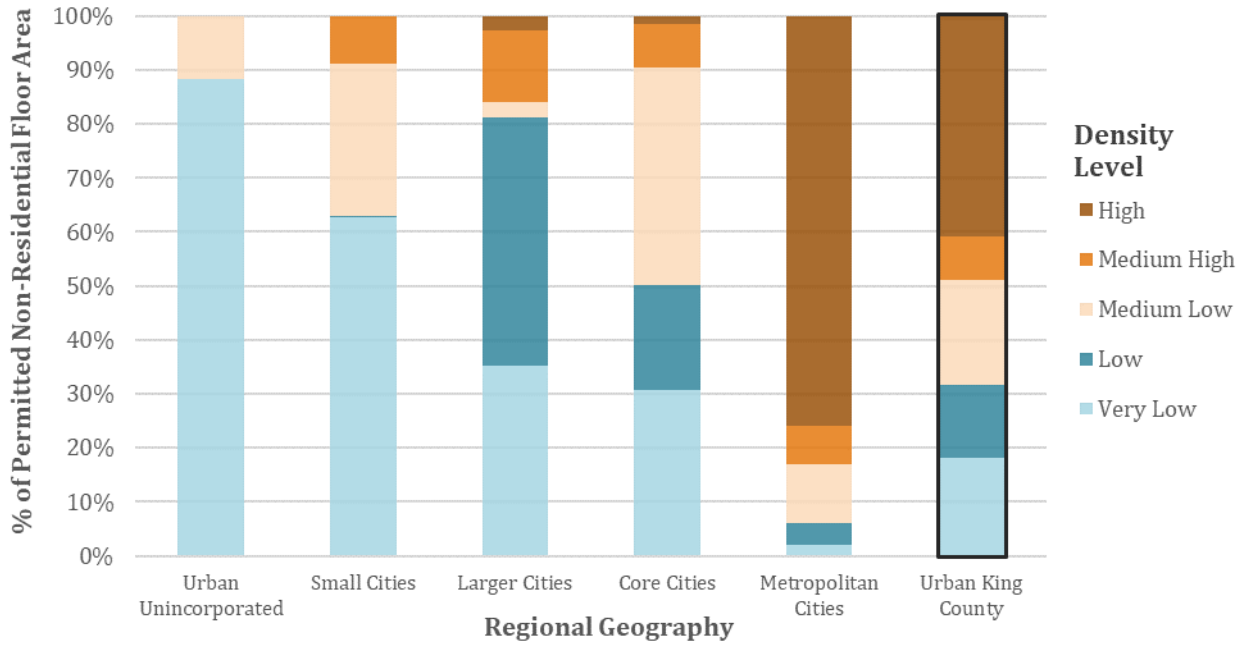
Exhibit 26. Permitted Non-Residential Development by Achieved Density Level, 2012-2018



Source: BERK, 2021, based on permit data summarized by King County jurisdictions.

Exhibit 27 shows the distribution of achieved non-residential density for each Regional Geography. About 75% of build square footage in Metropolitan Cities was developed at High density. In all other Regional Geographies, Low or Very Low development accounted for half or more of all square footage.

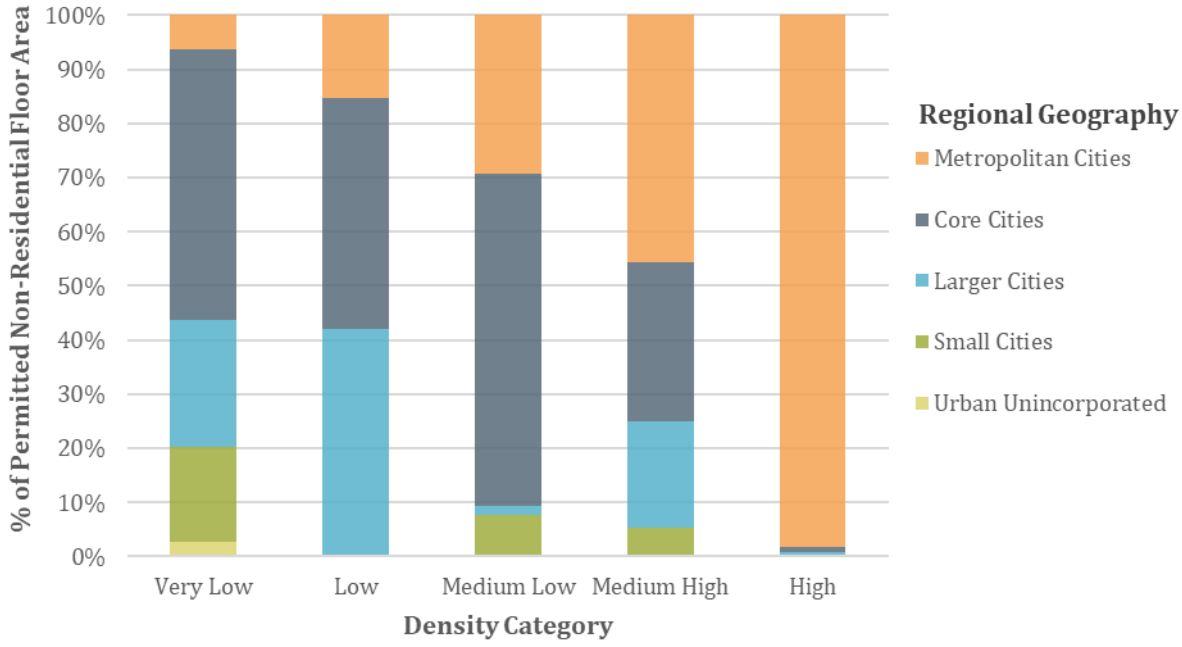
Exhibit 27. Permitted Non-Residential Development by Regional Geography and Achieved Density, 2012-2018



Source: BERK, 2021, based on permit data summarized by King County jurisdictions.

Exhibit 28 presents the same permit data transposed to show the distribution by Regional Geography for each achieved density level. Not surprisingly, nearly all High-density development occurred in Metropolitan Cities. Development at other density levels was spread out across different Regional Geographies. The one exception is Urban Unincorporated, which saw very limited development overall and mostly in Very Low density projects.

Exhibit 28. Permitted Non-Residential Development by Achieved Density and Regional Geography, 2012-2018



Source: BERK, 2021, based on permit data summarized by King County jurisdictions.

Rural Development Trends

While the purpose of the Urban Growth Capacity Report is analyze urban development trends and to determine whether King County and its cities have sufficient capacity within the Urban Growth Area to accommodate the county's forecasted population and job growth, RCW 36.70A.215 (2) requires analysis of land uses and development outside the UGA. Such information can be useful in analysis of residential trends and to assist the county in directing its programs to areas of greatest need. It is also helpful in analyzing linkages between urban and rural growth trends. This report examines growth trends on rural and resource lands during the 2012-2018 evaluation period.

Rural Areas and Resource Lands in King County

The landscape of King County's rural and resource areas is characterized by extensive forests, small-scale farms, free-flowing streams, and a variety of residential housing mostly at very low densities. There is no growth target for rural or resource areas. Their role is as supplier of resources including timber and agricultural products, and their primary characteristics include:

- Rural areas cover approximately 300 square miles of King County (15% of the land area) including all of Vashon Island and a band of territory east of the contiguous UGA.
- Resource lands, including designated Forest and Agricultural Production Districts and Mineral Lands, cover about 1,350 square miles or nearly 65% of King County's total land area.

- The entire King County UGA, by contrast, covers 460 square miles, less than 22% of the county's land area.
- Together, the rural- and resource-designated areas cover more than three-fourths of the county's land area but contain only 130,000 people, about 6% of the county's total population.
- The Countywide Planning Policies (CPPs) assume only a small fraction of King County's residential growth will occur in rural- and resource areas; staff projected about two percent of countywide growth for the 2006-35 planning period.

Growth Trends Outside the Urban Growth Area

A major goal of the King County Comprehensive Plan and the Countywide Planning Policies is to focus growth into the Urban Growth Area. As Ch. 4 Growth Capacity demonstrates, King County's Urban Growth Area has sufficient capacity to accommodate its entire growth target. Prior to the adoption of the Growth Management Act in 1991, about 10% to 14% of each year's new residential units were built outside the UGA. Following adoption of the county Comprehensive Plan in 1994, the percent of growth in rural areas has declined precipitously. As growth returned to King County following the Great Recession, permitting in rural King County increased, but remains a small percentage of the county's overall growth. Since 2012, only about 1.5% of new units have been developed outside the UGA, as shown in Exhibit 29. These findings demonstrate that King County is succeeding in directing growth to, and accommodating growth within, the Urban Growth Areas.

Exhibit 29. Permit Trends on Rural and Resource Lands

Year	Total Units Permitted	Units Permitted in the Rural Area	Rural Percent of County total
2012	12,191	92	0.8%
2013	11,688	138	1.2%
2014	13,350	201	1.5%
2015	13,620	215	1.6%
2016	13,300	244	1.8%
2017	14,700	278	1.9%
2018	17,400	260	1.5%

Source: King County/Puget Sound Regional Council, 2020

Key Development Findings on Rural and Resource Lands

The major findings regarding land uses and activities in the rural areas and on resource lands are as follows:

- There are approximately 48,300 existing housing units on rural and resource lands (approximately 43,500 units on rural, 4,800 units on resource lands).
- An average of about 200 of new residential units per year were permitted on rural and resource lands between 2012 and 2018.
- This small amount of growth is expected to continue, consistent with the assumption in the CPPs of a small fraction of residential growth occurring in rural areas and resource lands.
- Of approximately 66,000 total parcels in rural and resource areas, about 56,000 are developed with residential, commercial, public or open space use. Another 10,000 parcels are vacant or in an accessory use.
- Many parcels in rural areas are smaller than the minimum lot size, because they were created long ago, before current zoning was in place.
- At current rates of residential permitting, the rural area will still have undeveloped lots at the end of the planning period in 2035.

For commercial and industrial uses on rural and resource lands, the major finding was as follows:

- There are approximately 150 vacant parcels zoned for commercial or industrial uses in rural and resource lands, covering over 2,000 acres.
- Approximately 40 of these parcels are on designated resource land, accounting for over half of the vacant non-residential area, nearly 1,200 acres.
- A limited amount of non-residential development occurred on rural parcels from 2012-2018. A majority of the non-residential development was school or church buildings.
- Excluding the school, church and accessory development, approximately 50,000 square feet of development was constructed across 6 different developments.

Ch. 4 Growth Capacity

This chapter presents urban growth capacity for housing and jobs in King County. Summaries include capacity for the county as a whole, individual jurisdictions, and a set of five Regional Geographies for grouping individual jurisdictions based on the Puget Sound Regional Council (PSRC) VISION 2050 growth plan: Metropolitan Cities, Core Cities, High Capacity Transit (HCT) Communities, Cities & Towns, and Urban Unincorporated areas.

PSRC designated three unincorporated potential annexation areas (PAAs), Federal Way PAA, North Highline PAA, and Renton PAA, as HCT Communities. However, for capacity results in this chapter, data for HCT Communities excludes all unincorporated areas and groups the PAAs into the Urban Unincorporated areas. See Exhibit 30 for a map of jurisdictions by Regional Geography.

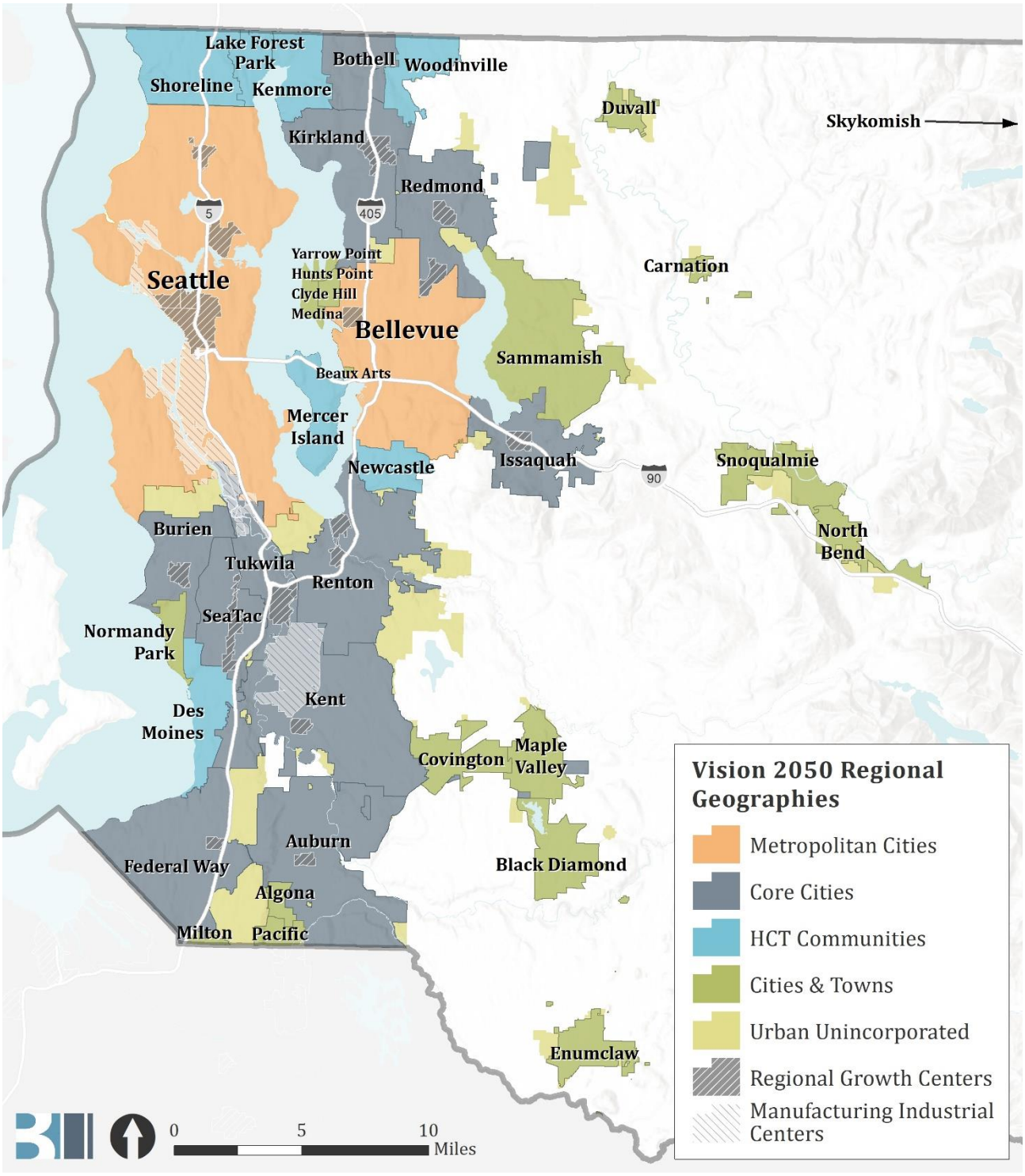
The Regional Geographies used in this chapter and in the jurisdictional profiles in Chapter 7 should not be confused with the older VISION 2040 Regional Geographies discussed in Chapter 4. These new geographies are consistent with those used in the VISION 2050 multicounty planning policies developed through PSRC in 2020, although all unincorporated urban areas are included in the urban unincorporated category.

General Findings

As a whole, King County has growth capacity of 406,124 housing units and 612,632 jobs in the urban areas of the county. This capacity is distributed within jurisdictions across the county, as shown in Exhibit 31. This exhibit breaks down both housing and employment capacity by VISION 2050 Regional Geography, and it shows the share of capacity by jurisdiction within each geography. Note that data for cities that straddle two counties include only the King County portion.[8]

[8] These cities include Auburn, Bothell, Milton, and Pacific.

Exhibit 30. Map of VISION 2050 Regional Geographies



Sources: PSRC VISION 2050; BERK, 2021.

Exhibit 31. Housing and Job Capacity by VISION 2050 Regional Geography and Jurisdiction

Jurisdiction	Total Housing Capacity (Units)	Share of Housing Capacity in Regional Geography	Total Job Capacity (Jobs)	Share of Job Capacity in Regional Geography
Metropolitan Cities				
Bellevue	26,859	13%	117,241	32%
Seattle	172,440	87%	245,598	68%
Subtotal	**199,298**		**362,839**	
Core Cities				
Auburn	9,151	7%	7,927	4%
Bothell	6,370	5%	9,015	4%
Burien	10,816	8%	752	0%
Federal Way	14,077	11%	29,500	15%
Issaquah	14,103	11%	15,561	8%
Kent	11,248	9%	28,995	14%
Kirkland	13,352	10%	18,139	9%
Redmond	17,777	14%	15,851	8%
Renton	16,503	13%	26,210	13%
SeaTac	6,396	5%	15,565	8%
Tukwila	8,219	6%	33,749	17%
Subtotal	**128,011**		**201,264**	
HCT Communities				
Des Moines	8,386	17%	2,410	14%
Kenmore	4,135	9%	3,881	23%
Lake Forest Park	1,870	4%	691	4%
Mercer Island	1,607	3%	961	6%
Newcastle	3,234	7%	680	4%
Shoreline	25,590	53%	3,953	23%
Woodinville	3,705	8%	4,373	26%
Subtotal	**48,527**		**16,950**	
Cities & Towns				
Algona	266	1%	313	1%
Beaux Arts	2	0%	0	0%
Black Diamond	8,434	37%	3,188	11%
Carnation	704	3%	2,864	10%
Clyde Hill	5	0%	28	0%
Covington	4,609	20%	8,421	28%
Duvall	1,343	6%	681	2%
Enumclaw	1,308	6%	1,152	4%
Hunts Point	5	0%	0	0%
Maple Valley	2,221	10%	1,784	6%
Medina	8	0%	0	0%
Milton	66	0%	1,213	4%
Normandy Park	135	1%	35	0%
North Bend	2,098	9%	5,759	19%
Pacific	137	1%	77	0%
Sammamish	1,144	5%	305	1%
Skykomish	29	0%	0	0%
Snoqualmie	372	2%	4,079	14%
Yarrow Point	17	0%	0	0%
Subtotal	**22,903**		**29,899**	
Urban Unincorporated				
Subtotal	**7,386**		**1,680**	
Total Urban Capacity:	**406,124**	**Housing Units**	**612,632**	**Jobs**

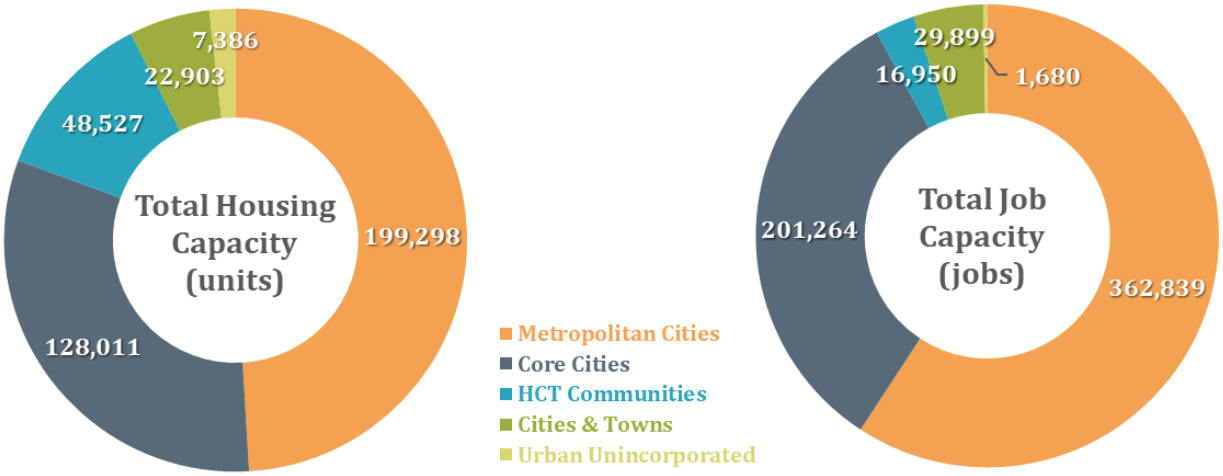
Sources: BERK, 2021; Data provided by individual King County jurisdictions, 2020-2021.

Findings by Regional Geography

Exhibit 32 summarizes housing and job capacity in King County, with breakdowns by VISION 2050 Regional Geographies. Nearly half of all housing capacity is in the Metropolitan Cities (Seattle and Bellevue), with another 32% of capacity located in Core Cities. Job capacity is even more focused in Metropolitan Cities and Core Cities. Only 20% of housing capacity and less than 9% of all job capacity is located in the HCT Communities, Cities & Towns, or Urban Unincorporated categories. HCT Communities have a much higher relative share of housing capacity with 12% of countywide total, compared to only 3% of countywide job capacity.

Exhibit 32. Capacity Summary, King County – VISION 2050 Geographies

VISION 2050 Regional Geographies	Total Housing Capacity			Total Job Capacity		
	Units	Percent		Jobs	Percent	
Metropolitan Cities	199,298	49%		362,839	59%	
Core Cities	128,011	32%		201,264	33%	
HCT Communities	48,527	12%		16,950	3%	
Cities & Towns	22,903	6%		29,899	5%	
Urban Unincorporated	7,386	2%		1,680	0.3%	
Total Urban Capacity	**406,124**	**Housing Units**		**612,632**	**Jobs**	



Sources: BERK, 2021; Data provided by individual King County jurisdictions, 2020-2021.

Residential Capacity

Exhibits in this section are grouped both by VISION 2050 Regional Geographies, as well as by assumed density level. For capacity calculations, individual jurisdictions selected an assumed density level for each zone based on a combination of factors, including the achieved density measured in historic development activity as well as current planned density. See Chapter 3 for more information about achieved density.

For residential capacity, each zone is categorized by density level according to the assumed dwelling units per acre (du/acre) for future development. Exhibits reporting residential capacity throughout the rest of this report rely on the following density levels, consistent with the categorization of achieved density levels in Ch. 3.

Exhibit 33. Assumed Density Levels – Residential Capacity (dwelling units per acre)

Very Low	Low	Medium-Low	Medium-High	High
Less than 4	**4 - 10**	**10 – 24**	**24 – 48**	**Greater than 48**

Source: BERK, 2021

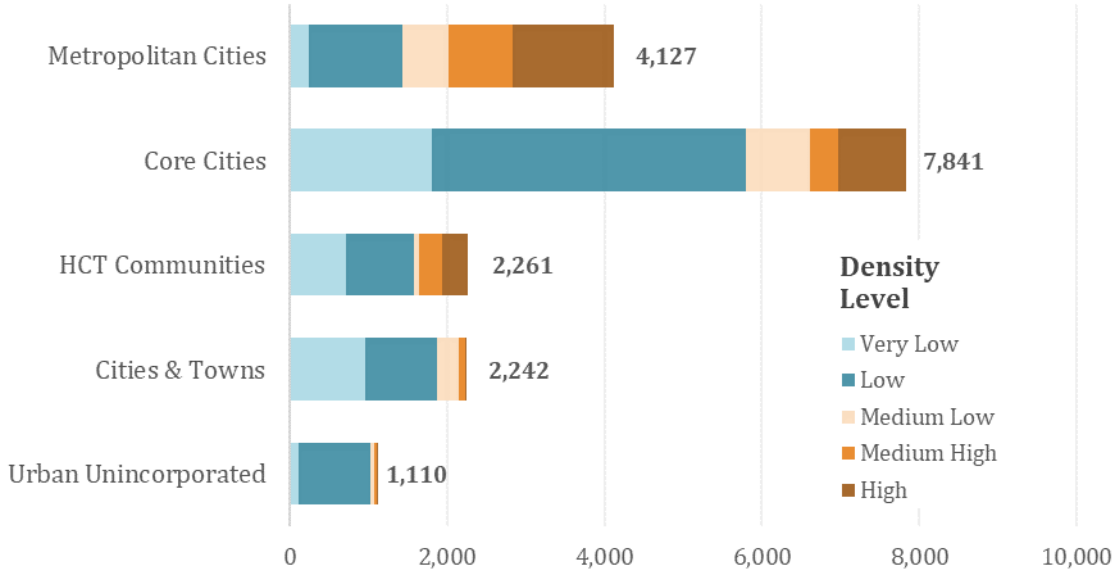
Residential Land Supply

Exhibit 34 and Exhibit 35 show the breakdown of the net buildable land for residential development after all deductions have been made. Deductions include the removal of non-buildable critical acres and critical area buffers, infrastructure constrained areas, future rights of way and usage for public purpose, and market factor. It is important to emphasize that these exhibits do not show growth capacity for new housing units, rather they show the acreage of land available for residential development.

There are 17,581 acres of buildable land available for residential development. Much of that land is grouped in the very low and low assumed density levels. This exhibit highlights the relative higher amount of land available in Very Low and Low density levels.

Exhibit 34. Buildable Residential Land by Assumed Density (acres)

Vision 2050 Geography	Assumed Density					Total	
	Very Low	Low	Medium Low	Medium High	High	#	%
Metropolitan Cities	244	1,190	590	810	1,293	4,127	23%
Core Cities	1,807	3,985	819	363	867	7,841	45%
HCT Communities	712	864	63	302	321	2,261	13%
Cities & Towns	965	906	284	76	11	2,242	13%
Urban Unincorporated	108	921	41	33	6	1,110	6%
Urban King County	**3,837**	**7,865**	**1,797**	**1,584**	**2,498**	**17,581**	**100%**



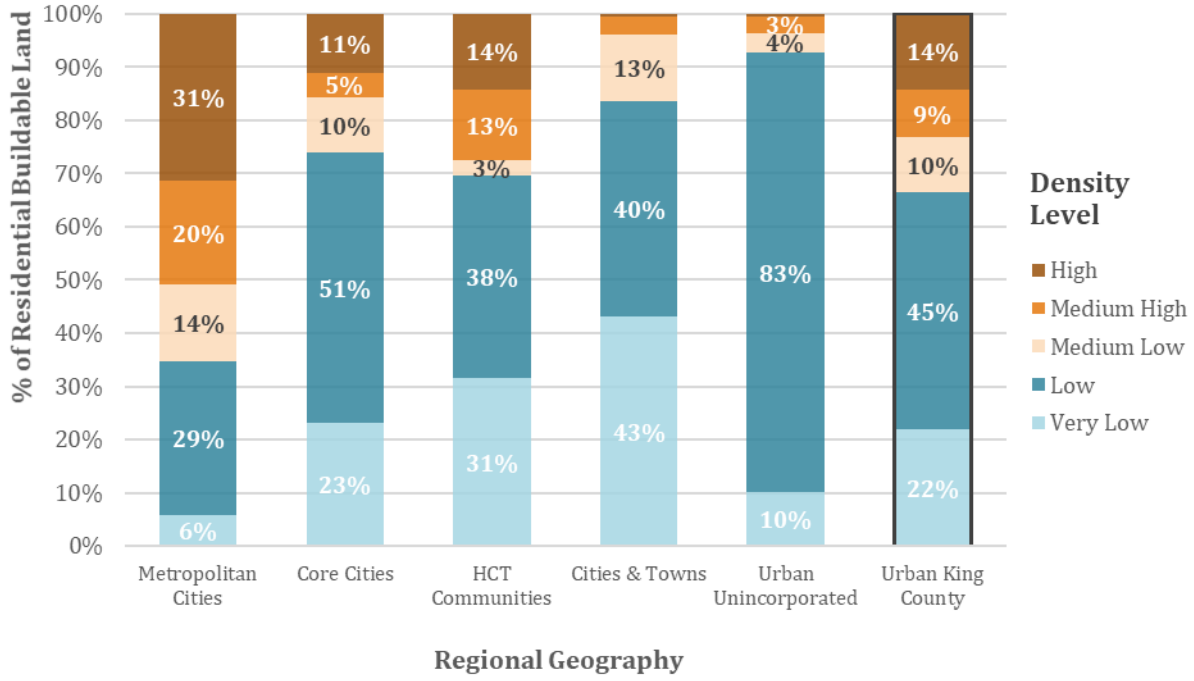
Sources: BERK, 2021; Data provided by individual King County jurisdictions, 2020-2021.

Exhibit 35 shows similar data presented by percent breakdown by geography by assumed density level as opposed to total acres of residential land supply. Metropolitan Cities have the greatest share of land supply allocated for higher density development, with 51% of available land for residential development falling into Medium-High or High density zones. The share of land in these density levels is much lower in the other Regional Geographies. HCT Communities have a somewhat higher share of Medium-High and High density land supply (27%) than Core Cities (16%), likely reflecting a relatively larger share of land in zones established to support transit-oriented residential and mixed-use development.

Across the entire county, two-thirds of residential land supply falls into the Low or Very Low density levels, with just 23% of land supply categorized as High density or Medium-High density. While there

is less residential land supply available at the higher density levels, the higher density levels allow for a far larger relative share of housing unit growth capacity, as discussed in the following section.

Exhibit 35. Percent of Residential Buildable Land by Regional Geography and Assumed Density



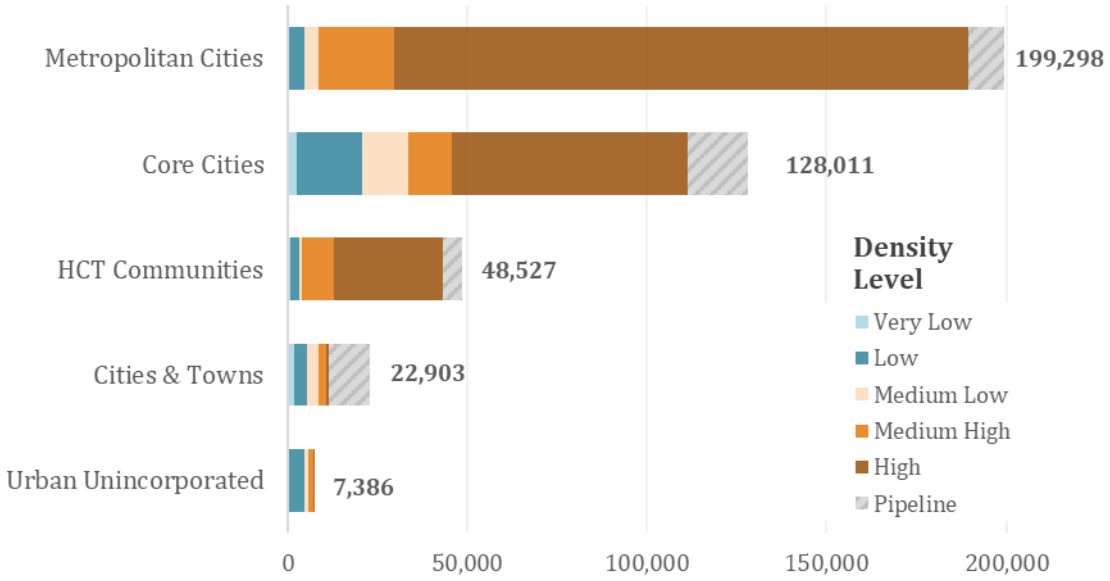
Sources: BERK, 2021; Data provided by individual King County jurisdictions, 2020-2021.

Residential Unit Capacity

Exhibit 36 and Exhibit 37 show residential growth capacity in terms of housing units, broken down by assumed density level and pipeline capacity. Pipeline capacity refers to housing units or non-residential development that has been permitted for construction, but not yet built as of the baseline for this study of January 1, 2019. Parcels with pipeline development are set aside and not counted in the remaining capacity broken down by assumed density level. See Chapter 3 for a more detailed discussion.

Exhibit 36. Housing Capacity by Assumed Density (units)

Vision 2050 Geography	Assumed Density						Total	
	Very Low	Low	Medium Low	Medium High	High	Pipeline	#	%
Metropolitan Cities	438	4,308	3,803	21,053	159,711	9,984	199,298	49%
Core Cities	2,555	18,307	12,778	11,991	65,645	16,734	128,011	32%
HCT Communities	622	2,649	679	8,851	30,486	5,239	48,527	12%
Cities & Towns	1,846	3,558	3,265	1,860	770	11,604	22,903	6%
Urban Unincorporated	68	4,656	964	1,400	298	0	7,386	2%
Urban King County	**5,529**	**33,479**	**21,490**	**45,155**	**256,910**	**43,561**	**406,124**	**100%**

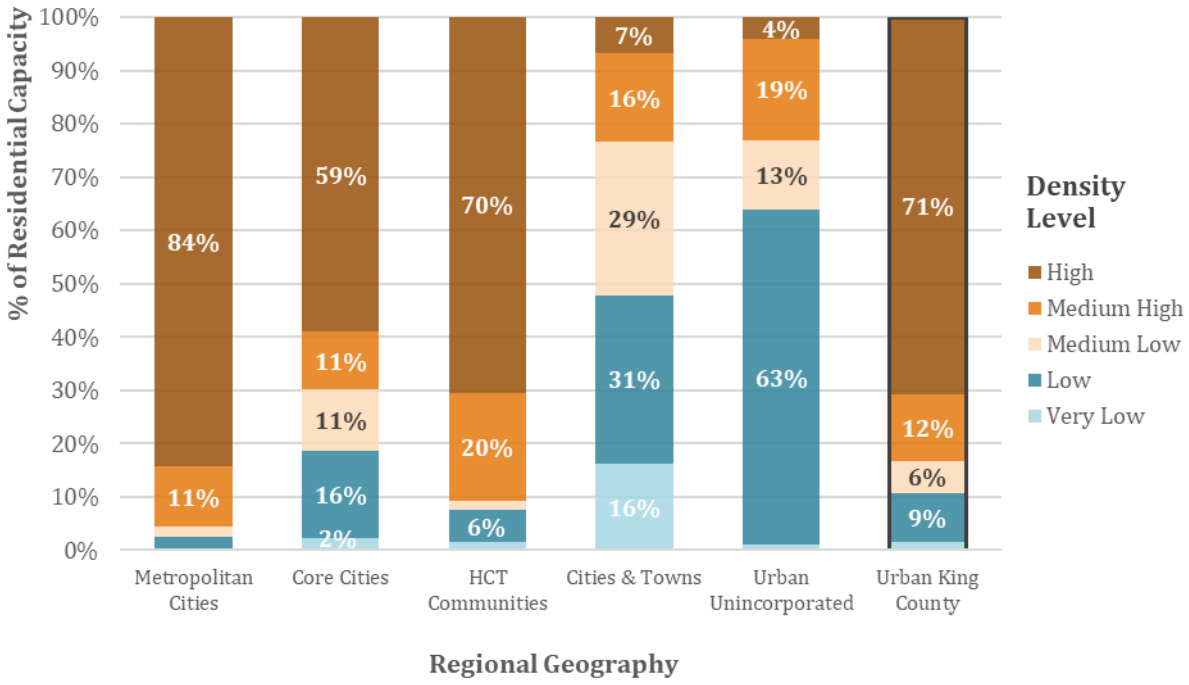


Sources: BERK, 2021; Data provided by individual King County jurisdictions, 2020.

There is growth capacity for nearly 200,000 housing units in Metropolitan Cities, followed by capacity for roughly 128,000 housing units in Core Cities. These two VISION 2050 geographies make up about 80% of urban housing unit capacity in King County. The remaining 20% of capacity found in HCT Communities, with capacity for just under 50,000 housing units; Cities & Towns, with capacity for nearly 23,000 housing units; and the Urban Unincorporated areas, with capacity for nearly 7,400 housing units.

Exhibit 37 shows the percent breakdown of housing unit capacity by assumed density level. Countywide, 71% of urban housing capacity (nearly 257,000 units) is in High density zones (see also Exhibit 36). Almost all of the housing capacity in Metropolitan Cities is in High density zones, and in Core Cities and HCT Communities, the majority of capacity is in High and Medium-High density zones. Cities & Towns and Urban Unincorporated areas have a much greater share of capacity in Low and Very Low density zones.

Exhibit 37. Percent of Non-Pipeline Housing Unit Capacity by Assumed Density



Sources: BERK, 2021; Data provided by individual King County jurisdictions, 2020.

Employment Capacity

Exhibits in this section are grouped both by VISION 2050 Regional Geographies, as well as by assumed density level. For non-residential capacity, each zone is categorized by density level according to the assumed floor area ratio (FAR) for future development. Exhibits reporting non-residential capacity throughout the rest of this report rely on the following density levels, consistent with the categorization of achieved density in Ch. 3.

Exhibit 38. Assumed Density Levels – Non-Residential Capacity (FAR)

Very Low	Low	Medium-Low	Medium-High	High
Less than 0.35	0.35 – 0.5	0.5 – 1.0	1.0 – 3.0	Greater than 3.0

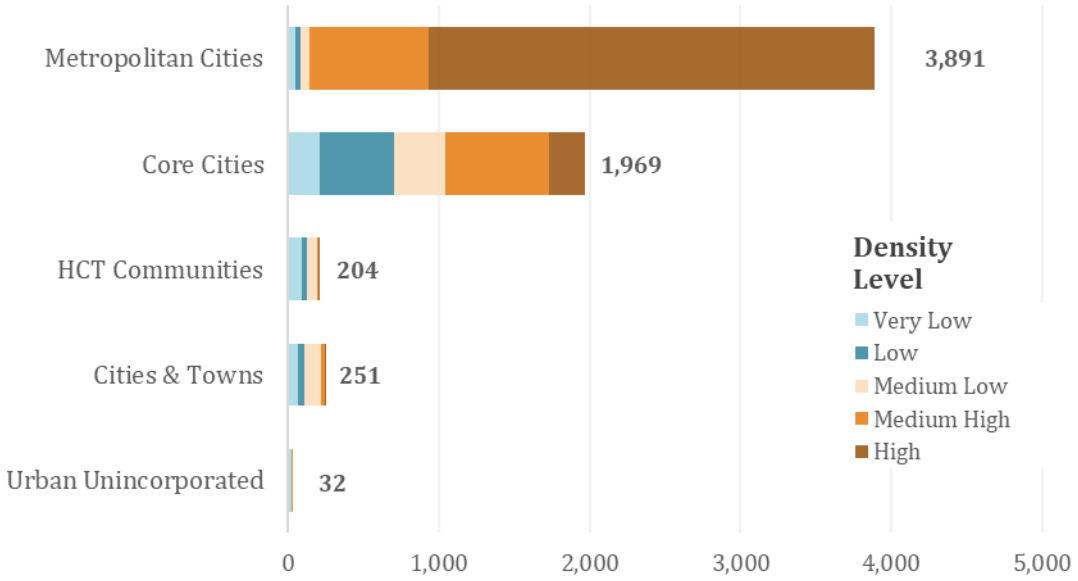
Source: BERK, 2021.

Nonresidential Land Supply

Exhibit 39 and Exhibit 40 show the breakdown of the net buildable land for non-residential development after all deductions have been made. This also includes removal of critical acres and critical area buffers, infrastructure constrained areas, future rights-of-way and usage for public purpose, and market factor. It is important to emphasize that these exhibits do not show growth capacity, rather they show the dispersion of land available for non-residential growth.

Exhibit 39. Buildable Non-Residential Land by Assumed Density (acres)

Geography	Assumed Density Level					Total	
	Very Low	Low	Medium Low	Medium High	High	#	%
Metropolitan Cities	51	35	58	788	2,960	3,891	61%
Core Cities	212	490	343	691	232	1,969	31%
HCT Communities	93	32	73	5	1	204	3%
Cities & Towns	67	45	111	24	5	251	4%
Urban Unincorporated	27	0	0	5	0	32	1%
Urban King County	**450**	**602**	**584**	**1,512**	**3,199**	**6,347**	**100%**

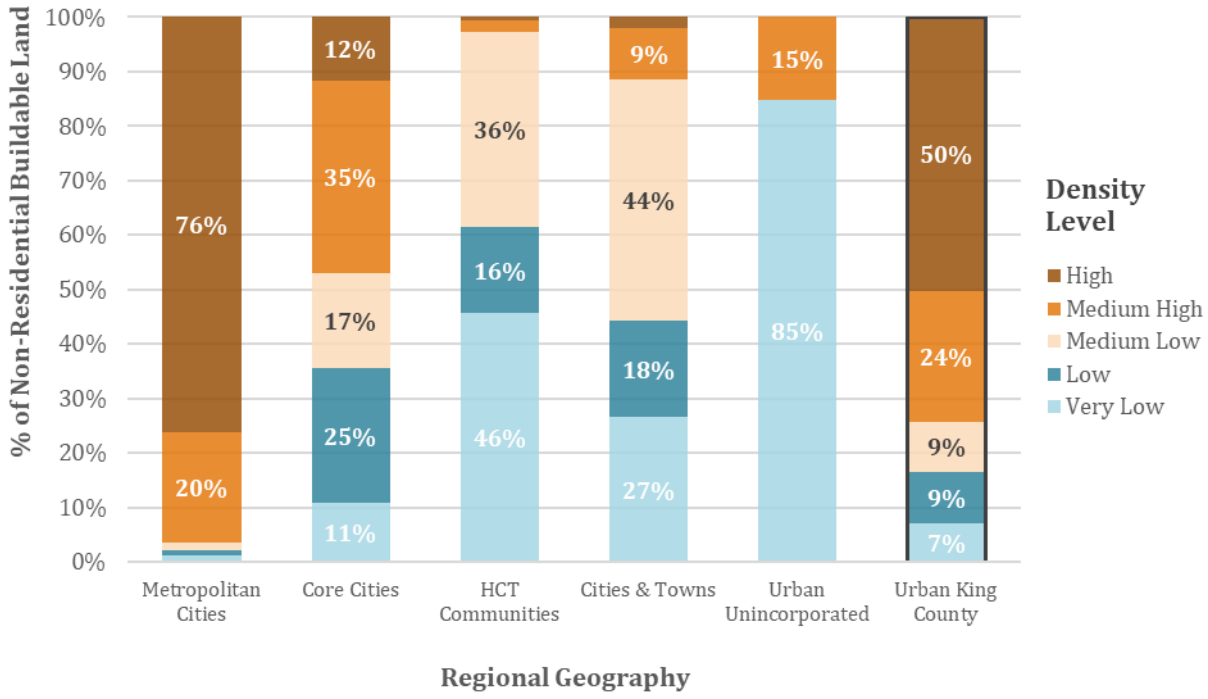


Sources: BERK, 2021; Data provided by individual King County jurisdictions, 2020-2021.

There are roughly 6,350 acres of buildable land available for non-residential development. The overwhelming majority of non-residential land supply is focused in Metropolitan Cities and Core Cities, consistent with the location of regional growth center (RGCs) and manufacturing-industrial centers (MICs) in the VISION 2050 plan (shown in Exhibit 30).

HCT Communities, Cities & Towns, and Urban Unincorporated areas have far less land available for non-residential development, totaling just 8% of total non-residential urban land supply across the county.

Exhibit 40. Percent of Non-Residential Buildable Land by Assumed Density



Note: Metropolitan Cities includes estimated breakdowns of residential/non-residential land supply in Seattle.
Sources: BERK, 2021; Data provided by individual King County jurisdictions, 2020-2021.

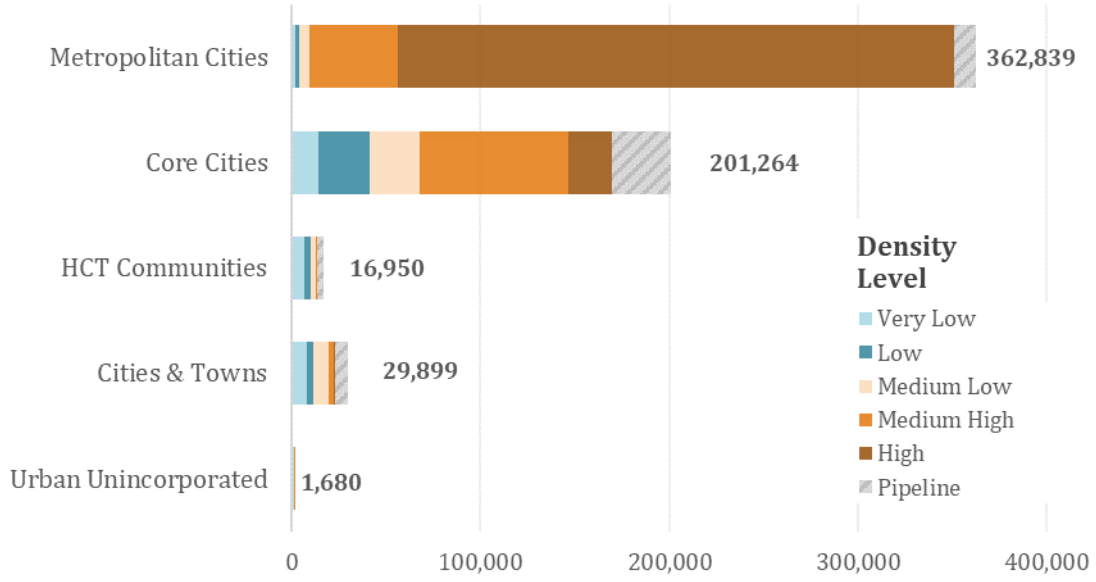
Across all of urban King County, half of land available for non-residential development is at the High assumed density level, with the 24% in the Medium-High level, and the remaining land supply spread across the lower assumed density levels. Similar to the residential side of land supply, the Metropolitan Cities have the highest share of buildable land in the High density level, with comparatively less land available for non-residential development available in the Medium-Low, Low, and Very Low density levels. The breakdown is more varied amongst the Core Cities, HCT Communities, and Cities & Towns, with Urban Unincorporated areas being comprised of almost entirely Very Low density land supply for non-residential development.

Capacity for Job Growth

Exhibit 41 and Exhibit 42 show non-residential growth capacity in terms of jobs, broken down by assumed density level and pipeline capacity.

Exhibit 41. Job Capacity by Assumed Density (jobs)

Geography	Assumed Density Level						Total	
	Very Low	Low	Medium Low	Medium High	High	Pipeline	#	%
Metropolitan Cities	1,699	2,114	5,517	46,636	295,230	11,645	362,839	59%
Core Cities	13,828	27,289	26,427	78,837	23,229	31,653	201,264	33%
HCT Communities	6,404	3,885	2,586	686	124	3,265	16,950	3%
Cities & Towns	7,668	3,761	8,113	2,725	747	6,884	29,899	5%
Urban Unincorporated	1,251	0	0	429	0	0	1,680	0%
Total	**30,850**	**37,049**	**42,643**	**129,313**	**319,331**	**53,446**	**612,632**	**100%**



Sources: BERK, 2021; Data provided by individual King County jurisdictions, 2020.

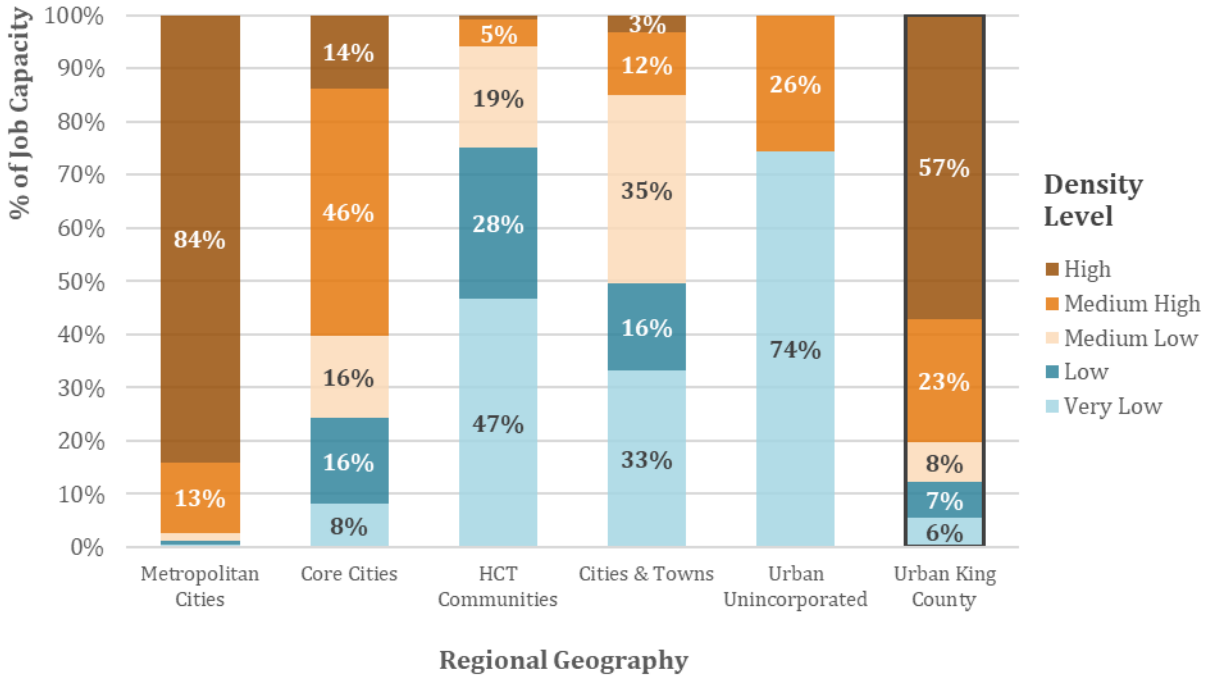
The Metropolitan Cities have capacity for over 360,000 jobs, 59% of total urban job capacity in King County. Most of this capacity in both Metropolitan Cities and countywide is in the High assumed density level. Countywide, there is capacity for 319,331 jobs in the High assumed density level, with 295,230 of those found in Metropolitan Cities.

Capacity for another 201,264 jobs is found in Core Cities, 33% of total urban job capacity in King County. This capacity is more evenly spread across the various assumed density levels, with a higher concentration in the Medium-High level.

There is comparatively less job capacity elsewhere in the county, with HCT Communities, Cities & Towns, and Urban Unincorporated areas only comprising roughly 8% of total job capacity, or just over 47,000 jobs.

Exhibit 42 shows the percent breakdown of job capacity by density levels within the VISION 2050 Regional Geographies.

Exhibit 42. Percent of Non-Pipeline Job Capacity by Assumed Density



Sources: BERK, 2021; Data provided by individual King County jurisdictions, 2020.

Nearly all the job capacity in Metropolitan Cities is in the High or Medium-High density zones, similar to the residential capacity results. In Core Cities, the largest share of job capacity is in the Medium-High assumed density level, while in HCT Communities, Cities & Towns, and Urban Unincorporated areas, job capacity is more spread across the assumed density levels.

Countywide, 80% of job capacity in urban areas is found in High or Medium-High density zones, with remaining capacity spread somewhat evenly across Medium-Low, Low, and Very Low density zones.

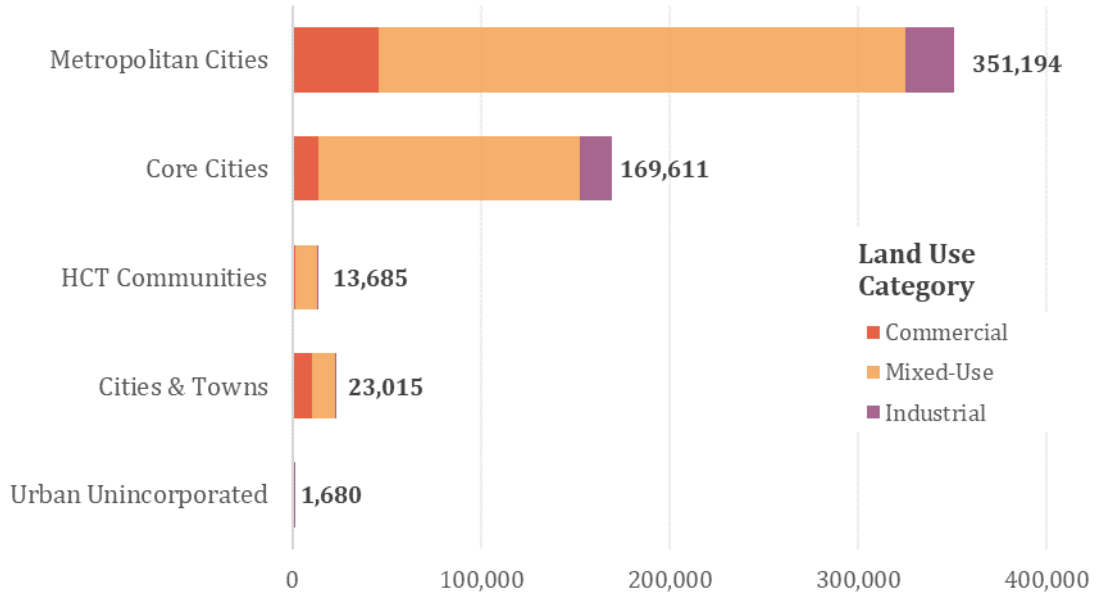
Job Capacity by Land Use Type

Throughout this study, jurisdictions were asked to categorize zones with potential for non-residential development by broad land use types: commercial, mixed-use, and industrial. The following section presents non-pipeline job capacity by those land use types and broken down by VISION 2050 Regional Geography. It is important to note that some jurisdictions allow for commercial development in industrial zones, industrial development in commercial zones, and multiple uses in mixed-use zones.[9]

[9] Since many jurisdictions allow for non-commercial uses in some commercial zones, a portion of job growth in commercial zones is likely to be from non-commercial jobs. Therefore, this study uses the phrase 'job capacity in commercial zones' instead of 'commercial job capacity' to describe job capacity by land use type.

Exhibit 43. Non-Pipeline Job Capacity by Land Use Type (jobs)

Geography	Land Use Type			Total
	Commercial	Mixed-Use	Industrial	
Metropolitan Cities	45,952	279,313	25,929	351,194
Core Cities	14,033	138,563	17,015	169,611
HCT Communities	1,813	11,564	308	13,685
Cities & Towns	10,271	12,180	565	23,015
Urban Unincorporated	429	574	677	1,680
Urban King County	**72,499**	**442,193**	**44,494**	**559,185**

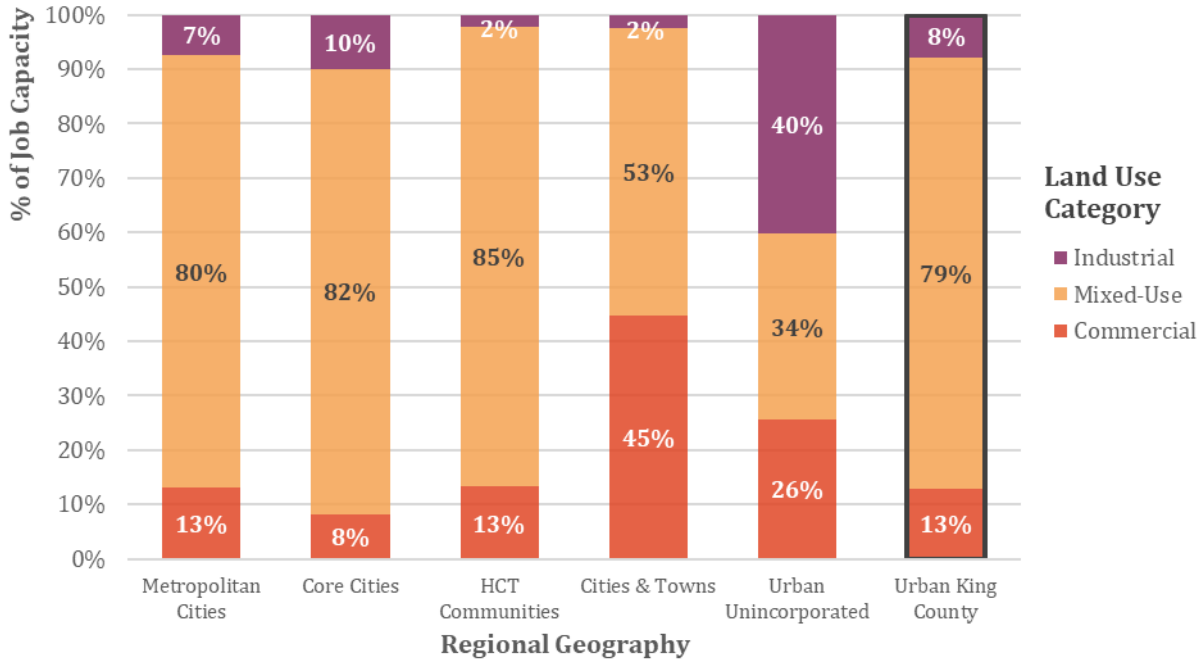


Sources: BERK, 2021; Data provided by individual King County jurisdictions, 2020.

Across all geographies, the majority of job capacity is found in mixed-use zones. In urban King County, there is capacity for over 442,193 jobs in mixed-used zones, over 72,000 jobs in commercial zones, and nearly 45,000 jobs in industrial zones. In Metropolitan Cities alone, there is capacity for near 280,000 jobs in mixed-use zones.

Metropolitan Cities and Core Cities have the greatest amount of job capacity in industrial zones, with HCT Communities and Cities & Towns having a relative higher amount of job capacity in mixed-use and commercial zones.

Exhibit 44. Percent of Non-Pipeline Job Capacity by Land Use Type



Sources: BERK, 2021; Data provided by individual King County jurisdictions, 2020.

In Metropolitan Cities, Core Cities, and HCT Communities, over 80% of job capacity is found in mixed-use zones. Countywide, 79% of urban job capacity is found in mixed-use zones. HCT Communities and Cities & Towns have a small share of job capacity in industrial zones, just 2%. Cities & Towns have the highest share of job capacity in commercial zones, at 45%, whereas all other geographies have between just 8%-26% of job capacity found in commercial zones.

Ch. 5 Reasonable Measures

As discussed in Chapter 1, the GMA requires that certain counties and cities, including King County, conduct an analysis to determine if land is being used efficiently in urban growth areas (UGAs), and to determine if growth is occurring consistent with adopted comprehensive plans. If this review and evaluation demonstrates inconsistencies between actual growth and planning goals, the jurisdiction is required to identify Reasonable Measures that could be taken to improve consistency other than adjusting UGA boundaries. Examples of Reasonable Measures include rezones, subarea planning, permitting process streamlining, or development incentives. Any Reasonable Measures selected to address inconsistencies are required to be adopted in comprehensive plans and monitored annually. Prior to the Urban Growth Capacity study, King County and its jurisdictions did not have any adopted Reasonable Measures.

This chapter reviews findings of the Urban Growth Capacity Study to determine whether new Reasonable Measures are necessary to align growth trends with planning goals or to ensure there is sufficient capacity for accommodating growth. The process includes three steps. First, the County measured consistency between actual growth and planning goals using a set of standard criteria. Second, jurisdictions reviewed findings and considered circumstances that may have contributed to observed inconsistencies. Third, based on this review, jurisdictions determined if Reasonable Measures were necessary to address observed inconsistencies. The following sections describe this process and document outcomes.

Criteria for Evaluating Consistency

The first step was developing criteria for determining where there are potential inconsistencies between actual growth trends and planning goals. King County developed these criteria with input from the UGC Technical Committee and Interjurisdictional Team. Exhibit 45 presents each consistency check, as well as a summary of the method used to evaluate consistency.

Exhibit 45. Criteria for Identifying Potential Inconsistencies

Consistency Check	Evaluation Method/Criteria
Are achieved densities consistent with planned densities?	▪ Group all zones by planned/allowed density level. ▪ For each density level, calculate aggregate achieved density for all development observed 2012-2018. ▪ Compare aggregate achieved density to the range of allowed densities among all zones in that density level. There is a potential inconsistency if *both* of the following conditions are true: ○ Average achieved density is outside of this range of allowed density. ○ Average achieved density is below 50% of the max allowed density.
Is the rate of growth consistent with the 2035 growth target?	▪ Calculate the elapsed 2035 growth target for the period of 2006-2018: about 41% of the total growth target. ▪ Compare actual growth to elapsed target. If actual growth is less than 50% of the elapsed target, then there is a potential inconsistency.
Is there capacity for accommodating the 2035 growth target?	▪ Calculate the remaining growth needed to achieve the 2035 growth target. ▪ If capacity for growth is less than the remaining growth target, then there is a potential inconsistency.

Summary of Potential Inconsistencies

This section summarizes the findings of the consistency checks described above.

Achieved Densities

Exhibit 46 summarizes the analysis of potential inconsistencies between average achieved residential densities between 2012 and 2018, and density levels allowed under zoning. Consistency is evaluated for development within each of the five density levels used for summarizing growth trends and capacity throughout this report. The symbols indicate where there is and is not a potential inconsistency identified. A more detailed presentation of the data that backs up both of these exhibits can be found in Ch. 7 Profiles of Cities and Unincorporated Areas.

Exhibit 47 presents this same summarization for achieved non-residential densities. It shows many cities with average achieved densities below 50% of maximum allowed density for the zone category. When interpreting these findings, keep in mind that maximum allowed densities in this report are measured in terms of floor area ratio (FAR). Many jurisdictions do not use FAR as a standard of density, and reporting maximum allowed densities often involved converting development standards such as height, bulk, and/or setback requirements to very roughly estimate FAR. In reality, achievable FAR under these development standards may vary significantly by parcel. And some requirements such as building heights may be in place to accommodate portions of structures (e.g., facades, chimneys, or signage) and were never intended to accommodate multistory buildings. These kinds of issues were considered in the jurisdictional review of potential inconsistency findings, as discussed in the following section.

Exhibit 46. Consistency of Achieved Residential Densities with Planned Densities

	Very Low	Low	Medium-Low	Medium-High	High
Metropolitan Cities					
Bellevue	●	●	●	■	●
Seattle	N/A	●	■	●	●
Core Cities					
Auburn	▼	■	▲	N/A	▲
Bothell	■	●	▼	N/A	●
Burien	▲	■	■	■	▲
Federal Way	●	■	▲	N/A	▼
Issaquah	▲	▲	▲	▼	▼
Kent	▲	▼	▼	N/A	▼
Kirkland	●	●	●	▼	●
Redmond	▲	●	●	▲	●
Renton	▲	●	●	■	●
SeaTac	N/A	●	■	N/A	▲
Tukwila	N/A	■	▲	N/A	●
HCT Communities					
Des Moines	●	■	●	N/A	●
Kenmore	▲	●	▲	■	▲
Lake Forest Park	▼	●	●	N/A	■
Mercer Island	■	●	N/A	■	■
Newcastle	N/A	●	N/A	N/A	▼
Shoreline	N/A	●	■	▼	●
Woodinville	■	●	N/A	▼	N/A
Cities & Towns					
Algona	N/A	■	▼	N/A	N/A
Beaux Arts	N/A	▼	N/A	N/A	N/A
Black Diamond	N/A	▼	▼	N/A	N/A
Carnation	N/A	●	N/A	■	▼
Clyde Hill	■	N/A	N/A	N/A	N/A
Covington	N/A	●	N/A	N/A	▲
Duvall	N/A	●	●	N/A	N/A
Enumclaw	N/A	■	■	N/A	▼
Hunts Point	▼	N/A	N/A	N/A	N/A
Maple Valley	N/A	●	N/A	■	N/A
Medina	●	N/A	N/A	N/A	N/A
Milton	N/A	▼	N/A	N/A	N/A
Normandy Park	▲	■	N/A	N/A	▼
North Bend	N/A	▲	●	▼	N/A
Pacific	▼	▲	N/A	N/A	N/A
Sammamish	▲	▲	▲	N/A	N/A
Skykomish	N/A	▼	N/A	N/A	N/A
Snoqualmie	N/A	■	▲	N/A	N/A
Yarrow Point	■	N/A	N/A	N/A	N/A
Urban Unincorporated					
Unincorporated King County	▲	●	▼	▼	■

Symbol Definitions

●	Achieved density is within planned density range
■	Achieved density is within 50% - 100% of category max
▼	Achieved density is less than 50% of category max
▲	Achieved density is higher than the category max
N/A	No development within zones at this density level.

Exhibit 47. Consistency of Achieved Non-Residential Densities with Planned Densities

	Very Low	Low	Medium-Low	Medium-High	High
Metropolitan Cities					
Bellevue	▼	N/A	▼	▼	▼
Seattle	N/A	N/A	N/A	▼	●
Core Cities					
Auburn	N/A	N/A	N/A	N/A	▼
Bothell	N/A	N/A	N/A	▼	▼
Burien	▼	N/A	N/A	▼	▼
Federal Way	▼	N/A	N/A	▼	▼
Issaquah	▼	N/A	N/A	▼	▼
Kent	▼	N/A	N/A	▼	▼
Kirkland	●	▼	■	▲	N/A
Redmond	●	■	N/A	▼	N/A
Renton	▼	N/A	▼	▼	▼
SeaTac	▼	▲	N/A	N/A	N/A
Tukwila	▼	N/A	N/A	N/A	▼
HCT Communities					
Des Moines	N/A	N/A	N/A	▼	▼
Kenmore	N/A	N/A	N/A	▼	N/A
Lake Forest Park	N/A	N/A	N/A	N/A	N/A
Mercer Island	▼	N/A	N/A	N/A	▼
Newcastle	N/A	N/A	N/A	●	▼
Shoreline	▼	N/A	N/A	▼	▼
Woodinville	N/A	N/A	N/A	▼	▼
Cities & Towns					
Algona	N/A	N/A	N/A	N/A	N/A
Beaux Arts	N/A	N/A	N/A	N/A	N/A
Black Diamond	N/A	N/A	N/A	■	N/A
Carnation	N/A	N/A	N/A	▼	N/A
Clyde Hill	N/A	N/A	N/A	N/A	N/A
Covington	N/A	N/A	N/A	N/A	N/A
Duvall	N/A	N/A	N/A	N/A	■
Enumclaw	▼	N/A	▼	▼	▼
Hunts Point	N/A	N/A	N/A	N/A	N/A
Maple Valley	▼	N/A	N/A	▼	▼
Medina	N/A	N/A	N/A	N/A	N/A
Milton	N/A	N/A	N/A	N/A	N/A
Normandy Park	N/A	N/A	N/A	N/A	▼
North Bend	N/A	N/A	▼	▼	N/A
Pacific	N/A	N/A	N/A	▼	N/A
Sammamish	▲	N/A	N/A	N/A	N/A
Skykomish	N/A	N/A	N/A	N/A	▼
Snoqualmie	▼	N/A	N/A	▼	N/A
Yarrow Point	N/A	N/A	N/A	N/A	N/A
Urban Unincorporated					
Unincorporated King County	▼	N/A	N/A	▼	N/A

Symbol Definitions

●	Achieved density is within planned density range
■	Achieved density is within 50% - 100% of category max
▼	Achieved density is less than 50% of category max
▲	Achieved density is higher than the category max
N/A	No development within zones at this density level.

Growth Rates and Capacity

Exhibit 48 summarizes the evaluation of consistency between 2006-2018 growth rates and 2035 growth targets as well as capacity and remaining 2035 target growth. These findings are presented for both housing and employment. The symbols indicate where there is and is not a potential inconsistency identified. More detailed presentations of the data that backs up this evaluation can be found in Exhibit 13. Residential Growth Compared to Targets, 2006-2018, Exhibit 31. Housing and Job Capacity by VISION 2050 Regional Geography and Jurisdiction, and Ch. 7 Profiles of Cities and Unincorporated Areas.

Exhibit 48. Consistency of Growth Rates and Capacity with 2035 Targets

	Growth Rate Consistent with 2035 Targets?		Capacity for Achieving 2035 Targets?	
	Residential	Employment	Residential	Employment
Metropolitan Cities				
Bellevue	●	●	●	●
Seattle	●	●	●	●
Core Cities				
Auburn	●	●	●	!
Bothell	●	●	●	●
Burien	●	!	●	!
Federal Way	●	!	●	●
Issaquah	●	●	●	●
Kent	●	●	●	●
Kirkland	●	●	●	●
Redmond	●	●	●	●
Renton	●	●	●	●
SeaTac	!	!	●	!
Tukwila	!	!	●	●
HCT Communities				
Des Moines	!	!	●	!
Kenmore	●	!	●	●
Lake Forest Park	●	●	●	●
Mercer Island	●	●	●	●
Newcastle	●	●	●	●
Shoreline	●	!	●	!
Woodinville	!	!	●	!
Cities & Towns				
Algona	●	●	●	●
Beaux Arts	●	●	!	●
Black Diamond	!	!	●	●
Carnation	●	!	●	●
Clyde Hill	●	●	●	●
Covington	●	●	●	●
Duvall	●	●	●	●
Enumclaw	!	!	!	●
Hunts Point	●	●	●	●
Maple Valley	●	●	●	●
Medina	●	●	●	●
Milton	●	●	●	●
Normandy Park	●	●	●	●
North Bend	●	●	●	●
Pacific	●	!	●	!
Sammamish	●	●	!	●
Skykomish	●	●	●	●
Snoqualmie	●	●	●	●
Yarrow Point	●	●	●	●
Urban Unincorporated				
Unincorporated King County	●	●	●	!

Growth Rate Symbol Definitions

●	Growth was at least 50% of elapsed growth target.
!	Growth was less than 50% of elapsed growth target.

Capacity Symbol Definitions

●	Capacity for growth exceeds remaining 2035 target.
!	Capacity for growth is less than remaining 2035 target.

Jurisdictional Review of Potential Inconsistencies

In May 2021, King County staff shared the criteria for identifying potential inconsistencies and preliminary findings with individual jurisdictions. They also shared guidance for reviewing these inconsistencies and determining whether Reasonable Measures are necessary. This review included consideration for circumstances that may help determine whether there was an actual inconsistency and explain why such an inconsistency occurred. If the jurisdiction determined that Reasonable Measures would not be necessary to overcome an inconsistency, then they were asked to provide documentation and analysis to explain how the inconsistency would be overcome to achieve the planning goal without adopting additional Reasonable Measures.

The guidance for determining whether potential inconsistencies necessitated Reasonable Measures was grounded in the Department of Commerce's Buildable Lands Guidelines. Jurisdictions were encouraged to consider the following kinds of questions to identify issues that could have impacted development outcomes during the evaluation period or provide context for interpreting potential inconsistencies:

- Are the developments permitted during the evaluation period a large enough sample and representative enough of development trends to serve as the basis for reliable findings?
- Have permitting and development trends after the evaluation period shifted in significant ways?
- Do code and development regulations promote unintended consequences that could impact development feasibility?
- Have there been any changes to code or development regulations during or following the evaluation period that address barriers to development consistent with planning objectives?
- Are there other relevant changes in market conditions such as infrastructure investment that could impact future development in the jurisdiction?

After completing this evaluation, jurisdictions provided King County with documentation of their findings regarding the potential inconsistencies, noting where Reasonable Measures are and are not necessary.

For the purpose of summarization in the Urban Growth Capacity Report, county staff and consultants reviewed these jurisdiction responses and categorized them by nine common themes. These themes are described in Exhibit 49. Individual jurisdiction responses to potential inconsistencies are summarized in Exhibit 50 through Exhibit 52. These tables only show cities in which a potential inconsistency was identified, where an observed trend fell short of the planning goal.

Exhibit 49. Theme Categories in Jurisdiction Responses to Potential Inconsistencies

Category Title	Definitions
Development aligned to planning framework	Response cited methodological issues related to translating their planning framework into an FAR-based density approach. The observed development reflects uses, forms, and densities allowed under a jurisdiction's planning framework.
Small development sample	The observed development sample included too few projects to reasonably determine whether development was achieving a planning goal, or included an unusual case causing inconsistency with the planning goal.
Additional development in pipeline	Additional specific projects are underway which represent a shift from trends observed during the evaluation period.
Expected market shift	There are indicators of shifts in market demand which would result in future development trends that do not resemble patterns observed during the evaluation period.
Addition of high capacity transit	High capacity transit such as light rail is coming in and is expected to shift market demand, resulting in future development that does not resemble patterns observed during the evaluation period.
Recent zoning or policy change	New zoning or policies have already been implemented either during or after the evaluation period. These changes are expected to shape future development trends.
Anticipated policy, zoning, or strategy updates	The jurisdiction anticipates adopting and implementing new policies, zoning, or strategies which are expected to shape future development trends.
Fully built out	The jurisdiction has no vacant land available for new development, and marginal redevelopable land maintains the existing growth pattern.
Environmental or utility constraints	Environmental or utility constraints are a barrier to new development.

Exhibit 50. Summary of Jurisdiction Responses - Residential Density Achieved

	Are reasonable measures necessary?	Rationale For Why Reasonable Measures Are or Are Not Required								
		Development aligned to planning approach	Small development sample	Additional development in pipeline	Expected market shifts	Addition of high capacity transit	Recent zoning or policy change	Anticipated policy or strategy updates	Fully built out	Environmental or utility constraints
Core Cities										
Auburn	No			*			*			*
Bothell	No			*			*			*
Burien	No	*								
Federal Way	No	*	*		*	*				
Issaquah	No	*		*			*	*		
Kent	No	*		*	*	*	*	*		
Kirkland	No						*			
Renton	No	*	*	*	*			*		
SeaTac	No	*	*							*
HCT Communities										
Des Moines	No	*			*					
Kenmore	No		*			*				
Lake Forest Park	No	*							*	
Mercer Island	No	*								*
Newcastle	No	*			*	*				
Shoreline	No	*				*				
Woodinville	No	*					*			*
Cities & Towns										
Algona	No	*	*					*		
Beaux Arts	No		*						*	
Black Diamond	No	*	*	*						
Carnation	No	*	*							
Enumclaw	No	*								
Maple Valley	No	*								
Milton	No	*								
Normandy Park	No			*						
North Bend	No			*	*			*		
Skykomish	No		*							
Snoqualmie	No	*								
Yarrow Point	No	*								
Urban Unincorporated										
Unincorporated King County	No	*	*							

Note: This table includes jurisdictions with potential inconsistencies related to achieved residential densities being lower than 50% of the zone category density max. It also includes several cities (Burien, Renton, Des Moines, Kenmore. Mercer Island, Snoqualmie, Yarrow Point) that showed potential inconsistencies using a prior screening approach and provided responses related to the need for Reasonable Measures.

Exhibit 51. Summary of Jurisdiction Responses – Non-Residential Density Achieved

	Are reasonable measures necessary?	Rationale For Why Reasonable Measures Are or Are Not Required								
		Development aligned to planning approach	Small development sample	Additional development in pipeline	Expected market shifts	Addition of high capacity transit	Recent zoning or policy change	Anticipated policy or strategy updates	Fully built out	Environmental or utility constraints
Metropolitan Cities										
Bellevue	No	*	*		*	*				
Seattle	No		*				*			
Core Cities										
Auburn	No	*			*					
Bothell	No	*								
Burien	No		*							
Federal Way	No	*	*			*		*		
Issaquah	No	*		*			*		*	
Kent	No	*				*	*			
Kirkland	No				*					
Redmond	No	*								
Renton	No	*	*		*					
Tukwila	No		*		*					
HCT Communities										
Des Moines	No	*								
Kenmore	No					*				
Mercer Island	No	*								
Newcastle	No	*			*	*				
Shoreline	No	*								
Woodinville	No			*			*			
Cities & Towns										
Carnation	No	*	*							
Enumclaw	No	*	*							
Maple Valley	No	*						*		
Normandy Park	No		*		*			*		
North Bend	No			*				*		
Pacific	No	*								
Skykomish	No		*							
Snoqualmie	No	*	*						*	
Urban Unincorporated										
Unincorporated King County	No	*								

Note: This table excludes jurisdictions in which there were no potential inconsistencies found with regards to achievement of non-residential densities.

Exhibit 52. Summary of Jurisdiction Responses to Potential Inconsistencies – Growth Rate

	Are reasonable measures necessary?	Rationale For Why Reasonable Measures Are or Are Not Required								
		Development aligned to planning approach	Small development sample	Additional development in pipeline	Expected market shifts	Addition of high capacity transit	Recent zoning or policy change	Anticipated policy or strategy updates	Fully built out	Environmental or utility constraints
RESIDENTIAL										
Metropolitan Cities										
Bellevue	No					*	*			
Core Cities										
Burien	No						*	*		
Federal Way	No					*		*		
Kirkland	No			*			*			
SeaTac	No			*	*		*			
Tukwila	Yes				*			*		
HCT Communities										
Des Moines	No			*						
Kenmore	No			*		*				
Shoreline	No			*		*				
Woodinville	No			*	*					
Cities & Towns										
Algona	No	*								
Black Diamond	No	*		*						
Carnation	No	*		*						
Enumclaw	No				*					
EMPLOYMENT										
Metropolitan Cities										
Bellevue	No			*						
Core Cities										
Burien	Yes							*		
Federal Way	No	*	*			*		*		
SeaTac	No		*			*				
Tukwila	Yes									
HCT Communities										
Des Moines	No			*	*	*				
Kenmore	No			*		*				
Mercer Island	No					*	*	*		
Shoreline	No	*								
Woodinville	No	*								
Cities & Towns										
Black Diamond	No			*	*					
Carnation	No	*			*					
Duvall	No	*								
Enumclaw	No	*								
Maple Valley	No	*		*						
Pacific	No	*		*	*					

Note: This table excludes jurisdictions in which there were no potential inconsistencies found with regards to growth rate.

Exhibit 53. Summary of Jurisdiction Responses to Potential Inconsistencies – Capacity

	Are reasonable measures necessary?	Rationale For Why Reasonable Measures Are or Are Not Required								
		Development aligned to planning approach	Small development sample	Additional development in pipeline	Expected market shifts	Addition of high capacity transit	Recent zoning or policy change	Anticipated policy or strategy updates	Fully built out	Environmental or utility constraints
RESIDENTIAL										
Cities & Towns										
Enumclaw	No				*			*		
Sammamish	Yes	*								*
EMPLOYMENT										
Core Cities										
Auburn	No		*		*		*			
Burien	Yes							*		
SeaTac	No	*			*			*		
HCT Communities										
Des Moines	No	*								
Shoreline	Yes				*	*	*			
Woodinville	-	*								
Cities & Towns										
Pacific	Yes							*		
Urban Unincorporated										
Unincorporated King County	No	*	*					*		

Note: This table excludes jurisdictions in which there were no potential inconsistencies found with regards to capacity.

Reasonable Measures Recommendations

As a result of the review of potential inconsistencies, the Urban Growth Capacity Report recommends that some jurisdictions adopt Reasonable Measures in the 2024 periodic update to comprehensive plans. Exhibit 54 notes the jurisdictions where Reasonable Measures are recommended, the identified inconsistency that supports the finding, and the general type(s) of Reasonable Measures that will be needed to address the inconsistency.

Exhibit 54. Recommendations for Adoption of Reasonable Measures

Jurisdiction	Inconsistency	Type(s) of Reasonable Measure Recommended
Burien	▪ Insufficient employment capacity ▪ Employment growth rate inconsistent with target	▪ Action(s) to increase employment capacity ▪ Action(s) to encourage and/or incentivize non-residential development
Pacific	▪ Insufficient employment capacity	▪ Action(s) to increase employment capacity
Sammamish	▪ Insufficient housing capacity	▪ Action(s) to increase residential capacity
Shoreline	▪ Insufficient employment capacity	▪ Action(s) to increase employment capacity
Tukwila	▪ Housing growth inconsistent with target ▪ Employment growth rate inconsistent with target	▪ Action(s) to encourage and/or incentivize residential development ▪ Action(s) to encourage and/or incentivize non-residential development

Following the adoption of comprehensive plans in 2024, each jurisdiction will be required to monitor progress toward resolving the inconsistency, with regular reporting to the Growth Management Planning Council.

Ch. 6 Applying Urban Growth Capacity Findings

The findings of this study can be used to inform several kinds of policy and regulatory decisions in local jurisdictions. This chapter provides an overview of two keys applications: growth target setting and local comprehensive plan updates. Additional information will be available in the UGC User's Guide.

Regional Planning and Growth Targets

Growth capacity is one important input that King County uses to inform the allocation of projected countywide housing and employment growth by Regional Geography and jurisdiction. King County is currently in the process of developing new growth targets for the 2019-2044 time period. This process is guided by PSRC's VISION 2050 Regional Growth Strategy which allocates shares of regionally forecasted growth to King County and its Regional Geographies, creating control allocations for each of the urban Regional Geographies. Working in Regional Geography based subgroups, the 39 cities and King County collaborate through the Growth Management Planning Council (GMPC), to determine appropriate growth targets for each jurisdiction. Table DP-1 in the Proposed 2021 Countywide Planning Policies identifies the draft housing and job targets for each jurisdiction, sorted by Regional Geography, as specified in VISION 2050. These growth targets are policy statements of the amount of housing and job growth each jurisdiction is expected to accommodate and plan for in their comprehensive plan. The allocations of growth are consistent with the VISION 2050 Regional Growth Strategy, focusing growth primarily to the two "Metropolitan" cities (Seattle and Bellevue), within "Core" cities with designated Urban Centers, and within "High Capacity Transit" communities. Notably, growth targets for HCT Communities include three unincorporated potential annexation areas (PAAs): Federal Way PAA, North Highline PAA, and Renton PAA.

Exhibit 55 shows draft 2019-2044 growth targets for individual cities and urban unincorporated areas alongside growth capacity for context. In aggregate countywide and each Regional Geography, there is sufficient capacity to accommodate the target growth. However, in some individual jurisdictions the 2044 growth target exceeds available capacity. This is appropriate, as the primary purpose of measuring growth capacity in this report is confirming available capacity to accommodate remaining growth under the current 2035 growth target. Ultimately, jurisdictions will demonstrate zoned or planned capacity for their 2044 growth targets in the next round of comprehensive plan updates in 2024.

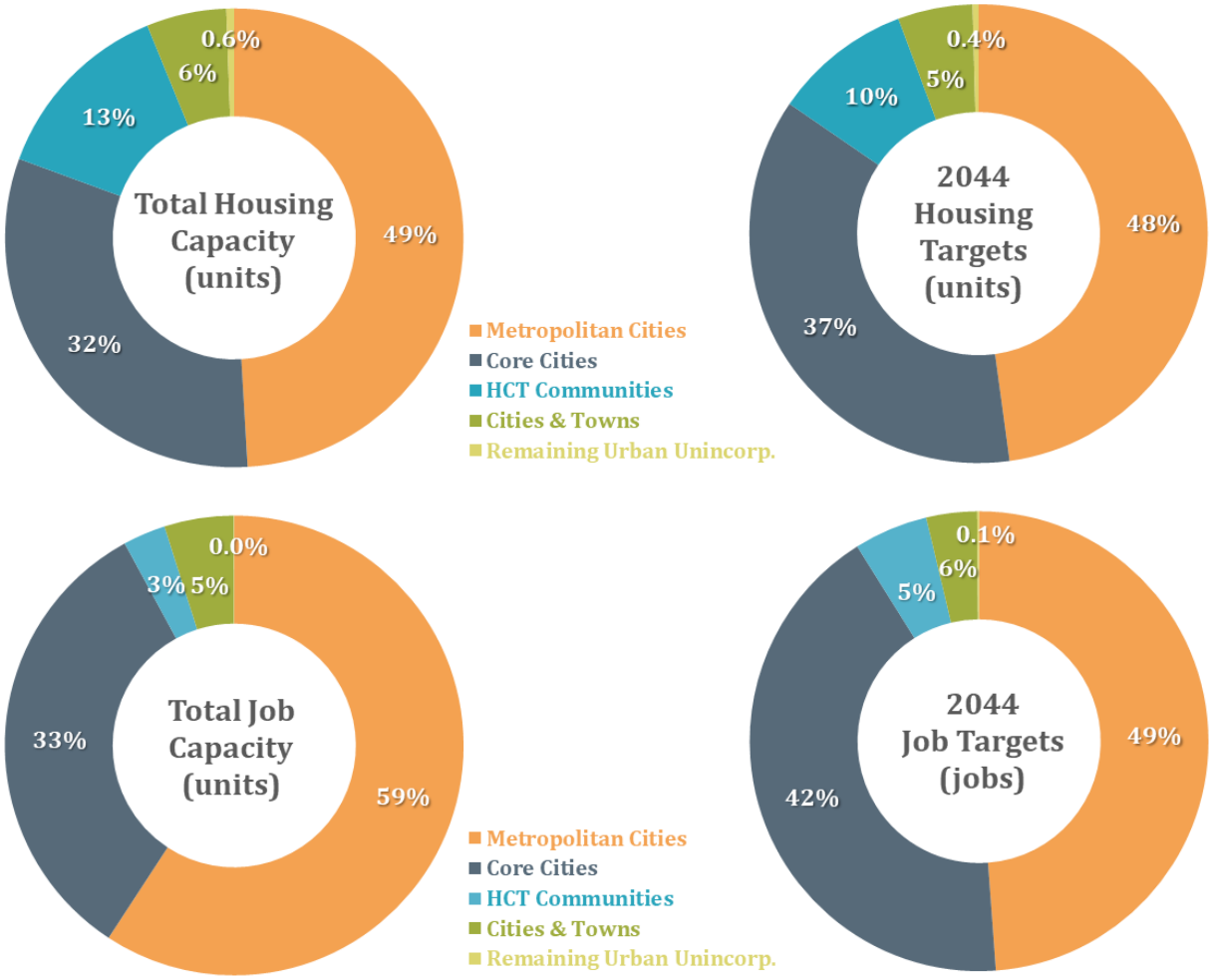
Exhibit 55. DRAFT King County Jurisdiction Growth Targets, 2019-2044

Jurisdiction	Total Housing Capacity (Units)	2044 Housing Target	Share of Housing Target in Regional Geography	Total Job Capacity (Jobs)	2044 Jobs Target	Share of Jobs Target in Regional Geography
Metropolitan Cities						
Bellevue	26,859	35,000	24%	117,241	70,000	29%
Seattle	172,440	112,000	76%	245,598	169,500	71%
Subtotal	**199,298**	**147,000**		**362,839**	**239,500**	
Core Cities						
Auburn	9,151	12,000	11%	7,927	19,520	9%
Bothell	6,370	5,800	5%	9,015	9,500	5%
Burien	10,816	7,500	7%	752	4,770	2%
Federal Way	14,077	11,260	10%	29,500	20,460	10%
Issaquah	14,103	3,500	3%	15,561	7,950	4%
Kent	11,248	10,200	9%	28,995	32,000	15%
Kirkland	13,352	13,200	12%	18,139	26,490	13%
Redmond	17,777	20,000	18%	15,851	24,000	12%
Renton	16,503	17,000	15%	26,210	31,780	15%
SeaTac	6,396	5,900	5%	15,565	14,810	7%
Tukwila	8,219	6,500	6%	33,749	15,890	8%
Subtotal	**128,011**	**112,860**		**201,264**	**207,170**	
HCT Communities						
Des Moines	8,386	3,800	13%	2,410	2,380	9%
Federal Way PAA	1,318	1,020	3%	613	720	3%
Kenmore	4,135	3,070	10%	3,881	3,200	13%
Lake Forest Park	1,870	870	3%	691	550	2%
Mercer Island	1,607	1,239	4%	961	1,300	5%
Newcastle	3,234	1,480	5%	680	500	2%
North Highline	1,172	1,420	5%	653	1,220	5%
Renton PAA	2,645	1,680	6%	185	700	3%
Shoreline	25,590	13,330	45%	3,953	10,000	39%
Woodinville	3,705	2,033	7%	4,373	5,000	20%
Subtotal	**53,662**	**29,942**		**18,400**	**25,570**	
Cities & Towns						
Algona	266	170	1%	313	325	2%
Beaux Arts	2	1	0%	0	0	0%
Black Diamond	8,434	2,900	18%	3,188	680	4%
Carnation	704	799	5%	2,864	450	3%
Clyde Hill	5	10	0%	28	10	0%
Covington	4,609	4,310	27%	8,421	4,496	26%
Duvall	1,343	890	5%	681	990	6%
Enumclaw	1,308	1,057	7%	1,152	989	6%
Hunts Point	5	1	0%	0	0	0%
Maple Valley	2,221	1,720	11%	1,784	1,570	9%
Medina	8	19	0%	0	0	0%
Milton	66	50	0%	1,213	900	5%
Normandy Park	135	153	1%	35	35	0%
North Bend	2,098	1,748	11%	5,759	2,218	13%
Pacific	137	135	1%	77	75	0%
Sammamish	1,144	700	4%	305	305	2%
Skykomish	29	10	0%	0	0	0%
Snoqualmie	372	1,500	9%	4,079	4,425	25%
Yarrow Point	17	10	0%	0	0	0%
Subtotal	**22,903**	**16,183**		**29,899**	**17,468**	
Remaining Urban Unincorporated (Excluding HCT Communities)						
Subtotal	**2,251**	**1,292**		**230**	**700**	
Total Urban Capacity:	**406,124**	**307,277**	**Housing Units**	**612,632**	**490,408**	**Jobs**

Many jurisdictions may draw from the UGC Report to demonstrate sufficient capacity. However, capacity measured in the UGC is focused on the 2035 planning period and constrained by achieved densities. Therefore, some jurisdictions may use zoned densities or updated future land use assumptions to inform a land capacity analysis in the 2024 comprehensive plans update to demonstrate sufficient capacity for 2044 growth targets. Nonetheless, comparing the UGC Report capacity to the 2044 growth targets provides some context for the next planning cycle.

Exhibit 56 compares the share of countywide capacity as calculated in the Urban Growth Capacity Report for each VISION 2050 Regional Geography, with the share of growth allocated to Regional Geographies in the 2019-2044 growth targets. As a category, Core Cities have a higher share of countywide housing and employment growth targets than their share of housing and employment capacity. Conversely Metropolitan Cities and HCT Communities both have a greater share of housing capacity than their shares of housing target growth. This implies there is significant spare capacity for additional housing growth in those areas beyond the targets. Likewise, Metropolitan Cities have a significantly greater share of employment capacity than their share of target employment growth.

Exhibit 56. Share of Capacity and Share of Draft 2044 Growth Targets by Regional Geography



County and City Plans

All jurisdictions in King County are required to fully update their comprehensive plans by June 30, 2024. A comprehensive plan is a 20-year vision and roadmap for accommodated growth and development. It guides County or City decisions on where to build new jobs and houses, how to improve transportation systems, and where to make capital investments such as utilities, sidewalks, and libraries. Many cities are also in the process of completing Housing Action Plans which will be implemented in the years to come. These plans and implementing activities will be informed by housing and job growth targets discussed above. But there are many other ways in which the Urban Growth Capacity Report findings can inform these planning activities., as two examples: implementing Reasonable Measures findings from the Urban Growth Capacity Report and housing policy development.

Detailed jurisdiction-level information available in Ch. 7 Profiles of Cities and Unincorporated Areas, as well as resources available in the UGC User's Guide, can be used to focus the development of policies, development regulations, incentives, or other actions for shaping local development activity. The sections that follow provide examples and guidance for applying and building upon UGC findings.

Implementing Reasonable Measures

Ch. 5 includes a list of jurisdictions where Reasonable Measures were determined to be necessary. Each of these jurisdictions will need to identify actions in their 2024 comprehensive plan updates that are likely to reduce or mitigate the inconsistency between actual growth with planning goals. These actions could include changes to development regulations, new incentives, subarea planning, or reviewing processes to encourage development types that are consistent with local plans. Such changes are also required to be adopted in capital facility plans and development regulations when necessary for full implementation. In some cases, Reasonable Measures must be adopted in Countywide Planning Policies, but no findings from the 2021 UGC Report indicate this is necessary. Wherever a measure is implemented, it should be clearly identified as a Reasonable Measure that addresses a growth inconsistency identified in the UGC Report.

The findings of the UGC Report can help to inform the selection of appropriate Reasonable Measures. Jurisdictions can use this data to answer questions such as:

- In which zones have there been inconsistencies between growth trends and planning goals?
- Where are there infrastructure gaps that create barriers to new development at planned density levels?
- What other barriers may be preventing development that is consistent with local plans?

The King County UGC User's Guide will include a simple framework to help planners to zero in on potential answers to these last two questions, which lie at the heart of Reasonable Measure selection. Additional outreach to the development community, a market study, code audit, or example development feasibility analysis may to help ensure that the measures are both targeted and effective. For examples of Reasonable Measures see the Department of Commerce Buildable Land Guidelines

Appendix B (2018), Housing Memo: Issues Affecting Housing Availability and Affordability (2019), and Guidance for Developing a Housing Action Plan (2020) Chapter 4.

Following implementation, jurisdictions may develop a monitoring program to assess the effectiveness of the Reasonable Measures. This will help in determining when and where additional measures may be needed.

Housing Planning and Policy Development

Housing affordability is an urgent and complex challenge that has impacts throughout King County. This section draws upon the Washington State Department of Commerce Housing Memo: Issues Affecting Housing Availability and Affordability (2019), to discuss how to apply UGC findings to support efforts to address housing affordability.

Regional Housing Planning

Housing affordability is a regional challenge, and the most effective responses to this challenge will involve coordination between jurisdictions. An example includes the King County Regional Affordable Housing Task Force which developed a coordinated regional strategy and action plan to address housing needs for lower income households. Regional housing planning can also involve an assessment of countywide housing needs and setting jurisdictional goals for future housing growth by housing type or affordability level.

The UGC Report is an important resource to support this kind of regional collaboration within King County. By presenting data about housing capacity by density level for jurisdictions in a common format, it allows for the evaluation of aggregate countywide capacity to support different kinds of housing development. This information can be used to determine if there are any capacity limitations when compared to region housing needs. Moreover, UGC data also allows for the evaluation of how capacity is distributed geographically across the county by jurisdiction. Mapping UGC data can enable analysis to answer the following kinds of questions:

- Is there capacity for the kinds of new housing development that are called for in countywide housing needs assessments, such as multifamily or "missing middle" formats?[10]
- Is capacity located in high demand or amenity-rich locations, like near frequent transit, parks, schools, or employment centers?
- Are areas with housing capacity aligned with high opportunity areas, as defined by PSRC?
- What kinds of regional amenities or resources are missing in areas with significant capacity for new housing development?

[10] The summaries of capacity by density level in the UGC report provides a good proxy for capacity by housing type, with low density zones typically providing capacity for detached single family development, middle density zones often providing capacity for missing middle formats such as townhomes and multiplexes, and high density zones providing capacity for apartments and condominiums. More detailed analysis of the development code in individual jurisdictions can confirm what kinds of housing are allowed and what code barriers may hinder development in a desired format.

Local Housing Planning

The findings of the UGC Report can also inform the development of local housing policies and implementing actions during the next round of comprehensive plan updates. Several cities in King County have recently identified housing strategies for implementation through the process of developing Housing Action Plans with funding from Washington State Department of Commerce. The UGC findings can inform the implementation of these strategies as well. Key policy questions that the UGC can help answer include:

- Is there capacity for the kinds of new housing development that are called for in local housing needs assessments, such as multifamily or "missing middle" formats?[11]
- How does housing capacity compare to housing development trends? Are zones with available capacity seeing the kinds of housing development that is needed?
- What kinds of housing development does your plan call for but isn't being produced?

Similar to the selection of Reasonable Measures, additional outreach to the housing development community, a market study, code audit, or example development feasibility analysis may to help to identify and prioritize actions that are most likely to encourage the kinds of new housing development that are in greatest need. Resources for the selection of actions include Guidance for Developing a Housing Action Plan (2020) Chapter 4 and Housing Memo: Issues Affecting Housing Availability and Affordability (2019), both available from the Washington State Department of Commerce. Actions could include rezones or revisions to development standards to allow new housing types or density levels, actions to streamline the processing of permit applications, addressing infrastructure limitations (see below), or proving incentives to encourage the development of housing types or affordability levels in greatest need.

Targeting Anti-Displacement Efforts

Displacement is a complex and multifaceted problem that local planners are faced with as they plan for growing the housing supply in their communities. Housing supply shortage is a key driver of housing cost escalation across the county. When housing costs increase, so too does economic displacement pressures on existing residents. The best way to address this issue is increasing the housing supply, with an emphasis on housing formats that are in greatest need.

However, much of the capacity for new housing development is in the form of redevelopment. Many redevelopable parcels contain older housing stock or commercial space that is typically less expensive to buy or rent than the prevailing market. So, when these older existing buildings are demolished in favor of redevelopment it can result in physical displacement of residents or businesses who cannot afford prevailing market costs in the area.

[11] The summaries of capacity by density level in the UGC report provides a good proxy for capacity by housing type, with low density zones typically providing capacity for detached single family development, middle density zones often providing capacity for missing middle formats such as townhomes and multiplexes, and high density zones providing capacity for apartments and condominiums. More detailed analysis of the development code in individual jurisdictions can confirm what kinds of housing are allowed and what code barriers may hinder development in a desired format.

Parcel-level data developed through the UGC Study can be of use to support analysis of what kinds of uses are present on redevelopable parcels, including both residential uses as well as nonresidential uses that may include small local businesses or cultural institutions. This information, combined with outreach to local residents, community groups, businesses, or other stakeholders, can be essential to developing targeted strategies or partnerships to address physical displacement risks. A good resource for such efforts includes the Washington State Department of Commerce Guidance for Developing a Housing Action Plan (2020) Chapter 5: Strategies for Minimizing and Mitigating Displacement.

Addressing Infrastructure Gaps

As described in Appendix G: Approach for Identifying Infrastructure Gaps, each jurisdiction conducted an assessment to identify significant infrastructure gaps or capacity issues that present barriers to realizing development capacity. This information can support both local and regional capital facilities planning to provide timely infrastructure to facilitate housing development in locations and formats that are most needed to address housing affordability challenges.

Ch. 7 Profiles of Cities and Unincorporated Areas

This chapter provides detailed profiles summarizing findings for each individual jurisdiction. The profiles are divided into four separate pages covering the following topics:

- Page 1: Housing Growth and Residential Development Trends
- Page 2: Residential Land Supply and Capacity
- Page 3: Employment Growth and Commercial/Industrial Development Trends
- Page 4: Commercial/Industrial Land Supply and Job Capacity

These jurisdictions are presented alphabetically by VISION 2050 Regional Geography, as shown in Exhibit 57.

Exhibit 57. Profiled King County Jurisdictions by VISION 2050 Regional Geography

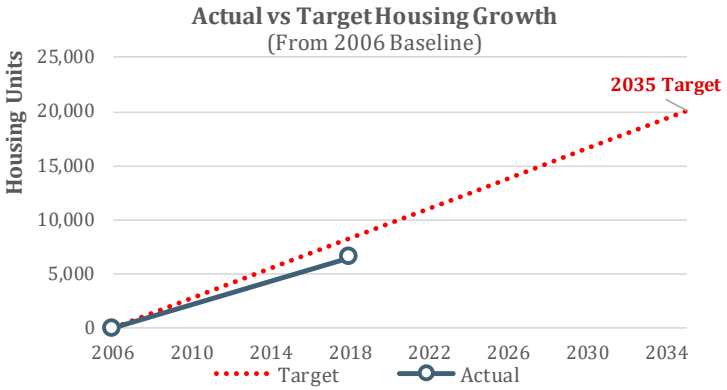
Metropolitan Cities	▪ City of Bellevue	▪ City of Seattle	
Core Cities	▪ City of Auburn ▪ City of Bothell ▪ City of Burien ▪ City of Federal Way	▪ City of Issaquah ▪ City of Kent ▪ City of Kirkland ▪ City of Redmond	▪ City of Renton ▪ City of SeaTac ▪ City of Tukwila ▪
High Capacity Transit Communities	▪ City of Des Moines ▪ City of Kenmore ▪ City of Lake Forest Park	▪ City of Mercer Island ▪ City of Newcastle ▪	▪ City of Shoreline ▪ City of Woodinville
Cities and Towns	▪ City of Algona ▪ City of Beaux Arts ▪ City of Black Diamond ▪ City of Carnation ▪ City of Clyde Hill ▪ City of Covington ▪ City of Duvall	▪ City of Enumclaw ▪ Town of Hunts Point ▪ City of Maple Valley ▪ City of Medina ▪ City of Milton ▪ City of Normandy Park	▪ City of North Bend ▪ City of Pacific ▪ City of Sammamish ▪ Town of Skykomish ▪ City of Snoqualmie ▪ Town of Yarrow Point
Urban Unincorporated Areas	▪ All urban unincorporated areas combined, including those that are classified as HCT Communities in VISION 2050.		

Metropolitan Cities

City of Bellevue
City of Seattle

City of Bellevue

Housing Growth and Residential Development Trends



Bellevue Housing Growth Target: 2006-2035	20,056
2006 Estimated Housing Units	55,107
2018 Estimated Housing Units	61,698
Estimated Housing Growth	**6,591**
Remaining 2035 Target	13,465

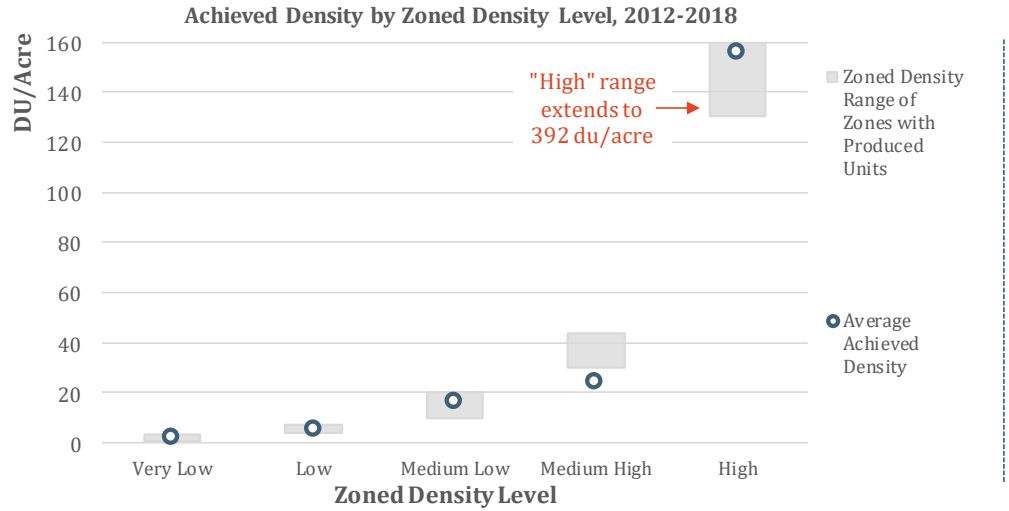
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
79.4%	**0.95%**	**1.17%**

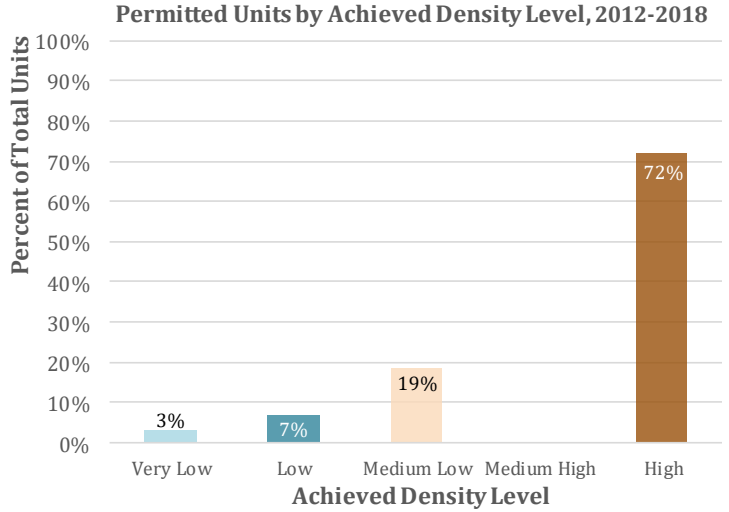
Since 2006, Bellevue has grown at 79% of the pace needed to achieve its 2035 housing growth target of 20,056 units. During this period, the total number of housing units in Bellevue grew by roughly 12%. At this current rate, Bellevue is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1.2% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	67.1	10.3	0.9	1.1	54.7	120	**2.2**
Low	4 - 10 du/acre	41.0	2.3	0.7	3.3	34.7	186	**5.4**
Medium Low	10 - 24 du/acre	7.1	2.4	0.0	0.0	4.7	76	**16.2**
Medium High	24 - 48 du/acre	64.9	0.9	0.0	0.0	63.9	1,560	**24.4**
High	48 & up du/acre	14.6	0.0	0.0	0.0	14.6	2,278	**155.5**
	Total	**194.7**	**15.9**	**1.7**	**4.4**	**172.7**	**4,220**	**24.4**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	54.7	120
Low	59.3	277
Medium Low	36.5	784
Medium High	0.0	0
High	22.1	3,039
Total	**172.7**	**4,220**

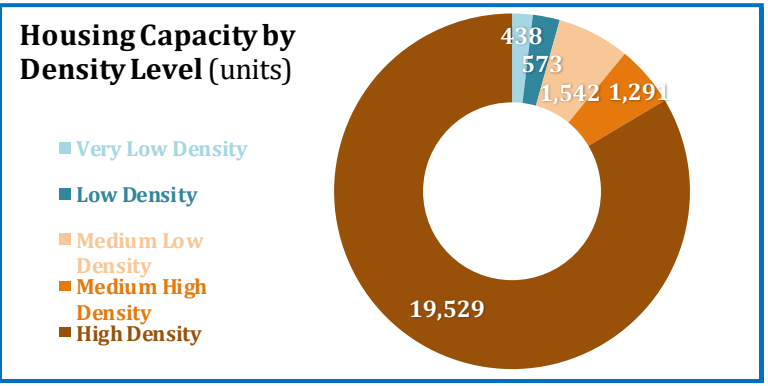




Bellevue - Residential Land Supply and Capacity

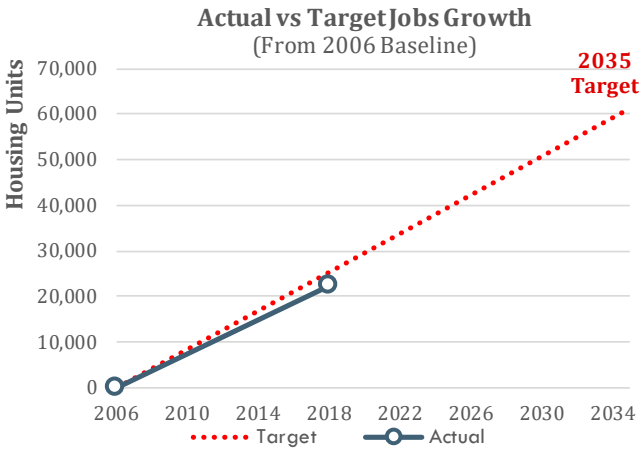
Assumed Density Level		Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acres)	Net Capacity (units)
Very Low Density	Land Supply	0.00	0.00	0.00	0.00	0.0% - 10.0%	243.98	0.8 / 3.4	**438**
Low Density	Land Supply	0.00	0.00	0.00	0.00	10.0% - 10.0%	137.65	4.1 / 6.6	**573**
Medium Low Density	Land Supply	0.00	0.00	0.00	0.00	0.0% - 10.0%	338.40	10.0 / 22.4	**1,542**
Medium High Density	Land Supply	0.00	0.00	0.00	0.00	10.0% - 15.0%	152.19	30.0 / 44.8	**1,291**
High Density	Land Supply	0.00	0.00	0.00	0.00	0.0% - 10.0%	318.06	53.9 / 303.0	**19,529**
All Zones	**Total**	**0.00**	**0.00**	**0.00**	**0.00**		**1,190.28**		**23,375**

Capacity (units)	
Very Low Density Zones	438
Low Density Zones	573
Medium Low Density Zones	1,542
Medium High Density Zones	1,291
High Density Zones	19,529
Capacity in Pipeline	*3,484*
Total Capacity (Units)	**26,859**
Remaining Target (2018-2035)	13,465
Surplus/Deficit Capacity (Units)	**13,393**



Note: Bellevue zone density is largely based on FAR. For these zones, a dwelling/unit per acre equivalent was calculated to categorize zone density level. Additionally, the development density/intensity of parcels with critical areas and their buffers as identified in Bellevue's Land Use Code section 20.25H.035 was calculated using Bellevue's development density/intensity formula specified in LUC 20.25H.45. This net acreage was carried forward when determining net vacant and redevelopable land.

Bellevue - Employment Growth and Commercial/Industrial Development Trends



Bellevue Jobs Growth Target: 2006-2035	61,480
2006 Jobs (PSRC)	120,494
2018 Jobs (PSRC)	143,023
Total Jobs Growth	**22,529**
Remaining 2035 Target	38,951

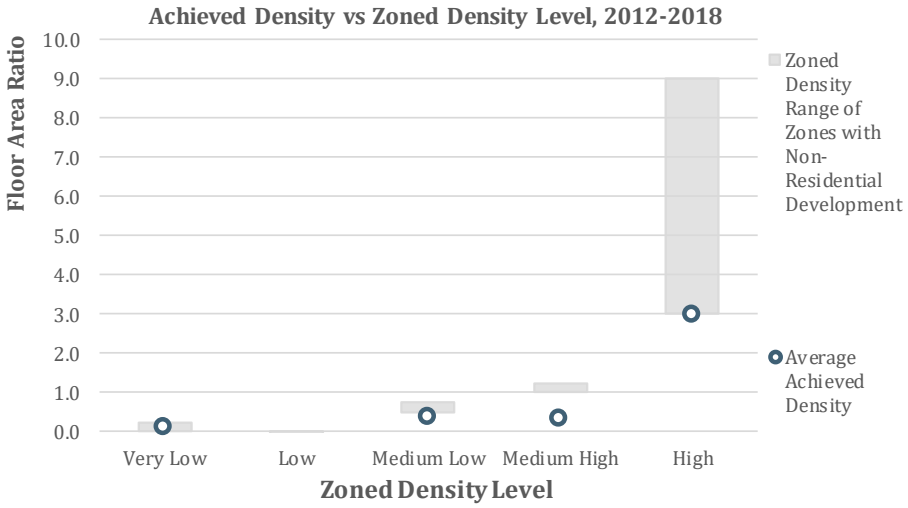
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
88.6%	1.44%	1.43%

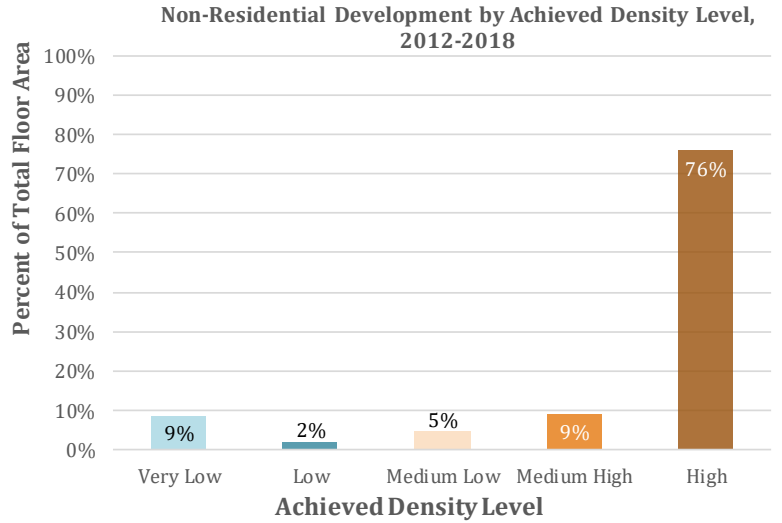
Since 2006, Bellevue has grown at 89% of the pace needed to achieve its 2035 jobs growth target of 61,480 units. During this period, the total number of jobs in Bellevue grew by roughly 19%. At this current rate, Bellevue is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 1.4% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	1,661,282	200,888	**0.1**
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	504,925	179,905	**0.4**
Medium High	1.0 - 3.0 FAR	1,348,453	412,671	**0.3**
High	3.0 & up FAR	909,541	2,704,313	**3.0**
	Total	**4,424,202**	**3,497,777**	**0.8**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	2,446,734	301,651	**0.1**
Low	168,421	60,828	**0.4**
Medium Low	454,922	163,610	**0.4**
Medium High	585,613	311,958	**0.5**
High	768,513	2,659,730	**3.5**
Total	**4,424,202**	**3,497,777**	**0.8**



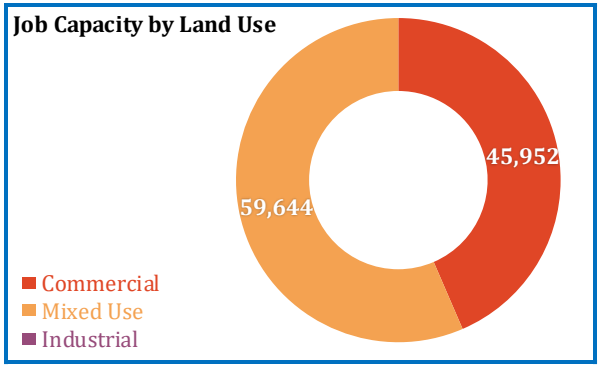


Bellevue - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	447	0.0	0.0	0.0	447	0% - 15%	402.6
Mixed Use	382	0.0	0.0	0.0	382	8% - 10%	71.3
Industrial	29	0.0	0.0	0.0	29	10%	25.8
Non-Res Land Total	**858**	**0.0**	**0.0**	**0.0**	**858**		**499.7**

Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac (million sq.ft.)		Sq. ft. per Job	Job Capacity
Commercial							
Commercial Total	16.07	0.26 / 9.90	3.26		14.38	300 / 444	**45,952**
Mixed-Use							
Mixed Use Total	9.24	0.30 / 5.40	3.40		18.04	300 / 500	**59,644**
Industrial							
Industrial Total	1.12	0.11	0.20		0.00	550	**0**
City Total							
Commercial	16.07	0.26 / 9.90	0.69		14.38	300 / 444	45,952
Mixed Use	9.24	0.30 / 5.40	0.91		18.04	300 / 500	59,644
Industrial	1.12	0.11	0.26		0.00	550	0
Job Capacity in Pipeline							*11,645*
City Total	**26.43**	**9.90**	**1.86**		**32.42**	**550**	**117,241**

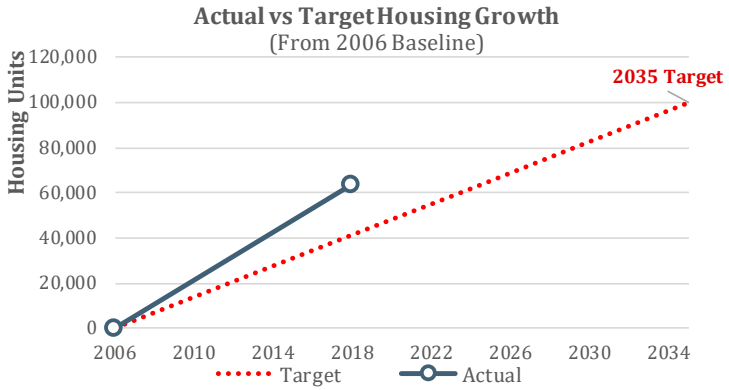
Job Capacity by Assumed Density Level	#	%
Very Low Density	1,699	2%
Low Density	1,694	2%
Medium Low Density	5,056	5%
Medium High Density	17,663	17%
High Density	79,485	75%
Capacity in Pipeline		*11,645*
Total Capacity (jobs)		**117,241**
Remaining Target (2018-2035)		38,951
Surplus/Deficit Capacity (jobs)		**78,290**



Note: The development density/intensity of parcels with critical areas and their buffers as identified in Bellevue's Land Use Code section 20.25H.035 was calculated using Bellevue's development density/intensity formula specified in LUC 20.25H.45. This net acreage was carried forward when determining net vacant and redevelopable land.

City of Seattle

Housing Growth and Residential Development Trends



Seattle Housing Growth Target: 2006-2035	99,760
2006 Estimated Housing Units	292,881
2018 Estimated Housing Units	356,556
Estimated Housing Growth	**63,675**
Remaining 2035 Target	36,085

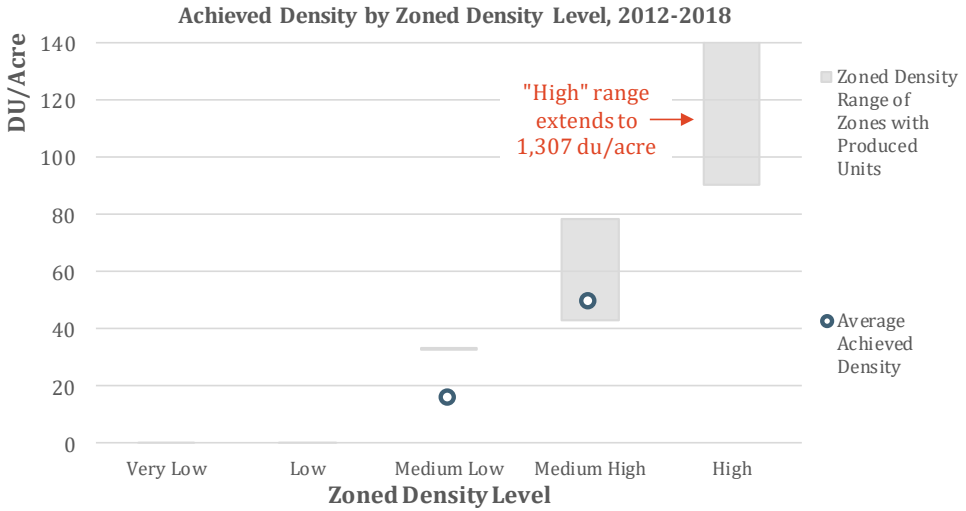
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
154.3%	1.65%	0.57%

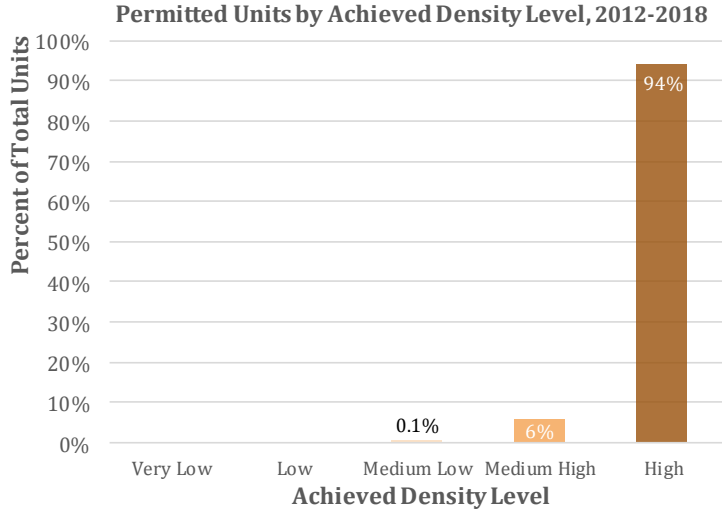
Since 2006, Seattle has grown at 154% of the pace needed to achieve its 2035 housing growth target of 99,760 units. During this period, the total number of housing units in Seattle grew by roughly 22%. At this current rate, Seattle is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0.6% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.1	1	15.5
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	110.7	5,438	49.1
High	48 & up du/acre	0.0	0.0	0.0	0.0	195.0	40,416	207.3
	Total	0.0	0.0	0.0	0.0	305.7	45,855	150.0

Achieved Density Level	Net Area (acres)	Total Units
Very Low	0.0	0
Low	0.0	0
Medium Low	1.6	23
Medium High	68.5	2,706
High	235.6	43,126
Total	305.7	45,855



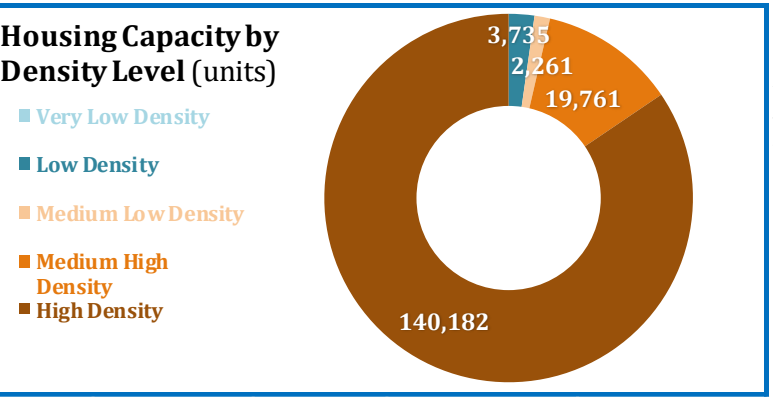


Seattle - Residential Land Supply and Capacity

Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas and Infrastructure Deductions	Buildable Area (acres)	Residential Split (low/high)	Assumed Densities (low/high - FAR)	Market Factor (low/high)	Net Capacity (units)
Very Low Density	Vacant Subtotal	0.0	Not available for disaggregation	0.0	0%	0.0	0%	0
	Redev Subtotal	0.0		0.0	0%	0.0	0%	0
	Subtotal	0.0	0.0	0.0				**0**
Low Density	Vacant Subtotal	0.0	Not available for disaggregation	0.0	0%	0.0	0%	0
	Redev Subtotal	1,283.9		1,052.3	100%	0.5	0% - 35%	3,735
	Subtotal	1,283.9	231.6	1,052.3				**3,735**
Medium Low Density	Vacant Subtotal	0.0*	Not available for disaggregation	0.0*	0%	0.0	0%	0
	Redev Subtotal	262.3		251.5	100%	0.8	10% - 38%	2,261
	Subtotal	262.3	10.8	251.5				**2,261**
Medium High Density	Vacant Subtotal	0.0*	Not available for disaggregation	0.0*	0%	0.0	0%	0
	Redev Subtotal	685.3		658.0	100%	1.3 / 1.8	10% - 38%	19,761
	Subtotal	685.3	27.3	658.0				**19,761**
High Density	Vacant Subtotal	41.0	Not available for disaggregation	36.4	0% - 100%	0.4 / 22.0	10% - 40%	4,813
	Redev Subtotal	964.8		938.1	20% - 100%	1.9 / 30.0	5% - 40%	135,369
	Subtotal	1,005.7	31.2	974.5				**140,182**
All Zones	Vacant Total	41.0		36.4				4,813
	Redev Total	3,196.2		2,899.9				161,127
	Total	**3,237.2**		**2,936.3**				**165,940**

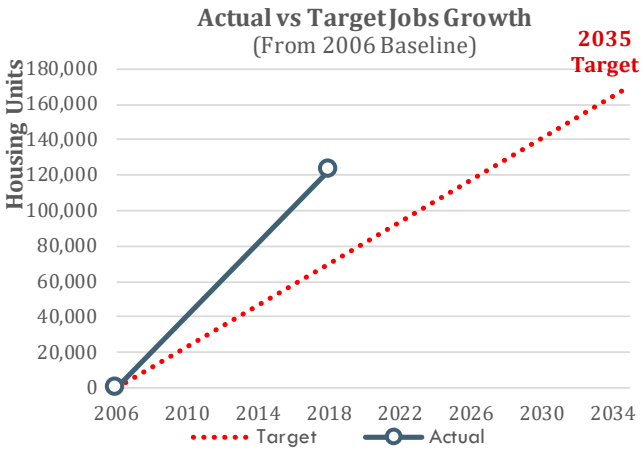
Capacity (units)	
Very Low Density Zones	0
Low Density Zones	3,735
Medium Low Density Zones	2,261
Medium High Density Zones	19,761
High Density Zones	140,182
Citywide ADU Capacity	*6,500*
Total Capacity (Units)	**172,440**
Remaining Target (2018-2035)	36,085
Surplus/Deficit Capacity (Units)	**136,355**

Housing Capacity by Density Level (units)



*In the Medium-Low and Medium-High density levels, the capacity showing up as vacant but with zero buildable area is a vestige of Seattle's split zoning,

Seattle - Employment Growth and Commercial/Industrial Development Trends



Seattle Jobs Growth Target: 2006-2035	170,172
2006 Jobs (PSRC)	498,931
2018 Jobs (PSRC)	622,121
Total Jobs Growth	**123,190**
Remaining 2035 Target	46,982

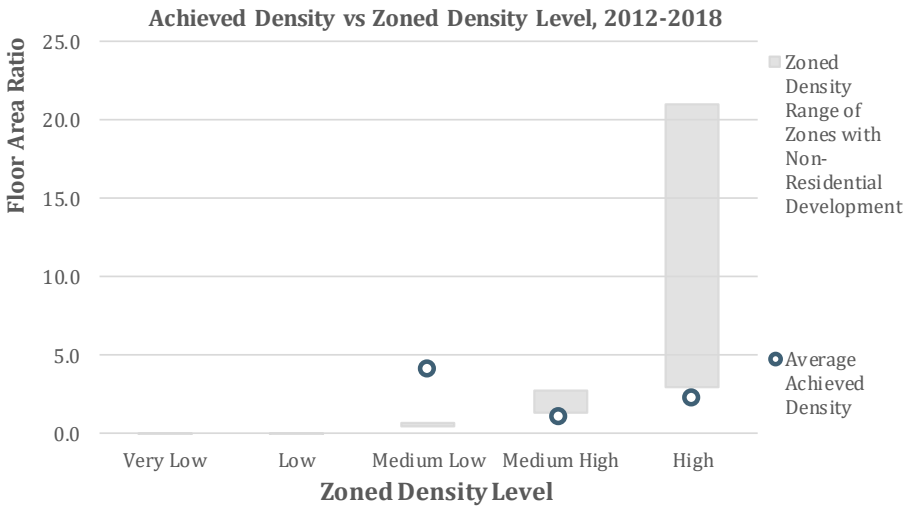
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
174.9%	1.86%	0.43%

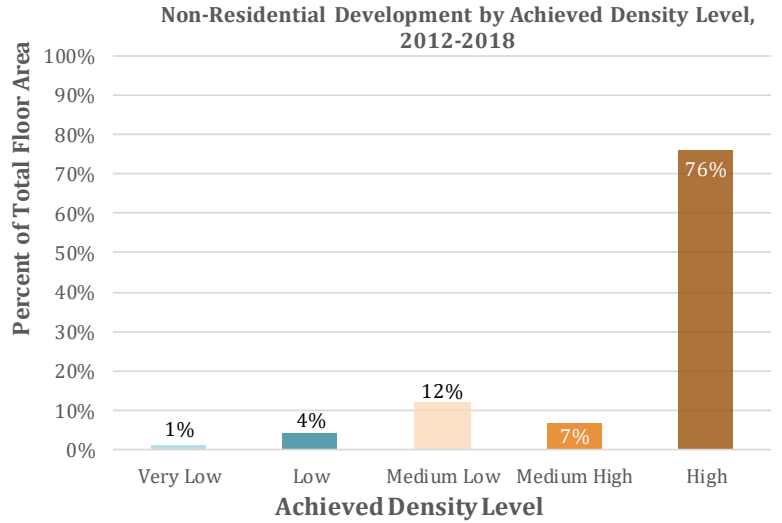
Since 2006, Seattle has grown at 175% of the pace needed to achieve its 2035 jobs growth target of 170,172 units. During this period, the total number of jobs in Seattle grew by roughly 25%. At this current rate, Seattle is over the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 0.4% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	86,380	355,885	4.1
Medium High	1.0 - 3.0 FAR	2,362,278	2,306,095	1.0
High	3.0 & up FAR	7,758,376	17,216,838	2.2
	Total	10,207,034	19,878,818	1.9

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	1,134,435	202,017	0.2
Low	1,998,886	842,833	0.4
Medium Low	3,899,050	2,373,226	0.6
Medium High	846,891	1,349,352	1.6
High	2,327,772	15,111,390	6.5
Total	10,207,034	19,878,818	1.9



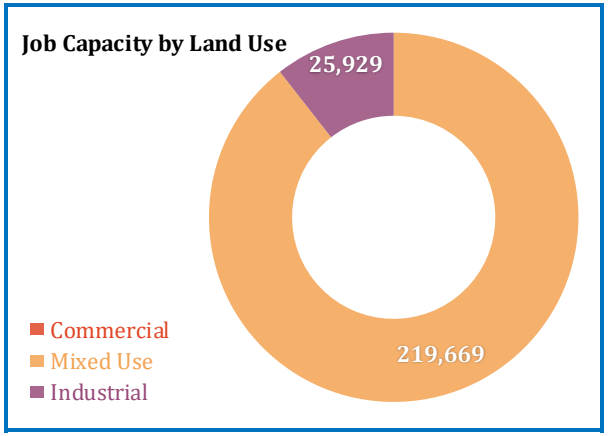


Seattle - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Mixed Use	306.0	0.0	0.0	0.0	306.0	0% - 40%	231.6
Industrial	417.9	0.0	0.0	0.0	417.9	0% - 25%	380.6
Non-Res Land Total	**723.9**	**0.0**	**0.0**	**0.0**	**723.9**		**612.1**

Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Commercial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
Mixed-Use						
Vacant	0.75	2.40 / 22.00	0.00	4.13	275 / 300	7,922
Redevelopable	18.32	0.50 / 30.00	21.71	69.42	0 / 300	211,747
Mixed Use Total	**19.06**	**0.50 / 30.00**	**21.71**	**73.55**	**0 / 300**	**219,669**
Industrial						
Vacant	19.74	0.40 / 2.75	5.12	20.03	500 / 700	25,929
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**19.74**	**0.40 / 2.75**	**5.12**	**20.03**	**500 / 700**	**25,929**
City Total						
Commercial	0.00	0.00	0.69	0.00	0	0
Mixed Use	19.06	0.50 / 30.00	0.91	73.55	0 / 300	219,669
Industrial	19.74	0.40 / 2.75	0.26	20.03	500 / 700	25,929
Job Capacity in Pipeline						*0*
City Total	**38.80**	**30.00**	**1.86**	**93.58**	**0 / 700**	**245,598**

Job Capacity by Assumed Density Level	#	%
Very Low Density	0	0%
Low Density	420	0%
Medium Low Density	460	0%
Medium High Density	28,973	12%
High Density	215,745	88%
Capacity in Pipeline		*0*
Total Capacity (jobs)		**245,598**
Remaining Target (2018-2035)		46,982
Surplus/Deficit Capacity (jobs)		**198,616**

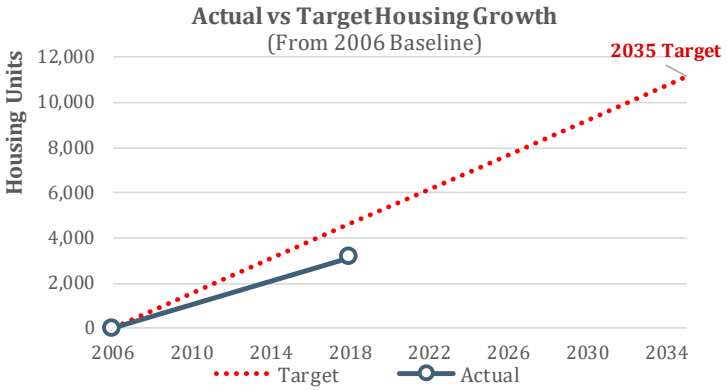


Core Cities

City of Auburn
City of Bothell
City of Burien
City of Federal Way
City of Issaquah
City of Kent
City of Kirkland
City of Redmond
City of Renton
City of SeaTac
City of Tukwila

City of Auburn

Housing Growth and Residential Development Trends



Auburn Housing Growth Target: 2006-2035	11,159
2006 Estimated Housing Units	23,602
2018 Estimated Housing Units	26,740
Estimated Housing Growth	**3,138**
Remaining 2035 Target	8,021

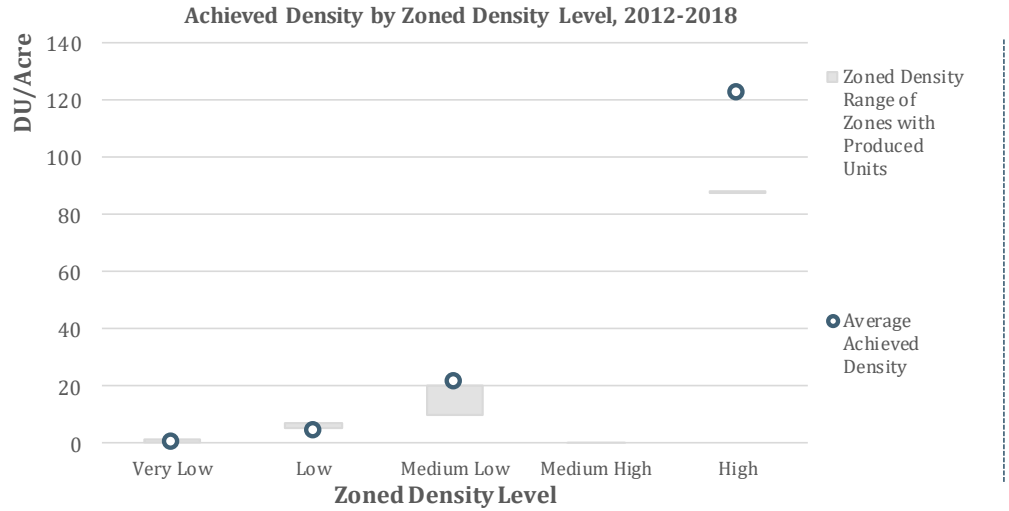
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
68.0%	1.05%	1.56%

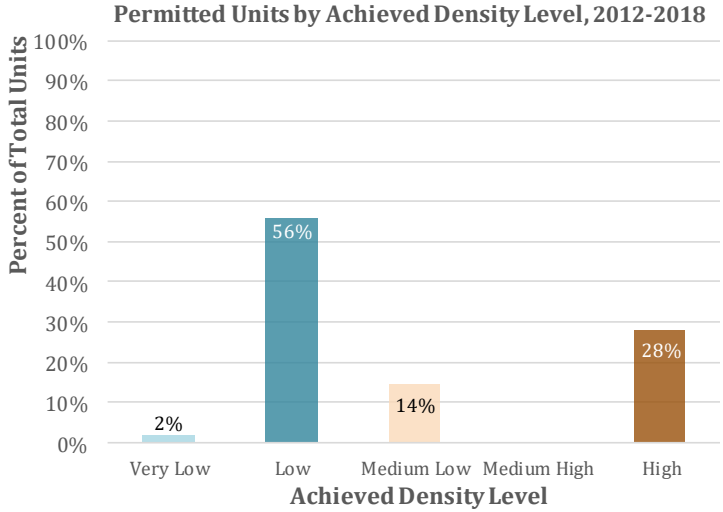
Since 2006, Auburn has grown at 68% of the pace needed to achieve its 2035 housing growth target of 11,159 units. During this period, the total number of housing units in Auburn grew by roughly 13%. At this current rate, Auburn is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1.6% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	173.6	0.0	0.0	0.0	173.6	5	**0.0**
Low	4 - 10 du/acre	135.5	0.0	0.0	0.0	135.5	525	**3.9**
Medium Low	10 - 24 du/acre	6.2	0.0	0.0	0.0	6.2	132	**21.1**
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	2.1	0.0	0.0	0.0	2.1	255	**122.1**
	Total	**317.5**	**0.0**	**0.0**	**0.0**	**317.5**	**917**	**2.9**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	208.6	18
Low	117.1	512
Medium Low	6.2	132
Medium High	0.0	0
High	2.1	255
Total	**334.0**	**917**



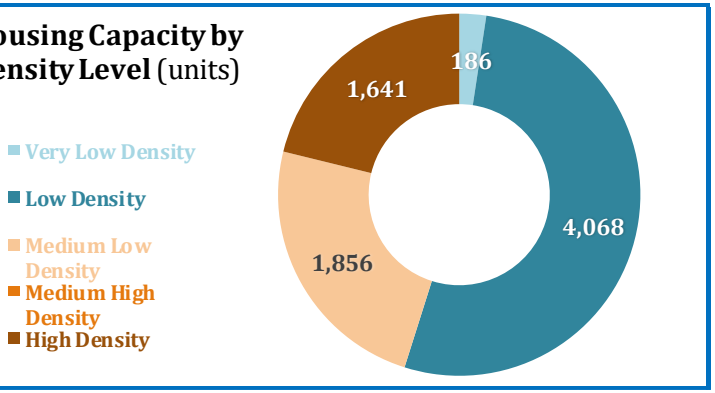


Auburn - Residential Land Supply and Capacity

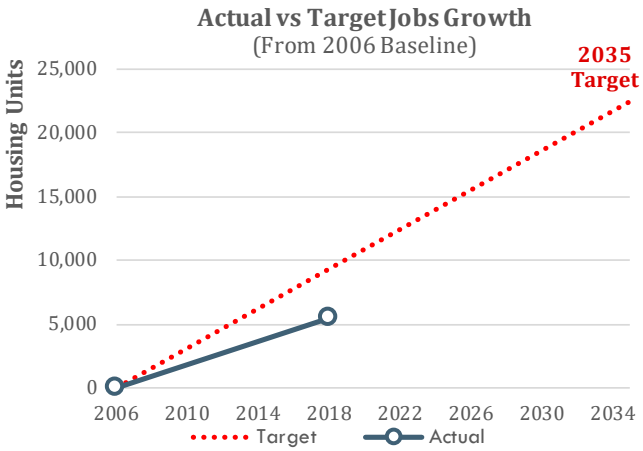
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				89.35	20.0% - 20.0%	268.04	0.3 / 1.0	119
	Redev Subtotal				114.76	20.0% - 20.0%	344.27	0.3 / 1.0	67
	Subtotal	1,508.47	354.51	133.45	204.10		612.31		**186**
Low Density	Vacant Subtotal				121.45	15.0% - 20.0%	387.16	4.4 / 7.0	1,939
	Redev Subtotal				183.49	15.0% - 20.0%	589.17	4.4 / 7.0	2,129
	Subtotal	1,947.77	299.20	123.89	304.94		976.33		**4,068**
Medium Low Density	Vacant Subtotal				11.06	5.0% - 20.0%	64.56	10.0 / 21.1	1,009
	Redev Subtotal				8.97	5.0% - 20.0%	52.92	10.0 / 21.1	847
	Subtotal	368.92	212.31	0.67	20.04		117.49		**1,856**
Medium High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				1.03	5.0% - 5.0%	6.82	94.0	641
	Redev Subtotal				1.61	5.0% - 5.0%	10.65	94.0	1,000
	Subtotal	21.35	0.18	0.00	2.65		17.47		**1,641**
All Zones	Vacant Total				222.89		726.58		3,708
	Redev Total				308.83		997.01		4,043
	Total	**3,846.51**	**866.20**	**258.01**	**531.72**		**1,723.59**		**7,751**

Capacity (units)	
Very Low Density Zones	186
Low Density Zones	4,068
Medium Low Density Zones	1,856
Medium High Density Zones	0
High Density Zones	1,641
Capacity in Pipeline	*1,400*
Total Capacity (Units)	**9,151**
Remaining Target (2018-2035)	8,021
Surplus/Deficit Capacity (Units)	**1,130**

Housing Capacity by Density Level (units)



Auburn - Employment Growth and Commercial/Industrial Development Trends



Auburn Jobs Growth Target: 2006-2035	22,446
2006 Jobs (PSRC)	38,252
2018 Jobs (PSRC)	43,770
Total Jobs Growth	**5,518**
Remaining 2035 Target	16,928

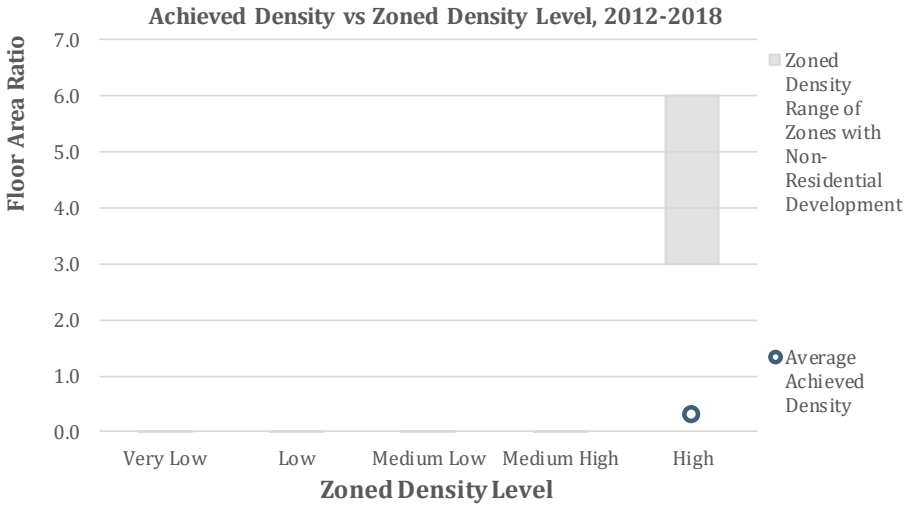
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
59.4%	**1.13%**	**1.94%**

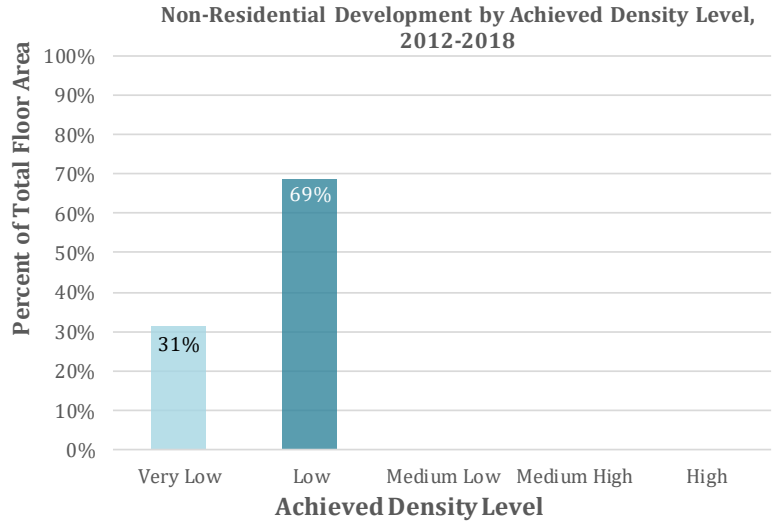
Since 2006, Auburn has grown at 59% of the pace needed to achieve its 2035 jobs growth target of 22,446 units. During this period, the total number of jobs in Auburn grew by roughly 14%. At this current rate, Auburn is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 1.9% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	1,435,270	400,061	**0.3**
	Total	**1,435,270**	**400,061**	**0.3**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	766,494	125,804	**0.2**
Low	668,776	274,257	**0.4**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**1,435,270**	**400,061**	**0.3**



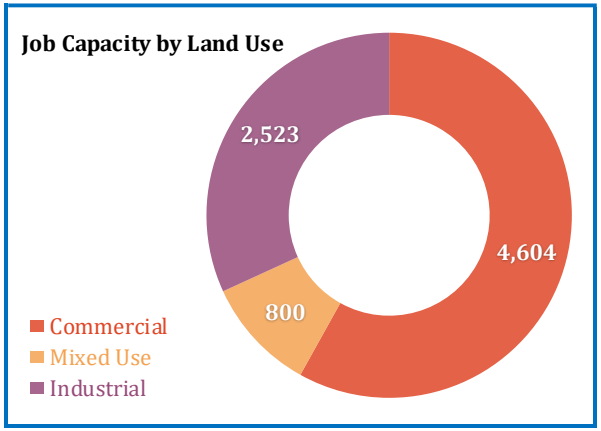


Auburn - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	420.4	93.2	16.4	24.5	286.3	15%	237.2
Mixed Use	152.6	113.3	2.0	2.9	34.4	5%	32.4
Industrial	718.2	362.8	17.8	26.7	310.9	8%	282.5
Non-Res Land Total	**1291.1**	**569.4**	**36.1**	**54.1**	**631.5**		**552.1**

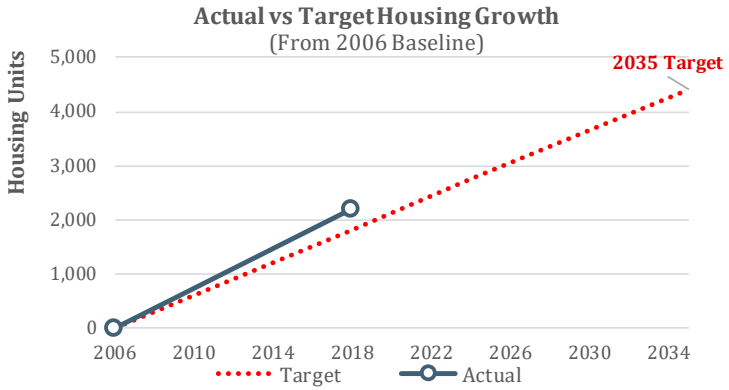
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	5.19	0.25	0.00	1.30	375 / 400	3,270
Redevelopable	5.14	0.25	0.76	0.53	375 / 400	1334
Commercial Total	**10.33**	**0.25**	**0.76**	**1.83**	**375 / 400**	**4,604**
Mixed-Use						
Vacant	0.95	0.25 / 0.37	0.00	0.33	400 / 1000	531
Redevelopable	0.46	0.25 / 0.37	0.06	0.11	400 / 1000	268
Mixed Use Total	**1.41**	**0.25 / 0.37**	**0.06**	**0.44**	**400 / 1000**	**800**
Industrial						
Vacant	6.71	0.07 / 0.41	0.00	1.63	1,000	1,631
Redevelopable	5.60	0.07 / 0.41	0.29	0.89	1,000	892
Industrial Total	**12.31**	**0.07 / 0.41**	**0.29**	**2.52**	**1,000**	**2,523**
City Total						
Commercial	10.33	0.25	0.69	1.83	375 / 400	4,604
Mixed Use	1.41	0.25 / 0.37	0.91	0.44	400 / 1000	800
Industrial	12.31	0.07 / 0.41	0.26	2.52	1,000	2,523
Job Capacity in Pipeline						*0*
City Total	**24.05**	**0.07 / 0.41**	**1.86**	**4.79**	**375 / 1000**	**7,927**

Job Capacity by Assumed Density Level	#	%
Very Low Density	4,877	62%
Low Density	3,050	38%
Medium Low Density	0	0%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*0*
Total Capacity (jobs)		**7,927**
Remaining Target (2018-2035)		16,928
Surplus/Deficit Capacity (jobs)		**-9,001**



City of Bothell

Housing Growth and Residential Development Trends



Bothell Housing Growth Target: 2006-2035	4,420
2006 Estimated Housing Units	9,522
2018 Estimated Housing Units	11,726
Estimated Housing Growth	**2,204**
Remaining 2035 Target	2,216

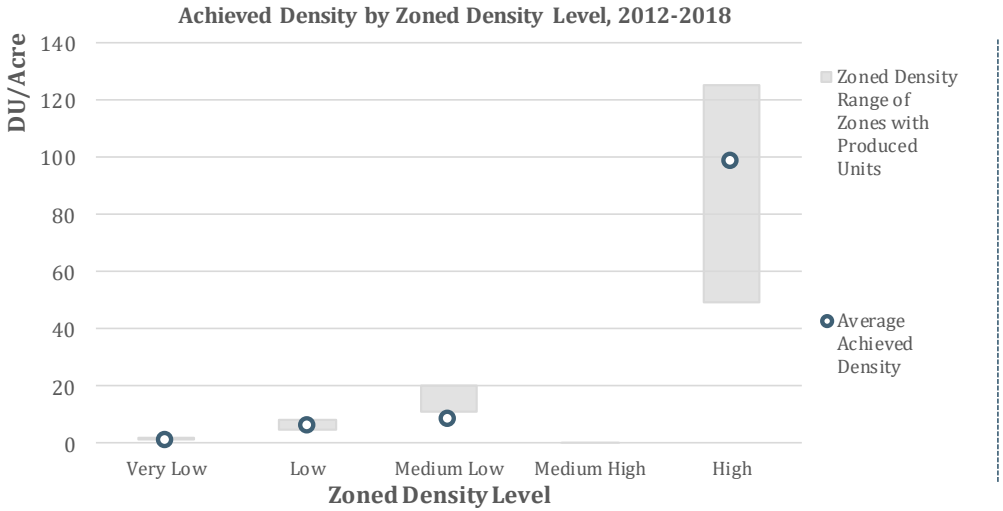
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
120.5%	**1.75%**	**1.02%**

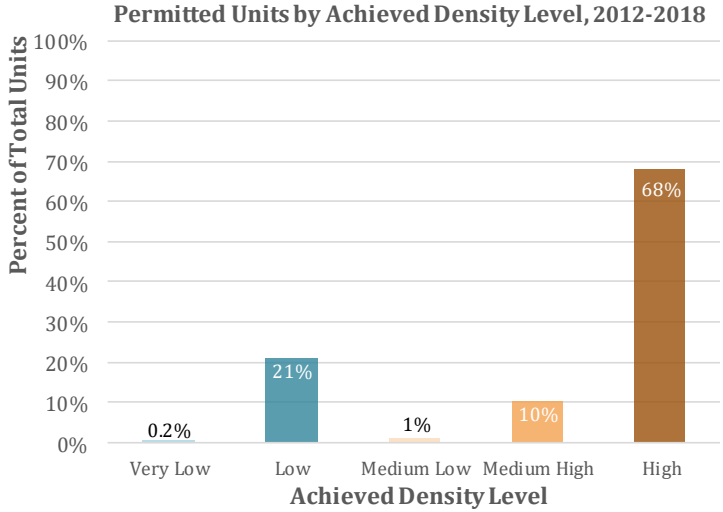
Since 2006, Bothell has grown at 121% of the pace needed to achieve its 2035 housing growth target of 4,420 units. During this period, the total number of housing units in Bothell grew by roughly 23%. At this current rate, Bothell is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	1.6	0.0	0.0	0.0	1.6	1	**0.6**
Low	4 - 10 du/acre	179.1	43.2	0.0	19.7	116.2	670	**5.8**
Medium Low	10 - 24 du/acre	6.3	0.2	0.0	0.0	6.1	49	**8.1**
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	20.9	0.0	1.7	0.5	18.7	1,836	**98.1**
	Total	**207.9**	**43.5**	**1.7**	**20.2**	**142.5**	**2,556**	**17.9**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	3.7	6
Low	112.6	535
Medium Low	1.6	22
Medium High	9.5	260
High	15.1	1,733
Total	**142.5**	**2,556**



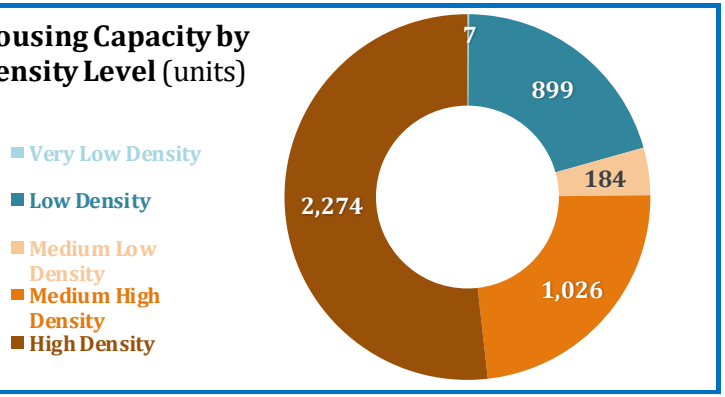


Bothell - Residential Land Supply and Capacity

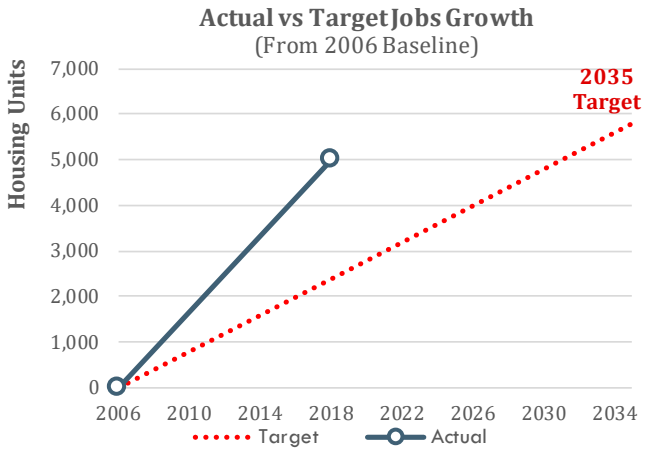
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				5.39	1.0% - 3.0%	10.03	3.1	7
	Redev Subtotal				1.20	1.0% - 3.0%	2.81	3.1	0
	Subtotal	34.07	13.33	0.00	6.58		12.85		**7**
Low Density	Vacant Subtotal				42.64	3.0% - 5.0%	77.45	4.3 / 8.0	392
	Redev Subtotal				71.22	3.0% - 5.0%	126.99	4.3 / 8.0	508
	Subtotal	376.01	47.71	0.00	113.86		204.45		**899**
Medium Low Density	Vacant Subtotal				0.75	3.0% - 5.0%	2.14	13.3 / 23.9	33
	Redev Subtotal				3.51	3.0% - 5.0%	9.78	13.3 / 23.9	151
	Subtotal	24.14	7.43	0.00	4.26		11.92		**184**
Medium High Density	Vacant Subtotal				4.47	3.0% - 3.0%	12.88	25.0 / 34.0	407
	Redev Subtotal				7.17	3.0% - 3.0%	20.66	25.0 / 34.0	620
	Subtotal	64.35	17.77	0.00	11.65		33.54		**1,026**
High Density	Vacant Subtotal				3.22	3.0% - 3.0%	9.27	66.3 / 192.4	1,271
	Redev Subtotal				3.43	3.0% - 3.0%	9.89	66.3 / 192.4	1,003
	Subtotal	30.11	3.50	0.00	6.65		19.16		**2,274**
All Zones	Vacant Total				56.47		111.78		2,109
	Redev Total				86.53		170.13		2,282
	Total	**528.68**	**89.74**	**0.00**	**143.00**		**281.91**		**4,391**

Capacity (units)	
Very Low Density Zones	7
Low Density Zones	899
Medium Low Density Zones	184
Medium High Density Zones	1,026
High Density Zones	2,274
Capacity in Pipeline	*1,979*
Total Capacity (Units)	**6,370**
Remaining Target (2018-2035)	2,216
Surplus/Deficit Capacity (Units)	**4,154**

Housing Capacity by Density Level (units)



Bothell - Employment Growth and Commercial/Industrial Development Trends



Bothell Jobs Growth Target: 2006-2035	5,800
2006 Jobs (PSRC)	11,757
2018 Jobs (PSRC)	16,780
Total Jobs Growth	**5,023**
Remaining 2035 Target	777

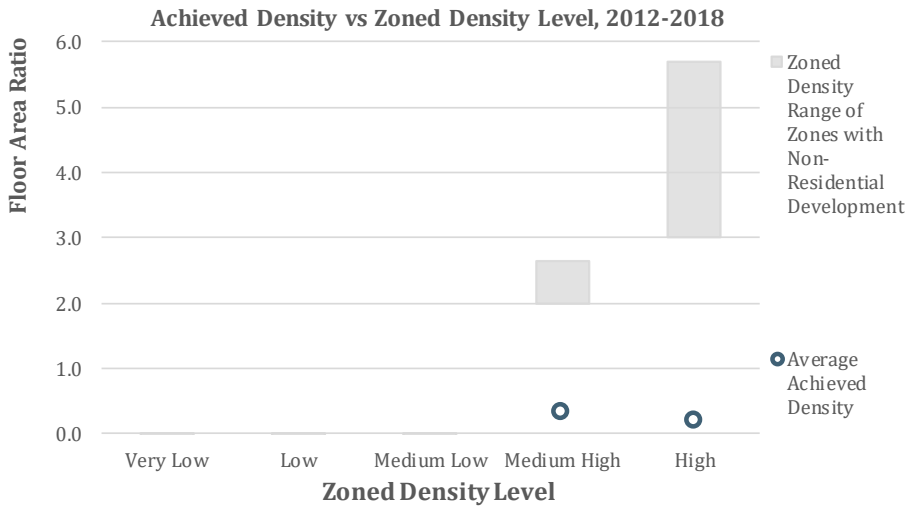
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
209.3%	3.01%	0.27%

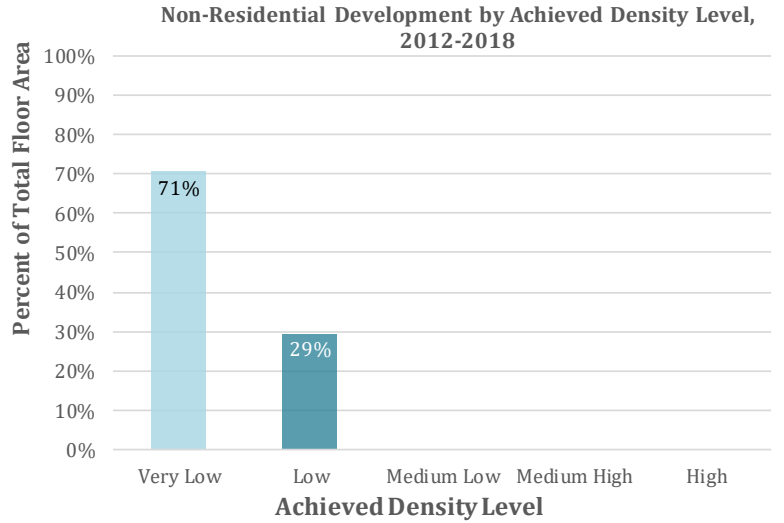
Since 2006, Bothell has grown at 209% of the pace needed to achieve its 2035 jobs growth target of 5,800 units. During this period, the total number of jobs in Bothell grew by roughly 43%. At this current rate, Bothell is over the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 0.3% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	17,550	5,592	0.3
High	3.0 & up FAR	634,620	121,751	0.2
	Total	**652,170**	**127,343**	**0.2**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	551,332	90,251	0.2
Low	100,838	37,092	0.4
Medium Low	0	0	0.0
Medium High	0	0	0.0
High	0	0	0.0
Total	**652,170**	**127,343**	**0.2**



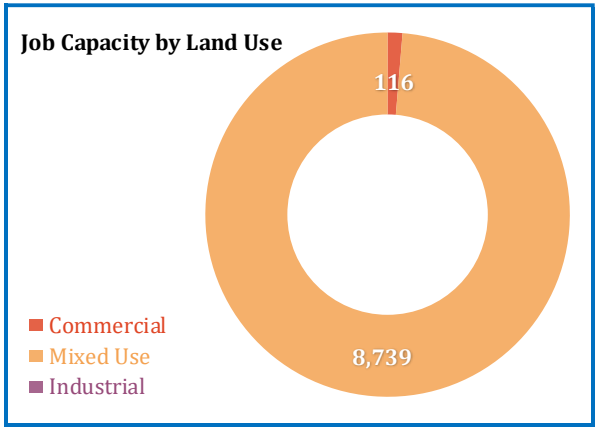


Bothell - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	6.5	2.6	0.6	0.4	2.9	5% - 10%	2.7
Mixed Use	159.4	57.2	15.3	10.2	76.6	1% - 5%	71.7
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**165.9**	**59.9**	**15.9**	**10.6**	**79.5**		**74.3**

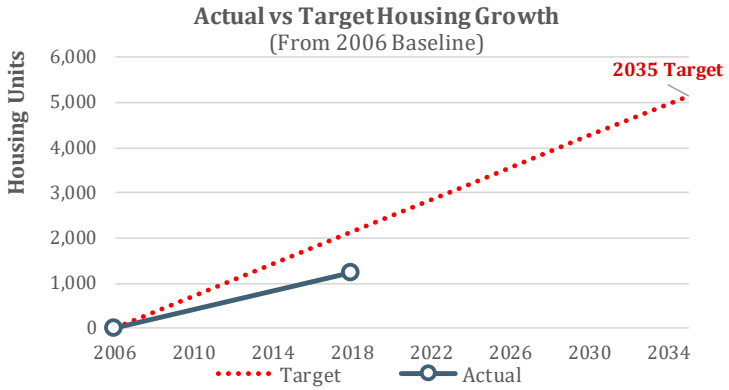
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.02	0.35 / 0.40	0.00	0.01	200	47
Redevelopable	0.09	0.35 / 0.40	0.07	0.01	200	69
Commercial Total	**0.12**	**0.35 / 0.40**	**0.07**	**0.02**	**200**	**116**
Mixed-Use						
Vacant	1.37	0.10 / 1.20	0.00	0.83	200 / 1000	4,137
Redevelopable	1.76	0.10 / 1.20	0.10	0.92	200 / 1000	4602
Mixed Use Total	**3.12**	**0.10 / 1.20**	**0.10**	**1.75**	**200 / 1000**	**8,739**
Industrial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
City Total						
Commercial	0.12	0.35 / 0.40	0.69	0.02	200	116
Mixed Use	3.12	0.10 / 1.20	0.91	1.75	200 / 1000	8,739
Industrial	0.00	0.00	0.26	0.00	0	0
Job Capacity in Pipeline						*160*
City Total	**3.24**	**1.20**	**1.86**	**1.77**	**0 / 1000**	**9,015**

Job Capacity by Assumed Density Level	#	%
Very Low Density	225	3%
Low Density	2,605	29%
Medium Low Density	540	6%
Medium High Density	5,485	62%
High Density	0	0%
Capacity in Pipeline		*160*
Total Capacity (jobs)		**9,015**
Remaining Target (2018-2035)		777
Surplus/Deficit Capacity (jobs)		**8,238**



City of Burien

Housing Growth and Residential Development Trends



Burien Housing Growth Target: 2006-2035	5,150
2006 Estimated Housing Units	19,584
2018 Estimated Housing Units	20,809
Estimated Housing Growth	**1,225**
Remaining 2035 Target	3,926

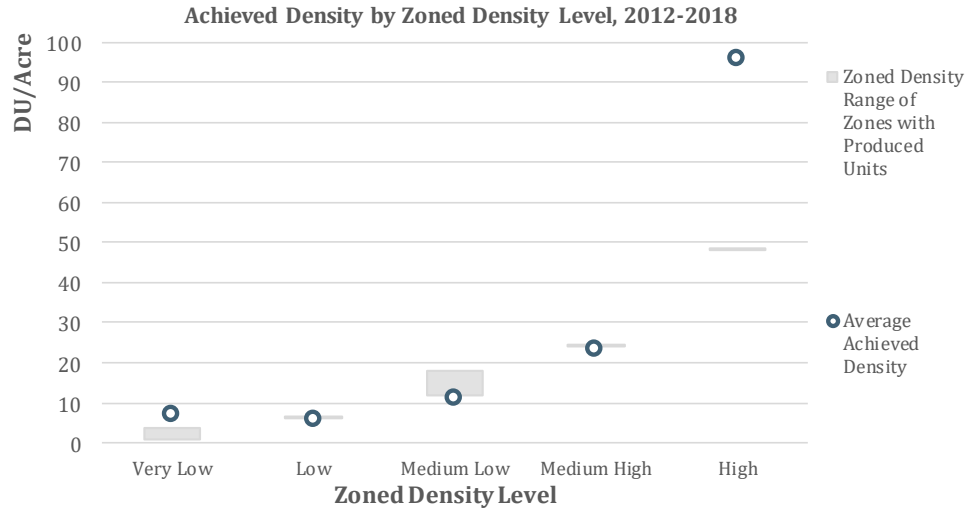
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
57.5%	**0.51%**	**1.02%**

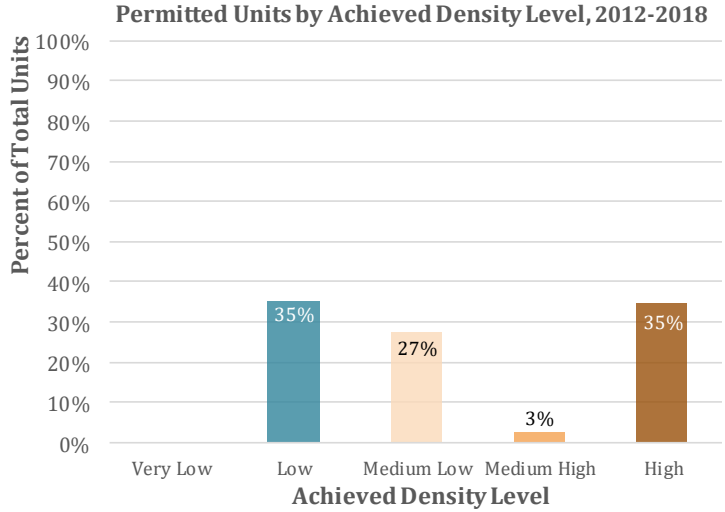
Since 2006, Burien has grown at 57% of the pace needed to achieve its 2035 housing growth target of 5,150 units. During this period, the total number of housing units in Burien grew by roughly 6%. At this current rate, Burien is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	17.6	12.5	0.0	0.2	4.8	33	**6.9**
Low	4 - 10 du/acre	58.3	0.0	0.5	2.1	55.6	323	**5.8**
Medium Low	10 - 24 du/acre	5.7	0.0	0.0	0.0	5.7	63	**11.0**
Medium High	24 - 48 du/acre	9.9	0.4	0.0	0.1	9.4	216	**23.1**
High	48 & up du/acre	4.0	0.0	0.0	0.0	4.0	381	**95.6**
	Total	**95.5**	**13.0**	**0.6**	**2.5**	**79.5**	**1,016**	**12.8**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	0.0	0
Low	60.4	356
Medium Low	15.1	279
Medium High	1.1	27
High	2.9	354
Total	**79.5**	**1,016**

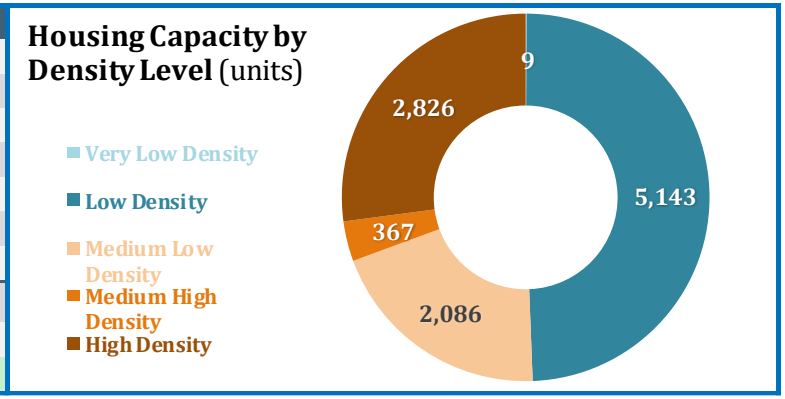




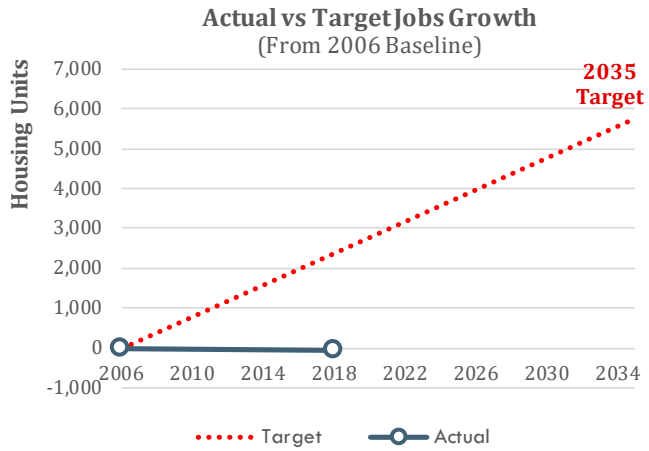
Burien - Residential Land Supply and Capacity

Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				1.23	18.0% - 18.0%	7.17	1.0	7
	Redev Subtotal				0.54	20.0% - 20.0%	3.03	1.0	2
	Subtotal	15.23	0.53	0.00	1.76		10.20		**9**
Low Density	Vacant Subtotal				15.33	16.0% - 30.0%	92.35	5.6 / 8.0	946
	Redev Subtotal				52.01	17.0% - 32.0%	308.91	5.6 / 8.0	4,196
	Subtotal	1,276.66	712.44	0.00	67.34		401.26		**5,143**
Medium Low Density	Vacant Subtotal				2.21	22.0% - 31.0%	37.90	10.8 / 23.0	721
	Redev Subtotal				4.97	24.0% - 32.0%	82.12	10.8 / 23.0	1,365
	Subtotal	204.58	29.80	0.00	7.17		120.01		**2,086**
Medium High Density	Vacant Subtotal				0.16	30.0% - 31.0%	2.60	24.0 / 25.7	66
	Redev Subtotal				0.98	32.0% - 33.0%	15.58	24.0 / 25.7	301
	Subtotal	28.87	0.54	0.00	1.13		18.18		**367**
High Density	Vacant Subtotal				0.60	31.0% - 100.0%	2.47	120.7	349
	Redev Subtotal				1.33	32.0% - 100.0%	20.91	120.7	2,477
	Subtotal	50.50	7.05	0.00	1.93		23.38		**2,826**
All Zones	Vacant Total				19.52		142.49		2,089
	Redev Total				59.82		430.54		8,341
	Total	**1,575.84**	**750.36**	**0.00**	**79.34**		**573.03**		**10,431**

Capacity (units)	
Very Low Density Zones	9
Low Density Zones	5,143
Medium Low Density Zones	2,086
Medium High Density Zones	367
High Density Zones	2,826
Capacity in Pipeline	*385*
Total Capacity (Units)	**10,816**
Remaining Target (2018-2035)	3,926
Surplus/Deficit Capacity (Units)	**6,890**



Burien - Employment Growth and Commercial/Industrial Development Trends



Burien Jobs Growth Target: 2006-2035	5,754
2006 Jobs (PSRC)	13,371
2018 Jobs (PSRC)	13,345
Total Jobs Growth	**-26**
Remaining 2035 Target	5,754

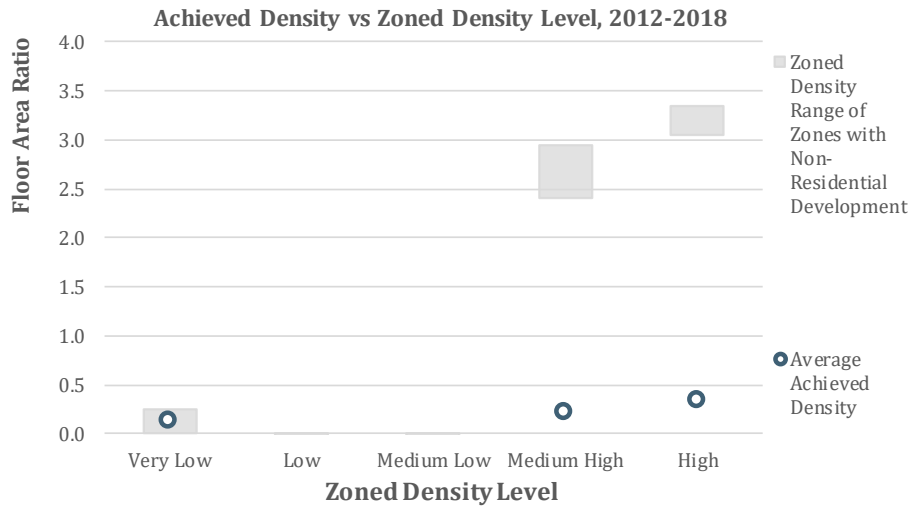
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
-1.1%	**-0.02%**	**2.14%**

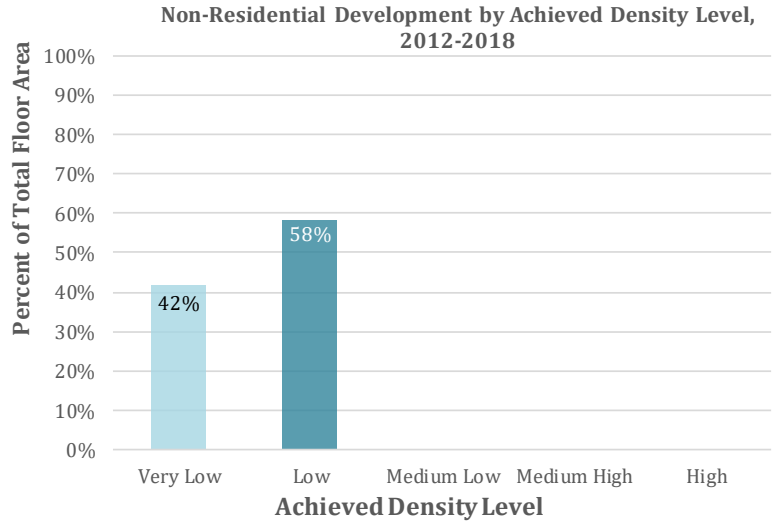
Since 2006, Burien has grown at -1% of the pace needed to achieve its 2035 jobs growth target of 5,754 units. During this period, the total number of jobs in Burien grew by roughly 0%. At this current rate, Burien is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 2.1% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	113,288	13,973	**0.1**
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	313,495	69,911	**0.2**
High	3.0 & up FAR	965,891	329,761	**0.3**
	Total	**1,392,674**	**413,645**	**0.3**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	808,777	172,505	**0.2**
Low	583,897	241,140	**0.4**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**1,392,674**	**413,645**	**0.3**



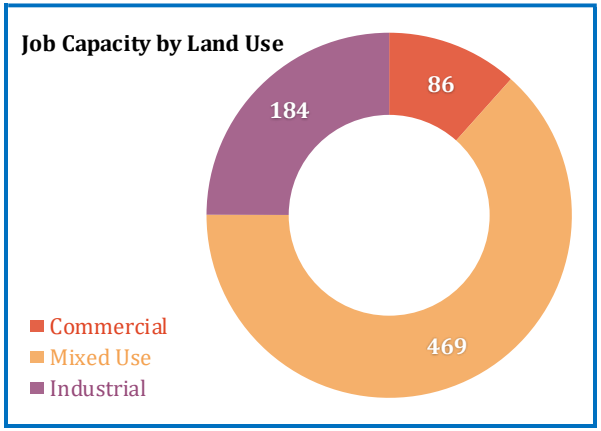


Burien - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	12.1	0.2	0.4	0.4	11.1	36% - 40%	6.7
Mixed Use	129.3	13.7	3.5	3.5	108.7	10% - 46%	64.9
Industrial	16.3	0.0	0.5	0.5	15.3	8% - 10%	13.7
Non-Res Land Total	**157.6**	**13.9**	**4.3**	**4.3**	**135.1**		**85.3**

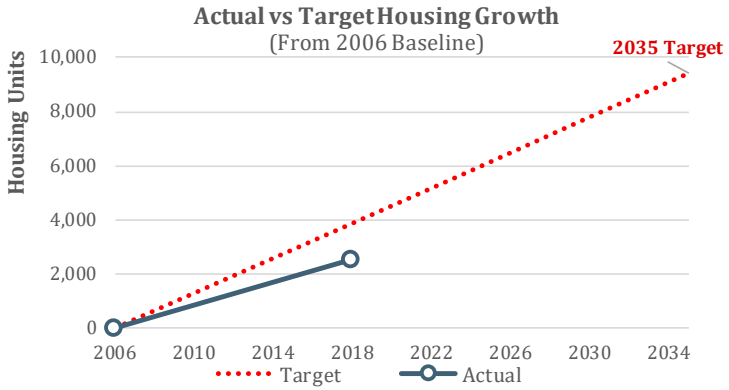
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.15	0.22 / 0.40	0.00	0.06	650	86
Redevelopable	0.14	0.22 / 0.40	0.11	0.00	650	0
Commercial Total	**0.29**	**0.22 / 0.40**	**0.11**	**0.06**	**650**	**86**
Mixed-Use						
Vacant	1.17	0.12 / 0.41	0.00	0.30	650 / 1200	406
Redevelopable	1.66	0.12 / 0.41	1.17	0.04	650 / 1200	62
Mixed Use Total	**2.83**	**0.12 / 0.41**	**1.17**	**0.34**	**650 / 1200**	**469**
Industrial						
Vacant	0.09	0.41	0.00	0.04	1,200	30
Redevelopable	0.51	0.41	0.02	0.19	1,200	154
Industrial Total	**0.60**	**0.41**	**0.02**	**0.22**	**1,200**	**184**
City Total						
Commercial	0.29	0.22 / 0.40	0.69	0.06	650	86
Mixed Use	2.83	0.12 / 0.41	0.91	0.34	650 / 1200	469
Industrial	0.60	0.41	0.26	0.22	1,200	184
Job Capacity in Pipeline						*13*
City Total	**3.71**	**0.12 / 0.41**	**1.86**	**0.62**	**650 / 1200**	**752**

Job Capacity by Assumed Density Level	#	%
Very Low Density	414	56%
Low Density	325	44%
Medium Low Density	0	0%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*13*
Total Capacity (jobs)		**752**
Remaining Target (2018-2035)		5,780
Surplus/Deficit Capacity (jobs)		**-5,027**



City of Federal Way

Housing Growth and Residential Development Trends



Federal Way Housing Growth Target: 2006-2035	9,396
2006 Estimated Housing Units	34,560
2018 Estimated Housing Units	37,085
Estimated Housing Growth	**2,525**
Remaining 2035 Target	6,871

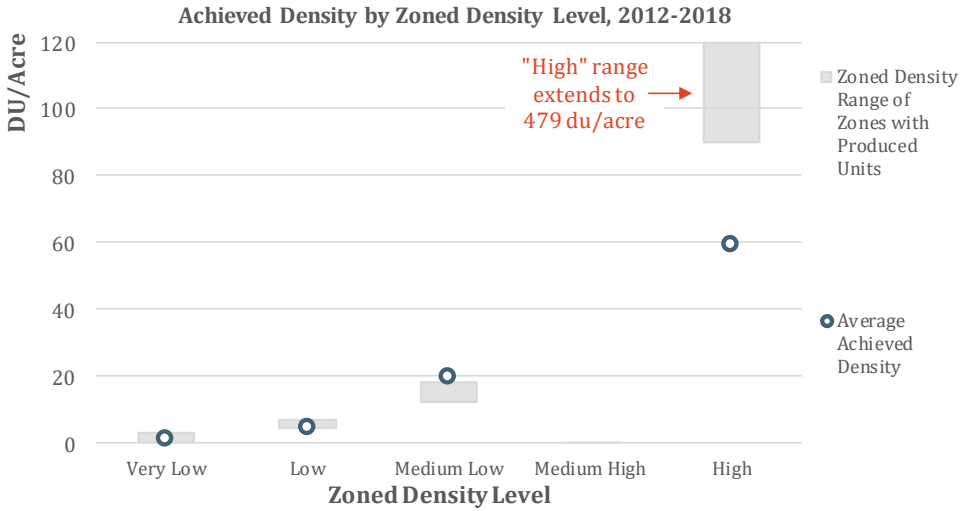
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
65.0%	**0.59%**	**1.00%**

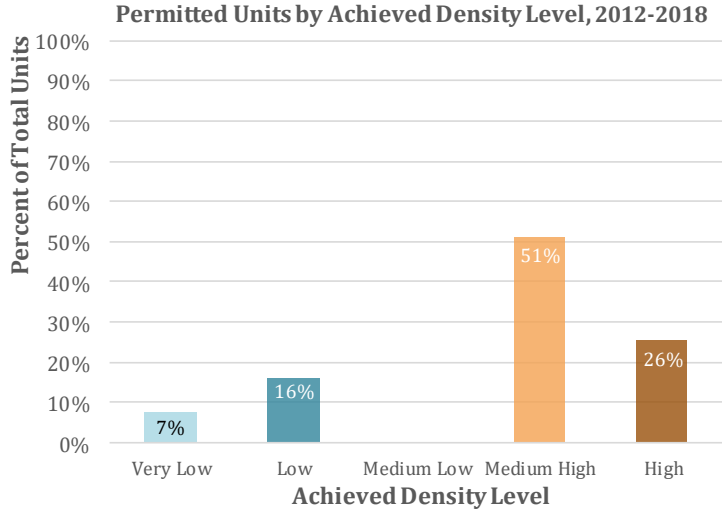
Since 2006, Federal Way has grown at 65% of the pace needed to achieve its 2035 housing growth target of 9,396 units. During this period, the total number of housing units in Federal Way grew by roughly 7%. At this current rate, Federal Way is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	29.7	0.0	0.0	0.0	29.7	29	**1.0**
Low	4 - 10 du/acre	57.1	0.0	0.0	0.0	57.1	245	**4.3**
Medium Low	10 - 24 du/acre	59.0	17.9	7.1	0.3	33.7	659	**19.5**
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	14.1	0.0	0.5	1.5	12.2	723	**59.2**
	Total	**160.0**	**17.9**	**7.6**	**1.7**	**132.8**	**1,656**	**12.5**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	56.5	123
Low	46.4	264
Medium Low	0.0	0
Medium High	26.1	846
High	3.7	423
Total	**132.8**	**1,656**



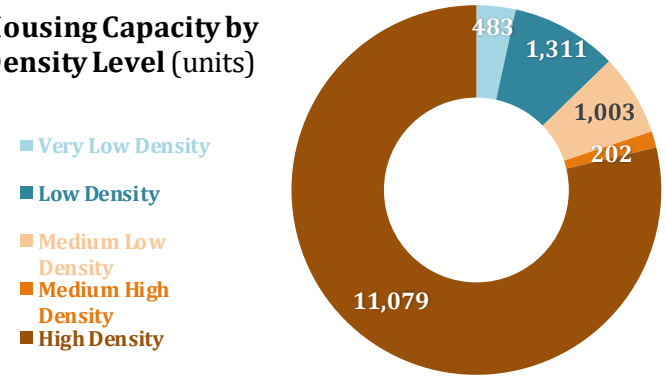


Federal Way - Residential Land Supply and Capacity

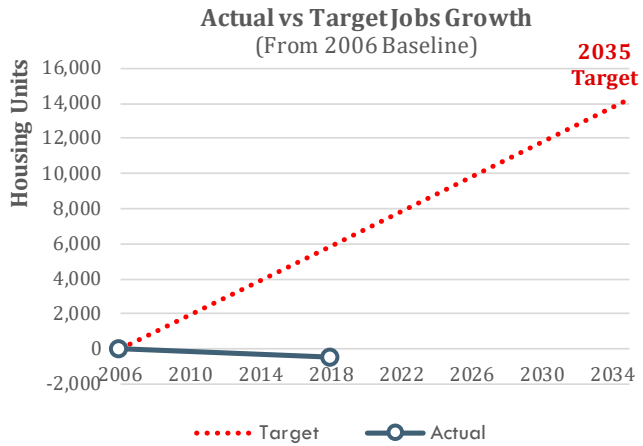
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				91.64	18.0% - 18.0%	123.06	0.2 / 2.9	258
	Redev Subtotal				118.17	18.0% - 18.0%	158.68	0.2 / 2.9	225
	Subtotal	1,391.30	791.83	0.00	209.81		281.75		**483**
Low Density	Vacant Subtotal				99.14	18.0% - 18.0%	133.14	4.5 / 8.7	723
	Redev Subtotal				136.12	18.0% - 18.0%	182.78	4.5 / 8.7	588
	Subtotal	1,459.97	787.80	0.00	235.26		315.92		**1,311**
Medium Low Density	Vacant Subtotal				12.13	7.0% - 10.0%	34.88	12.1 / 18.2	479
	Redev Subtotal				24.82	7.0% - 10.0%	69.72	12.1 / 18.2	524
	Subtotal	307.20	154.15	0.00	36.95		104.60		**1,003**
Medium High Density	Vacant Subtotal				2.43	7.0% - 7.0%	6.62	24.2	160
	Redev Subtotal				0.82	7.0% - 7.0%	2.22	24.2	42
	Subtotal	39.00	26.01	0.00	3.25		8.83		**202**
High Density	Vacant Subtotal				17.27	10.0% - 10.0%	60.44	54.0 / 135.0	3,400
	Redev Subtotal				23.15	10.0% - 10.0%	81.03	54.0 / 135.0	7,679
	Subtotal	406.99	86.43	0.00	40.42		141.47		**11,079**
All Zones	Vacant Total				222.62		358.13		5,020
	Redev Total				303.07		494.43		9,057
	Total	**3,604.46**	**1,846.21**	**0.00**	**525.68**		**852.56**		**14,077**

Capacity (units)	
Very Low Density Zones	483
Low Density Zones	1,311
Medium Low Density Zones	1,003
Medium High Density Zones	202
High Density Zones	11,079
Capacity in Pipeline	*0*
Total Capacity (Units)	**14,077**
Remaining Target (2018-2035)	6,871
Surplus/Deficit Capacity (Units)	**7,207**

Housing Capacity by Density Level (units)



Federal Way - Employment Growth and Commercial/Industrial Development Trends



Federal Way Jobs Growth Target: 2006-2035	14,268
2006 Jobs (PSRC)	31,616
2018 Jobs (PSRC)	31,148
Total Jobs Growth	**-468**
Remaining 2035 Target	14,268

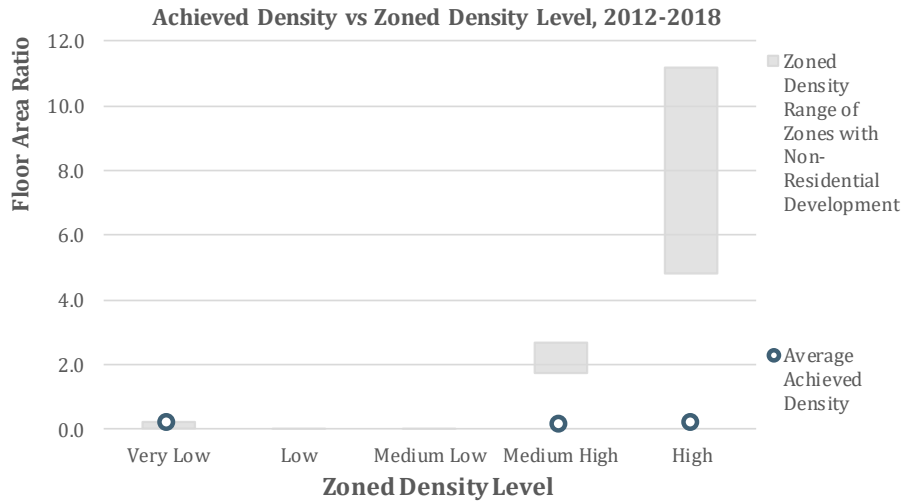
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
-7.9%	**-0.12%**	**2.31%**

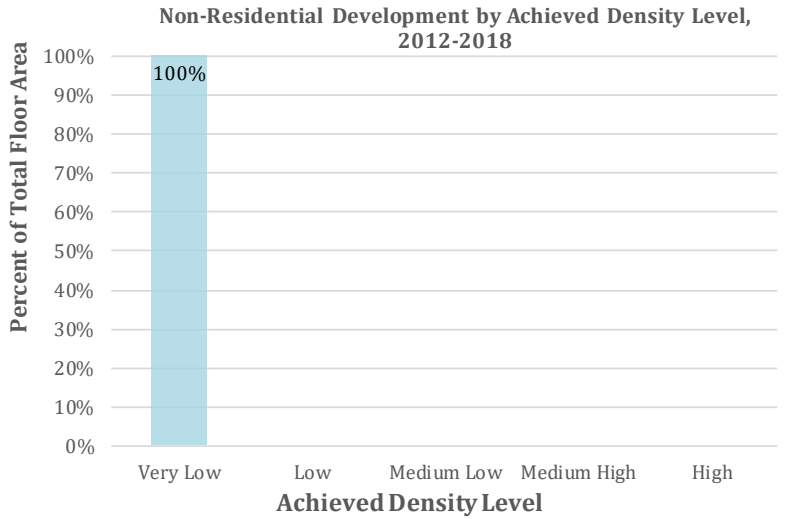
Since 2006, Federal Way has grown at -8% of the pace needed to achieve its 2035 jobs growth target of 14,268 units. During this period, the total number of jobs in Federal Way grew by roughly -1%. At this current rate, Federal Way is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 2.3% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	56,628	9,120	**0.2**
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	2,989,922	407,512	**0.1**
High	3.0 & up FAR	1,222,002	218,100	**0.2**
	Total	**4,268,552**	**634,732**	**0.1**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	4,268,552	634,732	**0.1**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**4,268,552**	**634,732**	**0.1**



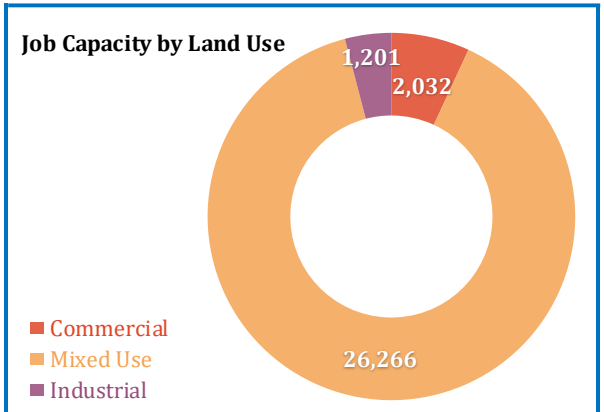


Federal Way - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	536.0	224.3	46.8	15.6	249.3	15%	202.6
Mixed Use	250.3	21.9	34.3	11.4	182.7	10%	159.9
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**786.3**	**246.2**	**81.0**	**27.0**	**432.1**		**362.5**

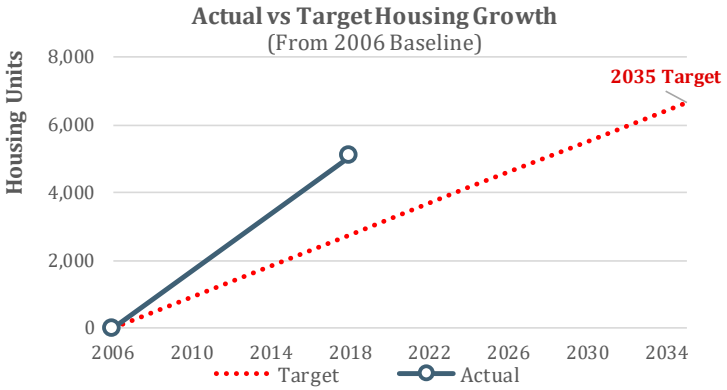
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	4.68	0.38	0.00	1.16	700 / 900	1,302
Redevelopable	4.14	0.38	0.08	0.66	700 / 900	730
Commercial Total	**8.82**	**0.38**	**0.08**	**1.82**	**700 / 900**	**2,032**
Mixed-Use						
Vacant	3.00	0.18 / 4.90	0.01	1.24	450	2,761
Redevelopable	3.96	0.18 / 4.90	0.35	10.58	450	23,505
Mixed Use Total	**6.96**	**0.18 / 4.90**	**0.36**	**11.82**	**450**	**26,266**
Industrial*						
Vacant	1.29	0.40	0.00	0.52	1,100	469
Redevelopable	2.32	0.40	0.12	0.81	1,100	732
Industrial Total	**3.61**	**0.40**	**0.12**	**1.32**	**1,100**	**1,201**
City Total						
Commercial	8.82	0.38	0.69	1.82	700 / 900	2,032
Mixed Use	6.96	0.18 / 4.90	0.91	11.82	450	26,266
Industrial	3.61	0.40	0.26	1.32	1,100	1,201
Job Capacity in Pipeline						*0*
City Total	**19.40**	**4.90**	**1.86**	**14.96**	**450 / 1100**	**29,500**

Job Capacity by Assumed Density Level	#	%
Very Low Density	1,673	6%
Low Density	3,174	11%
Medium Low Density	0	0%
Medium High Density	4,721	16%
High Density	19,933	68%
Capacity in Pipeline		*0*
Total Capacity (jobs)		**29,500**
Remaining Target (2018-2035)		14,736
Surplus/Deficit Capacity (jobs)		**14,764**



City of Issaquah

Housing Growth and Residential Development Trends



Issaquah Housing Growth Target: 2006-2035	6,670
2006 Estimated Housing Units	11,517
2018 Estimated Housing Units	16,612
Estimated Housing Growth	**5,096**
Remaining 2035 Target	1,574

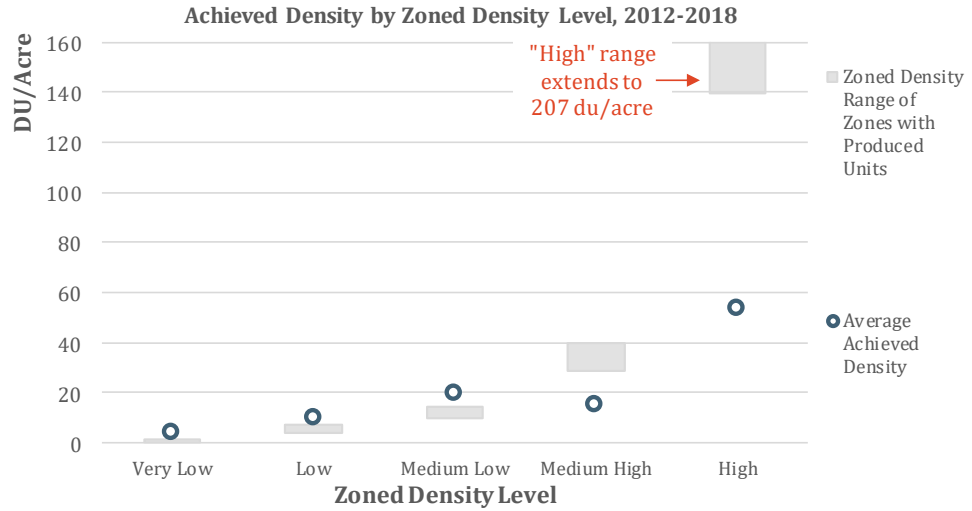
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
184.6%	3.10%	0.53%

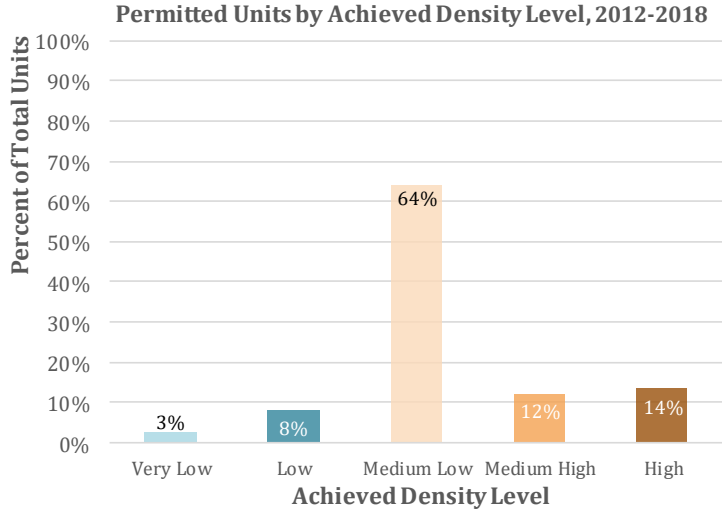
Since 2006, Issaquah has grown at 185% of the pace needed to achieve its 2035 housing growth target of 6,670 units. During this period, the total number of housing units in Issaquah grew by roughly 44%. At this current rate, Issaquah is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0.5% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	26.0	7.3	0.0	0.0	18.7	78	**4.2**
Low	4 - 10 du/acre	47.7	0.3	0.0	0.0	47.4	481	**10.1**
Medium Low	10 - 24 du/acre	21.4	0.2	0.0	3.1	18.1	358	**19.8**
Medium High	24 - 48 du/acre	87.2	0.1	1.0	3.5	82.5	1,238	**15.0**
High	48 & up du/acre	9.7	3.0	0.0	0.0	6.6	356	**53.6**
	Total	**191.9**	**10.9**	**1.0**	**6.6**	**173.4**	**2,511**	**14.5**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	27.8	67
Low	26.7	196
Medium Low	103.0	1,606
Medium High	10.2	298
High	5.6	344
Total	**173.4**	**2,511**



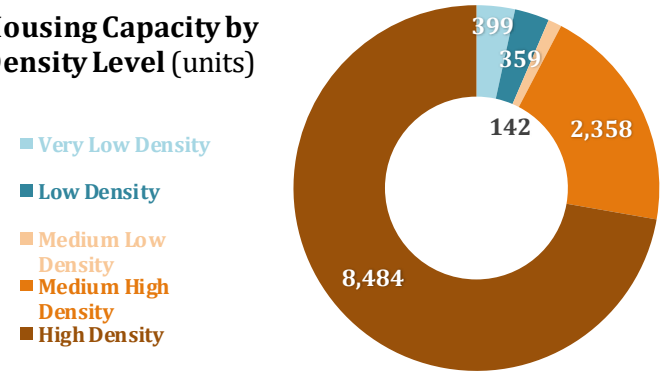


Issaquah - Residential Land Supply and Capacity

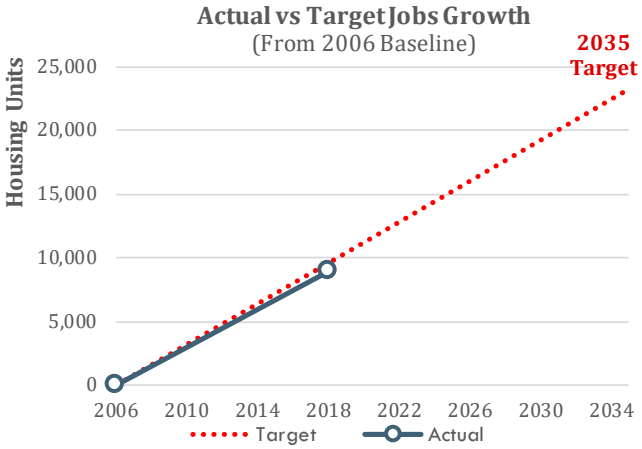
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				22.10	7.0% - 15.0%	69.11	4.0	175
	Redev Subtotal				44.47	7.0% - 15.0%	137.42	4.0	224
	Subtotal	392.70	103.48	0.00	66.57		206.53		**399**
Low Density	Vacant Subtotal				8.22	12.0% - 25.0%	27.10	6.9 / 9.2	197
	Redev Subtotal				19.78	12.0% - 25.0%	64.55	6.9 / 9.2	162
	Subtotal	166.28	27.60	0.00	28.00		91.65		**359**
Medium Low Density	Vacant Subtotal				1.32	1.0% - 15.0%	8.28	11.7 / 15.0	109
	Redev Subtotal				1.27	1.0% - 15.0%	7.50	11.7 / 15.0	32
	Subtotal	22.65	1.89	0.00	2.60		15.78		**142**
Medium High Density	Vacant Subtotal				11.37	1.0% - 25.0%	68.43	27.0 / 33.0	2,063
	Redev Subtotal				2.55	1.0% - 25.0%	12.73	27.0 / 33.0	295
	Subtotal	28.69	2.72	0.00	13.92		81.15		**2,358**
High Density	Vacant Subtotal				6.29	15.0% - 20.0%	33.55	50.0 / 60.0	1,982
	Redev Subtotal				32.50	15.0% - 20.0%	122.37	50.0 / 60.0	6,503
	Subtotal	292.63	21.71	0.00	38.79		155.92		**8,484**
All Zones	Vacant Total				49.30		206.47		4,526
	Redev Total				100.58		344.57		7,216
	Total	**902.95**	**157.40**	**0.00**	**149.87**		**551.04**		**11,743**

Capacity (units)	
Very Low Density Zones	399
Low Density Zones	359
Medium Low Density Zones	142
Medium High Density Zones	2,358
High Density Zones	8,484
Capacity in Pipeline	*2,360*
Total Capacity (Units)	**14,103**
Remaining Target (2018-2035)	1,574
Surplus/Deficit Capacity (Units)	**12,528**

Housing Capacity by Density Level (units)



Issaquah - Employment Growth and Commercial/Industrial Development Trends



Issaquah Jobs Growth Target: 2006-2035	23,200
2006 Jobs (PSRC)	18,889
2018 Jobs (PSRC)	27,839
Total Jobs Growth	**8,950**
Remaining 2035 Target	14,250

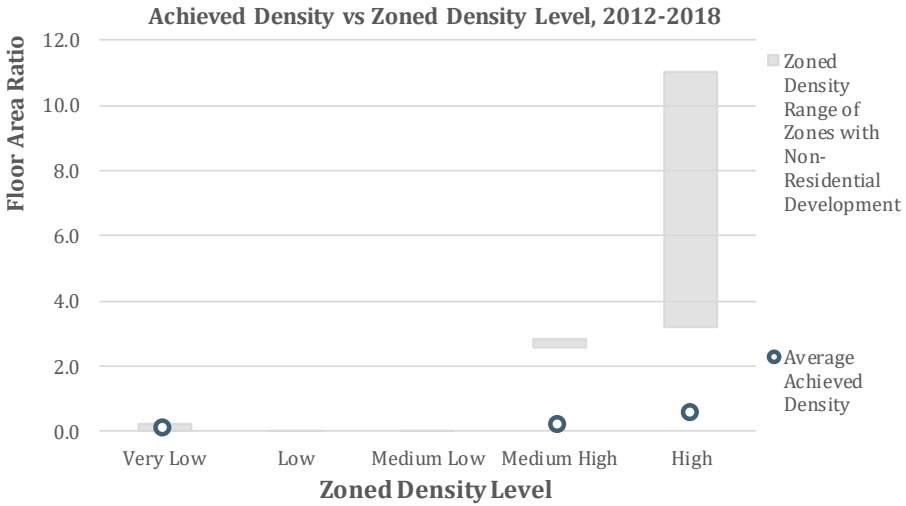
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
93.2%	3.29%	2.46%

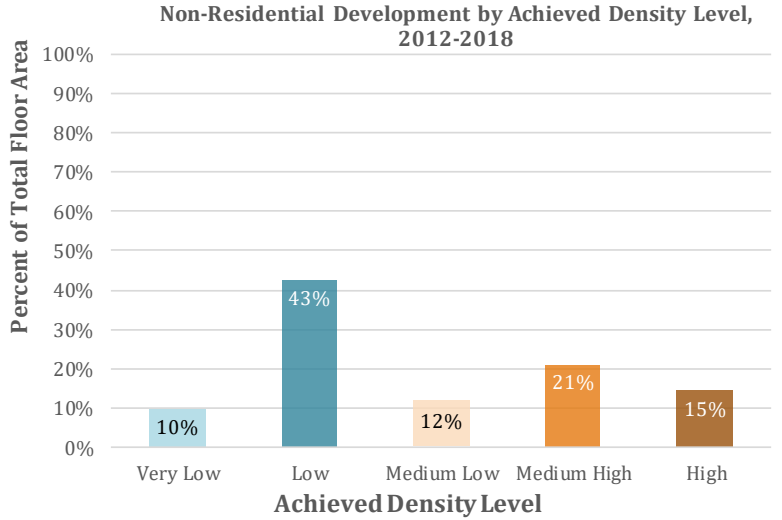
Since 2006, Issaquah has grown at 93% of the pace needed to achieve its 2035 jobs growth target of 23,200 units. During this period, the total number of jobs in Issaquah grew by roughly 47%. At this current rate, Issaquah is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 2.5% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	1,069,083	79,167	**0.1**
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	62,188	10,650	**0.2**
High	3.0 & up FAR	1,705,456	938,629	**0.6**
	Total	**2,836,727**	**1,028,446**	**0.4**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	1,263,400	99,261	**0.1**
Low	1,226,830	439,629	**0.4**
Medium Low	204,521	122,521	**0.6**
Medium High	92,998	217,468	**2.3**
High	48,978	149,567	**3.1**
Total	**2,836,727**	**1,028,446**	**0.4**



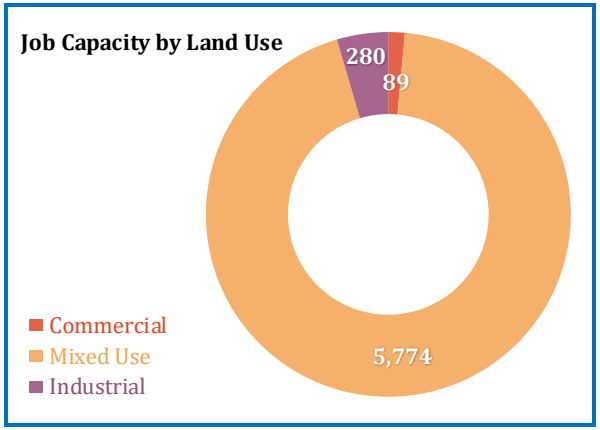


Issaquah - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	1.3	0.1	0.1	0.1	1.0	0%	1.0
Mixed Use	318.6	41.0	30.1	13.9	233.6	11% - 25%	183.6
Industrial	18.4	1.2	1.3	0.9	15.1	15%	12.5
Non-Res Land Total	**338.2**	**42.3**	**31.4**	**14.8**	**249.7**		**197.1**

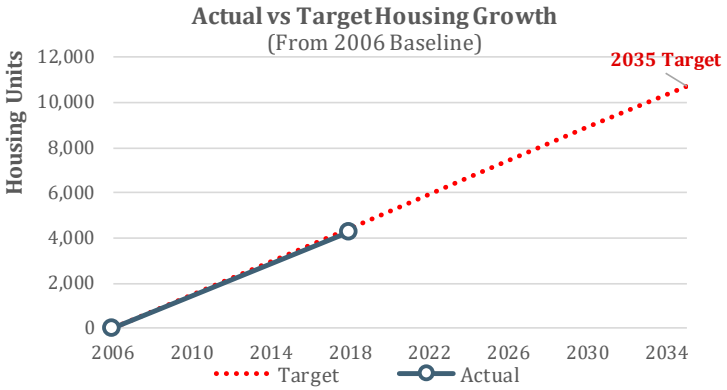
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.04	0.50	0.00	0.02	250	89
Redevelopable	0.00	0.50	0.00	0.00	250	0
Commercial Total	**0.04**	**0.50**	**0.00**	**0.02**	**250**	**89**
Mixed-Use						
Vacant	1.76	1.50	0.00	0.80	0 / 300	3,117
Redevelopable	6.24	1.50	2.45	0.77	0 / 300	2657
Mixed Use Total	**8.00**	**1.50**	**2.45**	**1.57**	**0 / 300**	**5,774**
Industrial						
Vacant	0.36	0.50	0.00	0.18	700	254
Redevelopable	0.19	0.50	0.08	0.02	700	26
Industrial Total	**0.54**	**0.50**	**0.08**	**0.20**	**700**	**280**
City Total						
Commercial	0.04	0.50	0.69	0.02	250	89
Mixed Use	8.00	1.50	0.91	1.57	0 / 300	5,774
Industrial	0.54	0.50	0.26	0.20	700	280
Job Capacity in Pipeline						*9,418*
City Total	**8.59**	**1.50**	**1.86**	**1.79**	**0 / 700**	**15,561**

Job Capacity by Assumed Density Level	#	%
Very Low Density	125	2%
Low Density	469	8%
Medium Low Density	5,549	90%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*9,418*
Total Capacity (jobs)		**15,561**
Remaining Target (2018-2035)		14,250
Surplus/Deficit Capacity (jobs)		**1,311**



City of Kent

Housing Growth and Residential Development Trends



Kent Housing Growth Target: 2006-2035	10,753
2006 Estimated Housing Units	43,552
2018 Estimated Housing Units	47,811
Estimated Housing Growth	**4,259**
Remaining 2035 Target	6,495

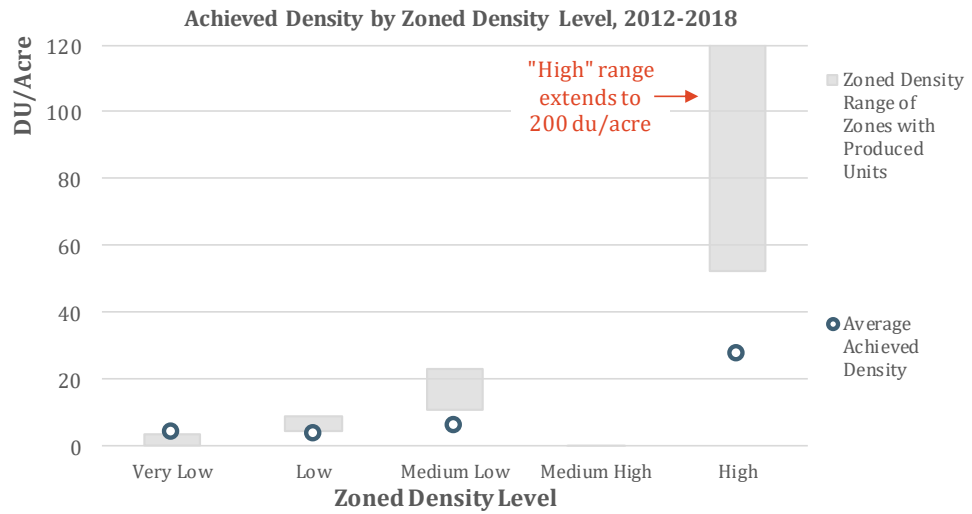
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
95.7%	0.78%	0.75%

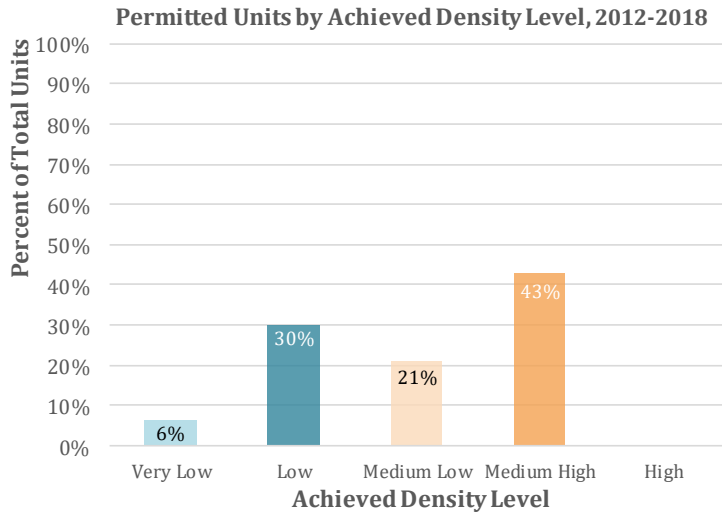
Since 2006, Kent has grown at 96% of the pace needed to achieve its 2035 housing growth target of 10,753 units. During this period, the total number of housing units in Kent grew by roughly 10%. At this current rate, Kent is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0.8% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	81.2	27.5	0.0	41.7	11.9	48	**4.0**
Low	4 - 10 du/acre	275.7	54.6	0.0	22.1	199.0	644	**3.2**
Medium Low	10 - 24 du/acre	50.2	4.6	0.0	1.8	43.8	255	**5.8**
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	76.8	19.0	0.0	0.4	57.4	1,572	**27.4**
	Total	**483.9**	**105.7**	**0.0**	**66.0**	**312.2**	**2,519**	**8.1**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	97.1	156
Low	155.9	755
Medium Low	27.1	528
Medium High	32.0	1,080
High	0.0	0
Total	**312.2**	**2,519**



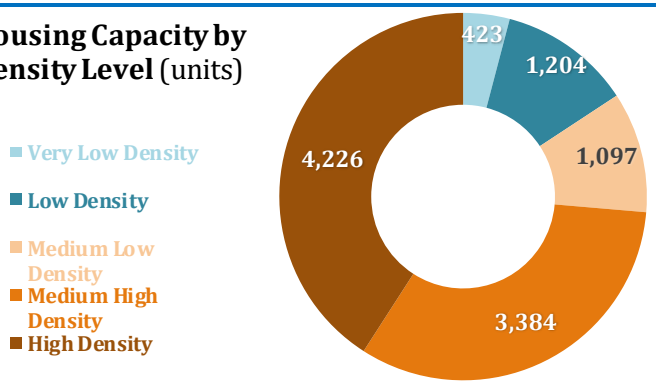


Kent - Residential Land Supply and Capacity

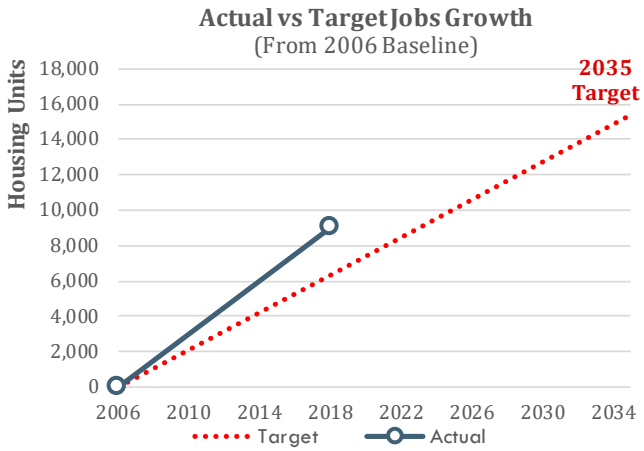
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				20.47	10.0% - 14.0%	159.75	3.9	365
	Redev Subtotal				12.33	10.0% - 14.0%	96.84	3.9	58
	Subtotal	590.80	263.04	0.00	32.80		256.59		**423**
Low Density	Vacant Subtotal				28.53	5.0% - 20.0%	228.17	4.7 / 5.8	1,085
	Redev Subtotal				30.68	5.0% - 20.0%	245.26	4.7 / 9.0	119
	Subtotal	880.15	287.95	0.00	59.21		473.43		**1,204**
Medium Low Density	Vacant Subtotal				4.07	11.0% - 20.0%	31.33	10.9 / 20.6	569
	Redev Subtotal				4.14	11.0% - 20.0%	32.30	10.9 / 20.6	528
	Subtotal	109.77	27.80	0.00	8.21		63.63		**1,097**
Medium High Density	Vacant Subtotal				8.57	11.0% - 20.0%	67.54	39.7 / 40.0	2,681
	Redev Subtotal				2.26	11.0% - 20.0%	17.77	39.7 / 40.0	703
	Subtotal	190.23	84.70	0.00	10.83		85.31		**3,384**
High Density	Vacant Subtotal				3.81	11.0% - 20.0%	29.15	83.3 / 174.2	2,800
	Redev Subtotal				1.87	11.0% - 20.0%	13.84	83.3 / 174.2	1,426
	Subtotal	79.72	22.92	0.00	5.68		42.99		**4,226**
All Zones	Vacant Total				65.45		515.95		7,500
	Redev Total				51.28		406.00		2,833
	Total	**1,850.67**	**686.40**	**0.00**	**116.73**		**921.95**		**10,333**

Capacity (units)	
Very Low Density Zones	423
Low Density Zones	1,204
Medium Low Density Zones	1,097
Medium High Density Zones	3,384
High Density Zones	4,226
Capacity in Pipeline	*915*
Total Capacity (Units)	**11,248**
Remaining Target (2018-2035)	6,495
Surplus/Deficit Capacity (Units)	**4,753**

Housing Capacity by Density Level (units)



Kent - Employment Growth and Commercial/Industrial Development Trends



Kent Jobs Growth Target: 2006-2035	15,405
2006 Jobs (PSRC)	63,299
2018 Jobs (PSRC)	72,360
Total Jobs Growth	**9,061**
Remaining 2035 Target	**6,344**

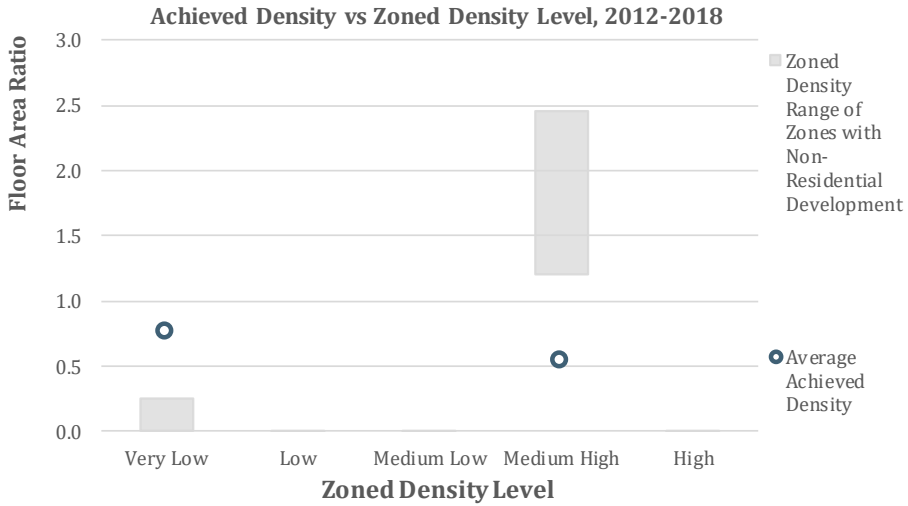
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
142.1%	**1.12%**	**0.50%**

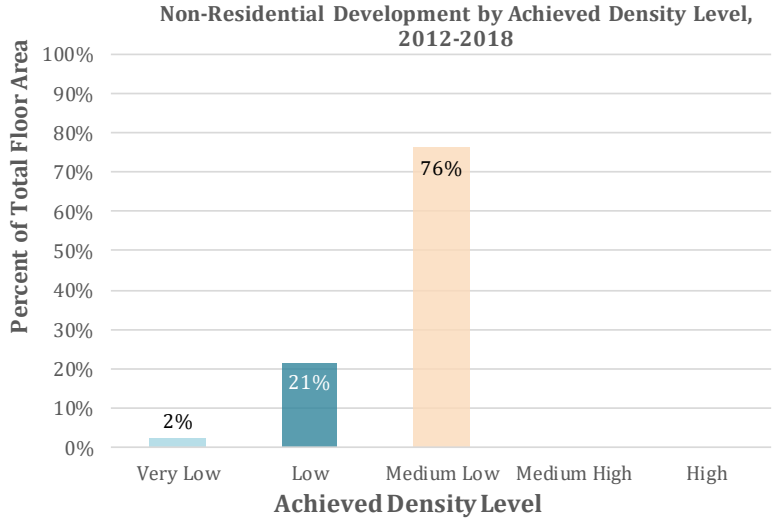
Since 2006, Kent has grown at 142% of the pace needed to achieve its 2035 jobs growth target of 15,405 units. During this period, the total number of jobs in Kent grew by roughly 14%. At this current rate, Kent is over the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 0.5% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	67,191	51,095	**0.8**
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	9,201,069	4,998,503	**0.5**
High	3.0 & up FAR	0	0	
	Total	**9,268,260**	**5,049,598**	**0.5**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	745,943	123,090	**0.2**
Low	2,598,787	1,070,908	**0.4**
Medium Low	5,923,530	3,855,600	**0.7**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**9,268,260**	**5,049,598**	**0.5**



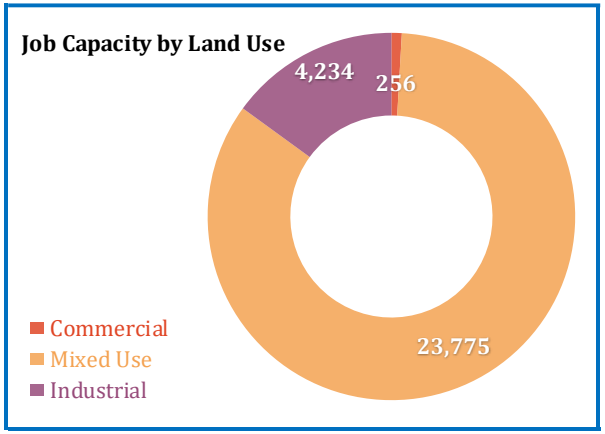


Kent - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	50.6	44.4	1.2	0.6	4.3	50%	1.2
Mixed Use	425.5	146.3	55.8	27.9	195.4	11% - 20%	162.6
Industrial	654.3	142.4	102.4	51.2	358.3	5%	332.7
Non-Res Land Total	**1130.3**	**333.0**	**159.5**	**79.7**	**558.1**		**496.6**

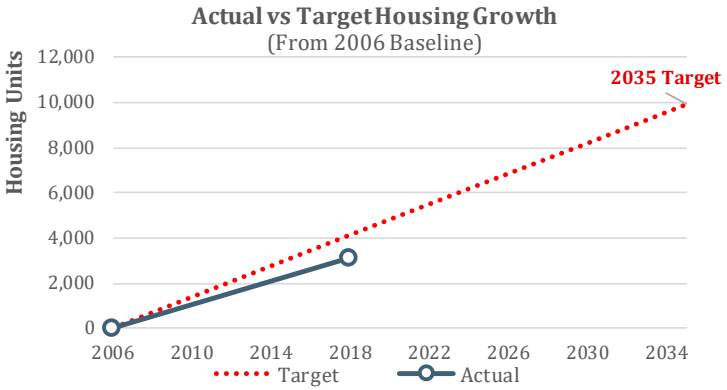
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial*						
Vacant	1.29	0.09 / 0.28	0.00	0.27	300 / 1200	252
Redevelopable	0.72	0.09 / 0.28	0.17	0.01	1,200	5
Commercial Total	**2.01**	**0.09 / 0.28**	**0.17**	**0.28**	**300 / 1200**	**256**
Mixed-Use						
Vacant	4.53	2.45	0.00	6.01	300	20,029
Redevelopable	2.55	2.45	2.44	1.12	300	3,746
Mixed Use Total	**7.08**	**2.45**	**2.44**	**7.13**	**300**	**23,775**
Industrial						
Vacant	6.90	0.39 / 0.64	0.00	3.35	1,200	2,790
Redevelopable	7.60	0.39 / 0.64	1.73	1.73	1,200	1444
Industrial Total	**14.49**	**0.39 / 0.64**	**1.73**	**5.08**	**1,200**	**4,234**
City Total						
Commercial	2.01	0.09 / 0.28	0.69	0.28	300 / 1200	256
Mixed Use	7.08	2.45	0.91	7.13	300	23,775
Industrial	14.49	0.39 / 0.64	0.26	5.08	1,200	4,234
Job Capacity in Pipeline						*730*
City Total	**23.59**	**2.45**	**1.86**	**12.49**	**300 / 1200**	**28,995**

Job Capacity by Assumed Density Level	#	%
Very Low Density	1,187	4%
Low Density	2,889	10%
Medium Low Density	2,372	8%
Medium High Density	21,817	77%
High Density	0	0%
Capacity in Pipeline		*730*
Total Capacity (jobs)		**28,995**
Remaining Target (2018-2035)		6,344
Surplus/Deficit Capacity (jobs)		**22,651**



City of Kirkland

Housing Growth and Residential Development Trends



Kirkland Housing Growth Target: 2006-2035	9,941
2006 Estimated Housing Units	35,556
2018 Estimated Housing Units	38,656
Estimated Housing Growth	**3,100**
Remaining 2035 Target	6,841

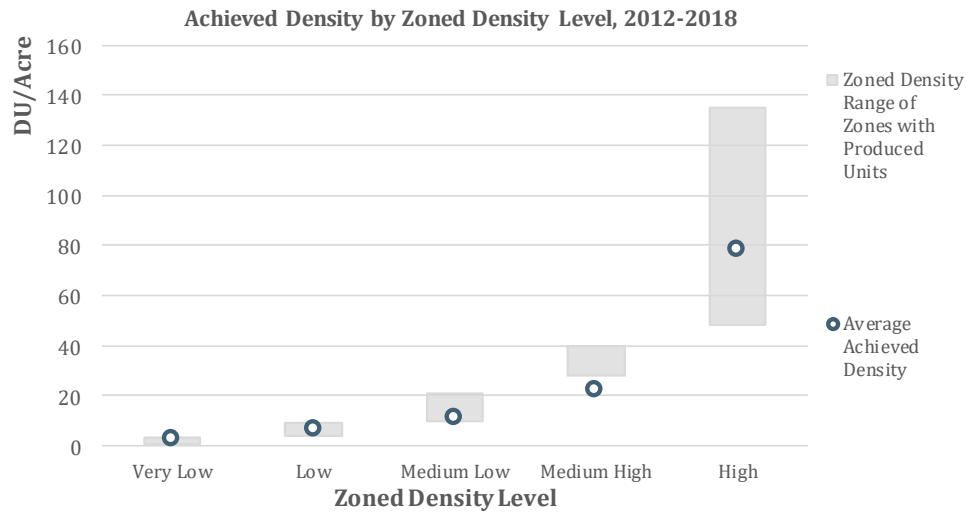
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
75.4%	0.70%	0.96%

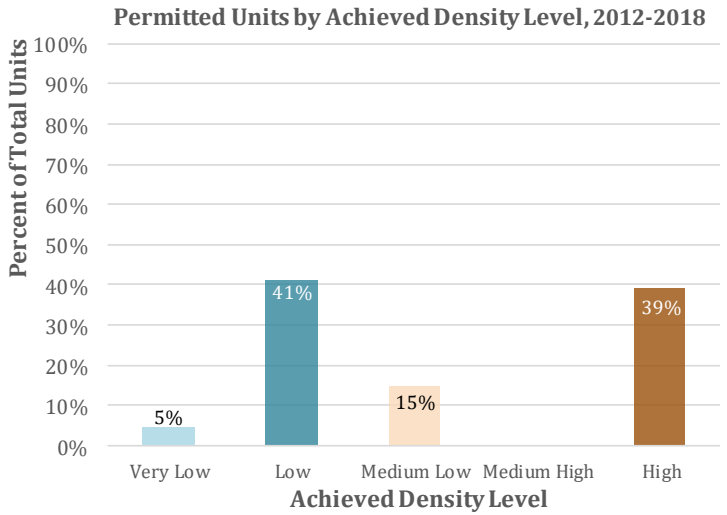
Since 2006, Kirkland has grown at 75% of the pace needed to achieve its 2035 housing growth target of 9,941 units. During this period, the total number of housing units in Kirkland grew by roughly 9%. At this current rate, Kirkland is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	5.9	0.1	0.0	0.0	5.8	17	**2.9**
Low	4 - 10 du/acre	146.8	5.5	0.0	0.0	141.2	888	**6.3**
Medium Low	10 - 24 du/acre	17.1	1.2	0.0	0.0	15.9	177	**11.1**
Medium High	24 - 48 du/acre	2.3	0.0	0.0	0.0	2.3	50	**21.9**
High	48 & up du/acre	9.0	0.0	0.0	0.0	9.0	705	**78.4**
	Total	**181.1**	**6.9**	**0.0**	**0.0**	**174.2**	**1,837**	**10.5**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	24.6	86
Low	118.0	759
Medium Low	22.5	271
Medium High	0.0	0
High	9.1	721
Total	**174.2**	**1,837**



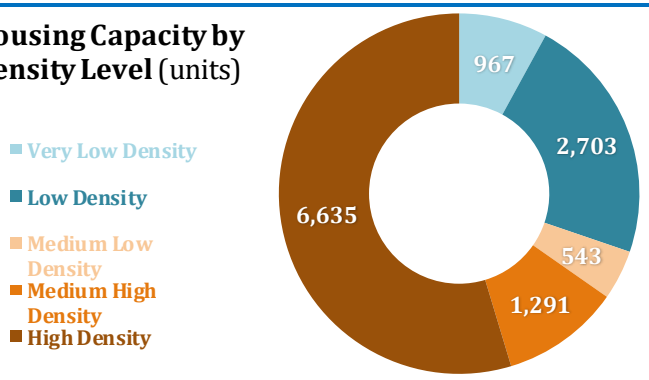


Kirkland – Residential Land Supply and Capacity

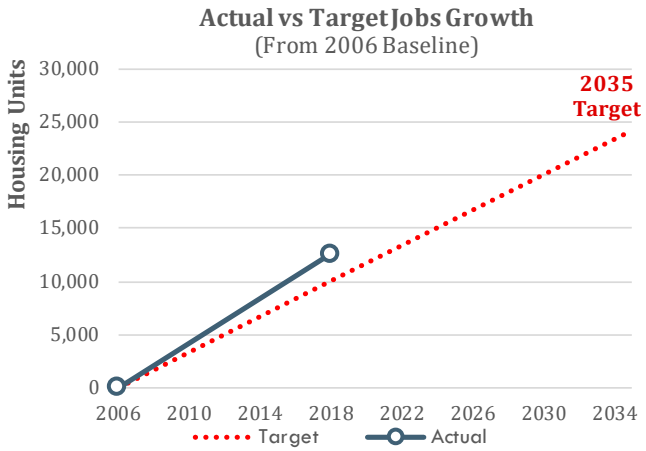
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				1.68	7.0% - 17.0%	88.44	3.9	265
	Redev Subtotal				5.05	7.0% - 17.0%	268.38	3.9	702
	Subtotal	545.45	109.43	0.00	6.73		356.82		**967**
Low Density	Vacant Subtotal				2.98	7.0% - 17.0%	46.15	4.0 / 9.3	305
	Redev Subtotal				35.02	7.0% - 17.0%	558.07	4.0 / 9.3	2,398
	Subtotal	828.95	58.12	0.00	37.99		604.22		**2,703**
Medium Low Density	Vacant Subtotal				0.16	7.0% - 17.0%	3.55	10.0 / 21.8	44
	Redev Subtotal				1.47	7.0% - 17.0%	54.22	10.0 / 21.8	499
	Subtotal	77.69	11.86	0.00	1.63		57.77		**543**
Medium High Density	Vacant Subtotal				0.03	7.0% - 7.0%	1.31	28.0 / 40.0	47
	Redev Subtotal				0.88	7.0% - 7.0%	40.26	28.0 / 40.0	1,244
	Subtotal	48.90	3.21	0.00	0.91		41.57		**1,291**
High Density	Vacant Subtotal				0.07	7.0% - 7.0%	3.19	48.0 / 135.0	324
	Redev Subtotal				1.63	7.0% - 7.0%	74.35	48.0 / 135.0	6,312
	Subtotal	95.32	4.37	0.00	1.70		77.55		**6,635**
All Zones	Vacant Total				4.92		142.65		985
	Redev Total				44.05		995.29		11,155
	Total	**1,596.31**	**186.99**	**0.00**	**48.97**		**1,137.93**		**12,140**

Capacity (units)	
Very Low Density Zones	967
Low Density Zones	2,703
Medium Low Density Zones	543
Medium High Density Zones	1,291
High Density Zones	6,635
Capacity in Pipeline	*1,212*
Total Capacity (Units)	**13,352**
Remaining Target (2018-2035)	6,841
Surplus/Deficit Capacity (Units)	**6,510**

Housing Capacity by Density Level (units)



Kirkland – Employment Growth and Commercial/Industrial Development Trends



Kirkland Jobs Growth Target: 2006-2035	24,186
2006 Jobs (PSRC)	36,698
2018 Jobs (PSRC)	49,280
Total Jobs Growth	**12,582**
Remaining 2035 Target	11,604

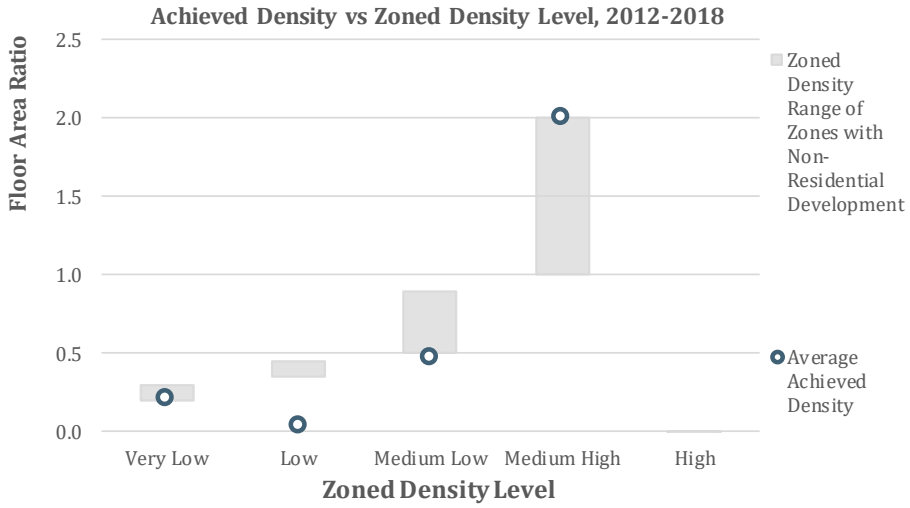
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
125.7%	2.49%	1.25%

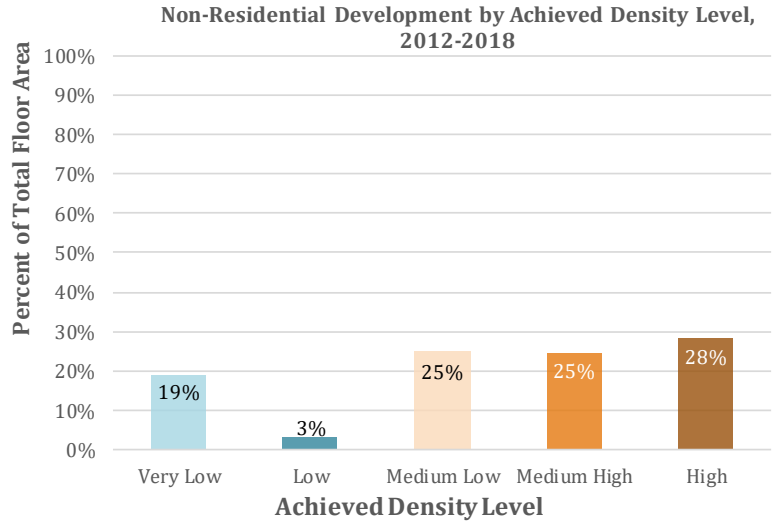
Since 2006, Kirkland has grown at 126% of the pace needed to achieve its 2035 jobs growth target of 24,186 units. During this period, the total number of jobs in Kirkland grew by roughly 34%. At this current rate, Kirkland is over the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 1.3% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	1,125,119	242,666	0.2
Low	0.35 - 0.5 FAR	186,909	7,394	0.0
Medium Low	0.5 - 1.0 FAR	391,250	183,070	0.5
Medium High	1.0 - 3.0 FAR	99,857	199,942	2.0
High	3.0 & up FAR	0	0	
	Total	1,803,134	633,072	0.4

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	1,439,813	118,814	0.1
Low	55,383	20,604	0.4
Medium Low	183,884	159,369	0.9
Medium High	98,507	156,492	1.6
High	40,012	180,793	4.5
Total	1,817,597	636,072	0.3





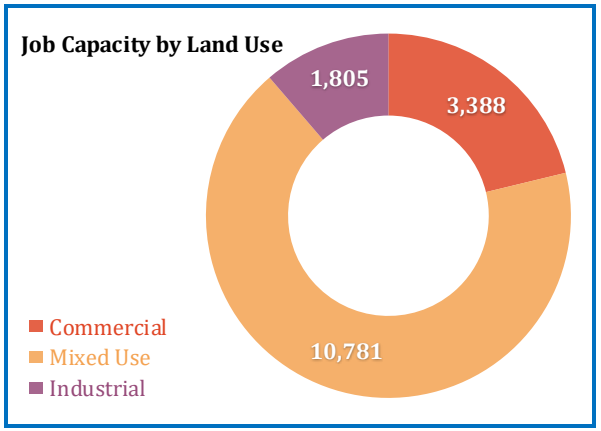
Kirkland – Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	87.3	11.0	1.5	0.0	74.8	5%	71.0
Mixed Use	191.8	16.2	3.5	0.0	172.1	7% - 17%	159.7
Industrial	1.1	1.1	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**280.2**	**28.3**	**5.0**	**0.0**	**267.7**		**230.7**

Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.61	0.02 / 1.80	0.00	0.14	250	561
Redevelopable	2.48	0.02 / 1.80	0.47	0.71	250	2827
Commercial Total	**3.09**	**0.02 / 1.80**	**0.47**	**0.85**	**250**	**3,388**
Mixed-Use						
Vacant	0.21	0.02 / 4.52	0.00	0.13	300	435
Redevelopable	6.75	0.02 / 4.52	1.68	3.10	300	10346
Mixed Use Total	**6.96**	**0.02 / 4.52**	**1.68**	**3.23**	**300**	**10,781**
Industrial*						
Vacant	0.01	0.88	0.00	0.01	300	30
Redevelopable	0.83	0.88	0.20	0.53	300	1775
Industrial Total	**0.84**	**0.88**	**0.20**	**0.54**	**300**	**1,805**
City Total						
Commercial	3.09	0.02 / 1.80	0.69	0.85	250	3,388
Mixed Use	6.96	0.02 / 4.52	0.91	3.23	300	10,781
Industrial	0.84	0.88	0.26	0.54	300	1,805
Job Capacity in Pipeline						*2,165*
City Total	**10.89**	**0.02 / 4.52**	**1.86**	**4.62**	**250 / 300**	**18,139**

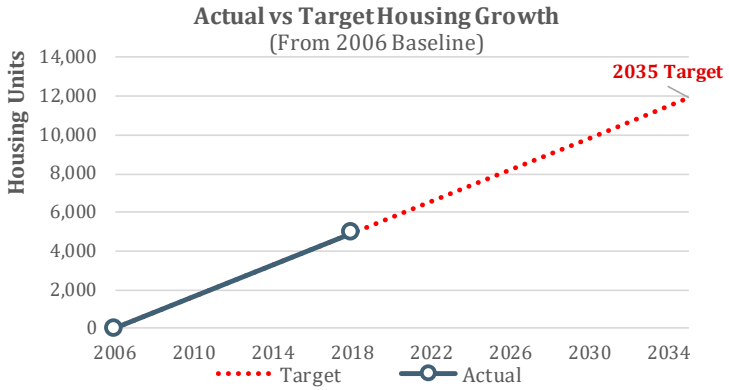
*Certain zones grouped as industrial allow for commercial use.

Job Capacity by Assumed Density Level	#	%
Very Low Density	525	3%
Low Density	1,206	8%
Medium Low Density	5,636	35%
Medium High Density	6,692	42%
High Density	1,914	12%
Capacity in Pipeline		*2,165*
Total Capacity (jobs)		**18,139**
Remaining Target (2018-2035)		11,604
Surplus/Deficit Capacity (jobs)		**6,535**



City of Redmond

Housing Growth and Residential Development Trends



Redmond Housing Growth Target: 2006-2035	11,896
2006 Estimated Housing Units	22,790
2018 Estimated Housing Units	27,736
Estimated Housing Growth	**4,946**
Remaining 2035 Target	6,950

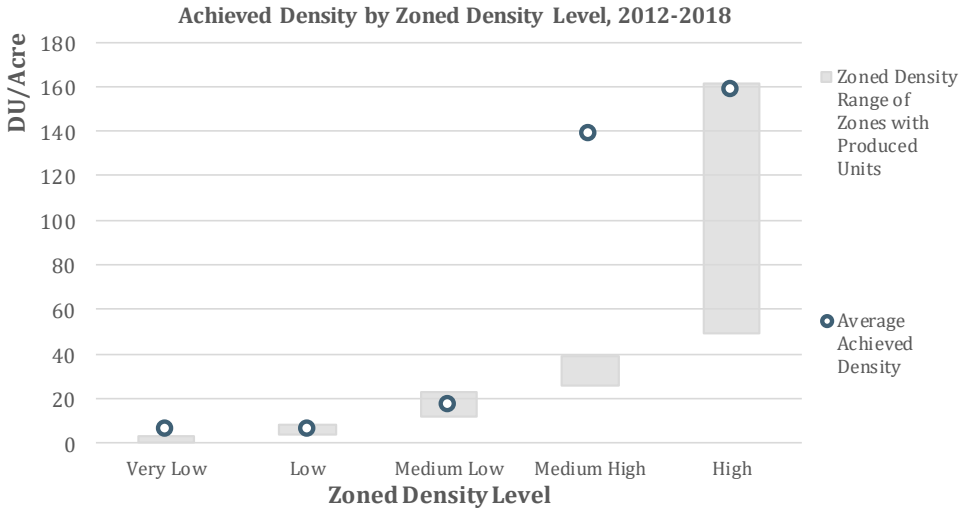
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
100.5%	1.65%	1.32%

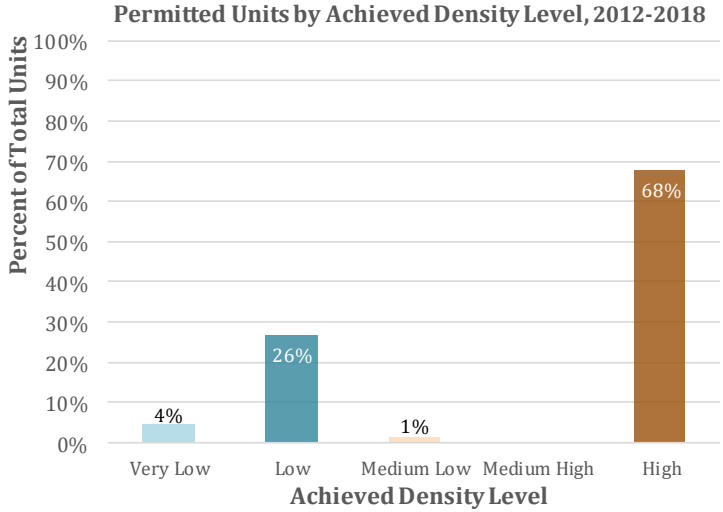
Since 2006, Redmond has grown at 100% of the pace needed to achieve its 2035 housing growth target of 11,896 units. During this period, the total number of housing units in Redmond grew by roughly 22%. At this current rate, Redmond is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1.3% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	3.0	0.0	0.0	0.0	3.0	17	**5.6**
Low	4 - 10 du/acre	179.1	3.2	0.0	0.0	175.9	1,099	**6.2**
Medium Low	10 - 24 du/acre	2.6	0.0	0.0	0.0	2.6	44	**16.7**
Medium High	24 - 48 du/acre	13.4	0.0	0.0	0.0	13.4	1,859	**138.4**
High	48 & up du/acre	3.0	0.0	0.0	0.0	3.0	482	**158.5**
	Total	**201.2**	**3.2**	**0.0**	**0.0**	**198.0**	**3,501**	**17.7**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	46.8	162
Low	132.1	954
Medium Low	2.9	51
Medium High	0.0	0
High	17.8	2,439
Total	**199.7**	**3,606**



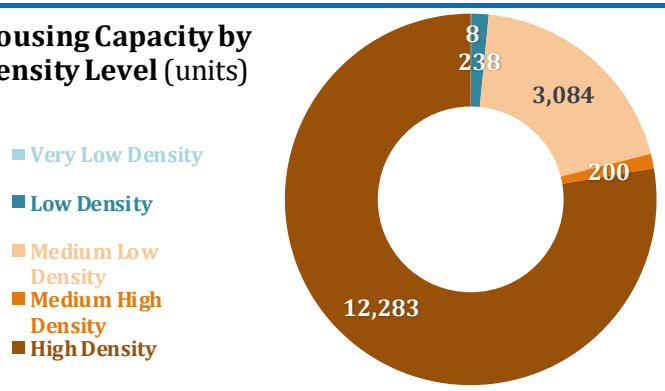


Redmond - Residential Land Supply and Capacity

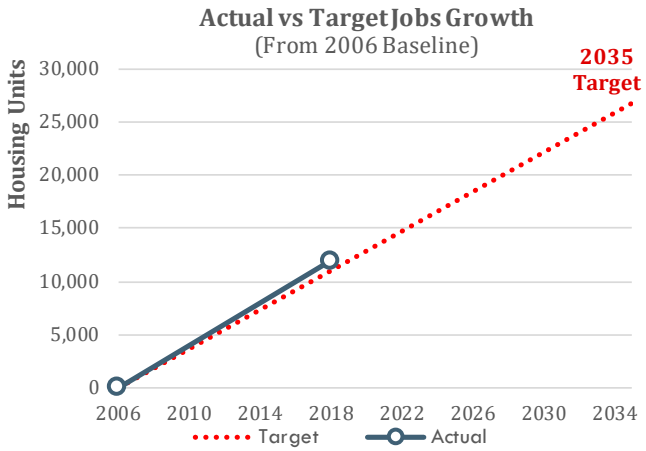
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				0.36	10.0% - 10.0%	1.80	0.1 / 3.0	3
	Redev Subtotal				0.62	10.0% - 10.0%	3.08	0.1 / 3.0	5
	Subtotal	209.70	193.62	9.50	0.98		4.88		**8**
Low Density	Vacant Subtotal				5.42	10.0% - 10.0%	27.08	4.0 / 9.4	129
	Redev Subtotal				12.35	10.0% - 10.0%	61.74	4.0 / 9.4	110
	Subtotal	493.36	212.07	162.87	17.76		88.82		**238**
Medium Low Density	Vacant Subtotal				6.41	5.0% - 10.0%	55.91	12.0 / 23.0	1,175
	Redev Subtotal				10.38	5.0% - 10.0%	89.30	12.0 / 23.0	1,908
	Subtotal	201.95	29.85	0.49	16.79		145.21		**3,084**
Medium High Density	Vacant Subtotal				0.14	7.0% - 7.0%	1.16	39.2 / 43.6	51
	Redev Subtotal				0.88	7.0% - 7.0%	7.27	39.2 / 43.6	149
	Subtotal	10.15	0.00	0.00	1.02		8.43		**200**
High Density	Vacant Subtotal				0.70	5.0% - 10.0%	5.78	49.2 / 161.2	315
	Redev Subtotal				13.82	5.0% - 10.0%	115.93	49.2 / 161.2	11,968
	Subtotal	149.35	2.61	1.35	14.52		121.71		**12,283**
All Zones	Vacant Total				13.02		91.73		1,672
	Redev Total				38.04		277.31		14,141
	Total	**1,064.52**	**438.15**	**174.21**	**51.07**		**369.04**		**15,813**

Capacity (units)	
Very Low Density Zones	8
Low Density Zones	238
Medium Low Density Zones	3,084
Medium High Density Zones	200
High Density Zones	12,283
Capacity in Pipeline	*1,964*
Total Capacity (Units)	**17,777**
Remaining Target (2018-2035)	6,886
Surplus/Deficit Capacity (Units)	**10,891**

Housing Capacity by Density Level (units)



Redmond - Employment Growth and Commercial/Industrial Development Trends



Redmond Jobs Growth Target: 2006-2035	26,680
2006 Jobs (PSRC)	81,207
2018 Jobs (PSRC)	93,174
Total Jobs Growth	**11,967**
Remaining 2035 Target	14,713

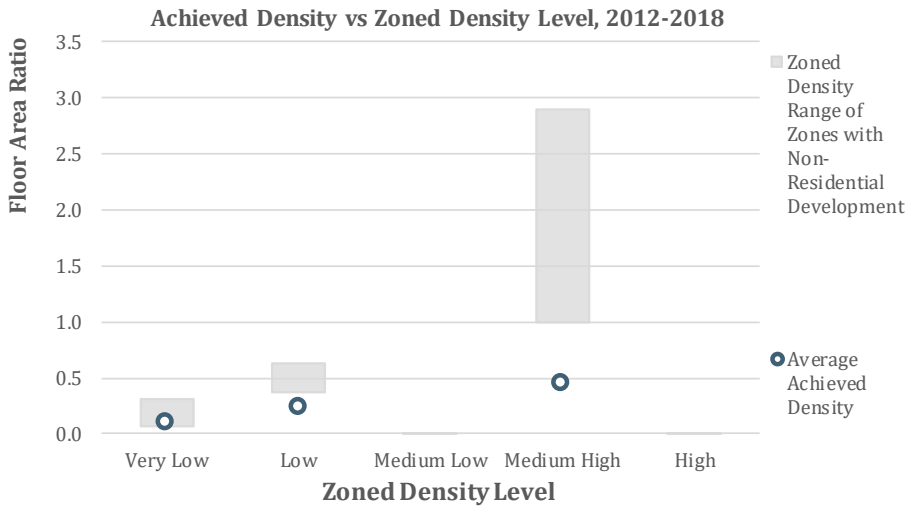
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
108.4%	1.15%	0.87%

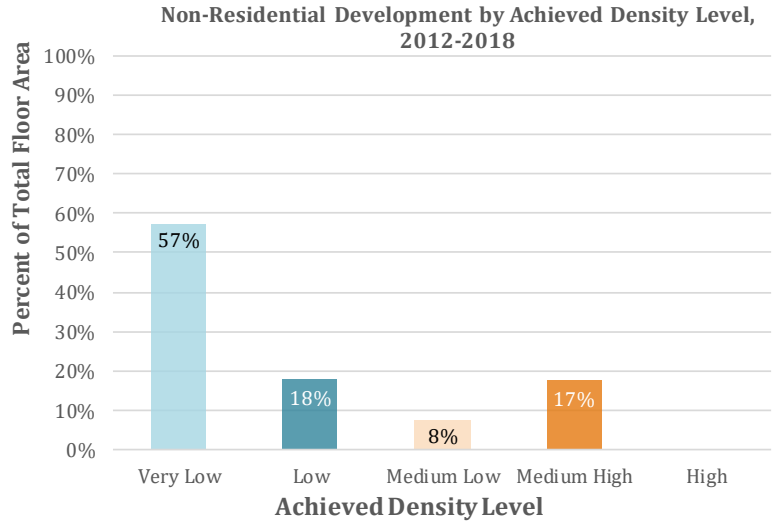
Since 2006, Redmond has grown at 108% of the pace needed to achieve its 2035 jobs growth target of 26,680 units. During this period, the total number of jobs in Redmond grew by roughly 15%. At this current rate, Redmond is over the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 0.9% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	4,021,624	375,664	**0.1**
Low	0.35 - 0.5 FAR	2,257,096	544,282	**0.2**
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	1,742,591	783,948	**0.4**
High	3.0 & up FAR	0	0	
	Total	**8,021,311**	**1,703,894**	**0.2**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	7,551,156	1,022,721	**0.1**
Low	664,724	318,430	**0.5**
Medium Low	226,315	136,034	**0.6**
Medium High	206,450	310,063	**1.5**
High	0	0	**0.0**
Total	**8,648,644**	**1,787,248**	**0.2**



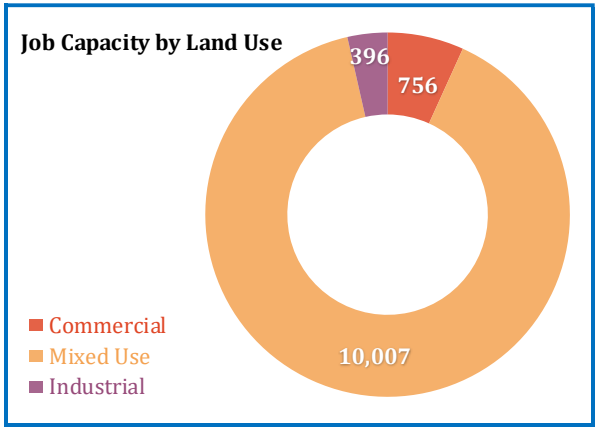


Redmond - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	177.6	111.2	0.0	0.0	66.4	5% - 10%	63.0
Mixed Use	377.4	54.5	16.1	16.1	290.8	5% - 10%	271.7
Industrial	134.4	32.5	0.0	0.0	101.9	35%	66.2
Non-Res Land Total	**695.2**	**198.1**	**16.1**	**16.1**	**464.9**		**401.0**

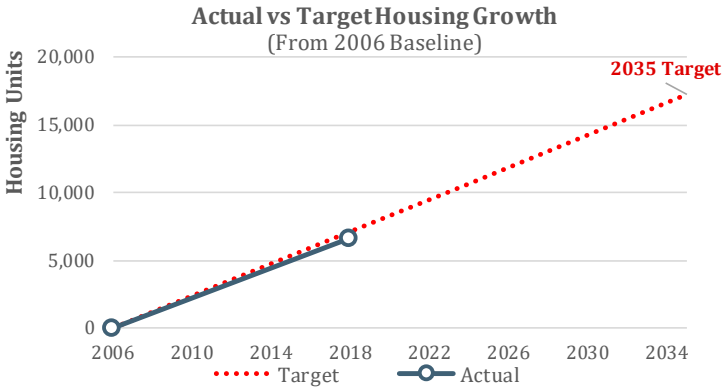
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.33	0.03 / 0.60	0.00	0.06	300 / 330	181
Redevelopable	2.42	0.03 / 0.60	0.39	0.19	300 / 330	575
Commercial Total	**2.74**	**0.03 / 0.60**	**0.39**	**0.25**	**300 / 330**	**756**
Mixed-Use						
Vacant	3.09	0.05 / 1.13	0.00	1.21	300 / 730	3,930
Redevelopable	8.75	0.05 / 1.13	3.05	1.85	300 / 730	6077
Mixed Use Total	**11.84**	**0.05 / 1.13**	**3.05**	**3.05**	**300 / 730**	**10,007**
Industrial						
Vacant	0.57	0.24 / 0.50	0.00	0.16	730	224
Redevelopable	2.31	0.24 / 0.50	0.67	0.13	730	171
Industrial Total	**2.88**	**0.24 / 0.50**	**0.67**	**0.29**	**730**	**396**
City Total						
Commercial	2.74	0.03 / 0.60	0.69	0.25	300 / 330	756
Mixed Use	11.84	0.05 / 1.13	0.91	3.05	300 / 730	10,007
Industrial	2.88	0.24 / 0.50	0.26	0.29	730	396
Job Capacity in Pipeline						*4,693*
City Total	**17.47**	**0.03 / 1.13**	**1.86**	**3.59**	**300 / 730**	**15,851**

Job Capacity by Assumed Density Level	#	%
Very Low Density	1,505	13%
Low Density	8,656	78%
Medium Low Density	997	9%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*4,693*
Total Capacity (jobs)		**15,851**
Remaining Target (2018-2035)		14,713
Surplus/Deficit Capacity (jobs)		**1,138**



City of Renton

Housing Growth and Residential Development Trends



Renton Housing Growth Target: 2006-2035	17,231
2006 Estimated Housing Units	36,168
2018 Estimated Housing Units	42,775
Estimated Housing Growth	**6,607**
Remaining 2035 Target	10,623

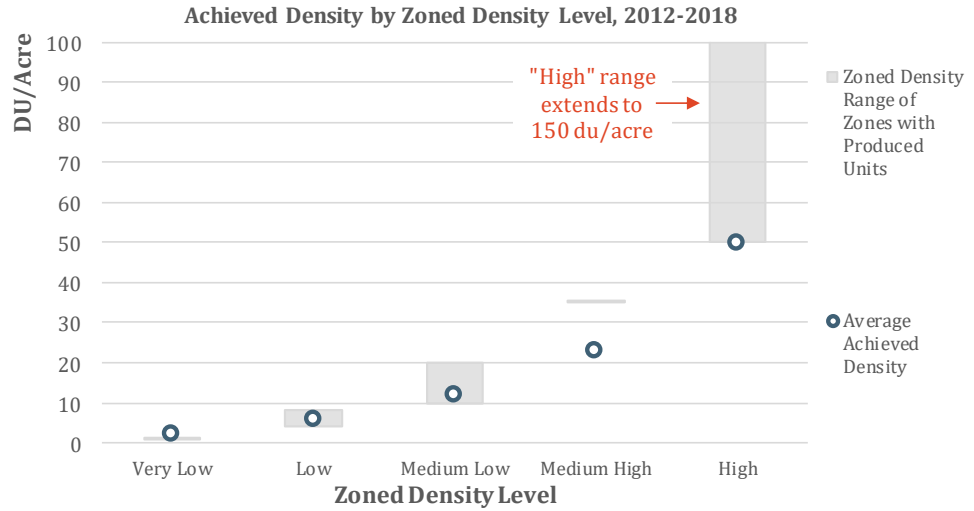
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
92.7%	1.41%	1.31%

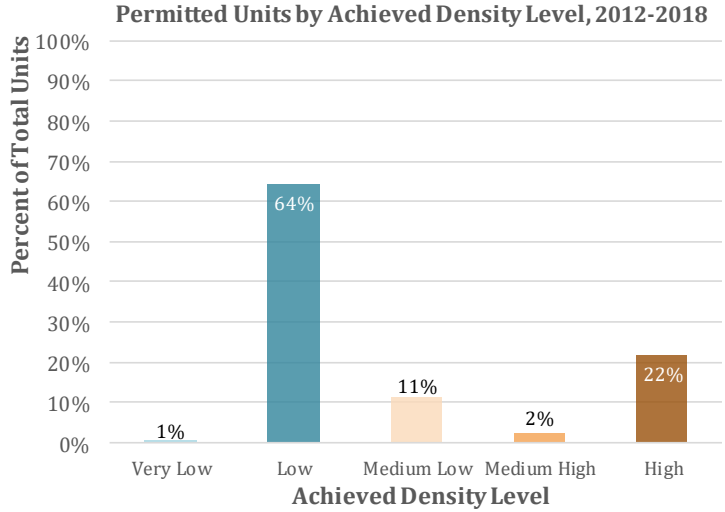
Since 2006, Renton has grown at 93% of the pace needed to achieve its 2035 housing growth target of 17,231 units. During this period, the total number of housing units in Renton grew by roughly 18%. At this current rate, Renton is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1.3% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	14.8	2.7	3.9	0.0	8.2	16	**2.0**
Low	4 - 10 du/acre	378.1	45.4	13.0	50.8	269.0	1,550	**5.8**
Medium Low	10 - 24 du/acre	48.6	3.2	0.6	6.4	38.3	452	**11.8**
Medium High	24 - 48 du/acre	0.2	0.0	0.0	0.0	0.2	5	**22.7**
High	48 & up du/acre	17.5	1.8	0.4	2.7	12.7	630	**49.6**
	Total	**459.3**	**53.1**	**17.9**	**59.9**	**328.4**	**2,653**	**8.1**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	8.2	16
Low	288.9	1,707
Medium Low	18.7	300
Medium High	2.0	54
High	10.7	576
Total	**328.4**	**2,653**

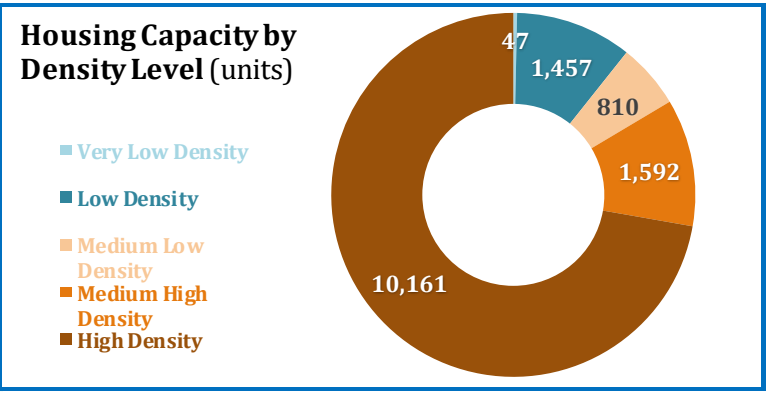




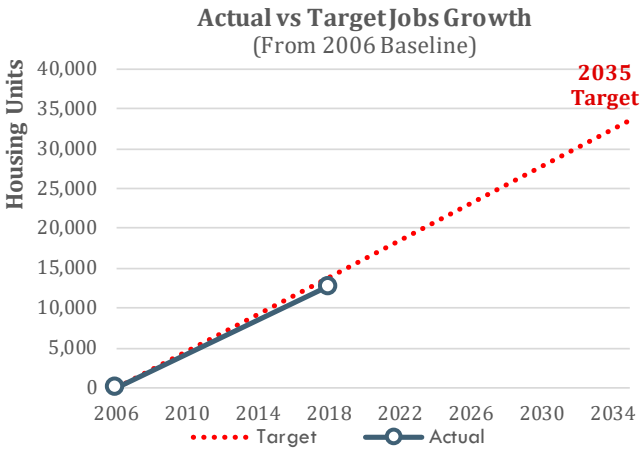
Renton - Residential Land Supply and Capacity

Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				11.89	14.0% - 14.0%	25.98	0.2 / 2.0	32
	Redev Subtotal				6.61	14.0% - 14.0%	14.44	0.2 / 2.0	15
	Subtotal	106.75	38.24	0.00	18.50		40.43		**47**
Low Density	Vacant Subtotal				65.20	10.0% - 35.0%	152.17	5.4 / 8.2	906
	Redev Subtotal				106.67	10.0% - 35.0%	249.35	5.4 / 8.2	551
	Subtotal	693.07	53.16	0.00	171.87		401.52		**1,457**
Medium Low Density	Vacant Subtotal				11.79	15.0% - 35.0%	34.23	10.2 / 17.4	443
	Redev Subtotal				11.66	15.0% - 35.0%	35.28	10.2 / 17.4	367
	Subtotal	137.60	20.32	0.00	23.46		69.51		**810**
Medium High Density	Vacant Subtotal				2.58	15.0% - 15.0%	24.86	41.0	1,018
	Redev Subtotal				1.46	15.0% - 15.0%	14.01	41.0	574
	Subtotal	56.61	3.47	0.00	4.04		38.87		**1,592**
High Density	Vacant Subtotal				4.09	11.0% - 21.0%	38.78	54.3 / 112.5	3,438
	Redev Subtotal				9.39	11.0% - 21.0%	90.39	54.3 / 112.5	6,724
	Subtotal	421.82	28.69	0.00	13.48		129.17		**10,161**
All Zones	Vacant Total				95.55		276.03		5,836
	Redev Total				135.79		403.48		8,231
	Total	**1,415.85**	**143.87**	**0.00**	**231.34**		**679.50**		**14,067**

Capacity (units)	
Very Low Density Zones	47
Low Density Zones	1,457
Medium Low Density Zones	810
Medium High Density Zones	1,592
High Density Zones	10,161
Capacity in Pipeline	*2,436*
Total Capacity (Units)	**16,503**
Remaining Target (2018-2035)	10,601
Surplus/Deficit Capacity (Units)	**5,902**



Renton - Employment Growth and Commercial/Industrial Development Trends



Renton Jobs Growth Target: 2006-2035	33,640
2006 Jobs (PSRC)	53,431
2018 Jobs (PSRC)	66,151
Total Jobs Growth	**12,720**
Remaining 2035 Target	20,920

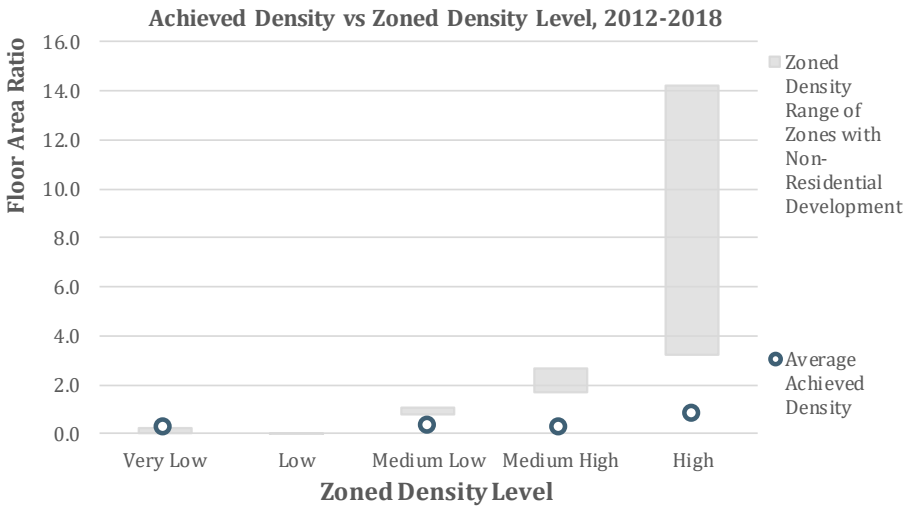
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
91.4%	1.80%	1.63%

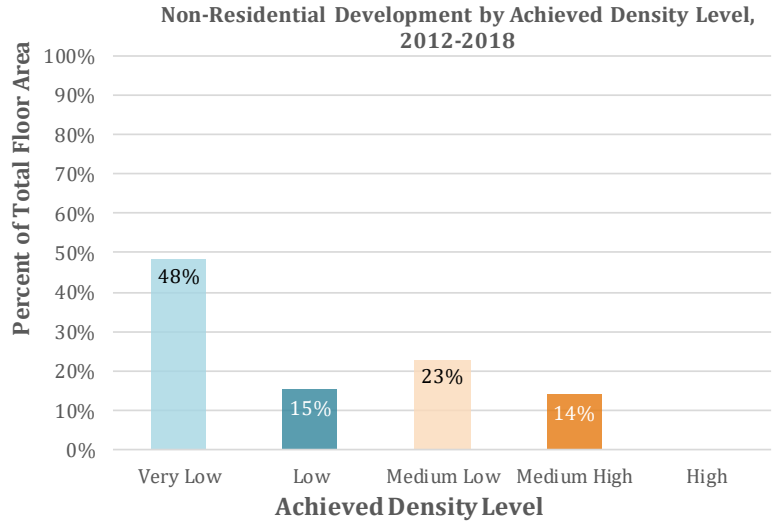
Since 2006, Renton has grown at 91% of the pace needed to achieve its 2035 jobs growth target of 33,640 units. During this period, the total number of jobs in Renton grew by roughly 24%. At this current rate, Renton is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 1.6% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	387,403	88,225	0.2
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	47,532	13,171	0.3
Medium High	1.0 - 3.0 FAR	7,136,894	1,913,364	0.3
High	3.0 & up FAR	1,518,735	1,167,138	0.8
	Total	9,090,564	3,181,898	0.4

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	6,324,143	1,530,240	0.2
Low	1,258,936	486,520	0.4
Medium Low	1,347,460	723,882	0.5
Medium High	160,025	441,256	2.8
High	0	0	0.0
Total	9,090,564	3,181,898	0.4



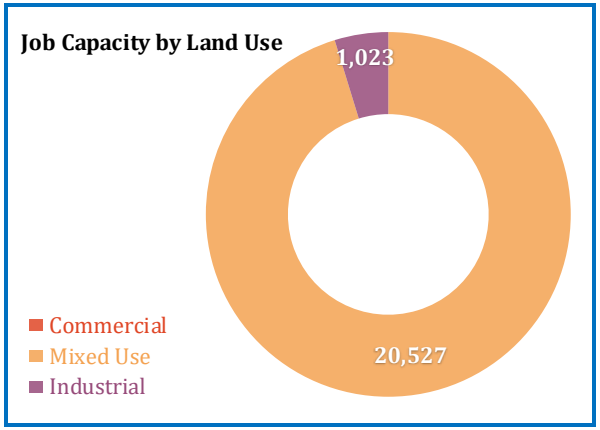


Renton - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Mixed Use	261.9	32.2	11.5	6.9	211.3	11% - 35%	179.8
Industrial	63.6	2.8	3.0	1.8	55.9	20% - 30%	41.9
Non-Res Land Total	**325.5**	**35.0**	**14.5**	**8.7**	**267.2**		**221.7**

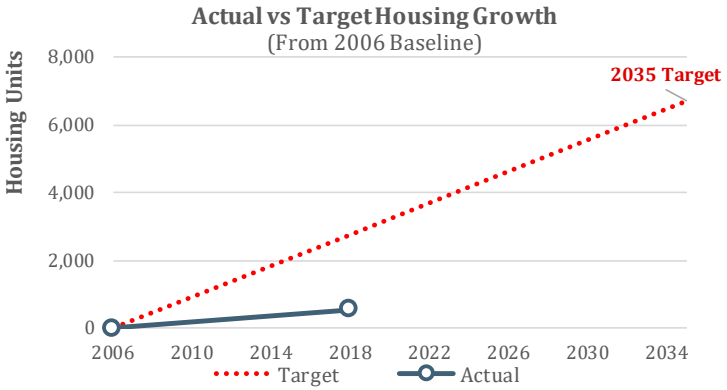
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Commercial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
Mixed-Use						
Vacant	3.75	0.28 / 4.01	0.00	3.21	250 / 400	12,415
Redevelopable	4.08	0.28 / 4.01	0.59	2.22	250 / 400	8112
Mixed Use Total	**7.83**	**0.28 / 4.01**	**0.59**	**5.44**	**250 / 400**	**20,527**
Industrial						
Vacant	0.88	0.20 / 0.39	0.00	0.32	450 / 700	688
Redevelopable	0.95	0.20 / 0.39	0.14	0.20	450 / 700	336
Industrial Total	**1.82**	**0.20 / 0.39**	**0.14**	**0.52**	**450 / 700**	**1,023**
City Total						
Commercial	0.00	0.00	0.69	0.00	0	0
Mixed Use	7.83	0.28 / 4.01	0.91	5.44	250 / 400	20,527
Industrial	1.82	0.20 / 0.39	0.26	0.52	450 / 700	1,023
Job Capacity in Pipeline						*4,660*
City Total	**9.66**	**4.01**	**1.86**	**5.96**	**0 / 700**	**26,210**

Job Capacity by Assumed Density Level	#	%
Very Low Density	2,989	14%
Low Density	1,012	5%
Medium Low Density	5,109	24%
Medium High Density	11,058	51%
High Density	1,382	6%
Capacity in Pipeline		*4,660*
Total Capacity (jobs)		**26,210**
Remaining Target (2018-2035)		20,920
Surplus/Deficit Capacity (jobs)		**5,290**



City of SeaTac

Housing Growth and Residential Development Trends



SeaTac Housing Growth Target: 2006-2035	6,728
2006 Estimated Housing Units	10,301
2018 Estimated Housing Units	10,849
Estimated Housing Growth	**548**
Remaining 2035 Target	6,180

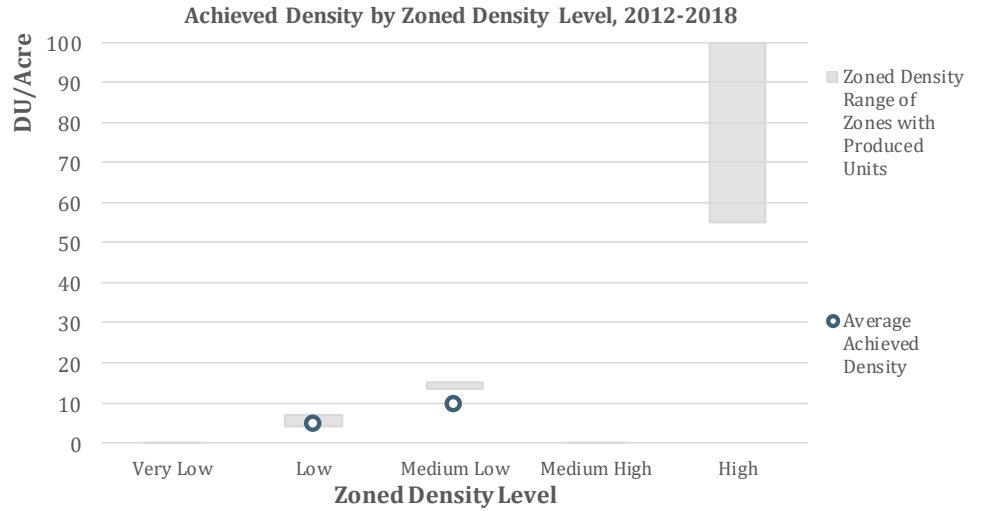
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
19.7%	**0.43%**	**2.69%**

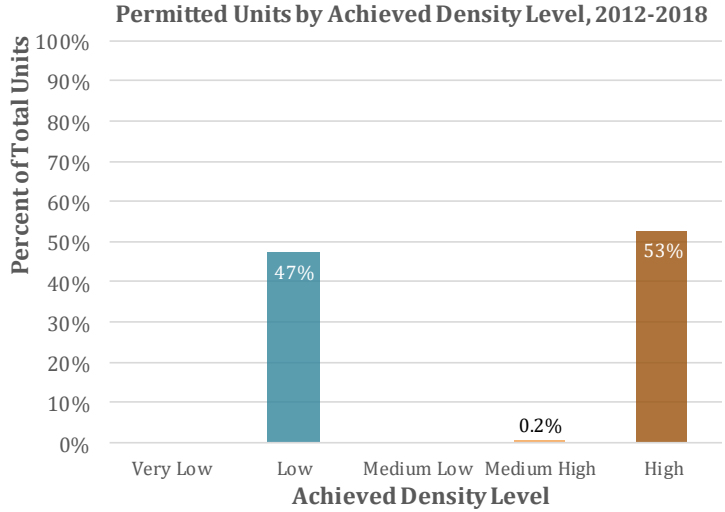
Since 2006, SeaTac has grown at 20% of the pace needed to achieve its 2035 housing growth target of 6,728 units. During this period, the total number of housing units in SeaTac grew by roughly 5%. At this current rate, SeaTac is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 2.7% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	16.8	0.0	0.0	0.0	16.8	79	**4.7**
Medium Low	10 - 24 du/acre	23.0	4.1	0.0	0.0	18.9	180	**9.5**
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	2.9	0.0	0.0	0.0	2.9	290	**100.8**
	Total	**42.7**	**4.1**	**0.0**	**0.0**	**38.6**	**549**	**14.2**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	0.0	0
Low	35.7	259
Medium Low	0.0	0
Medium High	0.0	1
High	2.9	289
Total	**38.6**	**549**

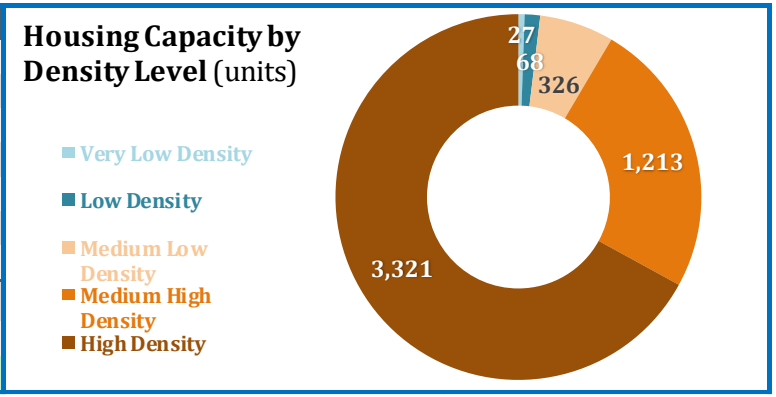




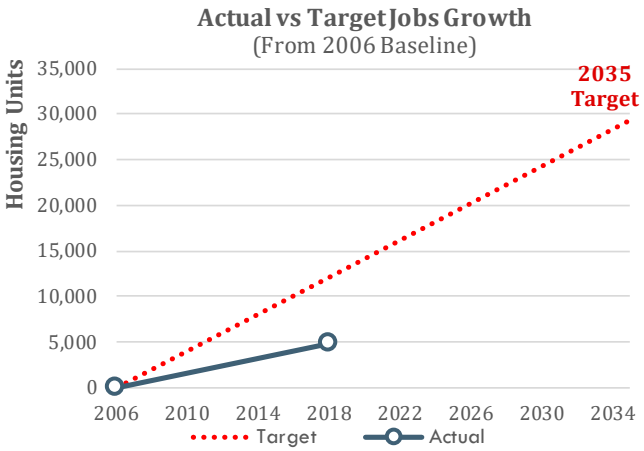
SeaTac - Residential Land Supply and Capacity

Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				0.00	40.0% - 100.0%	5.16	2.2	11
	Redev Subtotal				0.00	40.0% - 100.0%	19.47	2.2	16
	Subtotal	49.92	8.86	0.00	0.00		24.63		**27**
Low Density	Vacant Subtotal				0.00	20.0% - 60.0%	11.69	4.0 / 6.9	55
	Redev Subtotal				0.00	20.0% - 60.0%	131.54	4.0 / 6.9	13
	Subtotal	386.22	29.48	0.00	0.00		143.23		**68**
Medium Low Density	Vacant Subtotal				0.72	21.0% - 50.0%	3.00	12.1 / 22.0	51
	Redev Subtotal				7.41	21.0% - 50.0%	26.33	12.1 / 22.0	274
	Subtotal	86.80	32.60	0.00	8.13		29.33		**326**
Medium High Density	Vacant Subtotal				5.87	35.0% - 75.0%	19.99	26.0 / 45.0	827
	Redev Subtotal				5.00	35.0% - 75.0%	16.82	26.0 / 45.0	386
	Subtotal	119.60	22.83	0.00	10.87		36.82		**1,213**
High Density	Vacant Subtotal				1.14	11.0% - 50.0%	6.34	70.0 / 101.3	542
	Redev Subtotal				8.48	11.0% - 50.0%	32.80	70.0 / 101.3	2,779
	Subtotal	338.85	28.26	0.00	9.63		39.14		**3,321**
All Zones	Vacant Total				7.73		46.19		1,487
	Redev Total				20.89		226.96		3,468
	Total	**981.39**	**122.04**	**0.00**	**28.62**		**273.14**		**4,955**

Capacity (units)	
Very Low Density Zones	27
Low Density Zones	68
Medium Low Density Zones	326
Medium High Density Zones	1,213
High Density Zones	3,321
Capacity in Pipeline	*1,441*
Total Capacity (Units)	**6,396**
Remaining Target (2018-2035)	6,180
Surplus/Deficit Capacity (Units)	**216**



SeaTac - Employment Growth and Commercial/Industrial Development Trends



SeaTac Jobs Growth Target: 2006-2035	29,348
2006 Jobs (PSRC)	29,585
2018 Jobs (PSRC)	34,522
Total Jobs Growth	**4,937**
Remaining 2035 Target	24,411

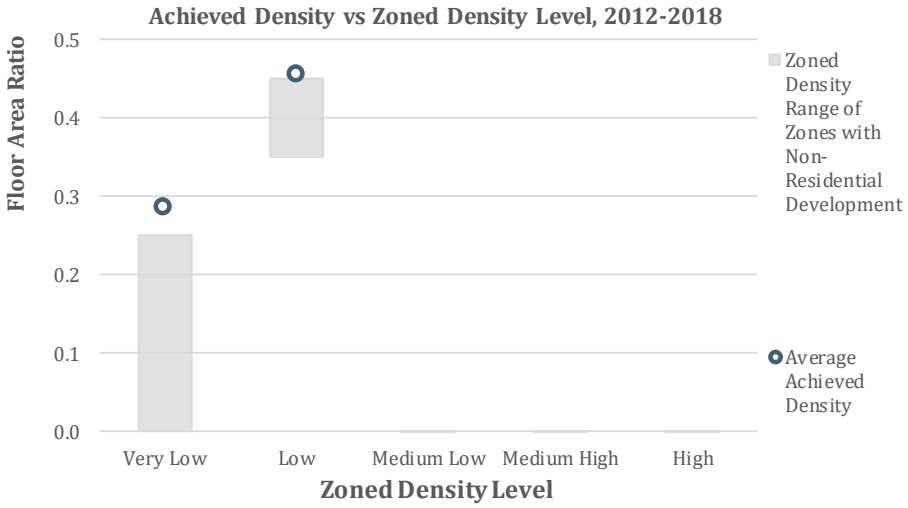
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
40.7%	**1.29%**	**3.20%**

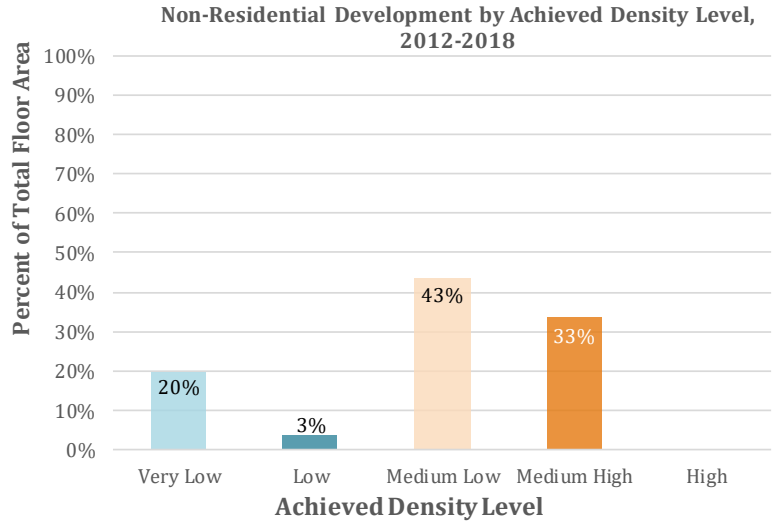
Since 2006, SeaTac has grown at 41% of the pace needed to achieve its 2035 jobs growth target of 29,348 units. During this period, the total number of jobs in SeaTac grew by roughly 17%. At this current rate, SeaTac is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 3.2% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	573,564	164,245	**0.3**
Low	0.35 - 0.5 FAR	19,925	9,050	**0.5**
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	0	0	
	Total	**593,489**	**173,295**	**0.3**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	458,773	51,480	**0.1**
Low	19,925	9,050	**0.5**
Medium Low	114,791	112,765	**1.0**
Medium High	54,729	87,220	**1.6**
High	0	0	**0.0**
Total	**648,218**	**260,515**	**0.4**



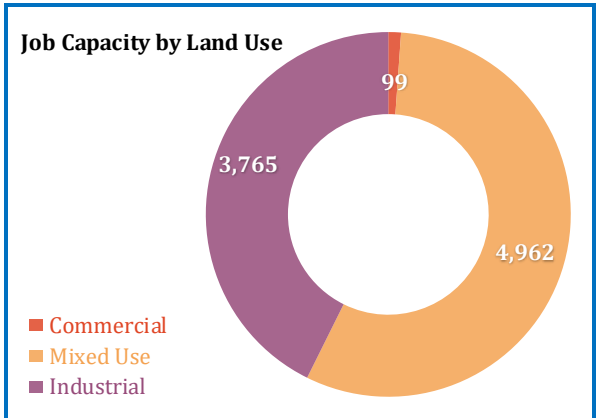


SeaTac - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	4.9	0.0	0.2	0.2	4.4	40%	2.4
Mixed Use	187.0	26.3	8.0	8.0	144.6	35% - 75%	66.2
Industrial	383.6	95.1	14.4	14.4	259.6	10% - 50%	151.4
Non-Res Land Total	**575.4**	**121.4**	**22.7**	**22.7**	**408.6**		**220.0**

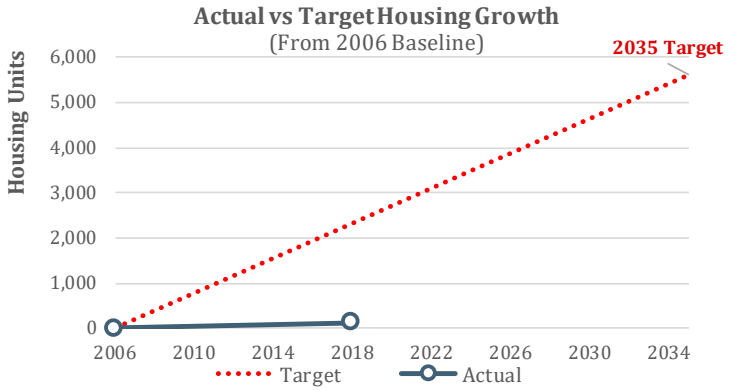
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.04	0.60	0.00	0.02	600	37
Redevelopable	0.07	0.60	0.00	0.04	600	62
Commercial Total	**0.11**	**0.60**	**0.00**	**0.06**	**600**	**99**
Mixed-Use						
Vacant	0.29	0.60 / 1.50	0.00	0.36	600	593
Redevelopable	2.59	0.60 / 1.50	1.01	2.62	600	4369
Mixed Use Total	**2.88**	**0.60 / 1.50**	**1.01**	**2.98**	**600**	**4,962**
Industrial						
Vacant	4.17	0.35 / 1.50	0.00	2.19	800 / 1200	2,218
Redevelopable	2.43	0.35 / 1.50	0.40	1.38	800 / 1200	1547
Industrial Total	**6.59**	**0.35 / 1.50**	**0.40**	**3.57**	**800 / 1200**	**3,765**
City Total						
Commercial	0.11	0.60	0.69	0.06	600	99
Mixed Use	2.88	0.60 / 1.50	0.91	2.98	600	4,962
Industrial	6.59	0.35 / 1.50	0.26	3.57	800 / 1200	3,765
Job Capacity in Pipeline						*6,739*
City Total	**9.58**	**0.35 / 1.50**	**1.86**	**6.61**	**600 / 1200**	**15,565**

Job Capacity by Assumed Density Level	#	%
Very Low Density	0	0%
Low Density	1,709	19%
Medium Low Density	269	3%
Medium High Density	6,848	78%
High Density	0	0%
Capacity in Pipeline		*6,739*
Total Capacity (jobs)		**15,565**
Remaining Target (2018-2035)		24,411
Surplus/Deficit Capacity (jobs)		**-8,846**



City of Tukwila

Housing Growth and Residential Development Trends



Tukwila Housing Growth Target: 2006-2035	5,626
2006 Estimated Housing Units	7,739
2018 Estimated Housing Units	7,869
Estimated Housing Growth	**130**
Remaining 2035 Target	5,496

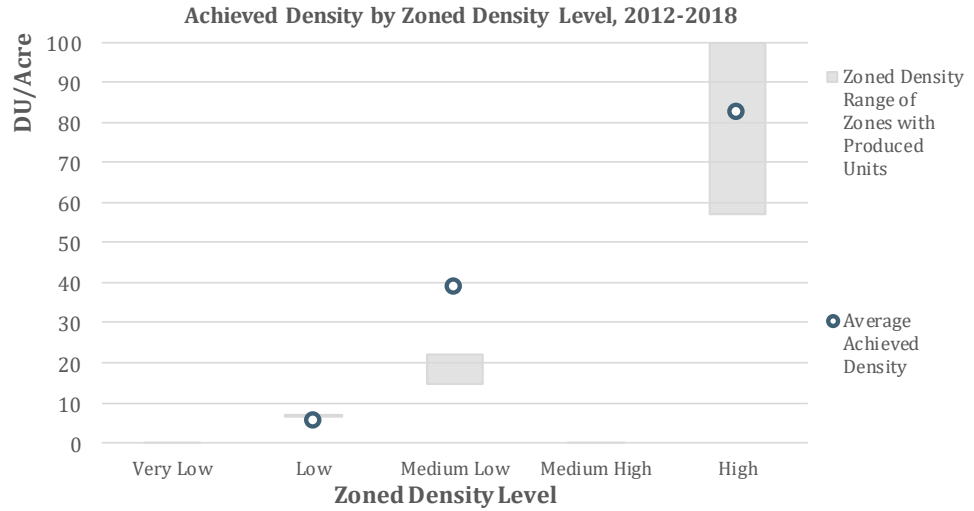
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
5.6%	**0.14%**	**3.17%**

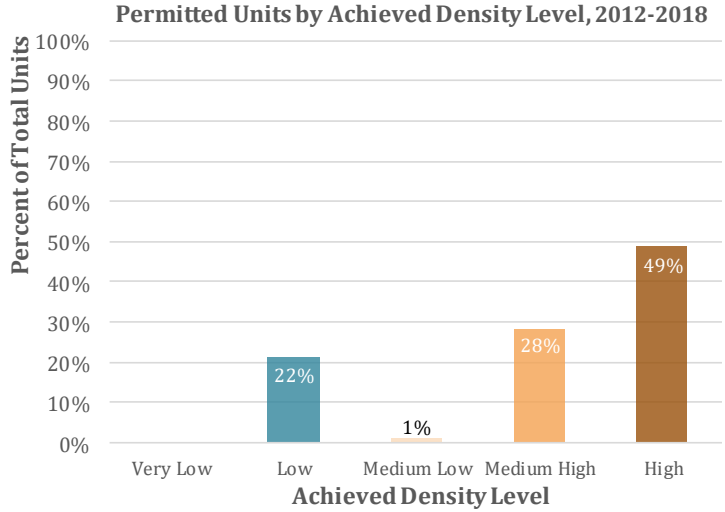
Since 2006, Tukwila has grown at 6% of the pace needed to achieve its 2035 housing growth target of 5,626 units. During this period, the total number of housing units in Tukwila grew by roughly 2%. At this current rate, Tukwila is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 3.2% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	35.6	1.7	2.3	0.0	31.6	163	**5.2**
Medium Low	10 - 24 du/acre	4.2	0.0	0.2	0.0	4.0	155	**38.9**
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	5.3	0.0	0.0	0.0	5.3	440	**82.4**
	Total	**45.1**	**1.7**	**2.5**	**0.0**	**40.9**	**758**	**18.5**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	0.0	0
Low	31.6	163
Medium Low	0.6	9
Medium High	5.3	215
High	3.4	371
Total	**40.9**	**758**



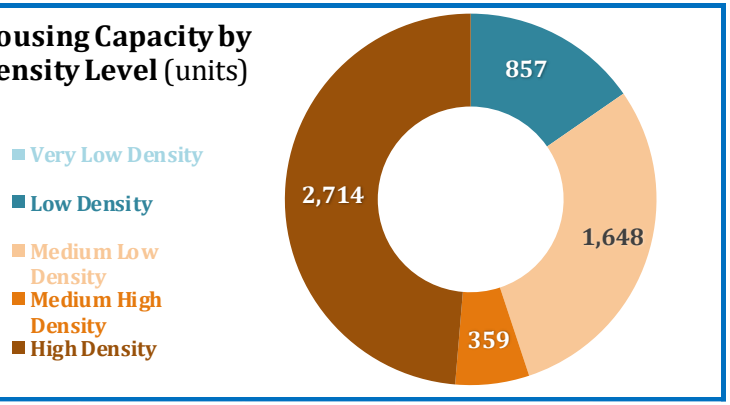


Tukwila - Residential Land Supply and Capacity

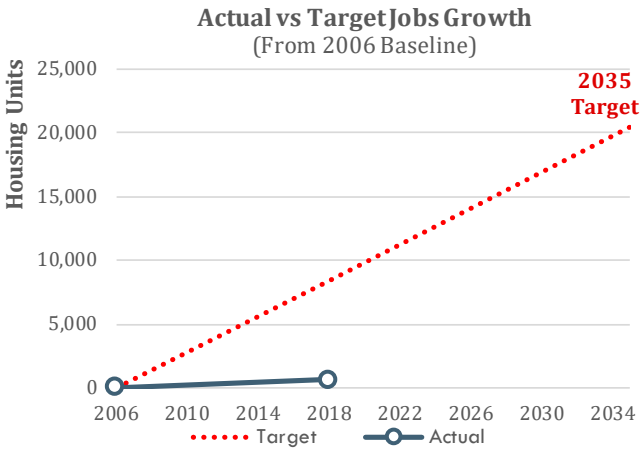
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Low Density	Vacant Subtotal				9.06	20.0% - 20.0%	63.41	5.1	323
	Redev Subtotal				31.52	20.0% - 20.0%	220.65	5.1	533
	Subtotal	645.65	225.11	14.74	40.58		284.06		**857**
Medium Low Density	Vacant Subtotal				7.65	10.0% - 20.0%	44.69	14.5 / 22.0	938
	Redev Subtotal				6.01	10.0% - 20.0%	39.04	14.5 / 22.0	710
	Subtotal	388.64	95.68	0.00	13.65		83.72		**1,648**
Medium High Density	Vacant Subtotal				0.43	10.0% - 10.0%	2.79	35.8	100
	Redev Subtotal				1.18	10.0% - 10.0%	7.69	35.8	259
	Subtotal	13.56	0.12	0.00	1.61		10.48		**359**
High Density	Vacant Subtotal				1.37	0.0% - 10.0%	8.92	61.7 / 61.7	271
	Redev Subtotal				13.82	0.0% - 10.0%	89.84	61.7 / 61.7	2,443
	Subtotal	155.60	28.98	0.00	15.19		98.76		**2,714**
All Zones	Vacant Total				18.51		119.81		1,632
	Redev Total				52.53		357.22		3,945
	Total	**1,203.45**	**349.89**	**14.74**	**71.04**		**477.03**		**5,577**

Capacity (units)	
Very Low Density Zones	0
Low Density Zones	857
Medium Low Density Zones	1,648
Medium High Density Zones	359
High Density Zones	2,714
Capacity in Pipeline	*2,642*
Total Capacity (Units)	**8,219**
Remaining Target (2018-2035)	5,496
Surplus/Deficit Capacity (Units)	**2,723**

Housing Capacity by Density Level (units)



Tukwila - Employment Growth and Commercial/Industrial Development Trends



Tukwila Jobs Growth Target: 2006-2035	20,358
2006 Jobs (PSRC)	44,345
2018 Jobs (PSRC)	44,966
Total Jobs Growth	**621**
Remaining 2035 Target	19,737

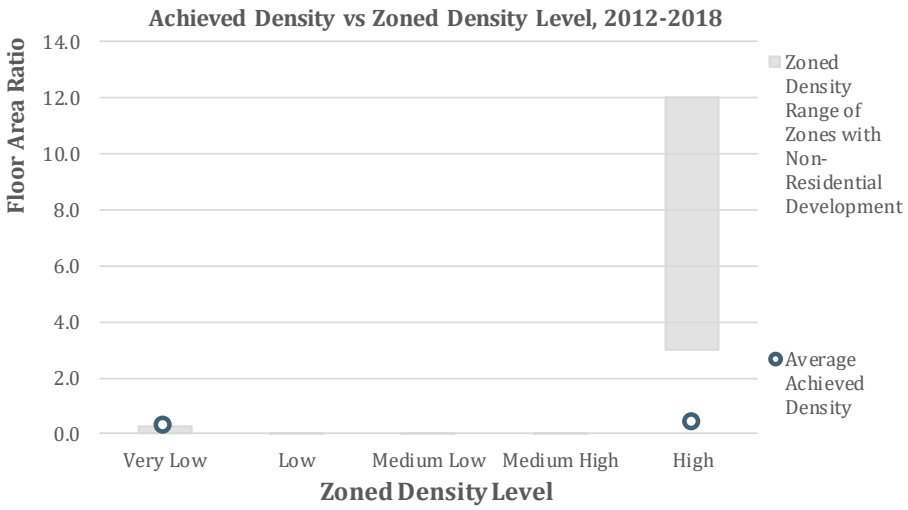
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
7.4%	0.12%	2.16%

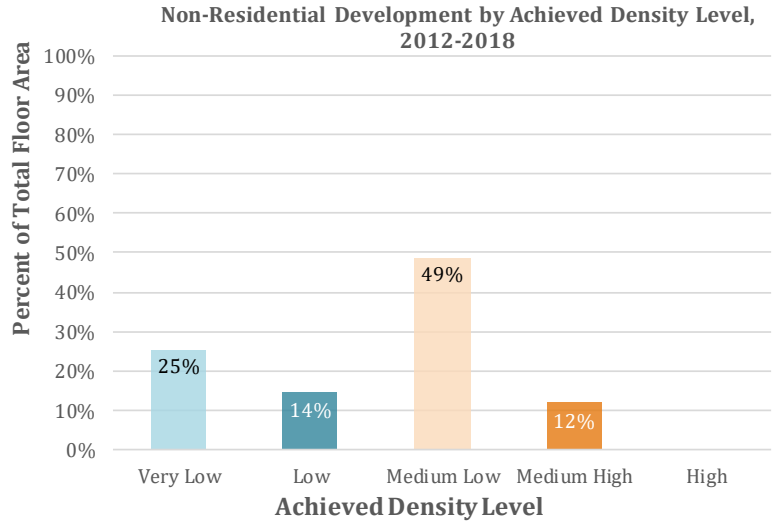
Since 2006, Tukwila has grown at 7% of the pace needed to achieve its 2035 jobs growth target of 20,358 units. During this period, the total number of jobs in Tukwila grew by roughly 1%. At this current rate, Tukwila is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 2.2% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	328,799	96,529	0.3
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	1,422,281	533,029	0.4
	Total	**1,751,080**	**629,558**	**0.4**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	1,141,085	158,640	0.1
Low	219,547	90,252	0.4
Medium Low	348,948	307,035	0.9
Medium High	41,500	73,631	1.8
High	0	0	0.0
Total	**1,751,080**	**629,558**	**0.4**





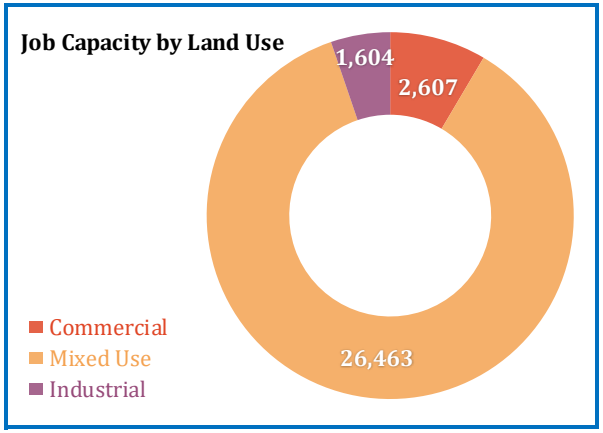
Tukwila - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	234.4	137.9	1.9	9.7	84.9	20%	65.6
Mixed Use	399.4	48.8	7.0	35.1	308.5	10% - 20%	256.3
Industrial	282.1	122.6	3.2	16.0	140.4	35%	84.5
Non-Res Land Total	**915.8**	**309.3**	**12.1**	**60.7**	**533.8**		**406.5**

Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial*						
Vacant	0.45	0.07 / 0.75	0.00	0.19	400 / 800	275
Redevelopable	3.97	0.07 / 0.75	0.95	1.09	400 / 800	2332
Commercial Total	**4.42**	**0.07 / 0.75**	**0.95**	**1.28**	**400 / 800**	**2,607**
Mixed-Use						
Vacant	5.48	0.06 / 1.75	0.00	8.67	400	21,679
Redevelopable	5.69	0.06 / 1.75	1.53	1.91	400	4,784
Mixed Use Total	**11.16**	**0.06 / 1.75**	**1.53**	**10.59**	**400**	**26,463**
Industrial						
Vacant	1.02	0.42	0.00	0.43	800	534
Redevelopable	2.67	0.42	0.26	0.86	800	1070
Industrial Total	**3.68**	**0.42**	**0.26**	**1.28**	**800**	**1,604**
City Total						
Commercial	4.42	0.07 / 0.75	0.69	1.28	400 / 800	2,607
Mixed Use	11.16	0.06 / 1.75	0.91	10.59	400	26,463
Industrial	3.68	0.42	0.26	1.28	800	1,604
Job Capacity in Pipeline						*3,074*
City Total	**19.26**	**0.06 / 1.75**	**1.86**	**13.15**	**400 / 800**	**33,749**

*Certain zones grouped as commercial allow for industrial use.

Job Capacity by Assumed Density Level	#	%
Very Low Density	309	1%
Low Density	2,195	7%
Medium Low Density	5,954	19%
Medium High Density	22,216	72%
High Density	0	0%
Capacity in Pipeline		*3,074*
Total Capacity (jobs)		**33,749**
Remaining Target (2018-2035)		19,737
Surplus/Deficit Capacity (jobs)		**14,012**

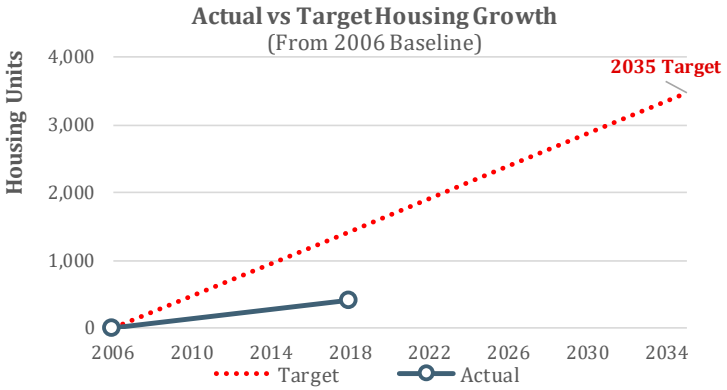


High Capacity Transit Communities

City of Des Moines
City of Kenmore
City of Lake Forest Park
City of Mercer Island
City of Newcastle
City of Shoreline
City of Woodinville

City of Des Moines

Housing Growth and Residential Development Trends



Des Moines Housing Growth Target: 2006-2035	3,480
2006 Estimated Housing Units	12,287
2018 Estimated Housing Units	12,700
Estimated Housing Growth	**413**
Remaining 2035 Target	3,067

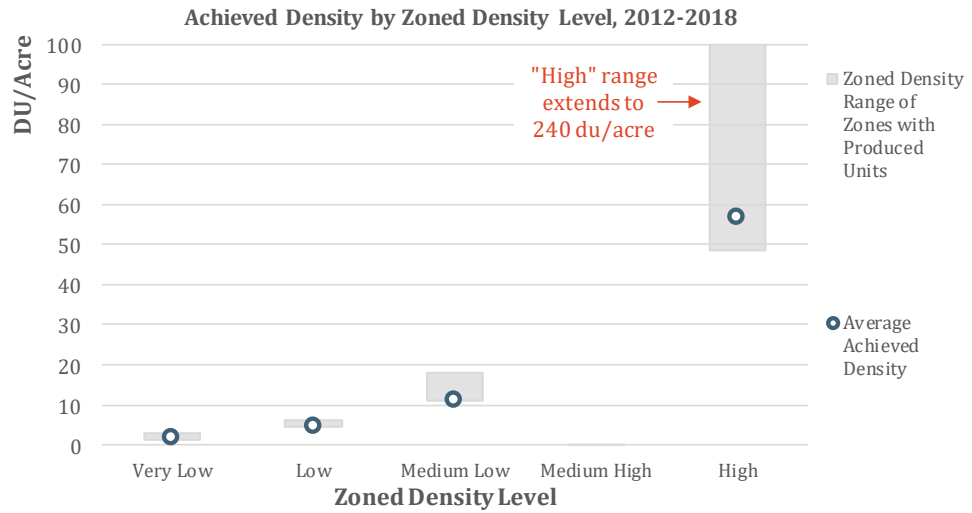
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
28.7%	**0.28%**	**1.28%**

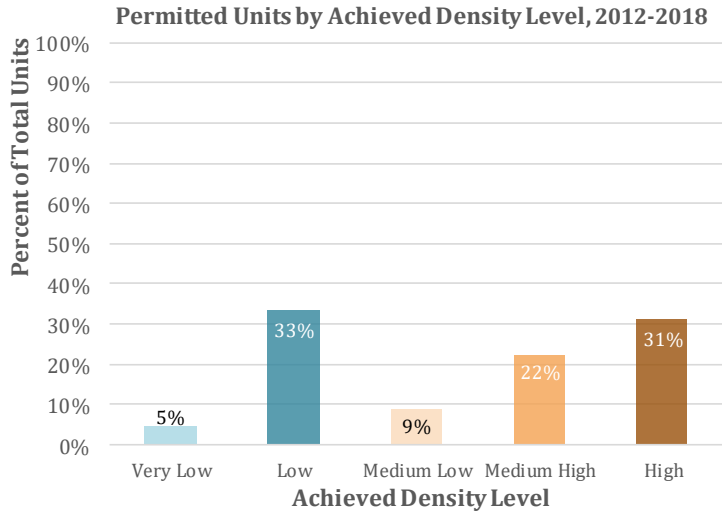
Since 2006, Des Moines has grown at 29% of the pace needed to achieve its 2035 housing growth target of 3,480 units. During this period, the total number of housing units in Des Moines grew by roughly 3%. At this current rate, Des Moines is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1.3% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	2.4	1.1	0.0	0.0	1.3	2	**1.5**
Low	4 - 10 du/acre	36.0	0.9	3.9	0.2	31.0	138	**4.4**
Medium Low	10 - 24 du/acre	4.3	0.3	0.0	0.1	3.9	44	**11.2**
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	3.7	0.0	0.0	0.0	3.7	209	**56.5**
	Total	**46.4**	**2.3**	**3.9**	**0.2**	**40.0**	**393**	**9.8**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	5.9	18
Low	27.9	131
Medium Low	2.8	35
Medium High	2.4	87
High	0.9	122
Total	**40.0**	**393**



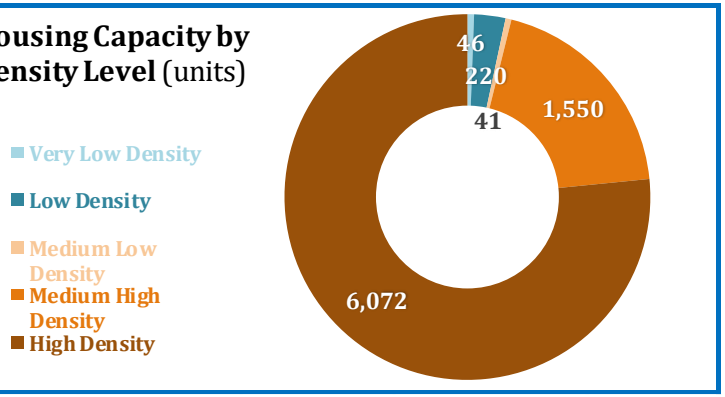


Des Moines - Residential Land Supply and Capacity

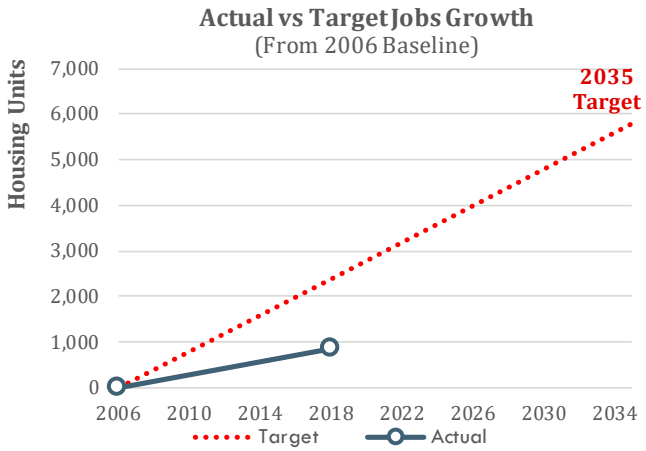
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				3.55	20.0% - 20.0%	7.82	1.2 / 3.8	28
	Redev Subtotal				6.33	20.0% - 20.0%	13.93	1.2 / 3.8	19
	Subtotal	181.56	111.71	0.00	9.89		21.75		**46**
Low Density	Vacant Subtotal				10.58	20.0% - 20.0%	24.42	4.4 / 8.8	118
	Redev Subtotal				23.13	20.0% - 20.0%	53.44	4.4 / 8.8	101
	Subtotal	516.05	376.59	0.00	33.71		77.86		**220**
Medium Low Density	Vacant Subtotal				0.07	20.0% - 20.0%	0.31	12.4	4
	Redev Subtotal				0.85	20.0% - 20.0%	3.67	12.4	37
	Subtotal	10.42	4.30	0.00	0.92		3.98		**41**
Medium High Density	Vacant Subtotal				2.90	14.0% - 30.0%	13.45	24.2 / 36.3	488
	Redev Subtotal				10.48	14.0% - 30.0%	43.42	24.2 / 36.3	1,062
	Subtotal	98.44	9.27	0.00	13.38		56.88		**1,550**
High Density	Vacant Subtotal				2.41	20.0% - 30.0%	10.01	48.4 / 129.7	988
	Redev Subtotal				12.71	20.0% - 30.0%	51.89	48.4 / 129.7	5,084
	Subtotal	103.04	1.91	0.00	15.12		61.91		**6,072**
All Zones	Vacant Total				19.51		56.01		1,626
	Redev Total				53.50		166.36		6,304
	Total	**909.51**	**503.78**	**0.00**	**73.01**		**222.37**		**7,930**

Capacity (units)	
Very Low Density Zones	46
Low Density Zones	220
Medium Low Density Zones	41
Medium High Density Zones	1,550
High Density Zones	6,072
Capacity in Pipeline	*456*
Total Capacity (Units)	**8,386**
Remaining Target (2018-2035)	3,067
Surplus/Deficit Capacity (Units)	**5,319**

Housing Capacity by Density Level (units)



Des Moines - Employment Growth and Commercial/Industrial Development Trends



Des Moines Jobs Growth Target: 2006-2035	5,800
2006 Jobs (PSRC)	6,206
2018 Jobs (PSRC)	7,065
Total Jobs Growth	**859**
Remaining 2035 Target	4,941

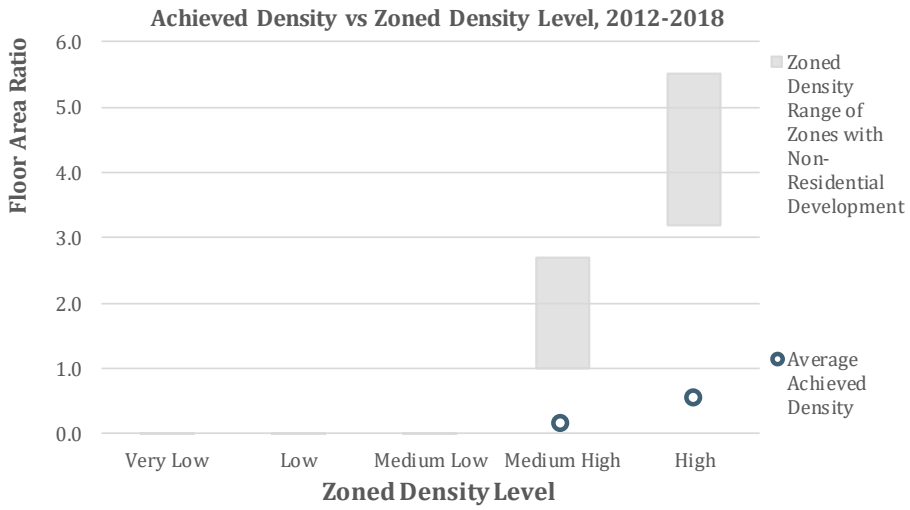
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
35.8%	**1.09%**	**3.17%**

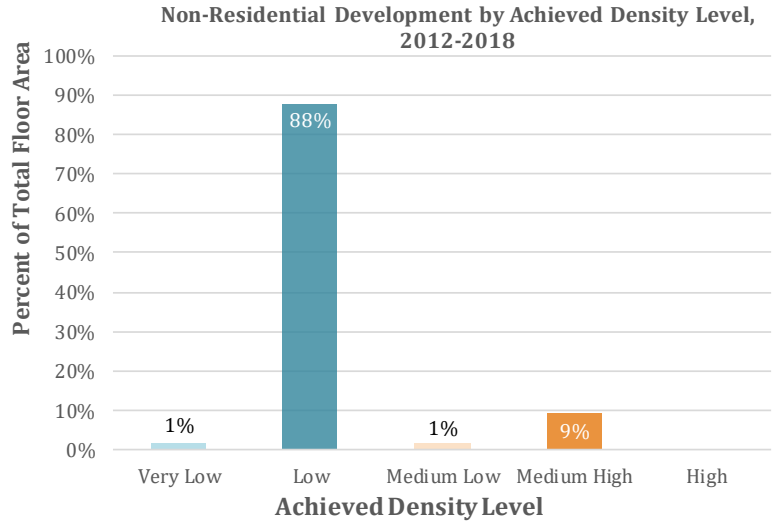
Since 2006, Des Moines has grown at 36% of the pace needed to achieve its 2035 jobs growth target of 5,800 units. During this period, the total number of jobs in Des Moines grew by roughly 14%. At this current rate, Des Moines is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 3.2% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	40,980	6,203	**0.2**
High	3.0 & up FAR	3,938,931	2,104,363	**0.5**
	Total	**3,979,911**	**2,110,566**	**0.5**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	114,290	29,744	**0.3**
Low	3,724,382	1,853,398	**0.5**
Medium Low	47,100	29,583	**0.6**
Medium High	94,139	197,841	**2.1**
High	0	0	**0.0**
Total	**3,979,911**	**2,110,566**	**0.5**



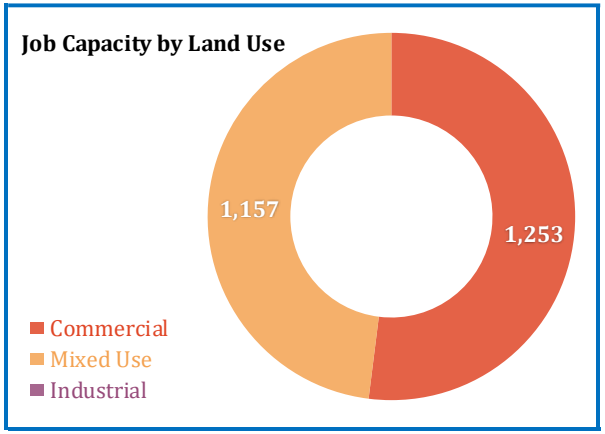


Des Moines - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	85.0	11.4	5.5	5.5	62.6	0% - 20%	51.2
Mixed Use	178.8	6.2	12.9	12.9	146.7	15% - 30%	106.6
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**263.8**	**17.6**	**18.5**	**18.5**	**209.3**		**157.8**

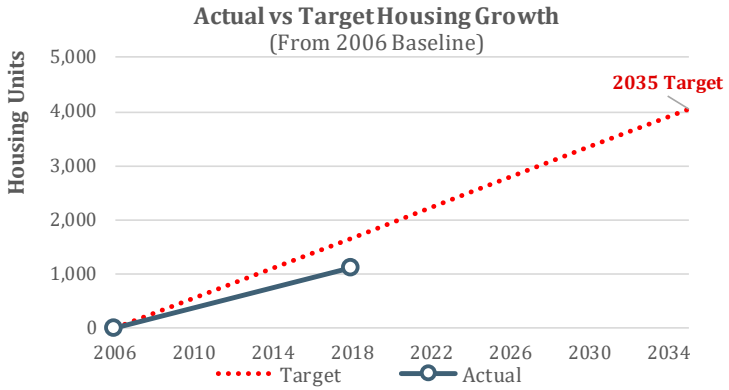
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.96	0.32 / 3.50	0.00	0.42	0 / 800	727
Redevelopable	1.27	0.32 / 3.50	0.29	0.30	0 / 800	526
Commercial Total	**2.23**	**0.32 / 3.50**	**0.29**	**0.72**	**0 / 800**	**1,253**
Mixed-Use						
Vacant	0.51	0.01 / 0.63	0.00	0.10	400 / 800	247
Redevelopable	4.13	0.01 / 0.63	1.51	0.41	400 / 800	911
Mixed Use Total	**4.64**	**0.01 / 0.63**	**1.51**	**0.51**	**400 / 800**	**1,157**
Industrial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
City Total						
Commercial	2.23	0.32 / 3.50	0.69	0.72	0 / 800	1,253
Mixed Use	4.64	0.01 / 0.63	0.91	0.51	400 / 800	1,157
Industrial	0.00	0.00	0.26	0.00	0	0
Job Capacity in Pipeline						*0*
City Total	**6.87**	**3.50**	**1.86**	**1.23**	**0 / 800**	**2,410**

Job Capacity by Assumed Density Level	#	%
Very Low Density	1,303	54%
Low Density	0	0%
Medium Low Density	823	34%
Medium High Density	160	7%
High Density	124	5%
Capacity in Pipeline		*0*
Total Capacity (jobs)		**2,410**
Remaining Target (2018-2035)		4,941
Surplus/Deficit Capacity (jobs)		**-2,531**



City of Kenmore

Housing Growth and Residential Development Trends



Kenmore Housing Growth Target: 2006-2035	4,060
2006 Estimated Housing Units	8,156
2018 Estimated Housing Units	9,276
Estimated Housing Growth	**1,120**
Remaining 2035 Target	2,940

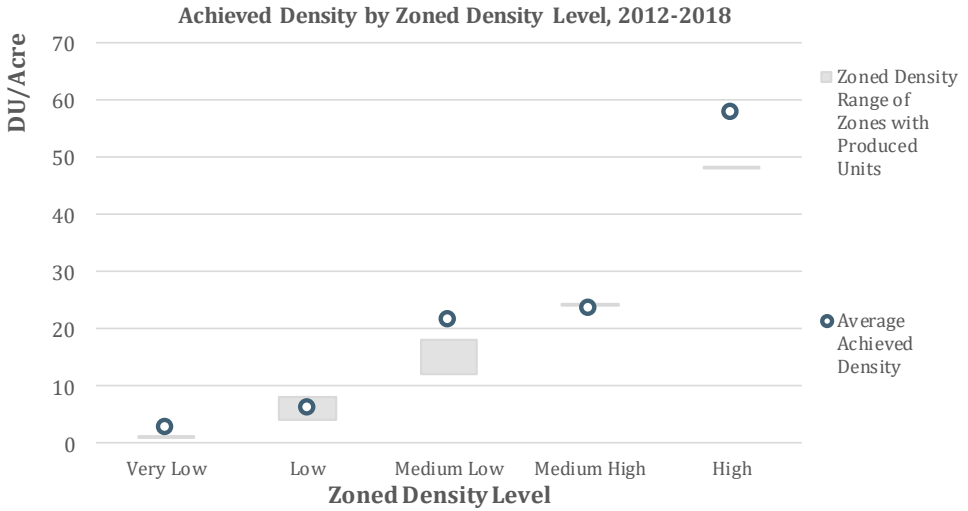
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
66.7%	1.08%	1.63%

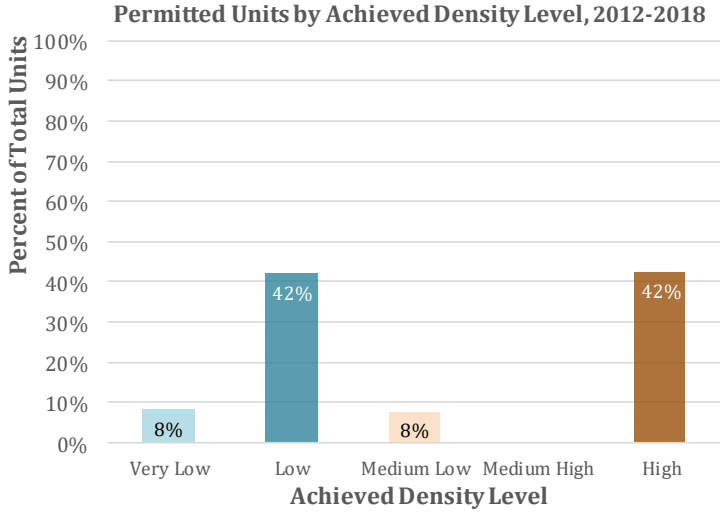
Since 2006, Kenmore has grown at 67% of the pace needed to achieve its 2035 housing growth target of 4,060 units. During this period, the total number of housing units in Kenmore grew by roughly 14%. At this current rate, Kenmore is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1.6% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	3.5	0.0	0.0	0.0	3.5	9	**2.5**
Low	4 - 10 du/acre	65.3	2.8	0.3	0.5	61.7	365	**5.9**
Medium Low	10 - 24 du/acre	5.6	4.2	0.1	0.0	1.4	29	**21.4**
Medium High	24 - 48 du/acre	1.0	0.0	0.0	0.0	1.0	23	**23.3**
High	48 & up du/acre	5.5	0.0	0.0	0.0	5.5	320	**57.7**
	Total	**81.0**	**7.0**	**0.4**	**0.5**	**73.1**	**746**	**10.2**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	18.3	61
Low	46.9	313
Medium Low	2.6	56
Medium High	0.0	0
High	5.3	316
Total	**73.1**	**746**



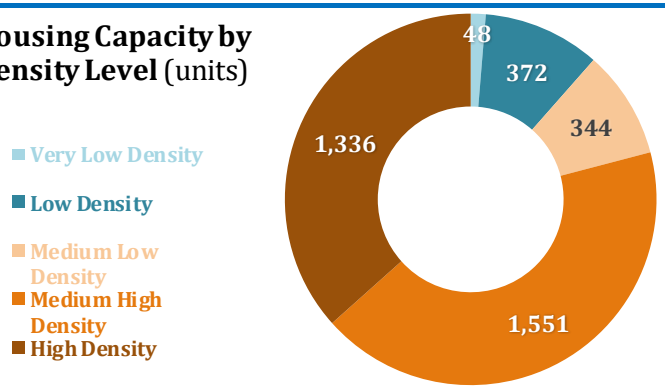


Kenmore - Residential Land Supply and Capacity

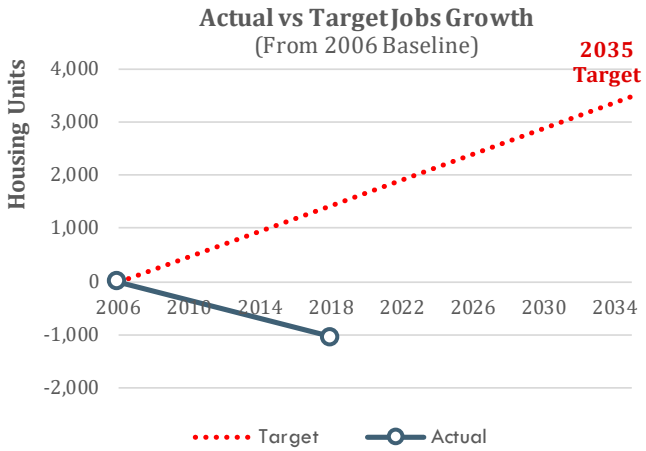
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				3.56	5.0% - 9.0%	15.04	2.5 / 3.5	47
	Redev Subtotal				3.48	0.0% - 9.0%	13.46	2.5 / 3.5	1
	Subtotal	151.92	114.06	0.00	7.05		28.50		**48**
Low Density	Vacant Subtotal				7.83	5.0% - 5.0%	22.03	6.7 / 8.0	149
	Redev Subtotal				21.56	5.0% - 5.0%	60.36	6.7 / 8.0	224
	Subtotal	218.79	101.13	0.00	29.39		82.39		**372**
Medium Low Density	Vacant Subtotal				1.36	5.0% - 5.0%	7.25	16.4 / 23.3	139
	Redev Subtotal				2.13	5.0% - 5.0%	11.36	16.4 / 23.3	205
	Subtotal	32.98	9.72	0.00	3.49		18.61		**344**
Medium High Density	Vacant Subtotal				0.14	5.0% - 5.0%	0.74	24.0	18
	Redev Subtotal				17.17	0.0% - 5.0%	51.59	24.0 / 31.0	1,533
	Subtotal	2.88	0.00	0.00	17.31		52.34		**1,551**
High Density	Vacant Subtotal				1.02	5.0% - 10.0%	5.33	48.0 / 72.0	266
	Redev Subtotal				3.80	5.0% - 10.0%	20.19	48.0 / 72.0	1,071
	Subtotal	116.09	12.21	0.00	4.82		25.51		**1,336**
All Zones	Vacant Total				13.91		50.39		618
	Redev Total				48.13		156.96		3,033
	Total	**522.66**	**237.12**	**0.00**	**62.04**		**207.35**		**3,651**

Capacity (units)	
Very Low Density Zones	48
Low Density Zones	372
Medium Low Density Zones	344
Medium High Density Zones	1,551
High Density Zones	1,336
Capacity in Pipeline	*484*
Total Capacity (Units)	**4,135**
Remaining Target (2018-2035)	2,940
Surplus/Deficit Capacity (Units)	**1,195**

Housing Capacity by Density Level (units)



Kenmore - Employment Growth and Commercial/Industrial Development Trends



Kenmore Jobs Growth Target: 2006-2035	3,480
2006 Jobs (PSRC)	5,062
2018 Jobs (PSRC)	4,012
Total Jobs Growth	**-1,050**
Remaining 2035 Target	3,480

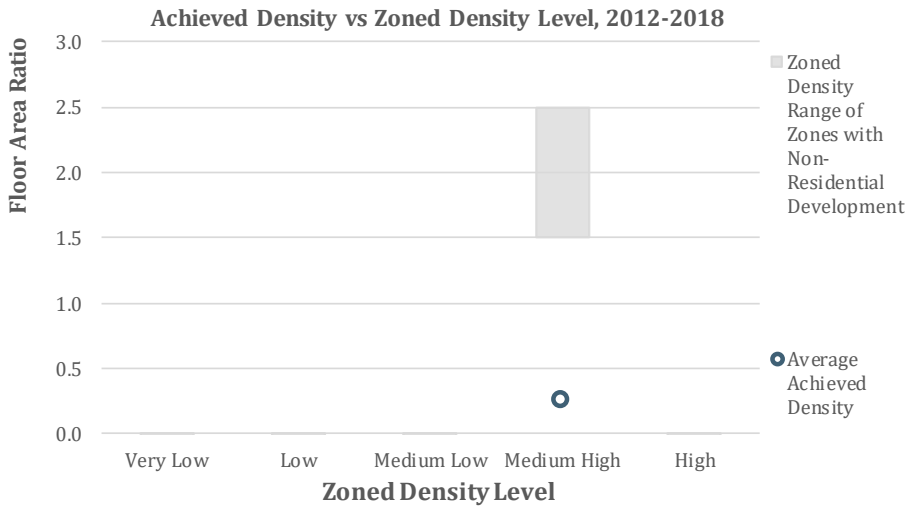
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
-72.9%	-1.92%	4.55%

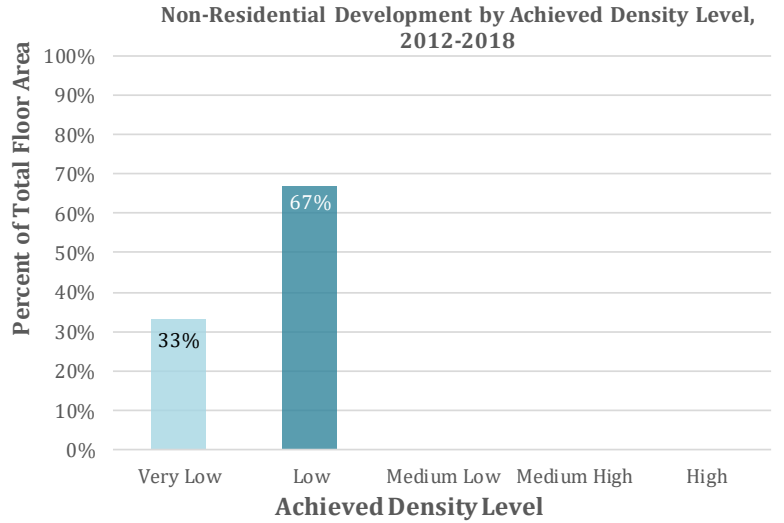
Since 2006, Kenmore has grown at -73% of the pace needed to achieve its 2035 jobs growth target of 3,480 units. During this period, the total number of jobs in Kenmore grew by roughly -21%. At this current rate, Kenmore is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 4.6% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	239,623	61,187	0.3
High	3.0 & up FAR	0	0	
	Total	**239,623**	**61,187**	**0.3**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	134,034	20,211	0.2
Low	105,589	40,976	0.4
Medium Low	0	0	0.0
Medium High	0	0	0.0
High	0	0	0.0
Total	**239,623**	**61,187**	**0.3**



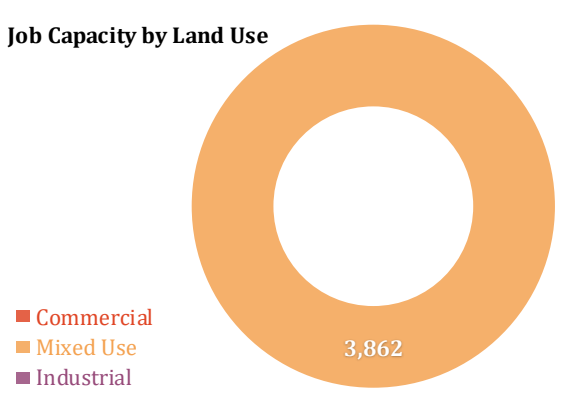


Kenmore - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Mixed Use	131.4	17.4	8.0	16.0	90.1	0% - 10%	87.5
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**131.4**	**17.4**	**8.0**	**16.0**	**90.1**		**87.5**

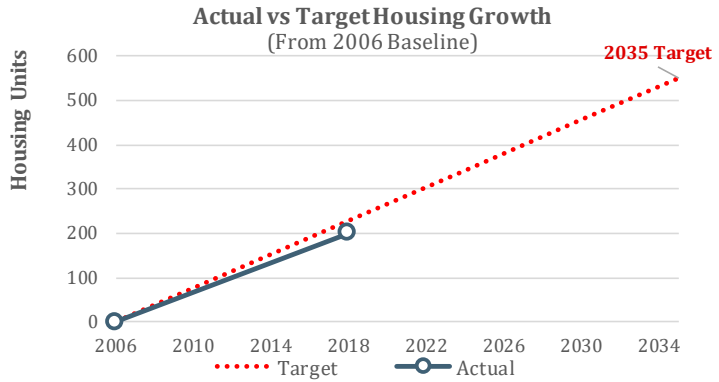
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Commercial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
Mixed-Use						
Vacant	0.48	0.16 / 1.50	0.00	0.19	300 / 400	623
Redevelopable	3.33	0.16 / 1.50	0.26	0.97	300 / 400	3239
Mixed Use Total	**3.81**	**0.16 / 1.50**	**0.26**	**1.16**	**300 / 400**	**3,862**
Industrial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
City Total						
Commercial	0.00	0.00	0.69	0.00	0	0
Mixed Use	3.81	0.16 / 1.50	0.91	1.16	300 / 400	3,862
Industrial	0.00	0.00	0.26	0.00	0	0
Job Capacity in Pipeline						*19*
City Total	**3.81**	**1.50**	**1.86**	**1.16**	**0 / 400**	**3,881**

Job Capacity by Assumed Density Level	#	%
Very Low Density	295	8%
Low Density	3,518	91%
Medium Low Density	0	0%
Medium High Density	49	1%
High Density	0	0%
Capacity in Pipeline		*19*
Total Capacity (jobs)		**3,881**
Remaining Target (2018-2035)		4,530
Surplus/Deficit Capacity (jobs)		**-649**



City of Lake Forest Park

Housing Growth and Residential Development Trends



Lake Forest Park Housing Growth Target: 2006-2035	551
2006 Estimated Housing Units	5,226
2018 Estimated Housing Units	5,427
Estimated Housing Growth	**201**
Remaining 2035 Target	**350**

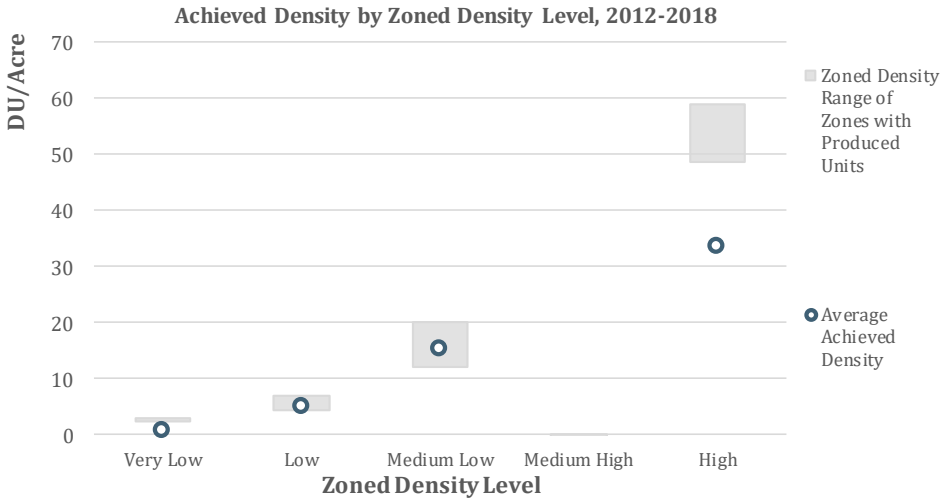
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
88.2%	**0.32%**	**0.37%**

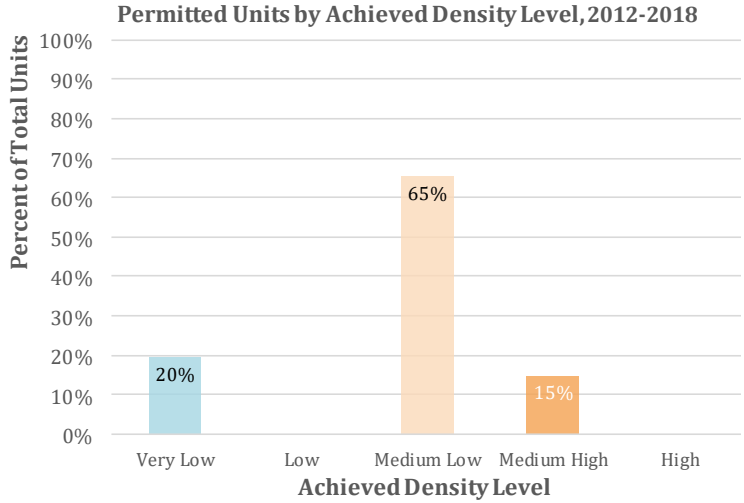
Since 2006, Lake Forest Park has grown at 88% of the pace needed to achieve its 2035 housing growth target of 551 units. During this period, the total number of housing units in Lake Forest Park grew by roughly 4%. At this current rate, Lake Forest Park is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0.4% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	3.5	0.0	0.0	0.0	3.5	2	**0.6**
Low	4 - 10 du/acre	17.8	4.2	0.0	0.0	13.6	67	**4.9**
Medium Low	10 - 24 du/acre	5.1	0.0	0.0	0.1	5.1	77	**15.2**
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	0.8	0.0	0.0	0.0	0.8	25	**33.3**
	Total	**27.2**	**4.2**	**0.0**	**0.1**	**22.9**	**171**	**7.5**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	15.2	34
Low	0.0	0
Medium Low	6.9	112
Medium High	0.8	25
High	0.0	0
Total	**22.9**	**171**

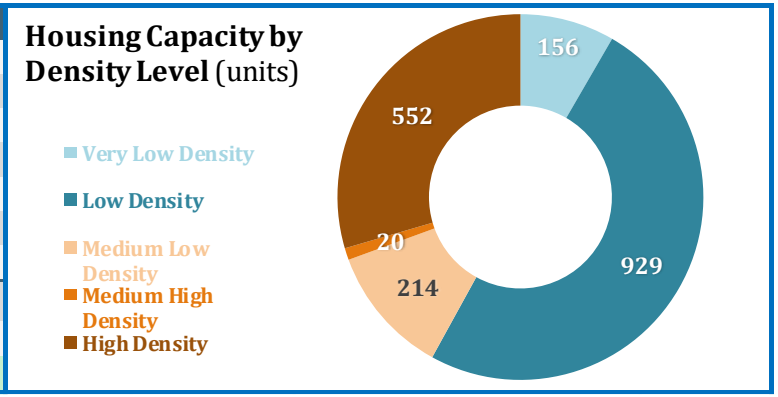




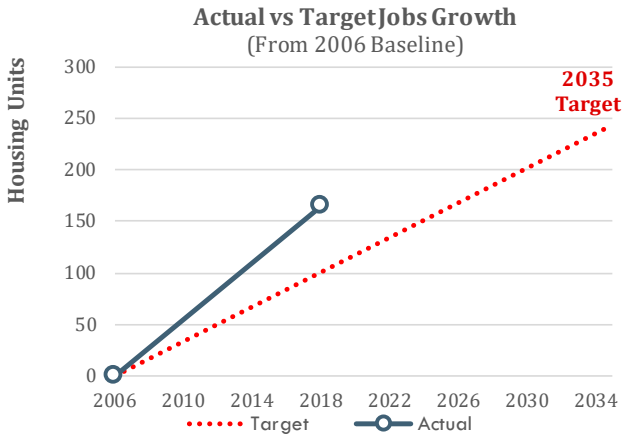
Lake Forest Park - Residential Land Supply and Capacity

Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				1.66	20.0% - 20.0%	24.94	2.0 / 3.0	56
	Redev Subtotal				6.32	20.0% - 20.0%	94.73	2.0 / 3.0	100
	Subtotal	207.12	47.27	0.29	7.98		119.66		**156**
Low Density	Vacant Subtotal				2.40	20.0% - 20.0%	35.93	4.4 / 6.0	192
	Redev Subtotal				14.79	20.0% - 20.0%	221.85	4.4 / 6.0	737
	Subtotal	373.29	27.13	2.45	17.19		257.78		**929**
Medium Low Density	Vacant Subtotal				0.00	16.0% - 20.0%	0.00	12.0 / 18.2	0
	Redev Subtotal				0.89	16.0% - 20.0%	14.08	12.0 / 18.2	214
	Subtotal	19.51	1.67	0.00	0.89		14.08		**214**
Medium High Density	Vacant Subtotal				0.00	16.0% - 16.0%	0.00	24.2 / 33.3	0
	Redev Subtotal				0.05	16.0% - 16.0%	0.71	24.2 / 33.3	20
	Subtotal	0.94	0.06	0.00	0.05		0.71		**20**
High Density	Vacant Subtotal				0.00	16.0% - 16.0%	0.00	65.0	0
	Redev Subtotal				0.56	16.0% - 16.0%	8.85	65.0	552
	Subtotal	11.17	0.00	0.00	0.56		8.85		**552**
All Zones	Vacant Total				4.06		60.87		247
	Redev Total				22.60		340.22		1,623
	Total	**612.01**	**76.14**	**2.74**	**26.66**		**401.09**		**1,870**

Capacity (units)	
Very Low Density Zones	156
Low Density Zones	929
Medium Low Density Zones	214
Medium High Density Zones	20
High Density Zones	552
Capacity in Pipeline	*0*
Total Capacity (Units)	**1,870**
Remaining Target (2018-2035)	350
Surplus/Deficit Capacity (Units)	**1,520**



Lake Forest Park - Employment Growth and Commercial/Industrial Development Trends



Lake Forest Park Jobs Growth Target: 2006-2035	244
2006 Jobs (PSRC)	1,612
2018 Jobs (PSRC)	1,777
Total Jobs Growth	**165**
Remaining 2035 Target	**79**

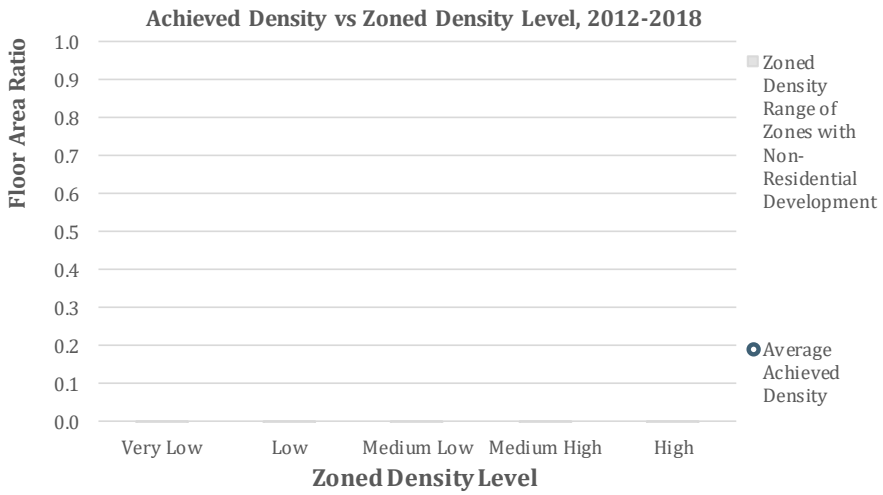
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
163.7%	**0.82%**	**0.25%**

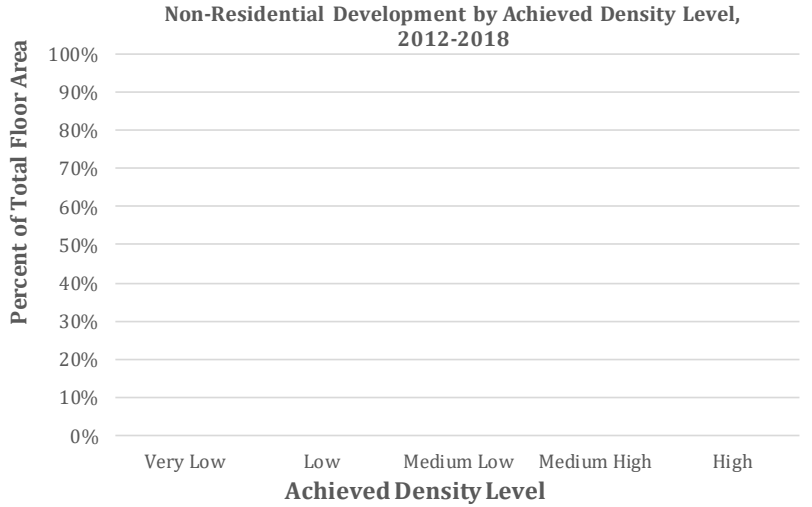
Since 2006, Lake Forest Park has grown at 164% of the pace needed to achieve its 2035 jobs growth target of 244 units. During this period, the total number of jobs in Lake Forest Park grew by roughly 10%. At this current rate, Lake Forest Park is over the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 0.3% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	0	0	
	Total	**0**	**0**	

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	**0.0**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**0**	**0**	**0.0**



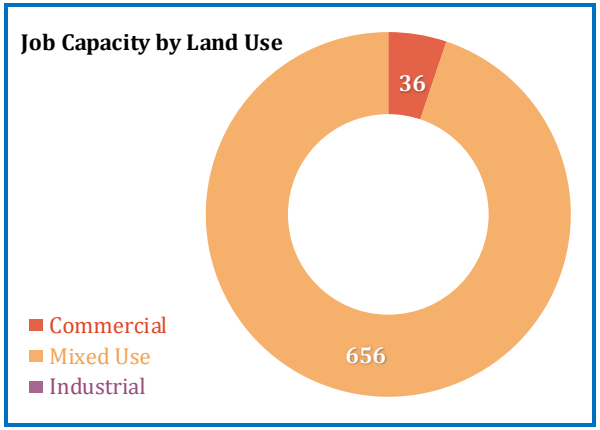


Lake Forest Park - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	3.4	0.2	0.1	0.0	3.0	26% - 50%	1.6
Mixed Use	31.1	1.7	1.2	0.3	28.0	16%	23.3
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**34.5**	**1.9**	**1.3**	**0.3**	**31.0**		**24.9**

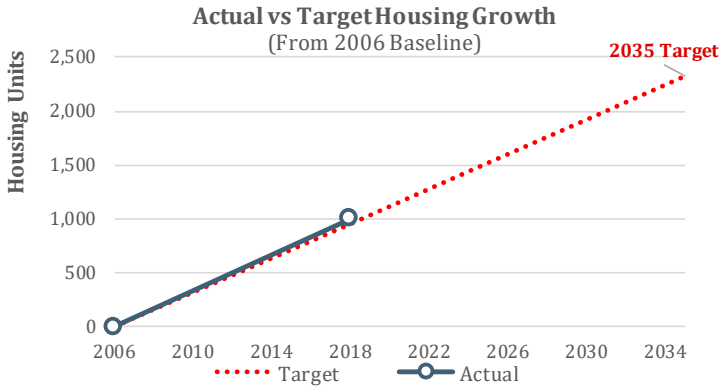
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.00	0.50	0.00	0.00	465	0
Redevelopable	0.07	0.50	0.02	0.02	465	36
Commercial Total	**0.07**	**0.50**	**0.02**	**0.02**	**465**	**36**
Mixed-Use						
Vacant	0.00	0.65	0.00	0.00	465	0
Redevelopable	1.01	0.65	0.29	0.30	465	656
Mixed Use Total	**1.01**	**0.65**	**0.29**	**0.30**	**465**	**656**
Industrial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
City Total						
Commercial	0.07	0.50	0.69	0.02	465	36
Mixed Use	1.01	0.65	0.91	0.30	465	656
Industrial	0.00	0.00	0.26	0.00	0	0
Job Capacity in Pipeline						*0*
City Total	**1.08**	**0.65**	**1.86**	**0.32**	**0 / 465**	**691**

Job Capacity by Assumed Density Level	#	%
Very Low Density	0	0%
Low Density	0	0%
Medium Low Density	691	100%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*0*
Total Capacity (jobs)		**691**
Remaining Target (2018-2035)		79
Surplus/Deficit Capacity (jobs)		**613**



City of Mercer Island

Housing Growth and Residential Development Trends



Mercer Island Housing Growth Target: 2006-2035	2,320
2006 Estimated Housing Units	9,467
2018 Estimated Housing Units	10,473
Estimated Housing Growth	**1,006**
Remaining 2035 Target	1,314

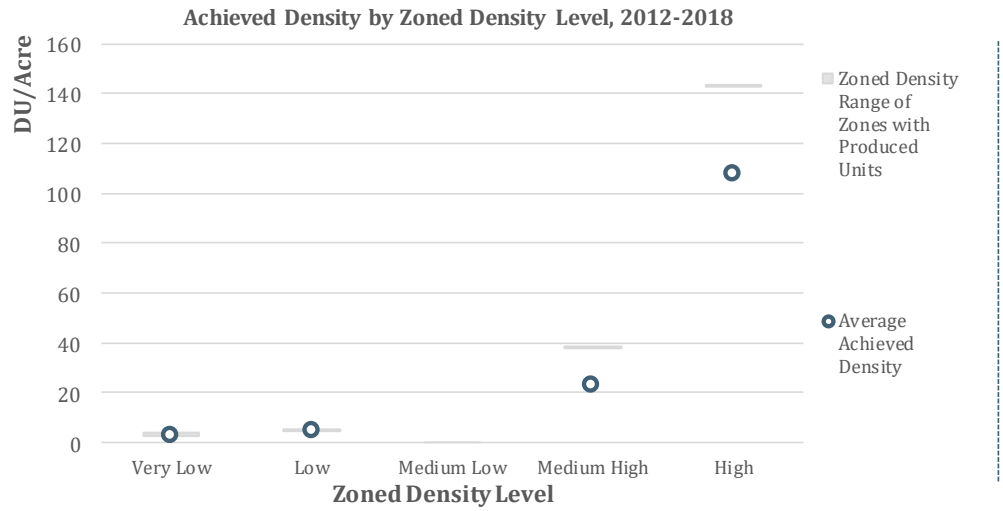
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
104.8%	**0.85%**	**0.70%**

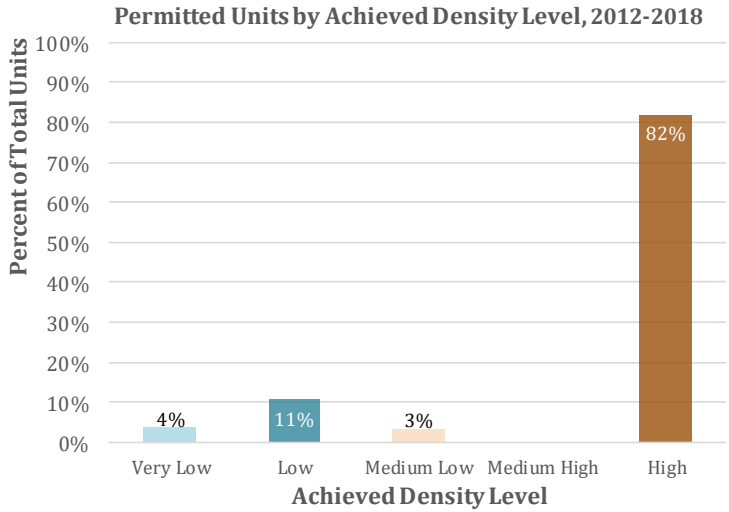
Since 2006, Mercer Island has grown at 105% of the pace needed to achieve its 2035 housing growth target of 2,320 units. During this period, the total number of housing units in Mercer Island grew by roughly 11%. At this current rate, Mercer Island is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0.7% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	12.2	2.2	1.7	0.0	8.3	22	**2.7**
Low	4 - 10 du/acre	16.0	0.7	2.4	0.0	13.0	60	**4.6**
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	1.0	0.0	0.2	0.0	0.8	19	**22.7**
High	48 & up du/acre	4.7	0.2	0.2	0.0	4.3	460	**107.5**
	Total	**33.8**	**3.1**	**4.4**	**0.0**	**26.4**	**561**	**21.3**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	8.3	22
Low	13.0	60
Medium Low	0.8	19
Medium High	0.0	0
High	4.3	460
Total	**26.4**	**561**



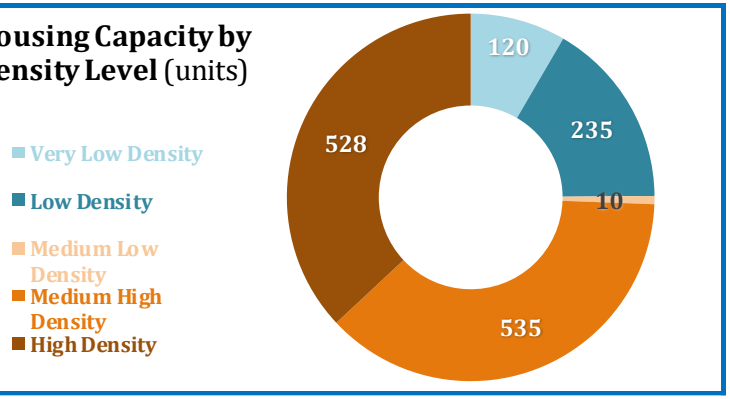


Mercer Island - Residential Land Supply and Capacity

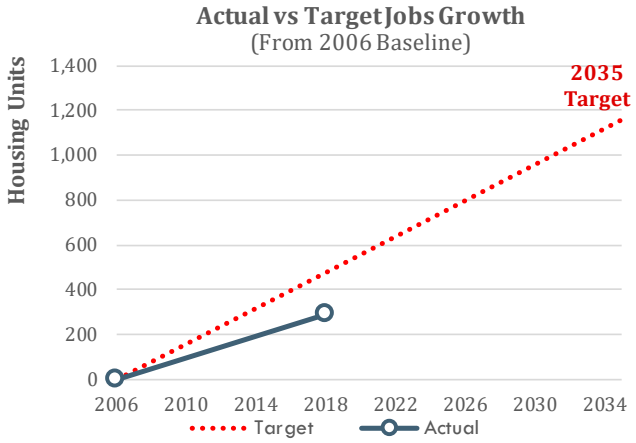
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				4.96	3.0% - 3.0%	32.05	2.6 / 3.3	85
	Redev Subtotal				13.31	3.0% - 3.0%	85.97	2.6 / 3.3	35
	Subtotal	352.32	211.82	0.00	18.27		118.02		**120**
Low Density	Vacant Subtotal				3.27	3.0% - 5.0%	21.12	4.6 / 6.1	98
	Redev Subtotal				16.64	3.0% - 5.0%	107.54	4.6 / 6.1	138
	Subtotal	287.75	134.59	0.00	19.91		128.65		**235**
Medium Low Density	Vacant Subtotal				0.02	20.0% - 20.0%	0.45	22.7	10
	Redev Subtotal				0.05	20.0% - 20.0%	1.13	22.7	0
	Subtotal	3.12	1.05	0.00	0.07		1.58		**10**
Medium High Density	Vacant Subtotal				0.00	20.0% - 20.0%	0.00	26.0	0
	Redev Subtotal				2.00	20.0% - 20.0%	43.70	26.0	535
	Subtotal	62.65	5.52	0.00	2.00		43.70		**535**
High Density	Vacant Subtotal				0.02	10.0% - 10.0%	0.54	100.6 / 167.8	91
	Redev Subtotal				0.95	10.0% - 10.0%	23.47	100.6 / 167.8	437
	Subtotal	29.86	2.10	0.00	0.97		24.01		**528**
All Zones	Vacant Total				8.27		54.16		284
	Redev Total				32.95		261.81		1,145
	Total	**735.70**	**355.08**	**0.00**	**41.22**		**315.97**		**1,429**

Capacity (units)	
Very Low Density Zones	120
Low Density Zones	235
Medium Low Density Zones	10
Medium High Density Zones	535
High Density Zones	528
Capacity in Pipeline	*178*
Total Capacity (Units)	**1,607**
Remaining Target (2018-2035)	1,314
Surplus/Deficit Capacity (Units)	**293**

Housing Capacity by Density Level (units)



Mercer Island - Employment Growth and Commercial/Industrial Development Trends



Mercer Island Jobs Growth Target: 2006-2035	1,160
2006 Jobs (PSRC)	7,453
2018 Jobs (PSRC)	7,745
Total Jobs Growth	**292**
Remaining 2035 Target	**868**

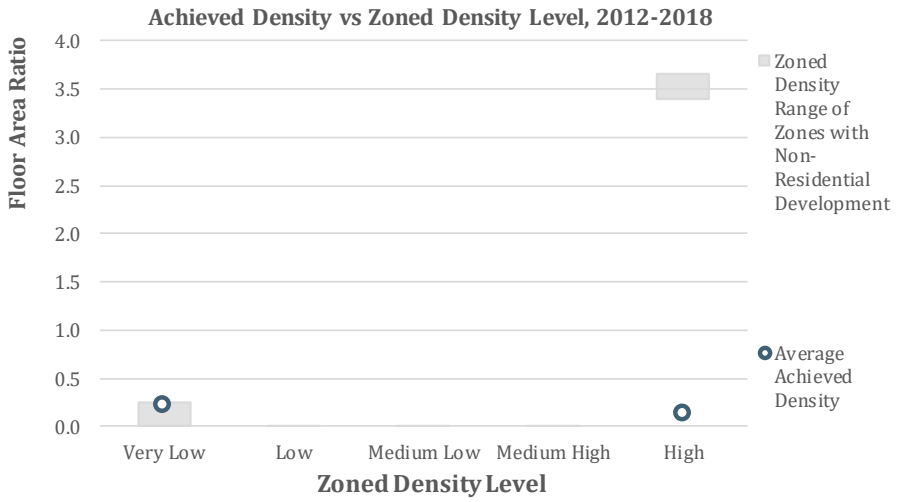
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
60.8%	**0.32%**	**0.63%**

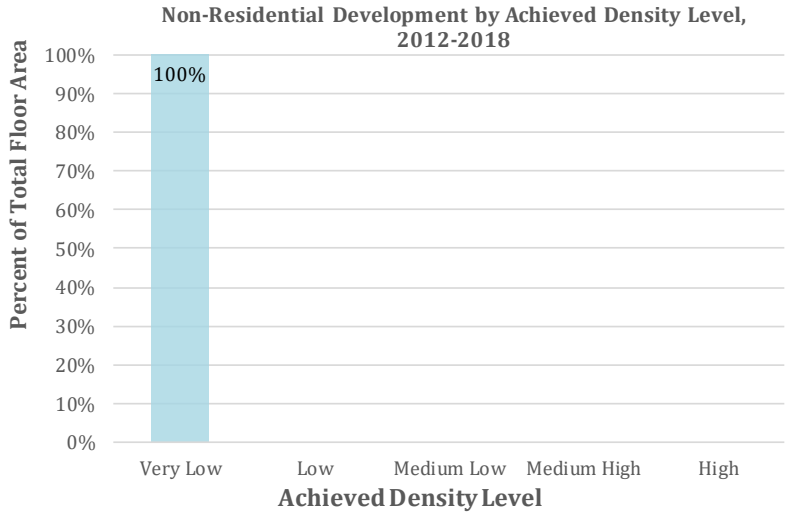
Since 2006, Mercer Island has grown at 61% of the pace needed to achieve its 2035 jobs growth target of 1,160 units. During this period, the total number of jobs in Mercer Island grew by roughly 4%. At this current rate, Mercer Island is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 0.6% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	364,525	77,277	**0.2**
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	195,824	24,137	**0.1**
	Total	**560,349**	**101,414**	**0.2**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	560,349	101,414	**0.2**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**560,349**	**101,414**	**0.2**



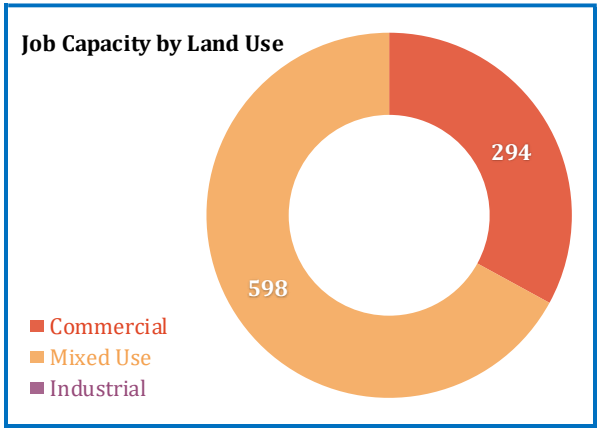


Mercer Island - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	25.0	15.6	0.0	0.3	9.0	15% - 20%	7.2
Mixed Use	29.9	2.1	0.0	1.0	26.8	10%	24.0
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**54.8**	**17.7**	**0.0**	**1.3**	**35.8**		**31.2**

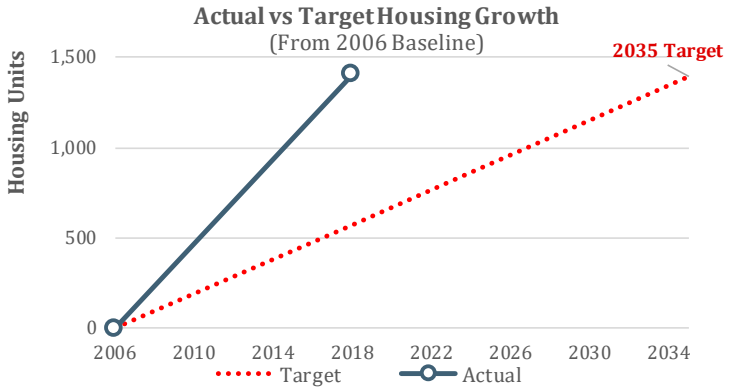
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.03	0.22 / 0.50	0.00	0.01	200	52
Redevelopable	0.29	0.22 / 0.50	0.06	0.05	200	242
Commercial Total	**0.31**	**0.22 / 0.50**	**0.06**	**0.06**	**200**	**294**
Mixed-Use						
Vacant	0.02	0.06 / 1.00	0.00	0.02	200	119
Redevelopable	1.02	0.06 / 1.00	0.48	0.10	200	479
Mixed Use Total	**1.05**	**0.06 / 1.00**	**0.48**	**0.12**	**200**	**598**
Industrial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
City Total						
Commercial	0.31	0.22 / 0.50	0.69	0.06	200	294
Mixed Use	1.05	0.06 / 1.00	0.91	0.12	200	598
Industrial	0.00	0.00	0.26	0.00	0	0
Job Capacity in Pipeline						*70*
City Total	**1.36**	**1.00**	**1.86**	**0.18**	**0 / 200**	**961**

Job Capacity by Assumed Density Level	#	%
Very Low Density	11	1%
Low Density	177	20%
Medium Low Density	227	25%
Medium High Density	477	54%
High Density	0	0%
Capacity in Pipeline		*70*
Total Capacity (jobs)		**961**
Remaining Target (2018-2035)		868
Surplus/Deficit Capacity (jobs)		**93**



City of Newcastle

Housing Growth and Residential Development Trends



Newcastle Housing Growth Target: 2006-2035	1,392
2006 Estimated Housing Units	3,784
2018 Estimated Housing Units	5,188
Estimated Housing Growth	**1,404**
Remaining 2035 Target	0

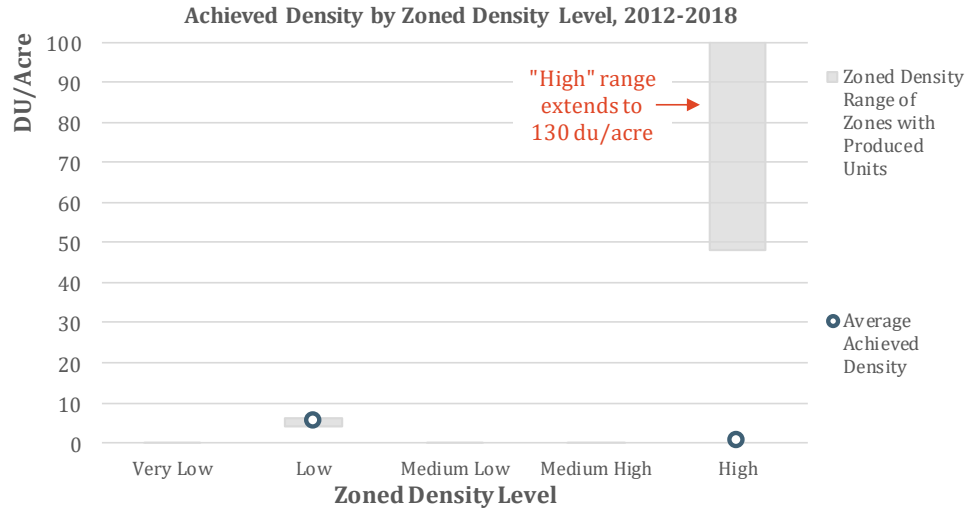
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
243.8%	**2.67%**	**Met Target**

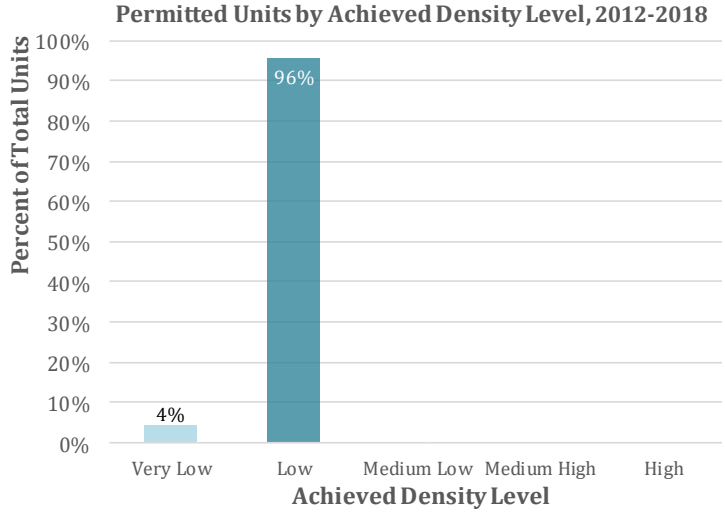
Since 2006, Newcastle has grown at 244% of the pace needed to achieve its 2035 housing growth target of 1,392 units. During this period, the total number of housing units in Newcastle grew by roughly 37%. Newcastle has achieved its 2035 housing growth target.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	77.0	18.7	11.5	4.2	42.6	223	**5.2**
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	57.9	13.6	1.0	5.4	37.9	10	**0.3**
	Total	**135.0**	**32.3**	**12.6**	**9.6**	**80.5**	**233**	**2.9**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	37.9	10
Low	42.6	223
Medium Low	0.0	0
Medium High	0.0	0
High	0.0	0
Total	**80.5**	**233**



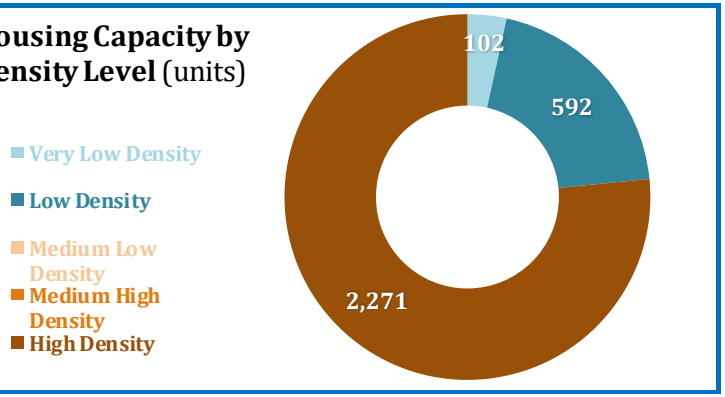


Newcastle - Residential Land Supply and Capacity

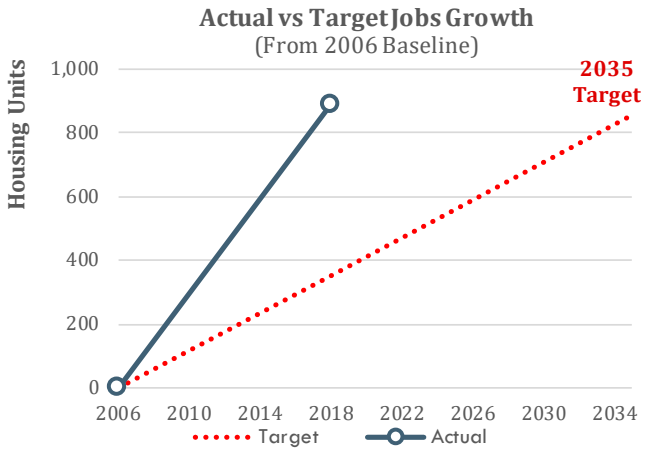
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				31.01	10.0% - 10.0%	70.49	1.0	70
	Redev Subtotal				19.23	10.0% - 10.0%	43.69	1.0	32
	Subtotal	218.80	0.61	35.50	50.24		114.18		**102**
Low Density	Vacant Subtotal				31.46	12.0% - 12.0%	69.22	4.0 / 6.0	298
	Redev Subtotal				38.73	12.0% - 12.0%	85.21	4.0 / 6.0	294
	Subtotal	266.80	11.55	0.00	70.20		154.43		**592**
Medium Low Density	Vacant Subtotal				0.00	10.0% - 10.0%	0.00	12.0	0
	Redev Subtotal				0.00	10.0% - 10.0%	0.00	12.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Medium High Density	Vacant Subtotal				0.00	10.0% - 10.0%	0.00	24.0	0
	Redev Subtotal				0.00	10.0% - 10.0%	0.00	24.0	0
	Subtotal	0.71	0.71	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	10.0% - 10.0%	0.00	48.0 / 60.0	0
	Redev Subtotal				5.86	10.0% - 10.0%	46.89	48.0 / 60.0	2,271
	Subtotal	58.61	0.00	0.00	5.86		46.89		**2,271**
All Zones	Vacant Total				62.48		139.71		369
	Redev Total				63.82		175.79		2,597
	Total	**544.92**	**12.87**	**35.50**	**126.30**		**315.50**		**2,966**

Capacity (units)	
Very Low Density Zones	102
Low Density Zones	592
Medium Low Density Zones	0
Medium High Density Zones	0
High Density Zones	2,271
Capacity in Pipeline	*268*
Total Capacity (Units)	**3,234**
Remaining Target (2018-2035)	0
Surplus/Deficit Capacity (Units)	**3,234**

Housing Capacity by Density Level (units)



Newcastle - Employment Growth and Commercial/Industrial Development Trends



Newcastle Jobs Growth Target: 2006-2035	853
2006 Jobs (PSRC)	1,736
2018 Jobs (PSRC)	2,627
Total Jobs Growth	891
Remaining 2035 Target	0

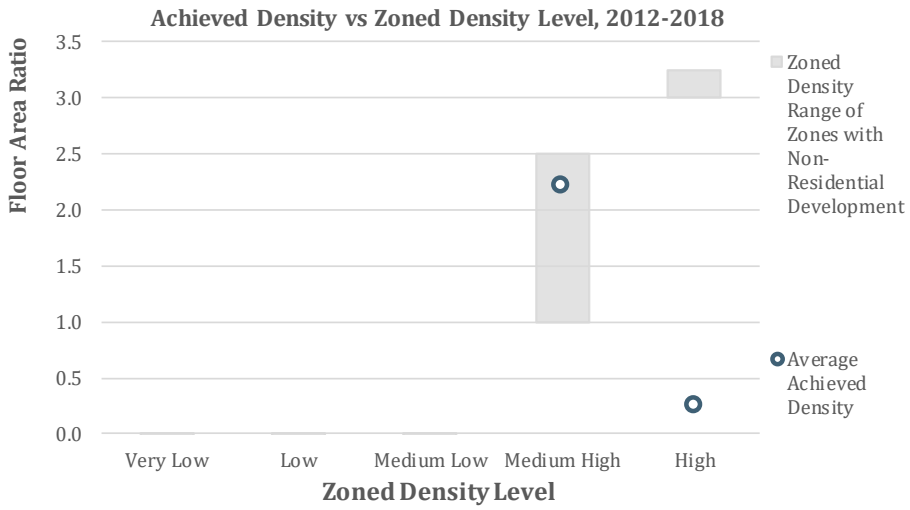
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
252.6%	3.51%	Met Target

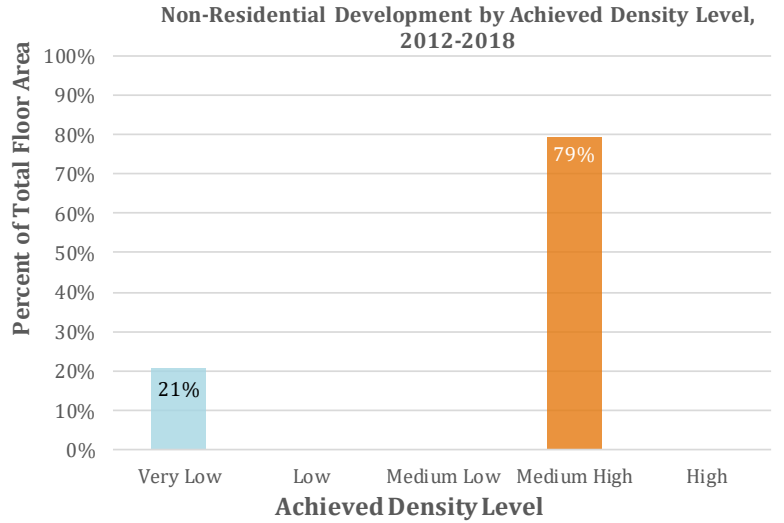
Since 2006, Newcastle has grown at 253% of the pace needed to achieve its 2035 jobs growth target of 853 units. During this period, the total number of jobs in Newcastle grew by roughly 51%. Newcastle has achieved its 2035 jobs growth target.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	40,769	90,451	2.2
High	3.0 & up FAR	95,013	23,330	0.2
	Total	135,782	113,781	0.8

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	95,013	23,330	0.2
Low	0	0	0.0
Medium Low	0	0	0.0
Medium High	40,769	90,451	2.2
High	0	0	0.0
Total	135,782	113,781	0.8



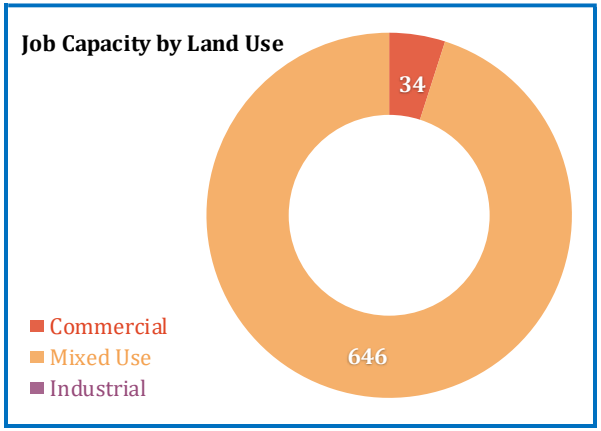


Newcastle - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	1.0	0.0	0.1	0.1	0.9	14%	0.8
Mixed Use	58.6	0.0	2.9	2.9	52.8	10%	46.9
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**59.6**	**0.0**	**3.0**	**57.4**	**1033.9**		**47.7**

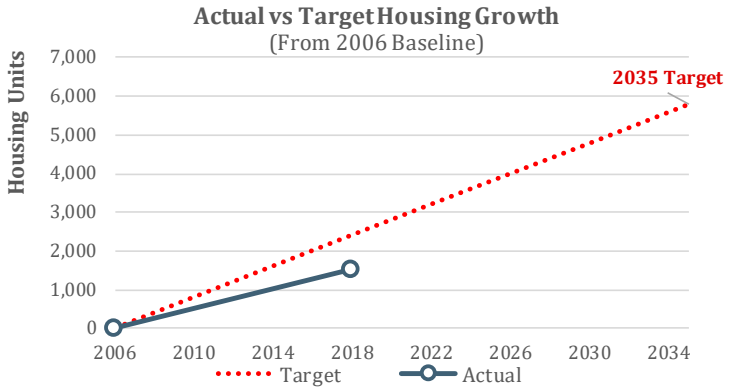
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.00	0.30	0.00	0.00	300	0
Redevelopable	0.03	0.30	0.00	0.01	300	34
Commercial Total	**0.03**	**0.30**	**0.00**	**0.01**	**300**	**34**
Mixed-Use						
Vacant	0.00	0.10 / 0.25	0.00	0.00	300	0
Redevelopable	2.04	0.10 / 0.25	0.43	0.19	300	646
Mixed Use Total	**2.04**	**0.10 / 0.25**	**0.43**	**0.19**	**300**	**646**
Industrial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
City Total						
Commercial	0.03	0.30	0.69	0.01	300	34
Mixed Use	2.04	0.10 / 0.25	0.91	0.19	300	646
Industrial	0.00	0.00	0.26	0.00	0	0
Job Capacity in Pipeline						*0*
City Total	**2.08**	**0.30**	**1.86**	**0.20**	**0 / 300**	**680**

Job Capacity by Assumed Density Level	#	%
Very Low Density	680	100%
Low Density	0	0%
Medium Low Density	0	0%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*0*
Total Capacity (jobs)		**680**
Remaining Target (2018-2035)		0
Surplus/Deficit Capacity (jobs)		**680**



City of Shoreline

Housing Growth and Residential Development Trends



Shoreline Housing Growth Target: 2006-2035	5,800
2006 Estimated Housing Units	22,173
2018 Estimated Housing Units	23,702
Estimated Housing Growth	**1,529**
Remaining 2035 Target	4,271

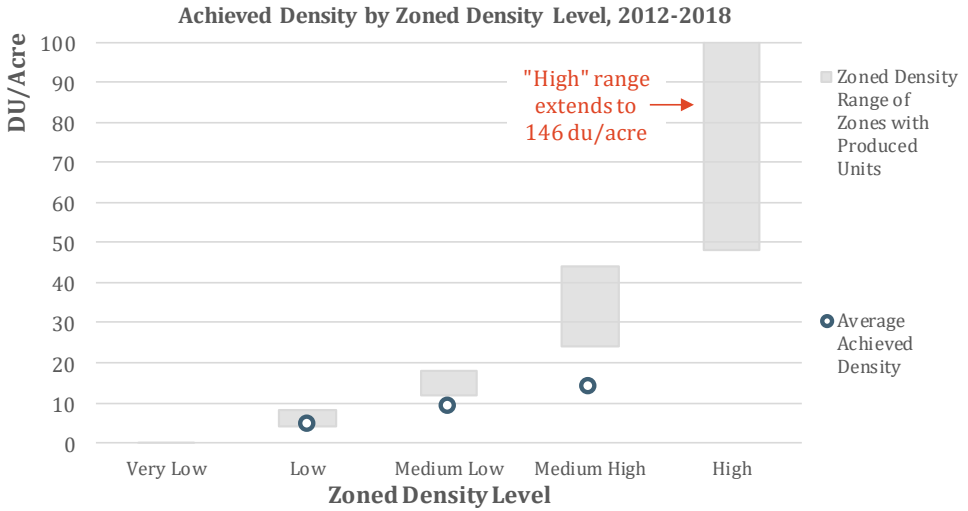
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
63.7%	0.56%	0.98%

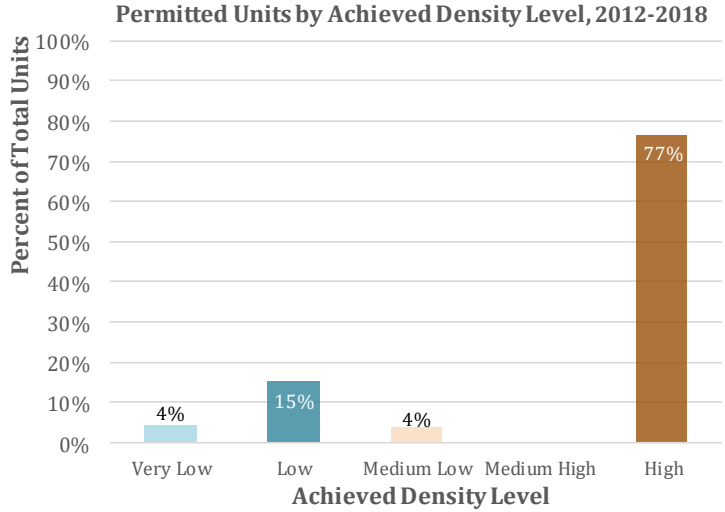
Since 2006, Shoreline has grown at 64% of the pace needed to achieve its 2035 housing growth target of 5,800 units. During this period, the total number of housing units in Shoreline grew by roughly 7%. At this current rate, Shoreline is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	94.1	10.6	0.0	0.0	83.5	360	**4.3**
Medium Low	10 - 24 du/acre	4.5	0.0	0.0	0.0	4.5	41	**9.1**
Medium High	24 - 48 du/acre	5.8	0.0	0.0	0.0	5.8	81	**14.0**
High	48 & up du/acre	15.1	0.0	0.0	0.0	15.1	1,639	**108.5**
	Total	**119.5**	**10.6**	**0.0**	**0.0**	**108.8**	**2,121**	**19.5**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	35.3	94
Low	54.2	319
Medium Low	5.8	81
Medium High	0.0	0
High	13.5	1,627
Total	**108.8**	**2,121**

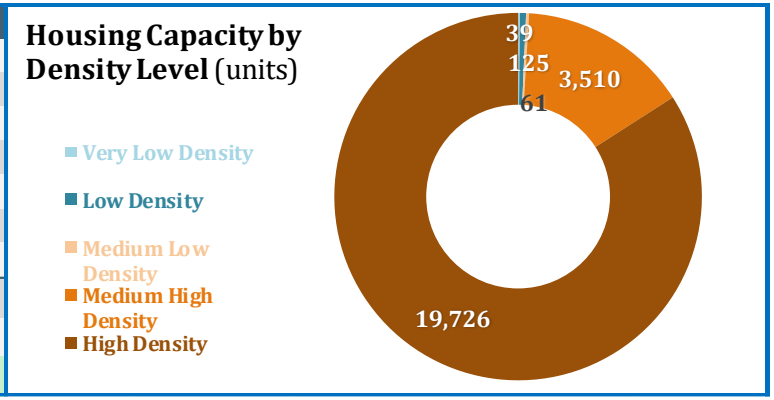




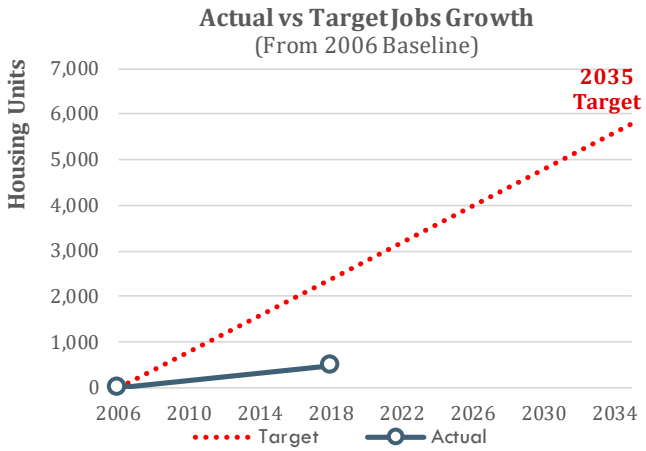
Shoreline - Residential Land Supply and Capacity

Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				0.00	0.0% - 10.0%	0.76	3.7	1
	Redev Subtotal				0.00	0.0% - 10.0%	45.28	3.7	37
	Subtotal	58.48	7.37	0.00	0.00		46.04		**39**
Low Density	Vacant Subtotal				0.00	10.0% - 10.0%	24.11	5.1 / 9.6	125
	Redev Subtotal				0.00	10.0% - 10.0%	94.64	5.1 / 9.6	0
	Subtotal	142.68	10.74	0.00	0.00		118.74		**125**
Medium Low Density	Vacant Subtotal				0.00	10.0% - 20.0%	0.13	11.9 / 12.0	2
	Redev Subtotal				0.00	10.0% - 20.0%	10.22	11.9 / 12.0	59
	Subtotal	11.78	0.21	0.00	0.00		10.35		**61**
Medium High Density	Vacant Subtotal				0.00	20.0% - 30.0%	1.03	25.0 / 44.0	36
	Redev Subtotal				0.00	20.0% - 30.0%	98.77	25.0 / 44.0	3,474
	Subtotal	141.68	0.50	0.00	0.00		99.80		**3,510**
High Density	Vacant Subtotal				0.00	20.0% - 30.0%	22.06	102.8 / 150.4	2,916
	Redev Subtotal				0.00	20.0% - 30.0%	132.57	102.8 / 150.4	16,810
	Subtotal	203.39	0.02	0.00	0.00		154.63		**19,726**
All Zones	Vacant Total				0.00		48.08		3,080
	Redev Total				0.00		381.47		20,381
	Total	**558.01**	**18.84**	**0.00**	**0.00**		**429.55**		**23,461**

Capacity (units)	
Very Low Density Zones	39
Low Density Zones	125
Medium Low Density Zones	61
Medium High Density Zones	3,510
High Density Zones	19,726
Capacity in Pipeline	*2,129*
Total Capacity (Units)	**25,590**
Remaining Target (2018-2035)	4,271
Surplus/Deficit Capacity (Units)	**21,318**



Shoreline - Employment Growth and Commercial/Industrial Development Trends



Shoreline Jobs Growth Target: 2006-2035	5,800
2006 Jobs (PSRC)	17,411
2018 Jobs (PSRC)	17,898
Total Jobs Growth	**487**
Remaining 2035 Target	5,313

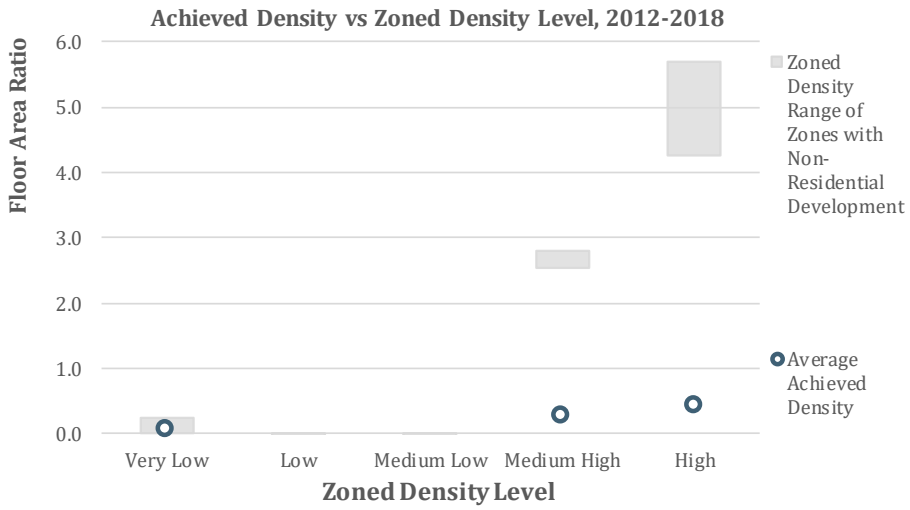
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
20.3%	**0.23%**	**1.54%**

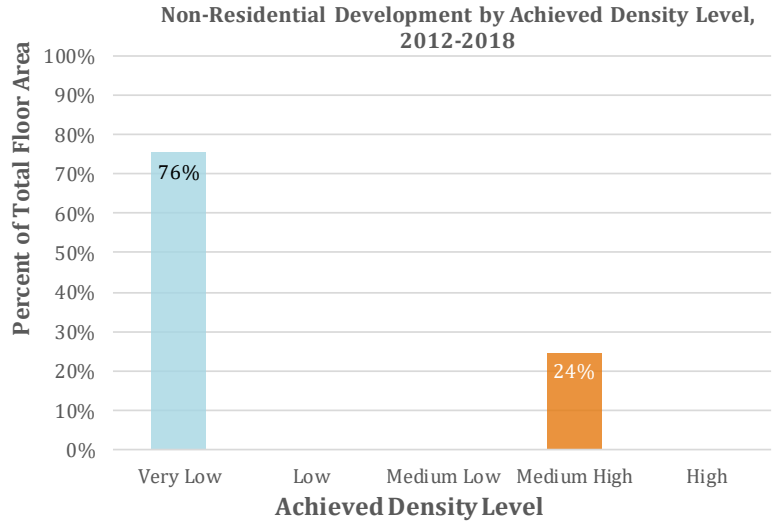
Since 2006, Shoreline has grown at 20% of the pace needed to achieve its 2035 jobs growth target of 5,800 units. During this period, the total number of jobs in Shoreline grew by roughly 3%. At this current rate, Shoreline is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 1.5% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	7,130,116	470,060	**0.1**
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	66,330	18,637	**0.3**
High	3.0 & up FAR	1,781,187	756,529	**0.4**
	Total	**8,977,633**	**1,245,226**	**0.1**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	8,737,630	941,618	**0.1**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	240,003	303,608	**1.3**
High	0	0	**0.0**
Total	**8,977,633**	**1,245,226**	**0.1**



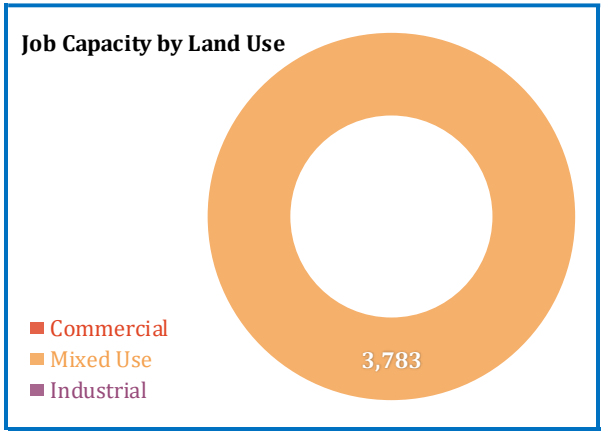


Shoreline - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Mixed Use	345.1	0.5	0.0	0.0	344.5	20% - 30%	254.4
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**345.1**	**0.5**	**0.0**	**0.0**	**344.5**		**254.4**

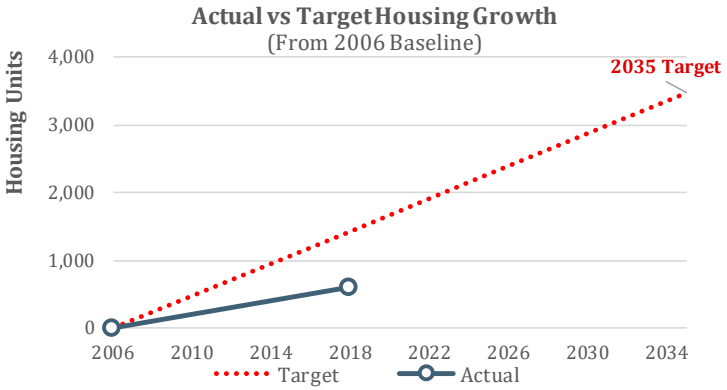
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Commercial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
Mixed-Use						
Vacant	1.01	0.10 / 0.50	0.00	0.42	500	835
Redevelopable	10.08	0.10 / 0.50	2.08	1.47	500	2,948
Mixed Use Total	**11.08**	**0.10 / 0.50**	**2.08**	**1.89**	**500**	**3,783**
Industrial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
City Total						
Commercial	0.00	0.00	0.69	0.00	0	0
Mixed Use	11.08	0.10 / 0.50	0.91	1.89	500	3,783
Industrial	0.00	0.00	0.26	0.00	0	0
Job Capacity in Pipeline						*170*
City Total	**11.08**	**0.50**	**1.86**	**1.89**	**0 / 500**	**3,953**

Job Capacity by Assumed Density Level	#	%
Very Low Density	2,939	78%
Low Density	0	0%
Medium Low Density	844	22%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*170*
Total Capacity (jobs)		**3,953**
Remaining Target (2018-2035)		5,313
Surplus/Deficit Capacity (jobs)		**-1,360**



City of Woodinville

Housing Growth and Residential Development Trends



Woodinville Housing Growth Target: 2006-2035	3,480
2006 Estimated Housing Units	4,550
2018 Estimated Housing Units	5,154
Estimated Housing Growth	**604**
Remaining 2035 Target	2,876

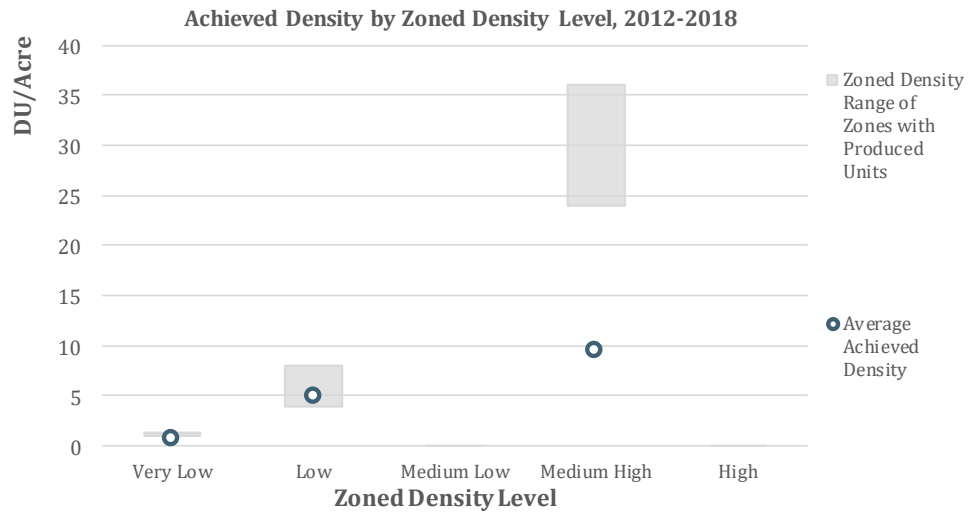
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
42.0%	**1.04%**	**2.64%**

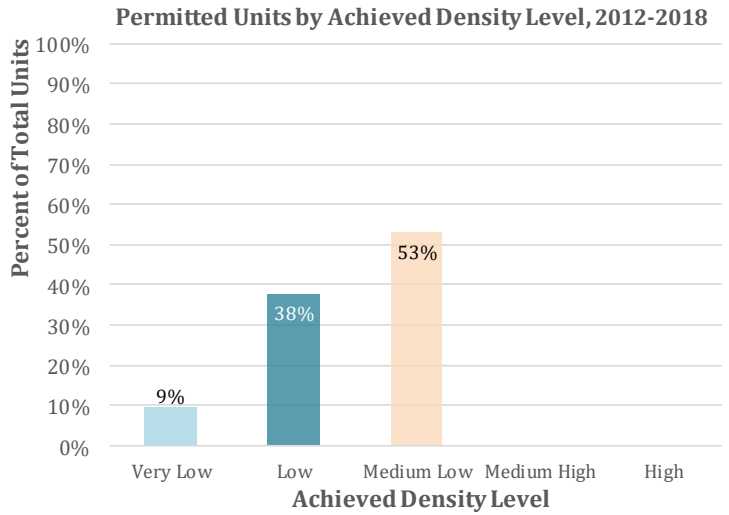
Since 2006, Woodinville has grown at 42% of the pace needed to achieve its 2035 housing growth target of 3,480 units. During this period, the total number of housing units in Woodinville grew by roughly 13%. At this current rate, Woodinville is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 2.6% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	57.6	1.1	0.0	0.1	56.3	40	**0.7**
Low	4 - 10 du/acre	35.2	0.0	0.0	0.0	35.2	171	**4.9**
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	28.3	2.9	0.0	0.2	25.3	237	**9.4**
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	**121.1**	**4.0**	**0.0**	**0.3**	**116.7**	**448**	**3.8**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	61.5	42
Low	33.5	169
Medium Low	21.8	237
Medium High	0.0	0
High	0.0	0
Total	**116.7**	**448**



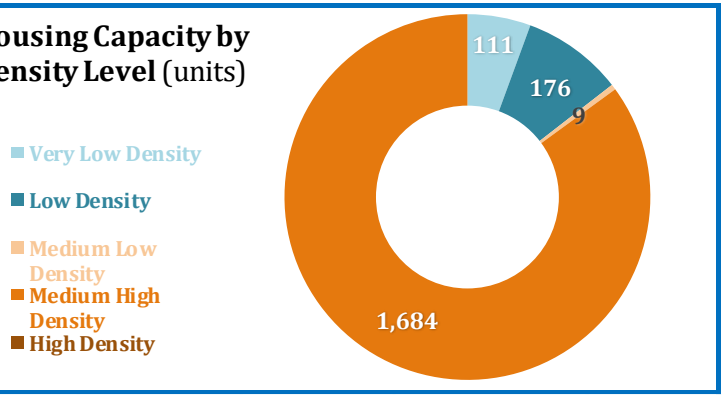


Woodinville - Residential Land Supply and Capacity

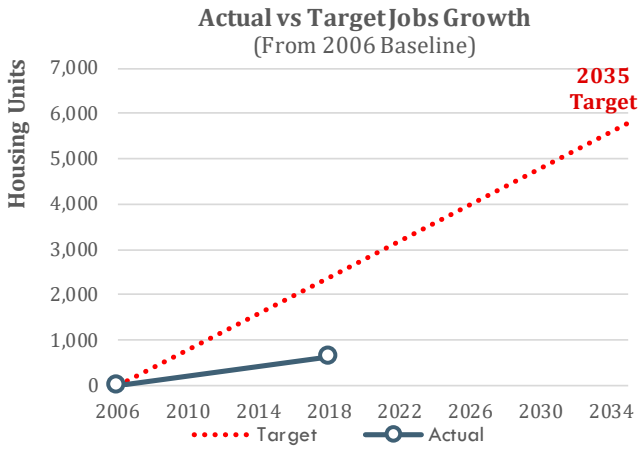
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				20.84	5.0% - 5.0%	111.14	0.7 / 1.2	91
	Redev Subtotal				28.62	5.0% - 5.0%	152.66	0.7 / 1.2	20
	Subtotal	538.85	65.66	143.44	49.46		263.80		**111**
Low Density	Vacant Subtotal				4.46	5.0% - 5.0%	23.81	5.0 / 8.0	122
	Redev Subtotal				3.77	5.0% - 5.0%	20.10	5.0 / 8.0	55
	Subtotal	123.94	65.62	10.05	8.23		43.91		**176**
Medium Low Density	Vacant Subtotal				0.13	5.0% - 5.0%	0.68	12.0 / 18.0	9
	Redev Subtotal				2.57	5.0% - 5.0%	13.70	12.0 / 18.0	0
	Subtotal	22.03	4.05	0.00	2.70		14.38		**9**
Medium High Density	Vacant Subtotal				4.51	1.0% - 80.0%	22.73	24.0 / 36.0	784
	Redev Subtotal				5.21	1.0% - 80.0%	25.42	24.0 / 36.0	901
	Subtotal	105.76	10.65	2.68	9.72		48.14		**1,684**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.72	100.0% - 100.0%	0.00	48.0	0
	Subtotal	4.78	0.00	0.00	0.72		0.00		**0**
All Zones	Vacant Total				29.94		158.36		1,006
	Redev Total				40.89		211.88		975
	Total	**795.36**	**145.98**	**156.17**	**70.83**		**370.24**		**1,981**

Capacity (units)	
Very Low Density Zones	111
Low Density Zones	176
Medium Low Density Zones	9
Medium High Density Zones	1,684
High Density Zones	0
Capacity in Pipeline	*1,724*
Total Capacity (Units)	**3,705**
Remaining Target (2018-2035)	2,876
Surplus/Deficit Capacity (Units)	**829**

Housing Capacity by Density Level (units)



Woodinville - Employment Growth and Commercial/Industrial Development Trends



Woodinville Jobs Growth Target: 2006-2035	5,800
2006 Jobs (PSRC)	11,876
2018 Jobs (PSRC)	12,519
Total Jobs Growth	**643**
Remaining 2035 Target	5,157

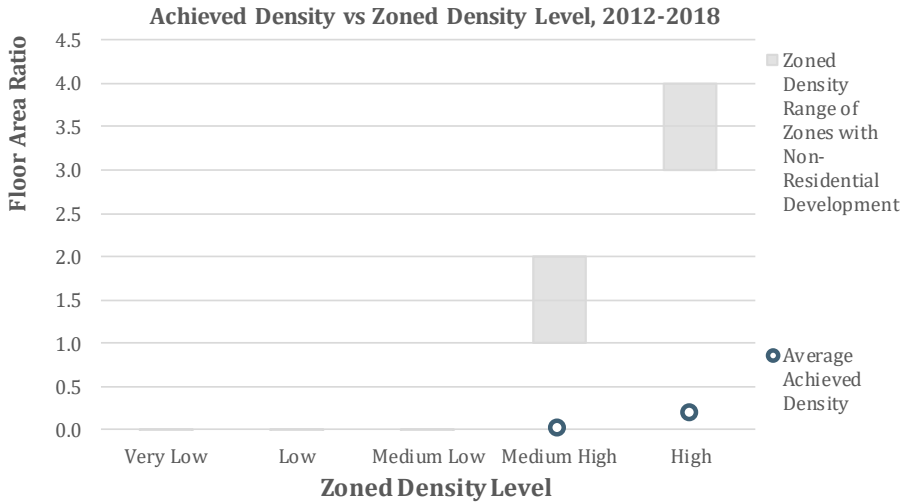
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
26.8%	**0.44%**	**2.05%**

Since 2006, Woodinville has grown at 27% of the pace needed to achieve its 2035 jobs growth target of 5,800 units. During this period, the total number of jobs in Woodinville grew by roughly 5%. At this current rate, Woodinville is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 2.1% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	115,688	1,707	**0.0**
High	3.0 & up FAR	108,260	20,536	**0.2**
	Total	**223,948**	**22,243**	**0.1**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	223,948	22,243	**0.1**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**223,948**	**22,243**	**0.1**



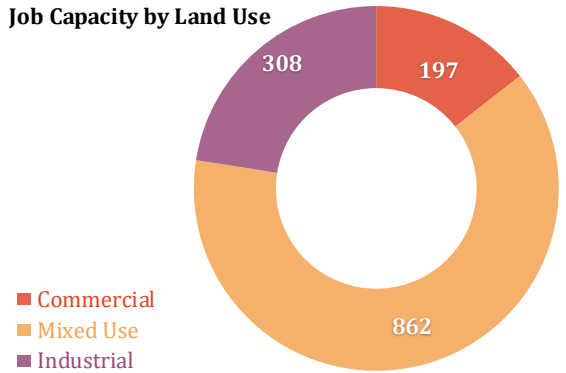


Woodinville - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	53.8	36.3	1.7	0.0	15.7	0% - 50%	12.0
Mixed Use	67.7	10.7	5.7	0.0	51.3	1% - 5%	50.6
Industrial	80.0	24.2	5.6	0.0	50.1	15%	41.8
Non-Res Land Total	**201.4**	**71.2**	**13.0**	**0.0**	**117.2**		**104.4**

Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.46	0.20 / 1.00	0.00	0.11	450 / 600	190
Redevelopable	0.07	0.20 / 1.00	0.01	0.00	450 / 600	7
Commercial Total	**0.52**	**0.20 / 1.00**	**0.01**	**0.12**	**450 / 600**	**197**
Mixed-Use						
Vacant	1.04	0.22 / 0.40	0.00	0.25	300	840
Redevelopable	1.16	0.22 / 0.40	0.26	0.01	300	21
Mixed Use Total	**2.20**	**0.22 / 0.40**	**0.26**	**0.26**	**300**	**862**
Industrial						
Vacant	1.25	0.17	0.00	0.21	700	303
Redevelopable	0.57	0.17	0.09	0.00	700	4
Industrial Total	**1.82**	**0.17**	**0.09**	**0.22**	**700**	**308**
City Total						
Commercial	0.52	0.20 / 1.00	0.69	0.12	450 / 600	197
Mixed Use	2.20	0.22 / 0.40	0.91	0.26	300	862
Industrial	1.82	0.17	0.26	0.22	700	308
Job Capacity in Pipeline						*3,006*
City Total	**4.55**	**0.17 / 1.00**	**1.86**	**0.59**	**300 / 700**	**4,373**

Job Capacity by Assumed Density Level	#	%
Very Low Density	1,176	86%
Low Density	190	14%
Medium Low Density	0	0%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*3,006*
Total Capacity (jobs)		**4,373**
Remaining Target (2018-2035)		5,157
Surplus/Deficit Capacity (jobs)		**-784**

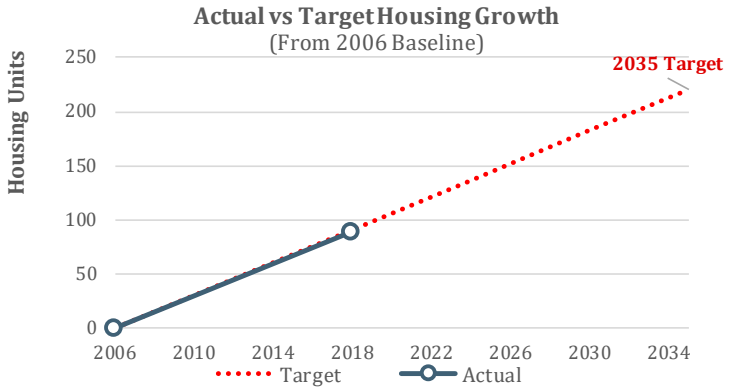


Cities and Towns

City of Algona
City of Beaux Arts
City of Black Diamond
City of Carnation
City of Clyde Hill
City of Covington
City of Duvall
City of Enumclaw
Town of Hunts Point
City of Maple Valley
City of Medina
City of Milton
City of Normandy Park
City of North Bend
City of Pacific
City of Sammamish
Town of Skykomish
City of Snoqualmie
Town of Yarrow Point

City of Algona

Housing Growth and Residential Development Trends



Algona Housing Growth Target: 2006-2035	220
2006 Estimated Housing Units	960
2018 Estimated Housing Units	1,049
Estimated Housing Growth	**89**
Remaining 2035 Target	132

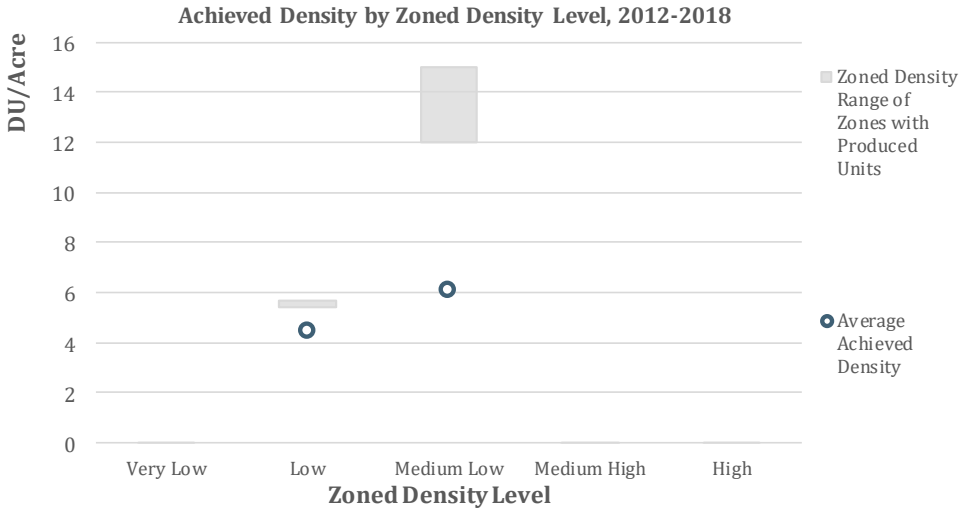
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
97.3%	0.74%	0.70%

Since 2006, Algona has grown at 97% of the pace needed to achieve its 2035 housing growth target of 220 units. During this period, the total number of housing units in Algona grew by roughly 9%. At this current rate, Algona is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0.7% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	2.9	0.0	0.0	0.0	2.9	13	4.4
Medium Low	10 - 24 du/acre	4.0	0.0	0.0	0.0	4.0	24	6.1
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	6.9	0.0	0.0	0.0	6.9	37	5.4

Achieved Density Level	Net Area (acres)	Total Units
Very Low	0.0	0
Low	6.9	37
Medium Low	0.0	0
Medium High	0.0	0
High	0.0	0
Total	6.9	37



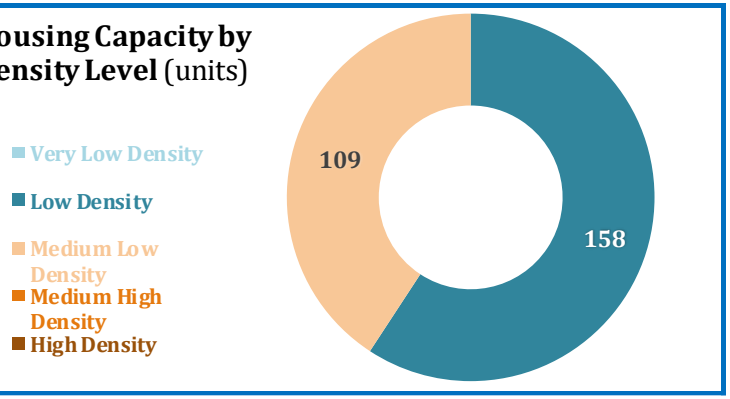


Algona - Residential Land Supply and Capacity

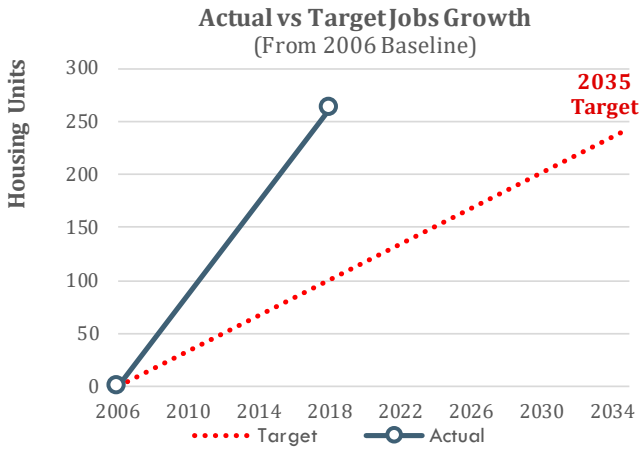
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Low Density	Vacant Subtotal				2.66	9.0% - 9.0%	9.44	4.1	38
	Redev Subtotal				9.98	9.0% - 9.0%	35.43	4.1	119
	Subtotal	63.29	0.05	0.00	12.64		44.87		**158**
Medium Low Density	Vacant Subtotal				1.96	9.0% - 35.0%	4.80	12.0 / 15.0	61
	Redev Subtotal				1.22	9.0% - 35.0%	4.07	12.0 / 15.0	48
	Subtotal	16.68	0.11	0.59	3.18		8.87		**109**
Medium High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				4.62		14.24		99
	Redev Total				11.20		39.50		167
	Total	**79.97**	**0.16**	**0.59**	**15.82**		**53.74**		**266**

Capacity (units)	
Very Low Density Zones	0
Low Density Zones	158
Medium Low Density Zones	109
Medium High Density Zones	0
High Density Zones	0
Capacity in Pipeline	*0*
Total Capacity (Units)	**266**
Remaining Target (2018-2035)	132
Surplus/Deficit Capacity (Units)	**135**

Housing Capacity by Density Level (units)



Algona - Employment Growth and Commercial/Industrial Development Trends



Algona Jobs Growth Target: 2006-2035	244
2006 Jobs (PSRC)	1,879
2018 Jobs (PSRC)	2,142
Total Jobs Growth	**263**
Remaining 2035 Target	0

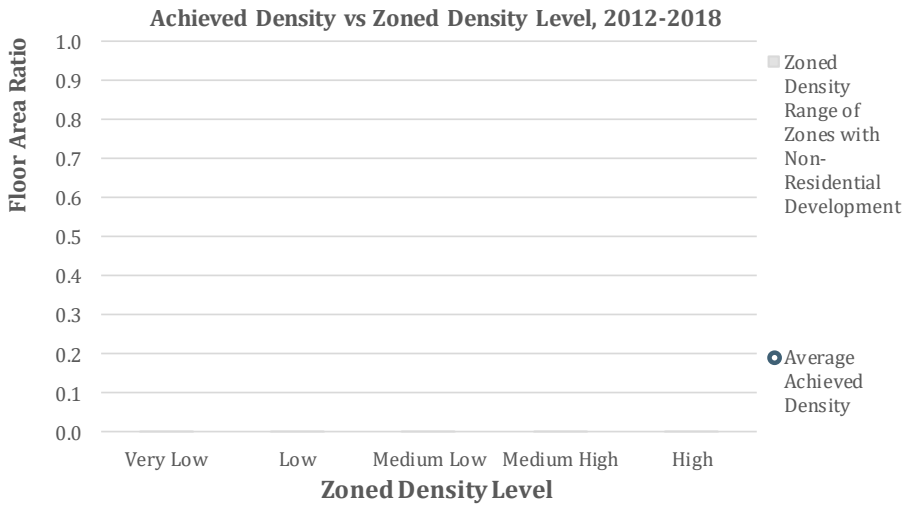
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
260.9%	1.10%	Met Target

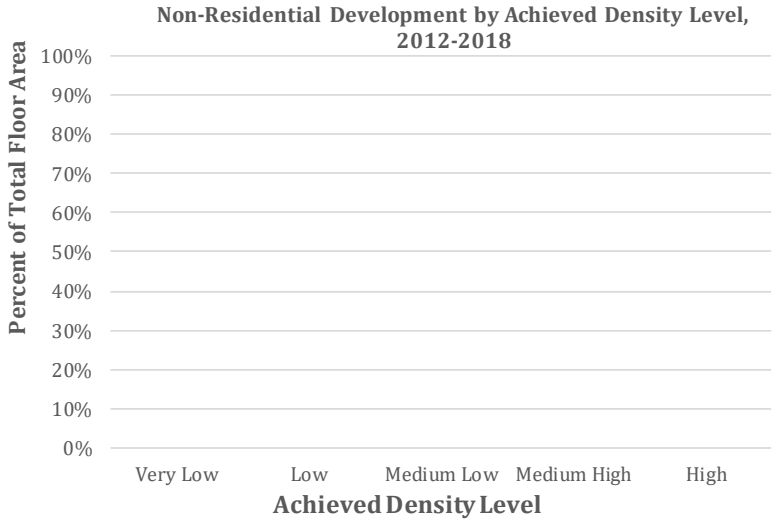
Since 2006, Algona has grown at 261% of the pace needed to achieve its 2035 jobs growth target of 244 units. During this period, the total number of jobs in Algona grew by roughly 14%. Algona has achieved its 2035 jobs growth target.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	0	0	
	Total	0	0	

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	0.0
Low	0	0	0.0
Medium Low	0	0	0.0
Medium High	0	0	0.0
High	0	0	0.0
Total	0	0	0.0



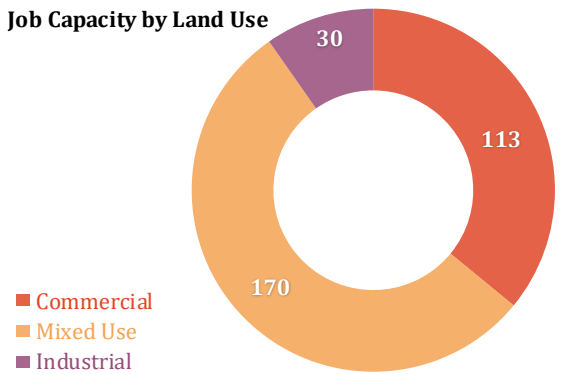


Algona - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	32.1	13.8	1.8	1.8	14.6	35%	8.2
Mixed Use	9.3	0.0	0.9	0.9	7.4	35%	4.2
Industrial	6.6	3.2	0.3	0.3	2.7	43%	1.3
Non-Res Land Total	**48.1**	**17.1**	**3.1**	**3.1**	**24.8**		**13.7**

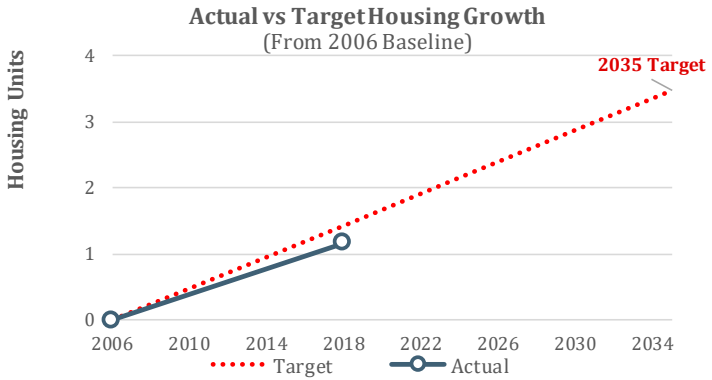
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.33	0.30	0.00	0.10	950	105
Redevelopable	0.03	0.30	0.00	0.01	950	8
Commercial Total	**0.36**	**0.30**	**0.00**	**0.11**	**950**	**113**
Mixed-Use						
Vacant	0.16	0.35	0.00	0.06	375	152
Redevelopable	0.02	0.35	0.00	0.01	375	18
Mixed Use Total	**0.18**	**0.35**	**0.00**	**0.06**	**375**	**170**
Industrial						
Vacant	0.05	0.50	0.00	0.03	900	30
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**0.05**	**0.50**	**0.00**	**0.03**	**900**	**30**
City Total						
Commercial	0.36	0.30	0.69	0.11	950	113
Mixed Use	0.18	0.35	0.91	0.06	375	170
Industrial	0.05	0.50	0.26	0.03	900	30
Job Capacity in Pipeline						*0*
City Total	**0.60**	**0.50**	**1.86**	**0.20**	**0 / 950**	**313**

Job Capacity by Assumed Density Level	#	%
Very Low Density	113	36%
Low Density	170	54%
Medium Low Density	30	10%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*0*
Total Capacity (jobs)		**313**
Remaining Target (2018-2035)		0
Surplus/Deficit Capacity (jobs)		**313**



City of Beaux Arts

Housing Growth and Residential Development Trends



Beaux Arts Village Housing Growth Target: 2006-2035	3
2006 Estimated Housing Units	119
2018 Estimated Housing Units	120
Estimated Housing Growth	**1**
Remaining 2035 Target	2

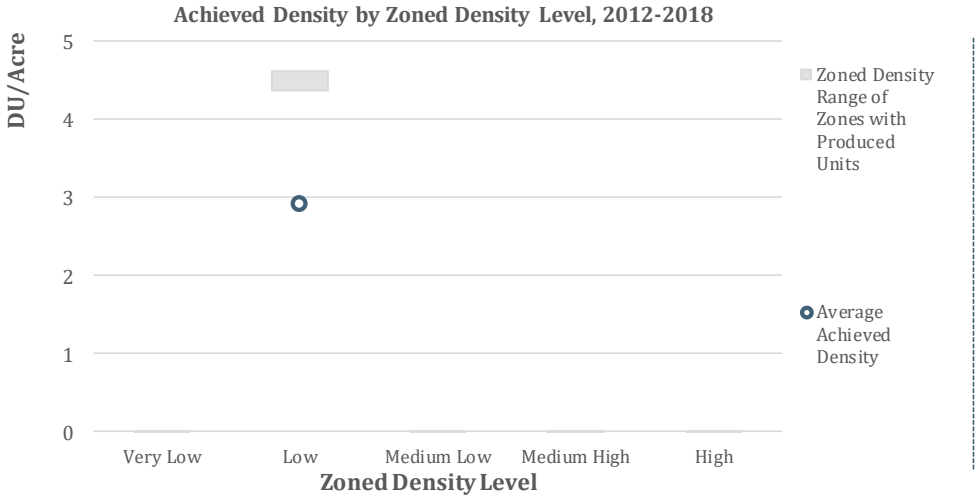
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
81.5%	0.08%	0.11%

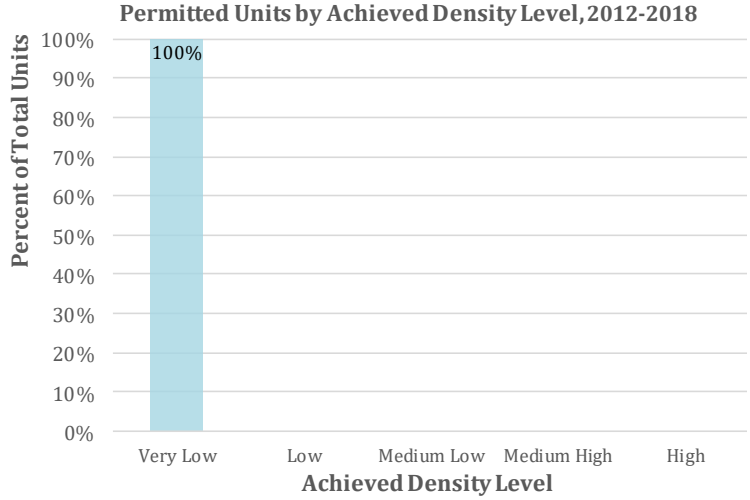
Since 2006, Beaux Arts Village has grown at 82% of the pace needed to achieve its 2035 housing growth target of 3 units. During this period, the total number of housing units in Beaux Arts Village grew by roughly 1%. At this current rate, Beaux Arts Village is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0.1% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	1.0	0.0	0.0	0.0	1.0	3	2.9
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	**1.0**	**0.0**	**0.0**	**0.0**	**1.0**	**3**	**2.9**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	1.0	3
Low	0.0	0
Medium Low	0.0	0
Medium High	0.0	0
High	0.0	0
Total	**1.0**	**3**



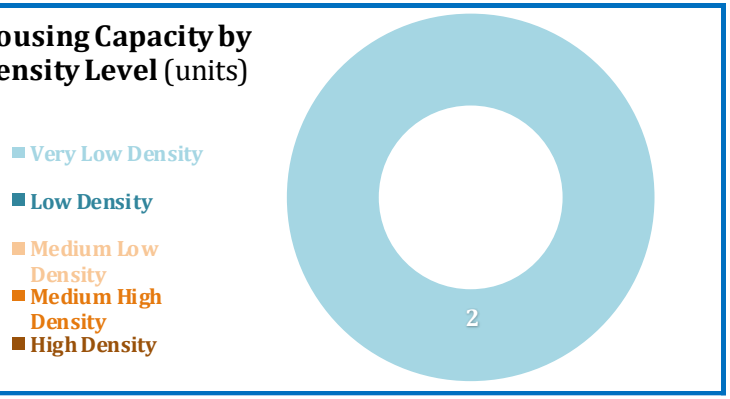


Beaux Arts - Residential Land Supply and Capacity

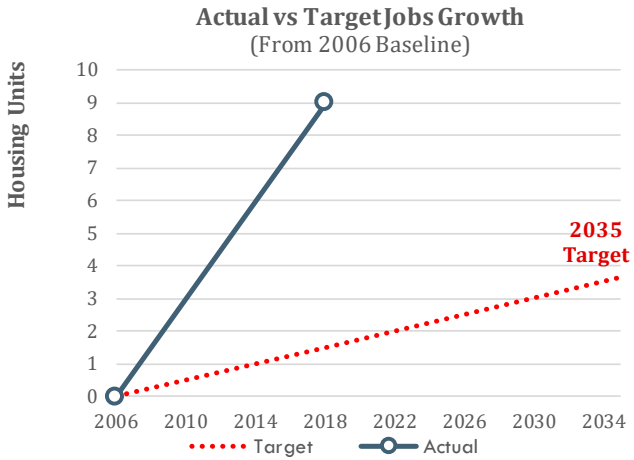
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				0.00	10.0% - 10.0%	0.31	2.9	1
	Redev Subtotal				0.00	10.0% - 10.0%	0.66	2.9	1
	Subtotal	6.15	1.64	0.00	0.00		0.97		**2**
Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Medium Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Medium High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				0.00		0.31		1
	Redev Total				0.00		0.66		1
	Total	**6.15**	**1.64**	**0.00**	**0.00**		**0.97**		**2**

Capacity (units)	
Very Low Density Zones	2
Low Density Zones	0
Medium Low Density Zones	0
Medium High Density Zones	0
High Density Zones	0
Capacity in Pipeline	*0*
Total Capacity (Units)	**2**
Remaining Target (2018-2035)	2
Surplus/Deficit Capacity (Units)	**0**

Housing Capacity by Density Level (units)



Beaux Arts - Employment Growth and Commercial/Industrial Development Trends



Beaux Arts Village Jobs Growth Target: 2006-2035	4
2006 Jobs (PSRC)	13
2018 Jobs (PSRC)	22
Total Jobs Growth	**9**
Remaining 2035 Target	0

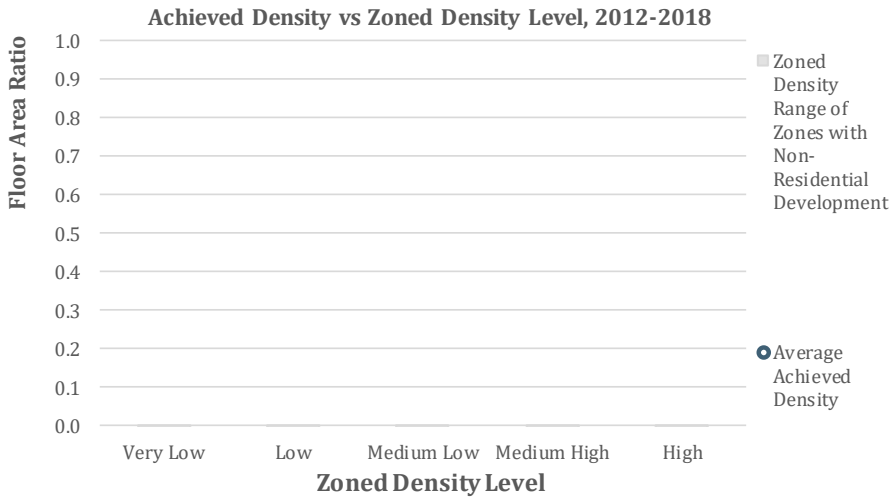
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
595.2%	4.48%	Met Target

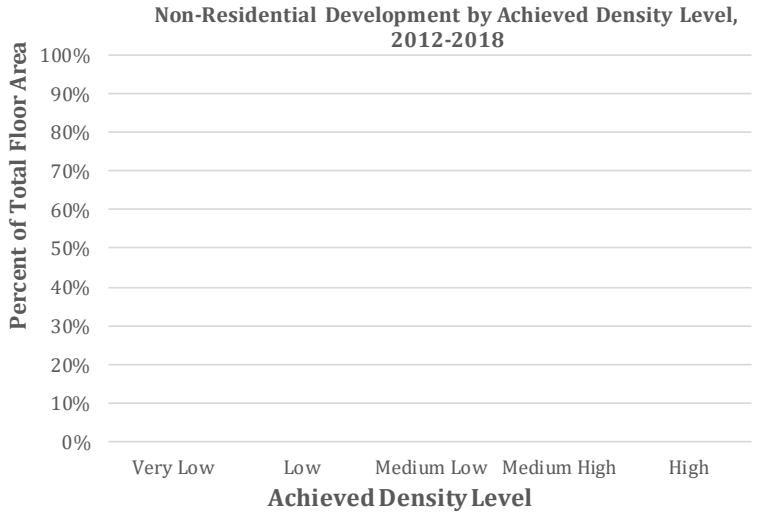
Since 2006, Beaux Arts Village has grown at 595% of the pace needed to achieve its 2035 jobs growth target of 4 units. During this period, the total number of jobs in Beaux Arts Village grew by roughly 69%. Beaux Arts Village has achieved its 2035 jobs growth target.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	0	0	
	Total	**0**	**0**	

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	**0.0**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**0**	**0**	**0.0**



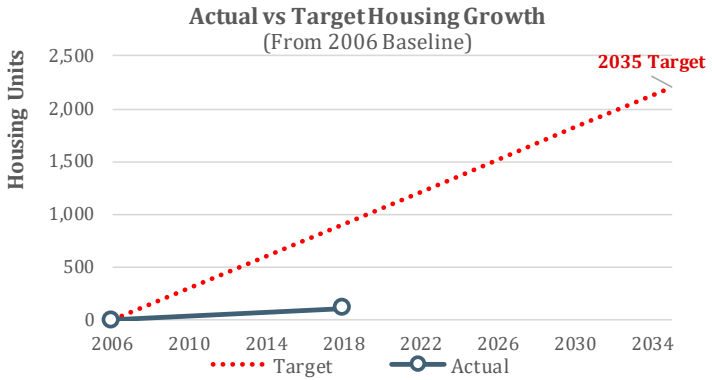


Beaux Arts - Commercial/Industrial Land Supply and Job Capacity

(no job capacity in Beaux Arts)

City of Black Diamond

Housing Growth and Residential Development Trends



Black Diamond Housing Growth Target: 2006-2035	2,204
2006 Estimated Housing Units	1,623
2018 Estimated Housing Units	1,735
Estimated Housing Growth	**112**
Remaining 2035 Target	2,092

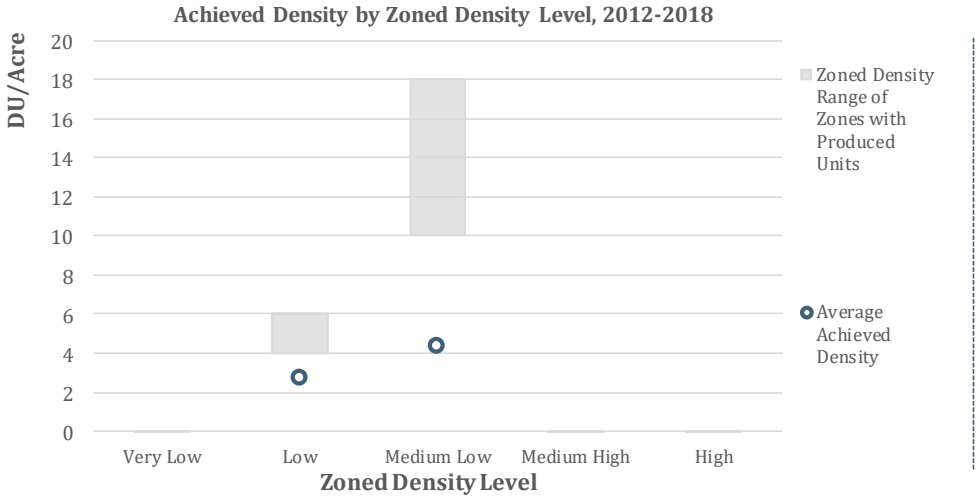
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
12.2%	0.56%	4.77%

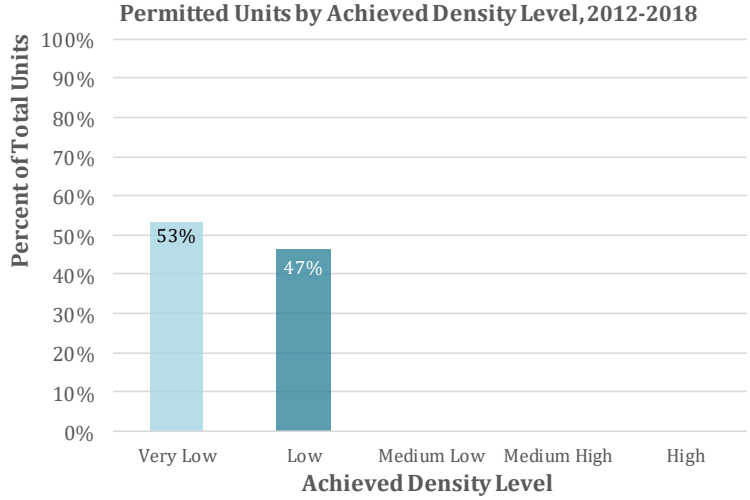
Since 2006, Black Diamond has grown at 12% of the pace needed to achieve its 2035 housing growth target of 2,204 units. During this period, the total number of housing units in Black Diamond grew by roughly 7%. At this current rate, Black Diamond is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 4.8% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	23.6	1.8	0.2	0.4	21.3	57	**2.7**
Medium Low	10 - 24 du/acre	16.1	0.0	1.7	7.2	7.1	31	**4.4**
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	**39.7**	**1.8**	**1.9**	**7.6**	**28.4**	**88**	**3.1**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	19.0	47
Low	9.4	41
Medium Low	0.0	0
Medium High	0.0	0
High	0.0	0
Total	**28.4**	**88**



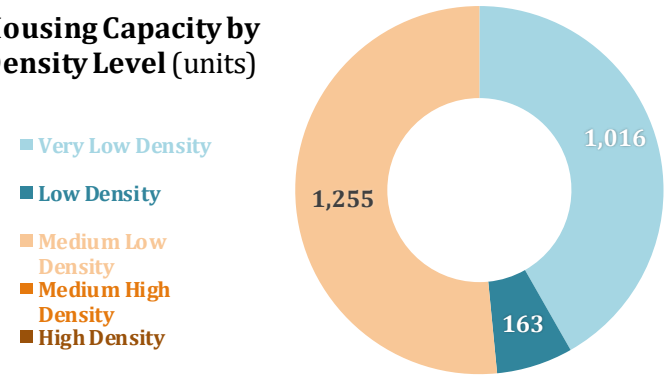


Black Diamond - Residential Land Supply and Capacity

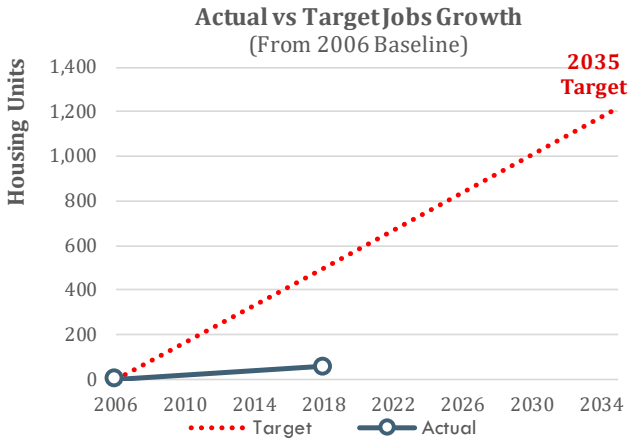
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				67.28	10.0% - 50.0%	235.73	2.5	577
	Redev Subtotal				71.55	10.0% - 50.0%	250.78	2.5	439
	Subtotal	789.70	60.18	29.14	138.82		486.51		**1,016**
Low Density	Vacant Subtotal				7.00	20.0% - 20.0%	21.00	4.5	94
	Redev Subtotal				6.86	20.0% - 20.0%	20.58	4.5	70
	Subtotal	84.53	5.23	10.00	13.86		41.58		**163**
Medium Low Density	Vacant Subtotal				8.73	25.0% - 50.0%	54.59	10.0 / 12.0	637
	Redev Subtotal				9.48	25.0% - 50.0%	57.57	10.0 / 12.0	618
	Subtotal	191.07	8.98	0.00	18.21		112.17		**1,255**
Medium High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				83.01		311.33		1,308
	Redev Total				87.89		328.93		1,126
	Total	**1,065.29**	**74.38**	**39.14**	**170.89**		**640.26**		**2,434**

Capacity (units)	
Very Low Density Zones	1,016
Low Density Zones	163
Medium Low Density Zones	1,255
Medium High Density Zones	0
High Density Zones	0
Capacity in Pipeline	*6,000*
Total Capacity (Units)	**8,434**
Remaining Target (2018-2035)	2,092
Surplus/Deficit Capacity (Units)	**6,342**

Housing Capacity by Density Level (units)



Black Diamond - Employment Growth and Commercial/Industrial Development Trends



Black Diamond Jobs Growth Target: 2006-2035	1,218
2006 Jobs (PSRC)	458
2018 Jobs (PSRC)	515
Total Jobs Growth	**57**
Remaining 2035 Target	**1,161**

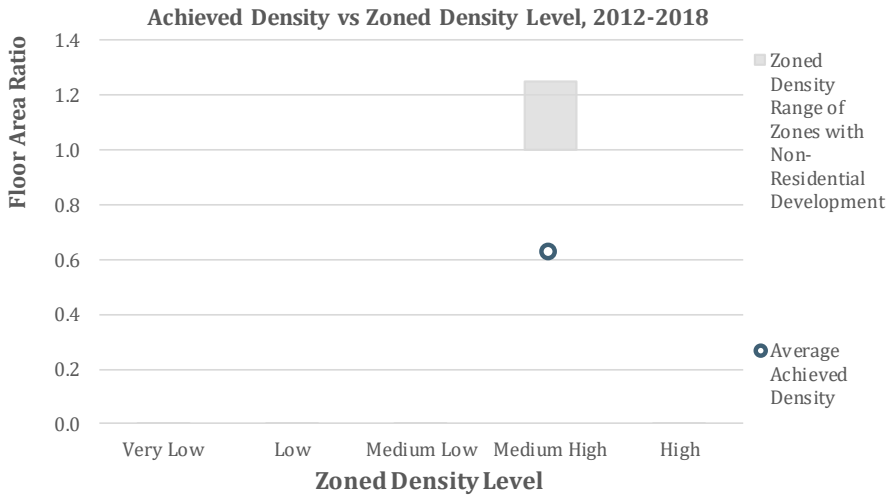
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
11.3%	**0.98%**	**7.22%**

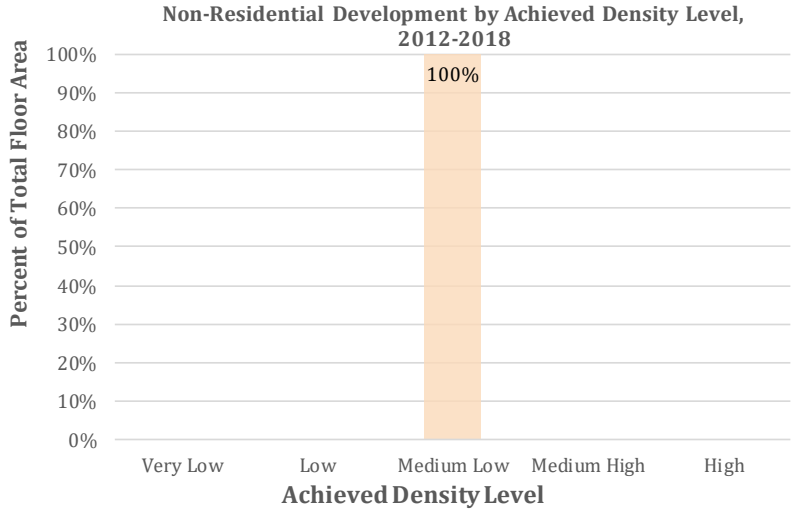
Since 2006, Black Diamond has grown at 11% of the pace needed to achieve its 2035 jobs growth target of 1,218 units. During this period, the total number of jobs in Black Diamond grew by roughly 12%. At this current rate, Black Diamond is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 7.2% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	84,071	52,231	**0.6**
High	3.0 & up FAR	0	0	
	Total	**84,071**	**52,231**	**0.6**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	**0.0**
Low	0	0	**0.0**
Medium Low	84,071	52,231	**0.6**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**84,071**	**52,231**	**0.6**





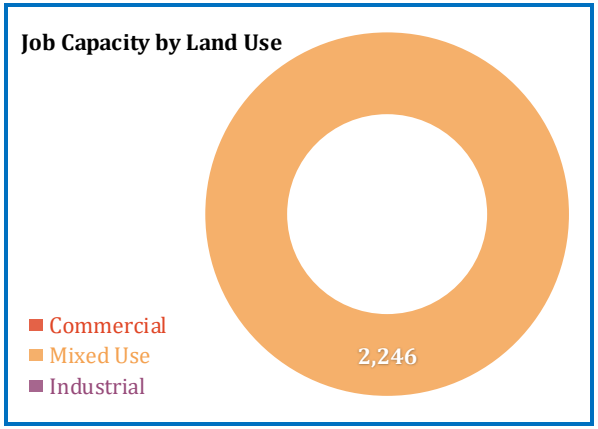
Black Diamond - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	2.4	2.4	0.0	0.0	0.0	0%	0.0
Mixed Use	156.3	6.2	7.5	7.5	135.1	25% - 50%	90.5
Industrial	70.7	0.0	3.5	3.5	63.6	70%	14.1
Non-Res Land Total	**229.4**	**8.6**	**11.0**	**22.3**	**401.1**		**104.6**

Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial*						
Vacant	1.69	0.00	0.00	0.00	1,000	0
Redevelopable	0.27	0.00	0.00	0.00	1,000	0
Commercial Total	**1.96**	**0.00**	**0.00**	**0.00**	**1,000**	**0**
Mixed-Use						
Vacant	2.07	0.20 / 0.40	0.00	0.79	600 / 860	1,310
Redevelopable	1.87	0.20 / 0.40	0.13	0.56	600 / 860	936
Mixed Use Total	**3.94**	**0.20 / 0.40**	**0.13**	**1.35**	**600 / 860**	**2,246**
Industrial						
Vacant	0.62	0.00	0.00	0.00	1,000	0
Redevelopable	0.00	0.00	0.00	0.00	1,000	0
Industrial Total	**0.62**	**0.00**	**0.00**	**0.00**	**1,000**	**0**
City Total						
Commercial	1.96	0.00	0.69	0.00	1,000	0
Mixed Use	3.94	0.20 / 0.40	0.91	1.35	600 / 860	2,246
Industrial	0.62	0.00	0.26	0.00	1,000	0
Job Capacity in Pipeline						*942*
City Total	**6.52**	**0.40**	**1.86**	**1.35**	**600 / 1000**	**3,188**

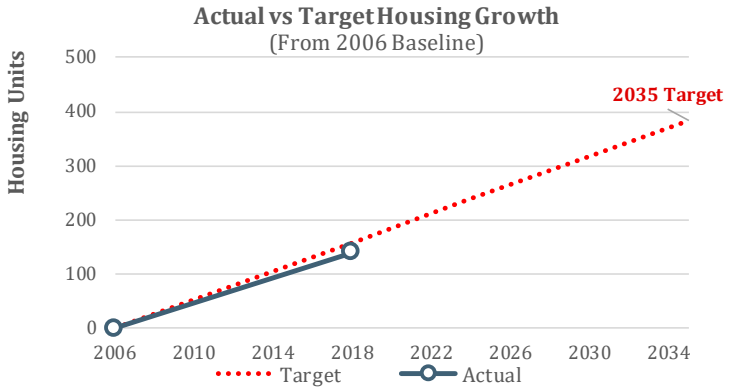
*Certain zones grouped as commercial allow for industrial use.

Job Capacity by Assumed Density Level	#	%
Very Low Density	67	3%
Low Density	2,179	97%
Medium Low Density	0	0%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*942*
Total Capacity (jobs)		**3,188**
Remaining Target (2018-2035)		1,161
Surplus/Deficit Capacity (jobs)		**2,027**



City of Carnation

Housing Growth and Residential Development Trends



Carnation Housing Growth Target: 2006-2035	383
2006 Estimated Housing Units	739
2018 Estimated Housing Units	880
Estimated Housing Growth	**141**
Remaining 2035 Target	242

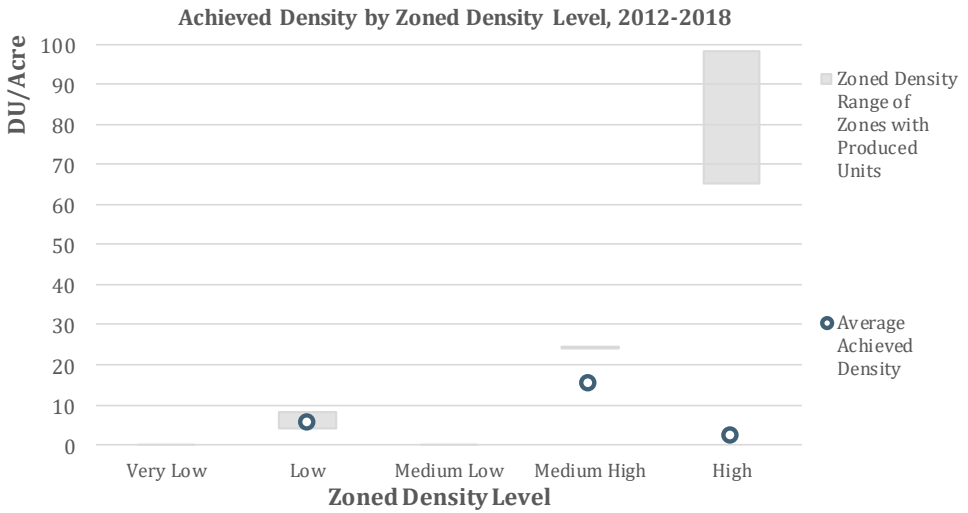
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
88.7%	**1.46%**	**1.44%**

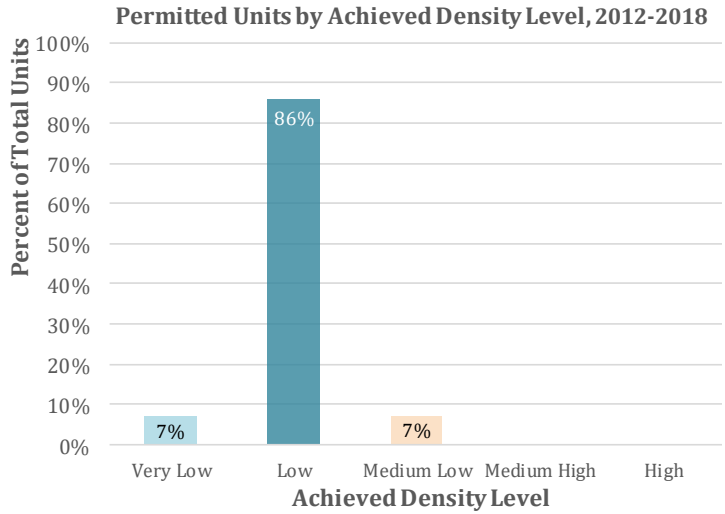
Since 2006, Carnation has grown at 89% of the pace needed to achieve its 2035 housing growth target of 383 units. During this period, the total number of housing units in Carnation grew by roughly 19%. At this current rate, Carnation is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1.4% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	29.7	0.1	0.0	0.0	29.6	156	**5.3**
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	0.9	0.0	0.0	0.0	0.9	14	**15.0**
High	48 & up du/acre	4.3	3.7	0.0	0.0	0.5	1	**1.9**
	Total	**34.9**	**3.9**	**0.0**	**0.0**	**31.0**	**171**	**5.5**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	3.4	12
Low	26.9	147
Medium Low	0.7	12
Medium High	0.0	0
High	0.0	0
Total	**31.0**	**171**



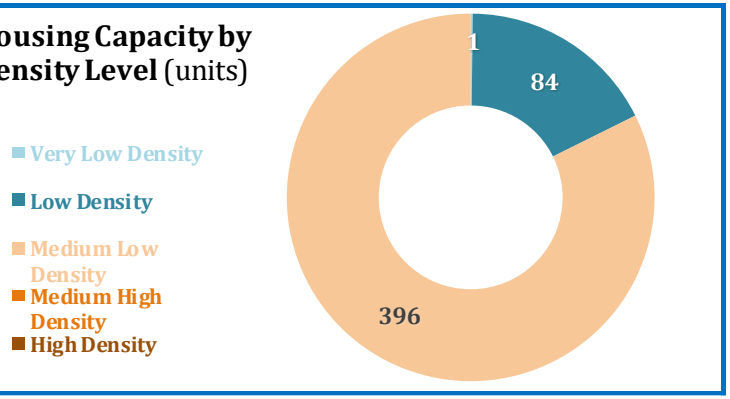


Carnation - Residential Land Supply and Capacity

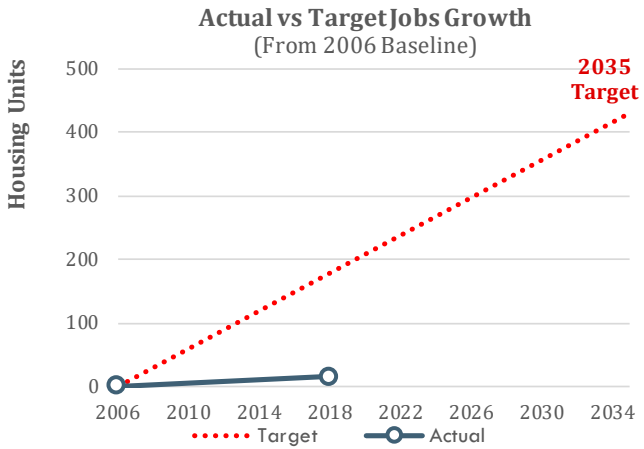
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	3.9	0
	Redev Subtotal				1.39	0.0% - 0.0%	3.23	3.9	1
	Subtotal	98.76	87.36	6.78	1.39		3.23		**1**
Low Density	Vacant Subtotal				0.90	0.0% - 0.0%	2.10	5.2 / 9.7	13
	Redev Subtotal				4.21	0.0% - 0.0%	11.39	5.2 / 9.7	72
	Subtotal	38.77	20.03	0.23	5.11		13.49		**84**
Medium Low Density	Vacant Subtotal				0.84	0.0% - 0.0%	2.96	12.0 / 17.0	49
	Redev Subtotal				7.87	0.0% - 0.0%	26.13	12.0 / 17.0	347
	Subtotal	30.25	13.55	0.00	8.71		29.09		**396**
Medium High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				1.74		5.06		62
	Redev Total				13.47		40.75		420
	Total	**167.78**	**120.95**	**7.01**	**15.20**		**45.82**		**481**

Capacity (units)	
Very Low Density Zones	1
Low Density Zones	84
Medium Low Density Zones	396
Medium High Density Zones	0
High Density Zones	0
Capacity in Pipeline	*223*
Total Capacity (Units)	**704**
Remaining Target (2018-2035)	242
Surplus/Deficit Capacity (Units)	**462**

Housing Capacity by Density Level (units)



Carnation - Employment Growth and Commercial/Industrial Development Trends



Carnation Jobs Growth Target: 2006-2035	429
2006 Jobs (PSRC)	871
2018 Jobs (PSRC)	886
Total Jobs Growth	**15**
Remaining 2035 Target	414

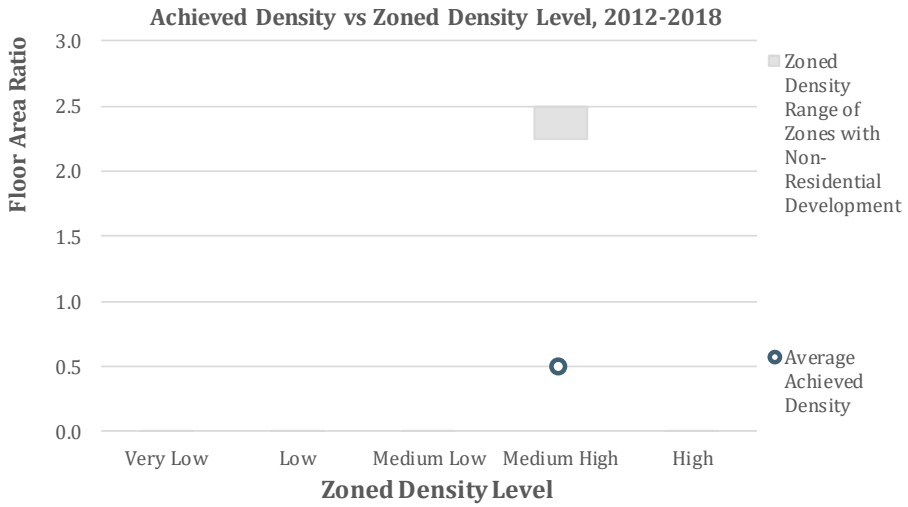
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
8.4%	0.14%	2.28%

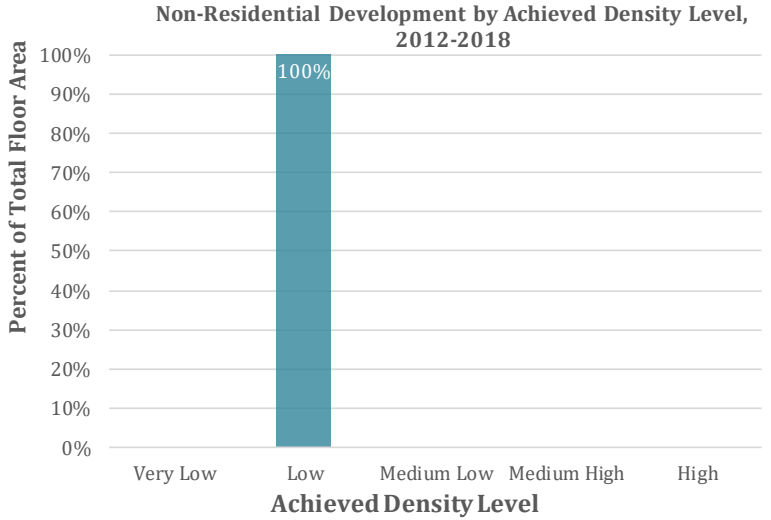
Since 2006, Carnation has grown at 8% of the pace needed to achieve its 2035 jobs growth target of 429 units. During this period, the total number of jobs in Carnation grew by roughly 2%. At this current rate, Carnation is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 2.3% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	2,387	1,152	**0.5**
High	3.0 & up FAR	0	0	
	Total	**2,387**	**1,152**	**0.5**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	**0.0**
Low	2,387	1,152	**0.5**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**2,387**	**1,152**	**0.5**



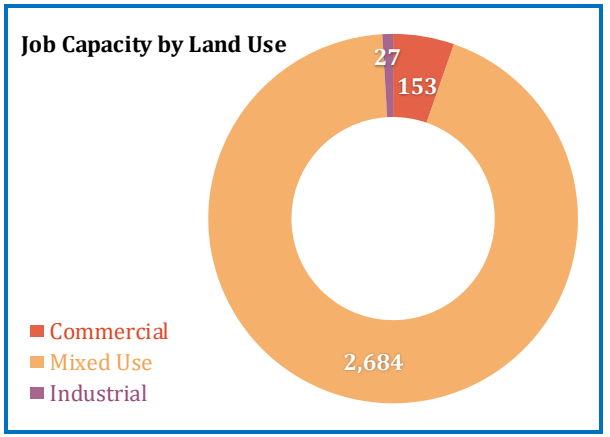


Carnation - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	0.6	0.0	0.1	0.1	0.5	0%	0.5
Mixed Use	73.3	61.6	1.4	1.2	9.1	0%	9.1
Industrial	17.9	16.6	0.2	0.1	1.0	0%	1.0
Non-Res Land Total	**91.8**	**78.2**	**1.6**	**1.4**	**10.6**		**10.6**

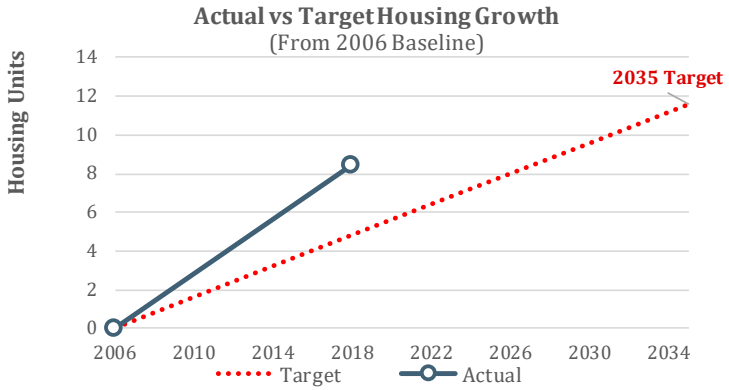
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.00	2.25	0.00	0.00	300	0
Redevelopable	0.02	2.25	0.00	0.05	300	153
Commercial Total	**0.02**	**2.25**	**0.00**	**0.05**	**300**	**153**
Mixed-Use						
Vacant	0.13	1.50 / 3.00	0.00	0.33	300 / 1000	883
Redevelopable	0.27	1.50 / 3.00	0.02	0.67	300 / 1000	1801
Mixed Use Total	**0.40**	**1.50 / 3.00**	**0.02**	**1.00**	**300 / 1000**	**2,684**
Industrial						
Vacant	0.00	0.48	0.00	0.00	800	0
Redevelopable	0.04	0.48	0.00	0.02	800	27
Industrial Total	**0.04**	**0.48**	**0.00**	**0.02**	**800**	**27**
City Total						
Commercial	0.02	2.25	0.69	0.05	300	153
Mixed Use	0.40	1.50 / 3.00	0.91	1.00	300 / 1000	2,684
Industrial	0.04	0.48	0.26	0.02	800	27
Job Capacity in Pipeline						*0*
City Total	**0.46**	**0.48 / 3.00**	**1.86**	**1.07**	**300 / 1000**	**2,864**

Job Capacity by Assumed Density Level	#	%
Very Low Density	0	0%
Low Density	27	1%
Medium Low Density	0	0%
Medium High Density	2,090	73%
High Density	747	26%
Capacity in Pipeline		*0*
Total Capacity (jobs)		**2,864**
Remaining Target (2018-2035)		414
Surplus/Deficit Capacity (jobs)		**2,450**



City of Clyde Hill

Housing Growth and Residential Development Trends



Clyde Hill Housing Growth Target: 2006-2035	12
2006 Estimated Housing Units	1,083
2018 Estimated Housing Units	1,091
Estimated Housing Growth	**8**
Remaining 2035 Target	3

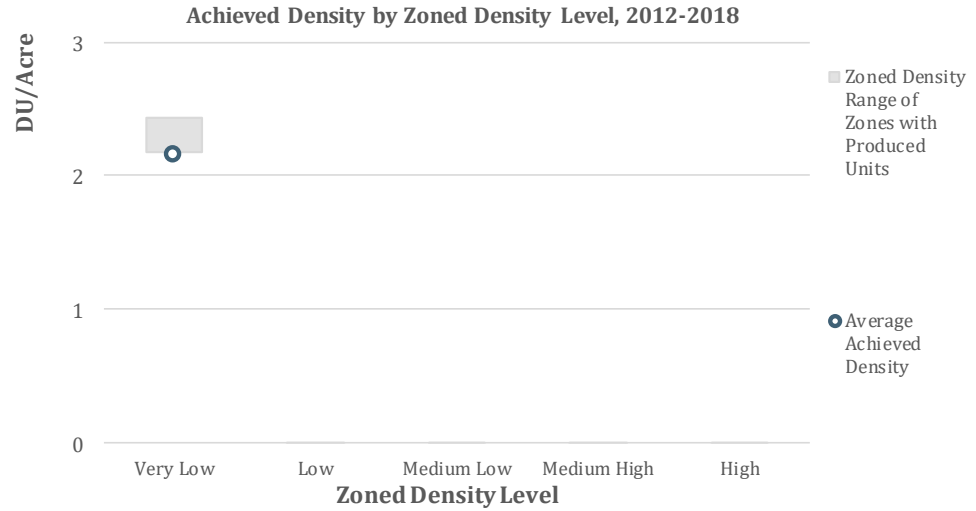
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
175.6%	0.06%	0.02%

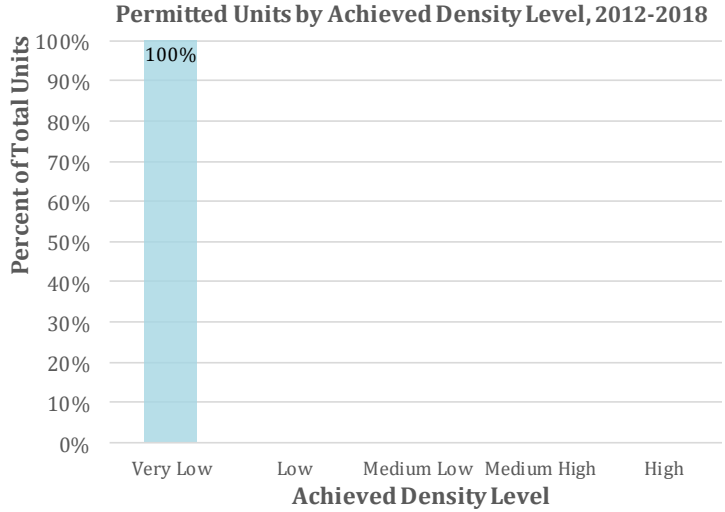
Since 2006, Clyde Hill has grown at 176% of the pace needed to achieve its 2035 housing growth target of 12 units. During this period, the total number of housing units in Clyde Hill grew by roughly 1%. At this current rate, Clyde Hill is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	2.8	0.0	0.0	0.0	2.8	6	2.2
Low	4 - 10 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	2.8	0.0	0.0	0.0	2.8	6	2.2

Achieved Density Level	Net Area (acres)	Total Units
Very Low	2.8	6
Low	0.0	0
Medium Low	0.0	0
Medium High	0.0	0
High	0.0	0
Total	2.8	6



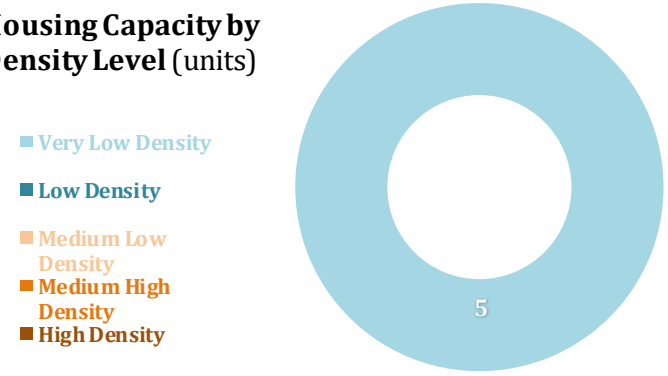


Clyde Hill - Residential Land Supply and Capacity

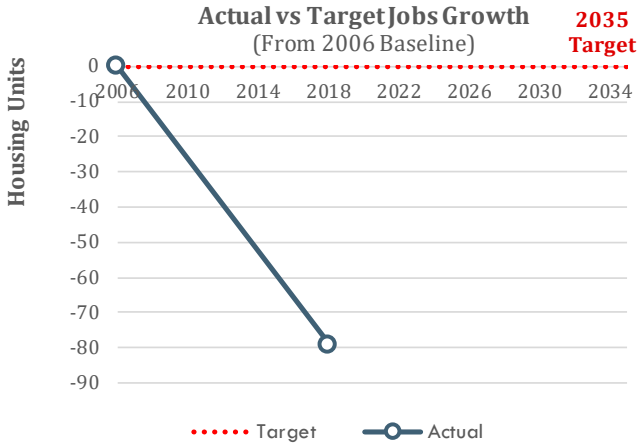
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.76	2.2	2
	Redev Subtotal				0.00	0.0% - 0.0%	1.83	2.2	3
	Subtotal	479.48	0.00	0.00	0.00		2.59		**5**
Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Medium Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Medium High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				0.00		0.76		2
	Redev Total				0.00		1.83		3
	Total	**479.48**	**0.00**	**0.00**	**0.00**		**2.59**		**5**

Capacity (units)	
Very Low Density Zones	5
Low Density Zones	0
Medium Low Density Zones	0
Medium High Density Zones	0
High Density Zones	0
Capacity in Pipeline	*0*
Total Capacity (Units)	**5**
Remaining Target (2018-2035)	3
Surplus/Deficit Capacity (Units)	**1**

Housing Capacity by Density Level (units)



Clyde Hill - Employment Growth and Commercial/Industrial Development Trends



Clyde Hill Jobs Growth Target: 2006-2035	0
2006 Jobs (PSRC)	713
2018 Jobs (PSRC)	634
Total Jobs Growth	**-79**
Remaining 2035 Target	**Not Applicable**

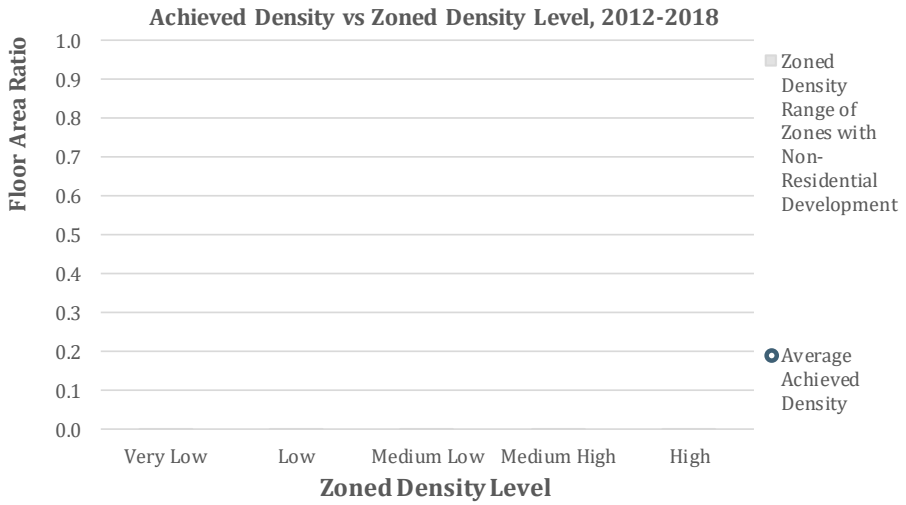
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
Not Applicable	**-0.97%**	**Not Applicable**

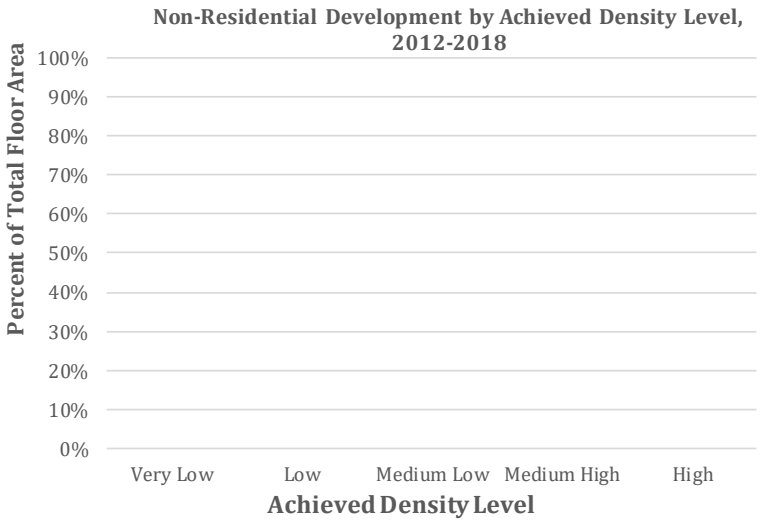
Since 2006, the total number of jobs in Clyde Hill grew by roughly -1%. There is no 2035 jobs growth target.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	0	0	
	Total	**0**	**0**	

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	**0.0**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**0**	**0**	**0.0**





Clyde Hill - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Mixed Use	0.0	0.0	0.0	0.0	0.0	0%	0.0
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**		**0.0**

Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.00	1.20	0.00	0.00	300	0
Redevelopable	0.00	1.20	0.00	0.00	300	0
Commercial Total	**0.00**	**1.20**	**0.00**	**0.00**	**300**	**0**
Mixed-Use						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Mixed Use Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
Industrial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
City Total						
Commercial	0.00	1.20	0.69	0.00	300	0
Mixed Use	0.00	0.00	0.91	0.00	0	0
Industrial	0.00	0.00	0.26	0.00	0	0
Job Capacity in Pipeline						*28*
City Total	**0.00**	**1.20**	**1.86**	**0.00**	**0 / 300**	**28**

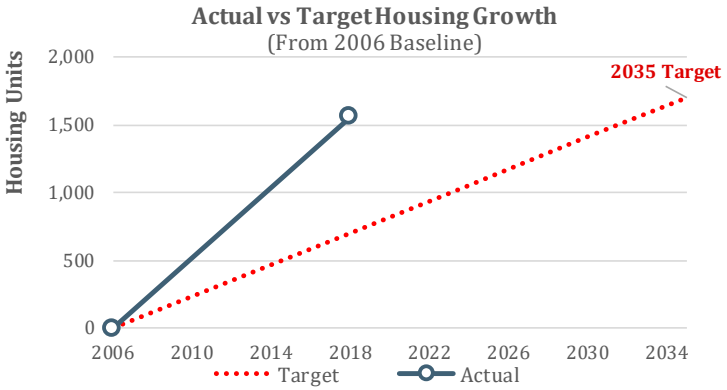
Job Capacity by Assumed Density Level	#	%
Very Low Density	0	
Low Density	0	
Medium Low Density	0	
Medium High Density	0	
High Density	0	
Capacity in Pipeline		*28*
Total Capacity (jobs)		**28**
Remaining Target (2018-2035)		79
Surplus/Deficit Capacity (jobs)		**-51**

Job Capacity by Land Use

- Commercial
- Mixed Use
- Industrial

City of Covington

Housing Growth and Residential Development Trends



Covington Housing Growth Target: 2006-2035	1,705
2006 Estimated Housing Units	5,470
2018 Estimated Housing Units	7,034
Estimated Housing Growth	**1,564**
Remaining 2035 Target	141

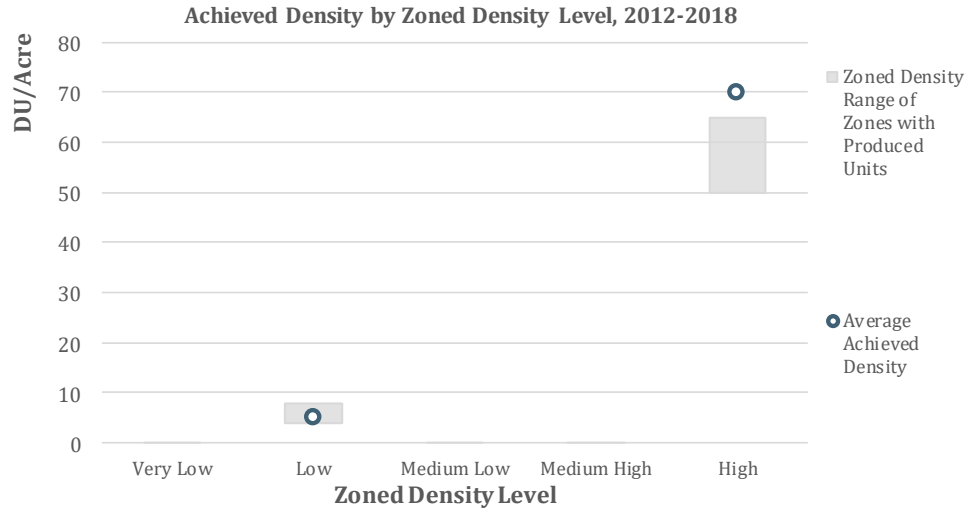
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
221.7%	2.12%	0.12%

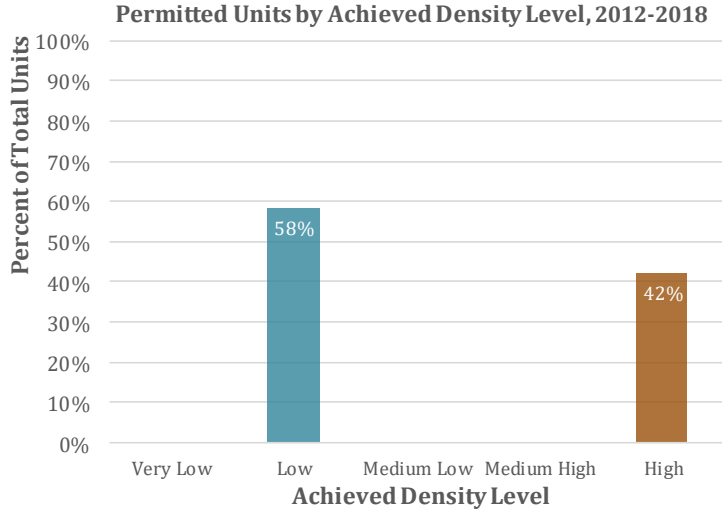
Since 2006, Covington has grown at 222% of the pace needed to achieve its 2035 housing growth target of 1,705 units. During this period, the total number of housing units in Covington grew by roughly 29%. At this current rate, Covington is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0.1% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	135.8	11.7	13.1	9.2	101.8	493	**4.8**
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	7.0	0.0	0.7	1.2	5.1	356	**69.9**
	Total	**142.9**	**11.7**	**13.8**	**10.4**	**106.9**	**849**	**7.9**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	0.0	0
Low	101.8	493
Medium Low	0.0	0
Medium High	0.0	0
High	5.1	356
Total	**106.9**	**849**

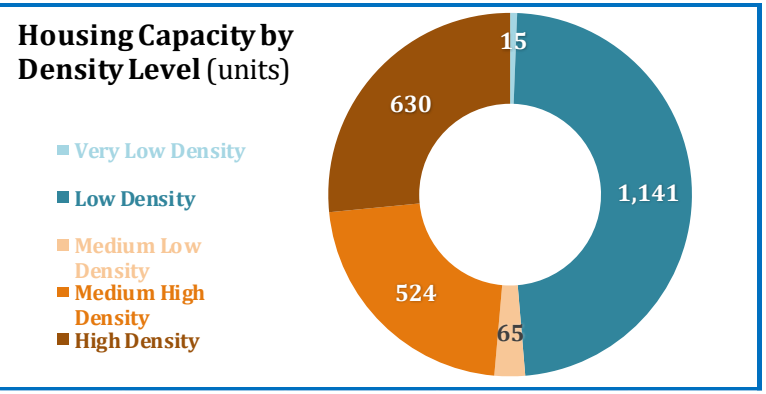




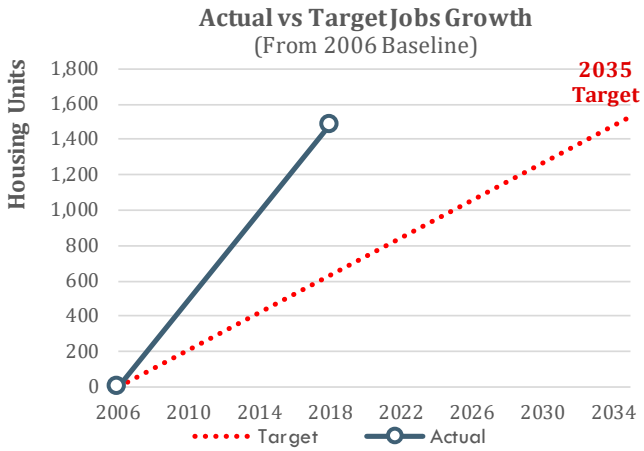
Covington - Residential Land Supply and Capacity

Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				2.38	10.0% - 10.0%	9.52	1.0	8
	Redev Subtotal				3.84	10.0% - 10.0%	15.34	1.0	6
	Subtotal	48.67	17.59	0.00	6.22		24.87		**15**
Low Density	Vacant Subtotal				22.46	1.0% - 5.0%	89.85	4.1 / 5.5	424
	Redev Subtotal				57.45	1.0% - 5.0%	229.79	4.1 / 5.5	717
	Subtotal	500.85	101.31	0.00	79.91		319.64		**1,141**
Medium Low Density	Vacant Subtotal				0.00	0.0% - 30.0%	0.00	12.0 / 18.0	0
	Redev Subtotal				1.51	0.0% - 30.0%	8.55	12.0 / 18.0	65
	Subtotal	18.19	8.13	0.00	1.51		8.55		**65**
Medium High Density	Vacant Subtotal				1.50	10.0% - 25.0%	2.55	24.0 / 42.0	76
	Redev Subtotal				17.14	10.0% - 25.0%	29.14	24.0 / 42.0	448
	Subtotal	159.96	35.66	0.00	18.64		31.70		**524**
High Density	Vacant Subtotal				0.76	20.0% - 20.0%	1.29	64.0	63
	Redev Subtotal				6.95	20.0% - 20.0%	11.81	64.0	567
	Subtotal	53.27	1.88	0.00	7.71		13.11		**630**
All Zones	Vacant Total				27.11		103.22		571
	Redev Total				86.88		294.64		1,804
	Total	**780.95**	**164.57**	**0.00**	**113.99**		**397.86**		**2,375**

Capacity (units)	
Very Low Density Zones	15
Low Density Zones	1,141
Medium Low Density Zones	65
Medium High Density Zones	524
High Density Zones	630
Capacity in Pipeline	*2,234*
Total Capacity (Units)	**4,609**
Remaining Target (2018-2035)	141
Surplus/Deficit Capacity (Units)	**4,468**



Covington - Employment Growth and Commercial/Industrial Development Trends



Covington Jobs Growth Target: 2006-2035	1,531
2006 Jobs (PSRC)	3,528
2018 Jobs (PSRC)	5,013
Total Jobs Growth	**1,485**
Remaining 2035 Target	46

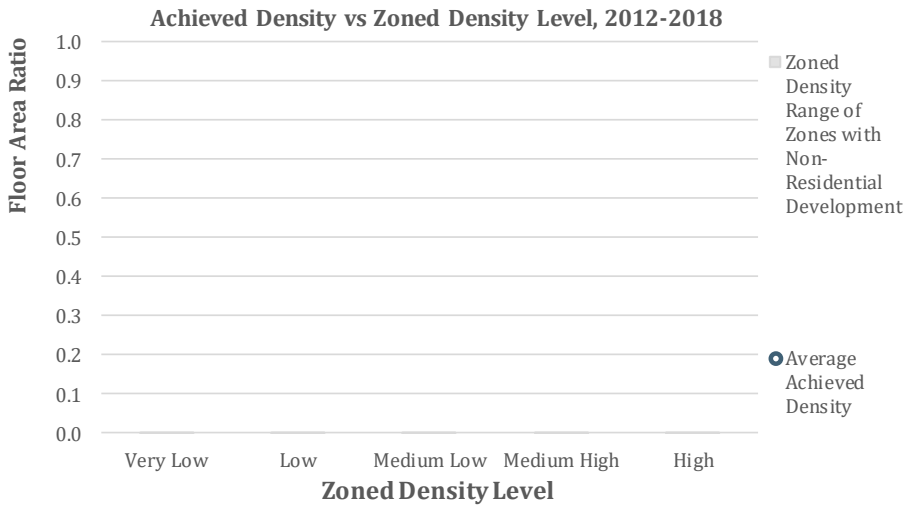
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
234.4%	2.97%	0.05%

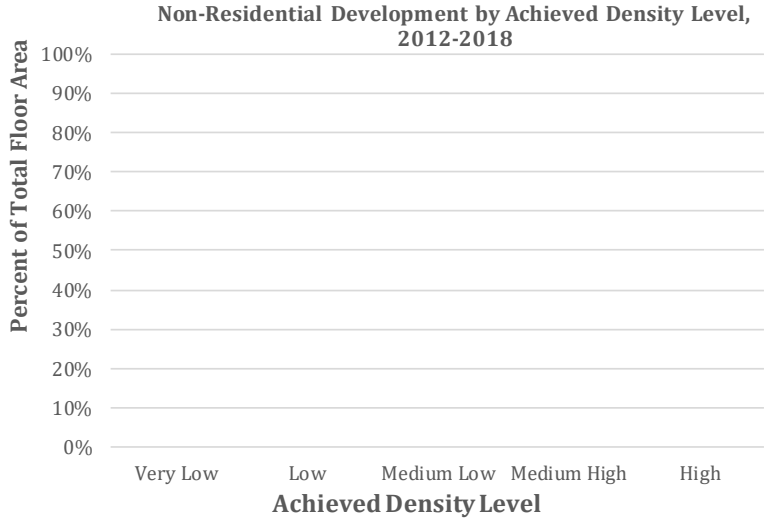
Since 2006, Covington has grown at 234% of the pace needed to achieve its 2035 jobs growth target of 1,531 units. During this period, the total number of jobs in Covington grew by roughly 42%. At this current rate, Covington is over the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 0.1% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	0	0	
	Total	**0**	**0**	

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	**0.0**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**0**	**0**	**0.0**



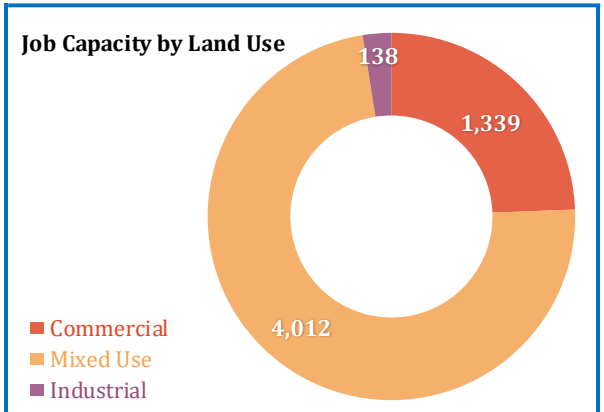


Covington - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	42.1	9.7	3.2	1.6	27.6	5% - 10%	24.5
Mixed Use	213.2	37.5	17.6	8.8	149.3	0% - 25%	111.4
Industrial	11.3	0.4	1.1	0.5	9.2	45%	4.3
Non-Res Land Total	**266.6**	**47.7**	**21.9**	**10.9**	**186.1**		**140.3**

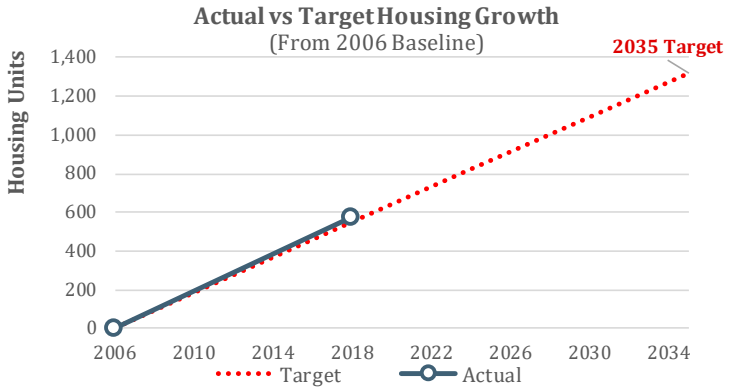
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.79	0.23 / 0.69	0.00	0.41	400	1,019
Redevelopable	0.30	0.23 / 0.69	0.03	0.13	400	320
Commercial Total	**1.09**	**0.23 / 0.69**	**0.03**	**0.54**	**400**	**1,339**
Mixed-Use						
Vacant	0.30	0.26 / 0.80	0.00	0.23	400 / 450	582
Redevelopable	3.27	0.26 / 0.80	1.18	1.37	400 / 450	3429
Mixed Use Total	**3.57**	**0.26 / 0.80**	**1.18**	**1.60**	**400 / 450**	**4,012**
Industrial						
Vacant	0.22	0.50	0.00	0.11	800	138
Redevelopable	0.00	0.50	0.00	0.00	800	0
Industrial Total	**0.22**	**0.50**	**0.00**	**0.11**	**800**	**138**
City Total						
Commercial	1.09	0.23 / 0.69	0.69	0.54	400	1,339
Mixed Use	3.57	0.26 / 0.80	0.91	1.60	400 / 450	4,012
Industrial	0.22	0.50	0.26	0.11	800	138
Job Capacity in Pipeline						*2,933*
City Total	**4.88**	**0.23 / 0.80**	**1.86**	**2.25**	**400 / 800**	**8,421**

Job Capacity by Assumed Density Level	#	%
Very Low Density	3	0%
Low Density	0	0%
Medium Low Density	5,485	100%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*2,933*
Total Capacity (jobs)		**8,421**
Remaining Target (2018-2035)		46
Surplus/Deficit Capacity (jobs)		**8,375**



City of Duvall

Housing Growth and Residential Development Trends



Duvall Housing Growth Target: 2006-2035	1,322
2006 Estimated Housing Units	2,105
2018 Estimated Housing Units	2,681
Estimated Housing Growth	**576**
Remaining 2035 Target	746

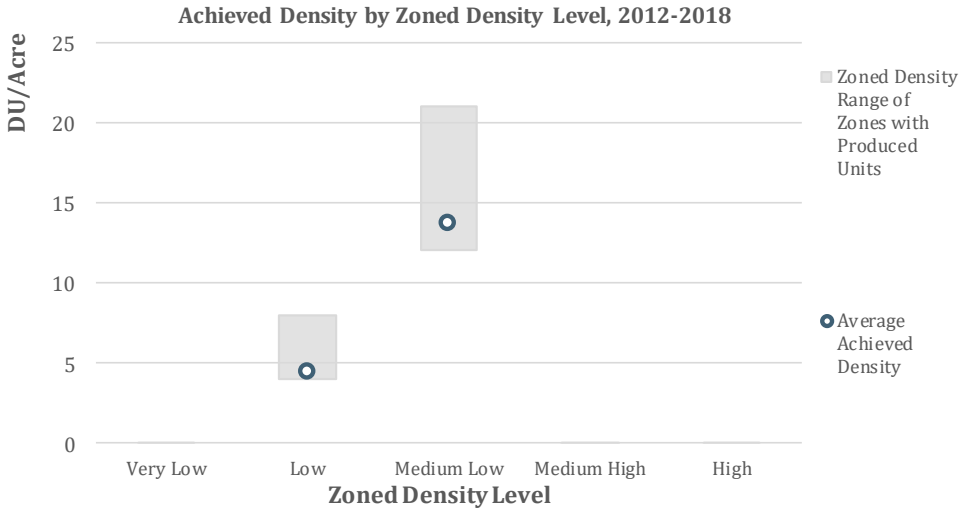
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
105.3%	2.04%	1.46%

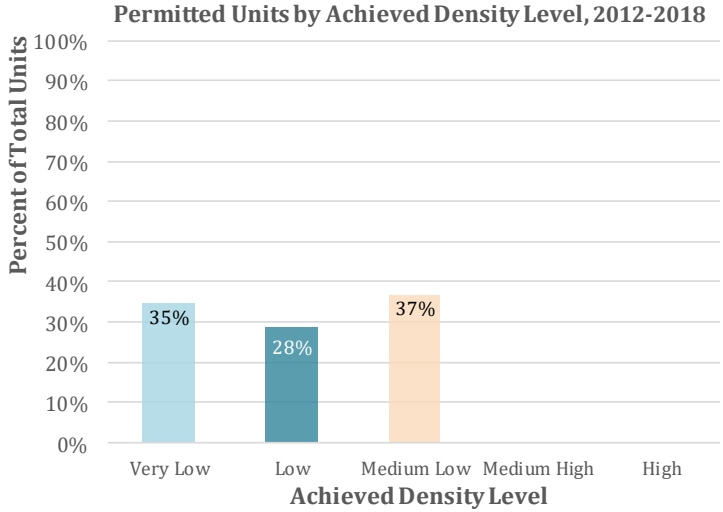
Since 2006, Duvall has grown at 105% of the pace needed to achieve its 2035 housing growth target of 1,322 units. During this period, the total number of housing units in Duvall grew by roughly 27%. At this current rate, Duvall is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1.5% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	51.8	11.6	4.5	8.0	27.8	122	**4.4**
Medium Low	10 - 24 du/acre	7.3	0.0	0.8	1.3	5.2	71	**13.7**
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	**59.1**	**11.6**	**5.3**	**9.2**	**33.0**	**193**	**5.9**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	20.4	67
Low	7.4	55
Medium Low	5.2	71
Medium High	0.0	0
High	0.0	0
Total	**33.0**	**193**



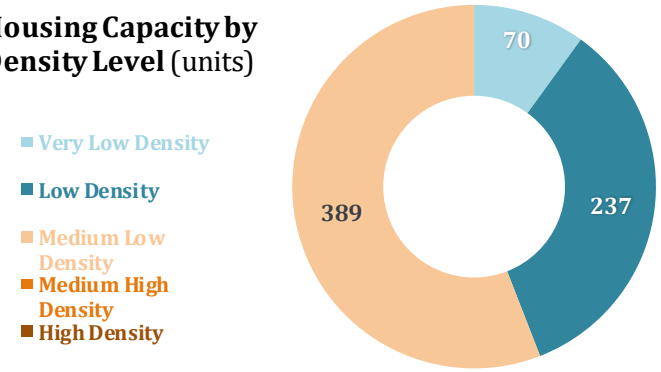


Duvall - Residential Land Supply and Capacity

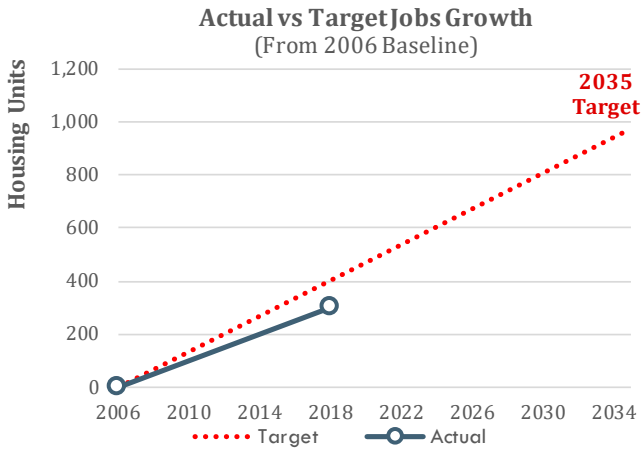
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				1.45	5.0% - 5.0%	4.05	3.3	13
	Redev Subtotal				9.91	5.0% - 5.0%	27.73	3.3	56
	Subtotal	93.22	38.46	0.00	11.35		31.79		**70**
Low Density	Vacant Subtotal				0.68	5.0% - 10.0%	1.89	4.5 / 8.0	14
	Redev Subtotal				20.63	5.0% - 10.0%	54.30	4.5 / 8.0	223
	Subtotal	108.45	10.88	0.00	21.32		56.18		**237**
Medium Low Density	Vacant Subtotal				1.99	20.0% - 50.0%	15.54	12.0 / 21.0	284
	Redev Subtotal				2.48	20.0% - 50.0%	7.61	12.0 / 21.0	106
	Subtotal	58.97	0.00	0.00	4.47		23.15		**389**
Medium High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				4.12		21.48		311
	Redev Total				33.01		89.64		385
	Total	**260.64**	**49.34**	**0.00**	**37.14**		**111.12**		**696**

Capacity (units)	
Very Low Density Zones	70
Low Density Zones	237
Medium Low Density Zones	389
Medium High Density Zones	0
High Density Zones	0
Capacity in Pipeline	*647*
Total Capacity (Units)	**1,343**
Remaining Target (2018-2035)	746
Surplus/Deficit Capacity (Units)	**597**

Housing Capacity by Density Level (units)



Duvall - Employment Growth and Commercial/Industrial Development Trends



Duvall Jobs Growth Target: 2006-2035	974
2006 Jobs (PSRC)	1,182
2018 Jobs (PSRC)	1,483
Total Jobs Growth	**301**
Remaining 2035 Target	673

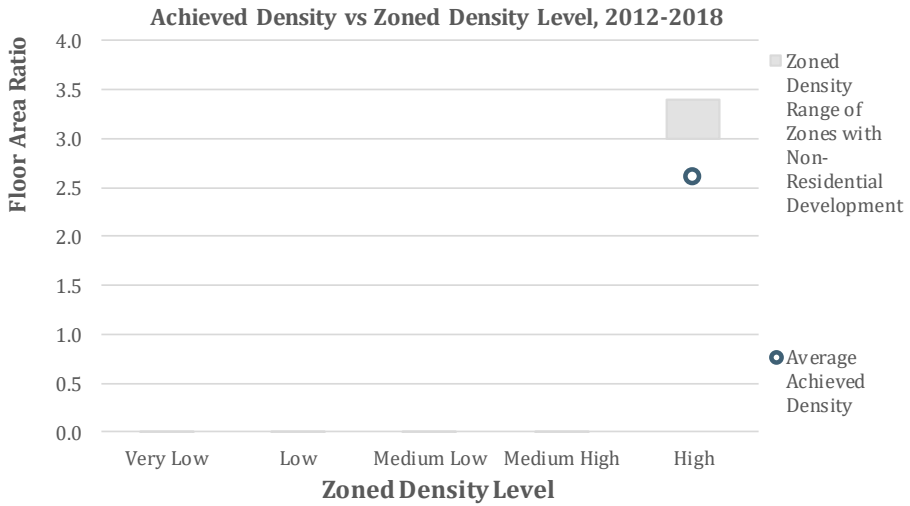
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
74.7%	1.91%	2.23%

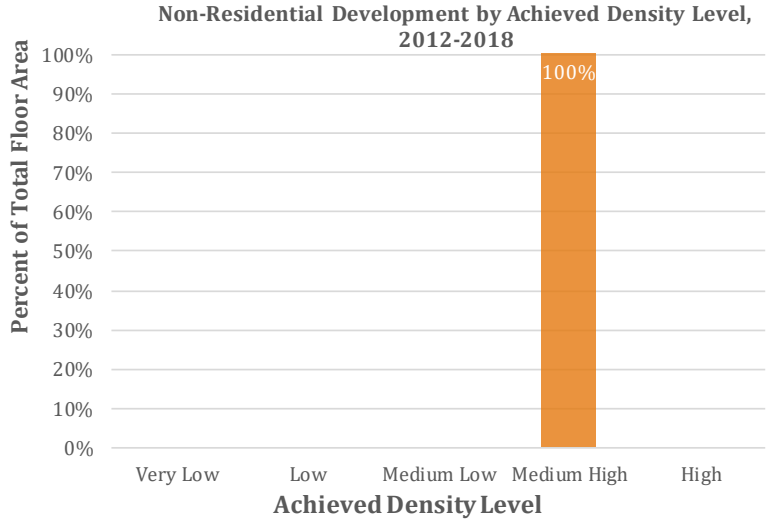
Since 2006, Duvall has grown at 75% of the pace needed to achieve its 2035 jobs growth target of 974 units. During this period, the total number of jobs in Duvall grew by roughly 25%. At this current rate, Duvall is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 2.2% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	39,075	101,294	2.6
	Total	**39,075**	**101,294**	**2.6**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	**0.0**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	39,075	101,294	**2.6**
High	0	0	**0.0**
Total	**39,075**	**101,294**	**2.6**



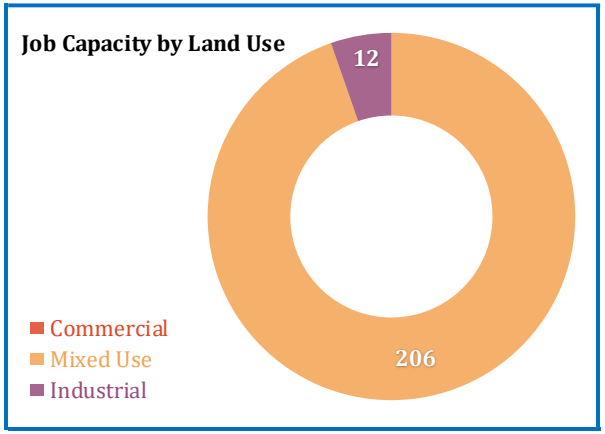


Duvall - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Mixed Use	24.1	0.0	1.2	0.2	22.7	25% - 50%	14.4
Industrial	1.2	0.0	0.1	0.0	1.1	15%	0.9
Non-Res Land Total	**25.3**	**0.0**	**1.3**	**0.3**	**23.8**		**15.4**

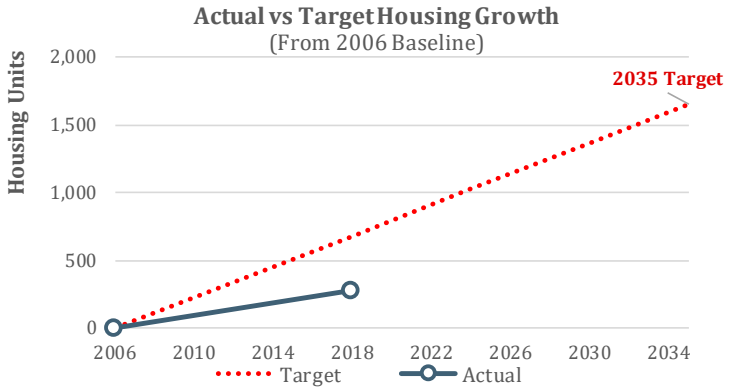
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Commercial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
Mixed-Use						
Vacant	0.60	0.20	0.00	0.12	500 / 600	205
Redevelopable	0.03	0.20	0.02	0.00	500 / 600	1
Mixed Use Total	**0.63**	**0.20**	**0.02**	**0.12**	**500 / 600**	**206**
Industrial						
Vacant	0.04	0.40	0.00	0.02	1,400	12
Redevelopable	0.00	0.40	0.00	0.00	1,400	0
Industrial Total	**0.04**	**0.40**	**0.00**	**0.02**	**1,400**	**12**
City Total						
Commercial	0.00	0.00	0.69	0.00	0	0
Mixed Use	0.63	0.20	0.91	0.12	500 / 600	206
Industrial	0.04	0.40	0.26	0.02	1,400	12
Job Capacity in Pipeline						*464*
City Total	**0.67**	**0.40**	**1.86**	**0.14**	**0 / 1400**	**681**

Job Capacity by Assumed Density Level	#	%
Very Low Density	206	95%
Low Density	12	5%
Medium Low Density	0	0%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*464*
Total Capacity (jobs)		**681**
Remaining Target (2018-2035)		673
Surplus/Deficit Capacity (jobs)		**8**



City of Enumclaw

Housing Growth and Residential Development Trends



Enumclaw Housing Growth Target: 2006-2035	1,653
2006 Estimated Housing Units	5,048
2018 Estimated Housing Units	5,326
Estimated Housing Growth	**278**
Remaining 2035 Target	1,375

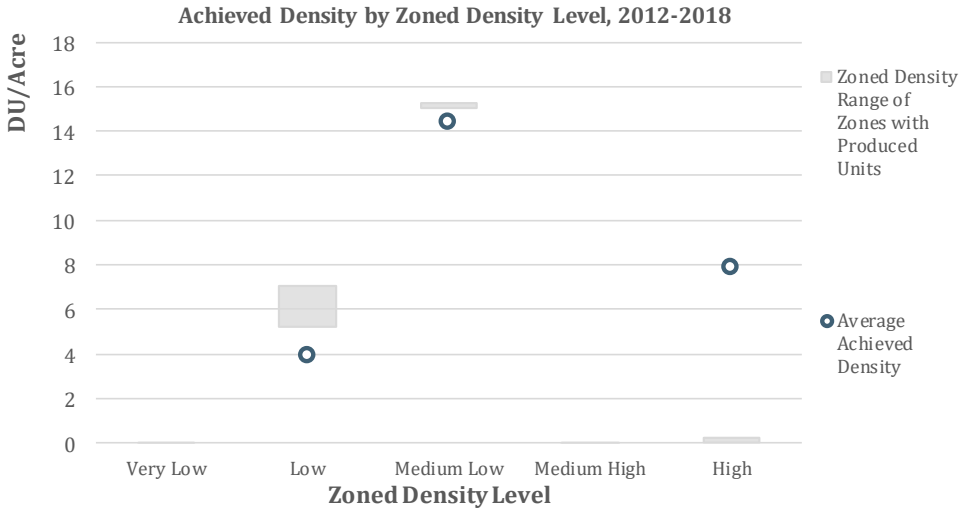
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
40.7%	**0.45%**	**1.36%**

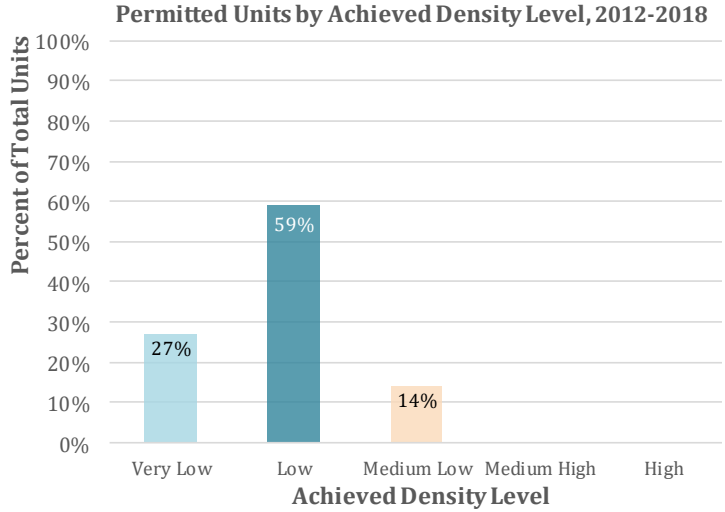
Since 2006, Enumclaw has grown at 41% of the pace needed to achieve its 2035 housing growth target of 1,653 units. During this period, the total number of housing units in Enumclaw grew by roughly 6%. At this current rate, Enumclaw is under the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1.4% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	46.1	0.0	1.7	3.9	40.6	157	**3.9**
Medium Low	10 - 24 du/acre	3.6	0.0	0.0	0.0	3.6	52	**14.4**
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	46.0	4.1	8.9	10.8	22.2	174	**7.8**
	Total	**95.7**	**4.1**	**10.5**	**14.6**	**66.4**	**383**	**5.8**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	32.8	104
Low	29.9	226
Medium Low	3.7	53
Medium High	0.0	0
High	0.0	0
Total	**66.4**	**383**



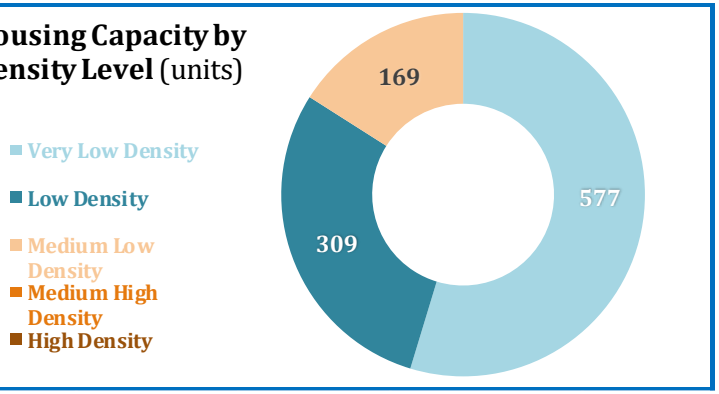


Enumclaw - Residential Land Supply and Capacity

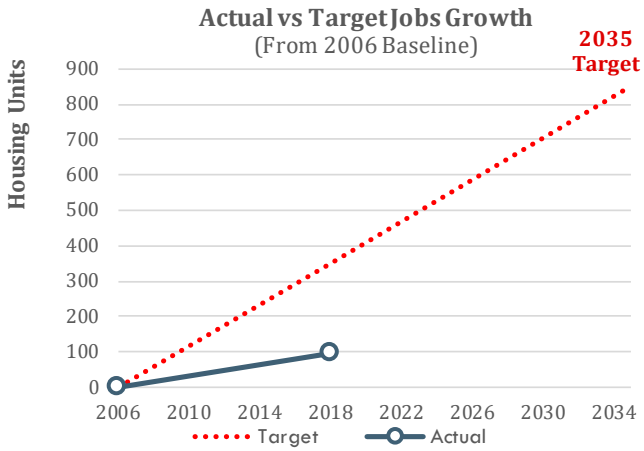
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				11.59	5.0% - 40.0%	63.44	3.2	112
	Redev Subtotal				46.42	5.0% - 40.0%	207.07	3.2	466
	Subtotal	816.36	28.62	215.28	58.01		270.51		**577**
Low Density	Vacant Subtotal				10.70	5.0% - 50.0%	47.38	4.4 / 6.8	288
	Redev Subtotal				1.01	5.0% - 50.0%	4.31	4.4 / 6.8	22
	Subtotal	71.84	3.42	0.00	11.71		51.69		**309**
Medium Low Density	Vacant Subtotal				2.86	50.0% - 50.0%	11.44	14.4	164
	Redev Subtotal				0.70	50.0% - 50.0%	2.82	14.4	4
	Subtotal	37.44	1.78	0.00	3.57		14.26		**169**
Medium High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				25.15		122.27		564
	Redev Total				48.13		214.19		492
	Total	**925.64**	**33.83**	**215.28**	**73.28**		**336.45**		**1,056**

Capacity (units)	
Very Low Density Zones	577
Low Density Zones	309
Medium Low Density Zones	169
Medium High Density Zones	0
High Density Zones	0
Capacity in Pipeline	*252*
Total Capacity (Units)	**1,308**
Remaining Target (2018-2035)	1,375
Surplus/Deficit Capacity (Units)	**-67**

Housing Capacity by Density Level (units)



Enumclaw - Employment Growth and Commercial/Industrial Development Trends



Enumclaw Jobs Growth Target: 2006-2035	853
2006 Jobs (PSRC)	4,960
2018 Jobs (PSRC)	5,056
Total Jobs Growth	**96**
Remaining 2035 Target	757

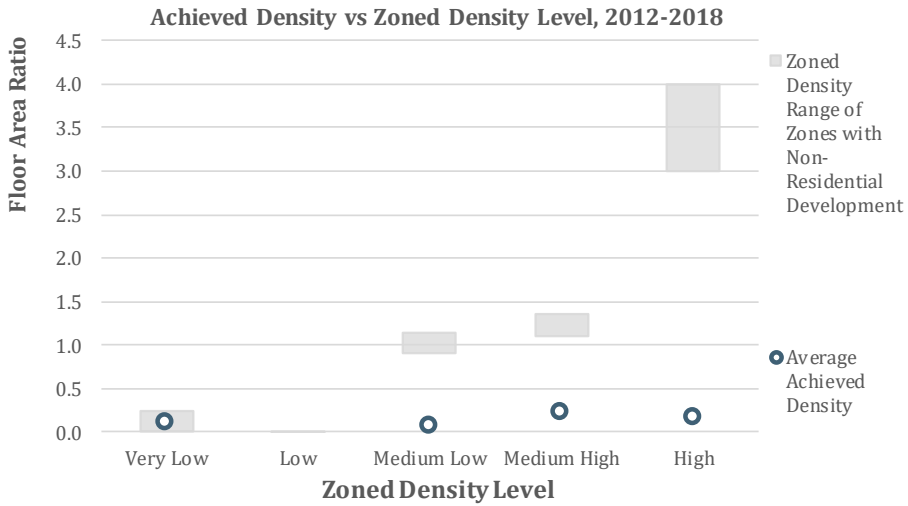
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
27.2%	**0.16%**	**0.82%**

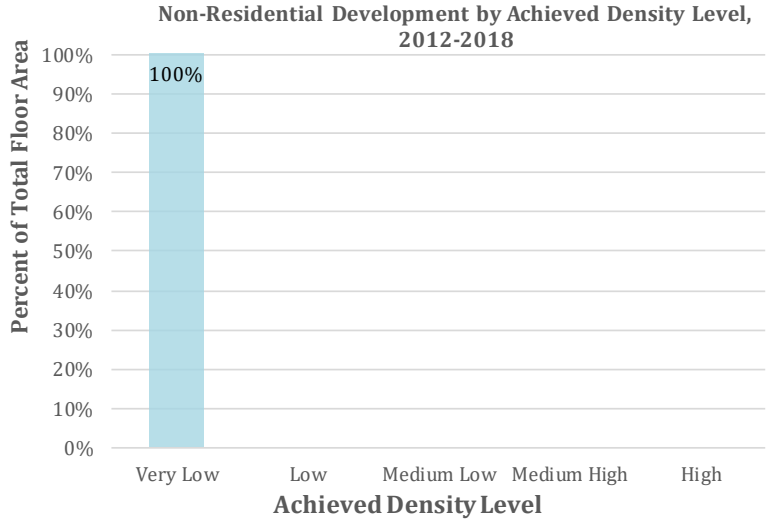
Since 2006, Enumclaw has grown at 27% of the pace needed to achieve its 2035 jobs growth target of 853 units. During this period, the total number of jobs in Enumclaw grew by roughly 2%. At this current rate, Enumclaw is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 0.8% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	135,907	14,549	**0.1**
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	22,000	1,623	**0.1**
Medium High	1.0 - 3.0 FAR	98,488	22,016	**0.2**
High	3.0 & up FAR	785,991	124,555	**0.2**
	Total	**1,042,386**	**162,743**	**0.2**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	1,042,386	162,743	**0.2**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**1,042,386**	**162,743**	**0.2**



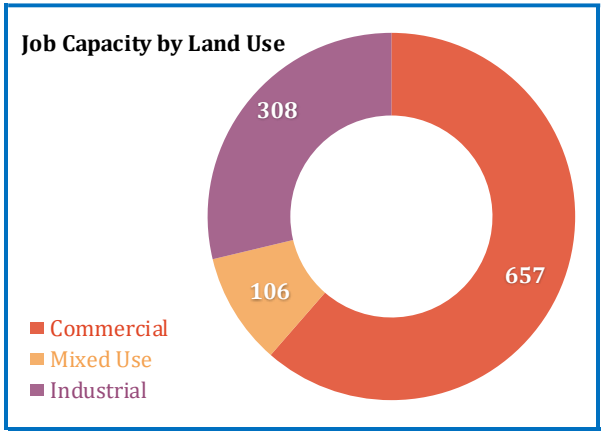


Enumclaw - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	86.7	4.1	4.1	4.1	74.3	15% - 20%	60.6
Mixed Use	10.7	1.1	0.5	0.5	8.7	40% - 50%	4.5
Industrial	74.9	11.5	3.2	3.2	57.0	36%	34.2
Non-Res Land Total	**172.3**	**16.7**	**7.8**	**7.8**	**140.0**		**99.2**

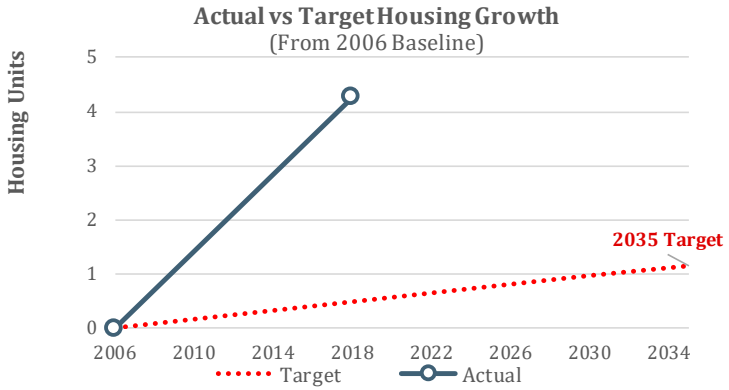
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.97	0.07 / 0.22	0.00	0.15	660	230
Redevelopable	1.67	0.07 / 0.22	0.02	0.28	660	427
Commercial Total	**2.64**	**0.07 / 0.22**	**0.02**	**0.43**	**660**	**657**
Mixed-Use						
Vacant	0.06	0.50	0.00	0.03	0 / 660	41
Redevelopable	0.14	0.50	0.01	0.04	0 / 660	64
Mixed Use Total	**0.19**	**0.50**	**0.01**	**0.07**	**0 / 660**	**106**
Industrial						
Vacant	1.15	0.25	0.00	0.29	1,200	239
Redevelopable	0.34	0.25	0.00	0.08	1,200	69
Industrial Total	**1.49**	**0.25**	**0.00**	**0.37**	**1,200**	**308**
City Total						
Commercial	2.64	0.07 / 0.22	0.69	0.43	660	657
Mixed Use	0.19	0.50	0.91	0.07	0 / 660	106
Industrial	1.49	0.25	0.26	0.37	1,200	308
Job Capacity in Pipeline						*81*
City Total	**4.32**	**0.50**	**1.86**	**0.87**	**0 / 1200**	**1,152**

Job Capacity by Assumed Density Level	#	%
Very Low Density	981	92%
Low Density	0	0%
Medium Low Density	90	8%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*81*
Total Capacity (jobs)		**1,152**
Remaining Target (2018-2035)		757
Surplus/Deficit Capacity (jobs)		**395**



Town of Hunts Point

Housing Growth and Residential Development Trends



Hunts Point Housing Growth Target: 2006-2035	1
2006 Estimated Housing Units	183
2018 Estimated Housing Units	187
Estimated Housing Growth	**4**
Remaining 2035 Target	0

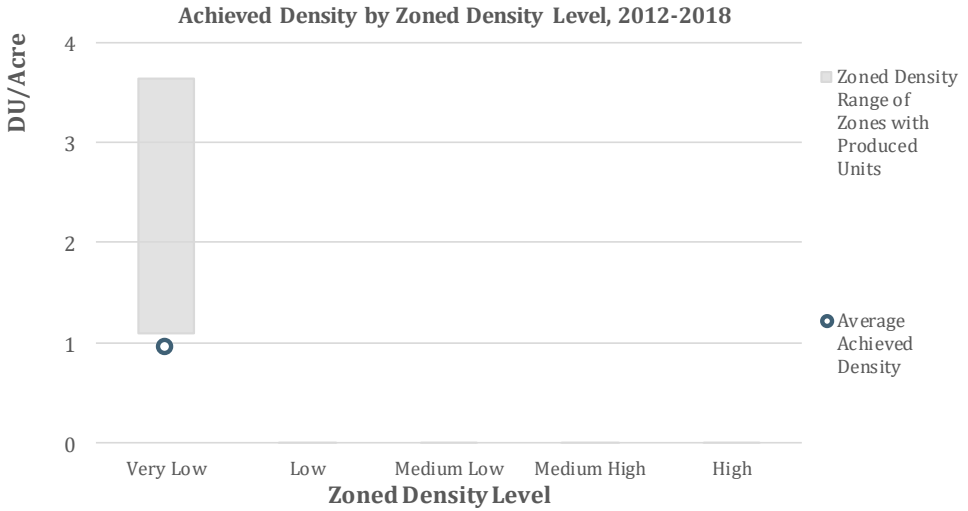
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
887.9%	**0.19%**	**Met Target**

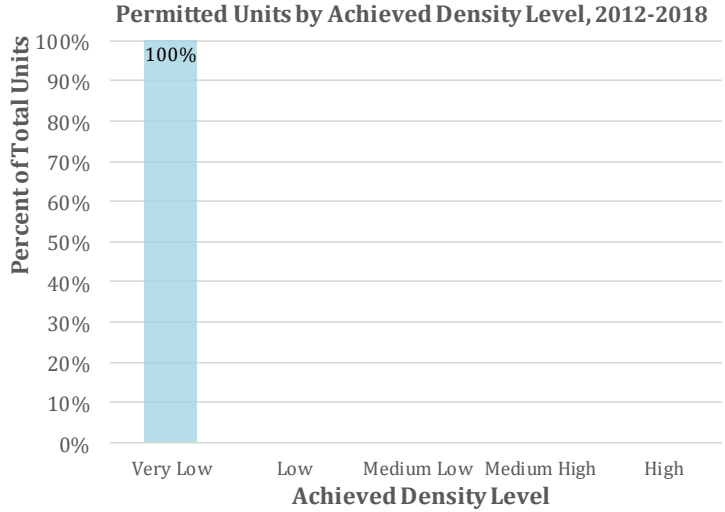
Since 2006, Hunts Point has grown at 888% of the pace needed to achieve its 2035 housing growth target of 1 units. During this period, the total number of housing units in Hunts Point grew by roughly 2%. Hunts Point has achieved its 2035 housing growth target.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	3.2	0.0	0.0	0.0	3.2	3	**1.0**
Low	4 - 10 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	**3.2**	**0.0**	**0.0**	**0.0**	**3.2**	**3**	**1.0**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	3.2	3
Low	0.0	0
Medium Low	0.0	0
Medium High	0.0	0
High	0.0	0
Total	**3.2**	**3**



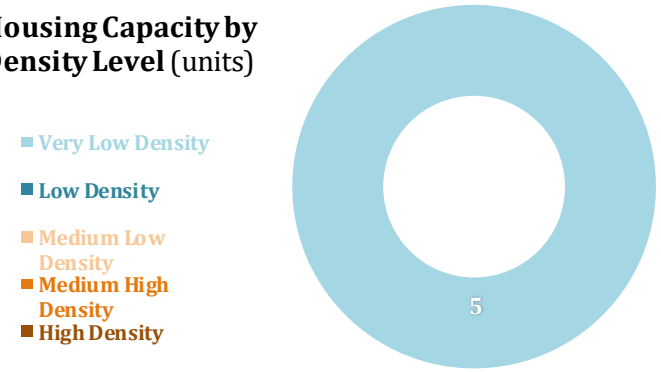


Hunts Point - Residential Land Supply and Capacity

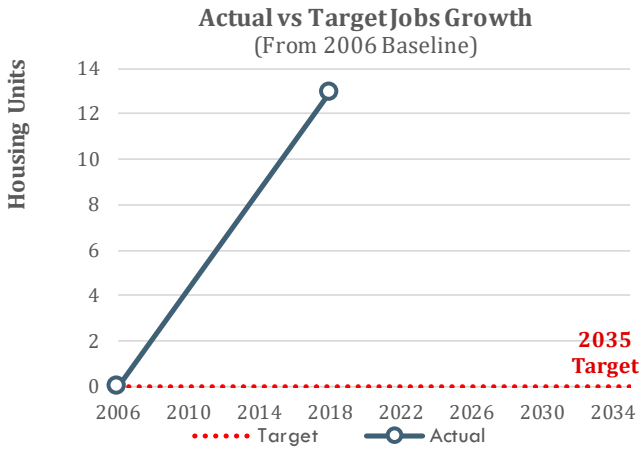
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	2.68	1.0 / 3.6	5
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	1.0 / 3.6	0
	Subtotal	17.08	6.54	0.40	0.00		2.68		**5**
Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Medium Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Medium High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				0.00		2.68		5
	Redev Total				0.00		0.00		0
	Total	**17.08**	**6.54**	**0.40**	**0.00**		**2.68**		**5**

Capacity (units)	
Very Low Density Zones	5
Low Density Zones	0
Medium Low Density Zones	0
Medium High Density Zones	0
High Density Zones	0
Capacity in Pipeline	*0*
Total Capacity (Units)	**5**
Remaining Target (2018-2035)	0
Surplus/Deficit Capacity (Units)	**5**

Housing Capacity by Density Level (units)



Hunts Point - Employment Growth and Commercial/Industrial Development Trends



Hunts Point Jobs Growth Target: 2006-2035	0
2006 Jobs (PSRC)	51
2018 Jobs (PSRC)	64
Total Jobs Growth	**13**
Remaining 2035 Target	**Not Applicable**

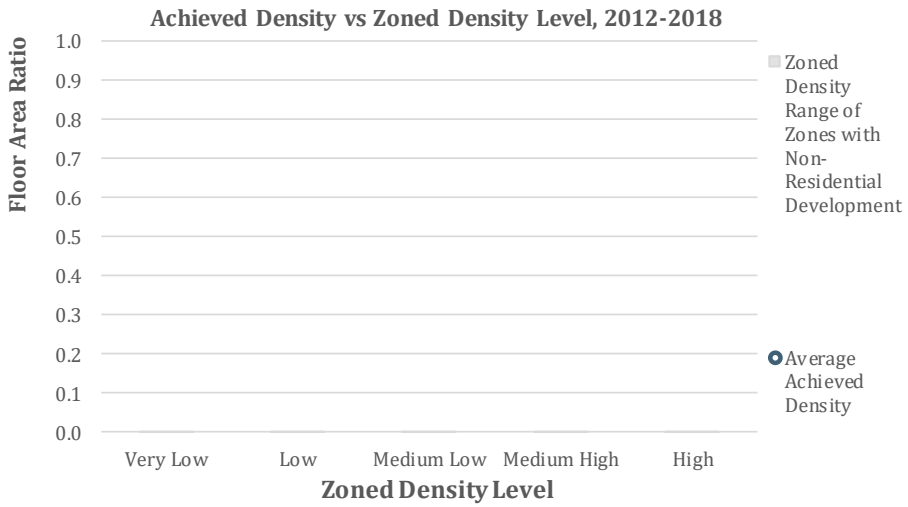
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
Not Applicable	**1.91%**	**Not Applicable**

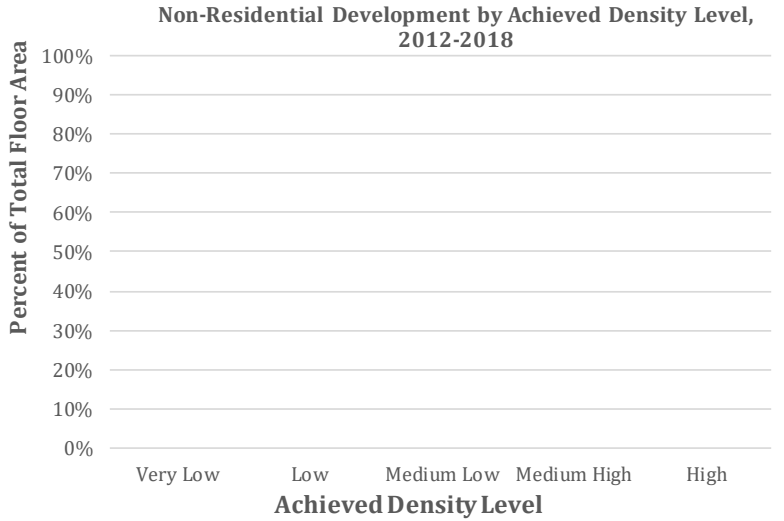
Since 2006, the total number of jobs in Hunts Point grew by roughly 2%. There is no 2035 jobs growth target.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	0	0	
	Total	**0**	**0**	

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	**0.0**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**0**	**0**	**0.0**



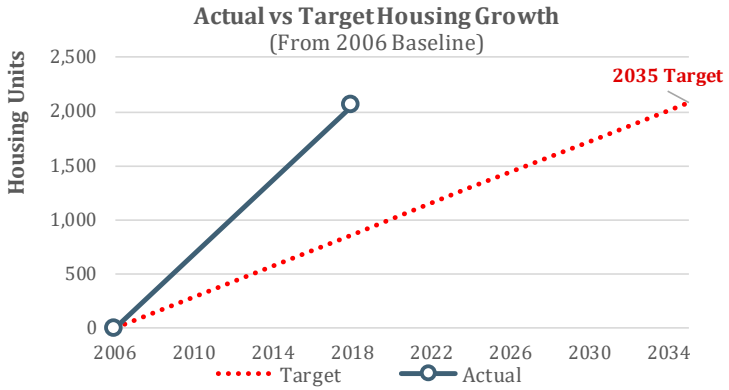


Hunts Point - Commercial/Industrial Land Supply and Job Capacity

(no job capacity in Hunts Point)

City of Maple Valley

Housing Growth and Residential Development Trends



Maple Valley Housing Growth Target: 2006-2035	2,088
2006 Estimated Housing Units	6,765
2018 Estimated Housing Units	8,826
Estimated Housing Growth	**2,061**
Remaining 2035 Target	27

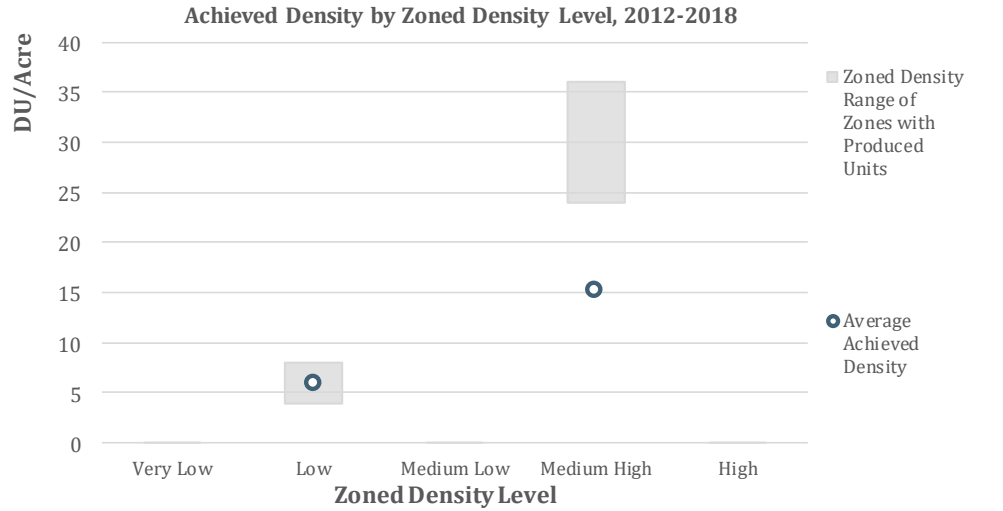
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
238.6%	2.24%	0.02%

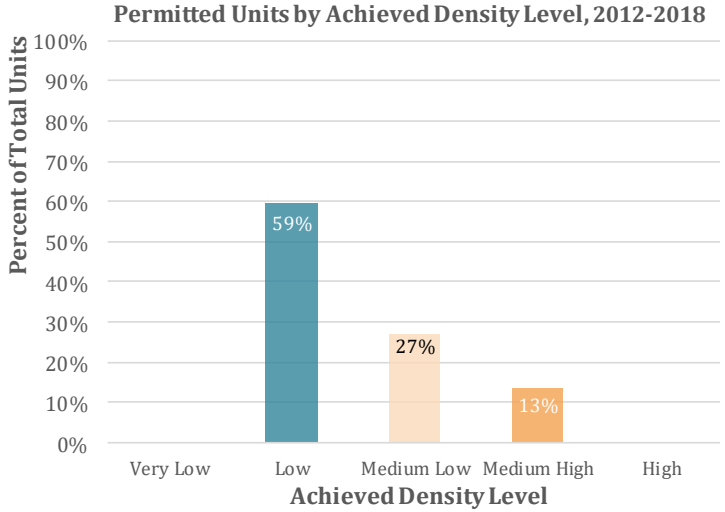
Since 2006, Maple Valley has grown at 239% of the pace needed to achieve its 2035 housing growth target of 2,088 units. During this period, the total number of housing units in Maple Valley grew by roughly 30%. At this current rate, Maple Valley is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	126.9	30.6	0.1	0.2	96.0	557	**5.8**
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	30.7	0.0	1.1	4.4	25.2	381	**15.1**
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	**157.7**	**30.6**	**1.3**	**4.7**	**121.2**	**938**	**7.7**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	0.0	0
Low	96.0	557
Medium Low	20.1	255
Medium High	5.1	126
High	0.0	0
Total	**121.2**	**938**



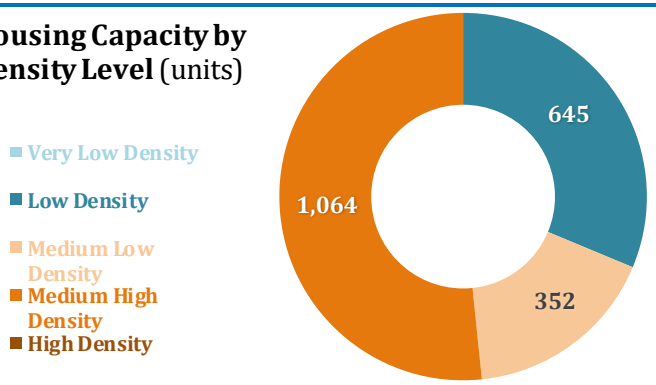


Maple Valley - Residential Land Supply and Capacity

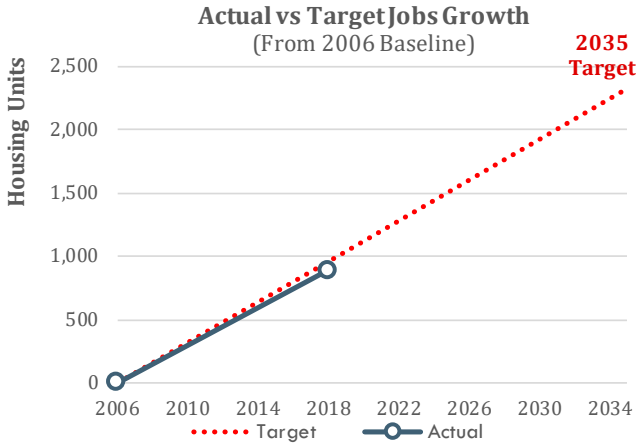
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				0.02	12.0% - 12.0%	0.07	0.0	0
	Redev Subtotal				0.08	12.0% - 12.0%	0.36	0.0	0
	Subtotal	0.61	0.00	0.00	0.10		0.43		**0**
Low Density	Vacant Subtotal				9.74	5.0% - 7.0%	29.94	5.4 / 7.4	186
	Redev Subtotal				33.79	5.0% - 7.0%	103.96	5.4 / 7.4	459
	Subtotal	202.24	12.99	0.00	43.53		133.90		**645**
Medium Low Density	Vacant Subtotal				0.00	12.0% - 20.0%	0.00	12.0 / 18.0	0
	Redev Subtotal				11.78	12.0% - 20.0%	42.19	12.0 / 18.0	352
	Subtotal	62.87	0.00	0.00	11.78		42.19		**352**
Medium High Density	Vacant Subtotal				3.51	12.0% - 20.0%	15.80	24.0 / 24.6	388
	Redev Subtotal				6.12	12.0% - 20.0%	27.55	24.0 / 24.6	676
	Subtotal	60.20	0.00	0.00	9.63		43.35		**1,064**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				13.26		45.81		574
	Redev Total				51.78		174.07		1,487
	Total	**325.92**	**12.99**	**0.00**	**65.04**		**219.87**		**2,061**

Capacity (units)	
Very Low Density Zones	0
Low Density Zones	645
Medium Low Density Zones	352
Medium High Density Zones	1,064
High Density Zones	0
Capacity in Pipeline	*160*
Total Capacity (Units)	**2,221**
Remaining Target (2018-2035)	27
Surplus/Deficit Capacity (Units)	**2,195**

Housing Capacity by Density Level (units)



Maple Valley - Employment Growth and Commercial/Industrial Development Trends



Maple Valley Jobs Growth Target: 2006-2035	2,320
2006 Jobs (PSRC)	3,297
2018 Jobs (PSRC)	4,190
Total Jobs Growth	**893**
Remaining 2035 Target	**1,427**

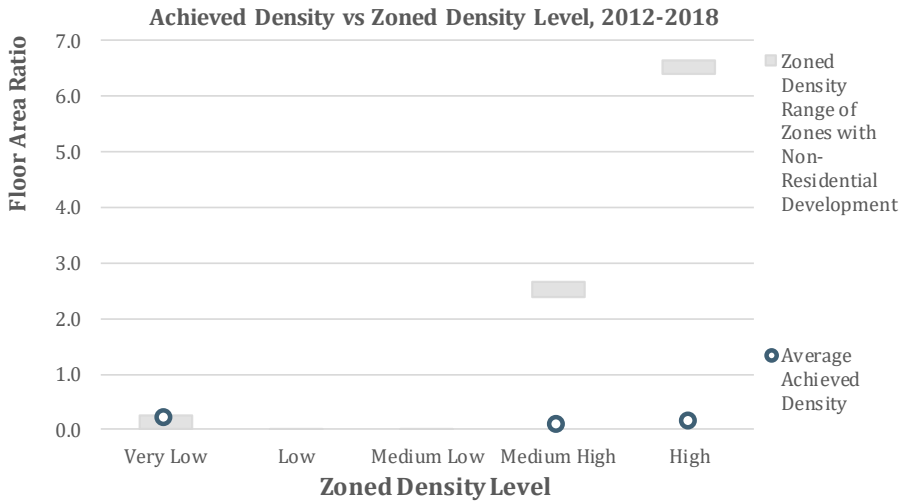
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
93.0%	**2.02%**	**1.74%**

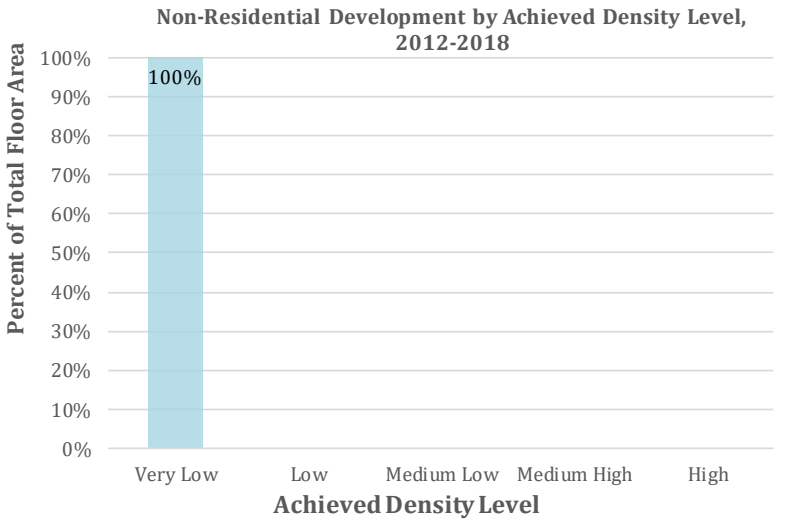
Since 2006, Maple Valley has grown at 93% of the pace needed to achieve its 2035 jobs growth target of 2,320 units. During this period, the total number of jobs in Maple Valley grew by roughly 27%. At this current rate, Maple Valley is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 1.7% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	2,140,550	409,209	**0.2**
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	63,513	4,826	**0.1**
High	3.0 & up FAR	2,133,765	275,858	**0.1**
	Total	**4,337,828**	**689,893**	**0.2**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	4,337,828	689,893	**0.2**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**4,337,828**	**689,893**	**0.2**





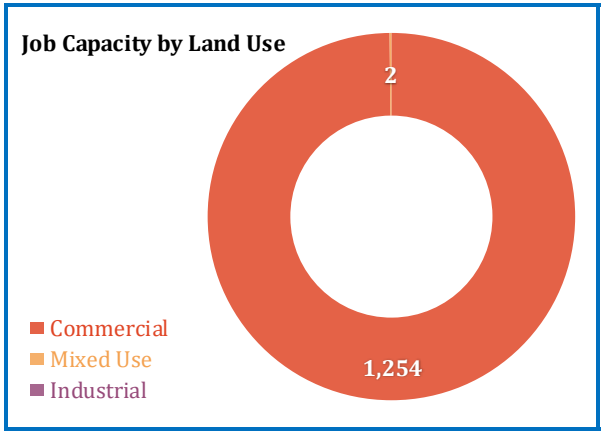
Maple Valley - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	105.2	10.8	6.6	8.5	79.3	12% - 16%	66.6
Mixed Use	0.6	0.0	0.0	0.1	0.5	12%	0.4
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**105.8**	**10.8**	**6.7**	**8.6**	**79.8**		**67.0**

Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial*						
Vacant	2.54	0.03 / 0.29	0.00	0.55	500	1,103
Redevelopable	2.36	0.03 / 0.29	0.12	0.08	500	151
Commercial Total	**4.89**	**0.03 / 0.29**	**0.12**	**0.63**	**500**	**1,254**
Mixed-Use						
Vacant	0.00	0.08	0.00	0.00	700	0
Redevelopable	0.02	0.08	0.00	0.00	700	2
Mixed Use Total	**0.02**	**0.08**	**0.00**	**0.00**	**700**	**2**
Industrial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
City Total						
Commercial	4.89	0.03 / 0.29	0.69	0.63	500	1,254
Mixed Use	0.02	0.08	0.91	0.00	700	2
Industrial	0.00	0.00	0.26	0.00	0	0
Job Capacity in Pipeline						*528*
City Total	**4.91**	**0.29**	**1.86**	**0.63**	**0 / 700**	**1,784**

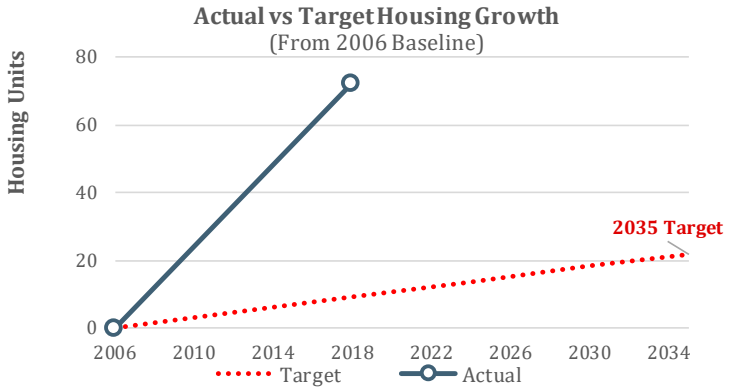
*Certain zones grouped as commercial allow for industrial use.

Job Capacity by Assumed Density Level	#	%
Very Low Density	1,256	100%
Low Density	0	0%
Medium Low Density	0	0%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*528*
Total Capacity (jobs)		**1,784**
Remaining Target (2018-2035)		1,427
Surplus/Deficit Capacity (jobs)		**357**



City of Medina

Housing Growth and Residential Development Trends



Medina Housing Growth Target: 2006-2035	22
2006 Estimated Housing Units	1,162
2018 Estimated Housing Units	1,234
Estimated Housing Growth	**72**
Remaining 2035 Target	0

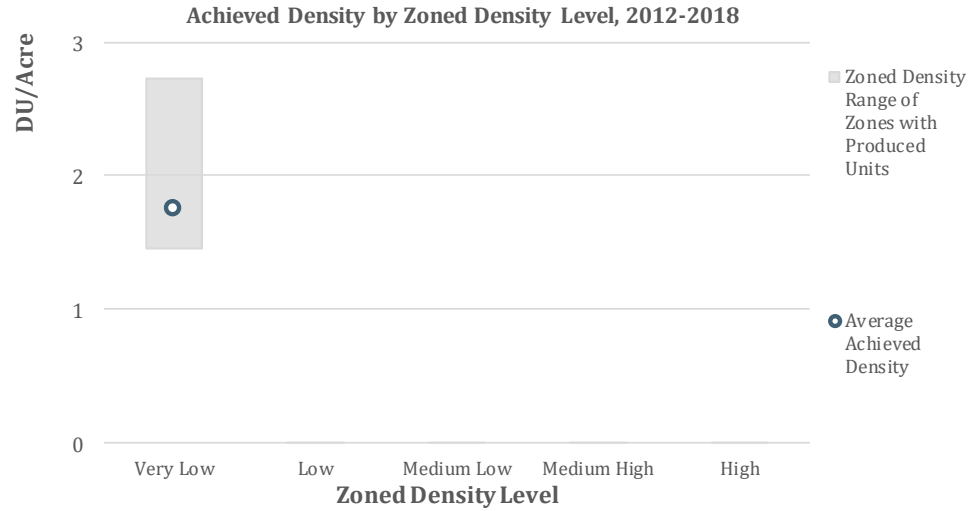
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
794.6%	0.51%	Met Target

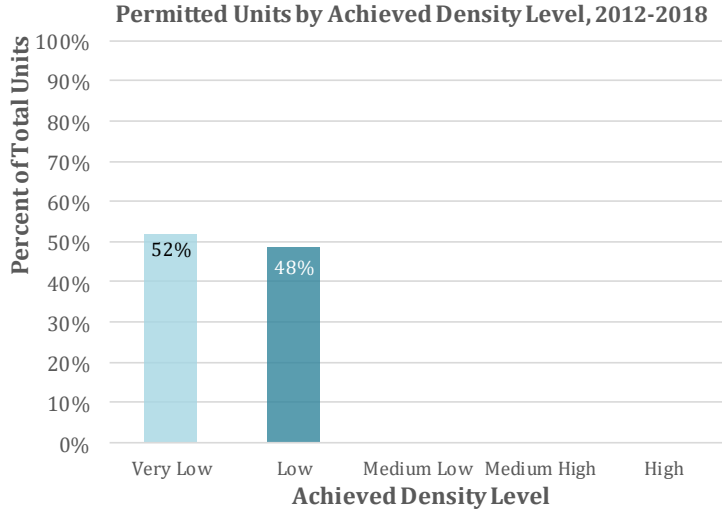
Since 2006, Medina has grown at 795% of the pace needed to achieve its 2035 housing growth target of 22 units. During this period, the total number of housing units in Medina grew by roughly 6%. Medina has achieved its 2035 housing growth target.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	55.3	4.5	0.0	0.0	50.9	89	1.7
Low	4 - 10 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	**55.3**	**4.5**	**0.0**	**0.0**	**50.9**	**89**	**1.7**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	40.8	46
Low	10.0	43
Medium Low	0.0	0
Medium High	0.0	0
High	0.0	0
Total	**50.9**	**89**



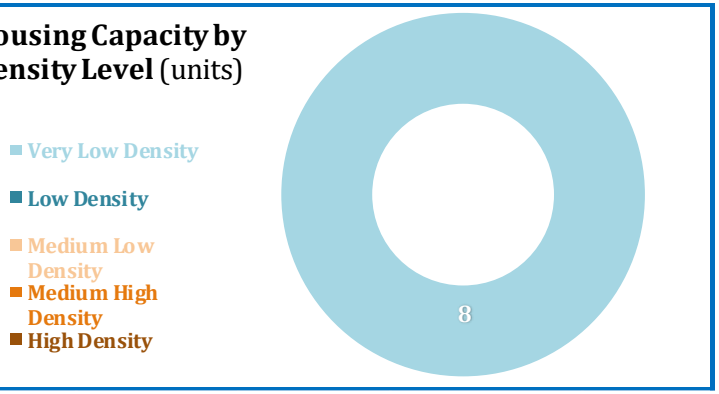


Medina - Residential Land Supply and Capacity

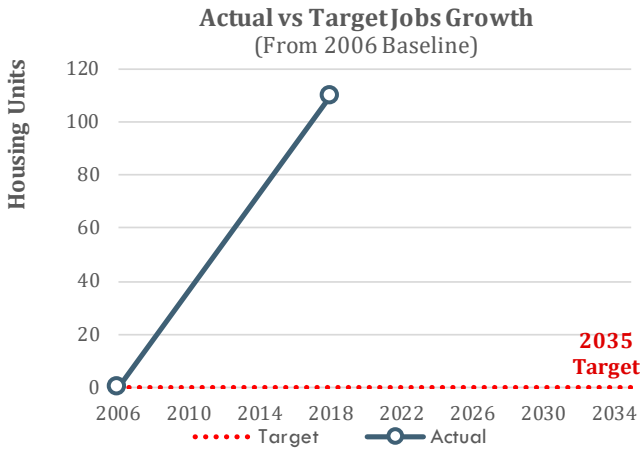
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				0.50	10.0% - 10.0%	4.00	3.0	7
	Redev Subtotal				0.50	10.0% - 10.0%	4.00	3.0	1
	Subtotal	0.00	0.00	0.00	1.00		8.00		**8**
Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Medium Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Medium High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				0.50		4.00		7
	Redev Total				0.50		4.00		1
	Total	**0.00**	**0.00**	**0.00**	**1.00**		**8.00**		**8**

Capacity (units)	
Very Low Density Zones	8
Low Density Zones	0
Medium Low Density Zones	0
Medium High Density Zones	0
High Density Zones	0
Capacity in Pipeline	*0*
Total Capacity (Units)	**8**
Remaining Target (2018-2035)	0
Surplus/Deficit Capacity (Units)	**8**

Housing Capacity by Density Level (units)



Medina - Employment Growth and Commercial/Industrial Development Trends



Medina Jobs Growth Target: 2006-2035	0
2006 Jobs (PSRC)	409
2018 Jobs (PSRC)	519
Total Jobs Growth	**110**
Remaining 2035 Target	**Not Applicable**

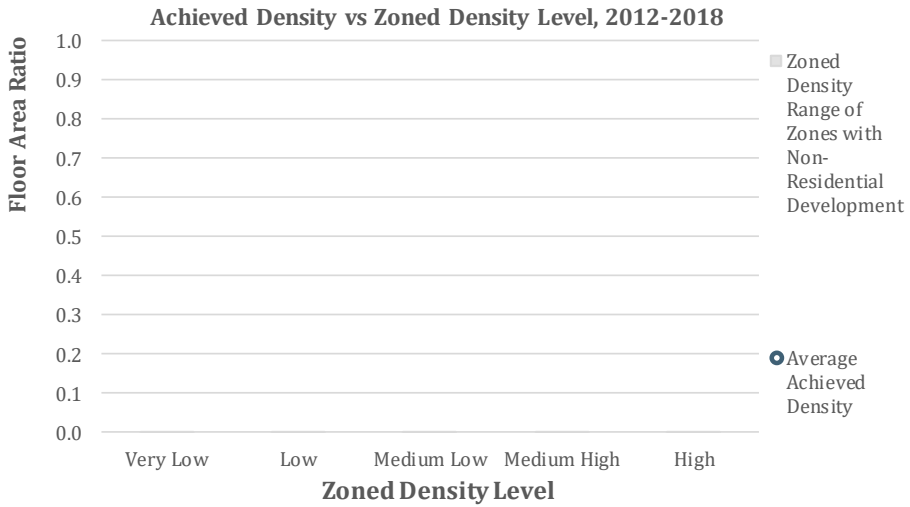
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
Not Applicable	**2.00%**	**Not Applicable**

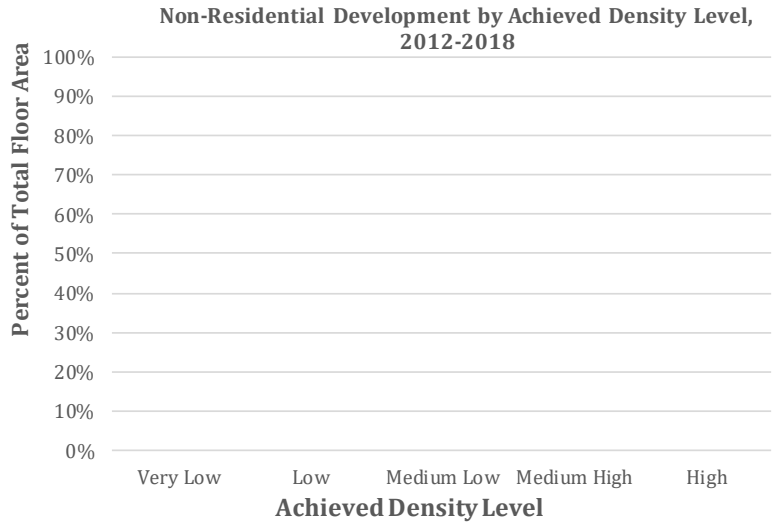
Since 2006, the total number of jobs in Medina grew by roughly 2%. There is no 2035 jobs growth target.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	0	0	
	Total	**0**	**0**	

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	**0.0**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**0**	**0**	**0.0**



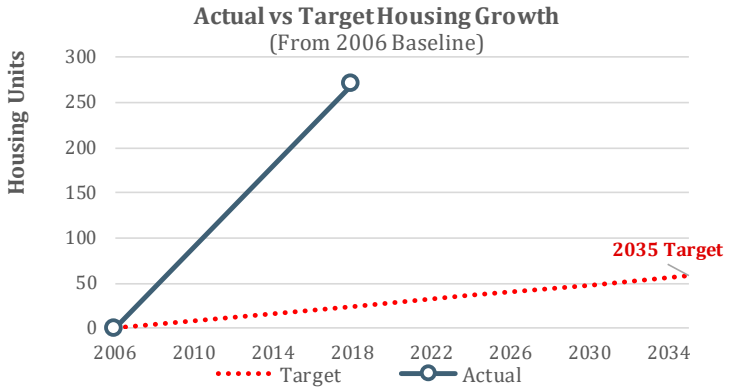


Medina - Commercial/Industrial Land Supply and Job Capacity

(no job capacity in Medina)

City of Milton

Housing Growth and Residential Development Trends



Milton Housing Growth Target: 2006-2035	58
2006 Estimated Housing Units	337
2018 Estimated Housing Units	608
Estimated Housing Growth	**271**
Remaining 2035 Target	0

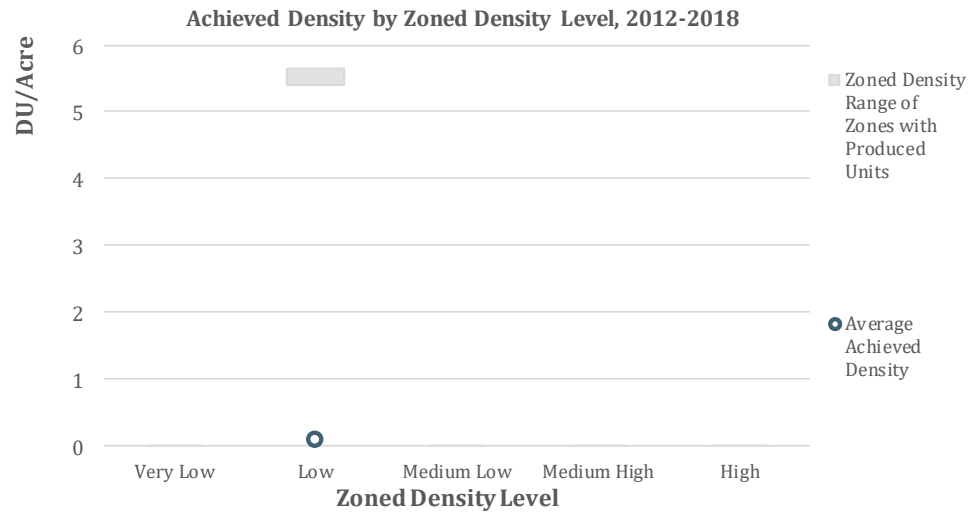
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
1128.6%	5.04%	Met Target

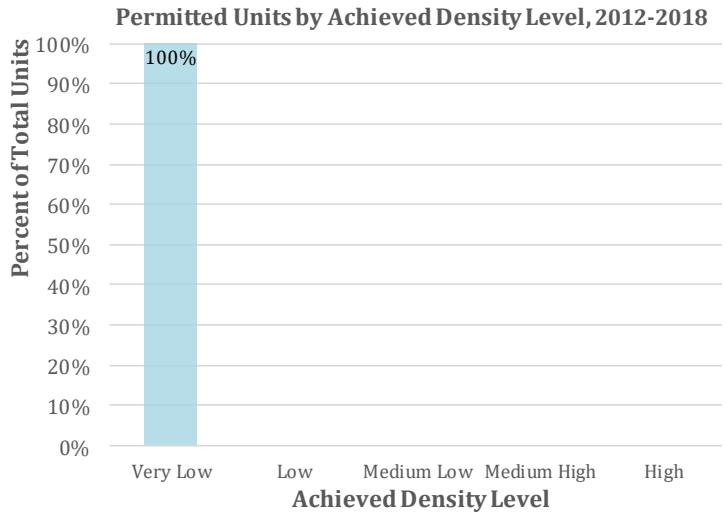
Since 2006, Milton has grown at 1129% of the pace needed to achieve its 2035 housing growth target of 58 units. During this period, the total number of housing units in Milton grew by roughly 80%. Milton has achieved its 2035 housing growth target.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	14.0	0.0	0.0	0.0	14.0	1	**0.1**
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	**14.0**	**0.0**	**0.0**	**0.0**	**14.0**	**1**	**0.1**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	14.0	1
Low	0.0	0
Medium Low	0.0	0
Medium High	0.0	0
High	0.0	0
Total	**14.0**	**1**



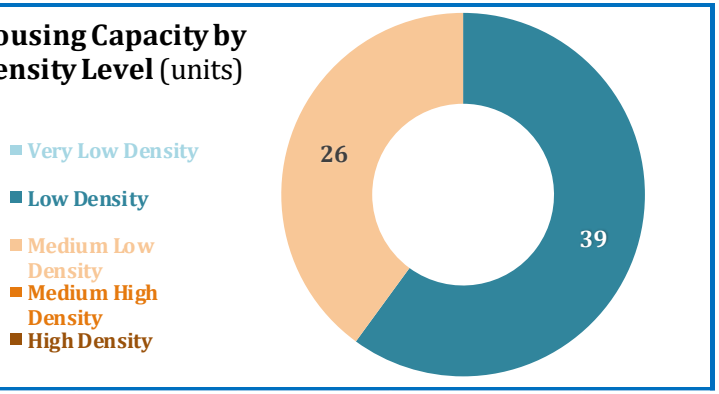


Milton - Residential Land Supply and Capacity

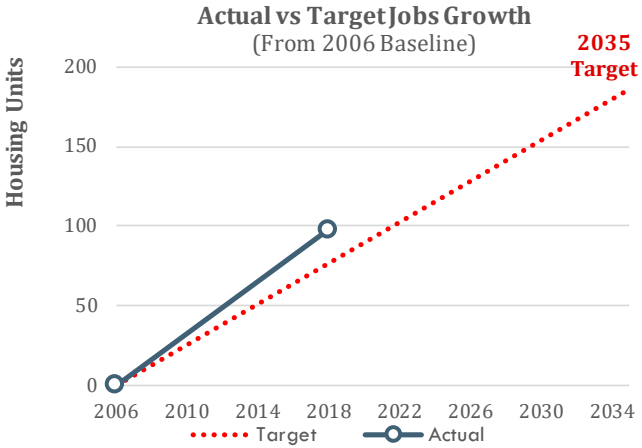
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	45.36	45.36	0.00	0.00		0.00		**0**
Low Density	Vacant Subtotal				0.07	0.0% - 0.0%	0.44	5.4	2
	Redev Subtotal				1.08	0.0% - 0.0%	7.22	5.4	37
	Subtotal	16.88	8.07	0.00	1.14		7.66		**39**
Medium Low Density	Vacant Subtotal				0.10	0.0% - 0.0%	0.70	12.0	8
	Redev Subtotal				0.25	0.0% - 0.0%	1.65	12.0	18
	Subtotal	3.84	1.09	0.00	0.35		2.35		**26**
Medium High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				0.17		1.13		11
	Redev Total				1.33		8.87		55
	Total	**66.09**	**54.52**	**0.00**	**1.50**		**10.01**		**66**

Capacity (units)	
Very Low Density Zones	0
Low Density Zones	39
Medium Low Density Zones	26
Medium High Density Zones	0
High Density Zones	0
Capacity in Pipeline	*0*
Total Capacity (Units)	**66**
Remaining Target (2018-2035)	0
Surplus/Deficit Capacity (Units)	**66**

Housing Capacity by Density Level (units)



Milton - Employment Growth and Commercial/Industrial Development Trends



Milton Jobs Growth Target: 2006-2035	186
2006 Jobs (PSRC)	22
2018 Jobs (PSRC)	120
Total Jobs Growth	**98**
Remaining 2035 Target	88

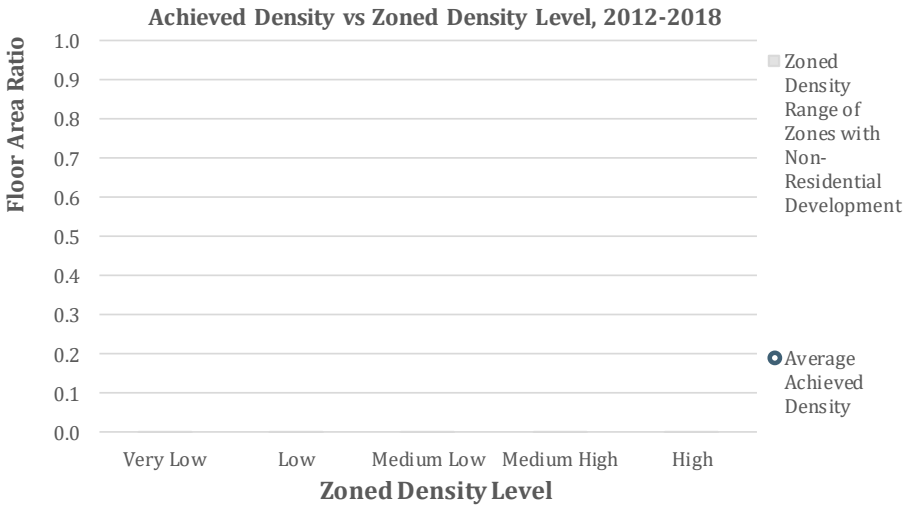
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
127.6%	**15.49%**	**3.28%**

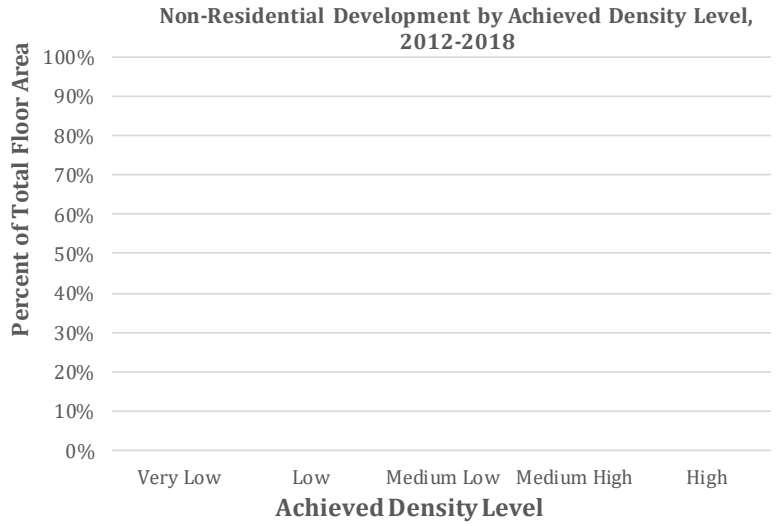
Since 2006, Milton has grown at 128% of the pace needed to achieve its 2035 jobs growth target of 186 units. During this period, the total number of jobs in Milton grew by roughly 445%. At this current rate, Milton is over the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 3.3% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	0	0	
	Total	**0**	**0**	

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	**0.0**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**0**	**0**	**0.0**



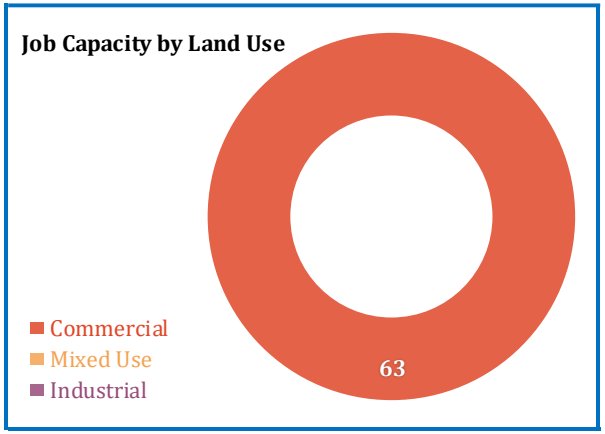


Milton - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	7.0	1.8	0.0	0.0	5.2	50%	2.6
Mixed Use	0.0	0.0	0.0	0.0	0.0	0%	0.0
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**7.0**	**1.8**	**0.0**	**0.0**	**5.2**		**2.6**

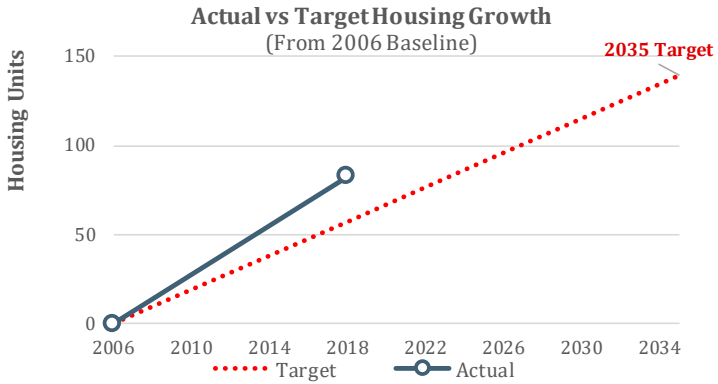
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.10	0.25	0.00	0.02	450	53
Redevelopable	0.02	0.25	0.00	0.00	450	10
Commercial Total	**0.11**	**0.25**	**0.00**	**0.03**	**450**	**63**
Mixed-Use						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Mixed Use Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
Industrial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
City Total						
Commercial	0.11	0.25	0.69	0.03	450	63
Mixed Use	0.00	0.00	0.91	0.00	0	0
Industrial	0.00	0.00	0.26	0.00	0	0
Job Capacity in Pipeline						*1,150*
City Total	**0.11**	**0.25**	**1.86**	**0.03**	**0 / 450**	**1,213**

Job Capacity by Assumed Density Level	#	%
Very Low Density	63	100%
Low Density	0	0%
Medium Low Density	0	0%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*1,150*
Total Capacity (jobs)		**1,213**
Remaining Target (2018-2035)		88
Surplus/Deficit Capacity (jobs)		**1,125**



City of Normandy Park

Housing Growth and Residential Development Trends



Normandy Park Housing Growth Target: 2006-2035	139
2006 Estimated Housing Units	2,794
2018 Estimated Housing Units	2,877
Estimated Housing Growth	**83**
Remaining 2035 Target	**56**

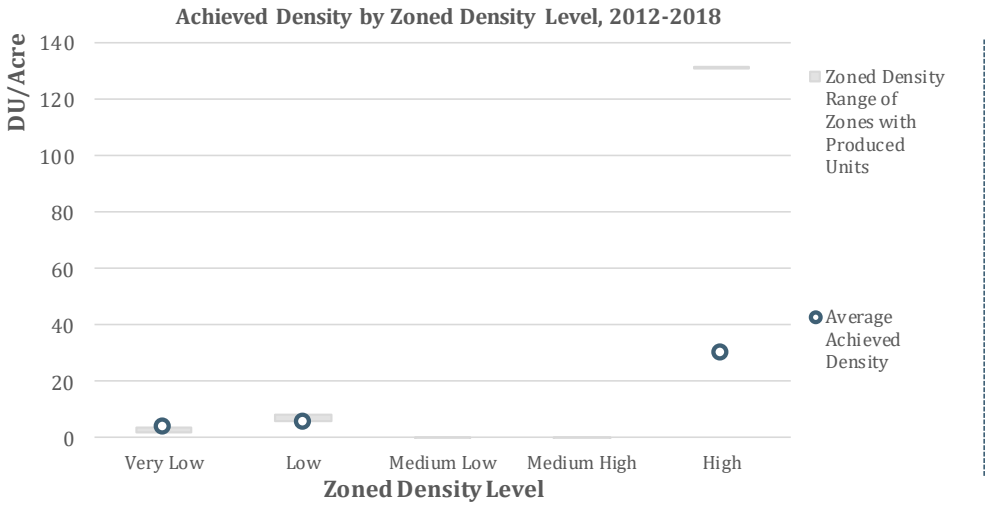
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
143.8%	**0.24%**	**0.11%**

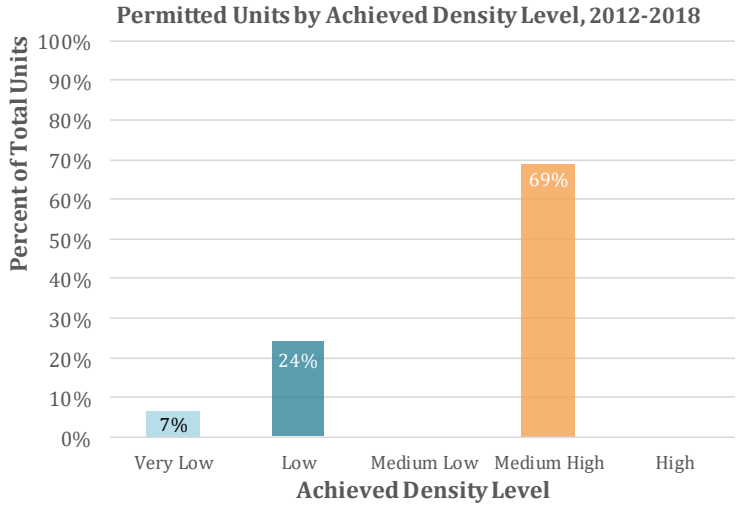
Since 2006, Normandy Park has grown at 144% of the pace needed to achieve its 2035 housing growth target of 139 units. During this period, the total number of housing units in Normandy Park grew by roughly 3%. At this current rate, Normandy Park is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0.1% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	6.5	4.6	0.0	0.0	1.9	7	**3.7**
Low	4 - 10 du/acre	0.4	0.0	0.0	0.0	0.4	2	**5.0**
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	1.7	0.0	1.0	0.0	0.7	20	**29.5**
	Total	**8.5**	**4.6**	**1.0**	**0.0**	**3.0**	**29**	**9.7**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	1.0	2
Low	1.3	7
Medium Low	0.0	0
Medium High	0.7	20
High	0.0	0
Total	**3.0**	**29**



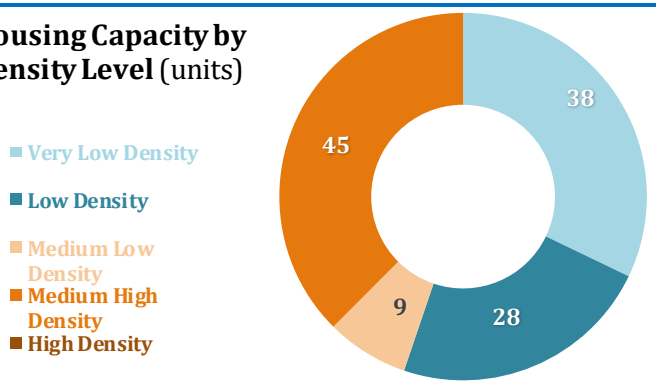


Normandy Park - Residential Land Supply and Capacity

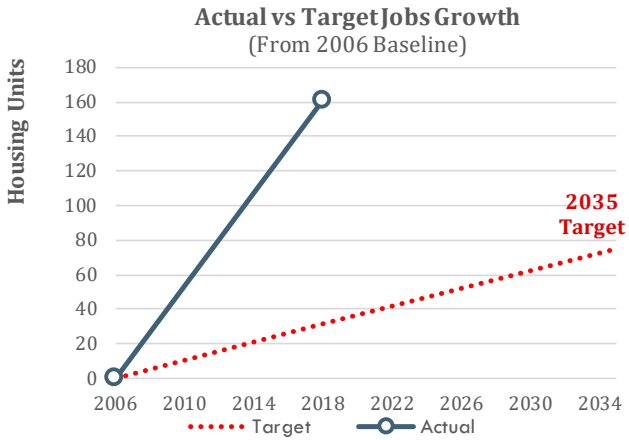
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				9.99	41.0% - 41.0%	15.09	2.0 / 3.3	38
	Redev Subtotal				6.96	41.0% - 41.0%	10.51	2.0 / 3.3	0
	Subtotal	132.96	19.34	40.12	16.95		25.61		**38**
Low Density	Vacant Subtotal				1.38	41.0% - 41.0%	2.09	5.0 / 8.0	10
	Redev Subtotal				2.21	41.0% - 41.0%	3.35	5.0 / 8.0	17
	Subtotal	15.78	0.00	0.48	3.60		5.43		**28**
Medium Low Density	Vacant Subtotal				0.00	10.0% - 10.0%	0.00	18.0	0
	Redev Subtotal				0.17	10.0% - 10.0%	0.48	18.0	9
	Subtotal	0.72	0.00	0.00	0.17		0.48		**9**
Medium High Density	Vacant Subtotal				0.00	10.0% - 10.0%	0.01	24.0 / 29.0	0
	Redev Subtotal				0.08	10.0% - 10.0%	1.57	24.0 / 29.0	44
	Subtotal	1.83	0.00	0.00	0.09		1.58		**45**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				11.37		17.19		49
	Redev Total				9.43		15.91		70
	Total	**151.29**	**19.34**	**40.60**	**20.80**		**33.10**		**119**

Capacity (units)	
Very Low Density Zones	38
Low Density Zones	28
Medium Low Density Zones	9
Medium High Density Zones	45
High Density Zones	0
Capacity in Pipeline	*16*
Total Capacity (Units)	**135**
Remaining Target (2018-2035)	56
Surplus/Deficit Capacity (Units)	**79**

Housing Capacity by Density Level (units)



Normandy Park - Employment Growth and Commercial/Industrial Development Trends



Normandy Park Jobs Growth Target: 2006-2035	75
2006 Jobs (PSRC)	773
2018 Jobs (PSRC)	934
Total Jobs Growth	**161**
Remaining 2035 Target	**0**

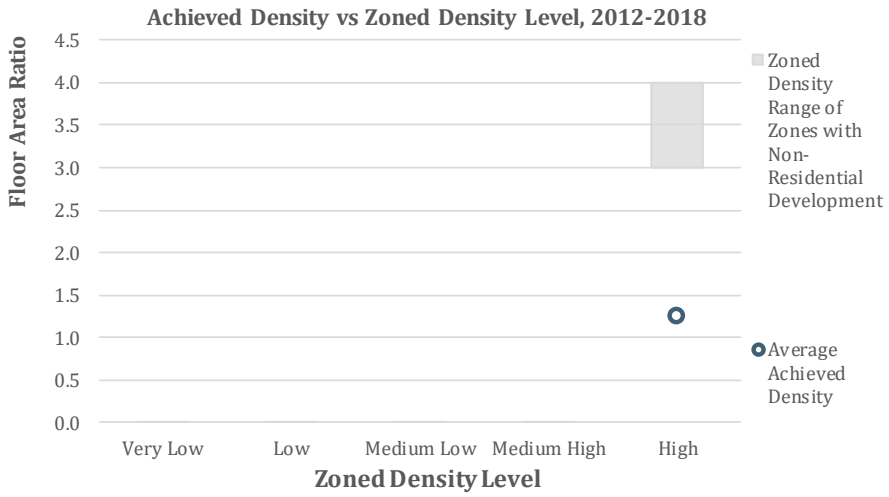
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
516.0%	**1.59%**	**Met Target**

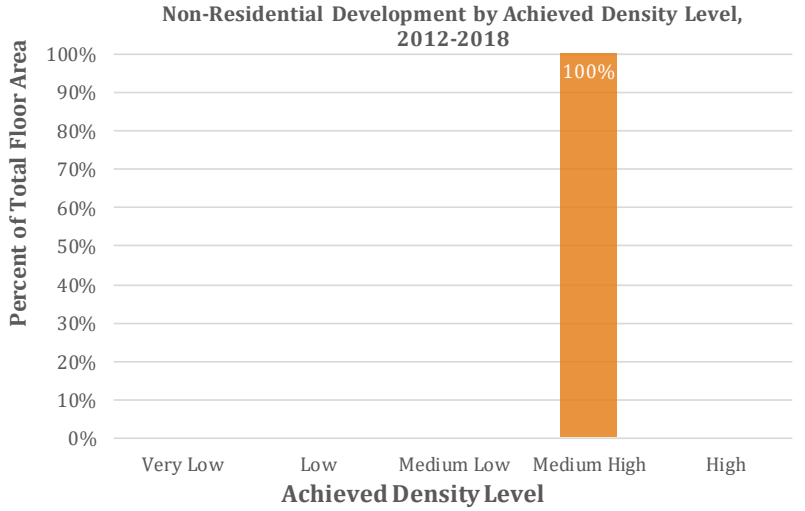
Since 2006, Normandy Park has grown at 516% of the pace needed to achieve its 2035 jobs growth target of 75 units. During this period, the total number of jobs in Normandy Park grew by roughly 21%. Normandy Park has achieved its 2035 jobs growth target.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	3,101	3,873	**1.2**
	Total	**3,101**	**3,873**	**1.2**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	**0.0**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	3,101	3,873	**1.2**
High	0	0	**0.0**
Total	**3,101**	**3,873**	**1.2**



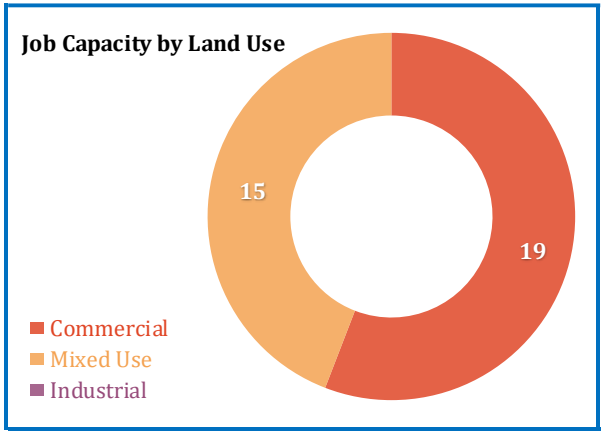


Normandy Park - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	0.5	0.0	0.0	0.0	0.5	11%	0.4
Mixed Use	1.8	0.0	0.1	0.0	1.7	10%	1.6
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**2.3**	**0.0**	**0.1**	**0.0**	**2.2**		**2.0**

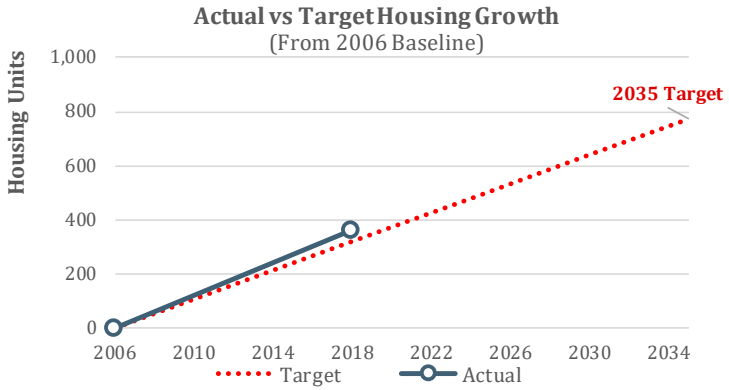
Job Capacity by Assumed Density Level	#	%
Very Low Density	35	100%
Low Density	0	0%
Medium Low Density	0	0%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*0*
Total Capacity (jobs)		**35**
Remaining Target (2018-2035)		0
Surplus/Deficit Capacity (jobs)		**35**

Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.02	0.28	0.00	0.00	250	19
Redevelopable	0.00	0.28	0.00	0.00	250	0
Commercial Total	**0.02**	**0.28**	**0.00**	**0.00**	**250**	**19**
Mixed-Use						
Vacant	0.00	0.15	0.00	0.00	250	0
Redevelopable	0.07	0.15	0.01	0.00	250	15
Mixed Use Total	**0.07**	**0.15**	**0.01**	**0.00**	**250**	**15**
Industrial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
City Total						
Commercial	0.02	0.28	0.69	0.00	250	19
Mixed Use	0.07	0.15	0.91	0.00	250	15
Industrial	0.00	0.00	0.26	0.00	0	0
Job Capacity in Pipeline						*0*
City Total	**0.09**	**0.28**	**1.86**	**0.01**	**0 / 250**	**35**



City of North Bend

Housing Growth and Residential Development Trends



North Bend Housing Growth Target: 2006-2035	771
2006 Estimated Housing Units	3,352
2018 Estimated Housing Units	3,712
Estimated Housing Growth	**361**
Remaining 2035 Target	**411**

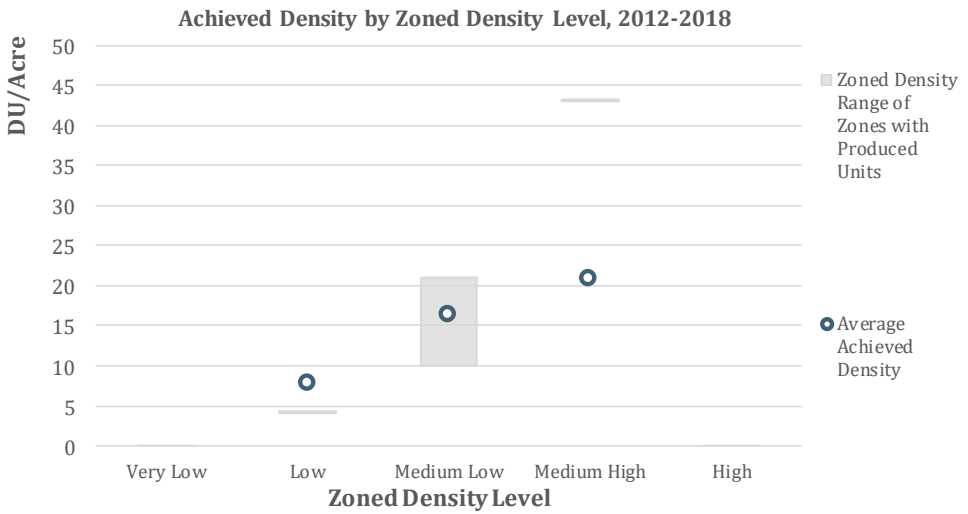
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
113.0%	**0.86%**	**0.62%**

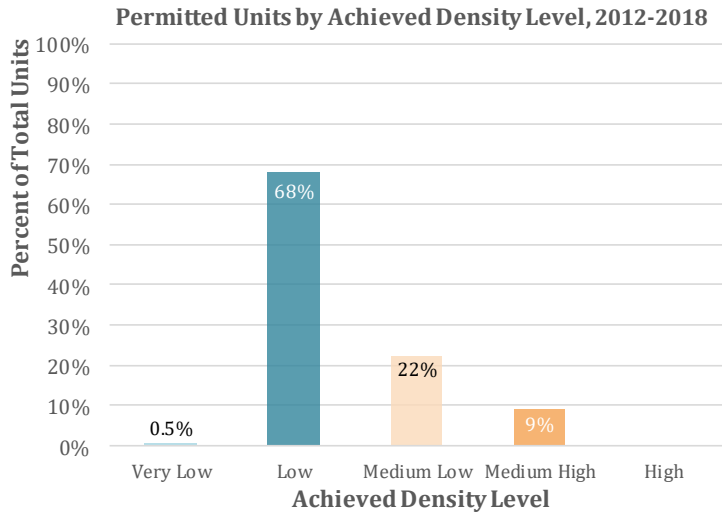
Since 2006, North Bend has grown at 113% of the pace needed to achieve its 2035 housing growth target of 771 units. During this period, the total number of housing units in North Bend grew by roughly 11%. At this current rate, North Bend is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0.6% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	159.3	26.0	23.7	32.9	76.7	592	**7.7**
Medium Low	10 - 24 du/acre	18.5	0.0	3.1	3.5	11.9	194	**16.3**
Medium High	24 - 48 du/acre	4.1	0.0	0.0	0.0	4.1	85	**20.8**
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	**181.9**	**26.0**	**26.8**	**36.4**	**92.7**	**871**	**9.4**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	1.5	4
Low	76.7	592
Medium Low	11.9	194
Medium High	2.6	81
High	0.0	0
Total	**92.7**	**871**

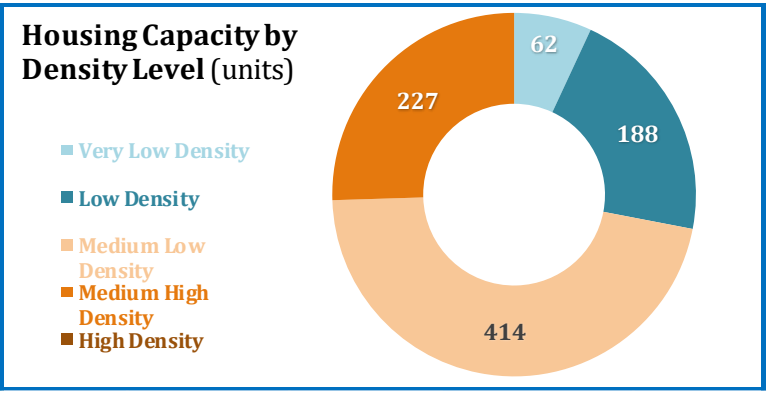




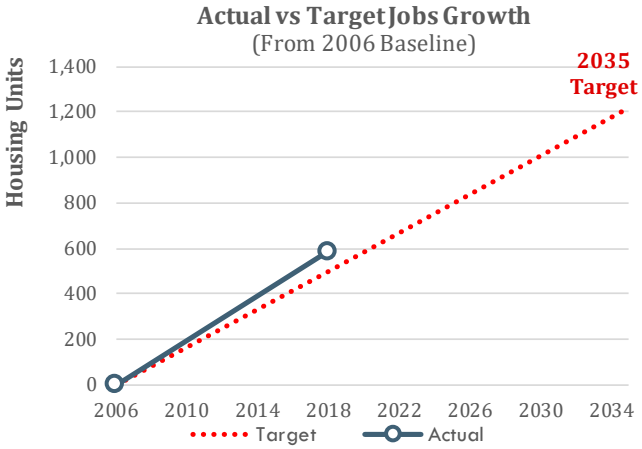
North Bend - Residential Land Supply and Capacity

Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				11.01	10.0% - 30.0%	25.07	2.0	50
	Redev Subtotal				12.23	10.0% - 30.0%	33.94	2.0	12
	Subtotal	69.64	5.56	0.00	23.24		59.01		**62**
Low Density	Vacant Subtotal				1.81	10.0% - 10.0%	5.58	4.0	22
	Redev Subtotal				19.25	10.0% - 10.0%	59.70	4.0	166
	Subtotal	388.92	76.23	175.49	21.06		65.28		**188**
Medium Low Density	Vacant Subtotal				3.37	4.0% - 25.0%	11.63	15.0 / 21.0	186
	Redev Subtotal				4.68	4.0% - 25.0%	15.77	15.0 / 16.0	228
	Subtotal	47.27	12.28	0.00	8.04		27.40		**414**
Medium High Density	Vacant Subtotal				0.70	25.0% - 25.0%	2.60	32.0	83
	Redev Subtotal				1.30	25.0% - 25.0%	4.78	32.0	144
	Subtotal	128.64	53.75	17.58	2.00		7.38		**227**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				16.89		44.88		342
	Redev Total				37.45		114.20		550
	Total	**634.47**	**147.82**	**193.07**	**54.34**		**159.07**		**891**

Capacity (units)	
Very Low Density Zones	62
Low Density Zones	188
Medium Low Density Zones	414
Medium High Density Zones	227
High Density Zones	0
Capacity in Pipeline	*1,207*
Total Capacity (Units)	**2,098**
Remaining Target (2018-2035)	411
Surplus/Deficit Capacity (Units)	**1,687**



North Bend - Employment Growth and Commercial/Industrial Development Trends



North Bend Jobs Growth Target: 2006-2035	1,218
2006 Jobs (PSRC)	2,707
2018 Jobs (PSRC)	3,297
Total Jobs Growth	590
Remaining 2035 Target	628

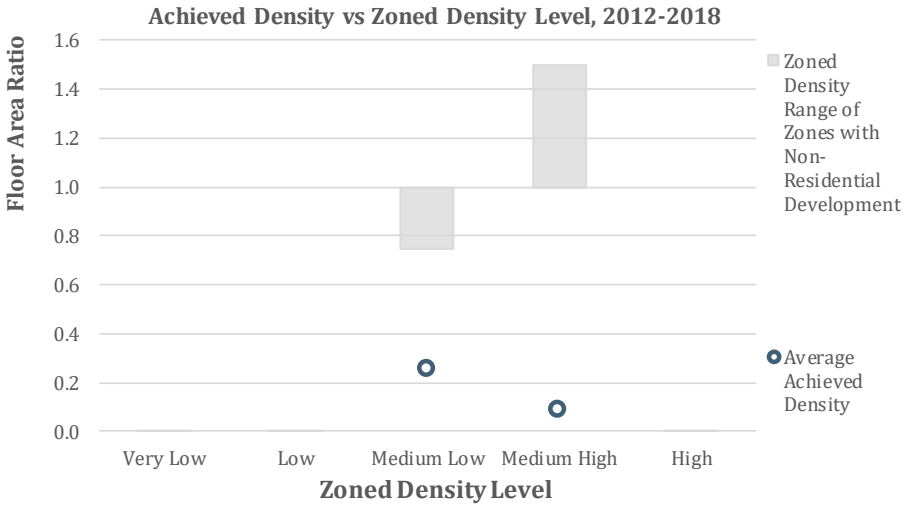
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
117.1%	1.66%	1.03%

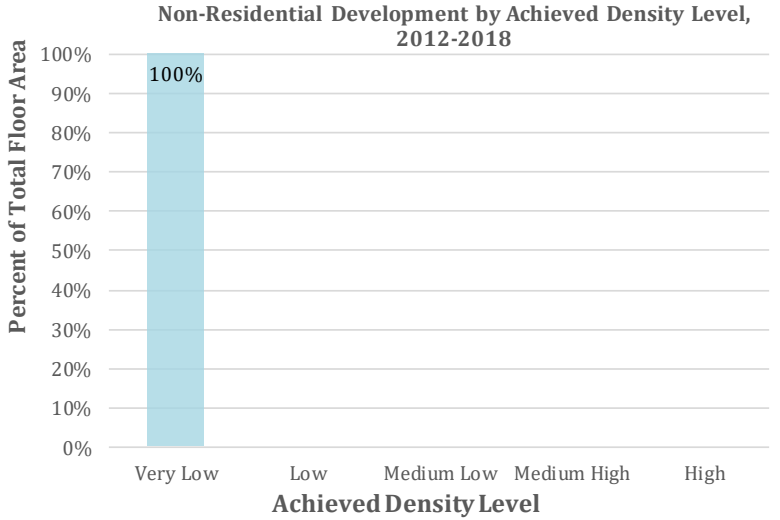
Since 2006, North Bend has grown at 117% of the pace needed to achieve its 2035 jobs growth target of 1,218 units. During this period, the total number of jobs in North Bend grew by roughly 22%. At this current rate, North Bend is over the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 1% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	1,634,066	413,860	0.3
Medium High	1.0 - 3.0 FAR	1,122,230	97,851	0.1
High	3.0 & up FAR	0	0	
	Total	2,756,296	511,711	0.2

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	2,756,296	511,711	0.2
Low	0	0	0.0
Medium Low	0	0	0.0
Medium High	0	0	0.0
High	0	0	0.0
Total	2,756,296	511,711	0.2





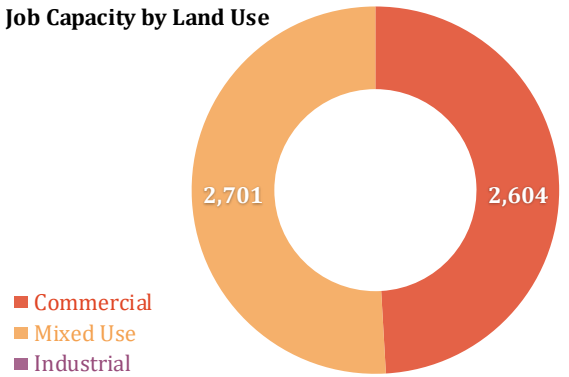
North Bend - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	129.1	89.5	3.2	3.2	33.3	20%	25.4
Mixed Use	59.5	0.0	4.8	4.8	50.0	25%	35.1
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**188.7**	**89.5**	**7.9**	**16.0**	**167.9**		**60.5**

Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial*						
Vacant	2.81	0.30 / 0.75	0.00	0.95	350 / 800	1,815
Redevelopable	0.89	0.30 / 0.75	0.03	0.33	350 / 800	789
Commercial Total	**3.69**	**0.30 / 0.75**	**0.03**	**1.28**	**350 / 800**	**2,604**
Mixed-Use						
Vacant	1.02	0.75 / 1.50	0.01	0.79	300 / 500	1,682
Redevelopable	0.51	0.75 / 1.50	0.02	0.43	300 / 500	1019
Mixed Use Total	**1.53**	**0.75 / 1.50**	**0.03**	**1.22**	**300 / 500**	**2,701**
Industrial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
City Total						
Commercial	3.69	0.30 / 0.75	0.69	1.28	350 / 800	2,604
Mixed Use	1.53	0.75 / 1.50	0.91	1.22	300 / 500	2,701
Industrial	0.00	0.00	0.26	0.00	0	0
Job Capacity in Pipeline						*453*
City Total	**5.22**	**1.50**	**1.86**	**2.51**	**0 / 800**	**5,759**

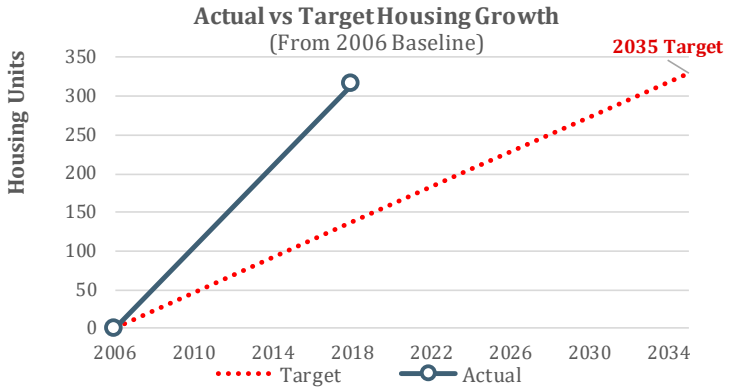
*Certain zones grouped as commercial allow for industrial use.

Job Capacity by Assumed Density Level	#	%
Very Low Density	1,234	23%
Low Density	928	18%
Medium Low Density	2,507	47%
Medium High Density	636	12%
High Density	0	0%
Capacity in Pipeline		*453*
Total Capacity (jobs)		**5,759**
Remaining Target (2018-2035)		628
Surplus/Deficit Capacity (jobs)		**5,131**



City of Pacific

Housing Growth and Residential Development Trends



Pacific Housing Growth Target: 2006-2035	331
2006 Estimated Housing Units	2,146
2018 Estimated Housing Units	2,462
Estimated Housing Growth	**316**
Remaining 2035 Target	15

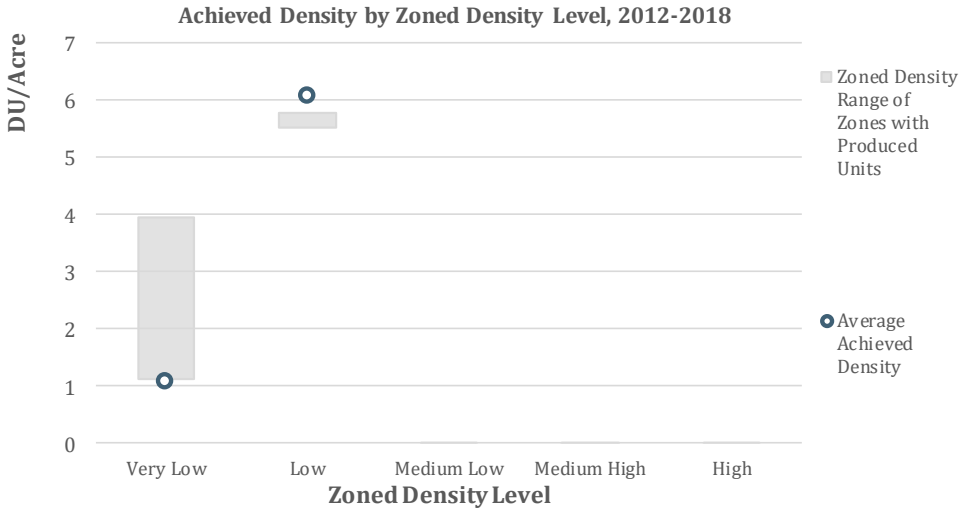
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
230.9%	1.15%	0.04%

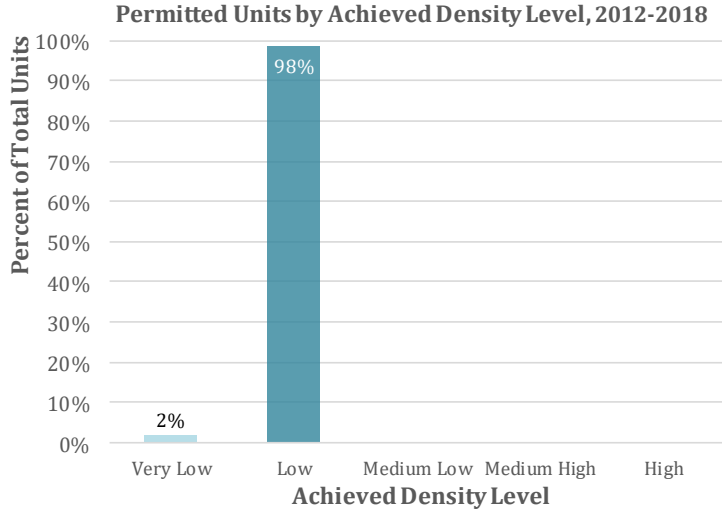
Since 2006, Pacific has grown at 231% of the pace needed to achieve its 2035 housing growth target of 331 units. During this period, the total number of housing units in Pacific grew by roughly 15%. At this current rate, Pacific is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	3.6	1.7	0.0	0.0	1.9	2	**1.1**
Low	4 - 10 du/acre	20.3	0.9	0.0	0.0	19.4	117	**6.0**
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	**23.9**	**2.6**	**0.0**	**0.0**	**21.3**	**119**	**5.6**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	1.9	2
Low	19.4	117
Medium Low	0.0	0
Medium High	0.0	0
High	0.0	0
Total	**21.3**	**119**



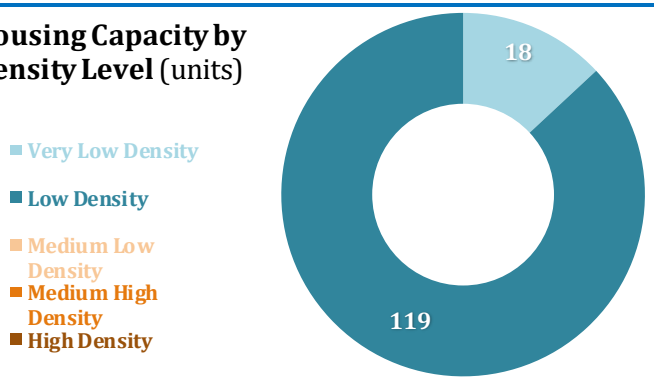


Pacific - Residential Land Supply and Capacity

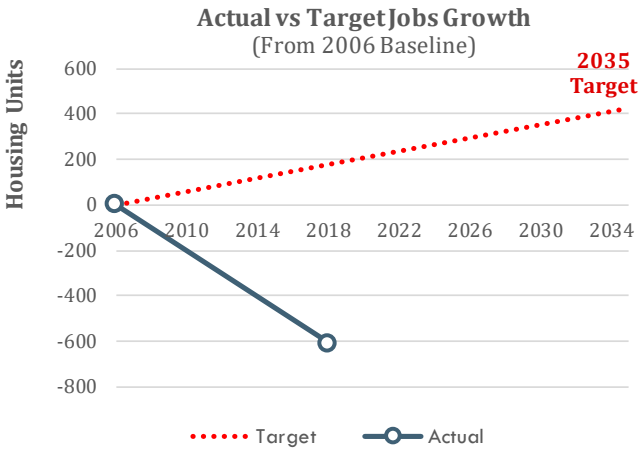
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				4.19	30.0% - 50.0%	10.16	1.1 / 4.0	13
	Redev Subtotal				3.97	30.0% - 50.0%	9.85	1.1 / 4.0	5
	Subtotal	68.75	27.94	0.00	8.16		20.01		**18**
Low Density	Vacant Subtotal				1.70	28.0% - 28.0%	4.43	5.9	26
	Redev Subtotal				11.64	28.0% - 28.0%	30.27	5.9	93
	Subtotal	86.40	19.68	0.00	13.35		34.70		**119**
Medium Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Medium High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				5.90		14.59		40
	Redev Total				15.61		40.12		98
	Total	**155.15**	**47.62**	**0.00**	**21.51**		**54.71**		**137**

Capacity (units)	
Very Low Density Zones	18
Low Density Zones	119
Medium Low Density Zones	0
Medium High Density Zones	0
High Density Zones	0
Capacity in Pipeline	*0*
Total Capacity (Units)	**137**
Remaining Target (2018-2035)	15
Surplus/Deficit Capacity (Units)	**123**

Housing Capacity by Density Level (units)



Pacific - Employment Growth and Commercial/Industrial Development Trends



Pacific Jobs Growth Target: 2006-2035	429
2006 Jobs (PSRC)	1,443
2018 Jobs (PSRC)	834
Total Jobs Growth	**-609**
Remaining 2035 Target	429

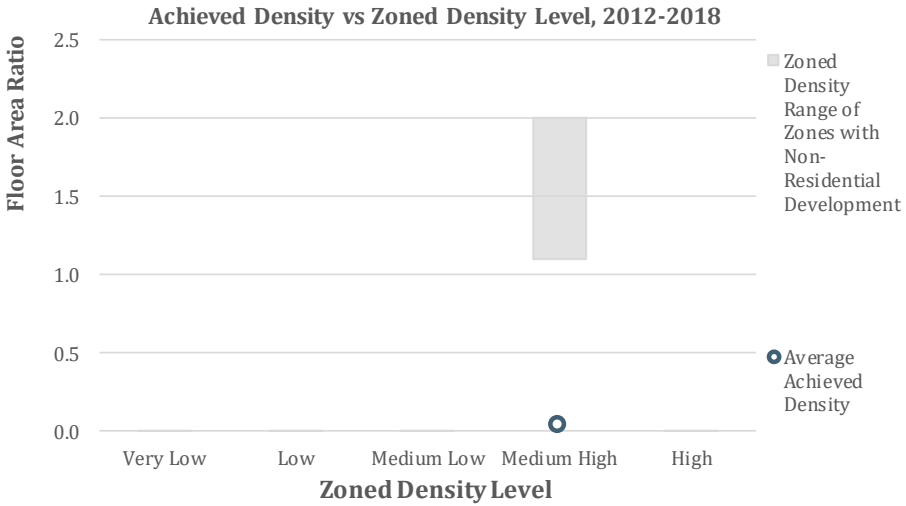
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
-342.9%	**-4.46%**	**4.88%**

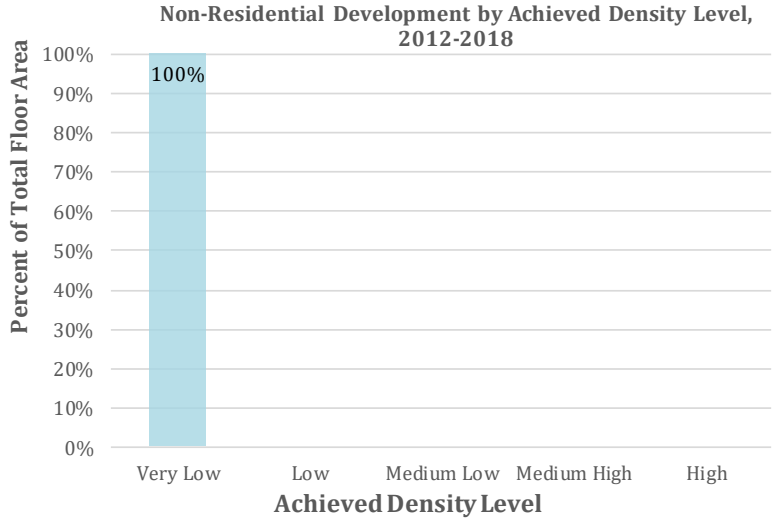
Since 2006, Pacific has grown at -343% of the pace needed to achieve its 2035 jobs growth target of 429 units. During this period, the total number of jobs in Pacific grew by roughly -42%. At this current rate, Pacific is under the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 4.9% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	22,128	756	**0.0**
High	3.0 & up FAR	0	0	
	Total	**22,128**	**756**	**0.0**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	22,128	756	**0.0**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**22,128**	**756**	**0.0**



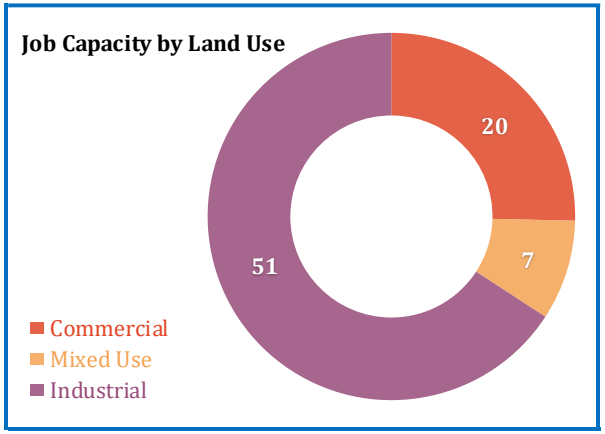


Pacific - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	14.1	11.4	0.3	0.3	2.2	50%	0.8
Mixed Use	3.8	3.0	0.1	0.1	0.6	50%	0.2
Industrial	27.7	8.8	1.9	1.9	15.1	50%	5.7
Non-Res Land Total	**45.6**	**23.2**	**2.2**	**2.2**	**17.9**		**6.7**

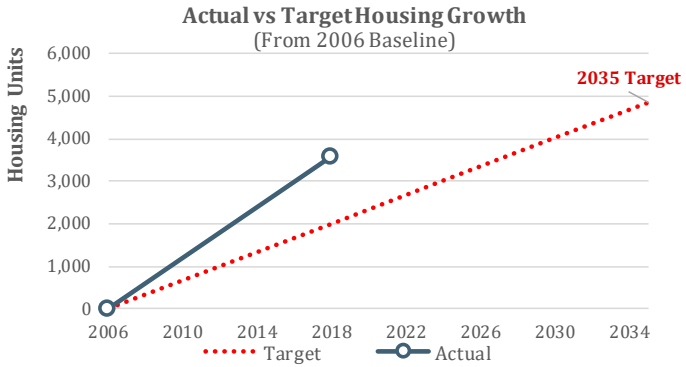
Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.03	0.25	0.00	0.01	450	16
Redevelopable	0.01	0.25	0.00	0.00	450	3
Commercial Total	**0.04**	**0.25**	**0.00**	**0.01**	**450**	**20**
Mixed-Use						
Vacant	0.01	0.30	0.00	0.00	450	4
Redevelopable	0.00	0.30	0.00	0.00	450	2
Mixed Use Total	**0.01**	**0.30**	**0.00**	**0.00**	**450**	**7**
Industrial						
Vacant	0.08	0.26	0.00	0.02	1,200	18
Redevelopable	0.17	0.26	0.00	0.04	1,200	33
Industrial Total	**0.25**	**0.26**	**0.00**	**0.06**	**1,200**	**51**
City Total						
Commercial	0.04	0.25	0.69	0.01	450	20
Mixed Use	0.01	0.30	0.91	0.00	450	7
Industrial	0.25	0.26	0.26	0.06	1,200	51
Job Capacity in Pipeline						*0*
City Total	**0.29**	**0.25 / 0.30**	**1.86**	**0.07**	**450 / 1200**	**77**

Job Capacity by Assumed Density Level	#	%
Very Low Density	77	100%
Low Density	0	0%
Medium Low Density	0	0%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*0*
Total Capacity (jobs)		**77**
Remaining Target (2018-2035)		1,038
Surplus/Deficit Capacity (jobs)		**-961**



City of Sammamish

Housing Growth and Residential Development Trends



Sammamish Housing Growth Target: 2006-2035	4,849
2006 Estimated Housing Units	18,196
2018 Estimated Housing Units	21,780
Estimated Housing Growth	**3,585**
Remaining 2035 Target	**1,264**

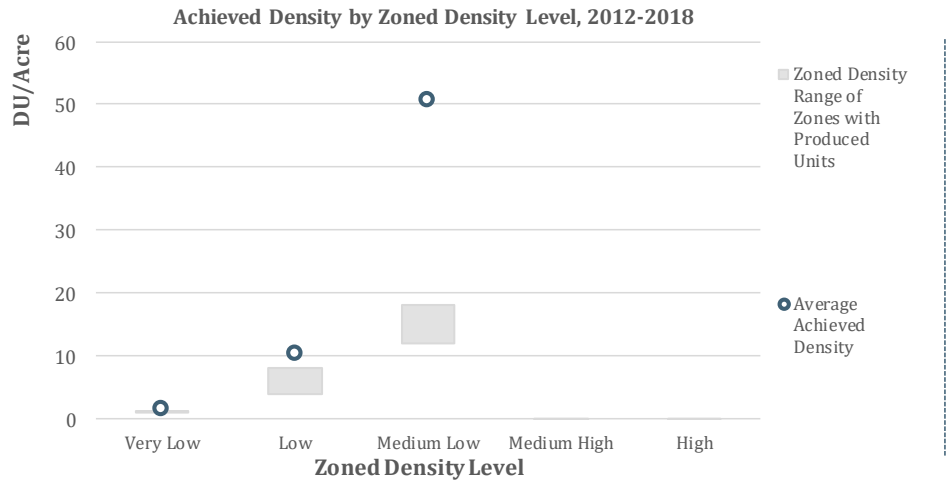
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
178.7%	**1.51%**	**0.33%**

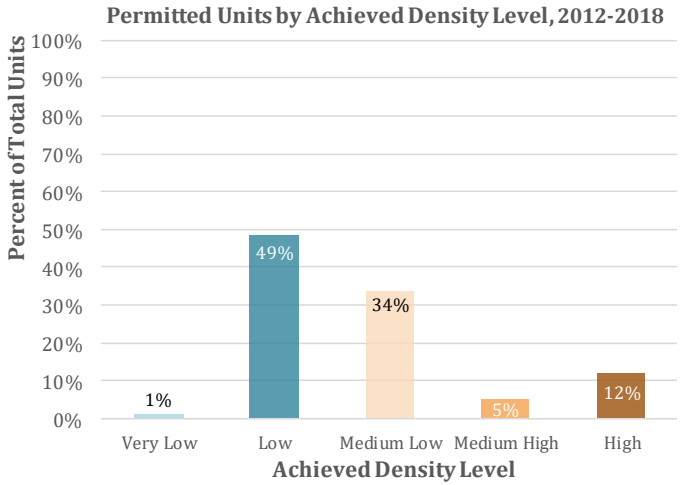
Since 2006, Sammamish has grown at 179% of the pace needed to achieve its 2035 housing growth target of 4,849 units. During this period, the total number of housing units in Sammamish grew by roughly 20%. At this current rate, Sammamish is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0.3% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	25.1	6.5	3.4	0.0	15.1	21	**1.4**
Low	4 - 10 du/acre	338.5	14.1	162.3	16.9	145.2	1,498	**10.3**
Medium Low	10 - 24 du/acre	10.2	0.6	2.3	0.2	7.2	364	**50.7**
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	**373.8**	**21.2**	**167.9**	**17.1**	**167.5**	**1,883**	**11.2**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	15.1	21
Low	108.0	917
Medium Low	40.1	631
Medium High	2.2	92
High	2.1	222
Total	**167.5**	**1,883**



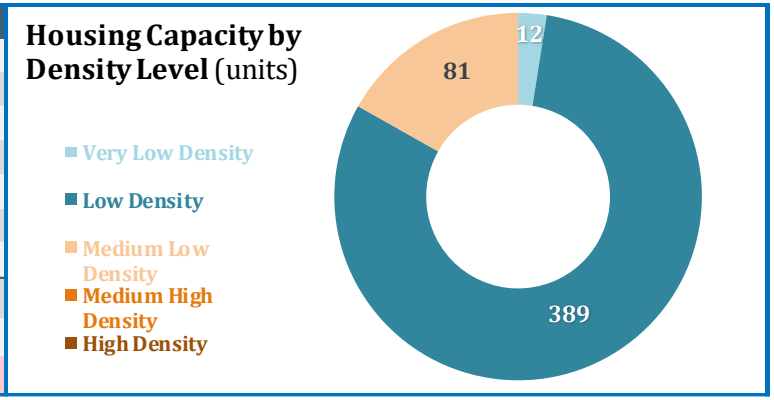


Note: Sammamish includes right-of-way or public purpose areas in the gross site area to calculate the net buildable area. While this report shows achieved density varying from planned density, if you adjust the approach to use Sammamish's formula for net buildable area, the densities are more comparable.

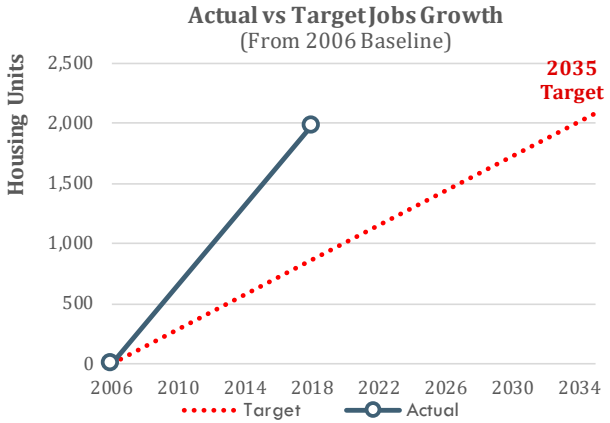
Sammamish - Residential Land Supply and Capacity

Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				4.26	10.0% - 10.0%	7.01	1.0	7
	Redev Subtotal				4.88	10.0% - 10.0%	8.04	1.0	5
	Subtotal	2,128.94	852.74	166.21	9.14		15.05		**12**
Low Density	Vacant Subtotal				16.27	10.0% - 50.0%	26.79	4.0 / 8.0	122
	Redev Subtotal				60.53	10.0% - 50.0%	99.70	4.0 / 8.0	268
	Subtotal	7,729.35	2,223.54	282.52	76.80		126.49		**389**
Medium Low Density	Vacant Subtotal				0.00	50.0% - 50.0%	0.00	12.0 / 16.0	0
	Redev Subtotal				38.38	50.0% - 50.0%	18.06	12.0 / 18.0	81
	Subtotal	339.26	77.64	63.83	38.38		18.06		**81**
Medium High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				20.52		33.80		129
	Redev Total				103.79		125.80		354
	Total	**10,197.55**	**3,153.91**	**512.57**	**124.32**		**159.60**		**483**

Capacity (units)	
Very Low Density Zones	12
Low Density Zones	389
Medium Low Density Zones	81
Medium High Density Zones	0
High Density Zones	0
Capacity in Pipeline	*661*
Total Capacity (Units)	**1,144**
Remaining Target (2018-2035)	1,264
Surplus/Deficit Capacity (Units)	**-120**



Sammamish - Employment Growth and Commercial/Industrial Development Trends



Sammamish Jobs Growth Target: 2006-2035	2,088
2006 Jobs (PSRC)	6,199
2018 Jobs (PSRC)	8,186
Total Jobs Growth	**1,987**
Remaining 2035 Target	101

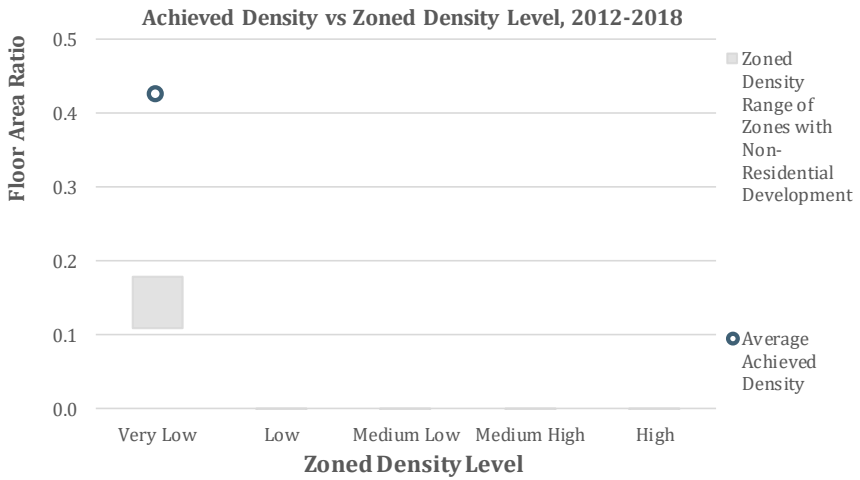
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
230.0%	**2.34%**	**0.07%**

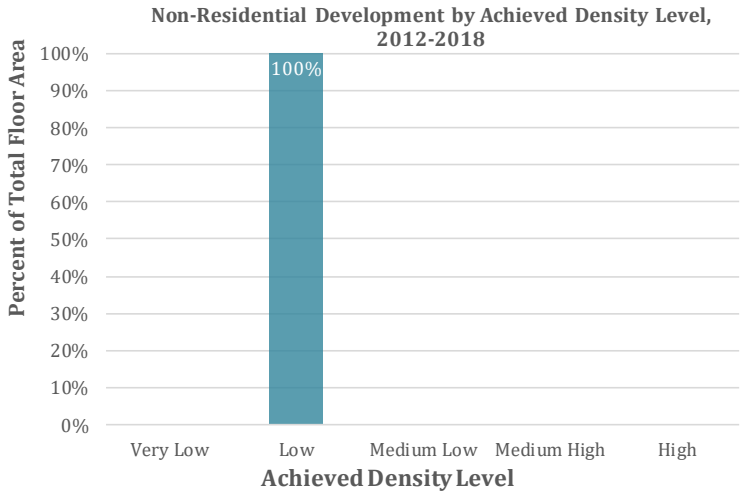
Since 2006, Sammamish has grown at 230% of the pace needed to achieve its 2035 jobs growth target of 2,088 units. During this period, the total number of jobs in Sammamish grew by roughly 32%. At this current rate, Sammamish is over the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 0.1% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	377,774	160,700	**0.4**
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	0	0	
	Total	**377,774**	**160,700**	**0.4**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	**0.0**
Low	377,774	160,700	**0.4**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**377,774**	**160,700**	**0.4**





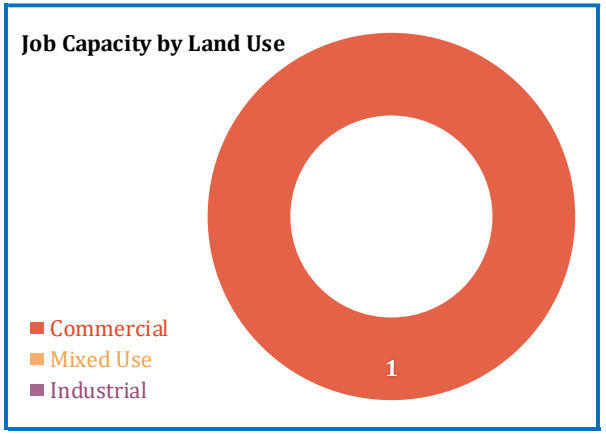
Note: Between 2012-2018, three mixed-use projects were completed in Town Center, some of which included parcels in multiple zones. Densities for all of these projects were guided by a Unified Zone Development Plan which established the level and intensity of new commercial and residential development within the city's Town Center.

Sammamish - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	18.5	13.7	0.9	0.8	3.2	50%	0.8
Mixed Use	12.7	12.7	0.0	0.0	0.0	50%	0.0
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**31.2**	**26.4**	**0.9**	**0.8**	**3.2**		**0.8**

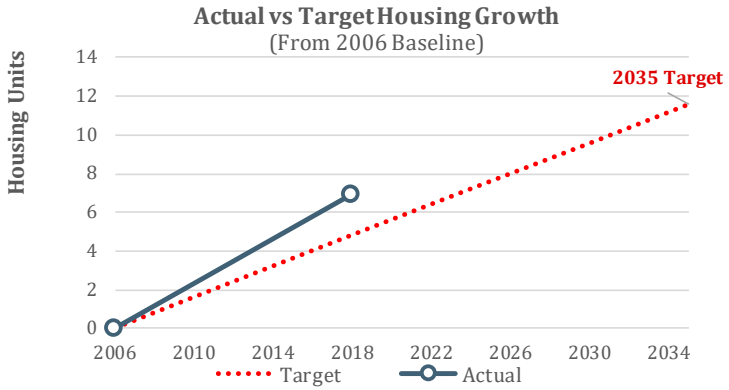
Job Capacity by Assumed Density Level	#	%
Very Low Density	0	0%
Low Density	0	0%
Medium Low Density	1	100%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*304*
Total Capacity (jobs)		**305**
Remaining Target (2018-2035)		101
Surplus/Deficit Capacity (jobs)		**204**

Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.03	0.50	0.03	0.00	370	1
Commercial Total	**0.03**	**0.50**	**0.03**	**0.00**	**370**	**1**
Mixed-Use						
Vacant	0.00	0.11 / 0.23	0.00	0.00	0 / 370	0
Redevelopable	0.00	0.18 / 0.23	0.00	0.00	0 / 370	0
Mixed Use Total	**0.00**	**0.11 / 8.00**	**0.00**	**0.00**	**0 / 370**	**0**
Industrial						
Vacant	0.00	0.00	0.00	0.00	0	0
Redevelopable	0.00	0.00	0.00	0.00	0	0
Industrial Total	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**
City Total						
Commercial	0.03	0.50	0.69	0.00	370	1
Mixed Use	0.00	0.11 / 8.00	0.91	0.00	0 / 370	0
Industrial	0.00	0.00	0.26	0.00	0	0
Job Capacity in Pipeline						*304*
City Total	**0.03**	**8.00**	**1.86**	**0.00**	**0 / 370**	**305**



Town of Skykomish

Housing Growth and Residential Development Trends



Skykomish Housing Growth Target: 2006-2035	12
2006 Estimated Housing Units	166
2018 Estimated Housing Units	173
Estimated Housing Growth	**7**
Remaining 2035 Target	5

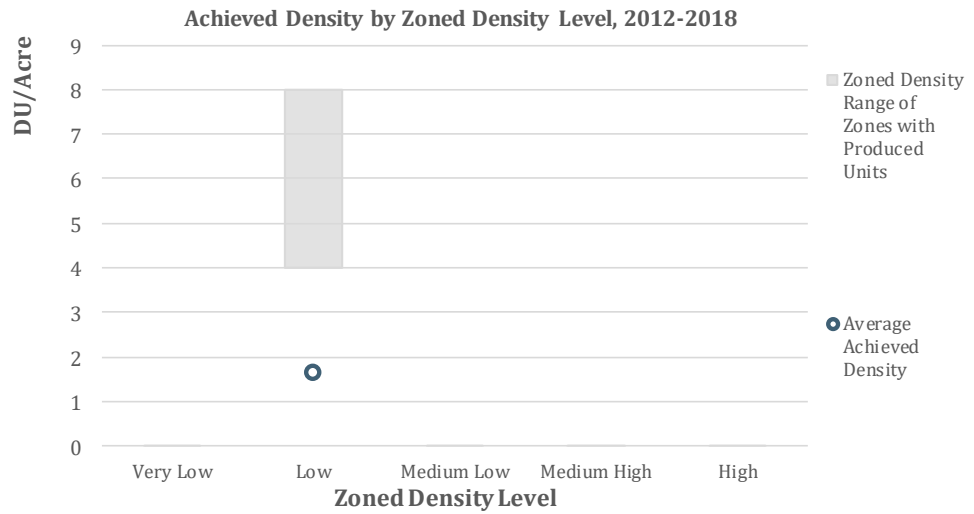
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
144.1%	0.34%	0.16%

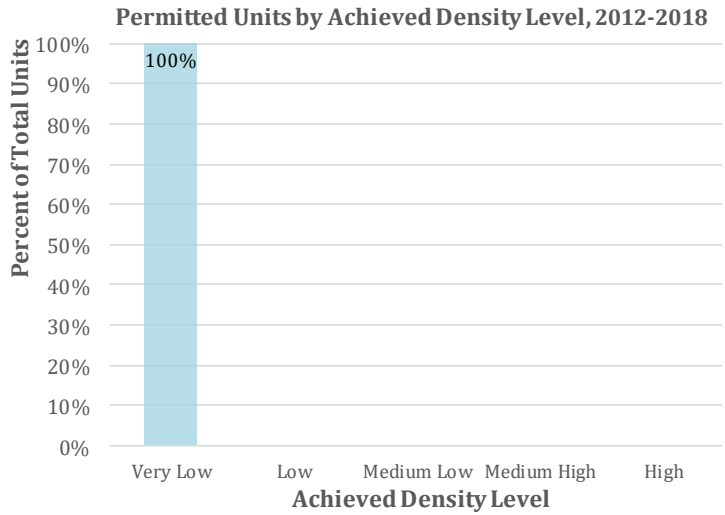
Since 2006, Skykomish has grown at 144% of the pace needed to achieve its 2035 housing growth target of 12 units. During this period, the total number of housing units in Skykomish grew by roughly 4%. At this current rate, Skykomish is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 0.2% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	1.2	0.0	0.0	0.0	1.2	2	1.6
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	1.2	0.0	0.0	0.0	1.2	2	1.6

Achieved Density Level	Net Area (acres)	Total Units
Very Low	1.2	2
Low	0.0	0
Medium Low	0.0	0
Medium High	0.0	0
High	0.0	0
Total	1.2	2

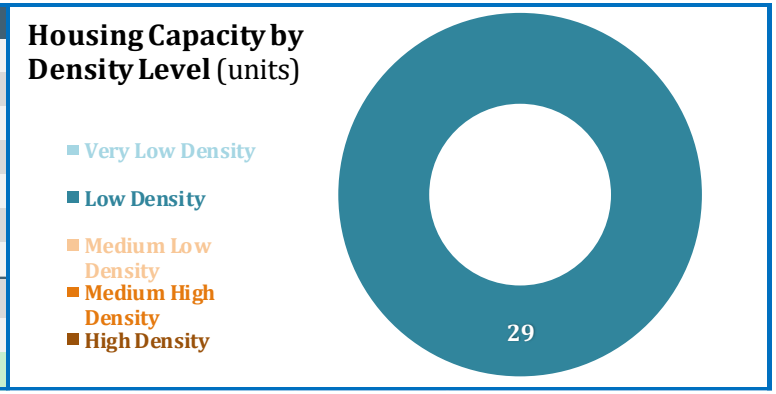




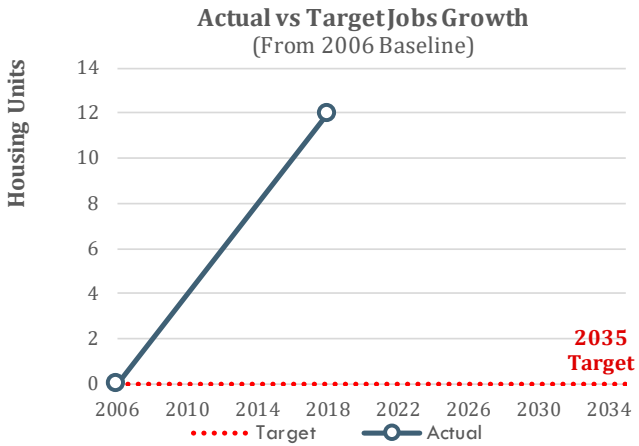
Skykomish - Residential Land Supply and Capacity

Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Low Density	Vacant Subtotal				1.25	41.0% - 41.0%	6.14	4.0 / 8.0	29
	Redev Subtotal				0.00	41.0% - 41.0%	0.00	4.0 / 8.0	0
	Subtotal	118.13	105.41	0.19	1.25		6.14		**29**
Medium Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Medium High Density	Vacant Subtotal				0.00	36.0% - 40.0%	0.00	24.0	0
	Redev Subtotal				0.00	36.0% - 40.0%	0.00	24.0	0
	Subtotal	5.90	5.90	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				1.25		6.14		29
	Redev Total				0.00		0.00		0
	Total	**124.03**	**111.31**	**0.19**	**1.25**		**6.14**		**29**

Capacity (units)	
Very Low Density Zones	0
Low Density Zones	29
Medium Low Density Zones	0
Medium High Density Zones	0
High Density Zones	0
Capacity in Pipeline	*0*
Total Capacity (Units)	**29**
Remaining Target (2018-2035)	5
Surplus/Deficit Capacity (Units)	**25**



Skykomish - Employment Growth and Commercial/Industrial Development Trends



Skykomish Jobs Growth Target: 2006-2035	0
2006 Jobs (PSRC)	64
2018 Jobs (PSRC)	76
Total Jobs Growth	**12**
Remaining 2035 Target	Not Applicable

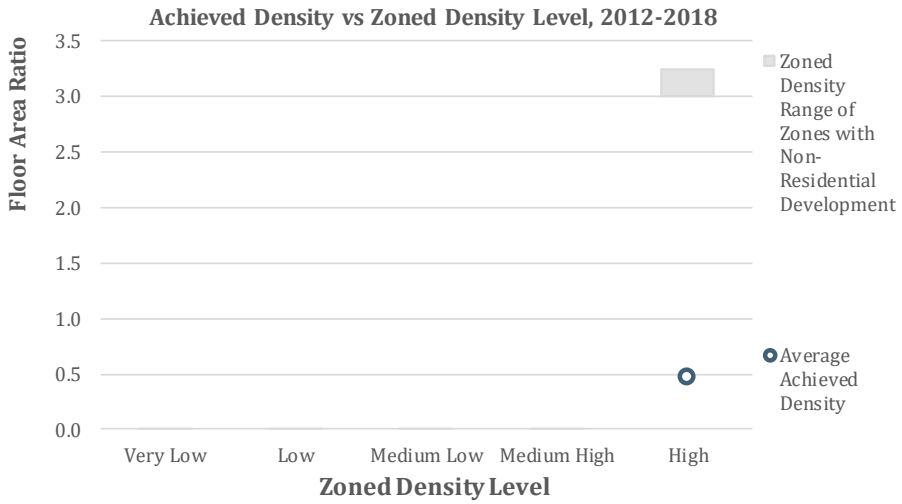
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
Not Applicable	1.44%	Not Applicable

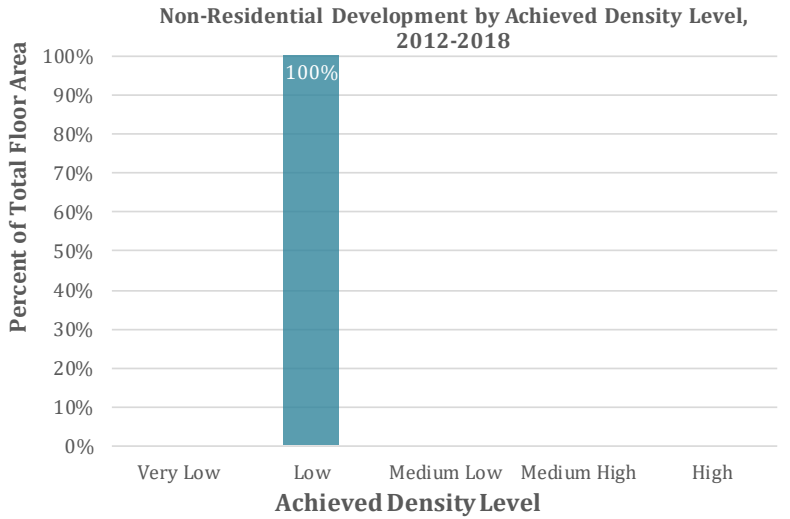
Since 2006, the total number of jobs in Skykomish grew by roughly 1.4%. There is no 2035 jobs growth target.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	5,227	2,450	**0.5**
	Total	**5,227**	**2,450**	**0.5**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	**0.0**
Low	5,227	2,450	**0.5**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**5,227**	**2,450**	**0.5**



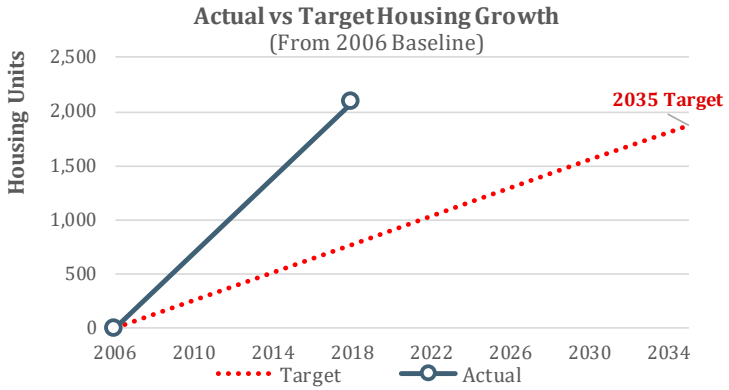


Skykomish - Commercial/Industrial Land Supply and Job Capacity

(no job capacity in Skykomish)

City of Snoqualmie

Housing Growth and Residential Development Trends



Snoqualmie Housing Growth Target: 2006-2035	1,873
2006 Estimated Housing Units	2,864
2018 Estimated Housing Units	4,951
Estimated Housing Growth	**2,087**
Remaining 2035 Target	0

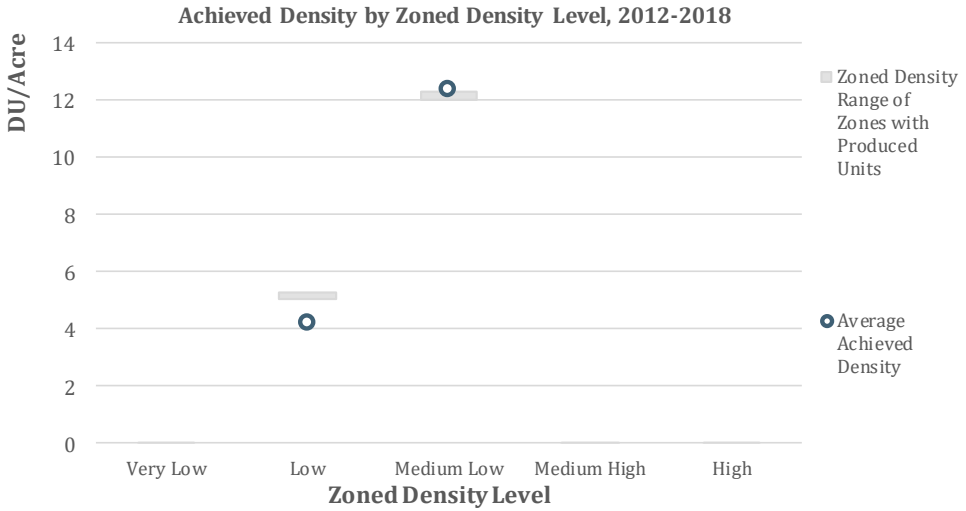
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
269.2%	4.67%	Met Target

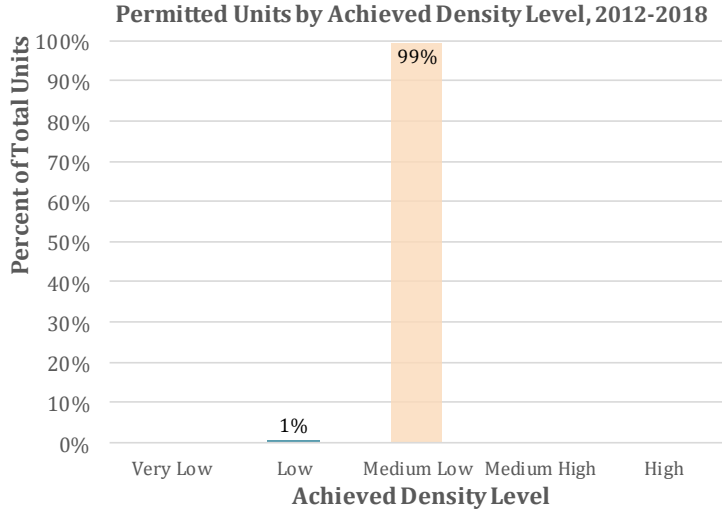
Since 2006, Snoqualmie has grown at 269% of the pace needed to achieve its 2035 housing growth target of 1,873 units. During this period, the total number of housing units in Snoqualmie grew by roughly 73%. Snoqualmie has achieved its 2035 housing growth target.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Low	4 - 10 du/acre	1.0	0.0	0.0	0.0	1.0	4	4.1
Medium Low	10 - 24 du/acre	52.0	0.0	0.0	0.0	52.0	640	12.3
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	52.9	0.0	0.0	0.0	52.9	644	12.2

Achieved Density Level	Net Area (acres)	Total Units
Very Low	0.0	0
Low	1.0	4
Medium Low	52.0	640
Medium High	0.0	0
High	0.0	0
Total	52.9	644

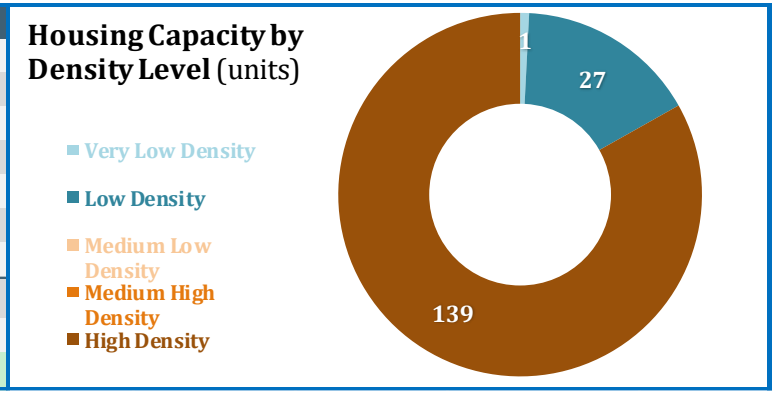




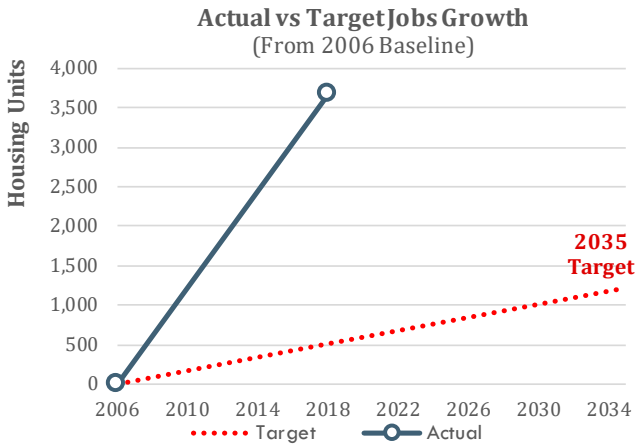
Snoqualmie - Residential Land Supply and Capacity

Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				4.45	75.0% - 75.0%	6.67	0.2	1
	Redev Subtotal				0.03	75.0% - 75.0%	0.04	0.2	0
	Subtotal	79.30	34.58	0.00	4.47		6.71		**1**
Low Density	Vacant Subtotal				0.06	35.0% - 35.0%	0.31	4.2	1
	Redev Subtotal				1.17	35.0% - 35.0%	6.41	4.2	26
	Subtotal	12.63	11.01	0.00	1.22		6.72		**27**
Medium Low Density	Vacant Subtotal				0.00	1.0% - 1.0%	0.00	12.0 / 12.3	0
	Redev Subtotal				0.00	1.0% - 1.0%	0.00	12.0 / 12.3	0
	Subtotal	33.00	23.00	0.00	0.00		0.00		**0**
Medium High Density	Vacant Subtotal				0.00	1.0% - 1.0%	0.00	25.0	0
	Redev Subtotal				0.00	1.0% - 1.0%	0.00	25.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.20	5.0% - 5.0%	1.07	130.0	139
	Redev Subtotal				0.00	5.0% - 5.0%	0.00	130.0	0
	Subtotal	1.34	0.00	0.00	0.20		1.07		**139**
All Zones	Vacant Total				4.70		8.05		142
	Redev Total				1.19		6.45		26
	Total	**126.27**	**68.59**	**0.00**	**5.90**		**14.50**		**168**

Capacity (units)	
Very Low Density Zones	1
Low Density Zones	27
Medium Low Density Zones	0
Medium High Density Zones	0
High Density Zones	139
Capacity in Pipeline	*204*
Total Capacity (Units)	**372**
Remaining Target (2018-2035)	0
Surplus/Deficit Capacity (Units)	**372**



Snoqualmie - Employment Growth and Commercial/Industrial Development Trends



Snoqualmie Jobs Growth Target: 2006-2035	1,218
2006 Jobs (PSRC)	2,004
2018 Jobs (PSRC)	5,688
Total Jobs Growth	**3,684**
Remaining 2035 Target	0

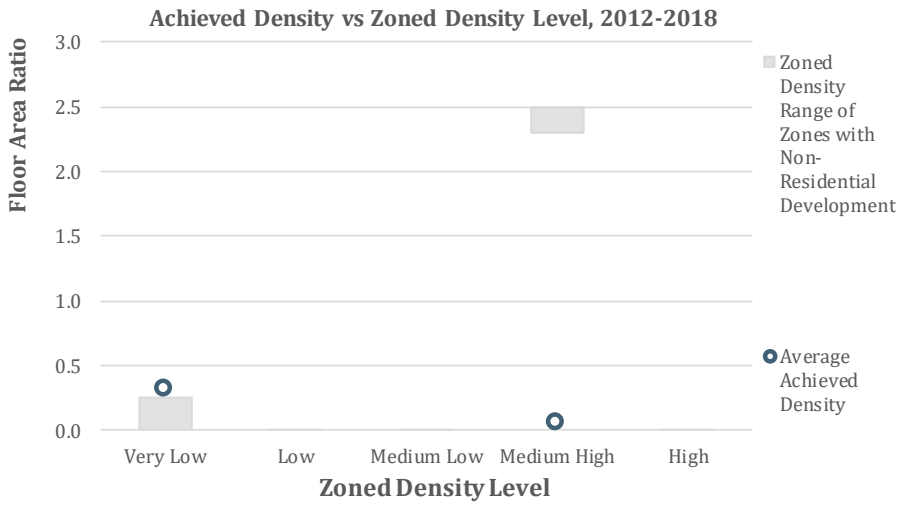
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
731.0%	**9.12%**	**Met Target**

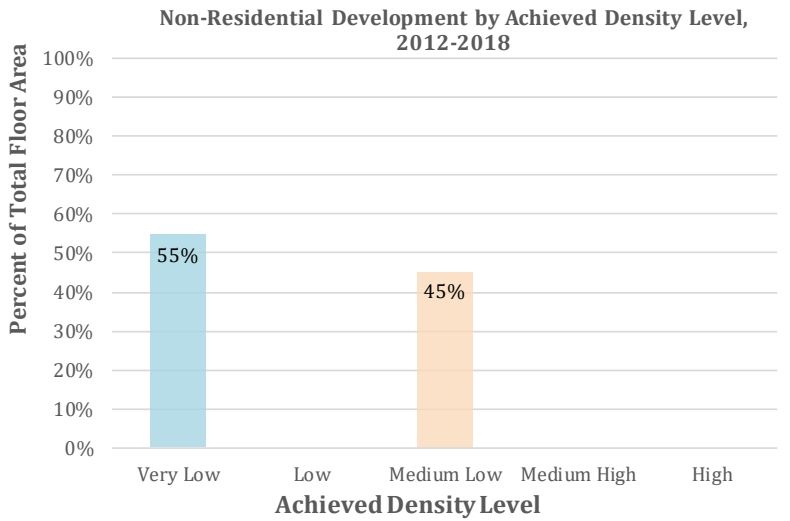
Since 2006, Snoqualmie has grown at 731% of the pace needed to achieve its 2035 jobs growth target of 1,218 units. During this period, the total number of jobs in Snoqualmie grew by roughly 184%. Snoqualmie has achieved its 2035 jobs growth target.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	3,819,208	1,239,861	**0.3**
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	736,164	39,699	**0.1**
High	3.0 & up FAR	0	0	
	Total	**4,555,372**	**1,279,560**	**0.3**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	3,396,241	698,916	**0.2**
Low	0	0	**0.0**
Medium Low	1,159,131	580,644	**0.5**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**4,555,372**	**1,279,560**	**0.3**





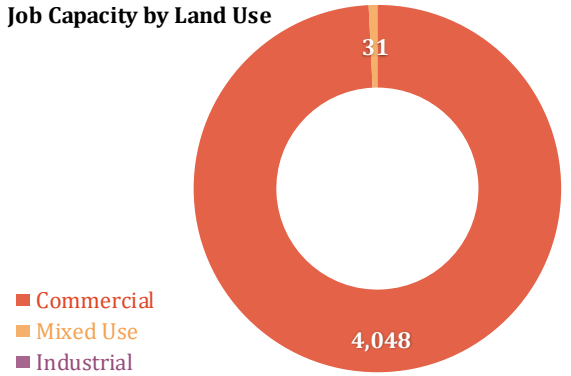
Snoqualmie - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	42.9	18.7	1.2	2.4	20.6	15% - 45%	11.1
Mixed Use	1.3	0.0	0.1	0.1	1.1	1% - 5%	1.1
Industrial	0.0	0.0	0.0	0.0	0.0	0%	0.0
Non-Res Land Total	**44.2**	**18.7**	**1.3**	**3.2**	**26.9**		**12.2**

Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial*						
Vacant	0.45	0.25 / 0.40	0.00	0.16	300 / 490	3,978
Redevelopable	0.16	0.25 / 0.40	0.01	0.03	300 / 490	70
Commercial Total	**0.60**	**0.25 / 0.40**	**0.01**	**0.20**	**300 / 490**	**4,048**
Mixed-Use						
Vacant	0.05	0.25	0.00	0.01	300 / 400	31
Redevelopable	0.00	0.25	0.00	0.00	300 / 400	0
Mixed Use Total	**0.05**	**0.25**	**0.00**	**0.01**	**300 / 400**	**31**
Industrial						
Vacant	0.00	0.00	0.00	0.00	800	0
Redevelopable	0.00	0.00	0.00	0.00	800	0
Industrial Total	**0.00**	**0.00**	**0.00**	**0.00**	**800**	**0**
City Total						
Commercial	0.60	0.25 / 0.40	0.69	0.20	300 / 490	4,048
Mixed Use	0.05	0.25	0.91	0.01	300 / 400	31
Industrial	0.00	0.00	0.26	0.00	800	0
Job Capacity in Pipeline						*0*
City Total	**0.65**	**0.40**	**1.86**	**0.21**	**300 / 800**	**4,079**

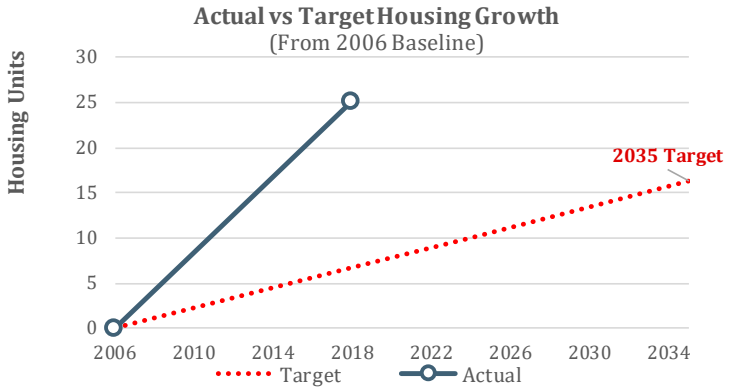
*Certain zones grouped as commercial allow for industrial use.

Job Capacity by Assumed Density Level	#	%
Very Low Density	3,633	89%
Low Density	446	11%
Medium Low Density	0	0%
Medium High Density	0	0%
High Density	0	0%
Capacity in Pipeline		*0*
Total Capacity (jobs)		**4,079**
Remaining Target (2018-2035)		0
Surplus/Deficit Capacity (jobs)		**4,079**



Town of Yarrow Point

Housing Growth and Residential Development Trends



Yarrow Point Housing Growth Target: 2006-2035	16
2006 Estimated Housing Units	401
2018 Estimated Housing Units	426
Estimated Housing Growth	**25**
Remaining 2035 Target	0

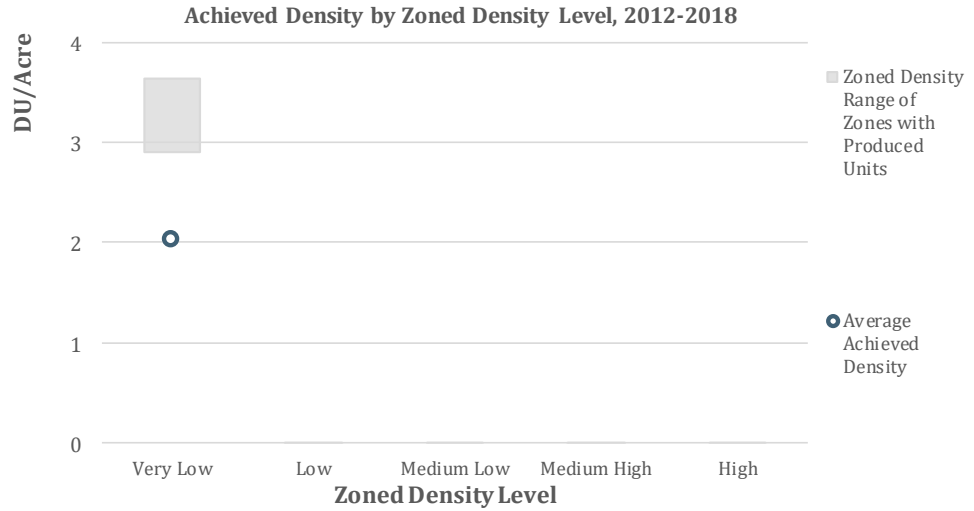
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
374.6%	0.51%	Met Target

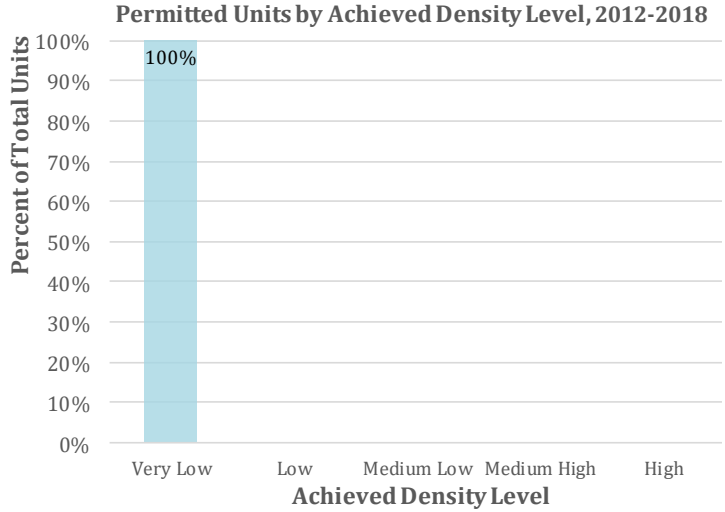
Since 2006, Yarrow Point has grown at 375% of the pace needed to achieve its 2035 housing growth target of 16 units. During this period, the total number of housing units in Yarrow Point grew by roughly 6%. Yarrow Point has achieved its 2035 housing growth target.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	1.0	0.0	0.0	0.0	1.0	2	2.0
Low	4 - 10 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium Low	10 - 24 du/acre	0.0	0.0	0.0	0.0	0.0	0	
Medium High	24 - 48 du/acre	0.0	0.0	0.0	0.0	0.0	0	
High	48 & up du/acre	0.0	0.0	0.0	0.0	0.0	0	
	Total	1.0	0.0	0.0	0.0	1.0	2	2.0

Achieved Density Level	Net Area (acres)	Total Units
Very Low	1.0	2
Low	0.0	0
Medium Low	0.0	0
Medium High	0.0	0
High	0.0	0
Total	1.0	2



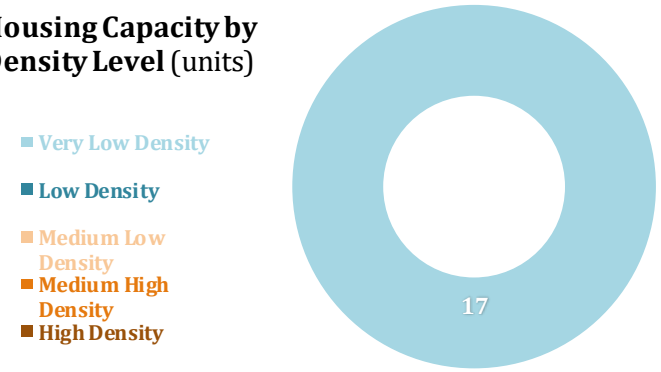


Yarrow Point - Residential Land Supply and Capacity

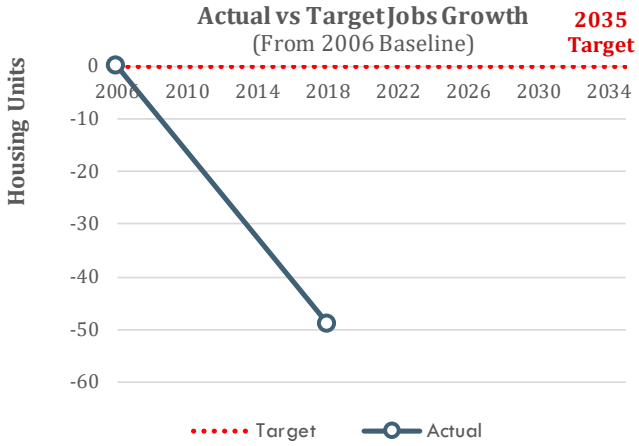
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	1.93	2.0 / 3.6	5
	Redev Subtotal				0.00	0.0% - 0.0%	8.67	2.0 / 3.6	12
	Subtotal	26.79	9.44	0.39	0.00		10.60		**17**
Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Medium Low Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
Medium High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
High Density	Vacant Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Redev Subtotal				0.00	0.0% - 0.0%	0.00	0.0	0
	Subtotal	0.00	0.00	0.00	0.00		0.00		**0**
All Zones	Vacant Total				0.00		1.93		5
	Redev Total				0.00		8.67		12
	Total	**26.79**	**9.44**	**0.39**	**0.00**		**10.60**		**17**

Capacity (units)	
Very Low Density Zones	17
Low Density Zones	0
Medium Low Density Zones	0
Medium High Density Zones	0
High Density Zones	0
Capacity in Pipeline	*0*
Total Capacity (Units)	**17**
Remaining Target (2018-2035)	0
Surplus/Deficit Capacity (Units)	**17**

Housing Capacity by Density Level (units)



Yarrow Point - Employment Growth and Commercial/Industrial Development Trends



Yarrow Point Jobs Growth Target: 2006-2035	0
2006 Jobs (PSRC)	109
2018 Jobs (PSRC)	60
Total Jobs Growth	**-49**
Remaining 2035 Target	**Not Applicable**

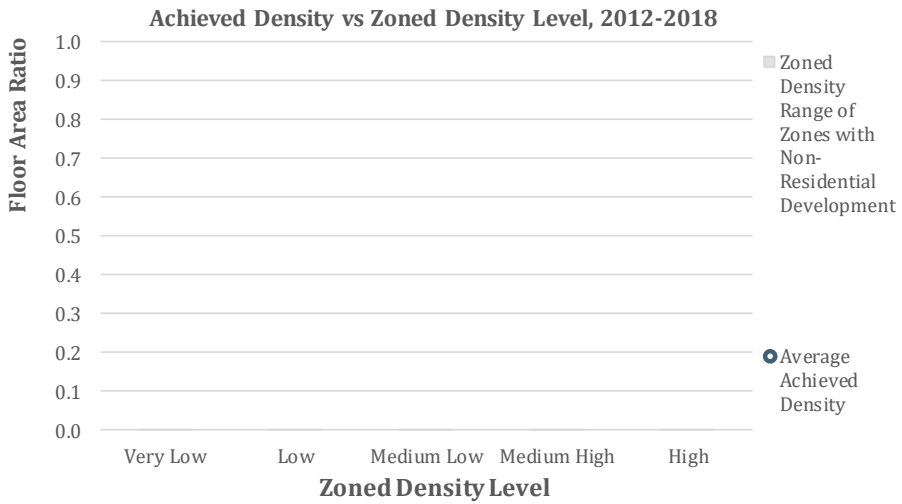
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
Not Applicable	**-4.85%**	**Not Applicable**

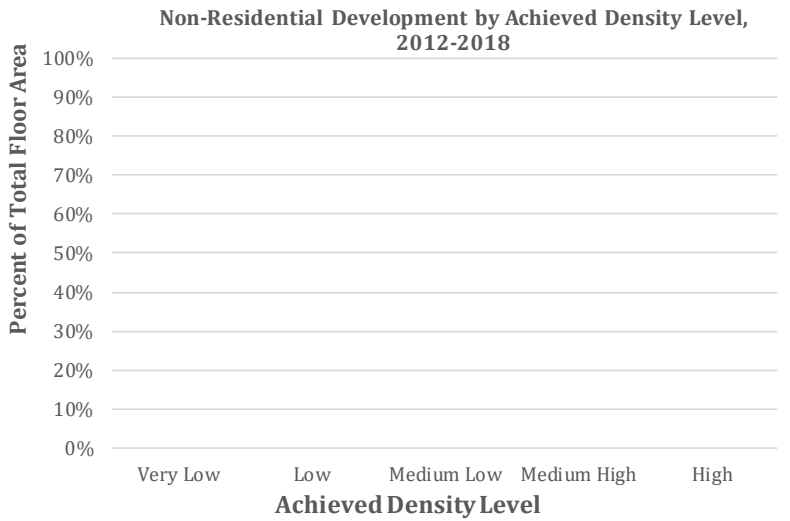
Since 2006, the total number of jobs in Yarrow Point grew by roughly -5%. There is no 2035 jobs growth target.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	0	0	
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	0	0	
High	3.0 & up FAR	0	0	
	Total	**0**	**0**	

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0	0	**0.0**
Low	0	0	**0.0**
Medium Low	0	0	**0.0**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**0**	**0**	**0.0**





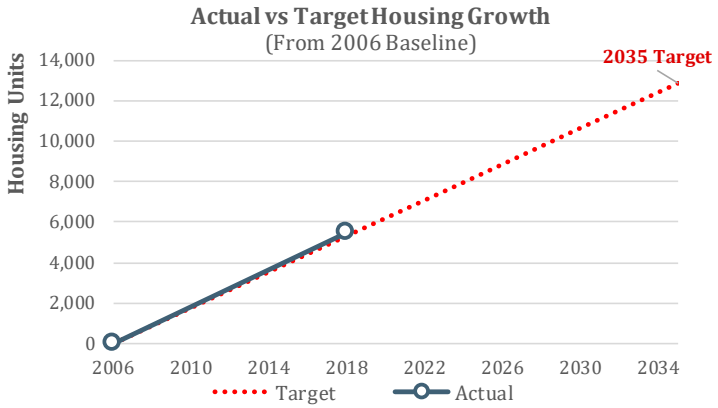
Yarrow Point - Commercial/Industrial Land Supply and Job Capacity

(no job capacity in Yarrow Point)

Urban Unincorporated Areas

Urban Unincorporated King County

Housing Growth and Residential Development Trends



Unincorporated King County Housing Growth Target: 2006-2035	12,837
2006 Estimated Housing Units	35,910
2018 Estimated Housing Units	41,408
Estimated Housing Growth	**5,498**
Remaining 2035 Target	7,339

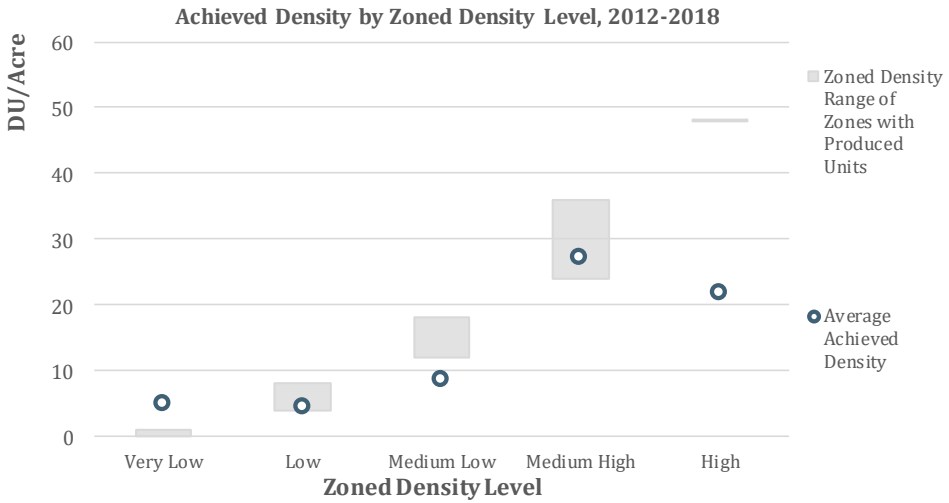
% of Pace Needed to Achieve 2035 Housing Growth Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Needed to Meet 2035 Target
103.5%	1.19%	0.96%

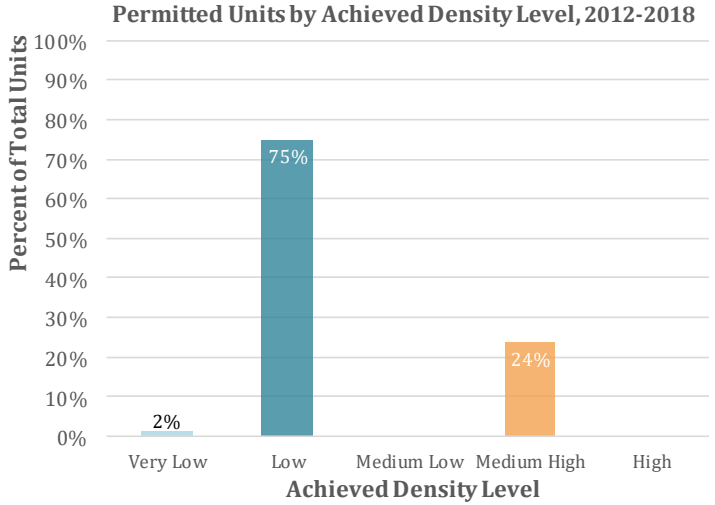
Since 2006, Unincorporated King County has grown at 104% of the pace needed to achieve its 2035 housing growth target of 12,837 units. During this period, the total number of housing units in Unincorporated King County grew by roughly 15%. At this current rate, Unincorporated King County is over the production pace needed to meet its 2035 growth target, and needs to grow at an annual rate of 1% to reach its remaining target by 2035.

Residential Achieved Densities

Zoned Density (du/acre)		Gross Area (acres)	Critical Areas (acres)	Public Purpose (acres)	ROWs (acres)	Net Area (acres)	Total Units	Achieved Density (DU/acre)
Very Low	0 - 4 du/acre	110.3	0.7	0.0	1.7	107.9	526	**4.9**
Low	4 - 10 du/acre	169.4	1.6	0.0	6.0	161.9	732	**4.5**
Medium Low	10 - 24 du/acre	25.9	0.0	0.0	1.9	24.0	208	**8.7**
Medium High	24 - 48 du/acre	17.9	0.0	0.0	0.0	6.6	179	**27.0**
High	48 & up du/acre	17.6	0.0	0.0	0.0	17.6	384	**21.8**
	Total	**341.2**	**2.3**	**0.0**	**9.6**	**318.0**	**2,029**	**6.4**

Achieved Density Level	Net Area (acres)	Total Units
Very Low	36.7	31
Low	268.2	1,520
Medium Low	0.0	0
Medium High	13.5	479
High	0.0	0
Total	**318.4**	**2,030**



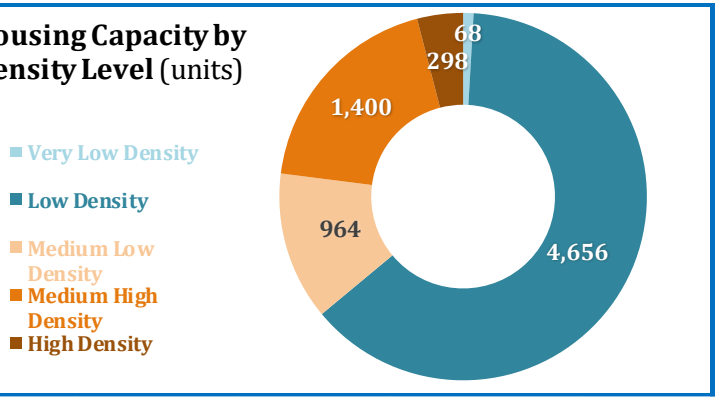


Urban Unincorporated - Residential Land Supply and Capacity

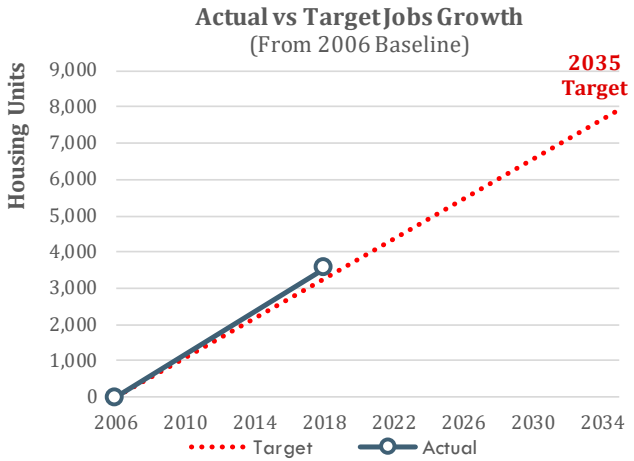
Assumed Density Level	Vacant/ Redevelopable	Gross Acres	Critical Areas	Infrastructure Constrained Area	ROW & Public Purpose Discount	Market Factor (low/high)	Net Available Acres	Assumed Densities (low/high - units/acre)	Net Capacity (units)
Very Low Density	Vacant Subtotal				36.97	0.0% - 20.0%	91.43	0.1 / 0.7	61
	Redev Subtotal				6.63	0.0% - 20.0%	16.95	0.1 / 0.7	7
	Subtotal	1,524.99	324.83	221.63	43.61		108.38		**68**
Low Density	Vacant Subtotal				214.72	0.0% - 50.0%	740.60	4.3 / 9.6	3,813
	Redev Subtotal				43.53	0.0% - 50.0%	180.31	4.3 / 9.6	843
	Subtotal	1,062.74	499.00	139.28	258.25		920.91		**4,656**
Medium Low Density	Vacant Subtotal				2.47	7.0% - 21.0%	18.34	23.5	431
	Redev Subtotal				3.06	7.0% - 21.0%	22.93	23.5	534
	Subtotal	0.00	0.00	0.00	5.53		41.27		**964**
Medium High Density	Vacant Subtotal				2.42	0.0% - 50.0%	13.84	36.0 / 42.1	580
	Redev Subtotal				2.79	0.0% - 50.0%	19.52	36.0 / 42.1	819
	Subtotal	64.78	7.20	0.19	5.21		33.36		**1,400**
High Density	Vacant Subtotal				0.68	10.0% - 21.0%	5.35	49.0	262
	Redev Subtotal				0.10	10.0% - 21.0%	0.77	49.0	36
	Subtotal	0.00	0.00	0.00	0.78		6.12		**298**
All Zones	Vacant Total				257.26		869.57		5,147
	Redev Total				56.11		240.48		2,239
	Total	**2,652.51**	**831.02**	**361.11**	**313.38**		**1,110.05**		**7,386**

Capacity (units)	
Very Low Density Zones	68
Low Density Zones	4,656
Medium Low Density Zones	964
Medium High Density Zones	1,400
High Density Zones	298
Capacity in Pipeline	*0*
Total Capacity (Units)	**7,386**
Remaining Target (2018-2035)	17,586
Surplus/Deficit Capacity (Units)	**-10,200**

Housing Capacity by Density Level (units)



Urban Unincorporated - Employment Growth and Commercial/Industrial Development Trends



Unincorporated King County Jobs Growth Target: 2006-2035	7,900
2006 Jobs (PSRC)	12,843
2018 Jobs (PSRC)	16,400
Total Jobs Growth	**3,557**
Remaining 2035 Target	**4,343**

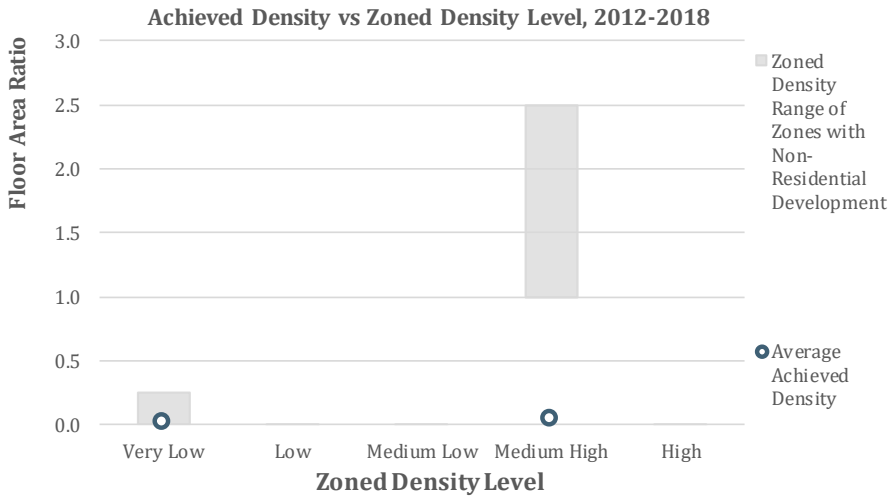
% of Pace Needed to Achieve 2035 Jobs Target	Average Annual 2006-2018 Growth Rate	2018-2035 Avg. Annual Growth Rate Needed to Meet 2035 Target
108.8%	**2.06%**	**1.39%**

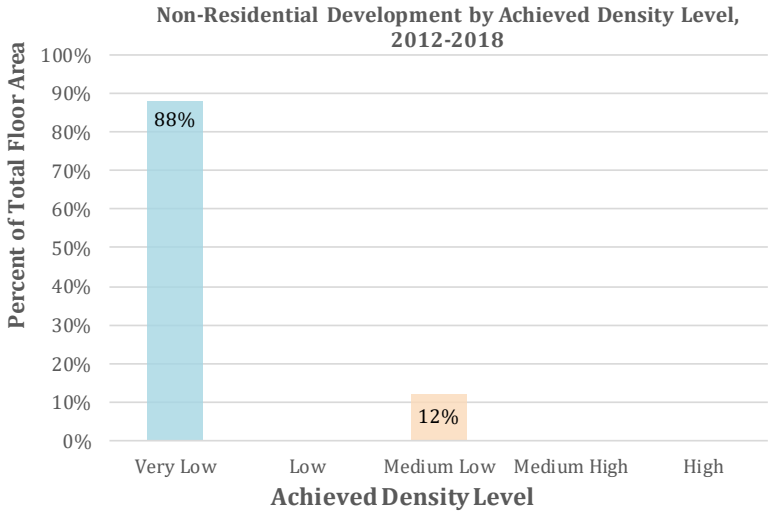
Since 2006, Unincorporated King County has grown at 109% of the pace needed to achieve its 2035 jobs growth target of 7,900 units. During this period, the total number of jobs in Unincorporated King County grew by roughly 28%. At this current rate, Unincorporated King County is over the pace needed to meet its 2035 jobs growth target, and needs to grow at an annual rate of 1.4% to reach its remaining target by 2035.

Non-Residential Achieved Densities

Zoned Density (FAR)		Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	0 - 0.35 FAR	7,294,688	109,974	**0.0**
Low	0.35 - 0.5 FAR	0	0	
Medium Low	0.5 - 1.0 FAR	0	0	
Medium High	1.0 - 3.0 FAR	2,801,955	137,391	**0.0**
High	3.0 & up FAR	0	0	
	Total	**10,096,643**	**247,365**	**0.0**

Achieved Density Level	Net Area (sq. feet)	Total Floor Area (sq. feet)	Average Achieved Density (FAR)
Very Low	10,059,293	218,390	**0.0**
Low	0	0	**0.0**
Medium Low	37,350	28,975	**0.8**
Medium High	0	0	**0.0**
High	0	0	**0.0**
Total	**10,096,643**	**247,365**	**0.0**



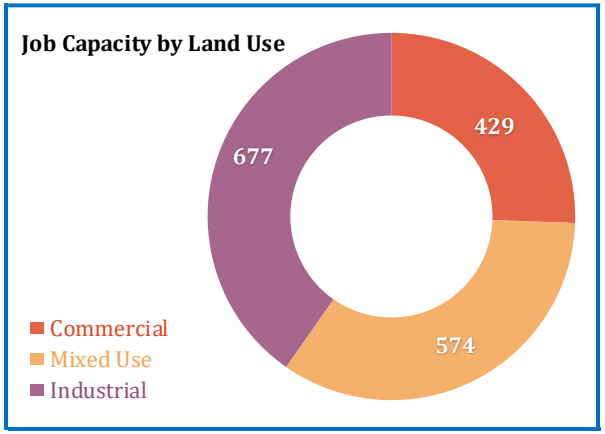


Urban Unincorporated - Commercial/Industrial Land Supply and Job Capacity

Land Supply	Gross Area (acres)	Critical Areas (acres)	ROWs (acres)	Public Purpose (acres)	Initial Land Supply	Market Factor	Buildable Area (acres)
Vacant / Redev.							
Commercial	4.5	1.9	0.1	0.1	2.4	10% - 25%	2.0
Mixed Use	79.3	8.0	3.6	3.6	64.2	0% - 50%	47.3
Industrial	154.4	47.8	5.3	16.0	85.3	0% - 30%	72.8
Non-Res Land Total	**238.2**	**57.6**	**9.0**	**19.7**	**151.9**		**122.1**

Job Capacity by Land Use	Net Buildable Area (mil.sq.ft.)	Assumed Density Range (FAR)	Existing Floor Area (million sq.ft.)	Floor Area Capac. (million sq.ft.)	Sq. ft. per Job	Job Capacity
Commercial						
Vacant	0.09	2.50	0.00	0.21	350 / 500	429
Redevelopable	0.00	2.50	0.00	0.00	350 / 500	0
Commercial Total	**0.09**	**2.50**	**0.00**	**0.21**	**350 / 500**	**429**
Mixed-Use						
Vacant	1.13	0.17 / 0.25	0.00	0.23	0 / 660	505
Redevelopable	0.93	0.17 / 0.25	0.18	0.04	0 / 660	68
Mixed Use Total	**2.06**	**0.17 / 0.25**	**0.18**	**0.27**	**0 / 660**	**574**
Industrial						
Vacant	1.12	0.25	0.00	0.28	0 / 1000	290
Redevelopable	2.05	0.25	0.13	0.38	0 / 1000	387
Industrial Total	**3.17**	**0.25**	**0.13**	**0.67**	**0 / 1000**	**677**
City Total						
Commercial	0.09	2.50	0.69	0.21	350 / 500	429
Mixed Use	2.06	0.17 / 0.25	0.91	0.27	0 / 660	574
Industrial	3.17	0.25	0.26	0.67	0 / 1000	677
Job Capacity in Pipeline						*0*
City Total	**5.32**	**0.17 / 2.50**	**1.86**	**1.15**	**0 / 1000**	**1,680**

Job Capacity by Assumed Density Level	#	%
Very Low Density	1,251	74%
Low Density	0	0%
Medium Low Density	0	0%
Medium High Density	429	26%
High Density	0	0%
Capacity in Pipeline		*0*
Total Capacity (jobs)		**1,680**
Remaining Target (2018-2035)		5,468
Surplus/Deficit Capacity (jobs)		**-3,788**



Technical Appendices

This section contains the guidance documents and methodologies provided to King County jurisdictions throughout this study.

Appendix A: Phase 1 Guidance - Achieved Density

King County 2020 Urban Growth Capacity Study
(Buildable Lands)
Guide for Local Government Reporting Template PART 1

This document describes the data reporting process and template for local governments in King County to use to report consolidated data and analysis results in compliance with the Review and Evaluation/Buildable Lands requirement of the Growth Management Act. Jurisdictions should send complete sections of the reporting template to Rebeccah Maskin, rmaskin@kingcounty.gov, at the King County Office of Performance, Strategy, and Budget, for inclusion in the 2020 Urban Growth Capacity Study (formerly Buildable Lands Report) to the State of Washington.

Standardized reporting is necessary to provide King County (and the state Legislature) with information that is comparable across jurisdictions, and that may be aggregated into a countywide evaluation report. King County and the cities will collaborate to draft a countywide report in 2020. That report will present jurisdiction-by-jurisdiction reporting of recent development and capacity, as well as summaries for the county and UGA as a whole and regional geographies. The template and guide include prompts for standardized technical documentation, which is crucial to making the Buildable Lands analyses both transparent and defensible to public officials, major stakeholders, and the public. An interjurisdictional group of planning and technical staff reviewed the Local Government Reporting Template and Guide in 2019 for both its content and format.

Under the current schedule, data reporting for the 2020 report will be phased over 2019. Reporting for Part 1 should be completed and submitted back to King County by June 1st, 2019. Part 2 will be sent out in mid-2019. Data will be reviewed and compiled by King County staff in coordination with local planning staff on the Interjurisdictional Team, and sent back to cities for review, in late fall 2019.

For staff that has worked on buildable lands reports in the past, this cycle's reporting will be different, particularly for residential development. The King County GIS Center is completing an initial analysis of residential development over the reporting period (2012-18) that aims to provide the bulk of residential reporting data. Cities will review this data, adding local detail from permits or development plans, to accurately calculate achieved densities over the reporting period. The GIS analysis, and further instructions, will be sent out after this guide, in March 2019.

This guidance is organized into two parts covering the three major questions the Urban Growth Capacity Study answers. Part 1 will cover reporting on the first question. Part 2 will cover the second and third questions, and will follow Part 1 reporting. The parts and their different sections are:

PART 1:

- ***I. Are Zoned Densities Being Achieved?***
  - ***A. Achieved Densities 2012-2018 (Reporting Tables 1-7)***
  - ***B. Achieved Density Documentation and Background (Reporting Tables 8-10)***

PART 2:

- ***II. Are Growth Targets Being Met?***
  - ***A. Demand for Development: Remaining Growth Targets***
- ***III. Is there Sufficient Capacity for Remaining Growth Targets?***
  - ***A. Land Supply and Capacity Inventory***

The template tables in the Excel workbook that accompanies this document are to be filled in by all jurisdictions, and returned to King County.[1]
This document describes these template tables and instructs on how to fill out the template and provide documentation on data sources and methodology. *Not all tables will apply to every jurisdiction*. Tables for data that are not relevant to local situations should be labeled to indicate "not applicable," with justification, e.g., "No multifamily development during reporting period."

Thank you for your assistance in completing the reporting template!

[1]Please email completed reporting documents to rmaskin@kingcounty.gov. If electronic submission is not possible, please contact Rebeccah Maskin at 206-263-0380.

I. Are Zoned Densities Being Achieved?

A. Measuring Achieved Densities (2012-2018)

Background

Section IA consists of Tables 1-6, and collects data on residential and non-residential development activity for the full 6-year review and evaluation period (2012-2018).[2] This data will come from a parcel-based analysis described below, and building permits for new development between 2012 and 2018. After compiling development data from the parcel-based analysis and building permits, residential units, square footage built, and net land area are aggregated by zone, and the densities achieved over the review period are calculated. These densities will be used in Part 2 to calculate capacity of developable land.

Local reporting on residential data has two steps: 1.) reviewing and supplementing a parcel-based analysis of new residential development, and 2.) reporting on any additional development permitted during the review period. The parcel-based analysis is the starting place for residential data collection in the Urban Growth Capacity Study. It was designed to replace the majority of plat and permit reporting by identifying new residential development on parcels that changed boundaries or added residential units 2012-2018. Permit reporting on single family and multifamily/mixed-use development may still be necessary for developments not identified in the parcel-based analysis data, and to review or supplement the parcel-based analysis with project data (for example, non-buildable critical areas area).

New non-residential development will be addressed through permit reporting.

Any reporting on permitted development should capture new residential units or non-residential space that came online between January 1st, 2012 and December 31st, 2018. Permits finaled or completed between these dates provide the best estimate of completed development. If your jurisdiction does not uniformly track completed permits, issued permits may be used, so long as the development was demonstrably completed between 2012 and 2018. Please document the basis for how permits are selected to cover the review period.

How to fill out the tables

Table 1 should be filled in with zone level data, summarized from the parcel-based analysis. The forthcoming parcel-based analysis packet will contain tables and maps of plat and parcel level (identified by parcel identification number (PIN)) development over the review period. Your review of the gross development area and residential units developed, and the provision of any constrained critical areas data, is essential for accurately estimating the net density achieved by recent development.

Because the source for this analysis is parcel data, public right-of-way, tract parcels, open water, and additional public purpose parcels commonly found in formal plats, have already been removed from the "gross" development site area presented in this analysis. However, additional constrained critical areas outside of tract or public purpose parcels need to be reported, so that they can be removed from the gross site area to calculate the net buildable area. For short plats or other residential development identified in the parcel-based analysis, constrained areas of developed parcels (for example, private roads or retention ponds), in addition to critical areas, *may* need to be reported to subtract from the gross site area.

A general flow for review the parcel-based analysis follows below. More specific instructions will be included with the parcel-based analysis when it is sent in March.

[2] Countywide analysis requires consistency across jurisdictions on the time frame of the development history data. Time frames for growth monitoring activities by individual jurisdictions will vary, based on the adoption date of comprehensive plans and other factors.

1. Review the parcel-based analysis for location, number of units built, and gross site area to verify the amount and location of development over the review period.
    a. The analysis is grouped by plat or parcel PIN.
    b. Shapefiles of the identified parcels are also available.
    c. Review the preliminary achieved densities, unit totals, or locations for anomalies (e.g., a density much higher or lower than expected for its zone)
    d. Correct any of the raw data in the parcel-based analysis (e.g., number of units, gross site area).
    e. If the parcel-based analysis captures development that should not be included (because it did not happen during the review period, or did not add residential units), note the parcels affected, and exclude that development from the reporting in Table 1.
2. Identify if there are other significant developments not included in the parcel analysis, from permit or other development sources.
    a. Add the number of units, gross site area, critical areas, public purpose area, right-of-way area, to the parcel-based analysis via Tables 2 and 3. Instructions follow Table 1 below.
3. Sum the number of residential units and gross area by zone and enter it into Table 1, columns A and B.
4. Calculate the square footage of constrained critical areas on developed plats/parcels included in the parcel-based analysis. Sum by zone and add to column C in Table 1.
5. Calculate the square footage of any other constrained area for developed parcels included in the parcel-based analysis, Sum by zone and add to the "D" columns in Table 1.
    a. Only complete this step as necessary. You do not need to compute public right-of-way and tract parcels that were already removed from the gross area as a part of the parcel-based analysis. Just include any additional constrained areas. Be mindful of short plats or subdivisions that might have private roads or environmentally constrained areas outside of tract parcels.
    b. "Public Purpose Area" refers to drainage/retention areas, open space, or other public facilities, outside of tract parcels.
6. If the zone has mixed-use development, please indicate "yes" in the "mixed-use development" column.
    a. Reporting on the share of mixed use development in residential/non-residential use will be captured the non-residential permit analysis in Table 6.

If the parcel-based analysis does not serve as a helpful starting point for reporting residential development accurately, please contact rmaskin@kingcounty.gov.

Table 1: Residential Parcel-based Analysis Summary

	A	B	C	D1	D2	E		
Zone	**2012-18 Developed Gross Site Area**	**2012-18 Developed Parcel Units**	**Critical Areas**	**Public Purpose Area**	**Right-of-way Area**	**Net Buildable Area**	**Achieved Density**	**Mixed-use Development?**
	Sq Ft	DU	Sq Ft	Sq Ft	Sq Ft	Acres	DU/acre	Y/N
	Summed from parcel-based analysis	Summed from parcel-based analysis	*REPORT HERE*	*REPORT HERE*	*REPORT HERE*	*Calculated:* (A-(C+Ds))/ 43,560	*Calculated: B/E*	

Tables 2 and 3 collect single family and multifamily/mixed-use residential projects, additional to the parcel-based analysis. Use these tables to document development not captured in the parcel-based analysis. Please report new units by zone, gross area from the developed parcels, critical areas, and other public purpose and right-of-way area. Reporting should be by year, by zone when possible.

Table 2: Single-Family Residential Building Permits*

		A	B1	B2	B3	C	D	
Zone	**Permit Year**	**Gross Area**	**Critical Areas**	**Public Purpose Area**	**Right-of-way Area**	**Net Buildable Area****	**Number Units**	**Achieved Density**
		Gross site Acres	Acres	Acres	Acres	Acres (calculated: A-(B1+B2+B3))	DUs	DUs/Acre (calculated: D/C)
Document permit data sources used here.								

* Each line in this table should represent all permits issued in a single year in a zone.
** Net buildable area equals parcel area, less critical areas and other constrained area. Be mindful of short plats and parcel subdivisions with right of way or other public purpose easements. These areas should be removed from the net buildable area.

Table 3 is for reporting on multifamily and mixed-use development. Reporting on multifamily permits is similar to reporting on single family development in Table 2. Mixed-use development refers to developments with both residential and non-residential components, and reporting requires a few more steps:

- Report only on the residential portions of mixed-use development here; non-residential portions will be captured in Table 6.
- To identify a mixed use project, mark "Yes" in the "Mixed-use Project" column.
- To assist with calculating mixed-use capacity later on, it is important to report the share of residential development in the mixed-use development in column A of Table 3.
    - Calculate this by dividing the total built square footage (floor area) of the mixed-use development by the amount of built square feet in residential use.
    - When totaling the development floor area for a mixed-use development, do not include the area of parking structures, public plazas or other amenity spaces in the gross or net floor area/built square feet.
    - It's ok if development is captured in the parcel-based analysis and does not appear in Table 3. The non-residential share will be captured in Table 6.

This table is designed to calculate achieved density in dwelling units per acre. If your city regulates density by Floor Area Ratio (FAR), instead of reporting dwelling units in column E, report the amount of residential floor area constructed, and convert the net buildable area acreage to square feet. Indicate the use of FAR densities in the table documentation.

Table 3: Multifamily Building Permits, Including Residential Portions of Mixed-Use Projects

				A	B	C1	C2	C3	D	E	
Zone	**Permit Year**	**Project Name**	**Mixed-use Project**	**% of Mixed-use in Residential**	**Gross Area**	**Critical Areas**	**Public Purpose Area**	**Right-of-way Area**	**Net Buildable Area**	**Number Units**	**Achieved Density**
		(If applic.)	Y/N	%	Acres	Acres	Acres	Acres	Acres (calc'd: B-(C1+C2+C3))	DUs	DUs/Acre (calc'd: E/D)
Document permit data sources or FAR densities used here.											

Table 4 tallies demolitions, plus accessory dwelling units (ADUs) and conversions. For projects adding units through ADUs or conversion, include the number of units already existing on the parcel and the parcel area, to calculate an achieved density for these types of developments. For demolitions, report the number of units demolished, where no replacement or additional units were constructed.

Table 4: Other New Units and Demolitions*

	A	B	C	D		E	
Zone	**Number of ADUs**	**Number of Units Added through Conversion**	**Pre-existing Units**	**Parcel Area**	**ADU/Convert Achieved Density**	**Number of Demolished Units**	**Net Other New Units**
			For ADUs and Conversions	For ADUs and Conversions	DUs/Acre (calc'd: [A+B+C]/D)		Calc'd: A + B - E

* Each line in this table represents all permits completed in a zone, single year.

Table 5 summarizes the permit data and parcel-based analysis (Tables 1, 2, and 3), and calculates achieved density in each zone.

Table 5: Residential Achieved Densities—Consolidation by Zone*

	A	B	
Zone	**Total Residential Units**	**Total Net Buildable Area**	**Overall Achieved Density**
	Table 1 column B + Table 2 column D + Table 3 column E	Table 1 column E + Table 2 column C + Table 3 column D	A/B

* Aggregate by zone for all years

Table 6 reports data on building permits for employment-based uses by zoning type, including the non-residential components of mixed-use development. The types of uses to include in this table are commercial and industrial developments where employees are located, and are broadly referred to as "commercial" or "non-residential," for simplicity. This includes developments on publicly owned lands, so long as they are employment sites (like a school or office building). Do not report on any tenant improvements or temporary/moveable structures. "Mixed-use" developments include residential and non-residential components. Commercial developments with different non-residential uses (e.g., a hotel and office), are not counted as mixed-use developments.

Purely commercial or industrial developments should be reported by zone, by year, with the gross parcel/site area of the development, constrained critical areas, right-of-way, and public purpose areas, and floor area (the built square footage) of the development. Do not include parking structures, plazas, or amenity spaces as built floor area. The floor area ratio (FAR) is the measure of non-residential density, and is calculated from the floor area and the net site area fields. It expresses the ratio of the amount of built space to the area of the site/parcel.

Mixed-use development requires additional reporting on the portion of development in non-residential use. For mixed-use developments:

- To identify a mixed use project, mark "Yes" in the "Mixed-use Project" column.
- Report the total built square feet for the project in column F1
- Report the non-residential built square feet for the project in column F2
- To assist future mixed-use capacity calculation, report the share of commercial development in the mixed-use development in column A.
    - Divide the total built floor area (F1) of the mixed-use development by the amount of built square feet in commercial use (F2).

Table 6: Commercial and Industrial Building Permits, Including Commercial Portions of Mixed-use Projects

				A	B	C1	C2	C3	D	E	F1	F2	
Zone	**Permit Year**	**Project Name**	**Mixed-use Project**	**% of Mixed-use in Commercial**	**Gross Site Area**	**Critical Areas**	**Public Purpose Area**	**Right-of-way Area**	**Net Site Area**	**Net Site Area**	**MU Floor Area**	**Commercial Floor Area**	**Achieved FAR**
		(If applic.)	Y/N	Calc'd: F2/F1	Acres	Acres	Acres	Acres	Acres (calc'd: B-(C1+C2+C3))	Sq. Ft. (calc'd: D* 640)	Sq. Ft. (MU dev. Only)	Sq. Ft.	Calc'd: F2/E
Document permit data sources used here.													

Table 7 consolidates the annual or project level data from Table 6 by zone. Simply sum the built floor area and net site area from Table 6 by zone to calculate the achieved density for each zone, expressed in floor area ratio (FAR).

Table 7: Non-residential Achieved Densities—Consolidation by Zone*

	A	B	
Zone	**Total Floor Area**	**Total Net Site area**	**Overall Achieved Density (FAR)**
	Table 6, column F2	Table 6, column E	A/B

B. Achieved Density Documentation and Background

Background

Section IA presented data on recent development activity, particularly achieved densities averaged across the six-year review period. Section IB provides a space for further analysis of achieved densities to consider a range of factors responsible for the densities achieved. The objective is to consider on the causes leading to the densities achieved in preparation for Part 2 reporting, where "assumed" densities are selected to apply to vacant and redevelopable land to calculate remaining capacity.

This section provides a space to reflect on the densities achieved in each zone, whether they approximate expected densities, and why they may not.

Buildable lands legislation now requires jurisdictions to review their development regulations for changes during the evaluation period that have significantly affected the supply of developable land (either positively or negatively). Additionally, cities must account for circumstances where zoned densities are not achieved during the evaluation period. Non-achievement of zoned densities may necessitate the adoption of reasonable measures in 2023 comprehensive plans. These requirements will be addressed in Part 2 of reporting, but the context behind the achieved densities will be collected while it is freshly in mind.

How to fill out the tables

For Tables 8 and 9, for each zone, enter the achieved densities (from Tables 5 and 7), or for zones where no development occurred during the review period, enter "0" for achieved density. Then, use the documentation space to supply any information documenting or exploring factors responsible for the achieved density. Is the density higher or lower than expected? Have there been significant recent changes in the zone? Provide any qualitative or quantitative data that helps contextualize the densities achieved.

The following describes some factors that can influence achieved densities.

Inadequate Density Data

Some zones may have had little or no development activity during the review period. If no activity occurred, there is no direct data from which to project future densities. In these situations, describe why development has not occurred. In Part 2 of reporting, when it's time to select an assumed density, development in other similar land use categories, including similar zones from other cities, analysis of not-yet-built development projects, and assumptions from code, can help inform assumed densities. It may be helpful to note these any of these data points at this time.

Planned Development

Issued permits, preliminary plats, or developer agreements for permitted or under-construction development that will come online after the end of the review period (12/31/18) can provide a fuller story of development within a zone. Do these types of development add any detail to the achieved density of a zone? Summary analysis of data on planned development can be provided now.

Changes in Regulations

In several jurisdictions, significant changes to zoning and other land use regulations, like rezones, upzones, changes to setbacks or impervious surface requirements, occurred during the review period. The impacts of such changes will likely be reflected, in part, in the density trends analysis. Note whether any of these circumstances affecting achieved densities apply over the review period.

Shifting Jurisdiction

For cities that annexed large areas during the review period (2012-2018), a significant number of the development projects included Section 1 tables may have been approved under King County's jurisdiction. The type and density of development approved by the county may not be representative of what is likely to occur under municipal jurisdiction in these areas. Density findings that show significant differences between county and city approved development may support alternative future assumptions about the capacity of land that is now incorporated.

Infrastructure Gaps and Limitations

Limited infrastructure availability may keep densities low in the foreseeable future, despite zoning that allows for higher densities. In most cases, this will be reflected in the achieved density data. Alternatively, infrastructure deficits that may have depressed achievable densities during the review period, may be resolved in the near future, allowing for higher density development within the planning horizon. Note if these circumstances apply.

Table 8: Document Achieved Residential Densities

Zone	**Achieved DUs/Acre**	**Reasons/Documentation**
	From Table 5	Add any footnotes from Tables 1-5, and any supplemental documentation on the densities achieved in each zone.

Table 9: Document Achieved Non-Residential Densities

Zone	**Achieved FAR**	**Reasons/Documentation**
	From Table 7	Add any footnotes from Table 6-7, and any supplemental documentation on the densities achieved in each zone.

Table 10 is similar in intent as tables 8 and 9, but examines the split of uses in zones allowing mixed-use development. Are certain zones experiencing more residential or commercial development than expected? Is mixed-use development tilted towards one use? Have development regulations only recently allowed mixed use? Report any qualitative or quantitative data to describe your city's outcomes.

Table 10: Achieved Shares of Residential and Commercial Development in Mixed-use Zones

Zoning	**Achieved % of Floor Area Developed Residential**	**Achieved % of Floor Area Developed Commercial**	**Reasons/Documentation for Mixed-use Use Splits**
Zones w/ Mixed-use dev. only	calculated: *1- Table 6 column A*	From Table 6 column A	

Appendix B: Phase 2 Guidance - Land Supply

I. Overview of the Urban Growth Capacity Study

The Urban Growth Capacity Study, also known as "buildable lands," is a collaboration between cities and King County to analyze recent land use development trends, and to compare those trends to comprehensive plans and growth targets, providing meaningful information on development and capacity for updating growth targets and comprehensive plans. King County coordinates the development of the report, and each city provides and a standardized set development data for their jurisdiction. In phase one of data collection, earlier in 2019, cities collected data on recent development 2012-18, in an effort to determine the zone-based achieved development densities. In phase two of data collection, cities and King County will review their urban land area to identify the supply developable land available over the next 20 years. This document will guide planners and analysts through that process. Phase three of data collection will take place in early 2020 and focus on calculating capacity and new requirements of the buildable lands process.

II. Purpose of Data Collection Phase 2

Phase one of data collection for the Urban Growth Capacity Study focused on calculating the achieved densities of recent development. Phase two will identify developable vacant and redevelopable lands to combine with the achieved density data to ultimately calculate capacity. Phase two also concerns the quantification of the planned density for each zone in your jurisdiction, to understand whether densities are being achieved as planned. Planned densities also help determine whether developable land is redevelopable or not. Planned densities are different from *achieved* densities (calculated in phase 1), in that they are expected densities based on your jurisdiction's code and development regulations. Planned densities will be detailed further in section III below.

This guidance will help you define vacant and redevelopable developable land, and identify the densities being planned for in each zone. Your task is then to use those definitions to quantify developable land and report planned densities. In the following sections we'll describe the details for the types of data to provide to complete phase two of data collection.

Ideally, you'll submit GIS-based zone- or parcel-level data identifying developable residential and non-residential land, and tabular data expressing the planned densities for each zone in your jurisdiction. Tables of data, in lieu of GIS data may be submitted as a last resort. If you do not have GIS to assist in this exercise, King County has resources available to support your efforts. Don't hesitate to request technical support by contacting Rebeccah Maskin, rmaskin@kingcounty.gov or 206-263-0380.

King County is requesting Phase two data to be returned by January 7, 2020.

III. Planned Density Reporting

Planned densities are collected for two reasons. First, as a part of new requirements to the GMA buildable lands statute[1] passed by the State Legislature in 2017, King County jurisdictions are now required to evaluate whether planned densities are being achieved in the 2020 Urban Growth Capacity Study. Achieved densities (evaluated in Phase one reporting) will be compared to planned densities to as one indicator of whether development is occurring as planned.

[1] RCW 36.70A.215

Second, planned densities are used in the identification of redevelopable lands. Since the 2007 Buildable Lands Report, King County has recommended jurisdictions identify redevelopable lands by comparing the existing density of development to its planned, or potential, density, particularly for residential and mixed use lands.

A planned density should be reported for each zone where people live or work in your jurisdiction. The next section will describe how King County is defining "planned densities."

Defining Planned Densities

For the Urban Growth Capacity Study, **planned densities will be defined as the "as-of-right" density granted by code for each zone, that is the maximum allowed density without any bonus or incentive density**. In many communities, residential densities are defined in dwelling units per acre (DU/acre) or by minimum lot size, while non-residential zones use development regulations or Floor Area Ratio (FAR) to define the allowed density. The following sections describe selecting or calculating DU/acre and FAR for each zone. While this guidance will provide instructions for relatively precise calculations, these should be reviewed with your professional judgement for the intent of your comprehensive plan and implementing code.

Residential Densities

For this analysis, we are requesting residential planned densities to be reported in terms of dwelling units per acre (DU/acre), unless your jurisdiction solely uses FAR to define density. Some jurisdictions use minimum lot sizes to define residential densities, particularly in single-family zones. Minimum lot sizes can easily be converted to DU/acre by dividing 43,560 square feet (one acre) by the minimum lot size. The result is the maximum dwelling units/acre allowed. Residential densities for mixed use zones should also be supplied.

Non-residential Densities

Densities in commercial and industrial zones are less frequently defined as explicitly as residential zones, typically relying on bulk, height, and use regulations to define the size or density of a development. Some jurisdictions have used floor area ratio (FAR) to define the density of non-residential development, and this is what is requested for non-residential planned density reporting. If your jurisdiction does not use FAR to define density, Table 1a in the data reporting tables template is a "FAR calculator" table and instructions to assist in determining a FAR-based density. Please provide non-residential densities for mixed use zones as well as residential densities.

Planned Density Template Table

Planned density data should be reported in Table 1: Planned Densities, which has the following format:

	Select:						Optional Fields (to assist with density calculation)						
Zone	Residential	Non-Residential	Mixed-use	Other	DU/acre	FAR	Minimum Lot Size	Maximum Height	Estimated Stories	Maximum Lot Coverage	Front Setback	Rear Setback	Side Setbacks

The following table describes the reporting table with field-level definitions and instructions for completing the table. Note that the optional fields duplicate fields in the FAR calculator. Store the values

used in the FAR calculator in Table 1, or by duplicating the FAR calculator in that tab of the template spreadsheet.

	Zone	Zone name/ID. Include all zones where people live and/or work
Select:	Residential	Characterize the zone by its dominant use, mark with an "x"
	Non-Residential	
	Mixed-use	
	Other	
	DU/acre	Where residential development is allowed, fill in the as-of-right maximum density allowed, per the guidance, in dwelling units per acre
	FAR	Where non-residential development is allowed, fill in the as-of-right maximum density allowed, per the guidance, in FAR. Use the following optional fields or the FAR calculator, as needed.
Optional Fields (to assist with density calculation)	Minimum Lot Size	Residential zones in particular. To convert to dwelling units per acre, divide the minimum lot size by 43,560.
	Maximum Height	Non-residential zones; maximum building height allowed in zone. Estimate a maximum height if "unlimited," not specified, or site specific.
	Estimated Stories	Non-residential zones; estimate from the maximum height. A rule of thumb to approximate: divide by 10 and round down (e.g, 35' = ~3 stories).
	Maximum Lot Coverage	Non-residential zones; as a percentage expressed in code as maximum lot coverage, impervious surface coverage, or a maximum building size/development site (if 1 story only)
	Front Setback	Non-residential zones, in feet
	Rear Setback	Non-residential zones, in feet
	Side Setbacks	Non-residential zones, in feet

IV. Developable Land Supply Reporting

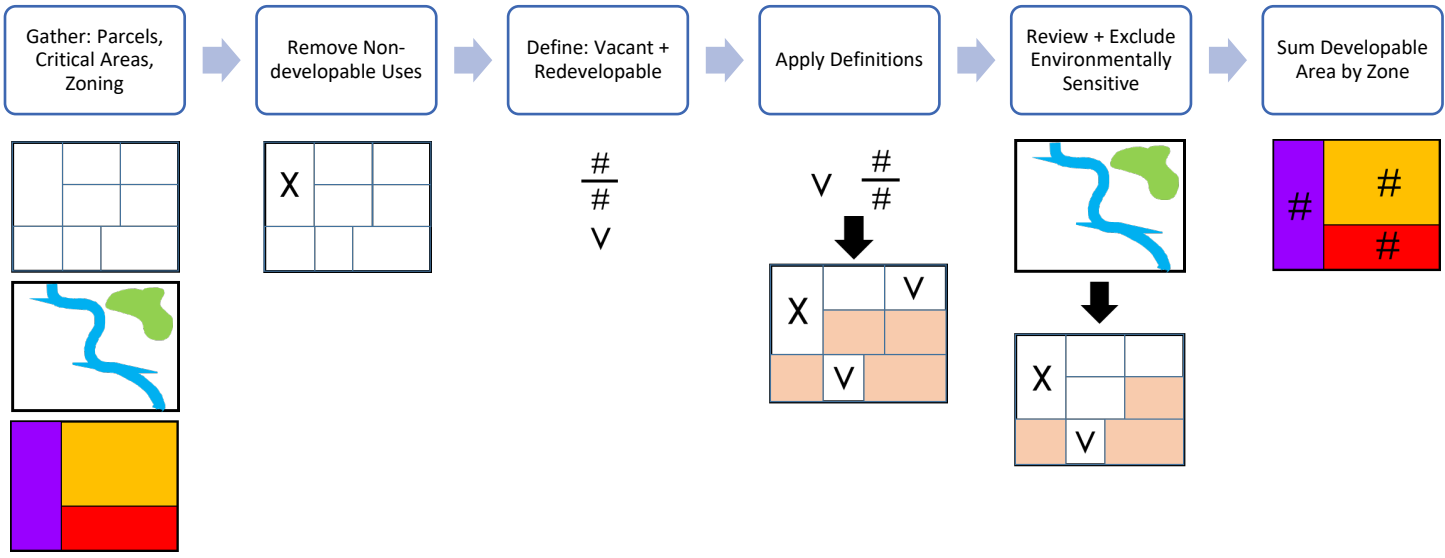
This portion of the analysis involves a jurisdiction-wide scan to quantify all land available for residential or commercial/industrial development for the next 20-year planning period. "Land supply" is the phrase used to refer to an inventory of land "suitable for development." Land supply inventories for each jurisdiction should strive for a snapshot of land with development potential as of January 2019, approximating the end of the most recent evaluation period (2012-2018). The land supply includes vacant and redevelopable lands

To quantify the developable land supply, jurisdictions will:

- Assemble necessary data for the entire jurisdiction, including parcel/assessor data, critical areas, and zoning.
- Define vacant and developable lands using a density and/or value threshold,
- Exclude land uses or parcels that are unlikely to develop for categorical reasons (e.g., parks, schools, public facilities, other institutions),
- Apply vacant and redevelopable land definitions to the parcel data,
- Review and refine the resulting developable land supply,
- Remove area for environmentally sensitive lands,

- Screen for infrastructure gaps, and
- Summarize developable land supply by zone.

The graphic below illustrates the process:



Later on in Phase 3 of data collection, cities will discount lands for area deductions for right-of-way and public purpose uses and apply a "market factor," to quantify capacity for housing and employment.

Data Needs for Identifying Developable Land Supply

King County has supplied cities with a data package including a shapefile and spreadsheet of parcel and assessor data that contains land use, existing development, area, and valuation data. Cities should supply their own zoning and critical areas data to relate to the parcel data. Planned densities from Section II should also be related to the data for use in determining if land is redevelopable. More information on defining redevelopment and vacant land thresholds follows below.

Parcel Data

Parcel data comes from the King County Assessor. It was downloaded in September 2019, to account for lag in data transmission, and approximates valuation and development on the ground in January 2019. This data source was selected because it is comprehensive and relatively consistent across the county, but cities should feel free to supplement it with their own data, if it improves accuracy. King County has related tables from the assessor database and selected fields that will be helpful for the land supply analysis. A field dictionary was included with the initial guidance email and data package. Data fields in the spreadsheet include: (a * indicates key data fields and blue text indicates calculated fields):

Major
Minor
PIN*
Jurisdiction
PropName

PlatName
Owner
SqFtLot*
PresentUseCode
PresentUse*

CurrentZoning*
PropType*
LandValue*
ImpValue*
ILR*

SFunits	VacantFlag*	LandslideHazard
CondoUnits	WaterSystem	SteepSlopeHazard
AptUnits	SewerSystem	Stream
TotalResUnits*	Access	Wetland
ResDensity*	TidelandShoreland	SpeciesOfConcern
BldgGrossSqFt*	PowerLines	SensitiveAreaTract
FARexist*	Contamination	ParcelGroup*
YrBuilt	ErosionHazard	EconomicUnitName
Address	HundredYrFloodPlain	EconomicUnitPart
CondoFlag*	SeismicHazard	EconomicUnitParcelList

To join the assessor data table to the parcel shapefile, use the PIN (parcel identification number) field. If you do not have staffing capacity to perform GIS analysis, please contact King County staff for assistance.

Zoning Data

While a zoning field is present in the parcel data, the value may not be the most current zoning for your jurisdiction. It is recommended that you overlay the parcel data with your current zoning to ensure that each parcel is related to the correct zone. While the parcel data represents early 2019, the zoning used should be the most current and forward looking as possible to reflect a truer picture of future development capacity over the planning period.

Critical Areas Data

Jurisdictions must deduct land from the set of potentially developable parcels that is constrained by environmentally sensitive areas. Environmental features associated with critical areas include wetlands, streams and other water bodies, steep slopes, geologic hazards, shoreline buffers and other features identified in a jurisdiction's update critical areas ordinance or other regulations. Ideally, jurisdictions maintain their own critical areas GIS data, and this should be used in the analysis. As a fallback for some areas of the county, cities may rely on critical areas GIS data provided by King County or state agencies. The parcel data also contains several fields that cities may be used as a backup for critical areas.

Uses to Exclude from Analysis

Certain development types or land uses should be removed from consideration as developable land supply. These include: public lands and facilities, religious institutions, cemeteries, golf courses, schools, landfills and quarries, railroads and utilities, and other miscellaneous institutional uses. These uses can be identified by the existing land use codes and other methods identified in the table below.

While these development types are generally not suitable for future development, exceptions exist, e.g., a churchyard might be planned for housing or a government agency might have plans to sell surplus property, and jurisdictions should use their best judgement to refine the results from a purely rule-based analysis. Red-colored comments in the table below identify cases to watch out for while broadly applying rules.

If your jurisdiction maintains a layer of parks and open space, consider using it to screen out parks or trail properties as well.

Use Type	Identification Methods	Comments
Public facility or public ownership	KC Assessor indicates property tax exemption. PropType = X. KC Assessor. Query Owner field for records containing strings, such as "CITY OF" or "SCHOOL." KC Assessor. Query PresentUse field for codes indicating various public uses (e.g., 184 for public schools). Individual jurisdiction parcel inventories of public facilities and parks.	Ownership may include city, school district, county, or state agencies. Watch out for multiple spellings or abbreviations used for public agency names (e.g., Dept. vs. Department vs. DNR). PropType query will select both "public" parcels as well as a number of additional parcels that fall into one of the categories below (e.g., church land, some railroad land, subsidized housing, and other non-profits). Exclusion of these parcels is consistent with additional categories described below. PropType query will also select some parcels owned by individual homeowners who qualify for tax exemption. Such parcels should not be excluded from the inventory.
Religious institution use or ownership	PropType screen (see above). Query for PresentUseCode = 165 (Church/Welfare/Relig. Srvc.) Query Owner field for records containing strings, such as "CHURCH."	Query for Present Use will select only those parcels in church use; parcels in church ownership will be more completely selected using Owner name query. Parcels in religious institution ownership, but not use, are more likely to be available for future development. Use discretion in selecting or excluding properties. Queries for strings in Owner name field (here and below) will select some parcels not intended for exclusion (e.g., "JOHN CHURCH"). Un-select these records by visually screening selected set.

Use Type	Identification Methods	Comments
Cemeteries	Query for PresentUseCode = 179 (Mortuary/Cemetery/Crematory) PropType screen (see above).	Will identify private mortuaries or other uses that may be redevelopable.
Golf courses	Query for PresentUseCode = 143 (Golf Course)	
Private schools	Query for PresentUseCode = 185 (Private School) Taxpayer name contains the string "SCHOOL"	Not all private school uses should be removed from the inventory. Use best judgment. Large institutions are more likely to be stable uses than small private ones, such as day care centers. PropType query (see above) will likely select many private, non-profit educational institutions, most of which should be excluded from the inventory. Some school uses may appear as vacant per Assessor's records (e.g., playfields).
Landfills and quarries	Query for PresentUseCode = 138 (Mining/Quarry/Ore Processing), or 266 (public utility).	
Other institutional uses and institutional campuses	Query by PresentUseCode (various).	Hospitals (173), nursing homes (59), colleges and universities (185, 184, 56) government services (172), etc.
Railroads and utilities	Query for PresentUseCode = 332 or 261 (Right of Way/Utility, Road, Rail Terminal) and = 266 (Utility, Public). Query Taxpayer Name field for records containing strings, such as "#RR#" or "BURLINGTON"	If not excluded from the inventory, many of these parcels will be misclassified as vacant. There are some parcels along RR ROWs that are of course, redevelopable. Make case-by-case determinations based on local knowledge.

Related Parcels

The parcel/assessor data includes fields titled or beginning with "EconomicUnit." These fields are intended to assist in identifying properties or developments that should be considered as a single development, such as a parking lot and a store on separate parcels, or a large development spanning several parcels. The data are linked by their *EconomicUnitName*. If a parcel is not connected with others, *EconomicUnit* fields will be blank. Economic unit data can be helpful in screening parcels that may be identified as vacant or redevelopable because of a low value or vacant land use, but are not functionally available as such. Conversely, this might identify parcels where aggregation (treating several individual parcels as a single unit) might render a site as redevelopable.

Major Planned Developments

Parcels where large known future developments are located may also be excluded from the land supply analysis. Please **record the parcel PINs, zone, planned number of units and/or square feet, and anticipated year of completion in Table 5: Major Planned Developments**. This step is optional; use only as necessary and supported by data.

Defining and Identifying Redevelopable and Vacant Lands

Jurisdictions' previously used definitions were included in the initial email with this guidance, in a PDF titled: "Past Vacant and Redevelopable Definitions." These definitions were used in the 2007 Buildable Lands Report, which what the last comprehensive compilation of developable land supply. Previous definitions for redevelopable and vacant lands are a good starting place for the 2020 Urban Growth Capacity Study, but jurisdictions should review and update assumptions for current circumstances. Generally, four definitions are recommended: a single definition for vacant lands (of all types), and separate thresholds for redevelopable single family, multifamily, and commercial/mixed-use lands. Fewer definitions are not recommended (unless a use is not applicable in your jurisdiction). **Record your selected definitions in template Table 3: Vacant/Redevelopable Definitions**.

Vacant Land

Vacant lands are devoid of development, or contain only low value accessory structures. King County advises using a two-part test of existing land use and an improvement value limit to define vacant land. Use the *Present Use* and *Improvement Value* fields in the parcel data, for example: *PresentUseCode* = 300, 301, 309, or 316 (Vacant), and/or *ImpValue* <$10,000, to query vacant parcels. A single-part test (only land use or only value) may alternatively be used.

Other undeveloped properties may not be classified with a vacant use code, like parking lots. These properties should be included as vacant land, unless local knowledge informs otherwise. Commercial parking lots have a present use code of 180, parking associated with other development is coded 159.

As another resource, the King County Assessor now includes a vacant lot table in the assessment data. Vacant lots are identified as those without any buildings present. These are identified in the field *VacantFlag* in the parcel data. Including a value-based screen to define vacant lands (to include parcels that are effectively vacant) is still recommended, and at least visually reviewing the results if using the *VacantFlag* field to identify vacant parcels.

After the vacant land definition has been applied to the data, review the results to identify that only vacant land has been included. In addition to reviewing the parcel attributes for identified vacant lands, aerial photography or site visits may be used to validate the results.

Redevelopable Land - Residential

Regardless of use, redevelopable land includes all developments that are not utilizing their full development potential. This can include partly developed land, infill development, properties that have been recently rezoned, or non-conforming uses.

There are multiple ways to classify redevelopable land. For residential lands, King County's preferred method uses a ratio of potential to existing density on a parcel to determine whether land is redevelopable. For example, if a city defined redevelopable land to be where existing development is less than two times the potential density for that property, a single family property on an acre lot is zoned for up to four units per acre, would be considered developable.

Drawing from King County studies of redeveloped land to inform redevelopable thresholds, defining a threshold between 2 and 3.5 is recommended. The threshold your jurisdiction selects may be influenced by development pressure and existing density, i.e., a lower threshold is be more appropriate for denser, rapidly developing jurisdictions. We recommend testing a 0.25-0.5 tolerance around your jurisdiction's past threshold and comparatively reviewing the resulting parcel output.

To use this method, follow these steps, using the provided assessor/parcel data:

1.) Review existing density. This has been calculated for parcels in the field *ResDensity*, by dividing the existing units by the parcel area to approximate the existing density.
2.) Calculate potential density. Using the Planned Density by zone reported in Table 1, and the parcel area from the assessor/parcel data, calculate the approximate potential units allowed on the parcel. Note: for this analysis, this is not the same as capacity. Capacity calculations for the Urban Growth Capacity Study are more refined and will be completed in Phase Three of data collection.
3.) Select a redevelopment threshold. Review the previous threshold, and make adjustments as described above.
4.) Query the results. Using the selected redevelopment threshold, query the parcel data to identify redevelopable lands.
5.) Review the results. Based on your professional judgement, local knowledge, site visits, or other screening factors listed below, exclude parcels that are unlikely redevelopment sites.

Screening Results

Consider the following additional rules and manual data screens to refine and finalize results from the redevelopable residential land supply identification.

Condo ownership. Condominium buildings may be excluded as redevelopable, as complex ownership makes redevelopment unlikely. Condo ownership is identified in the *PropType* field in the assessor data, with a value of "K."

Townhouse Plats. Townhouse plats or unit lot subdivisions are unlikely to redevelop on a parcel by parcel basis, and may be excluded from developable land supply.

Homeowner Association Properties. Covenant protected lands and structures (golf clubs, recreation centers, gyms) are unlikely to redevelop, and may be excluded from the developable land supply. These may be identified by a homeowner's association name in the *Owner* field.

Higher value homes. Crosscheck selected redevelopable parcels against value of single-family home. Highly valued homes may be less likely to subdivide. A recommended cut-off for this secondary screen is between $400,000 and $600,000—depending on the local market conditions. Consider your jurisdiction's, or the county median home value for reference. The King County Assessor's Local Scape tool can quickly provide this information for your jurisdiction.

Recently developed properties. Crosscheck selected parcels against year of construction (*YrBuilt*). Parcels with recently constructed residences are less likely to further subdivide over the remainder of the planning horizon. Year-built date cut-offs for this secondary screen should be made with respect to local development and market conditions.

Building Footprints. Visually inspect the location of existing buildings on smaller parcels (redevelopment ratio between 2 and 3) using GIS data for building footprints.

Ground checks. Spot check selected parcels against aerial imagery and/or field observations.

Redevelopable Land – Non-residential + Mixed Use

Setting redevelopable thresholds for mixed use, commercial, industrial zoned lands should be considered separately from residential lands. While a density-based ratio, as is recommended for residential lands, can be informative in some areas, particularly those facing significant development pressure, an improvement-to-land-value based ratio may also accurately identify properties likely to redevelop.

Value-ratio method. In the parcel/assessor data table, an improvement-to-land-value ratio has been calculated for each parcel (appraised improvement value divided by land value). A low ratio indicates more potential for redevelopment. Theoretically, the ratio reflects the potential profitability of more intensive use of a site relative to the revenue generating potential of the existing use. Typical threshold ratios for determining redevelopability range from 0.25 to 1. A threshold of 0.5 is recommended for most areas within the county. Jurisdictions experiencing more intense development pressure could consider a higher ratio.

Density-ratio method. Since planned densities for all zones are being evaluated for this analysis, using a density based filter is more possible than in the past studies. The existing FAR-based density is calculated and included in the parcel data, in the field *FARexist*. Relate this value to the planned FAR calculated for each zone to create a ratio of potential to existing density. Sorting and reviewing the range of results in GIS will be helpful to get a sense of the range in your jurisdiction. Starting with a ratio of 1.5 (potential-to-existing density), and testing a +/-0.5 tolerance is a good starting place for reviewing the redevelopable land supply that results. Jurisdictions with less non-residential development pressure would be advised to set a higher threshold.

Comparing density- and value-based methods is recommended in GIS, hard copy maps, or by site review.

Screening Results

Consider the following additional rules and manual data screens to refine and finalize results from the non-residential redevelopable land supply identification.

Low-intensity uses. Include additional parcels as redevelopable based on current land uses that are considered low intensity (e.g., surface parking, storage, single-family homes in commercial or industrial zones) relative to parcel size and location, and market demand for more intensive uses of these sites.

Parcel size and shape. Many parcels that turn up as redevelopable present challenges to redevelopment due to factors such as parcel size, shape, and fractured ownership with limited land assembly potential. Parcel data should be queried by size to identify and exclude sites that are too small to be redeveloped. Review maps of identified redevelopable parcels to identify potential parcel shape and assembly issues that warrant taking parcels out of the inventory.

Recently developed properties. Crosscheck selection against year of construction (*YrBuilt*). Parcels with recently constructed development are less likely to redevelop over the remainder of the planning horizon. Year built date cut-offs for this secondary screen should be made with respect to local development and market conditions.

Condo ownership. Condominium buildings may be excluded as redevelopable, as complex ownership makes redevelopment unlikely. Condo ownership is identified in the *PropType* field in the assessor data, with a value of "K."

Site contamination. Identify potentially redevelopable parcels that are constrained by on-site environmental contamination from current or historical land uses. Based on local knowledge, remove such parcels if site conditions effectively preclude further development within the planning horizon. Limited availability of information on the presence and extent of site contamination may hinder the ability of local governments to quantify its impact on future development potential. The *Contamination* field in the assessor data (value of "Y") can help identify contaminated properties.

Remove Environmentally Sensitive Lands

Once vacant and redevelopable parcels have been identified, environmentally constrained land should be deducted from the land supply inventory. Environmentally sensitive areas may include the following:

- Wetlands
- Streams and buffers
- Shoreline buffers
- Slopes and geologic hazards
- Fish and wildlife habitat
- Aquifer recharge areas
- Frequently flooded areas

The precise definitions for each constraint will vary across jurisdictions, depending on provisions of local updated critical areas ordinances and other regulations, local environmental features, and recent development history.

A recommended GIS-based methodology for deducting critical areas is as follows:

1.) Select relevant GIS layers and features (e.g., wetlands, streams).
2.) Apply buffers to these features, based on local ordinances, where applicable. Features should be sorted by type, class, and/or location in order to apply appropriate buffer widths consistent with regulations.
3.) Merge buffered features into a combined "critical areas" layer.
4.) Overlay this layer with selected parcels (vacant, redevelopable, etc.) to delineate and quantify areas that intersect with land subject to development restrictions. Deduct constrained areas from the aggregate supply of developable land within each zoning/land use category.

Reliability of GIS environmental data for the capacity analysis depends on their completeness in representing the extent of features on the ground, as well as the positional accuracy of the mapped features in relation to parcels. GIS data may be deemed so incomplete or inaccurate as to render them unreliable as the sole indicator of the extent of critical areas that constrain the land supply. Insufficient data may still be useful for the Buildable Lands analysis, particularly if utilized as a starting point for enhancements from field surveys, aerial imagery classification, and other secondary approaches.

For the jurisdictions that lack adequate GIS data on environmental features, constrained land may be deducted through the use of assumed % discounts. Due to differences in degree of urbanization, and due to differences in land base, the actual percentage of land constrained within individual cities will vary considerably. Determination of appropriate discounts should rely on best available GIS, hard copy, and other information about the type and extent of critical areas at the zoning district level within jurisdictions.

Screen for Infrastructure Gaps

A new requirement this cycle, jurisdictions must consider how lapses in infrastructure availability affect the amount of developable land supply. The buildable lands statue notes that this review shall include at least transportation, water, sewer, and stormwater infrastructure in the selection of developable land supply. Capital facilities and transportation plans will be key sources for this screen. King County is working with a consultant to recommend an approach for screening out infrastructure constrained, but otherwise developable, land supply. **Our recommended approach will follow in November.** This will be the last step in in identifying developable land supply, so please do not hesitate to begin the other steps first.

Summarize Data by Zone

After you have crafted definitions, queried the data, and screened the results, **summarize parcel-based developable land area by zone in template Table 4: Land Supply**, as illustrated below. Transmit any GIS-based land supply data to King County as well.

						Select:			
Zone	Gross Acres	Critical Areas	Infrastructure Constrained Area	Vacant Area	Redevelopable Area	Residential	Non-Residential	Mixed-use	Other

Field-level definitions and instructions for completing Table 4 follow below:

	Zone	Zone name/ID. Include all zones where people live and/or work
	Gross Acres	Total area of zone, summed from parcels (in acres)
	Critical Areas	Total area of critical or environmentally sensitive areas (in acres)
	Infrastructure Constrained Area	Total area of infrastructure constrained area (in acres) *more information on this field will be provided in November*
	Vacant Area	Total area of vacant land supply (acres) , summed from vacant parcel area
	Redevelopable Area	Total area of redevelopable land supply (acres), summed from redevelopable parcel area
Select:	Residential	Characterize the zone by its dominant use, mark with an "x"
	Non-Residential	
	Mixed-use	
	Other	

V. Wrapping Up and Next Steps

What to send to King County

When your jurisdiction's planned density and developable land supply identification are complete, **please send the completed phase two table template and GIS-based representations of developable land supply to King County**, via the contact information at the beginning of this guidance. If necessary, include any other accompanying materials to document methods or assumptions. King County staff will review your data and follow up with any questions.

What's next?

As laid out in the introduction, phase two data will be combined with achieved density data collected in phase one to calculate capacity in phase three of data collection. Phase three will begin in early 2020.

Stay in touch!

If you need assistance or have questions, get in touch with King County staff anytime. We are available for direct assistance if your jurisdiction does not have GIS software or other resources. King County is planning workshops in November to help with phase two data collection; more information will follow soon.

Thank you for your attention and partnership in completing the 2020 Urban Growth Capacity Study!

King County 2020 Urban Growth Capacity Study
Phase 2 Data Collection - Additional Guidance on Infrastructure Gaps

Background

This guidance supplements previous guidance from October 2019 on Phase 2 data reporting for the Urban Growth Capacity Study. The final step in completing the inventory of vacant and redevelopable land is a consideration of whether infrastructure availability will limit the developable land supply.

Formally identifying "infrastructure gaps" is a new requirement for the Urban Growth Capacity Study. To satisfy this requirement, King County is recommending the following process to identify any land unlikely to be serviced or achieve its planned density in the planning period, based on physical or ownership characteristics of the land, not because of service expense.

What Are Infrastructure Gaps?

For the Urban Growth Capacity Study, an infrastructure gap exists for a property when one or more critical types of infrastructure– transportation, water, sewer, or stormwater– will not be available over the 20-year planning horizon, and will prevent land development. An infrastructure gap can prevent development in two ways:

- A total preemption of development potential e.g., no improvement is planned to deliver necessary urban services to a piece of land
- A reduction of development potential, e.g., an improvement cannot be provided to serve land at its planned density

Process for Determining Gaps

The infrastructure evaluation process includes the following steps to identify parcels with long term infrastructure gaps significant enough to wholly or partially remove the land from the buildable lands supply:

1. Identify system capacity issues – are there gaps within the service area or capacity for water, sewer, or stormwater providers in your city?
2. Identify site-specific infrastructure gaps – are any parcels within a service area unlikely to be served because of their site characteristics?
3. Update developable land supply – remove parcels with infrastructure gaps from the land supply inventory.

Detailed instructions on how to complete these steps is provided in the next section.

Completing the Data Tables

In the reporting template tables spreadsheet, the tab labeled "Table 2: Infrastructure Gaps" provides three tables to complete this assessment. If you determine no infrastructure gaps to exist in your city, this will be indicated by the results of Tables 2.1 and 2.3

Step 1: Identify System Capacity Issues

1.1. Verify and update the data provided in the most recent Comprehensive Plan, documenting major changes in policy, service provision and other relevant details in Table 2.1.

1.2. List the providers serving your jurisdiction with essential infrastructure: water, sewer, and stormwater, in Table 2.1.

1.3. Collaborate with service providers, drawing from sewer and water district and comprehensive plans, to identify out-of-date planning information and any underserved portions of each city or the unincorporated urban area. Jurisdictions are advised to coordinate with public works staff to review, interpret and verify data. Note underserved areas or other gaps in the column "Service Deficiencies."

1.4. Document any future capital facilities investments planned to address these issues in Table 2.1. Determine if specific investments will resolve infrastructure gaps to "unlock" development potential and when it is expected to occur. Record these investments in column "Planned Investments."

1.5. Evaluate each system-wide capacity issue to determine if the issue is expected to stop or delay future development, or limit the types or densities of development that will be feasible. Record determinations in the column "Infrastructure Gap Present?" in Table 2.1

1.6. Preferably using GIS, overlay the service areas of providers with system capacity issues on the set of vacant and redevelopable parcels. Identify affected parcels in Table 2.2, noting the type of gap affecting development, whether it is a full or partial gap, and for partial gaps, the density restricted by the gap.

Example Table 2.1:

Service Provider	Infrastructure Type	Service Deficiencies	Planned Investments	Infrastructure Gap Present?
Westedge Water + Sewer District	*Sewer*	*Zone 3 - lift station required*	*Zone 3 lift station in CIP, planned completion by 2030*	*No*
Westedge Water + Sewer District	*Water*	*None*	*None*	*No*
Westedge Water + Sewer District	*Water*	*Comprehensive Plan last updated 2011*	*No update planned*	*No, but land use assumptions need updating*
West City	*Comprehensive Plan*	*Capacity project required to serve West Ridge neighborhood currently on septic*	*None for West Ridge*	*Yes*

Example Table 2.2:

PIN	Area	Infrastructure Type	Partial or Full Gap	Density Constraint	Density Type
1111111111	*0.32*	*Sewer*	*Full*		
1111111114	*1.15*	*Sewer*	*Part*	*2*	*DU/acre*

Step 2: Identify and Document Site-Specific Infrastructure Gaps

2.1. Review remaining vacant and redevelopable parcels to identify parcels with physical characteristics or locations that make them unlikely to be served with water, sewer, stormwater services, or roads, either completely, or to their planned density. Examples could include single parcels without road access, surrounded by other unrelated parcels lacking road access, or a parcel with site characteristics that would prevent sufficient sewer service for the planned highest and best use.

This review is most easily done through GIS. The previously supplied assessor data includes fields indicating whether a parcel currently has water, sewer, and transportation services. Suggested criteria for determining site-specific gaps for each utility are listed below. Jurisdictions may tailor these guidelines to meet local conditions. Please document any additional criteria used below Table 2.3:

- **Sewer:**
  - No pipe within 200'
  - Pipe within 200', but insufficient for highest and best use
  - Lift station required
- **Water:**
  - No pipe within 200'
  - Pipe adjacent, but insufficient for highest and best use
- **Stormwater:**
  - No adjacent public main
  - No available discharge point
  - No on-site infiltration capacity
- **Transportation:**
  - Inaccessible due to geographic constraints
  - No infrastructure to provide physical access to site
  - Infrastructure is aging, fails to meet adopted LOS or is otherwise out of compliance

2.2. Draw from code or adopted policy to determine if the issues are expected to stop or delay future development, or limit the types or densities of development feasible on vacant or redevelopable parcels. Review parcels with multiple gaps, regardless of severity, to consider if their combined impact will stop or delay development.

2.3. In Table 2.3, record identified site-specific infrastructure gaps, by documenting infrastructure constrained parcels in the developable land supply. List the parcel identification number, parcel area, type of infrastructure causing the gap, whether the gap fully removes the parcel from developable land supply or merely limits the density, and for partial gaps, the limit to the density, expressed in dwelling units per acre or floor area ratio. If no gaps exist, please write "NONE" in the table.

Example Table 2.3:

PIN	Area	Infrastructure Type	Partial or Full Gap	Density Constraint	Density Type	Note
1111113462	*0.48*	*Transportation*	*Full*	*(# if part)*	*(FAR or DU/ac)*	*surrounded by parcels without access*

Step 3: Update Developable Land Supply

3.1. Drawing from Tables 2.2 and 2.3, in Table 4 (Land Supply), update the field "Infrastructure Constrained Area" with the area of developable land supply affected by FULL infrastructure gaps. Subtract this area and the critical areas from the gross area for the net buildable redevelopable or vacant land supply.

3.2. For partially constrained parcels, in Table 4 create a new line for each affected zone, noting the infrastructure constraint in the "Zone" field (e.g., for zone R-6, create a row for R-6-constrained, or similar). Include the area of the affected parcels in the "Infrastructure Constrained Area" field.

3.3. Summarize vacant and redevelopable land supply by zone.

Appendix C: Phase 3 Guidance - Initial Capacity

2021 Urban Growth Capacity Report – DRAFT Phase 3 Reporting Guidance
June 2020

Introduction

The Urban Growth Capacity Study, also known as "buildable lands," is a collaboration between cities and King County to analyze recent land use development trends, and to compare those trends to comprehensive plans and growth targets. The study will provide meaningful information to cities and King County on development and capacity for updating growth targets and comprehensive plans. King County coordinates the development of the report, and each city provides a standardized set of development data for their jurisdiction.

In Phase 1 of data collection, conducted in 2019, cities collected data on recent development 2012-2018, in an effort to determine the zone-based achieved development densities. In Phase 2 of data collection, conducted in late 2019 and early 2020, cities collected data to identify the supply of available land over the next 20 years as well as information on planned densities for each zone. Phase 3 of the data collection process will build off the work of previous phases to determine assumed density and calculate an initial capacity for each zone. Phase 3 will also include review and reporting of housing and employment growth relative to cities' growth targets, as well as an opportunity to review achieved densities relative to planned densities. This document will guide planners and analysts through this process.

Cities will submit data for Phase 3 in a separate reporting template table accompanying this document. Due to circumstances and limited capacity caused by the COVID-19 Pandemic, King County is allocating resources and technical support for cities facing challenges meeting this data request. All previously submitted data relevant to Phase 3 has been entered into collection tables for each city (in tables 1, 2, and 4), and gaps in data collection have been noted or left as blank, but reviewing the completeness for the list of zones within your city, supplied densities, and land supply information is a great place to start. Any questions or requests for support can be forwarded to the Rebeccah Maskin rmaskin@kingcounty.gov or Ben Larson blarson@kingcounty.gov.

Reporting for Phase 3 data collection is due August 10th.

About Phase 3 Reporting

Phase 3 data reporting has three key components:

1. Calculating an initial capacity for each zone in your city
2. Reviewing and reporting on housing and employment growth relative to adopted growth targets
3. Reviewing and reporting on achieved densities relative to planned densities

Why "Initial" Capacity?

Phase 3 will work towards calculating capacity, but two assumptions used within the process for calculating capacity are currently being updated to provide more up-to-date information and meet state requirements. In the autumn 2020, jurisdictions will incorporate these assumptions and calculate final capacity for the Urban Growth Capacity Report. The two assumptions are:

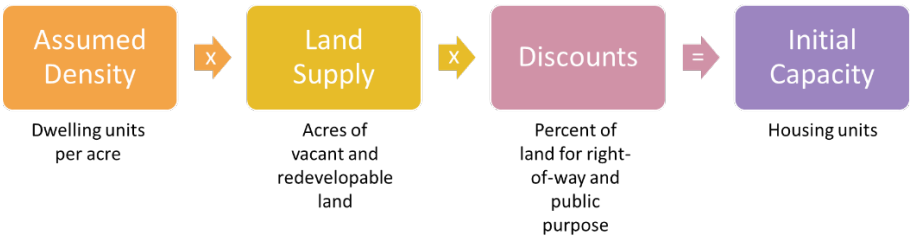
- Market Factor. An assumption that accounts for the amount of land kept out of development because of landowner preference not to develop.
- Square feet per Job Assumptions. These assumptions are used to convert non-residential capacity expressed in square feet to employees.

How Initial Capacity is calculated

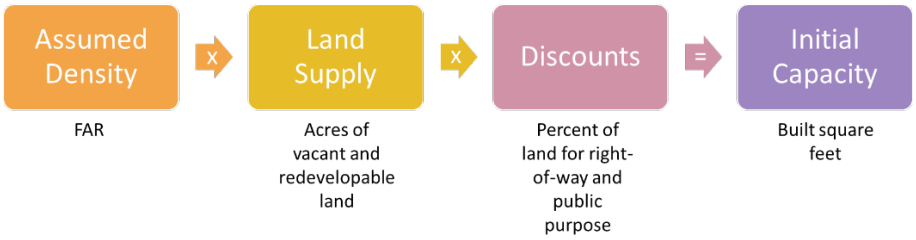
Generally, developable capacity is calculated by zone, and is the product of a zone's assumed density and the area of land supply, minus a percentage accounting for streets, sidewalks, and public purpose land. Achieved densities calculated in Phase 1 of data collection form the basis for the assumed densities, and the land supply was reported by zone in Phase 2. Jurisdictions will select discounts for right-of-way and public purpose lands, informed by recent

development trends, to reduce the land supply for non-buildable, necessary infrastructure. The following graphics illustrate the how capacity is calculated.

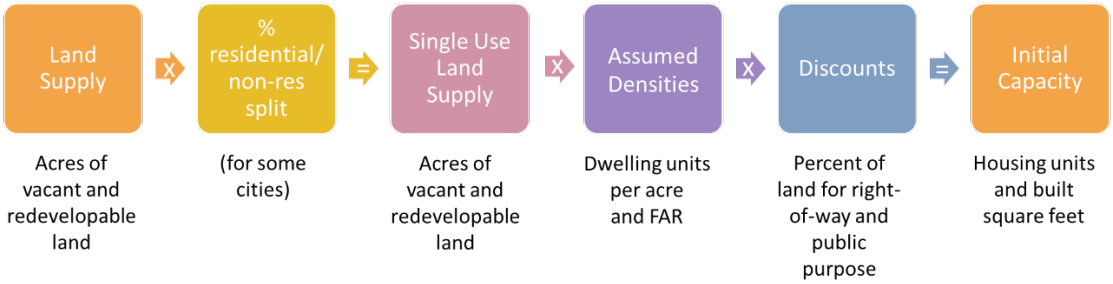
Calculating Residential Capacity



Calculating Non-Residential Capacity



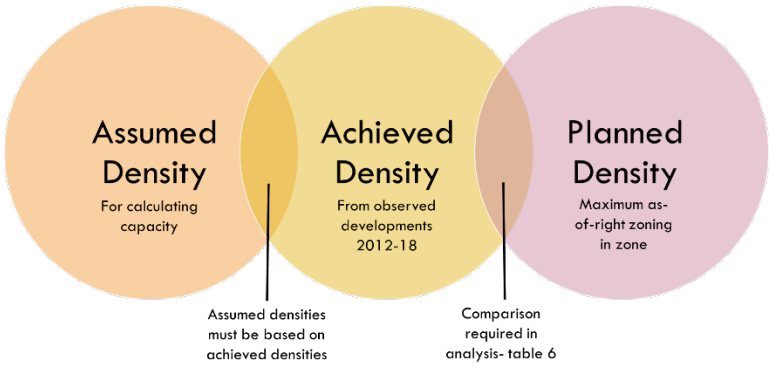
Calculating Mixed-use Capacity



Reviewing Progress toward Targets and Densities

Reviewing and reporting on progress toward growth targets and planned densities provides context on how each jurisdiction is meeting its planning goals. Should a city or the unincorporated urban area of the county be found to not be achieving its growth target or planned densities, reasonable measures may need to be adopted in the 2024 comprehensive plan. Reasonable measures are policy or planning strategies selected by jurisdictions to bring growth or development into alignment with planning goals. This is a new requirement for the buildable lands program, and more information is provided in the guidance below. In Phase 3, we are asking cities to compare adopted targets and growth, and achieved and planned densities, and report on policy, code, or other planning circumstances that may explain or otherwise account for the difference. For reference, the graphic below illustrates the difference between the three types of densities that are referenced in developing the Urban Growth Capacity Report.

Types of Density Reported in the Urban Growth Capacity Report



How to Complete Phase 3 Reporting

There are six tables in the template spreadsheet in the reporting packet that must be filled out to complete Phase 3 reporting. Additional materials in the reporting packet email and reporting template spreadsheet will assist your completion of Phase 3 reporting including:

- Past right of way and public purpose assumptions to discount undevelopable land
- Recommendations on adjusting discounts based on recent development trends
- Your jurisdiction's data provided in Phases 1 and 2

The next sections of this guidance will explain how to fill out the template spreadsheet tables.

Table 1: Assumed Densities

Assumed densities are an essential component to calculating capacity. They are reported for each zone where development can occur. Assumed densities, except in limited circumstances, must be based upon the achieved densities observed in the 2012-2018 evaluation period reported in Phase 1 of Urban Growth Capacity data collection. This is specifically called out in RCW 36.70A.215(3)a, e.

Deviation from achieved density is only permitted for zones in the following circumstances:

- **Insufficient observed development in the evaluation period**. Some zones may have experienced limited or no development to draw reasonable conclusions for anticipated development densities, either in the types of development allowed in a mixed use zone, or in the quantity of development.
- **Changes in regulations**. Densities achieved in development permitted during the 5-year review period may reflect zoning and development regulations that have since changed. Where regulations have changed to effectively increase or decrease achievable net densities, assumed future densities should reflect the impact of those regulatory changes, and the specific changes should be documented.
- **Trends over time**. A trend of increasing dwelling units per acre or FAR over time could justify an assumed future density higher than indicated in the zonal average reported as achieved density in Phase 1. Annual reporting in Phase 1 data would indicate this trend.
- **Infrastructure gaps.** "Partial infrastructure gaps," where infrastructure imitations affected portions of zones from achieving planned densities were identified in Phase 2 data reporting.

In such cases, jurisdictions may look to the planned density to inform the assumed density. Documentation of the specific development circumstances that demand deviation from the achieved density, and the rationale for the selected assumed density are required.

Reporting for this section is completed in table 1, as described below. Rows in table 1 will be populated with jurisdictional data provided in Phases 1 and 2. Depending on the completeness of data provided, achieved or planned densities for some zones may still need to be provided. Please review data provided for completeness vis-à-vis the zones in your jurisdiction.

When filling out table 1 for mixed use zones, create an individual row for each use.

Carrying over from Phase 2 reporting, if a portion of a zone is partly constrained by an infrastructure gap, create a separate row for those subareas, and use the constrained density in the assumed density field, noting the infrastructure gap in the document differences field.

Table 1: Assumed Densities

Zone	Land Use Type	Achieved Density	Planned Density	Assumed Density	Document differences between Assumed and Achieved densities, and rationale for selected density

Table 1 Fields and Reporting Instructions

Field Name	Definition and Reporting Instructions
Zone	Gathered from Phase 2 reporting. Each zone where development may occur must have values for all three densities below. For zones that allow multiple land uses list that zone once for each use.
Land Use Type	Residential, non-residential, mixed use, or Other (e.g. public lands, park zones, etc. that are occasionally recorded).
Achieved Density (both DU/acre and FAR)	From Phase 1 reporting. The achieved density the observed density of development occurring in a zone during the evaluation period 2012-2018. It is expressed in dwelling units per acre (residential) or FAR (non-residential). If no development was observed in a given zone, mark with zero and document in the "Documenting Differences" field.
Planned Density (both DU/acre and FAR)	From Phase 2 reporting. The planned density is the as-of-right density granted by code for each zone, that is the maximum allowed density without any bonus or incentive density.
Assumed Density (both DU/acre and FAR)	The density used to calculate capacity in this zone. In most cases this will be the same as the achieved density. Exceptions to this rule are described in the above section.
Documenting Differences	Use this field to report on the circumstances that warrant deviation from using the achieved density as the assumed density to calculate capacity.

Table 2: Mixed Use Zone Use Splits

Mixed use zones are defined as zones with capacity for both residential and non-residential development. In some cities, mixed use zones require the achieved use splits observed in Phase 1 to apportion area to residential and non-residential uses to calculate capacity, but all cities should report on differences between achieved and planned mixed use development. Some mixed use zones did not see mixed use development in the evaluation period. In these instances, jurisdictions can draw from additional sources:

- Observed splits in zones in comparable zones in or outside of your jurisdiction
- Expressed vision for these areas in comprehensive and neighborhood plan policies, or development regulations
- Local knowledge of market conditions, demand for space, projects in the development pipeline, and developer interest
- Existing development similar to that envisioned for a zone

Be sure to document which sources of information were used to determine assumed mixed use splits. Reporting for this section is completed in table 2, as described below.

Table 2: Mixed Use Zone Use Splits

Zone	Achieved % of Residential Development	Achieved % of Non-residential Development	Assumed % of Residential Development	Assumed % of Non-residential Development	Document differences between Assumed and Achieved Residential/Non-residential %

Table 2 Fields and Reporting Instructions

Field Name	Definition and Reporting Instructions
Zone	Gathered from Phase 2 reporting.
Achieved % of Residential Development	From Phase 1 reporting; zones without observed mixed use development will be zero.
Achieved % of Non-residential Development	From Phase 1 reporting; zones without observed mixed use development will be zero.
Assumed % of Residential Development	The share of residential development that will be used to apportion land to residential use. Assumption is to be based off of achieved splits, unless circumstances described above apply.
Assumed % of Non-residential Development	The share of non-residential development that will be used to apportion land to non-residential use. Assumption is to be based off of achieved splits, unless circumstances described above apply.
Documenting Differences	Use this field to report on the circumstances that warrant deviation from using the achieved development splits as the assumed splits to calculate capacity. In cases where no development was observed, cite the sources used to estimate assumed use splits.

Table 3: Discounts

To more accurately estimate the actual developable capacity, the area of vacant and redevelopable land supply must be reduced or "discounted" to account for land that gets utilized for rights-of-way and other public purpose uses where people do not live or work. Public purpose uses are generally stormwater facilities, parks, or other open space. These amounts vary by type and density of development.

The starting place for approximating these discounts is the observed development data used to calculate achieved densities in Phase 1. Past buildable lands reports provide additional reference points, built from the development observed during those evaluation periods. As development becomes denser and occurs as infill, these discount rates reduce, as right-of-way and public purpose uses are already built into the urban fabric.

To support jurisdictional selection of discounts, King County has performed analysis of developments constructed 2012-2018 that informed Phase 1 reporting. Discounts used in the 2007 Buildable Lands Report are also provided to inform the discount selection for the 2021 report. There may be reasons to deviate from the observed or past discounts, including:

- Increasingly dense or infill development experienced or anticipated in the future, could lend to reduced discounts, as essential infrastructure is already present.
- Changes in development regulations could affect discounts in either direction. Development regulations requiring additional set asides for environmental protection, for example could suggest increased discounts, while upzones or increases in land use intensity would suggest decreased discounts.

While zone-specific discounts are not recommended, additional detail may be provided. Land use or density patterns in some cities may justify a single discount being applied across residential land supply, or for multifamily and mixed uses.

Table 3: Discounts

	Right of Way	**Public Purpose**
Parcel Analysis SF Discount	%	%
Parcel Analysis MF/MU Discount		
BLR 2007 SF Discount		
BLR 2007 MF Discount		
BLR 2007 MU/Comm/Ind Discount		
SF Discount Selected		
MF Discount Selected		
MU/Comm/Ind Discount Selected		

Table 3 Fields and Reporting Instructions

Field Name	Definition and Reporting Instructions
Parcel Analysis SF Discount	Drawing from the comparison of 2012 and 2018 parcels that supplied data for Phase 1 reporting, this is the calculated portion of single family parcels developed during that period that went to right-of-way or public purpose uses.
Parcel Analysis MF/MU Discount	Drawing from the comparison of 2012 and 2018 parcels that supplied data for Phase 1 reporting, this is the calculated portion of multifamily and mixed use parcels developed during that period that went to right-of-way or public purpose uses. Values are not jurisdiction specific, and draw from a sampling of development
BLR 2007 SF Discount	This is the discount used for single family land supply in the 2007 Buildable Lands Report. Note that formatting may differ based on how discounts were applied in 2007 report.
BLR 2007 MF Discount	This is the discount used for multifamily land supply in the 2007 Buildable Lands Report. Note that formatting may differ based on how discounts were applied in 2007 report.
BLR 2007 MU/Comm/Ind Discount	This is the discount used for mixed use, commercial, and industrial land supply in the 2007 Buildable Lands Report. Note that formatting may differ based on how discounts were applied in 2007 report.
SF Discount Selected	Fill in your jurisdiction's selected discount for single family land supply here. Selecting a single discount for multiple land uses is also possible depending on your city's circumstance.
MF Discount Selected	Fill in your jurisdiction's selected discount for multifamily land supply here. Selecting a single discount for multiple land uses is also possible depending on your city's circumstance.
MU/Comm/Ind Discount Selected	Fill in your jurisdiction's selected discount for non-residential and/or mixed-use land supply here. Selecting a single discount for multiple land uses is also possible depending on your city's circumstance.

Table 4: Initial Capacity

In the template spreadsheets, the two tables on the tab titled "Table 4" calculate residential and non-residential capacity. The tables are separated for clarity, but are filled out in a similar way, moving from left to right to calculate initial capacity.

In each table, you'll create separate rows for each zone, and for vacant and redevelopable lands within each zone. Mixed use zones should have rows in both residential and non-residential tables. Be mindful of capacity affected by partial infrastructure gaps identified in Phase 2 reporting. These areas should also have their own rows to reflect the constrained densities of the infrastructure gaps.

About Calculating Mixed Use Capacity

In Phase 1 data collection, achieved densities were separately calculated for the residential and non-residential components of mixed use projects. These achieved densities were generally calculated from the number of residential units or commercial/office square footage over the entire parcel area. Calculating density in this manner factors in a split between residential and non-residential uses into the achieved density, making a separate apportionment of mixed use zoned land before the assumed density is applied unnecessary.

A handful of cities calculated density in a different, but equivalent, way— either expressing density only in FAR, or calculating the achieved densities for each use over a portion of the parcel relegated to individual land uses. Cities that calculated mixed use achieved density in one of these alternative ways will need to use the assumed mixed use shares recorded in Table 2 to apportion mixed use land supply to residential and non-residential use in each zone before applying the achieved densities, and document this approach in notes on table 4.

Table 4: Initial Capacity (Residential)

Zone	Mixed Use Zone	Land Use	Vacant/ Redevelopable	Assumed Density	Land Supply Area	Right of Way %	Public Purpose %	Buildable Area	Initial Residential Capacity	Existing Units on Redevelopable Parcels
Phase 2/ table 1	Y/N	SF/MF/MU	Select	from table 1	Phase 2	from table 3	from table 3	Acres	Housing units	Housing units

Table 4: Initial Capacity (Non-residential)

Zone	Mixed Use Zone	Land Use	Vacant/ Redevelopable	Assumed Density	Land Supply Area	Right of Way %	Public Purpose %	Buildable Area	Initial Non-residential Capacity	Existing construction on Redevelopable Parcels
Phase 2/ table 1	Y/N	Com/Ind/MU	Select	from table 1	Phase 2	from table 3	from table 3	Square Feet	Square feet	Square feet

Table 4 Fields and Reporting Instructions (both sub-tables combined)

Field Name	Definition and Reporting Instructions
Zone	Gathered from Phase 2 reporting, copied from Phase 3, table 1.
Mixed Use Zone	Yes or no- indicate whether this is a mixed use zone. Mixed use zones should have a residential and a non-residential row.
Land Use	Residential or Non-residential.
Vacant/Redevelopable	Indicate whether this is redevelopable or vacant land supply.
Assumed Density	Copied from table 1.
Land Supply Area	Gathered from Phase 2 reporting, table 4.
Right of Way %	Copied from table 3.
Public Purpose %	Copied from table 3.
Buildable Area	Developable land area for zone, from which capacity is calculated. Calculated field: Multiplies the single use land supply by 1-right of way % and 1-public purpose % discount fields. Residential land is expressed in acres (to be multiplied by DU/acre), non-residential land is expressed in square feet (to be multiplied by assumed FAR).

Field Name	Definition and Reporting Instructions
Initial (Non-)Residential Capacity	Initial capacity for zone. Multiply the buildable area by the assumed density in DU/acre.
Existing construction on Redevelopable Parcels	Compile the existing development in housing units or built square feet on land identified as redevelopable.

Table 5: Achieving Growth Targets

The review and evaluation program of the Growth Management Act requires that the county and its cities evaluate how they are achieving urban densities by comparing growth and targets. Further analysis is required where county or city growth targets are not being achieved. This concept has long been a part of the review and evaluation program, but amendments to the statute in 2017 strengthened analysis and reporting requirements, making non-achievement of growth targets a potential trigger for reasonable measures in the subsequent periodic comprehensive plan update.

To achieve this aim, King County is comparing estimated housing unit and employment growth 2006-2018 to growth targets adopted in the 2012 Countywide Planning Policies, extended to 2035. The extended growth targets were first published in a 2013 memo to help develop 2015 comprehensive plans. The extended targets have been adjusted to account for major annexations that have occurred since 2013. The memo and adjusted 2006-2035 targets are included in this Phase 3 data reporting packet.

For the recent estimates used to compare to the growth targets, 2006-2018 housing unit growth is derived from block-level OFM Small Area Population Estimates, using consistent geographic boundaries for cities in 2019. 2006-2018 employment estimates derive from the PSRC Covered Employment estimates. Employment estimates reflect total employment, less construction/resource sector employment, to mirror the targets for this period.

For Phase 3 data reporting, King County is requesting cities review the estimates in comparison to growth targets. This data will support the assessment of whether targets are being achieved. This data is presented in Table 6 of the Phase 3 reporting template. In addition to reviewing this data, jurisdictions are requested to consider the observed growth over the 2006-2018 evaluation period relative to the target, and report mitigating circumstances that have landed to significant differences between growth and the target. Such circumstances may include (but are not limited to):

- Development moratoria
- Timing or financing of infrastructure investments
- Preexisting developer agreements or major planned developments
- Development occurring well below planned densities
- National economic trends or factors outside of local land use control

Reporting for this section is completed in Table 5a and 5b, and described below. Data for all cities is also contained in a Tableau dashboard available here: https://public.tableau.com/profile/arrmask#!/vizhome/CompareTargets2006-35_all

Table 5a: Housing

2006-2035 Extended Housing Target	2006-2018 Target Elapsed	% of Target Period Elapsed	2006-2018 Housing Growth	% of Target Achieved	Discussion

Table 5b: Jobs

2006-2035 Extended Job Target	2006-2018 Target Elapsed	% of Target Period Elapsed	2006-2018 Job Growth	% of Target Achieved	Discussion

Table 5 Fields and Reporting Instructions

Field Name	Definition and Reporting Instructions
2006-2035 Extended Housing/Job Target	This field is supplied by King County, and reflects the adopted 2006-2031 target, extended to 2035 per the memo provided in the Phase 3 reporting packet. Jobs data reflects total employment minus construction/resource sector employment. City geographic boundaries reflect major annexations current through 2019.
2006-2018 Target Elapsed	This field is supplied by King County. It is a time-based estimate of the amount of target that has elapsed from 2006-2018. 41% of the 2006-2035 period has elapsed, so it is equal to 41% of the housing or jobs target. Review this number and compare it to the 2006-2018 growth estimate.
% of Target Period Elapsed	This field is supplied by King County. It is a time-based estimate of the amount of target that has elapsed from 2006-2018. 41% of the 2006-2035 period has elapsed, so it is equal to 41% of the housing or jobs target.
2006-2018 Housing/Job Growth	This field is supplied by King County. Housing unit data is sourced from OFM Small Area Estimates; job data is sourced from PSRC's employment estimates, minus construction/resource sector employment. City geographic boundaries reflect major annexations current through 2019. Review this estimate and compare to the 2006-2018 target elapsed estimate.
% of Target Achieved	This field is supplied by King County, calculated from the housing or job growth estimates divided by the extended target.
Discussion	Use this field for reporting specific events or conditions during the 2006-2018 period that could allow for a slower or quicker rate of target absorption. Examples are described in the preceding section.

Table 6: Achieving Planned Densities

Reporting on densities has always been a part of the review and evaluation program, but the review plays a more prominent role in this iteration of the Urban Growth Capacity Report. Like reporting on growth targets, amendments to the buildable lands statute in 2017 strengthened analysis and reporting requirements, making non-achievement of growth of planned densities a potential trigger for reasonable measures in the subsequent periodic comprehensive plan update.

Phase 3 data reporting will build towards this requirement by requesting your jurisdiction's reflection on differences in the densities achieved during the 2012-2018 evaluation period, and those you are planning for. Achieved densities derive from Phase 1 data reporting. Planned densities were requested in Phase 2 data reporting. Determination of "achieving" planned densities will be made later in 2020 according to countywide standards. Further analysis will be required where cities are determined to not be achieving planned densities.

For this phase of data reporting, King County is requesting jurisdictions compare achieved and planned densities for each zone, and evaluate potential reasons why densities may not have been achieved by development during the evaluation period. Such circumstances may include (but are not limited to):

- Rezones that occurred during the evaluation period
- Significant development regulation changes
- Infrastructure or level of service limitations
- Lack of capacity for new development
- Limited quantity of development to draw a comparison
- National economic conditions or development trends outside of local control

- Development vested under preexisting development regulations
- Development moratoria in specific zones or neighborhoods

Reporting for this section is completed in Table 6, and described below.

Table 6: Density Reporting

Zone	Land Use Type	Planned Density	Achieved Density	Difference	Discussion

Table 6 Fields and Reporting Instructions

Field Name	Definition and Reporting Instructions
Zone	Supplied by King County- please review for completeness. Cities with complex zoning codes may aggregate zones to a more generalized zone category that makes sense for monitoring.
Land Use Type	Indicate the type of use, residential, non-residential, or mixed use. For mixed use zones, include two lines for both the residential and non-residential planned and achieved densities. If your jurisdiction only uses FAR densities, you may report a single FAR value instead of indicating non-residential and residential densities.
Planned Density	From Phase 2 reporting
Achieved Density	From Phase 1 reporting
Difference	Calculated as a percentage: Achieved Density / Planned Density
Discussion	Use this field for reporting specific events or conditions during the 2006-2018 period that could allow for a slower or quicker rate of target absorption. Examples are described in the preceding section.

Wrapping up and Next Steps

Thank you for taking the time to read this guidance and complete Phase 3 reporting. Your partnership is essential to completing the Urban Growth Capacity Report. When your tables have been completed, please email them back to King County, to both rmaskin@kingcounty.gov and blarson@kingcounty.gov. Submissions are due July 13th, 2020.

King County's goal is to have all Phase 1 and 2 data completely submitted in early August 2020. This will facilitate countywide estimates of initial capacity in early September 2020. After Phase 3 is complete, we will follow up with information on calculating final capacity, and determinations on target and density achievement.

If you have questions or need help at any time, do not hesitate to contact Ben and Rebeccah, via the emails above or at 205-263-9590 (Ben) and 206-263-0380 (Rebeccah).

Appendix D: Phase 4 Guidance - Final Capacity

Introduction

The Urban Growth Capacity Study, also known as "buildable lands," is a collaboration between cities and King County to analyze recent land use development trends, and to compare those trends to comprehensive plans and growth targets. The study provides meaningful information to cities and King County on development and capacity for updating growth targets and comprehensive plans. King County coordinates the development of the report, and each city provides a standardized set of development data for their jurisdiction.

In February 2021, King County cities will report on the final assumptions necessary to calculate final capacity for this project. The previous three phases of reporting have cumulatively built upon each other towards the goal of calculating final capacity for each jurisdiction, as shown in Figure 1 below.

FIGURE 1: FLOW OF URBAN GROWTH CAPACITY REPORTING PHASES



Phase 4 of data collection will again build off work from previous phases of data collection to calculate residential and non-residential capacity. Final capacity will be compared to the remaining 2006-2035 growth target to determine whether sufficient capacity exists for targeted growth.

To calculate final capacity, cities will select two assumptions for each zone: *Market Factor* and *Employment Density* (Employment Density applies to mixed use and non-residential zones only). This guidance and set of reporting tables aim to provide the information necessary for each city to select appropriate assumptions for each zone.

Cities will submit data for Phase 4 in a separate reporting table template accompanying this document. King County staff are pursuing an accelerated timeline for Phase 4 data collection to complete capacity data for a draft Urban Growth Capacity Report in March 2021. **Phase 4 data is requested by March 5, 2021**. Resources and direct technical support are available to help meeting this data request. All previously submitted data relevant to Phase 4 has been entered into collection tables for each city and gaps in data collection have been noted or highlighted. Capacity calculations hare been pre-programed to the extent possible to facilitate efficient reporting.

Additionally, staff are encouraged to schedule appointments with Ben Larson to facilitate data collection. Staff are invited to book time via Calendy, an online scheduling website linked to Microsoft Outlook. You can schedule an appointment by clicking the following link: https://calendly.com/kingcounty_ugc/phase-iv. No account is necessary

Any questions or requests for support can be sent to Rebeccah Maskin rmaskin@kingcounty.gov or Ben Larson blarson@kingcounty.gov. As always, we greatly appreciate your assistance and cooperation with this request. Do not hesitate to reach out to let us know how we can facilitate your involvement in completing Urban Growth Capacity reporting.

Background on Phase 4 Data Assumptions

Phase 4 data reporting will build directly upon the data your jurisdiction reported in Phase 3 (initial capacity). Cities will select **Market Factor** assumptions to discount the identified land supply for each developable zone. Then, for zones with non-residential development, cities will select **Employment Densities**, expressed as square feet per job ratios, to convert built space capacity into employment capacity. Through allocated buildable lands grant funding from the Department of Commerce, King County has performed an updated analysis to support recommended assumptions, to comport with new statute requirements and recent development trends. Documents detailing the new analysis are included in the Phase 4 reporting package.

Market Factor

The Market Factor, also known as the Market Supply Factor, is a final adjustment to the developable land supply that follows other deductions that account for critical areas, infrastructure gaps, right-of-way, and future public facilities. It accounts for the percentage of buildable land that, due to market constraints, will not be developed during the 20-year planning period. Traditionally, it has been used as a proxy to account for landowner preference to not develop, or inability to develop property over the planning period. Market Factor will be applied to both residential and non-residential zones to determine final housing and employment capacity for each city.

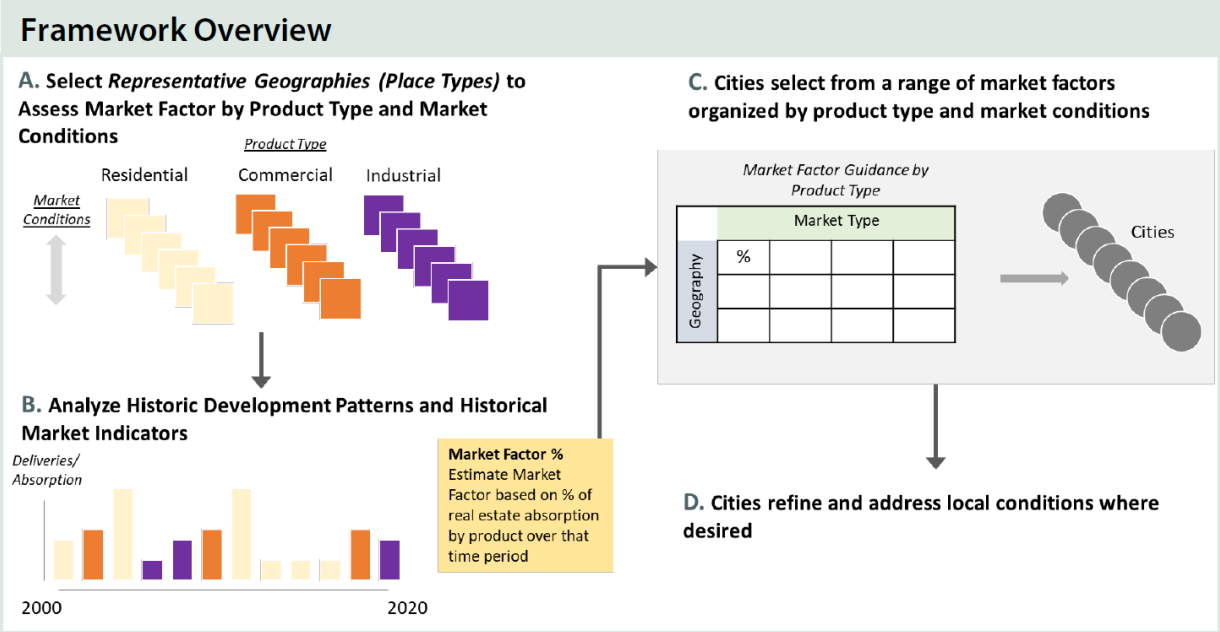
In general, land uses and zones where a *high* level of development or land conversion are expected over the planning period should assume a *low* market factor. Conversely, land uses and zones where development may be more difficult or slower to develop should assume a *high* market factor.

Through an updated analysis[1], recommended market factor ranges have been developed for residential and non-residential zones, varying by Regional Geography and relative market strength (market factor alignment). The analysis behind these recommended ranges compares historical development and land supply identified in the 2021 UGC study. Grouping cities by VISION 2050 Regional Geography, consultants analyzed the amount of development by "product type" (e.g., multifamily/mixed-use residential or industrial development) compared to the amount of capacity in zones linked to that product type, resulting in a distribution of rate of development for cities within a Regional Geography category.

Based on this distribution, cities were grouped into low, medium, and high market factor recommendation, with an associated range of market factors calculated from the relative amount of land left undeveloped in the product type classification. This process is illustrated in Figure 2, and detailed in pages 17-27 of the Market Factor Guidance document included in the reporting package

[1] *King County Urban Growth Capacity Market Factor Guidance* developed by Heartland, LLC and BERK Consulting, 2021. Excerpts from this guidance, including a step by step guide to selecting market factor are included in the reporting package. For the full draft guidance (includes appendices), please contact King County staff.

FIGURE 2: MARKET FACTOR RANGES DEVELOPMENT PROCESS OVERVIEW



The recommended ranges for product types by Regional Geography and market alignment are shown in Figure 3.

FIGURE 3: RECOMMENDED MARKET FACTOR RANGES

City Typology	Residential		Non-Residential	
Market Factor Alignment	Multifamily/ Mixed-Res	Single Family	Commercial (Office/Retail/Mix)	Industrial
Metropolitan Cities				
Low	5%-10%	1%-14%	1%-10%	1%-15%
Core Cities				
Low	5%-10%	1%-14%	1%-10%	1%-15%
Medium	11%-20%	15%-20%	11%-20%	16%-35%
High	21%-35%	21%-30%	21%-50%	36%-50%
High-Capacity Transit Communities				
Low	5%-10%	1%-9%	1%-14%	1%-19%
Medium	11%-15%	10%-20%	15%-25%	20%-30%
High	16%-30%	21%-35%	26%-50%	31%-50%
Cities and Towns				
Low	10%-24%	1%-10%	1%-10%	1%-15%
Medium	25%-35%	11%-40%	11%-20%	16%-35%
High	36%-50%	41%-50%	21%-50%	36%-50%

Selecting Market Factor for Your City

The first task of Phase 4 reporting will be to select the appropriate market factors for your city. For each zone, staff completing reporting will identify a market factor within the recommended ranges and update the reporting table. If the ideal market factor for a zone is determined to be outside of the recommended range, the specific rationale for selecting this market factor must be documented in the reporting table. Cities may vary their selected market factors by the relative complexity of zoning and available land within their jurisdiction. For smaller cities or less complex zoning, a single market factor by land use type may be appropriate, whereas larger cities or more complex development situations may require a more refined identification of appropriate market factors.

The following guidance describes the factors to weigh when selecting a value within the recommended ranges. More detail is included on pages 25-27 of the included Market Factor Guidance document, with the key factors to consider outlined here.

Redevelopable vs. Vacant Land

Cities are welcome to attune their market factors separately for vacant and redevelopable land stock. Be sure to consider how redevelopable lands were identified in calculating the land supply in phase 2 of data reporting. If in identifying the redevelopable land supply, a higher existing-to-planned density ratio or improvement-to-land value ratio was assumed for redevelopable lands, consider whether differentiating between redevelopable and vacant market factors is further required, as that definition already assumes a differentiation between these lands based on market forces.

Traditionally, redevelopable lands have assumed higher market factors than vacant lands to account for the relative ease of converting vacant land to development. As redevelopment takes more of the share of development, it could suggest the remaining vacant land could have significant development challenges that reduce this advantage.

Market Trends

If trends indicate growth in demand for a given product, consider a downward adjustment on market factor to reflect this demand. Alternatively, if the market data for a given product indicates more difficult market conditions, consider selection of a higher market factor within the recommended range.

Upzoned Existing Single-Family Areas

Market factor may be adjusted to account for relative uncertainty regarding how existing single-family zones that have been rezoned for greater intensity may redevelop. The age and value of the housing stock, presence of transit infrastructure, and recent sales or permitting activity can inform how to refine the appropriate market factor for these areas.

Restrictive Covenants

Some areas that have been rezoned or upzoned may still be subject to restrictive covenants that run with the land and limit how development may occur. This is most likely to exist in existing single-family neighborhoods but may also pose a challenge in business parks and other similar commercial districts. A higher market factor can account for this situation.

Fragmented Ownership and Parcel Size

Where capacity for a given product type is largely spread across fragmented or non-contiguous parcels and parcel sizes are generally smaller in size, a higher market factor may be considered to account for difficulties in parcel assemblage for future redevelopment.

Access to Transit

Planned transit infrastructure can greatly improve development feasibility and owner willingness to sell/redevelop land. Market factor assumptions can be tuned to reflect where such improvements exist or are planned in the future.

Infrastructure Cost

In phase 2 of data reporting, we examined the presence or availability of infrastructure in the identification of land supply. Market factor can build on this work, including selecting a higher factor to account for the cost or likeliness of significant infrastructure construction to support planned development.

Employment Densities

Selecting a square feet per job assumption, or employment density, per zone or land use is the last step of calculating non-residential capacity, converting built space capacity to jobs. Cities may vary their selected employment densities by the relative complexity of zoning and available land, or the sectors of employment that are likely to exist within their jurisdiction. Smaller cities or those with less complex zoning may consider a single value or values depending on the land use. Our most basic recommendation is differentiating between commercial and industrial jobs, because of the wide variance in employment density between these types.

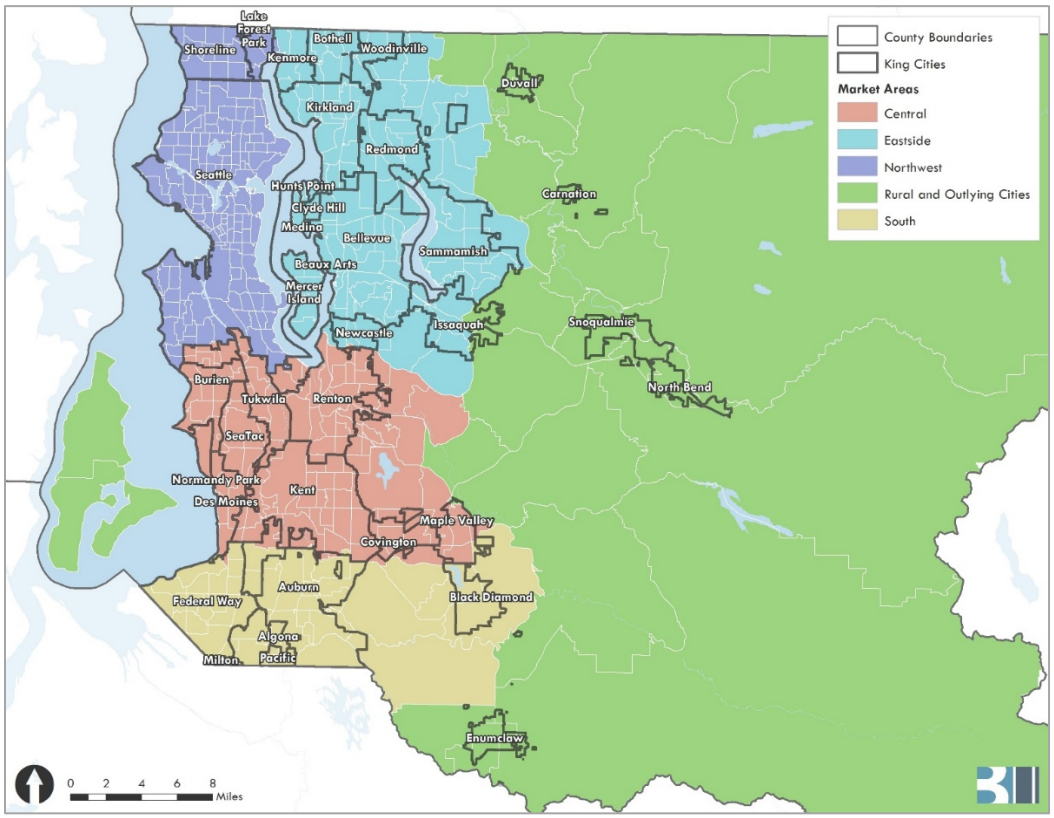
To prepare for the 2021 Urban Growth Capacity Report, an analysis of recent employment densities compared to past densities across King County was performed.[2] The analysis compared the amount of industrial and other commercial jobs to the aggregated amount of similarly classified non-residential built space in subareas covering King County to calculate ranges in employment density. This analysis was performed on 2006 and 2019 data to observe if employment density patterns have changed over time. The recommended ranges by subarea and general land use type (commercial/mixed use or industrial) are shown in Figure 4. A map of cities by subarea is included in Figure 5 below, and a city-specific table is included in the reporting table template and the employment density guidance document.

Figure 4: Recommended Square Feet per Job Ranges by Subarea

Market Area	Average 2006 Employment Density (all zones)	Average 2019 Employment Density (all zones)	Recommended Range for Commercial and Mixed-Use Zones	Recommended Range for Industrial Zones
Central	655	608	300–600	700–1,200
Eastside	398	386	200–400	500–800
Northwest	445	415	200–400	500–800
Outlying Cities	669	630	300–600	700–1,200
South	701	724	300–600	700–1,200

[2] *2021 King County Urban Growth Capacity Report Employment Density Guidance*, BERK Consulting, 2021. Full guidance included in reporting package.

FIGURE 5: EMPLOYMENT DENSITY SUBAREAS



Selecting Employment Density for Your City

The final task for calculating employment capacity will be reporting selected employment densities in the phase 4 reporting tables. Recommended ranges for your city are supplied in the reporting table template. If you select employment density values outside of the recommended range, please record specific rationale or alternative methods for doing so in the reporting table. The employment density guidance contains additional detail on pages 8-9 for refining employment densities within the recommended range for your city.

Guidance for Filling Out the Reporting Tables

About the Reporting Tables

The Phase 4 reporting table template consists of four tables. The reporting tables have been populated with data from previous phases of data reporting and programed with calculations to facilitate completion of this round of reporting. Columns include a header with a description of the calculation used to trace how data is used in across the table. **Columns that require input values are highlighted in yellow.**

City staff completing reporting will input selected market factor values by zone on Table 1, column E; and Table 2, column K. Selected employment densities will be inputted by zone on Table 3, column C. Table 4 includes the final capacity calculation. This calculation is primarily automated from values in the reporting tables, but a few values need to be inserted as indicated in the Table 4 explanation below. **As a final step before submitting your tables, back to King County, please review calculated capacity in Table 4.**

Reporting Tables

The below copies of the tables in the reporting table template include mocked-up examples of completed reporting, but otherwise mirror the versions provided in the table template. Each city has a version unique to their jurisdiction that reflects inputted phase 3 data, and recommended market factor or employment density ranges based on the guidance described in previous sections.

FIGURE 6: REPORTING TABLE 1: MARKET FACTOR

Zone	Zone Type	Market Factor Alignment (Low, Med, High)	Market Factor Range (%) (Based on Place-Type, Zone Type, and Market Factor Alignment) (See Guidance)	Final Market Factor	Comments (if final market factor is outside of the suggested range)
Zone Name	SFR, MFR, MU, Comm, Ind	Selected from Market Factor Guidance	Selected from Market Factor Guidance	To be decided by city staff. Please consult market factor guidance.	Please provide comments if final market factor is outside of the suggested range
Example 1	MU	Med	10% - 20%	15%	N/A
Example 2	Comm	Low	5% - 10%	20%	Owner of only vacant land directly opposed to development

Table 1 includes all zones imported from phases 2 and 3 of data reporting, and their land use type (zone type) classification. Select a market factor within the given range in column D, and provide any documentation if selecting a value outside of the given range.

FIGURE 6: REPORTING TABLE 2: INITIAL CAPACITY

Zone	**Mixed Use Zone**	**Land Use**	**Vacant/ Redevelopable**	**Assumed Density (DU/Acre)**	**Land Supply Area**	**Right of Way %**	**Public Purpose %**	**Final Market Factor %**	**Buildable Area (Acres)**	**Initial Residential Capacity (Housing Units)**
Name of Zone	Y/N	SF/MF/MU	Select Vacant or Redevelopable	From Phase 3	From Phase 3	From Phase 3	From Phase 3	From Table 1	= Column F * (1 - Column G - Column H - Column I)	= Column E * Column J
Example1	N	MF	Vacant	24.2	9.7	15%	10.0%		7	176.6

Existing Units on Redevelopable Parcels (Housing Units)	**Initial Capacity summed by zone (Housing Units)**	**Existing units on redevelopable parcels summed by zone (Housing Units)**
From Phase 3	To help with calculations on Table 4	To help with calculations on Table 4
0	235.8	12.0

Table 2 has two sub-tables, one for initial residential capacity, and one for initial non-residential capacity. Only the residential table is shown above. The non-residential table has an identical format, but is tailored to calculating developable square footage, not housing units.

Table 2 is largely imported from the final table in phase 3 data reporting. It includes almost all the data necessary for calculating capacity. In column I, input the selected market factor by zone from Phase 4 Table 1.

FIGURE 7: REPORTING TABLE 3: EMPLOYMENT DENSITIES

Zone	Zone Type (Ind/Comm/MU)	Square Feet Per Job
Example 1	MU	

If you are uncertain about how many square feet per job should be selected for each zone, please consult our employment densities guidance.

Table 3 also includes the following reference table (nothing to be reported by the city)

Recommended Ranges for City

Recommended Range: Commercial and Mixed-Use Zones	Recommended Range: Industrial Zones
200–300	450–700

For more information on these ranges please consult attached guidance on employment densities.

FIGURE 8: REPORTING TABLE 4: FINAL CAPACITY

Zone	Zone Type	Initial Residential Capacity	Existing Dwelling Units on Redevelopable Parcels	Development in the Pipeline	Final Residential Capacity (Dwelling Units)
Name of the Zone	*SFR/MFR/MU*	*From Table 2*	*From Table 2*	*From Phase 2*	*= Column C + Column E - Column D*
Example 1	MU	1,809	0	0	1,809

Table 4 has two sub-tables, one for residential capacity, and one for non-residential capacity. Please review this table, as it records the final capacity to be compared to the remaining target. As you select market factors, the calculated initial capacity will change. It will be lower than the initial capacity from phase 3 data reporting, as market factor discounts the land supply.

Input values for employment densities selected in Table 3 into Table 4 column G (non-residential table only). Also add any information on major planned developments to their appropriate zones in column E.

Pay special attention to any zones that your city has that are specific to single developments, institutions, or master planned areas. If applicable, we recommend using any capacity values relating to developer agreements, master plans, plats, or any other controlling documents rather than calculating capacity for these types of zones.

Wrapping up

Once you have completed phase 4 reporting, send the completed table and all necessary documentation back to King County staff: Ben Larson blarson@kingcounty.gov and Rebeccah Maskin rmaskin@kingcounty.gov.

Quality capacity data is the central product of the Urban Growth Capacity Report, and we cannot complete it without your support. You have our most esteemed respect and gratitude for completing this portion of King County's growth management journey, and we look forward to continuing to work with you as we compile findings for the report and complete additional analysis on achieved densities and growth targets, in addition to overall capacity findings.

A hearty THANK YOU for reading this guidance and partnering to complete this report. Please schedule time if you need technical assistance, or get in touch if you have any questions.

Appendix E: Market Factor Guidance

King County Urban Growth Capacity Report

Market Factor Guidance

January 2021

King County

BERK STRATEGY + ANALYSIS + COMMUNICATIONS

HEARTLAND

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1. Market Factor: Introduction

Intro and Purpose

The Market Factor, also known as the Market Supply Factor, is a final adjustment to the buildable land supply that follows other deductions that account for critical areas, infrastructure gaps, right-of-way, and future public facilities. It accounts for the percentage of buildable land that is unavailable or infeasible to develop during the 20-year planning period. Historically, it has been used as a proxy to account for landowner preferences and unwillingness to sell, with various methodologies and approaches employed to develop and inform the assumption. As stated in the Department of Commerce's 2018 Buildable Lands Guidelines:

> *Over a 20-year planning period, not all land will be available for development or redevelopment, no matter how suitable. One key constraint on property availability is market availability, or whether or not land will transact for purpose of development or redevelopment. Owners of property that could be developed or redeveloped may have no interest in selling or developing over an extended period of time for any number of reasons.*

E2SSB-5254 introduced new language regarding the overall buildable lands reporting requirements including new recommendations related to Market Factor assumptions. As part of King County's 2020/2021 updated Land Capacity Analysis the County is seeking guidance on development of Market Factor assumptions for municipalities across the County. King County, as mandated by GMA requirements, now seeks to develop a process and methodology for implementing Market Factors that comport with the revised buildable lands guidelines, and better reflect more current market realities present across the region.

Definition of Market Factor

Department of Commerce Guidelines. Several definitions of Market Factor are discussed in the Department of Commerce's 2018 Guidance Publication (see *Buildable Lands Guidelines, 2018).* Included are several references to the Revised Code of Washington (RCW) as well as the Washington Administrator Code (WAC). Overall, the guidelines describe Market Factor as:

> *Market Supply Factor is the estimated percentage of developable land contained within an urban growth area that is likely to remain unavailable over the course of a 20-year planning period and is, in practice, the final non-developable land deduction when calculating lands suitable for development and redevelopment.*

Process Overview

The following is an overview of the process utilized to develop Market Factor guidance for King County.

- Review Commerce guidance and past studies/methodologies
- Explore and evaluate potential methodologies, data sources and implementation frameworks
- Engage with planners and development community to inform methodology
- Conduct test fit analysis to inform Market Factor guidance (similar to case study examples to test data sources and results of the proposed methodology)
- Develop a framework for each City to evaluate and select a Market Factor assumption
- Recommended Market Factors for application across King County
- Create a "menu" of options organized by geography, product and market typologies
- Provide additional discussion and recommendations related to specific conditions that may impact the Market Factor assumption

Engagement

A critical component of the overall approach was the engagement with the public and private sector planning and development communities. The following groups were engaged throughout the development of the guidance document.

- King County Urban Growth Capacity (UGC) Technical Committee
- External Stakeholders (workshop and survey)
- City of Seattle

Engagement Process to Inform Market Factor

To inform development of a methodology for Market Factor, Heartland and Berk leveraged King County's UGC Technical Committee to discuss and review potential Market Factor methodologies. A survey was also distributed to the group of planners and feedback from the process was used to inform how the methodology and overall framework were developed.

In addition, a stakeholder focus group and survey were conducted to inform the development of the Market Factor Methodology as well as to validate conditions affecting the availability of land. A diverse list of professionals active throughout King County comprised primarily of developers and industry association representatives were invited to attend a discussion of the King County Land Capacity Analysis, and more specially, to discuss Market Factor. In attendance were a mix of representative including:

- Public sector representatives
- Industry/Association advocates
- Representation from both market-rate and income-restricted housing developers
- Developers/professional with expertise in multifamily, mixed use and single-family development
- Affordable Housing Advocacy Organizations

Below are highlights from the discussion. Bolded items are also discussed later in the guidance document.

Single Family Discussion

What We Heard:

- Political environment
- Reevaluate what is redevelopable
- **Issue of up-zones, resulting land price increase and impact on feasibility**
- **Slow turnover rate of SFR in MF or MU zones**
- Anticipate that regulations will only get tougher
- High degree of variability between cities in permit process/timing
- Lack of land zoned for townhomes
- On up zoned parcels, if too slow to convert large SFR lots into higher density, they will be redeveloped into more expensive SFR
- **Pricing expectations**

Multifamily and Mixed-Use Discussion

What We Heard:

- Permitting process and timing impacts matter
- **Access to transit** shapes project feasibility
- Missing/inadequate infrastructure in smaller communities to support higher density housing
- **Restrictive covenants impacts** newly up-zoned areas
- Emphasized need for predictability
- **Consider sale volume and growth as an indicator**
- Discussion of outlier communities:
  - **Mercer Island an example of a high price but limited growth community**
- Consider the existing land use mix and connections to employment centers
- **Consider physical parcel attributes**
- Include additional details for considering unique conditions and associated data sources to further evaluate

Approach

The guidance developed for King County focuses on a real estate product-type framework, wherein Market Factor assumptions/recommendations are organized by major real estate development typologies, also called product-types for the purposes of this report. Market Factor is to be selected by product-type and regional geography and applied to land capacity in areas of where the product type is projected to be the predominant use for a given zoning designation.

The approach to Market Factor for King County considers demonstrated supply, demand and projected capacity (projected for the 2021 UGC study). Demonstrated supply is informed by historical development deliveries. Relative demand for product is measured by both pricing and historical delivery by product type. All deliveries are measured in either residential units or non-residential square feet. The data referenced above were selected after a review of the Department of Commerce Buildable Lands Guidelines, review of former analysis of Market Factor conducted by King County as well as an evaluation of alternative data sources available at a County-wide scale.

This approach evaluates the recent demonstrated delivery rate for a certain product-type applied to a 20-year planning period as a ratio to the current projected capacity. This highlights the relationship between what is being developed by the market historically and the capacity a city is projecting into the future.

Rather than use the ratio to directly calculate a market factor, it is instead used to indicate and inform reasonable ranges of market factors and adjustments that cities in similar geographies and comparable market alignments can then choose to apply. These ranges serve as guidance and are recommended in Step 2 of the Market Factor Guidance Section. Additionally, cities can reference these ratio calculations for other cities to assess their own market factor assumptions and evaluate areas with different market conditions and historical development patterns.

Approach Considerations

The Market Factor assumption as applied in the Land Capacity Analysis framework is designed to account for a myriad of non-physical development conditions that would limit or prohibit the development of certain lands in the future. The approach, methodology and data sources in the guidance document are leveraged to inform the recommended ranges and selection framework, but are not meant to be directly translated to actual Market Factor percentages in a given City's estimates. *For example,* projecting a linear historical delivery trend does not necessarily represent the actual delivery trends for coming 20 years, but rather provides important context for how a City has grown historically versus how it expects to growth in the future.

Approach to City of Seattle

The City of Seattle, as one of two designated Metropolitan Cities in King County and the largest and most diverse City in the region, was analyzed at a more granular level than other Cities in King County. This is due to its geographic scale, total population and relative importance in terms of overall impact on capacity in King County. Seattle's distinct neighborhoods and zoning also allow for a more granular analysis and application of Market Factor. Seattle specific guidance is provided in the Appendix of document on page 40. It is important to note that the methodology for the City of Seattle is the same as the one used across the County, only at a neighborhood scale. The approach and framework herein does allow for more granular application of Market Factor in Cities where it may be appropriate, such as the City of Bellevue.

Why use this approach?

- Historical deliveries by product-type data is the best proxy for the nexus of real estate market conditions, willingness to sell and other factors that limit the development of land.
- This approach leverages readily available data from the King County Assessor to provide uniform analysis across all jurisdictions on existing supply, new deliveries, units and predominant use breakdowns to provide a historical and current market evaluation.
- The approach considers the demand for development land and attempts to account for the complexities associated with development economics that most often drive development decisions.
- The approach provides an empirical approach to deriving more realistic assumptions but also provides flexibility for Cities to address more qualitative and subjective conditions.
- The framework allows for a zone-by-zone approach for considering and selecting market factors for cities that wish to do so. Some cities may not have the complexity or need to apply Market Factor at that scale and may elect to apply at a City-wide scale.

The exhibit below depicts the overall process for selecting Market Factor deductions to apply to each City's capacity analysis.

Approach Summary

Analyze development patterns over the last 20 years by regional geography and product-type:

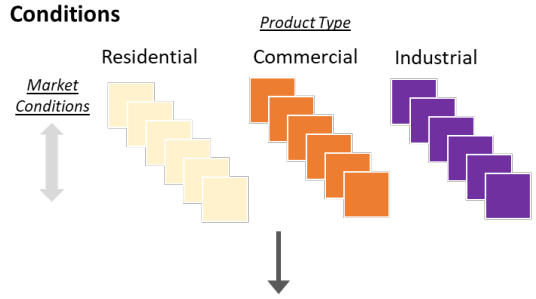
- What was delivered over the last 20 years by product type?
- How do historical rates of deliveries align with future capacity planned in the area?
- How does current supply for any given product type align with projected capacity?
- Leverage this data to inform Market Factor recommendations.

Provide recommendations for determining Market Factor based on:

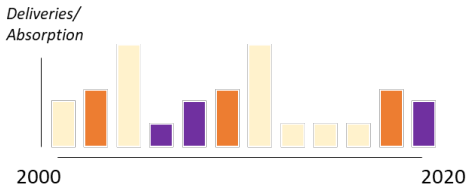
- Product-type
- Regional Geography
- Market conditions
- Other known market constraints

Methodology Overview

A. Select *Representative Geographies (Place Types)* to Assess Market Factor by Product Type and Market Conditions

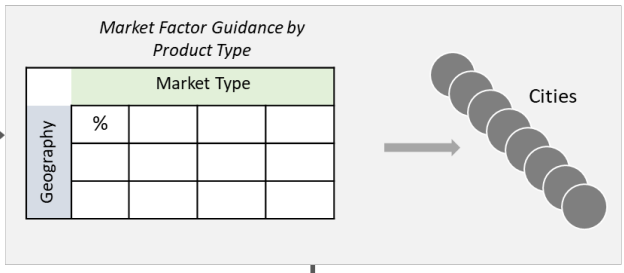


B. Analyze Historic Development Patterns and Historical Market Indicators



Market Factor %
Estimate Market Factor based on % of real estate absorption by product over that time period

C. Cities select from a range of market factors organized by product type and market conditions



D. Cities refine and address local conditions where desired

Market Factor: Key Definitions and Reference Terms Explained

The following terms and definitions are key to understanding the methodology and using the guidance document.

Product-type:
This refers to the general type of product that new construction would deliver in a particular zone. Using the *Product-type* in this approach serves as a bridge in applying market data to a jurisdiction's capacity data. Detailed *Product-type* definitions are provided in Table 1A under the first step in the Market Factor Guidance Framework.

Regional Geography:
This represents the PSRC *Regional Geographies* outlined in the PSRC Vision 2050 document. These are used to serve as place-type groupings for cities based on shared characteristics.

Market Factor Indicators:
The methodology centers around calculating *Market Factor Indicator* values. These values provide an indication of how capacity would be absorbed based on the annual delivery rate of development (by Product-type) found over the past 5-years. The indicators are not meant to directly translate into market factors but are intended to inform *Market Factor Alignments* and the *Market Factor Ranges* (both defined herein). Note: the analysis evaluated both the 5-year annual average and 20-year annual average historical deliveries.

The *Market Factor Indicator* applies the 5-year average historical delivery rate to the estimated capacity of a given geography over a 20-year planning horizon. This calculation as it relates to the projected capacity is used to indicate what percentage of the capacity is not absorbed over the coming 20 years. The resulting percentage value serves as an indicator of the amount of buildable land that is unavailable or infeasible to develop during the 20-year planning period

Market Factor Alignments:
Three specific groupings for assigning *Market Factor Ranges* (low, medium, and high) are provided. These are assigned by *Product-type* and *Regional Geography.*

The *Market Factor Indicators* for all cities are compared to each other for each *Product-type*. Given the range of *Market Factor Indicator* values, Cities are then grouped into low, medium, or high *Market Factor Alignments* based on how the Cities' *Market Factor Indicator* rankings compared to other cities (see Tables A1-4 in the Appendix). The Cities are then segmented by their respective *Regional Geographies*.

Market Factor Ranges:
Market Factor Ranges represent the range of Market Factors derived for King County organized by *Product-type* and *Regional Geography.* The ranges are informed by *Market Factor Indicators* and available market data (see page 10 to learn more about how the ranges were informed).

- For each *Product-type* and the corresponding *Market Factor Alignment,* a city can use the Table of *Market Factor Ranges* to serve as initial guidance for selecting a Market Factor.
- The discretion to select a value within the informed range or outside the range is left to each individual City. The comparative approach of this methodology is intended to provide flexibility for cities and allow them to make informed assumptions based on this framework but also leverage their unique knowledge of local conditions affecting capacity and future availability of land.

Methodology Overview

A: Establish the Market Factor Indicator through analysis of historical deliveries and the planned capacity for the coming twenty-year planning period.

Measurements:	5-year avg. annual deliveries Cities' Planned capacity
Regional Geographies:	PSRC Regional Geographies classifications.
Data Sources:	- King County Parcel Data - Year 2020 King County Buildable Lands Data - PSRC Regional Geographies
Output:	Market Factor Indicators for all Geographies and product types

Process :

- Assemble and evaluate past deliveries by evaluating the 5-year and 20-year average annual deliveries. These are used to project trends into the future.
- Evaluate Assumed capacity estimated by King County cities using UGC Phase III data. Assign this capacity data by product type based on zoning.
- Create an indicator by extending the 5-year annual delivery trend over the 20-year forward planning period and express as a percent of projected capacity. This gives an indication of what percentage of the planned capacity will be absorbed over the coming years. This indication can also be used to calculate what percentage of capacity does NOT develop over the 20-year planning horizon, which serves in this analysis as an *indicator* for Market Factor. The values from this analysis informed Market Factor recommendations but were not used to directly calculate Market Factors.

B: Establish Market Factor Alignments for all cities and general product types in King County

In the next step, cities were sorted into Low/Med/High Market Factor Alignment categories, based on the relationship of their Market Factor Indicators for each Product-type.

C: Establish Market Factor Ranges for each Regional Geography, Product-type and Market Factor Alignment.

- The Market Factor Indicators from Part A inform a reasonable baseline for the Market Factor Ranges for each city type, product type and Market Factor Alignment – covering every combination of these segments.
- Market price data (rents, median house prices) are used to inform how these ranges should be distributed among Market Factor Alignments (Part B) for each Product-Type.
- The Market Factors used in previous buildable lands analyses (referenced in **Appendix Table A10**) helped inform the maximum market factor (50%) to be found in the menu of ranges and provided useful context when evaluating appropriate ranges for cities to consider.

D: Adjustments – Cities can refine and adjust the Market Factor based on local analysis.

- Cities should adjust their Market Factor within the either the range provided OR the range that aligns most closely with the cities' market conditions.
- Further discussion of these adjustments is provided in step 4 of the Market Factor Guidance Framework.
- Additional data are provided in the appendix to aid cities in adjusting and in potentially re-aligning with another range that may better represent market conditions anticipated over the 20-year planning horizon.

Methodology Summary

A: Establish the Market Factor *Indicators*

B: Establish Market *Alignments* for each City and each Product-Type

C: Establish Market Factor *Ranges* for each Regional Geography , product type and Market Factor Alignment.

D: Refine and Adjust Market Factor

Chosen test-fit Market indicators:

Product Type	PSRC Designation	Test Fit City	Test-Fit Market Factor Range Alignment	Market Factor Indicator
Multifamily	Core City	Kirkland	Low	0.08
Multifamily	HCT	Kenmore	Low	0.07
Multifamily	Cities and Towns	Covington	Medium	0.23
Multifamily	Metropolitan	Bellevue	Low	
Single Family	Core City	Kirkland	Medium	0.18
Single Family	HCT	Lake Forest Park	Medium	0.34
Single Family	Cities and Towns	Pacific	Medium	0.5
Single Family	Metropolitan	Bellevue	Low	
COM(off)	Core City	Federal Way	Medium	0.5
COM(off)	HCT	Mercer Island	Medium	0.5
COM(off)	Cities and Towns	Snoqualmie	Medium	0.48
COM(off)	Metropolitan	Bellevue	Low	
Industrial	Core City	Redmond	Medium	0.5*
Industrial	HCT	Woodinville	Low	0.5*
Industrial	Cities and Towns	Enumclaw	High	0.5*
Industrial	Metropolitan	Bellevue	Low	

The table to the left shows each test fit city for each Regional Geography grouped by each Product-type.

**NOTE: the Market Factor upper bound was limited to 0.5, if there was value greater than this value, it was reduced to 0.5*

Process:

This process leverages the calculated *Market Factor Indicators* and identifies a test-fit city in each Regional Geography that has a reasonable alignment of historical deliveries and projected capacity. The test-fit city's indicator value is used as the foundation for the market factor range. The Market Factor Alignment for the test fit geography serves as the starting point for deriving the range, and the bounds for the ranges found under the remaining Market Factor Alignments (low/med/high) are derived through examining market pricing data (median sales price for single-family, and average rents for all other product types as shown in the Appendix Tables A5-9). These adjustments to find the bounds consider both the average price points and the range of prices across cities in King County. With higher ranges of market price data, a wider range of Market Factors generally resulted.

To ensure that the recommended Market Factor Ranges provided in the Guidance Document are reasonable and not overly impactful to a given City's estimated capacity, historical Market Factor assumptions were reviewed to inform an upper limit on the ranges across all product types.

Summary:

In summary, the Market Factor Ranges provided later in this document are informed by a review of calculated Market Factor Indicators and selection from this dataset to establish baseline Market Factor assumptions by Product-type and PSRC Geography. Baseline values were selected from those cities that illustrate relative alignment between historical deliveries and the projected capacity.

Smaller Market Factor Ranges are found where pricing of a given Product-type is more clustered and the overall range of pricing is smaller. Where large differences in pricing for a given Product-type exists, the resulting Market Factor Ranges are larger. These larger Market Factor Ranges reflect the variability in market conditions found for a given Product-type across a particular Regional Geography. This is reflected in Exhibits 1b-3b on the following pages.

Historical Delivery Data

Analysis of historical development patterns across King County began with the compilation and detailed analysis of King County Assessor data. Assessor data provides detailed information on each parcel within the County as well as building specific attributes. Leveraging this information, Heartland established the following:

- Number of residential units by jurisdiction
- A county-wide time-series of delivery data, based upon year of building/unit completion
- Square footage of development by year completed
- Building predominant use, and total square footage of each sectional use.

Product Classifications Assigned to Assessor Data:

Residential	Non-Residential
Single Family	Industrial
Multifamily/Mixed Residential	Office
	Retail
	Commercial (non-industrial)

Exhibits 1 - 3 Charts on the following pages illustrate overall development patterns across the County organized by Regional Geography. The data illustrates overall development patterns by specific Product Type.

The historical delivery data provides a proxy for a number of issues raised in the Buildable Lands Guidelines to which Market Factor is meant to address. These data provide a valuable indicator of:

- Demand for a given product in any given geography.
- The efficiency of the market to deliver the product.
- Willingness to sell.
- Impacts of planned or completed infrastructure.
- Other factors impacting the availability and development of land.

Other Data Analyzed

Capacity Data: Another key data point used to help inform this methodology includes the capacity data projected by each city by zone for the 2021 Buildable Lands Report.

Historical Market Data: Historical pricing data, for each market product-type were also analyzed. Other market data includes rental rates, sale pricing, vacancy, and the growth/trends associated with each of these, which are also previewed in exhibits 1-3.

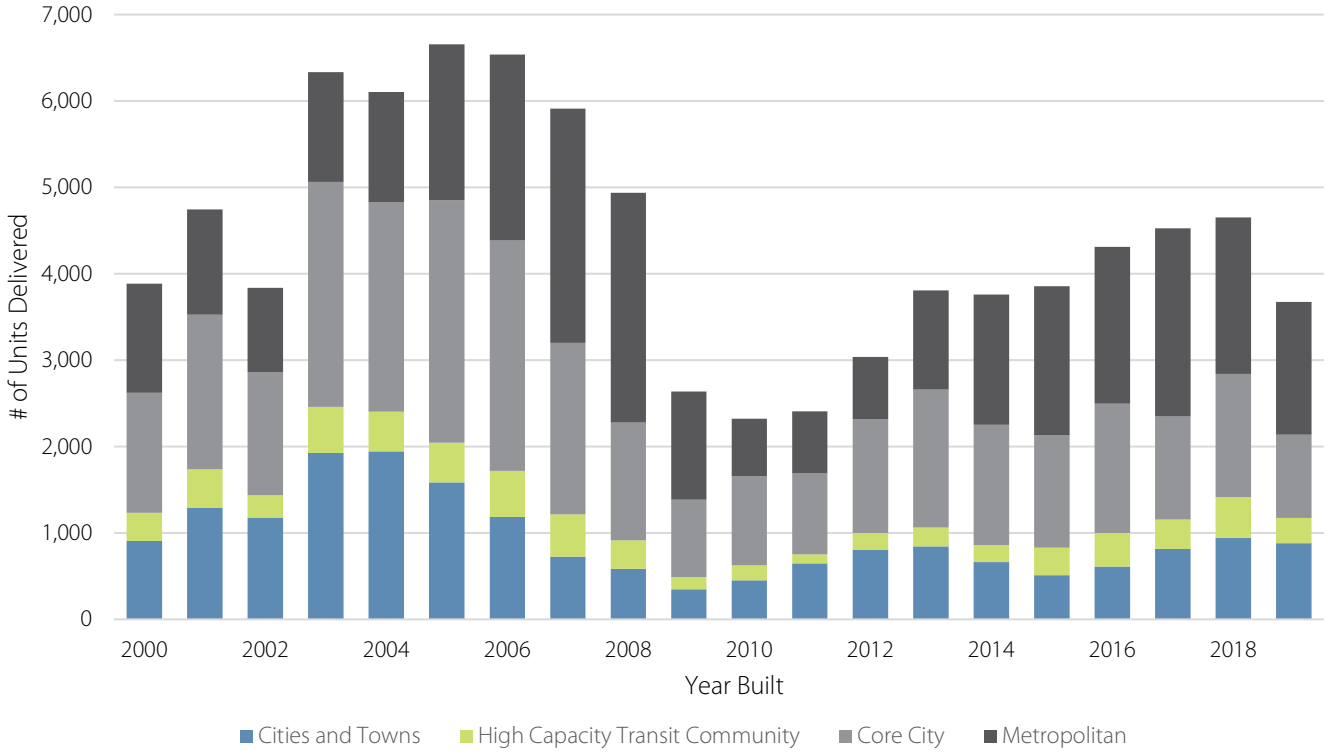
The three data sources combined provide a viewpoint of:

- Historical development deliveries by product type.
- Planned future capacity for a given Product-type.
- Current and past geography specific market conditions for the given product types.

Data Limitations:

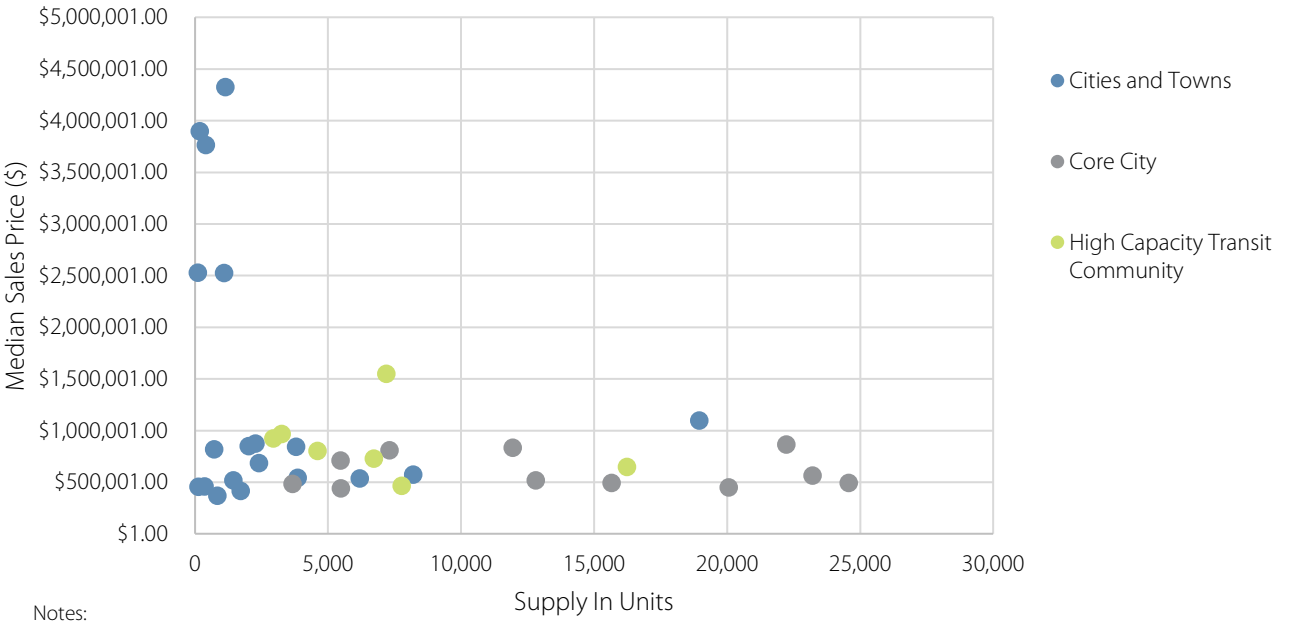
Several limitations exist and are important to acknowledge in the context of their impact to inform the Market Factor assumptions contained later in the Guidance Document. None of the data discussed herein lend themselves to a directly translatable Market Factor value, rather they are used to inform ranges and recommended assignments. In addition, it is important to note that with historical delivery data the year-built attribute may not align directly with a City's permitting data. In addition, for the purposes of the analysis, assumptions were made in classifying the building's product type based upon the predominant uses and overall residential densities.

Exhibit 1a: Single Family Unit Deliveries, 2000-2019



Source: King County Assessor Data

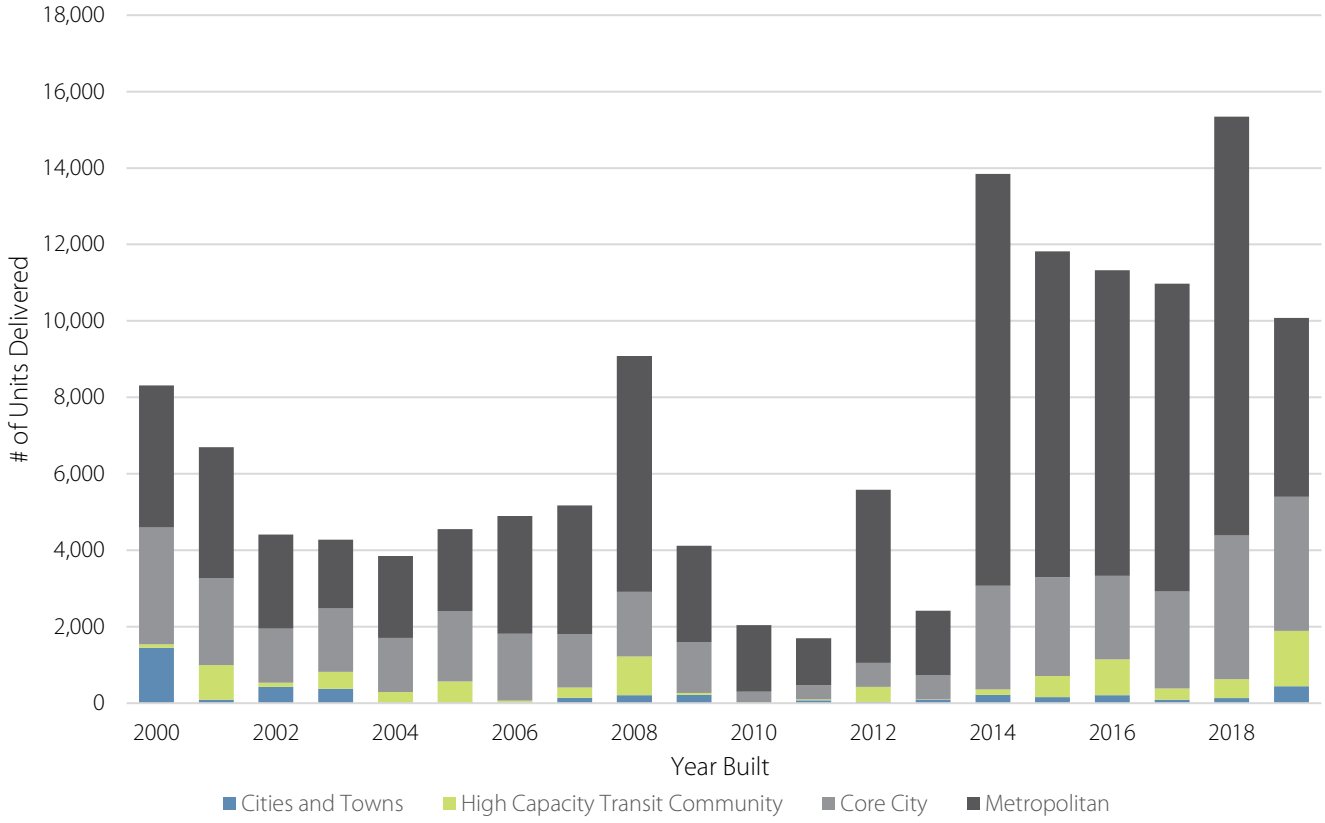
Exhibit 1b: Single Family Unit Supply and Median Sales Price



Notes:
Metro's are excluded from Exhibit 1b for readability, as supply greatly exceeds that of the other cities.
Single family is inclusive of attached single family units and townhomes

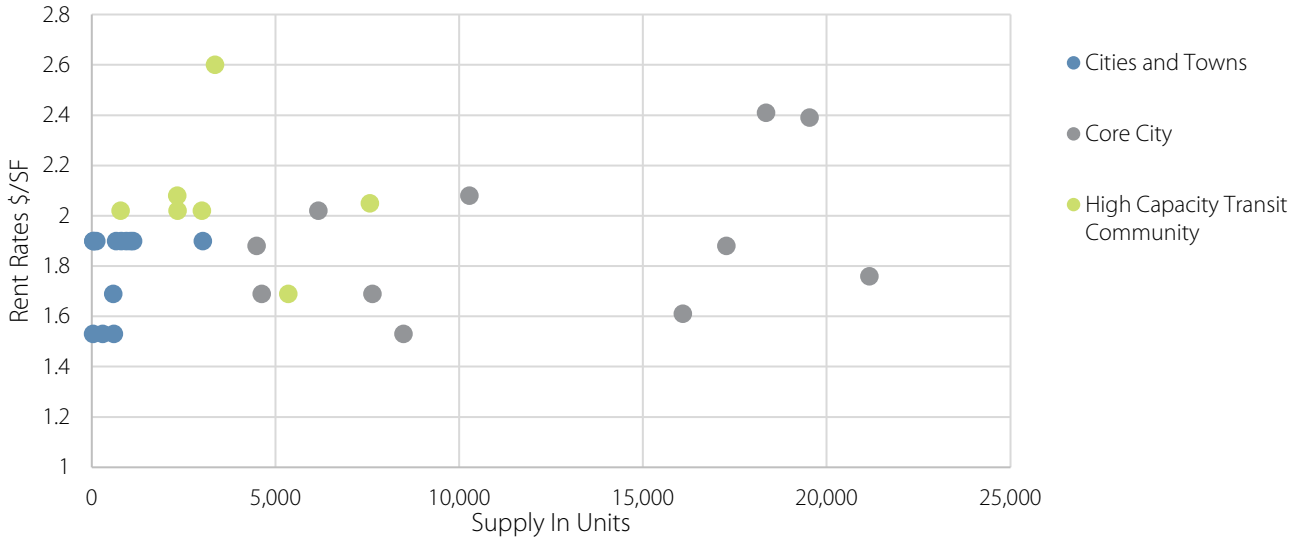
Source: King County Assessor Data, Redfin

Exhibit 2a: Multifamily & Mixed-Use Unit Deliveries 2000-2019



Source: King County Assessor Data

Exhibit 2b: Multifamily & Mixed-Use Supply and Current Rent ($/square foot)



Notes:

- Excludes Cities with Zero Supply; Assessor data completion year can come before actual occupancy and this may be reflected in 2019.
- Metro's are excluded from Exhibit 2b for readability, as supply greatly exceeds that of the other cities.

Source: King County Assessor Data, Costar

Exhibit 3a: Commercial Space (sq ft) Deliveries 2000-2019

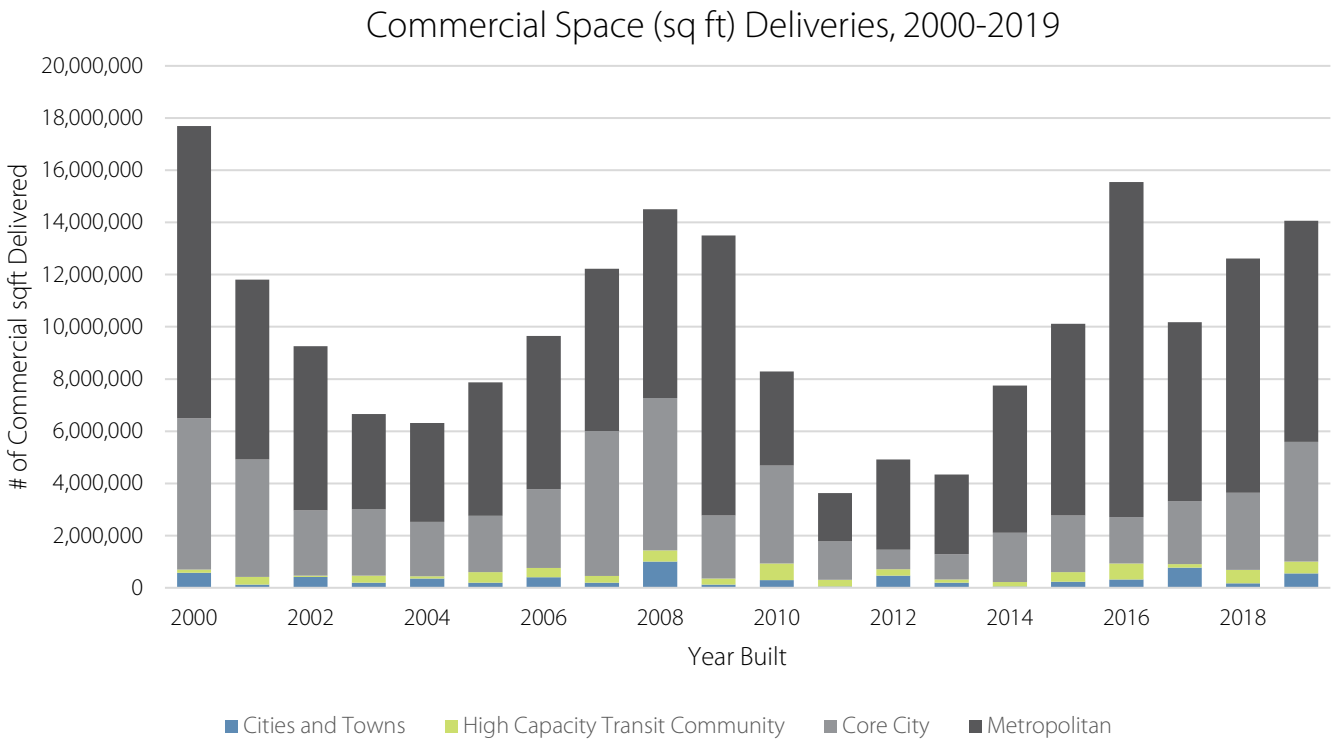
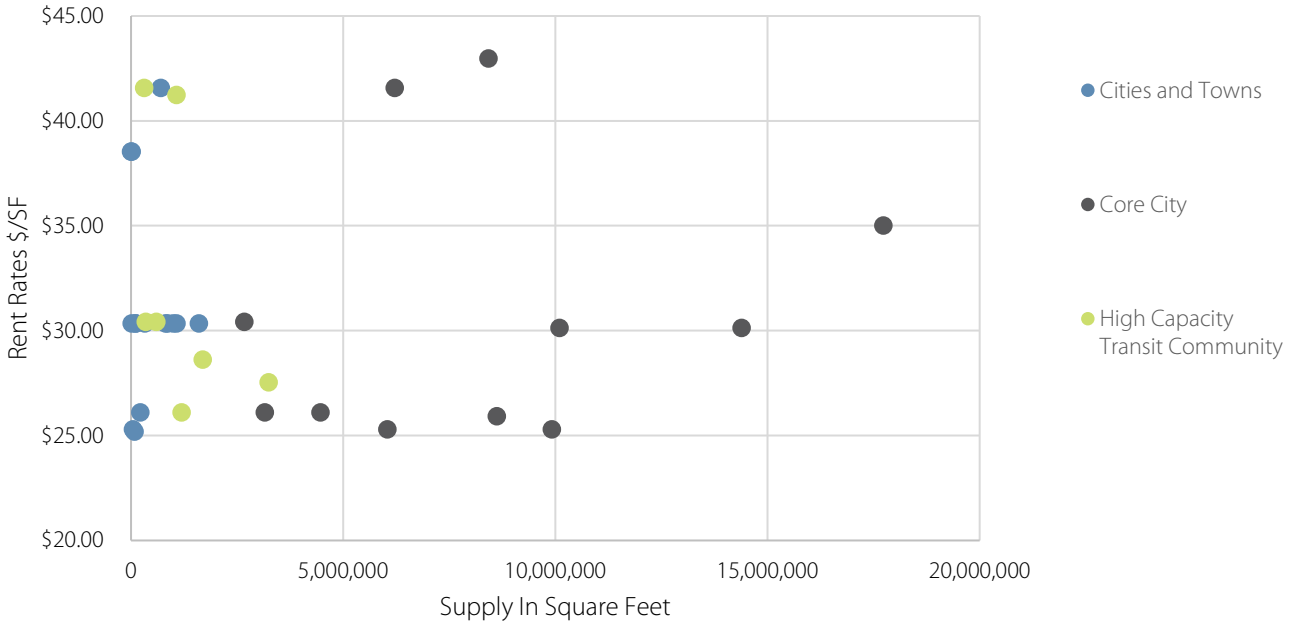


Exhibit 3b: Commercial Supply and Current Rent ($/ sq ft)



Notes:

- Metro's are excluded from Exhibit 3b for readability, as supply greatly exceeds that of the other cities.

Source: King County Assessor Data, Costar

Connecting Market Factor and other UGC Assumptions

Key considerations

Market conditions also enter the capacity analysis through other assumptions in the Urban Growth Capacity analysis. These assumptions can affect the values of selected market factors. Below is additional commentary on other assumptions made within the capacity analysis framework and how these assumptions should be considered when using the Market Factor Guidance document. It is important to note that all of the assumptions discussed are calculated and applied outside of the application of the Market Factor deduction and represent stand alone assumptions estimated by each City.

- **Identifying Redevelopable Lands.** The approach to identifying redevelopable lands and the selected thresholds for determining what could be redeveloped in the future is of great importance to how a City's capacity relates to market conditions and future development economics and conditions. More conservative thresholds, i.e., those that anticipate that less redevelopable lands will develop over the planning period, would result in less redevelopable land being available. Less conservative thresholds would result in more land being available for redevelopment, and may warrant the selection of a market factor at the higher end of the suggested range, depending on market strength. Each City should evaluate how their redevelopment assumptions already incorporate market conditions (or not) when selecting a Market Factor to apply.
- **Assumed Densities.** The density at which property develops in the future is in part dependent on market conditions and greatly impacts overall capacity. Each City has studied historical achieved densities and planned densities to arrive at an assumed density assumption. Where appropriate, each City should evaluate whether their assumptions reflect more aspirational product types and densities versus historical development patterns and achieved densities in a given zone and consider this when selecting a Market Factor to apply.
- **Infrastructure.** Analysis and deductions have been completed to account for deficiencies in infrastructure which could limit the development of land in the future. Jurisdictions may want to consider higher Market Factors for zones or land supply included as capacity, but requiring infrastructure investments to serve the assumed density. This adjustment would be intended to reflect the cost of the infrastructure investment, which was not a component of the previous infrastructure gaps analysis. This would only be a valid consideration where Cities believe the initial applied infrastructure gap deductions do not fully represent the infrastructure challenges in a given area.

2. Market Factor Guidance: *Framework*

Framework Overview

The following provides an overview of the Market Factor guidance framework developed for King County. There are four distinct steps defined within the framework outlined below. Additional details and data are provided on the subsequent pages detailing each step.

Step	Explanation of step	Definitions and Reference	Details
Step 1. Identify Zoning by Predominant Product-Type	Identify the predominant Product-type in each zone of the City where capacity exists	Explanation of each Product-type (Table 1A)	• Select the Product-types that align with the zones within your City that have capacity • The Product-type would be the predominant use expected to develop in each corresponding zone
Step 2. Identify Regional Geography and Market Alignment	Identify and align PSRC Regional Geographies and Market Conditions	Menu of Regional Geographies (PSRC) and Market Factor Alignments (Tables 2A-2D)	• Select applicable Regional Geography based on the Menu • Select appropriate Market Factor Alignment from menu
Step 3. Select from Market Factor Ranges	For each Product-type select a Market Factor Range to apply to the capacity analysis	Market Factor Ranges (Table 3A)	• Find correct table, review and use the selected range to inform Market Factor assumption prior to adjustments in Step 4.
Step 4. Adjustments	Adjust selected Market Factor Range assumptions based on known conditions	Condition Considerations (Table 4A)	•Review known conditions that impact Market Factor (p. 12) •Evaluate applicability in your City •Adjust Market Factor assumption based on on-the-ground conditions in your jurisdiction, and document in table template.

Step 1 : Identify Zoning by Product Type	
Explanation of step	Identify the predominant Product-Type in each zone of the City where capacity exists
Definitions and Reference	• **Table 1A - Product-type Reference** Select applicable Product-types on the following page

Directions

In Step 1, assign the applicable Product-type to each zone based upon the anticipated predominant uses in the corresponding zone.

To better understand the Product-types used in this guidance, reference **Table 1A: Product-Type Reference**

The Product-type assigned to each zone should represent the predominant building typology and use that is likely to occur. This can be based on past buildout within a given zone *OR* the Product-type envisioned and supported by the zoning regulations and requirements.

Example

Zoning Designations



Product-Types

Residential
Single Family
Multifamily/Mixed Residential
Non-Residential
Industrial
Office
Retail
Commercial (non-industrial)

Capacity Tables

Zoning	Mixed use (y/n)	Land Use	Product-type	Mkt Factor
R1	N	SF	Single Family	
R4	N	SF	Single Family	
R6	N	SF	Single Family	
R12	N	MF	Single Family	
R18	N	MF	Multifamily	
R24	N	MF	Multifamily	
R48	N	MF	Multifamily	
(MHC)	N		Single Family	
NB	Y	MU	Mixed Res	
CB	Y	MU	Mixed Res	
DR	Y	MU	Mixed Res	
			TOTALS	

Table 1A – Product-Type Reference

Product-type	Description/Application	Illustrative Examples
Residential		
Single Family	All areas where single family residential product inclusive of any of the following listed as the predominant use: detached, duplex, tri-plex four plex or townhouse plat.	Detached single family homes and subdivisions, attached townhomes and duplexes.
Multifamily/Mixed Residential	All areas where multilevel stacked residential product in the form of rental housing or condominium ownership is the predominant permitted use. Inclusive of high density multifamily and mixed-use developments.	Stacked flat apartment buildings, garden style apartment complexes, mid-rise multifamily podium projects, mid-rise multifamily podium projects with ground floor commercial uses, residential high-rise, residential condominium projects.
Non-Residential		
Industrial	Industrial facilities inclusive of manufacturing, warehousing, distribution and light industrial and facilities	Heavy industrial and manufacturing, warehousing and logistics development, light industrial and flex industrial facilities.
Office	Areas where the predominant use is office and zoning caters to office heavy commercial uses	Business Parks, Downtown CBDs.
Retail	Areas designated for standalone retail development.	Malls, power centers, lifestyle centers.
Commercial (non-industrial)	Inclusive of all nonindustrial commercial uses. Appropriate to apply in mixed use areas where the commercial use is the predominant use inclusive of instances where mixed residential is allowed but commercial component is primary.	Retail and office development (stand alone of mixed). Commercial components of residential mixed-use products.

Step 2 : Identify Regional Geographies mm and Market Factor Alignment	
Explanation of step	Use the following tables to identify the Regional Geography and to align with corresponding market conditions.
Definitions and Reference	• **Table 2A –** Metropolitan • **Table 2B –** High-Capacity Transit Market Factor Alignment Table • **Table 2C –** Core Cities Market Factor Alignment Table • **Table 2D –** Cities and towns Market Alignment Table

Directions

Regional Geography Designation

In addition to Product-type, this guidance segments different jurisdictions into like-kind Regional Geographies using the PSRC Designations. The four designations present in King County are given below:

- Metropolitan
- Core City
- High-Capacity Transit Community (HCT)
- Cities and Towns

Cities in these Regional Geographies share similar characteristics among peers. However, despite similarities amongst these Regional Geographies, market conditions still vary. To account for these variations amongst Regional Geographies peers, different *Market Factor Alignments* (high, medium, low) are be applied to the target cities to segment by these variations.

Use the Tables 2a -2d as a reference in selecting appropriate Market Factor Ranges by product type in Step 3. To review the Market Factor Indicators by City and Product type, refer to the **Appendix Tables A1-A4.** To review the methodology and explanation of Market Factor Indicators see Methodology Overview and Definitions section on page 8.

Market Factor Alignment

Each city's market conditions have been evaluated and *Market Alignment* has been assigned by Product-type. Use the rankings to select a *Market Factors Range* in Step 3.

- **Low** – market data and test fit analysis indicated that a lower Market Factor range is appropriate for the given Product-type.
- **Medium** – market data and test fit analysis indicated that a mid level Market Factor range is appropriate for the given Product-type.
- **High** – market data and test fit analysis indicated that a higher Market Factor range is appropriate for the given Product-type.

Further adjustments to the Market Factor, including how to select within the recommended range are completed in **Step 4**.

Table 2A – Metropolitan Market Alignment Table

City/Regional Geography		Product-Type Market Factor Alignment			
City	*PSRC Designation*	*Multifamily/MU*	*Single Family*	*Office/ Commercial*	*Industrial*
Bellevue	Metropolitan	Low	Low	Low	Low
Seattle*	Metropolitan	NA*	NA*	NA*	NA*

**Reference Appendix (page 40) for City of Seattle specific Market Factor guidance.*

Table 2B – Core Cities Market Factor Alignment Table

City/Regional Geography		Product-Type Market Factor Alignment			
City	*PSRC Designation*	*Multifamily/MU*	*Single Family*	*Office/Commercial*	*Industrial*
Redmond	Core City	Low	Low	Low	Medium
Tukwila	Core City	Low	Medium	Medium	Medium
Bothell	Core City	Low	Low	Low	Low
Issaquah	Core City	Medium	Low	Low	Low
Kirkland	Core City	Low	Medium	Low	Low
Kent	Core City	Medium	Low	High	Low
Burien	Core City	High	Medium	High	Low
SeaTac	Core City	High	Medium	Low	High
Federal Way	Core City	Low	Medium	Medium	Low
Renton	Core City	High	Low	Medium	Low
Auburn	Core City	Low	Medium	Medium	Low

Table 2C– High-Capacity Transit (HCT) Market Alignment Table

City/Regional Geography		Product-Type Market Factor Alignment			
City	*PSRC Designation*	*Multifamily/MU*	*Single Family*	*Office/ Commercial*	*Industrial*
Newcastle	HCT	Low	Medium	Low	High
Woodinville	HCT	Low	Low	Low	Low
Mercer Island	HCT	High	Low	Medium	Medium
Des Moines	HCT	High	Low	Low	Low
Shoreline	HCT	High	Medium	High	High
Kenmore	HCT	Low	Low	Medium	Medium
Lake Forest Park	HCT	High	Medium	High	NA

Table 2D – Cities and towns Market Alignment Table

City/Regional Geography		Product-Type Market Factor Alignment			
City	*PSRC Designation*	*Multifamily/MU*	*Single Family*	*Office/ Commercial*	*Industrial*
North Bend	Cities and Towns	Medium	Low	Medium	High
Maple Valley	Cities and Towns	Low	Low	Medium	High
Snoqualmie	Cities and Towns	Low	Low	Medium	High
Covington	Cities and Towns	Medium	Low	Low	High
Enumclaw	Cities and Towns	High	Low	Medium	High
Sammamish	Cities and Towns	High	Low	High	High
Milton	Cities and Towns	High	High	High	High
Carnation	Cities and Towns	High	Low	Low	High
Duvall	Cities and Towns	High	Low	High	Low
Black Diamond	Cities and Towns	High	Medium	NA	High
Medina	Cities and Towns	High	Low	High	High
Normandy Park	Cities and Towns	Low	High	Medium	High
Pacific	Cities and Towns	High	Medium	High	High
Skykomish	Cities and Towns	High	Medium	High	High
Algona	Cities and Towns	High	Low	High	High
Beaux Arts	Cities and Towns	High	Low	NA	NA
Clyde Hill	Cities and Towns	High	Low	NA	NA
Hunts Point	Cities and Towns	High	Low	NA	NA
Yarrow Point	Cities and Towns	High	Low	NA	NA

Step 3 : Select From Market Factor Ranges	
Explanation of step	For each Product-type select a *Market Factor Range* suitable for your City
Definitions and Reference	• **Table 3A – Market Factor Ranges by Product-type**

Directions

Building upon Steps 1 and 2, Step 3 applies *Market Factor Ranges* by relating each Regional Geography and *Market Factor Alignment* (Step 2) to a specific Product-type which can then be applied to zoning through a given zoning designation's corresponding Product-type, which was identified in Step 1.

The following table contains *Market Factors Ranges* for all combinations of Regional Geographies, *Market factor Alignments, and* product-types.

Table 3A – Market Factor Ranges by Product-Type

	Product-Type			
Regional Geography	**Residential**		**Non-Residential**	
Market Factor Alignment	**Multifamily/ Mixed-Res**	**Single Family**	**Commercial (Office/Retail/Mixed)**	**Industrial**
Core City				
Low	5%-10%	1%-14%	1%-10%	1%-15%
Medium	11%-20%	15%-20%	11%-20%	16%-35%
High	21%-35%	21%-30%	21%-50%	36%-50%
High-Capacity Transit				
Low	5%-10%	1%-9%	1%-14%	1%-19%
Medium	11%-15%	10%-20%	15%-25%	20%-30%
High	16%-30%	21%-35%	26%-50%	31%-50%
Cities and Towns				
Low	10%-24%	1%-10%	1%-10%	1%-15%
Medium	25%-35%	11%-40%	11%-20%	16%-35%
High	36%-50%	41%-50%	21%-50%	36%-50%
Metropolitan				
Low	5%-10%	1%-14%	1%-10%	1%-15%

Methodology Reminder:
These ranges are informed by the Market Factor Indictor test-fit analysis. This relates historical delivery trends to projected capacity. These ranges were then further differentiated among peers in each Regional Geography by evaluating price data including both rents and median sale price (for single family product). Reference Methodology Overview on Page 10 for more detail.

Step 4 : Adjustments	
Explanation of step	Make selected adjustments to suggested *Market Factor Ranges* based on known conditions
Definitions and Reference	• **Table 4A – Adjustment Implementation**

Overview

Step 4 provides a framework for selecting a Market Factor from within the range selected in Step 3. Specific conditions are discussed that would influence future development and impact the Market Factor value assumed by a given City.

The conditions listed below reflect specific topics and questions flagged during the engagement process described earlier in the guidance document. Each city should carefully consider these conditions and how they might impact their assumptions related to Market Factor. The conditions discussed do not represent all the potential conditions and issues that Market Factor may address. Cities should adjust within the given ranges or deviate from it altogether to account for known conditions that impact the development of and availability of land in their jurisdiction. **Table 4A** on the following pages provides more detailed descriptions of theses conditions and how adjustment should be considered. Note that assumptions previously incorporated into the Land Capacity Analysis (see page 15 *UGC Assumptions*) may already account for the adjustments discussed in this section.

- Vacant versus redevelopable lands assumptions
- Strong market growth indicators (Reference appendix market **Tables A5-A9**)
- Single family uses in recently up-zoned areas
- Restrictive Covenants in planned communities
- Parcel size and assemblage challenges
- Transit accessibility

Selecting Within The Range Based on Market Conditions:

A range for each Product-type by each Regional Geography is provided in Step 3. In order to select within this range, each city must review their specific attributes, assumptions and market conditions and consider whether a higher or lower Market Factor is appropriate for that given Product-type (and therefore, applicable zone within the city). It is important to note that additional factors may need to be considered to account for unique circumstances influencing the market availability of land in any given jurisdiction.

Several sets of data may be leveraged to evaluate the adjustments outlined in **Table 4a**:

- **Appendix Tables A1-A4:** *Market Factor Indicators* and supporting data for each jurisdiction in King County (illustrating historical deliveries and planned capacity)
- **Appendix Tables A5-A9:** Market conditions by product-type (key indicators for all applicable jurisdictions within the County)
- **Appendix Table A10**: Past Market Factor assumptions

Table 4A – Adjustment Template

Condition	Explanation	Recommendation on Market Factor Adjustment	
		Select a lower value from the range if:	*Select a higher value from the range if:*
Assumption for Vacant versus Redevelopable Lands			
Where a City has a mix of vacant and redevelopable lands as part of their capacity and it is appropriate to differentiate the Market Factor assumption for vacant and redevelopable lands.	Consider the overall ratio of vacant land versus redevelopable land and the condition of said lands. For example, if >50% of capacity is on vacant land, consider adjusting Market Factor downward on vacant land upward on redevelopable land. The relative location of vacant and redevelopable lands is also an important consideration. Where redevelopable lands are located near or adjacent to important infrastructure and amenities, the need to differentiate between the two is less pronounced.	For vacant lands, select a value that is lower within the given range (or outside the low end of the range if deemed appropriate) when the supply of vacant lands represents a significant portion of overall capacity for a given product and the location and relative attributes of said supply do not represent barriers to redevelopment	For redevelopable lands, select a higher value in the Market Factor range if conditions are known that may limit or impact the turnover and availability of land with existing uses.
Market Trends			
Where recent real estate market trends for a given Product-type indicate more or less challenging conditions for development in the next 20 years.	If trends indicate growth in demand for a given product, consider a downward adjustment on Market Factor to reflect this demand. Such indicators include growth in pricing/lease rates and/or decreases. Alternatively, if the market data for a given product indicates more difficult market conditions in terms of ranking amongst jurisdictions, consider selection of a higher market factor within the given range.	Market trends align with trends amongst peer cities falling in a lower Market Factor Alignment indicates that a lower market factor may be appropriate.	Market trends suggest a downward trend in overall demand or overall rankings amongst peer cities suggesting that a higher market factor may be appropriate.

Table 4A – Adjustment Template

Condition	Explanation	Recommendation on Market Factor Adjustment	
		Select a lower value from the range if:	*Select a higher value from the range if:*
Single Family Up-zoned Areas			
Where significant capacity for higher density single family or multifamily/ mixed-use housing is assumed on existing single family uses	Where capacity exists on lands that currently house single family uses but greater densities are permitted, many cities have cited concern regarding how such areas will redevelop and if a specific Market Factor adjustment should be leveraged. The Cities of Shoreline and SeaTac serve as examples where single family areas were up-zoned around planned or completed transit facilities. The turnover and development of single family areas in these cities is captured in through the analysis of historical deliveries data and may be leveraged for reference or comparison on a county wide scale. Important indicators to consider when adjusting for such a condition include: – Whether home prices are below, on par or above median prices in the region – The age and quality of the housing stock – Recent transaction activity – Recent permitting activity	The conditions of the capacity lands with single family uses reflect the following conditions: – Home prices at or below median prices for the area – The housing stock is aging – There is a higher rate of recent transactions reflecting interest from developers	The conditions of the capacity lands with single family uses reflect the following conditions: – Home prices are above median prices for the area representing a potential market barrier to redevelopment – The housing stock includes recently constructed or updated structures – Recent transactions reflect value in use (meaning the highest and best use of the property is still considered the single family residence)
Restrictive Covenants in Planned Communities			
Where restrictive home-owner associations or other similar covenants may limit the redevelopment at a higher intensity/use	In some cases, areas that have been rezoned or up-zoned are still subject to restrictive covenants that run with the land and limit how development may occur. This is most likely to exist in existing single family neighborhoods but may also pose a challenge in business parks and other similar commercial districts.	If restrictive covenants are not known to exist or would have a limited impact on redevelopment in the future.	If restrictive covenants are known and would need to be removed/eliminated in order for redevelopment per new zoning allowances to occur (at a higher intensity).

Table 4A – Adjustment Template (Continued)

Condition	Explanation	Recommendation on Market Factor Adjustment	
		Select a lower value from the range if:	*Select a higher value from the range if:*
Fragmented Ownership and Parcel Size			
Where capacity in a given neighborhood or zone is fragmented and generally consists of smaller parcels (less than ..25 acres for multifamily site for example)	Where capacity for a given Product-type occurs on largely fragmented or non-contiguous parcels and the parcels are generally smaller in size, a higher market factor may be considered. Such conditions may limit options for parcel assemblage in the future and result in less land being redeveloped in the future.	Vacant and/or redevelopable lands consist of a mix of contiguous and non-contiguous properties and parcel sizes do not appear to represent a challenge to development in the future	Conditions are observed that reflect an abundance of capacity on smaller, non-contiguous properties in a given zone or neighborhood
Access to Transit			
Where planned or recently completed transit facilities may impact develop feasibility in the surrounding neighborhood/zone.	Planned infrastructure like Bus Rapid Transit, Light Rail and other major transportation improvement that improve access and mobility can greatly improve development feasibility and owner willingness to sell/redevelopment land. Market Factor assumptions should reflect where such improvements either exist or are planned in the future (within an impacted area such as a ¼ mile walk shed).	A significant transportation infrastructure investment is completed or planned that will greatly improve transit access in a given zone or neighborhood.	NA

3. Appendix A – Reference Tables

Appendix Tables Summary

The following tables are available for reference and were used to inform the Market Factor alignment for Cities (low, medium or high) by product and the Market Factor range value.

- **Table A1. Supply, Deliveries, & Capacity Table:** *Multifamily + Mixed Res*
- **Table A2. Supply, Deliveries, & Capacity Table:** *Single Family*
- **Table A3. Supply, Deliveries, & Capacity Table:** Non-residential - *Commercial (Office/Retail)*
- **Table A4. Supply, Deliveries, & Capacity Table:** *Non-Residential - Industrial*

Additional Market data is available in the following tables to further inform Market Factor selection and adjustments. Included is an overview of past Market Factor assumptions used across Washington State.

- **Table A5. Market Data – Multifamily Residential Product**
- **Table A6. Market Data – Single Family Product**
- **Table A7. Market Data – Retail Product**
- **Table A8. Market Data – Office Product**
- **Table A9. Market Data – Industrial Product**
- **Table A10. Market Factor – Past Assumptions**

Table A1. Supply, Deliveries, & Capacity Table:

Multifamily + Mixed Res

City	Regional Geography	Market Factor Alignment	Total Supply (Units)	5-yr Average Annual Deliveries (Gross,2015-2019)	Assumed Capacity Estimates from Cities (Gross)	Market Factor Indicator
Algona	**Cities and Towns**	High	36	0	53	100%
Beaux Arts	**Cities and Towns**	High	0	0	0	100%
Black Diamond	**Cities and Towns**	High	41	0	1886	100%
Carnation	**Cities and Towns**	High	45	0	196	100%
Clyde Hill	**Cities and Towns**	High	0	0	0	100%
Duvall	**Cities and Towns**	High	119	0	856	100%
Enumclaw	**Cities and Towns**	High	1,053	0	632	100%
Hunts Point	**Cities and Towns**	High	0	0	0	100%
Medina	**Cities and Towns**	High	0	0	0	100%
Milton	**Cities and Towns**	High	300	23	0	100%
Pacific	**Cities and Towns**	High	599	0	3	100%
Skykomish	**Cities and Towns**	High	0	0	0	100%
Yarrow Point	**Cities and Towns**	High	0	0	0	100%
Sammamish	**Cities and Towns**	High	3,021	25	2157	76%
North Bend	**Cities and Towns**	Med	803	9	390	56%
Covington	**Cities and Towns**	Med	665	65	1689	23%
Maple Valley	**Cities and Towns**	Low	1,121	65	269	0%
Normandy Park	**Cities and Towns**	Low	584	1	12	0%
Snoqualmie	**Cities and Towns**	Low	944	58	148	0%
SeaTac	**Core City**	High	4,626	41	7044	88%
Renton	**Core City**	High	17,274	153	15476	80%
Burien	**Core City**	High	7,635	120	7624	68%
Kent	**Core City**	Med	21,166	278	13077	57%
Issaquah	**Core City**	Med	10,277	426	14172	40%
Kirkland	**Core City**	Low	18,348	427	9327	8%
Tukwila	**Core City**	Low	4,484	126	2551	1%
Auburn	**Core City**	Low	8,481	201	3511	0%
Bothell	**Core City**	Low	6,168	350	3238	0%
Federal Way	**Core City**	Low	16,085	192	617	0%
Redmond	**Core City**	Low	19,531	1,144	20414	0%
Lake Forest Park	**High Capacity Transit Community**	High	786	0	844	100%
Shoreline	**High Capacity Transit Community**	High	7,568	208	24037	83%
Des Moines	**High Capacity Transit Community**	High	5,348	106	6657	68%
Mercer Island	**High Capacity Transit Community**	High	3,352	78	4748	67%
Kenmore	**High Capacity Transit Community**	Low	2,335	53	1147	7%
Woodinville	**High Capacity Transit Community**	Low	2,996	126	2612	4%
Newcastle	**High Capacity Transit Community**	Low	2,330	202	2772	0%
Bellevue	**Metropolitan**	Low	30,707	993	23473	15%

Source: King County Assessor

Table A2. Supply, Deliveries, & Capacity Table:

Single Family

City	Regional Geography	Market Factor Alignment	Total Supply (Units)	5-yr Average Annual Deliveries (Gross,2015-2019)	Assumed Capacity Estimates from Cities (Gross)	Market Factor Indicator Value
Milton	**Cities and Towns**	High	370	0	70	100%
Normandy Park	**Cities and Towns**	High	2,279	9	4931	96%
Skykomish	**Cities and Towns**	Medium	136	0	54	85%
Black Diamond	**Cities and Towns**	Medium	1,442	16	1606	80%
Pacific	**Cities and Towns**	Medium	1,722	12	586	58%
Algona	**Cities and Towns**	Low	847	5	59	0%
Beaux Arts	**Cities and Towns**	Low	116	0	3	0%
Carnation	**Cities and Towns**	Low	725	33	110	0%
Clyde Hill	**Cities and Towns**	Low	1,100	16	0	0%
Covington	**Cities and Towns**	Low	6,195	52	295	0%
Duvall	**Cities and Towns**	Low	2,411	34	446	0%
Enumclaw	**Cities and Towns**	Low	3,867	92	1078	0%
Hunts Point	**Cities and Towns**	Low	181	0	5	0%
Maple Valley	**Cities and Towns**	Low	8,204	87	1314	0%
Medina	**Cities and Towns**	Low	1,147	9	60	0%
North Bend	**Cities and Towns**	Low	2,028	64	893	0%
Sammamish	**Cities and Towns**	Low	18,960	257	994	0%
Snoqualmie	**Cities and Towns**	Low	3,804	55	54	0%
Yarrow Point	**Cities and Towns**	Low	411	7	24	0%
Burien	**Core City**	Medium	12,813	58	8034	85%
SeaTac	**Core City**	Medium	5,489	20	1757	78%
Federal Way	**Core City**	Medium	20,058	50	4082	75%
Tukwila	**Core City**	Medium	3,677	31	1914	67%
Auburn	**Core City**	Medium	15,664	152	6859	56%
Kirkland	**Core City**	Medium	22,231	246	6019	18%
Bothell	**Core City**	Low	5,472	77	1065	0%
Issaquah	**Core City**	Low	7,319	102	1321	0%
Kent	**Core City**	Low	24,572	224	3174	0%
Redmond	**Core City**	Low	11,947	148	153	0%
Renton	**Core City**	Low	23,217	169	2887	0%
Shoreline	**High Capacity Transit Community**	Medium	16,241	51	1926	47%
Newcastle	**High Capacity Transit Community**	Medium	3,267	29	942	38%
Lake Forest Park	**High Capacity Transit Community**	Medium	4,605	36	1084	34%
Des Moines	**High Capacity Transit Community**	Low	7,770	45	549	0%
Kenmore	**High Capacity Transit Community**	Low	6,725	86	307	0%
Mercer Island	**High Capacity Transit Community**	Low	7,200	65	942	0%
Woodinville	**High Capacity Transit Community**	Low	2,945	51	159	0%
Bellevue	**Metropolitan**	Low	30,991	180	1401	0%

Source: King County Assessor

Table A3. Supply, Deliveries, & Capacity Table:

Non-residential - *Commercial (Office/Retail/Mixed-use)*

City	Regional Geography	Market Factor Alignment	Total Supply (square feet)	5-yr Average Annual Deliveries (Gross,2015-2019)	Assumed Capacity Estimates from Cities (Gross)	Market Factor Indicator Value
Algona	**Cities and Towns**	High	82,157	0	1,937,549	100%
Beaux Arts	**Cities and Towns**	High	0	0	0	100%
Black Diamond	**Cities and Towns**	High	112,398	24	0	100%
Carnation	**Cities and Towns**	Low	107,218	3,173	45,869	0%
Clyde Hill	**Cities and Towns**	High	3,943	0	0	100%
Covington	**Cities and Towns**	Low	1,600,545	17,681	21,500	0%
Duvall	**Cities and Towns**	High	329,706	0	0	100%
Enumclaw	**Cities and Towns**	Med	1,069,481	8,426	510,812	67%
Hunts Point	**Cities and Towns**	High	0	0	0	100%
Maple Valley	**Cities and Towns**	Med	1,000,677	6,225	3,034,746	96%
Medina	**Cities and Towns**	High	17,769	0	1,466	100%
Milton	**Cities and Towns**	High	0	0	453,024	100%
Normandy Park	**Cities and Towns**	Med	220,497	912	1,364,473	99%
North Bend	**Cities and Towns**	Med	815,721	5,093	1,816,293	94%
Pacific	**Cities and Towns**	High	44,398	0	986,895	100%
Sammamish	**Cities and Towns**	High	701,175	22,701	0	100%
Skykomish	**Cities and Towns**	High	17,793	0	0	100%
Snoqualmie	**Cities and Towns**	Med	861,700	15,282	589,806	48%
Yarrow Point	**Cities and Towns**	High	0	0	0	100%
Auburn	**Core City**	Med	6,044,887	29,832	3,117,316	81%
Bothell	**Core City**	Low	2,668,767	12,787	49,675	0%
Burien	**Core City**	High	3,154,588	25,970	0	100%
Federal Way	**Core City**	Med	9,915,400	40,014	2,297,392	65%
Issaquah	**Core City**	Low	6,213,142	15,918	22,297	0%
Kent	**Core City**	High	8,619,483	69,824	0	100%
Kirkland	**Core City**	Low	8,423,096	229,860	2,042,751	0%
Redmond	**Core City**	Low	17,730,711	124,991	0	100%
Renton	**Core City**	High	14,388,628	329,953	0	100%
SeaTac	**Core City**	Low	4,465,866	38,001	114,580	0%
Tukwila	**Core City**	Med	10,102,478	10,163	1,847,445	89%
Des Moines	**High Capacity Transit Community**	Low	1,192,091	65,619	1,081,548	0%
Kenmore	**High Capacity Transit Community**	High	599,267	8,177	0	100%
Lake Forest Park	**High Capacity Transit Community**	High	346,900	0	65,635	100%
Mercer Island	**High Capacity Transit Community**	Med	1,072,265	2,133	125,344	66%
Newcastle	**High Capacity Transit Community**	Low	309,937	7,889	12,170	0%
Shoreline	**High Capacity Transit Community**	High	3,240,969	5,866	0	100%
Woodinville	**High Capacity Transit Community**	Low	1,692,157	11,304	6,614	0%
Bellevue	**Metropolitan**	Low	35,827,922	684,660	1,828,205	0%

Source: King County Assessor

*Note: Capacity does not reflect the assumed capacity projected in mixed-use development

Table A4. Supply, Deliveries, & Capacity Table:

Non-Residential - Industrial

City	Regional Geography	Market Factor Alignment	Total Supply (square feet)	5-yr Average Annual Deliveries (Gross,2015-2019)	Assumed Capacity Estimates from Cities (Gross)	Market Factor Indicator Value
Algona	Cities and Towns	High	2,436,435	0	308056	100%
Beaux Arts	Cities and Towns	High	0	0	0	100%
Black Diamond	Cities and Towns	High	71,790	3,520	0	100%
Carnation	Cities and Towns	High	161,286	0	21321	100%
Clyde Hill	Cities and Towns	High	2,430	0	0	100%
Covington	Cities and Towns	High	350,018	40,329	0	100%
Hunts Point	Cities and Towns	High	0	0	0	100%
Maple Valley	Cities and Towns	High	321,719	0	0	100%
Medina	Cities and Towns	High	16,283	0	0	100%
Milton	Cities and Towns	High	1,300	0	0	100%
Normandy Park	Cities and Towns	High	47,284	0	0	100%
North Bend	Cities and Towns	High	852,090	0	0	100%
Pacific	Cities and Towns	High	254,978	0	1931973	100%
Sammamish	Cities and Towns	High	163,595	0	0	100%
Skykomish	Cities and Towns	High	12,385	0	0	100%
Yarrow Point	Cities and Towns	High	0	0	0	100%
Snoqualmie	Cities and Towns	High	1,083,332	6,982	9893940	99%
Enumclaw	Cities and Towns	High	1,028,576	15,684	2248545	86%
Duvall	Cities and Towns	Low	164,303	17,881	125140	0%
Bothell	Core City	High	1,891,744	25,976	0	100%
Kirkland	Core City	High	3,759,313	17,595	0	100%
Renton	Core City	High	13,611,660	175,518	0	100%
SeaTac	Core City	High	4,256,960	91,460	0	100%
Tukwila	Core City	Med	14,963,571	34,945	3397732	79%
Redmond	Core City	Med	10,139,556	19,167	1043760	63%
Auburn	Core City	Low	23,959,569	184,213	3092704	0%
Burien	Core City	Low	1,811,122	141,140	272973	0%
Federal Way	Core City	Low	2,732,946	88,774	1651415	0%
Issaquah	Core City	Low	1,421,025	17,721	327789	0%
Kent	Core City	Low	46,653,264	492,318	7856045	0%
Kenmore	High Capacity Transit Community	High	536,730	2,880	0	100%
Lake Forest Park	High Capacity Transit Community	High	14,757	0	0	100%
Mercer Island	High Capacity Transit Community	High	96,230	0	0	100%
Newcastle	High Capacity Transit Community	High	227,320	0	0	100%
Shoreline	High Capacity Transit Community	High	1,447,694	76,424	0	100%
Des Moines	High Capacity Transit Community	Low	1,892,369	311,055	7619	0%
Woodinville	High Capacity Transit Community	Low	5,868,390	50,850	371356	0%
Bellevue	Metropolitan	Low	4,853,067	32,740	143435	0%

Source: King County Assessor

Table A5. Market Data – Multifamily Residential Product

CITY	Total Product Supply	Total Housing Supply	Product % of total Housing units	Total Unit Deliveries 2000-2019	Average Annual Deliveries 2000-2019 (Units)	Total Deliveries last 5 years (gross, units)	Average Annual Deliveries last 5 years (Gross, Units)	5-yr. Total Deliveries as a % of 20-year Total Deliveries (Gross)	Current average rent, (Monthly $/SF)	Average Rent 2015, (Monthly $/SF)	Average Rent 2010, (Monthly $/SF)
ALGONA	36	884	4.1%	0	0	0	0	0.0%	$1.53	$1.25	$1.02
AUBURN	8,481	24,155	35.1%	2,055	103	1,003	201	9.8%	$1.53	$1.25	$1.02
BEAUX ARTS	0	116	0.0%	0	0	0	0	0.0%	$2.60	$2.30	$1.83
BELLEVUE	30,707	61,914	49.6%	10,231	512	4,964	993	9.7%	$2.60	$2.30	$1.83
BLACK DIAMOND	41	1,828	2.2%	0	0	0	0	0.0%	$1.90	$1.61	$1.27
BOTHELL	6,168	11,742	52.5%	2,841	142	1,750	350	12.3%	$2.02	$1.71	$1.37
BURIEN	7,635	20,456	37.3%	1,124	56	602	120	10.7%	$1.69	$1.39	$1.07
CARNATION	45	779	5.8%	0	0	0	0	0.0%	$1.90	$1.61	$1.27
CLYDE HILL	0	1,100	0.0%	0	0	0	0	0.0%	$2.60	$2.30	$1.83
COVINGTON	665	6,870	9.7%	665	33	326	65	9.8%	$1.90	$1.61	$1.27
DES MOINES	5,348	13,218	40.5%	772	39	532	106	13.8%	$1.69	$1.39	$1.07
DUVALL	119	2,557	4.7%	93	5	0	0	0.0%	$1.90	$1.61	$1.27
ENUMCLAW	1,053	4,928	21.4%	73	4	0	0	0.0%	$1.90	$1.61	$1.27
FEDERAL WAY	16,085	36,149	44.5%	2,357	118	962	192	8.2%	$1.61	$1.33	$1.00
HUNTS POINT	0	181	0.0%	0	0	0	0	0.0%	$2.60	$2.30	$1.83
ISSAQUAH	10,277	17,600	58.4%	5,744	287	2,129	426	7.4%	$2.08	$1.82	$1.40
KENMORE	2,335	9,153	25.5%	521	26	267	53	10.2%	$2.02	$1.71	$1.37
KENT	21,166	45,764	46.3%	3,066	153	1,390	278	9.1%	$1.76	$1.42	$1.09
KIRKLAND	18,348	40,736	45.0%	5,394	270	2,135	427	7.9%	$2.41	$2.07	$1.58
LAKE FOREST PARK	786	5,395	14.6%	1	0	0	0	0.0%	$2.02	$1.71	$1.37
MAPLE VALLEY	1,121	9,332	12.0%	614	31	326	65	10.6%	$1.90	$1.61	$1.27
MEDINA	0	1,148	0.0%	0	0	0	0	0.0%	$2.60	$2.30	$1.83
MERCER ISLAND	3,352	10,556	31.8%	1,983	99	389	78	3.9%	$2.60	$2.30	$1.83
MILTON	300	670	44.8%	300	15	116	23	7.7%	$0.00	$0.00	$0.00
NEWCASTLE	2,330	5,707	40.8%	1,444	72	1,009	202	14.0%	$2.08	$1.82	$1.40
NORMANDY PARK	584	2,864	20.4%	118	6	6	1	1.0%	$1.69	$1.39	$1.07
NORTH BEND	803	2,845	28.2%	308	15	43	9	2.8%	$1.90	$1.61	$1.27
PACIFIC	599	2,321	25.8%	79	4	0	0	0.0%	$1.53	$1.25	$1.02
REDMOND	19,531	31,587	61.8%	8,571	429	5,722	1,144	13.4%	$2.39	$2.12	$1.69
RENTON	17,274	40,576	42.6%	4,771	239	763	153	3.2%	$1.88	$1.56	$1.23
SAMMAMISH	3,021	21,989	13.7%	1,310	66	127	25	1.9%	$1.90	$1.61	$1.27
SeaTac	4,626	10,115	45.7%	1,213	61	207	41	3.4%	$1.69	$1.39	$1.07
SEATTLE	191,061	362,153	52.8%	82,778	4,139	46,027	9,205	11.1%	$0.00	$0.00	$0.00
SHORELINE	7,568	23,906	31.7%	2,053	103	1,042	208	10.2%	$2.05	$1.78	$1.52
SKYKOMISH	0	137	0.0%	0	0	0	0	0.0%	$1.90	$1.61	$1.27
SNOQUALMIE	944	4,748	19.9%	836	42	291	58	7.0%	$1.90	$1.61	$1.27
TUKWILA	4,484	8,298	54.0%	629	31	629	126	20.0%	$1.88	$1.56	$1.23
WOODINVILLE	2,996	6,208	48.3%	1,455	73	630	126	8.7%	$2.02	$1.71	$1.37
YARROW POINT	0	413	0.0%	0	0	0	0	0.0%	$2.60	$2.30	$1.83

Note: all deliveries are gross and measured in units

Source: King County Assessor, Costar

Table A6. Market Data – Single Family Product

CITY	Total Product Supply	Total Housing Supply	Product % of total Housing units	Total Unit Deliveries 2000-2019	Average Annual Deliveries 2000-2019 (Units)	Total Deliveries last 5 years (gross, units)	Average Annual Deliveries last 5 years (Gross, Units)	5-yr. Total Deliveries as a % of 20-year Total Deliveries (Gross)	Median Sale Price 2020	Median Sale Price 2015	Median Sale Price 2012	6-year CAGR	9- year CAGR
ALGONA	847	884	95.8%	223	11	25	5	11%	$371,000	$234,000	$140,000	8.0%	11.4%
AUBURN	15,664	24,155	64.8%	3,545	177	759	152	21%	$493,000	$302,000	$220,000	8.5%	9.4%
BEAUX ARTS	116	116	100.0%	17	1	2	0	12%	$2,530,000	$1,167,000	$660,000	13.8%	16.1%
BELLEVUE	30,991	61,914	50.1%	3,458	173	900	180	26%	$1,098,000	$680,000	$507,000	8.3%	9.0%
BLACK DIAMOND	1,442	1,828	78.9%	216	11	82	16	38%	$519,000	$310,000	$321,000	9.0%	5.5%
BOTHELL	5,472	11,742	46.6%	1,339	67	387	77	29%	$710,000	$449,000	$335,000	7.9%	8.7%
BURIEN	12,813	20,456	62.6%	1,050	53	292	58	28%	$518,000	$288,000	$192,000	10.3%	11.7%
CARNATION	725	779	93.1%	178	9	164	33	92%	$820,000	$352,000	$350,000	15.1%	9.9%
CLYDE HILL	1,100	1,100	100.0%	262	13	81	16	31%	$2,525,000	$2,000,000	$3,130,000	4.0%	-2.4%
COVINGTON	6,195	6,870	90.2%	1,880	94	262	52	14%	$536,000	$323,000	$255,000	8.8%	8.6%
DES MOINES	7,770	13,218	58.8%	685	34	224	45	33%	$467,000	$297,000	$186,000	7.8%	10.8%
DUVALL	2,411	2,557	94.3%	947	47	171	34	18%	$687,000	$497,000	$320,000	5.5%	8.9%
ENUMCLAW	3,867	4,928	78.5%	709	35	462	92	65%	$542,000	$319,000	$277,000	9.2%	7.7%
FEDERAL WAY	20,058	36,149	55.5%	1,814	91	250	50	14%	$450,000	$275,000	$210,000	8.6%	8.8%
HUNTS POINT	181	181	100.0%	41	2	2	0	5%	$3,900,000	$1,450,000	$6,900,000	17.9%	-6.1%
ISSAQUAH	7,319	17,600	41.6%	3,758	188	508	102	14%	$810,000	$500,000	$455,000	8.4%	6.6%
KENMORE	6,725	9,153	73.5%	1,767	88	430	86	24%	$730,000	$506,000	$352,000	6.3%	8.4%
KENT	24,572	45,764	53.7%	5,281	264	1,118	224	21%	$493,000	$316,000	$214,000	7.7%	9.7%
KIRKLAND	22,231	40,736	54.6%	3,955	198	1,230	246	31%	$865,000	$530,000	$407,000	8.5%	8.7%
LAKE FOREST PARK	4,605	5,395	85.4%	387	19	178	36	46%	$803,000	$400,000	$395,000	12.3%	8.2%
MAPLE VALLEY	8,204	9,332	87.9%	3,945	197	436	87	11%	$575,000	$383,000	$290,000	7.0%	7.9%
MEDINA	1,147	1,148	99.9%	250	13	47	9	19%	$4,325,000	$2,884,000	$925,000	7.0%	18.7%
MERCER ISLAND	7,200	10,556	68.2%	1,037	52	327	65	32%	$1,550,000	$1,090,000	$986,000	6.0%	5.2%
MILTON	370	670	55.2%	26	1	0	0	0%	$460,000	$246,000	$139,000	11.0%	14.2%
NEWCASTLE	3,267	5,707	57.2%	1,003	50	147	29	15%	$968,000	$605,000	$465,000	8.1%	8.5%
NORMANDY PARK	2,279	2,864	79.6%	152	8	44	9	29%	$875,000	$555,000	$425,000	7.9%	8.4%
NORTH BEND	2,028	2,845	71.3%	599	30	322	64	54%	$850,000	$439,000	$364,000	11.6%	9.9%
PACIFIC	1,722	2,321	74.2%	468	23	61	12	13%	$415,000	$242,000	$217,000	9.4%	7.5%
REDMOND	11,947	31,587	37.8%	3,089	154	738	148	24%	$834,000	$570,000	$450,000	6.5%	7.1%
RENTON	23,217	40,576	57.2%	7,141	357	847	169	12%	$566,000	$350,000	$295,000	8.3%	7.5%
SAMMAMISH	18,960	21,989	86.2%	5,746	287	1,285	257	22%	$1,099,000	$699,000	$507,000	7.8%	9.0%
SeaTac	5,489	10,115	54.3%	409	20	98	20	24%	$440,000	$262,000	$188,000	9.0%	9.9%
SEATTLE	167,142	362,153	46.2%	26,954	1,348	8,165	1,633	30%	$745,000	$494,000	$368,000	7.1%	8.2%
SHORELINE	16,241	23,906	67.9%	1,023	51	253	51	25%	$650,000	$388,000	$287,000	9.0%	9.5%
SKYKOMISH	136	137	99.3%	8	0	2	0	25%	$455,000	$108,000	$155,000	27.1%	12.7%
SNOQUALMIE	3,804	4,748	80.1%	3,030	152	274	55	9%	$845,000	$462,000	$396,000	10.6%	8.8%
TUKWILA	3,677	8,298	44.3%	619	31	156	31	25%	$485,000	$303,000	$225,000	8.2%	8.9%
WOODINVILLE	2,945	6,208	47.4%	780	39	253	51	32%	$925,000	$517,000	$430,000	10.2%	8.9%
YARROW POINT	411	413	99.5%	118	6	33	7	28%	$3,765,000	$3,260,000	$1,438,000	2.4%	11.3%

Note: all deliveries are gross and measured in units

Source: King County Assessor, Redfin

Table A7. Market Data – Retail Product

CITY	total Product supply (sf)	Total Deliveries 2000-2019 (SF)	Average Annual Deliveries 2000-2019 (SF)	5-yr Total Deliveries last (gross, sf)	5-Yr Average Annual Deliveries (Gross, sf)	5-yr. Total Deliveries as a % of 20-year Total Deliveries (Gross)	Current average rent, (Annual, $/SF)
ALGONA	21,931	7,828	391	0	0	0.0%	$22.84
AUBURN	4,059,789	963,901	48,195	58,083	11,617	1.2%	$22.84
BEAUX ARTS	0	0	0	0	0	0.0%	$42.34
BELLEVUE	9,281,934	2,835,369	141,768	845,558	169,112	6.0%	$0.00
BLACK DIAMOND	70,583	15,023	751	120	24	0.2%	$25.09
BOTHELL	645,440	200,487	10,024	38,065	7,613	3.8%	$25.99
BURIEN	2,123,997	284,126	14,206	38,718	7,744	2.7%	$19.16
CARNATION	74,165	1,380	69	0	0	0.0%	$25.09
CLYDE HILL	3,943	0	0	0	0	0.0%	$33.53
COVINGTON	1,386,194	905,663	45,283	86,947	17,389	1.9%	$25.09
DES MOINES	550,679	60,521	3,026	20,550	4,110	6.8%	$19.16
DUVALL	221,123	124,243	6,212	0	0	0.0%	$25.09
ENUMCLAW	692,328	113,886	5,694	42,129	8,426	7.4%	$25.09
FEDERAL WAY	5,454,100	1,528,960	76,448	157,356	31,471	2.1%	$22.84
HUNTS POINT	0	0	0	0	0	0.0%	$33.99
ISSAQUAH	2,915,049	953,438	47,672	26,190	5,238	0.5%	$34.29
KENMORE	441,307	28,247	1,412	11,529	2,306	8.2%	$25.99
KENT	4,748,839	1,130,023	56,501	66,941	13,388	1.2%	$20.64
KIRKLAND	3,168,063	830,530	41,527	393,796	78,759	9.5%	$33.99
LAKE FOREST PARK	262,736	0	0	0	0	0.0%	$25.99
MAPLE VALLEY	819,030	466,204	23,310	31,127	6,225	1.3%	$25.09
MEDINA	6,178	2,880	144	0	0	0.0%	$33.53
MERCER ISLAND	399,368	85,899	4,295	10,665	2,133	2.5%	$36.89
MILTON	0	0	0	0	0	0.0%	$22.84
NEWCASTLE	260,483	88,934	4,447	39,445	7,889	8.9%	$34.29
NORMANDY PARK	168,528	87,463	4,373	4,561	912	1.0%	$19.16
NORTH BEND	637,612	41,668	2,083	3,586	717	1.7%	$25.09
PACIFIC	39,538	20,924	1,046	0	0	0.0%	$22.84
REDMOND	3,281,259	858,590	42,930	257,075	51,415	6.0%	$35.15
RENTON	4,957,839	1,653,643	82,682	134,623	26,925	1.6%	$30.07
SAMMAMISH	563,210	90,901	4,545	82,688	16,538	18.2%	$34.29
SeaTac	1,006,041	75,568	3,778	5,191	1,038	1.4%	$19.16
SEATTLE	33,123,598	8,284,590	414,230	2,501,582	500,316	6.0%	$0.00
SHORELINE	2,242,072	311,288	15,564	11,152	2,230	0.7%	$26.31
SKYKOMISH	17,121	0	0	0	0	0.0%	$25.09
SNOQUALMIE	381,417	224,072	11,204	65,807	13,161	5.9%	$25.09
TUKWILA	5,036,808	486,846	24,342	25,332	5,066	1.0%	$30.07
WOODINVILLE	1,337,946	273,574	13,679	41,217	8,243	3.0%	$30.46
YARROW POINT	0	0	0	0	0	0.0%	$33.99

Note: all deliveries are gross and measured in square feet. *Source: King County Assessor, Costar*

Table A8. Market Data – Office Product

CITY	total Product supply (sf)	Total Deliveries 2000-2019 (SF)	Average Annual Deliveries 2000-2019 (SF)	5-yr Total Deliveries last (gross, sf)	5-Yr Average Annual Deliveries (Gross, sf)	5-yr. Total Deliveries as a % of 20-year Total Deliveries (Gross)	Current average rent, (Annual, $/SF)	Average Rent 2015, (Annual, $/SF)	Average Rent 2010, (Annual, $/SF)
ALGONA	60,226	10,832	542	0	0	0.0%	$25.18	$20.57	$19.43
AUBURN	1,985,098	452,657	22,633	91,078	18,216	4.0%	$25.29	$20.57	$19.43
BEAUX ARTS	0	0	0	0	0	0.0%	$39.35	$27.55	$24.16
BELLEVUE	26,545,988	9,727,048	486,352	2,577,743	515,549	5.3%	$0.00	$0.00	$0.00
BLACK DIAMOND	41,815	6,017	301	0	0	0.0%	$30.34	$21.92	$18.69
BOTHELL	2,023,327	843,248	42,162	25,872	5,174	0.6%	$30.42	$23.94	$22.86
BURIEN	1,030,591	326,129	16,306	91,131	18,226	5.6%	$26.10	$20.80	$19.44
CARNATION	33,053	17,291	865	15,866	3,173	18.4%	$30.34	$21.92	$18.69
CLYDE HILL	0	0	0	0	0	0.0%	$38.53	$27.33	$23.03
COVINGTON	214,351	106,877	5,344	1,460	292	0.3%	$30.34	$21.92	$18.69
DES MOINES	641,412	390,697	19,535	307,543	61,509	15.7%	$26.10	$20.80	$19.44
DUVALL	108,583	52,756	2,638	0	0	0.0%	$30.34	$21.92	$18.69
ENUMCLAW	377,153	52,076	2,604	0	0	0.0%	$30.34	$21.92	$18.69
FEDERAL WAY	4,461,300	843,481	42,174	42,713	8,543	1.0%	$25.29	$20.57	$19.43
HUNTS POINT	0	0	0	0	0	0.0%	$42.97	$30.26	$25.67
ISSAQUAH	3,298,093	1,359,752	67,988	53,402	10,680	0.8%	$41.57	$29.23	$24.70
KENMORE	157,960	37,573	1,879	29,354	5,871	15.6%	$30.42	$23.94	$22.86
KENT	3,870,644	812,971	40,649	282,178	56,436	6.9%	$25.91	$20.84	$19.60
KIRKLAND	5,255,033	1,862,111	93,106	755,506	151,101	8.1%	$42.97	$30.26	$25.67
LAKE FOREST PARK	84,164	7,846	392	0	0	0.0%	$30.42	$23.94	$22.86
MAPLE VALLEY	181,647	131,502	6,575	0	0	0.0%	$30.34	$21.92	$18.69
MEDINA	11,591	4,929	246	0	0	0.0%	$38.53	$27.33	$23.03
MERCER ISLAND	672,897	34,015	1,701	0	0	0.0%	$41.23	$29.10	$24.47
MILTON	0	0	0	0	0	0.0%	$25.29	$20.57	$19.43
NEWCASTLE	49,454	40,326	2,016	0	0	0.0%	$41.57	$29.23	$24.70
NORMANDY PARK	51,969	6,871	344	0	0	0.0%	$26.10	$20.80	$19.44
NORTH BEND	178,109	55,174	2,759	21,878	4,376	7.9%	$30.34	$21.92	$18.69
PACIFIC	4,860	0	0	0	0	0.0%	$25.29	$20.57	$19.43
REDMOND	14,449,452	5,801,050	290,053	367,880	73,576	1.3%	$35.01	$24.27	$20.58
RENTON	9,430,789	2,250,356	112,518	1,515,142	303,028	13.5%	$30.13	$23.05	$21.03
SAMMAMISH	137,965	56,892	2,845	30,815	6,163	10.8%	$41.57	$29.23	$24.70
SeaTac	3,459,825	1,016,197	50,810	184,812	36,962	3.6%	$26.10	$20.80	$19.44
SEATTLE	104,433,911	37,805,345	1,890,267	14,785,999	2,957,200	7.8%	$0.00	$0.00	$0.00
SHORELINE	998,897	249,497	12,475	18,179	3,636	1.5%	$27.53	$21.73	$20.77
SKYKOMISH	672	0	0	0	0	0.0%	$30.34	$21.92	$18.69
SNOQUALMIE	480,283	290,705	14,535	10,601	2,120	0.7%	$30.34	$21.92	$18.69
TUKWILA	5,065,670	504,792	25,240	25,482	5,096	1.0%	$30.13	$23.05	$21.03
WOODINVILLE	354,211	81,414	4,071	15,305	3,061	3.8%	$28.62	$22.82	$21.90
YARROW POINT	0	0	0	0	0	0.0%	$42.97	$30.26	$25.67

Note: all deliveries are gross and measured in square feet.

Source: King County Assessor, Costar

Table A9. Market Data – Industrial Product

CITY	Total Product supply (sf)	Total Deliveries 2000-2019 (SF)	Average Annual Deliveries 2000-2019 (SF)	5-yr Total Deliveries last (gross, sf)	5-Yr Average Annual Deliveries (Gross, sf)	5-yr. Total Deliveries as a % of 20-year Total Deliveries (Gross)	Current average rent, (Annual, $/SF)
ALGONA	2,436,435	329,838	16,492	0	0	0.0%	$8.86
AUBURN	23,959,569	8,559,752	427,988	921,067	184,213	2.2%	$8.86
BEAUX ARTS	0	0	0	0	0	0.0%	$18.44
BELLEVUE	4,853,067	520,591	26,030	163,698	32,740	6.3%	$16.64
BLACK DIAMOND	71,790	30,703	1,535	17,602	3,520	11.5%	$14.13
BOTHELL	1,891,744	462,999	23,150	129,880	25,976	5.6%	$17.98
BURIEN	1,811,122	749,988	37,499	705,698	141,140	18.8%	$12.28
CARNATION	161,286	69,076	3,454	0	0	0.0%	$14.13
CLYDE HILL	2,430	0	0	0	0	0.0%	$16.64
COVINGTON	350,018	202,591	10,130	201,646	40,329	19.9%	$14.13
DES MOINES	1,892,369	1,666,085	83,304	1,555,277	311,055	18.7%	$12.28
DUVALL	164,303	89,407	4,470	89,407	17,881	20.0%	$14.13
ENUMCLAW	1,028,576	235,590	11,780	78,418	15,684	6.7%	$14.13
FEDERAL WAY	2,732,946	752,173	37,609	443,868	88,774	11.8%	$12.52
HUNTS POINT	0	0	0	0	0	0.0%	$14.13
ISSAQUAH	1,421,025	317,409	15,870	88,604	17,721	5.6%	$18.44
KENMORE	536,730	32,696	1,635	14,400	2,880	8.8%	$17.98
KENT	46,653,264	6,702,321	335,116	2,461,588	492,318	7.3%	$8.79
KIRKLAND	3,759,313	347,474	17,374	87,975	17,595	5.1%	$15.13
LAKE FOREST PARK	14,757	1,120	56	0	0	0.0%	$17.98
MAPLE VALLEY	321,719	122,379	6,119	0	0	0.0%	$14.13
MEDINA	16,283	9,600	480	0	0	0.0%	$16.64
MERCER ISLAND	96,230	63,910	3,196	0	0	0.0%	$18.44
MILTON	1,300	0	0	0	0	0.0%	$8.38
NEWCASTLE	227,320	3,890	195	0	0	0.0%	$18.44
NORMANDY PARK	47,284	0	0	0	0	0.0%	$12.28
NORTH BEND	852,090	368,109	18,405	0	0	0.0%	$14.13
PACIFIC	254,978	21,038	1,052	0	0	0.0%	$8.86
REDMOND	10,139,556	794,471	39,724	95,833	19,167	2.4%	$15.60
RENTON	13,611,660	2,705,502	135,275	877,590	175,518	6.5%	$10.42
SAMMAMISH	163,595	50,545	2,527	0	0	0.0%	$15.60
SeaTac	4,256,960	1,257,196	62,860	457,299	91,460	7.3%	$12.28
SEATTLE	48,484,934	4,498,050	224,903	2,322,848	464,570	10.3%	$0.00
SHORELINE	1,447,694	590,900	29,545	382,122	76,424	12.9%	$13.35
SKYKOMISH	12,385	0	0	0	0	0.0%	$10.93
SNOQUALMIE	1,083,332	637,305	31,865	34,912	6,982	1.1%	$14.13
TUKWILA	14,963,571	1,015,066	50,753	174,726	34,945	3.4%	$11.95
WOODINVILLE	5,868,390	644,681	32,234	254,252	50,850	7.9%	$12.57
YARROW POINT	0	0	0	0	0	0.0%	$15.13

Note: all deliveries are gross and measured in square feet. *Source: King County Assessor, Costar*

Table A10. Mark Factor – Past Assumptions

			Residential Market Supply Factors				Industrial/Commercial Market Supply Factors			
	Explicit Supply Market Supply Factor		Unincorporated UGA		Cities (Range)		Unincorporated UGA		Cities (Range)	
Buildable Lands County	Owner Intent/ Not Available	Small Town Growth Margin	Vacant	Under-Utilized	Vacant	Under-Utilized (1/)	Vacant	Under-Utilized	Vacant	Under-Utilized (1/)
Clark	✓		10%	30%	0% - 10%	0%-30%	20%	50%	0% - 10%	0% - 10%
King	✓		10%-15%	25%-30%	0% - 50% (2/)	0%-50% (2/)	10% - 15%	25% - 30%	0% - 40%	0% - 40%
Kitsap	✓		5%	15%	5%	10%-90% (3/)	20%	25%	20%	50% - 80% (3/)
Pierce	✓		15%	40%	0% - 50%	0%-50%	20%	50%	0% - 50%	0% - 50%
Snohomish	✓		15%	30%	15%	30%	15%	30%	15%	30%
Thurston (4/)	✓	✓	10% - 37%	10% - 37%	20% - 37% (5/)	20%-37% (5/)	10% - 25%	10% - 25%	10% - 25%	10% - 25%
Whatcom	✓		15%	25%	15% - 70% (6/)	25%-70% (6/)	15%	25%	15%	25%
Averages/Ranges:			12%	28%	7% - 37%	9% - 55%	16%	33%	8% - 24%	17% - 38%

Source: Buildable Lands Guidelines, Department of Commerce, 2018.

4. Appendix B – City of Seattle Guidance

City of Seattle – Modified Market Factor Guidance Framework

Intro and Purpose

The City of Seattle stands as the employment and population center of the Puget Sound region and largest City in the State of Washington as well as the Pacific Northwest. It also serves an important role in accommodating population and employment growth in King County now and into the future. Seattle is unique in its geographic and economic diversity. The City is home to distinct neighborhoods and commercial districts at a scale not seen elsewhere in the County. As such, Market Factor guidance specific to the City of Seattle has been developed to account for the size, scale and regional importance of the City.

The guidance and recommendations in this section follow the same methodology and framework used for all jurisdictions in King County, but at a neighborhood level rather than at a citywide scale. This allows for a more granular view of historic and projected growth within the City, by Product-type. This also provides the City with a framework allowing for greater flexibility when applying Market Factor assumptions across disparate neighborhoods within the City.

Contents

Following guidance reflects the same guidance framework used across King County, the following pages provide a step-by-step overview of Market Factor recommendations for the City of Seattle followed by supporting data found in **Tables B3-B7**.

Data Sources

- King County Assessor Data
- City of Seattle Draft Capacity Data
- Costar Market Data
- Redfin Residential Sales Data

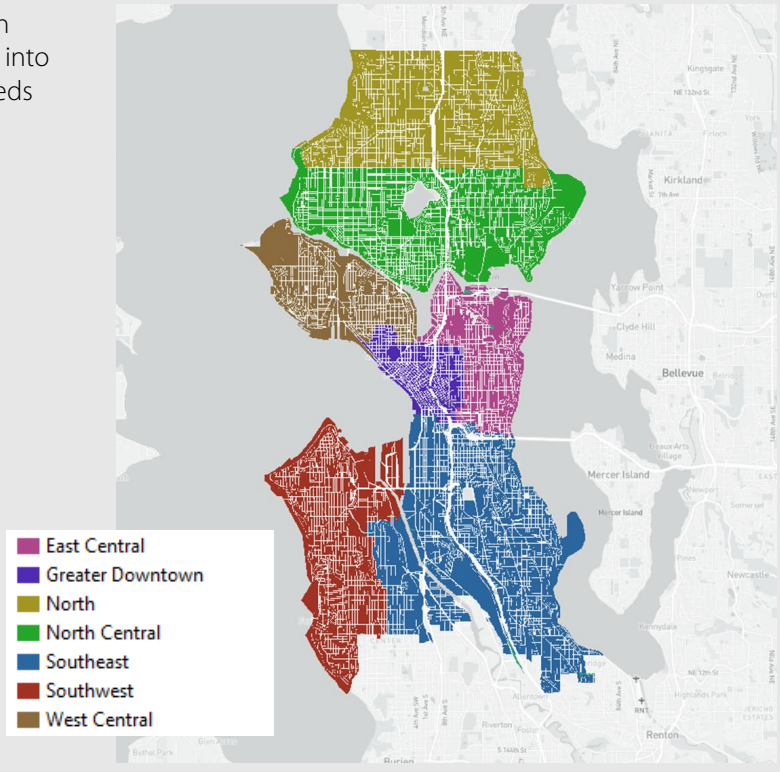
Sub-geographies

The City of Seattle is designated as a metropolitan regional Geography. The City was further divided into seven general areas based upon the Housing Needs Assessment (HNA) boundaries.

These are the following HNA boundaries and are indicated on the map to the right.

- North
- North Central
- West Central
- East Central
- Downtown
- Southwest
- Southeast

HNA Geographic Boundaries



Guidance Framework Modified –

The following diagram outlines key changes made to the overall Market Factor Guidance Framework to establish Market Factor for the City of Seattle. The following changes represent modifications to the Market Factor Guidance Framework set forth earlier in the report (page 17) .

Step	
Step 1. Identify Zoning by Predominant Product-Type	• This step remains largely unchanged for the city of Seattle, with the exception that attached single family units are addressed as their own product type (defined on following page). Reference Product-type definitions provided on page 19 (see **Table 1A**) for all other Product-types.
Step 2. Identify Market Factor Alignment for the Seattle Sub-Geographies	• Instead of using PSRC Regional Geographies to compare and classify Market Factor Indicators, the City of Seattle is broken down into sub-geographies (HNA boundaries, page 41). These sub-geographies are then compared against each other to inform a Market Factor Alignment. • The Market Factor Alignment Table has been updated to reflect these new geographies and their alignments.
Step 3. Select from Market Factor Ranges	• The market factor ranges have been updated to reflect the City of Seattle sub-geographies and the market metrics informing the range of Market Factors by Product-type. • The table has been updated to reflect the changes to the ranges and the additional Product-types.
Step 4. Adjustments	• This step remains unchanged, and the City of Seattle is encouraged to adjust the Market Factor guidance based on the City's perception and knowledge of each Product-type in each sub-geography.

Step 1 – Identify Zoning By Predominant Product Type

See additional Product-Type classification for the City of Seattle below

Product Type	Description/Application	Illustrative Examples
Residential		
Single Family Attached*	This category has been added for the City of Seattle to account for all attached single family dwelling units sharing walls separately.	These include townhouse plats, duplex, triplex and fourplex buildings.

** Note: for the City of Seattle, the single family attached Product-type, is accounted for separate of traditional single family detached product.*

Step 2 – Identify Market Alignment

Seattle Market Factor Alignments

The *Market Factor Alignments* (high/medium/low) identified in this step are applied in step 3 when selecting the appropriate Market Factor Ranges.

Each of the City's sub-geography market conditions have been evaluated and *Market Factor Alignment* has been assigned by Product-type. Use **Table B1** (below) as a reference in selecting appropriate Market Factor Ranges by product-type in Step 3. To review the Market Factor Indicators for the sub-geographies within the City of Seattle, refer to **Tables B3-B5** found later in this section.

Methodology Recap:

The Market Factor Alignments for the sub-geographies in the City of Seattle are informed by the Market Factor Indicators calculated for each sub-geography and Product-type.

Table B1 – Market Factor Alignments for City of Seattle Sub-Geographies

Seattle Sub-geography	**Product-Type Market Factor Indicator**				
City	*Multifamily/MU*	*Single Family Attached*	*Single Family Detached*	*Commercial (Office /Retail/Mixed-use)*	*Industrial*
East Central	Medium	Low	Medium	High	NA
Greater Downtown	Low	Medium	Low	Low	Low
North	High	Medium	High	High	NA
North Central	Low	Low	High	High	High
Southeast	High	High	High	High	High
Southwest	High	High	High	High	Medium
West Central	Low	Low	Medium	Medium	Low

Step 3 - Select from Market Factor Ranges

Market Factor Range

For each of the City's sub-geographies and Product-types, identify the Market Factor Range in the table below (**Table B2**) by using the Market Factor Alignments (low/medium/high) identified in Step 2.

Note: these informed ranges are intended to serve as initial guidance. It is expected that City of Seattle refines or departs from this range to arrive at the most appropriate market factor deduction.

Methodology Recap

A Market Factor Indicator from a test-fit sub-geography within the City of Seattle is selected to inform the market factor ranges.

Market price data is leveraged as the key metric to derive a range from the market factor indicator in the test fit geography. The range of prices among all the City of Seattle's sub-geographies (see **Tables B6-B7**) for each product type inform the magnitude of the market Factor Range for that product-type.

Table B2 – Market Factor Ranges by Product Type

	Residential				
	Multifamily/ Mixed-Res	**Single Family Attached**	**Single Family Detached**	**Commercial (Office/Retail/Mixed)**	**Industrial**
City of Seattle					
Low	4% - 11%	0% - 13%	0% - 9%	5% - 24%	3% - 14%
Medium	12% - 20%	14% - 38%	10% - 26%	25% - 35%	15% - 21%
High	21% - 29%	39% - 50%	27% - 43%	36% - 50%	22% - 27%

Table B3. Supply, Deliveries, & Capacity Table:

Residential – *Single family, Single Family Attached, Multi-family and Residential Mixed-use*

Residential Uses	Neighborhood (HNA boundaries)	Regional Geography	Market Factor Alignment	Total Supply (Units)	5-yr Average Annual Deliveries (Gross Units, 2015-2019)	Assumed Capacity Estimates from Cities (Gross, Units)	Market Factor Indicator
Single Family	East Central	Seattle Sub-type	Low	11,705	48	1,026	7%
Single Family	Greater Downtown	Seattle Sub-type	Medium	595	3	73	23%
Single Family	North	Seattle Sub-type	Medium	26,440	91	2,224	18%
Single Family	North Central	Seattle Sub-type	Low	34,628	150	769	0%
Single Family	Southeast	Seattle Sub-type	High	26,581	109	8,369	74%
Single Family	Southwest	Seattle Sub-type	High	21,135	84	3,105	46%
Single Family	West Central	Seattle Sub-type	Low	10,782	52	511	0%
Single Family	City of Seattle	Metropolitan		131,866	537	16,077	33%
Single Family Attached	East Central	Seattle Sub-type	Medium	5,658	205	5,575	26%
Single Family Attached	Greater Downtown	Seattle Sub-type	Low	1,336	37	462	0%
Single Family Attached	North	Seattle Sub-type	High	4,910	94	6,171	70%
Single Family Attached	North Central	Seattle Sub-type	High	10,421	319	12,871	50%
Single Family Attached	Southeast	Seattle Sub-type	High	4,935	194	12,238	68%
Single Family Attached	Southwest	Seattle Sub-type	High	4,606	152	7,188	58%
Single Family Attached	West Central	Seattle Sub-type	Medium	3,408	94	3,255	42%
Single Family Attached	City of Seattle	Metropolitan		35,274	1,096	47,760	54%
Mixed-use/MF/Condos	East Central	Seattle Sub-type	Medium	15,595	529	15,669	32%
Mixed-use/MF/Condos	Greater Downtown	Seattle Sub-type	Low	74,008	3,669	44,242	0%
Mixed-use/MF/Condos	North	Seattle Sub-type	High	20,285	352	55,225	87%
Mixed-use/MF/Condos	North Central	Seattle Sub-type	Low	35,335	1,442	31,237	8%
Mixed-use/MF/Condos	Southeast	Seattle Sub-type	High	11,607	414	34,660	76%
Mixed-use/MF/Condos	Southwest	Seattle Sub-type	High	12,399	256	13,040	61%
Mixed-use/MF/Condos	West Central	Seattle Sub-type	Low	14,041	492	7,246	0%
Mixed-use/MF/Condos	City of Seattle	Metropolitan		183,270	7,155	201,319	29%

Table B4. Supply, Deliveries, & Capacity Table:

Non-Residential – Industrial

Non-Residential Uses	Neighborhood (HNA boundaries)	Market Factor Alignment	Total Supply (SF)	5-yr Average Annual Deliveries (Gross SF,2015-2019)	Assumed Capacity Estimates from Cities (Gross SF)	Market Factor Indicator
Industrial	East Central	NA	1,071,715	39,800	0	No Capacity
Industrial	Greater Downtown	Low	2,498,938	25,934	184,384	0%
Industrial	North	NA	2,513,041	72,104	0	No Capacity
Industrial	North Central	High	5,481,941	46,781	2,489,843	62%
Industrial	Southeast	High	28,970,357	178,780	10,666,880	66%
Industrial	Southwest	Medium	3,041,201	22,790	685,437	34%
Industrial	West Central	Low	4,907,741	78,381	1,716,513	9%
Industrial	City of Seattle		48,484,934	464,570	15,743,057	41%

Table B5. Supply, Deliveries, & Capacity Table:

Non-Residential – Commercial (Office/Retail/Mixed-use)

Non-Residential Uses	Neighborhood (HNA boundaries)	Market Factor Alignment	Total Supply (SF)	5-yr Average Annual Deliveries (Gross SF,2015-2019)	Assumed Capacity Estimates from Cities (Gross SF)	Market Factor Indicator
Commercial	East Central	High	7,082,265	99,488	6,418,782	69%
Commercial	Greater Downtown	Low	82,200,368	2,632,501	24,041,513	0%
Commercial	North	High	7,780,108	19,480	40,181,095	99%
Commercial	North Central	High	13,670,239	287,330	20,299,610	72%
Commercial	Southeast	High	17,654,728	192,707	34,852,416	89%
Commercial	Southwest	High	3,500,611	44,465	9,158,698	90%
Commercial	West Central	Medium	5,669,190	181,545	5,561,376	35%
Commercial	City of Seattle		137,557,509	3,457,516	140,513,490	51%

Table B6. Market Data – Residential

Residential – Multifamily

Seattle Sub-Geography	Total Product Supply	Total Deliveries 2000-2019	Average Annual Deliveries 2000-2019	Total Deliveries 2015-2019	5-yr Average Annual Deliveries (2015-2019)	5-yr. Total Deliveries over 20-year Total Deliveries (%)	Current average rent, (Monthly $/SF)	Average Rent 2015, (Monthly $/SF)	Average Rent 2010, (Monthly $/SF)
East Central	15,595	4,860	243	2,645	529	54%	$2.58	$2.32	$2.01
Greater Downtown	74,008	38,654	1,933	18,346	3,669	47%	$3.09	$2.77	$2.38
North	20,285	4,983	249	1,759	352	35%	$2.03	$1.82	$1.53
North Central	35,335	15,365	768	7,211	1,442	47%	$2.64	$2.35	$2.03
Southeast	11,607	4,965	248	2,071	414	42%	$1.94	$1.71	$1.53
Southwest	12,399	4,100	205	1,281	256	31%	$2.29	$1.99	$1.70
West Central	14,041	5,042	252	2,462	492	49%	$2.71	$2.39	$2.08
City of Seattle	183,270	77,969	3,898	35,775	7,155	46%			

Residential – Single Family

Seattle Sub-Geography	Total Product Supply	Total Unit Deliveries 2000-2019	Average Annual Deliveries 2000-2019 (Units)	Total Deliveries last 5 years (gross, units)	Average Annual Deliveries last 5 years (Gross, Units)	5-yr. Total Deliveries as a % of 20-year Total Deliveries (Gross)	Median Sale Price 2020	Median Sale Price 2015	Median Sale Price 2012	6-year CAGR	9- year CAGR
East Central	11,705	923	46	239	48	26%	$905,000	$638,000	$502,000	6.0%	4.0%
Greater Downtown	595	41	2	14	3	34%	$575,500	$407,500	$305,000	5.9%	3.9%
North	26,440	1,750	88	457	91	26%	$650,000	$477,500	$333,000	5.3%	3.5%
North Central	34,628	2,067	103	749	150	36%	$816,500	$625,000	$450,000	4.6%	3.0%
Southeast	26,581	2,663	133	546	109	21%	$661,000	$453,000	$284,000	6.5%	4.3%
Southwest	21,135	1,686	84	421	84	25%	$642,000	$450,000	$340,000	6.1%	4.0%
West Central	10,782	867	43	259	52	30%	$823,500	$586,000	$483,000	5.8%	3.9%
City of Seattle	131,866	9,997	500	2,685	537	27%	$679,000	$494,000	$368,000	5.4%	3.6%

Note: all deliveries are gross and measured in square units.

Source: King County Assessor, Costar, Redfin

Table B7. Market Data – Non-Residential

Non-Residential – Industrial

Seattle Sub-Geography	total Product supply (sf)	Total Deliveries 2000-2019 (SF)	Average Annual Deliveries 2000-2019 (SF)	5-yr Total Deliveries last (gross, sf)	5-Yr Average Annual Deliveries (Gross, sf)	5-yr. Total Deliveries as a % of 20-year Total Deliveries (Gross)	Current average rent, (Annual, $/SF)	Average Rent 2015, (Annual, $/SF)	Average Rent 2010, (Annual, $/SF)
East Central	1,071,715	342,132	17,107	199,001	39,800	58%	$15.00	$10.20	$6.58
Greater Downtown	2,498,938	232,009	11,600	129,670	25,934	56%	$22.88	$13.00	$10.61
North	2,513,041	576,139	28,807	360,521	72,104	63%	$16.03	$8.73	$9.22
North Central	5,481,941	572,175	28,609	233,903	46,781	41%	$17.70	$22.30	$8.50
Southeast	28,970,357	1,999,207	99,960	893,898	178,780	45%	$12.41	$8.56	$7.17
Southwest	3,041,201	218,811	10,941	113,949	22,790	52%	$14.13	$9.27	$9.15
West Central	4,907,741	557,577	27,879	391,906	78,381	70%	$13.10	$10.67	$9.09
City of Seattle	48,484,934	4,498,050	224,903	2,322,848	464,570	52%			

Non-Residential – Office

Seattle Sub-Geography	Total Product supply (sf)	Total Deliveries 2000-2019 (SF)	Average Annual Deliveries 2000-2019 (SF)	5-yr Total Deliveries 2015-2019 (gross, sf)	5-Yr Average Annual Deliveries (Gross, sf)	5-yr. Total Deliveries as a % of 20-year Total Deliveries (Gross)	Current average rent, (Annual, $/SF)	Average Rent 2015, (Annual, $/SF)	Average Rent 2010, (Annual, $/SF)
East Central	5,542,044	1,991,909	99,595	277,914	55,583	14%	$39.03	$26.07	$26.72
Greater Downtown	69,906,518	27,176,902	1,358,845	12,159,927	2,431,985	45%	$29.01	$29.05	$22.83
North	2,643,527	410,387	20,519	71,318	14,264	17%	$30.43	$22.86	$20.90
North Central	7,184,334	2,778,142	138,907	918,762	183,752	33%	$30.00	$25.52	$20.58
Southeast	13,407,609	3,195,823	159,791	493,755	98,751	15%	$27.67	$25.05	$18.70
Southwest	1,490,647	329,756	16,488	71,968	14,394	22%	$25.26	$23.67	$20.31
West Central	4,259,232	1,922,426	96,121	792,355	158,471	41%	$33.09	$28.77	$19.12
City of Seattle	104,433,911	37,805,345	1,890,267	14,785,999	2,957,200	39%			

Non-Residential – Retail

Seattle Sub-Geography	Total Product supply (sf)	Total Deliveries 2000-2019 (SF)	Average Annual Deliveries 2000-2019 (SF)	5-yr Total Deliveries last (gross, sf)	5-Yr Average Annual Deliveries (Gross, sf)	5-yr. Total Deliveries as a % of 20-year Total Deliveries (Gross)	Current average rent, (Annual, $/SF)	Average Rent 2015, (Annual, $/SF)	Average Rent 2010, (Annual, $/SF)
East Central	1,540,221	459,411	22,971	219,528	43,906	48%	$30.55	$23.57	$21.02
Greater Downtown	12,293,850	2,920,458	146,023	1,002,576	200,515	34%	$29.01	$29.05	$22.83
North	5,136,581	1,148,079	57,404	26,080	5,216	2%	$22.85	$19.18	$18.11
North Central	6,485,905	1,423,998	71,200	517,888	103,578	36%	$25.94	$25.88	$19.32
Southeast	4,247,119	1,356,028	67,801	469,782	93,956	35%	$25.63	$16.26	$14.96
Southwest	2,009,964	631,893	31,595	150,359	30,072	24%	$32.85	$19.95	$21.13
West Central	1,409,958	344,723	17,236	115,369	23,074	33%	$34.17	$30.55	$24.02
City of Seattle	33,123,598	8,284,590	414,230	2,501,582	500,316	30%			

Note: all deliveries are gross and measured in square feet.

Source: King County Assessor, Costar

Appendix F: Employment Density Guidance

2021 King County Urban Growth Capacity Report

Employment Density Guidance

INTRODUCTION

This document provides guidance on developing assumptions for converting non-residential building area expressed in gross square feet to expected capacity for employment in buildable lands calculations. This is the final step in estimating total capacity for new employment growth in a jurisdiction. Current statutes and regulations (RCW 36.70A.215 and WAC 365.196.315) do not provide specific requirements for these calculations. Jurisdictions have discretion to develop assumptions that are consistent with local circumstances, provided they document the rationale. Therefore, this guidance also includes rationale to draw upon in the process of selecting appropriate assumptions.

While there are various ways to convert land capacity to capacity for new employment, King County has selected to use an approach that converts non-residential development capacity measured in square feet of floor area to capacity for new employment. This conversion requires assumptions for the average number of built square feet of floor area for each job. The lower the square foot per job, the higher the density of use. The calculation is simply:

Total job capacity = *Gross square footage*[1] *of floor area capacity / gross square footage per job*

Square footage per job can vary widely by building type or employment sector. For example, warehouses devote a great deal of square footage to storing inventory or other goods, and therefore they typically require considerably more square footage per job than office space. Therefore, average employment density assumptions should reflect the types of job growth that are expected in an area.

Many jurisdictions select different employment density assumptions for commercial and industrial zones to reflect different expectations for the type of development and job growth that are expected in those zones. Some jurisdictions even vary employment density assumptions among different commercial zones. For example, a city may assume that average square footage per job is lower in a downtown zone than in other commercial zones further from the core. This decision could reflect expectations that a higher proportion of the downtown floor area capacity will be used as office space, compared to other commercial zones where lower density retail uses may be more common.

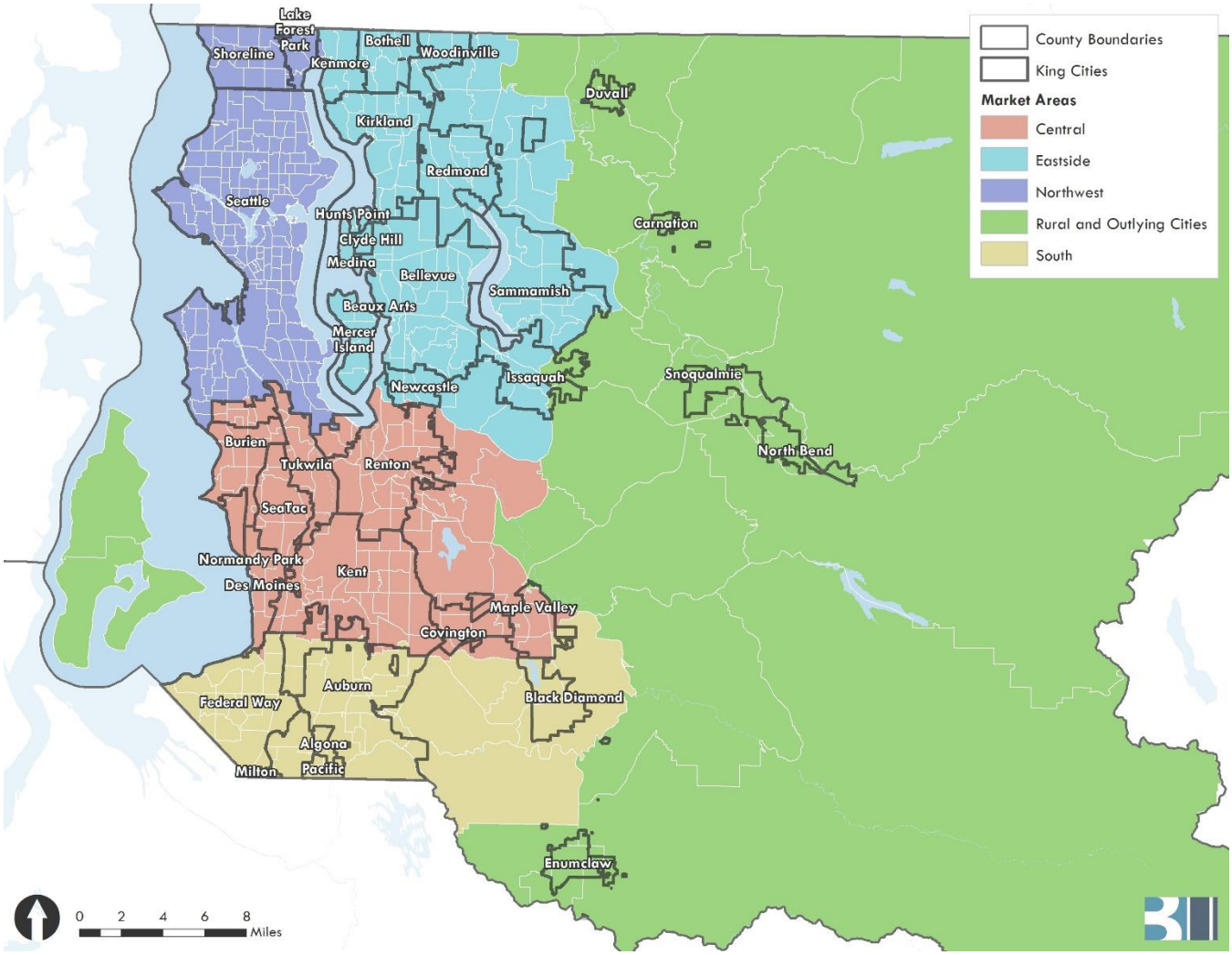
Jurisdictions have the discretion to choose whether to customize employment density assumptions for each zone or select broad assumptions. There is no single correct approach. The choice can depend upon local conditions, staff or consultant capacity for conducting analysis, and access to relevant data. This guidance provides several options for jurisdictions to choose from. Some of these options are grounded in new analysis of current employment density in market areas across King County. For a more detailed description of those findings, see Appendix A.

[1] Gross square footage simply refers to the total square footage of the building, including walls. Gross square footage capacity is calculated as the floor area ratio (FAR) * the parcel size in square feet.

APPROACHES FOR DEVELOPING EMPLOYMENT DENSITY ASSUMPTIONS

This section describes three main approaches for developing and selecting appropriate square feet per job assumptions for use in land capacity analysis calculations. A jurisdiction may choose only one option or a combination of options, depending on their needs and circumstances. The primary options draw upon analysis BERK Consulting conducted to estimate aggregate employment densities in five different market areas across King County. Those market areas are shown in Exhibit 1 for reference.

Exhibit 1. King County Market Areas



Source: BERK, 2020.

1. Select a single average employment density for all non-residential development

The simplest option is to assume the average square feet per job will follow recent trends in your city or market area. To support this option, BERK Consulting calculated average square feet per job in both 2006 and 2019 for most cities and the five market areas. The results for market areas are shown in Exhibit 2.[2] For most individual cities, see Exhibit 6 in Appendix A. Jurisdictions selecting this option can

[2] Details on the calculation of these densities are provided in Appendix A.

apply a single square feet per job assumption to all commercial and industrial zones. This option would be appropriate for jurisdictions that expect future job growth and non-residential development activity to be similar to the growth experienced in the past, or those that have limited non-residential zoning. It may also make sense in jurisdictions with very little diversity in the type of non-residential zoning available (for example: all commercial or all industrial).

The main limitation of this approach is that it does not allow for differentiating employment density assumptions by zone. A single employment density assumption would likely overestimate capacity in industrial areas (which tend to have lower relative employment densities) and underestimating capacity in some commercial zones where employment densities may be higher. This could significantly impact the accuracy of employment capacity estimates by zone and by these two different categories.

2. *Select separate commercial and industrial employment density assumptions*

Many cities select one assumed employment density for commercial zones and another for industrial zones. Others select unique employment density assumptions for each commercial and industrial zone. Either of these approaches is appropriate.

BERK conducted an analysis of recent non-residential development and job growth by market area to develop the recommended ranges shown in Exhibit 2. Jurisdictions should typically choose value within these ranges. When selecting density values, consider the types of uses that are expected to be most common:

- **Commercial and Mixed-Use:** Small-format commercial retail and food services are likely to have lower values for square feet per employee, with commercial office space and services at the middle of the range and large-format retail at the higher end.
- **Industrial:** Certain light manufacturing and flex space are likely to be at the lower end of this range, with heavy manufacturing and logistics in the mid-range and warehousing at the high end. Note that mini-warehouse/self-storage facilities tend to be at the highest end of the range.

Assumptions falling outside of the ranges shown in Exhibit 2 may be appropriate, but would require additional documentation of rationale to justify the variation.

For context, Exhibit 2 also shows the average employment density across all zones in 2006 and 2019. This average is affected by the proportion of total development in commercial or industrial zones, as well as differences in typical employer types and economic conditions. BERK's analysis in Appendix A indicates that employment density has increased somewhat in recent years in most market areas, primarily associated with redevelopment of lower-density commercial and industrial uses and shifts towards more intensive use of these spaces.

A benefit of this approach compared to Option 1 is that it does not presume the same mix of commercial and industrial development observed in the past will continue into the future, or that regional mixes of employment types would be applicable to a local area. This approach also allows jurisdictions to use different assumptions for zones in the city where alternative densities are more likely: differentiating between downtown and neighborhood commercial zones, for example.

Exhibit 2. Recommended Square Foot per Job Assumptions by King County Market Area

Market Area	Average 2006 Employment Density (all zones)	Average 2019 Employment Density (all zones)	Recommended Range for LCA: Commercial and Mixed-Use Zones	Recommended Range for LCA: Industrial Zones
Central	655	608	300–600	700–1,200
Eastside	398	386	200–400	500–800
Northwest	445	415	200–400	500–800
Outlying Cities	669	630	300–600	700–1,200
South	701	724	300–600	700–1,200

Notes: See Exhibit 3 in Appendix A for a map of jurisdictions included in the average density analysis for each market area.
Sources: BERK, 2020 (See Appendix A for details)

Appendix A includes an analysis that provides high-level city estimates for industrial and non-industrial uses using available real estate market data. Note that in this case, available real estate data for the entire county required aggregation of different non-industrial uses. These numbers can be helpful to see how a city compares to the market area as a whole and the ranges provided above.

In addition to the values in Appendix A, there are other sources of information that jurisdictions can use to help inform the selection of appropriate employment density assumptions from within the ranges shown in Exhibit 2. See the section below on using additional sources of information for more details.

3. *Select targeted employment density estimates for known pipeline development*

If a jurisdiction is aware of significant new growth within the development pipeline, such as through development agreements, master planned developments, or recent permit activity, consider applying targeted employment density assumptions for that portion of growth only. This may be particularly useful if this expected growth varies considerably from historic trends or other employment located within the market area.

Additional Sources of Information to Inform Employment Density Assumptions

The main approaches outlined above can be refined with other methods and sources of data. This can provide a more detailed estimate of the land required to accommodate future employment growth in a community. Although not every situation will require a more precise estimate, local trends may require some adjustments to these estimates. Examples of cases like this would include:

- Districts in a city dominated by the campus of a single employer or small number of large employers, where expected future employment growth could be linked to their expected expansion plans.
- Districts where the general types of employment within a category are expected to shift over time. This would include jurisdictions where industrial districts are expected to reflect a greater focus on warehousing and logistics over manufacturing uses.
- Districts where specific new uses are expected with densities different than citywide averages. A recent shift in the types of manufacturing businesses located in an industrial area towards activities requiring less space per employee may require adjustments of required floor area estimates.
- Other broad trends with space utilization may also be relevant: a greater focus of local businesses on online transactions versus physical sales or trends towards increasing employment density in offices may be changing the space needs for current and future businesses in the community, and should be reflected in estimates of future needs.

To this end, this section provides additional sources which could be used for refining calculated densities from the general methods discussed above. Additionally, this section also describes a general framework for considering whether this refinement is necessary for a community, so as to understand when choices should be made to deviate from the broader estimates.

Other Sources for Density Assumptions

Reference published employment density estimates by land use type

This guidance document only provides aggregate employment density estimates based on broad employment and land use categories. Other sources of information, such as the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, provide square feet per job estimates for a detailed list of land use types such as hospitals, schools, or airports. Jurisdictions looking to develop more targeted employment density assumptions may draw upon ITE or other resources to come up with estimated future densities of development.

There are several situations where this approach may make sense:

- Referencing employment density by specific land use types may also be useful for jurisdictions adjusting regional estimates to better reflect the local mix of employment growth expected.
- Employment density assumptions by land use type can also be useful to cities developing separate square feet per job assumptions for different zones. For example, if there is a downtown zone where the vast majority of floor area is expected to be office space, it may be appropriate to use an assumed density that is consistent with the office land use type.

Leverage space planning work by major employers

Another source of information for use in determining employment density may be the programming coordinated by companies or other organizations with larger buildings or campuses and significant space needs. If these needs are identified through facilities planning or as part of subarea plans, the associated numbers could support assumptions about the development necessary to support expected employment growth.

Calculate previous densities achieved in the community

If the same type and format of development will likely continue to be sited in the community, cities could also rely on available data to calculate local employment density across meaningful categories. This can use a range of information sources: County assessor's data, real estate listings websites, discussions with brokers, and other sources can all be used to identify the uptake of new space within a community, while surveys, business license data, and aggregate employment statistics can help to understand the new employment accompanying these uses. Average values for employment density may be aggregated or detailed as required.

Identify potential future changes in densities

The most detailed consideration of future space usage would refine the calculation of previous densities described in Appendix A to focus on expected changes in the future. This would limit the calculations of employment densities to more recent tenants expected to be typical of future employers in an area, and even highlight expected trends that would impact the future use of space, such as the increase in telework or open-format offices. Establishing values in this way needs detailed documentation, especially if the resulting employment density estimates would vary significantly from the figures that would result from other methods.

Process for Evaluating Density Assumptions

When determining the best estimates for employment density in a community, a structured process can include some consideration of the three main methods previously reviewed, as well as the additional sources of information discussed in this section, to determine what assumptions would be best for future projections. Steps in the process can include the following:

- **Select a starting estimate.** Based on assumptions from previous Buildable Lands reporting and/or the estimates provided in this report, select an initial estimate to be used for employment density. This could be an overall estimate for all employment lands or could be divided on broader categories of use.
- **Evaluate densities achieved from a selection of recent development, if possible.** An effective way of determining whether the estimates used have been accurate is to test these assumptions on recent development data. Tax assessment data from the King County Assessor or building permit data on file can determine the effective square footage of new construction, and a survey of current businesses or data from third-party providers can be used to determine employee counts for a representative set of projects. If there are significant and consistent differences between these calculations and broader estimates, there may be a need to examine changes to employment density estimates.

- **Assess the mix of land uses found in recent development and compare to previous expectations.** Additionally, estimates may also be affected by changes in the types of development coming into a community. Significant differences in expected versus actual uses may have substantive impacts on achieved employment density. For example, a significant rise in self-storage facilities or warehouses, more development of larger- or smaller-format retail spaces than expected, a greater proportion of restaurant versus service uses in commercial spaces, and other differences can all impact actual versus expected employment densities, and may point to the need to adjust these assumptions.
- **Identify potential new uses that could challenge employment density assumptions in the future.** Together with generally evaluating the mix of uses in new development, there may also be a need to consider new uses that are starting to become more popular and may require more consideration in the future. An increase in cannabis production or mini warehouse uses in industrial areas, for example, could suggest trends that may change how many employees can be accommodated in these areas. Combined with evaluating the mix of uses in recent development, this should highlight potential changes that could happen with employment densities into the future.
- **Review potential assumptions with other experts in the community.** After identifying potential trends that could impact achieved employment densities, reviewing this information and the resulting revised assumptions with experts from the community can be very useful in testing these conclusions. Discussing changes in space needs with local commercial brokers, developers, large space users, other businesses, and other real estate professionals can be essential in determining if new assumptions reflect their experiences, and whether there are other trends they have identified that should also be considered in these results.

Using some or all of the steps in this process can be useful in determining whether additional detail is required to adjust the starting assumptions to better reflect current and future projections. At minimum, generally establishing whether previous targets were reached and whether these trends will continue will be extremely useful in establishing whether previous assumptions can still be used.

However, beyond the use of currently published figures, either in this report or from other resources, evaluating existing plans and information to calculate alternative local employment densities can be a very data-intensive task. It may also come under scrutiny if calculated employment densities differ significantly from regional averages, especially if these estimates suggest that far less land would be needed to support growth. Refinements to these methods are best considered only if there are specific local situations that could lead to differences in these values, and the results should be thoroughly documented and reviewed to confirm.

NOTES ON CALCULATING EMPLOYMENT DENSITY

If your jurisdiction is considering calculating achieved employment density in an area or specific building or campus, consider these tips for calculating square footage per job.

Generally, the calculation of total gross employment density is calculated as:

> ***Total gross square footage per employee*** =
> (*gross square footage for employment / number of employees*) x (1 + *expected vacancy*)

These calculations include the following variables:

- The **total gross floor area for employment**, calculated as the total amount of building area supporting employment uses, which includes common areas and walls.
- The **number of employees**, which is the total number of employees supported by this gross floor area.
- The **expected vacancy rate**, which is estimated as a target or long-term average vacancy rate in the local market.

For some communities, this could be considered in aggregate across all employment lands. In other cases, however, these assessments can be created by land use categories: office, retail, industrial, warehouse/logistics, mini-warehouse, etc.

Considerations with these calculations include the following:

- **The amount of square footage per employee will change according to type.** Previous research and existing guidance highlight that employment densities vary by use category. Generally, office uses would have different densities of employment than retail spaces or self-storage warehouses, but specifically, medical offices may have different densities than office uses on average.
- **Not all building types are interchangeable.** In addition to different employment densities, building types may be limited in the businesses that can be practically accommodated. Most office spaces are interchangeable, for example, but medical offices have distinct layouts and amenities that would require tenant improvement to be used for other office uses, and manufacturing or industrial uses may have specialized construction dedicated to specific functions.
- **Businesses may not be using their full capacity with the space they occupy.** Whether owner-occupied or leased space, commercial businesses and other organizations may own or lease space to accommodate expected future growth. Because of this, available statistics may include some slack capacity that is not currently occupied, but can be used by the occupying businesses in the future.
- **Vacancies are necessary for the local real estate market to function.** Vacancies are necessary to provide the slack capacity necessary for the space market in a local area to function. Over the long term, some businesses will start, expand, or relocate while others will shut down, downsize, or move out of an area. Even in a market without significant expected long-term growth, natural vacancy rates provide some capacity for the short-term space needs that move around this trend.
- **Employment is not only included in commercial- and industrial-zoned lands.** In addition to the employment found on commercial and industrial lands, there are other employment types that will need to be considered. Certain communities, primarily in rural areas, may need to consider

agricultural and resource uses in the community, such as with aggregate mining. Additionally, home occupation uses, including contractors and self-employed individuals working from home, will also contribute to local employment but will not occupy employment floor space in the community. Note that the PSRC covered employment estimates exclude the self-employed (as well as other types of employees, such as the military and railroad workers).[3]

[3] See https://www.psrc.org/sites/default/files/emp_data_series.pdf for more details on the PSRC covered employment dataset, based on the Quarterly Census of Employment and Wages (QCEW) from the Washington State Employment Security Department (ESD).

APPENDIX A: EMPLOYMENT DENSITY ESTIMATES BY CITY AND MARKET AREA 2006-2019

To support jurisdictions in selecting employment density assumptions, BERK Consulting estimated the average aggregate square foot per job in individual jurisdictions and market areas across King County. The analysis included summarizing non-residential square footage (all commercial, industrial, and public sector buildings that could reasonably accommodate employment) based on King County Assessor data obtained for the years 2006 and 2019. For each jurisdiction with employment data available, BERK calculated the gross square footage per job[4] in 2006 and 2019. The results were then aggregated by five separate market areas (shown in Exhibit 3) that group cities based on geography to reflect variation in local real estate market conditions. This analysis did not consider growth in unincorporated areas due to large variation in geographic context and lack of employment breakdowns for analysis by subarea.

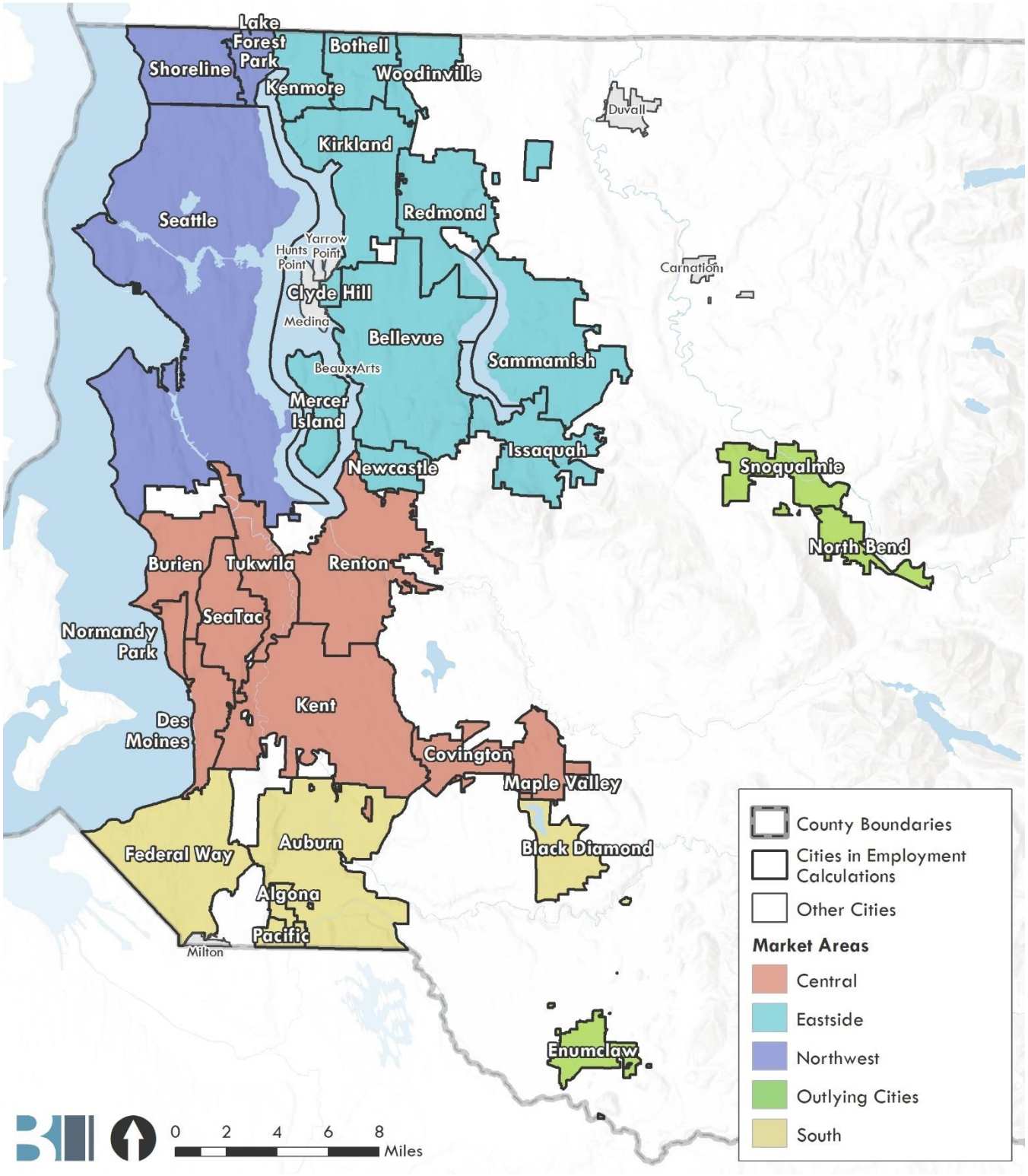
Exhibit 4 shows the total square feet per job in 2006 and 2019 for each of these market areas. While there was some variation between market areas, all areas except for South saw average square feet per job declines during this time period. In other words, employment density has been rising in most of King County. The different outcomes in the South appear to be due to strong gains in jobs associated with warehouse space, which typically require much more space per square foot.

Exhibit 5 adjusts the calculated employment density values on the basis of vacancy rates to determine the actual occupied space in the market and consider that future markets would normally have an average vacancy rate of around 5%. In most market areas, these estimates of square footage per job are somewhat different from the total aggregate square footage per job estimates shown in Exhibit 4. This step is important in cases where vacancy rates in employment areas are significantly higher or lower than expected.

Exhibit 6 provides gross employment density figures by jurisdiction, indicating the range of average densities found in communities across the region in 2006 and 2019. As noted previously, changes between 2006 and 2019 may be due to redevelopment as well as new development that supports employment uses at different densities than existing uses. For example, average densities may change with redevelopment of existing industrial areas for new office and retail uses, or development of new warehousing and distribution sites in communities that have not had these uses in the past.

[4] This analysis excluded construction and resource jobs, many of which are not tied to specific buildings and therefore not as relevant to employment capacity calculations.

Exhibit 3. Cities Included in the Employment Density Calculations by Market Area



Note: Cities with suppressed job counts were not considered in this analysis and therefore not symbolized on this map. Additionally, the 2019 job counts for Enumclaw, North Bend, and Snoqualmie include their respective unincorporated UGAs.
Source: BERK, 2020.

Exhibit 4. Gross Floor Area Square Feet Per Job Calculations, 2006 and 2019

Market Area	2006 Gross Non-Residential Square Feet	2006 Jobs	2006 Gross Square Feet Per Job	2019 Gross Non-Residential Square Feet	2019 Jobs	2019 Gross Square Feet Per Job	Gross Sq. Ft. per job % Change 2006-2019
Central	142,770,591	217,835	655	158,657,104	257,486	616	-6%
Eastside	120,169,602	302,084	398	145,776,209	384,505	379	-5%
Northwest	230,626,549	517,954	445	273,932,690	667,153	411	-8%
Outlying Cities	7,889,576	9,735	669	9,041,389	14,947	605	-10%
South	51,643,062	73,648	701	58,459,588	79,845	731	4%

Notes: See Exhibit 3 for a map of jurisdictions included in the analysis for each market area. Job counts exclude resource and construction jobs, many of which are not tied to specific buildings and therefore less relevant to employment density assumptions. Gross non-residential square footage excludes agricultural uses.
Sources: King County Assessor, 2006 & 2019; PSRC, 2006 & 2019; BERK, 2020.

Exhibit 5. Adjusted Floor Area Per Job Estimates for Non-Residential Buildings in King County, 2006 & 2019

Market Area	Vacancy Rate, 2006	Net Occupied Floor Area, 2006 (sf)	2006 Adjusted Gross sf/ Job	Vacancy Rate, 2019	Net Occupied Floor Area, 2019 (sf)	2019 Adjusted Gross sf/job	Adj. Gross sf per job % Change 2006-2019
Central	6.2%	133,925,953	647	6.3%	148,675,986	608	-6%
Eastside	6.2%	112,769,558	393	3.4%	140,834,396	386	-2%
Northwest	6.0%	216,680,562	440	4.1%	262,816,501	415	-6%
Outlying Cities	8.2%	7,239,633	646	1.1%	8,943,923	630	-3%
South	5.0%	49,080,533	701	6.0%	54,967,212	724	3%

Notes: See Exhibit 3 for a map of jurisdictions included in each market area for calculation purposes. Occupied floor area calculations reflect total floor area exclusive of parking garages adjusted for commercial vacancy estimates from CoStar. This adjustment was made to account for variation in vacancy between 2006 and 2019. Job counts exclude resource and construction jobs, many of which are not tied to specific buildings and therefore less relevant to employment density assumptions. Gross non-residential square footage excludes agricultural uses.
Sources: King County Assessor, 2006 & 2019; PSRC, 2006 & 2019; CoStar, 2020; BERK, 2020.

Exhibit 6. Gross Floor Area Square Feet Per Job Calculations by City, 2019.

City	Market Area	Gross Square Feet Per Job, 2006	Gross Square Feet Per Job, 2019	Gross Sq. Ft. per job % Change 2006-2019
Algona	South	1,349	1,061	-21%
Auburn	South	840	799	-5%
Bellevue	Eastside	374	398	7%
Black Diamond	South	484	762	57%
Bothell	Eastside	494	389	-21%
Burien	Central	536	651	21%
Carnation	Outlying Cities	479	*	*
Clyde Hill	Eastside	430	450	5%
Covington	Central	616	585	-5%
Des Moines	Central	466	818	75%
Duvall	Outlying Cities	547	*	*
Enumclaw	Outlying Cities	653	685	5%
Federal Way	South	516	612	19%
Issaquah	Eastside	420	346	-18%
Kenmore	Eastside	403	566	41%
Kent	Central	908	831	-8%
Kirkland	Eastside	440	366	-17%
Lake Forest Park	Northwest	437	401	-8%
Maple Valley	Central	410	481	17%
Medina	Eastside	*	*	*
Mercer Island	Eastside	332	340	2%
Milton	South	**	**	**
Newcastle	Eastside	454	258	-43%
Normandy Park	Central	493	534	8%
North Bend	Outlying Cities	643	637	-1%
Pacific	South	294	554	89%
Redmond	Eastside	361	327	-10%
Renton	Central	558	493	-12%
Sammamish	Eastside	377	373	-1%
SeaTac	Central	422	375	-11%

Exhibit 6. (continued)

City	Market Area	Gross Square Feet Per Job, 2006	Gross Square Feet Per Job, 2019	Gross Sq. Ft. per job % Change 2006-2019
Seattle	Northwest	444	408	-8%
Shoreline	Northwest	491	503	2%
Skykomish	Outlying Cities	**	**	**
Snoqualmie	Outlying Cities	865	509	-41%
Tukwila	Central	655	630	-4%
Woodinville	Eastside	671	657	-2%
Yarrow Point	Eastside	*	*	*

* *Employment statistics are suppressed for these communities in PSRC statistics.*
** *Densities for Milton and Skykomish not included due to significant variance given the small sample size (<100 jobs).*

Notes: Job counts exclude resource and construction jobs, many of which are not tied to specific buildings and therefore less relevant to employment density assumptions. Gross non-residential square footage excludes parking garages and agricultural uses.
Sources: King County Assessor, 2006 & 2019; PSRC, 2006 & 2019; BERK, 2020.

The analysis described above aggregates all commercial and industrial zones together when measuring employment density. BERK also analyzed assessor data in to help estimate aggregate employment density separately for different types of employment. Exhibit 7 provides estimates of the job densities by city for:

- **Non-industrial employment**, including spaces typically associated with employment in the Finance, Insurance, and Real Estate (FIRE); Retail; Services; Government; and Education major sector categories. This would include both commercial space as well as other public facility uses that may be accommodated elsewhere in land capacity studies but are difficult to distinguish without detailed analysis of individual buildings.
- **Industrial employment**, including Manufacturing and Wholesale Trade, Transportation, and Utilities (WTU) major sector categories.

The allocation of floor space to these categories is based on a classification of both site and building use for non-residential space as recorded in the King County Assessor's tax assessment database. Of course, there may be situations where jobs categorized as non-industrial are located in buildings classified as industrial. The opposite is also true. In most cases we expect this uncertainty would have a minor impact on aggregate calculations by city. However, there are some cases where the calculations in Exhibit 7 may be less reliable for an individual city, and surrounding market area characteristics should be used as a better guide.

Note as well that the non-industrial employment types include a wide range of uses, from recreation to education to government. Each of these types may have very different employment densities. Therefore, care should be used when interpreting these calculations and their relevance to land capacity assumptions.

Exhibit 7. Gross Floor Area Square Feet Per Job Calculations, by City and Job Type, 2019.

City	Market Area	Non-Industrial Employment (jobs)	Non-Industrial Empl. Density (sf per job)	Industrial Employment (jobs)	Industrial Empl. Density (sf per job)
Algona	South	288	1,745	2,146	968
Auburn	South	25,332	699	17,117	1,085
Bellevue	Eastside	129,270	438	12,734	321
Black Diamond	South	346	861	42	**
Bothell	Eastside	13,784	366	2,270	686
Burien	Central	11,198	631	509	2,707
Carnation	Outlying Cities	*	*	*	*
Clyde Hill	Eastside	*	*	*	*
Covington	Central	4,795	574	84	**
Des Moines	Central	6,082	699	454	3,509
Duvall	Outlying Cities	1,177	564	111	1,413
Enumclaw	Outlying Cities	4,148	661	689	1,225
Federal Way	South	26,612	625	1,952	1,130
Issaquah	Eastside	24,093	369	2,988	384
Kenmore	Eastside	3,108	627	448	752
Kent	Central	34,106	679	35,339	1,090
Kirkland	Eastside	42,275	361	4,427	754
Lake Forest Park	Northwest	1,455	465	73	**
Maple Valley	Central	3,634	506	370	770
Medina	Eastside	465	528	21	**
Mercer Island	Eastside	6,306	382	185	421
Milton	South	*	*	*	*
Newcastle	Eastside	2,693	236	127	1,228
Normandy Park	Central	830	581	110	***
North Bend	Outlying Cities	2,649	600	405	1,442
Pacific	South	556	571	134	1,108
Redmond	Eastside	80,377	295	11,852	726
Renton	Central	41,308	565	24,150	454
Sammamish	Eastside	6,884	430	539	262
SeaTac	Central	15,809	685	19,821	166

Exhibit 7. (continued)

City	Market Area	Non-Industrial Employment	Non-Industrial Empl. Density (sf per job)	Industrial Employment	Industrial Empl. Density (sf per job)
Seattle	Northwest	537,538	425	57,858	628
Shoreline	Northwest	15,628	507	430	2,350
Skykomish	Outlying Cities	60	**	-	-
Snoqualmie	Outlying Cities	3,548	633	1,298	736
Tukwila	Central	29,329	565	13,867	875
Woodinville	Eastside	8,206	452	3,839	1,277
Yarrow Point	Eastside	*	-	*	-
	Central	147,091	614	94,704	723
	Eastside	317,461	383	39,430	618
	Northwest	554,621	427	58,361	640
	Outlying Cities	11,582	635	2,503	1,015
	South	53,134	667	21,391	1,077
King County		**1,113,508**	**455**	**221,136**	**725**

* *Employment statistics are suppressed for these communities in PSRC statistics.*
** *Densities are not included due to significant variance given the small sample size (<100 jobs).*
*** *No industrial space was recorded with the classification system used.*

Sources: King County Assessor, 2019; PSRC, 2019; BERK, 2020.

Appendix G: Approach for Identifying Infrastructure Gaps

King County Urban Growth Capacity Study

Recommended Infrastructure Approach

April 5, 2020

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INTRODUCTION

Background and Purpose

King County is in the process of beginning its Urban Growth Capacity Study, also known as the buildable lands or review and evaluation program. The purpose of this study is to review how actual recent growth compares with planning assumptions developed for the existing comprehensive plan, recalculate the quantity and capacity of buildable land available during the current planning period, and identify any issues to be addressed during the next comprehensive plan update. The Study must be complete and delivered to the Department of Commerce by June 30, 2021, but King County will complete its report in November 2020 to allow for a longer comprehensive plan update process.

King County completed Urban Growth Capacity Studies in 2007 and 2014. In 2017, several significant changes were made to the State legal requirements for the program. The County has identified two changes that will require additional analysis before the study can move forward. First, the County must include infrastructure gaps in the process of identifying lands available for development. Second, it must address several specific considerations in developing market supply factors applied to buildable lands.

This report recommends an approach to addressing infrastructure gaps in the Urban Growth Capacity Study. These methods reflect both state requirements and King County jurisdictions' infrastructure needs. A second report will recommend updated methods for market factors.

Methods and Approach

The recommendations in this report were developed in partnership with King County staff from the following resources:

- Washington State Department of Commerce "Buildable Lands Guidelines" (2018)
- King County cities' comprehensive plans

Organization of Report

This report includes the following sections:

- **Regulatory Context** explains how State requirements have changed and how King County's existing methods may need to be updated for consistency

- **Existing Infrastructure Conditions** outlines known infrastructure gaps identified within individual Comprehensive Plans to prepare for interjurisdictional coordination
- **Recommended Approaches** identifies how King County's methods could be updated to accommodate any infrastructure gaps

State Requirements and Recent Changes

The purpose of the Urban Growth Capacity Study is to review how actual recent growth compares with planning assumptions, recalculate the quantity and capacity of buildable land available during the current 20-year planning period, and identify any issues to be addressed during the next comprehensive plan update. King County's study fulfills the requirements for the "Review and Evaluation Program" as established under RCW 36.70A.215. In general, the State program is structured to allow for counties to use unique approaches to suit local conditions. State law sets basic requirements, and counties may meet those requirements as they see fit, provided their rationale is sound and well-documented.

In 2017, E2SSB 5254 was passed by the Washington State Legislature. This bill included the first revisions to the state review and evaluation requirements since the program began in 1997. These revisions included adding the requirement for counties to incorporate infrastructure gaps into their evaluation and identification of land suitable for development or redevelopment during the planning period. This will entail identifying lands that would otherwise be considered vacant or redevelopable and part of the land supply, but which have infrastructure gaps significant enough that they are deemed unlikely to be developed during the planning period, or that infrastructure development will unlock their capacity at a specific point partway through the planning period.

RCW 36.70A.215(3)(b) clarifies that infrastructure gaps include but are not limited to transportation, water, sewer, and stormwater. This report focuses on top ranking infrastructure systems and challenges that affect most or all cities in King County.

In some cases, infrastructure challenges may not warrant removing land from the developable supply for the 20-year planning period. Per the Department of Commerce's 2018 guidelines, jurisdictions should consider the following factors when evaluating whether or not an infrastructure gap exists:

- Is there a long-term lack of urban development in the area?
- How did the recent comprehensive plan address the needed infrastructure provision, and is that information still valid?
- If the infrastructure is anticipated to be provided later in the planning period, is development likely to occur quickly so that planned development is realized within the planning period, or will some of the area remain undeveloped?

King County's Current Methods

King County's past methods for quantifying its developable land informally addressed infrastructure gaps in land supply identification. The County has identified the following steps to update its process to meet new requirements:

1. Assemble necessary data for the entire jurisdiction, including parcel/assessor data, critical areas, and zoning.
2. Define vacant and redevelopable lands using a density and/or value threshold.
3. Exclude land uses or parcels that are unlikely to develop for categorical reasons (parks, schools, public facilities, other institutions, etc.).
4. Apply vacant and redevelopable land definitions established in Step 2 to the remaining parcel data.
5. Review and refine the resulting developable land supply.
6. Identify and remove environmentally sensitive lands.
7. Adjust for infrastructure gaps (New step to be defined).
8. Summarize developable land supply by zone.

This report will provide recommendations on how to accomplish step seven, adjusting for infrastructure gaps. This will include accommodating any lands which should be entirely removed from the land supply and adjusting for lands that will become "unlocked" at some point during the planning period.

EXISTING CONDITIONS

This section discusses the Capital Facilities Elements of King County cities to assess high-level infrastructure challenges, summarized in **Exhibit 1**. Most plans were developed in 2014 or 2015, and individual jurisdictions should review these findings for the County's Buildable Lands needs. This review focuses on infrastructure systems most likely to prevent development, including water, sewer service, and stormwater facilities. Site-specific infrastructure issues independent of system capacity might also limit development capacity; cities should identify site-specific concerns, as outlined in the subsequent section of this report, *Recommended Approach*.

Water

In King County, 18 cities acquire all their potable water through agreements with utility districts or other cities. Another 11 cities have their own water system and supply, but also have areas within their limits served by outside water districts or other cities. This leaves 10 out of 39 cities providing all their own water needs. These 10 cities are generally either very large, with systems that serve many other jurisdictions (Seattle and Bellevue), or very small (Five out of 10 have a population under 10,000). Overall, all indicate that these providers had sufficient water supply to accommodate growth through 2035, though Redmond and Woodinville cited a potential need for additional sources. Several cities with sufficient water rights still face other challenges such as in storing water and managing water quality over time, including Bothell, Black Diamond, and Milton. SeaTac's plan notes concerns about Seattle Public Utilities' ability to supply water to regional cities as Seattle continues to grow.

Sewer

Twenty cities receive sewer service from utility districts or another jurisdiction such as the City of Bellevue or King County. Another 8 cities have their own utility, but also have areas within their limits served by utility districts. At least 20 cities report having parcels with septic systems, and Burien reports areas that do not have access to sewer. Auburn and Kenmore are working to provide sewer to all remaining parcels on septic. Most of the sewer providers have capacity for growth through 2035, though Milton and Woodinville expressed capacity concerns.

Stormwater

All jurisdictions except Carnation have public stormwater infrastructure, though some such as Mercer Island rely heavily on natural systems. At the time of the plan update, Enumclaw did not have a public stormwater utility to fund expansion of its system. A common concern was the need for

additional capacity in stormwater pipes and drainage swales. Some communities require that new development install onsite stormwater detention and treatment, and require the use of low impact development techniques in all development. Numerous communities possess natural conditions that make stormwater management difficult, such as flat topography, high water table, and the presence of rivers, streams, and wetlands. Depending on the use and circumstances, such natural conditions can create site-specific infrastructure gaps that could impact land capacity.

Funding Concerns

Several plans note that the gap between projected future revenues and the cost of required future capital facilities will continue to widen without additional taxes or other revenue increases. One plan notes that cuts in services or increases in operating revenues may be necessary. Another states that funding to maintain the system has not changed over the years and that there is no dedicated fund to cover basic operation and maintenance expenses. Multiple plans cite the need to replace aging infrastructure as a future funding concern.

Awareness of the need for future funding does not necessarily limit anticipated growth. Funding concerns therefore, are only presented herein as prohibitive to redevelopment if the city cites the concern in their plan as critical and imminent.

Exhibit 1 summarizes high level water, sewer, and stormwater issues identified in individual cities' last comprehensive plan updates. These are described in greater detail in **Appendix A**. Cities in Exhibit 1 are grouped by geographic area within King County.

Exhibit 1. Infrastructure Issues Identified in 2015-Era Comprehensive Plans

Jurisdiction	Water	Sewer	Stormwater
North King County			
Shoreline	No issues	No issues	No issues
Lake Forest Park	No issues	No issues	**Infrastructure improvements required**
Kenmore	No issues	No issues	No issues
Bothell	**Additional storage required**	No issues	No issues

Jurisdiction	Water	Sewer	Stormwater
Woodinville	**Projected deficiencies**	**Projected deficiencies**	**Areas of insufficient capacity**
Seattle	**Potential reduction in supply by 4% (2025) and 6% (2050) from climate change impacts**	**Need to reduce combined sewer overflow conditions**	**Need to reduce combined sewer overflow conditions**
Eastside King County			
Kirkland	No issues	**Aging Infrastructure**	No issues
Mercer Island	No issues	No issues	No issues
Bellevue	No issues	No issues	No issues
Newcastle	No issues	No issues	No issues
Redmond	**Potential Capacity Issues**	**Potential annexation areas unsewered**	No issues
Issaquah	No issues	No issues	No issues
Sammamish	No issues	No issues	No issues
Medina	No issues	No issues	No issues
Hunts Point	No issues	No issues	No issues
Clyde Hill	No issues	No issues	**Infrastructure improvements required**
Yarrow Point	No issues	No issues	**Infrastructure improvements required**
Beaux Arts Village	No issues	No issues	No issues
Rural East King County			
Duvall	No issues	No issues	No issues
Carnation	No issues	No issues	**On-site infiltration required, may limit**

Jurisdiction	Water	Sewer	Stormwater
			potential on specific sites
Snoqualmie	**Aging Infrastructure**	No issues	No issues
North Bend	**Aging Infrastructure**	**Unsewered area; expansion of wastewater treatment facility required**	**Concern about system being undersized in some areas for storm events**
Skykomish	**Limited or no dedicated funds to cover basic operation and maintenance expenses of services**	**Limited or no dedicated funds to cover basic operation and maintenance expenses of services**	**Limited or no dedicated funds to cover basic operation and maintenance expenses of services**
Enumclaw	No issues	**Infrastructure improvements required**	**No stormwater utility to fund repair and maintenance of existing system**
Central King County			
Burien	No issues	**Unsewered areas**	**Runoff issues in Salmon Creek basin**
Normandy Park	**Aging Infrastructure**	No issues	No issues
Des Moines	No issues	No issues	**On-site infiltration required, may limit potential on specific sites**
SeaTac	**Dependent on Seattle's capacity**	No issues	**Aging infrastructure**
Kent	**Additional storage required**	No issues	No issues
Tukwila	No issues	No issues	No issues
Renton	**Infrastructure improvements required**	**Potential capacity issues closer to 2030**	No issues
Covington	**Capacity limitations for area served by District 111**	**Infrastructure improvements required**	**Funding gaps**
Maple Valley	No issues	**Infrastructure improvements required**	**Infrastructure improvements required**

Jurisdiction	Water	Sewer	Stormwater
South King County			
Federal Way	No issues	No issues	No issues
Milton	**Aquifer constraints**	**Infrastructure improvements required**	**Infrastructure improvements required**
Pacific	**Aging Infrastructure**	**Potential capacity issues for commercial and industrial**	**On-site infiltration required, may limit potential on specific sites with topography challenges**
Auburn	No issues	No issues	No issues
Algona	No issues	No issues	**Infrastructure improvements required**
Black Diamond	**Infrastructure improvements required**	**Infrastructure improvements required**	No issues

RECOMMENDED APPROACH

This section proposes a process for King County and its cities to identify developable parcels with infrastructure gaps, make decisions about those gaps' impact on development potential, and adjust the land supply accordingly. At the beginning of the infrastructure evaluation process, each jurisdiction will have identified a set of vacant and redevelopable parcels. Environmentally sensitive areas and parcels or land uses unlikely to develop for categorical reasons will have already been excluded from this group. This potentially developable land supply will then be evaluated for infrastructure gaps.

An **infrastructure gap** exists for a property when one or more critical types of infrastructure is not available – transportation, water, sewer, or stormwater. Additional types of infrastructure may be critical in certain cases, and this should be assessed by each city. A gap may be temporary, meaning that a project has been identified in the CIP or TIP to address the gap and funding has also been identified. Or a gap may be long-term, meaning that there is no project funded within the planning period.

The infrastructure evaluation process includes the following steps to identify parcels which have long term infrastructure gaps significant enough to be wholly or partially removed from the buildable lands supply:

1. Identify system capacity issues
2. Identify site-specific infrastructure gaps
3. Update developable land supply

In some cases, this process will require the jurisdictions to work together with service providers to make informed decisions about whether or not lands with infrastructure gaps should be considered part of the buildable land supply. In determining whether there is an infrastructure gap, the Department of Commerce recommends that jurisdictions consider the following:

- Has there been a long-term lack of urban development in the area?
- How did the comprehensive plan address how the needed infrastructure would be provided, and is that analysis still valid?
- If the infrastructure is anticipated to be provided later in the planning period, is development likely to occur quickly enough for the planned development to be realized within the planning period, or will some of the area remain undeveloped?

The proposed approach adds additional rigor to Commerce's guidance through a stepwise scan of infrastructure capacity. Cities and King County

should use professional judgement and the best information available to make informed decisions, and clearly document their rationale.

Step 1. Identify System Capacity Issues

1.1. Each jurisdiction will verify and update the data provided in the most recent Comprehensive Plan, documenting major changes in policy, service provision and other relevant details.

1.2. Each jurisdiction will list the providers serving their jurisdiction with essential infrastructure: water, sewer, stormwater.

1.3. Each jurisdiction will collaborate with service providers, drawing from sewer and water district and comprehensive plans, to identify out-of-date planning information and any underserved portions of each city or the unincorporated urban area. Jurisdictions are advised to coordinate with public works staff to review, interpret and verify data.

1.4. Document any future capital facilities investments planned to address these issues. Determine if specific investments will resolve infrastructure gaps to "unlock" development potential and when it is expected to occur.

1.5. Document if funding has been identified for capital facilities investments.

1.6. Evaluate each system-wide capacity issue to determine if the issue is expected to stop or delay future development, or limit the types or densities of development that will be feasible.

1.7. Using GIS, overlay the service areas of providers with system capacity issues on the set of vacant and redevelopable parcels. Update data for impacted parcels to note system capacity issues.

Step 2. Identify and Document Site-Specific Infrastructure Gaps

2.1. Individual jurisdictions will review remaining vacant and redevelopable parcels to identify site-specific gaps. This review is best done with GIS data. **Appendix B** outlines a suggested process for assigning tiers to sites based on infrastructure availability, and using these tiers to identify site-specific gaps.

2.2. Draw from code or adopted policy to determine if the issues are expected to stop or delay future development, or limit the types or densities of development feasible on vacant or redevelopable parcels. Review parcels with multiple gaps, regardless of severity, to consider if their combined impact will stop or delay development. **Appendix B** provides additional guidance on evaluating multiple gaps.

2.3. Update parcel data to note identified site-specific infrastructure gaps, by documenting infrastructure constrained parcels in the developable land supply.

Step 3. Update Developable Land Supply

3.1. Update developable land supply by removing the developable area of fully constrained parcels from consideration. For partially constrained parcels, document the expected development to accurately convey capacity limitations due to infrastructure gaps.

3.2. Summarize developable land supply by zone.

North King County Jurisdictions

Except for Seattle, North King County's cities are all currently midsize, between 12,400 and 56,400 in population. Woodinville is projected to grow by the largest percentage, while Shoreline and Kenmore will grow the most in absolute terms. There are several utility districts that serve all of these communities in various iterations, particularly the Northshore Utility District, Alderwood Water & Wastewater District, and Woodinville Water District. Seattle, on the other hand, serves as a regional utility provider. Seattle Public Utilities serves communities throughout King County.

Bothell

The City of Bothell's 2015 Comprehensive Plan, called Imagine Bothell, contains a Capital Facilities Element that inventories all of the City's capital facilities. The Element outlines planned improvements to ensure that the facilities have adequate capacity to meet level of service (LOS) standards. The Element also references relevant capital facilities plans, master plans and strategic plans to identify funding sources and other detail.

The City has contracted with Seattle Public Utilities for potable water, and has **sufficient supply to serve growth**. At the time the Plan was updated, the City had identified a **deficiency for water storage**. As of 2015, a project to address this deficiency was underway. In addition to the City water and sewer systems, certain areas are served by the Alderwood Water & Wastewater District, Northshore Utility District, and Woodinville Water District.

Kenmore

Kenmore's utilities and capital facilities elements were last updated in 2015. The City's water is provided by the Northshore Utility District, and it accounts for 31% of the District's connections. The District purchases water from Seattle Public Utilities and has **sufficient capacity to meet growth needs to 2026 and beyond**. At the same time, average day and peak season demands at build out **slightly exceed the SPU supply contract amount**. The city believes this shortfall may be eliminated as conservation measures and water-use habits decrease demand. The District has additional sources for water that it is not yet using.

The Northshore Utility District also provides sewer service. Its policy is to provide public sewer service to areas within its service area, which encompasses Kenmore. It set a goal in 2006 to **provide sewer to the majority of parcels on septic within eight years**. As of 2014, 877 parcels

in the District were on septic systems, and 550 of these had sewer service available but not yet connected.

Lake Forest Park

The Lake Forest Park 2015-2035 Comprehensive Plan was adopted in 2016. Water service is provided by four public water utilities: Lake Forest Park Water District, North City Water Utility District, Northshore Utility District, Seattle Public Utilities. These districts have capital improvement plans that address issues of **aging pump stations and main infrastructure, meter replacements, and reservoir upgrades**, as well as the need for an I-405 transmission main replacement by 2026.

The City owns and operates its sewer utility, though portions of the City are served by the Northshore Utility District. Lake Forest Park manages the City's stormwater drainage system, and has identified $8.7 million dollars in funding for required future projects.

Seattle

The City of Seattle's Comprehensive Plan was updated in 2016. The Capital Facilities Appendix identifies necessary upgrades to police and fire facilities, a need for continuing acquisition of land for parks and open space, demand for new government office and warehousing space, a need for expanding school capacity, and other facility needs that will be necessary to serve a growing city.

The City's utilities will also be taxed by growth. Specifically, Seattle City Light will require **additional resources** to "meet load growth and comply with I-937 over the next twenty years." While maintenance to the water system will be required in perpetuity, particularly for distribution and storage systems and to meet fire flow requirements, Seattle Public Utilities nonetheless indicates that the **water supply is currently sufficient to meet levels of service for anticipated growth in the next twenty years**. Outside of general maintenance, the **sewer system has adequate capacity** to serve the City's full buildout.

Shoreline

Shoreline's capital facilities and utilities elements were last updated in 2012. The elements **do not identify any specific utility gaps.**

Woodinville

Woodinville's Comprehensive Plan was updated in 2015. The Capital Facilities Element indicates that the Woodinville Water District "**projects a deficit** of 200 gpm of source availability for the West service area in 2027 [and] an additional storage capacity deficit of over 900,000 gallons […] in the

West area". The Plan identifies **general deficiencies for the sanitary sewer system**, indicating that the latest Woodinville Water District plans do not include improvements that would be required to meet the current level of service standard. There are also **deficiencies identified for the stormwater system**, with the Comprehensive Plan indicating that "There are areas of insufficient capacity located throughout the City [and] some of the more significant problem areas are within the Woodin Creek basin and in areas upstream of Lake Leota."

Eastside King County Jurisdictions

East King County's large cities are projected to accommodate strong growth, particularly Bellevue and Redmond. More East King County communities own their own utilities compared to other regions, or have service provided by the City of Bellevue.

Bellevue

The City of Bellevue's Comprehensive Plan was last updated in 2015. The Plan indicates that the City has little vacant land, so the focus of the Capital Facilities Element is maintaining and upgrading existing facilities to accommodate anticipated population growth in areas that have already been developed. The Plan provides a detailed inventory of the City's capital facilities and references to several more specific functional plans, which contain detailed information about planned improvements and available funding. While the City anticipates increased demand for services and facilities, the **Plan does not indicate any gaps that would preclude growth.**

Issaquah

The City of Issaquah's Comprehensive Plan was last updated in 2015. It identifies City-managed utilities and capital facilities and provides policy language that requires the City to meet minimum levels of service and provide utilities to serve new growth. **No capacity shortfalls** are identified for water, sewer, or stormwater, though the Capital Facilities Element, indicates that imminent growth may exceed the capacity of police services and parks provision.

Kirkland

Kirkland's capital facilities element was last updated in 2015. The most significant potential gap noted was a need to **replace and/or rehabilitate aging sewer pipelines** to maintain level of service. In addition, some **portions of the city are currently on septic systems** and may need to join the City's system as they become more urbanized. Portions of north

Kirkland have sewer and water service through the Northshore Utility District or Woodinville Water District.

Mercer Island

The City of Mercer Island Comprehensive Plan includes a Capital Facilities Element that identifies capital needs for streets, parks and open spaces, pedestrian and bicycle facilities, stormwater, sewer, water, and schools. The City owns and operates its water, sewer, and stormwater systems. There are **no deficiencies identified for the water system**.

Newcastle

The City of Newcastle's Comprehensive Plan includes a Capital Facilities Element that references several other related plans and advances goals and policies related to level of service, facility financing and other policy issues. The Plan also includes a Capital Facilities Appendix. The Appendix provides a detailed inventory of the City's capital facilities and a comprehensive list of funding mechanisms for capital facility needs. The Appendix also provides a list of needed improvements and anticipated funding levels and sources. Beyond these improvements, **no other gaps are indicated**.

Redmond

The Redmond 2030 Comprehensive Plan was adopted in December 2011. The City of Redmond provides water service to most areas within the City limits. Water is sourced from City wells and the Cascade Water Alliance (CWA). Redmond's well system draws from a shallow aquifer which is **susceptible to contamination**, especially as urbanization of the Aquifer Recharge zone continues. The City has implemented a Wellhead Protection Program to preserve water quality, in addition to implementing conservation measures to decrease demand for a new water supply.

A majority of Redmond is served by a sanitary sewer, however, **some areas still have on-site disposal** such as septic tank systems. King County provides wastewater treatment through the Brightwater facility which has sufficient capacity to meet Redmond's future needs. Most of the **proposed annexation areas lack sewer**. The City manages most stormwater facilities, although there are also some private facilities.

Sammamish

The City of Sammamish's Comprehensive Plan was updated in 2015. The Capital Facilities Element does not contain an inventory of capital facilities but does detail the required levels of service for each type of facility. **No gaps in service provision** are indicated in the Element. Additional background information is contained in another section of the Comprehensive Plan, including an inventory and forecast of future needs. This section identifies

needed improvements to parks, stormwater facilities, transportation facilities, and water and sewer facilities. These capital improvements are **not anticipated to hinder growth** or preclude the City from reaching the buildout envisioned in the Land Use Element.

Beaux Arts Village

The Town of Beaux Arts Village's Comprehensive Plan was **last updated in 2015**. The capital facilities element notes that urban facilities and services are in place and **there are adequate water, sewage and drainage systems to meet the foreseeable needs of a stable population**. The Town's water supply comes from a well within its limits. The Town operates the well and maintains the water delivery system. The City of Bellevue provides sewer service to all Beaux Arts residences. The Town manages and maintains a system of stormwater catch basins, storage and transmittal pipes, and outfalls. No future projects were identified in the Plan. The Transportation element notes that the only local transportation issues relate to road surface maintenance, all addressed in the Town's Capital Improvement Plan.

Clyde Hill

The Clyde Hill Comprehensive Plan was last updated in 2015. Potable water and sanitary sewer service are provided by the City of Bellevue. The Plan states that **all future needs can be accommodated** by the existing systems.

The City owns and maintains a storm drainage system but indicates that as remaining vacant parcels are developed and surface water runoff has increased, **existing underground development has made installation of new stormwater infrastructure more difficult**. The City indicates that a long-term goal is to develop a system able to collect and treat storm water generated by a 10-year average storm event.

While no immediate infrastructure deficiencies were identified in the City's Capital Facilities element, the Plan notes that due to a range of circumstances, there is a **growing gap between operating revenues and expenses** in the City, and that it may be necessary to initiate cuts in services or increases in operating revenues in the future.

Hunts Point

The Hunts Point Comprehensive Plan was last updated in 2015. The City of Bellevue provides both potable water and sanitary sewer service. The Town provides a stormwater system that connects non-shoreline properties to drainage pipes that discharge to Lake Washington. Properties along the lakeshore have private systems that discharge directly to the Lake.

The Plan **does not identify any water, sewer, or stormwater projec**ts in the six-year plan contained in its capital facilities element.

Medina

The Medina Comprehensive Plan was last updated in 2015. Water and sewer services are provided by the City of Bellevue, and King County maintains a sewage pumping station at the corner of NE 8th Street and 82nd Avenue. Bellevue has **adequate capacity to continue water and sewer service**. Non-potable water used at the golf course is pumped from Lake Washington under a "grandfathered" water use rights agreement with the State Department of Natural Resources.

Medina operates and maintains its own storm drainage system. **A range of deficiencies** have been identified in the system, attributed to poor on-site management of stormwater runoff on individual properties. The City adopted requirements for property owners to implement best management practices to control runoff and to better manage private stormwater facilities. In addition, the **City identified a number of upgrades to the municipal stormwater system** to increase flow capacity of individual sections of the system, recondition some of the open ditches, correct old or undersized lines, and to install pollution control devices (e.g., catch basins, oil separators). Current projects are identified in the annual six-year Capital Improvement Plan.

Yarrow Point

The Comprehensive Plan for the Town of Yarrow Point was adopted in 2015. Potable water service is provided by the City of Bellevue, which **can accommodate Yarrow Point's planned growth**. The sanitary sewer system is also operated by the City of Bellevue. New connections to the sewer main require a right of way permit from the Town and a sewer connection permit from the City of Bellevue.

The Town Stormwater Utility was developed in 2011. A comprehensive stormwater inventory and assessment identified several capital projects necessary to accommodate the Town's full land-use build out, supported in part through property tax, Real Estate Excise Tax and other fees. Five projects identified in the 2015 Capital Improvement Plan totaled $688,000. The Town is exempt from the National Pollution Discharge Elimination Permit System (NPDES) Phase II Permit.

Rural Eastside King County Jurisdictions

Rural Eastside King County jurisdictions are generally located further east and are more geographically separate from other Eastside jurisdictions. All have generally strong growth projections, particularly North Bend, which is

projected to grow by nearly 45% by 2040. Each jurisdiction generally provides its own utility services.

Carnation

The City of Carnation's Comprehensive Plan was last updated in 2015. The City owns and operates its water system. Its **water rights and capacity are sufficient** to serve forecasted demand. The City's sewer system was completed in 2008, previously the City was dependent on private septic systems. The sewer system currently has **excess capacity**, with a wastewater treatment plant design to serve a population greater than the project buildout for the City (and currently operating at only 25% of capacity). However, some capital facilities in Carnation appear to have capacity challenges. Specifically, the City has **no public stormwater system** and only two drainage basins. The Plan indicates that "stormwater from impervious surfaces must be infiltrated on-site, which can sometimes be difficult to achieve given localized areas of poorly drained soils and/or seasonal high-water tables."

Duvall

The City of Duvall's Comprehensive Plan was last updated in 2015. The Comprehensive Plan **does not identify any gaps in facility provision** and includes goal and policy language that supports the provision of utilities to support future growth. The City owns and operates its water, sewer, and stormwater systems. It purchases its water from Seattle Public Utilities. Most of the detailed analysis of capacity for each utility is contained in the individual facility and capital improvement plans, rather than the Comprehensive Plan. However, the Comprehensive Plan specifically indicates that the sewer system currently has **capacity to serve 9,000 residents, with expansion capacity up to 13,000 residents**.

North Bend

The City of North Bend's Comprehensive Plan was last updated in 2015. The Plan indicates that about **34% of the City's water pipe is nearing the end of its useful life,** and the City served by different water suppliers in its eastern and western areas. It also identifies several near-term and high-priority investments in the City's water and sewer systems, including expansion of the wastewater treatment plant and the resolution of water supply issues in Sallal. The Plan also indicates that flooding may occur due to several factors, including **"inadequate storm drain infrastructure in certain areas"**. No other capital facilities gaps are indicated, including to police, fire, school and other municipal facilities.

Skykomish

The most recent Skykomish Comprehensive Plan was completed in 2015. The Town owns, maintains, and operates its own water distribution system. The Comprehensive Water Plan for the Town was adopted in 1993, and the Town has responded to the new laws and regulations to the best of its abilities, using grants and loans to provide maintenance and upgrades to the system. Any updates to the plan made since 1993 have not been reviewed or approved by the County or state.

The Town of Skykomish provides municipal water service through two wells located east of town. The water system was originally constructed in the early 1900s, however the town has continued to upgrade the system over the years. Water quality levels, fire flow, and storage facilities are **all adequate at this time**, however a 1993 Water Comprehensive Plan identified numerous improvements and service upgrades that were necessary. Funding has been identified for some of the needed upgrades, and some projects have been completed since 1993.

The General Sewer and Facilities Plan prepared for the Town in 2007 identified a strategy for developing a centralized wastewater collection, treatment, and disposal system that would replace the substandard septic systems used in Skykomish. That **system was planned to be complete** in 2015.

The Skykomish Stormwater Management Plan was adopted in 2014. The **town's system has nearly doubled since 2006**, and has benefitted greatly by the BNSF cleanup, the design of the Town's sewer system, and the Maloney Creek Rehabilitation project. Funding to maintain the system has not changed over the years, and while the Plan identified financing alternatives, there is **no dedicated fund to cover basic operation and maintenance expenses**.

Snoqualmie

The City of Snoqualmie's Comprehensive Plan was updated in 2014. The plan indicates the following needs, based on anticipated 2010-2032 population growth and a more immediate six-year growth forecast:

- Satellite fire station if areas of the UGA are annexed into the City
- Water distribution pipe (about 10% of system) **nearing the end of its useful life**, particularly in the Canyon Springs area
- Energy efficiency and other upgrades to the sewer system, though **no expansions due to capacity constraints** are anticipated
- Improvements to stormwater infrastructure in older City areas, where infrastructure is less robust, with older pipes, and some sections lacking stormwater conveyance

Central King County Jurisdictions

Central King County is home to two cities of over 100,000 residents, and several midsize jurisdictions that are growing rapidly. While some of its cities own their utility services, there is a high level of utility district overlap between cities, even those with their own services. There is also a higher number of utility districts active in this area.

Burien

Burien's capital facilities element was last updated in 2015. Its water is provided by Seattle; King County Water Districts 20, 125, and 40; and the Highline Water District. Water supply is **currently sufficient**, though some improvements are required to improve fire flow. All of these districts purchase water from Seattle Public Utilities. The majority of Burien's sewer service is provided by the Southwest Suburban Sewer System, with other areas served by the Midway Sewer District and Rainier Vista/Val Vue Sewer District. The City has experienced some stormwater challenges in its Salmon Creek basin. The area is almost fully developed, and has experienced erosion and pollution tied to undetained runoff and lack of treatment in some areas.

The City's utilities are provided by utility districts with **extensions and improvements funded by users and local improvement districts**. As a result, to the extent there are utility gaps specific to developable sites, they depend on market conditions to justify extension costs.

Covington

Covington's capital facilities and utilities elements were last updated in 2016. The City's water is provided by the Covington Water District, King County Water District 111, and Ham Water Company. Sewer is provided by Soos Creek Water and Sewer District. **District 111 has minimal capacity for new growth compared to other providers**, but only serves a limited number of properties. Soos Creek has identified capital projects within City limits, but it is not clear if these projects could "unlock" capacity. The element has identified a $**76.4 million funding gap for parks, stormwater, and transportation**. The land use plan may need to be revisited if no new funding sources are identified and LOS standards are not revised.

Des Moines

The Des Moines 2035 Comprehensive Plan was adopted in 2015. Potable water and sanitary sewer service are provided to the city by water and sewer districts (Water: King County Water District 54, Highline Water District, and Lakehaven Utility District; and sewer: Midway, Southwest Suburban, and Lakewood Utility Districts). A **portion of the City is still served by**

septic systems, although future development is required to provide sanitary service.

The City provides stormwater management and requires new development to install onsite stormwater detention and treatment. No specific projects are identified in the Comprehensive Plan.

Kent

Kent's capital facilities element was last updated in 2015. **No infrastructure gaps** were identified. The City's municipal water system does not cover the entire incorporated area. Areas outside the system boundary are served by Water District 111, the Soos Creek District, and the City of Renton. There are several new streets planned which could enhance development potential.

Maple Valley

The City of Maple Valley Comprehensive plan was adopted in 2015. Potable water is provided by **two independent water districts**: the Covington Water District and the Cedar River Water and Sewer District, **plus one Group-A private water system**, Cherokee Bay Community Club, Inc. Both the Covington Water District and the Cedar River Water and Sewer District are seeking to update their intertie and partnership agreements, and in 2015, the Covington Water District identified $41.3 million dollars in projects to upgrade and maintain their facilities. They anticipate **only moderate water system improvements** within the ten-year planning horizon of the Comprehensive Plan.

Most of the City's sewer service is provided by the Soos Creek Water and Sewer District (SCWSD). The Plan prioritized $2.6 million in repairs to aging sewers and mains, some of which date back to the 1950s. **Annexing rural areas in the future could cause a significant impact** on the ability of the SCWSD to meet demand (e.g., through the County's 4-to-1 program that converts adjacent rural lands to urban).

The City of Maple Valley manages the majority of the City's stormwater system, which comprises catch basins, manholes, pipes, ditches, infiltration tanks, detention/retention vaults, and detention/retention ponds. The City continues to identify projects to resolve **chronic stormwater problems**, including areas where there is ongoing recurrent flooding.

Normandy Park

The Normandy Park Comprehensive Plan was adopted in 2016. Water service is provided by three separate large water districts: Highline Water District, Water District 49, and Water District 54. Service is **adequate for**

current needs and capable of responding to anticipated growth. At the time of the City's Comprehensive Plan development, the Highline Water District Capital Improvement Plan identified one project to replace old Asbestos-Concrete water mains, in part, to reduce the potential for water line breaks.

The City does not own or maintain any sanitary sewer system components. Sanitary sewer conveyance services are provided by the Southwest Suburban Sewer District (SWSSD) and the Midway Sewer District. Treatment from both these systems is treated by the Miller Creek Wastewater Treatment Plant (WWTP) in the City. The latest SWSSD plan was developed in 2014, and Midway's latest plan was developed in 2008. These plans indicate that the **current system has sufficient capacity** to accommodate forecasted growth.

A portion of the city, estimated to include 459 persons, **does not receive sewer service**. The Capital Facilities Element notes that it is a priority to provide service in this area, either through expansion of sewer district boundaries, or building of infrastructure and reaching agreement with one of the districts about its construction and maintenance. Capital projects identified by the two districts focus on increasing capacity of the conveyance system, but it is noted that the **proposed improvements may be unrelated to growth** in Normandy Park.

The City has adopted a current Stormwater Management Plan (SWMP). The City is coordinating with surrounding jurisdictions to evaluate surface water management for two contiguous basins, and beyond projects identified for 2015 and 2016, had not identified any new stormwater facilities or projects for 2022-2035 (as of the 2016 Comprehensive Plan adoption date).

Renton

Renton's capital facilities and utilities elements were last updated in 2015. The City provides water, wastewater, and surface water services to the City and some additional areas outside its boundaries. Some **recently annexed areas are currently served by other utility providers**, particularly in the southeast portion of the City. Additional water providers active in Renton are the Soos Creek Water and Sewer District, Cedar River Water and Sewer District, King County Water District 90, and the Coal Creek Utility District.

The City provides water to a 16 square-mile area. Of the City's water, 95% comes from City water sources and 5% from an agreement with Seattle Public Facilities to serve Boeing facilities. The Element states that future infrastructure projects developed to accommodate growth are identified in the Water System Plan Update.

Much of the City's wastewater infrastructure is **reaching the end of its useful life**. City models do not indicate any current capacity deficiencies, but **capacity may be an issue at various locations closer to 2030**.

SeaTac

The SeaTac Comprehensive Plan 2035 was adopted in 2015. Five water districts provide service to SeaTac: Sea-Tac Airport Water System; King County Water District #125; King County Water District #20; King County Water District #49; and Highline Water District #75.

The Plan indicates that the availability of water may be a concern in the future. Since water districts serving SeaTac have historically obtained their water largely from Seattle Public Utilities, the population and employment **growth anticipated in Seattl**e over the next 20 years will affect their continued ability to supply water. This future is further complicated by the impacts that climate change is likely to have as snowpack and warmer temperatures will likely mean drier summers and more stress on water resources. SeaTac has adopted a policy to work with water districts to ensure that other water sources are developed to address future water needs.

Four sewer districts provide service to SeaTac: Valley View Sewer District; Midway Sewer District; Southwest Suburban Sewer District; and Kent Sewer District. In addition, some developed areas of the City are **not connected to sanitary sewers**. Sewer treatment is provided through the SeaTac Airport, the Southwest Suburban Sewer District, and King County's secondary wastewater treatment facilities in Renton. Historically, the City has not required connection to sanitary sewer service even when it is available, although adopted policy requires new development to connect when service is available within 300 feet.

The City indicated that being served by multiple water and sewer districts **complicates interjurisdictional coordination and the ability to assess system capacity** in terms of forecast population and employment growth.

SeaTac owns and operates a surface water utility. The City has adopted a 2013 Surface Water Utility Plan, and a 2012 Stormwater Management Plan. The Comprehensive Plan notes that City's stormwater infrastructure is aging, with **some sections well beyond their expected lifespan**. The Surface Water Utility is evaluating this infrastructure with the goal of repairing or replacing it as appropriate.

Tukwila

The Tukwila Comprehensive Plan was adopted in 2015. Slightly more than 50 percent of Tukwila is served by the City's water system. The remainder is served by the King County Water Districts #125 and #20, Highline Water

District, the City of Seattle, and the City of Renton. The City purchases its water from the Cascade Water Alliance under a contract through the year 2064. Cascade's current primary source of water is through a contract with Seattle. Tukwila's Comprehensive Water Plan (2015) identifies areas of water supply and distribution deficiency, and the six-year Capital Improvement Plan proposes corrective improvements. A **citywide pipeline replacement program** is planned to extend over a 50-year period.

Similar to water service, slightly more than 50 percent of the City is served by the its sewer utility. The remining providers include the City of Seattle, City of Renton, and Valley View Sewer District, or the area is unserved by sewer. The Tukwila sewer system is exclusively a collector system with no treatment component. King County DNRP Wastewater Treatment Division provides Regional wastewater treatment at the South Treatment Plant in Renton. The 2014 Comprehensive Sewer Plan identifies deficiencies in the system, and corrective improvements are proposed in the six-year Capital Improvement Plan. The plan notes that, in order to provide infrastructure in the unserved portions of the City, **additional revenue is needed to extend service** to these areas.

Tukwila's surface water drainage system consists of both drainage improvements, public and private, and natural drainage. Except for a small area in the Ryan Way neighborhood, drainage is ultimately to the Green/Duwamish River. The 2013 Surface Water Comprehensive Plan evaluates the current inventory of existing facilities and identifies deficiencies and planned improvements. A range of surface water issues (**drainage, water quality, and aquatic habitat**) were identified and prioritized, and proposed improvements are included in the City's Six-Year Capital Improvement Program.

South King County Jurisdictions

South King County jurisdictions are generally less populous compared to Central King County, though Federal Way is projected to surpass 100,000 residents by 2040. Some communities are growing rapidly, particularly Black Diamond, which is projected to grow by 57%. While some of its cities own their utility services, there is a high level of utility district overlap between cities, even those with their own services. Several communities are served by Tacoma Public Utilities.

Algona

The Infrastructure and Public Services and Transportation elements of the Algona Comprehensive Plan were **last updated in 2015**. The plan noted that existing services in Algona fall within **acceptable levels of service**

and that future development projected through 2035 will be adequately served provided a systematic approach to facility maintenance is employed.

The City has an interlocal agreement with Auburn for water service and has identified **2.5 million dollars in needed reservoir and water main projects**. The City owns and maintains the local collection system for the sewer system, and the trunk lines and treatment facility are owned by King County Metro. The City bills customers for King County charges, as well as for local maintenance and operation costs. The County trunk line has capacity to 2035. Facility improvements are addressed in Metro's Capital Improvement Program

The City's 2010 stormwater documents identified the need to increase stormwater pipe sizes to 36" in several areas to better handle storm flows, as well as a need for drainage swales sized to address a 25-year/24-hour storm events, to be provided by development.

Auburn

Auburn's capital facilities element was **last updated in 2015**. The Element describes currently utility service but does not identify specific gaps or planned projects. The City provides **water, sewer, and stormwater service** to its limits and several external areas. The City's watershed sources are **supplemented by wells** and **two connections to Tacoma Public Utilities'** regional water system. There are **significant areas in the sewer service area which are currently on septic**, with plans to expand service in the Comprehensive Sewer Plan.

Black Diamond

The City of Black Diamond's Comprehensive Plan was **adopted in 2019**. The City provides water to most of its limits, while the Covington Water District serves its northeast corner. City water is sourced from springs which have **adequate supply** to serve growth, though the City has long term concerns about impacts to **water quality and reliability** due to erosion and steep slopes. It is working to address these concerns while also seeking a supplementary water source. The City otherwise has **sufficient water rights to serve future growth**. System infrastructure improvements will be required to accommodate growth, outlined in the City's Capital Improvement Plan.

Similar to water, the City serves most of its limits with sewer, while the northeast corner is served by the Soos Creek Sewer District. The sewer system must grow to accommodate significant growth anticipated in two planned developments, but these **improvements have been addressed with development agreements**. The Plan does not identify gaps related to stormwater, and reports no major flooding problems. The current Capital

Improvement Plan (2019-2024) identifies funded improvements for all City-operated utilities.

Enumclaw

Enumclaw's capital facilities element was last updated in 2015. The City owns and operates its water system, including its water sources. The City's sewer system requires **improvements to accommodate future capacity**, but the planned timing of these improvements is not noted. While the City has a stormwater system, it **does not currently have a stormwater utility to fund repair and maintenance of that system**. No gaps were otherwise noted for water or stormwater. There are several new roads planned which could enhance development potential in part of the City's unincorporated UGA.

Federal Way

Federal Way's Comprehensive Plan was last updated in 2015. Most of Federal Way's water and sewer service is provided by the Lakehaven Utility District. Small parts of the City receive water from Tacoma Public Utilities, Highline Water District, and the City of Milton. For sewer, small areas are served by the Midway Sewer District, Metro/King County, Pierce County, and the City of Tacoma. Lakehaven Utility District has sufficient resources to fund its capital projects along with current operations.

Milton

The majority of Milton's potable water supply is provided through **six City groundwater wells** located in the City's service area. Existing interties with the Lakehaven Utility District and an agreement with the Mt. View-Edgewood Water Company can provide fire flow.

Milton has **sufficient water rights** available to serve future projected populations, however **aquifer constraints** prevent the City from being able to provide that volume. The City's wells are operated at a volume output level at or near aquifer capacity production limits. Projected maximum day demands are **likely to exceed well and aquifer capacity by 2022**. The City will need to develop additional source capacity before this time. Coordination with Lakehaven Utility District and the Mt. View-Edgewood Water Company may help augment supply if needed.

The majority of Milton's sanitary sewer service is provided by Pierce County Public Works and Utilities, with small areas served by the Lakehaven Utility District, and septic systems. Over the next 20 years, it is anticipated that **improvements will be needed to the conveyance system in order to meet demand**, especially in the Hylebos area. Milton wastewater is treated at the Tacoma Central Wastewater Treatment Plant treats wastewater from

the City. Capacity at this facility is adequate to manage future needs, however commercial and industrial uses would be required to comply with industrial pretreatment and prohibited discharges regulations of the city's two wastewater utilities.

The City of Milton operates a small municipal separated storm sewer system. The City **routinely experiences flooding** during high flow events, most notably in the Hylebos Creek area. To address this, the City has purchased flood prone properties, and has identified projects to improve aging facilities and open channels that are better managed in pipes.

Pacific

Pacific's Comprehensive Plan was last updated in 2015, and its capital facilities element was based on information from the 2010 Sanitary Sewer Plan and the 2009 Water System Plan. The capital facilities element indicates that the City's potable water distribution system consists of **aging and undersized asbestos cement pipe**, buried at shallow levels now considered nonstandard; these conditions are slowly being remedied by the City. Sanitary sewer service and treatment is provided by King County Metro downstream from the main pump stations. The element notes that **industrial and commercial users may require higher levels of service** than currently provided. The element notes that **new sanitary facilities will be needed** to provide service to several infill sub-basins in areas along SR 167 and Valley West Highway

The City of Pacific's storm drainage system is challenged by topography, a high ground water table, and low soil permeability, which have created **drainage issues**, especially in the winter months. To avoid burdening City infrastructure, the City requires new development to incorporate low impact development approaches, on-site storm water management, and other drainage management techniques.

APPENDIX B. INFRASTRUCTURE TIERING

This framework provides a system of assigning tiers to sites for each essential infrastructure category. (Water, sewer, stormwater, and transportation.). The intent is to filter buildable sites to identify only those at risk of not being developable during the planning period due to infrastructure gaps. Once identified, cities should review the sites to determine which ones should be removed from the buildable land supply and document their rationale.

For commercial and industrial sites, including larger multifamily developments, the bar for infrastructure capacity can be higher. **Appendix C** offers a more technical assessment, in the event that this process is not sufficient.

Infrastructure Tiers

A. Infrastructure exists and has the capacity to accommodate planned development.
    - Requires affirmation from local public works departments and utility districts, as applicable

B. Infrastructure does not currently exist, but plans to add necessary improvements exist and funding is identified.
    - Requires affirmation from local public works departments and utility districts, as applicable
    - Requires affirmation from finance departments

C. Infrastructure does not currently exist, but plans to add necessary improvements exist. Funding is uncertain.

D. Infrastructure does not currently exist. No plans have been adopted to add necessary improvements.

Interpreting Tiers

If a site ranks A-B in all categories, it is likely to be available for development within the planning period. If a site has any C rankings, the city should evaluate whether the funding uncertainties are likely to be resolved during the planning period. If they are not, an infrastructure gap could exist. If funding is not likely to be resolved for an extended period, capacity assumptions for the site should reflect development delays. If a site is ranked D in any category, an infrastructure gap is likely. Unless there are likely scenarios under which the gap could be resolved during the planning period, sites with D rankings should be removed from the developable land supply.

Appendix C. Advanced Infrastructure Tiers

Some uses, such as large industrial and commercial developments, will have more substantial infrastructure requirements than others. When a potential infrastructure gap has been identified in these cases, a more detailed review may be warranted. This section describes suggested standards for major industrial and commercial development. If a site ranks A-B in all categories, it is likely to be available for development within the planning period.

If a site is ranked C in any category, the City should evaluate whether a gap exists that will limit development during the planning period. This evaluation process can begin with identifying any existing plans and funding to address the gap, as outlined in **Appendix B.**

Sewer Tier Standards

- **A:** ≥ 8" main located adjacent to or stubbed to site or within ~200 ft of site with depth allowing gravity flow. No downstream pipe/treatment capacity issues.
- **B:** ≥ 8" main located within ~1,000 ft, with no downstream deficiencies. Private lift station may be needed.
- **C:** No nearby pipe and/or significant lift station and force main needed. Downstream deficiencies may be present.

Water Tier Standards

- **A:** ≥ 12" main adjacent or within ~200 ft, preferred loop system existing. No low-pressure issues.
- **B:** ≥ 8" adjacent, or ≥ 12" main within ~1,000 ft. No pump station or pressure/treatment deficiencies.
- **C:** No nearby pipe. System deficiencies present.

Stormwater Tier Standards

- **A:** ≥ 12" public main adjacent or within ~200 ft, or ability to discharge to managed surface waters or on-site infiltration. No capacity issues.
- **B:** ≥ 12" main within ~500 ft; possible outfall to nearby regulated surface channel or wetland, or limited on-site infiltration capacity.
- **C:** No adjacent public storm, no available discharge point to surface water, or no on-site infiltration capacity.

Transportation Tier Standards

Transportation infrastructure is evaluated based on two metrics: local access and system mobility.

Local Access

- **GOOD:** Property has direct connection and no off-site improvements or minor frontage improvements are necessary.
- **POOR:** Property does not have a direct connection and/or significant improvements are necessary to gain local access.

Transportation System Mobility

- **GOOD:** Mobility of adjacent system has a PM peak two-hour volume-to-capacity ratio (v/c) ≤ 0.99 (an approximate Level of Service [LOS] F or better).
- **POOR:** Mobility of adjacent system has a PM peak hour v/c ratio > 0.99 (an approximate LOS F or worse).

Combined Transportation Grade

- **A:** Highway Access and Transportation System Mobility are good.
- **B:** Highway Access is good and Transportation System Mobility is poor or highway access is poor and transportation system mobility is good.
- **C:** Highway Access and Transportation System Mobility are poor.

Appendix H: Documentation of Market Factor and Infrastructure Assumptions



Pierce County Buildable Lands Report

A Monitoring and Evaluation Analysis of Urban Growth and Development Capacity for Pierce County and its Cities and Towns

Pierce County Planning & Public Works

Fourth Edition
Revised Version

November 2022

REVISED VERSION NOTES

INTRODUCTION

The Pierce County 2021 Buildable Lands Report (2021 Report) was published by Pierce County on September 30, 2021, to meet obligations for the Buildable Lands Grant provided by the Washington State Department of Commerce.

The County had originally planned to only provide a supplemental to the 2021 Report with the detailed Consistency Evaluation and update to Pierce County's capacity consistent with new zoning. However, as the document was being updated, necessary corrections were discovered in the Excel files with the calculation tables and summary tables.

There are six major revisions to the document:

- Detailed consistency evaluation information
- Update to Pierce County's capacity to account for new zoning
- Update to 2044 Growth Targets to reflect the most recent version (ongoing until the targets are adopted)
- Correction to underutilized capacity shown in capacity summary tables to account for displaced housing units and jobs
- Correction to vacant capacity shown in employment capacity summary tables for jurisdictions with more than five zones (except Tacoma). All other zones were summarizing the critical area acreage rather than the employment capacity
- Corrections to Eatonville, Lakewood, Orting, Puyallup, and Steilacoom's capacity to address formulaic errors in capacity calculation tables

The scope of the revised version is limited to updates and corrections outlined above, it was not an opportunity to make new changes to the inventory or assumptions.

UPDATES

Consistency Evaluation

The updated version includes summarized data to complete consistency evaluations between the:

- Planned or assumed densities and observed development trends (new tables 10-13)
- Housing production and adopted growth targets (new table 14)
- Capacity and adopted growth targets (new table 15)

This information should be used in comprehensive plan updates to determine any reasonable measures that need to be taken to correct the inconsistencies shown in the consistency evaluation tables.

Pierce County Capacity

At the time the 2021 Report was developed, the intent was to provide a supplemental update to the unincorporated Pierce County section following the implementation of the County's Community Plan Updates, which included substantial zoning changes, and the 2021 Comprehensive Plan Amendments, which were effective on the same date (October 1, 2021). The analysis was not completed simultaneously with the 2021 Buildable Lands Report because the updates to the Frederickson, Mid-County, Parkland-Spanaway-Midland, and South Hill Community Plans were under appeal at the time.

The Community Plan Updates resulted in zoning changes to 7,389.8 urban acres, eliminated six urban zones, and created four new urban zones. The 2021 Comprehensive Plan Amendments resulted in zoning changes to 10 urban acres. The inventory was updated to account for the new assumptions for the new zones. Since the new zones do not have development trends to help establish assumptions, a combination of research was used: reviewing trends for similar zones within Pierce County jurisdictions, and considering the development regulations, active applications for development under the new zoning, and pre-application meeting materials for development inquiries under the new zoning.

This version of the report also includes a breakdown for the two regional geographies under VISION 2050's Regional Growth Strategy that apply to unincorporated Pierce County: Unincorporated Urban and High-Capacity Transit Communities (Mid-County urban, Parkland-Spanaway-Midland, and South Hill Community Plan areas).

2044 Growth Targets

The 2044 growth targets were not fully developed at the time the 2021 Buildable Lands Report was published. This version provides the most recent draft targets and will be updated in subsequent drafts as the targets move through the adoption process. When the targets are adopted, the final version of this report will be updated and published accordingly. References to the 2030 targets were retained for comparison to past housing production rates but were removed when comparing to the capacity.

CORRECTIONS

During the update to the Pierce County section, formulaic errors were found in summary tables for the capacity analysis that affected all jurisdictions. During the update to correct the summary tables, formulaic errors in four jurisdictions' capacity calculation tables were found and corrected, affecting the capacity totals for six zones. New versions of the calculation spreadsheets were created to avoid further errors. The updates and corrections are outlined below.

Underutilized Capacity/Displaced Housing Units and Jobs

Every jurisdiction's capacity summary tables in the September 30, 2021 Buildable Lands Report were displaying the incorrect totals for Underutilized capacity. The formula for summarizing the Underutilized capacity totals was pulling from a field that did not reduce the capacity based on existing units and jobs on Underutilized land. This version displays the correct totals for the Underutilized capacity. The correction affects tables 8 and 9 for each jurisdiction and tables 11 through 13 in the Countywide section.

Vacant Employment Capacity

The employment capacity summary tables for jurisdictions with more than five zones were displaying the critical area acreage deduction rather than the vacant land employment capacity due to a formula error. The error affected zones after the first five zones listed in the employment capacity summary table. All affected zones and the resulting changes are listed in the Notes tab of the updated Excel workbook.

The following jurisdictions were affected, with the number of affected zones listed in parentheses: Bonney Lake (5), Buckley (4), DuPont (7), Eatonville (3), Edgewood (5), Fife (5), Fircrest (3), Gig Harbor (12), Lakewood (16), Milton (1), Orting (1), Puyallup (18), Ruston (1), Steilacoom (2), Sumner (11), University Place (8), and Pierce County's previous capacity (16). The City of Tacoma had previously been corrected and was not impacted by the error in the September 30, 2021, report.

Most jurisdiction's totals showed a higher capacity than previously displayed in the summary tables. The following jurisdictions and zones have a lower capacity than previously displayed, with the deficit shown in parentheses: DuPont R-4 (-1) and R-5 (-28) with an overall change of +74 jobs for the city, Gig Harbor R-1 (-331) and R-2 (-421) with an overall change of -333 jobs for the city.

The actual capacities shown in the calculation tables for these zones have not changed, just the summary table was displaying an incorrect total that has been corrected.

Jurisdiction-Specific Corrections

The capacity tables of four jurisdictions have been corrected to display the actual capacity and the capacity summary table of one jurisdiction was further corrected. The following formulaic errors were found in eight zones, resulting in the noted change:

- **Eatonville MU zone** included an assumption for non-residential uses within a single-family zone; however, the MU zone is a mixed-use zone with a split between residential and commercial, so that assumption should not be applicable. The 5% non-residential assumption was corrected to 0%, resulting in a shift of jobs (-17) to housing units (+8).
- **Fircrest GC zone** was not included in the calculation tables and had pipeline development. Including the GC zone pipeline units increased capacity by 28 housing units.
- **Lakewood** formulas for four zones were pulling vacant and underutilized acreages for a different zone. The:
  - **ARC zone** was pulling the acreage from the AC2 zone, which was omitted from the analysis after determining the zone is not developable. The correction resulted in 127 housing units and zero jobs using the accurate ARC acreage, which is 127 more housing units than previously displayed and no change to employment capacity.
  - **C1 zone** was pulling the acreage from the ARC zone. The correction resulted in -12 housing units and 271 jobs using the accurate C1 acreage, which is 12 less housing units and 65 more jobs than previously displayed.

  - **C2 zone** was pulling the acreage from the C1 zone. The correction resulted in -2 housing units and 1,167 jobs using the accurate C2 acreage, which is 2 less housing units and 1,016 more jobs than previously displayed.
  - **C3 zone** was pulling the acreage from the C2 zone. The correction resulted in zero housing units and jobs using the accurate acreage, which is 1,969 less jobs than previously displayed and no change to housing unit capacity.
- **Orting PF zone** was pulling vacant and underutilized acreages from the OS zone, which has no developable land. The correction resulted in zero housing units and 615 jobs, which is 615 more jobs than previously displayed and no change to housing unit capacity.
- **Puyallup RMX zone** included an assumption for non-residential uses within a single-family zone; however, the MU zone is a mixed-use zone with a split between residential and commercial, so that assumption should not be applicable. The 3% non-residential assumption was corrected to 0%, resulting in a shift of jobs (-5) to housing units (+3).
- **Steilacoom MPD zone** was not included in the capacity summary totals and was showing displaced jobs on a property that is abandoned. The housing capacity summary total line did not include 226 housing units noted in the MPD Underutilized line. The MPD zone has no employment capacity, so the employment capacity summary table was not affected. The MPD Underutilized category was showing -7 in displaced jobs, which was corrected to zero since the property it was associated with is abandoned.
- **Tacoma**
  - **S2 and S11 zones** were not included in the calculation tables and had pipeline development. Including the S2 and S11 zone pipeline units increased capacity by 2 housing units (1 in each zone).
  - **R4 zone** was including acreage from the R4L zone. The correction resulted in 1,141 housing units and 30 jobs, which is 2,837 less housing units and 45 less jobs than previously displayed.

The corrected totals include the corrections noted in the previous section.

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EXECUTIVE SUMMARY

The Washington State Growth Management Act (RCW 36.70A), enacted in 1990, requires all counties with a population of 50,000 or more with a high rate of population growth to designate urban growth areas (UGAs). The Act requires that these UGAs be of sufficient size to accommodate the anticipated population growth during the 20-year period following the adoption of the UGA. In accordance with the Growth Management Act (GMA), the Pierce County Council has adopted UGAs for Pierce County and its incorporated cities and towns.

In 1997, GMA was amended to require certain counties and their cities and towns to monitor development activities and conduct a coordinated housing unit and employment capacity analysis for each of the jurisdictions. Pierce County and its cities and towns are required by state law to participate in this "Buildable Lands" monitoring program. Since 1997, Pierce County and its 23 cities and towns have worked collaboratively in a program to collect annual development permitting data, inventory developable land, and enhance information relating to wetlands and steep slopes.

Commonly referred to as the Buildable Lands Program, this collaborative program is aimed at satisfying the GMA requirements and improving accuracy in the information used to determine the capacity of Pierce County's UGA. Pierce County published its first consolidated residential/employment capacity analysis in August 2002, second in September 2007, and third in June 2014. This 2021 Report represents the fourth published documentation of Pierce County and its cities and towns ability to accommodate future growth and is intended for use in the 2024 GMA Comprehensive Plan periodic update.

The Buildable Lands Report details the methodology, assumptions, and calculations for identifying the housing and employment capacity within the UGA. An important piece of the Buildable Lands Program is using the information in the Report to compare observed densities to the planned densities and growth assumptions, capacity to the growth targets, and housing production rates to the growth targets. This work is completed in a Consistency Evaluation, discussed in Section III of this Report.

Overall, there is adequate housing and employment capacity within the countywide UGA to accommodate the 20-year growth targets through 2044. There are no significant inconsistencies between the individual jurisdiction capacities and the 2044 growth targets that would warrant reasonable measures.

In addition to the capacity analysis, a 2017 update to the Buildable Lands requirements required an analysis of housing production compared to the growth targets. The intent is to monitor actual development in comparison to the number of homes needed to be built in the timeframe to identify any issues with implementing comprehensive plans. For example, a zone may have the capacity to absorb the growth targets, but the market is not producing those units.

The updated Buildable Lands Guidance from the Washington State Department of Commerce provides examples of how to address this type of inconsistency. Progress in aligning housing production with the growth targets should be monitored for jurisdictions with low housing production rates.

I. Overview

- General description and historical perspective of State and County legislation addressing development of the program

II. Methodology

- Information and data collected through the monitoring procedures.
- Inventory categories and process
- Methodology applied to calculate a residential and employment capacity.
- Factors and assumptions used in the calculations

III. Summary of Observations

- Countywide data summaries and capacity results
- Individual chapters for each of the 23 cities and towns and urban unincorporated
  - Summary of development trends
  - Summary of assumptions used in analysis
  - Capacity results
  - Consistency evaluation

IV. Appendices

- Detailed development trend summaries, capacity calculations, and inventory maps for each jurisidiction
- Technical description of inventory model/process
- Employment density survey

SECTION I: OVERVIEW

INTRODUCTION

Pierce County and its 23 cities and towns began developing the Buildable Lands Program in 1997 in response to amendments to the Washington State Growth Management Act (GMA) enacted that same year. The program seeks to establish a coordinated system for collecting and monitoring data regarding growth and development occurring in Pierce County and its cities and towns.

The program primarily focuses on evaluating two aspects of growth management – accommodation of housing growth targets during the 20-year planning period and the availability of commercial and industrial land for employment purposes. The program is aimed at ensuring greater consistency between local planning efforts under GMA and the growth and development patterns actually occurring in the urban growth area (UGA).

History

The Washington State Legislature enacted the GMA in 1990. The GMA required local governments to develop rational policies to manage growth in the State and all urban counties and their cities and towns were required to plan under the GMA. This planning must address issues in land use, transportation, housing, capital facilities, utilities, and rural lands, and must ensure that the forecasted growth in population for the next 20 years can be accommodated in an efficient manner. An essential component of planning under the GMA is the designation of UGAs.

Each county required to plan under the GMA must designate a UGA within which urban growth shall be encouraged and outside of which urban growth shall be prohibited. These UGAs are to be based upon the projected 20-year population growth forecast for the county and its cities and towns as generated by the Washington State Office of Financial Management. To properly size UGAs such that this population could be accommodated, each jurisdiction planning under the GMA conducted a population capacity analysis. These capacity analyses sought to determine how much population could be accommodated in each area based upon availability of developable land.

In designating the UGA, the Pierce County Council worked closely with the individual cities and towns to ensure that the UGA was consistent with local comprehensive plans, urban population forecasts, and population capacity analyses. As a policy choice, each jurisdiction conducted its own independent residential capacity analysis through their GMA comprehensive plan. The County's analysis encompassed the unincorporated lands associated with the UGA and the cities and towns analyses encompassed the lands within their respective municipal boundaries. At this time, satellite cities and towns analyses also included the unincorporated lands within their respective urban growth areas. The methods, definitions, and assumptions incorporated in the analyses differed by jurisdiction and were not uniform or coordinated.

The jurisdictional variations in capacity analyses and the lack of specificity in the GMA led to statewide debate on the subject, with much of the debate focused on determining whether there were errors in the assumptions used by local governments in sizing their UGAs. In 1997, this debate resulted in the

GMA being amended through Senate Bill 6094, commonly referred to as the "Buildable Lands" amendment. The amendment requires certain counties and their cities and towns to monitor development activities and conduct a coordinated housing unit and employment capacity analysis for each of the jurisdictions. Pierce County and its cities and towns are required by state law to participate in this "Buildable Lands" monitoring program.

In July of 2001, the Pierce County Regional Council responded to Senate Bill 6094 by recommending the adoption of proposed amendments to Pierce County's Countywide Planning Policies (CPPs) that incorporated monitoring and evaluation policies related to Buildable Lands. The Buildable Lands legislation was most recently amended in 2017 to include an amended timeframe, a requirement to consider regulations affecting the achieved densities, and a requirement to monitor housing production rates in comparison to adopted growth targets or projections.

LOCAL AND REGIONAL FRAMEWORK

While the Growth Management Act (GMA) was silent on the details of urban density, sizing, and analyzing the sufficiency of urban growth areas, local planning policies and decisions by the Central Puget Sound Growth Management Hearings Board (GMHB) have established specific guidance on some of these issues. Additional guidance is provided through a document entitled "Buildable Lands Program Guidelines (2018)," published by the Washington State Department of Commerce. The Pierce County Comprehensive Plan also provides supporting policies specific to Buildable Lands.

Pierce County Countywide Planning Policies

The Pierce County Countywide Planning Policies are written statements that establish a countywide framework for the development of growth management guidelines adopted by the County and its cities and towns. The framework is intended to create consistency among all jurisdictions in addressing certain growth management issues. Pierce County adopted its CPPs on June 30, 1992.

The CPPs are currently being updated and include a section on Buildable Lands based on the original policies currently located in the "Urban Growth Areas, Promotion of Contiguous and Orderly Development and Provision of Urban Services to Such Development" chapter. Other related policies in the draft updated Urban Growth Area and Growth Targets sections address the sizing of the urban growth area, the allocation of targets, and appropriate average density within the UGA.

Per the CPPs and consistent with GMA, urban growth areas must be of sufficient size to accommodate the urban growth projected to occur over the succeeding 20-year planning period. In determining the appropriate size of the urban growth area, various components must be taken into account, such as critical areas, open space, and a market factor (i.e., maintaining a supply of developable land sufficient to allow market forces to operate).

The CPPs direct the County and cities and towns to plan for efficient land use patterns while conserving natural resources. The policies further define efficient land use as development with at least an average net density of four units per acre. Associated policies support the need for infill and compact development in achieving an efficient land use pattern. The CPPs direct the County and cities and towns to adopt plans that encourage concentrated development within the urban growth area which will accommodate the 20-year projected population and employment growth.

Housing and Employment Targets

Evaluating whether sufficient capacity exists in Pierce County's UGAs to accommodate the 20-year population target is one of the central components of the Buildable Lands Program. Adopted housing and employment targets are used in evaluating the success of growth management efforts. The Pierce County Council adopted the 2044 housing and employment targets through Pierce County Ordinance No. 2022-46s.

SECTION II: METHODOLOGY

DEVELOPMENT DATA

The development data provides information in three key areas:

1. Reveals if the urban growth area is developing at urban densities.
2. Assesses the integrity of assumptions incorporated in the capacity analysis.
3. Guides refinement of the build-out assumptions in the capacity analysis.

While in theory the use of development trend information in future capacity analyses is a valid measure and required by the "Buildable Lands" legislation, there could be some potential problems with doing this. Many jurisdictions have not experienced an amount or range of development necessary to establish a statistically valid trend. Accordingly, use of such data may not truly represent how development will occur in future years. In addition, a certain amount of "new" development being tracked in each jurisdiction is vested under older regulations or previous zoning that is no longer in effect. This vested development may be built to standards different than that occurring under the current regulations and may skew the trend information. These, among other potential problems, should be considered in reviewing the development trend information.

Annual Reporting

Jurisdictions are required to submit residential building permits, non-residential building permits, and platting activity. They must submit details of the permit data, including the parcel number, plan designation, zoning district, parcel size, and site address. For residential development they must also include the permitted units or lots, area used to calculate permitted number of units, and, if applicable to density calculations, the number of acres with environmental constraints, roads, and other land uses. For commercial development they must also include the total building size. Data on 100 percent of development activity occurring in each jurisdiction is sought. However, if a jurisdiction does not submit complete information for an individual project, that project is not incorporated in the reported information. The density information should not be compared among different jurisdictions since density calculations from the developments reflect locally adopted regulations.

Residential Building Permits	Residential Platting Activity	Commercial Building Permits
• Multifamily permits show the observed multifamily project density for each zone. • Single-family permit reporting is optional and not used to determine observed density. • Multifamily permits are used in conjunction with the residential platting activity to determine how much land is used for residential development in each zone.	• Used to determine the observed gross and net single-family project density for each zone. • Indicates how much land is used for non-residential purposes, (critical areas, roads, and other uses). • Used in conjunction with the multifamily building permits to determine how much land is used for residential development in each zone.	• Used to determine the amount of land consumed by commercial and industrial activity in each zone. • Indicates how much land is used for non-residential uses in residential zones. • Limitations: disconnect between commercial permits and available employment statistics.

BUILDABLE LANDS INVENTORY

Conducting an inventory of buildable lands, while not a complete representation of the "buildable land" in the county, is essential in the housing and employment capacity analyses and determining how much land is available and suitable for development. Accordingly, the Buildable Lands Program establishes a standard methodology to be used by all jurisdictions, including standard definitions and procedures to ensure reasonable accuracy and consistency. The inventory in this report represents the status of property as of January 2020 to align with Census data. There are six categories of land identified in the Buildable Lands inventory:

- Vacant (Subdividable)
- Vacant (Single Unit)
- Underutilized
- Pipeline
- Built Out
- Undevelopable

Vacant and underutilized lands are identified through a Geographic Information System (GIS) model using the assumptions and existing conditions as inputs. The GIS model process is outlined in Appendix B: Buildable Lands Inventory Process and the initial categorization of Assessor-Treasurer (ATR) land use descriptions is shown in Appendix Table 1 in Appendix B: Buildable Lands Inventory Process.

While the model is used to initially sort and categorize the parcels, the results are reviewed and refined by the applicable local jurisdictions to further improve the accuracy of the inventory by taking advantage of local knowledge, field visits, and the review of digital orthographic photography. The inventory provides the underlying basis for the housing and employment capacity analyses but is not a representation of the "buildable land" with capacity for development at a parcel level.

Four of the six inventory categories are identified as having additional housing or employment capacity: Vacant, Vacant (Single Unit), Underutilized, and Pipeline.

Vacant Land

Vacant lands include parcels without an established structure or land use activity, excluding those enrolled in a current use tax program. Vacant properties that are identified as being enrolled in a current use tax program are included in the Underutilized inventory because of the fiscal implications that are associated with developing those lands. Vacant parcels are categorized as either Vacant or Vacant Single Unit. Vacant parcels owned by a government entity or special district are flagged for local review.

- Vacant represents parcels that are assumed can be further subdivided and can accommodate more than one housing unit. These parcels are included in the capacity calculations where further assumptions are applied.



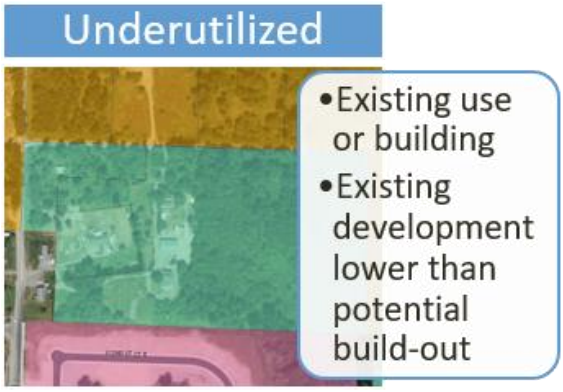
- Vacant Single Unit represents an individual building lot that is assumed to accommodate only one housing unit. These parcels are separated from the "acreage" capacity calculations and added in as one unit per parcel to the final capacity.



Underutilized Land

Underutilized lands include parcels that have an existing structure(s) or land use activity and can accommodate additional housing units or jobs. These lands include parcels in which excess space is available to build a new structure(s), or it is assumed that an existing structure(s) will be demolished and replaced with a larger structure or more structures.

Not all parcels that can theoretically accommodate additional growth are categorized as Underutilized. A specific ratio between the existing housing units or estimated jobs to the calculated assumed future build-out must be met. The ratio is different between housing units and jobs.



Existing Residential Use

Parcels with an existing residential use may be categorized as Underutilized if it meets one of the following:

1. **Residential or mixed-use zoning classification:**
   - The ATR use code is single-family, mobile home, multifamily, or mobile home park.
     - For existing single-family or mobile home units, the improvement value is less than $500,000.
     - For multifamily and mobile home parks, the improvement value is less than $1,500,000.
   - The ratio of assumed housing build-out to existing housing units is greater than or equal to 2.5.
2. **Commercial/industrial zoning classifications that prohibit residential units:**
   - An existing single-family housing unit, excluding parcels that are within platted subdivisions.

Calculation of Existing-to-Build-Out Housing Density Ratio

1. Determine the existing net housing units per acre for each parcel using ATR data for existing buildings/units.
2. Calculate the assumed housing units per acre using the established density assumptions (listed in the assumptions section for each jurisdiction).
3. Divide the assumed build-out density by the existing density (this is the existing density to build-out ratio).
4. If the existing housing unit to build-out ratio is 2.5 or greater, the property is categorized as Underutilized. If the build-out ratio is less than 2.5, the property is assumed not to have additional housing capacity and is identified as Built Out.

Existing Commercial or Industrial Use

Parcels with an existing commercial or industrial use may be categorized as Underutilized if it meets the following:

Parcels within commercial, industrial, or mixed-use zoning classifications:

- The ATR use code is non-residential.
- The parcel has an improvement value less than $1,500,000.
- The ratio of assumed future job build-out to estimated existing jobs is greater than or equal to 5.

Calculation of Existing-to-Build-Out Employment Density Ratio

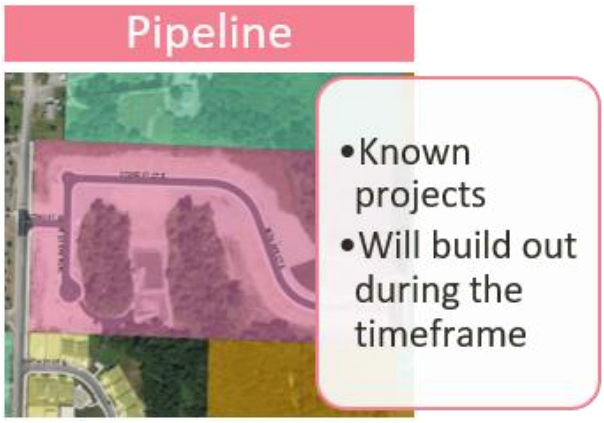
1. Determine the existing employment density for each parcel by dividing the square footage of the existing building(s) by the industry standard square footage assumption to estimate the existing number of employees using ATR data for existing building square footage.
2. Calculate the assumed future employment build-out for the parcel by multiplying the gross acreage of the parcel by the assumed employment density.
3. The assumed future employment build-out figure is divided by the estimated existing number of jobs (this is the existing employment to build-out ratio).
4. If the existing employment to assumed build-out ratio is 5 or greater, the property is categorized as Underutilized. If the build-out ratio is less than 5, the property is assumed not to have additional employment capacity and is counted as Built Out in the inventory.

Pipeline

For ease of use, the inventory categorizes pipeline projects and known development as Pipeline. Single-family residences that have been built or are planned to be built within the timeframe are captured in Vacant Single Unit category, not the Pipeline category.

Pipeline Projects

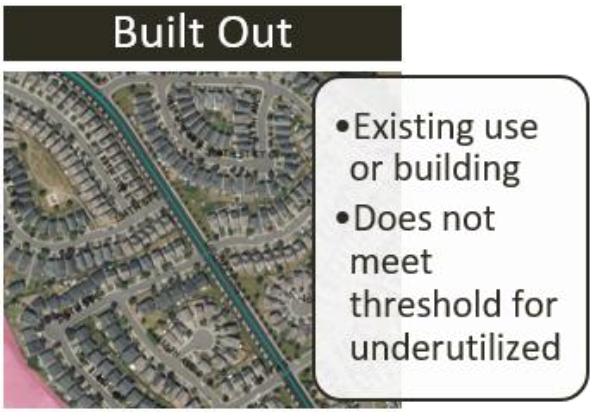
Projects that are currently in the "pipeline" may be counted separately from the vacant and underutilized land. Pipeline projects are those with an active development application and a known number of units or job estimate. The applicable parcels are identified as Pipeline in the inventory and the number of units applied for are counted toward the capacity to represent a more realistic representation of build-out and units or jobs available during the planning period.



Known Development

The next 20-year period for Growth Management Act periodic updates will span from 2024 to 2044. Since we do not have the ability to know the land available for development in 2024, 2020 is used as the initial baseline for both the Buildable Lands Report and the growth target setting for internal consistency. Using the same baseline data helps jurisdictions accurately track growth targets, and 2020 aligns with a U.S. Census data year, which helps with demographic data comparison in comprehensive planning.

Recognizing that parcels will be developed between 2020 and 2024, the analysis categorizes the parcels associated with these projects as Pipeline since it is known that they will be part of the housing inventory available during this timeframe.



Built Out

Parcels with existing uses that are categorized as Built Out are removed from the capacity calculations outright. Built Out parcels are those that did not meet the definition of Vacant or Underutilized but are not necessarily undevelopable.



Undevelopable

Parcels with existing uses that are categorized as Undevelopable are removed from the capacity calculations outright. It is assumed that certain uses (e.g., utilities, cemeteries, drain fields, landfills, and other protected uses) will not develop further or contribute to housing or employment capacity.

CAPACITY CALCULATION METHOD

The methodology used to calculate the residential and employment capacity in this report is similar to the methodology that was utilized in the 2014 analysis.

The methodology employed for the analysis includes various factors and assumptions. Each component directly influences the estimated capacity and needs' statistics. The assumptions reflect a conservative approach; therefore, the reported estimates are not maximum capacity or full build-out estimates. The analysis is based on the total gross acreage associated with each of the buildable land categories (Vacant and Underutilized) by zoning district. The estimated residential capacity is generated through acreage deductions to account for factors identified below and the application of an average residential density.

An explanation of the calculation table process is found in Appendix A: Full Data, Calculation Tables, and Maps with the full capacity calculations.

General Factors and Assumptions

Mixed-Use Zoning

Mixed-use zoning allows residential and commercial activity on the same parcel or on separate parcels within the same zoning classification. To account for this mixture of activity in both the housing and employment capacity analyses, a percentage of zoning classification's acreage is split between the housing and employment capacity calculations. This assumption is referred to as the "residential acreage" and "non-residential acreage" in the calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

In some instances where a vertical mixed-use is anticipated, 100 percent of the land area is assumed as both residential and non-residential. This recognizes buildings where the first floor is commercial and the additional stories are residential. In other cases, it is assumed that a specific mixed-use zone will produce 100 percent commercial on the first floor, but only a percentage of the land in that zone will produce residential on the second and above floors. A 100 percent non-residential and smaller percent residential assumption, depending on the jurisdiction and zone, is applied to accommodate this trend. Conversely, if it is assumed that a zone will develop as 100 percent residential uses, but only a portion will include commercial on the ground or other floor(s), a 100 percent residential and smaller percent non-residential assumption is used.

Future Capital Facilities

The employment capacity for Buildable Lands per RCW 36.70A.215 is limited to land available for commercial or industrial use. While some capital facilities generate jobs, the acreage associated with anticipated/planned public capital facilities is deducted from the total gross residential and commercial/industrial acreage. Any parcels documented as future capital facilities are considered Undevelopable or Built Out in the inventory and are excluded from the capacity calculations. In some instances, local jurisdictions choose to incorporate a specific percentage of future land to deduct from the gross acreage in each zone or specific zones for future public capital facilities if the specific sites are not yet known.

Market Factor

Although individual properties may meet the criteria for Vacant and Underutilized lands, not all properties are assumed available for development during the 20-year planning period. Property owners may not pursue development due to personal use, economic/investment, constraints associated with properties on private roads, or sentimental relationship with their surrounding environment. To account for the market availability and other factors, a percent of the net acreage is deducted from the inventory. A higher percentage is typically deducted for properties categorized as Underutilized to recognize the constraints of additional development or redevelopment of those properties. In previous reports, this market factor was identified as “land unavailable for development.”

Pipeline

Parcels with associated pipeline projects or known development (referred to as Pipeline in the inventory) are not included in the gross acreage shown in the capacity calculations. The associated housing unit or employment build-out total is added to the total capacity at the end of the process.

Residential-Specific Factors and Assumptions

Residential Density

The net buildable acreage is converted to housing unit capacity through the application of assumed density in the form of dwelling units per acre. The assumptions section for each jurisdiction identifies the density for each zoning district. Individual jurisdictions established the density assumptions while considering past trends and recent regulation changes. The assumptions are based on previous reports and refined using the observed development trends.

Plat Deductions

Individual jurisdictions apply different methods to calculate the maximum number of residential lots permitted within a plat. While some calculate units with a project's gross acreage, others employ a net acreage. The plat deductions reflect the type of approach the respective jurisdiction implements. These deductions may include land reserved for roads, critical areas, parks, recreation, open space, or stormwater facilities.

Non-Residential Uses

Zoning codes permit various types of non-residential development within residential districts, such as churches and day-care centers. To account for future non-residential development, a percentage of the net residential acreage is deducted from the residential capacity and moved to the non-residential capacity. The specific percentage differs between each jurisdiction and is only applied to residential-only zones. This process differs from the mixed-use zoning assumption to recognize that it is not truly a mixed-use zone.

Vacant Single Unit

If a parcel is categorized Vacant Single Unit, the parcel acreage is not included in the gross acreage and is incorporated in the analysis as one dwelling unit, which is added to the total capacity at the end of the process.

Displaced Units

In the analysis, existing housing units located on Underutilized parcels are categorized as displaced units. The existing number of units is derived from ATR data. Not all the gross acreage is considered to be developable; accordingly, the total number of displaced units per zone is adjusted down to reflect the same percent of deductions that was applied to the gross acreage. The adjusted displaced units are deducted from the total capacity to avoid double-counting. It is important to note that this calculation process differs from previous reports that added the displaced units back into the housing need, and instead reduces those units and jobs from the capacity itself.

Commercial and Industrial-Specific Factors and Assumptions

Employment Density

The net buildable acreage totals in the calculation tables are converted to employment capacity through the application of assumed employees per gross acre. An assumption for employment density (employees per acre) is necessary to calculate the capacity of the commercial and industrial lands.

Although the Buildable Lands legislation directs the County to use the average employment densities generated through the trending period, this approach is problematic because employment statistics are not readily available and many commercial/industrial buildings/complexes may not be 100 percent occupied within the first year of completion.

The 2014 report set an assumption of 19.37 employees per acre for commercial and services and 8.25 employees per acre for industrial warehousing and manufacturing. The County contracted with ABHL and ECONorthwest using grant funding through the Washington State Department of Commerce to evaluate the employment density assumptions used in the Buildable Lands Report. The findings of their study confirmed that the assumptions were still valid for this report (see Appendix C: Employment

Density Survey). The assumptions have been adjusted to whole numbers for this report and ease of use, updating them to 20 employees per acre for commercial/mixed use zones and 9 employees per acre for industrial zones. Jurisdictions with further analysis and applicable market studies have adjusted their employment assumptions on a case-by-case basis to reflect the market conditions in those areas.

Displaced Employees

The Underutilized land category may include existing businesses that, if redeveloped as another business, are assumed to be displaced. Accordingly, the employment capacity figure is increased to account for the assumed displaced employees. To calculate the displaced employees, the locally observed density of 500 square feet per employee for commercial and 900 square feet per employee for industrial/warehousing is applied to the existing building square footage. Since not all the gross acreage is considered developable, the total number of displaced employees per zone is adjusted down to reflect the same percent of deductions that was applied to the gross acreage. The adjusted displaced job estimates are deducted from the total capacity to avoid double-counting. It is important to note that this calculation process differs from previous reports that added the displaced jobs back into the employment need, and instead reduces those units and jobs from the capacity itself.

SECTION III: SUMMARY OF OBSERVATIONS

GENERAL OVERVIEW

The Pierce County Buildable Lands Report is a milestone project in an on-going monitoring and evaluation program. This section represents a summary of the data and calculations shown in Appendix A: Full Data, Calculation Tables, and Maps, as well as supplemental data.

The development data represents urban development trends between 2013-2020. The development activity generally indicates that urban density housing is being constructed within the urban growth area. As with previous reports, it is impossible to conclude whether there is a trend that indicates an increase or decrease in observed density due to a low number of projects in various zoning districts within the cities, towns, and unincorporated urban areas. The Buildable Lands Report does not calculate capacity for the rural area, but development data is collected to compare to the rate of growth within the urban growth area. The development data summaries are not representative of all development and permitting activity that occurred during the timeframe, rather it is a summary of data that is used to determine or support the assumptions established in the capacity analysis.

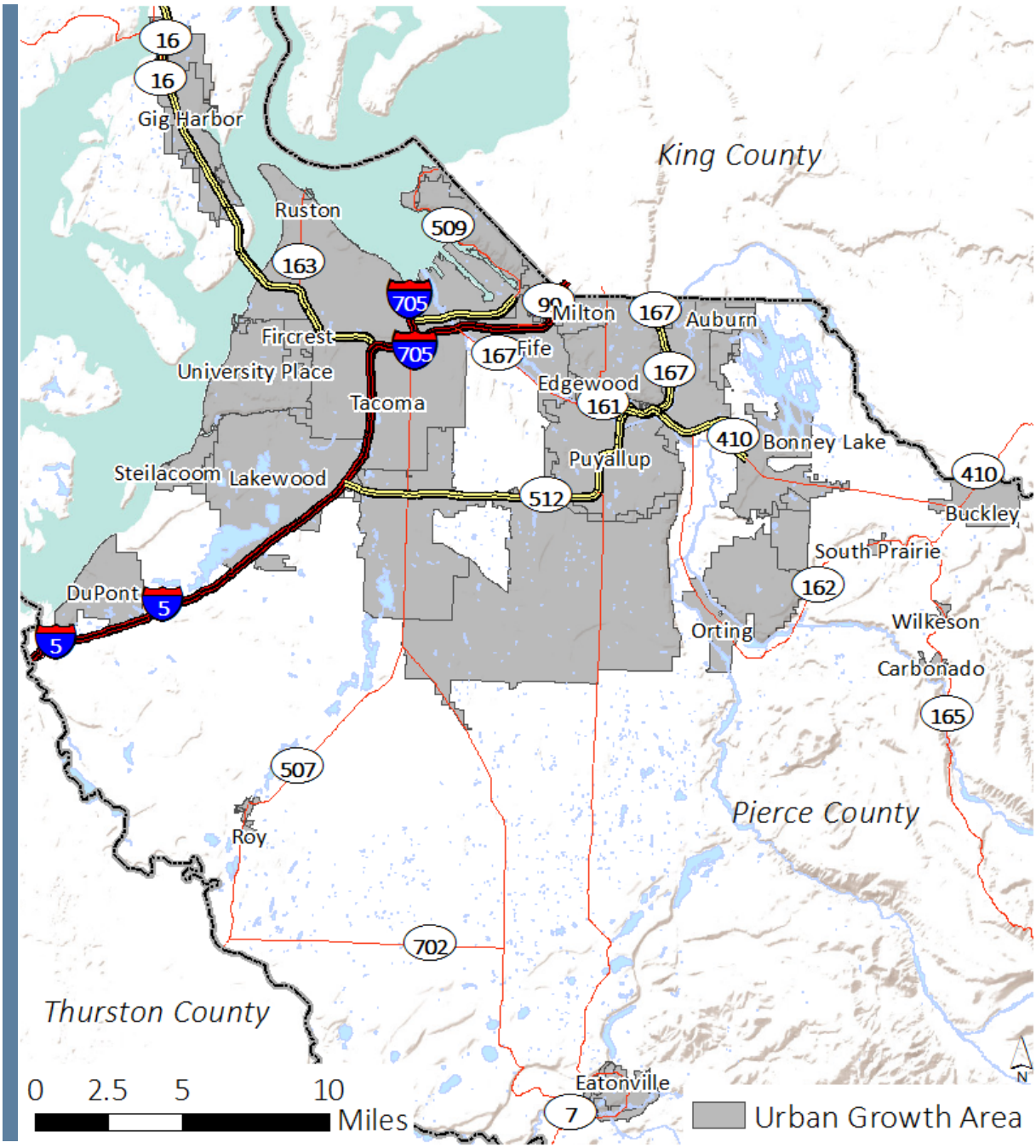
The adopted 2044 housing and employment targets and assumptions applied in the housing and employment capacity analyses reflect a redirection of growth through redevelopment and achieving higher density residential projects in cities and towns based on the Puget Sound Regional Council's VISION 2050 Regional Growth Strategy.

There are 3 factors that the Buildable Lands analysis must analyze for consistency:

1. If the allowed and assumed densities are consistent with the observed densities.
2. If the housing and employment capacity is consistent with the adopted growth targets.
3. If actual housing production is consistent with the adopted housing growth target (new requirement as of 2017).

The consistency analysis is important to confirm that the assumptions are valid, the allowed zoning is building out within the range allowed, and if there is enough capacity and development occurring to meet the growth targets. If there is an indication that there is an inconsistency between these datapoints, there should be further review into the extent and cause of the inconsistency.

1 COUNTYWIDE



DEVELOPMENT TRENDS

The Buildable Lands Report also tracks the distribution of development between the urban and rural areas. Over time, the platting trend has been shifting toward creating the majority of new lots within the urban growth area, as shown in Table 1-4. However, there are still undeveloped lots within the rural area that can accommodate a housing unit, as shown in Table 1-1 below. The trends for platting and housing production in the rural area do not always match up due to the number of existing lots of record in the rural area. As those lots develop, it is expected that they will more closely align.

Housing Production

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management (OFM) estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. While capacity is a large factor in determining the ability to accommodate growth in the urban growth area, housing production rates are integral to achieving the housing growth target.

The following comparisons use the 2020 Census as a base year to estimate growth through 2044 to be consistent with the data used to set the targets. Since OFM data is now available through 2022, the information in the individual jurisdiction sections have been supplemented as available to contribute to the Consistency Evaluation. However, 2020 data for the unincorporated urban area is not yet available.

Table 1-1: Housing Production in Urban Growth Area vs. Rural and Resource Lands (Includes Incorporated)

		2013	2014	2015	2016	2017	2018	2019	2020	2013-2020
Urban	Units	2,653	3,207	2,993	2,878	3,936	3,517	3,497	4,182	**26,863**
	Percent	92%	92%	90%	88%	88%	89%	90%	89%	**90%**
Rural/ Resource	Units	220	276	335	407	551	438	370	538	**3,135**
	Percent	8%	8%	10%	12%	12%	11%	10%	11%	**10%**
Total Units		**2,703**	**2,873**	**3,483**	**3,328**	**3,285**	**4,487**	**3,955**	**3,867**	**4,720**

Source: Washington State Office of Financial Management Housing Unit Data (2020).

Table 1-2 shows the number and percent of housing units developed between 2010-2020 in comparison to the 2030 targets (Ordinance No. 2017-24s), and the remainder of growth needed between 2020-2030 to achieve the target.

While the 2030 targets have been updated to 2044 for the next planning horizon, the information shown here is to document the progress made by jurisdictions to accommodate the previous planning horizon. The most recent data is used, so it may not align with the data shown in the 2014 Buildable Lands Report.

Table 1-2: Countywide Housing Units, Growth, 2030 Target, and Remaining Need by Jurisdiction

Jurisdiction	2010 Housing Units[1]	2030 Housing Unit Target[2]	2010-2030 Housing Unit Need[3]	2020 Housing Unit Estimate[4]	Total Housing Production 2010-2020[5]	2020-2030 Housing Unit Need[6]	Percent of 2010-2030 Housing Unit Need Developed Between 2010-2020[7]
Auburn (part)	3,196	3,634	438	3,898	702	-264	160%
Bonney Lake	6,446	8,604	2,158	7,605	1,159	999	54%
Buckley	1,671	2,930	1,259	1,956	285	974	23%
Carbonado	218	298	80	244	26	54	33%
DuPont	3,351	5,291	1,940	3,791	440	1,500	23%
Eatonville	1,067	1,353	286	1,127	60	226	21%
Edgewood	3,826	6,003	2,177	5,125	1,299	878	60%
Fife	3,938	4,457	519	4,326	388	131	75%
Fircrest	2,855	3,351	496	2,926	71	425	14%
Gig Harbor	3,637	5,431	1,794	5,642	2,005	-211	112%
Lakewood	26,612	34,284	7,672	26,999	387	7,285	5%
Milton (part)	2,729	2,779	50	2,963	234	-184	468%
Orting	2,378	3,121	743	2,999	621	122	84%
Pacific (part)	43	0	-43	19	-24	-19	56%
Puyallup	16,323	22,611	6,288	18,106	1,783	4,505	28%
Roy	325	487	162	315	-10	172	-6%
Ruston	434	775	341	517	83	258	24%
South Prairie	170	215	45	149	-21	66	-47%
Steilacoom	2,801	3,385	584	2,919	118	466	20%
Sumner	4,274	5,743	1,469	4,492	218	1,251	15%
Tacoma	86,186	129,030	42,844	92,309	6,123	36,721	14%
University Place	13,621	18,698	5,077	14,427	806	4,271	16%
Wilkeson	175	198	23	182	7	16	30%
Unincorporated Urban Pierce County	76,044	99,563	23,519	87,888	11,844	11,675	50%
Urban Total	**262,320**	**362,241**	**99,921**	**290,924**	**28,604**	**71,317**	**29%**

[1]2010 Census baseline, Source: OFM April 1, 2021 Housing Unit Estimate.
[2]2030 housing target, Source: Ord. No. 2017-24s.
[3]2030 housing target minus 2010 Census housing unit baseline.
[4]2020 OFM Estimate, Source: OFM April 1, 2021 Housing Unit Estimate.
[5]2020 OFM Estimate minus 2010 Census baseline
[6]2030 housing target minus 2010-2020 housing production total.
[7]2010-2020 housing production total divided by 2010-2030 housing unit need.

Table 1-3 shows the observed housing production and average annual rate between 2010-2020 in comparison to the draft 2020-2044 housing growth targets, and the increase needed for jurisdictions with an annual rate lower than the average annual rate needed to accommodate the 2020-2044 growth targets.

Table 1-3: Countywide Housing Unit Production, DRAFT 2044 Targets, and Remaining Need by Jurisdiction

Jurisdiction	Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
	2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
Auburn (part)	3,146	3,898	3,994	752	96	75	4	3,146
Bonney Lake	6,394	7,605	10,455	1,211	2,850	121	119	6,394
Buckley	1,669	1,956	3,330	287	1,374	29	57	1,669
Carbonado	218	244	261	26	17	3	1	218
DuPont	3,241	3,791	5,751	550	1,960	55	82	3,241
Eatonville	1,059	1,127	1,404	68	277	7	12	1,059
Edgewood	3,801	5,125	7,557	1,324	2,432	132	101	3,801
Fife	3,895	4,326	6,199	431	1,873	43	78	3,895
Fircrest	2,847	2,926	3,714	79	788	8	33	2,847
Gig Harbor	3,560	5,642	6,642	2,082	1,000	208	42	3,560
Lakewood	26,548	26,999	36,713	451	9,714	45	405	26,548
Milton (part)	2,724	2,963	3,222	239	259	24	11	2,724
Orting	2,361	2,999	3,167	638	168	64	7	2,361
Pacific (part)	45	19	19	-26	0	-3	0	45
Puyallup	16,171	18,106	25,594	1,935	7,488	194	312	16,171
Roy	326	315	410	-11	95	-1	4	326
Ruston	430	517	686	87	169	9	7	430
South Prairie	174	149	162	-25	13	-3	1	174
Steilacoom	2,793	2,919	3,095	126	176	13	7	2,793
Sumner	4,279	4,492	6,527	213	2,035	21	85	4,279
Tacoma	85,786	92,309	134,699	6,523	42,390	652	1,766	85,786
University Place	13,573	14,427	20,150	854	5,723	85	238	13,573
Wilkeson	175	182	251	7	69	1	3	175
Unincorporated Urban Pierce County	75,143	87,888	108,450	12,745	20,562	1,275	857	75,143
Incorporated Total	185,215	203,036	284,002	17,821	80,966	1,782	3,374	185,215
Urban Total	**260,358**	**290,924**	**392,452**	**30,566**	**101,528**	**3,057**	**4,230**	**260,358**

Plat Activity

Table 1-4: Platted Lots in Urban Growth Area vs. Rural and Resource Lands (Includes Incorporated)

		2006-2012[1]	2013	2014	2015	2016	2017	2018	2019	2020	2013-2020
Urban	Lots	7,313	780	1,379	1,140	1,462	1,545	1,208	1,448	622	**9,584**
	Percent	84%	90%	97%	91%	97%	96%	93%	95%	88%	**94%**
Rural / Resource	Lots	1,435	87	36	112	47	71	96	76	85	**610**
	Percent	16%	10%	3%	9%	3%	4%	7%	5%	12%	**6%**
Total Lots		**8,748**	**753**	**867**	**1,415**	**1,252**	**1,509**	**1,616**	**1,304**	**1,524**	**707**

[1]2014 Pierce County Buildable Lands Report

Sources: County/City/Town Permit Data, Pierce County Auditor Recorded Plats.

Table 1-5: Countywide Plat Activity by Jurisdiction

Jurisdiction	Gross Acres	Net Acres	Lots	Gross Density	Net Density	Percent of Total Lots
Auburn (part)	20.17	19.01	104	5.16	5.47	1.1%
Bonney Lake	149.50	53.91	275	1.84	5.10	2.9%
Buckley	108.66	65.37	321	2.95	4.91	3.3%
Carbonado	16.15	16.15	18	1.11	1.11	0.2%
DuPont	14.98	14.98	67	4.47	4.47	0.7%
Eatonville	14.84	14.84	23	1.55	1.55	0.2%
Edgewood	212.16	152.21	464	2.19	3.05	4.8%
Fife	7.65	4.64	38	4.96	8.18	0.4%
Fircrest	3.03	3.03	22	7.26	7.26	0.2%
Gig Harbor	323.68	213.52	1,043	3.22	4.88	10.9%
Lakewood	93.08	93.08	182	1.96	1.96	1.9%
Milton (part)	13.35	12.06	43	3.22	3.57	0.4%
Orting	106.10	106.10	417	3.93	3.93	4.4%
Pacific (part)	0.00	0.00	0	0.00	0.00	0.0%
Puyallup	170.64	159.03	639	3.74	4.02	6.7%
Roy	1.60	1.60	5	3.13	3.13	0.1%
Ruston	0.49	0.49	4	8.24	8.24	0.0%
South Prairie	0.00	0.00	0	0.00	0.00	0.0%
Steilacoom	31.10	31.10	85	2.73	2.73	0.9%
Sumner	47.74	31.78	157	3.29	4.94	1.6%
Tacoma	97.01	97.01	444	4.58	4.58	4.6%
University Place	76.78	59.63	299	3.89	5.01	3.1%
Wilkeson	0.00	0.00	0	0.00	0.00	0.0%
Unincorporated Urban Pierce County	1,799.55	1,454.34	4,934	2.74	3.39	51.5%
Urban Total	**3,308.24**	**2,603.87**	**9,584**	**2.90**	**3.68**	**100.0%**

Multifamily Development

Table 1-6: Countywide Multifamily Development by Jurisdiction

Jurisdiction	Gross Acres	Units	Gross Density	Percent of Total Multifamily Units
Auburn (part)	0.00	0	0.00	0.0%
Bonney Lake	33.82	615	18.19	6.5%
Buckley	0.00	0	0.00	0.0%
Carbonado	0.00	0	0.00	0.0%
DuPont	12.29	175	14.24	1.9%
Eatonville	0.28	4	14.37	0.0%
Edgewood	24.84	475	19.12	5.0%
Fife	9.91	150	15.14	1.6%
Fircrest	0.30	2	6.67	0.0%
Gig Harbor	63.68	649	10.19	6.9%
Lakewood	6.93	92	13.28	1.0%
Milton (part)	0.00	0	0.00	0.0%
Orting	0.47	3	6.38	0.0%
Pacific (part)	0.00	0	0.00	0.0%
Puyallup	27.63	374	13.53	4.0%
Roy	0.00	0	0.00	0.0%
Ruston	0.00	0	0.00	0.0%
South Prairie	0.00	0	0.00	0.0%
Steilacoom	0.00	0	0.00	0.0%
Sumner	9.67	188	19.44	2.0%
Tacoma	64.12	3,607	56.26	38.1%
University Place	1.39	270	193.83	2.9%
Wilkeson	0.00	0	0.00	0.0%
Unincorporated Urban Pierce County	173.26	2,854	16.47	30.2%
Urban Total	**428.58**	**9,458**	**22.07**	**100.0%**

Average Residential Density

The countywide net residential density is 6.42 dwelling units per net acre when the plat and multifamily data are combined. This average is above the required minimum of 4 units per acre for the countywide urban growth area per the Countywide Planning Policies.

Non-Residential Development

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment

density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Table 1-7: Countywide Non-Residential Development by Jurisdiction

Jurisdiction	Gross Acres	Building Square Feet (SF)	Floor-to-Area Ratio	Percent of Total Non-Residential Building SF Developed
Auburn (part)	7.07	154,075	0.50	0.7%
Bonney Lake	41.85	546,742	0.30	2.5%
Buckley	7.22	39,577	0.13	0.2%
Carbonado	0.00	0	0.00	0.0%
DuPont	214.96	3,955,958	0.42	17.8%
Eatonville	10.10	2,100	0.00	0.0%
Edgewood	9.25	138,010	0.34	0.6%
Fife	200.18	2,369,015	0.27	10.6%
Fircrest	1.49	8,334	0.13	0.0%
Gig Harbor	37.27	317,602	0.20	1.4%
Lakewood	169.58	2,071,492	0.28	9.3%
Milton (part)	1.23	4,888	0.09	0.0%
Orting	0.00	0	0.00	0.0%
Pacific (part)	22.62	332,093	0.34	1.5%
Puyallup	77.08	1,142,862	0.34	5.1%
Roy	0.19	168	0.02	0.0%
Ruston	11.37	215,096	0.43	1.0%
South Prairie	1.67	5,640	0.08	0.0%
Steilacoom	0.00	0	0.00	0.0%
Sumner	352.26	5,066,301	0.33	22.7%
Tacoma	166.94	1,255,564	0.17	5.6%
University Place	7.97	321,233	0.93	1.4%
Wilkeson	0.00	0	0.00	0.0%
Unincorporated Urban Pierce County	1,019.42	4,330,237	0.10	19.4%
Urban Total	**2,359.72**	**22,276,987**	**0.22**	**100.0%**

Employment Estimates

Table 1-8 shows the number of jobs between 2010-2020 in comparison to the 2030 targets (Ordinance No. 2017-24s), and the remainder of growth needed between 2020-2030 to achieve the target.

While the 2030 targets have been updated to 2044 for the next planning horizon, the information shown here is to document the progress made by jurisdictions to accommodate the previous planning

horizon. The most recent data is used, so it may not align with the data shown in the 2014 Buildable Lands Report.

Table 1-8: Countywide Employment, 2010-2020 Growth, 2030 Target, and Remaining Need by Jurisdiction

Jurisdiction	2010 Jobs	2030 Employment Target	2010-2030 Employment Need	2020 Jobs	2010-2020 Employment Growth	2020-2030 Employment Remaining Need
Auburn (part)	590	834	244	1,247	657	-413
Bonney Lake	4,505	5,448	943	6,365	1,860	-917
Buckley	2,089	3,033	944	2,241	152	792
Carbonado	52	68	16	54	2	14
DuPont	2,937	9,078	6,141	5,309	2,372	3,769
Eatonville	905	2,335	1,430	969	64	1,366
Edgewood	1,352	3,094	1,742	2,244	892	850
Fife	12,504	19,300	6,796	17,587	5,083	1,713
Fircrest	1,369	1,544	175	1,568	199	-24
Gig Harbor	9,155	10,189	1,034	12,855	3,700	-2,666
Lakewood	25,259	38,336	13,077	29,872	4,613	8,464
Milton (part)	1,855	2,337	482	2,203	348	134
Orting	1,134	2,370	1,236	1,473	339	897
Pacific (part)	2,071	5,156	3,085	2,005	-66	3,151
Puyallup	22,208	34,267	12,059	30,559	8,351	3,708
Roy	158	342	184	188	30	154
Ruston	141	494	353	532	391	-38
South Prairie	66	140	74	80	14	60
Steilacoom	659	788	129	840	181	-52
Sumner	9,825	21,484	11,659	18,106	8,281	3,378
Tacoma	104,399	176,930	72,531	121,183	16,784	55,747
University Place	6,074	9,593	3,519	7,145	1,071	2,448
Wilkeson	63	85	22	85	22	0
Unincorporated Urban Pierce County	36,336	65,893	29,557	57,392	21,056	8,501
Urban Total	**245,706**	**413,138**	**167,432**	**322,102**	**76,396**	**91,036**

Sources: PSRC Employment Estimates (2019 Estimate), Ord. No. 2017-24s (2030 Targets), 2014 Buildable Lands Report (2010 Estimate).

Table 1-9 shows the observed employment growth and average annual rate between 2010-2020 in comparison to the draft 2020-2044 employment growth targets, and the increase needed for jurisdictions with an annual rate lower than the average annual rate needed to accommodate the 2020-2044 growth targets. Since comparing the employment growth and the employment target is not required for consistency, this data is provided as information only and is not analyzed in the Consistency Evaluation.

Table 1-9: Countywide Employment, 2010-2020 Growth, 2044 Target, and Need by Jurisdiction

Jurisdiction	2010 Jobs	2020 Jobs	2010-2020 Growth	2010-2020 Annual Growth	2044 Employment Target	2020-2044 Employment Growth Target	Annual Growth Needed between 2020-2044	Increase Needed*
Auburn (part)	590	1,247	657	66	1,247	0	0	**590**
Bonney Lake	4,505	6,365	1,860	186	8,082	1,717	72	**4,505**
Buckley	2,089	2,241	152	15	3,321	1,080	45	**2,089**
Carbonado	52	54	2	0	60	6	0	**52**
DuPont	2,937	5,309	2,372	237	6,486	1,177	49	**2,937**
Eatonville	905	969	64	6	1,121	152	6	**905**
Edgewood	1,352	2,244	892	89	4,206	1,962	82	**1,352**
Fife	12,504	17,587	5,083	508	22,664	5,077	212	**12,504**
Fircrest	1,369	1,568	199	20	1,681	113	5	**1,369**
Gig Harbor	9,155	12,855	3,700	370	15,602	2,747	114	**9,155**
Lakewood	25,259	29,872	4,613	461	39,735	9,863	411	**25,259**
Milton (part)	1,855	2,203	348	35	2,644	441	18	**1,855**
Orting	1,134	1,473	339	34	1,669	196	8	**1,134**
Pacific (part)	2,071	2,005	-66	-7	2,643	638	27	**2,071**
Puyallup	22,208	30,559	8,351	835	45,274	14,715	613	**22,208**
Roy	158	188	30	3	280	92	4	**158**
Ruston	141	532	391	39	603	71	3	**141**
South Prairie	66	80	14	1	90	10	0	**66**
Steilacoom	659	840	181	18	850	10	0	**659**
Sumner	9,825	18,106	8,281	828	23,419	5,313	221	**9,825**
Tacoma	104,399	121,183	16,784	1,678	191,983	70,800	2,950	**104,399**
University Place	6,074	7,145	1,071	107	10,088	2,943	123	**6,074**
Wilkeson	63	85	22	2	96	11	0	**63**
Unincorporated Urban Pierce County	36,336	57,392	21,056	2,106	76,687	19,295	804	**36,336**
Incorporated Total	209,370	264,710	55,340	5,534	383,844	119,134	4,964	**209,370**
Urban Total	**245,706**	**322,102**	**76,396**	**7,640**	**460,531**	**138,429**	**5,768**	**245,706**

*2020-2044 annual growth needed to achieve 2044 target minus 2010-2020 yearly observed rate.

CAPACITY ANALYSIS

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in each jurisdiction's sub-section. Table 1-10 shows the characteristics of the initial inventory and Table 1-11 shows the amount of land that was reduced from that initial inventory to be included in the

capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 1-10: Countywide Summary of Developable Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross)	8,833.21	21,445.19	1,820.41	6,671.26
Average Lot Size (Gross)	2.33	1.14	0.29	8.94
Total Acreage (Net)	6,520.98	18,133.31	1,083.83	5,325.85
Average Lot Size (Net)	1.72	0.97	0.17	7.14
Percent Critical Areas	26%	15%	40%	20%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 1-11 shows the overall percentage of land assumed available vs. not available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 1-11: Countywide Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	2,312.23	3,311.88
Infrastructure Gaps	1,660.82	4,997.74
Plat Deductions	442.53	1,453.41
Capital Facilities	63.28	45.39
Market Factor	772.24	4,937.76
Total Percent Reduction in Inventory Land	35%	45%
Percent of Vacant or Underutilized Land Available for Capacity	65%	55%

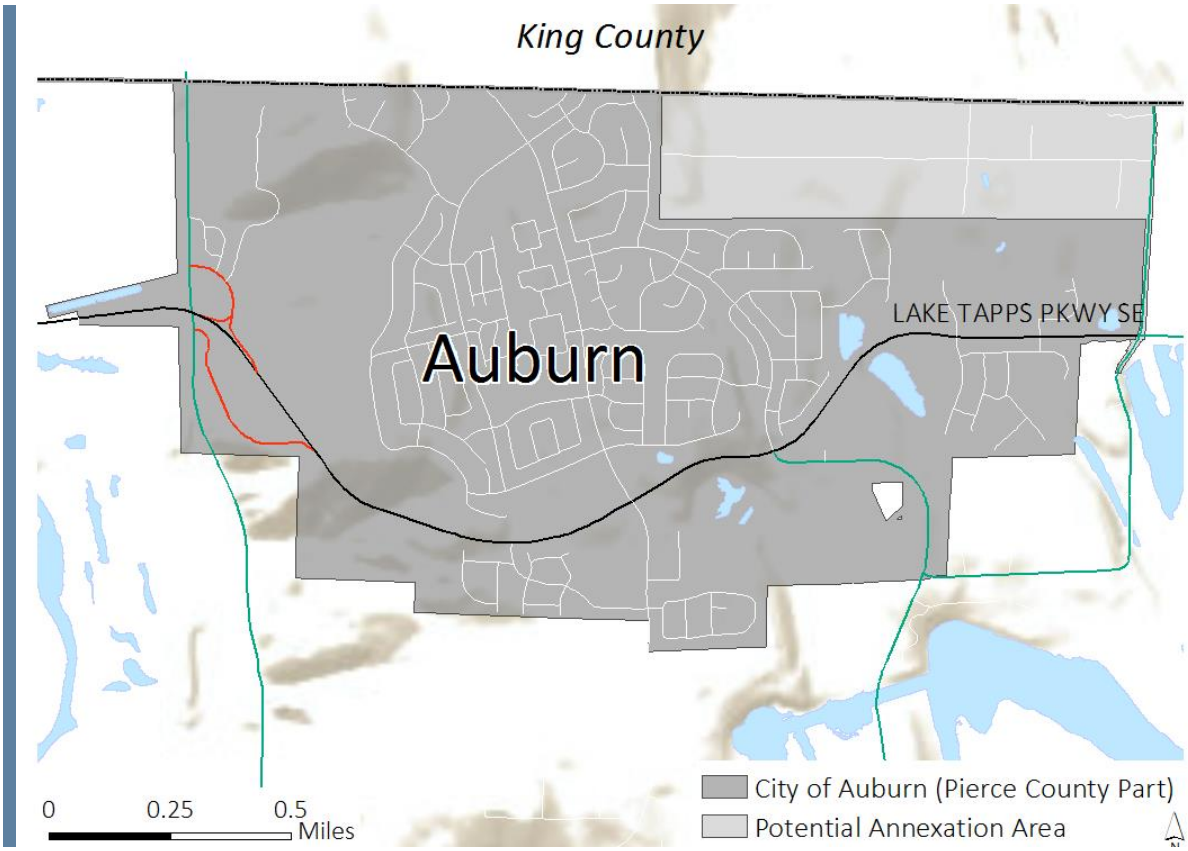
Housing and Employment Capacity

The housing and employment capacity totals in Table 1-12 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. The draft 2044 growth targets are still under review and have not been adopted. An updated version of this draft report will be released when the growth targets are adopted.

Table 1-12: Countywide Capacity and DRAFT 2020-2044 Need

Jurisdiction	Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
Auburn (part)	113	96	17	656	0	656
Bonney Lake	2,682	2,850	-168	3,811	1,717	2,094
Buckley	1,450	1,374	76	1,510	1,080	430
Carbonado	208	17	191	192	6	186
DuPont	1,150	1,960	-810	4,165	1,177	2,988
Eatonville	1,146	277	869	1,558	152	1,406
Edgewood	3,584	2,432	1,152	4,047	1,962	2,085
Fife	1,065	1,873	-808	5,043	5,077	-34
Fircrest	142	788	-646	199	113	86
Gig Harbor	1,976	1,000	976	3,416	2,747	669
Lakewood	10,242	9,714	528	12,212	9,863	2,349
Milton (part)	432	259	173	1,486	441	1,045
Orting	346	168	178	1,398	196	1,202
Pacific (part)	-9	0	-9	2,133	638	1,495
Puyallup	7,471	7,488	-17	11,263	14,715	-3,452
Roy	176	95	81	167	92	75
Ruston	653	169	484	778	71	707
South Prairie	73	13	60	218	10	208
Steilacoom	635	176	459	364	10	354
Sumner	2,352	2,035	317	6,739	5,313	1,426
Tacoma	68,049	42,390	25,659	84,436	70,800	13,636
University Place	8,915	5,723	3,192	1,195	2,943	-1,748
Wilkeson	43	69	-26	37	11	26
Unincorporated Urban Pierce County	37,393	24,250	13,143	32,140	19,295	12,845
High Capacity Transit Communities	16,621	13,380	3,241	15,842	10,445	5,397
Urban Unincorporated	20,772	10,870	9,902	16,298	8,850	7,448
Urban Total	**150,287**	**105,216**	**45,071**	**179,163**	**138,429**	**40,734**

2 CITY OF AUBURN (PIERCE COUNTY PART)



The City of Auburn is primarily located within King County; however, a portion of the City is located within Pierce County. This section focuses solely on the Pierce County portion. In 2018, the City changed from a net density to gross density calculation. Most of the area within the City limits in Pierce County is associated with the Lakeland Hills South Planned Unit Development (PUD). Vested projects in the Lakeland Hills South PUD would continue to be based on the original regulations.

Table 2-1: City of Auburn Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
C1	Commercial	Commercial	19.6
I	Industrial	Industrial	11.7
OS	Lakeland Hills Planned Unit District	Other-Not Developable	19.8
PUD	Open Space	Mixed Use	780.8
R5	Residential 5	Residential	129.0
R7	Residential 7	Residential	0.0
TV	Terrace View District	Mixed Use	50.1

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between **January 1, 2013 and December 31, 2018** and plat activity through December 31, 2020 that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 2-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 2-3 shows the average floor-to-area (FAR) ratio by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 2-2: City of Auburn 2013-2020 Residential Trends by Zone[1]

Zone	Acres	Lots/Units	Density
PUD	12.17	88	7.23
R-5	8.00	16	2.00
Total/Avg.	**20.17**	**104**	**5.16**

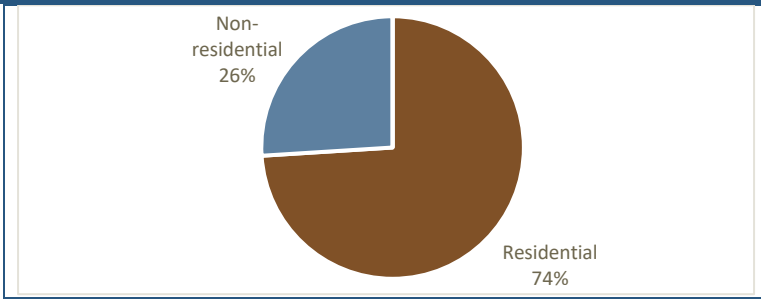
Table 2-3: City of Auburn 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
PUD	3.90	24,377	0.14
TV	3.17	129,698	0.94
Total/Avg.	**7.07**	**154,075**	**0.50**

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 2-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 2-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 2-A: City of Auburn Residential vs. Non-residential Development Split



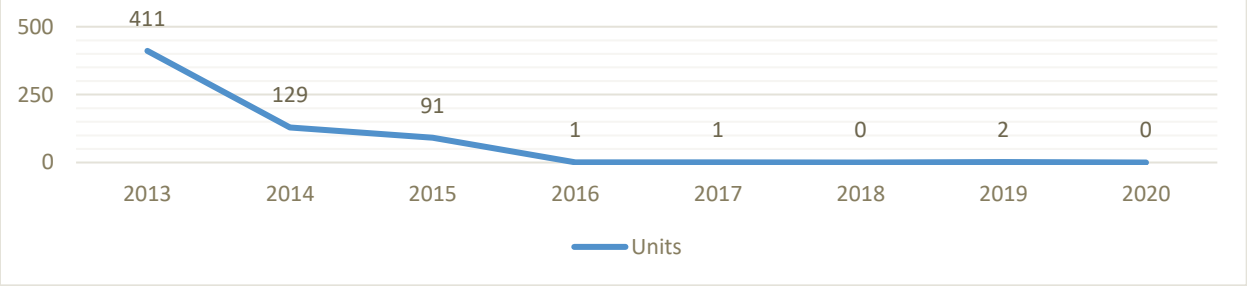
Zone	Use Type Split (Percent)[1]	
	Residential	Non-residential
PUD	76%	24%
R-5	100%	0%
TV	0%	100%
Avg.	**74%**	**26%**

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-3 (Countywide).

Figure 2-B: City of Auburn Housing Production Rates (OFM)

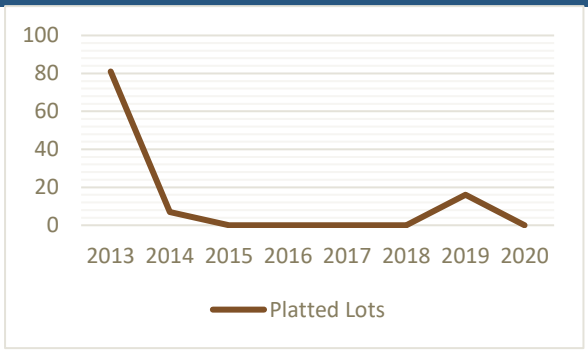


Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

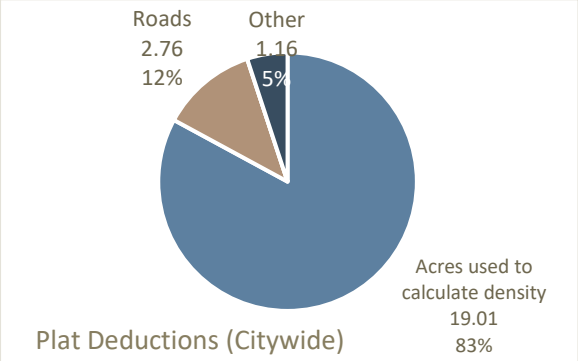
Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 2-2).

Figure 2-C: City of Auburn Platting Trends



Plat Activity by Year

Year	Lots	Acres	Density (Net)
2013	81	10.80	7.50
2014	7	1.37	5.11
2015	-	-	-
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	16	8.00	2.00
2020	-	-	-
Total	**104**	**20.17**	**5.16**



Plat Deductions by Zone (Percent)

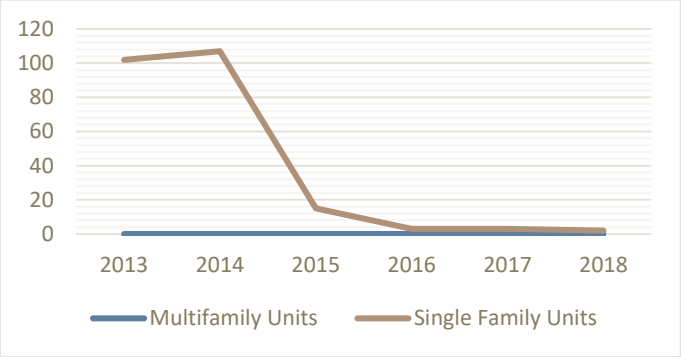
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
PUD	22.7%	0.0%	9.5%	0.0%
R-5	0.0%	0.0%	0.0%	0.0%
Avg.	**13.7%**	**0.0%**	**5.8%**	**0.0%**

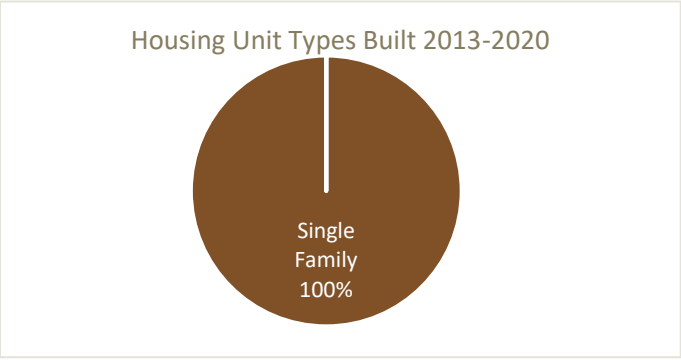
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 2-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 2-D: City of Auburn Residential Building Permit Trends





Multifamily Permits by Year

No multifamily permits were observed in the timeframe.

Single-Family Permits by Year (Optional)

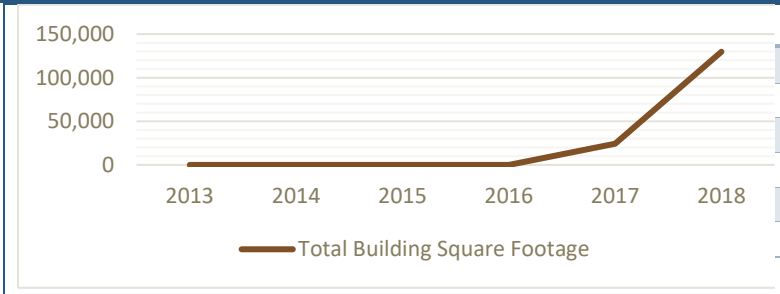
Year	Units	Acres	Avg. Lot Size
2013	102	12.47	0.12
2014	107	13.30	0.12
2015	15	2.93	0.20
2016	3	0.65	0.22
2017	3	0.55	0.55
2018	2	0.74	0.37
Total	**232**	**30.63**	**0.13**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 2-E: City of Auburn Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	3.90	24,377	0.25
2018	3.17	129,698	0.94
Total	**7.07**	**154,075**	**0.50**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 2-4 and Table 2-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 2-4: City of Auburn Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
C1	0%	0	100%	20	0%	0%	1%	1%	1%
I	0%	0	100%	20	0%	0%	1%	1%	1%
PUD	0%	0	100%	20	0%	0%	1%	0%	1%
R-5	100%	5	0%	0	1%	1%	0%	0%	0%
R-7	100%	7	0%	0	1%	1%	0%	0%	0%
TV	Zone is Built Out – No Further Capacity								

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 2-5: City of Auburn Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
R-5	7%	GIS	2%	0%	0%	<0.46 acres
R-7	7%	GIS	2%	0%	0%	<0.23 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 2-6 shows the characteristics of the initial inventory and Table 2-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 2-6: City of Auburn Summary of Inventory Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	27.66	28.36	4.08	0.00
Average Lot Size (Gross)	2.13	3.55	0.26	0.00
Total Acreage (Net)	21.94	17.22	3.35	0.00
Average Lot Size (Net)	1.69	2.15	0.21	0.00
Percent Critical Areas	21%	39%	18%	0%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 2-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 2-7: City of Auburn Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	5.72	11.15
Plat Deductions	0.26	1.77
Capital Facilities	0.25	0.09
Market Factor	0.28	0.27
Total Percent Reduction in Inventory Land	3%	8%
Percent of Vacant or Underutilized Land Available for Capacity	97%	92%

Capacity Results

The housing and employment capacity totals in Table 2-8 and Table 2-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 2-8: City of Auburn 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
C1	0	0	0	0	0
I	0	0	0	0	0
PUD	0	0	0	0	0
R-5	13	84	16	0	117
R-7	0	0	0	0	0
TV	0	0	0	0	0
Total	13	84	16	0	113

Table 2-9: City of Auburn 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
C1	200	170	0	370
I	177	0	0	177
PUD	109	0	0	109
R-5	0	0	0	0
R-7	0	0	0	0
TV	0	0	0	0
Total	486	170	0	656

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

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Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 2-10: City of Auburn Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
C1	0	0	0	0.00	0.0%
I	0	0	0	0.00	0.0%
OS	0	0	0	0.00	0.0%
PUD	2	2	88	16.07	2.1%
R5	0	0	0	0.00	0.0%
R7	0	0	0	0.00	0.0%
TV	0	1	0	3.17	6.3%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 2-11: City of Auburn Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
C1	0	0	0	0
I	0	0	0	0
OS	0	0	0	0
PUD	7	7	0	0
R5	0	0	0	5
R7	0	0	0	7
TV	0	0	0	0

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 2-12: City of Auburn Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
C1	0%	0%	0%	100%	Commercial	0%
I	0%	0%	0%	100%	Industrial	0%
OS	0%	0%	0%	0%	Other-Not Developable	0%
PUD	76%	0%	24%	100%	Mixed Use	0%
R5	0%	100%	0%	0%	Residential	0%
R7	0%	100%	0%	0%	Residential	0%
TV	0%	0%	100%	0%	Mixed Use	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 2-13: City of Auburn Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
C1	0%	0%	0%	0%	0%	0%
I	0%	0%	0%	0%	0%	0%
OS	0%	0%	0%	0%	0%	0%
PUD	23%	0%	10%	0%	0%	0%
R5	0%	7%	0%	2%	0%	0%
R7	0%	7%	0%	2%	0%	0%
TV	0%	0%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 2-14: City of Auburn Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
3,146	3,898	3,994	752	96	75	4	-

The past housing production trends in the Pierce County portion of the City of Auburn have been sufficient to accommodate the housing target and the current rate far exceeds the rate needed to accommodate the 2044 housing growth target.

Capacity / Growth Targets

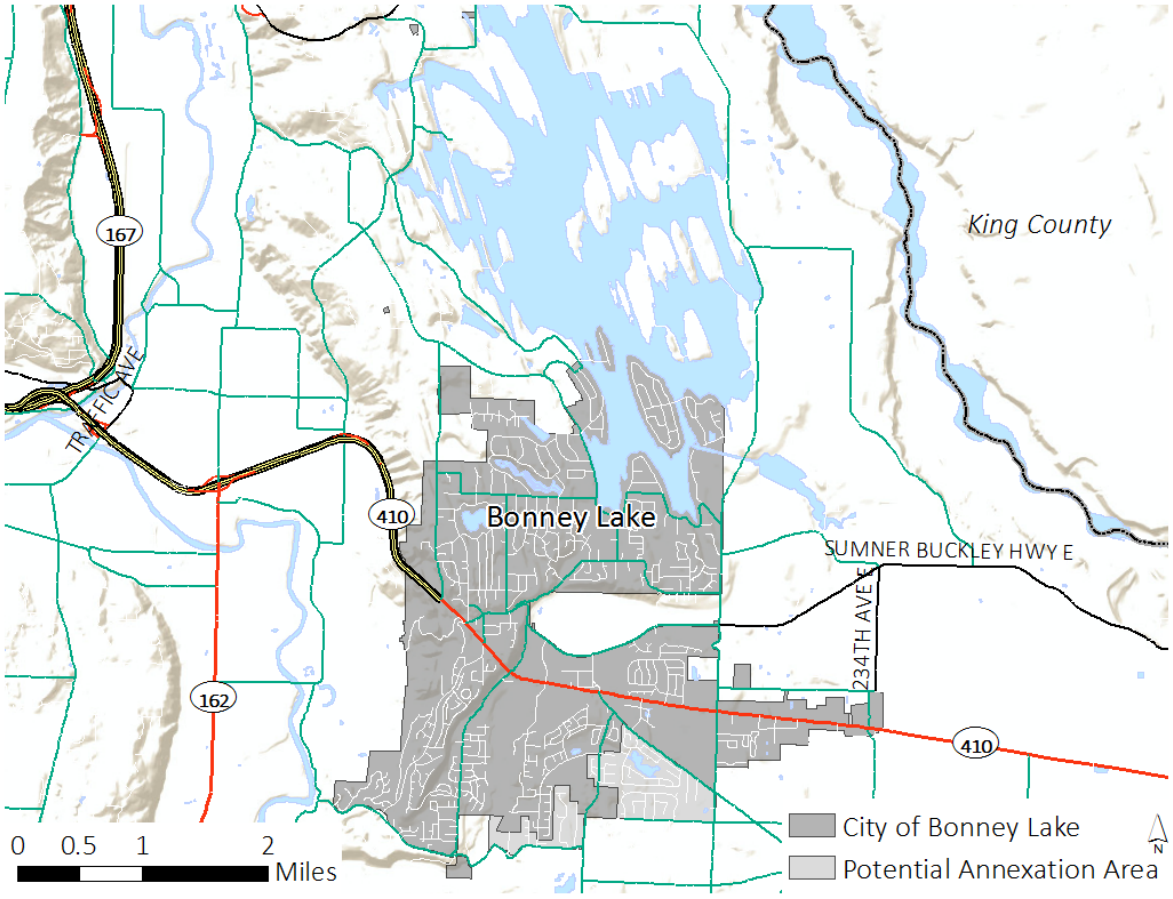
Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 2-15: City of Auburn Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
113	96	17	656	0	656

The Pierce County portion of the City of Auburn has sufficient capacity to accommodate the 2044 housing and employment targets.

3 CITY OF BONNEY LAKE



The City implements densities using a net acreage, deducting critical areas and buffers.

Table 3-1: City of Bonney Lake Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
C1	Neighborhood Commercial District	Mixed Use	0.2
C2	Commercial District	Commercial	51.0
DC	Downtown Core District	Mixed Use	8.7
DM	Downtown Mixed Use District	Mixed Use	23.3
E	Eastown District	Mixed Use	246.3
MC	Midtown Core District	Commercial	264.6
PF	Public Facility District	Commercial	484.1
R1	Low Density Residential	Residential	2,504.8
R2	Medium Density Residential	Residential	286.8
R3	High Density Residential	Residential	151.8
RC5	Residential/Conservation District	Residential	326.2

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between **January 1, 2013 and December 31, 2020** that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 3-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 3-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 3-2: City of Bonney Lake 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
C2	18.05	408	22.61
R1	149.50	275	1.84
R3	9.76	207	21.21
Total/Avg.	**177.31**	**890**	**5.02**

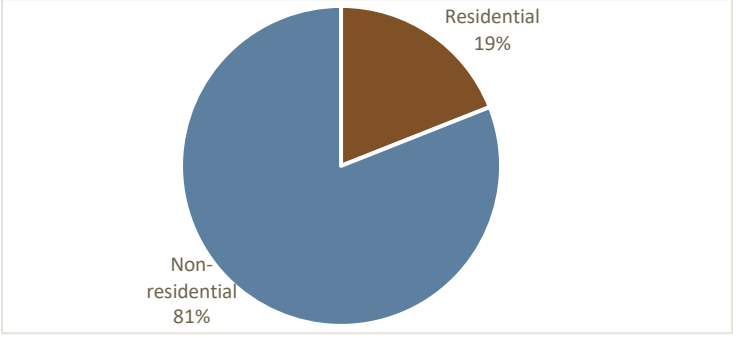
Table 3-3: City of Bonney Lake 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
C2	3.67	34,776	0.22
DC	0.77	20,915	0.62
DM	3.12	73,455	0.54
E	13.53	227,290	0.39
MC	20.76	190,306	0.21
Total/Avg.	**41.85**	**546,742**	**0.30**

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 3-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 3-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 3-A: City of Bonney Lake Residential vs. Non-residential Development Split



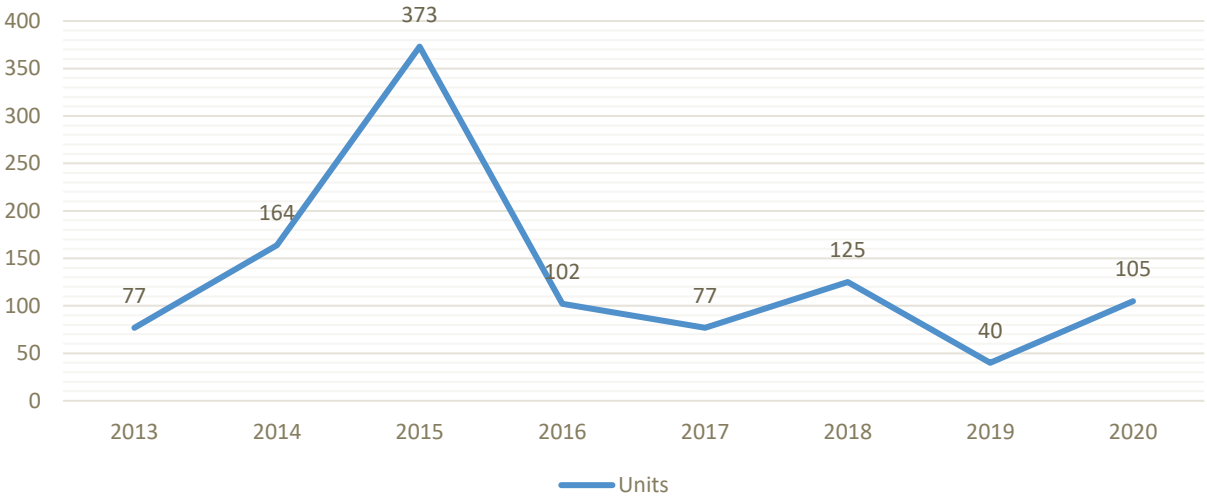
Zone	Use Type Split (Percent)[1]	
	Residential	Non-residential
C2	83%	17%
DC	0%	100%
DM	0%	100%
E	0%	100%
MC	0%	100%
R1	100%	0%
R3	100%	0%
Avg.	**81%**	**19%**

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 3-B: City of Bonney Lake Housing Production Rates (OFM)

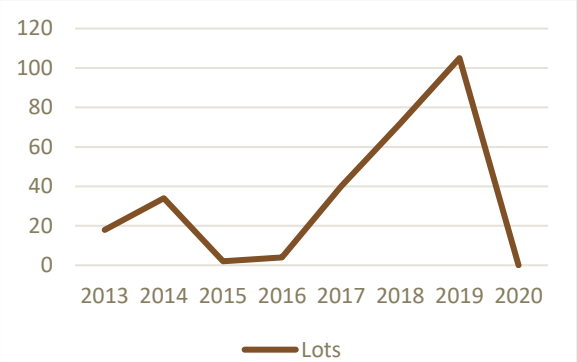


Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

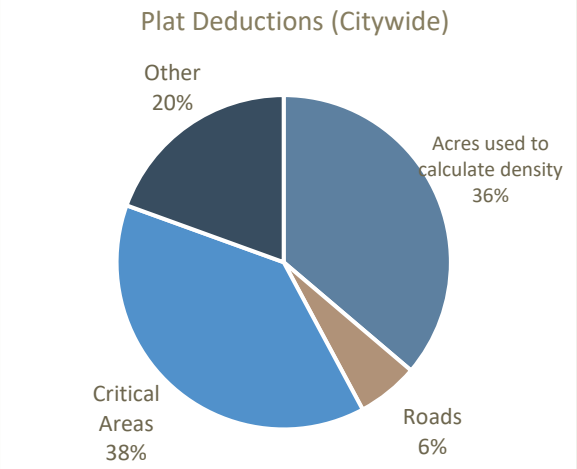
Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 3-2).

Figure 3-C: City of Bonney Lake Platting Trends



Plat Activity by Year

Year	Lots	Acres	Density
2013	18	3.18	5.67
2014	34	4.37	7.79
2015	2	0.40	5.03
2016	4	0.91	4.41
2017	40	10.83	3.69
2018	72	14.86	4.85
2019	105	19.37	5.42
2020	-	-	-
Total	**275**	**53.91**	**5.10**



Plat Deductions by Zone (Percent)

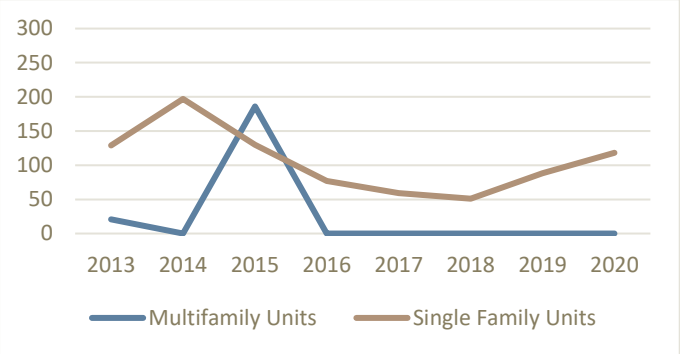
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
R1	5.9%	38.2%	16.3%	3.1%
R2	-	-	-	-
Average	**5.9%**	**38.2%**	**16.3%**	**3.1%**

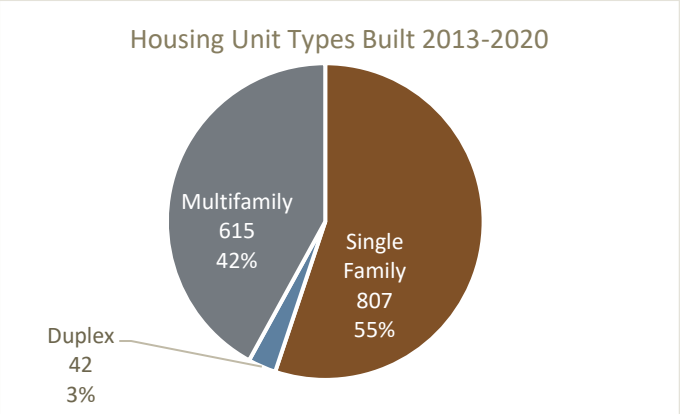
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 3-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 3-D: City of Bonney Lake Residential Building Permit Trends





Multifamily Permits by Year

Year	Units	Net Acres	Net Density
2013	21	1.08	19.44
2014	-	-	-
2015	186	8.68	21.43
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	-		-
2020	408	18.05	22.61
Total	**615**	**27.81**	**22.12**

Single-Family Permits by Year (Optional)

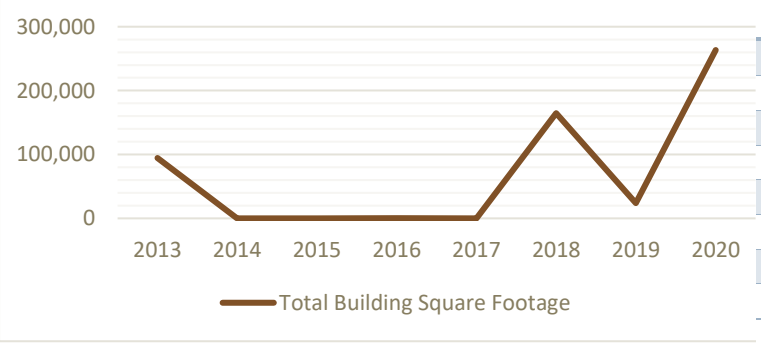
Year	Units	Acres	Avg. Lot Size
2013	129	32.83	0.28
2014	197	46.86	0.24
2015	130	25.29	0.20
2016	77	22.11	0.29
2017	59	15.17	0.26
2018	51	11.35	0.22
2019	88	24.33	0.29
2020	118	30.13	0.26
Total	**849**	**208.06**	**0.25**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 3-E: City of Bonney Lake Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	3.89	94,370	0.56
2014	-	-	-
2015	-	-	-
2016	0.66	260	0.01
2017	-	-	-
2018	15.40	164,534	0.25
2019	2.54	24,113	0.22
2020	19.36	263,465	0.31
Total	**41.85**	**546,742**	**0.30**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 3-4 and Table 3-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 3-4: City of Bonney Lake Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
C1	50%	6	50%	20	15%	35%	15%	35%	0%
C2	0%	0	100%	20	15%	35%	15%	35%	0%
DC	20%	15	80%	20	15%	35%	15%	35%	0%
DM	50%	15	50%	20	15%	35%	15%	35%	0%
E	0%	20	100%	20	15%	35%	15%	35%	0%
MC	0%	0	100%	20	15%	35%	15%	35%	0%
PF	0%	0	100%	20	15%	35%	15%	35%	0%
R1	100%	4	0%	20	15%	30%	0%	0%	0%
R2	100%	6	0%	20	15%	30%	0%	0%	0%
R3	100%	15	0%	20	15%	30%	0%	0%	0%
RC5	100%	0.15	0%	20	15%	30%	0%	0%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 3-5: City of Bonney Lake Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
R-1	15%	GIS	0%	5%	5%	<0.50 acres
R-2	15%	GIS	0%	5%	5%	<0.49 acres
R-3	15%	GIS	0%	5%	5%	<0.30 acres
RC-5	15%	GIS	0%	5%	5%	<12.50 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 3-6 shows the characteristics of the initial inventory and Table 3-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 3-6: City of Bonney Lake Summary of Inventory Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	182.83	621.47	209.95	181.83
Average Lot Size (Gross)	2.13	1.46	0.66	4.23
Total Acreage (Net)	127.93	495.33	63.90	153.03
Average Lot Size (Net)	1.49	1.17	0.20	3.56
Percent Critical Areas	30%	20%	70%	16%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 3-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 3-7: City of Bonney Lake Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	54.90	126.14
Infrastructure Gaps	13.63	40.84
Plat Deductions	13.37	76.54
Capital Facilities	0.00	0.00
Market Factor	21.87	137.94
Total Percent Reduction in Inventory Land	32%	52%
Percent of Vacant or Underutilized Land Available for Capacity	68%	48%

Capacity Results

The housing and employment capacity totals in Table 3-8 and Table 3-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 3-8: City of Bonney Lake 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
C1	0	0	0	0	**0**
C2	0	-1	0	408	**407**
DC	1	6	0	0	**7**
DM	16	13	0	0	**29**
E	0	-69	0	52	**-17**
MC	0	-1	0	165	**164**
PF	0	-4	1	0	**-3**
R1	123	537	270	47	**977**
R2	14	129	32	8	**183**
R3	147	179	0	594	**920**
RC5	0	0	15	0	**15**
Total	**301**	**789**	**318**	**1,274**	**2,682**

Table 3-9: City of Bonney Lake 2020-2044 Employment Capacity (Jobs)				
Zone	Vacant	Underutilized	Pipeline	Total
C1	0	0	0	0
C2	174	62	70	306
DC	4	16	0	20
DM	40	7	79	126
E	822	1,177	194	2,193
MC	338	149	74	561
PF	173	73	0	246
R1	38	240	0	278
R2	3	42	0	45
R3	12	22	0	34
RC5	0	2	0	2
Total	1,604	1,790	417	3,811

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10: City of Bonney Lake Permits Summary					
Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
C1	0	0	0	0.00	0.0%
C2	1	1	408	25.56	50.1%
DC	0	1	0	0.77	8.8%
DM	0	1	0	3.12	13.4%
E	0	3	0	13.53	5.5%
MC	0	7	0	20.76	7.8%
PF	0	0	0	0.00	0.0%
R1	14	0	275	149.50	6.0%
R2	0	0	0	0.00	0.0%
R3	2	0	207	11.93	7.9%
RC5	0	0	0	0.00	0.0%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 3-11: City of Bonney Lake Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
C1	0	0	0	6
C2	23	0	23	0
DC	0	0	0	15
DM	0	0	0	15
E	0	0	0	0
MC	0	0	0	0
PF	0	0	0	0
R1	5	5	0	4
R2	0	0	0	6
R3	21	0	21	15
RC5	0	0	0	0

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 3-12: City of Bonney Lake Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
C1	0%	50%	0%	50%	Mixed Use	0%
C2	86%	0%	14%	100%	Commercial	0%
DC	0%	20%	100%	80%	Mixed Use	0%
DM	0%	50%	100%	50%	Mixed Use	0%
E	0%	0%	100%	100%	Mixed Use	0%
MC	0%	0%	100%	100%	Commercial	0%
PF	0%	0%	0%	100%	Commercial	0%
R1	100%	100%	0%	0%	Residential	5%
R2	0%	100%	0%	0%	Residential	5%
R3	100%	100%	0%	0%	Residential	5%
RC5	0%	100%	0%	0%	Residential	5%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 3-13: City of Bonney Lake Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
C1	0%	0%	0%	0%	0%	0%
C2	0%	0%	0%	0%	0%	0%
DC	0%	0%	0%	0%	0%	0%
DM	0%	0%	0%	0%	0%	0%
E	0%	0%	0%	0%	0%	0%
MC	0%	0%	0%	0%	0%	0%
PF	0%	0%	0%	0%	0%	0%
R1	6%	15%	16%	0%	3%	5%
R2	0%	15%	0%	0%	0%	5%
R3	0%	15%	0%	0%	0%	5%
RC5	0%	15%	0%	0%	0%	5%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 3-14: City of Bonney Lake Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
6,394	7,605	10,455	1,211	2,850	121	119	**8**

The observed housing production rate is less than but very close to the rate needed to accommodate the 2044 housing target. It is expected that housing production fluctuates over time, and the current rate is consistent with the future need.

Capacity / Growth Targets

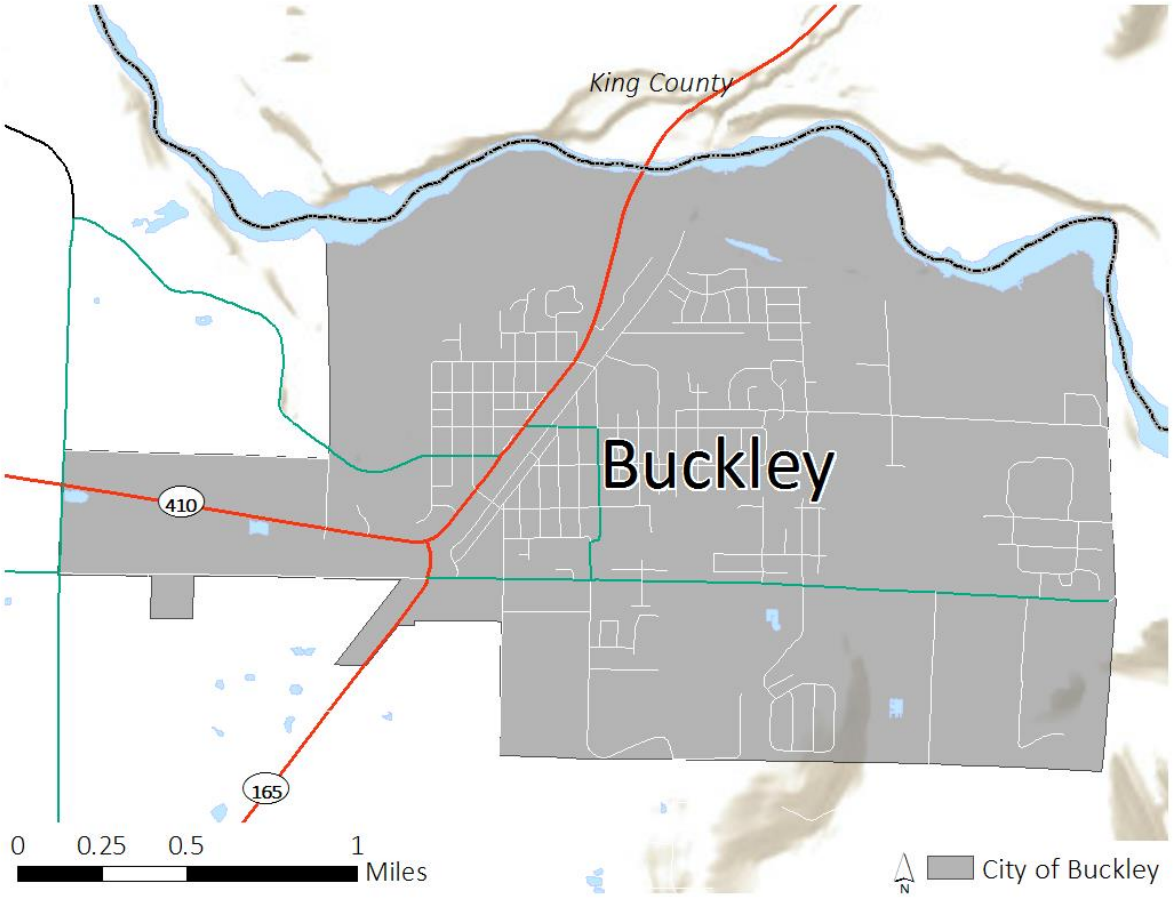
Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 3-15: City of Bonney Lake Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
2,682	2,850	-168	3,811	1,717	2,094

The 2044 housing target was developed using an older version of this report that displayed incorrect totals. Since the capacity summaries have been corrected, there is a slight difference between the housing needs and capacity, but it is not significant enough to warrant reasonable measures.

4 CITY OF BUCKLEY



The City of Buckley's Comprehensive Plan and regulations implement densities based on minimum lot size.

Table 4-1: City of Buckley Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
CC	Central Commercial	Mixed Use	61.0
GC	General Commercial	Commercial	100.7
HC	Historical Commercial	Mixed Use	2.7
HDR	High Density Residential	Residential	63.0
LI	Light Industrial	Industrial	44.1
NMU	Neighborhood Mixed-Use	Mixed Use	128.8
P	Public	Public Use	438.7
R-20,000	R-20,000 Residential	Residential	185.9
R-6,000	R-6,000 Residential	Residential	276.1
R-8,000	R-8,000 Residential	Residential	521.6
S	Environmentally Sensitive	N/A	413.7

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.

[2]Represents parcel acreage, not zoning coverage.

Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between **January 1, 2013 and December 31, 2020** that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 4-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 4-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 4-2: City of Buckley 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
HDR	0.93	4	4.30
R-6,000	81.96	245	2.99
R-8,000	25.78	72	2.79
Total/Avg.	**108.66**	**321**	**2.95**

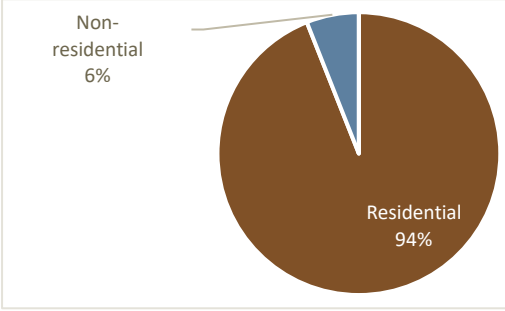
Table 4-3: City of Buckley 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
CC	0.84	4,388	0.12
GC	4.17	32,012	0.18
LI	2.21	3,177	0.03
Total/Avg.	**7.22**	**39,577**	**0.13**

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 4-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 4-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 4-A: City of Buckley Residential vs. Non-residential Development Split



Zone	Use Type Split (Percent)[1] Residential	Non-residential
CC	0%	100%
GC	0%	100%
HDR	100%	0%
LI	0%	100%
R-6,000	100%	0%
R-8,000	100%	0%
Total	**94%**	**6%**

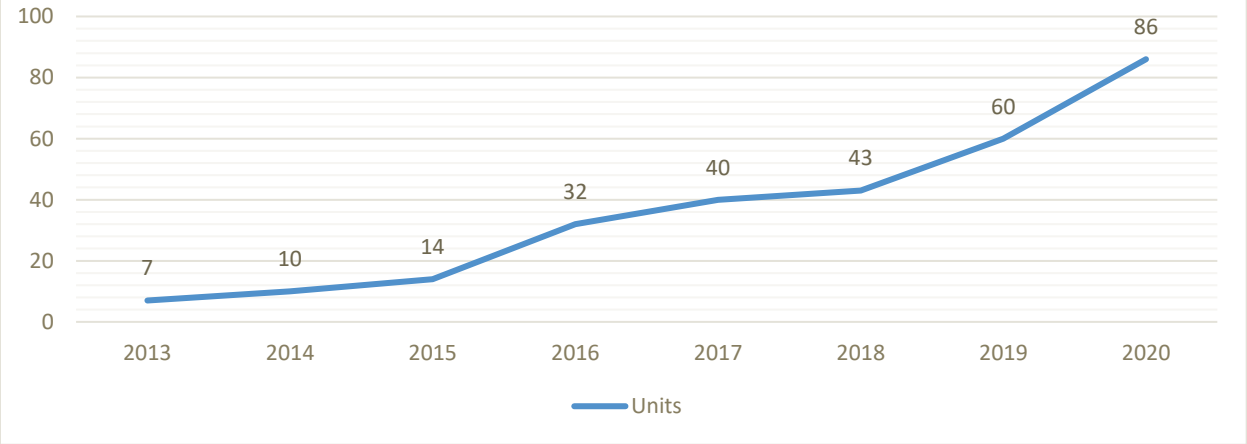
[1]Does not include single-family permits in order to avoid double-counting acreage.

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 4-B: City of Buckley Housing Production Rates (OFM)

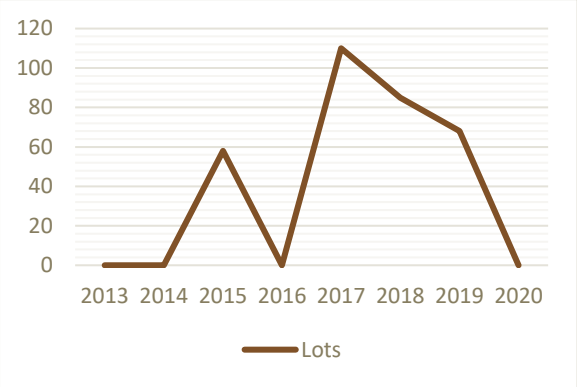


Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

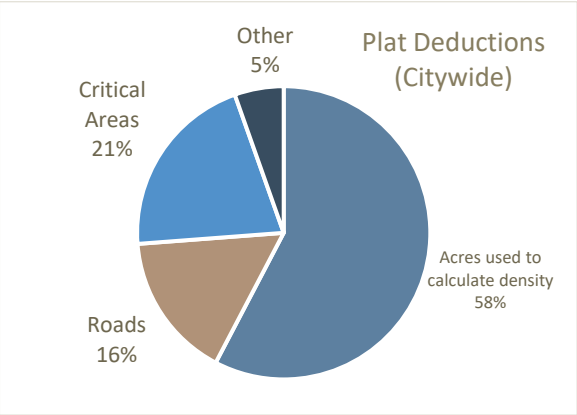
Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 4-2).

Figure 4-C: City of Buckley Platting Trends



Plat Activity by Year

Year	Lots	Acres	Density
2013	-	-	-
2014	-	-	-
2015	58	9.75	5.95
2016	-	-	-
2017	110	18.49	5.95
2018	85	18.62	4.56
2019	68	18.51	3.67
2020	-	-	-
Total	**321**	**65.37**	**4.91**



Plat Deductions by Zone (Percent)

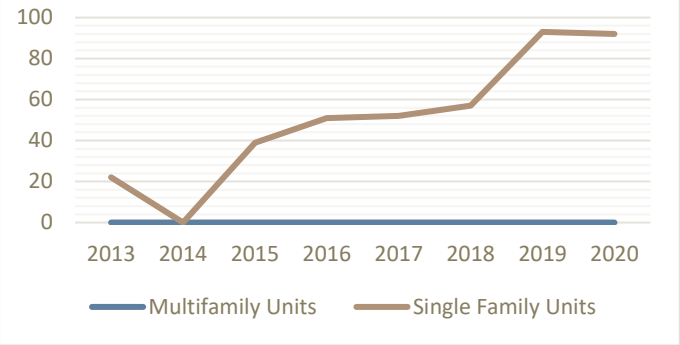
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
HDR	19.6%	-	8.7%	0.0%
R-6,000	16.0%	30.8%	0.4%	4.6%
R-8,000	20.9%	-	0.6%	6.2%
Average	**17.2%**	**23.3%**	**0.5%**	**5.0%**

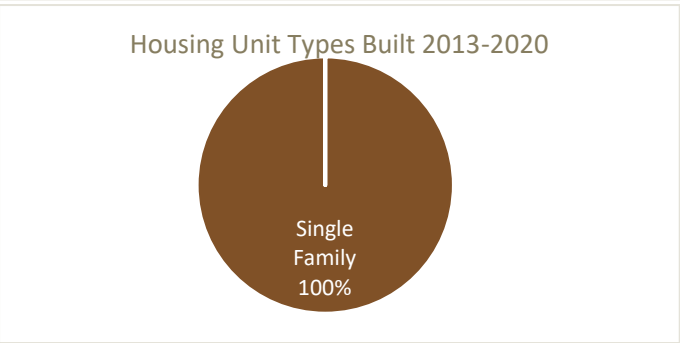
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 4-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 4-D: City of Buckley Residential Building Permit Trends





Multifamily Permits by Year

No multifamily permits were observed in the timeframe.

Single-Family Permits by Year (Optional)

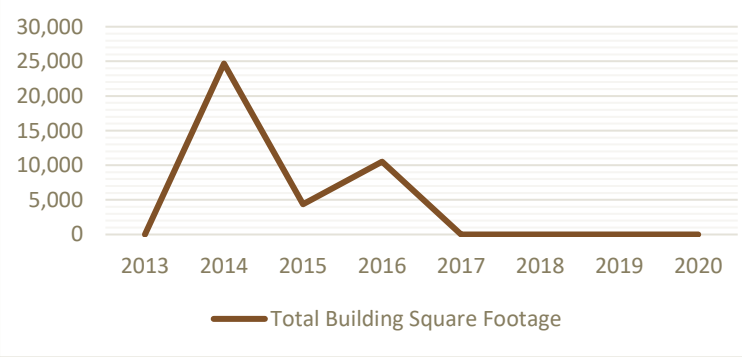
Year	Units	Acres	Avg. Lot Size
2013	22	7.89	0.36
2014	-	-	-
2015	39	14.08	0.36
2016	51	16.23	0.32
2017	52	14.33	0.28
2018	57	11.18	0.20
2019	93	26.30	0.28
2020	92	26.34	0.29
Total	**406**	**116.35**	**0.29**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 4-E: City of Buckley Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	-	-	-
2014	4.09	24,677	0.14
2015	0.84	4,388	0.12
2016	2.29	10,512	0.11
2017	-	-	-
2018	-	-	-
2019	-	-	-
2020	-	-	-
Total	**7.22**	**39,577**	**0.13**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 4-4 and Table 4-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 4-4: City of Buckley Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
CC	0%	5	100%	20	0%	0%	50%	50%	0%
GC	0%	0	100%	20	0%	0%	50%	50%	0%
HC	0%	5	100%	20	0%	0%	50%	50%	0%
HDR	100%	5	0%	0	0%	0%	50%	50%	0%
LI	0%	0	100%	9	0%	0%	50%	50%	0%
NMU	80%	6	20%	20	50%	50%	50%	50%	0%
P	0%	0	100%	20	0%	0%	50%	50%	0%
R-20,000	100%	2	0%	20	30%	50%	0%	0%	0%
R-6,000	100%	5	0%	20	30%	50%	0%	0%	0%
R-8,000	100%	4	0%	20	30%	50%	0%	0%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 4-5: City of Buckley Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
R-20,000	10%	GIS	3%	0%	1%	<1.15 acres
R-6,000	10%	GIS	3%	0%	1%	<0.34 acres
R-8,000	10%	GIS	3%	0%	1%	<0.46 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 4-6 shows the characteristics of the initial inventory and Table 4-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 4-6: City of Buckley Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	211.84	560.73	52.25	120.72
Average Lot Size (Gross)	3.07	2.28	0.33	4.31
Total Acreage (Net)	166.99	462.64	33.95	71.62
Average Lot Size (Net)	2.42	1.88	0.21	2.56
Percent Critical Areas	21%	17%	35%	41%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 4-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 4-7: City of Buckley Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	44.86	98.10
Plat Deductions	12.52	39.23
Capital Facilities	0.00	0.00
Market Factor	62.98	208.97
Total Percent Reduction in Inventory Land	51%	61%
Percent of Vacant or Underutilized Land Available for Capacity	49%	39%

Capacity Results

The housing and employment capacity totals in Table 4-8 and Table 4-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 4-8: City of Buckley 2020-2044 Housing Capacity (Dwelling Units)

one	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
CC	0	-5	0	0	**-5**
GC	0	-2	0	0	**-2**
HC	0	0	0	0	**0**
HDR	32	32	0	20	**84**
LI	0	-1	0	0	**-1**
NMU	39	168	0	40	**247**
P	0	0	0	0	**0**
R-20,000	22	48	31	1	**102**
R-6,000	7	60	84	232	**383**
R-8,000	182	328	43	89	**642**
Total	**282**	**628**	**158**	**382**	**1,450**

Table 4-9: City of Buckley 2020-2044 Employment Capacity (Jobs)				
Zone	Vacant	Underutilized	Pipeline	Total
CC	190	63	13	266
GC	204	417	80	701
HC	0	1	0	1
HDR	0	0	0	0
LI	12	71	18	101
NMU	32	163	0	195
P	175	2	0	177
R-20,000	3	11	0	14
R-6,000	0	6	0	6
R-8,000	13	36	0	49
Total	629	770	111	1,510

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 4-10: City of Buckley Permits Summary					
Zone	**Residential Permits**	**Non-Residential Permits**	**Dwelling Units**	**Acres Developed**	**% Zoned Acreage**
CC	0	1	0	0.84	1.4%
GC	0	2	0	4.17	4.0%
HC	0	0	0	0.00	0.0%
HDR	0	0	0	0.00	0.0%
LI	0	1	0	2.21	5.3%
NMU	0	0	0	0.00	0.0%
P	0	0	0	0.00	0.0%
R-20,000	0	0	0	0.00	0.0%
R-6,000	6	0	245	81.96	26.6%
R-8,000	3	0	72	25.78	5.0%
S	0	0	0	0.00	0.0%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 4-11: City of Buckley Density Evaluation				
Zone	**Observed Density (Overall)**	**Observed Plat Density (Single-Family)**	**Observed Multifamily Density**	**Assumed Density**
CC	0	0	0	0
GC	0	0	0	0
HC	0	0	0	0
HDR	0	0	0	5
LI	0	0	0	0
NMU	0	0	0	6
P	0	0	0	0
R-20,000	0	0	0	2
R-6,000	5	5	0	5
R-8,000	4	4	0	4
S	0	0	0	0

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 4-12: City of Buckley Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
CC	0%	0%	100%	100%	Commercial	0%
GC	0%	0%	100%	100%	Commercial	0%
HC	0%	0%	0%	100%	Commercial	0%
HDR	0%	100%	0%	0%	Residential	0%
LI	0%	0%	100%	100%	Industrial	0%
NMU	0%	80%	0%	20%	Mixed Use	0%
P	0%	0%	0%	100%	Commercial	0%
R-20,000	0%	100%	0%	0%	Residential	1%
R-6,000	100%	100%	0%	0%	Residential	1%
R-8,000	100%	100%	0%	0%	Residential	1%
S	0%	0%	0%	0%	Other-Not Developable	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 4-13: City of Buckley Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
CC	0%	0%	0%	0%	0%	0%
GC	0%	0%	0%	0%	0%	0%
HC	0%	0%	0%	0%	0%	0%
HDR	0%	0%	0%	0%	0%	0%
LI	0%	0%	0%	0%	0%	0%
NMU	0%	0%	0%	0%	0%	0%
P	0%	0%	0%	0%	0%	0%
R-20,000	0%	10%	0%	3%	0%	0%
R-6,000	16%	10%	0%	3%	5%	0%
R-8,000	21%	10%	1%	3%	6%	0%
S	0%	0%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 4-14: City of Buckley Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
1,669	1,956	3,330	287	1,374	29	57	**29**

The average observed housing production rates are lower than the rate needed to accommodate the 2044 target.

Capacity / Growth Targets

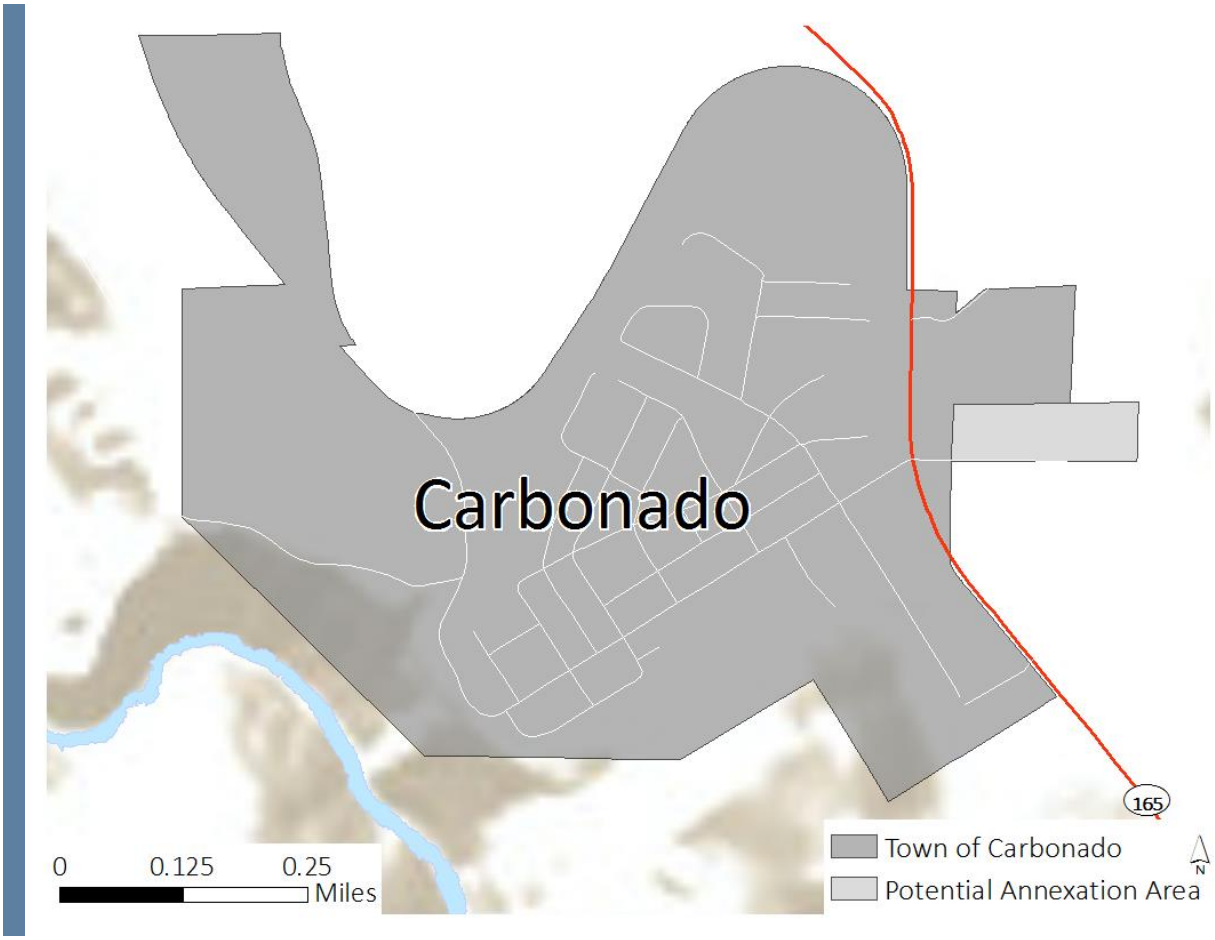
Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 4-15: City of Buckley Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
1,450	1,374	76	1,510	1,080	430

The City has sufficient capacity to accommodate the 2044 targets.

5 TOWN OF CARBONADO



The Town of Carbonado's Comprehensive Plan and regulations implement densities using gross acreage.

Table 5-1: Town of Carbonado Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
CF	Community Facilities District	Public Use	39.5
CMU	Commercial/Mixed-Use District	Mixed Use	4.5
POS	Parks & Open Space District	N/A	2.8
RLD	Residential Low Density District	Residential	173.2
RMD	Residential Moderate Density District	Residential	37.4

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the Town zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: Town Zoning Code.

DEVELOPMENT TRENDS

This section summarizes building and plat data obtained through the Pierce County Assessor-Treasurer and Auditor Departments observed between **January 1, 2013 and December 31, 2020** that is used to monitor observed densities and update the assumptions for future development. The summaries in this

section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 5-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 5-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 5-2: Town of Carbonado 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
RLD	7.06	16	2.27
RMD	9.09	2	0.22
Total/Avg.	**16.15**	**18**	**1.11**

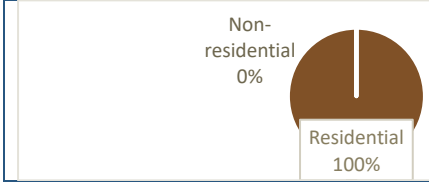
Table 5-3: Town of Carbonado 2013-2020 Non-residential Trends by Zone

No non-residential permits were observed in the timeframe.

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 5-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 5-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 5-A: Town of Carbonado Residential vs. Non-residential Development Split



Zone	Use Type Split (Percent)[1] Residential	Non-residential
RLD	100%	0%
RMD	100%	0%
Average	**100%**	**0%**

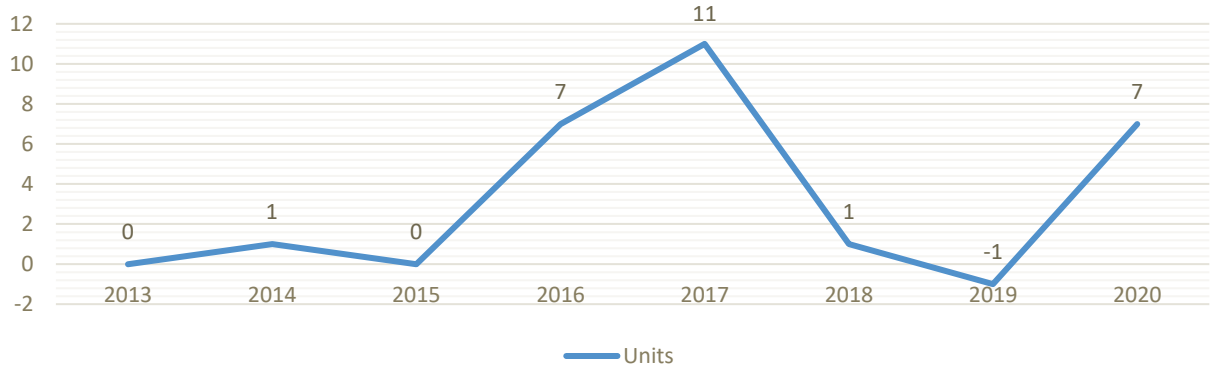
[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number

of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 5-B: Town of Carbonado Housing Production Rates (OFM)

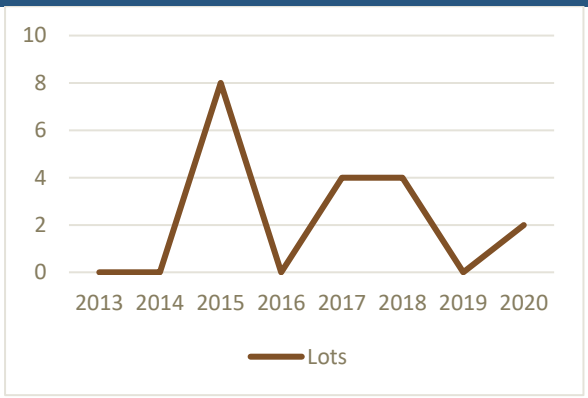


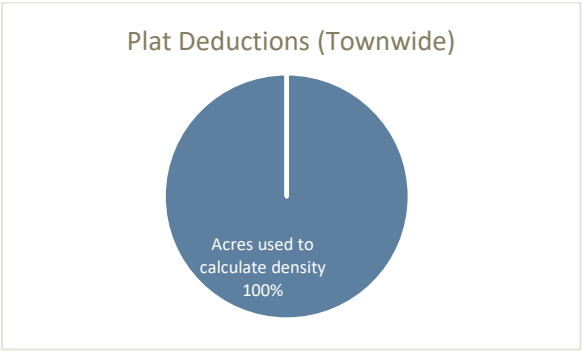
Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 5-2).

Figure 5-C: Town of Carbonado Platting Trends





Plat Activity by Year

Year	Lots	Acres	Density
2013	-	-	-
2014	-	-	-
2015	8	12.66	0.63
2016	-	-	-
2017	4	1.01	3.97
2018	4	0.97	4.14
2019	-	-	-
2020	2	1.51	1.32
Total	**18**	**16.15**	**1.11**

Plat Deductions by Zone (Percent)

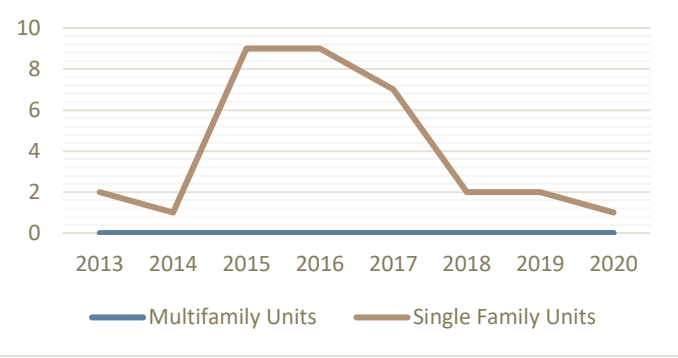
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
RLD	0.0%	0.0%	0.0%	0.0%
RMD	0.0%	0.0%	0.0%	0.0%
Average	**0.0%**	**0.0%**	**0.0%**	**0.0%**

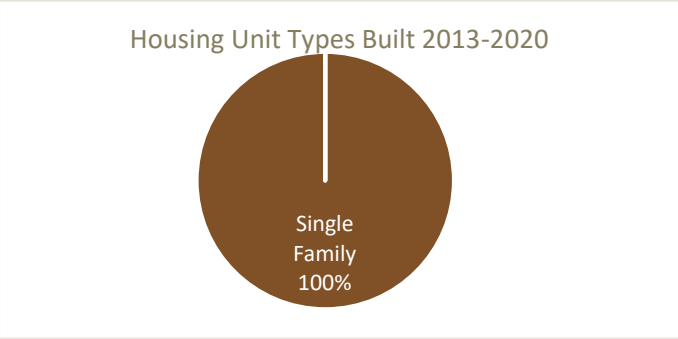
Sources: Town Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 5-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 5-D: Town of Carbonado Residential Building Permit Trends





Multifamily Permits by Year

No multifamily permits were observed in the timeframe.

Single-Family Permits by Year (Optional)

Year	Units	Acres	Avg. Lot Size
2013	2	1.30	0.65
2014	1	0.44	0.44
2015	9	7.04	0.78
2016	9	8.22	0.91
2017	7	3.35	0.48
2018	2	1.27	0.64
2019	2	0.71	0.36
2020	1	0.23	0.23
Total	**33**	**22.56**	**0.68**

Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 5-E: Town of Carbonado Non-residential Permit Trends

No non-residential permits were observed in the timeframe.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 5-4 and Table 5-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 5-4: Town of Carbonado Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
CF	0%	0	100%	20	0%	0%	10%	50%	0%
CMU	80%	3	20%	20	25%	25%	10%	50%	0%
RLD	100%	3	0%	20	25%	25%	0%	0%	0%
RMD	100%	2	0%	20	25%	25%	0%	0%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 5-5: Town of Carbonado Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
RLD	0%	0%	0%	0%	3%	<0.48 acres
RMD	0%	0%	0%	0%	3%	<0.48 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 5-6 shows the characteristics of the initial inventory and Table 5-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 5-6: Town of Carbonado Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	29.03	107.75	12.01	1.51
Average Lot Size (Gross)	5.81	1.86	0.50	1.51
Total Acreage (Net)	19.38	91.10	4.57	1.23
Average Lot Size (Net)	3.88	1.57	0.19	1.23
Percent Critical Areas	33%	15%	62%	19%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 5-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 5-7: Town of Carbonado Summary of Deductions		
Deductions/Category	**Vacant**	**Underutilized**
Critical Areas	9.65	16.65
Plat Deductions	0.00	0.00
Capital Facilities	0.00	0.00
Market Factor	4.85	28.58
Total Percent Reduction in Inventory Land	50%	32%
Percent of Vacant or Underutilized Land Available for Capacity	50%	68%

Capacity Results

The housing and employment capacity totals in Table 5-8 and Table 5-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 5-8: Town of Carbonado 2020-2044 Housing Capacity (Dwelling Units)					
Zone	**Vacant**	**Underutilized**	**Vacant Single Unit**	**Pipeline**	**Total**
CF	0	0	0	0	**0**
CMU	0	1	2	0	**3**
RLD	35	121	20	2	**178**
RMD	4	21	2	0	**27**
Total	**39**	**143**	**24**	**2**	**208**

Table 5-9: Town of Carbonado 2020-2044 Employment Capacity (Jobs)				
Zone	**Vacant**	**Underutilized**	**Pipeline**	**Total**
CF	0	122	0	**122**
CMU	0	6	0	**6**
RLD	10	39	0	**49**
RMD	2	13	0	**15**
Total	**12**	**180**	**0**	**192**

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

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Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 5-10: Town of Carbonado Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
CF	0	0	0	0.00	0.0%
CMU	0	0	0	0.00	0.0%
PROS	0	0	0	0.00	0.0%
RLD	6	0	16	7.06	4.3%
RMD	1	0	2	9.09	24.9%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 5-11: Town of Carbonado Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
CF	0	0	0	0
CMU	0	0	0	3
PROS	0	0	0	0
RLD	2	2	0	3
RMD	0	0	0	2

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 5-12: Town of Carbonado Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
CF	0%	0%	0%	100%	Commercial	0%
CMU	0%	80%	0%	20%	Mixed Use	0%
PROS	0%	0%	0%	0%	Other-Not Developable	0%
RLD	100%	100%	0%	0%	Residential	3%
RMD	100%	100%	0%	0%	Residential	3%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 5-13: Town of Carbonado Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
CF	0%	0%	0%	0%	0%	0%
CMU	0%	0%	0%	0%	0%	0%
PROS	0%	0%	0%	0%	0%	0%
RLD	0%	0%	0%	0%	0%	0%
RMD	0%	0%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 5-14: Town of Carbonado Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
218	244	261	26	17	3	1	-

The observed housing production trend is sufficient to accommodate the 2044 target.

Capacity / Growth Targets

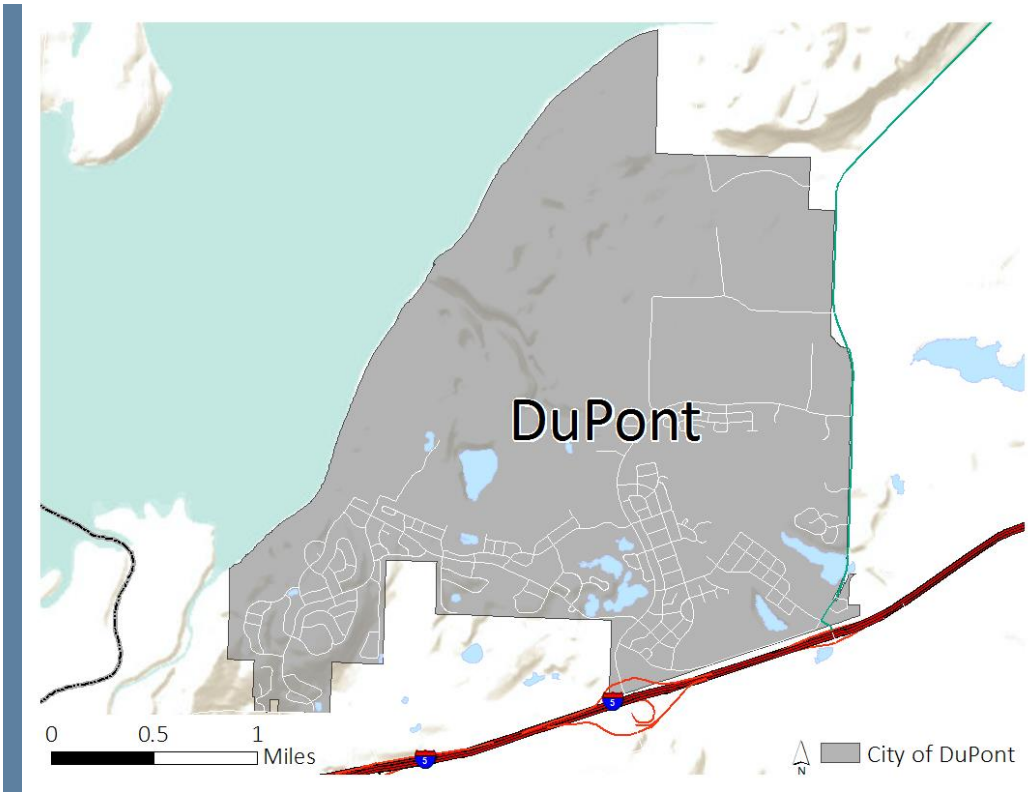
Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 5-15: Town of Carbonado Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
208	17	191	192	6	186

There is sufficient capacity to accommodate the 2044 targets.

6 CITY OF DUPONT



The City of DuPont's Comprehensive Plan and regulations implement densities using gross acreage.

Table 6-1: City of DuPont Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
CB	Community Business	Commercial	58.1
COM	Commercial	Commercial	18.2
CP	Community Park	N/A	59.1
IND	Industrial	Industrial	138.1
MRP	Manufacturing Research Park	Industrial	478.1
MUV	Mixed Use Village	Mixed Use	519.7
MXD	Mixed Use	Commercial	58.8
NP	Neighborhood Park	N/A	26.1
OFF	Office	Commercial	52.1
OS	Open Space	N/A	705.7
R-12	Residential-12	Residential	72.2
R-3	Residential-3	Residential	54.5
R-4	Residential-4	Residential	463.6
R-5	Residential-5	Residential	284.8
RR	Residential Reserve	Residential	207.2

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes building and plat data obtained through the Pierce County Assessor-Treasurer and Auditor Departments observed between **January 1, 2013 and December 31, 2020** that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 6-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 6-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 6-2: City of DuPont 2013-2020 Residential Trends by Zone[1]

Zone	Acres	Lots/Units	Density
R-12	10.04	240	11.95
R-5	7.18	2	0.28
Total/Avg.	**27.27**	**242**	**8.87**

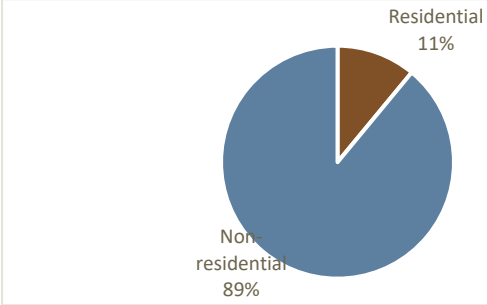
Table 6-3: City of DuPont 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
CB	40.91	735,839	0.41
COM	3.33	93,611	0.64
MRP	165.92	2,979,789	0.41
MXD	4.80	146,719	0.70
Total/Avg.	**214.96**	**3,955,958**	**0.42**

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 6-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 6-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 6-A: City of DuPont Residential vs. Non-residential Development Split



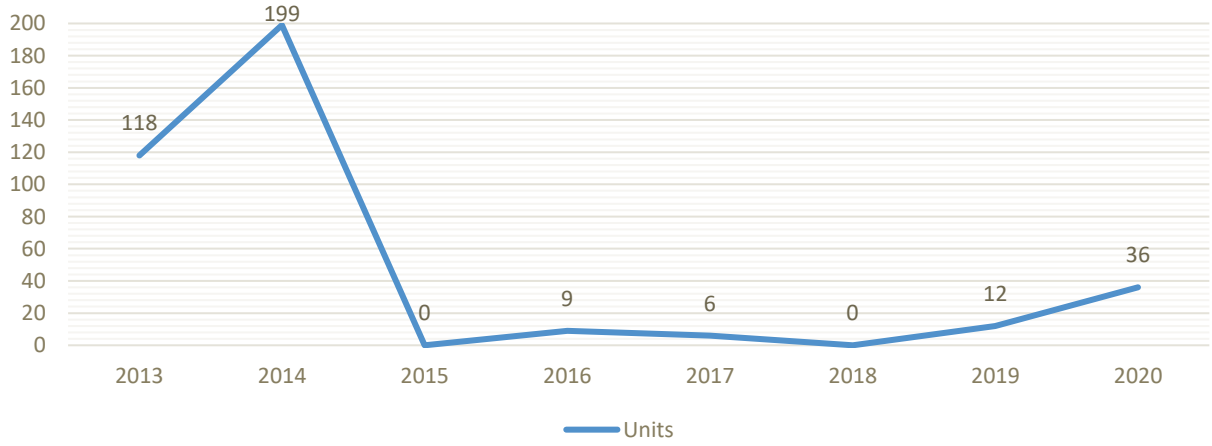
Zone	Use Type Split (Percent)[1]	
	Residential	Non-residential
CB	0%	100%
COM	0%	100%
MRP	0%	100%
MXD	0%	100%
R-12	100%	0%
R-5	100%	0%
Average	**11%**	**89%**

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 6-B: City of DuPont Housing Production Rates (OFM)

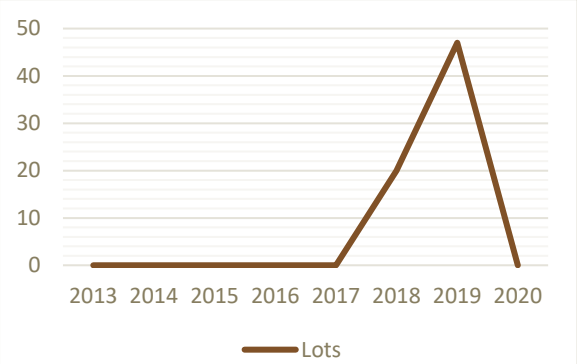


Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

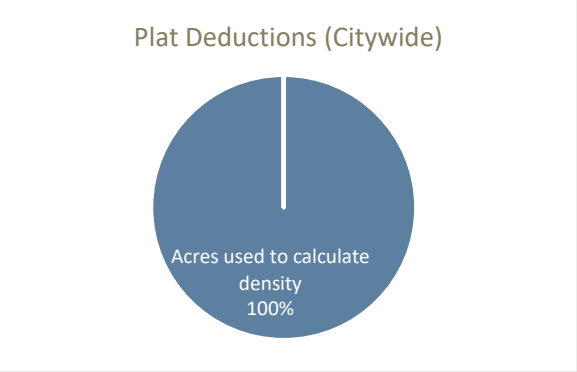
Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily to determine the overall achieved density (as shown in Table 6-2).

Figure 6-C: City of DuPont Platting Trends



Plat Activity by Year

Year	Lots	Acres	Density
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	-	-	-
2018	20	9.30	2.15
2019	47	5.68	8.28
2020	-	-	-
Total	**67**	**14.98**	**4.47**



Plat Deductions by Zone (Percent)

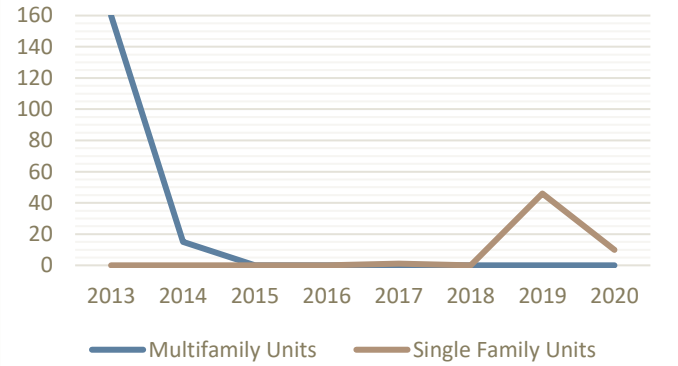
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
R-12	0.0%	0.0%	0.0%	0.0%
R-5	0.0%	0.0%	0.0%	0.0%
Average	**0.0%**	**0.0%**	**0.0%**	**0.0%**

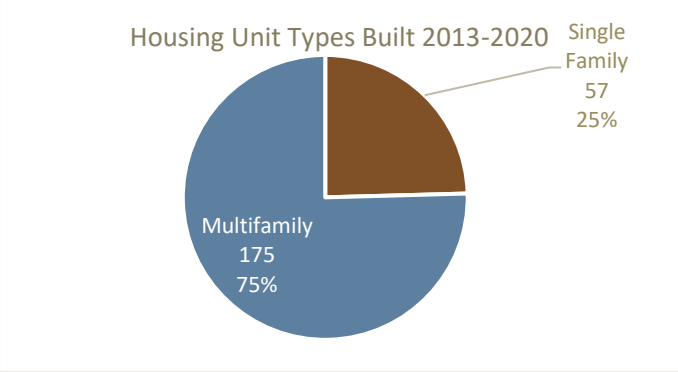
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 6-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 6-D: City of DuPont Residential Building Permit Trends





Multifamily Permits by Year

Year	Units	Net Acres	Net Density
2013	160	10.95	14.61
2014	15	1.34	11.21
2015	-	-	-
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	-	-	-
2020	-	-	-
Total	**175**	**12.29**	**14.24**

Single-Family Permits by Year (Optional)

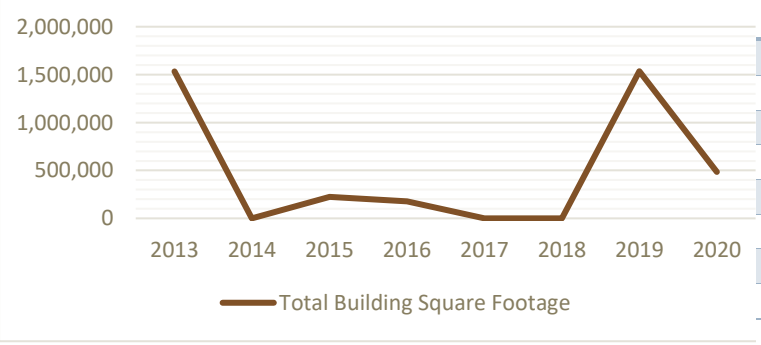
Year	Units	Acres	Avg. Lot Size
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	1	0.10	0.10
2018	-	-	-
2019	46	3.62	0.08
2020	10	1.15	0.11
Total	**57**	**11.71**	**0.09**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 6-E: City of DuPont Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	85.39	1,532,855	0.41
2014	-	-	-
2015	13.51	225,300	0.38
2016	7.79	176,210	0.52
2017	-	-	-
2018	-	-	-
2019	81.35	1,535,173	0.43
2020	26.91	486,420	0.41
Total	**214.96**	**3,955,958**	**0.42**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 6-4 and Table 6-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 6-4: City of DuPont Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
CB	0%	0	100%	20	0%	0%	10%	20%	1%
COM	0%	0	100%	20	0%	0%	10%	20%	1%
IND	0%	0	100%	9	0%	0%	10%	20%	1%
MRP	0%	0	100%	9	0%	0%	10%	20%	1%
MUV 1-8	30%	14	70%	9	10%	25%	10%	50%	1%
MUV 9	0%	0	100%	20	10%	25%	10%	50%	1%
MXD	0%	0	100%	20	0%	0%	10%	20%	1%
OFF	0%	0	100%	20	0%	0%	10%	20%	1%
R-12	100%	12	0%	0	5%	15%	0%	0%	0%
R-3	100%	3	0%	0	5%	15%	0%	0%	0%
R-4	100%	4	0%	0	5%	15%	0%	0%	0%
R-5	100%	5	0%	0	5%	15%	0%	0%	0%
RR	100%	0.2	0%	0	10%	20%	0%	0%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 6-5: City of DuPont Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
R-12	0%	0%	0%	0%	0%	<0.20 acres
R-3	0%	0%	0%	0%	0%	<0.56 acres
R-4	0%	0%	0%	0%	0%	<0.48 acres
R-5	0%	0%	0%	0%	0%	<0.45 acres
RR	0%	0%	0%	0%	0%	<10.50 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 6-6 shows the characteristics of the initial inventory and Table 6-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 6-6: City of DuPont Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	81.05	532.94	3.15	28.92
Average Lot Size (Gross)	4.50	23.17	0.17	9.64
Total Acreage (Net)	75.97	509.77	2.79	28.79
Average Lot Size (Net)	4.22	22.16	0.15	9.60
Percent Critical Areas	6%	4%	11%	0%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 6-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 6-7: City of DuPont Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	5.08	23.17
Plat Deductions	0.00	0.00
Capital Facilities	0.80	5.33
Market Factor	6.65	238.94
Total Percent Reduction in Inventory Land	9%	46%
Percent of Vacant or Underutilized Land Available for Capacity	91%	54%

Capacity Results

The housing and employment capacity totals in Table 6-8 and Table 6-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 6-8: City of DuPont 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
CB	0	0	0	0	**0**
COM	0	0	0	0	**0**
IND	0	0	0	0	**0**
MRP	0	0	0	0	**0**
MUV 1-8	0	961	0	0	**961**
MUV 9	0	0	0	0	**0**
MXD	0	0	0	0	**0**
OFF	0	0	0	0	**0**
R-12	0	0	12	19	**31**
R-3	0	8	7	0	**15**
R-4	5	0	0	0	**5**
R-5	131	7	0	0	**138**
RR	0	0	0	0	**0**
Total	**136**	**976**	**19**	**19**	**1,150**

Table 6-9: City of DuPont 2020-2044 Employment Capacity (Jobs)				
Zone	Vacant	Underutilized	Pipeline	Total
CB	95	0	0	95
COM	40	39	4	102
IND	0	0	0	0
MRP	308	0	538	846
MUV 1-8	0	954	0	954
MUV 9	0	2,060	0	2,062
MXD	103	20	0	8
OFF	0	4	0	8
R-12	0	0	0	0
R-3	0	0	0	0
R-4	0	0	0	1
R-5	0	0	0	28
RR	0	0	0	0
Total	546	3,077	542	4,165

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

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Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 6-10: City of DuPont Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
CB	0	4	0	40.91	70.4%
COM	0	2	0	3.33	18.7%
CP	0	0	0	0.00	0.0%
IND	0	0	0	0.00	0.0%
MIL	0	0	0	0.00	0.0%
MRP	0	4	0	165.92	34.7%
MUV 1-8	0	0	0	0.00	0.0%
MUV 9	0	0	0	0.00	0.0%
MXD	0	3	0	4.80	8.0%
NP	0	0	0	0.00	0.0%
OFF	0	0	0	0.00	0.0%
OS	0	0	0	0.00	0.0%
R-12	5	0	240	20.09	19.2%
R-3	0	0	0	0.00	0.0%
R-4	0	0	0	0.00	0.0%
R-5	1	0	2	7.18	2.5%
RR	0	0	0	0.00	0.0%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 6-11: City of DuPont Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
CB	0	0	0	0
COM	0	0	0	0
CP	0	0	0	0
IND	0	0	0	0
MIL	0	0	0	0
MRP	0	0	0	0
MUV 1-8	0	0	0	14
MUV 9	0	0	0	0
MXD	0	0	0	0
NP	0	0	0	0
OFF	0	0	0	0
OS	0	0	0	0
R-12	12	8	14	12
R-3	0	0	0	3
R-4	0	0	0	4
R-5	0	0	0	5
RR	0	0	0	0

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the

report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 6-12: City of DuPont Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
CB	0%	0%	100%	100%	Commercial	0%
COM	0%	0%	100%	100%	Commercial	0%
CP	0%	0%	0%	0%	Other-Not Developable	0%
IND	0%	0%	0%	100%	Industrial	0%
MIL	0%	0%	0%	0%	Other-Not Developable	0%
MRP	0%	0%	100%	100%	Industrial	0%
MUV 1-8	0%	30%	0%	70%	Mixed Use	0%
MUV 9	0%	0%	0%	100%	Commercial	0%
MXD	0%	0%	100%	100%	Commercial	0%
NP	0%	0%	0%	0%	Other-Not Developable	0%
OFF	0%	0%	0%	100%	Commercial	0%
OS	0%	0%	0%	0%	Other-Not Developable	0%
R-12	100%	100%	0%	0%	Residential	0%
R-3	0%	100%	0%	0%	Residential	0%
R-4	0%	100%	0%	0%	Residential	0%
R-5	100%	100%	0%	0%	Residential	0%
RR	0%	100%	0%	0%	Residential	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 6-13: City of DuPont Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
CB	0%	0%	0%	0%	0%	0%
COM	0%	0%	0%	0%	0%	0%
CP	0%	0%	0%	0%	0%	0%
IND	0%	0%	0%	0%	0%	0%
MIL	0%	0%	0%	0%	0%	0%
MRP	0%	0%	0%	0%	0%	0%
MUV 1-8	0%	0%	0%	0%	0%	0%
MUV 9	0%	0%	0%	0%	0%	0%
MXD	0%	0%	0%	0%	0%	0%
NP	0%	0%	0%	0%	0%	0%
OFF	0%	0%	0%	0%	0%	0%
OS	0%	0%	0%	0%	0%	0%
R-12	0%	0%	0%	0%	0%	0%
R-3	0%	0%	0%	0%	0%	0%
R-4	0%	0%	0%	0%	0%	0%
R-5	0%	0%	0%	0%	0%	0%
RR	0%	0%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 6-14: City of DuPont Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
3,241	3,791	5,751	550	1,960	55	82	**27**

The housing production rate would need to increase slightly to accommodate the 2044 target. The City of DuPont recently rezoned a large area of industrial zoning to mixed use zoning that hasn't started to develop. As that area develops it should close the gap on the housing production need.

Capacity / Growth Targets

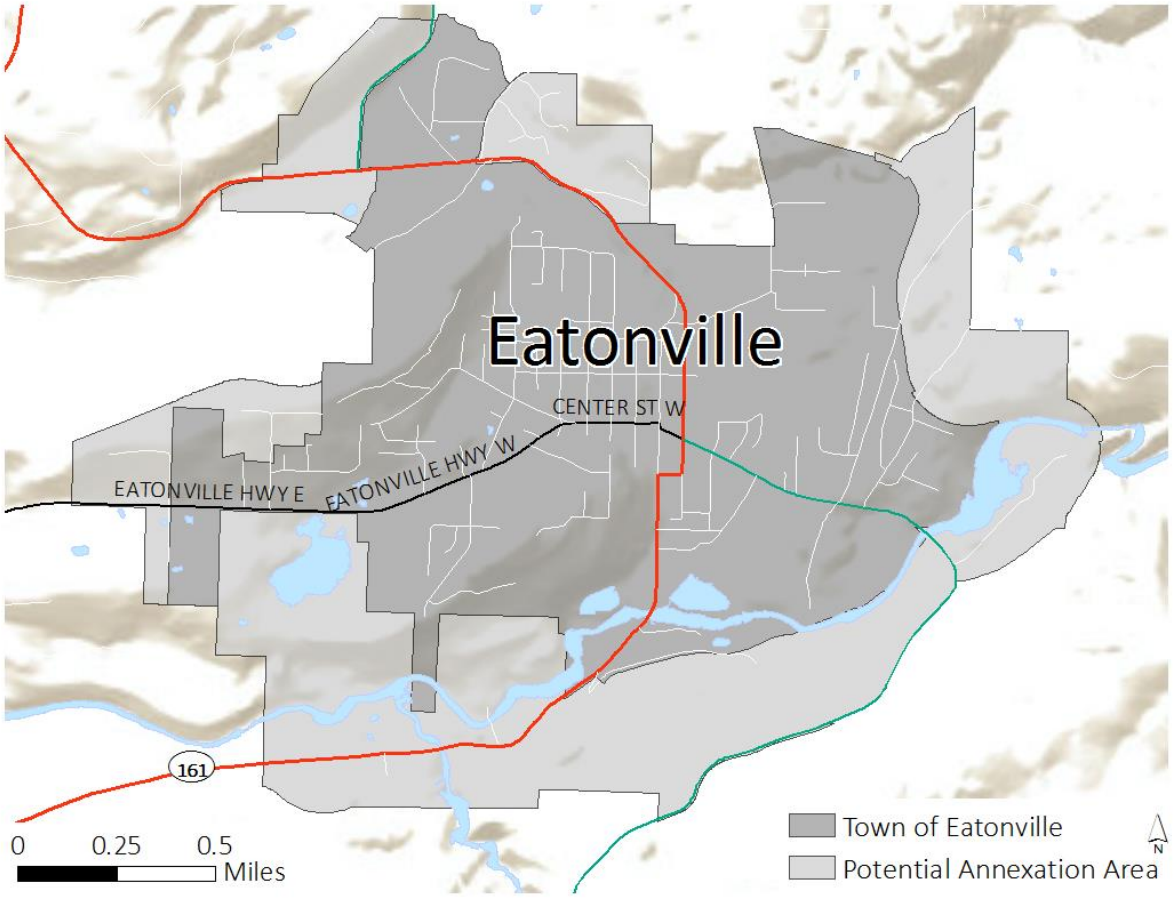
Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 6-15: City of DuPont Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
1,150	1,960	-810	4,165	1,177	2,988

The employment capacity is sufficient to accommodate the 2044 employment target. Since the City is now within the High Capacity Transit Communities regional geography, they will be planning for higher housing growth than previously allocated. Currently the housing capacity is not sufficient to accommodate the 2044 housing target. The capacity is just under 60 percent of the total need.

7 TOWN OF EATONVILLE



The Town of Eatonville's Comprehensive Plan and regulations implement density based on gross acreage netting out only roads. However, Planned Unit Developments (PUDs) are based on gross acreage.

Table 7-1: Town of Eatonville Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
AP	Aerospace District	Mixed Use	139.8
C-1	Downtown Commercial District	Mixed Use	35.9
C-2	General Commercia District	Commercial	102.7
MF-1	Multifamily Residential District – Medium Density	Residential	64.7
MF-2	Multifamily Residential District – High Density	Residential	13.8
MU	Mixed Use District	Mixed Use	45.7
SF-1	Single-Family Residential District – Low Density	Residential	317.6
SF-2	Single-Family Residential District – Medium Density	Residential	239.4
SF-3	Single-Family Residential District – High Density	Residential	76.5

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the Town zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: Town Zoning Code.

DEVELOPMENT TRENDS

This section summarizes building and plat data obtained through the Pierce County Assessor-Treasurer and Auditor Departments observed between **January 1, 2013 and December 31, 2020** that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 7-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 7-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 7-2: Town of Eatonville 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
AP	14.54	21	1.44
MF-2	0.28	4	14.37
SF-3	0.30	2	6.75
Total/Avg.	**15.11**	**27**	**1.79**

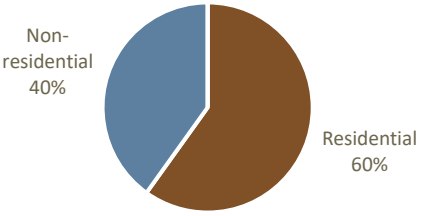
Table 7-3: Town of Eatonville 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
MU	10.10	2,100	0

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 7-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 7-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 7-A: Town of Eatonville Residential vs. Non-residential Development Split



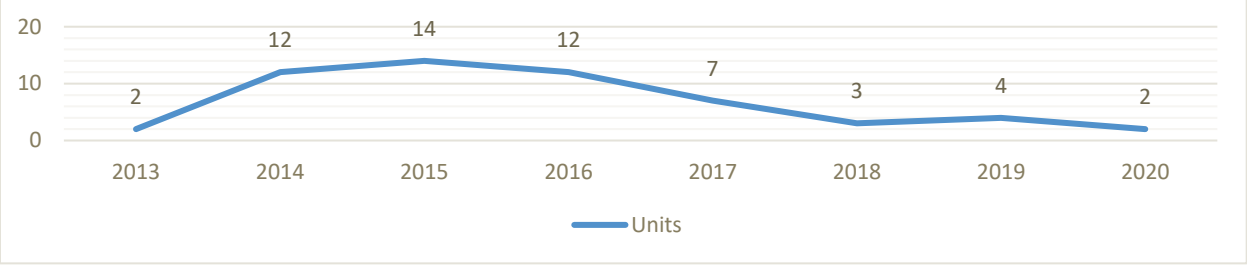
Zone	Use Type Split (Percent)[1] Residential	Non-residential
AP	100%	0%
MF-2	100%	0%
MU	0	100%
SF-3	100%	0%
Average	**60%**	**40%**

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 7-B: Town of Eatonville Housing Production Rates (OFM)

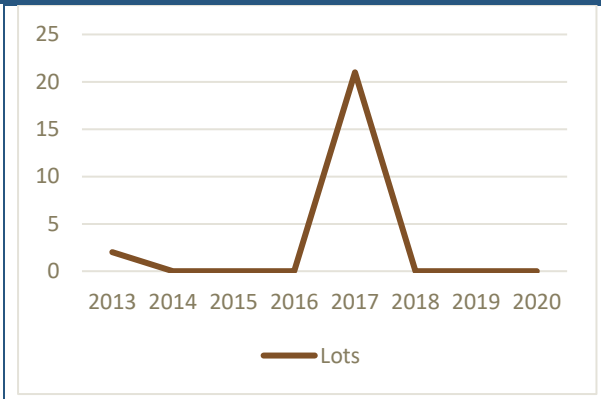


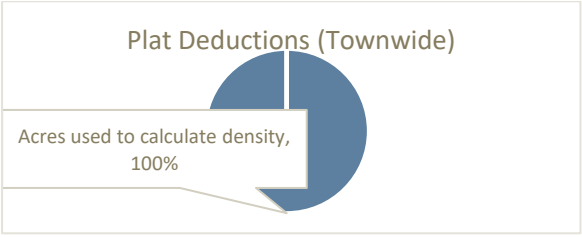
Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 7-2).

Figure 7-C: Town of Eatonville Platting Trends





Plat Activity by Year

Year	Lots	Acres	Density
2013	2	0.30	6.75
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	21	14.54	1.44
2018	-	-	-
2019	-	-	-
2020	-	-	-
Total	**23**	**14.84**	**1.55**

Plat Deductions by Zone (Percent)

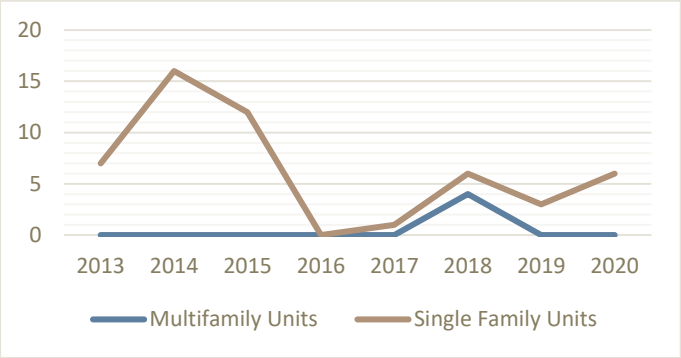
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
AP	0.0%	0.0%	0.0%	0.0%
SF-3	0.0%	0.0%	0.0%	0.0%
Average	**0.0%**	**0.0%**	**0.0%**	**0.0%**

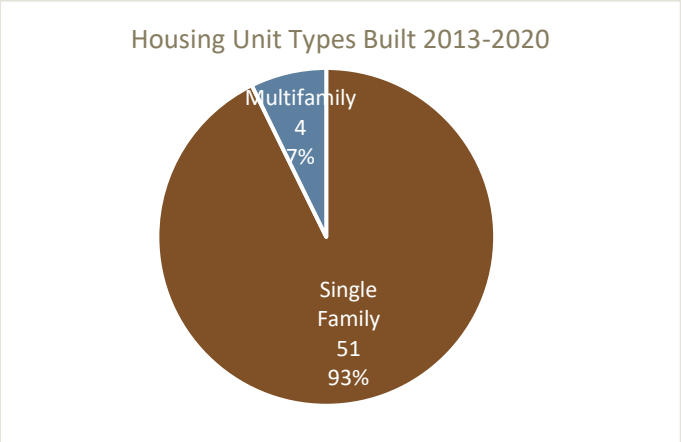
Sources: Town Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 7-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 7-D: Town of Eatonville Residential Building Permit Trends





Multifamily Permits by Year

Year	Units	Net Acres	Net Density
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	-	-	-
2018	4	0.28	14.37
2019	-	-	-
2020	-	-	-
Total	**4**	**0.28**	**14.37**

Single-Family Permits by Year (Optional)

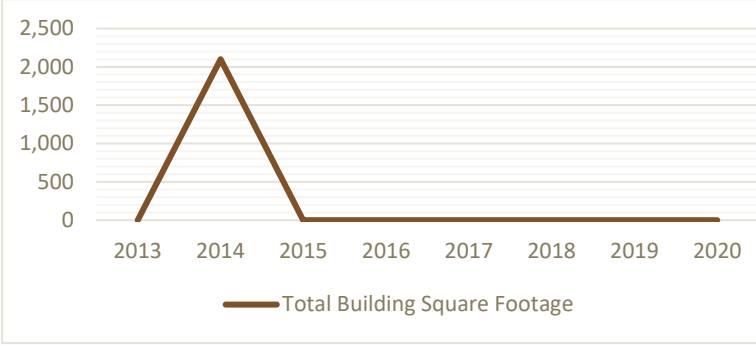
Year	Lots	Acres	Avg. Lot Size
2013	7	1.94	0.28
2014	16	3.90	0.24
2015	12	4.12	0.34
2016	-	-	-
2017	1	0.49	0.49
2018	6	2.45	0.41
2019	3	1.22	0.41
2020	6	3.86	0.64
Total	**51**	**17.99**	**0.35**

Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 7-E: Town of Eatonville Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	-	-	-
2014	10.10	2,100	0.00
2015	-	-	
2016	-	-	
2017	-	-	
2018	-	-	
2019	-	-	
2020	-	-	
Total	**10.10**	**2,100**	**0.00**

Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 7-4 and Table 7-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 7-4: Town of Eatonville Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
AP	25%	2	75%	20	25%	25%	10%	50%	0%
C-1	25%	8	75%	20	25%	25%	10%	50%	0%
C-2	0%	0	100%	20	0%	0%	10%	50%	0%
MF-1	100%	16	0%	20	25%	25%	0%	0%	0%
MF-2	100%	23	0%	20	25%	25%	0%	0%	0%
MU	65%	9	35%	20	25%	25%	10%	50%	0%
SF-1	100%	4	0%	20	25%	25%	0%	0%	0%
SF-2	100%	5	0%	20	25%	25%	0%	0%	0%
SF-3	100%	6	0%	20	25%	25%	0%	0%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 7-5: Town of Eatonville Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
MF-1	N/A	N/A	N/A	N/A	5%	N/A
MF-2	N/A	N/A	N/A	N/A	5%	N/A
SF-1	15%	GIS	0%	0%	5%	<0.55 acres
SF-2	15%	GIS	0%	0%	5%	<0.48 acres
SF-3	15%	GIS	0%	0%	5%	<0.34 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 7-6 shows the characteristics of the initial inventory and Table 7-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 7-6: Town of Eatonville Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	199.30	367.53	50.68	0.65
Average Lot Size (Gross)	2.69	1.97	0.51	0.33
Total Acreage (Net)	133.56	276.80	21.35	0.65
Average Lot Size (Net)	1.80	1.48	0.21	0.33
Percent Critical Areas	33%	25%	58%	0%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 7-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 7-7: Town of Eatonville Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	65.74	90.73
Plat Deductions	6.87	20.57
Capital Facilities	0.00	0.00
Market Factor	23.82	95.05
Total Percent Reduction in Inventory Land	43%	51%
Percent of Vacant or Underutilized Land Available for Capacity	57%	49%

Capacity Results

The housing and employment capacity totals in Table 7-8 and Table 7-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 7-8: Town of Eatonville 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
AP	11	14	17	0	42
C-1	8	3	0	0	11
C-2	0	-4	0	0	-4
MF-1	190	246	2	0	438
MF-2	36	42	7	0	85
MU	4	96	0	0	100
SF-1	100	190	24	0	314
SF-2	12	126	32	0	170
SF-3	0	14	18	0	37
Total	361	727	100	0	1,188

Table 7-9: Town of Eatonville 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
AP	425	508	0	933
C-1	80	75	0	155
C-2	728	333	3	1,064
MF-1	17	23	0	40
MF-2	2	3	0	5
MU	37	102	0	139
SF-1	36	74	0	110
SF-2	3	37	0	40
SF-3	0	5	0	5
Total	1,328	1,160	3	2,491

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 7-10: Town of Eatonville Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
AP	1	0	21	14.54	10.0%
C-1	0	0	0	0.00	0.0%
C-2	0	0	0	0.00	0.0%
MF-1	0	0	0	0.00	0.0%
MF-2	1	0	4	0.28	2.0%
MU	0	1	0	10.10	22.0%
ROW	0	0	0	0.00	0.0%
SF-1	0	0	0	0.00	0.0%
SF-2	0	0	0	0.00	0.0%
SF-3	1	0	2	0.30	0.4%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 7-11: Town of Eatonville Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
AP	1	1	0	2
C-1	0	0	0	8
C-2	0	0	0	0
MF-1	0	0	0	16
MF-2	14	0	14	23
MU	0	0	0	9
ROW	0	0	0	0
SF-1	0	0	0	4
SF-2	0	0	0	5
SF-3	7	7	0	6

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 7-12: Town of Eatonville Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
AP	100%	25%	0%	75%	Mixed Use	0%
C-1	0%	25%	0%	75%	Mixed Use	0%
C-2	0%	0%	0%	100%	Commercial	0%
MF-1	0%	100%	0%	0%	Residential	5%
MF-2	100%	100%	0%	0%	Residential	5%
MU	0%	65%	100%	35%	Mixed Use	0%
ROW	0%	0%	0%	0%	Other-Not Developable	0%
SF-1	0%	100%	0%	0%	Residential	5%
SF-2	0%	100%	0%	0%	Residential	5%
SF-3	100%	100%	0%	0%	Residential	5%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 7-13: Town of Eatonville Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
AP	0%	0%	0%	0%	0%	0%
C-1	0%	0%	0%	0%	0%	0%
C-2	0%	0%	0%	0%	0%	0%
MF-1	0%	0%	0%	0%	0%	0%
MF-2	0%	0%	0%	0%	0%	0%
MU	0%	0%	0%	0%	0%	0%
ROW	0%	0%	0%	0%	0%	0%
SF-1	0%	15%	0%	0%	0%	0%
SF-2	0%	15%	0%	0%	0%	0%
SF-3	0%	15%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 7-14: Town of Eatonville Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
1,059	1,127	1,404	68	277	7	12	**5**

The observed housing production rate is less than but very close to the rate needed to accommodate the 2044 housing target. It is expected that housing production fluctuates over time, and the current rate is consistent with the future need.

Capacity / Growth Targets

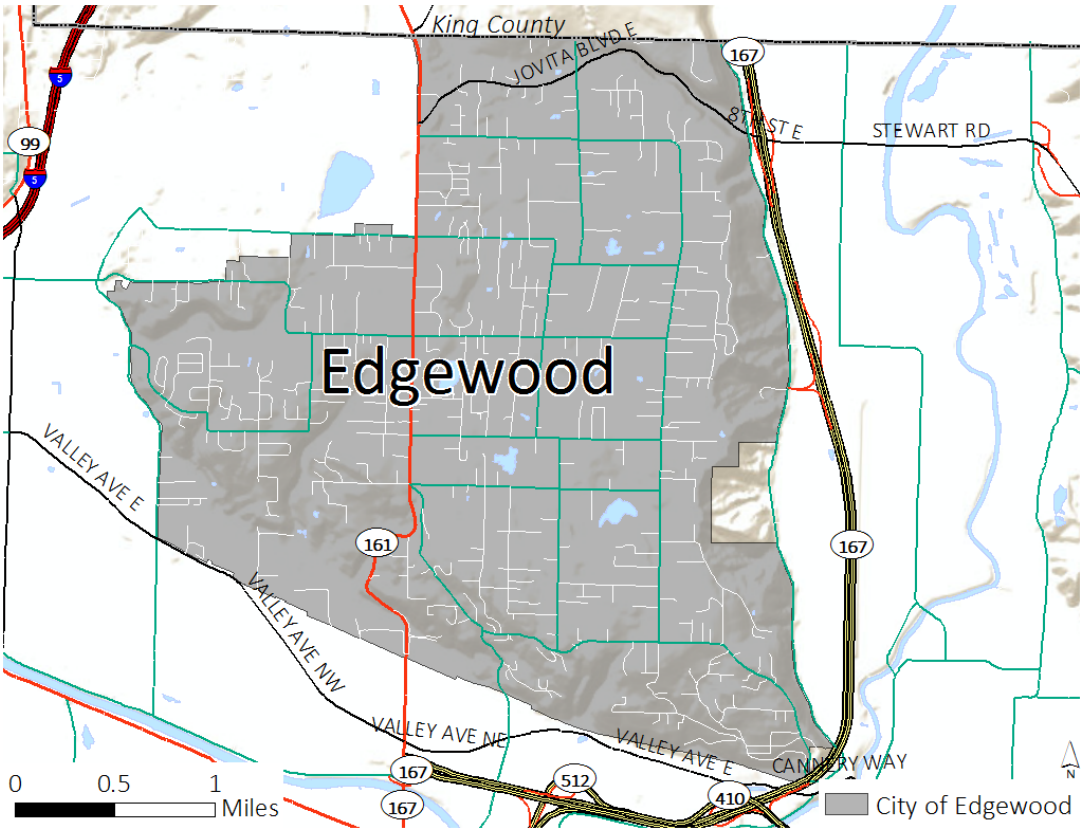
Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 7-15: Town of Eatonville Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
1,188	277	911	2,491	152	2,339

The capacity is sufficient to accommodate the 2044 targets.

8 CITY OF EDGEWOOD



The City of Edgewood's Comprehensive Plan and regulations implement densities based on acreage, subtracting critical areas and their associated buffers, including wetlands, streams, landslide hazard areas, and flood areas.

Table 8-1: City of Edgewood Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
BP	Business Park	Mixed Use	34.1
C	Commercial	Mixed Use	87.2
I	Industrial	Industrial	18.0
MR-1	Mixed Residential – Low	Residential	90.0
MR-2	Mixed Residential – Moderate	Residential	45.7
MUR	Mixed Use Residential	Mixed Use	110.6
P	Public	Public Use	186.7
SF-2	Single-Family – Low	Residential	1,938.7
SF-3	Single-Family – Moderate	Residential	2,241.8
SF-5	Single-Family – High	Residential	61.3
TC	Town Center	Mixed Use	76.9

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between **January 1, 2013 and December 31, 2019** and plat activity through December 31, 2020 that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 8-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 8-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 8-2: City of Edgewood 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
MR-1	54.55	90	1.65
MR-2	23.37	205	8.77
SF-2	53.70	77	1.43
SF-3	64.47	118	1.83
SF-5	20.45	80	3.91
TC	15.26	345	22.60
C	2.56	24	9.39
Total/Avg.	**234.37**	**939**	**4.01**

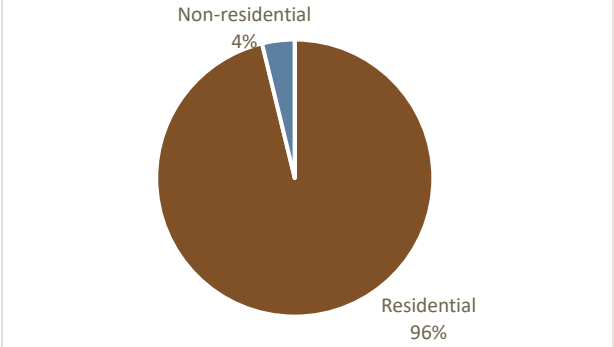
Table 8-3: City of Edgewood 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
C	7.36	97,090	0.30
TC	1.89	40,920	0.50
Total/Avg.	**9.25**	**138,010**	**0.34**

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 8-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 8-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 8-A: City of Edgewood Residential vs. Non-residential Development Split



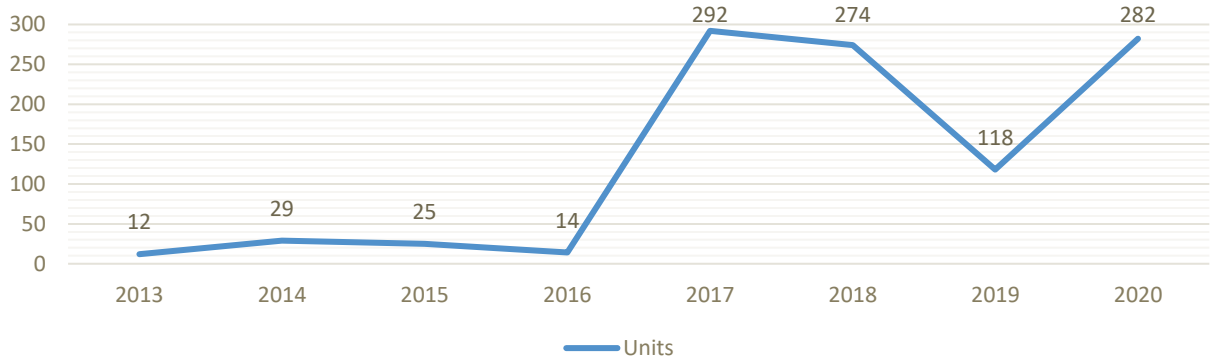
Zone	Use Type Split (Percent)[1] Residential	Non-residential
C	26%	74%
MR-1	100%	0%
MR-2	100%	0%
SF-2	100%	0%
SF-3	100%	0%
SF-5	100%	0%
TC	89%	11%
Average	**96%**	**4%**

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 8-B: City of Edgewood Housing Production Rates (OFM)

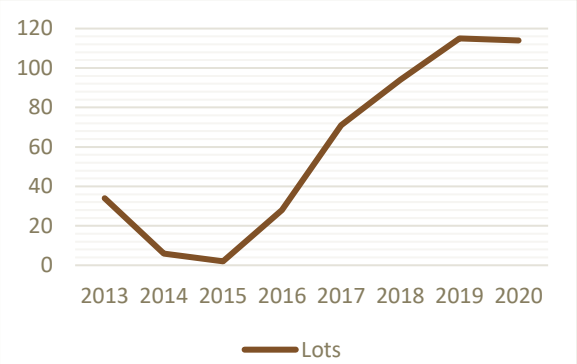


Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

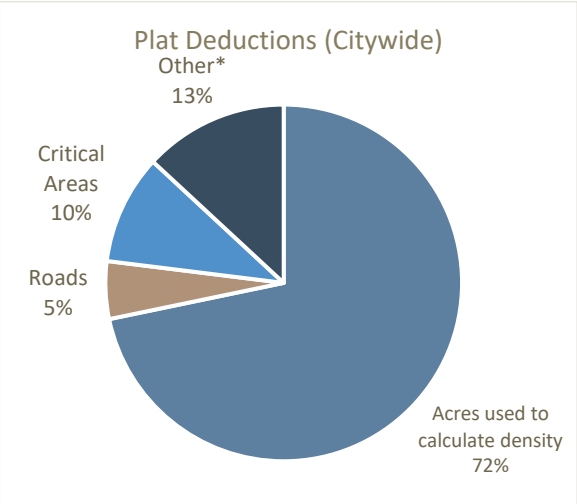
Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 8-2).

Figure 8-C: City of Edgewood Platting Trends



Plat Activity by Year

Year	Lots	Acres	Density
2013	34	26.08	1.30
2014	6	7.23	0.83
2015	2	1.01	1.98
2016	28	8.03	3.48
2017	71	17.67	4.02
2018	94	18.92	4.97
2019	115	35.98	3.20
2020	114	37.29	3.06
Total	**464**	**152.21**	**3.05**



Plat Deductions by Zone (Percent)

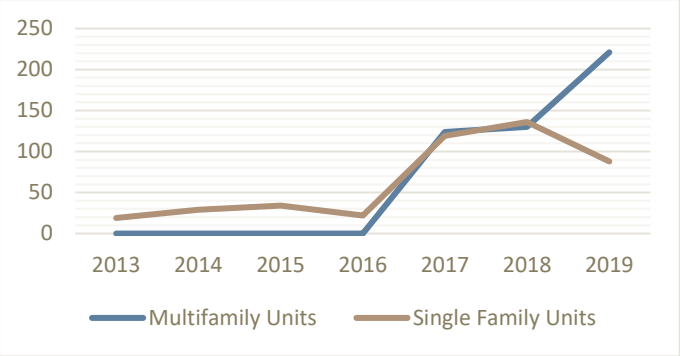
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
C	21.5%	6.7%	17.1%	0.0%
MR-1	1.8%	29.8%	1.3%	2.8%
MR-2	18.5%	19.5%	8.1%	7.1%
SF-2	4.8%	0.2%	1.7%	4.5%
SF-3	2.5%	2.1%	1.3%	1.6%
SF-5	11.0%	0.0%	0.0%	5.2%
Average	**5.2%**	**9.9%**	**2.0%**	**3.4%**

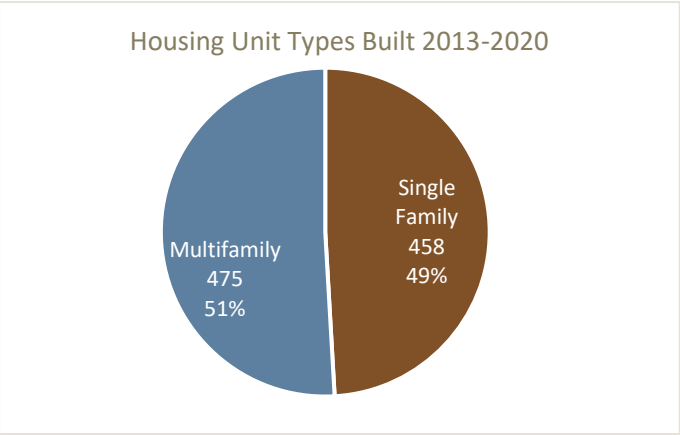
*Includes "other category" not shown in the plat deductions summary. See development data summaries for full data.
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 8-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 8-D: City of Edgewood Residential Building Permit Trends





Multifamily Permits by Year

Year	Units	Net Acres	Net Density
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	124	6.63	18.70
2018	130	6.95	18.70
2019	221	8.63	25.59
Total	**475**	**22.21**	**21.38**

Single-Family Permits by Year (Optional)

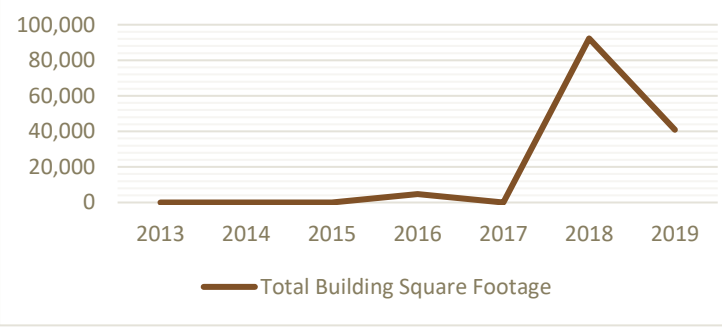
Year	Lots	Acres	Avg. Lot Size
2013	19	10.43	0.55
2014	29	16.57	0.57
2015	34	34.86	1.03
2016	22	26.73	1.21
2017	119	24.46	0.21
2018	136	38.88	0.29
2019	99	30.29	0.31
Total	**458**	**182.21**	**0.40**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 8-E: City of Edgewood Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	1.29	4,823	0.09
2017	-	-	-
2018	6.07	92,267	0.35
2019	1.89	40,920	0.50
Total	**9.25**	**138,010**	**0.34**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 8-4 and Table 8-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 8-4: City of Edgewood Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
BP	30%	8	70%	20	0%	10%	0%	0%	2%
C	40%	12	60%	20	0%	10%	0%	0%	2%
I	0%	0	100%	9	25%	25%	0%	0%	2%
MR-1	100%	4	0%	20	25%	25%	0%	0%	2%
MR-2	100%	8	0%	20	0%	10%	0%	0%	2%
MUR	60%	12	40%	20	0%	10%	0%	0%	2%
P	0%	0	100%	20	25%	25%	0%	0%	2%
SF-2	100%	2	0%	20	25%	25%	0%	0%	2%
SF-3	100%	3	0%	20	25%	25%	0%	0%	2%
SF-5	100%	5	0%	20	0%	10%	0%	0%	2%
TC	70%	24	30%	20	0%	10%	0%	0%	2%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 8-5: City of Edgewood Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
MR-1	N/A	N/A	N/A	N/A	5%	N/A
MR-2	N/A	N/A	N/A	N/A	5%	N/A
SF-2	9.80%	GIS	5%	0%	5%	<1.50 acres
SF-3	9.80%	GIS	5%	0%	5%	<0.83 acres
SF-5	9.80%	GIS	5%	0%	5%	<0.50 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 8-6 shows the characteristics of the initial inventory and Table 8-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 8-6: City of Edgewood Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	374.35	1,647.73	232.25	67.97
Average Lot Size (Gross)	3.34	2.52	0.52	3.78
Total Acreage (Net)	229.10	1,261.88	95.52	62.08
Average Lot Size (Net)	2.05	1.93	0.21	3.45
Percent Critical Areas	39%	23%	59%	9%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 8-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 8-7: City of Edgewood Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	145.25	385.86
Infrastructure Gaps	164.87	1,039.63
Plat Deductions	26.42	167.73
Capital Facilities	4.32	21.32
Market Factor	34.36	243.69
Total Percent Reduction in Inventory Land	49%	48%
Percent of Vacant or Underutilized Land Available for Capacity	51%	52%

Capacity Results

The housing and employment capacity totals in Table 8-8 and Table 8-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 8-8: City of Edgewood 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
BP	11	13	0	288	**312**
C	39	124	14	0	**177**
I	0	0	0	0	**0**
MR-1	16	20	23	66	**125**
MR-2	83	12	33	0	**128**
MUR	68	182	90	0	**340**
P	0	-2	0	0	**-2**
SF-2	95	605	94	39	**833**
SF-3	126	717	160	20	**1,023**
SF-5	16	76	33	3	**128**
TC	65	455	0	0	**520**
Total	**519**	**2,202**	**447**	**416**	**3,584**

Table 8-9: City of Edgewood 2020-2044 Employment Capacity (Jobs)				
Zone	Vacant	Underutilized	Pipeline	Total
BP	86	148	0	234
C	103	458	0	561
I	3	118	0	121
MR-1	6	8	0	14
MR-2	11	2	0	13
MUR	75	228	0	303
P	937	570	0	1,507
SF-2	70	519	0	589
SF-3	62	417	0	479
SF-5	3	20	0	23
TC	23	180	0	203
Total	1,379	2,668	0	4,047

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 8-10: City of Edgewood Permits Summary					
Zone	**Residential Permits**	**Non-Residential Permits**	**Dwelling Units**	**Acres Developed**	**% Zoned Acreage**
BP	0	0	0	0.00	0.0%
C	1	2	24	9.92	11.1%
I	0	0	0	0.00	0.0%
MR-1	2	0	90	54.55	61.5%
MR-2	3	0	205	23.81	45.3%
MUR	0	0	0	0.00	0.0%
P	0	0	0	0.00	0.0%
SF-2	12	0	77	53.70	2.7%
SF-3	21	0	118	64.47	2.9%
SF-5	5	0	80	20.45	32.3%
TC	2	1	345	19.34	25.3%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 8-11: City of Edgewood Density Evaluation				
Zone	**Observed Density (Overall)**	**Observed Plat Density (Single-Family)**	**Observed Multifamily Density**	**Assumed Density**
BP	0	0	0	8
C	20	20	0	12
I	0	0	0	0
MR-1	5	5	0	4
MR-2	14	10	19	8
MUR	0	0	0	12
P	0	0	0	0
SF-2	2	2	0	2
SF-3	2	2	0	3
SF-5	5	5	0	5
TC	23	0	23	24

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 8-12: City of Edgewood Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
BP	0%	30%	0%	70%	Mixed Use	0%
C	26%	40%	74%	60%	Mixed Use	0%
I	0%	0%	0%	100%	Industrial	0%
MR-1	100%	100%	0%	0%	Residential	5%
MR-2	100%	100%	0%	0%	Residential	5%
MUR	0%	60%	0%	40%	Mixed Use	0%
P	0%	0%	0%	100%	Commercial	0%
SF-2	100%	100%	0%	0%	Residential	5%
SF-3	100%	100%	0%	0%	Residential	5%
SF-5	100%	100%	0%	0%	Residential	5%
TC	90%	70%	10%	30%	Mixed Use	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 8-13: City of Edgewood Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
BP	0%	0%	0%	0%	0%	0%
C	22%	0%	17%	0%	0%	0%
I	0%	0%	0%	0%	0%	0%
MR-1	2%	10%	1%	5%	3%	0%
MR-2	19%	10%	8%	5%	7%	0%
MUR	0%	0%	0%	0%	0%	0%
P	0%	0%	0%	0%	0%	0%
SF-2	5%	10%	2%	5%	5%	0%
SF-3	3%	10%	1%	5%	2%	0%
SF-5	11%	10%	0%	5%	5%	0%
TC	0%	0%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 8-14: City of Edgewood Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
3,801	5,125	7,557	1,324	2,432	132	101	-

The observed housing production rates are sufficient to accommodate the 2044 target.

Capacity / Growth Targets

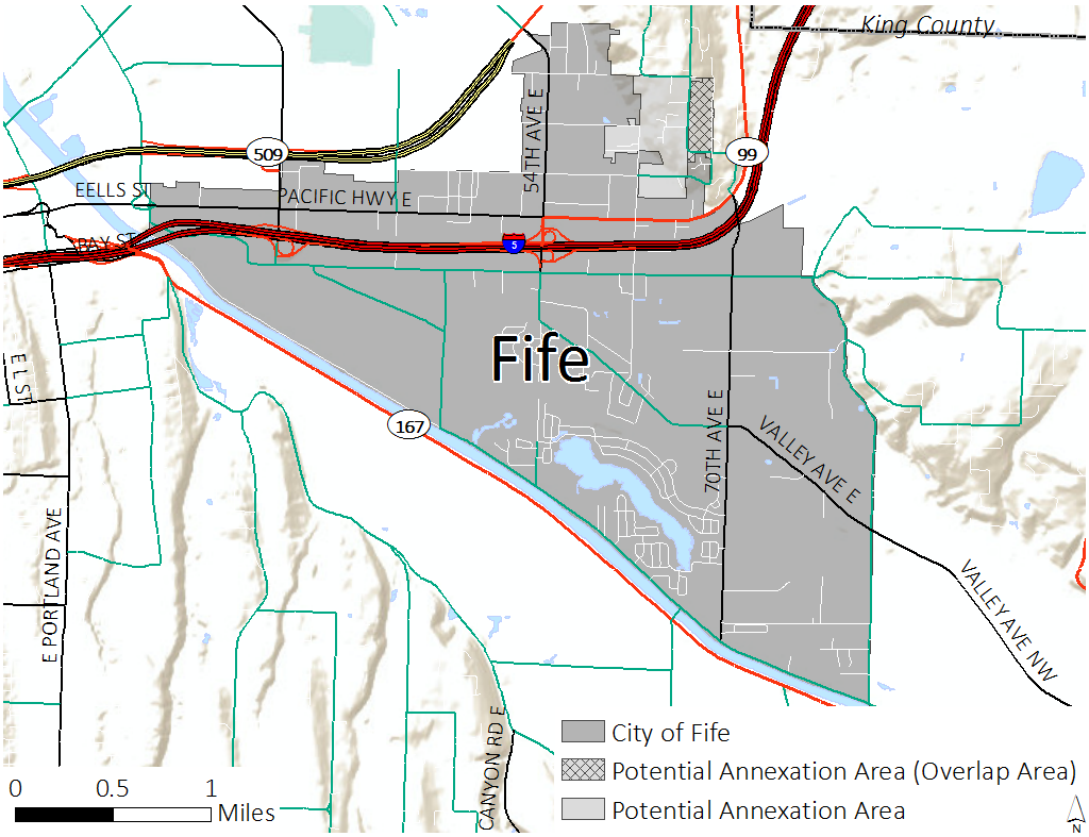
Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 8-15: City of Edgewood Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
3,584	2,432	1,152	4,047	1,962	2,085

The capacity is adequate to accommodate the 2044 targets.

9 CITY OF FIFE



The City of Fife's Comprehensive Plan and regulations implement densities using net acreage, deducting critical areas and buffers, roads, and public use space.

Table 9-1: City of Fife Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
BP	Business Park	Commercial	23.1
CC	Community Commercial	Mixed Use	194.1
CMU	Community Mixed Use	Mixed Use	193.6
HDR	High Density Residential	Residential	76.5
I	Industrial	Industrial	1,485.4
MDR	Medium Density Residential	Residential	154.4
NC	Neighborhood Commercial	Mixed Use	57.1
NR	Neighborhood Residential	Mixed Use	144.0
POS	Public Use/Open Space	N/A	153.6
RC	Regional Commercial	Mixed Use	379.3
SFR	Single-Family Residential	Residential	173.3
SLR	Small Lot Residential	Residential	11.3

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between **January 1, 2013 and December 31, 2019** and plat activity through December 31, 2020 that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 9-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 9-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 9-2: City of Fife 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
HDR	9.91	150	15.14
MDR	6.05	34	5.62
SFR	1.61	4	2.49
Total/Avg.	**17.56**	**188**	**23.25**

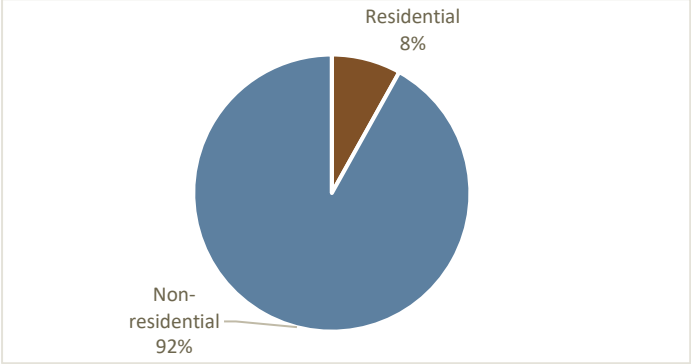
Table 9-3: City of Fife 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
CC	0.80	2,142	0.06
CMU	14.25	234,100	0.38
I	163.33	2,127,873	0.30
POS	15.67	3,480	0.01
RC	6.14	1,420	0.01
Total/Avg.	**200.18**	**2,369,015**	**0.27**

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 9-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 9-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 9-A: City of Fife Residential vs. Non-residential Development Split



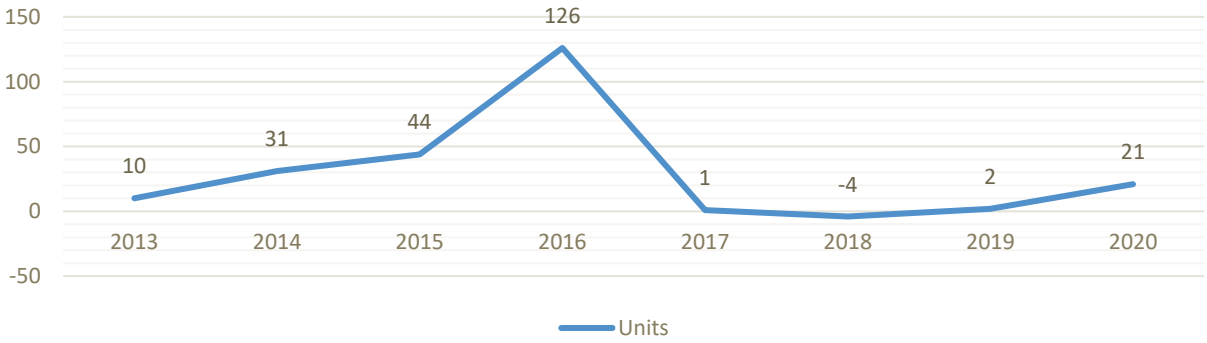
Zone	Use Type Split (Percent)[1]	
	Residential	Non-residential
CC	0%	100%
CMU	0%	100%
HDR	100%	0%
I	0%	100%
MDR	0%	100%
POS	0%	100%
RC	0%	100%
SFR	100%	0%
Average	**8%**	**92%**

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 9-B: City of Fife Housing Production Rates (OFM)



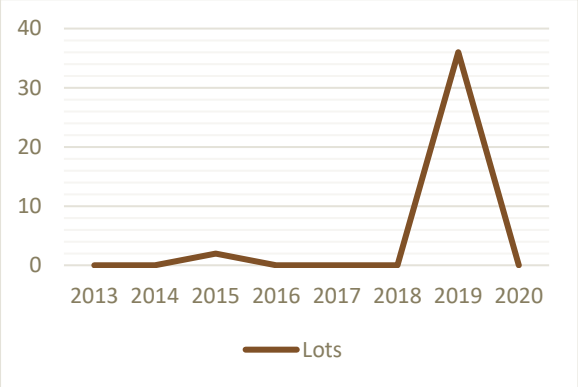
Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 9-2).

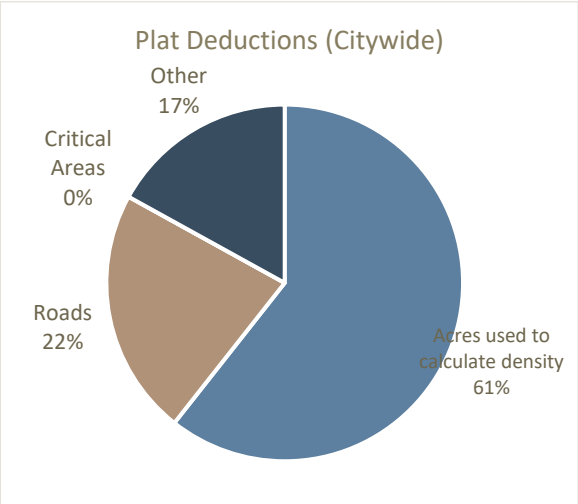
The permit data shown in Figure 9-C for Plat Deductions by Zone for the MDR zone represents an anomaly and should not be used to establish the assumptions. The percentage represents a dedication of Levee Road which also included space for the levee and is not a typical occurrence.

Figure 9-C: City of Fife Platting Trends



Plat Activity by Year

Year	Lots	Acres	Density
2013	-	-	-
2014	-	-	-
2015	2	0.68	2.93
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	36	3.96	9.09
2020	-	-	-
Total	**38**	**4.64**	**8.18**



Plat Deductions by Zone (Percent)

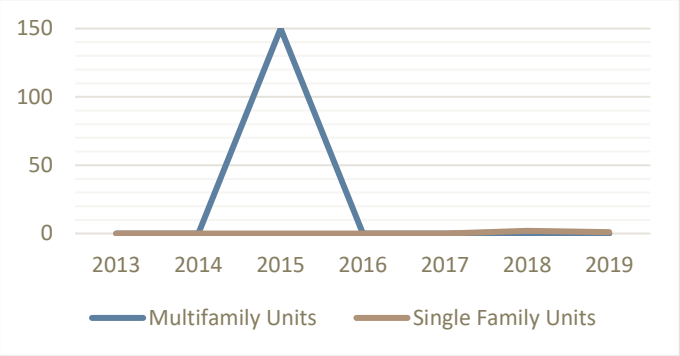
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
MDR	28.4%	0.0%	13.8%	7.6%
SFR	0.0%	0.0%	0.0%	0.0%
Average	**22.4%**	**0.0%**	**10.9%**	**6.0%**

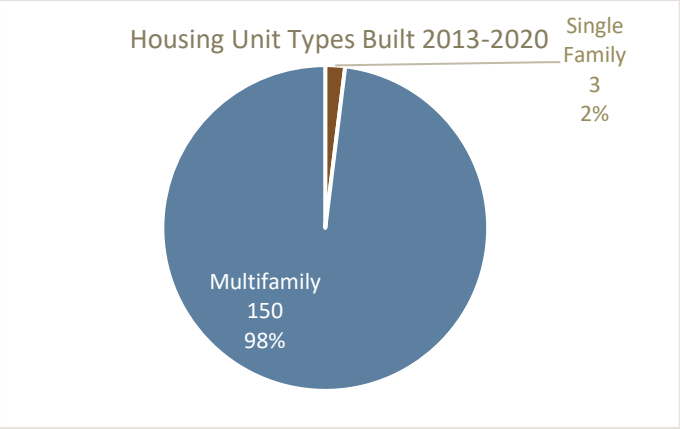
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 9-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 9-D: City of Fife Residential Building Permit Trends





Multifamily Permits by Year

Year	Units	Net Acres	Net Density
2013	-	-	-
2014	-	-	-
2015	150	9.91	15.14
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	-	-	-
Total	**150**	**9.91**	**15.14**

Single-Family Permits by Year (Optional)

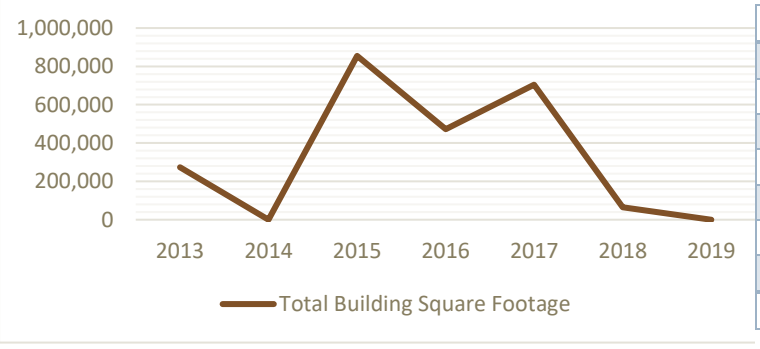
Year	Lots	Acres	Avg. Lot Size
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	-	-	-
2018	2	0.30	0.30
2019	1	0.09	0.09
Total	**3**	**0.38**	**0.19**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 9-E: City of Fife Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	19.73	272,914	0.32
2014	-	-	-
2015	68.45	854,774	0.29
2016	33.83	471,417	0.32
2017	47.48	703,802	0.34
2018	26.13	65,628	0.06
2019	4.56	480	0.00
Total	**200.18**	**2,369,015**	**0.27**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 9-4 and Table 9-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 9-4: City of Fife Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
BP	0%	0	100%	20	0%	0%	30%	30%	5%
CC	15%	10	85%	20	30%	30%	30%	30%	5%
CMU	15%	10	85%	20	30%	30%	30%	30%	5%
HDR	100%	14	0%	20	30%	30%	30%	30%	5%
I	0%	0	100%	9	0%	0%	30%	30%	5%
MDR	100%	10	0%	20	30%	30%	30%	30%	5%
NC	80%	8	20%	20	30%	30%	30%	30%	5%
NR	90%	10	10%	20	30%	30%	30%	30%	5%
RC	80%	10	20%	20	30%	30%	30%	30%	5%
SFR	100%	4	0%	20	30%	30%	30%	30%	5%
SLR	100%	7	0%	20	30%	30%	30%	30%	5%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 9-5: City of Fife Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
HDR	N/A	N/A	N/A	N/A	5%	N/A
MDR	N/A	N/A	N/A	N/A	5%	N/A
SFR	20%	16%	10%	5%	5%	<0.625 acres
SLR	20%	16%	10%	5%	5%	<0.350 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 9-6 shows the characteristics of the initial inventory and Table 9-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 9-6: City of Fife Summary of Vacant and Underutilized Land Characteristics				
Characteristics/Category	**Vacant**	**Underutilized**	**Vacant Single Unit**	**Pipeline**
Total Acreage (Gross	514.66	424.48	4.07	7.63
Average Lot Size (Gross)	4.32	1.24	0.11	1.27
Total Acreage (Net)	479.30	367.10	3.84	7.63
Average Lot Size (Net)	4.03	1.08	0.10	1.27
Percent Critical Areas	7%	14%	6%	0%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 9-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 9-7: City of Fife Summary of Deductions		
Deductions/Category	**Vacant**	**Underutilized**
Critical Areas	35.36	57.38
Infrastructure Gaps	469.77	316.85
Plat Deductions	19.00	35.78
Capital Facilities	24.45	18.65
Market Factor	146.65	111.90
Total Percent Reduction in Inventory Land	38%	43%
Percent of Vacant or Underutilized Land Available for Capacity	62%	57%

Capacity Results

The housing and employment capacity totals in Table 9-8 and Table 9-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 9-8: City of Fife 2020-2044 Housing Capacity (Dwelling Units)					
Zone	**Vacant**	**Underutilized**	**Vacant Single Unit**	**Pipeline**	**Total**
BP	0	0	0	0	**0**
CC	27	60	0	0	**87**
CMU	11	14	0	34	**59**
HDR	0	0	0	0	**0**
I	0	-16	0	0	**-16**
MDR	43	141	34	0	**218**
NC	18	104	0	0	**122**
NR	165	54	0	0	**219**
RC	91	238	0	0	**329**
SFR	26	13	4	0	**43**
SLR	1	3	0	0	**4**
Total	**382**	**611**	**38**	**34**	**1,065**

Table 9-9: City of Fife 2020-2044 Employment Capacity (Jobs)				
Zone	Vacant	Underutilized	Pipeline	Total
BP	0	0	0	0
CC	378	1,032	0	1,410
CMU	128	179	92	399
HDR	0	0	0	0
I	2,196	639	0	2,835
MDR	7	27	0	34
NC	11	108	0	119
NR	41	13	0	54
RC	49	100	24	173
SFR	11	7	0	18
SLR	0	1	0	1
Total	2,821	2,106	116	5,043

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 9-10: City of Fife Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
BP	0	0	0	0.00	0.0%
CC	0	1	0	0.80	0.4%
CMU	0	5	0	14.25	7.3%
HDR	2	0	150	9.91	11.9%
I	0	15	0	163.33	10.9%
MDR	1	0	34	6.05	3.3%
NC	0	0	0	0.00	0.0%
NR	0	0	0	0.00	0.0%
POS	0	1	0	15.67	9.7%
RC	0	2	0	6.14	1.6%
ROW	0	0	0	0.00	0.0%
SFR	2	0	4	1.61	0.9%
SLR	0	0	0	0.00	0.0%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 9-11: City of Fife Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
BP	0	0	0	0
CC	0	0	0	10
CMU	0	0	0	10
HDR	15	0	15	14
I	0	0	0	0
MDR	11	11	0	10
NC	0	0	0	8
NR	0	0	0	10
POS	0	0	0	0
RC	0	0	0	10
ROW	0	0	0	0
SFR	2	2	0	4
SLR	0	0	0	7

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 9-12: City of Fife Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
BP	0%	0%	0%	100%	Commercial	0%
CC	0%	15%	100%	85%	Mixed Use	0%
CMU	0%	15%	100%	85%	Mixed Use	0%
HDR	100%	100%	0%	0%	Residential	5%
I	0%	0%	100%	100%	Industrial	0%
MDR	100%	100%	0%	0%	Residential	5%
NC	0%	80%	0%	20%	Mixed Use	0%
NR	0%	90%	0%	10%	Mixed Use	0%
POS	0%	0%	100%	0%	Other-Not Developable	0%
RC	0%	80%	100%	20%	Mixed Use	0%
ROW	0%	0%	0%	0%	Other-Not Developable	0%
SFR	100%	100%	0%	0%	Residential	5%
SLR	0%	100%	0%	0%	Residential	5%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 9-13: City of Fife Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
BP	0%	0%	0%	0%	0%	0%
CC	0%	0%	0%	0%	0%	0%
CMU	0%	0%	0%	0%	0%	0%
HDR	0%	0%	0%	0%	0%	0%
I	0%	0%	0%	0%	0%	0%
MDR	28%	20%	14%	10%	8%	5%
NC	0%	0%	0%	0%	0%	0%
NR	0%	0%	0%	0%	0%	0%
POS	0%	0%	0%	0%	0%	0%
RC	0%	0%	0%	0%	0%	0%
ROW	0%	0%	0%	0%	0%	0%
SFR	0%	20%	0%	10%	0%	5%
SLR	0%	20%	0%	10%	0%	5%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 9-14: City of Fife Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
3,895	4,326	6,199	431	1,873	43	78	**35**

The observed housing production rate is lower than the rate needed to accommodate the 2044 housing target. The City of Fife recently became part of the High Capacity Transit Communities regional geography and is anticipated to grow more than previously planned, so over time should adjust.

Capacity / Growth Targets

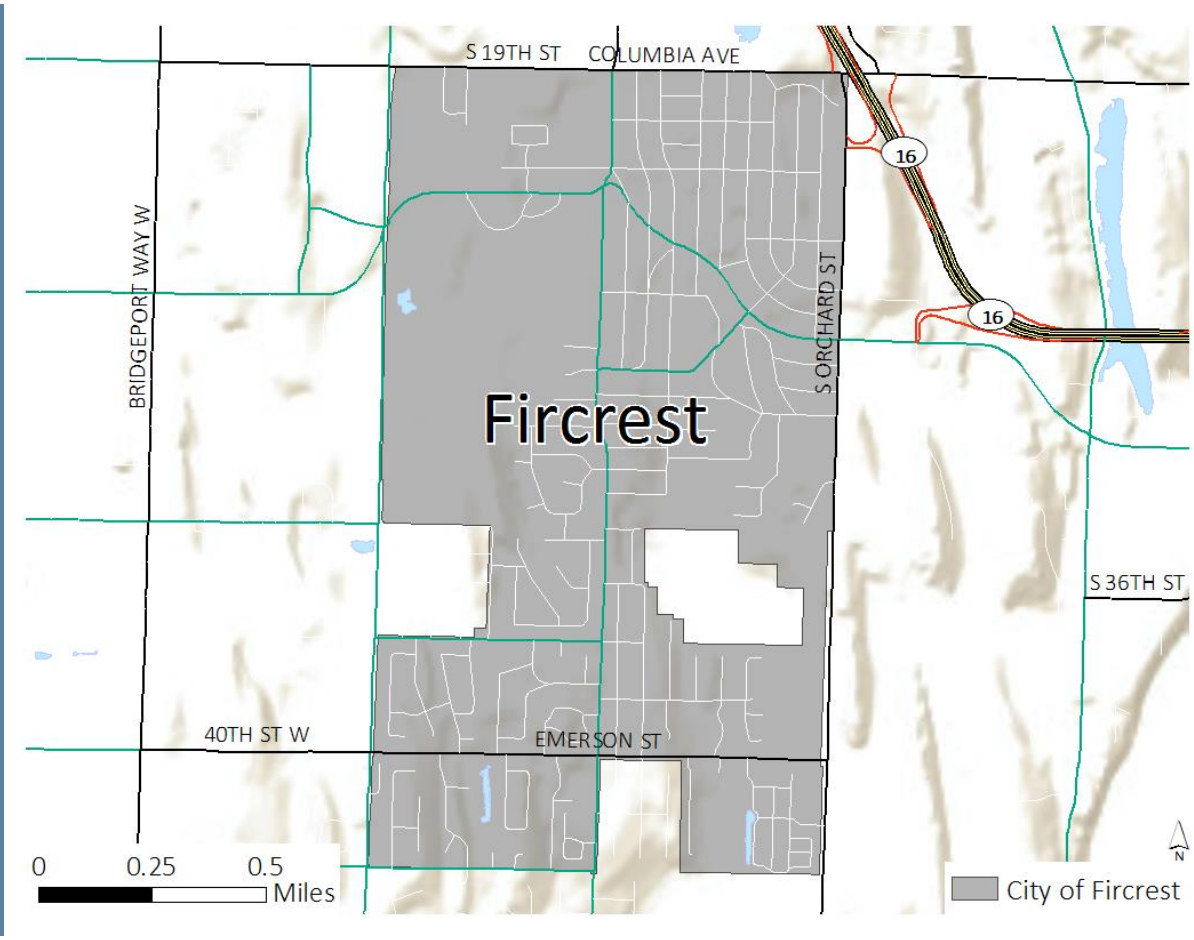
Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 9-15: City of Fife Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
1,065	1,873	-808	5,043	5,077	-34

The 2044 housing target was developed using an older version of this report that displayed incorrect totals. Since the capacity summaries have been corrected, there is a slight difference between the housing needs and capacity, but it is not significant enough to warrant reasonable measures.

10 CITY OF FIRCREST



The City of Fircrest's Comprehensive Plan and regulations implement densities using gross acreage.

Table 10-1: City of Fircrest Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
CMU	Commercial Mixed Use	Mixed Use	33.4
GC	Golf Course District	N/A	152.0
NC	Neighborhood Commercial District	Commercial	6.1
NO	Neighborhood Office District	Commercial	1.3
PROS	Park, Recreation and Open Space District	N/A	26.7
R10TCD	Residential-10 – Traditional Community Design District	Residential	30.2
R20	Residential-20 District	Residential	38.3
R4	Residential-4 District	Residential	261.8
R4C	Residential-4 – Conservation District	Residential	32.1
R6	Residential-6 District	Residential	186.1
R8	Residential-8 District	Residential	25.2

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between **January 1, 2013 and December 31, 2019** and plat activity through December 31, 2020 that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 10-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 10-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 10-2: City of Fircrest 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
CMU	0.30	2	6.67
GC	3.03	22	7.26
Total/Avg.	**3.33**	**24**	**7.21**

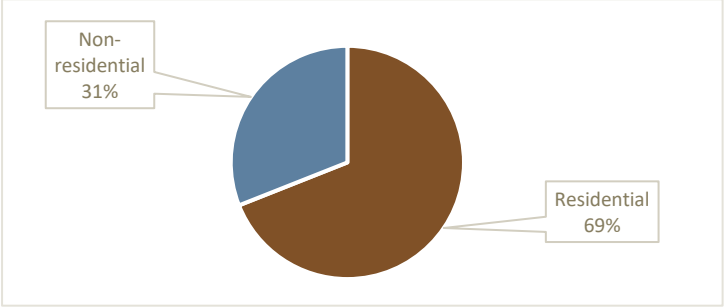
Table 10-3: City of Fircrest 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
CMU	1.49	8,334	0.13

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 10-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 10-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 10-A: City of Fircrest Residential vs. Non-residential Development Split



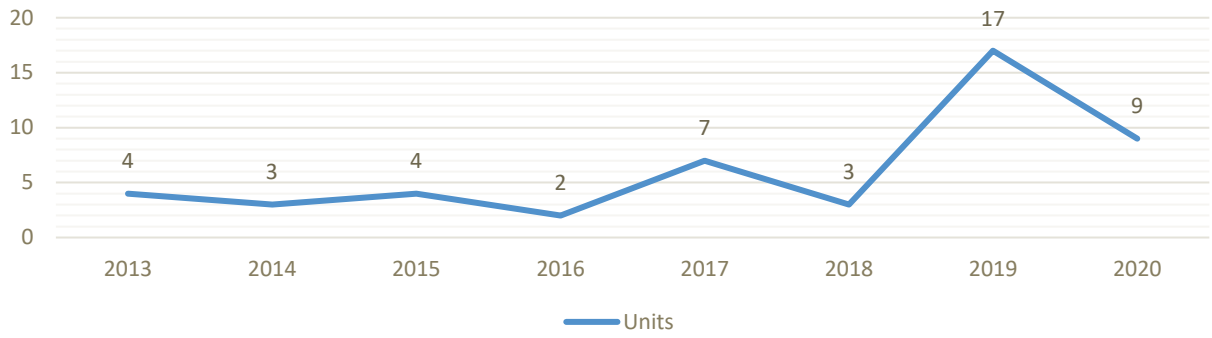
Zone	Use Type Split (Percent)1	
	Residential	Non-residential
CMU	17%	83%
GC	100%	0%
Average	**69%**	**31%**

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 10-B: City of Fircrest Housing Production Rates (OFM)

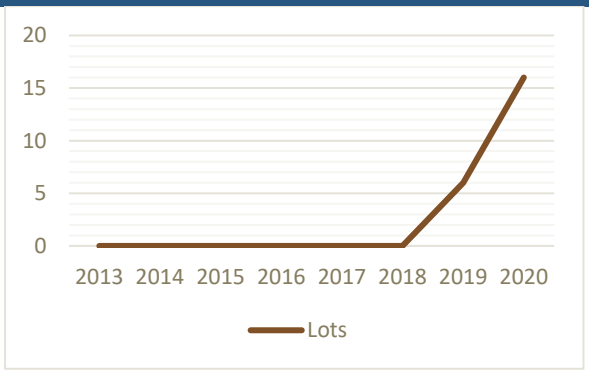


Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 10-2).

Figure 10-C: City of Fircrest Platting Trends





Plat Activity by Year

Year	Lots	Acres	Density
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	6	0.83	7.26
2020	16	2.20	7.26
Total	**22**	**3.03**	**7.26**

Plat Deductions by Zone (Percent)

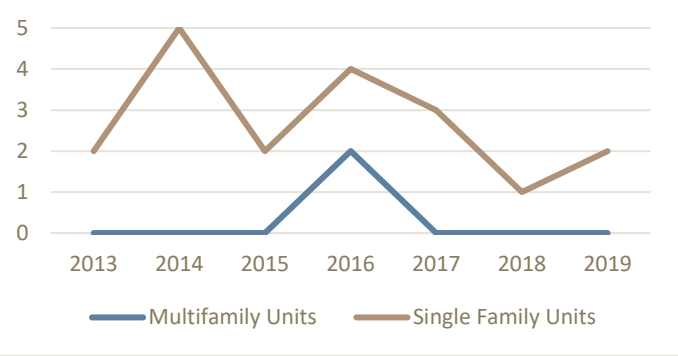
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
GC	0.0%	0.0%	0.0%	0.0%

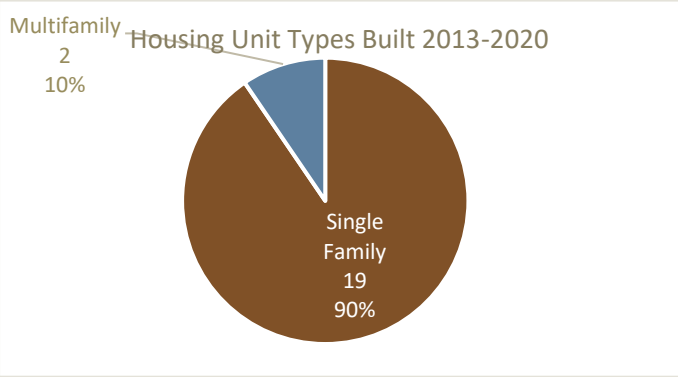
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 10-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 10-D: City of Fircrest Residential Building Permit Trends





Multifamily Permits by Year

Year	Units	Net Acres	Net Density
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	2	0.30	6.67
2017	-	-	-
2018	-	-	-
2019	-	-	-
Total	**2**	**0.30**	**6.67**

Single-Family Permits by Year (Optional)

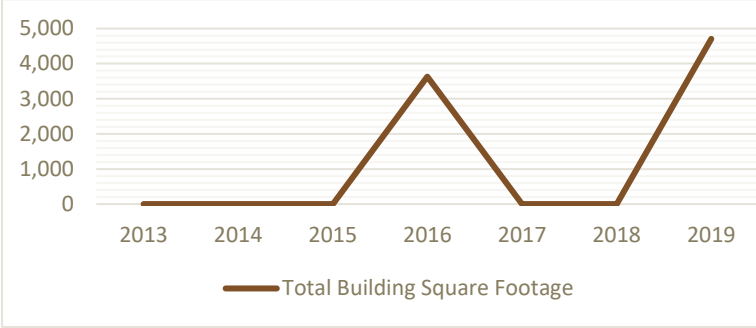
Year	Lots	Acres	Avg. Lot Size
2013	2	0.40	0.20
2014	5	0.72	0.14
2015	2	0.40	0.20
2016	4	0.55	0.14
2017	3	0.53	0.18
2018	1	0.12	0.12
2019	2	0.35	0.18
Total	**19**	**3.07**	**0.16**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 10-E: City of Fircrest Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	0.30	3,628	0.28
2017	-	-	-
2018	-	-	-
2019	1.19	4,706	0.09
Total	**1.49**	**8,334**	**0.13**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 10-4 and Table 10-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 10-4: City of Fircrest Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
CMU	0%	10	100%	20	0%	0%	5%	20%	0%
NC	0%	6	100%	20	0%	0%	5%	20%	0%
NO	0%	6	100%	20	0%	0%	5%	20%	0%
R10TCD	100%	10	0%	20	5%	5%	0%	0%	0%
R20	100%	20	0%	20	5%	5%	0%	0%	0%
R4	100%	4	0%	20	5%	5%	0%	0%	0%
R4C	100%	4	0%	20	5%	5%	0%	0%	0%
R6	100%	6	0%	20	5%	5%	0%	0%	0%
R8	100%	8	0%	20	5%	5%	0%	0%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 10-5: City of Fircrest Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
R10TCD	0%	0%	0%	0%	1%	N/A
R20	0%	0%	0%	0%	1%	N/A
R4	0%	0%	0%	0%	1%	<0.46 acres
R4C	0%	GIS	0%	0%	1%	<0.46 acres
R6	0%	0%	0%	0%	1%	<0.29 acres
R8	0%	0%	0%	0%	1%	N/A

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 10-6 shows the characteristics of the initial inventory and Table 10-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 10-6: City of Fircrest Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	32.18	22.80	2.75	5.27
Average Lot Size (Gross)	1.61	1.14	0.16	1.76
Total Acreage (Net)	19.55	20.25	1.76	5.27
Average Lot Size (Net)	0.98	1.01	0.10	1.76
Percent Critical Areas	39%	11%	36%	0%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 10-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 10-7: City of Fircrest Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	12.62	2.55
Plat Deductions	0.00	0.00
Capital Facilities	0.00	0.00
Market Factor	1.03	3.19
Total Percent Reduction in Inventory Land	40%	15%
Percent of Vacant or Underutilized Land Available for Capacity	60%	85%

HOUSING AND EMPLOYMENT CAPACITY

Capacity Results

The housing and employment capacity totals in Table 10-8 and Table 10-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 10-8: City of Fircrest 2020-2044 Housing Capacity (Dwelling Units)					
Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
CMU	0	0	0	2	**2**
GC	0	0	0	28	**28**
NC	0	0	0	0	**0**
NO	0	0	0	0	**0**
PROS	0	0	0	0	**0**
R10TCD	0	0	0	0	**0**
R20	0	0	0	0	**0**
R4	5	9	8	1	**23**
R4C	61	0	0	0	**61**
R6	3	16	9	0	**28**
R8	0	0	0	0	**0**
Total	**69**	**25**	**17**	**31**	**142**

Table 10-9: City of Fircrest 2020-2044 Employment Capacity (Jobs)				
Zone	Vacant	Underutilized	Pipeline	Total
CMU	40	154	0	**194**
GC	0	0	0	**0**
NC	0	0	0	**0**
NO	0	0	0	**0**
PROS	0	0	0	**0**
R10TCD	0	0	0	**0**
R20	0	0	0	**0**
R4	0	1	0	**1**
R4C	3	0	0	**3**
R6	0	1	0	**1**
R8	0	0	0	**0**
Total	**43**	**156**	**0**	**199**

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning

may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 10-10: City of Fircrest Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
CMU	1	2	2	1.79	5.2%
GC	3	0	22	3.03	1.8%
NC	0	0	0	0.00	0.0%
NO	0	0	0	0.00	0.0%
PROS	0	0	0	0.00	0.0%
R10TCD	0	0	0	0.00	0.0%
R20	0	0	0	0.00	0.0%
R4	0	0	0	0.00	0.0%
R4C	0	0	0	0.00	0.0%
R6	0	0	0	0.00	0.0%
R8	0	0	0	0.00	0.0%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 10-11: City of Fircrest Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
CMU	7	0	7	10
GC	7	7	0	0
NC	0	0	0	6
NO	0	0	0	6
PROS	0	0	0	0
R10TCD	0	0	0	10
R20	0	0	0	20
R4	0	0	0	4
R4C	0	0	0	4
R6	0	0	0	6
R8	0	0	0	8

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 10-12: City of Fircrest Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
CMU	17%	0%	83%	100%	Mixed Use	0%
GC	100%	0%	0%	0%	Other-Not Developable	0%
NC	0%	0%	0%	100%	Commercial	0%
NO	0%	0%	0%	100%	Commercial	0%
PROS	0%	0%	0%	0%	Other-Not Developable	0%
R10TCD	0%	100%	0%	0%	Residential	1%
R20	0%	100%	0%	0%	Residential	1%
R4	0%	100%	0%	0%	Residential	1%
R4C	0%	100%	0%	0%	Residential	1%
R6	0%	100%	0%	0%	Residential	1%
R8	0%	100%	0%	0%	Residential	1%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 10-13: City of Fircrest Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
CMU	0%	0%	0%	0%	0%	0%
GC	0%	0%	0%	0%	0%	0%
NC	0%	0%	0%	0%	0%	0%
NO	0%	0%	0%	0%	0%	0%
PROS	0%	0%	0%	0%	0%	0%
R10TCD	0%	0%	0%	0%	0%	0%
R20	0%	0%	0%	0%	0%	0%
R4	0%	0%	0%	0%	0%	0%
R4C	0%	0%	0%	0%	0%	0%
R6	0%	0%	0%	0%	0%	0%
R8	0%	0%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 10-14: Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
2,847	2,926	3,714	79	788	8	33	**25**

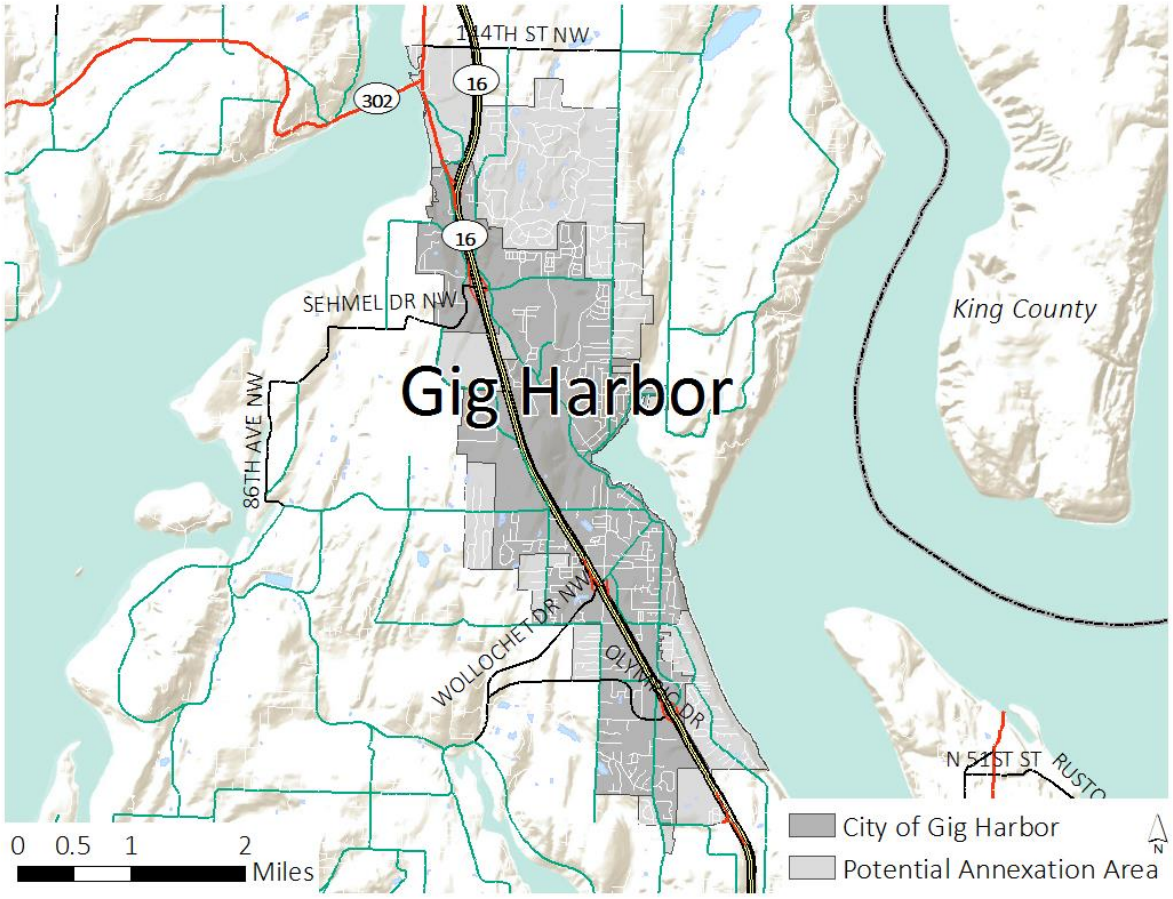
Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 10-15: Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
114	788	-674	199	113	86

11 CITY OF GIG HARBOR



The City of Gig Harbor's Comprehensive Plan and regulations implement densities using net acreage, subtracting out streets, roads, access easements, wetlands, ravine sidewalls, bluffs, and tideland.

Table 11-1: City of Gig Harbor Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
B-1	Neighborhood Commercial District	Commercial	0.6
B-2	General Business District	Commercial	223.6
C-1	Commercial District	Commercial	52.3
DB	Downtown Business District	Commercial	30.2
ED	Employment District	Industrial	241.0
PCD-BP	Planned Community Development Business Park District	Planned	152.0
PCD-C	Planned Community Development Commercial	Planned	75.1
PCD-NB	Planned Community Development Neighborhood Business District	Planned	
PCD-RLD	Planned Community Development Low Density Residential	Planned	
PCD-RMD	Planned Community Development Medium Density Residential	Planned	39.3
PI	Public-Institutional District	Commercial	142.9
PRD	Planned Residential Development	Planned	205.3

Zone Classification		Zone Type[1]	Total Acres[2]
R-1	Single-Family Residential	Residential	1,173.0
R-2	Medium-Density Residential	Residential	372.8
R-3	Multiple-Family Residential	Residential	53.7
RB-1	Residential and Business District	Mixed Use	39.1
RB-2	Residential and Business District	Mixed Use	201.3
WC	Waterfront Commercial	Mixed Use	22.5
WM	Waterfront Millville	Mixed Use	12.2
WR	Waterfront Residential	Residential	16.4

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between **January 1, 2013 and December 31, 2020** that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 11-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 11-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 11-2: City of Gig Harbor 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
B-2	2.51	66	26.29
PCD-RMD	14.58	63	4.32
PRD	235.04	1,007	4.28
R-1	43.31	141	3.26
R-2	51.13	174	3.40
R-3	2.15	10	4.65
RB-1	3.25	11	3.38
RB-2	23.39	220	9.41
Total/Avg.	**375.36**	**1,692**	**4.51**

Table 11-3: City of Gig Harbor 2013-2020 Non-residential Trends by Zone

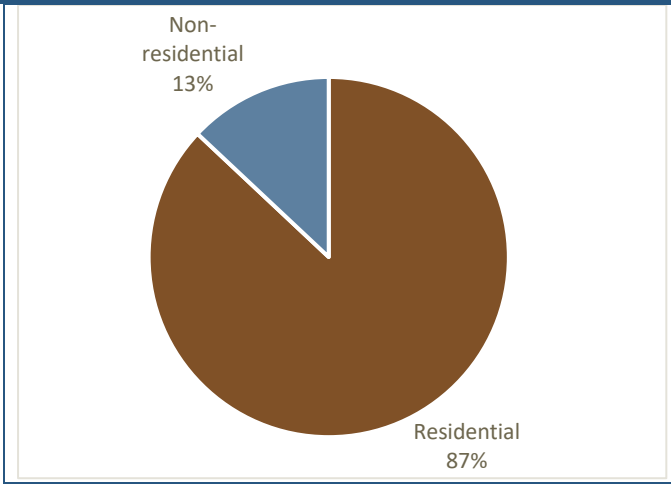
Zone	Acres	Sq. Ft.	FAR
B-2	9.38	95,187	0.23
C-1	14.00	175,497	0.29
PCD-BP	11.00	10,679	0.02
PRD	17.97	409,491	0.52
R-1	0.09	1,155	0.29
RB-1	1.00	8,952	0.21
RB-2	1.14	20,532	0.41
WM	0.66	5,600	0.19
Total/Avg.	**55.24**	**727,093**	**0.30**

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 11-A), the employment densities used in the capacity

assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 11-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 11-A: City of Gig Harbor Residential vs. Non-residential Development Split



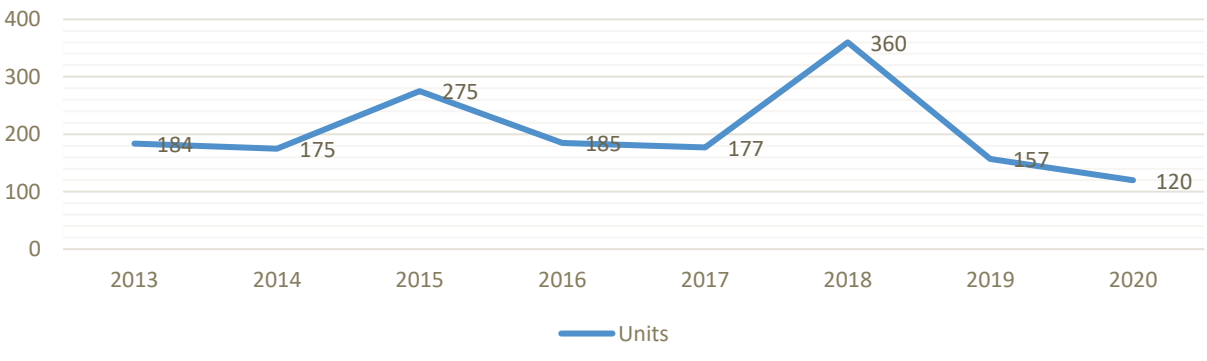
Zone	Use Type Split (Percent)[1] Residential	Non-residential
B-2	21%	79%
C-1	0%	100%
PCD-BP	0%	100%
PCD-RMD	100%	0%
PRD	93%	7%
R-1	100%	0%
R-2	100%	0%
R-3	100%	0%
RB-1	76%	24%
RB-2	95%	5%
WM	0%	100%
Average	**91%**	**9%**

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 11-B: City of Gig Harbor Housing Production Rates (OFM)

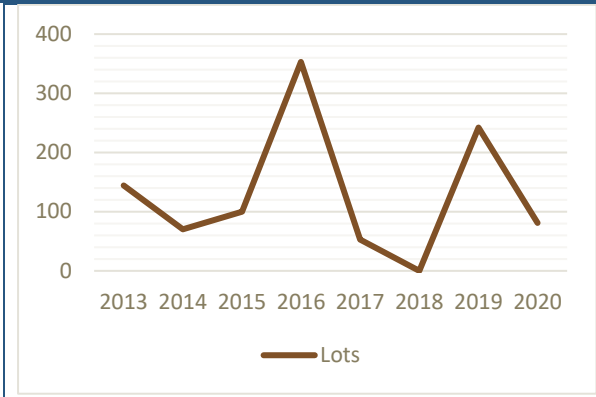


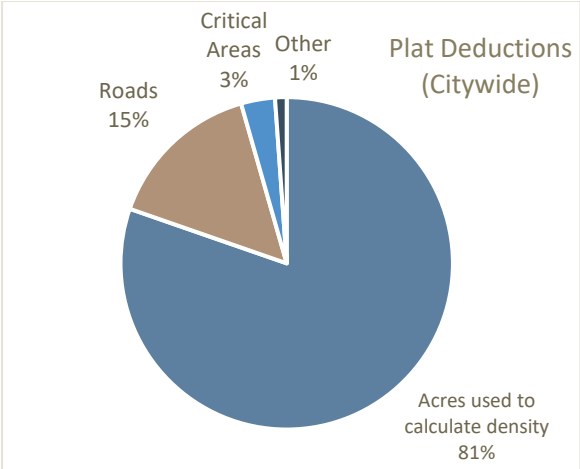
Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 11-2).

Figure 11-C: City of Gig Harbor Platting Trends





Plat Activity by Year

Year	Lots	Net Acres	Net Density
2013	144	28.33	5.08
2014	70	15.03	4.66
2015	100	33.07	3.02
2016	353	72.32	4.88
2017	53	13.37	3.96
2018	-	-	-
2019	242	27.40	8.83
2020	81	23.99	3.38
Total	**1,043**	**213.52**	**4.88**

Plat Deductions by Zone (Percent)

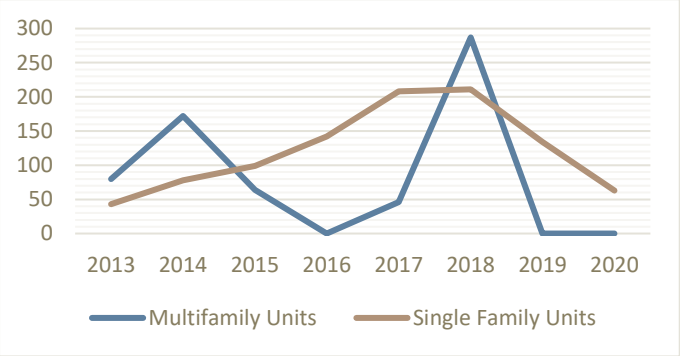
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
B-2	0.0%	0.0%	0.0%	0.0%
PCD	0.0%	0.0%	0.0%	0.0%
PCD-RMD	0.0%	0.0%	0.0%	0.0%
PRD	16.9%	1.8%	0.0%	0.0%
R-1	10.2%	1.1%	5.8%	0.6%
R-2	0.0%	0.0%	0.7%	0.0%
R-3	0.0%	0.0%	0.0%	0.0%
RB-1	0.0%	0.0%	0.0%	0.0%
RB-2	8.0%	24.1%	0.0%	0.0%
WM	0.0%	0.0%	0.0%	0.0%
Average	**12.5%**	**2.7%**	**0.8%**	**0.1%**

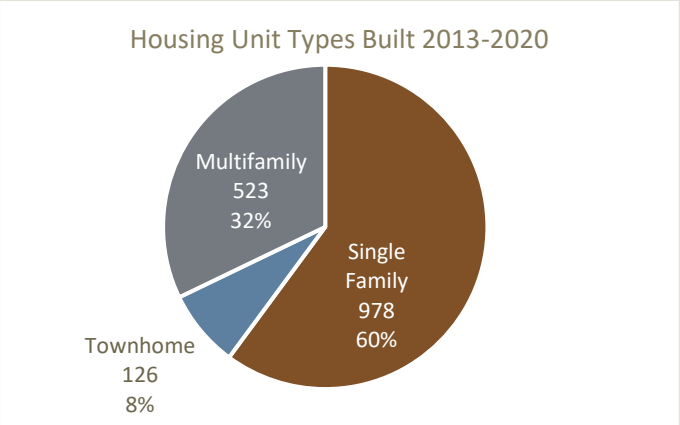
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 11-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 11-D: City of Gig Harbor Residential Building Permit Trends





Multifamily Permits by Year

Year	Units	Net Acres	Net Density
2013	80	15.50	5.16
2014	172	11.52	14.93
2015	64	1.92	33.33
2016	0	0.00	-
2017	46	9.64	9.64
2018	287	17.97	15.97
2019	0	0.00	-
2020	0	0.00	-
Total	**649**	**51.68**	**12.56**

Single-Family Permits by Year (Optional)

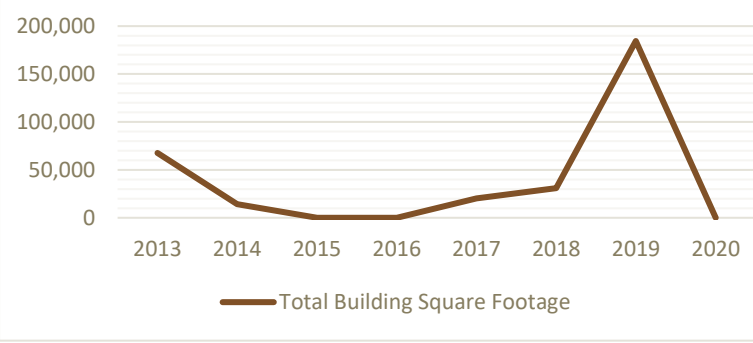
Year	Lots	Acres	Avg. Lot Size
2013	43	4.82	0.11
2014	78	9.13	0.12
2015	99	13.88	0.14
2016	142	19.79	0.14
2017	208	29.36	0.14
2018	211	29.11	0.14
2019	134	20.80	0.16
2020	63	11.62	0.18
Total	**978**	**138.51**	**0.14**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 11-E: City of Gig Harbor Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	6.95	67,585	0.22
2014	11.37	14,240	0.03
2015	-	-	-
2016	-	-	-
2017	1.76	20,319	0.27
2018	20.16	440,500	0.50
2019	15.00	184,449	0.28
2020	-	-	-
Total	55.24	727,093	0.30

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 11-4 and Table 11-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

The PCD and PRD zones have planned development assumptions represented as pipeline development in the capacity calculations, so they are not shown here.

Table 11-4: City of Gig Harbor Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
B-1	0%	0	100%	20	0%	0%	10%	50%	0%
B-2	20%	6	80%	20	10%	50%	10%	50%	0%
C-1	0%	0	100%	20	0%	0%	10%	50%	0%
DB	20%	8	80%	20	10%	50%	10%	50%	0%
ED	0%	0	100%	9	0%	0%	10%	50%	0%
PCD-BP	0%	0	100%	20	0%	0%	0%	0%	0%
PCD-C	0%	0	100%	20	0%	0%	0%	0%	0%
PCD-RMD	0%	0	0%	0	0%	0%	0%	0%	0%
PI	0%	0	100%	20	0%	0%	10%	50%	0%
PRD	0%	0	0%	0	0%	0%	0%	0%	0%
R-1	100%	4	0%	20	10%	50%	0%	0%	0%
R-2	100%	6	0%	20	10%	50%	0%	0%	0%
R-3	100%	8	0%	20	10%	50%	0%	0%	0%
RB-1	30%	4	70%	20	10%	50%	10%	50%	0%
RB-2	30%	8	70%	20	10%	50%	10%	50%	0%
WC	20%	4	80%	20	10%	0%	0%	50%	0%
WM	20%	4	80%	20	10%	0%	0%	50%	0%
WR	100%	4	0%	0	10%	50%	0%	0%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 11-5: City of Gig Harbor Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
R-1	15%	GIS	0%	0%	2%	<0.625 acres
R-2	15%	GIS	0%	0%	2%	<0.420 acres
R-3	15%	GIS	0%	0%	2%	N/A

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 11-6 shows the characteristics of the initial inventory and Table 11-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 11-6: City of Gig Harbor Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	411.92	351.37	50.85	174.18
Average Lot Size (Gross)	2.56	1.36	0.13	7.26
Total Acreage (Net)	397.81	343.88	48.17	171.26
Average Lot Size (Net)	2.47	1.33	0.13	7.14
Percent Critical Areas	3%	2%	5%	2%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 11-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 11-7: City of Gig Harbor Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	14.11	7.49
Plat Deductions	33.93	32.94
Capital Facilities	0.00	0.00
Market Factor	35.46	156.15
Total Percent Reduction in Inventory Land	19%	56%
Percent of Vacant or Underutilized Land Available for Capacity	81%	44%

Capacity Results

The housing and employment capacity totals in Table 11-8 and Table 11-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 11-8: City of Gig Harbor 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
B-1	0	0	0	0	0
B-2	25	18	0	0	43
C-1	0	0	0	0	0
DB	1	3	0	0	4
ED	0	-3	0	0	-3
PCD-BP	0	0	0	20	20
PCD-C	0	0	0	0	0
PCD-RMD	0	0	0	0	0
PI	0	0	0	0	0
PRD	0	0	94	6	100
R-1	373	246	93	89	801
R-2	456	92	16	143	707
R-3	0	3	0	0	3
RB-1	3	3	0	8	14
RB-2	76	34	174	0	284
WC	1	0	0	0	1
WM	0	0	0	0	0
WR	0	0	2	0	2
Total	935	396	379	266	1,976

Table 11-9: City of Gig Harbor 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
B-1	12	0	0	12
B-2	333	187	0	520
C-1	171	35	7	213
DB	13	75	0	88
ED	727	130	206	1,063
PCD-BP	242	0	371	613
PCD-C	0	0	0	0
PCD-RMD	0	0	0	0
PI	0	0	0	0
PRD	0	0	0	0
R-1	42	61	0	103
R-2	35	14	0	49
R-3	0	0	0	0
RB-1	33	59	0	92
RB-2	447	188	10	645
WC	19	-1	0	18
WM	0	0	0	0
WR	0	0	0	0
Total	2,074	748	594	3,416

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 11-10: Gig Harbor Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
B-1	0	0	0	0.00	0.0%
B-2	2	12	66	11.89	5.1%
C-1	0	1	0	14.00	25.6%
DB	0	0	0	0.00	0.0%
ED	0	0	0	0.00	0.0%
PCD-BP	0	1	0	11.00	7.3%
PCD-C	0	0	0	0.00	0.0%
PCD-RMD	1	0	63	14.58	37.1%
PI	0	0	0	0.00	0.0%
PRD	12	0	1,007	235.04	109.2%
R-1	7	1	141	43.40	3.3%
R-2	4	0	174	63.13	15.7%
R-3	1	0	10	2.15	3.9%
RB-1	1	1	11	4.25	10.8%
RB-2	2	1	220	24.53	11.4%
WC	0	0	0	0.00	0.0%
WM	0	2	0	0.66	4.9%
WR	0	0	0	0.00	0.0%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 11-11: Gig Harbor Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
B-1	0	0	0	0
B-2	31	10	33	6
C-1	0	0	0	0
DB	0	0	0	8
ED	0	0	0	0
PCD-BP	0	0	0	0
PCD-C	0	0	0	0
PCD-RMD	6	6	0	0
PI	0	0	0	0
PRD	7	4	15	0
R-1	4	4	0	4
R-2	4	3	5	6
R-3	5	5	0	8
RB-1	4	4	0	4
RB-2	12	13	10	8
WC	0	0	0	4
WM	0	0	0	4
WR	0	0	0	4

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 11-12: Gig Harbor Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
B-1	0%	0%	0%	100%	Commercial	0%
B-2	21%	20%	79%	80%	Mixed Use	0%
C-1	0%	0%	100%	100%	Commercial	0%
DB	0%	20%	0%	80%	Mixed Use	0%
ED	0%	0%	0%	100%	Industrial	0%
PCD-BP	0%	0%	100%	100%	Commercial	0%
PCD-C	0%	0%	0%	100%	Commercial	0%
PCD-RMD	100%	0%	0%	0%	Residential	0%
PI	0%	0%	0%	100%	Commercial	0%
PRD	100%	0%	8%	0%	Residential	0%
R-1	100%	100%	0%	0%	Residential	2%
R-2	100%	100%	0%	0%	Residential	2%
R-3	100%	100%	0%	0%	Residential	2%
RB-1	76%	30%	24%	70%	Mixed Use	0%
RB-2	95%	30%	5%	70%	Mixed Use	0%
WC	0%	20%	0%	80%	Mixed Use	0%
WM	0%	20%	100%	80%	Mixed Use	0%
WR	0%	100%	0%	0%	Residential	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 11-13: Gig Harbor Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
B-1	0%	0%	0%	0%	0%	0%
B-2	0%	0%	0%	0%	0%	0%
C-1	0%	0%	0%	0%	0%	0%
DB	0%	0%	0%	0%	0%	0%
ED	0%	0%	0%	0%	0%	0%
PCD-BP	0%	0%	0%	0%	0%	0%
PCD-C	0%	0%	0%	0%	0%	0%
PCD-RMD	0%	0%	0%	0%	0%	0%
PI	0%	0%	0%	0%	0%	0%
PRD	17%	0%	0%	0%	0%	0%
R-1	10%	15%	6%	0%	1%	0%
R-2	0%	15%	1%	0%	0%	0%
R-3	0%	15%	0%	0%	0%	0%
RB-1	0%	0%	0%	0%	0%	0%
RB-2	8%	0%	0%	0%	0%	0%
WC	0%	0%	0%	0%	0%	0%
WM	0%	0%	0%	0%	0%	0%
WR	0%	0%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 11-14: Gig Harbor Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
3,560	5,642	6,642	2,082	1,000	208	42	-

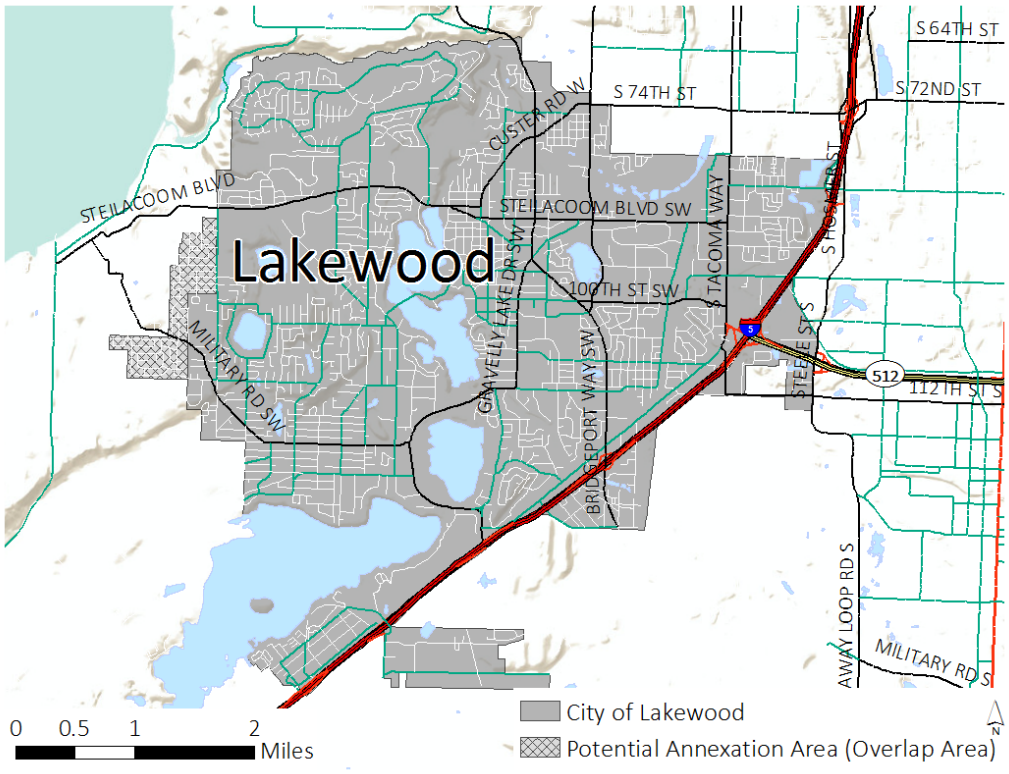
Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 11-15: Gig Harbor Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
1,976	1,000	976	3,416	2,747	669

12 CITY OF LAKEWOOD



The City of Lakewood's Comprehensive Plan and regulations implement densities using gross acreage.

Table 12-1: City of Lakewood Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
AC1	Air Corridor 1	Commercial	243.8
AC2	Air Corridor 2	N/A	196.6
ARC	Arterial Residential/Commercial	Residential	17.8
C1	Commercial One	Commercial	58.7
C2	Commercial Two	Commercial	236.4
C3	Commercial Three	Commercial	25.0
CBD	Central Business District	Mixed Use	267.6
CZ	Clear Zone	N/A	28.6
I1	Industrial One	Industrial	238.6
I2	Industrial Two	Industrial	37.6
IBP	Industrial Business Park	Industrial	335.2
MF1	Multi Family One	Residential	239.2
MF2	Multi Family Two	Residential	218.2
MF3	Multi Family Three	Residential	146.0
MR1	Mixed Residential One	Residential	108.5
MR2	Mixed Residential Two	Residential	151.6

Zone Classification		Zone Type[1]	Total Acres[2]
NC1	Neighborhood Commercial One	Mixed Use	13.9
NC2	Neighborhood Commercial Two	Mixed Use	216.1
OSR1	Open Space & Recreation One	N/A	923.4
OSR2	Open Space & Recreation Two	N/A	474.2
PI	Public/Institutional	Public Use	729.6
R1	Residential One	Residential	366.5
R2	Residential Two	Residential	514.6
R3	Residential Three	Residential	2,326.3
R4	Residential Four	Residential	878.1
TOC	Transit Oriented Commercial	Mixed Use	117.1

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between **January 1, 2013 and December 31, 2020** that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 12-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 12-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 12-2: City of Lakewood 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
ARC	0.78	15	19.23
CBD	1.45	15	10.34
MF1	3.13	30	9.60
MR1	0.33	2	6.02
MR2	10.06	34	3.38
NC2	3.19	34	10.65
OSR2	41.29	6	0.15
R1	5.83	8	1.37
R2	3.66	6	1.64
R3	24.17	92	3.81
R4	6.13	32	5.22
Total/Avg.	**100.01**	**274**	**2.74**

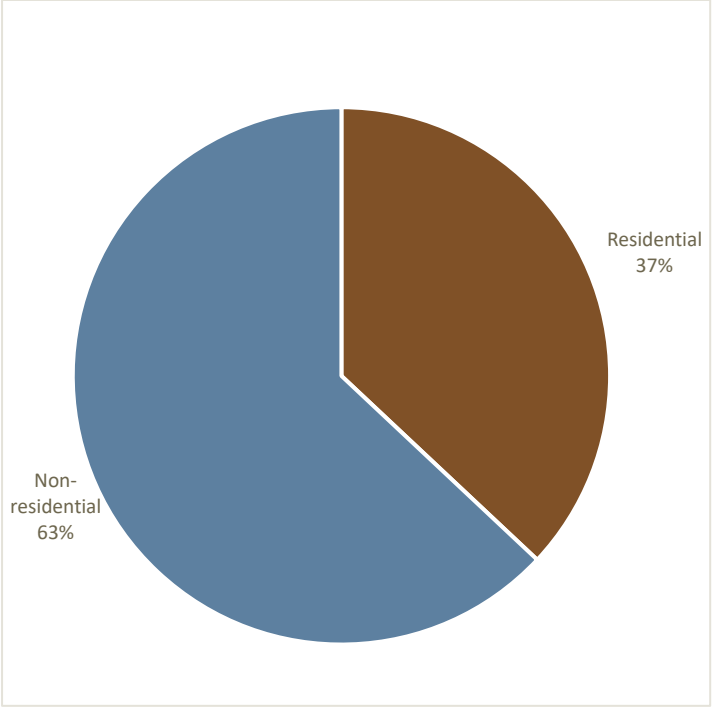
Table 12-3: City of Lakewood 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
AC1	18.80	265,808	0.32
C1	3.16	26,464	0.19
C2	19.93	305,722	0.35
CBD	47.35	31,095	0.02
IBP	54.43	1,114,882	0.47
NC1	0.43	858	0.05
NC2	6.65	25,829	0.09
PI	9.93	162,000	0.37
TOC	8.90	138,834	0.36
Total/Avg.	**169.58**	**2,071,492**	**0.28**

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 12-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 12-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 12-A: City of Lakewood Residential vs. Non-residential Development Split



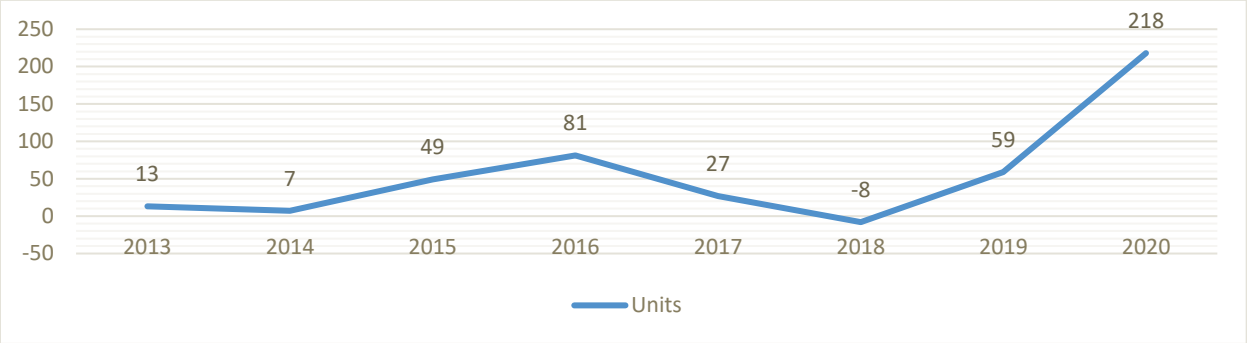
Zone	Use Type Split (Percent)[1] Residential	Non-residential
AC1	0%	100%
ARC	100%	0%
C1	0%	100%
C2	0%	100%
CBD	3%	97%
IBP	0%	100%
MF1	100%	0%
MR1	100%	0%
MR2	100%	0%
NC1	0%	100%
NC2	32%	68%
OSR2	100%	0%
PI	0%	100%
R1	100%	0%
R2	100%	0%
R3	100%	0%
R4	100%	0%
TOC	0%	100%
Average	**37%**	**63%**

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 12-B: City of Lakewood Housing Production Rates (OFM)

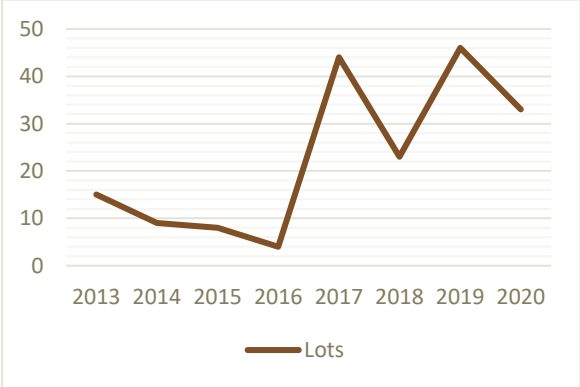


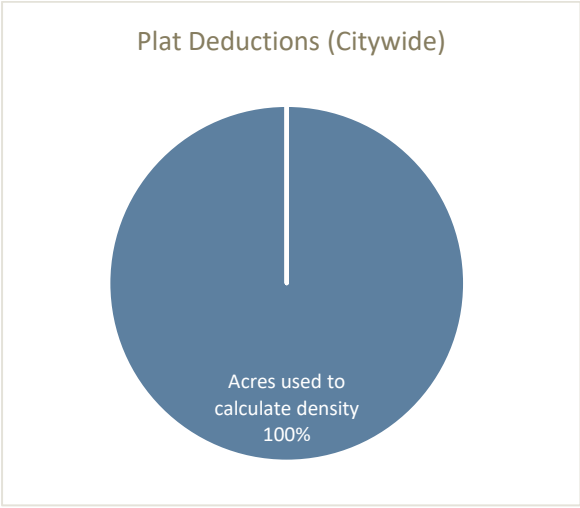
Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 12-2).

Figure 12-C: City of Lakewood Platting Trends





Plat Activity by Year

Year	Lots	Acres	Density
2013	15	43.01	0.35
2014	9	2.83	1.12
2015	8	2.57	3.11
2016	4	0.94	4.26
2017	44	10.43	4.22
2018	23	9.28	2.48
2019	46	17.51	2.63
2020	33	6.52	5.06
Total	**182**	**93.08**	**1.96**

Plat Deductions by Zone (Percent)

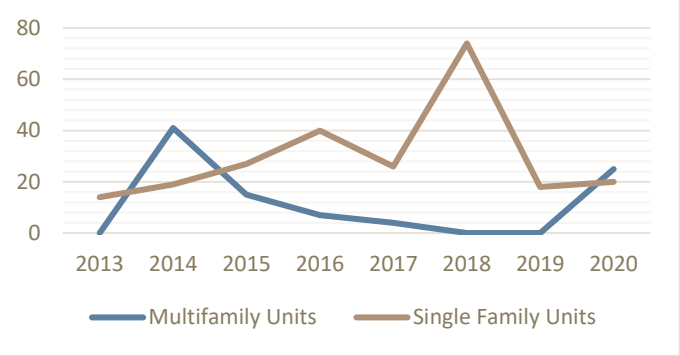
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
MF1	0.0%	0.0%	0.0%	0.0%
MR1	0.0%	0.0%	0.0%	0.0%
MR2	0.0%	0.0%	0.0%	0.0%
NC2	0.0%	0.0%	0.0%	0.0%
OSR2	0.0%	0.0%	0.0%	0.0%
R1	0.0%	0.0%	0.0%	0.0%
R2	0.0%	0.0%	0.0%	0.0%
R3	0.0%	0.0%	0.0%	0.0%
R4	0.0%	0.0%	0.0%	0.0%
Average	**0.0%**	**0.0%**	**0.0%**	**0.0%**

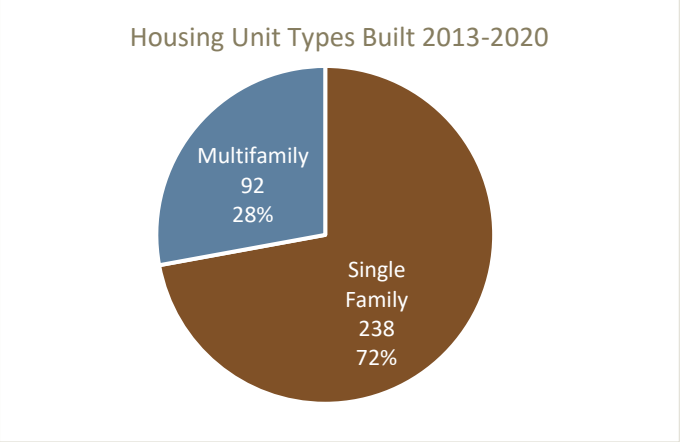
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 12-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 12-D: City of Lakewood Residential Building Permit Trends





Multifamily Permits by Year

Year	Units	Net Acres	Net Density
2013	-	-	-
2014	41	3.13	13.1
2015	15	0.78	19.23
2016	7	0.52	13.46
2017	4	0.21	19.05
2018	-	-	-
2019	-	-	-
2020	25	2.29	10.92
Total	**92**	**6.93**	**13.28**

Single-Family Permits by Year (Optional)

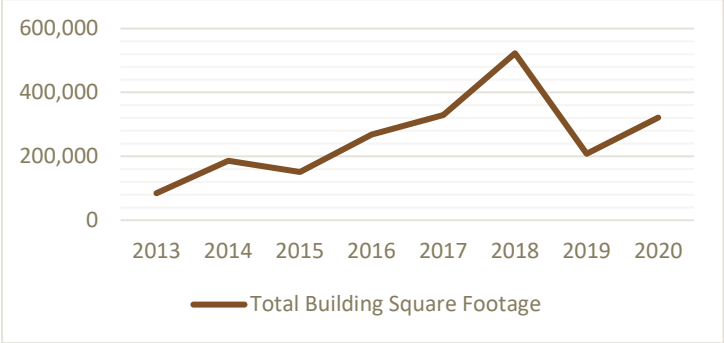
Year	Lots	Acres	Avg. Lot Size
2013	14	3.60	0.26
2014	19	6.43	0.34
2015	27	6.14	0.25
2016	40	9.73	0.28
2017	26	5.29	0.21
2018	74	13.80	0.23
2019	18	4.15	0.24
2020	20	8.94	0.47
Total	**238**	**58.96**	**0.27**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 12-E: City of Lakewood Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	13.76	84,530	0.14
2014	14.05	186,454	0.30
2015	9.64	151,420	0.36
2016	12.72	268,014	0.48
2017	41.70	329,529	0.18
2018	49.33	522,499	0.24
2019	11.82	208,212	0.40
2020	16.56	320,834	0.44
Total	**169.58**	**2,071,492**	**0.28**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 12-4 and Table 12-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 12-4: City of Lakewood Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
AC1	No Vacant or Underutilized Land								
ARC	100%	15	0%	25	10%	20%	0%	0%	0%
C1	0%	0	100%	25	0%	0%	10%	35%	0%
C2	0%	0	100%	25	0%	0%	10%	35%	0%
C3	0%	0	100%	25	0%	0%	10%	35%	0%
CBD	50%	80	50%	196	10%	20%	10%	35%	0%
I1	0%	0	100%	15	0%	0%	10%	35%	0%
I2	0%	0	100%	15	0%	0%	10%	35%	0%
IBP	0%	0	100%	15	0%	0%	10%	35%	0%
MF1	100%	22	0%	25	10%	20%	0%	0%	0%
MF2	100%	35	0%	25	10%	20%	0%	0%	0%
MF3	100%	54	0%	25	10%	20%	0%	0%	0%
MR1	100%	8	0%	25	10%	20%	0%	0%	0%
MR2	100%	14	0%	25	10%	20%	0%	0%	0%
NC1	15%	22	85%	25	10%	20%	10%	35%	0%
NC2	15%	35	85%	25	10%	20%	10%	35%	0%
PI	0%	0	100%	20	0%	0%	10%	35%	0%
R1	100%	2	0%	25	10%	20%	0%	0%	0%
R2	100%	2	0%	25	10%	20%	0%	0%	0%
R3	100%	5	0%	25	10%	20%	0%	0%	0%
R4	100%	6	0%	25	10%	20%	0%	0%	0%
TOC	25%	54	75%	45	10%	20%	10%	35%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 12-5: City of Lakewood Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
MF1	N/A	N/A	N/A	N/A	5%	N/A
MF2	N/A	N/A	N/A	N/A	5%	N/A
MF3	N/A	N/A	N/A	N/A	5%	N/A
MR1	N/A	N/A	N/A	N/A	5%	N/A
MR2	N/A	N/A	N/A	N/A	5%	N/A
R1	0%	0%	0%	0%	5%	<1.440 acres
R2	0%	0%	0%	0%	5%	<0.975 acres
R3	0%	0%	0%	0%	5%	<0.430 acres
R4	0%	0%	0%	0%	5%	<0.330 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 12-6 shows the characteristics of the initial inventory and Table 12-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 12-6: City of Lakewood Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	178.28	981.47	59.47	101.73
Average Lot Size (Gross)	0.88	0.57	0.26	1.88
Total Acreage (Net)	129.83	919.05	49.95	95.66
Average Lot Size (Net)	0.64	0.53	0.22	1.77
Percent Critical Areas	27%	6%	16%	6%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 12-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 12-7: City of Lakewood Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	48.45	62.42
Plat Deductions	0.00	0.00
Capital Facilities	0.00	0.00
Market Factor	17.83	248.94
Total Percent Reduction in Inventory Land	10%	25%
Percent of Vacant or Underutilized Land Available for Capacity	90%	75%

Capacity Results

The housing and employment capacity totals in Table 12-8 and Table 12-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 12-8: City of Lakewood 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
AC1	0	0	0	0	0
ARC	4	123	0	0	127
C1	0	-12	0	0	-12
C2	0	-2	0	0	-2
C3	0	0	0	0	0
CBD	181	2,342	0	67	2,590
I1	0	-5	0	0	-5
I2	0	0	0	0	0
IBP	0	-18	0	0	-18
MF1	132	1,028	16	5	1,181
MF2	304	1,130	0	80	1,514
MF3	152	978	0	1	1,131
MR1	0	116	0	1	117
MR2	42	480	5	5	532
NC1	2	10	0	42	54
NC2	49	370	0	2	421
PI	0	-1	0	0	-1
R1	7	20	17	1	45
R2	15	74	39	20	148
R3	172	553	91	34	850
R4	23	182	58	24	287
TOC	124	388	0	771	1,283
Total	1,207	7,756	226	1,053	10,242

Table 12-9: City of Lakewood 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
AC1	0	0	50	50
ARC	0	0	0	0
C1	60	211	0	282
C2	333	834	11	1,449
C3	0	0	282	0
CBD	443	4,317	0	4,760
I1	123	342	0	465
I2	16	0	0	16
IBP	560	152	822	1,534
MF1	9	95	72	176
MF2	13	59	0	72
MF3	4	36	0	40
MR1	0	31	0	31
MR2	5	76	0	81
NC1	15	56	2	73
NC2	199	1,006	0	1,205
PI	0	94	0	94
R1	6	22	0	28
R2	11	76	0	87
R3	51	246	0	297
R4	6	66	0	72
TOC	309	784	307	1,400
Total	2,163	8,503	1,546	12,212

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 12-10: City of Lakewood Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
AC1	0	6	0	18.80	7.4%
AC2	0	0	0	0.00	0.0%
ARC	1	0	15	0.78	4.3%
C1	0	1	0	3.16	5.3%
C2	0	6	0	19.93	8.2%
C3	0	0	0	0.00	0.0%
CBD	1	6	15	48.80	18.2%
CZ	0	0	0	0.00	0.0%
I1	0	0	0	0.00	0.0%
I2	0	0	0	0.00	0.0%
IBP	0	5	0	54.43	16.2%
MF1	4	0	30	3.13	1.2%
MF2	0	0	0	0.00	0.0%
MF3	0	0	0	0.00	0.0%
ML	0	0	0	0.00	0.0%
MR1	1	0	2	0.33	0.3%
MR2	5	0	34	10.06	6.5%
NC1	0	1	0	0.43	3.1%
NC2	3	9	34	9.84	4.5%
OSR1	0	0	0	0.00	0.0%
OSR2	1	0	6	41.29	8.4%
PI	0	1	0	9.93	1.3%
R1	4	0	8	5.83	1.4%
R2	2	0	6	3.66	0.7%
R3	22	0	92	24.17	1.0%
R4	6	0	32	6.13	0.7%
TOC	0	4	0	8.90	7.6%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 12-11: City of Lakewood Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
AC1	0	0	0	0
AC2	0	0	0	0
ARC	19	0	19	15
C1	0	0	0	0
C2	0	0	0	0
C3	0	0	0	0
CBD	10	0	10	80
CZ	0	0	0	0
I1	0	0	0	0
I2	0	0	0	0
IBP	0	0	0	0
MF1	10	9	12	22
MF2	0	0	0	35
MF3	0	0	0	54
ML	0	0	0	0
MR1	6	6	0	8
MR2	3	1	20	14
NC1	0	0	0	22
NC2	11	8	11	35
OSR1	0	0	0	0
OSR2	0	0	0	0
PI	0	0	0	0
R1	1	1	0	2
R2	2	2	0	2
R3	4	4	0	5
R4	5	5	0	6
TOC	0	0	0	54

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 12-12: City of Lakewood Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
AC1	0%	0%	100%	0%	Other-Not Developable	0%
AC2	0%	0%	0%	0%	Other-Not Developable	0%
ARC	100%	100%	0%	0%	Residential	0%
C1	0%	0%	100%	100%	Commercial	0%
C2	0%	0%	100%	100%	Commercial	0%
C3	0%	0%	0%	100%	Commercial	0%
CBD	3%	50%	97%	50%	Mixed Use	0%
CZ	0%	0%	0%	0%	Other-Not Developable	0%
I1	0%	0%	0%	100%	Industrial	0%
I2	0%	0%	0%	100%	Industrial	0%
IBP	0%	0%	100%	100%	Industrial	0%
MF1	100%	100%	0%	0%	Residential	5%
MF2	0%	100%	0%	0%	Residential	5%
MF3	0%	100%	0%	0%	Residential	5%
ML	0%	0%	0%	0%	Other-Not Developable	0%
MR1	100%	100%	0%	0%	Residential	5%
MR2	100%	100%	0%	0%	Residential	5%
NC1	0%	15%	100%	85%	Mixed Use	0%
NC2	32%	15%	68%	85%	Mixed Use	0%
OSR1	0%	0%	0%	0%	Other-Not Developable	0%
OSR2	100%	0%	0%	0%	Other-Not Developable	0%
PI	0%	0%	100%	100%	Commercial	0%
R1	100%	100%	0%	0%	Residential	5%
R2	100%	100%	0%	0%	Residential	5%
R3	100%	100%	0%	0%	Residential	5%
R4	100%	100%	0%	0%	Residential	5%
TOC	0%	25%	100%	75%	Mixed Use	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 12-13: City of Lakewood Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
AC1	0%	0%	0%	0%	0%	0%
AC2	0%	0%	0%	0%	0%	0%
ARC	0%	0%	0%	0%	0%	0%
C1	0%	0%	0%	0%	0%	0%
C2	0%	0%	0%	0%	0%	0%
C3	0%	0%	0%	0%	0%	0%
CBD	0%	0%	0%	0%	0%	0%
CZ	0%	0%	0%	0%	0%	0%
I1	0%	0%	0%	0%	0%	0%
I2	0%	0%	0%	0%	0%	0%
IBP	0%	0%	0%	0%	0%	0%
MF1	0%	0%	0%	0%	0%	0%
MF2	0%	0%	0%	0%	0%	0%
MF3	0%	0%	0%	0%	0%	0%
ML	0%	0%	0%	0%	0%	0%
MR1	0%	0%	0%	0%	0%	0%
MR2	0%	0%	0%	0%	0%	0%
NC1	0%	0%	0%	0%	0%	0%
NC2	0%	0%	0%	0%	0%	0%
OSR1	0%	0%	0%	0%	0%	0%
OSR2	0%	0%	0%	0%	0%	0%
PI	0%	0%	0%	0%	0%	0%
R1	0%	0%	0%	0%	0%	0%
R2	0%	0%	0%	0%	0%	0%
R3	0%	0%	0%	0%	0%	0%
R4	0%	0%	0%	0%	0%	0%
TOC	0%	0%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 12-14: Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
26,548	26,999	36,713	451	9,714	45	405	**360**

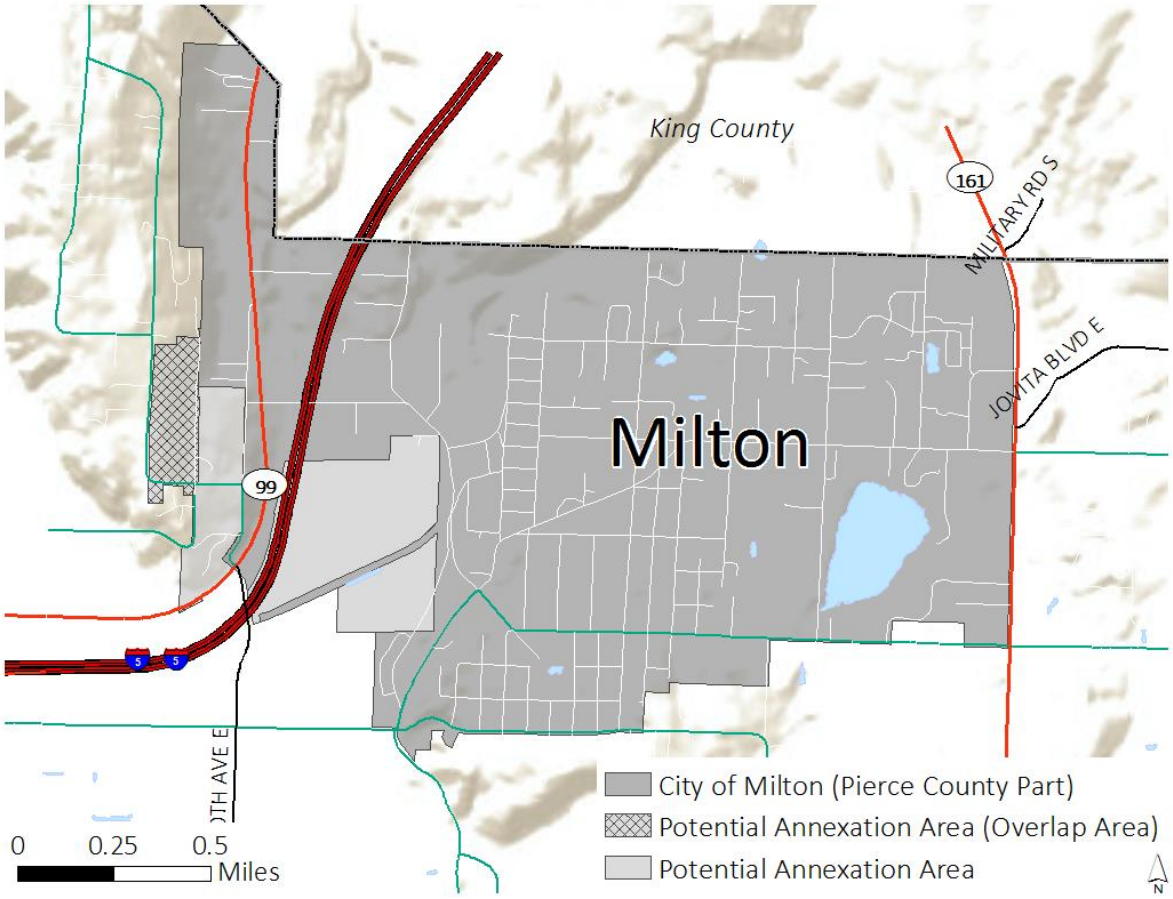
Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 12-15: Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
10,242	9,714	528	12,212	9,863	2,349

13 CITY OF MILTON (PIERCE COUNTY PART)



A portion of the City of Milton is in King County; this section represents only the portion within Pierce County. The City of Milton's Comprehensive Plan and regulations implement densities using net acreage.

Table 13-1: City of Milton Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
B	Business District	Commercial	150.7
CF	Community Facilities District	Public Use	38.8
M-1	Light Manufacturing District	Industrial	114.7
MX	Mixed-Use Town Center District	Mixed Use	10.8
OS	Open Space District	N/A	36.2
RM	Residential Multi-Family District	Residential	171.1
RMD	Residential Moderate-Density District	Residential	40.3
RS	Residential Single-Family District	Residential	607.2

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between **January 1, 2013 and December 31, 2019** and plat activity through December 31, 2020 that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 13-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 13-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 13-2: City of Milton 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
RM	0.57	4	10.81
RS	12.78	39	3.34
Total/Avg.	**13.35**	**43**	**3.22**

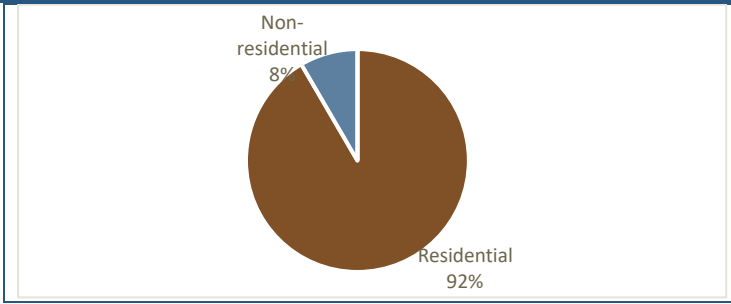
Table 13-3: City of Milton 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
B	1.01	4,483	0.10
TC	0.22	405	0.04
Total/Avg.	**1.23**	**4,888**	**0.09**

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 13-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 13-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 13-A: City of Milton Residential vs. Non-residential Development Split



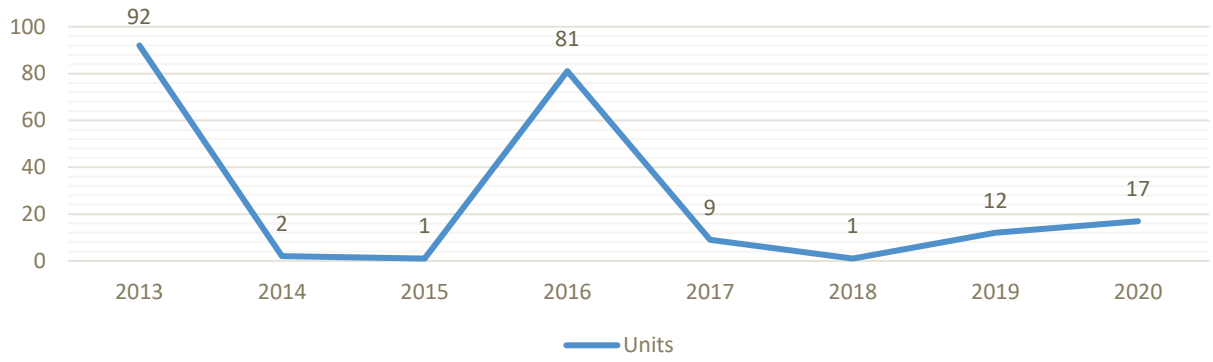
Zone	Use Type Split (Percent)[1] Residential	Non-residential
B	0%	100%
RM	100%	0%
RS	100%	0%
TC	0%	100%
Average	**92%**	**8%**

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 13-B: City of Milton Housing Production Rates (OFM)

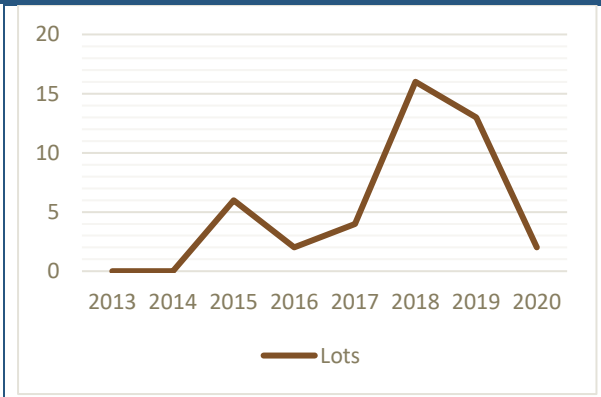


Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

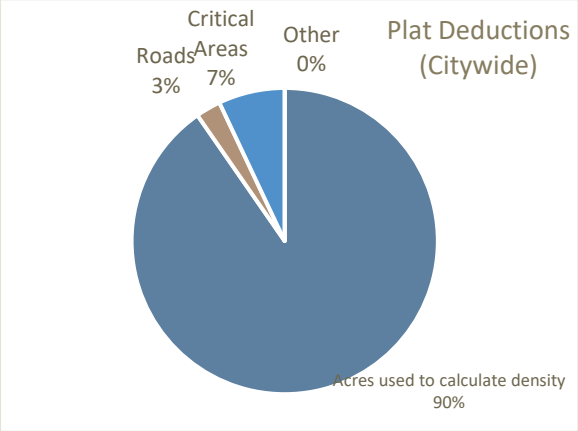
Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 13-2).

Figure 13-C: City of Milton Platting Trends



Plat Activity by Year

Year	Lots	Acres	Density
2013	-	-	-
2014	-	-	-
2015	6	1.25	4.80
2016	2	0.54	3.68
2017	4	0.80	5.01
2018	16	3.42	4.68
2019	13	3.70	3.51
2020	2	2.35	0.85
Total	**43**	**12.06**	**3.57**



Plat Deductions by Zone (Percent)

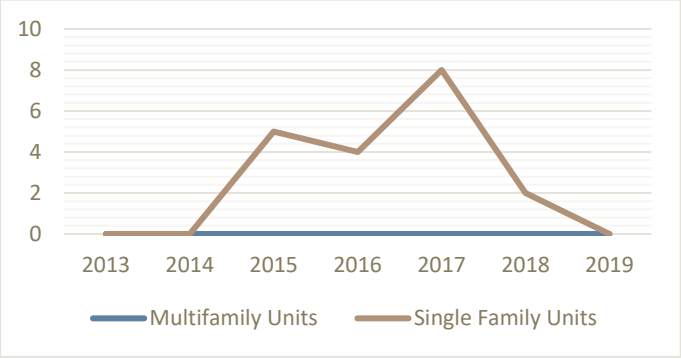
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
RM	35.1%	0.0%	0.0%	0.0%
RS	1.2%	7.3%	0.0%	0.0%
Average	**2.6%**	**7.0%**	**0.0%**	**0.0%**

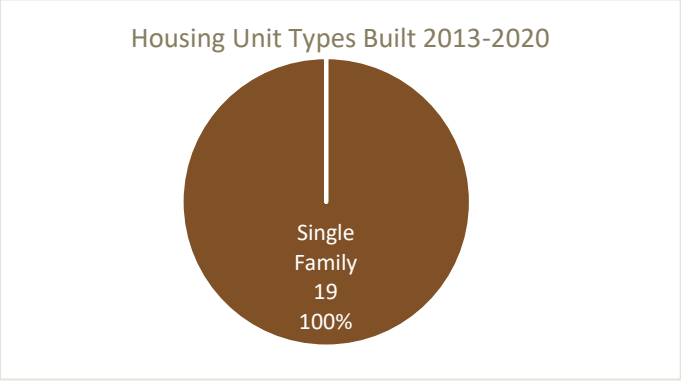
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 13-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 13-D: City of Milton Residential Building Permit Trends





Multifamily Permits by Year

No multifamily residential development was observed in the timeframe

Single-Family Permits by Year (Optional)

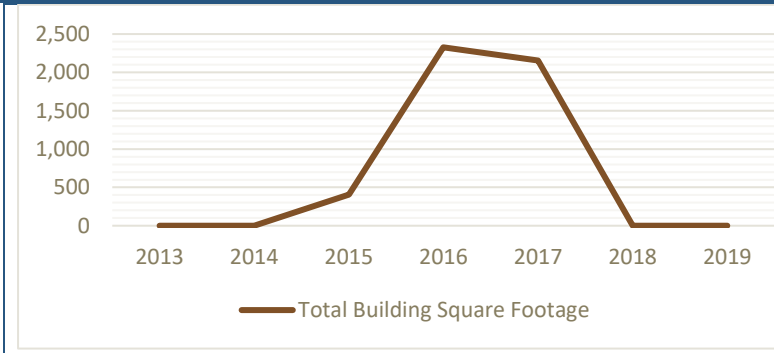
Year	Lots	Acres	Avg. Lot Size
2013	-	-	-
2014	-	-	-
2015	7	1.59	0.26
2016	4	0.96	0.32
2017	8	1.79	0.22
2018	2	0.61	0.31
2019	-	-	-
Total	**21**	**4.95**	**0.26**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 13-E: City of Milton Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	-	-	-
2014	-	-	-
2015	0.22	405	0.04
2016	0.31	2,327	0.17
2017	0.70	2,156	0.07
2018	-	-	-
2019	-	-	-
Total	**1.23**	**4,888**	**0.09**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 13-4 and Table 13-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 13-4: City of Milton Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
B	0%	0	100%	20	0%	0%	5%	35%	0%
CF	0%	0	100%	20	0%	0%	5%	35%	0%
M-1	0%	0	100%	9	0%	0%	5%	35%	0%
MX	60%	8	40%	20	5%	35%	5%	35%	0%
RM	100%	8	0%	20	5%	35%	0%	0%	0%
RMD	100%	8	0%	20	5%	35%	0%	0%	0%
RS	100%	3	0%	20	5%	35%	0%	0%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 13-5: City of Milton Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
RM	15%	GIS	0%	0%	2%	<0.39 acres
RMD	15%	GIS	0%	0%	2%	<0.23 acres
RS	15%	GIS	0%	0%	2%	<0.39 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 13-6 shows the characteristics of the initial inventory and Table 13-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 13-6: City of Milton Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	178.28	981.47	59.70	101.73
Average Lot Size (Gross)	0.88	0.57	0.26	1.88
Total Acreage (Net)	129.83	919.05	50.18	95.66
Average Lot Size (Net)	0.64	0.53	0.22	1.77
Percent Critical Areas	27%	6%	16%	6%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 13-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 13-7: City of Milton Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	48.45	62.42
Plat Deductions	4.50	17.76
Capital Facilities	0.00	0.00
Market Factor	3.49	66.97
Total Percent Reduction in Inventory Land	24%	44%
Percent of Vacant or Underutilized Land Available for Capacity	76%	56%

Capacity Results

The housing and employment capacity totals in Table 13-8 and Table 13-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 13-8: City of Milton 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
B	0	-15	0	0	-15
CF	0	-2	0	0	-2
M-1	0	-8	0	0	-8
MX	13	7	0	0	20
RM	39	122	2	0	163
RMD	10	25	4	0	39
RS	53	110	70	2	235
Total	115	239	76	2	432

Table 13-9: City of Milton 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
B	495	452	20	967
CF	0	36	0	36
M-1	130	254	0	384
MX	22	25	0	47
RM	2	11	0	13
RMD	1	3	0	4
RS	8	27	0	35
Total	658	808	20	1,486

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 13-10: City of Milton Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
B	0	2	0	1.01	0.7%
CF	0	0	0	0.00	0.0%
M-1	0	0	0	0.00	0.0%
MX	0	0	0	0.00	0.0%
OS	0	0	0	0.00	0.0%
RM	1	0	4	0.57	0.3%
RMD	0	0	0	0.00	0.0%
RS	11	0	39	12.78	2.1%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 13-11: City of Milton Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
B	0	0	0	0
CF	0	0	0	0
M-1	0	0	0	0
MX	0	0	0	8
OS	0	0	0	0
RM	11	11	0	8
RMD	0	0	0	8
RS	3	3	0	3

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 13-12: City of Milton Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
B	0%	0%	100%	100%	Commercial	0%
CF	0%	0%	0%	100%	Commercial	0%
M-1	0%	0%	0%	100%	Industrial	0%
MX	0%	60%	0%	40%	Mixed Use	0%
OS	0%	0%	0%	0%	Other-Not Developable	0%
RM	100%	100%	0%	0%	Residential	2%
RMD	0%	100%	0%	0%	Residential	2%
RS	100%	100%	0%	0%	Residential	2%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 13-13: City of Milton Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
B	0%	0%	0%	0%	0%	0%
CF	0%	0%	0%	0%	0%	0%
M-1	0%	0%	0%	0%	0%	0%
MX	0%	0%	0%	0%	0%	0%
OS	0%	0%	0%	0%	0%	0%
RM	35%	15%	0%	0%	0%	0%
RMD	0%	15%	0%	0%	0%	0%
RS	1%	15%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 13-14: Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
2,724	2,963	3,222	239	259	24	11	-

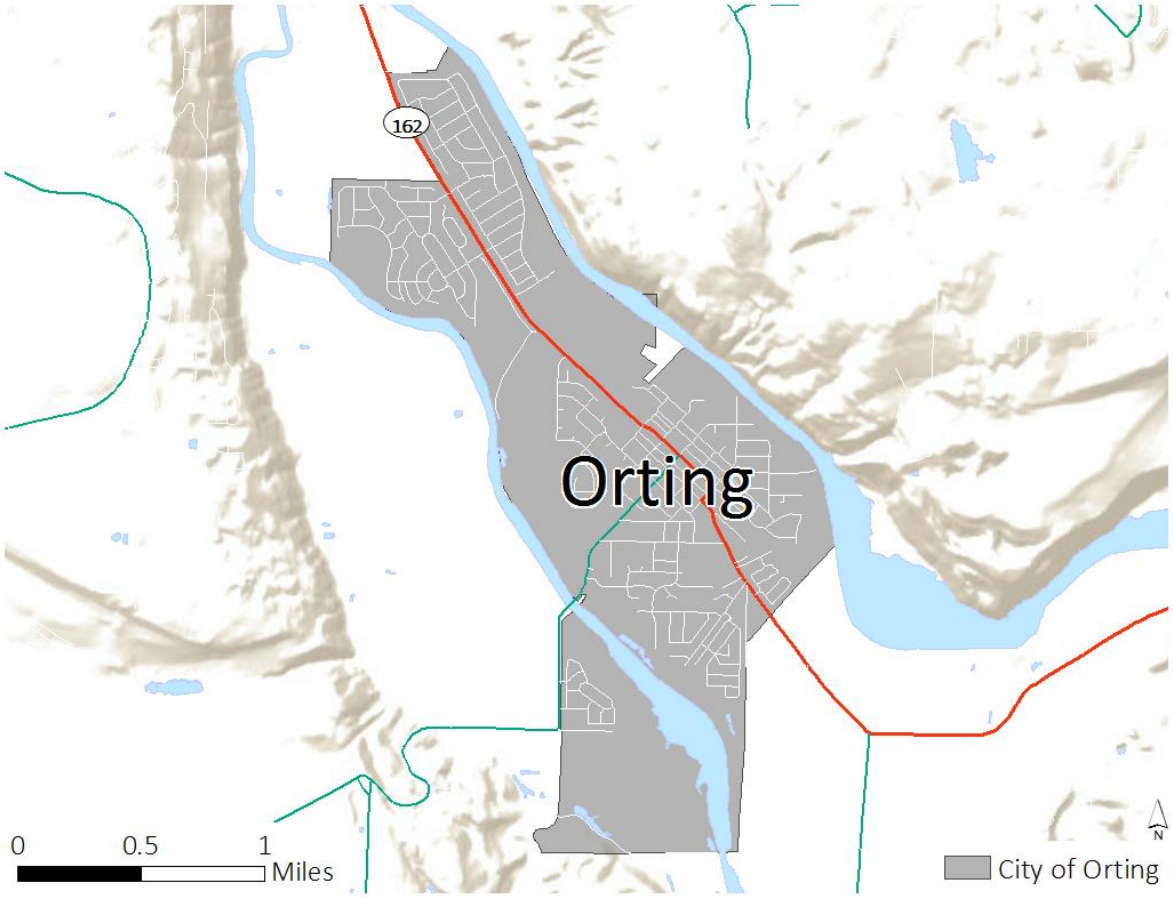
Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 13-15: Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
432	259	173	1,486	441	1,045

14 CITY OF ORTING



The City of Orting's Comprehensive Plan and regulations implement densities using net acreage, subtracting out roads, critical areas, and parks.

Table 14-1: City of Orting Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
LM	c	Industrial	0.9
MUTC	Mixed Use – Town Center	Mixed Use	48.7
MUTCN	Mixed Use – Town Center North	Mixed Use	65.3
OS	Open Space & Recreation	N/A	87.3
PF	Public Facilities	Public Use	381.5
RC	Residential – Conservation	Residential	166.3
RMF	Residential – Multi-family	Residential	38.0
RU	Residential – Urban	Residential	729.0

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between **January 1, 2013 and December 31, 2019 and plat activity through December 31, 2020** that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 14-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 14-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 14-2: City of Orting 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
MUTC	0.23	2	8.70
RU	106.34	418	3.93
Total/Avg.	**106.57**	**420**	**3.94**

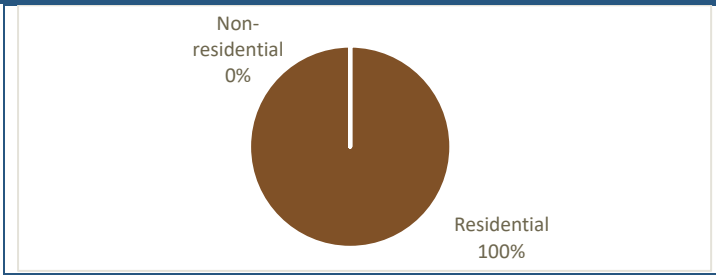
[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Table 14-3: City of Orting 2013-2020 Non-residential Trends by Zone

No non-residential development has been observed in the timeframe.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 14-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 14-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 14-A: City of Orting Residential vs. Non-residential Development Split



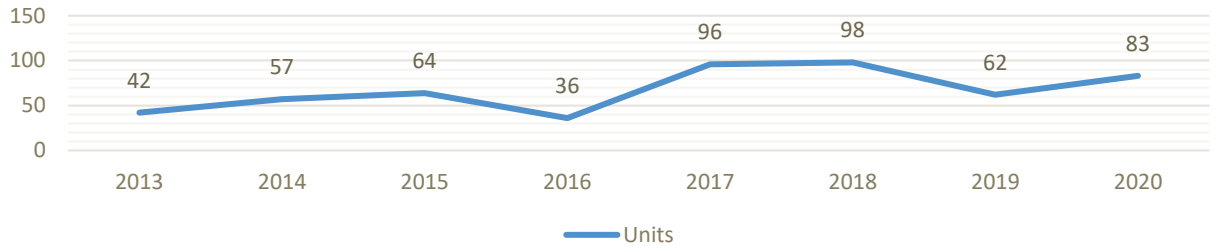
Zone	Use Type Split (Percent)[1]	
	Residential	Non-residential
MUTC	100%	0%
RU	100%	0%
Average	**100%**	**0%**

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 14-B: City of Orting Housing Production Rates (OFM)

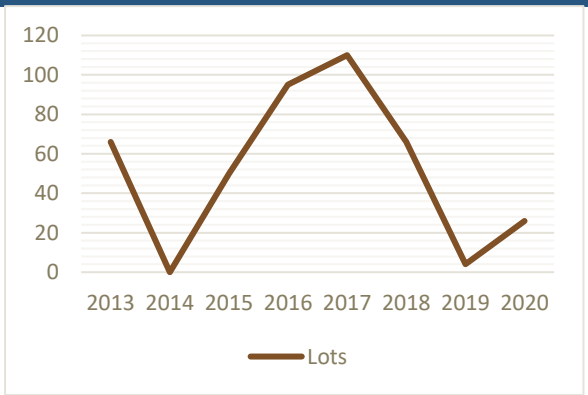


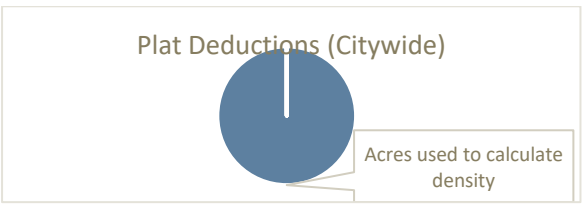
Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 14-2).

Figure 14-C: City of Orting Platting Trends





Plat Activity by Year

Year	Lots	Acres	Density
2013	66	15.37	4.29
2014	-	-	-
2015	50	11.30	4.42
2016	95	19.56	4.86
2017	110	30.52	3.60
2018	66	16.40	4.02
2019	4	1.20	3.33
2020	26	11.75	2.21
Total	**417**	**106.10**	**3.93**

Plat Deductions by Zone (Percent)

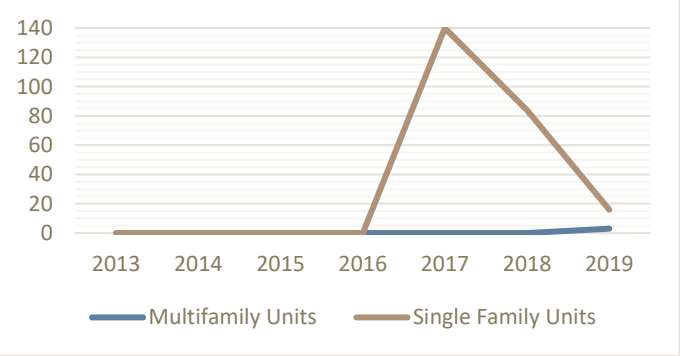
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
MUTC	0.0%	0.0%	0.0%	0.0%
RU	0.0%	0.0%	0.0%	0.0%
Average	**0.0%**	**0.0%**	**0.0%**	**0.0%**

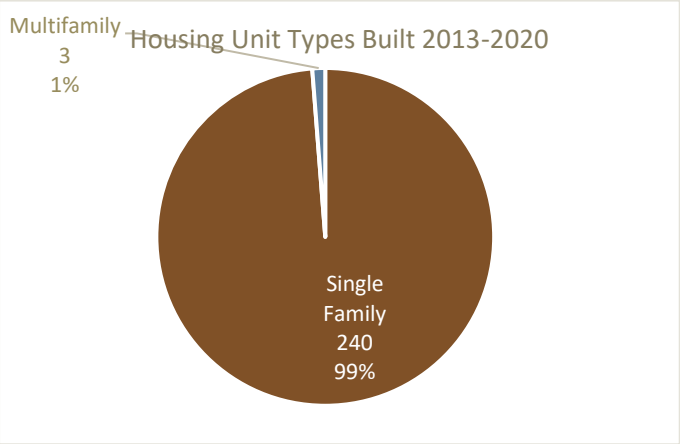
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 14-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 14-D: City of Orting Residential Building Permit Trends





Multifamily Permits by Year

Year	Units	Net Acres	Net Density
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	3	0.47	6.38
Total	**3**	**0.47**	**6.38**

Single-Family Permits by Year (Optional)

Year	Lots	Acres	Avg. Lot Size
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	140	23.58	0.17
2018	84	20.22	0.24
2019	16	3.77	0.23
Total/Avg.	**240**	**47.58**	**0.20**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 14-E: City of Orting Non-residential Permit Trends

No non-residential development has been observed in the timeframe.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 14-4 and Table 14-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps

Table 14-4: City of Orting Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
LM	0%	0	100%	9	0%	0%	4%	50%	0%
MUTC	50%	8	50%	20	1%	50%	4%	50%	0%
MUTCN	50%	10	50%	20	1%	50%	4%	50%	0%
PF	0%	0	100%	20	0%	0%	4%	50%	0%
RC	100%	0.5	0%	20	1%	50%	0%	0%	0%
RMF	100%	6	0%	20	1%	50%	0%	0%	0%
RU	100%	4	0%	20	1%	50%	0%	0%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 14-5: City of Orting Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
RC	10%	7.50%	6.20%	0%	0%	<4.50 acres
RMF	10%	7.50%	6.20%	0%	0%	<0.31 acres
RU	10%	7.50%	6.20%	0%	0%	<0.42 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 14-6 shows the characteristics of the initial inventory and Table 14-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 14-6: City of Orting Summary of Vacant and Underutilized Land Characteristics				
Characteristics/Category	**Vacant**	**Underutilized**	**Vacant Single Unit**	**Pipeline**
Total Acreage (Gross	156.55	70.99	9.75	20.92
Average Lot Size (Gross)	10.44	1.13	0.30	4.18
Total Acreage (Net)	106.77	31.70	2.48	4.96
Average Lot Size (Net)	7.12	0.50	0.08	0.99
Percent Critical Areas	32%	55%	75%	76%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 14-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 14-7: City of Orting Summary of Deductions		
Deductions/Category	**Vacant**	**Underutilized**
Critical Areas	49.79	39.29
Plat Deductions	2.74	3.79
Capital Facilities	33.46	0.00
Market Factor	4.46	13.99
Total Percent Reduction in Inventory Land	39%	80%
Percent of Vacant or Underutilized Land Available for Capacity	61%	20%

Capacity Results

The housing and employment capacity totals in Table 14-8 and Table 14-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 14-8: City of Orting 2020-2044 Housing Capacity (Dwelling Units)					
Zone	**Vacant**	**Underutilized**	**Vacant Single Unit**	**Pipeline**	**Total**
LM	0	0	0	0	**0**
MUTC	26	9	0	0	**35**
MUTCN	166	0	0	4	**170**
PF	0	0	1	0	**1**
RC	0	1	2	0	**3**
RMF	10	5	0	0	**15**
RU	28	12	0	0	**122**
Total	230	27	0	0	**346**

Table 14-9: City of Orting 2020-2044 Employment Capacity (Jobs)				
Zone	Vacant	Underutilized	Pipeline	Total
LM	0	0	0	0
MUTC	65	72	0	137
MUTCN	646	0	0	646
PF	615	0	0	615
RC	0	0	0	0
RMF	0	0	0	0
RU	0	0	0	0
Total	1,326	72	0	1,398

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

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Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 14-10: City of Orting Permits Summary					
Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
LM	0	0	0	0.00	0.0%
MUTC	1	0	2	0.23	0.5%
MUTCN	0	0	0	0.00	0.0%
OS	0	0	0	0.00	0.0%
PF	0	0	0	0.00	0.0%
RC	0	0	0	0.00	0.0%
RMF	0	0	0	0.00	0.0%
ROW	0	0	0	0.00	0.0%
RU	23	0	418	106.34	14.1%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 14-11: City of Orting Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
LM	0	0	0	0
MUTC	9	9	0	8
MUTCN	0	0	0	10
OS	0	0	0	0
PF	0	0	0	0
RC	0	0	0	1
RMF	0	0	0	6
ROW	0	0	0	0
RU	4	4	6	4

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 14-12: City of Orting Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
LM	0%	0%	0%	100%	Industrial	0%
MUTC	100%	50%	0%	50%	Mixed Use	0%
MUTCN	0%	50%	0%	50%	Mixed Use	0%
OS	0%	0%	0%	0%	Other-Not Developable	0%
PF	0%	0%	0%	100%	Commercial	0%
RC	0%	100%	0%	0%	Residential	0%
RMF	0%	100%	0%	0%	Residential	0%
ROW	0%	0%	0%	0%	Other-Not Developable	0%
RU	100%	100%	0%	0%	Residential	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 14-13: City of Orting Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
LM	0%	0%	0%	0%	0%	0%
MUTC	0%	0%	0%	0%	0%	0%
MUTCN	0%	0%	0%	0%	0%	0%
OS	0%	0%	0%	0%	0%	0%
PF	0%	0%	0%	0%	0%	0%
RC	0%	10%	0%	6%	0%	0%
RMF	0%	10%	0%	6%	0%	0%
ROW	0%	0%	0%	0%	0%	0%
RU	0%	10%	0%	6%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 14-14: Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
2,361	2,999	3,167	638	168	64	7	-

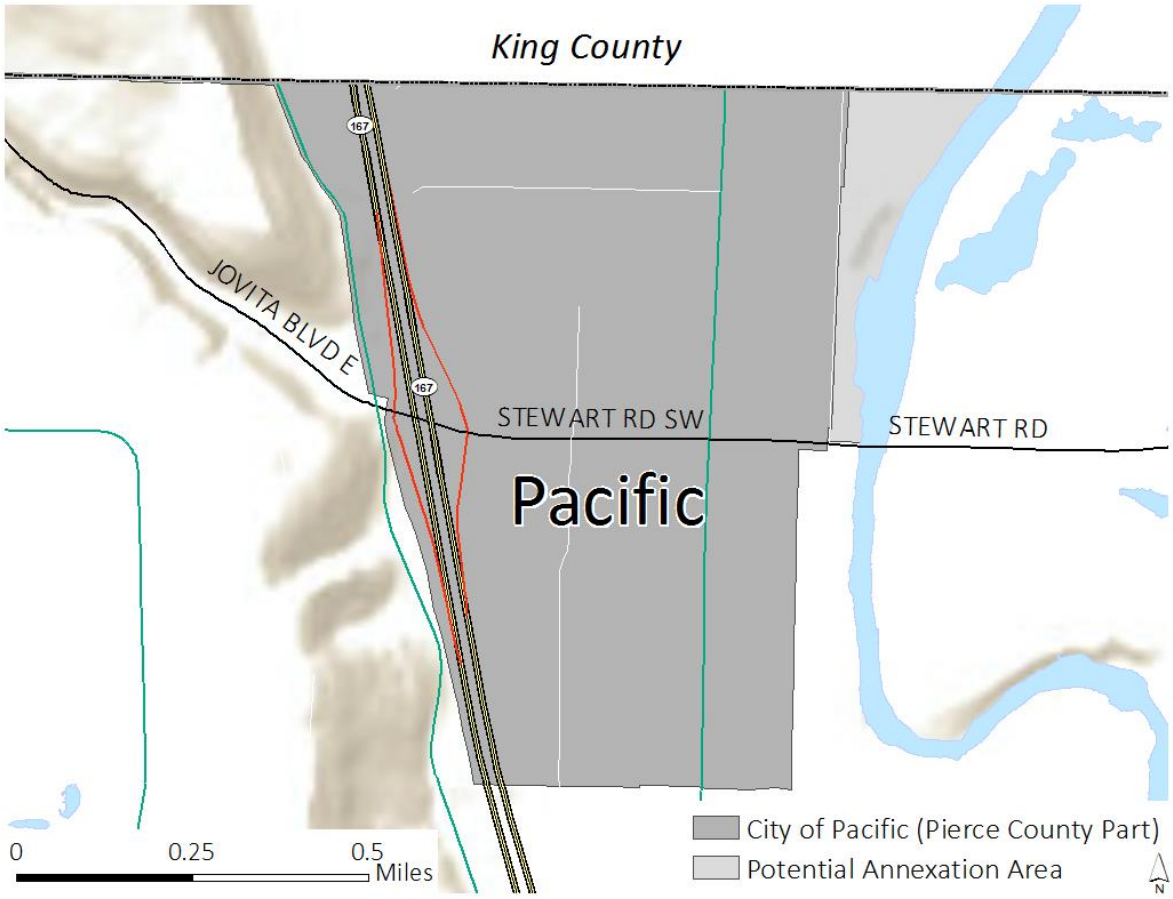
Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 14-15: Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
346	168	178	1,398	196	1,202

15 CITY OF PACIFIC (PIERCE COUNTY PART)



A portion of the City of Pacific is in King County; this section represents only the portion within Pierce County. The City does not have any residential-zoned land in Pierce County.

Table 15-1: City of Pacific Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
C	Commercial	Commercial	73.5
LI	Light Industrial	Industrial	191.0
OP	Office Park	Commercial	24.0
PL	Public Land	Public Use	1.6

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes building and plat data obtained through the Pierce County Assessor-Treasurer and Auditor Departments observed between **January 1, 2013 and December 31, 2020** that is used to monitor observed densities and update the assumptions for future development. The summaries in this

section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 15-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 15-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 15-2: City of Pacific 2013-2020 Residential Trends by Zone[1]

The portion of City of Pacific within Pierce County does not contain residential land, and no residential development has been observed in the timeframe.

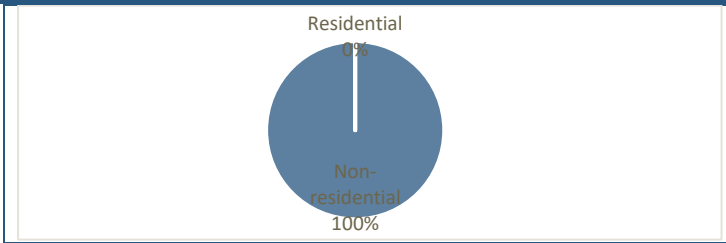
Table 15-3: City of Pacific 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
C	4.24	21,313	0.12
LI	16.11	293,492	0.42
OP	1.68	7,500	0.10
Total/Avg.	**22.03**	**322,305**	**0.34**

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 15-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 15-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 15-A: City of Pacific Residential vs. Non-residential Development Split



Zone	Use Type Split (Percent)[1]	
	Residential	Non-residential
OP	0%	100%
LI	0%	100%
C	0%	100%
Average	**0%**	**100%**

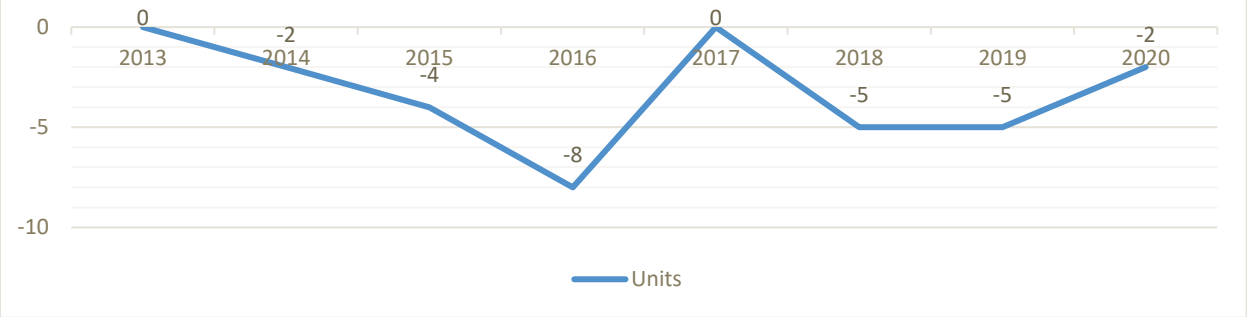
[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the

housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 15-B: City of Pacific Housing Production Rates (OFM)



Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 15-2).

Figure 15-C: City of Pacific County Platting Trends

The portion of City of Pacific within Pierce County does not contain residential land, and no residential platting activity has been observed in the timeframe.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 15-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 15-D: City of Pacific Residential Building Permit Trends

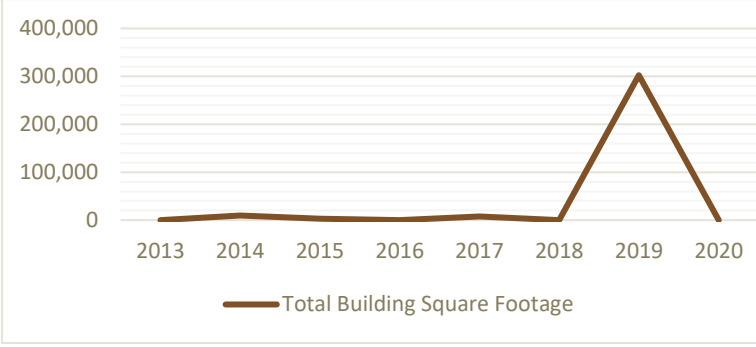
The portion of City of Pacific within Pierce County does not contain residential land, and no residential development has been observed in the timeframe.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and

summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 15-E: City of Pacific Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	-	-	-
2014	2.45	9,540	0.09
2015	2.58	2,880	0.03
2016	-	-	-
2017	1.68	7,500	0.10
2018	-	-	-
2019	15.90	312,173	0.45
2020	-	-	-
Total	**22.62**	**332,093**	**0.34**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 15-4 and Table 15-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 15-4: City of Pacific Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
C	0%	0	100%	20	0%	0%	0%	25%	0%
LI	0%	0	100%	16	0%	0%	0%	25%	0%
OP	0%	0	100%	20	0%	0%	0%	25%	0%
PL	0%	0	100%	20	0%	0%	0%	25%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 15-5: City of Pacific Plat Deductions for Single-Family Residential Zones

The portion of City of Pacific within Pierce County does not contain any residential-zoned land.

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 15-6 shows the characteristics of the initial inventory and Table 15-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 15-6: City of Pacific Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	6.96	173.17	0.00	3.46
Average Lot Size (Gross)	0.70	1.59	0.00	1.73
Total Acreage (Net)	6.96	162.50	0.00	3.46
Average Lot Size (Net)	0.70	1.49	0.00	1.73
Percent Critical Areas	0%	6%	0%	0%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 15-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 15-7: City of Pacific Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	0.00	10.68
Plat Deductions	0.00	0.00
Capital Facilities	0.00	0.00
Market Factor	0.00	43.30
Total Percent Reduction in Inventory Land	0%	25%
Percent of Vacant or Underutilized Land Available for Capacity	100%	75%

Capacity Results

The housing and employment capacity totals in Table 15-8 and Table 15-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 15-8: City of Pacific 2020-2044 Housing Capacity (Dwelling Units)

The portion of City of Pacific within Pierce County does not contain any residential-zoned land.

Table 15-9: City of Pacific 2020-2044 Employment Capacity (Jobs)				
Zone	Vacant	Underutilized	Pipeline	Total
C	44	401	0	445
LI	67	1,381	42	1,490
OP	12	186	0	198
PL	0	0	0	0
Total	123	1,968	42	2,133

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

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Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 15-10: City of Pacific Permits Summary					
Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
C	0	3	0	4.24	5.6%
LI	0	4	0	16.69	8.6%
OP	0	1	0	1.68	6.9%
PL	0	0	0	0.00	0.0%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 15-11: City of Pacific Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
C	0	0	0	0
LI	0	0	0	0
OP	0	0	0	0
PL	0	0	0	0

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 15-12: City of Pacific Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
C	0%	0%	100%	100%	Commercial	0%
LI	0%	0%	100%	100%	Industrial	0%
OP	0%	0%	100%	100%	Commercial	0%
PL	0%	0%	0%	100%	Commercial	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 15-13: City of Pacific Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
C	0%	0%	0%	0%	0%	0%
LI	0%	0%	0%	0%	0%	0%
OP	0%	0%	0%	0%	0%	0%
PL	0%	0%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 15-14: City of Pacific Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
45	19	19	-26	0	-3	0	**3**

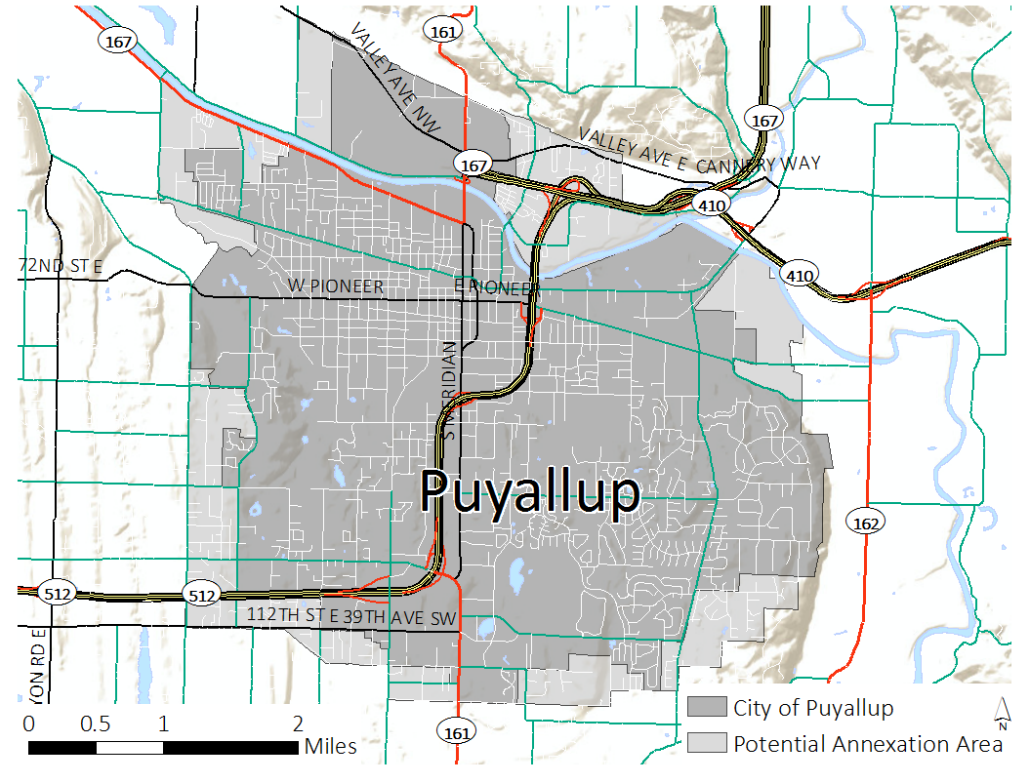
Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 15-15: City of Pacific Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
-9	0	-9	2,133	638	1,495

16 CITY OF PUYALLUP



The City of Puyallup's Comprehensive Plan and regulations implement densities using net calculations for plats only, subtracting out roads, critical areas, and associated buffers.

Table 16-1: City of Puyallup Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
ARO	Agriculture, Recreation and Open Space	N/A	18.5
CB	Community Business	Mixed Use	83.3
CBD	Central Business District	Mixed Use	43.1
CBD-CORE	Central Business District Core	Mixed Use	32.4
CCX	Community Commercial Mixed Use	Mixed Use	86.8
CG	General Commercial	Mixed Use	289.3
CL	Limited Commercial	Mixed Use	12.1
CMX	Shaw-Pioneer Community Mixed Use	Mixed Use	31.6
FAIR	Fair	Commercial	97.9
LMX	Limited Mixed Use	Mixed Use	31.2
MED	Medical	Commercial	56.5
ML	Limited Manufacturing	Industrial	585.0
MP	Business Park	Industrial	95.1
OP	Professional Office	Commercial	17.6
PF	Public Facilities	Public Use	1,094.9
RM-10	Medium Density Multiple-Family Residential	Residential	68.4

Zone Classification		Zone Type[1]	Total Acres[2]
RM-20	High Density Multiple-Family Residential	Residential	504.2
RM-CORE	Regional Growth Center Oriented Multi-Family Residential	Residential	163.6
RMX	River Road Mixed Use	Mixed Use	54.3
RS-04	High Urban Density Single-Family Residential	Residential	77.3
RS-06	Urban Density Single-Family	Residential	397.6
RS-08	Medium Density Single-Family	Residential	870.2
RS-10	Low Urban Density Single-Family Residential	Residential	2,283.6
RS-35	Very Low Density Single-Family Residential	Residential	386.3
UCX	Urban Center Mixed Use	Mixed Use	206.2

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between **January 1, 2013 and December 31, 2020** that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 16-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 16-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 16-2: City of Puyallup 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
PDC	37.37	239	6.39
RM-10	9.82	85	8.66
RM-20	3.75	52	13.85
RS-04	3.04	5	1.64
RS-06	3.67	19	5.18
RS-08	35.89	163	4.54
RS-10	88.01	210	2.39
RS-35	1.48	2	1.36
UCX	15.24	238	15.62
Total/Avg.	**198.27**	**1,013**	**5.11**

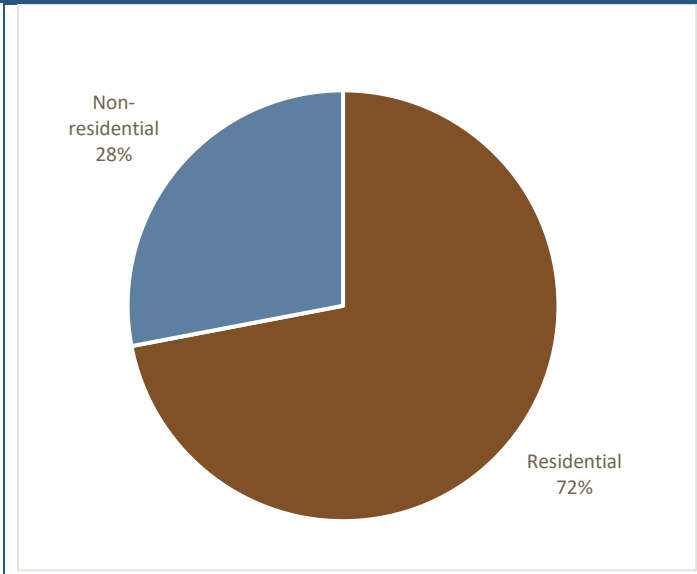
Table 16-3: City of Puyallup 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
CB	10.9	85,499	0.18
CCX*	0.5	810	0.04
CG	16.4	190,904	0.27
LMX*	1.99	16,449	0.19
ML	31.46	653,116	0.48
RM-20	0.92	45,093	1.13
UCX*	14.9	150,991	0.23
Total/Avg.	**77.08**	**1,142,862**	**0.34**

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.
*Non-residential data includes development that occurred prior to the establishment of the zone, since the allowed uses that were developed are permitted within the new zone.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 16-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 16-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 16-A: City of Puyallup Residential vs. Non-residential Development Split



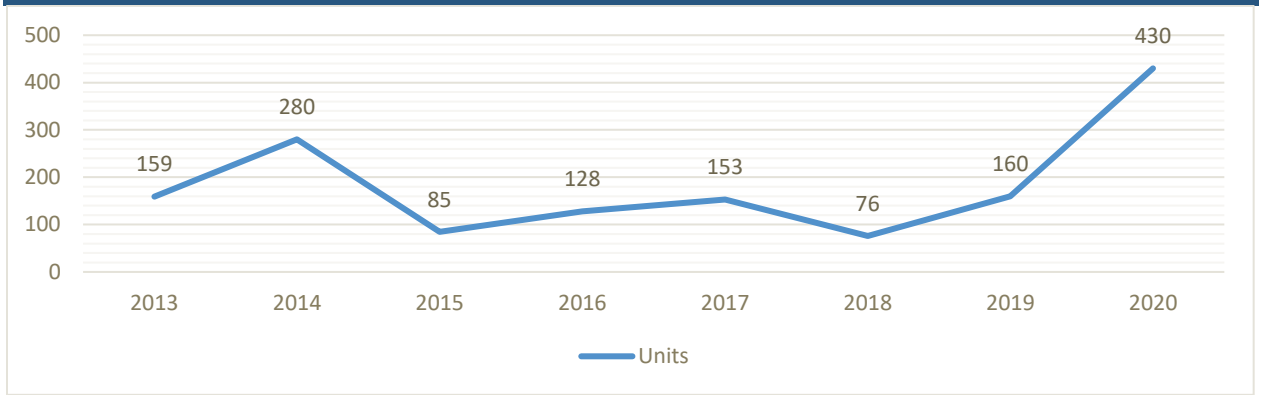
Zone	Use Type Split (Percent)[1] Residential	Non-residential
CB	0%	100%
CCX*	0%	100%
CG	0%	100%
LMX*	0%	100%
ML	0%	100%
PDC	100%	0%
RM-10	100%	0%
RM-20	80%	20%
RS-04	100%	0%
RS-06	100%	0%
RS-08	100%	0%
RS-10	100%	0%
RS-35	100%	0%
UCX*	51%	49%
Average	**72%**	**28%**

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.
*Non-residential data includes development that occurred prior to the establishment of the zone, since the allowed uses that were developed are permitted within the new zone.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 16-B: City of Puyallup Housing Production Rates (OFM)

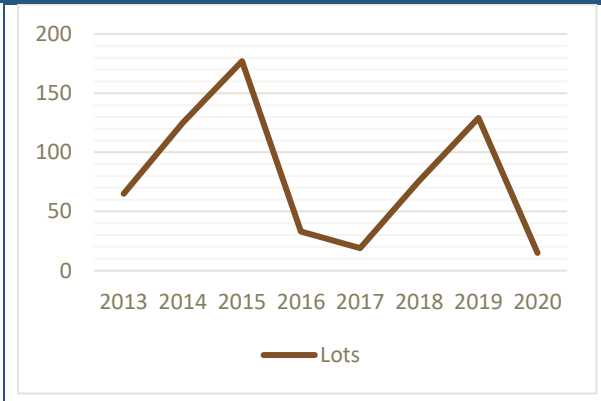


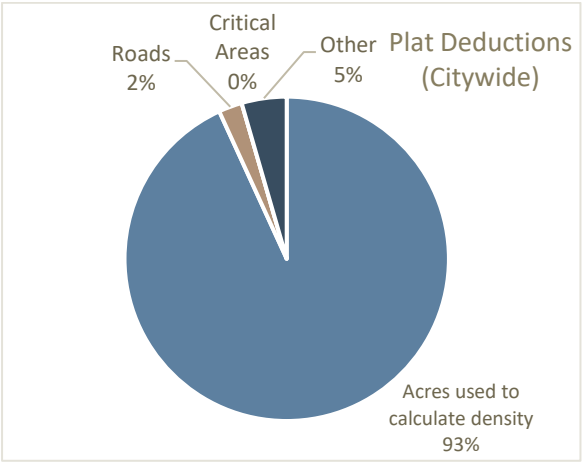
Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 16-2).

Figure 16-C: City of Puyallup Platting Trends





Plat Activity by Year

Year	Lots	Net Acres	Density
2013	65	26.70	2.43
2014	125	16.72	7.48
2015	177	34.89	5.07
2016	33	9.74	3.39
2017	19	9.30	2.04
2018	76	28.37	2.68
2019	129	27.85	4.63
2020	15	5.47	2.74
Total	**639**	**159.03**	**4.02**

Plat Deductions by Zone (Percent)

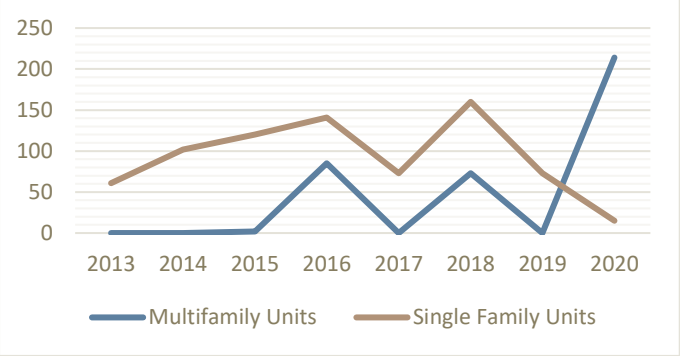
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
PDC	3.7%	0.0%	8.1%	0.0%
RM-20	0.0%	0.0%	0.0%	0.0%
RS-04	0.0%	0.0%	0.0%	0.0%
RS-06	0.0%	0.0%	0.0%	0.0%
RS-08	7.0%	0.0%	7.9%	2.3%
RS-10	0.1%	0.0%	1.1%	0.0%
RS-35	0.0%	0.0%	0.0%	0.0%
Average	**2.3%**	**0.0%**	**4.0%**	**0.5%**

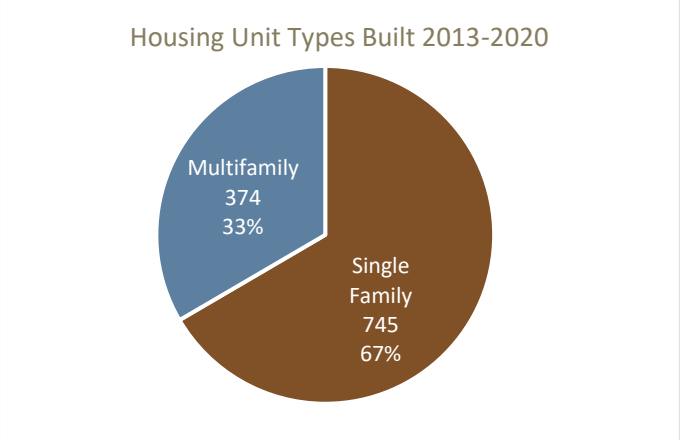
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 16-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 16-D: City of Puyallup Residential Building Permit Trends





Multifamily Permits by Year

Year	Units	Net Acres	Net Density
2013	-	-	-
2014	-	-	-
2015	2	0.09	21.51
2016	85	9.82	8.66
2017	-	-	-
2018	73	7.46	9.79
2019	-	-	-
2020	214	10.26	20.86
Total	**374**	**27.63**	**13.53**

Single-Family Permits by Year (Optional)

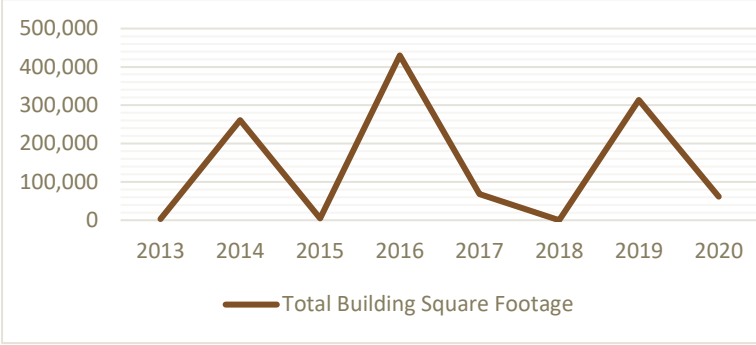
Year	Lots	Acres	Avg. Lot Size
2013	61	7.85	0.13
2014	102	17.90	0.18
2015	120	16.50	0.14
2016	141	25.72	0.18
2017	73	15.50	0.21
2018	160	29.25	0.18
2019	73	21.23	0.29
2020	15	4.46	0.32
Total	**745**	**138.52**	**0.19**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 16-E: City of Puyallup Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	0.69	3,410	0.11
2014	14.63	261,046	0.41
2015	1.01	4,480	0.10
2016	20.99	429,845	0.47
2017	8.62	68,541	0.18
2018	-	-	-
2019	28.22	313,998	0.26
2020	2.91	61,542	0.49
Total	**77.08**	**1,142,862**	**0.34**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 16-4 and Table 16-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

The CCX, LMX, and UCX zones were established in 2017 as part of adoption of the South Hill Neighborhood Plan. They primarily replaced existing commercial zones (usually CG or CL zoning) and resulted in increased building heights, reduced parking requirements, and allowances for mixed-use development. In the previous zones, residential was allowed on a very limited basis and the City generally assumed only 5% of future development would include residential. The new zones allow for horizontal or vertical mixed-use development. It is assumed that an increased percentage of each zone will result in residential development.

Table 16-4: City of Puyallup Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
CB	10%	4	90%	20	0%	50%	10%	50%	0%
CBD	100%	30	100%	50	0%	0%	0%	0%	0%
CBD-CORE	100%	35	100%	50	0%	0%	0%	0%	0%
CCX	50%	60	100%	50	0%	50%	10%	50%	0%
CG	5%	2	95%	20	0%	50%	10%	50%	0%
CL	5%	2	95%	20	0%	50%	10%	50%	0%
CMX	40%	7	60%	20	0%	50%	10%	50%	0%
FAIR	0%	0	100%	20	0%	0%	10%	50%	0%
LMX	15%	12	100%	30	0%	50%	10%	50%	0%
MED	0%	0	100%	50	0%	0%	10%	50%	0%
ML	0%	0	100%	9	0%	0%	10%	50%	0%
MP	0%	0	100%	9	0%	0%	10%	50%	0%
OP	0%	0	100%	20	0%	0%	10%	50%	0%
PF	0%	0	100%	20	0%	0%	10%	50%	0%

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
RM-10	100%	8	0%	20	0%	70%	0%	0%	0%
RM-20	100%	20	0%	20	0%	70%	0%	0%	0%
RM-CORE	100%	30	0%	0	0%	0%	0%	0%	0%
RMX	50%	11	100%	30	0%	50%	0%	0%	0%
RS-04	100%	8	0%	20	25%	40%	0%	0%	0%
RS-06	100%	6	0%	20	25%	40%	0%	0%	0%
RS-08	100%	5	0%	20	25%	40%	0%	0%	0%
RS-10	100%	4	0%	20	25%	40%	0%	0%	0%
RS-35	100%	1	0%	20	25%	40%	0%	0%	0%
UCX	50%	22	100%	30	0%	50%	10%	50%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 16-5: City of Puyallup Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
RM-10	N/A	N/A	N/A	N/A	2.50%	N/A
RM-20	N/A	N/A	N/A	N/A	2.50%	N/A
RS-04	10%	GIS	0%	0%	2.50%	<0.23 acres
RS-06	10%	GIS	0%	0%	2.50%	<0.34 acres
RS-08	10%	GIS	0%	0%	2.50%	<0.46 acres
RS-10	10%	GIS	0%	0%	2.50%	<0.57 acres
RS-35	10%	GIS	0%	0%	2.50%	<2.00 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 16-6 shows the characteristics of the initial inventory and Table 16-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 16-6: City of Puyallup Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	400.09	1,681.19	140.65	18.90
Average Lot Size (Gross)	1.98	1.15	0.36	1.35
Total Acreage (Net)	283.02	1,270.63	85.60	15.28
Average Lot Size (Net)	1.40	0.87	0.22	1.09
Percent Critical Areas	29%	24%	39%	19%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 16-7 shows the overall percentage of land assumed

available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 16-7: City of Puyallup Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	117.06	410.56
Infrastructure Gaps	21.75	114.32
Plat Deductions	9.68	52.79
Capital Facilities	0.00	0.00
Market Factor	40.08	626.84
Total Percent Reduction in Inventory Land	32%	52%
Percent of Vacant or Underutilized Land Available for Capacity	68%	48%

Capacity Results

The housing and employment capacity totals in Table 16-8 and Table 16-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 16-8: City of Puyallup 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
CB	4	0	0	0	**4**
CBD	69	598	0	0	**667**
CBD-CORE	0	657	0	0	**657**
CCX[1]	0	1,122	0	0	**1,122**
CG	1	-19	0	0	**-18**
CL	0	-12	0	0	**-12**
CMX	44	22	0	0	**66**
FAIR	0	0	0	0	**0**
LMX	4	6	0	0	**10**
MED	0	-16	0	0	**-16**
ML	0	-10	0	2	**-8**
MP	0	0	0	0	**0**
OP	0	-1	0	0	**-1**
PF	0	0	0	0	**0**
RM-10	37	27	0	0	**64**
RM-20	225	563	1	62	**851**
RM-CORE	289	1,024	1	0	**1,314**
RMX	0	46	0	0	**46**
RS-04	9	58	7	0	**74**
RS-06	2	58	26	0	**86**
RS-08	132	208	179	11	**530**
RS-10	141	711	148	12	**1,012**
RS-35	0	3	24	1	**28**
UCX	78	749	0	168	**995**
Total	**1,035**	**5,794**	**386**	**256**	**7,471**

[1]Underutilized land in the CCX zone occupied by a building has been netted out of the gross acreage assuming that the rest of the property could redevelop outside the existing building footprint.

Table 16-9: City of Puyallup 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
CB	204	27	2	233
CBD	118	939	0	1,057
CBD-CORE	0	771	0	771
CCX[1]	0	1,871	0	1,871
CG	202	845	5	1,052
CL	0	50	0	50
CMX	171	93	0	264
FAIR	0	0	0	0
LMX	74	144	0	218
MED	102	725	0	827
ML	757	271	0	1,028
MP	0	210	0	210
OP	94	31	0	125
PF	628	478	0	1,106
RM-10	2	7	0	9
RM-20	6	57	90	153
RM-CORE	0	0	0	0
RMX	0	506	0	506
RS-04	1	7	0	8
RS-06	0	10	0	10
RS-08	18	43	0	61
RS-10	24	173	0	197
RS-35	0	4	0	4
UCX	338	1,082	83	1,503
Total	2,739	8,344	180	11,263

[1]Underutilized land in the CCX zone occupied by a building has been netted out of the gross acreage assuming that the rest of the property could redevelop outside the existing building footprint.

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

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Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 16-10: City of Puyallup Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
ARO	0	0	0	0.00	0.0%
CB	0	1	0	10.90	11.0%
CBD	0	0	0	0.00	0.0%
CBD-CORE	0	0	0	0.00	0.0%
CCX	0	1	0	0.50	0.6%
CG	0	4	0	16.40	5.7%
CL	0	0	0	0.00	0.0%
CMX	0	0	0	0.00	0.0%
FAIR	0	0	0	0.00	0.0%
LMX	0	1	0	1.99	6.1%
MED	0	0	0	0.00	0.0%
ML	0	2	0	31.46	5.3%
MP	0	0	0	0.00	0.0%
OP	0	0	0	0.00	0.0%
PF	0	0	0	0.00	0.0%
RM-10	1	0	85	9.82	13.9%
RM-20	6	1	52	4.67	0.9%
RM-CORE	0	0	0	0.00	0.0%
RMX	0	0	0	0.00	0.0%
RS-04	2	0	5	3.04	3.9%
RS-06	7	0	19	3.67	0.9%
RS-08	16	0	163	35.89	4.1%
RS-10	18	0	210	88.01	3.8%
RS-35	1	0	2	1.48	0.4%
UCX	2	7	238	30.14	14.5%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 16-11: City of Puyallup Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
ARO	0	0	0	0
CB	0	0	0	4
CBD	0	0	0	30
CBD-CORE	0	0	0	35
CCX	0	0	0	60
CG	0	0	0	2
CL	0	0	0	2
CMX	0	0	0	7
FAIR	0	0	0	0
LMX	0	0	0	12
MED	0	0	0	0
ML	0	0	0	0
MP	0	0	0	0
OP	0	0	0	0
PF	0	0	0	0
RM-10	9	0	9	8
RM-20	18	6	21	20
RM-CORE	0	0	0	30
RMX	0	0	0	11
RS-04	2	2	0	8
RS-06	6	5	11	6
RS-08	5	5	0	5
RS-10	3	3	0	4
RS-35	1	1	0	1
UCX	16	0	16	22

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 16-12: City of Puyallup Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
ARO	0%	0%	0%	0%	Other-Not Developable	0%
CB	0%	10%	100%	90%	Mixed Use	0%
CBD	0%	100%	0%	100%	Mixed Use	0%
CBD-CORE	0%	100%	0%	100%	Mixed Use	0%
CCX	0%	50%	100%	100%	Mixed Use	0%
CG	0%	5%	100%	95%	Mixed Use	0%
CL	0%	5%	0%	95%	Mixed Use	0%
CMX	0%	40%	0%	60%	Mixed Use	0%
FAIR	0%	0%	0%	100%	Commercial	0%
LMX	0%	15%	100%	100%	Mixed Use	0%
MED	0%	0%	0%	100%	Commercial	0%
ML	0%	0%	100%	100%	Industrial	0%
MP	0%	0%	0%	100%	Industrial	0%
OP	0%	0%	0%	100%	Commercial	0%
PF	0%	0%	0%	100%	Commercial	0%
RM-10	100%	100%	0%	0%	Residential	3%
RM-20	80%	100%	20%	0%	Residential	3%
RM-CORE	0%	100%	0%	0%	Residential	0%
RMX	0%	50%	0%	100%	Mixed Use	0%
RS-04	100%	100%	0%	0%	Residential	3%
RS-06	100%	100%	0%	0%	Residential	3%
RS-08	100%	100%	0%	0%	Residential	3%
RS-10	100%	100%	0%	0%	Residential	3%
RS-35	100%	100%	0%	0%	Residential	3%
UCX	51%	50%	49%	100%	Mixed Use	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 16-13: City of Puyallup Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
ARO	0%	0%	0%	0%	0%	0%
CB	0%	0%	0%	0%	0%	0%
CBD	0%	0%	0%	0%	0%	0%
CBD-CORE	0%	0%	0%	0%	0%	0%
CCX	0%	0%	0%	0%	0%	0%
CG	0%	0%	0%	0%	0%	0%
CL	0%	0%	0%	0%	0%	0%
CMX	0%	0%	0%	0%	0%	0%
FAIR	0%	0%	0%	0%	0%	0%
LMX	0%	0%	0%	0%	0%	0%
MED	0%	0%	0%	0%	0%	0%
ML	0%	0%	0%	0%	0%	0%
MP	0%	0%	0%	0%	0%	0%
OP	0%	0%	0%	0%	0%	0%
PF	0%	0%	0%	0%	0%	0%
RM-10	0%	0%	0%	0%	0%	0%
RM-20	0%	0%	0%	0%	0%	0%
RM-CORE	0%	0%	0%	0%	0%	0%
RMX	0%	0%	0%	0%	0%	0%
RS-04	0%	10%	0%	0%	0%	0%
RS-06	0%	10%	0%	0%	0%	0%
RS-08	7%	10%	8%	0%	2%	0%
RS-10	0%	10%	1%	0%	0%	0%
RS-35	0%	10%	0%	0%	0%	0%
UCX	0%	0%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 16-14: City of Puyallup Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
16,171	18,106	25,594	1,935	7,488	194	312	**119**

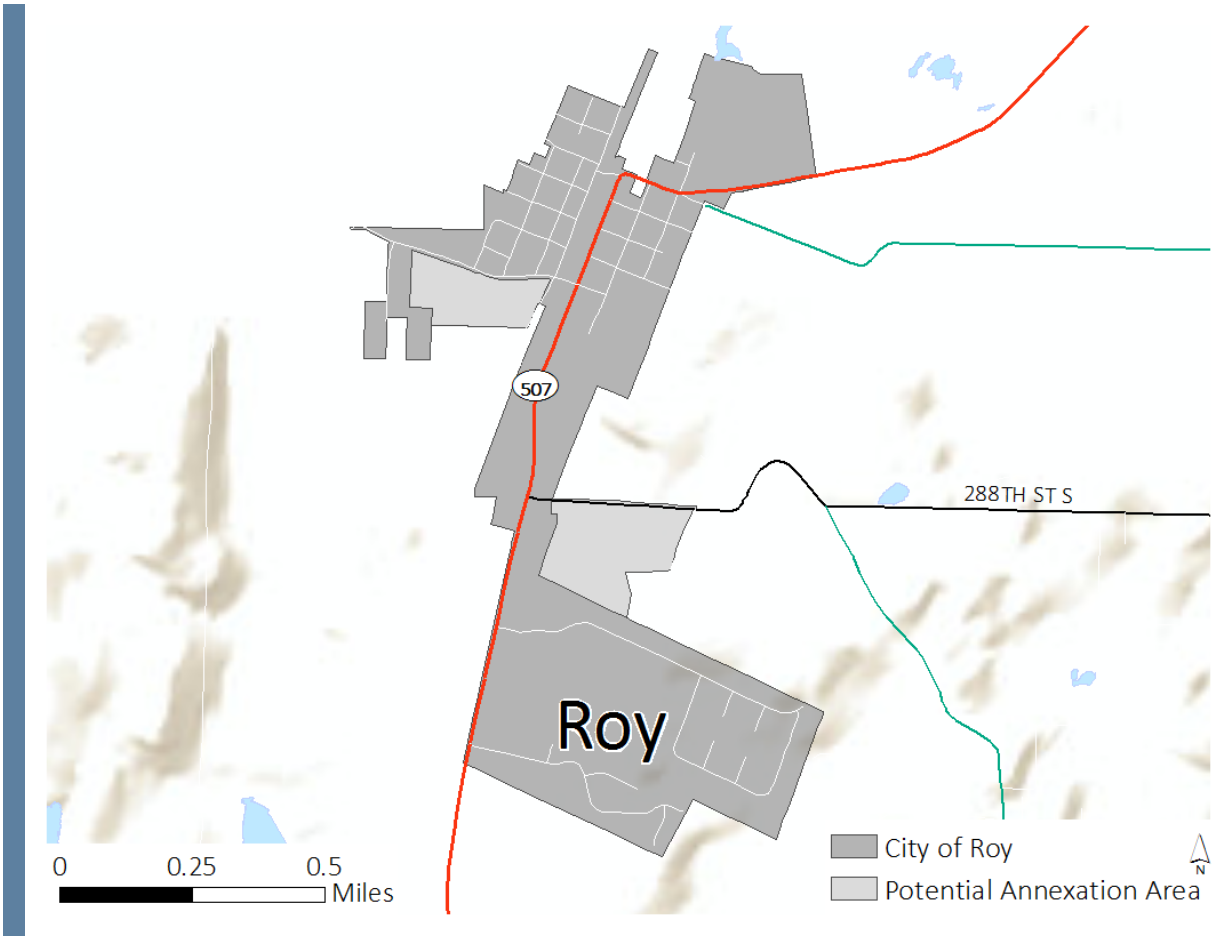
Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 16-15: City of Puyallup Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
7,471	7,488	-17	11,263	14,715	-3,452

17 CITY OF ROY



The City of Roy's Comprehensive Plan and regulations implement densities based on minimum lot size.

Table b-17-1: City of Roy Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
C	Commercial	Commercial	9.3
LI	Light Industrial	Industrial	5.2
MFR	Multi-Family Residential	Residential	28.4
MU	Mixed Use	Mixed Use	30.3
SFR	Single-Family Residential	Residential	180.7

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes building and plat data obtained through the Pierce County Assessor-Treasurer and Auditor Departments observed between **January 1, 2013 and December 31, 2020** that is used to monitor observed densities and update the assumptions for future development. The summaries in this

section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 17-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 17-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 17-2: City of Roy 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
SFR	1.60	5	3.13

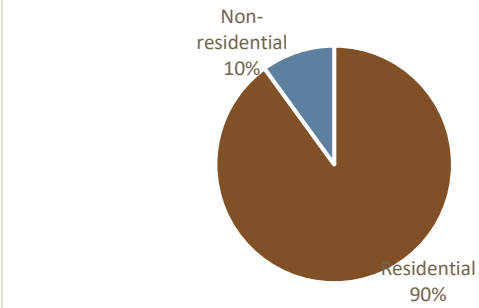
Table 17-3: City of Roy 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
C	0.19	168	0.02

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 17-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 17-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 17-A: City of Roy Residential vs. Non-residential Development Split



Zone	Use Type Split (Percent)[1] Residential	Non-residential
C	0%	100%
SFR	100%	0%
Average	**90%**	**10%**

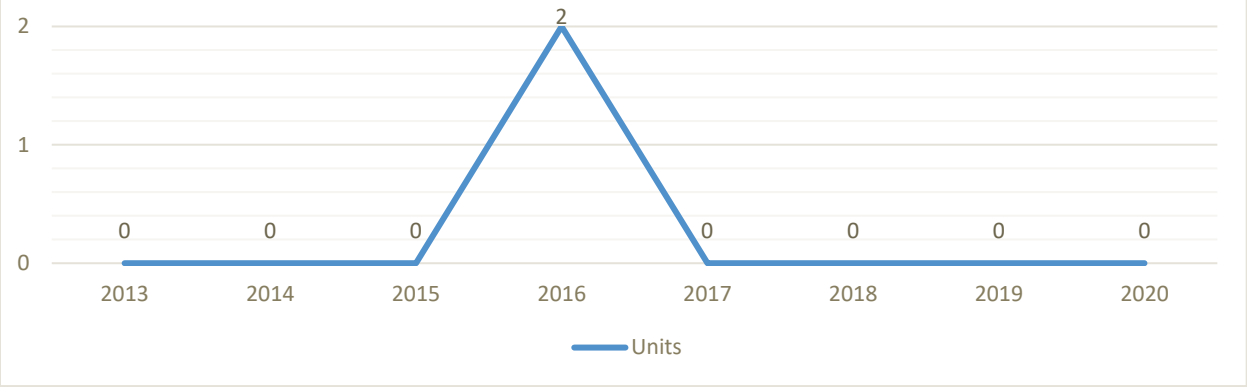
[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce

County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 17-B: City of Roy Housing Production Rates (OFM)

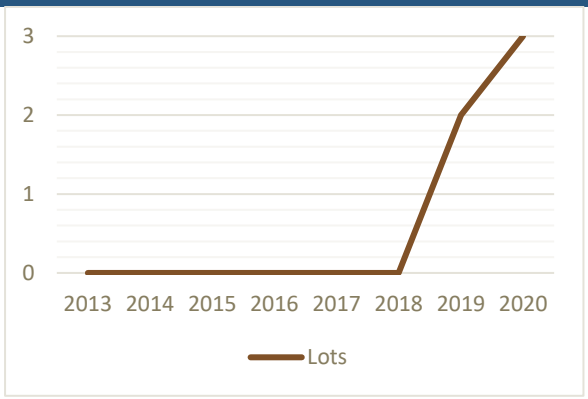


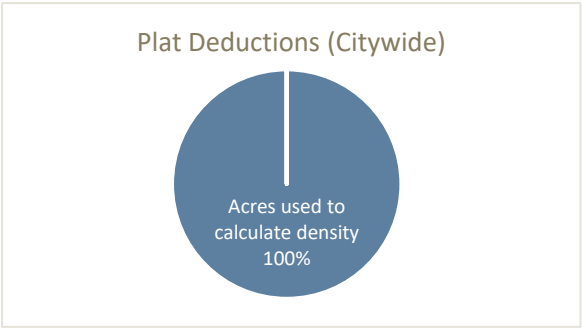
Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 17-2).

Figure 17-C: City of Roy Platting Trends





Plat Activity by Year

Year	Lots	Acres	Density
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	2	0.63	3.15
2020	3	0.96	3.12
Total	**5**	**1.60**	**3.13**

Plat Deductions by Zone (Percent)

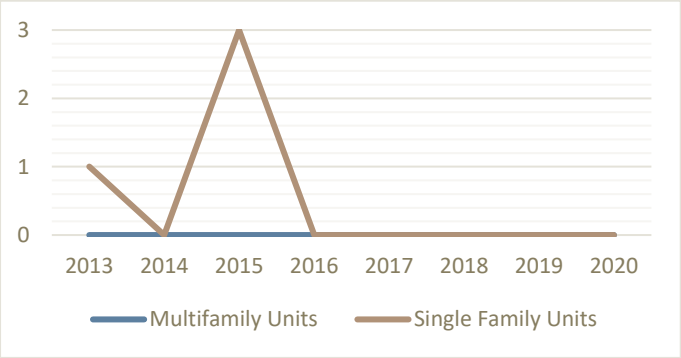
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
SFR	0.0%	0.0%	0.0%	0.0%

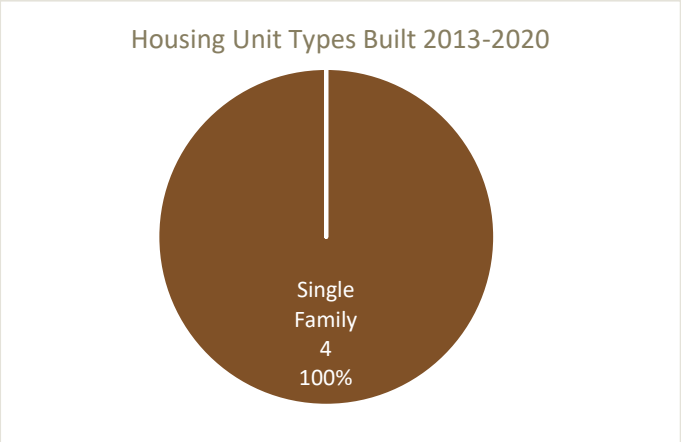
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 17-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 17-D: City of Roy Residential Building Permit Trends





Multifamily Permits by Year

No multifamily residential development has been observed in the timeframe.

Single-Family Permits by Year (Optional)

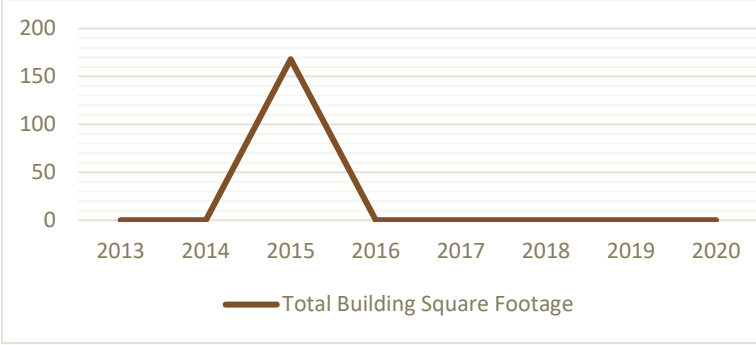
Year	Lots	Acres	Avg. Lot Size
2013	1	0.53	0.53
2014	-	-	-
2015	3	3.77	1.26
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	-	-	-
2020	-	-	-
Total	**4**	**4.30**	**1.08**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 17-E: City of Roy Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	-	-	-
2014	-	-	-
2015	0.19	168	0.02
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	-	-	-
2020	-	-	-
Total	**0.19**	**168**	**0.02**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 17-4 and Table 17-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 17-4: City of Roy Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
C	0%	0	100%	20	0%	0%	10%	50%	0%
LI	0%	0	100%	9	0%	0%	10%	50%	0%
MFR	100%	3.5	0%	0	10%	50%	0%	0%	0%
MU	75%	3.5	25%	20	10%	50%	10%	50%	0%
SFR	100%	3.5	0%	0	10%	50%	0%	0%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 17-5: City of Roy Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
SFR	15%	GIS	5%	0%	0%	<0.25 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 17-6 shows the characteristics of the initial inventory and Table 17-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 17-6: City of Roy Summary of Vacant and Underutilized Land Characteristics				
Characteristics/Category	**Vacant**	**Underutilized**	**Vacant Single Unit**	**Pipeline**
Total Acreage (Gross	36.42	90.00	3.28	0.96
Average Lot Size (Gross)	4.05	3.10	0.25	0.96
Total Acreage (Net)	24.68	79.30	3.28	0.96
Average Lot Size (Net)	2.74	2.73	0.25	0.96
Percent Critical Areas	32%	12%	0%	0%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 17-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 17-7: City of Roy Summary of Deductions		
Deductions/Category	**Vacant**	**Underutilized**
Critical Areas	11.74	10.70
Plat Deductions	1.31	11.64
Capital Facilities	0.00	0.00
Market Factor	2.63	33.93
Total Percent Reduction in Inventory Land	35%	62%
Percent of Vacant or Underutilized Land Available for Capacity	65%	38%

Capacity Results

The housing and employment capacity totals in Table 17-8 and Table 17-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 17-8: City of Roy 2020-2044 Housing Capacity (Dwelling Units)					
Zone	**Vacant**	**Underutilized**	**Vacant Single Unit**	**Pipeline**	**Total**
C	0	-1	0	0	**-1**
LI	0	0	0	0	**0**
MFR	0	25	0	0	**25**
MU	43	0	0	0	**43**
SFR	17	77	13	2	**109**
Total	**60**	**101**	**13**	**2**	**176**

Table 17-9: City of Roy 2020-2044 Employment Capacity (Jobs)				
Zone	Vacant	Underutilized	Pipeline	Total
C	2	18	0	20
LI	0	13	0	13
MFR	0	0	0	0
MU	134	0	0	134
SFR	0	0	0	0
Total	136	31	0	167

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 17-10: City of Roy Permits Summary					
Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
C	0	1	0	0.19	1.9%
LI	0	0	0	0.00	0.0%
MFR	0	0	0	0.00	0.0%
MU	0	0	0	0.00	0.0%
SFR	2	0	5	1.60	0.8%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 17-11: City of Roy Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
C	0	0	0	0
LI	0	0	0	0
MFR	0	0	0	4
MU	0	0	0	4
SFR	3	3	0	4

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 17-12: City of Roy Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
C	0%	0%	100%	100%	Commercial	0%
LI	0%	0%	0%	100%	Industrial	0%
MFR	0%	100%	0%	0%	Residential	0%
MU	0%	75%	0%	25%	Mixed Use	0%
SFR	100%	100%	0%	0%	Residential	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 17-13: City of Roy Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
C	0%	0%	0%	0%	0%	0%
LI	0%	0%	0%	0%	0%	0%
MFR	0%	0%	0%	0%	0%	0%
MU	0%	0%	0%	0%	0%	0%
SFR	0%	15%	0%	5%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 17-14: City of Roy Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
326	315	410	-11	95	-1	4	**5**

Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 17-15: City of Roy Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
176	95	81	167	92	75

18 CITY OF RUSTON



The City of Ruston's Comprehensive Plan and regulations implement densities based on net calculations, subtracting out roads, and critical areas.

Table 18-1: City of Ruston Zone Classifications

	Zone Classification	Zone Type[1]	Total Acres[2]
COM	Commercial	Commercial	2.9
COM-P	Commercial – Pearl	Commercial	4.5
MPD	Master Planned Development	Planned Development	1.0
MPD-PR	Master Planned Development-Point Ruston	Planned Development	41.2
MPD-RL	Master Planned Development	Planned Development	1.2
MPD-SH	Master Planned Development-Stack Hill	Planned Development	6.8
RES	Residential	Residential	64.1

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes building and plat data obtained through the Pierce County Assessor-Treasurer and Auditor Departments observed between January 1, 2013 and December 31, 2020 that is used to monitor observed densities and update the assumptions for future development. The summaries in this

section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 18-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 18-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 18-2: City of Ruston 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
RES	0.49	4	8.24

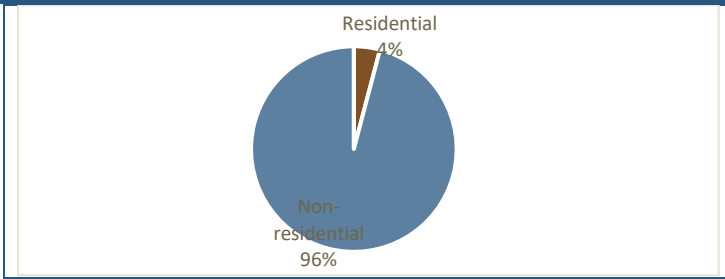
Table 18-3: City of Ruston 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
MPD-PR	11.37	215,096	0.43

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 18-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 18-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 18-A: City of Ruston Residential vs. Non-residential Development Split



Zone	Use Type Split (Percent)[1]	
	Residential	Non-residential
MPD-PR	0%	100%
RES	100%	0%
Average	**4%**	**96%**

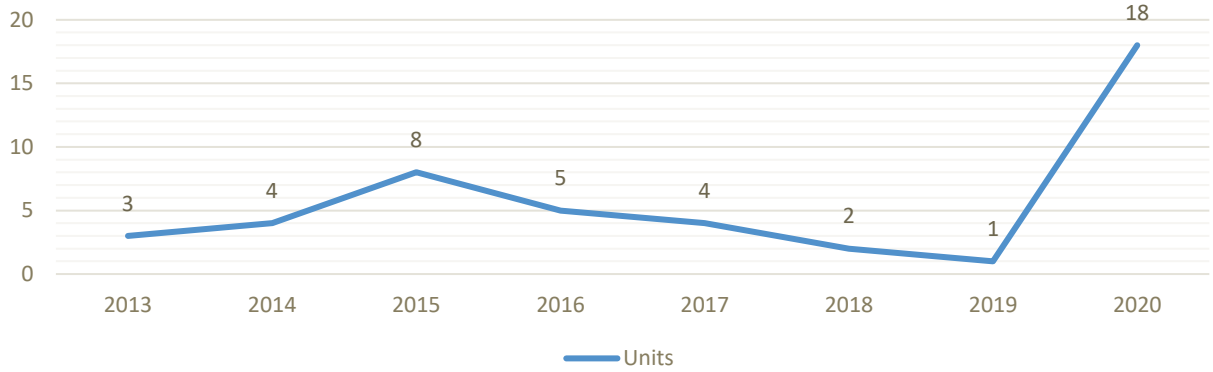
[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number

of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 18-B: City of Ruston Housing Production Rates (OFM)

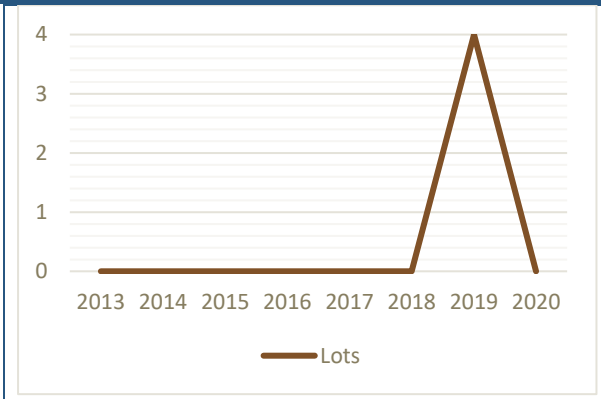


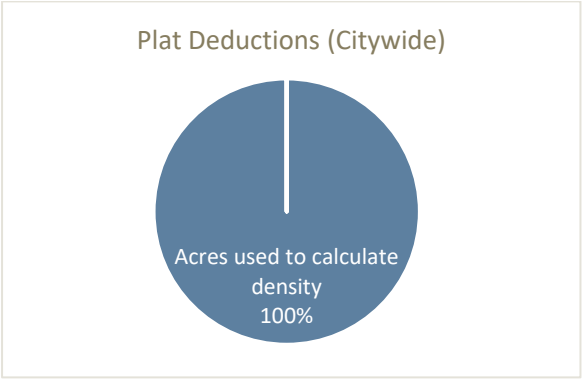
Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 18-2).

Figure 18-C: City of Ruston Platting Trends





Plat Activity by Year

Year	Lots	Acres	Density
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	4	0.49	8.24
2020	-	-	-
Total	4	0.49	8.24

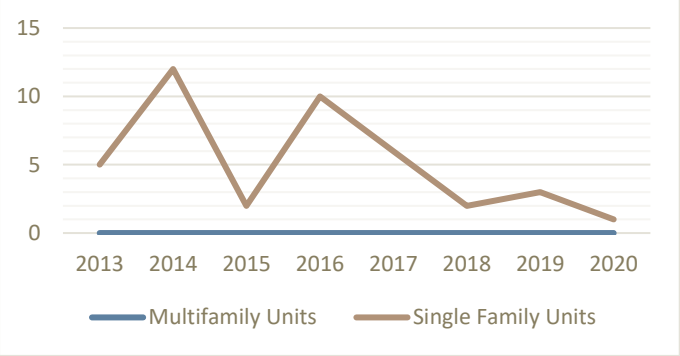
Plat Deductions by Zone (Percent)

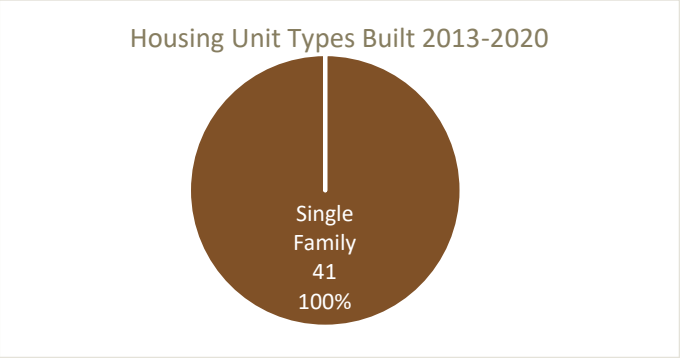
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
RES	0.0%	0.0%	0.0%	0.0%

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 18-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 18-D: City of Ruston Residential Building Permit Trends





Multifamily Permits by Year

No multifamily residential development has been observed in the timeframe.

Single-Family Permits by Year (Optional)

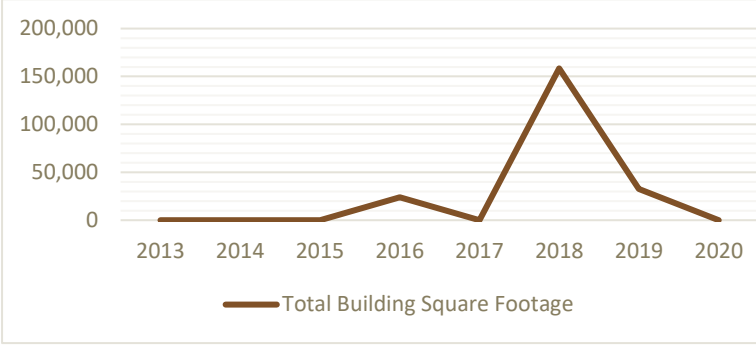
Year	Lots	Acres	Avg. Lot Size
2013	5	1.32	0.26
2014	12	2.19	0.18
2015	2	0.34	0.17
2016	10	1.96	0.20
2017	6	1.06	0.18
2018	2	0.32	0.16
2019	3	1.25	0.42
2020	1	0.14	0.14
Total	**41**	**8.59**	**0.21**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 18-E: City of Ruston Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	1.73	23,962	0.32
2017	-	-	-
2018	2.14	158,408	1.70
2019	7.50	32,726	0.10
2020	-	-	-
Total	**11.37**	**215,096**	**0.43**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 18-4 and Table 18-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 18-4: City of Ruston Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
COM	0%	0	100%	20	0%	0%	10%	50%	0%
COM-P	0%	0	100%	20	0%	0%	10%	50%	0%
MPD	Single Parcel – Considered Built Out								
MPD-PR	Master Planned Development – Included as Pipeline								
MPD-RL	0%	0	0%	0	0%	0%	0%	0%	0%
MPD-SH	Master Planned Development – Included as Pipeline or Vacant Single Unit								
RES	100%	6	0%	0	0%	0%	10%	20%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 18-5: City of Ruston Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
RES	0%	GIS	0%	0%	0%	<0.275 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 18-6 shows the characteristics of the initial inventory and Table 18-7 shows

the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 18-6: City of Roy Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	3.75	4.88	3.10	22.12
Average Lot Size (Gross)	0.27	0.22	0.15	2.76
Total Acreage (Net)	1.48	4.62	2.64	19.54
Average Lot Size (Net)	0.11	0.21	0.13	2.44
Percent Critical Areas	61%	5%	15%	12%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 18-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 18-7: City of Ruston Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	2.27	0.26
Plat Deductions	0.00	0.00
Capital Facilities	0.00	0.00
Market Factor	0.08	0.97
Total Percent Reduction in Inventory Land	55%	23%
Percent of Vacant or Underutilized Land Available for Capacity	45%	77%

Capacity Results

The housing and employment capacity totals in Table 18-8 and Table 18-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 18-8: City of Ruston 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
COM	0	-1	0	0	**-1**
COM-P	0	-1	0	0	**-1**
MPD	0	0	0	0	**0**
MPD-PR	0	0	0	620	**620**
MPD-RL	0	0	0	0	**0**
MPD-SH	0	0	2	0	**2**
RES	6	8	19	0	**33**
Total	**6**	**6**	**21**	**620**	**653**

Table 18-9: City of Ruston 2020-2044 Employment Capacity (Jobs)				
Zone	Vacant	Underutilized	Pipeline	Total
COM	9	6	0	15
COM-P	5	9	0	14
MPD	0	0	0	0
MPD-PR	0	0	749	749
MPD-RL	0	0	0	0
MPD-SH	0	0	0	0
RES	0	0	0	0
Total	14	15	749	778

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 18-10: City of Ruston Permits Summary					
Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
COM	0	0	0	0.00	0.0%
COM-P	0	0	0	0.00	0.0%
MPD	0	0	0	0.00	0.0%
MPD-PR	0	3	0	11.37	25.3%
MPD-RL	0	0	0	0.00	0.0%
MPD-SH	0	0	0	0.00	0.0%
RES	2	0	4	0.49	0.7%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 18-11: City of Ruston Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
COM	0	0	0	0
COM-P	0	0	0	0
MPD	0	0	0	0
MPD-PR	0	0	0	0
MPD-RL	0	0	0	0
MPD-SH	0	0	0	0
RES	8	8	0	6

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 18-12: City of Ruston Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
COM	0%	0%	0%	100%	Commercial	0%
COM-P	0%	0%	0%	100%	Commercial	0%
MPD	0%	0%	0%	0%	Mixed Use	0%
MPD-PR	0%	0%	100%	0%	Mixed Use	0%
MPD-RL	0%	0%	0%	0%	Mixed Use	0%
MPD-SH	0%	0%	0%	0%	Residential	0%
RES	100%	100%	0%	0%	Residential	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 18-13: City of Ruston Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
COM	0%	0%	0%	0%	0%	0%
COM-P	0%	0%	0%	0%	0%	0%
MPD	0%	0%	0%	0%	0%	0%
MPD-PR	0%	0%	0%	0%	0%	0%
MPD-RL	0%	0%	0%	0%	0%	0%
MPD-SH	0%	0%	0%	0%	0%	0%
RES	0%	0%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 18-14: City of Ruston Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
430	517	686	87	169	9	7	-

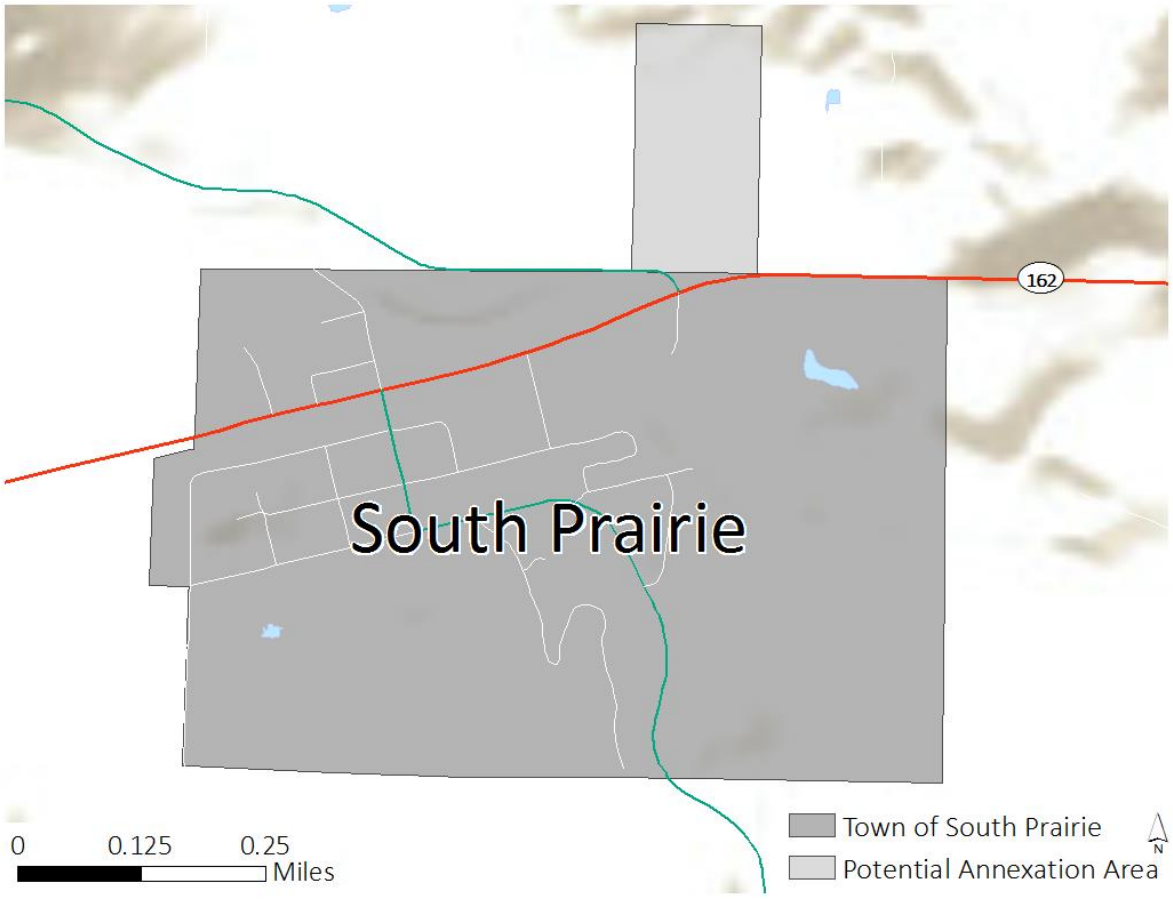
Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 18-15: City of Ruston Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
653	169	484	778	71	707

19 TOWN OF SOUTH PRAIRIE



The Town of South Prairie's Comprehensive Plan and regulations implement densities based on net acreage.

Table 19-1: Town of South Prairie Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
AGB	Agricultural Business	Commercial	10.0
C	Commercial	Commercial	12.0
GOV	Government/Utilities	Public Use	7.1
IND	Industrial	Industrial	0.6
PTOS	Parks/Trails/Open Space	N/A	19.4
R	Residential	Residential	138.9
R/CUP	Residential CUP	Residential	34.2

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the Town zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: Town Zoning Code.

DEVELOPMENT TRENDS

This section summarizes building and plat data obtained through the Pierce County Assessor-Treasurer and Auditor Departments observed between January 1, 2013 and December 31, 2020 that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 19-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 19-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 19-2: Town of South Prairie 2013-2020 Residential Trends by Zone[1]

No multifamily residential development or plat activity has been observed in the timeframe.

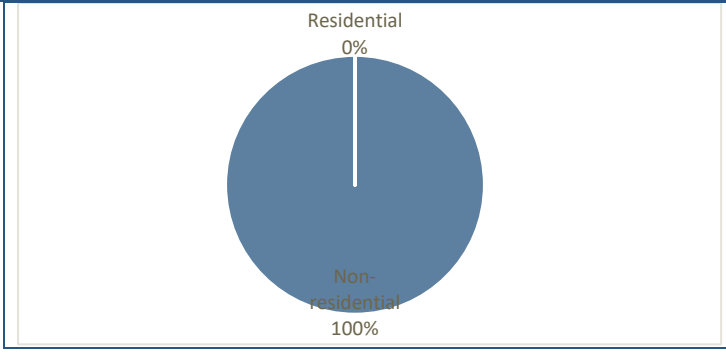
Table 19-3: Town of South Prairie 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
C	1.67	5,640	0.08

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 19-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 19-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 19-A: Town of South Prairie Residential vs. Non-residential Development Split



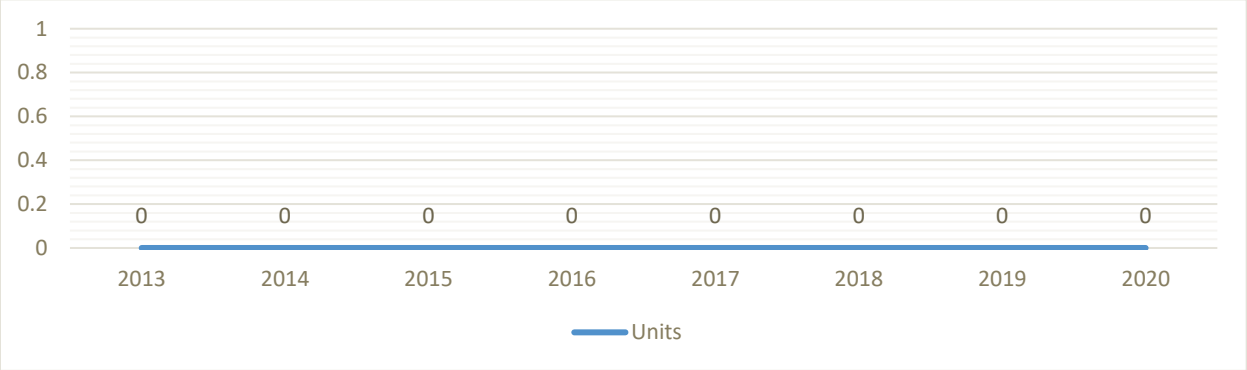
Zone	Use Type Split (Percent)[1]	
	Residential	Non-residential
C	0%	100%

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 19-B: Town of South Prairie Housing Production Rates (OFM)



Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 19-2).

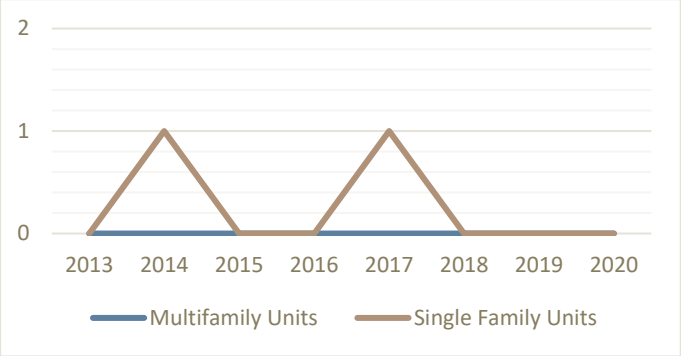
Figure 19-C: Town of South Prairie Platting Trends

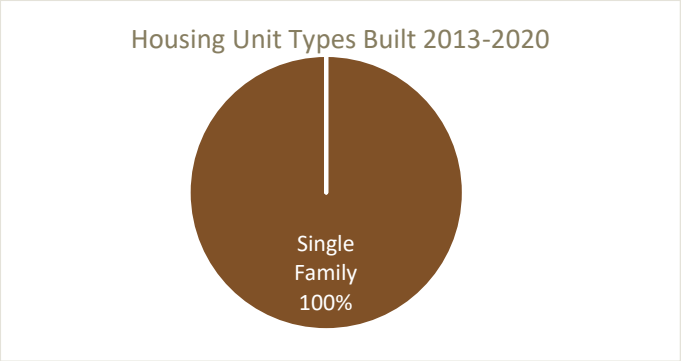
No plat activity has been observed in the timeframe.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 19-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 19-D: Town of South Prairie Residential Building Permit Trends





Multifamily Permits by Year

No multifamily residential development has been observed in the timeframe.

Single-Family Permits by Year (Optional)

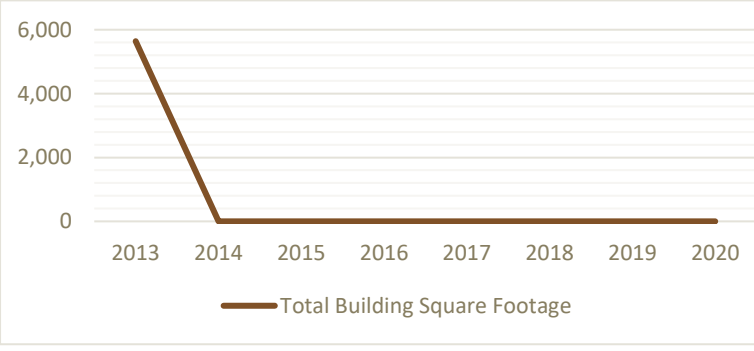
Year	Lots	Acres	Avg. Lot Size
2013	-		-
2014	1	0.66	0.66
2015	1	0.11	0.11
2016	-	-	-
2017	1	0.18	0.18
2018	-	-	-
2019	-	-	-
2020	-	-	-
Total	**3**	**0.96**	**0.32**

Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 19-E: Town of South Prairie Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	1.67	5,640	0.08
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	-	-	-
2020	-	-	-
Total	**1.67**	**5,640**	**0.08**

Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 19-4 and Table 19-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 19-4: Town of South Prairie Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
AGB	0%	0	100%	20	0%	0%	10%	50%	0%
C	0%	0	100%	20	0%	0%	10%	50%	0%
GOV	0%	0	100%	20	0%	0%	10%	50%	0%
IND	0%	0	100%	9	0%	0%	10%	50%	0%
R	100%	4	0%	20	25%	25%	0%	0%	0%
R/CUP	100%	4	0%	20	25%	25%	0%	0%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 19-5: Town of South Prairie Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
R	30%	35%	10%	0%	3%	<1 acre
R/CUP	30%	35%	10%	0%	3%	<1 acre

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 19-6 shows the characteristics of the initial inventory and Table 19-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 19-6: Town of South Prairie Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	35.78	111.19	4.67	0.00
Average Lot Size (Gross)	1.56	3.27	0.23	0.00
Total Acreage (Net)	26.58	70.87	3.65	0.00
Average Lot Size (Net)	1.16	2.08	0.18	0.00
Percent Critical Areas	26%	36%	22%	0%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 19-7 shows the overall percentage of land assumed

available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 19-7: Town of South Prairie Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	9.20	40.32
Plat Deductions	18.02	43.35
Capital Facilities	0.00	0.00
Market Factor	1.76	12.02
Total Percent Reduction in Inventory Land	81%	83%
Percent of Vacant or Underutilized Land Available for Capacity	19%	17%

Capacity Results

The housing and employment capacity totals in Table 19-8 and Table 19-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 19-8: Town of South Prairie 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
AGB	0	-1	0	0	-1
C	0	-1	0	0	-1
GOV	0	0	0	0	0
IND	0	0	0	0	0
R	17	34	20	0	71
R/CUP	0	4	0	0	4
Total	17	36	20	0	73

Table 19-9: Town of South Prairie 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
AGB	0	100	0	100
C	45	58	0	103
GOV	2	0	0	2
IND	0	0	0	0
R	4	8	0	12
R/CUP	0	1	0	1
Total	51	167	0	218

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report.

Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 19-10: Town of South Prairie Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
AGB	0	0	0	0.00	0.0%
C	0	2	0	1.67	14.0%
GOV	0	0	0	0.00	0.0%
IND	0	0	0	0.00	0.0%
PTOS	0	0	0	0.00	0.0%
R	0	0	0	0.00	0.0%
R/CUP	0	0	0	0.00	0.0%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 19-11: Town of South Prairie Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
AGB	0	0	0	0
C	0	0	0	0
GOV	0	0	0	0
IND	0	0	0	0
PTOS	0	0	0	0
R	0	0	0	4
R/CUP	0	0	0	4

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 19-12: Town of South Prairie Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
AGB	0%	0%	0%	100%	Commercial	0%
C	0%	0%	100%	100%	Commercial	0%
GOV	0%	0%	0%	100%	Commercial	0%
IND	0%	0%	0%	100%	Industrial	0%
PTOS	0%	0%	0%	0%	Other-Not Developable	0%
R	0%	100%	0%	0%	Residential	3%
R/CUP	0%	100%	0%	0%	Residential	3%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 19-13: Town of South Prairie Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
AGB	0%	0%	0%	0%	0%	0%
C	0%	0%	0%	0%	0%	0%
GOV	0%	0%	0%	0%	0%	0%
IND	0%	0%	0%	0%	0%	0%
PTOS	0%	0%	0%	0%	0%	0%
R	0%	30%	0%	10%	0%	0%
R/CUP	0%	30%	0%	10%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 19-14: Town of South Prairie Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
174	149	162	-25	13	-3	1	**3**

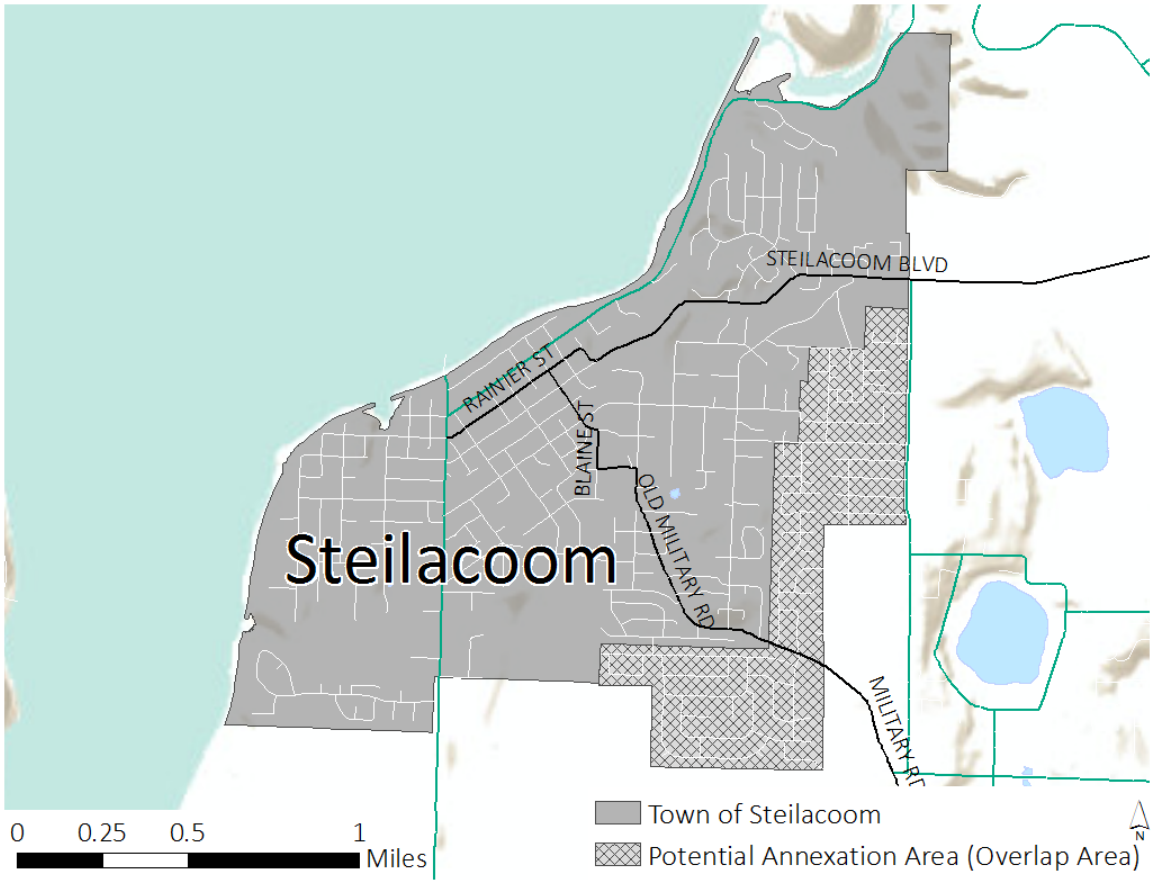
Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 19-15: Town of South Prairie Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
73	13	60	218	10	208

20 TOWN OF STEILACOOM



The Town of Steilacoom's Comprehensive Plan and regulations implement densities using net acreage, subtracting out critical areas and their buffers, roads, and parks.

Table 20-1: Town of Steilacoom Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
CG	Commercial – General	Mixed Use	8.7
CS	Commercial – Shoreline	Mixed Use	22.3
IND	Industrial	Industrial	14.1
MF	Multi-Family	Residential	48.9
MPD	Master Planned Development	Planned Development	71.3
P/QP	Public/Quasi-Public	Public Use	72.1
POS	Parks & Open Space	N/A	100.5
R-7.2	Residential – 7.2	Residential	178.7
R-9.6	Residential – 9.6	Residential	512.0

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the Town zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: Town Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between January 1, 2013 and December 31, 2020 that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 20-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 20-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 20-2: Town of Steilacoom 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
R-9.6	31.10	85	2.73

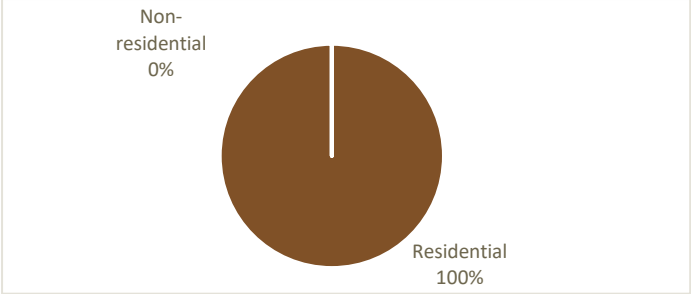
Table 20-3: Town of Steilacoom 2013-2020 Non-residential Trends by Zone

No non-residential development has been observed in the timeframe.

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 20-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 20-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 20-A: Town of Steilacoom Residential vs. Non-residential Development Split



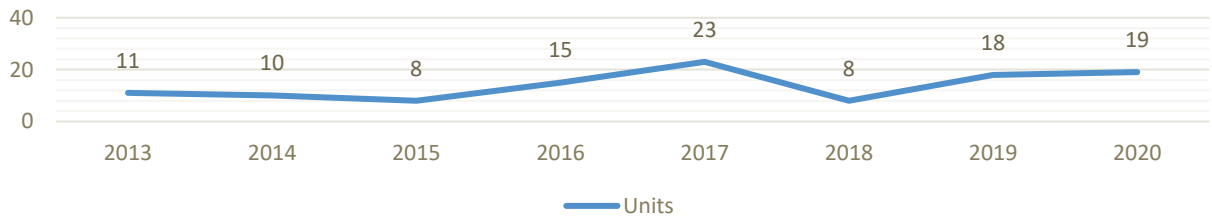
Zone	Use Type Split (Percent)[1]	
	Residential	Non-residential
R-9.6	100%	0%

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 20-B: Town of Steilacoom Housing Production Rates (OFM)

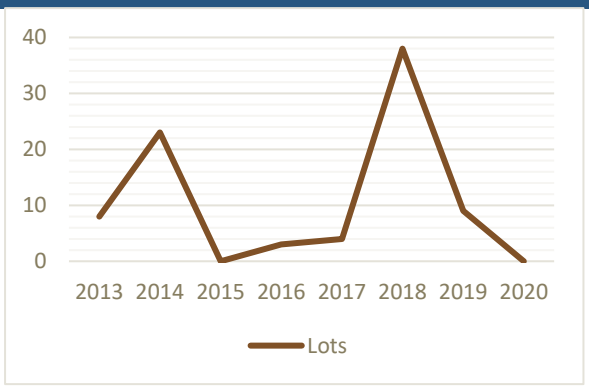


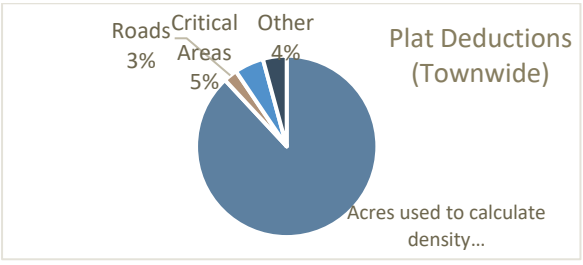
Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 20-2).

Figure 20-C: Town of Steilacoom Platting Trends





Plat Activity by Year

Year	Lots	Acres	Density
2013	8	2.14	3.74
2014	23	8.61	2.67
2015	-	-	-
2016	3	0.71	4.23
2017	4	1.30	3.08
2018	38	13.65	2.78
2019	9	4.69	1.92
2020	-	-	-
Total	**85**	**31.10**	**2.73**

Plat Deductions by Zone (Percent)

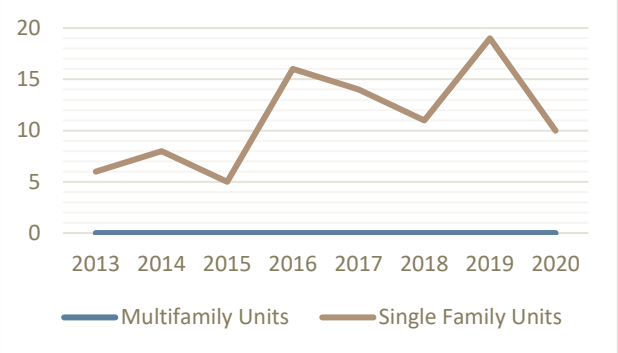
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
R-9.6	2.5%	5.2%	0.3%	3.9%

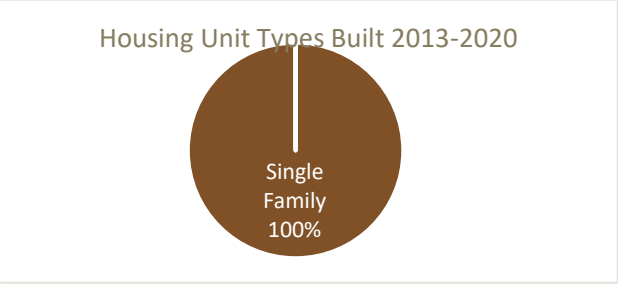
Sources: Town Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 20-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 20-D: Town of Steilacoom Residential Building Permit Trends





Multifamily Permits by Year

No multifamily residential development has been observed in the timeframe.

Single-Family Permits by Year (Optional)

Year	Lots	Acres	Avg. Lot Size
2013	6	1.57	0.26
2014	8	1.99	0.25
2015	5	1.06	0.21
2016	16	3.87	0.24
2017	14	3.40	0.24
2018	11	3.06	0.27
2019	19	6.48	0.34
2020	10	2.62	0.26
Total	**89**	**24.05**	**0.27**

Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 20-E: Town of Steilacoom Non-residential Permit Trends

No non-residential development has been observed in the timeframe.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 20-4 and Table 20-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 20-4: Town of Steilacoom Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
CG	15%	12	85%	20	0%	50%	10%	50%	0%
CS	15%	12	85%	20	0%	50%	10%	50%	0%
IND	0%	0	100%	9	0%	0%	10%	50%	0%
MF	100%	12	0%	20	0%	50%	0%	0%	0%
P/QP	0%	0	100%	20	0%	0%	10%	50%	0%
R-7.2	100%	6	0%	20	10%	20%	0%	0%	0%
R-9.6	100%	4	0%	20	10%	20%	0%	0%	0%
MPD	100%	6	0%	0	10%	20%	0%	0%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 20-5: Town of Steilacoom Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
R-7.2	12%	10%	2%	3%	0%	<0.41 acres
R-9.6	12%	10%	2%	3%	0%	<0.55 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 20-6 shows the characteristics of the initial inventory and Table 20-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 20-6: Town of Steilacoom Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	62.91	120.48	41.00	8.55
Average Lot Size (Gross)	1.53	2.04	0.25	2.14
Total Acreage (Net)	43.70	75.71	33.37	6.89
Average Lot Size (Net)	1.07	1.28	0.20	1.72
Percent Critical Areas	31%	37%	19%	19%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable

land" per the Buildable Lands requirements. Table 20-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 20-7: Town of Steilacoom Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	19.21	44.77
Plat Deductions	10.56	12.65
Capital Facilities	0.00	0.00
Market Factor	5.22	11.41
Total Percent Reduction in Inventory Land	25%	43%
Percent of Vacant or Underutilized Land Available for Capacity	75%	57%

Capacity Results

The housing and employment capacity totals in Table 20-8 and Table 20-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 20-8: Town of Steilacoom 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
CG	2	3	0	0	**5**
CS	0	1	0	0	**1**
IND	0	0	0	0	**0**
MF	0	0	0	0	**0**
P/QP	0	0	0	0	**0**
R-7.2	29	27	77	0	**133**
R-9.6	84	74	86	26	**270**
MPD	0	226	0	0	**226**
Total	**115**	**331**	**163**	**26**	**635**

Table 20-9: Town of Steilacoom 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
CG	17	22	0	**39**
CS	0	13	0	**13**
IND	107	0	0	**107**
MF	0	0	0	**0**
P/QP	171	34	0	**205**
R-7.2	0	0	0	**0**
R-9.6	0	0	0	**0**
MPD	0	0	0	**0**
Total	**295**	**69**	**0**	**364**

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

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Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 20-10: Town of Steilacoom Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
CG	0	0	0	0.00	0.0%
CS	0	0	0	0.00	0.0%
IND	0	0	0	0.00	0.0%
MF	0	0	0	0.00	0.0%
MPD	0	0	0	0.00	0.0%
P/QP	0	0	0	0.00	0.0%
POS	0	0	0	0.00	0.0%
R-7.2	0	0	0	0.00	0.0%
R-9.6	15	0	85	31.10	5.9%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 20-11: Town of Steilacoom Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
CG	0	0	0	12
CS	0	0	0	12
IND	0	0	0	0
MF	0	0	0	12
MPD	0	0	0	6
P/QP	0	0	0	0
POS	0	0	0	0
R-7.2	0	0	0	6
R-9.6	3	3	0	4

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 20-12: Town of Steilacoom Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
CG	0%	15%	0%	85%	Mixed Use	0%
CS	0%	15%	0%	85%	Mixed Use	0%
IND	0%	0%	0%	100%	Industrial	0%
MF	0%	100%	0%	0%	Residential	0%
MPD	0%	100%	0%	0%	Residential	0%
P/QP	0%	0%	0%	100%	Commercial	0%
POS	0%	0%	0%	0%	Other-Not Developable	0%
R-7.2	0%	100%	0%	0%	Residential	0%
R-9.6	100%	100%	0%	0%	Residential	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 20-13: Town of Steilacoom Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
CG	0%	0%	0%	0%	0%	0%
CS	0%	0%	0%	0%	0%	0%
IND	0%	0%	0%	0%	0%	0%
MF	0%	0%	0%	0%	0%	0%
MPD	0%	12%	0%	2%	0%	3%
P/QP	0%	0%	0%	0%	0%	0%
POS	0%	0%	0%	0%	0%	0%
R-7.2	0%	12%	0%	2%	0%	3%
R-9.6	2%	12%	0%	2%	4%	3%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 20-14: Town of Steilacoom Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
2,793	2,919	3,095	126	176	13	7	-

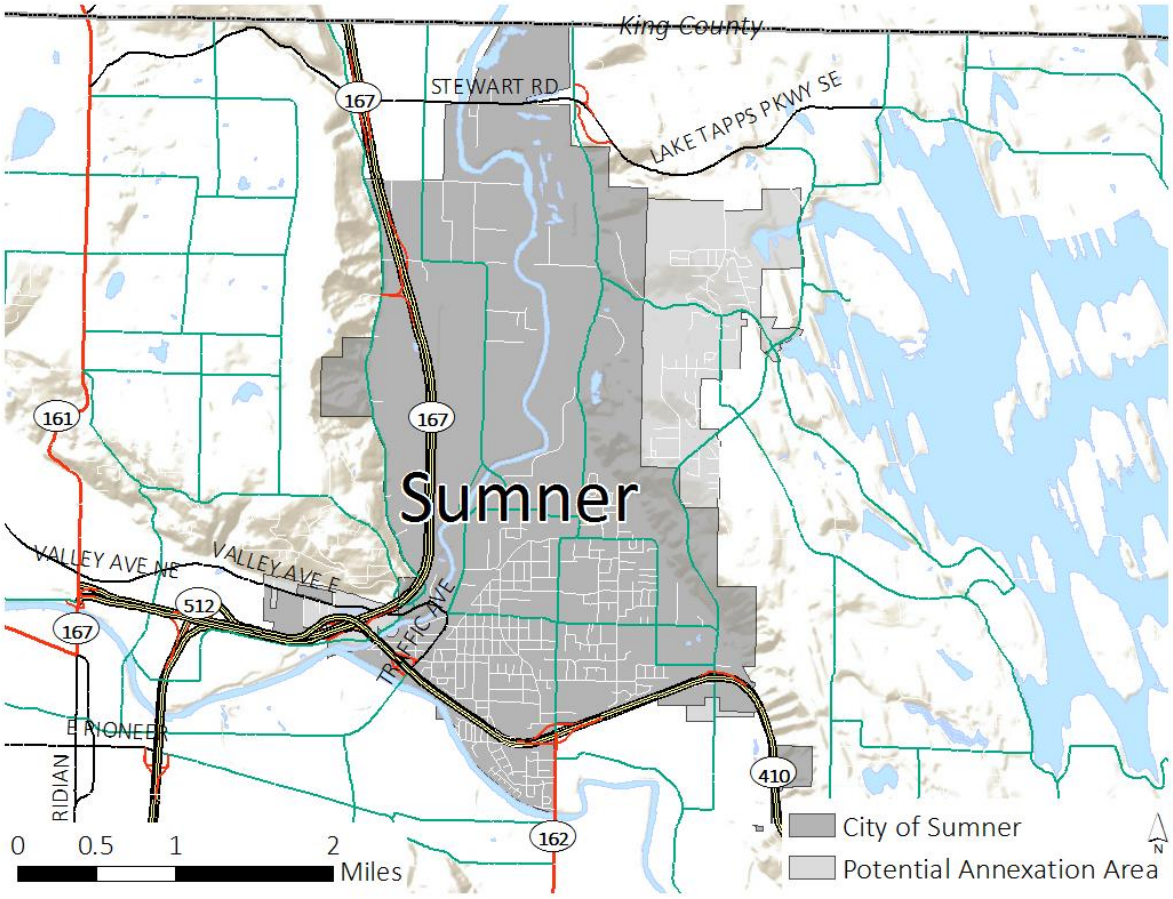
Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 20-15: Town of Steilacoom Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
635	176	459	364	10	354

21 CITY OF SUMNER



The City of Sumner's Comprehensive Plan and regulations implement densities based on net acreage, subtracting out critical areas and buffers.

Table 21-1: City of Sumner Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
CBD	Central Business District	Mixed Use	1.8
GC	General Commercial	Mixed Use	128.8
HDR	High Density Multi-Family Residential	Residential	100.9
IC	Interchange Commercial	Commercial	139.7
LDR-12	Low Density Residential 12,000	Residential	705.6
LDR-4	Low Density Residential 4,000	Residential	4.4
LDR-6	Low Density Residential 6,000	Residential	250.7
LDR-7.2	Low Density Residential 7,200	Residential	60.1
LDR-8.5	Low Density Residential 8,500	Residential	388.9
M1	Light Manufacturing	Industrial	1,808.1
M2	Heavy Manufacturing	Industrial	140.9
MDR	Medium Density Residential	Residential	114.1

Zone Classification		Zone Type[1]	Total Acres[2]
NC	Neighborhood Commercial	Mixed Use	28.8
RES	Resource Protection	N/A	96.2
TC-3	Town Center	Mixed Use	1.7
TC-4	Town Center	Mixed Use	34.3
TC-5	Town Center	Mixed Use	12.8
TC-6	Town Center	Mixed Use	89.2

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between January 1, 2013 and December 31, 2020 that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 21-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 21-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 21-2: City of Sumner 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Net Density
GC	4.41	120	27.21
HDR	0.92	4	4.35
LDR-12	0.79	2	2.53
LDR-6	20.17	62	3.07
LDR-7.2	20.46	79	3.86
LDR-8.5	4.35	5	1.15
MDR	6.31	73	11.57
Total/Avg.	**57.41**	**345**	**6.01**

Table 21-3: City of Sumner 2013-2020 Non-residential Trends by Zone

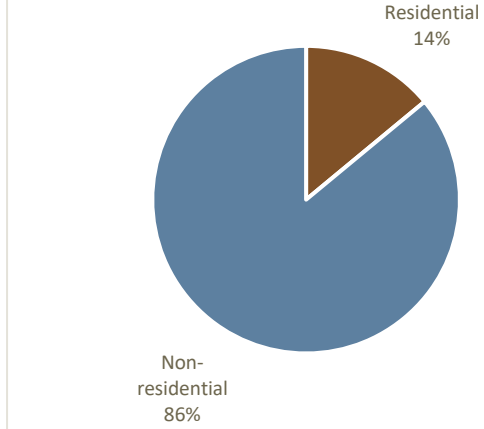
Zone	Acres	Sq. Ft.	FAR
GC	15.55	127,458	0.19
HDR	1.23	21,210	0.40
IC	22.83	219,408	0.22
M-1	305.91	4,483,426	0.34
M-2	9.96	212,628	0.49
TCP	0.12	4,649	0.91
Total/Avg.	**355.6**	**5,068,779**	**0.33**

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 21-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 21-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on

the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 21-A: City of Sumner Residential vs. Non-residential Development Split



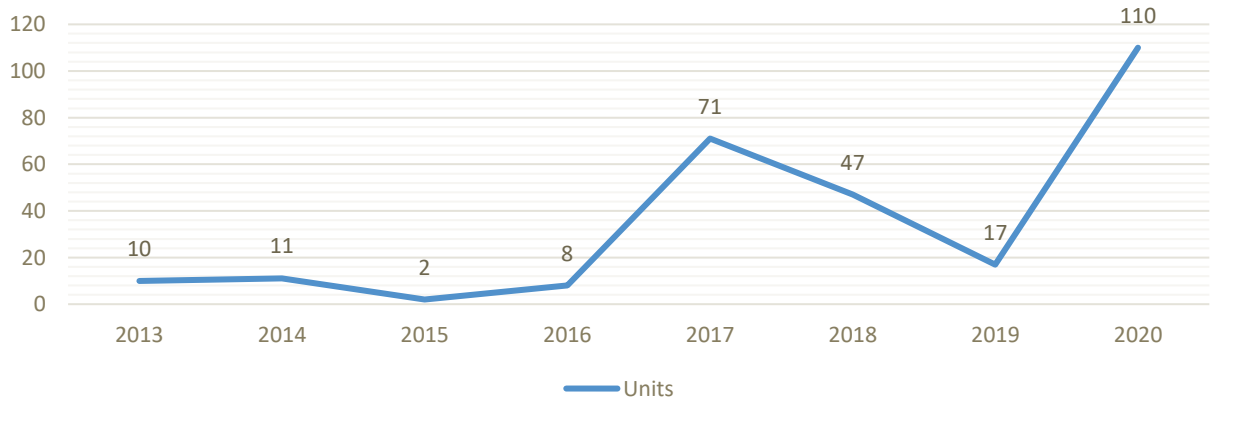
Zone	Use Type Split (Percent)[1] Residential	Non-residential
GC	22%	78%
HDR	43%	57%
IC	0%	100%
LDR-12	100%	0%
LDR-6	100%	0%
LDR-7.2	100%	0%
LDR-8.5	100%	0%
M-1	0%	100%
M-2	0%	100%
MDR	100%	0%
TCP	0%	100%
Average	**14%**	**86%**

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 21-B: City of Sumner Housing Production Rates (OFM)

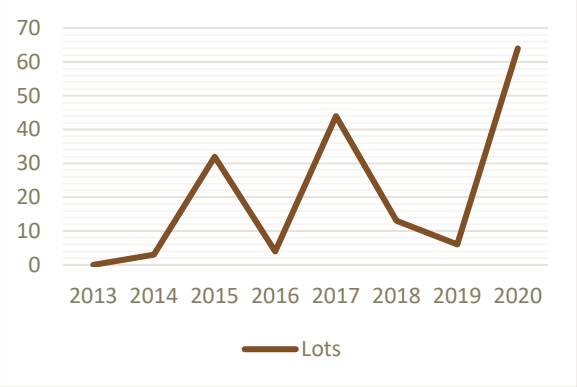


Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

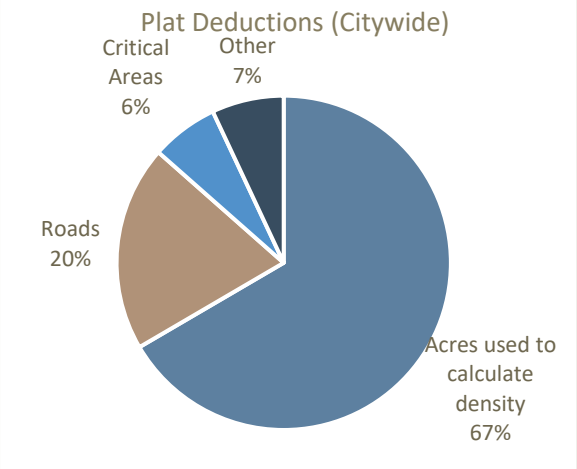
Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 21-2).

Figure 21-C: City of Sumner Platting Trends



Plat Activity by Year

Year	Lots	Net Acres	Net Density
2013	-	-	-
2014	3	0.74	4.05
2015	32	5.71	5.60
2016	4	0.92	4.35
2017	44	7.80	5.64
2018	4	0.59	6.78
2019	6	1.17	5.13
2020	64	14.85	4.31
Total	**157**	**31.78**	**4.94**



Plat Deductions by Zone (Percent)

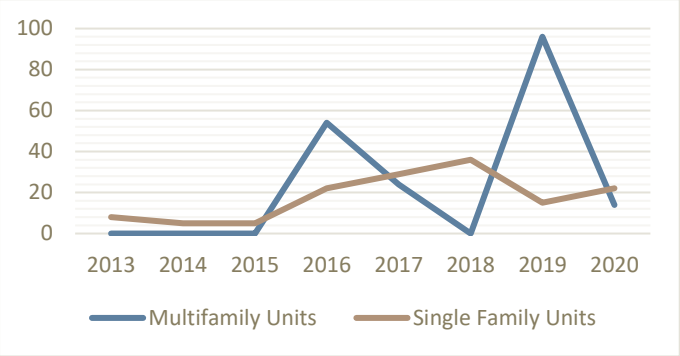
Zone	Roads	Critical Areas	Storm-water	Other
LDR-6	22.9%	5.3%	7.6%	7.6%
LDR-7.2	23.9%	0.0%	5.3%	3.2%
LDR-8.5	0.0%	46.9%	0.0%	0.0%
Average	**19.9%**	**6.5%**	**5.5%**	**1.5%**

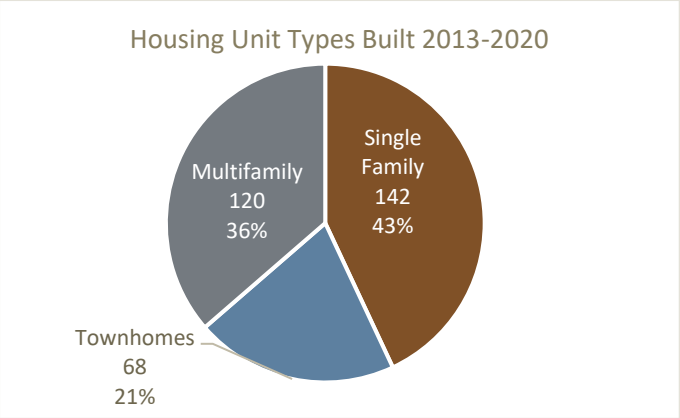
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 21-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 21-D: City of Sumner Residential Building Permit Trends





Multifamily Permits by Year

Year	Units	Acres	Density
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	54	4.26	12.68
2017	24	1.08	22.22
2018	-	-	-
2019	96	3.33	28.83
2020	14	1.00	14.00
Total	**188**	**9.67**	**19.44**

Single-Family Permits by Year (Optional)

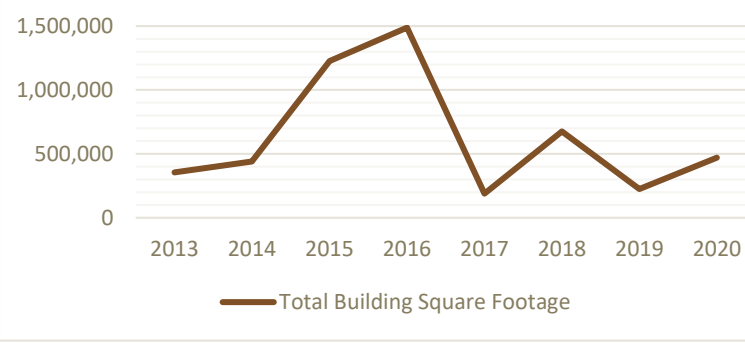
Year	Units	Acres	Avg. Lot Size
2013	8	1.88	0.23
2014	5	1.27	0.25
2015	5	0.90	0.18
2016	22	8.02	0.36
2017	29	5.54	0.19
2018	36	6.70	0.19
2019	15	6.48	0.43
2020	22	4.55	0.21
Total	**142**	**35.35**	**0.25**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 21-E: City of Sumner Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	17.88	354,838	0.46
2014	21.89	441,326	0.46
2015	57.48	1,225,785	0.49
2016	88.54	1,487,971	0.39
2017	18.47	188,741	0.23
2018	107.69	675,411	0.14
2019	16.30	223,741	0.32
2020	27.34	470,966	0.40
Total	**355.59**	**5,068,779**	**0.33**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 21-4 and Table 21-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 21-4: City of Sumner Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
CBD	100%	25	100%	20	10%	50%	10%	50%	0%
GC	10%	25	90%	20	10%	50%	10%	50%	0%
HDR	100%	12	0%	20	20%	40%	0%	0%	0%
IC	0%	0	100%	20	0%	0%	10%	50%	0%
LDR-12	100%	4	0%	20	10%	20%	0%	0%	0%
LDR-4	100%	5	0%	20	10%	20%	0%	0%	0%
LDR-6	100%	5	0%	20	10%	20%	0%	0%	0%
LDR-7.2	100%	5	0%	20	10%	20%	0%	0%	0%
LDR-8.5	100%	5	0%	20	10%	20%	0%	0%	0%
M1	0%	0	100%	16	0%	0%	10%	50%	0%
M2	0%	0	100%	16	0%	0%	10%	50%	0%
MDR	100%	12	0%	20	20%	40%	0%	0%	0%
NC	10%	25	90%	20	10%	50%	10%	50%	0%
TC-3	100%	76	0%	0	10%	50%	0%	0%	0%
TC-4	20%	76	80%	20	10%	50%	10%	50%	0%
TC-5	100%	76	0%	0	10%	50%	0%	0%	0%
TC-6	60%	76	40%	20	10%	50%	10%	50%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 21-5: City of Sumner Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
HDR	N/A	GIS	N/A	N/A	2%	N/A
LDR-12	0%	GIS	0%	0%	2%	<0.69 acres
LDR-4	0%	GIS	0%	0%	2%	<0.23 acres
LDR-6	0%	GIS	0%	0%	2%	<0.34 acres
LDR-72	0%	GIS	0%	0%	2%	<0.41 acres
LDR-85	0%	GIS	0%	0%	2%	<0.49 acres
MDR	N/A	GIS	N/A	N/A	2%	N/A

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 21-6 shows the characteristics of the initial inventory and Table 21-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 21-6: City of Sumner Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	296.21	610.72	53.37	66.72
Average Lot Size (Gross)	2.55	1.07	1.07	3.71
Total Acreage (Net)	142.95	433.76	7.41	36.89
Average Lot Size (Net)	1.23	0.76	0.15	2.05
Percent Critical Areas	52%	29%	86%	45%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 21-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 21-7: City of Sumner Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	153.26	176.95
Plat Deductions	0.00	0.00
Capital Facilities	0.00	0.00
Market Factor	27.52	213.77
Total Percent Reduction in Inventory Land	21%	51%
Percent of Vacant or Underutilized Land Available for Capacity	79%	49%

Capacity Results

The housing and employment capacity totals in Table 21-8 and Table 21-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 21-8: City of Sumner 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
CBD	0	8	0	0	8
GC	21	48	0	0	69
HDR	27	46	2	0	75
IC	0	-3	0	0	-3
LDR-12	86	150	10	2	248
LDR-4	0	0	0	0	0
LDR-6	3	68	23	69	163
LDR-7.2	0	38	5	3	46
LDR-8.5	20	190	5	2	217
M1	0	-8	0	0	-8
M2	0	-4	0	0	-4
MDR	96	127	4	49	276
NC	16	4	0	0	20
TC-3	0	40	0	0	40
TC-4	14	73	0	0	87
TC-5	27	224	1	0	252
TC-6	230	636	0	0	866
Total	540	1,637	50	125	2,352

Table 21-9: City of Sumner 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
CBD	0	6	0	6
GC	176	391	0	567
HDR	1	3	0	4
IC	598	272	474	1,344
LDR-12	10	20	0	30
LDR-4	0	0	0	0
LDR-6	0	9	0	9
LDR-7.2	0	5	0	5
LDR-8.5	2	21	0	23
M1	2,093	1,373	361	3,827
M2	78	137	0	215
MDR	4	9	0	13
NC	298	65	0	363
TC-3	0	0	0	0
TC-4	15	112	0	127
TC-5	0	0	9	9
TC-6	45	153	0	198
Total	3,320	2,576	844	6,740

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

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Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 21-10: City of Sumner Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
CBD	0	0	0	0.00	0.0%
GC	2	3	120	16.63	13.1%
HDR	1	1	4	2.15	2.0%
IC	0	10	0	22.83	16.1%
LDR-12	1	0	2	0.79	0.1%
LDR-4	0	0	0	0.00	0.0%
LDR-6	0	0	0	0.00	0.0%
LDR-72	0	0	0	0.00	0.0%
LDR-85	0	0	0	0.00	0.0%
M1	0	0	0	0.00	0.0%
M2	0	0	0	0.00	0.0%
MDR	4	0	73	6.31	5.4%
NC	0	0	0	0.00	0.0%
RES	0	0	0	0.00	0.0%
TC-3	0	0	0	0.00	0.0%
TC-4	0	0	0	0.00	0.0%
TC-5	0	0	0	0.00	0.0%
TC-6	0	0	0	0.00	0.0%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 21-11: City of Sumner Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
CBD	0	0	0	25
GC	27	0	22	25
HDR	4	4	0	12
IC	0	0	0	0
LDR-12	3	3	0	4
LDR-4	0	0	0	5
LDR-6	0	0	0	5
LDR-72	0	0	0	5
LDR-85	0	0	0	5
M1	0	0	0	0
M2	0	0	0	0
MDR	12	5	13	12
NC	0	0	0	25
RES	0	0	0	0
TC-3	0	0	0	76
TC-4	0	0	0	76
TC-5	0	0	0	76
TC-6	0	0	0	76

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 21-12: City of Sumner Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
CBD	0%	100%	0%	100%	Mixed Use	0%
GC	27%	10%	94%	90%	Mixed Use	0%
HDR	43%	100%	57%	0%	Residential	2%
IC	0%	0%	100%	100%	Commercial	0%
LDR-12	100%	100%	0%	0%	Residential	2%
LDR-4	0%	100%	0%	0%	Residential	2%
LDR-6	0%	100%	0%	0%	Residential	2%
LDR-72	0%	100%	0%	0%	Residential	2%
LDR-85	0%	100%	0%	0%	Residential	2%
M1	0%	0%	0%	100%	Industrial	0%
M2	0%	0%	0%	100%	Industrial	0%
MDR	100%	100%	0%	0%	Residential	2%
NC	0%	10%	0%	90%	Mixed Use	0%
RES	0%	0%	0%	0%	Other-Not Developable	0%
TC-3	0%	100%	0%	0%	Residential	0%
TC-4	0%	20%	0%	80%	Mixed Use	0%
TC-5	0%	100%	0%	0%	Residential	0%
TC-6	0%	60%	0%	40%	Mixed Use	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 21-13: City of Sumner Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
CBD	0%	0%	0%	0%	0%	0%
GC	0%	0%	0%	0%	0%	0%
HDR	0%	0%	0%	0%	0%	0%
IC	0%	0%	0%	0%	0%	0%
LDR-12	0%	0%	0%	0%	0%	0%
LDR-4	0%	0%	0%	0%	0%	0%
LDR-6	0%	0%	0%	0%	0%	0%
LDR-72	0%	0%	0%	0%	0%	0%
LDR-85	0%	0%	0%	0%	0%	0%
M1	0%	0%	0%	0%	0%	0%
M2	0%	0%	0%	0%	0%	0%
MDR	0%	0%	0%	0%	0%	0%
NC	0%	0%	0%	0%	0%	0%
RES	0%	0%	0%	0%	0%	0%
ROW	0%	0%	0%	0%	0%	0%
TC-3	0%	0%	0%	0%	0%	0%
TC-4	0%	0%	0%	0%	0%	0%
TC-5	0%	0%	0%	0%	0%	0%
TC-6	0%	0%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 21-14: City of Sumner Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
4,279	4,492	6,527	213	2,035	21	85	**63**

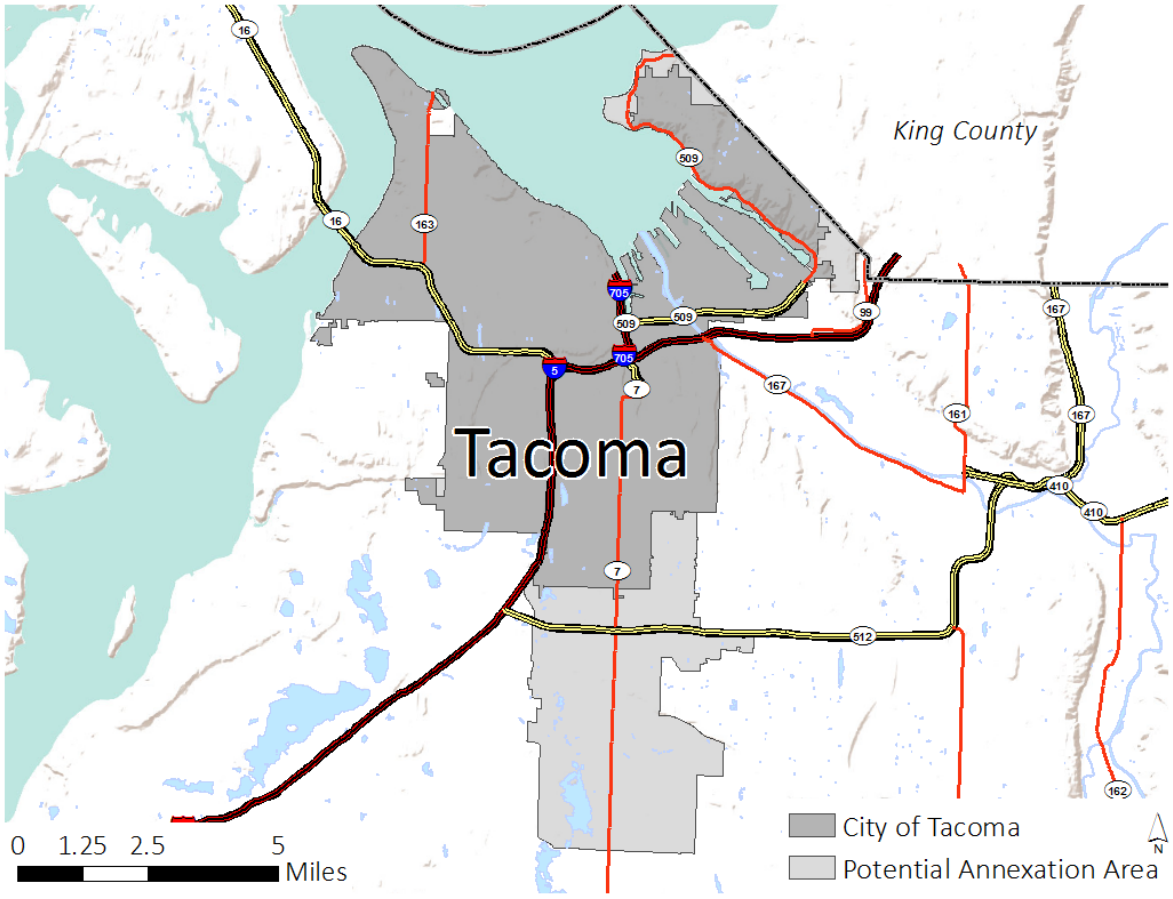
Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 21-15: City of Sumner Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
2,352	2,035	317	6,740	5,313	1,427

22 CITY OF TACOMA



The City of Tacoma's Comprehensive Plan and regulations implement densities using gross acreage.

Table 22-1: City of Tacoma Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
C1	Commercial	Mixed Use	141.8
C2	Commercial	Mixed Use	535.5
CCX	Community Commercial Mixed-Use	Mixed Use	505.0
CIX	Commercial Industrial Mixed-Use	Mixed Use	61.5
DCC	Downtown Commercial Core	Mixed Use	96.8
DMU	Downtown Mixed-Use	Mixed Use	144.2
DR	Downtown Residential	Mixed Use	128.0
HMR-SRD	Historic Mixed Residential – Special Review	Mixed Use	122.0
HMX	Hospital-Medical Mixed-Use	Mixed Use	83.7
M1	Light Industrial	Industrial	384.7
M2	Heavy Industrial	Industrial	1,000.3
NCX	Neighborhood Commercial Mixed-Use	Mixed Use	161.7
NRX	Neighborhood Residential Mixed-Use	Mixed Use	6.4

Zone Classification		Zone Type[1]	Total Acres[2]
PDB	Planned Business Development	Commercial	25.2
PMI	Port Maritime and Industrial	Industrial	2,636.4
R1	One Family Dwelling	Residential	2,050.6
R2	One Family Dwelling	Residential	11,202.2
R2-SRD	One Family Dwelling – Special Review	Residential	560.8
R3	Two Family Dwelling	Residential	1,105.7
R4	Multiple Family Dwelling	Residential	274.7
R4L	Low Density Multiple Family Dwelling	Residential	541.3
R5	Multiple Family Dwelling	Residential	5.3
RCX	Residential Commercial Mixed-Use	Mixed Use	318.1
S10	Shoreline	N/A	440.2
S11	Shoreline	N/A	39.7
S12	Shoreline	N/A	6.3
S13	Shoreline	N/A	488.9
S14	Shoreline	N/A	95.8
S15	Shoreline	Mixed Use	62.7
S1a	Shoreline	Mixed Use	6.8
S1b	Shoreline	N/A	3.2
S2	Shoreline	N/A	8.2
S3	Shoreline	N/A	38.7
S6	Shoreline	N/A	34.4
S6/7	Shoreline	N/A	1.1
S7	Shoreline	N/A	21.5
S8	Shoreline	Industrial	391.8
S9	Shoreline	Commercial	89.3
T	Transitional	Mixed Use	119.2
UCX	Urban Center Mixed-Use	Mixed Use	385.1
URX	Urban Residential Mixed-Use	Mixed Use	177.3
WR	Warehouse/Residential	Mixed Use	72.0

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between January 1, 2013 and December 31, 2020 that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 22-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 22-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 22-2: City of Tacoma 2013-2020 Residential Trends by Zone[1]

Zone	Acres	Lots/Units	Density
C1	2.69	77	28.67
C2	1.30	48	36.87
CCX	1.91	60	31.41
DCC	0.18	104	581.01
DMU	0.87	287	331.18
DR	2.68	229	110.7
HMR-SRD	0.06	4	67.02
NCX	2.58	509	197.51
R1	13.63	24	1.76
R2	77.64	375	4.83
R2-SRD	0.38	4	10.45
R3	2.74	39	14.24
R4	21.90	528	24.11
R4L	19.24	458	23.80
RCX	3.45	141	40.90
S15	10.90	766	70.25
S8	1.19	161	135.78
T	5.35	130	24.29
UCX	5.00	305	60.98
URX	6.69	213	31.82
Total/Avg.	**180.37**	**4,509**	**25.00**

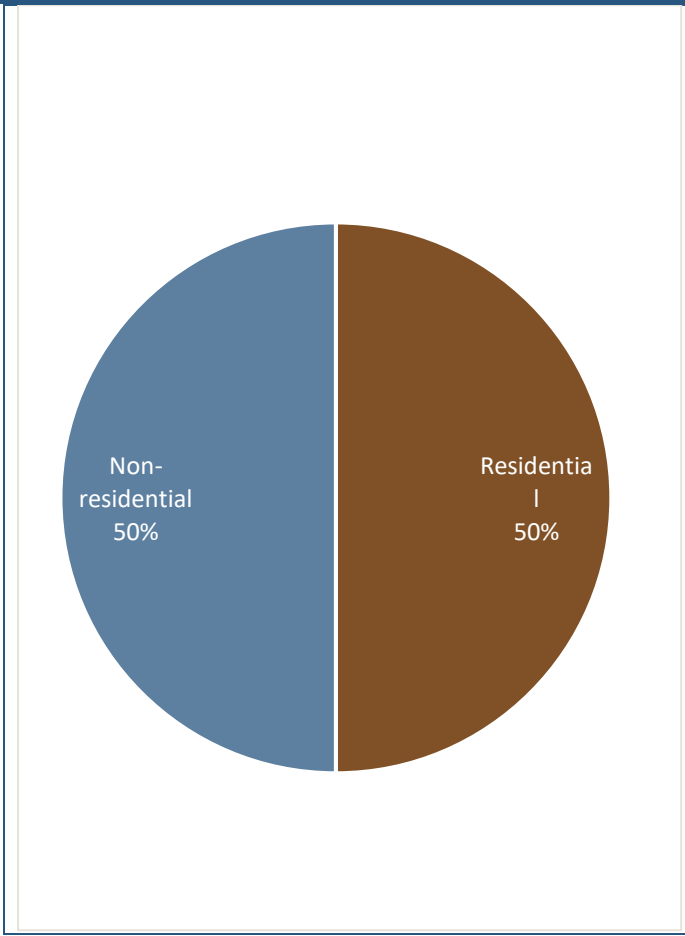
Table 22-3: City of Tacoma 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
C2	5.78	152,961	0.61
CCX	0.88	8,548	0.22
HMX	2.93	67,612	0.53
M1	0.16	1,480	0.21
M2	33.79	309,156	0.21
NCX	2.92	32,477	0.26
PMI	59.50	533,368	0.21
R2	1.90	3,834	0.05
R2-SRD	3.38	50,401	0.34
R3	8.27	99,100	0.28
S15	6.73	93,241	0.32
S8	1.19	4,979	0.10
UCX	49.60	17,352	0.01
Total/Avg.	**177.02**	**1,374,509**	**0.18**

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 22-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 22-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 22-A: City of Tacoma Residential vs. Non-residential Development Split



Zone	Use Type Split (Percent)[1]	
	Residential	Non-residential
C1	100%	0%
C2	18%	82%
CCX	69%	31%
DCC	100%	0%
DMU	100%	0%
DR	100%	0%
HMR-SRD	100%	0%
HMX	0%	100%
M1	0%	100%
M2	0%	100%
NCX	47%	53%
PMI	0%	100%
R1	100%	0%
R2	98%	2%
R2-SRD	10%	90%
R3	25%	75%
R4	100%	0%
R4L	100%	0%
RCX	100%	0%
S15	62%	38%
S8	50%	50%
T	100%	0%
UCX	9%	91%
URX	100%	0%
Total	**50%**	**50%**

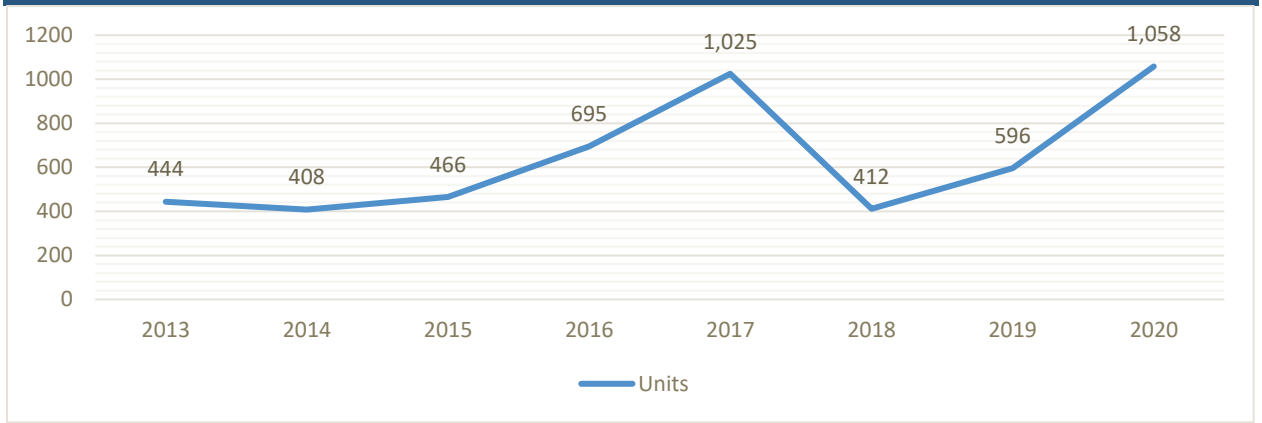
[1]Does not include single-family permits in order to avoid double-counting acreage.

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 22-B: City of Tacoma Housing Production Rates (OFM)

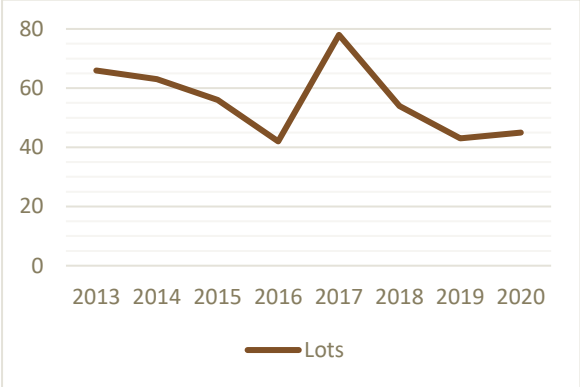


Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones, and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits for zones that permit both, to determine the overall achieved density (as shown in Table 22-2).

Figure 22-C: City of Tacoma Platting Trends



Plat Activity by Year

Year	Lots	Acres	Density
2013	66	12.07	5.47
2014	63	11.59	5.43
2015	56	8.49	6.60
2016	42	6.89	6.09
2017	78	27.87	2.80
2018	54	16.99	3.18
2019	43	6.59	6.53
2020	45	6.52	6.91
Total	**447**	**97.01**	**4.61**

Plat Deductions by Zone (Percent)

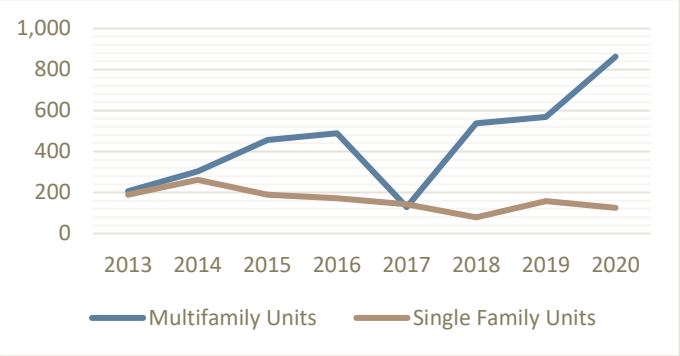
Not provided – Tacoma uses a gross calculation.

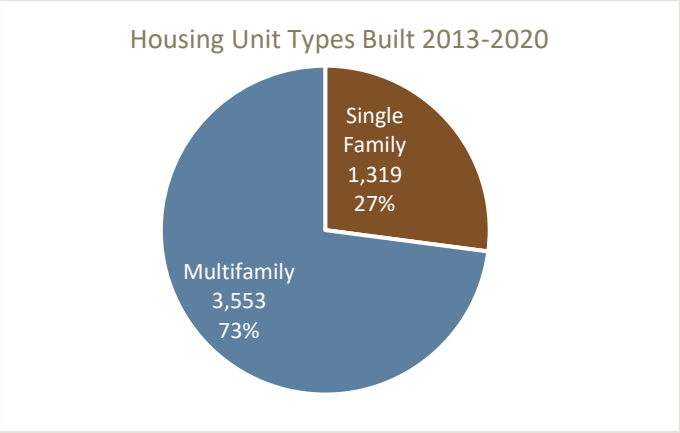
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 22-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 22-D: City of Tacoma Residential Building Permit Trends





Multifamily Permits by Year

Year	Units	Acres	Net Density
2013	207	4.32	47.88
2014	303	5.42	55.89
2015	456	13.07	34.89
2016	489	6.78	72.15
2017	129	4.11	31.37
2018	538	5.74	93.79
2019	568	9.04	62.87
2020	863	14.77	58.44
Total	**3,553**	**63.25**	**56.18**

Single-Family Permits by Year (Optional)

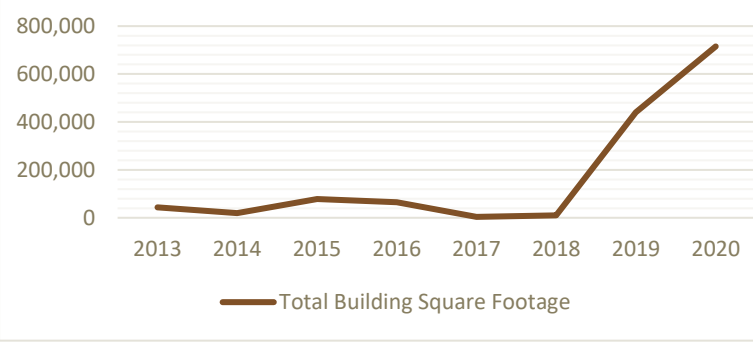
Year	Lots	Acres	Avg. Lot Size
2013	190	24.70	0.13
2014	262	29.62	0.11
2015	190	25.04	0.13
2016	172	23.42	0.14
2017	143	22.57	0.16
2018	79	12.17	0.15
2019	158	21.49	0.14
2020	125	16.45	0.14
Total	**1,319**	**175.47**	**0.13**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 22-E: City of Tacoma Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	53.21	42,911	0.02
2014	2.05	19,402	0.22
2015	7.60	78,454	0.24
2016	2.69	65,007	0.55
2017	1.90	3,834	0.05
2018	1.41	9,601	0.16
2019	28.81	440,128	0.35
2020	79.25	715,172	0.21
Total	**177.02**	**1,374,509**	**0.18**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 22-4 and Table 22-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 22-4: City of Tacoma Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
C1	0%	25	100%	25	5%	25%	5%	25%	0%
C2	10%	40	90%	25	5%	25%	5%	25%	0%
CCX	50%	76	50%	203	5%	15%	5%	15%	0%
CIX	5%	8	90%	386	5%	15%	5%	15%	0%
DCC	50%	261	50%	697	5%	15%	5%	15%	0%
DMU	70%	192	30%	220	5%	15%	5%	15%	0%
DR	80%	194	20%	129	5%	15%	5%	15%	0%
HMR-SRD	100%	8	0%	20	5%	15%	5%	15%	0%
HMX	0%	0	100%	813	0%	0%	5%	25%	0%
M1	0%	0	100%	25	0%	0%	5%	25%	0%
M2	0%	0	100%	50	0%	0%	5%	25%	0%
NCX	75%	91	25%	81	5%	15%	5%	15%	0%
NRX	95%	87	5%	12	5%	15%	5%	15%	0%
PDB	0%	0	100%	20	0%	0%	5%	25%	0%
PMI	0%	0	100%	25	0%	0%	5%	25%	0%
R1	100%	6	0%	20	5%	25%	5%	25%	0%
R2	100%	6	0%	20	5%	25%	5%	25%	0%
R2-SRD	100%	15	0%	20	5%	25%	5%	25%	0%
R3	100%	14	0%	20	5%	25%	5%	25%	0%
R4	100%	46	0%	20	5%	25%	5%	25%	0%
R4L	100%	17	0%	20	5%	25%	5%	25%	0%
R5	100%	55	0%	20	5%	25%	5%	25%	0%
RCX	90%	137	10%	41	5%	15%	5%	15%	0%
S15	70%	40	30%	25	5%	15%	5%	15%	0%
S1a	30%	40	70%	9	5%	15%	5%	15%	0%
S8	50%	90	50%	240	5%	15%	5%	15%	0%
S9	0%	0	100%	18.75	0%	0%	5%	25%	0%
T	25%	36	75%	25	5%	15%	5%	15%	0%
UCX	50%	91	50%	244	5%	15%	5%	15%	0%
URX	90%	116	10%	16	5%	15%	5%	15%	0%
WR	70%	192	30%	220	5%	15%	5%	0%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size

listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 22-5: City of Tacoma Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
R1	0%	0%	0%	0%	3%	<0.310 acres
R2	0%	15%	0%	0%	3%	<0.210 acres
R2-SRD	0%	15%	0%	0%	3%	<0.138 acres
R3	0%	15%	0%	0%	3%	<0.138 acres
R4	0%	15%	0%	0%	3%	<0.045 acres
R4L	0%	15%	0%	0%	3%	<0.068 acres
R5	0%	15%	0%	0%	3%	<0.210 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 22-6 shows the characteristics of the initial inventory and Table 22-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 22-6: City of Tacoma Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	1,053.29	2,836.84	187.48	183.75
Average Lot Size (Gross)	0.89	0.42	0.15	2.70
Total Acreage (Net)	548.36	2,541.46	143.37	162.85
Average Lot Size (Net)	0.46	0.38	0.12	2.39
Percent Critical Areas	48%	10%	24%	11%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 22-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 22-7: City of Tacoma Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	504.92	295.38
Infrastructure Gaps	4.65	14.97
Plat Deductions	106.09	59.69
Capital Facilities	0.00	0.00
Market Factor	48.17	638.33
Total Percent Reduction in Inventory Land	14%	24%
Percent of Vacant or Underutilized Land Available for Capacity	86%	76%

Capacity Results

The housing and employment capacity totals in Table 22-8 and Table 22-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 22-8: City of Tacoma 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
C1	0	-14	0	0	**-14**
C2	53	514	0	17	**584**
CCX	733	3,145	0	0	**3,878**
CIX	0	9	1	0	**10**
DCC	164	3,340	0	0	**3,504**
DMU	1,782	5,011	0	0	**6,793**
DR	2,668	7,146	0	78	**9,892**
HMR-SRD	0	0	7	0	**7**
HMX	0	-38	0	0	**-38**
M1	0	-10	0	0	**-10**
M2	0	-1	0	0	**-1**
NCX	470	5,176	0	0	**5,646**
NRX	8	160	0	0	**168**
PDB	0	0	0	0	**0**
PMI	0	0	0	0	**0**
R1	395	472	84	0	**951**
R2	2,601	2,383	1,031	74	**6,089**
R2-SRD	84	544	40	0	**668**
R3	224	502	24	16	**766**
R4	284	799	0	58	**1,141**
R4L	220	611	13	0	**844**
R5	0	5	0	0	**5**
RCX	1,226	5,970	0	15	**7,211**
S10	0	0	0	0	**0**
S11	0	0	1	0	**1**
S12	0	0	0	0	**0**
S13	0	0	0	0	**0**
S14	0	0	0	0	**0**
S15	13	0	0	561	**574**
S1a	0	0	0	0	**0**
S1b	0	0	0	0	**0**
S2	0	0	1	0	**1**
S3	0	0	0	0	**0**
S6	0	0	0	0	**0**
S6/7	0	0	0	0	**0**
S7	0	0	0	0	**0**
S8	145	648	0	0	**793**
S9	0	0	0	0	**0**
T	71	143	25	4	**243**
UCX	302	3,005	0	0	**3,307**
URX	500	9,266	0	10	**9,776**
WR	1,409	3,851	0	0	**5,260**
Total	**13,352**	**52,637**	**1,227**	**833**	**68,049**

Table 22-9: City of Tacoma 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
C1	219	505	16	**740**
C2	300	1,956	367	**2,623**
CCX	1,957	8,078	27	**10,062**
CIX	297	10,513	0	**10,810**
DCC	439	7,109	0	**7,548**
DMU	876	1,686	0	**2,562**
DR	444	628	5	**1,077**
HMR-SRD	0	0	0	**0**
HMX	57	9,845	149	**10,051**
M1	461	1,867	11	**2,339**
M2	3,551	6,463	503	**10,517**
NCX	139	114	0	**253**
NRX	0	2	0	**2**
PDB	13	123	0	**136**
PMI	3,220	7,388	918	**11,526**
R1	43	91	0	**134**
R2	283	417	176	**876**
R2-SRD	4	42	0	**46**
R3	10	38	0	**48**
R4	4	18	8	**30**
R4L	8	37	0	**45**
R5	0	0	0	**0**
RCX	41	157	0	**198**
S10	0	0	0	**0**
S11	0	0	0	**0**
S12	0	0	0	**0**
S13	0	0	0	**0**
S14	0	0	0	**0**
S15	4	0	70	**74**
S1a	0	0	0	**0**
S1b	0	0	0	**0**
S2	0	0	0	**0**
S3	0	0	0	**0**
S6	0	0	0	**0**
S6/7	0	0	0	**0**
S7	0	0	0	**0**
S8	386	1,649	0	**2,035**
S9	22	30	0	**52**
T	148	381	15	**544**
UCX	810	7,695	5	**8,510**
URX	8	162	0	**170**
WR	691	727	10	**1,428**
Total	**14,435**	**67,721**	**2,280**	**84,436**

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 22-10: City of Tacoma Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
C1	4	0	77	2.69	1.9%
C2	3	4	48	7.08	1.3%
CCX	1	2	60	2.79	0.6%
CIX	0	0	0	0.00	0.0%
DCC	1	0	104	0.18	0.2%
DMU	2	0	287	0.87	0.6%
DR	6	0	279	2.68	1.9%
HMR-SRD	1	0	4	0.06	0.0%
HMX	0	1	0	2.93	3.2%
M1	0	1	0	0.16	0.0%
M2	0	1	0	33.79	3.3%
NCX	5	2	509	3.34	2.0%
NRX	0	0	0	0.00	0.0%
PDB	0	0	0	0.00	0.0%
PMI	0	3	0	59.50	2.3%
R1	4	0	21	13.63	0.6%
R2	0	0	0	0.00	0.0%
R2-SRD	2	1	4	3.76	0.7%
R3	3	2	39	11.01	1.0%
R4	2	0	70	2.66	0.9%
R4L	7	0	458	19.24	3.4%
R5	0	0	0	0.00	0.0%
RCX	6	0	141	3.45	1.0%
S10	0	0	0	0.00	0.0%
S11	0	0	0	0.00	0.0%
S12	0	0	0	0.00	0.0%
S13	0	0	0	0.00	0.0%
S14	0	0	0	0.00	0.0%
S15	5	0	766	10.90	12.4%
S1a	0	0	0	0.00	0.0%
S1b	0	0	0	0.00	0.0%
S2	0	0	0	0.00	0.0%
S3	0	0	0	0.00	0.0%
S6	0	0	0	0.00	0.0%
S6/7	0	0	0	0.00	0.0%
S7	0	0	0	0.00	0.0%
S8	1	0	161	1.19	1.4%
S9	0	0	0	0.00	0.0%
T	5	0	130	5.35	4.4%
UCX	7	3	305	54.60	14.0%
URX	20	0	213	6.69	3.7%
WR	0	0	0	0.00	0.0%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 22-11: City of Tacoma Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
C1	29	0	29	0
C2	37	0	37	40
CCX	31	0	31	76
CIX	0	0	0	8
DCC	581	0	581	261
DMU	331	0	331	192
DR	104	52	106	194
HMR-SRD	67	0	67	8
HMX	0	0	0	0
M1	0	0	0	0
M2	0	0	0	0
NCX	198	0	102	91
NRX	0	0	0	87
PDB	0	0	0	0
PMI	0	0	0	0
R1	2	2	0	6
R2	0	0	0	6
R2-SRD	10	10	0	15
R3	14	6	34	14
R4	26	0	26	46
R4L	24	0	24	17
R5	0	0	0	55
RCX	41	0	41	137
S10	0	0	0	0
S11	0	0	0	0
S12	0	0	0	0
S13	0	0	0	0
S14	0	0	0	0
S15	70	0	48	40
S1a	0	0	0	40
S1b	0	0	0	0
S2	0	0	0	0
S3	0	0	0	0
S6	0	0	0	0
S6/7	0	0	0	0
S7	0	0	0	0
S8	136	0	0	90
S9	0	0	0	0
T	24	0	24	36
UCX	61	45	62	91
URX	32	7	55	116
WR	0	0	0	192

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend,

resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 22-12: City of Tacoma Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
C1	100%	0%	0%	100%	Mixed Use	0%
C2	18%	10%	82%	90%	Mixed Use	0%
CCX	69%	50%	31%	50%	Mixed Use	0%
CIX	0%	5%	0%	95%	Mixed Use	0%
DCC	100%	50%	0%	50%	Mixed Use	0%
DMU	100%	70%	0%	30%	Mixed Use	0%
DR	100%	80%	0%	20%	Mixed Use	0%
HMR-SRD	100%	100%	0%	0%	Mixed Use	0%
HMX	0%	0%	100%	100%	Mixed Use	0%
M1	0%	0%	100%	100%	Industrial	0%
M2	0%	0%	100%	100%	Industrial	0%
NCX	77%	75%	88%	25%	Mixed Use	0%
NRX	0%	95%	0%	5%	Mixed Use	0%
PDB	0%	0%	0%	100%	Commercial	0%
PMI	0%	0%	100%	100%	Industrial	0%
R1	100%	100%	0%	0%	Residential	3%
R2	0%	100%	0%	0%	Residential	3%
R2-SRD	10%	100%	90%	0%	Residential	3%
R3	25%	100%	75%	0%	Residential	3%
R4	100%	100%	0%	0%	Residential	3%
R4L	100%	100%	0%	0%	Residential	3%
R5	0%	100%	0%	0%	Residential	3%
RCX	100%	90%	0%	10%	Mixed Use	0%
S10	0%	0%	0%	0%	Other-Not Developable	0%
S11	0%	0%	0%	0%	Other-Not Developable	0%
S12	0%	0%	0%	0%	Other-Not Developable	0%
S13	0%	0%	0%	0%	Other-Not Developable	0%
S14	0%	0%	0%	0%	Other-Not Developable	0%
S15	100%	70%	62%	30%	Mixed Use	0%
S1a	0%	30%	0%	70%	Mixed Use	0%
S1b	0%	0%	0%	0%	Other-Not Developable	0%
S2	0%	0%	0%	0%	Other-Not Developable	0%

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
S3	0%	0%	0%	0%	Other-Not Developable	0%
S6	0%	0%	0%	0%	Other-Not Developable	0%
S6/7	0%	0%	0%	0%	Other-Not Developable	0%
S7	0%	0%	0%	0%	Other-Not Developable	0%
S8	100%	50%	100%	50%	Industrial	0%
S9	0%	0%	0%	100%	Commercial	0%
T	100%	25%	0%	75%	Mixed Use	0%
UCX	9%	50%	91%	50%	Mixed Use	0%
URX	100%	90%	0%	10%	Mixed Use	0%
WR	0%	70%	0%	30%	Mixed Use	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 22-13: City of Tacoma Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
C1	0%	0%	0%	0%	0%	0%
C2	0%	0%	0%	0%	0%	0%
CCX	0%	0%	0%	0%	0%	0%
CIX	0%	0%	0%	0%	0%	0%
DCC	0%	0%	0%	0%	0%	0%
DMU	0%	0%	0%	0%	0%	0%
DR	0%	0%	0%	0%	0%	0%
HMR-SRD	0%	0%	0%	0%	0%	0%
HMX	0%	0%	0%	0%	0%	0%
M1	0%	0%	0%	0%	0%	0%
M2	0%	0%	0%	0%	0%	0%
NCX	0%	0%	0%	0%	0%	0%
NRX	0%	0%	0%	0%	0%	0%
PDB	0%	0%	0%	0%	0%	0%
PMI	0%	0%	0%	0%	0%	0%
R1	0%	0%	0%	0%	0%	0%
R2	0%	0%	0%	0%	0%	0%
R2-SRD	0%	0%	0%	0%	0%	0%
R3	0%	0%	0%	0%	0%	0%
R4	0%	0%	0%	0%	0%	0%
R4L	0%	0%	0%	0%	0%	0%
R5	0%	0%	0%	0%	0%	0%
RCX	0%	0%	0%	0%	0%	0%
S10	0%	0%	0%	0%	0%	0%
S11	0%	0%	0%	0%	0%	0%
S12	0%	0%	0%	0%	0%	0%
S13	0%	0%	0%	0%	0%	0%
S14	0%	0%	0%	0%	0%	0%
S15	0%	0%	0%	0%	0%	0%
S1a	0%	0%	0%	0%	0%	0%
S1b	0%	0%	0%	0%	0%	0%
S2	0%	0%	0%	0%	0%	0%
S3	0%	0%	0%	0%	0%	0%
S6	0%	0%	0%	0%	0%	0%
S6/7	0%	0%	0%	0%	0%	0%
S7	0%	0%	0%	0%	0%	0%
S8	0%	0%	0%	0%	0%	0%
S9	0%	0%	0%	0%	0%	0%
T	0%	0%	0%	0%	0%	0%
UCX	0%	0%	0%	0%	0%	0%
URX	0%	0%	0%	0%	0%	0%
WR	0%	0%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 22-14: City of Tacoma Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
85,786	92,309	134,699	6,523	42,390	652	1,766	**1,114**

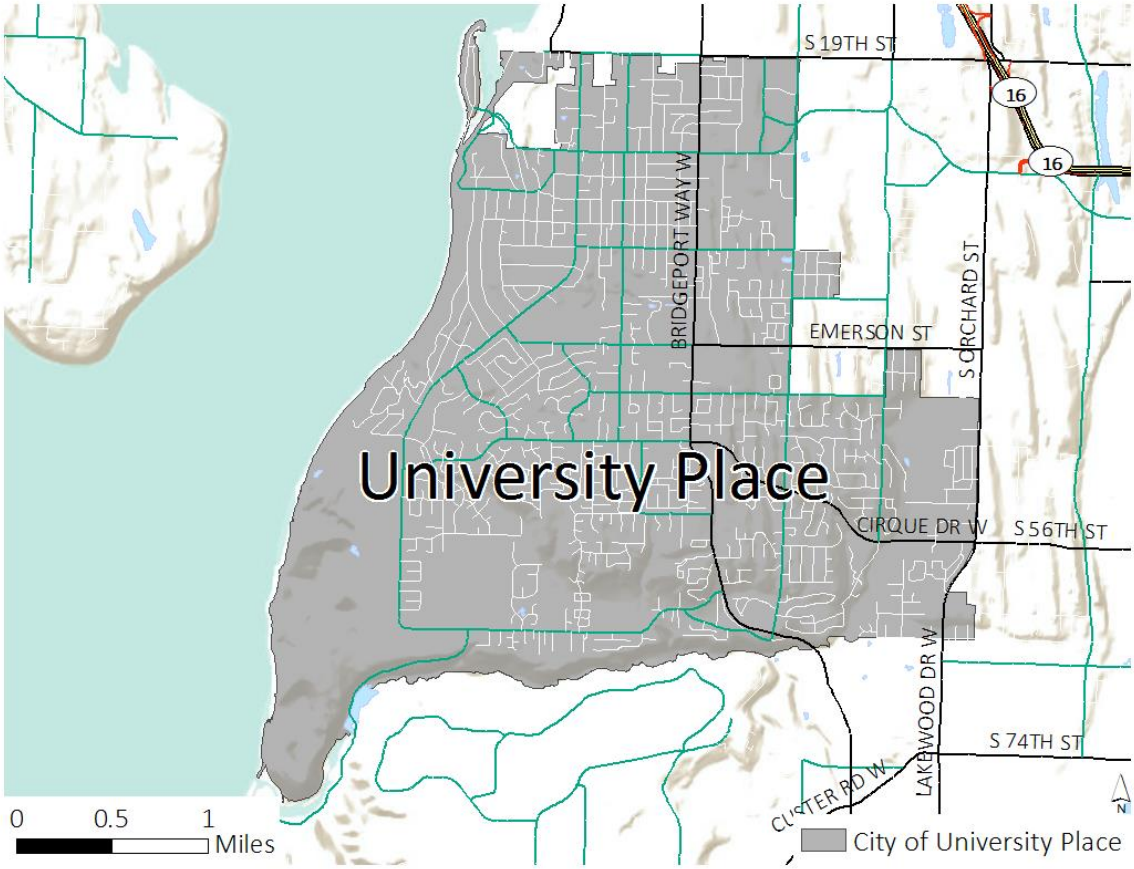
Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 22-15: City of Tacoma Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
68,049	42,390	25,659	84,436	70,800	13,636

23 CITY OF UNIVERSITY PLACE



The City's Comprehensive Plan and regulations implement densities using net acreage, subtracting roads and critical areas and buffers.

Table 23-1: City of University Place Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
MF-L	Multifamily Low	Residential	97.43
MF-H	Multifamily High	Residential	54.94
MU	Mixed Use	Mixed Use	8.29
MU-C	Mixed Use Center	Mixed Use	37.57
MU-M	Mixed Use Maritime	Mixed Use	122.99
MU-N45	Mixed Use Neighborhood	Mixed Use	205.12
MU-O	Mixed Use Office	Mixed Use	2.50
MU-U/I	Mixed Use Urban/Industrial	Mixed Use	205.12
MU-U75	Mixed Use Urban	Mixed Use	122.99
NC	Neighborhood Commercial	Commercial	17.72
POS	Parks and Open Space	N/A	127.51
R1	Residential 1	Residential	3,649.14
R2	Residential 2	Residential	374.00

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the City zoning code.

[2]Represents parcel acreage, not zoning coverage.

Sources: City Zoning Code.

DEVELOPMENT TRENDS

This section summarizes permit data observed between January 1, 2013 and December 31, 2019 and plat activity through December 31, 2020 that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data is omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 23-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 23-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 23-2: City of University Place 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[1]	Lots/Units	Net Density
MF-L	2.25	9	4.00
R1	36.79	102	2.77
R2	37.74	188	4.98
TC	1.39	270	193.83
Total/Avg.	**61.02**	**569**	**9.32**

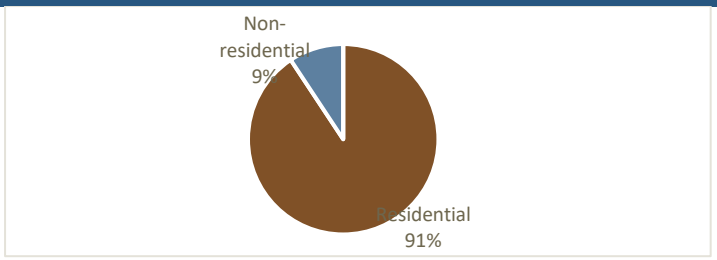
Table 23-3: City of University Place 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
MU	0.92	596	0.01
R2	1.50	18,222	0.28
TC	5.55	302,415	1.25
Total/Avg.	**7.97**	**321,233**	**0.93**

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 23-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 23-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential compared to non-residential permits. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 23-A: City of University Place Residential vs. Non-residential Development Split



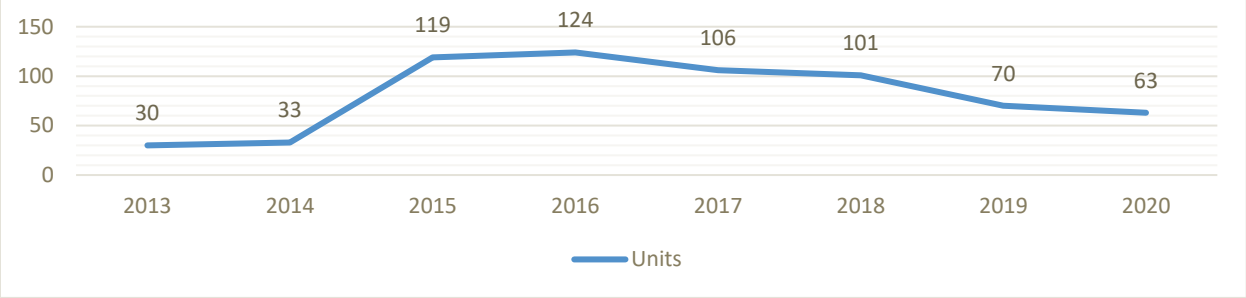
Zone	Use Type Split (Percent)[1]	
	Residential	Non-residential
MF-L	100%	0%
MU	0%	100%
R1	100%	0%
R2	96%	4%
TC	20%	80%
Average	**91%**	**9%**

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 23-B: City of University Place Housing Production Rates (OFM)

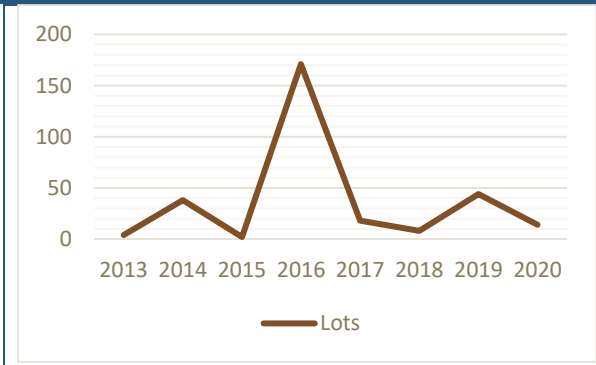


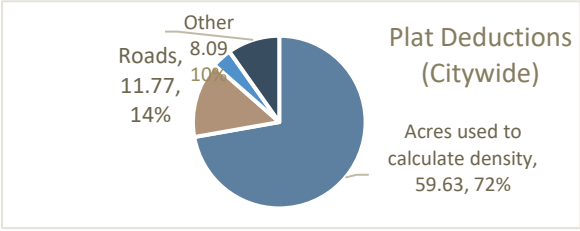
Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 23-2).

Figure 23-C: City of University Place Platting Trends





Plat Activity by Year

Year	Lots	Acres	Density (Net)
2013	4	0.98	4.09
2014	38	8.88	4.28
2015	2	0.70	2.86
2016	171	27.03	6.33
2017	18	8.06	2.23
2018	8	3.07	2.60
2019	44	6.15	7.15
2020	14	4.75	2.95
Total	**299**	**59.63**	**5.01**

Plat Deductions by Zone (Percent)

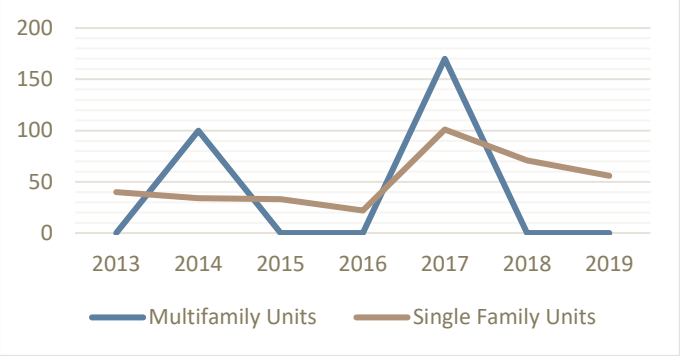
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
MF-L	20.9%	0.0%	6.1%	17.0%
R1	9.6%	8.3%	3.5%	1.8%
R2	20.6%	0.0%	13.1%	1.7%
Average	**15.3%**	**4.0%**	**8.3%**	**2.2%**

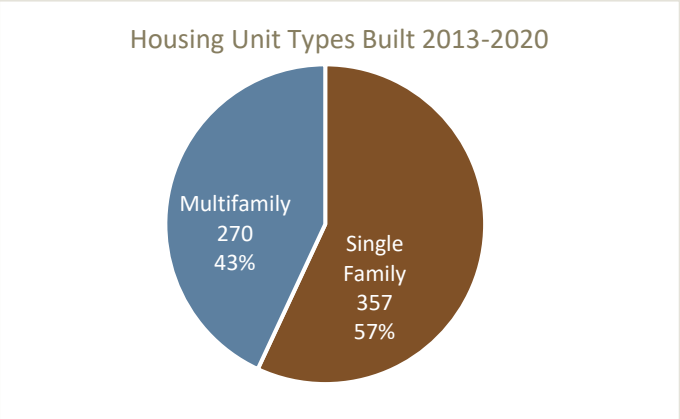
Sources: City Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 23-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 23-D: City of University Place Residential Building Permit Trends





Multifamily Permits by Year

Year	Units	Acres	Density
2013	-	-	-
2014	100	0.36	274.88
2015	-	-	-
2016	-	-	-
2017	170	1.03	165.18
2018	-	-	-
2019	-	-	-
Total	**270**	**1.39**	**193.83**

Single-Family Permits by Year (Optional)

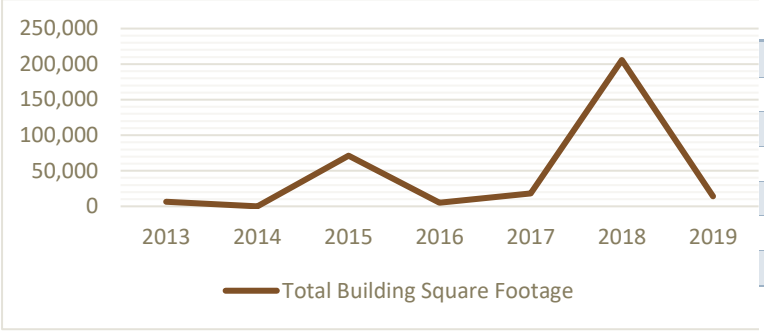
Year	Lots	Acres	Avg Lot Size
2013	40	9.42	0.24
2014	34	7.29	0.22
2015	33	7.99	0.24
2016	22	3.48	0.17
2017	101	13.40	0.13
2018	71	10.84	0.15
2019	56	10.57	0.19
Total	**357**	**63.00**	**0.18**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 23-E: City of University Place Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	0.65	6,599	0.23
2014	-	-	-
2015	3.36	71,049	0.49
2016	0.34	5,301	0.35
2017	1.50	18,222	0.28
2018	1.62	205,734	2.92
2019	0.50	14,328	0.66
Total	**7.97**	**321,233**	**0.93**

Sources: City Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 23-4 and Table 23-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 23-4: City of University Place Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
MF-H	100%	40	0%	20	10%	20%	0%	0%	0%
MF-L	100%	30	0%	20	10%	20%	0%	0%	0%
MU	50%	35	50%	25	10%	20%	10%	20%	0%
MU-C	70%	100	30%	25	10%	20%	10%	20%	0%
MU-C-S[1]	100%	100	100%	25	10%	20%	20%	25%	0%
MU-M	25%	30	75%	20	10%	20%	10%	20%	0%
MU-N45	70%	40	30%	25	10%	20%	10%	20%	0%
MU-O	10%	35	90%	20	10%	20%	10%	20%	0%
MU-U/I	25%	80	75%	30	10%	20%	10%	20%	0%
MU-U75	40%	80	60%	25	10%	20%	10%	20%	0%
MU-U75-S[1]	100%	80	100%	25	10%	20%	20%	25%	0%
NC	0%	0	100%	20	0%	0%	10%	50%	0%
R1	100%	4	0%	20	10%	10%	0%	0%	0%
R2	100%	6	0%	20	10%	10%	0%	0%	0%

[1]S=Streetfront Overlay. The Storefront Overlay for these zones has separate assumptions due to requirements for ground-floor retail compatibility and the expectation that a portion of future development will incorporate a commercial use.

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 23-5: City of University Place Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
MF-H	N/A	N/A	N/A	N/A	2%	N/A
MF-L	N/A	N/A	N/A	N/A	2%	N/A
R1	15%	GIS	7%	2%	2%	<0.41 acres
R2	15%	GIS	7%	2%	2%	<0.28 acres

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 23-6 shows the characteristics of the initial inventory and Table 23-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 23-6: City of University Place Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	90.88	340.61	45.94	17.85
Average Lot Size (Gross)	1.32	0.72	0.23	1.28
Total Acreage (Net)	64.46	289.57	32.25	16.87
Average Lot Size (Net)	0.93	0.62	0.16	1.20
Percent Critical Areas	29%	15%	30%	6%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 23-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 23-7: City of University Place Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	26.42	51.04
Plat Deductions	7.99	29.20
Capital Facilities	0.00	0.00
Market Factor	6.76	59.61
Total Percent Reduction in Inventory Land	38%	23%
Percent of Vacant or Underutilized Land Available for Capacity	62%	77%

Capacity Results

The housing and employment capacity totals in Table 23-8 and Table 23-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 23-8: City of University Place 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
MF-H	308	18	0	0	326
MF-L	112	26	7	0	145
MU	0	29	0	0	29
MU-C	0	173	0	0	173
MU-C (Storefront Overlay)	0	1,674	0	272	1,946
MU-M	0	0	0	0	0
MU-N45	185	1,333	0	26	1,544
MU-O	1	0	0	0	1
MU-U/I	22	328	0	0	350
MU-U75	102	251	0	184	537
MU-U75 (Storefront Overlay)	320	2,321	0	689	3,330
NC	0	0	0	0	0
R1	61	132	142	14	349
R2	43	205	49	0	297
Total	1,154	6,490	198	1,185	9,027

Table 23-9: City of University Place 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
MF-H	4	0	0	4
MF-L	2	1	0	3
MU	0	26	0	26
MU-C	0	3	0	3
MU-C (Storefront Overlay)	0	294	0	294
MU-M	0	0	0	0
MU-N45	59	332	0	391
MU-O	8	0	0	8
MU-U/I	33	248	0	281
MU-U75	67	141	0	208
MU-U75 (Storefront Overlay)	94	429	40	563
NC	23	31	0	54
R1	7	19	0	26
R2	3	18	0	21
Total	300	1,542	40	1,882

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning

may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 23-10: City of University Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
MF-H	0	0	0	0.00	0.0%
MF-L	1	0	9	2.25	1.9%
MU	0	1	0	0.92	10.7%
MU-C	0	0	0	0.00	0.0%
MU-C-S	0	0	0	0.00	0.0%
MU-M	0	0	0	0.00	0.0%
MU-N45	0	0	0	0.00	0.0%
MU-O	0	0	0	0.00	0.0%
MU-U/I	0	0	0	0.00	0.0%
MU-U75	0	0	0	0.00	0.0%
MU-U75-S	0	0	0	0.00	0.0%
NC	0	0	0	0.00	0.0%
POS	0	0	0	0.00	0.0%
R1	19	0	102	36.79	1.0%
R2	5	1	188	39.24	10.6%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 23-11: City of University Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
MF-H	0	0	0	40
MF-L	7	7	0	30
MU	0	0	0	35
MU-C	0	0	0	100
MU-C-S	0	0	0	100
MU-M	0	0	0	30
MU-N45	0	0	0	40
MU-O	0	0	0	35
MU-U/I	0	0	0	80
MU-U75	0	0	0	80
MU-U75-S	0	0	0	80
NC	0	0	0	0
POS	0	0	0	0
R1	3	3	0	4
R2	6	6	0	6

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 23-12: City of University Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
MF-H	0%	100%	0%	0%	Residential	2%
MF-L	100%	100%	0%	0%	Residential	2%
MU	0%	50%	100%	50%	Mixed Use	0%
MU-C	0%	70%	0%	30%	Mixed Use	0%
MU-C-S	0%	100%	0%	100%	Mixed Use	0%
MU-M	0%	25%	0%	75%	Mixed Use	0%
MU-N45	0%	70%	0%	30%	Mixed Use	0%
MU-O	0%	10%	0%	90%	Mixed Use	0%
MU-U/I	0%	25%	0%	75%	Mixed Use	0%
MU-U75	0%	40%	0%	60%	Mixed Use	0%
MU-U75-S	0%	100%	0%	100%	Mixed Use	0%
NC	0%	0%	0%	100%	Commercial	0%
POS	0%	0%	0%	0%	Other-Not Developable	0%
R1	100%	100%	0%	0%	Residential	2%
R2	96%	100%	4%	0%	Residential	2%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 23-13: City of University Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
MF-H	0%	0%	0%	0%	0%	0%
MF-L	21%	0%	6%	0%	17%	0%
MU	0%	0%	0%	0%	0%	0%
MU-C	0%	0%	0%	0%	0%	0%
MU-C-S	0%	0%	0%	0%	0%	0%
MU-M	0%	0%	0%	0%	0%	0%
MU-N45	0%	0%	0%	0%	0%	0%
MU-O	0%	0%	0%	0%	0%	0%
MU-U/I	0%	0%	0%	0%	0%	0%
MU-U75	0%	0%	0%	0%	0%	0%
MU-U75-S	0%	0%	0%	0%	0%	0%
NC	0%	0%	0%	0%	0%	0%
POS	0%	0%	0%	0%	0%	0%
R1	10%	15%	4%	7%	2%	2%
R2	21%	15%	13%	7%	2%	2%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 23-14: City of University Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
13,573	14,427	20,150	854	5,723	85	238	**153**

Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 23-15: City of University Place Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
9,027	5,723	3,304	1,882	2,943	-1,061

24 TOWN OF WILKESON



The Town of Wilkeson's Comprehensive Plan and regulations implement densities using gross acreage.

Table 24-1: Town of Wilkeson Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
C	Commercial	Commercial	5.2
P	Public Use	Public Use	170.2
R-1	Residential Single-Family	Residential	21.6
R-2	Residential Single-Family	Residential	75.8
R-3	Residential Multifamily	Residential	4.5

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the Town zoning code.
[2]Represents parcel acreage, not zoning coverage.
Sources: Town Zoning Code.

DEVELOPMENT TRENDS

This section summarizes building and plat data obtained through the Pierce County Assessor-Treasurer and Auditor Departments observed between January 1, 2013 and December 31, 2020 that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data are omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 24-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 24-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 24-2: Town of Wilkeson 2013-2020 Residential Trends by Zone[1]

No multifamily residential development or platting activity has been observed in the timeframe.

Table 24-3: City of 2013-2020 Non-residential Trends by Zone

No non-residential development has been observed in the timeframe.

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 24-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 24-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

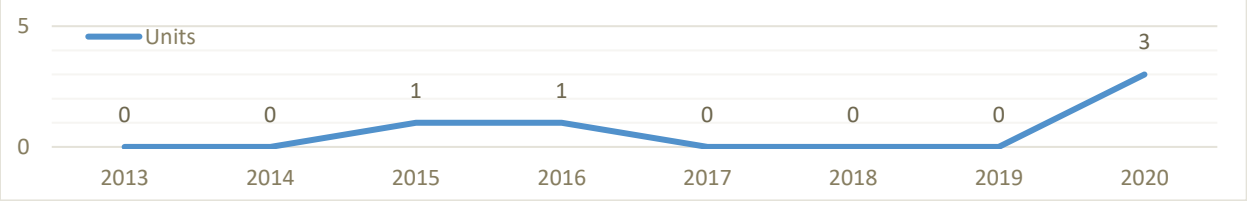
Figure 24-A: Town of Wilkeson Residential vs. Non-residential Development Split

No multifamily residential development, platting activity, or non-residential development has been observed in the timeframe.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 24-B: Town of Wilkeson Housing Production Rates (OFM)



Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 24-2).

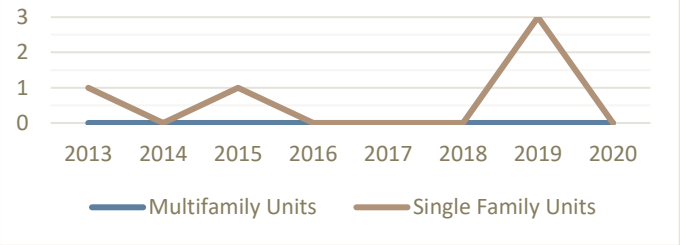
Figure 24-C: Town of Wilkeson Platting Trends

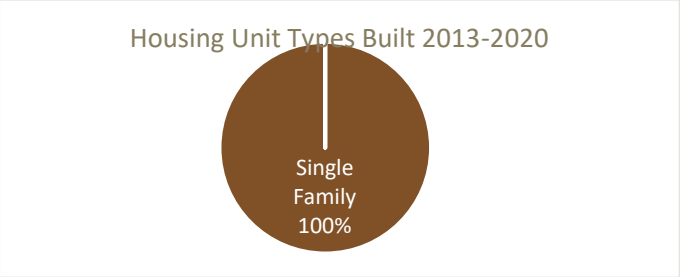
No platting activity has been observed in the timeframe.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is useful for identifying the total number of units built and the average lot size per zone and is provided as supplemental information. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 24-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 24-D: Town of Wilkeson Residential Building Permit Trends





Multifamily Permits by Year

No multifamily residential development or has been observed in the timeframe.

Single-Family Permits by Year (Optional)

Year	Lots	Acres	Avg. Lot Size
2013	1	0.27	0.27
2014	-	-	-
2015	1	0.17	0.17
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	3	0.90	0.30
2020	-	-	-
Total	**5**	**1.34**	**0.27**

Sources: Town Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 24-E: Town of Wilkeson Non-residential Permit Trends

No non-residential development has been observed in the timeframe.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 24-4 and Table 24-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 24-4: Town of Wilkeson Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities
	Percent	Density	Percent	Density	Vacant	Underutilized	Vacant	Underutilized	
C	0%	0	100%	20	0%	0%	10%	50%	0%
P	0%	0	100%	20	10%	0%	10%	50%	0%
R-1	100%	5	0%	20	25%	25%	0%	0%	0%
R-2	100%	6	0%	20	25%	25%	0%	0%	0%
R-3	100%	6	0%	20	25%	25%	0%	0%	0%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 24-5: Town of Wilkeson Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
R-1	20%	35%	20%	0%	3%	<1 acre
R-2	20%	35%	20%	0%	3%	<1 acre
R-3	20%	35%	20%	0%	3%	<1 acre

HOUSING AND EMPLOYMENT CAPACITY

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 24-6 shows the characteristics of the initial inventory and Table 24-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 24-6: Town of Wilkeson Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	19.86	37.97	1.85	0.00
Average Lot Size (Gross)	1.10	0.95	0.12	0.00
Total Acreage (Net)	7.74	28.58	1.72	0.00
Average Lot Size (Net)	0.43	0.71	0.11	0.00
Percent Critical Areas	61%	25%	7%	0%

The parcel inventory is used to categorize land and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 24-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and the deductions made to account for constraints to the inventory and overall market conditions.

Table 24-7: Town of Wilkeson Place Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	12.12	9.39
Plat Deductions	5.64	19.50
Capital Facilities	0.00	0.00
Market Factor	0.50	3.02
Total Percent Reduction in Inventory Land	92%	84%
Percent of Vacant or Underutilized Land Available for Capacity	8%	16%

Capacity Results

The housing and employment capacity totals in Table 24-8 and Table 24-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Table 24-8: Town of Wilkeson 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
C	0	-2	0	0	-2
P	0	0	0	0	0
R-1	4	10	0	0	14
R-2	2	11	14	0	27
R-3	1	2	1	0	4
Total	7	21	15	0	43

Table 24-9: Town of Wilkeson 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
C	4	26	0	30
P	0	2	0	2
R-1	1	2	0	3
R-2	0	2	0	2
R-3	0	0	0	0
Total	5	32	0	37

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 24-10: Town of Wilkeson Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
C	0	0	0	0.00	0.0%
P	0	0	0	0.00	0.0%
R-1	0	0	0	0.00	0.0%
R-2	0	0	0	0.00	0.0%
R-3	0	0	0	0.00	0.0%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 24-11: Town of Wilkeson Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
C	0	0	0	0
P	0	0	0	0
R-1	0	0	0	5
R-2	0	0	0	6
R-3	0	0	0	6

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the

report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 24-12: Town of Wilkeson Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
C	0%	0%	0%	100%	Commercial	0%
P	0%	0%	0%	100%	Commercial	0%
R-1	0%	100%	0%	0%	Residential	3%
R-2	0%	100%	0%	0%	Residential	3%
R-3	0%	100%	0%	0%	Residential	3%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 24-13: Town of Wilkeson Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
C	0%	0%	0%	0%	0%	0%
P	0%	0%	0%	0%	0%	0%
R-1	0%	20%	0%	20%	0%	0%
R-2	0%	20%	0%	20%	0%	0%
R-3	0%	20%	0%	20%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 24-14: Town of Wilkeson Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
175	182	251	7	69	1	3	**2**

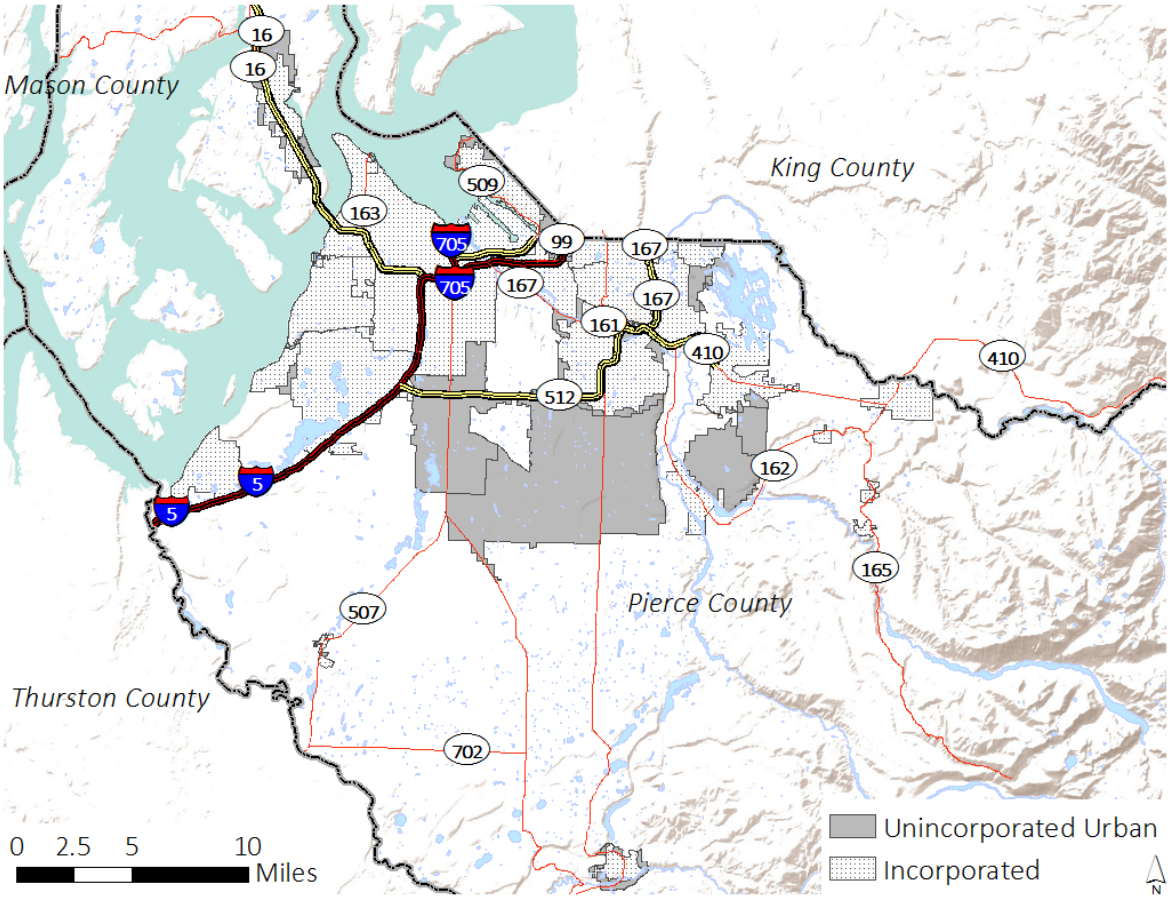
Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

Table 24-15: Town of Wilkeson Housing and Employment Capacity Compared to Growth Target Needs

Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
43	69	-26	37	11	26

25 UNINCORPORATED PIERCE COUNTY



Pierce County's Comprehensive Plan and regulations implement densities using net acreage, subtracting out critical areas and roads.

Table 25-1: Unincorporated Pierce County Zone Classifications

Zone Classification		Zone Type[1]	Total Acres[2]
Urban Zones			
AC	Activity Center	Mixed Use	31.3
CC	Community Center	Mixed Use	118.9
CE	Community Employment	Industrial	402.7
EBPC	Employment Based Planned Community	Planned Development	4,570.4
EC	Employment Center	Industrial	3,510.8
ECor	Employment Corridor	Industrial	1,394.3
HSF	High Density Single Family	Residential	644.9
MHR	Moderate-High Density Residential	Residential	762.6
MPC	Master Planned Community	Planned Development	2,483.9
MSF	Moderate Density Single Family	Residential	17,626.7

Zone Classification		Zone Type[1]	Total Acres[2]
MUC	Mixed Use Center	Mixed Use	14.3
MUD	Mixed Use District	Mixed Use	576.9
NC	Neighborhood Center	Mixed Use	124.9
NCor	Neighborhood Corridor	Mixed Use	2,033.3
PI	Public Institution	Public Use	225.8
ROC	Residential-Office/Civic	Mixed Use	10.2
RR	Residential Resource	Residential	4,509.0
SF	Single Family	Residential	6,874.7
TCtr	Towne Center	Mixed Use	371.6
TCtrSH	Towne Center-South Hill	Mixed Use	340.2
UCor	Urban Corridor	Mixed Use	1,001.9
UCorSH	Urban Corridor-South Hill	Mixed Use	395.4
Rural/Resource Zones			
ARL	Agricultural Resource Lands	Resource	22,077.2
EFRAN	Rural Airport North	Essential Public Facility	209.2
EFRAS	Rural Airport South	Essential Public Facility	359.1
FL	Forest Lands	Resource	272,153.3
GC	Gateway Communities	LAMIRD	34.6
MPR	Master Planned Resorts	Planned Development	21.6
PR	Park and Recreation	N/A	8,160.8
R10	Rural 10	Residential	157,917.1
R20	Rural 20	Residential	17,681.2
R40	Rural 40	Residential	2,256.1
R5	Rural 5	Residential	9,127.8
RAC	Rural Activity Center	LAMIRD	367.1
RF	Rural Farm	Residential	9,678.7
RIC	Rural Industrial Center	LAMIRD	97.1
RNC	Rural Neighborhood Center	LAMIRD	268.7
RSep	Rural Separator	Residential	9,679.9
RSR	Rural Sensitive Resource	Residential	34,529.3
TC	Tourist Commercial	LAMIRD	125.9
VC	Village Center	LAMIRD	217.8
VR	Village Residential	Residential	139.1

[1]For purposes of the Buildable Lands inventory and analysis; not a representation of the County zoning code.

[2]Represents parcel acreage, not zoning coverage.

Sources: County Zoning Code.

LAMIRD=Limited Areas of More Intensive Rural Development per RCW 36.70A.070(5)(d).

URBAN DEVELOPMENT TRENDS

This section summarizes permit data observed between January 1, 2013 and December 31, 2020 that is used to monitor observed densities and update the assumptions for future development. The summaries in this section are designed to show the average statistics used to inform the report. Only data pertinent to the Buildable Lands requirements is collected, and incomplete or not-applicable data

are omitted; therefore, this Report does not provide a full summary of all development within the jurisdiction. For more detailed summaries by zone/year, see Appendix A: Full Data, Calculation Tables, and Maps.

Table 25-2 shows the average residential density per zone and jurisdiction-wide and is not intended to show the total units/lots created or overall acres consumed. The results reflect the density calculation used by the jurisdiction, and only include a summary of plats and multifamily (3+ attached units) projects. Table 25-3 shows the average floor-to-area ratio (FAR) by zone and the amount of non-residential building square footage developed. The non-residential projects summarized only include new development and omit additions to existing businesses and non-building type improvements.

Table 25-2: Unincorporated Urban Pierce County 2013-2020 Residential Trends by Zone[1]

Zone	Net Acres[2]	Lots/Units	Density
AC	9.19	278	30.25
CC	45.01	949	21.08
HRD	9.55	69	7.23
HSF	29.28	163	5.57
MHR	97.64	679	6.95
MSF	404.52	1,480	3.66
MUC	1.10	3	2.73
MUD	32.59	476	14.60
NC	13.51	182	13.47
ROC	28.35	396	13.97
RR	31.08	104	3.35
SF	121.01	255	2.11
UV	0.71	22	31.17
Total/Avg.	**823.54**	**5,056**	**6.14**

Master Planned Developments

MPD	Acres	Sq. Ft.	FAR
Canterwood	4.59	13	2.83
Sunrise	114.13	537	4.71
Tehaleh	797.42	1,941	2.43

Table 25-3: Unincorporated Urban Pierce County 2013-2020 Non-residential Trends by Zone

Zone	Acres	Sq. Ft.	FAR
AC	3.70	26,072	0.16
CC	4.29	22,487	0.12
CE	31.87	446,887	0.32
CMUD	15.77	189,749	0.28
EC	330.98	2,273,971	0.16
ES	6.60	38,026	0.13
HSF	27.62	105,013	0.09
MSF	11.33	82,102	0.17
MUD	36.30	614,629	0.39
NC	1.53	8,276	0.12
ROC	0.38	575	0.03
SF	21.38	35,387	0.04
UV	9.88	155,475	0.36
Total/Avg.	**501.63**	**3,998,649**	**0.18**

Master Planned Developments

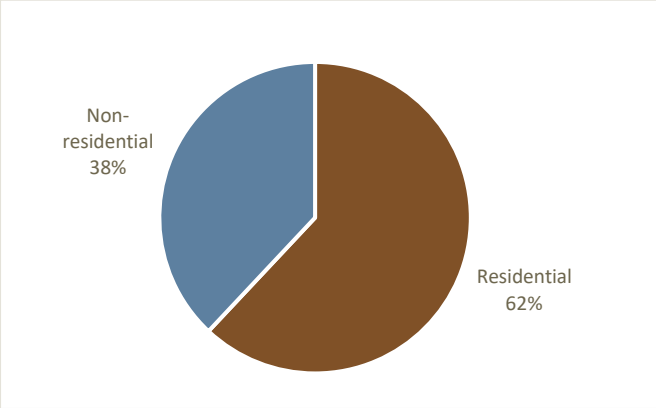
MPD	Acres	Sq. Ft.	FAR
Sunrise	25.83	546,010	0.49
Tehaleh	32.84	213,140	0.15

[1]Includes multifamily and plat data to represent the overall observed density by zone. Does not include single-family permits in order to accurately represent permitted densities; therefore, does not represent the total number of units developed in the timeframe.
Sources: County Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

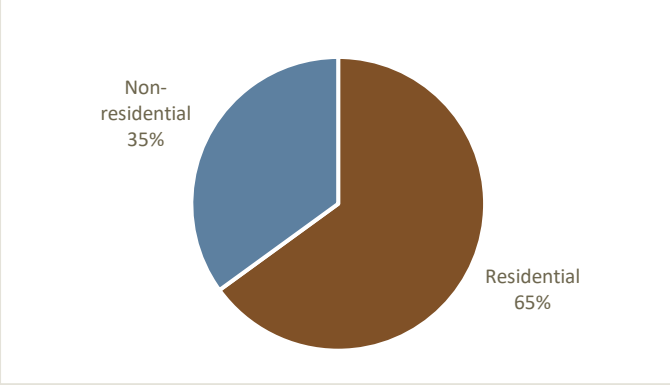
While the non-residential development trends are informative to show the percent of land consumed for non-residential purposes (as shown in Figure 25-A), the employment densities used in the capacity assumptions are derived through employment density surveys, as documented in Appendix C: Employment Density Survey. Figure 25-A summarizes the split between residential and non-residential development between 2013-2020 by zone and the jurisdiction average. The percent split is based on the gross acres developed between 2013-2020 using the plat activity and multifamily permits for residential and non-residential permits for non-residential. The information is used to inform the percent split for mixed-use zones, as well as the percent of non-residential uses in residential-only zones.

Figure 25-A: Unincorporated Urban Pierce County Residential vs. Non-residential Development Split

All Zones Outside of Master Planned Communities



Mixed Use Zones Outside of Master Planned Communities



Zone	Use Type Split (Percent)[1] Residential	Non-residential
AC	71%	29%
CC	91%	9%
CE	0%	100%
CMUD	0%	100%
EC	0%	100%
ES	0%	100%
HRD	100%	0%
HSF	51%	49%
MHR	100%	0%
MSF	97%	3%
MUC	100%	0%
MUD	47%	53%
NC	90%	10%
ROC	99%	1%
RR	100%	0%
SF	85%	15%
UV	7%	93%
Average	**62%**	**38%**

Master Planned Developments

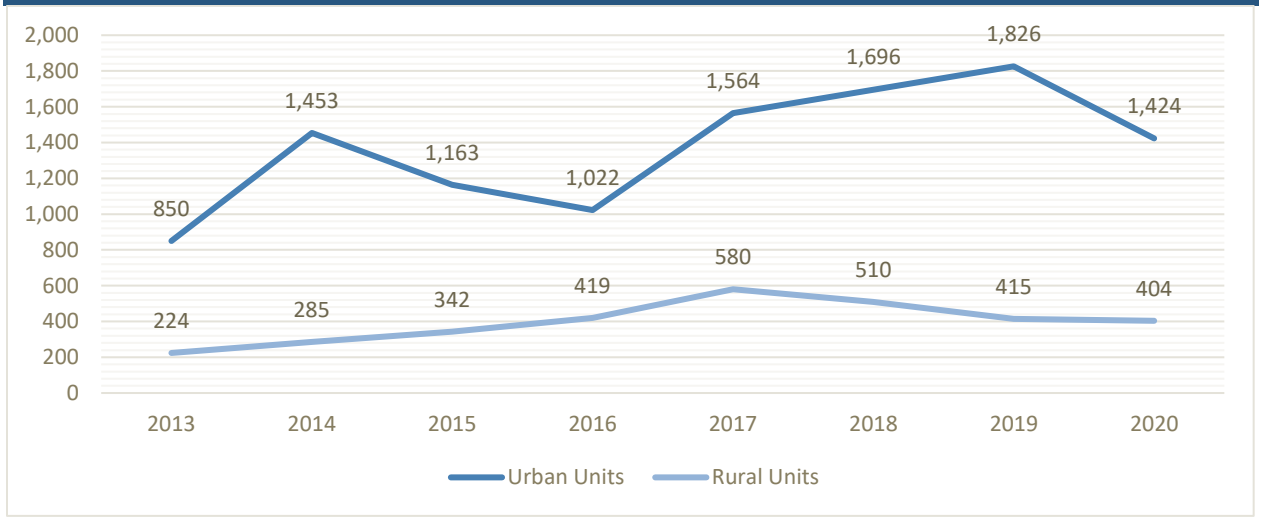
Zone	Use Type Split (Percent)[1] Residential	Non-residential
Canterwood	100%	0%
Sunrise	90%	10%
Tehaleh	97%	3%

[1]Does not include single-family permits in order to avoid double-counting acreage.
Sources: County Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Housing Production Rate

The residential data collected for the Buildable Lands Program tracks the density and other assumptions related to the capacity analysis. The Buildable Lands requirements that were amended in 2017 now require the tracking of housing production to compare to the necessary growth rates to achieve the housing targets. Due to the limitations of the permit data and lack of demolition permit data, Pierce County relies upon the Washington State Office of Financial Management estimates to track the number of housing units built per year in each jurisdiction for the purposes of this Report. The comparison of housing production and housing needs is shown in Table 1-2 and Table 1-3 (Countywide).

Figure 25-B: Unincorporated Urban Pierce County Housing Production Rates (OFM)

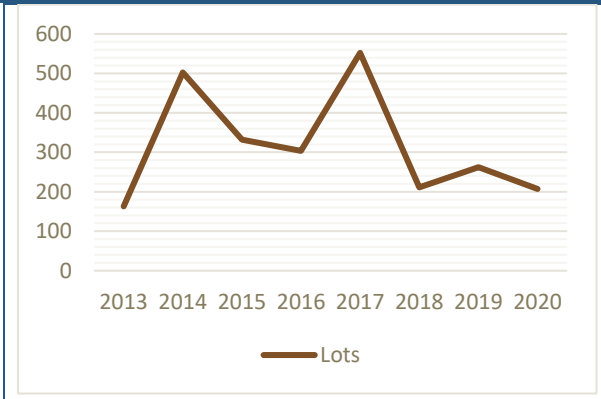


Source: Washington State Office of Financial Management Housing Unit Data (2020).

Platting Activity

Platting activity is used to determine the achieved density for single-family residential zones and to identify the amount of land used for other purposes (whether netted out for density or applied by a regulation and affecting the achieved density). Plat data is used in conjunction with multifamily permits to determine the overall achieved density (as shown in Table 25-2).

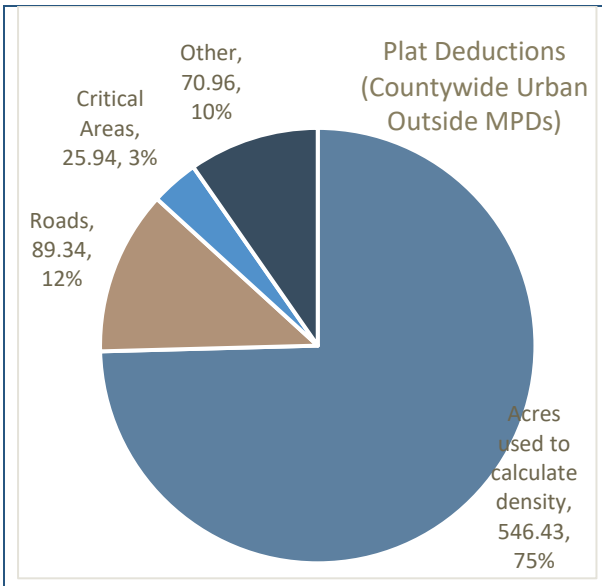
Figure 25-C: Unincorporated Urban Pierce County Platting Trends



Plat Activity by Year

Year	Lots	Acres	Density
2013	277	76.82	3.61
2014	1,001	235.59	4.25
2015	637	165.23	3.86
2016	723	254.92	2.84
2017	972	310.63	3.13
2018	651	186.89	3.48
2019	513	202.30	2.54
2020	207	36.16	5.72
Total	**4,981**	**1,468.55**	**3.39**

Note: Data includes Master Planned Developments.



Plat Deductions by Zone (Percent)[1]

Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
HRD	34.7%	-	6.2%	3.7%
HSF	18.3%	-	4.9%	1.6%
MHR	16.2%	-	3.6%	-
MSF	12.3%	0.7%	6.5%	1.0%
MUC	-	-	-	-
MUD	16.0%	7.1%	33.0%	9.7%
RR	17.6%	5.3%	-	-
SF	10.5%	17.5%	19.6%	7.3%
Average	**13.2%**	**3.8%**	**8.4%**	**2.1%**

Master Planned Developments

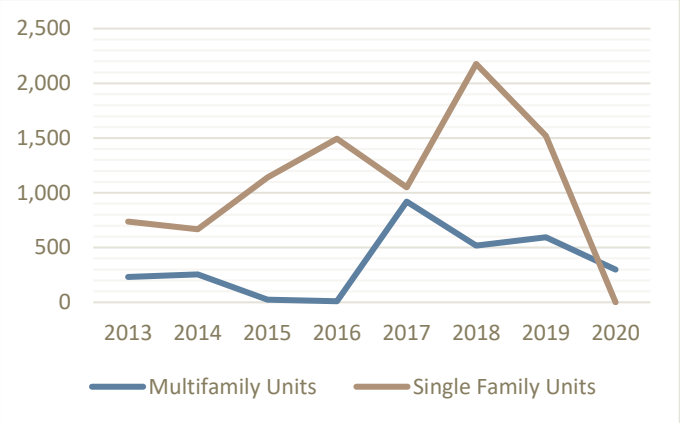
Zone	Roads	Critical Areas	Parks/Open Space	Storm -water
Canter-wood	-	-	-	-
Sunrise	10.7%	-	35.8%	0.4%
Tehaleh	4.1%	1.5%	13.7%	2.3%

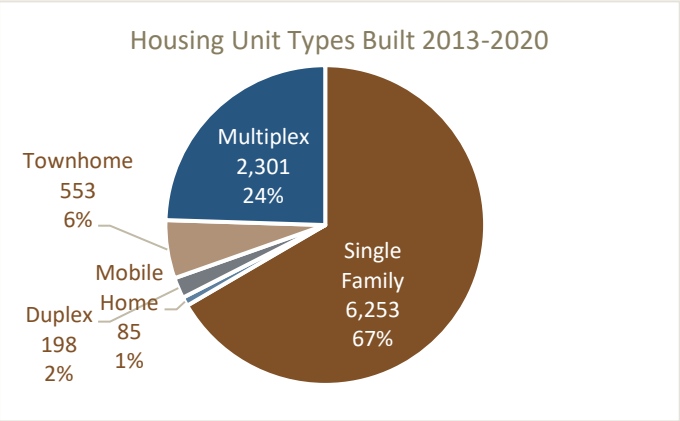
[1]Does not include master planned developments that have development agreements that may differ from traditional zoning.
Sources: County Permit Data, Pierce County Auditor Recorded Plats.

Residential Building Trends

Both multifamily and single-family building permits are collected and summarized; however, single-family permit reporting is optional per the Pierce County Countywide Planning Policies and limited in use for tracking factors affecting development. The single-family permit data is provided as supplemental information but is not used for establishing assumptions. The multifamily permit data is used to identify the observed density and amount of land used for residential purposes. Please note that this data differs from the data provided in Figure 25-B due to collection limitations and should not be used to represent housing production in the jurisdiction.

Figure 25-D: Unincorporated Urban Pierce County Residential Building Permit Trends





Multifamily Permits by Year

Year	Units	Net Acres	Net Density
2013	233	18.32	12.72
2014	256	11.51	22.23
2015	24	2.25	10.69
2016	10	1.07	9.37
2017	920	51.86	17.74
2018	518	33.20	15.60
2019	595	36.85	16.14
2020	298	18.20	16.38
Total	**2,854**	**173.26**	**16.47**

Note: Data includes Master Planned Developments.

Single-Family Permits by Year (Optional)

Year	Lots	Acres	Avg. Lot Size
2013	736	112.60	0.16
2014	667	106.67	0.17
2015	1,141	299.85	0.30
2016	1,493	414.59	0.33
2017	1,051	258.26	0.30
2018	2,177	564.79	0.31
2019	1,521	781.60	0.66
Total	**8,786**	**2,538.36**	**0.34**

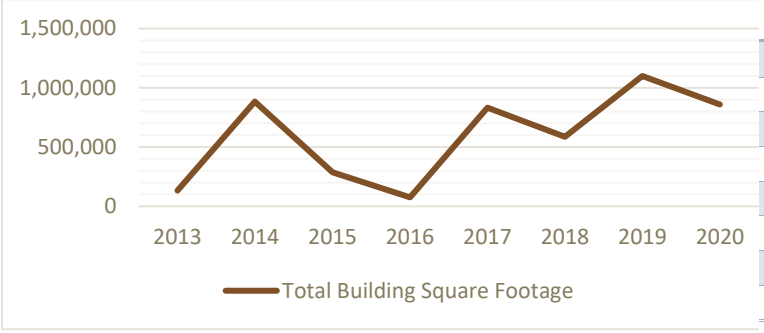
Note: Data includes Master Planned Developments; no single-family data for 2020 available.

Sources: County Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Non-residential building permits typically include commercial and industrial development; however, public use is often collected and summarized as well when the use type produces jobs. While the project acreage, building square footage, and floor-to-area ratio information is collected and summarized for the report in order to track non-residential development, the employment density is analyzed in a separate report using data other than building permits. The most recent employment density study to support the assumptions in this Report is provided in Appendix C: Employment Density Survey.

Figure 25-E: Unincorporated Urban Pierce County Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	37.53	132,333	0.08
2014	86.92	882,836	0.23
2015	45.49	287,108	0.14
2016	32.83	75,957	0.05
2017	80.94	833,370	0.24
2018	24.31	586,467	0.55
2019	65.09	1,099,796	0.39
2020	187.19	859,932	0.11
Total	**560.30**	**4,757,799**	**0.19**

Note: Data includes Master Planned Development.

Sources: County Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

ASSUMPTIONS

Assumptions vary by jurisdiction and zone. Table 25-4 and Table 25-5 provide a snapshot of the densities, mixed-use split, and deductions used in the inventory development and capacity calculation tables. The assumptions for each zone are shown in the assumptions column of the capacity calculation tables shown in Appendix A: Full Data, Calculation Tables, and Maps.

Table 25-4: Unincorporated Urban Pierce County Assumptions Summary

Zone	Residential		Employment		Residential Market Factor		Non-Residential Market Factor		Land for Capital Facilities	Infra-structure Gap Deduction	
	Percent	Density	Percent	Density	Vacant	Under-utilized	Vacant	Under-utilized		Res.	Non-Res.
AC	35%	15	65%	20	20%	40%	10%	40%	0%	50%	20%
CC	35%	20	65%	20	20%	40%	10%	40%	0%	50%	20%
CE	0%	0	100%	9	0%	0%	10%	50%	0%	0%	20%
EBPC	0%	0	0%	0	0%	0%	0%	0%	0%	0%	0%
EC	0%	0	100%	9	0%	0%	10%	50%	0%	0%	20%
ECor	0%	0	100%	9	0%	0%	10%	50%	0%	0%	20%
HSF	100%	6	0%	20	10%	20%	0%	0%	0%	30%	30%
MHR	100%	8	0%	20	20%	40%	0%	0%	0%	30%	30%
MPC	0%	0	0%	0	0%	0%	0%	0%	0%	0%	0%
MSF	100%	4	0%	20	10%	20%	0%	0%	0%	30%	30%
MUC	35%	8	65%	20	20%	40%	10%	40%	0%	50%	20%
MUD	35%	16	65%	20	20%	40%	10%	40%	0%	50%	20%
NC	35%	10	65%	20	20%	40%	10%	40%	0%	50%	20%
NCor	90%	12	10%	20	10%	40%	20%	40%	0%	50%	20%
PI	0%	0	100%	20	0%	0%	10%	50%	0%	0%	0%
ROC	35%	10	65%	20	20%	40%	10%	40%	0%	50%	20%
RR	100%	2	0%	20	10%	20%	0%	0%	0%	30%	30%
SF	100%	4	0%	20	10%	20%	0%	0%	0%	30%	30%
TCtr	35%	40	65%	20	10%	40%	0%	0%	0%	50%	20%
TCtrSH	35%	20	65%	20	20%	40%	0%	0%	0%	50%	20%
UCor	35%	20	65%	20	10%	40%	0%	0%	0%	50%	20%
UCorSH	35%	20	65%	20	20%	40%	10%	40%	0%	50%	20%

The Vacant Single Unit size threshold listed below represents the parcel size used to determine if a vacant property is subdividable or only able to accommodate one unit. Parcels smaller than the size listed are considered Vacant Single Units unless otherwise determined by the jurisdiction during the parcel-specific review.

Table 25-5: Unincorporated Urban Pierce County Plat Deductions for Single-Family Residential Zones

Zone	Roads	Critical Areas	Parks/Open Space	Stormwater	Non-residential	Vacant Single Unit
HSF	15%	GIS	0%	0%	2%	<0.625 acres
MHR	N/A	GIS	N/A	N/A	2%	<0.500 acres
MSF	15%	GIS	0%	0%	2%	<0.625 acres
RR	15%	GIS	0%	0%	2%	<2.500 acres
SF	15%	GIS	0%	0%	2%	<1.000 acres

URBAN HOUSING AND EMPLOYMENT CAPACITY

Unincorporated Pierce County Total

Inventory and Capacity Calculation Characteristics

A portion of the inventory is deducted from the gross acreage based on the assumptions identified in the previous section. Table 25-6 shows the characteristics of the initial inventory and Table 25-7 shows the amount of land that was reduced from that initial inventory to be included in the capacity analysis, as documented in the tables and maps in Appendix A: Full Data, Calculation Tables, and Maps.

Table 25-6: Unincorporated Pierce County Summary of Vacant and Underutilized Land Characteristics

Characteristics/Category	Vacant	Underutilized	Vacant Single Unit	Pipeline
Total Acreage (Gross	4,340.41	9,496.91	618.68	5,634.39
Average Lot Size (Gross)	3.80	1.90	0.27	13.16
Total Acreage (Net)	3,404.36	8,193.05	417.62	4,458.22
Average Lot Size (Net)	2.98	1.64	0.18	10.42
Percent Critical Areas	22%	14%	32%	21%

The parcel inventory is used to categorize land, and the capacity calculations are intended to represent the land available for development; thus, the inventory maps alone do not represent the "buildable land" per the Buildable Lands requirements. Table 25-7 shows the overall percentage of land assumed available as capacity in the 20-year planning period and deductions made to account for constraints to the inventory and overall market conditions.

Table 25-7: Unincorporated Pierce County Summary of Deductions

Deductions/Category	Vacant	Underutilized
Critical Areas	936.05	1,303.86
Infrastructure Gaps	986.14	3,471.13
Plat Deductions	163.63	828.48
Capital Facilities	0.00	0.00
Market Factor	275.79	1,741.66
Total Percent Reduction in Inventory Land	42%	49%
Percent of Vacant or Underutilized Land Available for Capacity	58%	51%

Capacity Results

The housing and employment capacity totals in Table 25-8 and Table 25-9 are derived from the calculations shown in Appendix A: Full Data, Calculation Tables, and Maps. A summary of the countywide capacity results compared to need is shown in **Error! Reference source not found.** (2030 Housing Target), **Error! Reference source not found.** (2030 Employment Target), and Table 1-12 (DRAFT 2044 Targets).

Note: The capacity is subject to the zoning at the time the report is published, not pending zoning changes. A large zoning update becomes effective after the publish date of this report, and the capacity for the updated zoning will be provided in an addendum to this report prior to the 2024 Comprehensive Plan periodic update.

Table 25-8: Unincorporated Pierce County 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	Vacant Single Unit	Pipeline	Total
AC	0	0	0	0	0
CC	22	30	0	0	52
CE	0	-32	0	3	-29
EBPC	0	0	560	6,688	7,248
EC	0	-38	0	6	-32
ECor	0	-108	0	0	-108
HSF	234	301	109	174	818
MHR	193	222	124	991	1,530
MPC	0	0	78	1,310	1,388
MSF	1,888	7,931	719	1,253	11,791
MUC	2	0	2	0	4
MUD	168	262	0	4	434
NC	40	28	0	2	70
NCor	1,036	1,776	125	465	3,402
PI	0	0	0	0	0
ROC	15	0	1	0	16
RR	300	654	113	1,911	2,978
SF	619	3,255	481	789	5,144
TCtr	374	546	3	42	965
TCtrSH	79	108	2	22	211
UCor	578	437	6	2	1,023
UCorSH	259	235	0	0	494
Total	5,807	15,607	2,323	13,662	37,399

Table 25-9: Unincorporated Pierce County 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
AC	0	0	0	0
CC	76	127	0	203
CE	248	409	85	742
EBPC	0	0	2,347	2,347
EC	8,635	2,163	1,176	11,974
ECor	2,608	2,162	44	4,814
HSF	18	33	0	51
MHR	12	21	33	66
MPC	0	0	0	0
MSF	215	1,181	1	1,397
MUC	14	0	0	14
MUD	825	991	340	2,156
NC	271	125	0	396
NCor	211	412	6	629
PI	0	0	0	0
ROC	66	0	0	66
RR	68	187	0	255
SF	70	477	0	547
TCtr	388	933	0	1,321
TCtrSH	236	373	59	668
UCor	1,655	1,847	1	3,503
UCorSH	547	443	0	990
Total	16,163	11,884	4,092	32,139

High Capacity Transit Communities Portion

Inventory and Capacity Calculation Characteristics

Table 25-10: Unincorporated Pierce County High Capacity Transit Communities Portion Summary of Vacant and Underutilized Land Characteristics

Inventory Characteristics/Category	Vacant	Underutilized	VSU	Pipeline
Total Acreage (Gross)	1,678.27	4,701.99	267.60	1,150.19
Average Lot Size (Gross)	2.48	1.71	0.29	8.33
Total Acreage (Net)	1,273.13	4,081.81	179.36	943.74
Average Lot Size (Net)	1.88	1.49	0.20	6.84
Percent Critical Areas	24%	13%	33%	18%

Table 25-11: Unincorporated Pierce County High Capacity Transit Communities Portion Summary of Deductions

Inventory-Capacity Deductions/Category	Vacant	Underutilized
Critical Areas	405.14	620.18
Infrastructure Gaps	345.39	1,035.15
Plat Deductions	66.01	394.91
Capital Facilities	0.00	0.00
Market Factor	113.76	943.66
Total Percent Reduction in Inventory Land	36%	46%
Percent of Vacant or Underutilized Land Available for Capacity	64%	54%

Capacity Results

Table 25-12: Unincorporated Pierce County High Capacity Transit Communities Portion 2020-2044 Housing Capacity (Dwelling Units)

Zone	Vacant	Underutilized	VSU	Pipeline	Total
AC	0	0	0	0	**0**
CC	12	0	0	0	**12**
CE	0	-31	0	3	**-28**
EBPC	0	0	0	0	**0**
EC	0	-11	0	4	**-7**
ECor	0	-107	0	0	**-107**
HSF	234	282	109	174	**799**
MHR	177	210	2	0	**389**
MPC	0	0	76	1,310	**1,386**
MSF	460	2,849	267	461	**4,037**
MUC	0	0	0	0	**0**
MUD	103	66	0	0	**169**
NC	24	27	0	0	**51**
NCor	508	1,182	99	153	**1,942**
PI	0	0	0	0	**0**
ROC	15	0	1	0	**16**
RR	264	535	96	1,859	**2,754**
SF	172	1,923	258	162	**2,515**
TCtr	374	546	3	42	**965**
TCtrSH	79	108	2	22	**211**
UCor	578	437	6	2	**1,023**
UCorSH	259	235	0	0	**494**
Total	**3,259**	**8,251**	**919**	**4,192**	**16,621**

Table 25-13: Unincorporated Pierce County High Capacity Transit Communities Portion 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
AC	0	0	0	0
CC	36	0	0	36
CE	236	380	85	701
EBPC	0	0	0	0
EC	1,915	312	0	2,227
ECor	1,616	2,067	44	3,727
HSF	18	31	0	49
MHR	11	20	0	31
MPC	0	0	0	0
MSF	52	431	1	484
MUC	0	0	0	0
MUD	488	233	188	909
NC	121	116	0	237
NCor	102	277	0	379
PI	0	0	0	0
ROC	66	0	0	66
RR	60	153	0	213
SF	20	281	0	301
TCtr	388	933	0	1,321
TCtrSH	236	373	59	668
UCor	1,655	1,847	1	3,503
UCorSH	547	443	0	990
Total	7,567	7,897	378	15,842

Urban Unincorporated Portion

Inventory and Capacity Calculation Characteristics

Table 25-14: Unincorporated Pierce County Urban Unincorporated Portion Summary of Vacant and Underutilized Land Characteristics

Inventory Characteristics/Category	Vacant	Underutilized	VSU	Pipeline
Total Acreage (Gross)	2,662.13	4,794.92	351.09	4,484.20
Average Lot Size (Gross)	5.73	2.12	0.25	15.46
Total Acreage (Net)	2,131.22	4,111.24	238.26	3,514.48
Average Lot Size (Net)	4.58	1.82	0.17	12.12
Percent Critical Areas	20%	14%	32%	22%

Table 25-15: Unincorporated Pierce County Urban Unincorporated Portion Summary of Deductions		
Inventory-Capacity Deductions/Category	**Vacant**	**Underutilized**
Critical Areas	530.91	683.68
Infrastructure Gaps	640.75	2,435.98
Plat Deductions	97.62	433.58
Capital Facilities	0.00	0.00
Market Factor	162.04	798.00
Total Percent Reduction in Inventory Land	46%	52%
Percent of Vacant or Underutilized Land Available for Capacity	54%	48%

Capacity Results

Table 25-16: Unincorporated Pierce County Urban Unincorporated Portion 2020-2044 Housing Capacity (Dwelling Units)					
Zone	**Vacant**	**Underutilized**	**VSU**	**Pipeline**	**Total**
AC	0	0	0	0	**0**
CC	10	30	0	0	**40**
CE	0	-1	0	0	**-1**
EBPC	0	0	560	6,688	**7,248**
EC	0	-27	0	2	**-25**
ECor	0	-1	0	0	**-1**
HSF	0	18	0	0	**18**
MHR	16	11	122	991	**1,140**
MPC	0	0	2	0	**2**
MSF	1,428	5,069	452	792	**7,741**
MUC	2	0	2	0	**4**
MUD	66	196	0	4	**266**
NC	16	1	0	2	**19**
NCor	528	596	26	312	**1,462**
PI	0	0	0	0	**0**
ROC	0	0	0	0	**0**
RR	36	119	17	52	**224**
SF	447	1,338	223	627	**2,635**
TCtr	0	0	0	0	**0**
TCtrSH	0	0	0	0	**0**
UCor	0	0	0	0	**0**
UCorSH	0	0	0	0	**0**
Total	**2,549**	**7,349**	**1,404**	**9,470**	**20,772**

Table 25-17: Unincorporated Pierce County Urban Unincorporated Portion 2020-2044 Employment Capacity (Jobs)

Zone	Vacant	Underutilized	Pipeline	Total
AC	0	0	0	0
CC	40	127	0	167
CE	12	30	0	42
EBPC	0	0	2,347	2,347
EC	6,720	1,852	1,176	9,748
ECor	991	95	0	1,086
HSF	0	2	0	2
MHR	1	1	33	35
MPC	0	0	0	0
MSF	162	751	0	913
MUC	14	0	0	14
MUD	337	757	152	1,246
NC	150	10	0	160
NCor	108	135	6	249
PI	0	0	0	0
ROC	0	0	0	0
RR	8	34	0	42
SF	51	196	0	247
TCtr	0	0	0	0
TCtrSH	0	0	0	0
UCor	0	0	0	0
UCorSH	0	0	0	0
Total	8,594	3,990	3,714	16,298

CONSISTENCY EVALUATION

Development Trends

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

The development trends evaluation compares development that has occurred and the planned and regulated characteristics of the applicable zone, as well as with the assumptions used in the report. Since the development trend evaluation window is a short period of time and the application of zoning may change periodically, it is often found that there is not enough information to make a statistically valid conclusion. Due to this, the information is provided but no conclusions have been made.

Error! Not a valid bookmark self-reference. is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 3-10 is provided to show the number of permits, units, and acres developed to identify which zones have experienced development in the timeframe.

Table 25-18: Pierce County Permits Summary

Zone	Residential Permits	Non-Residential Permits	Dwelling Units	Acres Developed	% Zoned Acreage
AC	2	1	278	10.65	34.1%
CC	6	4	949	49.30	41.5%
CE	0	10	0	31.87	7.9%
EBPC	21	5	1,940	987.22	21.6%
EC	0	0	0	0.00	0.0%
ECor	0	0	0	0.00	0.0%
HSF	5	1	163	56.90	8.8%
MHR	21	0	827	131.88	17.3%
MPC	1	0	13	4.59	0.2%
MSF	84	3	1,684	466.06	2.6%
MUC	1	0	3	1.10	7.7%
MUD	11	18	716	80.58	14.0%
NC	0	0	0	0.00	0.0%
NCor	0	0	0	0.00	0.0%
PI	0	0	0	0.00	0.0%
PR	0	0	0	0.00	0.0%
ROC	3	1	396	28.73	280.8%
RR	7	0	106	34.00	0.8%
SF	26	2	255	142.39	2.1%
TCtr	0	0	0	0.00	0.0%
TCtr SH	0	0	0	0.00	0.0%
UCor	0	0	0	0.00	0.0%
UCor SH	0	0	0	0.00	0.0%

Table 3-11 shows the observed residential density trends in comparison to the permitted density and assumed density for each zone with sufficient data. Both the plat and multifamily project average densities are shown in order to understand the source of the overall density.

Table 25-19: Pierce County Density Evaluation

Zone	Observed Density (Overall)	Observed Plat Density (Single-Family)	Observed Multifamily Density	Assumed Density
AC	30	0	25	15
CC	22	0	22	20
CE	0	0	0	0
EBPC	2	2	11	0
EC	0	0	0	0
ECor	0	0	0	0
HSF	7	7	0	6
MHR	8	7	10	8
MPC	3	3	0	0
MSF	4	4	0	4
MUC	3	3	0	8
MUD	17	6	19	16
NC	0	0	0	10
NCor	0	0	0	12
PI	0	0	0	0
PR	0	0	0	0
ROC	15	0	15	10
RR	4	4	0	2
SF	3	3	0	4
TCtr	0	0	0	40
TCtr SH	0	0	0	20
UCor	0	0	0	20
UCor SH	0	0	0	20

Table 3-12 shows the observed percent of developed acreage between residential and non-residential uses. Mixed-use project acreage is duplicated in each category, resulting in a 50/50 percent split. In these cases, further analysis would be needed to determine if vertical mixed-use is part of the trend, resulting in a 100/100 percent split. The observed trend is compared to the assumptions used in the report for both the mixed-use split and the assumption for non-residential in and single-family zone. The trend is also compared to the permitted uses to determine if the zone is developing as planned.

Table 25-20: Pierce County Mixed Use Split and Non-residential in Single Family Zones Evaluation

Zone	Observed Residential Percent	Assumed Residential Percent	Observed Non-residential Percent	Assumed Non-residential Percent	Zone Type (Residential, Non-residential, Mixed-use)	Assumed Non-residential in Single-Family zones Percent
AC	86%	35%	35%	65%	Mixed Use	0%
CC	91%	35%	9%	65%	Mixed Use	0%
CE	0%	0%	100%	100%	Industrial	0%
EBPC	97%	0%	3%	0%	Other-Not Developable	0%
EC	0%	0%	0%	100%	Industrial	0%
ECor	0%	0%	0%	100%	Industrial	0%
HSF	51%	100%	49%	0%	Residential	2%
MHR	100%	100%	0%	0%	Residential	2%
MPC	100%	0%	0%	0%	Other-Not Developable	0%
MSF	98%	100%	2%	0%	Residential	2%
MUC	100%	35%	0%	65%	Mixed Use	0%
MUD	55%	35%	45%	65%	Mixed Use	0%
NC	0%	35%	0%	65%	Mixed Use	0%
NCor	0%	90%	0%	10%	Mixed Use	0%
PI	0%	0%	0%	100%	Commercial	0%
PR	0%	0%	0%	0%	Other-Not Developable	0%
ROC	99%	35%	1%	65%	Mixed Use	0%
RR	100%	100%	0%	0%	Residential	2%
SF	85%	100%	15%	0%	Residential	2%
TCtr	0%	35%	0%	65%	Mixed Use	0%
TCtr SH	0%	35%	0%	65%	Mixed Use	0%
UCor	0%	35%	0%	65%	Mixed Use	0%
UCor SH	0%	35%	0%	65%	Mixed Use	0%

Table 3-13 shows the observed plat deductions for jurisdictions that use net acreage to calculate permitted density compared to the assumptions used in the report. Only zones with plat data are shown.

Table 25-21: Pierce County Plat Deductions Evaluation

Zone	Observed Roads	Assumed Roads	Observed Parks/OS	Assumed Parks/OS	Observed Stormwater	Assumed Stormwater
AC	0%	0%	0%	0%	0%	0%
CC	0%	0%	0%	0%	0%	0%
CE	0%	0%	0%	0%	0%	0%
EBPC	4%	0%	14%	0%	2%	0%
EC	0%	0%	0%	0%	0%	0%
ECor	0%	0%	0%	0%	0%	0%
HSF	18%	15%	5%	0%	2%	0%
MHR	16%	0%	3%	0%	0%	0%
MPC	0%	0%	0%	0%	0%	0%
MSF	13%	15%	7%	0%	1%	0%
MUC	0%	0%	0%	0%	0%	0%
MUD	16%	0%	33%	0%	10%	0%
NC	0%	0%	0%	0%	0%	0%
NCor	0%	0%	0%	0%	0%	0%
PI	0%	0%	0%	0%	0%	0%
PR	0%	0%	0%	0%	0%	0%
ROC	0%	0%	0%	0%	0%	0%
RR	16%	15%	0%	0%	0%	0%
SF	10%	15%	20%	0%	7%	0%
TCtr	0%	0%	0%	0%	0%	0%
TCtr SH	0%	0%	0%	0%	0%	0%
UCor	0%	0%	0%	0%	0%	0%
UCor SH	0%	0%	0%	0%	0%	0%

Housing Production / Growth Targets

Table 3-14 shows the observed housing production and average yearly housing production rate between 2010-2020 in comparison to the 2020-2044 housing growth target need and average yearly housing production rate needed to accommodate the growth target.

Table 25-22: Pierce County Housing Production Trends Compared to Growth Target Needs

Housing Units			Total Housing Growth		Average Yearly Housing Growth (Growth / Years)		
2010 Census	2020 OFM Estimate	2044 Target	2010-2020 Observed	2020-2044 Growth Target	2010-2020 Observed	2020-2044 Growth Target	Yearly Increase Needed
72,091	84,200	108,450	12,109	24,250	1,211	1,010	-

Capacity / Growth Targets

Table 3-15 shows the 2020-2044 housing and employment capacity in comparison to the housing and employment 2020-2044 growth target need.

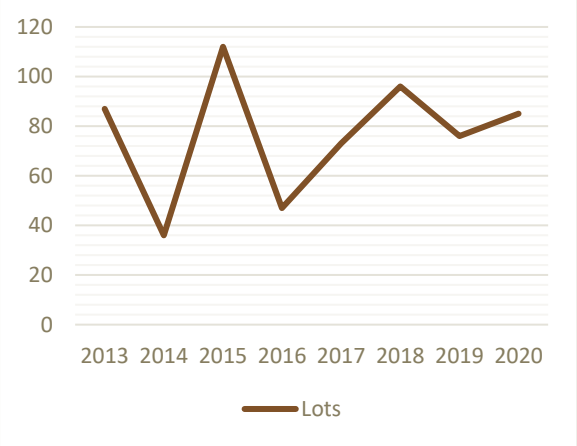
Table 25-23: Pierce County Housing and Employment Capacity Compared to Growth Target Needs

Jurisdiction	Housing Capacity	2020-2044 DRAFT Housing Need	Difference	Employment Capacity	2020-2044 DRAFT Employment Need	Difference
Unincorporated Urban Pierce County	37,399	24,250	13,149	32,139	19,295	12,844
High Capacity Transit Communities	16,621	13,380	3,241	15,842	10,445	5,397
Urban Unincorporated	20,772	10,870	9,902	16,298	8,850	7,448

DEVELOPMENT TRENDS OUTSIDE THE URBAN GROWTH AREA

Platting Activity

Figure 25-F: Unincorporated Rural/Resource Lands Platting Trends



Plat Activity by Year

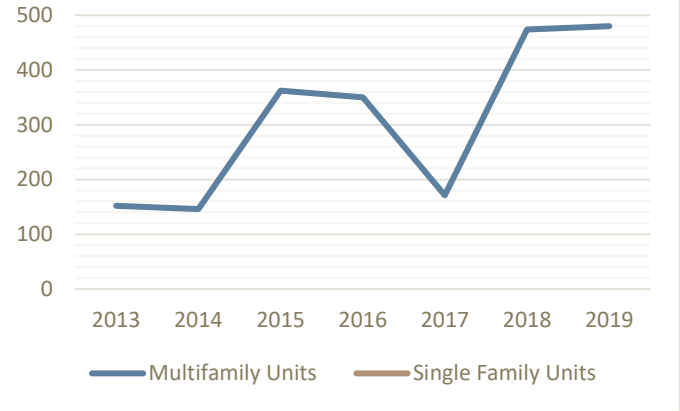
Year	Lots	Acres	Density
2013	87	226.95	0.38
2014	36	78.68	0.46
2015	112	29.66	3.78
2016	47	227.79	0.21
2017	73	322.34	0.23
2018	96	323.82	0.30
2019	76	392.19	0.19
2020	85	100.04	0.85
Total	**612**	**1,701.47**	**0.36**

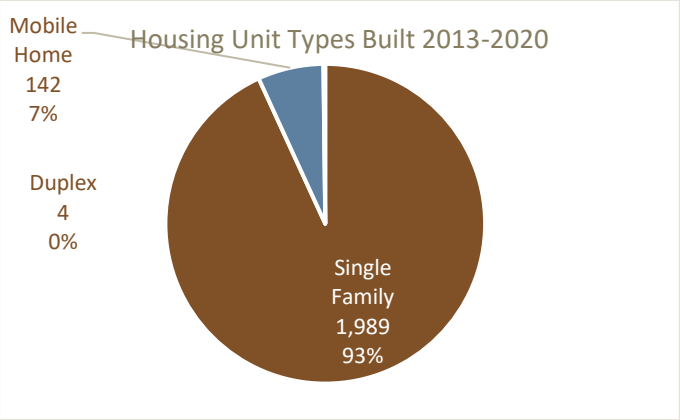
No plat deduction data: density in the rural area is calculated using gross acreage.

Sources: County Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Residential Building Trends

Figure 25-G: Unincorporated Rural/Resource Lands Residential Building Permit Trends





Multifamily Permits by Year

No multifamily development observed in the rural area.

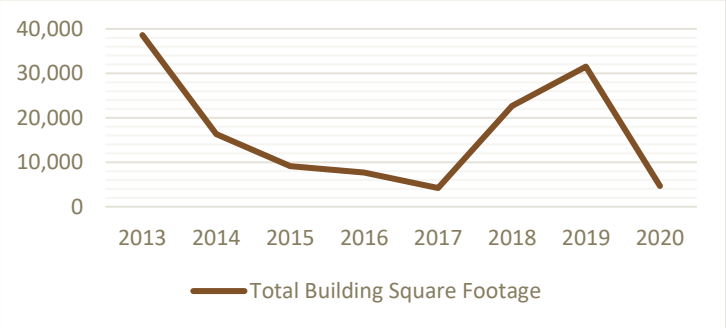
Single-Family Permits by Year (Optional)

Year	Lots	Acres	Avg. Lot Size
2013	152	149.44	0.98
2014	146	267.16	1.83
2015	362	727.10	2.01
2016	350	958.89	2.75
2017	171	674.36	3.94
2018	474	1,627.92	3.43
2019	480	1,344.13	2.80
Total	2,135	5,749.00	2.70

Sources: County Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

Non-residential Building Trends

Figure 25-H: Unincorporated Rural/Resource Lands Non-residential Permit Trends



Year	Acres	Bldg. SF	FAR
2013	33.56	38,605	0.03
2014	5.54	16,306	0.07
2015	21.27	9,148	0.01
2016	0.90	7,700	0.20
2017	4.75	4,200	0.02
2018	414.07	22,668	0.00
2019	6.08	31,511	0.12
2020	1.02	4,652	0.10
Total	487.19	134,790	0.01

Sources: County Permit Data, Pierce County Assessor-Treasurer Tax Parcels, Puget Sound Regional Council Housing Unit Permit Database.

SECTION IV: APPENDICES

Appendix A: Full Data, Calculation Tables, and Maps

Appendix B: Buildable Lands Inventory Process

Appendix C: Employment Density Survey

Appendix A: Full Data, Calculation Tables, and Maps

The following sections document the permit data, base inventory for the capacity calculations, and the calculation tables used to determine the capacity of land suitable for development. The calculations are performed within an excel spreadsheet using the formula base shown in Appendix Figure 1 on the following page. Each zone's assumptions are documented in the "Assumption" columns on the table. The resulting acreage or unit/job deductions/additions based on the assumptions are documented in the "Calculation" columns on the table.

PERMIT DATA AND SUMMARIES (EXCEL)

The permit data and detailed zone/assumption summaries can be found online at https://www.piercecountywa.gov/DocumentCenter/View/115083.

CALCULATION TABLES

It is important to note that this calculation process differs from previous reports that added the displaced units and jobs back into the housing and employment needs, and instead reduces those units and jobs from the capacity itself. The calculation tables were also provided separately in previous reports and have been combined in this report to consolidate the information. The excel spreadsheets are also available at https://www.piercecountywa.gov/DocumentCenter/View/115083.

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INVENTORY MAPS

GIS Maps

An interactive map that includes the 2010, previous 2020, and updated 2020 parcel inventories for comparison is available at: https://piercecowa.maps.arcgis.com/apps/webappviewer/index.html?id=f662a8103cd3441bb169e013c03c4fef.

If the link is broken, please refer to the Buildable Lands webpage for the most up to date files.

Hard-Copy Maps

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Appendix Figure 1: Capacity Calculation Spreadsheet Formulas

	A	B	C	D	E
1	Assumptions and Capacity Calculations	Zone (ZN)			
2		Vacant			Underutilized
3	**Gross Acres**		INPUT ACRES FROM INVENTORY		INPUT ACRES FROM INVENTORY
4	**Net Acres (minus critical areas)**		INPUT ACRES FROM INVENTORY		INPUT ACRES FROM INVENTORY
5	Net Acres with Infrastructure Gaps		INPUT ACRES FROM INVENTORY		INPUT ACRES FROM INVENTORY
6	**Displaced Housing Units**				INPUT EXISTING UNITS FROM INVENTORY
7	**Displaced Estimated Jobs**				INPUT EXISTING JOBS FROM INVENTORY
8	**Housing Capacity Calculations**	**Assumption**	**Calculation**	**Assumption**	**Calculation**
9	**Residential Acreage**	INPUT % ASSUMPTION	=ROUND(C4*B9,2)	INPUT % ASSUMPTION	=ROUND(E4*D9,2)
10	Infrastructure Gap Residential Deduction	INPUT % ASSUMPTION	=ROUND(C5*B10,2)	INPUT % ASSUMPTION	=ROUND(E5*D10,2)
11	**Adjusted Residential Acreage**		=C9-C10		=E9-E10
12	Roads Deduction	INPUT % ASSUMPTION	=ROUND(C$11*B12,2)	INPUT % ASSUMPTION	=ROUND(E$11*D12,2)
13	Critical Area Deduction (only if %)	INPUT % ASSUMPTION	=ROUND(C$11*B13,2)	INPUT % ASSUMPTION	=ROUND(E$11*D13,2)
14	Parks/Open Space Deduction	INPUT % ASSUMPTION	=ROUND(C$11*B14,2)	INPUT % ASSUMPTION	=ROUND(E$11*D14,2)
15	Stormwater Deduction	INPUT % ASSUMPTION	=ROUND(C$11*B15,2)	INPUT % ASSUMPTION	=ROUND(E$11*D15,2)
16	**Adjusted Residential Net Acres**		=C11-C12-C14-C15-C13		=E11-E12-E14-E15-E13
17	Non-Residential Deduction	INPUT % ASSUMPTION	=ROUND(C$16*B17,2)	INPUT % ASSUMPTION	=ROUND(E$16*D17,2)
18	Public Facilities Deduction	INPUT % ASSUMPTION	=ROUND(C$16*B18,2)	INPUT % ASSUMPTION	=ROUND(E$16*D18,2)
19	Residential Market Factor Deduction	INPUT % ASSUMPTION	=ROUND(C$16*B19,2)	INPUT % ASSUMPTION	=ROUND(E$16*D19,2)
20	**Final Residential Net Acres**		=C16-C17-C18-C19		=E16-E17-E18-E19
21	**Vacant/Underutilized Housing Unit Capacity**	INPUT UNIT/ACRE ASSUMPTION	=ROUND(C20*B21,0)	INPUT UNIT/ACRE ASSUMPTION	=ROUND(E20*D21,0)
22	Vacant Single Unit Addition		0		
23	Pipeline Unit Addition		0		0
24	Adjusted Displaced Unit Deduction	=ROUND(SUM(C33,C20)/C3,2)		=ROUND(SUM(E33,E20)/E3,2)	=ROUND(E6*D24,0)
25	**Total Housing Capacity**	**=C21+C22+C23**		**=E21+E23-E24**	
26	**Employment Capacity Calcuations**				
27	**Non-residential Acreage**	INPUT % ASSUMPTION	=ROUND(C3*B27,2)	INPUT % ASSUMPTION	=ROUND(E3*D27,2)
28	Infrastructure Gap Non-residential Deduction	INPUT % ASSUMPTION	=ROUND(C5*B28,2)	INPUT % ASSUMPTION	=ROUND(E5*D28,2)
29	**Adjusted Non-residential Acreage**		=C27-C28		=E27-E28
30	Public Facilities Deduction	INPUT % ASSUMPTION	=ROUND(C$29*B30,2)	INPUT % ASSUMPTION	=ROUND(E$29*D30,2)
31	Non-residential Market Factor Deduction	INPUT % ASSUMPTION	=ROUND(C$29*B31,2)	INPUT % ASSUMPTION	=ROUND(E$29*D31,2)
32	Non-Residential in Residential Addition		=C17		=E17
33	**Final Non-residential Net Acres**		=C29-C30-C31+C32		=E29-E30-E31+E32
34	**Vacant/Underutilized Job Capacity**	INPUT JOB/ACRE ASSUMPTION	=ROUND(C33*B34,0)	INPUT JOB/ACRE ASSUMPTION	=ROUND(E33*D34,0)
35	Pipeline Job Addition				0
36	Adjusted Displaced Jobs Deduction	=ROUND(SUM(C33,C20)/C3,2)		=ROUND(SUM(E33,E20)/E3,2)	=ROUND(E7*D36,0)
37	**Total Employment Capacity**	**=C34+C35**		**=E34+E35-E36**	

Note: If a jurisdiction uses a gross calculation for density, the gross and net acres will show as equal.

Appendix Figure 2: Auburn Capacity Tables

See following page.

Zone	AUBURN C1	AUBURN I	AUBURN OS	AUBURN PUD	AUBURN R5	AUBURN R7	AUBURN TV
VISION 2050 Geography	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities
Vacant Gross Acres	10.19	9.02	-	5.55	2.91	-	-
Vacant Acres Used to Calculate Housing (Gross/Net)	10.19	9.02	-	5.55	2.91	-	-
Vacant Acres Used to Calculate Jobs (Gross/Net)	10.19	9.02	-	5.55	2.91	-	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-
Underutilized Gross Acres	8.68	-	-	-	19.68	-	-
Underutilized Acres Used to Calculate Housing (Gross/Net)	8.68	-	-	-	19.68	-	-
Underutilized Acres Used to Calculate Jobs (Gross/Net)	8.68	-	-	-	19.68	-	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-
Displaced Units	-	-	-	-	5	-	-
Displaced Jobs	-	-	-	-	-	-	-
Displaced Adjustment	-	-	-	-	-	-	-
Vacant Single Units	-	-	-	-	**16**	-	-
Pipeline Units	-	-	-	-	-	-	-
Pipeline Jobs	-	-	-	-	-	-	-
Vacant Residential Acres	-	-	-	-	2.91	-	-
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	-	-	-	2.91	-	-
Vacant Roads Deduction	-	-	-	-	0.20	-	-
Vacant Critical Areas Deduction	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	0.06	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	-	-	-	2.65	-	-
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	-	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	-	-	0.03	-	-
Vacant Residential Capacity Net Acres	-	-	-	-	2.62	-	-
Vacant Housing Capacity	-	-	-	-	13	-	-
Underutilized Residential Acres	-	-	-	-	19.68	-	-
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	-	-	-	19.68	-	-
Underutilized Roads Deduction	-	-	-	-	1.38	-	-
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	0.39	-	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	-	-	-	17.91	-	-
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	-	-
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	-	-	-	0.18	-	-
Residential Capacity Net Acres	-	-	-	-	17.73	-	-
Adjusted Displaced Units	-	-	-	-	5	-	-
Underutilized Housing Capacity	-	-	-	-	**84**	-	-
Total Housing Capacity	-	-	-	-	**113**	-	-
Vacant Nonresidential Acres	10.19	9.02	-	5.55	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	10.19	9.02	-	5.55	-	-	-
Vacant Nonresidential Capital Facilities Deduction	0.10	0.09	-	0.06	-	-	-
Vacant Nonresidential Market Factor Deduction	0.10	0.09	-	0.06	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-
Vacant Nonresidential Capacity Net Acres	9.99	8.84	-	5.43	-	-	-
Vacant Employment Capacity	200	177	-	109	-	-	-
Underutilized Nonresidential Acres	8.68	-	-	-	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	8.68	-	-	-	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	0.09	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	0.09	-	-	-	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-
Underutilized Nonresidential Capacity Net Acres	8.50	-	-	-	-	-	-
Adjusted Displaced Jobs	-	-	-	-	-	-	-
Underutilized Employment Capacity	**170**	-	-	-	-	-	-
Total Employment Capacity	**370**	**177**	-	**109**	-	-	-

Appendix Figure 3: Bonney Lake Capacity Tables

See following page.

Zone	BONNEY LAKE C1	BONNEY LAKE C2	BONNEY LAKE DC	BONNEY LAKE DM	BONNEY LAKE E	BONNEY LAKE MC	BONNEY LAKE PF	BONNEY LAKE R1	BONNEY LAKE R2	BONNEY LAKE R3	BONNEY LAKE RC5
VISION 2050 Geography	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns
Vacant Gross Acres	-	10.22	0.28	4.75	48.36	19.89	10.16	63.93	6.63	18.60	-
Vacant Acres Used to Calculate Housing (Gross/Net)	-	2.73	0.28	2.45	37.97	8.31	9.36	48.04	3.52	15.28	-
Vacant Acres Used to Calculate Jobs (Gross/Net)	-	10.22	0.28	4.75	48.36	19.89	10.16	63.93	6.63	18.60	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	5.63	-	4.36	2.96	-	0.68	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	5.63	-	4.36	2.96	-	0.68	-
Underutilized Gross Acres	-	6.50	3.45	2.99	94.55	18.12	5.99	385.45	64.51	28.32	11.58
Underutilized Acres Used to Calculate Housing (Gross/Net)	-	5.84	3.41	2.90	78.34	16.75	5.33	300.43	52.56	27.81	1.94
Underutilized Acres Used to Calculate Jobs (Gross/Net)	-	6.50	3.45	2.99	94.55	18.12	5.99	385.45	64.51	28.32	11.58
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	6.21	-	-	17.89	9.36	7.38	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	6.21	-	-	17.89	9.36	7.38	-
Displaced Units	-	1	2	1	106	2	6	200	76	69	-
Displaced Jobs	-	33	31	18	80	133	8	-	-	-	-
Displaced Adjustment	-	-	-	-	-	-	-	-	-	-	-
Vacant Single Units	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**270**	**32**	**-**	**15**
Pipeline Units	**-**	**408**	**-**	**-**	**52**	**165**	**-**	**47**	**8**	**594**	**-**
Pipeline Jobs	**-**	**70**	**-**	**79**	**194**	**74**	**-**	**-**	**-**	**-**	**-**
Vacant Residential Acres	-	-	0.06	1.23	-	-	-	48.04	3.52	15.28	-
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	-	0.06	1.23	-	-	-	48.04	3.52	15.28	-
Vacant Roads Deduction	-	-	-	-	-	-	-	7.21	0.53	2.29	-
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	2.40	0.18	0.76	-
Vacant Acreage after Plat Deductions	-	-	0.06	1.23	-	-	-	38.43	2.81	12.23	-
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	-	-	1.92	0.14	0.61	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	0.01	0.18	-	-	-	5.76	0.42	1.83	-
Vacant Residential Capacity Net Acres	-	-	0.05	1.05	-	-	-	30.75	2.25	9.79	-
Vacant Housing Capacity	-	-	1	16	-	-	-	123	14	147	-
Underutilized Residential Acres	-	-	0.68	1.45	-	-	-	300.43	52.56	27.81	1.94
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	-	0.68	1.45	-	-	-	300.43	52.56	27.81	1.94
Underutilized Roads Deduction	-	-	-	-	-	-	-	45.06	7.88	4.17	0.29
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	15.02	2.63	1.39	0.10
Underutilized Acreage after Plat Deductions	-	-	0.68	1.45	-	-	-	240.35	42.05	22.25	1.55
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	-	-	12.02	2.10	1.11	0.08
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	-	0.24	0.51	-	-	-	72.11	12.62	6.68	0.47
Residential Capacity Net Acres	-	-	0.44	0.94	-	-	-	156.22	27.33	14.46	1.00
Adjusted Displaced Units	-	1	1	1	69	1	4	88	35	38	-
Underutilized Housing Capacity	-	**(1)**	**6**	**13**	**(69)**	**(1)**	**(4)**	**537**	**129**	**179**	**-**
Total Housing Capacity	**-**	**407**	**7**	**29**	**(17)**	**164**	**(3)**	**977**	**183**	**920**	**15**
Vacant Nonresidential Acres	-	10.22	0.22	2.38	48.36	19.89	10.16	-	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	-	10.22	0.22	2.38	48.36	19.89	10.16	-	-	-	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	-	1.53	0.03	0.36	7.25	2.98	1.52	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	1.92	0.14	0.61	-
Vacant Nonresidential Capacity Net Acres	-	8.69	0.19	2.02	41.11	16.91	8.64	1.92	0.14	0.61	-
Vacant Employment Capacity	-	174	4	40	822	338	173	38	3	12	-
Underutilized Nonresidential Acres	-	6.50	2.76	1.50	94.55	18.12	5.99	-	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	-	6.50	2.76	1.50	94.55	18.12	5.99	-	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	-	2.28	0.97	0.53	33.09	6.34	2.10	-	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	12.02	2.10	1.11	0.08
Underutilized Nonresidential Capacity Net Acres	-	4.22	1.79	0.97	61.46	11.78	3.89	12.02	2.10	1.11	0.08
Adjusted Displaced Jobs	-	22	20	12	52	87	5	-	-	-	-
Underutilized Employment Capacity	-	**62**	**16**	**7**	**1,177**	**149**	**73**	**240**	**42**	**22**	**2**
Total Employment Capacity	**-**	**306**	**20**	**126**	**2,193**	**561**	**246**	**278**	**45**	**34**	**2**

Appendix Figure 4: Buckley Capacity Tables

See following page.

Zone	BUCKLEY CC	BUCKLEY GC	BUCKLEY HC	BUCKLEY HDR	BUCKLEY LI	BUCKLEY NMU	BUCKLEY P	BUCKLEY R-20,000	BUCKLEY R-6,000	BUCKLEY R-8,000	BUCKLEY S
VISION 2050 Geography	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns
Vacant Gross Acres	19.00	20.38	-	6.41	2.60	16.14	17.54	30.94	2.33	96.51	-
Vacant Acres Used to Calculate Housing (Gross/Net)	13.65	19.26	-	6.41	2.60	16.14	12.61	18.27	2.33	75.72	-
Vacant Acres Used to Calculate Jobs (Gross/Net)	19.00	20.38	-	6.41	2.60	16.14	17.54	30.94	2.33	96.51	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-	-
Underutilized Gross Acres	7.16	48.49	0.15	8.36	16.55	83.55	0.25	91.20	40.78	264.23	-
Underutilized Acres Used to Calculate Housing (Gross/Net)	7.16	47.21	0.15	7.81	15.72	82.63	0.25	60.62	32.22	208.86	-
Underutilized Acres Used to Calculate Jobs (Gross/Net)	7.16	48.49	0.15	8.36	16.55	83.55	0.25	91.20	40.78	264.23	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-	-
Displaced Units	9	3	-	8	2	60	-	13	25	82	-
Displaced Jobs	18	136	-	-	5	8	-	-	-	-	-
Displaced Adjustment	-	-	-	-	-	-	-	-	-	-	-
Vacant Single Units	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**31**	**84**	**43**	**-**
Pipeline Units	**-**	**-**	**-**	**20**	**-**	**40**	**-**	**1**	**232**	**89**	**-**
Pipeline Jobs	**13**	**80**	**-**	**-**	**18**	**-**	**-**	**-**	**-**	**-**	**-**
Vacant Residential Acres	-	-	-	6.41	-	12.92	-	18.27	2.33	75.72	-
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	-	-	6.41	-	12.92	-	18.27	2.33	75.72	-
Vacant Roads Deduction	-	-	-	-	-	-	-	1.83	0.23	7.57	-
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-	0.55	0.07	2.27	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	-	-	6.41	-	12.92	-	15.89	2.03	65.88	-
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	-	-	0.16	0.02	0.66	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	-	-	-	6.46	-	4.77	0.61	19.76	-
Vacant Residential Capacity Net Acres	-	-	-	6.41	-	6.46	-	10.96	1.40	45.46	-
Vacant Housing Capacity	-	-	-	32	-	39	-	22	7	182	-
Underutilized Residential Acres	-	-	-	7.81	-	66.10	-	60.62	32.22	208.86	-
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	-	-	7.81	-	66.10	-	60.62	32.22	208.86	-
Underutilized Roads Deduction	-	-	-	-	-	-	-	6.06	3.22	20.89	-
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	-	-	1.82	0.97	6.27	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	-	-	7.81	-	66.10	-	52.74	28.03	181.70	-
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	-	-	0.53	0.28	1.82	-
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	-	-	-	-	33.05	-	26.37	14.02	90.85	-
Residential Capacity Net Acres	-	-	-	7.81	-	33.05	-	25.84	13.73	89.03	-
Adjusted Displaced Units	5	2	-	7	1	30	-	4	9	28	-
Underutilized Housing Capacity	(5)	(2)	-	32	(1)	168	-	48	60	328	-
Total Housing Capacity	**(5)**	**(2)**	**-**	**84**	**(1)**	**247**	**-**	**102**	**383**	**642**	**-**
Vacant Nonresidential Acres	19.00	20.38	-	-	2.60	3.23	17.54	-	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	19.00	20.38	-	-	2.60	3.23	17.54	-	-	-	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	9.50	10.19	-	-	1.30	1.62	8.77	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	0.16	0.02	0.66	-
Vacant Nonresidential Capacity Net Acres	9.50	10.19	-	-	1.30	1.61	8.77	0.16	0.02	0.66	-
Vacant Employment Capacity	190	204	-	-	12	32	175	3	-	13	-
Underutilized Nonresidential Acres	7.16	48.49	0.15	-	16.55	16.71	0.25	-	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	7.16	48.49	0.15	-	16.55	16.71	0.25	-	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	3.58	24.25	0.08	-	8.28	8.36	0.13	-	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	0.53	0.28	1.82	-
Underutilized Nonresidential Capacity Net Acres	3.58	24.24	0.07	-	8.27	8.35	0.12	0.53	0.28	1.82	-
Adjusted Displaced Jobs	9	68	-	-	3	4	-	-	-	-	-
Underutilized Employment Capacity	**63**	**417**	**1**	**-**	**71**	**163**	**2**	**11**	**6**	**36**	**-**
Total Employment Capacity	**266**	**701**	**1**	**-**	**101**	**195**	**177**	**14**	**6**	**49**	**-**

Appendix Figure 5: Carbonado Capacity Tables

See following page.

Zone	CARBONADO CF	CARBONADO CMU	CARBONADO PROS	CARBONADO RLD	CARBONADO RMD
VISION 2050 Geography	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns
Vacant Gross Acres	-	-	-	25.65	3.38
Vacant Acres Used to Calculate Housing (Gross/Net)	-	-	-	16.42	2.96
Vacant Acres Used to Calculate Jobs (Gross/Net)	-	-	-	25.65	3.38
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-
Underutilized Gross Acres	12.25	3.09	-	69.89	22.51
Underutilized Acres Used to Calculate Housing (Gross/Net)	1.94	3.09	-	64.26	21.81
Underutilized Acres Used to Calculate Jobs (Gross/Net)	12.25	3.09	-	69.89	22.51
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-
Displaced Units	-	7	-	26	14
Displaced Jobs	-	-	-	-	-
Displaced Adjustment	-	-	-	-	-
Vacant Single Units	**-**	**2**	**-**	**20**	**2**
Pipeline Units	**-**	**-**	**-**	**2**	**-**
Pipeline Jobs	**-**	**-**	**-**	**-**	**-**
Vacant Residential Acres	-	-	-	16.42	2.96
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	-	-	16.42	2.96
Vacant Roads Deduction	-	-	-	-	-
Vacant Critical Areas Deduction	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	-	-	16.42	2.96
Vacant Non-residential in Single Family Zones*	-	-	-	0.49	0.09
Vacant Residential Capital Facilities Deduction	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	-	4.11	0.74
Vacant Residential Capacity Net Acres	-	-	-	11.82	2.13
Vacant Housing Capacity	-	-	-	35	4
Underutilized Residential Acres	-	2.47	-	64.26	21.81
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	2.47	-	64.26	21.81
Underutilized Roads Deduction	-	-	-	-	-
Underutilized Critical Areas Deduction	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	2.47	-	64.26	21.81
Underutilized Non-residential in Single Family Zones*	-	-	-	1.93	0.65
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	0.62	-	16.07	5.45
Residential Capacity Net Acres	-	1.85	-	46.26	15.71
Adjusted Displaced Units	-	5	-	18	10
Underutilized Housing Capacity	**-**	**1**	**-**	**121**	**21**
Total Housing Capacity	**-**	**3**	**-**	**178**	**27**
Vacant Nonresidential Acres	-	-	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	-	-	-	-	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	-	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	0.49	0.09
Vacant Nonresidential Capacity Net Acres	-	-	-	0.49	0.09
Vacant Employment Capacity	-	-	-	10	2
Underutilized Nonresidential Acres	12.25	0.62	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	12.25	0.62	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	6.13	0.31	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	1.93	0.65
Underutilized Nonresidential Capacity Net Acres	6.12	0.31	-	1.93	0.65
Adjusted Displaced Jobs	-	-	-	-	-
Underutilized Employment Capacity	**122**	**6**	**-**	**39**	**13**
Total Employment Capacity	**122**	**6**	**-**	**49**	**15**

Appendix Figure 6: DuPont Capacity Tables

See following page.

Zone	DUPONT CB	DUPONT COM	DUPONT CP	DUPONT IND	DUPONT MIL	DUPONT MRP	DUPONT MUV 1-8	DUPONT MUV 9	DUPONT MXD	DUPONT NP	DUPONT OFF	DUPONT OS
VISION 2050 Geography	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities
Vacant Gross Acres	5.36	2.27	-	-	-	38.39	-	-	5.79	-	-	-
Vacant Acres Used to Calculate Housing (Gross/Net)	5.36	2.27	-	-	-	38.39	-	-	5.79	-	-	-
Vacant Acres Used to Calculate Jobs (Gross/Net)	5.36	2.27	-	-	-	38.39	-	-	5.79	-	-	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Gross Acres	-	3.66	-	-	-	-	309.09	210.42	2.93	-	0.51	-
Underutilized Acres Used to Calculate Housing (Gross/Net)	-	3.66	-	-	-	-	309.09	210.42	2.93	-	0.51	-
Underutilized Acres Used to Calculate Jobs (Gross/Net)	-	3.66	-	-	-	-	309.09	210.42	2.93	-	0.51	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-	-	-
Displaced Units	-	-	-	-	-	-	-	-	-	-	-	-
Displaced Jobs	-	25	-	-	-	-	-	5	33	-	5	-
Displaced Adjustment	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Single Units	-	-	-	-	-	-	-	-	-	-	-	-
Pipeline Units	-	-	-	-	-	-	-	-	-	-	-	-
Pipeline Jobs	-	**4**	-	-	-	**538**	-	-	-	-	-	-
Vacant Residential Acres	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Roads Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Capacity Net Acres	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Housing Capacity	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Acres	-	-	-	-	-	-	92.73	-	-	-	-	-
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	-	-	-	-	-	92.73	-	-	-	-	-
Underutilized Roads Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	-	-	-	-	-	92.73	-	-	-	-	-
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	0.93	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	-	-	-	-	-	23.18	-	-	-	-	-
Residential Capacity Net Acres	-	-	-	-	-	-	68.62	-	-	-	-	-
Adjusted Displaced Units	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Housing Capacity	-	-	-	-	-	-	**961**	-	-	-	-	-
Total Housing Capacity	-	-	-	-	-	-	961	-	-	-	-	-
Vacant Nonresidential Acres	5.36	2.27	-	-	-	38.39	-	-	5.79	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	5.36	2.27	-	-	-	38.39	-	-	5.79	-	-	-
Vacant Nonresidential Capital Facilities Deduction	0.05	0.02	-	-	-	0.38	-	-	0.06	-	-	-
Vacant Nonresidential Market Factor Deduction	0.54	0.23	-	-	-	3.84	-	-	0.58	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Capacity Net Acres	4.77	2.02	-	-	-	34.17	-	-	5.15	-	-	-
Vacant Employment Capacity	95	40	-	-	-	308	-	-	103	-	-	-
Underutilized Nonresidential Acres	-	3.66	-	-	-	-	216.36	210.42	2.93	-	0.51	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	-	3.66	-	-	-	-	216.36	210.42	2.93	-	0.51	-
Underutilized Nonresidential Capital Facilities Deduction	-	0.04	-	-	-	-	2.16	2.10	0.03	-	0.01	-
Underutilized Nonresidential Market Factor Deduction	-	0.73	-	-	-	-	108.18	105.21	0.59	-	0.10	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Capacity Net Acres	-	2.89	-	-	-	-	106.02	103.11	2.31	-	0.40	-
Adjusted Displaced Jobs	-	19	-	-	-	-	-	2	26	-	4	-
Underutilized Employment Capacity	-	**39**	-	-	-	-	**954**	**2,060**	**20**	-	**4**	-
Total Employment Capacity	95	83	-	-	-	846	954	2,060	123	-	4	-

DUPONT R-12 HCT Communities	DUPONT R-3 HCT Communities	DUPONT R-4 HCT Communities	DUPONT R-5 HCT Communities	DUPONT RR HCT Communities
-	-	1.40	27.83	-
-	-	1.40	27.83	-
-	-	1.40	27.83	-
-	-	-	-	-
-	-	-	-	-
-	3.98	-	2.35	-
-	3.98	-	2.35	-
-	3.98	-	2.35	-
-	-	-	-	-
-	-	-	-	-
-	2	-	4	-
-	-	-	-	-
-	-	-	-	-
12	**7**	**-**	**-**	**-**
19	**-**	**-**	**-**	**-**
-	**-**	**-**	**-**	**-**
-	-	1.40	27.83	-
-	-	-	-	-
-	-	1.40	27.83	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	1.40	27.83	-
-	-	-	-	-
-	-	0.01	0.28	-
-	-	0.07	1.39	-
-	-	1.32	26.16	-
-	-	5	131	-
-	3.98	-	2.35	-
-	-	-	-	-
-	3.98	-	2.35	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	3.98	-	2.35	-
-	-	-	-	-
-	0.04	-	0.02	-
-	0.60	-	0.35	-
-	3.34	-	1.98	-
-	2	-	3	-
-	**8**	**-**	**7**	**-**
31	**15**	**5**	**138**	**-**
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

Appendix Figure 7: Eatonville Capacity Tables

See following page.

Zone	EATONVILLE AP	EATONVILLE C-1	EATONVILLE C-2	EATONVILLE MF-1	EATONVILLE MF-2	EATONVILLE MU	EATONVILLE ROW	EATONVILLE SF-1	EATONVILLE SF-2	EATONVILLE SF-3
VISION 2050 Geography	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns
Vacant Gross Acres	31.51	5.91	40.44	23.62	6.06	5.80	-	80.60	5.37	-
Vacant Acres Used to Calculate Housing (Gross/Net)	28.09	5.58	34.05	16.95	2.25	0.84	-	41.87	3.92	-
Vacant Acres Used to Calculate Jobs (Gross/Net)	31.51	5.91	40.44	23.62	6.06	5.80	-	80.60	5.37	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-
Underutilized Gross Acres	67.78	11.00	34.30	35.16	3.56	30.01	-	112.78	66.74	6.21
Underutilized Acres Used to Calculate Housing (Gross/Net)	51.16	10.98	29.61	22.82	3.21	21.85	-	87.53	43.95	5.69
Underutilized Acres Used to Calculate Jobs (Gross/Net)	67.78	11.00	34.30	35.16	3.56	30.01	-	112.78	66.74	6.21
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-
Displaced Units	10	24	8	21	14	-	-	37	12	10
Displaced Jobs	-	12	20	-	-	7	-	-	-	-
Displaced Adjustment	-	-	-	-	-	-	-	-	-	-
Vacant Single Units	**17**	**-**	**-**	**2**	**7**	**-**	**-**	**24**	**32**	**18**
Pipeline Units	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Pipeline Jobs	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Vacant Residential Acres	7.02	1.40	-	16.95	2.25	0.55	-	41.87	3.92	-
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	7.02	1.40	-	16.95	2.25	0.55	-	41.87	3.92	-
Vacant Roads Deduction	-	-	-	-	-	-	-	6.28	0.59	-
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	7.02	1.40	-	16.95	2.25	0.55	-	35.59	3.33	-
Vacant Non-residential in Single Family Zones*	-	-	-	0.85	0.11	-	-	1.78	0.17	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	1.76	0.35	-	4.24	0.56	0.14	-	8.90	0.83	-
Vacant Residential Capacity Net Acres	5.26	1.05	-	11.86	1.58	0.41	-	24.91	2.33	-
Vacant Housing Capacity	11	8	-	190	36	4	-	100	12	-
Underutilized Residential Acres	12.79	2.74	-	22.82	3.21	14.20	-	87.53	43.95	5.69
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	12.79	2.74	-	22.82	3.21	14.20	-	87.53	43.95	5.69
Underutilized Roads Deduction	-	-	-	-	-	-	-	13.13	6.59	0.85
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	12.79	2.74	-	22.82	3.21	14.20	-	74.40	37.36	4.84
Underutilized Non-residential in Single Family Zones*	-	-	-	1.14	0.16	-	-	3.72	1.87	0.24
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	3.20	0.69	-	5.71	0.80	3.55	-	18.60	9.34	1.21
Residential Capacity Net Acres	9.59	2.05	-	15.97	2.25	10.65	-	52.08	26.15	3.39
Adjusted Displaced Units	5	13	4	10	10	-	-	18	5	6
Underutilized Housing Capacity	**14**	**3**	**(4)**	**246**	**42**	**96**	**-**	**190**	**126**	**14**
Total Housing Capacity	**42**	**11**	**(4)**	**438**	**85**	**100**	**-**	**314**	**170**	**32**
Vacant Nonresidential Acres	23.63	4.43	40.44	-	-	2.03	-	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	23.63	4.43	40.44	-	-	2.03	-	-	-	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	2.36	0.44	4.04	-	-	0.20	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	0.85	0.11	-	-	1.78	0.17	-
Vacant Nonresidential Capacity Net Acres	21.27	3.99	36.40	0.85	0.11	1.83	-	1.78	0.17	-
Vacant Employment Capacity	425	80	728	17	2	37	-	36	3	-
Underutilized Nonresidential Acres	50.83	8.25	34.30	-	-	10.50	-	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	50.83	8.25	34.30	-	-	10.50	-	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	25.42	4.13	17.15	-	-	5.25	-	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	1.14	0.16	-	-	3.72	1.87	0.24
Underutilized Nonresidential Capacity Net Acres	25.41	4.12	17.15	1.14	0.16	5.25	-	3.72	1.87	0.24
Adjusted Displaced Jobs	-	7	10	-	-	3	-	-	-	-
Underutilized Employment Capacity	**508**	**75**	**333**	**23**	**3**	**102**	**-**	**74**	**37**	**5**
Total Employment Capacity	**933**	**155**	**1,064**	**40**	**5**	**139**	**-**	**110**	**40**	**5**

Appendix Figure 8: Edgewood Capacity Tables

See following page.

Zone	EDGEWOOD BP	EDGEWOOD C	EDGEWOOD I	EDGEWOOD MR-1	EDGEWOOD MR-2	EDGEWOOD MUR	EDGEWOOD P	EDGEWOOD SF-2	EDGEWOOD SF-3	EDGEWOOD SF-5	EDGEWOOD TC
VISION 2050 Geography	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns
Vacant Gross Acres	6.27	8.73	0.37	19.95	15.01	9.57	47.74	169.96	88.45	4.37	3.94
Vacant Acres Used to Calculate Housing (Gross/Net)	4.69	8.22	0.18	6.71	13.10	9.57	24.09	82.22	72.40	3.99	3.94
Vacant Acres Used to Calculate Jobs (Gross/Net)	6.27	8.73	0.37	19.95	15.01	9.57	47.74	169.96	88.45	4.37	3.94
Acres with Infrastructure Gaps (Residential Calculation)	-	-	0.18	3.30	11.04	1.35	6.69	82.22	60.10	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	0.18	3.30	11.04	1.35	6.69	82.22	60.10	-	-
Underutilized Gross Acres	11.06	41.71	13.64	15.28	2.31	34.41	29.05	802.39	638.93	26.12	32.81
Underutilized Acres Used to Calculate Housing (Gross/Net)	8.15	32.15	1.53	9.07	2.31	32.05	23.42	609.12	489.01	23.73	31.34
Underutilized Acres Used to Calculate Jobs (Gross/Net)	11.06	41.71	13.64	15.28	2.31	34.41	29.05	802.39	638.93	26.12	32.81
Acres with Infrastructure Gaps (Residential Calculation)	-	-	1.53	0.43	1.38	3.04	22.30	606.44	403.47	1.04	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	1.53	0.43	1.38	3.04	22.30	606.44	403.47	1.04	-
Displaced Units	5	14	-	2	1	24	2	216	279	12	10
Displaced Jobs	4	38	3	-	-	47	-	-	-	-	15
Displaced Adjustment	-	-	-	-	-	-	-	-	-	-	-
Vacant Single Units	**-**	**14**	**-**	**23**	**33**	**90**	**-**	**94**	**160**	**33**	**-**
Pipeline Units	**288**	**-**	**-**	**66**	**-**	**-**	**-**	**39**	**20**	**3**	**-**
Pipeline Jobs	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Vacant Residential Acres	1.41	3.29	-	6.71	13.10	5.74	-	82.22	72.40	3.99	2.76
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	1.41	3.29	-	6.71	13.10	5.74	-	82.22	72.40	3.99	2.76
Vacant Roads Deduction	-	-	-	0.66	1.28	-	-	8.06	7.10	0.39	-
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	0.34	0.66	-	-	4.11	3.62	0.20	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	1.41	3.29	-	5.71	11.16	5.74	-	70.05	61.68	3.40	2.76
Vacant Non-residential in Single Family Zones*	-	-	-	0.29	0.56	-	-	3.50	3.08	0.17	-
Vacant Residential Capital Facilities Deduction	0.03	0.06	-	0.11	0.21	0.11	-	1.33	1.17	0.06	0.05
Vacant Residential Market Factor Deduction	-	-	-	1.43	-	-	-	17.51	15.42	-	-
Vacant Residential Capacity Net Acres	1.38	3.23	-	3.88	10.39	5.63	-	47.71	42.01	3.17	2.71
Vacant Housing Capacity	11	39	-	16	83	68	-	95	126	16	65
Underutilized Residential Acres	2.44	12.86	-	9.07	2.31	19.23	-	609.12	489.01	23.73	21.94
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	2.44	12.86	-	9.07	2.31	19.23	-	609.12	489.01	23.73	21.94
Underutilized Roads Deduction	-	-	-	0.89	0.23	-	-	59.69	47.92	2.33	-
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	0.45	0.12	-	-	30.46	24.45	1.19	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	2.44	12.86	-	7.73	1.96	19.23	-	518.97	416.64	20.21	21.94
Underutilized Non-residential in Single Family Zones*	-	-	-	0.39	0.10	-	-	25.95	20.83	1.01	-
Underutilized Residential Capital Facilities Deduction	0.05	0.24	-	0.15	0.04	0.37	-	9.86	7.92	0.38	0.42
Underutilized Residential Market Factor Deduction	0.24	1.29	-	1.93	0.20	1.92	-	129.74	104.16	2.02	2.19
Residential Capacity Net Acres	2.15	11.33	-	5.26	1.62	16.94	-	353.42	283.73	16.80	19.33
Adjusted Displaced Units	4	12	-	1	1	21	2	102	134	8	9
Underutilized Housing Capacity	**13**	**124**	**-**	**20**	**12**	**182**	**(2)**	**605**	**717**	**76**	**455**
Total Housing Capacity	**312**	**177**	**-**	**125**	**128**	**340**	**(2)**	**833**	**1,023**	**128**	**520**
Vacant Nonresidential Acres	4.39	5.24	0.37	-	-	3.83	47.74	-	-	-	1.18
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	4.39	5.24	0.37	-	-	3.83	47.74	-	-	-	1.18
Vacant Nonresidential Capital Facilities Deduction	0.08	0.10	0.01	-	-	0.07	0.91	-	-	-	0.02
Vacant Nonresidential Market Factor Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	0.29	0.56	-	-	3.50	3.08	0.17	-
Vacant Nonresidential Capacity Net Acres	4.31	5.14	0.36	0.29	0.56	3.76	46.83	3.50	3.08	0.17	1.16
Vacant Employment Capacity	86	103	3	6	11	75	937	70	62	3	23
Underutilized Nonresidential Acres	7.74	25.03	13.64	-	-	13.76	29.05	-	-	-	9.84
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	7.74	25.03	13.64	-	-	13.76	29.05	-	-	-	9.84
Underutilized Nonresidential Capital Facilities Deduction	0.15	0.48	0.26	-	-	0.26	0.55	-	-	-	0.19
Underutilized Nonresidential Market Factor Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	0.39	0.10	-	-	25.95	20.83	1.01	-
Underutilized Nonresidential Capacity Net Acres	7.59	24.55	13.38	0.39	0.10	13.50	28.50	25.95	20.83	1.01	9.65
Adjusted Displaced Jobs	4	33	2	-	-	42	-	-	-	-	13
Underutilized Employment Capacity	**148**	**458**	**118**	**8**	**2**	**228**	**570**	**519**	**417**	**20**	**180**
Total Employment Capacity	**234**	**561**	**121**	**14**	**13**	**303**	**1,507**	**589**	**479**	**23**	**203**

Appendix Figure 9: Fife Capacity Tables

See following page.

Zone	FIFE BP	FIFE CC	FIFE CMU	FIFE HDR	FIFE I	FIFE MDR	FIFE NC	FIFE NR	FIFE POS	FIFE RC	FIFE ROW	FIFE SFR	FIFE SLR
VISION 2050 Geography	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities
Vacant Gross Acres	-	34.23	11.54	-	375.37	14.49	4.21	31.66	-	18.92	-	23.39	0.85
Vacant Acres Used to Calculate Housing (Gross/Net)	-	27.30	11.37	-	353.42	14.44	4.21	28.22	-	17.51	-	22.26	0.55
Vacant Acres Used to Calculate Jobs (Gross/Net)	-	34.23	11.54	-	375.37	14.49	4.21	31.66	-	18.92	-	23.39	0.85
Acres with Infrastructure Gaps (Residential Calculation)	-	27.30	11.37	-	349.73	14.44	0.34	28.22	-	15.61	-	22.19	0.55
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	27.30	11.37	-	349.73	14.44	0.34	28.22	-	15.61	-	22.19	0.55
Underutilized Gross Acres	-	96.71	20.81	-	131.32	54.40	44.26	10.18	-	46.87	-	18.25	1.68
Underutilized Acres Used to Calculate Housing (Gross/Net)	-	82.89	20.81	-	103.83	54.36	33.06	10.18	-	46.21	-	14.16	1.60
Underutilized Acres Used to Calculate Jobs (Gross/Net)	-	96.71	20.81	-	131.32	54.40	44.26	10.18	-	46.87	-	18.25	1.68
Acres with Infrastructure Gaps (Residential Calculation)	-	82.89	20.81	-	92.45	54.36	4.97	10.18	-	37.02	-	12.56	1.60
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	82.89	20.81	-	92.45	54.36	4.97	10.18	-	37.02	-	12.56	1.60
Displaced Units	-	33	9	-	24	58	66	9	-	3	-	17	1
Displaced Jobs	-	58	79	-	199	-	14	-	-	34	-	-	-
Displaced Adjustment	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Single Units	**-**	**-**	**-**	**-**	**-**	**34**	**-**	**-**	**-**	**-**	**-**	**4**	**-**
Pipeline Units	**-**	**-**	**34**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Pipeline Jobs	**-**	**-**	**92**	**-**	**-**	**-**	**-**	**-**	**-**	**24**	**-**	**-**	**-**
Vacant Residential Acres	-	4.10	1.71	-	-	14.44	3.37	25.40	-	14.01	-	22.26	0.55
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	4.10	1.71	-	-	14.44	3.37	25.40	-	14.01	-	22.26	0.55
Vacant Roads Deduction	-	-	-	-	-	2.89	-	-	-	-	-	4.45	0.11
Vacant Critical Areas Deduction	-	-	-	-	-	2.31	-	-	-	-	-	3.56	0.09
Vacant Parks/Open Space Deduction	-	-	-	-	-	1.44	-	-	-	-	-	2.23	0.06
Vacant Stormwater Deduction	-	-	-	-	-	0.72	-	-	-	-	-	1.11	0.03
Vacant Acreage after Plat Deductions	-	4.10	1.71	-	-	7.08	3.37	25.40	-	14.01	-	10.91	0.26
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	0.35	-	-	-	-	-	0.55	0.01
Vacant Residential Capital Facilities Deduction	-	0.21	0.09	-	-	0.35	0.17	1.27	-	0.70	-	0.55	0.01
Vacant Residential Market Factor Deduction	-	1.23	0.51	-	-	2.12	1.01	7.62	-	4.20	-	3.27	0.08
Vacant Residential Capacity Net Acres	-	2.66	1.11	-	-	4.26	2.19	16.51	-	9.11	-	6.54	0.16
Vacant Housing Capacity	-	27	11	-	-	43	18	165	-	91	-	26	1
Underutilized Residential Acres	-	12.43	3.12	-	-	54.36	26.45	9.16	-	36.97	-	14.16	1.60
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	12.43	3.12	-	-	54.36	26.45	9.16	-	36.97	-	14.16	1.60
Underutilized Roads Deduction	-	-	-	-	-	10.87	-	-	-	-	-	2.83	0.32
Underutilized Critical Areas Deduction	-	-	-	-	-	8.70	-	-	-	-	-	2.27	0.26
Underutilized Parks/Open Space Deduction	-	-	-	-	-	5.44	-	-	-	-	-	1.42	0.16
Underutilized Stormwater Deduction	-	-	-	-	-	2.72	-	-	-	-	-	0.71	0.08
Underutilized Acreage after Plat Deductions	-	12.43	3.12	-	-	26.63	26.45	9.16	-	36.97	-	6.93	0.78
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	1.33	-	-	-	-	-	0.35	0.04
Underutilized Residential Capital Facilities Deduction	-	0.62	0.16	-	-	1.33	1.32	0.46	-	1.85	-	0.35	0.04
Underutilized Residential Market Factor Deduction	-	3.73	0.94	-	-	7.99	7.94	2.75	-	11.09	-	2.08	0.23
Residential Capacity Net Acres	-	8.08	2.02	-	-	15.98	17.19	5.95	-	24.03	-	4.15	0.47
Adjusted Displaced Units	-	21	6	-	16	19	34	6	-	2	-	4	-
Underutilized Housing Capacity	-	60	14	-	(16)	141	104	54	-	238	-	13	3
Total Housing Capacity	**-**	**87**	**59**	**-**	**(16)**	**218**	**122**	**219**	**-**	**329**	**-**	**43**	**4**
Vacant Nonresidential Acres	-	29.09	9.81	-	375.37	-	0.84	3.17	-	3.78	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	-	29.09	9.81	-	375.37	-	0.84	3.17	-	3.78	-	-	-
Vacant Nonresidential Capital Facilities Deduction	-	1.45	0.49	-	18.77	-	0.04	0.16	-	0.19	-	-	-
Vacant Nonresidential Market Factor Deduction	-	8.73	2.94	-	112.61	-	0.25	0.95	-	1.13	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	0.35	-	-	-	-	-	0.55	0.01
Vacant Nonresidential Capacity Net Acres	-	18.91	6.38	-	243.99	0.35	0.55	2.06	-	2.46	-	0.55	0.01
Vacant Employment Capacity	-	378	128	-	2,196	7	11	41	-	49	-	11	-
Underutilized Nonresidential Acres	-	82.20	17.69	-	131.32	-	8.85	1.02	-	9.37	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	-	82.20	17.69	-	131.32	-	8.85	1.02	-	9.37	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	4.11	0.88	-	6.57	-	0.44	0.05	-	0.47	-	-	-
Underutilized Nonresidential Market Factor Deduction	-	24.66	5.31	-	39.40	-	2.66	0.31	-	2.81	-	-	-
Underutilized Nonresidential in Single Family Zones Additio	-	-	-	-	-	1.33	-	-	-	-	-	0.35	0.04
Underutilized Nonresidential Capacity Net Acres	-	53.43	11.50	-	85.35	1.33	5.75	0.66	-	6.09	-	0.35	0.04
Adjusted Displaced Jobs	-	37	51	-	129	-	7	-	-	22	-	-	-
Underutilized Employment Capacity	-	1,032	179	-	639	27	108	13	-	100	-	7	1
Total Employment Capacity	**-**	**1,410**	**399**	**-**	**2,835**	**34**	**119**	**54**	**-**	**173**	**-**	**18**	**1**

Appendix Figure 10: Fircrest Capacity Tables

See following page.

Zone	FIRCREST CMU	FIRCREST GC	FIRCREST NC	FIRCREST NO	FIRCREST PROS	FIRCREST R10TCD	FIRCREST R20	FIRCREST R4	FIRCREST R4C	FIRCREST R6	FIRCREST R8
VISION 2050 Geography	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities
Vacant Gross Acres	2.11	-	-	-	-	-	-	1.30	28.27	0.50	-
Vacant Acres Used to Calculate Housing (Gross/Net)	2.11	-	-	-	-	-	-	1.30	16.31	0.50	-
Vacant Acres Used to Calculate Jobs (Gross/Net)	2.11	-	-	-	-	-	-	1.30	28.27	0.50	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-	-
Underutilized Gross Acres	14.16	1.34	-	-	-	-	-	3.23	-	4.07	-
Underutilized Acres Used to Calculate Housing (Gross/Net)	14.16	1.34	-	-	-	-	-	3.23	-	4.07	-
Underutilized Acres Used to Calculate Jobs (Gross/Net)	14.16	1.34	-	-	-	-	-	3.23	-	4.07	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-	-
Displaced Units	-	1	-	-	-	-	-	3	-	7	-
Displaced Jobs	91	-	-	-	-	-	-	-	-	-	-
Displaced Adjustment	-	-	-	-	-	-	-	-	-	-	-
Vacant Single Units	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**8**	**-**	**9**	**-**
Pipeline Units	**2**	**28**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**
Pipeline Jobs	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Vacant Residential Acres	-	-	-	-	-	-	-	1.30	16.31	0.50	-
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	-	-	-	-	-	-	1.30	16.31	0.50	-
Vacant Roads Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	-	-	-	-	-	-	1.30	16.31	0.50	-
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	-	-	0.01	0.16	0.01	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	-	-	-	-	-	0.07	0.82	0.03	-
Vacant Residential Capacity Net Acres	-	-	-	-	-	-	-	1.22	15.33	0.46	-
Vacant Housing Capacity	-	-	-	-	-	-	-	5	61	3	-
Underutilized Residential Acres	-	-	-	-	-	-	-	3.23	-	4.07	-
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	-	-	-	-	-	-	3.23	-	4.07	-
Underutilized Roads Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	-	-	-	-	-	-	3.23	-	4.07	-
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	-	-	0.03	-	0.04	-
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	-	-	-	-	-	-	0.16	-	0.20	-
Residential Capacity Net Acres	-	-	-	-	-	-	-	3.04	-	3.83	-
Adjusted Displaced Units	-	-	-	-	-	-	-	3	-	7	-
Underutilized Housing Capacity	-	-	-	-	-	-	-	**9**	-	**16**	-
Total Housing Capacity	**2**	**28**	**-**	**-**	**-**	**-**	**-**	**23**	**61**	**28**	**-**
Vacant Nonresidential Acres	2.11	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	2.11	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	0.11	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	0.01	0.16	0.01	-
Vacant Nonresidential Capacity Net Acres	2.00	-	-	-	-	-	-	0.01	0.16	0.01	-
Vacant Employment Capacity	40	-	-	-	-	-	-	-	3	-	-
Underutilized Nonresidential Acres	14.16	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	14.16	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	2.83	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	0.03	-	0.04	-
Underutilized Nonresidential Capacity Net Acres	11.33	-	-	-	-	-	-	0.03	-	0.04	-
Adjusted Displaced Jobs	73	-	-	-	-	-	-	-	-	-	-
Underutilized Employment Capacity	**154**	-	-	-	-	-	-	**1**	-	**1**	-
Total Employment Capacity	**194**	-	-	-	-	-	-	**1**	**3**	**1**	-

Appendix Figure 11: Gig Harbor Capacity Tables

See following page.

Zone	GIG HARBOR B-1	GIG HARBOR B-2	GIG HARBOR C-1	GIG HARBOR DB	GIG HARBOR ED	GIG HARBOR PCD-BP	GIG HARBOR PCD-C	GIG HARBOR PCD-RMD	GIG HARBOR PI	GIG HARBOR PRD	GIG HARBOR R-1
VISION 2050 Geography	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns
Vacant Gross Acres	0.64	23.12	9.50	0.94	89.78	12.10	-	-	-	-	133.87
Vacant Acres Used to Calculate Housing (Gross/Net)	0.64	23.12	9.50	0.94	86.16	12.10	-	-	-	-	124.66
Vacant Acres Used to Calculate Jobs (Gross/Net)	0.64	23.12	9.50	0.94	89.78	12.10	-	-	-	-	133.87
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-	-
Underutilized Gross Acres	-	32.57	6.25	11.88	31.59	-	-	-	-	-	182.79
Underutilized Acres Used to Calculate Housing (Gross/Net)	-	32.20	6.25	11.88	31.59	-	-	-	-	-	178.49
Underutilized Acres Used to Calculate Jobs (Gross/Net)	-	32.57	6.25	11.88	31.59	-	-	-	-	-	182.79
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-	-
Displaced Units	-	1	-	14	6	-	-	-	-	-	106
Displaced Jobs	-	148	53	41	24	-	-	-	-	-	-
Displaced Adjustment	-	-	-	-	-	-	-	-	-	-	-
Vacant Single Units	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**94**	**93**
Pipeline Units	**-**	**-**	**-**	**-**	**-**	**20**	**-**	**-**	**-**	**6**	**89**
Pipeline Jobs	**-**	**-**	**7**	**-**	**206**	**371**	**-**	**-**	**-**	**-**	**-**
Vacant Residential Acres	-	4.62	-	0.19	-	-	-	-	-	-	124.66
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	4.62	-	0.19	-	-	-	-	-	-	124.66
Vacant Roads Deduction	-	-	-	-	-	-	-	-	-	-	18.70
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	4.62	-	0.19	-	-	-	-	-	-	105.96
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	-	-	-	-	-	2.12
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	0.46	-	0.02	-	-	-	-	-	-	10.60
Vacant Residential Capacity Net Acres	-	4.16	-	0.17	-	-	-	-	-	-	93.24
Vacant Housing Capacity	-	25	-	1	-	-	-	-	-	-	373
Underutilized Residential Acres	-	6.44	-	2.38	-	-	-	-	-	-	178.49
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	6.44	-	2.38	-	-	-	-	-	-	178.49
Underutilized Roads Deduction	-	-	-	-	-	-	-	-	-	-	26.77
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	6.44	-	2.38	-	-	-	-	-	-	151.72
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	-	-	-	-	-	3.03
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	3.22	-	1.19	-	-	-	-	-	-	75.86
Residential Capacity Net Acres	-	3.22	-	1.19	-	-	-	-	-	-	72.83
Adjusted Displaced Units	-	1	-	7	3	-	-	-	-	-	45
Underutilized Housing Capacity	-	**18**	-	**3**	**(3)**	-	-	-	-	-	**246**
Total Housing Capacity	**-**	**43**	**-**	**4**	**(3)**	**20**	**-**	**-**	**-**	**100**	**801**
Vacant Nonresidential Acres	0.64	18.50	9.50	0.75	89.78	12.10	-	-	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	0.64	18.50	9.50	0.75	89.78	12.10	-	-	-	-	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	0.06	1.85	0.95	0.08	8.98	-	-	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	-	-	-	2.12
Vacant Nonresidential Capacity Net Acres	0.58	16.65	8.55	0.67	80.80	12.10	-	-	-	-	2.12
Vacant Employment Capacity	12	333	171	13	727	242	-	-	-	-	42
Underutilized Nonresidential Acres	-	26.06	6.25	9.51	31.59	-	-	-	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	-	26.06	6.25	9.51	31.59	-	-	-	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	-	13.03	3.13	4.76	15.80	-	-	-	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	-	-	-	3.03
Underutilized Nonresidential Capacity Net Acres	-	13.03	3.12	4.75	15.79	-	-	-	-	-	3.03
Adjusted Displaced Jobs	-	74	27	20	12	-	-	-	-	-	-
Underutilized Employment Capacity	-	**187**	**35**	**75**	**130**	-	-	-	-	-	**61**
Total Employment Capacity	**12**	**520**	**213**	**88**	**1,063**	**613**	**-**	**-**	**-**	**-**	**103**

GIG HARBOR R-2 Cities and Towns	GIG HARBOR R-3 Cities and Towns	GIG HARBOR RB-1 Cities and Towns	GIG HARBOR RB-2 Cities and Towns	GIG HARBOR WC Cities and Towns	GIG HARBOR WM Cities and Towns	GIG HARBOR WR Cities and Towns	GIG HARBOR WTR Cities and Towns
102.66	-	2.64	35.46	1.20	-	-	-
101.54	-	2.64	35.30	1.20	-	-	-
102.66	-	2.64	35.46	1.20	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
41.64	0.80	10.40	33.03	0.42	-	-	-
40.36	0.80	10.40	31.49	0.42	-	-	-
41.64	0.80	10.40	33.03	0.42	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
17	-	6	9	-	-	-	-
-	-	28	89	7	-	-	-
-	-	-	-	-	-	-	-
16	**-**	**-**	**174**	**-**	**-**	**2**	**-**
143	**-**	**8**	**-**	**-**	**-**	**-**	**-**
-	**-**	**-**	**10**	**-**	**-**	**-**	**-**
101.54	-	0.79	10.59	0.24	-	-	-
-	-	-	-	-	-	-	-
101.54	-	0.79	10.59	0.24	-	-	-
15.23	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
86.31	-	0.79	10.59	0.24	-	-	-
1.73	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
8.63	-	0.08	1.06	0.02	-	-	-
75.95	-	0.71	9.53	0.22	-	-	-
456	-	3	76	1	-	-	-
40.36	0.80	3.12	9.45	0.08	-	-	-
-	-	-	-	-	-	-	-
40.36	0.80	3.12	9.45	0.08	-	-	-
6.05	0.12	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
34.31	0.68	3.12	9.45	0.08	-	-	-
0.69	0.01	-	-	-	-	-	-
-	-	-	-	-	-	-	-
17.16	0.34	1.56	4.73	-	-	-	-
16.46	0.33	1.56	4.72	0.08	-	-	-
7	-	3	4	-	-	-	-
92	**3**	**3**	**34**	**-**	**-**	**-**	**-**
707	**3**	**14**	**284**	**1**	**-**	**2**	**-**
-	-	1.85	24.82	0.96	-	-	-
-	-	-	-	-	-	-	-
-	-	1.85	24.82	0.96	-	-	-
-	-	-	-	-	-	-	-
-	-	0.19	2.48	-	-	-	-
1.73	-	-	-	-	-	-	-
1.73	-	1.66	22.34	0.96	-	-	-
35	-	33	447	19	-	-	-
-	-	7.28	23.12	0.34	-	-	-
-	-	-	-	-	-	-	-
-	-	7.28	23.12	0.34	-	-	-
-	-	-	-	-	-	-	-
-	-	3.64	11.56	0.17	-	-	-
0.69	0.01	-	-	-	-	-	-
0.69	0.01	3.64	11.56	0.17	-	-	-
-	-	14	43	4	-	-	-
14	**-**	**59**	**188**	**(1)**	**-**	**-**	**-**
49	**-**	**92**	**645**	**18**	**-**	**-**	**-**

Appendix Figure 12: Lakewood Capacity Tables

See following page.

Zone	LAKEWOOD AC1	LAKEWOOD AC2	LAKEWOOD ARC	LAKEWOOD C1	LAKEWOOD C2	LAKEWOOD C3	LAKEWOOD CBD	LAKEWOOD CZ	LAKEWOOD I1	LAKEWOOD I2	LAKEWOOD IBP	LAKEWOOD MF1	LAKEWOOD MF2
VISION 2050 Geography	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities
Vacant Gross Acres	-	-	0.27	2.64	14.81	-	5.01	-	9.08	1.17	41.49	7.06	10.21
Vacant Acres Used to Calculate Housing (Gross/Net)	-	-	0.27	2.64	14.81	-	5.01	-	9.08	1.17	41.49	7.06	10.21
Vacant Acres Used to Calculate Jobs (Gross/Net)	-	-	0.27	2.64	14.81	-	5.01	-	9.08	1.17	41.49	7.06	10.21
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Gross Acres	-	-	12.99	22.28	83.34	-	75.14	-	38.54	-	15.60	75.83	47.24
Underutilized Acres Used to Calculate Housing (Gross/Net)	-	-	12.99	22.28	83.34	-	75.14	-	38.54	-	15.60	75.83	47.24
Underutilized Acres Used to Calculate Jobs (Gross/Net)	-	-	12.99	22.28	83.34	-	75.14	-	38.54	-	15.60	75.83	47.24
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-	-	-	-
Displaced Units	-	-	41	19	3	-	86	-	7	-	28	279	137
Displaced Jobs	-	-	-	233	800	-	642	-	53	-	-	-	-
Displaced Adjustment	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Single Units	-	-	-	-	-	-	-	-	-	-	-	**16**	-
Pipeline Units	-	-	-	-	-	-	**67**	-	-	-	-	**5**	**80**
Pipeline Jobs	**50**	-	-	**11**	**282**	-	-	-	-	-	**822**	**72**	-
Vacant Residential Acres	-	-	0.27	-	-	-	2.51	-	-	-	-	7.06	10.21
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	-	0.27	-	-	-	2.51	-	-	-	-	7.06	10.21
Vacant Roads Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	-	0.27	-	-	-	2.51	-	-	-	-	7.06	10.21
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	-	-	-	-	-	-	0.35	0.51
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	0.03	-	-	-	0.25	-	-	-	-	0.71	1.02
Vacant Residential Capacity Net Acres	-	-	0.24	-	-	-	2.26	-	-	-	-	6.00	8.68
Vacant Housing Capacity	-	-	4	-	-	-	181	-	-	-	-	132	304
Underutilized Residential Acres	-	-	12.99	-	-	-	37.57	-	-	-	-	75.83	47.24
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	-	12.99	-	-	-	37.57	-	-	-	-	75.83	47.24
Underutilized Roads Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	-	12.99	-	-	-	37.57	-	-	-	-	75.83	47.24
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	-	-	-	-	-	-	3.79	2.36
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	-	2.60	-	-	-	7.51	-	-	-	-	15.17	9.45
Residential Capacity Net Acres	-	-	10.39	-	-	-	30.06	-	-	-	-	56.87	35.43
Adjusted Displaced Units	-	-	33	12	2	-	63	-	5	-	18	223	110
Underutilized Housing Capacity	-	-	**123**	**(12)**	**(2)**	-	**2,342**	-	**(5)**	-	**(18)**	**1,028**	**1,130**
Total Housing Capacity	-	-	**127**	**(12)**	**(2)**	-	**2,590**	-	**(5)**	-	**(18)**	**1,181**	**1,514**
Vacant Nonresidential Acres	-	-	-	2.64	14.81	-	2.51	-	9.08	1.17	41.49	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	-	-	-	2.64	14.81	-	2.51	-	9.08	1.17	41.49	-	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	-	-	-	0.26	1.48	-	0.25	-	0.91	0.12	4.15	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	-	-	-	-	0.35	0.51
Vacant Nonresidential Capacity Net Acres	-	-	-	2.38	13.33	-	2.26	-	8.17	1.05	37.34	0.35	0.51
Vacant Employment Capacity	-	-	-	60	333	-	443	-	123	16	560	9	13
Underutilized Nonresidential Acres	-	-	-	22.28	83.34	-	37.57	-	38.54	-	15.60	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	-	-	-	22.28	83.34	-	37.57	-	38.54	-	15.60	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	-	-	-	7.80	29.17	-	13.15	-	13.49	-	5.46	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	-	-	-	-	3.79	2.36
Underutilized Nonresidential Capacity Net Acres	-	-	-	14.48	54.17	-	24.42	-	25.05	-	10.14	3.79	2.36
Adjusted Displaced Jobs	-	-	-	151	520	-	469	-	34	-	-	-	-
Underutilized Employment Capacity	-	-	-	**211**	**834**	-	**4,317**	-	**342**	-	**152**	**95**	**59**
Total Employment Capacity	**50**	-	-	**282**	**1,449**	-	**4,760**	-	**465**	**16**	**1,534**	**176**	**72**

LAKEWOOD MF3 Core Cities	LAKEWOOD ML Core Cities	LAKEWOOD MR1 Core Cities	LAKEWOOD MR2 Core Cities	LAKEWOOD NC1 Core Cities	LAKEWOOD NC2 Core Cities	LAKEWOOD OSR1 Core Cities	LAKEWOOD OSR2 Core Cities	LAKEWOOD PI Core Cities	LAKEWOOD R1 Core Cities	LAKEWOOD R2 Core Cities	LAKEWOOD R3 Core Cities	LAKEWOOD R4 Core Cities	LAKEWOOD ROW Core Cities	LAKEWOOD TOC Core Cities
3.32	-	-	3.51	0.80	10.42	-	-	-	4.34	8.90	40.55	4.53	-	10.16
3.32	-	-	3.51	0.80	10.42	-	-	-	4.34	8.90	40.55	4.53	-	10.16
3.32	-	-	3.51	0.80	10.42	-	-	-	4.34	8.90	40.55	4.53	-	10.16
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28.75	-	24.50	60.54	6.49	109.02	-	-	9.32	17.52	60.55	196.99	52.59	-	44.23
28.75	-	24.50	60.54	6.49	109.02	-	-	9.32	17.52	60.55	196.99	52.59	-	44.23
28.75	-	24.50	60.54	6.49	109.02	-	-	9.32	17.52	60.55	196.99	52.59	-	44.23
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
233	-	39	195	11	132	-	-	1	8	21	233	69	-	130
-	-	-	-	51	747	-	-	41	-	-	-	-	-	270
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**-**	**-**	**5**	**-**	**-**	**-**	**-**	**-**	**17**	**39**	**91**	**58**	**-**	**-**
1	**-**	**1**	**5**	**42**	**2**	**-**	**-**	**-**	**1**	**20**	**34**	**24**	**-**	**771**
-	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**307**
3.32	-	-	3.51	0.12	1.56	-	-	-	4.34	8.90	40.55	4.53	-	2.54
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.32	-	-	3.51	0.12	1.56	-	-	-	4.34	8.90	40.55	4.53	-	2.54
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.32	-	-	3.51	0.12	1.56	-	-	-	4.34	8.90	40.55	4.53	-	2.54
0.17	-	-	0.18	-	-	-	-	-	0.22	0.45	2.03	0.23	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.33	-	-	0.35	0.01	0.16	-	-	-	0.43	0.89	4.06	0.45	-	0.25
2.82	-	-	2.98	0.11	1.40	-	-	-	3.69	7.56	34.46	3.85	-	2.29
152	-	-	42	2	49	-	-	-	7	15	172	23	-	124
28.75	-	24.50	60.54	0.97	16.35	-	-	-	17.52	60.55	196.99	52.59	-	11.06
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28.75	-	24.50	60.54	0.97	16.35	-	-	-	17.52	60.55	196.99	52.59	-	11.06
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28.75	-	24.50	60.54	0.97	16.35	-	-	-	17.52	60.55	196.99	52.59	-	11.06
1.44	-	1.23	3.03	-	-	-	-	-	0.88	3.03	9.85	2.63	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.75	-	4.90	12.11	0.19	3.27	-	-	-	3.50	12.11	39.40	10.52	-	2.21
21.56	-	18.37	45.40	0.78	13.08	-	-	-	13.14	45.41	147.74	39.44	-	8.85
186	-	31	156	7	88	-	-	1	6	17	186	55	-	90
978	**-**	**116**	**480**	**10**	**370**	**-**	**-**	**(1)**	**20**	**74**	**553**	**182**	**-**	**388**
1,131	**-**	**117**	**532**	**54**	**421**	**-**	**-**	**(1)**	**45**	**148**	**850**	**287**	**-**	**1,283**
-	-	-	-	0.68	8.86	-	-	-	-	-	-	-	-	7.62
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0.68	8.86	-	-	-	-	-	-	-	-	7.62
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0.07	0.89	-	-	-	-	-	-	-	-	0.76
0.17	-	-	0.18	-	-	-	-	-	0.22	0.45	2.03	0.23	-	-
0.17	-	-	0.18	0.61	7.97	-	-	-	0.22	0.45	2.03	0.23	-	6.86
4	-	-	5	15	199	-	-	-	6	11	51	6	-	309
-	-	-	-	5.52	92.66	-	-	9.32	-	-	-	-	-	33.17
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	5.52	92.66	-	-	9.32	-	-	-	-	-	33.17
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	1.93	32.43	-	-	3.26	-	-	-	-	-	11.61
1.44	-	1.23	3.03	-	-	-	-	-	0.88	3.03	9.85	2.63	-	-
1.44	-	1.23	3.03	3.59	60.23	-	-	6.06	0.88	3.03	9.85	2.63	-	21.56
-	-	-	-	34	500	-	-	27	-	-	-	-	-	186
36	**-**	**31**	**76**	**56**	**1,006**	**-**	**-**	**94**	**22**	**76**	**246**	**66**	**-**	**784**
40	**-**	**31**	**81**	**73**	**1,205**	**-**	**-**	**94**	**28**	**87**	**297**	**72**	**-**	**1,400**

Appendix Figure 13: Milton Capacity Tables

See following page.

Zone	MILTON B	MILTON CF	MILTON M-1	MILTON MX	MILTON OS	MILTON RM	MILTON RMD	MILTON RS
VISION 2050 Geography	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns
Vacant Gross Acres	26.06	-	15.25	2.94	-	8.81	1.68	32.28
Vacant Acres Used to Calculate Housing (Gross/Net)	16.46	-	9.23	2.87	-	6.19	1.55	22.26
Vacant Acres Used to Calculate Jobs (Gross/Net)	26.06	-	15.25	2.94	-	8.81	1.68	32.28
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-
Underutilized Gross Acres	38.35	2.79	44.62	5.04	-	36.87	8.10	87.83
Underutilized Acres Used to Calculate Housing (Gross/Net)	31.49	2.79	29.04	4.85	-	32.27	7.44	78.68
Underutilized Acres Used to Calculate Jobs (Gross/Net)	38.35	2.79	44.62	5.04	-	36.87	8.10	87.83
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-
Displaced Units	23	3	13	12	-	34	14	33
Displaced Jobs	72	-	11	1	-	-	-	-
Displaced Adjustment	-	-	-	-	-	-	-	-
Vacant Single Units	-	-	-	-	-	2	4	70
Pipeline Units	-	-	-	-	-	-	-	2
Pipeline Jobs	20	-	-	-	-	-	-	-
Vacant Residential Acres	-	-	-	1.72	-	6.19	1.55	22.26
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	-	-	1.72	-	6.19	1.55	22.26
Vacant Roads Deduction	-	-	-	-	-	0.93	0.23	3.34
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	-	-	1.72	-	5.26	1.32	18.92
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	0.11	0.03	0.38
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	-	0.09	-	0.26	0.07	0.95
Vacant Residential Capacity Net Acres	-	-	-	1.63	-	4.89	1.22	17.59
Vacant Housing Capacity	-	-	-	13	-	39	10	53
Underutilized Residential Acres	-	-	-	2.91	-	32.27	7.44	78.68
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	-	-	2.91	-	32.27	7.44	78.68
Underutilized Roads Deduction	-	-	-	-	-	4.84	1.12	11.80
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	-	-	2.91	-	27.43	6.32	66.88
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	0.55	0.13	1.34
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	-	-	1.02	-	9.60	2.21	23.41
Residential Capacity Net Acres	-	-	-	1.89	-	17.28	3.98	42.13
Adjusted Displaced Units	15	2	8	8	-	16	7	16
Underutilized Housing Capacity	(15)	(2)	(8)	7	-	122	25	110
Total Housing Capacity	(15)	(2)	(8)	20	-	163	39	235
Vacant Nonresidential Acres	26.06	-	15.25	1.18	-	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	26.06	-	15.25	1.18	-	-	-	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	1.30	-	0.76	0.06	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	0.11	0.03	0.38
Vacant Nonresidential Capacity Net Acres	24.76	-	14.49	1.12	-	0.11	0.03	0.38
Vacant Employment Capacity	495	-	130	22	-	2	1	8
Underutilized Nonresidential Acres	38.35	2.79	44.62	2.02	-	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	38.35	2.79	44.62	2.02	-	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	13.42	0.98	15.62	0.71	-	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	0.55	0.13	1.34
Underutilized Nonresidential Capacity Net Acres	24.93	1.81	29.00	1.31	-	0.55	0.13	1.34
Adjusted Displaced Jobs	47	-	7	1	-	-	-	-
Underutilized Employment Capacity	452	36	254	25	-	11	3	27
Total Employment Capacity	967	36	384	47	-	13	4	35

Appendix Figure 14: Orting Capacity Tables

See following page.

Zone	ORTING LM	ORTING MUTC	ORTING MUTCN	ORTING OS	ORTING PF	ORTING RC	ORTING RMF	ORTING ROW	ORTING RU
VISION 2050 Geography	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns
Vacant Gross Acres	-	6.80	67.28	-	66.91	-	2.21	-	13.36
Vacant Acres Used to Calculate Housing (Gross/Net)	-	6.63	33.57	-	55.05	-	2.21	-	9.29
Vacant Acres Used to Calculate Jobs (Gross/Net)	-	6.80	67.28	-	66.91	-	2.21	-	13.36
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-
Underutilized Gross Acres	-	15.79	-	-	-	23.15	2.87	-	29.17
Underutilized Acres Used to Calculate Housing (Gross/Net)	-	15.69	-	-	-	5.16	2.82	-	8.02
Underutilized Acres Used to Calculate Jobs (Gross/Net)	-	15.79	-	-	-	23.15	2.87	-	29.17
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-
Displaced Units	-	43	-	-	-	1	2	-	3
Displaced Jobs	-	13	-	-	-	-	-	-	-
Displaced Adjustment	-	-	-	-	-	-	-	-	-
Vacant Single Units	**-**	**-**	**-**	**-**	**1**	**2**	**-**	**-**	**30**
Pipeline Units	**-**	**-**	**4**	**-**	**-**	**-**	**-**	**-**	**52**
Pipeline Jobs	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Vacant Residential Acres	-	3.32	16.79	-	-	-	2.21	-	9.29
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	3.32	16.79	-	-	-	2.21	-	9.29
Vacant Roads Deduction	-	-	-	-	-	-	0.22	-	0.93
Vacant Critical Areas Deduction	-	-	-	-	-	-	0.17	-	0.70
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	0.14	-	0.58
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	3.32	16.79	-	-	-	1.68	-	7.08
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	-	-	-	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	0.03	0.17	-	-	-	0.02	-	0.07
Vacant Residential Capacity Net Acres	-	3.29	16.62	-	-	-	1.66	-	7.01
Vacant Housing Capacity	-	26	166	-	-	-	10	-	28
Underutilized Residential Acres	-	7.85	-	-	-	5.16	2.82	-	8.02
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	7.85	-	-	-	5.16	2.82	-	8.02
Underutilized Roads Deduction	-	-	-	-	-	0.52	0.28	-	0.80
Underutilized Critical Areas Deduction	-	-	-	-	-	0.39	0.21	-	0.60
Underutilized Parks/Open Space Deduction	-	-	-	-	-	0.32	0.17	-	0.50
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	7.85	-	-	-	3.93	2.16	-	6.12
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	-	-	-	-
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	3.93	-	-	-	1.97	1.08	-	3.06
Residential Capacity Net Acres	-	3.92	-	-	-	1.96	1.08	-	3.06
Adjusted Displaced Units	-	22	-	-	-	-	1	-	-
Underutilized Housing Capacity	-	**9**	-	-	-	**1**	**5**	-	**12**
Total Housing Capacity	**-**	**35**	**170**	**-**	**1**	**3**	**15**	**-**	**122**
Vacant Nonresidential Acres	-	3.40	33.64	-	66.91	-	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	-	3.40	33.64	-	66.91	-	-	-	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	33.46	-	-	-	-
Vacant Nonresidential Market Factor Deduction	-	0.14	1.35	-	2.68	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Capacity Net Acres	-	3.26	32.29	-	30.77	-	-	-	-
Vacant Employment Capacity	-	65	646	-	615	-	-	-	-
Underutilized Nonresidential Acres	-	7.90	-	-	-	-	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	-	7.90	-	-	-	-	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	-	3.95	-	-	-	-	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Capacity Net Acres	-	3.95	-	-	-	-	-	-	-
Adjusted Displaced Jobs	-	7	-	-	-	-	-	-	-
Underutilized Employment Capacity	-	**72**	-	-	-	-	-	-	-
Total Employment Capacity	**-**	**137**	**646**	**-**	**615**	**-**	**-**	**-**	**-**

Appendix Figure 15: Pacific Capacity Tables

See following page.

Zone	PACIFIC C	PACIFIC LI	PACIFIC OP	PACIFIC PL
VISION 2050 Geography	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns
Vacant Gross Acres	2.18	4.20	0.58	-
Vacant Acres Used to Calculate Housing (Gross/Net)	2.18	4.20	0.58	-
Vacant Acres Used to Calculate Jobs (Gross/Net)	2.18	4.20	0.58	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-
Underutilized Gross Acres	30.50	126.61	16.07	-
Underutilized Acres Used to Calculate Housing (Gross/Net)	30.50	126.61	16.07	-
Underutilized Acres Used to Calculate Jobs (Gross/Net)	30.50	126.61	16.07	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-
Displaced Units	1	4	7	-
Displaced Jobs	75	183	74	-
Displaced Adjustment	-	-	-	-
Vacant Single Units	-	-	-	-
Pipeline Units	-	-	-	-
Pipeline Jobs	-	42	-	-
Vacant Residential Acres	-	-	-	-
Vacant Residential Infrastructure Gap Deduction	-	-	-	-
Adjusted Vacant Residential Acreage	-	-	-	-
Vacant Roads Deduction	-	-	-	-
Vacant Critical Areas Deduction	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-
Vacant Acreage after Plat Deductions	-	-	-	-
Vacant Non-residential in Single Family Zones*	-	-	-	-
Vacant Residential Capital Facilities Deduction	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	-	-
Vacant Residential Capacity Net Acres	-	-	-	-
Vacant Housing Capacity	-	-	-	-
Underutilized Residential Acres	-	-	-	-
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-
Adjusted Underutilized Residential Acreage	-	-	-	-
Underutilized Roads Deduction	-	-	-	-
Underutilized Critical Areas Deduction	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-
Underutilized Acreage after Plat Deductions	-	-	-	-
Underutilized Non-residential in Single Family Zones*	-	-	-	-
Underutilized Residential Capital Facilities Deduction	-	-	-	-
Underutilized Residential Market Factor Deduction	-	-	-	-
Residential Capacity Net Acres	-	-	-	-
Adjusted Displaced Units	1	3	5	-
Underutilized Housing Capacity	(1)	(3)	(5)	-
Total Housing Capacity	(1)	(3)	(5)	-
Vacant Nonresidential Acres	2.18	4.20	0.58	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-
Adjusted Vacant Nonresidential Acreage	2.18	4.20	0.58	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-
Vacant Nonresidential Market Factor Deduction	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-
Vacant Nonresidential Capacity Net Acres	2.18	4.20	0.58	-
Vacant Employment Capacity	44	67	12	-
Underutilized Nonresidential Acres	30.50	126.61	16.07	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-
Adjusted Underutilized Nonresidential Acres	30.50	126.61	16.07	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	7.63	31.65	4.02	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-
Underutilized Nonresidential Capacity Net Acres	22.87	94.96	12.05	-
Adjusted Displaced Jobs	56	138	55	-
Underutilized Employment Capacity	401	1,381	186	-
Total Employment Capacity	445	1,490	198	-

Appendix Figure 16: Puyallup Capacity Tables

See following page.

Zone	PUYALLUP ARO	PUYALLUP CB	PUYALLUP CBD	PUYALLUP CBD-CORE	PUYALLUP CCX	PUYALLUP CG	PUYALLUP CL	PUYALLUP CMX	PUYALLUP FAIR	PUYALLUP LMX	PUYALLUP MED	PUYALLUP ML	PUYALLUP MP	PUYALLUP OP
VISION 2050 Geography	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities
Vacant Gross Acres	-	12.61	2.36	-	-	11.83	-	15.85	-	2.74	2.26	93.45	-	5.24
Vacant Acres Used to Calculate Housing (Gross/Net)	-	9.92	2.29	-	-	7.60	-	15.83	-	2.02	1.37	84.85	-	3.83
Vacant Acres Used to Calculate Jobs (Gross/Net)	-	12.61	2.36	-	-	11.83	-	15.85	-	2.74	2.26	93.45	-	5.24
Acres with Infrastructure Gaps (Residential Calculation)	-	0.87	-	-	-	-	-	-	-	-	-	2.03	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	0.87	-	-	-	-	-	-	-	-	-	2.03	-	-
Underutilized Gross Acres	-	3.54	22.40	18.94	86.52	112.24	5.33	15.51	-	10.84	29.51	69.16	61.02	3.77
Underutilized Acres Used to Calculate Housing (Gross/Net)	-	1.72	22.30	18.94	74.83	101.84	5.08	15.41	-	9.40	20.23	52.47	53.82	2.97
Underutilized Acres Used to Calculate Jobs (Gross/Net)	-	3.54	22.40	18.94	74.83	112.24	5.33	15.51	-	10.84	29.51	69.16	61.02	3.77
Acres with Infrastructure Gaps (Residential Calculation)	-	0.37	-	-	-	-	-	15.41	-	-	-	6.93	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	0.37	-	-	-	-	-	15.41	-	-	-	6.93	-	-
Displaced Units	-	1	71	6	-	47	23	-	-	3	31	19	-	2
Displaced Jobs	-	10	181	176	1,019	443	3	-	-	35	26	79	129	14
Displaced Adjustment	-	-	1	1	2	-	-	-	-	-	-	-	-	-
Vacant Single Units	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pipeline Units	-	-	-	-	-	-	-	-	-	-	-	**2**	-	-
Pipeline Jobs	-	**2**	-	-	-	**5**	-	-	-	-	-	-	-	-
Vacant Residential Acres	-	0.99	2.29	-	-	0.38	-	6.33	-	0.30	-	-	-	-
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	0.99	2.29	-	-	0.38	-	6.33	-	0.30	-	-	-	-
Vacant Roads Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	0.99	2.29	-	-	0.38	-	6.33	-	0.30	-	-	-	-
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Capacity Net Acres	-	0.99	2.29	-	-	0.38	-	6.33	-	0.30	-	-	-	-
Vacant Housing Capacity	-	4	69	-	-	1	-	44	-	4	-	-	-	-
Underutilized Residential Acres	-	0.17	22.30	18.94	37.41	5.09	0.25	6.16	-	1.41	-	-	-	-
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	0.17	22.30	18.94	37.41	5.09	0.25	6.16	-	1.41	-	-	-	-
Underutilized Roads Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	0.17	22.30	18.94	37.41	5.09	0.25	6.16	-	1.41	-	-	-	-
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	0.09	-	-	18.71	2.55	0.13	3.08	-	0.71	-	-	-	-
Residential Capacity Net Acres	-	0.08	22.30	18.94	18.70	2.54	0.12	3.08	-	0.70	-	-	-	-
Adjusted Displaced Units	-	-	71	6	-	24	12	-	-	2	16	10	-	1
Underutilized Housing Capacity	-	-	**598**	**657**	**1,122**	**(19)**	**(12)**	**22**	-	**6**	**(16)**	**(10)**	-	**(1)**
Total Housing Capacity	-	**4**	**667**	**657**	**1,122**	**(18)**	**(12)**	**66**	-	**10**	**(16)**	**(8)**	-	**(1)**
Vacant Nonresidential Acres	-	11.35	2.36	-	-	11.23	-	9.51	-	2.74	2.26	93.45	-	5.24
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	-	11.35	2.36	-	-	11.23	-	9.51	-	2.74	2.26	93.45	-	5.24
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	-	1.14	-	-	-	1.12	-	0.95	-	0.27	0.23	9.35	-	0.52
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Capacity Net Acres	-	10.21	2.36	-	-	10.11	-	8.56	-	2.47	2.03	84.10	-	4.72
Vacant Employment Capacity	-	204	118	-	-	202	-	171	-	74	102	757	-	94
Underutilized Nonresidential Acres	-	3.19	22.40	18.94	74.83	106.63	5.06	9.31	-	10.84	29.51	69.16	61.02	3.77
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	-	3.19	22.40	18.94	74.83	106.63	5.06	9.31	-	10.84	29.51	69.16	61.02	3.77
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	-	1.60	-	-	37.42	53.32	2.53	4.66	-	5.42	14.76	34.58	30.51	1.89
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Capacity Net Acres	-	1.59	22.40	18.94	37.41	53.31	2.53	4.65	-	5.42	14.75	34.58	30.51	1.88
Adjusted Displaced Jobs	-	5	181	176	-	221	1	-	-	19	13	40	65	7
Underutilized Employment Capacity	-	**27**	**939**	**771**	**1,871**	**845**	**50**	**93**	-	**144**	**725**	**271**	**210**	**31**
Total Employment Capacity	-	**233**	**1,057**	**771**	**1,871**	**1,052**	**50**	**264**	-	**218**	**827**	**1,028**	**210**	**125**

PUYALLUP PF Core Cities	PUYALLUP RM-10 Core Cities	PUYALLUP RM-20 Core Cities	PUYALLUP RM-CORE Core Cities	PUYALLUP RMX Core Cities	PUYALLUP RS-04 Core Cities	PUYALLUP RS-06 Core Cities	PUYALLUP RS-08 Core Cities	PUYALLUP RS-10 Core Cities	PUYALLUP RS-35 Core Cities	PUYALLUP UCX Core Cities
34.89	5.53	12.22	16.05	-	6.00	0.95	51.33	114.28	-	12.50
25.59	4.70	11.53	9.64	-	1.68	0.44	40.45	54.15	-	7.11
34.89	5.53	12.22	16.05	-	6.00	0.95	51.33	114.28	-	12.50
-	-	-	4.96	-	-	-	-	13.88	-	-
-	-	-	4.96	-	-	-	-	13.88	-	-
49.10	15.12	125.16	51.07	22.53	20.01	30.32	116.47	641.43	26.64	144.57
45.25	14.30	114.00	37.42	16.56	16.25	23.17	95.56	384.22	8.63	136.28
49.10	15.12	125.16	51.07	22.53	20.01	30.32	116.47	641.43	26.64	144.57
17.42	-	-	1.17	-	-	-	-	68.78	4.24	-
17.42	-	-	1.17	-	-	-	-	68.78	4.24	-
-	14	237	135	-	20	34	88	261	4	3
27	-	-	-	170	-	-	-	-	-	2,173
-	-	-	-	1	-	-	-	-	-	1
-	**-**	**1**	**1**	**-**	**7**	**26**	**179**	**148**	**24**	**-**
-	**-**	**62**	**-**	**-**	**-**	**-**	**11**	**12**	**1**	**168**
-	**-**	**90**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**83**
-	4.70	11.53	9.64	-	1.68	0.44	40.45	54.15	-	3.55
-	-	-	-	-	-	-	-	-	-	-
-	4.70	11.53	9.64	-	1.68	0.44	40.45	54.15	-	3.55
-	-	-	-	-	0.17	0.04	4.05	5.42	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	4.70	11.53	9.64	-	1.51	0.40	36.40	48.73	-	3.55
-	0.12	0.29	-	-	0.04	0.01	0.91	1.22	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	0.38	0.10	9.10	12.18	-	-
-	4.58	11.24	9.64	-	1.09	0.29	26.39	35.33	-	3.55
-	37	225	289	-	9	2	132	141	-	78
-	14.30	114.00	37.42	8.28	16.25	23.17	95.56	384.22	8.63	68.14
-	-	-	-	-	-	-	-	-	-	-
-	14.30	114.00	37.42	8.28	16.25	23.17	95.56	384.22	8.63	68.14
-	-	-	-	-	1.63	2.32	9.56	38.42	0.86	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	14.30	114.00	37.42	8.28	14.62	20.85	86.00	345.80	7.77	68.14
-	0.36	2.85	-	-	0.37	0.52	2.15	8.65	0.19	-
-	-	-	-	-	-	-	-	-	-	-
-	10.01	79.80	-	4.14	5.85	8.34	34.40	138.32	3.11	34.07
-	3.93	31.35	37.42	4.14	8.40	11.99	49.45	198.83	4.47	34.07
-	4	64	99	-	9	14	39	84	1	1
-	**27**	**563**	**1,024**	**46**	**58**	**58**	**208**	**711**	**3**	**749**
-	**64**	**851**	**1,314**	**46**	**74**	**86**	**530**	**1,012**	**28**	**995**
34.89	-	-	-	-	-	-	-	-	-	12.50
-	-	-	-	-	-	-	-	-	-	-
34.89	-	-	-	-	-	-	-	-	-	12.50
-	-	-	-	-	-	-	-	-	-	-
3.49	-	-	-	-	-	-	-	-	-	1.25
-	0.12	0.29	-	-	0.04	0.01	0.91	1.22	-	-
31.40	0.12	0.29	-	-	0.04	0.01	0.91	1.22	-	11.25
628	2	6	-	-	1	-	18	24	-	338
49.10	-	-	-	22.53	-	-	-	-	-	144.57
-	-	-	-	-	-	-	-	-	-	-
49.10	-	-	-	22.53	-	-	-	-	-	144.57
-	-	-	-	-	-	-	-	-	-	-
24.55	-	-	-	-	-	-	-	-	-	72.29
-	0.36	2.85	-	-	0.37	0.52	2.15	8.65	0.19	-
24.55	0.36	2.85	-	22.53	0.37	0.52	2.15	8.65	0.19	72.28
13	-	-	-	170	-	-	-	-	-	1,086
478	**7**	**57**	**-**	**506**	**7**	**10**	**43**	**173**	**4**	**1,082**
1,106	**9**	**153**	**-**	**506**	**8**	**10**	**61**	**197**	**4**	**1,503**

Appendix Figure 17: Roy Capacity Tables

See following page.

Zone	ROY C	ROY LI	ROY MFR	ROY MU	ROY SFR
VISION 2050 Geography	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns
Vacant Gross Acres	0.09	-	-	29.77	6.56
Vacant Acres Used to Calculate Housing (Gross/Net)	0.09	-	-	18.03	6.56
Vacant Acres Used to Calculate Jobs (Gross/Net)	0.09	-	-	29.77	6.56
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-
Underutilized Gross Acres	1.87	3.22	17.29	-	67.62
Underutilized Acres Used to Calculate Housing (Gross/Net)	1.69	3.22	16.18	-	58.22
Underutilized Acres Used to Calculate Jobs (Gross/Net)	1.87	3.22	17.29	-	67.62
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-
Displaced Units	1	-	7	-	15
Displaced Jobs	2	2	-	-	-
Displaced Adjustment	-	-	-	-	-
Vacant Single Units	**-**	**-**	**-**	**-**	**13**
Pipeline Units	**-**	**-**	**-**	**-**	**2**
Pipeline Jobs	**-**	**-**	**-**	**-**	**-**
Vacant Residential Acres	-	-	-	13.52	6.56
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	-	-	13.52	6.56
Vacant Roads Deduction	-	-	-	-	0.98
Vacant Critical Areas Deduction	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	0.33
Vacant Stormwater Deduction	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	-	-	13.52	5.25
Vacant Non-residential in Single Family Zones*	-	-	-	-	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	-	1.35	0.53
Vacant Residential Capacity Net Acres	-	-	-	12.17	4.72
Vacant Housing Capacity	-	-	-	43	17
Underutilized Residential Acres	-	-	16.18	-	58.22
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	-	16.18	-	58.22
Underutilized Roads Deduction	-	-	-	-	8.73
Underutilized Critical Areas Deduction	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	2.91
Underutilized Stormwater Deduction	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	-	16.18	-	46.58
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	-	8.09	-	23.29
Residential Capacity Net Acres	-	-	8.09	-	23.29
Adjusted Displaced Units	1	-	3	-	5
Underutilized Housing Capacity	**(1)**	**-**	**25**	**-**	**77**
Total Housing Capacity	**(1)**	**-**	**25**	**43**	**109**
Vacant Nonresidential Acres	0.09	-	-	7.44	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	0.09	-	-	7.44	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	0.01	-	-	0.74	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-
Vacant Nonresidential Capacity Net Acres	0.08	-	-	6.70	-
Vacant Employment Capacity	2	-	-	134	-
Underutilized Nonresidential Acres	1.87	3.22	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	1.87	3.22	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	0.94	1.61	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-
Underutilized Nonresidential Capacity Net Acres	0.93	1.61	-	-	-
Adjusted Displaced Jobs	1	1	-	-	-
Underutilized Employment Capacity	**18**	**13**	**-**	**-**	**-**
Total Employment Capacity	**20**	**13**	**-**	**134**	**-**

Appendix Figure 18: Ruston Capacity Tables

See following page.

Zone	RUSTON COM	RUSTON COM-P	RUSTON MPD	RUSTON MPD-PR	RUSTON MPD-RL	RUSTON MPD-SH	RUSTON RES
VISION 2050 Geography	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns
Vacant Gross Acres	0.51	0.30	-	-	-	-	2.94
Vacant Acres Used to Calculate Housing (Gross/Net)	0.21	0.30	-	-	-	-	0.97
Vacant Acres Used to Calculate Jobs (Gross/Net)	0.51	0.30	-	-	-	-	2.94
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-
Underutilized Gross Acres	0.62	1.32	-	-	-	-	2.95
Underutilized Acres Used to Calculate Housing (Gross/Net)	0.50	1.32	-	-	-	-	2.80
Underutilized Acres Used to Calculate Jobs (Gross/Net)	0.62	1.32	-	-	-	-	2.95
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-
Displaced Units	1	1	-	-	-	-	9
Displaced Jobs	-	8	-	-	-	-	-
Displaced Adjustment	-	-	-	-	-	-	-
Vacant Single Units	-	-	-	-	-	2	19
Pipeline Units	-	-	-	620	-	-	-
Pipeline Jobs	-	-	-	749	-	-	-
Vacant Residential Acres	-	-	-	-	-	-	0.97
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	-	-	-	-	-	0.97
Vacant Roads Deduction	-	-	-	-	-	-	-
Vacant Critical Areas Deduction	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	-	-	-	-	-	0.97
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	-	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	-	-	-	-	-
Vacant Residential Capacity Net Acres	-	-	-	-	-	-	0.97
Vacant Housing Capacity	-	-	-	-	-	-	6
Underutilized Residential Acres	-	-	-	-	-	-	2.80
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	-	-	-	-	-	2.80
Underutilized Roads Deduction	-	-	-	-	-	-	-
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	-	-	-	-	-	2.80
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	-	-
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	-	-	-	-	-	-
Residential Capacity Net Acres	-	-	-	-	-	-	2.80
Adjusted Displaced Units	1	1	-	-	-	-	9
Underutilized Housing Capacity	(1)	(1)	-	-	-	-	8
Total Housing Capacity	(1)	(1)	-	620	-	2	33
Vacant Nonresidential Acres	0.51	0.30	-	-	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	0.51	0.30	-	-	-	-	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	0.05	0.03	-	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-
Vacant Nonresidential Capacity Net Acres	0.46	0.27	-	-	-	-	-
Vacant Employment Capacity	9	5	-	-	-	-	-
Underutilized Nonresidential Acres	0.62	1.32	-	-	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	0.62	1.32	-	-	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	0.31	0.66	-	-	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-
Underutilized Nonresidential Capacity Net Acres	0.31	0.66	-	-	-	-	-
Adjusted Displaced Jobs	-	4	-	-	-	-	-
Underutilized Employment Capacity	6	9	-	-	-	-	-
Total Employment Capacity	15	14	-	749	-	-	-

Appendix Figure 19: South Prairie Capacity Tables

See following page.

Zone	SOUTH PRAIRIE AGB	SOUTH PRAIRIE C	SOUTH PRAIRIE GOV	SOUTH PRAIRIE IND	SOUTH PRAIRIE PTOS	SOUTH PRAIRIE R	SOUTH PRAIRIE R/CUP	SOUTH PRAIRIE ROW
VISION 2050 Geography	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns
Vacant Gross Acres	-	2.52	0.13	-	-	33.13	-	-
Vacant Acres Used to Calculate Housing (Gross/Net)	-	2.42	0.13	-	-	24.02	-	-
Vacant Acres Used to Calculate Jobs (Gross/Net)	-	2.52	0.13	-	-	33.13	-	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-
Underutilized Gross Acres	10.04	6.78	-	-	-	71.61	22.76	-
Underutilized Acres Used to Calculate Housing (Gross/Net)	6.93	6.14	-	-	-	51.59	6.20	-
Underutilized Acres Used to Calculate Jobs (Gross/Net)	10.04	6.78	-	-	-	71.61	22.76	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-
Displaced Units	2	2	-	-	-	20	2	-
Displaced Jobs	-	20	-	-	-	-	-	-
Displaced Adjustment	-	-	-	-	-	-	-	-
Vacant Single Units	-	-	-	-	-	**20**	-	-
Pipeline Units	-	-	-	-	-	-	-	-
Pipeline Jobs	-	-	-	-	-	-	-	-
Vacant Residential Acres	-	-	-	-	-	24.02	-	-
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	-	-	-	-	24.02	-	-
Vacant Roads Deduction	-	-	-	-	-	7.21	-	-
Vacant Critical Areas Deduction	-	-	-	-	-	8.41	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	2.40	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	-	-	-	-	6.00	-	-
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	0.18	-	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	-	-	-	1.50	-	-
Vacant Residential Capacity Net Acres	-	-	-	-	-	4.32	-	-
Vacant Housing Capacity	-	-	-	-	-	17	-	-
Underutilized Residential Acres	-	-	-	-	-	51.59	6.20	-
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	-	-	-	-	51.59	6.20	-
Underutilized Roads Deduction	-	-	-	-	-	15.48	1.86	-
Underutilized Critical Areas Deduction	-	-	-	-	-	18.06	2.17	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	5.16	0.62	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	-	-	-	-	12.89	1.55	-
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	0.39	0.05	-
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	-	-	-	-	3.22	0.39	-
Residential Capacity Net Acres	-	-	-	-	-	9.28	1.11	-
Adjusted Displaced Units	1	1	-	-	-	3	-	-
Underutilized Housing Capacity	**(1)**	**(1)**	-	-	-	**34**	**4**	-
Total Housing Capacity	**(1)**	**(1)**	-	-	-	**71**	**4**	-
Vacant Nonresidential Acres	-	2.52	0.13	-	-	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	-	2.52	0.13	-	-	-	-	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	-	0.25	0.01	-	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	0.18	-	-
Vacant Nonresidential Capacity Net Acres	-	2.27	0.12	-	-	0.18	-	-
Vacant Employment Capacity	-	45	2	-	-	4	-	-
Underutilized Nonresidential Acres	10.04	6.78	-	-	-	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	10.04	6.78	-	-	-	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	5.02	3.39	-	-	-	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	0.39	0.05	-
Underutilized Nonresidential Capacity Net Acres	5.02	3.39	-	-	-	0.39	0.05	-
Adjusted Displaced Jobs	-	10	-	-	-	-	-	-
Underutilized Employment Capacity	**100**	**58**	-	-	-	**8**	**1**	-
Total Employment Capacity	100	103	2	-	-	12	1	-

Appendix Figure 20: Steilacoom Capacity Tables

See following page.

Zone	STEILACOOM CG	STEILACOOM CS	STEILACOOM IND	STEILACOOM MF	STEILACOOM MPD	STEILACOOM P/QP	STEILACOOM POS	STEILACOOM R-7.2	STEILACOOM R-9.6	STEILACOOM WTR
VISION 2050 Geography	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns
Vacant Gross Acres	1.08	-	13.21	-	-	9.49	-	7.34	31.79	-
Vacant Acres Used to Calculate Housing (Gross/Net)	1.08	-	13.21	-	-	9.49	-	7.34	31.79	-
Vacant Acres Used to Calculate Jobs (Gross/Net)	1.08	-	13.21	-	-	9.49	-	7.34	31.79	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-
Underutilized Gross Acres	3.48	1.59	-	-	64.51	4.06	-	10.33	36.51	-
Underutilized Acres Used to Calculate Housing (Gross/Net)	3.48	1.59	-	-	64.51	4.06	-	10.33	36.51	-
Underutilized Acres Used to Calculate Jobs (Gross/Net)	3.48	1.59	-	-	64.51	4.06	-	10.33	36.51	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-
Displaced Units	-	-	-	-	-	-	-	16	19	-
Displaced Jobs	14	2	-	-	-	13	-	-	-	-
Displaced Adjustment	-	-	-	-	-	-	-	-	-	-
Vacant Single Units	-	-	-	-	-	-	-	**77**	**86**	-
Pipeline Units	-	-	-	-	-	-	-	-	**26**	-
Pipeline Jobs	-	-	-	-	-	-	-	-	-	-
Vacant Residential Acres	0.16	-	-	-	-	-	-	7.34	31.79	-
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	0.16	-	-	-	-	-	-	7.34	31.79	-
Vacant Roads Deduction	-	-	-	-	-	-	-	0.88	3.81	-
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	0.73	3.18	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-	0.15	0.64	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	0.22	0.95	-
Vacant Acreage after Plat Deductions	0.16	-	-	-	-	-	-	5.36	23.21	-
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	-	-	-	-	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	-	-	-	-	-	0.54	2.32	-
Vacant Residential Capacity Net Acres	0.16	-	-	-	-	-	-	4.82	20.89	-
Vacant Housing Capacity	2	-	-	-	-	-	-	29	84	-
Underutilized Residential Acres	0.52	0.24	-	-	64.51	-	-	10.33	36.51	-
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	0.52	0.24	-	-	64.51	-	-	10.33	36.51	-
Underutilized Roads Deduction	-	-	-	-	7.74	-	-	1.24	4.38	-
Underutilized Critical Areas Deduction	-	-	-	-	6.45	-	-	1.03	3.65	-
Underutilized Parks/Open Space Deduction	-	-	-	-	1.29	-	-	0.21	0.73	-
Underutilized Stormwater Deduction	-	-	-	-	1.94	-	-	0.31	1.10	-
Underutilized Acreage after Plat Deductions	0.52	0.24	-	-	47.09	-	-	7.54	26.65	-
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	0.26	0.12	-	-	9.42	-	-	1.51	5.33	-
Residential Capacity Net Acres	0.26	0.12	-	-	37.67	-	-	6.03	21.32	-
Adjusted Displaced Units	-	-	-	-	-	-	-	9	11	-
Underutilized Housing Capacity	**3**	**1**	-	-	**226**	-	-	**27**	**74**	-
Total Housing Capacity	**5**	**1**	-	-	**226**	-	-	**133**	**270**	-
Vacant Nonresidential Acres	0.92	-	13.21	-	-	9.49	-	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	0.92	-	13.21	-	-	9.49	-	-	-	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	0.09	-	1.32	-	-	0.95	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Capacity Net Acres	0.83	-	11.89	-	-	8.54	-	-	-	-
Vacant Employment Capacity	17	-	107	-	-	171	-	-	-	-
Underutilized Nonresidential Acres	2.95	1.36	-	-	-	4.06	-	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	2.95	1.36	-	-	-	4.06	-	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	1.48	0.68	-	-	-	2.03	-	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Capacity Net Acres	1.47	0.68	-	-	-	2.03	-	-	-	-
Adjusted Displaced Jobs	7	1	-	-	-	7	-	-	-	-
Underutilized Employment Capacity	**22**	**13**	-	-	-	**34**	-	-	-	-
Total Employment Capacity	**39**	**13**	**107**	-	-	**205**	-	-	-	-

Appendix Figure 21: Sumner Capacity Tables

See following page.

Zone	SUMNER CBD	SUMNER GC	SUMNER HDR	SUMNER IC	SUMNER LDR-12	SUMNER LDR-4	SUMNER LDR-6	SUMNER LDR-72	SUMNER LDR-85	SUMNER M1	SUMNER M2	SUMNER MDR
VISION 2050 Geography	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities
Vacant Gross Acres	-	10.89	3.42	33.20	53.50	-	0.59	-	6.54	145.35	5.43	11.15
Vacant Acres Used to Calculate Housing (Gross/Net)	-	9.20	2.93	31.16	24.33	-	0.59	-	4.47	40.28	5.43	10.31
Vacant Acres Used to Calculate Jobs (Gross/Net)	-	10.89	3.42	33.20	53.50	-	0.59	-	6.54	145.35	5.43	11.15
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Gross Acres	0.70	49.80	8.25	27.74	108.06	-	23.93	12.06	80.91	180.82	25.29	22.31
Underutilized Acres Used to Calculate Housing (Gross/Net)	0.70	47.16	8.25	25.36	49.09	-	22.39	12.06	52.59	109.33	25.12	22.31
Underutilized Acres Used to Calculate Jobs (Gross/Net)	0.70	49.80	8.25	27.74	108.06	-	23.93	12.06	80.91	180.82	25.29	22.31
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-	-	-
Displaced Units	1	21	18	6	9	-	25	11	29	15	8	47
Displaced Jobs	2	113	-	11	-	-	-	-	-	148	131	-
Displaced Adjustment	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Single Units	**-**	**-**	**2**	**-**	**10**	**-**	**23**	**5**	**5**	**-**	**-**	**4**
Pipeline Units	**-**	**-**	**-**	**-**	**2**	**-**	**69**	**3**	**2**	**-**	**-**	**49**
Pipeline Jobs	**-**	**-**	**-**	**474**	**-**	**-**	**-**	**-**	**-**	**361**	**-**	**-**
Vacant Residential Acres	-	0.92	2.93	-	24.33	-	0.59	-	4.47	-	-	10.31
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	0.92	2.93	-	24.33	-	0.59	-	4.47	-	-	10.31
Vacant Roads Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	0.92	2.93	-	24.33	-	0.59	-	4.47	-	-	10.31
Vacant Non-residential in Single Family Zones*	-	-	0.06	-	0.49	-	0.01	-	0.09	-	-	0.21
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	0.09	0.59	-	2.43	-	0.06	-	0.45	-	-	2.06
Vacant Residential Capacity Net Acres	-	0.83	2.28	-	21.41	-	0.52	-	3.93	-	-	8.04
Vacant Housing Capacity	-	21	27	-	86	-	3	-	20	-	-	96
Underutilized Residential Acres	0.70	4.72	8.25	-	49.09	-	22.39	12.06	52.59	-	-	22.31
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	0.70	4.72	8.25	-	49.09	-	22.39	12.06	52.59	-	-	22.31
Underutilized Roads Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	0.70	4.72	8.25	-	49.09	-	22.39	12.06	52.59	-	-	22.31
Underutilized Non-residential in Single Family Zones*	-	-	0.17	-	0.98	-	0.45	0.24	1.05	-	-	0.45
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	0.35	2.36	3.30	-	9.82	-	4.48	2.41	10.52	-	-	8.92
Residential Capacity Net Acres	0.35	2.36	4.78	-	38.29	-	17.46	9.41	41.02	-	-	12.94
Adjusted Displaced Units	1	11	11	3	3	-	19	9	15	8	4	28
Underutilized Housing Capacity	**8**	**48**	**46**	**(3)**	**150**	**-**	**68**	**38**	**190**	**(8)**	**(4)**	**127**
Total Housing Capacity	**8**	**69**	**75**	**(3)**	**248**	**-**	**163**	**46**	**217**	**(8)**	**(4)**	**276**
Vacant Nonresidential Acres	-	9.80	-	33.20	-	-	-	-	-	145.35	5.43	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	-	9.80	-	33.20	-	-	-	-	-	145.35	5.43	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	-	0.98	-	3.32	-	-	-	-	-	14.54	0.54	-
Vacant Nonresidential in Single Family Zones Addition	-	-	0.06	-	0.49	-	0.01	-	0.09	-	-	0.21
Vacant Nonresidential Capacity Net Acres	-	8.82	0.06	29.88	0.49	-	0.01	-	0.09	130.81	4.89	0.21
Vacant Employment Capacity	-	176	1	598	10	-	-	-	2	2,093	78	4
Underutilized Nonresidential Acres	0.70	44.82	-	27.74	-	-	-	-	-	180.82	25.29	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	0.70	44.82	-	27.74	-	-	-	-	-	180.82	25.29	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	0.35	22.41	-	13.87	-	-	-	-	-	90.41	12.65	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	0.17	-	0.98	-	0.45	0.24	1.05	-	-	0.45
Underutilized Nonresidential Capacity Net Acres	0.35	22.41	0.17	13.87	0.98	-	0.45	0.24	1.05	90.41	12.64	0.45
Adjusted Displaced Jobs	2	57	-	5	-	-	-	-	-	74	65	-
Underutilized Employment Capacity	**5**	**391**	**3**	**272**	**20**	**-**	**9**	**5**	**21**	**1,373**	**137**	**9**
Total Employment Capacity	**5**	**567**	**4**	**1,344**	**30**	**-**	**9**	**5**	**23**	**3,827**	**215**	**13**

SUMNER NC HCT Communities	SUMNER RES HCT Communities	SUMNER ROW HCT Communities	SUMNER TC-3 HCT Communities	SUMNER TC-4 HCT Communities	SUMNER TC-5 HCT Communities	SUMNER TC-6 HCT Communities
18.41	-	-	-	1.05	0.39	6.28
7.21	-	-	-	1.05	0.39	5.60
18.41	-	-	-	1.05	0.39	6.28
-	-	-	-	-	-	-
-	-	-	-	-	-	-
7.90	-	-	1.11	14.60	6.87	40.37
7.90	-	-	1.11	14.60	6.37	29.43
7.90	-	-	1.11	14.60	6.87	40.37
-	-	-	-	-	-	-
-	-	-	-	-	-	-
11	-	-	4	75	40	83
13	-	-	-	10	-	20
-	-	-	-	-	-	-
-	**-**	**-**	**-**	**-**	**1**	**-**
-	**-**	**-**	**-**	**-**	**-**	**-**
-	**-**	**-**	**-**	**-**	**9**	**-**
0.72	-	-	-	0.21	0.39	3.36
-	-	-	-	-	-	-
0.72	-	-	-	0.21	0.39	3.36
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
0.72	-	-	-	0.21	0.39	3.36
-	-	-	-	-	-	-
-	-	-	-	-	-	-
0.07	-	-	-	0.02	0.04	0.34
0.65	-	-	-	0.19	0.35	3.02
16	-	-	-	14	27	230
0.79	-	-	1.11	2.92	6.37	17.66
-	-	-	-	-	-	-
0.79	-	-	1.11	2.92	6.37	17.66
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
0.79	-	-	1.11	2.92	6.37	17.66
-	-	-	-	-	-	-
-	-	-	-	-	-	-
0.40	-	-	0.56	1.46	3.19	8.83
0.39	-	-	0.55	1.46	3.18	8.83
6	-	-	2	38	18	35
4	**-**	**-**	**40**	**73**	**224**	**636**
20	**-**	**-**	**40**	**87**	**252**	**866**
16.57	-	-	-	0.84	-	2.51
-	-	-	-	-	-	-
16.57	-	-	-	0.84	-	2.51
-	-	-	-	-	-	-
1.66	-	-	-	0.08	-	0.25
-	-	-	-	-	-	-
14.91	-	-	-	0.76	-	2.26
298	-	-	-	15	-	45
7.11	-	-	-	11.68	-	16.15
-	-	-	-	-	-	-
7.11	-	-	-	11.68	-	16.15
-	-	-	-	-	-	-
3.56	-	-	-	5.84	-	8.08
-	-	-	-	-	-	-
3.55	-	-	-	5.84	-	8.07
6	-	-	-	5	-	8
65	**-**	**-**	**-**	**112**	**-**	**153**
363	**-**	**-**	**-**	**127**	**9**	**198**

Appendix Figure 22: Tacoma Capacity Tables

See following page.

Zone	TACOMA C1	TACOMA C2	TACOMA CCX	TACOMA CIX	TACOMA DCC	TACOMA DMU	TACOMA DR	TACOMA HMR-SRD	TACOMA HMX	TACOMA M1	TACOMA M2	TACOMA NCX
VISION 2050 Geography	Metropolitan City	Metropolitan City	Metropolitan City	Metropolitan City	Metropolitan City	Metropolitan City	Metropolitan City	Metropolitan City	Metropolitan City	Metropolitan City	Metropolitan City	Metropolitan City
Vacant Gross Acres	9.23	14.02	20.29	0.85	1.32	13.96	18.09	-	0.07	19.42	74.76	7.24
Vacant Acres Used to Calculate Housing (Gross/Net)	9.23	14.02	20.29	0.85	1.32	13.96	18.09	-	0.07	19.42	74.76	7.24
Vacant Acres Used to Calculate Jobs (Gross/Net)	9.23	14.02	20.29	0.85	1.32	13.96	18.09	-	0.07	19.42	74.76	7.24
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-	0.72	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-	0.72	-
Underutilized Gross Acres	41.37	184.25	102.95	35.70	30.28	44.48	58.80	-	16.22	115.58	186.32	99.74
Underutilized Acres Used to Calculate Housing (Gross/Net)	41.37	184.25	102.95	35.70	30.28	44.48	58.80	-	16.22	115.58	186.32	99.74
Underutilized Acres Used to Calculate Jobs (Gross/Net)	41.37	184.25	102.95	35.70	30.28	44.48	58.80	-	16.22	115.58	186.32	99.74
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-	-	-	1.83	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-	-	-	1.83	-
Displaced Units	19	51	212	3	22	83	718	-	51	13	1	719
Displaced Jobs	362	1,538	945	724	2,190	952	779	-	55	400	699	1,885
Displaced Adjustment	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Single Units	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**7**	**-**	**-**	**-**	**-**
Pipeline Units	**-**	**17**	**-**	**-**	**-**	**-**	**78**	**-**	**-**	**-**	**-**	**-**
Pipeline Jobs	**16**	**367**	**27**	**-**	**-**	**-**	**5**	**-**	**149**	**11**	**503**	**-**
Vacant Residential Acres	-	1.40	10.15	0.04	0.66	9.77	14.47	-	-	-	-	5.43
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	1.40	10.15	0.04	0.66	9.77	14.47	-	-	-	-	5.43
Vacant Roads Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	1.40	10.15	0.04	0.66	9.77	14.47	-	-	-	-	5.43
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	0.07	0.51	-	0.03	0.49	0.72	-	-	-	-	0.27
Vacant Residential Capacity Net Acres	-	1.33	9.64	0.04	0.63	9.28	13.75	-	-	-	-	5.16
Vacant Housing Capacity	-	53	733	-	164	1,782	2,668	-	-	-	-	470
Underutilized Residential Acres	-	18.42	51.47	1.79	15.14	31.14	47.04	-	-	-	-	74.81
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	18.42	51.47	1.79	15.14	31.14	47.04	-	-	-	-	74.81
Underutilized Roads Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	18.42	51.47	1.79	15.14	31.14	47.04	-	-	-	-	74.81
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	4.61	7.72	0.27	2.27	4.67	7.06	-	-	-	-	11.22
Residential Capacity Net Acres	-	13.81	43.75	1.52	12.87	26.47	39.98	-	-	-	-	63.59
Adjusted Displaced Units	14	38	180	3	19	71	610	-	38	10	1	611
Underutilized Housing Capacity	**(14)**	**514**	**3,145**	**9**	**3,340**	**5,011**	**7,146**	**-**	**(38)**	**(10)**	**(1)**	**5,176**
Total Housing Capacity	**(14)**	**584**	**3,878**	**10**	**3,504**	**6,793**	**9,892**	**7**	**(38)**	**(10)**	**(1)**	**5,646**
Vacant Nonresidential Acres	9.23	12.62	10.15	0.81	0.66	4.19	3.62	-	0.07	19.42	74.76	1.81
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	9.23	12.62	10.15	0.81	0.66	4.19	3.62	-	0.07	19.42	74.76	1.81
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	0.46	0.63	0.51	0.04	0.03	0.21	0.18	-	-	0.97	3.74	0.09
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Capacity Net Acres	8.77	11.99	9.64	0.77	0.63	3.98	3.44	-	0.07	18.45	71.02	1.72
Vacant Employment Capacity	219	300	1,957	297	439	876	444	-	57	461	3,551	139
Underutilized Nonresidential Acres	41.37	165.82	51.47	33.92	15.14	13.34	11.76	-	16.22	115.58	186.32	24.94
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	41.37	165.82	51.47	33.92	15.14	13.34	11.76	-	16.22	115.58	186.32	24.94
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	10.34	41.46	7.72	5.09	2.27	2.00	1.76	-	4.06	28.90	46.58	3.74
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Capacity Net Acres	31.03	124.36	43.75	28.83	12.87	11.34	10.00	-	12.16	86.68	139.74	21.20
Adjusted Displaced Jobs	271	1,153	803	615	1,861	809	662	-	41	300	524	1,603
Underutilized Employment Capacity	**505**	**1,956**	**8,078**	**10,513**	**7,109**	**1,686**	**628**	**-**	**9,845**	**1,867**	**6,463**	**114**
Total Employment Capacity	**740**	**2,623**	**10,062**	**10,810**	**7,548**	**2,562**	**1,077**	**-**	**10,051**	**2,339**	**10,517**	**253**

TACOMA NRX Metropolitan City	TACOMA PDB Metropolitan City	TACOMA PMI Metropolitan City	TACOMA R1 Metropolitan City	TACOMA R2 Metropolitan City	TACOMA R2-SRD Metropolitan City	TACOMA R3 Metropolitan City	TACOMA R4 Metropolitan City	TACOMA R4L Metropolitan City	TACOMA R5 Metropolitan City	TACOMA RCX Metropolitan City	TACOMA S10 Metropolitan City	TACOMA S11 Metropolitan City	TACOMA S12 Metropolitan City	TACOMA S13 Metropolitan City
0.11	0.69	135.59	84.23	554.40	7.20	20.45	7.90	16.54	-	10.47	-	-	-	-
0.11	0.69	135.59	84.23	554.40	7.20	20.45	7.90	16.54	-	10.47	-	-	-	-
0.11	0.69	135.59	84.23	554.40	7.20	20.45	7.90	16.54	-	10.47	-	-	-	-
-	-	0.47	0.29	2.92	-	0.25	-	-	-	-	-	-	-	-
-	-	0.47	0.29	2.92	-	0.25	-	-	-	-	-	-	-	-
3.05	8.45	432.67	159.29	732.33	74.37	66.47	31.22	65.00	0.15	63.79	-	-	-	-
3.05	8.45	432.67	159.29	732.33	74.37	66.47	31.22	65.00	0.15	63.79	-	-	-	-
3.05	8.45	432.67	159.29	732.33	74.37	66.47	31.22	65.00	0.15	63.79	-	-	-	-
-	-	0.25	7.11	5.77	-	-	-	-	-	-	-	-	-	-
-	-	0.25	7.11	5.77	-	-	-	-	-	-	-	-	-	-
64	-	-	256	876	309	190	258	204	1	842	-	-	-	-
-	6	967	-	-	-	-	-	-	-	77	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**-**	**-**	**84**	**1,031**	**40**	**24**	**-**	**13**	**-**	**-**	**-**	**1**	**-**	**-**
-	**-**	**-**	**-**	**74**	**-**	**16**	**58**	**-**	**-**	**15**	**-**	**-**	**-**	**-**
-	**-**	**918**	**-**	**176**	**-**	**-**	**8**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
0.10	-	-	84.23	554.40	7.20	20.45	7.90	16.54	-	9.42	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.10	-	-	84.23	554.40	7.20	20.45	7.90	16.54	-	9.42	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	12.63	83.16	1.08	3.07	1.19	2.48	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.10	-	-	71.60	471.24	6.12	17.38	6.71	14.06	-	9.42	-	-	-	-
-	-	-	2.15	14.14	0.18	0.52	0.20	0.42	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.01	-	-	3.58	23.56	0.31	0.87	0.34	0.70	-	0.47	-	-	-	-
0.09	-	-	65.87	433.54	5.63	15.99	6.17	12.94	-	8.95	-	-	-	-
8	-	-	395	2,601	84	224	284	220	-	1,226	-	-	-	-
2.90	-	-	159.29	732.33	74.37	66.47	31.22	65.00	0.15	57.41	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.90	-	-	159.29	732.33	74.37	66.47	31.22	65.00	0.15	57.41	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	7.96	36.62	3.72	3.32	1.56	3.25	0.01	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.90	-	-	151.33	695.71	70.65	63.15	29.66	61.75	0.14	57.41	-	-	-	-
-	-	-	4.54	20.87	2.12	1.89	0.89	1.85	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.44	-	-	37.83	173.93	17.66	15.79	7.42	15.44	0.04	8.61	-	-	-	-
2.46	-	-	108.96	500.91	50.87	45.47	21.35	44.46	0.10	48.80	-	-	-	-
54	-	-	182	622	219	135	183	145	1	716	-	-	-	-
160	**-**	**-**	**472**	**2,383**	**544**	**502**	**799**	**611**	**5**	**5,970**	**-**	**-**	**-**	**-**
168	**-**	**-**	**951**	**6,089**	**668**	**766**	**1,141**	**844**	**5**	**7,211**	**-**	**1**	**-**	**-**
0.01	0.69	135.59	-	-	-	-	-	-	-	1.05	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.01	0.69	135.59	-	-	-	-	-	-	-	1.05	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0.03	6.78	-	-	-	-	-	-	-	0.05	-	-	-	-
-	-	-	2.15	14.14	0.18	0.52	0.20	0.42	-	-	-	-	-	-
0.01	0.66	128.81	2.15	14.14	0.18	0.52	0.20	0.42	-	1.00	-	-	-	-
-	13	3,220	43	283	4	10	4	8	-	41	-	-	-	-
0.15	8.45	432.67	-	-	-	-	-	-	-	6.38	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.15	8.45	432.67	-	-	-	-	-	-	-	6.38	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.02	2.11	108.17	-	-	-	-	-	-	-	0.96	-	-	-	-
-	-	-	4.54	20.87	2.12	1.89	0.89	1.85	-	-	-	-	-	-
0.13	6.34	324.50	4.54	20.87	2.12	1.89	0.89	1.85	-	5.42	-	-	-	-
-	4	725	-	-	-	-	-	-	-	65	-	-	-	-
2	**123**	**7,388**	**91**	**417**	**42**	**38**	**18**	**37**	**-**	**157**	**-**	**-**	**-**	**-**
2	**136**	**11,526**	**134**	**876**	**46**	**48**	**30**	**45**	**-**	**198**	**-**	**-**	**-**	**-**

TACOMA S14 Metropolitan City	TACOMA S15 Metropolitan City	TACOMA S1a Metropolitan City	TACOMA S1b Metropolitan City	TACOMA S2 Metropolitan City	TACOMA S3 Metropolitan City	TACOMA S6 Metropolitan City	TACOMA S6/7 Metropolitan City	TACOMA S7 Metropolitan City	TACOMA S8 Metropolitan City	TACOMA S9 Metropolitan City	TACOMA T Metropolitan City	TACOMA UCX Metropolitan City	TACOMA URX Metropolitan City	TACOMA WR Metropolitan City
-	0.50	-	-	-	-	-	-	-	3.38	1.22	8.29	6.98	5.05	11.04
-	0.50	-	-	-	-	-	-	-	3.38	1.22	8.29	6.98	5.05	11.04
-	0.50	-	-	-	-	-	-	-	3.38	1.22	8.29	6.98	5.05	11.04
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	16.95	3.49	29.57	81.23	119.23	33.89
-	-	-	-	-	-	-	-	-	16.95	3.49	29.57	81.23	119.23	33.89
-	-	-	-	-	-	-	-	-	16.95	3.49	29.57	81.23	119.23	33.89
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	98	160	1,546	24
-	-	-	-	-	-	-	-	-	93	25	106	857	-	1,381
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**25**	**-**	**-**	**-**
-	**561**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**4**	**-**	**10**	**-**
-	**70**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**15**	**5**	**-**	**10**
-	0.35	-	-	-	-	-	-	-	1.69	-	2.07	3.49	4.54	7.73
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0.35	-	-	-	-	-	-	-	1.69	-	2.07	3.49	4.54	7.73
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0.35	-	-	-	-	-	-	-	1.69	-	2.07	3.49	4.54	7.73
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0.02	-	-	-	-	-	-	-	0.08	-	0.10	0.17	0.23	0.39
-	0.33	-	-	-	-	-	-	-	1.61	-	1.97	3.32	4.31	7.34
-	13	-	-	-	-	-	-	-	145	-	71	302	500	1,409
-	-	-	-	-	-	-	-	-	8.47	-	7.39	40.61	107.31	23.72
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	8.47	-	7.39	40.61	107.31	23.72
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	8.47	-	7.39	40.61	107.31	23.72
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	1.27	-	1.11	6.09	16.10	3.56
-	-	-	-	-	-	-	-	-	7.20	-	6.28	34.52	91.21	20.16
-	-	-	-	-	-	-	-	-	-	-	83	136	1,314	20
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**648**	**-**	**143**	**3,005**	**9,266**	**3,851**
-	**574**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**793**	**-**	**243**	**3,307**	**9,776**	**5,260**
-	0.15	-	-	-	-	-	-	-	1.69	1.22	6.22	3.49	0.50	3.31
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0.15	-	-	-	-	-	-	-	1.69	1.22	6.22	3.49	0.50	3.31
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0.01	-	-	-	-	-	-	-	0.08	0.06	0.31	0.17	0.03	0.17
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0.14	-	-	-	-	-	-	-	1.61	1.16	5.91	3.32	0.47	3.14
-	4	-	-	-	-	-	-	-	386	22	148	810	8	691
-	-	-	-	-	-	-	-	-	8.47	3.49	22.18	40.61	11.92	10.17
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	8.47	3.49	22.18	40.61	11.92	10.17
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	1.27	0.87	3.33	6.09	1.79	1.53
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	7.20	2.62	18.85	34.52	10.13	8.64
-	-	-	-	-	-	-	-	-	79	19	90	728	-	1,174
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1,649**	**30**	**381**	**7,695**	**162**	**727**
-	**74**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2,035**	**52**	**544**	**8,510**	**170**	**1,428**

TACOMA WTR Metropolitan City
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Appendix Figure 23: University Place Capacity Tables

See following page.

Zone	UNIVERSITY PLACE MF-H	UNIVERSITY PLACE MF-L	UNIVERSITY PLACE MU	UNIVERSITY PLACE MU-C	UNIVERSITY PLACE MU-C-S	UNIVERSITY PLACE MU-M	UNIVERSITY PLACE MU-N45	UNIVERSITY PLACE MU-O
VISION 2050 Geography	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities	Core Cities
Vacant Gross Acres	8.75	17.01	-	-	-	-	8.68	0.48
Vacant Acres Used to Calculate Housing (Gross/Net)	8.75	4.26	-	-	-	-	7.33	0.48
Vacant Acres Used to Calculate Jobs (Gross/Net)	8.75	17.01	-	-	-	-	8.68	0.48
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-
Underutilized Gross Acres	0.64	2.05	2.67	3.09	20.93	-	68.77	-
Underutilized Acres Used to Calculate Housing (Gross/Net)	0.64	2.05	2.37	3.09	20.93	-	68.21	-
Underutilized Acres Used to Calculate Jobs (Gross/Net)	0.64	2.05	2.67	3.09	20.93	-	68.77	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-	-	-
Displaced Units	2	28	10	-	-	-	349	-
Displaced Jobs	-	-	3	65	133	-	339	-
Displaced Adjustment	-	-	-	-	-	-	-	-
Vacant Single Units	-	**7**	-	-	-	-	-	-
Pipeline Units	-	-	-	-	**272**	-	**26**	-
Pipeline Jobs	-	-	-	-	-	-	-	-
Vacant Residential Acres	8.75	4.26	-	-	-	-	5.13	0.05
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	8.75	4.26	-	-	-	-	5.13	0.05
Vacant Roads Deduction	-	-	-	-	-	-	-	-
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	8.75	4.26	-	-	-	-	5.13	0.05
Vacant Non-residential in Single Family Zones*	0.18	0.09	-	-	-	-	-	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	0.88	0.43	-	-	-	-	0.51	0.01
Vacant Residential Capacity Net Acres	7.69	3.74	-	-	-	-	4.62	0.04
Vacant Housing Capacity	308	112	-	-	-	-	185	1
Underutilized Residential Acres	0.64	2.05	1.19	2.16	20.93	-	47.75	-
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	0.64	2.05	1.19	2.16	20.93	-	47.75	-
Underutilized Roads Deduction	-	-	-	-	-	-	-	-
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	0.64	2.05	1.19	2.16	20.93	-	47.75	-
Underutilized Non-residential in Single Family Zones*	0.01	0.04	-	-	-	-	-	-
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	0.13	0.41	0.24	0.43	4.19	-	9.55	-
Residential Capacity Net Acres	0.50	1.60	0.95	1.73	16.74	-	38.20	-
Adjusted Displaced Units	2	22	8	-	-	-	279	-
Underutilized Housing Capacity	**18**	**26**	**25**	**173**	**1,674**	-	**1,249**	-
Total Housing Capacity	**326**	**145**	**25**	**173**	**1,946**	-	**1,460**	**1**
Vacant Nonresidential Acres	-	-	-	-	-	-	2.61	0.43
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	-	-	-	-	-	-	2.61	0.43
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	-	-	-	-	-	-	0.26	0.04
Vacant Nonresidential in Single Family Zones Addition	0.18	0.09	-	-	-	-	-	-
Vacant Nonresidential Capacity Net Acres	0.18	0.09	-	-	-	-	2.35	0.39
Vacant Employment Capacity	4	2	-	-	-	-	59	8
Underutilized Nonresidential Acres	-	-	1.33	0.93	20.93	-	20.63	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	-	-	1.33	0.93	20.93	-	20.63	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	-	-	0.27	0.19	5.23	-	4.13	-
Underutilized Nonresidential in Single Family Zones Addition	0.01	0.04	-	-	-	-	-	-
Underutilized Nonresidential Capacity Net Acres	0.01	0.04	1.06	0.74	15.70	-	16.50	-
Adjusted Displaced Jobs	-	-	2	52	206	-	272	-
Underutilized Employment Capacity	-	**1**	**25**	**(33)**	**187**	-	**141**	-
Total Employment Capacity	**4**	**3**	**25**	**(33)**	**187**	-	**200**	**8**

UNIVERSITY PLACE MU-U/I Core Cities	UNIVERSITY PLACE MU-U75 Core Cities	UNIVERSITY PLACE MU-U75-S Core Cities	UNIVERSITY PLACE NC Core Cities	UNIVERSITY PLACE POS Core Cities	UNIVERSITY PLACE R1 Core Cities	UNIVERSITY PLACE R2 Core Cities	UNIVERSITY PLACE ROW Core Cities	UNIVERSITY PLACE WTR Core Cities
1.63	4.99	4.71	1.30	-	27.89	15.42	-	-
1.24	3.55	4.44	1.11	-	22.66	10.64	-	-
1.63	4.99	4.71	1.30	-	27.89	15.42	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
21.63	13.98	38.32	3.98	-	73.86	90.68	-	-
20.50	10.15	36.30	3.66	-	63.31	58.35	-	-
21.63	13.98	38.32	3.98	-	73.86	90.68	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
2	40	3	-	-	62	65	-	-
235	56	387	19	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	**-**	**-**	**-**	**-**	**142**	**49**	**-**	**-**
-	**184**	**689**	**-**	**-**	**14**	**-**	**-**	**-**
-	**-**	**40**	**-**	**-**	**-**	**-**	**-**	**-**
0.31	1.42	4.44	-	-	22.66	10.64	-	-
-	-	-	-	-	-	-	-	-
0.31	1.42	4.44	-	-	22.66	10.64	-	-
-	-	-	-	-	3.40	1.60	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	1.59	0.74	-	-
-	-	-	-	-	0.45	0.21	-	-
0.31	1.42	4.44	-	-	17.22	8.09	-	-
-	-	-	-	-	0.34	0.16	-	-
-	-	-	-	-	-	-	-	-
0.03	0.14	0.44	-	-	1.72	0.81	-	-
0.28	1.28	4.00	-	-	15.16	7.12	-	-
22	102	320	-	-	61	43	-	-
5.13	4.06	36.30	-	-	63.31	58.35	-	-
-	-	-	-	-	-	-	-	-
5.13	4.06	36.30	-	-	63.31	58.35	-	-
-	-	-	-	-	9.50	8.75	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	4.43	4.08	-	-
-	-	-	-	-	1.27	1.17	-	-
5.13	4.06	36.30	-	-	48.11	44.35	-	-
-	-	-	-	-	0.96	0.89	-	-
-	-	-	-	-	-	-	-	-
1.03	0.81	7.26	-	-	4.81	4.44	-	-
4.10	3.25	29.04	-	-	42.34	39.02	-	-
2	28	5	-	-	37	29	-	-
326	**232**	**2,318**	**-**	**-**	**132**	**205**	**-**	**-**
348	**518**	**3,327**	**-**	**-**	**349**	**297**	**-**	**-**
1.23	2.99	4.71	1.30	-	-	-	-	-
-	-	-	-	-	-	-	-	-
1.23	2.99	4.71	1.30	-	-	-	-	-
-	-	-	-	-	-	-	-	-
0.12	0.30	0.94	0.13	-	-	-	-	-
-	-	-	-	-	0.34	0.16	-	-
1.11	2.69	3.77	1.17	-	0.34	0.16	-	-
33	67	94	23	-	7	3	-	-
16.22	8.39	38.32	3.98	-	-	-	-	-
-	-	-	-	-	-	-	-	-
16.22	8.39	38.32	3.98	-	-	-	-	-
-	-	-	-	-	-	-	-	-
3.24	1.68	9.58	1.99	-	-	-	-	-
-	-	-	-	-	0.96	0.89	-	-
12.98	6.71	28.74	1.99	-	0.96	0.89	-	-
186	40	584	9	-	-	-	-	-
203	**128**	**135**	**31**	**-**	**19**	**18**	**-**	**-**
236	**195**	**269**	**54**	**-**	**26**	**21**	**-**	**-**

Appendix Figure 24: Wilkeson Capacity Tables

See following page.

Zone	WILKESON C	WILKESON P	WILKESON R-1	WILKESON R-2	WILKESON R-3	WILKESON ROW
VISION 2050 Geography	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns	Cities and Towns
Vacant Gross Acres	0.21	-	8.12	9.60	1.94	-
Vacant Acres Used to Calculate Housing (Gross/Net)	0.21	-	4.37	2.30	0.86	-
Vacant Acres Used to Calculate Jobs (Gross/Net)	0.21	-	8.12	9.60	1.94	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-
Underutilized Gross Acres	2.56	0.21	14.07	18.59	2.54	-
Underutilized Acres Used to Calculate Housing (Gross/Net)	2.37	0.21	11.76	12.40	1.83	-
Underutilized Acres Used to Calculate Jobs (Gross/Net)	2.56	0.21	14.07	18.59	2.54	-
Acres with Infrastructure Gaps (Residential Calculation)	-	-	-	-	-	-
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	-	-	-	-
Displaced Units	4	-	4	17	1	-
Displaced Jobs	-	-	-	-	-	-
Displaced Adjustment	-	-	-	-	-	-
Vacant Single Units	-	-	-	14	1	-
Pipeline Units	-	-	-	-	-	-
Pipeline Jobs	-	-	-	-	-	-
Vacant Residential Acres	-	-	4.37	2.30	0.86	-
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-
Adjusted Vacant Residential Acreage	-	-	4.37	2.30	0.86	-
Vacant Roads Deduction	-	-	0.87	0.46	0.17	-
Vacant Critical Areas Deduction	-	-	1.53	0.81	0.30	-
Vacant Parks/Open Space Deduction	-	-	0.87	0.46	0.17	-
Vacant Stormwater Deduction	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	-	1.10	0.57	0.22	-
Vacant Non-residential in Single Family Zones*	-	-	0.03	0.02	0.01	-
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	-	0.28	0.14	0.06	-
Vacant Residential Capacity Net Acres	-	-	0.79	0.41	0.15	-
Vacant Housing Capacity	-	-	4	2	1	-
Underutilized Residential Acres	-	-	11.76	12.40	1.83	-
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-
Adjusted Underutilized Residential Acreage	-	-	11.76	12.40	1.83	-
Underutilized Roads Deduction	-	-	2.35	2.48	0.37	-
Underutilized Critical Areas Deduction	-	-	4.12	4.34	0.64	-
Underutilized Parks/Open Space Deduction	-	-	2.35	2.48	0.37	-
Underutilized Stormwater Deduction	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	-	2.94	3.10	0.45	-
Underutilized Non-residential in Single Family Zones*	-	-	0.09	0.09	0.01	-
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	-	0.74	0.78	0.11	-
Residential Capacity Net Acres	-	-	2.11	2.23	0.33	-
Adjusted Displaced Units	2	-	1	2	-	-
Underutilized Housing Capacity	(2)	-	10	11	2	-
Total Housing Capacity	(2)	-	14	27	4	-
Vacant Nonresidential Acres	0.21	-	-	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-
Adjusted Vacant Nonresidential Acreage	0.21	-	-	-	-	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	0.02	-	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	0.03	0.02	0.01	-
Vacant Nonresidential Capacity Net Acres	0.19	-	0.03	0.02	0.01	-
Vacant Employment Capacity	4	-	1	-	-	-
Underutilized Nonresidential Acres	2.56	0.21	-	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	-	-	-	-
Adjusted Underutilized Nonresidential Acres	2.56	0.21	-	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	1.28	0.11	-	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	0.09	0.09	0.01	-
Underutilized Nonresidential Capacity Net Acres	1.28	0.10	0.09	0.09	0.01	-
Adjusted Displaced Jobs	-	-	-	-	-	-
Underutilized Employment Capacity	26	2	2	2	-	-
Total Employment Capacity	30	2	3	2	-	-

Appendix Figure 25: Unincorporated Urban Pierce County Capacity Tables

See following page.

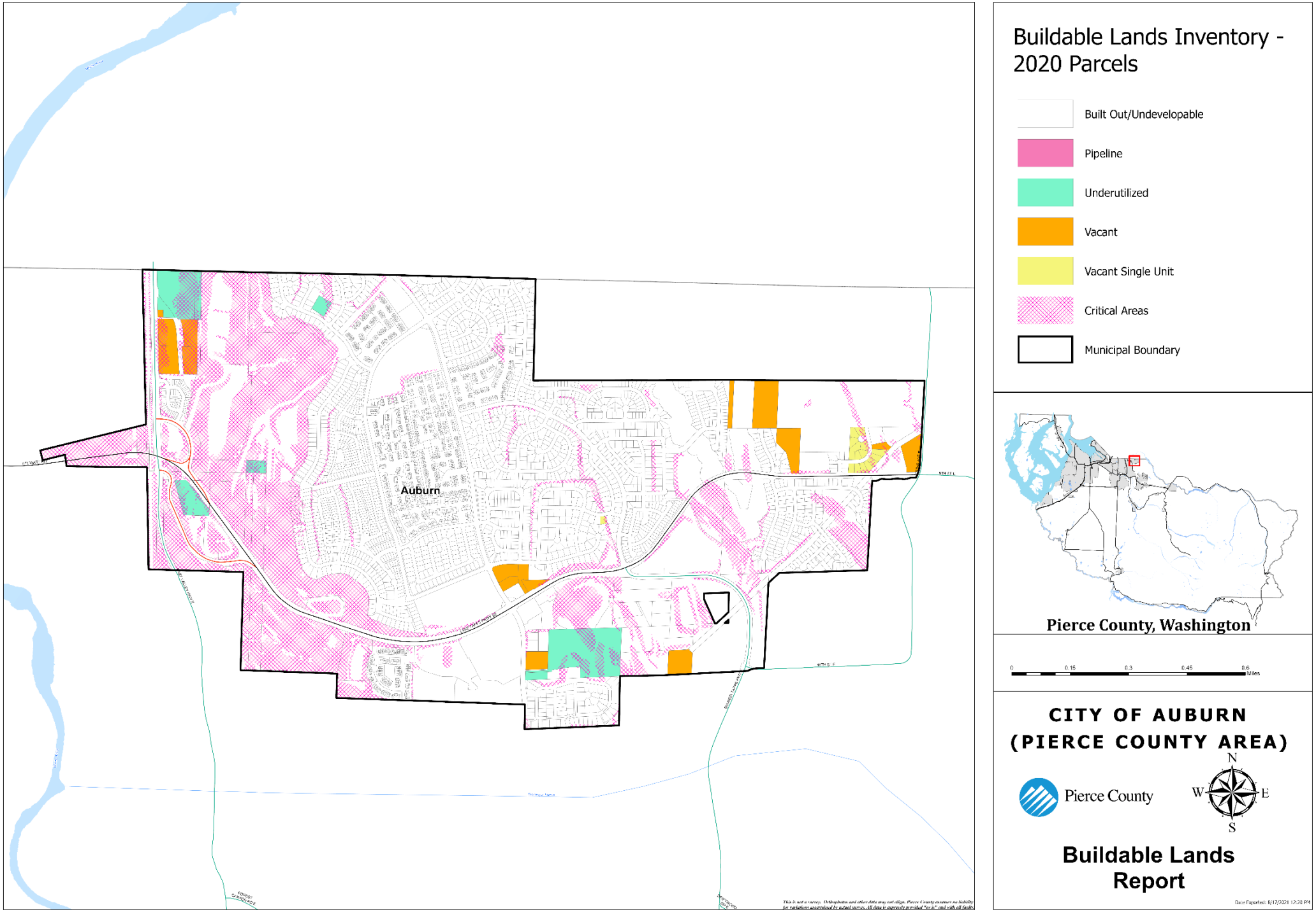
Zone	PIERCE COUNTY AC	PIERCE COUNTY CC	PIERCE COUNTY CE	PIERCE COUNTY EBPC	PIERCE COUNTY EC	PIERCE COUNTY ECor	PIERCE COUNTY HSF	PIERCE COUNTY MHR	PIERCE COUNTY MPC	PIERCE COUNTY MSF
VISION 2050 Geography	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities	HCT Communities
Vacant Gross Acres	-	3.07	29.20	-	238.85	201.65	66.64	31.16	164.42	195.15
Vacant Acres Used to Calculate Housing (Gross/Net)	-	2.07	25.97	-	149.92	128.30	53.14	29.17	144.27	169.76
Vacant Acres Used to Calculate Jobs (Gross/Net)	-	3.07	29.20	-	238.85	201.65	66.64	31.16	164.42	195.15
Acres with Infrastructure Gaps (Residential Calculation)	-	-	0.27	-	12.28	10.48	3.06	2.73	81.41	53.29
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	0.27	-	12.28	10.48	3.06	2.73	81.41	53.29
Underutilized Gross Acres	-	-	95.04	-	81.12	491.02	103.88	57.56	-	1,533.62
Underutilized Acres Used to Calculate Housing (Gross/Net)	-	-	90.75	-	71.06	419.57	103.14	55.45	-	1,402.52
Underutilized Acres Used to Calculate Jobs (Gross/Net)	-	-	95.04	-	81.12	491.02	103.88	57.56	-	1,533.62
Acres with Infrastructure Gaps (Residential Calculation)	-	-	6.39	-	47.17	51.48	41.85	19.05	-	453.09
Acres with Infrastructure Gaps (Nonresidential Calculation)	-	-	6.39	-	47.17	51.48	41.85	19.05	-	453.09
Displaced Units	-	-	64	-	25	219	133	40	-	910
Displaced Jobs	-	-	87	-	25	196	-	-	-	-
Displaced Adjustment	-	-	-	-	-	-	-	-	-	-
Vacant Single Units	**-**	**-**	**-**	**-**	**-**	**-**	**109**	**2**	**76**	**267**
Pipeline Units	**-**	**-**	**3**	**-**	**4**	**-**	**174**	**-**	**1,310**	**461**
Pipeline Jobs	**-**	**-**	**85**	**-**	**-**	**44**	**-**	**-**	**-**	**1**
Vacant Residential Acres	-	0.73	-	-	-	-	53.14	29.17	-	169.76
Vacant Residential Infrastructure Gap Deduction	-	-	-	-	-	-	0.92	0.82	-	15.99
Adjusted Vacant Residential Acreage	-	0.73	-	-	-	-	52.22	28.35	-	153.77
Vacant Roads Deduction	-	-	-	-	-	-	7.83	-	-	23.07
Vacant Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-
Vacant Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-
Vacant Stormwater Deduction	-	-	-	-	-	-	-	-	-	-
Vacant Acreage after Plat Deductions	-	0.73	-	-	-	-	44.39	28.35	-	130.70
Vacant Non-residential in Single Family Zones*	-	-	-	-	-	-	0.89	0.57	-	2.61
Vacant Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-
Vacant Residential Market Factor Deduction	-	0.15	-	-	-	-	4.44	5.67	-	13.07
Vacant Residential Capacity Net Acres	-	0.58	-	-	-	-	39.06	22.11	-	115.02
Vacant Housing Capacity	-	12	-	-	-	-	234	177	-	460
Underutilized Residential Acres	-	-	-	-	-	-	103.14	55.45	-	1,402.52
Underutilized Residential Infrastructure Gap Deduction	-	-	-	-	-	-	12.56	5.72	-	135.93
Adjusted Underutilized Residential Acreage	-	-	-	-	-	-	90.58	49.73	-	1,266.59
Underutilized Roads Deduction	-	-	-	-	-	-	13.59	-	-	189.99
Underutilized Critical Areas Deduction	-	-	-	-	-	-	-	-	-	-
Underutilized Parks/Open Space Deduction	-	-	-	-	-	-	-	-	-	-
Underutilized Stormwater Deduction	-	-	-	-	-	-	-	-	-	-
Underutilized Acreage after Plat Deductions	-	-	-	-	-	-	76.99	49.73	-	1,076.60
Underutilized Non-residential in Single Family Zones*	-	-	-	-	-	-	1.54	0.99	-	21.53
Underutilized Residential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-
Underutilized Residential Market Factor Deduction	-	-	-	-	-	-	15.40	19.89	-	215.32
Residential Capacity Net Acres	-	-	-	-	-	-	60.05	28.85	-	839.75
Adjusted Displaced Units	-	-	31	-	11	107	78	21	-	510
Underutilized Housing Capacity	-	-	**(31)**	-	**(11)**	**(107)**	**282**	**210**	-	**2,849**
Total Housing Capacity	**-**	**12**	**(28)**	**-**	**(7)**	**(107)**	**799**	**389**	**1,386**	**4,037**
Vacant Nonresidential Acres	-	2.00	29.20	-	238.85	201.65	-	-	-	-
Vacant Nonresidential Infrastructure Gap Deduction	-	-	0.05	-	2.46	2.10	-	-	-	-
Adjusted Vacant Nonresidential Acreage	-	2.00	29.15	-	236.39	199.55	-	-	-	-
Vacant Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-
Vacant Nonresidential Market Factor Deduction	-	0.20	2.91	-	23.64	19.96	-	-	-	-
Vacant Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	0.89	0.57	-	2.61
Vacant Nonresidential Capacity Net Acres	-	1.80	26.24	-	212.75	179.59	0.89	0.57	-	2.61
Vacant Employment Capacity	-	36	236	-	1,915	1,616	18	11	-	52
Underutilized Nonresidential Acres	-	-	95.04	-	81.12	491.02	-	-	-	-
Underutilized Nonresidential Infrastructure Gap Deduction	-	-	1.28	-	9.43	10.30	-	-	-	-
Adjusted Underutilized Nonresidential Acres	-	-	93.76	-	71.69	480.72	-	-	-	-
Underutilized Nonresidential Capital Facilities Deduction	-	-	-	-	-	-	-	-	-	-
Underutilized Nonresidential Market Factor Deduction	-	-	46.88	-	35.84	240.36	-	-	-	-
Underutilized Nonresidential in Single Family Zones Addition	-	-	-	-	-	-	1.54	0.99	-	21.53
Underutilized Nonresidential Capacity Net Acres	-	-	46.88	-	35.85	240.36	1.54	0.99	-	21.53
Adjusted Displaced Jobs	-	-	42	-	11	96	-	-	-	-
Underutilized Employment Capacity	-	-	**380**	-	**312**	**2,067**	**31**	**20**	-	**431**
Total Employment Capacity	**-**	**36**	**701**	**-**	**2,227**	**3,727**	**49**	**31**	**-**	**484**

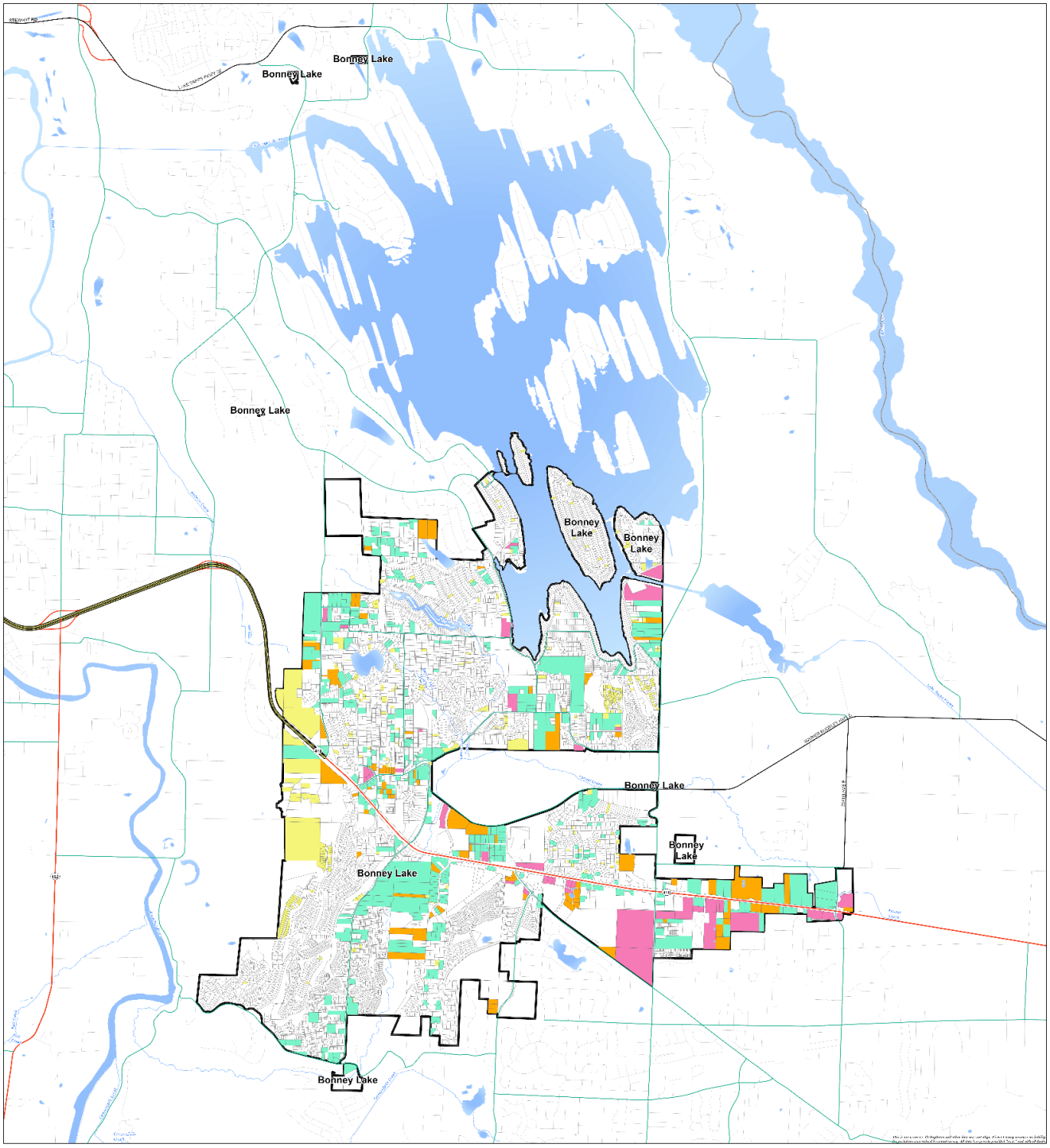
PIERCE COUNTY MUC HCT Communities	PIERCE COUNTY MUD HCT Communities	PIERCE COUNTY NC HCT Communities	PIERCE COUNTY NCor HCT Communities	PIERCE COUNTY PI HCT Communities	PIERCE COUNTY PR HCT Communities	PIERCE COUNTY ROC HCT Communities	PIERCE COUNTY RR HCT Communities	PIERCE COUNTY SF HCT Communities	PIERCE COUNTY TCtr HCT Communities	PIERCE COUNTY TCtr SH HCT Communities	PIERCE COUNTY UCor HCT Communities	PIERCE COUNTY UCor SH HCT Communities
-	47.30	10.55	65.14	-	-	5.63	321.70	71.77	29.84	18.15	131.05	47.01
-	37.01	9.15	55.39	-	-	5.16	210.20	61.75	29.66	14.16	101.19	46.85
-	47.30	10.55	65.14	-	-	5.63	321.70	71.77	29.84	18.15	131.05	47.01
-	28.18	1.14	6.26	-	-	-	111.59	14.63	-	-	18.82	1.24
-	28.18	1.14	6.26	-	-	-	111.59	14.63	-	-	18.82	1.24
-	33.79	14.81	243.84	-	-	-	743.61	996.99	72.34	29.18	147.18	58.01
-	31.80	14.47	234.63	-	-	-	513.19	857.20	68.86	28.54	133.51	57.12
-	33.79	14.81	243.84	-	-	-	743.61	996.99	72.34	29.18	147.18	58.01
-	18.30	-	65.02	-	-	-	210.90	105.30	-	-	16.60	-
-	18.30	-	65.02	-	-	-	210.90	105.30	-	-	16.60	-
-	20	5	255	-	-	-	150	477	38	14	110	8
-	3	-	-	-	-	-	-	-	9	7	28	17
-	-	-	-	-	-	-	-	-	-	-	-	-
-	**-**	**-**	**99**	**-**	**-**	**1**	**96**	**258**	**3**	**2**	**6**	**-**
-	**-**	**-**	**153**	**-**	**-**	**-**	**1,859**	**162**	**42**	**22**	**2**	**-**
-	**188**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**59**	**1**	**-**
-	12.95	3.20	49.85	-	-	1.81	210.20	61.75	10.38	4.96	35.42	16.40
-	4.93	0.20	2.82	-	-	-	33.48	4.39	-	-	3.30	0.22
-	8.02	3.00	47.03	-	-	1.81	176.72	57.36	10.38	4.96	32.12	16.18
-	-	-	-	-	-	-	26.51	8.60	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	8.02	3.00	47.03	-	-	1.81	150.21	48.76	10.38	4.96	32.12	16.18
-	-	-	-	-	-	-	3.00	0.98	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	1.60	0.60	4.70	-	-	0.36	15.02	4.88	1.04	0.99	3.21	3.24
-	6.42	2.40	42.33	-	-	1.45	132.19	42.90	9.34	3.97	28.91	12.94
-	103	24	508	-	-	15	264	172	374	79	578	259
-	11.13	5.07	211.17	-	-	-	513.19	857.20	24.10	9.99	46.73	19.99
-	3.21	-	29.26	-	-	-	63.27	31.59	-	-	2.91	-
-	7.92	5.07	181.91	-	-	-	449.92	825.61	24.10	9.99	43.82	19.99
-	-	-	-	-	-	-	67.49	123.84	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	7.92	5.07	181.91	-	-	-	382.43	701.77	24.10	9.99	43.82	19.99
-	-	-	-	-	-	-	7.65	14.04	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	3.17	2.03	72.76	-	-	-	76.49	140.35	9.64	4.00	17.53	8.00
-	4.75	3.04	109.15	-	-	-	298.29	547.38	14.46	5.99	26.29	11.99
-	10	3	128	-	-	-	62	267	32	12	89	5
-	**66**	**27**	**1,182**	**-**	**-**	**-**	**535**	**1,923**	**546**	**108**	**437**	**235**
-	**169**	**51**	**1,942**	**-**	**-**	**16**	**2,754**	**2,515**	**965**	**211**	**1,023**	**494**
-	30.75	6.86	6.51	-	-	3.66	-	-	19.39	11.80	85.18	30.56
-	3.66	0.15	0.13	-	-	-	-	-	-	-	2.45	0.16
-	27.09	6.71	6.38	-	-	3.66	-	-	19.39	11.80	82.73	30.40
-	-	-	-	-	-	-	-	-	-	-	-	-
-	2.71	0.67	1.28	-	-	0.37	-	-	-	-	-	3.04
-	-	-	-	-	-	-	3.00	0.98	-	-	-	-
-	24.38	6.04	5.10	-	-	3.29	3.00	0.98	19.39	11.80	82.73	27.36
-	488	121	102	-	-	66	60	20	388	236	1,655	547
-	21.96	9.63	24.38	-	-	-	-	-	47.02	18.97	95.67	37.71
-	2.38	-	1.30	-	-	-	-	-	-	-	2.16	-
-	19.58	9.63	23.08	-	-	-	-	-	47.02	18.97	93.51	37.71
-	-	-	-	-	-	-	-	-	-	-	-	-
-	7.83	3.85	9.23	-	-	-	-	-	-	-	-	15.08
-	-	-	-	-	-	-	7.65	14.04	-	-	-	-
-	11.75	5.78	13.85	-	-	-	7.65	14.04	47.02	18.97	93.51	22.63
-	2	-	-	-	-	-	-	-	7	6	23	10
-	**233**	**116**	**277**	**-**	**-**	**-**	**153**	**281**	**933**	**373**	**1,847**	**443**
-	**909**	**237**	**379**	**-**	**-**	**66**	**213**	**301**	**1,321**	**668**	**3,503**	**990**

PIERCE COUNTY UML HCT Communities	PIERCE COUNTY WTR HCT Communities	PIERCE COUNTY AC Urban Unincorporated	PIERCE COUNTY CC Urban Unincorporated	PIERCE COUNTY CE Urban Unincorporated	PIERCE COUNTY EBPC Urban Unincorporated	PIERCE COUNTY EC Urban Unincorporated	PIERCE COUNTY ECor Urban Unincorporated	PIERCE COUNTY HSF Urban Unincorporated	PIERCE COUNTY MHR Urban Unincorporated	PIERCE COUNTY MPC Urban Unincorporated	PIERCE COUNTY MSF Urban Unincorporated
-	-	-	4.15	1.77	-	844.69	122.37	-	2.89	477.71	795.95
-	-	-	3.67	1.67	-	678.39	114.76	-	2.60	427.19	581.99
-	-	-	4.15	1.77	-	844.69	122.37	-	2.89	477.71	795.95
-	-	-	3.67	1.67	-	75.24	-	-	-	-	348.87
-	-	-	3.67	1.67	-	75.24	-	-	-	-	348.87
-	-	-	19.71	8.69	-	467.49	23.75	7.43	2.71	-	3,065.75
-	-	-	16.86	5.97	-	335.83	23.75	7.33	2.62	-	2,691.98
-	-	-	19.71	8.69	-	467.49	23.75	7.43	2.71	-	3,065.75
-	-	-	16.86	5.97	-	227.52	-	7.33	-	-	1,612.74
-	-	-	16.86	5.97	-	227.52	-	7.33	-	-	1,612.74
-	-	-	12	2	-	60	2	5	1	-	1,607
-	-	-	1	9	-	104	23	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	**-**	**-**	**-**	**-**	**560**	**-**	**-**	**-**	**122**	**2**	**452**
-	**-**	**-**	**-**	**-**	**6,688**	**2**	**-**	**-**	**991**	**-**	**792**
-	**-**	**-**	**-**	**-**	**2,347**	**1,176**	**-**	**-**	**33**	**-**	**-**
-	-	-	1.28	-	-	-	-	-	2.60	-	581.99
-	-	-	0.64	-	-	-	-	-	-	-	104.66
-	-	-	0.64	-	-	-	-	-	2.60	-	477.33
-	-	-	-	-	-	-	-	-	-	-	71.60
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0.64	-	-	-	-	-	2.60	-	405.73
-	-	-	-	-	-	-	-	-	0.05	-	8.11
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0.13	-	-	-	-	-	0.52	-	40.57
-	-	-	0.51	-	-	-	-	-	2.03	-	357.05
-	-	-	10	-	-	-	-	-	16	-	1,428
-	-	-	5.90	-	-	-	-	7.33	2.62	-	2,691.98
-	-	-	2.95	-	-	-	-	2.20	-	-	483.82
-	-	-	2.95	-	-	-	-	5.13	2.62	-	2,208.16
-	-	-	-	-	-	-	-	0.77	-	-	331.22
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	2.95	-	-	-	-	4.36	2.62	-	1,876.94
-	-	-	-	-	-	-	-	0.09	0.05	-	37.54
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	1.18	-	-	-	-	0.87	1.05	-	375.39
-	-	-	1.77	-	-	-	-	3.40	1.52	-	1,464.01
-	-	-	5	1	-	27	1	2	1	-	787
-	**-**	**-**	**30**	**(1)**	**-**	**(27)**	**(1)**	**18**	**11**	**-**	**5,069**
-	**-**	**-**	**40**	**(1)**	**7,248**	**(25)**	**(1)**	**18**	**1,140**	**2**	**7,741**
-	-	-	2.70	1.77	-	844.69	122.37	-	-	-	-
-	-	-	0.48	0.33	-	15.05	-	-	-	-	-
-	-	-	2.22	1.44	-	829.64	122.37	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0.22	0.14	-	82.96	12.24	-	-	-	-
-	-	-	-	-	-	-	-	-	0.05	-	8.11
-	-	-	2.00	1.30	-	746.68	110.13	-	0.05	-	8.11
-	-	-	40	12	-	6,720	991	-	1	-	162
-	-	-	12.81	8.69	-	467.49	23.75	-	-	-	-
-	-	-	2.19	1.19	-	45.50	-	-	-	-	-
-	-	-	10.62	7.50	-	421.99	23.75	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	4.25	3.75	-	210.99	11.88	-	-	-	-
-	-	-	-	-	-	-	-	0.09	0.05	-	37.54
-	-	-	6.37	3.75	-	211.00	11.87	0.09	0.05	-	37.54
-	-	-	-	4	-	47	12	-	-	-	-
-	**-**	**-**	**127**	**30**	**-**	**1,852**	**95**	**2**	**1**	**-**	**751**
-	**-**	**-**	**167**	**42**	**2,347**	**9,748**	**1,086**	**2**	**35**	**-**	**913**

PIERCE COUNTY MUC Urban Unincorporated	PIERCE COUNTY MUD Urban Unincorporated	PIERCE COUNTY NC Urban Unincorporated	PIERCE COUNTY NCor Urban Unincorporated	PIERCE COUNTY PI Urban Unincorporated	PIERCE COUNTY PR Urban Unincorporated	PIERCE COUNTY ROC Urban Unincorporated	PIERCE COUNTY RR Urban Unincorporated	PIERCE COUNTY SF Urban Unincorporated	PIERCE COUNTY TCtr Urban Unincorporated	PIERCE COUNTY TCtr SH Urban Unincorporated	PIERCE COUNTY UCor Urban Unincorporated
1.53	34.11	15.18	68.45	-	-	-	51.96	241.37	-	-	-
1.53	27.83	11.68	55.88	-	-	-	30.57	193.46	-	-	-
1.53	34.11	15.18	68.45	-	-	-	51.96	241.37	-	-	-
1.53	26.40	11.68	3.09	-	-	-	21.77	146.83	-	-	-
1.53	26.40	11.68	3.09	-	-	-	21.77	146.83	-	-	-
-	118.33	1.44	113.48	-	-	-	157.81	808.32	-	-	-
-	112.86	0.95	98.90	-	-	-	104.68	709.50	-	-	-
-	118.33	1.44	113.48	-	-	-	157.81	808.32	-	-	-
-	102.04	0.95	6.13	-	-	-	12.15	444.29	-	-	-
-	102.04	0.95	6.13	-	-	-	12.15	444.29	-	-	-
-	29	-	48	-	-	-	33	396	-	-	-
-	15	-	1	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
2	**-**	**-**	**26**	**-**	**-**	**-**	**17**	**223**	**-**	**-**	**-**
-	**4**	**2**	**312**	**-**	**-**	**-**	**52**	**627**	**-**	**-**	**-**
-	**152**	**-**	**6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
0.54	9.74	4.09	50.29	-	-	-	30.57	193.46	-	-	-
0.27	4.62	2.05	1.39	-	-	-	6.53	44.05	-	-	-
0.27	5.12	2.04	48.90	-	-	-	24.04	149.41	-	-	-
-	-	-	-	-	-	-	3.61	22.41	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
0.27	5.12	2.04	48.90	-	-	-	20.43	127.00	-	-	-
-	-	-	-	-	-	-	0.41	2.54	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
0.05	1.02	0.41	4.89	-	-	-	2.04	12.70	-	-	-
0.22	4.10	1.63	44.01	-	-	-	17.98	111.76	-	-	-
2	66	16	528	-	-	-	36	447	-	-	-
-	39.50	0.33	89.01	-	-	-	104.68	709.50	-	-	-
-	17.86	0.17	2.76	-	-	-	3.65	133.29	-	-	-
-	21.64	0.16	86.25	-	-	-	101.03	576.21	-	-	-
-	-	-	-	-	-	-	15.15	86.43	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	21.64	0.16	86.25	-	-	-	85.88	489.78	-	-	-
-	-	-	-	-	-	-	1.72	9.80	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	8.66	0.06	34.50	-	-	-	17.18	97.96	-	-	-
-	12.98	0.10	51.75	-	-	-	66.98	382.02	-	-	-
-	12	-	25	-	-	-	15	190	-	-	-
-	**196**	**1**	**596**	**-**	**-**	**-**	**119**	**1,338**	**-**	**-**	**-**
4	**266**	**19**	**1,462**	**-**	**-**	**-**	**224**	**2,635**	**-**	**-**	**-**
1.00	22.17	9.87	6.84	-	-	-	-	-	-	-	-
0.20	3.43	1.52	0.06	-	-	-	-	-	-	-	-
0.80	18.74	8.35	6.78	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
0.08	1.87	0.84	1.36	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	0.41	2.54	-	-	-
0.72	16.87	7.51	5.42	-	-	-	0.41	2.54	-	-	-
14	337	150	108	-	-	-	8	51	-	-	-
-	76.92	0.93	11.35	-	-	-	-	-	-	-	-
-	13.27	0.12	0.12	-	-	-	-	-	-	-	-
-	63.65	0.81	11.23	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	25.46	0.32	4.49	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1.72	9.80	-	-	-
-	38.19	0.49	6.74	-	-	-	1.72	9.80	-	-	-
-	7	-	-	-	-	-	-	-	-	-	-
-	**757**	**10**	**135**	**-**	**-**	**-**	**34**	**196**	**-**	**-**	**-**
14	**1,246**	**160**	**249**	**-**	**-**	**-**	**42**	**247**	**-**	**-**	**-**

PIERCE COUNTY UCor SH Urban Unincorporated	PIERCE COUNTY UML Urban Unincorporated	PIERCE COUNTY WTR Urban Unincorporated
-	-	-
-	-	-
-	-	-


Auburn
Buildable Lands Inventory - 2020 Parcels
Built Out/Undevelopable
Pipeline
Underutilized
Vacant
Vacant Single Unit
Critical Areas
Municipal Boundary
Pierce County, Washington
0
0.15
0.3
0.45
0.6
Miles
CITY OF AUBURN
(PIERCE COUNTY AREA)
Pierce County
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S
Buildable Lands Report



Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

0 0.55 1.1 1.65 2.2 Miles

CITY OF BONNEY LAKE

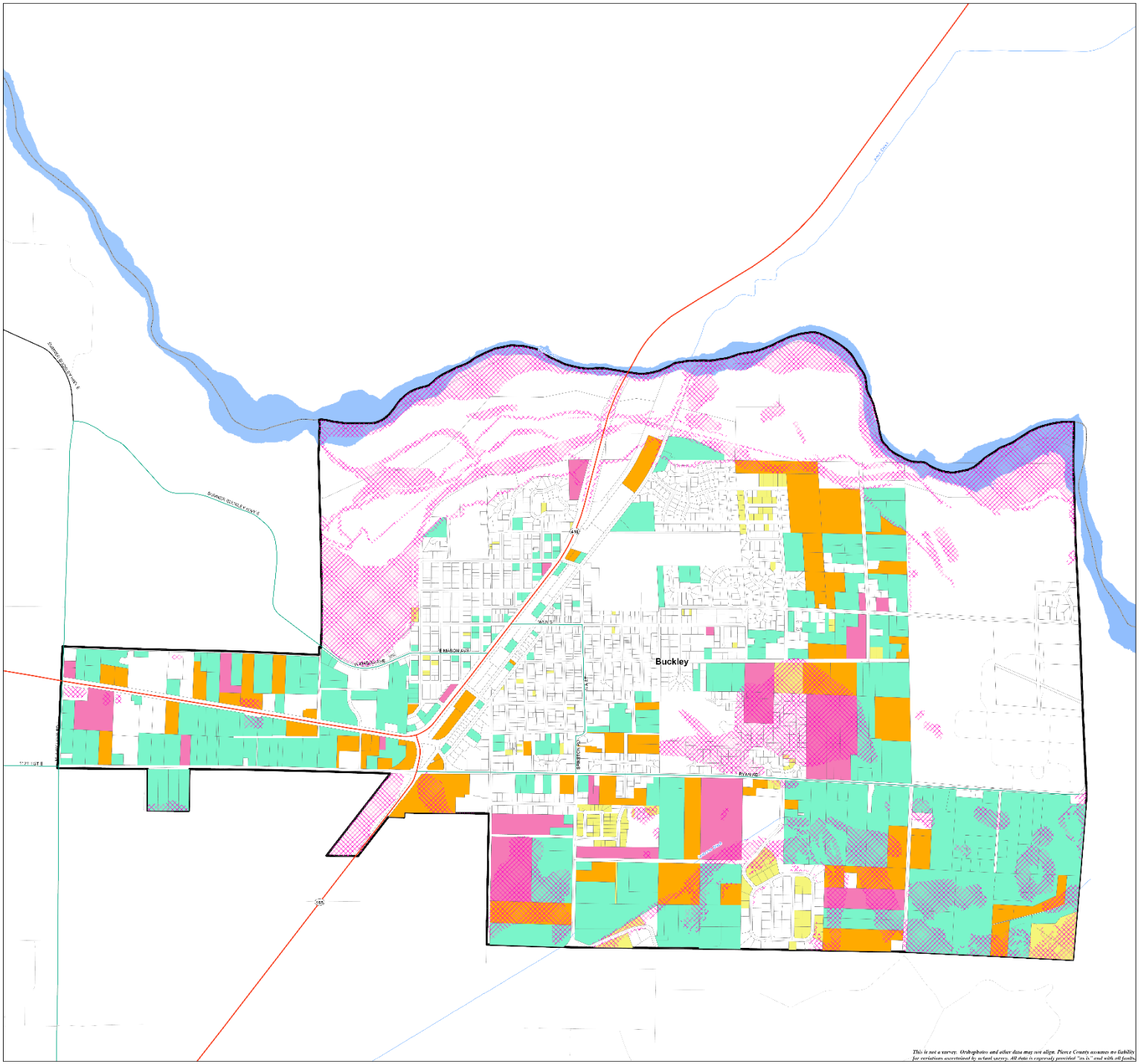
Pierce County

Buildable Lands Report

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Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

0 0.2 0.4 0.6 0.8 Miles

CITY OF BUCKLEY

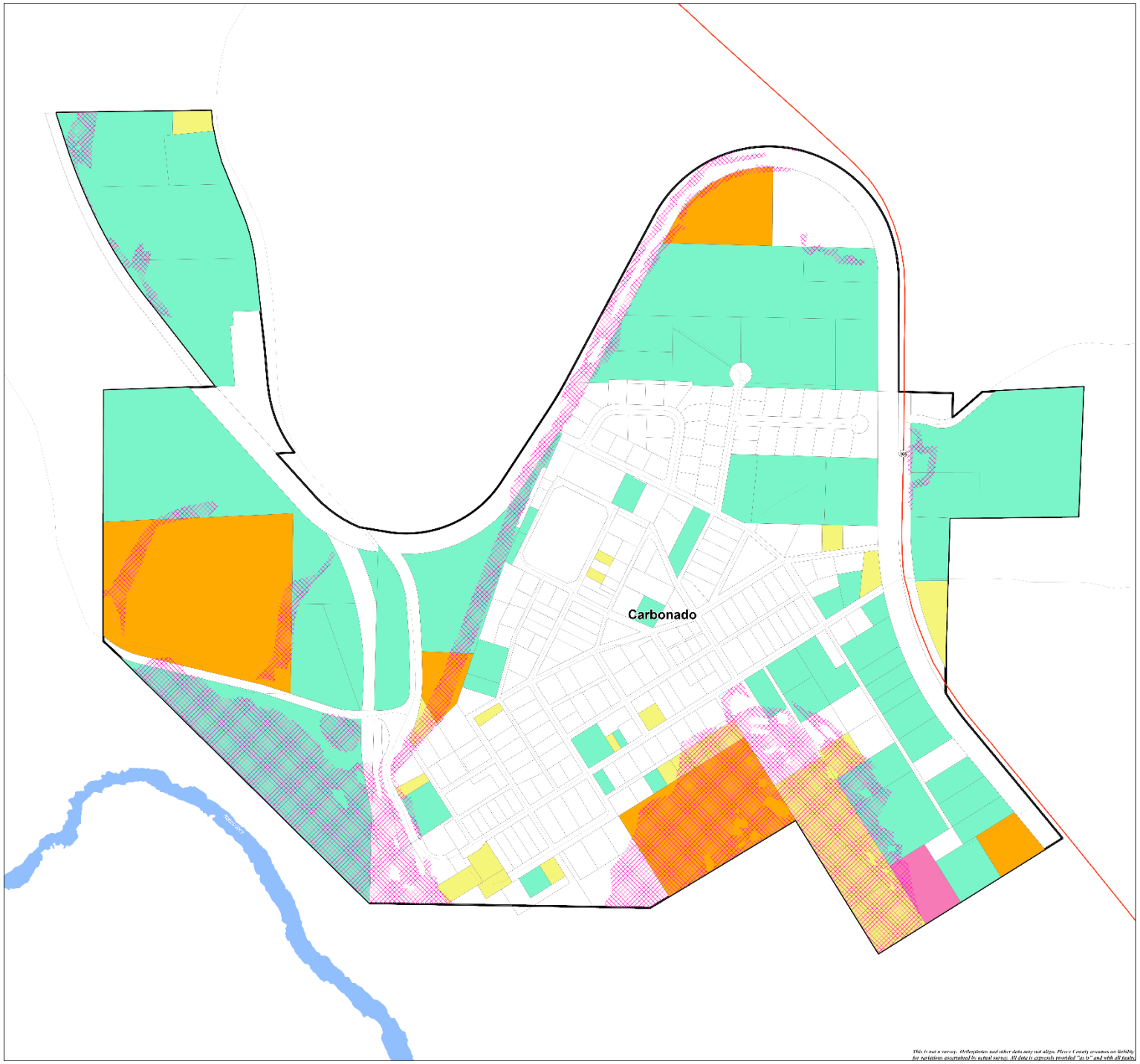
Pierce County

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Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

0 0.07 0.13 0.2 0.26 Miles

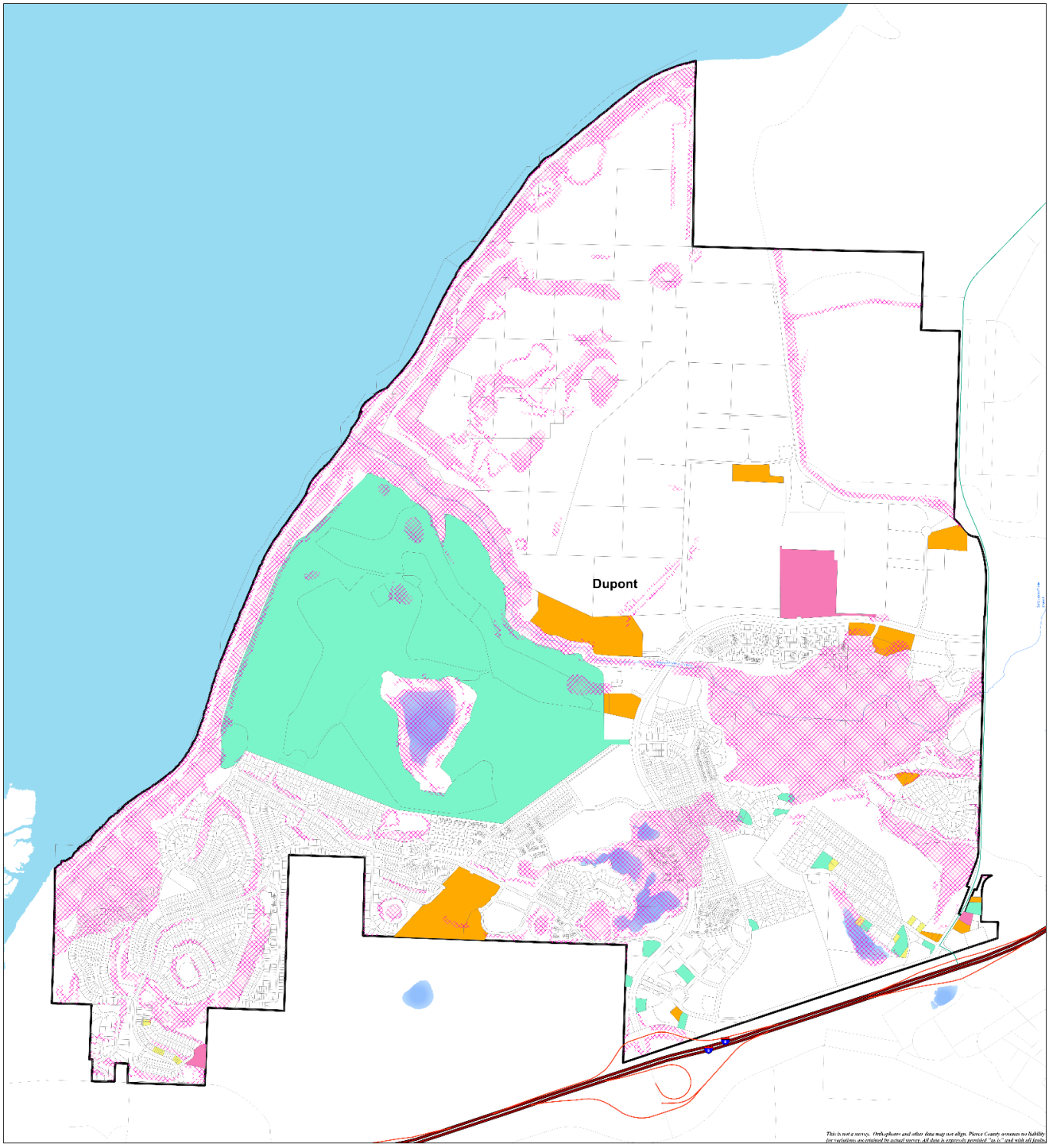
TOWN OF CARBONADO

Pierce County

N W E S

Buildable Lands Report

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Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

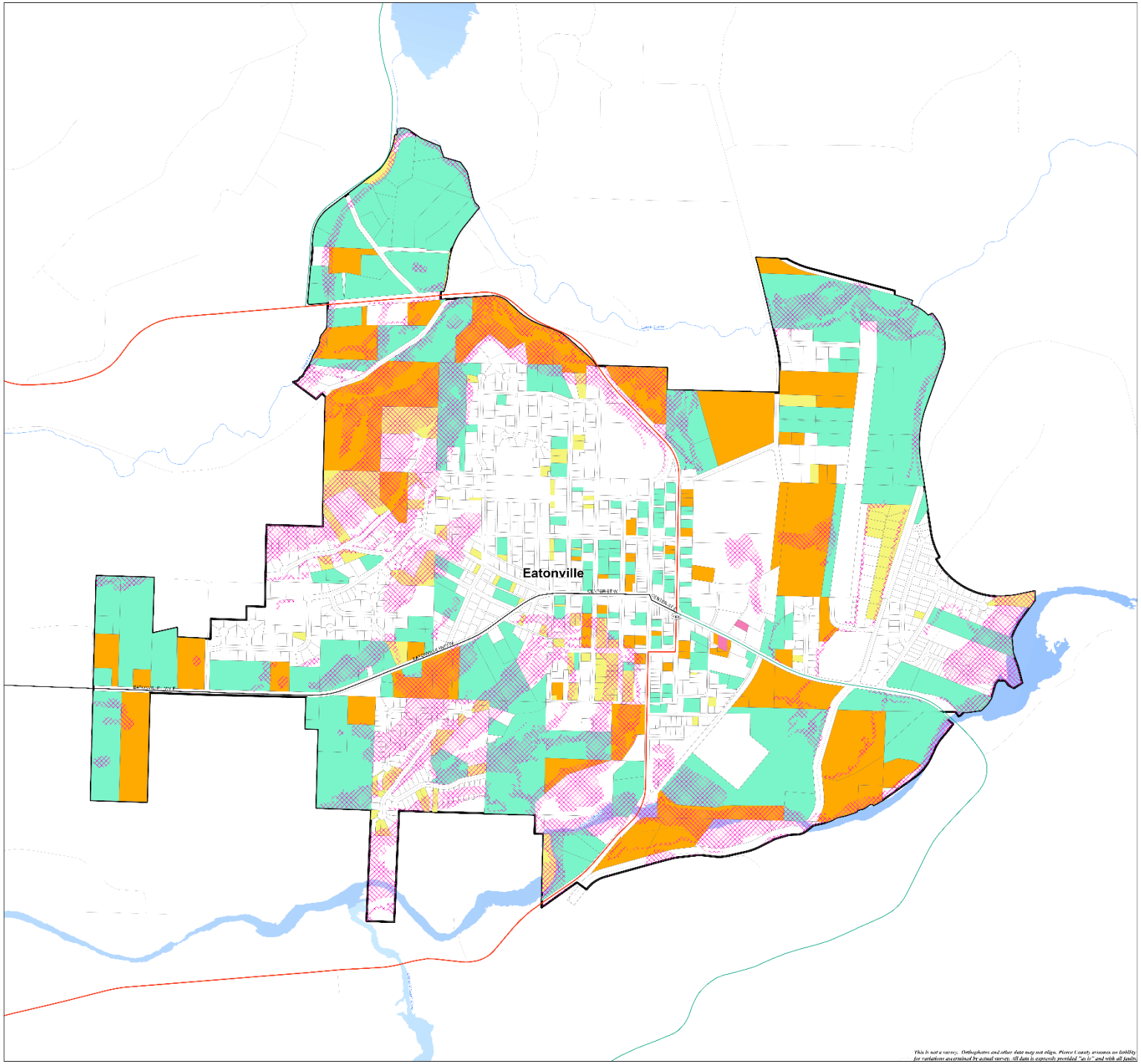
0 0.25 0.5 0.75 1 Miles

CITY OF DUPONT

Pierce County

Buildable Lands Report

N W E S



Buildable Lands Inventory - Parcels 2020

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

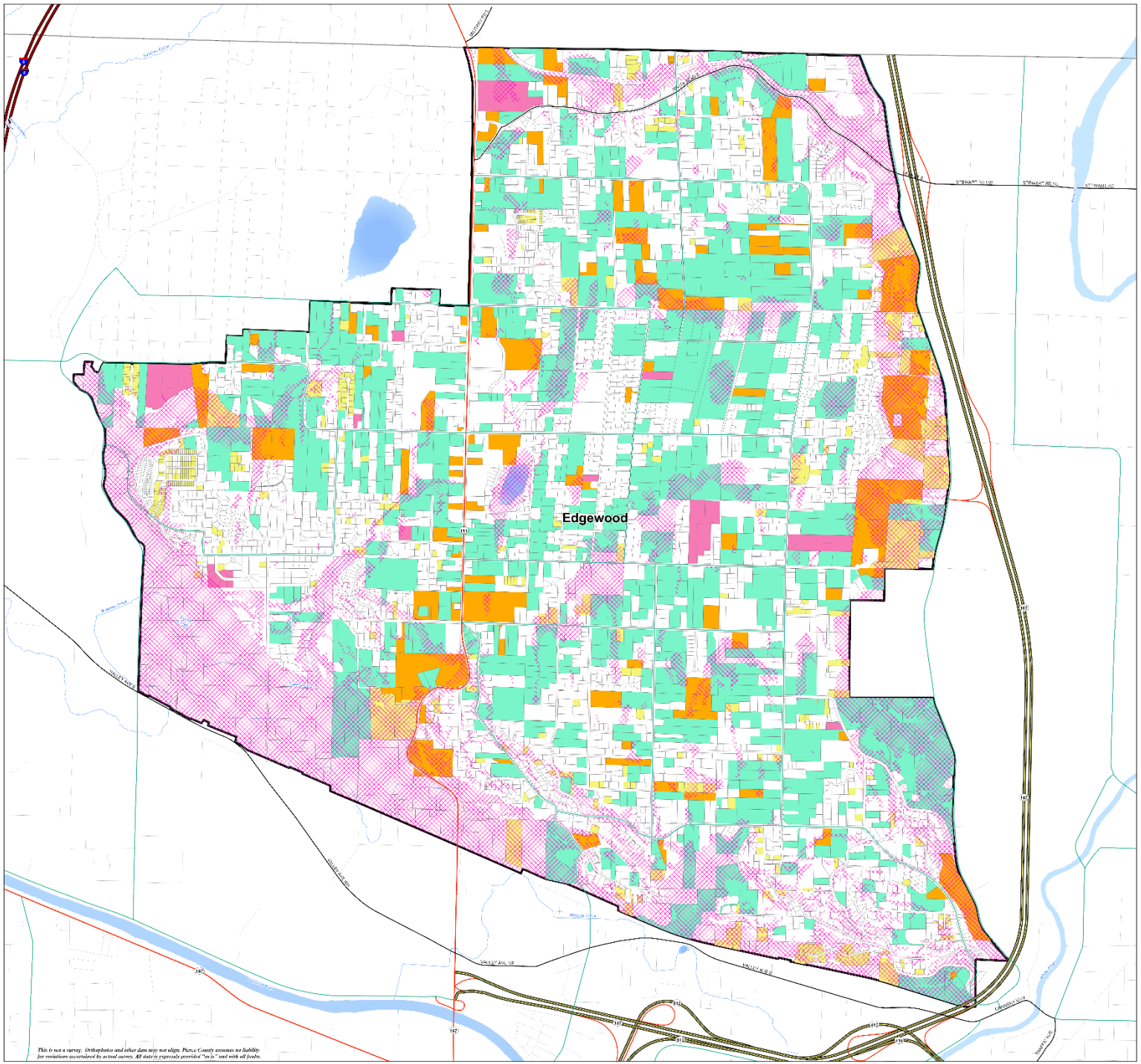
0 0.15 0.3 0.45 0.6 Miles

TOWN OF EATONVILLE

Pierce County

N W E S

Buildable Lands Report



Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

0 0.25 0.5 0.75 1 Miles

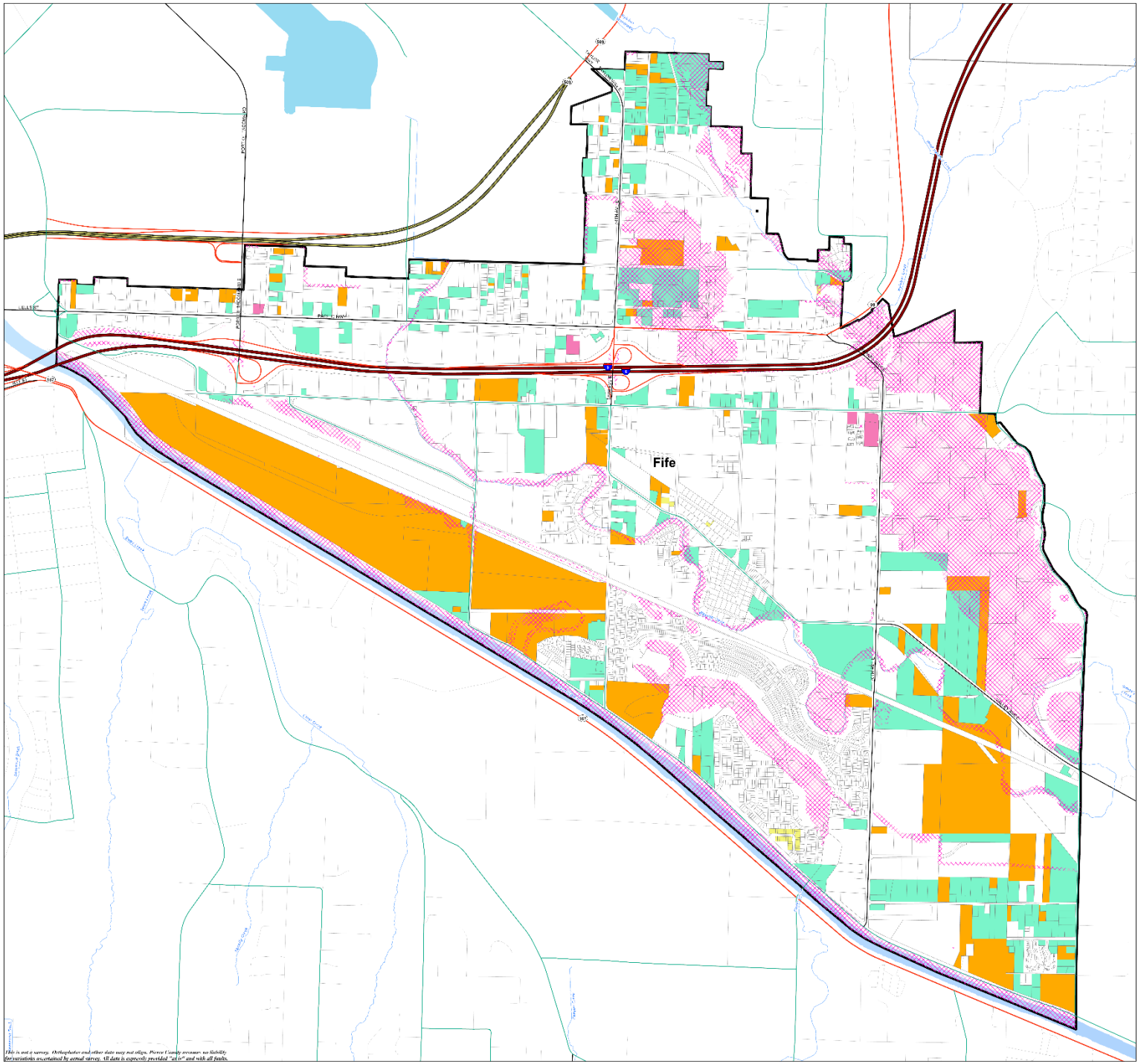
CITY OF EDGEWOOD

Pierce County

N W E S

Buildable Lands Report

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Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

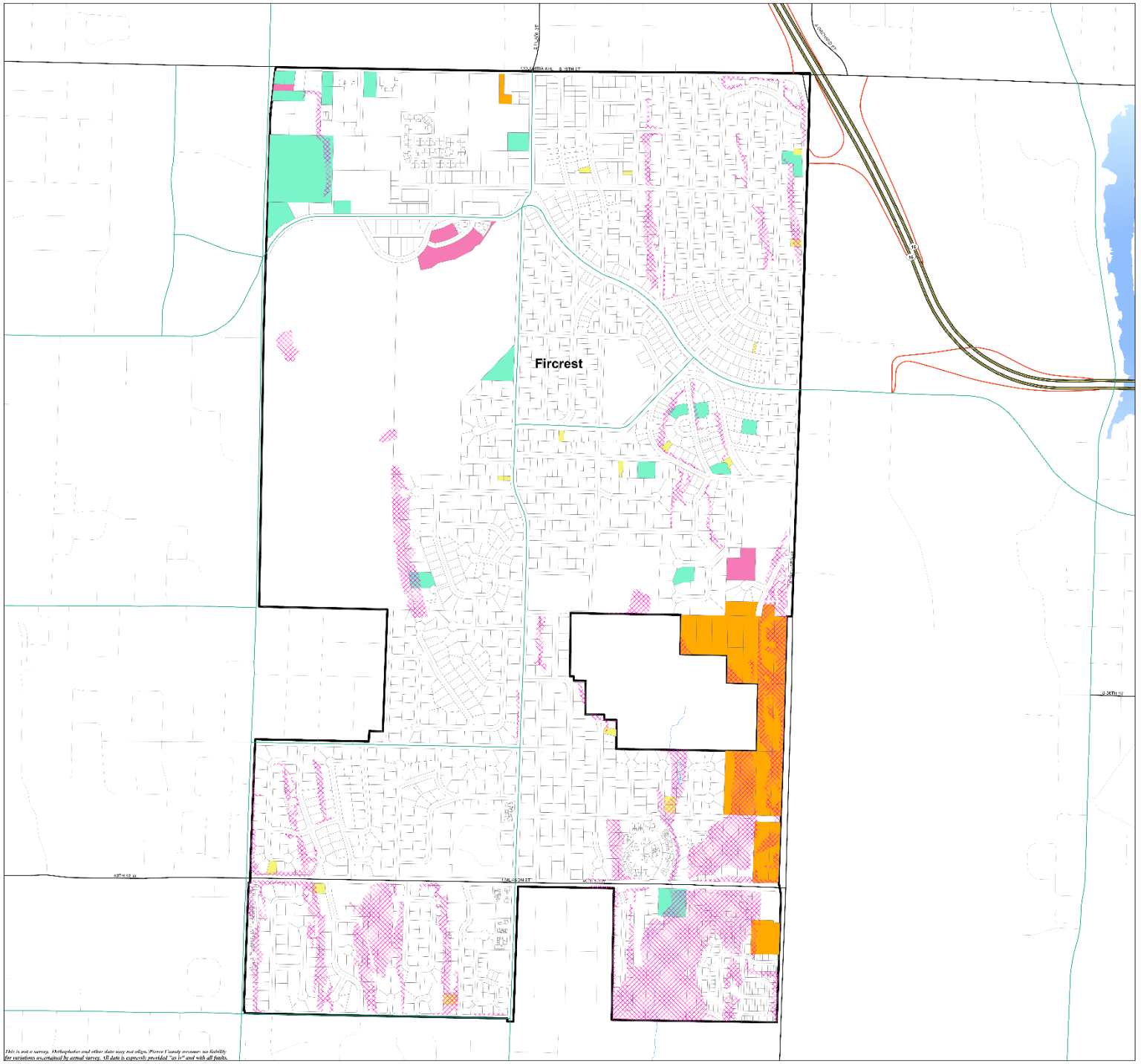
0 0.13 0.25 0.5 0.75 1 Miles

CITY OF FIFE

Pierce County

N W E S

Buildable Lands Report



Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



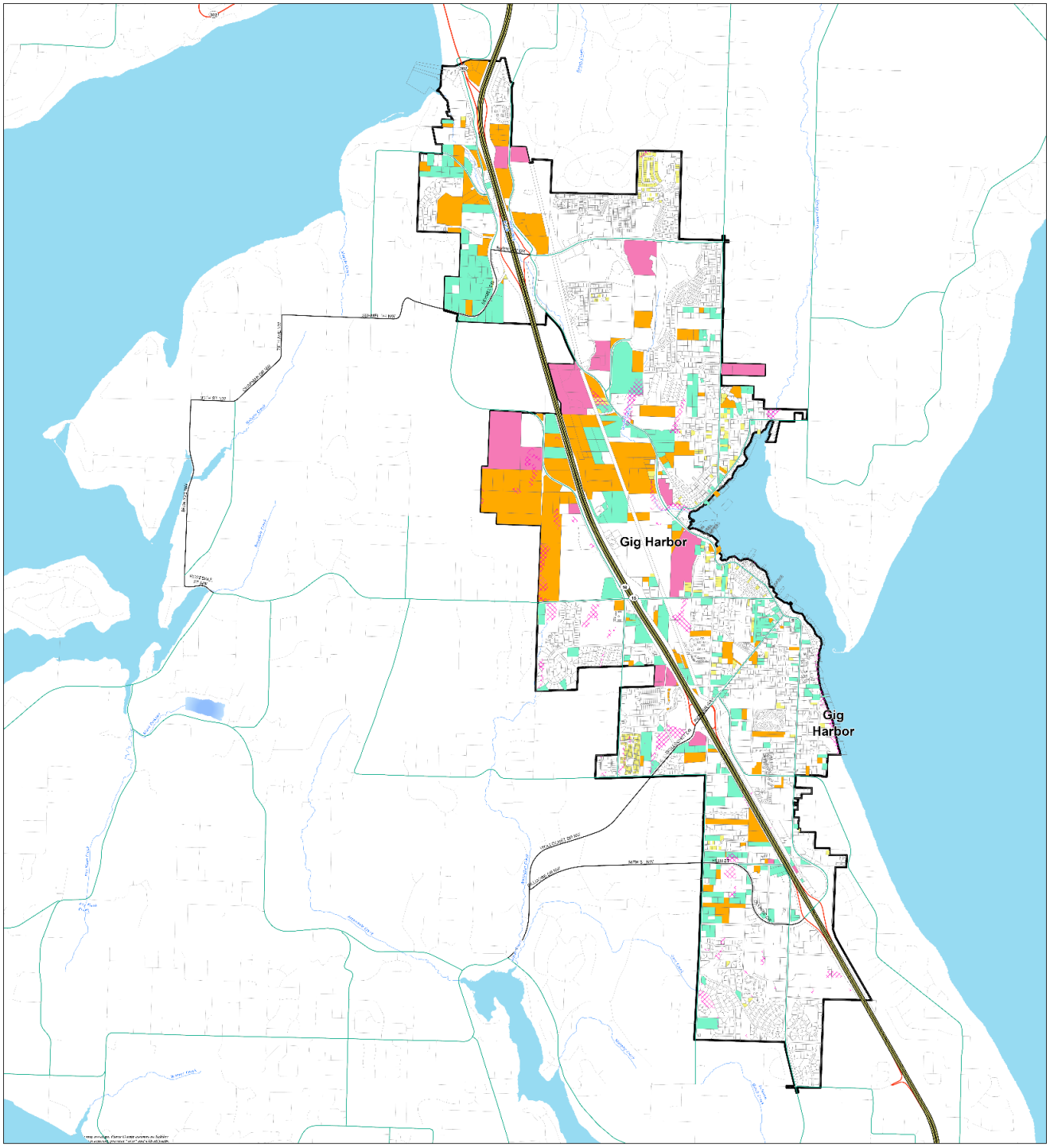
0 0.1 0.2 0.3 0.4 Miles

CITY OF FIRCREST

Pierce County

N W E S

Buildable Lands Report



Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

0 0.5 1 1.5 2 Miles

CITY OF GIG HARBOR

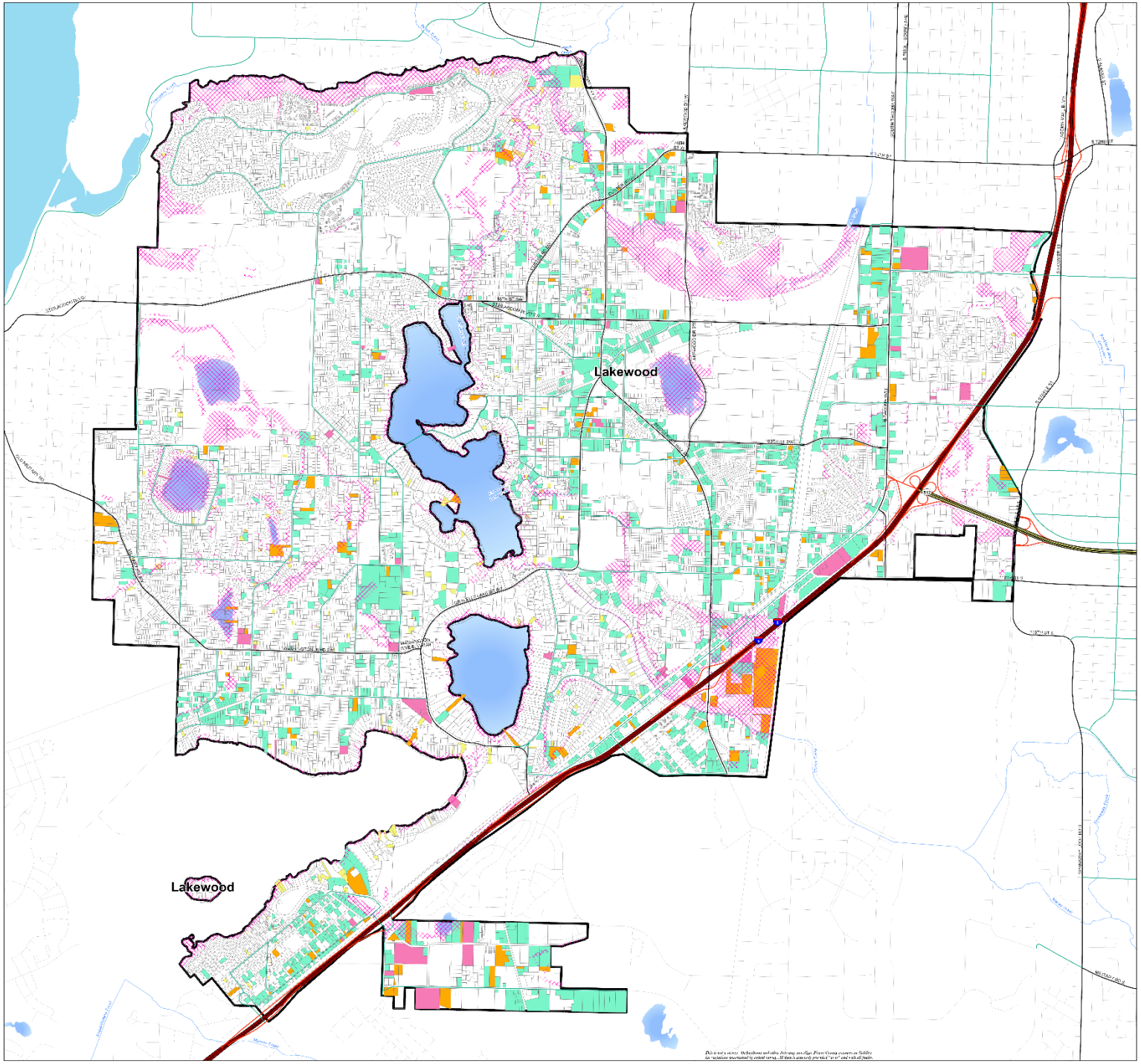
Pierce County

Buildable Lands Report

N W E S

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Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

0 0.2 0.4 0.8 1.2 1.6 Miles

CITY OF LAKEWOOD

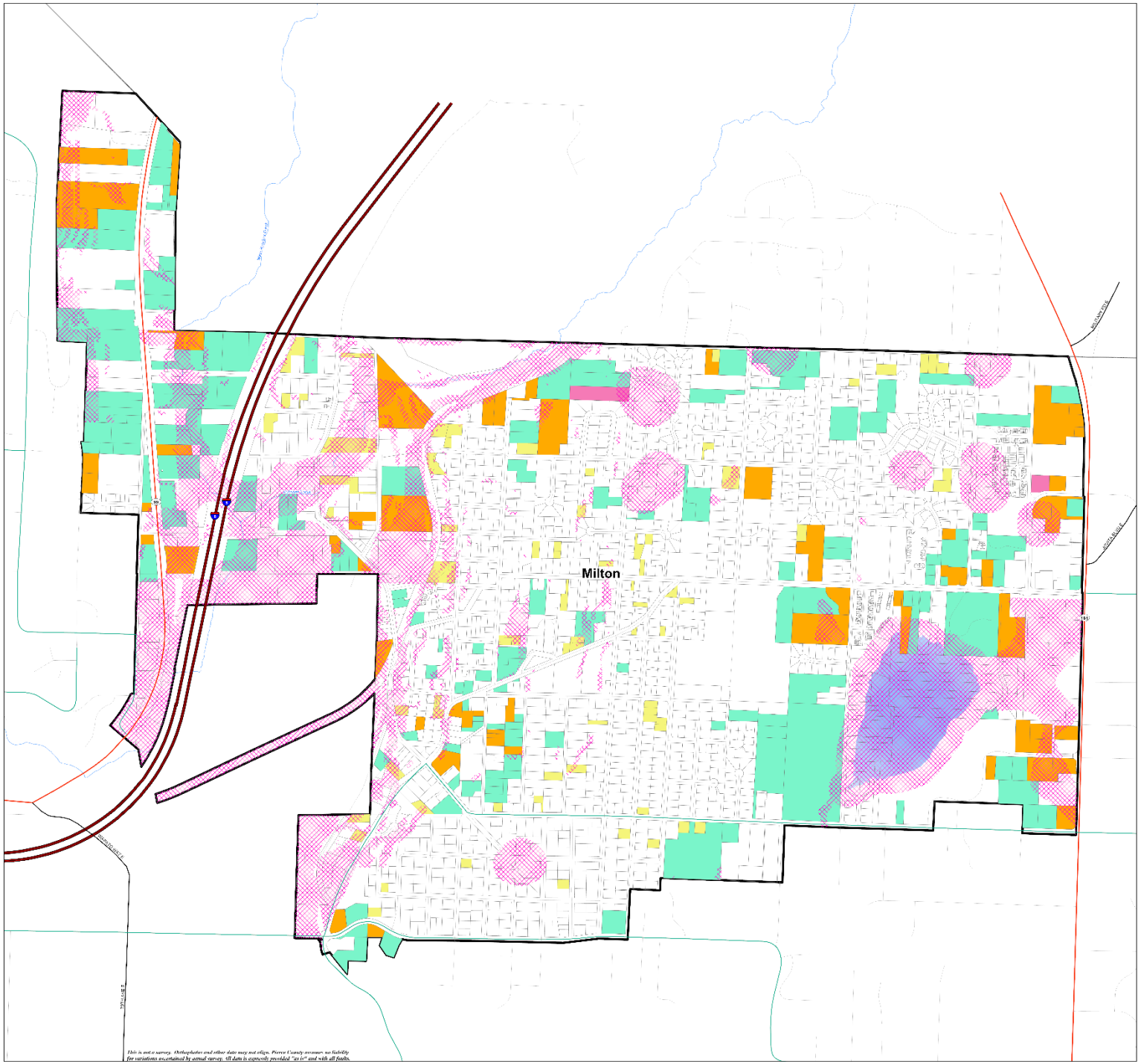
Pierce County

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Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

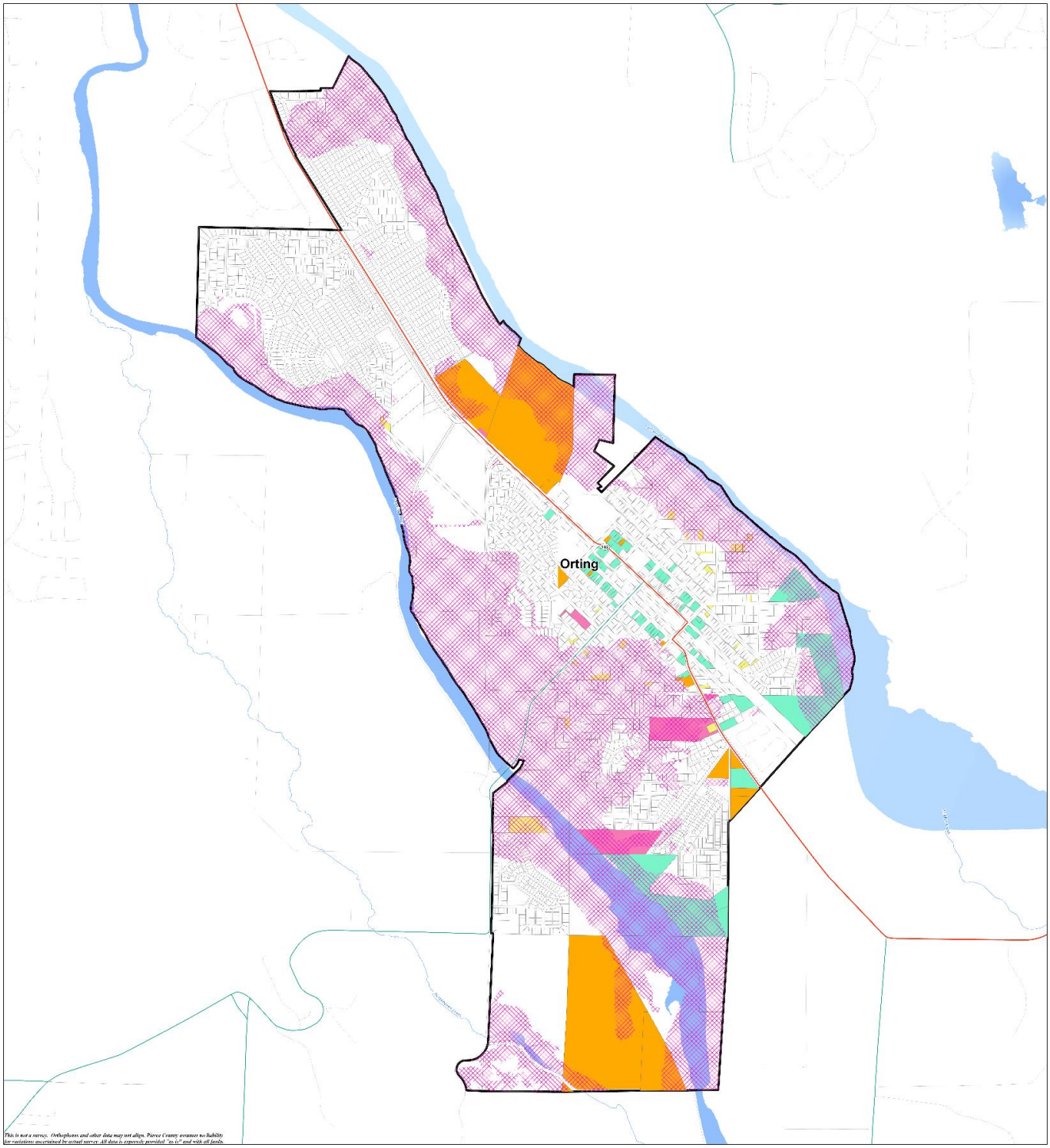
0 0.15 0.3 0.45 0.6 Miles

CITY OF MILTON (PIERCE COUNTY AREA)

Pierce County

N W E S

Buildable Lands Report



Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

0 0.25 0.5 0.75 1 Miles

CITY OF ORTING

Pierce County

Buildable Lands Report

N W E S



Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

0 0.1 0.19 0.29 0.38 Miles

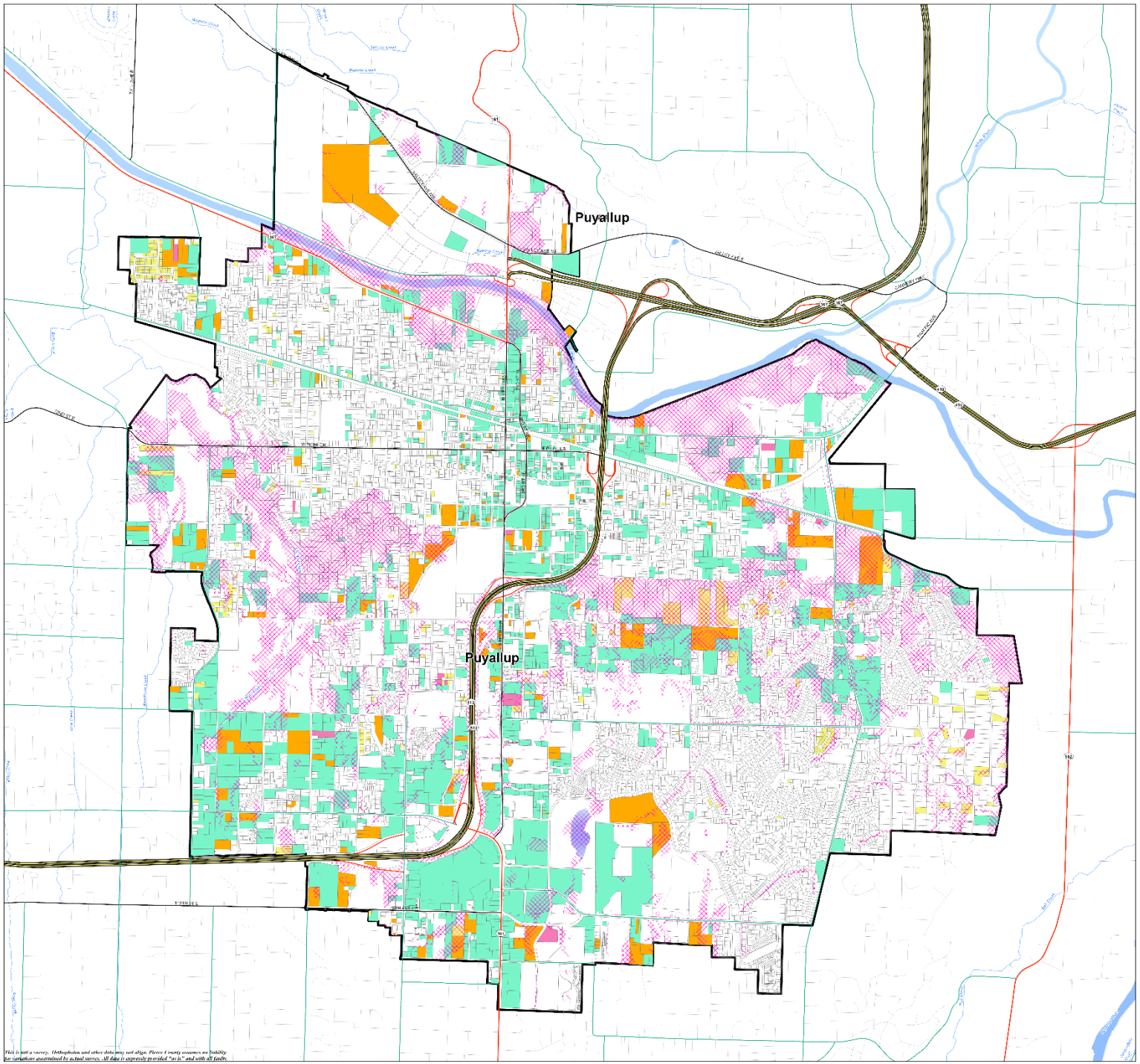
CITY OF PACIFIC (PIERCE COUNTY AREA)

Pierce County

N W E S

Buildable Lands Report

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Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

0 0.4 0.8 1.2 1.6 Miles

CITY OF PUYALLUP

Pierce County

N W E S

Buildable Lands Report

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Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

0 0.1 0.2 0.3 0.4 Miles

CITY OF ROY

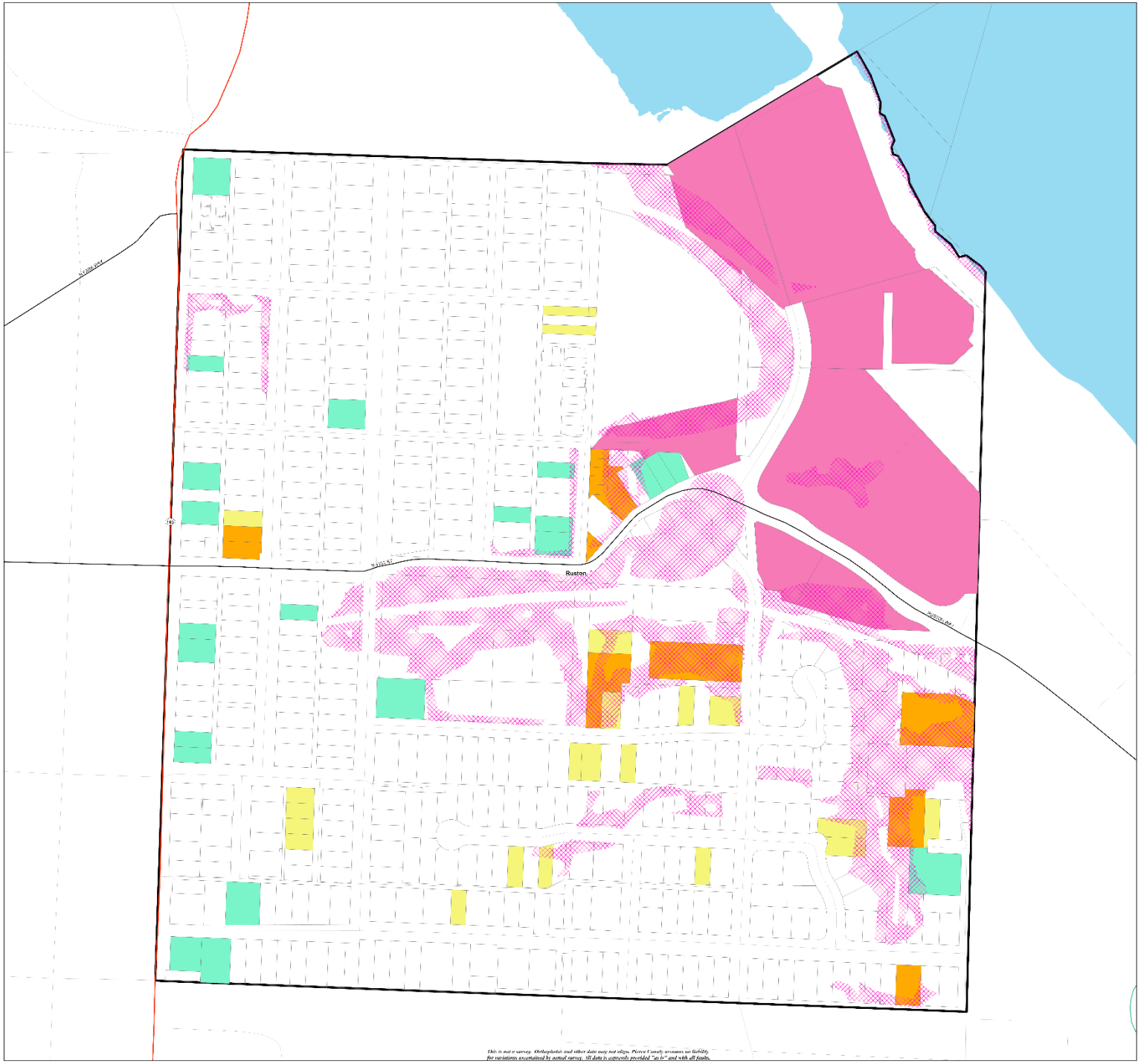
Pierce County

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Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Cities in Pierce County



Pierce County, Washington

0 0.04 0.08 0.12 0.16 Miles

CITY OF RUSTON

Pierce County

N W E S

Buildable Lands Report

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Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

0 0.06 0.12 0.18 0.24 Miles

TOWN OF SOUTH PRAIRIE

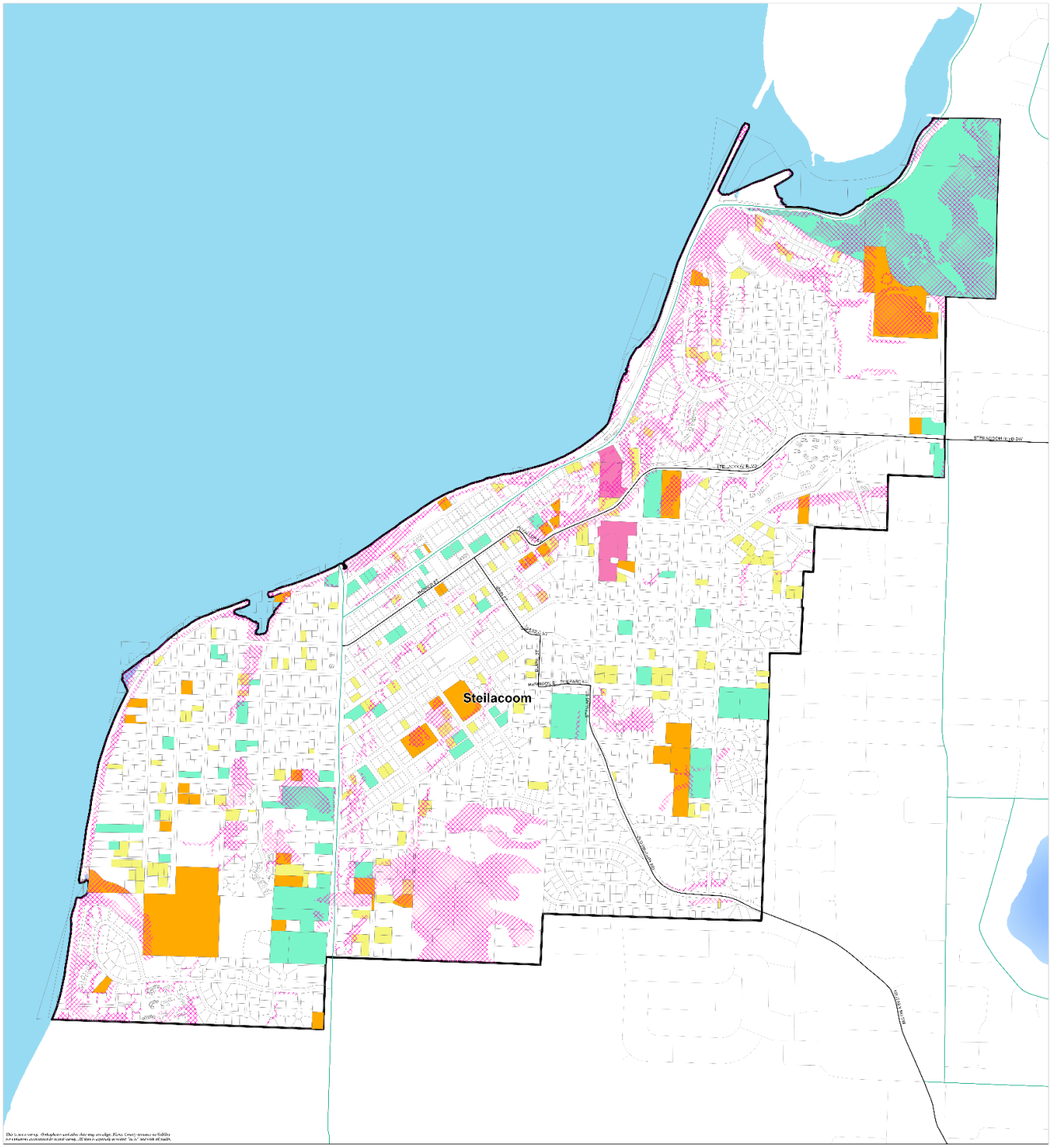
Pierce County

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Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

0 0.15 0.3 0.45 0.6 Miles

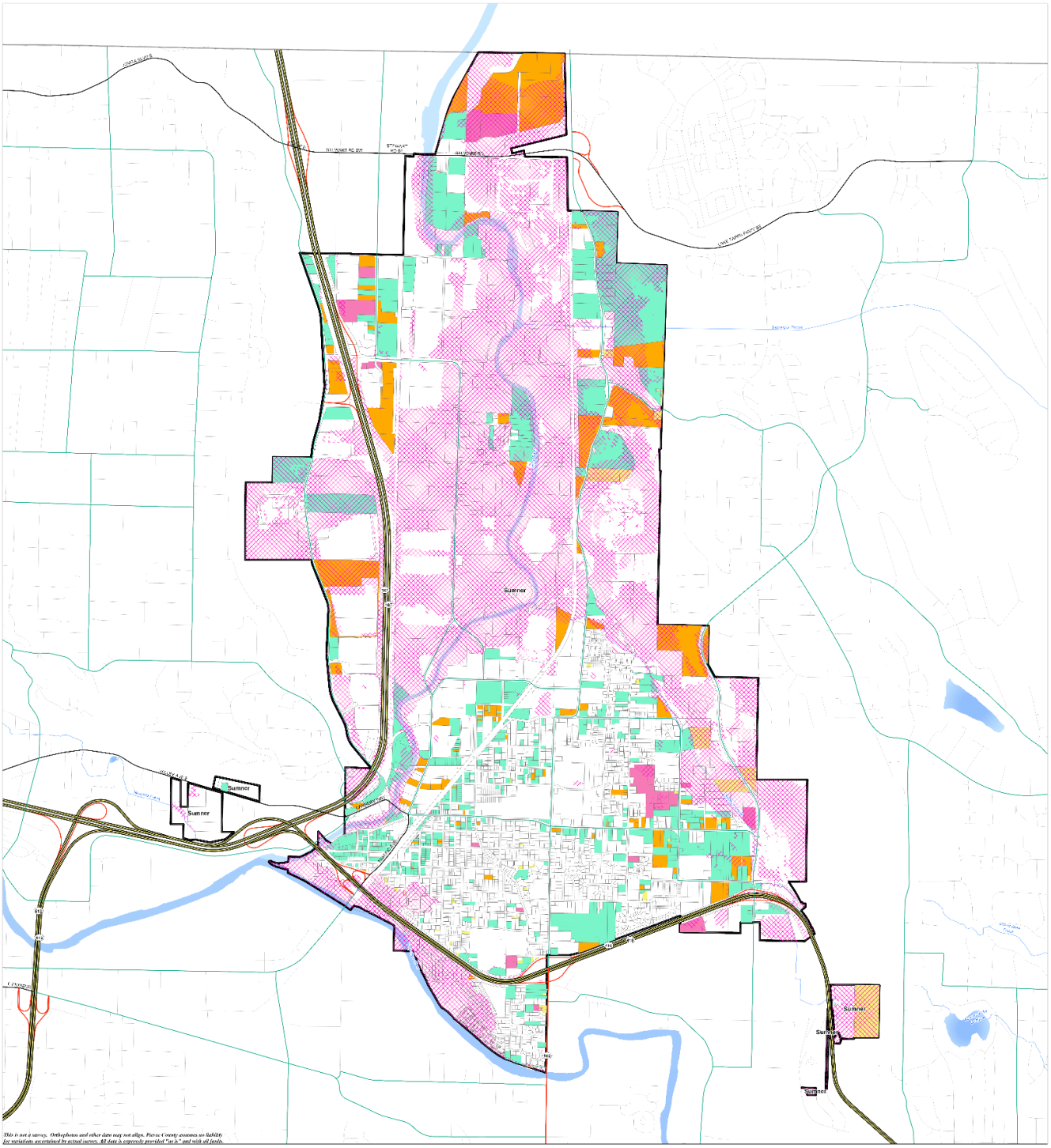
CITY OF STEILACOOM

Pierce County

N W E S

Buildable Lands Report

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Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

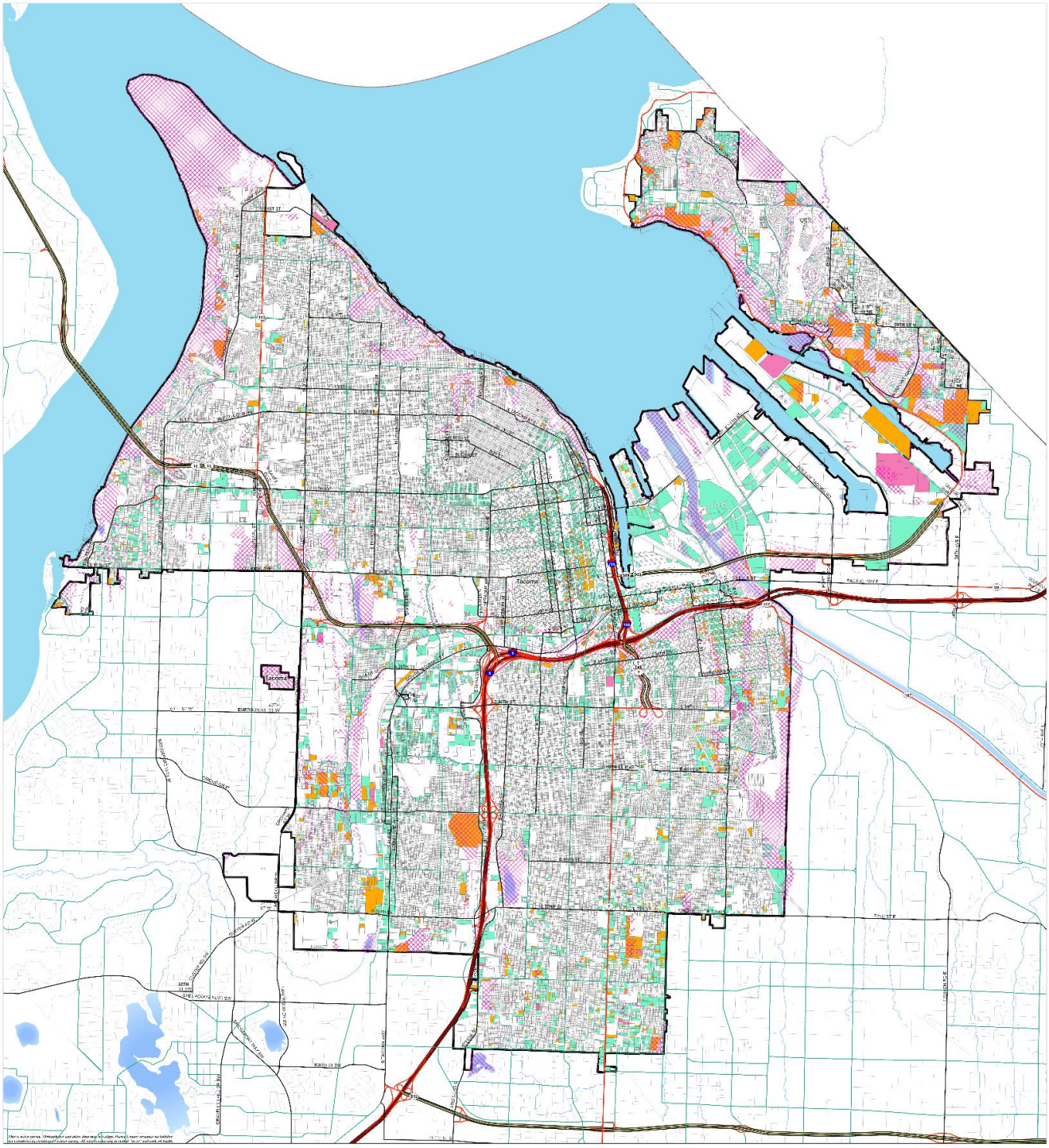
0 0.2 0.4 0.8 1.2 1.6 Miles

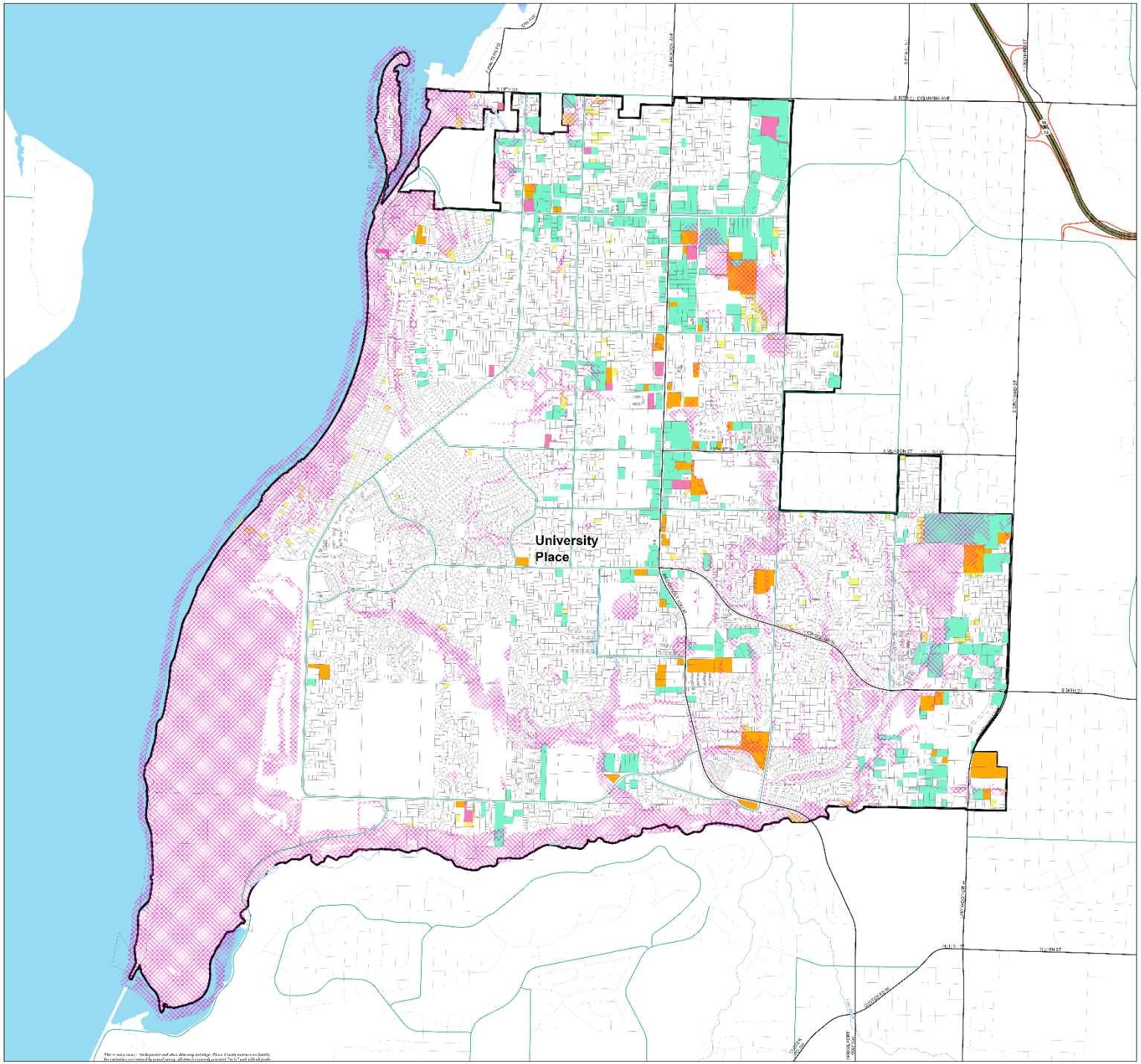
CITY OF SUMNER

Pierce County

Buildable Lands Report

N W E S


Buildable Lands Inventory - 2020 Parcels
Built Out/Undevelopable
Pipeline
Underutilized
Vacant
Vacant Single Unit
Critical Areas
Municipal Boundary
Pierce County, Washington
CITY OF TACOMA
Pierce County
Buildable Lands Report
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Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

0 0.15 0.3 0.6 0.9 1.2 Miles

CITY OF UNIVERSITY PLACE

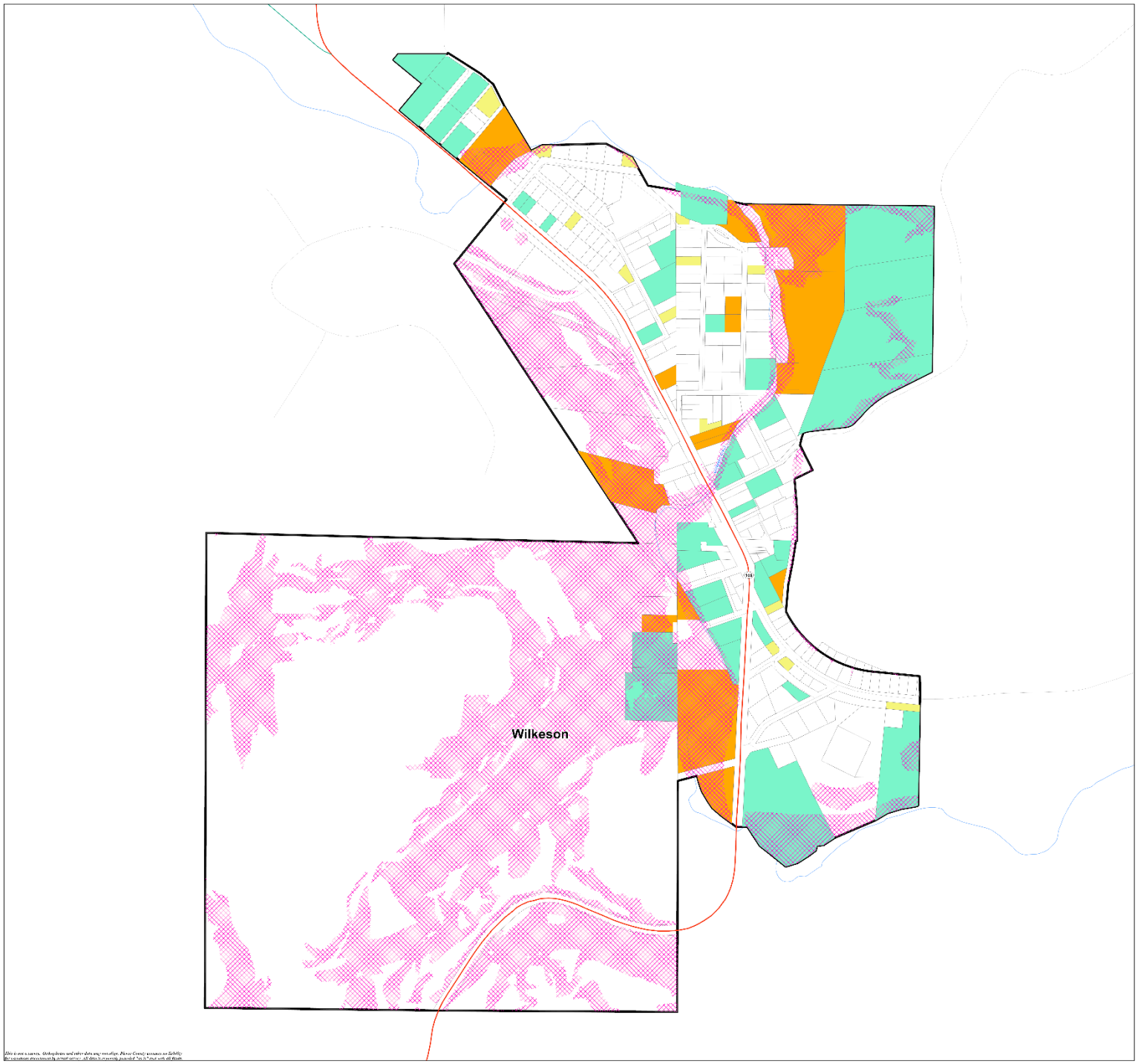
Pierce County

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Buildable Lands Inventory - 2020 Parcels

- Built Out/Undevelopable
- Pipeline
- Underutilized
- Vacant
- Vacant Single Unit
- Critical Areas
- Municipal Boundary



Pierce County, Washington

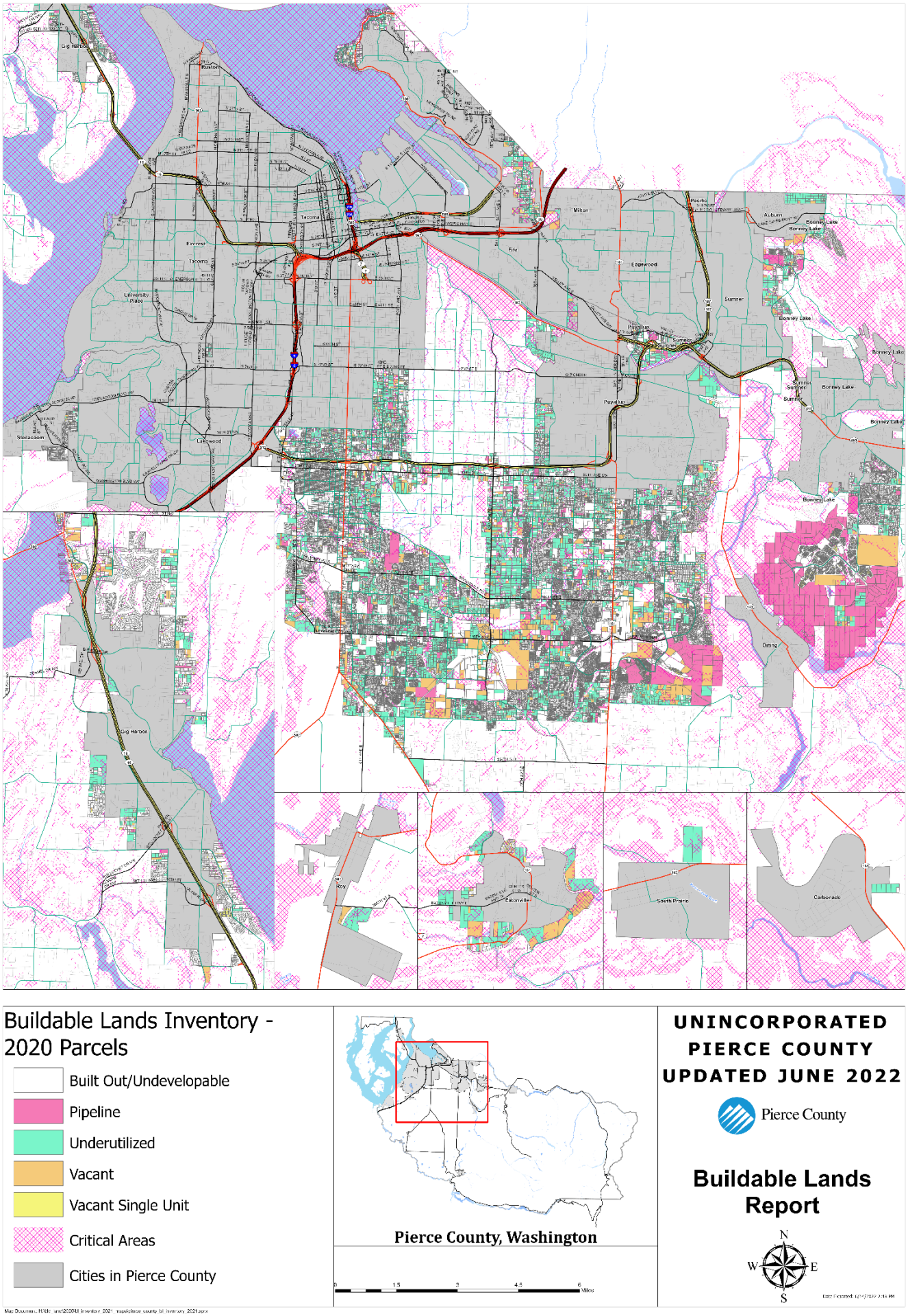
0 0.08 0.16 0.24 0.32 Miles

TOWN OF WILKESON

Pierce County

N W E S

Buildable Lands Report


Buildable Lands Inventory - 2020 Parcels
Built Out/Undevelopable
Pipeline
Underutilized
Vacant
Vacant Single Unit
Critical Areas
Cities in Pierce County
Pierce County, Washington
UNINCORPORATED PIERCE COUNTY
UPDATED JUNE 2022
Pierce County
Buildable Lands Report
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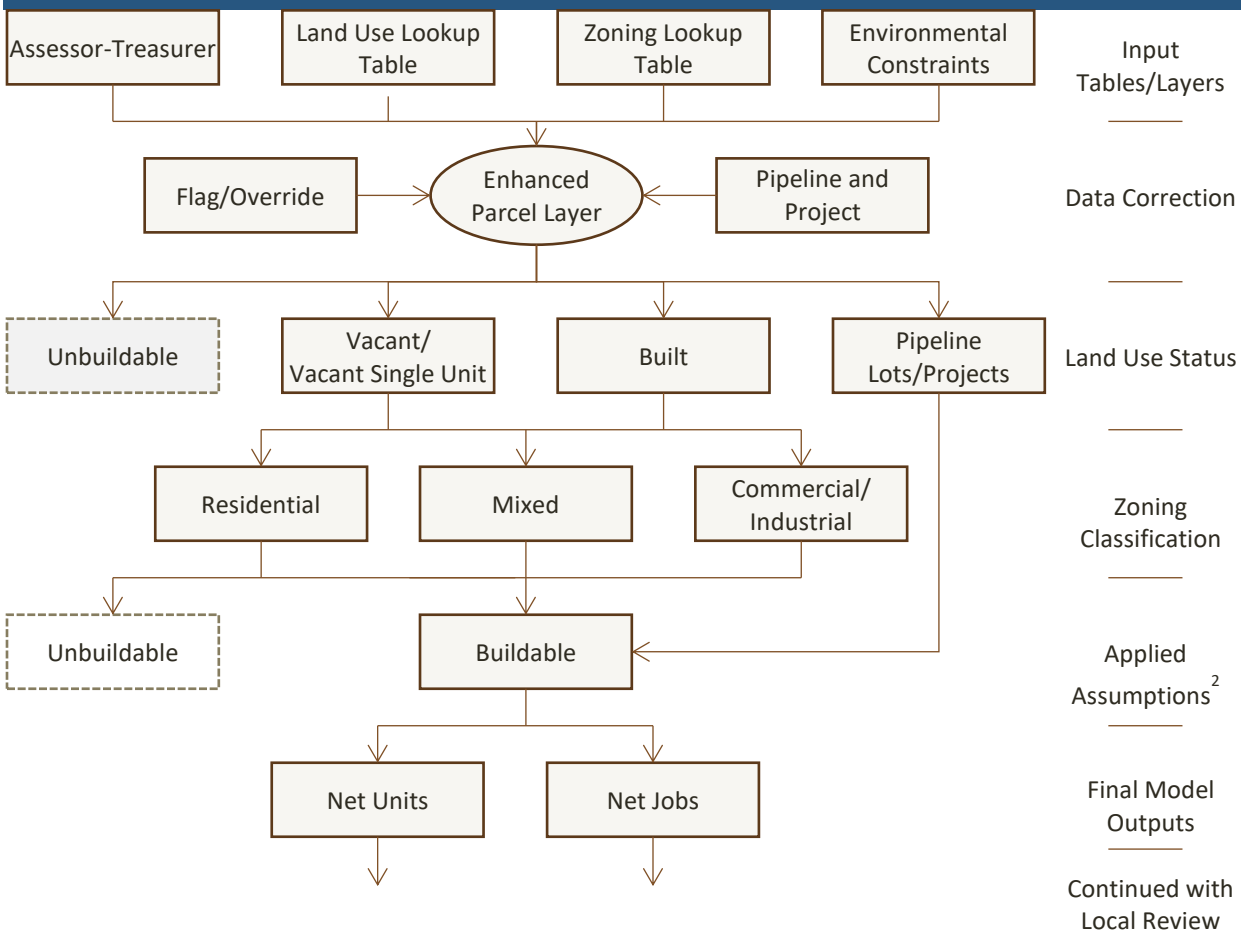
Appendix B: Buildable Lands Inventory Process

DATA INVENTORY

The process of buildable lands begins with assigning designations to parcels based on land use description. Parcels will be coded as vacant, potentially underutilized, unbuildable, or a special code for specific circumstance based on land use description. Certain land use codes that could be vacant will be marked for review by digital orthophoto to determine if they are vacant or not. This process is known as Stage 1A.

While vacant, vacant – single unit, and unbuildable are easily recognizable, underutilized lands require some definition and context. The underutilized category encompasses all parcels that could be further developed given market conditions. Thus, underutilized will capture parcels that have low densities for housing units or jobs that are assumed to have more capacity to accommodate population or employment growth. The following sections outline this process; text bodies contain the contextual information while the technical sequencing is displayed in bullets.

Appendix Figure 26: Buildable Lands Inventory Script Process



ESTIMATED NET UNITS AND JOBS

Net units and jobs are derived from the difference between the future estimated number of units and jobs respectively and the current baseline figures. These estimations are based on observed densities.

- For residential classifications future units equal the housing unit per acre assumption multiplied by the net acreage.
- For commercial and industrial classifications future jobs equal net acreage multiplied by the employees per acre density assumption.
- Residential net units equal the future residential units minus the 2020 inventoried units on the parcel.
- Commercial and industrial present jobs are calculated by parcel square feet divided by 500 for commercial and 900 for industrial.
- The net is then calculated by the present value subtracted from the future value.

INCLUSIONS AND EXCLUSIONS

Utilizing the classifications created in the first stage of this process, it was possible to manually search through selected fields and insert user overrides and special cases that need to be handled by the model separately. All of these classifications will be marked for inclusion or exclusion based on whether or not one could build upon them; hence those included are underutilized or vacant. Some parcels are locked at this stage so that the model ignores their land use type when calculating units and jobs. The model instead relies solely on the inventoried value supplied with the parcel itself. As an example, this occurs with pipeline projects which have a set number of future units.

- Query locks all pipeline parcels.
- Exclude all lots less than 3,000 net square feet, unless otherwise indicated by the jurisdiction.
- Exclude right of ways, narrow polygons, playgrounds, condos, some forms of government-owned lands, and marine areas.
- School sites are identified [this includes universities and colleges] and excluded.
- Vacant government parcels are included.
- Single-family residences on commercial, industrial, or mixed-use lands are included as underutilized.
- Exclude Joint Base Lewis-McChord parcels.
- Include/exclude manually corrected parcels.

REDEVELOPABLE EXCLUSIONS

Redevelopable exclusions provide another parameter which would exclude otherwise included parcels.

- If a single-family residence has an improvement value that is greater than or equal to $500,000 it is excluded.
- If a mobile home park, multifamily development, or commercial development has a value greater than or equal to $1,500,000 it is excluded.
- If a residential use has a future unit to base unit ratio less than 2.5 it is excluded.
- If a commercial use has a future job to existing estimated jobs ratio less than 5 it is excluded.

UNIT AND JOB REVISIONS

This section determines the final net units and jobs based on certain market assumptions, presumably that for underutilized units and jobs there must be sufficient additional units or jobs respectively, in order for development to likely occur.

- Housing units are first tested to determine if their acreage meets the minimum size for single-family zones. Those that do not meet this minimum are given a final unit of 1.
- School sites are marked at zero units and jobs while school parcels outside of the school boundary are treated as the parcel provided units and jobs indicate.
- Pipeline projects are marked with recorded units and jobs.
- Pipeline single-family residences are marked as vacant single units.
- Test redevelopable parcels for jobs and units and if they are below the minimum size. The ratio between future and base must be at least 2.5 for units and 5.0 for jobs.

CATEGORIZING POTENTIALLY VACANT, UNDERUTILIZED, AND UNBUILDABLE LAND

Appendix Table 1 shows the Assessor-Treasurer's (ATR) land use descriptions used to categorize land within the Buildable Lands Model.

Appendix Table 1: Inventory Categories for Assessor-Treasurer Tax Parcel Use Codes

	Landuse Description	Use Type	Category	Use Code
1	AG NOT CURRENT USE	OTHERS	REDEVELOPABLE	8100
2	AG RELATED ACTIVITIES	FIRES	REDEVELOPABLE	8200
3	AIRCRAFT TRANSPORTATION	WTCU	AIRCRAFT LAND	4300
4	AMUSEMENTS	FIRES	REDEVELOPABLE	7300
5	APPAREL & FINISH MFG	MANU	REDEVELOPABLE	2300
6	APPAREL ACCSSRS RETAIL	RETAIL	REDEVELOPABLE	5600
7	APT CONDO HIGH RISE	RES CON	REDEVELOPABLE	1410
8	APT/CONDO 3 STOR OR LESS	RES CON	REDEVELOPABLE	1405
9	AUTO ACCESSORIES RETAIL	RETAIL	REDEVELOPABLE	5525
10	AUTO DLR NEW AND USED RETAIL	RETAIL	REDEVELOPABLE	5515
11	AUTO PARKING	OTHERS	REDEVELOPABLE	4600
12	AUTO REPAIR SERVICES	FIRES	REDEVELOPABLE	6410
13	AUTO WRECKING RETAIL	RETAIL	REDEVELOPABLE	5500
14	BANKS	FIRES	REDEVELOPABLE	6110
15	BAYS OR LAGOONS	NA	UNBUILDABLE	9330
16	BIG BOX POWER CTR	WTCU	REDEVELOPABLE	5350
17	BLDG MTRL FARM EQUIP RETAIL	RETAIL	REDEVELOPABLE	5200
18	BUSINESS SERVICES	FIRES	REDEVELOPABLE	6300
19	CAR WASH	FIRES	REDEVELOPABLE	6412
20	CEMETERIES	FIRES	UNBUILDABLE	6242

	Landuse Description	Use Type	Category	Use Code
21	CHEMICAL MFG	MANU	REDEVELOPABLE	2800
22	COMM LND WITH IMPROV LAND VAL ONLY	OTHERS	REDEVELOPABLE	9178
23	COMM LND WITH SFR	MIXED USE	REDEVELOPABLE	1197
24	COMM VAC LAND	VACANT COM	VACANT	9170
25	COMM VAC LND SP ENVIR APPR FILED	VACANT COM	VACANT	9174
26	COMMUNICATION	WTCU	REDEVELOPABLE	4700
27	CONTRACTOR SERVICES	FIRES	REDEVELOPABLE	6600
28	CONVEN STORE MAY HAVE GAS	RETAIL	REDEVELOPABLE	5410
29	CREDIT UNIONS	FIRES	REDEVELOPABLE	6120
30	CU FARM & AGRI RCW 84.34 CURRENT USE	RCW LANDS	UNBUILDABLE	8300
31	CU OPEN SPACE RCW 84.34 CURRENT USE	RCW LANDS	REDEVELOPABLE	9400
32	CU TIMBERLAND RCW 84.34 CURRENT USE	RCW LANDS	REDEVELOPABLE	9500
33	CULTIVATED TIDELANDS	NA	UNBUILDABLE	8491
34	CULTURAL ACTIVITIES	FIRES	REDEVELOPABLE	7100
35	DENTAL SERVICES	FIRES	REDEVELOPABLE	6512
36	DESIG FOREST LND RCW 84.33	RCW LANDS	REDEVELOPABLE	8800
37	DET GARAGE CONDO	RES CON	REDEVELOPABLE	5030
38	DISCOUNT STORES	RETAIL	REDEVELOPABLE	5320
39	DRAINFLDS CATCH BASINS	NA	UNBUILDABLE	4830
40	DUPLEX 2 UNITS	RES MF	REDEVELOPABLE	1202
41	DUPLEX CONDO	RES CON	REDEVELOPABLE	1402
42	EDUCATIONAL SERVICES	EDUC	REDEVELOPABLE	6800
43	ELEM SCHOOLS 1 TO 6	EDUC	SCHOOL LAND	6810
44	ENTERTAINMENT BARS	FIRES	REDEVELOPABLE	5822
45	ESPRESSO SHOP	RETAIL	REDEVELOPABLE	5815
46	FAB METAL PRODUCTS	MANU	REDEVELOPABLE	3400
47	FARMS NOT CURRENT USE	OTHERS	REDEVELOPABLE	8140
48	FAST FOOD	RETAIL	REDEVELOPABLE	5805
49	FIRE STATIONS	GOV	GOV LAND	6720
50	FISHING ACTIVITIES AND SERVICES	FIRES	REDEVELOPABLE	8400
51	FLOOD PLAIN	NA	UNBUILDABLE	9108
52	FLOODWAY	NA	UNBUILDABLE	9109
53	FOOD MFG	MANU	REDEVELOPABLE	2100
54	FOOD RETAIL TRADE	RETAIL	REDEVELOPABLE	5400
55	FOURPLEX 4 UNITS	RES MF	REDEVELOPABLE	1204
56	FOURPLEX OR MORE CONDO	RES CON	REDEVELOPABLE	1404
57	FUELING STATIONS	RETAIL	REDEVELOPABLE	5550
58	FUNERAL CREMATORY SERV	FIRES	REDEVELOPABLE	6241
59	FURNITURE MFG	MANU	REDEVELOPABLE	2500

	Landuse Description	Use Type	Category	Use Code
60	GAS STATION CASHIER BOOTH	RETAIL	REDEVELOPABLE	5560
61	GAS STATION MINI MART	RETAIL	REDEVELOPABLE	5540
62	GAS STATION SERV GAR	RETAIL	REDEVELOPABLE	5530
63	GAS STATION VAC NO PUMPS	RETAIL	REDEVELOPABLE	5570
64	GEN MERCHANDISE RETAIL TRADE	RETAIL	REDEVELOPABLE	5300
65	GEN WAREHOUSING STORAGE	WTCU	REDEVELOPABLE	6310
66	GOLF COURSES	FIRES	GOLF COURSE	7410
67	GOVERNMENTAL SERVICES	GOV	GOV LAND	6700
68	GRNBELT COMMON AREAS	NA	UNBUILDABLE	7630
69	HORTICULTURAL SPECIALTIES	FIRES	REDEVELOPABLE	8150
70	HOSPITAL	FIRES	REDEVELOPABLE	6510
71	HOTELS/MOTELS	FIRES	REDEVELOPABLE	1600
72	IND INDIAN RESERV LND	VACANT IND	VACANT	9186
73	IND LND WITH IMPROV LAND VAL ONLY	VACANT IND	VACANT	9188
74	IND VAC LND SP ENVIR APPR FILED	VACANT IND	VACANT	9184
75	INSTITUTIONAL LODGING	FIRES	REDEVELOPABLE	1700
76	JR COLLEGES	EDUC	SCHOOL LAND	6840
77	LIBRARIES	FIRES	GOV LAND	7110
78	LNDRY & DRY CLEANING SERV	FIRES	REDEVELOPABLE	6210
79	LUMBER & WOOD MFG	MANU	REDEVELOPABLE	2400
80	MARINA SLIP CONDOS	NA	UNBUILDABLE	5050
81	MARINAS	WTCU	UNBUILDABLE	7420
82	MARINE CRAFT TRANSPORTATION	WTCU	REDEVELOPABLE	4400
83	MEDICAL OFFICES SERVICES	FIRES	REDEVELOPABLE	6511
84	MH PARK	RES MH	UNBUILDABLE	1500
85	MH PARK CONDO	RES CON	UNBUILDABLE	1440
86	MH SALES RETAIL	RETAIL	REDEVELOPABLE	5505
87	MH SR/DISABLED EXEMPT ADMIN COMBO	RES MH	REDEVELOPABLE	1154
88	MH TITLE ELIM	RES SFR	REDEVELOPABLE	1155
89	MILITARY BASES	GOV	GOV LAND	6750
90	MINI LUBE SERVICE	RETAIL	REDEVELOPABLE	6420
91	MINI WAREHOUSING	WTCU	REDEVELOPABLE	6380
92	MINING ACTIVITIES	MANU	UNBUILDABLE	8500
93	MISC MFG	MANU	REDEVELOPABLE	3900
94	MISC OFFICE SPACE	FIRES	REDEVELOPABLE	6199
95	MISC SERVICES	FIRES	REDEVELOPABLE	6900
96	MOBILE/MFG HOME	RES MH	REDEVELOPABLE	1152
97	MOTION PICTURE THEATERS	FIRES	REDEVELOPABLE	7210
98	MULTI FAM APTS 5 UNITS OR MORE	RES APT	REDEVELOPABLE	1305
99	MULTI FAM HIGH RISE 5 UNITS OR MORE	RES APT	REDEVELOPABLE	1306

	Landuse Description	Use Type	Category	Use Code
100	NGB COMMUNITY SC	RETAIL	REDEVELOPABLE	5360
101	NON COMM FOREST	VACANT	VACANT	9200
102	NURSERY SCHOOLS	EDUC	REDEVELOPABLE	6860
103	NURSING CONVALESCENT HOSPITALS	FIRES	REDEVELOPABLE	6516
104	OFF INSURANCE REAL ESTATE FINANCE	FIRES	REDEVELOPABLE	6100
105	OFFICE CONDO	FIRES	REDEVELOPABLE	5020
106	OLDER BUSINESS DIST	FIRES	REDEVELOPABLE	5390
107	OP PROP RR RIGHT OF WAY	NA	UNBUILDABLE	4111
108	OTHER CULTURAL ACTIVITIES	FIRES	REDEVELOPABLE	7900
109	OTHER GROUP QTRS	RES GQ	REDEVELOPABLE	1860
110	OTHER PUB ASSEMBLY	FIRES	REDEVELOPABLE	7200
111	OTHER RESIDENTIAL	RES OTHER	REDEVELOPABLE	1800
112	OTHER RESOURCE PROD	FIRES	REDEVELOPABLE	8900
113	OTHER RETAIL TRADE	RETAIL	REDEVELOPABLE	5900
114	OTHER TRANS UTILITIES	WTCU	UNBUILDABLE	4900
115	OTHER UNDEVEL LAND	VACANT	VACANT	9900
116	OTHER WATER AREAS	NA	UNBUILDABLE	9390
117	PAPER PROD MFG	MANU	REDEVELOPABLE	2600
118	PARKS	NA	UNBUILDABLE	7600
119	PERSONAL SERVICES	FIRES	REDEVELOPABLE	6200
120	PETRO INDUSTRIES	MANU	REDEVELOPABLE	2900
121	POSTAL SERVICES	GOV	GOV LAND	6730
122	PRIM METAL INDUSTRIES	MANU	REDEVELOPABLE	3300
123	PRINTING PUBLISHING	FIRES	REDEVELOPABLE	2700
124	PRISONS	GOV	GOV LAND	6740
125	PROFESSIONAL SERVICES	FIRES	REDEVELOPABLE	6500
126	QUARRY SAND ROCK	MANU	UNBUILDABLE	8505
127	REC ACTIVITIES	FIRES	UNBUILDABLE	7400
128	REFRIG WAREHOUSE	WTCU	REDEVELOPABLE	6373
129	REGIONAL SC	RETAIL	REDEVELOPABLE	5380
130	RELIGIOUS SERVICES	FIRES	UNBUILDABLE	6910
131	RENTAL EQUIP AUTO TRUCK	FIRES	REDEVELOPABLE	6390
132	REPAIR SERVICES	FIRES	REDEVELOPABLE	6400
133	RES INDIAN RESERV LND	OTHERS	REDEVELOPABLE	9160
134	RES LND WITH COMM BUILDING	MIXED USE	REDEVELOPABLE	9145
135	RES LND WITH IMPROV LAND VAL ONLY	RES OTHER	REDEVELOPABLE	9140
136	RES NO PERK VAC LND REQ DOC	VACANT	VACANT	9101
137	RESORTS CAMPS	FIRES	UNBUILDABLE	7500
138	RESTAURANT	RETAIL	REDEVELOPABLE	5800
139	RETAIL HOME FURNISHINGS	RETAIL	REDEVELOPABLE	5700

	Landuse Description	Use Type	Category	Use Code
140	RETAIL STAND ALONE	RETAIL	REDEVELOPABLE	5999
141	RETIREMENT HOME	RES GQ	REDEVELOPABLE	1840
142	RM BOARDING HOUSE	RES GQ	REDEVELOPABLE	1300
143	RR EQUIP MAINT	WTCU	UNBUILDABLE	4112
144	RR PASSENGER TERMINALS	WTCU	UNBUILDABLE	4113
145	RV SALES RETAIL	RETAIL	REDEVELOPABLE	5510
146	SALONS SPAS BARBER SHOPS	FIRES	REDEVELOPABLE	6231
147	SALTWATER TIDELANDS	NA	UNBUILDABLE	9391
148	SCI INSTR PHOTO OPTICAL WATCH MFG	MANU	REDEVELOPABLE	3500
149	SEC SCHOOLS 7 TO 12	EDUC	SCHOOL LAND	6820
150	SFR CONDO	RES CON	REDEVELOPABLE	1401
151	SINGLE FAMILY DWELLING	RES SFR	REDEVELOPABLE	1101
152	SPECIAL TRAINING SCHOOLS	EDUC	REDEVELOPABLE	6870
153	SPECIALTY FOOD MKTS	RETAIL	REDEVELOPABLE	5430
154	SPORTS BAR REST LARGER TAV	RETAIL	REDEVELOPABLE	5825
155	STONE/CLAY/GLASS MFG	MANU	REDEVELOPABLE	3200
156	STREET RIGHT OF WAY	NA	UNBUILDABLE	4500
157	SUBSIDIZED HIGH RISE 5 OR MORE	RES APT	REDEVELOPABLE	1308
158	SUBSIDIZED UNITS 5 OR MORE	RES APT	REDEVELOPABLE	1307
159	TAVERNS	RETAIL	REDEVELOPABLE	5820
160	TEXTILE MILL MFG	MANU	REDEVELOPABLE	2200
161	TRANSFERRED DEVELOPMENT RIGHTS	NA	UNBUILDABLE	9190
162	TRANSIT RR RIGHT OF WAY	NA	UNBUILDABLE	4100
163	TRIPLEX 3 UNITS	RES MF	REDEVELOPABLE	1203
164	TRIPLEX CONDO	RES CON	REDEVELOPABLE	1403
165	UNIVERSITY/COLLEGES	EDUC	SCHOOL LAND	6830
166	UNKNOWN	NA	UNBUILDABLE	0
167	USED CAR LOTS ONLY RETAIL	RETAIL	REDEVELOPABLE	5520
168	UTILITIES	WTCU	UNBUILDABLE	4800
169	VAC INDUSTRIAL LAND	VACANT IND	VACANT	9180
170	VAC LND BLDG RESTRICT DOC REQ	VACANT	VACANT	9110
171	VAC LND MAJOR PROBLEM	NA	UNBUILDABLE	9166
172	VACANT LAND UNDEVELOPED	VACANT	VACANT	9100
173	VEHICLE TRANSPORTATION	WTCU	REDEVELOPABLE	4200
174	VETERINARIAN SERVICES	FIRES	REDEVELOPABLE	6520
175	VOC TRADE SCHOOLS	EDUC	REDEVELOPABLE	6850
176	WAREHOUSE CONDO	WTCU	REDEVELOPABLE	5060
177	WATER AREAS	NA	UNBUILDABLE	9300
178	WELL SITES	NA	UNBUILDABLE	4836
179	WETLANDS RECORDED	NA	UNBUILDABLE	9112

	Landuse Description	Use Type	Category	Use Code
180	WHOLESALE TRADE	WTCU	REDEVELOPABLE	5100
181	RV PARK	RES MH	REDEVELOPABLE	1501
182	MARIJUANA GROW OPERATIONS	WTCU	REDEVELOPABLE	
183	VAC LND NOT A BLDG SITE	NA	UNBUILDABLE	

Appendix C: Employment Density Survey

Pierce County contracted with AHBL and ECONorthwest to analyze available employment data and determine if an update to the employment assumptions used in the Buildable Lands analysis is necessary. ECONorthwest provided the following memorandum with findings on the employment density assumptions.

ECONorthwest
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DATE: July 1, 2019
TO: Dan Cardwell and Jessica Gwilt, Pierce County
CC: Wayne Carlson and Brittany Port, AHBL
FROM: Bob Parker, Denise Chin, Sadie DiNatale, Ryan Ulsberger
SUBJECT: PIERCE COUNTY EMPLOYMENT DENSITY SURVEY TECHNICAL MEMORANDUM

1 Summary

An initial step in updating the methodology for Pierce County's buildable lands program is to review the methodology used to complete the 2014 Buildable Lands Report (BLR) and identify methodological changes based on amended state legislation, data availability, and best practices. Task 1.2 of the Buildable Lands Program Support work program includes an evaluation of the past employment density survey methodology, proposed refinements the approach, and conducting a new employment density survey for Pierce County. This memorandum summarizes ECONorthwest's initial research and analysis related to this task.

Several refinements to the 2014 methodology could improve the capacity and land need estimates. Given the amount of variability that exists in broad employment categories, and PSRCs regional plans, we recommend that any methodology employ the principles of simplicity and transparency. More complicated methods do not necessarily improve the results. We recommend the County consider adjustments for employment in residential areas and using the PSRC center framework.

Pierce County's challenge is developing an acceptable methodology that can be applied across many jurisdictions that range from urban centers to suburbs, to rural communities, to rural areas. After a thorough investigation of the methodological options, we make the offer the following recommendations:

- **Continue to use an EPA based method**. Given the countywide scope and the diversity of cities, EPAs are the most accurate and practical method for estimating employment capacity of vacant and under-utilitized land as well as land demand.
- **Consider refinements to the methods used in the 2014 BLR.** The County could make refinements to both the capacity and land demand estimates.
    - **Consider allocating some employment to non-employment lands**. Our review of the 2014 BLR suggests that all of the employment growth increment is allocated to employment lands. We suggest considering allocating some employment to non-employment lands.
    - **Consider disaggregating employment forecasts to three or more categories.** A review of the 2014 BLR only identified single value employment figures. The PSRC data ECO used for the employment density analysis in section 3 is available by city disaggregated by sectors or 2-digit NAICS codes. At the

simplest, the models could differentiate between retail, office, and warehouse employment densities.

- **Consider developing a land use typology based on PSRC's Regional Centers Strategy. Typology by PSRC regional centers.**[1] PSRC's VISION 2040 calls for the creation of central places with a mix of uses and activities connected by efficient transportation. PSRC designated 29 regional growth centers which are locations of the region's most significant business, governmental, and cultural facilities and are planning for growth. PSRC also identified nine regional manufacturing/industrial centers, which are locations for more intensive industrial activity. According to PSRC, both regional growth centers and regional manufacturing/industrial centers are focal points for planned growth, economic development and transportation infrastructure investments.

  Moreover, the framework identifies three primary geographies: Metropolitan Cities (16 centers), Core Cities (17), and Unincorporated Urban Areas (3). Five regional growth centers and two industrial/manufacturing centers are located in Pierce County.

  PSRC's 2013 Monitoring Report presents employment densities for each of the areas based on 2010 data. Exhibit X shows employment densities for Pierce County Centers. The observed densities are lower than the commercial assumptions in all instances, and considerably lower than the 2014 industrial assumptions for the industrial/manufacturing centers.

  Given that much of the county's employment is located outside these centers, any method will require assumptions for capacity of those lands. The County could use the 2014 assumptions, or use an approach based on city type.

[1] https://www.psrc.org/sites/default/files/centers_monitoring.pdf

2 Background

An initial step in updating the methodology for Pierce County's buildable lands program is to review the methodology used to complete the 2014 Buildable Lands Report (BLR) and identify methodological changes based on amended state legislation, data availability, and best practices. Task 1.2 of the Buildable Lands Program Support work program includes an evaluation of the past employment density survey methodology, proposed refinements the approach, and conducting a new employment density survey for Pierce County. This memorandum summarizes ECONorthwest's initial research and analysis related to this task.

Pierce County last completed an employment density in 2007. The County is interested in whether the methods and assumptions used in the 2010 Survey are still reasonable, and if there are ways to improve them. AHBL subcontracted to ECONorthwest to provide this analysis. This document details the process of confirming employment density assumptions in Pierce County. The key questions considered in this task are:

- How accurate were the previous methods used?
- How does employment density vary by and within employment sectors?
- How does employment density vary by geography (e.g., cities)?

The 2010 analysis used Employment Security data that allowed matching of specific employers to tax lots. ESD no longer releases parcel-specific employment data. Thus, the updated employment density survey will require a different method to update the employment density assumptions. In addition, the County desires to understand how employment densities may have changed over time based on changing work configuration and technologies. ECONorthwest conducted the analysis presented in this memorandum using the following approaches:

(1) Spatial analysis in GIS using PSRC employment data by city and census tract

(2) A review of studies surrounding buildable land inventories, employment surveys, and other relevant research to observe new employment density methods or consider changing assumptions

(3) Informational interviews with real estate professionals to gain insight on recent trends in commercial and industrial employment in Pierce County

The 2014 BLR used a relatively simple method that applied standardized average employee per acre assumptions for commercial and industrial uses. The memo concludes with a discussion of the merits of the method used in the 2014 BLR as well as alternative methodological options for estimating demand for employment land.

The following sections provide legal context to buildable land inventories in Pierce County under Washington state's Growth Management Act; and a discussion of past methods and assumptions used in Pierce County's Employment Density Surveys.

2.1 Legal Context

The employment density survey provides data that support assumptions used to determine land needed for employment uses. The statutory guidance from the program is codified in RCW 3670A.215. Specifically, the following two subsections address density of employment:

- Based on the actual density of development, review commercial, industrial, and housing needs by type and density range to determine the amount of land needed for these uses for the remaining portion of the current 20-year planning period (RCW 36.70A.215(3)(e));
- Determine if there is sufficient employment capacity for the remainder of the planning period based upon planned and achieved densities (RCW 36.70A.215(3)(e));

Section 3 provides further guidance on how the data are used:

(a) Determine whether there is sufficient suitable land to accommodate the countywide population projection established for the county pursuant to RCW 43.62.035 and the subsequent population allocations within the county and between the county and its cities and the requirements of RCW 36.70A.110;

(b) Determine the actual density of housing that has been constructed and the actual amount of land developed for commercial and industrial uses within the urban growth area since the adoption of a comprehensive plan under this chapter or since the last periodic evaluation as required by subsection (1) of this section; and

(c) Based on the actual density of development as determined under (b) of this subsection, review commercial, industrial, and housing needs by type and density range to determine the amount of land needed for commercial, industrial, and housing for the remaining portion of the twenty-year planning period used in the most recently adopted comprehensive plan.

The 2018 *Buildable Lands Guidelines* document provide concise direction on the process and distill the requirements into two questions: How much land was actually developed for commercial and industrial uses within the UGA since the last comprehensive plan was adopted or the last evaluation completed? Based on this and other relevant information, how much land would be needed for commercial and industrial development during the remainder of the 20-year comprehensive planning period?

Thus, while the guidelines provide direction on how to address commercial and industrial development, they are not proscriptive and provide considerable local discretion with respect to methods. Because the focus of this research is on employment density, we do not address other aspects of the methods related to commercial and industrial land.

2.2 Methods and Assumptions Used in Previous Studies

In this section, we discuss past methods and assumptions from Pierce County's 2007 Employment Density Survey and 2014 Buildable Lands Report. As a general observation, the methods used for employment density surveys have not changed much throughout the years.

Definitions: Floor Area Ratios, Employees Per Square Foot, and Employees Per Acre

The Buildable Lands Guidelines and BLR reports use the terms Floor Area Ratio (FAR), Employees Per Square Foot (Emp/sf), and Employees Per Acre (EPA). We start by establishing definitions and the relationship between each of these metrics.

By definition, employment density is the ratio of labor to land. Several measures of employment density exist: FARs, EPAs, and sq. ft. per employee. To understand the relationship between Floor Area Ratios, square feet per employee, and employee per acre ratios, we start with definitions.

- Floor Area Ratio (FAR). The Floor Area Ratio is the total building square footage (building area) divided by the site size square footage (site area)
- Square Feet Per Employee (SFE). The total square feet required for employees. This includes shared spaces such as lobbies, hallways, elevators and stairwells, restrooms, and other built space.
- Employee per acre ratio (EPA). The total number of employees divided by the size of the site. Implicitly, this is a net density figure; it does not include land needed for streets and other public uses.

Given these definitions, there is a simple mathematical relationship between the three measures as expressed below.

FAR can be derived from EPA and SFE as follows:
(EPA*43560)/SF per Emp

SFE can be derived from EPA and FAR:
(FAR*43560)/EPA

EPA can be derived from SFE and FAR:
(FAR*43560)/SFE

A key issue in estimating EPA ratios is what values are used in the numerator and denominator. The numerator is typically straightforward—reported employment figures. Most analysis we have reviewed do not make distinctions about shifts, or whether employees are full or part time. This is consistent with the way employment data are typically presented.

The issue of the denominator is considerably trickier. The nature of commercial and industrial development is such that it often spans several tax lots. In these instances, calculating density on a tax lot basis can be misleading. Shopping centers, industrial parks, or any employment use

that includes multiple tax lots should be analyzed as combined sites. Parking can also be an issue—is parking part of an employment use or not? If it is in the same ownership and directly related to the use, it should be.

Mixing of employment further complicates matters. In a detailed analysis in Bend, Oregon, we found considerable mixing of employment that would be considered commercial or industrial. The data showed considerable employment in industrial zones that would typically be considered commercial, and the opposite. Zoning codes typically are not proscriptive by NAICS categories.

A final issue is employment that is on lands not zoned for employment. In Oregon cities, we have observed that between 10% and 25% of employment in a city can be on lands that are not zoned for employment. These include typical uses that sometimes locate in residential zones such as schools and churches, as well as home occupations, construction firms, and certain types of retail or service firms that are permitted by zoning.

One of the issues that complicates estimating land capacity is variability. As pointed out in previous Pierce County employment density surveys, employment density in commercial zones can range from more than 100 per acre for restaurants to a few per acre for certain retail uses. Employee per acre ratios implicitly assume…

Pierce County 2007 Employment Density Survey

Pierce County conducted employment density surveys in 2004 and 2007. In those surveys, the method was based on location-specific employment data from the Washington State Employment Security Department (ESD)[2] and parcel data from the Pierce County Assessor-Treasurer. Businesses included in the survey were randomly selected and categorized based on the sector.

The 2007 Employment Density Survey utilized building permit data, ESD covered employment data, and Pierce County Assessor-Treasurer (ATR) parcel records. Data for Downtown Tacoma was segregated and reported separately due to its unique development intensity—downtown Tacoma reported much higher employment density than elsewhere in the County.

To arrive at the average employee per acre numbers, the sum of the total number of employees and parcel acreage under each category was divided by the total employees by total acreage.

The 2007 Survey identified several data limitations such as unavailable ESD employment data for the entire five-year trending period at the initiation of the project; a large number of commercial/industrial permits in 1999 and 2000 could not be associated with ESD employment data points.

[2] The ESD data includes firms that report covered employment. The data includes average employment, NAICS codes, and is geolocated. This makes calculating employment densities at the industry or zoning district level relatively straightforward: select a sample of employers, sum the average employment, and then divide it by the number of acres reported in the Assessor-Treasurer tax lot database.

Pierce County 2014 Buildable Lands Report

The 2014 BLR adopted the same methodology as the 2002 and 2007 analyses. The one exception in the 2014 BLR methodology is the consolidation of "underdeveloped" and "redevelopable" categories into one "underutilized" category, as well as the criteria used to identify parcels within this category. The authors note that this step was in effort to achieve inter-departmental consistency between the County's land use and transportation models.

Exhibit 1 provides a summary of resultant employment densities from past employment surveys and buildable lands reports in Pierce County. The report consistency applies the 8.25 EPA for commercial and the 19.37 EPA for industrial in all geographies but Tacoma.

Exhibit 1. Pierce County Employment Density Comparisons (employees per acre)

Employment sector	1999 Survey	2004 Survey Average	2004 Survey Median	2007 Survey	2014 BLR
Industrial	11.15	13.8	21.32	11.15	8.25
Commercial	34.3	21.92	19.37	19.37	19.37
Government	22.7	7.74	n/a	n/a	n/a
Downtown Tacoma	318	356.77	235.59	235.59	**

Source: ECONorthwest, with data from Pierce County 2007 Employment Density Survey and Pierce County 2014 Buildable Lands Report

** Table 11a of the 2014 Buildable Lands Report (page 225) shows that higher assumptions were used for Tacoma in many zones. The report does not provide an explanation of the source of the assumptions.

2018 Buildable Lands Guidebook

Chapter 3 of the 2018 *Buildable Lands Guidebook* provides guidance on approach and methodologies related to commercial and industrial land capacity. The guidebook indicates that data from the Institute of Transportation Engineers (ITE) presents employees per square footage of buildable area data their trip generation manuals to determine potential trip generation for development and redevelopment sites. Obtaining a copy of the ITE manual was cost prohibitive for this project.

The guidebook suggests that an alternative method that may be used is an employment density calculation based on a ratio of employees per net acre, if employee estimates are available. It suggests that Washington State Employment Sector data can supply jobs per acre estimates. ECO was unable to locate any analysis of employment density based on sector data. The next section presents an analysis of Census tract level. sector data compiled by PSRC.

The Guidebook also suggests that employment densities can be calculated using FAR for buildings constructed during the evaluation period. This approach can be refined by building type or type of employment if data are available. FAR data can then be combined with SF/Emp data from ITE or other sources to arrive at an estimate of employees and employment density in

EPA. This approach would allow for an estimate of achieved employment densities per land use category.

3 Pierce County 2019 Employment Density Analysis

The following sections detail analyses carried out by ECONorthwest to document achieved employment densities and inform methodological options.

3.1 Spatial Analysis of Employment Patterns and Densities

ECO explored alternative methods for estimating employment densities. This analysis intended to assess a methodology for estimating the density of employment throughout Pierce County, Washington using PSRC data at the census tract level combined with parcel data.

Our assessment of this approaches is that available data is not consistent enough to accurately predict employment densities with granularity to enable decision making. However, with directed effort, data maintained by Pierce County and other regional planning agencies could potentially be used for employment density analysis. We are unable to estimate the amount of effort it would take to make the data reasonably reliable for BLR purposes. Two factors are particularly problematic: (1) variability in employment densities within generalized categories; and (2) the quality of the underlying land use/parcel data.

Methodology

Assessors data is some of the most routinely maintained data by counties and represents the smallest geography available from tracking land use. Different properties have different appraisal types; for example, commercial properties are assessed differently than residential properties. Recognizing this advantage, the parcel database was used to identify the different types of land use occurring on properties throughout Pierce County.

As mentioned before, different types of appraisals occur for different types of land uses. Possible appraisal types are summarized in Exhibit 2.

Exhibit 2. Pierce County Appraisal Types

Land Use Categorization	Appraised Property Types
Residential Landuses	
	Residential
	Residential Leasehold
	Condominium
	Reference
Economic and Other Landuses	
	Commercial
	Commercial Condo
	Commercial Leasehold
	Commercial Multi Unit
	Industrial
	Trended Investment

Source: Pierce County Assessor

Appraisal types do not always correspond to the actual use of a parcel. Housing land uses can incorporate some economic uses which were not captured in this analysis. There is not an accurate way to predict where self-employed or work-from-home employees are based geographically from any available datasets. Furthermore, commercial and industrial appraisal types can also have residential land uses or community and cultural land uses which do not provide any employment. As a result, the Pierce County Assessor also identifies land use descriptions which attempts to clarify what the parcel's current use is. For non-housing appraisal types in Pierce County, there were 179 distinct land use descriptions. This analysis attempted to match land use descriptions to major sectors as designated by the North American Industry Classification System (NAICS). The land use NACIS describes the major sectors of employment as the following:

- Construction and Resources
- Finance, Insurance and Real Estate (FIRE)
- Manufacturing
- Retail
- Services
- Wholesale Trade, Transportation, and Utilities (WTU)
- Government
- Education

The minimum geographical unit available with employment coverage covering all of Pierce County is by census tract. Thus, each parcel was associated with the corresponding census tract.

Employment data was acquired from the Puget Sound Regional Council (PSRC) who has worked with the Washington State Employment Security Department (ESD) to conduct the

Quarterly Census of Employment and Wages (QCEW) and complied into the Covered Employment Estimate Dataset. This data collects the employment information for all employees covered by the Washington Unemployment Insurance Act and aggregates this data across census tracts. However, out of privacy concerns for employers, any employer who has more than 80% of the employment share for a given census tract has the value withheld.

Finally, the total land area for a given NACIS Major Sector was calculated by parcel area for each census tract. The PSRC employment data was joined to the parcel data using the census tract id, which revealed a total employee count per NACIS Major Sector land area where available. In areas where employment data was obscured, these parcels were removed from the analysis as

The result is an employment density covering the entirety of Pierce County.

Results

The results of the analysis, summarized in Exhibit 3, ranges of employment density range from 49 employees per acre for Finance, Insurance, and Real Estate uses to 2 employees per acre for both Construction and Resource, and Wholesale, Transportation, and Utility land uses in Pierce County. Unsurprisingly, land uses which are concentrated in office environments, or retail and service uses centered in Urban Centers have much higher employment densities that land uses which typically require larger footprints such as warehousing and industrial and manufacturing uses.

Exhibit 3.: Summary of Employment Density for NAICS Major Sectors

Economic Use Category	Total Census Tracts	Total Parcels	Total Acres	Total Employment	Employment Land Use Ratio (Employment/Acre)
CONSTRUCTION/RESOURCE	47	271	4,974	10,097	2
CONSTRUCTION/RESOURCE - EMPLOYMENT DATA REMOVED	3	32	569		
EDUCATION	132	746	5,206	20,494	4
FINANCE/INSURANCE/REAL ESTATE	76	350	241	11,716	49
FINANCE/INSURANCE/REALESTATE - EMPLOYMENT DATA REMOVED	11	14	12		
GOVERNMENT	96	369	2,318	19,013	8
MANUFACTURING	47	919	4,069	11,619	3
MANUFACTURING - EMPLOYMENT DATA REMOVED	28	89	1,034		
RETAIL	109	2,988	3,051	31,124	10
RETAIL - EMPLOYMENT DATA REMOVED	31	238	246		
SERVICES	147	7,566	15,151	113,820	8
SERVICES - EMPLOYMENT DATA REMOVED	2	9	22		
WHOLESALE/TRANSPORTATION/UTILITIES	86	2,054	7,868	16,389	2
WHOLESALE/TRANSPORTATION/UTILITIES - EMPLOYMENT DATA REMOVED	58	285	1,355		
UNCLASSIFIED	151	4,653	12,620		

Source: Pierce County, PSRC, Census, ECONorthwest

However, estimates of employment are likely to be lower than the actual employment because of the withheld employment estimates for those employers which had more than 80% of employment within a census tract. For example, employment in the Frederickson Manufacturing and Industrial Center is anchored by the Boeing Manufacturing Facility. The employment this facility was withheld because Boeing met the 80% threshold to obtain

anonymity in the PSRC employment dataset. Boeing is the 4th largest employer within Pierce County with an estimate employment of 1,550 employees as of 2018[3] and would represent an employment ratio of 2.7 employees per acre if all employees were working on the Fredrickson property.[4]

Review and Assessment

After reviewing the results from the employment density analysis for Pierce County, the results were not as conclusive as desired. In short, we do not conclude that this is a viable method that could be incorporated into the BLR.

In particular, two obstacles appeared while using the data available from the Pierce County Assessors Data and the PSRC Employment Dataset.

1. Assessors land use and appraisal types are not consistent across different land uses. Furthermore, land uses descriptions can describe a variety of potential uses that do not relate to economic activities cleanly; if they are classified at all.
2. Employment data is sensitive information and is often obscured to maintain the anonymity of an employer.

If these obstacles were mitigated, the feasibility of using the Pierce County Assessors Data and the PSRC Covered Employment Estimates could become a viable method. In particular, verifying the appraisal types and the land use descriptions of given parcels in Pierce County Assessors database would increase the resolution of the analysis. Furthermore, a partnership with the Washington State Employment Security Department to retrieve the employment data over the 80% employment threshold for a given census tract would allow for more refined results that could better estimate employment density in the county.

3.2 Literature review

EOC conducted an extensive literature review that included academic articles, planning reports conducted in cities and counties within and outside of Washington state, relevant findings from a similar ECONorthwest review conducted in 2015 that was focused on industrial employment densities. We also explored employment density themes throughout the region and the US. One observation we made is that there is little academic research on employment density—a fact we found surprising. Exhibit 4 displays a summary of studies reviewed from Washington state. A more detailed matrix can be found in Appendix 1.

3 Economic Development Board, https://www.edbtacomapierce.org/area-profile/2018-major-employers/, Accessed May, 2019

4 Manufacturing and industrial land uses exists on an estimated 571 acres for Census tract 731.08.

Exhibit 4. Summary of Methods, Assumptions, and Findings from Washington State Studies

Location	Methodology	Employment Density Assumptions (Emp./acre or SFE)		Findings
		Commercial	Industrial	
Counties				
Clark	• Building permits primary source of data from 2006-2016.	9.3	10.9	County has sufficient capacity to accommodate projected employment growth.
Island	• Suppressed data substituted with older available data. • For jobs missing in QCEW data, methodology from PSRC used to estimate total employment from covered employment. • City of Freeland excluded from calculation of employment density average due to lack of amenities (sewer). • Due to County's low industrial employment, rounded average from neighboring counties (Skagit, Clark, Pierce) used for industrial assumptions.	17.0	8.0	Sufficient capacity to accommodate anticipated employment growth.
King (BLR)	• Half of jurisdictions brought forward 2007 BLR density and capacity calculations; remainder cities required new capacity analysis • Location-specific densities reported in final analysis.	250 - 850 SFE*	250 - 851 SFE*	Sufficient capacity to accommodate residential, employment growth.
King (Emp. Capacity Analysis)	• Employment density assumptions from 2007 BLR. • Does not consider future fiscal impacts of redevelopment within Duwamish Industrial Manufacturing Center.	550 SFE	800 SFE	• Total assessed land value for the South Park LID area is $2,458,285,700. • Total assessed value for the MIC site is $193,751,000.
Kitsap	• Methods for Land Capacity Analysis adjusted following Remand Order: 1) Using trend-based density factors for each residential zone 2) Increase public facility deduction to 20% 3) Remove discount for environmental purposes in Urban Restricted Zone 4) Platted lots adjustment	969 SFE	500 SFE	Sufficient capacity to meet industrial and commercial development to 2025, 2016-2036.

Location	Methodology	Employment Density Assumptions (Emp./acre or SFE)		Findings
		Commercial	Industrial	
Snohomish	• Existing structures (as of April 2011) counted as population or employment base; proposed, built, or occupied structures after April 2011 counted as future capacity.	200 - 700 SFE	300 - 20,000 SFE	Adequate land capacity reported in the County for the 2025 adopted UGA population and employment growth targets.
Thurston		3.3	1.5	Sufficient land supply to support projected growth to 2035.
Whatcom	• Based on 2009 Land Capacity Analysis methodology	626 - 900 SFE	775 - 3,500 SFE	Surplus capacity to meet future employment needs
Region				
Puget Sound Regional Council	• Relevant mixed-use zones and land classification included into analysis if related to industrial land. E.g. "Business Park"; "Employment Center" • Parcels considered industrial land if significant industrial development present or permitted to occur. • Four categories of industrial lands: Core industrial; Industrial commercial; Military industrial; Aviation operations areas • Special consideration given to tribal land; natural resource lands; limited areas of more intense rural development; planned developments		0.25 - 14.7*	Employable land capacity variable to area: • Strong demand / limited capacity: Interbay-Ship Canal, Duwamish-North Tukwila, Kent-Renton, and SeaTac-Des Moines subareas • Strong demand/adequate capacity: Frederickson- Lakewood, Southwest Everett and Tacoma-Puyallup subareas • Adequate capacity: I-405 Corridor, Arlington-Marysville, and North-Central Everett subareas • Surplus capacity: DuPont-Gray Field, Puget Sound Industrial Center (PSIC)-Bremerton-Sinclair Inlet, and Auburn-Sumner subareas
City				
Lakewood	• Developed a consolidated employment capacity model • Error in Pierce Co. BLR--one residential zone moved to commercial	12 - 25	15 - 25	Sufficient capacity to meet 2030, 2035 employment targets

Notes: *Location specific numbers reported; ranges provided here. SFE = Square foot per employee.

3.3 Interview findings

ECONorthwest conducted phone interviews with real estate professionals familiar with recent commercial and industrial development in Pierce County (Task 1.2, subtask 4 - Real Estate Professional Interviews). The purpose of the interviews was to better understand local development conditions and emerging employment trends in Pierce County. To the extent possible, ECONorthwest vetted reasonableness of employment density assumptions from the 2014 Buildable Lands study.

ECONorthwest interviewed the following real estate professionals:

1. Rob Allen, Senior Economic Development Specialist with Pierce County, Economic Development Department
2. Kevin Clegg, Special Assistant to the Executive for Business Services with Pierce County, Economic Development Department
3. Patrick Gemma, SVP Investment Officer with Prologis

3.3.1 Interview Key Themes

The interviews consisted of a series of questions (see Appendix B). The following sections describe the key themes from the interviews.

Revisit the 2014 Employment Density Assumptions

Pierce County's 2014 Buildable Lands study used the following employment density assumptions: 19.37 employees per acre for commercial and services (1 employee per 500 sq. ft.) and 8.25 employees per acre for industrial warehousing and manufacturing (1 employee per 900 sq. ft).

Interviewees suggested that while the commercial employment density assumption seemed reasonable, they are more practical in areas with generally higher densities, such as downtown Tacoma (we note that the BLR indicates much higher EPA assumptions were used in downtown Tacoma). The assumption seemed less practical (too high) for the more suburban areas of the county.

Interviews indicated they thought the industrial employment density assumption seemed inflated (too high). Four to five employees per acre seemed more reasonable, if not a little high. Further, employment capacity needs in industrial / manufacturing facilities will fluctuate depending on the amount of office space that exists in the facility (e.g., a large office component in an industrial / manufacturing facility will accommodate more employees per acre). When taking that factor into consideration, the industrial employment density assumption seemed more reasonable. The following assumption was provided to illustrate typical employment capacity needs: four employees per 1,000 sq. ft. for the office component with one employee per 1,000 sq. ft. for the industrial / manufacturing component.

Vary Average Employment Density Assumptions

Interviewees suggested that varying average employment density assumptions by geographic area and industry sector seemed reasonable.

By geographic area: It is reasonable to assume that downtown or high-density areas will have a higher average employment density assumption. However, lower average employment density assumptions should be assumed in more suburban cities and towns. Accordingly, average density could vary for each incorporated area or between incorporated area versus unincorporated area. An appropriate threshold to help inform varied density assumptions by geographic location was unknown.

By industry sector: Breaking out employment assumptions by sector also seemed reasonable. Large differences in employment densities exist between sector types, such as warehousing versus manufacturing. While an average density works in a general sense, a fair number of anomalies result in observable differences between sites of different sector types. Managing these anomalies may make the study more precise. For example, the manufacturing sector will accommodate more jobs per acre than wholesale trade and transportation; wholesale trade and transportation will accommodate more jobs per acre than warehousing (and big-box warehousing will accommodate fewer jobs per acre than other warehousing types).

Different industrial /manufacturing facilities (with office components) will typically demand different employment capacity needs as well. For example, a distribution center will typically have an office component accounting for 3% - 5% of total building sq. ft. A manufacturing facility will typically have an office component accounting for 10% of total building sq. ft.[5]

Technology and Automation Will Affect Employment Capacity Needs

Looking forward, interviewees suggested that technology and automation will have the biggest impact on employment capacity needs. Other commercial / industrial trends are not expected to drastically affect change. For example, automation of the manufacturing process is a much more significant portion of economic activity than any movement *toward* creative offices or makerspaces or *away* from shopping malls and big box stores. An interviewee compared other trends to an "artsy" community in a downtown area – the trend may be cool (innovation-wise) but does not scale very well and affects only a specific area.

A range of opinions exist about how technology and automation are currently changing employment capacity needs:

[5] By using the previous example, four employees per 1,000 sq. ft. for an office component in an industrial / manufacturing facility: If both the distribution center and manufacturing facility were 100,000 sq. ft., the manufacturing facility would have about 40 office employees using 10% of the building while the distribution center would have about 12-20 office employees using 3-5% of the building.

- E-Commerce distribution centers (like Amazon) demand more employees per acre than traditional distribution centers because more people are needed to move goods in and around the center (and goods stay in the center for longer).
- Some distribution centers (like IKEA), are experiencing an interesting trend. Technology and automation reduce employment capacity needs, only for employment to increase soon after (although not to the same level). The hypothesis is that companies are "bouncing back" and can hire new employees to serve different roles than before.

Other Considerations

One interviewee provided a suggestion that may help inform employment density assumptions:

- Review the Institute of Transportation Engineers (ITE 10th addition) manual. ITE takes a deep dive into different land uses to determine traffic generation. It is possible that they determine traffic generation by using employment density assumptions. If this is true, the manual could offer a factual basis for Pierce County's assumptions. A caveat that small sample sizes may present limitations.

  We note that this approach is discussed in the 2018 *Buildable Lands Guidebook*.

4 Conclusions and Methodological Options

In general, most employment assumptions have remained the same since each county's previous employment density and/or buildable land study. This is likely because the relevant underlying data has not evolved much. Notable exceptions include Clark County, where lower employment densities were reported compared to its 2007 study. The City of Lakewood's study reported higher densities than what was found in Pierce County's 2014 study—the authors revised a zoning error that adjusted employment densities and showed that Lakewood has substantially more employment capacity than reported. An annotated literature review can be found in Appendix 2.

The following are methodological takeaways to note:

- **Employees per acre (EPA) vs. square feet per employee (SFE)**—some studies used employees per acre as a unit of measurement for employment densities, while others used square feet per employee. Because ESF requires an additional step to get to land estimates, we recommend using EPA as the measurement unit for employment density in Pierce County.
- **Densities seem to cluster around central figures**—while the results vary, employment densities (whether EPA or ESF) seem to cluster around some central figures (5-10 EPA for industrial uses; 15-25 EPA for commercial uses). These figures are not much different than those used in Pierce County's 2014 Buildable Lands Inventory and 2007 Employment Density Survey.

- **Location specific figures**—several studies developed location-specific employment densities (Chamberlain 2015; King County 2014; Gehrke and Srivastava 2012; Watson & Associates Economists Ltd. 2008). This could be an appropriate methodological approach for Pierce County to consider, which will be based on a taxonomy of development or place types. Considering the Cervero/Ewing method of defining place types could also be a useful methodological approach in determining location-specific figures.
- **Most studies relied on methods from their previous years**, with updates to employment data where possible. Lakewood, however, utilized a **hybrid method in calculating employment densities**, which combined a floor-to-area ratio method with acreage-based calculations using updated employment density factors identified by City staff. This method is worth consideration, given the time and resources available at Pierce County.

Notable Employment Trends in Washington State

- The Great Recession affected employment in the Puget Sound Region. Most studies noted, however, that the economy is bouncing back and recovering in their respective counties. Job growth in Washington is expected to rise over the next decade—several studies (e.g. Kitsap, Thurston) reported a projected increase in jobs, a majority of which will be in the commercial sector.
- There is an increasing number of remote workers/home businesses in the region. In Thurston County, for example, 20 percent of future jobs is projected to be in residential zones, which could be taken to mean remote, mobile employment and home-based businesses. The City of Lakewood reduced its total employment allocation by 12 percent to account for remote employees in its Employment Density Survey, consistent with a similar assumption in Pierce County's 2014 Buildable Lands Report.

Observations from Studies Outside of Washington State

- Accommodating future employment growth scenarios—the City of Reno, Nevada, made note of an impending Tesla factory that would increase employment in the city. The expansion of the University of Nevada in Reno was also a factor in future growth. The City utilized two growth scenarios, Baseline and Recent Trends to project future economic opportunities, where the latter doubled growth rate for manufacturing, wholesale trade, and transportation and warehousing to match Tesla's projected employment.
- Several studies (i.e. Reno, Minnesota, Placer County) used methods and assumptions informed by studies from other cities, such as Minneapolis, Washington state, Portland, Southern California, and Rhode Island.

4.1 Methodological Options

The primary objective of this research was to inform BLR methodologies around estimating land needed for employment. Several approaches exist for translating population/employment forecasts into land need. Exhibit 5 summarizes the approaches.

The first method is the easiest: jurisdictions should have current year population estimates as well as population forecasts. Estimates of the amount of developed commercial and industrial land should be developed during the supply analysis. The second method is similar to the first, but uses local employment estimates and forecasts.

The third method requires employee per acre assumptions. Employee-per-acre assumptions allow conversion of employment into acres. Employment density, however, varies considerably by industry—and even within industries. Thus, a small jurisdiction might use an assumption of 8 employees per acre, while a larger one might assume 15-20. Of importance here are whether the assumption is for *net* acres (i.e., land that is available for sale in parcels or lots after roads (right-of-way) has already been deducted, or gross acres (total land before those deductions): one should assume more employees on a net acre than on a gross acre, other things being equal.

Exhibit 5. Basic methods for estimating employment land demand

Method	Description
Population/developed land ratio	Uses the number of developed commercial and industrial acres per 1000 persons and extrapolates it to the planning horizon using the local population forecast.
Employment/developed land ratio	Uses the number of developed commercial and industrial acres per 1000 employees and extrapolates it to the planning horizon using the local population forecast. Requires both a current employment estimate and an employment forecast.
Employee per acre (EPA) ratio	Assumes a specific employment density, expressed in employees per acre. At the simplest level, the method uses an aggregate EPA ratio for all new employment. Requires both a current employment estimate and an employment forecast.
Floor area ratio (FAR) / Employees per sq. ft. (ESF)	Uses zoning to determine floor area ratios and allowable lot coverage. Lot coverage * FAR provides an estimate of built space in square feet. Built space * ESF provides an estimate of land capacity for employment.
Expert consultation	Relies on the expertise of local developers, business leaders and others to estimate land needs.

A variation of the third method is to build up to estimates of employees by using assumptions about floor-to-area ratios (FAR) and about square feet of built space per employee. For example, assumptions of 500 square feet of total (not usable or leasable) office space per employee and of a FAR of 0.3 (built space equals 30% of the buildable area) would yield about 26 employees per net acre, and about 21 employees per gross acre. This method tends to yield greater densities

than those typically assumed for employees per acre, perhaps because the FAR assumes for a single lot are hard to sustain over a larger area.

Each of these methods has limitations.

- **Population and Developed Land Ratio.** This method has two key limitations: (1) use of population forecasts to derive estimates of employment land; and (2) the quality of parcel data. The method is simple: divide developed acres by population to get a ratio of persons per acre (usually expressed as acres per 1,000 persons). A key issue is population is not a good proxy for employment and does not recognize variability of the amount of employment lands in a region. For example, a city that is an industrial center might have half its land in industrial uses; another may be a bedroom community with no industrial land. A second limitation is that assessor's parcel data typically requires considerable effort to identify lands in employment uses that are developed. As a result, this method provides very coarse estimates. We do not recommend considering this approach for the BLR.
- **Employment and Developed Land Ratio**. This is the same as the previous method, with the difference that it uses employment instead of population. ECO used the employment per developed land methodology to estimate EPAs (the analysis is summarized in Section 3 of this memo). The limitations of this method are the same for assessment data. A second limitation is the issue of how to address residential and other lands that might have employment but are not zoned for employment. Due to these limitations we do not recommend using this method for the BLR.
- **Employee Per Acre (EPA) Methods**. The advantage of EPA methods is that they distill the estimate into a very simple formula: net acres * EPA = capacity. EPA assumptions can be developed for broad employment types—the 2014 BLR used commercial (19.37 EPA) and industrial (8.25 EPA). These assumptions are in line with what we see in other studies (for example, Oregon advocates EPAs of 7-12 for heavy industrial uses; 10-15 for light industrial uses; and 12-20 for commercial uses). The limitations of this method are generally related to the source of the EPA assumptions as well as how the assumptions are applied. The EPAs used in the 2014 BLR were derived from a survey of properties using Employment Security data. In our view, this is the best method for developing assumptions using the best data sources.

  The biggest limitation of this approach is related to variability in employment densities. As we have discussed, considerable variation exists within zoning districts and within individual industries.
- **FAR/SFE Methods**. Like other methods, this method is limited by the quality of data. One of the biggest problems with this method is that it is difficult to generalize FARs across broad employment types. By definition, FARs are zoning specific. Moreover, variability exists in the amount of built space required by different industries. The amount of effort required to develop accurate estimates for the entire county is

significant given the countywide scope of the BLR. We do not recommend using this approach for future BLRs.

4.2 Recommendations

Pierce County's challenge is developing an acceptable methodology that can be applied across many jurisdictions that range from urban centers to suburbs, to rural communities, to rural areas. After a thorough investigation of the methodological options, we make the offer the following recommendations:

- **Continue to use an EPA based method**. Given the countywide scope and the diversity of cities, EPAs are the most accurate and practical method for estimating employment capacity of vacant and under-utilized land as well as land demand.
- **Consider refinements to the methods used in the 2014 BLR.** The County could make refinements to both the capacity and land demand estimates.
    - **Consider allocating some employment to non-employment lands**. Our review of the 2014 BLR suggests that all of the employment growth increment is allocated to employment lands. Analysis of employment patterns in every Oregon city ECO has worked in shows significant employment exists outside employment zones. Ideally, the amount of employment allocated to non-employment lands would be based on empirical analysis. We suggest exploring if an economist at the Washington Employment Security Department could conduct such an analysis based on zoning data provided by Pierce County.

      As an alternative, deductions could be made using ACS commute data. The 2013-17 ACS shows that 4.5% of worked at home. The assumption could be based on a countywide average, or on data for Census places. This refinement is a land demand refinement.
    - **Consider disaggregating employment forecasts to three or more categories.** A review of the 2014 BLR only identified single value employment figures. The PSRC data ECO used for the employment density analysis in section 3 is available by city disaggregated by sectors or 2-digit NAICS codes. At the simplest, the models could differentiate between retail, office, and warehouse employment densities. Typically, these would be grouped by NAICS codes. This method is only possible if the employment forecasts/allocations are disaggregated.
    - **Consider developing a land use typology based on geography and zoning.** One critique we heard of the 2014 method was that it does not adequately recognize geographic differences. Both ECO's previous work, as well as the literature we reviewed, suggest that geographic variations in employment density exist. In our view, the variations are both due to geography (e.g., one would expect higher

densities in urban cores than in rural areas—a fact that Tacoma's analysis for the 2014 BLR documents) and zoning. In short, a methodology that recognizes regional differences in land uses could be more robust. The question then is, what options are available?

Following are a few variations for consideration:

- **Typology by city size.** This would be a simple methodology that would develop a typology of city sizes and then associated those with EPA assumptions. The general idea would be that smaller cities and rural areas would be assigned lower EPA assumptions.
- **Typology by PSRC regional centers.**[6] PSRC's VISION 2040 calls for the creation of central places with a mix of uses and activities connected by efficient transportation. PSRC designated 29 regional growth centers which are locations of the region's most significant business, governmental, and cultural facilities and are planning for growth. PSRC also identified nine regional manufacturing/industrial centers, which are locations for more intensive industrial activity. According to PSRC, both regional growth centers and regional manufacturing/industrial centers are focal points for planned growth, economic development and transportation infrastructure investments.

  Moreover, the framework identifies three primary geographies: Metropolitan Cities (16 centers), Core Cities (17), and Unincorporated Urban Areas (3). Five regional growth centers and two industrial/manufacturing centers are located in Pierce County.

  PSRC's 2013 Monitoring Report presents employment densities for each of the areas based on 2010 data. Exhibit X shows employment densities for Pierce County Centers. The observed densities are lower than the commercial assumptions in all instances, and considerably lower than the 2014 industrial assumptions for the industrial/manufacturing centers.

  Given that much of the county's employment is located outside these centers, any method will require assumptions for capacity of those lands. The County could use the 2014 assumptions, or use an approach based on city type as described above.

[6] https://www.psrc.org/sites/default/files/centers_monitoring.pdf

Exhibit 6. Employment Densities in Pierce County Centers, 2010

Type/Center Name	Core Geography	EPA
Regional Growth Centers		
Lakewood	Core City	11.2
Puyallup Downtown	Core City	10.3
Puyallup South Hill	Core City	6.8
Tacoma Downtown	Metropolitan City	22.1
Tacoma Mall	Metropolitan City	14.8
Regional Manufacturing/Industrial Centers		
Fredrickson	Unincorporated UGA	1.2
Port of Tacoma MIC	Metropolitan City	1.8

Source: https://www.psrc.org/sites/default/files/centers_monitoring.pdf, pg 87-88

- **Typology by Zoning.** This is a variation on the previous approach and would be based on local zoning. Effectively, it would require developing a crosswalk between zoning districts and EPAs. This approach has some problems: (1) the number of zoning districts in the county, and (2) data limitations would make it difficult to assign EPAs to zoning districts with any certainty.

In summary, several refinements to the 2014 methodology could improve the capacity and land need estimates. Given the amount of variability that exists in broad employment categories, and PSRCs regional plans, we recommend that any methodology employ the principles of simplicity and transparency. More complicated methods do not necessarily improve the results. We recommend the County consider adjustments for employment in residential areas and using the PSRC center framework.

Appendix 1: Literature Review Matrix

Studies from Washington State

Location	Document Reviewed	Methodology	Employment Density Assumptions (Emp./acre)		Notable Trends	Findings
			Commercial	Industrial		
Counties						
Clark	BLI, 2015	• Building permits primary source of data from 2006-2014 • GIS to link parcels to building permits	9.3	10.9	County has experienced employment gains, however, observed net densities lower than 2007 planning assumptions--could be due to businesses adding employees without requiring new buildings.	County has sufficient capacity to accommodate projected employment growth.
Island	Comp. Plan, 2016	• Suppressed data substituted with older available data • For jobs missing in QCEW data, methodology from PSRC used to estimate total employment from covered employment • City of Freeland excluded from calculation of employment density average due to lack of amenities (sewer) • Due to County's low industrial employment--rounded average from neighboring counties (Skagit, Clark, Pierce) used for industrlal assumptions.	17	8	• UGAs resized to accommodate growth in 20 years. • Reduction in size of Freeland and Langley to result in more concentrated growth.	Sufficient capacity to accommodate anticipated employment growth

Location	Document Reviewed	Methodology	Employment Density Assumptions (Emp./acre)		Notable Trends	Findings
			Commercial	Industrial		
King	BLI, 2014	• Half of jurisdictions brought forward 2007 BLR density and capacity calculations; remainder cities required new capacity analysis • Location-specific densities reported in final analysis	250 - 850 SFE*	250 - 851 SFE*	Majority of capacity in Metro and Core cities	Sufficient capacity to accommodate residential, employment growth
King	Emp. Capacity Analysis, 2010	• Employment density assumptions from 2007 BLR • Does not consider future fiscal impacts of redevelopment within Duwamish Industrial Manufacturing Center	550 SFE	800 SFE	South Park has significant portion of employment land capacity	• Total assessed land value for the South Park LID area is $2,458,285,700. • Total assessed value for the MIC site is $193,751,000
Kitsap	BLI, 2014	• Methods for Land Capacity Analysis adjusted following Remand Order: 1) Using trend-based density factors for each residential zone 2) Increase public facility deduction to 20% 3) Remove discount for environmental purposes in Urban Restricted Zone 4) Platted lots adjustment	969 SFE	500 SFE	Majority commercial jobs expected to increase (over 70%) Industrial jobs expected to increase by 6%	Sufficient capacity to meet industrial and commercial development to 2025, 2016-2036
Snohomish	BLI, 2012	• Existing structures (as of April 2011) counted as population or employment base; proposed, built, or occupied structures after April 2011 counted as future capacity.	200 - 700 SFE	300 - 20,000 SFE		Adequate land capacity reported in the County for the 2025 adopted UGA population and employment growth targets.

Location	Document Reviewed	Methodology	Employment Density Assumptions (Emp./acre)		Notable Trends	Findings
			Commercial	Industrial		
Thurston	BLI, 2014		3.3	1.5	• Majority employment expected in commercial zones (over 70%) • Industrial jobs expected to increase by 8% • Employment in residential zones (remote jobs / home-based businesses) expected to increase by 20% • Federal endangered species listings anticipated to affect commercial, industrial land supply	Sufficient land supply to support projected growth to 2035.
Whatcom	BLI, 2016	Based on 2009 Land Capacity Analysis methodology	626 - 900 SFE	775 - 3,500 SFE	County-wide surplus employment capacity of almost 13%	Surplus capacity to meet future employment needs
Region						

Location	Document Reviewed	Methodology	Employment Density Assumptions (Emp./acre)		Notable Trends	Findings
			Commercial	Industrial		
PSRC	Industrial Land Analysis, 2015	• Relevant mixed-use zones and land classification included into analysis if related to industrial land. E.g. "Business Park", "Employment Center" • Parcels considered industrial land if significant industrial development present, permitted to occur. • Four categories of industrial lands: 1. Core industrial 2. Industrial commercial 3. Military industrial 4. Aviation operations areas • Special consideration given to: 1. Tribal lands 2. Natural resource lands 3. Limited Areas of more intense Rural Development 4. Planned Developments		0.25 - 14.7*	• Revival of manufacturing industry, comparable to the Gulf region, South Carolina, Colorado. • Industrial jobs occuring in non-industrial zoned land. • Non-industrial jobs on industrial lands projected to grow to 45% by 2040.	• Employable land capacity variable to area: Strong demand / limited capacity: Interbay-Ship Canal, Duwamish-North Tukwila, Kent-Renton, and SeaTac-Des Moines subareas. • Strong demand/adequate capacity: Frederickson- Lakewood, Southwest Everett and Tacoma-Puyallup subareas. • Adequate capacity: I-405 Corridor, Arlington-Marysville, and North-Central Everett subareas • Surplus capacity: DuPont-Gray Field, Puget Sound Industrial Center (PSIC)-Bremerton-Sinclair Inlet, and Auburn-Sumner subareas.
City						
Lakewood	Emp. Density Survey, 2017	• Developed a consolidated employment capacity model. • Error in Pierce Co. BLR--one residential zone moved to commercial	12 - 25	15 - 25	City has substantially greater employment capacity than reported in Pierce Co. BLR.	Sufficient capacity to meet 2030, 2035 employment targets

Notes: *Location specific numbers reported; ranges provided here. SFE = Square foot per employee.

Other Studies from Around the US

Location	Document Reviewed	Methodology	Employment Density Assumptions (Emp./acre)		Notable Trends	Findings
			Commercial	Industrial		
Counties						
Placer, CA	Dev. Estimates, 1994	Two development scenarios used to project growth--2010 and 2040. Assumes County caotures over 18% regional employment growth for both scenarios.	333 - 550 SFE	700 SFE	• Strong long-term growth rates expected in Sacramento region. • Placer Co. expected to be one of the fastest growing counties due to population and employment increasing from 1990-2010.	Sufficient capacity to meet employment growth needs.
Maricopa, AZ	Emp. Analysis, 2012	• Identified 32 significant regional employment clusters in relation to transit • Employment clusters are assigned sector mix values		5.6 - 14.2	Lowest employment densities in regions characterized by production, distribution, repair	Employment clusters within quarter mile of transit in central and south region have highest densities and employment concentrations--mostly not industrial
Scott, MN	Commercial / Industrial Analysis, 2012	Informed by previous employment density research in other cities		344 - 753 SFE	Buildings with more on-site amenities have higher densities	• Commercial and industrial land expected to expand, but at slower pace than 2006 study. • Sufficient capacity to meet demand but may require land designation changes to meet this change.
Cities						

Location	Document Reviewed	Methodology	Employment Density Assumptions (Emp./acre)		Notable Trends	Findings
			Commercial	Industrial		
Anchorage, AK	BLI, 2009	• Employment density assumptions based on previous studies and trends from other cities. • Employment projections do not account for major construction projects, i.e. Natural Gas Pipeline, the Knik Arm Bridge, the Pebble Mine, Kensington Mine. • Employment density assumptions based on current trend of low density and FARs.		500 - 2000 SFE**	• Major construction projections anticipated to affect industrial sector. • Natural gas pipeline expected to require infrastructure improvements. • Changes in federal spending, expansions in mining or tourism, major infrastructure projects, oil price fluctuations known to have significant impact on local and regional economy. • City is on the lower end of spectrum in regard to industrial employment density.	Sufficient capacity to meet employment growth needs.
Eugene, OR	Emp. Density Analysis, 2006	Employment densities broken down by plan designation and study area	36.3 - 53.9*	8.3 - 20.7*		Provides employment densities by land use designation and study area.
Eugene, OR	Emp. Land Assumptions, 2011	• Government employment growth excluded because typically occurs on public, semi-public lands. • Used "safe harbor" methodology--utilized growth rate for Lane County as calculated by the State.	20 - 90.3	5 - 20	• New employment on non-employment lands: Covered employment occuring in residential and other non-employment land designations. • Increasing number of employment in existing space, making it difficult to predict vacancy rate. Number used in study reflects recession.	Community Advisory Committee agreed that densities would be similar to past.

Location	Document Reviewed	Methodology	Employment Density Assumptions (Emp./acre)		Notable Trends	Findings
			Commercial	Industrial		
Guelph, Canada	Emp. Land Assumptions, 2008	Location-specific densities reported	5 - 106*	2 - 48*	• Competitive industrial land prices. • Employment in Industrial sector expected to increase, followed by commercial and institutional development. • Land-extensive employment trends in warehousing sector.	• Limited supply of employment land, especially for larger sites. • City has adequate land for employment needs to 2031.
Minneapolis, MN	Emp. Pol. Plan, 2006	Introduces Industrial Scorecard to indicate each industry's projected growth, employment demand, and land demand.	7 - 64	14 - 42	Industrial sector significant economic contributor to City.	• Industrial land supply depleting. • City should adopt Employment Districts. • Rezoning for residential use should be reconsidered. • Rezonings should consider job impacts, tax base impacts, viability, transition costs, and adjacency to viable industrial areas.
Reno, NV	Emp. Capacity Analysis, 2016	• Two growth scenarios, Baseline and Recent trends to forecast anticipated employment • Industrial / Commercial buildings categorized by high density and medium/low density	0.15 - 1.25	0.15 - 0.5	Forecasting upcoming employment centers, i.e. Tesla Gigafactory, U of Nevada-Reno	City has capacity to meet employment demands. Growth rate for manufacturing doubled in forecast model to accommodate anticipated employment
San Diego, CA	Industrial Element, n.d.			15.7	Limited industrial land to meet anticipated employment needs.	Rezonings recommended to encourage industrial development.
Region						

Location	Document Reviewed	Methodology	Employment Density Assumptions (Emp./acre)		Notable Trends	Findings
			Commercial	Industrial		
SCAG	Emp. Density Survey, 2001	Over 100 categories consolidated into 10 categories. Employment densities calculated using two methods, median, and weighted averages for employment per acre and FARs.	11.04 - 22.9**	10.63 - 17.05**	Density in Government Offices land use category unusually high--possibly due to small sample size.	Employment density factors derived to be used at region- and county-level.
State						
Oregon	Emp. Density Survey, n.d.	• Employment outside of Central Business District but within city limits referred as Peripheral Employment. • Effects of Great Recession and rise in e-commerce could be reflected in data but difficult to prove at this stage.			• Decreasing jobs in Wholesale, Retail, Transportation, and IT jobs. • Retail trade survived Great Recession.	• Employment densities of downtown central commercial areas have decreased. • Employment densities in city peripheries are more varied.

Notes: *Location specific numbers reported; ranges provided here. **Report also provides weighted averages and/or averages by industry for employee per square foot. SFE = Square foot per employee.

Appendix 2: Annotated Literature Review

Studies from Washington state

Carter, Stephen, and Susan Davis. 2010. South Park Bridge Tiger Grant II Employment Capacity Analysis. ECONorthwest.

This memo includes the technical analysis to be used as background to contribute to the economic competitiveness analysis portion of the Tiger II grant application.

Location: King County, Washington

Relevant Information (2):

- ECONorthwest identified 2007 employment densities from the King County Buildable Lands Report:
    - Commercial: 550 square feet/employee
    - Industrial/warehouse: 800 square feet/employee

Chamberlain, Elizabeth. 2015. Industrial Lands Analysis for the Central Puget Sound Region. Puget Sound Regional Council.

This report assesses economic activity on industrial land in the central Puget Sound region. It is intended to "serve a broad range of land use and economic development planning needs and interests" (E-1).

Location: Puget Sound Region, Washington

Relevant Information (3-8):

- Employment densities for individual Manufacturing/Industrial Centers:
    - Ballard-Interbay (core industrial and industrial commercial): 14.66 EPA
    - Duwamish (core industrial and industrial commercial): 11.61 EPA
    - Frederickson (core industrial and industrial commercial): 1.17 EPA
    - Kent MIC (core industrial): 7.64 EPA
    - North Tukwila (core industrial): 14.05 EPA
    - Paine field/Boeing Everett (core industrial): 10.00 EPA
    - Port of Tacoma (core industrial): 1.79 EPA
    - Puget Sound Industrial Center-Bremerton: 0.25 EPA

Clark County. 2015. Clark County Buildable Lands Plan Monitoring Report.

This report provides updates to the County's enactment of the Growth Management Act, specifically sprawl reduction and urban growth concentration.

Location: Clark County, WA

Relevant information (4, 20)

- 2007 planning assumptions:
    - Commercial: 20 employees/acre
    - Industrial: 9 employees/acre
- Observed densities are lower than the 2007 planning assumptions:
    - Commercial: 9.3 employees/acre
    - Industrial: 10.9 employees/acre
- "Clark County has seen employment gains from 2006 to 2014. It is likely that some businesses have added employees, which would not require new building permits and may account for the low employment density reported." (20)

Gifford, Kevin. 2017. City of Lakewood Employment Capacity Analysis. BERK Consulting.

This report found that employment densities in Lakewood diverge from Pierce County's 2014 Buildable Lands Report. BERK's analysis concludes that the City of Lakewood has substantially greater employment capacity available than is represented in the 2014 Pierce County Buildable Lands Report.

Location: City of Lakewood, Washington

Relevant information:

- BERK developed a consolidated employment capacity model
    - "This blended approach combines the FAR-based method described for the Central Business District with acreage-based calculations using updated employment density factors, as identified by City staff."
    - "Model assumes a reduction in the market factor for underutilized properties from 50% (assumed by the Pierce County BLR) to 35%, comparable to other commercial hubs in northern Pierce County."
    - Model provides sufficient employment capacity to meet Lakewood's 2030 and 2035 employment targets.
- "Per 2014 Pierce County BLR report, total employment allocation is reduced by 12.1% to account for mobile workers and employees working from home."
- Found error in Pierce Co. BLR
    - ARC zone in residential moved to commercial. This study accounted for ARC zone in employment density
- Lakewood adjusted densities
    - Commercial density: 12-25 employees/acre
    - Industrial density: 15-25 employees/acre

Island County. 2016. "Appendix B: Population Growth Analysis & Accommodations." Island County 2036: 2016 GMA Periodic Review.

This document provides detailed account of Island County's population projections, including buildable lands analysis and employment projections. This document is an appendix to Island County's periodic review of the Growth Management Act.

Location: Island County, WA

Relevant information

- "Suppressed data was substituted for three sectors (Mining, Utilities and Management of Companies and enterprises) using older available data." (16)
- "To compensate for these missing jobs in the QCEW data, a methodology developed by PSRC was used to estimate total employment from covered employment."
- Commercial: 17 employees/acre
- Industrial: 8 employees/acre
- County comparisons
    - Skagit County
        - Commercial: 20 employees/site acre
        - Industrial: 6.5 employees/site acre
    - Clark County (see Clark Co. review—same as 2007 assumptions)
    - Pierce Co. (Unincorporated Pierce County 2014 buildable lands report)
        - Manufacturing/Warehousing: 8.2 employees per acre
        - Commercial/Services: 19.37 employees per site acre

King County. 2014. King County Buildable Lands Report.

This report is an update to the 2007 BLR, in fulfillment of the GMA. The report spans the time period from January 2006 to January 2012, encompassing all 39 cities in King County. The BLR concludes that King County has sufficient capacity to accommodate residential and employment growth.

Location: King County, Washington

Relevant information:

- Employment growth still in transition out of Great Recession (2)
- Minor shortfall in job capacity in unincorporated areas, but majority of King County's capacity to accommodate growth is located in Metro and Core cities. (3)
- Used similar assumptions to 2007 BLR, updated housing and jobs data to 2012
    - "Achieved densities and – for some cities – land capacity data are brought forward from the 2007 BLR into this 2014 BLR. Half of King County's

jurisdictions reported sufficient housing and job capacity in 2007 to absorb even the higher numbers in the new 2006-31 targets. Those cities, including most of the Small Cities, carried forward their 2007 BLR density and capacity calculations into this 2014 BLR… The remaining cities required new analysis of land capacity to overcome a shortfall of capacity with respect to the new targets as part of their process of developing new comprehensive plans." (2)

  - Employment capacity in Table 5.5, 2007 BLR pg V-9

Kitsap County Department of Community Development. 2014. Kitsap County 2014 Buildable Lands Report.

This document provides information on Kitsap County's update to its growth projections and land capacity for housing and employment. The report found that the County had sufficient land supply to meet the demand for commercial and industrial development to 2025, and the 2016-2036 planning period.

Location: Kitsap County

Relevant information:

- "Kitsap County adopts employment targets to be consistent with the Puget Sound Regional Council's (PSRC) Regional Growth Strategy." (53)
- Over 45,000 additional jobs anticipated, majority commercial
  - Industrial jobs expected to increase by 6.4%
- From Appendix:
  - Commercial: 969 sq ft/employee
  - Industrial: 500 sq ft/employee

Snohomish County Council. 2012. Snohomish County Buildable Lands Report.

This report is in accordance with the Growth Management Act. The report evaluates land needs and capacity for residential, commercial, and industrial use anticipated in 20-year planning period, spanning to 2025.

Location: Snohomish County, Washington

Relevant information (3,23):

- Adequate land capacity reported in the County for the 2025 adopted UGA population and employment growth targets.
- No capacity shortfall anticipated in UGAs or cities within the UGAs
- Food Services = 200 sq ft/employee
- Other Services = 400 sq ft/employee
- Finance, Insurance and Real Estate (FIRE) - mini-storage warehouses only = 20,000 sq ft/employee

- Finance, Insurance and Real Estate (FIRE) - other = 350 sq ft/employee
- Retail = 700 sq ft/employee
- Manufacturing = 500 sq ft/employee
- Wholesale, Transportation and Utilities (WTU) = 1,000 sq ft/employee
- Government/Education = 300 sq ft/employee

Thurston Regional Planning Council. 2014. Buildable Lands Inventory for Thurston County.

Thurston County's BLR reports sufficient land supply to support projected growth to 2035. Varying by jurisdiction, Thurston County can sufficiently meet the demand for employment land needs.

Location: Thurston County, Washington

Relevant information:

- Majority of new employment expected to be in commercial zones (72%)
- 8% new jobs expected in industrial zones
- 20% jobs expected in residential zones, i.e. remote workers, home-based businesses
- Employment densities:
    - Commercial: 3.3 employees/1,000 sq ft.
    - Industrial: 1.5 employees/1,000 sq ft.
- "Questions remain as to how much of the commercial and industrial land supply will be available for development due to the pending federal endangered species listings." (65)

Whatcom County Planning and Development Services. 2016. Land Capacity Analysis Report.

This report provides a summary of the land capacity analysis for Whatcom County and its Urban Growth Areas as part of the County's Comprehensive Plan.

Location: Whatcom County, Washington

Relevant information:

- Employment density (found in Appendix C)
    - Commercial: 626-900 sq ft./employee
    - Industrial: 775-3500 sq ft./employee
- "Each UGA has a population growth capacity surplus or deficit within 6% of the allocation, with the exception of the Blaine UGA, which has considerable surplus capacity within its city limits. Figure 2 shows a countywide employment capacity surplus of 12.6%." (1)

Studies outside of Washington state

City of Minneapolis. 2006. Industrial Land Use Study and Employment Policy Plan.

The purpose of this study was to provide information and policy direction for industrial land use and employment in Minneapolis.

Location: Minneapolis, Minnesota

Relevant Information (52-53):

- Minneapolis Assessor/InfoUSA employment per acre:
    - Utilities: 42 EPA
    - Construction: 30 EPA
    - Manufacturing: 27 EPA
    - Wholesale Trade: 20 EPA
    - Transportation & Warehousing: 14 EPA
    - Information: 64 EPA
    - Real Estate, Rental, Leasing: 7 EPA
    - Professional and Technology Services: 64 EPA
    - Other Services: 50 EPA
    - All Industries: 34 EPA

Economic and Planning Systems, Inc. 2009. Anchorage Industrial Land Assessment Final Report. Prepared for the Anchorage Economic Development Corporation.

Chapter 4 of this report, "Industrial Land Demand," estimates the demand for future industrial land in Anchorage by analyzing the relationship between employment and industrial space.

Location: Municipality of Anchorage, Alaska

Relevant Information (29-38):

- Assumptions for employment density in Anchorage by land use category, based on "EPS experience and professional judgment and have been supplemented by significant research of employment density trends specific to the MOA" (31).
    - Industrial Services, Assembly, and Manufacturing: 1000 sq. ft./employee
    - Miscellaneous Industrial (Open storage, processing, heavy manufacturing, utilities, trades, and transportation): 1,800 sq. ft./employee
    - Warehouse/Distribution: 2,800 sq. ft./employee
    - Industrial Flex Space: 500 sq. ft./employee
- EPS conducted a national review of employment density studies with the following results:
    - Pierce County, WA (2006): 13.8 EPA for manufacturing/warehousing
    - Hillsboro, OR (n.d.): 9.0 EPA for industrial

- Silverton, OR (2006): 8.9 EPA for industrial
- Caledon, Ontario, Canada (2007): 17.0 EPA for manufacturing, 9.0 EPA for warehouse/distribution
- Peel Region, Ontario, Canada (2007): 15.8 EPA for industrial
- Grand Traverse County, MI (n.d.): 30.0 EPA for intensive industry, 14.0 EPA for intermediate intensive, 8.0 EPA for extensive
- Portland-Vancouver MSA (2001): 10.0 EPA for warehouse/distribution, 24.5 EPA for general industrial, 24.3 EPA for tech/flex
- Wilsonville, OR (2008): 16.3 EPA for efficient land need, 14.2 EPA for medium land need, 12.3 EPA for high land need
- Minneapolis, MN (2006): 27.0 EPA for manufacturing, 14.0 EPA for transportation and warehousing

Economic & Planning Systems, Inc. 2016. City of Reno: Employment Demand Forecast and Needs Analysis.

This report is a technical analysis to inform the policies and strategies of the City of Reno's Master Plan. It contains a summary of technical analysis, stakeholder feedback, and policy recommendations for the economic components of the Master Plan.

Location: Reno, NV

Relevant information (6-10)

- Used different building types to estimate employment density and land demand. Sub-categories within building types to reflect development density levels and square feet of building space.
- Assumptions based on existing conditions within the Region and national industry standards.
- Building types:
  - Office
    - Type A (Suburban or Campus Office): 300 sq ft./employee, 0.25 FAR
    - Type B (Mid-Rise / High-Rise Office): 250 sq ft./employee, 1.0 FAR
  - Industrial
    - Type A (Large Scale or Heavy Industrial): 1,500 sq ft./employee, 0.15 FAR
    - Type B (Small Scale or Light Industrial): 500 sq ft./employee, 0.50 FAR
  - Retail
    - Type A (Large Format Retail): 400 sq ft./employee, 0.15 FAR
    - Type B (Small Format Retail): 400 sq ft./employee, 0.60 FAR
  - Accommodation and Food Service
    - Type A (Accommodation): 750 sq ft./employee, 1.25 FAR

        - Type B (Food Service): 500 sq ft./employee, 0.30 FAR
    - Education
        - Type A (General Education): 1,000 sq ft./employee, 0.50 FAR
- Upcoming presence of Tesla's Gigafactory is noted to potentially have impact on employment trends.
- University of Nevada-Reno and its expansion is noted as another economic driver with impact on increased employment.
- Two growth scenarios used to project future economic opportunities, Baseline and Recent Trends. In Recent Trends scenario, growth rate is doubled for manufacturing, wholesale trade, and transportation and warehousing to match trends and include upcoming employment from Tesla.

ECONorthwest. 2006. "Eugene Employment Density Analysis."

This document provides a table of employment density by plan designation and study area in Eugene, Oregon.

Location: Eugene, Oregon.

Relevant information:

- Employment densities were broken down to be more location specific to study area
- Industrial:
    - Campus Industrial: 20.7 EPA
    - Heavy Industrial: 8.3
    - Light Medium Industrial: 15.8
    - Special Heavy Industrial: Not disclosable
- Commercial: 36.3 EPA
    - Commercial Mixed-use: 39.7
    - Major Retail Center: 53.9

Envision Eugene Technical Resource Group. 2011. City of Eugene Employment Land Assumptions Summary.

This document summarizes several assumptions that relate to Eugene's employment land needs. Employment density estimates were based on a 2006 employment density study of 22 areas of Eugene. The Community Advisory Committee agreed that densities would be similar to what they were in the past.

Location: Eugene, Oregon

Relevant Information (4-5)

- Industrial employment density: Ranged from 5 EPA (heavy industrial) to 20 EPA (light or campus industrial); Average industrial EPA: 13
- Commercial employment density: Ranged from 30 EPA (mixed retail and office) to 93 EPA (downtown); Average commercial EPA: 68
- Retail employment density: Ranged from 20 EPA to 37 EPA; Average retail EPA: 23

"Evaluating Employment Density and Land Needs: Floor Area Ratios, Employees Per Square Foot, and Employees Per Acre." N.d.

This document provides context to the units used when calculating employment densities.

Relevant information:

- Floor-to-Area ratio (FAR), Employees per acre (EPA), square feet per employee (SFA) are three different ways to express employment density
- The document provides the mathematical relationship between FAR, EPA, and SFA
    - "FAR can be derived from EPA and SF/Emp as follows:
      (EPA*43560)/SF per Emp
    - SF/Emp can be derived from EPA and FAR:
      (FAR*43560)/EPA
    - EPA can be derived from SF and FAR:
      (FAR*43560)/SF per Emp"
- The document also shows the relationship when other variables are held constant:
    - "FAR increasing: When sq. ft. per employee is held constant and FAR increases, EPA also increases (e.g., there is a linear relationship between EPA and FAR)
    - FAR constant/ sf per emp decreasing: When sq. ft. per employee decreases and FAR is held constant, EPA increases at an increasing rate (e.g., a compounding relationship)
    - FAR + SF/Emp Increasing. Under this scenario EPA remains constant.
    - FAR Increasing and SF/Emp decreasing. When both FAR and sf/emp are increased, EPA increases at an increasing rate (e.g., a compounding relationship)"
    - This information is provided in graph form as well

Gehrke, Amanda and Sujata Srivastava. 2012. Final Employment Analysis Memorandum for Maricopa Association of Governments Sustainable Land Use and Transportation Strategy. Strategic Economics.

This updated memo provides information and insight into the relationship between transit (both planned and existing) and employment patterns in Maricopa County. Strategic Economics identified 32 significant regional employment clusters. The Maricopa Association of Governments serves the Phoenix metro area.

Location: Maricopa County, Arizona

Relevant Information (7-15):

- Employment clusters within one-quarter mile of transit in the central and south MAG region have the highest densities and employment concentrations, mainly not industrial
- Regions characterized by PDR (Production, Distribution, and Repair) have lowest employment densities in the region
- Employment clusters are assigned sector mix values. Listed below are employment clusters with over 40% PDR classification, and each cluster's corresponding employment density (jobs per acre)
    - Falcon Field, 58% PDR, 5.6 EPA
    - I-10 West Corridor, 63% PDR, 2.8 EPA
    - West Chandler, 45% PDR, 10.3 EPA
    - West Temple Industrial, 40% PDR, 14.2 EPA

Karr, Peter. N.d. Employment and Density in Oregon 2004–2012. University of Oregon.

This study reports employment trends and density changes in Oregon's current downtown and city peripheries from 2004 to 2012. The author focuses on Wholesale and Retail Trade, Transportation, and Information Service Sectors (NAICS Codes 42, 44-45, 48-49, and 51-56), and how much employment from these sectors are in Residential and Mixed-use zones outside of downtown. The study reports findings from Albany, Bend, Corvallis, Eugene, Grants Pass, McMinnville, Medford, Salem, and Springfield.

Location: Oregon (Albany, Bend, Corvallis, Eugene, Grants Pass, McMinnville, Medford, Salem, and Springfield)

Relevant information (10, 23):

- Metrics for evaluation of density included:
    - Count of Businesses per 2-digit NAICS Designation
    - Average Minimum Number of Employees
    - Average Maximum Number of Employees
    - Average Total Number of Employees
    - Standard Deviation
    - Sum of Total Employees working in that Industry
    - Sum of Acreage Totals for Tax Lots Containing Businesses
- Employment in Wholesale and Retail Trade, Transportation, and Information Services has decreased.
- Retail Trade (NAICS Codes 44 and 45) showed increases.
- Employment densities of downtown central commercial areas have decreased, except Salem and Bend showing greater than 5% increase
- Employment densities in city peripheries are more varied

Mullins, Matt, and Amanda Janzen. 2012. "Commercial/Industrial Market Analysis for Scott County, Minnesota." Maxfield Research Inc. Prepared for the Scott County Community Development Agency.

This study analyzed commercial and industrial land supply for Scott County. It is estimated that commercial and industrial land would expand in the county from 2012-2020. To estimate employment density, Maxfield Research, Inc. used previous employment density research in Minneapolis, Washington (state), Portland, Southern California, and Rhode Island.

Location: Scott County, Minnesota

Relevant Information (97-99):

- Estimated EPA using previous studies: Utilities (40), Construction (30), Manufacturing (30), Wholesale Trade (20), Transportation and Warehousing (15), Information (60), Real Estate, Rental, Leasing (20), Professional and Technical Services (60), Other Services (50).
- Square feet per employee has increased in industrial sectors from 2001 to 2010:
  - Light Industrial: 365 sq ft/employee in 2001 to 387 sq ft/employee in 2010
  - General Industrial: 344 sq ft/employee in 2001 to 505 sq ft/employee in 2010
  - General Warehouse: 538 sq feet/employee in 2001 to 753 sq ft/employee in 2010
  - Large Scale/High Bay: 861 sq ft/employee in 2001 and 2010
- Industrial, warehouse, and distribution have experienced increases in EPA since 2001
- Buildings that have more on-site amenities have higher EPAs

Placer County. 1994. Assumptions and Development Estimates. Placer County Countywide General Plan Final EIR.

This chapter is a discussion of assumptions and development estimates in Placer County's Countywide General Plan Final EIR. The document reports estimates for the development scenarios for years 2010 and 2040, which provide the basis for the rest of the impact assessment.

Location: Placer County, CA

Relevant information (2-8)

- Employment density assumptions:
  - Commercial: 550 sq ft/worker
  - Office: 333 sq ft/worker
  - Industrial: 700 sq ft/worker
  - Assumptions based on 1991 County Assessor's database and projections of use over time

San Diego Industrial Element. N.d.

This portion of the general plan examines industrial parcels in Southeastern San Diego.

Location: San Diego County, California

Relevant Information (97):

- SANDAG identified 180 acres of industrial zoned land in Southeastern San Diego, with an employment density of 15.7 jobs per acre.

The Natelson Company. 2001. Employment Density Study Summary Report. Southern California Association of Governments.

This document produces employment density figures based on land use categories from six counties. The consultants consolidated over 100 categories into 10 categories and calculated employment densities using two methods, median and weighted averages for employment per acre and floor-to-area ratios.

Location: Six-county SCAG region (Imperial County, Los Angeles County, Orange County, Riverside County, San Bernardino County, and Ventura County)

Relevant information:

- Land use categories from six counties were aggregated to 10 primary land use categories:
    - Regional Retail
    - Other Retail/Svc.
    - Low-Rise Office
    - High-Rise Office
    - Hotel/Motel
    - R & D/Flex Space
    - Light Manufacturing
    - Heavy Manufacturing
    - Warehouse
    - Government Offices
- Employment density reported in two formats
    - Median employees per acre density and median FAR. Employees per acre:
        - Regional Retail: 14.99
        - Other Retail/Svc.: 13.49
        - Low-Rise Office: 22.91
        - High-Rise Office: 116.32
        - Hotel/Motel: 11.04
        - R & D/Flex Space: 18.13

        - Light Manufacturing: 11.63
        - Heavy Manufacturing: 17.05
        - Warehouse: 10.63
        - Government Offices: 16.23
    - Weighted average of employees per acre density and weighted average FAR. Employees per acre:
        - Regional Retail: 19.71
        - Other Retail/Svc.: 21.98
        - Low-Rise Office: 43.95
        - High-Rise Office: 175.49
        - Hotel/Motel: 33.07
        - R & D/Flex Space: 20.53
        - Light Manufacturing: 17.83
        - Heavy Manufacturing: 31.14
        - Warehouse: 11.40
        - Government Offices: 51.67

Watson & Associates Economists Ltd. 2008. City of Guelph Employment Lands Strategy Phase 1.

This Employment Lands Strategy created a vision and plan for future employment lands in the City of Guelph, while maintaining competitiveness in business retention and attraction. The first of two phases, Phase 1: Needs and Opportunities Analysis, identified future employment lands by forecasting demand and evaluating existing vacant and developable land supply.

Location: Guelph, Ontario, Canada

Relevant Information (4-14 – 4-18):

- 2006 Employees per net acre in Hanlon Business Park (287 net acres)
    - Manufacturing: 16 EPA
    - Warehousing & Distribution (including transportation, storage, and wholesale trade): 11 EPA
    - Utilities & Construction: 2 EPA
    - Office: 6 EPA
    - Retail: 5 EPA
    - Other: 24 EPA
- 2006 Employees per net acre in the York-Watson Industrial Area (110 net acres)
    - Manufacturing: 29 EPA
    - Warehousing & Distribution (including transportation, storage, and wholesale trade): 11 EPA

    - Utilities & Construction: 30 EPA
    - Office: 14 EPA
    - Retail: 24 EPA
    - Other: 1 EPA
- James Snow Parkway Area, Milton, Industrial EPA: 18
- Harry Walker Parkway Industrial Park, Newmarket, Light Industrial EPA: 23
- Beaver Creek/Commerce Valley Dr. Area, Richmond Hill, Business Commercial/Office EPA: 86; Prestige Industrial EPA: 48
- Brantford, General Industrial EPA: 8
- Mississuga, Limited Outside Storage Industrial EPA: 20, Outside Storage Industrial EPA: 9, Restricted Commercial EPA: 106

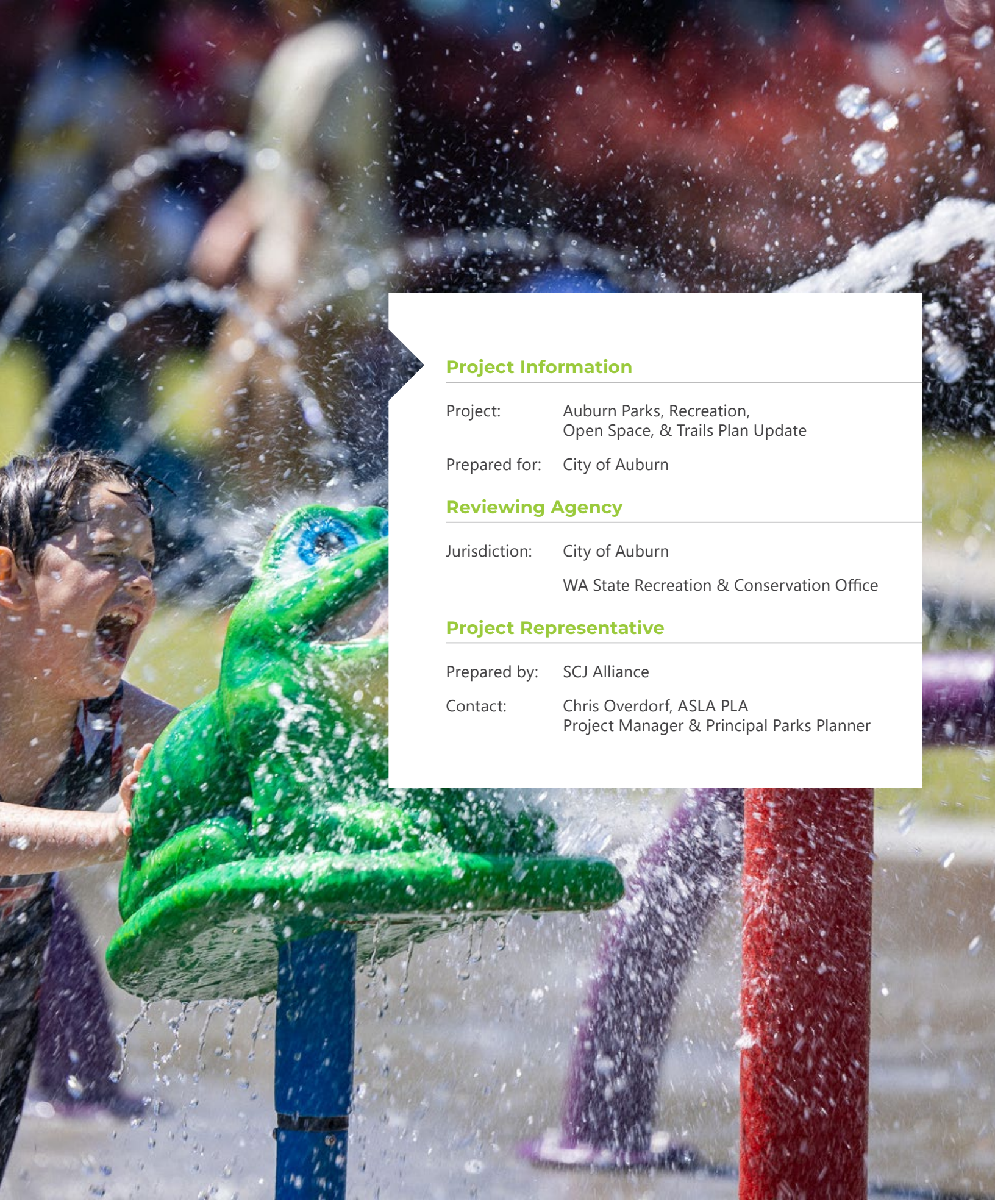


AUBURN

Parks, Recreation, Open Space, & Trails Plan Update

September 2024

CITY OF AUBURN
PARKS, ARTS & RECREATION



Project Information

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Summary

The City of Auburn's Parks, Recreation, and Open Space (PROS) Plan is an ambitious and visionary blueprint designed to elevate the city's parks and recreation facilities to meet the evolving needs of its vibrant community. This comprehensive plan, which spans from 2024 to 2030, is the result of extensive public engagement, reflecting the community's collective aspirations for a higher quality of life through enhanced recreational services and access to diverse outdoor opportunities.

The PROS Plan outlines a strategic Capital Improvement Program (CIP) that prioritizes both immediate enhancements and long-term projects, ensuring that Auburn's parks and open spaces continue to be cherished assets for generations to come. It reaffirms the city's commitment to fostering a healthy, walkable community, promoting environmental stewardship, and creating spaces that inspire connection, well-being, and a sense of place.

To bring this vision to life, the plan is designed with flexibility, allowing for adjustments as community needs evolve, new opportunities arise, and funding sources become available. The city is committed to leveraging a mix of municipal budgets, grants, and the passionate efforts of community volunteers to realize these improvements. Through ongoing review and adaptive management, Auburn aims to create a parks and recreation system that not only meets the current needs of its residents but also anticipates and shapes the future, ensuring that the city remains a dynamic, engaging, and inclusive place to live, work, and play.



August 23, 2024

Auburn is proud of its public parks, arts and recreation programs and facilities which include over 50 parks, community, teen and senior centers, the 18-hole Auburn Golf Course, Postmark Center for the Arts, White River Valley Museum and Mary Olson Farm, as well as two beautiful cemeteries. Our parks include something for everyone, from picnic areas to sports fields. The whole family can enjoy our extensive recreation trail system, enjoy community events such as Petpaloozza, Kids Day, Veterans Day Parade, Farmers Market as well as participate in youth and adult recreation programs as well as our beautiful open spaces and trails.

This PROS Plan is used to develop strategies to deliver the "right parks and programs in the right places" and bring those places to life through events and public programming. Active use of our Parks, Arts and Recreation system improves your health as well as the health of our community.

We continue to grow and change for the betterment of our community and the enjoyment of our citizens, visitors, and patrons. I invite you to visit our parks and facilities and enjoy the quality of life they offer – the benefits are endless.

Sincerely,
Daryl Faber
Director of Auburn
Parks, Arts and Recreation

Introduction









Welcome to the City of Auburn's Parks, Recreation, and Open Space Plan Update (PROS Plan). This document fulfills the requirements of the Growth Management Act (GMA), ensuring the City's eligibility for funding from the Washington State Recreation and Conservation Office (RCO) and other sources over the next six to ten years. It provides a comprehensive overview of Auburn's parks, recreation areas, open spaces, and non-motorized trails.

The PROS Plan incorporates public input gathered through surveys, outreach, and online tools to assess recreational needs and preferences. It evaluates the current conditions of the city's parks and open spaces, establishing a vision and goals based on community demand.

A critical component of this document is the Capital Improvement Plan (CIP). Upon approval, the CIP will finalize the PROS Plan by recommending enhancements aimed at improving services for Auburn residents over the next six years and beyond. These recommendations are strategically linked to potential grant funding sources, guiding the City in prioritizing projects that align with the community's desired quality of life.

Purpose

In Washington State, communities like Auburn rely on Parks, Recreation, and Open Space (PROS) Plans to shape the future of their outdoor spaces, serving as vital roadmaps for growth, development, and preservation. These plans are not just state mandates; they are essential tools for balancing growth with environmental protection and enhancing residents' quality of life.

For Auburn, the PROS Plan is crucial for complying with the Growth Management Act (GMA), which ensures thoughtful planning to accommodate growth while protecting the environment and enhancing residents' quality of life.

However, the PROS Plan goes beyond mere compliance. It embodies a vision and a commitment to community engagement, providing a platform for residents to express their needs and desires for parks, trails, and recreational areas. Through surveys, outreach, and online tools, the city gathers valuable input to ensure the plan reflects the diverse interests and aspirations of its people.

At its core, the PROS Plan is about dreaming big while remaining practical. It sets ambitious goals for improving access to recreational amenities, enhancing existing facilities, and expanding green spaces. These goals are not just lofty ideals; they are actionable steps toward creating a community where residents can live, work, and play.

Within the PROS Plan is the Capital Improvement Plan (CIP), a strategic blueprint for turning vision into action. The CIP outlines specific projects and improvements designed to enhance services for Auburn's residents over the next six years and beyond. These projects are carefully aligned with the community's goals and values, ensuring that every dollar spent brings tangible benefits.

In essence, the PROS Plan is Auburn's promise to its residents: a commitment to vibrant parks, thriving green spaces, and abundant opportunities for outdoor adventure. It is a testament to the city's dedication to building a sustainable future where nature and community flourish together.

Regulatory Requirements

Growth Management Act Requirements

RCW 36.70A.140, known as the Growth Management Act (GMA), is crucial to all Comprehensive Parks, Recreation, and Open Space (PROS) Plans in Washington State. This law mandates that local governments, such as cities and counties, plan for growth through comprehensive plans that consider natural resources, economic development, and residents' quality of life.

Specifically, the GMA requires local governments to adopt comprehensive plans that address various aspects, including parks and recreation. Additionally, it outlines the requirements for a Capital Facilities Plan (CIP) that includes:

- An inventory of existing public facilities, including green spaces.
- Forecasts for future needs of these facilities.
- Plans for expanding or building new facilities.
- A six-year funding plan with identified public funding sources.
- A requirement to reassess plans if funding falls short, ensuring all elements are coordinated. Parks and recreation facilities are integral to the CIP.

The Parks and Recreation element of the GMA further specifies that the plan should include:

- Estimates of park and recreation demand for at least ten years.
- An evaluation of existing facilities and service needs.
- Exploration of opportunities for regional collaboration on park and recreation services.

In the context of a PROS Plan, RCW 36.70A.140 provides the legal framework for integrating parks, recreation, and open space considerations into overall planning. The PROS Plan becomes a specific component of the broader comprehensive plan, focusing on developing, maintaining, and enhancing these aspects within the community.

By adhering to RCW 36.70A.140, cities like Auburn ensure their PROS Plans align with state goals for sustainable growth and development. Compliance with the GMA is essential for Auburn to access state funding and effectively manage its parks, recreation, and open spaces.

Washington Recreation and Conservation Office (RCO) Requirements

The Recreation and Conservation Office (RCO) promotes outdoor recreation and conservation in Washington State through grants and technical assistance, ensuring that all residents have access to well-maintained parks and protected natural spaces. However, their role extends beyond funding.

1. The RCO recognizes the importance of well-planned park systems, which not only serve local communities but also contribute to a statewide network of parks and open spaces. A well-implemented Parks, Recreation, and Open Space (PROS) Plan acts as a roadmap for a city's park system, communicating the current state of parks, recreation facilities, budgeting, and programs to the RCO. It identifies gaps in current and future service levels and develops an actionable vision for the community's future. This roadmap assures the RCO that grant money will be used effectively to meet community needs aligned with statewide goals.

The RCO requires a PROS Plan, updated every six years, to comply with the Growth Management Act (GMA). These plans should cover the following key elements:

2. Existing Conditions & Baseline Analysis: Establishes the groundwork by reviewing past plans, demographics, and park system trends.
3. Community & Systems Needs Assessment: Identifies gaps and needs in park infrastructure, assesses facility conditions, and sets service level benchmarks.
4. Priorities, Strategies, and Implementation Plan: Compiles the analyses and proposes recommendations. It prioritizes goals, outlines implementation strategies, and establishes a potential capital improvement plan for park development.

By following RCO's guidelines and creating a strong PROS Plan, Auburn can secure grant funding, improve its park system, and enhance the quality of life for its residents. To ensure compliance with RCO's framework

and alignment with the GMA, communities must submit the PROS Plan along with the RCO's Self-Certification Form (see Approvals Section). By adhering to this framework, Washington communities can develop a robust vision for their parks and recreation systems and strengthen their grant applications by demonstrating clear vision and strategic priorities.

More information can be found in RCO's Manual 2: Planning Guidelines (January 2024), available at:

https://rco.wa.gov/recreation-and-conservation-office-grants/grant-manuals/.

Process

While RCO has no specific requirements for the number of pages, number of chapters, or format for comprehensive parks plans, it is expected that the plan will capture the needs of the organization and, more importantly, the quality of life desired by the community.

The process used to develop the City of Auburn's Park's PROS Plan Update is modeled after six minimum elements noted in RCO Manual 2: Planning Policies & Guidelines. Whether this plan supports a grant application for a capital project (facility development and land acquisition) or a non-capital project (architectural, engineering, planning, etc.,) the organization of this plan and the process followed is purposefully designed to capture the elements expected by RCO.

Aside from this, the first section, the project overview, this plan is structured around six primary sections or elements needed for an effective comprehensive parks plan:

Existing Conditions (Systems Inventory)

A description of the planning or service area, including the physical setting, the community profile, other mutually supportive planning efforts, and a summary of conditions of the complete inventory of each existing outdoor recreation asset or program.

Public Involvement

A description of how the planning process gave the public ample opportunity to be involved in plan development and adoption.

Demand & Needs Analysis

An analysis that takes your inventory work and public involvement into consideration, balancing public demand with your organization's current capacity and future expectations.

Goals and Objectives

The plan must support the applicant's park and recreation mission, including the current project, with broad statements of intent, or goals that capture a community's desired outdoor recreation resources.



Capital Improvement Program

A list of the desired capital improvements or capital facility programs of at least 6 years that lists and prioritizes desired land acquisition, development, renovation, and restoration projects.

Approvals

A resolution, ordinance, or other adoption instrument showing formal approval of the plan and planning process by the governing entity.

The process diagram below identifies the priority sections needed to develop a GMA-compliant and RCO-certified PROST plan, however, many steps ran concurrently.





Inventory & Assessment



INVENTORY & ASSESSMENT

This section aims to provide a comprehensive understanding of the current conditions of Auburn's parks, recreation programs, open space, and trail system. It examines the condition of the City's parks system, the population served by these parks, and the regional context and planning efforts that shape the system.

The City of Auburn manages a diverse range of parks and recreation assets, including 10 neighborhood parks, 14 community parks, 6 parcels of dedicated open space, 13 pocket parks and tot lots, and 16 special use facilities, including a golf course and trail systems. Given Auburn's current population of 90,096 in 2024, this equates to approximately 11.8 acres of parkland per 1,000 residents. This ratio aligns Auburn with other communities across the country, which have a median of 11.2 acres of parkland per 1,000 residents. A more detailed analysis of the composition of Auburn's parks and recreation system is provided in the Demand & Needs section of this report.

The inventory and assessment section, and the information that follows, is divided into four distinct contexts that capture the structure upon which the parks system is a part of.

- **Physical Context**
- **Demographic Context**
- **Planning Context**
- **Site Evaluations**

Pocket Parks

21st Street Playground • North Tapps Estates
Riversands Park • Terminal Park
Village Square Park • Ballard Park
Dorothy Bothell Park • Dykstra Park
Edgeview Park • Forest Villa Tot Lot
Gaines Park • Indian Tom Park • Jordana Park

Neighborhood Parks

Auburndale 2 Park • Shaughnessy Park
Auburndale Park • Cameron Park
Cedar Lanes Park • Evergreen Park
Lakeland Hills Park • Riverpoint Park
Scootie Brown Park • Trail Run

Community Parks

104th Ave SE • Brannan Park • Fulmer Park
Game Farm Park • Game Farm Wilderness
GSA Park • Isaac Evans Park
Jacobsen Tree Farm (und.) • Lea Hill Park
Les Gove Park • Mill Pond Park • Roegner Park
Sunset Park • Veterans Memorial Park

Open Space

Auburn Environmental • Clark Property
Game Farm Open Space • Golf Course
Lakeland Nature Area • Mary Olson Farm
West Auburn Lake

Special Use Areas

B Street Plaza • Bicentennial Park
Centennial Viewpoint Park • City Hall Plaza
Clark Plaza • Community Garden A
Community Garden B • Environmental Park
Fenster Nature Park • Fly-in Lion
Mary Olson Farm • Mountain View Cemetery
Pioneer Cemetery • Plaza Park
Slaughter Memorial

Planning Context

Auburn: A History of Transformation

The Auburn area has a rich history of human settlement, with indigenous populations being the first inhabitants. Tribal groups such as the Skopamish, Smalhkamish, and Stkamish thrived at the confluence of local rivers, establishing trade routes over the Cascade Mountains, interacting with eastern tribes, and using the waterways for resource gathering and commerce with coastal groups.

In the mid-1800s, the first European pioneers arrived in the White River Valley. The following decades, particularly the 1880s, saw the arrival of railroads, which attracted settlers from various regions, including the eastern and Midwestern United States, Europe, and Asia. Early European and Japanese farmers began cultivating the fertile land, leading to bountiful harvests and establishing the White River Valley as a prominent agricultural center.

Auburn's central location between Seattle and Tacoma played a significant role in its development. The construction of a hydroelectric power plant on the upper White River in 1911 provided electricity for Auburn, Seattle, and Tacoma, and powered the Interurban Railway. Additionally, the selection of Auburn by the Northern Pacific Railroad in 1910 as the site for its western freight terminal spurred a population boom, driven by the influx of permanent rail workers in need of housing.

World War II had a profound impact on Auburn's trajectory. The federal government's wartime relocation of Japanese American citizens to internment camps resulted in the loss of numerous businesses, homes, and farms. Unfortunately, most of these families never returned.

Although Auburn remained an agricultural hub for some time, the city began transitioning towards increased industrialization in the post-war period. In the 1960s, the establishment of a Boeing aircraft plant in the city marked a pivotal shift. Efforts to address historical flooding issues, including the construction of Mud Mountain and Howard Hanson Dams by the U.S. Army Corps of Engineers, further supported Auburn's transformation from a frontier settlement to a developed industrial center.

Auburn's strategic position within south King County made it a desirable location during the 1990s, a period coinciding with a population surge across the Puget Sound region. The city's population, estimated to be around 30,000 in 1990, grew significantly over the next few decades, reaching approximately 76,347 by 2014—a 154.5% increase. However, from around 2014 onward, growth slowed to approximately 11%, marking a significant deceleration from the previous pace.

This slowdown during the 2000s can be attributed to a combination of economic and demographic factors. The region faced the aftermath of the dot-com bust and the early 2000s economic recession, which impacted job creation and investment. Additionally, the housing market crisis that culminated in the 2008 financial crash significantly affected real estate development and home purchases, leading to a decrease in population influx. Infrastructure limitations and congestion also played a role, as the city's capacity to accommodate rapid growth was stretched thin, particularly considering its physical context. Moreover, competition from nearby cities offering more attractive amenities or better economic opportunities may have diverted potential residents and businesses away from Auburn. These factors collectively contributed to a period of slower growth for the city during that decade.

Today, Auburn remains an attractive community known for its family-oriented, small-town atmosphere. With more affordable housing compared to most of King County, convenient highway access, and a charming small-town feel, Auburn is poised for continued, stable, and sustainable growth. This growth will increase the demand for quality of life elements that the community expects, including the demand for and access to recreational facilities.

Physical Context

Auburn's location in the Puget Sound region has profoundly influenced its historical development and future growth. The city's geography has been central to its evolution, with its proximity to rivers making it an essential transportation hub for both Native Americans and early settlers. The fertile valley attracted cultivation, and railways were later built to transport crops and timber from Auburn to larger cities like Tacoma and Seattle.

Today, Auburn is traversed by two major rivers, the White River and the Green River, along with two critical transportation corridors, SR-167 and SR-18. These natural and man-made features divide the city, with a flat valley floor surrounded by steep ascents leading to the West Hill and East Hill. The valley is further segmented by Highway 167 and distinct zoning designations, creating identifiable areas such as Downtown and the Industrial Valley.

The Green River is fed by numerous creeks that carve through the East Hill, forming ravines and preserving natural spaces, which in turn limit mobility within this region. East Hill is primarily a residential area with pockets of retail, and it is crossed by major roads like Highway 515 and E James Street. In contrast, West

Hill is somewhat isolated from the rest of the city, bounded by the Green River and Highway 516, and further divided by I-5.

Topography

Nestled within the Puget Sound Lowland region of the Pacific Northwest, Auburn is a city shaped by the enduring legacy of ancient glacial epochs and the ongoing influence of geological forces. Positioned between the eastern foothills of the Cascade Range and the shores of Puget Sound, Auburn features a diverse range of terrain types.

To the east, the Cascade foothills rise gradually, giving the landscape a gentle undulation that ascends toward the towering peaks of the Cascade Range. These foothills provide a rich tapestry of topographical variety, offering panoramic vistas and numerous recreational opportunities.

The city's landscape is marked by a broad, flat valley bordered by the Green River and Lea Hill to the east, and West Hill to the west. These green slopes define Auburn's contours, creating natural boundaries within the urban expanse while offering breathtaking views of the Cascade Range and the iconic silhouette of Mount Rainier.

To the west, Auburn's proximity to Puget Sound imparts a maritime character to its climate and geography. Located near the southern edge of the sound, the city benefits from easy access to waterfront areas and the thriving marine ecosystems they support. This maritime influence moderates the climate, resulting in milder winters and cooler summers compared to the more extreme conditions experienced further inland.

Hydrology

Auburn's intricate network of rivers and creeks holds deep significance for the community, serving a variety of crucial functions and enriching the local landscape. These waterways act as natural drainage systems, contribute to flood mitigation, provide vital habitats for diverse fish and wildlife, offer scenic beauty, hold historical importance, and create opportunities for recreation.

The history of Auburn's watercourses, particularly the White River, highlights the complex interaction between natural forces and human intervention. Before 1906, the White River flowed through King County, merging with the Green River before emptying into Elliot Bay. However, a significant debris blockage in 1906 altered the river's course, diverting floodwaters away from King County and redirecting them down the Stuck River into the Puyallup River. To manage this change, a permanent diversion wall was built at Game Farm Park in Auburn, directing the White River to its current path.

Today, the White River in southern Auburn serves as a natural boundary, separating the more developed urban core from the rural areas beyond. Historically, the city developed within the river valley, where many of its parks are located. However, with the valley reaching its developmental capacity, urban growth has expanded into newly annexed areas to the west, east, and south. Various water bodies, including the Green River, Mill Creek, Bowman Creek, Olson Creek, Mill Pond, and White Lake, have significantly influenced Auburn's spatial development. The wetlands along much of Mill Creek have limited extensive urbanization in that area, though some industrial properties have been established.

Among Auburn's water features, White Lake and West Auburn Lake are the only naturally occurring lakes or ponds. West Auburn Lake, acquired by the city within the past decade, offers recreational opportunities within a highly urbanized setting. In contrast, White Lake, located south of Highway 18, remains privately owned and inaccessible to the public, preserving its natural state.

Climate

Nestled within a temperate maritime climate, Auburn experiences a nuanced interplay of meteorological forces, shaping its seasonal identity with distinct variability.

Summer (June to August) brings warmth to the region, with temperatures typically ranging from 75°F to 85°F (24°C to 29°C). While the season is mostly dry, occasional light rainfall may punctuate the otherwise arid conditions.

Autumn (September to November) ushers in cooler temperatures, settling between 60°F and 70°F (15°C to 24°C). During this period, Auburn transitions to a wetter climate, with more frequent showers that cast the familiar Pacific Northwest veil of precipitation over the landscape.

Winter (December to February) sees temperatures dip to an average of 45°F to 50°F (7°C to 10°C). While cold air intrusions can briefly push temperatures below freezing, such occurrences are typically short-lived. Precipitation increases during the winter months, and although snowfall is rare, it occasionally blankets the city. When snow is accompanied by freezing rain, it can significantly impact local traffic.

Spring (March to May) signals a gradual warming, with temperatures rising to a moderate 55°F to 65°F (13°C to 18°C). Intermittent showers persist, remnants of the previous seasons' precipitation, as the landscape undergoes its annual rejuvenation.

Auburn receives approximately 37 inches (940 mm) of annual precipitation, evenly distributed across the seasons, reflecting its maritime influence. The city's proximity to the Pacific Ocean helps moderate extreme temperatures, tempering both the summer heat and winter chill.

Auburn's diverse topography, with its varying elevations and water bodies like the Green River, fosters the development of microclimates within the city. These microclimates create subtle weather patterns and temperature differences, adding richness and complexity to Auburn's overall climate.

DEMOGRAPHIC CONTEXT

Auburn, Washington, is a vibrant city with a diverse demographic profile. Based on the latest U.S. Census data, here is a detailed breakdown of key demographic aspects:

Population Size & Growth

Auburn is a mid-sized city in King County, Washington, with a population of approximately 90,096 as of July 2023. The city has experienced steady growth, reflecting broader trends in the Seattle metropolitan area. Since 2000, Auburn's population has increased by 54.4%. With a population density of about 3,046 people per square mile, the city continues to see urban development and residential expansion.

In recent years, Auburn's growth rate has moderated. Between 2020 and 2023, the population grew at an annual rate of about 0.99%. Looking ahead, the growth rate is projected to decelerate to approximately 0.31% annually from 2023 to 2028.

Employment

Auburn's economy is diverse, with key industries including retail, manufacturing, healthcare, education, and various service sectors. Major employers in the city reflect this diversity. Among them are Boeing, which operates a significant aerospace manufacturing facility in Auburn, employing thousands of workers and playing a central role in the city's industrial base. Multicare Health System and CHI Franciscan Health are also significant employers, providing a wide range of healthcare services to the region.

In addition to these, The Muckleshoot Indian Tribe is a major contributor to the local economy, not only through its government operations but also through its enterprises, such as the Muckleshoot Casino and Muckleshoot Bingo. Auburn School District is another key employer, reflecting the city's strong focus on education.

Many residents of Auburn work within the city, benefiting from the presence of these major employers. However, a significant portion of the population commutes to nearby employment hubs such as Seattle, Tacoma, and Bellevue, which are easily accessible due to Auburn's strategic location and robust transportation infrastructure, including major highways and rail services.

Auburn's accessibility and central location make it a vital center for both residential living and employment opportunities within the Puget Sound region. The combination of local employment and the city's position within a broader regional economy enhances Auburn's role as both a residential community and a significant economic hub.

Race and Ethnicity

Auburn stands out for its notable ethnic and racial diversity, which is somewhat unique compared to other cities in Washington State. According to recent data, the racial composition of Auburn's population is approximately 59.7% White, 11.6% Asian, 7.3% Black or African American, 2.1% American Indian or Alaska Native, and 2.8% Native Hawaiian or other Pacific Islander. Additionally, 16.5% of the population identifies as Hispanic or Latino. The city's diversity is further highlighted by the fact that 21.4% of Auburn's residents are foreign-born, a figure that exceeds the state average.

Auburn's significant Asian and Hispanic or Latino populations are particularly noteworthy. While many cities in Washington have diverse communities, Auburn's proportion of Asian residents stands out, reflecting broader trends in the Seattle-Tacoma-Bellevue metropolitan area, yet distinguishing itself from smaller or less urban areas in the state.

Moreover, Auburn is home to a significant population of Marshall Islanders, who have migrated to the United States primarily under the Compact of Free Association (COFA). This treaty allows citizens of the Marshall Islands, along with those from Micronesia and Palau, to live and work in the U.S. without visas. Auburn has become a notable center for Marshallese migrants, following Arkansas, which hosts the largest population on the mainland.

The migration of Marshallese to the U.S. has been driven

by various factors, including economic opportunities and better access to healthcare. Additionally, many Marshallese migrate due to environmental degradation and health issues linked to the legacy of nuclear testing conducted by the United States in the Marshall Islands during the mid-20th century. This has resulted in health concerns such as cancer and other chronic diseases, prompting many to seek better healthcare in the U.S.

In Auburn, the Marshallese community has maintained strong cultural ties, frequently gathering in local churches and community events to support one another and preserve their traditions. This tight-knit community aspect is crucial as they navigate the challenges of migration, including language barriers and economic adjustments.

Auburn's demographic diversity is rooted in its historical development as a key agricultural and industrial hub, which has attracted various immigrant communities over the years. This has created a rich cultural fabric that continues to shape the city's identity today.

Languages

While English is the primary language spoken in Auburn, with 69.36% of residents speaking it exclusively, the city's cultural diversity means that a variety of languages can be heard in everyday life. Spanish is the most common non-English language, spoken by 13.28% of the population. Additionally, other languages, including various Slavic languages, contribute to the city's linguistic landscape.

The Auburn School District reflects this diversity, with over 80 languages spoken in the homes of its students. More than 40% of students use multiple languages in their daily lives. The district's Multilingual Learner Program is designed to help students develop English language skills while also promoting the preservation of their home languages. Although the exact number of students speaking each language at home is not disclosed due to privacy concerns, the fact that the district's Multilingual Learners department serves students from over 80 different language backgrounds illustrates the rich tapestry of languages spoken in Auburn.

Moreover, the district offers translation services for a variety of languages, including Afrikaans, Burmese, Hmong, Marshallese, Russian, Spanish, and Ukrainian. While this is not an exhaustive list, it highlights some of the prominent languages spoken in the community alongside English.

These languages likely represent just a portion of Auburn's diverse linguistic landscape. However, by examining the languages supported by the school district, we can gain insight into the multilingual character of the city.

Age

Auburn has a diverse age distribution among its population of approximately 90,096 people. The largest age group consists of residents aged 35 to 54, comprising about 27% of the population. This is followed by children and teenagers (ages 5 to 17), who make up roughly 18%. Young adults aged 25 to 34 represent around 15%, while those in the 55 to 64 age bracket account for approximately 12%. The senior population (over 65 years) comprises about 13% of the population, and those aged 18 to 24 constitute around 9%. The youngest segment, children under 5 years old, represents about 7% of Auburn's population.

Recent trends in Auburn's age distribution have shown relative stability across the different age groups. However, there has been a slight increase in the senior population, mirroring broader national trends of an aging demographic. This shift suggests a growing need for services and amenities that cater to older residents, while also maintaining support for families and younger adults.

Gender

Auburn's gender distribution is close to an even split between males and females, with a slightly higher percentage of males. According to the latest U.S. Census Bureau data, Auburn has approximately 46,922 males (52.1%) and 43,174 females (47.9%), indicating a clear majority of males over females in the city. This trend is somewhat uncommon in many parts of the United States, where women typically outnumber men.

Income

Auburn's residents represent a wide range of income levels, reflecting the diverse economic profiles of its neighborhoods and communities. While some areas of Auburn are affluent, others have a higher percentage of lower-income households. The city's economic structure includes a mix of blue-collar and white-collar workers, contributing to this diversity. As of the most recent data, the median household income in Auburn is approximately $83,881, with a per capita income around $41,440. The city's poverty rate is 10.7%, and 14.9% of children live below the poverty line. Housing is a significant aspect of the local economy, with the median home value around $561,000 (per 2024 Zillow Home Value Index). This reflects a community with varied economic experiences, encompassing both substantial earning potential and areas in need of economic support.

Education

Auburn is served by a variety of educational institutions, including both public and private schools. The Auburn School District is a key provider, operating numerous elementary, middle, and high schools, such as Auburn High School, Auburn Riverside High School, and Auburn Mountainview High School, along with various elementary and middle schools spread throughout the city. The district serves a substantial student population, with an enrollment of over 17,000 students.

Private education options in Auburn include Valley Christian School, which offers a Christian-centered education from preschool through 12th grade, and Auburn Adventist Academy, a Seventh-day Adventist high school. Additionally, the Muckleshoot Tribal School, managed by the Muckleshoot Indian Tribe, provides education from kindergarten through high school, addressing the specific needs of its tribal community.

Green River College is a notable public institution in the area, offering a range of associate degrees, certificates, and transfer programs. Collectively, these educational institutions contribute to the diverse and comprehensive learning environment in Auburn.

Housing

Auburn's housing market is diverse, featuring a mix of single-family homes, apartments, and affordable housing options. As of mid-2024, the median home price in Auburn is approximately $621,000 (per 2024 Zillow Home Value Index), reflecting a 5.5% increase over the past year. The market remains highly competitive, with homes typically selling within a week of listing. Rental prices are also significant, with median rents around $1,919 per month. The city supports a range of affordable housing programs through the King County Housing Authority, including Section 8 vouchers and subsidized housing designed for low-income families, seniors, and individuals with disabilities.

This varied housing landscape influences Auburn's parks and recreation system by increasing the demand for accessible and inclusive recreational spaces. The presence of affordable housing communities, such as Burndale Homes and Firwood Circle, which offer on-site services and are located near parks, highlights the importance of maintaining and expanding public recreational facilities. These parks provide essential amenities and green spaces for residents of all income levels, promoting community well-being and environmental sustainability.

Commuters

Auburn is often considered a commuter city due to its strategic location in the Puget Sound region and its proximity to major employment centers such as Seattle, Tacoma, and Bellevue. The city's population fluctuates during the day as residents commute to jobs in these areas. The average one-way commute time for Auburn residents is approximately 31.6 minutes, covering an average distance of around 10.75 miles.

Here's an overview of key cities to which Auburn residents commonly commute for work and the respective employment opportunities:

1. Tacoma is a major city in the Puget Sound region offering a wide range of employment opportunities across various industries.
2. As a neighboring city, Puyallup provides job options in retail, healthcare, education, and other sectors.
3. Although farther from Auburn, some residents commute to Seattle for jobs in tech, finance, healthcare, and various other industries.
4. Located to the north, Kent offers job opportunities in logistics, manufacturing, and retail.
5. Also north of Auburn, Renton is home to companies in aerospace, technology, healthcare, and other industries.
6. To the west, Federal Way has a diverse job market, including opportunities in retail, healthcare, and education.

System Inventory

Auburn takes great pride in its expansive parks system, designed to cater to a variety of recreational interests while preserving the natural beauty of the area. Among the many parks throughout the city, Les Gove Park stands out as a tranquil oasis in downtown Auburn, offering verdant green spaces, meandering pathways, and designated picnic areas, providing a peaceful retreat amid the urban bustle. Game Farm Park, a premier destination for sports enthusiasts and families alike, spans 80 acres and features sports fields for soccer, baseball, and softball, along with tennis courts, a skate park, and playgrounds. Isaac Evans Park, located along the scenic Green River, delights visitors with riverside trails, scenic viewpoints, and inviting picnic spots, allowing nature lovers to immerse themselves in a serene environment. Brannan Park, near the Green River, is a picturesque spot for outdoor recreation, offering walking trails, picnic shelters, and a boat launch for water enthusiasts. For those seeking a more botanical experience, Soos Creek Botanical

Garden (privately owned) showcases a stunning array of native and exotic flora, inviting visitors to explore its themed gardens, winding paths, and tranquil ponds.

Auburn's park system extends beyond recreation to include educational and environmental initiatives. Auburn Environmental Park combines recreational amenities with interactive exhibits and interpretive trails, serving as a platform for environmental education and awareness. These programs enrich the community's understanding of local ecosystems and foster a deeper appreciation for the natural world. In essence, Auburn's parks system is more than just a collection of green spaces; it's a vibrant tapestry of recreational opportunities, natural wonders, and educational endeavors that enrich the lives of residents and visitors alike.

Auburn prioritizes the development of park spaces that align with the community's values. To determine what improvements are needed or desired, the first step is to catalog and assess the current conditions of all the city's existing parks, open spaces, and trail resources. This process involves identifying the assets that Auburn currently owns, manages, and maintains, and evaluating them to ensure they meet or exceed park development standards, safety criteria, liability and risk concerns, recreational trends, aesthetic appeal (placemaking), and landscape and climate change resiliency objectives.

To effectively plan for budgeting and resource allocation based on each park's level of service or area of influence, parks are also assessed to determine the individual contributions they provide to the community.

Physical & Mental Health: Assessing a park by expected or projected use helps visitors know what to expect and allows park managers to establish rules and guidelines that ensure visitors' safety and preserve the park's resources.

Ecological Diversity: Parks often vary in terms of their ecosystems and biodiversity. Assessing parks based on their ecological features can aid in understanding and protecting these unique natural environments.

Cultural and Historical Significance: Some parks are often assessed based on their cultural or historical importance. These designations help preserve and showcase sites of cultural heritage, such as historical landmarks, archaeological sites, and areas with indigenous significance.

Tourism & Branding Benefits: Classifying parks can aid in promoting tourism and attracting visitors. Visitors often have varying interests, so categorizing parks allows tourism agencies to target specific audiences with appropriate marketing strategies.

Educational and Interpretive Benefits: Classification helps in developing educational programs and interpretive materials tailored to the park's unique characteristics. This enhances visitor experiences by providing relevant information about the park's natural, cultural, and historical attributes.

Research and Conservation Planning: Scientists and conservationists can use classification systems to prioritize research efforts and develop conservation plans. By understanding the different types of parks and their specific features, they can focus on areas that are most in need of study and protection.



Categorized Recreation Programs

The City of Auburn offers a wide range of recreation programs designed to meet the diverse interests and needs of its community members. These programs, categorized by age group and activity type, provide opportunities for fitness, personal growth, social engagement, and community involvement.:

Fitness Programs:

- Fitness memberships
- Fitness classes
- Open gym sessions
- Equipment and weight room access at the Auburn Community & Event Center

Preschool Programs (Ages 1-5):

- Indoor playground
- Classes and programs
- Birthday party packages
- Youth Programs (Ages 6-12):
- Rec n Roll (mobile recreation unit)
- Summer camps
- Classes and programs
- Family programs
- Birthday party packages

Teen Programs (Ages 13-18):

- The REC Teen Center
- Classes and programs
- Camps
- MakerSpace

Adult Programs (Ages 18+):

- Art classes
- MakerSpace
- Fitness classes
- Open gym

Senior Programs (Ages 50+):

- Senior Activity Center
- Fitness classes
- Social activities
- Educational workshops

Family Programs:

- Various family-oriented activities and events

Specialized Recreation:

- Programs for individuals with disabilities
- Sports & Athletics:
- Youth leagues
- Youth sports classes

Community Events and Special Programs:

- Auburn Farmers Market
  (June-September at Les Gove Park)
- National Recreation and Park Month events
  Various special events throughout the year

Cultural Arts Programs:

- Performing arts
- Public art installations

Outdoor Recreation:

- MTB Trailblazers biking program
- Hiking and trail activities

Volunteer Opportunities:

- Community service and volunteer programs

Facility Rentals:

- Athletic fields
- Campground
- Meeting and banquet rooms
- Picnic shelters

Overall, the City of Auburn's diverse array of programs and services supports a healthy, active, and engaged community and highlights Auburn's commitment to providing diverse and inclusive recreational opportunities for its residents, promoting community well-being and engagement

Existing Parks & Recreation Facilities

The City of Auburn offers a wide array of recreational opportunities and park spaces for both residents and visitors, with a strong emphasis on developing park spaces that align with the community's values. Auburn's park system currently encompasses approximately 980 acres of mostly developed or partially developed parklands, along with non-contiguous trail segments along the White River that aim to connect to the downtown core.

To identify necessary or desired improvements, the City first catalogs and assesses the current conditions of all its existing parks, open spaces, and trail resources. This assessment process involves identifying and evaluating the assets that the City of Auburn owns, manages, and maintains, ensuring they meet or exceed park development standards, safety criteria, and liability and risk concerns. Additionally, this evaluation addresses recreational trends, enhances aesthetic appeal through placemaking, and supports landscape resiliency.

Assessment Methodology

Modeled after RCO's suggested Level-of-Service (LOS) grading system and NRPA's "system level" approach, a custom assessment methodology was used in this study to inventory and assess the current range of recreation and open space opportunities within any particular area. The methodology used in this report is ranked on a scale of 5 to 0, from high to low, across a number of different criteria, including:

- Location
- Park Classification
- Facility Age
- History
- Funding Encumbrances or Regulatory Framework
- Condition of Individual Components & Amenities
- Maintenance / Known Issues

Table 2-1: Assessment Rankings

Ranking (High to Low)	Description
0	n/a - Not Present
1	Major liability and structural failures present and imminent. Needs to be closed.
2	Condition is poor with major structural, cosmetic, maintenance, and liability issues observed.
3	Condition is moderate with some major cosmetic or maintenance issues that create minor liability concerns.
4	Condition is very nice with only minor cosmetic or maintenance issues observed.
5	Perfect condition with a long life cycle and no risk or liability issues.

Please note that park areas developed by private entities e.g., a HOA, or and public or private schools were not included on the overall City Park map, therefore they were not part of the assessment procedure.

Process

The following steps were executed to capture the institutional knowledge of City staff, while allowing the consultant team to assess each park and trail component.

1. Inventory and build maps of the existing parks.
2. Develop a detailed inventory of each park from the previous planning process and geospatial sources, including encumbrances research and park / funding histories.
3. Distribute inventory information to City for review.

Park Classifications

Classification systems provide a standardized method to develop, organize, operate, and manage parks based on certain criteria, which can include factors such as their size, ecological importance, recreational opportunities provided, historical or cultural significance, placemaking potential, economic development, and ability to support conservation & climate resiliency goals.

Table 2-2: Park Classifications

Key*	Classification
C	Community
N	Neighborhood
O	Natural Areas & Greenspaces (Open Space)
S	Special Use Facilities
P	Pocket Parks / Mini-Parks / Tot Lots
T	Trails, Bikeways & Pathways

* to be used when referring to the parks system key map, Figure 2-1.

Washington State Parks & RCO use different classification definitions but are built on the same premise - consistent methodology is critical to best manage our public spaces and to ensure the public are active and able to enjoy a quality mix of structured and natural environments and all the benefits that they provide.

There are six basic park and greenspace facility types typically classified and utilized by municipalities the size of Auburn of which are currently exhibited:

Pocket Parks / Mini-Parks / Tot Lots

Pocket parks are very small and serve a limited radius (up to ¼-mile) from the site; they provide passive and play-oriented recreational opportunities. Examples of pocket parks can include a tot lot with play equipment such as a climber, slide or swings; a viewpoint; or waterfront access areas such as at street ends.

A small urban plaza or civic recognition project may also be considered a pocket park. Parking is not often provided at pocket parks, although lighting may be used for security and safety.

Neighborhood (Local) Park

Generally considered the basic unit of traditional park systems, neighborhood or local parks are small park areas designed for unstructured play and limited active and passive recreation. They are generally up to around 5 acres in size, but can be larger depending on a variety of factors including neighborhood need, physical location and opportunity, and should meet a minimum size of 2 acre in size when possible.

Community Park

Larger multi-acre sites developed for organized play, contain a wider array of facilities and, as a result, appeal to a more diverse group of users. Community parks are generally 20 to 50 acres in size, meet a minimum size of 20 acres when possible and serve residents within a 1-mile radius of the site.

Natural Areas (Open Space)

Natural areas are those which are preserved to maintain the natural character of the site and are managed to protect valuable ecological systems, such as riparian corridors and wetlands, and to preserve native habitat and biodiversity. In managing for their ecological value, these natural areas may contain a diversity of native vegetation that provides fish and wildlife habitat and embodies the beauty and character of the local landscape. Low-impact activities, such as walking, nature observation, and fishing are allowed, where appropriate, and horseback riding is also permitted on certain sites.

Trails, Bikeways & Pathways

Trails are non-motorized transportation networks separated from roads. Trails can be developed to accommodate multiple uses or shared uses, such as pedestrians, in line skaters, bicyclists, and equestrians. Bikeways are different than trails in that their principal focus is on safe and efficient non-motorized transportation. Bikeways & pathways serve distinctly different user groups than trail users. For shared-use trails, it is important that the alignment and cross sections be designed with flexibility to accommodate higher speeds, passing zones and greater widths. Surfaces will vary with intended use and environmental considerations.

More information on the other classification types not used can be found in Appendix B.

Current Inventory

Over its 133-year history, Auburn, WA, has developed a robust park system under the guidance of its past and present Mayors and City Councils. The City has expanded its parkland through various means, including donations, dedications, and purchases. Each park undergoes regular evaluations and renovations to ensure they align with evolving recreational trends, aesthetic standards, safety protocols, and government regulations. To meet the needs of both current and future residents, Auburn must continue to acquire new parkland while also maintaining and enhancing its existing parks and facilities.

This section provides an overview of each park and open space, detailing the neighborhood it is located in, its year of establishment, classification, and acreage. As a prelude, the following table identifies the quantity and total acreage of the entire system, based on its classification.

Parks, Open Space & Special Use Facilities

The core of Auburn, WA's parks system is characterized by its diverse parklands, expansive open spaces, and specialized use facilities, all of which contribute to the community's recreational and aesthetic needs.

Auburn's parklands consist of a variety of mini-parks, neighborhood parks, community parks, open spaces, and special use facilities that provide residents with access to green spaces for leisure, sports, and recreational activities. These parks are equipped with amenities such as playgrounds, sports fields, picnic areas, and walking trails, ensuring they cater to the needs of individuals and families alike. Open spaces offer residents opportunities for passive recreation, such as hiking, bird-watching, and enjoying the scenic beauty of nature. The city's commitment to maintaining these open spaces ensures that natural resources are protected and accessible to the community.

Table 2-3: Existing Parks & Open Spaces

Key	Classification	Count	Acres
C	Community	14	283.30
N	Neighborhood	10	51.23
O	Open Space	6	321.42
S	Special Use Facilities	14	307.69
P	Tot-Lots	13	16.71
	Totals:	**57**	**980.35***

* does not include other non-park related properties, or other landbanked right-of-ways and easements.

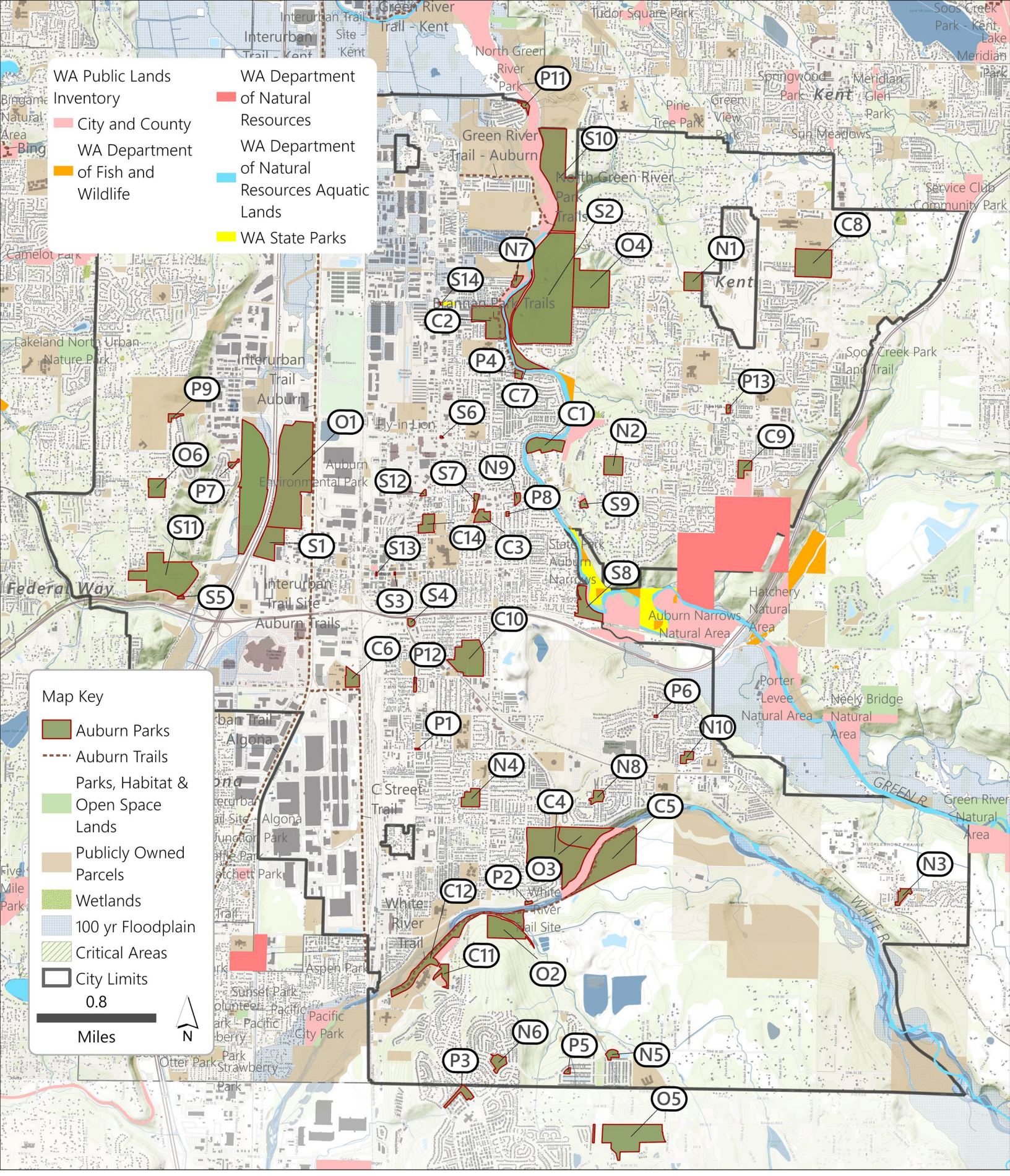

WA Public Lands Inventory
City and County
WA Department of Fish and Wildlife
WA Department of Natural Resources
WA Department of Natural Resources Aquatic Lands
WA State Parks
Map Key
Auburn Parks
Auburn Trails
Parks, Habitat & Open Space Lands
Publicly Owned Parcels
Wetlands
100 yr Floodplain
Critical Areas
City Limits
0.8
Miles
N
P11
S10
S2
O4
N7
S14
C2
P4
C7
S6
C1
N2
P13
C9
C8
N1
P9
O1
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S12
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S11
S1
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C10
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P12
P6
P1
N10
N4
N8
C4
C5
O3
P2
C12
N3
C11
O2
N6
P5
N5
P3
O5
Green River Trail - Kent
Tudor Square Park
North Green River Park
Green River Trail - Auburn
Kent
Interurban Trail Auburn
Auburn Environmental Park
Lakeland North Urban Nature Park
Soos Creek Park and Trail
Auburn Narrows Natural Area
Hatchery Natural Area
Porter Levee Natural Area
Neely Bridge Natural Area
Green River Natural Area
Federal Way
Interurban Trail Site Auburn Trails
Algona
C Street Trail
White River Trail
Aspen Park
Sunset Park
Pacific City Park
Strawberry Park
Otter Park
GREEN R
WHITE R

Table 2-4: Existing Parks Inventory				
Key	Name	Classification	Acres	Rating
C1	104TH AVE SE PARK	COMMUNITY	13.22	3
C2	BRANNAN PARK	COMMUNITY	23.55	3.5
C3	FULMER PARK	COMMUNITY	4.88	4
C4	GAME FARM PARK	COMMUNITY	56.94	4
C5	GAME FARM WILDERNESS	COMMUNITY	48.59	3
C6	GSA PARK	COMMUNITY	6.34	3
C7	ISAAC EVANS PARK	COMMUNITY	17.94	3.75
C8	JACOBSEN TREE FARM	COMMUNITY	29.34	3
C9	LEA HILL PARK	COMMUNITY	5.32	3.5
C10	LES GOVE PARK	COMMUNITY	27.83	4.5
C11	MILL POND PARK	COMMUNITY	4.85	3
C12	ROEGNER PARK	COMMUNITY	21.79	4
C13	SUNSET PARK	COMMUNITY	15.46	3
C14	VETERANS MEMORIAL PARK	COMMUNITY	7.25	3
	Subototals	14	283.31	
N1	AUBURNDALE 2 PARK	NEIGHBORHOOD	9.39	3
N10	SHAUGHNESSY PARK	NEIGHBORHOOD	3.32	3
N2	AUBURNDALE PARK	NEIGHBORHOOD	10.14	4
N3	CAMERON PARK	NEIGHBORHOOD	3.79	3
N4	CEDAR LANES PARK	NEIGHBORHOOD	8.38	3.5
N5	EVERGREEN PARK	NEIGHBORHOOD	2.74	3
N6	LAKELAND HILLS PARK	NEIGHBORHOOD	5.15	3
N7	RIVERPOINT PARK	NEIGHBORHOOD	2.65	3
N8	ROTARY PARK	NEIGHBORHOOD	3.89	3
N9	SCOOTIE BROWN PARK	NEIGHBORHOOD	1.77	3
	Subototals	10	51.23	
O1	AUBURN ENVIRONMENTAL PARK OPEN SPACE	OPEN SPACE	180.17	3
O2	CLARK PROPERTY OPEN SPACE	OPEN SPACE	27.42	3
O3	GAME FARM OPEN SPACE	OPEN SPACE	22.67	3
O4	GOLF COURSE OPEN SPACE	OPEN SPACE	40.97	3
O5	LAKELAND HILLS NATURE AREA	OPEN SPACE	41.02	3
O6	LEWIS LAKE NATURE PARK	OPEN SPACE	9.17	3
	Subototal:s	6	321.42	
P1	21ST STREET PLAYGROUND	POCKET PARK / MINI-PARK / TOT LOT	0.21	3

Table 2-4: Existing Parks Inventory				
P11	TRAIL RUN PARK	POCKET PARK / MINI-PARK / TOT LOT	1.73	3
P12	TERMINAL PARK	POCKET PARK / MINI-PARK / TOT LOT	1.16	3
P13	VILLAGE SQUARE PARK	POCKET PARK / MINI-PARK / TOT LOT	0.97	3
P2	BALLARD PARK	POCKET PARK / MINI-PARK / TOT LOT	0.64	3
P3	DOROTHY BOTHELL PARK	POCKET PARK / MINI-PARK / TOT LOT	4.83	3
P4	DYKSTRA PARK	POCKET PARK / MINI-PARK / TOT LOT	1.73	2
P5	EDGEVIEW PARK	POCKET PARK / MINI-PARK / TOT LOT	0.80	3
P6	FOREST VILLA TOT LOT	POCKET PARK / MINI-PARK / TOT LOT	0.24	3
P7	GAINES PARK	POCKET PARK / MINI-PARK / TOT LOT	1.34	3
P8	INDIAN TOM PARK	POCKET PARK / MINI-PARK / TOT LOT	0.41	3
P9	JORNADA PARK	POCKET PARK / MINI-PARK / TOT LOT	1.87	3
	Subototal:s	13	16.71	
S1	AUBURN ENVIRONMENTAL PARK	SPECIAL USE AREA	18.81	3
S10	MARY OLSON FARM	SPECIAL USE AREA	68.78	3
S11	MOUNTAIN VIEW CEMETERY	SPECIAL USE AREA	50.29	3
S12	PIONEER CEMETERY	SPECIAL USE AREA	0.75	3
S13	PLAZA PARK	SPECIAL USE AREA	0.15	3
S14	SLAUGHTER MEMORIAL	SPECIAL USE AREA	0.15	3
S2	AUBURN GOLF COURSE	SPECIAL USE AREA	150.52	3.5
S3	B STREET PLAZA	SPECIAL USE AREA	0.13	3
S4	BICENTENNIAL PARK	SPECIAL USE AREA	1.34	3
S5	CENTENNIAL VIEWPOINT	SPECIAL USE AREA	0.50	3
S6	CLARK PLAZA	SPECIAL USE AREA	0.17	3
S7	COMMUNITY GARDEN	SPECIAL USE AREA	1.84	3
S8	FENSTER PROPERTY	SPECIAL USE AREA	12.72	3
S9	LEA HILL TENNIS COURTS	SPECIAL USE AREA	1.54	3.5
	Subototal:s	14	307.69	
	Totals:	**57**	**980.35**	

*** does not include other non-park related properties, or other landbanked right-of-ways and easements.**

P1



21st Street Playground

405 21st Street SE
0.17 acres – Dedicated in 2006
Classification: Pocket Park
Status: Developed

This small pocket park is situated adjacent to a City stormwater detention pond. Park amenities include a playground, picnic table, and benches. The park is on a short list of parks that need to go through the naming process.

N1



Auburndale Park

31700 108th ST SE
9.74 acres –Transferred in 2003
Classification: Neighborhood Park
Status: Developed

Auburndale Park falls into the neighborhood park category, and like many in this classification, is underused. The City recently constructed an entrance on the east side of the park in order to provide better access to the surrounding neighborhoods in an effort to increase use in the park. The main feature of the park is a natural wooded area with a loop trail. There is a play area, picnic tables and barbecue grill.

N1



Auburndale Park II

29725 118th ST SE
9.34 acres – Transferred in 2003
Classification: Neighborhood Park
Status: Undeveloped

Auburndale II is an undeveloped park with a mix of native over-story, and an under-story that is dominated by Himalayan blackberry and scotch b room. A future trail connecting Lea Hill to the valley floor is being considered, which would likely run east to west along the northern boundary of the park.

P2



Ballard Park

1612 37th Way SE
0.68 acres - Dedicated in 1966
Classification: Pocket Park
Status: Developed

Ballard Park is a neighborhood park with a distinctive stone picnic shelter. In 2003, a new playground and irrigation system was installed, as well as pathways and an entrance gate. Two new tables and benches were installed and a new concrete fence constructed at that same time. Ballard Park is situated high above the White River and benefits from an appealing view of the river. There is not direct river access.



Cameron Park

3727 Lemon Tree Lane
3.85 acres – Dedicated in 1989
Classification: Neighborhood Park
Status: Developed

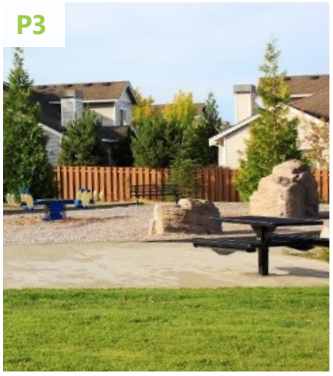
Cameron Park is a nestled between two rows of houses, east of the Muckleshoot Indian Reservation. The park has two entrances, one near the intersection of Lemon Tree Lane SE and Academy Drive SE, and the other off of Lemon Tree Lane SE. Visitors can take an asphalt path into the heart of the park that winds through a large grassy open field, planted with occasional trees. A colorful play structure is located in the northeast corner of the park. Picnic tables next to the playground provide seating for picnics or for caretakers of young children. The layout of the path provides a good opportunity to integrate the play area into the rest of the park using landscaping to create a more lush and cohesive setting. A limiting factor in achieving this is the utility easement of Northwest Pipeline, which reduces the ability to landscape and improve some parts of the park.



Cedar Lanes Park

1002 25th Street SE
8.36 acres – Dedicated in 1969
Classification: Neighborhood Park
Status: Developed

Cedar Lanes Park is a unique combination of native woodland, well-kept lawn, and a formal playground. The forested area contains a mix of western red cedar, big leaf maple, and cottonwood trees. The park includes a bike skills park with drop zones, a flow track and other features that was constructed in 2023. In 2024 an asphalt pump track, new restroom, and storage/shelter were constructed.



Dorothy Bothell Park

1087 Evergreen Way SE
4.35 acres – Dedicated in 2009
Classification: Pocket Park
Status: Developed

Located adjacent to the Lakeland Hill Community Center, Dorothy Bothell Park is a an attractive neighborhood park in Lakeland Hills. Park amenities include a playground, climbing boulders, and a trail that connects with other trails beyond the park. Dinosaur bones have been buried in the play area for the kids to uncover.

P4





Dykstra Park

1487 22nd Street NE

1.67 acres – Dedicated in 1979

Classification: Neighborhood Park

Status: Developed

Dykstra Park is a small, attractive park along the Green River. Its linkage to the larger Isaac Evans Park via a suspension bridge increases its value to the community. The bridge was substantially repaired in 2002, with major structural repair completed on the north end of the structure.

Dykstra is primarily a playground neighborhood park, and its proximity to the river also makes it popular with walkers and wildlife lovers. A new playground was installed in April 2015 made possible by a Dr. Pepper/ Kaboom! Playground grant. The playground was constructed using volunteer labor during the City's annual Clean Sweep volunteer event. In addition to the three new playground pieces, approximately 150 cubic yards of playground fiber wood chips were placed within the play area.

P6



Forest Villa Park

1647 Fir St. SE

0.23 acres – Dedicated in 1971

Classification: Pocket Park

Status: Developed

The Forest Villa Park is located on a single lot in a single family residential neighborhood. The play structure is the primary focus of the park.

P7



Gaines Park

1008 Pike Street NW

1.33 acres – Dedicated in 1999

Classification: Neighborhood Park

Status: Developed

Gaines Park is located in the Vistaria/Sunning Hills residential area. This park is a joint project between the City's Storm Water Division and Parks and Recreation. There is a short section of boardwalk through a wetland area on the east edge of the park. The park has a picnic area, play area, ½ basketball court, and a walking trail through the park.

P8



Indian Tom Park

1316 6th Street NE

0.42 acres – Deeded to the City in 1979 from King County

Classification: Pocket Park

Status: Developed

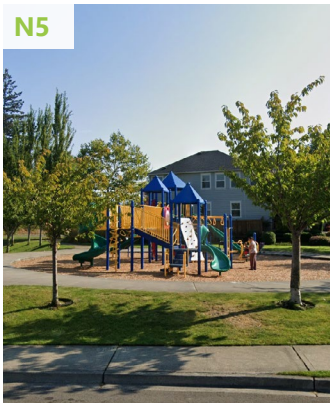
This small park is located on a single lot in the middle of a residential block. A playground was installed in April 2014 made possible by a Dr. Pepper/ Kaboom! Playground grant. The playground was constructed using volunteer labor at the City's annual Clean Sweep volunteer event.



Jornada Park

1433 U Court. NW
1.89 acres – Dedicated in 2004
Classification: Pocket Park
Status: Developed

This small park is located on a single lot in the middle of a residential block. It contains a play structure, climbing wall, picnic tables and a short loop trail.



Evergreen Park

5480 Charlotte Ave. SE
2.73 acres – Dedicated in 2014
Classification:Neighborhood Park
Status: Developed

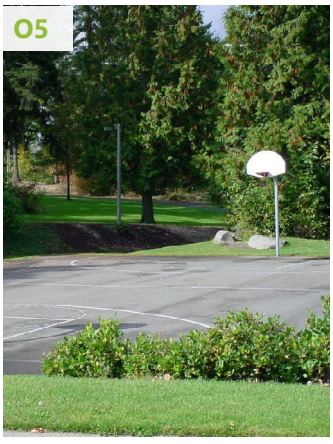
This park was constructed to meet level of service needs for a neighborhood park within in newly developed Kersey III neighborhood. A paved walking trail with picnic tables and benches connects the ball field, to the playground and the basketball court.



Edge View Park

1433 U Court. NW
0.79 acres – Dedicated in 2014
Classification: Pocket Park
Status: Developed

This park has similar features and amenities as nearby Evergreen Park, but on a smaller scale.



Lakeland Hills Park

1401 Evergreen Way SE
5.06 acres – Dedicated in 1993
Classification: Neighborhood Park
Status: Developed

Lakeland Hills Park serves the Lakeland development in south Auburn. This five-acre park is nestled into a wooded hillside, where many native trees were saved and integrated into the design of the park. The park provides active recreation facilities at a neighborhood scale, and also a paved trail around the circumference of the park. Restroom facilities were built in this park and share a common structure with some water utility equipment.

S9



Lea Hill Tennis Courts

32121 105th Pl. SE.
1.18 acres
Classification: Special Use Facility
Status: Developed

The Lea Hill Tennis Court has a unique location on top of a City of Auburn water reservoir. Originally, two courts were constructed, but one of these is now being used as a basketball court. The court is on Lea Hill, surrounded by an adjacent apartment complex. Standing water is evident in several low areas.

N7

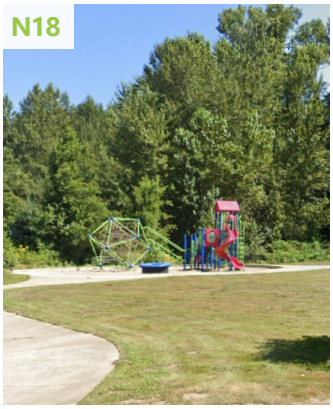


Riverpoint Park

1450 32nd St. NE
3.8 acres – Dedicated in 2005
Classification: Neighborhood Park
Status: Developed

Built in 2005, the park is adjacent to the Green River and provides an access point to the Green River Trail.

N18



Trail Run

5014 Pike Street NE
1.76 acres – Dedicated in 2015
Classification: Neighborhood Park
Status: Developed

This pocket neighborhood park located is along the Green River near the northern City Limits. Visitors can gain direct access from the park to a bridge across the river that connects to the City of Kent's S. 277th Street Trail (1.1 miles). The future Green River Trail will run along the eastern boundary of the park if the trail is ever extended through Auburn.

N8



Rotary Park

2635 Alpine Street SE
3.89 acres – Dedicated in 1966
Classification: Neighborhood Park
Status: Developed

Rotary Park was developed in 1966 by the Auburn Rotary Club. At first glance the playground is the only apparent facility here. The rolling topography, unusual shape of the site and the location of conifers obscure the presence of the other major recreation facilities, including the basketball court and informal softball field. An additional acre, and a half-court basketball was added to Rotary Park in connection with the development of the Riverwalk neighborhood.



Scootie Brown Park

1403 Henry Road NE
1.68 acres – Dedicated in 1973
Classification: Neighborhood Park
Status: Developed

The park is located at a junction between commercial and residential zones. Bounded on the north by 8th Street N.E., the park has a busy, open feel, with minimal landscaping. The City's youth baseball programs use this park for practice.



Shaughnessy Park

3302 21st Street SE
3.46 acres – Dedicated in 1973
Classification: Neighborhood Park
Status: Developed

Shaughnessy Park is located in an attractive setting of mature Douglas Firs on a quiet residential street. Several recreational courts are located in close proximity to the street. An open play field with a backstop is in a corner of the park and is not readily apparent from other parts of the park and street. The adjacent residential neighbors have erected fences between their backyards and the playing field. Recent park improvements were made possible by a Neighborhood Block Grant in the amount of $50,000.



Terminal Park

1292 C Street SE
1.22 acres – Dedicated in 1913
Classification: Neighborhood Park
Status: Developed

Terminal Park is a small park along a quiet residential street. The newly renovated playground at the center of the park is the focal point here. The remainder of the park contains a slightly rolling lawn, with mature trees scattered throughout. Improved irrigation has also been added. In 2013 broken patio pavers were replaced with colored concrete in the patio adjacent to the playground.



Village Square

12111 SE 310th Street
1.10 acres – Transferred in 2007
Classification: Pocket Park
Status: Developed

This is a small pocket park is located in the middle of an apartment complex. The park has a short loop trail with a small grassy area in the middle. Access to the park can either be gained from the adjacent apartment complex or from SE 310th Street.



104th Ave SE

31495 104th Ave. SE

14.73 acres – Transferred in 2006

Classification: Community Park

Status: Undeveloped

This undeveloped riverside property is comprised of two parcels along the Green River. A nice sandy beach along the Green River is popular for swimmers in the summer, and fishermen in the fall and winter months. Nearly two-thirds of the park is located within the 100-year floodplain so given the location of the park along the river and regulatory constraints, the park will likely be designed as a passive use nature park.



Brannan Park

1019 28th St. NE

21.68 acres – Dedicated in 1973

Classification: Community Park

Status: Developed

Brannan Park contains one of Auburn's most heavily used sports complexes. The City sponsors many sports events at Brannan Park; Cascade Middle School users and a variety of organizations – youth soccer leagues, and Little League - also use the playing fields extensively. Brannan Park is on a flat, open site, with the Green River forming the park's eastern boundary. The remaining sides are bounded by residential housing to the north and west, and Cascade Middle School to the south.



Fulmer Park

1005 5th Street NE

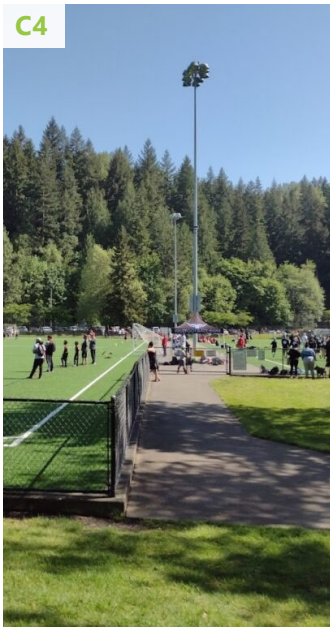
5.04 acres – Dedicated in 1979

Classification: Community Park

Status: Developed

Fulmer Park is primarily an active sports facility. In 2015 an undeveloped area on the north side of the park was bladed, all of the blackberry bushes were removed, and a new perimeter fence was installed. New irrigation, perimeter landscaping, and grass seed was added in 2014. New backstops, fencing, dugouts and drinking fountains, as well as scorekeeper tables, were added to the park in 1998. A new playground was installed in 2023.

C4



Game Farm Park

3030 R ST SE

57.20 acres – Dedicated in 1988

Classification: Community Park

Status: Developed

Game Farm Park continues to be one of the largest and most frequented parks in Auburn. The park contains a wide variety of facilities for organized sports activities as well as a distinctive natural setting. The hillside backdrop and the White River along its southern edge create an intimate setting for park for users to enjoy. The park with its many courts, fields and picnic facilities is heavily used. Game Farm Park was dedicated in 1988 and exhibits many successful design features. Designing and building the park in one phase resulted in functional architectural features and site layout. Passive uses such as trails or open grassy slopes are located where the park abuts residences. Good pedestrian access is available to the surrounding neighborhood at several points along the park's perimeter. A trail head off of Forest Ridge Drive SE provides access to a relatively unimproved gravel trail along the river in the eastern portion of the park. A pedestrian bridge was constructed in 2024 connecting the two Game Farm parks across the White River.

C5



Game Farm Wilderness Park

2407 Stuck River Dr. SE 48.50acres –

Dedicated in 1989

Classification: Community Park

Status: Developed

Game Farm Wilderness Park emphasizes a connection between park users and the natural environment. It has limited development and has preserved most of the native woodland along the White River. The White River Trail continues along the river on the north side of the park from Kersey Way beyond the east end of the park. The park is designed for both overnight and daytime visitors. The camping area is designed to accommodate recreation vehicles, providing each unit with water and power hook-ups. An 18-hole disc golf course is located in the wooded area between the campground and White River.

C6



GSA Park

413 15th St. SW

5.31 acres – Dedicated in 1966

Classification: Community Park

Status: Developed

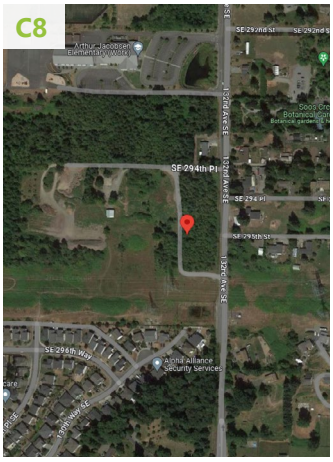
The land for GSA Park was donated to the City by the U.S. General Services Administration. Its location in a heavily trafficked industrial zone has resulted in an atypical park setting. Currently the park has two youth softball/baseball fields, a parks maintenance building, and dugouts. New dugout covers were recently added, made possible by donations from Auburn Little League. A greenhouse is located on the property near the maintenance that is used by the City's horticulturist to propagate new plants. The two ball fields were completed in 2003, including drinking fountains and an asphalt trail to the ball fields.



Isaac Evans Park

29827 Green River Road SE
19.87 acres – Dedicated in 1989
Classification: Community Park
Status: Developed

Isaac Evans Park is a riverfront park providing valuable passive recreation opportunities for the citizens of Auburn. The park's connection to Dykstra Park via the suspension bridge increases its accessibility to local residents and is an appealing feature for visitors. The pedestrian bridge may also accommodate future trail connections between the eastern and western sides of the river. A internal paved trail runs around the circumference of the park. The forested riparian area along the Green River remains in a natural condition with recent restoration plantings added to accommodate the Reddington Levee Setback project located across the river from the park. Scattered throughout the grassy space on the inside of the trail are clusters of picnic tables, a picnic shelter, restroom facilities, and playground equipment.



Jacobsen Tree Farm Park

29387 132nd Ave. SE
29.30 acres – Transferred in 2003
Classification: Community Park
Status: Undeveloped

The Jacobsen Tree Farm property is an undeveloped park located in the Lea Hill area of Auburn. The City went through a master planning process for the future park, which was completed in 2010. Future elements of the park include soccer fields, baseball fields, play grounds, and passive recreational opportunities. The park is adjacent to Arthur Jacobsen Elementary and Auburn Mountainview High School, and has magnificent views of Mount Rainier. A bond or levy will be needed in order to develop this large community park property.



Lea Hill Park

31693 124th Ave. SE
5.26 acres –Dedicated in 2013
Classification: Community Park
Status: Developed

Lea Hill Park is a community park that serves the Lea Hill neighborhood and is located adjacent to the Green River Community College Campus. Park amenities include a skate park, pervious walking pathways, a rentable picnic shelter, an amphitheater, baseball field, free game synthetic sport area, half basketball court, and a play area featuring a tractor and climbing toys. An ADA accessible restroom facility with two unisex bathrooms and drinking fountains was completed in the spring 2015.



Les Gove Park/Les Gove Community Campus

910 9th St. SE
26.07 acres –Dedicated in 1966
Classification: Community Park
Status: Developed

Les Gove Park is a recreational and educational facility serving the entire community. The Library, Parks and Recreation Administration Building, Community Center, Teen Center, Senior Center, the White River Valley Museum, and a variety of recreational features make Les Gove a very popular destination.



Mill Pond Park

4582 Mill Pond Dr. SE
4.20 acres – Dedicated in 1997
Classification: Community Park
Status: Developed

Mill Pond is unique in several ways. The park is a joint project between the Parks and Public Works Departments, the Auburn School District, and the developer of Lakeland Hills. All of these groups came together to create a park with a dual purpose: to provide a recreational experience in a natural setting, and to provide stormwater detention and filtering for a 400 acre area. The site includes a permanent pond, a grass-lined bio-swale that becomes a temporary pond during storms, a 1/4 mile paved trail around the circumference of the ponds, and a fishing dock. Fishing in the pond is limited to children under 15.



Roegner Park

601 Oravetz Road SE
19.22 acres – Dedicated in 1994
Classification: Community Park
Status: Developed

This community park is located along the banks of the White River, adjacent to Auburn Riverside High School. A trail system includes both hard and soft-surfaced sections that meet the needs of many different users, including equestrians from the near- by Hidden Valley neighborhood. Trail construction began in 1997 from the east side of Roegner Park to Kersey Way, and continuing east along the river to Game Farm Wilderness Park. An approximate ½- acre off-leash fenced dog park is located near the trail, and can be easily accessed from the parking area off of Oravitz Road. Commissioned artwork for the park includes a uniquely designed bench with a salmon motif, placed to allow views of the river.



Sunset Park

1420 69th St. SE
15.15 acres – Dedicated in 2003
Classification: Community Park
Status: Developed

Sunset Park was developed by the developer in Lakeland Hills. It is unique in several ways. The community park serves the Lakeland Hills neighborhood but also the community. The site includes a picnic shelter, two youth baseball/softball fields, trails, basketball court and skate park.



Veterans Memorial Park

405 E St. NE
7.67 acres – Dedicated in 1926
Classification: Community Park
Status: Developed

Veteran's Memorial Park, formerly City Park, is a popular community park located close to downtown Auburn and adjacent to Auburn High School's Memorial Stadium. The park is distinctive for its Veterans Memorial structure, shady woods and underlying expanse of green lawn. The Veterans Memorial structure was funded with donations and fund-raising events by local veterans groups. Its design and construction were accomplished with use of volunteer labor.

Special use facilities include unique recreational and cultural amenities that serve specific community interests. This includes the Auburn Golf Course, the White River Valley Museum, and various sports complexes and community centers, all enhancing the quality of life for Auburn residents.

Trails, Bikeways & Pathways

Auburn's parks system is designed to offer a balanced mix of recreational opportunities, natural preservation, and specialized facilities, which fosters a vibrant and active community. The city's mild climate, combined with a strong culture of outdoor activities, significantly contributes to the high usage and support of its extensive trail network.

The city categorizes its trails into three primary types:

1. Recreational loop trails
2. Linear trails
3. Recreation/transportation trails.

Recreational loop trails are typically short paths that form loops within a single park or site. These trails are designed for activities such as walking, bicycling, hiking, or skating, and they often connect various activity areas within a park or provide access to natural preserves or nearby neighborhoods. These trails can be constructed with either hard surface materials and are usable in all weather conditions, while soft surface trails offer a more rustic and natural experience.

Linear trails in Auburn are designed to connect different areas of the city or activity centers, leading to key destinations. These trails are generally hard-surfaced, making them suitable for activities like walking, bicycling, and skating, even in varying weather conditions. Notable examples of linear trails include the Green River (Reddington) Trail, Lakeland Hills Linear Trail, Lake Tapps Parkway Trail, and the White River Trail. The White River Trail, for example, stretches from Game Farm Wilderness Park through Roegner Park and ends at A Street SE, featuring both paved sections and soft surface areas that accommodate a variety of users, including mountain bikers, horseback riders, and hikers.

Recreation/transportation trails serve a dual purpose by connecting various parts of the city or activity centers for both recreational and transportation uses. Refer to Table 2-6 for the primary or major examples of these trails. These trails are typically linear, hard-surfaced, and designed to accommodate a variety of transportation modes, such as walking, bicycling, and skating. Sometimes referred to as "multi-modal trails," they are built to stricter standards and are generally designed for two-way traffic.

Table 2-5: Existing Trails					
Park/Trail	Description	Linear Trails Total (miles)	Recreational Loop Trails Total (miles)	Recreation / Transportation Trails Total (miles)	Total Length
Auburndale Park	Paved loop path around park		0.41		0.14
Auburn Environmental Park	Board Walk Trail		0.23		0.23
Brannan Park	Paved loop path around Park to Reddington levee. A paved surface linear trail extends along the levee.	1.7	0.72		2.42
C' Street SE Trail	Ellington Rd. SW to 15th Street SW			1.6	1.6
Cameron Park	Paved loop path through park and loops through Lemon Tree Lane		0.33		0.33
Cedar Lanes Park	Informal path through wooded area		0.25		0.25
Dorothy Bothell	Loop trail		0.25		0.25
Game Farm Park	Paved loop path around meadow, play structure, ball fields. Extensive sidewalk throughout park		3.3		3.3
Game Farm Wilderness Park	Paved trail along the White River and around the group camp area.	See White R. Trail			
Interurban Trail	Paved 12' wide trail runs alongside the Union Pacific railroad, from the city's northern to southern limits			4.5	4.5
Isaac Evans Park	Paved loop through wood and along the Green River		1.07		1.07
Jornada Park	Paved loop through wood and around park		0.1		0.1
Lakeland Hills Linear	Extensive sidewalk path on Lake- land Hills Way from Evergreen Way to Lake Tapps Parkway	0.73			0.73
Lakeland Hills Park Trail	Paved loop path around recreational fields		0.39		0.39
Lake Tapps Pkwy Trail	Paved sidewalk and asphalt trail	1.62			1.62
Les Gove Park Trail	Paved loop path around open space		0.58		0.58
Mill Pond Park Trail	Paved loop path around pond. Connects to Lakeland Hills Trail.		0.29		0.29
PSE (Lakeland)		0.4			0.4
Roegner Park	Both hard and soft surface trails are present in the park. A paved loop path is marked.	See White River Trail Below			
Sunset Park	Paved loop path around park.		1.19		1.19
West Auburn Lake			0.25		0.25
White River Trail	Paved and soft surface trail	3.5			2.3
Total		**7.95**	**9.11**	**6.1**	**23.16**

The Interurban Trail is managed by King County Parks for the sections outside specific municipal boundaries. However, within Auburn's city limits, the Auburn Parks Department is responsible for maintaining the segment of the trail that runs through the city. This collaborative effort ensures the trail remains well-maintained and accessible throughout its route. On the other hand, the White River Trail is primarily maintained by the City of Auburn Parks Department, which ensures its upkeep and accessibility as it connects several key parks within the city. The Interurban Trail is a prominent example of this type, serving as a major non-motorized route that runs north to south through several cities, including Tukwila, Kent, Auburn, Algona, and Pacific. This 12-foot-wide path follows the Puget Power right-of-way and parallels the Union Pacific Railroad for much of its length, making it a key transportation and recreational asset. The trail also provides access to several of Auburn's major employers, including Boeing, GSA, the Outlet Collection, and Auburn Environmental Park. Located less than half a mile from downtown Auburn, the Interurban Trail is a vital link for the community.

Table 2-6: Auburn Maintained Trails (Dedicated)

Type	Length
Interurban Trail (South)	4.5 mi
White River Trail	3.5 mi
Green River Trail*	TBD
	8.0 mi

* Future proposed extension

Both the Interurban Trail and the White River Trail are also designed to accommodate equestrians, making them versatile for a range of users. Additionally, informal trails in the open space areas of southeast Auburn and the shoulders of some rural roads are also used by equestrians, although these are not specifically designed or managed for this purpose. Auburn's commitment to providing diverse and accessible recreational options ensures that the city's parks and trails continue to meet the needs of its growing population.

Schools & Other Outdoor Recreation Amenities

In Auburn, recreational opportunities extend beyond city parks, encompassing other public lands and private facilities, which play a crucial role in assessing the adequacy of the City's park system. Among these, schools are one of the largest contributors to recreational space outside of city-managed parks.

Schools naturally serve as neighborhood gathering places and are often within walking distance of most homes in the city. School grounds typically feature sports fields, open grassy areas for play, playground equipment, and basketball courts. However, the accessibility and availability of these school facilities can vary. During the school year, these spaces are primarily used by the schools throughout the day and often during after-school hours, limiting their availability for individual use or non-school sports leagues. Additionally, some sports fields may be too small or not maintained to the standards required for organized league play. Therefore, while school facilities are valuable components of the community's overall recreational resources, they cannot substitute for a robust public park system.

Table 2-7 in the following pages summarizes the recreational facilities available at Auburn School District properties. It's important to note that the Auburn School District's boundaries extend beyond the Auburn city limits, resulting in a service area that does not fully align with that of the City of Auburn. As a result, the availability and utilization of these school facilities for Auburn residents may vary based on geographic and jurisdictional differences.

In addition to school properties, several other lands used informally for recreation are owned by other public entities. The Auburn Water Utility manages several watershed areas with restricted access to maintain water quality. The Coal Creek Spring Watershed in south Auburn is the city's primary water source, while the West Hill Watershed serves as a secondary source. Despite the proximity of these areas to neighborhoods, public access is generally discouraged to protect water quality.

King County Parks also owns several developed and undeveloped properties near Auburn. While Auburn's parks are more convenient for residents, many recreational users also utilize nearby King County parks, regardless of civic boundaries. A significant regional project, the Green River Trail, managed by King County, spans over 19 miles from Cecil Moses Park near Seattle's southern boundary to North Green River Park near Auburn. Extending the Green River Trail south from Kent has indeed faced challenges due to private property issues. However, plans are still in development to continue this extension through Auburn and eventually to Flaming Geyser State Park at the Green River Gorge. The project remains in the design and planning stages, with ongoing efforts to resolve these challenges and facilitate the trail's expansion further south.

Additionally, the State of Washington owns an easement along certain sections of the west side of the Green River within the city. This easement, which runs directly behind several residences, permits access for fishing only, limiting broader public use.

Table 2-7: Auburn School District Facilities	
School	Available Facilities
Elementary Schools	
Alpac	2 youth baseball/softball fields
Chinook	4 youth baseball/softball fields
Evergreen Heights	2 youth baseball/softball fields
Gildo Rey	2 youth baseball/softball fields
Ilalko	2 youth baseball/softball fields
Lakeview	3 youth baseball/softball fields
Lea Hill	2 youth baseball/softball fields
Dick Scobee	2 youth baseball/softball fields
Pioneer	3 youth baseball/softball fields
Terminal Park	2 youth baseball/softball fields
Washington	2 youth baseball/softball fields
Middle Schools	
Cascade	1 Football Field with Track,
	Gymnasium with 1 basketball court, Annex 2 Baseball/Softball Fields, 90' & 65' fields
Mt. Baker	1 Football Field with Track, 2 Gymnasium
	3 Baseball Fields, 90' & 65' fields
	3 Softball Fields
Olympic	1 Football Field, Track,
	Gymnasium with 1 basketball court
	2 Baseball/Softball Fields, 90' & 65' fields
Rainier	1 Football Field, Track
	Gymnasium with 2 basketball court
	2 Baseball/Softball Fields, 90' & 65' fields
Senior High Schools	
Auburn Riverside High	1 Football Field synthetic turf with Track (Lighted), 8 Tennis Courts
	5 Gymnasiums
	1 Baseball Field, 90' infield, 3 softball fields
Auburn Senior High	1 Football Field synthetic turf with Track (Lighted), 8 Lighted Tennis Courts
	Gymnasium with 2 basketball court 1 Baseball Field, 90' infield
Auburn Mountain View High	1 Football Field with Track,
	6 Gymnasiums, 8 Tennis Courts
	2 Baseball Fields, 90' & 65' fields, 2 Softball Fields
West Auburn High	1 Baseball/Softball Field, 65' infield
	1 Gymnasium

Existing Major Public Art Projects

The City of Auburn Parks Department plays a vital role in maintaining the city's vibrant public art installations. These installations not only enhance the beauty of public spaces but also reflect the cultural and artistic spirit of the community. Below is a list of the major public art installations that the Auburn Parks Department is responsible for maintaining, ensuring they remain in excellent condition for all residents and visitors to enjoy.



Table 2-8: Existing Public Art Inventory

Year	Artist	Piece	Location
1989	Meg Pettibone	Steelhead	Isaac Evans Park
1991	Richard Beyer	Children Playing Train at the Switch	City Hall
1993	Michele Van Slyke	Every Year the Salmon Return	Roegner Park
1994	Nancy Hammer	Burlington Northern Railroad Bridge	Auburn Way S & Hwy 18
1995	Garth Edwards	B Street Plaza	E Main & B St. SE
1996	Timothy Siciliano	Bus Shelter Murla	15th St SW
1996	Gerald Tsutukawa	Sun Circle	Game Farm Park
1997	Timothy Siciliano	The Equine Amusement	15th St. NE @ Metro P&R
1998	Deborah Merksy	Pioneer Cemetery Entryway	Auburn Way N & 8th St. NE
1999	Kulzer & Spitzer	Xtreme AtmosFearic Oscillator	Auburn Skate Park
2000	Evans & Mee	Mnemosyne's Opus	King County Library
2001	Phillip Levine	Threshold	Les Gove Park
2001	Ries Niemi	5 Moments Senior Center	Les Gove Park
2003	Paul Sorey	Running Figures	Sound Transit Plaza
2004	Brandon Zebold	Sighting	LL Hills Way & Evergreen Way
2004	Sidney Genette	Blue Neutron	Auburn Justice Center
2005	Ingrid Lahti	Les Gove Community Campus Sign	Auburn Way S & F Street
2006	Darel Grothaus	Evergreen-Washelli Cemetery: Seattle, WA	Cemetery Admin Building
2007	Greg Boudreau	Veteran's Day Parade	Veteran's Memorial Building
2008	Tom Askman Le Anne Lake	Tobu Bo	West Main Street
2008	Jesse Brown	Urban Art Works Mural	233 W. Main Street (A1 Collision Building)
2009	Susan Zoccola	Swing and Flight	Auburn Golf Course
2011	Bruce Meyers	Auburn Valley Topography	Les Gove Park
2011	Sheila Klein	Civic Lanterns	25 W. Main, City Hall
2011	Rachael Dotson	Utility Boxes	Various– Throughout Down- town
2011	Mauricia Robalino	Ride the Wave	116 A Street
2012	Chris Sharp	Railroads our Beginning Mural	364 W Main Street
1013	Michael Laughlin	Strawberry Calf	Lea Hill Park
2013	Lin McJunkin	Riparian Totem	Auburn Justice Center
2013	Patricia Vader	Watch My Tail	4910 A Street SE
2014	Kenneth Hall	Origami #2 – Fuchia	Sunset Park
2016	Virginia Paquette	Confluence/ Community	9910 Ninth Street SE
2016	Steve Tyree	Hawk	Game Farm Park
2017	David Varnau	Joie de Vivre	Auburn Community & Event Center
2019	Jacob Novinger	Heirloom Hare	Les Gove Park
2019	Peter Reiquam	Crow with Fries	Les Gove Park
2019	Nicholas Goettling	Pillow Fight Mural	F Street Bridge Underpass
2021	MacRae Wylde	Truth	Postmark Center for the Arts

Public Involvement









The successful development and implementation of a community's parks system ultimately relies on listening to the needs, demands, and ideas the community has to improve or suggest new additions to the system. Knowing that "the people who show up get to make the decisions", it was imperative that a successful public involvement process be implemented that allowed Auburn's citizens, and its visitors, multiple opportunities to inform the process and results. These opportunities hosted during this planning process included:

- Community Needs Assessment Survey
- Community Visioning Survey

With grant programs and other decision makers focusing on understanding a community's desired quality of life, public involvement is the most crucial and time-consuming element of the PROS planning process, allowing a correct assessment of a community's desired quality of life. This is where the public and users can share their ideas, goals, and objectives for their parks system and communicate these needs and desires to the City.

The intention behind the public involvement approach was to maximize an equitable distribution of needs, wishes, and ideas from the public. To ensure that the PROS Plan is reflective of the Auburn community and their interests, needs, and priorities, a series of engagement goals and methodologies were discussed and developed.

Engagement Goals

As this process began and continued through the COVID-19 pandemic, many public events were canceled or postponed due to safety concerns and government restrictions, leading to a substantial decline or, in many cases, the elimination of in-person participation. To adapt, more focus was placed on virtual engagement techniques, which provided a safer alternative for community engagement, though they could not fully replace in-person experiences. There was also a notable increase in the use of parks and outdoor spaces as people sought safe ways to engage in recreational activities while maintaining social distancing, with activities like hiking, biking, and outdoor fitness classes gaining popularity. The pandemic prompted a reevaluation of public health and safety practices, resulting in changes to engagement planning and execution. As restrictions eased, participation rates began to recover gradually, although some individuals still remained cautious about returning to large in-person events. Additionally, there was an increased focus on health

and wellness, driving interest in related programs offered by parks and recreation departments and encouraging the development of more diverse and inclusive programming to meet community needs. Overall, COVID-19 brought about significant changes in public participation, with a lasting impact on how events are conducted and attended. To overcome this potential lack of participation, a series of goals for the engagement plan was developed.

1. Continue to Build On or Validate Public Sentiment From Previous Surveys

The goal is to recognize that in communities like Auburn, public communication often relies heavily on informal channels such as word-of-mouth and conversations among neighbors. This approach is effective for disseminating information and fostering discussions about local events. Auburn also has other planning processes, such as the Comprehensive Plan and Downtown Master Plan, ongoing during this time. The current planning effort aims to incorporate a review of these past surveys to identify relevant data that can inform the understanding of the community's desired quality of life.

2. Ensure equitable distribution of new survey results throughout the city.

To gain a holistic understanding of a city's diverse communities and their needs, conducting surveys at the neighborhood level is crucial. This approach ensures that the concept of "quality of life" is not skewed towards a specific demographic. Ideally, the surveys are designed to capture respondents' residential locations within the city. This allows for the identification of localized needs and the development of tailored strategies for equitable resource allocation, targeted interventions, and effective community engagement. Using a GIS-based tool to identify the locations of comments will ensure we can achieve a desired level of response equity across all neighborhoods of Auburn.

3. Deploy multiple engagement opportunities

The inclusion of multiple participation methods effectively broadens the reach of the survey and addresses potential accessibility challenges. In addition to online and virtual surveys, the public is invited to participate in multiple engagement events online and complete paper surveys distributed at designated locations like City Hall, the Senior Center, and the Museum. This multi-modal approach ensures inclusivity by catering to residents with varying technological access and preferences.

4. Provide a broad range of constituents the ability to supply both broad and specific action-oriented feedback.

The goal is to transcend the collection of broad public needs and desires by implementing an online map-based engagement tool that uniquely incorporates opportunities for residents to actively participate in the "design" of their parks, generating site-specific suggestions. This approach will align with the principles of an inclusive planning framework, emphasizing citizen engagement in shaping service delivery. The aim is to create avenues for the public to contribute "real" ideas and concepts, fostering a sense of ownership and impact. Additionally, measures will be taken to ensure participant demographics accurately reflect the Auburn community profile.

Public Engagement Plan Overview

The engagement plan was organized around a series of both virtual and in-person events, noting the specific time dates. With the primary goal of the City always being to engage with the public about its park and recreation needs, the City developed a public engagement plan centered around two different kinds of virtual engagement techniques: 1) an online Needs & Assessment Survey, and 2) an online map-based project.

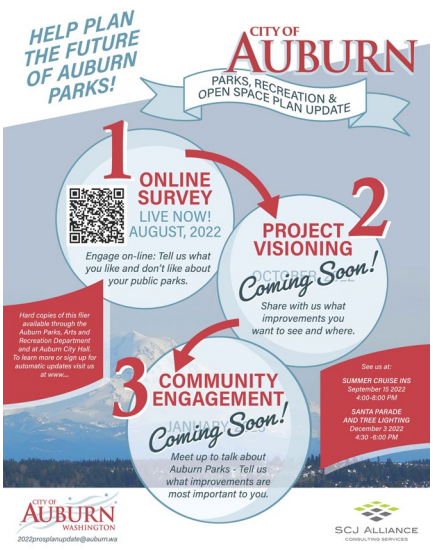
A successful engagement process harnesses the community's energy and inspires community ownership of the process, while also adapting to new insights and feedback. Stakeholders and community members supply the local knowledge, context, and information necessary to make informed project decisions.

As part of this engagement process, public comment was collected via an online community needs assessment survey, conducted in the Fall of 2022 and linked through the City's website. The project team will use the collected input, summarized in this report, to inform and drive the PROS Plan update.

Kickoff Meeting

SCJ met with City of Auburn Staff to conduct a kickoff meeting. At this meeting, the following was reviewed and discussed:

1. Determine the current parks, recreation, and open space issues
2. Brainstorm and finalize stakeholder interview list
3. Share and finalize the Public Engagement Plan







Engagement Marketing

With a primary goal of the City to always be engaging with the public about its park & recreation needs, the City developed a public engagement plan centered around two different kinds of virtual engagement techniques, 1) A online Needs & Assessment Survey, and 2) a on-line map-based project

A successful engagement process harnesses the community's energy and inspires community ownership of the process, while also adapting to new insights and feedback. Stakeholders and community members supply the local knowledge, context, and information necessary to make informed project decisions.

As part of this engagement process, public comment was collected via an online community needs assessment survey, conducted in the Fall of 2022 and linked through the City's website. The project team will use the collected input, summarized in this report, to inform and drive the PROS Plan update.

Note that all the engagement marketing, flyers, and surveys were all translated and offer in multiple languages, including Chinese, Russian, and Spanish. A Marshaleese translator was found but was not able to process the survey information in time.

Parks Needs & Assessment Survey

To assess how people were using Auburn's park and trail system, an online survey was conducted in the fall of 2022. This initiative aimed to gather valuable insights from both residents and visitors. The survey specifically focused on understanding current usage patterns of existing parks and trails, identifying any barriers that hinder their use, and gauging resident interest in adding or removing specific park and recreation features. The online survey consisted of both multiple-choice and open-ended questions focusing on community needs and issues with regards to Auburn's park facilities and recreation programs.

Additionally, the survey sought to identify the most popular parks and amenities among residents and visitors. To ensure broad participation, the survey was offered in both English, Spanish, Chinese, and Russian.

The list of questions asked, minus typical demographic inquiries, included:

How frequently do you use the City's park and recreation facilities?

How long is your average visit to these facilities?

What are the existing barriers to your use of parks in Auburn?

The survey was live for several months in the Fall of 2022, and a total of 619 completed surveys were received in that time. A summary of the responses to each question is provided on the following pages.

How much do you or would you use specific recreational elements?

What does Auburn need more or less of?

What is your connection to Auburn?

Other typical demographic questions were asked as well, in order to better understand the survey audience, identify any trends and ensure that a balanced representation was captured.

Full survey results are found in Appendix C, with key takeaways and highlights summarized here.

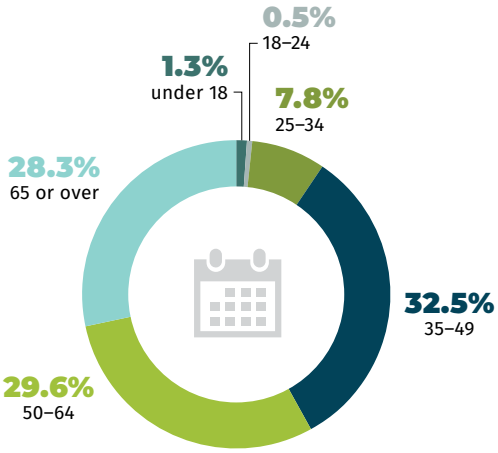


Demographics

Demographic information was collected to help ensure survey responses are representative of the community and amenities are tailored to patrons and residents. All responses were voluntary and were collected anonymously.

Age Range

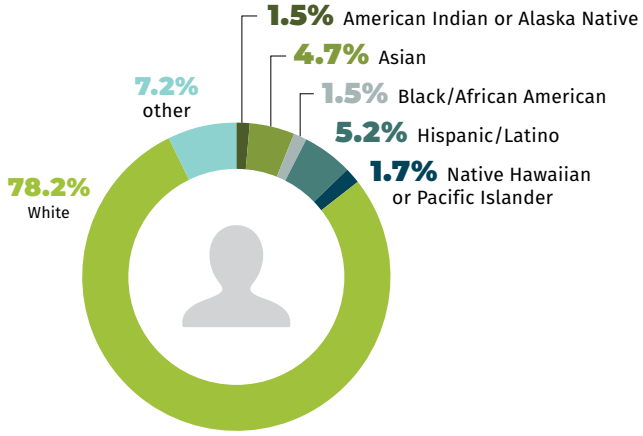
When asked the question, "What age range are you in?" the largest percentage (33%) were in the 35–49 age range. Another 30% were in the 50–64 range, and 28% were 65 or over. Only 10% of respondents were under the age of 35.



Ethnicity

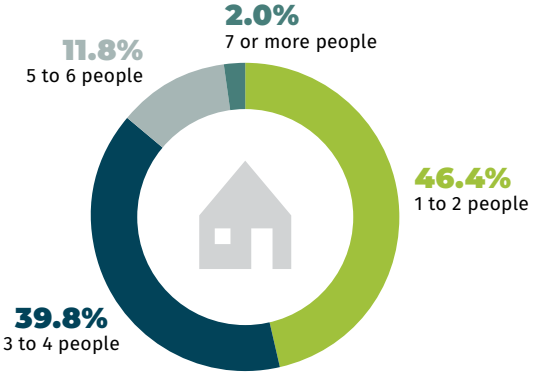
When asked "What is your ethnicity?" the largest percentage (78%) identified as "White", with another 5% identifying as "Hispanic/Latino" and 5% identifying as "Asian."

"American Indian or Alaska Native," "Black/ African American," and "Native Hawaiian or Pacific Islander" each accounted for less than 2% of the respondent population, and about 7% of respondents identified as "Other."



Household Size

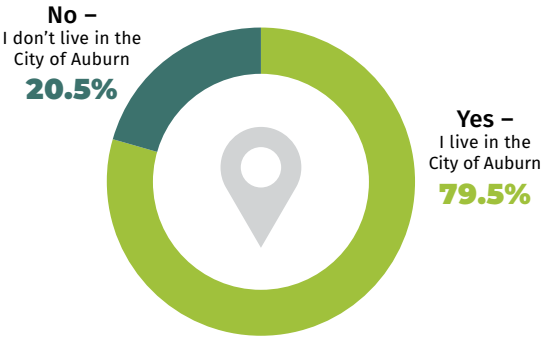
Nearly half of respondents (46%) indicated their household consists of only 1 to 2 people, and another 40% indicated their household consists of 3 to 4 people.

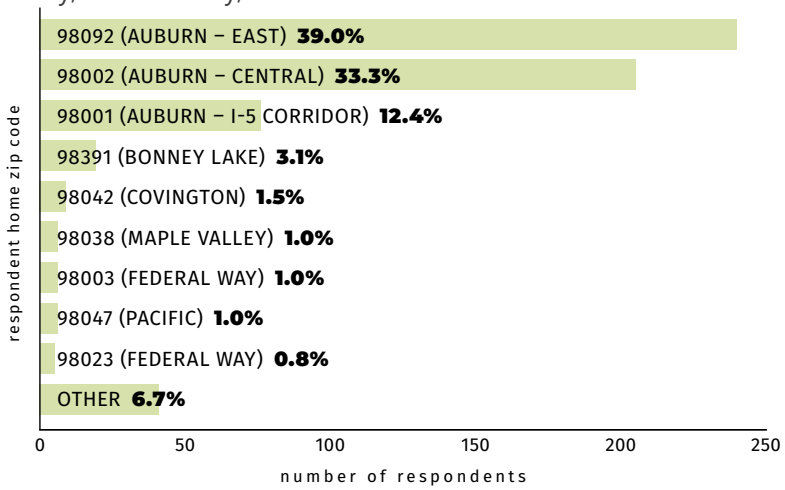


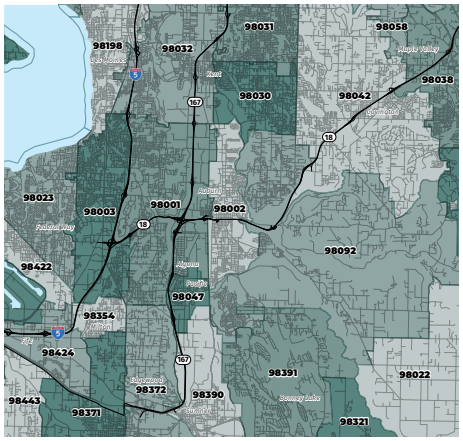
Demographics

Home Location

A majority of survey participants (79.5%) indicated they live in the City of Auburn. In order to better understand where Auburn's park users live, survey participants were also asked what zip code they live in. Nearly 40% of participants responded that they live in zip code 98092 (Auburn – east), with another third of participants in 98002 (Auburn – central) and 12% in 98001 (Auburn – I-5 corridor). The survey also saw a significant number of participants who lived in Bonney Lake, Covington, Maple Valley, Federal Way, and Pacific.

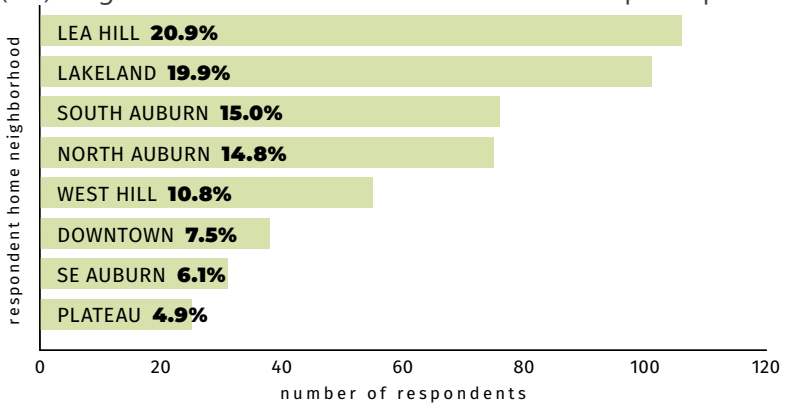


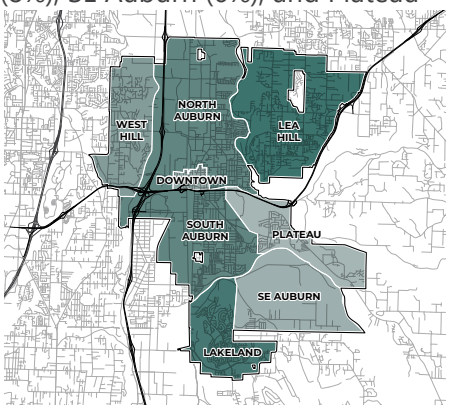




Neighborhood of Residence

Of the 507 survey participants who indicated they live in the City of Auburn, the highest percentages live in the Lea Hill (21%) and Lakeland (20%) neighborhoods. The Downtown (8%), SE Auburn (6%), and Plateau (5%) neighborhoods had the smallest numbers of participants.

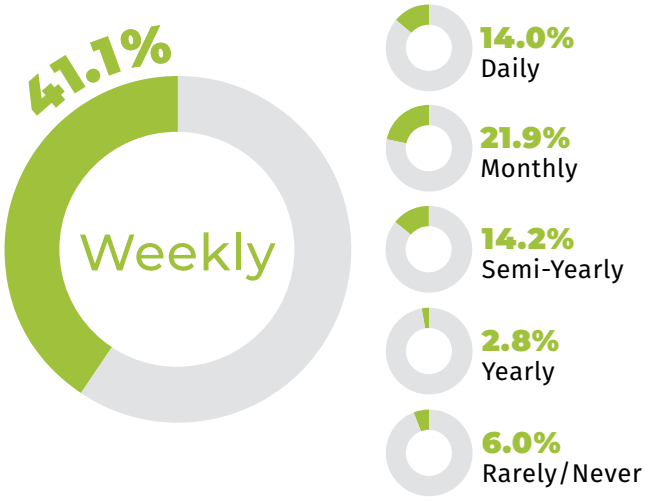




Use of Auburn's Existing Facilities

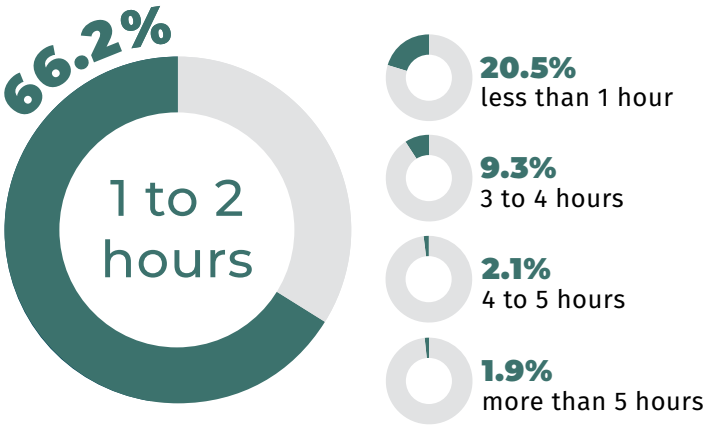
Frequency

Survey participants were asked, "How frequently do you visit the parks or recreational facilities within the City of Auburn?" Over 40% indicated they visit Auburn's parks weekly, with another 22% visiting monthly.



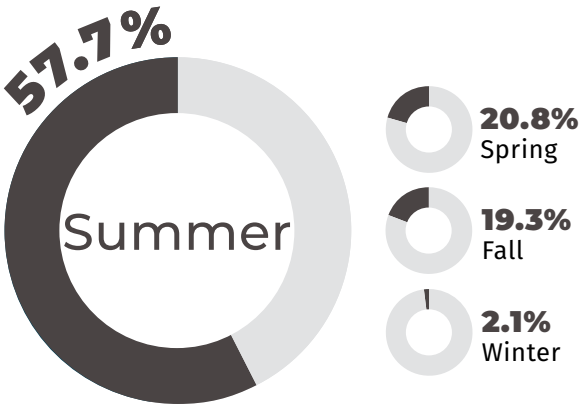
Length of Visit

When asked, "How long is your average visit to a park or recreational facility within the City of Auburn?" nearly two-thirds of participants responded with 1 to 2 hours, with another 21% indicating their average visits last less than 1 hour. Only 13% of respondents indicated their average visits were longer than 2 hours.



Season

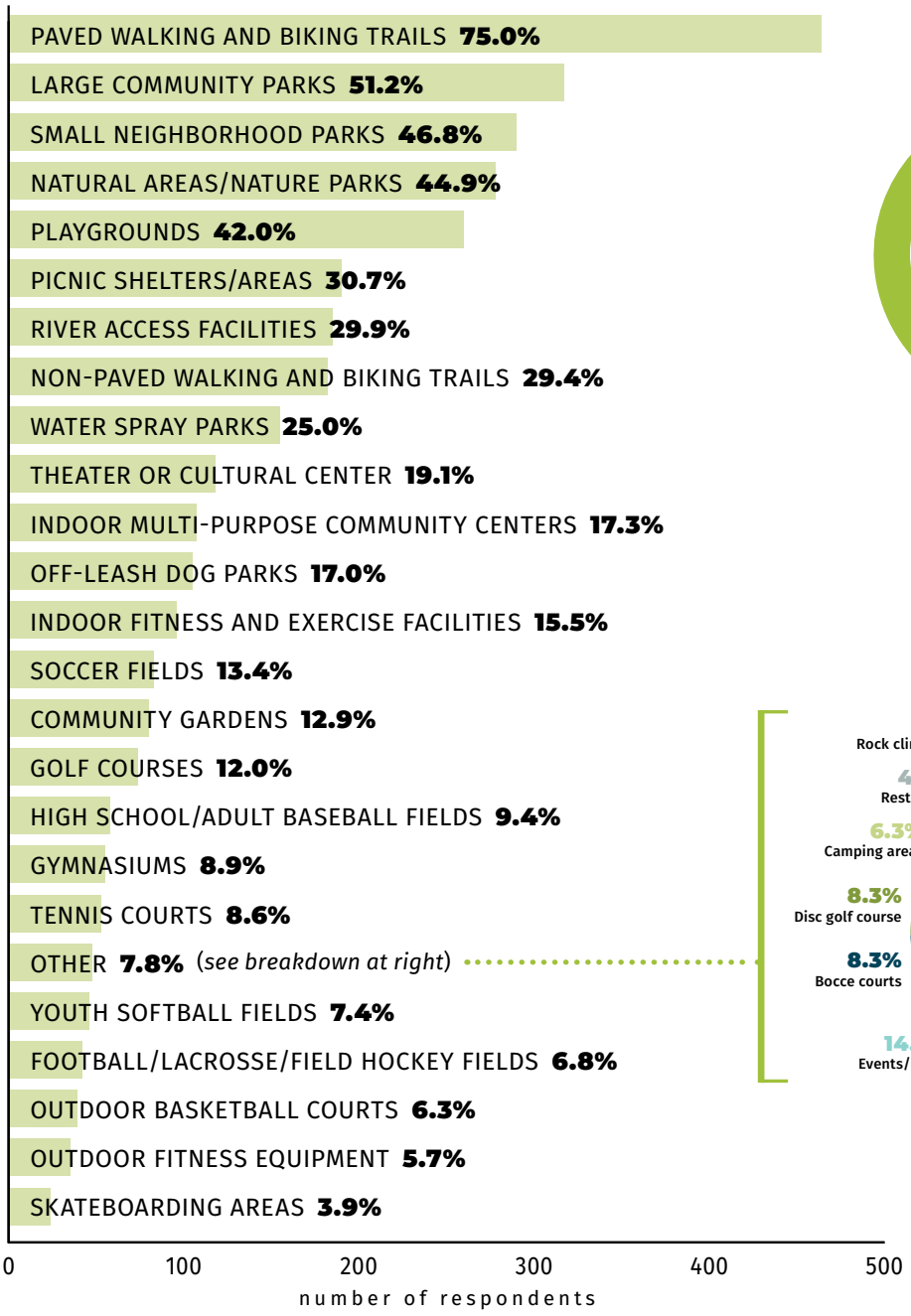
Participants were asked, "What is your favorite season to visit parks and recreational facilities in the City of Auburn?" Summer was the favorite time to visit for 58% of respondents, with Spring and Fall each garnering about 20% of the vote. Only 2% of respondents indicated winter was their favorite season for a parks visit.

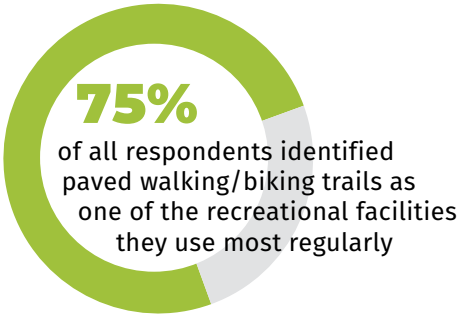


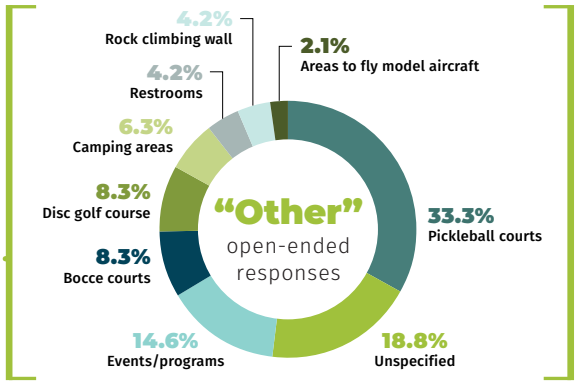
Recreational Facility Use

Types of Facilities Used

Respondents were asked to select from a multiple-choice list to answer the question, "What are the types of recreational amenities/facilities that you most regularly use?" Respondents could select as many choices as applicable for them/their household, regardless of whether the facilities were located in Auburn or not.



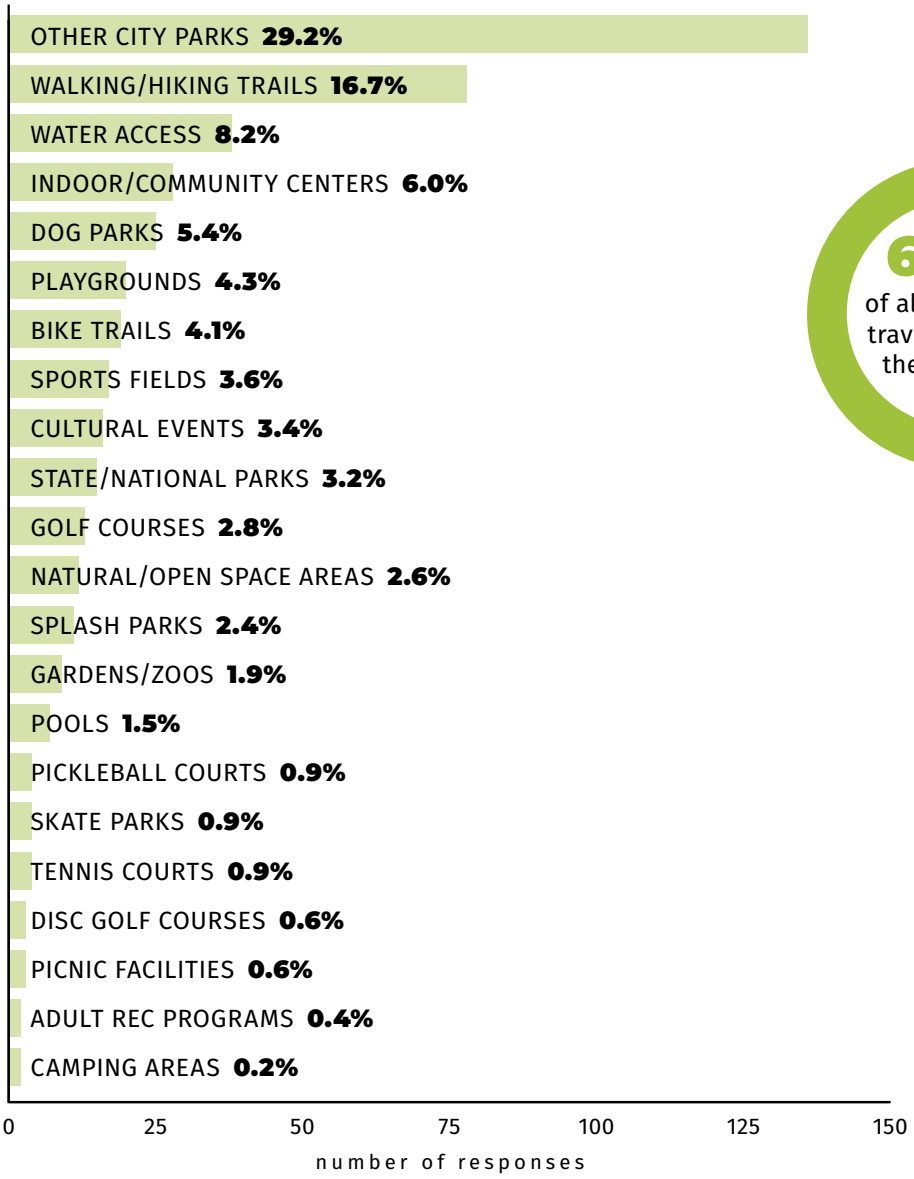


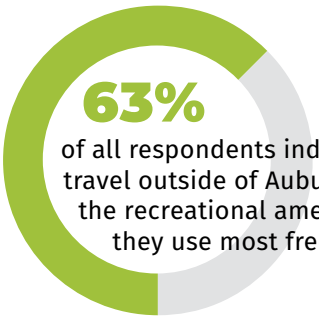


Recreational Facility Use

Recreational Facilities Outside Auburn

As a follow-up question to what types of recreational amenities/facilities they use most regularly, survey participants were asked, "Do you currently travel outside the City of Auburn for any of these amenities?" They were then asked to list the facilities they currently travel outside the City of Auburn to use. The open-ended answers provided by participants can be broadly broken into the categories below.



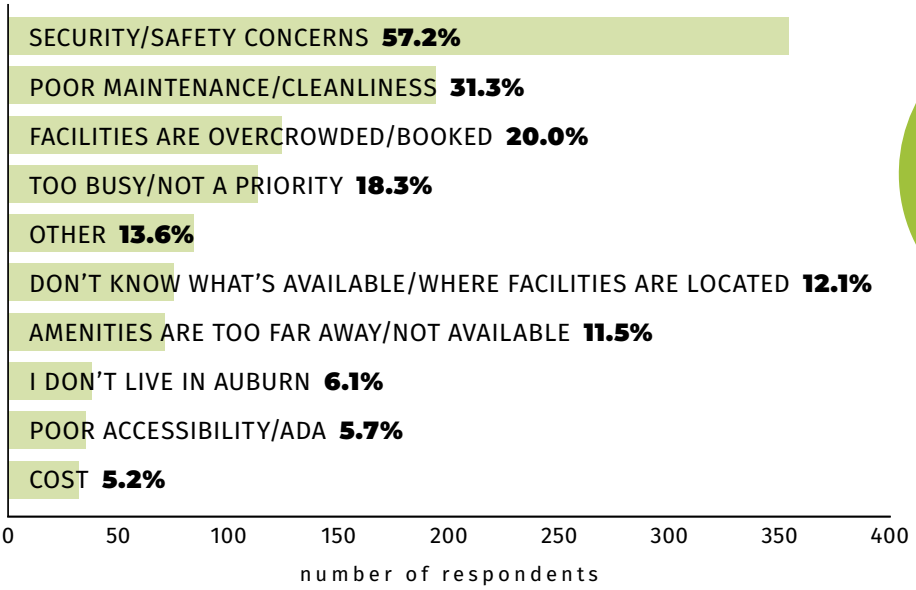


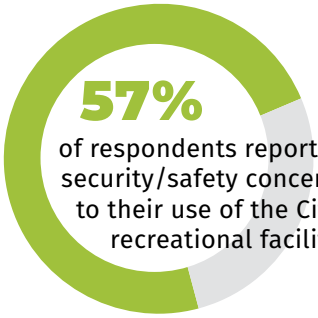
of all respondents indicated they travel outside of Auburn to access the recreational amenities/facilities they use most frequently

Recreational Facility Use

Barriers to Use

Survey participants were asked to select from a multiple-choice list to answer the question, "What are some of the existing barriers or reasons why you may not use available recreational facilities or participate in parks and recreational programs within the City of Auburn?" Participants were invited to select as many choices as applied for them/their household. Security/safety concerns (57%) were the top barrier to participants' use of existing facilities, followed by maintenance/cleanliness (31%) and overcrowded/booked facilities (20%).

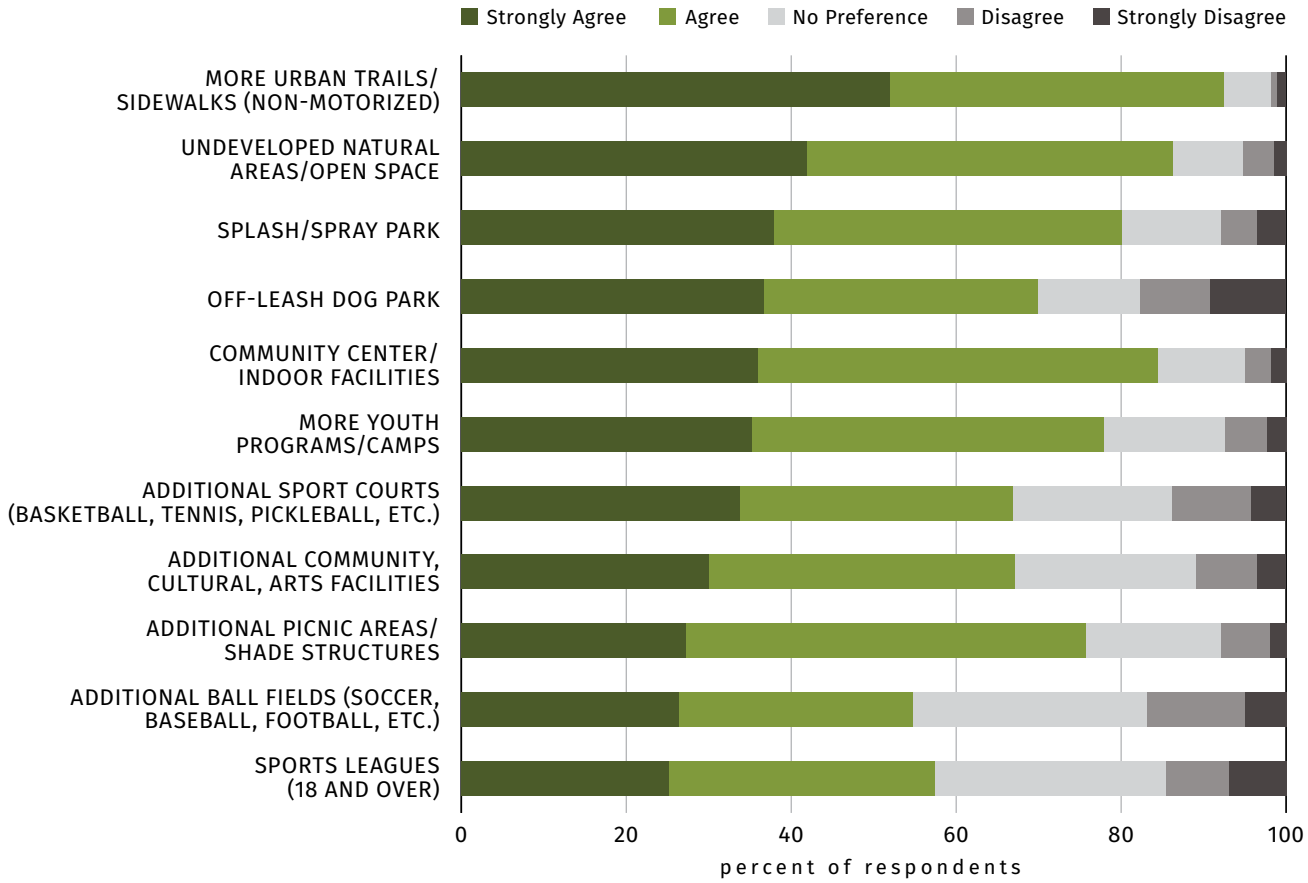




57% of respondents reported that security/safety concerns are a barrier to their use of the City's available recreational facilities or programs

Parks and Recreation Needs

The City Needs...



Survey participants were provided with a list of recreational facilities and amenities, each framed as a statement ("The City needs [facility/amenity]"). Participants were asked to select how strongly they agreed or disagreed with each statement on a sliding scale of one to five (5 = strongly agree, 4 = agree, 3 = no preference, 2 = disagree, 1 = strongly disagree). Responses are summarized in the above chart.

At the top of the list, over 90% of participants either agreed or strongly agreed that the City needs more urban trails/sidewalks (non-motorized). Strong support was also given for undeveloped natural areas/ open space, splash/spray parks, off-leash dog parks, community center/indoor facilities, and more youth programs/camps.

Key Takeaways

The project team will use the input collected through the community survey to inform and drive the PROS Plan update. Key takeaways from the survey data include:

- Survey respondents' **most-used** recreational facilities include **paved walking/biking trails** (used by 75% of respondents), **large community parks** (51%), **small community parks** (47%), small neighborhood parks (47%), **natural areas/nature parks** (45%), and **playgrounds** (42%).
- Survey respondents' **least-used** recreational facilities include **skateboarding areas** (used by 4% of respondents), **outdoor fitness equipment** (6%), **football/lacrosse/hockey fields** (7%), and **youth softball fields** (7%).
- 63% of survey participants indicated they **travel outside of Auburn** to access the recreational amenities/facilities they use most frequently. These facilities include other (nearby) **city parks** (29%), **walking/hiking trails** (17%), **water access** (8%), and **indoor community centers** (6%). These responses suggest there could be a need for more of these facility types in the City of Auburn, or a need to improve those that already exist within the city.
- **Barriers to use** indicate existing issues that need to be addressed by the City in order to improve Auburn parks users' experience. The largest barriers to use of the City's available recreation facilities or programs, as reported by survey respondents, are **security/safety concerns** (57% of respondents), **poor maintenance/cleanliness** (31%), and **overcrowded/booked facilities** (20%).
- According to survey respondents, the City of Auburn's biggest parks and recreation needs include:
  - More non-motorized urban trails/sidewalks (92.5% of respondents)
  - Undeveloped natural areas/open space (86.4%)
  - Community centers/indoor facilities (84.5%)
  - Splash/spray parks (80.2%)
  - More youth programs/camps (77.9%)
  - Off-leash dog parks (69.9%)

Demand & Needs









The purpose of the demand and needs analysis is to evaluate, quantify, and understand the current and future demand for recreational facilities and parkland. This analysis also identifies the existing and anticipated needs for providing parkland, facilities, and open spaces, both now and in the future. "Needs" in this context includes both the preservation of existing services and resources, as well as the projected future requirements based on population forecasts and economic outlooks.

This update reflects the community's needs, desires, and recommended priorities, establishing a foundation for the next 6 to 10 years. It also outlines longer-term aspirations for the next 15 to 20 years.

Quantifications vs Qualifications

Traditionally, quantitative standards have been used to assess the need for and identify potential actions to acquire or develop additional parks and recreation elements. Based on the National Recreation and Park Association's (NRPA) guidelines and its online database "Park Metrics," simple comparisons of adequate land, derived from normalized averages across the country, were used to determine the minimum amount of parkland required to effectively provide parks and recreation services.

While this plan is primarily focused on the needs identified by the public, it also evaluates the recreational demands of the City of Auburn using traditional level-of-service (LOS) standards, recreation trends, and a gap analysis of access within the current park system.

However, while quantifiable metrics allow for straightforward comparisons, they fall short when it comes to understanding the "quality" of life that a community expects or demands. Developing strong strategies and identifying potential improvements requires engaging with community members through surveys, public meetings, and other forms of public consultation. The previous section of this report outlines this process in detail.

This section concludes with a comparison of the quantitative and qualitative findings to refine a methodology for testing and ultimately selecting improvements that will enhance Auburn's quality of life, aligned with its demonstrated values and preferences.

Park Equity & Access

To better understand where the demand and need for park lands should occur, a service area map was created on the following pages that identifies the current service area of each existing park and the new service areas created by proposed improvements.

To develop the service maps, Open Street Map data was used to identify and verify known sidewalk data and the City's transportation grid that the City of Auburn provided. Sidewalks are considered to be safe walking routes. All the existing access points to each existing park and/or trail space were digitized and a network analysis of the safe walking routes to each access point was developed. The analysis would initially stop even if the end of a sidewalk was encountered before the 10-min range (approximately 1/2 mile) was reached.

A second analysis ignored the known sidewalks and trails but followed the City's existing transportation grid, essentially identifying known gaps in the walkshed that could be addressed by extending existing sidewalks.

Additional maps on pages 60 and 61 highlight specific areas of the City where residents identified gaps in the current park system, with a particular emphasis on the need for more sports fields, courts, and other recreational amenities, as indicated through public involvement responses.

The "10-Min Walk" Metric

A 10-minute walk is considered an important park access metric for several reasons. A 10-minute walk (approximately 1/2 mile on level ground) as a park access metric is important because it promotes physical activity, equity, sustainability, social interaction, and overall community well-being (see 'Benefits of the 10-min Walk' on the next page.) It aligns with various health, environmental, and social goals the City has and should encourage staff and policymakers to prioritize accessible green spaces as a fundamental part of Auburn's development and the community's desired quality of life.

The figure on the following page identifies the service areas, AKA the 10-minute "walksheds", for each existing park as well as showing the current gaps on the page after that.

Gap Analysis

As outlined in the Goals & Objectives and related policies, ensuring that residents have fair and easy access to parks located within a half-mile of their homes is crucial for the overall health and well-being of the community. This previous figure offer insights into population density and conducts a network analysis of park accessibility. This analysis examines each property's ability to reach a nearby park within a half-mile, either via a street or a trail. The service area maps are designed to demonstrate how accessible parks with various amenities are to the community and how accessibility could be enhanced through improvements to parks that currently offer limited amenities. It's worth noting that these accessibility gaps can be reduced by ensuring safe access to parks can be increased with new sidewalks and transportation improvements.

City of Auburn Projections

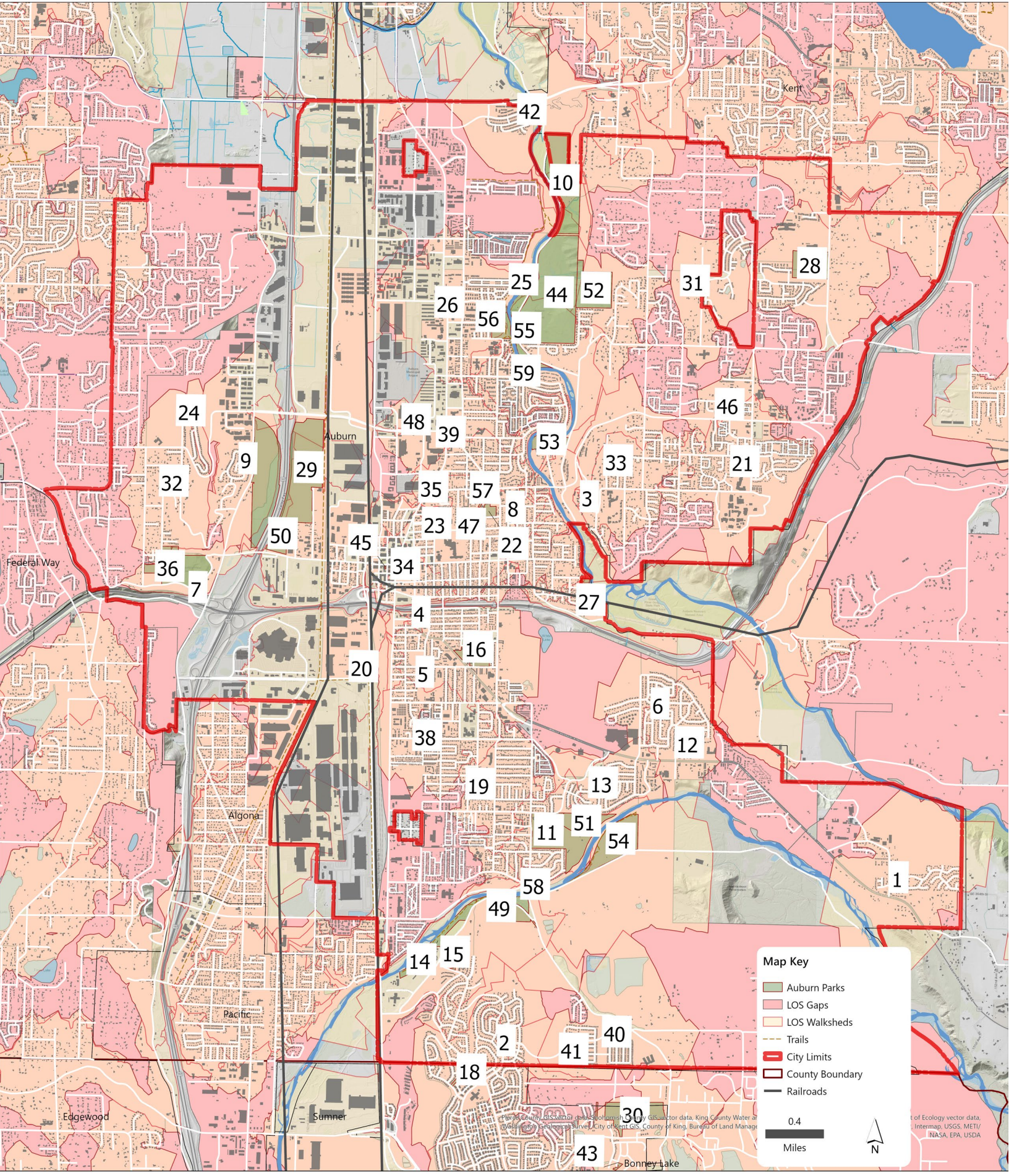
The City of Auburn, out of 635 named cities and populated areas, is currently ranked #14 in the list of cities in the State of Washington based on population size, and is located in the county with the highest desnity of people living per sq mile.

The Office of Financial Management (OFM) predicts population projections under the Growth Management Act (GMA) to accommodate growth over the next 20 years. While the most recent census data available is from 2020, it shows the population has grown to over 88,000. The rapid growth experienced during the '90's and '00's may have slowed, but Auburn remains an attractive community known for its family-oriented, small-town atmosphere. With affordable housing compared to most of King County, convenient highway access, and a charming small-town feel, Auburn is poised for continued, stable growth that will support the demand for recreational facilities.

Recreation Trends

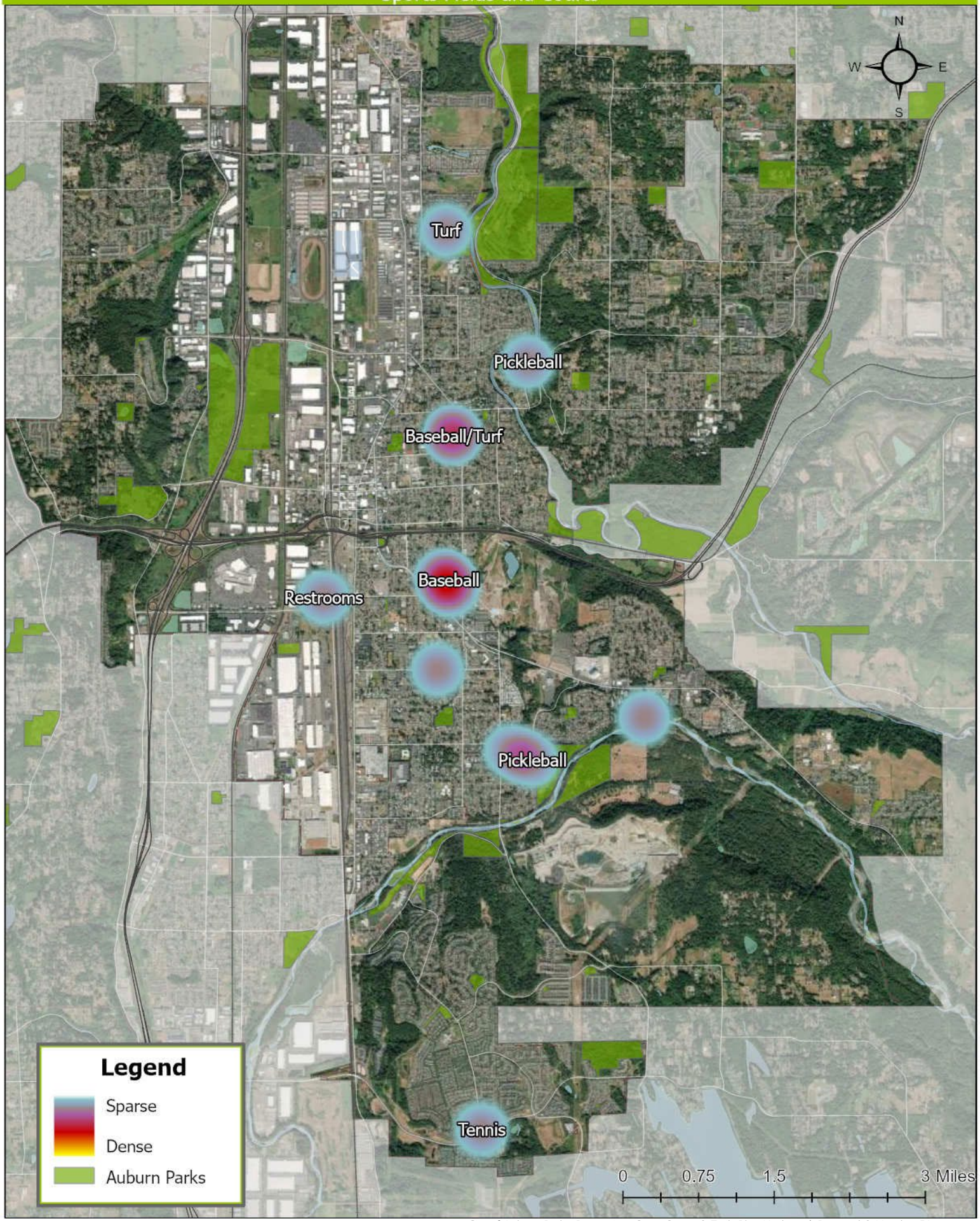
Outdoor recreation is on the rise nationwide, and Washington State and all its communities is no exception. Since 2019, and especially throughout the Covid pandemic, outdoor recreation equipment sales saw a significant increase across all major product categories. In Washington, there has been a notable surge in the participation rates of 20 outdoor activities since 2017. Among these activities, non-motorized trails, nature and wildlife viewing, camping, paddling, winter recreation, and leisure activities in nearby parks are consistently in high demand among Washington residents. With an expected statewide population increase of 2 million residents in the next 25 years, it's more critical for cities such as Auburn to plan for the future demand on outdoor recreation facilities.

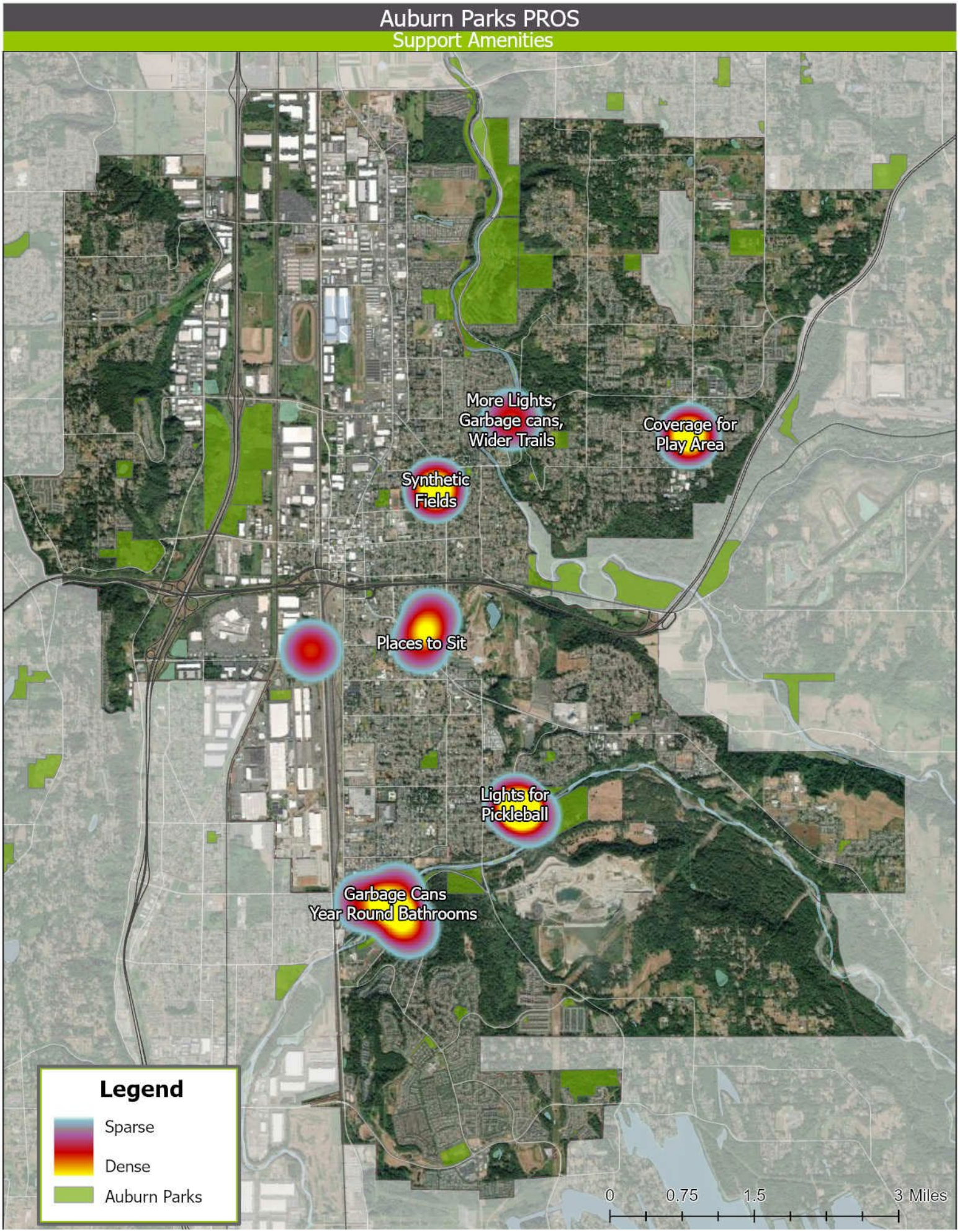
Outdoor recreation not only supports local economies


Kent
Auburn
Federal Way
Algona
Pacific
Edgewood
Sumner
Bonney Lake
42
10
25
44
52
26
56
55
59
31
28
24
48
39
53
46
9
29
32
35
57
8
3
33
21
50
45
23
47
22
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16
20
5
6
38
12
19
13
11
51
54
1
58
49
14
15
2
40
41
18
30
43
Map Key
Auburn Parks
LOS Gaps
LOS Walksheds
Trails
City Limits
County Boundary
Railroads
0.4
Miles
N

Auburn Parks PROS

Sports Fields and Courts




Auburn Parks PROS
Support Amenities
More Lights, Garbage cans, Wider Trails
Coverage for Play Area
Synthetic Fields
Places to Sit
Lights for Pickleball
Garbage Cans Year Round Bathrooms
Legend
Sparse
Dense
Auburn Parks
0
0.75
1.5
3 Miles

but also connects people with the natural world, promoting physical and mental well-being. With the rise of work-from-home arrangements post-pandemic and housing shifts from larger cities to smaller communities, residents are increasingly seeking convenient access to a variety of outdoor experiences, both developed and primitive, that allow them to integrate nature-based recreation into their busy schedules while avoiding crowds and traffic.

However, striking a balance between providing access to outdoor recreation and safeguarding natural and cultural resources remains a significant concern statewide. The heavy concentration of outdoor recreation at popular sites has led to resource degradation and reduced user satisfaction. Many communities face disparities in access to meaningful outdoor recreation opportunities, and residents often struggle with the time, cost, and information needed to support their outdoor pursuits. As the state aims to promote equitable access to the social, health, and economic benefits of outdoor recreation, a careful approach to outdoor recreation management is essential to ensure the protection of natural and cultural resources.

2030 Statewide Comprehensive Outdoor Recreation Plan

The 2023 Recreation and Conservation Plan, or commonly referred to as the Statewide Comprehensive Outdoor Recreation Plan (SCORP), is a comprehensive document outlining the state's vision for outdoor recreation and public land conservation. Developed by the Recreation and Conservation Office (RCO), the plan guides investments for the next 5-10 years. It considers challenges and benefits of outdoor recreation, assesses current demand, and inventories existing opportunities. By establishing statewide priorities and goals, the plan serves a crucial role in securing funding, guiding investments strategically, and fostering collaboration between land managers. Public input through surveys and outreach ensures the plan reflects the needs of Washington residents. Ultimately, the WA State RCO SCORP Plan serves as a blueprint for a sustainable future where outdoor recreation and public lands are preserved and accessible for all.

RCO's 2022 Assessment of Resident Demand

In the 2022 Assessment of Resident Demand report, participation rates for 45 activities were compared to 2017. All but two of those activities (Technology-based games and Collecting or Gathering Things in Nature) showed an increase in participation. Activities that had the greatest increase in participation include the following:

- Wildlife or nature viewing increased by 28%
- Paddle sports increased by 28%
- Visiting outdoor cultural or historical facility increased by 27%
- Tent camping (undeveloped area) increased by 26%
- Backpacking increased by 25%
- Playing yard games (in a park) increased by 25%
- Snowshoeing increased by 23%
- Tent camping (developed area) increased by 19%
- Hanging out (in a park) increased by 19%
- Mountain biking increased by 18%

The SCORP document classifies Auburn within the 'Seattle King" region, encompassing King CVounty soley. Note that a portion of Auburn stretches into Pierce County. Regardless, the SCORP survey reveals a significant trend – "walking in a park or trail setting" that boasts the highest participation rate in the region (92% compared to the statewide average of 82%). This preference for walking holds true across diverse demographics, including age, gender, race, and income groups.

An interesting observation is the increasing popularity of walking as a recreational activity since the previous RCO survey in 2012. Additionally, participation in boating and swimming has also risen, with swimming now ranking among the top 10 recreational activities in the Seattle King region. Other favored activities include nature-based pursuits like visiting rivers, streams, and beaches, wildlife viewing, attending outdoor events like farmer's markets and fairs, and day hiking. These findings from the SCORP planning outreach program align with the trends identified in state-level surveys, underscoring the importance of walking/hiking opportunities and nature-based recreation in King County.

Trails

Trails, both within parks and connecting parks, schools, shops, and destinations are generally the top demand seen across the country. Providing trail connections between these popular destinations enhances a community's walkability and encourages active lifestyles. Trail usage has seen a significant uptick in recent years, with data suggesting a surge starting in 2020. Recent studies by both American Trails report increases ranging from 79% to 171% and can

attributed to several factors, especially as a response to the COVID-19 pandemic. With access to traditional forms of exercise and leisure activities significantly impacted due to closures and safety concerns, many people turned to outdoor recreation, including hiking and other trail-based activities as safe and accessible options. This trend has continued post-pandemic, with increased trail use likely due, in part, to the population continuing to seek alternative ways to exercise and maintain mental well-being.

While some pandemic restrictions have eased, evidence from the National Parks Service and the Washington State SCORP suggests a continued rise, or at least a steady hold, in trail use. This trend underscores the growing importance of well-maintained trail networks. This applies not just within parks themselves, but also in connecting parks and open spaces together. As demand for these outdoor spaces rises, so too does the need for additional supporting infrastructure to ensure their continued enjoyment by all.

Canines

The trend of dog ownership in the United States is experiencing a significant upswing, with estimates suggesting a population exceeding 89 and 94 million canine companions nationwide. This surge translates to a parallel rise in demand for designated dog parks across the country. These parks, particularly larger facilities, have become popular destinations, attracting dog owners and potentially boosting agency revenue through user fees and contributing to tourism.

In Washington State, the growing human-canine bond is likely influencing public land use plans. With dogs increasingly viewed as cherished family members, especially in urban environments, families are actively seeking opportunities to include their furry companions in outdoor activities. Cities are likely taking note of this trend, potentially leading to the inclusion of designated dog walking areas or off-leash spaces within their planning strategies.

Pickleball & Padel

The participation in pickleball has witnessed a remarkable surge, growing by 159% in just three years, reaching 8.9 million participants in 2022, as reported by the Sports & Fitness Industry Association.

This swift expansion has presented challenges for public parks and recreation departments, which must strike a balance between the competing interests of diverse recreational activities while working within constraints of limited space and budgets. Parks agencies are becoming more confronted with the task of accommodating pickleball enthusiasts, who favor this tennis-like sport with a smaller court, without causing discomfort or inconvenience to others. The noise and disruption generated by pickleball is becoming more a source of frustration for some neighbors, tennis enthusiasts, parents with young children, and other community members.

In various towns and cities, homeowners' associations and local residents have begun to impose restrictions on pickleball activities and thwart the construction of new courts. They have initiated petitions, pursued legal actions, and voiced their concerns at council and town hall meetings, all in an effort to temper the widespread enthusiasm for pickleball and its unique auditory characteristics.

Similar to pickleball, Padel is a racket sport of Mexican origin gaining popularity across the United States. This game is a cross between tennis, racquetball, and squash. It's currently estimated that Padel has over 100,000 players in the United States, and the number of courts has more than doubled in the last two years, expecting to grow to 30,000 courts by 2030. It is expected that the sport will grow substantially in communities with growing Hispanic populations, including Auburn.

Youth Sports

Participation in youth sports leagues has undergone a complex transformation in recent years. While traditional team sports remain popular, data suggests a decline in children (ages 6-12) consistently playing on teams. The Aspen Project reports a drop from 45% in 2008 to 38% in 2018, and the Sports & Fitness Industry Association (SFIA) confirms this trend with a 6% decline in core participation (ages 6-17) between 2019 and 2022. This translates to roughly 1.2 million fewer participants. Several factors may contribute to this decline, including the financial burden of participation fees, equipment, and travel expenses, concerns about over-specialization leading to burnout, and time constraints due to competing academic and extracurricular demands.

This changing landscape has potential implications for the need for large regional sports facilities. While the decline in regular participation suggests a decreased demand for facilities solely focused on traditional team sports, total team sports participation (including those playing at least once a year) remained stable between 2019 and 2022, suggesting a potential shift towards less structured forms of sports involvement. Basketball continues to be the most popular sport, with nearly a

quarter of youth (ages 6-17) participating at least once in 2022.

Multi-sport facilities catering to a wider range of activities and hosting tournaments or events attracting teams from a broader area are expected to see continued use. Well-designed facilities could also become community hubs, offering recreational activities for all ages and potentially incorporating amenities like fitness centers or indoor walking tracks that would noit be affected by inclement weather.

The future of youth sports will require adaptation in programs. Focusing on fun and inclusivity, offering flexible scheduling and shorter seasons, implementing strategies to reduce financial barriers, e.g. developing parks districts to help cover long-term operating & maintenance costs, and promoting foundational athletic skills applicable to various sports are all crucial considerations. By adapting to these trends, youth sports programs can ensure they continue to play a vital role in promoting physical activity, social development, and positive health outcomes for children.

Playground Trends

Modern playground design reflects a growing emphasis on inclusivity, fostering connections with nature, and catering to a wider range of users. A key trend to note is the creation of inclusive playgrounds, ensuring accessibility for children with various abilities through features like ramps, sensory panels, and equipment that accommodates different physical and cognitive needs.

Playgrounds are also increasingly designed to mimic natural environments, incorporating elements like logs, boulders, and water features. This reconnection with nature encourages open-ended and imaginative play.

The concept of multigenerational playgrounds is also gaining traction, offering adult fitness equipment and interactive features that promote intergenerational play within families and communities. Grant programs such as AARP's FitLot program is a great example.

Sensory play experiences are being actively integrated through musical instruments, textured panels, and fragrant plants. These elements stimulate different senses, enriching the play experience and catering to children with special needs.

While still emerging, some playgrounds are exploring seamless technology integration through augmented reality or interactive elements, adding a new layer to physical play.

Recognizing the limitations of shrinking green spaces in downtown cores or within communities, there's a growing focus on "playgrounds within reach." This involves maximizing the play value of smaller spaces through multifunctional equipment, innovative design, and better integration with surrounding areas.

Overall, these trends highlight a shift towards playgrounds that are not just fun, but also inclusive, educational, and promote holistic development in children.

Electrification

As electric technology develops, maintenance equipment, vehicles, mowers, and other equipment used in parks and recreation are transitioning from gas powered resources to electric assets. This transition provides long-term cost savings, environmental benefits, and decreased noise. Additionally, parks and trailheads should consider the addition of EV charging stations in parking lots, as the number of EV cars on the road continues to grow. Washington State has led this transition to electric vehicles, with over 18% of new cars sold in the first half of 2023 being fully electric or plug-in hybrids according to the Seattle Times. Vehicle chargers located at park facilities enable drivers to engage with park facilities while waiting for a full charge.

Climate Resiliency

The concept of electrification pertains to growing needs for climate resilience and the ways in which future park implementations can accommodate the increase of hotter days and nights, as well as the increase of storm and wildfire impacts. Parks create a great opportunity to address these goals through smart design and engineering. Parks and open space can mitigate urban heat islands, absorb flood and stormwater, and create fire breaks through green space and linear trail corridors. Climate change, stormwater/flooding implementations, and tree canopy coverage should be considered in future park renovations to increase resiliency.

Funding Threats & Availability

Funding for parks and municipal recreation services has been forced into a creative shift as municipalities have been forced to seek additional ways to fund operation and improvements. Long-standing grant and funding assistance programs have repeatedly come under threat at both the federal and state level. Congress let the Land and Water Conservation

Fund (LWCF) expire in 2015 for the first time in 50 years. In response to public outcry, several members in Congress fought for a short-term solution: an emergency authorization of three years. In 2016, Congress had another opportunity to permanently reauthorize LWCF, thanks to legislation championed by Washington's own Senator Maria Cantwell in the Energy Bill. While LWCF initially failed under the past administration, in September 2021, LWCF was permanently authorized with full funding through the Dingell Act. This act directed a significant portion of offshore oil and gas royalties to the LWCF for the preservation of public lands, waters, and recreational opportunities.

Since then, specific funding levels and appropriations for the LWCF have varied from year to year as part of the federal budgeting process. Funding for the LWCF depends on annual appropriations by Congress, hence the program's budget and funding levels can be subject to changes and priorities set by the federal government.

Investments in Parks Will Rise

Across other municipal agencies statewide, investment in state and local infrastructure, which had been depressed since the Great Recession of 2008, and especially since the COVID-related stimulus packages, e.g., ARPA, increased federal funding has helping that fund public works and park and recreation infrastructure improvements, such as buildings, restrooms, and roads.

State and local spending is up nearly 10 percent from last year, according to data from the Commerce Department, and spending on capital outlays continues to grow. The Commerce Department data also show that spending on amusement and recreation facilities is up 31 percent from a year ago. It appears that economic conditions will remain favorable for new investments in park and recreation infrastructure if local and state tax collections continue to rise and interest rates remain relatively low. Building on the momentum of the past few years, local and state governments will make even more park and recreation infrastructure investments in buildings, playground equipment, roads and bridges, and capital repairs to aging infrastructure, topping the highest level of infrastructure spending since the recession of 2008.

Level-of-Service (LOS)

To evaluate how different types of parks align with a community's desires, the National Recreation & Park Association (NRPA) developed and maintains simple demand standards as a guideline for identifying the number of park facilities potentially needed per community. While there are various methods to assess the service standards of a park system, the NRPA's standards focus primarily on comparing population size to the number and types of parks or recreational amenities offered.

Traditionally, the ratio of land acres per thousand people has been a widely adopted measure. However, this metric provides only a limited evaluation of a park system. A more comprehensive approach to determining service standards should consider the distribution of land and facilities throughout the community, the per capita value of the system, the availability of programs for all demographics, the characteristics of the park user base, the quality and upkeep of facilities, and, most importantly, public perception of the park system as an indicator of quality of life.

Recognizing that the vision, values, and needs of each community are unique, planners have acknowledged that simply applying local level-of-service (LOS) standards to a national benchmark is not an effective means of evaluating a community's specific needs and vision. Consequently, NRPA's LOS standards have evolved in recent decades, now recommending that each community develop its own standards based on local goals, priorities, and conditions.

NRPA Recommendations

The National Recreation and Park Association (NRPA) provides guidelines for Level of Service (LOS) standards, which help communities determine appropriate targets for parks and recreational facilities based on population. However, it's important to note that NRPA has moved away from prescribing specific numeric LOS standards (traditional benchmarks) for all communities, recognizing that each community has unique needs and contexts. Instead, they emphasize using data-driven approaches, including benchmarking against similar communities, community input, and local conditions to determine the appropriate LOS.

For communities with populations of 85,000 to 100,000 residents, the NRPA suggests the following general recommendations:

Total Parkland per 1,000 Residents

Traditional Benchmark: Historically, a common benchmark was to provide around 10 acres of parkland per 1,000 residents. However, this is no longer a one-size-fits-all recommendation. Communities are encouraged to set their own targets based on factors such as geographic constraints, population density, and specific recreational needs.

Contemporary Approach: Communities might set goals ranging from 5 to 20 acres per 1,000 residents, depending on their unique circumstances and priorities.

Park Access and Distribution

Accessibility: NRPA recommends that all residents should have access to a park or green space within a 10-minute walk (approximately 0.5 miles) from their home. This focus on accessibility ensures that park benefits are equitably distributed across the community.

Distribution: For larger communities, ensure that parks are evenly distributed across different neighborhoods and are easily accessible by diverse modes of transportation, especially safe walkable routes.

Programming and Services

Diversity: Communities should offer a wide range of recreational programs that meet the diverse needs of their population, including youth, adults, seniors, and special populations. This may include sports leagues, fitness classes, arts and culture programs, and environmental education.

Staffing Levels

Staffing is crucial for maintaining facilities and delivering quality programming. NRPA provides guidance on staffing ratios, often suggesting a mix of full-time, part-time, and seasonal staff based on the size and scope of the park system.

Staffing by Park Acreage Benchmark: NRPA recommends approximately 1 full-time equivalent (FTE) maintenance staff member per 10 to 20 acres of developed parkland. This number can vary depending on the complexity of the park, the intensity of maintenance required, and the specific facilities within the park (e.g., sports fields, playgrounds, trails).

Programming and Operations Staff: For every 50 to 100 acres of parkland, NRPA suggests having 1 FTE dedicated to programming and operations. This staff is responsible for organizing events, managing facilities, and overseeing day-to-day operations.

Staffing by Number of Parks: NRPA recommends approximately 1 FTE staff member (including maintenance, administrative, and programming roles) per park, assuming the park is of average size and complexity. Smaller parks might not require a full-time staff member and could be maintained by part-time

Budget and Funding

NRPA annually surveys parks organizations across the country to provide quantitative data on several budget and funding metrics:

Per Capita Spending: NRPA Park Metrics reports suggest that the average spending per capita by park and recreation agencies across the U.S. is around $85-$90 per resident. However, this can vary significantly depending on the size of the city, regional cost of living, and specific needs of the community.

Operating Budget Per Acre: NRPA's Park Metrics also indicate that the median operating expenditure is around $6,000 to $8,000 per park acre. This includes costs for maintenance, staffing, utilities, and other operational needs.

Capital Expenditures: A common benchmark is that capital expenses (new developments, major renovations, etc.) should be a significant portion of the overall budget. A rough guideline is allocating 20-30% of the total budget to capital projects, though this can fluctuate based on current needs and existing infrastructure.

Auburn's Quantitative LOS

With NRPA's recommendations in mind, a straightforward quantitative analysis of the City's Level of Service (LOS) can be conducted. The following section evaluates Auburn's current park system against expected NRPA benchmarks to identify current performance and future needs. Ultimately, these quantitative findings will be integrated with the public involvement findings to develop a customized set of LOS standards. This approach, grounded in extensive community engagement, ensures that Auburn's parks and recreation system reflects the community's priorities, whether that means more green spaces, enhanced sports facilities, expanded trails, or additional cultural amenities.

LOS Standards & Overview

Table 4.1 presents the current Level of Service (LOS) based on Auburn's park classifications and recreational amenities inventory. The LOS analysis utilizes assumed low to median values for each category, considering

Table 4-1: Existing Facility Type & LOS Targets					
Facility Type	Current	Recommended Standard*	Current Ratio	Current Difference	Projected Difference****
Park Classification					
Mini-Parks (Pocket Parks)	16.71 acres	0.25 to 0.5 acres	0.19	-0.06	-0.1
Neighborhood Parks	51.23 acres	1 to 2 acres	0.57	-0.43	-0.55
Community Parks	283.31 acres	5 to 8 acres	3.14	-1.86	-3.14
Open Space	321.42 acres	5 to 10 acres	3.57	-1.43	-2.19
Special Use Areas	307.69 acres	Variable			
Total Parkland	980.35 acres	10 acres	10.88	+0.88	-1.44
Total # of Parks	57	1 park per 2000	46	+11	-
Trails	21.96**	.25 to .5 miles	0.24	-	-6.67
Recreation Amenity					
Baseball/Softball Fields	7	1 per 5,000	18.02	-9	-13
Soccer Fields	4	1 per 10,000	9.01	-5	-11
Football Fields	2	1 per 20,000 to 25,000	3.6	-2	-4
Multi-use Fields	6	1 per 10,000	9.01	-3	-5
Basketball Courts	18	1 per 5,000	18.02	-	-5
Tennis Courts	8	1 per 4,000	22.52	-13	-20
Playgrounds	33	1 per 1,000 children under 12***	18	+15	+3
Pickleball Courts	16	1 per 4,000	22.52	-6	-12
Volleyball Courts	2	1 per 10,000	9.01	-7	-9
Recreation Centers	1	1 per 25,000	3.6	-2.6	+3.5
Splash Pads	2	1 per 25,000	3.6	-1.6	-2.5
Dog Parks	2	1 per 50,000	1.8	-	-
Skate Parks	4	1 per 25,000	3.6	-	-.5
Golf Courses (18-hole)	1	1 per 50,000	1.8	-1	-1
Community Gardens (Plots)	16	1 per 10,000	9.01	+7	+5
Amphitheaters	1	1 per 50,000	1.8	-0.8	-1

* measured as acres per 1000 population

** Includes other trails maintained by others

*** Projected 2044 Population = 114,540

**** Assumed # of childen under 12 approximately 20% of overall population

Auburn's current population of 90,096 (as of 2024) and a projected population of 114,540 by 2044. Below is an overview and guideline for LOS quantifications, structured around common park classifications and key recreational elements.

Total Parkland LOS Analysis

Overview: Currently, the City of Auburn boasts a diverse portfolio of parks and recreation assets, totaling 57 sites and covering over 980 acres. This exceeds the lower end of the expected range for parkland based on NRPA guidelines. The NRPA typically recommends between 10 to 20 acres of parkland per 1,000 residents as a general standard. With Auburn's current population of 90,096 (as of 2024), the expected median total acreage of parkland would range from approximately 900 to 1,800 acres. Auburn's park system is therefore well-aligned with these recommendations, supporting the recreational needs of its residents today.

- Total Number: 57 parks
- NRPA Target Number of Parks Based on Population: 57 Parks
- Total Acreage: 980.35 acres
- Average Size: 21.97 acres
- NRPA Target Acreage Based on Population: 10-20 acres per 1000
- Current LOS: 10.88 acres per 1,000 residents
- Projected LOS: 8.56 acres per 1,000 residents
- Auburn Target LOS: 10 acres per 1,000 residents or additional 164 acres of total parkland by 2024

Conclusion/Recommendations: Auburn's current total acreage of parkland is generally within the expected range for a community of its size and physical context. However, when analyzing the distribution and average size of its park types, especially neighborhood and community parks, there are notable discrepancies compared to national standards.

According to the National Recreation and Park Association (NRPA), the recommended level of service (LOS) for community parks is between 5 to 8 acres per 1,000 residents. Auburn currently averages only 3.14 acres per 1,000 residents, which is below this recommended standard. For neighborhood parks, the NRPA suggests an LOS of 1 to 2 acres per 1,000 residents, but Auburn's current average is just 0.57 acres per 1,000 residents. This indicates a significant shortfall in the provision of both neighborhood and community parks relative to the city's population.

Furthermore, the NRPA recommends 5 to 10 acres of open space per 1,000 residents, yet Auburn currently provides only 3.57 acres per 1,000 residents. When factoring in land managed by other organizations, such as King County's Department of Natural Resources, this figure improves and aligns more closely with the recommended range.

Auburn exceeds expectations in total acreage due to the significant footprint of its Special-Use Facilities. This surplus is largely attributed to the inclusion of extensive environmental areas and the golf course, both of which are managed differently from traditional parks and offer limited access to the general public. While reclassifying the golf course as open space might enhance Auburn's Level of Service (LOS) for open space, the specific use, management practices, and limited public access associated with the golf course support its continued classification as a special-use area.

In summary, while the overall size of Auburn's park system aligns with general recommendations, there is a clear shortfall in the distribution of neighborhood and community parks. Additionally, while the city maintains over 30 beautification areas that enhance its aesthetic appeal, these spaces do not replace the need for more neighborhood and community parks to meet national standards and adequately serve the recreational needs of Auburn's residents.

Parklets / Mini Parks / Tot-Lots LOS Analysis

Overview: These parks serve small areas, often a single neighborhood or part of one. They typically feature amenities like playgrounds, benches, and small open spaces with no restrooms. incorporating more parklets and mini-parks can be an effective strategy for addressing Level of Service (LOS) deficiencies, especially in urban areas where space is limited. These smaller parks can provide critical, but disconnected, green space, recreational opportunities, and social gathering spots within densely populated neighborhoods. They are often easier and quicker to implement than larger parks, making them a practical solution to improve accessibility and equity in park distribution. However, they generally require the same level of maintenance and operational purview as larger local or neighborhood parks and, factoring in the increased travel time, can potentially become a lrger burden on park staff.

- Number: 13 parks
- Acreage: 16.71 acres
- Average Size: 1.28 acres
- Target Size: Typically less than 1 acre
- NRPA Target LOS: 0.25 to 0.5 acres per 1,000 residents
- Current LOS (2024): 0.19 acres per 1,000 residents
- Projected LOS (2044): 0.15 acres per 1,000 residents
- Draft NEW LOS: 0.25 acres per 1,000 residents
- Projected Deficit (Acres): 11.29 acres
- Service Radius: 1/4 mile or less

Conclusion/Recommendations: To address the projected decline in the Level of Service (LOS) for mini-parks, parklets, and tot-lots, it is recommended that the City prioritize the strategic addition of these smaller park facilities only as opportunities arise. Currently, the LOS stands at approximately 0.19 acres per 1,000 residents, which close to NRPA's minimum of .25, but without intervention, this will decrease to 0.15 acres per 1,000 residents by 2044. To maintain an adequate LOS, the City should aim to add approximately 11 acres of new park areas in this classification by 2044, ensuring continued access to these essential recreational spaces for the growing population.

Neighborhood Parks LOS Analysis

Overview: Local or neighborhood parks serve as the recreational and social hubs of a neighborhood. These parks are designed to be accessible by foot or bicycle and typically feature amenities such as playgrounds, athletic fields, picnic areas, sports courts, and open play areas. Some parks may also include restrooms and other supportive facilities. Currently, there is a shortage of local or neighborhood parks based on current park classifications, but the total parkland acreage across the city exceeds the cumulative standard.

- Number: 10 parks
- Acreage: 51.23 acres
- Average Size: 5.12 acres
- Target Size: Generally 5 to 10 acres
- NRPA Target LOS: 1 to 2 acres per 1,000 residents
- Current LOS (2024): 0.57 acres per 1,000 residents
- Projected LOS (2044): 0.45 acres per 1,000 residents
- NEW LOS: 1 acres per 1,000 residents
- Projected Deficit (Acres): 63.31 acres
- Service Radius: 1/4 to 1/2 mile

Conclusion/Recommendations: The current Level of Service (LOS) for neighborhood parks in Auburn is 0.57 acres per 1,000 residents, which is projected to decline to 0.45 acres per 1,000 residents by 2044. This projected LOS falls significantly below the recommended minimum standard of 1 acre per 1,000 residents. To meet this new standard by 2044, Auburn will need to add approximately 63 acres of new neighborhood parks. This strategic addition is critical to ensuring that the growing population has sufficient access to neighborhood park facilities, maintaining a high quality of life and community well-being.

Community Park Inventory and Needs Analysis

A community park is planned primarily to provide active and structured recreation op- portunities for young people and adults. They often exceed 10 acres in size and may have sports fields, water bodies, gardens, nature trails or similar features as the central focus of the park. Community parks can also provide indoor facilities to meet a wide range of recre- ation interests. They require more support facilities such as parking and restrooms than neighborhood parks. Community parks serve a much larger area than neighborhood parks and offer more facilities. Where there are no neighborhood parks, the community park can also serve the neighborhood park function. The community park service area covers a one to two mile radius.

Community Parks LOS Analysis

Overview: Community parks serve broader community needs, often featuring larger facilities or arrays of facilities types, e.g., tournament baseball field complexes, and a wider range of amenities, such as swimming pools, and community centers that are intended to support the entire community. The number of community parks a city like Auburn, WA, should have depends on several factors, including NRPA guidelines, local demand, and geographic considerations. The target acreage for community parks typically ranges from 20 to 50 acres per park or 5-8 acres per 1000 residents, according to NRPA guidelines. Using those metrics, Auburn, WA, should have about 2 to 4 community parks based on its population, with an ideal total acreage between 40 - 200 acres. This ensures that the parks are large enough to accommodate a variety of amenities, such as sports fields, playgrounds, walking trails, and open spaces, while serving a significant portion of the population effectively.

- Number: 14 parks
- Acreage: 283.31 acres
- Average Size: 20.2 acres
- Target Size: Generally 20 to 50 acres
- NRPA Target LOS: 5 to 8 acres per 1,000 residents
- Current LOS (2024): 3.14 acres per 1,000 residents
- Projected LOS (2044): 2.47 acres per 1,000 residents
- NEW LOS: 3.5 acres per 1,000 residents
- Projected Deficit (Acres): 116.69 acres
- Service Radius: 1 to 2 miles

Conclusion/Recommendations: The current Level of Service (LOS) for community parks in Auburn is 3.14 acres per 1,000 residents, but it is projected to decline to 2.47 acres per 1,000 residents by 2044. This anticipated reduction highlights a significant shortfall, with a projected deficit of over 116 acres in this park classification. To meet the needs of Auburn's growing population and maintain the recommended LOS, the City will need to prioritize the addition of these 116 acres of new community parks by 2044.

Future community park sites should be strategically selected in areas like West Hill and Lea Hill, where development is ongoing, and large gaps exist between existing parks. Additionally, other residential areas, particularly in the northeast and southeast corners of the City, are on the edges of existing service areas and will require new community park acquisitions and development as population growth continues.

Two key sites, Jacobsen Tree Farm and the 104th Ave SE property along the Green River, offer significant potential for development into community parks. These sites account for 44 acres of undeveloped land that will be crucial in addressing the City's parkland needs. The development of these areas into community parks will help close the gap in service coverage and ensure that Auburn's residents continue to have access to ample recreational spaces, supporting the overall quality of life in the community.

Special Use Parks LOS Analysis

Overview: Unlike other recreational classifications, special use facilities serve very unique, often singular functions and include unique features that add depth and variety to the city's recreational and open space amenities. By integrating these specialized spaces, Auburn creates a vibrant public landscape that reflects the city's identity and enhances recreational opportunities for the community. Examples of these facilities include pocket landscape areas, community gardens, streetscapes, unique sections of the Environmental Park, viewpoints, historic sites, public art installations, and traffic islands.

- Number: 14
- Acreage: 307.69 acres
- Auburn Average Size: 21.9 acres
- Target Quanitity & Size: Varies depending on the facility type and use
- Target LOS: Depends on community needs; not typically defined by a strict LOS but considered based on demand.
- Service Radius: Typically serves the entire community or region.

Conclusion/Recommendations: Past and more recent survey comments indicate that residents have a strong desire to enhance the City's aesthetics by increasing the planting of street trees, flowers, and other greenery. Integrating these beautification efforts, along with the development of additional special-use areas as opportunities arise, presents a valuable chance to improve the overall appearance of the community.

However, there are currently no specific targets or goals for purposefully developing more special-use areas. Introducing a significant number of small, specialized facilities could result in higher-than-expected maintenance and operational costs for the department. As development continues and additional land is acquired—including smaller, less usable areas within the public right-of-way—it is essential to remain vigilant in assessing these opportunities. Evaluating them for their unique, heritage, natural, and activity-centric qualities that could provide community value is recommended.

The Parks Department should continue collaborating with relevant departments to ensure that landscaping standards support the inclusion of street trees and other plantings, further integrating existing green spaces and improving their connectivity. This will not only enhance the city's aesthetics but also contribute to public safety. Additionally, encouraging the development of boulevard-style streets in key locations can further improve the visual appeal and functionality of the urban environment.

Natural Resource Areas and Greenways (Open Space)

Overview: Open space areas are vital for protecting and preserving natural landscapes, wildlife habitats, and green corridors. The purpose of these amenities is to maintain natural landscapes, safeguard wildlife habitats, and protect critical natural infrastructure, while also providing residents with opportunities for passive recreation and environmental education, such as hiking and birdwatching.

NRPA provides general guidelines for the amount and size of open space and natural areas within a community. Typically, these guidelines recommend that a city should maintain between 7 to 10 acres of open space and natural areas per 1,000 residents. For a city the size of Auburn, with a population of 90,096 (as of 2024), this would equate to approximately 630 to 900 acres of open space and natural areas. Currently, Auburn has 321 acres of dedicated open space areas. However, when considering other greenways and open spaces within the city that are not maintained by the City of Auburn, the total approaches the minimum target of 630 acres.

Given Auburn's current inventory of open space areas available to residents, the city is close to meeting the lower range of the NRPA's recommendations for open space and natural areas. Auburn's commitment to preserving these areas aligns well with NRPA guidelines, and the city's existing acreage of natural areas and open spaces is well-positioned to support the ecological and recreational needs of its residents. This ensures that Auburn continues to provide valuable natural amenities as the community grows.

- Number: 6 Open Space and Natural Areas
- Total Acreage: 321.42
- Average Size: 53.57 acres
- Target Acreage: 630-900 acres
- NRPA Target LOS: 5 to 10 acres per 1,000 residents
- Current LOS (2024): 3.57 acres per 1,000 residents
- Projected LOS (2044): 2.81 acres per 1,000 residents

- NEW LOS: 4 acres per 1,000 residents
- Projected Deficit (Acres): 136.58 acres
- Service Radius: Typically regional, with users traveling farther to access these areas

Conclusion/Recommendations: Auburn's current Level of Service (LOS) for open space areas is 3.57 acres per 1,000 residents as of 2024. However, with the city's projected population growth, this LOS is expected to decline to 2.81 acres per 1,000 residents by 2044. This decrease places Auburn below both the National Recreation and Park Association's (NRPA) target LOS of 5 to 10 acres per 1,000 residents and the City's draft new LOS standard of 4 acres per 1,000 residents.

The decision to increase the LOS for open space reflects a growing recognition of the critical role these areas play in promoting climate change resiliency, managing flood hazards, supporting wildlife habitats, and mitigating the effects of urban heat on aging populations. As climate change continues to impact weather patterns, open spaces can serve as vital buffers, absorbing excess rainfall and reducing the risk of flooding, particularly in vulnerable areas along rivers and low-lying regions.

Furthermore, open spaces provide essential habitats for wildlife, helping to preserve biodiversity within the city. These natural areas are increasingly important as urbanization encroaches on green spaces, putting pressure on local ecosystems. By expanding and protecting open space, Auburn can help ensure that wildlife populations continue to thrive, maintaining ecological balance and enhancing the natural beauty of the community.

In addition to their environmental benefits, open spaces are crucial for the health and well-being of Auburn's residents, especially as the population ages. Access to nature has been shown to reduce the effects of heat islands in urban areas, where concrete and asphalt trap heat, leading to higher temperatures. These elevated temperatures can be particularly harmful to older adults, who are more susceptible to heat-related illnesses. Expanding open space provides shaded areas and cooling effects that are vital for protecting vulnerable populations.

To meet the new LOS standard of 4 acres per 1,000 residents by 2044, Auburn will need to acquire and develop an additional 136.58 acres of open space. This strategic expansion is essential not only to meet recreational needs but also to ensure the city's resilience in the face of climate change and urbanization. By investing in open spaces, Auburn can enhance its ability to manage environmental challenges, protect its natural heritage, and promote the long-term health and well-being of all its residents.

Trails LOS Analysis

Auburn, WA, boasts an extensive network of trails that weave through the city's diverse landscapes, offering residents and visitors a range of recreational opportunities. These trails, often referred to as linear parks, typically follow natural and man-made features such as stream corridors, abandoned railroads, or power line easements. They serve multiple purposes, including providing pathways for walking, running, and biking, as well as creating interpretive areas, open spaces, and landscaped zones.

The city's trail system is designed with minimal development to preserve the natural environment, focusing on essentials such as trailheads, educational signage, benches, and picnic tables. However, in areas with more space, like wide power line easements, there is potential for more extensive development, allowing for a broader range of recreational uses while still maintaining the primary function of these linear parks.

Auburn currently has 21 different trail segments of varying purposes covering a total of 21.96 miles across the city, however 6.75 miles of those trails are within existing parks (see Table 2-5.)

- Total Miles of Trails (All): .25 to .5 miles per 1,000 residents
- Total Miles of Trails (All): .25 to .5 miles per 1,000 residents
- Expected NRPA Standard: .25 to .5 miles per 1,000 residents
- Existing Ratio: Total: 0.28 miles per 1,000 residents
- Existing Inventory: 21.96 miles
- Current Need: 0.0 miles
- Future Need (2044): 6.69 miles
- NEW LOS: 0.125 miles per 1,000 residents

Conclusion/Recommendations: Auburn's current ratio of 0.24 miles of developed trail parkland per 1,000 residents aligns closely with the minimum expected average. However, with the projected population increase, there is an anticipated need for an additional 6 miles of trails by 2044. Given the existing opportunities for new trail development and the high level of public interest in trails, it is recommended to slightly adjust the standard to 0.125 miles of developed trail parkland per 1,000 residents. Although Auburn's current inventory of trails already exceeds the adopted standards, further expansion and development are essential to ensure connectivity across different areas of the city and beyond. The demand for an interconnected trail system is expected to grow, particularly as residents, especially post-pandemic, continue to express a strong interest in trails for

recreation and as an alternative means of commuting, as identified in the Statewide Comprehensive Outdoor Recreation Plan (SCORP). This underscores the importance of enhancing Auburn's trail network to meet the evolving needs of its community.

Future Trails/Linear Park Development:

There are several opportunities to develop additional trails and linear parks in Auburn providing local and regional trail systems. Considering the interest in trail activities as demonstrated by public invovlement results and national recreation trends, these additional trails are worth pursuing. Identified locations for potential loop trails within parks, new linear parks, or extensions of existing linear parks include:

- BPA Power Line Easement (Lea Hill to Green River Road)
- Green River TRail (Planned)
- White River Trail (A Street to Interurban Trail)
- Mill Creek Corridor
- Rotary Park
- Shaughnessy Park
- Fulmer Park

Goals & Objectives









The Auburn Parks, Arts, and Recreation Department is dedicated to preserving the city's natural beauty through a vibrant and well-maintained system of parks, open spaces, and trails. Our mission is to enrich the lives of Auburn's residents by providing diverse recreational and cultural opportunities that foster a strong sense of community, promote health and well-being, and celebrate the unique natural landscapes that define our city.

The goals and objectives outlined in this chapter have been meticulously crafted to align with the requirements of the Growth Management Act (GMA) and are the result of an extensive and thoughtful planning process. This process drew upon a range of valuable resources, including insights from the 2015 Park, Arts, and Recreation Open Space Plan, findings from the 2023 Parks, Recreation, and Open Space Survey, and input from dedicated Parks and Recreation staff. Additionally, we carefully analyzed recreation trends, participation rates, and the current state of our parks to ensure that these goals are both forward-looking and responsive to the evolving needs of our community.

Through this comprehensive approach, we aim to create a park system that not only meets the present demands but also anticipates future growth and challenges. Our commitment is to maintain and enhance Auburn's parks and recreation offerings, ensuring that they continue to serve as vital community assets for generations to come.

Goal 1: Serve all residents and provide a broad range of programs and facilities in order to serve all residents regardless of age or ability.

The Auburn Parks, Arts, and Recreation Department is committed to providing accessible leisure and recreational programs for all residents, with a focus on accommodating special needs. To ensure awareness of these programs, the City has adapted its marketing strategies, blending innovative social media with traditional outreach to engage the community effectively.

Goal 1: Objectives

1A. Provide a variety of recreation facilities and programs that will improve the physical and mental well being of community members.

1B. Provide a system of neighborhood and community parks so that residents live within a half mile walking distance to a developed park.

1C. Develop multi-use facilities to increase flexibility to meet recreational trends as demonstrated by community input.

1D. Continue to identify under-served segments of the population and develop programs that will satisfy unmet needs.

1E. Develop marketing strategies allowing the widest possible distribution of information concerning park facilities and recreation programs.

1F. Provide programs and facilities designed for maximum affordability to local residents.

1G. Continue to improve upon and expand the Fee Waiver and Scholarship Programs, where possible, to allow more low income youth and seniors to participate at reduced rates.

1H. Continue to improve access for the disabled and seniors by providing wheelchair ramps and other appropriate facilities in parks where they do not currently exist.

1I. Continue to maintain an open decision-making process that allows opportunity for resident input.

1J. Parks and Recreation Department staffing levels shall be sufficient to maintain and improve the existing cultural and recreation programs. As programs expand or additional parks are developed, the impact on current staff levels and the need for additional staff will be evaluated.

Goal 2: Provide a balanced mix of passive and active recreation opportunities to promote healthy and balanced activities.

The Auburn Parks and Recreation Department recognizes the importance of offering diverse recreational opportunities that cater to all residents. To promote a healthy and balanced lifestyle, our goal is to provide a well-rounded mix of both active and passive recreation options. This approach ensures that everyone, regardless of their activity level, can enjoy and benefit from the City's parks and recreational facilities.

Goal 2: Objectives

2A. Develop a park system that provides facilities for social, cultural and physical activities.

2B. Provide parks areas that accommodate passive recreation opportunities such as picnicking and walking.

2C. Provide park areas that accommodate active recreation such as ballfields, skate parks, spray parks, sports courts, etc.

2D. Track changing trends at the local, state, and national levels. Respond with appropriate programs and facilities to meet changing needs as funding and budgets are available and meet the level of service expectations of the residents of Auburn.

2E. Provide access to healthy foods through the continued operation of the Auburn Farmer's Market and Community Gardens.

Goal 3: Provide a system of high quality parks that are well maintained and aesthetically pleasing.

Parks are one of the most visible public features in a City, their design and maintenance can influence people's perceptions of the community. Long term maintenance, good design, and the use of high quality materials will all affect the appearance of a park for years to come.

Goal 3: Objectives

3A. Develop Level of Service Standards that are consistent with NRPA standards to assure that residents' expectations are met.

3B. Parks shall be intentionally designed to require low maintenance, and low water and energy consumption. Higher maintenance features like fountains or annual beds are reserved for high visibility locations or as appropriate.

3C. Select environmentally friendly materials that are durable and aesthetically pleasing.

3D. Parks shall exhibit a "cared for" appearance through close attention to maintenance.

3E. In order to maintain parks in a safe and attractive condition, maintenance staff levels will be evaluated with additions of new park land or facilities.

3F. Renovate deteriorating features. Identify conditions that require redesign or construction of new facilities; schedule and budget necessary changes in the City's Capital Facilities Plan.

3G. Conduct regularly scheduled inspections to identify necessary repairs and upgrades to ensure safe conditions.

Goal 4: Provide a park system that contributes to a positive city image for Auburn.

Auburn's Comprehensive Plan contains goals and objectives to enhance the City's identity by ensuring a quality visual environment. Parks are an effective tool in improving visual appearance, but many of Auburn's parks are tucked away in residential neighborhoods, unseen and unknown except to residents. This lack of visibility hinders the parks from effectively contributing to the city's overall appearance. Increased visibility and high quality design are paramount to "advertising" our community as a good place in which to live and work.

Goal 4: Objectives

4A. Select new park sites with high visibility and access. This may be accomplished by locating at least one side of larger parks along arterial streets.

4B. Increase the quantity of trees, shrubs and ground covers in parks.

4C. Continue to work on Tree City USA goals for better Urban Forestry design and tree preservation.

4D. Create a green spaces in the downtown core that will be a focal point for community activities and stimulate economic growth.

4E. Incorporate artwork as part of new park development or when upgrading existing parks or other public facilities.

Goal 5: Acquire and manage important open spaces in the City of Auburn.

Undeveloped open spaces contribute to the well-being of our community in many ways. We value them for their ability to provide buffers from urban encroachment; to provide opportunities for recreation; to provide public access to creeks, rivers and other water bodies; to create distinctive settings within the city; to provide connections between different areas for both people and wildlife; as well as offering health and safety benefits.

Goal 5: Objectives

5A. Maintain and protect a system of forested corridors and buffers to provide separation between natural areas and urban land uses.

5B. Target significant open space areas in the City, with emphasis on their planning and acquisition. Target areas include the land along the Green and White Rivers, steep hillsides, Mill Creek Corridor and West Hill Watershed.

5C. Explore all possible funding mechanisms to enable the acquisition of open space on a regular basis to identify properties as they become available.

5D. City owned open space lands shall be accessible to the public wherever possible and appropriate.

5E. Provide adequate management and maintenance of public open spaces, ensuring their ability to provide environmental benefits and wildlife habitat.

5F. When mitigation is required, develop a monitoring and maintenance plan to ensure successful establishment.

5G. Involve the community in habitat restoration activities through the City's annual Clean Sweep event, community service days, and an adopt a park program.

5H. Determine the ecosystem service value reach open space and park space continues to address climate resiliency goals.

Goal 6: Provide a network of pedestrian and bicycle trails.

To enhance Auburn's recreational and transportation infrastructure, we aim to create a comprehensive network of bike and pedestrian trails that serves both commuters and recreational users. This network will be strategically developed to connect key areas within the city and extend to neighboring communities. By prioritizing the acquisition of land, especially along the Green River, and focusing on trail designs that highlight Auburn's unique natural landscapes, we can offer diverse experiences to residents and visitors alike. Our commitment also includes ensuring accessibility for all users, enhancing safety through thoughtful design, and implementing a cohesive wayfinding system. To sustain this network, securing ongoing funding for maintenance will be essential. Through these objectives, Auburn will establish a robust and interconnected trail system that promotes active transportation, environmental stewardship, and community well-being.

Goal 6: Objectives

6A. Develop a network of trails created or extended to provide adequate coverage for both commuting and recreational cyclists. Locations for east/west trails shall be identified and developed.

6B. Acquisition of land for the proposed Green River Trail shall continue to be a priority.

6C. Trail design and layout shall take advantage of unique natural locations and provide access to a variety of landscapes and habitats.

6D. Participate in planning activities for regional trails in South King County and North Pierce County.

6E. Explore possibilities for new trail connections between Auburn and neighboring communities.

6F. Develop and maintain trails to comply with Americans with Disabilities Act.

6G. Provide safe trail system by discouraging crime through environmental design concepts.

6H. Develop a standardized interpretive and way-finding program to be used through- out our trail system.

6I. Identify and provide funding to maintain existing trail systems.

Goal 7: Expand our existing park inventory where level of service standards are not being met, with an emphasis on the West Hill and Lea Hill areas of the City.

Our goal is to prioritize the development of community and linear parks with trail systems, focusing on larger, multi-use spaces to meet Auburn's diverse needs. We will actively pursue funding to acquire and preserve key parklands, emphasizing shoreline properties for public access. To minimize land use conflicts, particularly in residential areas, we will implement thoughtful design and strategic placement. High-quality design standards will guide new park developments, supported by comprehensive Master Plans and public input. Additionally, we aim to create vibrant public gathering spaces in the downtown core to enhance community life.

Goal 7: Objectives

7A. Make the development of community parks and linear parks with trail systems a priority over small neighborhood parks when possible and appropriate.

7B. Apply for King County Conservation Futures and Recreation & Conservation Office grants and other available funding sources to acquire and preserve park land and natural areas.

7C. Acquisition of community amenities, such as shoreline property, shall be emphasized, to preserve or allow public access to these special places.

7D. Minimize land use conflicts between parks and other uses, and use sensitive design measures when locating parks in residential neighborhoods.

7E. Criteria for new park development ensures consistent high quality design meeting the needs of the community.

7F. Develop Master Plans for undeveloped park properties and incorporate future park development costs into the Capital Facilities plan as appropriate.

7G. Schedule public meetings as a part of the Master Planning process to ensure that residents' voices are heard and needs are met when developing new parks.

7H. Develop public gathering spaces in the downtown core.

Goal 8: Establish park and trail levels of service provided in the PROS plan.

To ensure Auburn's parks and recreational spaces continue to meet the needs of a growing population, we are committed to maintaining a consistent level of investment per capita. Currently, the City provides over 10 acres of parkland per 1,000 residents, a standard we aim to uphold even as our community expands. By sustaining this investment, Auburn will preserve its high quality of life and ensure that all residents have ample access to well-maintained and accessible parks and green spaces.

Goal 8: Objectives

8A. Fields, Courts, Tracks, Gyms: Improve the equivalent population per Auburn facility type based on expected demand and need ideintified by public survey responses.

8B. Informal Recreation Facilities: Increase the number of Picnic Shelters, Off Leash Areas, Playgrounds, Paths, Community Gardens, Flexible Open Turf Areas, Gathering Spaces and Amphitheaters: Resident equivalent population per facility consistent with the current ratio.

8C. Trails: Increase the number of per trail miles to be consistent with .25 miles per 1000 residents.

8D. Parks: Maintain a minimum total parkland Level of Service (LOS) of over 10 acres per 1,000 residents, regardless of park classification.

Capital Improvement Program









The vision articulated in this PROS Plan is not only a mandate of the Growth Management Act but is also essential to enhancing the quality of life and driving economic development in the City of Auburn. This plan is both pragmatic, addressing the immediate needs of current residents, and forward-looking, preparing the park system to meet future demands while delivering economic, social, and environmental benefits. This section outlines the City's approach to incorporating public feedback through a comprehensive Capital Improvement Program (CIP), presented initially in tabular form and followed by detailed descriptions of conceptual improvements planned for the next six years.

Serving as a crucial blueprint, this plan significantly impacts residents' quality of life via Auburn's Parks & Recreation system. The effective administration of these services by the City's limited staff requires a committed allocation of budget resources. Realizing this vision also depends on grant funding and the continued dedication of community volunteers. Annual investments in personnel, equipment, and supplies are vital for maintaining a diverse range of outdoor recreational opportunities, ensuring safety, and meeting public expectations.

Aligned with Auburn's strategic goals and integrated into the principles of the Comprehensive Plan, this PROS Plan promotes a safe, healthy, and walkable community, cultural enrichment, and environmental conservation, reflecting the aspirations and quality of life desired by the city's residents.

This section emphasizes Auburn's commitment to addressing public feedback and improving system deficiencies by detailing a comprehensive CIP. This program includes specific park-related projects and broader recommendations aimed at closing service gaps. The proposals, summarized in tables and elaborated upon in detail, outline enhancements and conceptual improvements scheduled for implementation over the next six years. Additionally, the inclusion of long-term visionary projects shows a readiness to seize opportunistic improvements based on market conditions or funding availability.

At the core of this plan are key recommendations designed to address current challenges, anticipate future needs, maximize funding flexibility, and align with public preferences. It thoroughly considers the range of parks and recreation amenities available within the city, ensuring that Auburn's park system evolves in a balanced and sustainable manner.

Developing The Capital Improvement Program

This plan spans a six-year period from 2024 through 2030, aiming to guide park and recreation improvements while also presenting a conceptual vision for additional long-term enhancements aligned with Auburn's projected growth. It is designed to be flexible and dynamic, recognizing that funding availability, public needs, and political priorities may shift over time. As such, the plan is not a rigid script but rather a strategic guide adaptable to unforeseen opportunities that may better serve the public.

The listed capital improvement projects are initially categorized into six-year and long-term (20-year) CIP lists based on specific recommendations. However, the implementation timeline is subject to various factors, including design and permitting durations, other critical public works projects, grant funding cycles, available budgets, and city staff capacity. These timelines are for planning purposes only and do not represent a commitment to implementation in any particular year. The plan should remain a living document, continually updated as conditions evolve.

The CIP project list reflects public demand and needs, validated through input from city staff, commission members, and the City Council. The actual implementation over the next six years will depend on available funding, success in securing grants, and essential maintenance and repair needs. In developing the CIP, several aspects were considered to ensure it is robust yet flexible, capable of adapting to changing circumstances and opportunities.

Strategic Project Development and Funding Opportunities

Improving the parks system is a collaborative effort, not solely reliant on city funding. Auburn should actively pursue grants and donations from various sources to maximize public investment in parks, recreation, and open space facilities. Specific improvements should be matched with appropriate Recreation Conservation Office programs, such as the Youth Athletic Field or Land Water Conservation Fund grants, which have a history of being funded. Additionally, many trail and access projects can integrate with Safe Route to School grants and other transportation-related projects. Combining park projects with transportation and economic development initiatives will enhance implementation flexibility and open up further funding opportunities from county, state, and federal programs.

Auburn's Fiscal Sources

Auburn, WA's parks budget is supported by a diverse mix of funding sources. The City's General Fund, which includes revenues from property and sales taxes, is a primary source of funding for the Parks, Arts, and Recreation Department. Additional revenue comes from fees collected for recreational programs, facility rentals, and special events. The City also actively pursues grants from sources like the Washington State Recreation and Conservation Office (RCO), King County Conservation Futures, and federal programs such as the Land and Water Conservation Fund (LWCF). To address the demands of population growth, Auburn charges impact fees on new developments to fund the expansion of parks and recreational facilities. The budget is further supplemented by a portion of the Real Estate Excise Tax (REET) and a dedicated sales tax, which is 1/10th of 1% of the countywide sales tax. Occasionally, the City issues bonds for large-scale park projects, which are repaid over time. Additional funding comes from donations, sponsorships, and partnerships with local businesses, non-profits, and other governmental agencies, all of which contribute to maintaining and enhancing Auburn's park system.

Estimate of Probable Cost

This CIP includes preliminary estimates of construction costs for recommended improvements at each park and city-wide. These estimates are intended for budgeting and scoping future design and construction projects and are subject to change based on site conditions, final design, and market circumstances. The estimates are based on current park master planning projects and include considerations for inflation, annual cost escalators, design contingencies, permitting, and other soft costs. However, staff time costs are not included in these estimates.

Performance and Monitoring

Auburn's plan addresses the level of service and needs for parks, recreation, open spaces, and trails identified at the time of the plan's creation. Recognizing the dynamic nature of communities and outdoor spaces, this plan is designed to be flexible and adaptable in its implementation. To monitor progress and adapt to changing circumstances, including new grant and funding sources, the following actions should be taken annually during the capital improvement budgeting cycle:

Annual Prioritization Review:

City staff and volunteers should conduct annual evaluations to determine if any changes to the park system are necessary, especially considering funding availability or demographic shifts.

Plan Update:

Beginning in early-to-mid 2030, a formal update process should engage Auburn residents, staff, and committee members to review changing service needs, propose new capital improvements, and renew eligibility for the Washington Recreation and Conservation Office (RCO) programs for the next performance period. By maintaining this proactive and adaptive approach, Auburn can ensure that its parks and recreational facilities continue to meet the evolving needs of its community.

Park Development:

The development of more mini-parks (under one or two acres) is not encouraged. Mini-parks have not been found to be as successful as larger community parks, because they tend to serve very small populations and are difficult and expensive to maintain. Developers may have the opportunity to develop neighborhood parks that are maintained by the local homeowners association but meet the City's park standards.

Unforeseen Threats to the CIP Strategy

Several unforeseen threats could impact the strategy and implementation of Auburn's Capital Improvement Program (CIP):

Economic Downturns:

A significant economic recession could reduce available funding from local, state, and federal sources, impacting the ability to finance planned projects.
Natural Disasters: Events such as earthquakes, floods, or wildfires could damage existing infrastructure and necessitate reallocation of funds for emergency repairs and rebuilding efforts.
Pandemics or Public Health Crises: Situations similar to the COVID-19 pandemic could disrupt project timelines, reduce workforce availability, and shift funding priorities towards health and safety measures.
Policy and Regulatory Changes: New laws or regulations at the local, state, or federal level could alter funding eligibility, increase costs, or impose new requirements on project implementation.
Environmental Issues: Unforeseen environmental challenges, such as soil contamination or endangered species habitats, could delay or complicate project execution.
Community Opposition: Public opposition or legal challenges to specific projects could result in delays or necessitate project modifications.
Technological Changes: Rapid advancements in technology may require updates to project plans or could render certain planned improvements obsolete.
Market Fluctuations: Changes in the cost of materials and labor due to market volatility can significantly impact project budgets and timelines.
Considering these potential threats, the CIP must remain adaptable, ensuring that Auburn can respond effectively to changing conditions and continue to meet the needs of its residents.



Table 5-1: Capita;l Facilities Plan Projects & Financing Municipal Parks Construction Fund (See the Capital Facilities Plan sheets for details on the following numbers.)								
Capacity Projects:		**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Auburndale Park II								
	Capital Costs	-	-	$125,000	-	$2,000,000	-	$2,125,000
	Funding Sources:							
	Fund Balance	-	-	-	-	-	-	-
	Grants (Fed,State,Local)	-	-	-	-	$1,000,000	-	$1,000,000
	Other (TBD)	-	-	$125,000	-	$1,000,000	-	$1,125,000
BPA Trail on Lea Hill								
	Capital Costs	-	-	-	-	150,000	-	$150,000
	Funding Sources:							
	Fund Balance	-	-	-	-	150,000	-	$150,000
	Grants (Fed,State,Local)	-	-	-	-	-	-	-
	KC Prop 2	-	-	-	-	-	-	-
Fulmer Park Turf Fields								
	Capital Costs	-	-	-	-	-	-	-
	Funding Sources:							
	Fund Balance	-	-	-	-	-	-	-
	Grants (Fed,State,Local)	-	-	1,800,000	-	-	-	1,800,000
	Park Impact Fees	-	-	-	-	-	-	-
	KC Prop 2	-	-	-	-	-	-	-
Game Farm Park Improvements								
	Capital Costs	200,000	-	-	-	-	-	200,000
	Funding Sources:							
	Fund Balance	-	-	-	-	-	-	-
	Grants (Fed,State,Local)	200,000	1,500,000	-	-	-	-	1,700,000
	Park Impact Fees	-	500,000	-	-	-	-	500,000
Jacobsen Tree Farm Development								
	Capital Costs	125,000	5,000,000	-	-	5,000,000	-	10,125,000
	Funding Sources:							
	Fund Balance	-	-	-	-	-	-	-
	Grants (Fed,State,Local)	-	1,000,000	-	-	1,000,000	-	2,000,000
	KC Prop 2	-	-	-	-	-	-	-
	Other (TBD)	-	2,000,000	-	-	2,000,000	-	4,000,000
	Park Impact Fees	125,000	2,000,000	-	-	2,000,000	-	4,125,000

Table 5-1: Capita;l Facilities Plan Projects & Financing Municipal Parks Construction Fund (See the Capital Facilities Plan sheets for details on the following numbers.)								
Capacity Projects:		**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Lakeland Hills Nature Area								
	Capital Costs	-	-	400,000	-	-	-	400,000
	Funding Sources:							
	Fund Balance	-	-	-	-	-	-	-
	Grants (Fed,State,Local)	-	-	200,000	-	-	-	200,000
	Park Impact Fees	-	-	200,000	-	-	-	200,000
Miscellaneous Parks Improvements								
	Capital Costs	150,000	150,000	150,000	150,000	150,000	150,000	900,000
	Funding Sources:							
	Fund Balance	50,000	50,000	50,000	50,000	50,000	50,000	300,000
	Grants (Fed,State,Local)	-	-	-	-	-	-	-
	KC Prop 2	150,000	150,000	150,000	150,000	150,000	150,000	900,000
	Park Impact Fees	100,000	100,000	50,000	50,000	50,000	50,000	400,000
Park Acquisitions/Development								
	Capital Costs	125,000	125,000	125,000	125,000	125,000	125,000	750,000
	Funding Sources:							
	Fund Balance	-	-	-	-	-	-	-
	Grants (Fed,State,Local)	-	-	-	-	-	-	-
	KC Prop 2	125,000	125,000	125,000	125,000	125,000	125,000	750,000
Sunset Park Improvements								
	Capital Costs	-	-	-	-	-	-	-
	Funding Sources:							
	Fund Balance	-	-	-	-	-	-	-
	Park Impact Fees	350,000	-	1,500,000	-	-	-	1,850,000
	Other (TBD)	-	-	500,000	-	-	-	500,000
West Hill Park Acquisition and Development								
	Capital Costs	-	-	750,000	1,000,000	-	-	1,750,000
	Funding Sources:							
	Fund Balance	-	-	-	-	-	-	-
	Grants (Fed,State,Local)	-	-	400,000	500,000	-	-	900,000
	Park Impact Fees	-	-	350,000	500,000	-	-	850,000

Table 5-1: Capita;l Facilities Plan Projects & Financing
Municipal Parks Construction Fund

(See the Capital Facilities Plan sheets for details on the following numbers.)

Capacity Projects:	2025	2026	2027	2028	2029	2030	Total
Subtotal, Capacity Projects:							
Capital Costs	600,000	5,275,000	1,550,000	1,275,000	7,425,000	275,000	16,400,000
Non-Capacity Projects:							
Dykstra Footbridge							
Capital Costs	-	-	-	-	-	-	-
Funding Sources:							
Fund Balance	-	-	-	-	-	-	-
ARPA funding	40,000	-	-	-	-	-	40,000
Other (TBD)	-	-	-	-	-	-	-
Fairway Drainage Improvement							
Capital Costs	30,000	30,000	30,000	30,000	30,000	30,000	180,000
Funding Sources:							
Fund Balance	-	-	-	-	-	-	-
Grants (Fed,State,Local)	-	-	-	-	-	-	-
REET 2	30,000	30,000	30,000	30,000	30,000	30,000	180,000
Capacity Projects:	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Capacity Projects	600,000	5,275,000	1,550,000	1,275,000	7,425,000	275,000	16,400,000
Non-Capacity Projects	30,000	30,000	30,000	30,000	30,000	30,000	180,000
Total Costs	630,000	5,305,000	1,580,000	1,305,000	7,455,000	305,000	16,580,000
Fund Balance	50,000	50,000	50,000	50,000	200,000	50,000	450,000
Grants (Fed,State,Local)	200,000	2,500,000	2,400,000	500,000	2,000,000	-	7,600,000
Grants - Private	-	-	-	-	-	-	-
KC Prop 2	275,000	275,000	275,000	275,000	275,000	275,000	1,650,000
ARPA funding	40,000	-	-	-	-	-	40,000
Park Impact Fees	575,000	2,600,000	2,100,000	550,000	2,050,000	50,000	7,925,000
REET 2	30,000	30,000	30,000	30,000	30,000	30,000	180,000
Other (TBD)	-	2,000,000	625,000	-	3,000,000	-	5,625,000
Total Funding	1,170,000	7,455,000	5,480,000	1,405,000	7,555,000	405,000	23,470,000

Project Title: **Auburndale Park II**
Project No: **gpbd05**
Project Type: **Capacity**
Project Manager: **Thaniel Gouk**

Description:

Develop a Master Plan, improve the existing trail system and install signage and play structure.

Progress Summary:

n/a

Future Impact on Operating Budget:

Increased utility costs of $2,000 per year once the park is fully developed.

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Fund 321 -Unrestricted Fund Balance	-	-	-	-	-
Grants- Secured (Fed,State,Local)	-	-	-	-	-
REET	-	-	-	-	-
Impact Fees	-	-	-	-	-
Total Funding Sources:	**-**	**-**	**-**	**-**	**-**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	-	-	-	-	-
Total Expenditures:	**-**	**-**	**-**	**-**	**-**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Fund 321 -Unrestricted Fund Balance	-	-	-	-	-
Grants- Secured (Fed,State,Local)	-	-	-	-	-
REET	-	-	-	-	-
Impact Fees	-	-	-	-	-
Total Funding Sources:	**-**	**-**	**-**	**-**	**-**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	-	-	-	-	-
Total Expenditures:	**-**	**-**	**-**	**-**	**-**

Unsecured Non-Budgeted Funding

Funding Sources:	2025	2026	2027	2028-2030	Total 2025-20230
RCO Local Parks Grant	-	-	125,000	2,000,000	2,125,000
Total Funding Sources:	**-**	**-**	**125,000**	**2,000,000**	**2,125,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	125,000	-	125,000
Right of Way	-	-	-	-	-
Construction	-	-	-	2,000,000	2,000,000
Total Expenditures:	**-**	**-**	**125,000**	**2,000,000**	**2,125,000**

Grants / Other Sources:

Project Title: **BPA Trail on Lea Hill**
Project No: **gpbd23**
Project Type: **Capacity**
Project Manager: **Thaniel Gouk**

Description:

Develop a feasibility study related to constructability of a pedestrian trail linking the Jacobsen Tree Farm site to the west end of Lea Hill. This trail would follow the alignment of the Bonneville Power Administration (BPA) transmission lines from 132nd to 108th Avenue SE. Construction would be in phases based on constructability.

Progress Summary:

Future Impact on Operating Budget:

None

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Fund 321 -Unrestricted Fund Balance	-	-	-	-	-
Grants- Secured (Fed,State,Local)	-	-	-	-	-
Bond Proceeds	-	-	-	-	-
REET	-	-	-	-	-
Other (KC Prop. 2)	-	-	-	-	-
Total Funding Sources:	**-**	**-**	**-**	**-**	**-**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Construction	-	-	-	-	-
Total Expenditures:	**-**	**-**	**-**	**-**	**-**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Fund 321 -Unrestricted Fund Balance	-	-	150,000	-	150,000
Grants- Secured (Fed,State,Local)	-	-	-	-	-
Bond Proceeds	-	-	-	-	-
REET	-	-	-	-	-
Other (KC Prop. 2)	-	-	-	-	-
Total Funding Sources:	**-**	**-**	**150,000**	**-**	**150,000**
Capital Expenditures:					
Predesign	-	-	25,000	-	25,000
Design	-	-	125,000	-	125,000
Construction	-	-	-	-	-
Total Expenditures:	**-**	**-**	**150,000**	**-**	**150,000**

Grants / Other Sources:

MUNICIPAL PARKS CONSTRUCTION FUND (321)

Capital Facilities Plan

Six Year Capital Facilities Plan, 2025-2030

Capital Projects Fund

Project Title: **Brannan Park Improvements**
Project No: **cpxxxx**
Project Type: **Capacity**
Project Manager: **Thaniel Gouk**

Description:

Court upgrades, trail improvements, and new synthetic fields.

Progress Summary:

N/A

Future Impact on Operating Budget:

Lessened maintenance requirements and water for grass fields, savings of approx. $10,000/year.

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Municipal Parks Construction Fund	-	-	-	-	-
Grants- Secured (Fed,State,Local)	-	-	-	-	-
Impact Fees	-	-	-	-	-
REET	-	-	-	-	-
Other	-	-	-	-	-
Total Funding Sources:	**-**	**-**	**-**	**-**	**-**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	-	-	-	-	-
Total Expenditures:	**-**	**-**	**-**	**-**	**-**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Municipal Parks Construction Fund	-	-	-	-	-
Grants- Secured (Fed,State,Local)	-	-	-	-	-
Impact Fees	-	-	-	500,000	500,000
REET	-	-	-	-	-
Other	-	-	-	-	-
Total Funding Sources:	**-**	**-**	**-**	**500,000**	**500,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	50,000	50,000
Right of Way	-	-	-	-	-
Construction	-	-	-	450,000	450,000
Total Expenditures:	**-**	**-**	**-**	**500,000**	**500,000**

Unsecured Non-Budgeted Funding

Funding Sources:	2025	2026	2027	2028-2030	Total 2025-20230
Recreation Conservation Office (RCO) Youth Athletic Facilities and Community Outdoor Athletic Facilities Grants	300,000	-	-	1,000,000	1,300,000
Total Funding Sources:	**300,000**	**-**	**-**	**1,000,000**	**1,300,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	300,000	-	-	1,000,000	1,300,000
Total Expenditures:	**300,000**	**-**	**-**	**1,000,000**	**1,300,000**

Grants / Other Sources:

Project Title: **Downtown Plaza and Alleyway Improvements**
Project No: CP2423
Project Type: **Capacity**
Project Manager: **Thaniel Gouk**

Description:

Create a new open space plaza in the downtown area near the Auburn Avenue Theater site. A portion of the project would be contingent on receiving King County Grant funds to purchase a property and demolishing a building. Also included would be alleyway improvements to the area between the Postmark Center for the Arts and theater building.

Progress Summary:

An application has been submitted for a King County Conservation Futures grant; a decision will be made in Fall of 2024 by KC Council. A portion of the funding would be from the direct appropriation monies for the rebuild of the theater.

Future Impact on Operating Budget:

Increased utility costs of $1,000.

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Municipal Parks Construction Fund	-	-	-	-	-
Grants- Secured (Fed,State,Local)	-	-	250,000	-	250,000
Grants- Unsecured (King County CFT)	-	-	950,000	-	950,000
REET	-	-	-	-	-
KC Parks Prop Levy	-	10,000	-	-	10,000
Total Funding Sources:	**-**	**10,000**	**1,200,000**	**-**	**1,210,000**
Capital Expenditures:					
Predesign	-	10,000	-	-	10,000
Design	-	-	75,000	-	75,000
Acquisition	-	-	700,000	-	700,000
Construction	-	-	425,000	-	425,000
Total Expenditures:	**-**	**10,000**	**1,200,000**	**-**	**1,210,000**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Municipal Parks Construction Fund	-	-	-	-	-
Grants- Secured (Fed,State,Local)	-	-	-	-	250,000
Grants- Unsecured (King County CFT)	-	-	-	-	950,000
REET	-	-	-	-	-
KC Parks Prop Levy	-	-	-	-	-
Total Funding Sources:	**-**	**-**	**-**	**-**	**1,200,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	75,000
Acquisition	-	-	-	-	700,000
Construction	-	-	-	-	425,000
Total Expenditures:	**-**	**-**	**-**	**-**	**1,200,000**

Grants / Other Sources: King County Conservation Futures Grant & RCO Grant

Project Title: **Game Farm Park Improvements (Lighting)**
Project No: **cp2416**
Project Type: **Capacity**
Project Manager: **Daryl Faber**

Description:

Improve interior lighting and pathways and provide access from the newly acquired property on southwest corner of the park. The project will also add lighting to pickleball and basketball court. New turf infields.

Progress Summary:

N/A

Future Impact on Operating Budget:

None

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Fund 321 -Unrestricted Fund Balance	-	-	-	-	-
Grants- Secured (Fed,State,Local)	-	-	-	-	-
REET 1	-	-	-	-	-
Park Impact Fees	-	-	-	350,000	350,000
Total Funding Sources:	**-**	**-**	**-**	**350,000**	**350,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	150,000	150,000
Right of Way	-	-	-	-	-
Construction	-	-	-	200,000	200,000
Total Expenditures:	**-**	**-**	**-**	**350,000**	**350,000**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Fund 321 -Unrestricted Fund Balance	-	-	-	-	-
Grants- Secured (Fed,State,Local)	-	-	-	-	-
REET 1	-	-	-	-	-
Park Impact Fees	150,000	-	-	-	500,000
Total Funding Sources:	**150,000**	**-**	**-**	**-**	**500,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	150,000
Right of Way	-	-	-	-	-
Construction	150,000	-	-	-	350,000
Total Expenditures:	**150,000**	**-**	**-**	**-**	**500,000**

Unsecured Non-Budgeted Funding

Funding Sources:	2025	2026	2027	2028-2030	Total 2025-20230
RCO Youth Athletic Facilities Grant	-	1,000,000	-	-	1,000,000
KC Youth and Amatuer Sports Grant	200,000	500,000	-	-	700,000
Total Funding Sources:	**200,000**	**1,500,000**	**-**	**-**	**1,700,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	200,000	1,500,000	-	-	1,700,000
Total Expenditures:	**200,000**	**1,500,000**	**-**	**-**	**1,700,000**

Grants / Other Sources:

Project Title: **Golf Course Maintenance Building**
Project No: **cpxxxx**
Project Type: **Capacity**
Project Manager: **Thaniel Gouk**

Description:

Replace dilapidated mechanics building (built in 1970) at the Auburn Golf Course. A new approx. 1,000 sq.-ft. building would provide mechanics space for the Golf Course Fleet.

Progress Summary:

N/A

Future Impact on Operating Budget:

None

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Municipal Parks Construction Fund	-	-	-	-	-
Grants- Secured (Fed,State,Local)	-	-	-	-	-
Bond Proceeds	-	-	-	-	-
REET 2	-	-	-	-	-
Park Impact Fees	-	-	-	-	-
Total Funding Sources:	**-**	**-**	**-**	**-**	**-**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	-	-	-	-	-
Total Expenditures:	**-**	**-**	**-**	**-**	**-**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Municipal Parks Construction Fund	-	350,000	-	-	350,000
Grants- Secured (Fed,State,Local)	-	-	-	-	-
Bond Proceeds	-	-	-	-	-
REET 2	-	300,000	-	-	300,000
Park Impact Fees	-	-	-	-	-
Total Funding Sources:	**-**	**650,000**	**-**	**-**	**650,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	50,000	-	-	50,000
Right of Way	-	-	-	-	-
Construction	-	600,000	-	-	600,000
Total Expenditures:	**-**	**650,000**	**-**	**-**	**650,000**

Grants / Other Sources:

Project Title: **Jacobsen Tree Farm Development -Phase 2**
Project No: **cp2020**
Project Type: **Capacity**
Project Manager: **Daryl Faber**

Description:

Develop the 29.3 acre site into a Community Park. Phase 1 would include a new Master Plan (to replace 2009 plan); Phase 2 would include parking and frontage improvements, some park amenities; Phase 3 would include building out the property with expanded parking, restrooms, and sport fields.

Progress Summary:

A master plan was completed in 2009, however, is out of date and Phase 1 would include updating this plan for a more modern park layout.

Future Impact on Operating Budget:

No significant impact due to master plan. Future park development will result in maintenance and utility expenses undeterminable at this time.

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Fund 321 -Unrestricted Fund Balance	-	333,500	-	-	333,500
Grants- Secured (Fed,State,Local)	-	-	-	-	-
King County Prop 2	14,165	-	-	-	-
Park Impact Fees	-	-	125,000	-	125,000
Other	-	-	-	-	-
Total Funding Sources:	**14,165**	**333,500**	**125,000**	**-**	**458,500**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	14,165	333,500	125,000	-	458,500
Right of Way	-	-	-	-	-
Construction	-	-	-	-	-
Total Expenditures:	**14,165**	**333,500**	**125,000**	**-**	**458,500**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Fund 321 -Unrestricted Fund Balance	-	-	-	-	-
Grants- Secured (Fed,State,Local)	-	-	-	-	-
King County Prop 2	-	-	-	-	-
Park Impact Fees	2,000,000	-	2,000,000	-	4,125,000
Other	-	-	-	-	-
Total Funding Sources:	**2,000,000**	**-**	**2,000,000**	**-**	**4,125,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	500,000	-	500,000	-	1,125,000
Right of Way	-	-	-	-	-
Construction	1,500,000	-	1,500,000	-	3,000,000
Total Expenditures:	**2,000,000**	**-**	**2,000,000**	**-**	**4,125,000**

Unsecured Non-Budgeted Funding

Unsecured Grants	2025	2026	2027	2028-2030	Total 2025-20230
RCO WA Wildlife & Recreation Prgm.	-	1,000,000	-	-	1,000,000
King County Parks Grant	-	2,000,000	-	-	2,000,000
RCO Community Outdoor Athletic Funds	-	-	-	1,500,000	1,500,000
RCO Youth Athletic Facilities Grant	-	-	-	1,500,000	1,500,000
Total Funding Sources:	**-**	**3,000,000**	**-**	**3,000,000**	**6,000,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	-	3,000,000	-	3,000,000	6,000,000
Total Expenditures:	**-**	**3,000,000**	**-**	**3,000,000**	**6,000,000**

Grants / Other Sources:

Project Title: **Lakeland Hills Nature Area**
Project No: **gpbd11**
Project Type: **Capacity**
Project Manager: **Daryl Faber**

Description:

Complete Master Plan to include the development and construction of an environmental community park. Trails, fencing, parking and visitor amenities are included in the project.

Progress Summary:

Future Impact on Operating Budget:

Increased maintenance costs of $5,000

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Fund 321 -Unrestricted Fund Balance	-	-	-	-	-
Other (Pierce Co. Zoo Taxes)	-	-	-	-	-
Park Impact Fees	-	25,000	-	-	25,000
Park Mitigation Fees	-	-	-	-	-
Total Funding Sources:	**-**	**25,000**	**-**	**-**	**25,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	25,000	-	-	25,000
Right of Way	-	-	-	-	-
Construction	-	-	-	-	-
Total Expenditures:	**-**	**25,000**	**-**	**-**	**25,000**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Fund 321 -Unrestricted Fund Balance	-	-	-	-	-
Other (Pierce Co. Zoo Taxes)	200,000	-	-	-	200,000
Park Impact Fees	200,000	-	-	-	200,000
Park Mitigation Fees	-	-	-	-	-
Total Funding Sources:	**400,000**	**-**	**-**	**-**	**400,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	400,000	-	-	-	400,000
Total Expenditures:	**400,000**	**-**	**-**	**-**	**400,000**

Grants / Other Sources:

Project Title: **Les Gove Park Improvements**
Project No: **cp2232**
Project Type: **Capacity**
Project Manager: **Thaniel Gouk**

Description:

Construction of a covered multi-use pavilion building at the south end of Les Gove Park. Uses could include pickleball and farmers market, among others.

Progress Summary:

N/A

Future Impact on Operating Budget:

Future impacts are undeterminable at this time. Potential impacts include general building maintenance.

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Municipal Parks Construction Fund	15,259	79,430	-	-	79,430
Grants Secured (Fed,State,Local)	-	100,000	-	-	100,000
Park Impact Fees	-	-	-	-	-
REET 2	-	-	-	-	-
Other	-	-	-	-	-
Total Funding Sources:	**15,259**	**179,430**	**-**	**-**	**179,430**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	15,259	179,430	-	-	179,430
Total Expenditures:	**15,259**	**179,430**	**-**	**-**	**179,430**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Municipal Parks Construction Fund	-	-	-	-	-
Grants Secured (Fed,State,Local)	-	-	-	-	-
Park Impact Fees	750,000	-	-	-	750,000
REET 2	750,000	-	-	-	750,000
Other	-	-	-	-	-
Total Funding Sources:	**1,500,000**	**-**	**-**	**-**	**1,500,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	100,000	-	-	-	100,000
Right of Way	-	-	-	-	-
Construction	1,400,000	-	-	-	1,400,000
Total Expenditures:	**1,500,000**	**-**	**-**	**-**	**1,500,000**

Unsecured Non-Budgeted Funding

Unsecured Grants	2025	2026	2027	2028-2030	Total 2025-20230
KC Parks Capital and Open Space Grant	-	-	750,000	-	750,000
Total Funding Sources:	**-**	**-**	**750,000**	**-**	**750,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	-	-	750,000	-	750,000
Total Expenditures:	**-**	**-**	**750,000**	**-**	**750,000**

Grants / Other Sources:

Project Title: **Miscellaneous Parks Improvements**
Project No: **gpbd03**
Project Type: **Capacity/Non-Capacity**
Project Manager: **Daryl Faber**

Description:

Minor park improvements including shelters, roofs, playgrounds, irrigation and restrooms.

Progress Summary:

Completed projects include: security cameras at Mary Olson Farm. At Les Gove installed gates at 12th Street parking lot, added a bench, art pedestals, poem etching, senior center walkway, and improvements at the spray park and playground. At Auburndale park added new playground and replaced dilapidated pathway. New split rail fence at Isaac Evans.

Future Impact on Operating Budget:

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Fund 321 -Unrestricted Fund Balance	-	247,700	50,000	50,000	347,700
Grants Secured (Fed,State,Local)	-	-	-	-	-
KC Prop 2	-	100,000	150,000	150,000	400,000
Park Impact Fees	-	213,869	50,000	100,000	363,869
Total Funding Sources:	**-**	**561,569**	**250,000**	**300,000**	**1,111,569**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	50,000	50,000	100,000
Right of Way	-	-	-	-	-
Construction	-	561,569	200,000	250,000	1,011,569
Total Expenditures:	**-**	**561,569**	**250,000**	**300,000**	**1,111,569**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Fund 321 -Unrestricted Fund Balance	50,000	50,000	50,000	50,000	300,000
Grants Secured (Fed,State,Local)	-	-	-	-	-
KC Prop 2	150,000	150,000	150,000	150,000	900,000
Park Impact Fees	100,000	50,000	50,000	50,000	400,000
Total Funding Sources:	**300,000**	**250,000**	**250,000**	**250,000**	**1,600,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	100,000	100,000	100,000	100,000	500,000
Right of Way	-	-	-	-	-
Construction	200,000	150,000	150,000	150,000	1,100,000
Total Expenditures:	**300,000**	**250,000**	**250,000**	**250,000**	**1,600,000**

Grants / Other Sources:

Project Title: **Park Acquisitions/Development**
Project No: **gpbd04**
Project Type: **Capacity**
Project Manager: **Daryl Faber**

Description:

Land and other property acquisitions to occur based on demand and deficiencies including parks, open space, trails, corridors and recreational facilities.

Progress Summary:

The City purchased the Auburn Avenue Theater and the Qares property in 2020. The City will be purchasing a downtown open space plaza.

Future Impact on Operating Budget:

None

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Fund 321 -Unrestricted Fund Balance	-	-	-	-	-
Grants Secured (Fed,State,Local)	-	-	-	-	-
KC Prop 2	-	195,000	-	-	195,000
REET1	-	-	-	-	-
Other Sources	-	-	-	-	-
Total Funding Sources:	**-**	**195,000**	**-**	**-**	**195,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Acquisition	-	195,000	-	-	195,000
Construction	-	-	-	-	-
Total Expenditures:	**-**	**195,000**	**-**	**-**	**195,000**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Fund 321 -Unrestricted Fund Balance	-	-	-	-	-
Grants Secured (Fed,State,Local)	-	-	-	-	-
KC Prop 2	-	-	-	-	-
REET1	-	-	-	-	-
Other Sources	-	-	-	-	-
Total Funding Sources:	**-**	**-**	**-**	**-**	**-**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Acquisition	-	-	-	-	-
Construction	-	-	-	-	-
Total Expenditures:	**-**	**-**	**-**	**-**	**-**

Unsecured Non-Budgeted Funding

Unsecured Grants	2025	2026	2027	2028-2030	Total 2025-20230
Local Grant KC Conservation Futures	125,000	125,000	125,000	375,000	750,000
Total Funding Sources:	**125,000**	**125,000**	**125,000**	**375,000**	**750,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Acquisition	125,000	125,000	125,000	375,000	750,000
Construction	-	-	-	-	-
Total Expenditures:	**125,000**	**125,000**	**125,000**	**375,000**	**750,000**

Grants / Other Sources:

Project Title: **Sunset Park Improvements**
Project No: **gpbd06**
Project Type: **Capacity**
Project Manager: **Daryl Faber**

Description:

Phase 2 improvements to include looking at options for new or modified court uses (e.g. pickleball). Phase 3 to include replacing the grass base/softball fields with new multi-sport synthetic turf fields.

Progress Summary:

RCO Community Outdoor Athletic Funds grant applied for in Spring 2024; decision expected Fall 2024. Phase 1 included drainage improvements to the playground area and were completed in 2022.

Future Impact on Operating Budget:

Less water use (Bonney Lake Water) for fields would save money for the City.

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Fund 321 -Unrestricted Fund Balance	-	-	-	-	-
Grants Secured (Fed,State,Local)	-	-	-	-	-
Park Impact Fees	-	88,161	200,000	-	288,161
Other (Pierce Co. Zoo Tax)	-	-	-	-	-
Total Funding Sources:	**-**	**88,161**	**200,000**	**-**	**288,161**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	-	88,161	200,000	-	288,161
Total Expenditures:	**-**	**88,161**	**200,000**	**-**	**288,161**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Fund 321 -Unrestricted Fund Balance	-	-	-	-	-
Grants Secured (Fed,State,Local)		-	-	-	-
Park Impact Fees	1,650,000	-	-	-	1,850,000
Other (Pierce Co. Zoo Tax)	500,000	-	-	-	500,000
Total Funding Sources:	**2,150,000**	**-**	**-**	**-**	**2,350,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	50,000	-	-	-	50,000
Right of Way	-	-	-	-	-
Construction	2,100,000	-	-	-	2,300,000
Total Expenditures:	**2,150,000**	**-**	**-**	**-**	**2,350,000**

Unsecured Non-Budgeted Funding

Unsecured Grants	2025	2026	2027	2028-2030	Total 2025-20230
Local Grant KC Conservation Futures	-	-	1,500,000	-	1,500,000
Total Funding Sources:	**-**	**-**	**1,500,000**	**-**	**1,500,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	-	-	1,500,000	-	1,500,000
Total Expenditures:	**-**	**-**	**1,500,000**	**-**	**1,500,000**

Grants / Other Sources:

Project Title: **Dykstra Footbridge**
Project No: **cp2214**
Project Type: **Non-Capacity**
Project Manager: **Faber**

Description:

Engineering study was completed and results were better then expected. Most fixes have already been completed and remaining items to be done by a contractor.

Progress Summary:

Minor fixes by mainteance staff completed in 2023; remaining items will be completed in 2024 & 2025.

Future Impact on Operating Budget:

None

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Municipal Parks Construction Fund	-	-	-	-	-
Grants Secured (Fed,State,Local)	-	-	-	-	-
REET	-	-	-	-	-
Other (ARPA)	10,582	-	-	-	-
Total Funding Sources:	**10,582**	**-**	**-**	**-**	**-**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	10,582	-	-	-	-
Right of Way	-	-	-	-	-
Construction	-	-	-	-	-
Total Expenditures:	**10,582**	**-**	**-**	**-**	**-**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Municipal Parks Construction Fund	-	-	-	-	-
Grants Secured (Fed,State,Local)	-	-	-	-	-
REET	-	-	-	-	-
Other (ARPA)	-	-	-	-	-
Total Funding Sources:	**-**	**-**	**-**	**-**	**-**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	-	-	-	-	-
Total Expenditures:	**-**	**-**	**-**	**-**	**-**

Unsecured Non-Budgeted Funding

Unsecured Grants	2025	2026	2027	2028-2030	Total 2025-20230
King County	40,000	-	-	-	40,000
Total Funding Sources:	**40,000**	**-**	**-**	**-**	**40,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	40,000	-	-	-	40,000
Total Expenditures:	**40,000**	**-**	**-**	**-**	**40,000**

Grants / Other Sources:

Project Title: **Fairway Drainage Improvement**
Project No: **gpbd19**
Project Type: **Non-capacity**
Project Manager: **Daryl Faber**

Description:

Apply top dressing sand to the approaches to numerous holes in order to firm up these landing areas so that the holes are playable year-round. Emphasis will also be on the practice area to increase our lesson program and prepare for the driving range. Sand will be applied with a three-yard top dressing machine.

Progress Summary:

Drainage improvements have greatly impacted the increase in play during the winter months as well as the quality of the turf year around. Continuing with the practice will ensure quality course conditions as well as an increase in rounds.

Future Impact on Operating Budget:

None

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Municipal Parks Construction Fund	-	-	-	-	-
Grants- Secured (Fed,State,Local)	-	-	-	-	-
Bond Proceeds	-	-	-	-	-
REET 2	-	30,000	30,000	30,000	90,000
Other	-	-	-	-	-
Total Funding Sources:	**-**	**30,000**	**30,000**	**30,000**	**90,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	-	30,000	30,000	30,000	90,000
Total Expenditures:	**-**	**30,000**	**30,000**	**30,000**	**90,000**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Municipal Parks Construction Fund	-	-	-	-	-
Grants- Secured (Fed,State,Local)	-	-	-	-	-
Bond Proceeds	-	-	-	-	-
REET 2	30,000	30,000	30,000	30,000	180,000
Other	-	-	-	-	-
Total Funding Sources:	**30,000**	**30,000**	**30,000**	**30,000**	**180,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	30,000	30,000	30,000	30,000	180,000
Total Expenditures:	**30,000**	**30,000**	**30,000**	**30,000**	**180,000**

Grants / Other Sources:

Project Title: **Mary Olson Farm Mobile Home Replacement**
Project No: **gpbd32**
Project Type: **Non-Capacity**
Project Manager: **Thaniel Gauk**

Description:

This project consists of removing and replacing the 25+ year old mobile home (caretaker's residence) with a new/slightly used mobile home to be relocated on the existing pad. The existing caretaker residence is past its anticipated lifespan and in need of extensive repairs, that are not financially prudent as the repair costs are in excess of 50% of the replacement cost.

Progress Summary:

The existing mobile home condition has been accessed. Numerous repairs are required that are not financially prudent.

Future Impact on Operating Budget:

None

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Fund 321 -Unrestricted Fund Balance	-	-	-	-	-
Grants - Unsecured (Fed,State,Local)	-	-	-	-	-
KC Parks Prop Levy	-	-	40,000	-	40,000
Total Funding Sources:	**-**	**-**	**40,000**	**-**	**40,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Construction	-	-	40,000	-	40,000
Total Expenditures:	**-**	**-**	**40,000**	**-**	**40,000**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Fund 321 -Unrestricted Fund Balance	-	-	-	-	-
Grants - Unsecured (Fed,State,Local)	-	-	-	-	-
KC Parks Prop Levy	-	-	-	-	40,000
Total Funding Sources:	**-**	**-**	**-**	**-**	**40,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Construction	-	-	-	-	40,000
Total Expenditures:	**-**	**-**	**-**	**-**	**40,000**

Unsecured Non-Budgeted Funding

Unsecured Grants	2025	2026	2027	2028-2030	Total 2025-20230
King County Open Doors	40,000	-	-	-	40,000
Total Funding Sources:	**40,000**	**-**	**-**	**-**	**40,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Construction	40,000	-	-	-	40,000
Total Expenditures:	**40,000**	**-**	**-**	**-**	**40,000**

Grants / Other Sources:

Project Title: **Public Art**
Project No: **gcbd05**
Project Type: **Non-Capacity**
Project Manager: **Julie Krueger**

Description:

The City designates $30,000 annually toward the purchase of public art, for placement at designated locations throughout the City.

Progress Summary:

Arts Commission will meet to assess future needs and seek approval from City Council on placement.

Future Impact on Operating Budget:

None

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Unrestricted Fund Balance		187,500	-	-	187,500
Grants - Secured (Fed,State,Local)		-	-	-	-
REET 2		30,000	30,000	30,000	90,000
Other		-	-	-	-
Total Funding Sources:		**217,500**	**30,000**	**30,000**	**277,500**
Capital Expenditures:					
Predesign		-	-	-	-
Design		-	-	-	-
Right of Way		-	-	-	-
Construction		217,500	30,000	30,000	277,500
Total Expenditures:		**217,500**	**30,000**	**30,000**	**277,500**

Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Unrestricted Fund Balance	-	-	-	-	-
Grants - Secured (Fed,State,Local)	-	-	-	-	-
REET 2	30,000	30,000	30,000	30,000	180,000
Other	-	-	-	-	-
Total Funding Sources:	**30,000**	**30,000**	**30,000**	**30,000**	**180,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Right of Way	-	-	-	-	-
Construction	30,000	30,000	30,000	30,000	180,000
Total Expenditures:	**30,000**	**30,000**	**30,000**	**30,000**	**180,000**

Grants / Other Sources:

Project Title: **Golf Course Driving Range**
Project No: **cp2325**
Project Type: **Capacity**
Project Manager: **Daryl Faber**

Description:

The Auburn Golf Course is a leading public play golf course in the region hosting over 50,000 rounds per year. It is lacking a teaching/warm up area that will both create new revenues and "grow the game". An approximate 14-18 stall driving range is proposed on the current casual warm up area on the NW portion of the property. It is anticipated that the range will produce approximately $200,000 in new net revenue per year.

Progress Summary:

Cost Construction estimates have been provided. Two potential design options are under consideration. Preferred option will be determined during Phase 1 feasibility in 2023. Construction anticipated in 2027, pending funding.

Future Impact on Operating Budget:

This project will increase operating revenues by approximate $250,000 per year upon full implementation of programs. Expenses will increase by approximately $50,000 per year.

Activity:

Funding Sources:	Prior to 2024*	2024 Budget	2025 Budget	2026 Budget	Budget 2024-2026
Unrestricted Cap Improve	-	-	-	-	-
Park Impact Fees	-	-	-	-	-
REET 1	-	-	-	-	-
Total Funding Sources:	**-**	**-**	**-**	**-**	**-**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	-	-	-	-	-
Construction	-	-	-	-	-
Total Expenditures:	**-**	**-**	**-**	**-**	**-**

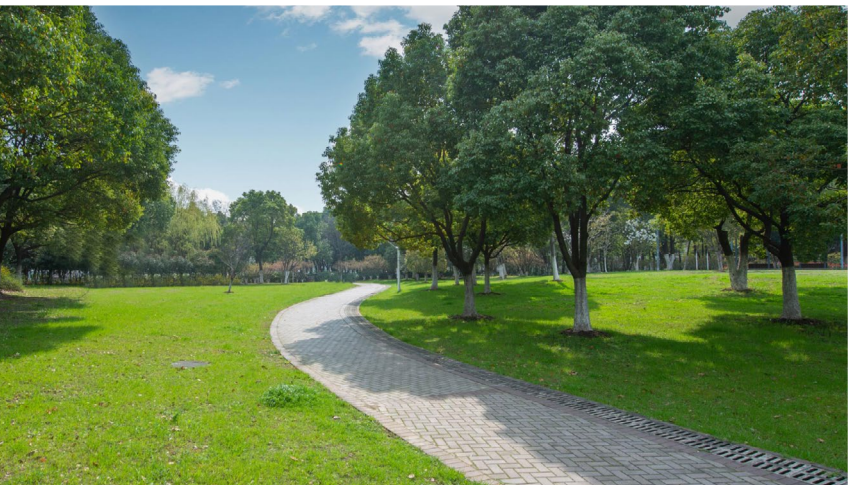
Forecasted Project Cost:

Funding Sources:	2027	2028	2029	2030	Total 2025-2030
Unrestricted Cap Improve	-	-	-	-	-
Park Impact Fees	300,000	-	-	-	300,000
REET 1	-	-	-	-	-
Total Funding Sources:	**300,000**	**-**	**-**	**-**	**300,000**
Capital Expenditures:					
Predesign	-	-	-	-	-
Design	100,000	-	-	-	100,000
Construction	200,000	-	-	-	200,000
Total Expenditures:	**300,000**	**-**	**-**	**-**	**300,000**

Park Impact Fee Analysis









Park Impact Fees (PIFs) are charges imposed on new residential developments to fund the acquisition, improvement, and expansion of public parks and recreational facilities. These fees are collected by local governments from developers or property owners when they construct new homes or residential units. The primary purpose of PIFs is to ensure that as communities grow, there are sufficient parks and recreational spaces to meet the needs of the increasing population.

The calculation of PIFs typically involves various factors, including the size and type of the new residential development, the projected increase in population, and the costs associated with providing additional park services to the new residents. Local governments often use specific formulas or criteria to determine the fee amount. The revenue generated from PIFs is earmarked for specific purposes related to parks and recreation, such as purchasing land for new parks, developing new recreational facilities, upgrading existing parks.

Implemented through local ordinances, PIFs are part of broader parks, recreation, and open space plans that outline the level of service standards for parks and recreational facilities. These standards ensure that the funds are used effectively to meet community needs. The underlying philosophy of PIFs is that growth should pay for growth, meaning that the financial burden of expanding public infrastructure to accommodate new residents should be borne by those who contribute to the growth, rather than existing residents. Overall, Park Impact Fees are a crucial tool for cities and municipalities to manage urban growth sustainably and ensure that all residents have access to quality parks and recreational facilities.

This document specifically addresses the impact fees related to parks and recreational facilities in Auburn. These fees are applied to all residential developments to ensure that the city's parks and recreational infrastructure can support the demands of a growing population.

Regulatory Framework for Impact Fees

Pursuant to state statute (RCW 82.02.050 - 82.02.100), Washington counties and cities, including Auburn, are authorized to collect impact fees to "ensure adequate facilities are available to serve new growth and development." These fees are designed to fund public facilities that support new developments, ensuring that the infrastructure required by a growing population is adequately financed.

Impact fees must be spent on projects related to the impacts of new development and cannot be used to correct pre-existing deficiencies or to pay for maintenance costs. They also cannot exceed a development's proportionate share of the total cost for system improvements. The fees must be based on a formula or other method that calculates this fair share, ensuring equity and effectiveness in funding public infrastructure.

Impact fees can be collected for four types of public facilities: public streets and roads, publicly owned parks, open spaces and recreational facilities, school facilities, and fire protection facilities (in areas not served by a fire district), as specified in RCW 82.02.050(2) and (4), and RCW 82.02.090(7). These fees must be used for "system improvements" that serve the broader community rather than "project improvements" specific to individual developments, as outlined in RCW 82.02.050(3)(a) and RCW 82.02.090(6) and (9).

Local governments must establish reasonable service areas and develop impact fee rate categories for various land uses, as mandated by RCW 82.02.060(6). The improvements funded by these fees must benefit new development and be reasonably related to it, ensuring that the new infrastructure meets the needs generated by growth.

In 2011, the Washington Legislature extended the period during which impact fees must be spent from six to ten years. According to RCW 82.02.070(3), if impact fees are not spent within ten years following their collection, they must be refunded. This extension provides local governments with more flexibility in planning and implementing necessary infrastructure projects to support new development.

By incorporating these statutes, Auburn ensures that its impact fees are used effectively to fund essential public facilities, maintaining a high quality of life for its residents while accommodating growth.

Auburn Municipal Code:

Chapter 19.08 of the Auburn Municipal Code establishes the legal framework for assessing parks impact fees, as authorized by RCW 82.02. These fees are imposed on new residential developments to ensure that adequate parks and recreational facilities are available to support growth. The assessment of these fees is based on a specific schedule and is typically due at the time of building permit issuance. The funds collected must be used exclusively for improvements to parks and recreational facilities that serve the new development, and cannot be used for maintenance or to address existing deficiencies. A dedicated account is established for managing these funds, with stringent reporting and management requirements to ensure transparency. The code also provides for refunds if the impact fees are not spent within ten years, as well as adjustments and credits under certain conditions, such as when developers provide on-site recreational facilities. Additionally, there are provisions for exemptions and an appeals process for disputing fee assessments.

Assessing the Need for Impact Fees

To establish appropriate impact fee rates in Auburn, several critical factors must be considered. These include determining which public facilities the city is responsible for, identifying the demand for additional parks and recreational spaces, securing the necessary revenue to support these facilities, and understanding the benefits these amenities bring to new developments.

The City of Auburn is responsible for its parks and recreational facilities, and impact fees can only be applied to public facilities, including those managed by other government entities, as outlined in RCW 82.02.090(7). Evaluating the need for new parks involves comparing current service levels with future demands based on population growth, identifying any gaps, and ensuring compliance with statutory requirements. Auburn's approach includes analyzing per capita investment in existing facilities to determine the need for additional parks and recreational spaces.

Revenue from impact fees is crucial for funding the development and maintenance of these facilities, ensuring that new developments contribute to the infrastructure they require. This process involves evaluating current funding levels and forecasting the additional revenue needed to support Auburn's growth. New parks and recreational facilities not only enhance the attractiveness of new developments but also improve residents' quality of life and provide significant economic and social benefits. Therefore, ensuring that new developments contribute to these amenities is essential for sustainable and balanced growth in the city.

Evaluating the Benefit of Impact Fees in Auburn

Impact fee laws in Auburn ensure that the fees imposed on new developments are justified and beneficial through several key principles and tests. These principles ensure that the fees are fair, equitable, and directly related to the needs generated by new development.

Rational Nexus Test

The rational nexus test requires a clear connection between the need for new public facilities and the development being charged the impact fees. In Auburn, this means that the fees must be used to fund improvements that directly address the impacts of new development. This test ensures that the impact fees are justified and applied appropriately.

Proportionality Test

The proportionality test ensures that the amount of the impact fee is proportional to the development's impact on public facilities. This means that the fees collected in Auburn should not exceed the cost of the facilities needed to accommodate the new development. The fees must be fair and reflect the actual cost of providing the necessary public services and infrastructure.

Specific Benefit

Auburn's impact fee laws require that the fees collected provide a specific benefit to the new development paying the fees. This ensures that the improvements funded by the impact fees directly enhance the facilities and services available to the new development, supporting growth in a way that benefits those contributing developments.

Compliance with Statutory Requirements

Impact fees in Auburn must comply with statutory requirements, which include detailed documentation and analysis to support the fees. This includes identifying existing deficiencies, reserve capacity, and new capacity needs. These statutory requirements ensure transparency and accountability in the use of impact fees.

In summary, Auburn's impact fee laws evaluate the benefit provided by these fees through the rational nexus and proportionality tests, ensuring that the fees are directly related to and proportional to the impact of new development. The laws also mandate that the fees provide a specific benefit to the development and comply with statutory requirements to maintain fairness, transparency, and accountability.

Methodology and Relationship to Capital Facilities Plan

In the City of Auburn, the calculation of impact fees for parks and recreational facilities is anchored in the per capita value of the city's capital improvements for these amenities. The purpose is to ensure that new housing and other private and public developments contribute their fair share of the investment necessary to support, often needing to improve, the city's level of service objectives for its parks and recreational facilities. This investment is typically supported by a combination of general revenue, capital improvement funds, grant funding, and impact fees.

To determine the amount of the impact fee, Auburn multiplies the average number of residents per dwelling unit by the per capita investment needed for new development. This per capita investment reflects the cost of future parks projects identified in the City's Capital Facilities Plan. By using this approach, Auburn ensures that the infrastructure required to support population growth is adequately financed and fairly shared.

This method is consistent with Auburn's municipal regulations and complies with RCW 82.02, which mandates that impact fees be equitable, proportional, and dedicated to system improvements that benefit new developments. This ensures transparency and fairness in funding the necessary expansions and enhancements to Auburn's parks and recreational facilities.

Current Impact Fee Summary

The City of Auburn, WA, has implemented impact fees to finance necessary infrastructure improvements due to new developments, ensuring that the cost of growth is shared equitably among developers. These fees cover transportation, schools, and parks, with a special focus on park impact fees. Park impact fees are authorized by RCW 82.02.090 (7) and are designed to support the acquisition, expansion, and development of parks, open spaces, and recreational facilities. In Auburn, "parks" include both developed recreational facilities and open spaces preserved for their natural and ecological value.

The impact fees are calculated based on the type and intensity of new development, ensuring a proportional distribution of costs. Different land uses, such as residential, commercial, and industrial developments, are assessed varying fees. Residential developments are categorized similarly to the transportation impact fee system for ease of understanding and administration. The City of Auburn ensures proper administration of these fees through regular updates, transparency, and accountability, with funds earmarked for specific park projects. The benefits of park impact fees include equitable cost distribution, enhanced quality of life, and sustainable growth.

Projected Growth and Density per Dwelling Unit Population Growth:

Between 2024 and 2044, Auburn, WA, is projected to experience significant population growth. The population is expected to increase from approximately 90,096 residents in 2024 to around 114,540 residents by 2044, the projected population growth rate for Auburn between 2024 and 2044 is approximately 27.13%, representing an addition of approximately 24,444 residents over the 20-year period, which will significantly impact housing demand and density. This growth underscores ongoing urban development, rising housing demand, and Auburn's attractiveness as a residential and economic hub in the region. To sustain the quality of life for both current and future residents, this projected growth necessitates careful planning and substantial investment in infrastructure, including parks and recreational facilities.

Per Unit Occupancy:

The most recent estimates from the Washington State Office of Financial Management indicate the following average number of occupants per dwelling unit for Auburn:

Single-Family Residential: 2.864 persons per unit
Multi-Family Residential: 1.907 persons per unit
Using these OFM estimates and the City's existing inventory of single-family and multi-family residential units, we have calculated a weighted average occupancy of 2.559 persons per unit. This average is used for a uniform impact fee calculation, ensuring equitable distribution of costs associated with accommodating the city's growth.

Using these estimates and the city's current inventory of single-family and multi-family residential units, the weighted average number of persons per unit is calculated to be approximately 2.545 persons. This figure is instrumental in calculating uniform impact fees and supporting future planning needs as Auburn continues to grow.

Level of Service Standards for Parks, Recreation, and Open Space

Auburn's previous Parks, Recreation, and Open Space Plan Update (2015) included a comprehensive demand and needs analysis including specific recreation facility types, that were used to develop proposed Level of Service (LOS) standards established within the same plan. After further review, and as detailed in this plan's Demand & Needs, it was determined these standards are no longer aligned with Auburn's current demographics, community needs, and future parks development plans. Consequently, this plan is adopting and revising the following recommended LOS standards:

Parks:

Neighborhood Parks: 1.25 acres per 1,000 population
Community Parks: 5 acres per 1,000 population

Trails: 0.25 miles per 1,000 population

The following analysis includes an update to the parks impact fees based on the updated standards. Importantly, as outlined in the Capital Improvement Program section, the City of Auburn has identified the need to exclude football fields and indoor pool facilities from the impact fee cost basis, as there are no immediate plans to develop additional amenities of this type. City staff determined that excluding these facilities more accurately reflects the current and future recreational needs of Auburn's residents, ensuring that the impact fees are aligned with planned improvements and community priorities.

Projected Costs for Parks and Facilities, and Total Cost Basis for the Parks Impact Fees

Based on this detailed analysis to update its parks impact fees, based on revised Level of Service (LOS) standards needed for this parks, recreation, and open space update, the 2002 standards were found to be outdated and not reflective of the city's current demographics, needs, or future development plans. As a result, the City adopted new standards, including 1.25 acres of neighborhood park per 1,000 residents, 5 acres of community park per 1,000 residents, and 0.25 miles of multi-use trail per 1,000 residents.

The total cost required to meet these standards through 2044, included developing 63.31 acres of neighborhood parks, 116 acres of community parks, and 6.68 miles of multi-use trails, had an estimated total cost of almost $56M.

After adjusting the total cost by accounting for external funding sources, including transfers from the General Fund and sales tax, as well as anticipated grant money. After these adjustments, the net cost basis for the parks impact fees was calculated to be approximately $6.134 million. This cost was then used to determine the per-household impact fee, ensuring that new developments contribute their fair share towards maintaining Auburn's parks and recreational facilities at the revised LOS standards.

Using the number of parks facilities needed to meet the revised standards for growth over the next six years and the unit cost estimates, the total cost of the growth was calculated. Based on the information provided and the calculations we discussed earlier, the calculated impact fee per household is approximately $4,612.

Table 6-: PIF Analysis					
City	Current Population 2024	Projected Population 2044	% Growth	Single-family fee	Multifamily fee
Renton	108,555	140,000	28.97	$2,915	$1,978
Tukwila	21,798	30,000	37.63	$3,006	$2,618
Woodinville	14,330	20,000	39.57	$3,175	$3,175
Auburn	83,870	120,000	43.08	$3,500	$3,500
University Place	35,500	50,000	40.85	$3,644	$2,660
Puyallup	42,861	65,000	51.65	$3,675	$3,675
Shoreline	61,353	80,000	30.39	$4,692	$3,077
Redmond	80,280	110,000	37.02	$5,124	$3,557
Kirkland	91,194	120,000	31.59	$5,629	$4,278
Lynnwood	40,592	60,000	47.81	$5,899	$4,238
Sammamish	65,116	90,000	38.21	$6,739	$4,362
Issaquah	40,380	70,000	73.35	$9,107	$5,590

This fee was determined by dividing the net cost basis of $6.134 million (after accounting for grants and other funding sources) by the projected population growth, and then calculating the fee on a per-household basis using the average occupancy of 2.545 persons per household.

Comparison Analysis

With an updated park impact fee of $4,612 per household, Auburn is positioned competitively compared to similar-sized communities in the region. This fee closely aligns with those charged by cities like Kent and Federal Way, reflecting a similar commitment to funding park infrastructure. Auburn's fee is slightly higher than those in Renton, Puyallup, and Lakewood, indicating a modestly greater investment in parks to accommodate future growth. However, it remains significantly lower than the fees in areas like Redmond, where higher development costs drive more substantial impact fees. Overall, Auburn's impact fee ensures a balanced approach to maintaining and enhancing park services while staying competitive within the region.



Approvals







Adoption Process

In order for this Plan to be formally adopted, the plan must be reviewed by several bodies, including the public, ultimately culminating with a resolution, ordinance, or other adoption instrument showing formal approval of the plan and planning process by the governing entity. Only after RCO approves the plan, may the organization may apply for grants for up to six calendar years from the date when the governing body adopted the plan.

With the depth of public and staff involvement made over the execution of this planning process, the following review and approvals have been included:

1. City Council Ordinance
2. RCO Self-Certification Checklist



ORDINANCE NO. 6956

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, ADOPTING THE 2025-2030 CAPITAL FACILITIES PLAN FOR THE CITY OF AUBURN, WASHINGTON

WHEREAS, pursuant to RCW 36.70A.040, the City of Auburn is required to produce and periodically review a comprehensive plan under the State Growth Management Act (RCW 36.70A); and

WHEREAS RCW 36.70A.070 requires that cities establish within their comprehensive plan, a capital facilities element, including a six-year minimum financing plan "that will finance...capital facilities within projected funding capacities and clearly identifies sources of public money for such purposes;" and

WHEREAS RCW 36.70A.120 states "Each county and city that is required or chooses to plan under RCW 36.70A.040 shall perform its activities and make capital budget decisions in conformity with its comprehensive plan;" and

WHEREAS RCW 36.70A.130 allows for "The amendment of the capital facilities element of a comprehensive plan that occurs concurrently with the adoption or amendment of a county or city budget;" and

WHEREAS, as set forth in the Capital Facilities Element of the Comprehensive Plan, users shall reference "the most recently adopted version" of the City of Auburn Capital Facilities Plan; and

WHEREAS the City prepares the six-year Capital Facilities Plan to coincide with the adoption of the biennial budget, having incorporated the first two years of the Capital Facilities Plan into the biennial budget, as presented to Council and the public during workshops on September 9, September 12 and September 13, 2024,

and in study session on October 28th, 2024, and in public hearings November 4 and November 18, 2024; and

WHEREAS the City Council finds that the 2025-2030 Capital Facilities Plan meets the criteria set forth in the Auburn City Code and all other applicable legal criteria, including those of the Growth Management Act.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, DO ORDAIN AS FOLLOWS:

Section 1. Adoption of the Capital Facilities Plan. Pursuant to RCW 36.70A.070, the Capital Facilities Element of the City of Auburn Comprehensive Plan is hereby amended by the adoption of the revised and updated six-year 2025-2030 Capital Facilities Plan for the City of Auburn, attached hereto as Exhibit A and incorporated herein by this reference as if set forth in full.

Section 2. Implementation. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directions of this legislation.

Section 3. Severability. The provisions of this ordinance are declared to be separate and severable. The invalidity of any clause, sentence, paragraph, subdivision, section or portion of this ordinance, or the invalidity of the application thereof to any person or circumstance shall not affect the validity of the remainder of this ordinance, or the validity of its application to other persons or circumstances.

Section 4. **Effective Date.** This Ordinance shall take effect and be in force five (5) days from and after its passage, approval and publication as provided by law.

INTRODUCED: NOV 18 2024

PASSED: NOV 18 2024

APPROVED: NOV 18 2024

NANCY BACKUS, MAYOR

ATTEST:

Shawn Campbell, MMC, City Clerk

APPROVED AS TO FORM:

Jason Whalen, City Attorney

Published: _____

Exhibit A

CAPITAL PROJECTS SUMMARY

2025

FUNDING SOURCES - 2025	Fund Balance	Federal Sources	State Sources	Local Sources	REET	Other Sources	Unsecured Sources	Total Sources By Fund
Transportation Projects	$ 4,190,000	$ 3,615,689	$ -	$ -	$ 650,000	$ 7,617,100	$ 373,000	$ 16,445,789
Water Projects	5,012,810	-	-	-	-	-	-	5,012,810
Sewer Projects	5,543,300	-	-	-	-	-	-	5,543,300
Storm Drainage Projects	2,882,012	-	-	-	-	-	-	2,882,012
Parks and Recreation Projects	50,000	-	250,000	950,000	30,000	565,000	705,000	2,550,000
General Muncipal Projects and Community Improvements	-	80,000	-	-	(249,900)	10,650,000	-	10,480,100
Other Proprietary Fund Projects	405,304	-	-	-	-	-	1,021,136	1,426,440
Total Funding by Source	$ 18,083,426	$ 3,695,689	$ 250,000	$ 950,000	$ 430,100	$ 18,832,100	$ 2,099,136	$ 44,340,451

EXPENDITURES - 2025	Design	Right of Way	Acquisition	Environmental & Monitoring	Demolition & Construction	Long Term Debt	Unsecured Expenditures	Total Expenditures
Transportation Projects	$ 1,717,000	$ 1,281,000	$ -	$ 75,000	$ 12,795,689	$ 204,100	$ 373,000	$ 16,445,789
Water Projects	260,000	-	934,810	-	3,818,000	-	-	5,012,810
Sewer Projects	671,000	-	-	-	4,872,300	-	-	5,543,300
Storm Drainage Projects	1,422,712	-	-	-	1,459,300	-	-	2,882,012
Parks and Recreation Projects	250,000	-	700,000	-	895,000	-	705,000	2,550,000
General Municipal Projects and Community Improvements	3,280,000	-	2,200,000	-	4,295,000	705,100	-	10,480,100
Other Proprietary Fund Projects	138,460	-	-	-	175,000	91,844	1,021,136	1,426,440
Total Capital Expenditures	$ 7,739,172	$ 1,281,000	$ 3,834,810	$ 75,000	$ 28,310,289	$ 1,001,044	$ 2,099,136	$ 44,340,451

2026

FUNDING SOURCES - 2026	Fund Balance	Federal Sources	State Sources	Local Sources	REET	Other Sources	Unsecured Sources	Total Sources By Fund
Transportation Projects	$ 3,370,000	$ 865,000	$ -	$ -	$ -	$ 4,605,400	$ 1,251,000	$ 10,091,400
Water Projects	4,927,810	-	-	-	-	-	-	4,927,810
Sewer Projects	2,826,000	-	-	-	-	-	-	2,826,000
Storm Drainage Projects	2,947,461	-	-	-	-	-	-	2,947,461
Parks and Recreation Projects	50,000	-	-	-	30,000	600,000	4,625,000	5,305,000
General Muncipal Projects and Community Improvements	-	420,000	-	-	1,539,700	11,990,000	-	13,949,700
Other Proprietary Fund Projects	629,844	-	-	-	-	-	1,200,000	1,829,844
Total Funding by Source	$ 14,751,115	$ 1,285,000	$ -	$ -	$ 1,569,700	$ 17,195,400	$ 7,076,000	$ 41,877,215

EXPENDITURES - 2026	Design	Right of Way	Acquisition	Environmental & Monitoring	Demolition & Construction	Long Term Debt	Unsecured Expenditures	Total Expenditures
Transportation Projects	$ 1,905,000	$ 355,000	$ -	$ 20,000	$ 6,236,000	$ 324,400	$ 1,251,000	$ 10,091,400
Water Projects	225,000	-	934,810	-	3,768,000	-	-	4,927,810
Sewer Projects	265,400	-	-	-	2,560,600	-	-	2,826,000
Storm Drainage Projects	242,337	-	-	-	2,705,124	-	-	2,947,461
Parks and Recreation Projects	200,000	-	-	-	480,000	-	4,625,000	5,305,000
General Municipal Projects and Community Improvements	1,940,000	-	-	-	11,310,000	699,700	-	13,949,700
Other Proprietary Fund Projects	185,000	-	-	-	353,000	91,844	1,200,000	1,829,844
Total Capital Expenditures	$ 4,962,737	$ 355,000	$ 934,810	$ 20,000	$ 27,412,724	$ 1,115,944	$ 7,076,000	$ 41,877,215

Exhibit A

2027

EXPENDITURES - 2027	Design	Right of Way	Acquisition	Environmental & Monitoring	Demolition & Construction	Long Term Debt	Unsecured Expenditures	Total Expenditures
Transportation Projects	$ 950,000	$ -	$ -	$ 20,000	$ 17,338,000	$ 323,567	$ 11,047,406	$ 29,678,973
Water Projects	740,000	-	934,810	-	2,570,000	-	6,909,000	11,153,810
Sewer Projects	987,100	4,000	-	-	1,423,900	-	-	2,415,000
Storm Drainage Projects	486,429	-	-	-	914,447	-	-	1,400,876
Parks and Recreation Projects	750,000	-	-	-	5,780,000	-	2,500,000	9,030,000
General Municipal Projects and Community Improvements	525,000	-	-	-	10,540,000	698,200	-	11,763,200
Other Proprietary Fund Projects	35,000	-	-	-	211,000	91,844	-	337,844
Total Capital Expenditures	$ 4,473,529	$ 4,000	$ 934,810	$ 20,000	$ 38,777,347	$ 1,113,611	$ 20,456,406	$ 65,779,703

2028

EXPENDITURES - 2028	Design	Right of Way	Acquisition	Environmental & Monitoring	Demolition & Construction	Long Term Debt	Unsecured Expenditures	Total Expenditures
Transportation Projects	$ 1,050,000	$ -	$ -	$ 20,000	$ 5,136,000	$ 322,873	$ 1,687,000	$ 8,215,873
Water Projects	915,000	-	934,810	-	3,625,000	-	11,641,000	17,115,810
Sewer Projects	2,103,200	10,000	-	-	2,737,600	-	-	4,850,800
Storm Drainage Projects	256,486	-	-	-	1,610,732	-	-	1,867,218
Parks and Recreation Projects	150,000	-	-	-	780,000	-	125,000	1,055,000
General Municipal Projects and Community Improvements	805,000	-	-	-	4,795,000	702,800	-	6,302,800
Other Proprietary Fund Projects	80,000	-	-	-	170,000	91,844	1,000,000	1,341,844
Total Capital Expenditures	$ 5,359,686	$ 10,000	$ 934,810	$ 20,000	$ 18,854,332	$ 1,117,517	$ 14,453,000	$ 40,749,345

2029

EXPENDITURES - 2029	Design	Right of Way	Acquisition	Environmental & Monitoring	Demolition & Construction	Long Term Debt	Unsecured Expenditures	Total Expenditures
Transportation Projects	$ 1,235,000	$ -	$ -	$ -	$ 5,371,000	$ 241,795	$ 1,687,000	$ 8,534,795
Water Projects	400,000	-	934,810	-	5,107,000	-	3,950,000	10,391,810
Sewer Projects	585,000	-	-	-	1,860,900	-	-	2,445,900
Storm Drainage Projects	484,143	-	-	-	970,745	-	-	1,454,888
Parks and Recreation Projects	750,000	-	-	-	1,680,000	-	5,125,000	7,555,000
General Municipal Projects and Community Improvements	225,000	-	-	-	3,925,000	695,700	-	4,845,700
Other Proprietary Fund Projects	100,000	-	-	-	135,000	91,844	465,000	791,844
Total Capital Expenditures	$ 3,779,143	$ -	$ 934,810	$ -	$ 19,049,645	$ 1,029,339	$ 11,227,000	$ 36,019,937

2030

EXPENDITURES - 2030	Design	Right of Way	Acquisition	Environmental & Monitoring	Demolition & Construction	Long Term Debt	Unsecured Expenditures	Total Expenditures
Transportation Projects	$ 2,100,000	$ -	$ -	$ -	$ 5,136,000	$ 241,503	$ 1,687,000	$ 9,164,503
Water Projects	1,775,000	-	-	-	5,265,250	-	-	7,040,250
Sewer Projects	1,109,900	-	-	-	6,018,200	-	-	7,128,100
Storm Drainage Projects	271,498	-	-	-	1,662,867	-	-	1,934,365
Parks and Recreation Projects	150,000	-	-	-	630,000	-	1,125,000	1,905,000
General Municipal Projects and Community Improvements	125,000	-	-	-	815,000	694,200	-	1,634,200
Other Proprietary Fund Projects	522,500	-	-	-	1,247,500	91,844	3,830,000	5,691,844
Total Capital Expenditures	$ 6,053,898	$ -	$ -	$ -	$ 20,774,817	$ 1,027,547	$ 6,642,000	$ 34,498,262

Planning Eligibility Self-Certification Form

Use this form to certify that the need for any grant projects have been developed through an appropriate planning process. Provide the completed form with the subject plans and adoption documentation to RCO via e-mail or other means of electronic access (i.e. Web link, Box.com, etc.).

Organization Name: CITY OF AUBURN

Contact Name: THANIEL GOUK

Adoption Date of Submitted Documents: DECEMBER 2024

Seeking Eligibility for: ☐ Recreation Grants ☐ Conservation Grants ☒ Both

Initial Each to Certify Completion	Plan Element Certification	Document and Page Number Location of Information
TG	**1. Goals, objectives:** The attached plan supports our project with broad statements of intent (goals) *and* measures that describe when these intents will be attained (objectives). Goals may include a higher level of service.	73
TG	**2. Inventory:** The plan includes a description of the service area's facilities, lands, programs, and their condition. *(This may be done in a quantitative format or in a qualitative/narrative format.)*	15
TG	**3. Public involvement***:* The planning process gave the public ample opportunity to be involved in plan development and adoption.	44
TG	**4a. Demand and need analysis:** In the plans: • An analysis defines priorities, as appropriate, for acquisition, development, preservation, enhancement, management, etc., and explains why these actions are needed. • The process used in developing the analysis assessed community desires for parks, recreation, open space, and/or habitat, as appropriate, in a manner appropriate for the service area (personal observation, informal talks, formal survey(s), workshops, etc.).	56
TG	**4b. Level of Service assessment (optional)**: An assessment of the criterion appropriate to your community. Possibly establish a higher level of service as a plan goal (above).	65
TG	**5. Capital Improvement Program:** The plan includes a capital improvement/facility program that lists land acquisition, development, and renovation projects by year of anticipated implementation; include funding source. The program includes any capital project submitted to the Recreation and Conservation Funding Board for funding.	79
TG	**6. Adoption:** The plan and process has received formal governing body approval *(that is, city/county department head, district ranger, regional manager/supervisor, etc., as appropriate).* Attach signed resolution, letter, or other adoption instrument.	110

Certification Signature

I certify that this information is true and complete to the best of my knowledge.

Print/Type Name: **Thaniel Gouk**

Signature (Hand Written or Digital): 
tgouk 11/05/2024

Title: **Park Planning & Development Manager**

Date: **11/5/2024**

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SCJ ALLIANCE
CONSULTING SERVICES

CITY OF AUBURN
PARKS, ARTS & RECREATION



Appendices/Attachments

A - Terms & Definitions

Washington State Recreation & Conservation Office (RCO) has found that many terms commonly used in recreation planning do not have consistent definitions from one plan to another. RCO suggests, but does not require, the following definitions compiled from various sources, including Washington Administrative Code, Department of Natural Resources, and Washington State Parks & Recreation Commission used in this master parks plan include:

Table A1: Terms & Definitions

Term	Definition#
Access	The public's ability to physically use land or water.
Active Recreation	Predominately human muscle powered recreational activities.
Camping	An overnight stay in a tent or other non-permanent structure.
Capital Improvement Program (CIP)	A list or description of proposal capital projects.
Capital Project	A project that results in redevelopment of an existing property, acquisition of new property, or a new built facility with a budget that excess $10,000.00
Consumptive	Recreation that physically consumes resources; examples include berry picking, shellfish harvest, hunting, fishing.
Development	A development project is construction or work resulting in new elements, including but not limited to structures, facilities, and/or materials to enhance outdoor recreation resources.
Dispersed	Recreation that is scattered or spread across the landscape and not concentrated at a specific site. Examples include trail uses, camping, walking, cycling, and jogging.
Impact (Low, Medium, High)	The effect that recreational uses have on resources including but not limited to soils, water, species, habitat, sites, and facilities.



Table A1: Terms & Definitions	
Term	**Definition#**
Improve	Expanding an existing site or facility to serve more uses or more types of use.
Level of Service	Measure of the current status of a park and recreation system as a whole based on either quantitative or qualitative characteristics.
Maintain	To maintain existing areas and facilities through repairs and upkeep for the benefit of outdoor recreationists.
Multiple-use	Use by more than one type of recreation on the same facility.
Non-consumptive	Resource recreation that depends on, but does not consume, resources; for example, photographing wildlife.
Park	Land or an area set aside for a special purpose, but particularly for leisure or recreation. • **Totlot/Mini-Park/Pocket Park** – a small local park or civic space accessible to the general public without the capacity for large outdoor recreation activities like field sports and often associated with playground equipment for toddlers and young children. • **Neighborhood Park** – a local-scale park with a service area of a reasonable walking distance, typically ½ mile, but up to 1 mile. • **Community Park** – a community-scale park facility has a service area typically of 1-5 miles that includes the city limits of a town or city. • **Regional Park** – a larger park facility intended to serve populations and uses from multiple jurisdictions. • **State Park** – a park facility owned and managed by the State of Washington. • **Marine Park** – a state or regional park facility intended to serve populations spanning multiple jurisdictions with primary access via watercraft . • **Day-use Park** – any kind of park facility that does not allow overnight uses such as camping. • **Seasonal Parks** – any kind of parks intended for use in specific seasons.
Passive	Activities usually conducted in place and requiring minimal physical exertion such as picnicking, watching a sports event, sun bathing, or relaxing.
Qualitative	An adjective relating to the quality of something interpreted by its intrinsic non-numerical characteristics other than some quantity or measured value.
Quantitative	Relating to, measuring, or measured by the quantity of something obtained using a numerical measurement process.
Recreation	Activities of a voluntary and leisure time Nature that aid in promoting entertainment, pleasure, play, relaxation, or instruction.
Renovate (Renovation)	The activities intended to improve an existing site or structure in order to increase its useful service life beyond original expectations or functions. This does not include maintenance activities to maintain the facility for its originally expected useful life.
Restoration	Bringing a site back to its historic function as part of a natural ecosystem or improving the ecological functionality of a site.
Shared Use	Use by more than one type of recreation on the same facility.
Trail	According to the Washington State Trails Plan (RCO, 2013): *"...a path, route, way, right-of-way, or corridor posted, signed, or designated as open for travel or passage by the general public but not normally designated as open for the transportation of commercial goods or services by motorized vehicles."* A trail is a recreational facility that also can serve as a non-motorized route for transportation.

B - Standards & Guidelines

There are six basic park and greenspace facility types typically utilized by municipalities:

- Pocket Parks / Mini-Parks / Tot Lots
- Neighborhood Parks
- Community Parks
- Natural Areas & Greenspaces
- Trails, Bikeways & Paths
- Special Facilities

POCKET PARKS / MINI-PARKS / TOT LOTS

Pocket parks are very small and serve a limited radius (up to ¼-mile) from the site; they provide passive and play-oriented recreational opportunities. Examples of pocket parks can include a tot lot with play equipment such as a climber, slide or swings; a viewpoint; or waterfront access areas such as at street ends.

A small urban plaza or civic recognition project may also be considered a pocket park. Parking is not often provided at pocket parks, although lighting may be used for security and safety.

LOCAL / NEIGHBORHOOD PARK

Neighborhood parks are generally considered the basic unit of traditional park systems. They are small park areas designed for unstructured play and limited active and passive recreation. They are generally 3-5 acres in size, depending on a variety of factors including neighborhood need, physical location and opportunity, and should meet a minimum size of 2 acre in size when possible.

Neighborhood parks are intended to serve residential areas within short walking distance (up to ½-mile radius) of the park and should be geographically distributed throughout the community. Access is mostly pedestrian, and park sites should be located so that persons living within the service area will not have to cross a major arterial street or other significant natural or man-made barrier, such as ravines and railroad tracks, to get to the site.

Additionally, these parks should be located along road frontages to improve visual access and community awareness of the sites.

Generally, developed neighborhood parks typically include amenities such as pedestrian paths, picnic tables, benches, play equipment, a multi-use open field for youth soccer and baseball, sport courts or multi-purpose paved areas, landscaping and irrigation. Restrooms are not provided due to high construction and maintenance costs. Parking is also not usually provided; however, on-street, ADA accessible parking stall(s) may be included.

Neighborhood park development may proceed in phases.

COMMUNITY PARKS

Community parks are larger sites developed for organized play, contain a wider array of facilities and, as a result, appeal to a more diverse group of users. Community parks are generally 20 to 50 acres in size, meet a minimum size of 20 acres when possible and serve residents within a 1-mile radius of the site.

In areas without neighborhood parks, community parks can also serve as local neighborhood parks. In general, community park facilities are designed for organized or intensive recreational activities and sports, although passive components such as pathways, picnic areas and natural areas are highly encouraged and complementary to active use facilities.

Since community parks serve a larger area and offer more facilities than neighborhood parks, parking and restroom facilities are provided. Community parks may also incorporate community facilities, such as community centers, senior centers or aquatic facilities.



NATURAL AREAS & GREENSPACES

NATURAL AREAS

Natural areas are those which are preserved to maintain the natural character of the site and are managed to protect valuable ecological systems, such as riparian corridors and wetlands, and to preserve native habitat and biodiversity. In managing for their ecological value, these natural areas may contain a diversity of native vegetation that provides fish and wildlife habitat and embodies the beauty and character of the local landscape. Low-impact activities, such as walking, nature observation, and fishing are allowed, where appropriate, and horseback riding is also permitted on certain sites.

GREENSPACES

Greenspaces are passive-use open spaces and turf areas without developed amenities or structured functions.

TRAILS & BIKEWAYS

Trails are non-motorized transportation networks separated from roads. Trails can be developed to accommodate multiple uses or shared uses, such as pedestrians, in line skaters, bicyclists, and equestrians. Trail alignments aim to emphasize a strong relationship with the natural environment and may not provide the most direct route from a practical transportation viewpoint.

Bikeways are different than trails in that their principal focus is on safe and efficient non-motorized transportation. Bikeways serve distinctly different user groups than trail users. Typical bikeway user groups would include bicycle commuters, fitness enthusiasts and competitive athletes. Their emphasis is on speed, which can create conflicts with recreation-type trails and their respective user groups.

For shared-use trails, it is important that the alignment and cross sections be designed with flexibility to accommodate higher speeds, passing zones and greater widths. Surfaces will vary with intended use and environmental considerations. Additionally, parking, consistent signage (wayfinding, access, use hierarchy) and interpretive markers or panels should be provided as appropriate.

SPECIAL FACILITIES

Special facilities include single-purpose recreational areas such as skateparks and display gardens, along with community centers, aquatic centers and public plazas in or near the downtown core. Additionally, publicly-accessible sport fields and play areas of public schools are classified as special facilities; while they often serve as proxies to public parks, school sites have restricted daytime access and offer limited recreational use during non-school hours. No standards are proposed concerning special facilities, since facility size is a function of the specific use.

C - Park Needs & Assessment Survey Comments

ADDITIONAL COMMENTS

resources, costs and good staff who maintain the massive areas. Thank you for planning to address continuing future needs."

"Auburn has one of the best senior activity centers in King County. Keep up the good work."

"Bring parks to the west hill!!!"

"Did you miss my request for a park on West Hill with a playground???? Please please please. I've been asking for 4 years. My kids will be out of the house by the time it happens. You've been goldilocksing a park up here since you acquired West Hill 14 years ago. The lake park isn't for kids, theres no where for them to play. I know it's expensive but it's never going to be perfect or the right time, just get us a playground please!!!!!"

> "I absolutely love the community center and the activities they provide."

"Disability friendly off leash park with safe and secure parking area! Needs to be large enough to throw a ball, not a tiny fenced in area."

"Do better to rid the drug activity, homelessness n make trails more wheelchair friendly "

"Do whatever needs to be done so people will feel safe spending time at the parks. I know young mothers who would never come without their husbands to certain parks. Also, prioritize the needs and desires of law abiding citizens over those of the homeless."

"Doing a great job. Would like to see more open spaces. Thank you."

> "I appreciate all the community events and the close, friendly collaboration with the Muckleshoot Tribe."

"Emphasis on sports for elementary age kids. I called recently and was told basketball is not offered. "

"For an indigenous people to have an identity, we must have land on which we can reclaim our ancestral ways. Not "borrowed" day use land by portioned out indigenous owned and indigenous tended land. Auburn has PLENTY of open natural land that can be up for "reclaiming" by indigenous groups of people. Some king of process towards ownership. Open natural space for planting, harvesting, inipi temazcal (sweat ceremony) other relevant ceremonies around our calendar, outdoor kitchens ie stone, mud, brick, yurts, overnight amenities. A communal space for healing and reclaiming the ways of our ancestors."

"I absolutely love the community center and the activities they provide"

"I am a 72 year old active person and I love to walk, bike and hike, go to the gym for exercise. So, don't forget that older folks are sometimes a lot more active than younger folks. I have many neighbors that do not encourage their children to go or play outside. We need to get them out there. I think being inside all the time, and rushing from one activity to the next is causing societal stress. The out doors, green space, and activity is perfect for stress reduction and a healthy life."

"I am happy with the park facilities but do not feel safe at most community areas anymore. I have been robbed, my car window broken out well playing at a park with my family and most recently

ADDITIONAL COMMENTS

confronted by a homeless drug addicted man yelling at me to get him cigarettes. I no longer visit a majority of parks in the city as it's just not safe. "

"I am in my second career as a high school teacher and coach. I became a high school teacher and coach because I saw the need. I care about kids in my community and I want to help them be as successful as possible. They are the literal future. As a teacher I'm able to see behind the scenes at what our most at risk kids need. Please steward our money wisely. I see a crisis on the horizon and right now there is something we can do about it. Thank you! "

"I appreciate all the community events and the close, friendly collaboration with the Muckleshoot Tribe."

"I appreciate the recreational opportunities Auburn provides. One thing I don't like is maintaining so much grass and would like to see more of that converted to planting beds. Reducing fertilizing and mowing would be good for our city."

"I believe Auburn Parks to be the best part of Auburn. Thank you for all that you do."

"I just wanted to share with you my appreciation for being asked for input on this. Having safe, welcoming spaces is a hallmark of a healthy community."

> "As a single mother on a tight budget it helps me out so much to have so many free and low-cost activities available for me and my 8 year old."

"I live in West Hill Auburn, and I feel like we are almost a forgotten area. We are sometimes closer to Federal Way for things, but our address is Auburn, and our school district is Federal Way, so it makes being a part of a community difficult when we are sorta spread out."

"I love all the free activities you have for children!"

"I love Auburn parks. Lets keep them safe and beautiful!"

> "I live in West Hill Auburn, and I feel like we are almost a forgotten area."

"I love our parks and hope they are around for my grandkids to enjoy many years from now"

"I love the parks we have, but they are starting to feel unsafe and dirty. "

"I really appreciate that the parks department put a walkway in our neighborhood park. The park gets a lot more use since we don't have to get shoes wet on the grassy. Also the increased foot traffic makes the park safer. It would be fantastic if the park department would bring summer programs for kids to our local park. Arts and crafts or a nature education would be fabulous for our neighborhood kids."

"I really love Auburn and their Parks and Rec department, as a single mother on a tight budget it helps me out so much to have so many free and low-cost activities available for me and my 8 year old. Keep up the good work!"

"I think the biggest concern for all of Auburn residents is the safety issues because of the crime

ADDITIONAL COMMENTS

rate associated with the homeless drug problem plaguing our once safe city."

"I work in Auburn so I like to use your parks and facilities before and after work."

"I would love more lighting on darker streets, especially this time of year when it's dark and cold. We've lived here for 5 years after over 15 years in Seattle, I was surprised at the slow response to the traffic lights for pedestrians, especially on Auburn Way, I hit the button and wait FOREVER, and often no traffic or people driving like 50MPH because the lights aren't requiring them to stop. I don't feel safe standing on the corners with my toddlers/stroller etc. When it's cold and rainy, the pedestrian WALK light response should be faster. Traffic should stop and pedestrians should be able to cross and not stand and wait. Your traffic control people should talk to the Seattle planners because they are so pedestrian focused. I think I would opt to walk more if it wasn't clear the automobiles have priority."

"I'd like to see a park in the downtown core, close to coffee shop. There was benches at train station but have been removed. No homeless but nobody else. I use to see lots of folks visiting."

"In the last couple of years, there is a new trend to run motorized vehicles on our walking trails, mostly motorbikes. Either people don't read or ignore the no motorized vehicle signs. Its multiple times a week I'm seeing this, i get the police is busy but its getting pretty bad"

"It would be nice if the City of Auburn worked with the YMCA to provide more services and facilities for senior citizens to keep physically active at a cost that is affordable. Thanks for listening."

"I've lived here in Auburn all my life and have always enjoyed our beautiful parks. Thank you to the Auburn parks employees"

> "Keep parks safer. Add better lighting. Deter homeless and drug users. Update equipment. Replace/ repair missing/broken equipment."

"Keep growing the parks and public spaces. We love the free summer events or low cost including music, movies, art."

"Keep parks safer. Add better lighting. Deter homeless and drug users. Update equipment. Replace/repair missing/broken equipment. Les Gove was amazing when it opened- its horrible now."

"Keep prioritizing the needs of the citizens. :) And thanks for asking."

"Keep up the good work. Thanks for all you do."

"Lea Hill seems to be the area most ignored. The high school is the only place with nice fields and they are constantly locked."

"Les Gove and Game Farm get way too crowded during events and parking is impossible. Offering shuttles to events would be great."

"Lights in a dog park!!"

"Loved your Farmer's Market!"

"Make our parks safe again, please. We have some great recreation areas but they're just not safe anymore."

"Maybe a way to link the parks and such facilities to the walking trail along the rail road tracks/!!"

"More biking classes and ninja classes for kids would be so wonderful. It's really needed. Look at marymor park in Redmond. They are a perfect

ADDITIONAL COMMENTS

example. A bike track for riders would be a full family and healthy sport. "

"More safety efforts, more community outreach, more public and community focused events"

> "Overall, we have a great park system in Auburn. Keep up the good efforts to sustain and improve the wonderful parks we have."

"More support for agricultural businesses. More care needed for some of historic mature trees. Both trees and agriculture are part of the city's culture, so the cultural staff need to be kept in the loop and have input on these issues."

"My grandchildren and I love and appreciate the parks in Lakeland Hills! Thank you!"

"Our kids need more contact with mentors and good role models. The Scouts are having a hard time finding a permanent place to meet."

"Overall, we have a great park system in Auburn. Keep up the good efforts to sustain and improve the wonderful parks we have."

"perhaps list pickleball as an activity"

"Please build a playground a fulner asap"

"Please continue to work on the homeless problem. I know it is a very complex issue. I would like to see a more permanent solution. The camps have been cleared out by the Green River three times now. Within days they all move back. Stolen cars are routinely dumped and stripped there and the garbage just piles up again and again. I am also concerned about the river being polluted by all this as well as human waste. Shootings are a regular occurrence. I have had to call 911 numerous times while golfing on our City Golf Course because of gun shots during my golf game. One person was shot and killed on the road there. This is just so unsafe!!!"

"Please work to build the park maintenance crew as they are very understaffed from what I have learned this year. Also, it's VERY difficult for me to report concerns as I see them. I used to tell Mike Miller direct via text / cell but now I have no one to call and I have left numerous messages for the new head of maintenance and parks, with zero returned calls. I am disappointed."

"Safety, graffiti, equipment repair needs to be done in a more expeditious fashion. Parks and rec and the city police and City Hall need to work more closely together to make our community safer and cleaner"

"Shout out for all the work Auburn already does to provide great parks and recreation. Thanks for making these spaces and activities available to all."

"Thank you for asking for public opinion! I will feel safer using Auburn parks when the homeless/drug addict situation is under control."

"Thank you for creating this survey. I think that the main question Auburn should be concerned with is whether we can handle all the incoming people successfully as a city. It seems that the homeless population is growing exponentially, as is the low income population. We need to make sure that there are adequate jobs and services available

> "Parks and rec and the city police and City Hall need to work more closely together to make our community safer and cleaner."

ADDITIONAL COMMENTS

before we add any more folks who need them, if we want to have a safe and successful city."

"Thank you for having recreational facilities available as well as a way for the community to provide feedback."

"Thank you for putting out this survey, please consider Lea Hill Area for development and please look at safety. Slow down the vehicles before there is a serious accident. Walking and biking options are not provided"

"The farmers market is the place I most enjoy. and I appreciate how it has grown. To that end I would like to see the market manager get some needed help."

"The more Green Space available for people of any age, the more we can beautify our city!"

"The summer kids activities at the parks are great: disc golf, parkour, inflatable water slide."

"The trail along the White river is nice but too flat. Need more trails with some variety."

"The youth and adult tennis programs are very good. I appreciate the level of coaching."

"This is a well-designed and thoughtful survey! Before I retired I developed surveys for state government and school districts, so I appreciate the care that went into this. I especially liked the use of the map to identify where in Auburn we live. Please have more opportunities for local artists. Right now, unless the Auburn Arts Commission already knows you, there is slim chance of having your artwork posted or displayed. I know this is beyond the scope of this survey, but Renton and Burien, for example, are much friendlier to their community artists. Unfortunately, Auburn Arts Commission seems a bit clique-ish to me. There could be better use of the REC, for example, to display artwork. The Senior Center displays art but usually not from the people who take art classes there or have taken them there. Too much competition to get your artwork shown!!"

> "The more green space available for people of any age, the more we can beautify our city!"

> "I love that there are a lot of community events and the parks are great."

"We appreciate all of the programming and fun activities that you provide year round - thank you!"

"We appreciate seeing how Auburn takes care of itself and wants to be a place for community."

"We love Auburn parks and nice maintenance all the time. Sometimes I see homeless people at parking lots or next to green river. We wish we could do something for them, we hope we can kind a share each other those parks or trails nicely."

"We love Auburn. I love that there are a lot of community events and activities and the parks are great. Would love to see even more additions and/or improvements to make them even better!"

"We need to find ways to acknowledge and welcome the full diversity of our neighbors. The unsheltered neighbor is still my neighbor! As I would not seek to remove my trailer house living neighbor, nor apartment living, nor too fancy

ADDITIONAL COMMENTS

home for my taste neighbor – nor do I seek to remove these neighbors. How to help us be better neighbors to one another is a real question! What would help them to be better neighbors to me? Restrooms, showers, places to stay warm, cook food, share healthy interactions, places for dumping garbage, transportation opportunities .... hmmmm... hope we are finding a way to positively seek all these neighbors input on these vital questions! Thank you"

> "Working parents need options that are available during non-work hours."

"Working parents need options that are available during non work hours. And toddlers need places to play especially with the COVID baby boom"

"Would like to see the farmers market back on main street"

"Would like to use the parks/facilities again without fearing for my safety or theft."

"Would love an indoor playground near the Lea Hill area"



KEY TAKEAWAYS

The project team will use the input collected through the community survey to inform and drive the PROS Plan update. Key takeaways from the survey data include:

- Survey respondents' **most-used** recreational facilities include **paved walking/biking trails** (used by 75% of respondents), **large community parks** (51%), **small community parks** (47%), small neighborhood parks (47%), **natural areas/nature parks** (45%), and **playgrounds** (42%).
- Survey respondents' **least-used** recreational facilities include **skateboarding areas** (used by 4% of respondents), **outdoor fitness equipment** (6%), **football/lacrosse/hockey fields** (7%), and **youth softball fields** (7%).
- 63% of survey participants indicated they **travel outside of Auburn** to access the recreational amenities/facilities they use most frequently. These facilities include other (nearby) **city parks** (29%), **walking/hiking trails** (17%), **water access** (8%), and **indoor community centers** (6%). These responses suggest there could be a need for more of these facility types in the City of Auburn, or a need to improve those that already exist within the city.
- **Barriers to use** indicate existing issues that need to be addressed by the City in order to improve Auburn parks users' experience. The largest barriers to use of the City's available recreation facilities or programs, as reported by survey respondents, are **security/safety concerns** (57% of respondents), **poor maintenance/cleanliness** (31%), and **overcrowded/booked facilities** (20%).
- According to survey respondents, the City of Auburn's biggest parks and recreation needs include:
  - More non-motorized urban trails/sidewalks (92.5% of respondents)
  - Undeveloped natural areas/open space (86.4%)
  - Community centers/indoor facilities (84.5%)
  - Splash/spray parks (80.2%)
  - More youth programs/camps (77.9%)
  - Off-leash dog parks (69.9%)



CITY OF AUBURN WASHINGTON

2024

Comprehensive Transportation Plan



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Plan Overview

CH.1

Introduction

Overall purpose, goals, policies, and actions of the Comprehensive Transportation Plan. Summary of other Plan elements, including public outreach efforts and agency coordination, regulatory compliance, and the relationship between land use and transportation.

CH.2

Multimodal Network

Multimodal level of service (LOS) standards. Streets system and functional classification of City streets. Existing and future LOS conditions. Transportation demand management strategies.

CH.3

Safety

Where to find additional safety information, with reference to the City's Comprehensive Safety Action Plan.

CH.4

Policies

Goals, policies, and actions to establish the framework for Auburn's transportation system vision.

CH.5

System Management, Maintenance, and Operations

Overview of existing and needed staffing and resources to manage, maintain, and operate Auburn's transportation system.



CH.6

Funding

Planning tools and funding mechanisms available to the City to finance the maintenance and improvement of Auburn's transportation system.

CH.7

Monitoring & Evaluation

Strategy to regularly re-evaluate and update the Comprehensive Transportation Plan to incorporate changes and ensure consistency with other plans.



CHAPTER 1

Introduction

IN THIS CHAPTER

- Plan Purpose, Goals, Policies, and Actions
- Public Involvement
- Regulatory Compliance
- Agency Coordination
- Land Use/Transportation Relationship





The transportation system is a vital component of Auburn's social, economic, and physical structure. The primary purposes of the transportation system is to support the movement of people and goods within the City and connect the City to the broader region. The transportation system influences patterns of growth, development, and economic activity by providing access to adjacent land uses. Planning for the development and maintenance of the transportation system is a critical activity promoting the efficient movement of people and goods, ensuring emergency access, and optimizing the role transportation plays in attaining other community objectives.

1.1. PURPOSE

Auburn's Comprehensive Transportation Plan ("the Plan or CTP") evaluates the transportation system by identifying key assets and improvement needs, which guides the future of the transportation system.

This Plan is multimodal, addressing multiple forms of transportation in Auburn including streets, active transportation, transit, and freight. Evaluating all modes enables the City to address its future transportation needs in a comprehensive and balanced manner.

The Plan provides policy and technical direction for development of the City's transportation system through the year 2044. Major updates are required every 10 years, with an implementation report required every five years.

1.2. GOALS, POLICIES, AND ACTIONS

Transportation goals, policies, and actions establish the framework for realizing the City's vision of its transportation system. Policies provide guidance for the City, other governmental entities, and private developers, enabling the City to achieve its goals in accordance with the Plan. Adopted goals, policies and actions to support them are included in Chapter 4. The policies presented in the Plan will be followed by the City in its evaluation of individual projects, programs, and other actions to address its transportation infrastructure needs. The goals, policies, and actions make reference to the City of Auburn Engineering Design Standards (EDS) that provide specific guidelines and standards for design of the City's transportation system.

The Plan reflects the current and future needs of the Auburn community and, in doing so, seeks to:

- Enhance the quality of life for all Auburn residents
- Encourage a healthy, sustainable, and equitable community through active transportation
- Promote a transportation system that supports local businesses and enhances economic development opportunities
- Create a transportation system that is efficient, uncomplicated, and welcoming to visitors
- Provide a balanced, multimodal transportation system that addresses both local and regional needs





1.3. PUBLIC INVOLVEMENT

Public outreach is a critical component of the comprehensive planning process. Throughout years 2023 and 2024, City staff attended several public events and provided a webpage with a survey for public participation. The information provided on the webpage was available is English, Spanish, Ukrainian, Russian, and Tagalog, which are prevalent languages in Auburn.

As part of the adoption process, the Plan is also reviewed by the Transportation Advisory Board and the Planning Commission. Detailed description of the public involvement and comments received is in Appendix D.

1.4. REGULATORY COMPLIANCE

1.4.1. GMA and PSRC Requirements

Washington State's 1990 Growth Management Act (GMA) requires that transportation planning be directly tied to the City's land use decisions and financial planning. This is traditionally accomplished through the adoption of the Transportation Element of the Comprehensive Plan.

The City of Auburn is a member of the Puget Sound Regional Council (PSRC), the regions Metropolitan Planning Organization (MPO). PSRC is responsible for developing a long-range regional transportation plan and near-term regional transportation improvement program. PSRC establishes policies, procedures, and programs for award of Federal Highway Administration (FHWA) and other federal funding. PSRC has established requirements for agency comprehensive transportation plans that must be met to maintain eligibility for PSRC managed grant funding.

Auburn fulfills this mandate by adopting the Comprehensive Transportation Plan as the Transportation Element of the City's Comprehensive Plan.

Appendix C includes a list of GMA and PSRC

requirements and provides page/policy references where the requirement is satisfied in the Plan, the goals, policies, and or actions.

1.4.2. ADA Compliance

The Americans With Disabilities Act (ADA) went into effect on January 26, 1992. ADA requires that all facilities constructed after this date are readily accessible and usable by persons with disabilities. The City is committed to providing public infrastructure without barriers to those with disabilities and achieving compliance with ADA.

In 2020, the City adopted its first ADA Transition Plan for facilities in the public right-of-way. This document guides the process to reach full compliance with the ADA requirements for facilities in the public right-of-way. It addresses pedestrian pathways such as sidewalks, trails, curb ramps, and cross walks and traffic control devices such as pedestrian pushbuttons and pedestrian signals.

The ADA Transition Plan includes the following elements:

·Overview and Background

·Self-Evaluation

·Policies and Procedures

The ADA transition plan will be updated regularly to reflect new data and the progress towards full ADA compliance. Public comments are accepted and will be considered during the updates.

The City will make all reasonable modifications to policies and programs to ensure that people with disabilities have an equal opportunity to enjoy all its programs, services, and activities.

The City's current ADA Transition Plan is available here and included as part of this Plan by reference.

1.4.3. Title VI Compliance

In accordance with Title VI of the Civil Rights Act of 1964 (Title VI), the City assures that no person shall, on the grounds of race, color, national origin, or sex be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity funded directly or indirectly with federal funds. The City further assures every effort will be made to ensure non-discrimination in all its programs and activities, whether those programs and activities are federally funded or not.

The City works closely with the Washington State Department of Transportation (WSDOT) Office of Equal Opportunity to provide required Title VI assurances, plan, and annual reporting.

The City's Title VI information and reports are available here.

1.5. AGENCY COORDINATION

Auburn's transportation system is influenced by what happens outside its jurisdiction and/or boundaries: growth in neighboring communities, infrastructure maintenance by regional agencies, new capacity projects, and competing needs for transit service.

The Plan calls for effective inter-jurisdictional collaboration to address shared transportation issues. The Plan also recognizes that other jurisdictions, particularly state agencies and transit providers, are responsible for a major share of the transportation facilities serving Auburn.

1.5.1. Tribe

The **Muckleshoot Indian Tribe (MIT)** is situated in the southeastern portion of the City and in unincorporated King County, generally to the east of Auburn Way South (SR 164) and south of SR 18. MIT owns significant attractions in or near Auburn including the Emerald Downs Racetrack, Muckleshoot Bingo, the Muckleshoot Casino Hotel and Resort, and the White River Amphitheatre. These activity centers generate a relatively large number of vehicle trips. Residential, industrial, and commercial development on tribal lands is expected to increase in the future and must be evaluated during transportation planning efforts.

The City and MIT coordinate on a variety of transportation planning issues to accommodate the capacity needs derived from traffic generated by tribal land uses and to ensure the tribe has a functioning transportation system for its members. The City and the MIT have established a Memorandum of Understanding (MOU) to partner on pedestrian improvement projects along the Auburn Way South corridor. The partnership has provided for pedestrian access and safety improvements on, and along, the Auburn Way South corridor.

During July 2015, the State Legislature passed a

transportation package which included $15 million for the SR 164 East Auburn Access project along SR 164 between SR 18 and the Auburn plateau area, which was intended to create and develop an affordable, long-term improvement to congestion and safety issues, while also planning to accommodate future growth in the area. MIT is the lead agency on the project and the City has been involved in the alternatives development and evaluation process. The current status of the project is unknown and the City's traffic modeling does not include project improvements. The City's traffic modeling and planning approaches will be updated, as needed, to address progress on this project by MIT.

1.5.2. State

The **Washington State Department of Transportation (WSDOT)** has jurisdiction over three major routes connecting Auburn to the region: SR 167, SR 18, and SR 164 (Auburn Way South). SR 164 is considered a City of Auburn street and a state route and is subject to the City Streets as Part of State Highways Guidelines agreement. SR 164 is also designated by the State as a Highway of State Significance, which has implications regarding applicable level of service standards and concurrency. **Chapter 2** includes additional information regarding SR 164 and other State transportation facilities in Auburn. Auburn coordinates with WSDOT to study these corridors and implement roadway improvements. WSDOT also serves an important role as administrator of federal and state transportation funds.

1.5.3. Transit Agencies

Sound Transit provides a variety of regional transit services for King, Snohomish, and Pierce counties. In Auburn, Sound Transit provides commuter rail, parking, and express bus service. Auburn Station also serves as a hub and transfer station for local transit service provided by **King County Metro Transit** and **Pierce Transit.**

The transit chapter provides more detail on current Sound Transit services, remaining needs for regional transit service, and the role Auburn plays in coordinating with the agency.

King County Metro Transit (KC Metro) provides local bus, Metro Flex, vanpool, and paratransit services for the Auburn area. Planned service for the City of Auburn is described in the Metro Strategic Plan for Public Transportation 2021-2026, and in Metro Connects Long Range Public Transportation Plan, which was adopted by the King County Council in 2021. The City has developed an employee Commute Trip Reduction (CTR) program in cooperation with WSDOT. Details of the CTR program are summarized in the Active Transportation and Transit chapters of this plan.

Pierce Transit operates the 497 Lakeland Hills Express route which provides AM and PM direct service between Lakeland Hills and Auburn Station. This is a partnership route with the City, KC Metro, and Pierce Transit providing funding through an inter-local agreement.

1.5.4. Counties

King County Road Services Division is responsible for maintaining and regulating the roadway network in King County, including the Totem and Klump portions of King County, which are islands of unincorporated King County within the greater jurisdictional boundary of Auburn. King County Road Services has a number of programs and plans in place that regulate development and other activities affecting their roadway network.

Under the GMA, King and Pierce Counties have adopted Countywide Planning Policies to guide development in both incorporated and unincorporated areas of their jurisdictions. The policies support county and regional goals to provide a variety of mobility options and establish LOS standards that emphasize the efficient movement of people and not just vehicles. The Countywide Planning Policies are also important because they provide direction for planning and development of potential annexation areas.

1.5.5. Regional Government

The **Puget Sound Regional Council (PSRC)** sets policy for King, Pierce, Kitsap, and Snohomish Counties through its long-range planning document, Vision 2050, and its regional transportation plan, Transportation 2040. Auburn's transportation plan is required to be consistent with PSRC's regional planning documents and policies. PSRC encourages future growth to be concentrated in regional growth centers. Regional growth centers are locations with significant business, governmental, and cultural facilities, and serve as focal points

for planned growth, economic development, and transportation infrastructure investments.[1] The PRSC Planning documents seek to provide a multimodal transportation system that serves all travel modes, creating opportunities for the use of alternatives to single occupant vehicles. Other important PRSC policy themes are a focus on maximizing the efficiency of the transportation system through transportation demand management (TDM) and transportation system management (TSM) strategies, as well as completing critical links in the network.

1.5.6. Neighboring Cities

The **City of Kent** shares Auburn's northern border and several regional transportation corridors including S 277th Street, SR 167, Auburn Way North/Central, and West Valley Highway. Most recently, Auburn has completed coordination with Kent on the annexation of S 277th Street from Auburn Way North to the Green River into the City of Auburn to allow the widening of S 277th Street between Auburn Way N and L Street NE.

The **City of Federal Way** is located west of Auburn. Several roadways, most notably SR 18, connect Auburn and Federal Way. Auburn and Federal Way regularly coordinate on both vehicular and active transportation improvements affecting both jurisdictions.

The City partners with its southern neighbors in many respects, including street system planning, transit planning, and regional trail planning. Auburn is also working with **Sumner**, **Pacific**, and **Algona** on roadway improvement projects, including the financial support of the Sumner and Pacific projects to widen Stewart Road. The City coordinates primarily with **Bonney Lake** for provision of water service in the Pierce County portion of the City. However, efforts to coordinate transportation systems and services will likely occur in the future. Partnerships with neighboring cities will continue to be an important factor in successful transportation planning.

1.6. LAND USE/TRANSPORTATION RELATIONSHIP

Land use and the transportation system are intertwined, each influencing the needs and development of the other. Therefore, it is necessary to evaluate how existing transportation systems can be improved to best support both existing and proposed land uses.

It is equally important to consider potential transportation system needs when developing future land use plans. This 2024 Comprehensive Transportation Plan was developed concurrently with the City's Comprehensive Plan that included reviewing, evaluating, and revising projected land use throughout the City.

1.6.1. Land Use Characteristics and Transportation Systems

A broad overview of Auburn's existing land use designations shows industrial (light and heavy) designations in the west side of the valley floor portion of the City, extensive commercial development (light and heavy) located along Auburn Way N, Auburn Way S, and A Street SE, and sizable heavy commercial designated areas near the SR 18 and 15th Street SW interchange and between 15th Street NW and 37th Street NW (Emerald Downs). Residential development generally exists along the east side of the valley floor and the surrounding hillsides of West Hill, Lea Hill, and Lakeland Hills. A major land use activity in Lea Hill to the east includes the Green River College located on SE 320th Street.

The existing land use element identifies Industrial as the City's second most predominant zoning designation (Residential being first). Consequently, the City's land use plan establishes a development pattern that has traffic generated by these industrial uses directed towards the State Highway System.

Another key feature in the land use element is a Heavy Commercial designation at 15th Street SW, adjacent to SR 167 and SR 18. This commercial designation is the site of The Outlet Collection. The Outlet Collection generates high volumes of local and regional traffic that utilize State highways and City streets. Auburn's "Auto Row", along Auburn Way N, to the north of downtown also generates large volumes of local and regional traffic.

1 PSRC, https://www.psrc.org/our-work/centers

Downtown Auburn is near the geographic center of the City, located generally east of the Interurban Trail, north of SR 18, west of F Street SE/NE, and south of 3rd Street NW/NE and 4th Street NE. Downtown Auburn is designated as a Regional Growth Center by the PSRC as part of Vision 2050. Designated regional growth centers are identified for housing and employment growth, as well as being eligible for regional transportation funding. Downtown Auburn contains a mix of land uses including residential, commercial, and industrial uses. Commercial uses in Downtown are focused along Main Street, Auburn Way, and A Street SE. Historically, this commercial development has served predominantly local needs. However, the presence of Auburn Station, MultiCare, City Hall, and new development projects, combined with regulations and policies that encourage transit-oriented developments (TODs), downtown commercial development will serve a broader range of needs in the future. Downtown Auburn also has the City's most robust active transportation infrastructure, including both extensive pedestrian and bicycle facilities. This provides the opportunity for both residents and employees to rely on proximate transit services at Auburn Station, combined with a robust active transportation system for a portion of their transportation needs.

The City's Comprehensive Plan land use map focuses residential development in the eastern portion of the valley and in the West Hill, Lea Hill, and the Lakeland Hills area. Access to the State Highway System in Lea Hill is limited to SR 18 at SE 304th Street. Future impacts on the State Highway System in the Lea Hill area will primarily be commuter traffic due to the predominance of residential comprehensive plan designations in that area, and continued growth of Green River College. The development of Lakeland Hills will also principally result in increased commuter traffic.

1.6.2. **Future Land Use**

The Washington Office of Financial Management (OFM) produces population and employment forecasts for each county which are then allocated to cities through the Countywide Planning Policies. Cities must plan to accommodate the required levels of housing and employment growth allocated through this process. King and Pierce Counties have allocated Auburn a combined target of 12,096 new housing units (12,000 in King County and 96 in Pierce County) and 19,520 new jobs (all in King County) between the baseline of 2019 and 2044.

Based on the available land capacity as zoned in 2023, Auburn showed a deficit of capacity for both the 2044 housing unit and jobs targets. The future land use map developed with the 2024 Comprehensive Plan was developed to accommodate the 2044 housing and jobs targets through new zoning and land uses in various corridors and nodes throughout Auburn, and in the Downtown area in particular. Development of the future land use map involved evaluating alternative land use scenarios and testing them against various factors. Further information regarding this process is included in the Comprehensive Plan.



This Comprehensive Transportation Plan is based on the Preferred Land Use Alternative documented in the Comprehensive Plan. This land use alternative was a combination of two alternatives that each focused on centralizing housing and employment growth with either corridors or centers approach. Both alternatives included intense housing and employment growth focused in the Downtown area by expanding and increasing development density and intensity. The combined alternative targets employment and housing along the Auburn Way North and I Street NE corridors where frequent transit is planned to start operating in 2026. Focused growth in employment and housing was also identified at locations of known future development plans. These areas include the Outlet Collection Mall area along 15th Street SW, the Icon Materials mining operations and adjacent lands along the east side of Kersey Way (known as the Segale development area), and at vacant or underdeveloped land areas on Lea Hill and West Hill.

CHAPTER 2

Multimodal Network



IN THIS CHAPTER

- Multimodal Level of Service Standards
- Streets System
- Active Transportation
- Transit
- Freight
- Airport



The transportation network includes facilities for several modes of transportation, which must integrate well together, and support or complement each other, to provide the best possible mobility options throughout the city. While it is important to limit vehicle congestion and traffic delays, it is equally important to provide alternative transportation options, which can encourage active transportation and reduce the need to increase vehicle capacity on the roadways.

The availability of transit service, bike facilities, and sidewalks will become more important to achieve a comprehensive multimodal transportation network, which is composed of the vehicular traffic network (roads) which serves cars, trucks, and buses, and the active transportation network, which includes bike and pedestrian facilities. Some roads are more heavily used by trucks, and are identified in the freight network. Transit routes are also identified. Based on the primary function of the roads, special considerations are made to carefully prioritize specific modes, and protect other modes where there are overlaps, such as freight corridors along bikes routes.

2.1. MULTIMODAL LEVEL OF SERVICE STANDARDS

Transportation level of service (LOS) standards are metrics that indicate how well transportation facilities are moving people and goods.

Prior to this Plan, as with comprehensive transportation plans for most other agencies in Washington, the City of Auburn's Comprehensive Transportation Plan only included LOS standards for motorized vehicles (vehicle LOS). Without adopted multimodal LOS standards (MMLOS), there were no metrics by which the effectiveness of the active transportation and transit systems could be measured and evaluated. With MMLOS, the City of Auburn can ensure that transportation system improvements are planned, funded, and implemented to develop a comprehensive, connected, and versatile transportation system. One of the main goals of MMLOS is to realize a transportation system that doesn't rely on adding more vehicular capacity alone to address growing needs to move people and goods. The MMLOS approach supports providing other transportation modes including walking, bicycling, and transit to address these needs. The City of Auburn's MMLOS have been developed with the strategic and focused intent of maximizing potential mode shifts from driving cars to walking, biking, and riding transit. The standards work towards this by setting higher level of service standards for walking and biking in areas where doing so will best support existing and planned transit service.

These principles, many of which can be promoted by thoughtful transportation systems planning, encourage healthier communities by increasing physical activity and decreasing air pollution caused

In 2023, Washington enacted House Bill (HB) 1181 which required agencies to develop MMLOS. MMLOS expand the transportation system metrics to include other travel modes such as transit, walking, and biking.

Auburn's multimodal transportation network primarily includes the **modes of travel highlighted below**, which are explained and assessed in more detail throughout the Plan.

Separate sections have been included in the Plan that address the following elements for each mode:

- General description and overview
- Existing facilities and/or services
- LOS standards
- Existing LOS evaluation and existing deficiencies
- Future LOS evaluation and future deficiencies
- Strategies, projects, and programs to address existing and future deficiencies

The City of Auburn envisions a transportation system that will help promote healthy community principles by coordinating land use, the active transportation system, and transit in a manner that encourages walking and bicycling. PSRC has identified several elements that contribute to the desirability of walking, bicycling, and transit use in their Vision 2050 "Update Paper on Health":

- **Concentrating complementary uses** such as restaurants, retail, and grocery stores proximate to residences and employment.
- **Linking neighborhoods** by connecting streets, sidewalks, and trails.
- **Designing for safe and welcoming pedestrian and bicycle facilities.**
- **Enhancing transit opportunities and active transportation connections** to transit facilities.
- **Reducing and mitigating the effects of parking.**



Motorized vehicles moving people on streets



Pedestrians and bicyclists



Buses and trains moving people



Trucks and trains moving goods

by vehicle emissions. Auburn has historically planned for a transportation system that incorporates many healthy community principles, such as transit facility planning and regional trail planning. In addition, the Downtown Plan calls for a mixed-use, high density, pedestrian-oriented downtown. Improving the active transportation system also helps address the findings of the citywide Health Impact Assessment process, which recommended that the City improve sidewalk connectivity; improve the pedestrian environment; eliminate natural and man-made mobility barriers for pedestrians and bicyclists; improve access to transit; and improve vehicle safety, and pedestrian safety.

In the future, Auburn shall continue to promote these principles through long-range planning efforts, capital facility improvements, development review, and community activities involving active lifestyle elements.

MMLOS is vital to providing an equitable, effective, sustainable, and environmentally balanced transportation system. MMLOS allows a more strategic approach towards moving people and goods as compared to the historic approach of only using vehicle LOS standards. Products of the historic approach are visible all around us where we see wide multi-lane roadways with narrow or missing sidewalks, neighborhoods and commercial areas with little to no transit services, and an incomplete, often sporadic bicycle network. These deficiencies in the transportation system are understandable given that LOS standards are used to identify where the transportation system is not adequately functioning and, subsequently, used to plan and prioritize improvements to address those issues. If vehicle LOS is the only standard in place, the resulting transportation investments are focused on moving goods and people with motorized vehicles while other modes receive little funding relative to vehicle capacity.



2.2. STREETS SYSTEM

The City has 249 centerline miles of public roadways. The City's planned arterial street network is mostly established with existing roadways with only a few new arterials that have yet to be constructed. Many of the City's arterial and other streets were not built to current City design standards as the network itself is a product of almost a century of evolving standards and design approaches. Many older roads, including those inherited through several annexations, do not include robust pavement sections and do not accommodate active transportation users. The annexed county road networks present a challenge as they were originally set to provide access to rural areas and not to accommodate existing and future planned higher density housing and commercial areas. The network challenges are most prevalent on the City's West Hill and Lea Hill areas where connectivity is mostly provided by two-lane county roadways that don't form a fully connected network. Constructing new roadways or re-aligning existing roads to improve the network connectivity is heavily constrained by topography, environmentally sensitive areas, existing development, and jurisdictional boundaries.

Almost 400,000 vehicle trips use Auburn's streets everyday. Most of the City's arterial and collector roadways have adequate vehicle capacity on sections of roadways without intersections. Where capacity issues do occur, they are mostly at controlled intersections of arterial and/or collector streets.

An inventory of the City's street system is maintained using the City's asset management software and geographic information systems (GIS). The inventory includes spatially referenced roadway segments generally delineated between roadway centerline intersections. Each roadway segment includes a set of data associated with it such as roadway width, number of lanes, classification, posted speed, pavement condition index, and initial construction, maintenance/repair, and replacement history. This data is used to generate the maps included in Appendix A.

2.2.1. Functional Classification of City Streets

The street system functions as a network. Functional classification is the hierarchy by which streets and highways are defined according to the service they provide. There are three main classes of streets in Auburn: **arterials**, **collectors**, and **local streets**.



Map 7. 2024 Roadway Classifications in Appendix A provides the currently adopted classification of Auburn's existing and planned streets. Streets are classified using the Federal Functional Classification system guidelines, as shown in Map 9. 2024 Federal Functional Classifications in Appendix A.

The Auburn EDS establishes typical roadway cross sections for each City street classification. Some City streets have specific cross sections and other design elements that have been established through specific studies and/or design efforts. The following City studies or standards are included in this Plan by reference and establish roadway cross sections and other design elements for the studied roadways:

- R Street SE Corridor Study
- Lea Hill Road Corridor Study
- BNSF Railway and A Street SE Crossing Study
- Downtown Division Street Promenade Project
- Downtown Urban Standards as Presented in the EDS
- Other studies that have, or will be prepared and approved, by the City Engineer with consultation and input provided by the Transportation Advisory Board (TAB) and the City Council

Designation of functional classifications allows for the preservation of the right-of-way for future transportation corridors, whether the corridor provides access to car, transit, bike, or pedestrian use. Functional classification helps establish corridors that will provide for the future movement of people and goods, as well as emergency vehicle access. Proper designation is crucial to the planning effort; as development occurs, accommodation for the appropriate transportation corridors should be incorporated into development plans.

The following describes the different classifications used by the City, in order from highest classification to lowest:

Principal Arterials are designed to move traffic between locations within the region and connect with the freeway system. Design emphasis is placed on providing movement for both inter- and intra-City traffic. As such, these facilities typically carry the highest traffic volumes and are designed to accommodate longer-distance trips, provide the highest level of mobility, and have the highest speed limits of all City streets. Principal arterials will generally carry moderate to high level of large truck traffic. Direct access to adjacent land uses is permitted, although these streets are most likely to have limited or managed access in an effort to enhance safety and preserve capacity. Active modes also use these streets, but rely on sidewalks and other dedicated facilities to safely navigate vehicle traffic.

Principal arterials are the framework street system for the City and usually extend beyond the City limits, connecting with neighboring jurisdictions. Principal arterials are heavily utilized as bus routes, carrying both local and regional service.

Minor Arterials connect collector and local industrial streets to principal arterials and freeways. They serve moderate length trips, provide slightly less mobility than principal arterials, and distribute traffic to smaller geographic areas. Minor arterials may serve secondary traffic generators such as business centers, neighborhood shopping centers, major parks, multifamily residential areas, medical centers, larger religious institutions, and community activity centers.

Minor arterials will generally carry moderate to low levels of large truck traffic. Direct access to adjacent land use is permitted but may sometimes require limited or managed access in an effort to enhance safety and corridor capacity. Active modes also use these streets, and often rely on sidewalks and other dedicated facilities to safely navigate vehicle traffic.

Collectors and Rustic Collectors carry traffic originating from local streets, neighborhoods, and recreational areas to minor and principal arterials. Collectors typically serve only local truck trips and are not typically intended for use by large trucks. Collectors are intended to have a residential neighborhood feel and encourage active transportation. Collectors may accommodate some local transit routes.

Rustic collectors are located in areas with less intensive land uses associated with the Residential Conservancy land-use designation and along environmentally sensitive corridors such as Green River Road. Rustic collectors are intended to have a less urban feel and generally don't have separate bike or pedestrian facilities. Rustic collectors do not typically carry fixed route transit services.

Local, Local Industrial, and Local Rustic primarily provide direct access to adjacent land uses and connect with other local streets to eventually connect to collectors and arterials. Local streets are not intended to connect traffic between collector and arterial streets, also known as cut-through traffic. Local street networks generally consist of shorter roadway segments between intersections with collectors and arterials and often have cul-de-sacs and looping configurations. Local streets generally do not serve fixed route transit. Local streets are the most common streets in the City and are intended to have a residential neighborhood feel with relaxed and comfortable driving, biking, and walking experiences. Local streets are not intended to serve large truck traffic.

Rustic residential streets are a type of local street that serve areas associated with the Residential Conservancy zoning designation. Rustic residential streets are intended to have a less urban feel and typically do not have separate walking and biking facilities.

Local industrial streets serve primarily industrial and manufacturing land uses. They are intended to accommodate large trucks and provide a more urban or industrial setting.

Alleys are the lowest classification of City street and provide vehicular access to abutting properties generally from the rear or side. Alleys also provide access for garbage collection and emergency vehicles and serve as corridors for city and non-city utilities. Alleys can also serve additional purposes including access management and the alleviation of traffic operations issues on streets with higher classifications (not related to level of service issues). Alleys generally connect to local streets and are short in length without separate walking or biking facilities.

2.2.2. City Street Classification Changes

In preparing the Plan, the roadway classifications and street network were reviewed to evaluate if revisions were needed to reflect current and future needs. Previously, the City classified its local and collector streets as being either residential, non-residential, or rustic. There was some ambiguity and inconsistency in the non-residential designation as the name implied that the classification was intended for all commercial, industrial, and non-rustic streets. However, the typical roadway cross sections in the EDS for non-residential streets included wide vehicle travel lanes to accommodate large trucks. The EDS also specified a pavement section for non-residential roads that was very robust, again, intended to serve large trucks. Throughout the City, roads previously classified as non-residential included roads serving

multi-family housing, commercial areas, multi-use areas, and industrial areas. Except some heavy commercial and industrial areas, the wide lanes and robust pavement section specified in the EDS were generally not desirable for these roadways. To address this issue, the decision was made to discontinue the use of the non-residential collector classification. Streets previously classified as non-residential collectors were updated to be reflect the new classification approach. The local street classifications were updated to be either local, local industrial, or local rustic. Streets previously classified as local non-residential streets that serve industrial areas and large volumes of truck traffic were updated to be local industrial streets. Streets that were not local rustic or local industrial were classified as local streets. In addition to the change in roadway classification categories, the assigned classification to various City streets were updated to reflect current and future land-use, traffic volumes, and other factors. A summary of these changes is provided in Appendix E.

2.2.3. State Highways

State highways include **SR 18**, **SR 167**, and **SR 164**. A description of each highway is provided in **Table 1**.

2.2.4. Private Streets and Shared Driveways

Private Streets can be appropriate for local access in very limited usage. They provide direct access to City streets and are not intended to connect between two or more public streets immediately adjacent properties.

Shared Driveways, sometimes referred to as access tracts provide public right-of-way access for one or more properties. A driveway serving only one property but utilizing an access easement or tract across another property for access to the public right-of-way is also considered a shared driveway. They are most common in panhandle lots or rear lots that do not have street or alley access. Shared driveways have become very common in subdivision projects that are trying to meet density requirements while also working around critical areas and other constraints. Access tracts are privately owned and maintained.

2.2.5. City Streets LOS

Streets are based on the amount of delay experienced by drivers at intersections and how the queue of vehicles waiting at those intersections may block other intersections, driveways, and travel lanes. Previously, the City also included corridor delay as a vehicle LOS standard. Corridor LOS is no longer considered because intersections generally control how well the roadway network functions. If a roadway corridor is congested, most often it is the result of delays and queuing at the intersections along the corridor. The City's established policies and actions related to providing an efficient and effective multimodal network include provisions to support efficient, effective, and resilient roadway corridors. Previously the City vehicle LOS standards

Table 1. State Highways

ROUTE	
18	• Connects I-5 to I-90 through Auburn • Within the City limits, has interchanges with SR 167, West Valley Highway, C Street SW, SR 164/Auburn Way S, Auburn Black Diamond Road, and SE 304th Street providing access to downtown Auburn and Lea Hill • Classified as both a Highway of Statewide Significance (HSS) and a National Highway System (NHS) route for the entire corridor segment • A full control limited access highway, allowing access only at interchanges within the City limits
167	• Also known as the Valley Freeway • Serves as an alternative to I-5, connecting south King and north Pierce Counties to the I-405 corridor to the north • Designated as both HSS and NHS • Within the City limits, SR 167 has interchanges with SR 18, S 277th Street, 15th Street NW, and 15th Street SW • A full control limited access highway, allowing access only at interchanges within the City limits
164	• Also known as Auburn Way South • A 15-mile roadway corridor beginning at the SR 18 interchange with Auburn Way S • The corridor is aligned southeast through the City, connecting through the Muckleshoot Indian Tribe lands and unincorporated King County before terminating in the City of Enumclaw at its junction with SR 410 • A City street which is part of a state highway • Functionally classified as an urban other arterial by WSDOT, and also a Highway of State Significance (HSS) • Subject to WSDOT Complete Streets requirements

also included reference to other factors like pavement degradation, safety impacts, and general roadway geometry. Since those factors don't have a metric or rating that can be used to determine how well a facility is functioning, they are no longer included as a vehicle LOS standard. Instead, those are addressed with other goals and policies throughout the Plan and provided for with standards established in the EDS.

The vehicle LOS methodology used in the City of Auburn for intersection delay is based on the current edition of the Highway Capacity Manual (HCM) which assigns intersections with a letter designation from 'A' through 'F' based on control delay. Control delay is the total elapsed time from a vehicle joining the intersection queue until its departure from the stopped position at the head of the queue. This includes the time required to decelerate into the queue and accelerate back to free-flow. **Table 2** shows the LOS ratings for intersections based on the type of intersection control and maximum expected delay times. The Plan policies establish LOS "D" as

Figure 1. Vehicle LOS - Illustration of Roadway Delay

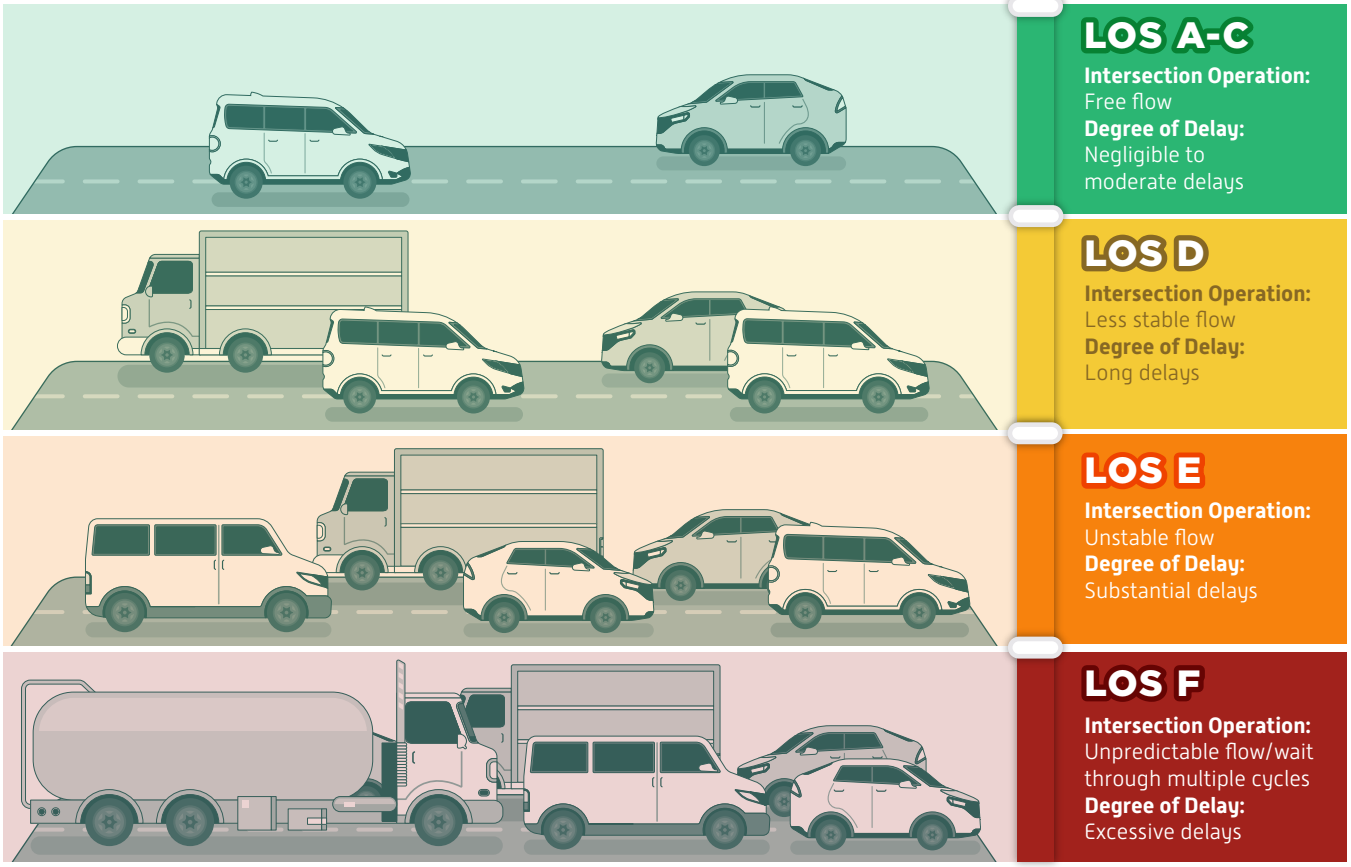


Table 2. Vehicle Intersection Delay LOS Table

INTERSECTION TYPE	LEVEL OF SERVICE					
	A	B	C	D	E	F
	AVERAGE CONTROL DELAY (SECONDS PER VEHICLE)					
Stop Control*	0 – 10	>10 – 15	>15 – 25	>25 – 35	>35 – 50	> 50
Traffic Signal or Roundabout Control**	0 – 10	>10 – 20	>20 – 35	>35 – 55	>55 – 80	>80

* LOS for stop-controlled intersections with one or more uncontrolled approaches is evaluated based on the movement with the highest delay.
** Intersections with roundabouts are also evaluated using V/C ratio.
Source: Highway Capacity Manual, 6th Edition

the minimum standard for most intersections with the exception being signalized intersections of two or more principal arterial roadways which have a LOS "E" minimum standard. Intersections with roundabout control are evaluated using both the letter designation "A" through "F" grade for control delay and the volume/capacity ratio (V/C ratio). The City has adopted WSDOT's Measures of Effectiveness (MOE) approach for roundabouts and established 0.90 as the maximum allowed V/C for each lane group.

Another metric used for Vehicle LOS standards in Auburn is based on the length of the queue of vehicles backed up at an intersection. This is a pass/fail metric based on whether or not all intersection approaches fit within the available queue storage under projected 95th percentile queue lengths. If any approach does not fit within the available storage, the intersection queuing LOS standard is "failed." If all approaches fit within available storage, the intersection queuing LOS standard is "pass." As outlined in the Plan policies, the queuing standard is that the 95th percentile queue shall not extend across an adjacent driveway, alley, or street intersection, except if the driveway, alley, or street intersection is within the functional intersection boundary of the queue in which case the queue may extend to the limit of the functional intersection boundary. Additionally, queuing for a designated turn lane shall not exceed the turn-lane storage area and cause a blockage of adjacent lane(s).

2.2.6. Vehicle LOS Standards - State Highways

Amendments to the GMA in 1998 added new requirements for local jurisdictions to address state-owned transportation facilities, as well as local transportation system needs in their comprehensive plans (RCW 47.06.140). House Bill 1487, adopted by the Washington State Legislature in 1998, requires that the transportation element of local comprehensive plans include the LOS standards for HSS. HB 1487 clarified that the concurrency requirement of the GMA does not apply to HSS or other transportation facilities and services of statewide significance. HB 1487 also requires local jurisdictions to estimate traffic impacts to state-owned facilities resulting from land use assumptions in the Comprehensive Plan.

WSDOT has identified a LOS D standard for all urban HSS, according to the State Highway System Plan (HSP). All state highways within the City of Auburn, including SR 18, SR 167, and SR 164, are classified as urban HSS, and therefore have a LOS D standard.

2.2.7. Transportation Demand Management (TDM)

In 1991, the State of Washington adopted its Commute Trip Reduction (CTR) law. The law's intent is to reduce traffic congestion and air pollution by shifting drive-alone commutes to other modes. Today, more than 1,000 worksites take part in the CTR program statewide and the program is well known nationally as an example of impactful TDM.

The law requires local jurisdictions to adopt ordinances detailing requirements for employers to implement employee commute trip reduction programs that encourage the reduction of the number of trips and miles people drive alone to work. In 2010, City of Auburn adopted Ordinance 6218, codified by Auburn City Code Chapter 10.02, which provides these requirements for employers within the City limits.

Reducing congestion includes strategies to reduce demands on the transportation system. The State of Washington emphasized the importance of TDM by adopting a CTR law. That law requires all major employers, with over 100 employees at a single site and arriving between the hours of 6:00 and 9:00 AM, to develop programs and strategies to reduce the number of commuter automobile trips made by their employees. Transportation demand management reduces demand on the street system. While TDM and TSM employ different strategies, they share many of the same benefits. Both reduce the peak vehicle demand, increase the efficiency of the transportation system, reduce the need for costly capacity expansions, help improve LOS, and contribute to an enhanced quality of life for those who use and benefit from the transportation system.

TDM strategies include those shown in **Figure 2** on the next page.

The City of Auburn will continue to encourage drivers of single occupancy vehicles to consider alternate modes of travel such as carpools, vanpools, transit, active transportation travel, and alternative work schedules, and has identified mode split goals for the Regional Growth Center. The goals were developed in consideration of the current mode splits for the Auburn Regional Growth Center, the current mode splits for all designated Regional Growth Centers, and the 2040 mode split targets identified by PSRC for all designated Regional Growth Centers. The existing and 2035 mode split goals for the Auburn Regional Growth Center are summarized in **Figure 3** on the next page.

The mode split goals for the Regional Growth Center reflect the desire to significantly reduce automobile travel as a share of work trips, with the most significant increase in transit trips. The reduction in the vehicle mode split will be the result of the right

mix of land use changes, transportation investments, and roadway pricing tools. Additionally, factors such as shifting demographic trends, preferences, and technology may contribute to mode shifts above and beyond the identified goals.

Figure 2. TDM Strategies

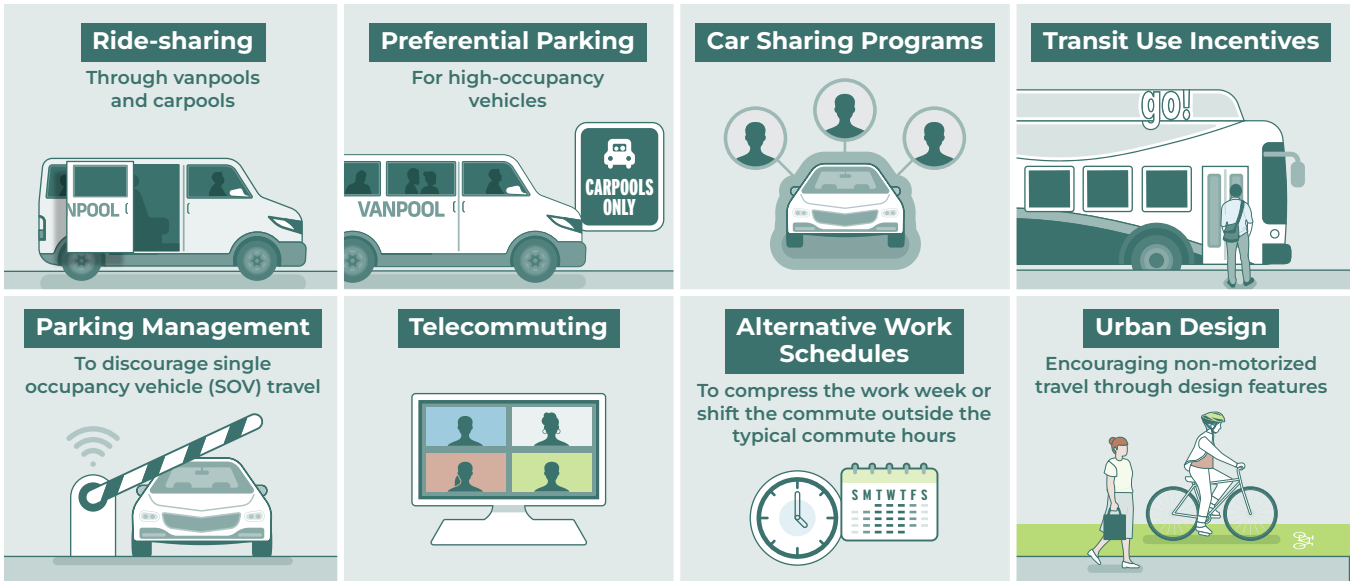
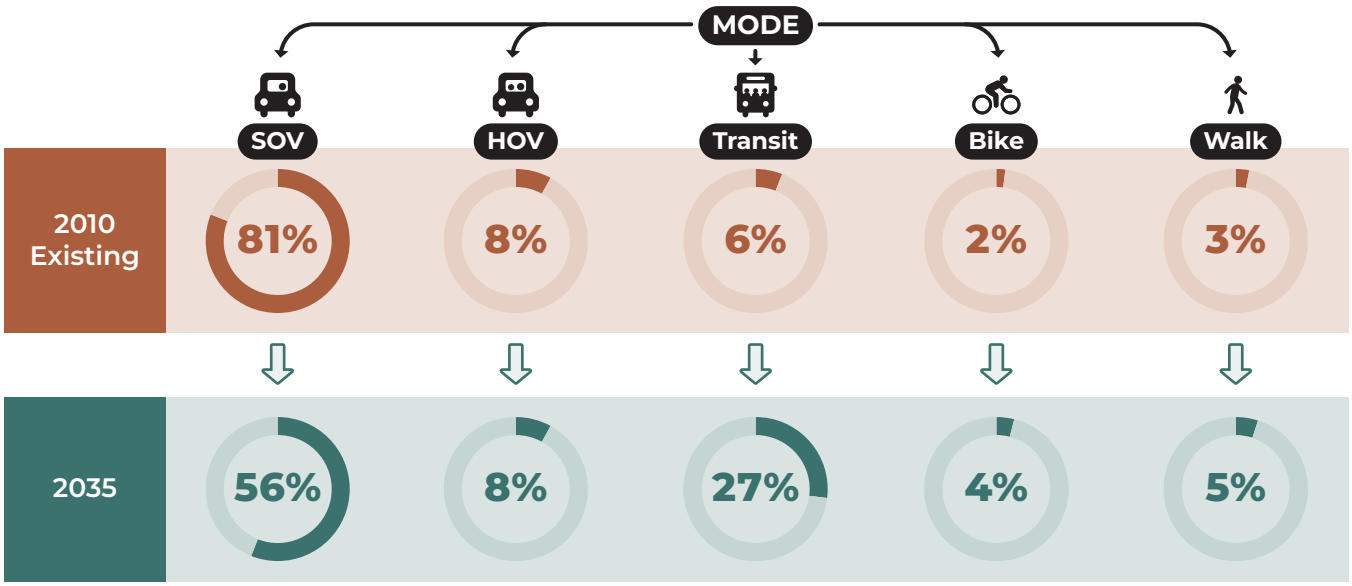


Figure 3. Regional Center Mode Split Goals



2.2.8. Existing and Future Vehicle LOS Conditions

Existing Conditions

In 2022, the City collected average daily traffic counts from arterial and collector streets and peak hour turning movement counts at 157 intersections in Auburn. These observations formed the basis for the existing conditions analysis of traffic operations in Auburn. Existing turning movement counts were analyzed using Synchro traffic operations software to calculate the LOS at each study intersection for the busiest hour during the weekday AM (7:00 - 9:00 am) and PM (4:00 - 6:00 pm) peak periods. Wherever possible, HCM 6th edition analysis was used. In some cases, due to incompatible intersection channelization and/or phasing settings, HCM 2000 was applied. Of the 157 intersections evaluated, the 11 (or 8%) shown in **Table 3** are currently operating below the City's adopted LOS standard. **Figure 4** displays the existing LOS standard of evaluated intersections and numbered intersections currently operating below the LOS standard.

The majority of intersections operating below adopted level of service standards or failing intersections have two-way stop-control; of the 13 failed intersections, three are signalized, one has all-way stop-control, and eight have two-way stop-control. The PM peak hour period is also when the network is under most strain: seven intersections are failing only during the PM peak hour, while only four intersections are failing only during the AM peak hour, and two intersections are failing during both AM and PM peak hours. In addition to current failures, five intersections are operating near the threshold of failure in the AM and three are approaching the City's standard in the PM, indicating that future growth could cause the level of service to drop below standards.

Many of the intersections with existing level of service issues are on Lea Hill or West Hill. Multiple intersections along Auburn Way South (SR 164), M Street SE, and A Street SE carry heavy volumes of both local and regional traffic and are close to or failing City and/or state LOS standards.

Table 3. Intersections Operating Below the LOS Standard per 2022 Traffic Counts

	INTERSECTION
1	116th Ave SE & SE 304th St
2	46th PL S / 44th Ave S & S 321st St / 51st Ave S
3	51st Ave S & 316th Ave
4	A St SE & 44th St SE
5	Auburn Way North & 45th St NE
6	Auburn Way South & 17th St SE
7	C St SW & 3rd St NW
8	Henry Rd NE / Pike St NE & 8th St NE
9	Lakeland Hills Way SE & Oravetz Rd SE
10	M St SE & 12th St SE
11	M St SE & AWS
12	R St SE & 33rd St SE
13	Howard Rd / 21st St SE

EXISTING LOS	NUMBER OF INTERSECTIONS
OK	111
Approaching Standard	27
At Standard	6
Failed	13

Future Conditions (2044 Preferred)

To forecast what travel patterns might be in 2044, the City's VISUM-based travel demand model was applied. Developing these forecasts required validation of the model to confirm it could replicate existing traffic volumes (with model inputs reflecting 2022 roadway and land use conditions throughout Auburn). Then, the model was updated to reflect land use and transportation conditions expected under the 2044 preferred land use scenario from the City's Comprehensive Plan Land Use Element. **Table 4** lists the projects included in the Initial 2044 Preferred Land Use Future model. The table also indicates what the current project status is and what are the next steps planned for the project. The next steps indicate whether or not the project will be retained or removed from the Plan project list included in Appendix B.

Figure 4. Existing Intersection Level of Service

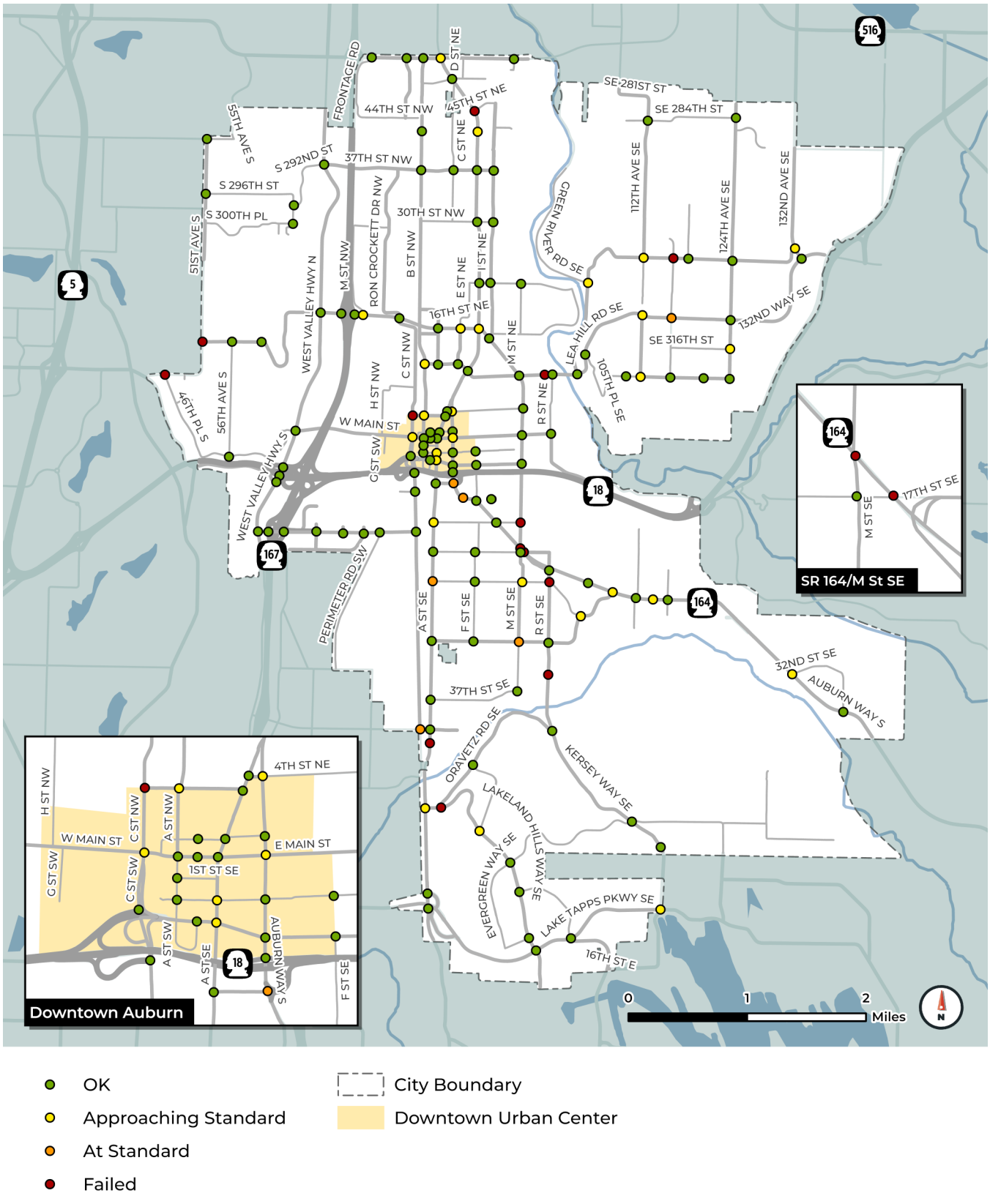


Table 4. Improvement Projects in the Initial 2044 Preferred Land Use Future Model

2024-2029 TIP ID	IMPROVEMENT PROJECT	PROJECT STATUS	NEXT STEPS
I-6	Lea Hill Road SE & 112th Avenue SE Roundabout	Design Programmed for 2027, Construction Not Yet funded.	Retain in 2024 CTP Project List
I-10	R Street SE & 21st Street SE Road Roundabout	Design Underway, Construction Programmed for 2025	Retain in 2024 CTP Project List
I-11	SR 164 & 6th Street SE Improvement	Design Programmed for 2025, Construction Not Yet Funded	Effectiveness of Project in Mitigating LOS questionable. Remove project from TIP and CTP.
I-12	Lea Hill Road SE & 104th Avenue SE Roundabout	Design Underway, Construction Not Yet Funded	Seek Construction Funding. Retain in 2024 CTP List.
I-15	10th Street NW & A Street NW Signal	Design Underway, Construction Programmed for 2024	Project to be substantially complete by end of 2024. Remove from 2024 CTP list.
I-16	SR 167 NB Ramps & 15th Street NW Improvement	Removed from TIP. Design and Construction Not Funded	Alternate Project Developed to Address LOS issue. Remove from 2024 CTP List.
R-2	Stewart Road Widening (City of Sumner)	Design Underway, Construction Programmed for 2025	Project By Others and Outside City of Auburn. Remove from 2024 CTP Project List.
R-4	A Street Loop	Construction underway	Project to be substantially complete by end of 2024. Remove from 2024 CTP list.
R-5	A Street NW & 3rd Street NW Improvement	Design and Construction Not Yet Funded	Retain in 2024 CTP Project List
R-6	Auburn Way S Widening (Hemlock Street to Poplar St)	Design Underway, Construction Programmed for 2024	Project will still be in construction by end of 2024. Retain in 2024 CTP Project List.
R-7	M Street NE Widening (Main Street to 4th Street NE)	Design Underway, Construction Programmed for 2025	Retain project in 2024 CTP Project List.
R-13	R Street SE Widening (22nd to 33rd)	Design Underway, Construction Not Yet Funded	Retain project in 2024 CTP Project List.

(Continued on next page)

2024-2029 TIP ID	IMPROVEMENT PROJECT	PROJECT STATUS	NEXT STEPS
R-16	RGC Access Improvements	Design Underway, Construction Programmed for 2024	Project to be substantially complete by end of 2024. Remove from 2024 CTP Project List.
R-26	E Valley Highway Widening	Design Underway, Construction Not Yet Funded	Seek construction funding. Retain in 2024 CTP Project List.
R-27	Garden Avenue Realignment	Design Underway, Construction Programmed for 2024	Project to be substantially complete by end of 2024. Remove from 2024 CTP Project List.
P-3	10th Street NE Improvements	Design and Construction Not Yet Funded	Retain in 2024 CTP Project List
2019 COMP PLAN ID	**IMPROVEMENT PROJECT**	**PROJECT STATUS**	**NEXT STEPS**
2	I Street NE Extension (45th Street NE to S 277th St)	Complete	Remove from 2024 CTP Project List
11	116th Avenue SE & SE 320th Street Roundabout	Not funded	Retain in 2024 CTP Project List
16	M Street SE Widening (8th Street SE to Auburn Way S)	Not funded	Combine with M/12th signal project in 2024 CTP Project List
19	116th Avenue SE & SE 312th Street Roundabout	Not funded	Retain in 2024 CTP Project List
22	M Street SE & 12th Street SE Signal	Not funded	Combine with M Street SE Widening
23	M Street SE & 29th Street SE Roundabout	Not funded	Retain in 2024 CTP Project List
30	R Street Bypass (M Street SE to SR 18)	Not funded	Retain in 2024 CTP Project List
WSDOT	**IMPROVEMENT PROJECT**	**PROJECT STATUS**	**NEXT STEPS**
n/a	SR 167 HOV Widening (15th Street SW to SR 410)	Construction Programmed for 2025	Project by Others. Remove from 2024 CTP Project List.

The initial 2044 Preferred Land Use Future Model was used to generate future travel demand volumes and turning movement counts at 162 study intersections[2] throughout the city during the busiest hour of the weekday AM (7:00 - 9:00 am) and PM (4:00 - 6:00 pm) peak periods.

Figure 5 shows the forecast 32% increase in households and 44% increase in jobs in the City of Auburn between 2022 and 2044. AM peak hour trips are forecast to increase by 28% (from 22,900 trips today to 29,300 trips in 2044). PM peak hour trips are forecast to increase by 37% (from 30,700 trips today to 42,200 trips in 2044).

Forecast volumes from the preferred land use alternative model were then applied to study intersections using Synchro software to test future LOS.

In the preferred land use alternative, 162 intersections were analyzed. Of these, 22 intersections are forecast to operate below City or state LOS standards in 2044. These intersections are listed in **Table 5**. Of the intersections forecast to fail, 10 currently do not meet the adopted LOS standards. These 10 intersections are highlighted in pink in **Table 5**. **Figure 6** shows a map of intersection LOS across the City.

Figure 5. Changes in Trip Generation Between 2022 Existing Condition and the Preferred Land Use 2044 Alternative

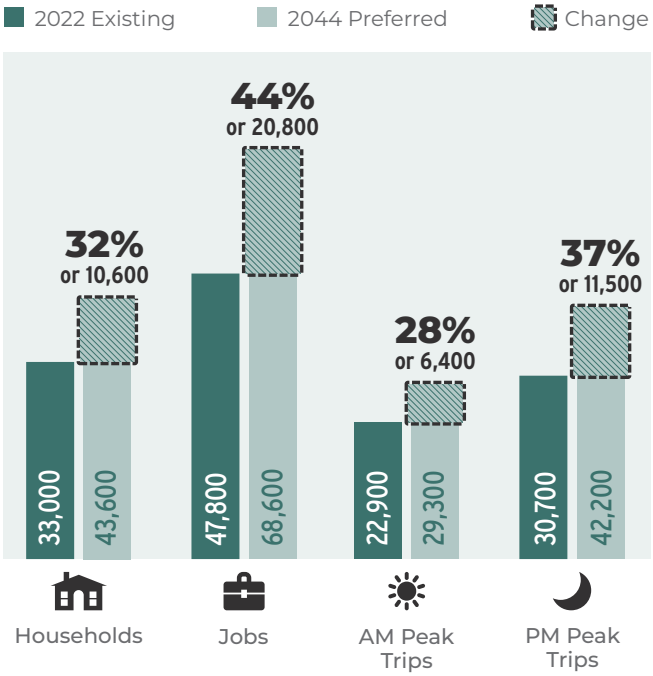


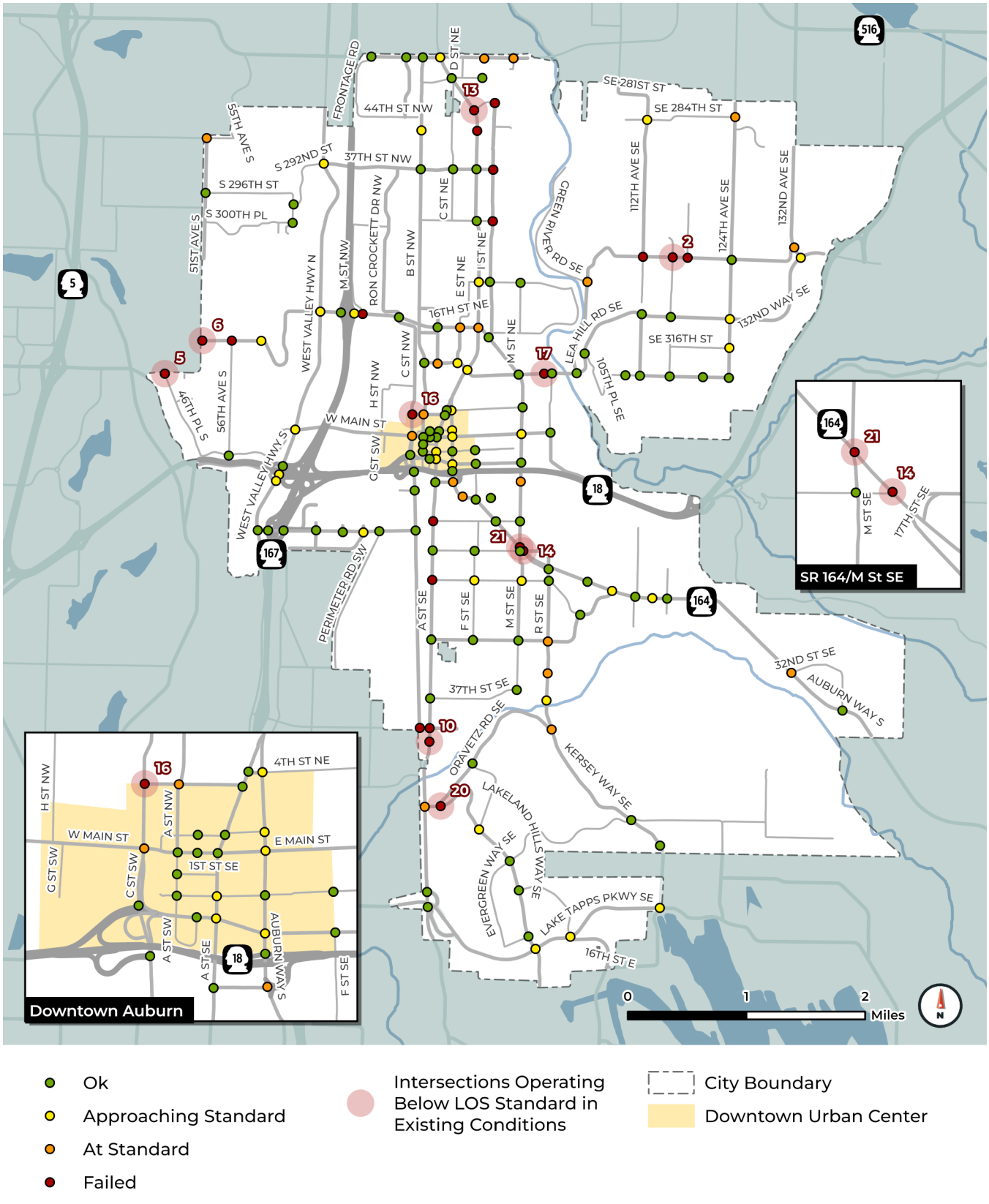
Table 5. Intersections Operating Below the LOS Standard

	INTERSECTION
1	112th Ave SE & SE 304th St
2	116th Ave SE & SE 304th St
3	15th St NE & M St NE
4	30th St NE
5	46th PL S / 44th Ave S & S 321st St / 51st Ave S
6	51st Ave S & 316th Ave
7	56th Ave S & S 316th Ave
8	A St SE & 12th St SE
9	A St SE & 21st St SE
10	A St SE & 44th St SE
11	A St SE & Ellingson Rd / 41st St SE
12	Auburn Way North & 42nd St NE
13	Auburn Way North & 45th St NE
14	Auburn Way South & 17th St SE
15	C St SE & Ellingson Rd
16	C St SW & 3rd St NW
17	Henry Rd NE / Pike St NE & 8th St NE
18	I St NE & 37th St NE
19	I St NE & 45th St NE
20	Lakeland Hills Way SE & Oravetz Rd SE
21	M St SE & AWS
22	SE 304th St & 118th Ave SE

FUTURE LOS	NUMBER OF INTERSECTIONS
OK	88
Approaching Standard	33
At Standard	19
Failed	22

2 Note that the future scenario includes five intersections that do not exist today.

Figure 6. Intersection Level of Service in the 2044 Future Preferred Land Use Alternative



Of the intersections forecast to operate below LOS standards by 2044, the vast majority have two-way stop-control; only three failing intersections are signalized, four have all-way stop-control, and 14 have two-way stop-control. More of the intersections are impacted during the PM peak hour than in the morning, similar to existing conditions. In addition to the 21 intersections that are expected to fail city or state standards by 2044, 14 intersections are forecast to operate at the City's LOS standard, two in both the AM and PM, three in the AM and nine in the PM peak hour, signaling that increased growth could test the capacity on more of the road network in Auburn.

With some exceptions, Vehicle LOS issues associated with the preferred land use alternative are concentrated along five corridors, where multiple intersections will fail to meet City or state LOS standards:

- **East:** SE 304th Street corridor on Lea Hill
- **North:** I St corridor and Auburn Way N
- **West:**51st Ave S / S 321st Street Corridor on West Hill
- **South:** A Street SE corridor

2.2.9. Addressing Vehicle LOS Deficiencies

Projects to Address Existing and Forecast LOS Issues

Where the future analysis indicated that an intersection would not meet adopted LOS standards in 2044, measures to address the deficiency were identified, evaluated, and costed. City transportation policies, goals, site characteristics, and and adjacent planned or underway projects were considered to identify effective and desirable improvements. The types of improvements considered included roundabouts, re-channelization of intersections, access management, turning restrictions, and signalization. Where a signalized intersection was deemed a desirable solution, MUTCD 11th Edition signal warrants were applied to determine if forecast volumes would warrant signalization of the intersection. In instances where a failing intersection would not meet MUTCD signal warrants, non-signalized mitigation measures, such as channelization and access management, were considered. All improvements were analyzed using Synchro traffic operations software to ensure the recommended measure would facilitate the intersection meeting the adopted level of service standards in the 2044 preferred land use alternative. Projects to implement these improvements are included in the project list in Appendix B.

Trip Reductions

The Preferred scenario includes reductions to vehicle trip generation rates to reflect shifts to other travel models due to increased density and mixed-use development projects, focused land use growth and increased access to additional active transportation facilities, transit service, increased vehicular travel costs, and demographic changes. The reduction percentages were determined based on results from PSRC's regional travel demand for travel behavior changes in the City of Auburn. Reductions were applied across the City based on the Transit LOS rating. This metric is based on walking proximity to transit. Reductions were only applied in areas with level of transit service 1 and 2, the highest quality transit options in the City: within the walkshed of Auburn Station and frequent transit routes (BRT and routes with less than 30 minute headways). The reductions in vehicle trip rates ranged from 1.5 to 8.0 percent based on trip type (commute vs. non-commute) and transit area type.

Regional Capacity Projects

In addition to projects that provide additional vehicle capacity to meet City vehicle LOS standards, a set of projects have been identified that would provide regional system-wide capacity benefit. These projects are included in the Regional Transportation Plan (RTP), by the Puget Sound Regional Council (PSRC) and are listed below:

- **Auburn Way South - Hemlock to Poplar** (currently in construction)
- **Auburn Way South: 32nd St to City Limit** (candidate project)
- **Auburn Way South - Poplar to 32nd St** (candidate project)
- **E Valley Highway Widening** (currently in design w/planned construction start in 2028)
- **M Street NE Widening, E Main St to 4th St NE**, (currently in design w/planned construction start in 2025/2026)
- **M Street SE Corridor Improvements** (8th St SE to Auburn Way S)

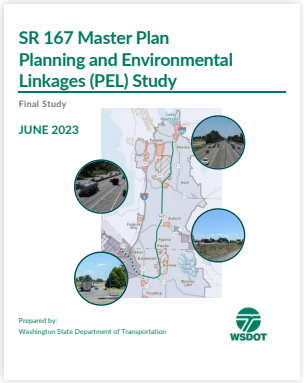
See Project Comp-20 in Appendix B. For more information regarding these projects, please refer to the **PSRC Regional Transportation Plan** available at https://www.psrc.org/planning-2050/regional-transportation-plan.

SR 167 Master Plan

The SR 167 Master Plan update includes recommendations to address the significant congestion and impact on local roadways from regional traffic flowing through the SR 167 corridor.

The plan calls for an additional express toll lane in each direction and interchange improvements on SR 167 at 15th Street NW, SR 18, and 15th Street SW to reduce bottlenecking and queuing issues. These changes are complemented by a suite of transit improvements and active mode access improvements in the surrounding area. Additionally, the master plan also includes support for reconstructing the BNSF freight railway over Ellingson Road to reduce bottleneck and impacts to traffic.

For further review of the SR 167 master plan, visit the WSDOT project website.



SR 167 PEL Study

2.3. ACTIVE TRANSPORTATION

Active transportation is an integral component of Auburn's transportation system. Active transportation includes walking, bicycling, and rolling. The City seeks to enhance the active transportation travel environment both for recreational travel and trips that might otherwise be taken via a car to improve mobility and environmental health.



The City recognizes that the past development of the transportation system has prioritized the automobile as the primary travel mode. A side effect of this has been conditions less conducive to active transportation travel. The City seeks to redress the balance by enhancing conditions in which active transportation modes are a realistic and attractive travel option.

Over the last 15 years, there have been significant improvements to active transportation facilities in Auburn's Regional Growth Center (Downtown Auburn). Sidewalk, ADA, and lighting improvements have been made to Main Street, S Division Street Promenade, City Hall Plaza and Plaza Park, and behind the shops on East Main Street. Growth in the downtown core has resulted in the development of multi-story residential and office buildings and senior housing, helping renew the pedestrian infrastructure and creating a need for continued effort to maintain and improve the sidewalk system. In addition, the Sounder Auburn Station and transit hub at West Main Street and C Street SW provide pedestrians more options for connecting to regional destinations.

These improvements contribute to a more hospitable environment for pedestrians. Despite the progress that has been made over the past several years, there are still many areas of need and gaps in active transportation systems in Downtown Auburn and in other areas throughout the city.

Commercial development outside the downtown exists primarily along arterials and is dominated by strip development and auto-oriented businesses. Although sidewalks are provided on most arterials, pedestrians may feel exposed to the traffic. Surface parking lots border the sidewalks, and driveways interrupt the continuity of the sidewalk system. The high volumes of vehicular traffic and wide streets along arterials, such as Auburn Way, pose a barrier for pedestrians crossing the roadway.

Residential areas, such as southwest Lea Hill, were built under King County's jurisdiction and sidewalk construction was not required. Breaks in the sidewalk network require pedestrians to maneuver around parked cars, into private yards, or into the street. In newer neighborhoods such as Lakeland Hills,

sidewalks built to the city standards applicable at the time of their construction are provided on both sides of the street.

The Lea Hill and West Hill neighborhoods have a sporadic and often disconnected sidewalk system. Most newer residential developments have sidewalks, but many of the older residential areas and arterial streets are missing large segments of sidewalk, resulting in an inconsistent pedestrian environment.

The Auburn Valley is flat and conducive to cycling for a range of skill levels and has a good network of existing or planned north-south biking routes and trails. Areas along the Green and White Rivers provide opportunities for multi-use trails that accommodate bicyclists and pedestrians. The Interurban Trail is part of a major north-south regional trail system. The Green River trail is also an extension of a north-south regional trail. Conversely, there are few existing east-west connections between the West Hill and Lea Hill areas of Auburn which are more challenging due to steep topography. Many bicycle lanes existing throughout the City but often have gaps before forming a fully connected network or connection to transit and trails.

Planning and developing a strong active transportation network supports several state and national acts including Washington's GMA, CTR Act, the federal Clean Air Act, the ADA, and the Move Ahead for Progress in the 21st Century Act (MAP-21) and its successors. Supporting the active transportation system helps ensure compliance with these initiatives and the healthy community principles espoused by PSRC through Vision 2050. It also increases funding opportunities for City projects. Improving the active transportation system also helps address the findings of the citywide Health Impact Assessment, which recommended that the City improve sidewalk connectivity; improve the pedestrian environment; eliminate natural and man-made mobility barriers for pedestrian and bicyclists; improve transit access; and improve traffic safety, and pedestrian safety.

As a regional growth center, the City encourages transportation planning that emerges from a clear land use plan based on a community vision and the values expressed in Imagine Auburn. In this vision, Auburn supports higher density housing in the downtown; neighborhood commercial districts; and landscaped, pedestrian-oriented street and sidewalk design. This pattern of development reinforces a positive walking and biking environment.

Auburn's developing trail network provides local and regional connections for both recreational use and commuting. The regional trails that have been developed include the Interurban Trail and portions of the Green River and White River Trails. The Lakeland Hills Trail network provides connections to neighborhood parks, community center, and to the Sumner Link Trail via a tunnel under the BNSF railway. Map 2. 2024 Bike Route Network in Appendix A illustrates the existing and proposed trail network within the City.

Figure 7. Existing Bike Facility Statistics as of January 2024



TOTAL: 46.67 mi

In 2024, the City's existing bike facilities were mapped using aerial photography and field verification. All roads in the City of Auburn are considered Class III Bikeways. However, only bike facilities of Class III Bikeways with Pavement Markings level and higher were included in the inventory. The inventory is depicted in Map 3. 2024 Existing Bike Facilities in Appendix A and yielded the statistics shown in **Figure 7**.

A citywide sidewalk inventory was completed in 2022. This initial inventory collected the following information for city sidewalks:

- Location
- Surface type (concrete, asphalt, brick)
- Width
- Length
- Surface area

The inventory was collected prior to the development of the Pedestrian Level of Traffic Stress (LTS) standards and for many sidewalks, doesn't include all information needed to determine the Pedestrian LTS. An ongoing effort is underway to collect this additional information that will then be used to evaluate and document where existing sidewalks meet or don't meet pedestrian LOS standards.

The total length of City sidewalks inventoried in 2022 was **298 Miles**.

2.3.1. Active Transportation Level of Service Standards

The Plan policies establish active transportation LOS standards based on the LTS, shown in **Figure 8**. This approach is consistent with Washington State, Pierce County, and King County policies and standards. LTS describes how comfortable a pedestrian or bicycle route feels to its users based on a variety of variables including posted speed limit, traffic volumes, whether or not the roadway is a truck route, and the type of active transportation facility provided. Active transportation facilities in, or along, roadways with higher vehicle speeds and volumes generally have higher LTS scores because the vehicle traffic makes it less comfortable for bicyclists and pedestrians to use those facilities. Facilities that provide more separation between active transportation modes and adjacent roadway vehicular traffic and/or on lower speed roadways are more comfortable for bikes and pedestrians and therefore have a lower LTS. The City rates the LTS of its bicycle and pedestrian facilities on a scale of "1" to "4" with "1" being the most comfortable facilities and are the most likely to be used by people with a wide range of ages and abilities and "4" is the least comfortable and are likely to be used by only a select group of people and may present a barrier to the general walking and biking community.

2.3.2. Walking LOS Standards

The City's pedestrian network consists mostly of sidewalks and roadway shoulders. Trails and alleys also provide pedestrian connectivity in some areas. The City utilizes the Pedestrian Facility LTS Table shown in **Table 6** to identify the LTS scores for pedestrian facilities. The Plan policies establish an LTS of "2" as the minimum standard for new and upgraded pedestrian facilities. The Plan policies also establish that new and upgraded pedestrian facilities will meet current ADA requirements. The Plan policies support actions to identify, prioritize, and plan improvements to existing pedestrian facilities to meet current LTS standards and ADA requirements.

Figure 8. Level of Traffic Stress (LTS)

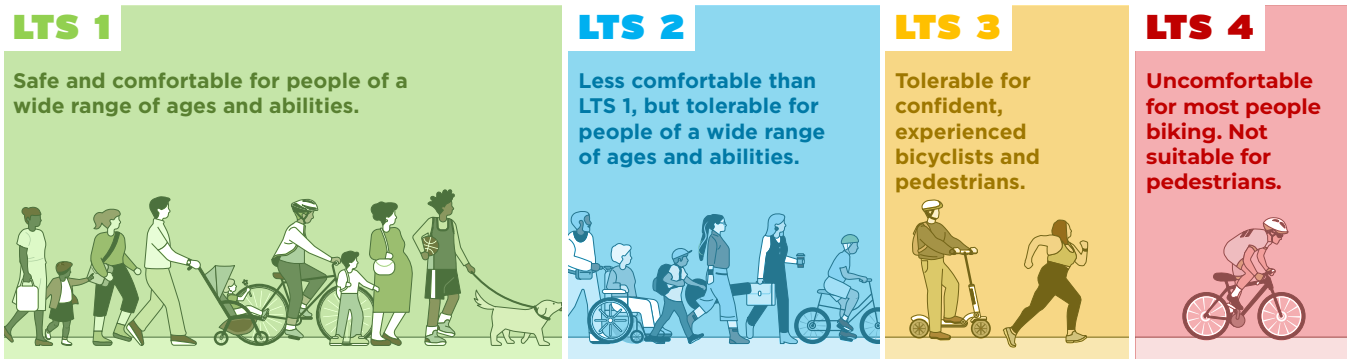


Table 6. Pedestrian Facility LTS Table

ROADWAY CLASS	NO SEPARATE PEDESTRIAN FACILITY	5' SHOULDER	5' SHOULDER WITH PHYSICAL BARRIER	5' SIDEWALK	5' SIDEWALK WITH 5' SEPARATION	10' SIDEWALK
Alley	2	1	1	1	1	1
Local Rustic	2	1	1	1	1	1
Rustic Collector	3	2	1	1	1	1
Local	3	3	2	2	1	1
Collector	4	3	2	2	1	1
Local Industrial	4	4	3	3	2	1
Minor Arterial	4	4	4	3	2	1
Principal Arterial	4	4	4	3	2	1

2.3.3. Biking LOS Standards

The planned and existing routes making up the City's bicycle transportation network have been classified as either Regional, Priority, or Auxiliary Routes and are shown on Map 2. 2024 Bike Route Network in Appendix A. These classified bicycle routes, both existing and planned, support general movement of cyclists throughout the City and have been identified to provide connectivity between neighborhoods and commercial areas to transit stops, regional trail connections, and the downtown urban center. Streets and trails not identified as Regional, Priority, or Auxiliary routes provide important connections between local destinations, recreational use, and access to the bicycle transportation network.

- **Regional routes** provide connectivity through the City to areas outside the City
- **Priority routes** provide connectivity from Auxiliary Routes to Regional Routes, frequent transit stops, and Auburn Station
- **Auxiliary routes** provide connectivity to Priority Routes from neighborhoods, commercial areas, schools, services, and non-frequent transit stops

The Plan policies establish standards that require Regional Routes to have the lowest LTS of "1", Priority Routes to have a slightly higher LTS of "2" or less, and Auxiliary Routes to have an LTS of no more than "3". Bicycle facilities not identified as being Regional, Priority, or Auxiliary do not have assigned LTS standards d are designed in accordance with the standard roadway cross sections by street classification in the EDS.

The City utilizes the Bicycle Facility LTS Table shown in **Table 7** to identify the LTS scores for bicycle facilities. The table represents a simplified approach towards evaluating bicycle level of traffic stress. In some cases, factors not shown in the table may need to be considered and could necessitate the use of a more robust bike facility than is shown on the table to achieve the level of traffic stress standard. Standards for Class I, II, and III Bikeways are included in the EDS, shown in **Figure 9**.

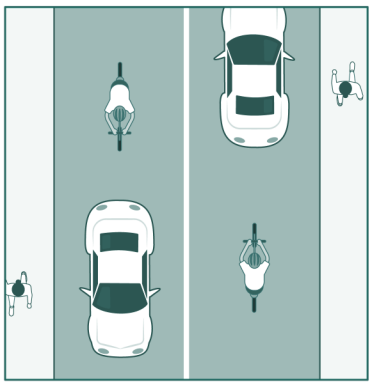
The EDS will be periodically updated to reflect current and emerging approaches towards achieving LTS standards with differing treatments and approaches.

Although a bike network route is not identified on SR 164, this state route is subject to WSDOT complete streets requirements. Per these standards, SR 164 would require a minimum of a separated trail (Class I Bike Facility) to meet WSDOT level of traffic stress requirements. The City will look for opportunities to improve SR 164 to include these facilities where feasible with capital and development project improvements and in partnership with the Muckleshoot Indian Tribe.

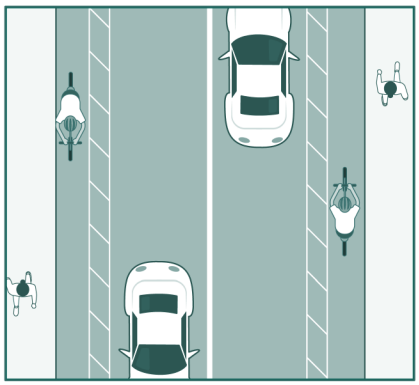
2.3.4. Sidewalk Facility Gap Analysis

The inventory of existing sidewalks was used to identify gaps in the City's sidewalk network. Improvements to address gaps and to address safety, accessibility, and level of traffic stress deficiencies have been, or will be, identified and included projects in this plan or addressed with future projects and programs.

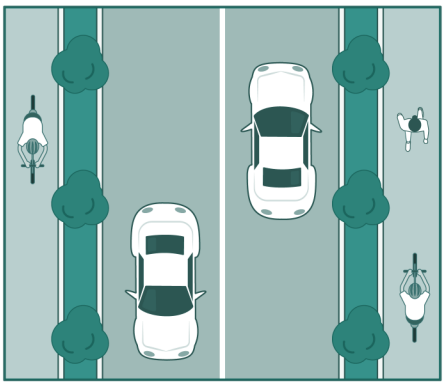
Figure 9. Bikeway Standards



Class III bikeways typically has the bicyclists and vehicles sharing travel lanes.



Class II bikeways are generally bicycle lanes in the roadway but separated from vehicular traffic.



Class I bikeways are bicycle facilities that are outside the roadway and are usually separated from roadway traffic by curbing, landscaping, buffer hardscaping, or physical barriers.

Table 7. Bicycle Facility LTS Table

POSTED SPEED LIMIT (MPH)	ARTERIAL TRAFFIC VOLUME/ FREIGHT CLASS	CLASS III BIKEWAY	CLASS III BIKEWAY W/ PAVEMENT MARKINGS	CLASS II BIKEWAY	CLASS II BIKEWAY W/BUFFER	CLASS I BIKEWAY
25/Not Posted	<3k	1	1	1	1	1
	3-7k	3	2	2	2	1
	≥7k	3	3	2	2	1
30	<15k	4	3	2	2	1
	≥15k	4	4	3	2	1
35	<25k	4	4	3	3	1
	≥25k	4	4	4	3	1
40+	Any Volume	4	4	4	4	1
Any	T-2* or Greater	4	4	4	4	1

2.3.5. Bike Facility Gap Analysis

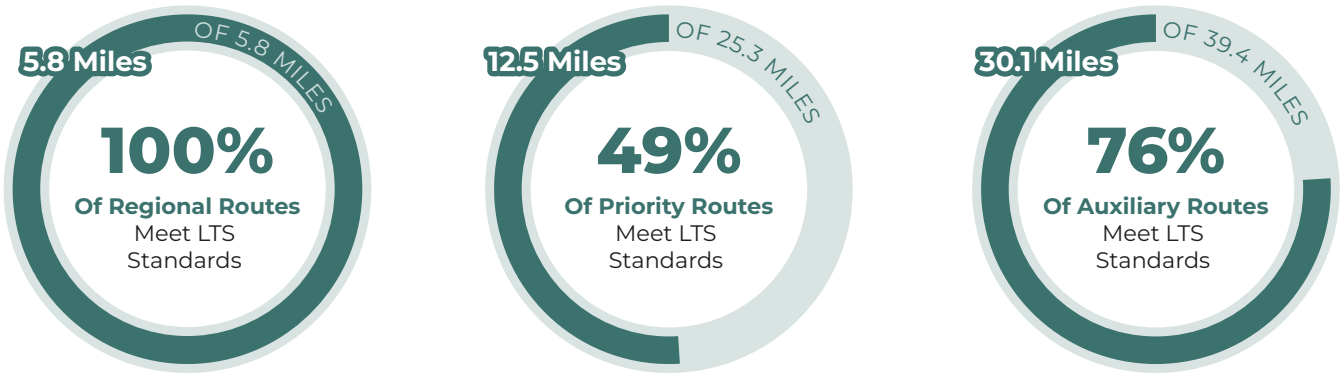
The inventory of existing bike facilities was evaluated using the LTS Table to determine the LTS for existing facilities.

The existing bike facilities LTS data was compared to the Map 2. 2024 Bike Route Network in Appendix A of regional, priority, and auxiliary routes to identify gaps in the planned bike network and existing bike facilities that do not currently meet the LTS standards. The comparison yielded the following statistics shown in **Figure 10**.

Bike facilities not located on the City's bike network do not have an LTS standard and were therefore not assessed for a gap between the provided LTS and the LTS standard.

Completing gaps in the bike network and upgrading bike facilities to meet or exceed LTS standards in areas closer to transit services and where those transit services are more frequent and convenient (level of transit service "1" or "2", see Section 2.4.2. Transit LOS Standards) is more likely to encourage a mode shift from cars to bikes and transit. These projects would help relieve vehicle congestion and reduce needs for increased vehicle capacity and are therefore eligible to be funded with a per person trip transportation impact fee program. These projects are listed in Appendix B.

Figure 10. Bikeway Network Assessment Statistics as of January 2024



2.4. TRANSIT

2.4.1. Existing Transit Services

Figure 11 provides a brief summary of the public transportation services offered in Auburn. Existing transit service for the Auburn area is identified in Map 5. 2024 Transit Bus Routes/Stops in Appendix A. The service levels outlined in this section are for normal operations as of January 2024.

Auburn Station

Transit service is a key component of Auburn's transportation system, providing mobility within the City and access to and from the City. Unlike the street and active transportation systems, Auburn does not directly administer transit service. Rather, the City works with local and regional transit agencies to coordinate service. The transit agencies are publicly funded and are responsible for providing transit service within their individual service boundaries.

Today, Auburn is served by local and regional bus service and commuter rail.

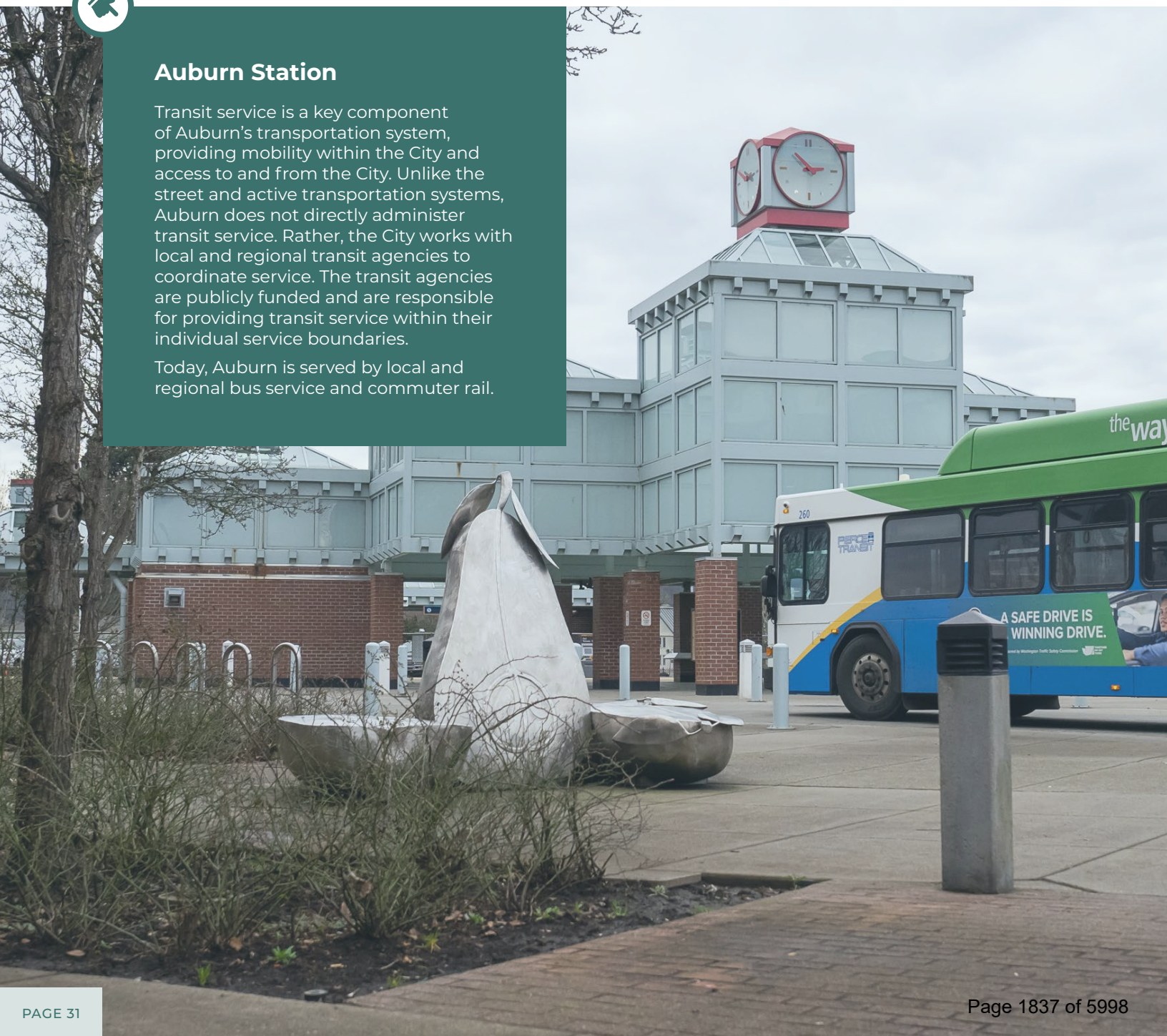
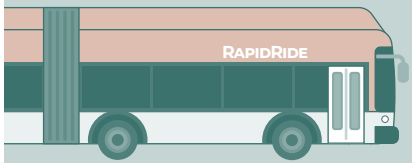
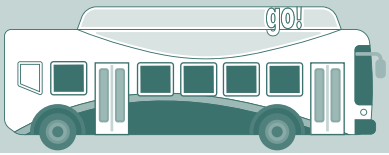
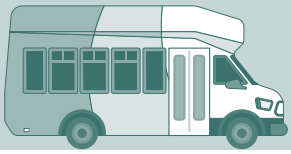


Figure 11. Types of Transit Services in Auburn

AUBURN STATION (MANY TRANSIT OPTIONS AVAILABLE)

- Sound Transit Sounder commuter rail service
- Sound Transit express bus service
- KC Metro frequent route service
- KC Metro and Muckleshoot Tribal Transit local route service
- KC Metro DART service
- Pierce Transit express route service

	Level of Service	Service/ Frequency	Distance Between Stops
Frequent Routes BRT – Bus Rapid Transit (RapidRide) 	**HIGHEST** service frequency/ hours	**< 15 MINS OR LESS** headways during service hours Minimum 4 buses/hour during peak times (currently route 160)	**STOPS EVERY 1/2 MILE**
Local Routes 	**MEDIUM** service frequency/ hours	**≤ 30 MINS** headways during peak hours **≤ 60 MINS** during service hours outside of peak hours (currently routes 181, 184, Muckleshoot Tribal Transit)	**STOPS EVERY 1/4 MILE**
DART & Express Routes 	**LIMITED** service frequency/ hours	**Service with few stops between destinations, intended to take riders quickly to the key destinations.** • Express routes are currently routes 497, 566, and 578 • Dial-A-Ride Transit Service (DART) routes are currently routes 915 and 917	**STOPS EVERY 1/4 MILE**

King County Metro Transit (KC Metro)

KC Metro offers a network of bus service in Auburn, connecting the city to the region. KC Metro adopted and implemented changes to its network in September 2020, via the Renton-Kent-Auburn Area Mobility Plan (RKAAMP), and some routes were affected. These changes were in part to accommodate the planned RapidRide I Line, which would replace a portion of Route 160, and provide frequent, reliable, and extended (early mornings to late night) service from Auburn Station, along the Auburn Way N corridor, connecting Auburn, Kent, and Renton transit stations.

Route 160 provides connection between Auburn Station, Kent Station, and the Renton Transit Center with very limited stops in between. It provides a maximum of 15-minute service during peak hours and 30-minute service during off-peak, and operates from 4 am to 3 am on weekdays and from 5 am to 3 am on weekends. This route will become the RapidRide I Line in 2026 and will provide service every 10 to 15 minutes.

Route 165 provides regional service between Kent, Auburn, and Green River College. It connects with Route 181 at Green River College. This route provides 20-minute service during peak hours and 30- to 60-minute service during off-peak, operating from 5 am to 12 am on weekdays and 6 am to 12am on weekends.

KC Metro provides frequent, local, and DART bus services linking destinations within the community and providing regional connections to the Auburn Station.

Route 181 provides daily service between the Twin Lakes Park-and-Ride, Federal Way Commons Mall, Federal Way Transit Center, the Outlet Collection, Auburn Station, and Green River College. It provides 15- to 30-minute service during peak hours and 30- to 60-minute service during off-peak, operating from 5 am to 11:30 pm on weekdays and 6:45 am to 11:30 pm on weekends.

Route 184 provides daily service from Auburn Station to south Auburn. It provides 20- to 30-minute service during the day, and 30- to 60-minute service during nights and weekends, and operates from 4:30 am to 1:30 am on weekdays and 5:30 am to 2 am on weekends.

Route 915 provides weekday and Saturday service between Auburn Station and Enumclaw via Auburn Way South. The route also includes a small portion of DART service with limited, variable routing in response to rider requests in downtown Enumclaw and the northern part of the Auburn Downtown Urban Center around the MultiCare Auburn Medical Center. This route provides 40- to 60-minute service, operating from 4:30 am to 7:45 pm, during weekdays, and 90-minute service, operating from 10 am to 6:30pm, on weekends.



Route 917 provides weekday and Saturday service between A St SE, 41st St SE, Algona, the Outlet Collection, and Auburn Station. The route offers DART service (limited variable route) in portions of Pacific. This route provides 25- to 40-minute service on weekdays, and 60-minute service on weekends. It operates from 5 am to 7 pm on weekdays and from 8:30 am to 5:45 pm on weekends.

Metro Flex

Metro Flex is an on-demand neighborhood ride share service, allowing transit users to ride anywhere within its service area at the same cost as a KC Metro bus trip. Metro Flex provides service in places that are not near frequent bus or rail service, helping to fill transit gaps in the areas that it serves. While Auburn is not currently within a Metro Flex service area, it is on the short list for expansion of the program.

ACCESS

ACCESS Transportation is a KC Metro paratransit service, providing door-to-door, shared-ride van transportation within most of King County. The ADA requires door-to-door paratransit service for persons whose disabilities prevent use of accessible fixed-route bus service.

Vanpool Services

KC Metro sponsors vanpool services that serve residents and employees in Auburn. Vanpool is a shared-ride service that provides group transport for commuters with proximate origins and destinations. Vanpool is a popular and flexible service that provides commuters with an alternative to driving alone and fixed-route transit service. Vanpool will continue to be an important strategy for mitigating peak period congestion throughout Auburn and the region.

Metro Transit Facilities

KC Metro owns and operates the Auburn 15th Street NW Park-and-Ride with approximately 150 surface parking stalls. KC Metro also operates into Auburn Station, which is managed by Sound Transit.



Pierce Transit

Route 497 is operated by Pierce Transit in partnership with the City of Auburn and KC Metro. It operates peak hour weekday service between Lakeland Hills and Auburn Station. As a morning and evening service meeting Sounder commuter rail schedule, Route 497 is a commuter-oriented route, but is open to all riders. Route 497 primarily serves Sounder passengers and significantly reduces the demand for commuter parking at the Auburn Station parking garage managed by Sound Transit.

Vanpool Services are provided by Pierce Transit similar to those offered by KC Metro.

Sound Transit

Sound Transit is the regional transit provider for the many parts of the Puget Sound region. It provides limited-stop transit services linking Auburn to major regional destinations in King and Pierce Counties. The agency offers Sounder commuter rail and regional express bus services in Auburn.

Sounder Commuter Rail

Sound Transit operates the Sounder commuter rail service on the Lakewood to Tacoma to Seattle route (S Line) via the BNSF Railway. The S Line provides weekday peak hour trips northbound to Seattle in the morning and southbound from Seattle to Tacoma to Lakewood in the afternoon. Limited reverse direction trips are also provided in each peak hour, as well as limited midday service. Some connections are available between S Line Sounder trains, which terminate in Seattle, and N Line Sounder trains from Everett to Seattle. Additional special event service to and from Seattle for Mariners, Seahawks, and Sounders games on some weekends.

Currently, nine trains operate northbound to Seattle in the morning peak, and ten trains return southbound during the evening peak. Three trains operate southbound to Tacoma/Lakewood in the morning and northbound to Seattle in the evening. There is currently one midday train running northbound to Seattle.

Due to shifts in ridership since the COVID-19 pandemic and changes in many commuters' work schedules, particularly the increase in telework, Sound Transit is re-examining the priorities from the 2020 Sounder South Strategic Plan. Prior to the pandemic, near capacity ridership growth was expected during peak periods, resulting in the plan prioritizing longer trains (from seven cars to ten cars) during the peak periods. However, since the pandemic, peak ridership has lowered, leading Sound Transit to consider prioritizing new trips, including more trips during off-peak hours, over longer trains.



Any new trips, however, will require approval from BNSF Railway, which owns most of the tracks the Sounder runs on.

As part of its re-examination of its priorities, Sound Transit conducted public engagement around the question of longer trains during peak hours versus more trips. The survey results showed that approximately 90% of respondents preferred adding new trips over longer trains. Sound Transit will use the feedback from its public engagement, along with other research, to inform Sound Transit Board discussions regarding its Sounder S-Line priorities.

Regional Express Bus Service

Route 566/567 offers daily weekday, limited-stop service between Auburn Station, Kent Station, Renton Transit Center, Bellevue Transit Center, and Overlake Transit Center. It provides 20- to 30-minute service northbound during the morning peak from 5:30 am to 11 am, and 20- to 30-minute service southbound during the evening peak from 1:40 pm to 8 pm.

Route 577/578 offers daily limited-stop service between Puyallup, Sumner, Auburn, Federal Way, and Seattle. Route 577 provides service between the Federal Way Transit Center and Seattle during the peak periods when the Sounder train is in operation. The 578 provides service between Puyallup and Seattle during the off-peak hours when train service is not currently provided. Route 578 provides 30- to 60-minute service on weekdays. On weekends, Route 578 provides hourly service.

Auburn Station

Sound Transit owns and operates Auburn Station located in downtown Auburn. This full-service multimodal facility provides parking for a total of 633 vehicles in a six-story parking garage and a surface parking lot. A new parking garage is expected to be available for transit users in 2027, offering an additional 525 parking stalls. A number of parking stalls are reserved for carpool/vanpool, and a number of stalls are reserved for paying single-occupant vehicles.

The facility currently handles approximately 470 daily bus trips. Approximately 3,000 passengers ride bus service to/from the station on a daily basis. Boardings at Auburn on the Sounder commuter rail are approximately 1,300 per day.

Muckleshoot Tribal Transit

MIT currently operates the Muckleshoot Tribal Transit (MTT) services that offers two publicly available transit routes. The Reservation Hot Lap provides local service between SE 384th Street and SE 416th Street with 30- to 60-minute service from 7 am to 8 pm on weekdays. The Reservation Route serves the SR 164 corridor generally between SE 416th Street, Downtown Auburn, and the Outlet Collection with 30-minute service from 5:30 am to 8:30 pm on weekdays, and 30-minute service from 10 am to 4:30 pm on Saturdays and holidays. MTT shares many stop locations with KC Metro and is a valuable resource to the community as the service is free to all passengers.



2.4.2. Transit LOS Standards

Different agencies take different approaches towards transit LOS standards. Unlike facilities and services for other transportation modes, the City of Auburn does not own or operate transit facilities and does not directly provide transit services. It follows that the City evaluates and utilizes transit LOS standards differently than transit service providers (KC Metro, Pierce Transit, Muckleshoot Indian Tribe, and Sound Transit). Agencies that provide transit service typically utilize transit LOS standards to identify deficiencies in transit services and plan for expanded or improved transit services and facilities.

The City of Auburn's approach utilizes transit LOS standards to identify and prioritize investments in other transportation modes that would best encourage people to use transit services instead of driving.

This approach utilizes transit LOS as a gauge to evaluate the likelihood that people would choose transit over driving. The variables used to evaluate transit LOS by the City are proximity to transit services and the type of transit services available to the area. People in areas that are within closer walking and biking distances to transit services are more likely to use those services and therefore those areas have a higher transit LOS than areas further from transit services. Similarly, people are more likely to use transit services that offer more frequent and connected services and therefore areas served by more frequent and connected services have a higher transit LOS than areas with less frequent, less connected services.

Using the transit LOS in **Table 8**, a transit LOS rating ranging from "1" to "4" can be assigned for any location in the City using a combination of the walking distance from the location to transit service and the type of transit service available. A transit LOS rating of "1" is the highest rating which indicates an area is within a comfortable walking or biking distance to the most frequent and convenient transit services (frequent transit and/or transit hubs like Auburn Station). A transit LOS rating of "4" is the lowest rating and indicates an area is not within a short walking or biking distance to even the most basic transit services.

Map 6. 2024 Level of Transit Service in Appendix A shows level of transit service ratings throughout the City. Transit LOS is estimated using the walkshed distance to current and near-term planned transit stops based on the existing street network and does not account for whether or not those streets have active transportation facilities that meet current LOS pedestrian and bike standards. The City utilizes transit LOS to help prioritize investments in active transportation facilities intended to reduce the transportation system's need for vehicular capacity. Placing a new sidewalk, bike lane, or trail in a location with a transit LOS of "1" is more likely to encourage mode shift from vehicle to transit than placing the new facility in a location with a transit LOS of "4". Additionally, mitigation of potential vehicular LOS impacts caused by development is more likely realized with active transportation improvements in areas with higher transit LOS ratings. Map 6. 2024 Level of Transit Service in Appendix A is also used by the City in its coordination efforts with transit agencies to help identify service needs and gaps. It is the City's intention to improve overall transit LOS in the City by coordinating with transit agencies to encourage and support improved services, planning growth in the City near areas served by transit, and prioritizing investments in active transportation facilities that provide connectivity to transit services.

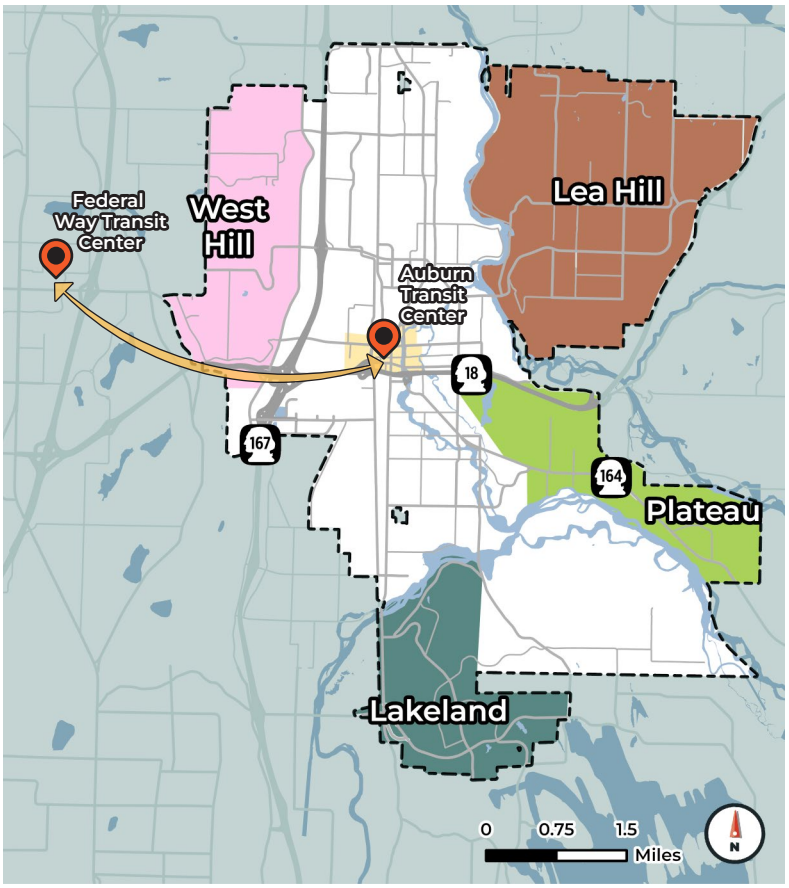
Table 8. Transit LOS Table

TYPE OF TRANSIT SERVICE	>1 MILE WALKSHED	1 MILE WALKSHED	¾ MILE WALKSHED	½ MILE WALKSHED	¼ MILE WALKSHED
Auburn Station	4	3	2	1	1
Frequent	4	3	2	1	1
Local	4	4	3	2	2
Express and Dart	4	4	4	3	2

2.4.3. Transit Needs and Gaps

The City serves as a community voice and advocate to transit providers to maintain and expand transit services to meet community needs. However, the City is not in full control of these services, therefore, the City's approach towards addressing transit level of service issues in order to improve that level of service where the City has control is to focus on providing access to existing and planned transit services. Those efforts are centered on improving sidewalk and bicycle facilities to provide connections to transit services and are described in the active transportation sections of this plan. This section summarizes the gaps and needs in the existing transit services in Auburn and provides recommendations on how those gaps and needs may be filled. The City will continue to communicate and coordinate with transit agencies to advocate for these needs.

Figure 12. Auburn Neighborhoods with Transit Needs and Gaps



West Hill

The West Hill of Auburn is generally the area bound on the west by 56th Ave S, Peasley Canyon Rd, 51st Ave S and 46th Place S (City limits), on the east by West Valley Highway, on the south by the S 348th St alignment (City limits), and on the north by the S 284th St alignment (the City limits approximately ½ mile south of S 277th St). Auburn's West Hill is not directly served by any transit services making its 7,500 residents the least transit served people in Auburn. Auburn's West Hill is also unique in that it sits between the Auburn Station and the Federal Way Transit Center. This presents an opportunity to provide transit connections from West Hill to the Federal Way Transit Center, Auburn Station, or both. These connections could come in the form of new routes or by modifying existing routes. KC Metro Route 183 could be modified to expand into portions of the West Hill to provide connection to the Federal Way Transit Center. KC Metro Route 181 could be modified to pass through a portion of West Hill to provide access to both the Federal Way Transit Center and Auburn Station. Another recommended solution would be to provide Metro Flex services to the West Hill and other parts of Auburn that lack transit services.

Connection Between Auburn Station and Federal Way Transit Center

With the Link Light Rail expanding south to Federal Way with an expected opening in 2026, there is an opportunity and need to improve Auburn's overall access to regional transit systems by providing frequent and efficient transit services between the Federal Way Link Station and Auburn Station. When the Link Light Rail is complete to the Federal Way Transit Center, the demand for this route is likely to increase significantly. The City of Auburn strongly supports and advocates for the expansion to frequent services and/or conversion of the existing Route 181 to a RapidRide line to enhance the connection between Auburn Station and the Federal Way Transit Center.

Lea Hill

The Lea Hill area of Auburn is bound on the west and south by the Green River, on the east by SR 18, and on the north by the City limits along S 282nd St and S 288th St. Lea Hill, a predominantly residential community, has two transit routes that predominantly serve Green River College, leaving a large portion of the residents unable to walk or bike to a transit route. In 2014, a license plate survey of the Auburn Station garage indicated that a substantial

number of Lea Hill residents utilize transit service at Auburn Station. This suggests that a commuter-oriented shuttle serving Lea Hill, similar to the Route 497 shuttle implemented in Lakeland Hills, could be successful. Another recommended solution would be to provide Metro Flex services to the Lea Hill and other parts of Auburn that lack transit services.

Plateau

The area along Auburn Way South (SR 164) between Riverwalk Drive, east to the City limits is referred to as the Plateau and is currently served by KC Metro Route 915 and Muckleshoot Tribal Transit. With both of these routes running, headway time ranges from 30 to 60 minutes. The City will continue to encourage partnership between KC Metro and Muckleshoot Tribal Transit to improve transit services to/from the

Other Transit Needs and Suggested Improvements



Residential areas of east Auburn, east of M St NE and south of 8th St NE, and parts of northeast Auburn, east of I St NE, are located more than 1/4 mile from fixed-route bus service. It is difficult for these areas to access transit, both for local and regional trips.



The design of KC Metro's local bus routes in Auburn should be reviewed in relation to future changes in Sound Transit's Sounder commuter rail and regional express bus services to identify opportunities and priorities for productive improvements to transit coverage, frequency, and hours of operation.



To maximize the investment in public transit service in Auburn, it is recommended that both Sound Transit and KC Metro conduct an evaluation of their schedules with a focus on improving service to major employers in the Auburn area.



Sounder Commuter Rail operates bi-directionally in the peak periods. Most of the trips are operated in the peak direction: northbound during the weekday AM peak and southbound during the weekday PM peak. No midday, evening, or weekend regular service is currently provided, except for the special events times. These services are needed, as is additional capacity on some of the currently most popular runs. The City encourages Sound Transit to institute midday Sounder service to and from Tacoma/Lakewood and Seattle, and plan for evening and weekend service in the near future.



The City will continue to work with Sound Transit as it designs and builds the second parking garage for the Auburn Station.



The City will utilize the CTR commuter surveys and employer program reports and continue to develop partnerships with CTR businesses to better understand the transit needs and gaps with the major employers in Auburn.



The City will continue to work with transit providers to ensure that transit stops are clean, secure, and meet safety requirements.



Auburn encourages Amtrak to consider implementing more intercity rail stations in the high density and traffic congested areas of Puget Sound, such as at Auburn Station. A new Auburn stop would have great ridership benefits since it is at a station with available overnight parking and is in close proximity to hundreds of thousands of potential new customers.

plateau to shorten headways along Auburn Way South. Another recommended solution would be to provide Metro Flex services to the Plateau and other parts of Auburn that lack transit services.

Lakeland Hills

Lakeland Hills, a planned residential community with approximately 3,800 homes, has peak-hour service to downtown Auburn, but lacks all-day service. The City of will continue to work with Pierce Transit, KC Metro, and Sound Transit to preserve Route 497 and add service to the route to meet all existing and future Sounder trains. In its Destination 2040 Long Range Plan, Pierce Transit lists an unfunded project that would expand Route 497 to become Route 498 that would run between Auburn and Fife. The City will continue to coordinate with Pierce Transit when, or if, this route expansion project starts to move forward. Another recommended solution would be to provide Metro Flex services and/or Pierce Transit Runner services to Lakeland Hills.

Additionally, during the public outreach efforts for development of this Plan, the City heard a suggestion from multiple people to expand KC Metro Route 184 into Lakeland to replace or augment Route 497. The City will discuss and potentially advocate for this, or similar concepts, with KC Metro and Pierce Transit.

2.5. FREIGHT

The efficient movement of freight, through and within the City, is critical to local and regional economic stability. Both rail and truck freight, originating largely in the Ports of Tacoma and Seattle, pass through Auburn regularly.

Within Auburn, freight, or the movement of goods, occurs mostly with trucks on state routes and City streets or on railroad facilities. These facilities benefit the City as they provide regional connectivity and access. The state routes present challenges as they create barriers to other roadways and active transportation facilities. Multiple railroad corridors pass through Auburn and provide regional benefit as they provide freight movement and, in the case of the BNSF Railway north-south corridor, also local benefit as it provides commuter rail line service. However, like the state routes, in many areas throughout the valley area of the City, the railroads obstruct neighborhood access and transportation network connectivity. A strength of the railroad network is that 11 of the 21 mainline rail crossings of City trails and roadways are grade separated. All non-grade separated mainline rail crossings have gates and warning lights. An opportunity to greatly improve neighborhood access and overall transportation network connectivity exists in working to create more grade separated crossings for active transportation modes. A significant amount of freight also moves throughout the City on City streets. Based on actual truck usage data, there are currently 49 centerline miles of T-1, T-2, and T-3 truck routes in Auburn.



2.5.1. **Truck**

The City has designated truck routes for through freight movement in an effort to maximize the efficiency of and protect the roadway infrastructure. Current City of Auburn truck routes are shown in Map 10. 2024 Freight Network in Appendix A. Truck routes, established by City ordinance, are designated for roadways that incorporate special design considerations such as street grades, continuity, turning radii, street and lane widths, pavement strength, and overhead obstruction heights.

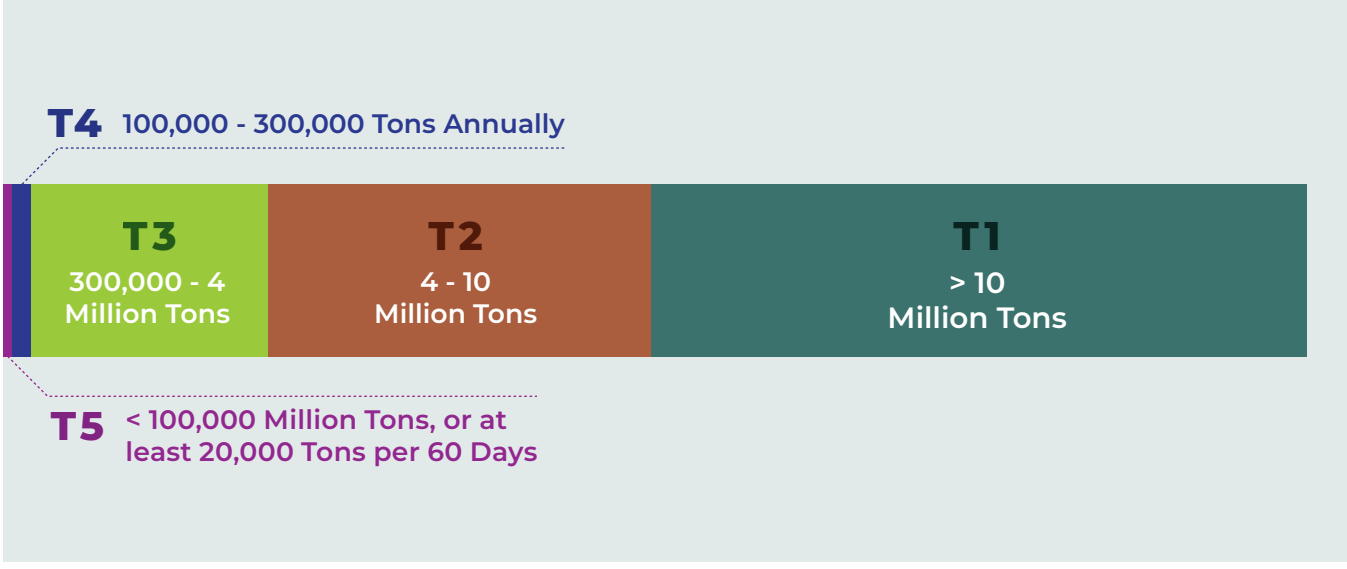
In addition, the Washington State Freight and Goods Transportation System (FGTS) is used to classify roadways, freight railroads, and waterways according to the annual freight tonnage they carry as directed by RCW 47.05.021. Map 10. 2024 Freight Network in Appendix A shows the 2023 classifications of City streets. The FGTS is primarily used to establish funding eligibility for Freight Mobility Strategic Investment Board (FMSIB) grants, fulfill federal reporting requirements, support transportation planning process, and plan for pavement needs and upgrades. The FGTS classifies roadways using the categories shown in **Figure 13**.

Truck freight tonnage values are derived from actual or estimated truck traffic counts and converted into average weights by truck type.

The City expects that the majority of regional truck trips will take place on state highways. However, recognizing that trips through the City are sometimes necessary, Auburn has designated a network of north-south and east-west corridors as truck routes, which are built to truck standards. In addition, the City has designated future truck routes, which will be designed and constructed to accommodate truck traffic, as opportunities arise. FMSIB has expressed an interest in these first and last mile connectors which provide access between these classified freight facilities and port, rail yard, distribution centers, and truck terminals.

Auburn has significant industrial and commercial development throughout the City. The City encourages local delivery trucks to use the designated truck network as much as possible, but recognizes that trips on non-truck routes are necessary. The City is committed to supporting local industry and recognizes that the ability to ship and receive freight is essential to the success of many businesses. To implement this policy, the City will collaborate with local businesses to improve freight access, while maintaining the roadway infrastructure whenever possible. This may include adopting City Code and updating the Auburn Engineering Design and Construction Standards in a manner that favors these priorities. However, in a limited number of key locations, trucks may be prohibited due to existing design elements which do not support trucks, protecting sensitive areas such as downtown and residential neighborhoods, and to extend pavement life.

Figure 13. FGTS Truck Route Classification



2.5.2. **Rail**

The Union Pacific Railroad (UP) and Burlington Northern Santa Fe Railway (BNSF) have rail lines running through Auburn. The UP line runs north-south, to the east of the Interurban Trail. BNSF has a triple-track, federally designated, high-speed railroad line running north-south. The BNSF Stampede Pass line runs east-west through downtown Auburn, entering Auburn at the east end of town near Auburn-Black Diamond Road, and merges with the north-south line just south of Auburn Station.

In addition, BNSF operates a rail yard between A Street SE and C Street SW, south of SR 18. In the future, this area may develop as a multimodal rail yard, prompting the need to mitigate increased truck traffic through capacity improvements. BNSF also has plans to increase traffic on the Stampede Pass line, the east-west rail line running through Auburn. To accommodate this increase, the City completed the grade separation of M Street SE. Both the BNSF north-south line and the Stampede Pass line are handling an increase in rail freight traffic. BNSF handles a number of unit (solid) coal trains traveling to terminals in northwest Washington state, as well as unit oil trains carrying crude oil to northwest Washington state refineries. While loaded coal and oil trains are usually handled on the north-south line, some of these empty trains return east to Wyoming or North Dakota via the Stampede Pass line.

At-grade railroad crossings create conflict points between vehicles and active transportation road users and rail traffic. Auburn has several at-grade railroad crossings: the Union Pacific tracks cross 44th St NW, 37th Street NW, 29th Street NW, West Main Street, and 15th Street SW. The BNSF tracks cross 37th Street NW, 29th Street NW, 3rd Street NW, W Main Street, and Auburn-Black Diamond Road. There are also at-grade crossings of spur tracks at various locations throughout the City.

With as many as 75 trains passing through the City each day, the City has many at-grade crossings, each with unique safety implications. The City coordinates with railroad operators and the State to upgrade the crossings whenever possible. For instance, the project to grade separate M Street SE at the BNSF Stampede Pass tracks by lowering M Street SE under the railroad overpass was completed during 2013.

Upgrades include the construction of a pre-signal where 37th Street NW crosses the BNSF tracks, to stop westbound vehicles on 37th Street NW to the west of the grade crossing in advance of the traffic signal at B Street NE. The pre-signal will prevent vehicles from stopping on the crossing.

BNSF recently constructed a third rail mainline between Seattle and Auburn to improve service and reliability for passenger rail. The new mainline is located on the west-side of the existing tracks. The third mainline reduces vehicle storage for westbound vehicles on W Main Street and 3rd Street NW



between the tracks and traffic signals with C Street NW.

Vehicle delays and queuing at the remaining at-grade crossings are anticipated to worsen in the future due to increased vehicle demands at the crossings, combined with increased rail and longer trains, resulting in more frequent, and longer duration, closures.

2.5.3. Freight LOS Standards

Within Auburn, freight, or the movement of goods, occurs mostly with trucks on state routes and City streets or on railroad facilities. The City of Auburn's freight LOS standards focus on elements of the freight network that the City owns, operates, or has regulatory authority to control such as City streets and intersections. The standards are intended to provide a network of roadways to carry freight traffic to/from freight oriented land use within the City to/from state highways and other regional truck routes. The standards are also intended to facilitate local deliveries using truck routes in the City. Unlike other LOS standards, freight LOS standards do not apply to all City streets. Instead, the standards are applied to truck routes in the City as designated in the Plan policies and shown on Map 10. 2024 Freight Network in Appendix A. Generally, truck routes include T-1, T-2, or T-3 routes, except as designated otherwise by the City Code or as posted by the City Engineer. In addition, the City recognizes local industrial roads, which are other key connections between truck routes and industrial properties. The freight LOS standards are established in the Plan policies and are summarized in **Table 9**.

Table 9. Freight LOS Standards

	LOS STANDARD
1	Freight LOS standards for intersection delay and queuing on truck routes match vehicle LOS standards.
2	Intersections of truck routes shall be designed to accommodate turning trucks such that the trucks do not interfere or obstruct with other travel modes or cause damage to adjacent property and facilities.
3	Roadway pavement on truck routes shall be designed with a minimum 20-year service life with truck loading.
4	Driveways serving trucks and lane widths on the adjacent truck routes shall be designed such that trucks accessing the driveways do not enter into opposing roadway or driveway lanes. Driveways with excessive width may be required to provide mitigation treatments for bicyclists and pedestrians crossing the driveway.
5	Truck oriented land-uses shall provide on-site parking area for truck loading and unloading and shall accommodate truck access and on-site turn-around. Development anticipating regular truck deliveries or services shall provide a delivery plan that identifies the trucks size, frequency, and delivery or service duration and demonstrates how, when, and where the trucks will make deliveries or services without causing impacts to vehicles, bicycles, and pedestrians in the roadway corridor.



2.6. AIRPORT

The Auburn Municipal Airport was founded in 1969. It is a division within the Public Works Department, is operated by three full-time City staff and is supported by other City of Auburn departments. The Airport is guided by seven volunteers on the Airport Advisory Board who advise the City Council regarding operations, master planning, facilities improvements, leasing, rental fees, and other aviation concerns. The airport is comprised of 113 acres. This includes 1,330,436 total square feet of pavement which is maintained by staff. The Airport has 254 hangar units (145 are City-owned), and 140 tie downs. In 2021, the City undertook an update to the City's Zoning regulations to address the need to discourage incompatible uses near the airport. The revised Auburn City Code Chapter 18.39, LF Airport Landing Field District, Overlay, and FAR Part 77 Surfaces, provides zone regulations specific to development near the airport that include restrictions, performance standards and requirements of development within the overlay areas Airport planning is specifically addressed in a separate document, Auburn Municipal Airport – Airport Master Plan.



Auburn Municipal Airport – Airport Master Plan

CHAPTER 3

Safety

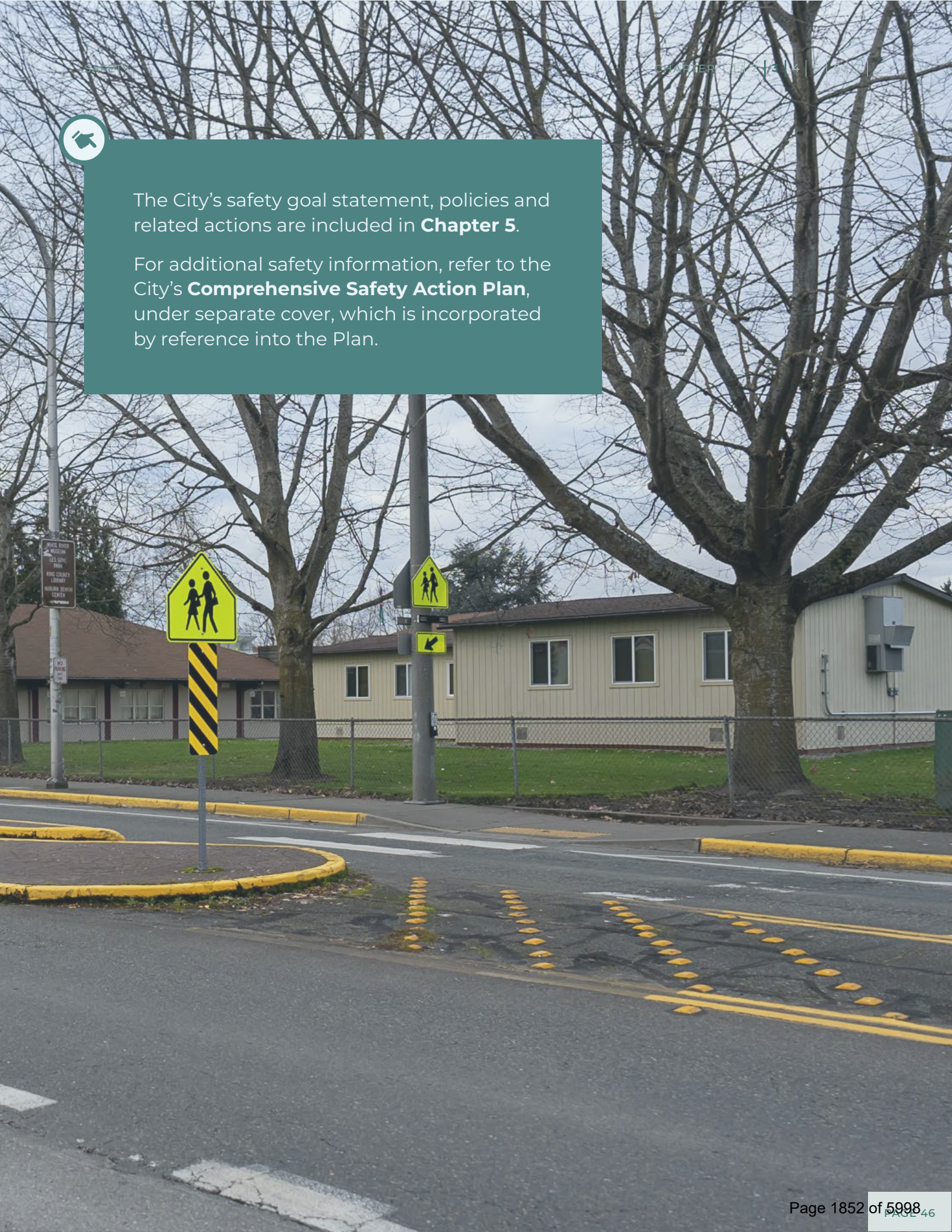
IN THIS CHAPTER

Where to Find Additional Safety Information



The City's safety goal statement, policies and related actions are included in **Chapter 5**.

For additional safety information, refer to the City's **Comprehensive Safety Action Plan**, under separate cover, which is incorporated by reference into the Plan.



CHAPTER 4

Policies

IN THIS CHAPTER

Goals, Policies and Actions



Transportation goals, policies, and actions establish the framework for realizing the City's vision of its transportation system. Policies provide guidance for the City, other governmental entities, and private developers, enabling the City to achieve its goals in accordance with the Plan. The policy framework presented in this chapter is a guideline, which the City will use to evaluate individual projects, programs, actions, and other actions to address its infrastructure needs. The goals, policies, and actions make reference to the City of Auburn Engineering Design Standards (EDS) that provide specific guidelines and standards for design of the City's transportation system.



4.1. GOALS

GOAL 1



Planning: Plan, expand, and improve the transportation system.

GOAL 2



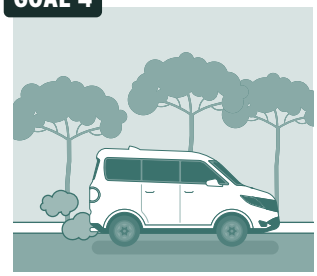
Equity: Plan and implement the City's transportation system to support system wide equity.

GOAL 3



Safety: Significantly reduce or eliminate traffic fatalities and serious injuries through a safe systems approach.

GOAL 4



Environmental: Comply with environmental laws and regulations.

GOAL 5



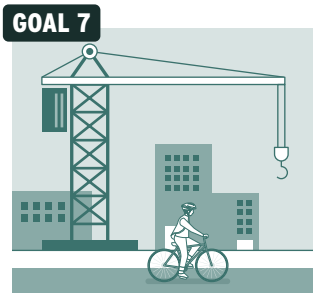
Multimodal Accessible Network: Ensure Auburn's transportation system is designed to be comprehensive, integrated, accessible for all.

GOAL 6



Multimodal Level of Service: Establish multimodal level of service (MMLOS) for all City streets, active transportation facilities, and access to transit.

GOAL 7



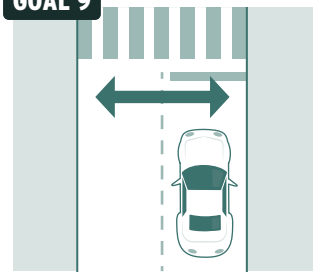
Multimodal Concurrency: Ensure transportation systems and facilities are adequate to serve development.

GOAL 8



Demand & System Management: Transportation Demand Management (TDM) and Transportation System Management (TSM) strategies.

GOAL 9



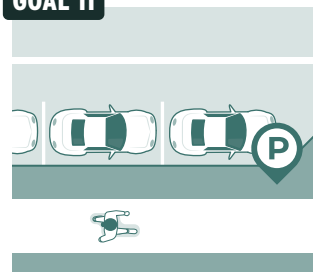
Right-of-Way: Retain and preserve existing Right-of-Way (ROW) and identify and acquire new ROW as needed.

GOAL 10



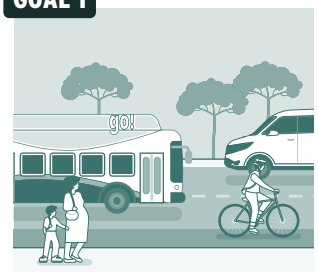
Asset Management: Design, construct, preserve, and maintain the City's transportation system in the most cost-effective manner.

GOAL 11



Parking: Ensure a balance between on-street and off-street parking.

GOAL 1



Planning

Plan, expand, and improve the transportation system in cooperation and coordination with adjacent and regional jurisdictions to ensure concurrency compliance with the Growth Management Act, and to improve the safety and efficiency of the multimodal system to meet the community needs, facilitate the land use plan, and reduce vehicle miles traveled and greenhouse gas emissions.

Planning Policies

The City's long range planning tool for its transportation systems shall be the Comprehensive Transportation Plan that will comply with State Law (RCW 36.70A.070).

TR1-1. The City's short range (6-year) planning tool for transportation system capital projects and programs, shall be the Transportation Improvement Program (TIP) that will comply with State Law (RCW 35.770.010).

TR1-2. The TIP shall be financially constrained to align planned project and programs expenditures with anticipated available funding.

TR1-3. The City shall identify transportation facilities or services that are below established multimodal level of service standards and develop projects and programs and engage in coordination activities that support improving those facilities or services to meet level of service standards.

TR1-4. City transportation planning will focus system improvements to connect centers and support existing and planned development as allocated by the Regional Growth Strategy.

SUPPORTING ACTIONS

- Evaluate and amend the Comprehensive Transportation Plan regularly to ensure it is technically accurate, consistent with state, regional, and other local plans, and in keeping with the City's vision of the future transportation system.
- Prepare a 5-year Comprehensive Transportation Plan intermediate progress report in 2029.
- Prepare a periodic update to the Comprehensive Transportation Plan to be adopted by Council in 2034 or date required by the State, whichever is earlier.
- Coordinate transportation planning and improvements with other transportation authorities and governmental entities (cities, counties, tribes, state, federal) to address transportation issues and to ensure that Auburn and its adjacent jurisdictions do not unreasonably preclude each other from implementing their planned improvements.
- Prepare, amend, and update a 6-year Transportation Improvement Program that is reviewed and adopted by the City Council in accordance with RCW 35.77.010. The TIP will include the following elements:
  - *Proposed road and bridge construction work and other transportation facilities and programs deemed appropriate.*
  - *Any new or enhanced bicycle or pedestrian facilities identified pursuant other applicable changes that promote nonmotorized transit.*
  - *Identify projects of regional significance for inclusion in the regional TIP.*
  - *Revise the TIP before July 1st of each year to encompass the ensuing six calendar years to update the included projects, programs, and associated funding to reflect transportation system priorities and available funding.*
- Coordinate transportation improvements with City utilities to provide efficiency and cost-effective solutions for both planned transportation improvements and planned utility improvements.
- Identify and fund capital projects and programs that address existing and emerging system needs to meet MMLOS standards and to support safety goals.

GOAL 2



Equity

Plan and implement the City's transportation system to support system wide equity.

Equity Policies

TR2-1. Transportation system improvements shall be planned such that they minimize and mitigate potential impacts, as well as past impacts, to historically under-represented and under-served communities.

TR2-2. The transportation system will be planned, built, and operated to provide equitable levels of access to transportation systems based on the needs of the populations being served, particularly populations that are traditionally underserved.

TR2-3. Encourage the involvement of residents, business and property owners in the planning process, including the participation of vulnerable populations and overburdened communities, and ensure coordination with other agencies to reconcile conflicts.

TR2-4. In the development of projects, the city shall identify opportunities to remove barriers created by past transportation programs or improvements.

SUPPORTING ACTIONS

- Develop and implement a process during project/program planning to review demographic information and identify potential impacts to historically under-represented and under-served communities and identify potential mitigation measures.
- Develop and implement equity tools to assist in transportation system planning, construction, and operations.
- For the communities adjacent to the project locations, or served by the projects and programs, research how to best engage with them, and develop outreach and information tools.



GOAL 3



Safety

Significantly reduce or eliminate traffic fatalities and serious injuries through a safe systems approach.

Safety Policies (General)

TR3-1-1. The City shall apply the Safe System Approach for pursuing its transportation safety goal through the different elements associated with the safety of the City's transportation system which the City has the ability to influence including: roadways, roadway users, speeds, vehicles, and post crash care.

TR3-1-2. The City shall study, plan, and implement safety improvements prioritized by the occurrence of fatal and serious injury crashes and/or the presence of systemic characteristics indicative of serious or fatal crash risk.

TR3-1-3. The City will seek internal and external funding to both implement safety strategies and on-going maintenance of improvements.

SUPPORTING ACTIONS (GENERAL)

- Implement, maintain, and regularly update the Local Road Safety Plan (LRSP) and Comprehensive Safety Action Plan (CSAP).
- The LRSP/CSAP will include documentation of the progress towards actions and performance metrics identified in the plans.
- Establish a transportation program in the Transportation Improvement Plan and funding that provides for safety data collection, study, planning, and implementation.
- Identify, evaluate, and pursue grant funding and other outside funding sources for safety programs and improvements.

What is the Safe Systems Approach?

Founded on the belief that death and serious injuries on city streets are preventable, the Safe System Approach considers how the transportation system as a whole can be improved to avoid serious and fatal crashes. It is organized into five categories: Safe Roads, Safe Speeds, Safe Vehicles, Safe Road Users, and Post Crash Care.

To learn more, please visit
highways.dot.gov/safety/zero-deaths



Source: Federal Highway Administration (https://highways.dot.gov/safety/zero-deaths)

Safety Policies (Roadways)

TR3-2-1. The City will integrate the Safe System Approach into roadway design standards and related policies, and project development processes and be consistent with industry best practice.

TR3-2-2. Roadway design shall consider safety and multi-modal level of service standards to meet both transportation level of service goals and safety goals to the greatest extent feasible. However, safety of active transportation users shall be prioritized over vehicle level of service standards.

TR3-2-3. In making changes to existing roadways, including horizontal or vertical re-alignment, re-channelization, additional lanes, new or modified intersections, and new or modified driveways, design speeds for safety related design elements shall not be less than the 85th percentile speeds of existing vehicle traffic except where roadway changes include traffic calming measures that will reduce vehicle speeds.

TR3-2-4. The City shall fund and implement the neighborhood traffic safety program that will take a pro-active, area wide approach towards traffic calming through studying streets in residential areas to identify safety concerns. The program will identify and implement physical measures per the EDS and as funding allows address identified concerns.

TR3-2-5. Safety countermeasures will be incorporated into roadways as recommended by the Federal Highway Administration and as appropriate to City roadways as funding allows to potentially reduce roadway fatalities and serious injuries.

SUPPORTING ACTIONS (ROADWAYS)

- Periodically review and update City EDS to integrate current and emerging Safe System Approaches and safety countermeasures.
- In identifying projects for inclusion in the Plan and TIP, develop and implement approaches to consider all travel modes and to specifically address risk factors identified in the CSAP in the project scope.
- At locations with a high number of risk factors identified in the CSAP, identify potential safety countermeasures to reduce the potential for fatality and serious injury crashes. Seek funding to implement countermeasures and implement as funding is available.
- Establish standards for physical improvements implemented with the neighborhood traffic calming program, including, but not limited to, speed cushions, traffic circles, raised crosswalks, and tabletop intersections.

Safety Policies (Road Users)

TR3-3-1. Seek and utilize opportunities to provide the community with information to educate and encourage safe driving, biking, and walking practices.

TR3-3-2. Implement and operate, as appropriate and funding allows, systems to provide information to roadway users that could help improve safety.

SUPPORTING ACTIONS (ROAD USERS)

- Establish and implement approaches towards education, outreach, and other measures as appropriate to encourage safe behaviors.
- Regularly communicate rules of the road and other safer travel strategies to the general public via various mediums such as signage, social media, public service announcements, flyers, articles, and mailers.

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Safety Policies (Road Users)

TR3-3-3. City employees are responsible for operating City vehicles responsibly and safely, according to all state and local laws and City administrative policies.

TR3-3-4. Support equitable, unbiased enforcement to enhance overall public safety.

SUPPORTING ACTIONS (ROAD USERS)

- Coordinate with appropriate partners such as local, county, and state law enforcement, local and regional hospitals, school districts, and large employers to create and distribute safety messages and materials.
- Regularly coordinate with law enforcement regarding the road user behaviors and/or street locations being targeted for enforcement to encourage equitable, unbiased enforcement that uses practices to enhance overall public safety, including use of automated enforcement technologies.
- Explore, identify, evaluate, and as appropriate and funding allows, implement systems such as dynamic message signs that provide roadway conditions and other information to drivers.

Safety Policies (Speeds)

TR3-4-1. Posted and design speeds of new roadways shall consider context, including adjacent land use, presence and proximity of active transportation, traffic volumes, and geometric design constraints.

TR3-4-2. The 85th percentile speed of vehicular traffic shall be used to evaluate speed compliance and to determine appropriate traffic calming measures as established by thresholds and considerations in the EDS. Traffic calming measures will be prioritized and implemented as funding is available.

TR3-4-3. The City will implement automated speed enforcement that encourages speed compliance as allowed by state law.

SUPPORTING ACTIONS (SPEEDS)

- Establish criteria in the EDS for when physical traffic calming measures may be appropriate to encourage safer speeds.
- Implement automated school speed zone enforcement. Modify and/or expand program as needed to address compliance issues and other concerns. Provide annual reporting as required by law.
- Identify, evaluate, and implement automated speed enforcement in non-school zone areas as allowed by law and as determined to be appropriate to address speed compliance concerns.
- As issues and concerns arise, as part of specific speed studies, and/or as part of public improvement project designs, the City will review roadways to identify existing and desired posted speeds based on classification, land use context, types of road users, and degree of separation or conflict management between vehicles and active transportation users. The review will identify changes needed to posted speeds, if any, and any new or modified roadway features needed to align desired speeds and posted speeds.

Safety Policies (Vehicles)

TR3-5-1. The City shall advocate for vehicle and device safety enhancements that make traveling in Auburn safer.

TR3-5-2. Seek opportunities to provide the community with information to educate and encourage vehicle safety practices.

TR3-5-3. City shall continue to implement vehicle safety practices on its fleet.

TR3-5-4. New or modified vehicle types and emerging vehicle technology shall be evaluated and measures may be taken to promote, prohibit, or restrict their use in the City transportation network as appropriate to support adopted goals and policies.

SUPPORTING ACTIONS (VEHICLES)

- Coordinate with other local, regional and state agencies to advocate for vehicle safety enhancements for commercial motor vehicles as well as technologies used in private automobile industry, and vehicle inspections.
- Review, update, and maintain local ordinances regarding the appropriate use of new or modified vehicle types and emerging vehicle technology.
- Ensure City vehicles are regularly inspected and maintained, and include regulatory required appropriate safety enhancing technologies, and are equipped with appropriate emergency equipment and tools.

Safety Policies (Post Crash Care)

TR3-6-1. Maintain the transportation system to support entities providing emergency response services to crashes.

TR3-6-2. Prioritize emergency vehicle routes and access to hospitals and trauma care centers.

TR3-6-3. Actions will be taken, as applicable, after crashes involving serious injury or fatality, to reduce or eliminate the possibility of repeat crashes at the location due to malfunctioning or failing traffic control devices.

SUPPORTING ACTIONS (POST CRASH CARE)

- Coordinate with entities providing emergency response services to crashes with the purpose of maintaining appropriately managed routes, access and facilitate wayfinding to hospitals and trauma care facilities.
- Continue to maintain emergency vehicle pre-emption technology at traffic signals throughout the City prioritizing emergency vehicle routes and access to hospitals and trauma care centers, and emergency response to crashes.
- When notified by Police, City Public Works staff perform post crash investigations where a serious injury or fatality crash occurs at a traffic signal or stop controlled intersection, in a marked and/or enhanced cross walk, involves a pedestrian during non-daylight hours where street lighting is present, or other situations that warrant verification that transportation systems are functioning as intended.



GOAL 4



Environmental

Comply with environmental laws and regulations.

Environmental Policies

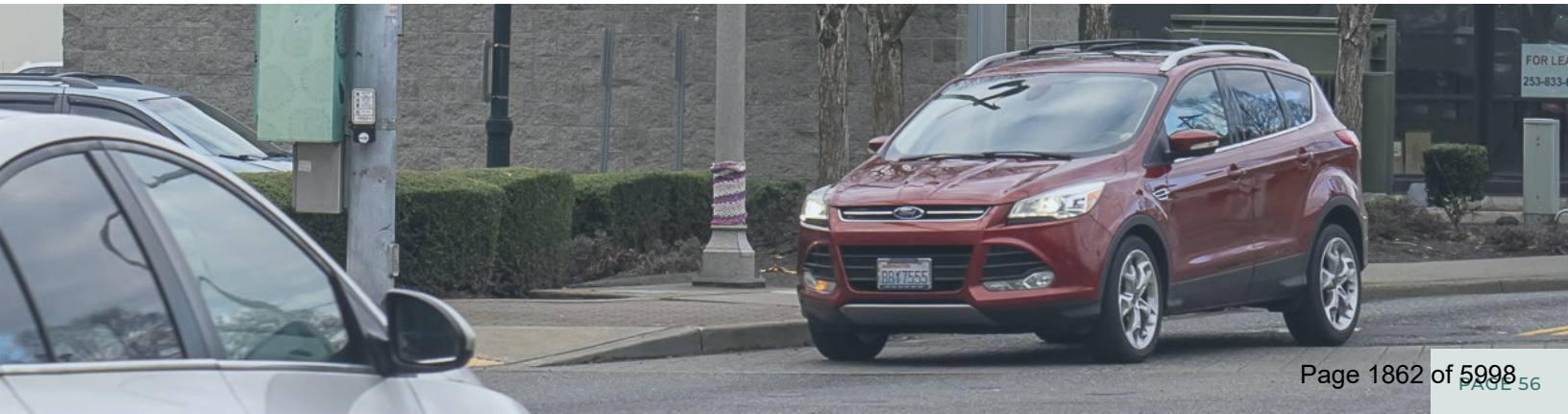
TR4-1. The impacts of transportation projects shall be evaluated, and the appropriate mitigation measures identified in accordance with the applicable environmental laws and regulations.

TR4-2. The multimodal transportation systems shall be designed efficiently and support reductions in greenhouse gas emissions and per capita miles traveled, protect and enhance environmental, economic, and human health and safety, and advance environmental justice, and are based on regional priorities and coordinated with other comprehensive plans.

TR4-3. In planning transportation facilities and programs, the City will seek to reduce stormwater pollution from transportation facilities and improve fish passage.

SUPPORTING ACTIONS

- Incorporate environmental factors into transportation decision-making, including attention to human health and safety.
- Review and implement guidance from the Department of Commerce pertaining to measures that cities may implement to reduce greenhouse gas emissions. These guidelines will prioritize measures that benefit overburdened communities that have experienced disproportionate harm due to air pollution and be consistent with environmental justice assessment pursuant to RCW 70A.02.060.



GOAL 5



Multimodal Accessible Network

Ensure Auburn's transportation system is designed to be comprehensive, integrated, accessible for users of all abilities, and facilitates different types of traffic flows, including pedestrians, bicyclists, motorists, transit riders and operators, truck operators and aviation users.

Multimodal Accessible Network Policies (General)

TR5-1-1. The network of sidewalks, bicycle facilities and roadways shall be interconnected to encourage active transportation between neighborhoods, activity centers, community resources, and transit.

TR5-1-2. Ensure that the city's standards and development requirements align with the complete streets policies.

TR5-1-3. Context and flexibility in balancing user needs for all travel modes shall be considered in the planning and design of all projects and, if necessary, a deviation from the EDS may be considered to ensure the Complete Streets Goal and supporting policies are achieved.

TR5-1-4. The development of the multimodal transportation system shall balance safety and convenience to accommodate all users of the transportation system to safely, reliably, and efficiently provide access and mobility to people and goods.

SUPPORTING ACTIONS (GENERAL)

- Plan for and develop a balanced transportation system, which provides safer access and connectivity to transportation facilities for users of all ages and abilities, including pedestrians, bicyclists, motorists, transit users and operators, and truck operators.
- Plan for, design, and construct all transportation projects, whether City led or development driven, to provide appropriate accommodation for bicyclists, pedestrians, and transit users in a manner consistent with the Comprehensive Plan, except in situations where the establishment of such facilities would be contrary to public health and safety or the cost would be excessively disproportionate to the need
- Ensure the transportation system meets the requirements outlined in the ADA and the ADA Transition Plan for Facilities in the Public Right-of-Way and its policies.
- Ensure the EDS requirements support the policies and guidance for complete streets, bicycle LTS, and pedestrian facilities.



Multimodal Accessible Network Policies (Streets)

TR5-2-1. City streets shall be classified as arterial, collector, local, or alley to support the goals and policies of the Plan. The EDS may establish more detailed classifications as needed to serve the needs of the transportation system.

TR5-2-2. The City Functional Roadway Classifications Map shall serve as the adopted standard for identifying classified streets in the City of Auburn.

TR5-2-3. The City shall pursue federal classification of all eligible streets and prioritize federal classification as funding needs and regulatory requirements are identified.

TR5-2-4. Street standards in the EDS shall reflect the street classification system and function.

TR5-2-5. The design and management of the street network shall seek to improve the appearance of existing street corridors. The EDS shall include provisions for streetscaping to enhance the appearance of City street corridors, where appropriate.

TR5-2-6. The classification standards adopted in the EDS are considered the City's minimum standards for new streets. The standards do not limit or prevent developers or the City from providing facilities that exceed the City's standards.

TR5-2-7. The standards for residential streets may be modified in cross section to provide better relationships between the different components of the street including, but not limited to, on-street parking, the landscape strip, and the sidewalk. Among other objectives, this may be done to balance the need to provide adequate parking and buffer pedestrians from traffic.

TR5-2-8. The city shall designate new arterials and collectors to serve developing areas concurrent with approval of such development. These new roadways shall be spaced in compliance with transportation network planning principles and support the importance of overall system circulation.

SUPPORTING ACTIONS (STREETS)

- The EDS will include cross section standards for the various city roadway classifications and established more detailed sub-classifications as appropriate.

- To achieve access control to meet city policy, the City:
  - *Adopts and supports the State's controlled access policy on all state highway facilities;*
  - *May acquire access rights along some arterials and collectors;*
  - *Adopts design standards that identify access standards for each type of functional street classification;*
  - *Encourages consolidation of access in developing commercial and high-density residential areas through shared use of driveways and local access streets; and*
  - *Will establish standards for access management, develop a planning process to work with the community, and implement access management solutions on arterial corridors.*

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Multimodal Accessible Network Policies (Streets)

TR5-2-9. The City will seek consolidation of access points to state highways, arterials, and collectors as appropriate to benefit the highway and city street system, reduce interference with traffic flows on arterials, and discourage through traffic on local streets.

TR5-2-10. ROW access shall be provided in a manner that minimizes operational impacts to the City street system, reduces or eliminates safety impacts to the ROW, and provides for access needs of the property. Shared driveways in access tracts or easements may be allowed as specified in the EDS to reduce access points to the ROW.

TR5-2-11. Intersections controlled with roundabouts are preferred over signalized intersections. Where necessary to meet level of service standards, roundabout control shall be implemented over signalization or all-way stop-control, unless determined to be infeasible.

TR5-2-12. Conversion of an intersection to all-way stop-control as mitigation for existing intersection level of service deficiencies shall only be allowed as a temporary measure where permanent measures such as a traffic signal or roundabout are planned.

TR5-2-13. New all-way stop-control intersections shall be discouraged. In evaluating improvements to existing intersections, roundabout or signalization are preferred over all-way stop-control.

TR5-2-14. The local street network shall be developed to maximize the efficiency of the transportation network in residential areas and minimize through traffic in neighborhoods.

TR5-2-15. The street network should be developed and maintained to increase resiliency and support security and emergency management.

TR5-2-16. Private streets are discouraged, but may be permitted on a discretionary basis, as regulated by City code and the EDS. Private streets are not intended to connect between two public streets and shall be built to public street standards. The properties benefiting from the private street are responsible for its maintenance.

SUPPORTING ACTIONS (STREETS)

- To maximize the efficiency of the transportation network in residential areas and minimize through traffic in neighborhoods, the EDS will incorporate requirements such that:
  - *The internal local residential street network for a neighborhood discourages regional through traffic and non-residential traffic from penetrating the neighborhood or adjacent neighborhoods.*
  - *Streets shall be planned, designed, and constructed to connect to future development as appropriate to support the goals and policies of the Plan.*
  - *Residential developments should be planned in a manner that minimizes the number of local street access points to arterials and collectors.*
  - *To promote efficient connectivity between areas of the community, existing stub end streets shall be linked to other streets in new development whenever the opportunity arises and the resulting traffic volumes are not likely to exceed acceptable volumes per the street classification as identified in the EDS.*
- Design criteria for roundabouts, including feasibility criteria, will be incorporated into the EDS.
- The City will coordinate with the WSDOT, counties, and adjacent cities to facilitate the movement of traffic through the City, to construct improvements needed to the state and county arterial and freeway systems, and to develop through routes that minimize the impact of through traffic on Auburn's residential neighborhoods.

Multimodal Accessible Network Policies (Active Transportation)

TR5-3-1. The City's active transportation facilities include bicycle and pedestrian networks and shall be planned and built in accordance with the active transportation level of service standards.

TR5-3-2. City investment in active transportation facilities will prioritize facilities that: 1) Encourage mode shifts from vehicle to active transportation and transit; 2) Provide access to key destinations, such as schools, parks, community services, transit stops, commercial areas, and the Downtown Urban Center; 3) Encourage and support bicycle and pedestrian safety; and 4) Serve disadvantaged and historically underserved communities.

TR5-3-3. City bicycle routes shall be classified as Regional, Priority, or Auxiliary to support the goals and policies of the Plan.

TR5-3-4. The City shall seek external funding and prioritize investments to develop the bicycle network identified in the bicycle priority map, and to build the associated projects listed in Comprehensive Transportation Plan.

TR5-3-5. Active transportation facilities shall be designed to reduce modal conflicts, with greater separation from vehicle traffic along roadways with higher classification, expecting higher vehicle volume and speed.

TR5-3-6. Bicycle and pedestrian crossings of vehicular travel ways shall be placed to align with desired crossing lines and in accordance with the EDS.

TR5-3-7. Pedestrian facilities shall be designed consistent with ADA guidelines and the existing infrastructure shall be updated per the city's ADA Transition Plan for facilities in the Public Right-of-way, to accommodate users of all ages and abilities.

TR5-3-8. Wayfinding elements may be constructed to guide travelers along major active transportation routes.

SUPPORTING ACTIONS (ACTIVE TRANSPORTATION)

- The City shall schedule, plan, and co-sponsor events that support recreational walking and bicycling. These events should emphasize their recreational and health values and introduce people to the transportation capabilities of bicycling and walking.
- Develop programs and publications, and work with local employers to encourage citywide bicycle commuting.
- Work with the Community Development Department to establish guidelines and building code requirements to require convenient and secure bicycle storage facilities in all large public and private developments.
- The City will develop, and periodically update, a Bicycle Route Map that defines the bicycle network in Auburn and classifies bicycle routes throughout the City as either Regional, Priority, or Auxiliary. The network of classified bicycle routes will focus on connectivity from non-classified routes in neighborhoods and commercial areas to auxiliary, priority, and regional routes.
- Develop and maintain an official Auburn Bicycling Guide Map.
- Evaluate transportation projects and identify opportunities to include sidewalk and bicycle facilities based on the identified priority locations.
- Seek ways to provide pedestrian amenities such as streetlights, trees (within the downtown and on local residential streets), signage, and public art along appropriate pedestrian travel routes.
- Encourage the formation of Local Improvement Districts to develop pedestrian pathways and other active transportation amenities throughout the City. Partner with the local school districts to improve Safe Walking Routes to School.
- Actively seek to acquire land along corridors for planned bike routes as identified in the Bicycle Route Map and for pedestrian facilities needing more property to meet LOS standards.

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Multimodal Accessible Network Policies (Active Transportation)

TR5-3-9. Active transportation routes shall be constructed to accommodate emergency vehicle access and be amenable to law enforcement.

TR5-3-10. When applicable, active transportation paths shall be provided at the end of dead end streets to shorten walking distances to an adjacent arterial or public facility including, but not limited to, schools and parks.

Multimodal Accessible Network Policies (Transit)

TR5-4-1. Active transportation improvements shall be prioritized based on transit level of service with higher priority placed on improvements in areas with higher transit level of service.

TR5-4-2. Improvements that optimize intersections and corridors to facilitate speed and reliability of transit service will be encouraged and supported as appropriate and will be balanced with the needs of the other travel modes.

TR5-4-3. The City shall cultivate partnerships with transit agencies and WSDOT to help with, or support the development of a robust transit network, to serve trip generators such as colleges, commercial areas, and community resources, to expand transit service within the underserved areas of Auburn, and to achieve a transit network that is convenient and provides a viable alternative to driving.

TR5-4-4. The City shall advocate for adequate off-street parking supply to accommodate demand associated with transit facilities in Auburn, where no alternative options are provided by transit agencies to access transit service that meet the needs of the transit riders.

TR5-4-5. The City shall encourage development projects to provide access improvements to transit stops located within priority transit walksheds.

TR5-4-6. The City shall establish parking restrictions in areas where transit parking impacts nearby residential areas to mitigate the impact of overflow transit parking.

TR5-4-7. The City shall seek partnership opportunities with transit agencies for grant applications and cost sharing to improve access to transit for active transportation facilities, supporting safety, equity, and sustainability.

SUPPORTING ACTIONS (TRANSIT)

- Evaluate intersections and identify opportunities to improve speed and reliability of transit service.
- Partner with transit agencies to support transit service in the City.
- Work proactively with Sound Transit, KC Metro, and Pierce Transit to ensure the adequate supply of transit parking capacity in Auburn.
- Expand the areas included in the Restricted Parking Zones and other parking restrictions as needed to mitigate impacts from transit parking.

Multimodal Accessible Network Policies (Freight)

TR5-5-1. City transportation planning efforts will seek to facilitate the movement of freight and goods through Auburn with minimal adverse traffic and environmental impacts.

TR5-5-2. The movement of freight and goods that serve largely national, state, or regional needs should take place in such a way so that the impacts on the local transportation system are minimized. These movements should take place primarily on state highways, interstates, or on rail corridors with grade separated roadway crossings to minimize the local impacts.

TR5-5-3. All through truck trips and the majority of local trips shall take place on designated truck routes. This policy shall not apply to developments and uses operating under existing ROW use permits, traffic mitigation agreements, or equivalent agreements directly related to the regulation of permitted haul routes.

TR5-5-4. Prioritize improvements that facilitate truck movements along and connecting to future and existing truck routes to accommodate truck traffic and minimize impacts to infrastructure.

TR5-5-5. Development shall be required to mitigate the impacts of development project generated truck traffic on the City's transportation system, based on the City's vehicle LOS standard.

TR5-5-6. Temporary haul routes for overweight or oversized vehicles shall be permitted under circumstances acceptable to the City and with appropriate mitigation. A temporary haul permit must be obtained prior to the hauling of oversized or overweight freight.

TR5-5-7. Truck traffic in residential neighborhoods shall be prohibited, except for local deliveries within said neighborhood, unless no other possible route is available, in which case mitigation may be required.

SUPPORTING ACTIONS (FREIGHT)

- Evaluate intersections and identify opportunities to reduce delays along freight corridors.
- Seek public and private partners to leverage funds for freight improvement projects and associated mitigation.
- Work with local and regional groups to ensure regional freight needs are met and local impacts are mitigated.
- The City will coordinate and communicate with railroad purveyors in Auburn (United Pacific Railroad and Burlington Northern Santa Fe Railway) regarding safety and operational concerns at railroad crossings, along railroad corridors, and near rail yards.

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Multimodal Accessible Network Policies (Freight)

TR5-5-8. As roadway reconstruction projects are identified, opportunities to reconstruct roadways adapted to heavy truck traffic shall be evaluated along T-1 and T-2 freight corridors, to prevent accelerated damage to these facilities.

TR5-5-9. Grade separation of roadway and active transportation facilities from railroad tracks and T-1 Truck Routes (such as SR 167 and SR 18) is preferred over at-grade crossings. The City shall plan its multimodal networks to utilize existing grade separated crossings and identify where future grade separation improvements are desired.

TR5-5-10. The City shall maintain its transportation systems to be compliant with Washington Utilities and Transportation Commission requirements regarding railroad crossings and shall work diligently to address any identified deficiencies.

Multimodal Accessible Network Policies (Air Transportation)

TR5-6-1. Continue to develop the Auburn Municipal Airport in accordance with the Airport Master Plan as adopted or amended.

TR5-6-2. The airport shall be managed as a general aviation facility. General aviation includes all civilian flying except scheduled passenger airline service.

TR5-6-3. When siting new or revised facilities or operations at the airport, the impacts on neighborhoods such as increased noise generated from the use of those facilities shall be considered.

TR5-6-4. Use of the airport by non-conventional aircraft, such as ultra lights, is discouraged.

TR5-6-5. Minimize or eliminate the potentially adverse effects of light, glare, and obstructions on the operation of the Auburn Airport.

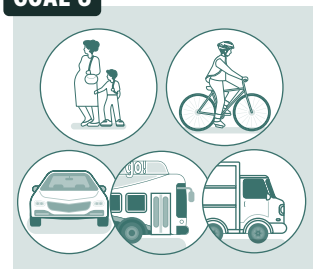
TR5-6-6. Insure that uses surrounding the Airport are compatible with the operations of the Airport as development occurs.



SUPPORTING ACTIONS (AIR TRANSPORTATION)

- Review existing and planned uses near Auburn Municipal Airport through development actions and review ACC18.38 regulations periodically to continue to discourage incompatible uses neat the airport.
- Coordinate planning efforts to optimize the effectiveness of the aviation system while minimizing health, air quality, and noise impacts to surrounding communities, including historically marginalized communities.

GOAL 6



Multimodal Level of Service (MMLOS) Standards

Establish multimodal level of service standards for all City streets, active transportation facilities, and access to transit service to serve as a gauge to judge performance of the system and success in helping achieve the comprehensive plan goals consistent with environmental justice.

The MMLOS policies under Goal 6 for bicycle and pedestrian facilities, including access to transit, are intended to provide guidance to evaluate the multimodal facilities, identify deficiencies, and prioritize projects to eventually reach a complete multimodal network that can support and promote mode shift, reducing the vehicle capacity demand on the roadways.

MMLOS Standards Policies (Vehicles)

TR6-1-1. The City adopts the following vehicle LOS standards for the AM and PM peak periods per the Highway Capacity Manual:

- **Signalized:** The LOS standard for signalized intersections is "D", with the following exceptions: for signalized intersections of two principal arterial roads the LOS standard is "E."
- **Stop Controlled:** The LOS standard for stop controlled intersections is "D."
- **Roundabout:** The LOS standard for roundabout controlled intersections is "D" and a V/C ratio for each lane group of less than 0.90.
- **Queuing:** The LOS standard for intersection queuing is the 95th percentile queue shall not extend across an adjacent driveway, alley, or street intersection, except if the driveway, alley, or street intersection is within the functional intersection boundary of the queue in which case the queue may extend to the limit of the functional intersection boundary. Additionally, queuing for a designated turn lane shall not exceed the turn lane storage area and cause a blockage of through lane(s).

SUPPORTING ACTIONS

- Regularly conduct traffic counts, observations, and modeling to evaluate current and future Vehicle LOS and identify projects to address deficiencies.

MMLOS Standards Policies (Active Transportation)

TR6-2-1. The City adopts the following bicycle LOS standards:

- **Bicycle LOS shall be based on Bicycle Level of Traffic Stress (LTS) ranging from "1" to "4" as follows:** "1" – minimal traffic stress and high comfort facilities that accommodate bicyclists of all ages and skill levels; "2" – some traffic stress and moderate comfort facilities that accommodate average bicyclists; "3" – moderate to high traffic stress and moderate to low comfort facilities that accommodate mostly experienced bicyclists; "4" – high traffic stress and low comfort facilities that accommodate mostly bicycle enthusiasts with advanced experience and skill levels.
- The **Bicycle LTS standard** for Auxiliary bicycle routes is "3."
- The **Bicycle LTS standard** for Priority bicycle routes is "2."

SUPPORTING ACTIONS (ACTIVE TRANSPORTATION)

- The EDS will be updated to include standards for various types of bicycle facilities intended to meet level of service standards as defined in the Plan.
- Standards will be developed and incorporated within the EDS to establish typical cross sections by roadway classification to meet the pedestrian LTS standards.

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MMLOS Standards Policies (Active Transportation)

- The **Bicycle LTS standard** for Regional bicycle routes is "1."
- **Minimum Bicycle LTS standards** for City streets without Regional, Priority, or Auxiliary bicycle routes shall be per the standard roadway cross sections by street classification in the EDS.
- **Streets may be designed with Bicycle LTS higher than the minimum standard** to accommodate local needs such as parks, schools, and other uses.

TR6-2-2. The City adopts the following pedestrian LOS standards:

- **Pedestrian LOS** shall be based on Pedestrian Level of Traffic Stress (LTS) ranging from "1" to "4" as follows: "1" – minimal traffic stress and high comfort facilities; "2" – some traffic stress and moderate comfort facilities; "3" – moderate to high traffic stress and moderate to low comfort facilities; "4" – high traffic stress and low comfort facilities.
- The **pedestrian LTS standard for City streets** is "1" except streets classified as "rustic" or alleys have a Pedestrian LTS standard of "2."
- **Streets may be designed with pedestrian LTS higher than the minimum standard** to accommodate local needs such as parks, schools, and other uses.

SUPPORTING ACTIONS (ACTIVE TRANSPORTATION)

- The Street cross sections included in the EDS will be updated to include active transportation facilities that provide at least minimum level of service requirements.

MMLOS Standards Policies (Transit)

TR6-3-1. Transit LOS is defined as the accessibility, frequency, comfort, reliability, and connectivity of available transit services using active transportation modes. A Transit LOS score ranging from "1" to "4" can be estimated for any location in the City using a combination of the walking shed distance from the location to transit services and the type of available transit service as defined in the Plan.

TR6-3-2. Active transportation improvements shall be prioritized based on transit level of service with higher priority placed on improvements in areas with higher transit level of service.

SUPPORTING ACTIONS (TRANSIT)

- Coordinate regularly with transit operators to understand service plans.
- Maintain a map that reports transit service levels citywide based on transit service plans and walksheds.
- Prioritize eliminating gaps in active transportation routes and improving sub standard active transportation facilities in areas of transit levels of service "1" and "2".
- Develop tools to assess current and future planned transit level of service throughout the City and identify active transportation gaps and substandard active transportation facilities.
- Advocate for, and support, transit speed and reliability improvements.

MMLOS Standards Policies (Freight)

TR6-4-1. The City adopts the following Freight LOS standards:

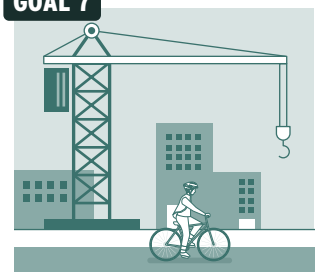
- **LOS for freight movement** follows the vehicle LOS standards.
- **Principal Arterial, Minor Arterial, Non-Residential, and other streets** identified as T-1, T-2, or T-3 routes are considered truck routes except as designated otherwise by the City Code or as posted by the City Engineer.
- **Intersections of truck routes** shall be designed to accommodate turning trucks such that the trucks do not interfere or obstruct with other travel modes or cause damage to adjacent property and facilities.
- **Roadway pavement on truck routes** shall be designed with a minimum 20-year service life with truck loading.
- **Driveways serving trucks and lane widths on the adjacent truck routes** shall be designed such that trucks accessing the driveways do not enter into opposing roadway or driveway lanes. Driveways with excessive width may be required to provide mitigation treatments for bicyclists and pedestrians crossing the driveway.
- **Truck dependent land-uses** shall provide on-site parking area for truck loading and unloading and shall accommodate truck access and on-site turn-around.
- **Development anticipating regular truck deliveries or services** shall provide a delivery plan that identifies the trucks size, frequency, and delivery or service duration and demonstrates how, when, and where the trucks will make deliveries or services without causing impacts to vehicles, bicycles, and pedestrians in the right-of-way.

SUPPORTING ACTIONS (FREIGHT)

- Maintain a map of Auburn streets that overlap with the WSDOT Freight and Goods Movement Transportation System and ensure that transportation projects that overlap with T-1, T-2, and T-3 routes include adequate space for large vehicle turns.
- Update the EDS to ensure they adequately consider the needs of freight vehicles in terms of intersection turning movements, mid-block turning movements into driveways, loading docks, and alleys, and entrance to, navigation of, and exit from traffic circles and roundabouts.
- Identify truck routes that do not meet current freight level LOS standards and prioritize investments to address deficiencies based on level of impact and available funding.



GOAL 7



Multimodal Concurrency

Ensure that those transportation system facilities and services necessary to support development shall be adequate to serve the development at the time the development is available for occupancy without decreasing current service levels below established minimum standards.

Concurrency Policies

TR7-1. The City will not approve development activity if the development causes the vehicle level of service on a transportation facility to decline below level of service standards or if the development negatively impacts a transportation facility currently operating below vehicle level of service standards (any increase in intersection delay where intersection delay standard is already exceeded or any increase to queue length of an existing queue length that does not meet standards). Strategies that may allow a development to proceed, include, but are not limited to, one or more of the following:

- Concurrent with the development, Developer constructs **street improvements** to address the vehicular level of service impacts of the development.
- Concurrent with the development, Developer provides **active transportation** facility improvements, increased or enhanced **public transportation** service, **ride-sharing** programs, **demand management**, and other transportation systems management strategies that demonstrate a mode shift from vehicle to active transportation and/or transit modes such that the development vehicular level of service impacts are mitigated.
- If the City's Transportation Improvement Program includes a **project that is not fully funded (for instance, the funding includes unsecured grants)** that will mitigate the impacts of the development and is scheduled to be complete concurrent to the development, the City may allow the developer to provide funds to fully fund the project so that it may proceed concurrent to the development.
- If the City's Transportation Improvement Program or Comprehensive Transportation Plan includes a project that would **mitigate the impacts** of the development, the City may allow the developer to fund (all or in-part) and build the project concurrent to the development.
- Development project scope is **reduced**.

SUPPORTING ACTIONS

- Include standards in the EDS that require development projects to conduct a traffic impact analysis (TIA) when certain thresholds are met. Thresholds will be intended to require a TIA when it is likely that a development could cause transportation facilities to operate below level of service standards or when then development is likely to have negative impact on transportation facilities already operating below level of service standards. The TIA scope will be scalable based on the development project and its potential impacts on the transportation system. The TIA will identify impacts and associated mitigation actions proposed to address the impacts.
- The City will review transportation impact analyses for developments outside the City through SEPA to identify if there may be potential impacts to City systems.
- The City will provide transportation impacts analyses for developments within the City that may impact other agencies so that those agencies may identify if there are potential impacts to their facilities.
- The City will update the per-person trip traffic impact rate for the following calendar year based on the traffic impact fee funding need identified in the TIP and revise the fee schedule based on this per-person trip rate for adoption as part of the City's overall fee schedule.

(Continued on next page)

- Development project is **phased or delayed**.
- Establish a **lower vehicle level of service standard** via the City Council adoption of an amended Comprehensive Transportation Plan. The denial of a development in order to maintain concurrency may be grounds for the City declaring an emergency for the purpose of amending the Comprehensive Transportation Plan outside of the annual amendment cycle.

For the purposes of this policy **"concurrent with the development"** means that improvements or strategies are in place at the time of development, or that a financial commitment is in place to complete the improvements or strategies within six years.

TR7-2. The City may afford a developer that funds and/or constructs improvements that provide mitigation beyond the impacts of the development activity a credit against the traffic impact fees due for the project.

TR7-3. Development activity generating people trips shall pay a transportation impact fee that is used by the City to make system wide capital improvements and programs that provide vehicular capacity and encourage a mode shift from vehicles to active transportation and/or transit.

TR7-4. Development activity shall make improvements along project right-of-way frontages to provide for vehicle, pedestrian, bicyclist, transit, and freight trips to/from the project. Improvements shall be in accordance with multimodal level of service standards and the EDS.

TR7-5. The City may enter into latecomer (payback) agreements where transportation investments are made by one party that legitimately should be reimbursed by others, agreements will be at the discretion of the City Council. Latecomer or payback agreements do not apply to situations in which a property owner is required to construct improvements per an existing city code provision, such as in the case of half-street and other required improvements.

TR7-6. The City may make transportation improvements that would be required for an undeveloped or underdeveloped private property to develop or redevelop with a City funded capital project and re-coup the costs of those improvements assessed through a payback requirement on the private property.

TR7-7. Conversion of an intersection to all-way stop-control as mitigation for intersection level of service deficiencies shall only be allowed as a temporary measure where permanent measures such as a traffic signal or roundabout will be constructed concurrent to the development activity triggering the mitigation requirement.

SUPPORTING ACTIONS

- On an annual basis, the City will develop a per person transportation impact fee based on the number of people trips anticipated over the next six-year period of the TIP and the impact fee funding needed to implement projects to accommodate those trips. Projects include those that increase vehicular capacity or provide mode shift from vehicle to active transportation and transit, thereby reducing the need for vehicle capacity.
- In planning expenditure of transportation impact fees, the City will seek to support development concurrency by prioritizing projects that address vehicular level of service issues related to recent and anticipated development activity.
- The EDS will define frontage improvements (half-street improvements) required to be provided by development activities.
- The City will seek grant, loan, and partnership funding for system capacity and mode shift projects that would help reduce traffic impact fee rates required to maintain concurrency.

GOAL 8



Demand and System Management

Use Transportation Demand Management (TDM) and Transportation System Management (TSM) strategies to reduce capacity demand on the transportation system.

Demand and System Management Policies

TR8-1. TSM strategies shall be utilized to efficiently operate the existing transportation system, thereby maximizing resources, and reducing the need for physical system capacity expansion.

TR8-2. TDM strategies, such as the Commute Trip Reduction (CTR) program or other strategies that reduce single occupant vehicle travel shall be utilized, when possible, to lessen the impact on transportation system capacity.

TR8-3. Reduce the need for new capital improvements through investments in operations, pricing programs, demand management strategies, and system management activities that improve the efficiency of the current system.

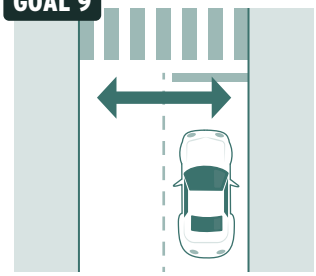
TR8-4. Emphasize transportation investments that provide alternatives to single occupancy vehicle travel, increase travel options, especially to and within centers, and support compact, pedestrian- and transit-oriented densities and development.

SUPPORTING ACTIONS

- Identify and map prioritized intelligent transportation system (ITS) improvements, based on available funding and existing infrastructure.
- Coordinate with transit agencies to enhance CTR programs for CTR employers in Auburn.
- Improve the CTR Program for City employees.



GOAL 9



Right-of-Way (ROW)

Retain and preserve existing right-of-way and identify and acquire new right-of-way as needed to provide for the existing and planned transportation system.

ROW Policies

TR9-1. Seek opportunities to obtain right-of-way along roadways and at intersections in accordance with adopted standards and comprehensive planning.

TR9-2. The City may acquire right-of-way, development rights, easements, and other property rights in accordance with the uniform act and other local, state, and federal law.

TR9-3. Private property shall not be taken for public use without just compensation having been made. The property rights of landowners shall be protected from arbitrary and discriminatory actions.

TR9-4. Right-of-way that has the potential for future transportation system needs shall be retained and right-of-way that has no potential future transportation system needs shall be considered for vacation.

TR9-5. When triggered by City code, require the dedication of right-of-way to accommodate the build-out of half street improvements based on the roadway classification and active transportation facilities identified in this Plan.

TR9-6. Permanent use or encroachment of right-of-way for non-City transportation system purposes shall be prohibited, restricted, or regulated to preserve the City's existing and planned use of the right-of-way for City transportation system purposes.

SUPPORTING ACTIONS

- Preserve and protect existing right-of-way through the issuance of permits such as Construction Permits, right-of-way Use Permits and franchise agreements.
- Monitor and address right-of-way encroachments.
- Acquire additional right-of-way as necessary to implement the Comprehensive Plan.
- As budgeted funds allow, purchase property when it is available on the market as a voluntary protective purchase rather than under threat of use of eminent domain.



GOAL 10



Asset Management

Design, construct, preserve, and maintain the City's transportation system in the most cost-effective manner.

Asset Management Policies

TR10-1. The target average Pavement Condition Index (PCI) for all streets is 70.

TR10-2. The minimum design service life for new and re-built roadways is 20 years.

TR10-3. The City shall take and require actions by others that minimize and mitigate impacts to the roadway surfaces by utility work and other construction activities.

TR10-4. Pursue and secure other funding sources, such as grants, partnerships, and revenue mechanisms to fund pavement preservation projects.

TR10-5. To the extent allowed by available preservation funding, the City shall prioritize the preservation of streets prior to the existing pavement degrading to the point where reconstruction of the roadway becomes the appropriate treatment.

TR10-6. Non-residential roadways requiring full pavement replacement shall be prioritized based on vehicle volumes and classifications with higher volumes of vehicles, heavy trucks, and transit routes being higher priorities than those with less.

TR10-7. Local Street Preservation program shall focus on preserving and re-building roadways classified as local residential, local industrial or rustic residential.

TR10-8. The Arterial Street Preservation program shall focus on preserving and re-building roadway systems classified as arterials or collectors.

SUPPORTING ACTIONS

- EDS prohibit trenching or cutting into newly constructed pavement surfaces (within five years) or require additional pavement replacement area where trenching or cutting in newly constructed pavement surfaces cannot be avoided.
- Notify and coordinate with private and public utilities when planning to complete pavement overlays or reconstruction.
- Identify City streets that are nearing a deterioration level that would require complete roadway re-build for inclusion in the pavement preservation program.
- Require roadways to be built per the requirements in the adopted EDS.
- Evaluate options to meet funding gaps that may include revenue mechanisms available through the Transportation Benefit District for consideration and potential implementation.
- Maintain a Computerized maintenance management system (CMMS) to record response to customer service calls.

(Continued on next page)

TR10-9. Prioritize the maintenance and replacement of pedestrian facilities to address deficiencies and to meet ADA requirements.

TR10-10. Prioritize maintenance of bicycle facilities to keep them visible with signage and markings, and clear of encroachments and debris.

TR10-11. Prioritize maintenance, repairs, and replacement of traffic control systems (signals, dynamic message signs, rapid rectangular flashing beacons) at a level consistent with optimizing system reliability, asset economic life, and system performance .

TR10-12. Ensure adequate resources to maintain, per USDOT, MUTCD, and other regulatory requirements and best practices, other elements of the street system such as signage, street lighting, and roadway markings.

TR10-13. Bridge inspection and maintenance shall follow State, Federal, and other applicable regulatory requirements.

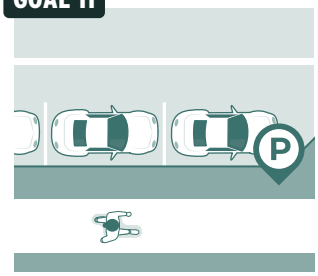
TR10-14. Intelligent Transportation Systems (ITS) will be managed and maintained to be secure, reliable, and effective.

TR10-15. Prepare for changes in transportation technologies and mobility patterns.

SUPPORTING ACTIONS

- Assign industry standard design lives for control systems. Seek to repair or replace system assets before they exceed their economic life and minimize the number of high-criticality assets beyond their economic life.
- Take measures to ensure system security for traffic control systems.
- Incorporate repair and replacement of sidewalks and other street assets into pavement preservation projects as appropriate and as resources allow.

GOAL 11



Parking

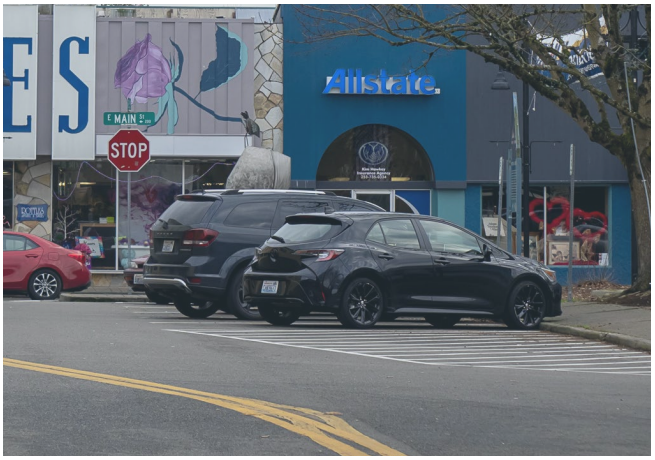
Ensure a balance between on-street and off-street parking provided to meet the needs of existing land use, development, and other community needs and as allowed by law.

Parking Policies

TR11-1. On-street parking should be allowed only when consistent with the classification and intended function of the street.

TR11-2. New developments shall provide adequate off-street parking to meet the needs of their development unless otherwise precluded by law.

TR11-3. Within high density areas, such as Regional Growth Center, evaluate and address the need for passenger and/or commercial loading zones.



SUPPORTING ACTIONS

- Take an active approach to managing on- and off-street parking in commercial and high-density residential areas to minimize land dedicated to parking and ensure right-of-way balancing parking with other community needs.
- Explore the feasibility of parking management programs, shared parking strategies, and/or subsidized ORCA cards programming as new low-income housing units are being developed; addressing the transportation needs as development occurs.
- Encourage new development to incorporate appropriate design features such as: Preferential parking for carpools and vanpools; Special loading and unloading facilities for carpools and vanpools; Transit passenger facilities, including comfortable bus stops and waiting areas that may be integrated in the building design; and secure and covered bicycle parking, showers, lockers, and related facilities to support bicycle commuters. Where applicable, encourage convenient short-term bicycle parking for customers or other visitors.
- Develop guidance for the creation of parking facilities for bicycles, scooters, and other active transportation vehicles that help promote mode shift away from motorized vehicles.


IT'S A
GOOD
DAY

CHAPTER 5

System Management, Maintenance, and Operations



IN THIS CHAPTER

- Staffing
- Equipment/Fleet
- Facilities
- Asset Management



Efficient and effective management, maintenance, and operations of the City's transportation systems relies on strategic planning and implementation. These efforts require identification of current and future assets and the financial, equipment, facilities, and personnel resources required to maintain and operate them. This chapter summarizes current and anticipated future staffing, equipment, and facilities needs and describes management of key transportation systems and elements such as pavement, street signal, sidewalks, and signage.

5.1. STAFFING

The staffing for the City's transportation system is broken down into four areas: Transportation Engineering and Planning, Traffic Signal Operation and Maintenance, Street Maintenance and Vegetation Maintenance.

5.1.1. Transportation Engineering and Planning

This area is responsible for the development, management, and administration of the Plan, Transportation Improvement Plan, Traffic Impact Fee program, street payback agreements, development review and permitting related to transportation requirements on all types of developments, traffic studies, citywide traffic count program, citywide channelization and pavement marking program, franchises, right-of-way use permits, community banner program, adopt a street program, right-of-way vacations, Americans with disabilities transition plan for right-of-way, commute trip reduction program for all large employers within Auburn, pavement preservation, capital project grants, neighborhood traffic calming program, on-street parking management, photo enforcement program, and regional coordination on transportation issues. There are currently five full-time equivalent (FTE) employees to manage these responsibilities.

5.1.2. Traffic Signal Operations and Maintenance

This area is responsible for the operation and maintenance of the City's traffic signals including programing and signal timing, electronic traffic control and warning devices, dynamic message signs, traffic cameras, school zone flashing beacons, and the ITS including fiber optic cable. There are currently five FTE's to manage these responsibilities.

5.1.3. Street Maintenance

This area is responsible for the maintenance of the roadway system including signage, street lighting, guardrails, walls, pavement, sidewalks, curbing, and delineators. There are currently 10.5 FTE's to complete this work.

Litter management is contained within the Solid Waste program through contracted services.

5.1.4. Vegetation Maintenance

This area is responsible for maintenance of roadside and pond vegetation, hardscape medians located along the roadways of the city, and provides street sweeping services on all roadways. The Parks Department maintains the landscaped medians within the roadway corridors of the City. There are currently 11.5 FTE's to complete this work, however, 5.1 FTE's are funded by the Storm Drainage Utility and provide for the vegetation maintenance of the Storm properties and facilities and therefore only 6.4 FTE's are dedicated to the street vegetation maintenance functions.

The City's transportation system elements are shown in **Table 10**.

Table 10. Transportation System Elements

QTY	DESCRIPTION
248.69	Miles of Streets
17	Bridges
11,000	Street Signs
13,389	Feet of Guardrail
96	Traffic Signals
31	Rapid Rectangular Flashing Beacons
3.684	Street Lights - City Owned
2,261	Street Lights - PSE Owned
53	School Zone Flashing Beacons
19	Speed Radar Feedback Signs
89	Traffic Cameras
12	Speed Photo Enforcement Locations (School Zones)
4	Dynamic Message Signs
43.86	Miles of Fiber Optic Systems
2	Community Banner Locations

As the City's transportation systems grow and new regulatory requirements are enacted, the resources needed to complete necessary maintenance and operations must be evaluated and adjusted to ensure adequate resources to meet the growing needs of the system and continue to maintain the system in a state of good repair. Unfortunately, because not all agencies provide the same services and functions, there are no reliable national standards to look at to determine level of staffing needed for a transportation system with the exception of signal maintenance.

The Federal Highway Administration and Institute of Transportation Engineers recommends a ration of between 25-50 traffic signal/field devices per technician. The City of Auburn has three signal technicians and one supervisor which results in a ratio of 76:1 and is therefore under resourced for the current number of systems that they are responsible for. This plan has identified a need for potentially ten to 12 new traffic signals and several RRFB's associated with projects and programs to improve pedestrian access and safety. In addition, there is the potential for future expansion of the photo enforcement program which should also be considered when determining future staff resources needed.



5.2. EQUIPMENT/FLEET

The City currently has the equipment resources for use in the maintenance of transportation systems shown in **Table 11** and **Table 12**.

Similar to the staff resource discussion above, there are no national statistics on the amount of equipment needed for the size of a transportation system because there are too many differences between agency responsibilities and levels of service. The current resources allow for adequate maintenance of the City's systems and as staffing resources grow, equipment resources will be need to increase accordingly.

In addition, in 2024 the City will be implementing an all electric street sweeper which was made possible through a grant from the Department of Ecology. In order to reduce the cities greenhouse gas emissions, replacement of fleet equipment and purchase of new equipment will consider the ability for electric vehicles, hybrid vehicles, or alternative fuels to be used as these technologies develop and improve.

Table 11. Equipment Assigned to Street Division or Traffic Signal Division

QTY	EQUIPMENT DESIGNATION	TYPE
4	6402E, 6403F, 6404B, 6412E	1 Ton Truck
1	6415C	F 350 Light Truck
1	6418D	Sign Truck
2	6113D, 6114D	Signal Transit Van
1	6116D	Signal Bucket Truck
1	6116D	Engineering SUV
4	6413D, 6414C, 6114C, 6113D	Staff Vehicles
2	6450A, 6450B	Bucket Trucks
1	6426D	Patching Truck
3	6411C, 6425C, 6425D	International Dump Truck
6	A402A, A402B, A901A, A408A, A404A, A501D	Plow Attachments
3	A403A, A405A, A401A	Sander Attachments
2	A904A, A407A	Deicer Attachments
1	A411A	1650 Gallon Tank
1	6423D	NorAm Grader
1	6420C	Johne Deere Loader
1	6432D	CAT Roller
1	6436A	Wacker Roller
1	6934A	Trverus Sidewalk Cleaner
1	N/A	ACCUBRINE Brine Maker

Table 12. Additional Equipment Available for all M&O Teams

QTY	EQUIPMENT DESIGNATION	TYPE
1	6940C	Case Skid Steer
1	A428E	30'' Cold Grinder
1	N/A	84" Angle Broom attachment-seria
1	6523C	Backhoe/ Extendahoe
1	6900	Backhoe
2	6635A, 6930A	Yanmar Excavator
1	6601A	John Deere Excavator
3	6911B, 6910C, 6505B	International Dump Truck
4	A904A, A905A, A406A, (6910D)	Plow
4	A903A, A902A, A502A, (6910D)	Sander
1	6910D	Kenworth Dump Truck
1	6911A	Mack Dump Truck
1	6420C	Johne Deere Loader
1	6432D	CAT Roller
1	6436A	Wacker Roller
1	6934A	Trverus Sidewalk Cleaner
1	N/A	ACCUBRINE Brine Maker

5.3. FACILITIES

Management, maintenance, and operations of the City's transportation systems are provided from two locations:

- **1 East Main Street** – City Hall Annex, Transportation Engineering Services
- **1305 C Street SW** – Maintenance and Operations Shops, Street Division, Vegetation Division, Traffic Signals Division

Other facilities also used for the Transportation system include the following

- **Sand and salt storage** – five locations citywide
- **Vegetation sorting facility** – Jacobson Tree Farm
- **Storage** – City's GSA Property on C Street SW

In 2020, the City undertook a study, the Facility Master Plan, to determine the space needs for the Public Works, Parks and Police departments. The recommendation of that study as it relates to the transportation system was to continue to provide maintenance and operations services from the 1305 C Street SW location but to expand the facilities with the construction of approximately 13,100 SF crew building, expansion of the fleet shops, relocation of the employee parking, completion of a driveway connection to 15th Street SW, and construction of covered parking for high valued fleet. This plan and its recommendations were adopted by the City Council in 2021 with Resolution 5595.

In 2024 construction is anticipated in the first phase of the Facility Master Plan for Public Works which is the expansion of the fleet shop facilities. As part of this work in the first phase, the City is improving the electrical service to the property to accommodate future charging stations for the electric street sweeper and future electric and/or hybrid fleet vehicles. In 2024/2025 it is anticipated that planning work will be done in the second phase of the identified improvements which for Public Works includes improvements at the Maintenance and Operations Shops to address the need for more crew space and warehousing space.

In 2024/2025 the City will be increasing the ability for the City to handle inclement weather events in the future by adding an additional sand and salt storage location. Planning efforts are also underway to relocate the vegetation sorting facility, which allows debris from operations to be separated and dried before disposal thereby reducing the costs of disposal is completed, from the Jacobson Tree Farm Property. This is due to the future plans of the City to build a Community Park on the tree farm site.

In 2024, the City is also completing a remodel at the City Hall Annex facility to provide the necessary office space for the future growth of the Public Works, Community Development and Finance departments located on the second floor and will provide necessary space for the transportation staff located there.



5.4. ASSET MANAGEMENT

Asset management involves the balancing of costs, opportunities and risks against the desired performance of assets to achieve objectives of the transportation system. The City currently uses an asset management system for its transportation and utility infrastructure and integrates this information with its GIS. This system allows the City to track requests for services both internally and from the community, assign specific tasks both reactionary and preventative to the maintenance of our facilities, and track information on specific assets defined within the system. The City has been implementing this system since 2007 and continues to improve the asset data sets and mapping to provide resources for our planning of system improvements as well as the day to day work of maintaining the systems.

5.4.1. Street Pavement

The City's Streets Division completes temporary and permanent pavement patching as needed in response to requests and complaints on all roadway corridors up to 6' x 10' in size. Areas that require more extensive patching or full pavement replacement are incorporated into the pavement preservation programs and implemented as capital projects managed by the Public Works Engineering services.

As of December 2022, City streets have an overall average pavement condition index of "67" on a scale of "0" to "100" where "0" is a completely deteriorated roadway surface and "100" is a new roadway surface. The City's goal is to achieve and maintain an average 70 pavement condition index which reflects a "good" surface condition.

An annual report is published to document the pavement rating throughout the City.

In November 2004, Auburn residents approved Proposition 1, Save Our Street Program, which created a dedicated local street fund. This money was set aside for repair and maintenance of local roadways which can sometimes also include sidewalk repair and rebuild. In 2013, the City Council modified the funding source for this program to be from construction sales tax revenues and no longer from property taxes. In 2018, the City Council modified the funds for this program, to be temporarily provided by real estate excise tax (REET) Revenues until a permanent and sustainable source could be established. Beginning in 2023, the City Council reallocated the existing 1% tax on utilities previously used to fund the arterial street preservation program to the fund the local street preservation program (formerly known as the Save Our Streets Program).

Figure 14. Local Residential Street Before and After SOS Rebuild



This re-allocating established $2 million annually to the local streets preservation program, which is the funding level estimated (in 2022 dollars) needed to achieve and maintain the City's average pavement condition index (PCI) goal of 70.

In 2008, the City created a similar program to fund the repair and maintenance of arterials and collector streets. Through 2022, this program was funded with a 1% utility tax, which was supplemented by grant funds, which provided an average of approximately $3.3 million per year. Analysis shows that approximately $5 million per year (in 2022 dollars) is needed to improve our arterial and collector streets to the PCI average target of 70 within the next 10-15 years, and then maintain them at that level.

Besides preserving, repairing, and replacing pavement surfaces, the street preservation programs also address non-ADA compliant curb ramps on-streets being re-paved or re-built when required per the criteria established in the City's ADA Transition Plan. The programs also address damaged or lifted sidewalks that may present an ADA obstruction or concern on streets it is re-paving or re-building.

In 2022, the City Council took actions to work towards reaching and sustaining the needed funding for both programs. Starting in 2023 the 1% utility tax revenue was moved to the local streets preservation program and a 1.5% tax on City Utilities was enacted to provide funding for the arterial streets preservation program. Additionally, as the City's Transportation Benefit District, the City Council enacted a 0.1% sales tax to provide funding for the arterial street preservation program. These new revenue streams, combined with grants, and fund balance are projected to get the City closer to the $5 million needed per year for the arterial street preservation program. The analysis in 2022 also identified that the City may need to consider the implementation of a $20 car tab fee through the Transportation Benefit District depending on future grant revenues. Current grant programs provide funding opportunities based on eligibility and scoring that exclude many City streets and the number of streets that are eligible and score well for the grants that have not already been repaired and preserved is diminishing. Therefore, the future level of grant revenues for pavement preservation is uncertain.

5.4.2. Active Transportation Facilities

Sidewalk Repair and Accessibility Program

The City of Auburn has an Annual Citywide Sidewalk Repair and Accessibility Program to repair damaged sidewalks, install/replace curb ramps that do not meet ADA standards, and to complete missing links in the sidewalk network.

These funds are essential for promoting active transportation travel and can be used to leverage other funding sources, such as state and federal grants or other city capital projects.

Auburn has identified three principal areas in which sidewalk improvements should be prioritized: corridors that provide access to and within the downtown, school zones, and parks, with a focus on addressing areas of known concern and complaints. Additional criteria for priority access improvement could include, but are not limited to, areas with high concentrations of senior citizens or disabled citizens, areas with high volumes of pedestrian-transit interaction, areas where private improvements such as trees have damaged the public infrastructure,



and areas where property owners are willing to financially participate in the construction of sidewalk improvements through payment into the City's sidewalk repair program. This program may also include the completion of sidewalk improvements using Community Development Block Grant funding to address areas that are within a qualified census tract as defined by HUD.

5.4.3. Street Lights

In 2021, the City completed the conversion of all of its City-owned standard Cobrahead style street lights from sodium halide to LED lighting and implemented a control system that provides information on the use of the system and can provide notifications when lights are not working. Beginning in 2021, the City created a Street Lighting Improvement program to complete the conversion of PSE-owned lights within the City to LED and to provide funds to add street lights where lighting does not meet the City's current design standards. More significant lighting projects are included in the transportation improvement plan as funding allows.

5.4.4. Traffic Signal Systems

The City completes annual preventative maintenance on its traffic signal systems. Every eight to ten years, the City also completes the re-lamping of signal heads. Each capital project that may impact an existing traffic signal is also reviewed for improvements and/or equipment replacements that may be needed for signal operations. In addition, as a traffic signal system reaches the end of its useful service life, it is included in the transportation improvement plan for replacement as funding allows. Often, development or capital projects re-build all, or portions, of existing traffic signal systems. Generally, to keep up with the general useful service lifetime of the City's traffic signals, a complete signal system must be replaced every three to four years.

5.4.5. Street Landscaping/Vegetation

The City's street standards require landscape strips along some roads classified as local residential or collector. City code establishes that the landscape strips are the responsibility of the adjacent property owner to maintain. Medians that include landscape treatments are maintained by the City's Parks Department through a contract with a landscape maintenance company. Roadside vegetation is maintained by the City's Vegetation Division where formal landscape strips do not exist and where vegetation within the right-of-way may create potential hazards or sight distance concerns.

5.4.6. Transportation System Management (TSM) and ITS

TSM techniques, which make more efficient use of the existing transportation facilities, can reduce the need for costly system capacity expansion projects. These techniques can also be used to improve reduce congestion and delays at intersections and along corridors to help meet City LOS standards TSM techniques used by the City include:

- Re-channelization/restriping, adding turn lanes, adding
- Signal interconnect and optimization
- Turn movement restrictions
- Access Management
- ITS, including Dynamic Message Signs (DMS)
- Traffic monitoring with PTZ cameras
- Signal battery backups on all major intersections



The City will continue to use these TSM techniques to maximize the efficiency of the existing street network. Of the various TSM strategies available, the City continues to invest in and expand its ITS infrastructure as a cost-effective means of increasing system capacity. The ITS system enables the City to change traffic signals in phasing and timing real-time, thereby accommodating unexpected increases in traffic or traffic obstacles such as event related traffic and crashes. For example, ITS has proven to be a useful tool in helping to manage the impact of event traffic traveling south on Auburn Way South, often during the PM peak, to the White River Amphitheatre. The City will continue to roll out ITS capabilities on corridors around the City, as referenced in Map 8. 2024 Intelligent Transportation Systems (ITS) in Appendix A.

In addition to TSM strategies, the City strives to provide viable alternatives for travelers to encourage mode shifts away from single occupancy vehicles to transit, biking, and walking,

5.4.7. Signage and Channelization

The City maintains street signage per the Manual of Uniform Traffic Control Devices (MUTCD) as adopted by WSDOT. This includes the replacement of signage as necessary due to knock downs or when reflectivity is below standards. Reflectivity requirements are established in the MUTCD.

The City re-paints roadway and curb striping on an annual basis. A database of the locations of all thermoplastic roadway markings is currently being created to facilitate a programmatic approach to the refreshing of these markings on a one to five-year basis. In addition, this data set will include the locations of raised pavement markers (RPMs) as new regulatory requirements within the MUTCD call for these RPM's to be updated/replaced on streets without street lighting and meeting other criteria.

5.4.8. Bridges

The City completes bridge inspections as required by the FHWA on an annual or bi-annual basis as determined in the prior inspection report. Inspection reports identify if there are maintenance, repairs, rehabilitation or replacement that is needed for the bridges within the City. The City Bridge program provides for minor cost repairs that are identified in the annual inspections on an annual or bi-annual basis depending on the work identified within each bridge inspection report. When larger items of work are identified, the City includes specific projects within the Transportation Improvement Plan as funding allows. The City also typically applies for grants through WSDOT's Local Bridge Grant Program and has secured funding for bridge maintenance and repairs.



CHAPTER 6

Funding

IN THIS CHAPTER

- Financial Summary
- Financial Planning & Programming
- Funding Sources
- Revenue Shortfall Contingency
- Funding Strategies, Project Prioritization





The ability to finance the maintenance and enhancement of the transportation system is critical to the implementation of this plan and the success of the future transportation system. This chapter details the financial planning tools and funding mechanisms available to accomplish these goals.

6.1. FINANCIAL SUMMARY

The summary below provides an overview of the 20-year financial outlook for the City's transportation systems. Forecasts are based on current funding levels for City funds and based on past trends for grants and partnerships. All amounts shown are shown in current dollars (2024) without discount rate adjustments to current value.

Table 13. 2024 to 2044 Expense and Revenue Forecast

OPERATIONS		
Labor, Materials, Facilities Operations, Equipment Maintenance	$	(336.6 Million)
Facilities Expansion, Additional Equipment	$	(20 Million)
Motor Vehicle Excise Tax Revenue	$	18.9 Million
General Fund	$	337.7 Million
OPERATIONS FUNDING REMAINDER/(SHORTFALL)	$	0
CAPITAL		
Plan Projects/Programs Expense	$	(320 Million)
Traffic Impact Fees Revenue	$	25.86 Million
Transportation Benefit District Revenue		
0.1% Sales Tax	$	47.5 Million
$20 Car Tabs*	$	11.7 Million
Utility Taxes Dedicated to Transportation		
1.0% on Non-City Utilities	$	40.98 Million
2.5% on City Utilities	$	26.61 Million
Motor Vehicle Excise Tax Revenue	$	10.6 Million
Multimodal Transportation	$	2.5 Million
Interest Earning and Investment Income	$	2.73 Million
Utility Revenues for Local Street Impacts	$	3 Million
Other (Developer and/or Other Contributions/Payments)	$	12.6 Million
Grants, Loans, and Partnerships Revenue**	$	106 Million
Real Estate Excise Tax Revenue	$	29.7 Million
OVERALL FUNDING CONTINGENCY/(SHORTFALL)	$	0.22 Million

* Assumes 13 years of collection at $900k collected per year.
** Based on historic average of $4.25 million awarded per year + $20 million grant for BNSF/A Street Access Project.

6.2. FINANCIAL PLANNING & PROGRAMMING

The City uses the Transportation Improvement Program (TIP) and Capital Facilities Plan (CFP) to develop a financial plan for capital improvements in Auburn, thus enabling the City to fulfill the GMA requirement of having a multi-year financing plan based on the identified transportation needs.

6.2.1. Transportation Improvement Program

The TIP is a six-year fiscally constrained plan which lists programmed transportation improvements in the following categories: roadway improvement projects, intersection improvement projects, active transportation and transit projects, preliminary engineering and miscellaneous projects, and preservation projects. Transportation needs are identified by examining the latest information concerning safety and crash history, growth trends, the traffic model, traffic studies, and the projects identified in the Plan. The City adopts an updated TIP annually, including a revenue forecast and analysis of available funding. Projects are then prioritized according to a number of factors including safety, capacity needs, access needs, and the likelihood of securing funding. The first three years of the TIP must be financially constrained, however, the City utilizes financial constraint on the full TIP period so project programming is often limited due to anticipated funding limitations.

The TIP is an important tool for identifying funding and developing a financial plan for project implementation. This planning document is incorporated into the CFP and used to influence the City's adopted budget.

6.2.2. Capital Facilities Plan

The CFP is the Comprehensive Plan element which identifies the financial plan for implementing all capital improvements in Auburn. Transportation improvements are included in the CFP, which is amended with each Biennial Budget. The CFP enables the City to fulfill the GMA requirement of having a multi-year financing plan based on identified transportation needs. It also enables the City to make informed decisions about its investment of public dollars and make timely decisions about maintaining LOS's in accordance with the Comprehensive Plan standards. The 2024-2044 Plan capital projects and program costs are summarized in **Table 14** on the next page.



Table 14. Capital Project and Program Cost Summary and Revenue Forecast

DESCRIPTION	SUMMARY			2024 – 2044 TOTAL
Comprehensive Plan Projects (Comp-X) from Appendix B	See Appendix B		$	123 Million
Asset Preservation, Repair, Replacement Projects/Programs	Traffic Signals Maintenance	$200,000 / Year	$	162 Million
	Traffic Signal Replacements	$150,000 / Year		
	Sidewalk Repair and Replacement Program	$250,000 / Year		
	Arterial Street Preservation	$5 Million / Year		
	Local Street Preservation	$2 Million / Year		
	Bridge Repair & Maintenance	$100,000 / Year		
	Channelization and Pavement Markings	$400,000 / Year		
Active Transportation Projects/Programs	Active Transportation Mode Shift Projects	$1 Million / Year	$	20 Million
Safety Projects/ Programs	Street Lighting	$50,000 / Year	$	11 Million
	Traffic Safety Programs	$500,000 / Year		
Other	Transit Partnership Routes	$200,000 / Year	$	4 Million
		TOTAL	**$**	**320 Million**

6.3. FUNDING SOURCES

The City uses a combination of public and private funding sources to implement transportation improvements in Auburn, both for maintenance activities and capital improvements.

6.3.1. General Tax Revenues

The City receives tax revenues from a variety of state, regional, and local sources including the Real Estate Excise Tax, sales tax, property tax, and the motor vehicle fuel tax (MVFT).

In addition, the City has implemented a utility tax on all utilities within the City and allocated a portion of these revenues specifically to the City's transportation system for improvements. This includes a 1% tax on all non-City utilities such as gas, power, telecommunications, and cable and a 2.5% tax on City utilities including water, sanitary sewer, storm drainage, and solid waste.

In 2023, the City began operation of a school zone photo enforcement program that may provide revenues for future transportation related projects.

6.3.2. Transportation Benefit District

Chapter 36.73 of the Revised Code of Washington provides for the establishment of Transportation Benefit District (TBD) by cities and counties to levy

and impose various taxes and fees to generate revenues to support transportation improvements within the district. A TBD is a quasi-municipal corporation and independent taxing district created for the sole purpose of acquiring, constructing, improving, providing, and funding transportation improvements within the district. The State Legislature provided local governments with the tools of the TBD because inflation has eroded the local share of gas tax and a series of statewide ballot initiatives passed over the last 12 years have eliminated other traditional sources of funding for local transportation needs.

In 2011, the City of Auburn implemented a TBD to provide adequate levels of funding for transportation improvements that are consistent with existing state, regional, and local transportation plans, and are necessitated by existing or reasonably foreseeable congestion levels.

The geographic boundaries of the Auburn TBD is the municipal limits of the City of Auburn as they currently exist. The Auburn TBD geographic boundaries would expand with any future annexations.

In December 13, 2016, there was an approval to implement an annual vehicle license fee of $20.00 for qualifying vehicles in the district. However, in September 19, 2017, the action was rescinded and therefore, no vehicle license fees were put into effect and no fees have been collected.

In 2022, the City Council completed a review of the needs for the preservation of the City's streets and determined that $5 Million was needed annually to preserve the City's arterial and collector streets and $2 Million was needed annually for local streets. As a result of that the Council developed three recommendations to provide funding for preservation of the City's roads. Two of the recommendations utilize the authorities granted to the TBD by the State Legislature. The first one was approved by the City Council on October 3, 2022, with the adoption of Ordinance No. 6881 which added a new section to the Auburn City Code (Chapter 3.23) imposing a Transportation Benefit District 0.1% Sales and Use Tax as authorized by RCW 84.55 and RCW 36.73. This tax became effective on January 1, 2023 and may be used for transportation improvements with a focus on preservation of the City's arterial and collector roadways. The second TBD consideration is a future implementation of a $20 Car Tabs at such time as the City is unable to obtain the grant funding to supplement the revenues for arterial and collector street preservation to meet the annual budget need of $5 Million. Based on the projected need of this Plan, it is anticipated that the $20 Car Tab's may be required to be implemented between 2031 and 2032. In addition, the 0.1% Sales and Use tax is enacted for a 10 year period and the City will need to consider continuing that tax every 10 years to continue to receive the revenues forecast in this plan.

The TBD is provided the authority to:

- Establish and implement district policies, programs and procedures
- Borrow money and incur indebtedness
- Provide for investment of district funds
- Create advisory committees (limited to seven City residents)
- Other powers consistent with state law

6.3.3. Grants

The City has an active grant program and continually seeks grants, both private and public, to improve Auburn's transportation system. The following is a list of some of the grants the City has historically applied for and will likely apply for again in the future.

Federal Legislation

In 2021, the Federal Legislature approved the new Surface Transportation reauthorization bill called the Infrastructure Investment and Jobs Act (IIJA). This is the largest long-term investment in infrastructure and provides $550 billion over fiscal years 2022 through 2026 in new federal funding. This is also know as the Bipartisan Infrastructure Law (BIL).

State Legislation

In 2015 and 2022, the Washington State Legislature passed two separate transportation funding packages called Connecting Washington and Move Ahead Washington. These programs also increased potential funding available to existing grant programs within the State and each identified specific regional projects to be funded by the programs.

Freight Mobility Strategic Investment Board (FMSIB)

The mission of the FMSIB is to create a comprehensive and coordinated state program to facilitate freight movement between and among local, national, and international markets which enhances trade opportunities. FMSIB is also charged with finding solutions that lessen the impact of the movement of freight on local communities.

FMSIB obtains funding directly from legislative appropriations and has contributed funds to the 3rd Street SW Grade Separation, the S 277th Street Grade Separation, M Street NE Widening 8th to 4th, and the M Street Underpass projects.

Potential Grant Programs for Consideration

From these state and federal actions, there are a number of grant programs available to local agencies related to transportation infrastructure improvements, as shown in **Table 15**.

There are a multitude of other potential federal grant programs through the IIJA that are evaluated as calls for projects are issued. PSRC has published a summary of the numerous grant programs available at https://www.psrc.org/media/7292.

Table 15. Potential Grant Program for Consideration

PROGRAM	DESCRIPTION
Transportation Alternatives Program (TAP)	TAP funds projects designed to strengthen the cultural, aesthetic, and environmental aspects of the inter-modal transportation system. The program provides for the implementation of a variety of non-traditional projects, including the restoration of historic transportation facilities, the construction of bicycle and pedestrian facilities, landscaping and scenic beautification, and the mitigation of water pollution from highway runoff.
Surface Transportation Program (STP)	STP provides flexible funding that may be used by states and localities for projects on any federally classified public road, active transportation improvements, bridge, and transit capital project.
Safety Program	A federal program targeted at reducing crash rates at intersections and along corridors, particularly at those locations with higher than average fatality and injury rates. Funds come from the Highway Safety Improvement (HSIP) Program . HSIP requires that states program and spend safety funds according to their Local Road Safety Plan. Washington State's plan is called Target Zero.
Congestion Mitigation and Air Quality (CMAQ)	A federally funded program administered through PSRC. CMAQ funds projects and programs in air quality non-attainment and maintenance areas, which reduce transportation related emissions.
Safe Routes to Schools Program	A state and federally funded program that aims to protect children from traffic related deaths and injuries and promotes a healthy lifestyle by encouraging bicycling and walking to school.
Pedestrian and Bicycle Safety Grant	A state funded program that funds active transportation safety improvements.
Transportation Improvement Board (TIB)	TIB administers annual grant programs that fund roadway and active transportation projects that improve safety, mobility, capacity, and promote economic development. The TIB offers several programs, each of which emphasizes different funding criteria. In addition, they offer a Complete Streets program.

(Continued on next page)

PROGRAM	DESCRIPTION
Community Economic Revitalization Board (CERB)	A state funded program that provides low-cost financing for public facility improvements. Public entities are eligible to apply for and receive loans and grants for public facilities linked to economic development outcomes such as private business investment and job creation. CERB also finances site-specific studies and plans.
Regional Mobility Grant Program	A State managed program to improve connectivity between counties and regional population centers and reduce transportation delay. There are four project types: vehicle and equipment purchases, capital construction, operations, and transportation demand management.
Local Bridge Grant Program	A State managed program to preserve and improve the condition of bridges that are physically deteriorated or structurally deficient through replacement, rehabilitation and systematic preventative maintenance.
Rebuilding American Infrastructure with Sustainability and Equity (RAISE)	A discretionary program funding to complete critical freight and passenger transportation projects.
Safe Streets and Roads For All (SS4A)	A discretionary program funding regional, local, and Tribal initiatives to prevent roadway deaths and serious injuries.
Reconnecting Communities and Neighborhoods (RCN)	RCN provides funding to prioritizing disadvantaged communities, aiming to improve access to daily needs such as jobs, education, healthcare, food, and recreation, fosters equitable development and restoration, and reconnects communities by removing, retrofitting, or mitigating highways or other transportation facilities that create barriers to community connectivity, including to mobility, access, or economic development.

6.3.4. Loans

Low-interest loans are also available to municipalities. For example, the Washington State Department of Commerce Public Works Board offers low-interest loans (PWTF) for local governments to finance public infrastructure construction and rehabilitation. Eligible projects must improve public health and safety, respond to environmental issues, promote economic development, or upgrade system performance. Roads, streets, and bridges are eligible for these loans. The loans can be strategically employed to leverage grant funding by providing a local match, enabling the City to compete for funding for public infrastructure projects. In addition, the City has the option of issuing bonds for public infrastructure projects. The City may also pursue financing airport improvements through the Community Aviation Revitalization Board (CARB) loan program.

Table 16. 2024-2044 Forecast

CURRENT LOANS & INDEBTEDNESS			
Harvey Road/8th Street NE Intersection Improvements	Remaining Debt Payments 2024 – 2028	**$**	**407,933**
M Street SE Undercrossing Improvements	Remaining Debt Payments 2024-2041	**$**	**2,155,891**
Auburn Way South Widening (Hemlock St SE to Poplar St SE)	Anticipated Payback Period 2025-2045	**$**	**3,000,000 + Interest**

6.3.5. Transportation Impact Fees

The City has an established traffic impact fee system based on the Institute of Traffic Engineers (ITE) guidelines, as amended by the City Council. The fee system estimates the amount of traffic each development is anticipated to create, based on the land use type and size. Traffic impact fees compensate the City for the capacity improvements needed to accommodate the new trips generated by new development. In turn, the City uses the revenues to expand the street network through the capacity projects included in the TIP. The fees are based on the costs of the capacity project included in the TIP and forecast growth throughout the City. The fees are updated annually following the adoption of the TIP by City Council. Payment of the impact fee does not relieve developers of their codified obligation to construct half-street improvements, nor the need to mitigate project impacts identified through the SEPA process, which may include the construction of an identified TIP project (and a credit for the impact fee contribution towards that project).

The City also charges a truck impact fee for certain land-use types which are associated with significant truck traffic generation, such as commercial and industrial uses. These fees are used to address impacts on the City's truck routes and other truck-related infrastructure.

With the adoption of this plan, the City will be updating its transportation impact fee schedule to be based on a per person trip approach. The impact fees generated from this revised approach will be used for both vehicle capacity projects and active transportation projects that support mode shift away from vehicles (and therefore reduce need for vehicle capacity).

6.3.6. Funding Partnerships

The City has successfully formed several funding partnerships, which have enabled it to leverage its resources in implementing transportation improvements.

The Muckleshoot Indian Tribe (MIT) has graciously provided easements, funding, and other support to the City for several transportation projects and programs. In 2020, the City and MIT entered into a Memorandum of Understanding (MOU) where both parties agreed to work together to identify needs and provide solutions to gaps in active transportation facilities on, and along, SR 164/Auburn Way South. Subsequently, the MIT and City have entered into funding agreements for specific projects where MIT has provided funding for projects implemented by the City.

The City anticipates continuing to partner with WSDOT on funding projects involving the state routes through the City.

Local Improvement Districts (LIDs) enable City investment in a specified area by leveraging City funds, when available, with contributions from property owners in the district. LIDs are a means of using limited city resources to improve neighborhood quality through improvement of streets, sidewalks, and other features of the roadway. Historically, LIDs were often implemented to construct public improvements associated with new commercial and residential neighborhoods. It has been over 15 years since the City has last implemented an LID. This is presumably due to the high costs that LIDs would require the benefited property owners to pay. Additionally, most new residential and commercial developments trigger the requirement for public improvements such as streets, sidewalks, and street lighting to be built by the development at the time of the development rather than being built through LID. For these reasons, the City has not included any LID constructed improvements or funding in its future projections.

In 2022, the City implemented a new Sidewalk Repair Program to address situations where adjacent property owners are financially responsible for the correction of damaged sidewalks within the City. This program allows for a property owner to pay the City a pre-determined fee to complete the work on their behalf in the next regularly scheduled sidewalk improvement project.

Street Deferral agreements or Fee In Lieu payments are allowed per Auburn City Code 12.64A where property owners responsible for the construction of frontage improvements along their properties can pay the City for the completion of the work where a planned improvement project has been identified in the City's Transportation Improvement Plan and/or adopted budget.

6.4. REVENUE SHORTFALL CONTINGENCY

Revenue forecasts for City funds are considered to be relatively secured. Other revenue such as grants and partnership funding can be slightly more unpredictable. While all the revenue currently forecast is anticipated to fully fund the transportation plan, if shortfalls arise the City will have to take one or more of the following actions to maintain compliance with GMA concurrency requirements:

- Supplant the projected budget shortfall with other existing City funds.
- Enact new sources of revenue.
- Revise the Land Use Plan to reduce development capacity and resultant need for additional transportation improvements.
- Lower the LOS Standard sufficiently to reduce the need for additional transportation improvements.
- Impose restriction (moratorium) on further development with impacts to areas not meeting LOS standards until the current LOS standard is met.

6.5. FUNDING STRATEGIES, PROJECT PRIORITIZATION

The City uses a variety of criteria to prioritize transportation projects, including safety, mobility, and overall community benefit. In addition, the City also considers the availability of funding and the ability to leverage City dollars to raise addition funds. For example, grants are often available for specific types of capital investments, whereas they are more limited for maintenance/preservation. Hence, the City often needs to budget for maintenance/preservation through tax revenues. Capital improvements may be financially secured through a combination of public and private investment. Hence, project prioritization for capital improvements is often partially dependent on the ability to secure outside funding. Likewise, maintenance and preservation are highly dependent on the limited tax revenues available to the City. In the future, the City will need to continue lobbying for its share of federal, state, and county tax revenues, seek creative avenues for securing private investment dollars and grant funds, and potentially implement new funding strategies such as car tabs or additional tax implementation when allowed.



CHAPTER 7

Monitoring & Evaluation

IN THIS CHAPTER

Annual Updates

Multi-Year Updates

Accomplishments Since the Last Plan Update (2019)





The Comprehensive Transportation Plan, a long-range plan with the horizon year 2044, predicts the needs and conditions of the future transportation system, enabling the City to anticipate its future needs. Nonetheless, the transportation network is dynamic, constantly evolving due to circumstances beyond the scope and influence of this plan. Hence, regular updates are necessary to ensure the Plan remains current and relevant.

7.1. ANNUAL UPDATES

The Plan can be amended annually as part of the City's regular Comprehensive Plan amendment cycle, which ensures proposed changes go through a public review process before the amended plan is adopted by the City Council at the end of the calendar year. In preparation for the annual amendment cycle, the City will review the plan and propose updates as needed. These proposed updates may be due to changes to City priorities, the availability of new information, or the relevance of certain plan components.

7.1.1. Re-Evaluation

The annual re-evaluation process provides an opportunity for the City to identify progress made in implementing the Plan, as well as identify new needs that have arisen since the previous update. The update will consider the street, active transportation, and transit systems, and assess whether the Plan adequately addresses the implementation strategies necessary to ensure the transportation infrastructure continues to grow in line with the City's objectives.

As part of this process, the City will review its future projects list and update the TIP and the CPF as appropriate. It will also review and update the Policies and Funding chapters in order to remain consistent with the City's vision and current with potential funding strategies.

7.1.2. Technical Information

The Plan contains a range of technical data, much of which informs other elements of the Plan. As part of the annual amendment cycle, technical information, such as traffic volumes, existing LOS, roadway classifications, and transit route and ridership information, will be updated as appropriate. Updated information will inform much of the evaluation process, enabling the City to quantify system changes over time and make appropriate decisions in planning the future system.

7.1.3. Model Updates

The City's traffic model shall be updated on a regular basis, every few years, as new land use, employment, and housing data becomes available. Model updates are important as they ensure the City has an accurate understanding of how land use patterns, employment, and other factors impact future transportation conditions, enabling the City Council to make informed policy decisions. The model also provides an understanding of the impacts associated with different projects, allowing the City to devise a revised list of future projects to improve capacity and safety, as well as achieve other priorities.

7.1.4. Comprehensive Plan Consistency

The annual evaluation process is an opportunity to ensure the Plan is consistent with other elements of the City's Comprehensive Plan, including the land use and economic development elements; Auburn Parks, Recreation and Open Space Plan, Transportation Improvement Program; and CFP. Hence, as part of the annual amendment cycle, the City will ensure these plan components are consistent with and supportive of each other.



7.2. MULTI-YEAR UPDATES

The City has the opportunity to perform annual updates to the Plan on an as-needed basis to account for significant changes which have occurred during the previous year. A more exhaustive process is periodically necessary; hence, a thorough rewrite of the Plan shall be conducted every five to eight years. This endeavor will include a broad public outreach effort with input from neighboring jurisdictions, state and regional agencies, and Auburn residents and businesses. Much like the process for the 2024 update, it will present an opportunity to holistically examine the current transportation system and lay the framework for development of the future system.

7.3. ACCOMPLISHMENTS SINCE THE LAST PLAN UPDATE (2019)

Since 2019, the City has completed numerous transportation improvements, with an emphasis on providing new road capacity, improving pedestrian and bicycle safety, preservation of existing infrastructure, and providing better access to regional transit services including commuter rail.

In addition to the completed planned capacity projects, additional projects were completed, such as the I Street extension to South 277th Street, the Auburn Way South sidewalk additions from Dogwood to Hemlock, Riverwalk Drive Sidewalks Expansion, and numerous pavement preservation projects.



APPENDIX A

Maps & Interactive Links



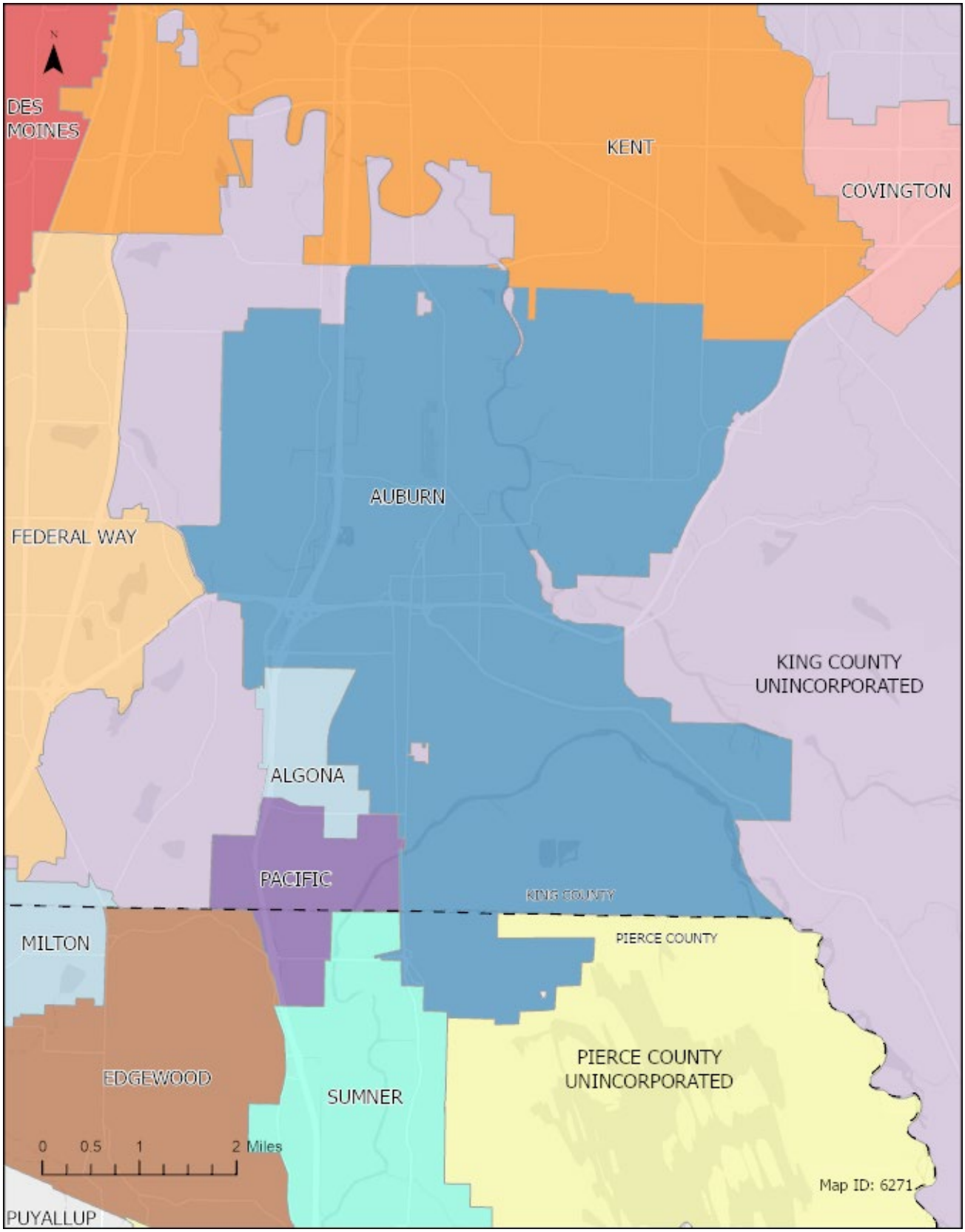
IN THIS APPENDIX

Map 1. 2024 Adjacent Cities and Counties
Map 2. 2024 Bike Route Network
Map 3. 2024 Existing Bike Facilities
Map 4. 2024 Existing Sidewalks
Map 5. 2024 Transit Bus Routes/Stops
Map 6. 2024 Level of Transit Service
Map 7. 2024 City of Roadway Classifications
Map 8. 2024 Intelligent Transportation Systems (ITS)
Map 9. 2024 Federal Functional Classifications
Map 10. 2024 Freight Network

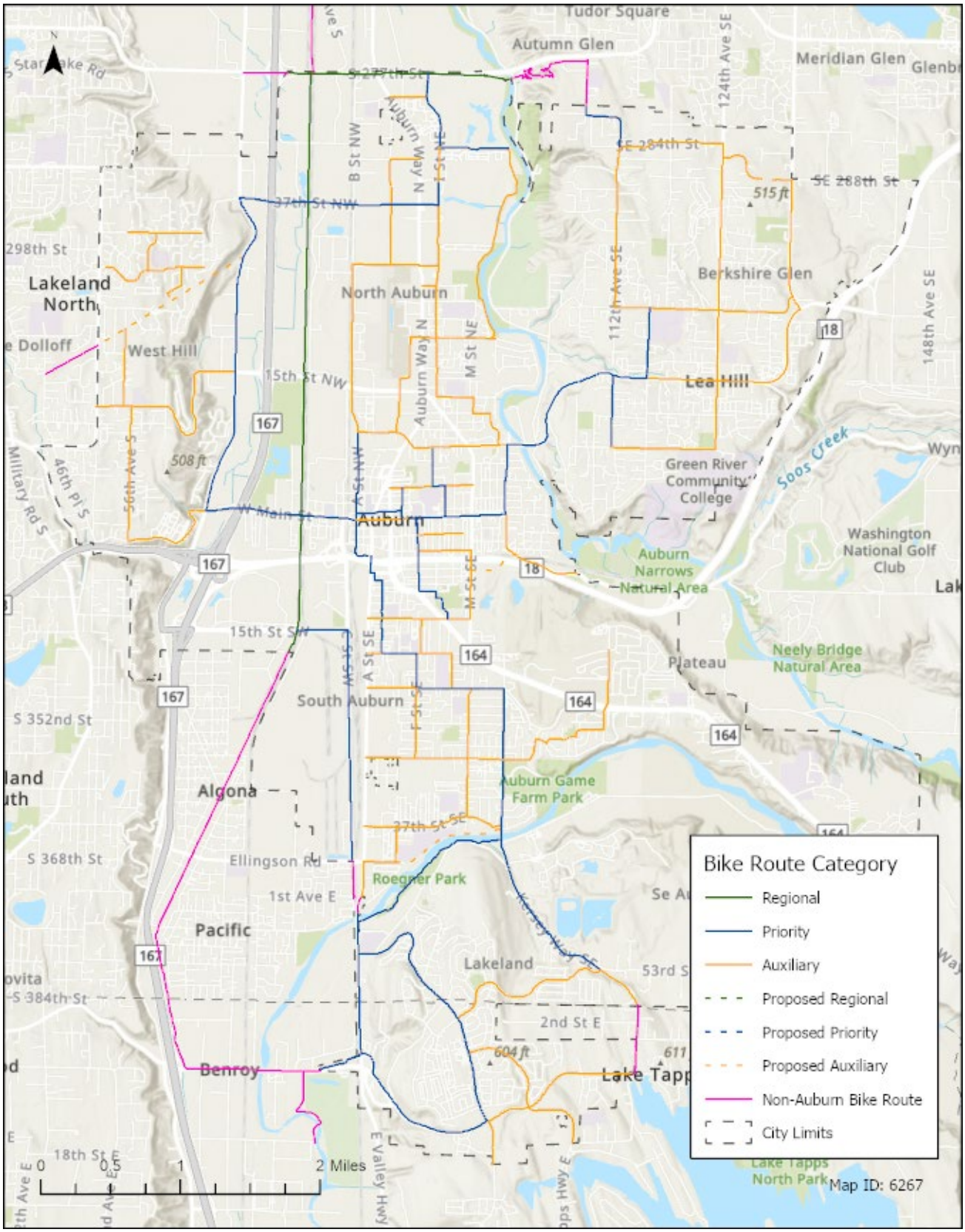
INTERACTIVE LINKS

Roadway Information
Vehicle LOS - Intersection Delays
Sidewalk Inventory and Transit Level of Service
Bike Network Assessment Map
Existing and Planned Bike Facilities Map
Conceptual Projects and Map

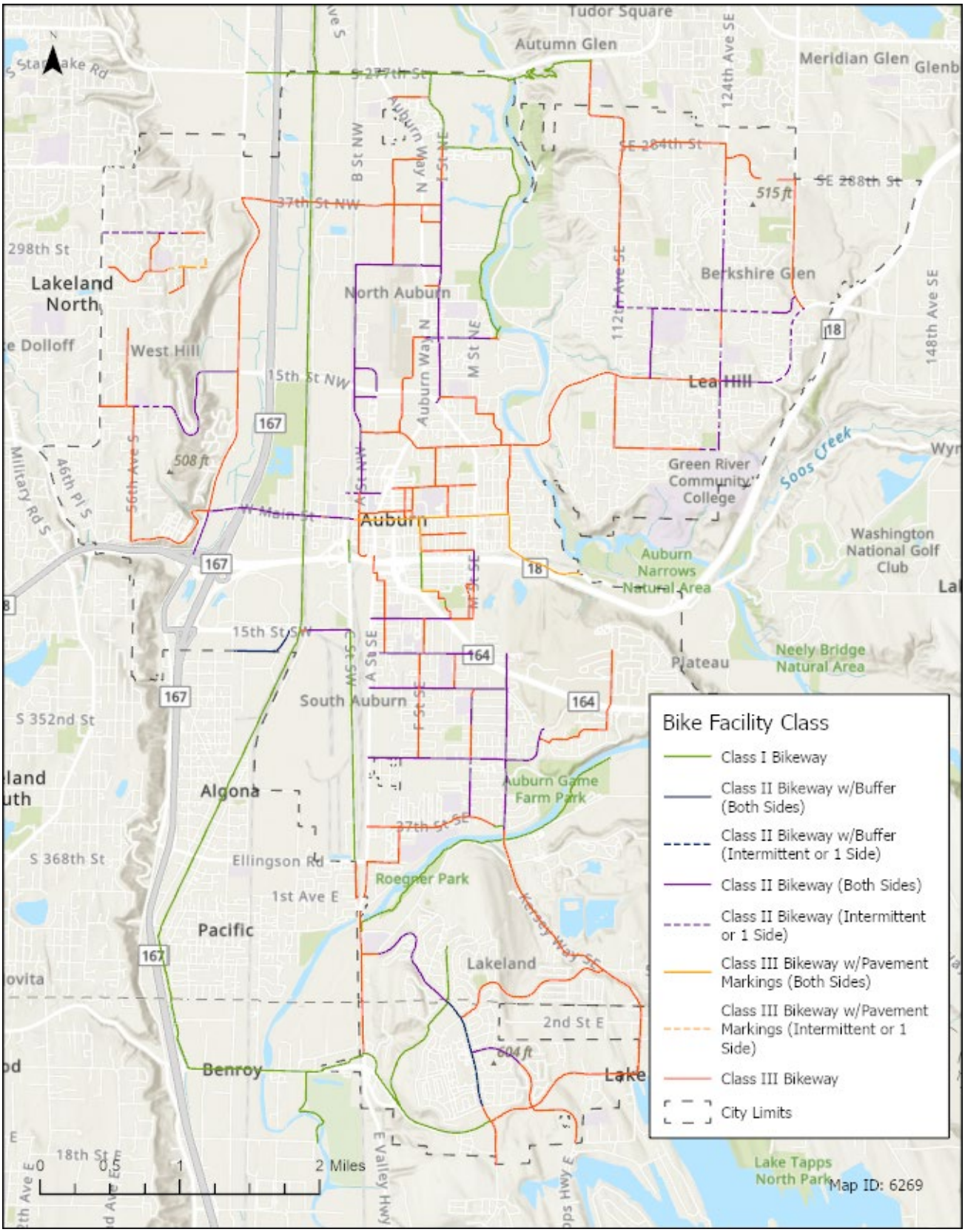
Map 1. 2024 Adjacent Cities and Counties



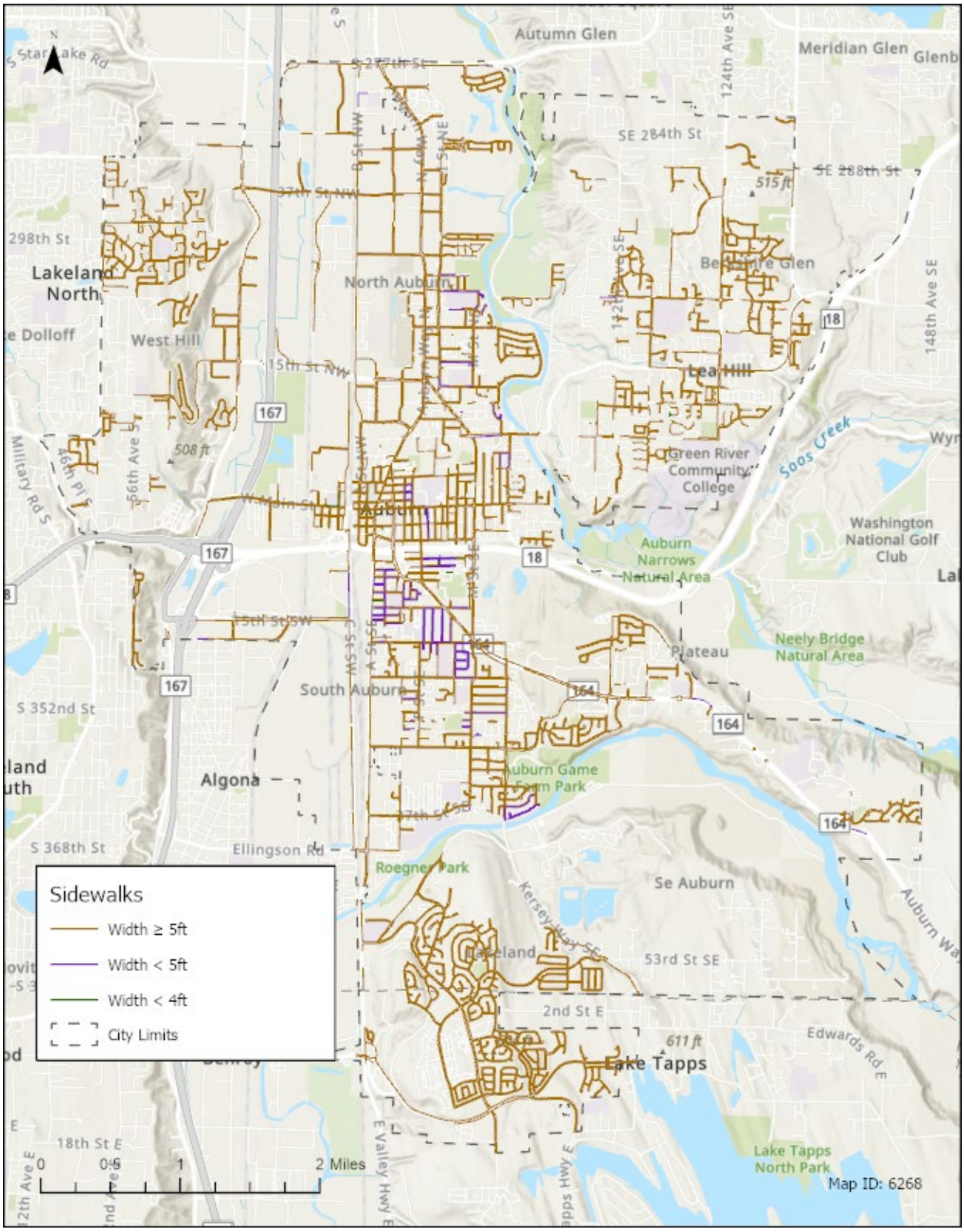
Map 2. 2024 Bike Route Network



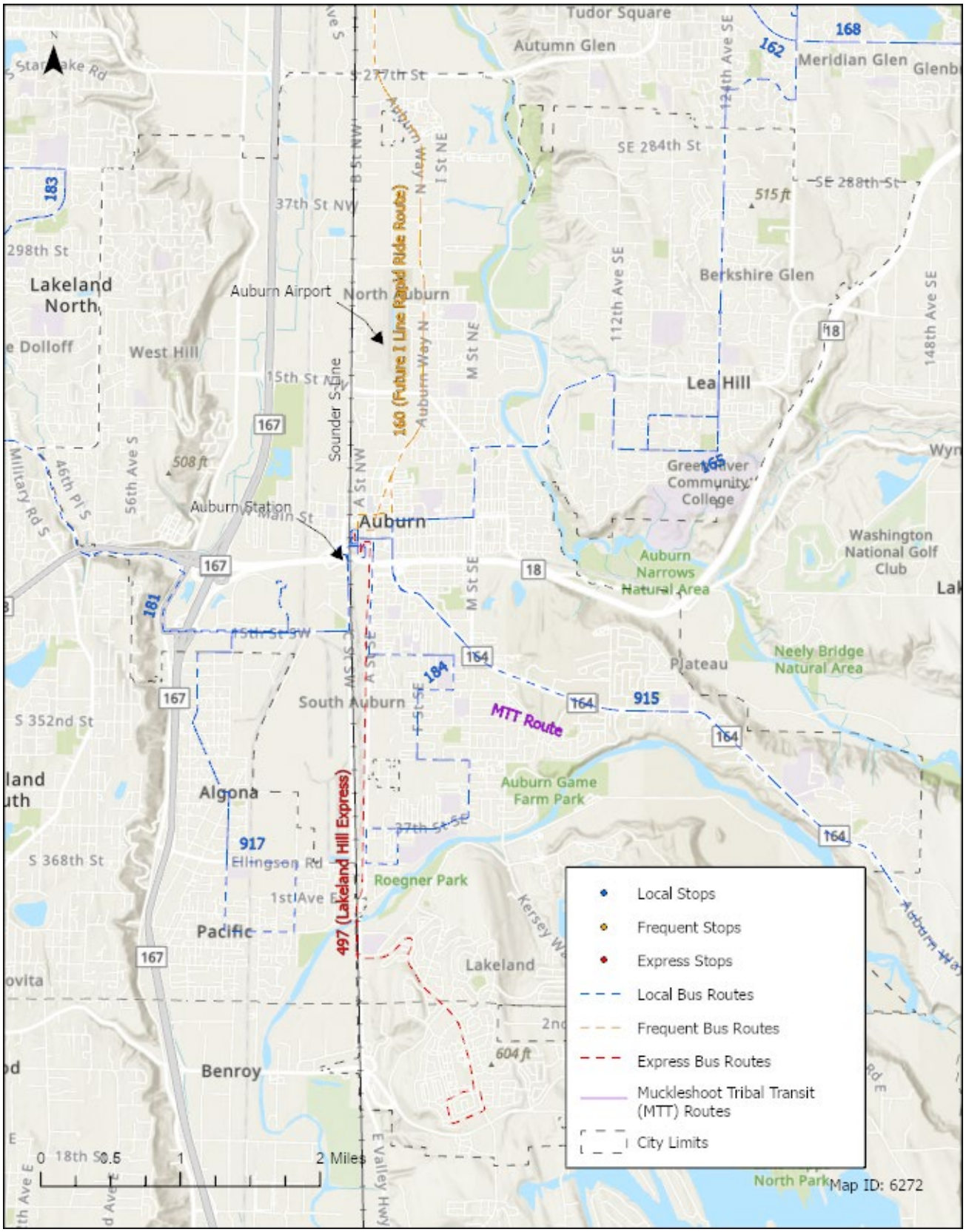
Map 3. 2024 Existing Bike Facilities



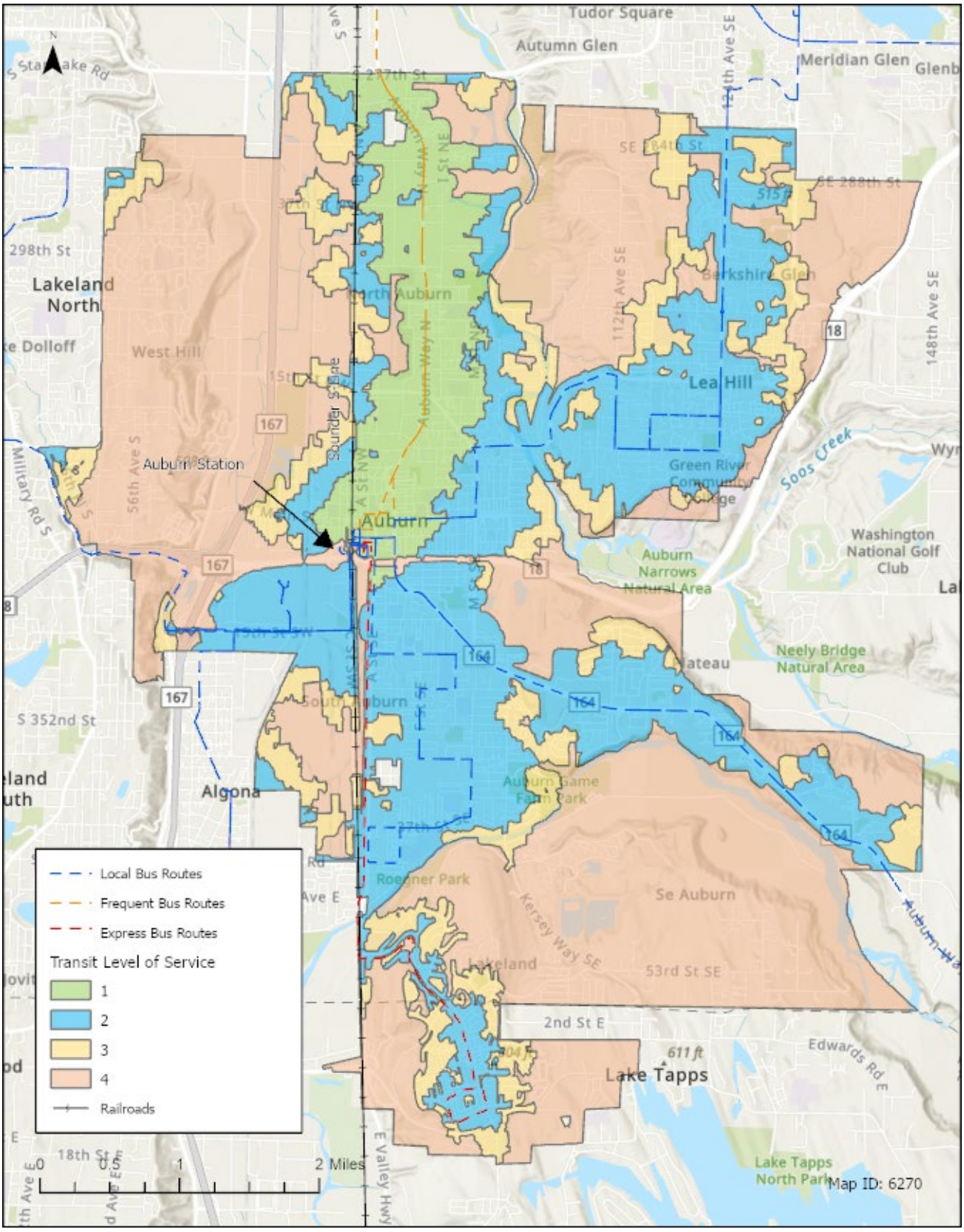
Map 4. 2024 Existing Sidewalks



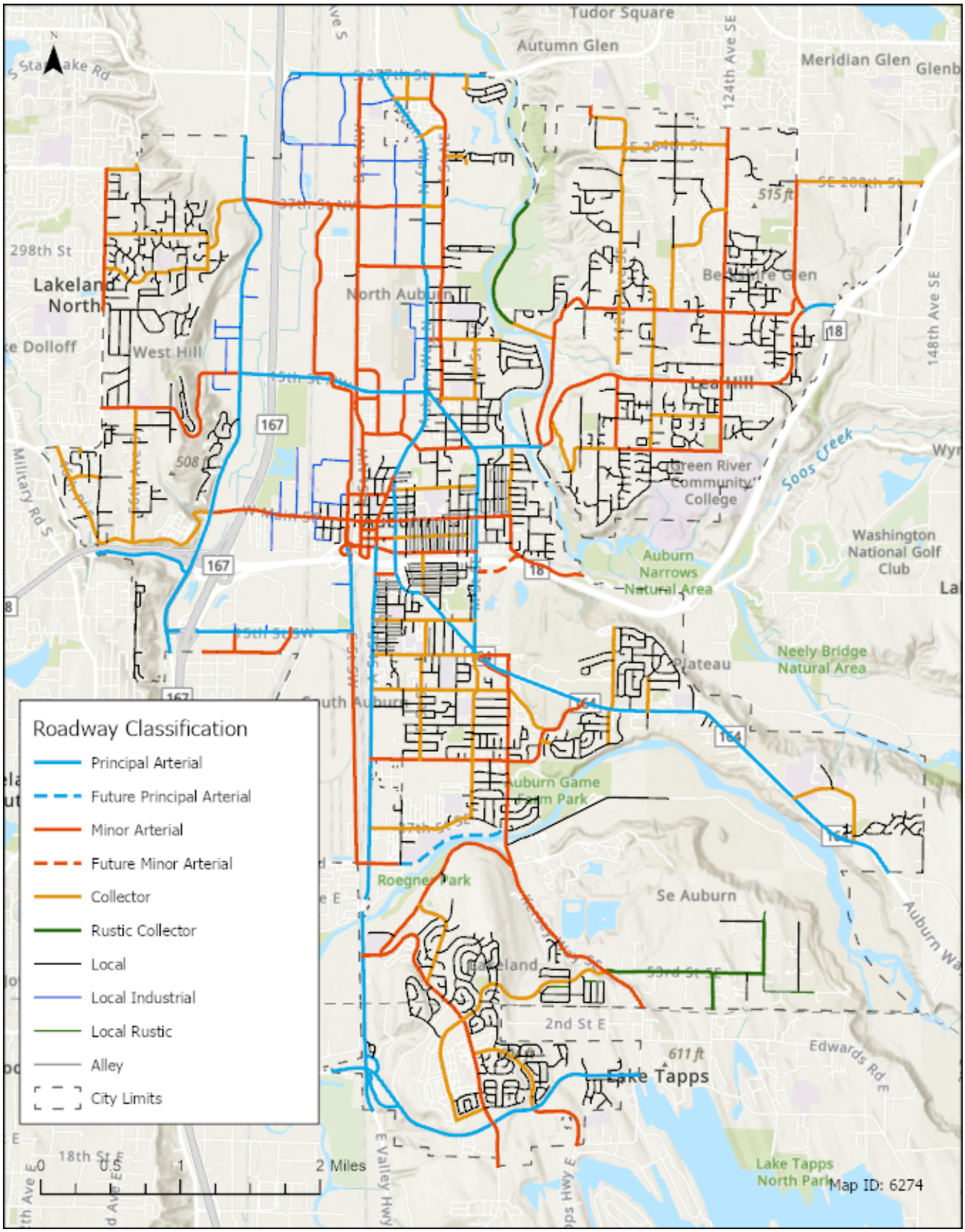
Map 5. 2024 Transit Bus Routes/Stops



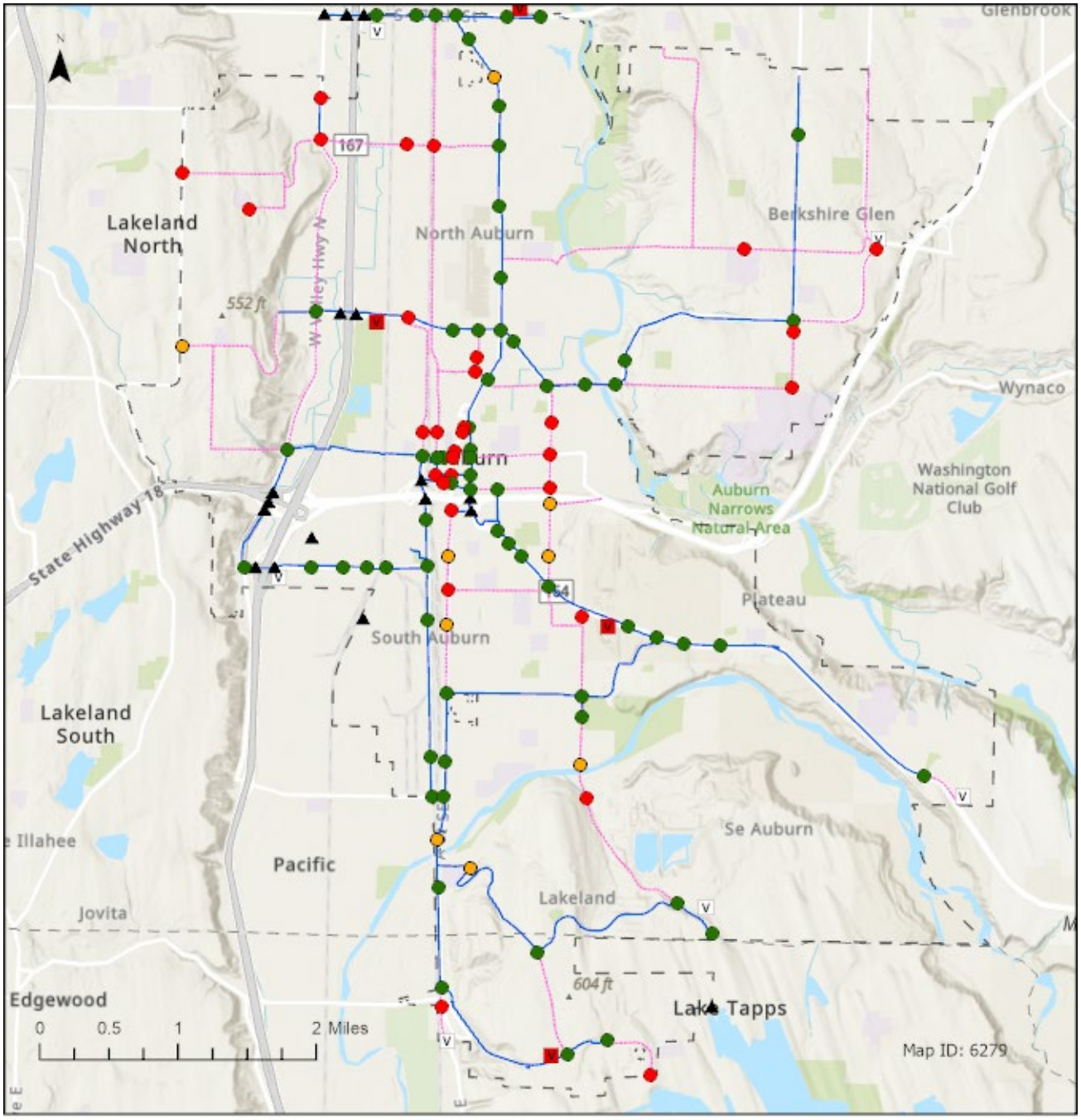
Map 6. 2024 Level of Transit Service



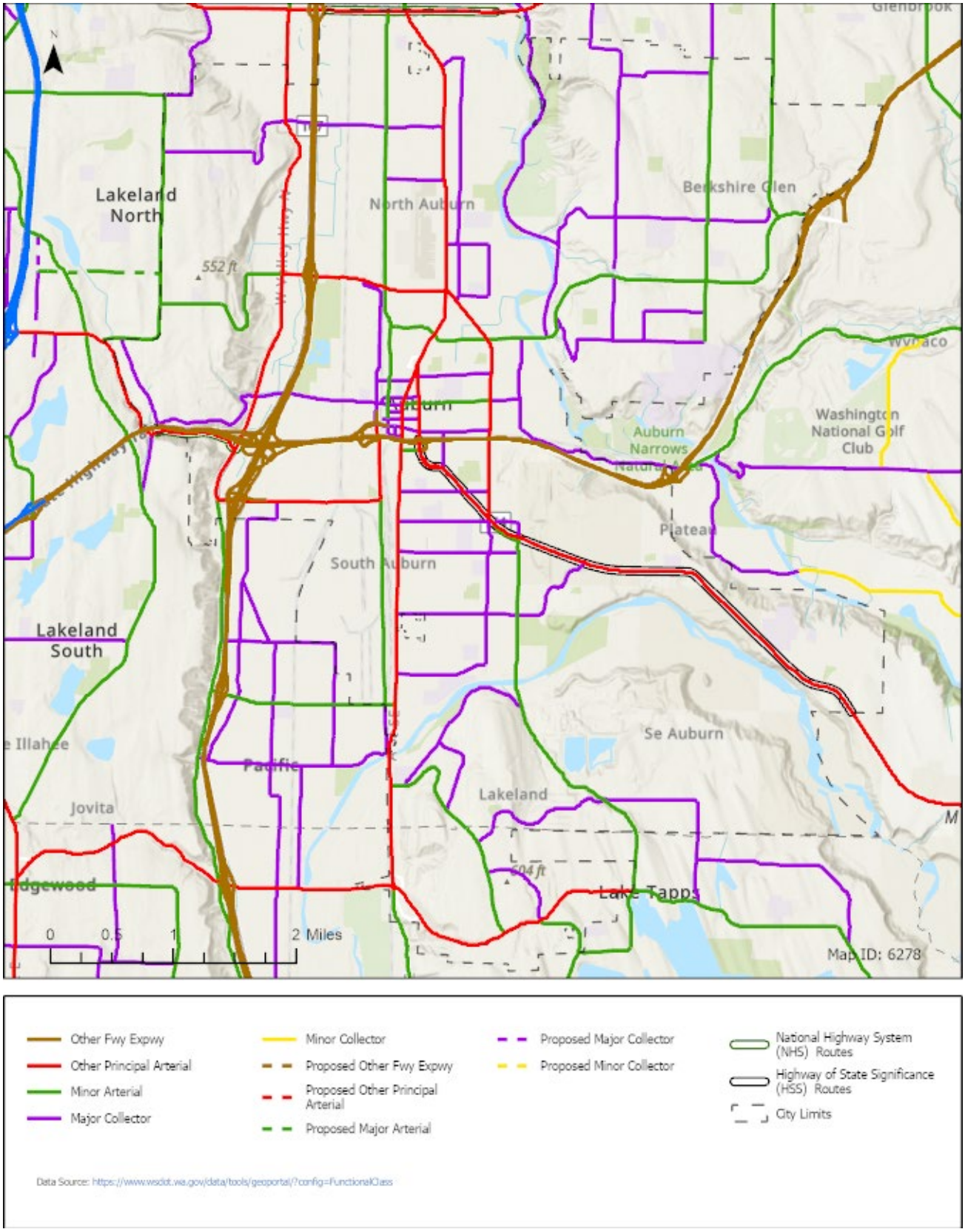
Map 7. 2024 Roadway Classifications



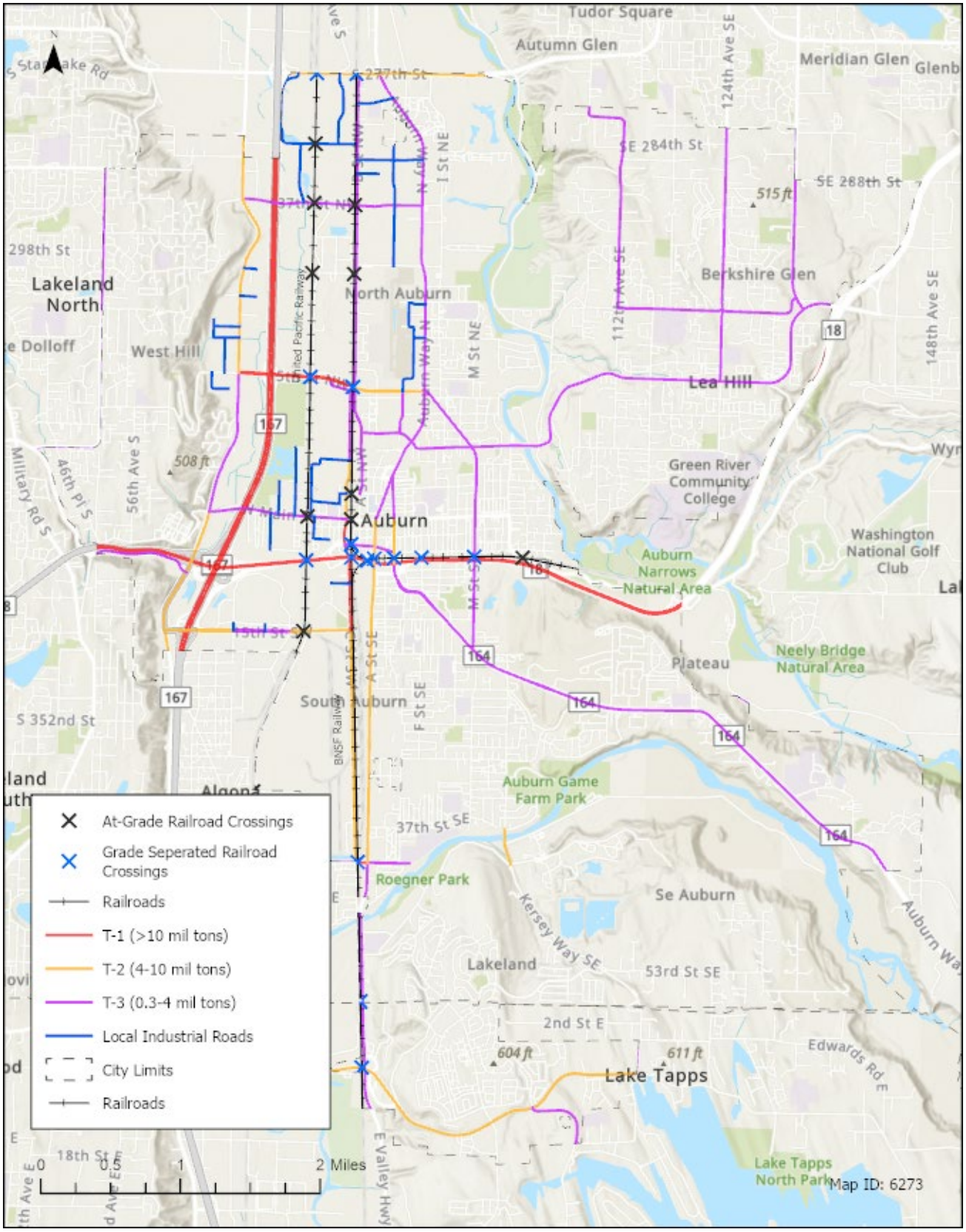
Map 8. 2024 Intelligent Transportation Systems (ITS)



Map 9. 2024 Federal Functional Classifications



Map 10. 2024 Freight Network



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APPENDIX B

Project Summaries

IN THIS APPENDIX

- Summary Table of Planned Projects and Programs
- Project Summaries: Purpose, Concept, Planning Level Cost
- List of Bike Improvements to Encourage Mode Shift



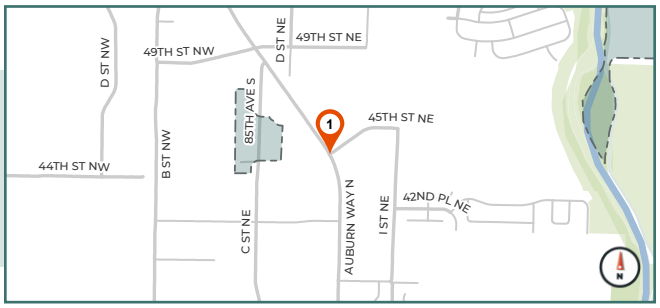
PLANNED PROJECTS & PROGRAMS

Interactive Map: https://storymaps.arcgis.com/stories/2d9fe1e0980044fbb4bf78c2056450eb

Click on a linked **COMP #** in the summary table below to view that specific project summary.

COMP #	PROJECT		COST ESTIMATE
1	Auburn Way N & 45th St NE Intersection Improvements	$	1,900,000
2	Auburn Way N & 42nd St NE Intersection Improvements	$	100,000
3	I St NE Improvements (37th St NE - 45th St NE)	$	6,700,000
4	I St NE & 37th St NE Intersection Improvements	$	2,300,000
5	I St NE & 30th St NE Intersection Improvements	$	3,250,000
6	SE 304th St & 112th Ave SE Intersection Improvements	$	800,000
7	SE 304th St & 118th Ave SE Intersection Improvements	$	950,000
8	SE 304th St & 116th Ave SE Intersection Improvements	$	3,725,000
9	Lea Hill Corridor Improvements	$	14,675,000
10	116th Ave SE & SE 312th St Intersection Improvements	$	5,600,000
11	116th Ave SE & SE 320th St Intersection Improvements	$	3,150,000
12	Pike St NE & 8th St NE Access Management	$	50,000
13	8th St NE Improvements (Auburn Way N - Harvey Rd/M St NE)	$	8,200,000
14	10th St NE Improvements (A St NW - Auburn Way N)	$	2,300,000
15	15th St NW & M St NW Access Management	$	50,000
16	S 316th St & 56th Ave S Intersection Improvements	$	3,225,000
17	S 316th St & 51st Ave S Intersection Improvements	$	2,150,000
18	S 321st St & 44th Ave S/46th Pl S Intersection Improvements	$	3,750,000
19	A St NW & 3rd St NW Improvements	$	3,025,000
20	C St NW & 3rd St NW Intersection Improvements	$	1,900,000
21	M St SE By-Pass Rd (M St SE - Black Diamond Rd)	$	17,250,000
22	Auburn Way S, M St SE, 17th St SE Intersection Improvements	$	2,300,000
23	M St SE & 12th St SE Intersection Improvements	$	4,650,000
24	M St SE & 29th St SE Intersection Improvements	$	2,925,000
25	A St Corridor Improvements - 37th to White River Bridge	$	21,965,000
26	A St SE & 12th St SE Intersection Improvements	$	1,425,000
27	A St SE & 21st St SE Intersection Improvements	$	1,925,000
28	Lakeland Hills Way SE & Oravetz Rd SE Corridor Improvements	$	2,610,000
		TOTAL $	**122,850,000**

COMP-1
AUBURN WAY N & 45TH ST NE INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

Primary Need: Vehicle Capacity

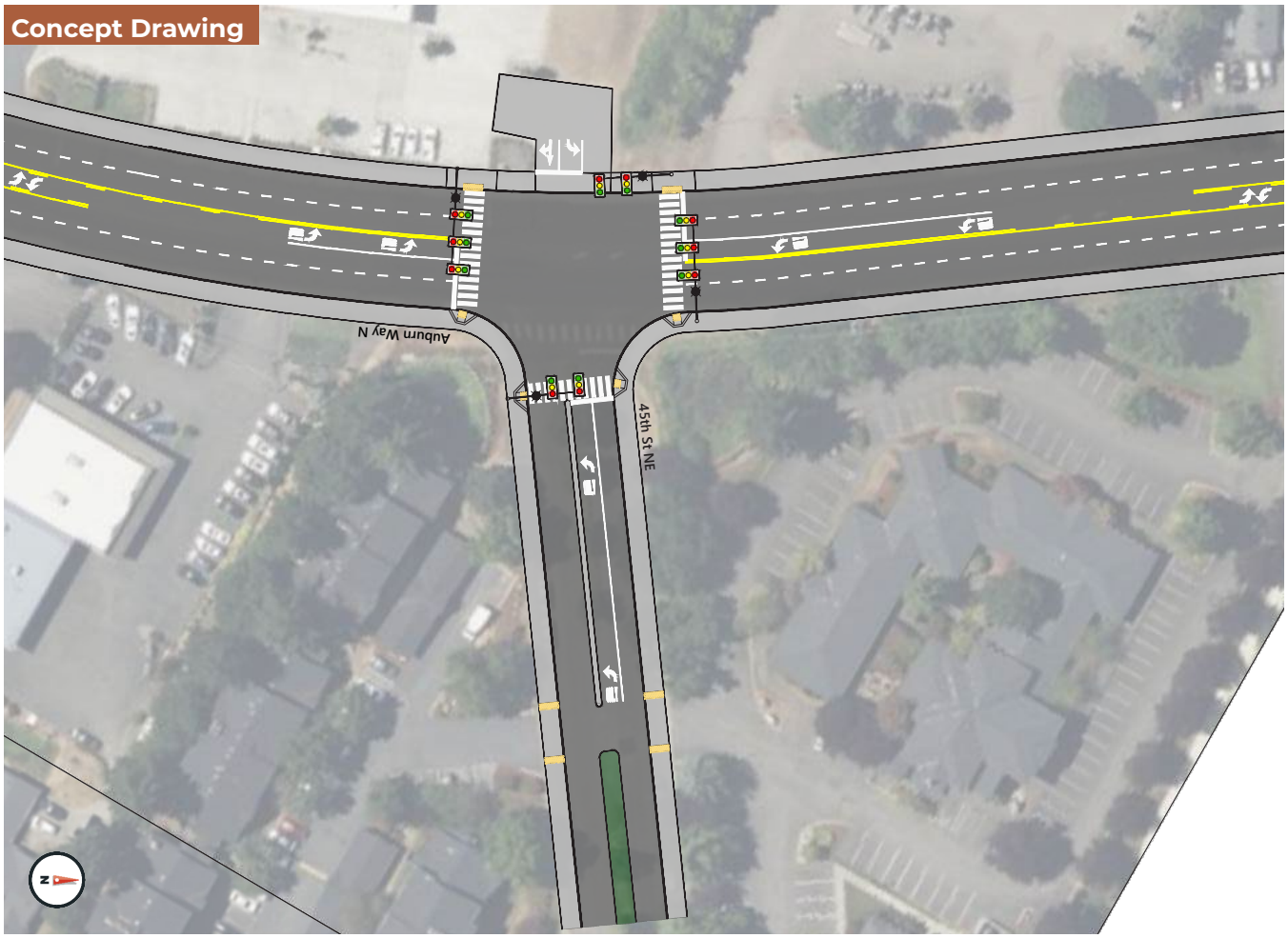
Description:

Intersection delays will be reduced through the replacement of the stop control with construction of a new traffic signal.

VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Meets	Fails
2044 Future	Fails	Fails

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 700,000
Right of Way	$ 0
Construction	$ 1,200,000
Total	$ 1,900,000

Concept Drawing



COMP-2
AUBURN WAY N & 42ND ST NE INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

Primary Need: Vehicle Capacity

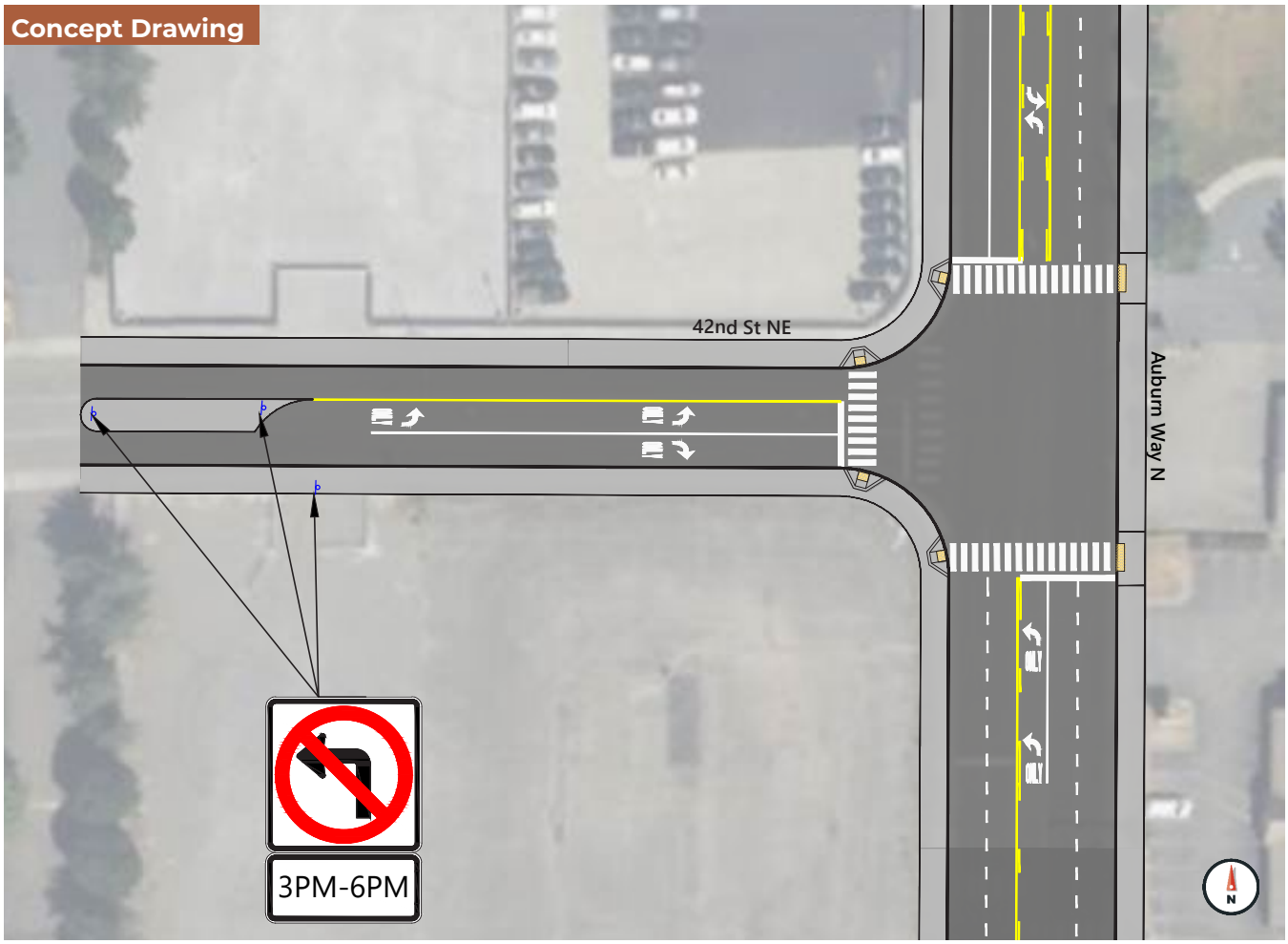
Description:

Intersection delays will be reduced through the restriction of left turns from 42nd St NE to Auburn Way N during PM peak hours with signage installed on a new raised median.

VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Meets	Meets
2044 Future	Meets	Fails

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 25,000
Right of Way	$ 0
Construction	$ 75,000
Total	$ 100,000

Concept Drawing



COMP-3
I ST NE IMPROVEMENTS
(37TH ST NE - 45TH ST NE)



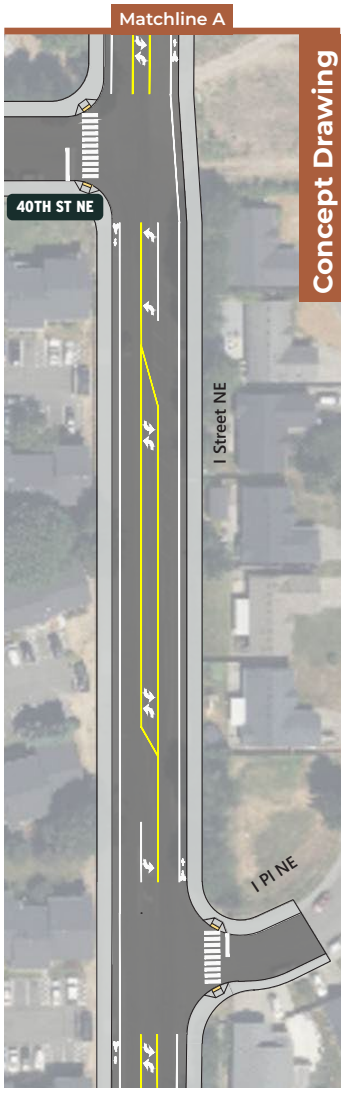
Project Origin: New 2024 CTP Project

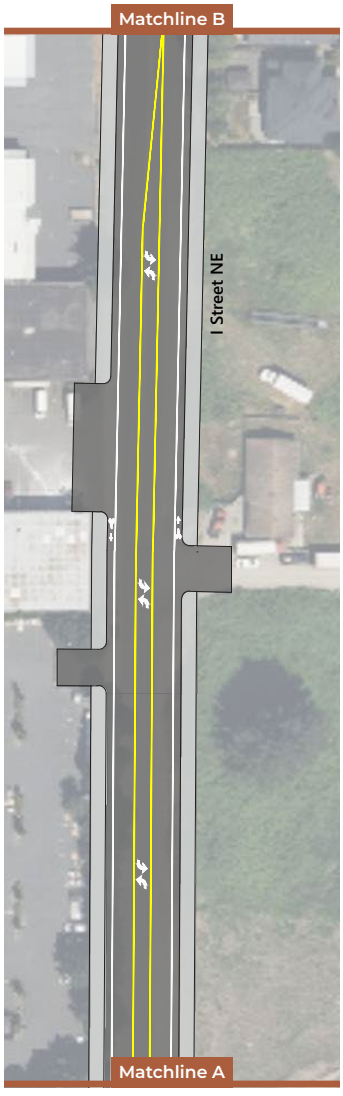
Primary Need: Safety/Active Transportation/ Mode Shift

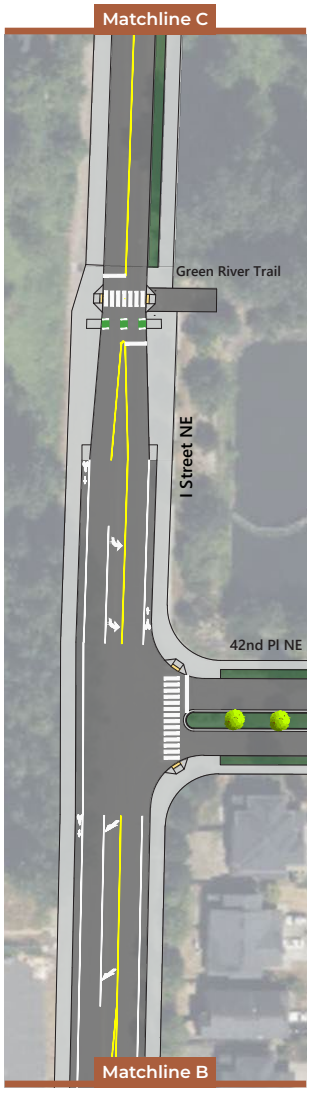
Description:

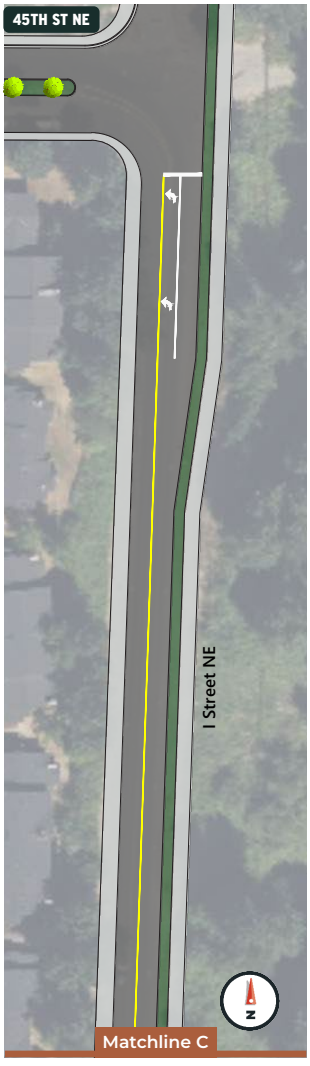
The I St NE Corridor provides access to several neighborhoods and commercial properties. To improve multi-model safety, and meet city roadway standards, bicycle and pedestrian improvements are proposed between 37th St NE and 45th St NE.

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 2,000,000
Right of Way	$ 1,000,000
Construction	$ 3,700,000
Total	$ 6,700,000

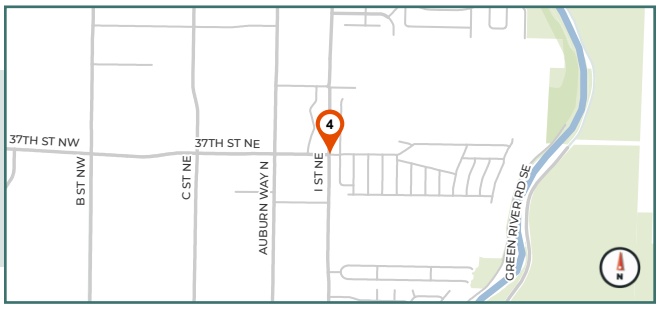








COMP-4
I ST NE & 37TH ST NE INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

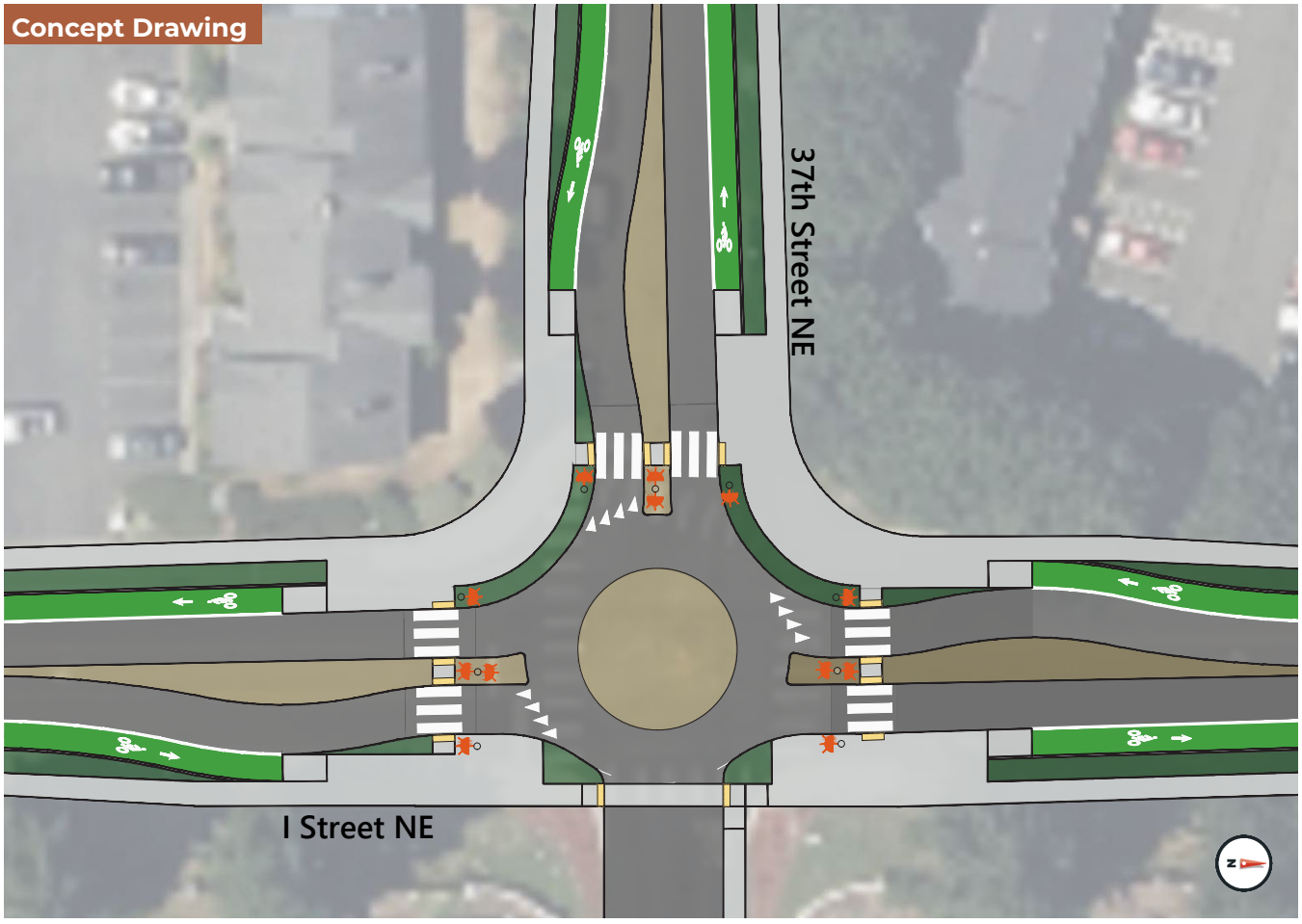
Primary Need: Vehicle Capacity

Description:

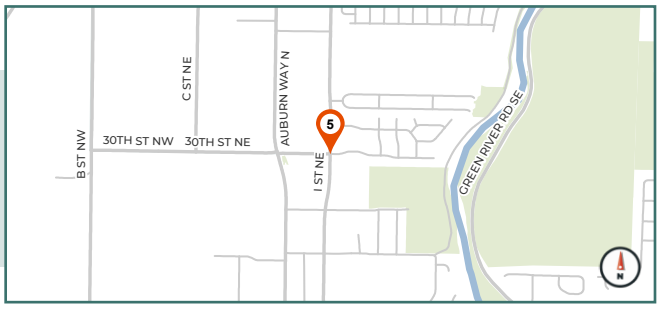
Intersection delays will be reduced through the construction of a single-lane roundabout.

VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Meets	Meets
2044 Future	Meets	Fails

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 800,000
Right of Way	$ 100,000
Construction	$ 1,400,000
Total	$ 2,300,000



COMP-5
I ST NE & 30TH ST NE INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

Primary Need: Vehicle Capacity

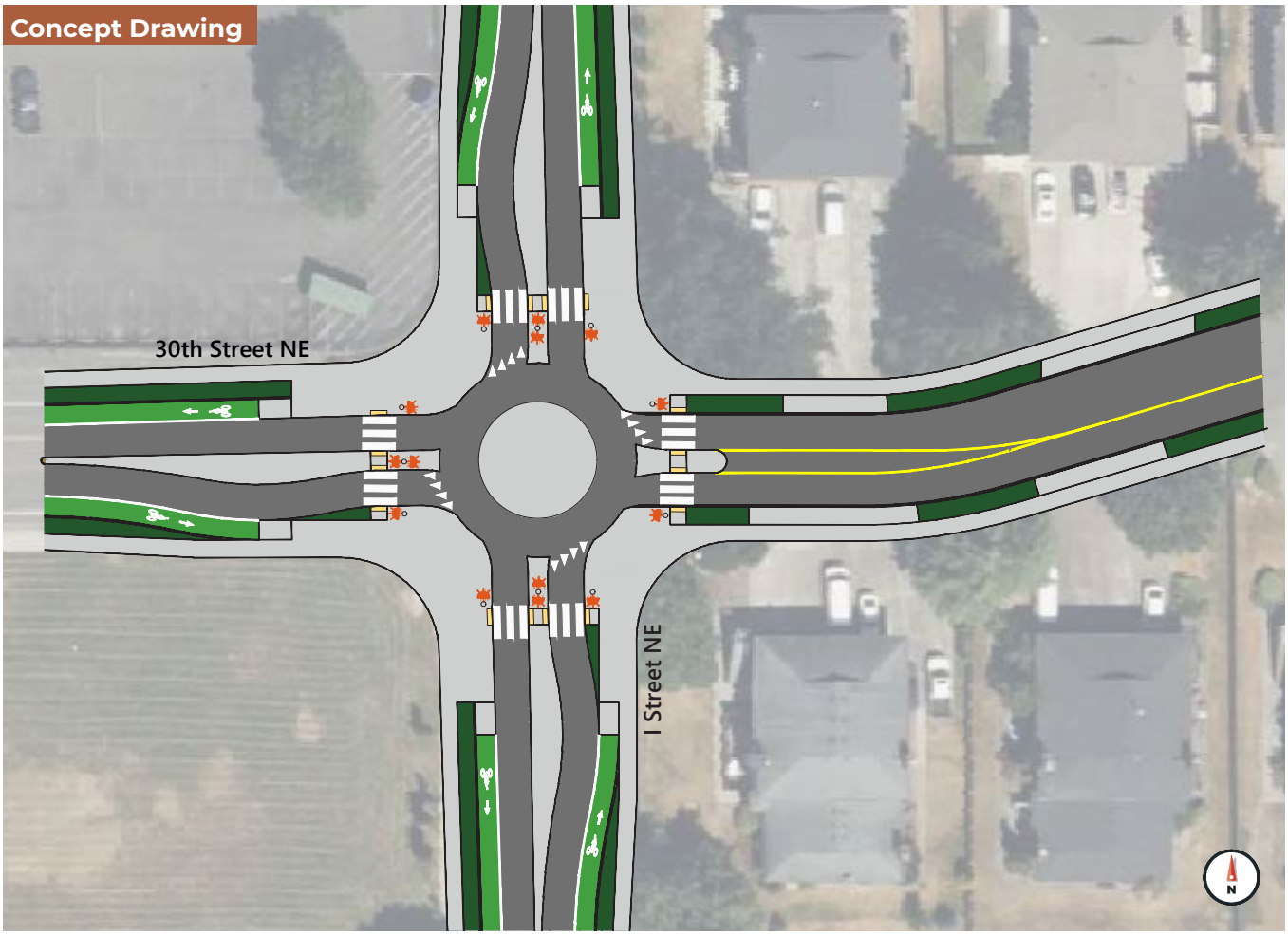
Description:

Intersection delays will be reduced through the construction of a single-lane roundabout.

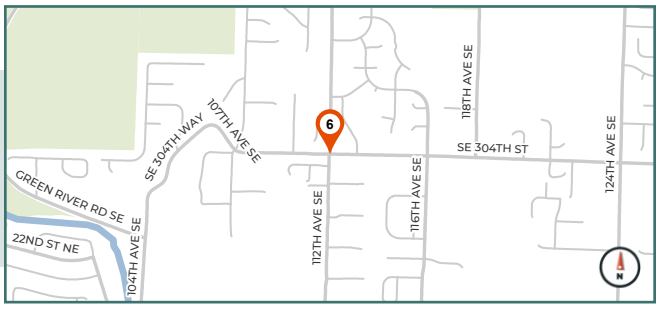
VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Meets	Meets
2044 Future	Meets	Fails

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 1,100,000
Right of Way	$ 50,000
Construction	$ 2,100,000
Total	$ 3,250,000

Concept Drawing



COMP-6
SE 304TH ST & 112TH AVE SE INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

Primary Need: Vehicle Capacity

Description:

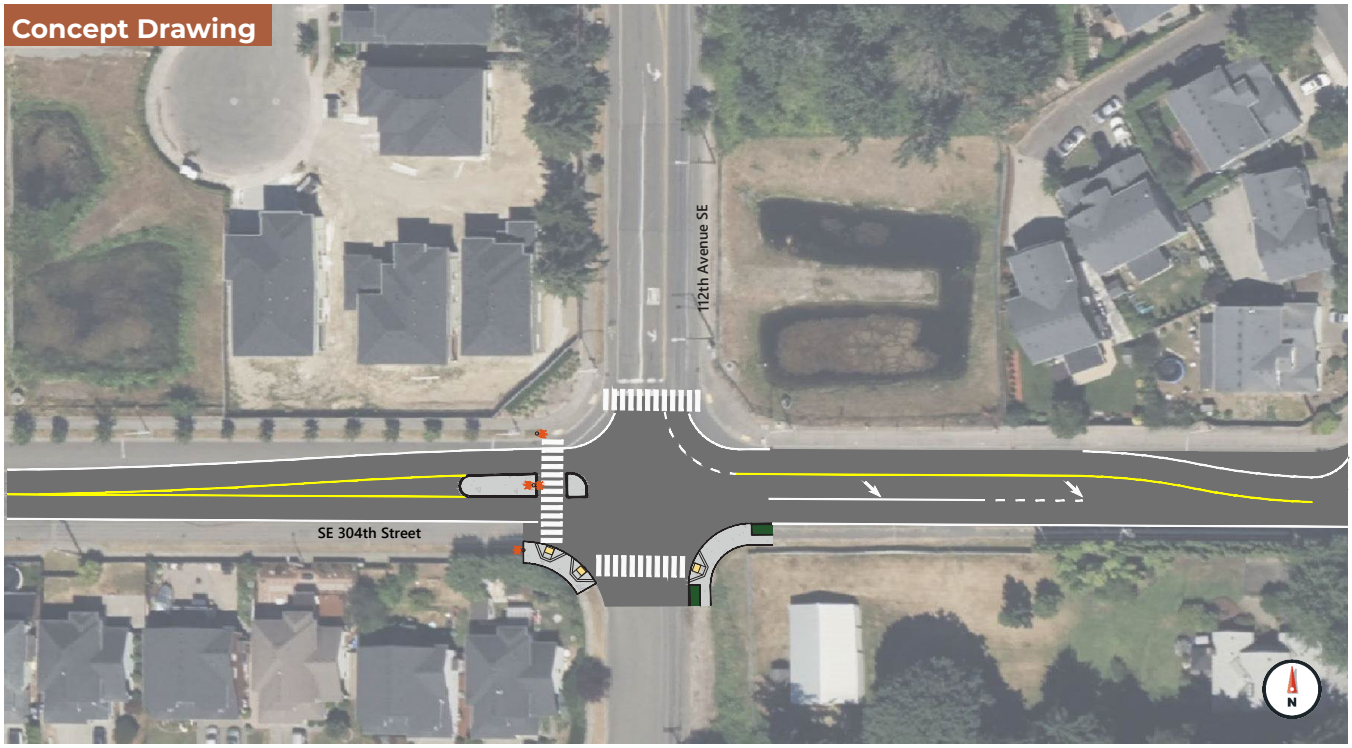
Intersection delays will be reduced through the construction of a new two-stage left turn lane on SE 304th St that will assist motorists turning from 112th Ave SE. A pedestrian refuge island and flashing beacons will be provided to enhance pedestrian crossing safety.

VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Meets	Meets
2044 Future	Meets	Fails

PROJECT PHASE	COST ESTIMATE*
Planning & Engineering/ Design	$ 300,000
Right of Way	$ 0
Construction	$ 500,000
Total	$ 800,000

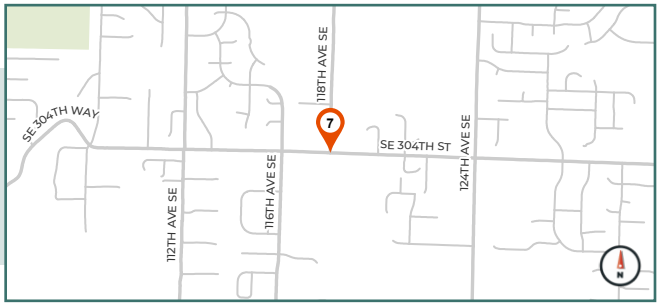
** Includes RRFB system*

Concept Drawing



COMP-7

SE 304TH ST & 118TH AVE SE INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

Primary Need: Vehicle Capacity

Description:

Intersection delays will be reduced through the construction of a raised median on SE 304th St that will restrict left turns from 118th Ave SE.

VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Meets	Meets
2044 Future	Fails	Fails

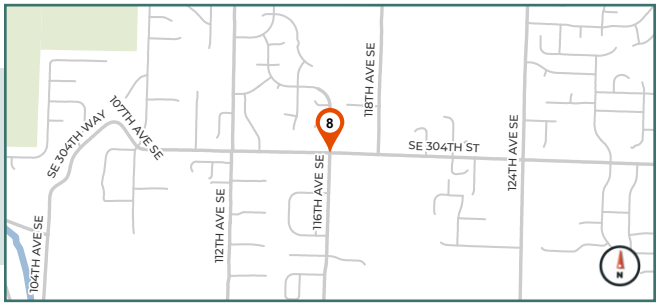
PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 300,000
Right of Way	$ 50,000
Construction	$ 600,000
Total	$ 950,000

Concept Drawing



COMP-8

SE 304TH ST & 116TH AVE SE INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

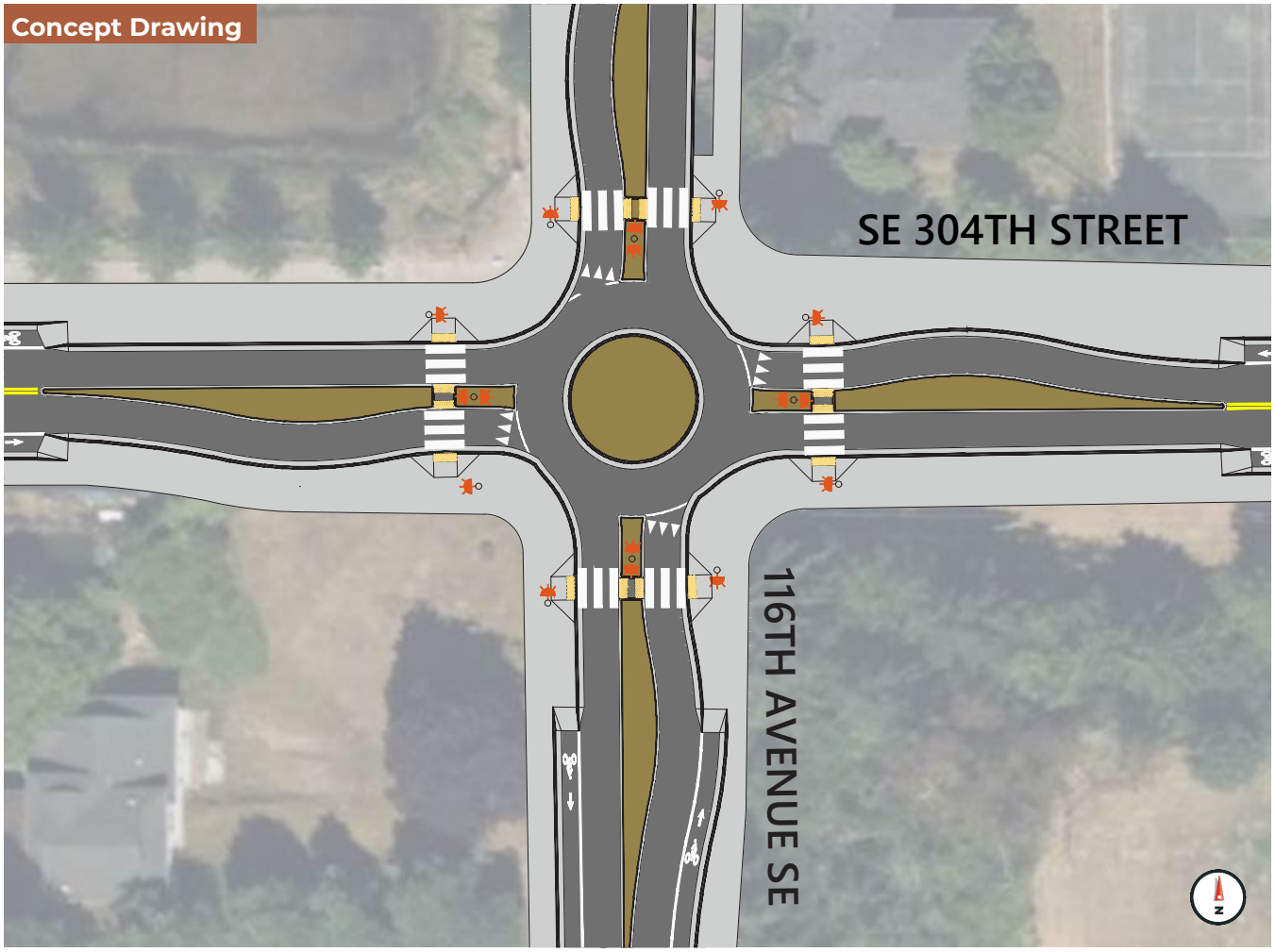
Primary Need: Vehicle Capacity

Description:

Intersection delays will be reduced through the construction of a single-lane roundabout.

VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Fails	Meets
2044 Future	Fails	Meets

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 1,200,000
Right of Way	$ 325,000
Construction	$ 2,200,000
Total	$ 3,725,000





COMP-9
LEA HILL CORRIDOR IMPROVEMENTS

Project Origin: Lea Hill Corridor Study (2020)

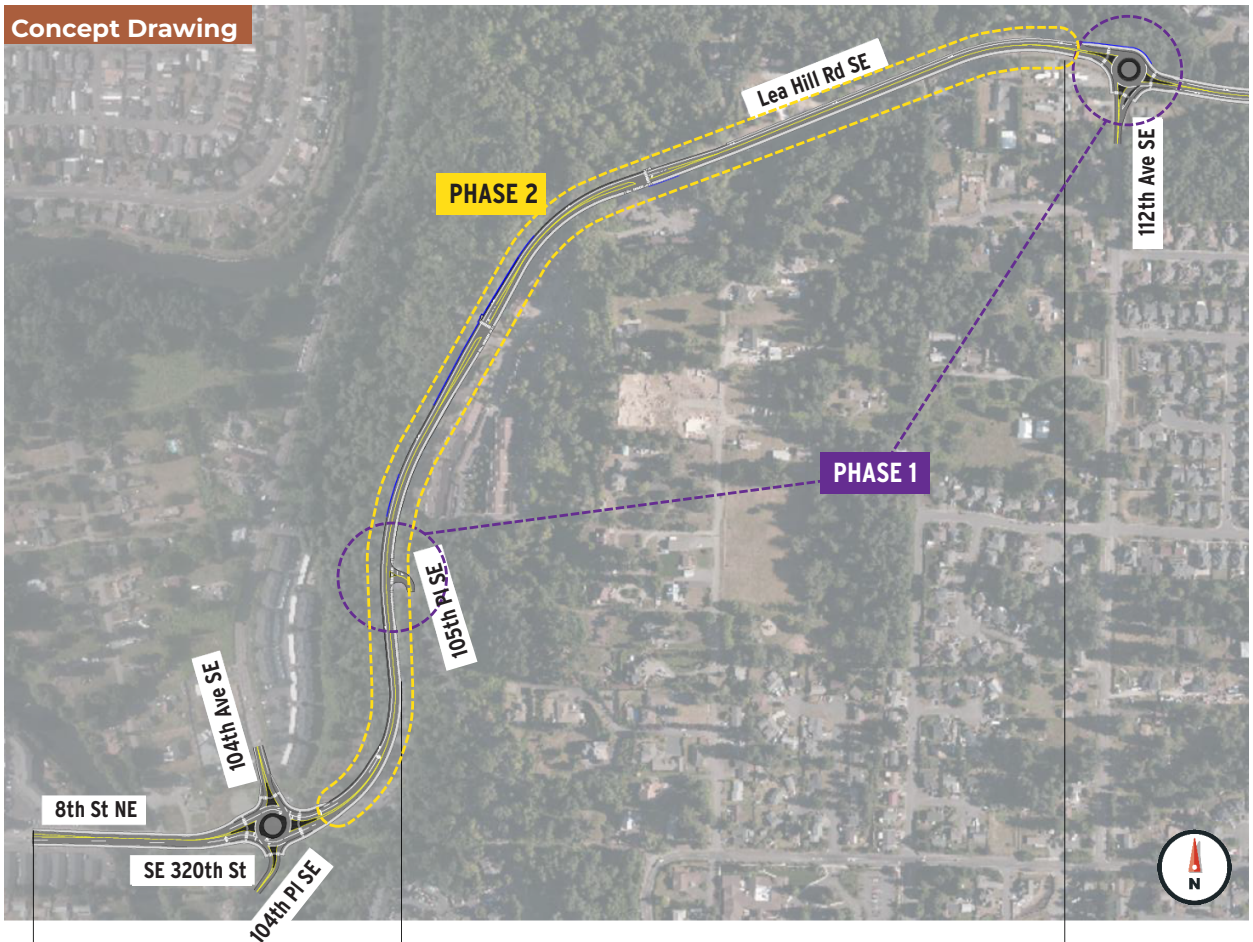
Primary Needs: Vehicle Capacity, Mode Shift, Active Transportation, Safety

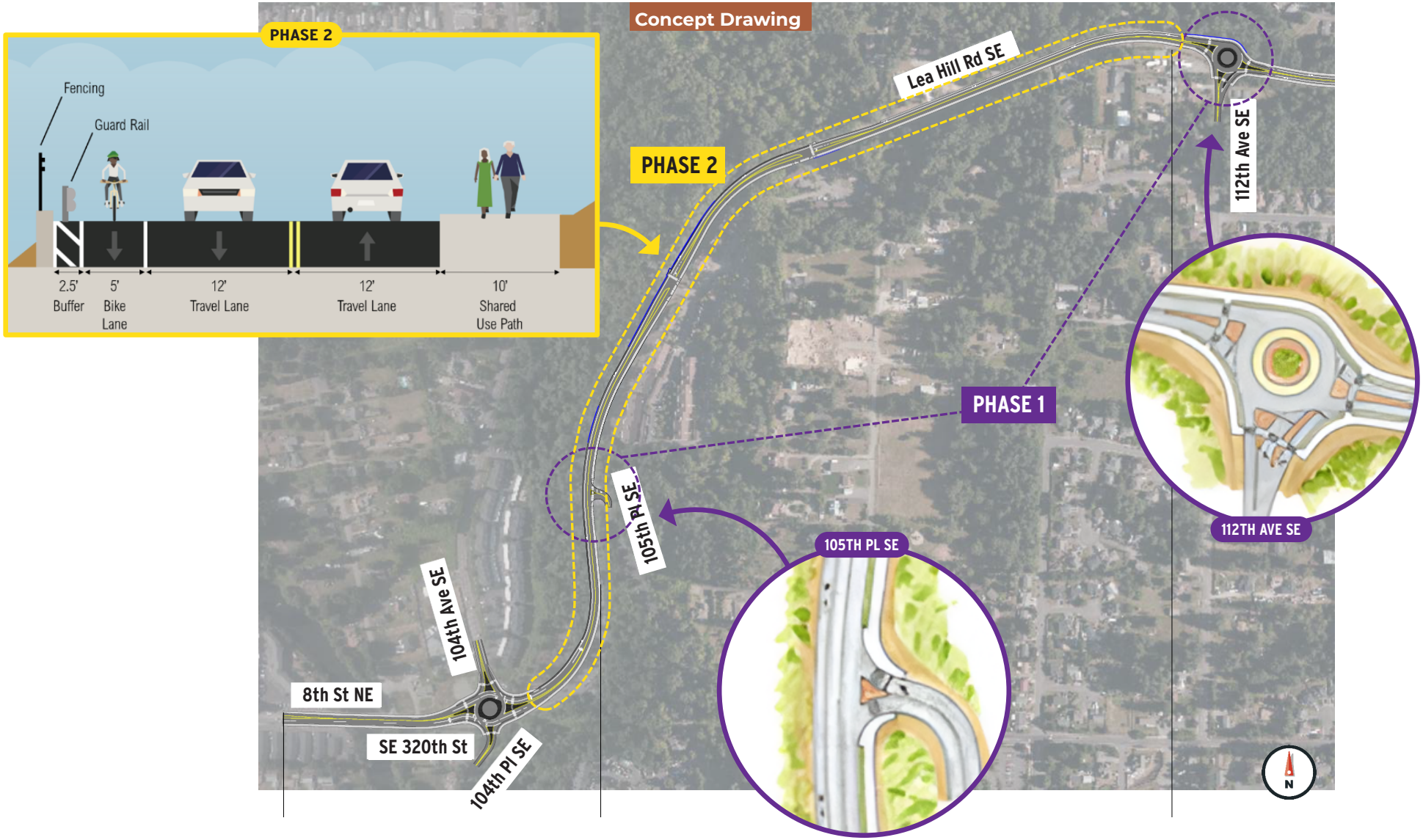
PROJECT PHASE	COST ESTIMATE
Phase 1: Lea Hill Corridor - 112th Ave SE & 105th Pl SE Intersections Improvements	$ 5,175,000
Phase 2: Lea Hill Rd Corridor - Non-Motorized Improvements from 104th Ave SE to SE 312th St	$ 9,500,000
Total	$14,675,000

Description:

This project will reduce intersection delays, improve vehicle and active transportation safety, and support mode shift through the construction of the following improvements that would likely be implemented as two separate phased projects:

- Phase 1 -
  New single lane roundabout at the intersection of Lea Hill Road and 112th Ave SE and removal of the existing traffic signal at the intersection of Lea Hill Road and 105th Ave SE. A raised media would restrict left turning movements at 105th Ave SE.
- Phase 2 -
  New multi-use shared path along east side (uphill) and bike lane along west side (downhill) of Lea Hill Road from the new roundabout at 104th Ave SE (previously constructed as a separate project), to the new roundabout at 112th Ave SE (constructed with Phase 1 of this project).




PHASE 2
Fencing
Guard Rail
2.5' Buffer
5' Bike Lane
12' Travel Lane
12' Travel Lane
10' Shared Use Path
Concept Drawing
PHASE 2
Lea Hill Rd SE
112th Ave SE
PHASE 1
105th Pl SE
112TH AVE SE
105TH PL SE
104th Ave SE
8th St NE
SE 320th St
104th Pl SE
N

COMP-10

116TH AVE SE & SE 312TH ST IMPROVEMENTS



Project Origin: Lea Hill Corridor Study (2020)

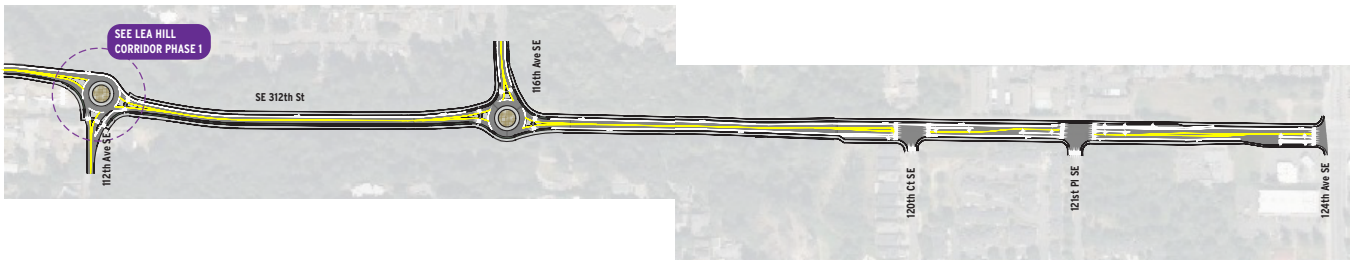
Primary Need: Vehicle Capacity

Description:

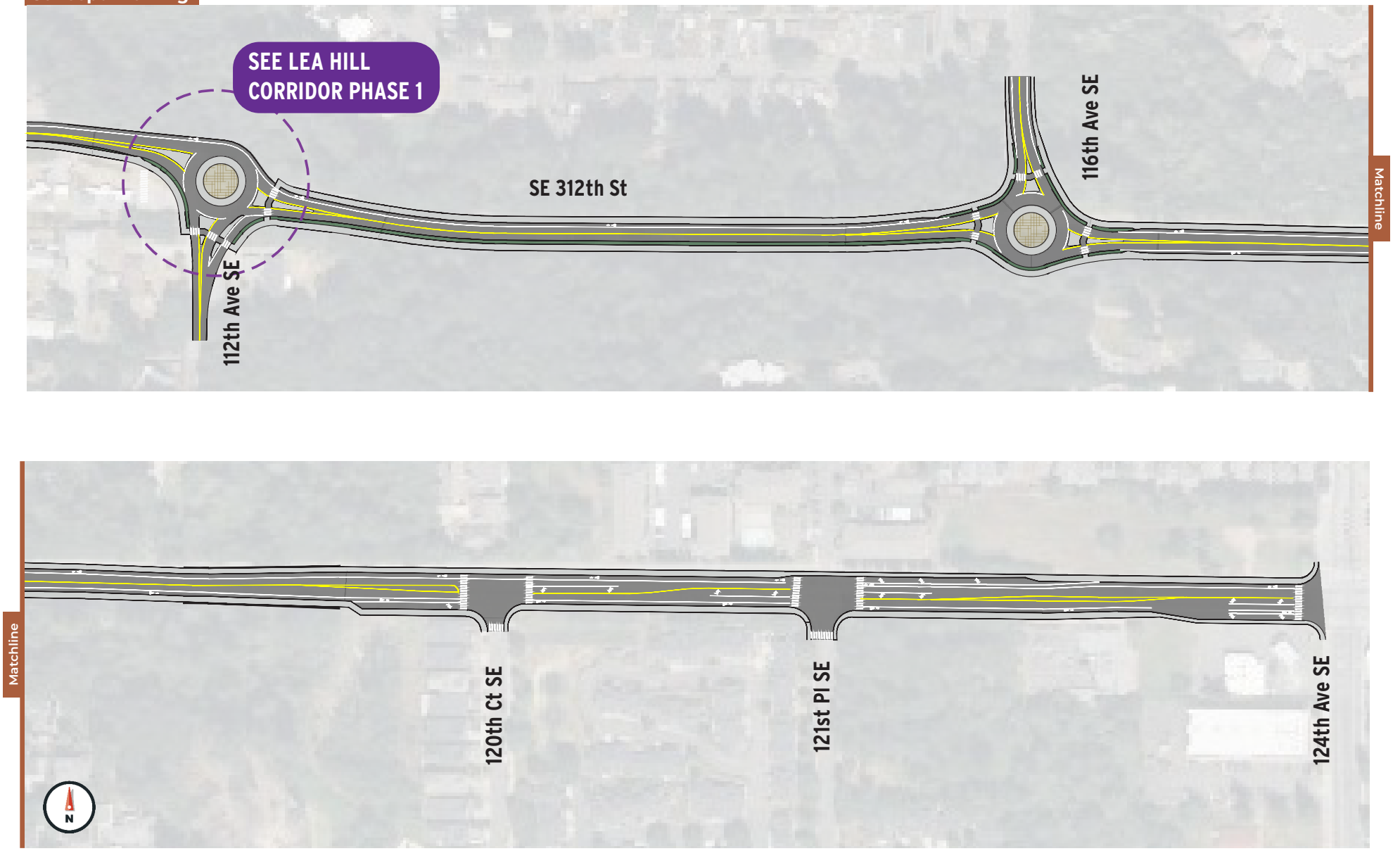
This project will reduce intersection delays, address bike and pedestrian LTS deficiencies, and provide overall safety improvements on Lea Hill Road/SE 312th Street from a new roundabout to be constructed with a separate project at the intersection of 112th Ave SE to the intersection of 124th Ave SE. Improvements include a new single lane roundabout at the intersection of 116th Ave SE, a bike lane along the north side of Lea Hill Road/SE 312th Street, a separated multi-use shared trail along the south side of Lea Hill Road/ SE 312th Street between 112th Ave SE and 116th Ave SE, and completing gaps in sidewalks and bike lanes on both sides of Lea Hill Road/SE 312th Street between 116th Ave SE and 124th Ave SE.

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 550,000
Right of Way	$ 50,000
Construction	$ 5,000,000
Total	$ 5,600,000

Concept Drawing



Concept Drawing



COMP-11

116TH AVE SE & SE 320TH ST INTERSECTION IMPROVEMENTS



Project Origin: 2019 Comprehensive Transportation Plan

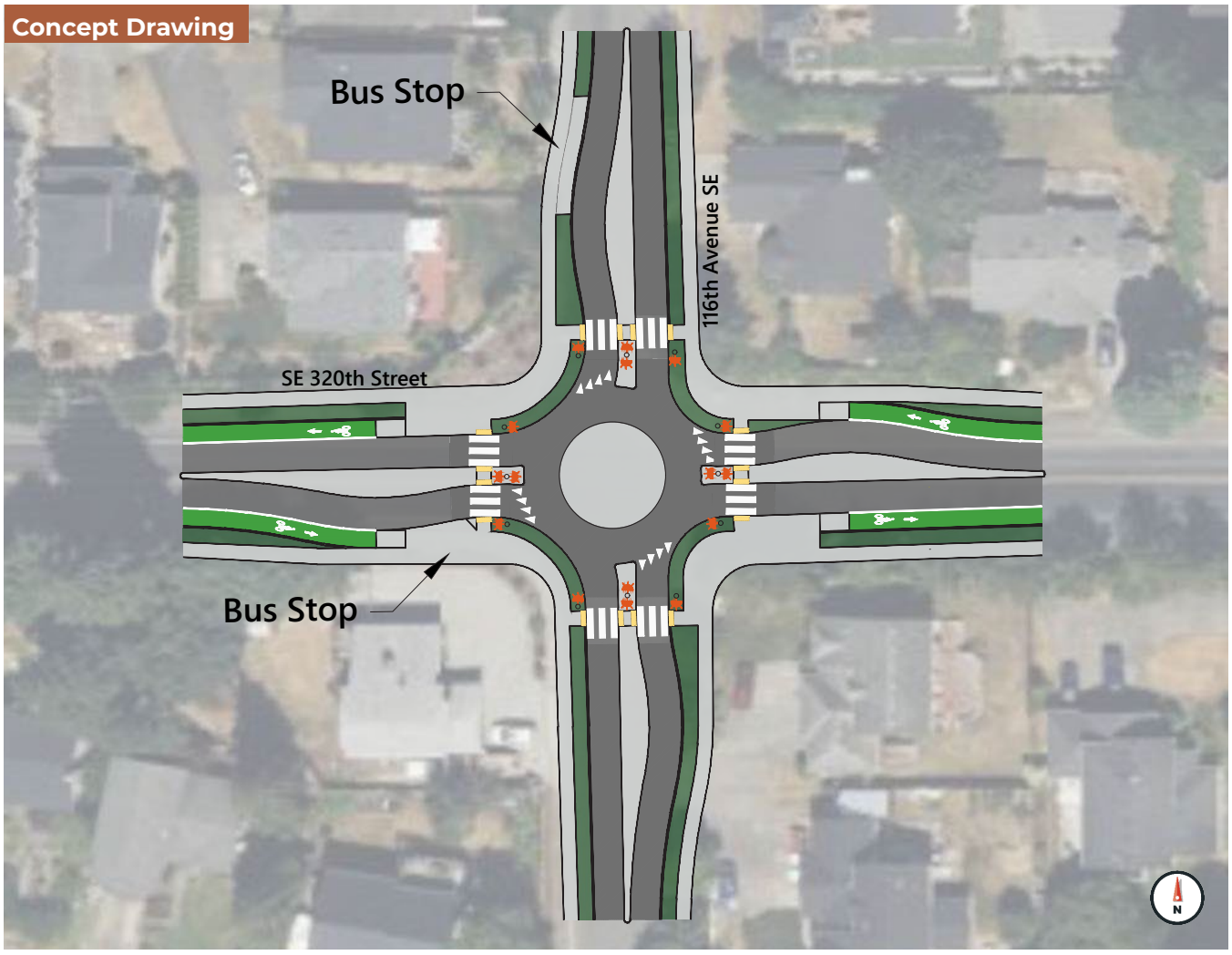
Primary Needs: Safety, Active Transportation

Description:

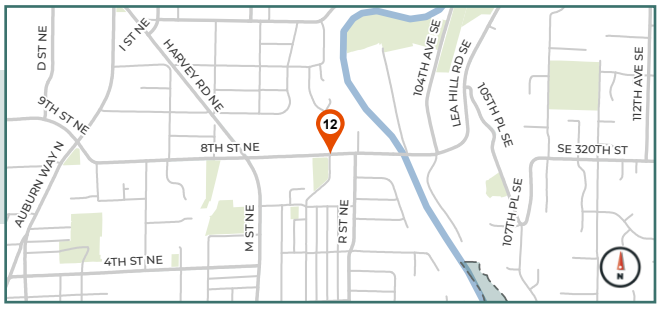
This project will improve vehicle and active transportation safety at the intersection with the construction of a single lane roundabout. This project may be expanded to complete gaps in sidewalks and bike lanes on SE 320th Street.

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 1,100,000
Right of Way	$ 50,000
Construction	$ 2,000,000
Total	$ 3,150,000

Concept Drawing



COMP-12
PIKE ST NE & 8TH ST NE ACCESS MANAGEMENT



Project Origin: New 2024 CTP Project

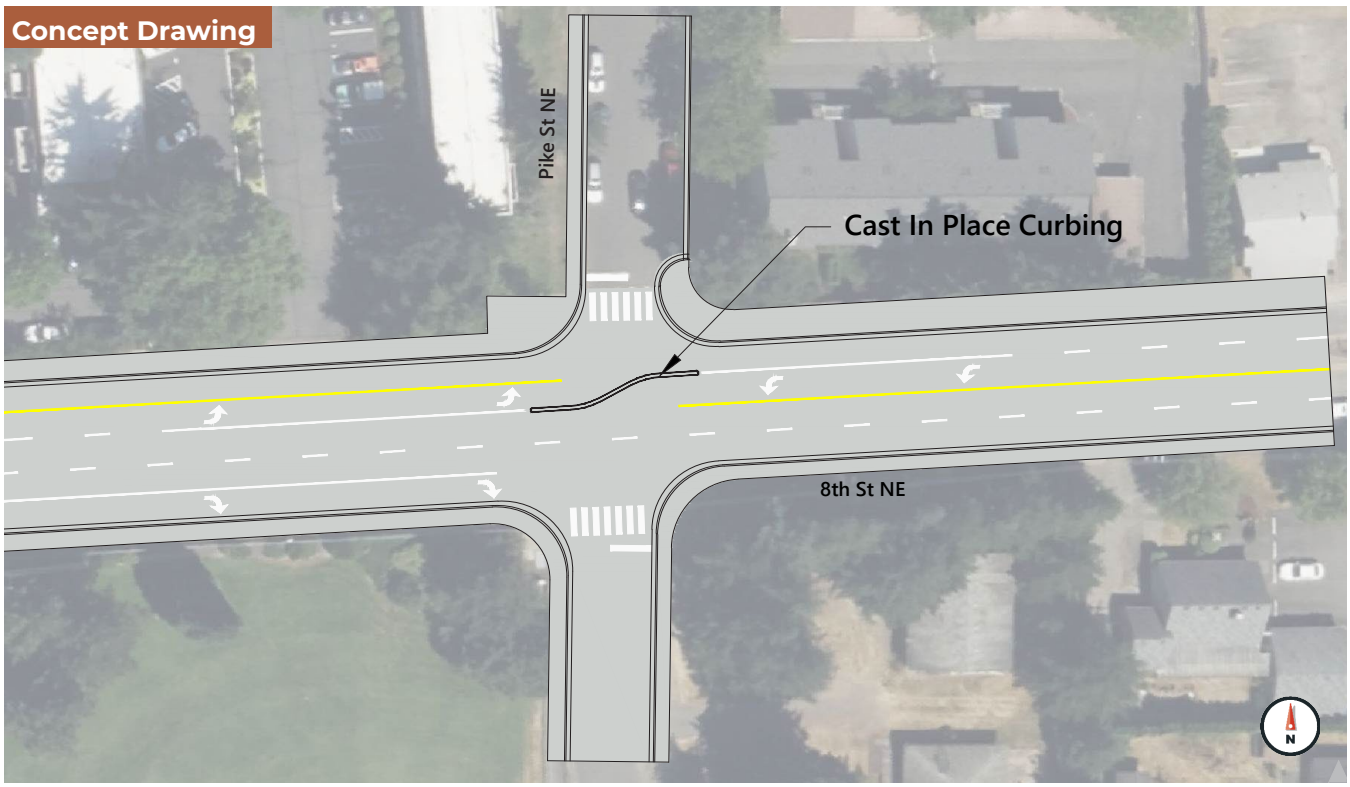
Primary Need: Vehicle Capacity

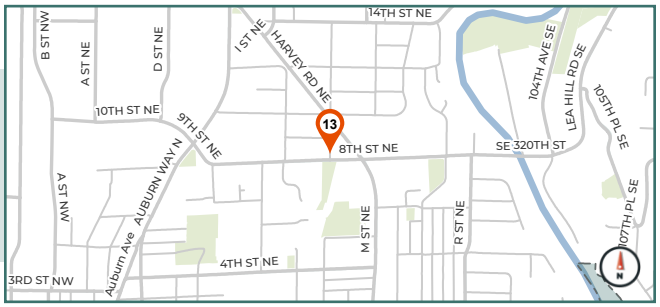
Description:

Intersection delays will be reduced by restricting left turns from both northbound and southbound Pike St NE on to 8th St NE.

VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Meets	Fails
2044 Future	Fails	Fails

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 15,000
Right of Way	$ 0
Construction	$ 35,000
Total	$ 50,000





COMP-13
8TH ST NE IMPROVEMENTS PROJECT
(AUBURN WAY N - HARVEY RD/M ST NE)

Project Origin: 2024 CTP New Project

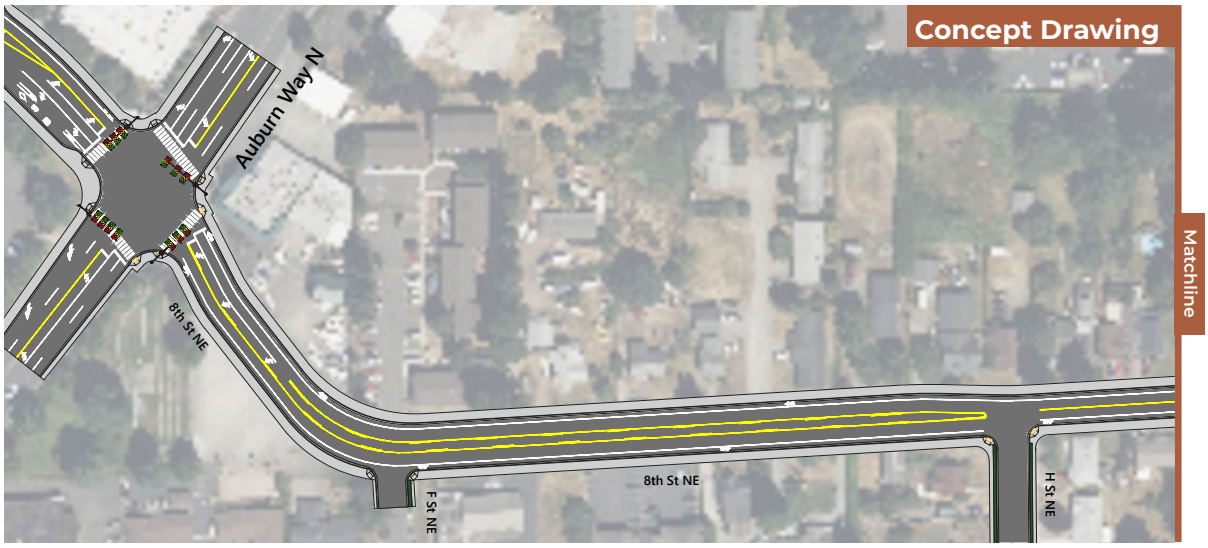
Primary Needs: Mode Shift/Active Transportation/Safety

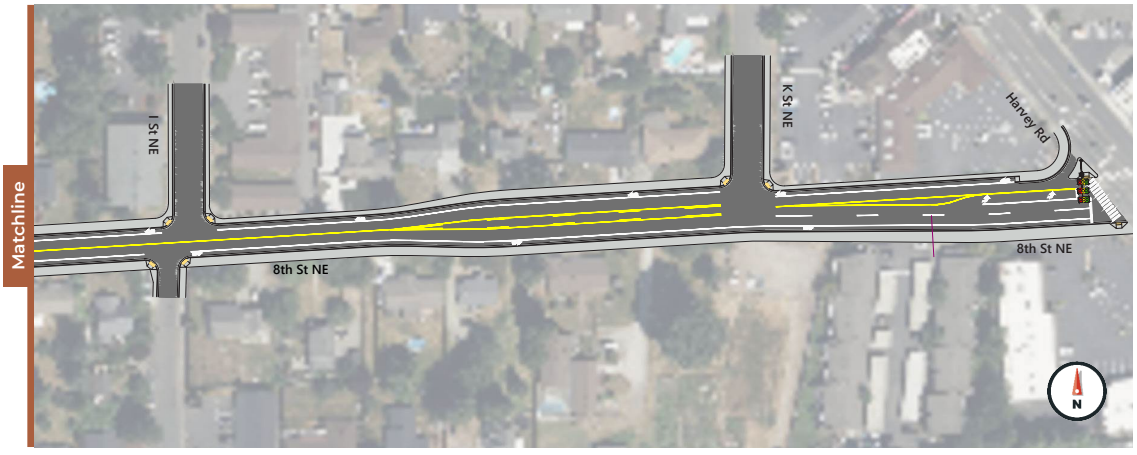
PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 2,300,000
Right of Way	$ 1,800,000*
Construction	$ 4,100,000
Total	$ 8,200,000

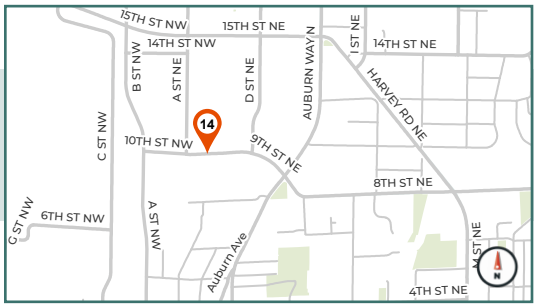
* ROW costs assume no relocation is required.

Description:

Residents from the neighborhoods along 8th Street NE currently must walk or ride along narrow shoulders to get to shopping, social services, recreation, and transit along Auburn Way North and M Street NE/Harvey Rd. This route is part of the City's designated bike route network (as shown in Map 2 - Bike Network) and is a critical connection to Downtown Auburn and regional transit and bike facilities. This project will improve the roadway to provide comfortable walking and biking facilities that meet or exceed the City's active transportation level of service standards. The project concept currently includes a center turn lane but whether or not the lane is included in the final project design will depend on detailed design considerations, including right of way needs.







COMP-14
10TH ST NE IMPROVEMENTS
(A ST NW - AUBURN WAY N)

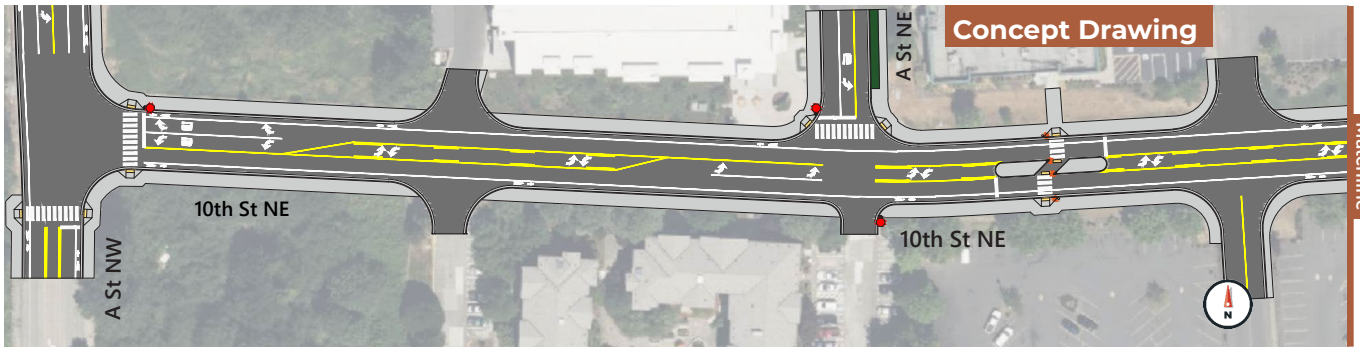
Project Origin: 2024 Comprehensive Transportation Plan

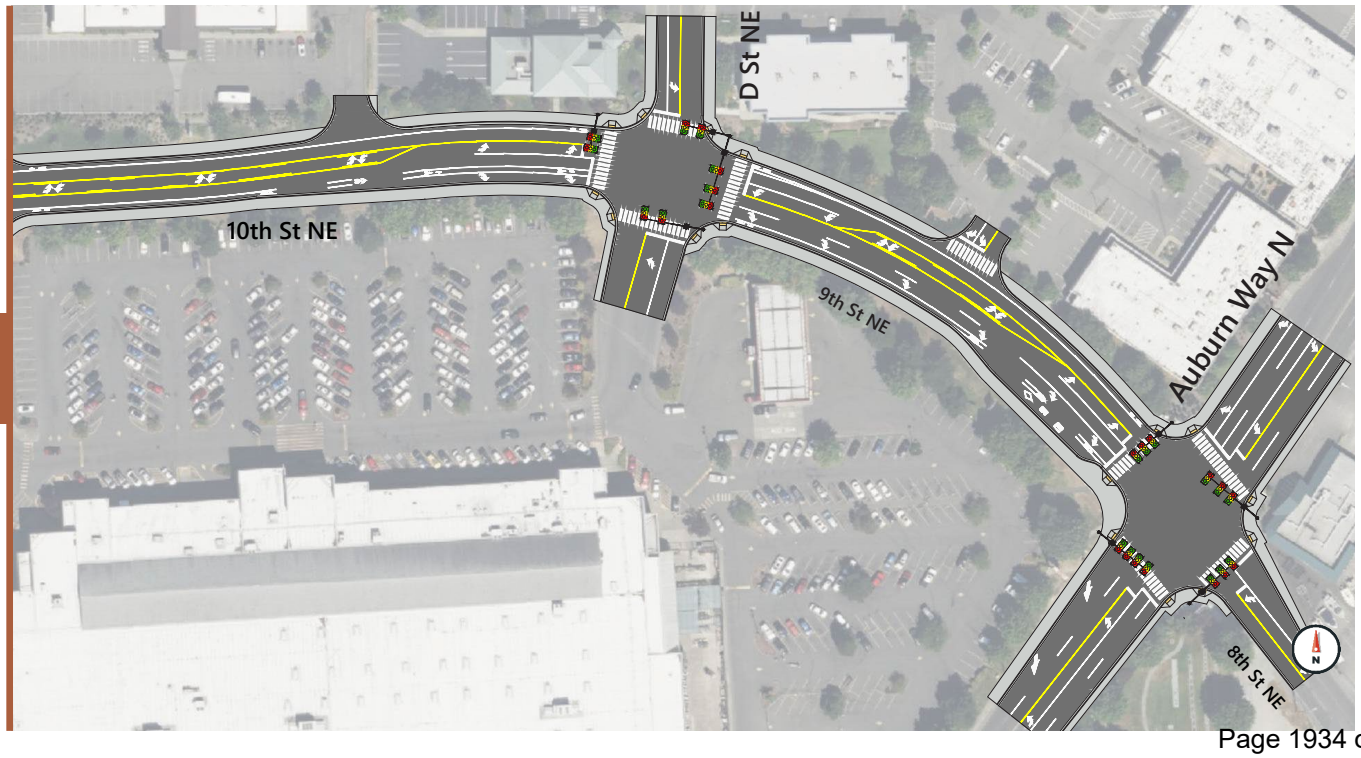
Primary Needs: Safety, Active Transportation, Mode Shift

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/Design	$ 800,000
Right of Way	$ 0
Construction	$ 1,500,000
Total	$ 2,300,000

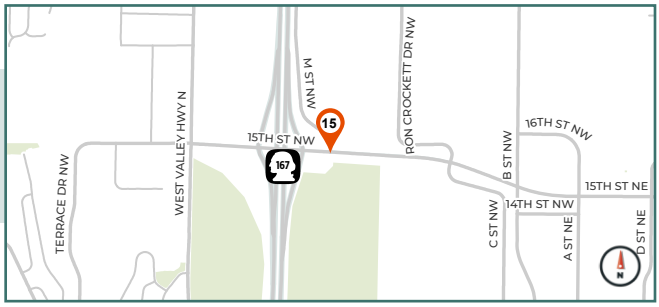
Description:

This project will provide bicycle facilities that meet or exceed City LTS Standards and improve vehicle and pedestrian safety measures on 10th Street NE between A Street NW and Auburn Way North. Improvements include addition of bike lanes, a road-diet to convert two lanes in each direction to one lane in each direction with a center turn lane, removal of stop-control at the intersection of A Street NE, and installation of an enhanced pedestrian crossing. The project provides active transportation facilities that connect housing and commercial areas to frequent transit on Auburn Way North.





COMP-15
15TH ST NW & M ST NW ACCESS MANAGEMENT



Project Origin: New 2024 CTP Project

Primary Need: Vehicle Capacity

Description:

Intersection delays will be reduced by restricting left turns from southbound M St NW to eastbound 15th St NW during peak travel demand periods.

VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Meets	Meets
2044 Future	Fails	Fails

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 10,000
Right of Way	$ 0
Construction	$ 40,000
Total	$ 50,000



COMP-16

S 316TH ST & 56TH AVE S INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

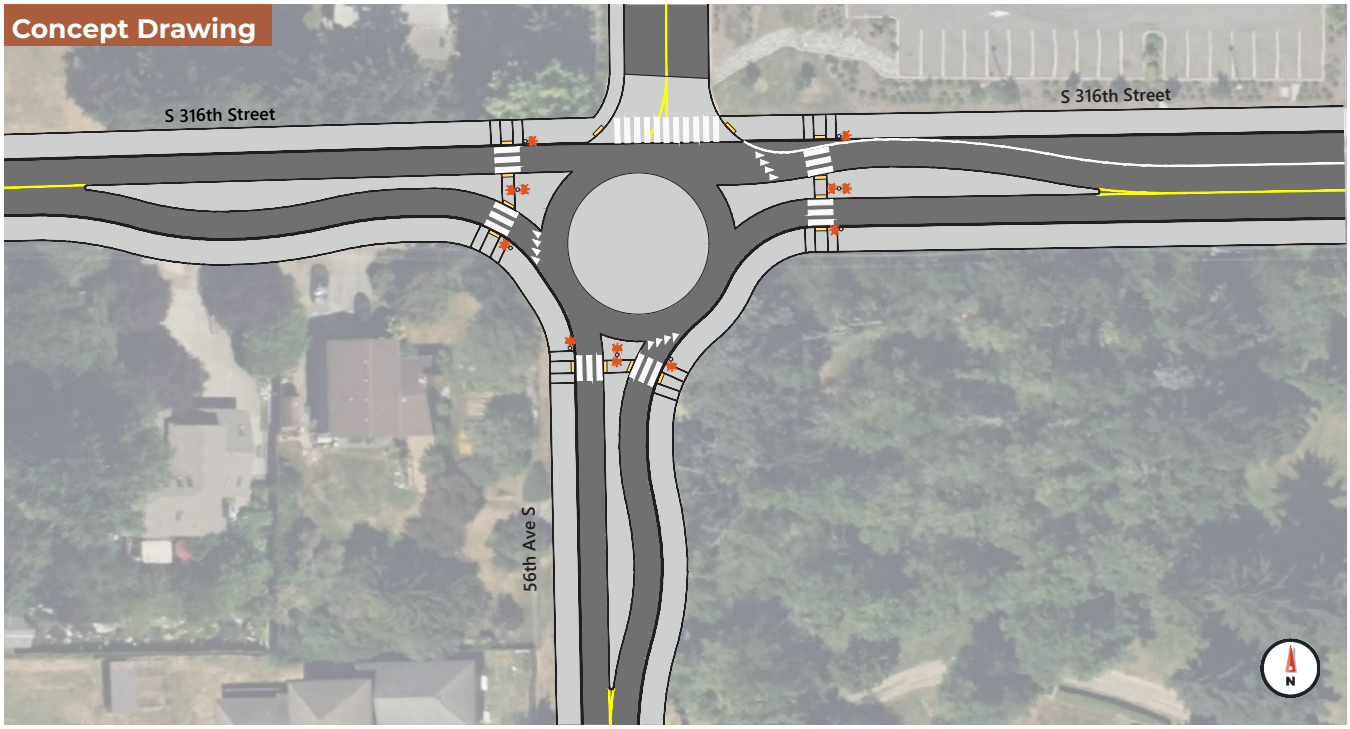
Primary Need: Vehicle Capacity

Description:

Intersection delays will be reduced through the construction of a single-lane roundabout.

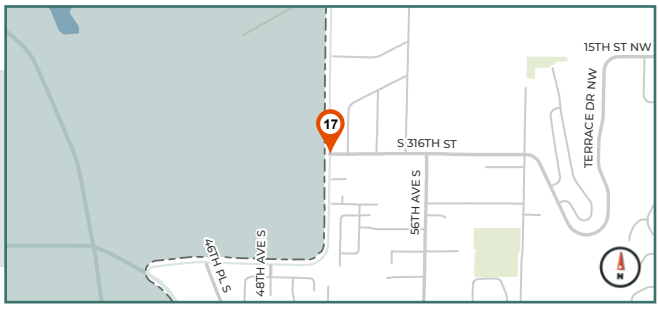
VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Meets	Meets
2044 Future	Meets	Fails

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 1,100,000
Right of Way	$ 125,000
Construction	$ 2,000,000
Total	$ 3,225,000



COMP-17

S 316TH ST & 51ST AVE S INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

Primary Need: Vehicle Capacity

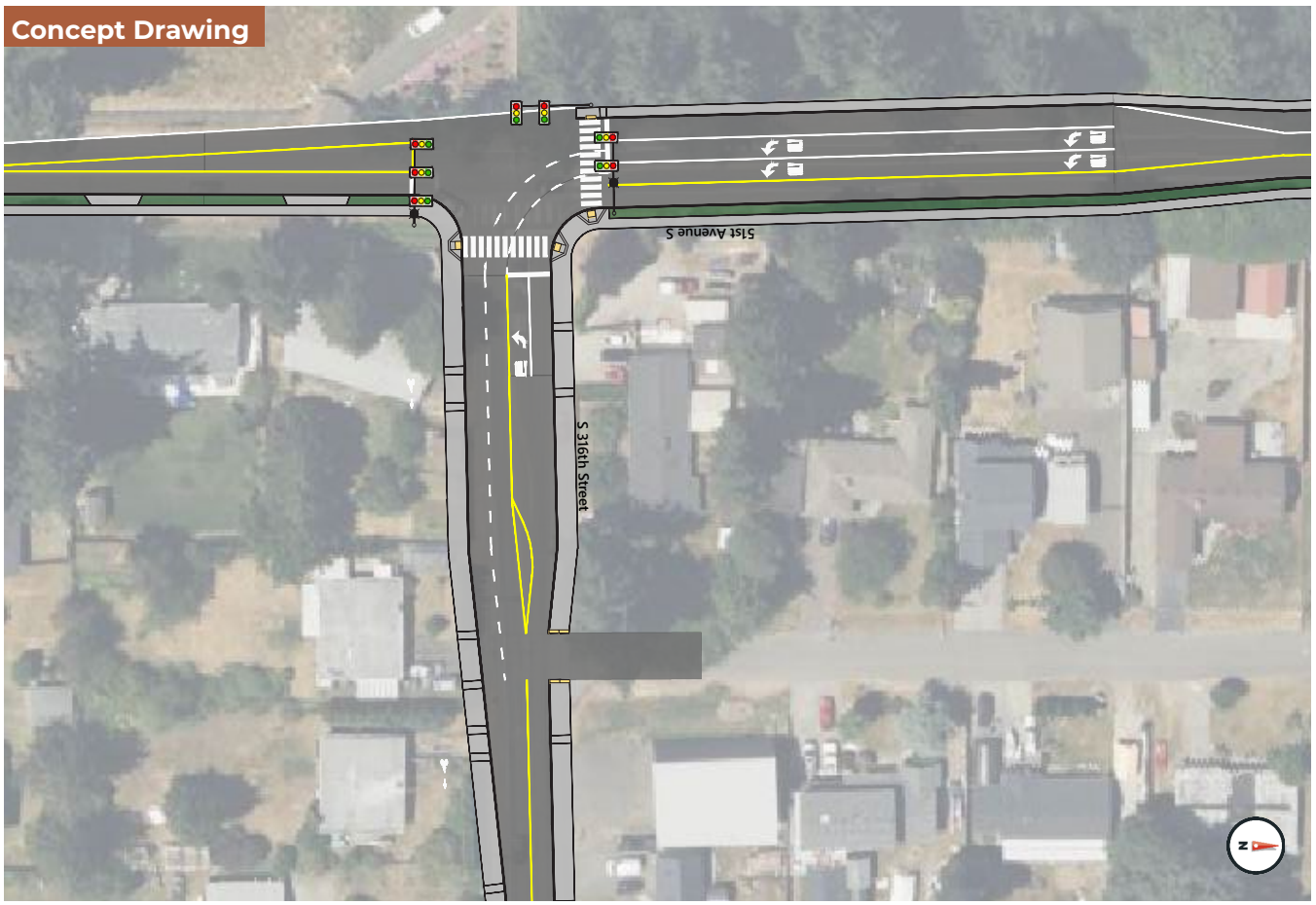
Description:

Intersection delays will be reduced through the replacement of the stop controls with construction of a new traffic signal. This intersection is outside City limits in King County. Coordination with King County will be required to fund and implement this project.

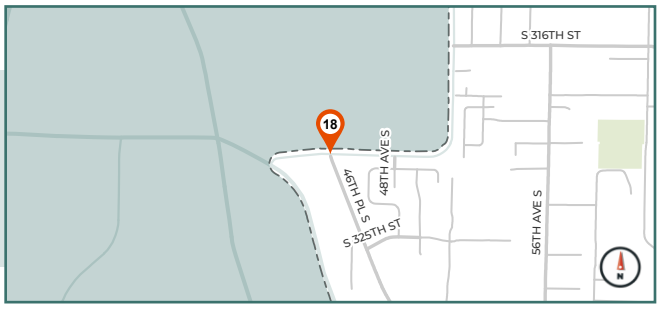
VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Meets	Fails
2044 Future	Meets	Fails

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 700,000
Right of Way	$ 150,000
Construction	$ 1,300,000
Total	$ 2,150,000

Concept Drawing



COMP-18
S 321ST ST & 44TH AVE S/ 46TH PL S INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

Primary Need: Vehicle Capacity

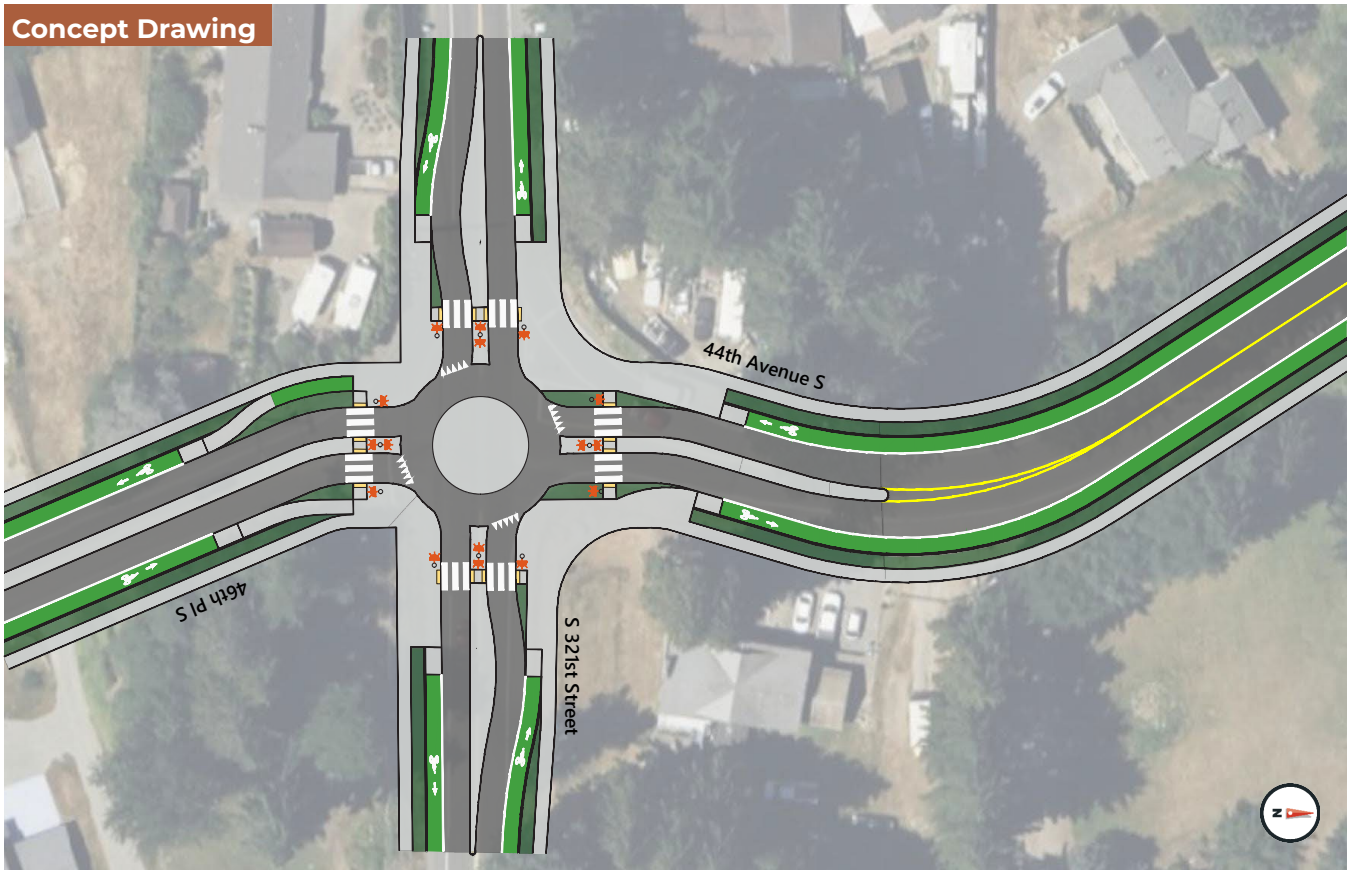
Description:

Intersection delays will be reduced through the construction of a single-lane roundabout. This intersection is outside City limits in King County. Coordination with King County will be required to fund and implement this project.Temporary mitigation measures to address existing LOS deficiency may require a traffic signal or other improvements until permanent project can be funded. Additional analysis is needed to determine if existing and/or future capacity needs can be met by improving the right-of-way east of 46th Place with roadway facilities instead of, or in addition to this roundabout.

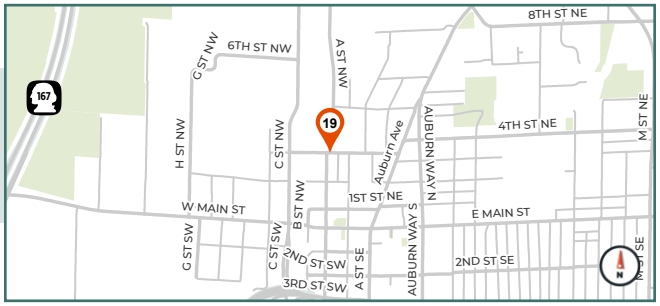
VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Meets	Fails
2044 Future	Fails	Fails

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 1,200,000
Right of Way	$ 350,000
Construction	$ 2,200,000
Total	$ 3,750,000

Concept Drawing



COMP-19
A ST NW & 3RD ST NW IMPROVEMENTS



Project Origin: 2019 Comprehensive Transportation Plan

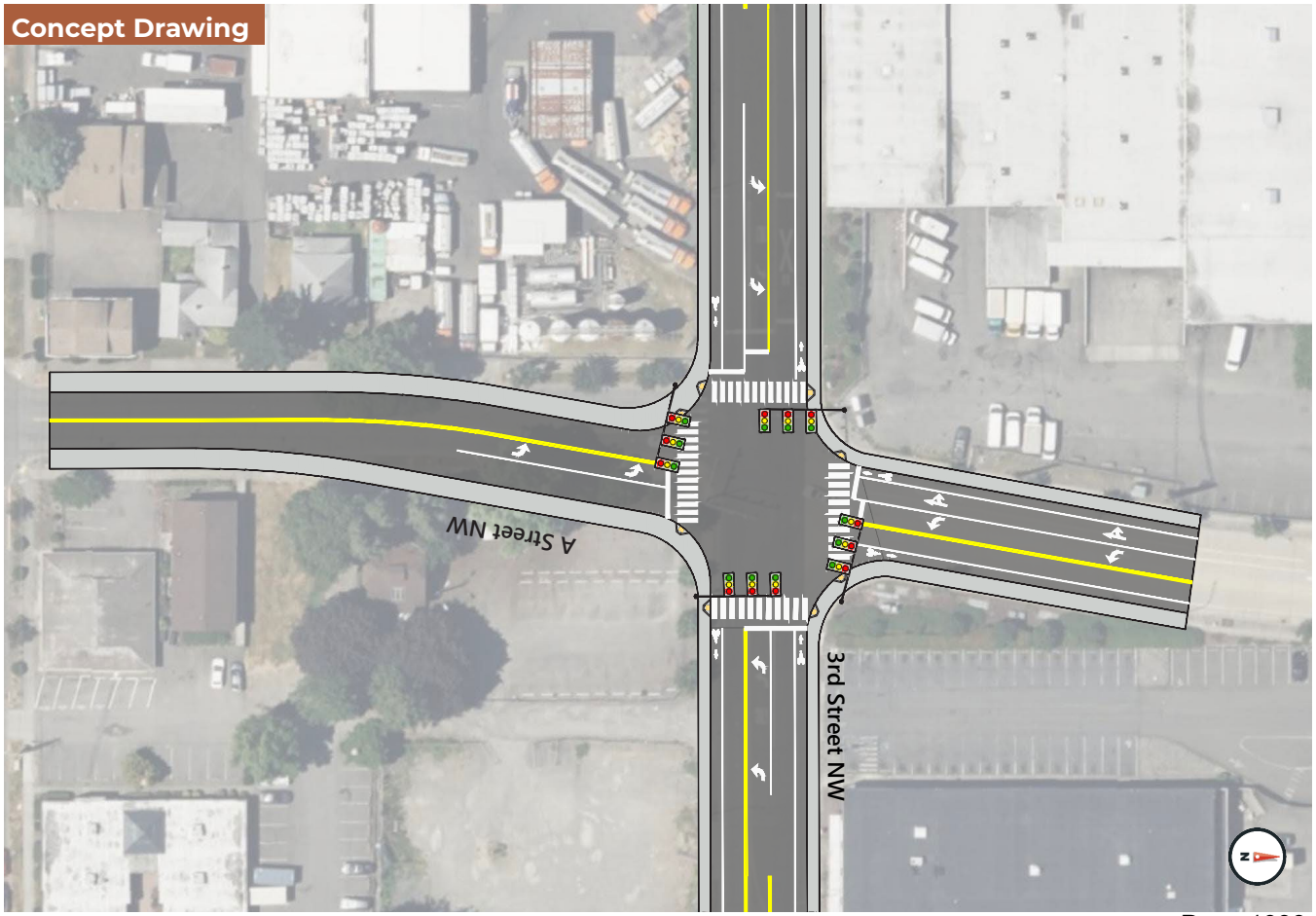
Primary Needs: Vehicle Capacity

Description:

This project will reduce intersection delays and improve overall vehicle, pedestrian, and bicycle operations through this intersection by re-constructing the south leg of the intersection to be re-aligned such that the split phase operations of the signal can be removed. Modeling indicates that despite this project, the southbound right turn lane queue would have a queue length that exceeds LOS standards. Therefore, additional refinement of this project would be required with, or prior to, implementation.

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 1,000,000
Right of Way	$ 225,000
Construction	$ 1,800,000
Total	$ 3,025,000

Concept Drawing



COMP-20
C ST NW & 3RD ST NW INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

Primary Need: Vehicle Capacity

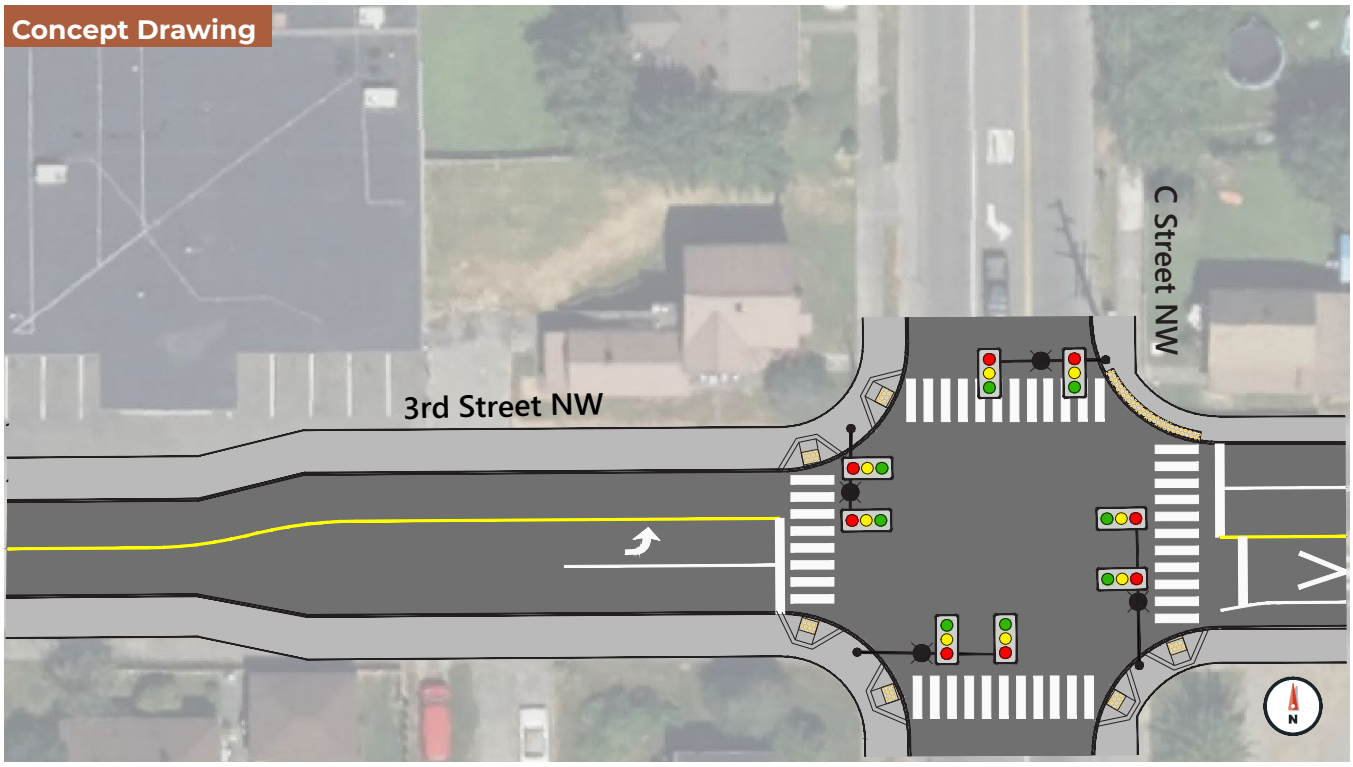
Description:

Intersection delays will be reduced through the addition of a dedicated eastbound left turn lane on 3rd Street NW and modifying the signal operations to allow for protected/ permissive left-turns on all approaches.

VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Meets	Fails
2044 Future	Meets	Fails

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 700,000
Right of Way	$ 0
Construction	$ 1,200,000
Total	$ 1,900,000

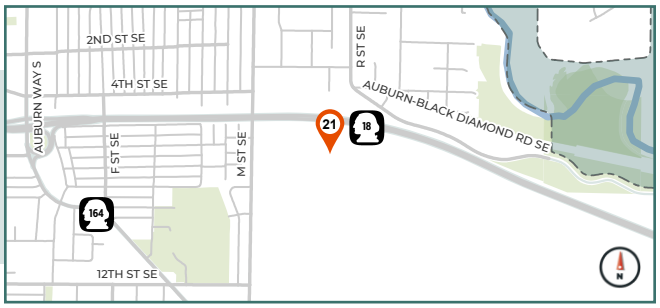
Concept Drawing



COMP-21

M ST SE BY-PASS RD

(M ST SE BY-PASS RD & SE AUBURN - BLACK DIAMOND RD)



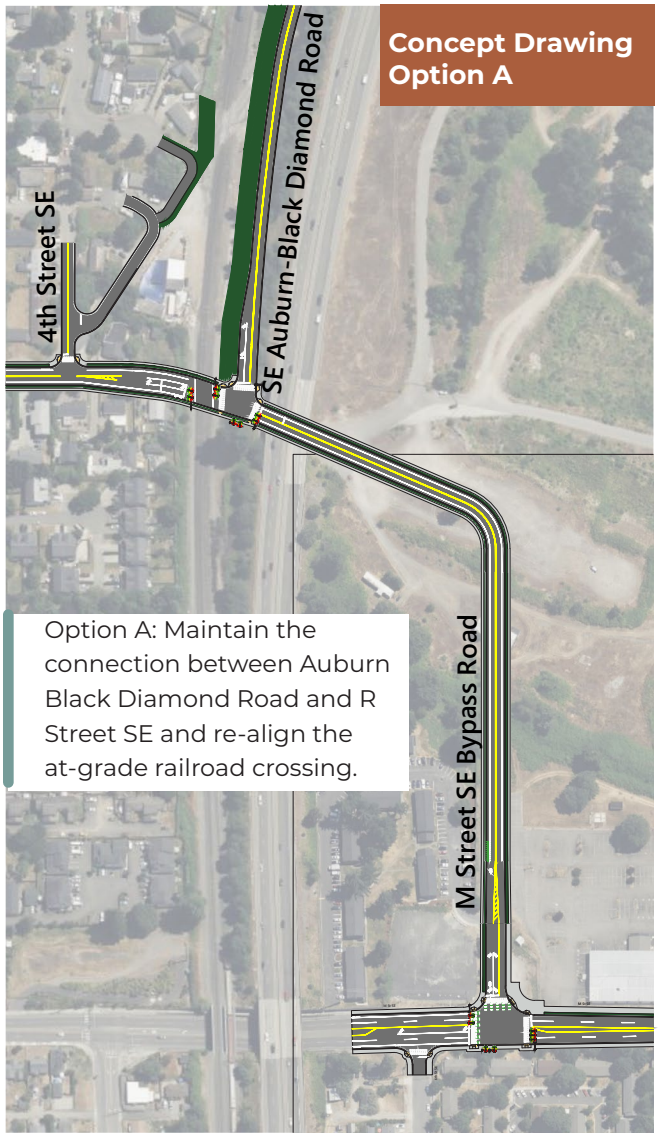
Project Origin: M Street Grade Separation Pre-Design Report (2009)

Primary Needs: Active Transportation/Safety/ System Resiliency

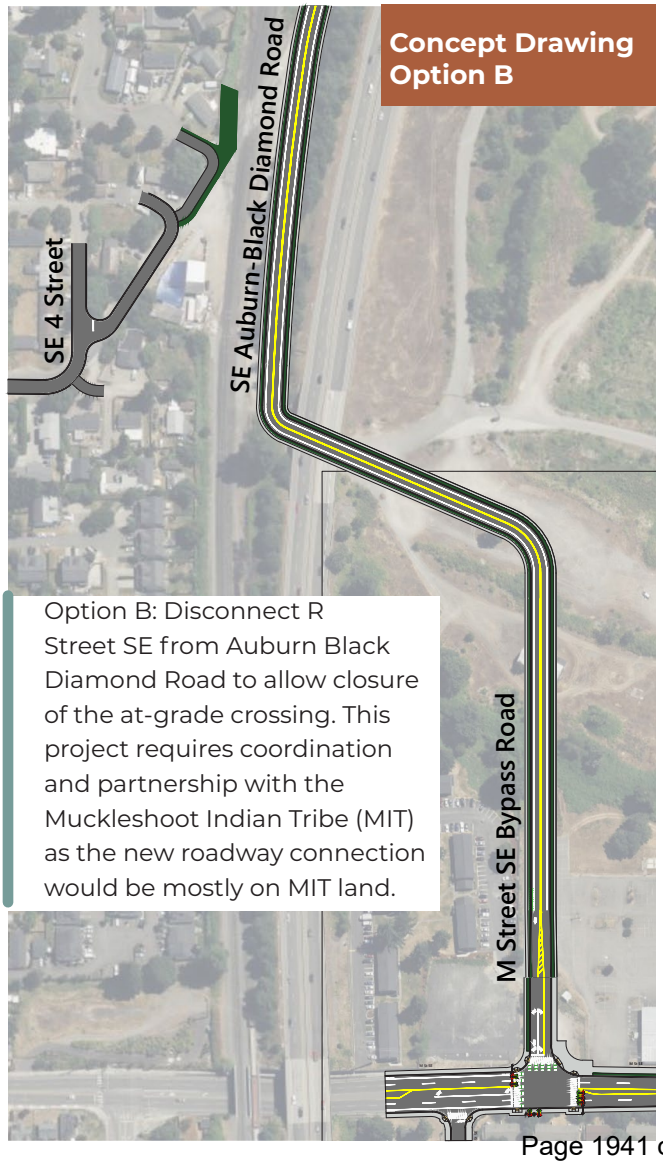
PROJECT PHASE	OPTION A	OPTION B
Planning & Engineering/Design	$ 3,500,000	$ 2,400,000
Right of Way	$ 6,250,000	$ 5,000,000
Construction	$ 7,500,000	$ 5,200,000
Total	$ 17,250,000	$ 12,600,000

Description:

This project will provide a new roadway connection between Auburn Black Diamond Road and M Street SE. The new connection will provide pedestrian, bicycle, and vehicle connectivity that allows by-pass of the at-grade railroad crossing at Black Diamond Road/R Street SE to the grade separated crossing at M Street SE. There are two alternatives for this project that will be considered further with preliminary project design:

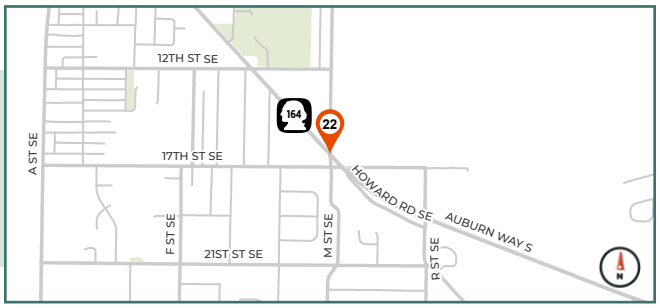


Option A: Maintain the connection between Auburn Black Diamond Road and R Street SE and re-align the at-grade railroad crossing.



Option B: Disconnect R Street SE from Auburn Black Diamond Road to allow closure of the at-grade crossing. This project requires coordination and partnership with the Muckleshoot Indian Tribe (MIT) as the new roadway connection would be mostly on MIT land.

COMP-22
AUBURN WAY S, M ST SE, 17TH ST SE INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

Primary Need: Vehicle Capacity

VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Fails	Fails
2044 Future	Fails	Fails

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 700,000
Right of Way	$ 300,000
Construction	$ 1,300,000
Total	$ 2,300,000

Description:

Intersection delays will be reduced with several improvements including:

Add a third eastbound lane on Auburn Way South through the intersection

Restrict left turns from eastbound Auburn Way South to northbound M Street SE. Vehicles would utilize 12th Street SE for access to M Street SE from eastbound Auburn Way South.

Restrict left turns from westbound Auburn Way South on the west intersection leg with curbing/median. Access to businesses on the south side of Auburn Way South would be made via a u-turn at the signalized intersection of 12th Street SE/Auburn Way South.

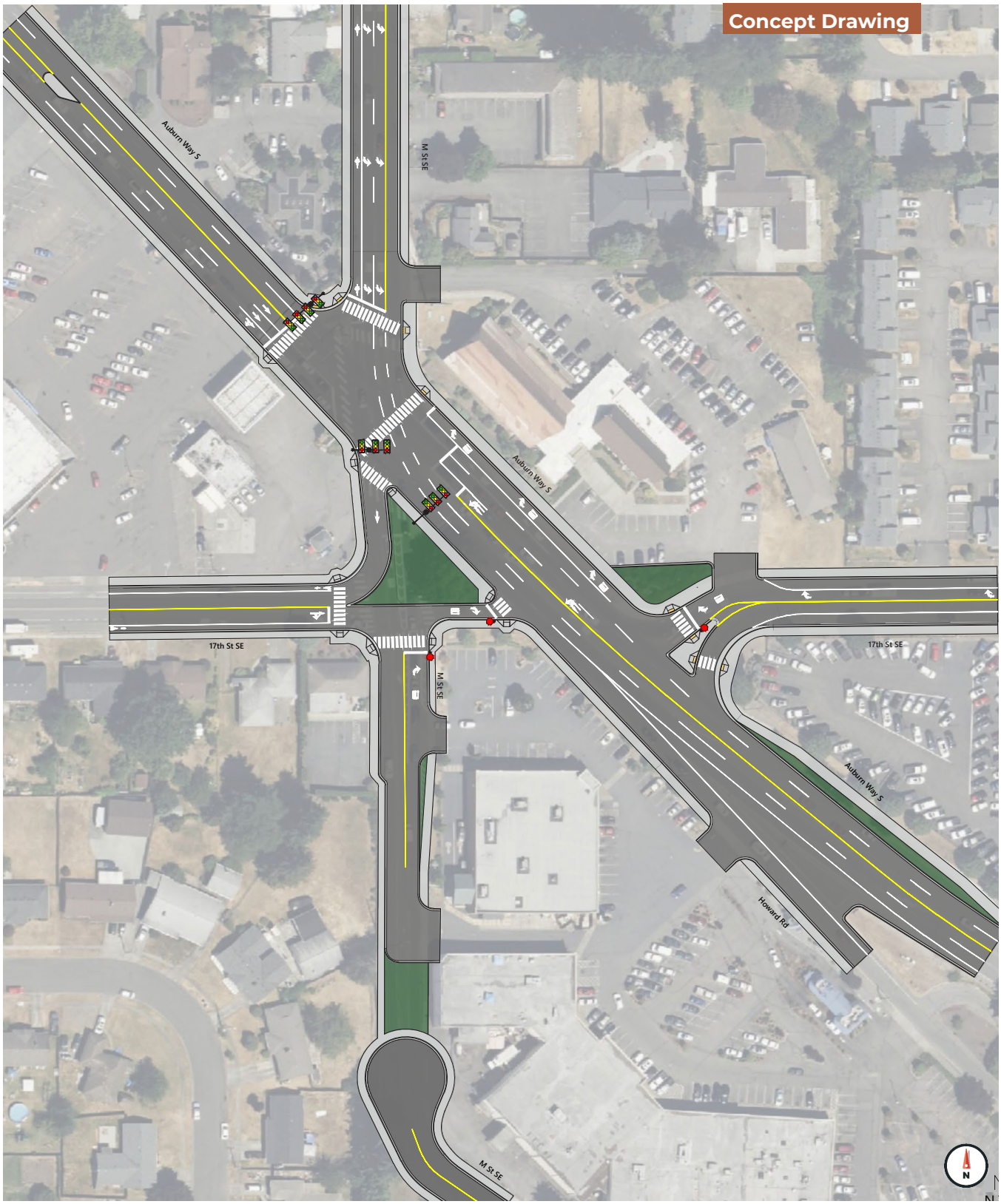
Left turns from southbound M Street SE to eastbound Auburn Way South would be allowed from the far west lane, creating three lanes available for this movement.

Eastbound 17th Street SE to eastbound Auburn Way South would be opened where it is currently blocked.

Northbound movements from M Street SE to Auburn Way South would be restricted and M Street SE would not provide connectivity between 21st Street SE and Auburn Way South.

Mark east crossing of Auburn Way South with a new crosswalk

Improvements on Auburn Way South will be subject to WSDOT complete streets requirements and will require coordination and approval from WSDOT.


Concept Drawing
Auburn Way S
M St SE
17th St SE
Howard Rd
N

COMP-23

M ST SE & 12TH ST SE INTERSECTION IMPROVEMENTS



Project Origin: 2024 CTP Project (Modified from Previous Comp. Plan)

Primary Need: Vehicle Capacity, Active Transportation

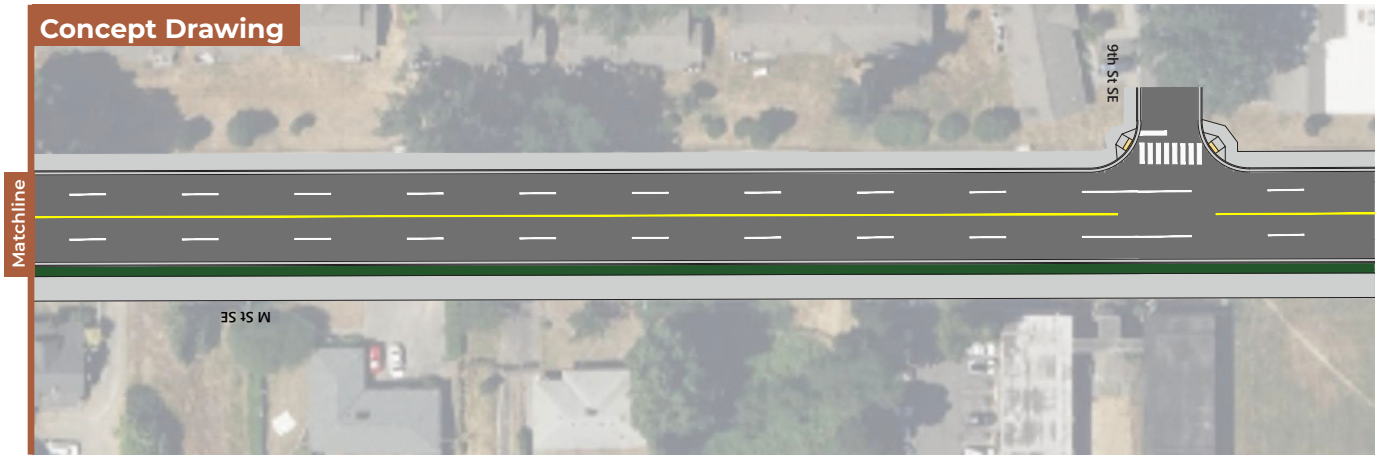
VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Fails	Fails
2044 Future	Fails	Fails

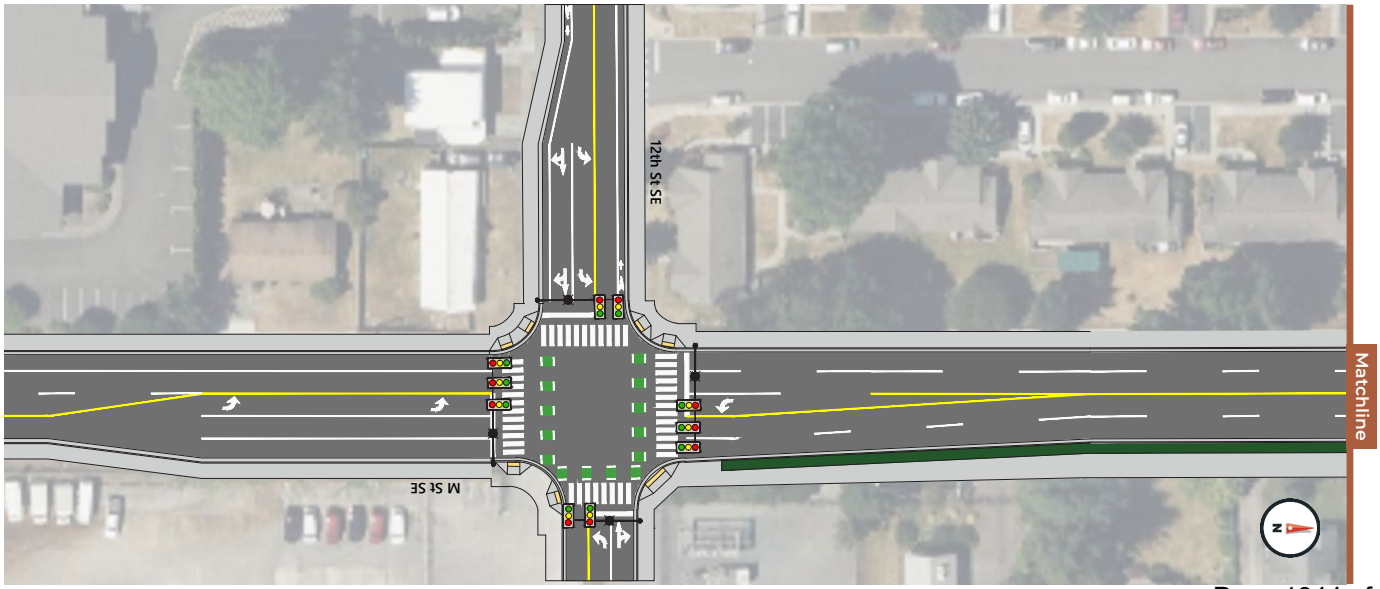
Description:

This project will reduce intersection delays with a new traffic signal. The project will also construct a separated trail along the east side of M Street SE between 12th Street SE and 8th Street SE to address active transportation level of service requirements.

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 1,200,000
Right of Way	$ 1,350,000
Construction	$ 2,100,000
Total	$ 4,650,000

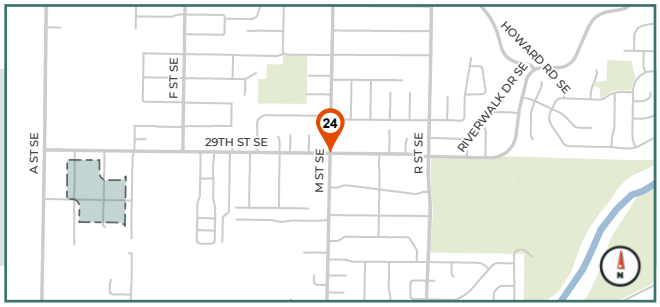
Concept Drawing





COMP-24

M ST SE & 29TH ST SE INTERSECTION IMPROVEMENTS



Project Origin: R St SE Corridor Study (2020)

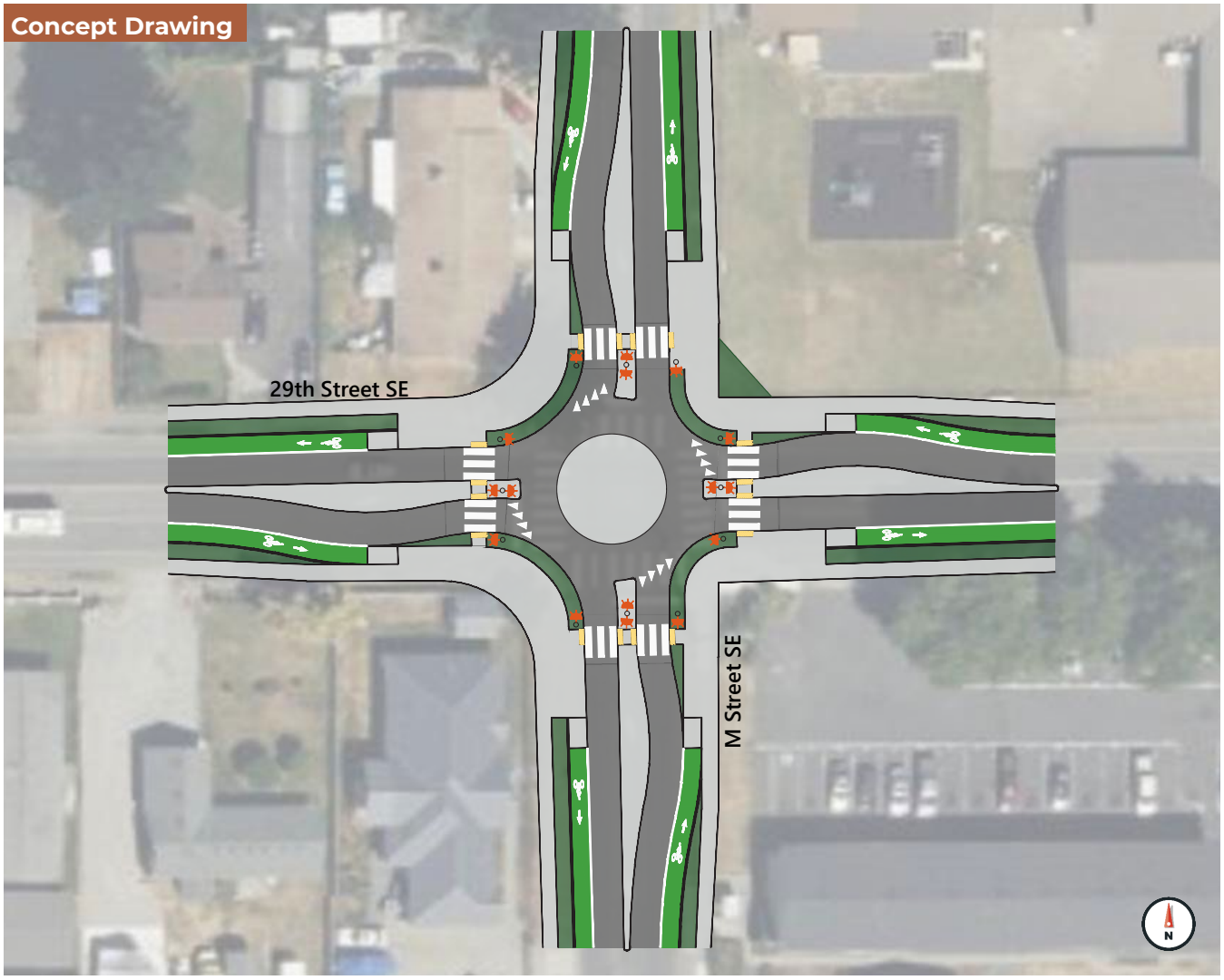
Primary Needs: Active Transportation/Safety/ Vehicle Capacity

Description:

This project will reduce vehicle delays, improve operations and safety, and provide improved access for bikes and pedestrians through the intersection through construction of a single lane roundabout to replace the current all-way stop control.

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 900,000
Right of Way	$ 125,000
Construction	$ 1,900,000
Total	$ 2,925,000

Concept Drawing



COMP-25
A ST SE CORRIDOR IMPROVEMENTS
(37TH ST SE - WHITE RIVER BRIDGE)



Project Origin: BNSF Railway and A Street SE Crossing Study (2015), 2024 CTP Project

Primary Needs: Vehicle LOS/Mode Shift/Active Transportation/Safety

	PROJECT PHASE	COST ESTIMATE
Phase 1	Planning & Engineering/Design	$ 2,940,000
	Right of Way	$ 1,750,000
	Construction	$ 15,250,000
	Phase 1 Total	$ 19,940,000
Phase 2	Planning & Engineering/Design	$ 600,000
	Right of Way	$ 225,000
	Construction	$ 1,200,000
	Phase 2 Total	$ 2,025,000
	Project Total	$ 21,965,000

Description:

This project will reduce intersection delays at the intersections of C St SW & Ellingson Rd/41st St SE, A St SE & Ellingson Rd/41st St SE, and at SE & 44th St SE (private road). The project will provide active transportation facilities that support mode shift and improved vehicle and active transportation safety. The improvements would likely be implemented with multiple projects implemented over time as funding is available.

Key project improvements and potential sequencing/phasing are:

Phase 1 (BNSF Railway and A Street SE Crossing)

1a New intersection with traffic signal and pedestrian and bike trail crossing on A Street SE just north of White River Bridge. White River Estates, and commercial properties along the east side of A Street SE between 41st Street SE and the new intersection will utilize this intersection for full access.

1b Construction of a pedestrian/bike tunnel under the BNSF Railway tracks that provides connectivity between the west side of A Street SE and Skinner Road. Extension of the separated trail on Skinner Road to connect to the tunnel crossing. Improvements between the White River Trail and the new intersection at the north end of the White River Bridge on the east side of A Street SE to created separated/buffered trail connection.

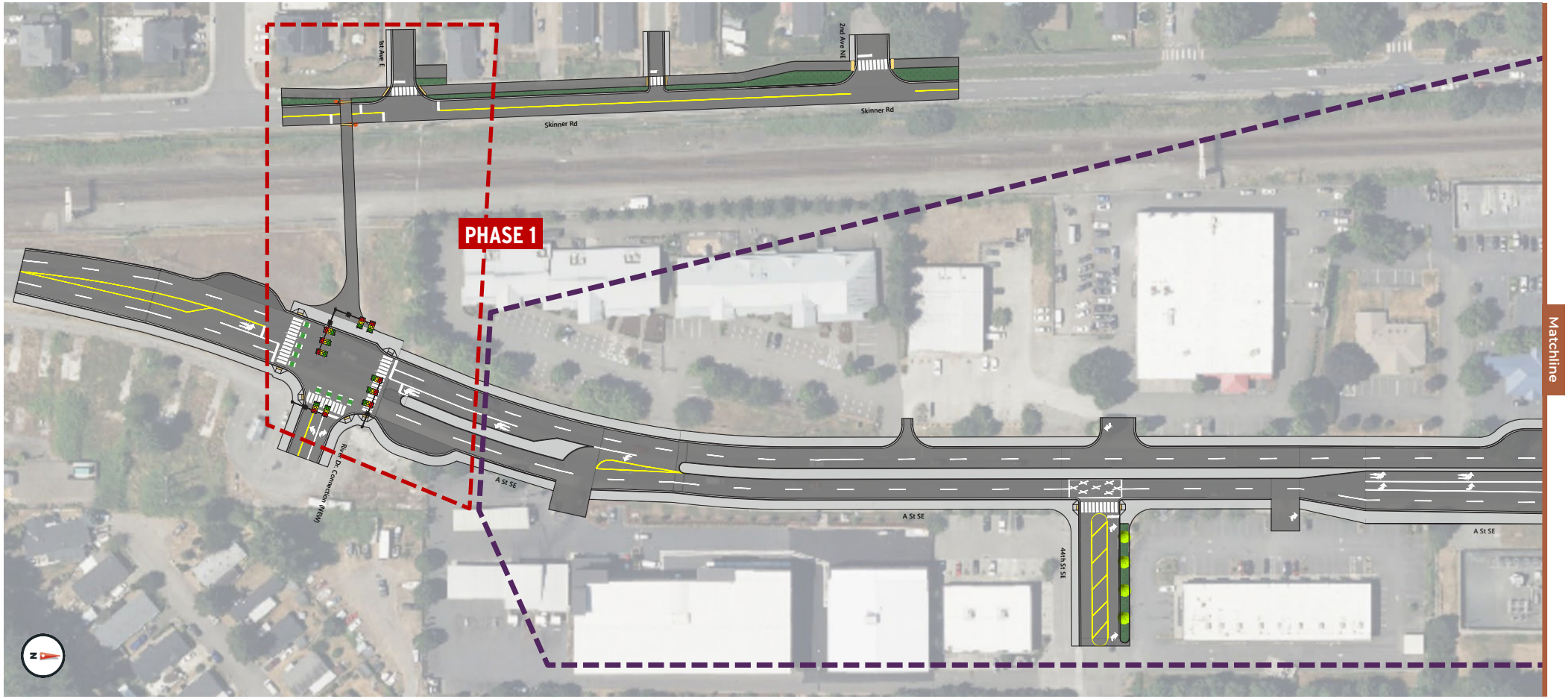
Phase 2 (Access Management & A Street SE Intersection Improvements at 41st Street SE and 37th Street SE)

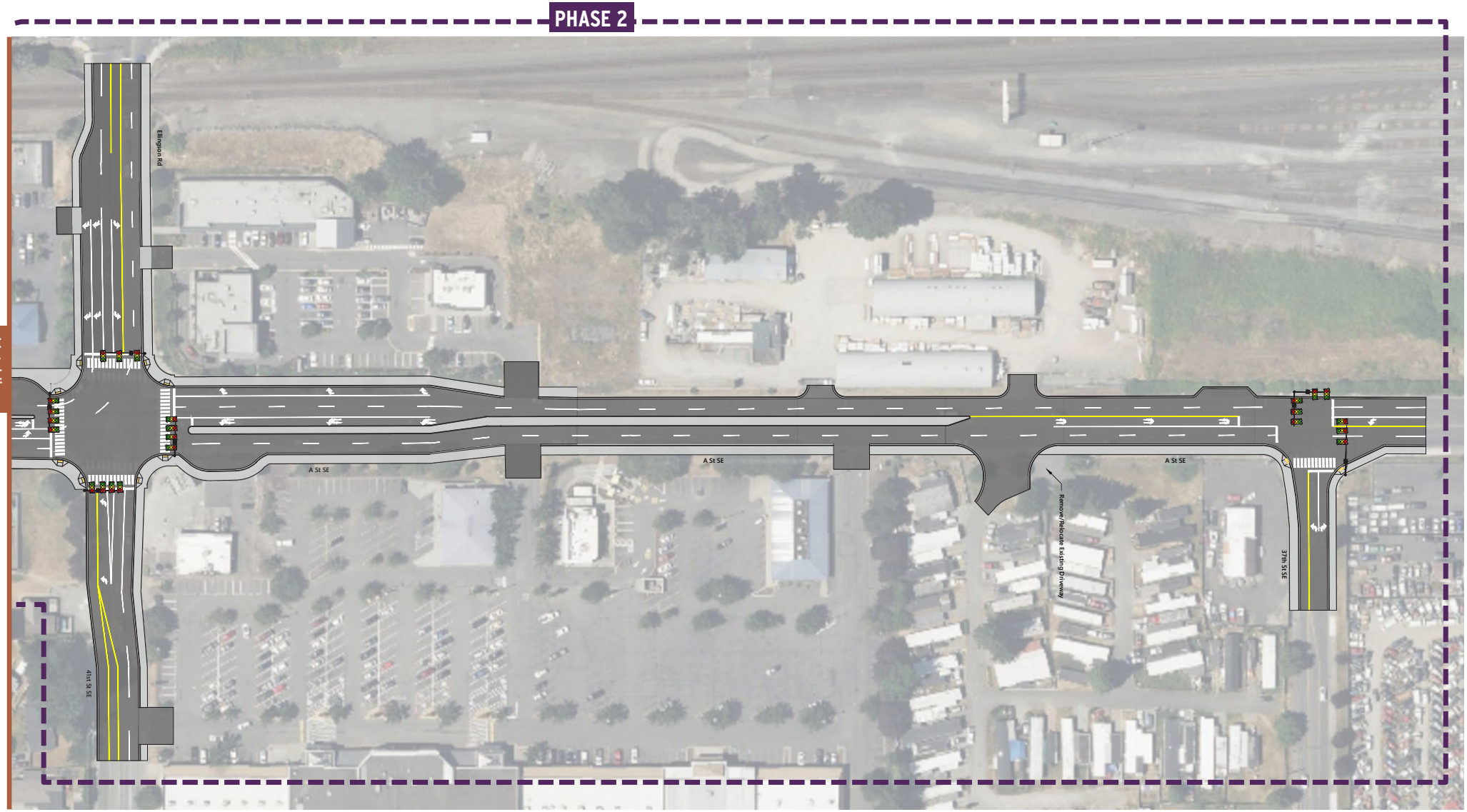
2a Space for vehicle u-turns for both directions on A Street SE will be provided at all signalized intersections and medians will be installed to restrict left turns in/out of adjacent driveways and 44th Street SE.

2b A second left turn lane from northbound A Street SE to westbound Ellingson Road/41st Street SE will be added.

2c A second dedicated right turn lane from eastbound Ellingson Road/41st Street SE will be added and there will be a separated dedicated eastbound through lane.

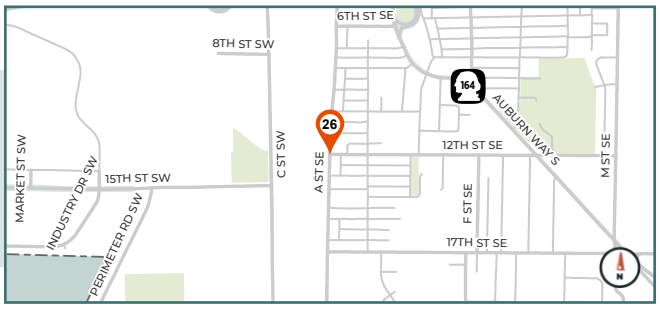
2d Smart signage will be installed on Ellingson Road/41st Street SE to allow two westbound movements through the intersection of C Street SW during some times and one westbound through and one right turn only (to northbound C Street SW) during other times. Re-build sidewalks on Ellingson Road/41st Street SE between C Street SW and A Street SE to provide maximum width possible as constrained by the BNSF bridge and mark the crosswalk/replace curb ramps on south leg of intersection of A Street SE and Ellingson Road/41st Street SE.


PHASE 1
Skinner Rd
Skinner Rd
A St SE
A St SE
A St SE
44th St SE
Matchline


PHASE 2
Matchline
Ellingson Rd
A St SE
A St SE
A St SE
Remove/Relocate Existing Driveway
37th St SE
41st St SE

COMP-26

A ST SE & 12TH ST SE INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

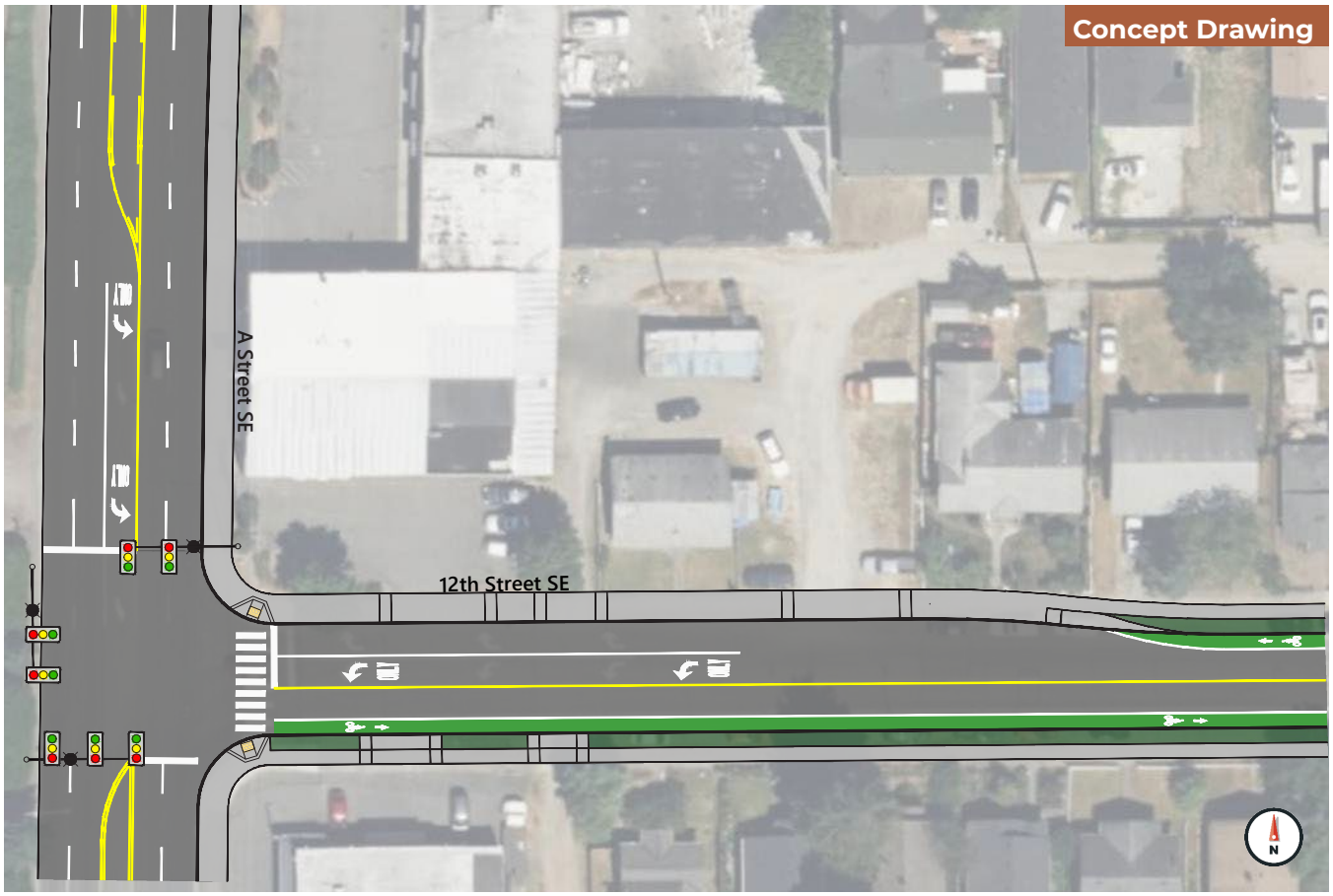
Primary Need: Vehicle Capacity

Description:

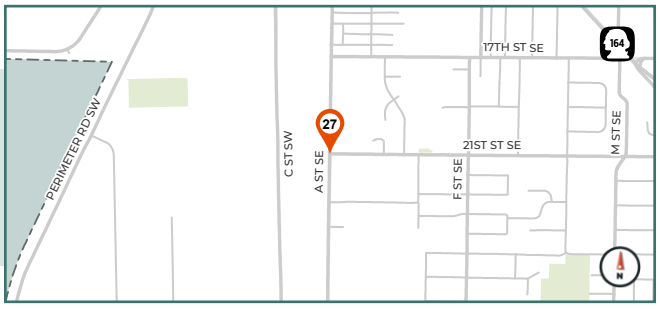
Intersection delays will be reduced through the replacement of the stop control with construction of a new traffic signal.

VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Meets	Meets
2044 Future	Fails	Fails

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 500,000
Right of Way	$ 25,000
Construction	$ 900,000
Total	$ 1,425,000



COMP-27
A ST SE & 21ST ST SE INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

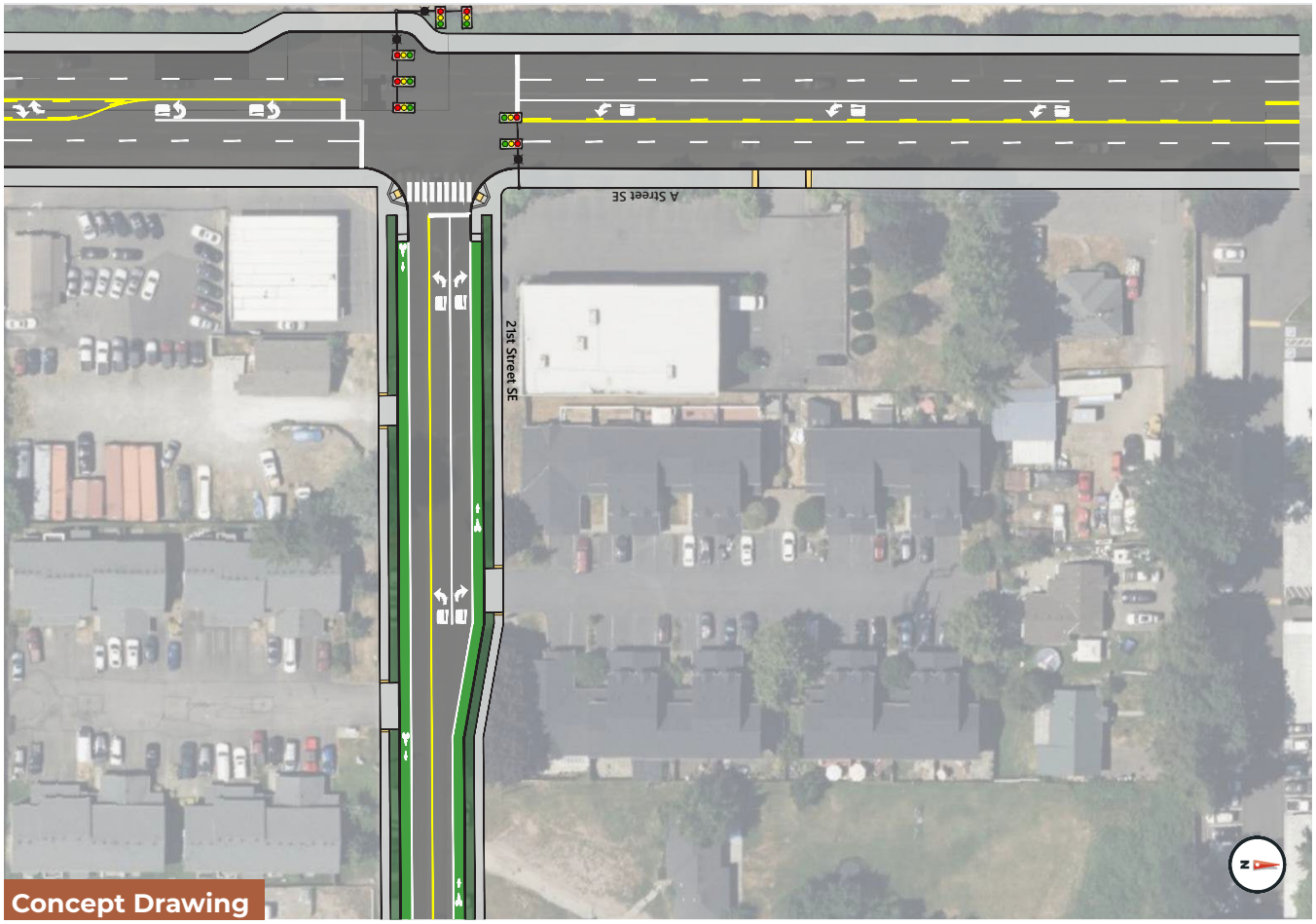
Primary Need: Vehicle Capacity

Description:

Intersection delays will be reduced through the replacement of the stop control with construction of a new traffic signal. Improvements may also include widening for a northbound u-turn to support access management along the corridor.

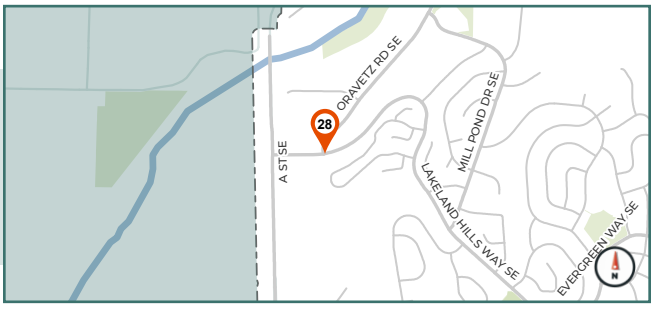
VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Meets	Meets
2044 Future	Fails	Fails

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 600,000
Right of Way	$ 125,000
Construction	$ 1,200,000
Total	$ 1,925,000



Concept Drawing

COMP-28
LAKELAND HILLS WAY SE & ORAVETZ RD SE CORRIDOR INTERSECTION IMPROVEMENTS



Project Origin: New 2024 CTP Project

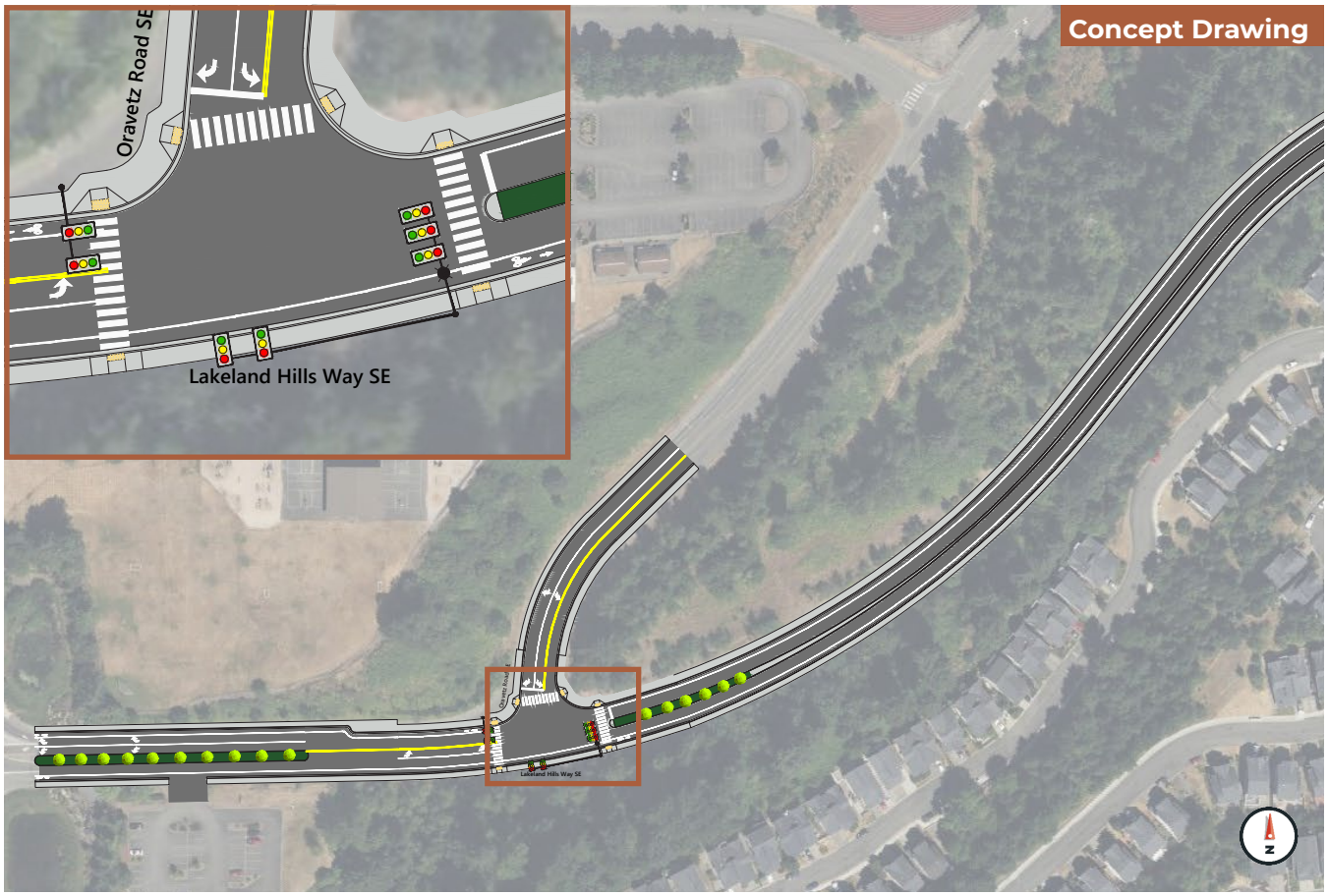
Primary Need: Vehicle Capacity

Description:

Intersection delays will be reduced through the replacement of the stop control with construction of a new traffic signal.

VEHICLE LOS WITHOUT PROJECT	AM	PM
2024 Existing	Fails	Meets
2044 Future	Fails	Meets

PROJECT PHASE	COST ESTIMATE
Planning & Engineering/ Design	$ 900,000
Right of Way	$ 10,000
Construction	$ 1,700,000
Total	$ 2,610,000



LIST OF BIKE IMPROVEMENTS TO ENCOURAGE MODE SHIFT

Existing and proposed bike facilities are mapped at https://auburn.maps.arcgis.com/apps/instant/sidebar/index.html?appid=0d4f2a3eee6d4a54bb284c3d09142b62

STREET	FROM	TO	EXISTING FACILITY	MINIMUM FACILITY REQUIRED TO MEET LTS STANDARD	APPROACH
Lakeland Hills Way	Lake Tapps Parkway	69th Street SE	Class III Bikeway	Class II Bikeway	Sign bike trail through Sunset Park.
I St NE	45th St NE	42nd Pl. NE	Class III Bikeway	Class I Bikeway	Build trail on East side, RRFB at trail crossing.
I St NE	42nd PL. NE	37th St NE	Class III Bikeway	Class II Bikeway	Change network class to auxiliary. Build out bike lanes.
C St NE	42nd St NE	30th St NE	Class III Bikeway	Class II Bikeway	North of 37th, remove TWFTL add bike lanes; south of 37th re-build pavement, add bike lanes.
37th St NE	I St NE	AWN	Class III Bikeway	Class III Bikeway w/ Pavement Marking	Re-stripe to include bike lanes and remove parking on north side.
37th St NE/NW	AWN	Between Emerald Downs Dr & I	Class III Bikeway	Class I Bikeway	Build separated trail on north side, re-strip to narrow lanes to 11 to 12 feet wide.
AWN	37th St NE	35th St NE	Class III Bikeway	Class II Bikeway	Remove bike network designation, remove bike lane designation on 35th between AWN and I Street.
8th St NE	Harvey Rd NE	R St NE	Class III Bikeway	Class II Bikeway	Re-channelize to include bike lanes. Potential widening at some locations.
8th St NE	R St NE	8th St Bridge	Class III Bikeway	Class I Bikeway	Construct separated trail along side of roadway.
8th St Bridge			Class III Bikeway	Class I Bikeway	Widen bridge or construct adjacent active transportation bridge. Construction separated trail.
SE 320th St	8th St Bridge	104th Ave SE	Class III Bikeway	Class I Bikeway	Re-channelize and widen to provide separated trail.
Lea Hill Rd SE	104th Ave SE	112th Ave SE	Class III Bikeway	Class I Bikeway	Trail along east side of road, bike lane along west side of road - See Lea Hill Corridor Study.
SE 312th St	112th Ave SE	116th Ave SE	Class III Bikeway	Class I Bikeway	Trail along east side of road, bike lane along west side of road - See Lea Hill Corridor Study.
SE 312th St	116th Ave SE	124th Ave SE	Class III Bikeway	Class II Bikeway	Re-Channelize and Widen to Provide bike lanes.
124th Ave SE	SE 284th St	SE 288th St	Class III Bikeway	Class II Bikeway	Widen to Minor Arterial Standards w/bike lanes.
124th Ave SE	SE 304th St	SE 307th Pl	Class III Bikeway	Class II Bikeway	Widen to Minor Arterial Standards w/bike lanes.
R St NE	8th St NE	E Main St	Class III Bikeway	Class II Bikeway	Re-Stripe to include bike lanes.

(Continued on next page)

STREET	FROM	TO	EXISTING FACILITY	MINIMUM FACILITY REQUIRED TO MEET LTS STANDARD	APPROACH
4th St NE	AWN	H St NE	Class III Bikeway	Class III Bikeway w/ Pavement Marking	Add bike lanes.
4th St NE	H St NE	J St NE	Class III Bikeway	Class II Bikeway	Add bike lanes.
4th St NE	J St NE	M St NE	Class III Bikeway	Class III Bikeway w/ Pavement Marking	Add bike lanes.
E Main St	E St NE	Pike St SE	Class III Bikeway w/ Pavement	Class II Bikeway	Bulb-outs/traffic calming/speed reduction to 25mph/sharrows signage (R to D).
4th St SE	F St SE	M St SE	Class III Bikeway	Class III Bikeway w/ Pavement Marking	Install sharrows/signage.
12th St SE	J St SE	L St SE	Class III Bikeway	Class III Bikeway w/ Pavement Marking	Bikes lanes on 12th from AWN to M Street SE.
15th St SW	C St SE	Perimeter Rd	Class II Bikeway (Both Sides)	Class I Bikeway	Construct separated trail along south side.
15th St SE	Perimeter Rd	Interurban Trail	Class III Bikeway	Class I Bikeway	Construct separated trail along south side.
17th St SE	B St SE	F St SE	Class II Bikeway (Both Sides)	Class I Bikeway	Bulb-outs/traffic calming/speed reduction to 30mph/sharrows signage (R to D).
21st St SE	F St SE	R St SE	Class II Bikeway (Both Sides)	Class I Bikeway	Bulb-outs/traffic calming/speed reduction to 30mph/sharrows signage (R to D).
R St SE	21st St SE	Between 22nd St SE & 23rd St S	Class II Bikeway (Both Sides)	Class I Bikeway	Separated trail along east side of roadway. CP2116.
37th St SE	A St SE	M St SE	Class III Bikeway	Class III Bikeway w/ Pavement Marking	Re-stripe to include bike lanes.
A St SE	41st St SE	44th St SE	Class III Bikeway	Class II Bikeway	Separated trail along east side of roadway.
A St SE	44th St SE	COA Boundary	Class III Bikeway	Class II Bikeway w/Buffer	Separated trail along east side of roadway.
A St SE	COA Boundary	South of Lakeland Hills Way SE	Class III Bikeway	Class I Bikeway	Separated trail along east side of roadway. CP2331.
Lakeland Hills Way	A St SE	Oravetz Pl SE	Class III Bikeway	Class II Bikeway	Re-stripe to include bike lanes.
R St SE	Between 25th St SE & 26th	White River Bridge	Class II Bikeway (Both Sides)	Class I Bikeway	Separated trail along east side of roadway. CP2116.
Lakeland Hills Way	Lake Tapps Parkway	Between Lake Tapps & 15th St	Class III Bikeway	Class III Bikeway w/ Pavement Marking	Install sharrows/signage.
Lake Tapps Pkwy SE	Lakeland Hills Way SE	Just east of Lakeland Hills	Class III Bikeway	Class I Bikeway	Construct separated trail along north side of roadway.

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APPENDIX C

Plan Checklists

IN THIS APPENDIX

GMA Requirements Checklist

PSRC Requirements Checklist



GMA REQUIREMENTS CHECKLIST

To comply with the Growth Management Act requirements, the Comprehensive Transportation Plan will include the following elements:

GMA REQUIREMENT	PLAN ELEMENT(S)
1. An inventory of air, water, and ground transportation facilities and services, including transit alignments, state-owned transportation facilities, and general aviation airports.	· Chapter 2 · Appendix A
2. Adopted multimodal levels of service (LOS) standards for all arterials, transit routes and highways.	· Chapter 2
3. Identification of specific actions to bring locally-owned transportation facilities and services to established multimodal LOS.	· Chapter 2 · Appendix B
4. A forecast of traffic for at least 10 years including land use assumptions used in estimating travel.	· Chapter 2
5. A projection of state and local system needs to meet current and future demand.	· Chapter 2 · Appendix B
6. A pedestrian and bicycle component to include collaborative efforts to identify and designate planned improvements for pedestrian and bicycle facilities and corridors that address and encourage enhanced community access and promote healthy lifestyles.	· Chapter 2, Section 2.3
7. A description of any existing and planned transportation demand management (TDM) strategies, such as HOV lanes or subsidy programs, parking policies, etc.	· Chapter 4, Goal 8
8. An analysis of future funding capability to judge needs against probable funding resources.	· Chapter 6, Section 6.1
9. A multi-year financing plan based on needs identified in the comprehensive plan, the appropriate parts of which serve as the basis for the 6-year street, road or transit program.	· Chapter 6, Section 6.1
10. If probable funding falls short of meeting identified needs: a discussion of how additional funds will be raised, or how land use assumptions will be reassessed to ensure that LOS standards will be met.	· Chapter 6, Section 6.4

(Continued on next page)

GMA REQUIREMENT	PLAN ELEMENT(S)
11. A description of intergovernmental coordination efforts, including an assessment of the impacts of the transportation plan and land use assumptions on the transportation systems of adjacent jurisdictions and how it is consistent with the regional transportation plan.	• Chapter 1, Section 1.5
12. A plan for public participation in the comprehensive planning process.	• Chapter 1, Section 1.3 • Appendix D
13. A plan to monitor how well comprehensive plan policies, development regulations, and other implementation techniques are achieving the plan's goals and the goals of the GMA.	• Chapter 7
14. Considerations for preserving property rights with an evaluation of regulatory or administrative actions to ensure they do not result in unconstitutional taking of private property.	• Chapter 4, Goal 9, Policy TR9-3
15. Requirement that local governments permit development only if adequate multimodal transportation facilities exist, or can be guaranteed to be available within six years, to support new development. The GMA requires each local jurisdiction to identify facility and service needs based on LOS standards. Auburn ensures that future development will not cause the system's performance to fall below the adopted LOS standard by doing one or a combination of the following: limiting development, requiring appropriate mitigation, or changing the adopted standard.	• Chapter 4, Goal 7

PSRC REQUIREMENTS CHECKLIST

PSRC requires that the plan promotes a sustainable, equitable, affordable, safe, and efficient multimodal transportation system, with specific emphasis on an integrated regional transit network that supports the Regional Growth Strategy and promotes vitality of the economy, environment, and health.

PSRC REQUIREMENT	PLAN ELEMENT(S)
Implement the Regional Transportation Plan	
1. Promote the development of an efficient, multimodal transportation system that supports the Regional Growth Strategy in collaboration with other jurisdictions and agencies **(MPP-T-7)**	· Chapter 4, Goal 4, Policy TR4-2
2. Work to develop and operate a safe and convenient system for all users and the movement of freight and goods **(MPP-T-11)**	· Chapter 4, Goal 5, Policy TR5-1-4
3. Reduce the need for new capital improvements through investments in operations, pricing programs, demand management strategies, and system management activities that improve the efficiency of the current system **(RCW 36.70A.070(6)(a)(vi), MPP-T-3)**	· Chapter 4, Goal 8, Policy TR8-3
4. Emphasize transportation investments that provide alternatives to single occupancy vehicle travel, increase travel options, especially to and within centers, and support compact, pedestrian- and transit-oriented densities and development **(MPP-T-12-13, T-15)**	· Chapter 4, Goal 8, Policy TR8-4
5. Increase the resilience of the transportation system and support security and emergency management **(MPP-T-31)**	· Chapter 4, Goal 5, Policy TR5-2-15
6. Prepare for changes in transportation technologies and mobility patterns **(MPP-T-33-34)**	· Chapter 4, Goal 10, Policy TR10-15
Support the Regional Growth Strategy	
7. Focus system improvements to connect centers and support existing and planned development as allocated by the Regional Growth Strategy **(MPP-RC-7-9, T-7-8, T-15)**	· Chapter 4, Goal 1, Policy TR1-4
8. Prioritize multimodal investments in centers and high-capacity station areas **(MPP-RC-7-10, T-12-13,T-19)**	· Chapter 2, Section 2.4.1 · Chapter 4, Goal 1, 5, and 6, Policies TR1-3 and TR1-4; TR5-1-1; TR6-3-1 and TR6-3-2

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PSRC REQUIREMENT	PLAN ELEMENT(S)
Support the Regional Growth Strategy	
9. Promote the design of transportation facilities that support local and regional growth centers and high-capacity transit station areas and fit the community in which they are located **(MPP-T-19-21)**	· Chapter 2, Section 2.4 · Chapter 4, Goal 5, Multimodal Accessible Network Policies (Transit) · Chapter 4, Goal 6, MMLOS Standards Policies (Transit)
10. Support a safe and welcoming environment for walking and bicycling **(MPP-DP-15)**	· Chapter 4, Goal 5 (page 62-66)
11. Include a pedestrian and bicycle component and collaborative efforts to identify planned improvements for pedestrian and bicycle facilities and corridors **(RCW 36.70A.070(6)(a)(vii))**	· Chapter 2, Section 2.3
12. Improve local street patterns and design to promote walking and biking **(MPP-T-16-17)**	· Chapter 4, Goal 5
13. Support alternatives to driving alone, including walking, biking, and transit use, through design of local streets, land use development tools, and other practices **(MPP-T-16-18)**	· Chapter 4, Goal 8, Policy TR8-4
Support People	
14. Identify racial and social equity as a core objective when planning and implementing transportation improvements, programs, and services **(MPP-T-9)**	· Chapter 4, Goal 2
15. Ensure mobility choices for people with special needs **(MPP-T-10)**	· Chapter 4, Goal 2
Support the Economy	
16. Recognize the critical role of safe, reliable, and efficient movement of people and goods **(MPP-Ec-6,T-1, T-23)**	· Chapter 4, Goal 5, Policy TR5-1-4
17. Identify and support key facilities and improvements that connect the region to major transportation hubs such as ports, airports, and designated freight routes **(MPP-T-24-25)**	· Appendix A
18. Promote coordination with providers of major regional infrastructure, such as freight rail and commercial aviation **(MPP-Ec-4-5, T-27-28)**	· Chapter 4, Goal 5, Multimodal Accessible Network Policies and Supporting Actions (Freight, Air Transportation)

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PSRC REQUIREMENT	PLAN ELEMENT(S)
Protect the Environment	
19. Promote clean transportation programs and facilities, including actions to reduce air pollution and greenhouse gas emissions from transportation **(MPP-CC-3, CC-12, T-29-30)**	· Chapter 4, Goal 4, Policy TR4-2
20. Reduce stormwater pollution from transportation facilities and improve fish passage **(MPP-T-32)**	· Chapter 4, Goal 4, Policy TR4-3
21. Incorporate environmental factors into transportation decision-making, including attention to human health and safety **(MPP-DP-44, T-4-5, T-29-32)**	· Chapter 4, Goal 4, Supporting Actions
Provide Facilities inventories and identify Service Needs	
22. Include mapped inventories for each element of the transportation system, including roadways, transit, cycling, walking, freight, airports, and ferries **(RCW 36.70A.070, RCW 36.70A.108, MPP-T-7,T-15-17)**	· Appendix A
23. Include state facilities and reflect related (regional/ state) level-of-service standards **(RCW 36.70A.070, RCW 36.70A.108)**	· Chapter 2, Section 2.2
24. Develop a comprehensive concurrency program that addresses level-of-service standards for multimodal types of transportation and include implementation strategies **(RCW 36.70A.070, RCW 36.70A.108, MPP-DP-52-54)**	· Chapter 4, Goal 7
25. Provide travel demand forecasts and identify state and local system projects, programs, and management necessary to meet current and future demands and to improve safety and human health **(RCW 36.70A.070, MPP-T-4-5)**	· Chapter 2, Section 2.2.8
26. Identify maintenance and system preservation projects and programs necessary to maintain the ability of the transportation system to provide safe, efficient, and reliable movement of people, goods, and services **(RCW 36.70A.070, MPP-T-1-2, T-4)**	· Chapter 4, Goal 10 · Chapter 6

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PSRC REQUIREMENT	PLAN ELEMENT(S)
Finance Transportation Investments	
27. Identify stable and predictable funding sources for maintaining and preserving existing transportation facilities and services **(MPP-RC-11-12, T-6)**	· Chapter 6, Section 6.3
28. Pursue alternative transportation financing methods, such as user fees, tolls, and other pricing mechanisms **(MPP-T-6)**	· Chapter 6, Section 6.5
29. Include a 20-year financing plan, as well as an analysis of funding capability for all transportation modes **(RCW 36.70A.070(3), RCW 36.70A.070(6)(a)(iv), WAC 365-196-415, WAC 365-196-430, MPP-RC-11-12, T-6, T-15)**	· Chapter 6, Section 6.1
30. Include a reassessment strategy to address the event of a funding shortfall **(RCW 36.70A.070(3), RCW 36.70A.070(6)(a)(iv), WAC 365-196-415, WAC 365-196-430, MPP-RC-11-12,T-6)**	· Chapter 6, Section 6.4
Address Land Uses Adjacent to Airports	
31. Airport-adjacent communities: Identify and address any airports within or adjacent to the jurisdiction **(RCW 36.70.547, 36.70A.070(6)(a)(iii)(A), MPP-DP-48)**	· Chapter 2, Section 2.5
32. Describe existing and planned uses near the airport, as well as policies and regulations that discourage incompatible uses **(RCW 36.70.547, 36.70A.070(6)(a)(iii)(A), MPP-DP-48)**	· Existing and planned uses are not described. However, Chapter 4, Goal 5, lists an action under Actions to Support Multimodal Accessible Network Goal and Policies (Air Transportation) that calls the agency to do so
33. Promote coordinated planning and effective management to optimize the region's aviation system in a manner that minimizes health, air quality, and noise impacts to communities, including historically marginalized communities **(MPP-T-28)**	· Chapter 4, Goal 5, Multimodal Accessible Network Policies (Air Transportation)


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APPENDIX D

Outreach



IN THIS APPENDIX

Public Outreach

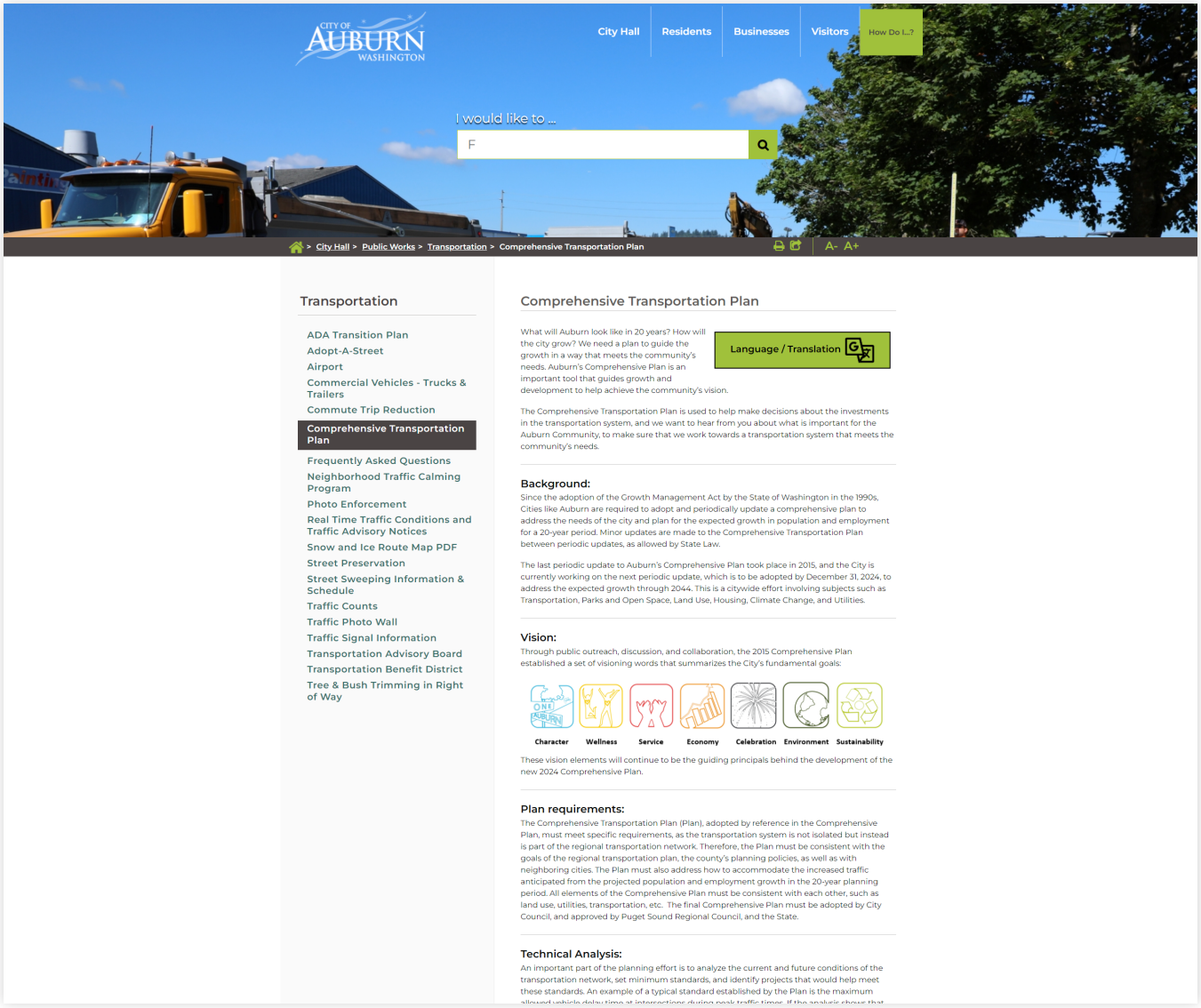
PUBLIC OUTREACH

For the 2024 update to the Comprehensive Transportation Plan (Plan), City staff engaged with the public in different ways, with the intent to encourage participation and receive input from the public to ensure that the needs of the community are addressed in the planning process.

Plan Webpage

A webpage was created with key information regarding the plan, and with a location specific survey where people could show on a map the type of concern they have, as well as three questions to help guide our planning process. The survey questions were translated into the four most used languages in Auburn, after English, which are, as of 2023, Spanish, Ukrainian, Russian, and Tagalog.

Figure 15. Plan Website Homepage



Visit the Comprehensive Transportation Plan Website

Figure 16. Online Survey - Location Specific Feedback

Public input:

We want to hear from you throughout this process, to understand your needs and ideas for Auburn's transportation systems.

Location Specific Feedback

Click on the map to drop a pin for the comment*

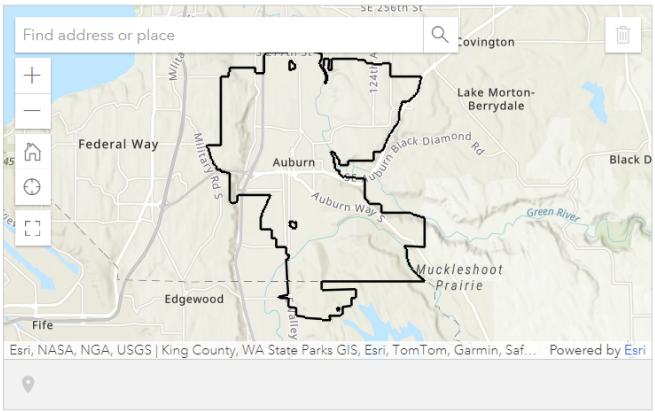
Please only click inside the box showing the Auburn City Limits. Only locations in Auburn will be considered.

Haga clic en el mapa para colocar un marcador para el comentario. Haga clic únicamente en el recuadro que muestra los límites de la ciudad de Auburn. Solo se considerarán las ubicaciones dentro de Auburn.

Клацніть на карті, щоб поставити мітку для коментарю. Клацайте лише в полі, що розташоване в межах міста Auburn City. Ураховуватимуться тільки зони в Auburn.

Щелкните карту, чтобы поставить метку для комментария. Щелкайте только в поле, находящемся в пределах города Auburn City. Будут учитываться только зоны в Auburn.

I-click ang map upang maglagay ng pin para sa mga komento. Pindutin lamang sa loob ng box na nagpapakita ng mga Limitasyon sa Lungsod ng Auburn. Ang mga lugar sa Auburn lamang ang isasaalang-alang.



Which category fits best? ¿Qué categoría se adapta mejor? Яка категорія підходить найкраще? Какая категория подходит лучше всего? Aling kategorya ang pinakaangkop?*

-Please select-

Please provide more details for your comment on the map:

Sírvase proporcionar más detalles para su comentario sobre el mapa:
Надайте більше інформації щодо свого коментарю на карті:
Предоставьте больше информации для своего комментария на карте:
Mangyaring magbigay ng higit pang mga detalye para sa iyong komento sa map:

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Public Comments from the Website/Online Survey

Comments collected through the plan website/online survey are summarized in the table below:

GENERAL QUESTIONS ABOUT TRANSPORTATION IN AUBURN			
QUESTION	**RESPONDENT #1**	**RESPONDENT #2**	**RESPONDENT #3**
1. Do you have any suggestions on how we can encourage more people to walk, ride a bike, or take a bus instead of driving a car?	*I think the best thing to do is to expand the bicycle route network. The current network of bike lanes and trails do not take people to where they want to go. The best way to get people out of their cars is to make cycling an attractive option, and making dedicated space for them will allow for that. Ideally, bike lanes should be protected bike lanes; cyclists are not going to feel safe if there is nothing physically protecting them from being run over by cars! In terms of walking, many sidewalks are currently too narrow and/or do not provide enough protection from cars. We could also benefit from more protected pedestrian/ bicycle crossings (e.g., HAWK signals). Also consider making some streets (perhaps downtown) pedestrian-only; taking cars off of a street makes it a much more attractive place for people to gather and shop. For buses, increasing service frequencies and expanding service hours (e.g., adding off-peak service to the 497) is a good way to attract more riders.*	*Safety. Safety. Safety. Nonexistent or disconnected infrastructure makes pedestrians and bicyclists feel unsafe. Aggressive inattentive drivers are everywhere and street widths are designed for freeway speeds. My elementary school children are threatened by drivers and nearly run over by right and left turning drivers daily. No amount of victim blaming will fix that. Intersections near schools need pedestrian first design principles like raised crosswalks and intersections and narrow streets to force drivers to slow.*	*You need a mix of advertising options and upkeep for what you have. Moved down here going on 2 years and there are places that are not safe to walk due to crime, etc. Other places like between Les Groves and M tend to have lots of debris piled up. (For example under the overpass there's large piles of dirt and grass growing and it's clear there's very poor drainage and upkeep in the area). Businesses downtown occasionally block sidewalks with signage etc., making it difficult for strollers or mobility issues. Overall need a mix of upkeep so people can utilize/ access them and then making sure you are giving them places to go.*

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GENERAL QUESTIONS ABOUT TRANSPORTATION IN AUBURN

QUESTION	RESPONDENT #1	RESPONDENT #2	RESPONDENT #3
2. Do you have any suggestions on how we make sure we are providing transportation facilities in an equitable way and that we are considering the needs of the entire community, including typically underserved and disadvantaged groups?	*Expanding pedestrian, bicycle, and transit infrastructure to serve everyone's destinations is the best way to provide equitable transportation. Cars are expensive to purchase and maintain; living without one should be a feasible option.*	*Expanding pedestrian, bicycle, and transit infrastructure to serve everyone's destinations is the best way to provide equitable transportation. Cars are expensive to purchase and maintain; living without one should be a feasible option.*	*More education on existing options, maybe a more consistent booth at the farmers market and/or articles in the paper and making it clear where to flag needs or provide suggestions. Community Facebook groups in the area (and Nextdoor) seem fairly active so a social media education campaign could help spread the word more than just an add in the Auburn reporter (which by the way was misleading ad. I thought it was for city wide feedback but all these questions are transportation specific).*
3. Do you have suggestions on how we should prioritize limited funding for the wide range of transportation needs throughout the City?	*I think non-motorized projects should be prioritized over most projects that serve private cars. It's cheaper to add new bike lanes than it is to add new car lanes. And if we can get enough people out of their cars, we won't even need to expand road capacity!*	*All road repaving effort must add infrastructure for unrepresented road users like bicycles. Per a comprehensive plan for a connected network. Change zoning to create 15 minute neighborhoods.*	
4. Do you have any other comments about transportation in Auburn?		*All road repaving effort must add infrastructure for unrepresented road users like bicycles. Per a comprehensive plan for a connected network. Change zoning to create 15 minute neighborhoods.*	

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Active Transportation (Non-motorized, Walking or Biking) General Traffic Issues Safety

COMMENTS ON THE INTERACTIVE MAP

COMMENT	CATEGORY	PIN/LOCATION
Perhaps a traffic light at A St SE & 21st St SE? This seems like a fairly busy intersection and I see a lot of people making somewhat dangerous turns.		A St SE & 21st St SE
Southbound C Street SW can get very congested at Ellingson Road during peak hours. Maybe consider adding an additional southbound left turn lane. Though, due to capacity constraints, this may require careful coordination of the C Street and A Street signals.		C St SE & Ellingson Rd
Consider bike lanes on Evergreen Way SE! The road lanes are too narrow to fit a bike and car simultaneously, and the sidewalk is too narrow to comfortably fit a bike and pedestrian simultaneously. I used to bike on this road frequently as part of my commute to school, and this caused problems for me.		Evergreen Way SE
On Kersey Way SE between Stuck River Dr and 50th St SE, there is a mismatch between the design speed of the road and the posted speed limit. Most of the vehicles on the road travel significantly faster than the posted speed limit of 35 mph, because the geometry and environment of the road puts the comfortable driving speed much higher. This should be fixed by either raising the speed limit to reflect the actual speed of traffic, or by adding traffic calming measures to make drivers slow down.		Kersey Way SE
The portion of Kersey Way SE between 50th St SE and the White River currently lacks non-motorized access. There should be a path for pedestrians and cyclists running parallel to this road on its west side. As someone who lives near 50th St, this would make it much more convenient for me to bike to school or downtown.		Kersey Way SE
The sidewalks are poor quality and in some places overgrown. Makes it difficult for anyone handicapper, strollers etc. to get around. There are several elderly residents on this road so would be nice to see some meaningful repair work done, not some more griding that literally did nothing to improve conditions. The street was skipped over for paving as part of the larger paving project in the area, which made sense but the sidewalks are a big miss for the area and promoting walkability.		L St SE between E Main St & 2nd St SE

 Active Transportation (Non-motorized, Walking or Biking)

 General Traffic Issues

 Safety

COMMENTS ON THE INTERACTIVE MAP

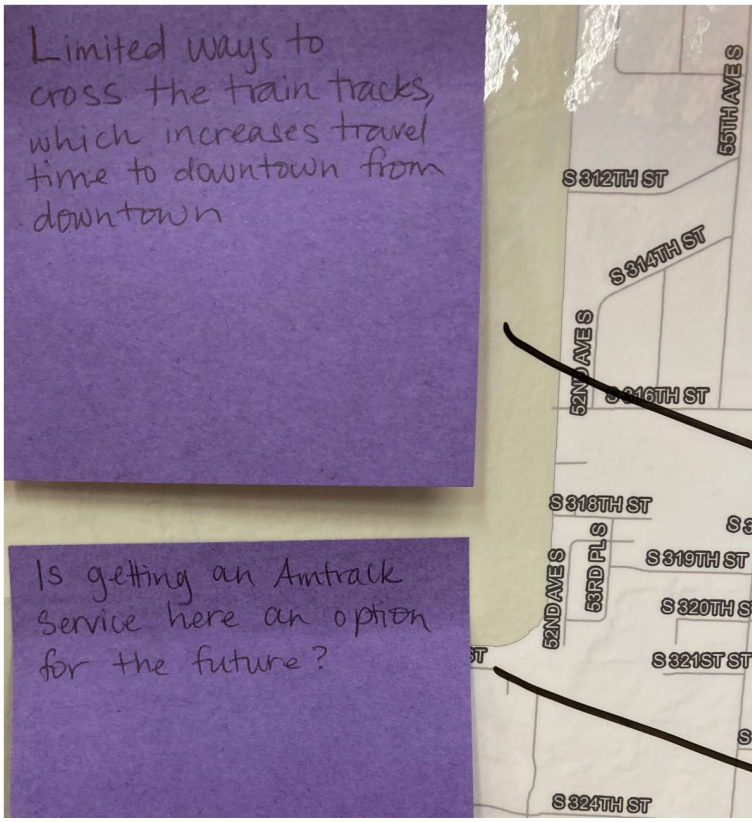
COMMENT	CATEGORY	PIN/LOCATION
Everyday I cross this intersection; everyday drivers fail to yield to pedestrians. Particularly drivers waiting to turn left ignore children AND adults in the crosswalks. Drivers even do this with the crossing guard waiving their flag! Several changes would make this intersection safer. Time the light to treat pedestrians with respect. Give us the time to cross the street without fear of drivers by keeping all lights red and making right turn on red illegal and left turn only on green arrow. For human behavior it seems best to make this 24 hour policy instead of only before and after school hours. That would be a big improvement without much expense. What is really appropriate for a pedestrian area like this is a traffic circle with raised crosswalks to return the right-of-way to pedestrian and bicycle modes.		Lakeland Hills Way SE & Evergreen Way SE
Because of high volumes of vehicular and pedestrian traffic, it may be wise to consider prohibiting right turns on red at the Lake Tapps Pkwy/Lakeland Hills Way intersection to improve safety.		Lakeland Hills Way SE & Lake Tapps Pkway E
The all-way stop at 29th St SE and M St SE can sometimes get congested or confusing. Maybe consider installing a roundabout instead, to improve safety and traffic flow. I'm no traffic engineer, but traffic patterns seem to be well-suited for a roundabout.		M St SE & 29th St SE
Maybe replace the all-way stop at 37th St SE and M St SE with a roundabout. Most people are making the same turn; right onto westbound 37th, or left onto northbound M. A roundabout would allow both of these movements to occur simultaneously without everyone having to stop.		M St SE & 37th St SE
The intersection of Sumner-Tapps Hwy E and 16th St E seems like a good place for a roundabout. From what I can tell, the traffic patterns here are more sporadic, making it a good fit for a roundabout to improve traffic flow and safety. Though, I understand that this intersection probably isn't a high priority for the city.		*Sumner Tapps Hwy E & 16th St E*

Comprehensive Plan Open House

Organized by the Community Development Department, this event was intended to inform the community about the update to the City's Comprehensive Plan, on April 25, 2023 from 4 pm to 7 pm, at Washington Elementary School. Transportation Staff was present to share information and engage with attendees on the Comprehensive Transportation Plan, which is the Transportation Element of the Comprehensive Plan.

Figure 17. Open House Photos







Other Events

Staff hosted a celebration station on **Bike Everywhere Day**, on the Interurban Trail at the West Main Street entrance to encourage cyclist and active transportation in Auburn, as an alternative to driving, as part of the CTR / TDM work. At the same time, staff took advantage of this event to also engage with cyclists on the plan update and the survey.

Staff displayed information at the **Kids' Day** event on June 23, 2023, to let the community know about the plan, and share information about the survey.

Staff reserved a booth and engaged with the community at the **Auburn Farmer's Market** on July 23, 2023, from 10 am to 3 pm.

Staff reserved a booth and engaged with the community at the **Church of Nazarene**, who was hosting a resource fair for families with free backpacks and school supplies in partnership with the Auburn Kiwanis on August 5, 2023, from 11 am to 2 pm.

Figure 18. Other Outreach Event Photos

Bike Everywhere Day



Farmer's Market



Kids' Day



Church of Nazarene Kiwanis Event





Public Comments from Outreach Events

Comments collected at all of our public outreach events are summarized in the table below and categorized by type:

Pedestrian Bicycle Transit Safety Parks

COMMENT	CONTEXT/ CLARIFICATION	COMMENT TYPE
Open House (April 5, 2023)		
1. *Dedicated and protected bike lanes needed. It's hard to feel safe if the bike lanes are not protected, as there are A LOT of distracted and bad drivers.*	*Comment was Auburn in general, not related to one specific location.*	Bicycle
2. *Need street lights, especially brighter LED lights as it's hard to see people at night.*	*Comment referring to neighborhood downtown, to the west of the BNSF tracks, south of Main St.*	Safety
3. *Is getting an Amtrak service an option for the future?*		Transit
4. *Limited ways to cross the train tracks, which increases travel time to downtown from downtown*	*Referring the access from the west side of the tracks to the core downtown area.*	Transit
5. *Need to improve safety and the perception of safety downtown.*		Safety
6. *Need to better enforce traffic laws and improve bike and pedestrian visibility at intersections downtown.*		Safety
7. *The 4-way stop by Zola's (Main St /D St) lacks compliance and there is a concern about pedestrian safety when crossing.*		Safety
8. *Bus shelters are not welcoming. We need shelters and seating to encourage riders, and need to address safety at bus stops, such as transient camps and unwanted activity taking place in bus shelters.*		Transit
9. *The interurban trail is not welcoming anymore; there is trash and homeless camps*		Pedestrian Bicycle
10. *There is lots of trash downtown - garbage bins were removed and people don't have places to throw away trash, so it's all over the sidewalks. This makes the sidewalk less appealing and less comfortable to walk downtown.*		Pedestrian
11. *Bathrooms are closed in downtown parks. It is not equitable when other parks out of downtown have access to bathrooms, but not downtown residents and families.*		Parks

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Pedestrian Bicycle Transit Safety Parks

COMMENT	CONTEXT/ CLARIFICATION	COMMENT TYPE
Bike Day (May 19, 2023)		
1. *The Interurban trail needs to be repaved.*		Pedestrian, Bicycle
2. *Accessing the Interurban Trail from the grocery Outlet area is difficult.*		Pedestrian, Bicycle
3. *Suggestion to replicate event from Seattle, where 8 miles of Lake Washington Boulevard are closed to traffic on Sundays for bicycles to ride. Something like this would be great in Auburn.*		Bicycle
4. *Corner radius in ADA compliant facilities should also accommodate bike turning radius, as sharp corners are challenging for bikes*		Bicycle
5. *Streets need to be bicycle friendly in general. Bike lanes with RPMs, rumble strips, or delineators would make it much more comfortable for cyclists. Solid curb is not ideal, however, as it presents a challenge to get out of the bike lane.*		Bicycle
6. *Bike lanes need to be cleaned regularly, and also plowed when there is snow.*		Bicycle
7. *Suggestion to extend the Interurban trail to Tacoma.*		Bicycle
8. *Auburn needs more protected bike lanes along large or busy roads.*		Bicycle
9. *Suggestion to look at Denver's bike network - they are a great model with a good bike network that connects Denver to any surrounding suburbs. The network is continuous, comfortable, and safe.*		Bicycle
10. *It would be great to connect the Green River Trail to the Interurban Trail.*		Bicycle

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Bike Day



Pedestrian Bicycle Transit Safety Parks

COMMENT	CONTEXT/ CLARIFICATION	COMMENT TYPE
Bike Everywhere Day Celebration Station (May 17, 2024)		
1. *There needs to be a connection between the Interurban Trail and the Sumner Link Trail.*		Pedestrian, Bicycle
2. *The trail condition on the Interurban Trail needs improvements, particularly the southern portion of the Interurban.*	*Comment is not specific to the portion of the Interurban in Auburn, but also pertains to portions of the trail outside of Auburn*	Bicycle
3. *The pavement quality of the Interurban Trail is poor, particularly from W Main St to 15th St SW*		Bicycle
4. *There should be restroom facilities on the Interurban Trail.*		Pedestrian, Bicycle
5. *There needs to be a better bicycle connection between Auburn and Federal Way*		Bicycle
6. *There needs to be better pedestrian facilities on W Valley Hwy*		Pedestrian
7. *There is no bus connection between W Valley Hwy and Auburn Station. People who work along W Valley Hwy have to walk to Auburn Station to get the train.*		Transit
8. *There should be water fountains along the Interurban Trail*		Pedestrian, Bicycle
9. *Make sure there are traffic calming features and RRFBs at trail crossings*		Bicycle
Senior Center Tabling (May 21, 2024)		
1. *There is a safety concern for pedestrians when walking under Hwy 18; there are many homeless people there making it feel unsafe.*		Pedestrian, Safety
2. *During the winter, there is often ice near the bus stop by the downtown Safeway. Please make sure that ice is clear near bus stops.*		Transit, Safety
3. *There is no transit access to Mary Olsen Farm; would like a bus route that goes there.*		Transit
4. *Drivers often don't see pedestrians during blinking yellow left turn signals.*		Pedestrian, Safety
5. *I generally have a good pedestrian experience walking around Auburn in terms of sidewalks and ramps.*		Pedestrian

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Pedestrian Bicycle Transit Safety Parks

COMMENT	CONTEXT/ CLARIFICATION	COMMENT TYPE
Farmer's Market (July 23, 2023)		
1. *Need easier / more affordable way to get to airport (SeaTac).*		Transit
2. *Parking garage for Sounder Train gets full early, and it's difficult to find parking to ride the train, unless arriving very early. There is no alternative parking available.*		Safety
Church of Nazarene One Community Kiwanis Event (August 5, 2023)		
1. *It is difficult for elderly residents to get around when they have mobility challenges.*		Safety
2. *Need to improve safety for kids to get to and from schools, parks, and around the neighborhood.*		Pedestrian, Bicycle
3. *The Government should not tell people what to do and let people chose to drive if that is what they want.*	*Comment related to the question "how to encourage people to walk, bike, and use transit."*	Pedestrian, Bicycle
4. *The City needs to install more roundabouts, and replace traffic signals with roundabouts.*		Safety

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Pedestrian Bicycle Transit Safety Parks

COMMENT	CONTEXT/ CLARIFICATION	COMMENT TYPE	LOCATION
OMS Requests (Comments are Summarized)			
1. *At the intersection of M St SE & 21st St SE, there are concerns about speeding and stop sign compliance. Multiple residents have complained about crashes resulting in both injuries and property damage. They've also voiced concern about this due to it's proximity to schools.*	*We have received 13 requests for this intersection: R41232, R41186, R39846, R39650, R39529, R39519, R39511, R39398, R39262, R38041, R37045. R36674, R34364*	Safety	M St SE & 21st St SE
2. *At the intersection of 112th Ave SE and SE 284th St, there have been requests about speeding and a request for a roundabout at this location to help with pedestrian safety concerns.*	*R399390*	Safety	112th Ave SE & SE 284th
3. *Stop compliance concern at W St NW & Terrace Dr/S 316th St*	*R39982*	Safety	W St NW & Terrace Dr/S 316th St
4. *Concern about speeding and the left turn at 124th Ave SE & SE 284th St. Requests a street light at this location.*	*R40588*	Safety	124th Ave SE & SE 284th St
5. *Concern about the road condition on 37th St NW between I St NE and the Interurban Trail. Would like the condition of the road improved for bicycles.*	*R41651*	Bicycle	37th St NW
6. *Concern about pedestrian safety at the intersection of SE 304th St and 116th Ave SE.*	*R42770*	Pedestrian, Safety	SE 304th St & 116th Ave SE
7. *Would like sidewalk along SE 304th St between 112th Ave SE and 116th Ave SE.*	*R42772*	Pedestrian, Safety	SE 304th St between 112th Ave SE & 116th Ave SE
8. *Concern about safety on Lea Hill Rd between 104th Ave SE and 112th Ave SE. Requests additional safety features, such as street lights, turtles, warning signs, etc.*	*R42796*	Safety	Lea Hill Rd between 104th Ave SE and 112th Ave SE
9. *Concern about safety at the AWS & SR-18 interchange. Reports that many drivers wait too long to get into the left turn lanes, stopping abruptly in the through lanes and cutting in front of other drivers.*	*R43047*	Safety	AWS & Sr-18 Interchange

(Continued on next page)

Pedestrian Bicycle Transit Safety Parks

COMMENT	CONTEXT/ CLARIFICATION	COMMENT TYPE	LOCATION
Emails and Other Feedback (Comments are Summarized)			
1. *When prioritizing bike facility projects, instead of focusing only on feeding into transit and larger trails, the City should also look at destinations within the city and how cyclists get to those destinations.*		Bicycle	General
2. *A St SE should have bike lanes.*		Bicycle	A St SE
3. *M St SE should have its bike lane extended all the way up to Les Gove.*		Bicycle	M St SE
4. *37th St SE should have a bike lane, to complete a grid of bike lanes to make biking feasible in south Auburn.*		Bicycle	37th St SE
5. *Would like bike lanes on Auburn Way, both North and South.*		Bicycle	AWN & AWS
6. *Concerned about the lack of bike lanes on Evergreen Way SE between Lakeland Hills Way & Kersey.*		Bicycle	Evergreen Way SE
7. *Concern about speeding and pedestrian safety on crosswalks crossing Evergreen Way.*		Pedestrian, Safety	Evergreen Way SE
8. *Concern about speeding on 21st St SE near Shaughnessy Park*		Safety	21st St SE east of Hemlock
9. *Would like sidewalk or wider shoulder on 53rd St SE east of Kersey for better pedestrian and bicycle access.*		Pedestrian, Bicycle, Safety	53rd St SE east of Kersey
10. *Would like speed cushions on 22nd St SE between M St SE and R St SE. Would like street to be safe enough for children to play in.*		Safety	22nd St SE between M St SE & R St SE
11. *Does not think the R St widening project will have any benefit*		General	R St SE
12. *Does not think the R St SE/21st St SE roundabout will have any benefit*		General	R St SE & 21st St SE

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Pedestrian Bicycle Transit Safety Parks

	COMMENT	CONTEXT/ CLARIFICATION	COMMENT TYPE	LOCATION
13.	*The AWS/17th St SE/M St SE intersection improvements project will create inconveniences for accessing AWS and M St NE from her neighborhood*		Pedestrian, Safety	AWS/17th St SE/M St SE
14.	*Would like sidewalk on S 298th/65th Ave S/ S292nd, which connects 64th Ave S to W Valley Hwy.*		Pedestrian, Safety	S 298th St/65th Ave S/S 292nd St
15.	*Would like to see a speed enforcement camera on AWS at the bottom of the hill northwest of the casino.*		Safety	AWS
16.	*Would like the White River Trail to connect to the right bank of the White River in the Pacific Right Bank Flood Protection Project, crossing A St SE and the BNSF tracks.*		Bicycle	White River Trail
17.	*There is a lack of bicycle crossings across AWS between D St SE and M St SE.*		Bicycle	AWS
18.	*There is a lack of bicycle facilities on I St NE between 40th St NE and 45th St NE*		Bicycle	I St NE between 40th St NE & 45th St NE
19.	*Would like a signalized (RRFB) crossing of 8th St NE at Pike St NE/Henry St NE*		Bicycle	8th St NE & Pike St NE/ Henry St NE
20.	*A list of locations where signals do not detect bicycles was sent to the City.*		Bicycle	General
21.	*Concern about speeding on Evergreen Way SE near Lakeland Hills Elementary.*		Safety	Evergreen Way SE near Lakeland Hills Elementary
22.	*Concern about speeding and possible sight distance issues on Evergreen Way SE, particularly near 56th St SE and Bennett Ave SE.*		Safety	Evergreen Way SE

All Project Ratings

PROJECT/ COMP#	PROJECT NAME	AVERAGE RATING	NUMBER OF RATINGS	NOTES
	N/A (General)	4.00	1	
20	C St NW & 3rd St NW Intersection Improvements	5.00	1	
15	15th St NW & M St NW Access Management	4.00	1	
3	I St NE & 37th St NE Intersection Improvements			
17	S 316th S & 51st Ave S Intersection Improvements	4.00	1	
6	SE 304th St & 112th Ave SE Intersection Improvements	5.00	1	
7	SE 304th St & 118th Ave SE Intersection Improvements	3.00	1	
26	A St SE & 12th St SE Intersection Improvements	4.50	2	
2	Auburn Way N & 42nd St NE Intersection Improvements			
1	Auburn Way N & 45th St NE Intersection Improvements			
5	I St NE & 30th St NE Intersection Improvements			
8	SE 304th St & 116th Ave SE Intersection Improvements			
18	S 321st St & 44th Ave S/46th Pl S Intersection Improvements			
27	A St SE & 21st St SE Intersection Improvements	4.00	1	
16	S 316th St & 56th Ave S Intersection Improvements	3.00	1	
28	Lakeland Hills Way SE & Oravetz Rd SE Corridor and Intersection Improvements			
12	Pike St NE & 8th St NE Access Management			
22	Auburn Way S, M St SE, 17th St SE Intersection Improvements	1.90	21	*Ratings where either 4/5 or 1/2. No 3s*
23	M St SE & 12th St SE Intersection Improvements	4.00	1	
9	Lea Hill Rd Corridor Improvements (104th Ave SE - 112th Ave SE)			

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PROJECT/ COMP#	PROJECT NAME	AVERAGE RATING	NUMBER OF RATINGS	NOTES
10	Auburn Way S & 6th St SE Improvements (SR 18/ SR 164 Interchange)	5.00	1	
19	A St NW & 3rd St NW Improvements	5.00	1	
14	10th St NE Improvements (B St NW - Auburn Way N)	5.00	1	
11	116th Ave SE & SE 320th St Intersection Improvements			
9	Lea Hill Rd Corridor Improvements (SE 312th St from 112th Ave SE to 124th Ave SE)	5.00	1	
24	M St SE & 29th St SE Intersection Improvements			
21	M St SE By-Pass Rd (M St SE By-Pass & SE Auburn-Black Diamond Rd)	2.77	36	*14 prefer Option A; 24 prefer Option B; 5 don't like either option*
21	M St SE By-Pass Rd (M St SE By-Pass & SE Auburn-Black Diamond Rd)	3.54	35	*14 prefer Option A; 24 prefer Option B; 5 don't like either option*
3	I St Improvements (37th St NE - 45th St NE)	5.00	1	
13	8th St NE Improvements Project (Auburn Way N - Harvey Rd/M St NE)	5.00	1	
25	A St SE Projects	4.63	8	

AWS, 17th St SE, M St SE Project Ratings

RATING	COMMENT
1	*If you filter southbound M St SE traffic to 17th St SE, it will impact the residential area between 17th St SE and 21st St SE next to the middle school and overflow 21st St SE traffic. The right turn a car has to make from M St SE onto 17th St SE is what slows traffic going through the lights! There needs to be a light at M St SE and 21st St SE. Also, people going north from this end of town, who normally take M St SE will have to take R St SE and you also need a traffic light at R St SE and 21st St SE to handle that. During the evening rush hour, it's very difficult to get on R St going north to wind around, get on Auburn Way S for 1/2 a block and try to turn north onto M St SE. Come up with a better plan to not choke out R St SE, because this one you present will become an instant nightmare in a very wide area of southeast Auburn. A freeway exist running up to the Muckleshoot area of Auburn Way S, from the M St SE area under Hwy 18 would be a good spot for an exit! That would relieve traffic coming down M St SE to get to Auburn Way S and beyond.*
n/a	*The cul-de-sac will promote tent camping as there are no houses like a normal cul-de-sac. Let me just tent behind the Walgreens. And the antique store that already has a lot of theft will become a bigger target.*
n/a	*I have a lot of concerns. Will there be any public meetings or can I come down to see a whole plan? Do not block off and make a cul-de-sac of M St SE between 21st and 17th. All your improvements are pushing speeding traffic down neighborhood streets with no alternatives. If you close off M St SE between 21st and 17th, where is all the traffic supposed to go? Also, people in my area will now be forced into more traffic since there will be fewer options to get to the other side of town. Bad idea!*
5	*I am excited to reduce traffic in the residential area on and around M St SE. We have new schools in the area and a lot of kids walk to school. I live on the corner of M St SE and 21st St SE and I cannot count the number of accidents that have occurred and the number of near misses at this 4-way stop. It is a nonstop flow of traffic.*
5	*I live on the corner of M St SE and 21st St SE. Day and night, I hear cars spinning out and loud music. Oftentimes, people blow through the stop sign and cause accidents, one of which damaged our front fence. I believe the cul-de-sac will be the most beneficial for my family and everyone in this area! Thank you for this proposal, and I hope they all pass!*
1	*How am I supposed to get home when I live further south on M St SE?*
1	*I live on 23rd st SE. It is almost impossible to get out on R St SE to get to Auburn Way S in the morning, so I go to M St SE to get across Auburn Way S to get to work on the north end of town. This is going to force me and countless others to go through the school zones during the start of school and increase our time and fuel costs. Once in a while I will go to A St SE and the amount of inconsiderate parents dropping their kids off in the middle of the road is insane, all so they don't have to pull off the road and fight their way back in. My opinion is this will end in disaster.*
4	*I appreciate the multiple options provided. The lane being utilized for multiple left/right options makes the most sense to me.*
4	*Not a fan of the cul-de-sac on M St SE south of 17th St SE. It would cut off the direct access to Auburn Way S and M St SE from 21st St SE.*

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RATING	COMMENT
1	*I know it will make no difference since you will go through with these plans, but not having access to crossing Auburn Way S from M St SE is really an inconvenience to the hundred if not thousands of people that use it now. Change can really stink and this one is not helping.*
1	*Northbound coming from Lakeland, Lake Tapps, and Bonney Lake will only have R St SE/17th St SE to get on Auburn Way S instead of also having the option of M St SE. 17th St SE already backs up for blocks to get onto Auburn Way S. There will need to be a light at the bottom of Auburn Way S at 17th St SE for traffic from 17th St SE to get onto Auburn Way S. Also, how will fire trucks get through from the fire station onto Auburn Way S if 17th St SE is backed up? For southbound traffic, there needs to be a light at Howard Rd onto R St SE, as this already backs up onto Auburn Way S. Additionally, the pedestrian crossing at M St SE (from the church to Starbucks) is very dangerous. Needs to be "no vehicle turn on red" from Auburn Way S onto M St SE. Also, making M St SE a dead end is a horrible idea - there are only 3 north-south roads through Auburn.*
1	*No northbound traffic from M St SE to westbound AWS is a huge mistake. Putting in a cul-de-sac on M St SE is a nightmare waiting to happen. I suggest you put in a light at the intersection just south of the fire station on R St SE for everyone trying to make a left turn. I'd rather not ever shop in that area of Auburn since the access is so limited to go west on AWS. Also, this intersection was remade to its current flow to reduce accidents from cars attempting to cross over AWS at 17th St SE. Dead ending M St SE is a huge mistake. I'd rather see a roundabout for better traffic flow.*
4	*The 12th St SE signal with a u-turn? This isn't clear to me. Will there be a crosswalk at 12th? Will 12th ever go through to this land use that is being discussed at the miles sand pit?*
1	*Auburn Way S traffic up toward Muckleshoot and Enumclaw has gotten out of hand. The amount of incidents, traffic violations, and growing traffic is unbearable. Turning M St SE into a dead end doesn't seem like the correct answer. It seems like a cost effective, short sighted solution to a big problem.*
1	*By stopping northbound traffic from M St SE onto Auburn Way S, you did not provide a safe way for residents to access Auburn Way S from the streets west of Game Farm Park. This forces traffic onto R St SE, which means all those streets must make left turns and then go behind the apartments on Howard Rd to merge onto Auburn Way S without a traffic light. Or they will be forces to make a left turn at the four-way stop on 21st and then back track in order to turn onto 17th St SE. While this plan may move more volume, it totally ignores the current residents who live in this community.*
1	*This is not an improvement for traffic at all. M St SE is a major through road to reach the south end of town for families.*

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RATING	COMMENT
1	*This proposal, in my opinion, is not favorable to the citizens of Auburn whatsoever. I am a router for the Auburn School District and design the bus routes that travel these roads. This proposal would add significant costs, delays, and additional traffic to the intersection of Auburn Way S & M St SE. For our buses transporting students between all north end and south end schools, this would add significant delays where we wouldn't be able to make it to schools on time. Our bus fleet travels north and south on M St SE as the quickest way to access schools in north Auburn, mid-town, Lea Hill, and all the schools on the south end of Auburn. Eliminating access on M St SE from Auburn Way S to 21st St SE will cause major delays. Personally, I can't really believe it is being considered. We have bus stops at EJ Square (1210 M St SE) and if the eastbound left hand turn lane on Auburn Way S is eliminated, we will not be able to access this development. This is not even counting all the buses we have doing field trips that use that road to and from all the south and north schools. We have at least 30 routes that turn off Auburn Way S to 17th St SE. We have 23 routes that use R St SE and 17th St SE. We already have 22 buses that go from H St SE to 17th St SE to G St SE to 12th St SE to Auburn Way S. If you close M St SE, that will cause over 100 buses to use the neighborhood streets and we already get complaints when we use some of them.*
1	*This will make traveling north from our home on 25th St SE next to Pioneer Elementary very difficult. K St SE is already crowded in the morning. People park when dropping off kids and it's unsafe. This appears to make K St SE the only way out of our neighborhood. This plan will make traveling out of and in to south Auburn more congested.*
1	*The blocking off of M St SE from 21st St SE to 17th St SE is totally unacceptable! Having to use the neighborhood side streets to reach Olympic Middle School, Pioneer Elementary, or 17th St Plaza Retirement Center is not acceptable for emergency teams or school buses. Has anyone asked the police/fire departments about having to respond when more than one unit has to go there? The traffic on R St SE/17th St SE is already a major back up at the AM rush hour and so is the PM traffic on the road in front of the shopping center (Walgreens) connecting to R St SE. You think their deliver trucks can square the blocks through the 21st St SE neighborhoods? That short expanse of M St SE from 17th St SE to 21st St SE is a relief for the back ups at R St SE in the am/pm and so does the right hand turn of Auburn Way S to 17th St SE. Having them available decreases the response time for additional units coming into the SE Auburn area. This plan is a safety risk for the 21st St SE/R St SE/17th St SE/29th St SE residents.*
1	*The dead-end of M St SE does not make sense. It will cause increased traffic for nearby residential areas and a school zone. I do not understand the rationale. A better solution would involve adjusting the traffic light sequencing. No explanations for the changes have been presented. The communities south of 17th St SE will be negatively impacted. More thought needs to be given to the proposal, with better reasons given.*

A St SE Projects

RATING	COMMENT
5	*I believe that such improvements are needed on A St SE.*
4	*Yes, I think they need to add a road under the railroad tracks. Ellingson Rd is impossible at 3:00pm to 6:00pm in the afternoon. We cannot get in or out of our neighborhood. All of the traffic going to Lakeland Hills blocks us from leaving or coming home. So many people use that intersection. They don't follow the traffic light rules and block the intersection. It is definitely overrun with excessive traffic. There needs to be a separate road to cross over to A St SE.*
4	*I like it but we need serious help with the Skinner Rd and Ellingson Rd intersection. The traffic is backed up at the light going eastbound and it blocks the intersection. We have to drive around cars to continue on Ellingson northbound through the very short green light. It's been dangerous and dreadful whenever I leave my house on 2nd Ave NE during rush hours.*
4	*All around, this is a pretty good plan with sensible safety improvements. A few notes: 1) the illustration does not depict any bike lanes/paths along A St SE. This project should include quality bicycle facilities along the corridor; they would fill a crucial gap in the bike network and would make the proposed tunnel more useful. 2) It's unclear from the illustration if the existing median on Ellingson Rd will remain. If ti will, it may be worth considering allowing u-turns from eastbound Ellingson so eastbound traffic can access the shopping center with the Dominos and Starbucks. 3) For pedestrian safety, I'd recommend keeping the existing no turn on red restriction. 4) The sidewalks don't look particularly safe or pleasant to walk on since they're right up against the travel lanes. Consider adding some extra space between the road and sidewalks; this would have the additional benefit of not detouring pedestrians as much around the u-turn pockets.*

M Street Bypass Project Ratings

OPTION A RATING	OPTION B RATING	PREFERRED OPTION	COMMENT
3	5	B	*I live on 5th St NE and initially gravitated toward option A, but then as I read through the logic of Option B, I was swayed. My biggest complaint about my neighborhood is that it's not very walkable because it is cut off by several busy streets and people speed up and down R St. Not to mention I find the train horns to be a mild nuisance. I would love to live in a quieter, more walkable neighborhood and taking two extra minutes to drive a couple blocks further when I need to use that highway exit is most certainly worth that. Let's make this a more walkable, more connected city!*
n/a	n/a	B	*Option B looks best. It might move some traffic from residential streets to minor arterials. Also removes an at-grade railroad crossing. There are alternative routes to get access to Hwy 18, so no problem there. Please consider a roundabout instead of a new signal at the new M St SE intersection.*
3	5	B	*I live near there and the trains not sounding their horns sounds like a great idea to me.*
5	2	A	*Concern is losing access to Hwy 18 with Option B for us who take this everyday instead of Lea Hill or downtown Auburn. I vote for Option A because it is an additive with less negative due to opening up driving opportunities, improving train safety, and benefiting the community around it. 100% for train safety as we do not want a derailment ever.*
1	5	B	*Currently, the traffic along R St SE to Black Diamond Rd encourages some drivers to rev their engines, speed, and make a lot of noise, all of which is detrimental to the residents and community that neighbors R St SE. Option B would eliminate this nuisance and improve the quality of life for everyone along R St SE and neighboring streets. Currently, it is risky to walk along R St SE as a pedestrian, out for a stroll. Option B would make the walk far more pleasant and also better for bicycles. Bicycle traffic currently is dangerous and hazardous for both cyclists and motorists.*
1	5	B	*I've lived in this neighborhood for almost 30 years and experienced a decline in quality of life due to increased traffic on R St SE due to noise and pollution. The train hons continue to be a nuisance, especially at night. The closing of R St SE (Option B) would be a blessing to the neighborhood, restoring some peace and tranquility, preserving the residential character of the area. I fail to see the practical feasibility of Option A. R St south of E Main St is a narrow two-lane street, no sidewalks, minimal shoulder, lined with homes. The front yards of these homes are shallow. There is no space to widen the road. A further increase in traffic, as projected, would be disastrous for the residents of this area. Traffic delays would still occur at the redesigned railway crossing. I don't know anyone who would feel inconvenienced by driving a few extra blocks to reach Auburn Black Diamond Rd. Funneling traffic to M St SE makes more sense as M St SE is well-established as a major arterial.*
1	4	B	*The statement says we currently enjoy easy access to Hwy 18. It is much easier to go up over Lea Hill and enter the highway there. I would rather do that than to continue to endure the extra load of trucks that Option A would bring to our neighborhood.*
5	n/a	A	*I think it's critical that NE Auburn maintains access through R St.*
n/a	5	B	*We don't need more traffic on R St NE. This would make the 8th St NE and R St NE intersection more of a mess and the 8th St NE road over the bridge to Lea Hill more of a bottle neck.*

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OPTION A RATING	OPTION B RATING	PREFERRED OPTION	COMMENT
n/a	n/a	B	*I prefer Option B because Option A would give access to more traffic at high speeds through residential areas. We already have this issue when Hwy 18 is blocked due to accidents.*
5	1	A	*I live outside the city limits on Auburn Black Diamond Rd and use the R St connection to get into Auburn when Hwy 18 is backed up or block and have used it for years! Closing off the R St connection would have a huge negative impact for those of us who live out that way! Having the M St connection in addition to R St would absolutely help give options to easily commute to both north and south Auburn.*
1	3	Neither	*With Option A, it is imaginable traffic flow eventually increasing along R St to make those along it and surrounding areas uncomfortable. The little connector of 4th St SE (from to R) may suffer similarly. Residential streets are not meant as highways. It's better to keep traffic flow on streets already undertaking heavier flow, such as M St. This makes Option B preferable. Yet, Option B's closing older access from 4th to Auburn Black Diamond and train crossing seems overkill. Local access will be lost. Not everyone taking back roads is a distance commuter or looking for shortcuts. It is a mistake to assume so. As for the train horn, Auburn is a railroad town. Train hors are sounding all about. Residing in the very neighborhood of the intersection discussed, it strikes me that spending money on an "inconvenience" that will little effect pervasiveness is wasteful. I prefer a compromised Option B, one with 4th to Auburn Black Diamond and the train crossing remaining open.*
n/a	n/a	A	*My concern is the restriction access to Auburn Black Diamond Rd for neighbors. Being a resident of 4th St SE and T St SE, Auburn Black Diamond provides a quick and necessary route for our children to get to and from school at Lakeview Elementary, especially for emergencies. In addition to accessing recreational areas such as Flaming Geyser Park and community events, family, and friends.*
1	5	B	*I would much prefer to keep our neighborhood quiet and lose the convenient access to 18 than have trucks utilizing R St.*
1	5	B	*I am voting for keeping large volumes of truck traffic out of our neighborhoods. M St is a large street, which is much better suited to such traffic.*
n/a	n/a	Neither	*Option A puts a street in our yard! Option B cuts us off from Hwy 18. Option A, how many drivers are going to run the light? Or speed through our yard? How many more accidents are going to happen in our yard? Option B takes away our road to Hwy 18 or Flaming Geyser State Park. Option B also allows the trains to be longer and idle more next to the houses here. We the home owners have to live with the extra noise, pollution, danger of car crashing our yard, loss of property, and more vibrations. We do not want this! No Option A or B!*
n/a	n/a	Neither	*Neither option benefits the neighborhood. Both options harm the neighborhood that this construction is being planned around.*
1	5	B	*I do not think diverting traffic through a housing neighborhood is a best practices idea. As the old Miles Pit area is developed, this would increase. I dealt with the M St SE underpass project and the traffic that diverted through our neighborhood was obnoxious! Not only did they drive around road closed signs, many of them were speeding while driving through. I would not wish increased traffic through a neighborhood on anyone. We all know that with a new improved road, the speeding would increase and put the residents living in those areas at increased risk.*

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OPTION A RATING	OPTION B RATING	PREFERRED OPTION	COMMENT
n/a	n/a	Neither	*I'm not sure what traffic issue is being addressed. Congestion? Rush hour backup? Pollution and accidents? Train horn? Diverting traffic off of M St to push it back onto M St further south doesn't solve much; it only pushes issues further down the line. Adding a traffic signal to M St - this alone will cause more stoppage and congestion. Spending money to eliminate train horns is silly - Auburn is a train hub. Additionally, closing the railroad crossing eliminates local access, potentially increasing incidental traffic on M St. Pollution and accidents will certainly escalate along R St by using it as a diversion thoroughfare. It is easy to speculate, but it would be less so if your purpose was clearer. As it stands, the project seems to be solving a non-existent problem by using Auburn Black Diamond Rd as a catalyst to disregard an entire neighborhood. Dedicated money might be better spent directly connecting Hwy 18 to the top of SR 164 hill at Muckleshoot.*
n/a	n/a	Neither	*Both options hinder the local neighborhood. The planned route saves 2 minutes. Maybe at the cost of a loss of property, more accidents, more noise, and more pollution.*
n/a	1	Neither	*I've lived in this neighborhood for over 15 years. Current traffic volumes and conditions make this a dangerous area to add more vehicles. Current volumes are high enough that a train crossing during peak hours means cars back up and block driveway access all the way down to E Main St. The speed limit is only 25, but folks drive too fast and take out street signs, trees, and last summer even a telephone pole. Most driveways are back in/back out driveways all along R St, which is not great. Option B is not too great either. I can't see why we would want to limit the neighborhood's access to Hwy 18. Aren't the in/off ramps backed up enough during peak hours? I see the intersection at AWS blocked by traffic for the on ramps pretty frequently. Wouldn't decreasing access to 18 make this worse?*
1	5	B	*We do not want more traffic, especially truck traffic, on R St SE.*
1	5	B	*Extending R St to the M St bypass road would negatively impact the quality of life in the neighborhood. The area between M St and the river, and south of 8th St to the railroad tracks is completely residential. R St is a residential street. South of E Main St, it is a narrow two lanes, lined with homes, without sidewalks or shoulders to speak of. There doesn't appear to be much room for widening the street. As such, it is unsuitable for the anticipated increased traffic. The proposed "improvement" to the rail crossing would not eliminate traffic delays as it will remain an at-grade crossing. Current traffic level is a nuisance, as are the frequent train whistles. Most of the traffic is from people outside the neighborhood passing through. This will increase dramatically if R St is extended. The benefits of closing R St - reduced traffic, no train horns - far outweigh the "drawback" of driving a few extra blocks to access Auburn Black Diamond Rd.*
1	5	B	*I am at 19 N St NE in Auburn, and have non-stop traffic down my street all day. My camera records cars every 30 seconds at peak traffic time. I have asked for speed bumps to match the adjacent road for 8 years. We have had two speed studies that show many speeders. I have even offered to pay for the speed bump between myself and the concerned neighbors that have put in many speed concerns on the See-Click-Fix app. Option B seems to be the only one that may lessen people cutting down my road to avoid the light on E Main and M St.*
3	4	B	*We like the reduced cut-through traffic and train whistle elimination of Option B, but a traffic study should be done for westbound E Main St between R St SE and M St first. As it is, we sometimes have difficulty going north and turning left/westbound off of N St SE onto E Main St because of westbound traffic, and Option B would divert more traffic off of R St onto E Main st that would have otherwise continued south on R St to get to Auburn Black Diamond Rd.*

Respondent Demographics

AGE	RACE (SELECT ALL THAT APPLY)	OTHER - RACE (SELECT ALL THAT APPLY)	DISABILITY	COUNTRY OF BIRTH	LANGUAGES SPOKEN AT HOME (SELECT ALL THAT APPLY)
64+	Caucasian		Yes	USA	English
43 to 63	Caucasian			USA	English
64+	Caucasian		No	USA	English
43 to 63	Other	North Africa-middle east	No	USA	Arabic, English
64+				USA	English
22 to 42	Hispanic or Latino, Caucasian		No	USA	English
22 to 42	Caucasian		No	USA	English
64+	Caucasian		No	USA	English
22 to 42	Black or African American, Caucasian		No	USA	English
22 to 42	Asian		No	USA	English
22 to 42	Prefer not to answer				English
64+					
43 to 63	Caucasian		No	USA	English

APPENDIX E

Roadway Classification Changes



IN THIS APPENDIX

New Street Classification Changes by Street Name

ROADWAY CLASSIFICATION CHANGES

STREET NAME	BEGIN	END	PREVIOUS CLASSIFICATION	NEW CLASSIFICATION
S 324th Street	49th Avenue S	51st Avenue S	Local	Collector
62nd Place S	S 300th Street	End	Residential Collector	Local
63rd Place S	S 301st Street	End	Residential Collector	Local
Frontage Road	S 277th Street	44th Street NW	Minor Arterial	Local Industrial
D Street NW	S 277th Street	44th Street NW	Minor Arterial	Local Industrial
D Street NW Extension	44th Street NW	37th Street NW	Planned Minor Arterial	Remove
44th Street NW	Frontage Road NW	End	Minor Arterial	Local Industrial
I Street NW	44th Street NW	37th Street NW	Local	Local Industrial
49th Street NW	B Street NW	Auburn Way N	Non-Residential Collector	Local Industrial
49th Street NE Extension	I Street NE	L Street NE	Non-Residential Collector	Collector
L Street NE	51st Street NE	S 277th Street	Non-Residential Collector	Collector
M Street NW	15th Street NW	Gate	Non-Residential Collector	Local Industrial
M Street NW	Gate	29th Street NW	Non-Residential Collector	(Pending ROW Vacation)
29th Street NW	M Street NW	End	Non-Residential Collector	Private
29th Street NW	West Valley Hwy	End	Local	Local Industrial
26th Street NW	West Valley Hwy	End	Local	Local Industrial
R Street NW	15th Street NW	14th Street NW	Local	Local Industrial
14th Street NW	R Street NW	End	Local	Local Industrial
Pike Street NW	15th Street NW	20th Street NW	Local	Local Industrial
R Street NW	20th Street NW	End	Local	Local Industrial

(Continued on next page)

STREET NAME	BEGIN	END	PREVIOUS CLASSIFICATION	NEW CLASSIFICATION
20th Street NW	R Street NW	West Valley Hwy	Local	Local Industrial
22nd Street NW	R Street NW	West Valley Hwy	Local	Local Industrial
Outlet Collection Ramp	15th Street SW	Outlet Collection Way	Principal Arterial	Local Industrial
Outlet Collection Way (west)	15th Street SW	End	Principal Arterial	Local Industrial
Market Street	15th Street SW	End	Principal Arterial	Local Industrial
Outlet Collection Way (east)	15th Street SW	End	Principal Arterial	Local Industrial
Industry Drive SW	Boundary Blvd	15th Street SW	Minor Arterial	Local Industrial
Perimeter Rd	15th Street SW	End	Non-Residential Collector	Private
Sumner-Tapps Hwy E	Lake Tapps Pkwy SE	City Limit	Principal Arterial	Minor Arterial
55th Street SE	Bridget Ave SE	End	Rustic Collector	Rustic Local
Bridget Ave SE	55th Street SE	53rd Street SE	Rustic Collector	Rustic Local
M Street SE Extension	37th Street SE	41st Street SE	Planned Residential Collector	N/A
28th Street SE	Riverwalk Drive	Forest Ridge Dr. SE	Local	Collector
M Street SE	Auburn Way S	29th Street SE	Minor Arterial	Collector
Hemlock Street SE	Auburn Way S	End	Residential Collector	Local
15th Street SW Extension	C Street SW	A Street SE	Planned Minor Arterial	Remove
F Street SE	4th Street SE	Auburn Way S	Non-Residential Collector	Collector
A Street SW	Main Street	4th Street SW	Non-Residential Collector	Minor Arterial
4th Street SW	A Street SW	S Division St	Non-Residential Collector	Minor Arterial
S Division Street	3rd Street SW	4th Street SW	Non-Residential Collector	Minor Arterial

(Continued on next page)

STREET NAME	BEGIN	END	PREVIOUS CLASSIFICATION	NEW CLASSIFICATION
C Street SW	SR 18 EB ramps	SR 18 WB ramps	Minor Arterial	Principal Arterial
2nd Street SE/SW	Auburn Way North	D Street SE	Non-Residential Collector	Collector
2nd Street SE/SW	A Street SW	Auburn Way North	Non-Residential Collector	Minor Arterial
1st Street SE/SW	A Street SW	A Street SE	Non-Residential Collector	Minor Arterial
G Street SW	W Main Street	3rd Street SW	Non-Residential Collector	Local Industrial
3nd Street SW	E Street SW	G Street SW	Non-Residential Collector	Local Industrial
Lund Road	W Main Street	4th Street SW	Local	Local Industrial
Western St	W Main Street	End	Local	Local Industrial
Clay Street NW	W Main Street	End	Local	Local Industrial
H Street NW	W Main Street	6th Street NW	Non-Residential Collector	Local Industrial
6th Street NW	H Street NW	C Street NW	Non-Residential Collector	Local Industrial
2nd Street NW	D Street NW	H Street NW	Local	Local Industrial
D Street NW	2nd Street NW	3rd Street NW	Local	Local Industrial
3rd Street NW	C Street NW	D Street NW	Local	Local Industrial
1st Street NE/NW	B Street NW	Auburn Way N	Non-Residential Collector	Local
B Street NW	W Main Street	1st Street NW	Non-Residential Collector	Local
4th Street NE	Auburn Way N	M Street NE	Non-Residential Collector	Collector
8th Street NE	Harvey Road/M Street NE	104th Street SE	Minor Arterial	Principal Arterial
D Street NE	15th Street NE	16th Street NE	Non-Residential Collector	Local Industrial

(Continued on next page)

STREET NAME	BEGIN	END	PREVIOUS CLASSIFICATION	NEW CLASSIFICATION
16th Street NE	D Street NE	E Street NE	Non-Residential Collector	Local Industrial
E Street NE	16th Street NE	22nd Street NE	Non-Residential Collector	Local Industrial
E Street NE	22nd Street NE	23rd Street NE	Local	Local Industrial
23rd Street NE	E Street NE	E Street NE	Local	Local Industrial
E Street NE	23rd Street NE	26th Street NE	Local	Local Industrial
26th Street NE	E Street NE	Auburn Way N	Local	Local Industrial
22nd Street NE	E Street NE	Auburn Way N	Non-Residential Collector	Local Industrial
22nd Street NE	Auburn Way N	I Street NE	Non-Residential Collector	Minor Arterial
Riverview Drive NE	M Street NE	22nd Street NE	Residential Collector	Local
22nd Street NE	Pike Street NE	Riverview Drive	Residential Collector	Local
30th Street NE	B Street NW	Auburn Way N	Non-Residential Collector	Minor Arterial
30th Street NE	Auburn Way N	I Street NE	Non-Residential Collector	Minor Arterial
C Street NE	30th Street NE	42nd Street NE	Non-Residential Collector	Local Industrial
42nd Street NW/NE	B Street NW	Auburn Way N	Local	Local Industrial
B Place NW	B Street NW	End	Local	Local Industrial
85th Avenue S	Auburn Way N	City Limit	Non-Residential Collector	Local
37th Street NE	Auburn Way N	I Street NE	Non-Residential Collector	Collector
Green River Road	100th Avenue SE	City Limit	Non-Residential Collector	Rustic Collector
Green River Road	100th Avenue SE	104th Avenue SE	Non-Residential Collector	Collector

(Continued on next page)

STREET NAME	BEGIN	END	PREVIOUS CLASSIFICATION	NEW CLASSIFICATION
105th Place SE	Lea Hill Road	107th Place SE	Non-Residential Collector	Collector
107th Place SE	105th Place SE	SE 320th Street	Non-Residential Collector	Collector
SE 320th Street	107th Place SE	112th Avenue SE	Non-Residential Collector	Collector
116th Avenue SE	SE 316th Street	SE 315th Street	Residential Collector	Local
112th Avenue SE	SE 304th Street	SE 281st Street	Minor Arterial	Collector
SE 281st Street	112th Avenue SE	108th Avenue SE	Minor Arterial	Collector
108th Avenue SE	SE 281st Street	City Limit	Minor Arterial	Collector
SE 304th Street	132nd Avenue SE	City Limit	Minor Arterial	Principal Arterial
SE 288th Street	132nd Avenue SE	End	Local	Collector
SE 286th Street	124th Avenue SE	End	N/A	Local
SE 284th Street Extension	124th Avenue SE	SE 288th Street	Planned Residential Collector	Removed

City of Auburn

Climate Element Comprehensive Plan Framework

Prepared by Cascadia Consulting Group, Inc.

SCJ ALLIANCE
CONSULTING SERVICES

CITY OF AUBURN WASHINGTON

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Climate Element Framework

PROJECT OVERVIEW

This Climate Element Framework serves as a foundation for City of Auburn staff to develop a Climate Element and recommends that additional effort be completed to engage key stakeholders and the community as goals and policies are finalized. Ultimately, the Climate Element will provide mitigation and resilience goals and policies to guide City planning efforts that will reduce greenhouse gas (GHG) emissions and build climate resilience for Auburn residents.

THE GROWTH MANAGEMENT ACT (CHAPTER 36.70A RCW) WAS AMENDED IN 2023 UNDER WASHINGTON HOUSE BILL 1181, REQUIRING CITIES AND COUNTIES TO INTEGRATE CLIMATE MITIGATION AND RESILIENCE POLICIES INTO COMPREHENSIVE PLAN UPDATES. TO MEET THE NEW REQUIREMENTS, THE WASHINGTON STATE DEPARTMENT OF COMMERCE RECOMMENDS JURISDICTIONS DEVELOP A CLIMATE ELEMENT THAT CONSISTS OF BOTH RESILIENCE AND GHG EMISSIONS MITIGATION GOALS AND POLICIES. GOALS AND POLICIES MAY BE CONSOLIDATED INTO A SINGLE COMPREHENSIVE PLAN CLIMATE ELEMENT OR INTEGRATED ACROSS MULTIPLE ELEMENTS.

The Climate Element framework includes the following sections:

- Implementation Plan: Provides a guidance strategy for developing a final Climate Element and timeline
- Methodology: Reviews steps taken to complete the Regional and State Climate Change Policy Review and Gap Assessment and the Climate Change Policy Framework
- Regional and State Climate Change Policy Review and Gap Assessment: Includes the gap assessment for each key theme that was identified for policies related to climate mitigation, climate resilience, and climate equity to be included in a climate element
- Climate Change Policy Framework: Includes draft mitigation and resilience policies for the climate element

Intended User

City staff responsible for drafting the Climate Element for Auburn's next Comprehensive Plan update can use this framework as a starting point for mitigation and resilience goals and policies to include. Additional review and engagement with the city and community will be required to finalize policies.

IMPLEMENTATION PLAN

Guidance Strategy

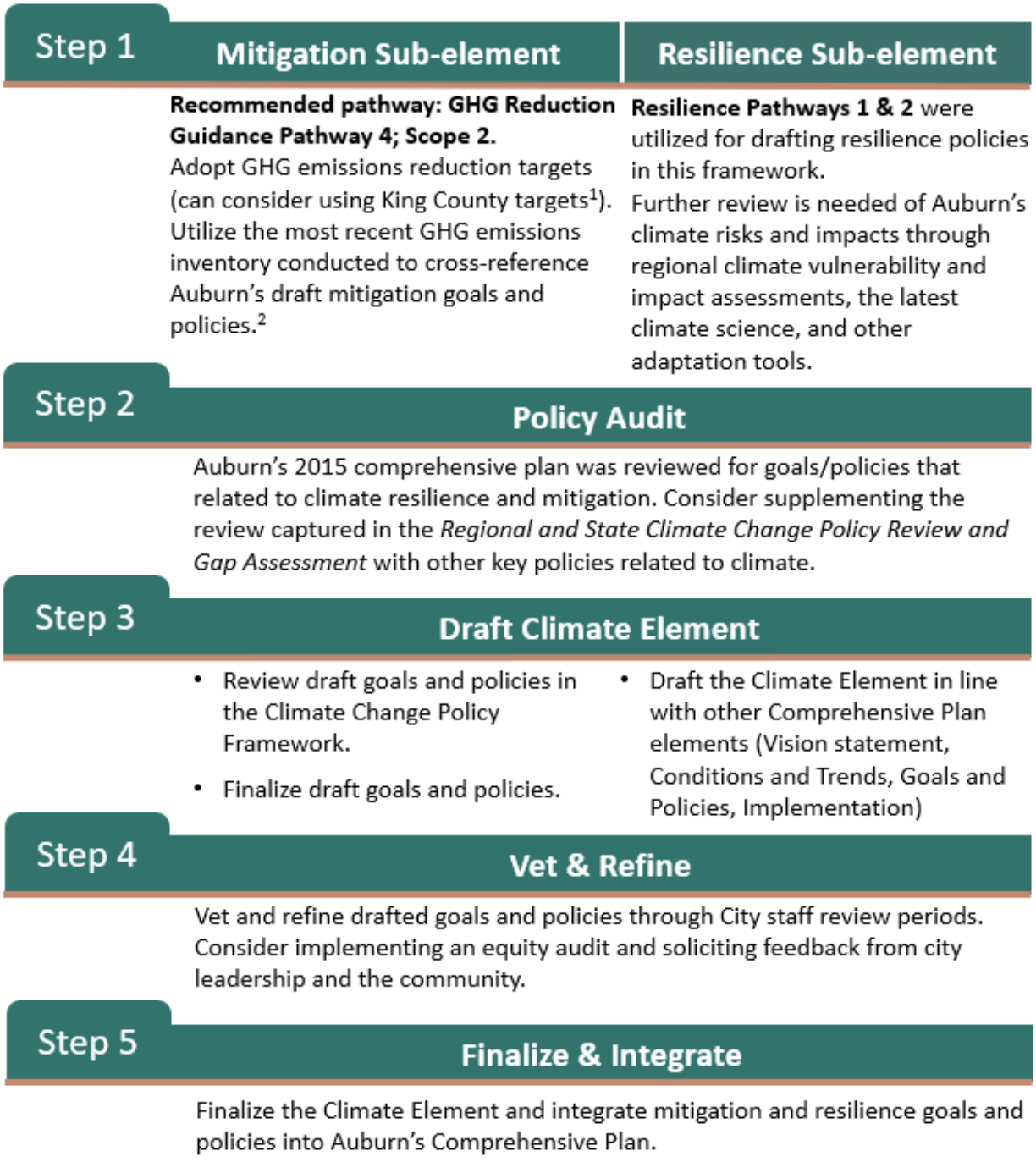
The Washington Department of Commerce (Commerce) published an "early version" Climate Element Planning Guidance in June 2023 that provides local governments with resources and detailed steps to complete a Climate Element under the Growth Management Act. This available guidance was incorporated into the Climate Element Framework; however, Commerce intends to publish an "intermediate version" of the guidance in December of 2023. As new guidance and information emerges, Auburn staff should stay informed and incorporate elements of the guidance as needed.

Commerce Guidance and Next Steps

As stated above, the available Commerce guidance was utilized during development of Auburn's Climate Element Framework. As a first phase in developing Auburn's Climate Element, the framework does not represent a complete product, rather it sets the development process in motion by ensuring requirements are understood and met within the policy recommendations included in final framework. See the Methodology section under 1. Evaluate state and regional guidance to identify key themes for compliance requirements.

In the next phase of the Climate Element development process, staff can review the Commerce Guidance and utilize Auburn's framework as a starting point and continue to refine, vet, and engage with the community to ensure compliance is met and city priorities are centered. The following figure outlines the steps Auburn can take to draft the Climate Element (Figure 1). See Commerce's step and pathway figures and descriptions in the guidance for more information.

Figure 1. Auburn's Climate Element development steps.



[1] King County targets: Reduce 2007 emissions 50%, 75%, and 95% by 2030, 2040, and 2050 respectively.
[2] Utilize Auburn draft CAP GHG inventory or the Puget Sound Regional Emissions Analysis Project planning tools

Recommended Timeline

Please note that the recommended timeline will depend on staff availability.

Date Range	Task
2023 July - August	• Review this document: the Climate Element Comprehensive Plan Framework report. • Determine department lead and roles.
2023 August – October	• Determine if additional plans/policies are required for policy audit. Complete supplemental audit if needed. • Finalize draft goals and policies in a language consistent with the Comprehensive Plan. • Engage with Planning Commission to introduce the Climate Element concept, if needed.
2023 - 2024 October – January	• Vet draft goals and policies with additional staff, leadership, and the community. ○ Community engagement could include attending in-person events, hosting a community survey, or publishing draft goals and policies on a platform that allows comments. • Draft the Climate Element to include a vision statement, conditions and trends, goals and policies, and implementation.
2024 February – Onward	• Finalize Climate Element (Planning Commission Recommendation and City Council adoption).

METHODOLOGY

Cascadia used a three-step process to complete the regional and state climate change policy review and gap assessment:

1. Evaluate state and regional guidance to identify key climate resilience and mitigation themes for climate integration in comprehensive plans. The key themes identify groupings for goals and policies to be developed that comply with the GMA and are within the 11 priority sectors identified in Commerce's Model Climate Element Guidance.

2. Identify potential comprehensive plan goals and policies for the Climate Element that relate to the key themes from Step 1. Cascadia reviewed the model climate element policies from the Department of Commerce and King County's K4C Model Policies, Auburn's unadopted Climate Action Plan (CAP), and Auburn's Comprehensive Plan to identify potential goals and policies.

3. Determine degree of alignment of Auburn's existing Comprehensive Plan with potential Climate Element goals and policies. Cascadia compared the

goals and policies currently in Auburn's Comprehensive Plan with potential goals and policies for the Climate Element. We labeled Auburn's existing alignment as either "good," "lacking," or a "policy gap," compared to the model climate goals and policies.

Cascadia then completed two additional steps to develop the Climate Element Framework:

4. Vet and prioritize draft goals and policies with City Staff and project team for inclusion in the Climate Element Framework. Following the completion of Step 3, Cascadia organized a workshop with Auburn City staff and the Comprehensive Plan update team to vet, refine, and prioritize identified policies under each key theme to include in a standalone climate element.
5. Develop Draft Climate Change Policy Framework by creating an implementation plan, guidance strategy, and suite of prioritized mitigation and resilience policies that can be used to develop a climate change element.

Each of these steps is outlined in more detail in the sections below.

1. Evaluate state and regional guidance to identify key themes.

Cascadia reviewed Washington House Bill 1181 that passed the Legislature in 2023 and will require the integration of climate mitigation and resilience policies into county and city comprehensive plans. These required policy changes will address climate emissions and impacts, while considering co-benefits and integration with other planning documents such as housing, transportation, and land use. The requirements outlined in the bill for the "climate change and resiliency element" are as follows:

- GHG emission reduction policies must:
  - Result in reductions in overall GHG emissions generated by transportation and land use within the jurisdiction but without increasing greenhouse gas emissions elsewhere in the state.
  - Result in reductions in per capita vehicle miles traveled within the jurisdiction but without increasing greenhouse gas emissions elsewhere in the state.
  - Prioritize reductions that benefit overburdened communities in order to maximize the co-benefits of reduced air pollution and environmental justice.

- Resilience policies must:
  - Identify, protect, and enhance natural areas to foster resiliency to climate impacts, as well as areas of vital habitat for safe passage and species migration.
  - Identify, protect, and enhance community resiliency to climate change impacts, including social, economic, and built environment factors, that support adaptation to climate impacts consistent with environmental justice; and
  - Address natural hazards created or aggravated by climate change, including landslides, flooding, drought, heat, smoke, wildfire, and other effects of changes to temperature and precipitation patterns.
- The bill also states that for mitigation and resilience policies, complying with any additional requirements from the Department of Commerce (Commerce) Model Climate Element guidelines that are developed in response to the bill would also be required.
  - According to Commerce guidance, the selection of at least one climate resilience goal and supportive policy must be developed within each of the model climate element's 11 sectors (see Table 1).

Table 1. Priority Sectors identified in Commerce's Model Climate Element Guidance

Priority Sector	Includes...
Zoning & Development	Site use, design, and other development facets
Buildings & Energy	Generation, transmission, and consumption
Cultural Resources & Practices	Historic sites and cultural resources and practices
Water Resources	Water quality and quantity
Transportation	Multimodal travel and infrastructure
Economic Development	Business continuity, opportunities
Ecosystems	Land and water species and habitat
Emergency Management	Preparedness, response, and recovery
Human Health	Community well-being and engagement
Waste Management	Materials recycling and disposal
Agriculture	Production and distribution

Cascadia evaluated additional climate change planning guidance documents to identify key themes that would encompass mitigation,[3] resilience,[4] and climate equity[5] goals and policies within the 11 priority sectors identified in Commerce's Model Climate Element Guidance.

The Washington State and regional guidance documents we reviewed included:

- WA Dept of Commerce's Climate Element Guidance and Menu of Measures.
- King County-Cities Climate Collaboration (K4C) Comprehensive Plan Model Climate Policies. *Will be available to the public in Summer 2023.*
- EcoAdapt's Climate Change Adaptation through Local Comprehensive Planning: Guidance for Puget Sound Communities

2. Identify climate element comprehensive plan goals and policies related to key themes.

Once key themes were identified using HB 1181 and climate change planning guidance documents, Cascadia identified goals and policies using Washington state specific model policies,[6] Auburn's Comprehensive Plan, and Auburn's unadopted CAP. Key themes and the goals capture the ways climate change can be integrated in comprehensive plans and cover all 11 Commerce priority sectors. The ten themes we identified are:

Mitigation Key Themes

Theme 1. Transportation and planned development: Reduce greenhouse gas (GHG) emissions by prioritizing accessible multi-modal and low-carbon transportation options; increase the percentage of electric vehicles (EV) and other low-emission transportation modes operating within the City; decrease emissions that stem from fleet & freight

[3] Goals and policies to reduce the rate and extent of climate change caused by greenhouse gas emissions. Mitigation can be achieved through approaches such as higher-density development, reducing vehicle miles traveled, non-motorized transit, green building techniques, reduced consumption and waste, and renewable energy sourcing.

[4] Goals and policies to address the effects of climate change by increasing resilience and/or decreasing vulnerability. Resiliency policies and goals can be achieved though approaches such as low-impact development; climate-certified zoning, permitting & procurement; and climate-savvy hazard mitigation.

[5] Goals and policies to address the disproportionate impacts of climate change on frontline communities due to existing and historic racial, social, environmental, and economic inequities. Climate equity can be achieved through approaches such as community engagement and partnerships with frontline communities, increasing access to healthy local food, and investing in anti-displacement programs. Climate equity policies will be integrated within the resilience and mitigation themes.

[6] Dept. of Commerce's Menu of Measures and King County's K4C Model Policies.

service vehicles and aviation; reduce GHG emissions by promoting densification and efficient land uses in mixed-use urban villages near transit corridors.

Theme 2. Renewable energy and energy efficiency: Reduce GHG emissions by transitioning to renewable energy sources, decarbonizing buildings, and increasing energy efficiency; promote a diverse, clean, efficient grid that increases the grid's reliability as demand increases.

Theme 3. Waste management and circular economy*: Reduce GHG emissions from materials and organic waste by minimizing waste generation and maximizing waste diversion; reduce greenhouse gas emissions from materials by supporting a circular economy.

**Policies within this theme identified with the superscript $^{M+R}$ indicate that the policy falls under both mitigation and resilience categories.*

Theme 4. Natural habitats and urban green space: Protect and enhance land carbon sinks (e.g., trees, urban green space, soil) to mitigate GHG emissions; establish a green belt of parks to develop a non-motorized trail to connect housing, schools, and businesses across a community.

Resilience Key Themes

Theme 5. Public health and community resiliency: Conduct, and periodically update, a climate vulnerability and risk assessment; minimize disproportionate impacts of climate change on vulnerable and frontline communities and focus/maximize associated benefits; prioritize green, affordable housing to meet projected growth and needs of the community.

Theme 6. Infrastructure and emergency preparedness: Protect public health and safety equitably by identifying and planning for risks associated with climate change; protect the community from extreme heat impacts and wildfire smoke; ensure that infrastructure (critical and noncritical) and utilities are resilient to climate change impacts (e.g., precipitation events and stormwater flooding); provide all residents an equitable opportunity to learn about climate impacts, influence policy decisions, and take actions to enhance community resilience.

Theme 7. Cultural resources and practices: Protect and preserve cultural resources and practices to build resilient communities and ecosystems in the face of climate change.

Theme 8. Water conservation and stormwater management: Protect and preserve water quantity and quality from drought, extreme heat, and other hazards exacerbated by climate change consistent with

Auburn's Comprehensive Water Plan; account for climate change impacts in planning, designing, and operating stormwater management approaches consistent with Auburn's Comprehensive Storm Drainage Plan.

Theme 9. Natural habitats and urban green space: Support preservation and access to green and open spaces; protect and enhance the climate resilience of urban forests by implementing climate-smart forest, park, and green space management; ensure the protection and recovery of ecosystems to provide healthy habitat in a changing climate.

Theme 10. Economic development: Increase access to green jobs, with special consideration for increasing access for frontline communities.

3. Determine the degree of alignment of Auburn's existing Comprehensive Plan with climate element policies.

Cascadia then cross walked Auburn's Comprehensive Plan to determine policy alignment with key themes and specific climate policies. With the potential goals and policies now organized by key theme, Cascadia compared the goals and policies currently in Auburn's Comprehensive Plan with each potential goal and policy for the Climate Element. We assessed whether the potential goal or policy was present in Auburn's Comprehensive Plan, the strength and completeness of the goal or policy in relation to what is in Auburn's Comprehensive Plan, and whether the goal or policy made sense to include for Auburn given local context. We labeled Auburn's existing alignment as either "good" alignment, "lacking" in alignment, or a "policy gap" compared to the model climate goals and policies. See Table 2 for how policies were coded.

Table 2. Policy Alignment Cell Coding

Cell Color	Level of Policy Alignment
Green	Good. The green cell color indicates that the current Auburn Comprehensive Plan effectively includes the potential Climate Element goal or policy already; however, additional policies/language could be considered to strengthen existing policy language.
Orange	Lacking. The orange cell color indicates that the current Auburn Comprehensive Plan includes language that is consistent with the potential Climate Element goal or policy but is not effectively integrating the potential climate element goal or policy. Or, it

Cell Color	Level of Policy Alignment
	indicates the potential Climate Element goal or policy was identified in Auburn's unadopted CAP, which is not being used to implement climate action or policies at this time.
Red	Policy Gap. The red cell color indicates a policy gap. The policy is not represented in Auburn's current Comprehensive Plan or unadopted CAP. Policy gaps are taken directly or modified from Commerce's menu or measures or the K4C model policies.

Once we determined the alignment of Auburn's existing Comprehensive Plan with climate element policies, our team drafted the Regional and State Climate Change Policy Review and Gap Assessment memorandum and shared with City staff for review (Step 4).

4. Prioritize Draft Policies with City Staff

Cascadia worked with the project team and City staff to further refine, vet, and prioritize climate goals and policies for inclusion into the Climate Element. A workshop was held on May 17, 2023, with City staff. City staff reviewed the project purpose, outputs, and timeline, then prioritized the draft climate mitigation and resiliency goals and policies for the Climate Element. See Appendix A for a detailed workshop summary.

Staff prioritized policies and provided feedback on goals and policies within the key theme(s) that best aligned with their expertise. City staff prioritized potential policies using these rankings:

- NA: Already represented within the current Comprehensive Plan. (Note element cited).
- Low: Not a priority to include in a Climate Element.
- Medium: Should consider inclusion in the Climate Element, but not a priority.
- High: Recommend inclusion in the Climate Element.

Cascadia revised policies using staff feedback. Policies ranked "Medium" and "High" were included in the Climate Change Policy Framework. We also included policies that did not receive a ranking because they require additional review and prioritization before determining whether they are included in the final Climate Element. See Appendix A for all draft policy rankings.

5. Develop Draft Climate Change Policy Framework

Cascadia then developed a Climate Element Framework that includes a recommended implementation plan, guidance strategy, and suite of prioritized mitigation and resilience policies that can be used to draft and finalize a climate change element. Auburn staff prioritized the preliminary climate goals and policies for inclusion in the Comprehensive Plan's climate element and prioritized policies and included edits based on the feedback we received. Policies were also added when a gap was identified by staff.

Regional and State Climate Change Policy Review and Gap Assessment

This section includes the gap assessment summary for each key theme that was identified for policies related to climate mitigation, climate resilience, and climate equity to be included in a climate element. For a more detailed policy gap and alignment analysis, see the Regional and State Climate Change Policy Review and Gap Assessment (Task 1) Memorandum.

MITIGATION THEMES (1-4)

Theme 1*: Transportation and planned development*

Gap Assessment: The current Auburn Comprehensive Plan captures key policies for long-term planning related to transportation and building infrastructure and development. However, there is a lack of policies that link long-term planning strategies with GHG emissions reduction and climate equity. Additional policies related to electric vehicles (EVs) and EV infrastructure, reducing vehicle miles traveled, and preventing displacement from development should be considered.

Theme 2: Renewable energy and energy efficiency

Gap Assessment: The current Auburn Comprehensive Plan captures key policies for long-term planning related to land use and utility infrastructure, with some broad policies aimed at reducing energy consumption, practicing sustainable development, and reducing the impact of utilities. However, additional polices are needed that relate these strategies with GHG emissions reduction and climate equity. These include policies aimed at transitioning to renewable energy sources, promoting energy conservation and efficiency measures, building grid resilience, and educating homeowners about energy efficiency upgrades should be considered.

Theme 3: Waste management and circular economy

Gap Assessment: The current Auburn Comprehensive Plan captures key policies for long-term planning related to critical facilities (i.e., waste facilities), with some aimed at solid waste management. While the Comprehensive Plan encourages effective solid waste management and increased recycling efforts, additional policies are needed to relate these strategies with GHG emissions reduction and climate equity. Policies including supporting a circular economy, supporting urban agriculture and local food production, encouraging composting, enforcing sustainable construction and demolition (C&D) practices, and implementing environmentally friendly purchasing policies should be considered.

Theme 4: Natural habitats and urban green space

Gap Assessment: The current Auburn Comprehensive Plan captures key policies for long-term planning related to utilizing new development to contribute to new park developments, seeking land to establish a green belt for non-motorized travel, and implementing low-impact development and landscaping in parking lots. However, additional policies are needed that relate these long-term planning strategies with carbon sequestration (i.e., carbon storage). Policies related to managing and planning for carbon storage should be considered.

RESILIENCE THEMES (5-10)

Theme 5: Public health and community resiliency

Gap Assessment: The current Auburn Comprehensive Plan captures key policies for long-term planning related to housing. However, additional policies are needed that relate to climate resilience, public health, and equity. Policies related to identifying climate vulnerable communities, investing in programs and services that reduce vulnerability in vulnerable and frontline communities, and prioritizing green affordable housing should be considered.

Theme 6: Infrastructure and emergency preparedness

Gap Assessment: The current Auburn Comprehensive Plan captures key policies for long-term planning related to housing and infrastructure resiliency. However, additional policies are needed that relate these long-term planning strategies with equity, emergency preparedness, and climate adaptation. Policies related to and offering equitable access to adaptation resources (i.e., resilience hubs), developing strategies to aid community members ability to respond to extreme weather events (i.e., extreme heat, wildfire smoke events), and ensuring critical and non-critical infrastructure is resilient in the face of climate change should be considered.

Theme 7: Cultural resources and practices

Gap Assessment: The current Auburn Comprehensive Plan captures the importance of historic preservation through policies related to developing a Historic Preservation Plan, planning for future development impacts to historic sites, and recognizing that the City should accord the same levels of promotion and protection to Native American sites and artifacts as to those of the more recent past. However, there are not specific policies that recognize the risks climate impacts pose to historic sites. Additional policies related to assessing climate vulnerability of the city's historic resources and establishing and maintaining government-to-government relations with tribes related to preserving sites should be considered.

Theme 8: Water conservation and stormwater management

Gap Assessment: The current Auburn Comprehensive Plan has many policies related to preserving water quality and quantity through conservation efforts and includes policies related to stormwater planning. However, additional policies are needed that provide a connection between climate change impacts and planning for community water needs and stormwater management. Policies that link climate change with water conservation efforts and stormwater management should be considered.

Theme 9: Natural habitats and urban green space

Gap Assessment: The current Auburn Comprehensive Plan includes policies protecting, enhancing, and restoring critical areas and natural resources. However, policies related to forest management and increasing the resilience of natural resources to climate change impacts are lacking. Additional policies that speak to tree management and link the protection of healthy habitats to climate resiliency should be considered.

Theme 10: Economic Development

Gap Assessment: The current Auburn Comprehensive Plan captures the high-level policies related to local economic development. However, additional policies are needed that recognize climate and environmental justice considerations. Policies related to developing a green job strategy, an equitable green workforce (including education and workforce training), and a just transition should be considered.

Climate Change Policy Framework

Policies were revised using staff feedback received at the staff workshop. Policies ranked "Medium" and "High" were included in the Climate Change Policy Framework. Any policy that was not evaluated is also in the Framework so that it can be further evaluated by staff.

Each policy in the Framework has a parenthetical citation. This citation indicates where policy language originated. Language may have been edited to suit Auburn's specific needs.

- Corresponding policies included within Auburn's Comprehensive Plan (e.g., Comp Plan *LU-1*). LU-1 indicates the policy can be found in the 2015 comprehensive plan, Land Use section, Policy 1.
- Corresponding actions included within Auburn's Climate Action Plan (e.g., *CAP E-7*). CAP E-7 indicates the policy can be found in Auburn's CAP, Energy section, action 7.
- Policies sourced from the Department of Commerce's Menu of Measures (Commerce)
- Policies sourced from the K4C Comprehensive Plan Model Climate Policies (K4C Model Policies)

MITIGATION SUB-ELEMENT

Goals and policies included in the mitigation sub-element are focused on reducing GHG emissions.

Theme 1: Transportation and planned development

Draft policies related to electric vehicles (EVs) and EV infrastructure were typically ranked high-medium priority. Draft policies pertaining to reducing VMT were prioritized as "low" or noted as continuing efforts already covered in other elements within the Comprehensive Plan ("NA"). However, as a key compliance requirement, reducing per capita VMT will be important for the Climate Element to address these ongoing strategies and build upon them when appropriate. This includes policies such as:

- Partnering with agencies that support multimodal transportation infrastructure;
- Prioritizing dense, mixed use, transit-oriented development, and affordable housing in high use areas;
- Investigating opportunities to expand and implement multi-modal transportation options, including bicycling, walking, and transit;

- Maximize bicycle and pedestrian infrastructure and other active-transportation systems.

Goal 1	Increase the percentage of EV and other low-emission transportation modes operating within the City.
Policy 1.1	Development incentives should be established that encourage the creation of electric car charging stations (*LU-57*). Work with utility providers and other partners (e.g. developers and EV companies) to ensure that there is access to EV charging where it is needed and expand EV charging readiness for buildings. (K4C Model Policies)
Policy 1.2	Develop and implement an Electric Vehicle Infrastructure Plan that: • Reviews current EV infrastructure in the city to identify gaps in charging locations. This review should be done with an equity lens and consider areas that are historically underserved and where the most benefit would be observed. • Identifies locations for chargers in commercial, multifamily residence areas, and city facilities. • Reviews feasibility of fast charging stations. • Addresses access issues and barriers to EV and charging stations for low-income homeowners, renters, and multifamily residents. • Identifies key stakeholders to EV infrastructure use and development. • Identifies partners in the region who can assist with charging station infrastructure to lower program and construction costs. (K4C Model Policies)
Goal 2	Decrease emissions that stem from fleet & freight service vehicles and aviation.
Policy 2.1	Support state-level policies and actions that incentivize and create requirements for clean fuels and electrification of private and commercial fleet vehicles. (K4C Model Policies)
Policy 2.2	Convert public-owned fleets to zero-emission vehicles (e.g., electric or renewably produced hydrogen) as soon as feasible. (Commerce)

Theme 2: Renewable energy and energy efficiency

Staff noted that some of the draft policies related to energy had limitations to what a city can achieve and when the effort requires action by an industry or other regional partners. Additionally, budget limitations need to be considered when determining what is feasible in the next 20 years under this theme. Draft policies that were ranked “low” were noted to already be covered elsewhere in the Comprehensive Plan.

Goal 3	Reduce greenhouse gas emissions by transitioning to renewable energy sources, decarbonizing buildings, and increasing energy efficiency.
Policy 3.1	Evaluate opportunities to retrofit municipal buildings for energy efficiency. (Commerce)
Policy 3.2	Optimize heating, ventilation, and air-conditioning (HVAC) systems at City facilities by installing more efficient equipment and technology and implementing operational changes to increase energy efficiency. Such efforts may include the following: • Conducting HVAC energy efficiency audits to identify cost-effective upgrades. • Installing building automation systems (BAS). • Installing high-efficiency motors, dampers, and multi-speed motors for air handling. • Phasing out chlorofluorocarbons (CFCs) in air-conditioning and refrigeration equipment. • Educating staff to ensure and maintain peak efficiency and operating conditions. (*CAP E-2*)
Policy 3.3	Adopt performance standards for all City buildings, including renovations on existing buildings and design of new buildings, and establish a tracking system that makes the benchmarking scores of City buildings publicly available. Relevant building performance standards may include the following: • Standards from LEED-EB, the Leadership in Energy and Environmental Design rating system for Existing Buildings. • Building commissioning requirements. • Lighting power densities (LPDs) and controls that go beyond existing energy code requirements. • Wall insulation, window performance, and envelope air tightness standards that go beyond existing energy and building code requirements. • LEED and/or ENERGYSTAR certification for buildings larger than a specified size. (*CAP E-3*)
Policy 3.4	Optimize building envelope energy efficiency at City facilities by installing more efficient materials and technology. Relevant upgrades may include the following: • Conducting audits to identify cost-effective upgrades for weatherization and building envelope components. • Replacing single-pane windows with insulated glazing with low-e film. • Replacing or increasing interior wall insulation and roof insulation during major renovations.

	• Adding additional batt or rigid insulation and thermal barriers during interior renovations. (*CAP E-4*)
Policy 3.5	Implement audits and technical assistance to increase building energy efficiency. Such a program could address single-family, multifamily, and/or commercial buildings. Elements could include weatherization strategies, direct-installation of energy and water conservation materials, appliance trade-in/exchanges, home and business conservation kits, and rooftop solar and solar hot water projects – targeting support in low-income communities. (*CAP E-5*)
Policy 3.6	Adopt performance standards for residential and commercial building codes to increase building energy efficiency. The standards can address single-family, multifamily, and commercial renovations, existing buildings, and new buildings. The City can also require that building performance ratings be publicly available, to help inform prospective tenants and buyers about the energy performance status of buildings. (*CAP E-6*)
Policy 3.7	Pursue and advocate for federal and state funding and incentives to improve energy efficiency in existing commercial and residential buildings. (Commerce)
Policy 3.8	Maximize renewable energy sources for the supply of electricity and heat to new and existing residential and commercial building construction. (Commerce)
Policy 3.9	Retrofit publicly owned buildings with solar panels and electric heat pumps. (Commerce)
Policy 3.10	Support and expand building energy efficiency retrofit programs to reduce building energy use and improve energy resilience, including a focus on affordable housing. (K4C Model Policies)
Policy 3.11	Explore and promote low interest loan options and incentive programs to finance energy efficiency upgrades for commercial and residential buildings, while seeking other finance mechanisms to fill in potential funding gaps. Investments and programs should be prioritized in historically underserved areas. (K4C Model Policies)
Policy 3.12	Develop energy efficiency outreach programs for residents and businesses by partnering with PSE and other local jurisdictions to identify and select appropriate and cost-effective energy improvements. This could involve supporting local schools in integrating climate and sustainability education into curriculum. (K4C Model Policies)
Policy 3.13	Building on proposed WA state policy, strengthen energy efficiency codes to reflect best practices and meet established energy targets (e.g., require energy use disclosure and benchmarking for buildings,

	starting with commercial and multifamily buildings over a size threshold). (K4C Model Policies)
Policy 3.14	Expand local onsite renewable energy production, such as through installation at municipal facilities, support of incentive programs, and coordination of community-based partnership projects and programs. (K4C Model Policies)
Policy 3.15	Support cleaner energy sources. Potential efforts include supporting community-scale renewable energy projects and efficient small-scale on-site power generation, working with local utilities to use cleaner energy sources, and encouraging Auburn businesses and residents to offset their energy use. *(CAP E-7)*
Policy 3.16	Develop low-energy-use requirements and building code compliance for residential buildings. (Commerce)
Policy 3.17	Educate community members about incentives for emerging alternative energy technology, such as tax exemptions for solar installations, and increase community awareness of existing solar arrays and water heating systems in the city. (K4C Model Policies)
Goal 4	Promote a diverse, clean, efficient grid that increases the grids reliability as demand increases.
Policy 4.1	Work with and encourage the utility provider to plan, site, build and maintain an electrical system that meets the needs of existing and future development, and provides highly reliable service for City customers and coordinate with non-city utility providers to ensure planning for system growth consistent with the city's Comprehensive Plan and growth forecasts. (K4C Model Policies)
Policy 4.2	Advocate for increased grid reliability through state and utility regulatory rulemaking and legislation that supports demand response and storage technologies that reduce peak load and provide grid flexibility. (K4C Model Policies)
Policy 4.3	Advocate for energy utilities to adopt efficient practices and explore alternative energy resources, in order to help meet long-term energy needs and reduce environmental impacts associated with traditional energy supplies. (K4C Model Policies)

Theme 3: Waste Management and Circular Economy

Staff feedback received confirmed inclusion of many of the draft policies, however, policies noted as "impractical", not feasible, or already a program that Auburn runs were omitted.

Goal 5	Reduce greenhouse gas emissions from materials and organic waste by minimizing waste generation.

Policy 5.1	Encourage local food production, processing, and distribution through the support of home and community gardens (i.e., P-Patches), farmers' markets, community kitchens, and other collaborative initiatives to provide healthy foods and promote food security. (K4C Model Policies)
Policy 5.2	Update municipal solid waste contract policies and programs to encourage waste prevention and take-back programs, maximize diversion, ensure efficient collection routes, and promote hybrid and electric vehicles to transport and collect waste. (K4C Model Policies)
Policy 5.3	Promote prevention and redistribution of food waste, such as through expanding and encouraging community and school gardens, urban agriculture, and farmers markets; and working with local grocery stores to support a food donation program to send surplus food. (K4C Model Policies)
Policy 5.4	Support extended producer responsibility (EPR) related policies and actions that require companies that make consumer products fund the residential recycling system and that ensure that packaging and paper products actually get recycled. (K4C Model Policies)
Policy 5.5	Implement solid waste management programs and services that provide ample opportunities and incentives to maximize the community's participation in local and regional waste reduction and recycling efforts. (CF-30)
Policy 5.6	Ensure that solid waste management programs shall be developed to make waste reduction and recycling efficient, reliable, cost-effective, and convenient for all residents and businesses. (CF-31)
Policy 5.7	Encourage and promote the use of products manufactured from recycled materials, and the use of materials that can be recycled. City Departments and contractors shall use recycled and recyclable products whenever and wherever feasible. (CF-32)
Policy 5.8	Implement solid waste reduction and recycling programs that have the cumulative effect maintaining the 50 percent waste reduction and recycling goal (recycling tons/total solid waste stream). (CF-33)
Policy 5.9	Promote the recycling of solid waste materials by providing opportunities for convenient recycling and by developing educational materials on recycling, composting and other waste reduction methods. (CF-35)
Goal 6	Reduce greenhouse gas emissions from materials and organic waste by maximizing waste diversion.
Policy 6.1	Expand commercial recycling and organics collection and service, including making recycling and organics disposal as convenient as garbage and adequate to serve the number of tenants. Implement

	compost requirements for food businesses in accordance with HB 1799. Consider the implications of implementing an organics disposal bans and/or requiring services. (K4C Model Policies)
Policy 6.2	Expand recycling and compost service for single-family and multifamily properties and provide technical assistance to help compost successfully. Consider the implications of implementing an organics disposal bans and/or requiring services. (K4C Model Policies)
Policy 6.3^{M+R}	Continue to implement community outreach and education programs around proper waste reduction, recycling, and composting—with a focus on food waste. Provide outreach and program in multiple formats and languages as appropriate. (K4C Model Policies)
Policy 6.4	Adopt standards for City buildings to use best practices for recycling, composting, reuse, and waste reduction. Standards can recommend practices such as placing more recycling bins at workstations, collecting organics more frequently and garbage less frequently, and installing more water bottle filling stations in facilities. (*CAP M-1*)
Policy 6.5^{M+R}	Identify gaps in recycling and composting programs and take steps to expand service. The City can help identify locations, communities, and building types that are underserved by recycling and composting programs, such as multifamily apartment buildings. The City can work with haulers and through policies to improve service and increase recycling and composting. (*CAP M-3*)
Policy 6.6	Incentivize recycling of construction and demolition debris. (Commerce)
Policy 6.7	Use recycled materials in the construction of transportation and other infrastructure facilities. (Commerce)
Policy 6.8	Develop, implement, and enforce construction and demolition (C&D) recycling and deconstruction ordinances. (K4C Model Policies)
Goal 7	Reduce greenhouse gas emissions from materials by supporting a circular economy.
Policy 7.1	Develop and adopt a citywide purchasing policy that includes environmental impacts. Environmentally Preferable Purchasing (EPP) policies can prioritize reusing products and materials, purchasing durable goods, avoiding disposable goods, and reducing energy use, greenhouse gas emissions, and lifecycle costs and impacts. EPP policy may include targets, measures to track impacts, strategies for implementation, and references to existing standards (e.g., EPEAT, ENERGYSTAR, and LEED). (*CAP M-2*)

Policy 7.2[M+R]	Support "collaborative consumption" community projects that encourage shared use and exchanges. Examples projects may include tool libraries or repair cafes, which the City can support through partnerships or grants with nonprofit and community organizations. (*CAP M-4*)

Theme 4: Natural habitats and urban green space

Staff ranked all draft policies "Medium"- "High".

Goal 8	Protect and enhance land carbon sinks (e.g., trees, urban green space) to mitigate GHG emissions.
Policy 8.1	Require open space set-asides (such as parks) for new development. (Commerce) *(PR-2)*
Policy 8.2	Maximize tree canopy coverage in surface parking lots. (Commerce)
Policy 8.3	Improve and expand urban forest management to maximize or conserve carbon storage. (Commerce)
Policy 8.4	Manage natural lands (forests, grasslands, wetlands) to maintain and/or increase their carbon concentrations. Avoid the conversion of carbon-rich ecosystems. Prioritize increasing tree canopy cover and open space in overburdened frontline communities. (Commerce)
Goal 9	Establish a green belt to develop a non-motorized trail to connect housing, schools, and businesses across a community.
Policy 9.1	Actively seek to acquire land along corridors identified for future trail development in the current Comprehensive Transportation Plan and Auburn Parks, Recreation, & Open Space Plan. *(NM-04)*

RESILIENCE SUB-ELEMENT

Goals and policies included in the resilience sub-element are focused on building community resilience and reducing community vulnerability to climate impacts.

Theme 5: Public health and community resiliency

Staff ranked many of the draft policies as "High" but noted they are covered by other plans and programs such as the Hazard Mitigation plan and the Comprehensive Emergency Management Plan.

Goal 10	Conduct, and periodically update, a climate vulnerability and risk assessment.
Policy 10.1	Conduct, and periodically update, a climate vulnerability and risk assessment that includes a focus on the built environment,

	communities, and natural systems. Support enhanced data collection for hazard events to provide a fuller understanding of the community's hazard characteristics—including identifying demographic groups/community members most vulnerable to climate impacts. Use assessment findings to evaluate changes to comprehensive plan goals and policies and enhance resilience. (K4C Model Policies)
Policy 10.2	Promote the use of health impact assessments and other tools to address the potential impacts of health, equity, and climate change on vulnerable communities. (Commerce)
Policy 10.3	Integrate a climate impacts risk assessment and policies into the local hazard mitigation plan. (Commerce)
Policy 10.4	Support enhanced data collection for hazard events of all magnitudes to provide a fuller understanding of the community's hazard characteristics — including those affected by climate change. (Commerce)
Goal 11	Minimize disproportionate impacts of climate change on vulnerable and frontline communities and focus/maximize associated benefits
Policy 11.1	Provide information in multiple languages to Auburn's diverse communities regarding services offered by local and regional governmental, educational, employment, health, and other providers to improve residents' quality of life and to promote resident engagement and household economic independence. (*H-38*)
Policy 11.2	Encourage and support human and health service organizations that offer programs and facilities for people with special needs. Support programs in particular that help people to remain within the community, including those that are veterans, disabled, seniors, single-parent households, and the homeless. (*H-31*)
Policy 11.3	Identify and address the disproportionate impacts of climate change on communities of color and lower-income communities when prioritizing investments, policies, programs, and projects. Prioritize investments, policies, and programs that address existing disparities in the distribution of environmental burdens and benefits. Ensure benefits are accessible to and focused on underserved communities. (K4C Model Policies)
Policy 11.4	Invest in community-driven climate planning processes, share decision-making power, and co-develop and identify climate actions and priorities, particularly with frontline communities. (K4C Model Policies)
Policy 11.5	Improve access to services throughout the community by investing in partnerships with frontline communities to co-identify

	and remove systemic and physical barriers to services that increase climate resilience. (K4C Model Policies)
Policy 11.6	Place special emphasis on extreme weather events that impact programs addressing those who are most vulnerable to homelessness. (K4C Model Policies)
Policy 11.7	Prioritize investments, policies, programs, and projects that equitably reduce climate change impacts on vulnerable communities and increase resilience. This includes actions that address the impacts of extreme weather events on those experiencing homelessness. (K4C Model Policies)
Policy 11.8	Identify communities disproportionately impacted by extreme heat events and prioritize equitable access to emergency preparedness resources for vulnerable populations and areas. Develop and distribute tools and resources for the community to stay safe during extreme heat events. (K4C Model Policies)
Policy 11.9	Identify and expand community-centered anti-displacement strategies and climate-resilient infrastructure to mitigate housing insecurities exacerbated by climate change and/or gentrification. (K4C Model Policies)
Policy 11.10	Link climate adaptation strategies with social equity and public health strategies. (Commerce)
Policy 11.11	Address the social and mental health needs of displaced populations following disasters. (Commerce)
Goal 12	Prioritize green, affordable housing to meet projected growth and needs of the community.
Policy 12.1	Support projects that bring renewable energy to communities of color, low-income populations, and members of limited-English speaking communities, based on evaluation and assessment of barriers and challenges. (K4C Model Policies)
Policy 12.2	Uphold the Growth Management Act to prioritize dense, mixed use, transit-oriented development (TOD) and affordable housing by encouraging integrated site planning and green building, with a focus on early consideration of these in the site development process. Encourage the location of new green, affordable housing units near community amenities and services, such as transit and green space. (K4C Model Policies)
Policy 12.3	Give intentional consideration to a local community response to homelessness with affordable, green housing and supportive services provided. (K4C Model Policies)

Theme 6: Infrastructure and Emergency Preparedness

Staff ranked many of the draft policies as "High" but noted they are covered by other plans and programs such as the Hazard Mitigation plan and the Comprehensive Emergency Management Plan.

Goal 13	Equitably protect public health and safety by identifying and planning for risks associated with climate change.
Policy 13.1	Promote housing improvements by property owners and building managers. Seek available assistance for housing rehabilitation. Assistance will include the development of residential infrastructure and the rehabilitation of individual properties. (HO-20) a. Find public and private sources of capital and offer low-interest loans for rehabilitation. (Public Works, 2012) b. Continue to participate in the Emergency Home Repair Program and consider partnering with nongovernmental organizations to maximize funds. (Public Works, 2012) c. Encourage green lending for improved energy conservation, indoor air quality, and other measures. (Public Works, 2012) d. Help identify professional volunteers at educational or professional associations to plan redesign or architectural upgrades of the properties. (Public Works, 2012) e. Support additional healthy housing and preservation strategies, such as property tax exemptions to preserve affordable housing opportunities and utilizing community health workers to offer property owners and residents the education and resources needed to maintain housing. (*H-21*)
Policy 13.2	Ensure the Comprehensive Emergency Management Plan incorporates considerations of climate change impacts on the Auburn community, including: 1) potential housing insecurities and displacement exacerbated by climate change, 2) chronic and acute heat risk in the community, 3) infrastructure and utility disturbances, and 4) plans and communication tools to help residents plan and practice actions that make responding to emergencies quicker and safer. (Commerce)
Policy 13.4	Develop resilience hubs — community-serving facilities augmented to support residents and coordinate resource distribution and services before, during, and after a hazard event. (Commerce)
Policy 13.5	Work toward a distribution of growth that promotes equitable access for frontline communities and reduces the potential for displacement through program services such as municipal emergency preparedness, affordable energy prices, and accountable utilities with consideration of climate impacts such as

	extreme heat, flooding, wildfire smoke, and drought. (K4C Model Policies)
Policy 13.6	Factor climate impacts into the planning of operations and coordination of preparedness, response, and recovery activities among first responders and partners, including public health, law enforcement, fire, school, and emergency medical services (EMS) personnel. (Commerce)
Goal 14	Protect the community from extreme heat impacts and wildfire smoke
Policy 14.1	Work with partners, such as the Valley Regional Fire Authority, to prioritize at-risk community members for actions that mitigate wildfire smoke, including providing filter fans or incentivizing infrastructure updates that protect against wildfire smoke (e.g., HVAC updates and MERV 13 filters for air intake) for facilities that serve high-risk populations. (Commerce)
Policy 14.2	Develop and implement an urban heat resilience plan or strategy that includes heat mitigation and management actions to prepare for and respond to chronic and acute heat risk in the community. The strategy should be informed by urban heat island mapping and may include coordinated efforts such as cooling centers, early warning systems, development/land use codes, and energy grid resilience. Utilize the King County Extreme Heat Mitigation Strategy to align with county planning efforts. (K4C Model Policies)
Policy 14.3	Review and update land use and development codes to encourage the use of passive cooling approaches to reduce urban heat island effects. Utilizing energy efficient cooling technologies, reflective and/or vegetated roofs, and the integration of trees, landscaping, and green space should be implemented to help reduce the health effects of extreme heat on frontline communities and vulnerable population. (K4C Model Policies)
Policy 14.4	Encourage the use of methods that contribute to improved indoor air quality during wildfire smoke events. (K4C Model Policies)
Policy 14.5	Provide community education and outreach on wildfire mitigation best management practices and expand household-level wildfire mitigation assistance. (K4C Model Policies)
Policy 14.6	Provide community education and outreach on wildfire smoke mitigation best management practices. Ensure outreach is accessible and prioritize frontline communities. (K4C Model Policies)
Policy 14.7	Develop and implement a wildfire smoke resilience strategy in partnership with local residents, emergency management officials, regional clean air agency officials, and other stakeholders. (Commerce)

Policy 14.8	Develop and implement an urban heat resilience strategy that includes land use, urban design, urban greening, and waste heat reduction actions. (Commerce)
Policy 14.9	Ensure that all community members have equitable access to green space within a half-mile. (Commerce)
Policy 14.10	Develop a program to distribute cooling units and install heat pumps, prioritizing households with residents (e.g., low-income seniors) most vulnerable to extreme temperature events. (Commerce)
Policy 14.11	Support Valley Regional Fire Authority in the development of community wildfire protection plans. (Commerce)
Goal 15	Ensure that infrastructure (critical and noncritical) and utilities are resilient to climate change impacts (e.g., precipitation events and stormwater flooding).
Policy 15.1	Integrate local climate impacts risk assessment into hazard mitigation planning. (K4C Model Policies)
Policy 15.2	Account for climate change impacts when planning, siting, designing, and operating capital facility, utility, and infrastructure projects. (K4C Model Policies)
Policy 15.3	Factor climate impacts into the planning of operations and coordination of preparedness, response, and recovery activities. (K4C Model Policies)
Policy 15.4	Coordinate and support public education by utility providers that raises awareness of the need for water and energy conservation and empowers individuals across diverse audience segments to take action. (K4C Model Policies)
Policy 15.5	Identify and reduce flooding through improvements to drainage and reductions in impervious surfaces and runoff, particularly in overburdened communities. (K4C Model Policies)
Policy 15.6	Incorporate post-wildfire debris flow and flooding hazard information into critical area delineation in fire-prone communities. (Commerce)
Goal 16	Provide all residents an equitable opportunity to learn about climate impacts, influence policy decisions, and take actions to enhance community resilience.
Policy 16.1	Create and implement culturally contextualized outreach and education initiatives and materials that will inform the community about near-term and longer-term climate change threats and ways that the community can prepare and build resilience to these changes. (Commerce)
Policy 16.2	Build and support partnerships with community organizations with the capacity and relationships to convene diverse coalitions of

	residents and to educate and empower them to implement climate resilience actions. (Commerce)
Policy 16.3	Cultivate relationships with climate justice coalitions that can help facilitate frontline community learning and engagement that links local issues with regional and statewide issues. (Commerce)

Theme 7: Cultural resources and practices

No feedback was received on theme 7 policies, all were kept for the framework.

Goal 17	Protect and preserve cultural resources and practices to build resilient communities and ecosystems in the face of climate change.
Policy 17.1	Ensure that cultural resources and practices — including historic sites and culturally important traditional foods and natural resources — are resilient to the impacts of extreme weather and other natural hazards worsened by climate change consistent with the Historic Preservation Element. (Commerce) *(HP-1)*
Policy 17.2	Consider climate impact vulnerability (e.g., flooding, landslides, etc.) as a factor in the Historic Preservation Plan to identify and protect City historic resources. *(HP-2)*
Policy 17.3	Establish or work with partners to establish a native plant nursery and seed bank to support long-term restoration and carbon sequestration efforts. (Commerce)
Policy 17.4	Establish and maintain government-to-government relations with Native American tribes for the preservation of archaeological sites and traditional cultural properties that are vulnerable to climate impacts. (Commerce)

Theme 8: Water conservation and stormwater management

Staff ranked most policies “Medium”- “High” and noted there should be more emphasis on preparing for drought as this is an impact that will be exacerbated by climate change. Policy 18.1 was added to address this concern.

Goal 18	Protect and preserve water quantity and quality from drought, extreme heat, and other hazards exacerbated by climate change consistent with the Utilities element.
Policy 18.1	Evaluate the long-term adequacy of water delivery infrastructure to ensure that changes in hydrological patterns (e.g., increases in flooding frequency or reduction of late-summer water availability associated with climate change) can be anticipated and managed effectively.

Policy 18.2	Reduce water consumption annually for the City of Auburn's public water supply by supporting water conservation efforts, such as addressing distribution leakage. *(CAP note; LU-93, CF-20, CF-21)*
Policy 18.3	Promote water efficiency and conserve community water resources. Foster water conservation through incentives, information, and requirements that residents and business adopt water-efficiency practices and technologies. Help ensure that existing codes do not pose any barriers that discourage or prevent the use of water conservation practices on public and private property *(CAP E-8).*
Policy 18.4	Implement automated metering infrastructure (AMI), groundwater monitoring, and other proven measures to conserve water and enhance drought resilience. (Commerce) *(LU-93, CF-20, CF-21)*
Policy 18.5	Utilize water conservation methods and technologies in development of irrigation infrastructure within parks and recreation areas to foster climate resilience. (Commerce) *(LU-93, CF-20, CF-21)*
Policy 18.6	Manage water resources sustainably in the face of climate change through smart irrigation, stormwater management, preventative maintenance, water conservation and wastewater reuse, plant selection, and landscape management. (Commerce) *(LU-93, CF-20, CF-21)*
Goal 19	Account for climate change impacts in planning, designing, and operating stormwater management approaches consistent with the Comprehensive Storm Drainage Plan.
Policy 19.1	Identify opportunities to retrofit undersized stormwater infrastructure and areas with uncontrolled runoff to improve flow control and water quality, with a priority on locations providing the most benefit, are identified to be most vulnerable to extreme precipitation climate impacts, and areas such as overburdened communities. (K4C Model Policies)

Theme 9: Natural habitats and urban green space

Staff ranked the majority of draft policies as "High" and noted they were aligned with Auburn's goals; however, determining leadership and budget to implement some actions were noted as barriers. Policies relevant to forestland were prioritized as a "Low" ranking since they may not be applicable to the City.

Goal 20	Support preservation and access to green and open spaces.
Policy 20.1	Ensure equitable access to parks, green space, and recreational services for all residents consistent with the Land Use Element. (K4C Model Policies) *(LU-96)*

Goal 21	Protect and enhance the climate resilience of urban forests by implementing climate-smart forest management.
Policy 21.1	Review, update, and implement tree protection codes to increase tree retention. Encourage the protection, maintenance, and expansion of tree canopy throughout the community, prioritizing residential and mixed-use areas with the least current tree canopy to equitably distribute benefits. (K4C Model Policies)
Policy 21.2	Adopt an urban forest master plan and implementing ordinances to maintain and expand tree canopy cover, improve tree and watershed health, prioritize carbon sequestration, and build climate resilience. (Commerce)
Policy 21.5	Prioritize urban forestry planning resources and funding for frontline communities that are hurt first and worst by climate change. (Commerce)
Goal 22	Ensure the protection and recovery of ecosystems to provide healthy habitat in a changing climate.
Policy 22.1	Ensure no net loss of ecosystem composition, structure, and functions, especially in Critical Areas, and strive for net ecological gain to enhance climate resilience in accordance with the Land Use Element. (Commerce) *(LU-132, LU-133, LU-134, LU-135)*
Policy 22.2	Identify opportunities to expand habitat protection and improve habitat quality and connectivity to foster climate resilience using conservation area designations, buffers, and open space corridors. (Commerce)
Policy 22.3	Use an integrated approach to prevent the spread and establishment of invasive plant species and enhance the climate resilience of native plant communities. (Commerce)
Policy 22.4	Implement actions identified in restoration and salmon recovery plans to improve climate resilience of streams and watersheds. (Commerce)
Policy 22.5	Protect and restore riparian vegetation to reduce erosion, provide shade, and support other functions that improve the resilience of streams to climate change. (Commerce)
Policy 22.6	Increase resilience to flooding by protecting and, where possible, enhancing, and restoring existing flood storage, conveyance, and ecological functions and values of floodplains, wetlands, and riparian corridors. (K4C Model Policies)

Theme 10: Economic Development

Staff ranked all draft policies “High”.

Goal 23	Increase access of green jobs, with special consideration of increasing access for frontline communities.

Policy 23.1	Support economic development activity through workforce development programs to provide training and employment with private sector, school districts, Downtown Auburn Cooperative, and Green River College. Consideration of the special needs of economically disadvantaged residents and neighborhoods, and people with physical impairments and developmental disabilities, should be included in these programs. (*ED-11*)
Policy 23.2	Develop a green jobs strategy in partnership with community groups, frontline communities, and businesses that (1) supports sustainable practices, green skills development, and the low carbon transition of the City's impacted industries, (2) develops pathways for youth and impacted workers to transition into green jobs; (3) ensures opportunities (e.g., local hiring requirements) for these jobs, and 4) recruits sectors that can bring low-carbon emissions, like clean energy. (K4C Model Policies)
Policy 23.3	Develop an equitable green workforce that is representative of the diversity of the city's communities and reflects the diverse skill sets, knowledge systems, and experiences communities through targeted hiring, workforce development, community agreements, and creating intentional pathways for frontline communities across sectors and seniority levels. (K4C Model Policies)
Policy 23.4	Ensure that the jurisdiction's Comprehensive Emergency Management Plan responds to the impacts of climate change and identifies roles and responsibilities to support a sustainable economic recovery after a disaster. (Commerce)
Policy 23.5	Support local businesses' efforts to generate and store renewable electricity on-site, which can provide back-up power during emergencies and help ensure continuity of operations. (Commerce)
Policy 23.6	Promote local industrial development to support a circular economy that increases demand for recycled materials and reduces demand for new raw materials and their embodied carbon emissions. (Commerce)

Appendix A: Workshop Meeting Summary

Cascadia worked with the project team and City staff to further refine, vet, and prioritize climate goals and policies for inclusion into the Climate Element. A workshop was held on May 17th, 2023 with City staff that focused on reviewing the project purpose, outputs, timeline, and prioritizing the draft climate mitigation and resiliency goals and policies for the Climate Element.

Staff in attendance included representatives from the following departments:

- Community Planning
- Public Works
- Parks & Recreation
- Economic Development

The workshop began with project background, goals, final outputs, and an overview of the timeline. Climate element requirements outlined in HB 1181 and the Department of Commerce Climate Element Guidance was also reviewed.

Once climate element key themes from the Regional and State Climate Change Policy Review and Gap Assessment memo were reviewed, staff were organized amongst four breakout rooms where they were asked to prioritize policies and provide feedback on goals and policies within the key theme(s) that best aligned with their expertise. Prioritization of policies was done using the rankings:

- NA: Already represented within the current Comp Plan. (Note element cited).
- Low: Not a priority to include in a Climate Element.
- Med: Should consider inclusion in the Climate Element, but not a priority.
- High: Recommend inclusion in the Climate Element.

Policy feedback was integrated and rankings that were undetermined or ranked Med - High were to be included in the Climate Change Policy Framework.

BREAKOUT ROOM TAKEAWAYS

Group 1

Group 1 included staff from Community Planning and Public Works and reviewed the following themes:

- Theme 1: Transportation and planned development
- Theme 2: Renewable energy and energy efficiency
- A few policies in Theme 6: Infrastructure and emergency preparedness

Main Takeaways

- Many policies on multimodal transportation, transit-oriented development, and other vehicle miles traveled reduction policies were indicated as being represented elsewhere in the comprehensive plan.
- The Auburn Comprehensive Plan is currently undergoing an update, therefore the gap analysis/crosswalk that was conducted on the 2015 plan is not representative of those updates.
- HB 1110 will address many policies on housing policies in Theme 1.
- There are limitations to what a city is able to achieve on climate and when the effort requires action by an industry or regionally.
- Budget limitation need to be considered when determining what is feasible/achievable in the next 20 years.
- There is conflict/competition between natural areas and open space given demands of housing and employment targets. Space is a commodity and it's hard to achieve all the targets.

Group 2

Group 2 included staff from Public Works and reviewed the following themes:

- A few policies in Theme 6: Infrastructure and emergency preparedness
- Theme 8: Water conservation and stormwater management

Main Takeaways

- Currently, three utility systems (water, sewer, and stormwater) are developing/updating plans. Instead of referring to specific plans within an element, recommend keep policy language more general.
- There should be more emphasis on preparing for drought as this is an impact that will be exacerbated by climate change.

Group 3

Group 3 included staff from Parks & Recreation and reviewed the following themes:

- Theme 4: Natural habitats and urban green space (mitigation)
- Theme 9: Natural habitats and urban green space (resilience)

Main Takeaways

- Many of the policies were ranked "High" and inline with Auburn goals; however, determining leadership and budget to implement some actions were noted as a barrier.
- Policies relevant to forestland were noted as a "Low" ranking since it may not be applicable to the City.

Group 4

Group 4 included staff from Community Planning and Economic Development and reviewed the following themes:

- Theme 5: Public health and community resiliency
- Most of the policies in Theme 6: Infrastructure and emergency preparedness
- Theme 7: Cultural resources and practices
- Theme 10: Economic development

Main Takeaways

- Many of the policies were ranked "High" but are covered by other plans and programs such as the Hazard Mitigation plan and the Comprehensive Emergency Management Plan.
- Identified Valley Regional Fire Authority (VRFA) as a critical partner related to wildfire risks.
- Noted that the City should be recruiting sectors that bring low-carbon emissions, like clean energy.

Theme 3: Waste Management and Circular Economy

During the workshop, Theme 3 was not reviewed as the staff responsible for waste management were not present. Feedback on the goals and policies were collected following the workshop from the Finance Department, who oversees the City's waste management.

Main Takeaways

- It is important to keep policies feasible for the City (i.e., recycling all paper by a certain date is not practical).
- There are ongoing efforts to increase recycling/composting, education, and community gardens in Auburn.

Gap Assessment Findings and Goals & Policies Prioritization

This section includes a gap assessment for each key theme and a suite of accompanying goals and policies related to climate mitigation, climate resilience, and climate equity. Policy alignment per proposed policy also assessed to determine if current Auburn policy alignment is "good," "lacking," or was a "policy gap." See Table 2 for how policies were coded. Finally, each policy is cited to indicate where policy language was taken directly or tailored from, these include:

- Corresponding policies included within Auburn's Comprehensive Plan (e.g., *LU-1*)
- Corresponding actions included within Auburn's Climate Action Plan (e.g., *CAP E-7*)

- Policies sourced from the Department of Commerce's Menu of Measures (Commerce)
- Policies sourced from the K4C Comprehensive Plan Model Climate Policies (K4C Model Policies)

Theme Structure

Under each key theme, the relevant Auburn Comprehensive Plan elements and priority sector will be highlighted if represented by the theme goals and policies. (see Table 3 for figure abbreviations).

Example:

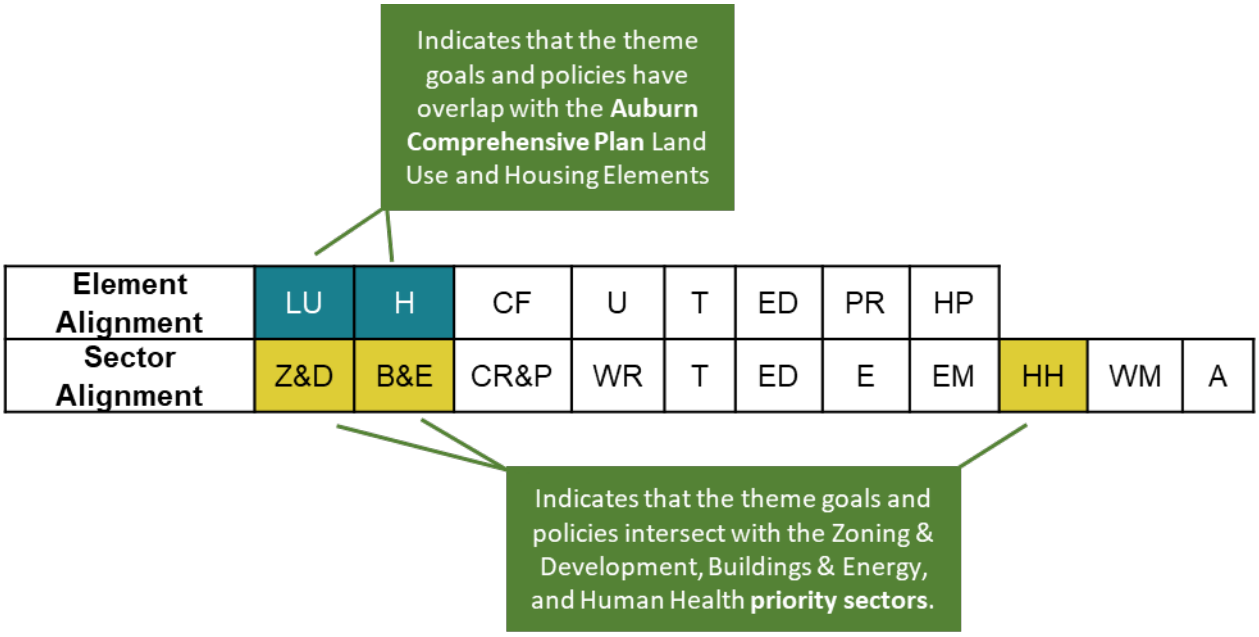


Table 3. Theme alignment abbreviations (abbr.).

Element Abbr.	Element (from Auburn's Comp Plan)	Priority Sector Abbr.	Priority Sector (from Commerce Guidance)
LU	Land Use	Z&D	Zoning & Development
H	Housing	B&E	Buildings & Energy
CF	Capital Facilities	CR&P	Cultural Resources & Practices
U	Utilities	WR	Water Resources
T	Transportation	T	Transportation
ED	Economic Development	ED	Economic Development

PR	Parks and Recreation	E	Ecosystems
HP	Historic Preservation	EM	Emergency Management
		HH	Human Health
		WM	Waste Management
		A	Agriculture

To ensure compliance with Commerce guidance, the resilience themes' priority sector alignment was reviewed to confirm at least one climate resilience goal and/or supportive policy were developed within each of the model climate element's 11 sectors. Table 4 shows the number of resilience themes that aligned within the identified 11 priority sectors.

Table 4. Number of resilience themes that align with Commerce priority sectors.

Priority Sector	Number
Zoning & Development	2
Buildings & Energy	1
Cultural Resources & Practices	1
Water Resources	1
Transportation	1
Economic Development	1
Ecosystems	1
Emergency Management	2
Human Health	3
Waste Management*	1
Agriculture	1

Mitigation

Goals and policies included in the mitigation gap assessment are focused on reducing GHG emissions.

Theme 1: TRANSPORTATION AND PLANNED DEVELOPMENT

Gap Assessment: The current Auburn Comprehensive Plan captures key policies for long-term planning related to transportation and building infrastructure and development. However, there is a lack of policies that link long-term planning strategies with GHG emissions reduction and climate equity. Additional policies related to electric vehicles (EVs) and EV infrastructure, reducing vehicle miles traveled, and preventing displacement from development should be considered.

Element Alignment	LU	H	CF	U	T	ED	PR	HP			
Sector Alignment	Z&D	B&E	CR&P	WR	T	ED	E	EM	HH	WM	A

		Prioritization	Notes
Goal 1	Reduce GHG emissions by prioritizing accessible multi-modal and low-carbon transportation options.		
Policy 1.1	Partner with agencies that support multimodal transportation infrastructure including Puget Sound Regional Council, Sound Transit, King Co. Metro and Pierce Transit. The City should continue to advocate for funding to support transportation improvements, such as better first-last mile access to transit, as an important means of expanding the City's and the region's economic base, consistent with the Economic Development element. *(ED-12)*	NA/Low (see notes)	Already covered in transportation plan.
Policy 1.2	Prioritize dense, mixed use, transit-oriented development, and affordable housing in high use areas in accordance with the Transportation, Land Use *(LU-148),* and Housing *(H-4)* elements.	NA/Low (see notes)	Already doing. Theme throughout: We want the Climate Element to point to other policies and elements that support climate policies (both current plans/policies AND plans/policies in progress or being updated). Important to focus on what's missing, how hard/easy it is, level of importance.

		Prioritization	Notes
			Another component: policies are currently being rewritten (so this crosswalk doesn't address upcoming transportation policies/updates). We want to keep connectivity between elements. Don't want/need to be repeating policies in the Climate Element.
Policy 1.3	Investigate opportunities to expand and implement multi-modal transportation options, including bicycling, walking, and transit. (Commerce; K4C Model Policies)	NA/Low	
Policy 1.4	Create a pedestrian and bicycle master plan to address mobility gaps, improve safety, and increase convenience by improving infrastructure, services, and community development for people walking and biking. Improvements may include: • Bike-sharing programs • Personal motor vehicle-free streets in the downtown area • "Complete Streets" • Infrastructure repairs and upgrades • Incentives for people biking and walking. *(CAP T-6)*	NA/Low	
Policy 1.5	Reduce and prevent displacement of households and businesses from transit-oriented locations, with a focus on low-income households and small businesses. (K4C Model Policies)	NA/Low	Embedded in HB 1110, so it'll find its way into Housing Element (no existing policies but working on it).
Policy 1.6	Consider congestion pricing and tolling or establishing parking maximums to reduce the number of single occupancy vehicles and promote the use of alternative transit (Commerce)	Low (congestion pricing)	Not sure this would be considered, not sure how we'd do this. Maybe adjusting parking maximums.
Goal 2	Increase the percentage of EV and other low-emission transportation modes operating within the City.		
Policy 2.1	Support the transition to plug-in hybrids and electric vehicles within the community by facilitating the installation of EV-charging stations and requiring installation of charging stations in new multifamily housing developments. *(CAP T-5)*	NA/Low	Easy area to embrace with updated building code (higher requirements with EV infrastructure for new buildings). Implementing a building code automatically addresses this. In addition to residential, there's the opportunity for more public charging stations – off street, in parking lots. Complicated, challenges – cannot add

		Prioritization	Notes
			into right-of-way. Narrowing sidewalks takes away from other priorities. Competition within right-of-way for amenities (bike racks, wider ped areas, charging stations, etc.). Especially relevant in downtown. Promote charging within existing parking lots. Take policy a step further to focus on parking lots.
Policy 2.2	Development incentives should be established that encourage the creation of electric car charging stations (*LU-57*). Work with utility providers and other partners (e.g. developers and EV companies) to ensure that there is access to EV charging where it is needed and expand EV charging readiness for buildings. (K4C Model Policies)	High	1.1 and 2.2 blend together – notes above apply to both. Important and will evolve. PSE readiness – support their efforts.
Policy 2.3	Develop and implement an Electric Vehicle Infrastructure Plan that: • Reviews current EV infrastructure in the city to identify gaps in charging locations. This review should be done with an equity lens and consider areas that are historically underserved and where the most benefit would be observed. • Identifies locations for chargers in commercial, multifamily residence areas, and city facilities. • Reviews feasibility of fast charging stations. • Addresses access issues and barriers to EV and charging stations for low-income homeowners, renters, and multifamily residents. • Identifies key stakeholders to EV infrastructure use and development. • Identifies partners in the region who can assist with charging station infrastructure to lower program and construction costs. (K4C Model Policies)	Med	More long-term – needed someday, but not a more immediate priority. Support KC if they are already leading the work. Need to keep an eye on evolving technology.
Goal 3	Decrease emissions that stem from fleet & freight service vehicles and aviation.		
Policy 3.1	Support state-level policies and actions that incentivize and create requirements for clean fuels and electrification of private and commercial fleet vehicles. (K4C Model Policies)	Med	State's requirements don't necessarily meet the needs (can we find clean fuels, electric fleet vehicles, etc.?). Industry needs to be ready before State forces requirements. Depends on how this policy is written.

		Prioritization	Notes
Policy 3.2	Convert public-owned fleets to zero-emission vehicles (e.g., electric or renewably produced hydrogen) by 2040 (or other date). (Commerce)	Med/High	Tech isn't there to meet the needs, not possible. Convert portions of fleet that can be converted. Police fleet does not have time for charging so will not go fully electric. Large vehicles take a lot of energy to function. And it's a significant investment to get charging infrastructure in place. Rewrite 3.2 to be more realistic. Also not recognizing the budget as written. Can we write policy in a way that is optimistic about tech and cost advancements?
Policy 3.3	Partner with local organizations to identify funding sources and opportunities to electrify buses and heavy- duty vehicles. (K4C Model Policies)	Low	3.3 – 3.5 – happy to support efforts.
Policy 3.4	Increase the energy efficiency of city buses and vehicles, through adoption and promotion of innovative technology vehicles and greenhouse gas reducing fuels with a focus on electric vehicles, all electric battery buses and associated infrastructure, where appropriate. (K4C Model Policies)	Low	
Policy 3.5	Support state and regional requirements for electric delivery vehicles and Transportation Network Corporations (TNC's). (K4C Model Policies)	Low	
Policy 3.6	Promote coordinated planning and effective management to optimize the region's aviation system in a manner that minimizes air quality and noise impacts to communities, including historically marginalized communities. (Visions 2050, *Air-03*)	Low/NA	Air travel is in transportation element and airport master plan. Already work on air quality and noise impacts.
Policy 3.7	Support regional and industrial efforts to reduce regional aviation emissions by promoting the use of sustainable aviation fuel and adoption of aviation fuel efficiency measures.	Low	Industry needs to develop the fuels – until then, it's limited in what City can do. Low control.
Goal 4	Reduce greenhouse gas emissions by promoting densification and efficient land uses in mixed-use urban villages near transit corridors.		
Policy 4.1	Focus development within the Urban Growth Area and reduce development pressure on rural and natural resource lands consistent with the Land Use Element. *(LU-92, LU-120)*		Missing from the goal/theme: more explicit or direct VMT reduction policies. 4.1 and 4.4 relate to comments in goal 1 – easy, achievable, supported.

		Prioritization	Notes
			Policy is more about consistency with countywide policies. Potential policy broadly to comply with state regulations. Need more jobs/housing balance so that people can live closer to job locations to reduce travel. Plus expanded/extended transit options.
Policy 4.2	Use innovative zoning provisions to encourage infill development of underutilized parcels in zones that have been identified in the Comprehensive Plan as areas where infill residential development should be encouraged. Certain development requirements for infill development may be relaxed, while requiring adherence to specific design requirements to ensure compatibility with the character of nearby existing residential structures. [HO-27] (*H15*)	Low/NA	Addressed under missing middle housing.
Policy 4.3	Consider greenhouse gas emissions impacts and opportunities to reduce them when updating and implementing transportation and land use plans, codes, and zoning, as well as identifying and carrying out relevant projects (*CAP T-1*)	Low/NA	Building code updates also include energy code updates – which has been ambitious. Support the State's policy – and each energy code update adds significant housing costs (which does not support affordability). Policy is already happening because of State policy.
Policy 4.4	Prioritize dense, mixed use, transit-oriented development, and affordable housing in Auburn and city urban growth areas. (K4C Model Policies)	Low/NA	Downtown Urban Center Plan will further support this policy.
Policy 4.5	Adopt "missing middle" housing policies and codes to allow for broader housing types in single family zones, particularly near transit, while ensuring affordability for current and future residents. (K4C Model Policies)	Low/NA	Easy – HB 1110 will address.

Theme 2: Renewable energy and energy efficiency

Gap Assessment: The current Auburn Comprehensive Plan captures key policies for long-term planning related to land use and utility infrastructure, with some broad policies aimed at reducing energy consumption, practicing sustainable development, and reducing the impact of utilities. However, additional polices are needed that relate these strategies with GHG emissions reduction and climate equity. These include policies aimed at transitioning to

renewable energy sources, promoting energy conservation and efficiency measures, building grid resilience, and educating homeowners about energy efficiency upgrades should be considered.

Element Alignment	LU	H	CF	U	T	ED	PR	HP			
Sector Alignment	Z&D	B&E	CR&P	WR	T	ED	E	EM	HH	WM	A

		Prioritization	Notes
Goal 5	Reduce greenhouse gas emissions by transitioning to renewable energy sources, decarbonizing buildings, and increasing energy efficiency.		
Policy 5.1	Implement measures to promote buildings that conserve energy and water and reduce greenhouse gas emissions. *(LU-9)*	Low/NA (covered elsewhere)	Overarching Q: does the City want/need to do this faster than what the state has established? Overarching note: Main limitations are industry and budget limitations.
Policy 5.2	Public and institutional facilities should incorporate practices that reduce energy consumption, reduce the emission of greenhouse gases, conserve water, and preserve native vegetation. *(CF-62)*	Low/NA (covered elsewhere)	
Policy 5.3	Sustainable development practices will be incorporated into capital facility project design and construction. The City will support and implement efforts to promote climate action objectives by using low impact development techniques, energy and water conservation measures, and reducing greenhouse gas emissions. *(CF-10)*	Low/NA (covered elsewhere)	Some components are already accounted for. Modify to incorporate as appropriate.
Policy 5.4	Identify and implement measures that reduce emissions and conserve energy and water at all park facilities. *(CF-9)*	Low/NA (covered elsewhere)	
Policy 5.5	Support the transition of utility energy fuel mixes to renewable sources, including through coordination with utility Integrated Resource Planning processes and state policy	Low	Not sure this feels relevant to City.

		Prioritization	Notes
	development/implementation. Work with utility provider and other stakeholders to establish a plan to have 100% renewable energy for the community (K4C Model Policies).		
Policy 5.6	Retrofit municipal buildings for energy efficiency (Commerce).	High, but needs wording adjustment/qualifiers – should be aspirational goal for City to pursue.	5.6, 5.8, 5.9, and 5.10 – not sure City can commit to this. Not simple, plus budget impact. Supportive of policy that incorporates more energy efficiency with new buildings, but retrofitting is hard and so unaffordable. And/or policy that looks for/evaluates opportunities for retrofitting.
Policy 5.7	Continue to update and retrofit traffic and street lights to increase energy efficiency. Upgrades may include converting traffic lights and street to light-emitting diode (LED) lighting and installing solar-powered fixtures for signage and lighting where appropriate. (*CAP E-1*)	Low/NA	Already done, so not a priority.
Policy 5.8	Optimize heating, ventilation, and air-conditioning (HVAC) systems at City facilities by installing more efficient equipment and technology and implementing operational changes to increase energy efficiency. Such efforts may include the following: • Conducting HVAC energy efficiency audits to identify cost-effective upgrades. • Installing building automation systems (BAS). • Installing high-efficiency motors, dampers, and multi-speed motors for air handling. • Phasing out chlorofluorocarbons (CFCs) in air-conditioning and refrigeration equipment. • Educating staff to ensure and maintain peak efficiency and operating conditions. (*CAP E-2*)	High	

		Prioritization	Notes
Policy 5.9	Adopt performance standards for all City buildings, including renovations on existing buildings and design of new buildings, and establish a tracking system that makes the benchmarking scores of City buildings publicly available. Relevant building performance standards may include the following: • Standards from LEED-EB, the Leadership in Energy and Environmental Design rating system for Existing Buildings. • Building commissioning requirements. • Lighting power densities (LPDs) and controls that go beyond existing energy code requirements. • Wall insulation, window performance, and envelope air tightness standards that go beyond existing energy and building code requirements. • LEED and/or ENERGYSTAR certification for buildings larger than a specified size. (*CAP E-3*)		(Another department is responsible for this so should be the ones weighing in). Challenge with LEED is annual certification and monitoring that continues after building is built. Staffing would be an issue. Massive budget challenges.
Policy 5.10	Optimize building envelope energy efficiency at City facilities by installing more efficient materials and technology. Relevant upgrades may include the following: • Conducting audits to identify cost-effective upgrades for weatherization and building envelope components. • Replacing single-pane windows with insulated glazing with low-e film. • Replacing or increasing interior wall insulation and roof insulation during major renovations. • Adding additional batt or rigid insulation and thermal barriers during interior renovations. • (*CAP E-4*)		(Another department is responsible for this so should be the ones weighing in).
Policy 5.11	Implement audits and technical assistance to increase building energy efficiency. Such a program could address single-family, multifamily, and/or commercial buildings. Elements could include weatherization strategies, direct-installation of energy and water conservation materials, appliance trade-in/exchanges, home and business conservation kits, and rooftop solar and solar hot water projects. (*CAP E-5*)		Big tradeoff with these policies and affordable housing. Want to be able to support, but all so expensive/require significant staffing.

		Prioritization	Notes
			(Notes apply to a lot of these policies). Policy edit/addition: high priority: Home repair program – importance of weatherization, esp. for low-income households, often mobile homes – so there are elements to this policy that could be incorporated elsewhere (like weatherization, water conservation, energy efficiency).
Policy 5.12	Adopt performance standards for residential and commercial building codes to increase building energy efficiency. The standards can address single-family, multifamily, and commercial renovations, existing buildings, and new buildings. The City can also require that building performance ratings be publicly available, to help inform prospective tenants and buyers about the energy performance status of buildings. (*CAP E-6*)		
Policy 5.13	Provide incentives to improve energy efficiency in existing commercial and residential buildings. (Commerce)		Financial costs here. Could add or focus more on an advocacy policy – to pursue incentives from State/federal.
Policy 5.14	Maximize renewable energy sources for the supply of electricity and heat to new and existing residential and commercial building construction. (Commerce)		
Policy 5.15	Retrofit publicly owned buildings with solar panels and electric heat pumps. (Commerce)		Budget issue, some infrastructure issues.
Policy 5.16	Support and expand building energy efficiency retrofit programs to reduce building energy use and improve energy		

		Prioritization	Notes
	resilience, including a focus on affordable housing. (K4C Model Policies)		
Policy 5.17	Explore and promote low interest loan options and incentive programs to finance energy efficiency upgrades for commercial and residential buildings, while seeking other finance mechanisms to fill in potential funding gaps. Investments and programs should be prioritized in historically underserved areas. (K4C Model Policies)		Could add or focus more on an advocacy policy – to pursue incentives from State/federal.
Policy 5.18	Develop energy efficiency outreach programs for residents and businesses by partnering with PSE and other local jurisdictions with the goals to identify and select appropriate and cost-effective energy improvements. This could involve supporting local schools in integrating climate and sustainability education into curriculum. (K4C Model Policies)		
Policy 5.19	Building on proposed WA state policy, strengthen energy efficiency codes to reflect best practices and meet established energy targets (e.g., require energy use disclosure and benchmarking for buildings, starting with commercial and multifamily buildings over a size threshold). (K4C Model Policies)		
Policy 5.20	Expand local onsite renewable energy production, such as through installation at municipal facilities, support of incentive programs, and coordination of community-based partnership projects and programs. (K4C Model Policies)		
Policy 5.21	Support cleaner energy sources. Potential efforts include supporting community-scale renewable energy projects and efficient small-scale on-site power generation, working with local utilities to use cleaner energy sources, and encouraging Auburn businesses and residents to offset their energy use. *(CAP E-7)*		
Policy 5.22	Require additional net-zero greenhouse gas emission features of all new residential and commercial structures. (Commerce)	Low/NA	Already accounted for in State requirements.
Policy 5.23	Require electric heat pumps and restrict natural gas in new commercial and residential construction. (Commerce)	Low/NA	Already underway.
Policy 5.24	Phase out natural gas use in existing publicly owned facilities by 2040 and retrofit with electric heat pumps. (Commerce)	Low	Not simple. High cost.

		Prioritization	Notes
			Easier to support these actions in new buildings. Not feasible given budget, age of facilities.
Policy 5.25	Require that all publicly owned buildings are powered 100% by renewable energy. (Commerce)	Low	Not simple. High cost.
Policy 5.26	Develop low-energy-use requirements and building code compliance for residential buildings. (Commerce)		
Policy 5.27	Educate community members about incentives for emerging alternative energy technology, such as tax exemptions for solar installations, and increase community awareness of existing solar arrays and water heating systems in the city. (K4C Model Policies)	High	Doable.
Goal 6	Promote a diverse, clean, efficient grid that increases the grids reliability as demand increases.		
Policy 6.1	The City shall consider the environmental impacts of proposed utility facilities as a part of its environmental review process. When requested by the City, the utility provider shall furnish documentation of current research results and/or provide additional information related to determination of the potential environmental impacts, if any, from the proposed facilities. *(PU-7)*	Low/NA	Already do this.
Policy 6.2	Work with and encourage Puget Sound Energy to plan, site, build and maintain an electrical system that meets the needs of existing and future development, and provides highly reliable service for City customers and coordinate with non-city utility providers to ensure planning for system growth consistent with the city's Comprehensive Plan and growth forecasts. (K4C Model Policies)	High	Interesting, but not sure how impactful City would be in this. But happy to support.
Policy 6.3	Advocate for increased grid reliability through state and utility regulatory rulemaking and legislation that supports demand response and storage technologies that reduce peak load and provide grid flexibility. (K4C Model Policies)	High	Interesting, but not sure how impactful City would be in this. But happy to support.

		Prioritization	Notes
Policy 6.4	Advocate for energy utilities to adopt efficient practices and explore alternative energy resources, in order to help meet long-term energy needs and reduce environmental impacts associated with traditional energy supplies. (K4C Model Policies)	High	Interesting, but not sure how impactful City would be in this. But happy to support. Broad note: Conflict/competition between natural areas and open space given demands of housing and employment targets. Space is a commodity and it's hard to achieve all the targets. Housing/jobs come at the expense of natural areas.

Theme 3: Waste management and circular economy (waste management, finance department)

Gap Assessment: The current Auburn Comprehensive Plan captures key policies for long-term planning related to critical facilities (i.e., waste facilities), with some aimed at solid waste management. While the Comp Plan encourages effective solid waste management and increased recycling efforts, additional policies are needed to relate these strategies with GHG emissions reduction and climate equity. These include supporting a circular economy, supporting urban agriculture and local food production, encouraging composting, enforcing sustainable construction and demolition (C&D) practices, and implementing environmentally friendly purchasing policies should be considered.

Element Alignment	LU	H	CF	U	T	ED	PR	HP			
Sector Alignment	Z&D	B&E	CR&P	WR	T	ED	E	EM	HH	WM*	A

**Theme 3 captures both mitigation and resilience policies related to Waste Management.*

		Prioritization	Notes
Goal 7	Reduce greenhouse gas emissions from materials and organic waste by minimizing waste generation.		

		Prioritization	Notes
Policy 7.1	The City shall implement solid waste management programs and services that provide ample opportunities and incentives to maximize the community's participation in local and regional waste reduction and recycling efforts. (*CF-30*)		
Policy 7.2	The City's solid waste management programs shall be developed to make waste reduction and recycling efficient, reliable, cost-effective, and convenient for all residents and businesses. (*CF-31*)		
Policy 7.3	The City encourages and should promote the use of products manufactured from recycled materials, and the use of materials that can be recycled. City Departments and contractors shall use recycled and recyclable products whenever and wherever feasible. (*CF-32*)		
Policy 7.4	The City shall implement solid waste reduction and recycling programs that have the cumulative effect maintaining the 50 percent waste reduction and recycling goal (recycling tons/total solid waste stream). (*CF-33*)		
Policy 7.5	The City shall promote the recycling of solid waste materials by providing opportunities for convenient recycling and by developing educational materials on recycling, composting and other waste reduction methods. (*CF-35*)		
Policy 7.6	The City will coordinate with solid waste providers and King County to ensure the provision of adequate and mandatory waste and recycling service throughout Auburn. The City will continue to create, support, and implement efforts that expand recycling and reuse. (*CF-5*)		
Policy 7.7	Encourage local food production, processing, and distribution through the support of home and community gardens (i.e., P-Patches), farmers' markets, community kitchens, and other collaborative initiatives to provide healthy foods and promote food security. (K4C Model Policies)		This could be added since we have a Community Garden Program (Parks), Farmer's Market (Parks), and Blue Ribbon Committee (Mayor).
Policy 7.8	Update municipal solid waste contract policies and programs to encourage waste prevention and take-back programs, maximize diversion, ensure efficient collection routes, and promote hybrid and electric vehicles to transport and collect waste. (K4C Model Policies)		We do all of this except our hauler has CNG vehicles for collection. King County is piloting an electric transfer truck right now.

		Prioritization	Notes
Policy 7.9	Promote prevention and redistribution of food waste, such as through expanding and encouraging community and school gardens, urban agriculture, and farmers markets and working with local grocery stores to support a food donation program to send surplus food. (K4C Model Policies)		We do this and the Auburn Food Bank has relationships with many of the local grocery stores.
Policy 7.10	Support extended producer responsibility (EPR) related policies and actions that require companies that make consumer products fund the residential recycling system and that ensure that packaging and paper products actually get recycled. (K4C Model Policies)		We are members of the Northwest Product Stewardship Association.
Goal 8	Reduce greenhouse gas emissions from materials and organic waste by maximizing waste diversion.		
Policy 8.1	Reduce municipal solid waste disposed of in landfills by (insert percentage) by (insert target date). (Commerce)		This is not realistic for Auburn at this point. Two-thirds of our tonnage is from our business sector, so it fluctuates with the economy. Also, our city continues to grow in population, and we've had large multifamily developments open recently. Even with waste reduction/recycling efforts, our disposal tonnage has been increasing each year.
Policy 8.2	Recycle all paper, food, textile, and metal waste by (date). (Commerce)		This seems impractical as written. We have recycling available for all those waste types, but we rely on the public to put things where they should go.
Policy 8.3	Expand commercial recycling and organics collection and service, including making recycling and organics disposal as convenient as garbage and adequate to serve the number of tenants. Implement compost requirements for food businesses in accordance with HB 1799. Consider the implications of implementing an organics disposal bans and/or requiring services. (K4C Model Policies)		Yes, we are developing a plan to meet the requirements of HB1799 (Organics Management Law). The disposal ban/service requirement is something that would need to come from King County. Auburn has mandatory garbage service,

		Prioritization	Notes
			recycle is no additional cost and unlimited (not required though), and organics is offered but not required (we only have about a 60% residential subscription rate, so we continue to keep it optional).
Policy 8.4	Expand recycling and compost service for single-family and multifamily properties and provide technical assistance to help compost successfully. Consider the implications of implementing an organics disposal bans and/or requiring services. (K4C Model Policies)		We offer free technical assistance and plan on expanding outreach efforts as we meet the requirements of HB1799. Ban/service requirement would need to come from King County.
Policy 8.5^{M+R}	Build and implement community outreach and education programs around proper waste reduction, recycling, and composting—with a focus on food waste. (K4C Model Policies)		Already do this.
Policy 8.6	Adopt standards for City buildings to use best practices for recycling, composting, reuse, and waste reduction. Standards can recommend practices such as placing more recycling bins at workstations, collecting organics more frequently and garbage less frequently, and installing more water bottle filling stations in facilities. (*CAP M-1*)		We work with our facilities Department to make sure everyone has access to recycle/compost at City buildings where applicable. We have used grant funds for water bottle filling stations in schools, so if that is something the City wanted to do in our buildings, we could help with that.
Policy 8.7^{M+R}	Identify gaps in recycling and composting programs and take steps to expand service. The City can help identify locations, communities, and building types that are underserved by recycling and composting programs, such as multifamily apartment buildings. The City can work with haulers and through policies to improve service and increase recycling and composting. (*CAP M-3*)		We are always looking for ways to improve service/programs. We rotate our focus for projects between residential, multifamily, schools, and business. We will be taking a closer look at composting while implementing the requirements of HB1799. Almost all multifamily housing has recycling (for those that don't we have a recycling station at the WM facility

		Prioritization	Notes
			that is available 24/7). The major limiting factor in multifamily buildings is space for organics collection containers.
Policy 8.8	Incentivize recycling of construction and demolition debris. (Commerce)		What is meant by incentivize? Who would be incentivizing?
Policy 8.9	Create a business technical assistance program to increase recycling and reduce waste. (Commerce)		We already provide free assistance and WM staff visit Auburn businesses every-other-year to offer outreach.
Policy 8.10	Use recycled materials in the construction of transportation and other infrastructure facilities. (Commerce)		Is this something Community Development can require?
Policy 8.11	Develop a program that will enable recycling of all construction and demolition debris (include target date). (Commerce)		King County is leading this. Doesn't seem like a City policy.
Policy 8.12	Develop, implement, and enforce construction and demolition (C&D) recycling and deconstruction ordinances. (K4C Model Policies)		There are cities who have adopted ordinances that we could use for examples.
Policy 8.13	Increase staff and facility capacity for composting programs to achieve (insert percentage) of community waste. (Commerce)		We are told there is plenty of capacity in King County. Doesn't seem like this should be a City policy.
Goal 9	Reduce greenhouse gas emissions from materials by supporting a circular economy.		
Policy 9.1	Adopt a citywide purchasing policy that includes environmental impacts. Environmentally Preferable Purchasing (EPP) policies can prioritize reusing products and materials, purchasing durable goods, avoiding disposable goods, and reducing energy use, greenhouse gas emissions, and lifecycle costs and impacts. EPP policy may include targets, measures to track impacts, strategies for implementation, and references to existing standards (e.g., EPEAT, ENERGYSTAR, and LEED). (*CAP M-2*)		Who would lead this? Would need support/buy-in from City leadership to accomplish.
Policy 9.2^{M+R}	Support "collaborative consumption" community projects that encourage shared use and exchanges. Examples projects may include tool libraries or repair cafes, which the City can support		Kathleen and I are on the steering committee for South King Tool Library's expansion into Auburn.

		Prioritization	Notes
	through partnerships or grants with nonprofit and community organizations. (*CAP M-4*)		

Theme 4: Natural habitats and urban green space

Gap Assessment: The current Auburn Comprehensive Plan captures key policies for long-term planning related to utilizing new development to contribute to new park developments, seeking land to establish a green belt for non-motorized travel, and implementing low-impact development and landscaping in parking lots. However, additional policies are needed that relate these long-term planning strategies with carbon sequestration (i.e., carbon storage). Policies related to managing and planning for carbon storage should be considered.

Element Alignment	LU	H	CF	U	T	ED	PR	HP			
Sector Alignment	Z&D	B&E	CR&P	WR	T	ED	E	EM	HH	WM	A

		Prioritization	Notes
Goal 10	Protect and enhance land carbon sinks (e.g., trees, urban green space) to mitigate GHG emissions.		
Policy 10.1	Require open space set-asides (such as parks) for new development. (Commerce) *(PR-2)*	High	If it's a subdivision and 1 lot is set aside as green space want to ensure the HOA is owning that and not City parks (planning usually does this but just want to make sure) Planning/Zoning code policy
Policy 10.2	Maximize tree canopy coverage in surface parking lots. (Commerce)	High	Parks department doesn't build too many parking lots (maybe not relevant for this department's opinion)
Policy 10.3	Improve and expand urban forest management to maximize or conserve carbon storage. (Commerce)	Med	Unless it's a hazard, trees are not removed
Policy 10.4	Manage natural lands (forests, grasslands, wetlands) to maintain and/or increase their carbon concentrations. Avoid the conversion of carbon-rich ecosystems. Prioritize increasing tree canopy cover and open space in overburdened frontline communities. (Commerce)	High	May not be relevant – if we're talking about street trees that belongs to Transportation. Open spaces are maintained by Parks dept.

Goal 11	Establish a green belt of parks to develop a non-motorized trail to connect housing, schools, and businesses across a community.		Recommend to take “of parks” out of the goal
Policy 11.1	Actively seek to acquire land along corridors identified for future trail development in the current Comprehensive Transportation Plan and Auburn Parks, Recreation, & Open Space Plan. *(NM-04)*	High	No obvious language edits

Resilience

Goals and policies included in the resilience gap assessment are focused on building community resilience and reducing community vulnerability to climate impacts.

Theme 5: Public health and community resiliency

Gap Assessment: The current Auburn Comprehensive Plan captures key policies for long-term planning related to Housing. However, additional policies are needed that relate to climate resilience, public health, and equity. Policies related to identifying climate vulnerable communities, investing in programs and services that reduce vulnerability in vulnerable and frontline communities, and prioritizing green affordable housing should be considered.

Element Alignment	LU	H	CF	U	T	ED	PR	HP			
Sector Alignment	Z&D	B&E	CR&P	WR	T	ED	E	EM	HH	WM	A

		Prioritization	Notes
Goal 12	Conduct, and periodically update, a climate vulnerability and risk assessment.		
Policy 12.1	Conduct, and periodically update, a climate vulnerability and risk assessment that includes a focus on the built environment, communities, and natural systems. Support enhanced data collection for hazard events to provide a fuller understanding of the community's hazard characteristics—including identifying demographic groups/community members most vulnerable to climate impacts. Use assessment findings to evaluate changes to	High	Hazard plan has risk assessment component, but may not address climate vulnerability thoroughly.

		Prioritization	Notes
	comprehensive plan goals and policies and enhance resilience. (K4C Model Policies)		
Policy 12.2	Promote the use of health impact assessments and other tools to address the potential impacts of health, equity, and climate change on vulnerable communities. (Commerce)	High	More Public Health's realm, though there is an Emergency Mgmt. component. Also not reflected in Econ development.
Policy 12.3	Integrate a climate impacts risk assessment and policies into the local hazard mitigation plan. (Commerce)	High	Hazard plan has risk assessment component but may not address climate vulnerability thoroughly.
Policy 12.4	Support enhanced data collection for hazard events of all magnitudes to provide a fuller understanding of the community's hazard characteristics — including those affected by climate change. (Commerce)	High	Don't currently have system in place. Not something the City leads, but do report info to County after storms occasionally (thought inconsistent). Need clarity on what this means and what is entailed but agree it's important.
Policy 12.5	Promote the use of health impact assessments and other tools to address the potential impacts of health, equity, and climate change on vulnerable communities. (Commerce)	See 12.2	Same as 12.2
Goal 13	Minimize disproportionate impacts of climate change on vulnerable and frontline communities and focus/maximize associated benefits		
Policy 13.1	Provide information in multiple languages to Auburn's diverse communities regarding services offered by local and regional governmental, educational, employment, health, and other providers to improve residents' quality of life and to promote resident engagement and household economic independence. (*H-38*)	High	Supportive but note it's covered elsewhere. Joint effort: Housing would distribute and lead; language support comes from Communications; emergency mgmt. and econ development. plan for these communities as well.
Policy 13.2	Encourage and support human and health service organizations that offer programs and facilities for people with special needs. Support programs in particular that help people to remain within the community, including those that are veterans, disabled, seniors, single-parent households, and the homeless. (*H-31*)	High	Supportive but note it's covered elsewhere. Joint effort: Unsure which dept would lead; health, human services, community services, emergency mgmt., parks, and econ development plan for these communities as well.

		Prioritization	Notes
Policy 13.3	Identify and address the disproportionate impacts of climate change on communities of color and lower-income communities when prioritizing investments, policies, programs, and projects. Prioritize investments, policies, and programs that address existing disparities in the distribution of environmental burdens and benefits. Ensure benefits are accessible to and focused on underserved communities. (K4C Model Policies)	High	Should be happening in every project, not just within one group or dept. Public Works lead.
Policy 13.4	Invest in community-driven climate planning processes, share decision-making power, and co-develop and identify climate actions and priorities, particularly with frontline communities. (K4C Model Policies)	High	Should be happening with every planning process.
Policy 13.5	Improve access to services throughout the community by investing in partnerships with frontline communities to co-identify and remove systemic and physical barriers to services that increase climate resilience. (K4C Model Policies)	High	
Policy 13.6	Place special emphasis on extreme weather events that impact programs addressing those who are most vulnerable to homelessness. (K4C Model Policies)	Medium	Also in CEMP but broadened to include all hazards.
Policy 13.7	Prioritize investments, policies, programs, and projects that equitably reduce climate change impacts on vulnerable communities and increase resilience. This includes actions that address the impacts of extreme weather events on those experiencing homelessness. (K4C Model Policies)	Medium	Covered by other policies but should be mentioned here. Include working with Mayor's office, which has an anti-homelessness strategy. Emergency Mgmt. works with Housing Authority (lead), Mayor's office (anti-homeless division), and Public Health to respond to extreme weather events for homeless population.
Policy 13.8	Identify communities disproportionately impacted by extreme heat events and prioritize equitable access to emergency preparedness resources for vulnerable populations and areas. Develop and distribute tools and resources for the community to stay safe during extreme heat events. (K4C Model Policies)	Medium	Also in CEMP, but broadened to include all hazards
Policy 13.9	Identify and expand community-centered anti-displacement strategies and climate-resilient infrastructure to mitigate housing	High	If gentrification is not addressed elsewhere, should be High

		Prioritization	Notes
	insecurities exacerbated by climate change and/or gentrification. (K4C Model Policies)		(emergency mgmt. doesn't address). Similar org structure as Policy 13.7
Policy 13.10	Link climate adaptation strategies with social equity and public health strategies. (Commerce)	High	Should be happening with every planning process.
Policy 13.11	Address the social and mental health needs of displaced populations following disasters. (Commerce)	Medium	Should be happening with every planning process. Main focus of this work should be in emergency mgmt. plans and disaster recovery plans.
Goal 14	Prioritize green, affordable housing to meet projected growth and needs of the community.		
Policy 14.1	Support projects that bring renewable energy to communities of color, low-income populations, and members of limited-English speaking communities, based on evaluation and assessment of barriers and challenges. (K4C Model Policies)		
Policy 14.2	Uphold the Growth Management Act to prioritize dense, mixed use, transit-oriented development (TOD) and affordable housing by encouraging integrated site planning and green building, with a focus on early consideration of these in the site development process. Encourage the location of new green, affordable housing units near community amenities and services, such as transit and green space. (K4C Model Policies)		
Policy 14.3	Give intentional consideration to a local community response to homelessness with affordable, green housing and supportive services provided. (K4C Model Policies)		

Theme 6: Infrastructure and emergency preparedness (P.J., except Goal 17; AF/NG Goal 17)

Gap Assessment: The current Auburn Comprehensive Plan captures key policies for long-term planning related to housing and infrastructure resiliency. However, additional policies are needed that relate these long-term planning strategies with equity, emergency preparedness, and climate adaptation. Policies related to and offering equitable

access to adaptation resources (i.e., resilience hubs), developing strategies to aid community members ability to respond to extreme weather events (i.e., extreme heat, wildfire smoke events), and ensuring critical and non-critical infrastructure is resilient in the face of climate change should be considered.

Element Alignment	LU	H	CF	U	T	ED	PR	HP			
Sector Alignment	Z&D	B&E	CR&P	WR	T	ED	E	EM	HH	WM	A

		Prioritization	Notes
Goal 15	Equitably protect public health and safety by identifying and planning for risks associated with climate change.		
Policy 15.1	Promote housing improvements by property owners and building managers. Seek available assistance for housing rehabilitation. Assistance will include the development of residential infrastructure and the rehabilitation of individual properties. [HO-20] a. Find public and private sources of capital and offer low-interest loans for rehabilitation. [Public Works, 2012] b. Continue to participate in the Emergency Home Repair Program and consider partnering with nongovernmental organizations to maximize funds. [Public Works, 2012] c. Encourage green lending for improved energy conservation, indoor air quality, and other measures. [Public Works, 2012] d. Help identify professional volunteers at educational or professional associations to plan redesign or architectural upgrades of the properties. [Public Works, 2012] e. Support additional healthy housing and preservation strategies, such as property tax exemptions to preserve affordable housing opportunities and utilizing community health workers to offer property owners and residents the education and resources needed to maintain housing. (*H-21*)		
Policy 15.2	Create evacuation plans and outreach materials to help residents plan and practice actions that make evacuation quicker and safer. (Commerce)	High	Already in Comprehensive Emergency Mgmt. Plan (CEMP), so describe briefly in Climate Element

		Prioritization	Notes
			and refer to CEMP for details.
Policy 15.3	Ensure that people, including the community's most vulnerable groups, are resilient to climate and weather-related hazards by better understanding hazard type and impact and equipping people and the community to prepare for and respond to emergency situations. (K4C Model Policies)	High	Already in Comprehensive Emergency Mgmt. Plan (CEMP), so describe briefly in Climate Element and refer to CEMP for details.
Policy 15.4	Develop resilience hubs — community-serving facilities augmented to support residents and coordinate resource distribution and services before, during, and after a hazard event. (Commerce)	Medium	Have other policies that get resources to people; use a trusted partner network.
Policy 15.5	Work toward a distribution of growth that promotes equitable access for frontline communities and reduces the potential for displacement through program services such as municipal emergency preparedness, affordable energy prices, and accountable utilities with consideration of climate impacts such as extreme heat, flooding, wildfire smoke, and drought. (K4C Model Policies)	High	Important to make policies that get out to people and effectively reach them
Policy 15.6	Factor climate impacts into the planning of operations and coordination of preparedness, response, and recovery activities among first responders and partners, including public health, law enforcement, fire, school, and emergency medical services (EMS) personnel. (Commerce)	High	Important to make policies that get out to people and effectively reach them
Goal 16	Protect the community from extreme heat impacts and wildfire smoke		
Policy 16.1	Prioritize at-risk community members for actions that mitigate wildfire smoke, including providing filter fans or incentivizing infrastructure updates that protect against wildfire smoke (e.g., HVAC updates and MERV 13 filters for air intake) for facilities that serve high-risk populations. (Commerce)	High	Should involve Valley Regional Fire Authority (VRFA). Doing a lot of work on smoke and WUI laws.
Policy 16.2	Develop and implement an urban heat resilience plan or strategy that includes heat mitigation and management actions to prepare for and respond to chronic and acute heat risk in the community. The strategy should be informed by urban heat island mapping and may include coordinated efforts such as cooling centers, early warning systems, development/land use codes,	High	Very important – noting KC report that identified Auburn and Kent as heat sinks.

		Prioritization	Notes
	and energy grid resilience. Utilize the King County Extreme Heat Mitigation Strategy to align with county planning efforts. (K4C Model Policies)		
Policy 16.3	Review and update land use and development codes to encourage the use of passive cooling approaches to reduce urban heat island effects. Utilizing energy efficient cooling technologies, reflective and/or vegetated roofs, and the integration of trees, landscaping, and green space should be implemented to help reduce the health effects of extreme heat on frontline communities and vulnerable population. (K4C Model Policies)	High	Outside of emergency mgmt. so curious about what building folks think of this policy
Policy 16.4	Include messages on the impacts of climate change on health and safety, including information to help residents plan and practice actions to protect themselves from these impacts, in outreach efforts. Outreach and materials should be provided in languages representative of community needs. (K4C Model Policies)	Low	Already in outreach planning
Policy 16.5	Work with community partners to establish resilience hubs that can serve as clean air shelters for use by the public during wildfire smoke events, particularly in areas that experience poor air quality due to transportation emissions. (K4C Model Policies)	Low	People don't use clean air shelters as much as you think. Same for cooling centers. More bang for buck to focus on things people can do at home.
Policy 16.6	Encourage the use of methods that contribute to improved indoor air quality during wildfire smoke events. (K4C Model Policies)	High	Helps people at home
Policy 16.7	Develop community wildfire preparedness, response, and recovery plans. (K4C Model Policies)	Medium	Already in Comprehensive Emergency Mgmt. Plan (CEMP), so describe briefly in Climate Element and refer to CEMP for details.
Policy 16.8	Develop and implement notification alerts within the community to reduce the risk of exposure to wildfire smoke and particulate matter. (Commerce)	Medium	Already in Comprehensive Emergency Mgmt. Plan (CEMP), so describe briefly in Climate Element and refer to CEMP for details. Idea to have a

		Prioritization	Notes
			Climate Element statement about "alignment and support with CEMP"
Policy 16.9	Provide community education and outreach on wildfire mitigation best management practices and expand household-level wildfire mitigation assistance. (K4C Model Policies)	Medium	Not Auburn's biggest hazard
Policy 16.10	Provide community education and outreach on wildfire smoke mitigation best management practices. Ensure outreach is accessible and prioritize frontline communities. (K4C Model Policies)	Medium	Indirectly covered in CEMP, but it's not specific to wildfire smoke
Policy 16.11	Develop and implement a wildfire smoke resilience strategy (if absent) in partnership with local residents, emergency management officials, regional clean air agency officials, and other stakeholders. (Commerce)	High	Don't have this yet
Policy 16.12	Develop and implement an urban heat resilience strategy (if absent) that includes land use, urban design, urban greening, and waste heat reduction actions. (Commerce)	High	Don't have this yet
Policy 16.13	Ensure that all community members have equitable access to green space within a half-mile. (Commerce)	High	Would be great!
Policy 16.14	Develop a program to distribute cooling units and install heat pumps, prioritizing households with residents (e.g., low-income seniors) most vulnerable to extreme temperature events. (Commerce)	Medium	Not a high priority for emergency mgmt. cooling response – would do other things first (quicker or more efficient), but not unhelpful. Human Services or Community Resources would distribute these.
Policy 16.15	Support the development of community wildfire protection plans. (Commerce)	High	Valley Regional Fire Authority doing this – new reports.
Goal 17	Ensure that infrastructure (critical and noncritical) and utilities are resilient to climate change impacts (e.g., precipitation events and stormwater flooding).		
Policy 17.1	Integrate local climate impacts risk assessment into hazard mitigation planning. (K4C Model Policies)		KC runs hazard mitigation process for the

		Prioritization	Notes
			whole county. Auburn prepares annex and Emergency Mgmt. leads it. Work detail is covered elsewhere so Karissa recommends Medium.
Policy 17.2	Account for climate change impacts when planning, siting, designing, and operating capital facility, utility, and infrastructure projects. (K4C Model Policies)		
Policy 17.3	Factor climate impacts into the planning of operations and coordination of preparedness, response, and recovery activities. (K4C Model Policies)		
Policy 17.4	Coordinate and support public education by utility providers that raises awareness of the need for water and energy conservation and empowers individuals across diverse audience segments to take action. (K4C Model Policies)		
Policy 17.5	Identify opportunities to retrofit undersized stormwater infrastructure and areas with uncontrolled runoff to improve flow control and water quality, with a priority on locations providing the most benefit, are identified to be most vulnerable to extreme precipitation climate impacts, and areas that are historically under-resourced. (K4C Model Policies)	Same	
Policy 17.6	Review and update development codes and design standards to increase requirements for stormwater facility sizing, low-impact development, adopt nature-based solutions, and minimize impervious surface areas in private development and city capital improvements. (K4C Model Policies)	Theme 8	
Policy 17.7	Account for climate change impacts in planning, designing, and operating stormwater management approaches, including stormwater infrastructure and stormwater best management practices. (K4C Model Policies)	Low	SWIM Plan? Stormwater management plan This is something we could consider once we know what the target is. Would need specific BMPs
Policy 17.8	Identify and reduce flooding through improvements to drainage and wastewater systems and reductions in impervious surfaces and runoff, particularly in traditionally underserved areas. (K4C Model Policies)	High	Remove wastewater systems. Disadvantaged communities

		Prioritization	Notes
			We are doing this. Reductions in impervious surfaces in a stretch
Policy 17.9	To help increase resilience to flooding, protect, and where possible, enhance, and restore existing flood storage, conveyance, and ecological functions and values of floodplains, wetlands, and riparian corridors. (K4C Model Policies)	High	Belong in natural system/greenspace resiliency. Existing protections in place to promote
Policy 17.10	Map transportation infrastructure that is vulnerable to repeated floods, landslides, and other natural hazards, and designate alternative travel routes for critical transportation corridors when roads must be closed. (Commerce)		Already in Comprehensive Emergency Mgmt. Plan and map is updated through that planning process. Karissa recommends Low.
Policy 17.11	Analyze how the municipal water system maintains adequate pressure during a major wildfire event (e.g., multiple structures burning) and how it will look under current and projected drought conditions. (Commerce)	Low	Auburn – not at a high risk for Wildfires Well-worn communities – emergency water systems
Policy 17.12	Incorporate post-wildfire debris flow and flooding hazard information into critical area delineation in fire-prone communities. (Commerce)		
Goal 18	Provide all residents an equitable opportunity to learn about climate impacts, influence policy decisions, and take actions to enhance community resilience.		
Policy 18.1	Create and implement culturally contextualized outreach and education initiatives and materials that will inform the community about near-term and longer-term climate change threats and ways that the community can prepare and build resilience to these changes. (Commerce)	High	High b/c culturally contextualized. Not necessarily an Emergency Mgmt. role but would support. Not sure who would lead.
Policy 18.2	Build and support partnerships with community organizations with the capacity and relationships to convene diverse coalitions of residents and to educate and empower them to implement climate resilience actions. (Commerce)	High	No clear lead dept. Emergency Mgmt. would support. Would likely integrate across departments.

		Prioritization	Notes
Policy 18.3	Cultivate relationships with climate justice coalitions that can help facilitate frontline community learning and engagement that links local issues with regional and statewide issues. (Commerce)	High	No clear lead dept. Emergency Mgmt. would support. Would likely integrate across departments.

Theme 7: Cultural resources and practices

Gap Assessment: The current Auburn Comprehensive Plan captures the importance of historic preservation through policies related to developing a Historic Preservation Plan, planning for future development impacts to historic sites, and recognizing that the City should accord the same levels of promotion and protection to Native American sites and artifacts as to those of the more recent past. However, there are not specific policies that recognize the risks climate impacts pose to historic sites. Additional policies related to assessing climate vulnerability of the city's historic resources and establishing and maintaining government-to-government relations with tribes related to preserving sites should be considered.

Element Alignment	LU	H	CF	U	T	ED	PR	HP			
Sector Alignment	Z&D	B&E	CR&P	WR	T	ED	E	EM	HH	WM	A

		Prioritization	Notes
Goal 19	Protect and preserve cultural resources and practices to build resilient communities and ecosystems in the face of climate change.		
Policy 19.1	Ensure that cultural resources and practices — including historic sites and culturally important traditional foods and natural resources — are resilient to the impacts of extreme weather and other natural hazards worsened by climate change consistent with the Historic Preservation Element. (Commerce) *(HP-1)*		
Policy 19.2	The City should consider climate impact vulnerability (e.g., flooding, landslides, etc.) as a factor in the Historic Preservation Plan to identify and protect City historic resources. *(HP-2)*		

Policy 19.3	Establish or work with partners to establish a native plant nursery and seed bank to support long-term restoration and carbon sequestration efforts. (Commerce)		
Policy 19.4	Establish and maintain government-to-government relations with Native American tribes for the preservation of archaeological sites and traditional cultural properties that are vulnerable to climate impacts. (Commerce)		

Theme 8: Water conservation and stormwater management

Gap Assessment: The current Auburn Comprehensive Plan has many policies related to preserving water quality and quantity through conservation efforts and includes policies related to stormwater planning. However, additional policies are needed that provide a connection between climate change impacts and planning for community water needs and stormwater management. Policies that link climate change with water conservation efforts and stormwater management should be considered.

Element Alignment	LU	H	CF	U	T	ED	PR	HP			
Sector Alignment	Z&D	B&E	CR&P	WR	T	ED	E	EM	HH	WM	A

		Prioritization	Notes
Goal 20	Protect and preserve water quantity and quality from drought, extreme heat, and other hazards exacerbated by climate change consistent with the Utilities element. ~~consistent with the Comprehensive Water Plan~~.	Public Works – water, sewer, storm	Water chapter to the water system plan (what will be reference in the utilities element) All three utilities will have their own system plan
Policy 20.1	Reduce water consumption ~~by 1%~~ annually for the City of Auburn's public water supply by supporting water conservation efforts. *(CAP note; LU-93, CF-20, CF-21)*	High	We are already working to reduce consumption. 172/g/connection – 1% goal Once this is reached, we will reevaluate. Address distribution leakage goal (DSL under 10%)

		Prioritization	Notes
Policy 20.2	Promote water efficiency and conserve community water resources. Transporting and treating drinking water, wastewater, and stormwater requires energy and generates pollution. The City can foster water conservation through incentives, information, and requirements that residents and business adopt water-efficiency practices and technologies, in addition to Low-Impact Development that it already requires. The City can also help ensure that existing codes do not pose any barriers that discourage or prevent the use of water conservation practices on public and private property *(CAP E-8).*	Low – stormwater Med/High – water and sewer	All three utilities are grouped. Reduce the number of pump stations. Development/manage stormwater on the site. Goal is to be efficient as possible. Located in a valley and limited by terrain. Separate incentives from operations - Water = tiered water rate system - Toilet rebate program (low flow) - Auburn does not treat wastewater, but they do transport it
Policy 20.3	Implement automated metering, groundwater monitoring, and other proven measures to conserve water and enhance drought resilience. (Commerce) *(LU-93, CF-20, CF-21)*	High (water)	AMI – implement water metering. Should be covered in water and sewer plans. Cover all three utilities – try not toget too specific
Policy 20.4	Utilize water conservation methods and technologies in development of irrigation infrastructure within parks and recreation areas to foster climate resilience. (Commerce) *(LU-93, CF-20, CF-21)*	Med	AMI School education/programs – water efficiency May be more appropriate somewhere else (some parks use turf, water reuse TBD, water audits – landscape irrigation)
Policy 20.5	Manage water resources sustainably in the face of climate change through smart irrigation, stormwater management, preventative maintenance, water conservation and wastewater reuse, plant selection, and landscape management. (Commerce) *(LU-93, CF-20, CF-21)*	Med	Landscape management – lots of grasses are “useless grass” Stormwater management = uses LID

		Prioritization	Notes
Goal 21	Account for climate change impacts in planning, designing, and operating stormwater management approaches consistent with the Comprehensive Storm Drainage Plan.		
Policy 21.1	The Storm Drainage Utility shall work with other jurisdictions and agencies to address regional water quality issues exacerbated by climate change, consistent with the Capital Facilities Element. *(CF-50, CF-51, CF-52, CF-53)*	NA	Regional water quality issues – what is meant in this policy Not general Utilities Element
Policy 21.2	Require the use of green infrastructure and low-impact development to address increased storm intensities and stormwater runoff. (Commerce) *(CF-38)*	NA	Utilities Element (stormwater comprehensive plan)
Policy 21.3	Review and update development codes and design standards to increase requirements for stormwater facility sizing, low-impact development, adopt nature-based solutions, and minimize impervious surface areas in private development and city capital improvements. (K4C Model Policies) (*CF-39, CF-40, CF-44)*	Low Supportive, but this will be covered by other standards provided by Ecology	Sizing = 100 year storm events There are other regional efforts going on at the state level/county level that will push the direction here
Policy 21.4	Identify opportunities to retrofit undersized stormwater infrastructure and areas with uncontrolled runoff to improve flow control and water quality, with a priority on locations providing the most benefit, are identified to be most vulnerable to extreme precipitation climate impacts, and areas that are historically under-resourced. (K4C Model Policies)	High	Stormwater comp plan Make more broad – still related to stormwater

Theme 9: Natural habitats and urban green space

Gap Assessment: The current Auburn Comprehensive Plan includes policies protecting, enhancing, and restoring critical areas and natural resources. However, policies related to forest management and increasing the resilience of natural resources to climate change impacts are lacking. Additional policies that speak to tree management and link the protection of healthy habitats to climate resiliency should be considered.

Element Alignment	LU	H	CF	U	T	ED	PR	HP

Sector Alignment	Z&D	B&E	CR&P	WR	T	ED	E	EM	HH	WM	A

		Prioritization	Notes
Goal 22	Support preservation and access to green and open spaces.		
Policy 22.1	Ensure equitable access to parks, green space, and recreational services for all residents consistent with the Land Use Element. (K4C Model Policies) *(LU-96)*	High	
Goal 23	Protect and enhance the climate resilience of urban forests by implementing climate-smart forest management.		Be sure to use "urban" before forest when referring to urban forestry.
Policy 23.1	Review, update, and implement tree protection codes to increase tree retention. Encourage the protection, maintenance, and expansion of tree canopy throughout the community, prioritizing residential and mixed-use areas with the least current tree canopy to equitably distribute benefits. (K4C Model Policies)	High	Strong language (good). Planning and public works policy for implementation.
Policy 23.2	Adopt a forest master plan and implementing ordinances to maintain and expand tree canopy cover, improve tree and watershed health, prioritize carbon sequestration, and build climate resilience. (Commerce)	Med	Not sure what a forest master plan would like (who would own this?)
Policy 23.3	Reduce loss of private forestland through forest stewardship education and identify opportunities to expand incentives for forest landowners. (Commerce)	Low	May not be applicable to a city
Policy 23.4	Encourage participation in Washington's small forest landowner assistance cost-share and stewardship programs. (Commerce)	Low	May not be applicable to a city
Policy 23.5	Prioritize urban forestry planning resources and funding for frontline communities that are hurt first and worst by climate change. (Commerce)	High	Prioritize may not be the right word for it. Implementation considerations – would need to hire a consultant for this, consider what this means for budget
Goal 24	Ensure the protection and recovery of ecosystems to provide healthy habitat in a changing climate.		
Policy 24.1	Ensure no net loss of ecosystem composition, structure, and functions, especially in Critical Areas, and strive for net ecological gain to enhance climate resilience in accordance with the Land Use Element. (Commerce) *(LU-132, LU-133, LU-134, LU-135)*	High	Good – strong language

		Prioritization	Notes
Policy 24.2	Identify opportunities to expand habitat protection and improve habitat quality and connectivity to foster climate resilience using conservation area designations, buffers, and open space corridors. (Commerce)	High	Good strong language
Policy 24.3	Use an integrated approach to prevent the spread and establishment of invasive plant species and enhance the climate resilience of native plant communities. (Commerce)	High	Good strong language
Policy 24.4	Implement actions identified in restoration and salmon recovery plans to improve climate resilience of streams and watersheds. (Commerce)	High	Good strong language
Policy 24.5	Protect and restore riparian vegetation to reduce erosion, provide shade, and support other functions that improve the resilience of streams to climate change. (Commerce)	High	Good strong language

Theme 10: Economic Development

Gap Assessment: The current Auburn Comprehensive Plan captures the high-level policies related to local economic development. However, additional policies are needed that recognize the need for climate and environmental justice considerations. Policies related to developing a green job strategy, an equitable green workforce (including education and workforce training), and a just transition should be considered.

Element Alignment	LU	H	CF	U	T	ED	PR	HP			
Sector Alignment	Z&D	B&E	CR&P	WR	T	ED	E	EM	HH	WM	A

		Prioritization	Notes
Goal 25	Increase access of green jobs, with special consideration of increasing access for frontline communities.		
Policy 25.1	The City should support economic development activity through workforce development programs to provide training and employment with private sector, school districts, and Green River College. Consideration of the special needs of economically disadvantaged residents and neighborhoods, and people with physical impairments	High	Add stakeholder: Downtown Auburn Cooperative. Economic development Department is lead; shared with Community development Dept

		Prioritization	Notes
	and developmental disabilities, should be included in these programs. (*ED-11*)		
Policy 25.2	Develop a green jobs strategy in partnership with community groups, frontline communities, and businesses that (1) supports sustainable practices, green skills development, and the low carbon transition of the city's impacted industries, (2) develops pathways for youth and impacted workers to transition into green jobs; and (3) ensures opportunities (e.g., local hiring requirements) for these jobs. (K4C Model Policies)	High	Try to recruit sectors that can bring low-carbon emissions, like clean energy. Economic development Department is lead; shared with Community development Dept
Policy 25.3	Develop an equitable green workforce that is representative of the diversity of the city's communities and reflects the diverse skill sets, knowledge systems, and experiences communities through targeted hiring, workforce development, community agreements, and creating intentional pathways for frontline communities across sectors and seniority levels. (K4C Model Policies)	High	Pair with Policy 25.2 – need the opportunity and environment to work. Next 10-year economic strategic development plan should include Policies 25.2, 25.3, and 25.6 – will start renewal process in 2024; include support for the High policies in Goal 25. Economic development Department is lead; shared with Community development Dept
Policy 25.4	Ensure that the jurisdiction's Comprehensive Emergency Management Plan responds to the impacts of climate change and identifies roles and responsibilities to support a sustainable economic recovery after a disaster. (Commerce)	High	CEMP has boiler plate language on climate change (need to update to be more specific; it's on its own 5-year update cycle).
Policy 25.5	Support local businesses' efforts to generate and store renewable electricity on-site, which can provide back-up power during emergencies and help ensure continuity of operations. (Commerce)	High	City-private grant partnership to share costs? Would need to work with PSE. Encourage for new buildings in particular. Economic development Department is lead; shared with Community development Dept
Policy 25.6	Promote local industrial development to support a circular economy that increases demand for recycled materials and reduces demand for new raw materials and their embodied carbon emissions. (Commerce)	High	Economic development Department is lead; shared with Community development Dept

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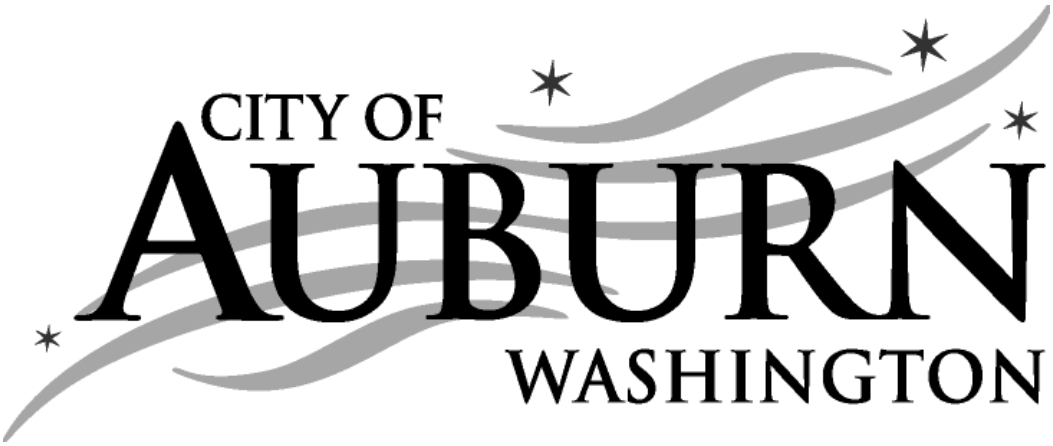


CITY OF AUBURN, WA

Water System Plan

December 2024

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2024
Water System Plan

City of Auburn, Washington

December 2024

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Water System Plan
December 2024

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Acronyms & Abbreviations

A	
AACE	American Association of Cost Estimators
AC	Asbestos-Cement
ACC	Auburn City Code
ac-ft/year	Acre-Foot Per Year
ADD	Average Day Demand
ADU	Accessory Dwelling Unit
AFY	Acre Feet Per Year
Algona	City of Algona
AMC	Auburn Municipal Code
AMI	Advanced Metering Infrastructure
APWA	American Public Works Association
ASR	Aquifer Storage and Recovery
AWC	Association of Washington Cities
AWWA	American Water Works Association
B	
BCA	Bilaterial Compliance Agreement
Bonney Lake	City of Bonney Lake
BPS	Booster Pump Station
C	
Cascade	Cascade Water Alliance
ccf	Centum Cubic Feet
CCI	Construction Cost Index
CCPP	Calcium Carbonate Precipitation Potential
CCR	Consumer Confidence Report
CCT	Corrosion Control Treatment
CCTF	Corrosion Control Treatment Facility
CDBG	Community Development Block Grant
CDPW	Community Development & Public Works
CEMP	Comprehensive Emergency Management Plan
CERB	Community Economic Revitalization Board
CEU	Continuing Education Units
cfs	Cubic Feet Per Second
cfm	Cubic Feet Per Minute
CFP	Capital Facilities Plan
City	City of Auburn
CIP	Capital Improvement Plan
CMP	Coliform Monitoring Plan
CPR	Conservation Planning Requirements
CSCSL	Confirmed and Suspected Contaminate Sites

CWD	Covington Water District
CWSP	Coordinated Water System Plan
D	
D	Distribution Improvements
DBPR	Disinfectants and Disinfection Byproducts Rule
DBP	Disinfection Byproducts
DHS	Department of Homeland Security
DI	Ductile Iron
DNS	Determination of Non-Significance
DOE	Department of Ecology
DOH	Washington State Department of Health
DSL	Distribution System Leakage
DWSRF	Drinking Water State Revolving Fund
E	
EDCS	Engineering Design and Construction Standards
ENR	Engineering News Record
EOC	Emergency Operation Center
EPA	United States Environmental Protection Agency
EPS	Extended Period Simulation
ERU	Equivalent Residential Unit
EWE	Energy and Water Efficiency
F	
FEMA	Federal Emergency Management Agency
FF	Fire Flow
ft/s or fps	Feet Per Second
G	
G	General Improvements
gal/ERU	Gallons Per Equivalent Residential Unit
GIS	Geographic Information System
gpd	Gallons Per Day
gpm	Gallons Per Minute
GMA	Growth Management Act
G.O.	General Obligation
GWMP	Ground Water Management Plan
GWR	Groundwater Rule
GWUI	Groundwater Under the Influence of Surface Water
H	
HAA5	Haloacetic Acids
HGL	Hydraulic Grade Line
HPC	Heterotrophic Plate Count
HP	Horsepower
HWD	Highline Water District

I	
IA2	Interlocal Agreement 2
IA3	Interlocal Agreement 3
ICS	Incident Command System
IDSE	Initial Distribution System Evaluation
IGEA	Investment Grade Efficiency Audit
L	
LCRMR	Lead and Copper Rule Minor Revisions
LFC	Local Facilities Charge
LIDs	Local Improvement Projects
LMWD	Lake Meridian Water District
LRAAs	Locational Running Annual Averages
LR	Larson Ratio
LSI	Langelier
LWSD	Lakehaven Water and Sewer District
M	
MAG	Electromagnetic
Manual	Public Works Emergency Response Manual
MCL	Maximum Contaminant Level
MCLGs	Maximum Contaminant Level Goals
M/DBP	Microbial/Disinfection By-Product
MDD	Maximum Day Demand
MDRLs	Maximum Disinfectant Residual Level
MFR	Multifamily Residential
MG	Million Gallon
mgd	Million Gallons Per Day
MG/year	Million Gallons Per Year
MIT	Muckleshoot Indian Tribe
M&O	Maintenance and Operations
MRSC	Municipal Research and Services Center of Washington
MSDS	Material Safety Data Sheets
N	
NIMS	National Incident Management System
NOM	Natural Organic Matter
O	
O&M	Operations & Maintenance
OSHA	Occupational Safety and Health Administration
P	
PAA	Potential Annexation Areas
PGG	Pacific Groundwater Group
PHD	Peak Hour Demand
PHG	Public Health Goal

PIC	Forest Villa Manor
PI	Parcel Insight
Plan	Comprehensive Water Plan
PLC	Programmable Logic Controller
PNR	Public Notification Rule
PR	Pressure Reducing
Project ID	Identification Number
PRV	Pressure Reducing Valve
psi	Pounds Per Square Inch
PSRC	Puget Sound Regional Council
PS	Pump Stations
PUD	Planned Unit Development
PW	Public Works
PWB	Public Works Board
Q	
Qaw	White River Alluvium
Qd	Vashon Recessional Deltaic Deposits
Qom	Osceola Mudflow
Qua	Undifferentiated Alluvium
Qu	Undifferentiated Glacial and Interglacial Deposits
R	
R	Storage Improvement
R5	Residential 5 Du/Acre
RAA	Running Annual Average
RWSA	Retail Water Service Area
RWSS	Regional Water Supply System
S	
S	Supply Improvement
SCA	Sanitary Control Area
SCADA	Supervisory Control and Data Acquisition
SDC	Standard Development Charge
SDS	Safety Data Sheets
SDWA	Safe Drinking Water Act
SEATAC	Seattle-Tacoma International Airport
SEPA	State Environmental Policy Act
SFR	Single-Family Residential/Duplex
SMP	Standard Monitoring Program
SOC	Synthetic Organic Chemical
SOS	Save Our Streets
SSS	System-Specific Study
SWTR	Surface Water Treatment Rule

T	
Tacoma	City of Tacoma
TAZ	Transportation Analysis Zone
TCR	Total Coliform Rule
TPU	Tacoma Public Utility
TTHM	Total Trihalomethanes
U	
UCM	Unregulated Contaminant Monitoring
UDF	Unidirectional Flushing
UGA	Urban Growth Area
ULID	Utility Local Improvement District
USGS	United States Geological Survey
USEPA	United States Environmental Protectional Agency
UTC	Utilities And Transportation Commission
V	
VA	Vulnerability Assessment
VFD	Variable Frequency Drive
VOC	Volatile Organic Compound
W	
WAC	Washington Administrative Code
WCIA	Washington Cities Insurance Authority
WD#111	King County Water District #111
WETRC	Washington Environmental Training Resource Center
WFI	Water Facilities Inventory
WHP	Wellhead Protection
WHPA	Wellhead Protection Areas
WHPP	Wellhead Protection Plan
WISHA	Washington Industrial Safety and Health Act
WSP	Water System Plan
WSSIP	Water System Security Improvement Plan
WUE	Water Use Efficiency

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Executive Summary

Introduction

This Water System Plan (WSP) has been developed in accordance with Chapter 426-290 of the Washington Administrative Code (WAC), as presented in the Washington State Department of Health (DOH) regulations for Group A Public Water Systems. This WSP supersedes the City of Auburn's (City) 2015 WSP, approved by DOH on May 11, 2016, and the 2021 Limited WSP Update approved by DOH on December 16, 2021. The City's water system identification number is 03350V.

Th purpose of this WSP is to develop a long-term planning strategy for the City's Retail Water Service Area (RWSA). Updated every ten years per DOH, the WSP evaluates the existing system and its ability to meet the anticipated requirements for water source, treatment, transmission, storage, and distribution over a 20-year planning period. Historical data through the year 2022 were used for the analyses throughout the WSP. The ten-year planning period is 2024-2034. The long-term planning period is 2034-2044. Water system improvement projects have been developed to meet the changing demands of regulatory impacts, population growth, and necessary infrastructure repair and replacement. The WSP also identifies planning-level costs of the improvement projects and provides a financial plan for funding the projects.

ES.1 Description of Water System

The City limits are within both King County and Pierce County in the Puget Sound Region of Washington. Figure ES-1 shows the City's RWSA which encompasses approximately 30 square miles. Several water purveyors adjoin the City's RWSA, including the cities of Algona, Bonney Lake, Federal Way, Kent, Pacific, and Sumner. Also included are the Covington Water District (CWD), Lakehaven Water and Sewer District (LWSD), Lake Meridian Water District (LMWD) (formerly known as King County Water District #111), Highline Water District (HWD), and the Muckleshoot Indian Tribe (MIT). The City also provides internal staffing for the management, operations, and maintenance of the Braunwood Estates satellite system.

The City's water system consists of groundwater wells, springs, and interties with adjacent purveyors as water sources, chlorination and corrosion control treatment facilities, pump stations, pressure reducing valve stations, steel and concrete enclosed reservoirs for storage, and transmission and distribution pipelines to provide potable water to customers. The RWSA is further divided into four service areas (Valley, Lea Hill, Lakeland, and Academy) that include a total of 28 pressure zones. The City's four service areas and the location of key components of the water system are shown in Figure ES-2.

Interties provide a tool that water utilities use to move water between systems to meet supply needs, to increase reliability and respond to emergencies. The City maintains wholesale supply interties with three water systems: City of Tacoma (Tacoma), Algona, and LMWD. The City also has a supply contract with the MIT and the Indian Health Service, dating from 1972, for services along a pipeline at SE 368th PL extending from the City limits into the reservation. The City has emergency interties with seven water systems, Algona, Bonney Lake, Kent, Pacific, LWSD, LMWD and Tacoma.

A hydraulic profile of the City's water system is presented in Figure ES-3, showing all service areas, pressure zones, supplies, interties, reservoirs, and pump stations.

Figure ES-1 | RWSA Vicinity Map

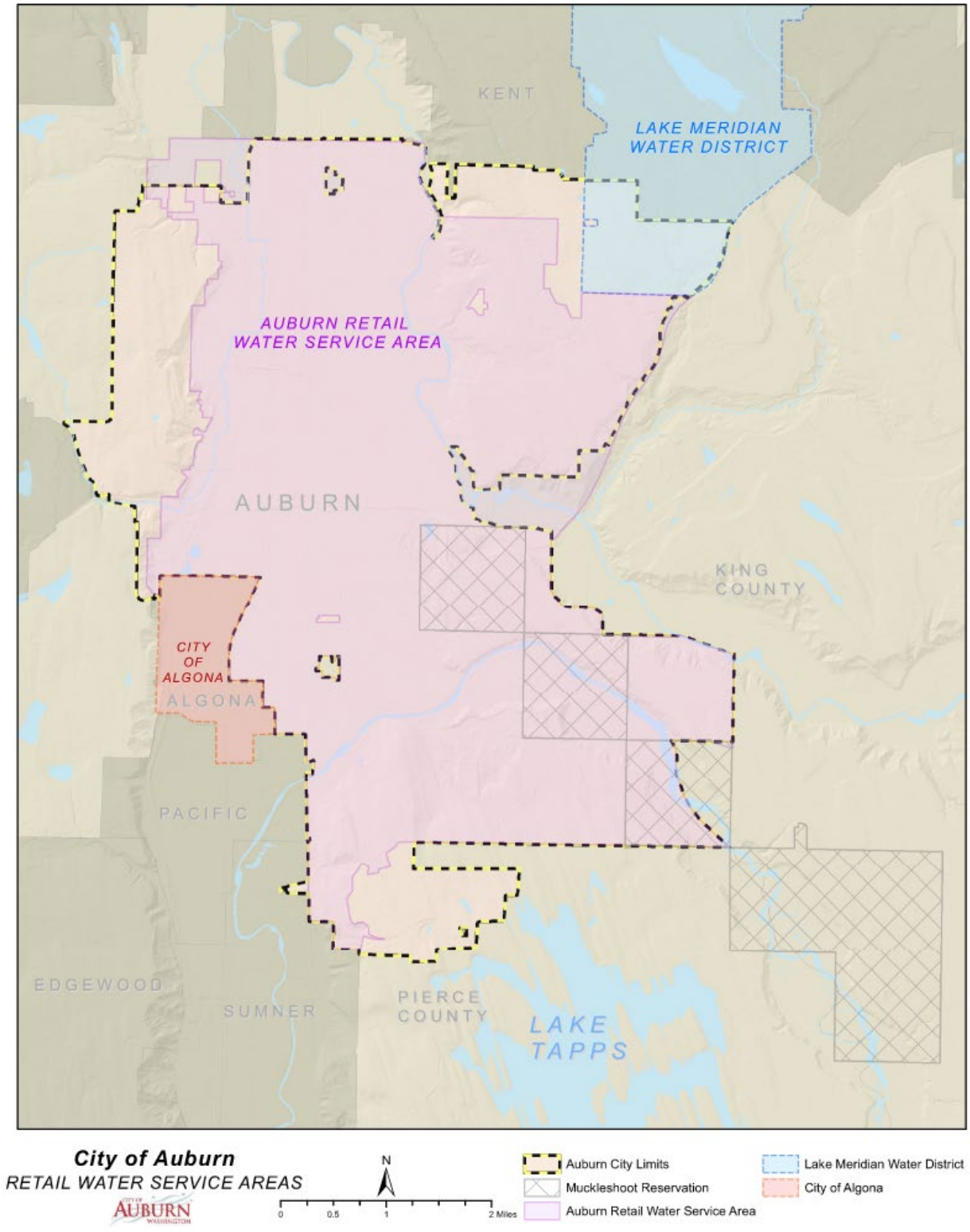


Figure ES-2 | Existing Facilities

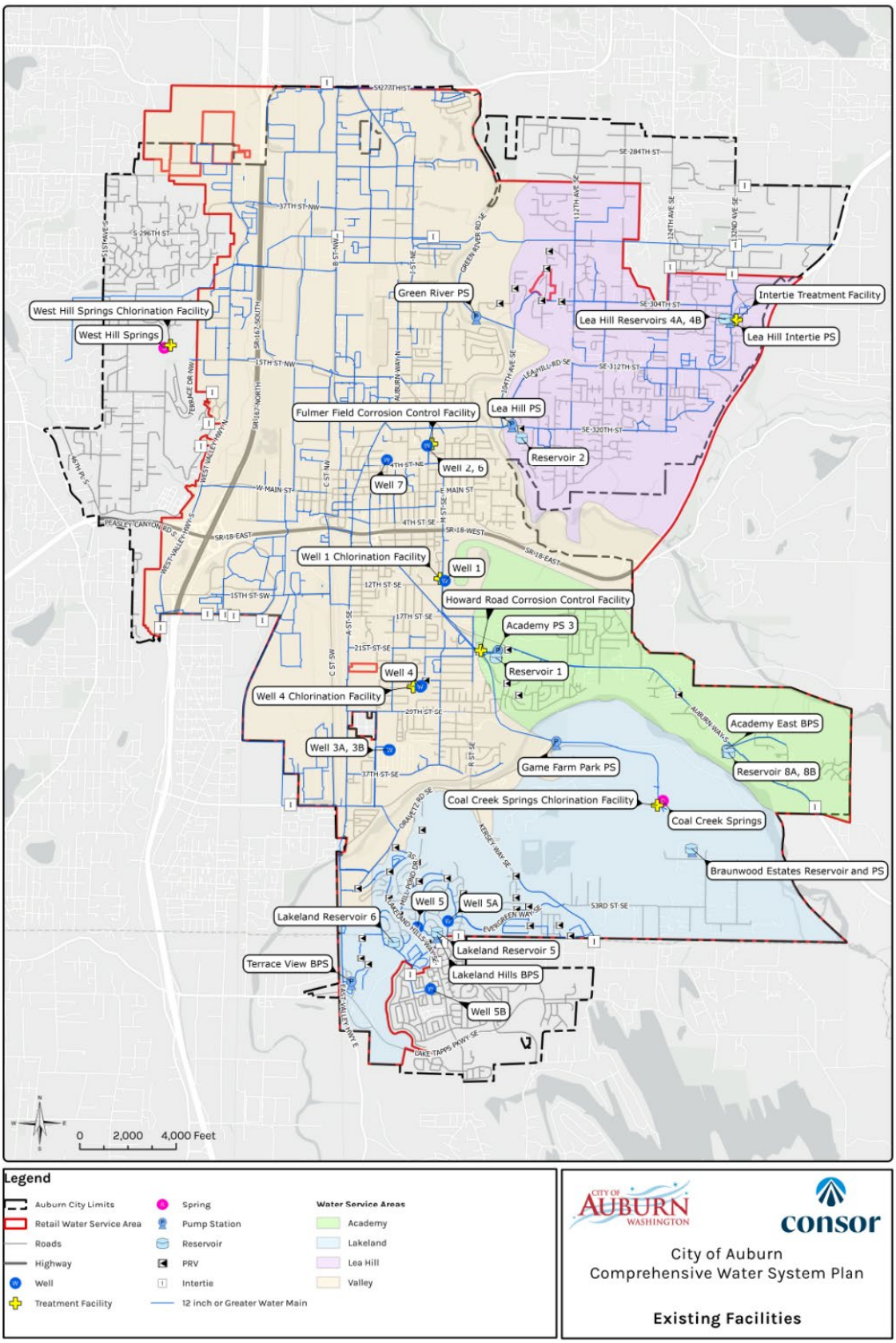
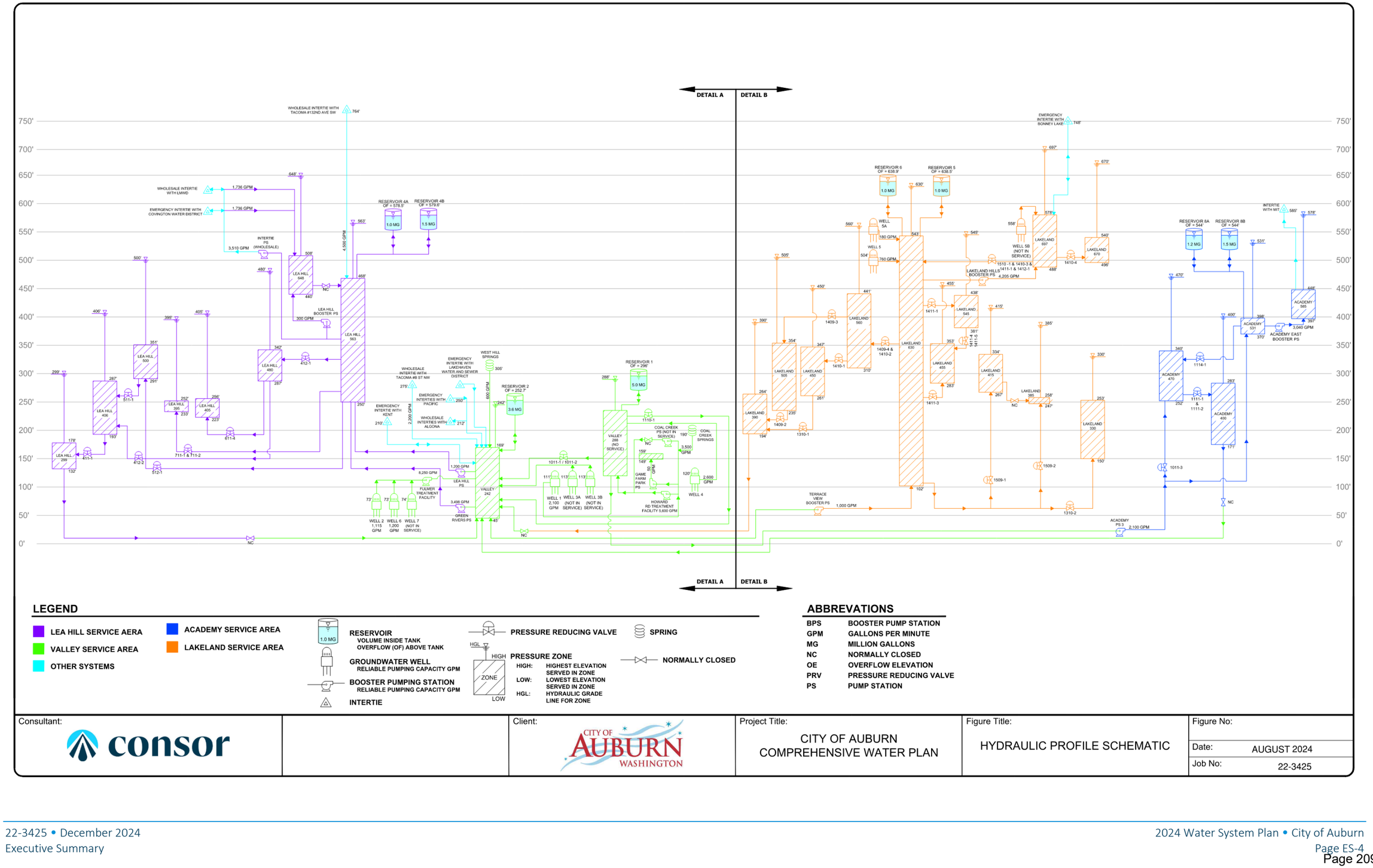


Figure ES-3 | Hydraulic Profile



LEGEND

- LEA HILL SERVICE AERA
- VALLEY SERVICE AREA
- OTHER SYSTEMS
- ACADEMY SERVICE AREA
- LAKELAND SERVICE AREA
- RESERVOIR — VOLUME INSIDE TANK OVERFLOW (OF) ABOVE TANK
- GROUNDWATER WELL — RELIABLE PUMPING CAPACITY GPM
- BOOSTER PUMPING STATION — RELIABLE PUMPING CAPACITY GPM
- INTERTIE
- PRESSURE REDUCING VALVE
- PRESSURE ZONE
  - HIGH: HIGHEST ELEVATION SERVED IN ZONE
  - LOW: LOWEST ELEVATION SERVED IN ZONE
  - HGL: HYDRAULIC GRADE LINE FOR ZONE
- SPRING
- NORMALLY CLOSED

ABBREVATIONS

BPS	BOOSTER PUMP STATION
GPM	GALLONS PER MINUTE
MG	MILLION GALLONS
NC	NORMALLY CLOSED
OE	OVERFLOW ELEVATION
PRV	PRESSURE REDUCING VALVE
PS	PUMP STATION

Consultant: consor		Client: CITY OF AUBURN WASHINGTON	Project Title: CITY OF AUBURN COMPREHENSIVE WATER PLAN	Figure Title: HYDRAULIC PROFILE SCHEMATIC	Figure No:
					Date: AUGUST 2024
					Job No: 22-3425

ES.2 Basic Planning Data

Water Service Connections and Usage

The City's current and future water demand requirements were projected for each customer class (single-family residential/duplex, multifamily residential, commercial, manufacturing/industrial, schools, city accounts, irrigation, and wholesale). The water consumption, or demand, of each customer classification can be expressed in terms of equivalent residential units (ERUs) for forecasting and planning purposes. One ERU is defined as the average quantity of water used by one average, full-time, single-family residence per day. The quantity of water used by other customer classes, or by the entire system, can be expressed in terms of equivalent ERUs. The historical average and maximum water demands are important parameters when performing system and supply analyses. The Average Day Demand (ADD) is typically used in operational evaluations. The Maximum Day Demand (MDD) represents the single largest day water demand during the year and is a key parameter for infrastructure sizing.

The City provided water to approximately 63,450 customers through 15,046 connections as of the end of 2022. Between 2015 and 2022 the ADD ranged from 6.32 million gallons per day (mgd) on the low end in 2020 to 7.67 mgd on the high end in 2016. The MDD has ranged from 11.25 mgd in 2019 to 12.43 mgd in 2020. The total number of connections increased by approximately three percent between 2015 and 2022. The City has two active wholesale water agreements, one with the City of Algona and the other with LMWD that is interruptible.

Water Supply and Production

The City has a diverse water supply consisting of two springs, ten wells and an intertie with the City of Tacoma. Wells 1, 2, 3A, 3B, 4, 6, and 7 are in the lower alluvial aquifer in the Auburn Valley, referred to as the Valley Wellfield. Wells 3A, 3B and 7 are currently offline due to high manganese concentrations. Wells 5, 5A, and 5B are in the Upland Wellfield within the Lakeland Service Area. Once Well 5B came online, the City discovered that the aquifer was not recovering and Well 5B has been offline since 2006. The safe yield of Wells 5 and 5A have been decreased from their design capacity due to a drop in the aquifer's capacity. The City has sufficient water rights to meet current demands as well as 10- and 20-year demand projections, as shown in the Water Rights Self-Assessment Form provided in Appendix I. Additional information on the City meeting future demands is mentioned in the Capacity Analysis Section under ES.3 (System Analysis and Asset Management).

West Hill Springs draws from an unnamed confined aquifer. The spring source water flows by gravity into the Valley Service Area, although flows vary depending on aquifer conditions. Coal Creek Springs is the largest active water supply for the City and draws from a confined aquifer, however its flow varies depending on aquifer conditions. The City also owns two additional wells: the Algona Well 1, which is not operational and the Braunwood Well which serves the Braunwood satellite system.

Future Population and Demand Projections

Demographic projections are based on the Puget Sound Regional Council's (PSRC) 2044 forecasts for population and employment within the City's RWSA. Total population is projected to increase by 1.5 percent annually from 2021 to 2044 and total employment is projected to increase by 1.9 percent annually over the same period. Overall, the City is planning for an additional 24,987 residents and 20,525 employed people by 2044 within the RWSA. The Valley Service Area is projected to represent 64 percent of the system's population and 93 percent of the system's employment in 2044.

The projected ADD and MDD, along with wholesale demands, are summarized in **Table ES-1.** To be conservative, an ERU planning value higher than the average was used for demand forecasting. The 75th percentile of the historical ADD per ERU between 2015 and 2022 was used to select the planning ERU value of 182 gpd. The peak demands can be expressed as an MDD/ADD peaking factor, which is the relative magnitude of MDD compared to ADD. The City's MDD/ADD peaking factor was 1.77. Distribution system leakage and authorized unbilled consumption are accounted for in the projections.

Table ES-1 | ADD, MDD, and ERUs Summarized by Service Area with Wholesale Included

	2024	2034	2044
Lea Hill			
Average Day Demand (mgd)	1.00	1.04	1.09
Maximum Day Demand (mgd)	1.77	1.84	1.92
Equivalent Residential Units	5,506	5,729	5,966
Valley			
Average Day Demand (mgd)	5.11	5.84	6.72
Maximum Day Demand (mgd)	9.02	10.31	11.88
Equivalent Residential Units	28,034	32,037	36,920
Lakeland			
Average Day Demand (mgd)	0.51	0.59	0.67
Maximum Day Demand (mgd)	0.91	1.04	1.19
Equivalent Residential Units	2,815	3,217	3,684
Academy			
Average Day Demand (mgd)	0.43	0.48	0.54
Maximum Day Demand (mgd)	0.76	0.85	0.95
Equivalent Residential Units	2,375	2,642	2,946
Total Retail Customers			
Average Day Demand (mgd)	7.05	7.95	9.02
Maximum Day Demand (mgd)	12.47	14.04	15.94
Equivalent Residential Units	38,731	43,626	49,515
Algona (Firm Wholesale)			
Total Average Day Demand (mgd)	0.365	0.386	0.409
Total Equivalent Residential Units, ADD	2,005	2,120	2,246
Total Maximum Day Demand (mgd)	0.692	0.732	0.775
Total Equivalent Residential Units, MDD	3,800	4,018	4,256
Retail with Algona			
Total Average Day Demand (mgd)	7.42	8.33	9.43
Total Maximum Day Demand (mgd)	13.16	14.77	16.71
Retail with Firm Wholesale (Algona and MIT)			
Average Day Demand (mgd)	9.92	10.83	11.93
Maximum Day Demand (mgd)	14.66	16.27	18.21
Retail with Firm & Interruptible Wholesale (Algona, MIT, and LMWD)			
Average Day Demand (mgd)	12.42	13.33	14.43
Maximum Day Demand (mgd)	17.16	18.77	20.71

ES.3 System Analysis and Asset Management

Asset Management

The City actively assesses and plans for the maintenance, repair, and replacement of its assets while preventive maintenance practices keep assets in good condition, thereby extending their useful life. For asset management, the City utilizes CarteGraph in conjunction with the geographic information system (GIS). GIS is updated using as-builts as projects are completed and CarteGraph is auto-populated from this information. CarteGraph is used to track and schedule maintenance activities and track material and labor costs and project timelines.

An inventory of the City's existing water system assets including distribution system components, treatment, reservoirs, supply facilities, pump stations, backup power, and the telemetry system is presented in Chapter 3.

Water Quality

The DOH requires that source water be monitored for primary and secondary contaminants. Primary contaminant levels are not to be exceeded for health reasons and secondary contaminants should not be exceeded for aesthetic reasons. Distribution system water quality testing requirements include monitoring of many contaminants for which the DOH determines maximum contaminant levels.

Historically, the City has relied on groundwater supplies from wells and springs, which have been determined are not under the direct influence of surface waters. For these water sources, the City is required to meet the United States Environmental Protection Agency's (EPA's) Groundwater Rule. The treatment objectives of the City are to treat source water to contaminant concentrations below the maximum contaminant levels (MCLs) established by the EPA and WAC. All constituents are currently below their respective MCLs.

The required frequency of monitoring of inorganic chemical and physical parameters varies by source, however, the City typically monitors these constituents every 12 months. Within the study period, the maximum detected concentrations of these parameters did not exceed the MCLs published by the EPA.

All active sources are disinfected with chlorine prior to entering the distribution system except for Well 5. The City has a capital project discussed in Chapter 8 that will include the addition of a chlorination facility to Well 5. Corrosion control treatment is required on the water produced by Coal Creek Springs, Well 1, Well 2, Well 6, and Well 7 to limit the corrosion of lead and copper in the system. Since the corrosion control treatment facilities were constructed, the lead and copper levels in the City's system have been well below the action level. There were no water quality violations in the distribution system between 2015 and 2022.

Design Standards

The City's most recent Engineering Design and Construction Standards are available on the City's website and are provided as Appendix P.

The City's water quality design standards follow the design standards set forth by the EPA and the Washington DOH.

Capacity Analysis

The City's water supply (production) capacity compared with demand projections and DOH and City criteria indicate that the City has the supply facilities necessary to meet demand projections under current and future projections for all required criteria.

The City's Water Rights Self-Assessment Form is provided in **Appendix I** and was used to assess the City's water rights and includes supply that is available to the City through firm wholesale interties with Tacoma. The form includes a comparison of the available water rights to the existing, 10-year and 20-year demand projections for the "High Demand Scenario" provided in **Chapter 2**. The calculations presented in the Water Rights Self-Assessment Form conclude that the City's existing water rights are anticipated to be adequate to meet the current, 10-year, and 20-year projections for Qi and Qa.

The City does not currently have the infrastructure necessary to withdraw from all water rights (i.e., Wells 3A, 3B, 5B, and 7 are not currently operational). Additionally, some sources have underlying aquifer or infrastructure restrictions that limit the capacity of the source (i.e., Well 2, Well 6, and Coal Creek Springs). Several facility improvement projects are necessary for the City to maximize water production capacity to meet future demands, and planned supply related capital projects to meet this need are discussed further in **Chapter 8**.

Table ES-2 provides an overview of pump station supply analysis results expressed as either having a capacity surplus or deficit for open and closed zones. Open zones are pressure zones that are fed by gravity from a reservoir. Pressure zones that do not include a storage facility are analyzed as a closed zone. A closed zone in the Lea Hill Service Area and the Game Farm Park closed zone have a BPS capacity deficit identified in all planning scenarios. The City has planned a capital project to resolve the deficiency at the Intertie Pump Station/Lea Hill BPS. The Game Farm Park Pump Station only provides service to a recreational area with no residential or commercial property connections supplied by this facility. The City has reviewed the deficit with the Fire Marshal and the deficiency is not critical to address, therefore no actions are currently planned to resolve the deficiency at the Game Farm Park Pump Station. As further development progresses in and around the Game Farm Park Pump Station, modifications will be considered to address the deficiency.

Table ES-2 | Summary of Pump Station Capacity Results

	2024	2034	2044
Valley Open Zone Pump Station Capacity	Surplus	Surplus	Surplus
Lea Hill Open Zone Pump Station Capacity	Surplus	Surplus	Surplus
Lakeland Open Zone Pump Station Capacity	Surplus	Surplus	Surplus
Academy Open Zone Pump Station Capacity	Surplus	Surplus	Surplus
Lakeland Closed Zone BPS Capacity	Surplus	Surplus	Surplus
Academy Closed Zone BPS Capacity	Surplus	Surplus	Surplus
Lea Hill Closed Zone BPS Capacity	**Deficit**	**Deficit**	**Deficit**
Game Farm Park Closed Zone BPS Capacity	**Deficit**	**Deficit**	**Deficit**

The City's water storage facilities were analyzed to determine if they have sufficient capacity to meet the existing and future storage requirements. A summary of the results is provided in **Table ES-3**. New sources and pump stations allow for reliable and redundant operation of the system as an interconnected whole, rather than separate Service Areas. As such, excess storage in one service area can be used to

offset a deficit in another area of the system. The results of the storage analysis indicate that there is sufficient capacity to meet the projected 2024 and 2034 storage requirements, however additional storage is projected to be necessary in 2044. The City has a planned capital project to add a new reservoir in the Valley Service Area to address this deficiency.

Table ES-3 | Summary Storage Capacity Analysis

	Total Usable Storage	2024		2034		2044	
		Total Required Storage (MG)	Surplus/ (Deficit) (MG)	Total Required Storage (MG)	Surplus/ (Deficit) (MG)	Total Required Storage (MG)	Surplus/ (Deficit) (MG)
Academy	2.66	1.54	1.12	1.60	1.06	1.68	0.98
Lakeland	1.34	1.24	0.10	1.36	(0.02)	1.49	(0.15)
Lea Hill	2.12	2.29	(0.17)	2.34	(0.22)	2.40	(0.28)
Valley	7.96	7.72	0.24	8.68	(0.72)	9.86	(1.89)
RWSA	**14.08**	**12.79**	**1.29**	**13.98**	**0.10**	**15.42**	**(1.34)**

The City's existing distribution system was analyzed to determine if they have sufficient capacity to meet the existing and future demands and fire flow requirements using an updated and calibrated version of the City's hydraulic model. A low-pressure analysis was performed in the hydraulic model to confirm that pressures throughout the system were above 30 psi during under peak hour demand (PHD) conditions for 2024, 2034, and 2044. The results of this analysis indicated that all areas of existing and future system have pressures meeting this condition and were compliant with requirements.

An individual fire flow analysis was performed for each hydrant node in the hydraulic model to determine the available fire flow during MDD plus fire flow (FF) conditions, while maintaining a minimum residual pressure of 20 psi. The results of this analysis indicate that multiple pipeline improvement projects are necessary to address the distribution system deficiencies.

An analysis of the water system's overall physical capacity in terms of ERU using DOH Worksheet 4-1 is provided in Appendix V. The analysis indicates that the existing system has sufficient capacity to serve the current and projected water demands through 2034 (10-year planning horizon). Under 2024 and 2034 demand conditions, storage is the limiting system component for growth and development. In 2044 (20-year planning horizon) storage is deficient, which is consistent with the other analysis findings.

ES.4 Water Use Efficiency Program

Source and Service Metering

Each of the City's sources are metered to measure the amount of water produced. The meters are calibrated annually. If a meter cannot be calibrated properly, it is replaced with a new one. Propeller source meters are being replaced with electromagnetic (MAG) meters as part of on-going operation and maintenance (O&M) improvements.

Service meters are installed on every service line to measure the quantity of water used by a customer per WAC 246-290-496 and City Code Chapter 13.06.320. In 2015, the City began installing an Automated Metering Infrastructure (AMI) system, as a part of the Water Meter and Billing System Improvements project, which was completed in 2018. With the new AMI system, the City automatically receives meter reads via radio transmission and can integrate the data into the billing software.

Distribution System Leakage

Distribution System Leakage (DSL) represents the difference between production and documented water use (retail, wholesale, and authorized unmetered). The City's historical DSL performance complies with the DOH requirement that the three-year average DSL be under ten percent to minimize water waste. To further reduce DSL, the City has ongoing leak detection, meter calibration, and an active repair and replacement program for water system infrastructure.

Water Use Efficiency Program

The City's Water Use Efficiency (WUE) Program provides for efficient water use and supports stewardship of the City's resources. The selected program measures are interrelated and will help the City achieve its goals to both reduce average water use and peak water use per customer. Per the WUE requirements, the following measures implemented as part of the 2024-2034 WUE program:

- Install production (source) meters.
- Install consumption (service) meters.
- Perform meter calibration.
- Implement a water loss control action plan to control leakage if the three-year rolling average exceeds ten percent.
- Educate customers about water use efficiency practices.

Additionally, the following measures that must be evaluated are:

- Rates that encourage water demand efficiency (discussed in Chapter 9).
- Reclamation opportunities (discussed in detail in Chapter 4).

The DOH requires that the City estimate the amount of water saved through implementation of the system's WUE program over the last six years. Water use per-capita dropped from 112 gpd per capita in 2017 to 105 gpd per capita in 2022. The net water savings over this period equates to approximately 148 million gallons or 29.6 million gallons of savings per year.

The City has chosen to focus on implementing voluntary measures to decrease both the average and peak water usage. The City's goals are as follows:

- Decrease the planning ERU value (gpd/ERU) one percent annually from the current planning ERU value of 182 gpd/ERU,
- Decrease the planning peaking factor from the current 1.77 to 1.68, or less, and
- Maintain three-year average DSL under ten percent.

The City is committed to wastewater reuse and rainwater reclamation, as stated in its official water system policies summarized in Appendix A. Currently, there are no reclaimed water users in the City.

Climate Change Resiliency

To estimate the impact of climate change on the City's water demands, results from the Water Supply Forum's 2009 Regional Water Supply Outlook (WSF 2009 Outlook) were used. The impacts of climate change on sources that rely on groundwater are mostly unknown due to the variability between aquifers and site-specific effects. No changes to demand projections were made for the 20-year planning period to account for potential climate change due to the uncertain magnitude and timing of local effects. However, it is recognized that demand has the potential to increase in the future given these changes. In the event the City experiences such an increase, the City will use a model to compute firm yield from streamflow data, replacing historic inflows with projected inflows from three climate change scenarios as described by the WSF 2009 Outlook.

This WSP discusses short and long-term actions the City can take to improve the resiliency of the water system from the impacts of climate change. The short-term measures can improve resiliency within three to five years while the long-term measures may require decades to be fully implemented.

ES.5 Source Water Protection

Sanitary Control Areas (SCAs) have been established for each of the City's water sources per WAC 246-290-135(2). The standard SCA for wells has a minimum radius of 100 feet from the wellhead. The standard SCA for spring sources has a minimum radius of 200 feet from the spring head. All City water sources have SCAs that were established and approved by DOH, and are documented in the susceptibility forms provided in Appendix T.

The DOH has developed regulations that require Group A water systems using groundwater sources to develop and implement a Wellhead Protection Program (WHPP) in accordance with WAC 246-290-135. The City maintains its WHPP for 12 groundwater sources. A WHPP was prepared in 2014 for the City's 2015 WSP; this remains the current WHPP for the City.

Susceptibility Assessment Forms have been completed by the City and submitted to the DOH. The DOH's susceptibility assessment rating for each source is summarized in Table ES-4

Table ES-4 | Source Susceptibility Assessment Ratings

Source	DOH Issued Susceptibility Rating
Coal Creek Springs	High
West Hill Springs	High
Well 1	Moderate
Well 2	High
Well 3A	Low (Off-line)
Well 3B	Low (Off-line)
Well 4	Low
Well 5	Low
Well 5A	Low
Well 5B	Low (Off-line)
Well 6	High
Well 7	High (Off-line)

The Wellhead Protection Area (WHPA) defines the area around a groundwater source that has the potential to contaminate the source. This area is based on the source's capture zones, which are the zones of the source aquifer and ground surface that can contribute water to the source in six months, one year, five years, or ten years of time of travel. The established WHPAs are shown in Figure ES-4.

A summary of potential contaminant sources for the City's water sources was updated in July 2024 and is included in Appendix T.

ES.6 Operations and Maintenance Program

The Auburn Water Utility is operated as a utility enterprise under the direction of the Public Works (PW) Director. Specific water utility management responsibilities within the PW Department fall under either the Utilities-Water Section of Engineering Services or the Water Division of Maintenance and Operations Services. The Utilities-Water Section of Engineering Services is responsible for comprehensive water system planning, development of a Capital Improvement Program (CIP), as well as programming the design, construction, and inspection of projects related to the water system. The Water Division of Maintenance and Operations Services is responsible for operating and maintaining the water system, performing daily operation and inspection, water quality monitoring as required by DOH, and line management of the Water Utility.

The mission statement of the City's Water Utility is to provide for the efficient, environmentally sound, and safe management of the existing and future water system within the City's service area. Operations staff provide daily O&M of wells, corrosion control treatment facilities, pump stations, and reservoirs. They also implement the cross connection control program and provide locating services for all City utilities. Distribution staff maintains the complete distribution system including water mains, valves, hydrants, pressure reducing stations, and meters.

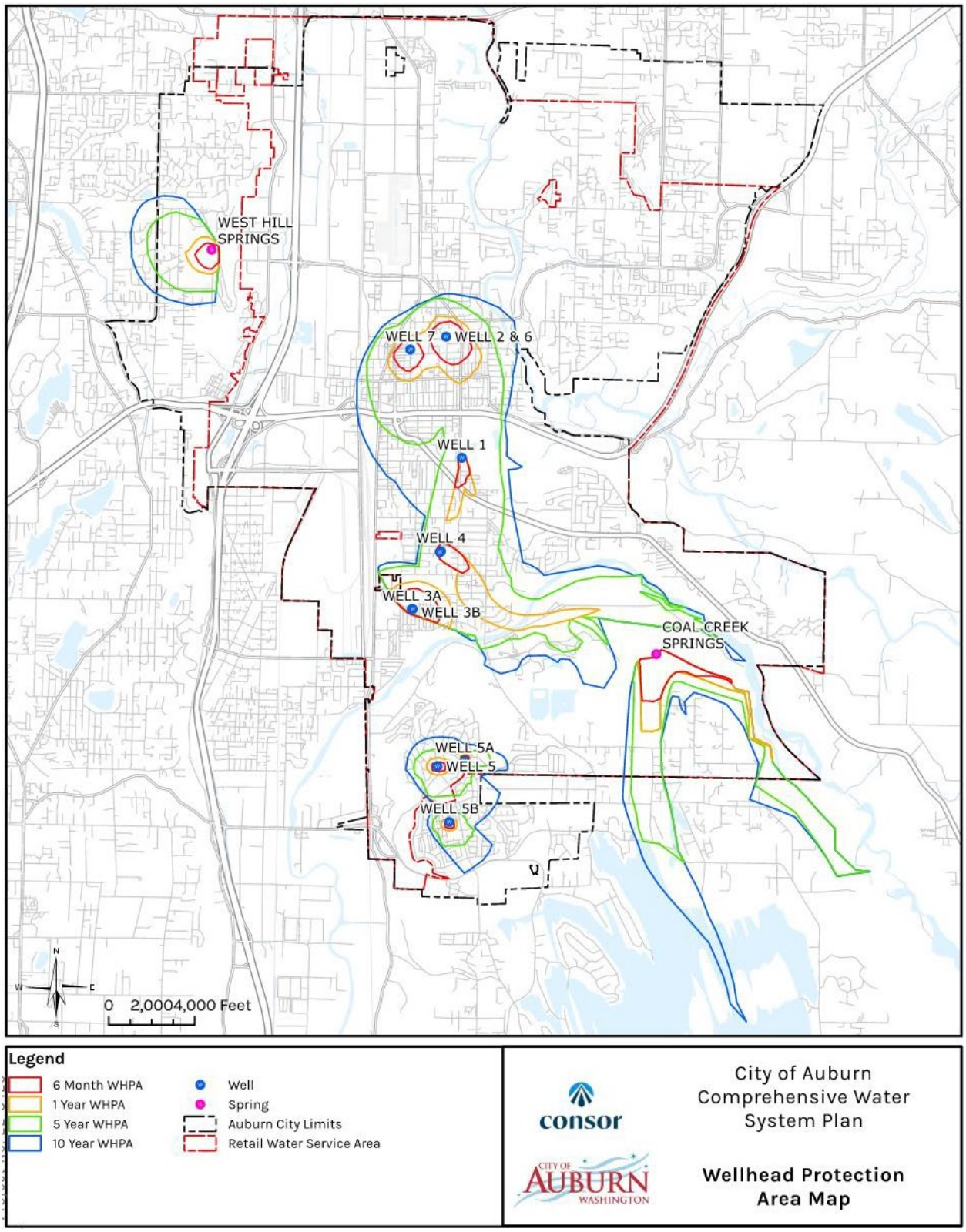
Primary operation of the water system is maintained via the Supervisory Control And Data Acquisition (SCADA) computerized control system. Wonderware software works in association with SCADA to provide real time graphical display of system data for staff interpretation and control.

The Water Operations staff maintains an active and ongoing program of water quality monitoring and reporting to ensure a safe, high quality water supply. Two staff members are responsible for water quality monitoring, sampling, control, and record keeping as outlined in the City's Water Quality Monitoring Plan provided in Appendix O.

The City has prepared an electronic Public Works Emergency Response Manual (Manual) as a guide for management of emergency situations, with the objective of protecting life and property and restoration of essential services, such as providing clean water, as quickly as possible. The Emergency Response Plan is updated annually at the first of the year. The master response program for the entire City is documented in the Comprehensive Emergency Management Plan (CEMP), which provides guidance to the Emergency Management Organization for mitigation, preparedness, responsibilities, recovery operations, training, and community education activities. The CEMP also describes the functions of local government and incorporation of essential non-governmental organizations into the Emergency Management Organization.

The City has a comprehensive safety program that meets Occupational Safety and Health Administration (OSHA) and Washington Industrial Safety and Health Act (WISHA) regulations. The safety policies and procedures for the water department are documented in this WSP and cover the full range of hazards staff may experience while operating the water system.

Figure ES-4 | Wellhead Protection Area Map



The City's Cross Connection Control Program (provided in **Appendix Q**) protects the public water system from contamination via cross connection hazards. It describes minimum operating policies, provides guidelines for installation, testing, and maintenance of approved backflow prevention assemblies, permitting process, inspection, and survey requirements for existing and new water service connections. The findings of the 2022 Sanitary Survey are also summarized in this WSP, along with the actions completed or in progress to address the deficiencies. The next DOH sanitary survey is scheduled for 2027.

ES.7 Distribution Facilities Design and Construction Standards

The Engineering Design and Construction Standards (EDCS) encompass policies and procedures governing project review and approval. To ensure the highest level of water system reliability, integration of the EDCS into the broader City infrastructure is essential. The integration of the EDCS in this WSP empowers the City to employ an alternative review process for distribution main projects, through the submittal exception process, which permits the City to approve project reports and construction documents without written approval from the DOH.

The City's Utilities-Water Section of Engineering Services reviews plans, including calculations, reports, and AutoCAD files, to verify conformity with development requirements, City standards, City policies, as well as other federal, state, and local requirements. Compliance with Washington State Department of Transportation (WSDOT) "Standard Specifications for Road, Bridge, and Municipal Construction," and relevant City, State, and Federal regulations is also evaluated during the review process.

ES.8 Capital Improvement Program

The CIP was developed to identify system improvements needed to meet customer demands throughout the 20-year planning horizon. The capital projects identified are categorized as water supply (S), storage (R), pump stations (PS), distribution (D), and general improvements (G). Planning-level cost estimates were developed for each of the recommended projects for budgeting purposes.

The capital projects for the facilities improvements were prioritized based on existing capacity deficiencies, safety concerns, maintenance or capacity requirements, and regulatory requirements. A summary of the total planned CIP cost is provided in **Table ES-5.** All costs are presented as total project costs in March 2024 dollars. For future budgeting purposes, the latest Engineering News Record (ENR) Construction Cost Index (CCI) can be used to project current estimates to the year of implementation. The cost estimates for the Auburn area used the ENR Seattle CCI. The March 2024 CCI is 15,477. Overall, the City anticipates total projects costs of $214M over the next 20 years, with more than 50 percent of the cost being for distribution system improvements.

Table ES-5 | Water System Capital Improvement Program Budget 2024-2044

Capital Improvement Category	Total for 20-Year Period From 2024-2044 (2024 USD)
Distribution	$121,858,681
Supply	$60,416,013
Storage	$21,579,621
Pump Station	$9,230,000
General	$1,750,000
TOTAL	**$214,834,315**

ES.9 Financial Program

Chapter 9 was prepared by FCS GROUP to provide a financial program that allows the City to remain financially viable during the 20-year planning horizon. This viability analysis considers the financial condition of the utility of the past six-year period (2017-2022), current and identified future financial and policy obligations, O&M needs, and the financial impacts of the capital projects identified in Chapter 8. A review of the water utility's current rate structure with respect to rate adequacy and customer affordability is also included.

The City's water charges for services increased from $14.8M in 2017 to $16.5M in 2022, averaging an annual increase of approximately 2.2 percent per year. Operating expenditures increased by $1.7M across the six years with an average annual increase of 2.8 percent. Despite total operating expenses outpacing growth in operating revenues, operating income has been positive in all years observed.

The financial forecast indicates that at existing rate levels the utility will become deficient in 2025 as growth in expenses outpaces growth in revenues and the utility takes on additional debt obligations to fund capital infrastructure investments. The City has adopted a 7.50 percent increase for 2025 to resolve the remaining projected deficiency. Rates will need to potentially increase by 9.50 percent annually from 2026 through 2030, before decreasing to 3.00 percent annually through 2033. A detailed rate study is planned for completion in 2025. It is recommended that the City regularly review and update the key underlying assumptions that compose the multi-year financial plan to confirm that adequate revenues are collected to meet the City's total financial obligations.

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CHAPTER 1

Description of the Water System

1.1 Objective

This Water System Plan (Plan) for the City of Auburn (City) has been prepared to serve as a guide for planning and designing future water system infrastructure and to assist the City in the efficient use of its water resources. The Plan identifies system improvements intended to meet the anticipated growth and changing needs of the City while maintaining reliable and quality water service to customers.

The Plan is designed to meet state, county, and local requirements. It complies with the requirements of the Washington State Department of Health (DOH) as set forth in the Washington Administrative Code (WAC) 246-290-100, Water System Plan. This Plan supersedes the City's 2015 Water System Plan, approved by DOH on May 11, 2016, and the 2021 Limited Water System Plan Update approved by DOH on December 16, 2021.

A 10-year approval period is desired for this Plan, and therefore the Plan analyzes the 10-year and 20-year planning periods. This Plan contains a framework for future funding decisions and capital projects. However, the timeframes are estimates and do not represent actual commitments by the City, which may depend on funding, resources availability, and/or other unidentified factors.

1.2 Plan Content

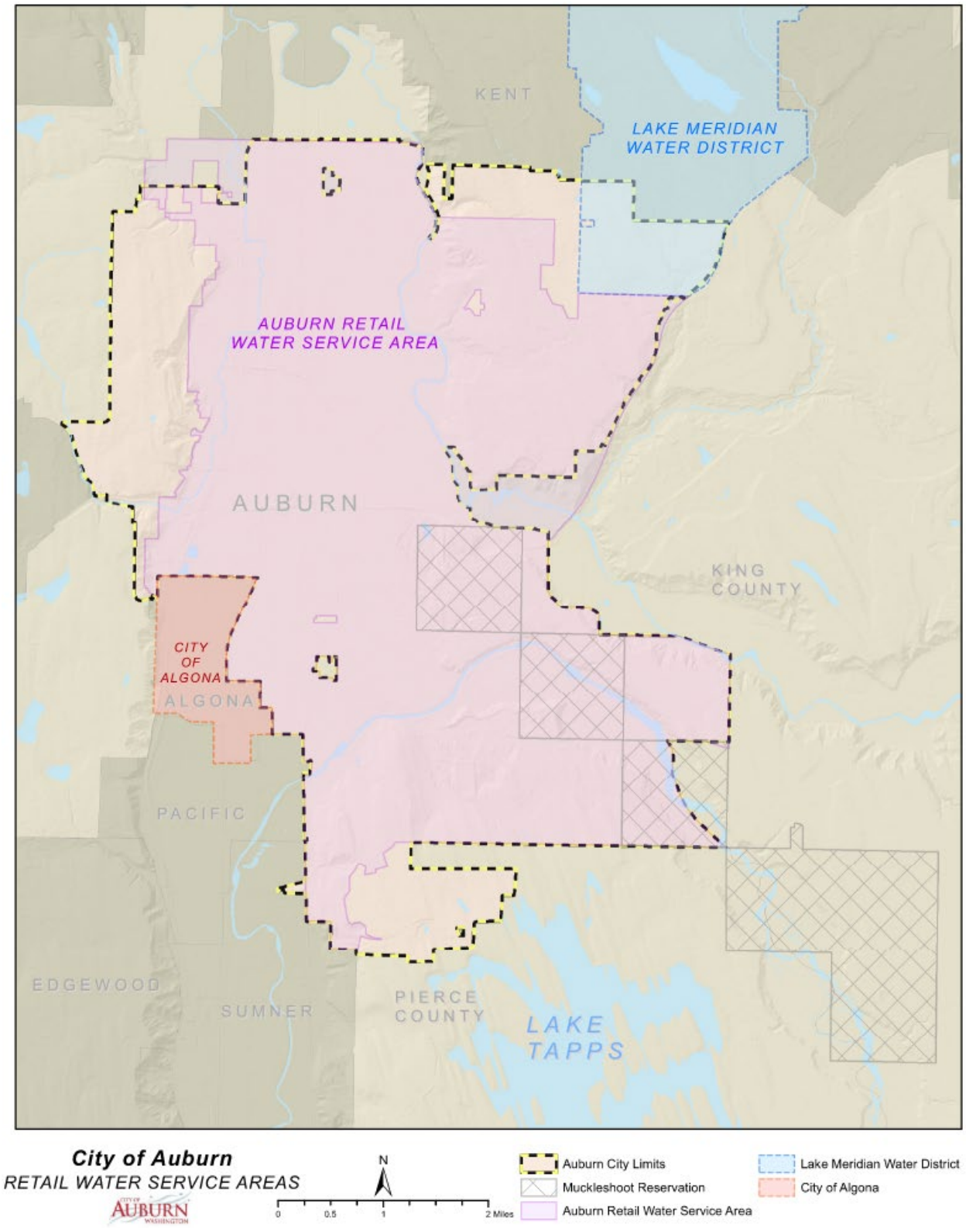
This chapter addresses the following topics:

1.3 Ownership and Management
1.4 System History and Background
1.5 Related Plans and Studies
1.6 Service Areas, Maps, and Land Uses
1.7 System Policies
1.8 Duty to Serve
1.9 Local Government Consistency
1.10 Watershed Consistency

1.3 Ownership and Management

The City owns and operates its water system and serves most of the City as delineated by the Retail Water Service Area (RWSA). The City also provides firm wholesale water supply to the City of Algona (Algona), and interruptible wholesale water supply to Lake Meridian Water District (LMWD) (formally known as King County Water District #111). The City RWSA boundary is further described in Section 1.4 and Figure 1-1 shows the City RWSA with wholesale customers.

Figure 1-1 | RWSA Vicinity Map



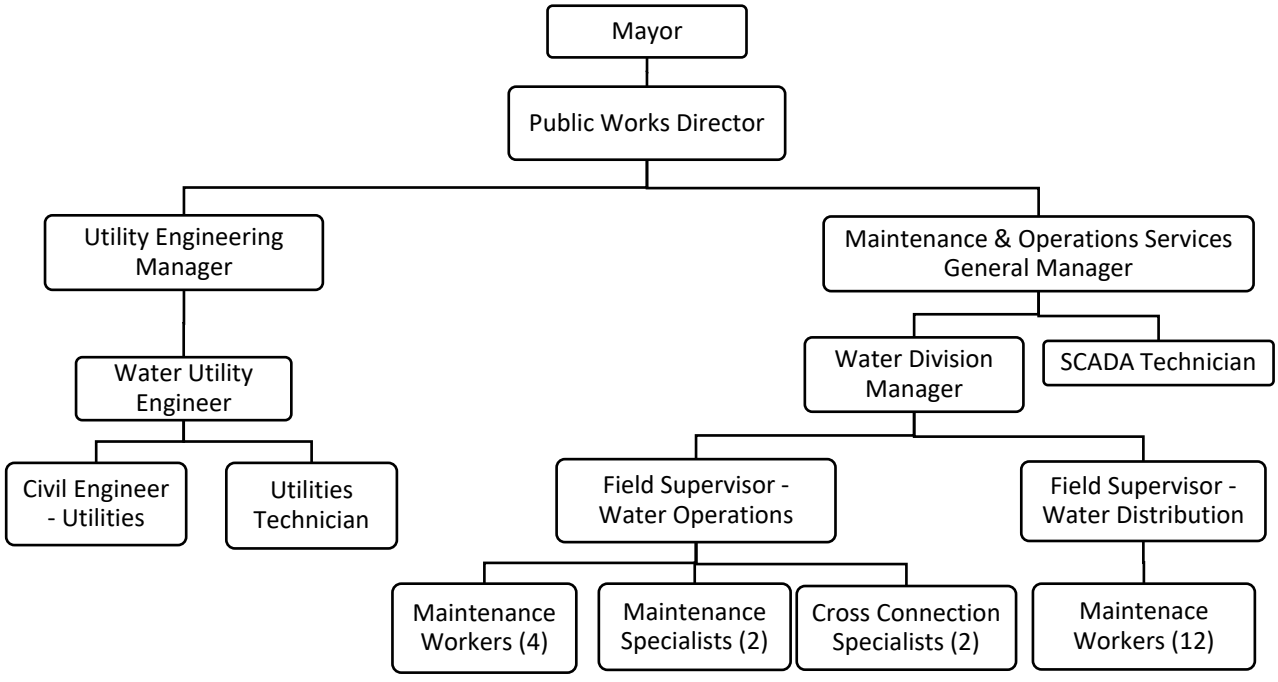
The City provides internal staffing for the management, operations, and maintenance of the water system and the Braunwood Estates satellite system. The DOH's data on these water systems, managed by the City, is presented in **Table 1-1**. The water management structure is presented in **Figure 1-2** and further elaborated in **Chapter 6**.

Chapter 3 provides details on the existing water facilities, while **Appendix H** includes a copy of the current Water Facility Inventory (WFI) form.

Table 1-1 | Water System Ownership Management

Information Type	Description
System Names	City of Auburn Braunwood Estates (Satellite System)
System Type	Group A - Community Public Water System
County	King County and Pierce County
City of Auburn System ID Number	03350V
Braunwood Estates System ID Number (Satellite System)	03336E
Address	25 W Main St Auburn, WA 98001
Primary Contact	Josh Flanders, Water Division Manager
Owner Contact	(253) 876-1998

Figure 1-2 | Water Utility – Organizational Chart



The City's water system is publicly owned, under the jurisdiction of the local government. As a result, it is exempt from regulation by the Washington Utilities and Transportation Commission (UTC), which is

responsible for overseeing some private water companies. There are no plans to bring the City's water utility service under UTC's regulatory authority during this planning period.

1.4 System History and Background

1.4.1 Geography

The City is centrally located between Seattle and Tacoma in both King and Pierce Counties, Washington. It encompasses approximately 30 square miles. Adjacent cities include Pacific, Algona, Bonney Lake, Federal Way, Kent, Sumner, and Covington.

1.4.1.1 Topography

The City's RWSA is dominated by a broad valley surrounded by uplifted plateaus. The Green River enters from the eastern City limit and then runs north cutting through the center of the City. Mill Creek, a tributary of the Green River, parallels the western corporate limits. The White River flows through the southern part of the City before turning south to join the Puyallup River. The topography of the service area is a result, in part, of the glaciation of the region.

Most of the City lies on a two to three-mile wide plain bound by Mill Creek on the west and the Green River on the east. Ground elevations in the area range between 50 to 100 feet and slope upward generally to the north. The terrain rises sharply to elevations of 400 to 500 feet on either side of the valley as well as in the southern portion of the City, south of the White River and between the White and Green Rivers.

The topographic features of the RWSA provide for a necessary divide of the water system into four major service areas serving the valley and the surrounding plateaus. The following are the major service areas and associated elevations:

- Valley Service Area (service elevation from 39 to 235 feet)
- Lea Hill Service Area (service elevation from 129 to 513 feet)
- Academy Service Area (service elevation from 171 to 444 feet)
- Lakeland Service Area (service elevation from 122 to 578 feet)

Each service area is further subdivided into smaller hydraulic operating areas based on topographic elevations, called pressure zones. Additional details on the City's major service areas are provided in Chapter 2.

1.4.1.2 Climate

The RWSA has a West Coast, marine-type climate caused by the influence of air masses coming from the Pacific Ocean. In late fall and winter, orographic lifting, and cooling cause moist air masses to create clouds and precipitation throughout the area. The average annual rainfall is approximately 40 inches, generally occurring between October and March. The average annual snowfall is 8.6 inches. The temperatures typically range from mid-70 degrees Fahrenheit in the summer to 38 degrees Fahrenheit during the winter, with an overall average of 54 degrees Fahrenheit.

Water consumption is notably impacted by climate conditions, as customers adjust their usage based on weather patterns. In periods of hot and dry weather, consumption rises, driven by activities such as lawn watering and outdoor water use. Conversely, consumption tends to decrease during wet weather.

1.4.1.3 Geology

The geology of the City is the result of glacial and interglacial processes acting over millions of years. During the periods when large continental glaciers, not rivers nor lakes, occupied the Puget Sound area, landslides created deposits and erosion through glacial and interglacial deposits. Generally, the uplands surrounding the City are composed of glacial and interglacial deposits and the valleys are filled with more recent deposits overlying older ones.

Five major geologic units lie within the White and Green River Valleys: White River Alluvium (Qaw), Osceola Mudflow (Qom), Undifferentiated Alluvium (Qua), Vashon Recessional Deltaic Deposits (Qd) and Undifferentiated Glacial and Interglacial Deposits (Qu). Bedrock is known to lie approximately 1,280 feet beneath the valley floors.

The Pacific Groundwater Group (PGG) completed an extensive geological and hydrogeological study within the City's RWSA, known as the Auburn Water Resources Program Study, and the results are documented in several volumes:

- 1996 Preliminary Hydrogeologic Characterization
- Summary of 1997 Hydrogeologic Investigations
- The 1997-1998 Test Well Drilling and Installation Program
- The 1999 Hydrogeologic Characterization Report and Appendices

The general groundwater flow system in the City's vicinity is characterized by recharge within uplands and discharge to the rivers in the lowland valleys. Precipitation and Lake Tapps are sources of groundwater recharge. Lake water flows from the lake bottom into the groundwater system. Contrary to recharge in other upland areas, recharge from Lake Tapps is not totally dependent upon precipitation because water is routed to the lake from outside the area. The main discharge zone for the City's area is the Green River Valley. Some groundwater discharges into the river in the City's vicinity and further downstream.

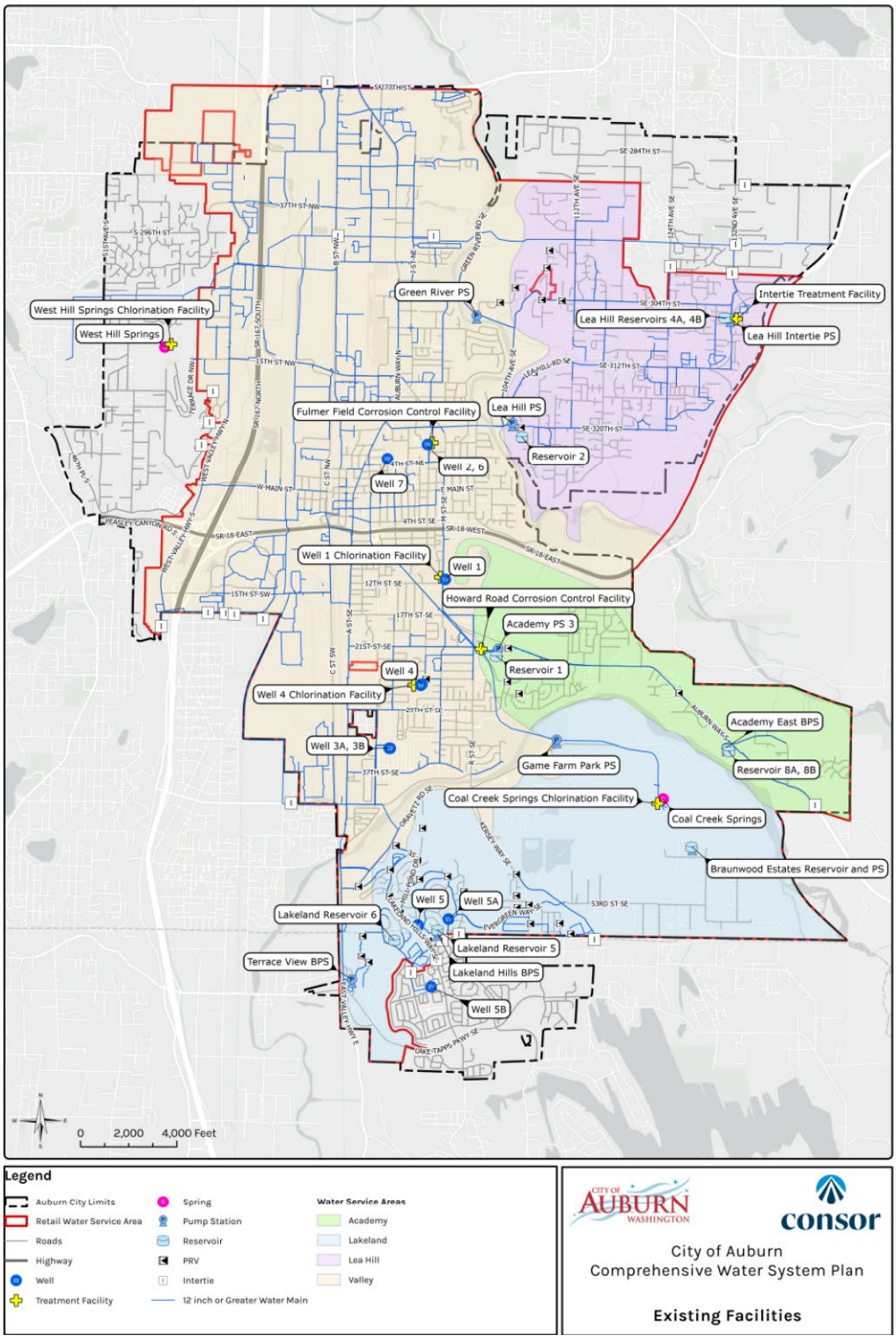
1.4.2 Existing System Overview

The City's water system consists of wells, springs and interties as water sources, chlorination stations and corrosion control facilities for water treatment, pump stations, pressure reducing stations, steel and concrete enclosed reservoirs for storage, and transmission and distribution pipelines to provide potable water to customers. Service is provided to four major service areas (Valley, Lea Hill, Lakeland, and Academy). Each major service area is further divided into pressure zones as required by local topography. The City's four major service areas and the location of key elements of the water system are shown in **Figure 1-3**. A more detailed inventory of assets and system hydraulic profile is presented in **Chapter 3**.

1.4.3 History

The earliest record of a potable water system for the City of Auburn traces back to 1884 with the establishment of the Peasley Canyon supply. Initially serving the City, then called Slaughter, a 4-inch wood-stave pipe connected Peasley Canyon Reservoir to deliver surface water. The year 1907 marked a pivotal moment as the City acquired West Hill Springs for $2,000, a source that continues to yield approximately 1 million gallons of water per day (600 gpm) and remains active.

Figure 1-3 | Existing Facilities



As the City's population grew to a few thousand by 1922, the demand for water prompted the introduction of groundwater wells alongside the existing West Hill Springs. These wells, strategically drilled in the downtown area, were complemented by pump stations, with one situated at the present site of City Hall. Despite their longstanding service, these early wells and pump stations have since been decommissioned.

The evolution of Auburn's water distribution system saw a transition from wooden pipes to the installation of the first recorded steel water main in 1924 - a 10-inch pipeline connecting West Hill Springs to the valley floor. The Coal Creek Springs water collection system, which included a 24-inch steel main under the White River was constructed in 1925, along with the construction of Reservoir 1 (later replaced in 1975), to meet the escalating water needs of the growing City.

By 1946, the population had increased, prompting construction of the Coal Creek Pump Station, to pump water from Coal Creek Springs to the distribution system.

In 1960, the City embarked on further enhancements by supplementing its two springs with a well system, beginning with Well 1 and then Well 2 in 1969.

In 1961, water system facilities were constructed in the Academy Service Area.

Expansion into the Lea Hill Service Area occurred between 1964 and 1965, coinciding with extensive modifications to the Coal Creek supply system and the implementation of a Supervisory Control and Data Acquisition (SCADA) system.

The early 1980s saw the extension of the water system into Lakeland Service Area.

A key development occurred in 1991 with the acceptance of Braunwood Estates (now called Hidden Valley) as a satellite water system operating independently outside the City's distribution network.

The late 1990s marked significant construction under the Interlocal Agreement 2 (IA2) project, a water supply project between LMWD, Covington Water District (CWD) and the City to provide LMWD and CWD with wholesale water supply, and as a result expanding the water system. Expansion into Pierce County and service agreement modifications characterized the late 1990s and early 2000s.

Table 1-2 summarizes key construction and enhancements related to the City's wells, springs, reservoirs, pump stations, treatment, water pipelines, and system upgrades. Notably, the water pipelines improvements focus on transmission mains, excluding distribution mains installation and replacements (due to the extensive list), with exceptions for distribution improvements mandated by environmental (water quality) regulations. The table provides a documented history of the water system, recognizing occasional gaps.

Table 1-2 | Water Facilities History

Springs	
West Hill Springs	• Before 1907: Established as a potable water supply for the City. • 1915: Construction of 210,000-gallon concrete reservoir to store water from West Hill Springs. • 1924: Installation of the first recorded steel water main (10" pipeline from West Hill Springs to the valley floor). • 1960: Ongoing use, with a replacement of collection boxes. • 1988: Removal of reservoir. West Hill Springs water flows continuously into the system.

	• 2000: Partial fencing of the watershed carried out according to the 2000 Water Comprehensive Plan. • 2017: Flow Control Improvements, including installation of an electromagnetic meter and flow control valve for automatic shutdown. • Current: The spring has a capacity of 600-gpm, with varying supply based on aquifer conditions. Equipped with chlorination station.
Coal Creek Springs	• 1925: Construction of Collection system. • 1925: Installation of 24" wood-stave supply pipeline connecting the Coal Creek Springs collection system to a booster pump station (present Howard Road site) and 14" transmission main to Reservoir 1, including installation of 24" steel pipe under the White River • 1964: Construction of south and middle collectors in the system. • 1964: Replacement of the 24" wood-stave supply pipeline connecting the Coal Creek Springs collection system to a booster pump station (present Howard Road site) with 24-inch concrete pipe. • 1998: Addition of the north collector for enhanced system performance. • 2023: Coal Creek Springs Transmission Main Replacement underway to install a new transmission main suspended from a utility/pedestrian bridge over the white river to replace a portion of the old main crossing the river. • Current: Flows by gravity to Howard Road Corrosion Control Treatment Facility (CCTF) and pumped into Reservoir 1, with typical production capacity of 3,000-gpm. Equipped with chlorination station.
Wells	
Well 1	• 1960: Construction of Well 1, within Valley Service Area. • 1998: Shutdown due to reduced well output and water levels. • 2010: The well was brought back into service temporarily to meet summer demands. • 2015: Phase 1 improvements to bring the facility back online. Construction of transmission main in M St SE, 17th St SE, R St SE & Howard Road SE to convey supplies from Well 1 to Howard Road CCTF. • 2016: Phase 2 improvements to bring the facility back online. Improvements included new well house, pumping system (2,200-gpm), disinfection with sodium hypochlorite, on-site emergency power, and upgraded electrical and SCADA controls. • Current: Operational and pumps to Howard Road CCTF, then boosted to Reservoir 1.
Well 2	• 1969: Construction of Well 2 (3,000-gpm capacity), within Valley Service Area. • 2000: Replacement with a new masonry building, pump (1,600-gpm) and associated equipment. • 2014: Installation of Variable-frequency Drive (VFD). • 2023: Rehabilitation and replacement of well pump and motor. • Current: Operational with the Fulmer Field CCTF, providing chlorination and emergency power.
Well 3A	• 1983: Construction of Well 3A (1,650-gpm) with automatic standby generator, pumps directly into Valley Service Area. • 1984: Installation of chlorination system. • Current: Inactive since mid-1990's (Est. 1995 – 1997) due to elevated manganese levels.
Well 3B	• 1984: Construction of Well 3B (1,650-gpm) adjacent to Well 3A, with chlorination system. • Current: Inactive since mid-1990's (Est. 1995 – 1997) due to elevated manganese levels.
Well 4	• 1985: Construction of Well 4 (2,600-gpm), to pump directly into Reservoir 1 and capable of feeding south end of Valley distribution system through pressure-reducing station. • 2016: Emergency Power Improvements project added a diesel-fueled generator and hypochlorite chlorination equipment.

	• 2018: Upgrade of Well soft starter. • 2023 (ongoing): Well 4 Facility Improvements project underway to replace aging mechanical equipment and electrical improvements. • Current: Pumps directly to Reservoir 1 and to south end of Valley Service Area through PRVs.
Well 5	• 1983: Construction of Well 5 (1,000-gpm) to serve the Lakeland Hills Development. • Current: Maximum production capacity of 650-gpm, not chlorinated and pumps directly into Lakeland Service Area and supplies Reservoirs 5 and 6.
Well 5A	• 1990: Construction of Well 5A (180-gpm) to supplement Well 5. • Current: Equipped with chlorination facilities and a manual transfer switch. Pumps directly into Lakeland Service Area and supplies Reservoirs 5 and 6.
Well 5B	• 2005: Construction of Well 5B (600-gpm) with hypochlorite generation and ATEC media filters, to remove iron and manganese prior to disinfection. • Current: Removed from service in 2006 due to irrecoverable aquifer.
Well 6	• 1998-2000: Construction of Well 6 (3,500-gpm) within Valley Service Area. • 2014: Replacement of pump bowl and installation of VFD. • 2000: Rehabilitation with a new masonry building, well pump (1,600-gpm), and associated equipment. • Current: Operational with the Fulmer Field CCTF, providing chlorination and emergency power.
Well 7	• 1997: Construction of Well 7 (3,500-gpm) within Valley Service Area. • Current: Inactive as of 2012, due to elevated manganese levels.
Reservoirs	
West Hill Springs Reservoir	• 1915: Construction of 210,000-gallon concrete reservoir to store water from West Hill Springs. • Current: Reservoir removal (1988). West Hill Springs water flows continuously into the system.
Academy Reservoir	• 1961: 500,000 gallons steel reservoir, supplied by Academy Pump Station. • Current: Reservoir removed (1978-1980) when Reservoir 8B was constructed.
Reservoir 1	• Est. 1925: Construction of 3.0 million gallons to store water from Coal Creek Springs. • 1975: Replacement of uncovered reservoir with covered 5-MG concrete reservoir. • 2019: Seismic isolation control valve installed on outlet piping. • Current: Primary storage for Coal Creek Springs and can also be filled with water from Well 4. Serves as water supply for the Academy Pump Station and Valley Service Area.
Reservoir 2	• 1975: Construction of a 3.6-MG pre-stressed concrete underground reservoir (dual-purpose facility with tennis court on top) in Lea Hill. • Current: Supplied with several City sources and Reservoir 1. Serves as water supply for Valley Service Area. Design for the addition of a seismic isolation control valve in 2024 with construction expected in 2025.
Reservoir 4A	• 1965: Construction of 1.0-MG steel reservoir in Lea Hill. • 1965: Installation of 12-inch ductile iron pipeline from Porter (8th St NE) Bridge to Reservoir 4A. • 1998: Replacement of exterior and interior protective coatings. • Current: Supplied by Valley Service Area through Lea Hill & Green River Pump Stations. Serves as water supply for Lea Hill Service Area. Addition of a seismic isolation control valve underway with construction anticipated in 2024.
Reservoir 4B	• 1983: Construction of 1.5-MG steel reservoir in Lea Hill. • 1998: Replacement of exterior protective coatings. • 2002-2003: Replacement of interior protective coatings

	• Current: Supplied by Valley Service Area through Lea Hill & Green River Pump Stations. Serves as water supply for Lea Hill Service Area. Addition of a seismic isolation control valve underway with construction anticipated in 2024.
Reservoir 5	• 1981: Construction of 1.0-MG steel reservoir for Lakeland Service Area. • 2015: Painting of the Interior and exterior, installation of seismic isolation control valve and addition of ladder. • Current: Supplied with wells 5, 5A and Terrace View Booster Pump Station. Serves as water supply for Lakeland Service Area.
Reservoir 6	• 2012: Construction of 1.0-MG reservoir in Lakeland Service Area (also provides storage for City of Algona). • Current: Supplied with wells 5, 5A and Terrace View Booster Pump Station. Serves as water supply for Lakeland Service Area and City of Algona.
Reservoir 8A	• 1973: Construction of 1.2-MG steel reservoir in Academy Service Area. • 2002-2003: Recoating of the reservoir's exterior and interior. • Current: Supplied with Reservoir 1 through the Academy Pump Station. Serves as water supply for Academy Service Area. Addition of a seismic isolation control valve underway with construction anticipated in 2024.
Reservoir 8B	• 1980: Construction of 1.5-MG steel reservoir in Academy Service Area. • 2002-2003: Recoating of the reservoir's exterior and interior. • Current: Supplied with Reservoir 1 through the Academy Pump Station. Serves as water supply for Academy Service Area. Addition of a seismic isolation control valve underway with construction anticipated in 2024.
Pump Stations	
Howard Road Site Pump Station	• 1925: Construction of Howard Road Site Pump Station with 5 hydraulic ram-type pumps to move water from coal creek springs to Reservoir 1 & distribution system. • Current: (1962) Operation of ram-type pumps ended.
Coal Creek Springs Pump Station	• 1946: Construction Coal Creek Springs Pump Station to pump water to Reservoir 1 and distribution system (consisted of pump house and an electric pump). • 1947-1952 (exact year unknown): Addition of second pump (2,000-gpm). • 1953: Addition of third pump (3,000-gpm) • 1964: Replacement of two pumps with new 1,500-gpm and 2,500-gpm pumps. • 1999: Replacement of Diesel fuel storage tanks for emergency generators with above-ground, double-walled fuel tanks (easier to inspect for fuel leakage). • Current: Pump station removed in 2003 to make way for Howard CCTF.
Academy Pump Station	• 1960: Construction of Academy Pump Station 1, housing Pumps 1 and 2 (300-gpm and 500-gpm capacity). • 1961: Installation of 2 miles 10" cast iron transmission main from Academy Pump station 1 to Academy reservoir. • 1980: Construction of Academy Pump Station 2, housing Pumps 3 and 4 (750-gpm capacity each), with emergency power generator. • 1980: Installation of 2 miles 14" ductile iron transmission main, connecting Academy Pump Station 2 to Reservoirs 8A & 8B. • 1999: Replacement of Diesel fuel storage tanks for emergency generators with above-ground, double-walled fuel tanks (easier to inspect for fuel leakage). • 2022: Academy Pump Stations 1 and 2 replaced with a single pump station, Academy Pump Station 3, that consists of 4 vertical turbines, variable speed drive pumps with firm pumping capacity of 2,100-gpm. • Current: Pumps water to the Academy Reservoirs (Reservoirs 8A & 8B)
Green River Pump Station	• 1999: Construction of the Green River Pump Station, equipped with 4 pumps (1,170-gpm capacity each), as part of the Interlocal Agreement 2 (IA2) to supply water to CWD & LMWD.

	• 2020: Facility improvements for emergency generator and associated electrical equipment. • Current: Pumps water to the Lea Hill Reservoirs (Reservoirs 4A & 4B).
Game Farm Park Pump Station	• 1988: Construction of the Game Farm Wilderness Park Pump station for water supply and fire protection of the park. • 1992: Installation of 60-gpm domestic pump. • 1993: Installation of 1,000-gpm fire pump. • Current: Pumps water to the Game Farm Wilderness Park from the Coal Creek gravity supply line.
(Lea Hill) Intertie/Booster Pump Station	• 1998-2000: Construction of Intertie Pump Station near Lea Hill Reservoirs, designed to operate in conjunction with Green River Pump Station to serve IA2 partners (using 4 pumps) and to also serve small area at the top of Lea Hill using a "package type" booster-pump station. • Current: Pumps water to small higher elevation service area in Lea Hill. Equipped with a hypochlorite chlorination system.
Lea Hill Pump Station	• 1965: Construction of Lea Hill Pump station with two 600-gpm and one 800-gpm pumps, to boost water from Valley Service Area to Lea Hill Service Area. • 1999: Replacement of Diesel fuel storage tanks for emergency generators with above-ground, double-walled fuel tanks (easier to inspect for fuel leakage). • Current: Pumps water to the Lea Hill Service Area.
Lakeland Hills Booster Pump Station	• 1990: Construction of Lakeland Hills Booster Pump Station, consisting of a three-pump pressure sustaining package system and two large-capacity fire pumps, to pump water from Lakeland Hills Reservoir to Lakeland Service Area. • 2013: Replaced for improved service to boosted Lakeland Service Area, using three low flow pumps (720-gpm capacity each) and two fire flow pumps (3,125-gpm capacity each). • Current: Pumps water to higher elevation service area in Lakeland.
Terrace View Booster Pump Station	• 2010: Construction of Terrace View Booster Pump Station with firm capacity of 1,100-gpm, to supply water from Valley 242 to Lakeland 630 pressure zone. • Current: Pumps Valley Service Area water to Lakeland Service Area. Equipped with hypochlorite feed pump.
Academy East Booster Pump Station	• 2014: Construction of the Academy East Booster Pump Station replaced the single pump Janssen's Addition Pump Station, equipped with three domestic pumps with firm capacity ranging from 750 to 1,250-gpm. • Current: Pumps water from Reservoirs 8A and 8B into Academy Service Area.
Treatment	
Howard Road Corrosion Control Treatment Facility (CCTF)	• 2004: Construction of the Howard Road CCTF (6,300-gpm capacity), to treat water from Coal Creek Springs and Well 1 and boost to Reservoir 1, using three 2,100-gpm booster pumps. • Current: Pumps water to Reservoir 1.
Fulmer Field CCTF	• 2004: Construction of the Fulmer Field CCTF (9,600-gpm capacity), to treat water from Well 2, 6 and 7 and boost to Reservoir 2 and distribution system, using four 3,200-gpm booster pumps. • 2013-2018: Evaluation of Fulmer Field CCTF (along with Wells 2, 6 and 7) to identify improvements to increase the supply and treatment capacity of the existing facilities and infrastructure. • Current: Pumps water to Reservoir 2 and the Valley Service Area.
Distribution Main Improvements (mandated by Environmental Regulations) & Interties	
Intertie with City of Algona	• After 1996: Construction of wholesale interties (combined 1.1-mgd capacity) at: ○ 1149 Industry Drive SW ○ Boundary Boulevard and Milwaukee Ave

	○ Iowa Drive and West Valley Highway ○ 1st Avenue • Emergency Interties at ○ Boundary Boulevard and Celery Ave ○ Boundary Boulevard and O Street
Intertie with City of Bonney Lake	• 2002: Construction of 8" emergency intertie at Evergreen Way, southwest of Lakeland Hills Way • After 2010: Construction of emergency interties at ○ Lakeland Hills Way & 59th Avenue ○ Evergreen Way and Nathan Avenue ○ Olive Avenue, south of Evergreen Loop
Intertie with City of Pacific	• After 2003: Construction of emergency interties at ○ Ellingson Road near Pacific Ave ○ A St SE, north of White River
Intertie with City of Kent	• After 2001: Construction of emergency intertie with 78th Avenue S and S 277th Street
Intertie with LMWD	• Est. 1996 – Construction of 12" wholesale intertie at 30502 132nd Avenue SE (5-mgd capacity) • 1996 – 2002: Construction of emergency interties in ○ 127th Place SE, south of SE 299th Place ○ 124th Avenue SE and SE 300th Way ○ SE 300th & 132nd Ave SE ○ 1998-2000 at SE 288th St & 132nd Ave SE
Intertie with Lakehaven Water & Sewer District (LWSD)	• Est. 1995: Construction of the Aaby Dr. emergency intertie with LWSD at R St. NW (named Intertie #2). • 2004: Transfer of Aaby Dr. pump station and service from City to LWSD. • 2006: Emergency intertie with LWSD at R St. NW (Intertie #2) was removed from service • After 2010: Installation of water meter and control valve vault for 6" emergency intertie at Aaby Dr. and Knickerbocker Dr. (reinstating Intertie #2)
Intertie with City of Tacoma	• Est. 2012: Construction of wholesale interties at: ○ 3240 B St NW (2,200-gpm max. instantaneous flow rate) ○ 29598 132nd Ave SE (4,500-gpm max. instantaneous flow rate) ○ Combined max. flow rate of 5.12 MGD (3,555 gpm) in a 24 hour period (the interties could flow at a higher rate for a portion of the day so long as the 24-hour average meets the contractual peak period flow)
Distribution Main Improvements (mandated by environmental (water quality) regulation)	• 2015: Replacement of 2,760 linear feet of Asbestos Cement (AC) water main with ductile iron main. • 2022: Removal and replacement of approximately 186 service lines with lead goosenecks and approximately 7,075 linear feet of distribution water main with ductile iron main.
System Upgrades	
Supervisory Control and Data Acquisition (SCADA) system	• 1975: Addition of SCADA/telemetry, to control all reservoirs, wells and pumps from the Maintenance and Operations building. • 2015: Extensive upgrade of the SCADA/telemetry system, to improve control of the water utility facilities and replace obsolete components. • 2024: Updated System Platform to AVEVA. Major components and new hardware were replaced to provide more reliable service.
Metering	• 2016: Installation of two master meters for Muckleshoot Indian Tribe (MIT) Casino, to facilitate City and MIT account administration.

	• 2017-2018: Installation of Advanced Metering Infrastructure (AMI) for all customers. The AMI allowed for more accurate meter reads, daily information for quicker detection of leaks, and improved efficiency of billing operations. • 2020 - 2022: Replacement of deduct meters used for irrigation purposes with separate water service tap on the city's main.

1.5 Related Plans and Studies

In preparing this Plan, related studies and plans were reviewed to ensure coordination with adopted documents that affect system planning and operations. The related plans are categorized into two groups for clarity: Internal Studies/Plans Specific to the City and External Plans Influencing City-Wide Water Management. A brief synopsis of these studies and plans are presented below.

Internal Studies/Plans Specific to the City:

Wellhead Protection Plan, City of Auburn, 2014: The City developed a Wellhead Protection Plan to identify and protect groundwater sources. The initial plan was created in 2000 by Pacific Groundwater Group (PGG) and subsequently updated by Robinson Noble in 2008 and 2014. The plan maintains existing wellhead protection areas (WHPAs) and contributes to hazard assessments within these zones. It aligns with county ordinances, impacting land use planning and reflecting in critical aquifer recharge areas as outlined in the King County Comprehensive Plan. Additionally, the plan developed a monitoring system for groundwater sampling, which enhanced operational readiness by providing early warnings of potential contaminations.

City of Auburn Water Resources Program, Pacific Groundwater Group, Inc., 1995-1999: Pacific Groundwater Group conducted a comprehensive groundwater study in response to recommendations of the 1995 Comprehensive Water Plan. The study was documented in a series of reports (listed below), collectively known as the Auburn Water Resources Program Study. The Auburn Water Resources Program assessed the long-term potential for the City's continued use of groundwater for its water supply. The study confirmed substantial quantities of groundwater underlying the valley area and provided the basis for the water supply conclusions for this Plan. This comprehensive program, spanning several years, strategically addresses water rights acquisition by delving into technical studies of the local groundwater system. Two key elements of the program were the installation of monitoring wells and river gauges, and the assessment of the existing City wells in the deep aquifer. The installation of monitoring wells and river gauges not only aids in system planning by understanding groundwater dynamics but also enhances operational efficiency through real-time data collection. The program also included the development of a regional ground-water model (MODFLOW), using the United States Geological Survey (USGS) model program. This provided a tool for analyzing potential withdrawal scenarios, offering valuable insights into optimizing water system operations.

- 1996 Existing Data Hydrogeologic Characterization
- 1996 Preliminary Hydrogeologic Characterization
- Summary of 1997 Hydrogeologic Investigations
- 1997-1998 Test Well Drilling and Installation Program
- 1999 Hydrogeologic Characterization Report and Appendices
- Regional Groundwater Model Report

Bilateral Compliance Agreement (BCA), 1996: This agreement, entered with the Department of Health (DOH) due to copper levels that exceeded the action levels in samples collected in 1993, outlined treatment options and schedules for corrosion control facilities. As a result, new corrosion facilities at the Howard Road/Coal Creek Springs Pump Station and Fulmer Field Park were completed in 2004. The completion of

these facilities in 2002 directly impacts operational efficiency, ensuring compliance with health standards and safeguarding water quality in the long term.

City of Auburn – Public Works Emergency Response Manual, 2022: This electronic manual is only one element of the City's overall Emergency Response Plan, which serves as a guide for management of emergency situations. It was first developed in 1999 in response to the potential impact of Y2K and it is updated annually at the first of the year. The manual is not all-inclusive for every type of disaster that could occur, but it is a valuable tool for dealing with many of the emergency situations that most water utilities could face.

City of Auburn Comprehensive Plan, 2015 and Amendments: This current plan, originally adopted in 2015 in accordance with the State Growth Management Act (GMA) is the City's comprehensive land use plan and policy document. It consists of goals, land use policies, and the Comprehensive Plan maps. The plan may be amended annually as needed. The update of the comprehensive plan is taking place concurrently with the revision of this water system plan.

City of Auburn 2015 Comprehensive Water Plan, City of Auburn Public Works, 2015: The previous Comprehensive Water Plan provided evaluation of needs and recommended improvements to the City system for 2015-2022. In 2021, DOH extended the approval period for the 2015 WSP until May 11, 2026. The plan adopted in 2015 constitutes the basis for this Plan.

Capital Facilities Plan (2023-2028), City of Auburn Finance Department, 2022: Adopted in 2022, this plan is instrumental in both planning and operations. It outlines goals, policies, and implementation programs mandated by the State GMA, providing a roadmap for capital improvements. This directly influences the operational landscape by defining necessary infrastructure enhancements and improvements, aligning with the city's capital improvements program.

Engineering Design and Construction Standards, City of Auburn, 2024: The City updates its Design and Construction Standards as needed, typically on an annual or bi-annual basis. These standards not only guide the planning of new infrastructure but also enhance day-to-day operations by ensuring adherence to the latest industry practices and regulations. The City of Auburn Design and Construction Standards are attached in Appendix P.

Water Shortage Contingency Plan, City of Auburn, 2024: The plan establishes actions and procedures for implementing Auburn City Code (ACC) 13.14 during impending or actual water shortages, to maintain levels of service essential for public health and safety, minimize adverse impacts on economic activity, and protect customer's lifestyle; refer to Appendix R.

Water Cost of Service Rate Update Study, City of Auburn, 2022: This study informs strategic decisions related to water rates and influences the operational budget.

System Development Charge Study, City of Auburn, 2014: Completed in 2014, this study examines system development charges, offering insights for future infrastructure development. Its findings directly influence the planning of new systems and infrastructure projects and provide a financial basis for expansion.

External Plans Influencing City-Wide Water Management:

King County 2016 Comprehensive Plan, King County Department of Local Services, 2016: The King County Comprehensive Plan establishes land use zoning for areas outside the City limits, but within the RWSA. Additionally, King County provides critical area ordinances and critical aquifer recharge areas that support

the City's wellhead protection efforts. The current King County Comprehensive Plan was first adopted on December 5, 2016, and was later amended in 2020.

Pierce County Comprehensive Plan, 2015 and Amendments: This is a comprehensive plan and policy document for Pierce County. The plan was developed in accordance with the GMA and is amended every two years. This plan influences planning by offering insights into regional policies.

Pierce County Coordinated Water System Plan, 2021: In 1983, all of Pierce County was declared a Critical Water Supply Service Area. In response to this declaration, Pierce County established the first Coordinated Water System Plan to coordinate planning and establish water service areas. The current Coordinated Water System Plan, adopted in 2021 through Ordinance 2018-39s2, influences both regional water planning and City's operational coordination with other systems in the county.

Pierce County White River Basin Plan, 2013: This plan provides a comprehensive guide to storm drainage and surface water management in portions of the White River Basin. Given that the City of Auburn utilizes this basin, the plan significantly influences operational considerations and emergency response strategies during storm events.

South King County Coordinated Water System Plan (CWSP), 1989: This plan, adopted in 1989, defined the initial service area boundaries for the water systems within the Critical Water Supply Area of South King County. The City of Auburn Comprehensive Water Plan, upon adoption, becomes an element of the CWSP.

South King County Ground Water Management Plan (GWMP), 2003: The GWMP was initiated by Ecology with the intent to develop methods to protect the quality and quantity of ground water, meet future resource needs while recognizing existing water rights and provide effective and coordinated management of ground-water resources. This plan is considered in planning for and operation of the City's water system.

Tribal Land Use Plan, Muckleshoot Indian Tribe, 1978: The adoption of the MIT's Zoning Ordinance in 1979, which influences land use within the Muckleshoot Indian Tribe, affects water-related considerations. This plan plays a crucial role in ensuring collaborative water management efforts that respect tribal land use.

USGS Hydrogeologic Framework, Groundwater Movement, and Water Budget in the Puyallup River Watershed and Vicinity, Pierce and King Counties, Washington: Scientific Investigations Report 2015-5068: A collaborative effort involving various entities (Cities of Auburn, Milton, Puyallup, Sumner, and Tacoma; Pierce Conservation District; DOH; Cascade Water Alliance; Lakehaven Utility District; Summit Water & Supply Company; Mt. View-Edgewood Water Company; and The Russell Family Foundation), this report contributes valuable insights into the hydrogeologic framework, groundwater movement, and water budget in the Puyallup River Watershed. It significantly influences both regional water planning and operational considerations, providing a scientific basis for understanding the water dynamics in the watershed.

Other Plans

In addition to the studies listed above, the current Water Comprehensive Plans from the following neighboring water systems (City of Algona, Bonney Lake, Kent, Pacific, CWD, LWSD, LMWD and Highline Water District (HWD)) were considered during the preparation of this Plan.

1.6 Service Area, Maps, and Land Use

The City's RWSA boundaries were initially defined and documented through the South King County CWSP in 1989. The boundaries of the RWSA have been adjusted since 1989. An area of Pierce County was incorporated into the RWSA through the Pierce County Coordinated Water System Planning process (1997) and interlocal agreements with Bonney Lake (1998 and 2016), LWSD (2004), Kent (2006), and LMWD (2006). Copies of the Water Service Area Agreements are provided in **Appendix G.** The RWSA covers a total area of 16,193 acres; 15,877 acres are in King County and the remaining 316 acres are in Pierce County within Auburn City Limits. A total of 700 acres (4.3 percent) of the RWSA is in unincorporated King County urban and rural areas.

Several water purveyors adjoin the City of Auburn RWSA, as shown in **Figure 1-4**. These include the cities of Algona, Bonney Lake, Kent, Pacific, and Sumner. Also included are the CWD, LWSD, LMWD, HWD, and MIT. Purveyors with wholesale water agreements and interties are discussed in **Section 1.6.1**.

The City currently does not plan to update its service area boundaries unless the need arises in the future. The City will continue to evaluate its service area boundaries and will consider updates if future needs or circumstances warrant changes.

Figure 1-5 reflects the City's current land use designations. The City includes a wide range of residential, commercial, institutional, and industrial land uses. Public and quasi-public land uses include parks, open space, and public recreation as well as institutional uses such as schools. Commercial and industrial uses occur primarily in the valley; however, large areas of residential land use and the Downtown Urban Center (DUC) also exist in the valley area.

The Academy and Lakeland Service Areas are primarily residential, although some commercial development is located along Auburn Way South (SR 164) in the Academy Service Area. The Lea Hill Service Area is also primarily residential although other uses include small amounts of commercial and open spaces, and Green River College.

Areas within the RWSA, but outside the City limits, are governed by unincorporated King County land uses which include agricultural, rural and residential land use types as shown in **Figure 1-5**. The unincorporated King County land uses shown in **Figure 1-5** were obtained from King County's open data portal which reflects the current adopted land use designations established in the Comprehensive Plan. Those land use designations reflect the intended long-range use of land of the 20-year planning horizon of the plan.

Figure 1-6 shows the Urban Growth Area (UGA), which is comprised of both the current City limits and potential annexation areas (PAA).

1.6.1 Wholesale Interties

Interties provide a tool that water utilities use to move water between systems to meet supply needs, to increase reliability and respond to emergencies. The City maintains wholesale supply interties with three water systems: City of Tacoma, Algona, and LMWD. The City also has a supply contract with the MIT and the Indian Health Service, dating from 1972, for services along a pipeline at SE 368th PL extending from the City limits into the reservation.

1.6.1.1 City of Tacoma

In 2012, Tacoma agreed to provide water to the City in the quantity of up to 1.0 mgd average day use, 1.8 mgd peak day use, and 1.62 mgd four-day peak use. Two interties were constructed to supply the City: located at 3200 B Street NW and 29600 132nd Avenue SE in Auburn. This agreement will remain in force as long as Tacoma (or its successors in interest of its water system) remains in the business of providing water, and as long as the City meets the terms and conditions of the agreement.

In 2014, Tacoma amended and restated the 2012 agreement with the City to provide a total of 3.5 mgd (2,430 gpm) of average use and 5.12 mgd (3,555 gpm) of peak use combined from the interties. The B Street NW Intertie is limited to a maximum flowrate of 2,200 gpm and the 132nd Avenue SE Intertie is limited to a maximum flowrate of 4,500 gpm. However, the combined use of the interties cannot exceed 5.12 mgd (3,555 gpm) in a 24 hour period.

Figure 1-4 | Adjacent Water Systems

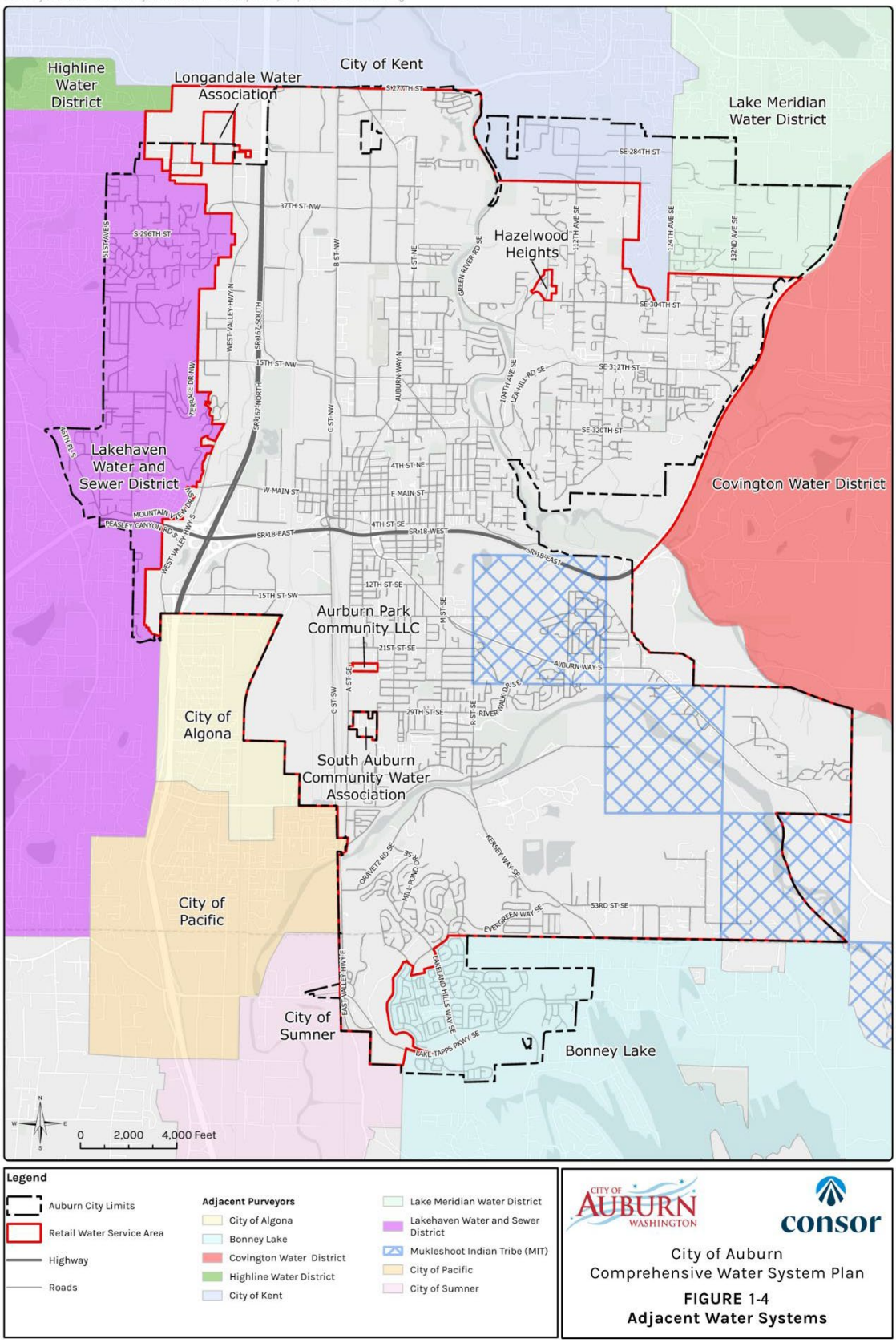


Figure 1-5 | Existing Land Use

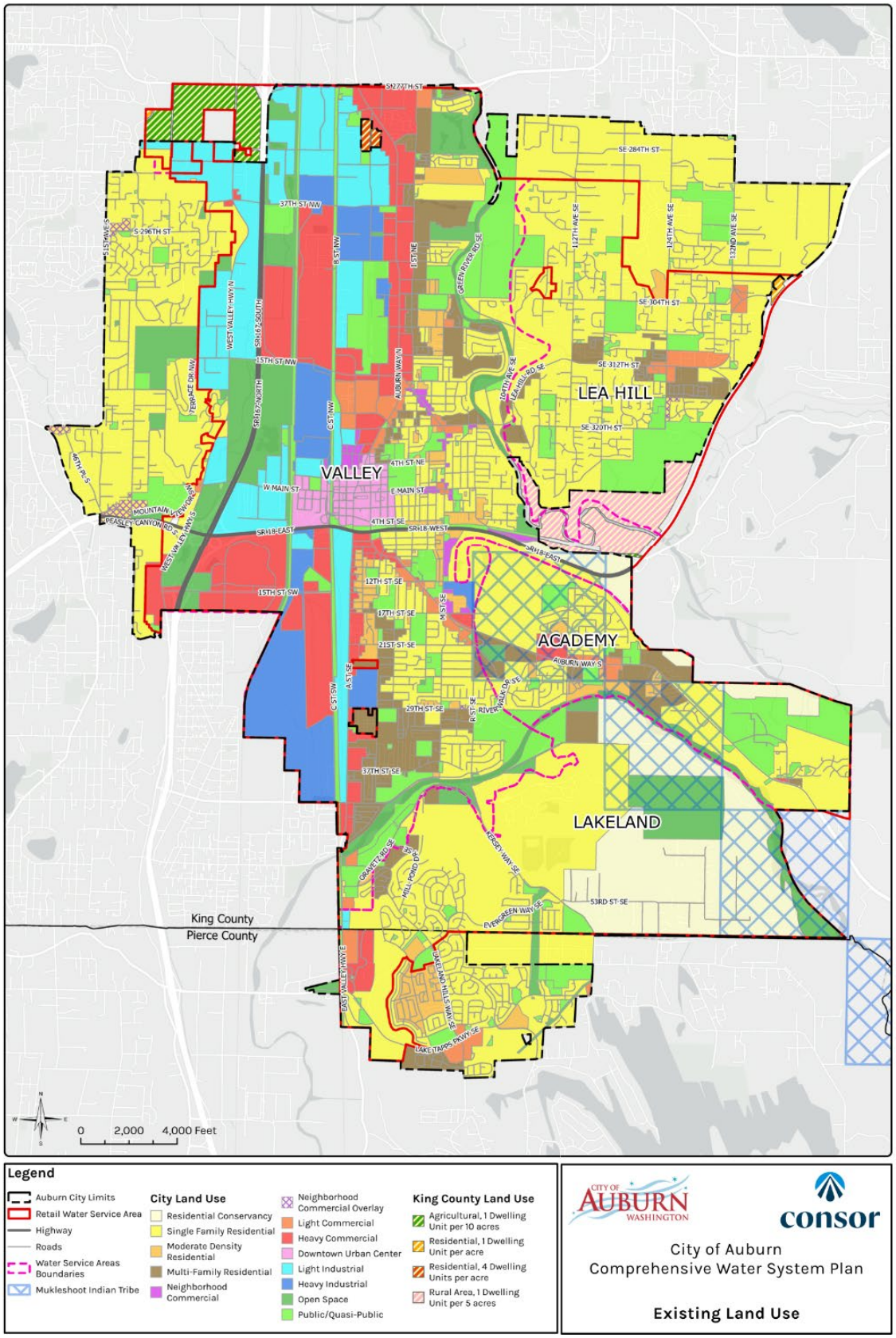
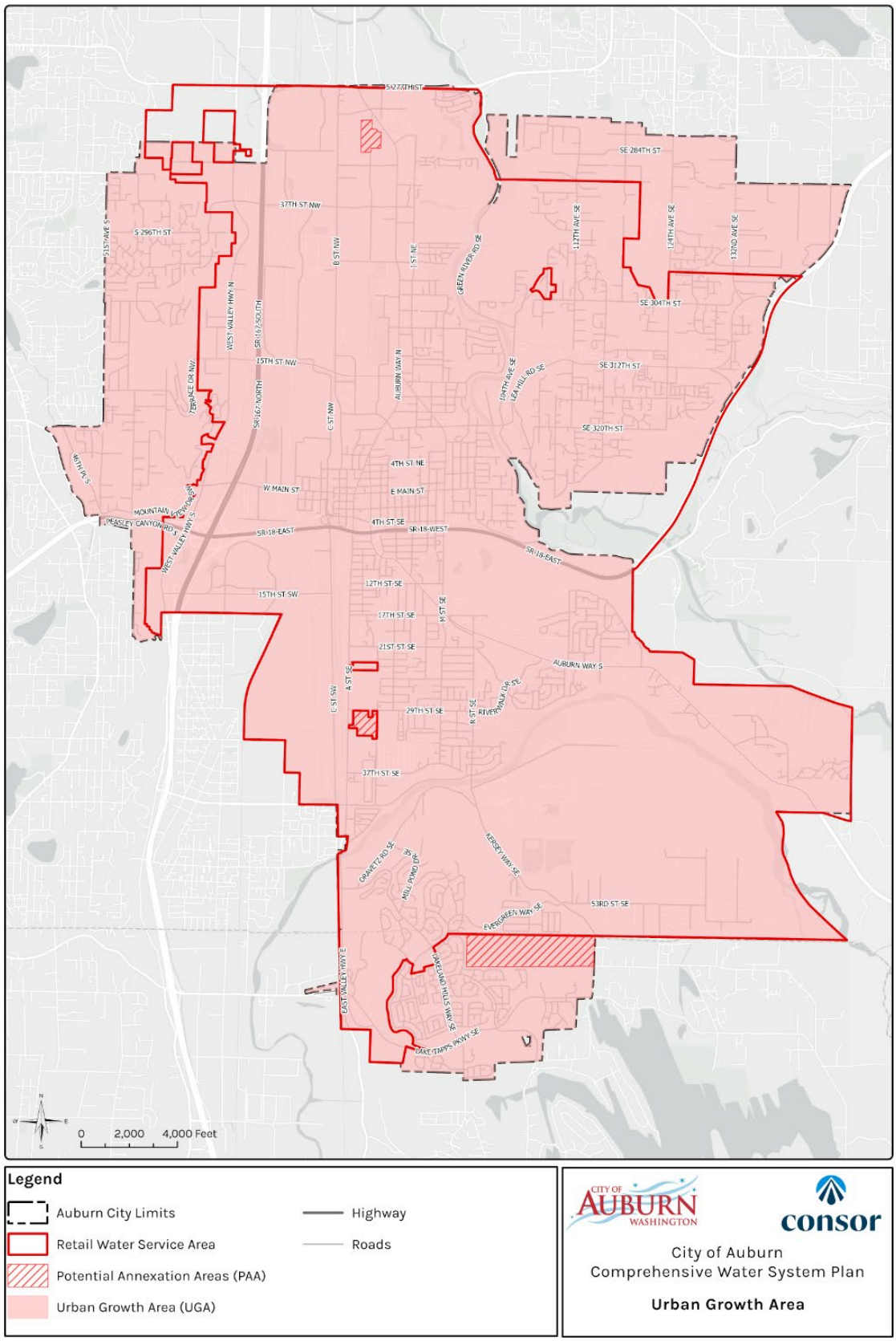


Figure 1-6 | Urban Growth Area



1.6.1.2 City of Algona (Algona)

In 1996, the City and Algona entered into a water supply interlocal agreement (IA3) for the City to provide wholesale water supply to Algona. In 2002, the agreement was superseded with Interlocal Agreement 3A (IA3A). IA3A called for the City to provide for a firm quantified (uninterruptible) wholesale water supply and Algona would provide the City its groundwater rights from the failed well located at the intersection of 3rd Avenue and Washington Boulevard. Per IA3A, Algona also agreed to maintain its 100,000 gallons of system storage and financially participate in an additional 180,000-gallon share of the City's Reservoir 6 storage capacity. Per request in 2016, Algona elected to increase its participation in Reservoir 6 by 100,000 gallons, which accounted for a total share of 280,000-gallon storage capacity. If the City experiences any failure or decreased capacity, the supply of water to Algona may be decreased by the same percentage that is experienced by the City.

Algona is served (per agreement IA3A) through 8-inch meter located at 1st Avenue and by two 8-inch intertie meter stations located at 1149 Industry Drive SW, and at Boundary Boulevard and Milwaukee Avenue. A fourth 8-inch master meter is located near Iowa Drive and West Valley Highway. All the interties are connected to the City's 242 zone.

1.6.1.3 Lake Meridian Water District (LMWD)

An intertie between the City and LMWD was constructed in 1996 as part of Interlocal Agreement 2 (IA2), to enable the District to purchase water from the City. The intertie also allows the City to provide an emergency supply to Kent's East Hill Service Area through LMWD. A provision of the IA2 agreement calls for the district to provide an emergency supply to the City when needed for the Lea Hill Service Area. As part of the IA2, the City agrees to provide up to 2.5 mgd of MDD to LMWD (total maximum day demand of 5.0 mgd).

Per the 2017 Amendment to the IA2, LMWD discontinued regular purchase of water from the City and instead switched their primary supply to CWD. The amendment maintained the intertie with LMWD but modified the conditions of service to interruptible.

1.6.2 Emergency Interties

The City has emergency interties with seven water systems as summarized in **Table 1-3.**

Table 1-3 | Emergency Interties

Water System	Receiver	Location	Auburn Pressure Zone	Mode of Operation	Meter Size	Operated by
City of Algona	City of Algona	Boundary Boulevard and Celery Ave	Valley 242	Manual	N/A	City of Auburn
City of Algona	City of Algona	Boundary Boulevard and O Street	Valley 242	Manual	8"	City of Auburn
City of Bonney Lake	City of Bonney Lake	Evergreen Way SE (southwest of Lakeland Hills Way)	Lakeland 697	Manual	8"	City of Bonney Lake
City of Bonney Lake	Two-way	Lakeland Hills Way & 59th Avenue	Lakeland 697	Manual	N/A	City of Auburn/ Bonney Lake
City of Bonney Lake	Two-way	Evergreen Way and Nathan Avenue	Lakeland 697	Manual	N/A	City of Auburn/ Bonney Lake
City of Bonney Lake	Two-way	Olive Avenue, south of Evergreen Loop	Lakeland 697	Manual	N/A	City of Auburn/ Bonney Lake

Water System	Receiver	Location	Auburn Pressure Zone	Mode of Operation	Meter Size	Operated by
City of Kent	Two-way	78th Avenue S and S 277th Street	Valley 242	Manual	6"	City of Auburn/ Kent
City of Pacific	City of Pacific	Ellingson Road near Pacific Ave	Valley 242	Manual	4"	City of Pacific
City of Pacific	City of Pacific	A St SE (north of White River)	Valley 242	Manual	N/A	City of Pacific
Lakehaven Water & Sewer District (LWSD)	City of Auburn	Aaby Drive and Knickerbocker Drive	Valley 242	Manual	6”	LWSD
LMWD	Two-way	127th Place SE, south of SE 299th Place	Lea Hill 648	Manual	N/A	City of Auburn
LMWD	Two-way	124th Avenue SE and SE 300th Way	Lea Hill 648	Manual	N/A	City of Auburn
LMWD	LMWD	SE 300th & 132nd Ave SE	Lea Hill 648	Manual	8”	City of Auburn
LMWD	LMWD	SE 288th St & 132nd Ave SE	Lea Hill 648	Manual	8”	City of Auburn

1.7 System Policies

The City manages the water utility in accordance with established water system policies that govern various facets of utility operations. The water system policies are established to support a vision or mission and to provide a framework for the design, operation, and ongoing wellbeing of the City’s water utility. The policies establish consistency and ensure that adequate levels of service are provided throughout the system. The policies also provide documentation to current water-system customers, as well as those considering service from the City.

The City’s Water Comprehensive Plan is based upon the following mission statement for the water utility:

“The City will provide for the efficient, environmentally sound and safe management of the existing and future water system within Auburn’s service area.”

For areas outside its municipal boundaries, the City maintains water franchises that allow for construction, operation, and maintenance of its facilities. Water system design and construction in the franchise areas are consistent with franchise requirements and the design and construction standards included in this Plan.

The City’s water system policies and criteria, provided in Appendix A, are grouped within goal statements that are headlined under seven categories: Business Practices, Service Area, Operations and Maintenance, Financial, Planning, Environmental Stewardship, and Design and Construction.

1.8 Duty to Serve

The City recognizes its duty to serve all new service connections within its RWSA when the following thresholds are met per WAC 246-290-106.

- The water system has sufficient capacity to serve water in a safe and reliable manner.
    - To ensure the water system's capacity for safe water delivery, hydraulic analysis is conducted. This involves assessment of peak demand patterns, pressure requirements, and potential system expansions. The goal is to establish and maintain a water supply infrastructure that can reliably and securely accommodate the needs of new connections.
- The service request is consistent with adopted local plans and development regulations.
    - Service requests undergo a comprehensive review to ascertain their alignment with local plans, including the City's Design and Construction Standards.
- The water system has sufficient water rights to provide service.
    - Assessment of water production data is performed for all sources to confirm the water system's capacity and compliance with available water rights.
- The water system can provide service in a timely and reasonable manner.
    - The assessment of the water system's capability to provide service promptly and reasonably encompasses evaluating infrastructure readiness, adherence to construction timelines, and minimizing disruption to existing customers. The City incorporates Washington State DOH recommendations for timely and reasonable service, which is defined as providing water service within 120 days of receiving a complete application, barring any extenuating circumstances.
    - If a customer or applicant is dissatisfied with a decision made by the City Engineer concerning water service, they may file a written objection with the Public Works Director within 15 working days of receiving the decision. The Director will respond within 15 working days. If the response is unsatisfactory, the appellant may request a hearing with the City's hearing examiner within 30 days.
    - The hearing examiner's decision is final, but can be appealed in superior court following RCW 34.05.510 through 34.05.598.
    - For customers in the city's RWSA located within unincorporated areas of King County, if all city-level appeals are exhausted and unresolved, the dispute may be escalated to the King County Utilities Technical Review Committee (UTRC) in accordance with King County Code (KCC) 13.24.080.

The City will plan to provide water service to all customers within its RWSA, in accordance with the WAC requirements and City Code. Revisions to the City's RWSA will be made only by written agreement and in accordance with local, county and state regulations.

1.9 Local Government Consistency

The City has submitted this plan to DOH, King and Pierce Counties, adjacent utilities, and local governments as part of the Agency Review process. Local government consistency review is completed in accordance with WAC 246-290-100(7) and WAC 246-290-108 to confirm consistency between the water system plan and local comprehensive plans, development regulations, and other local codes.

The consistency review also supports planning and development, minimizing conflicts and legal entanglements. The completed and signed Local Government Consistency Determination forms (DOH 331-568) are provided in Appendix C.

1.10 Watershed Plan Consistency

The City is in the Duwamish-Green (WRIA 9) and Puyallup-White Watershed (WRIA 10). The City currently has no plans to expand water rights place of use to include any portion of the service area that was not previously within the place of use for the water right when documented in an approved planning or engineering document and as identified in this Plan.

If the City expands water rights place of use, the new area within the water rights place of use service area will be formed in compliance with the terms of WAC 246-290-107 and consistent with the Watershed Plan approved for WRIA 9 or WRIA 10, under RCW 90.54.040(1).

CHAPTER 2

Basic Planning Data

This chapter's objective is to meet the requirements of WAC 246-290-100 (4)(b), incorporating basic planning data into this 2024 Water System Plan (WSP). It provides current population and water demand information; estimates future population and water demand; validates data; and compares future population and water demand estimates with locally adopted plans.

Projecting realistic future water requirements, or demand, is necessary for planning infrastructure projects and securing adequate water supply to meet future growth. Future water demands are a key component of the water system analyses presented in this WSP and in the City's Capital Improvement Program (CIP). Accurate demand projections require a thorough review of historical water use, predicting where and how much growth will occur, and estimating the future water use for existing and new customers.

The following topics are addressed in this chapter:

2.1 Water Service Area Population
2.2 Water Service Connections and Usage
2.3 Water Supply and Production
2.4 Distribution System Leakage
2.5 Water Supply Characteristics
2.6 Water Supply Reliability Evaluation
2.7 Future Population Projections and Land Use
2.8 Future Water Demand

2.1 Water Service Area Population

The City's current area within the RWSA boundary is smaller than its City limits, with adjacent purveyors serving the portion of the City's population that is outside its RWSA boundary, as shown in **Figure 1-1** presented in **Chapter 1**. As a result, historical City population data does not accurately represent the population served by the City's water system. To calculate the RWSA population, the Housing Unit Method was used, which is presented as an acceptable option for population determination in the Washington State Department of Health's (DOH) Water System Planning Guidebook 2020 Revision. The Housing Unit Method calculates the population based on the number of residential units and the area's average person's per household ratio.

The historical population data for the water system, as calculated using the Housing Unit Method, is presented in **Table 2-1**. These calculated populations are consistent with the numbers the City has reported on its Water Facilities Inventory (WFI), included in **Appendix H.**

Table 2-1 | Historical Population

	2015	2016	2017	2018	2019	2020	2021	2022
Persons per household[1]	2.73	2.75	2.76	2.77	2.79	2.80	2.81	2.82
Single-Family Residential Connections[2,3]	11,600	12,128	11,852	11,857	11,883	11,894	11,985	11,980
Multi-Family Residential Connections[2]	1,045	1,070	1,035	1,044	1,054	1,054	1,064	1,052
Calculated Multi-Family Units[4]	10,450	10,700	10,350	10,440	10,540	10,540	10,640	10,520
Calculated Population Served[5]	60,259	62,704	61,294	61,872	62,535	62,876	63,576	63,450
City Population[6]	78,210	80,362	82,058	84,352	86,353	87,256	88,080	88,750
City Employment (Non-Residential Population)[7]	37,298	39,466	29,487	40,855	41,985	39,092	37,871	N/A

Notes:

1. Persons per household per Washington State Office of Financial Management (OFM). 2021 and 2022 values are projected since OFM data is only available for the census period of 2010-2020.
2. Single and Multi-Family connections per City's water system billing records.
3. Single-Family Residential connections include duplexes per the City's design standards.
4. Assumed units per multi-family connection is 10 per the City's WFI, updated on 3/15/2022.
5. Calculated Population Served is calculated as the number of single-family connections plus the number of multi-family units multiplied by the persons per household.
6. City population per the Washington State OFM records.
7. Employment data is from the United States Census OnTheMap data source using a City-defined selection area.

Based on the calculated historical water system population presented in **Table 2-1**, the City's water system has seen growth in population between 2015 and 2022 averaging a one percent increase annually. The number of connections peaked in 2016 (along with the calculated population), however this was during the time when the City was transferring services to AMI metering, resulting in some apparent fluctuations of reported connections during the switchover that could not be easily rectified. The last row in **Table 2-1** provides the City population as reported by the Office of Financial Management (OFM). The City population has had a similar, steady growth to the calculated water system population, with an average annual growth rate of 1.8 percent annually. The City population as reported by the OFM is larger than the calculated water system population because the RWSA is smaller than the City limits as shown in the Water System Map (**Figure 1-3**). Additionally, growth in parts of the City beyond the RWSA has been greater than the rate of growth experienced within the RWSA. The OFM City population information is provided for reference; the calculated population served will be used for the purposes of this WSP.

2.2 Water Service Connections and Usage

Historical water use, or consumption, data was obtained from City records to characterize the demands of the City's customers. Annual water use data for the years 2015 to 2022 was used to develop historical demand patterns and parameters, which represent current and likely future water use. Two key demand parameters were generated from the data: typical water use per customer classification, and typical water use per equivalent residential unit. These parameters were used as the basis of future demand projections.

2.2.1 Historical Accounts

The City's water customers are divided into eight customer classifications, which are:

- Single-family Residential (SFR).
- Multi-family Residential (MFR).
- Commercial.

- Manufacturing and Industrial.
- Schools.
- Municipal (City Accounts).
- Irrigation.
- Wholesale.

The number of connections for each customer classification is summarized in Table 2-2. Unmetered, also referred to as non-revenue water, also accounts for a portion of the City's water use, however, this classification is not included in Table 2-2. Please note that per the City's standards, SRF connections include duplexes.

Table 2-2 | Historical Number of Connections per Customer Classification

	2015	2016	2017	2018	2019	2020	2021	2022
Single-Family Residential	11,600	12,128	11,852	11,857	11,883	11,894	11,985	11,980
Multi-Family Residential	1,045	1,070	1,035	1,044	1,054	1,054	1,064	1,052
Commercial	1,317	1,386	1,340	1,339	1,333	1,328	1,284	1,244
Manufacturing & Industrial	50	4	4	3	2	2	2	2
Schools	70	64	60	60	60	60	58	55
Municipal (City Accounts)	32	34	33	33	33	33	33	33
Irrigation	459	499	484	499	514	514	620	675
Wholesale	8	8	8	7	5	5	5	5
Number of Connections, Total	**14,581**	**15,193**	**14,816**	**14,842**	**14,884**	**14,890**	**15,051**	**15,046**

As summarized in Table 2-2, SFR connections make up approximately 80 percent of all accounts. The total number of connections has increased by approximately three percent between 2015 and 2022. Variation in the total number of water service connections in 2016 is linked to the rollout of AMI technology from 2016 to 2017. Throughout this transitional phase, there may have been instances of double counting meters in 2016, leading to an inflated number of connections. Subsequently, there was a notable decrease in 2017 as the number of connections were normalized.

A significant change in manufacturing and industrial accounts occurred between 2015 and 2016 due to some meters being reclassified as commercial connections. Manufacturing and industrial services are classified as businesses engaging in the manufacture of products, materials, equipment, machinery, and supplies with a meter size of two inches or larger and a monthly annual average water consumption equal to or greater than 30,000 cubic feet. There were several accounts that did not meet the criteria for this classification and were changed to Commercial classification rate following 2015. The total number of connections from 2016 to 2017 decreased due to low and high flow meters (two meters) being replaced with one meter; this impacted Commercial, Manufacturing and Industrial, and School connections.

The number of SFR, MFR, and commercial connections peaked in 2016, however, as mentioned in the opening paragraph, this is likely due to the fluctuations in the City's transition to AMI metering. Municipal connections remained constant over this period.

Wholesale connections were reduced in 2019 when Covington Water District (CWD) and Lake Meridian Water District (LMWD), formerly known as King County Water District # 111, discontinued regular purchase of water from the City.

2.2.2 Historical Consumption

The City's historical annual water consumption based on City billing data for each customer classification is presented in **Table 2-3** in million gallons (MG); the table does not include non-revenue (unmetered) water.

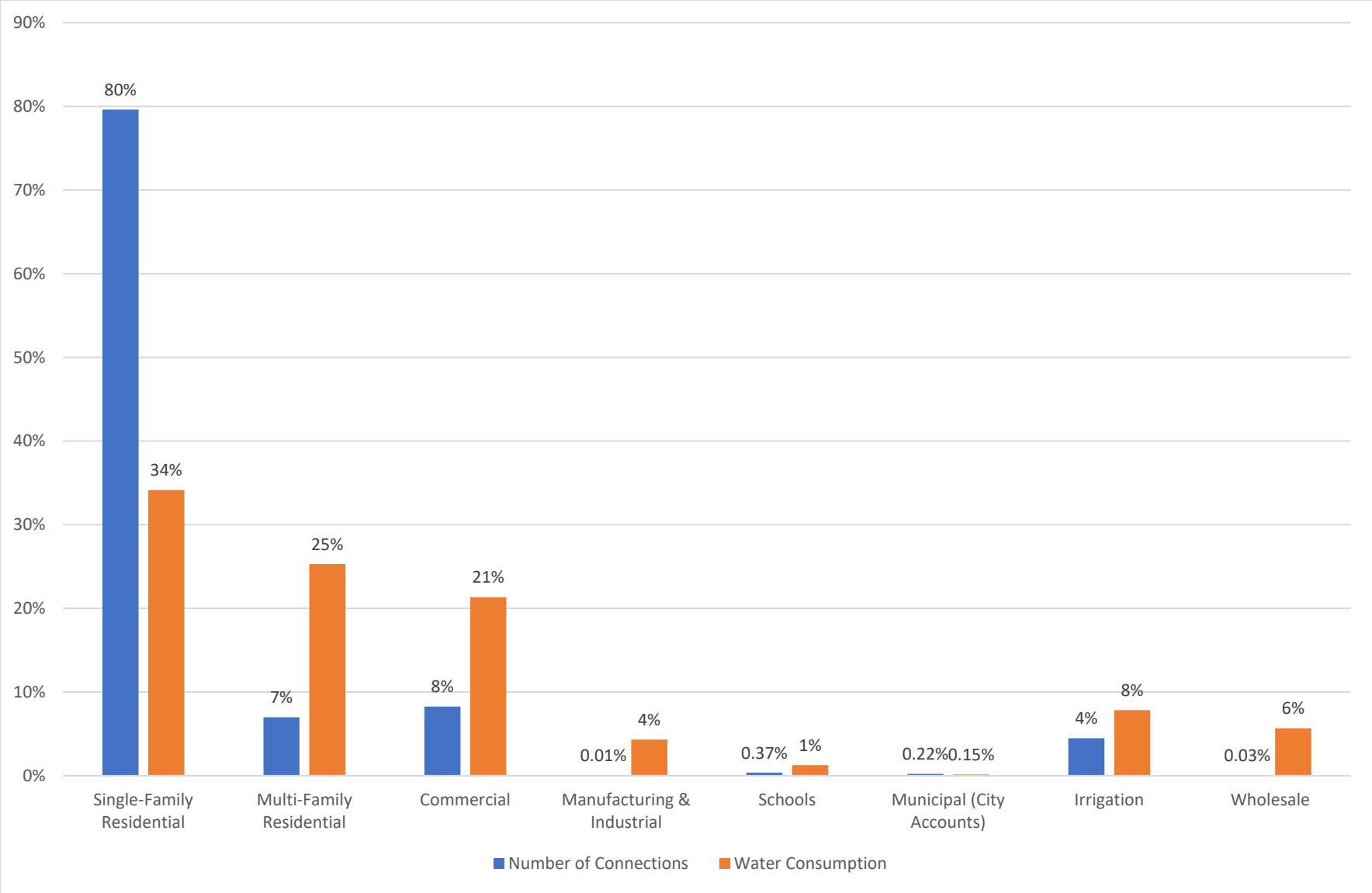
Table 2-3 | Historical Consumption in Million Gallons (MG) by Customer Classification

	2015	2016	2017	2018	2019	2020	2021	2022
Single-Family Residential	774	753	759	836	729	777	796	755
Multi-Family Residential	537	546	523	587	536	553	559	559
Commercial	501	581	595	594	585	461	470	472
Manufacturing & Industrial	170	153	123	124	121	101	94	96
Schools	41	49	56	49	42	30	33	28
Municipal (City Accounts)	5	4	5	5	5	4	4	3
Irrigation	163	162	160	102	102	118	173	173
Wholesale	425	428	153	137	130	131	128	125
Total Consumption, MG	**2,616**	**2,676**	**2,374**	**2,433**	**2,251**	**2,175**	**2,257**	**2,211**

Consumption has slightly declined over the period of record. While SFR and MFR consumption varied from year to year, it generally saw a slight increase during the study period which is correlated to the steady increase in the number of connections presented in **Table 2-2**. SFR and MFR consumption peaked in 2018, which is likely due to AMI meters implementation. Manufacturing and industrial demands decreased between 2015 and 2022 which is attributed to the reduced number of connections (reclassification) presented in **Table 2-2** as well as reduced consumption from Boeing which is the City's only current manufacturing and industrial customer. Commercial and school consumption decreased in 2020 through 2022 which is likely correlated with remote working and schooling that resulted during the COVID-19 pandemic. Wholesale demands also decreased over the planning period since LMWD and CWD discontinued purchase of water from the City. Additionally, no wholesale water was supplied to the Muckleshoot Indian Tribe (MIT) for the future fish hatchery; refer to **Section 2.8** for additional information.

Figure 2-1 presents the percentage of customer connections and annual billed water consumption by customer classification in 2022. Comparing the number of connections and water consumption illustrates the differences in water consumption between the different customer classifications. For example, SFR customers represent 80 percent of the connections, yet only 34 percent of the total consumption in 2022. Conversely, MFR customers represent seven percent of the connections, but 25 percent of the total consumption in 2022. Wholesale customers have six accounts in 2022 (0.04 percent of the total connections), but account for six percent of the total consumption in 2022. Similarly, manufacturing and industrial have two connections in 2022 (0.01 percent of the total connections), but account for four percent of the total consumption in 2022.

Figure 2-1 | Comparison of Number of Connections to Annual Water Consumption per Customer Classification in 2022



2.2.2.1 Historical Wholesale Consumption

Wholesale consumption decreased between 2015 and 2022. From 2015 to 2016 wholesale consumption represented 16 percent of the City's annual water consumption. In 2017 wholesale consumption decreased to six percent and remained relatively constant through 2022.

The City has two wholesale water agreements, one with the City of Algona and the other with LMWD. These agreements are described below, and copies of the agreements are included in **Appendix G**.

The City of Algona relies on the City of Auburn for water supply under the Water System Intertie Agreement, Algona/Auburn Intertie Agreement No. 3A (Agreement 3A). Agreement 3A was amended in 2002 to continue the agreement for the City of Auburn to provide a portion of the City of Algona's long-term water supply needs. Additionally, in 2016 the City of Algona purchased 100,000 gallons of additional storage in Lakeland Reservoir 6, bringing their total storage capacity to 280,000 gallons. Algona's consumption increased in 2018. Water consumption averaged 0.33 mgd between 2015 and 2017, and 0.36 mgd between 2018 and 2022. See **Table 2-6** for annual usage totals.

The City's Interlocal Agreement 2 (IA2) outlines the agreement with LMWD. The City's agreement with LMWD is on an interruptible basis and allows sales up to 2.5 mgd. This agreement was executed in October of 1996 and amended as Resolution 5332 in 2017. The agreement will remain in full force unless terminated by mutual agreement of the participants. LMWD did not purchase wholesale water during the planning period since they discontinued regular purchase of water from the City of Auburn in 2017 per the amendment to IA2. Instead, LMWD switched their primary supply to CWD, however, LMWD still maintains intertie with the City to use as a wholesale water supply on an as-needed basis.

The first amendment to IA2 also included the termination of CWD's wholesale agreement with the City; CWD did not purchase wholesale water during the planning period.

2.2.3 Water Use Per Connection and Equivalent Residential Units

The water use, or demand, of each customer classification can be expressed in terms of equivalent residential units (ERUs) for forecasting and planning purposes. One ERU is defined as the average quantity of water beneficially used by one average, full-time, SFR per day. The ERU calculation does not include non-revenue water or distribution leakage. **Table 2-4** summarizes the annual demand per ERU from 2015 to 2022 in gpd.

Table 2-4 | Historical Annual Demand per ERU (gpd per ERU)

	2015	2016	2017	2018	2019	2020	2021	2022
SFR Consumption (MG)[1]	774	753	759	836	729	777	796	755
Number of SFR Connections[2]	11,600	12,128	11,852	11,857	11,883	11,894	11,985	11,980
ERU_{ADD} (gpd)[3]	**183**	**170**	**176**	**193**	**168**	**179**	**182**	**173**

Notes:
1. Per annual residential consumption from **Table 2-3.**
2. Per residential connections from **Table 2-2.**
3. Calculated as annual consumption divided by number of connections.

To be conservative, an ERU planning value higher than the average was used by the City for demand forecasting. The 75th percentile of all the eight-year values was used to select the planning ERU value of 182 gpd. This methodology is consistent with the City's 2015 Plan. The ERU value of 182 gpd is seven percent lower than the 2015 Plan's ERU planning value of 195 gpd per ERU.

The conversion of total water consumption to ERUs provides a means to express water consumption by non-residential customers as an equivalent number of SFR accounts. The number of ERUs per account is obtained by dividing the water consumption per account by the water use per ERU (182 gpd for this planning period). Table 2-5 presents the number of ERUs per account for each customer classification based on the planning value of 182 gallons per ERU.

Table 2-5 | Historical Demand as Equivalent ERUs per Customer Classification

	2015	2016	2017	2018	2019	2020	2021	2022
Single-Family Residential(ERUs)[1]	11,600	12,128	11,852	11,857	11,883	11,894	11,985	11,980
Multi-Family Residential (ERUs)	8,078	8,194	7,864	8,832	8,067	8,295	8,403	8,411
Commercial (ERUs)	7,542	8,709	8,947	8,933	8,806	6,920	7,066	7,096
Manufacturing & Industrial (ERUs)	2,561	2,298	1,857	1,864	1,817	1,510	1,412	1,437
Schools (ERUs)	614	730	842	742	624	448	497	420
Municipal (City Accounts) (ERUs)	69	62	69	72	82	56	67	49
Irrigation (ERUs)	2,454	2,431	2,412	1,528	1,534	1,775	2,608	2,603
Wholesale (ERUs)	6,395	6,414	2,299	2,057	1,949	1,966	1,925	1,884
Annual Demand Equivalent (ERUs)	**39,314**	**40,967**	**36,141**	**35,884**	**34,762**	**32,863**	**33,963**	**33,881**

Note:

1. The number of Single-Family Residential ERUs is equivalent to the actual number of connections. For all other customer classifications, the planning value of one ERU is equivalent to 182 gpd.

2.2.4 Largest Water Users

The top 20 largest water users for the City's water system are summarized in Table 2-6 and Figure 2-2 with rank assignments based on 2022 consumption. Total consumption values are presented in MG. This list, in conjunction with the information above, provides information on where water is consumed in the system. It is important to note the type of customer classification, because the top 20 water users consume a significant percentage of the total consumption. As mentioned above, SFR connections make up most of the total connections and water consumption for the system, but no individual SFR connections are listed within the top 20 largest water users. Though the City of Algona is comprised of individual SFR's, the City of Algona is one of the top 20 largest water users because it is a wholesale customer supplied via a limited number of connections.

The top 20 water users in the City's water system accounted for approximately 24 percent of the total water system consumption in 2022. LMWD was the largest water user in 2015 and 2016, purchasing over 300 MG per year, but discontinued regular purchase of consumed water from the City in 2017. Copper Gate, Promenade Apartments, and Villas/Reserve are developments that were constructed after 2015, which pushed Tall Cedars and Leisure Manor multi-family users out of the top 20. Boeing and the City of Algona make up almost 50 percent of the top 20 water users' consumption.

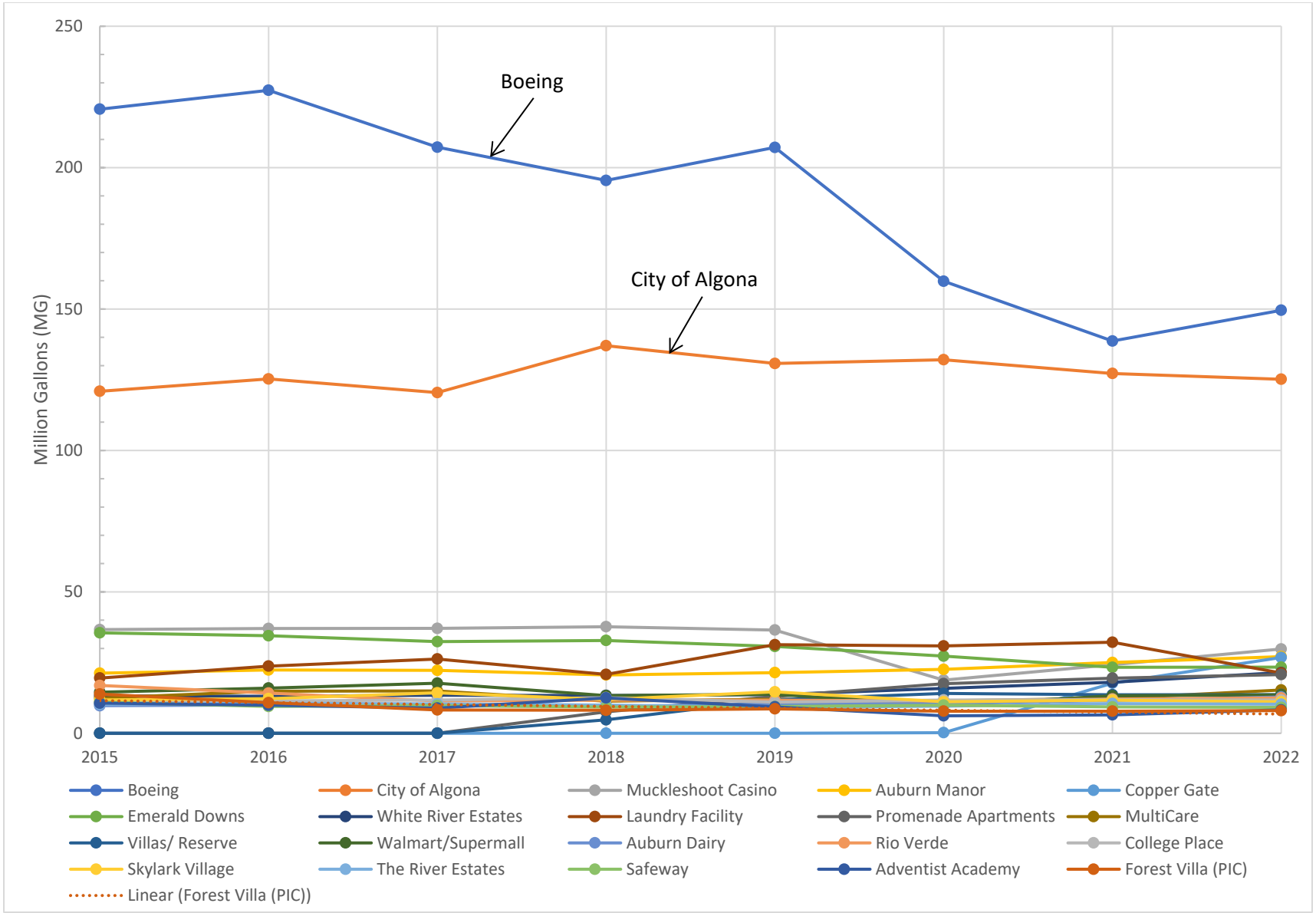
Table 2-6 | Historical Annual Consumption of the Top 20 Largest Water Users in Million Gallons (MG)

Rank[1]	Customer Name	Classification	Service Area	2015	2016	2017	2018	2019	2020	2021	2022
1	Boeing	Manufacturing/Commercial	Valley	220.67	227.34	207.23	195.48	207.15	159.83	138.70	149.57
2	City of Algona	Wholesale	Valley	120.93	125.29	120.46	137.04	130.75	132.07	127.22	125.18
3	Muckleshoot Casino	Commercial	Academy	36.65	37.04	37.08	37.66	36.49	18.79	24.24	29.79
4	Auburn Manor	Multi-Family	Valley	21.25	22.367	22.24	20.61	21.45	22.59	25.03	27.10
5	Copper Gate[2]	Irrigation/Multi-Family	Valley	-	-	-	-	-	0.22	17.70	26.80
6	Emerald Downs	Commercial/Irrigation	Valley	35.51	34.48	32.40	32.81	30.69	27.28	23.33	23.36
7	White River Estates	Multi-Family	Valley	13.24	13.09	13.42	13.36	13.66	15.87	18.06	21.47
8	Laundry Facility	Commercial	Valley	19.52	23.73	26.25	20.81	31.31	30.87	32.19	21.32
9	Promenade Apartments[2]	Commercial/Irrigation/Multi-Family	Lea Hill	-	-	-	7.58	13.00	17.53	19.48	20.74
10	MultiCare	Commercial/Irrigation	Valley	12.45	14.86	14.95	11.35	12.04	11.48	12.32	15.30
11	Villas/Reserve[2]	Commercial/Irrigation/Multi-Family	Valley	-	-	-	4.75	11.84	14.09	13.62	13.66
12	Wal-mart/Supermall	Commercial/Irrigation	Valley	14.54	15.98	17.70	13.31	13.78	9.79	13.26	13.58
13	Auburn Dairy	Commercial	Valley	9.73	10.03	9.73	9.49	10.38	10.63	11.58	12.82
14	Rio Verde	Multi-Family	Valley	16.91	14.21	11.41	11.72	11.72	11.46	12.12	12.48
15	College Place	Multi-Family	Lea Hill	10.81	11.46	11.75	12.59	10.99	11.77	11.89	11.74
16	Skylark Village	Multi-Family	Valley	11.80	12.23	14.30	11.93	14.65	11.13	11.73	11.11
17	The River Estates	Multi-Family	Valley	10.23	10.59	10.38	9.97	9.17	9.59	10.49	10.27
18	Safeway	Commercial	Valley	11.01	9.48	9.81	9.27	9.44	9.95	9.32	9.14
19	Adventist Academy	School/Multi-Family	Academy	10.66	9.92	8.89	12.49	9.33	6.17	6.50	8.26
20	Forest Villa (PIC)	Multi-Family	Academy	13.86	10.83	8.24	8.13	8.63	7.80	7.82	8.00
-	LMWD[3]	Wholesale	Lea Hill	302.89	303.02	29.40	-	-	-	-	-
		TOTAL CONSUMPTION (MG)[3]		**905.86**	**918.45**	**618.85**	**588.28**	**613.31**	**545.32**	**546.66**	**571.67**

Notes:

1. Rank assignments are based on 2022 consumption data.
2. Service location was constructed after 2015 WSP was published.
3. LMWD was the largest water user in 2015 and 2016 but discontinued purchase of water from the City in 2017. Included to contribute to the total consumption.
4. The annual total is the sum of the top 20 largest users from each year; Tall Cedars and Leisure Manor consumption data is not shown but is included in the total.

Figure 2-2 | Historical Annual Consumption of the Top 20 Largest Water Users in Million Gallons (MG)



2.3 Water Supply and Production

The historical average and maximum water demands are important parameters when performing system and supply analyses. The term "water demand" refers to all the water requirements of a system including metered customers, unmetered water use, and unaccounted for water loss such as leakage and theft. For this reason, the City's supply data, which accounts for all water demand, was used to calculate the Average Day Demand (ADD) and Maximum Day Demand (MDD) for each year.

2.3.1 Historical Water Supply

The City produces water through its springs, wells, and, when needed, wholesale water purchases. **Table 2-7** summarizes the amount of water produced and purchased by the City between 2015 and 2022 as MG. The City has not purchased water from the City of Tacoma since 2016.

Table 2-7 | Historical Annual Water Supply by Source in Million Gallons (MG)

	2015	2016	2017	2018	2019	2020	2021	2022
Lakeland Well 5	4.9	0.1	0.2	0.5	1.0	0.9	1.2	3.3
Lakeland Well 5A	54	45	64	76	68	65	72	59
Lakeland Well 5B	-	-	-	-	-	-	-	-
Valley Well 1	-	200	336	93	143	143	57	73
Valley Well 2	-	-	-	270	296	235	305	314
Valley Well 3A	-	-	-	-	-	-	-	-
Valley Well 3B	-	-	-	-	-	-	-	-
Valley Well 4	302	430	421	121	96	84	88	66
Valley Well 6	-	-	-	402	445	349	438	468
Valley Well 7	-	-	-	-	-	-	-	-
Coal Creek Springs	1,456	1,613	1,510	1,315	1,208	1,268	1,338	1,225
West Hill Springs	173	198	114	176	136	133	140	157
Algona Well 1	-	-	-	-	-	-	-	-
Total Production (MG)[1]	2,033	2,487	2,506	2,464	2,410	2,313	2,443	2,395
Total Purchased (MG)	732	321	-	-	-	-	-	-
Total Supply (MG)	**2,765**	**2,808**	**2,506**	**2,464**	**2,410**	**2,313**	**2,443**	**2,395**

Note:

1. Small differences exist between the total production value and the sum of individual production values by source. This is due to the use of raw unprocessed data for individual sources, which was subsequently processed to identify and remove outliers, correct data entry errors and account for anomalies that could distort the overall results. These adjustments ensure that the . Total Production values presented depict the most accurate information available.

Table 2-8 | 2022 Monthly Water Production by Source (MG)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Lakeland Well 5	0.4	0.2	0.2	0.2	0.2	0.2	0.9	0.6	0.1	0.1	0.1	0.1
Lakeland Well 5A	6	5	6	6	6	6	5	6	6	6	-	1
Lakeland Well 5B	-	-	-	-	-	-	-	-	-	-	-	-
Valley Well 1	3	1	-	1	-	3	19	41	5	-	-	-
Valley Well 2	27	25	29	28	29	25	30	29	24	23	21	24

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Valley Well 3A	-	-	-	-	-	-	-	-	-	-	-	-
Valley Well 3B	-	-	-	-	-	-	-	-	-	-	-	-
Valley Well 4	3	2	2	3	-	2	18	27	8	1	-	-
Valley Well 6	41	37	44	41	43	36	44	44	37	35	31	35
Valley Well 7	-	-	-	-	-	-	-	-	-	-	-	-
Coal Creek Springs	90	71	77	62	83	110	129	159	153	112	89	90
West Hill Springs	13	11	13	12	13	13	13	15	14	14	13	13
Algona Well 1	-	-	-	-	-	-	-	-	-	-	-	-

2.3.2 Average Day Demands and Maximum Day Demands

Table 2-9 summarizes the historical ADD and MDD based on production from 2015 through 2022.

To calculate the ADD, the total annual supply was divided by the number of days in the year.

Historical values of MDD are equivalent to the highest production and purchase in one day each year, usually during the summer when irrigation use is highest. The MDD is a key parameter used for supply capacity, pump station discharge rates, reservoir capacity, and pump sizes. The peaking factor is also a key parameter in developing the future MDD projections.

Table 2-9 | Historical Annual ADD, MDD, Peak Day, and Peaking Factor

	2015	2016	2017	2018	2019	2020	2021	2022
Annual Supply (MG)[1]	2,765	2,808	2,506	2,464	2,410	2,313	2,443	2,395
Average Day Demand (mgd)	7.57	7.67	6.87	6.75	6.60	6.32	6.69	6.56
Maximum Day Demand (mgd)	11.62	12.56	11.76	11.60	11.25	12.43	11.77	11.78
Max Day Date (month/day)	6/28	8/25	8/22	7/27	8/1	7/29	7/27	7/29
MDD/ADD Peaking Factor	1.53	1.64	1.71	1.72	1.70	1.97	1.76	1.80

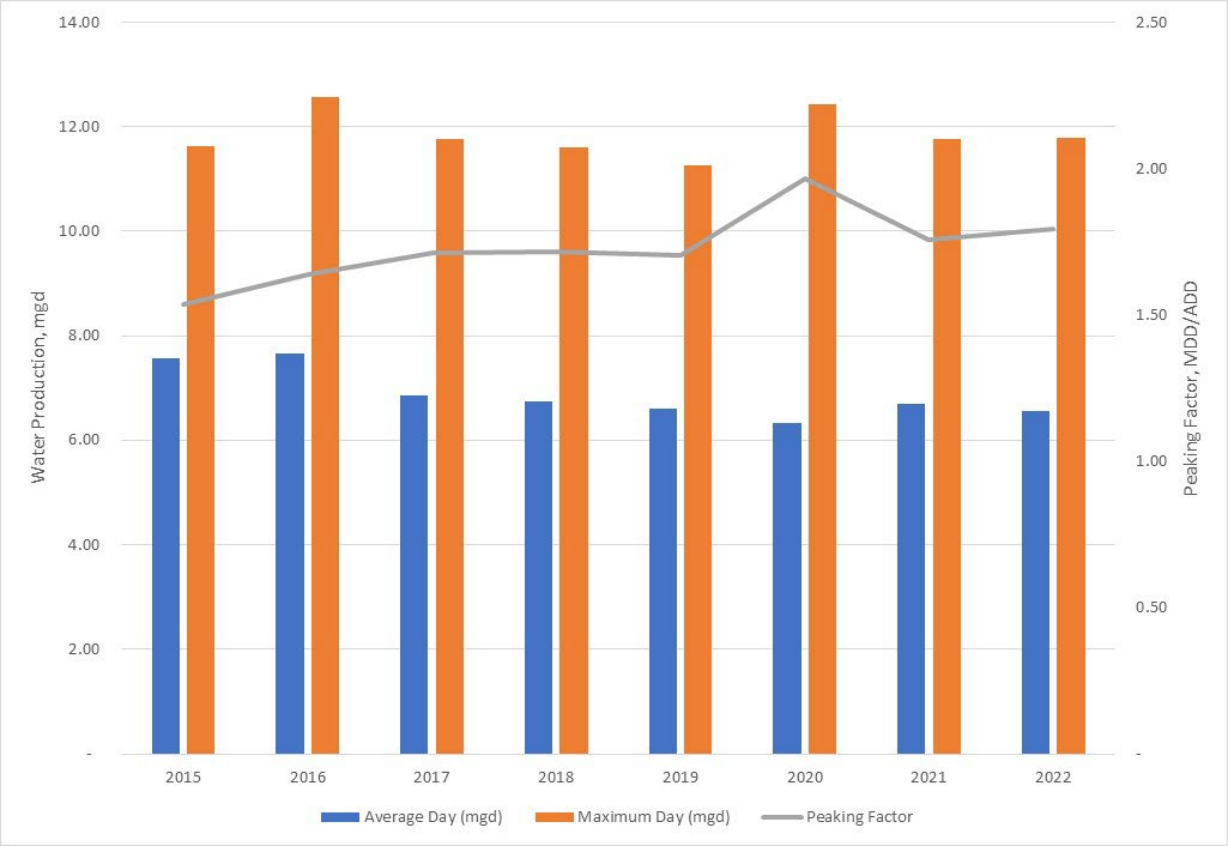
Note:
1. Value is from **Table 2-7.**

The last row of **Table 2-9** presents the historical MDD to ADD peaking factor, which normalizes the historical data to compare between years. The minimum MDD factor was 1.53 in 2015, and the maximum MDD was 1.97 in 2020.

Due to variability of the peaking factor, the City has chosen to use the 75th percentile of the historical peaking factors in demand projections, which is 1.77. This factor provides a better representation of the peaking factors observed historically for water supply predictions.

Figure 2-3 shows that from 2015 to 2022 the ADD has decreased, which is correlated with improved water use efficiency, but the MDD and MDD/ADD peaking factor have increased. This is likely due to warmer and drier summer months and a reduction in the ADD after CWD opted out of their original agreement with the City, terminating their purchase of water, and LMWD stopped regular purchase of consumed water from the City, switching to interruptible supply.

Figure 2-3 | Historical Water Production with Peaking Factor



2.3.3 Peak Hour Demand

Peak Hour Demand (PHD) is the amount of water used, excluding fire flow, during the largest use hour of the year. Because the City does not track hourly production data, PHD was estimated based on Equation 3-1 from the DOH Water Design Manual, which is as follows:

$PHD = (ERU_{MDD}/1440)\ [(C \times N) + F] + 18$

Where **PHD =** Peak Hourly Demand, total system (gpm)
C = Coefficient Associated with Ranges of ERUs (1.6 for systems with more than 500 ERUs)
N = Number of ERUs based on MDD
F = Factor Associated with Ranges of ERUs (225 for systems with more than 500 ERUs)
ERU_{MDD} = Maximum Day Demand per ERU (gpd)

The calculated annual PHD for the system is summarized in **Table 2-10**.

Table 2-10 | Historical Peak Hour Demand

	2015	2016	2017	2018	2019	2020	2021	2022
ERU_{MDD} (gpd)	279	298	312	313	310	358	320	327
Number of ERUs based on MDD	41,586	42,115	37,692	37,068	36,253	34,696	36,747	36,025
PHD (gpm)	12,973	14,019	13,135	12,950	12,567	13,881	13,140	13,159
PHD to MDD Factor	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61

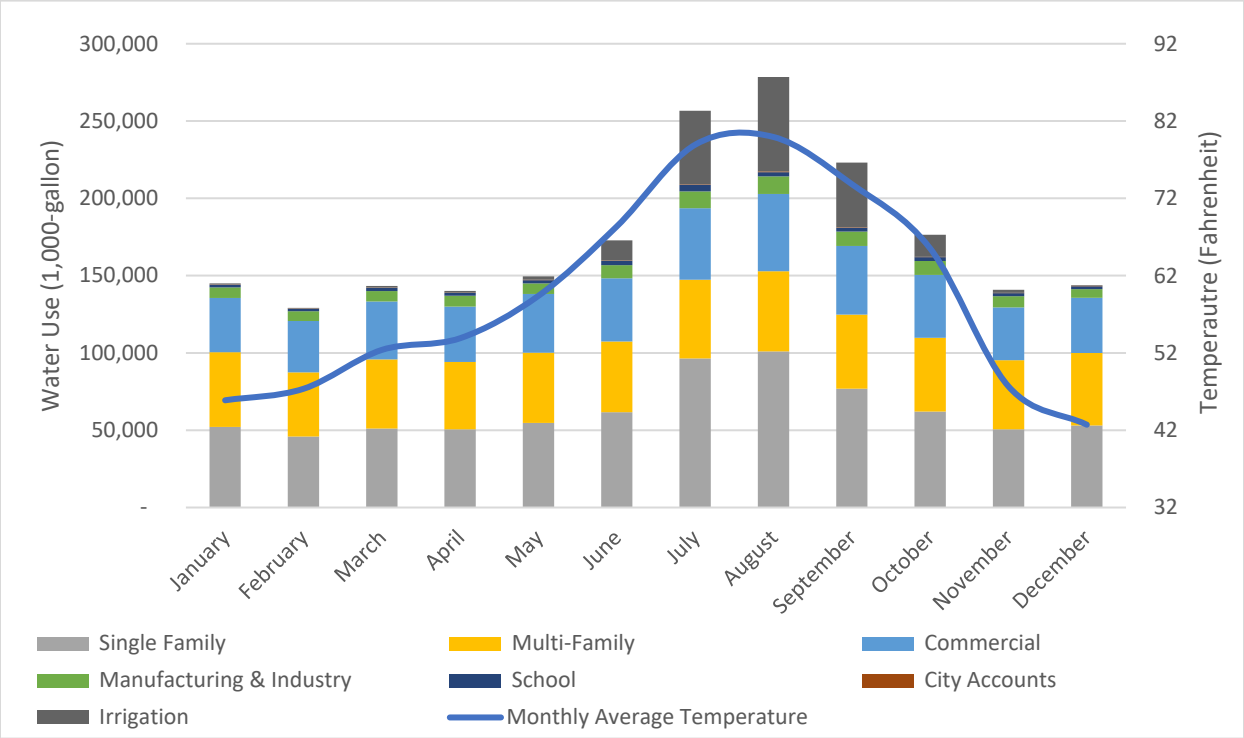
The last row of **Table 2-10** provides the calculated PHD to MDD factor, which normalizes the historical data to compare between years. The calculated PHD factor remained consistent at 1.61 between 2015-2022. Due to this consistency, the City has elected to use the PHD factor of 1.61 in future demand projections.

2.3.4 Seasonal Variations

The pattern of water consumption differs between the customer classifications. Water use increases significantly during the summer when daylight hours are longer, and lawn and landscape watering is prominent. Other outdoor uses, including car washing, pools, and recreation, are also at their highest during summer months.

Figure 2-4 presents the effect that temperature has on water usage by comparing 2022 monthly consumption data per customer classification to the average monthly temperature.

Figure 2-4 | Temperature Effects on Water Usage in 2022



As seen in **Figure 2-4**, SFR and irrigation customers show a significant peak in total consumption during the summer months. Other customer classifications show a smaller similar peak during these months. MFR customers do not show a significant peak during summer monthly because City's policy dictates the use of separate irrigation accounts for all non-SFR accounts. These monthly variations can be used to target water use efficiency efforts and/or to project future water-use patterns for planning purposes.

2.4 Distribution System Leakage

Distribution System Leakage (DSL) represents the difference between production and documented water use (retail, wholesale, and authorized unmetered). It may include inaccurate master and service connection meters, unaccounted-for non-revenue water use, pipeline leakage, and unauthorized use. DSL does not include authorized water usage such as water used for fire protection, flushing, construction, and other

maintenance and operations practices. However, to be credited, this must be accounted for by metering or estimating using credible means.

DSL is calculated as the difference between the total amount of water produced and the sum of water sold and authorized unbilled water usage. DOH requires the three-year average DSL to be under 10 percent to minimize water waste.

The City's estimated DSL for 2015 through 2022 is presented in **Table 2-11**. Revised DSL values have been provided to DOH for 2020, 2021 and 2022 that are lower than the values presented in **Table 2-11**. However, the revised values are not utilized for projections, as the revisions were made after the demand projections and system analysis were completed. Since the values used for demand projections and system analysis are slightly higher than the revised values, the projections are slightly more conservative than would have been necessary otherwise.

Table 2-11 | Historical Distribution System Leakage

	2015	2016	2017	2018	2019	2020	2021	2022
Total Water Supply[1] (MG)	2,765	2,808	2,506	2,464	2,410	2,313	2,443	2,395
Billed Consumption[2] (MG)	2,616	2,676	2,374	2,433	2,251	2,175	2,266	2,214
Authorized Non-Billed Consumption (MG)	7	4	6	13	7	4	5	5
Total Authorized Consumption (MG)	2,623	2,679	2,380	2,446	2,257	2,179	2,271	2,219
DSL (MG)	142	128	126	18	153	133	172	176
Annual Percent DSL	5.1%	4.6%	5.0%	0.7%	6.3%	5.8%	7.1%	7.4%
3-Year Rolling Average (Percent)	6.8%	5.1%	4.9%	3.4%	4.0%	4.3%	6.4%	6.7%
3-Year Rolling Average (MG)	183	139	132	91	99	101	153	161

Notes:
1. From **Table 2-7.**
2. From **Table 2-3.**

For the City's water system, the total three-year rolling average DSL ranged from 3.4 percent to 6.8 percent of the total production meeting DOH requirements and the City's goal. The City's annual average DSL over the period was 5.2 percent. During this period the City maintained a DSL below 10 percent on an annual basis, which is an improvement from the last planning period. Abnormally high authorized non-billed consumption was recorded in 2018 due to unidirectional flushing for the Valley Service Area. Starting in 2021, the billed consumption was updated to track hydrant water used during construction.

The City is committed to maintaining a 3-year rolling average DSL below 10 percent and actively works to identify and eliminate DSL throughout the system through its ongoing leak detection, meter calibration, and repair and replacement programs for water system infrastructure, as detailed in **Chapter 6 – Operations and Maintenance**. Additionally, the City has maintained efforts to reduce non-payment bills and water theft.

2.5 Water Supply Characteristics

The City has a diverse water supply consisting of two springs, ten wells and an emergency intertie with the City of Tacoma; refer to the Existing Facilities Figure provided in **Chapter 1** (**Figure 1-3**). The City's aquifer characteristics are described in several sources; this section draws mainly from the Conceptual Mitigation Plan (CMP) for Water Right Application G1-28404, provided in **Appendix S**.

Wells 1, 2, 3A, 3B, 4, 6, and 7 are in the lower alluvial aquifer in the Auburn Valley, referred to as the Valley Wellfield. This wellfield is mostly confined by the Osceola Mudflow, an important aquitard in the Auburn Valley depicted in Figure 4 of the CMP. Groundwater discharge from the upland aquifers is the primary source of recharge to the lower alluvial aquifer, which hosts all the City's wells. Groundwater generally moves upward in the valley aquifers and moves horizontally at approximately one to four feet per day. Alluvial groundwater from the White River also recharges the Green River alluvial aquifer. Groundwater in the vicinity of Wells 2, 6, and 7 discharges into the Puget Sound via the Green River and the Duwamish River valley. Wells 2, 6, and 7 are located northeast of downtown Auburn and collectively referred to as the Fulmer Wellfield. Wells 1, 3A, 3B, and 4 are in the White River Drainage Basin and Wells 2, 6, 7 and West Hill Springs are in the Green River Drainage Basin.

Wells 3A, 3B and 7 are not currently in use due to high manganese concentrations, however the City plans to install manganese treatment at each of these facilities to bring them back online. The City has a pending water right application for 13,443 acre-feet per year from the existing Wells 6 and 7 and a future Well 8. The City has sufficient water rights to meet current demands, 10-year, and 20-year demand projections, as shown in the Water Rights Self-Assessment Form provided in Appendix I. Mitigation obligations due to the proposed water right for Wells 6, 7, and 8 are listed below and are described in detail in the CMP:

- Mitigation of impacts to Green River,
- Mitigation of impacts to White River, and
- Mitigation of impacts to Mill Creek.

Wells 5, 5A, and 5B are in the Upland Wellfield and constructed within the Lakeland Service Area. The upland aquifers are recharged through precipitation and leakage from Lake Tapps and discharge into the White River system. Once Well 5B came online, the City discovered that the aquifer was not recovering. Well 5B has been offline since 2006. The safe yield of Wells 5 and 5A have been decreased from their design capacity due to a drop in the aquifer's capacity. Specific information on the individual wells and their associated water rights are provided in Section 3.4.1.

West Hill Springs draws from an unnamed confined aquifer. The spring source water flows by gravity into the Valley Service Area, although flows vary depending on aquifer conditions, and discharges into Mill Creek, which flows into the Green River.

Coal Creek Springs is the largest active water supply for the City and draws from a confined aquifer, however its flow varies depending on aquifer conditions. Coal Creek Springs collection system is located at the base of Lake Tapps Upland and is in the White River Drainage Basin. Further aquifer details are provided within the Wellhead Protection Program (WHPP) provided as Appendix T.

The City also owns two additional wells: the Algona Well 1 and the Braunwood Well. Algona Well 1 was acquired by the City in 1996 but has since been taken offline due to operational issues.

The City plans to use a groundwater flow model being developed by the USGS to predict potential impacts to surface water.

2.6 Water Supply Reliability Evaluation

The City's active water sources have maintained current production capacities and are deemed reliable, as they have back-up power sources available. The production of some water sources is limited by pump or intake capacity, as mentioned in Section 2.5, however all production is managed to be within available water rights and is managed by the physical capacity of each facility as summarized in Table 2-12.

Table 2-12 | Summary of Source Water Pumping or Production Capacity Compared to 2022 Maximum Daily Production

Source	Service Area	Pumping/Production Capacity (gpm)	Maximum Daily Production[1] (gpm)
Well 5	Lakeland	760	640
Well 5A	Lakeland	180	180
Well 5B	Lakeland	--[2]	--
Well 1	Valley	2,100	2,100
Well 2	Valley	1,600[4]	1,470
Well 3A	Valley	--[2]	--
Well 3B	Valley	--[2]	--
Well 4	Valley	2,600	1,796
Well 6	Valley	1,800	1,777
Well 7	Valley	--[2]	--
Coal Creek Springs	Valley	3,500[3]	4,383
West Hill Springs	Valley	600	563
Algona Well 1	--	--[2]	--
TOTAL		**13,140**	**12,909**

Notes:

1. Maximum daily production per source is the maximum production rate recorded in 2022.
2. The facility is currently offline. No production capacity is available without facility improvements.
3. Water rights for Coal Creek Springs allow for a Qi of 6,732 gpm. 3,500 gpm is the typical historical production capacity limitation experienced. The City is currently investigating the possible factors influencing the feasible withdrawal from this source.
4. The pump at Well 2 was replaced in 2023 and now has a capacity of 1,115 gpm.

Calculations presented in the Water Rights Self-Assessment Form (**Appendix I**) conclude that the City's existing water rights are anticipated to be adequate to meet the current, 10-year, and 20-year projections for maximum instantaneous flows (Qi) and total annual withdrawal (Qa).

However, the City does not have the infrastructure required to withdraw from all water sources, and some sources have underlying production restrictions that require further evaluation. Several facility improvement projects are required to maximize production and obtain the full water rights. Furthermore, potential demand from LMWD was not included in the assessment, as they have an interruptible wholesale agreement with the City which is a secondary priority to the City's demand. Currently, the City's interties with the City of Tacoma provide additional wholesale water for purchase if necessary to meet demands, however the City has not purchased water from Tacoma since 2016.

The City has established a policy of maintaining the capability to supply the MDD while the largest water source is out of service. The system analysis documented in **Chapter 3** confirms that with projected demands over the 20-year planning period, the City will maintain the capability to meet MDD if the largest pumping source is out of service. This evaluation includes the Tacoma interties as available sources to meet this need and excludes the capacity of facilities that are offline or not operational.

Of the twelve sources, only Wells 5 and 7 are currently without a standby power source. Standby power will be added to Wells 5 and 7 as part of CIP projects discussed in **Chapter 8.** The Fulmer Field Corrosion Control Treatment Facility has backup power.

The Game Farm Park Pump Station, Lea Hill BPS, and Intertie Pump Station are the only pump stations without a standby power source or connection. Backup power will be added to the Lea Hill BPS and the Intertie Pump Station as part of a capital projects discussed further in **Chapter 8**. The Game Farm Park Pump

Station is a small facility that serves a recreational area and does not serve residential or commercial properties, therefore back-up power is not a critical element.

2.6.1 Use Impacts on Instream Flows

New water right appropriations in the Green-Duwamish Basin are subject to instream flow (ISF) regulations as described in the CMP and WAC 173-509. These ISF are senior to the City's recent water rights application G1-28404. This requires mitigation for potential impacts to the Green River when instream flows are not met, such as predicting when streamflow will drop below ISFs as well as determining the lag time associated with impacts to instream flows from groundwater withdrawals. The CMP includes the following detailed description of the streamflow characteristics:

> "A review of historical streamflow data indicates that on average streamflow's are below the ISFs at the Auburn gauge approximately 20 percent of the time (Table 3). Streamflow's are generally more often below the minimum ISFs during the summer months, falling below the minimum ISFs 35 percent to 61 percent of the time between June and September. The flows are frequently above the minimum ISFs during the spring and winter months but can drop to below ISFs at any time of the year. For example, in April, streamflow falls below the minimum ISFs approximately 3 percent of the time (4.1.2)."

The City's current rights are senior to the instream rights and therefore not effected by the instream flow limitations, however as stewards of the watershed, the City has an aggressive water use efficiency program described in Chapter 4 meant to limit the volume of withdrawals, especially during the dry season. The City has a minor surplus of both annual volume withdrawn (Qa) and maximum instantaneous flow rate withdrawn (Qi) to meet MDD through the 20-year planning period. However, several facility improvements are required to make the withdrawals feasible.

2.6.2 Wholesale Interties

The City has three wholesale interties, described below and in further detail in Section 1.6.2.

City of Algona

The City has supplied water to Algona on a regular basis since 1996, when interlocal agreement IA3 was negotiated. A superseded agreement, IA3A, was negotiated in October 2002 which reflects the current status. The agreement will remain unless terminated by mutual agreement of the City and Algona. Currently, Algona is served through the metered Boeing Welded Duct Intertie and by two eight-inch, manually operated meter stations located at Boundary Boulevard and Industry Drive North, and at Boundary Boulevard and Milwaukee Avenue.

LMWD

An intertie between the City and LMWD was constructed in 1996 as part of IA2 to enable LMWD to purchase water from the City. The manually operated intertie also allows the City to provide an emergency supply to Kent's East Hill Service Area. The City agreed to provide up to 2.5 MGD average day and 5.0 MGD maximum day use. A provision of the agreement calls for LMWD to send an emergency supply of water to

the City when needed for the Lea Hill Service Area. The IA2 agreement also included several improvements to allow delivery of water:

- The Green River Pump Station and pipelines to deliver additional water into the Lea Hill Service Area
- The Intertie Pump Station and pipelines to deliver water from the Lea Hill Service Area to LMWD
- Construction of two additional wells (Wells 6 and 7).

LMWD discontinued regular purchase of water from the City in 2017 per the amendment to IA2, however LMWD still maintains the intertie with the City to use as a wholesale water supply on an as-needed basis. This interlocal agreement has a term of sixty years, commencing in 2017.

City of Tacoma

In 2012, Tacoma agreed to provide water to the City in the quantity of up to 1.0 MGD average day use, 1.8 MGD peak day use, and 1.62 MGD four-day peak use. Two interties were constructed to supply the City's Valley pressure zone: located at 3200 B Street NW and 29600 132nd Avenue SE in Auburn. In 2014, Tacoma amended and restated the 2012 agreement with the City to provide a total of 3.5 mgd (2,430 gpm) of average use and 5.12 mgd (3,555 gpm) of peak use from the interties. The B Street NW remotely operated intertie is limited to a maximum flowrate of 2,200 gpm and the 132nd Avenue SE Intertie is limited to a maximum flowrate of 4,500 gpm. However, the combined use of the interties cannot exceed 5.12 mgd (3,555 gpm) in a 24 hour period. This agreement will remain in force as long as the City of Tacoma remains in the business of providing water, however the City has not purchased water for consumption from the City of Tacoma since 2016.

2.6.3 Emergency Interties

Emergency interties are an important tool that helps water utilities increase reliability and respond to emergencies. The City has emergency interties with seven water systems, as described in Section 1.6.2 and summarized in Table 1-3.

2.6.4 Potential Interties

The City has an interest in acquiring additional interties that would enhance the reliability of water service in the City and among adjacent purveyors. Tacoma Public Utilities constructed the Second Supply Pipeline Project, which runs through the north end of the City's RWSA between 30th and 37th Streets NE. In addition to the B Street NW and 132nd Avenue SE interties, a third turnout was constructed as part of the pipeline project in the Valley Service Area. The City does not currently plan to develop this turnout but may do so in the future.

2.7 Future Population Projections and Land Use

2.7.1 Demographic Forecast

Demographic forecasts provide an estimate of future population and employment. The City is a member of the Puget Sound Regional Council (PSRC), which develops demographic analyses for the central Puget Sound region (King County, Kitsap County, Pierce County, and Snohomish County). The demographic projections are developed based on local planned development capacities and regional policies adopted by the PSRC Vision 2050. Vision 2050 established the region's strategy for accommodating population and employment growth to maintain the high quality of living, economic prosperity, and a healthy environment

through the year 2050. Through this planning process, the City is required to plan for a specific number of additional housing units and jobs.

Consistent with the Washington State Growth Management Act (GMA), the City uses the Vision 2050 growth values as the basis of the demographic projections.

Demographic projections are based on the PSRC's 2044 forecasts for housing, population, and employment for each Transportation Analysis Zone (TAZ) within the City's RWSA, as the City's policy is to serve all customers within its RWSA. Additional information on the City's existing land use, future zoning, demographic projections, and corresponding rates of growth are detailed in this Section.

2.7.2 Future Land Use and Zoning

Land use and zoning regulations provide important information in determining future water requirements. Land use and zoning determines the area available for various types of development including both SFR and MFR development, as well as commercial and other types of land use that provide the economic base necessary to support residential development. The housing, population and employment projections developed for the 2024 Periodic Comprehensive Plan are based on the employment and housing targets provided by King and Pierce counties that the City must accommodate over the 20-year planning horizon. This consistent approach is encouraged by the Washington State GMA and should result in predictable and stable land uses over longer planning periods.

Future land use and zoning designations for the City's RWSA are shown on the Comprehensive Zoning Map provided as Figure 2-5. Land uses in unincorporated King County which are part of the RWSA, but beyond City limits are anticipated to remain consistent with current designations, as the current land use designations reflect the intended long-range use of land for the 20-year planning horizon in the current Comprehensive Plan; additional data for future land use designation for unincorporated King County are not currently available. Zoning designations implement the land use identified in the City's Comprehensive Plan; therefore, the current land use reflects the City's historical zoning. House Bill 1337 and House Bill 1110, both effective as of July 2023, are geared at expanding housing options. As such, the City has adopted future zoning to allow for accessory dwelling units within areas previously dedicated to single-family detached housing. Table 2-13 summarizes the updating zoning designations and fire flow requirements. Note that the required fire flow in some zoning designations will be determined on a case-by-case basis pending development or re-development type. Fire flow requirements for portions of the RWSA located in unincorporated King County are also captured in Table 2-13.

Three of the updated residential zoning designations presented in Table 2-13 allow for Accessory Dwelling Units (ADUs). Policies related to ADU water service metering and connection fees are included in Appendix A. The demographic population projections are expected to be sufficient to account for growth that is realized by the additional ADUs within the service area. The demographic population projections are discussed in Section 2.7.3 and demand projections are discussed in Section 2.8.2. Required fire flow for ADUs will be determined on a case-by-case basis pending development or re-development type.

The City includes a wide range of residential, commercial, institutional, and industrial land uses. Public and quasi-public land uses include parks, open space, and public recreation as well as institutional uses such as schools. Commercial and industrial uses occur primarily in the Valley Service Area; however, large areas of residential land use and the Downtown Urban Center (DUC) also exist in the Valley Service Area.

The Academy and Lakeland Service Areas are primarily residential, although some commercial zoning is located along Auburn Way South (SR 164) in the Academy Service Area. The Lea Hill Service Area is also

primarily residential although other uses include small amounts of commercial and open space, and Green River College.

Areas within the RWSA, but outside the City limits, are governed by King County zoning. Land use was assumed to be consistent with zoning in these areas. The area in the northwest corner of the RWSA, west of SR167 and north of S 287th Street is zoned for Agriculture. A second area is located near Auburn Narrows State Park, which is north and west of SR18. This area includes Rural Residential, as well as Park and Greenbelt zoning. The City does not currently provide service in this area; however, it is willing to provide service to customers meeting the Service Area Policies. There are two additional unincorporated "pockets" of urban residential zoning within the RWSA that the City currently serves, where the southern area also contains a single parcel of Industrial zoning. The King County zoning was used in the demographic analyses.

Table 2-13 | Updated Zoning Districts and Fire Flow Requirements

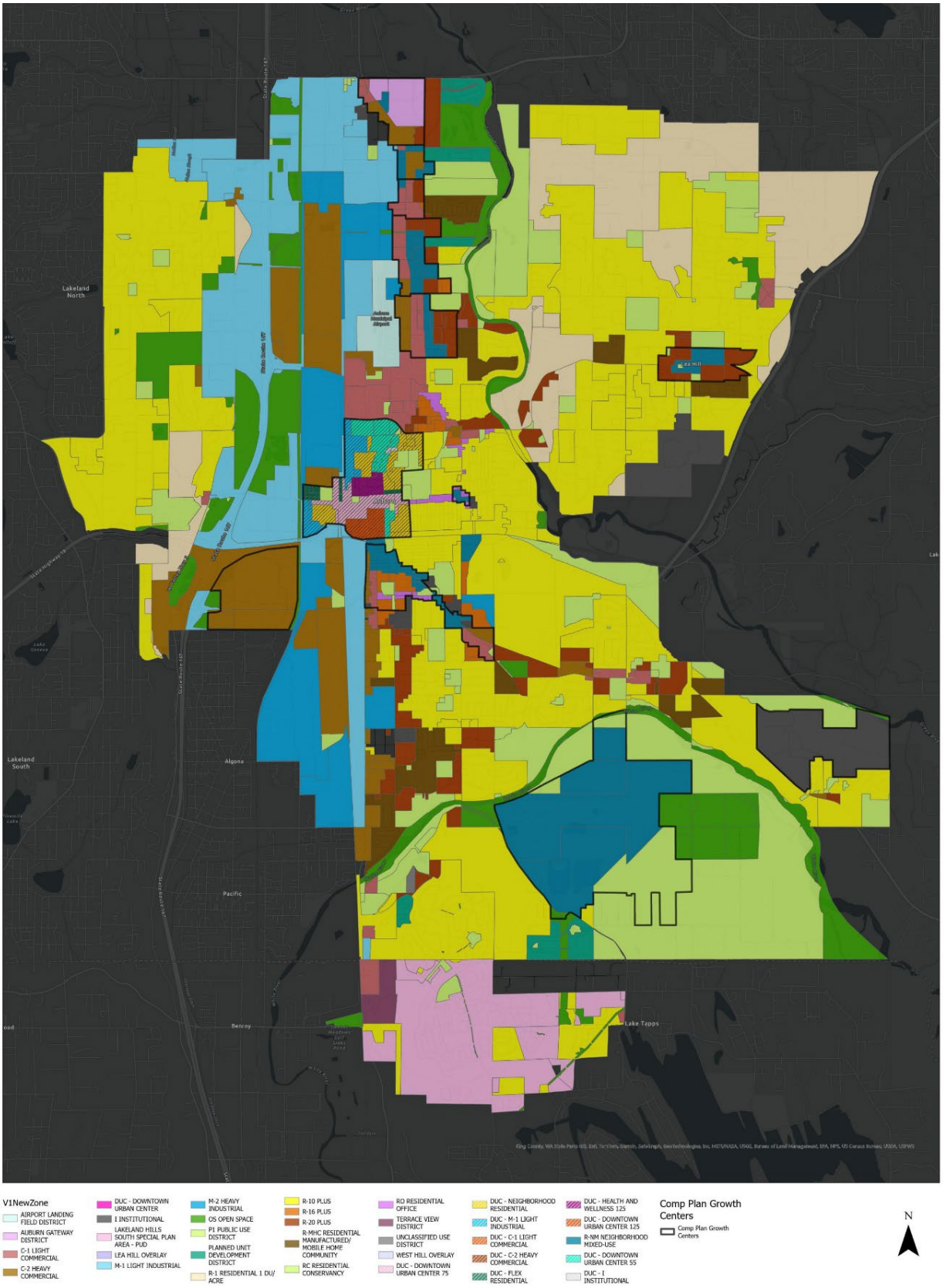
Zoning District	Land Use	Definition	Fire Flow Requirement (gpm)
RC RESIDENTIAL CONSERVANCY	Residential Conservancy	No change	1,500
R-1 RESIDENTIAL 1 DU/ACRE	Neighborhood Residential One	No change	1,500
R-10 PLUS[1]	Neighborhood Residential Two	Single family, townhouse, duplex, triplex, fourplex, two-story stacked flats, cottage housing-4-6 units/lot ADUs	1,500 - 2,500
R-16 PLUS	Neighborhood Residential Two	R-10, plus five-plex, six-plex, 3 story stacked flats, courtyard apartments, apartment buildings and mixed use up to 20 units ADUs	2,500
R-20 PLUS	Neighborhood Residential Three	R-16 plus apartment buildings, and mixed use over 20 units ADUs	2,500
R-NM NEIGHBORHOOD MIXED-USE	Mixed Use	R-16 and C-1 Uses + Mixed-use (horizontal or vertical) encouraged	2,500
R-MHC RESIDENTIAL MANUFACTURED/MOBILE HOME COMMUNITY	Neighborhood Residential Three	No change	2,500
RO RESIDENTIAL OFFICE	Mixed Use	Smaller scale R-NM with emphasis on conversion of existing structure	2,500
C-1 LIGHT COMMERCIAL DISTRICT	Commercial	Generally the same as existing	2,500
C-2 HEAVY COMMERCIAL DISTRICT	Commercial	Generally the same as existing	2,500
AUBURN GATEWAY DISTRICT	Mixed Use	North Auburn Subarea Use	2,500
M-1 LIGHT INDUSTRIAL DISTRICT	Industrial	Generally the same as existing	2,500
M-2 HEAVY INDUSTRIAL DISTRICT	Industrial	Generally the same as existing	2,500
AIRPORT ZONE	Industrial	No change	2,500
P1 PUBLIC USE DISTRICT	Public/Quasi-Public	Public schools, recreational spaces, police stations, fire stations, cemeteries	2,500

Zoning District	Land Use	Definition	Fire Flow Requirement (gpm)
I INSTITUTIONAL USE DISTRICT	Public/Quasi-Public	Private schools, Green River College, large campus development	2,500
OS OPEN SPACE	Open Space	No change	-
DUC - DOWNTOWN URBAN CENTER 125	Downtown Urban Center	DUC with up to 125-ft tall buildings where permitted	2,500
DUC - DOWNTOWN URBAN CENTER 75	Downtown Urban Center	DUC with up to 75-ft tall buildings where permitted	2,500
DUC - DOWNTOWN URBAN CENTER 55	Downtown Urban Center	DUC with up to 55-ft tall buildings where permitted	2,500
DUC - NEIGHBORHOOD RESIDENTIAL	Downtown Urban Center	Mixed-use and R-15	2,500
DUC - HEALTH AND WELLNESS 125	Downtown Urban Center	R-OH-MultiCare Zone	2,500
DUC - FLEX RESIDENTIAL	Downtown Urban Center	RO with permitted specific industrial uses (craft workshops, breweries, coffee, etc.)	2,500
LAKELAND HILLS SOUTH SPECIAL PLAN AREA – PUD[1]	Neighborhood Residential Two		1,500-2,500
AIRPORT LANDING FIELD DISTRICT	Industrial		2,500
AUBURN GATEWAY DISTRICT	Mixed Use		2,500
DUC - I INSTITUTIONAL	Downtown Urban Center		2,500
DUC - M-1 LIGHT INDUSTRIAL	Downtown Urban Center		2,500
I INSTITUTIONAL	Public/Quasi-Public		2,500
PLANNED UNIT DEVELOPMENT DISTRICT[1]		Varies by location	1,500-2,500
TERRACE VIEW DISTRICT	Commercial		2,500
UNCLASSIFIED USE DISTRICT[1]		Varies by location	1,500-2,500
A-10	Agricultural	1 Dwelling Unit per 10 acres, located in unincorporated King County.	1,500
RA-5	Rural Area	1 Dwelling Unit per 5 acres, located in unincorporated King County.	1,500
R-1	Residential	1 Dwelling Unit per acre, located in unincorporated King County	1,500
R-4	Residential	4 Dwelling Units per acre, located in unincorporated King County	1,500

Note:

1. Required fire flow will be determined on a case-by-case basis pending development or re-development type.

Figure 2-5 | Comprehensive Future Land Use and Zoning Map



2.7.3 Projected Demographic Growth

Many factors influence population growth including the state of the economy, interest rates, annexation of adjacent areas, and up-zoning for new development. Growth management policies, along with coordination between local governments, should make development more predictable and growth projections more accurate than they have been historically. The City's Comprehensive Plan, as well as this Plan, are key documents to aid the City in preparing for the predicted growth. However, it is common for actual growth rates to vary from those predicted. In addition, growth rates will vary between various parts of the City based on the availability of services and the costs to develop for the zoned use.

Housing, population, and employment projections were used to calculate rates of growth. PSRC's Vision 2050 requires the City to plan for a given number of additional housing units and jobs. The demographic projections for population and employment were allocated based on water meter locations within the four Water Service Areas that comprise the RWSA. Population projections extending beyond the RWSA boundary were modified or eliminated and are not included in the projections.

2.7.3.1 Demographic Projections

Existing and future demographic projections consistent with the City's GMA goals were provided by the City for 2021 and 2044. City planning provided projections of housing, population, and employment growth based on TAZ data. The intermediate 10-year planning horizon (2034) was interpolated assuming consistent compounding growth across the planning period.

The projections were further delineated by Service Area, as growth is expected to vary due to zoning, availability of vacant or re-developable land, existing and proposed infrastructure, etc. Demographic growth rates, rather than total number of people or employed people, were used to develop demand projections. The resulting demographic growth rates as a compounding annual percentage are presented in **Table 2-14.** Total population is projected to annually increase by 1.5 percent from 2021 to 2044 and total employment is projected to increase by 1.9 percent annually over the same period. Overall, the City is planning for an additional 24,987 people and 20,525 employed people by 2044 within the RWSA.

Table 2-14 | Growth Rates by Customer Class and Service Area

	Total Growth from 2021 to 2044 (Housing Units/Population)	Total Growth from 2021 to 2044 (%)	Annual Average Compounding Growth (%)
Single-Family Unit Projections			
Lea Hill	201	5.9%	0.248%
Valley	275	5.3%	0.223%
Lakeland	534	27.0%	1.043%
Academy	436	36.3%	1.355%
Multi-Family Unit Projections			
Lea Hill	254	12.6%	0.518%
Valley	7,862	77.1%	2.515%
Lakeland	1,003	55.7%	1.943%
Academy	124	10.4%	0.433%
Population Projections			
Lea Hill	1,245	8.2%	0.343%
Valley	18,009	44.1%	1.602%

	Total Growth from 2021 to 2044 (Housing Units/Population)	Total Growth from 2021 to 2044 (%)	Annual Average Compounding Growth (%)
Lakeland	4,113	39.4%	1.456%
Academy	1,621	24.6%	0.962%
Employment Projections			
Lea Hill	484	30.6%	1.168%
Valley	18,692	43.8%	1.586%
Lakeland	171	31.1%	1.172%
Academy	1,178	77.8%	0.316%

Table 2-15 summarizes the calculated demographic projections for population or employment projections by Service Area for each category when applying the growth rates from **Table 2-14.**

Table 2-15 | Population and Employment Projections Calculated by Service Area

	2024	2034	2044
Single-Family Population			
Lea Hill	10,498	10,864	11,243
Valley	19,889	23,315	27,330
Lakeland	4,394	5,077	5,866
Academy	5,009	5,512	6,066
Subtotal	**39,789**	**44,767**	**50,505**
Multi-Family Population			
Lea Hill	5,341	5,527	5,719
Valley	25,203	29,544	34,633
Lakeland	3,454	3,991	4,612
Academy	1,535	1,689	1,859
Subtotal	**35,533**	**40,752**	**46,824**
Total Population			
Lea Hill	15,839	16,391	16,962
Valley	45,092	52,859	61,964
Lakeland	7,848	9,068	10,478
Academy	6,544	7,201	7,925
Subtotal	**75,323**	**85,519**	**97,328**
Employment			
Lea Hill	1,720	1,932	2,170
Valley	46,946	54,948	64,313
Lakeland	596	669	752
Academy	1,605	1,656	1,709
Subtotal	**50,867**	**59,205**	**68,944**

The demographic growth for each Service Area is shown in **Figure 2-6, Figure 2-7**, and **Figure 2-8**, where single family population, multi-family population, and employment population growth are each presented in a different graph. The figures show the anticipated variability in growth between the Service Areas. For example, employment growth rate (percentage) is projected to be greater in the Valley Service Area than the other Services Areas between 2024 and 2044. Since the Valley Service Area has a much greater magnitude of population and employment than the other Service Areas, minor differences in growth projection percentages results in larger increases in total population and employment numbers. The Valley

Service Area is projected to represent 64 percent of the system's population and 93 percent of the system's employment in 2044.

Figure 2-6 | Single Family Population Projections by Service Area

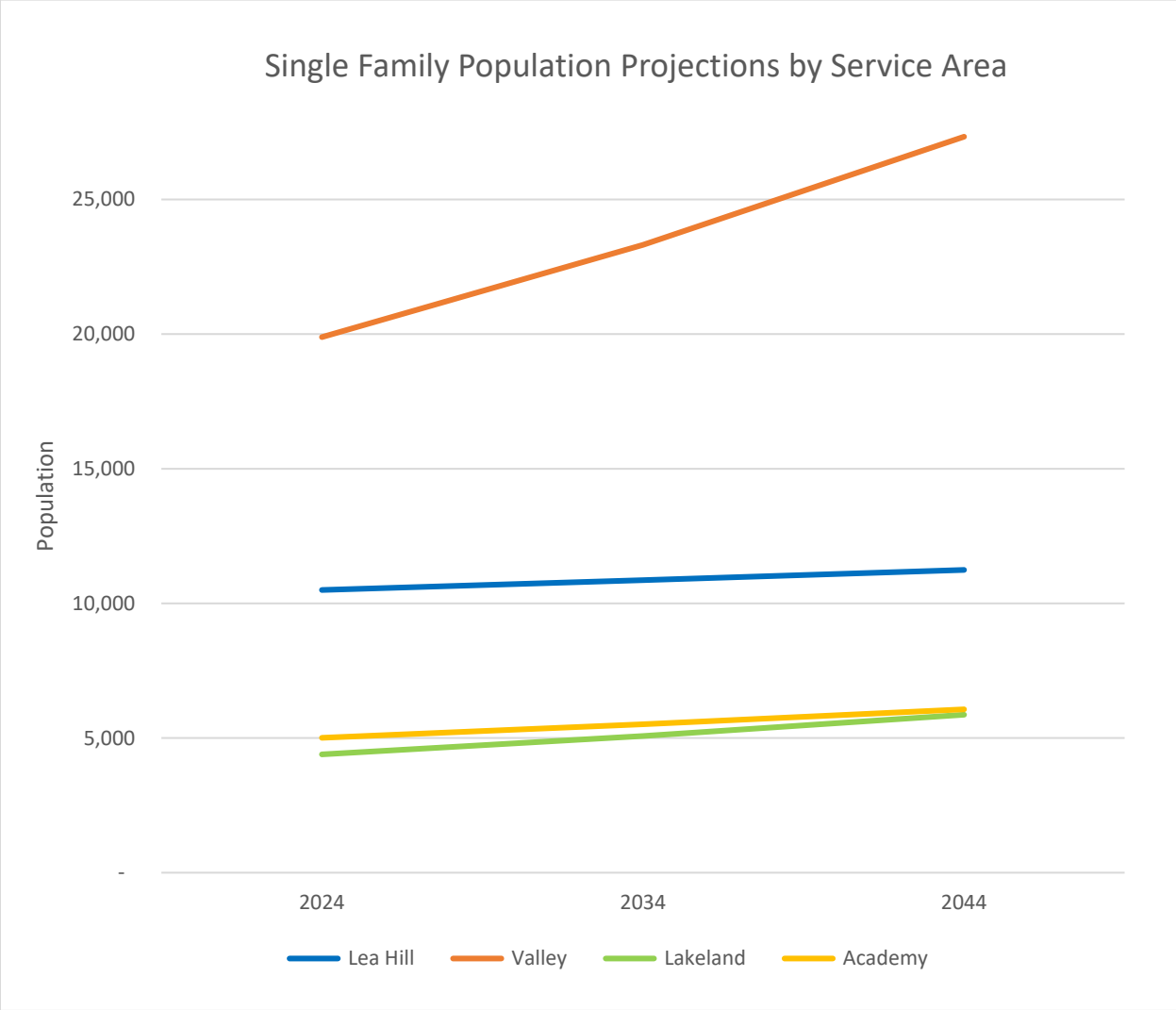


Figure 2-7 | Multi-Family Population Projections by Service Area

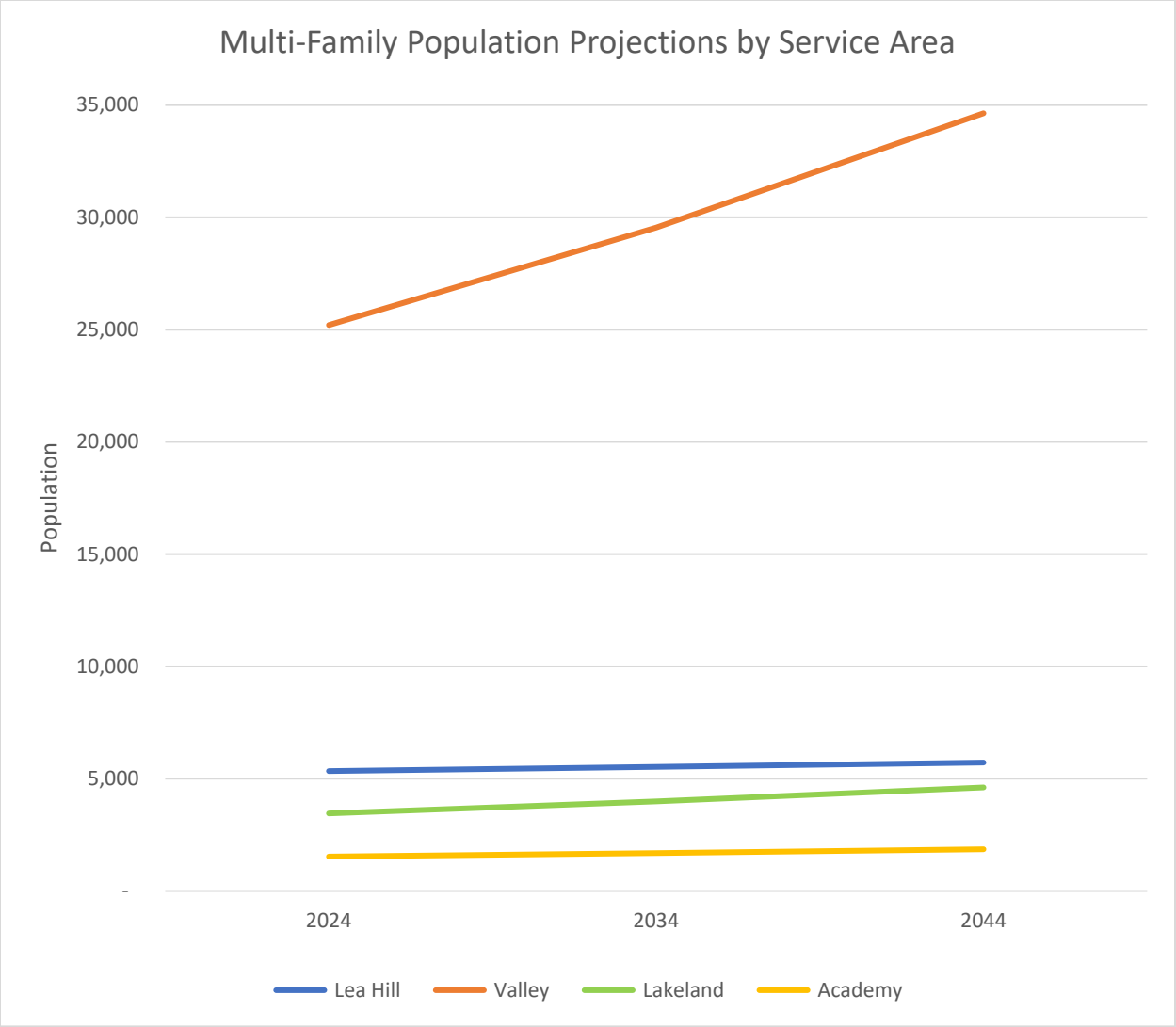
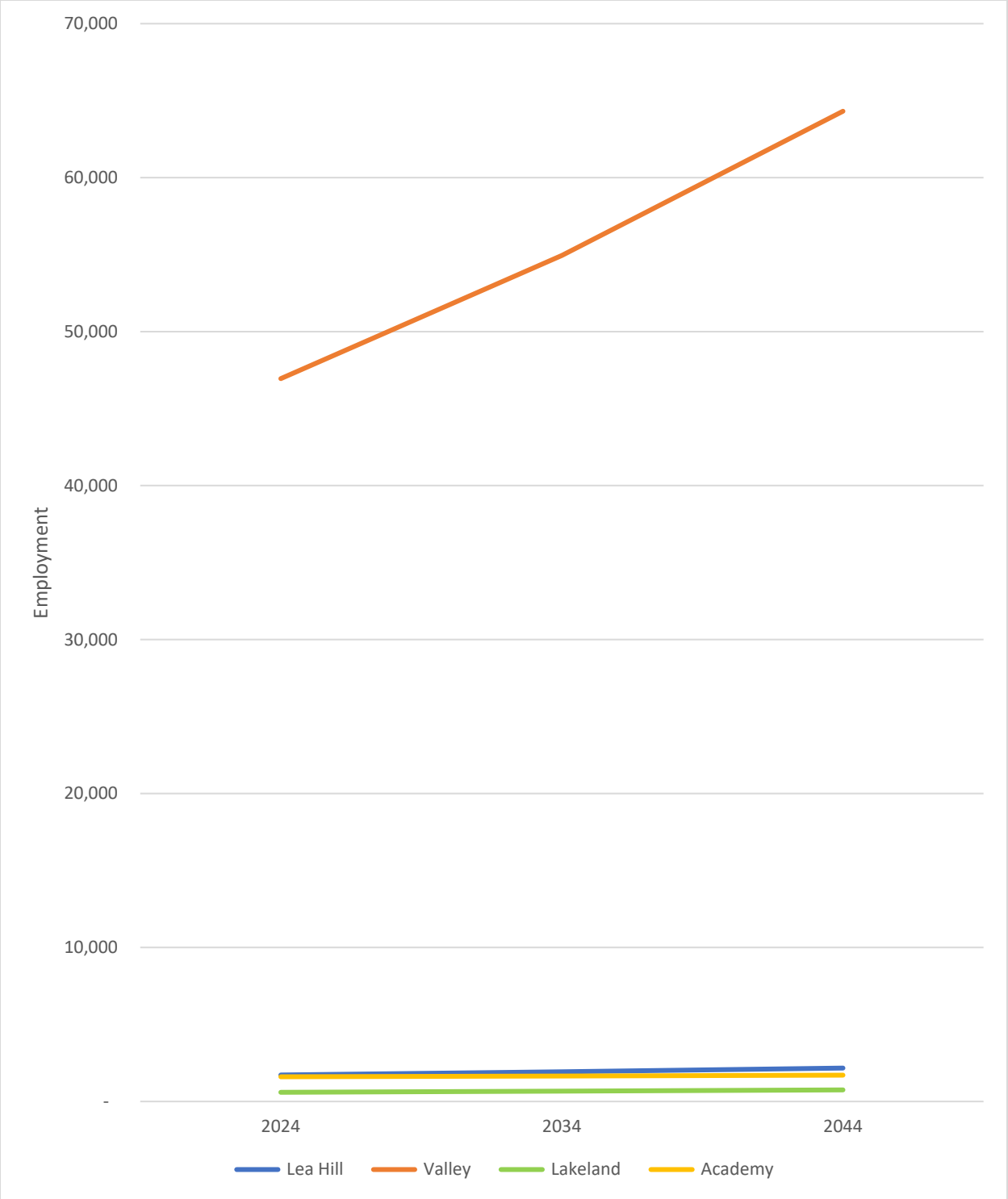
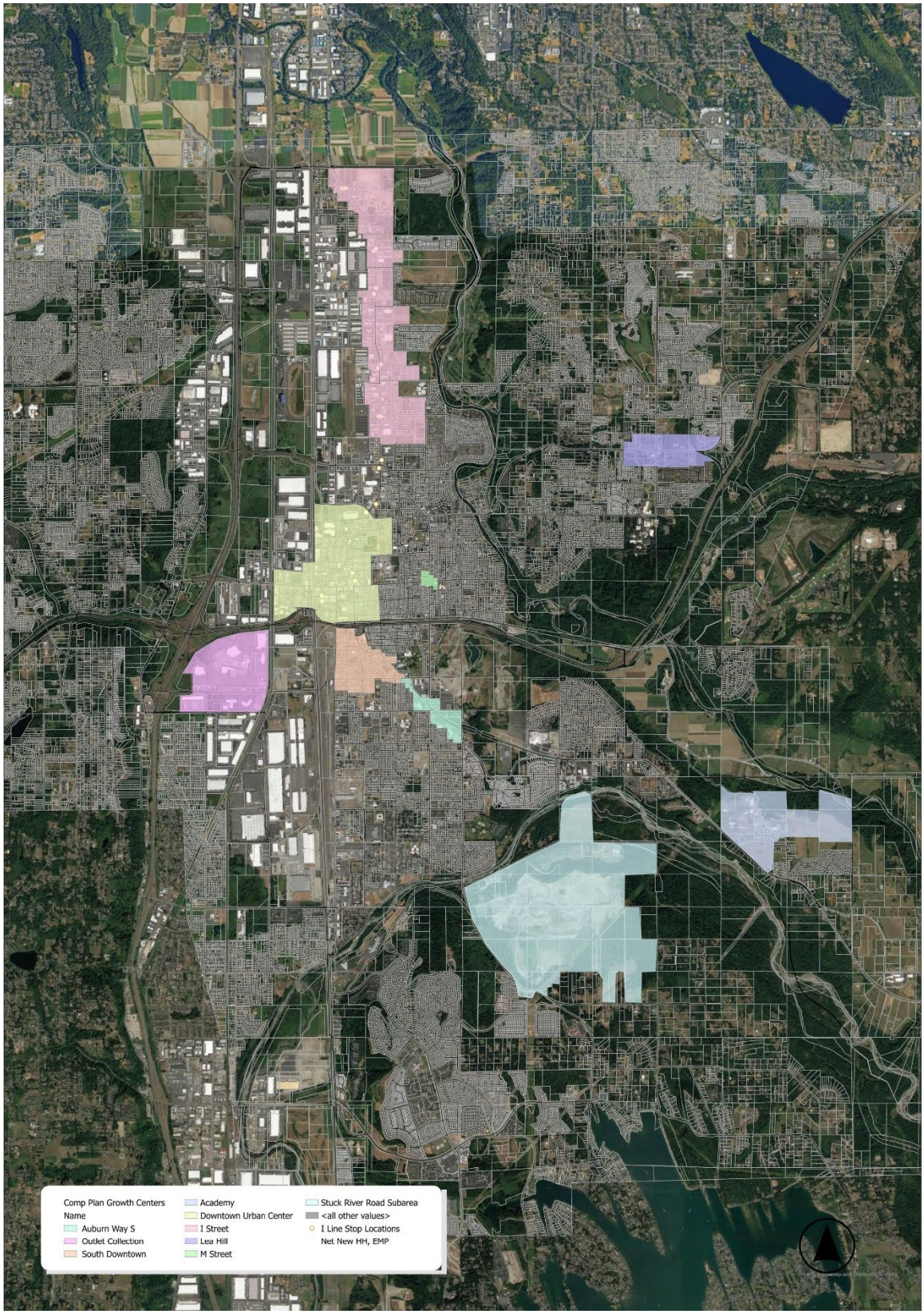


Figure 2-8 | Employment Projections by Service Area



Areas anticipated to have higher than average population and employment growth through 2044, termed "Growth Centers" identified in the City's Comprehensive Plan, are presented in **Figure 2-9.** Demand in each Service Area was modified during the system analysis to reflect focus growth in the areas identified in **Figure 2-9**, matching the population and employment growth projection data.

Figure 2-9 | Map of Projected Areas with Greatest Population Growth



2.8 Future Water Demand

2.8.1 Projected Number of Connections

The number of water connections was used in determining the ERU, ADD, and MDD projections. The number of water connections in the future was projected using the demographic growth rates presented in **Table 2-14** and the number of existing water accounts presented in **Table 2-2**. The projected future connections by both Service Area and customer classification are presented in **Table 2-16.**

- The respective housing unit growth rates for each Service Area were used to calculate projected SFR and MFR connections.
- The School connections were projected by multiplying the percentage of the City population aged 5-19 (22%) by population growth rates for each Service Area.
- The projected employment growth rates were used to calculate future Commercial, Municipal (City Accounts), and Irrigation connections.
- The City's largest user (Boeing) is not included in **Table 2-16**, their projections are based on individual demand and are presented separately. Boeing also accounts for the only Manufacturing and Industrial connections within the City.
- Wholesale customers are not included in **Table 2-16**, their projections are based on individual demand and are presented separately.

Table 2-16 | Connection Projections by Customer Classification and Service Area

	2024	2034	2044
Lea Hill			
Single-Family Residential	3,265	3,347	3,431
Multi-Family Residential	167	176	186
Commercial	22	24	27
Manufacturing/Industrial	-	-	-
Schools	11	11	11
Municipal (City Accounts)	1	1	1
Irrigation	61	69	78
Valley			
Single-Family Residential	5,954	6,088	6,226
Multi-Family Residential	807	1,035	1,327
Commercial	1,272	1,489	1,743
Manufacturing/Industrial	-	-	-
Schools	37	38	40
Municipal (City Accounts)	32	38	45
Irrigation	532	622	729
Lakeland			
Single-Family Residential	1,354	1,502	1,666
Multi-Family Residential	109	132	161
Commercial	34	39	43
Manufacturing/Industrial	-	-	-
Schools	9	9	9

	2024	2034	2044
Municipal (City Accounts)	-	-	-
Irrigation	21	23	26
Academy			
Single-Family Residential	1,581	1,808	2,069
Multi-Family Residential	47	49	51
Commercial	14	14	15
Manufacturing/Industrial	-	-	-
Schools	2	2	2
Municipal (City Accounts)	1	1	1
Irrigation	34	35	36
Total			
Single-Family Residential	12,153	12,745	13,391
Multi-Family Residential	1,131	1,393	1,725
Commercial	1,342	1,566	1,828
Manufacturing/Industrial	-	-	-
Schools	59	60	62
Municipal (City Accounts)	35	40	47
Irrigation	648	750	868

2.8.1.1 Lea Hill Service Area

The Lea Hill Service Area is located east of the Auburn-Kent Valley and the Green River. The area is mostly residential with supportive neighborhood businesses. Green River College is in the Lea Hill Service Area and has a concentration of multi-family residential units in the vicinity of the college.

The Lea Hill service area is projected to have the lowest growth rate in population with a 0.3 percent per year average increase from 2021 to 2044. This Service Area is projected to have a moderate growth in employment with a 1.2 percent growth per year from 2021 to 2044.

2.8.1.2 Valley Service Area

The Valley Service Area contains a significant amount of developable land designated as multi-family and commercial, including the Downtown Urban Center. The Service Area is projected to have the highest growth rate in population at 1.6 percent per year from 2021 to 2044. The multi-family connections in this area are projected to grow 2.5 percent per year from 2021 to 2044 and employment is projected to grow 1.6 percent per year. These growth projections are based on the City's anticipation of growth trends and the redevelopment of Auburn's Downtown Urban Center, as well as commercial developments in locations with available space throughout the Service Area.

2.8.1.3 Lakeland Service Area

The Lakeland Service Area includes the entire City south of the White River. A sizable portion of this Service Area is designated residential conservancy land use, which is anticipated to be developed within the planning horizon related to the anticipated closure of the Segale Gravel Pit. The area includes proposed special planning areas for Stuck River Road and Mount Rainier Vista anticipated to be developed with a moderate population growth rate of 1.5 percent per year. This Service Area is projected to have a moderate growth in employment with a 1.2 percent growth per year from 2021 to 2044.

2.8.1.4 Academy Service Area

The Academy Service Area is a well-developed portion of the City. It is expected to have a population growth of 1.0 percent per year from 2021 to 2044. This Service Area is projected to have minimal growth in employment with a 0.3 percent per year increase from 2021 to 2044.

2.8.2 Projected Water Demand

Projecting future water demand is one of the key elements of the water system planning process. Identification of system improvements such as supply, pumping, storage, and piping requirements are all related to demand projections. This section summarizes the ERU, ADD, and MDD projections, as well as the potential range in future demands associated with various factors, such as water use per ERU, DSL, and demographic growth rate.

2.8.2.1 Potential Range in Future Water Demand

Several factors and assumptions affect the accuracy of projected future water demands. Recognizing that certain assumptions built into the demand projections will vary in the future, the projections were developed for medium and high demand scenarios to provide a range in demands that may be experienced in the future. The medium projection will be used for the system analysis in **Chapter 3**, while the high projection will be used for the water right evaluation in **Chapter 5**. The system analysis determines future pumping, storage, and distribution system deficiencies and identifies potential improvements to achieve the City's established capacity criteria. The water right evaluation looks at both water rights and overall supply capacity. Only the medium projections are presented within this Chapter. The variables considered in developing the range of demand projections are summarized in **Table 2-17** and are discussed below.

- Future Water Connections: The future water connections are presented in **Table 2-16** and were used for both demand scenarios.
- Water Use Per ERU_{ADD}: Water use per ERU for the average demand day projections are based on the 75th percentile of the historical data, which is the medium demand scenario, presented in **Table 2-4**. This value equals 182 gpd per ERU. The high demand scenario used the highest annual value from the data set presented in **Table 2-4**, which equals 193 gpd per ERU.
- ERUs per Account: The historical ERU per account by customer classification presented in **Table 2-4** was used to develop demand projections. The ERU per Account values are based on the 75th percentile of the historical data and a water use per ERU value of 182 gpd per ERU. These values are used in both projections.
- Distribution System Leakage: Historical annual DSL varied between 0.7 and 7.4 percent of the City's total City production between 2015 and 2022. The average three-year rolling average of historical DSL values of 5.2 percent is utilized in the medium demand scenario and the maximum three-year rolling average of 6.8 percent was used for the high demand scenario.
- Authorized Unbilled Consumption: Historical annual authorized unbilled consumption varied between 0.14 and 0.54 percent of the City's total billed consumption between 2015 and 2022. The 75^{th} percentile value of 0.27 percent is utilized in the medium demand scenario and the maximum values of 0.54 percent is used for the high demand scenario.
- Water Use Per ERU_{MDD}: Water use per ERU for the maximum demand day projections are based on 75th percentile of the historical data, which is the medium demand scenario, presented in **Table**

2-10. This value equals 322 gpd per ERU. The high demand scenario used the highest annual value from the data set presented in Table 2-10, which is 358 gpd per ERU.

- MDD/ADD Peaking Factor: The 75th percentile of historical annual peaking factors of 1.77 is utilized in the medium demand scenario. The highest value in the historical annual peaking factor data set was used for the high demand scenario, which is 1.97.

The City's largest user (Boeing) and wholesale customers are not included in Table 2-17, their projections are based on individual demand and are presented separately.

Table 2-17 | Proposed Planning Values for Demand Projections

Assumptions	Medium Demand Scenario	High Demand Scenario
Water Demand per ERU_{ADD} (gpd)	182	193
DSL	5.2%	6.8%
Authorized Unbilled	0.27%	0.54%
Water Demand per ERU_{MDD} (gpd)	322	358
MDD/ADD Peaking Factor	1.77	1.97

2.8.3 Large User Demand Forecast

The large user term is used to identify customers consuming the greatest volume of water on an annual basis as presented in Table 2-6. Projections for the City's single largest user (Boeing) is separated from the demand forecasts to aid in accurate forecasting and in the system analyses. The forecasts were based on historical water use data from 2015 through 2022 and is presented in Table 2-18. The projected demand will use the 75th percentile of water use from the historical period of record. Boeing's consumption has trended down over the historical period of record, therefore, the projected demand is conservative and actual consumption is anticipated to be less than the value presented in Table 2-18.

Wholesale connections are also projected separately in Table 2-22. The remaining largest users are not presented separately in demand forecasts; their projected consumption is built into the overall Service Area projections by customer classification.

Table 2-18 | Large User Demand Projections

Large User	Customer Class	Service Area	Representative Historical Water Use Statistic[1]	Representative Annual Water Use (MG)[2]	Projected ERUs in 2044
Boeing	Manufacturing Commercial	Valley	75th percentile	210.6	3,168

Notes:
1. Historical water use data from 2015 through 2022
2. Based on representative historical water use statistic.

2.8.4 Projected Retail ERUs

Future water system demands are based on projected ERUs, which in turn are based on the projected water consumption by customer classification and the projected number of accounts discussed earlier in this chapter. Table 2-19 shows the projected ERUs for the City's individual service areas over the planning period. The projected number of ERUs for each Service Area was calculated by multiplying the projected number of accounts, provided in Table 2-16, by the number of ERUs per account, as summarized in Table

2-3, for each customer class. Wholesale customer demand in terms of ERUs is not included in the demand projections below and must be added separately as summarized in Table 2-23.

Table 2-19 | ERU Projections by Customer Class and Service Area

	2024 ERU	2034 ERU	2044 ERU
Lea Hill			
Single-Family Residential	3,265	3,347	3,431
Multi-Family Residential	1,379	1,452	1,529
Commercial	128	143	161
Manufacturing/Industrial	-	-	-
Schools	127	128	129
Municipal (City Accounts)	2	3	3
Irrigation	319	358	402
Authorized Unbilled	14	15	15
DSL	272	283	295
Valley			
Single-Family Residential	5,954	6,088	6,226
Multi-Family Residential	6,652	8,528	10,933
Commercial	7,554	8,841	10,348
Manufacturing/Industrial	-	-	-
Schools	435	451	467
Municipal (City Accounts)	70	82	96
Irrigation	2,758	3,228	3,778
Boeing (Largest User)	3,170	3,170	3,170
Authorized Unbilled	56	66	78
DSL	1,386	1,584	1,825
Lakeland			
Single-Family Residential	1,354	1,502	1,666
Multi-Family Residential	900	1,091	1,323
Commercial	204	230	258
Manufacturing/Industrial	-	-	-
Schools	102	106	109
Municipal (City Accounts)	-	-	-
Irrigation	108	121	136
Authorized Unbilled	7	8	9
DSL	139	159	182
Academy			
Single-Family Residential	1,581	1,808	2,069
Multi-Family Residential	388	405	423
Commercial	81	84	86
Manufacturing/Industrial	-	-	-
Schools	25	26	27
Municipal (City Accounts)	2	2	2
Irrigation	174	179	185
Authorized Unbilled	6	7	8
DSL	117	131	146
Total			
Single-Family Residential	12,153	12,745	13,391
Multi-Family Residential	9,320	11,477	14,209

	2024 ERU	2034 ERU	2044 ERU
Commercial	7,967	9,298	10,853
Manufacturing/Industrial	-	-	-
Schools	690	711	732
Municipal (City Accounts)	74	87	101
Irrigation	3,359	3,887	4,502
Boeing (Largest User)	3,170	3,170	3,170
Authorized Unbilled	83	96	110
DSL	1,914	2,156	2,447
City of Algona (Wholesale)	Refer to **Table** 2-22.		

2.8.5 Projected Retail Average Day and Maximum Day Demands

The ADD projections include the projected customer demands by customer classification, authorized unbilled consumption, and DSL by service area. The resulting ADD projections are summarized in **Table 2-20**.

- Customer demands by classification were calculated by multiplying the projected ERUs summarized in **Table 2-19** by the average ERU water use (182 gpd/ERU).
- Authorized unbilled consumption projections were calculated by multiplying the sum of all customer classification use by the medium demand scenario percentage presented in **Table 2-17**.
- DSL consumption projections were calculated by multiplying the sum of all customer classification use and authorized unbilled use by the medium demand scenario percentage presented in **Table 2-17** for DSL.

Table 2-20 | ADD Projections

	2024 (mgd)	2034 (mgd)	2044 (mgd)
Lea Hill			
Single-Family Residential	0.595	0.610	0.625
Multi-Family Residential	0.251	0.265	0.279
Commercial	0.023	0.026	0.029
Manufacturing/Industrial	-	-	-
Schools	0.023	0.023	0.023
Municipal (City Accounts)	-	-	0.001
Irrigation	0.058	0.065	0.073
Authorized Unbilled	0.003	0.003	0.003
DSL	0.050	0.052	0.054
Valley			
Single-Family Residential	1.084	1.109	1.134
Multi-Family Residential	1.212	1.553	1.991
Commercial	1.376	1.610	1.885
Manufacturing/Industrial	-	-	-
Schools	0.079	0.082	0.085
Municipal (City Accounts)	0.013	0.015	0.017
Irrigation	0.502	0.588	0.688
Boeing (Largest User)	0.577	0.577	0.577

	2024 (mgd)	2034 (mgd)	2044 (mgd)
Authorized Unbilled	0.010	0.012	0.014
DSL	0.252	0.288	0.332
Lakeland			
Single-Family Residential	0.247	0.274	0.303
Multi-Family Residential	0.164	0.199	0.241
Commercial	0.037	0.042	0.047
Manufacturing/Industrial	-	-	-
Schools	0.019	0.019	0.020
Municipal (City Accounts)	-	-	-
Irrigation	0.020	0.022	0.025
Authorized Unbilled	0.001	0.002	0.002
DSL	0.025	0.029	0.033
Academy			
Single-Family Residential	0.288	0.329	0.377
Multi-Family Residential	0.071	0.074	0.077
Commercial	0.015	0.015	0.016
Manufacturing/Industrial	-	-	-
Schools	0.005	0.005	0.005
Municipal (City Accounts)	-	-	-
Irrigation	0.032	0.033	0.034
Authorized Unbilled	0.001	0.001	0.001
DSL	0.021	0.024	0.027
Total			
Single-Family Residential	2.214	2.321	2.439
Multi-Family Residential	1.698	2.091	2.588
Commercial	1.451	1.694	1.977
Manufacturing/Industrial	-	-	-
Schools	0.126	0.129	0.133
Municipal (City Accounts)	0.014	0.016	0.018
Irrigation	0.612	0.708	0.820
Boeing (Largest User)	0.577	0.577	0.577
Authorized Unbilled	0.015	0.017	0.020
DSL	0.349	0.393	0.4546

The MDD projections include the projected customer demands by customer classification, authorized unbilled consumption, and DSL by service area and are summarized in **Table 2-21**.

- Customer demands by classification, authorized unbilled consumption projections, and DSL projections were calculated by multiplying the ADD projections as summarized in **Table 2-20** by the MDD/ADD Peaking Factor presented in **Table 2-17.**

Table 2-21 | MDD Projections

	2024 (mgd)	2034 (mgd)	2044 (mgd)
Lea Hill			
Single-Family Residential	1.051	1.077	1.104
Multi-Family Residential	0.444	0.468	0.492
Commercial	0.041	0.046	0.052
Manufacturing/Industrial	-	-	-

	2024 (mgd)	2034 (mgd)	2044 (mgd)
Schools	0.041	0.041	0.041
Municipal (City Accounts)	0.001	0.001	0.001
Irrigation	0.103	0.115	0.129
Authorized Unbilled	0.005	0.005	0.005
DSL	0.088	0.091	0.095
Valley			
Single-Family Residential	1.916	1.960	2.004
Multi-Family Residential	2.141	2.745	3.519
Commercial	2.431	2.846	3.331
Manufacturing/Industrial	-	-	-
Schools	0.140	0.145	0.150
Municipal (City Accounts)	0.022	0.026	0.031
Irrigation	0.888	1.039	1.216
Boeing (Largest User)	1.020	1.020	1.020
Authorized Unbilled	0.018	0.021	0.025
DSL	0.446	0.510	0.587
Lakeland			
Single-Family Residential	0.436	0.483	0.536
Multi-Family Residential	0.290	0.351	0.426
Commercial	0.066	0.074	0.083
Manufacturing/Industrial	-	-	-
Schools	0.033	0.034	0.035
Municipal (City Accounts)	-	-	-
Irrigation	0.035	0.039	0.044
Authorized Unbilled	0.002	0.003	0.003
DSL	0.045	0.051	0.059
Academy			
Single-Family Residential	0.509	0.582	0.666
Multi-Family Residential	0.125	0.130	0.136
Commercial	0.026	0.027	0.028
Manufacturing/Industrial	-	-	-
Schools	0.008	0.008	0.009
Municipal (City Accounts)	0.001	0.001	0.001
Irrigation	0.056	0.058	0.060
Authorized Unbilled	0.002	0.002	0.002
DSL	0.038	0.042	0.047
Total			
Single-Family Residential	3.912	4.102	4.310
Multi-Family Residential	3.000	3.694	4.573
Commercial	2.564	2.993	3.493
Manufacturing/Industrial	-	-	-
Schools	0.222	0.229	0.236
Municipal (City Accounts)	0.024	0.028	0.032
Irrigation	1.081	1.251	1.449
Boeing (Largest User)	1.020	1.020	1.020
Authorized Unbilled	0.027	0.031	0.036
DSL	0.616	0.694	0.788

2.8.6 Wholesale Demands

The City currently has a wholesale water contract with the City of Algona. The City is also planning to supply wholesale water for the MIT's future fish hatchery. As stated in the Retail Water Service Policy, "the City will plan for and provide water service to all retail customers and wholesale customers with firm contracts. As supply permits, the City may provide water to wholesale customers without firm contracts unilaterally or as part of a capital improvement partnership agreement." The wholesale demands for the City are summarized in Table 2-22.

Algona's current agreement allows for the sale of up to 525,000 gallons per day on a firm basis for the ADD and up to 1,114,00 gallons per day on a firm basis for the MDD. In 2022, Algona purchased an average of 342,953 gallons per day of water from the City. Algona's 2022 Water System Plan (WSP) projects 2042 ADD to be 404,278 gallons per day and 2042 MDD to be 766,137 gallons per day. Algona's WSP demand projections were used for projecting the wholesale water purchases by Algona, rather than the contractual amount, as presented in Table 2-22.

MIT plans to develop a fish hatchery on the White River. An agreement dated from 1986 (included in Appendix G) requires that the City provide the tribe with an average annual demand of 3.9 cubic feet per second (cfs) (2.52 mgd) from Coal Creek Springs for MIT's future fishery enhancement purposes. The agreement does not specify an MDD but rather states:

"The Tribe and the City agree to work in harmony toward a mutually satisfactory allocation of the Coal Creek waters. In furtherance of this goal, the City understands that the water requirements for fishery enhancement purposes are greatest in the winter and spring months. Accordingly, the City agrees to increase the amount of water above 3.9 cfs as needed for fishery purposes. The Tribe understands that the City's requirement for water for domestic use is greatest in the summer and fall months. Accordingly, the Tribe agrees to decrease its use of water below 3.9 cfs, as needed for domestic water purposes…It is further understood that the tribe requires a minimum of 3 cfs at all times for fishery enhancement purposes".

The intent of this agreement indicates that the MIT demand will be at a minimum when the City's demands are at their maximum. Based on this understanding, the planned MDD for the MIT is 1.5 mgd and the ADD was 2.5 mgd. For planning purposes, the MIT demand was added to the Algona demand and included in the "Retail + firm wholesale" group of demands.

LMWD has an interruptible wholesale contract that can be terminated at any time and is therefore represented separately. As discussed in the Historical Wholesale Consumption section, LMWD discontinued regular purchase of water from the City in 2017 per the amendment to IA2 but maintains an intertie with the City to use wholesale water supply on an as-needed basis. LMWD may purchase up to 2.5 mgd of wholesale water per IA2. The contract does not have an expiration date and therefore 2.5 mgd of interruptible wholesale demand is projected through 2044.

Table 2-22 | Wholesale Demand Projections

Wholesale Customer	Service Area	Contractual Delivery[1]	2024 (mgd)	2034 (mgd)	2044 (mgd)[2]
ADD					
Algona	Valley	Firm	0.37	0.39	0.41
MIT Fish Hatchery	Valley	Firm	2.5	2.5	2.5
LMWD	Lea Hill	Interruptible	2.5	2.5	2.5
MDD					
Algona	Valley	Firm	0.69	0.73	0.78
MIT Fish Hatchery	Valley	Firm	1.5	1.5	1.5
LMWD	Lea Hill	Interruptible	2.5	2.5	2.5

Notes:

1. The City will plan for and provide water services to all retail customers and wholesale customers with firm contracts. As supply permits, the City may provide water to wholesale customers without firm contracts unilaterally or as part of a CIP agreement.
2. Algona's projections are provided through 2042; their projected rate increase was used to project consumption to 2044.

2.8.7 Total Demands

The total projected demands are tabulated for retail customers, firm wholesale, and interruptible wholesale in **Table 2-23.** The demands are presented separately to show the level of obligation to the City's customers. Projected retail ADD, MDD, and ERUs are presented by Service Area for the medium demand scenario. Additionally, the ADD and MDD are presented as the total of the projected retail demand and firm wholesale. The retail with firm wholesale represents the projected demand that is used as the basis for the system analysis and are shown in **Figure 2-10**. The difference between the historical and projected wholesale demands is due to the projected allocation of the supply to the proposed MIT Fish Hatchery, per the 1986 Stipulation Settlement Agreement. Additionally, both CWD and LMWD discontinued regular purchase of water from the City in 2017.

The 2044 retail ADD demand is projected to 9.02 mgd, which represents a 28 percent increase from 2024. Throughout the planning period, approximately 40 percent of the City's demand may be from wholesale purchases when both firm and interruptible supply are considered. The MDD is projected to increase by 24 percent from 2024 to 2044 for the sum of firm wholesale customers and retail customers.

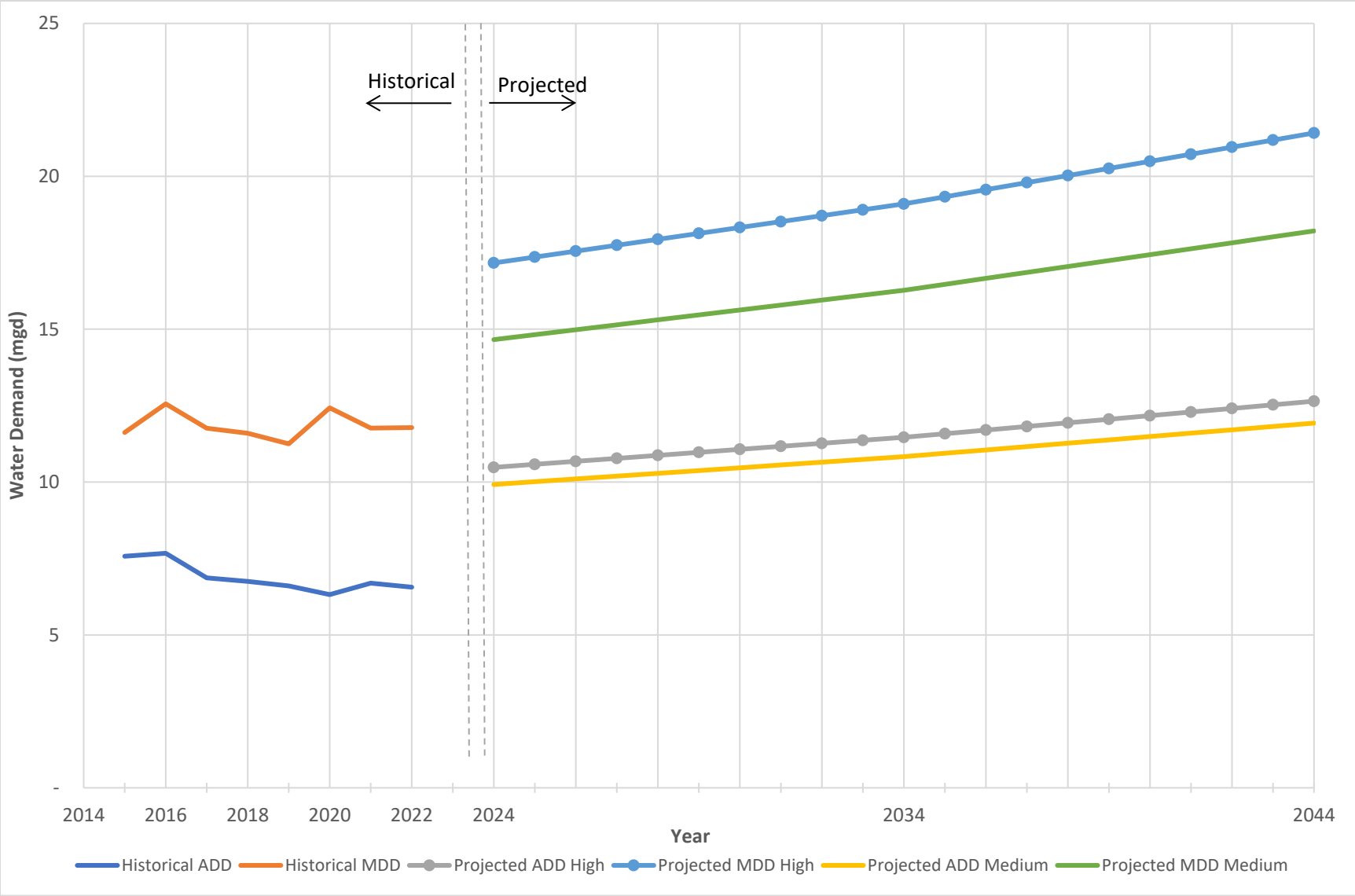
Table 2-23 | ADD, MDD, and ERUs Summarized by Service Area with Wholesale Included

	2024	2034	2044
Lea Hill			
Average Day Demand (mgd)	1.00	1.04	1.09
Maximum Day Demand (mgd)	1.77	1.84	1.92
Equivalent Residential Units	5,506	5,729	5,966
Valley			
Average Day Demand (mgd)	5.11	5.84	6.72
Maximum Day Demand (mgd)	9.02	10.31	11.88
Equivalent Residential Units	28,034	32,037	36,920
Lakeland			
Average Day Demand (mgd)	0.51	0.59	0.67
Maximum Day Demand (mgd)	0.91	1.04	1.19
Equivalent Residential Units	2,815	3,217	3,684
Academy			
Average Day Demand (mgd)	0.43	0.48	0.54
Maximum Day Demand (mgd)	0.76	0.85	0.95
Equivalent Residential Units	2,375	2,642	2,946
Total Retail Customers			
Total Average Day Demand (mgd)	7.05	7.95	9.02
Total Maximum Day Demand (mgd)	12.47	14.04	15.94
Total Equivalent Residential Units	38,731	43,626	49,515
Algona (Firm Wholesale)			
Total Average Day Demand (mgd)	0.365	0.386	0.409
Total Equivalent Residential Units, ADD[1]	2,005	2,120	2,246
Total Maximum Day Demand (mgd)	0.692	0.732	0.775
Total Equivalent Residential Units, MDD[1]	2,150	2,274	2,409
Retail Customer Demand with Algona (Firm Wholesale)			
Total Average Day Demand (mgd)	7.42	8.33	9.43
Total Maximum Day Demand (mgd)	13.16	14.77	16.71
Retail with Firm Wholesale (Algona and MIT Fish Hatchery)			
Total Average Day Demand (mgd)	9.92	10.83	11.93
Total Maximum Day Demand (mgd)	14.66	16.27	18.21
Retail with Firm & Interruptible Wholesale (Algona, MIT Fish Hatchery, and LMWD)			
Average Day Demand (mgd)	12.42	13.33	14.43
Maximum Day Demand (mgd)	17.16	18.77	20.71

Note:

1. The Algona ERU values were calculated using the City of Algona's projected demand and the City of Auburn's ERU_{ADD} and ERU_{MDD} factors.

Figure 2-10 | Projected Retail Plus Firm Wholesale ADD and MDD



CHAPTER 3

System Analysis and Asset Management

This chapter's objective is to identify existing facilities and determine their capacity to reliably satisfy current and projected water demands with safe drinking water. The cost of addressing identified infrastructure deficiencies and operational and maintenance improvements is addressed in priority order in Chapter 8.

This chapter addresses the following topics:

3.1 Asset Management – Asset Inventory and Analysis
3.2 Water Quality
3.3 Design Standards
3.4 Capacity Analysis
3.5 Summary of System Deficiencies

3.1 Asset Management – Asset Inventory and Analysis

This section establishes a date-based inventory of all system-owned water assets and satisfies the requirements of WAC 246-290-100(4)e(iii). The City actively assesses and plans for the maintenance, repair, and replacement of its major assets while preventive maintenance practices keep assets in good condition, thereby extending their useful life.

The City utilizes Cartegraph, an asset management software program, in conjunction with ESRI ArcGIS, a geographic information system (GIS) software program to manage its water assets. GIS is updated using record drawings as projects are completed and Cartegraph is linked to automatically update with new GIS information. Cartegraph is used to track and schedule maintenance activities, as well as materials, labor hours, costs and project timelines. Capital costs for the replacement of assets are assessed on a case-by-case basis.

The City's water system is comprised of groundwater wells, springs, interties with other water systems, treatment facilities, pump stations, storage facilities, pressure reducing stations, and water transmission and distribution pipelines. The City's water system includes 28 pressure zones in four different service areas: Lea Hill, Valley, Academy, and Lakeland. The location of major assets and pressure zones are shown in Figure 3-1. The hydraulic profile of the City's water system is presented in Figure 3-2, with enlargements provided as Figure 3-3 and Figure 3-4.

Water system vulnerabilities relating to risks from natural hazards, such as power outage, flooding, and earthquake are detailed in the Natural Hazard Vulnerability Summary, which is provided in Appendix U.

Figure 3-1 | Map of Water System Assets and Pressure Zones

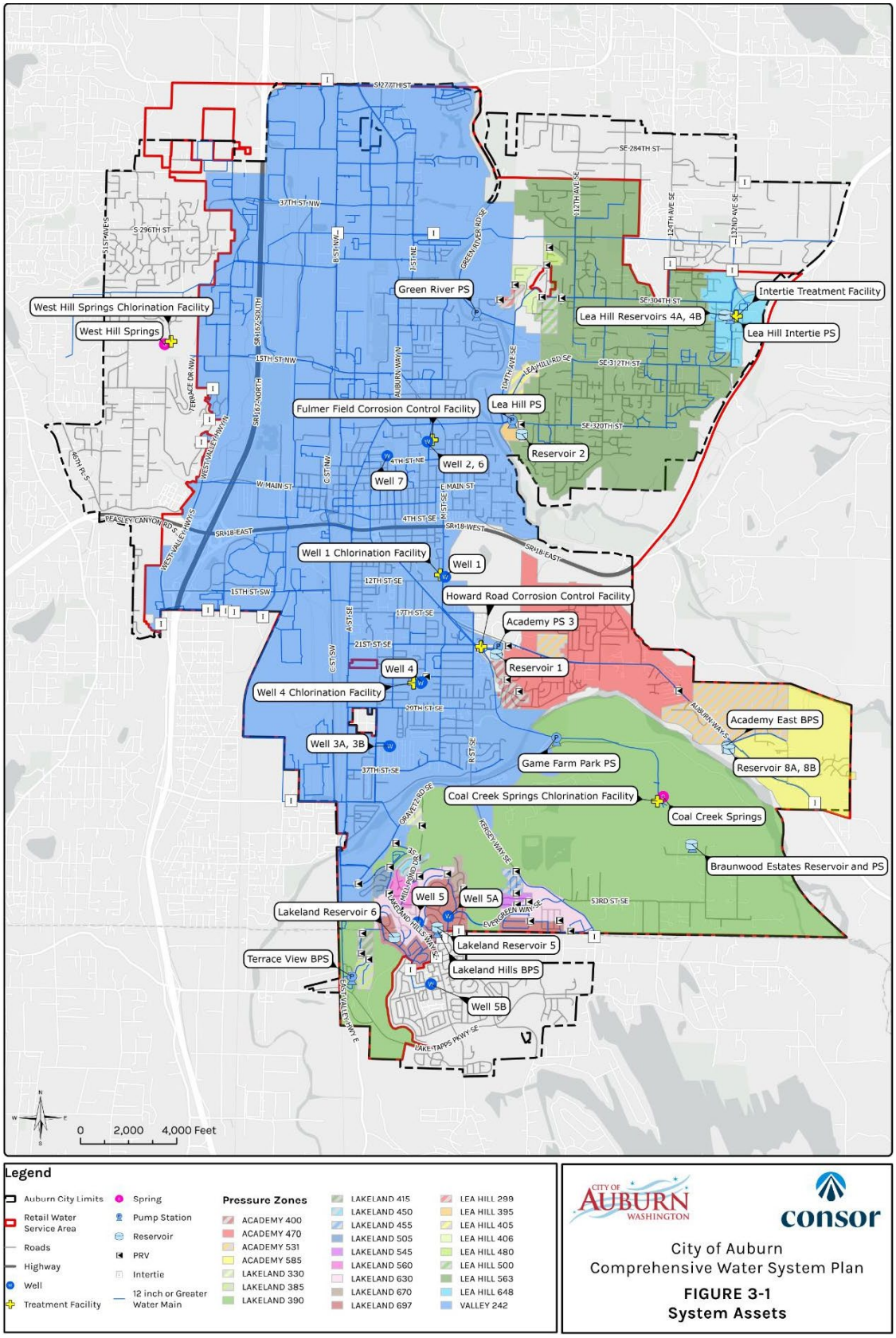
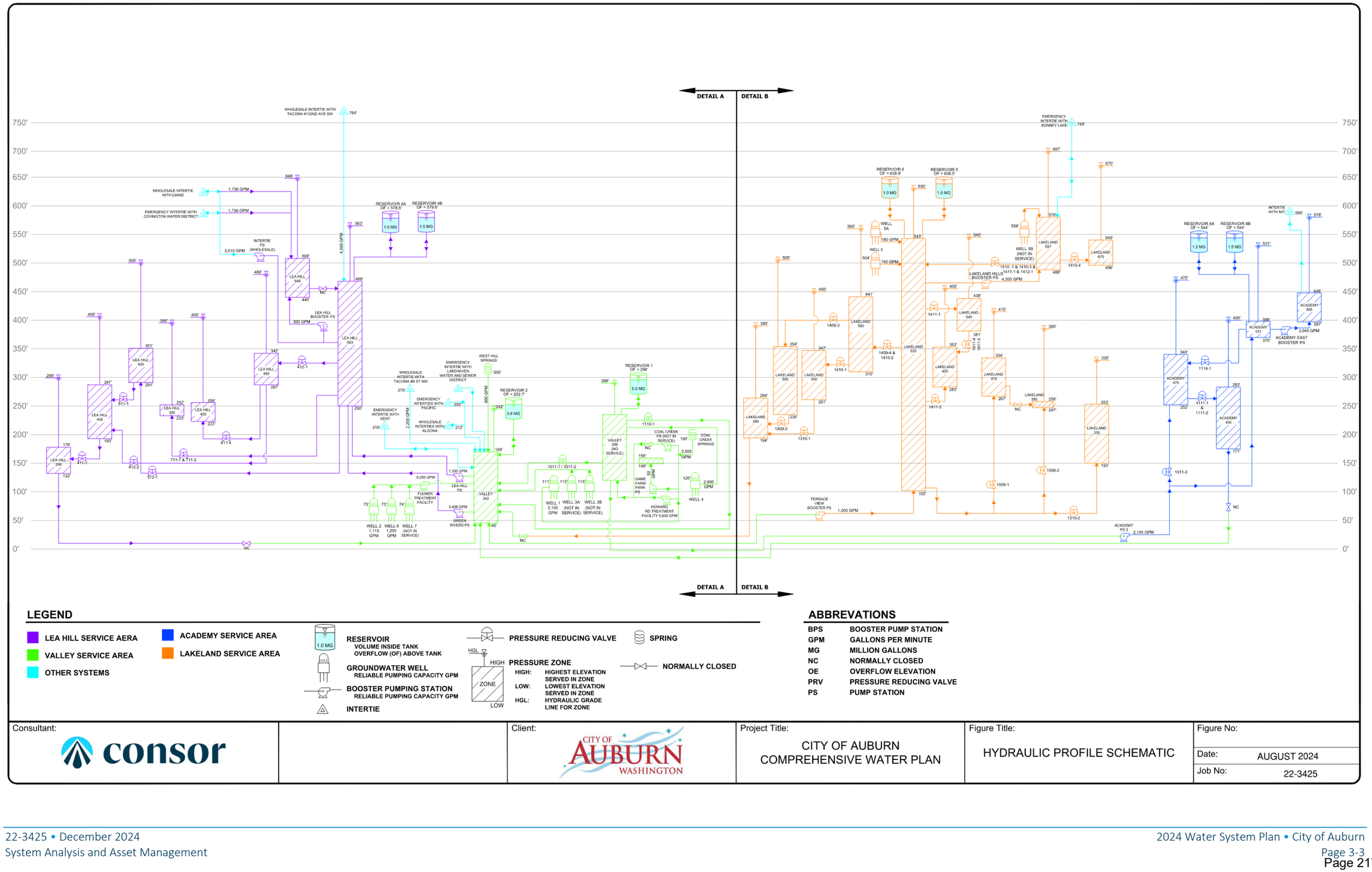


Figure 3-2 | Hydraulic Profile



LEGEND

- LEA HILL SERVICE AERA
- VALLEY SERVICE AREA
- OTHER SYSTEMS
- ACADEMY SERVICE AREA
- LAKELAND SERVICE AREA
- RESERVOIR — VOLUME INSIDE TANK OVERFLOW (OF) ABOVE TANK
- GROUNDWATER WELL — RELIABLE PUMPING CAPACITY GPM
- BOOSTER PUMPING STATION — RELIABLE PUMPING CAPACITY GPM
- INTERTIE
- PRESSURE REDUCING VALVE
- PRESSURE ZONE
  - HIGH: HIGHEST ELEVATION SERVED IN ZONE
  - LOW: LOWEST ELEVATION SERVED IN ZONE
  - HGL: HYDRAULIC GRADE LINE FOR ZONE
- SPRING
- NORMALLY CLOSED

ABBREVIATIONS

BPS	BOOSTER PUMP STATION
GPM	GALLONS PER MINUTE
MG	MILLION GALLONS
NC	NORMALLY CLOSED
OE	OVERFLOW ELEVATION
PRV	PRESSURE REDUCING VALVE
PS	PUMP STATION

Consultant: consor		Client: CITY OF AUBURN WASHINGTON	Project Title: CITY OF AUBURN COMPREHENSIVE WATER PLAN	Figure Title: HYDRAULIC PROFILE SCHEMATIC	Figure No:
					Date: AUGUST 2024
					Job No: 22-3425

Figure 3-3 | Hydraulic Profile - Detail A

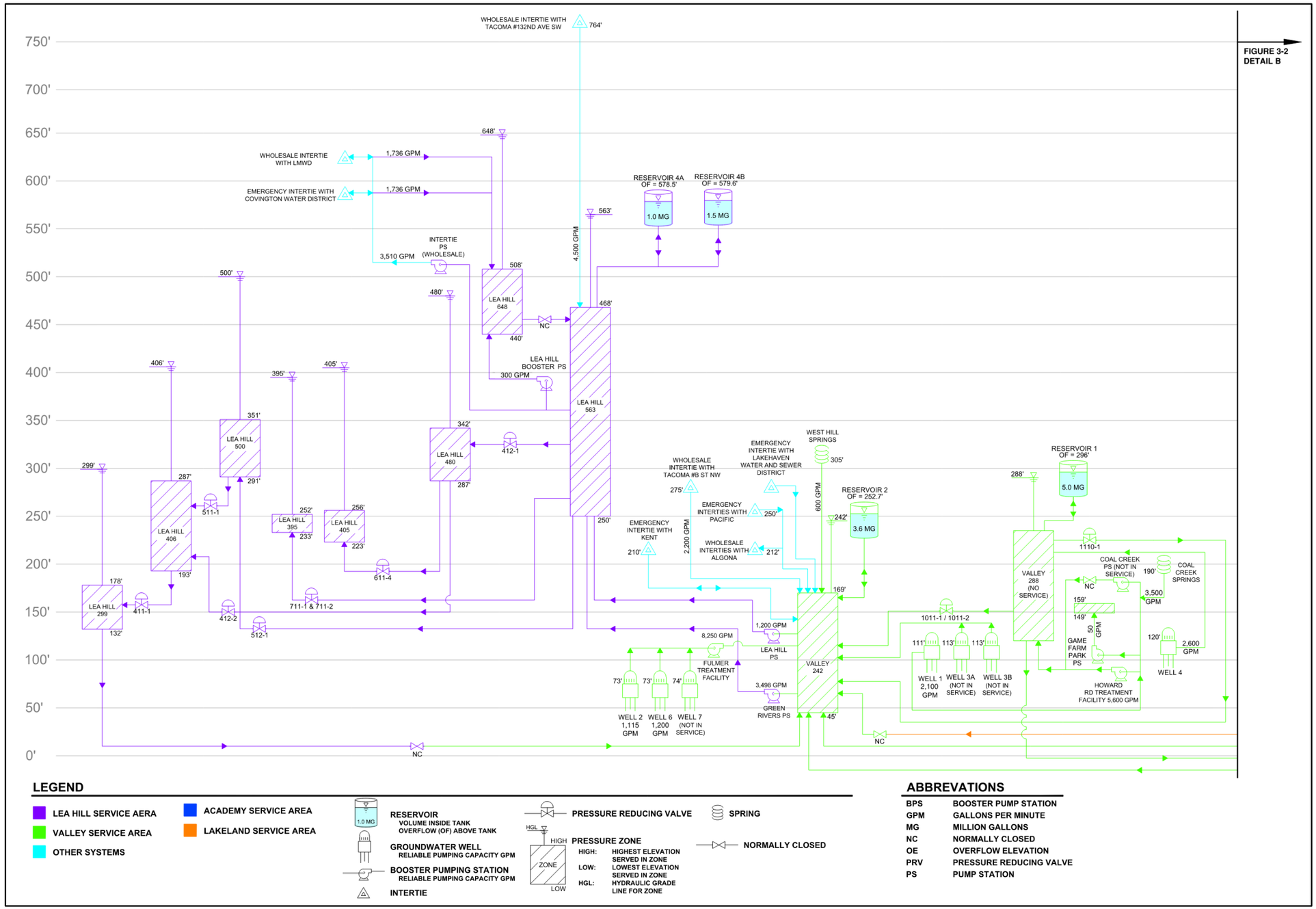
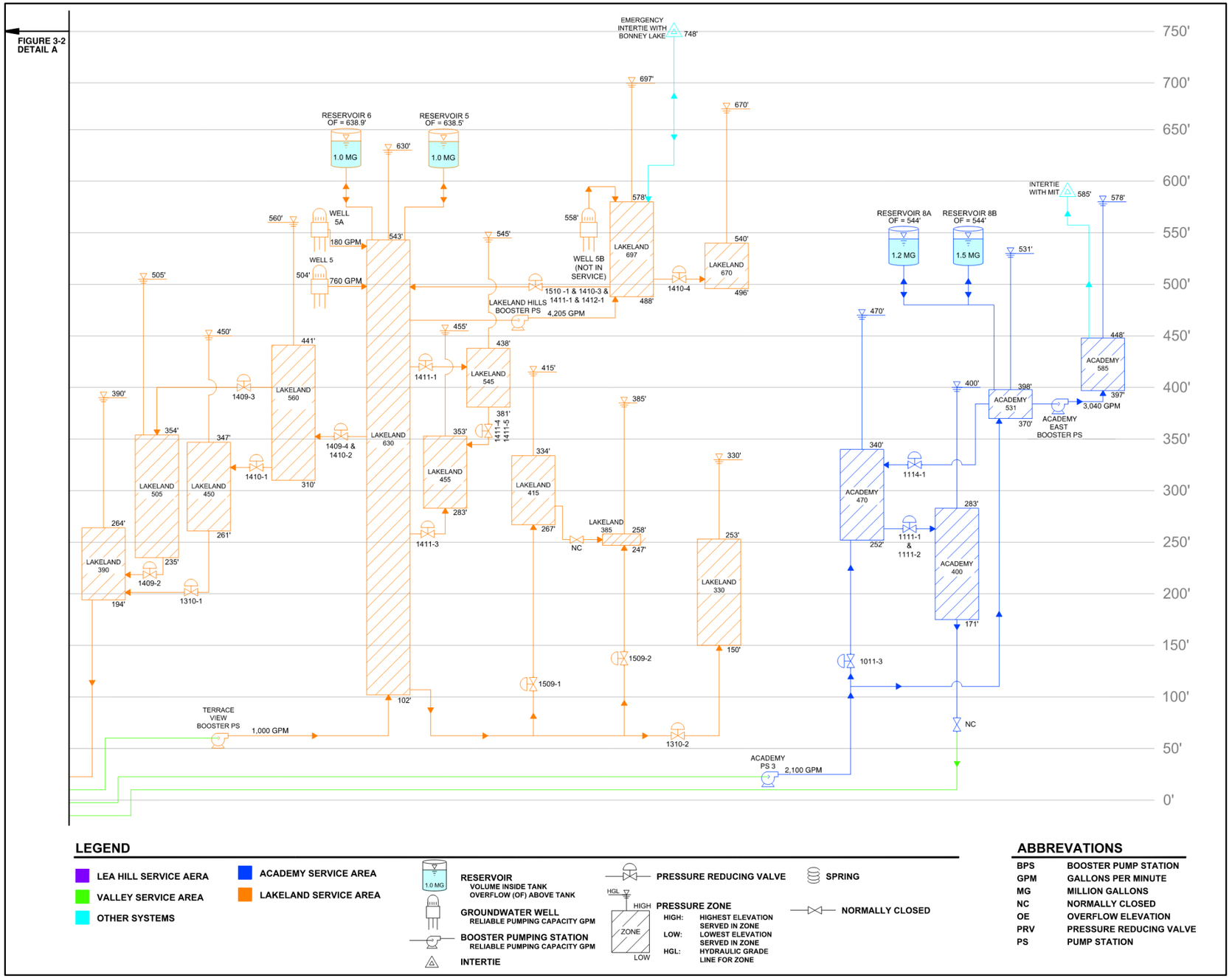


Figure 3-4 | Hydraulic Profile - Detail B



3.1.1 Distribution Facilities

The City' water distribution system includes approximately 300 miles of piping. **Table 3-1** summarizes the water piping inventory by size (diameter). The criticality ratings for the system's pipes are presented in **Table 3-1**, as criticality of the pipelines is assessed based on size. Water main and transmission pipelines vary in diameter from 4 to 36 inches, with a predominance of 8 and 12 inches, and range in age with the oldest piping dating back to 1925. Approximately 78 percent of the distribution system is ductile iron pipe.

Table 3-1 | Transmission and Distribution System Piping Inventory by Pipe Diameter

Distribution System Piping Diameter (inches)	Length (linear feet)	Design Life (years)	Criticality Rating (Bigger # = Less Critical)[1]
≤ 6	189,574	100	4
8-10	681,601		4
12-15	532,953		3
16-20	119,997		3
24-30	15,582		2
36-42	35		2
Unknown	1,380		--

Note:
1. Criticality was assessed based on pipe diameter. Larger diameter pipes were identified as being more critical than smaller diameter pipes.

Table 3-2 organizes water system piping by material and age and identifies the anticipated pipe condition. Pipe condition was assessed based on pipe age and remining useful life. Cast iron pipe that was installed after the 1930's, which constitutes over 48 miles of water mains or 16 percent of the total length of water mains in the City's system, was designated to have a significantly reduced design life of 50 years due to known pipe integrity issues. As such, the City is prioritizing replacement of cast iron pipe and regularly partners with other City projects to replace this piping efficiently and has capital programs to fund replacements as discussed further in **Chapter 8**. Piping that has an unknown material and unknown installation date will be updated in the City's GIS system and Cartegraph as more records research is completed.

In 2014, the City conducted leak detection testing and condition assessment of approximately 2.8 miles of 14 to 24-inch ductile iron and concrete composite pipe. The results indicated that the 20-inch and 16-inch ductile iron mains in the Lea Hill Service Area range from moderate to good condition. The Coal Creek Springs concrete composite main was identified as being in good condition. The 14-inch ductile iron main located in the Academy Service Area was suspected of being in poor condition, however this was later thought to be in decent condition as more information regarding the pipe material was obtained. A portion of the 14-inch piping was replaced as part of a roundabout project within Auburn Way S.

In 2020 the City conducted additional leak detection testing and condition assessment of approximately 13,500 feet of 10 to 16-inch cast iron main. With a focus on four specific sites: Auburn Way South, C Street Southwest, West Hill Springs, and Lea Hill Road. All the pipe on Auburn Way South and Lea Hill Road are in moderate condition. The pipe on C Street Southwest and at West Hill Springs are in poor to moderate condition. The C Street Southwest piping is currently being replaced by the City's "C St SW Preservation" capital project that will begin construction in in 2024.The West Hill Springs piping will be replaced in a forthcoming capital project titled "West Hill Springs Transmission Main Replacement" that is identified in **Chapter 8**.

Table 3-2 | Transmission and Distribution System Piping Inventory by Material and Installation Decade

Piping Material	Total Length (linear feet)	Install Decade (10-Year Period)	Length (linear feet)	Design Life (years)	Remaining Useful Life (years)	Condition Rating (Bigger # = Worse Condition)[1]
Cast Iron	253,919	1920	11,877	100	-4	7
		1930	10,602		6	6
		1940	3,079	50	-34	10
		1950	5,937		-24	10
		1960	147,764		-14	9
		Unknown	74,660		--	--
Concrete[2]	11,284	1960	11,284	100	36	3
Ductile Iron	1,198,958	1960	48,235	100	36	4
		1970	115,184		46	4
		1980	283,977		56	4
		1990	299,293		66	4
		2000	230,295		76	3
		2010	156,307		86	2
		2020	50,594		96	1
		Unknown	15,072		--	--
HDPE	409	2010	409	100	86	1
PVC[2]	19,498	1960	1,630	100	36	4
		1970	2,598		46	4
		1980	1,251		56	4
		1990	1,784		66	4
		2000	2,647		76	3
		2010	2,588		86	2
		2020	1,117		96	1
		Unknown	5,884		--	--
RCP	1,014	1970	884	100	46	3
		2020	130		96	1
Steel	1,030	1920	870	100	-4	6
		1970	160		46	4
Unknown - Anticipated to be Cast Iron based on install date	4,022	1960	4,022	50	-14	4
	28,564	1970	4,001	100	46	4
		1980	3,822		56	4

Piping Material	Total Length (linear feet)	Install Decade (10-Year Period)	Length (linear feet)	Design Life (years)	Remaining Useful Life (years)	Condition Rating (Bigger # = Worse Condition)[1]
Unknown – Anticipated to be Ductile Iron based on install date		1990	12,465		66	4
		2000	4,165		76	3
		2010	4,112		86	2
Unknown	23,089	Unknown	23,089	50	--	--

Notes:

1. Condition was assessed based on remaining useful life of the pipe.
2. The City is investigating pipe materials in 2024 to verify pipe materials in the City's database that may be mislabeled.

The distribution system piping is delineated into pressure zones using Pressure Reducing Valves (PRVs). An inventory of the City's PRVs, as well as their size, remaining useful life, condition, and criticality are summarized in **Table 3-3**. As PRVs approach their anticipated design life, the City's Maintenance and Operations (M&O) staff remove and rebuild the valve to extend the useful life of the asset, when feasible.

Table 3-3 | Pressure Reducing Valve (PRV) Inventory

Valve ID #	PRV Location Description	Valve Size (inches)	Install Date (year)	Design Life (years)	Remaining Useful Life (years)	Condition Rating (Bigger # = Worse Condition)	Criticality Rating (Bigger # = Less Critical)
Lea Hill Service Area							
411-10 - Primary Valve	Cobble Creek Upper at 30216 104th Ave SE	8	2024	40	40	1	3
411-11 - Secondary Valve		2					4
411-12 - Relief Valve		1.5					4
411-20 - Primary Valve	104th Ave SE/SE 302nd St. Cobble Creek Lower	6	1994		10	4	3
411-21 - Secondary Valve		2					4
411-22 - Relief Valve		1.5					4
412-10 - Primary Valve	298th Pl SE & 109th Ave SE	6	2011		27	2	3
412-11 - Secondary Valve		2					4
412-12 - Secondary Valve		2					4
412-20 - Primary Valve	300 Block SE & 108th Ave SE	6	2005		21	1	3
412-21 - Secondary Valve		2					4
412-22 - Secondary Valve		2					4
511-10 - Primary Valve	SE 304th St. & 108th Ave. SE	6	2016	40	32	1	3
511-11 - Secondary Valve		2					4
511-20 – Primary Valve	Cobble Creek Lower at 10230 304th Pl SE	6	1994		10	1	3
511-21 – Secondary Valve		2					4
511-22 – Relief Valve		1.5					4

Valve ID #	PRV Location Description	Valve Size (inches)	Install Date (year)	Design Life (years)	Remaining Useful Life (years)	Condition Rating (Bigger # = Worse Condition)	Criticality Rating (Bigger # = Less Critical)
512-10 – Primary Valve	SE 304th St & 110th Pl SE	6	2018		34	1	3
512-11 – Secondary Valve		2					4
512-12 – Secondary Valve		2					4
611-30 - Primary Valve	Carriage Square	8	2018		34	1	3
611-31 - Secondary Valve		3					4
611-32 - Secondary Valve		3					4
711-10 - Primary Valve	Amberview North	8	1986		2	5	3
711-11 – Secondary Valve		2					4
711-20 - Primary Valve	Amberview South	8	1986		2	5	3
Valley Service Area							
1110-10 - Primary Valve	25th St SE & K St SE	10	1987	40	3	6	3
1110-20 - Secondary Valve		4					4
Lakeland Service Area							
1309-10 - Primary Valve	Mill Pond Dr SE & Oravetz Rd SE	10	1980	40	-4	6	3
1309-11 - Secondary Valve		3					4
1309-12 - Secondary Valve		3					4
1309-13- Secondary Valve		1					4
1310-10 - Primary Valve	Mill Pond Dr SE & Mill Pond Loop SE	10	1980		-4	6	3
1310-11 - Secondary Valve		3					4
1310-12 - Secondary Valve		2		40			4
1310-13 - Secondary Valve		1					4
1409-10 - Primary Valve	Oravetz Rd SE & Lakeland Hills Way SE	8	1990		6	5	3
1409-11 - Secondary Valve		4					4
1409-12 - Secondary Valve		2					4
1409-13 - Secondary Valve		2					4
1409-20 - Primary Valve	47th St SE & Lakeland Hills Way SE	8	1992		8	5	3
1409-21 - Secondary Valve		4					4
1409-22 - Secondary Valve		2					4
1409-23 - Secondary Valve		2					4
1409-30 - Primary Valve	Lakeland Hills Way SE & 51st St SE	10	2004		20	3	3
1409-31 - Secondary Valve		3					4
1409-32 - Secondary Valve		2					4
1409-40 - Primary Valve		10	1988		4	5	3

Valve ID #	PRV Location Description	Valve Size (inches)	Install Date (year)	Design Life (years)	Remaining Useful Life (years)	Condition Rating (Bigger # = Worse Condition)	Criticality Rating (Bigger # = Less Critical)
1409-41 - Secondary Valve	Mill Pond Dr SE & Lakeland Hills Way SE	3					4
1409-42 - Secondary Valve		3					4
1409-43 - Secondary Valve		1					4
1410-10 - Primary Valve	5018 Mill Pond Dr SE	10	1980		-4	6	3
1410-11 - Secondary Valve		3					4
1410-12 - Secondary Valve		2					4
1410-20 - Primary Valve	52nd St SE & East of Mill Pond Dr SE	8	1992		8	5	3
1410-21- Secondary Valve		4					4
1410-22- Secondary Valve		2					4
1410-23- Secondary Valve		2					4
1410-30 - Primary Valve	Nathan Ave SE & Highland Dr SE	8	1992		8	5	3
1410-31- Secondary Valve		4					4
1410-32- Secondary Valve		2					4
1410-33- Secondary Valve		2					4
1410-40 - Primary Valve	5203 Quincy Ave SE	8	1995	40	11	4	3
1410-41- Secondary Valve		4					4
1410-42- Secondary Valve		2					4
1410-43- Secondary Valve		2					4
1509-10 - Primary Valve	Terrace View Lower	10	2007		23	3	3
1509-11- Secondary Valve		3					4
1509-12- Secondary Valve		3					4
1509-20 - Primary Valve	Terrace View Middle	10	2007		23	3	3
1509-21- Secondary Valve		3					4
1509-22- Secondary Valve		3					4
1509-30 - Primary Valve	Terrace View Upper	10	2007		23	3	3
1509-31- Secondary Valve		3					4
1509-32- Secondary Valve		3					4
1509-40 - Primary Valve	Terrace View Dr SE & Alexander Pl SE	10	2007		23	3	3
1509-41- Secondary Valve		3					4
1509-42- Secondary Valve		3					4
1510-10 - Primary Valve	Lakeland Hills Way SE & Evergreen Way SE	8	1994		10	4	3
1510-11- Secondary Valve		4					4
1510-12- Secondary Valve		2					4

Valve ID #	PRV Location Description	Valve Size (inches)	Install Date (year)	Design Life (years)	Remaining Useful Life (years)	Condition Rating (Bigger # = Worse Condition)	Criticality Rating (Bigger # = Less Critical)
1510-13- Secondary Valve		2					4
1411-10 - Primary Valve	56th St SE at Bennett Ave SE	6	2011		27	2	3
1411-11- Secondary Valve		2					4
1411-12- Secondary Valve		2					4
1411-20 - Primary Valve	5310 Bennett Ave SE	6	2010		26	2	3
1411-21- Secondary Valve		2					4
1411-22- Secondary Valve		2					4
1411-30 - Primary Valve	Kersey Way SE & 50th St SE	8	2015		31	2	3
1411-31- Secondary Valve		2					4
1411-32- Secondary Valve		2		40			4
1411-40 - Primary Valve	2305 54th St SE	10	2015		31	2	3
1411-41- Secondary Valve		3					4
1411-42- Secondary Valve		3					4
1411-50 - Primary Valve	5253 Wesley Ave SE	6	2015		31	2	3
1411-51- Secondary Valve		2					4
1411-52- Secondary Valve		2					4
1412-10 - Primary Valve	5539 Franklin Ave SE	6	2012		28	2	3
1412-11- Secondary Valve		2					4
1412-12- Secondary Valve		2					4
Academy Service Area							
1011-30 - Primary Valve	2003 Auburn Way S	8	2006		22	3	3
1011-31 - Secondary Valve		3					4
1011-32 - Secondary Valve		3					4
1111-10 - Primary Valve	Riverwalk Dr SE & Howard Rd SE	6	2006		22	3	3
1111-11 - Secondary Valve		2					4
1111-12 - Secondary Valve		2					4
1111-20 - Primary Valve	2204 27th St SE	6	1997		13	3	3
1111-21 - Secondary Valve		2					4
1111-22 - Secondary Valve		2					4
1114-10 - Primary Valve	4500 Auburn Way South	8	2006		22	3	3
1114-11 - Secondary Valve		3					4
1114-12 - Secondary Valve		3					4

Figure 3-5 shows the locations of water main breaks and leaks that have required repair since 2014. A total of 93 repairs have been completed during this timeframe and include water main break and leak repairs, water main appurtenance repairs, service lines repairs, and repairs due to damage caused by construction contractors.

Figure 3-5 | Water Main Leak and Break Repair Locations from 2014-2024

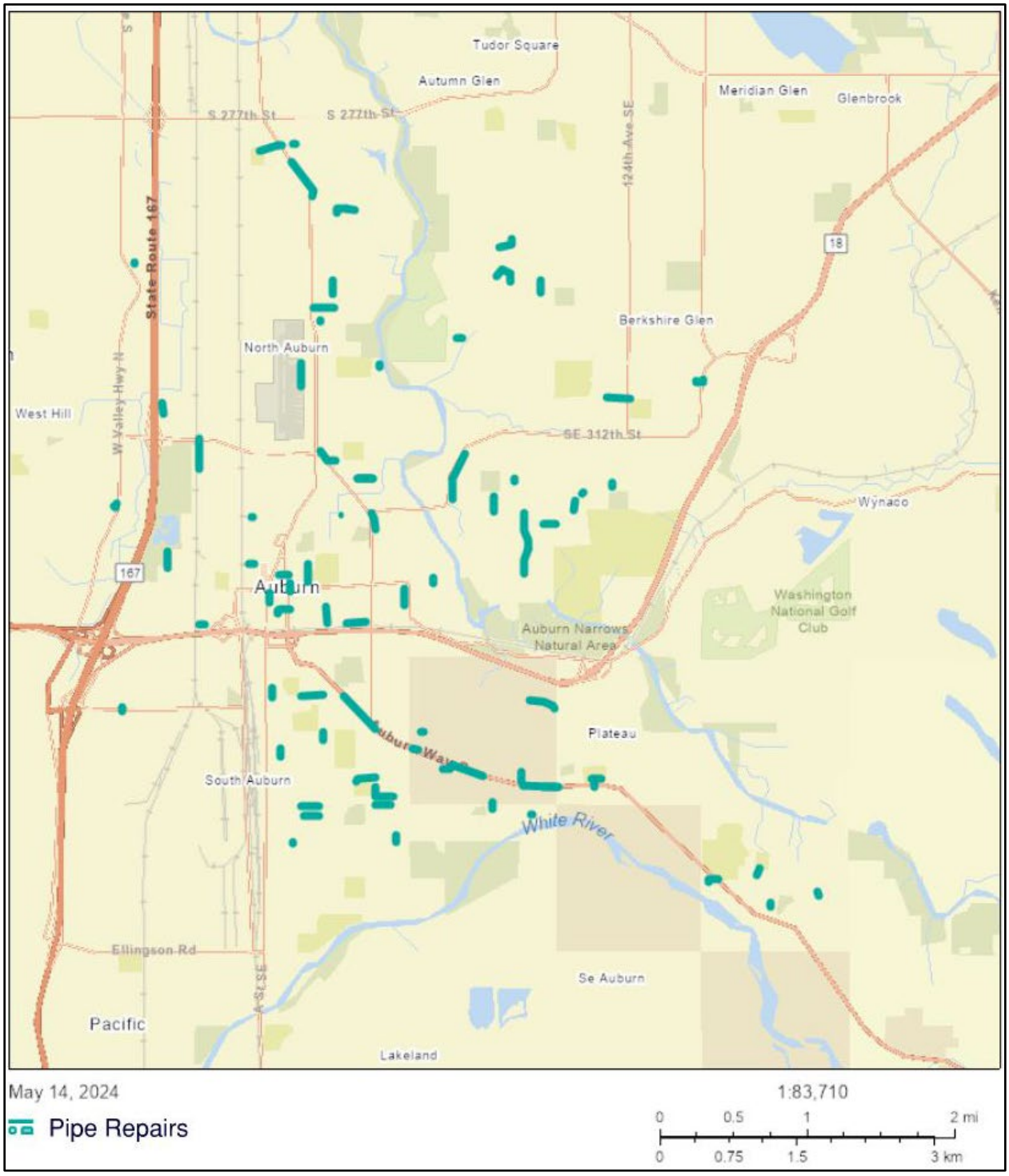
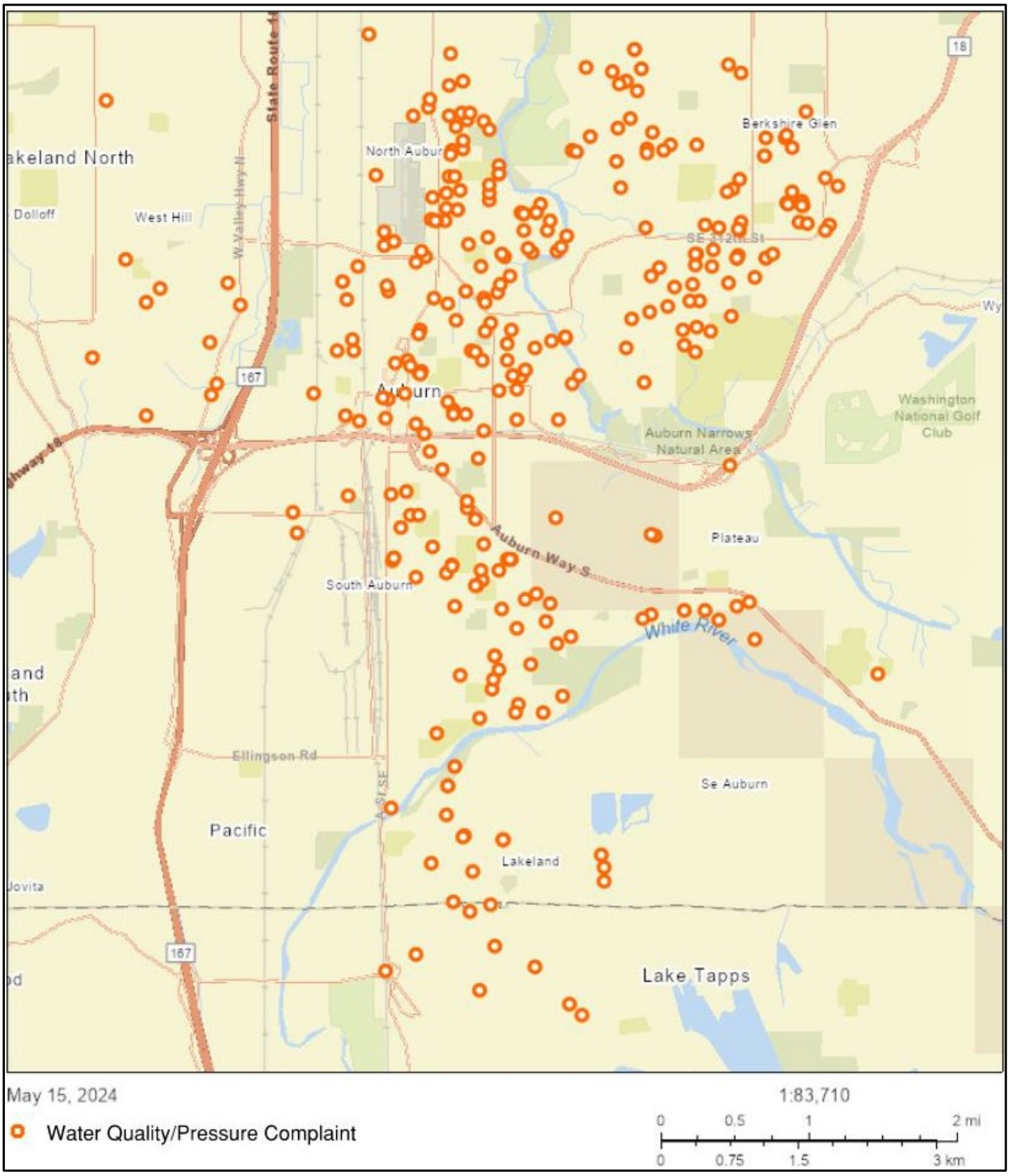


Figure 3-6 shows the locations of low pressure and water quality (odor and discolored water) complaints received since 2014.

Figure 3-6 | Low Pressure, Odor, and Discolored Water Complaints from 2014-2024



A summary of the customer complaints by category is presented in **Table 3-4**. Overall, there has been only one odor complaint within the last ten years. Pressure complaints and water quality complaints have remained fairly consistent, with the fewest number of complaints being made in 2023.

Table 3-4 | Summary Customer Complaints

Category	2014[1]	2015	2016	2017	2018	2019	2020	2021	2022	2023
Water Quality (Appearance)	0	40	47	23	14	55	48	47	27	9
Odor	3	1	0	0	0	0	0	0	0	0
Pressure	6	9	16	19	12	8	4	11	8	10
Total	**9**	**50**	**63**	**42**	**26**	**63**	**52**	**58**	**35**	**19**

Note:
1. Data in 2014 is incomplete due to the City transitioning to Cartegraph Asset Management.

3.1.2 Water Source Facilities

The City uses a combination of groundwater wells and springs as supply sources for the water system. The pumping capacity, remaining useful life, condition and criticality of the City's groundwater wells are summarized in **Table 3-5**. The City's two spring sources, Coal Creek Springs and West Hill Springs, are not included in **Table 3-5** since both these sources operate by gravity and have no on-site pumping equipment. Condition ratings are assigned based on the 2013 Water Facilities Evaluation Study.

A detailed description of each water source facility, including both springs and groundwater wells, and planned improvements is provided following **Table 3-5**. A summary of the pumping or production capacity of each source, including the springs, is included in **Section 2.6** of **Chapter 2**. Discussion of the City's current water rights for each water source is provided in **Section 3.4.1**.

Table 3-5 | Source of Supply Well Pump Inventory

Facility Name	Capacity (MGD)	No. of Pumps	Pump Type	Install Year	Design Life (years)	Remaining Useful Life (years)	Condition Rating (Bigger # = Worse Condition)	Criticality Rating (Bigger # = Less Critical)
Valley Service Area								
Well 1	3.02	1	Vertical Turbine	2016	40	32	2	2
Well 2	1.61	1	Centrifugal	2023		39	3	1
Well 3A	Not in Service							
Well 3B	Not in Service							
Well 4	3.74	1	Centrifugal	1985	40	30	1	3
Well 6	1.73	1	Vertical Turbine	1999		15	4	1
Well 7	Not in Service							
Lakeland Service Area								
Well 5	0.94	1	Submersible	1983	40	-1	7	3
Well 5A	0.26	1	Submersible	1990		6	7	2
Well 5B	Not in Service							

3.1.2.1 Coal Creek Springs

Coal Creek Springs is a primary water supply for the City due to its production capacity. This source is more economical to operate than other sources as it can provide a large volume of water and does not require pumping for extraction. Much of the spring's collector system, including the south and middle collectors, was constructed in 1964. A third collector (the north collector) was added in 1998 to enhance system performance and to provide increased reliability. Currently, the flow from this collector is by gravity, however a buried manhole structure was installed in the line to provide space for a future pump station that could increase production.

Each collector is connected to an overflow structure before connection to a 24-inch transmission line that conveys flow to the Howard Road Corrosion Control Treatment (CCT) Facility where the water is treated for corrosion and is then pumped to Reservoir 1. Between the Coal Creek Springs headworks and the Howard Road CCT Facility is a single connection that supplies potable water to Game Farm Wilderness Park. This transmission main is in good condition, however a suspected leak on the 24-inch steel transmission main crossing the White River was identified in a facility evaluation study completed in 2014. It was later identified that there was not a leak, but the evaluation results were caused by river turbulence due to portions of the pipe being exposed along the riverbed. The City is currently constructing a project that replaces the river crossing with new transmission piping suspended from a utility and pedestrian bridge; the project will be completed in 2024 and is identified in Chapter 8.

In recent years, the production capacity of Coal Creek Springs has been reduced. A maximum instantaneous production rate up to 4,500 gpm is currently feasible, however a more consistent functional production capacity of 3,500 gpm is currently achieved (approximately 52 percent of the water right capacity). The City is currently investigating the cause of reduced production and potential solutions. A capital project is planned to rehabilitate Coal Creek Springs once a solution is identified; the project is discussed further in Chapter 8.

3.1.2.2 West Hill Springs

Although the use of West Hill Springs as a potable water supply dates to before 1907, most of the current facilities and equipment were constructed after 1960. More recent improvements include replacement of the collection boxes, as recommended in the 1995 Comprehensive Water Plan, and partial fencing of the watershed, as recommended by the 2000 Water Comprehensive Plan. The spring's existing transmission main is constructed of 10-inch diameter cast iron piping and has experienced two breaks. The City plans to replace approximately 1,250 linear feet of the transmission main with 12-inch diameter ductile iron pipe in an upcoming capital project identified in Chapter 8.

3.1.2.3 Well 1

Well 1 was constructed in 1960 and underwent substantial renovation in 2016, significantly improving the overall facility condition. Renovations included transmission piping to Howard Road CCT Facility, site improvements, a new well house, new pumping system, disinfection with sodium hypochlorite, on-site emergency power, and upgraded electrical and supervisory control and data acquisition (SCADA) controls. The new well pumping system is a two-stage, vertical turbine pump with a capacity of 2,100 gpm, driven by a 100-HP motor and controlled by a variable frequency drive (VFD). Supply from Well 1 will be routed along the recently constructed 16-inch transmission main and conveyed to the Howard Road CCT Facility.

3.1.2.4 Wells 2 & 6

Well 2 was constructed in 1970 and the well and well house were replaced in 2000 with a new masonry building and pumping equipment as part of the City's corrosion control strategy. The facility built in 2000 also houses Well 6, which was built in 1999. Within the facility is a two-stage 1,115 gpm centrifugal pump powered by a 125-HP motor, installed in 2023 (Well 2), and a two-stage, vertical-turbine pump driven by a 200-HP motor (Well 6). The pumping capacity of Well 6 has been reduced in recent years to a typical production rate of 1,200 gpm due to fouling of the well screen that requires occasional cleaning. The wells discharge to a 14-inch transmission main to Fulmer Field CCT Facility for treatment prior to distribution.

Since the Fulmer Field CCT Facility is required to re-pump the water from Wells 2 and 6 into the Valley Service Area and to Reservoir 2, Wells 2 and 6 are functional only with operation of the Fulmer Field CCT Facility. Chlorination and emergency power for both Wells 2 and 6 are housed in the Fulmer Field CCT Facility.

In 2023 the City completed an interim replacement of the pump at Well 2. Full replacement of Well 2 is planned as a capital project discussed further in **Chapter 8.** Additionally, rehabilitation work completed in 2013 and 2014 indicated that it would be beneficial to clean and rehab both wells on a regular basis. As such, the City initiated a program for regular cleaning of the wells established on a 3-year cycle which is discussed further in **Chapter 8**.

3.1.2.5 Wells 3A & 3B

Wells 3A and 3B are located at the same site, off 37th Street SE on the extension of E Street SE. The wells are approximately 50 feet apart and were constructed in 1983 and 1984 respectively. Each well is equipped with a four-stage, centrifugal pump driven by a 125-HP motor, each with a maximum pumping capacity of 1,650 gpm when operated individually. A standby generator capable of running one pump at a time is available on site. The system is equipped with an automatic transfer switch.

Currently, Wells 3A and Well 3B are not operated because they produce water that contains high concentrations of manganese. Since the wells were taken offline, the chlorination facilities have been removed. If operated, the wells pump directly into the Valley Service area distribution system. The City plans to construct treatment for these wells as part of the "Wells 3A/3B Treatment" project discussed further in **Chapter 8**.

3.1.2.6 Well 4

Well 4 was originally constructed in 1985, was rebuilt in 2012, and is currently undergoing significant upgrades to mechanical and electrical equipment, including well pump piping, valve replacement, and control panel replacement. Once the upgrades are complete this source will be considered in excellent condition. The well is equipped with a 2,600-gpm, four-stage, centrifugal, turbine pump driven by a 300-HP motor. Well 4 pumps directly to a 16-inch transmission main that can either convey water to Reservoir 1 or to distribution through a PRV. Well 4 is an important supply for the southern end of the City's Retail Water Service Area (RWSA). Operation of the well is normally controlled by the water level in Reservoir 1.

3.1.2.7 Well 5

Well 5 is one of three City wells that were constructed to serve the Lakeland Hills Development within the City's Lakeland Service Area. Well 5 pumps directly into the Lakeland Service Area distribution system. The well was constructed in 1983 and is equipped with a seven-stage submersible turbine pump, driven by a

125-HP motor. The well facility was assessed to be in poor condition in the 2013 Water Facilities Evaluation Study. The City plans to upgrade the facility as part of the Well 5/5A Upgrades project discussed in Chapter 8.

3.1.2.8 Well 5A

Well 5A is the second well serving the Lakeland Service Area and was constructed in 1990 to supplement Well 5. The well pumps directly into the Lakeland Service Area distribution system. The well is equipped with a ten-stage submersible turbine pump, driven by a 60-HP motor and has on-site chlorination facilities. A manual transfer switch is provided to allow operation of Well 5A using a portable emergency generator. The well facility was assessed to be in poor condition in the 2013 Water Facilities Evaluation Study. The City plans to upgrade the facility as part of the Well 5/5A Upgrades project discussed in Chapter 8.

3.1.2.9 Well 5B

Well 5B was constructed in 2005 with a 600 gpm pump. Once this source came on-line, the City discovered the aquifer was not recovering, so the well was taken out of service in 2006 and has not been operated since. The City has no plans to operate this well within the planning horizon.

3.1.2.10 Well 7

Well 7 was constructed in 1997 and was originally equipped with a 3,500-gpm variable-stage, vertical-turbine pump driven by a 500-HP motor. Well 7 is configured to pump directly to the Fulmer Field CCT Facility through a 16-inch transmission main. The treated water is then re-pumped into the Valley Service Area. If necessary, Well 7 can pump untreated water directly to the Valley Service Area through a PRV. The well was taken out-of-service in 2012 due to high manganese concentrations. The City has planned capital projects to expand the treatment capacity and treat manganese at Fulmer Field CCT Facility to accommodate flows from Well 7 so operation of this facility can be reinstated. The projects to provide treatment and back-up power for Well 7 are discussed in Chapter 8.

3.1.2.11 Algona Well 1

In 1996, the City acquired the water rights for Algona Well 1 as a condition of the wholesale agreement with the City of Algona (Algona). Due to pump operational problems, Algona Well 1 was removed from service. The 500-gpm pump and associated piping have been removed from the well house and the building has been demolished, but the well casing is still intact, and the well is plugged. The City has a capital project identified in Chapter 8 to study the well and options for potential use or relocation.

3.1.3 Water Treatment Facilities

The City's water treatment facilities provide chlorination and corrosion control. An inventory of the water system's treatment facilities, including the treatment type, capacity, remaining useful life, condition, and criticality is provided in Table 3-6. Condition ratings are assigned based on the 2013 Water Facilities Evaluation Study. A detailed description of each water treatment facility and planned improvements is provided following Table 3-6.

Table 3-6 | Water Treatment Facility Inventory

Facility Name	Treatment Type	Treatment/ Dosing Capacity	Install Date	Design Life (years)	Remaining Useful Life (years)	Condition Rating (Bigger # = Worse Condition)	Criticality Rating (Bigger # = Less Critical)
Coal Creek Springs	Gas Chlorination	0.75-0.80 mg/L	1976	35	-13	3	2
West Hill Springs	Gas Chlorination	0.75-0.80 mg/L	1992		15	5	3
Fulmer Field CCT Facility	Hypochlorite	0.95 mg/L	2002	35	13	5	2
	Corrosion/Air-Stripping	11.88 MGD					1
Howard Road CCT Facility	Corrosion/Air-Stripping	8.06 MGD	2004		15	5	1
Terrace View Booster Pump Station	Re-chlorination	0.75 mg/L	2010		21	3	2
Well 1	Hypochlorite	0.75-0.80 mg/L	2016		27	2	2
Well 4	Hypochlorite	0.75-0.80 mg/L	2016		27	2	3
Well 5A	Hypochlorite	0.75-0.80 mg/L	1990		1	3	2

3.1.3.1 Chlorination Facilities

3.1.3.1.1 Coal Creek Springs Chlorination

The Coal Creek Springs chlorination station was built in 1976 and achieves 4-log treatment of the supply. The chlorination station is housed in a masonry building approximately 300 feet north of the collectors and is in fair condition. As a major source of water for the system, Coal Creek Springs is used to maintain chlorine residuals in the Academy Service Area and south end of the Valley Service Area.

This chlorination station is equipped with two chlorinators. Gaseous chlorine is stored on site in a separate room. Alarms from the chlorination equipment are transmitted back to the Water Control Center at the M&O Facility. A chlorine residual analyzer provides high and low alarms to the M&O Facility. Chlorine is dosed into the water at a range of 0.75-0.80 milligrams per liter (mg/L) and is adjusted based on the chlorine residual measured in the Academy and the south end of the Valley Service Area.

The City has a capital project planned to replace the chlorination building and upgrade the chlorination equipment from chlorine gas to hypochlorite disinfection. This project is discussed further in **Chapter 8**.

3.1.3.1.2 West Hill Springs Chlorination

The West Hill Springs Chlorination Facility was constructed in 1992. Water produced at West Hill Springs continuously flows from the collection boxes to the on-site chlorination station, housed in a wood building, where gas chlorine is metered continuously to treat the water. Chlorine dosage typically ranges from 0.75 – 0.80 mg/L and is adjusted based on the measured chlorine residual in the north end of the Valley Service Area. From the chlorination station, the water flows by gravity into the Valley Service Area.

3.1.3.1.3 Well 1

Liquid sodium hypochlorite treatment was installed at Well 1 in 2016. The chlorine dosage typically ranges from 0.75 - 0.80 mg/L. A residual monitoring system is tied into the City's existing SCADA system. The City plans to replace the liquid hypochlorite system with an on-site chlorine generation system (OSEC) to better accommodate seasonal changes to chemical demands and reduce chemical waste. This project is discussed further in Chapter 8.

3.1.3.1.4 Wells 2 and 6

Water produced at Wells 2 and 6 is treated and chlorinated at the Fulmer Field CCT Facility prior to distribution.

3.1.3.1.5 Well 4

Well 4 was equipped with a liquid sodium hypochlorite chlorination system in 2016. The chlorine dosage typically ranges from 0.75 – 0.80 mg/L. The City plans to replace the liquid hypochlorite system with an on-site chlorine generation system (OSEC) to better accommodate seasonal changes to chemical demands and reduce chemical waste. This project is discussed further in Chapter 8.

3.1.3.1.6 Well 5

There is currently no chlorination provided for water produced at Well 5. This City has a capital project discussed in Chapter 8 that will include the addition of a chlorination facility to Well 5.

3.1.3.1.7 Well 5A

Well 5A was equipped with a liquid sodium hypochlorite chlorination station in 1990. The chlorine dosage typically ranges from 0.75 – 0.80 mg/L and is adjusted based on the chlorine residual measured in the Lakeland Service Area.

3.1.3.1.8 Fulmer Field CCT Facility

The Fulmer Field CCT Facility was constructed in 2004. Chlorination at Fulmer Field CCT, along with B Street Intertie, is a major source of chlorine residual in the north end of the Valley Service Area and in the Lea Hill Service Area and is achieved using an on-site chlorine generation system. The existing on-site chlorine generation cell was replaced in 2012, but the system was identified as being in poor condition and sourcing replacement parts for repairs has become increasingly more difficult. A capital project to replace the entire on-site generation system is planned and discussed further in Chapter 8.

The Fulmer Field CCT Facility treats the water from Wells 2, 6, and 7 (when operational). Chlorine is introduced into the system prior to the air-stripping towers at a dose of approximately 0.95 mg/L. The chlorine is adjusted based on measured chlorine residual at the station analyzer. The treated water is then stored in the clearwell and boosted into the distribution system and Reservoir 2. If needed, the chlorine can be manually introduced into the clearwell rather than prior to the towers.

3.1.3.1.9 Terrace View Booster Pump Station (BPS)

The Terrace View BPS was equipped with a liquid sodium hypochlorite chlorination system in 2010, adding 6 percent solution to the discharge piping of the station at an approximate dose of 0.75 mg/L.

3.1.3.1.10 Intertie Pump Station

Through the First Amendment to Interlocal Agreement No. 2 for the Lea Hill Intertie project executed in 2017, Covington Water District (CWD) terminated its rights or obligations to Interlocal Agreement No. 2 or the First Amendment and Lake Meridian Water District (LMWD) continues to receive wholesale water from the City, as needed, on an interruptible basis. The chlorination equipment was removed from the Intertie Pump Station since the intertie is not used on regular basis.

3.1.3.2 CCT Facilities

To limit the corrosion of lead and copper in the system, the City treats major supplies. The treatment process increases the pH of the water, which reduces the solubility of lead and copper, allowing the water to comply with the Lead and Copper Rule. The goal of the CCT facilities is to adjust the water leaving the facility to a pH of approximately 7.5.

3.1.3.2.1 Fulmer Field CCT Facility

The Fulmer Field CCT Facility also adjusts the pH of the water from its sources to approximately 8.0 by air-stripping in three 33,000 gallon air-stripping towers to provide corrosion control treatment. Three 10,000 cubic feet per minute (CFM) blowers provide air. As the carbon dioxide is stripped from the water, the treated water is stored in the clearwell and boosted through four booster pumps back into the distribution system and Reservoir 2. The firm capacity of the facility is 11.88 MGD.

3.1.3.2.2 Howard Road CCT Facility

The Howard Road CCT Facility was constructed in 2004. It has a life expectancy of an additional 15 years and is generally in fair condition. This facility is housed in a masonry building and treats the water from Coal Creek Springs and Well 1. The pH of the water from Coal Creek Springs and Well 1 is then adjusted to approximately 7.8 by air-stripping in two 33,000 gallon air-stripping towers. Two 9,300 CFM blowers provide air. The treated water is then stored in the clearwell at the facility and re-boosted through three booster pumps to Reservoir 1 and the Valley Service Area. The firm capacity of the facility is 8.06 MGD.

3.1.4 Storage Facilities

The City currently maintains a total of 15.7 million gallons (MG) of water storage in eight water reservoirs located throughout the system. Storage reservoirs are present in each of the City's Service Areas. The location of each storage reservoir is shown in **Figure 3-1**. A summary of the City's storage reservoirs, as well as the type of storage tank, installation date, remaining useful life, condition and criticality is provided in **Table 3-7**. Condition ratings are assigned based on the 2013 Water Facilities Evaluation Study. The storage volumes provided in **Table 3-7** represent the maximum tank volume; however, the City commonly operates the reservoirs at below the maximum levels. A detailed description of reservoir and planned improvements is provided following **Table 3-7**.

Table 3-7 | Inventory of Storage Reservoirs

Reservoir Name	Storage Volume (MG)	Type	Install Date	Design Life (years)	Remaining Useful Life (years)	Condition Rating (Bigger # = Worse Condition)	Criticality Rating (Bigger # = Less Critical)
Valley Service Area							
Reservoir 1	5.0	Prestressed Concrete	1975	100	45	5	2
Reservoir 2	3.6	Prestressed Concrete	1975		45	3	2
Lea Hill Service Area							
Reservoir 4A	1.0	Steel Standpipe	1965	70	11	3	2
Reservoir 4B	1.5	Steel Standpipe	1983		29	4	2
Lakeland Service Area							
Reservoir 5	1.0	Steel Standpipe	1981	70	27	2	3
Reservoir 6	1.0	Steel Standpipe	2012		58	2	3
Academy Service Area							
Reservoir 8A	1.2	Steel Standpipe	1973	70	19	3	3
Reservoir 8B	1.5	Steel Standpipe	1980		26	3	3

3.1.4.1 Reservoir 1

Reservoir 1 is located at the southeast end of the Valley Service Area and is the primary storage location for water produced at Coal Creek Springs and pumped from the Howard Road CCT Facility. Reservoir 1 can also be filled by water produced at Well 4. The reservoir was constructed in 1975 and is a covered, pre-stressed concrete tank with a capacity of 5 MG. Reservoir 1 is 184.5 feet in diameter and has an overflow elevation of 269 feet. Academy Pump Station 3 draws water from Reservoir 1 to feed the Academy Service Area. Reservoir 1 also serves the Valley Service Area through Control Valve 1. Control Valve 1 is essential to limit flow and maintain adequate supply to the Valley Service Area.

Reservoir 1 was last inspected and cleaned on March 15, 2023. Recommended improvements identified in 2013 Water Facilities Evaluation Study are planned to be completed as part of the "Reservoir Capital Improvements" project discussed further in **Chapter 8**.

3.1.4.2 Reservoir 2

Reservoir 2 is located on the northeast side of the City's Water Service Area and serves the Valley Service Area. The reservoir was constructed in 1975 and is a buried, pre-stressed concrete tank with public tennis courts on the concrete roof. The reservoir has a maximum storage capacity of 3.6 MG, has a diameter of 143 feet and an overflow elevation of 252.7 feet. Reservoir 2 is filled by the water sources located in the Valley Service Area and is also filled from Reservoir 1 through Control Valve 1.

Reservoir 2 was last inspected and cleaned on March 13, 2023. A capital project is planned to replace the fill and drain valves associated with the reservoir; the project is discussed further in **Chapter 8**. This project will also resolve improvements identified in the 2022 sanitary survey.

3.1.4.3 Reservoirs 4A and 4B

Storage in the Lea Hill Service Area is provided in two steel standpipe reservoirs located in the northeast corner of the City's RWSA, Reservoir 4A and Reservoir 4B. The reservoirs have capacities of 1.0 MG and 1.5 MG respectively. Reservoir 4A was constructed in 1965 with a diameter of 46 feet and an overflow elevation of 578.5 feet. Reservoir 4B was constructed in 1983 with a diameter of 58 feet and an overflow elevation of 579.6 feet. Water is supplied to the Lea Hill reservoirs from the City's Valley Service Area through the Green River Pump Station and Lea Hill Pump Station.

The reservoirs were last inspected and cleaned in June and April of 2018. A capital project is currently installing seismic control valves on the outlet piping from both reservoirs to prevent catastrophic flow during a seismic pipe failure; the project is discussed further in **Chapter 8**. Additionally, required improvements identified in the 2022 Sanitary Survey will be completed as part of the Reservoir Repair and Replacements Program also discussed in **Chapter 8**.

3.1.4.4 Reservoir 5

Reservoir 5 is one of two reservoirs providing storage for the Lakeland Service Area. The reservoir was constructed in 1981 and has a total capacity of 1.0 MG. The reservoir is filled by Well 5, Well 5A, and the Terrace View BPS. Reservoir 5 is steel standpipe with a 53.25-foot diameter and an overflow elevation of 638.5 feet. The reservoir was last cleaned and inspected in 2019 and the interior and exterior were last painted in 2016 as part of routine maintenance.

3.1.4.5 Reservoir 6

Reservoir 6 is in the Lakeland Service Area within the boundary of the Lakeland 697 pressure zone but is connected to distribution piping for the Lakeland 630 pressure zone. Reservoir 6 is a steel standpipe constructed in 2012 and has a total capacity of 1.0 MG. This reservoir has a diameter of 63.4 feet and an overflow elevation of 638.9 feet. The reservoir is filled by Well 5, Well 5A, and the Terrace View BPS. The reservoir was last cleaned and inspected in 2019.

3.1.4.6 Reservoir 8A and 8B

Reservoirs 8A and 8B are steel standpipes that provide storage for the Academy Service Area. The reservoirs are normally operated in parallel, functioning as one large reservoir. Reservoir 8A has a diameter of 52.75 feet and a total storage volume of 1.2 MG and was constructed in 1973. Academy Reservoir 8B has a diameter of 60 feet and a total storage volume of 1.5 MG and was constructed in 1980. Both reservoirs have an overflow elevation of 544 feet. Academy Pump Station 3 fills the reservoirs.

The reservoirs were last cleaned and inspected in October 2019. A capital project is currently installing seismic control valves on the outlet piping from both reservoirs to prevent catastrophic flow during a seismic pipe failure; the project is discussed further in **Chapter 8**. Additionally, required improvements identified in the 2022 Sanitary Survey will be completed as part of the Reservoir Repair and Replacements Program also discussed in **Chapter 8**.

3.1.5 Pump Station Facilities

The City operates and maintains several pump stations to move water throughout the distribution system and to provide water at the required service pressures. An inventory of the City's pump stations is provided in **Table 3-8** and locations are shown in **Figure 3-1**. Condition ratings provided in **Table 3-8** are assigned based on findings from the 2013 Water Facilities Evaluation Study.

Table 3-8 | Pump Station and Booster Pump Station Inventory

Facility Name	Firm Capacity (gpm)	Firm Capacity (MGD)	Install Date	Design Life (years)	Remaining Useful Life (years)	Condition Rating (Bigger # = Worse Condition)	Criticality Rating (Bigger # = Less Critical)
Lea Hill Service Area							
Intertie Pump Station (Wholesale)	3,510	5.05	1999	40	15	3	4
Lea Hill BPS	300	0.432	1999		15	3	3
Lea Hill Pump Station	1,200	1.73	1965		-19	6	3
Green River Pump Station	3,498	5.04	1999		15	3	2
Valley Service Area							
Game Farm Park Pump Station	50	0.07	1988	40	4	7	4
Lakeland Service Area							
Lakeland Hills BPS	4,205	6.06	2012	40	28	2	2
Terrace View BPS	1,000	1.44	2010		26	2	2
Fulmer Field CCT Facility	8,250	11.88	2004		20	3	1
Howard Road CCT Facility	5,600	8.06	2004		20	4	1
Academy Service Area							
Academy Pump Station 3	2,100	3.02	2023	40	39	1	1
Academy East BPS	3,040	4.38	2014		30	2	2

3.1.6 Facility Back-Up Power

An inventory of the City's existing facilities with backup power accommodation is provided in **Table 3-9**. Of the City's twelve water sources, only Wells 5 and 7 are currently without a standby power source. Standby power will be added to both wells as part of capital projects discussed in **Chapter 8**. Back-up power for Wells 2 and 6 is housed at the Fulmer Field CCT Facility.

The Game Farm Park Pump Station, Lea Hill BPS, and Intertie Pump Station are the only pump stations without a standby power source or connection. Backup power will be added to the Lea Hill BPS as part of a capital project discussed further in **Chapter 8**. The Game Farm Park Pump Station is a small facility that serves a recreational area and does not serve residential or commercial properties, therefore back-up power is not a critical element.

Table 3-9 | Back Up Power Inventory

Generator Location	Generator Type and Size	Install or Purchase Date	Design Life (years)	Remaining Useful Life (years)	Condition Rating (Bigger # = Worse Condition)	Criticality Rating (Bigger # = Less Critical)
Fulmer Field CCT Facility	On-site, 1000 kW	2001	25	2	4	3
Howard Road CCT Facility	On-site, 600 kW	2004		5	3	3
Academy East BPS	On-site, 600 kW	2010		11	2	3

Generator Location	Generator Type and Size	Install or Purchase Date	Design Life (years)	Remaining Useful Life (years)	Condition Rating (Bigger # = Worse Condition)	Criticality Rating (Bigger # = Less Critical)
Academy Pump Station 3	On-site, 450 kW	2023		24	1	3
Green River Pump Station	On-site, 515 kW	2004		5	2	3
Lakeland Hills BPS	On-site, 300 kW	2012		13	2	3
Lea Hill Pump Station	On-site, 250 kW	1964		-35	6	3
Terrace View BPS	On-site, 250 kW	2010		11	2	3
Well 1	Portable, 230 kW	2014		15	2	3
Well 3A/3B	On-site, 210 kW	1983		-16	5	3
Well 4	On-site, 450 kW	2016		17	2	3
Well 5A	Portable, 230 kW	1992		-7	4	3
Well 5B	On-site, 400 kW	2005		6	3	4
Coal Creek Springs	On-site, 20 kW	1964		-35	6	3

3.1.7 Facility Monitoring and Control

Primary monitoring and operation of the City's water system and facilities is conducted via a SCADA computerized control system. A software program called "AVEVA" works in association with SCADA to provide real time graphical display of system data, set points, and alarms for staff monitoring and control. The City's SCADA system controls are centralized at the Public Works M&O Facility. Major upgrades of the City's SCADA system were complete in 2015 and again in 2024, and the system regularly undergoes updates as facility upgrades or improvements are completed.

3.1.8 2022 Sanitary Survey Findings

The City has already taken corrective actions and will continue to resolve all deficiencies identified in the 2022 Sanitary Survey, as summarized in **Table 3-10**.

Table 3-10 | Summary of 2022 Sanitary Survey Findings

Issues/Recommended Improvements		Required Action
Sources and Treatment		
Well 3A	Offline due to manganese issues	--
Well 3B	Offline due to manganese issues	--
Well 5	Water supply lines to chlorine solution tanks must be provided with either air gaps or reduced pressure backflow assemblies to eliminate potential cross connections.	This deficiency was mislabeled by DOH, This should have been for Well 4. A letter from the DOH acknowledging the error was received on October 17, 2022.
	Pump to waste line should terminate above grade.	Will be addressed in Well 5/5A Upgrades project included in CIP; refer to **Chapter 8**.
Well 5A	Water supply lines to chlorine solution tanks must be provided with either air gaps or reduced pressure backflow assemblies to eliminate potential cross connections.	Completed. On September 21, 2022, a reduced pressure backflow assembly was installed at Well 5A, on the water supply line to the chlorine tank.
	Raise casing to terminate above grade or provision of sump pump or alarms that activate when water accumulates in vault. In the meantime, the vault	City implemented an inspection program in October 2022.

	Issues/Recommended Improvements	Required Action
	should be inspected weekly and immediately following significant storm events.	Will be addressed further in Well 5/5A Upgrades project included in CIP; refer to **Chapter 8**.
Well 7	Offline due to manganese issues	--
Storage		
Reservoir 2	Reservoir overflow should not be connected directly to any drain, sanitary sewer, or storm sewer.	Will be addressed in Reservoir 2 improvements project included in CIP; refer to **Chapter 8**.
Reservoir 4A	Reservoir vents should open downward to prevent windblown debris from entering tank.	Will be completed as part of City's annual Reservoir Repair and Replacement program or Reservoirs 4 and 8 Seismic Rehabilitation project; refer to **Chapter 8**.
	Reservoir overflow should not be connected directly to any drain, sanitary sewer, or storm sewer.	Will be completed as part of City's annual Reservoir Repair and Replacement program or Reservoirs 4 and 8 Seismic Rehabilitation project; refer to **Chapter 8**.
Reservoir 4B	Reservoir overflow should not be connected directly to any drain, sanitary sewer, or storm sewer.	Will be completed as part of City's annual Reservoir Repair and Replacement program or Reservoirs 4 and 8 Seismic Rehabilitation project; refer to **Chapter 8**.
Reservoir 8A	Reservoir overflow screen must be repaired	Completed. On September 13, 2022, the overflow screen at Reservoir 8A was repaired.
	Reservoir vents should open downward to prevent windblown debris from entering tank.	Will be completed as part of City's annual Reservoir Repair and Replacement program or Reservoirs 4 and 8 Seismic Rehabilitation project; refer to **Chapter 8**.
Reservoir 8B	Reservoir overflow screen must be repaired	Completed. On September 13, 2022, the overflow screen at Reservoir 8B was repaired.
	Reservoir vents should open downward to prevent windblown debris from entering tank.	Will be completed as part of City's annual Reservoir Repair and Replacement program or Reservoirs 4 and 8 Seismic Rehabilitation project; refer to **Chapter 8**.

3.2 Water Quality

The quality of drinking water in the United States is regulated by the EPA. Under provisions of the Safe Drinking Water Act (SDWA) established in 1974, the EPA is allowed to delegate primary enforcement responsibility for water quality control to each state. In the State of Washington, DOH is the agency responsible for implementing and enforcing the drinking water regulations. For the State to maintain the authority to implement requirements under the SDWA, it must adopt drinking water regulations that are at least as stringent as federal regulations. In meeting these requirements, the State has published drinking water regulations that are contained in Chapter 246-290 of the WAC.

As a Group A system, the City is responsible for monitoring and complying with all applicable SDWA and WAC regulations pertaining to source water and distribution system water quality. The purpose of this section is to document the water system's water quality compared to the above drinking water standards, satisfying the requirements of WAC 246-290-100(4)(e)(ii).

The City also owns and operates the Braunwood satellite system located in southeast Auburn in the Braunwood development, also known as the Hidden Valley Acres development. This system is classified as a Group A - Community Water System by DOH. This system is not discussed further in this chapter since it is a small satellite system that is regularly monitored by the City as required and has not had water quality issues as documented in the City's annual water quality reports for the system.

This section includes the following:

- Water quality and treatment objectives
- Analysis of source water quality
- Analysis of distribution system water quality
- Recent regulatory changes

3.2.1 Water Quality Treatment and Objectives

The treatment objectives of the City are to treat source water to contaminant concentrations below the MCLs established by the EPA and WAC.

Historically, the City has relied on groundwater supplied from wells and springs, which have been determined to be not under the direct influence of surface waters (DOH 2004 for Coal Creek Springs). For these water sources, the City is required to meet the EPA's Groundwater Rule (GWR). The City treats water from all groundwater and spring sources, except for Well 5. The City's water treatment facilities provide chlorination and corrosion control. A summary of the required operator certifications for each type of facility is provided in **Table 3-11**.

Table 3-11 | Summary of Operator Certifications

Treatment Facility	Required Operator Certifications
Corrosion Control Treatment (CCT) Facilities	Water Distribution Manager 4 (WDM-4) and Water Treatment Plant Operator (WTPO)
Chlorination Facilities	WDM-4

The City began using surface water in 2012 through the B-St Wholesale Intertie with the City of Tacoma (Tacoma). This supply, referred to as the Regional Water Supply, originates from the Green River and the Howard Hansen Dam. Since the City receives treated water as a wholesale purchaser, it is not required to meet the Surface Water Treatment Rule. Tacoma maintains compliance with the Interim Enhanced Surface Water Rule, Long Term 1 and Long Term 2 Enhanced Surface Water Treatment Rules; and the Filter Backwash Recycling Rule. The City has not purchased water for consumption from Tacoma since 2016.

3.2.2 Analysis of Source Water Quality

3.2.2.1 Raw Water Quality

The City only samples post-treatment water except for Well 5, which does not currently have treatment or chlorination. Water quality data for Well 5 is provided in **Table 3-12**.

3.2.2.2 Finished Water Quality

Monitoring of inorganic chemical and physical parameters varies by source but is typically required once per 36-month compliance period, however, the City typically monitors these constituents every 12 months (annually) in July. Samples are collected from each source following treatment. A summary of the maximum detected concentrations for monitoring data from 2015 through 2022 is provided in **Table 3-12**. During this time, none of the MCLs published by the EPA were exceeded; all samples were below required limits.

Asbestos sampling is usually required once per 36-month compliance period. However, the City has a waiver that requires sampling once every nine years at three distribution system sample sites. No data was collected during the study period. The City is expected to sample again in 2028. Annual VOC sampling is required for Wells 2 and 6, which are both currently represented by the Fulmer Field CCT Facility. All active sources are disinfected with chlorine prior to entering the distribution system except for Well 5, which serves the Lakeland Service Area.

Monitoring data for 2015 through 2022 for inorganic constituents, physical parameters, SOCs, and VOCs were reviewed and is summarized in **Table 3-12**. All values are post-treatment, except for Well 5 since water from this source is not treated. Wells 3A, 3B, 5B, and 7 were not used during this period and were therefore not sampled.

Table 3-12 | EPA Primary Drinking Water Standards Results from 2015 through 2022

Constituent	MCL	Units	Maximum Detected Concentration From 2015 Through 2022[1] (mg/L)						
			Coal Creek Springs	West Hill Springs	Well 1	Well 4	Well 5	Well 5A	Fulmer Field CCT Facility[2]
EPA Primary Drinking Water Standards									
Arsenic	0.01	mg/L	0.001	0.001	0.001	0.001	0.001	0.002	0.002
Barium	2	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cadmium	0.005	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Chromium	0.1	mg/L	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Mercury	0.002	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Selenium	0.05	mg/L	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Beryllium	0.004	mg/L	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
Nickel[3]	-	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Antimony	0.006	mg/L	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Thallium	0.002	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Cyanide	0.2	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Fluoride	4.0	mg/L	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nitrite-N	1	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Nitrate-N	10	mg/L	1.7	3.6	2.4	1.4	1.9	0.4	1.7
Total Nitrate/Nitrite[4]	10	mg/L	1.7	3.6	2.4	1.4	1.9	0.5	1.7
EPA Secondary Drinking Water Standards[5]									
Iron	0.3	mg/L	0.1	0.1	0.1	0.62[6]	0.16	0.1	0.1
Manganese	0.05	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.032
Silver	0.1	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Chloride	250	mg/L	5	8	5	4	6	3	9
Sulfate	250	mg/L	9	15	12	12	11	6	14
Zinc	5	mg/L	0.2	0.2	0.2	0.2	0.2	0.2	0.2
State Regulated Characteristics									
Sodium	20	mg/L	6	8	7	7	10	6	12
Conductivity	700	µmhos/cm	150	254	184	152	275	133	224

Constituent	MCL	Units	Maximum Detected Concentration From 2015 Through 2022[1] (mg/L)						
			Coal Creek Springs	West Hill Springs	Well 1	Well 4	Well 5	Well 5A	Fulmer Field CCT Facility[2]
Turbidity	1	NTU	0.4	1.5	9.6	5.8	1.2	0.4	3.1
Color	15	Color Units	5	5	10	5	5	5	5
Total Dissolved Solids (TDS)[7]	600	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A
State Unregulated									
Lead[8]	0.015	mg/L	0.001	0.001	0.001	0.018	0.001	0.001	0.001
Copper	1.3	mg/L	0.02	0.3	0.02	0.2	0.02	0.02	0.02
Hardness[9]	-	mg/L	66	122	83	100	130	62	100

Notes:

1. Based on monitoring conducted between 2015 and 2022. Wells 3A, 3B, and 5B were not in use during this time period and no monitoring was conducted.
2. The Fulmer Field CCT Facility was monitored in 2015, 2018,2020, 2021, and 2022, it replaces monitoring of Wells 2, 6, and 7.
3. There is no state or federal MCL, but Washington state has a detection reporting limit of 0.005 mg/L.
4. EPA has set a treatment goal of Total Nitrate at 10 mg/L.
5. EPA does not enforce these "secondary maximum contaminant levels" (SMCLs). They are established as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor. These contaminants are not considered to present a risk to human health at the SMCL.
6. Iron levels in Well 4 exceeded the Secondary Drinking Water Standards in 2015 but have since all been below the MCL.
7. N/A - not applicable, no testing conducted; testing for total dissolved solids is only required if the specific conductivity is greater than 700 micomhos per centimeter (umhos/cm).
8. On November 30, 2023, the EPA announced the proposed Lead and Copper Rule Improvements, which would lower the Lead Action Level from 0.015 mg/L to 0.010 mg/L if finalized in October 2024.
9. No MCL, as hardness is not a regulated characteristic.

3.2.2.3 Water Quality and Treatment Technique Violations

There were no water quality treatment violations from 2015 through 2022.

3.2.3 Analysis of Distribution System Water Quality

3.2.3.1 Seasonal Water Quality Changes

Water quality within the distribution system is relatively consistent throughout the year. The Valley Service Area distribution water experiences low pH during the winter, however no changes are implemented to offset seasonal variations.

3.2.3.2 Distribution Water Quality Objectives

The City collects 100 samples at 70 dedicated sampling sites for total and fecal coliform monitoring. Sampling is conducted at one quarter of the routine sample locations each week during the first four weeks of a month. The City also monitors weekly for total and fecal coliform at Coal Creek Springs and West Hill Springs at their respective collector vaults, as well as after treatment, and at several additional sites to support operations on a weekly basis. The City uses two types of disinfectant for treatment, chlorine gas and liquid sodium hypochlorite, which both produce free chlorine residuals in the distribution system. Average chlorine residuals throughout the distribution system ranged from 0.57 to 0.71 mg/L from 2015 through 2022, as summarized in Table 3-13. Although the range of chlorine residual varies throughout the year, the range of chlorine residual is relatively consistent from year to year. Planned improvements to chlorination facilities at Well 1 and Well 4 are expected to help maintain a more consistent chlorine residual level within the water system.

Table 3-13 | Total Chlorine Residuals Results from 2015 through 2022

Year	Sample Results (mg/L)	
	Average	Range
2015	0.71	0.40 - 1.09
2016	0.64	0.37 – 0.89
2017	0.58	0.32 – 0.79
2018	0.57	0.30 – 0.78
2019	0.59	0.33 – 0.77
2020	0.57	0.33 – 0.80
2021	0.58	0.36 – 0.78
2022	0.59	0.40 – 0.77

The Stage 1 Disinfection By-Product Rule (DBPR) monitoring was superseded in 2012 with Stage 2 DBPR monitoring because the City's population exceeded 50,000 people. The City conducts monthly sampling within the distribution system to determine the concentration of fluoride. This sampling is in addition to the inorganic source monitoring required by DOH. The City does not add fluoride to their water. The City of Tacoma does fluoridate their water and is wholesale supplier to the City, but the City has not purchased water for consumption from Tacoma since 2016. Sampling is conducted for informational purposes only and to answer customer questions regarding natural fluoride in the City's water. Should the City purchase water from Tacoma, this information would also be used to monitor the blending of different water sources within the distribution system.

In the event the City purchases water from Tacoma via the Cascade Water Alliance, such as during a shortage or other such operational constraint, the City will monitor and report distribution system disinfection residuals daily. These samples will be taken at the same time and place as the City's routine coliform sampling.

The City conducted both Stage 1 and Stage 2 DBPR monitoring since the last water system plan (WSP). **Table 3-14** provides a summary of the sample results from 2015 through 2022. The City's Total Trihalomethanes (TTHMs) and Haloacetic Acid 5 (HAA5) monitoring has been conducted once per year during the month with the warmest water temperature (i.e., July or August). All samples were well below the concentrations that DOH uses to determine whether a water system qualifies for reduced monitoring (0.080 mg/L for TTHMs and 0.060 mg/L for HAA5).

Table 3-14 | Summary of Disinfection By-Product Rule Monitoring Results from 2015 through 2022

Year	TTHM Concentration (µg/L)[2]		HAA5 Concentration (µg/L)[2]	
	Range for LRAA[1]	Compliance	Range for LRAA[1]	Compliance
2015	2.6 – 19.0	< 80	Not Detected – 4.8	< 60
2016	2.2 – 23.1	< 80	Not Detected – 6.0	< 60
2017	1.7 – 15.0	< 80	1.1 – 6.9	< 60
2018	6.7 – 15.1	< 80	Not Detected – 6.9	< 60
2019	ND	< 80	0.2 – 0.3	< 60
2020	7.5 – 11.95	< 80	Not Detected – 3.66	< 60
2021	6.45 – 17.62	< 80	1.25 – 12.41	< 60
2022	9.03 – 10.41	< 80	Not Detected	< 60

Notes:
1. Local running annual average.

2. Microgram per liter (µg/L).

Corrosion control treatment (CCT) is required for the water produced at Coal Creek Springs, Well 1, Well 2, Well 6, and Well 7. Per the Lead and Copper Rule (LCR), the City is required to collect at least 30 water samples per 36-month compliance period in alignment with reduced lead and copper monitoring requirements of WAC 246-290. Sample results from 2015 through 2022 are presented in **Table 3-15**. Since the CCT facilities were constructed, the lead and copper levels have been well below the action level.

DOH granted the City a (b)(3) exemption on August 17, 2021. This exemption, under 40 CFR Part 141.81(b)(3), eliminates the requirement for the City to conduct optimal water quality parameter (OWQP) sampling throughout the distribution system. Instead, the City continues to focus on lead and copper sampling at designated monitoring sites to meet compliance requirements. A copy of the City's exemption letter from DOH is included as **Appendix F.**

Table 3-15 | Summary of Lead and Copper Sampling Results from 2015 through 2022

Constituent	Range of Results from 2015 through 2022
Copper Concentrations (mg/L)	
Copper Concentration Range	<0.02 – 0.3
Copper 90th Percentile	0.091
Lead Concentrations (mg/L)	
Lead Concentration Range	<0.001-0.018
Lead 90th Percentile	<0.001

3.2.3.3 Water Quality and Treatment Technique Violations

There were no water quality violations in the distribution system from 2015 through 2022.

3.2.4 Recent Regulatory Changes

The EPA established a health advisory for drinking water of 70 parts per trillion (ppt) for perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), two commonly found Perfluorinated compounds (PFAS). When both compounds are found in the water, the combined health advisory is also 70 ppt. The Washington State Board of Health (Board) adopted rule changes to chapter 246-290 WAC, Group A Public Water Supplies and WAC 246-390, Drinking Water Laboratory Certification and Data Reporting. The newly adopted rules became effective on January 1, 2022.

The rule establishes the administrative processes for setting drinking water quality standards as State Action Levels (SAL) and state MCLs. The rule establishes SALs for five PFAS contaminants: PFOA, PFOS, perfluorohexane sulfonic acid (PFHxS), perfluorononanoic acid (PFNA), and perfluorobutane sulfonic acid (PFBS). The rule requires Group A community and non-transient noncommunity public water systems to test for PFAS. For those Group A water systems that have detections of PFAS, but do not exceed the SAL, the rule requires additional ongoing monitoring, with the frequency of monitoring based upon the detected level in comparison to the SAL. It also establishes reporting, recordkeeping, and consumer confidence report requirements. For those Group A water systems that exceed the SAL, the rule requires follow-up actions such as monitoring, public notification, additional recordkeeping, and reporting requirements. SALs for regulated PFAS compounds are shown in **Table 3-16** with results from the City's latest samples. Most results indicated that the PFAS compounds were not detected (ND), being they were below detectable limits. PFBS was detected at Well 1, Coal Creek Springs, and West Hill Springs, however the levels are far

below regulated levels. In more recent results received in May 2024, all samples were below detection limits for all facilities and the City was approved for a 3-year testing schedule.

Furthermore, in April 2024, the EPA announced the first National Primary Drinking Water Regulation for six PFAS. This established individual MCLs for PFOA, PFOS, PFHxS, PFNA, and Hexafluoropropylene oxide dimer acid (HFPO-DA) and a Hazard Index MCL for PFAS mixtures containing at least two or more of PFHxS, PFNA, HFPO-DA, and PFBS. The EPA also finalized MCLGs for these PFAs, which can be seen alongside the MCLs in Table 3-16. The regulation requires that public water systems must monitor for these PFAS and must complete initial monitoring by 2027, followed by ongoing compliance monitoring. Water systems must provide the public with information on the PFAS levels in the drinking water beginning 2027. Public water systems must implement solutions by 2029 to reduce PFAS if monitoring shows that drinking water levels exceed the MCLs.

Table 3-16 | PFAS State Action Levels and Monitoring Data

PFAS Compound	SAL (ng/L)	MCL (ng/L)	MCLG (ng/L)	Maximum Detected Concentration (ng/L)[1]									
				Well 1	Fulmer Field CCT Facility	Well 3A	Well 3B	Well 4	Well 5	Well 5A	Well 5B	Coal Creek Springs	West Hill Springs
PFOA	10	4.0	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFOS	15	4.0	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxS	65	10	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFNA	9	10	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFBS	345	-	-	2.8	ND	ND	ND	ND	ND	ND	ND	3.1	3.0
HFPO-DA	-	10	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS	-	1[3]	1[3]	0	0	0	0	0	0	0	0	0	0

Notes:
1. Nanograms per liter (ng/L).
2. Not detected (ND).
3. Hazard Index – unitless.

3.3 Design Standards

The City's most recent Engineering Design Standards are available on the City's website and are provided as **Appendix P**. **Table 3-17** highlights keys standards that are used to evaluate the capacity of the City's water system, summarizing both DOH criteria and City criteria. The City's water quality design standards follow the design standards set forth by the EPA and DOH, as discussed in **Section 3.2**.

Table 3-17 | System Capacity Analysis Criteria

Evaluation Type		Evaluation Criteria	Agency's Standard
Water Reliability Recommendations	Multiple Source	2 or more supply sources are available	DOH
	Backup Power	Source of supply pump stations have power connections to two independent primary public power sources, have in-place auxiliary power available, and/or maintain adequate gravity standby storage	DOH
	Surface Water Reliability	Firm watershed yield for surface water provides 98% reliability to meet normal, anticipated system demands.	DOH
	Groundwater Reliability	Factor of safety is applied to well pumping test safe yield determination.	DOH
Water Source	Source Capacity	MDD while replenishing Fire Suppression Storage (FSS) within 72-hrs (24-hr source pumping may be assumed).	DOH
		ADD with largest source out of service.	DOH
		MDD in a pumping period of 20 hours or less of pumping.	DOH
		MDD with the largest active water source out of service.	City
Pump Stations	Capacity - Open System (sufficient storage in zone)	ADD with largest pump out of service.	DOH
		MDD with all pumps in service.	
		MDD with largest pump out of service.	City
		Fire Flow is met from storage reservoir.	
	Capacity - Closed System (no/insufficient storage in zone)	PHD with largest pump out of service.	DOH
		MDD + Fire Flow at a pressure of at least 20 psi at all points throughout the distribution system.	
		PHD + Fire Flow with largest pump out of service.	City
		Standby power with capacity to run with any single pump out of service.	

	Evaluation Type	Evaluation Criteria	Agency's Standard
Storage Facilities	Total Storage Capacity	Sum of operational, equalization, standby, fire suppression, and dead storage.	DOH
	Operating Storage (OS)	The volume of water before sources turn on.	DOH
		(pump off elev. – pump on elev.) x gal/ft	
	Equalizing Storage (ES)	(PHD – maximum supply capacity) x 150 min	DOH
		Min. pressure of 30 psi.	
		Must be provided when source pumping capacity cannot meet the peak hourly demand.	
	Standby Storage (SB)	Min. standby storage of 200 gallons per ERU.	DOH
		Min. pressure of 20 psi.	
		Standby storage volume equal to one day of MDD for the pressure zone(s) served.	
	Fire Suppression Storage (FSS)	(required fire flow rate) x (duration in minutes)	DOH
		Min. pressure of 20 psi.	
		Nested storage (same storage for Standby and Fire Suppression Storge) requires written consent of fire protection authority.	
	Dead Storage (DS)	Volume that cannot provide minimum design pressure (20 psi) to all customers.	DOH
		Volume below the outlet pipe and cannot be used because of hydraulic limitations.	City
Distribution System	Minimum Pressures	PHD at no less than 30 psi.	DOH
		MDD + Fire Flow at no less than 20 psi.	
	Maximum Pressures	Add individual PRVs for ADD pressures more than 80 psi.	DOH
		Max. target pressure of 80 psi in water distribution system.	City
	Maximum Velocity	No more than 8 feet per second (fps) under PHD conditions.	DOH
		No more than 8 fps in distribution mains and 5 fps in transmission mains under PHD conditions. No more than 18 fps under MDD+FF conditions.	City
	Minimum Pipe Size	6-inch diameter in residential areas and 8-inch diameter in commercial areas, unless a hydraulic analysis justifies another size.	DOH
		Single-Family Residential minimum 8-inch diameter and Industrial/Commercial/Multi-Family minimum 12-inch diameter.	City
	Telemetry	Each parcel receiving water service shall have its own meter	City
		Meters shall be located as close to the water main from which the service is taken as possible, distance not to exceed 50 feet.	
		Meters shall be placed in landscape strips, behind the sidewalk, or at the right-of-way limits in that order of availability.	
		Meters in landscaped or unimproved areas shall be set 2 inches above the finished grade.	
	Maximum Valve Spacing	Maximum 400-foot spacing and at the intersection of lateral lines in all zones.	City
	Hydrant Spacing	Single-Family Residential maximum 600-foot spacing.	City
		Industrial/Commercial/Multi-Family maximum 300-foot spacing.	
Fire Flow & Duration	Residential	Minimum 1,500 gpm at 2 hours.	City
	Multi-Family Residential	Minimum 2,500 gpm at 3 hours.	
	Commercial		
	Industrial		

3.4 Capacity Analysis

This section provides an analysis of legal and physical capacity of the water system based on the system's available water rights, sources, treatment, storage, and distribution components.

3.4.1 Water Rights

A summary of the City's current water rights is presented in **Table 3-18**. The maximum instantaneous allowable flow for each source (Qi) is in units of gpm. The total annual withdrawal for each source (Qa) is in units of acre-feet per year. The City does not have any interruptible water rights.

Table 3-18 | Summary of Existing Water Rights

Water Right	Primary Qi (gpm)	Primary Qa (acre-feet/year)
Coal Creek Springs	6,732	9,410
Well 1, 6, & 7	2,200	1,120
Well 2, 6, & 7	2,400	1,360
Well 3A & 3B, 6, & 7	2,800	3,600
Well 4, 6, and 7	2,800	3,600
Wells 5, 5A, 5B, &5C	1,000	720
Well 5A	167	0
Algona Well	500	175
Braunwood Well[1]	20	6.5
West Hill Springs[2]	625	1,010
TOTAL	**19,244**	**21,002**

Notes:

1. Water from the Braunwood well is administered through water right certificate G1-25173C, originally issued for a small domestic water system to serve up to 13 connections. Braunwood is a standalone non-municipal satellite water system that currently serves 12 connections.
2. Water from West Hill Springs operates through water right claim S1-049354CL. A claim is an assertion that a water right was created pre-code (1917 for surface water and 1945 for groundwater).

In addition to the water rights presented above, the City also has a wholesale agreement with the City of Tacoma and can purchase water through two interties as discussed in **Chapter 1, Section 1.6.1**. These two interties are also considered to be supply facilities. The City also has several emergency interties with adjacent purveyors.

3.4.1.1 Analysis Criteria

Supply facilities must be reliable and provide sufficient water at pressures that meet the requirements of WAC 246-290-230. The capacity of supply facilities in a pressure zone with adequate storage must be sufficient to provide water at a rate that is equal to or greater than the MDD of the zone being served. This approach assumes that demands greater than the MDD will be supplied using equalizing storage.

According to Section 3.10.5 and Section 5.4 of the 2020 DOH Water System Design Manual, water system sources must be capable of supplying MDD and replenishing depleted within 72-hours (assuming continuous pumping), provide MDD in a pumping period of 20 hours or less, and provide ADD with the largest source out of order. The City's standards have a more stringent requirement to provide MDD with the largest active source out of service.

3.4.1.2 Analysis Results

The City's water supply (production) capacity compared with demand projections and DOH and City criteria are summarized in **Table 3-19**. It is worth noting that the water supply (production) capacity is not synonymous with the supply water rights. The MDD and ADD values are based on the demand projections included in **Chapter 2** and include wholesale supply projections for the City of Algona. Demand allocation for the Muckleshoot Indian Tribe (MIT) Fish Hatchery and LMWD are not included. LMWD is not included since they do not rely on the City as their main source of water and have an interruptible wholesale agreement. Demand from the MIT Fish Hatchery is also not included since it is unknown when this facility will be constructed, however the analysis presented in **Table 3-19** shows that the City has sufficient surplus supply to support this demand when it comes to fruition. The FSS flow rate is calculated as the sum of the FSS for each service area presented in **Section 3.4.2.3.2**, which totals 797 gpm, divided over a 72-hour period.

The results presented in **Table 3-19** demonstrate that the City has the supply facilities necessary to meet demand projections under current and future projections for all required criteria.

Table 3-19 | Supply Analysis with Largest Source Out of Service

Description	2024 Scenario	2034 Scenario	2044 Scenario
Required Supply (gpm)			
FSS Replenished in 72-hours	797	797	797
Maximum Day Demand[1], gpm	8,657	9,751	11,068
Average Day Demand[1], gpm	4,899	5,518	6,263
Available Supply (gpm)			
Largest Source (Q_L) – Tacoma Interties	3,555	3,555	3,555
Largest Active Source – Coal Creek Springs[2]	3,500	3,500	3,500
Total Sources (Q_t)[3,4]	15,610	15,610	15,610
DOH Criteria: MDD while replenishing FSS within 72-hrs (24-hr source pumping may be assumed)			
Surplus / (Deficit) of Supply, gpm	6,156	5,062	3,746
DOH Criteria: ADD with largest source out of service			
Surplus / (Deficit) of Supply, gpm	7,156	6,537	5,792
DOH Criteria: MDD in a pumping period of 20 hours or less of pumping			
Surplus / (Deficit) of Supply, gpm	4,352	3,257	1,941
City Criteria: MDD with largest active water supply source out of service			
Surplus / (Deficit) of Supply, gpm[2]	3,453	2,359	1,042

Notes:

1. Current analysis does NOT include a separate allocation for wholesale customers who have not purchased water from the City since 2019 or earlier (i.e., MIT or LMWD).
2. The City's largest active source is Coal Creek Springs since the City has not purchased water from Tacoma since 2016.
3. Total sources are: Well 1, 2, 4, 5, 5a, and 6 (7,955 gpm), Coal Creek Springs (3,500 gpm), West Hill Springs (600 gpm), and two Tacoma Interties (3,555 gpm).
4. Supplies do NOT include emergency interties with CWD (1,736gpm) or LMWD (1,736 gpm).

The City's Water Rights Self-Assessment Form is provided in **Appendix I** and was used to assess the City's water rights water rights and includes supply that is available to the City through firm wholesale interties with Tacoma. The form includes a comparison of the available water rights to the existing, 10-year and 20-year demand projections for the "High Demand Scenario" presented in **Chapter 2**. The calculations presented in the Water Rights Self-Assessment Form conclude that the City's existing water rights are anticipated to be adequate to meet the current, 10-year, and 20-year demand projections.

The City does not have all the infrastructure required to withdraw from all water rights (i.e., Wells 3A, 3B, 5B, and 7 are not currently operational). Additionally, some sources have underlying aquifer or infrastructure restrictions that limit the capacity of the source (i.e., Well 2, Well 6, and Coal Creek Springs). Several facility improvement projects are necessary for the City to maximize water production capacity to meet future demands, and planned supply related capital projects to meet this need are discussed further in Chapter 8.

3.4.2 Physical Capacity Analysis

This section includes an analysis of the physical capacity of the City's distribution system. The specific components analyzed include:

- Pump Station Capacity Analysis
  - Open Pressure Zones: Zones with storage reservoirs
  - Closed Pressure Zones: Zones without storage
- Storage Capacity Analysis
- Hydraulic Analysis of the Distribution System
- System Analysis based on ERUs

To complete the physical capacity analysis, the projected demands calculated in Chapter 2 were utilized for the 2024 scenario (existing conditions), 2034 scenario (10-year projections) and 2044 scenario (20-year projections). When evaluating facilities under fire flow conditions, the largest fire flow demand was utilized in each Service Area. The fire flow required for single family residential customers is 1,500 gpm for two hours and all other customer types have a requirement of 2,500 gpm for two hours. There are select buildings throughout the system that require fire flow capacity in the water system that exceeds 2,500 gpm for two hours as determined by the Fire Marshal; these individual locations and their fire flow requirements are summarized in Table 3-20.

Table 3-20 | Buildings in Auburn with High Fire Flow Requirements

ID #	Location Description	Address	Service Area	Flow Required (gpm)
1	RPS Distribution Center	3702 C St. NE	Valley	4,000
2	Emerald Downs	2300 Emerald Downs Drive	Valley	3,000
3	Panattoni Warehouse	816 44th ST NW	Valley	4,000
4	Span Alaska Transportation Inc.	3815 W Valley Highway N	Valley	3,125
5	AMB Valley Distribution Center	2202 Perimeter Road SW	Valley	4,000
6	Grace Community Church	1106 12th Street SE	Valley	3,750
7	Riverside High School	501 Oravetz Road SE	Valley	3,000
8	Wesley Homes Senior Housing	10805 SE 320th Street	Lea Hill	4,000
9	Auburn Elementary School at Lakeland	1020 Evergreen Way SE	Lakeland	3,125
10	Academy Campus	5000 Auburn Way South	Academy	4,000
11	MIT Casino Expansion	2402 Auburn Way South	Academy	2,625

3.4.2.1 Pump Station Analysis: Open Pressure Zones

This section evaluates the pumping capacity of the water system on a zone-by-zone basis with consideration for pump stations between zones and supply wells pumping directly into the pressure zones

that contain a storage reservoir. All reduced pressure zones are included in the open zone analysis, as they are ultimately fed by gravity from a reservoir. Pressure zones that do not include a storage facility are analyzed as a closed zone.

3.4.2.1.1 Valley Service Area

The Valley Service Area is the largest service area in the water system and consists of two pressure zones: Valley 288 and Valley 242. The Valley 288 pressure zone is a transmission zone that does not directly serve any customers. Valley 242 is the largest pressure zone in the RWSA and is draws supply from the following facilities:

- Wells 2 and 6 via the Fulmer Field CCT Facility
- Coal Creek Springs and Well 1 via the Howard Road CCT Facility with transmission through Valley 288
- Well 4 with transmission through Valley 288
- West Hill Springs

Table 3-21 provides an overview of the total pump station capacity into the Valley Service Area compared with demand projections and DOH and City criteria. The results presented in Table 3-21 demonstrate that the City has adequate pumping capacity within the open pressure zones of the Valley Service Area to meet current and future demand projections for all required criteria.

Table 3-21 | Pumps Station Capacity for Valley Service Area Open Pressure Zones

Description	Valley 2024 Scenario	Valley 2034 Scenario	Valley 2044 Scenario
Required Capacity (gpm)			
FSS Replenished in 72-hours	222	222	222
Maximum Day Demand, gpm	6,266	7,161	8,252
Average Day Demand, gpm	3,546	4,052	4,670
Available Capacity (gpm)			
Largest Pump (Q_L), gpm	2,800	2,800	2,800
Total Pumping Capacity (Q_t), gpm	19,400	19,400	19,400
DOH Criteria: Reliable Capacity (ADD + largest pump out of service)			
Surplus / (Deficit), gpm	15,854	15,348	14,730
DOH Criteria: Total Capacity (MDD + replenish FSS in 72-hours)			
Surplus / (Deficit), gpm	13,134	12,239	11,148
City Criteria: MDD + largest pump out of service			
Surplus / (Deficit), gpm	10,334	9,439	8,348

3.4.2.1.2 Lea Hill Service Area

Water supply for the Lea Hill Service Area is provided by the Lea Hill Pump Station and the Green River Pump Station. In 2014, the City added wholesale water supply from Tacoma through the 132nd Ave SW intertie, however the City has not purchased water for consumption from Tacoma since 2016. The intertie and pump stations feed the Lea Hill 563 pressure zone, which includes Reservoirs 4A and 4B. Therefore,

the Lea Hill and Green River Pump Stations were evaluated based on the open zone criteria. **Table 3-22** provides a summary of the pump station capacity into the Lea Hill Service Area compared with demand projections and DOH and City criteria. The results presented in **Table 3-22** demonstrate that the City has adequate pumping capacity within the open pressure zones of the Lea Hill Service Area to meet current and future demand projections for all required criteria.

Table 3-22 | Pump Station Capacity for Lea Hill Service Area Open Pressure Zones

Description	Lea Hill 2024 Scenario	Lea Hill 2034 Scenario	Lea Hill 2044 Scenario
Required Capacity (gpm)			
FSS Replenished in 72-hours	222	222	222
Maximum Day Demand, gpm	1,231	1,281	1,333
Average Day Demand, gpm	696	725	755
Available Capacity (gpm)			
Largest Pump (Q_L), gpm	1,166	1,166	1,166
Total Pumping Capacity (Q_t), gpm	6,664[1]	6,664[1]	6,664[1]
DOH Criteria: Reliable Capacity (ADD + largest pump out of service)			
Surplus / (Deficit), gpm	5,968	5,939	5,909
DOH Criteria: Total Capacity (MDD + replenish FSS in 72-hours)			
Surplus / (Deficit), gpm	5,433	5,383	5,331
City Criteria: MDD + largest pump out of service			
Surplus / (Deficit), gpm	4,267	4,217	4,165

Note:

1. The Green River Pump Station has a firm capacity of 3,498 gpm (largest pump out of service) and the Lea Hill Pump Station has a firm capacity of 1,200 gpm (largest pump out of service). The largest pump at Green River and Lea Hill PS have 1,166 gpm and 800 gpm capacity, respectively. Therefore, the firm and total pumping capacity of both pump stations is 4,698 gpm (two pumps out of service) and 6,664 gpm (all pumps in service), respectively.

3.4.2.1.3 Lakeland Service Area

The Lakeland Service Area is supplied from the Upland Well Field (Wells 5 and 5A) and by sources in the Valley Service Area using the Terrace View BPS. The Terrace View BPS supplies the Lakeland 630 pressure zone from the Valley Service Area, which is then distributed through the Service Area. Since the Lakeland 630 pressure zone contains two reservoirs (Reservoirs 5 and 6), the Terrace View BPS was evaluated based on the open zone criteria. **Table 3-23** provides a summary of the pump station capacity into the Lakeland Service Area compared with demand projections and DOH and City criteria. The results presented in **Table 3-23** demonstrate that the City has adequate pumping capacity within the open pressure zones of the Lakeland Service Area to meet current and future demand projections for all required criteria.

Table 3-23 | Pump Station Capacity for Lakeland Service Area Open Pressure Zones

Description	Lakeland 2024 Scenario	Lakeland 2034 Scenario	Lakeland 2044 Scenario
Required Capacity (gpm)			
FSS Replenished in 72-hours	130	130	130
Maximum Day Demand, gpm	629	719	823
Average Day Demand, gpm	356	407	466
Available Capacity (gpm)			

Description	Lakeland 2024 Scenario	Lakeland 2034 Scenario	Lakeland 2044 Scenario
Largest Pump (Q_L), gpm	500	500	500
Total Pumping Capacity (Q_t), gpm	1,500	1,500	1,500
DOH Criteria: Reliable Capacity (ADD + largest pump out of service)			
Surplus / (Deficit), gpm	1,144	1,093	1,034
DOH Criteria: Total Capacity (MDD + replenish FSS in 72-hours)			
Surplus / (Deficit), gpm	871	781	677
City Criteria: MDD + largest pump out of service			
Surplus / (Deficit), gpm	371	281	177

3.4.2.1.4 Academy Service Area

The Academy Service Area is supplied from the Valley Service Area using Academy Pump Station 3. The pump station operates based on levels in Reservoirs 8A and 8B located in the Academy 531 pressure zone. **Table 3-24** provides a summary of the pump station capacity into the Academy Service Area compared with demand projections and DOH and City criteria. The results presented in **Table 3-24** demonstrate that the City has adequate pumping capacity within the open pressure zones of the Academy Service Area to meet current and future demand projections for all required criteria.

Table 3-24 | Pump Station Capacity for Academy Service Area Open Pressure Zones

Description	Academy 2024 Scenario	Academy 2034 Scenario	Academy 2044 Scenario
Required Capacity (gpm)			
FSS Replenished in 72-hours	222	222	222
Maximum Day Demand, gpm	531	591	658
Average Day Demand, gpm	300	334	373
Available Capacity (gpm)			
Largest Pump (Q_L), gpm	700	700	700
Total Pumping Capacity (Q_t), gpm	2,800	2,800	2,800
DOH Criteria: Reliable Capacity (ADD + largest pump out of service)			
Surplus / (Deficit), gpm	2,500	2,466	2,427
DOH Criteria: Total Capacity (MDD + replenish FSS in 72-hours)			
Surplus / (Deficit), gpm	2,269	2,209	2,142
City Criteria: MDD + largest pump out of service			
Surplus / (Deficit), gpm	1,569	1,509	1,442

3.4.2.2 Booster Pump Station Analysis: Closed Pressure Zones

The City operates a closed zone in each of its Service Areas. Closed zones do not have a storage reservoir directly serving the zone and are required to supply the peak hour demand (PHD) and fire flow via a BPS. The BPS serving each closed pressure zone was evaluated using the closed zone criteria as defined by DOH.

3.4.2.2.1 Lakeland Hills BPS

The Lakeland Service Area has two closed pressure zones served by the Lakeland Hills BPS: Lakeland 697 and Lakeland 670. **Table 3-25** provides a summary of the BPS capacity into the Lakeland closed pressure

zones compared with demand projections and DOH and City criteria. The results presented in **Table 3-25** demonstrate that the City has adequate pumping capacity within the closed pressure zones of the Lakeland Service Area to meet current and future demand projections for all required criteria.

Table 3-25 | BPS Capacity for Lakeland Service Area Closed Pressure Zones

Description	Lakeland 670 & 697 2024 Scenario	Lakeland 670 & 697 2034 Scenario	Lakeland 670 & 697 2044 Scenario
Required Capacity (gpm)			
Fire Flow Required, gpm	3,125	3,125	3,125
Maximum Day Demand, gpm	231	261	296
Peak Hour Demand, gpm	372	419	476
Available Capacity (gpm)			
Largest Pump (Q_L), gpm	3,125	3,125	3,125
Total Pumping Capacity (Q_t), gpm	7,330	7,330	7,330
DOH Criteria: Firm Capacity (no storage; PHD + largest pump out of service)			
Surplus / (Deficit), gpm	3,833	3,786	3,729
DOH Criteria: Reliable Capacity (no storage; MDD + FSS + largest pump out of service)			
Surplus / (Deficit), gpm	3,974	3,944	3,909
City Criteria: PHD+ FSS + largest pump out of service			
Surplus / (Deficit), gpm	708	661	604

3.4.2.2.2 Academy East BPS

The Academy Service Area has one closed zone served by the Academy East BPS: Academy 585. **Table 3-26** provides a summary of the BPS capacity into the Academy closed pressure zone compared with demand projections and DOH and City criteria. The results presented in **Table 3-26** demonstrate that the City has adequate pumping capacity within the closed pressure zones of the Academy Service Area to meet current and future demand projections for all required criteria.

Table 3-26 | BPS Capacity for Academy Service Area Closed Pressure Zone

Description	Academy 585 2024 Scenario	2 Academy 585 2034 Scenario	Academy 585 2044 Scenario
Required Capacity (gpm)			
Fire Flow Required, gpm	2,500	2,500	2,500
Maximum Day Demand, gpm	87	98	111
Peak Hour Demand, gpm	140	158	179
Available Capacity (gpm)			
Largest Pump (Q_L), gpm	1,250	1,250	1,250
Total Pumping Capacity (Q_t), gpm	4,290	4,290	4,290
DOH Criteria: Firm Capacity (no storage; PHD + largest pump out of service)			
Surplus / (Deficit) of Supply, gpm	2,900	2,882	2,861
DOH Criteria: Reliable Capacity (no storage; MDD + FSS + largest pump out of service)			
Surplus / (Deficit), gpm	1,703	1,692	1,679
City Criteria: PHD+ FSS + largest pump out of service			

Surplus / (Deficit), gpm	400	382	361

3.4.2.2.3 Lea Hill BPS

The Lea Hill Service Area has one closed zone served by the Lea Hill BPS: Lea Hill 648. **Table 3-27** provides a summary of the BPS capacity into the Lea Hill closed pressure zone compared with demand projections and DOH and City criteria. The results presented in **Table 3-27** indicate that the Lea Hill BPS is currently deficient and cannot meet the required criteria for existing or future demands.

Table 3-27 | BPS Capacity for Lea Hill Service Area Closed Pressure Zone

Description	Lea Hill 648 2024 Scenario	Lea Hill 648 2034 Scenario	Lea Hill 648 2044 Scenario
Required Capacity (gpm)			
Fire Flow Required, gpm	2,500	2,500	2,500
Maximum Day Demand, gpm	110	124	141
Peak Hour Demand, gpm	178	200	227
Available Capacity (gpm)			
Largest Pump (Q_L), gpm	1,500	1,500	1,500
Total Pumping Capacity (Q_t), gpm	1,800	1,800	1,800
DOH Criteria: Firm Capacity (no storage; PHD + largest pump out of service)			
Surplus / (Deficit), gpm	122	100	73
DOH Criteria: Reliable Capacity (no storage; MDD + FSS + largest pump out of service)			
Surplus / (Deficit), gpm	(810)	(824)	(841)
City Criteria: PHD+ FSS + largest pump out of service			
Surplus / (Deficit), gpm	(2,378)	(2,400)	(2,427)

The Intertie Pump Station shares a building with the Lea Hill BPS and contains pumps which were originally purposed to serve the intertie for wholesale supply to CWD and LMWD. Since CWD and LMWD no longer rely on the City as their primary water source, the City plans to complete facility modifications so the pumps at the Intertie Pump Station can serve the Lea Hill 648 pressure zone. This project is discussed further in **Chapter 8** and will resolve the deficiencies identified in **Table 3-27**.

3.4.2.2.4 Game Farm Park Pump Station

The Valley Service Area has one closed zone served by the Game Farm Park Pump Station: Game Farm Park (no assigned pressure zone name). **Table 3-28** provides a summary of the BPS capacity into the Valley closed pressure zone compared with demand projections and DOH and City criteria. The results presented in **Table 3-28** indicate that the Game Farm Park Pump Station is currently deficient and cannot meet the required criteria for existing or future demands.

The Game Farm Park Pump Station provides service to a park restroom facility, two fire hydrants, and individual RV campsites. As this is a small BPS with the single purpose of providing service to a recreational area, and there are no residential or commercial property connections supplied by this facility, no actions are planned to resolve this deficiency. The DOH and City criteria are geared towards providing reliable service for residents and businesses and are not applicable for this minor facility. The City has reviewed this condition with the Fire Marshal, and no exceptions were taken. As further development progresses in and around the Game Farm Park Pump Station, modifications will be considered to address the deficiency.

Table 3-28 | BPS Capacity for Game Farm Park Closed Pressure Zone

Description	2024 Game Farm	2034 Game Farm	2044 Game Farm
Required Capacity (gpm)			
Fire Flow Required, gpm	1,500	1,500	1,500
Maximum Day Demand, gpm	0.4	0.4	0.4
Peak Hour Demand, gpm	0.6	0.6	0.7
Available Capacity (gpm)			
Largest Pump (Q_L), gpm	1,000	1,000	1,000
Total Pumping Capacity (Q_t), gpm	1,050	1,050	1,050
DOH Criteria: Firm Capacity (no storage; PHD + largest pump out of service)			
Surplus / (Deficit), gpm	49	49	49
DOH Criteria: Reliable Capacity (no storage; MDD + FSS + largest pump out of service)			
Surplus / (Deficit), gpm	(450)	(450)	(451)
City Criteria: PHD+ FSS + largest pump out of service			
Surplus / (Deficit), gpm	(1,451)	(1,451)	(1,451)

3.4.2.3 Storage Analysis

This section evaluates the City's existing water storage facilities to determine if there is sufficient capacity to meet existing and future storage requirements of the system.

3.4.2.3.1 Components of Storage

The City currently maintains a total of 15.7 MG of water storage in eight reservoirs located throughout the service area. Each Service Area has two reservoirs, providing redundancy for cleaning and maintenance. Historically, the City has evaluated each Service Area independently. However, new sources, pump stations, and PRV facilities now allow for reliable and redundant operation of the system as an interconnected whole, rather than as separate Service Areas. The storage analysis reflects the new operational ability by allowing sharing of emergency storage between the Service Areas. The existing infrastructure and customer expectations still require that other storage components, such as FSS, be stored in individual Service Areas.

Water storage requirements are typically defined by the following components: operational storage, equalizing storage, standby storage, fire suppression storage, and dead storage. A description of each storage component and the criteria used to evaluate the capacity of the City's reservoirs is as follows:

- Operational Storage: Operational storage is used to supply the water system under normal demand conditions and provides pump protection to avoid frequent starting and stopping of pumps for pump stations that are used to fill reservoirs. The operational storage is calculated per the DOH Design Manual as the pump supply firm capacity (in gpm) times 2.5-minutes.

- Equalizing Storage: When the source pumping capacity cannot meet the periodic daily (or longer) peak demands placed on the water system, equalizing storage must be provided as a part of the total storage for the system and must be available at 30 psi to all service connections. The criteria for determining the equalizing storage requirements for the City's system is based on the equalizing calculation in the DOH Design Manual (refer to equation 7-1).

- Standby Storage: Standby storage is the portion of the reservoir used to supply the water system when supply facilities are out of service. DOH allows water systems with multiple sources to require that standby volume be supplied with the largest supply source out of service but recommends a

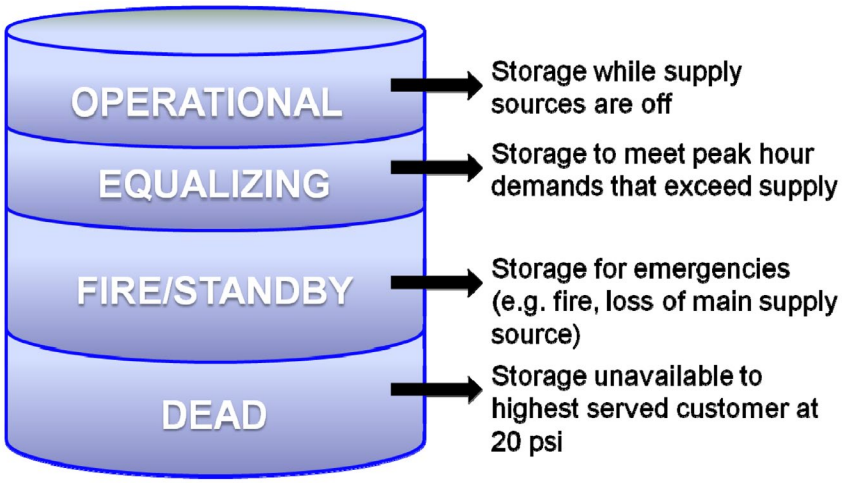
minimum standby storage of 200 gallons per ERU in the system. The City calculates standby storage as the maximum volume required to supply all ERUs at least 240 gallons (based on the DOH minimum times a 20 percent factor of safety).

- Fire Suppression Storage (FSS): FSS is the portion of the reservoir with sufficient volume to supply water to the system at the maximum rate and duration required to extinguish a fire at the building with the highest fire flow requirement. The required volume of the FSS is the product of the fire flow rate and duration of the system's maximum fire flow requirement.

- Dead Storage: Dead storage is the bottom portion of the reservoir that cannot be used because water is stored at an elevation that is too low to provide sufficient system pressure (below 20 psi at the highest elevation served by the reservoir). This unusable storage occupies the lower portion of many ground-level standpipe-type reservoirs. When the highest service elevation is not the limiting factor, the City defines dead storage as being 1-foot above the reservoir inlet elevation for operational reasons.

The City's reservoir storage requirements depend on the water system's configuration, seasonal and daily variation in water-use patterns, and the reliability of various water system components. This section describes the five components of storage, summarizes the existing system's capacity to meet the storage needs of each Service Area, and makes recommendations to address identified storage deficits.

Figure 3-7 | Illustration of Reservoir Storage Components



3.4.2.3.2 Storage Analysis Results

The storage available in the four Service Areas was evaluated to confirm each is provided with the required usable Operational, Equalizing, Fire Suppression, and Emergency Storage volumes. Reflecting the interconnectedness of the system, excess storage in higher Service Areas (i.e., Lea Hill, Lakeland and Academy) can be used in the Valley Service Area and vice versa through use of the system pump stations. The storage analysis compares the required storage, based on the criteria in Table 3-17, and the available storage. The FSS for each region was calculated using 4,000 gpm for four hours except for Lakeland, which used 3,125 gpm for three hours based on buildings with the highest fire flow requirement in each Service Area (see Table 3-20).

Table 3-29 summarizes the existing 2024 storage analysis and results. The results indicate a deficit in the Lea Hill Service Area, however, this deficit is offset by surplus storage available in other Service Areas.

Table 3-29 | System-Wide Storage Analysis for the 2024 Scenario

Description	RWSA 2024	Academy 2024	Lakeland 2024	Lea Hill 2024	Valley 2024
Usable Storage (MG)					
Maximum Storage Capacity	15.86	2.72	2.06	2.48	8.60
Algona Reserve Storage Capacity[1]	0.28	--	0.28	--	--
Dead Storage	1.50	0.06	0.44	0.36	0.64
Total Usable Storage	14.08	2.66	1.34	2.12	7.96
Required Storage (MG)					
Operational Storage	0.05	0.01	0.00	0.01	0.03
Equalizing Storage	0.00	0.00	0.00	0.00	0.00
Standby Storage (Emergency)	9.30	0.57	0.68	1.32	6.73
FSS (Emergency)	3.44	0.96	0.56	0.96	0.96
Total Required Storage	12.79	1.54	1.24	2.29	7.72
Surplus/ (Deficit) Storage	**1.29**	**1.12**	**0.10**	**(0.17)**	**0.24**

Note:

1. The water supply interlocal agreement (IA3) between the City of Algona and the City of Auburn was updated in 2016. Through this updated agreement, Algona elected to financially participate in Lakeland Reservoir 6 to obtain a total share of 280,000-gallons of storage capacity. The agreement stipulates that if the City experiences any failure or decreased capacity, the supply of water to Algona may be decreased by the same percentage that is experienced by the City.

Table 3-30 summarizes the 2034 storage analysis and results (10-year projections). The results indicate a deficit in the Lea Hill, Lakeland, and Valley Service Areas, however, this deficit is offset by surplus storage available in other Service Areas. Additionally, the deficit in the Lakeland Service Area may not be realized based on the City's terms and conditions of the IA3 agreement with Algona.

Table 3-30 | System-Wide Storage Analysis for the 2034 Scenario

Description	RWSA 2034	Academy 2034	Lakeland 2034	Lea Hill 2034	Valley 2034
Usable Storage (MG)					
Maximum Storage Capacity	15.86	2.72	2.06	2.48	8.60
Algona Reserve Storage Capacity[1]	0.28	--	0.28	--	--
Dead Storage	1.50	0.06	0.44	0.36	0.64
Total Usable Storage	14.08	2.66	1.34	2.12	7.96
Required Storage (MG)					
Operational Storage	0.05	0.01	0.00	0.01	0.03
Equalizing Storage	0.02	0.00	0.02	0.00	0.00
Standby Storage (Emergency)	10.47	0.63	0.77	1.38	7.69
FSS (Emergency)	3.44	0.96	0.56	0.96	0.96
Total Required Storage	13.98	1.60	1.36	2.34	8.68
Surplus/ (Deficit) Storage	**0.10**	**1.06**	**(0.02)**	**(0.22)**	**(0.72)**

Note:

1. The water supply interlocal agreement (IA3) between the City of Algona and the City of Auburn was updated in 2016. Through this updated agreement, Algona elected to financially participate in Lakeland Reservoir 6 to obtain a total share of 280,000-gallons of storage capacity. The agreement stipulates that if the City experiences any failure or decreased capacity, the supply of water to Algona may be decreased by the same percentage that is experienced by the City.

The 2044 storage analysis was performed to determine the ability of the proposed storage facilities to meet the future storage requirements in 2044, based on projected demands. The analysis results indicate that the existing storage facilities do not have sufficient capacity to meet the future demands of the system

based on the demand projections presented in Chapter 2. The City is currently planning a new reservoir in the Valley Service area to address these future deficiencies in the 20-year time frame. Table 3-31 summarizes the buildout 2044 storage analysis.

Table 3-31 summarizes the 2044 storage analysis and results (20-year projections). The results indicate an overall deficit in the RWSA, spurred largely by the projected growth within the Valley Service Area in the 20-year horizon.

Table 3-31 | System-Wide Storage Analysis for the 2044 Scenario

Description	RWSA 2044	Academy 2044	Lakeland 2044	Lea Hill 2044	Valley 2044
Usable Storage (MG)					
Maximum Storage Capacity	15.86	2.72	2.06	2.48	8.60
Algona Reserve Storage Capacity[1]	0.28	--	0.28	--	--
Dead Storage	1.50	0.06	0.44	0.36	0.64
Total Usable Storage	14.08	2.66	1.34	2.12	7.96
Required Storage (MG)					
Operational Storage	0.05	0.01	0.00	0.01	0.03
Equalizing Storage	0.05	0.00	0.05	0.00	0.00
Standby Storage (Emergency)	11.88	0.71	0.88	1.43	8.86
FSS Storage (Emergency)	3.44	0.96	0.56	0.96	0.96
Total Required Storage	15.42	1.68	1.49	2.40	9.86
Surplus/ (Deficit) Storage	**(1.34)**	**0.98**	**(0.15)**	**(0.28)**	**(1.89)**

Note:

1. The water supply interlocal agreement (IA3) between the City of Algona and the City of Auburn was updated in 2016. Through this updated agreement, Algona elected to financially participate in Lakeland Reservoir 6 to obtain a total share of 280,000-gallons of storage capacity. The agreement stipulates that if the City experiences any failure or decreased capacity, the supply of water to Algona may be decreased by the same percentage that is experienced by the City.

Since most of the future storage deficiency is in the Valley Service Area, a new storage reservoir is planned in the northeastern portion of the Service Area (Valley 242 pressure zone). The reservoir is a planned capital project to be completed in the 20-year horizon and is discussed further in Chapter 8.

The Lea Hill PS has sufficient capacity to transfer standby storage from Valley to Lea Hill. In addition, there are multiple PRVs which can be used to transfer water from the Academy and Lakeland Service Areas back to Valley to utilize excess standby storage in those areas. No other projects are necessary to resolve this deficiency.

3.4.2.4 Distribution and Transmission Capacity Analysis

This section evaluates the City's existing distribution and transmission mains to determine if the water pipelines are sized and looped adequately to provide the required flow and pressures to meet existing and future system conditions. The evaluation used an updated version of the City's computerized hydraulic water system model and InfoWater Pro, a GIS-based modeling software developed by Autodesk (formerly Innovyze). The model was updated to accurately reflect the City's existing water system and verified against field hydrant test data. Results from the model were used to evaluate the existing system and identify deficiencies.

3.4.2.4.1 Model Update

The following updates were made to the City's hydraulic model prior to conducting the capacity analyses:

- Facility updates
- Pipeline network updates
- Elevation updates
- Demand updates

Each update is described in further detail below.

Facility Updates

Existing facilities within the hydraulic model were reviewed and updated based on information provided by the City. The facilities reviewed included groundwater wells, springs, interties with adjacent water systems, potable water reservoirs, pump stations, treatment facilities, flow control valves, and PRVs. The following documents were used to confirm the accuracy of the facility information within the hydraulic model:

- Interlocal agreements
- Record drawings
- PRV calibration records
- Pump curves
- SCADA data
- Operations and maintenance data

Pipeline Network Updates

The existing pipeline network within the hydraulic model was compared to the City's existing GIS data to locate areas where pipelines may have been missing in the model. In addition, the pipeline material type was added to the model to match data available from GIS to more accurately reflect the existing distribution system.

Elevation Updates

Node elevations within the model were updated using United States Geological Survey (USGS) Digital Elevation Model (DEM). The DEM is a tile of the 3-Dimenional Elevation Program (3DEP) with data that is updated regularly and distributed in geographic coordinates in units conforming with the North American Datum of 1983 (NAD 83). All elevation values are in meters and, over the contiguous United States, are referenced to the North American Vertical Datum of 1988 (NAVD 88). The assigned elevations were converted to feet when applied to the model.

In addition to the general elevation update of the model nodes, the record drawings of the water reservoirs were used to verify the bottom and overflow elevations of the reservoirs within the model. Where necessary based on date, the as-built elevations were corrected to NAVD88 values, as some of the reservoirs were constructed using National Geodetic Vertical Datum of 1929 (NGVD 29). A conversion of 3.51 feet was used to update elevations from NGVD 29 to NAVD 88.

Demand Updates

Demands in the model were updated using the City's customer billing database. The meters were geolocated based on the customer's address and assigned to the closest model junction. No demands were allocated to transmission pipelines or facility nodes (i.e., pump station, reservoirs, etc.). Approximately 10 percent of the demand was unable to be allocated using this method. The remaining demand and non-

billed usage, like DSL and construction meters, was distributed uniformly throughout the model by applying a scaling factor to match the 2022 production data. The demand sets in the model sought to distribute the demand projections provided in Chapter 2. A scaling factor was then applied to all demand nodes to equal the demand projection in years 2024.

As discussed in Chapter 2, TAZ data was used to determine growth projections and the future water demand. Based on the TAZ data, each Service Area was split between focused growth areas and non-growth areas. Future demands were allocated equally across all current demand nodes within the focused growth and non-growth areas of each Service Area. Demand peaking factors from Chapter 2 were used to adjust demands to MDD for the fire flow analyses and PHD for the pressure analysis.

3.4.2.4.2 Model Calibration

To verify and calibrate the hydraulic model, the City collected field hydrant testing data. A map of the hydrant testing locations and testing plan is included in Appendix K. The City also collected static pressure at the test locations to verify the hydraulic grade line (HGL) of specific areas of the water system.

In addition to the hydrant tests results, the boundary conditions of the water system facilities at the time of each test were provided. The boundary conditions were used to calculate the demand observed during each test. The boundary conditions were also entered into the model for each hydrant test to accurately simulate the system conditions during the hydrant test. At most locations, hydrants were operated to stress the system to identify required changes to the boundary conditions and pipe roughness factors (C-factors) within the hydraulic model.

A fire flow calibration scenario was set up within the hydraulic model and each of the hydrant test locations was simulated. Appendix K provides the field flow data compared to the flow data input into the model and a comparison of the static pressures and pressure drops observed at each hydrant test. Table 3-32 summarizes the final Hazen Williams C-factors used during the calibration based on piping material.

Table 3-32 | Final C-Factors for Piping Materials

Material	C-Factor
Cast Iron	90-120
Concrete	120
Ductile Iron	120
HDPE	130
PVC	130
RCP	120
Steel	120
Unknown	115

Valley Service Area

A total of 16 hydrant tests were conducted in the Valley Service Area, however the results from one test were excluded as the static pressure was not recorded. The static pressure and pressure drop in the calibrated model is now within 5 psi, or less, of the observed data for each of the hydrant tests.

Lea Hill Service Area

A total of nine hydrant tests were conducted in the Lea Hill Service Area. The static pressure and pressure drop in the calibrated model is now within 5 psi, or less, of the observed data for each of the hydrant tests.

The HGL from the hydrant testing was higher than the reported HGL in the hydraulic model for the Lea Hill 462 pressure zone. The PRV setpoints were referenced to confirm the higher HGL observed during the hydrant testing. As such, the naming for the pressure zone was updated to Lea Hill 480. The update and supporting calculations are included in Appendix K.

Academy Service Area

A total of five hydrant tests were conducted in the Academy Service Area. The static pressure and pressure drop in the calibrated model is now within 5 psi, or less, of the observed data for each of the hydrant tests.

The HGL from the hydrant testing was higher than the reported HGL in the hydraulic model for the Academy 350 and Academy 445 pressure zones. The PRV setpoints were referenced to confirm the higher HGL observed during the hydrant testing. As such, the naming for each pressure zone was updated to Academy 400 and Academy 470 respectively. The updates and supporting calculations are included in Appendix K.

Lakeland Service Area

A total of ten hydrant tests were conducted in the Lakeland Service Area, however the results from one test were excluded as the recorded static pressure was determined to be incorrect. The static pressure and pressure drop in the calibrated model is now within 5 psi, or less, of the observed data for each of the hydrant tests.

The HGL from the hydrant testing varied from the reported HGL in the hydraulic model for the Lakeland 440, Lakeland 441, Lakeland 446, and Lakeland 485 pressure zones. The PRV setpoints were referenced to confirm the HGLs observed during the hydrant tests. As such, the naming for each pressure zone was updated as follows:

- Lakeland 440 pressure zone was split into two pressure zones: Lakeland 450 and Lakeland 405.
- Lakeland 441 pressure zone was updated to Lakeland 385
- Lakeland 446 pressure zone was updated to Lakeland 415
- Lakeland 485 pressure zone was updated to Lakeland 455.

The hydrant test for Lakeland 575 was not simulated in the model as observed in the field since a static pressure of 101 psi was recorded during the hydrant test. According to the PRV setpoints, the HGL on the test date was anticipated to be an error. The City re-checked the hydrant on February 8, 2024, and a static pressure of 69 psi was recorded. It was concluded that the original hydrant test data was inaccurate, and the test was voided. The Lakeland 575 pressure zone was updated to Lakeland 560 instead based on the PRV setpoints and static pressure reading completed in February 2024. The updates and supporting calculations are included in Appendix K.

3.4.2.4.3 Hydraulic Analysis

PHD Analysis

During PHD conditions, the water system must maintain a minimum pressure of 30 psi at all service nodes, a maximum velocity of 8 fps in wall water mains, and a maximum velocity of 5 fps in all transmission mains in accordance with DOH and City standards. The hydraulic model was set up to evaluate pressures and velocities throughout the system under PHD conditions for the 2024 (existing conditions), 2034 (10-year), and 2044 (20-year) scenarios. The results of this analysis are shown in Figure 3-8, Figure 3-9, and Figure 3-10 respectively. The results of this analysis indicate that all areas of the water system meet these requirements under existing and future conditions.

Figure 3-8 | 2024 PHD Scenario – Pressure and Velocity

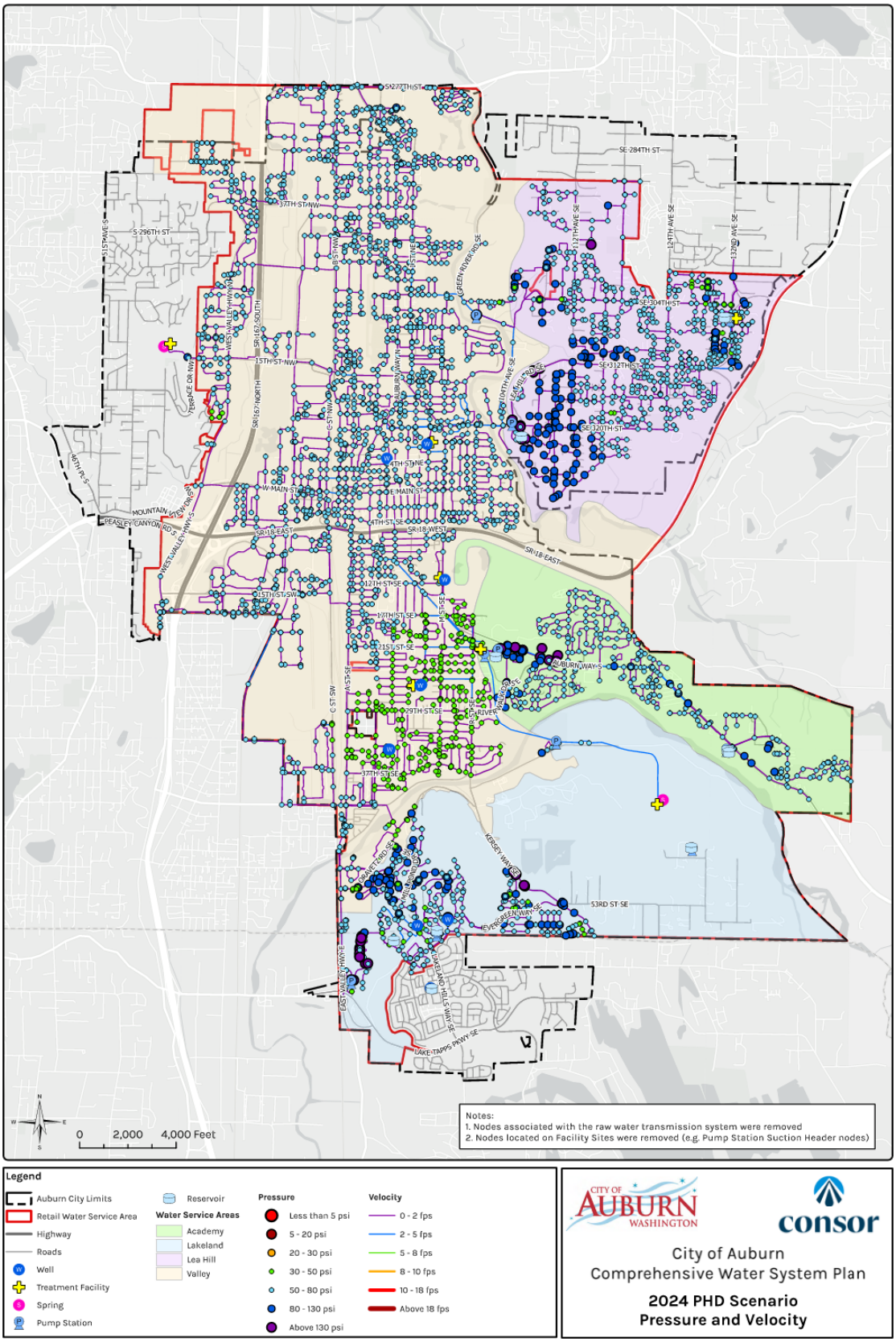


Figure 3-9 | 2034 PHD Scenario – Pressure and Velocity

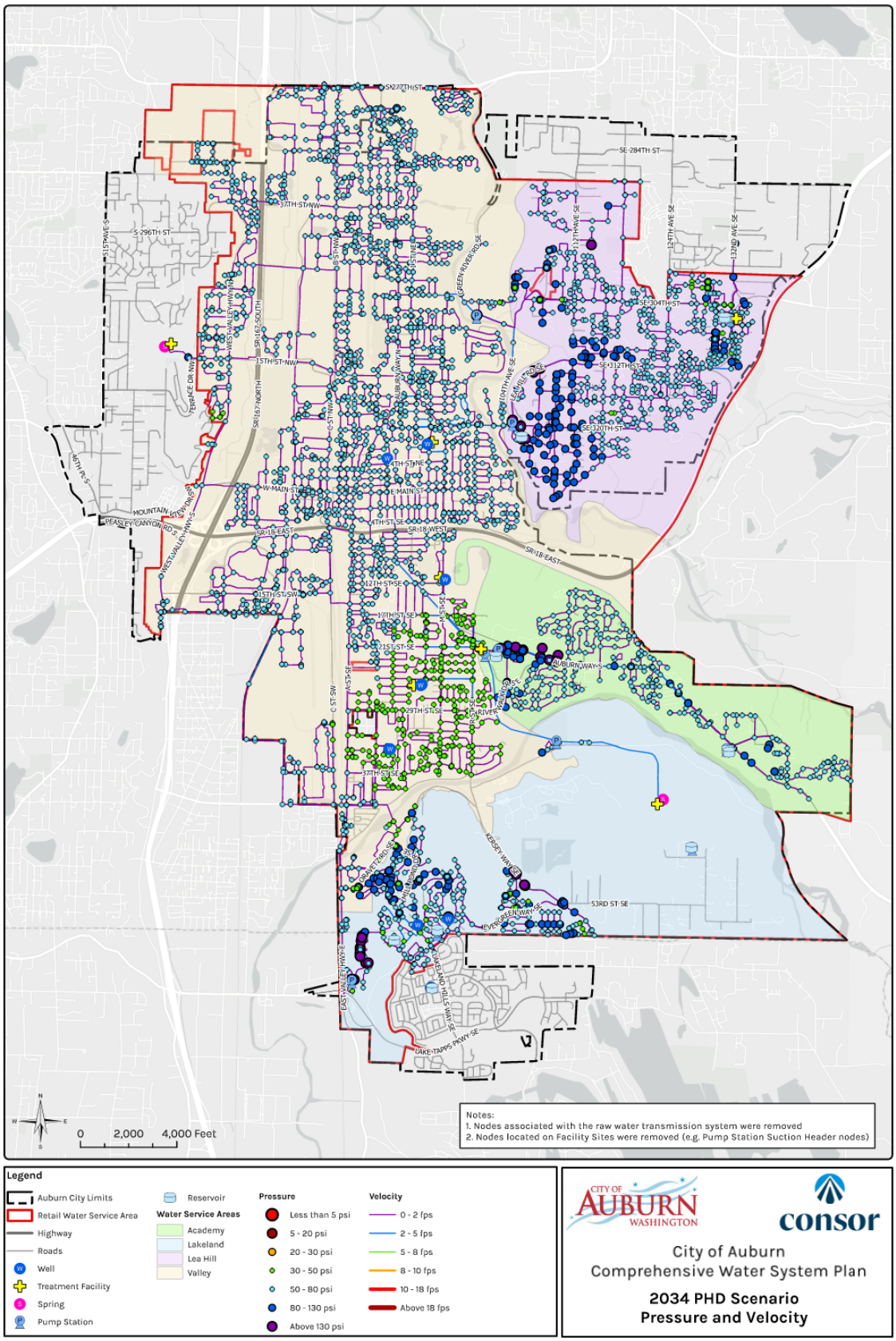
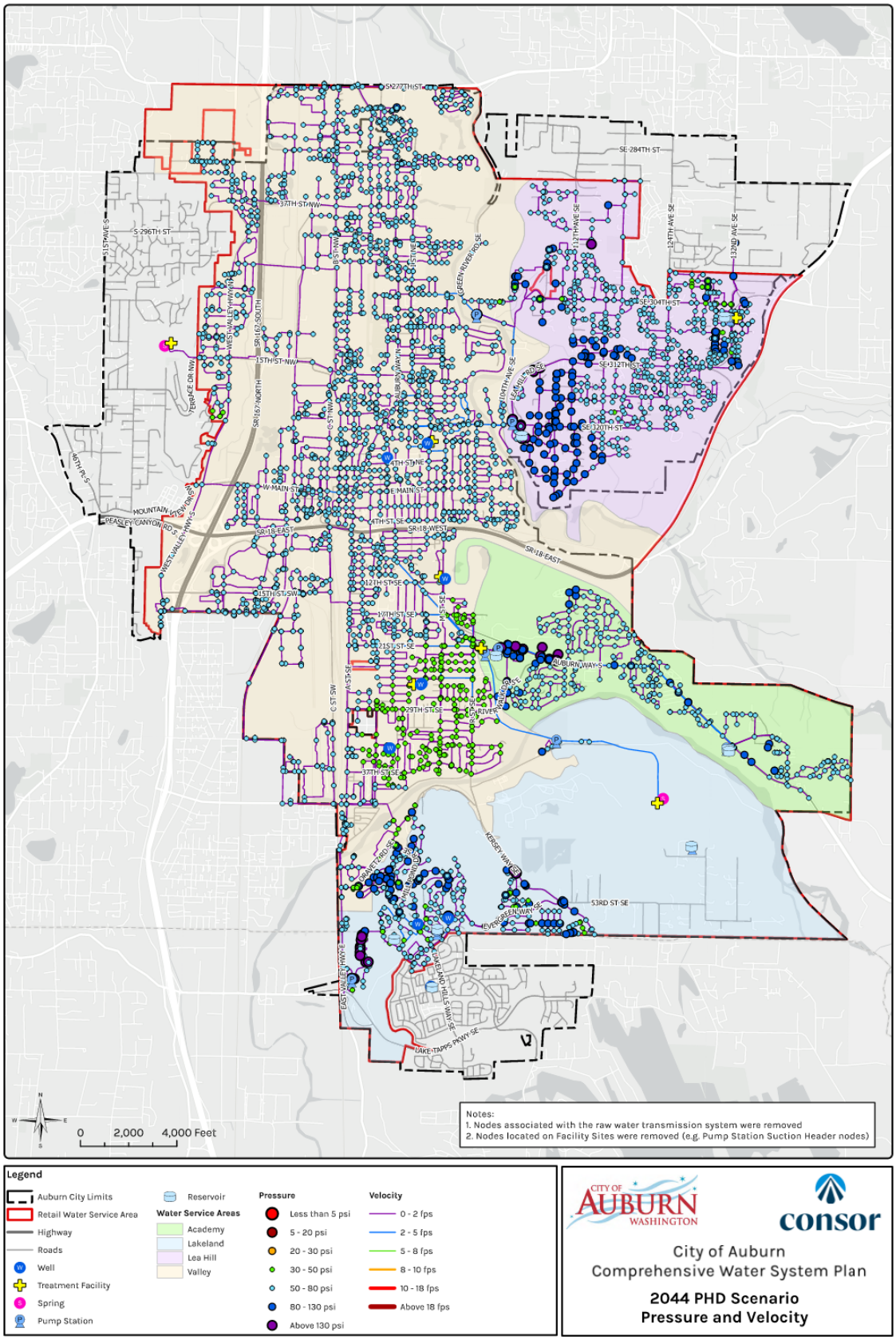


Figure 3-10 | 2044 PHD Scenario – Pressure and Velocity



Fire Flow Analysis

The fire flow analysis assesses each hydrant node in the hydraulic model to determine the available fire flow while maintaining a minimum residual pressure of 20 psi throughout the respective pressure zone. To complete the analysis, the water elevation in each reservoir was set to top of dead storage (below operational, equalizing and standby storage) per DOH recommendations. In addition, the system demands were set to MDD for each scenario (2024, 2034 and 2044). For each node, the modeled available fire flow was compared to its target fire flow requirement as follows:

- Single Family Residential Meters: 1,500 gpm of fire flow required.
- All Other Meters (i.e., multi-family, commercial, etc.): 2,500 gpm of fire flow required.
- Specific Buildings with Higher Fire Flow Requirements: Assessed individually per **Table 3-20**.

Fire flow requirements were assigned to the model nodes based on account classifications of the assigned water meters. Where multiple meters with different account classifications were assigned to the same node, the highest fire flow requirement was assigned to the node. The hydrant locations provided in the City's GIS system do not correspond to the exact location of the hydrant node in the model. Therefore, the nodes that were predicted to have fire flow below what is required were checked based on their proximity to the nearest hydrant to verify whether the appropriate hydrant could provide the required fire. As shown in **Figure 3-11** the results of this analysis indicated that multiple areas of the system under current and future demand conditions have fire flow deficiencies. A summary of the proposed pipeline improvements to resolve the deficiencies is shown in **Figure 3-12** and summarized in **Table 3-33**. **Figure 3-12** also includes on-going projects currently being completed by the City or developers.

Valley Service Area

Multiple deficiencies are identified in the Valley Service Area. The highest priority project assists with raising the HGL of the highest critical node on the west side of the RWSA. This project will increase the available fire flow at most of the western failure locations. The remaining improvements assist with specific failure locations by upsizing water mains experiencing significant headloss.

Additionally, a new PRV facility is proposed to rezone a portion of the Valley 242 pressure zone to the Academy 350 pressure zone to resolve deficiencies in the area. This PRV facility will also allow storage transfer from the Academy Service Area where this is surplus storage to the Valley Service Area to resolve the 2034 storage deficit projections. This project is discussed further in **Chapter 8**.

Lakeland Service Area

There were no failure locations identified within the Lakeland Service Area for the existing and future demand conditions.

Lea Hill Service Area

Multiple deficiencies are identified in the Lea Hill Service Area. The highest priority project in this area is to rezone a portion of Lea Hill 563 pressure zone to the Lea Hill 648 pressure zone. In addition, deficiencies were noted in the northern part of Lea Hill 563, in the vicinity of 112th Avenue, 290th Street, 295th Street, and 293rd Street. These pipelines were replaced recently and provide an available fire flow of approximately 1,350 gpm after the rezoning of the Lea Hill 563 pressure zone is completed. Therefore, a project was not proposed in this area and was confirmed with the Fire Marshal. The remaining improvements assist with specific failure locations by upsizing water mains experiencing significant headloss.

Figure 3-11 | MDD+FF Deficiency Locations for 2024, 2034 and 2044 Scenarios

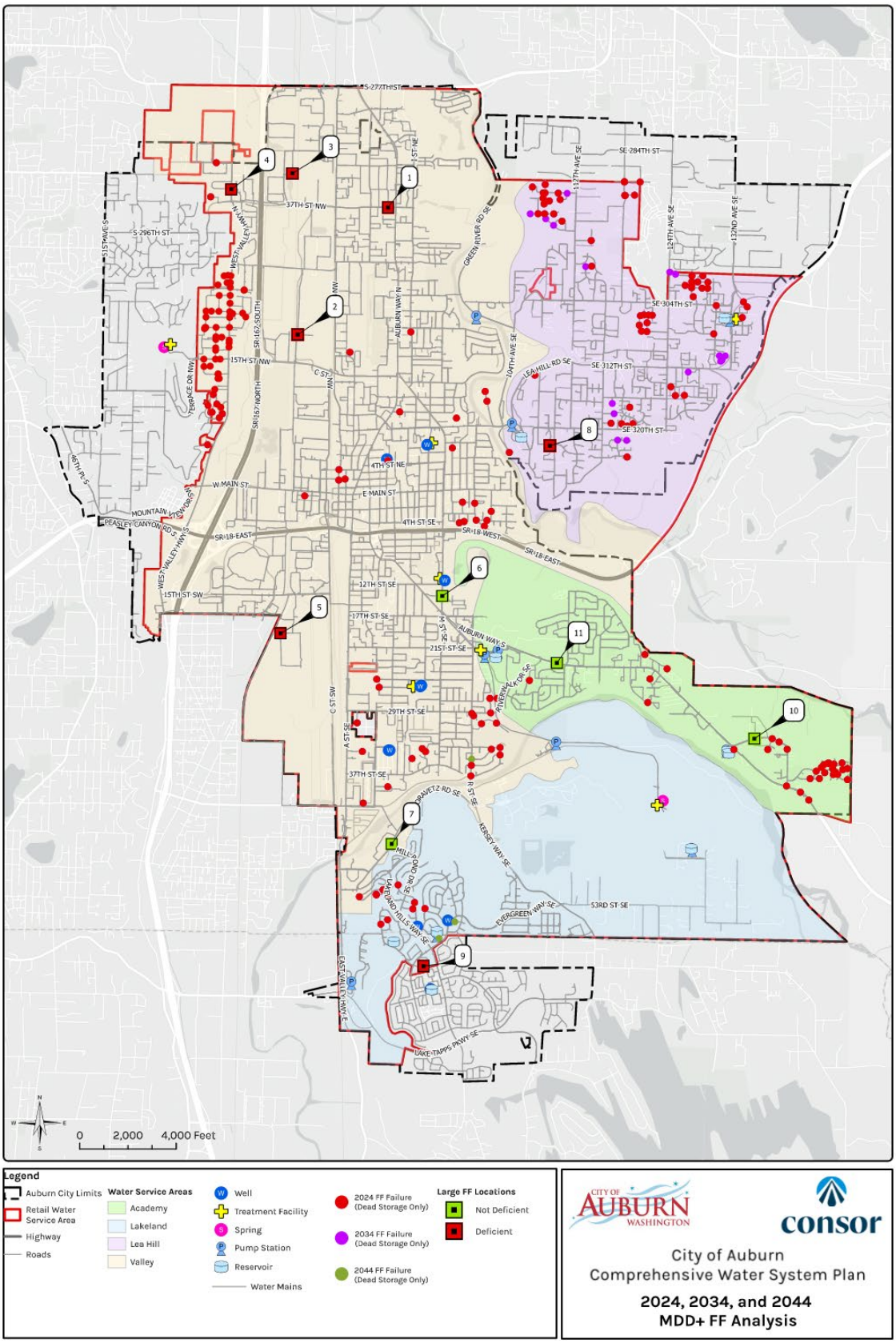
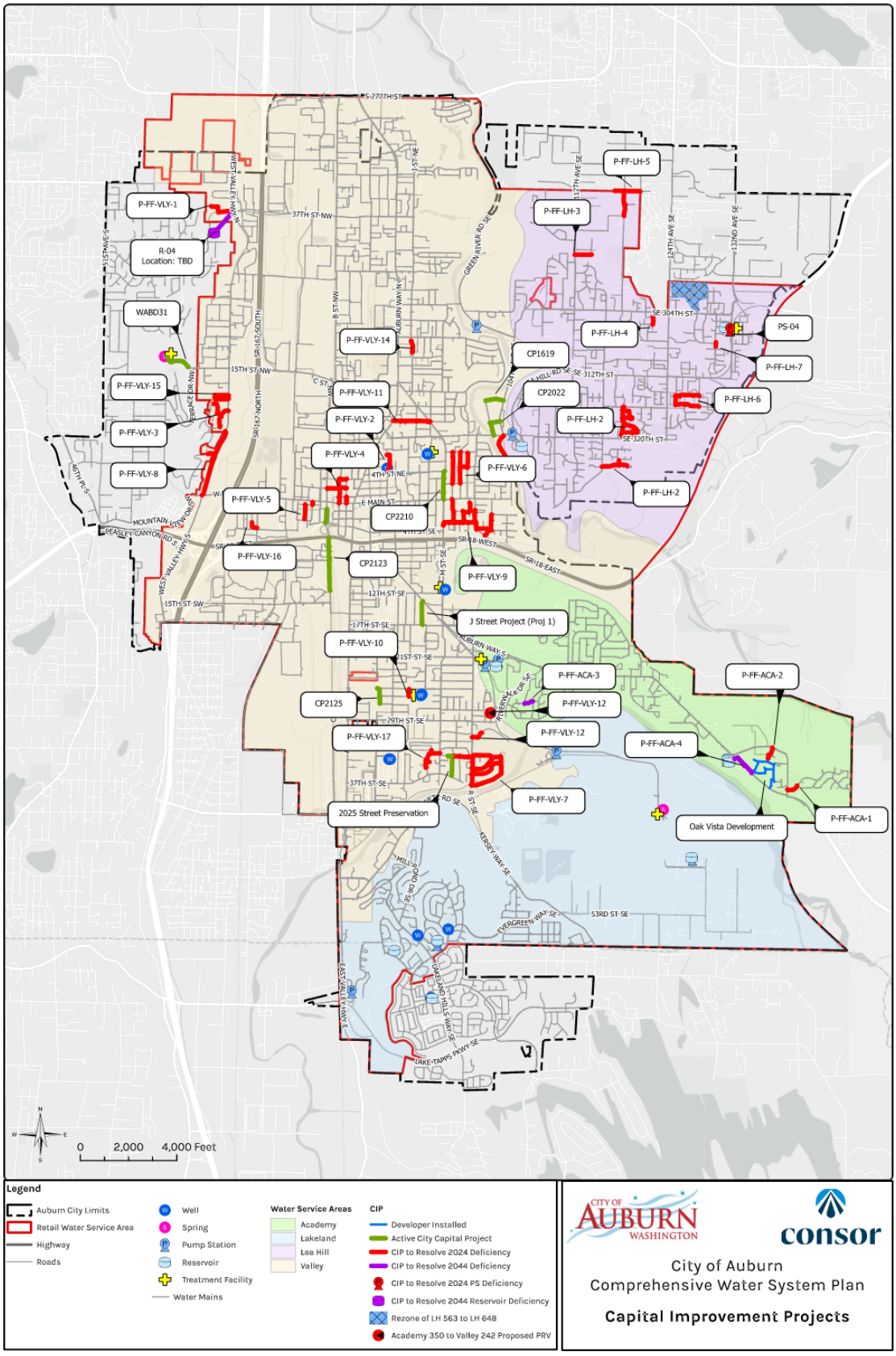


Figure 3-12 | Capital Improvement Projects Addressing Fire Flow Deficiencies



Academy Service Area

Multiple deficiencies are identified in the Academy Service Area. The planned Oak Vista Development provides a significant increase in available fire flow in Academy 585 pressure zone. The remaining improvements assist with specific failure locations by upsizing pipelines with high predicted headloss.

Table 3-33 | Prioritized Pipeline Improvements to Address Fire Flow Deficiencies

Project Priority	Service Area	Project ID	Summary of Deficiency	Summary of Improvements
1	Valley	P-FF-VLY-8	2024 Scenario: Hydrants less than 500 gpm	Replace existing with 3,200 LF of 16-inch diameter piping.
2	Lea Hill	P-FF-LH-3	2024 Scenario: Hydrants less than 1,000 gpm	Replace existing with 690 LF of 12-inch diameter piping.
3	Lea Hill	P-FF-LH-7	2024 Scenario: Hydrants less than 1,000 gpm.	Replace existing with 180 LF of 8-inch diameter piping. Move hydrant connection to higher zone.
4	Lea Hill	P-FF-LH-5	2024 Scenario: Hydrants less than 1,000 gpm	Replace existing with 1,080 LF of 12-inch diameter piping and 1,170 LF of 16-inch diameter piping.
5	Valley	P-FF-VLY-15	2024 Scenario: Hydrants less than 1,000 gpm	Replace existing with 1,320 LF of 12-inch diameter piping.
6	Valley	P-FF-VLY-6	2024 Scenario: Hydrants less than 1,000 gpm	Replace existing with 3,590 LF of 8-inch diameter piping.
7	Valley	P-FF-VLY-7	2024 Scenario: Hydrants less than 1,500 gpm	Replace existing with 7,9840 LF of 8-inch diameter piping and 4,380 LF of 12-inch piping.
8	Valley	P-FF-VLY-13	2024 Scenario: Hydrants less than 1,000 gpm	Replace existing with 1,290 LF of 12-inch diameter piping.
9	Valley	P-FF-VLY-12	2024 Scenario: Hydrants less than 1,000 gpm	Replace existing with 1,440 LF of 8-inch diameter piping and 550 LF of 12-inch piping.
10	Lea Hill	P-FF-LH-1	2024 Scenario: Hydrants less than 1,500 gpm	Replace existing with 4,540 LF of 8-inch diameter piping.
11	Lea Hill	P-FF-LH-2	2024 Scenario: Hydrants less than 1,500 gpm	Replace existing with 1,300 LF of 8-inch diameter piping.
12	Lea Hill	P-FF-LH-6	2024 Scenario: Hydrants less than 1,500 gpm	Replace existing with 2,470 LF of 12-inch diameter piping.
13	Academy	P-FF-ACA-2	2024 Scenario: Hydrants less than 1,500 gpm.	Replace existing with 590 LF of 8-inch diameter piping.
14	Academy	P-FF-ACA-1	2024 Scenario: Hydrants less than 1,500 gpm.	Replace existing with 500 LF of 12-inch diameter piping.
15	Lea Hill	P-FF-LH-4	2024 Scenario: Hydrants less than 1,500 gpm	Replace existing with 340 LF of 8-inch diameter piping.
16	Valley	P-FF-VLY-9	2024 Scenario: Multiple hydrants less than 1,500 gpm	Replace existing with 190 LF of 8-inch diameter piping and 5,765 LF of 12-inch piping.
17	Valley	P-FF-VLY-14	2024 Scenario: Hydrants less than 2,500 gpm	Replace existing with 510 LF of 12-inch diameter piping.
18	Valley	P-FF-VLY-2	2024 Scenario: Hydrants less than 2,500 gpm	Replace existing with 910 LF of 12-inch diameter piping.

Project Priority	Service Area	Project ID	Summary of Deficiency	Summary of Improvements
19	Valley	P-FF-VLY-17	2024 Scenario: Hydrants less than 2,500 gpm	Replace existing with 170 LF of 8-inch diameter piping and 1,270 LF of 12-inch piping.
20	Valley	P-FF-VLY-4	2024 Scenario: Hydrants less than 2,500 gpm	Replace existing with 2,610 LF of 12-inch diameter piping.
21	Valley	P-FF-VLY-10	2024 Scenario: 4-inch Cast Iron near 1,500 gpm dead end	Replace existing with 320 LF of 12-inch diameter piping.
22	Valley	P-FF-VLY-3	2024 Scenario: Hydrant less than 1,500 gpm available.	Replace existing with 1,010 LF of 8-inch diameter piping and 660 LF of 12-inch piping. Complete P-FF-VLY-8 has higher priority for initial improvement in this area.
23	Valley	P-FF-VLY-1	2024 Scenario: Hydrants less than 2,500 gpm	Replace existing with 960 LF of 12-inch diameter piping.
24	Valley	P-FF-VLY-11	2024 Scenario: Hydrants less than 2,500 gpm	Replace existing with 1,630 LF of 12-inch diameter piping.
25	Valley	P-FF-VLY-16	2024 Scenario: Hydrants less than 2,500 gpm	Replace existing with 390 LF of 12-inch diameter piping.
26	Valley	P-FF-VLY-5	2024 Scenario: Hydrants less than 2,500 gpm	Replace existing with 750 LF of 12-inch diameter piping.
27	Academy	P-FF-ACA-3	2044 Scenario: Hydrants less than 2,500 gpm	Replace existing with 380 LF of 12-inch diameter piping.
28	Academy	P-FF-ACA-4	2044 Scenario: Hydrants less than 2,500 gpm	Replace existing with 1,040 LF of 16-inch diameter piping.

3.4.2.5 System Capacity Analysis Results

Chapter 2 of this WSP calculated the ADD ERU planning value to be at 182 gallons per day per Equivalent Residential Units (gpd/ERU) and an MDD ERU planning value of 322 gpd/ERU. An analysis of the water system's overall physical capacity in terms of ERU using DOH Worksheet 4-1 is provided in Appendix V. Demand projection values include retail customer demands, distribution system losses, authorized unbilled consumption, and wholesale demand from Algona. Projections for the MIT Fish Hatchery and LMWD are not included. LMWD is not included since they do not rely on the City as their main source of water and have an interruptible wholesale agreement. Demand from the MIT Fish Hatchery is also not included since it is unknown when this facility will be constructed or what the actual demands will be.

The results of the ERU analysis included in Appendix V are summarized in Table 3-34. The analysis indicates that the existing system has sufficient capacity to serve the current and projected water demands through 2034 (10-year planning horizon). Under 2024 and 2034 demand conditions, storage is the limiting system component for growth and development. In 2044 (20-year planning horizon) storage is deficient, which is consistent with the analysis findings summarized in Section 3.4.2.3 and is planned to be resolved with a new reservoir project included in Chapter 8.

Table 3-34 | System Capacity Analysis in ERU Basis

Description of Capacity Parameter	2024	2034	2044
Demands per ERU Basis			
Average Day Demand, gpd/ERU	182	182	182
Maximum Day Demand, gpd/ERU	322	322	322
Peak Hour Demand, gpd/ERU	518	518	518
Projected Retail Customer Demand, ERUs	**38,731**	**43,626**	**49,515**
Algona (Firm Wholesale) Projected ADD, ERUs	2,005	2,120	2,246
Algona (Firm Wholesale) Projected MDD, ERUs	2,150	2,274	2,409
Total ERUs Required for Qa Analysis (ADD), ERUs	**40,736**	**45,746**	**51,761**
Total ERUs Required for Qi and Qs Analysis (MDD), ERUs	**40,881**	**45,900**	**51,924**
Source Capacity (Qi)			
Total Supply Capacity, Qi (20 hours of pumping), gpd	23,092,800	23,092,800	23,092,800
Maximum Day Demand, gpd/ERU	322	322	322
Maximum Supply Capacity, ERUs	**71,744**	**71,744**	**71,744**
Projected MDD Demand, ERUs	40,881	45,900	51,924
Remaining Qi Capacity Surplus/(Deficit), ERUs	**30,863**	**25,845**	**19,820**
Water Rights (Qa)			
Supply Capacity, Qa (Total), gpd	18,749,377	18,749,377	18,749,377
Average Day Demand, gpd/ERU	182	182	182
Maximum Supply Capacity, ERUs	**102,938**	**102,938**	**102,938**
Projected ADD Demand, ERUs	40,736	45,746	51,761
Remaining Qa Capacity Surplus/(Deficit), ERUs	**62,202**	**57,192**	**51,177**
Pumping Capacity (Qs)			
Total Pumping Capacity, Qs (20 hours of pumping), gpd	22,506,000	22,506,000	22,506,000
Maximum Day Demand, gpd/ERU	322	322	322
Maximum Supply Capacity, ERUs	**69,921**	**69,921**	**69,921**
Projected MDD Demand, ERUs	40,881	45,900	51,924
Remaining Pumping Capacity Surplus/(Deficit), ERUs	**29,040**	**24,022**	**17,997**
Storage Capacity			
Maximum Usable Storage Capacity, MG	14.07	14.07	14.07
Available Standby and Equalization Storage Capacity, MG	10.58	10.58	10.58
Standby Storage Requirement, gal/ERU	240	240	240
Equalizing Storage Requirement, gal/ERU	-	-	-
Maximum Storage Capacity, ERUs	**44,071**	**44,071**	**44,071**
Projected Retail System ERUs	38,731	43,626	49,515
Remaining Storage Capacity Surplus/(Deficit), ERUs	**5,340**	**445**	**(5,445)**
System Capacity Analysis Summary			
Limiting Component of System Capacity Surplus/ (Deficit), ERUs	**5,340**	**445**	**(5,445)**

3.4.3 New Source of Supply Analysis

The City has a pending water right application for 13,443 acre-feet from the existing Wells 6 and 7 and a future Well 8. The location of the future Well 8 has not been determined but is expected to be located near Wells 6 and 7. Flows from future Well 8 would be treated at the Fulmer Field CCT Facility. It is anticipated that water quality from Well 8 would be similar to Wells 6 and 7 and may require manganese treatment.

Calculations presented in the Water Rights Self-Assessment Form (**Appendix I**) conclude that the City's existing water rights are anticipated to be adequate to meet the current, 10-year, and 20-year demand projections for maximum instantaneous flows (Qi) and total annual withdrawal (Qa).

The City has established a policy of maintaining the capability to supply the MDD while the largest water source is out of service. The system analysis documented in this chapter confirms that, with projected demands over the 20-year planning period, the City will maintain the capability to meet MDD with the largest pumping source is out of service with the use of the Tacoma interties as an available source.

Mitigation obligations due to the proposed water right for Wells 6, 7, and 8 are listed below and are described in detail in the Conceptual Mitigation Plan (**Appendix S**):

- Mitigation of impacts to Green River,
- Mitigation of impacts to White River, and
- Mitigation of impacts to Mill Creek.

Water Use Efficiency measures described in **Chapter 4** will be applied to the expanded supplies from Wells 6 and 7 and the new supply from Well 8 if the pending water right is approved.

Aside from the pending water right application, the City has several projects planned over the 20-year horizon to improve supply production or fully utilize their existing water rights, as discussed in **Section 3.1.2**.

3.5 Summary of System Deficiencies

Table 3-35 provides a summary of the system deficiencies described in this chapter. Proposed improvements include pump station improvements, storage improvements, and distribution system improvements. Total project costs and the anticipated source of funding for each project are provided in **Chapter 8**.

Table 3-35 | Summary of System Deficiencies

CIP Improvement	Classification of Deficiency	Description of Project Solution	Location in WSP Where Deficiency is Identified	Location in WSP Where Analysis Demonstrates Deficiency will be Addressed by Project
Supply Improvements	Reliability, Resiliency	• Coal Creek Springs Rehabilitation • Well 2 Replacement • Well 2 and Well 6 Cleaning Program • Wells 5/5A Upgrades • Well 7 Back-up Power • Algona Well 1 Study	Section 3.1.2	Section 3.1.2 and Chapter 8

CIP Improvement	Classification of Deficiency	Description of Project Solution	Location in WSP Where Deficiency is Identified	Location in WSP Where Analysis Demonstrates Deficiency will be Addressed by Project
Treatment Improvements	Reliability	• Wells 3A/3B Treatment • Well 5 Chlorination • Well 7 Treatment • Coal Creek Springs Chlorination Building Replacement • Wells 1 and 4 On-site Chlorination Improvements • Fulmer Field CCT Facility Chlorination Improvements	Section 3.1.3	Section 3.1.3and Chapter 8
Storage Improvements	Growth, Fire Flow, Reliability, Resiliency	• Reservoir 2 Valve Improvements • Reservoirs 4 and 8 Seismic Rehabilitation • Additional storage in the Valley Service Area	Section 3.1.4 and Section 3.4.6	Section 3.1.4, Section 3.4.6, and Chapter 8
Pump Station Improvements	Reliability, Fire Flow	• Modifications to Lea Hill BPS/Intertie PS	Section 3.4.5	Section 3.4.5 and Chapter 8
Distribution Improvements	Growth, Fire Flow	• Coal Creek Springs Transmission Improvements • West Hill Springs Transmission Improvements • Replacing and upsizing pipelines where needed	Section 3.1.2 and Section 3.4.7	Section 3.1.2, Section 3.4.7, and Chapter 8

CHAPTER 4

Water Use Efficiency Program

The purpose of this chapter is to describe the water system's program to improve water use efficiency (WUE). WUE contributes to the long-term water supply reliability and promotes good stewardship of the state's water resources.

This chapter addresses the following topics.

4.1 Source and Service Metering
4.2 Distribution System Leakage
4.3 Water Use Efficiency Program
4.4 Water Use Efficiency Savings
4.5 Climate Change Resiliency

Table 4-1 lists the requirements of the WUE Rules from the DOH 2020 Water Use Efficiency Guidebook and reflects the City's level of compliance with these requirements.

Table 4-1 | WUE Rule Requirements

Category	Requirement	City of Auburn Compliance Status
Meters		
	Meter all sources.	Yes, all sources are metered.
	Meter all service connections.	Yes, all services are metered.
Data Collection		
	Provide annual consumption by customer class.	Yes, provided in Section 2.2.2.
	Provide "seasonal variations" consumption by customer class.	Yes, provided in Section 2.5.
	Evaluate reclaimed water opportunities.	Yes, provided in Section 4.3.5.
	Consider water use efficiency rate structure.	Yes, the City has an inverted block rate structure to promote conservation.
	Provide monthly and annual production for each source.	Yes, provided in Section 2.3.1.
Distribution System Leakage		
	Calculate annual volume and percent using formula defined in WUE Rules.	Yes, distribution leakage is calculated and reported in Section 4.2.
	Report annually: annual leakage volume, annual leakage percent, and for systems not fully metered, meter installation progress and leak minimization activities.	Yes, distribution leakage is reported to DOH on an annual basis.
	Develop water loss control action plan (if leakage is over 10% for 3-year average).	N/A, system has a 3-year average water loss of less than 10%.
Goals		
	Establish measurable (in terms of water production or usage) conservation goals and re-establish every 6 years. Provide schedule for achieving goals.	Yes, measurable goals were established via a public process. See Section 4.3.3.
	Use a public process to establish goals.	

Category	Requirement	City of Auburn Compliance Status
	Report annually on progress.	Yes, report submitted annually to DOH.
WUE Program		
	Describe existing conservation plan.	Yes, see Section 4.3.
	Estimate water saved over last 6 years due to conservation program.	Yes, see Section 4.3.1.
	Describe conservation goals.	Yes, see Section 4.3.3.
	Implement or evaluate 1-12 measures, depending on size. Nine measures for City of Auburn.	Yes, see Section 4.3.4.
	Describe conservation programs for next 6 years including schedule, budget, and funding mechanism.	Yes, see Section 4.3.6.
	Describe how customers will be educated on efficiency practices.	Yes, see Section 4.3.4.
	Estimate projected water savings from selected measures.	Yes, see Section 4.4.
	Describe how efficiency program will be evaluated for effectiveness.	Yes, see Section 4.3.1.
	Estimate leakage from transmission lines (if not included in distribution system leakage).	N/A, transmission line leakage included in distribution system leakage as system does not have true transmission lines.
Demand Forecast		
	Provide demand forecast reflecting no additional conservation.	Yes, provided in Section 4.4.
	Provide demand forecast reflecting all "cost effective" evaluated measures.	
Performance Reports		
	Develop annual report including goals and progress towards meeting them, total annual production, annual leakage volume and percent and, for systems not fully metered, status of meter installation and actions taken to minimize leakage.	Yes, reports will be submitted annually to DOH.
	Submit annually by July 1 to DOH and customers and make available to the public.	

4.1 Source and Service Metering

4.1.1 Source Meters

Source meters, also known as production meters, measure the amount of water emitted from the City's springs and wells. Each of the City's sources are metered to measure the amount of water produced. The meters are calibrated annually by an outside contractor under the direction of the Water Operations Supervisor to ensure an accurate accounting of water produced. If a meter cannot be calibrated properly, it is replaced with a new one. Propeller source meters are being replaced with electromagnetic (MAG) meters in conjunction with planned capital improvements projects, or as the budget allows.

Table 4-2 | Source Meter Details

Source Meter ID	Manufacturer	Meter Type	Meter Size	Years in Service	Date of Last Calibration
Coal Creek Springs	Siemens	Magnetic	24-inch	26	August 2023
West Hill Springs	Siemens	Magnetic	10-inch	10	Unknown
Algona Well 1	N/A	N/A	Not in use	Not in use	Not in use
Valley Well 1	Siemens	Magnetic	12-inch	14	August 2023
Valley Well 2	Siemens	Magnetic	10-inch	24	August 2022
Valley Well 3A	Sparling	Turbine	Not in use	Not in use	Not in use
Valley Well 3B	Sparling	Turbine	Not in use	Not in use	Not in use
Valley Well 4	Siemens	Magnetic	12-inch	39[1]	August 2023
Lakeland Well 5	Sparling	Turbine	8-inch	41[1]	August 2023
Lakeland Well 5A	Siemens	Magnetic	4-inch	34	August 2023
Lakeland Well 5B	Siemens	Magnetic	Not in use	Not in use	Not in use
Valley Well 6	Siemens	Magnetic	12-inch	24[1]	August 2023
Valley Well 7	Sparling	Turbine	Not in use	Not in use	Not in use

Note:
1. Years in service assumed to be from source's original construction date.

4.1.2 Service Meters

Water meters are installed on every service line to measure the quantity of water used by a customer per WAC 246-290-496 and City Code Chapter 13.06.320. All new direct service connections must be metered at the time-of-service activation per WAC 246-290-496(2)(d). All meters shall remain the property of the City and shall not be removed except by the City. In all cases where meters are lost, damaged or broken by carelessness, negligence, or willful actions of owners/operators of premises, they shall be replaced or repaired by or under the direction of the City. The actual cost of repairs or replacement of meters will be charged against the owners/operators. In case of nonpayment of fees, fines, charges, or penalties, the water shall be shut off and will not be turned on until all charges are paid.

In 2015, the City began installing an Automated Metering Infrastructure (AMI) system, as a part of the Water Meter and Billing System Improvements project, which was completed in 2018. With the new AMI system, the City automatically receives meter reads via radio transmission and can integrate the data into the billing software. The benefits of an AMI system include increased accuracy and efficiency, early leak detection, and improved customer service. The AMI system is anticipated to have a 20-year life, including the system components and batteries in the radios.

In conjunction with the AMI system installation, the City also completed a meter changeout in 2018. Since 2015, the City has installed 15,156 meters, ranging in size from ¾ inch to ten inches. Meter replacement will be on a 20-year program to coincide with the AMI system. Large source meters and three-inch and larger commercial meters will be tested and calibrated annually. Small meters (less than three inches) are not calibrated.

All new service connections under three inches, in addition to repairs, retrofits or replacements of existing services, are typically conducted by Water Distribution Staff unless unusual circumstances arise. Meter

services consist of meters, meter vaults, meter boxes, service lines, valves, setters, re-setters, and other associated equipment.

- Small Meters (3/4 to two inch)
    - Replacement Cost: $700 - $1,620
    - New Installation Cost: $550 - $1,500
- Large Meters (three to eight inch)
    - Replacement Cost: $3,300 - $12,000
    - New Installation Cost: $2,800 - $11,500

The City uses master meters when beneficial to the City and its customers. Master meters are used at certain locations such as mobile home parks, the Auburn Business Park (formerly the Federal General Services Administration Property), and Muckleshoot Indian Tribe (MIT) commercial properties.

4.1.2.1 Large Meters

Large meters are used to measure water consumption by customers with significant demand requirements. They are usually employed by the following customer classes.

- Commercial
- Farms or Parks – Irrigation
- Schools
- Multifamily Complexes
- Industrial / Manufacturing Businesses
- Wholesale Customers
- Municipal Buildings

Large meters are defined as water meters three inches or larger and new meters are installed by contractors rather than City maintenance staff. There are a total of 127 large meters in the City's system. All large meters are calibrated for accuracy each year, usually between the months of April and June, as part of the City's System Loss Program. Calibration of large meters is conducted by an outside contractor, but two maintenance staff members under the direction of the Water Distribution Supervisor assist in the process. If a meter cannot be calibrated, it is replaced with a new one by City maintenance staff.

4.2 Distribution System Leakage

Distribution System Leakage (DSL) represents the difference between production and documented water use (retail, wholesale, and authorized unmetered). It may include inaccurate master and service connection meters, unaccounted-for non-revenue water use, pipeline leakage, and unauthorized use. DSL does not include authorized water usage such as water used for fire protection, flushing, construction, and other maintenance and operations practices. However, to be credited, this must be accounted for by metering or estimating using credible means.

The DSL is calculated as the difference between the total amount of water produced and the sum of water sold plus any authorized unmetered water usage. The City's estimated DSL for 2015 through 2022 is presented in Chapter 2, Table 2-11. For the City's water system, the 2022 three-year rolling average DSL was 6.7 percent of total production (corrected value submitted by the City to DOH in 2024). This falls below the DOH requirement that the three-year average DSL be under ten percent to minimize water waste.

The City is committed to maintaining DSL below the required ten percent and is actively working to identify and minimize DSL. To minimize DSL, the City has ongoing leak detection, meter calibration, and an active repair and replacement program for water system infrastructure, as detailed in Chapter 6 – Operations and Maintenance. The City completes a leak detection study of 25 percent of the water distribution system every year to detect and fix leaks. Additionally, the City has recently increased its efforts to reduce non-payment of bills and water theft. The City recently completed a major SCADA system upgrade in 2024. These investments should significantly increase the City's ability to measure DSL both temporally and geographically. The resulting information may allow the City to better target its WUE activities to reduce DSL.

4.2.1 Water Audits

The City has implemented AMI throughout the system, completing installations between 2015 and 2018. AMI is a tool that improves the effectiveness of the WUE Program measures, providing detailed water use data for each customer that allows the City to better understand water use patterns and target WUE Program measures to specific customers. Data can be sent in real-time or stored for several weeks or months. Potential AMI capabilities vary depending on the chosen hardware and software however, most systems can aid in the WUE Program. Below is a summary of how the City can use the AMI data.

- Advanced algorithms and metering data will allow the City to identify customer leaks.
- Advanced metering will provide cost savings in the Leak Detection and Repair and Service Meter Replacements programs.
- Advanced metering will aid in the City's efforts to reduce non-payment of bills and water theft.
- By comparing production and customer water use, DSL can be evaluated in greater temporal and geographic detail. For example, DSL may be calculated by month or for a given service area.
- Advanced metering data will help the City identify groups of customers to target for WUE measures and can be used to track the effectiveness of the measures for the same customers.
- Advanced metering data will allow additional reporting options to educate customers, such as their peak water use.

The City reports DSL annually; refer to Appendix M for the previous three annual WUE reports. The newly installed AMI system will provide substantial benefits for the WUE Program and improve savings, further outlined in Section 4.4 of this chapter.

4.3 Water Use Efficiency Program

In 2003, the Washington State Legislature passed the 2003 Municipal Water Law (MWL) which added a requirement that water purveyors use water efficiently. This law was expanded in January 2007 with the WUE Rule and has since been updated. WUE requirements are listed under WAC 246-290 and include:

- Publicly establishing a water savings goal.
- Evaluating water use efficiency opportunities specific to each community.
- Developing a WUE planning program.
- Meter installation on all customer connections by January 22, 2017.
- Achieve a standard of no more than ten percent water loss, on a three-year rolling annual average.
- Annual reporting on WUE progress.

The City's WUE Program provides for efficient water use and supports continued growth. This program fulfills all the necessary requirements of DOH. The selected program measures will allow the City to meet its WUE goals, resulting in decreased water demand. Measures are interrelated and will help the City achieve its goals to both reduce average water use and peak water use per customer. Public education measures (showing water use in bills, workshops, school outreach, fairs/trade shows, etc.) will continue to be a focus of the WUE Program to increase customer awareness and knowledge of WUE opportunities. Public education is needed to support the City's other WUE measures and to support reductions in both average and peak water use. Continued appliance rebates and shower head giveaways help customers implement what is learned in the public education campaign. With the implementation of AMI, it is expected that the City and customers will be able to identify more water loss reduction opportunities than previously possible. Therefore, customer and City leak detection, water audits, and meter repair and replacement may have a prominent role in the 2024-2034 WUE Program. The program will also continue to provide financial disincentives for excessive water use through metering and WUE pricing. This aspect of the program is likely to help reduce peak water usage further. These measures will result in the City being able to achieve its WUE goals, which includes reduced demand.

The 2024-2034 WUE Program will be a continuation of the City's successful existing WUE Program. The program has also been updated to leverage the City's investments in improved SCADA, leak detection, and AMI. The 2024 Plan complies with regulations as set forth in WAC 246-290-830 and DOH's 2020 Water Use Efficiency Guidebook. This section summarizes the program's goals, demand and supply side measures, reclaimed water, and DSL. The projected demand with the conservation goals, program budget, and cost savings are also presented.

4.3.1 Program Requirements

The WUE requirements emphasize the importance of measuring water usage and evaluating the effectiveness of the City's program. There are three fundamental requirements of a WUE Program that the City follows.

- **Planning Requirements** – Municipal water suppliers are required to:
  - Collect data.
  - Forecast demand.
  - Evaluate WUE measures.
  - Calculate DSL.
  - Implement a WUE Program to meet their goals.
- **Distribution Leakage Standard** – Municipal water suppliers are required to meet a distribution system leakage standard to minimize water loss from their distribution system.
- **Goal setting and performance reporting** – Municipal water suppliers are required to set WUE goals through a public process and report annually to their customers and DOH.

The DOH requires that the City estimate the amount of water saved through implementation of the system's WUE program over the last six years. **Table 4-3** shows the average day demand per-capita from 2017 to 2022. Water use per-capita dropped from 112 gpd per capita in 2017 to 103 gpd per capita in 2022. The net water savings over this period equates to approximately 195.2 million gallons or 39.0 million gallons per year. This was calculated by multiplying the population for each individual year (over the six-year period) by the difference in calculated savings in gpd per capita year after year. The result was then multiplied by the total days in each year. Annual totals were summed for the entire six-year period.

Table 4-3 | Annual Average Day Demand (gpd) per Capita[1]

2017	2018	2019	2020	2021	2022
112	109	106	100	105	103

Note:

1. Average day demand per capita was calculated by dividing the Average Day Demand from Table 2-9 by the population served from Table 2-1 and converting to gpd.

4.3.2 Mandatory Measures

The WUE Program includes supply side measures that the City implements to understand and control leakage including new meters, leak detection surveys, and water audits. Per the WUE requirements, the following measures shall be continued for the 2024-2034 WUE program.

- Install production (source) meters.
- Install consumption (service) meters.
- Perform meter calibration.
- Implement a water loss control action plan to control leakage if the three-year rolling average exceeds ten percent.
- Educate customers about water use efficiency practices.

Additionally, the following measures that must be evaluated are:

- Rates that encourage water demand efficiency (discussed in **Chapter 9**)
- Reclamation opportunities (discussed below)

The City has complied with these requirements in the past and will continue to comply with these regulations.

4.3.3 Program Goals

Per the WAC 246-290-830(4)(a), all water purveyors with 1,000 or more connections were required to set efficiency goals through a public process. The City's 2024-2034 Conservation Program builds upon the goals and framework established through the public process conducted in July 2009, during which the City's water conservation goals were developed and posted to the City's website for public review, in alignment with WAC 246-290-830(4)(a). This process ensured transparency and community engagement in shaping measurable conservation objectives.

The goals established in 2009, including a 1 percent reduction per year in Equivalent Residential Unit (ERU) values, continue to guide the City's Conservation Program today. These goals emphasize efficient water usage and public education. The 2024-2034 Program incorporates updates to comply with WUE regulations and address evolving community needs, as detailed in **Section 4.3.4**. The City has chosen to focus on implementing voluntary measures to decrease both the average and peak water usage. The 2024 program has established the following goals.

- Water Use per ERU Goal: Decrease the planning ERU value (gpd/ERU) one percent annually from the current planning ERU value of 182 gpd/ERU, which is the 75th percentile of eight years of

historical data (2015 – 2022). Revaluate goal when the planning ERU value reaches less than 172 gpd/ERU.

  - To be conservative, an ERU planning value higher than the average was used by the City for demand forecasting. The 75th percentile of the eight-years of data was used to select the planning ERU value of 182 gpd. This methodology is consistent with the City's 2015 Plan. The ERU value of 182 gpd is seven percent lower than the 2015 Plan's ERU planning value of 195 gpd per ERU.

- MDD/ADD Peaking Factor: Decrease the planning peaking factor from the current 1.77, which is equal to the 75th percentile of eight years of historical data (2015-2022), to a planning peaking factor of less than 1.68, the average peaking factor from 2015-2022.

- Distribution System Leakage: Maintain three-year average DSL under ten percent to minimize water waste.

- Customer Support: Provide the service and support necessary to those water customers expressing a desire to conserve water as a part of their environmental ethic and as a means of minimizing water bills.

The WUE Program measures, as summarized below, are designed to help meet these established goals.

4.3.4 2024-2034 Demand-Side Program Measures

To encourage WUE and support customers, the City has incorporated program measures that target demand reductions. Under the WUE requirements, a program measure may include water efficient devices, actions, business practices, or policies that promote efficient water use. With 14 measures as part of the 2024 Program, the City exceeds the minimum DOH requirement of nine measures. WUE measures can target specific customer classes or a combination of customer classes. The City's demand-side program measures are summarized below.

1. School Outreach: The City will continue to participate in programs arranged to educate students on efficient water usage as requested by schools.

2. Speakers' Bureau: The City will seek speaking opportunities to discuss efficient water use with a wide audience spectrum. Topics could include water efficient fixtures and appliances, curbing seasonal peak demands, lawn watering practices, etc.

3. Program Promotion: The City will seek opportunities for social media, television, and/or radio public service announcements for WUE and submit news articles to local papers and Auburn Magazine on efficient water usage especially during the spring and summer months.

4. Theme Shows/Fairs: The City hosts an annual Kids Day fair. The fair includes a wide range of activities for all ages of kids. As part of the fair, the City has fun, water-related activities and provides water efficiency brochures and other materials. The City will conduct outreach at other Theme Shows/Fairs if requested. Water saving device kits are distributed to interested single-family and multiple-family residential customers.

5. Water Audits: The City will conduct a water audit upon the request of a customer, including industrial, commercial, and institutional customers. The audits will review items such as:

recirculation of cooling water, reuse of cooling and process water, reuse of treated wastewater, efficient landscape irrigation, low water using fixtures, fixing leaks, and process modifications.

6. Customer Leak Detection: The City identifies potential leaks through investigation of the water meter upon request of customers. The City runs multiple reports in the AMI system to analyze data and investigate water meters to identify leaks.

7. Bills Showing Consumption History: The City will continue to provide customer bills showing the previous year's water usage. The City provides water usage information from AMI on the customers e-portal.

8. Water Saving Device Kits: The City will participate in distribution of water use efficiency kits through education events such as speakers' bureaus, theme shows, fairs, and through bill insert request forms.

9. WUE Pricing: The City has an inverted block rate structure for single-family residential customers to encourage WUE. The City will consider WUE in future cost of service/rate studies. Studies should determine the most appropriate water structures and rate levels to achieve the City's WUE goals, while generating sufficient revenues for utility operations. It is recommended that the studies consider uniform rates by class, inverted block rates, seasonal rates, and excess use rates.

10. Water Efficient Toilet Rebate Program: The City will continue to provide rebates to customers that replace old toilets with new high-efficiency toilets through their Environmental Protection Agency (EPA) WaterSense Toilet Rebate program.

11. Low-Flow Shower Heads Giveaways: The City gives away free low-flow shower heads at the Utility Billing Counter.

12. School Outdoor Water Use Reduction: The City will target schools to reduce their outdoor water consumption. Water audits and education on the benefits of replacing inefficient irrigation systems or landscaping (including turf) will be conducted.

13. City Water Use Reduction: The City will audit the water use of City accounts to identify both indoor and outdoor water saving opportunities. The Water Utility staff will help educate City account holders on WUE; however, no water budget has been allocated to implement water saving devices at City facilities.

14. Rainwater Harvesting: The City will evaluate implementation of a rainwater harvesting (rainwater reclamation) promotion program as a means to reduce irrigation water usage by commercial, public, and residential customers. The City's Stormwater Utility's requirements to use Low Impact Development (LID) measures, where feasible, strives to keep rainwater on the property, further reducing irrigation demands.

It is important to note that in addition to the water cost savings for the WUE measures, other benefits result, both to the utility and to its customers, from WUE activities. Such additional benefits could include:

- Significant customer energy savings because water heaters are the second largest energy users in the home. Hot water use can be reduced by almost one-third by cost-effective WUE measures, such as water efficient fixtures and appliances. Significant energy savings can also occur for industrial processes requiring water heating and other power uses.

- Efficient landscaping and irrigation techniques save on maintenance costs.
- Reductions in water production decrease energy required by utilities to treat and distribute water and to collect and treat wastewater. Chemical costs are also reduced in water and wastewater operations.
- System measures could provide substantial benefits in addition to water production cost savings including:
    - Identification of non-revenue water could result in recovery of unbilled revenue (inaccurate meters) and reduced unauthorized water usage (theft).
    - Leak detection helps prevent major main breaks, which could result in significant repair costs.
    - Leak detection reduces a utility's liability due to prevention of potential property damage.
    - Repair and/or replacement of service and source meters allows a utility to recover unbilled water revenues.

4.3.5 Reclaimed Water

According to WAC 246-290-100 and the WUE requirements, water systems with over 1,000 connections must collect and evaluate information on reclaimed water opportunities. The City is committed to wastewater reuse and rainwater reclamation, as stated in its official water system policies summarized in Appendix A. The City participates in the King County reclaimed water program, which completed a Reclaimed Water Comprehensive Plan in 2012. Additionally, the City has completed the King County Water Reclamation Evaluation Checklist, included as Appendix L. Currently, there are no reclaimed water users in the City. The City considers the most likely candidates for use of reclaimed water to be the irrigation customer class. Since the City conveys all sewage to King County's regional sewerage system, there is not an opportunity for the City to sell reclaimed water without significant capital investments to develop a reclaimed water distribution system, and there is not currently an alternative reclaimed water source in the area.

The City will implement reclaimed water as a conservation measure and include these savings in the demand projections when specific opportunities arise. The City, in conjunction with King County, may develop projects or consider participation in water reuse projects and programs developed by adjacent purveyors and others as appropriate. The efforts may include demonstration or pilot projects developed in accordance with applicable federal, state, and local laws and regulations.

4.3.6 WUE Budget

The City has established a budget for each program measure from 2023 to 2029, as required per WAC 246-290-810 4.e, shown in Table 4-4. WUE measures are funded through rates.

Table 4-4 | Annual WUE Budget

Measure	2023	2024	2025	2026	2027	2028	2029
School Education (NPDES & Water)	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000
Conservation Public Education/ WQ Report	$6,350	$6,350	$6,350	$6,350	$6,350	$6,350	$6,350

Toilet Rebates & Low-flow Shower Heads	$11,000	$11,000	$11,000	$11,000	$11,000	$11,000	$11,000
Large Meter Test/Repair/Replace	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000
WSP Update (WUE)	$22,000	-	-	-	-	-	-
Total	**$89,350**	**$67,350**	**$67,350**	**$67,350**	**$67,350**	**$67,350**	**$67,350**

4.4 Water Use Efficiency Savings

The WUE Program primarily provides cost savings in two ways, reducing demand and reducing DSL. Reducing demand may reduce or delay capital projects for additional supply and expanded distribution infrastructure. Reducing DSL can provide additional revenue, as well as increase the efficiency of supplying existing water uses. Additionally, advanced metering will provide cost savings in the Leak Detection and Repair and Service Meter Replacements programs.

The City has completed a cost analysis of their proposed WUE Program using historical data and projected annual water savings. Table 4-5 shows projected demands with and without annual water savings. This analysis maintains the target water use efficiency goal of one percent reduction per year in the planning ERU value. This goal will be reached through implementation of the proposed program measures. These reductions in demand can be translated into tangible benefits once realized, such as more time before new sources must be developed, increased ERUs that can be served by the existing water infrastructure, and cost savings in power and water treatment.

Table 4-5 | Demand Forecast With and Without Projected WUE Savings

Year	ADD (mgd)				MDD (mgd)			
	Without WUE	With WUE	Savings	% Savings	Without WUE	With WUE	Savings	% Savings
2024	7.05	6.98	0.07	1%	12.47	12.34	0.12	1%
2025	7.14	6.99	0.14	2%	12.61	12.36	0.25	2%
2026	7.22	7.00	0.22	3%	12.76	12.38	0.38	3%
2027	7.31	7.01	0.29	4%	12.91	12.39	0.52	4%
2028	7.39	7.02	0.37	5%	13.06	12.41	0.65	5%
2029	7.48	7.03	0.45	6%	13.22	12.43	0.79	6%
2030	7.57	7.04	0.53	7%	13.38	12.44	0.94	7%
2031	7.66	7.05	0.61	8%	13.54	12.46	1.08	8%
2032	7.75	7.06	0.70	9%	13.70	12.47	1.23	9%
2033	7.85	7.06	0.78	10%	13.87	12.48	1.39	10%
2034	7.95	7.07	0.87	11%	14.04	12.50	1.54	11%

4.5 Climate Change Resiliency

In 2023, the Washington State Legislature passed House Bill 1181, which requires all group A community public water systems serving 1,000 or more connections to include a climate resilience element in water system plans initiated after June 30, 2025. Though this requirement is not yet in effect, the following section is included to initiate discussion and planning for climate resilience and to supplement the Climate Element being incorporated into the City's 2024 Comprehensive Plan update.

4.5.1 Expected Climate Changes for the City of Auburn

Climate is a key factor driving water use as temperature, precipitation, and other climate-driven weather patterns affect irrigation, and commercial and industrial cooling. Auburn's maritime climate is characterized by wet cool winters and dry warm summers. The City's temperate climate is largely protected from continental weather by the Cascade Mountains to the east.

According to the publication Climate Change Impacts and Adaptation in Washington State, Washington State is projected to experience decreases in snowpack, increases in stream temperatures, and widespread changes in streamflow timing, flooding, and summer minimum flows. Climate change is expected to cause more frequent summer water shortages, especially in fully allocated watersheds with little management flexibility. The average spring snowpack in Washington is projected to decline by 38 percent to 46 percent by the 2040s[1].

To estimate the impact of this change in climate on the City's water demands, results from the Water Supply Forum's 2009 Regional Water Supply Outlook (WSF 2009 Outlook) were used. The impacts of climate change on sources that rely on groundwater are mostly unknown due to the variability between aquifers and site-specific effects, such as recharge rates.

Continued increases in average annual and seasonal air temperatures in the Puget Sound are projected due to climate change, as well as increases in extreme heat. Projected changes in annual precipitation are generally minor, although summer precipitation is projected to decrease and heavy rainfall events are projected to become more severe[2].

No changes to demand projections were made for the 20-year planning period to account for potential climate change due to the uncertain magnitude and timing of local effects. However, it is recognized that demands have the potential to increase in the future given these changes. In the event the City experiences an increase in demand, to understand the scale of the impact, the City will run a model of the City water system that would compute firm yield from inputted streamflow data, replacing historic inflows with projected inflows from three climate change scenarios as described by the WSF 2009 Outlook. Those climate change scenarios for King County are provided in Table 4-6.

Table 4-6 | Predicted Increase in Demand from Baseline Due to Climate Change[1]

Climate Change Scenario	2005	2020	2030	2040
Baseline	0.0%	0.0%	0.0%	0.0%
Warm	3.5%	4.4%	4.9%	5.4%
Warmer	4.6%	4.9%	5.8%	7.4%
Warmest	4.8%	6.2%	7.6%	9.5%

4.5.2 Extreme Weather Events and Significant Challenges

To meet the requirements for risk and resilience assessments in America's Water Infrastructure Act (AWIA) of 2018, the City completed a Risk and Resilience Analysis (RRA) in December 2020 using the EPA's Vulnerability Self-Assessment Tool (VSAT). VSAT was developed to serve as an all-hazards assessment tool for water and wastewater utilities of all sizes and addresses malevolent acts, dependency/proximity

[1] Climate Change Impacts and Adaptation in Washington State: Technical Summaries for Decision Makers (uw.edu)
[2] *2009RegionalWaterSupplyOutlook.pdf (amazonaws.com)

threats, and natural hazards. Through this effort, the City has identified the following assets as the most vulnerable to flood hazards.

- Coal Creek Springs aquifer
- Coal Creek Springs and West Hill Springs piping
- Valley Aquifer (Wells 1, 2, 3A, 3B, 4, 6, 7)
- Green River and Lea Hill pump stations
- Distribution System

Climate change exacerbates existing challenges with flooding, landslides, droughts, wildfire, and other natural hazards by potentially changing the frequency, intensity, and duration of these events. Heavier rainfall increases the threat of flooding. In addition to immediate flood threats, flood waters can damage and contaminate wells and water treatment plants resulting in short-term outages and increased risk of waterborne diseases in drinking water. Higher levels of pathogens in runoff from areas around drinking water wells and surface water intakes from flooding of the wells themselves.

In October 2018, the Intergovernmental Panel on Climate Change (IPCC) released the Special Report on Global Warming of 1.5 degrees Celsius (^{O}C). Warming of 1.5^{O}C is projected to decrease summer streamflow in the Puget Sound by 23 percent. Average temperatures in 2015 were 2.7^{O}C warmer than pre-industrial era temperatures which resulted in low summer streamflow and warmer waters[3]. According to the King County Climate Change GIS map "Summer Runoff: Change, 2040s", summer (July-September) runoff in the City of Auburn is expected to decrease by 2.4 percent by the 2040s from historical conditions (1970-1999)[4]. The WSF 2009 Outlook believes the region is reasonably well prepared for drought, however further actions could improve drought preparation. During droughts, water supplies may fall short of meeting demands, especially in summer months. In the past, water utilities in the Puget Sound have adapted to fluctuations in water supplies from droughts through reservoir management and system adaptations such as long-term conservation programs and short-term demand curtailments[1].

Warming of 1.5^{O}C is also expected to bring larger and more frequent wildfires, which could disrupt regional water supplies. Significant water quality impairments from a wildfire include increased turbidity and introduction of radionuclides, metals, and fire-retardant chemicals[5], although impacts to the City's water quality is not likely as there are not surface water sources. The City can maintain existing emergency interties to mitigate wildfires that affect adjacent systems more severely than the City's. While the City contains land that is considered Wildland-Urban Interface, the United States Forest Service has classified the City as either Very Low or Non-burnable in its Potential Wildfire Hazard GIS map (2020)[6].

4.5.3 Assessment of Actions to Protect System

In the face of continued warming, there are actions the City can take to improve the resiliency of the water system from the impacts of climate change. Below are possible short-term and long-term actions for the City to consider. The short-term measures can improve resiliency within three to five years while the long-term measures may require decades to be fully implemented[5].

[3] NoTimeToWaste_CIG_Feb2019.pdf (uw.edu)
[4] https://climate-kingcounty.opendata.arcgis.com/maps/bab86832a962416cbdbb35644dacb11b
[5] Phase2SummaryReport20180731FINAL.pdf (amazonaws.com)
[6] https://hub.arcgis.com/datasets/usfs::wildfire-hazard-potential-version-2020-classified-image-service/explore?location=47.307822%2C-121.937736%2C10.98

4.5.3.1 Short-Term Actions

Source Inventory: Identify sources that will remain online in the event of a 100-year or 500-year flood. Utilize GIS or other mapping tools to create a map to visualize which sources are at risk of inundation in such events. Develop protocols for isolating these sources. Determine how sources could be used for critical health and safety following an extreme weather event and how these sources relate to emergency shelters and critical facilities, such as hospitals.

Groundwater Supplies: Develop new groundwater supplies or augment existing groundwater supplies to improve drought resiliency and offset challenges posed by the wetter winters and drier summers expected with warming temperatures. Establish models to understand the effects of drier summers and increased risk of drought on groundwater supplies. Evaluate impacts of lower snowpack levels in the Cascade Mountains on aquifer recharge.

Wildfire Mitigation: Evaluate fire-fighting capacity for open space areas such as Game Farm Park and Wilderness Area.

Interaction with Research Community: Build and sustain routine interactions with the research community on the subject of climate change and water supply. Consider opportunities to fund water-industry research with direct application to water supplies in western Washington. Explore opportunities to have imbedded persons, such as employing a scientist with climate change expertise.

Rate Factors: Implement less frequently used rate factors, such as a rate for drought periods, to encourage lower demands.

Floodproofing: Build flood barriers such as levees and dikes to protect critical infrastructure. Elevate critical equipment or place it within waterproof containers or foundation systems.

Power Supplies: Extreme weather events can cause power outages. Consider alternative or on-site power supplies to provide resiliency during such events.

4.5.3.2 Long-Term Actions

Monitor Aquifer Conditions: Establish a program of long-range monitoring of aquifer recharge and water levels as affected by climate change. Assess risk of saltwater intrusion. Establish models to assess source redundancy in extreme drought events.

Green Infrastructure: Apply green infrastructure strategies to collect and manage stormwater. Regional or water-shed scale plans for stormwater management can be more cost effective than individual plans.

Water Use Efficiency: Continue to invest in and evaluate WUE programs to reduce water consumption and improve efficiency. Consider partnering with King County to assess reclamation and reuse programs to augment non-potable water demands.

Water Rights: Invest in permanent or mobile infrastructure to ensure access to all available water rights to maximize available sources.

CHAPTER 5

Source Water Protection

The City relies on groundwater sources to meet current water supply demands. This chapter's objective is to update the City of Auburn's (City's) program to protect and improve source water used by the City. As the City's sources only include groundwater wells and springs which are not under the influence of surface water, a Watershed Control Program is not required.

This chapter addresses the following topics:

5.1 Sanitary Control Area
5.2 Wellhead Protection Program

5.1 Sanitary Control Area

Sanitary Control Areas (SCAs) have been established for each of the City's water sources per WAC 246-290-135(2). An SCA is the front-line protection against contamination of the water source. The standard SCA for wells has a minimum radius of 100 feet from the wellhead. The standard SCA for spring sources has a minimum radius of 200 feet from the spring head. All City water sources have SCAs that were established and approved by DOH, and are documented in the susceptibility forms provided in Appendix T. All properties within the SCA for each water source are under the City's ownership and control.

5.2 Wellhead Protection Program

DOH has developed regulations that require Group A water systems using groundwater sources to develop and implement a Wellhead Protection Program (WHPP) in accordance with WAC 246-290-135. The basic elements required of a WHPP are:

- Assessment of initial groundwater susceptibility (physical susceptibility to contamination) for each water supply source,
- Delineation of the wellhead protection area (WHPA) that directly contributes groundwater to each water supply well,
- Identification of potential sources of contamination within each WHPA,
- Documentation of notification to owner/operators of known or potential hazards, and
- Development of spill prevention plans and water contingency plans that minimize or eliminate the possibility of contamination to the groundwater supply and development of options for maintaining water supply in the event the aquifer contributing to a source is contaminated.

The City maintains its WHPP for 12 groundwater sources. A WHPP was prepared in 2014 for the City's 2015 WSP; this remains the current WHPP for the City. The purpose of the WHPP is to help prevent the City's water supply from becoming contaminated and to develop contingency and emergency response procedures in case one or more sources are lost due to contamination. This is accomplished by providing

WHPAs around public groundwater sources, identifying existing groundwater contamination sources, and managing potential groundwater contamination sources prior to their entry into the drinking water system.

The WHPP provides tasks for the City to implement wellhead protection and the City prioritizes those tasks by criteria such as available staff, time to complete, cost, and urgency due to limited available resources. The City maintains an annual operating budget for implementing tasks related to the wellhead protection program, as well as identifying and monitoring potential new hazards. The City allocates budget annually for the Water Resources Protection Program, as discussed in **Chapter 8.**

5.2.1 Susceptibility Assessment

Susceptibility Assessment Forms have been completed by the City and submitted to the DOH. The forms are provided in **Appendix T**. The DOH's susceptibility assessment rating for each source is summarized in **Table 5-1.**

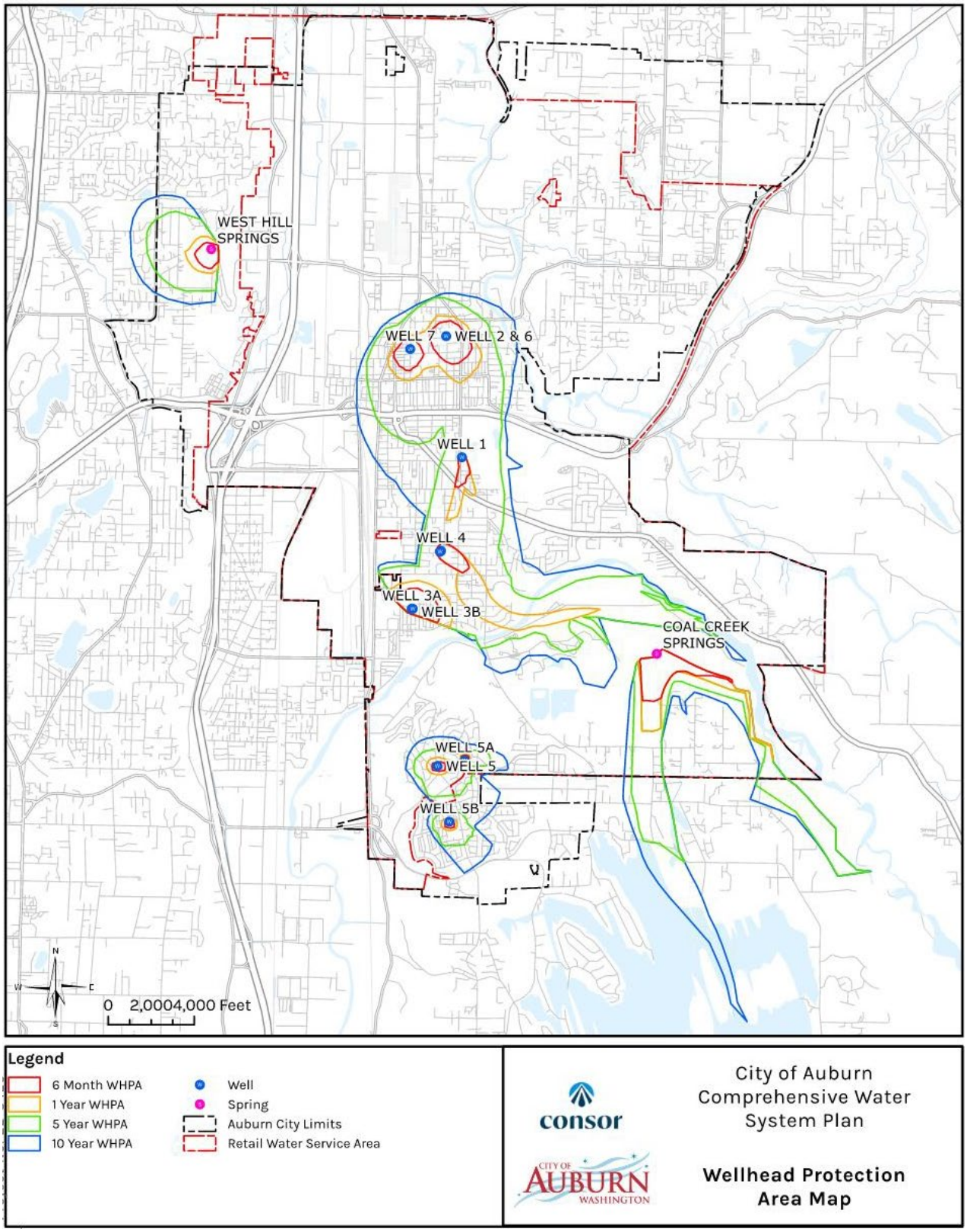
Table 5-1 | Source Susceptibility Assessment Ratings Issued by DOH

Source	Susceptibility Rating
Coal Creek Springs	High
West Hill Springs	High
Well 1	Moderate
Well 2	High
Well 3A	Low (Off-line)
Well 3B	Low (Off-line)
Well 4	Low
Well 5	Low
Well 5A	Low
Well 5B	Low (Off-line)
Well 6	High
Well 7	High (Off-line)

5.2.2 Wellhead Protection Area Delineation

The WHPA defines the area around a groundwater source that has the potential to contaminate the source. This area is based on the source's capture zones, which are the zones of the source aquifer and ground surface that can contribute water to the source in six months, one year, five years, or ten years. The City's 2014 WHPP largely replaced the initial plan created in 2000. The study area, physiographic settings, and WHPAs were defined in the 2000 WHPP and remain valid. Capture zones were delineated using a three-dimensional particle-tracking program with a steady-state head distribution created by a numerical model. The established WHPAs are shown in **Figure 5-1.**

Figure 5-1 | Wellhead Protection Area Map



5.2.3 Contaminant Source Inventory and Notification of Findings

A summary of potential contaminant sources for the City's water sources was updated in April 2024. The Contaminant Source Inventory (CSI) was updated utilizing Ecology's Facility/Site ID database. The contaminant sources are organized by water source and time travel zones, and are included in **Appendix T**.

DOH requires notifications be sent to landowners with potential contaminant sources, as well as state and local agencies, of the CSI findings. Letters and WHPA maps were mailed to landowners in June 2024; copies of the notification letter template and maps that were sent to landowners are included in **Appendix T.**

State and local agencies use the CSI findings and WHPAs to help prioritize local and state pollution control outreach, to provide incentives to landowners for risk reduction, and to support local land-use planning decisions. DOH requires that state and local emergency responders be notified of the WHPAs, results of the susceptibility assessment, CSI findings, and the contingency plan. Copies of the notifications sent to emergency responders and regulatory agencies, as well as the WHPA maps, are included in **Appendix T**. A list of state and local agencies that were sent notifications letters, along with the date of the notification is summarized in **Table 5-2**.

Table 5-2 | State and Local Agencies Notified of CSI Findings

Agency	Notification Date
Washington Department of Ecology	June 2024
Washington State Department of Health Southwest Regional Office	June 2024
King County Public Health	June 2024
Auburn Police Department	June 2024
East Pierce Fire and Rescue	June 2024
King County Fire Protection District 31	June 2024
Mountain View Fire and Rescue	June 2024
South King Fire and Rescue	June 2024
Valley Regional Fire Authority	June 2024

5.2.4 Contingency Plan

The City developed a Water Source Loss Mitigation Plan (City of Auburn Standard Operating Procedure 5.2.1) to address how the water system will provide consumers with adequate supply of potable water in the event one or more sources become temporarily or permanently unavailable; this plan is included in **Appendix T**. Should one water source be unavailable, the City has sufficient capacity across the remaining sources and interties to supply potable drinking water to its customers; water supply availability is evaluated in greater detail in **Chapter 3**.

CHAPTER 6

Operations and Maintenance Program

This chapter provides an overview of the City of Auburn's (City) Water Utility organization, operations and maintenance (O&M). The purpose of the chapter is to document existing procedures and to identify areas where improvements or changes could enhance system operation.

The following topics are addressed in this chapter:

6.1 Water System Management and Personnel
6.2 Operations and Preventive Maintenance
6.3 Comprehensive Water Quality Monitoring
6.4 Emergency Preparedness and Response
6.5 Safety Procedures
6.6 Cross Connection Control Program
6.7 Sanitary Survey Findings
6.8 Customer Complaint Response Program
6.9 Recordkeeping and Reporting
6.10 Summary of O&M Deficiencies and Recommended Improvements

6.1 Water System Management and Personnel

6.1.1 Mission Statement

The mission statement of the City's Water Utility is to provide for the efficient, environmentally sound, and safe management of the existing and future water system within the City's service area.

6.1.2 Department Overview

The Water Utility is responsible for providing potable water to the City's customers that meets or exceeds the recognized standards of today and the future by efficiently administering, operating, and maintaining the water supply. The Water Utility will also continue to enhance its customer service through public education and information. A primary responsibility of the Water Utility is implementing the Comprehensive Water Plan (Plan).

6.1.3 Internal and External Factors

The objective of the Water Utility is based on compliance with internal and external factors. An internal Work Plan Overview is generated at the beginning of each work year with a review process at the end of the year. The Work Plan Overview describes budget goals, performance measures, engineering tasks,

capital projects, and maintenance and operations tasks. External factors include adoption of goals, recommendations, and standards established by the following regulatory or professional practice agencies:

- Washington State Department of Health (DOH)
- Washington State Department of Ecology (Ecology)
- American Public Works Association (APWA)
- Association of Washington Cities (AWC)
- Department of Homeland Security (DHS)
- American Water Works Association (AWWA)
- Washington Cities Insurance Authority (WCIA)
- Municipal Research and Services Center of Washington (MRSC)
- United States Environmental Protection Agency (USEPA)

6.1.4 Water Utility Division Organization

The Auburn Water Utility is operated as a utility enterprise under the direction of the Public Works (PW) Director. Specific Water Utility Management Responsibilities within the PW Department fall under either the Utilities-Water Section of Engineering Services or the Water Division of Maintenance and Operations Services.

The Utilities-Water Section of Engineering Services is responsible for comprehensive water system planning, development of a Capital Improvement Program (CIP), as well as programming the design, construction, and inspection of projects related to the water system.

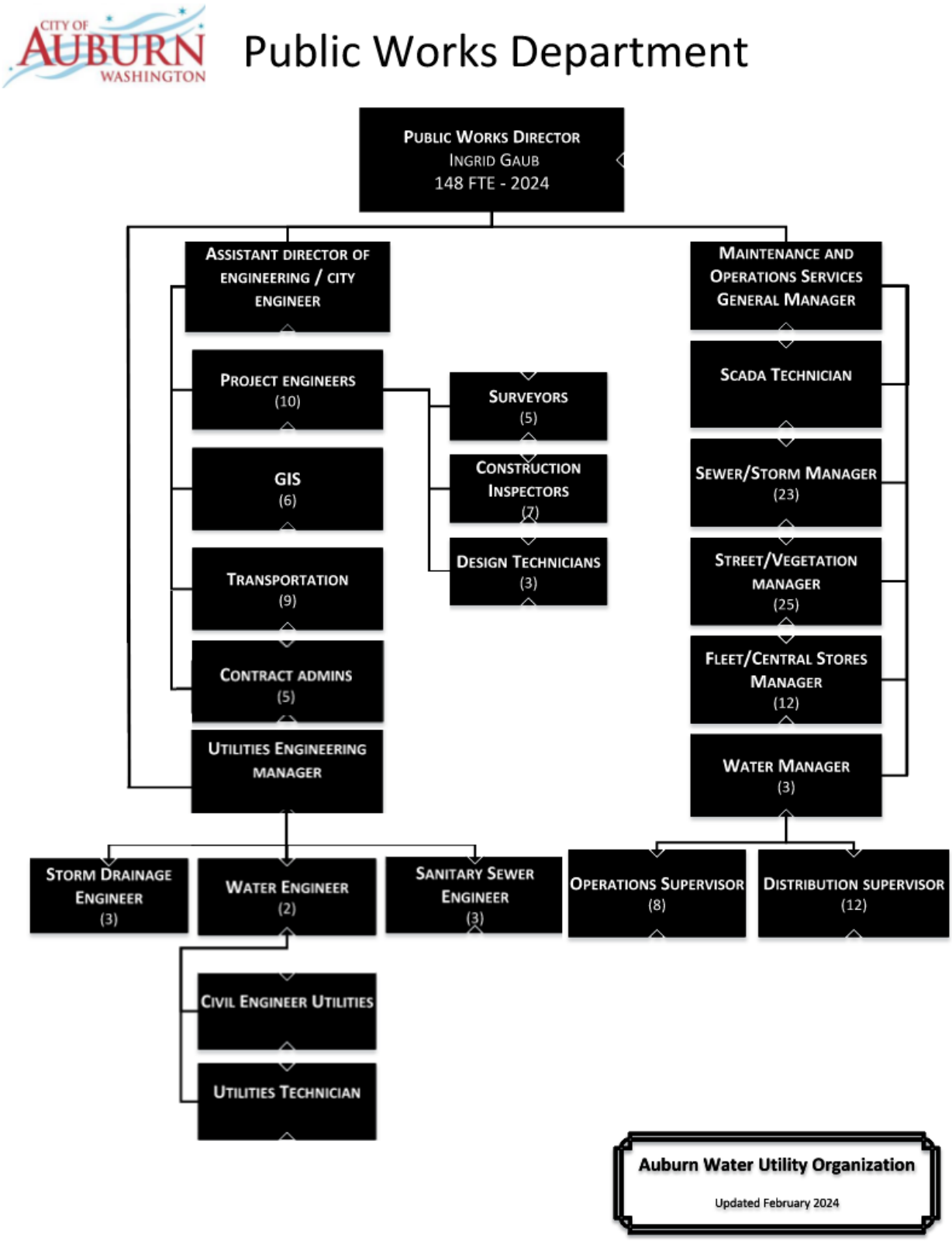
The Water Division of Maintenance and Operations Services is responsible for operating and maintaining the water system, performing daily operation and inspection, water quality monitoring as required by DOH, and line management of the Water Utility.

The organization of the Water Utility is shown within the Public Works Organizational chart in Figure 6-1. The responsibilities of each staff within the Utilities-Water Section of Engineering Services, including professional and technical support staff from within Engineering Services that are not specifically within the Water Utility are summarized below.

- Utilities Engineering Manager and Water Utility Engineer: Primarily responsible for development of the comprehensive water plans, water capital facility plan, annual project budgeting, technical design, and construction standards, "as-built" drawings, and designs, utilized in the construction of the water systems facilities. They also provide technical computations, water modeling and other analysis required to support system operation. Additional responsibilities include engineering, consultant contracts, capital projects planning, and customer assistance with City code, drawings, and permits.

- Water Quality Programs Coordinator: Assist with the Water Quality and Water Conservation Programs and is responsible for compiling DOH sampling data and verifying DOH sampling was conducted per the sampling schedule.

Figure 6-1 | Auburn Water Utility Organizational Chart



- City Engineer: Responsible for issuance of the City's Design and Construction Standards. Responsible for the management and the design and construction of capital projects managed by Project Engineers, including consultant-designed projects and construction contractors. Under the direction of the City Engineer, GIS Specialists are responsible for the transfer of data from "as-built" drawings to the GIS database. GIS is a mapping software that records and locates infrastructure related to the water system. GIS Specialists are also responsible for provision of maps and statistics to staff within the PW Department.

- Utilities Technician: Assist with certain permit-related activities involving the water system. The Technician is also responsible for customer inquiries, assistance with applications, tracking water system usage for reporting, and updating and updating water system records.

- Utilities Civil Engineer: Review City capital improvements and development projects pertaining to water system improvements and provides customer assistance regarding projects and permit activities.

Personnel lists for Engineering and Maintenance and Operation (M&O) staff that are responsible for daily operations are summarized in Table 6-1 and Table 6-2. Operations staff provide daily O&M of wells, corrosion control treatment facilities, pump stations, and reservoirs. They also implement the cross connection control program and provide locating services for all City utilities. Distribution staff maintains the complete distribution system including water mains, valves, hydrants, pressure reducing stations, and meters.

The City has a mayor-council form of government; therefore, the PW Director reports to the Mayor. The City Council provides oversight of the Water Utility regarding policy, planning, and management of the water system.

6.1.5 Communication System

The City maintains a robust communication system to contact Water Utility personnel during normal work hours and after hours. This system is necessary to respond to customer requests, routine maintenance, or emergency situations. Maintenance staff vehicles and other rolling stock are all equipped with radios and personnel carry cellular phones. The Water Utility also has access to an inventory of portable emergency use radio units, should they be required.

A Standby Call-Out Program was initiated in 2006 to ensure that coverage for after-hours response was guaranteed. One staff member in Operations and one staff member in Distribution always carry a dedicated cell phone during their off hours. Standby duration runs for one week before responsibility is rotated to the next staff member on the roster.

Water problems involving service leaks, quality issues, main breaks, broken hydrants, etc., that occur outside normal working hours, are reported through the City's 911 emergency response system. An "Emergency Call-Out List" is provided to the emergency operators who will attempt to contact the designated standby Water Distribution or Water Operations employee, based on the type of service required. If contact cannot be made, the operator will contact the designated Standby Public Works Maintenance and Operation Manager.

Table 6-1 | Water Operations and Distribution Staff and Certifications

Position	Primary Function(s)	Certification(s)[1]
Water Manager	Management	Water Distribution Manager 4
Water Operations Field Supervisor	Management (Operations)	Water Distribution Manager 4, Water Treatment Plant Operator 1, Cross Connection Specialist
Water Distribution Field Supervisor	Management (Distribution)	Water Distribution Manager 3
Maintenance Lead (Distribution)	Management (Distribution)	Water Distribution Manager 2
Cross Connection Control Specialist	Cross Connection Control & Backflow Assembly Tester	Water Distribution Manager 1, Cross Connection Specialist, Backflow Assembly Tester
Distribution Specialist	Distribution Operations Maintenance	Water Distribution Manager 1
Maintenance Worker II / Locator	Operations & Distribution Maintenance	N/A
Maintenance Worker I	Operations & Distribution Maintenance	N/A

There are 12 staff members on the On-Call Manager Standby List and one of them has call-out responsibility for an entire week until it rotates to the next staff member. The 12 staff positions on the Standby List are:

- Water Manager
- Water Distribution Supervisor
- Water Operation Supervisors
- Sanitary Sewer and Storm Drainage Manager
- Sanitary Sewer Supervisor
- Storm Drainage Supervisor
- Streets and Vegetation Manager
- Street Supervisor
- Vegetation Supervisor
- Fleet/General Service Manager
- Maintenance & Operations (M&O) Support Supervisor
- M&O Services General Manager

There are also three other maintenance staff members on standby that can be called out as needed. The staff members are employed by Sanitary Sewer Division, Storm Drainage Division, and Street Division. The 911 operator also has phone access to the other Public Works staff, if the situation warrants it.

Telemetry alarms that occur after hours are handled by an automated Supervisory Control and Data Acquisition (SCADA) alarm and an automated dialer for notification called WIN911. The SCADA alarm calls standby staff from the WIN911 list. If no one responds within 15 minutes, then WIN911 calls the Water Operations standby staff on the call out list. The system will continue to cycle through the roster of seven employees until contact is made.

6.1.6 Operator Certification Program

The Washington Administrative Code (WAC) 246-292, requires minimum standards for the certification status of water operators. Also, the City has recognized the value of having a knowledgeable and well-trained staff operating the Water Utility and encourages employees to obtain the highest level of certification available. The City currently serves a population of greater than 50,000, which classifies their

distribution system into a group 4 according to WAC 246-292-040. Certifications required per staff role are summarized in Table 6-1.

The City pays for annual certification fees, provides time and tuition for certification training courses, and allows time for certification examinations. In addition, the City provides opportunities for staff to obtain continuing education units (CEUs) to maintain certification. Professional growth requirements for certification CEUs are monitored and maintained by the Washington Certification Services.

6.1.7 Education and Training Program

Continuing educational opportunities are fundamental for staff in the Water Utility. The Water Utility training budget is funded to support staff in maintaining their technical awareness and skill sets. Seminars, conferences, and college coursework: 1) broaden their knowledge and 2) allow them to network with other professionals involved in Water Utility work. Subjects include cross connection control, pumps, motors, pressure reducing valves, hydrants, chlorination, generators, forklift training, confined space, first aid, CPR, electrics, and other essential topics.

Most staff are tasked with specific job functions during their normal work shift and the consistent nature of the work allows them to complete their jobs in a very professional and efficient manner. However, all staff are rotated through an active cross training program to cope with employee absences such as vacation, sickness, retirement, and termination.

6.2 Operations and Preventive Maintenance

The City's water system is comprised of pump stations, chlorination stations, corrosion control facilities, reservoirs, springs, and wells. Figure 1-3 presented in Chapter 1 provides an overview map of the major existing system facilities. These components all work together to ensure that water is available to meet customer demands. Primary operation of the water system is maintained via the SCADA computerized control system. AVEVA software works in association with SCADA to provide real time graphical display of system data for staff interpretation and control. The SCADA system is often referred to as the Telemetry system based on one of the definitions of Telemetry (the science and technology of the transmission and measurement of data from a distant source). The City's SCADA system is monitored in the Public Works M&O Building, 1305 C Street SW, and responsibility for the system related to the Water Utility falls under the Water Manager and associated staff.

Some of the functions that SCADA monitors, records, and controls include:

- Reservoir levels
- Source meter production
- Pumps
- Motors
- Valves
- Chlorination
- Pressures: Low, High, Discharge, Suction
- Alarms: Intrusion, Fire, Generator Run, Low Fuel, Overflows, Failures, Turbidity

Status reports are continuously received via radio and information regarding system demand is used to determine system activation. The SCADA system includes logic programming which automates the process; however, Operations staff can manually override most computer decisions, if necessary. The alarm infrastructure is linked to WIN911 for after-hour call-out and response.

All data monitored by the SCADA system is electronically recorded by a computer server maintained by the Innovation & Technology (IT) Department. A back-up copy is made each evening to ensure that records are retrievable should hardware or software failures occur. SCADA records are available to all PW staff via the City's computer server. Access and control of the system is relegated to two dedicated computer terminals at the M&O Building. The computer terminal that houses SCADA is password protected and entry into the building is keycard access controlled.

The SCADA software and historical data is maintained on the City's Wide Area Network (WAN). Staff have access to the system via workstations connected to the WAN or remote network applications. A telephone connection provides the auto-dialer for the WIN911 notification to phones or pagers. An Ethernet radio connected to the computer system at the M&O Building sends and receives radio signals to/from the Programmable Logic Controllers (PLCs) at the water facilities. PLCs at the facilities are also able to communicate directly with each other via radio signal.

The City recently completed a SCADA Upgrade Project, completed in 2024, which updated the system platform to the most current version, modernizing the City's SCADA system from its last major upgrade in 2015. Major components were also replaced throughout the system to provide more reliable communication. The new hardware, in conjunction with software upgrades, provides additional control of the city's facilities.

6.2.1 Inspections, Preventive Maintenance, Repairs, and Replacement

Systematic inspection of Water Utility facilities is conducted on a daily or weekly basis by Distribution Specialists under direction of the Water Operations Supervisor as summarized in Table 6-2. The inspection process serves the following purposes:

- System Confirmation - proper operation of automated control and monitoring equipment
- Sound Check - listen for unusual noises
- Well Levels - static and dynamic
- Equipment Check - pumps, motors, valves, chlorination, heaters, vents, generators, etc.
- Security Verification - intrusion, vents, hatches, locks, gates, graffiti, etc.

A portion of the maintenance tasks handled by the Operations staff are associated with a Preventive Maintenance Program and some of those activities are arranged to coincide with the Facility Inspection Schedule shown in Table 6-2. The maintenance activities are based on equipment manufacturer recommendations and maintenance staff observations for infrastructure located within and outside the facility. Preventive maintenance tasks are essential for reliable operations and preservation of investment so adherence to the program is stressed. Additional maintenance activities handled by Water Operations staff include repairs, replacement, small improvement projects, and response to customer requests.

The Distribution staff is involved in the same activities as Water Operations staff regarding inspection, preventive maintenance, repairs, replacement, and response to customer requests. Water Distribution staff activities are usually in response to damage or leaks involving mainlines, service laterals, meters, meter boxes, and hydrants. Other Distribution tasks include fire flow testing, system flushing, meter installation, and miscellaneous small improvement projects.

Most customer requests are associated with water quality concerns and water pressure issues. Those requests are handled by the Distribution staff and/or Cross Connection Specialists, on a case-by-case basis.

Table 6-2 | Water Operations - Facility Inspection Schedule

Type of Facility	Facility Name	Daily Inspection 5 Day Workweek	Weekly Inspection
Booster Pump Station	Academy Pump Station 3	X	
	Academy East Booster Pump Station	X	
	Green River Pump Station	X	
	Lea Hill Pump Station	X	
	Lea Hill Booster Pump Station		X
	Lea Hill Intertie Booster Pump Station	X	
	Terrace View Booster Pump Station	X	
	Lakeland Hills Booster Pump Station	X	
	Game Farm Park Pump Station		X
	Braunwood Booster Pump Station	X	
Chlorination Facility	Lea Hill Intertie Pump Station (Re-chlorination)	X	
	Terrace View Booster Pump Station (Re-chlorination)	X	
	Coal Creek Springs – Chlorine Gas	X	
	West Hill Springs - Chlorine Gas	X	
	Well 1 – Hypochlorite	X	
	Well 3A – Chlorine Gas (when well is in operation)		Off-line
	Well 3B – Chlorine Gas (when well is in operation)		Off-line
	Well 4 - Hypochlorite	X	
	Fulmer Field Corrosion Control Facility – Onsite Generated Hypochlorite (Treats Well 2, 6, and 7 sources)	X	
	Well 5A - Hypochlorite	X	
	Braunwood Well - Hypochlorite	X	
Corrosion Control Facility	Howard Road Corrosion Control Treatment Facility (Treats Coal Creek Springs source)	X	
	Fulmer Field Corrosion Control Treatment Facility (Treats Well 2, 6 and 7 sources)	X	
Metals Removal Facility	Well 5B (Treats iron and manganese)		Off-line
Reservoir	Reservoir 1 – Valley Service Area	X	
	Reservoir 2 – Valley Service Area	X	
	Reservoir 4A – Lea Hill Service Area	X	
	Reservoir 4B – Lea Hill Service Area	X	
	Reservoir 5 – Lakeland Service Area	X	
	Reservoir 6 – Lakeland Service Area	X	
	Reservoir 8A - Academy Service Area	X	
	Reservoir 8B - Academy Service Area	X	
	Braunwood Reservoir	X	
Spring Source	Coal Creek Springs	X	
	West Hill Springs	X	

Type of Facility	Facility Name	Daily Inspection 5 Day Workweek	Weekly Inspection
Well Source	Well 1	X	
	Well 2	X	
	Well 3A (Off-line)		Off-line
	Well 3B (Off-line)		Off-line
	Well 4	X	
	Well 5	X	
	Well 5A	X	
	Well 5B (Off-line)		Off-line
	Well 6	X (when on)	X (when off)
	Well 7 (Off-line)		Off-line
	Braunwood Satellite Well	X	
Intertie Supply	Tacoma B Street Intertie		X
	Tacoma 132nd Avenue Intertie		X

6.2.2 Reservoir Maintenance

Reservoirs are a fundamental part of the water distribution system. They act as storage and regulating devices for water flow and maintaining them in prime physical condition is an essential activity. The Water Utility began a rigorous reservoir maintenance program in 1997 and it has evolved into an annual routine function. Each year, two of the reservoirs have their interiors thoroughly inspected by a contractor experienced in reservoir maintenance. The annual inspection process is based on a rotational schedule to ensure inspection of each reservoir on a 5-year timetable.

Since the reservoirs are usually filled with water, a diver must conduct the inspection. The diver is equipped with lights and an audio/video device to record the process. Issues of concern include corrosion, cracks, and condition of coating on the walls, valve, fasteners, etc. The diver is also equipped with a vacuum unit to remove sedimentation. The contractor also performs a visual inspection of the exterior of the reservoir for the same elements noted for the interior. The recording is reviewed by the contractor, a report is generated based on the interior and exterior inspection and a copy of the report and recording are given to the Water Manager and Water Utility Engineer for review.

If the report and recording indicate that a reservoir needs major repair, relining, or repainting, another contractor is acquired for a recommended course of action. If interior work is required, the reservoir must be drained of water. In those situations, a carefully orchestrated timetable and shifting of water resources is necessary to balance maintenance with the needs of the City's customers.

6.2.3 Pump Station Maintenance

Pump Stations are inspected daily or weekly depending on the station by Water Operations staff. The inspection checklist includes confirming that proper operation of the automated controls and monitoring equipment align with the standard operating procedures for the equipment, sound checks for unusual noises, static and dynamic well level checks, equipment checks (pumps, motors, valves, chlorination, heaters, vents, generators, etc.), security checks through visual inspection of the facility grounds for

intrusion, graffiti, or issues with vents, hatches, locks, gates, and anything else that may seem unusual or misaligned.

6.2.4 Treatment Facility Maintenance

Treatment Facilities are inspected daily by Water Operations staff. The inspection checklist includes confirming that proper operation of the automated controls and monitoring equipment align with the standard operating procedures for the equipment, sound checks for unusual noises, equipment checks (pumps, motors, valves, chlorination, heaters, vents, generators, aeration towers, etc.), security checks through visual inspection of the facility grounds for intrusion, graffiti, or issues with vents, hatches, locks, gates, and anything else that may seem unusual or misaligned.

6.2.5 Pressure Reducing Valve Stations

Pressure Reducing Valve (PRV) Stations are inspected every month by Water Operations staff. The inspection checklist includes condition of the vault, valves, inlet pressure, outlet pressure, and pilot controls. Staff inspections are supplemented by a more thorough inspection and calibration process conducted annually by a contractor that specializes in PRVs. Repair or replacement maintenance, unless minor, is usually performed by the contractor. The City plans to implement an in-house repair maintenance program.

Rebuilds of PRVs are typically done every three to five years based on the rebuild schedule.

6.2.6 Utility Locating Service

Two Water Utility staff are designated as the Utility Locators for all City utilities and roadway infrastructure (Water, Storm Drainage, Sanitary Sewer, and Street lights and traffic signals) and additional staff may also be present to provide flagging when safety issues arise. The number of location requests varies daily but averages out to a full-time commitment. The Utility Locators report to the Water Operation Supervisor, but location requests may be made indirectly by the Water Distribution, Sanitary Sewer, or Storm Drainage Supervisors.

6.2.7 Fire Hydrant Inspection

In 1999, a fire hydrant inspection goal was initiated. The intent was to inspect, repair, and test at least one third of the utility owned fire hydrants in the system each year. The importance of this program cannot be understated since fire hydrants are the first defense against loss of life or property due to fire. The inspections also improve water quality due to the stagnant water that is purged from the hydrant stubs. A water de-chlorination program, in response to Ecology guidelines, was initiated in 2001 to treat water purged from hydrant stubs. The Water Distribution Supervisor has made public hydrant inspection a year-round routine task of Water Utility operations. Secondary maintenance of public hydrants such as rust removal, painting, street reflector replacement, clearing obstructions, etc., is handled by seasonal part time staff when time permits. Property owners with private hydrants are solely responsible for obtaining annual, satisfactory inspections of their private hydrants from a qualified inspector.

6.2.8 Dead-end Flushing

A key component of water quality control is dead-end line flushing. The City has approximately 548 dead-end mains throughout the distribution system. The water in dead-end mains tends to stagnate due to lack of turnover which can have an impact on water quality for customers in the immediate vicinity. Flushing dead-ends is the only effective way to purge the lines of stagnant water and associated particulate matter.

In 2000, an engineering consulting firm was hired to assist the City with the development of a Dead-end Flushing Program. They examined the City's distribution system via GIS data and supplemented the study with field inspections. A comprehensive operating procedure detailing separate flushing instructions for each dead-end was developed and continues to be used today.

Maintenance staff, under the direction of the Water Distribution Supervisor, follow the program instructions and record their activities. This program has been incorporated into the Unidirectional Flushing program, see Section 6.3.8.

6.2.9 Valve Exercising

The AWWA technical manual *M44 Distribution Valves: Selection, Installation, Field Testing, and Maintenance*, suggests that valve exercising should be conducted each year and more frequently for valves 16 inches and larger.

The Water Utility has a Valve Exercising Program, which is in concert with the Unidirectional and Dead-end Flushing programs. Historically, distribution valves have only been exercised on a limited and sporadic basis. Through the Valve Exercising Program, the City's goal is to exercise 25 percent of the distribution valves each year. Hydrant foot valves are not included in the valve exercising program and instead, are exercised as part of the hydrant inspection process.

Opening and closing valves by hand is a repetitive, ergonomically unsafe, and time-consuming task. The City has purchased a portable valve exercising machine and vacuum device to speed up removal of debris that collects in the bottom of valve boxes. Valves requiring repair or replacement are documented and corrected by City Staff or contractors.

Additionally, Distribution staff work with GIS staff to correct inaccurate valve information in the City's GIS data.

6.2.10 Unidirectional Flushing

In 2013, the City implemented a comprehensive Unidirectional Flushing (UDF) program to flush its water system. The program's goals include:

- Improving cleaning of accumulated deposits on pipes,
- Reducing water use, as compared with conventional flushing, and
- Reducing the impact on customers.

The Water Distribution Supervisor is responsible for the UDF program to maintain Water Quality.

The UDF process concentrates flow within a pipe by closing valves and using specific hydrants to isolate each pipeline and create flow in a single direction. The concentrated flows increase velocities within the pipe that results in scouring of accumulated deposits on pipes. UDF may remove sand, gravel, plastic, biofilms, and other accumulated materials that are not removed by conventional flushing. The cleaned mains may have improved water clarity or color, reduced turbidity, and improved chlorine residual.

Flushing times of a half hour or less are typical, which can equate to substantial water savings. Therefore, UDF is a key component of the City's Water Use Efficiency (WUE) program. The reduced flushing time also limits the impact on the Water Utility's customers.

As previously mentioned, the City has incorporated the valve exercising and dead-end flushing programs into the UDF program. Valves not used as part of a flushing sequence along each pipe length are exercised by distribution system staff to complete the Valve Exercising Program. While the UDF program flushes dead-end mains, more frequent dead-end main flushing may be required for water quality reasons. The UDF program also provides static pressure measurements.

The City's goal is to conduct UDF of approximately 20 percent of the system each year.

6.2.11 System Loss Program

The City has committed to an active System Loss Program to maintain water loss under 10 percent. The achievement is documented each year in the Distribution System Leakage Report. Elements of the Program include Leak Detection, Source Meter Calibration, Large Meter Testing, and Meter Replacement. Each of these is discussed in detail below.

6.2.11.1 Leak Detection

The City is committed to a tight, non-leaking water distribution system. As of 2016, the city implemented an in-house Leak Detection program, with a goal to inspect 90 miles of water main every year.

6.2.11.2 Source Meters

Source meters, also known as production meters, measure the amount of water emitted from the City's springs and wells. They are calibrated by an outside contractor under the direction of the Water Operations Supervisor and if a meter cannot be calibrated properly, it is replaced with a new one.

6.2.11.3 Meter Replacement Program

Between 2017 and 2018, the City replaced all service meters with an Automated Metering Infrastructure (AMI) system, under the Water Meter and Billing System Improvements project. The system automatically receives meter reads via radio transmission and integrates the data into the City's billing software. The benefits of an AMI system include increased accuracy and efficiency; early leak detection; high usage, zero usage, and backflow detection; and improved customer service. This has saved staff time associated with regular meter reading, missed or incorrect reads, final reads for customer account close-out, and confirmation of high reads for potential leaks. An optional interactive customer portal allows customers to view their monthly, daily, and hourly usage to see exactly when they are using water and how much. This allows customers to better understand their water usage, encourages conservation, and potentially saves them money.

The AMI system is anticipated to have a 20-year life. That includes the system components and batteries in the radios. Meter replacement will be on a 20-year program to coincide with the AMI system.

6.2.11.4 Meter Services

Water Distribution staff are responsible for all new service connections under three inches and contractors are usually secured for installation of sizes three inches and larger. Repairs, retrofits, or replacements of existing services are typically conducted by Water Distribution Staff unless unusual circumstances arise. Meter services consist of meters, meter vaults, meter boxes, service lines, valves, setters, and other associated equipment. The City uses master meters when beneficial to the City and its customers. Master meters are currently used at several mobile home parks, the Auburn Business Park, and Muckleshoot Indian Tribe (MIT) commercial properties.

6.2.11.5 Large Meter Testing

Large meters are devices that measure water consumed by customers with significant demand requirements. They are usually employed by the following customer classes:

- Commercial
- Farms or Parks – Irrigation
- Schools
- Multifamily Complexes
- Industrial / Manufacturing Businesses
- Wholesale Customers
- Municipal Buildings

Large meters are defined as water meters three inches or larger. The system contains a total of 151 large meters, all of which are calibrated annually, as part of the City's System Loss Program.

Calibration of large meters is conducted by an outside contractor, but one maintenance staff member under the direction of the Water Distribution Supervisor assists in the process. If a meter cannot be calibrated, it is replaced with a new one.

6.2.12 Distribution System Corrosion Inspection

One program that the Water Distribution Division would like to activate, if additional funds and labor resources are available, is a Distribution System Corrosion Inspection program. A significant percentage of the City's piping system is constructed of metal which is subject to corrosive deterioration. Corrosion is an electrochemical reaction whereby metal is eroded and reduced. It is not possible to stop corrosion of metal pipe, but it can be substantially reduced if proper anti-corrosive measures are taken.

The Distribution System Corrosion inspection will identify which pipes can benefit from corrosion resistance measures, resulting in a longer serviceable life. Popular measures taken to resist corrosion include coatings, poly-bagging, and anode packs, and they are described further below:

- Coatings are electrical insulator types of finishes applied to a surface and is the most common method of corrosion protection. Though coatings are common, they are subject to damage and decay. Damage from soil stress such as contraction and expansion can rip coatings from pipes. Pinholes in the insulation, also known as holidays, can allow seepage between the coating and pipe and accelerate corrosion. Penetration of the pipe occurs even more rapidly when pinholes are present than it would on a bare line.

- Anode packs are metal cylinders that are connected to a metal structure via electrically conductive wires and inserted into the ground adjacent to the structure. The ground is subject to stray electric currents and these currents are the electrical component of the electrochemical nature of corrosion. Anode packs become the sacrificial metal to corrode in lieu of the structure. This type of treatment, when initiated, provides benefits in two ways: 1) it could save substantial amounts of money by reducing unnecessary, early replacement of pipe and 2) it would reduce possible disruptive service to the City's customers that could occur if pipe replacement were necessary. Though anodes packs are effective and economical, their current capacity is limited and they typically have a short lifespan.

- Poly-bagging is the process of wrapping the exterior of buried water mains and appurtenances, typically under the influence of corrosive soils, with polyethylene, creating a protective layer around the mains and appurtenances. Poly-bagging is an effective method for corrosion protection of water mains and they are resistant to tearing or puncturing. Though economical, they are not as environmentally friendly and add another layer to maintenance activities.

6.3 Comprehensive Water Quality Monitoring

The Water Operations staff maintains an active and ongoing program of water quality monitoring and reporting to ensure a safe, high quality water supply. Two staff members are responsible for water quality monitoring, sampling, control, and record keeping. The Water Operations staff also receives assistance from the Engineering Services - Water Quality Program Coordinator. A detailed description of the City's water quality monitoring and results is presented in Appendix Q, which includes the following:

- Summary of the City's water quality monitoring programs.
- Summary of recent water quality testing results.
- Summary of the Wholesale Interties Blending Evaluation.

The City's Water Quality Monitoring Program is detailed in a manual entitled "City of Auburn Public Water System Water Quality Monitoring Plan" provided in Appendix O. The document includes plans associated with coliform, lead and copper, disinfection by-products and treatment specific monitoring, and the Water Quality Monitoring Schedule. These plans comply with DOH regulations for Group A public water systems. All sampling is conducted in accordance with the annual Water Quality Monitoring Schedule received from DOH. The City samples for inorganic and physical parameters, synthetic and volatile organic compounds, asbestos, nitrate and nitrite, radionuclides, coliforms, residual chlorine, disinfection byproducts, lead and copper, fluoride, and per and poly-fluoroalkyl substances (PFAS). A map of the sampling locations is included with the documents provided in Appendix O.

Additional sampling also occurs based on special requests by DOH or by customers concerned about water quality issues involving unusual taste, odor, or color.

The Water Manager maintains hard copies of the water quality analysis laboratory reports. These reports are kept at the M&O Building in files organized by years and analysis type. As specified by DOH regulations, chemical analysis reports are kept indefinitely, and bacteriological reports are maintained for a minimum of five years.

The City will comply with the Follow-Up Action Requirements of WAC 246-290-320 whenever water quality results exceed a prescribed level. The Water Utility also complies with the requirements of WAC 246-290 for public notification, as established by the Safe Drinking Water Act (SDWA) and DOH.

Forms for "Water Boil Notification" and "Drinking Water Problem Corrected Notification" have been developed and are available for immediate distribution, if necessary. A list of the appropriate print, TV, and radio media to contact for public notice is included in the electronic Emergency Response Manual. An additional procedure described in the Emergency Response Manual to address water quality issues involves an "Action Plan for Water System Contamination Via Threat Warning."

The City maintains equipment to perform some basic water quality monitoring functions. However, all testing required for water quality regulatory compliance is contracted to independent testing laboratories. The current primary laboratory used by the City is:

Water Management Laboratory
1515 80th Street East
Tacoma, Washington 98404
206-531-3121

If testing cannot be done on a timely basis, the City also uses the following laboratory:

Analytical Resources, Inc.
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200

6.4 Emergency Preparedness and Response

The City has prepared an electronic Public Works Emergency Response Manual (Manual) as a guide for management of emergency situations, with the objective of protecting life and property and restoration of essential services, such as providing clean water, as quickly as possible. The Manual is only one element of the City's overall Emergency Response Plan, which serves as a guide and was first developed in 1999 in response to the potential impact of Y2K. The Emergency Response Plan is updated annually at the first of the year. It is not all-inclusive for every type of disaster that could occur but is a valuable tool for dealing with many of the emergency situations that most utilities could face.

The Manual contains a detailed table of contents and is tabbed to allow quick access to information. Three copies of the Manual have been published. Copies are located at the M&O Building, in Engineering Services with the Public Works Director, and at the Valley Regional Fire Authority, Station 31. The Manual is also available in digital format on the City's computer server.

The master response program for the entire City is documented in the Comprehensive Emergency Management Plan (CEMP), which provides guidance to the Emergency Management Organization for mitigation, preparedness, responsibilities, recovery operations, training, and community education activities. The CEMP also describes the functions of local government and incorporation of essential non-governmental organizations into the Emergency Management Organization. Copies are in each City Department, the Public Works M&O Building, and the Valley Regional Fire Authority, Station 31. The CEMP is also available in digital format on the City's Emergency Operation Center (EOC) computer server.

An additional emergency response manual that is available for use is the Water Division Intertie Locations and Policy Manual. This manual contains contact names, addresses, and phone numbers for cities and water districts that have intertie connections with the City. Included are photos of the intertie vaults, valves, and meters, along with information for activating or deactivating an intertie. Three copies have been published and are located at the M&O Building, in Engineering Services with the Water Utility Engineer, and at the Valley Regional Fire Authority, Station 31.

The City has been involved with several tabletop exercises to prepare for emergencies and they are an ongoing feature of the City's Emergency Response Program. Staff, depending on their position, have also been trained for emergencies in accordance with the Federal Emergency Management Authority (FEMA)

under the auspices of Homeland Security. The training program, known as the National Incident Management System (NIMS), offers educational classes tailored for the Incident Command System (ICS).

The NIMS and ICS program is a solid blueprint for federal and local emergency command activities, but it does not provide the type of response details needed by PW maintenance staff and managers. Consequently, the PW Emergency Response Manual is the reference tool referred to on a more intimate scale.

6.4.1 Vulnerability Assessment

The City's Vulnerability Assessment (VA) was prepared in 2004 under the guidance of an engineering consultant firm and it was submitted to the USEPA on November 15, 2004. A Water System Security Improvement Plan (WSSIP) was also prepared in conjunction with the VA to prevent or significantly lessen the impact of intrusive activities.

Recommendations noted in the WSSIP have been adequately addressed by completing the SCADA system upgrades and physical security project. As further upgrades are completed at City facilities, the recommendations noted in the WSSIP are considered, as well as other considerations as technology continues to advance.

6.4.2 Wellhead Protection Program

The City's wellhead protection program is key to managing potential sources of groundwater contamination prior to their entry into the drinking water system. The wellhead protection plan (WHP) was updated as part of the Plan and summarized in Chapter 5.

Engineering Services staff are charged with implementation of the program. Staff track and follow up on construction projects, spills, and monitor possible contamination sources, as possible.

6.4.3 Water Shortage Contingency Plan

In Auburn City Code (ACC) 13.14 the Mayor may order water use restrictions and conservation measures, when necessary, to protect public health, safety, and welfare during a water shortage or emergency caused by drought conditions, city water utility damage or destruction, or any other cause which threatens to disrupt or diminish the City's water supply below its ability to meet normal demands.

The City has also updated its Water Shortage Contingency Plan, attached as Appendix R, which establishes actions and procedures during impending or actual water shortages. These actions and activities maintain levels of service essential for public health and safety, minimize adverse impacts on economic activity, and protect customers' lifestyles. The plan addresses both progressive situations, such as those that are weather-related, and more drastic and immediate situations such as facility emergencies (e.g., a pipeline break). Initial stages of the Water Shortage Contingency Plan may coincide with efforts in the WUE program; however, it is distinct as it is a response to a specific situation, and it may lead to mandatory restrictions and curtailment.

6.5 Safety Procedures

The City has a comprehensive safety program that meets Occupational Safety and Health Administration (OSHA) and Washington Industrial Safety and Health Act (WISHA) regulations. The safety policies and procedures for the water department are documented in 25 policies that are summarized in Table 6-3. The

policies cover the full range of hazards staff may experience while operating the water system. These include, but are not limited to, operation of motor vehicles and equipment, chemicals, confined spaces, falls, traffic, and fires. Each policy includes a purpose, organization affected, references, the policy, definitions, procedures to implement the policy, and responsibilities for the implementation. Responsibilities are assigned to individual roles, such as employee, supervisor, or safety manager. The policies and procedures clearly identify contact information of the applicable regulating agencies in case of a serious incident. All policies are available on the City's intranet.

Table 6-3 | Safety Policies and Procedures

Number	Policy Name	Description
300-01	Workplace Health & Safety	Document workplace health and safety policy
300-03	Hearing Conservation	Implement program to protect employee hearing
300-04	Personal Protective Equipment	Establish policy that requires employees to always use personal protective equipment when performing certain tasks or when in an unsafe environment
300-05	Flagger Certification	Flagger certification requirements
300-06	First Aid	Employee first aid training, first aid supplies and emergency stations
300-07	Hazard Reporting	Procedure to report an obvious or potential safety or health hazard
300-08	Incident Reporting	Procedures for reporting non-vehicular incidents
300-09	On The Job Injury	Establish policy to monitor on-the-job injuries
300-10	Safety Inspection of City Owned Facilities	Procedure for inspection of all City-owned and operated facilities
300-11	Central Safety Committee	Establish function and structure of Central Safety Committee
300-13	Emergency Evacuations of City Buildings	Procedure for evacuation of City buildings in the event of an emergency
300-14	Safety Restraints & Seat Belts	Requires mandatory use of safety restraints/seat belts while driving or riding in the City vehicles
300-15	Excavation Trenching & Shoring	Establish policy for shoring and sloping all excavations or trenches over four (4) feet in depth
300-16	Safety Line Procedure All Cranes, Backhoes, & Hoists	Procedures for controlling moving loads being hoisted or swinging ground or truck using hoists, backhoes, cranes, or any mechanical device use in moving loads
300-17	Chemical Hazard Communication (Worker Right To Know)	Establish chemical and global hazard communication program to assure the health and safety of City employees
300-18	Welding, Brazing, & Cutting	Procedure for welding, cutting or brazing work or practices which may result in an injury or death
300-19	Lockout & Tagout	Requirements for the lockout or tagout of energy isolating devices
300-20	Bloodborne Pathogens	Procedure to prevent exposure to blood or other substances and materials that may carry bloodborne pathogens. Procedures for decontamination of equipment and evaluation and treatment of employees who experience exposure.
300-21	Reporting Vehicle Accidents	Procedure for reporting vehicle accidents
300-22	Heat Related Illness	Training for potential heat related illness

Number	Policy Name	Description
300-23	Confined Spaces	Procedures for entering a confined space
300-24	Green Housekeeping Guidelines	Procedures that sustain a "Green Cleaning" environment
300-25	Respiratory Protection Program	Procedures that will prevent employees from inhaling hazardous airborne chemicals
300-26	Fall Protection & Rooftop Safety	Procedures for rooftop safety and use of fall protection
300-27	Powered Industrial Trucks	Training, operation, and safety of powered industrial vehicles

In addition to the policies, all M&O staff receive safety training. The contents of the training are periodically reviewed and updated, if necessary, through departmental and city-wide safety committees. The Human Resources and Risk Management Department maintains information and schedules on safety training.

The City maintains appropriate safety equipment and information. Each vehicle and facility have a fire extinguisher and first aid kit. All staff use personal protective equipment, such as hard hats, safety glasses, safety vests, etc., appropriate to the task. Climbing equipment and lockout/tagout equipment is available and stored at the M&O Building and the Well 7 storage facility. Additionally, each site with chemicals has a Safety Data Sheets (SDS) book that contains the Material Safety Data Sheets (MSDS) for all chemicals on site. A master sheet of all chemicals used by the Water Utility is maintained at the M&O Building.

6.6 Cross Connection Control Program

The City's Cross Connection Control Program (provided in Appendix Q) protects the public water system as defined by WAC 246.290.010, WAC 246.290.490, and Auburn City Code (ACC) 13.12 from contamination via cross connection hazards. It describes minimum operating policies, provides guidelines for installation, testing, and maintenance of approved backflow prevention assemblies, permitting process, inspection, and survey requirements for existing and new water service connections. The program is maintained by two Cross Connection Specialists under the direction of the Water Operations Supervisor. The specialists are responsible for identification and elimination of potential and actual cross connections and contamination hazards within the public water system.

6.7 Sanitary Survey Findings

DOH completes periodic inspections of the City's water facilities, their operations, and facility records to identify potential health risks to the public. The sanitary survey, conducted by DOH on August 22, 2022, identified significant deficiencies such as air gaps or backflow assemblies that must be added to the water supply lines at Wells 5 and 5A. Additionally, repair needs were identified for the reservoir overflow screens at Reservoirs 8A and 8B.

DOH identified the need to terminate the pump to waste line at Well 5 above grade and either raise the casing at Well 5A or provide a sump pump or alarms to address potential water accumulation in the vault. Weekly vault inspections, especially after significant storms, were recommended until a permanent solution is implemented.

The survey noted that the reservoir vents at Reservoirs 4A, 4B, and 8A should open downward to prevent debris entry. It also identified a need for evaluation of the overflow piping at Reservoirs 2, 4A, and 4B, to ensure compliance with regulations.

The next DOH sanitary survey is scheduled for 2027.

The City has taken the following actions to address some of the deficiencies identified in the sanitary survey.

- A backflow assembly was installed at Well 5A.
- The reservoir overflow screen at Reservoirs 8A and 8B was repaired on September 13, 2022.
- The City implemented an inspection and maintenance program to conduct weekly inspections at Well 5A and immediately after a significant storm even.
- The direct connections of reservoir overflows (Reservoirs 4A and B to drains, sanitary sewer, and/or storm sewer) have been addressed.

The following deficiencies identified in the sanitary survey will be addressed with ongoing or planned Capital Improvement Projects identified in Chapter 8 and are captured in Section 6.10.2 as recommended improvements:

- Reservoir vents will be retrofitted or replaced as part of the ongoing Reservoirs 4A, 4B, 8A, and 8B Seismic Valves Retrofit capital project.
- The request for the pump to waste line at Well 5 to terminate above grade will be addressed with a capital improvement project.
- The direct connections of reservoir overflows (Reservoirs 2) to drains, sanitary sewer, and/or storm sewer, will be addressed with a capital improvement project.

6.8 Customer Complaint Response Program

One member of the Water Distribution staff is a Customer Service Representative. This individual is responsible for meter turn-on and turn-off, delinquency notices, meter rereads, new service reads, final service reads, leak adjustments, high consumption investigations, account documentation, and other duties, as assigned. The employee maintains a modified work schedule, which provides more flexibility in dealing with emergency service requests by customers.

Beginning in 2006, the Water Utility, along with the rest of PW transitioned to an asset management software system called CarteGraph. Some of the benefits include:

- Ability to assign and track citizen complaints and requests
- Produce work orders
- Monitor work and maintenance projects
- Track costs for labor, equipment, and material
- Enhanced inventory control
- Integration with GIS
- Benchmark analysis
- Generate reports
- Track infrastructure conditions – GASB 34

The City has a customer service program accessible by the public and City staff via the City's website. Customers fill out the online Citizen Report form and describe the services they are seeking. The submitted form downloads into the CarteGraph system for review and action by staff. In addition, customers can stay connected with the City on mobile devices with a SeeClickFix application. The SeeClickFix app allows customers to report graffiti, abandoned vehicles or potholes, water issues, etc.

6.8.1 Customer Request Response Program

As described above, the CarteGraph system can assign and track customer requests (or complaints) and produce work orders. The City maintains a list of requests and identifies the work done to respond to any requests from the public. The City categorizes the citizen reported issues into the following five categories:

- Water Appearance: contains all requests related to the color of the water (brown, discoloration, cloudy, etc.)
- Odor: contains all requests related to water smell (chemical, sulfur, chlorine smell, etc.)
- Pressure: contains all requests related to change in water pressure (pressure drop, high water pressure, fluctuation in pressure, etc.)
- Taste: contains all requests related to water taste (poor, bitter, strong chlorine taste, etc.)
- Water Quality: contains all requests related to a combination of odor, taste, and discoloration issues.

Customer requests are entered into the CarteGraph or SeeClickFix and a work order is generated. Typically, a Distribution staff member or team will investigate the issue and respond directly to the customer.

A table summarizing the number and type of requests or complaints is provided in Chapter 3.

6.9 Recordkeeping and Reporting

All recordkeeping and reporting practices follow DOH regulations as specified in WAC 246-290-480. The Water Manager maintains hard copies of the water quality analysis laboratory reports. These reports are kept at the M&O Building in files organized by year and analysis type.

Analytical laboratories submit reports directly to DOH. As specified by the regulations, chemical analysis reports are kept indefinitely, and bacteriological reports are maintained for a minimum of five years. Additionally, Construction Completion Reports are submitted to DOH, as required. Construction Completion Reports for distribution main projects are maintained on file at the City and are available upon request by DOH, in accordance with WAC 246-290-125.

Water production and purchase source meters are read daily (during the work week). Paper copies are scanned at the end of the month and digital copies in pdf format are maintained on the City computer server by month and year. Annual summary spreadsheets are also maintained on the computer server. This data is added to the monthly DOH reports. Records are maintained for a minimum of 10 years.

Chlorine residual samples are collected in the distribution system and analyzed on a weekly basis. Summary spreadsheets are maintained on the City computer server by year. Records are maintained for a minimum of three years.

Monthly reports containing water production and treatment data are submitted to DOH by the 10th day of the following month, using forms provided by DOH. Signed paper copies are scanned to produce a digital copy and are maintained on the City computer server, organized by year. Digital copies are maintained for a minimum of 10 years.

Most records that Water Utility collected in the past are based on hard copy paper forms. This includes forms that track maintenance and inspection records used for pumps, valves, meters, reservoirs, hydrants, operating equipment, etc. A portion of the integration process with CarteGraph involved the collection and collation of historical data into a form that can be downloaded into the software system. The City's goal is a near-paperless documentation system that can be accessed by staff in the office, field, or home on a 7-day, 24-hour basis. Existing electronic records include those described below.

6.9.1 Cross Connection Control Program

Cross Connection Control records are managed with Tokay software and Laserfiche. Test reports conducted are stored in Laserfiche and are kept for 5 years. Tokay is used for creating reports, identifying and updating when tests are required, and general data entry and management of cross connection devices per parcel.

6.9.2 Water Meter Consumption

Water meter consumption records are maintained by the Finance Department using the Springbrook Utility Billing System. These records include customer account data for classes of customers, billing, service, comments, and questions. The system also includes a tracking feature for water sold each month as well as annual total water sales. The tracking feature is useful because data on water consumption by customer type and season supports the City's WUE Program, per Chapter 4. The Finance Department also provides staff with monthly financial reports regarding Water Utility operations.

The City also uses AMI throughout the system as a tool for the WUE Program. Using AMI data, the City may be able to identify customer leaks and, as a result, provide cost savings in the Leak Detection, Repair, and Service Meter Replacements programs. Advanced metering also aids the City's efforts to reduce non-payment of bills and water theft.

6.9.3 Supervisory Control and Data Acquisition (SCADA)

The SCADA system monitors, records, and controls water system operations at various facilities. The electronic records are maintained by the IT Department and a back-up copy is made each evening to ensure that records are retrievable should hardware or software failure occur.

Please note that the SCADA system is discussed more thoroughly in Section 6.2 of this chapter.

6.9.4 Water Meter Reading

Effective January 1, 2019, the City transitioned to monthly consumption billing. The Utility Billing staff imports the water meter reads monthly into the City Utility Billing System. With the implementation of the AMI system, the City obtained a Cloud-Based Data Analytics Solution with meter data management capabilities called Sensus Analytics. Within Sensus Analytics, is a billing access application, which enables Utility Billing staff to generate and export a billing request file defined by a billing cycle and billing window. Subsequently, the file that contains meter numbers, account numbers, and current water meter reads are imported into the City Utility Billing System. The Utility Billing staff reviews abnormally high or low consumption levels compared to previous readings from the previous year, same period.

Water service meters are read monthly to document customers' water usage for billing purposes. The AMI system automatically stores and transmits the water use data for utility billing, without the need for personnel to collect the data on site.

6.10 Summary of O&M Deficiencies and Recommended Improvements

6.10.1 Water Facilities Evaluation Study

The City completed an extensive Water Facilities Evaluation Study in 2014. The study conducted a physical inspection and evaluation of 40 out of the City's 97 water supply facilities. Inspections included pump stations, treatment facilities, reservoirs, wells, transmission mains, and PRVs. Inspections considered general conditions, corrosion and rust, structural deficiencies, ability to meet current code, and operational constraints. In addition to the inspections, the remaining useful life of the facilities were developed in a desktop analysis for pump, motor, pipe, valve, general electrical equipment, and major electrical equipment.

Where notable deficiencies were identified in the inspections or assets exceeded their usable life, improvements were recommended. Many of the recommended improvements have been completed or are currently scheduled to be completed and identified in the Capital Improvement Plan. Remaining improvements less than or equal to $10,000 are considered capital maintenance projects, which the City staff or a small works contractor will address as part of the normal M&O budget and are not identified in the Capital Improvement Plan.

Based on the observed facilities, general maintenance improvements are recommended for each facility to create a schedule of improvements based on the facility's remaining useful life. Regular facility inspections are also recommended, as summarized Table 6-4. Additionally, maintenance plans were developed for each inspected water system facility. These plans included the improvement type, estimated project cost, and frequency the improvement is required.

Table 6-4 | Recommended Inspections

Asset Type	Recommended Inspection	Frequency (years)
Pump	Perform pump test	5
Motor	Check motor amp draw	5
Reservoir	Inspect coating thickness	5
Reservoir	Inspect reservoir interior	5
PRV Station	Inspect for corrosion and signs of flooding	1
Structure	Inspect for cracks in grout (where applicable)	1
Piping	Inspect for general coating conditions	3

6.10.2 Recommended Improvements

The City operates and maintains an efficient, environmentally sound, and safe water system. Recommended improvements include the outstanding projects identified from the 2014 Facility Evaluation Study, outstanding items to be corrected from the 2022 Sanitary Survey, and general continued repairs and maintenance activities that are conducted by M&O staff or contracted out. Table 6-5 provides a summary of the identified O&M projects and their costs.

Table 6-5 | O&M Improvement Projects

O&M Deficiency	Planned Year	Notes
The pump to waste line at Well 5 to terminate above grade will be addressed with a capital improvement project. (Identified in 2022 Sanitary Survey)	2026-2028	Included with the Well 5/Well 5A Upgrades Project
Raising the casing at Well 5A to terminate above grade or the provision of a sump pump or alarms to activate when water accumulates in the vault. (Identified in 2022 Sanitary Survey)	2026-2028	Included with the Well 5/Well 5A Upgrades Project
Reservoir vents will be retrofitted or replaced as part of the ongoing Reservoirs 4A, 4B, 8A, and 8B Seismic Valves Retrofit capital project. (Identified in 2022 Sanitary Survey)	2024-2025	Included in CP2219 – Reservoirs 4 and 8 Seismic Rehabilitation
The direct connections of reservoir overflows at Reservoirs 2 to drains, sanitary sewer, and/or storm sewer, will be addressed with a capital improvement project. (Identified in 2022 Sanitary Survey)	2024-2025	Included in Reservoir 2 Valves Project
Conduct inspections of facilities at frequency recommended in the Facilities Evaluation Study.	--	Refer to **Table 6-4**. To be completed via annual M&O operating budget.
Continue distribution system corrosion inspection.	TBD	To be completed via annual M&O operating budget as funds are available.
Develop a UDF Program for the Lakeland Service Areas.	TBD	To be completed via annual M&O operating budget as funds are available.
Replace source water supply meters with flow transmitters for improved electronic data transmission and record keeping.	TBD	To be completed via annual M&O operating budget as funds are available.
Continue PRV Vault Repairs	2024-2026	To be completed via annual M&O operating budget as funds are available.
Continue Pump and Equipment Repairs and Maintenance	2024-2026	To be completed via annual M&O operating budget as funds are available.
Continue Annual HVAC Maintenance and Repairs	2024-2026	To be completed via annual M&O operating budget as funds are available.
Continue Fencing Repairs at Water Facilities	2024-2026	To be completed via annual M&O operating budget as funds are available.
Continue Generator Maintenance and Repair	2024-2026	To be completed via annual M&O operating budget as funds are available.
Continue Large Meter Repair and Testing	2024-2026	To be completed via annual M&O operating budget as funds are available.
Continue Chlorine Feed and Analyzer Maintenance	2024-2026	To be completed via annual M&O operating budget as funds are available.

O&M Deficiency	Planned Year	Notes
Continue Vegetation Control and Maintenance at Water Facilities	2024-2026	To be completed via annual M&O operating budget as funds are available.

CHAPTER 7

Distribution Facilities Design and Construction Standards

This chapter outlines the Engineering Design and Construction Standards (EDCS) of the City of Auburn (City), concerning its water system. It encompasses policies and procedures governing project review and approval. To ensure the highest level of water system reliability, integration of the EDCS into the broader city infrastructure is essential. The City recognizes the interdependence of its water system with other municipal services. As such, there is an ongoing collaborative effort between the Water Division and other relevant City departments, such as Community Development and Finance, as well as non-City stakeholders, such as the Valley Regional Fire Authority (VRFA).

The integration of the EDCS in this Water System Plan empowers the City to employ an alternative review process for distribution main projects, through the submittal exception process, which permits the City to approve project reports and construction documents without written approval from the Department of Health (DOH). This submittal exception is granted provided the conditions specified in WAC 246-290-125(2) are met.

The submittal exception does not apply for source of supply, reservoir, pump station, and water treatment projects. For those projects, the City will seek approval from DOH through the submittal process outlined in WAC 246-290-110 and 246-290-120.

The following topics are addressed in this chapter:

7.1 Project Review Procedures
7.2 Policies and Requirements for Outside Parties
7.3 Design and Construction Standards
7.4 Construction Certification

7.1 Project Review Procedures

For all construction activities related to the City's water system, coordination must be done directly through the City's Water Department. The City's Water Department reviews plans, including calculations, reports, and AutoCAD files, to verify conformity with development requirements, City standards, City policies, as well as other federal, state, and local requirements. The plan sets are required to feature an overall utility plan illustrating public water facilities and private connections within the water service boundary, regardless of whether the project is inside or outside the City limits. City staff also review projects proposed by developers or other water purveyors to determine impacts to the City's water system facilities.

Development review processes are detailed in the Engineering Design Standards (EDS), available on the City's website. Compliance with Washington State Department of Transportation (WSDOT) "Standard Specifications for Road, Bridge, and Municipal Construction," and relevant City, State, and Federal regulations is also evaluated during the review process.

All water-related improvements projects, whether for capital improvement or development, undergo a thorough review process by the Water Division, including evaluation by the VRFA and City's Fire Authority for fire protection standards. Additionally, all plans involving main extensions, modifications, and fire service installations must be stamped by a Professional Engineer licensed in Washington State.

7.2 Policies and Requirements for Outside Parties

The City manages the water utility in accordance with established water- system policies that govern various facets of utility operations. City policies are established by the City to provide a vision or mission of the water utility and to provide a framework for the design, operation, and ongoing wellbeing of the City's water utility.

Policies are developed specifically for the City's multi-source municipal water system and seek to provide consistent treatment to all utility customers and to provide documentation to current water-system customers as well as those considering service from the City. What is included in these policies is limited to those things related to the water system and its design, maintenance, and operation. There are other policies and criteria that pertain to the water utility the City has in place regarding land use, development, and financial components that could still have an impact on the needs of the water system. These policies and criteria may include factors such as zoning regulations, building codes, infrastructure requirements, and financing options. These additional factors will be considered when planning for the water system, to meet the needs of the community in a sustainable and effective matter.

Policies set forth for development are described in the Water System Policies provided as Appendix A of this Plan.

7.3 Design and Construction Standards

Within the Retail Water Service Area (RWAS), the City has established specific standards governing the design and construction of water mains, detailed in the City's EDCS. The EDCS collectively contains the following:

- City of Auburn Engineering Design Standards (EDS).
- City of Auburn Engineering Construction Standards (ECS):
    - City of Auburn Engineering Construction Standards – Standard Details (STD DTL)
    - City of Auburn Engineering Construction Standards – General Special Provisions (GSP)
    - City of Auburn Engineering Construction Standards – Technical Special Provisions (TSP)

These standards undergo periodic updates, with the most recent revision in 2024. The City's 2024 design standards and construction specifications related to the water system are outlined in Appendix P. Additionally, this plan incorporates relevant sections of the City's current construction standards, including materials, methods, and standard details applicable to the construction of water system appurtenances.

For detailed information, the latest versions of the collective EDCS are accessible for view on the City's Public Works web page.

Table 7-1 lists sections of the EDCS sections for the specifications, drawing standards, and special conditions of water main installations, extensions, and replacements. Standards for supply sources, reservoirs, pump stations, and water treatment facilities are not presented due to the complex nature of these facilities. For

those projects, the City will seek approval from DOH through the submittal process outlined in WAC 246-290-110 and 246-290-120.

Table 7-1 | Water Main Design and Construction Standards

Specifications for:	
Pipe material and pipe class. ANSI/NSF Standard 61 certified materials required for all pipes.	EDS Section 7.01.02
Disinfection procedures (include de-chlorination or chlorinated water disposal specifications).	TSP – 7.09.3(24)
Pipe bedding and installed depth of bury.	EDS Section 9.05
Bacteriological testing.	TSP – 7.09.3(24)N
Pressure and leakage testing.	TSP – 7.09.3(23)
Separation from sewer mains, non-potable conveyance systems, and other buried utilities.	EDS Section 6.02
Valve spacing.	EDS Section 7.03
Construction Drawings Standards	
Plan and profile views drawn to a particular scale	EDS Sections 3.03, 3.04 & 3.04.07
Easement locations and dimensions	EDS Sections 2.02, 3.04 & 3.04.07.B, 6.01, 7.01.04, 7.01.05, 7.02.01, 7.03 and STD DTL W-06.3, W-22.2, W-23.3,
Appurtenant Design Standard Drawings	
Pipeline trench cross-section, including pipe bedding, backfill, compaction, and road restoration standard details	STD DTL T-01
Hydrants (for fire, flushing)	STD DTL W-07, W-08
Valves	STD DTL W-17, W-18, W-19
Service Meters	STD DTL W-15, W-16, W-16a
Service lines and service connection to main	STD DTL W-9, W-13, W-14
Air relief, vacuum relief, and combination air-vacuum relief valve and valve vault	STD DTL W-02
Pressure reducing valve stations	Submittal review (project specific)
Thrust blocking	STD DTL W-01
Backflow prevention assemblies	STD DTL W-21, W-22, W-23, W-24, W-25
Blow-offs	STD DTL W-03, W-04
Special Conditions	
Pipeline corrosion mitigation measures	TSP 7.09.03(25)
Potable/non-potable pipeline crossing construction details	EDS Section 6.02
Stream-crossing construction details	N/A
Individual service booster pumps	N/A
Temporary water service (i.e., employed during water main replacement or emergency repair)	N/A

7.4 Construction Certification

Construction work aimed at improving City roads and utilities, whether initiated by private developers or the City itself, must adhere to approved contract documents. City approval is mandatory for any modifications to approved plans before implementation, especially for work within the public right-of-way (ROW) or designated easements. Compliance with general WSDOT/APWA Standard Specifications, approved plans, and the City's EDCS is strictly enforced.

Prior to the start of construction, a pre-construction meeting must be held by the City and the developer, contractor, and/or designated representative. Pre-construction meetings establish the first touch point between the City and developer/contractor to discuss the schedule, certain unique aspects of the work, any special restrictions, and general coordination and communication protocols. Consistent presence of the approved set of plans with redline markups identified and requisite permits at the job site during construction is a shared responsibility of the City, the developer, and the construction contractor. The City exercises its authority to enforce standards through appointed project engineers, assistants, and inspectors, ensuring collective adherence to specified standards. Inspections, test measurements, and actions outlined in the City's Development Guidelines and Public Works Standards are pivotal. Post-construction, the submission of as-built drawings is mandated.

Non-compliance with approved project documents can lead to stop-work orders and potential removal of completed elements, subject to penalties established by ordinance. The project's conclusive status is granted only when the City issues a formal letter of acceptance to the responsible party.

Upon completion of construction activities related to the water system, including disinfection, flushing, and pressure testing for water mains, a construction completion report must be submitted. This document becomes part of the project records, and the release of water meters for any lot or building linked to a project is contingent upon final acceptance.

CHAPTER 8

Capital Improvements Program

This chapter's objective is to develop a cohesive Capital Improvement Program (CIP) for the City of Auburn (City) by summarizing and prioritizing all capital projects identified in the previous chapters. The CIP provides a comprehensive accounting of capital projects needed to continue consistent, efficient water supply to the City's Retail Water Service Area (RWSA) through the 20-year planning horizon. The recommended projects were developed in coordination with City staff.

Projects identified as part of the City's asset management program that are anticipated to cost greater than $50,000 were included as capital projects. The capital projects discussed in Section 8.2 include water supply and storage improvements, improvements to the distribution system, and upgrades or replacement of aging facilities and distribution piping as discussed in Chapter 3.

Projects were allocated to the 10-year (2025 to 2034) and 20-year (2035-2044) planning horizons. Planned projects coincide with the City's current Capital Facilities Plan (CFP) and have been placed into specific years for planned completion. These timeframes are intended to be a framework for future funding decisions that directs when future actions and decisions are intended to occur. However, these timeframes are estimates, and depending on factors involved in the processing of applications and project work, and availability of funding, the timing may change from the included timeframes. The framework does not represent actual commitments from the City, which may depend on funding and staffing resources available.

8.1 Prioritization

8.1.1 Project Identification

Capital projects are organized into two categories to help provide a better understanding of the primary project driver as follows:

- Capacity Projects (CAP): These projects are needed to expand infrastructure capacity to meet increased demands associated with current deficiencies or projected growth.
- Non-Capacity (Non-CAP): These projects are needed to address aged and/or obsolete equipment to maintain and/or improve the reliability of the infrastructures system. These projects are needed to improve existing infrastructure for reasons other than capacity.

The capital projects are also identified and grouped into categories based on the infrastructure they are focused on. Each project is assigned an identification number (Project ID) with the following ID prefixes:

- Supply (S): These projects are associated with the City's water supply sources and treatment facilities.

- Storage (R): These projects are associated with the City's storage reservoirs or allow modifications in the system impacting reservoir storage transfer throughout the RWSA.
- Pump Stations (PS): These projects are associated with the City's pump stations or booster pump stations (BPS).
- Distribution (D): These projects are associated with the City's transmission and distribution piping systems.
- General Improvements (G): General improvement projects do not fit into the other categories and may be broader, impacting multiple components of the City's water system.

8.1.2 Prioritization Factors

The capital projects for the facilities improvements were prioritized based on system deficiencies, safety concerns, maintenance or capacity requirements, and regulatory requirements.

The capital projects for the capacity driven distribution system improvements were prioritized based on the fire flow availability; projects resolving the largest deficits were prioritized higher, and as such are planned to be completed sooner than projects resolving smaller deficits. The capital projects for the condition driven distribution improvements were prioritized based on the existing pipe age, size, and material. More details are discussed in Chapter 3.

The priority order of these improvements is reflected in the schedule of improvements, which is presented in Section 8.3 and Appendix W.

8.1.3 Estimated Costs

"Active projects" are projects that are currently underway for completion. The project costs presented include total project costs for the current and future years and are presented in 2024 dollars.

For projects already included in the City's 2023 CFP, it was assumed that the project cost in 2024 dollars remains the same, unless the costs were identified as needing to be reassessed.

For planned capital projects identified in the 2015 WSP that have not been completed and are not included in the City's 2023 CFP, the project costs were escalated from 2014 dollars as presented in the 2015 WSP to 2024 dollars using the Engineering News Record (ENR) Construction Cost Index (CCI).

For all other projects that were newly identified, modified, or reassessed, planning-level project cost estimates were developed for the improvements using average costs from RSMeans, HeavyBid Construction Cost Data, recent City of Auburn project bid tabs, City input, industry experience, and local contractor and supplier costs. These project costs are planning-level estimates and are categorized as Class 5 estimates, as defined by the Association for the Advancement of Cost Engineering (AACE) International:

> *Class 5 estimates are generally prepared based on very limited information, and subsequently have wide accuracy ranges. As such, some companies and organizations have elected to determine that due to the inherent inaccuracies, such estimates cannot be classified in a conventional and systemic manner.*
>
> *Class 5 estimates are prepared for any number of strategic business planning purposes, such as but not limited to market studies, assessment of initial viability, evaluation of alternate schemes, project*

screening, project location studies, evaluation of resource needs and budgeting, long-range capital planning, etc.

Typical accuracy ranges for Class 5 estimates are -50 % to -20% on the low side and +30% to +100% on the high side, depending on the construction complexity of the project, appropriate reference information and other risks (after inclusion of an appropriate contingency determination). Ranges could exceed those shown if there are unusual risks.

All project descriptions and cost estimates in this WSP represent planning-level accuracy and opinions of costs (-50 percent to +100 percent).

During the pre-design phase of each project, the project definition, scope, and specific information (e.g., pipe length and diameter, roadway restoration requirements, permitting requirements) should be verified. The final cost of individual projects will vary depending on actual labor and material costs, site conditions, market conditions, regulatory requirements, project schedule and other factors. Because of these factors, project feasibility and risks must be carefully reviewed prior to making specific financial decisions or establishing project budgets to support proper project evaluation and adequate funding.

Total estimated project costs were developed through a progression of steps and multiple methodologies. The steps included development of component unit costs, construction costs and, finally, total project costs. The component unit cost includes the sum of materials, labor and equipment of a project's basic features. The construction cost is the sum of component costs and construction markups, which includes a 30 percent allowance for contingency and 10.2 percent for sales tax. The total project costs presented is the sum of construction costs with the following additional allowances:

- 15 percent for City management, survey, legal, and project administration.
- 15 percent engineering design.
- 15 percent construction management and inspection.

The following costs are not included, unless specifically noted:

- Land or right-of-way acquisition.
- Maintenance expenses.
- Operation expenses.

All cost estimates were developed as total project costs in March 2024 dollars. In Table 8-10, costs have been inflated and escalated using an annual increase rate from 2024 dollars to their planned implementation year. For projects that will be designed or constructed in 2024, an annual increase of eight percent was used. For projects that will be designed or constructed after 2024, an annual increase of five percent was used. For future budgeting purposes, the latest engineering news record (ENR) Construction Cost Index (CCI) can be used to project current estimates to the year of implementation. The cost estimates for the Auburn area used the ENR CCI in Seattle of 15,477 (March 2024).

8.1.3.1 Pipeline Component Unit Costs

The pipelines unit costs were developed using recent City construction bid tabs assuming the use of ductile iron pipe and a typical cover depth of four feet. The estimated unit cost is provided by pipe diameter per linear foot of pipe in Table 8-1, which includes the cost for the pipe, trench, roadway restoration, appurtenances, installation, and direct construction markups. As the diameter of pipe and the trench width increase, the costs also increase.

Table 8-1 | Water Pipeline Construction Costs per Linear Foot

Pipe Diameter (inch)	Unit Construction Cost ($/linear foot)
8	$490
10	$510
12	$520
14	$570
16	$630
18	$730
20	$780
24	$880

8.1.3.2 Reservoir Component Unit Costs

Reservoir (storage tank) unit costs were determined based on the tank volume in gallons. Conceptual costs for tanks vary based on the material of storage: prestressed concrete and welded steel being the most common options. Unit costs for the different reservoir options are presented in Table 8-2 in terms of cost per gallon of storage. The unit costs do not include site piping, site improvements, land acquisition, repair, or recoating. Storage reservoir costs are sensitive to site-specific geotechnical and seismic considerations. A tank siting study is necessary whenever a new tank project is initiated to obtain the information required to inform the design.

Table 8-2 | Reservoir Tank Construction Costs per Gallon

Tank Material	Unit Construction Cost ($/gallon)
Prestressed Concrete	$1.50
Welded Steel	$1.25

8.2 Capital Improvement Program Summary and Schedule

8.2.1 Completed Projects

The following projects have been completed since 2015 WSP was completed:

- S-01: Onsite Improvements Projects, completed in 2016.
- S-02: Emergency Power Improvements Project, completed in 2016.
- S-17: West Hill Springs Flow Control Improvements, completed in 2017.
- S-19: Fulmer Field Improvements Project, completed in 2018.
- R-01: Lakeland Hills Reservoir 5 Improvements, completed in 2016.
- D-03: SCADA Upgrades, completed in 2015.
- D-10: Pipeline Asset Management Study, completed in 2020.
- D-13: Lea Hill PRV Station Improvements, completed in 2018.
- D-14: Valley AC Main Replacement, completed in 2015.
- PS-03: Green River Pump Station Emergency Power, completed in 2020.
- PS-07: Academy Pump Station No.1 Improvements, completed in 2023.
- G-06: Muckleshoot Indian Tribe (MIT) Casino Master Meters, completed in 2016.
- G-09: Water Meter & Billing System Improvements, completed in 2018

The following projects have been eliminated since 2015 WSP was prepared:

- G-05 - Utilities Field Operations Center: This project was replaced with a more comprehensive upgrade to the City's Operations and Maintenance Facilities as reported in the 2021 Limited Comprehensive Plan Update.

- D-12 - Academy Transmission Replacement: This project was eliminated, after further investigation found no issues with the existing pipeline.

- D-15: Braunwood Transmission: This project was split from Reservoir Seismic Rehabilitation (R-06) identified in the 2015 WSP. This project was originally planned to incorporate the Braunwood Satellite System, however after further evaluation, there is not a business case to support this project. Instead, it is replaced in this WSP with a mechanical upgrades project for the Braunwood Pump Station to maintain operation. The potential for incorporation of the Braunwood Satellite System may be more viable in the future pending potential development in the southern portion of the City's RWSA.

- D-16 - Game Farm Park Transmission: This project was originally planned to allow for the decommissioning and removal of the Game Farm Park Pump Station, however after further evaluation, there is not a business case to support this project. Instead, it is replaced in this WSP with a mechanical upgrades project to maintain operation of the Game Farm Park Pump Station. Elimination of the Game Farm Park Pump Station may be more viable in the future pending potential development in the southern portion of the City's RWSA.

- S-12 - West Hill Springs Water Quality Improvements: The City had planned to replace the aging West Hill Springs chlorination building and equipment with a new liquid chlorination system. However, since this project is not required to meet regulatory requirements and after further review of the City's Financial Program, this project was eliminated to prioritize projects required to resolve deficiencies. This project will be completed later, likely beyond the planning horizon for this WSP.

- S-14 - Algona Well 1 Redevelopment: This project was eliminated until the Algona Well 1 Study is completed. A new capital project may be developed in the 10 to 20-year planning horizon pending the outcome of the study.

8.2.2 Active Projects

The following projects are currently underway for completion by the City and are referred to as "Active Projects" that have remaining costs to be spent in the near term:

- CP2021 - Well 4 Facility Improvements: This project was split from the Well 4 Pump Improvements project (S-22) identified in the 2015 WSP. This project includes upgrades to much of the mechanical systems at the facility.

- CP2043 - Well 4 Electrical Improvements: This project was split from the Well 4 Pump Improvements project (S-22) identified in the 2015 WSP to accommodate beneficial electrical improvements outside the original scope of the project. The well facility is over 40 years old and much of the electrical equipment is original. Upgrades to the electrical system will improve the overall efficiency of the facility.

- CP2219 - Reservoir 4 and 8 Seismic Rehabilitation: This project was split from Reservoir Seismic Rehabilitation (R-06) identified in the 2015 WSP. The City plans to install seismic control valves on outlet piping of the Lea Hill Reservoirs (4A & 4B) and Academy Reservoirs (8A & 8B). A seismic control valve isolates the reservoir to prevent catastrophic flows from the reservoir during a seismic pipe failure. This project will also address outstanding deficiencies identified in the 2022 Sanitary Survey, including vent modifications, overflow connection modifications and overflow screen repairs.

- CP2134 - Comprehensive Water System Plan Update: This project was split from identified in the 2015 WSP (G-08), which originally included updates for both 2024 and 2034. This project will be carried forward in the CIP with further WSP updates being required in 2034 and 2044.

- CP1603 - Coal Creek Springs Transmission Main Replacement: This project was identified in the 2015 WSP as project (D-11) will be completed in 2024. The project will replace the existing 24-inch diameter steel transmission main crossing the White River with a new transmission main suspended from a utility and pedestrian bridge to cross the White River.

- CP2204 - Coal Creek Springs Rehabilitation (Phase 1): The Coal Creek Springs Rehabilitation project aims to investigate the cause of low yield and identify potential upgrades to improve water production. The updates will be completed in Phase 2 of the project.

- CP2413 - Reservoir 2 Valves: This project was split from Reservoir Seismic Rehabilitation (R-06) identified in the 2015 WSP. This project will replace the existing 20-inch supply valve with a seismic control valve and replace the 12-inch drain valve at Reservoir 2. Both valves will be installed in a vault. This project was identified as a maintenance issue due to limited access to the valves. The addition of a seismic control valve will improve the resiliency of the distribution system. This project will address the outstanding deficiency identified in the 2022 Sanitary Survey by modifying the overflow connection.

- CP1914 - Cascade Water Alliance Water Purchase: This project was identified in the 2015 WSP as project (S-04) and finances System Development Charges for the right to purchase water from Tacoma Public Utilities (TPU) through the Second Supply Pipeline to meet future projected demand, based on agreements with Cascade Water Alliance. Council approved the agreements for permanent and reserve wholesale supply in September 2013, and a new agreement was executed in 2014. Budget reflects purchase of permanent supply; payments will continue through 2029.

- S-08 - Water Resources Protection Program (Wellhead Protection): This program provides annual funding for implementing strategies identified in the Wellhead Protection Plan. Although some tasks will be performed as part of the water operations budget, other tasks will require consultants with expertise in review and investigation of contaminant sites and other environmental databases, development of spill response plans, and leaking underground storage tanks. This program will continue through the 20-year planning horizon.

- R-03 - Reservoir Repair and Replacements: This is an annual program that provides budget for general reservoir maintenance and minor repairs. This program will continue through the 20-year planning horizon.

- R-05 - Reservoir Painting: This is a program that operates on a 10-year cycle to complete reservoir coatings. This program will continue through the 20-year planning horizon with the next anticipated painting project planned in 2025.

The following projects include distribution improvements identified in the 2015 WSP to be completed as part of either the Annual Distribution System Improvements Program (D-02), Water Repair and Replacement Program (D-09) or are in partnership with other City utilities and are funded by budget available in the Street Utility Improvements annual program (D-06). All three programs have been updated and will continue through the 20-year planning horizon. In total the following active projects will replace approximately 9,000 linear feet of water main in the City's system. The locations of all active distribution system improvement projects are identified in Figure 3-12 in Chapter 3.

- CP1619 - 104th Park Development (104th to 102nd Water Main Loop)
- CP2301 - 104th Avenue SE PRV Replacement
- CP2123 - C St SW Preservation
- CP2125 - D St SE and 23rd Street SE Storm Improvements
- CP2410 - 112th Pl SE Water Main Replacement
- CP1622 - Auburn Way South - Hemlock St SE to Poplar St SE
- CP2022 - Garden Avenue Realignment
- CP2210 - M Street NE Widening
- CP2116 - R Street SE Widening
- CP2308 - R St SE and 21st St SE Roundabout
- CP2315 - R St SE Preservation - 33rd St SE to 37th St SE
- CP2319 - Lea Hill Road/104th Ave SE Roundabout
- CP2404 - 12th St SE and Auburn Way South Water R&R
- CP2412 - 2025 Local Street Preservation
- 2026 Local Street Preservation

The following active projects were not identified in the 2015 WSP:

- CP2405 - Fulmer Treatment Facility VFD Replacements: The variable frequency drive (VFD) for pumps 1 and 2 at Fulmer Corrosion Control Treatment Facility (CCTF) were installed in 2002. They are at the end of their useful life and require replacement as repair parts are no longer available.

- CP2329 - Coal Creek Springs Flowmeter Replacement: The project will replace existing source meters on the Coal Creek Springs collectors to improve the accuracy and frequency of production readings.

- Algona Well 1 Study – Phase 1: The project will conduct a preliminary assessment of options to utilize the existing water right.

- Valley Service Area Reservoir No. 3 Siting Analysis: The project will conduct a siting analysis to identify and evaluate possible locations for the new reservoir.

- Braunwood Pump Station Assessment: The project will identify process mechanical upgrades necessary to continued operation. The project will also evaluate roofing replacement material options and costs.

- Coal Creek Springs Rehabilitation – Phase 1: The project will investigate the cause of reduced production from Coal Creek Springs and recommend improvements to increase production capacity.

8.2.3 Capital Improvement Projects

The following projects identified in the 2015 WSP have not been completed since the WSP was prepared, but have been revisited and are discussed in detail in the following sections for completion during this planning period. The timing of most projects has been adjusted based on the City's financial analysis and project prioritization updates.

- S-03 - Well 7 Back-Up Power: Delayed to 2032 since Well 7 has been offline due to high levels of Manganese. The timing of this project will be aligned with the completion of the Well 7 Treatment Phase 1 project (S-15) that will allow the Well to resume operation.
- S-06 - Well 5/5A Upgrades: Delayed from 2022 to 2026.
- S-07 - Well Inspection and Redevelopment Program: Delayed from 2015-2033 to 2026.
- S-09 - Coal Creek Springs Rehabilitation: Delayed from 2018 to 2027 based on awaiting results of ongoing investigations to identify the cause and possible solutions to improve production from Coal Creek Springs. The timing of this project may be adjusted pending results of the on-going investigation.
- S-11 - Wells 3A/3B Treatment: Delayed from 2035 to 2036.
- S-13 - Algona Well 1 Study: Delayed from 2015 to 2039.
- S-15 - Well 7 Treatment Phase 1: Delayed from 2022 to 2030 based on City financial analysis and updated project prioritization.
- S-16 - Well 7 Treatment Phase 2: Moved forward from 2035 to 2033.
- S-18 - Howard Road CCTF Expansion: Delayed from 2025 to 2032. The timing of this project must be aligned with the completion of the Coal Creek Springs Rehabilitation project, as its purpose is to provide increased treatment capacity to accommodate increased flows from Coal Creek Springs.
- S-20 - Well 2 Replacement: Moved forward from 2035 to 2030.
- S-21 - Coal Creek Springs Chlorination Building Replacement: Moved forward from 2035 to 2030.
- R-04 - Valley Service Area Reservoir No. 3: Delayed from 2025 to 2041.
- R-07 - Reservoir Capital Improvements: Delayed from 2025 to 2027 to avoid timing conflicts with other current projects at Reservoirs 4A, 4B, and 8A.
- R-07 - Braunwood Reservoir Improvements: Separated from "Reservoir Capital Improvements" project and delayed from 2025 to 2039.
- PS-04 - Intertie Booster Pump Station Improvements: Delayed from 2021 to 2024.
- PS-09 - Game Farm Park Pump Station Mechanical Upgrades: Replaces original project 'Game Farm Park Pump Station/Distribution System Improvements. Delayed from 2025 to 2034.
- PS-10 - Lea Hill Pump Station Replacement: Delayed from 2025 to 2027 to avoid conflicts with concurrent work in area being completed as part of a separate project.

- G-08 - Comprehensive Water System Plan Update: This project was split into two separate completion years for future updates (2034 and 2044).

Based on the information provided by the City, information included in the 2023 CFP, asset management program input, and results of the system capacity analysis provided in **Chapter 3**, the following new projects were identified that are included in the CIP and are discussed in further detail below:

- Rehabilitate & Clean Wells 2 and 6 (3-year Cycle).
- On-Site Chlorine Generation Systems (OSEC) at Wells 1 and 4.
- Academy PRV Project.
- Braunwood Pump Station Mechanical Upgrades.
- Water Trench Patches Program.
- West Hill Springs Transmission Main Replacement.
- Lea Hill 648 Zoning Adjustment.

8.2.3.1 Water Supply

The City's water supply strategy details both project sizing and timing. A summary of the 0 to 10-year and 10 to 20-year capital projects recommended for securing adequate supply to meet the system's future demands are presented in **Table 8-3**. Project IDs have been revised to reflect the updated prioritization and planned timing of projects presented in this WSP. Previous project IDs from the 2015 WSP as presented above will be discontinued for clarity purposes. Active projects identified above are not discussed in detail as they are already well defined and in progress.

8.2.3.1.1 Cascade Water Alliance Water Purchase (S-01)

Financing to purchase water from Tacoma Public Utilities (Tacoma) to meet water demands is based on an agreement with Cascade Water Alliance (Cascade), which had purchased water supply from Tacoma. The Council approved the agreement for permanent wholesale supply in September 2013. The agreement provides an additional 3.32 mgd of supply during the peak day and 1.5 mgd of average day supply. The City's permanent and reserve agreement requires System Development Charges (SDC) payments of $21,073,743 between 2017 and 2029. A total of $934,810 of payments will continue from 2023 through 2029. The SDC costs will decrease if less than the full reserve amount is purchased. The project ID was previously S-04 in the 2015 WSP.

8.2.3.1.2 Water Resources Protection Program (Wellhead Protection) (S-02)

Annual funding for implementing strategies identified in the Wellhead Protection Plan. Although some tasks will be performed as part of the water operations budget, other tasks will require consultants with expertise in review and investigation of contaminant sites and other environmental databases, development of spill response plans, and leaking underground storage tanks. The project ID was previously S-08 in the 2015 WSP.

8.2.3.1.3 Rehabilitate & Clean Wells 2 and 6 (3-year Cycle) (S-3)

Rehabilitation work completed in 2013-2014 indicated it would be beneficial to clean and rehabilitate both wells on a regular basis to improve production capacity and pumping efficiencies. Cleaning was completed in 2020 and again in late 2023/early 2024. This program was originally established as a 5-year cycle, however based on more recent evidence, more frequent cleaning is required. Cleaning and rehabilitation for Wells 2 and 6 will be performed over a 3-year cycle. This program was not identified in the 2015 WSP.

8.2.3.1.4 Well Inspection and Redevelopment Program (S-04)

The City allocates annual funding for investigations and redevelopment of supply wells and springs necessary to support production at maximum capacity for efficient utilization. This program is to be used for production wells and spring collectors, and is not intended to finance the replacement of pumps, motors, buildings, etc. The project ID was previously S-07 in the 2015 WSP.

8.2.3.1.5 On-Site Chlorine Generation Systems (OSEC) at Wells 1 and 4 (S-05)

The existing liquid chlorine (sodium hypochlorite) used at Wells 1 and 4 degrades during low winter demand periods when the volume used is much lower and product turnover is decreased. This results in more chemical consumption to achieve the same chlorine dose which is not cost effective. The hypochlorite systems will be replaced with on-site chlorine generation systems sized to meet peak summer demands while providing flexibility during winter months. This project was not identified in the 2015 WSP.

8.2.3.1.6 Fulmer CCTF Replace On-Site Chlorine Generation System (OSEC) (S-06)

The existing on-site chlorine generating equipment was installed in 2002. The generation cell was replaced in 2012. Sourcing parts for equipment repairs has become increasingly difficult due to the equipment age. An analysis performed in 2018 comparing chlorine alternatives indicated that on-site generation has the lowest overall cost. This project will replace the entire generation system. The chlorination system will be sized to accommodate future production from Well 7.

8.2.3.1.7 Well 5/5A Upgrades (S-07)

Well 5 needs significant improvements including a new building, a backup generator, chlorination, and a hydrologic investigation to evaluate observed decreased production. Due to the small size of the existing site, the acquisition of an adjacent parcel may be required. Additionally, the project will address the recommended Capital Improvements identified in the 2014 Facility Evaluation Study (CIP Project G-01), including a new pump at Well 5 and new pump and motor at Well 5A. Additional upgrades may be identified in the hydrologic investigation; therefore, the cost of this CIP item should be revisited upon completion of the study. This project will also include improvements to address outstanding deficiencies identified in the 2022 Sanitary Survey, including modifications to the pump waste line for Well 5 and addressing water accumulation in the vault at Well 5A. The project ID was previously S-06 in the 2015 WSP.

8.2.3.1.8 Coal Creek Springs Rehabilitation – Phase 2 (S-08)

Complete rehabilitation of the Coal Creek Springs collectors to improve production capacity resulting in greater utilization of the water right. Improvements are to be defined by the outcomes of the 2023/2024 hydrogeologic study currently being completed as Phase 1 (S-04). Additional upgrades may be identified in the hydrologic investigation; therefore, the cost of this CIP item should be revisited upon completion of the study.

8.2.3.1.9 Coal Creek Springs Chlorination Building Replacement (S-09)

Coal Creek Springs chlorination building was identified as requiring replacement in the 2013 Facility Evaluation Study. Additionally, the project will upgrade the source treatment from chlorine gas to a liquid sodium hypochlorite disinfection system. Sizing of the new equipment will be dependent upon capacity improvements completed as part of the Coal Creek Springs Rehabilitation Project. A new building will be constructed to house the equipment. The project ID was previously S-21 in the 2015 WSP.

8.2.3.1.10 Well 7 Treatment Phase 1 (S-10)

Well 7 is not operational due to high manganese levels. Manganese treatment is required to allow operation of this facility to be restored and to utilize the full water right for this well. Due to space limitations at the Well 7 site, the treatment facilities will be added at the Fulmer Field CCT Facility. The treatment facility will be installed in two phases. The first phase will provide 2.5 mgd of capacity. Additionally, phase 1 of the project will address the recommended improvements to the Fulmer Field CCT Facility identified in the 2013 Facility Evaluation Study, including a new pump and motor. The project ID was previously S-15 in the 2015 WSP.

8.2.3.1.11 Well 2 Replacement (S-11)

The Fulmer Well Field Improvement project found that Well 2 can continue to serve the City but would need to be replaced to resolve ongoing operational challenges. This project includes installation of a new large diameter well. It is assumed that the well will remain on its existing site, or other City-owned property. The project ID was previously S-20 in the 2015 WSP.

8.2.3.1.12 Howard Road CCTF Expansion (S-12)

The inflow to the Howard Road CCTF will increase with the completion of the Well 1 Improvements project in 2016 and planning production improvements for Coal Creek Springs Collector Improvements. The existing facility will be expanded to its full capacity to provide additional treatment capacity and redundant pump capacity to match increased flows. Additionally, the project will address the recommended improvements to Howard Road CCTF identified in the 2013 Facility Evaluation Study, including a new pump and motor. The expansion will include an additional aeration tower and a pump to match existing. The project ID was previously S-18 in the 2015 WSP.

8.2.3.1.13 Well 7 Back-up Power (S-13)

Well 7 is currently out of service, but the City has plans to bring the facility back online once manganese treatment is provided as part of the Well 7 Treatment Phase 1 Project. Without back-up power to its pumps, Well 7 is not considered a reliable source of supply for the Valley Service Area. The City has limited land available at the Well 7 site, therefore, backup power will be installed at the Fulmer Field CCT Facility. The project also includes installing underground electrical transmission capability between Well 7 and the Fulmer Field CCT Facility. The project ID was previously S-03 in the 2015 WSP.

8.2.3.1.14 Well 7 Treatment Phase 2 (S-14)

Well 7 Treatment Phase 2 will complete the manganese treatment facilities at the Fulmer Field CCT Facility to allow year-round use of Well 7. Phase 2 will add 2.5 mgd of treatment for a total capacity of 5.0 mgd. The project ID was previously S-16 in the 2015 WSP.

8.2.3.1.15 Wells 3A/3B Treatment (S-15)

Wells 3A and 3B are not operated due to high manganese levels. Manganese treatment is required to allow these wells to be used, which would add 4.03 mgd of instantaneous flow capacity to the City's supply capabilities. The project includes manganese treatment, a new well and treatment building, well pumps, and onsite backup-power. Additionally, a new sodium hypochlorite system for chlorination will be installed. The project ID was previously S-11 in the 2015 WSP.

Table 8-3 | Prioritized Water Supply Improvement Projects

Project Name	Project ID	Project Timing	Added Qi Capacity (mgd)	Estimated Cost 2024 USD	Brief Project Description
0 to 10-Year Planning Horizon					
Cascade Water Alliance Water Purchase	S-01	2024-2029	3.32	$5,608,860	The agreement provides an additional 3.32 mgd of supply during the peak day and 1.5 mgd of average day supply.
Water Resources Protection Program (Wellhead Protection)	S-02	2024-2044 (Annual)		$1,287,700	Annual funding for Wellhead Protection activities.
Rehabilitate & Clean Wells 2 and 6 (3-year Cycle)	S-03	2025-2044		$1,750,000	3-year cycle program to clean and rehab Wells 2 and 6.
Well Inspection and Redevelopment Program	S-04	2026-2027		$420,000	Annual funding allocation for investigations and redevelopment of wells and springs to maximize production capacity.
On-Site Chlorine Generation Systems (OSEC) at Wells 1 and 4	S-05	2026-2027		$275,000	Replace liquid hypochlorite systems with on-site generation systems.
Fulmer CCTF Replace On-Site Chlorine Generation System (OSEC)	S-06	2026-2027		$500,000	Replace aged on-site chlorine generation equipment.
Well 5/5A Upgrades	S-07	2026-2028		$2,715,000	New building, back-up generator, chlorination, and a hydrologic investigation to evaluate the reasons for decreased production.
Coal Creek Springs Rehabilitation – Phase 2	S-08	2027-2030	4.32	$5,337,000	Rehabilitation of the Coal Creek Springs collectors to improve production.
Coal Creek Springs Chlorination Building Replacement	S-09	2030-2031		$2,081,000	Replace chlorination system and building at Coal Creek Springs Facility with hypochlorite disinfection system.
Well 7 Treatment Phase 1	S-10	2030-2032	2.5	$10,097,000	Requires manganese treatment facilities
Well 2 Replacement	S-11	2030-2031	3.46	$1,960,000	Replace Well 2 to resolve ongoing operational challenges.
Howard Road CCTF Expansion	S-12	2032-2033		$1,450,000	Expand the facility to its full capacity (including an additional aeration tower and pumps).
Well 7 Back-Up Power	S-13	2032-2033		$2,075,000	Provide back-up power for this source.
Well 7 Treatment Phase 2	S-14	2033-2035	2.5	$8,054,000	Requires completion of manganese treatment facilities.
10 to 20-Year Planning Horizon					
Wells 3A/3B Treatment	S-15	2036-2038	4.03	$13,945,000	Provide manganese treatment for well operation
Algona Well 1 Study – Phase 2	S-16	2039		$250,000	Evaluate possible uses of water right.
Subtotal				**$57,805,560**	

8.2.3.1.16 Algona Well 1 Study – Phase 2 (S-16)

Algona Well 1 has been abandoned and all related facilities removed. This project will study possible options to utilize the existing water right. One option may be to redevelop the well on-site at its previous location. Another alternative may be to pursue an alternative well location or how to use the water right at another existing facility. The project does not include the development of design, permitting or construction of well infrastructure. The project ID was previously S-13 in the 2015 WSP.

8.2.3.2 Storage

Table 8-4 provides a summary of the planned reservoir projects. Project IDs have been revised to reflect the updated prioritization and planned timing of projects presented in this WSP. Previous project IDs from the 2015 WSP as presented above will be discontinued for clarity purposes. Active projects identified above are not discussed in detail as they are already well defined and in progress.

8.2.3.2.1 Reservoir Repair & Replacements (R-01)

The City has allocated an annual capital expenditure for general reservoir maintenance and minor improvements. Projects are identified by the City on an as-needed basis. The project ID was previously R-03 in the 2015 WSP.

8.2.3.2.2 Reservoir Painting (10-year Cycle) (R-02)

The City plans to paint the welded steel reservoirs to extend their useful life. This program finances the painting of two reservoirs every 10 years. The project ID was previously R-05 in the 2015 WSP.

8.2.3.2.3 Academy PRV Project (R-03)

A new PRV facility will be located to rezone a portion of the Valley 242 pressure zone to the Academy 350 pressure zone to resolve fire flow deficiencies in the area. This PRV facility will also allow storage transfer from the Academy Service Area where this is surplus storage to the Valley Service Area to resolve 2034 storage deficit projections, allowing for more system flexibility. The PRV facility location is assumed to be in a cul-de-sac where U St SE meets 28th St SE but will be confirmed during design. The PRV vault is assumed to house a 2-inch PRV for low flows (normal operation) and a 6-inch PRV for fire flows. This project was not identified in the 2015 WSP.

8.2.3.2.4 Reservoir Capital Improvements (R-04)

The 2013 Facility Evaluation Study identified improvements to reservoir facilities based on the condition and remaining useful life of the assets within the facilities. Improvements were identified at Reservoir 1, Reservoir 4A & 4B, and Reservoir 8A & 8B. The project ID was previously R-07 in the 2015 WSP.

8.2.3.2.5 Braunwood Reservoir Improvements (R-05)

The 2013 Facility Evaluation Study identified improvements to reservoir facilities based on the condition and remaining useful life of the assets within the facilities. Improvements were identified at the Braunwood Reservoir and were previously included in Reservoir Capital Improvements project (R-07) in the 2015 WSP.

8.2.3.2.6 Valley Service Area Reservoir No. 3 (R-06)

To meet future storage requirements in the Valley Service Area, it is recommended that a new, 2-MG storage reservoir. A siting study should be conducted to identify the preferred reservoir location and other details; it is assumed that the reservoir will be in the northeast portion of the Valley 242 pressure zone.

Property acquisition is expected to be required and an allowance of $1M is included in the project budget. The project ID was previously R-04 in the 2015 WSP. It was assumed that the new reservoir will be a prestressed concrete tank, however this should be confirmed during the siting study.

Table 8-4 | Storage Improvements Projects

Project Name	Project ID	Project Timing	Added Storage (MG)	Estimated Cost 2024 USD	Brief Project Description
0 to 10-Year Planning Horizon					
Reservoir Repair & Replacements	R-01	2024-2044 (Annual)		$1,392,000	Annual program for reservoir maintenance and minor improvements.
Reservoir Painting (10-year Cycle)	R-02	2025-2044		$3,500,000	Required for maintenance and reservoir longevity in both Academy and Lea Hill service areas.
Academy PRV Project	R-03	2027		$470,000	PRV for storage transfer and rezoning to meet fire flow demands.
Reservoir Capital Improvements	R-04	2027		$470,000	Improvements to Reservoir 1, Reservoir 4A&4B, Reservoir 8A&8B based on the condition and remaining useful life.
10 to 20-Year Planning Horizon					
Braunwood Reservoir Improvements	R-05	2039-2040		$250,000	Improvements based on condition and remaining useful life.
Valley Service Area Reservoir No. 3	R-06	2041-2044	2.0	$11,745,000	Required to meet future storage requirements in the Valley service area.
Subtotal				**$17,827,000**	

8.2.3.3 Pump Stations

Table 8-5 provides a summary of the planned pump station projects. Project IDs have been revised to reflect the updated prioritization and planned timing of projects presented in this WSP. Previous project IDs from the 2015 WSP as presented above will be discontinued for clarity purposes. Active projects identified above are not discussed in detail as they are already well defined and in progress.

8.2.3.3.1 Intertie Pump Station/Lea Hill BPS Improvements (PS-01)

The Lea Hill BPS serves the closed 648 Pressure Zone and does not have sufficient capacity to meet fire flow requirements under current or future demand projections. To meet fire flow requirements, an additional 2,500 gpm of firm capacity is required. The Lea Hill BPS and that Intertie Pump Station share a building. To increase capacity of the Lea Hill PS, the project will provide additional piping and modify the existing Intertie Pump Station/Lea Hill BPS building to utilize the existing Intertie Pump Station pumps to serve the Lea Hill 648 pressure zone. The project will also add pressure reducing valves and control valves at Lea Hill reservoirs, and system valves to provide efficient operation of the 132nd Ave Tacoma Intertie. On-site back-up power improvements for the Lea Hill BPS are also included to improve facility reliability.

In the 2015 WSP, this project also included distribution system improvements to rezone a portion of the Lea Hill Service Area; this work has been shifted to a separate project titled the Lea Hill 648 Zoning Adjustment project. This project ID was previously PS-04 in the 2015 WSP.

8.2.3.3.2 Lea Hill Pump Station Replacement (PS-02)

The Lea Hill Pump Station will be reconstructed to provide redundant pumped supply to the Lea Hill area. If the Green River Pump Station is out of service for maintenance, a redundant pump station would avoid the need to purchase more expensive regional surface water through the 132nd Intertie. The pump station needs to be relocated from its current location on the shoulder of Lea Hill Road at the base of a steep hill for safety and reliability considerations. Two separate active projects (Garden Avenue Realignment and Lea Hill Roundabout) will construct approximately 900 feet and 835 feet of 12-inch diameter transmission main respectively, that is required for the future pump station. The project ID was previously PS-10 in the 2015 WSP.

8.2.3.3.3 Braunwood Pump Station Mechanical Upgrades (PS-03)

The Braunwood Pump Station is an aging facility that serves the Braunwood Satellite System. The project will include minor mechanical or electrical improvements to rehabilitate the facility for continued use. This project ID was previously PS-09 in the 2015 WSP. This project was not identified in the 2015 WSP.

8.2.3.3.4 Game Farm Park Pump Station Mechanical Upgrades Project (PS-04)

The Game Farm Wilderness Park Pump Station is an aging facility that serves the Game Farm Wilderness and recreational area. The 2013 Facility Evaluation Study identified improvements to allow continued use of the station including pump replacement and building repairs. Additional minor mechanical or electrical improvements may be warranted to rehabilitate the facility for continued use. This project ID was previously PS-09 in the 2015 WSP.

Table 8-5 | Pump Station Improvement Projects

Project Name	Project ID	Project Timing	Added Firm/Reliable Capacity (gpm)	Estimated Cost 2024 USD	Brief Project Description
0 to 10-Year Planning Horizon					
Intertie Pump Station/Lea Hill BPS Improvements	PS-01	2024-2026	2,500 gpm	$2,325,000	Expand the fire flow capacity of the Lea Hill BPS by connecting to the Intertie PS pumps.
Lea Hill Pump Station Replacement	PS-02	2027-2029		$6,365,000	Decommission and replace the pump station at the end of its usable life.
10 to 20-Year Planning Horizon					
Braunwood Pump Station Mechanical Upgrades	PS-03	2034-2035		$250,000	Rehabilitate Pump Station to allow continued use.
Game Farm Park Pump Station Mechanical Upgrades	PS-04	2034-2035		$250,000	Rehabilitate Pump Station to allow continued use.
Subtotal				**$9,190,000**	

8.2.3.4 Distribution System

The City's water distribution system will require many improvements to address fire flow deficiencies identified by the system analysis presented in **Chapter 3**. Additionally, the City has undersized, and aging piping within the water system that needs to be replaced to reduce the risk of breaks and leaks. The identified distribution system improvements programs are described below and summarized in **Table 8-7**.

Project IDs have been revised to reflect the updated prioritization and planned timing of projects presented in this WSP. Previous project IDs from the 2015 WSP as presented above will be discontinued for clarity purposes. Active projects identified above are not discussed in detail as they are already well defined and in progress.

8.2.3.4.1 Annual Distribution System Improvements Program (D-01)

The Annual Distribution System Improvements Program is focused on capacity related improvements to the City's water distribution system as identified in **Figure 3-12** and **Table 3-33** of **Chapter 3**. These improvements address deficiencies during fire flow demand scenarios. A comprehensive list of the projects and their individual estimated costs are provided in **Appendix W**. The total of all project costs is distributed across the 20-year planning horizon and will be prioritized to address the areas with the greatest deficiency first. This project ID was previously D-02 in the 2015 WSP.

8.2.3.4.2 Street Utility Improvements (D-02)

The City Street Utility program provides an annual budget to perform water main improvements in coordination with the Street Preservation programs and general arterial street improvements. By replacing water infrastructure concurrent with other utility or street improvement projects, the City can reduce overall project costs. Identified projects are anticipated to occur annually throughout the planning period. This project ID was previously D-06 in the 2015 WSP.

8.2.3.4.3 Water Repair & Replacements (D-03)

Previous WSPs identified pipelines for the City's Water Repair & Replacement program focus on replacement of old cast iron pipes, pipes under 6-inches that serve fire hydrants, dead-end mains in non-residential areas, and decommissioned duplicate pipes. The budget for this project has been re-evaluated and is revised to focus on the replacement of undersized cast iron pipe. The budget was developed focusing specifically on 4-inch diameter cast iron pipe, however the City may also allocate this budget to replace other undersized cast iron pipe within the system. **Table 8-6** summarizes the basis of the program budget using the same unit cost assumptions and allowances established in **Section 8.1.3**. The City's pipeline water repair and replacement program will be accomplished through the combination of the Street Utility Improvements (D-02) and this program. Ideally, Water Repair and Replacement and Street Utility projects will be constructed on alternating years to maintain consistent levels of capital expenditures. This project ID was previously D-09 in the 2015 WSP.

Table 8-6 | Water Repair & Replacements Cost Estimate

Length (LF)	Existing Size (inch)	New Size (inch)	Unit Cost	Component Cost	Construction Cost	Project Cost
11,740	4	8	$490/LF	$5,752,500	$8,241,000	$11,950,000

8.2.3.4.4 Water Trench Patches Program (D-04)

This program provides annual funding for roadway restoration of trench patches from water main leak repairs and water service installation that are beyond the scope of work done by City maintenance staff. This project was not identified in the 2015 WSP.

8.2.3.4.5 West Hill Springs Transmission Main Replacement (D-05)

The 2020 pipeline assessment indicated the existing cast iron transmission main is in poor condition. The main has experienced two breaks in the past. The project will replace approximately 1,250 LF of 10-inch

diameter cast iron pipe with 12-inch diameter ductile iron pipe. The project includes preliminary geotechnical investigations prior to design and construction. This project was not identified in the 2015 WSP.

8.2.3.4.6 Lea Hill 648 Zoning Adjustment (D-06)

The system capacity analysis identified deficiencies in the upper portion of the Lea Hill 563 pressure zone where the highest service elevations of the zone are located. This project includes system piping and valving modifications to rezone a portion of the Lea Hill 563 pressure zone to the Lea Hill 648 pressure zone. GIS and site verification, as well as minimal system modeling are required to verify necessary modifications.

Table 8-7 | Distribution System Improvements Projects

Project Name	Project ID	Project Timing	Estimated Cost 2024 USD	Brief Project Description
0 to 20-Year Planning Horizon				
Annual Distribution System Improvements Program	D-01	2025-2044 (Annual)	$59,699,000	Pipe improvement projects required to address system capacity deficits.
Street Utility Improvements	D-02	2025-2044 (Annual)	$24,618,000	Water main improvements concurrent with street improvements.
Water Repair & Replacements	D-03	2025-2044 (Annual)	$11,950,000	Pipe improvements to replace aging and undersized pipes.
Water Trench Patches Program	D-04	2024-2044 (Annual)	$3,360,000	Annual program for restoration following water and service leaks.
West Hill Springs Transmission Main Replacement	D-05	2024, 2026-2027	$1,401,000	Transmission piping replacement.
Lea Hill 648 Zoning Adjustment	D-06	2027	$104,000	Pressure zone modifications to address fire flow capacity deficit.
Subtotal			**$101,132,000**	

8.2.3.5 General Utility Projects

The general water system projects and their estimated costs are provided in **Table 8-8**. Project IDs have been revised to reflect the updated prioritization and planned timing of projects presented in this WSP. Previous project IDs from the 2015 WSP as presented above will be discontinued for clarity purposes.

8.2.3.5.1 Water System Plan Updates (G-01, G-02)

DOH requires Water System Plans to be updated every ten years. The City has allocated budget to complete Water System Plan Updates in 2034 and 2044. The project ID for both updates was previously G-08 in the 2015 WSP.

Table 8-8 | General Water System Projects

Project Name	Project ID	Project Timing	Estimated Cost 2024 USD	Brief Project Description
0 to 10-Year Planning Horizon				
Water System Plan Update - 2034	G-01	2033-2034	$750,000	Mandated by Washington Department of Health.
10 to 20-Year Planning Horizon				
Water System Plan Update - 2044	G-02	2043-2044	$750,000	Mandated by Washington Department of Health.
Subtotal			**$1,500,000**	

8.3 CIP Summary and Schedule

Table 8-9 summarizes the total CIP cost by project categories for the 20-year planning horizon. All costs shown are in 2024 dollars. Distribution system improvements comprise more than 50 percent of the allocated costs for the CIP.

Table 8-9 | Total CIP Cost by Project Category from 2024 through 2044

Category	Total CIP Cost Summary 2024 – 2044 (2024 USD)
Supply	$60,416,013
Storage	$21,579,621
Pump Stations	$9,230,000
Distribution	$121,858,681
General	$1,750,000
TOTAL	**$214,834,315**

The results of prioritizing the improvements were used to establish an implementation schedule that can be used by the City for preparing its 20-year CIP and 6-year CFP. The implementation schedule for the active projects and planned CIP projects is summarized in **Table 8-10**. More details are included in **Appendix W**. The City uses this information to develop rates and SDC charges.

The City will schedule the water main projects in the Annual Distribution Improvements Program and Water Repair and Replacements during the annual budget process. This provides the City with the flexibility to coordinate these projects with roadway or other projects within the same area.

Table 8-10 | Capital Improvements Program Costs and Phasing

CIP ID	Name	CAP/ Non-CAP	Total Estimated Cost 2024 USD	2024	10-Year										20-Year		
					2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035-38	2039-42	2043-44
Active Projects																	
CP1619	104th Park Development (104th to 102nd Water Main Loop)	Non-CAP	$350,000	$350,000													
CP2301	104th Avenue SE PRV Replacement	Non-CAP	$390,475	$390,475													
CP2123	C St SW Preservation	Non-CAP	$1,802,075	$901,038	$901,038												
CP1603	Coal Creek Springs Transmission Main Replacement	Non-CAP	$4,450,422	$4,450,422													
CP2125	D St SE and 23rd Street SE Storm Improvements	Non-CAP	$2,285,677	$2,285,677													
CP2021	Well 4 Facility Improvements	Non-CAP	$884,822	$884,822													
CP2403	Well 4 Electrical Improvements	Non-CAP	$1,050,000	$200,000	$850,000												
CP2410	112th Pl SE Water Main Replacement	Non-CAP	$2,100,000	$255,000	$1,845,000												
CP1622	Auburn Way South - Hemlock St SE to Poplar St SE	Non-CAP	$2,398,000		$2,398,000												
CP2022	Garden Avenue Realignment	Non-CAP	$699,797	$699,797													
CP2210	M Street NE Widening	Non-CAP	$357,000	$37,000		$320,000											
CP2116	R Street SE Widening	Non-CAP	$1,762,488		$100,000	$1,662,488											
CP2308	R St SE and 21st St SE Roundabout	Non-CAP	$544,897	$61,897	$483,000												
CP2315	R St SE Preservation - 33rd St SE to 37th St SE	Non-CAP	$301,850	$301,850													
CP2319	Lea Hill Road/104th Ave SE Roundabout	Non-CAP	$850,000	$100,000		$150,000	$600,000										
CP2405	Fulmer Treatment Facility VFD Replacements	Non-CAP	$175,000	$175,000													
CP2219	Reservoirs 4 and 8 Seismic Rehabilitation	Non-CAP	$1,433,871	$1,433,871													
CP2404	12th St SE and Auburn Way South Water R&R	Non-CAP	$636,000	$318,000	$318,000												
CP2412	2025 Local Street Preservation	Non-CAP	$725,000	$65,000	$660,000												
	2026 Local Street Preservation	Non-CAP	$1,073,000	$50,000	$150,000	$873,000											
CP2329	Coal Creek Springs Flowmeter Replacement	Non-CAP	$375,017	$375,017													
CP2134	Comprehensive Water System Plan Update - 2024	Non-CAP	$250,000	$250,000													
CP2209	Coal Creek Springs Rehabilitation - Phase 1	Non-CAP	$75,614	$75,614													
CP2413	Reservoir 2 Valves	Non-CAP	$2,268,750	$68,750	$2,200,000												
	Algona Well 1 Study – Phase 1	Non-CAP	$50,000	$50,000													
	Valley Service Area Reservoir No. 3 Siting Analysis	Non-CAP	$50,000	$50,000													
	Braunwood Pump Station Assessment	Non-CAP	$40,000	$40,000													
Supply																	
S-01	Cascade Water Alliance Water Purchase	CAP	$5,608,860	$934,810	$934,810	$934,810	$934,810	$934,810	$934,810								
S-02	Water Resources Protection Program (Wellhead Protection)	Non-CAP	$1,287,700	$87,700	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$240,000	$240,000	$120,000
S-03	Rehabilitate & Clean Wells 2 and 6 (3-year Cycle)	Non-CAP	$1,750,000		$250,000			$250,000			$250,000			$250,000	$250,000	$250,000	$250,000
S-04	Well Inspection and Redevelopment Program	Non-CAP	$420,000			$210,000	$210,000										
S-05	On-Site Chlorine Generation Systems (OSEC) at Wells 1 and 4	Non-CAP	$275,000			$100,000	$175,000										

CIP ID	Name	CAP/ Non-CAP	Total Estimated Cost 2024 USD	2024	10-Year										20-Year		
					2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035-38	2039-42	2043-44
S-06	Fulmer CCTF Replace On-Site Chlorine Generation System (OSEC)	Non-CAP	$500,000			$150,000	$350,000										
S-07	Well 5/5A Upgrades	CAP	$2,715,000			$950,000	$265,000	$1,500,000									
S-08	Coal Creek Springs Rehabilitation – Phase 2	CAP	$5,337,000				$500,000	$1,000,000	$2,000,000	$1,837,000							
S-09	Coal Creek Springs Chlorination Building Replacement	Non-CAP	$2,081,000							$520,250	$1,560,750						
S-10	Well 7 Treatment Phase 1	CAP	$10,097,000							$1,500,000	$2,597,000	$6,000,000					
S-11	Well 2 Replacement	CAP	$1,960,000							$400,000	$1,560,000						
S-12	Howard Road CCTF Expansion	CAP	$1,450,000									$450,000	$1,000,000				
S-13	Well 7 Back-Up Power	Non-CAP	$2,075,000									$414,961	$1,660,039				
S-14	Well 7 Treatment Phase 2	CAP	$8,054,000										$1,654,000	$3,800,000	$2,600,000		
S-15	Wells 3A/3B Treatment	CAP	$13,945,000												$13,945,000		
S-16	Algona Well 1 Study – Phase 2	Non-CAP	$250,000													$250,000	
Storage																	
R-01	Reservoir Repair & Replacements	Non-CAP	$1,392,000	$192,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$240,000	$240,000	$120,000
R-02	Reservoir Painting (10-year Cycle)	Non-CAP	$3,500,000		$250,000	$1,500,000									$1,750,000		
R-03	Academy PRV Project	CAP	$470,000				$470,000										
R-04	Reservoir Capital Improvements	Non-CAP	$470,000				$470,000										
R-05	Braunwood Reservoir Improvements	Non-CAP	$250,000													$250,000	
R-06	Valley Service Area Reservoir No. 3	CAP	$11,745,000													$1,500,000	$10,245,000
Pump Station																	
PS-01	Intertie Pump Station/Lea Hill BPS Improvements	Non-CAP	$2,325,000	$75,000	$250,000	$2,000,000											
PS-02	Lea Hill Pump Station Replacement	Non-CAP	$6,365,000				$765,000	$3,000,000	$2,600,000								
PS-03	Braunwood Pump Station Mechanical Upgrades	Non-CAP	$250,000											$70,000	$180,000		
PS-04	Game Farm Park Pump Station Mechanical Upgrades	Non-CAP	$250,000											$70,000	$180,000		
Distribution																	
D-01	Annual Distribution System Improvements Program	CAP	$59,699,000		$400,000	$2,500,000	$2,500,000	$2,500,000	$2,500,000	$2,500,000	$2,500,000	$2,500,000	$2,500,000	$3,572,636	$14,290,546	$14,290,546	$7,145,273
D-02	Street Utility Improvements	Non-CAP	$24,618,000		$601,000	$617,000	$1,300,000	$1,300,000	$1,300,000	$1,300,000	$1,300,000	$1,300,000	$1,300,000	$1,300,000	$5,200,000	$5,200,000	$2,600,000
D-03	Water Repair & Replacements	Non-CAP	$11,950,000		$150,000	$450,000	$600,000	$600,000	$600,000	$600,000	$600,000	$600,000	$600,000	$650,000	$2,600,000	$2,600,000	$1,300,000
D-04	Water Trench Patches Program	Non-CAP	$3,360,000	$160,000	$160,000	$160,000	$160,000	$160,000	$160,000	$160,000	$160,000	$160,000	$160,000	$160,000	$640,000	$640,000	$320,000
D-05	West Hill Springs Transmission Main Replacement	Non-CAP	$1,401,000	$50,000		$200,000	$1,151,000										
D-06	Lea Hill 648 Zoning Adjustment	CAP	$104,000				$104,000										
General																	
G-01	Comprehensive Water System Plan Update - 2034	Non-CAP	$750,000										$375,000	$375,000			
G-01	Comprehensive Water System Plan Update - 2044	Non-CAP	$750,000														$750,000
Total Project Cost (March 2024 USD)			**$214,834,315**	**$15,368,740**	**$13,020,848**	**$12,897,298**	**$10,674,810**	**$11,364,810**	**$10,214,810**	**$8,937,250**	**$10,647,750**	**$11,544,961**	**$9,369,039**	**$10,367,636**	**$42,115,546**	**$25,460,546**	**$22,850,273**
Cost in Future USD with Inflation/Escalation				**$15,505,949**	**$13,438,366**	**$15,356,813**	**$13,346,021**	**$14,919,117**	**$14,079,931**	**$12,934,911**	**$16,181,050**	**$18,421,739**	**$15,697,211**	**$18,238,810**	**$84,303,230**	**$61,753,697**	**$64,192,441**

CHAPTER 9

Financial Program

9.1 Introduction

This chapter was prepared by FCS GROUP to provide a financial program that allows the City of Auburn (City) water utility to remain financially viable during the planning period. This financial viability analysis considers the historical financial condition, current and identified future financial and policy obligations, operation and maintenance (O&M) needs, and the financial impacts of the capital projects identified in this Water System Plan (WSP). Furthermore, this chapter provides a review of the water utility's current rate structure with respect to rate adequacy and customer affordability.

9.2 Past Financial Performance

This section includes a historical summary of financial performance as reported by the City, including fund resources and uses arising from cash transactions.

9.2.1 Comparative Financial Statements

The City legally owns and operates a water utility. Table 9-1 shows a summary of water fund resources and uses arising from cash transactions for the previous 6 years (2017 through 2022). 2023 financial statements were not available at the time the chapter was developed. Table 9-2 shows a summary of assets and liabilities, with the difference between the two reported as "net position." Increases and decreases in net position are useful indicators of the financial position of the City's utility. Noteworthy findings and trends for the historical performance and condition of the City's water utility are then discussed.

9.2.1.1 Findings and Trends

- The City's water charges for services increased from $14.8M in 2017 to $16.5M in 2022. The average annual increase was approximately 2.2 percent per year, with a total increase of 11.4 percent from 2017 to 2022. Charges for services increase each year, except for 2019 and 2020 where revenues fell by 1.5 percent and 1.4 percent respectively. Operating Expenditures increased by $1.7M across the six years with an average annual increase of 2.8 percent. Similar to observations made in revenues, expenditures dropped in 2020 but to a greater extent, decreasing by 2.0 percent. Despite total operating expenses slightly outpacing growth in operating revenues, operating income has been positive in all years observed. 2019 and 2020 had slightly less operating income than other years, observed at $2.7M, with the remainder of the years averaging $3.1M.

- The O&M coverage ratio (total operating revenues divided by total operating expenses) was 126.3 percent in 2017. With expenses slightly outpacing revenues this metric decreased and ended 2022 at 122.8 percent. A ratio of 100.0 percent or greater shows that operating revenue will successfully cover operating expenses, and the utility has remained above this ratio for all years observed.

Table 9-1 | Summary of Historical Fund Resources and Uses Arising From Cash Transactions

	2017	2018	2019	2020	2021	2022
OPERATING REVENUES						
Charges for Service	$ 14,781,310	$ 15,293,485	$ 15,057,517	$ 14,846,679	$ 15,879,799	$ 16,459,868
Other Operating Revenue	-	600	835	835	-	-
Total Operating Revenues	$ 14,781,310	$ 15,294,085	$ 15,058,352	$ 14,847,514	$ 15,879,799	$ 16,459,868
OPERATING EXPENSES						
Operations and Maintenance	$ 3,753,573	$ 3,692,419	$ 3,789,093	$ 3,727,553	$ 3,912,937	$ 3,840,391
Administration	4,672,569	4,702,259	4,727,971	4,615,503	5,221,782	6,028,393
Depreciation and Amortization	3,269,581	3,407,933	3,848,016	3,774,956	3,826,387	3,533,926
Other Operating Expenses	8,964	-	-	-	-	-
Total Operating Expenses	$ 11,704,687	$ 11,802,611	$ 12,365,080	$ 12,118,012	$ 12,961,106	$ 13,402,710
Operating Income (Loss)	$ 3,076,623	$ 3,491,474	$ 2,693,272	$ 2,729,502	$ 2,918,693	$ 3,057,158
NONOPERATING REVENUES (EXPENSES)						
Interest Revenue	$ 104,564	$ 178,271	$ 261,654	$ 49,808	$ 22,790	$ 278,430
Other Non-Operating Revenue	269,264	324,228	589,809	148,433	26,542	86,333
Gain (Loss) on Sale of Capital Assets	-	-	-	-	-	-
Interest Expense	(703,321)	(697,363)	(658,808)	(910,452)	(663,857)	(601,400)
Other Non-Operating Expense	-	-	-	(225,230)	-	(90,443)
Total Non-Operating Revenues (Expenses)	$ (329,493)	$ (194,864)	$ 192,655	$ (937,441)	$ (614,525)	$ (327,080)
Income (Loss) Before Contributions and Transfers	$ 2,747,130	$ 3,296,610	$ 2,885,927	$ 1,792,061	$ 2,304,168	$ 2,730,078
Capital Contributions	$ 1,176,756	$ 1,271,234	$ 3,246,853	$ 2,170,407	$ 5,382,110	$ 1,772,439
Transfers In	2,500,000	2,686,332	39,258	6,536,029	-	-
Transfers Out	(2,693,946)	(2,800,400)	(147,002)	(6,643,340)	(119,472)	(96,339)
Change in Net Position	$ 3,729,940	$ 4,453,776	$ 6,025,036	$ 3,855,157	$ 7,566,806	$ 4,406,178
Net Position, January 1	75,751,705	79,481,645	83,935,421	89,960,457	93,815,614	101,382,420
Net Position, December 31	$ 79,481,645	$ 83,935,421	$ 89,960,457	$ 93,815,614	$ 101,382,420	$ 105,788,598
O&M Coverage Ratio	126.3%	129.6%	121.8%	122.5%	122.5%	122.8%
Net Operating Income as a % of Operating Revenue	20.8%	22.8%	17.9%	18.4%	18.4%	18.6%
Debt Service Coverage Ratio	3.83	4.16	3.93	3.63	3.17	2.85

Table 9-2 | Summary of Historical Comparative Statements of Net Position

	2017	2018	2019	2020	2021	2022
CURRENT ASSETS						
Cash and Cash Equivalents	$ 5,765,412	$ 7,294,288	$ 9,568,609	$ 11,417,193	$ 14,719,905	$ 13,826,776
Investments	-	-	-	-	-	-
Restricted Cash:						
Bond Payments	1,690,316	1,687,994	1,672,123	2,334,270	2,246,000	2,183,144
Customer Deposits	43,892	31,541	40,062	64,792	91,672	104,070
Other (Reserve for Bonds and Rate Stabilization)	1,630,313	1,630,314	1,627,520	11,586,722	5,987,879	2,448,053
Customer Accounts	1,363,945	1,837,533	1,912,797	2,090,429	2,007,050	2,203,858
Other Receivables	-	-	-	-	-	-
Due From Other Governmental Units	17,968	14,338	-	-	10,000	-
Inventories	135,450	183,252	189,071	233,015	242,192	313,273
Total Current Assets	$ 10,647,296	$ 12,679,260	$ 15,010,182	$ 27,726,421	$ 25,304,698	$ 21,079,174
NONCURRENT ASSETS						
Net Pension Asset	$ -	$ -	$ -	$ -	$ 2,266,854	$ 920,143
Capital Assets Not Being Depreciated:						
Land	897,971	897,971	897,971	1,283,524	1,283,524	1,283,524
Intangible - Water Rights	5,449,186	5,701,772	5,954,358	6,889,163	7,823,968	8,758,773
Construction In Progress	8,374,328	620,533	3,488,784	4,443,772	6,918,228	6,283,865
Capital Assets:						
Buildings and Equipment	2,509,599	2,509,599	2,509,599	2,509,599	2,509,599	2,509,599
Improvements Other Than Buildings	131,463,582	142,480,531	145,175,810	151,038,789	159,207,726	167,888,532
Less Accumulated Depreciation	(54,538,817)	(57,946,751)	(61,794,767)	(65,569,723)	(69,396,109)	(72,930,035)
Total Noncurrent Assets Net of Accumulated Depreciation	$ 94,155,849	$ 94,263,655	$ 96,231,755	$ 100,595,124	$ 110,613,790	$ 114,714,401
TOTAL ASSETS	$ 104,803,145	$ 106,942,915	$ 111,241,937	$ 128,321,545	$ 135,918,488	$ 135,793,575
DEFFERED OUTFLOWS OF RESOURCES						
Deferred Outflow from Bond Refunding	$ -	$ -	$ -	$ 78,146	$ 78,146	$ 78,146
Deferred Outflow related to Pensions	312,206	274,590	296,941	334,033	309,166	866,866
Total Deferred Outflows of Resources	312,206	274,590	296,941	412,179	387,312	$ 945,012
CURRENT LIABILITIES						
Current Payables	$ 1,354,856	$ 831,153	$ 971,724	$ 1,015,566	$ 1,627,369	$ 700,718
Claims Payable	-	-	-	-	-	-
Loans Payable - Current	634,328	652,107	467,646	478,000	250,914	224,800
Employee Leave Benefits - Current	125,285	122,115	128,188	122,116	172,872	172,114
Leases Payable - Current	-	-	-	-	-	-
Revenue Bonds Payable - Current	871,737	902,092	935,347	1,215,345	1,268,753	1,327,964
Payable From Restricted Assets:						
Accrued Interest	828,486	794,779	754,158	1,126,592	1,065,376	998,923
Deposits	43,892	31,541	40,062	64,792	91,672	104,070
Other Liabilities Payable	600	-	-	-	-	-
Total Current Liabilities	$ 3,859,184	$ 3,333,787	$ 3,297,125	$ 4,022,411	$ 4,476,956	$ 3,528,589
NONCURRENT LIABILITIES						
Employee Leave Benefits	$ 37,836	$ 44,177	$ 34,069	$ 44,176	$ 74,823	$ 66,026
Loans Payable	3,689,390	3,123,514	2,697,219	2,359,332	2,108,418	1,883,620
Leases Payable	-	-	-	-	-	-
Revenue Bonds Payable	14,899,559	13,952,693	12,972,571	26,189,156	24,596,375	22,944,382
Net Pension Liability	2,775,633	2,245,967	1,937,559	1,917,936	1,216,710	1,478,887
Total Non Current Liabilities	$ 21,402,418	$ 19,366,351	$ 17,641,418	$ 30,510,600	$ 27,996,326	$ 26,372,915
TOTAL LIABILITIES	$ 25,261,602	$ 22,700,138	$ 20,938,543	$ 34,533,011	$ 32,473,282	$ 29,901,504
DEFERRED INFLOWS OF RESOURCES						
Deferred Inflow Related to Leases	$ -	$ -	$ -	$ -	$ -	$ -
Deferred Inflow Related to Pensions	372,104	581,946	639,878	385,099	2,450,098	1,048,485
Total Deferred Inflows of Resources	$ 372,104	$ 581,946	$ 639,878	$ 385,099	$ 2,450,098	$ 1,048,485
NET POSITION						
Net Investment in Capital Assets	$ 75,751,151	$ 77,321,243	$ 80,831,095	$ 72,687,561	$ 86,632,404	$ 87,779,897
Restricted For:						
Debt Service	801,827	835,535	873,362	10,460,130	658,575	3,265,869
Rate Stabilization	-	-	-	-	-	-
Pension Asset	-	-	-	-	-	920,143
Unrestricted	2,928,667	5,778,643	8,256,000	10,667,923	14,091,441	13,822,689
TOTAL NET POSITION	$ 79,481,645	$ 83,935,421	$ 89,960,457	$ 93,815,614	$ 101,382,420	$ 105,788,598
Current Ratio	2.8	3.8	4.6	6.9	5.7	6.0
Debt to Net Position Ratio	0.26	0.23	0.20	0.33	0.29	0.26
Debt to Noncurrent Capital Assets Ratio	0.22	0.21	0.19	0.31	0.26	0.24

- Net operating income as a percentage of operating revenue was 20.8 percent in 2017, decreasing to a low of 17.9 percent in 2019, before ending 2022 at 18.6 percent. Similar to the O&M coverage ratio, these trends show how successfully operating revenue actually covered operating expenses, with higher positive numbers being the best and negative numbers showing a need for improvement. In addition, these trends demonstrate the ability of the utility to invest in capital, whether through direct cash transfers or the issuance and servicing of debt.

- The debt service coverage ratio measures the amount of cash flow available to meet principal and interest payments. Typically, revenue bond debt service coverage requires a minimum factor of 1.25 during the life of the loans. This ratio is calculated by dividing cash or net operating income (operating revenues less operating expenses) by annual revenue bond debt service. The debt service coverage ratio for all outstanding revenue bond debt ended 2017 at 3.83, decreasing to 2.85 by 2022, as the City took on more debt liabilities. The fact that this ratio has sustained levels higher than the minimum target of 1.25 indicates a stable capacity for new debt and will likely result in favorable terms when entering the bond market.

9.2.1.2 Findings and Trends

- The current ratio is calculated by dividing unrestricted current assets by current liabilities and measures an entity's ability to pay short-term obligations. This ratio ranges from a low of 2.8 in 2017 to a high of 6.9 in 2020, ending at 6.0 in 2022. Anything above 2.0 for this liquidity ratio is good.

- The Debt to Net Position Ratio compares total debt to total net position, which is the difference between total assets and liabilities. This ratio ranged from a high of 0.33 or 33 percent in 2020 to a low of 0.20 or 20 percent in 2019. For utilities, a ratio of 40 to 60 percent helps to moderate rate impacts by spreading costs over a longer period of time. Based on these results, the City may consider utilizing debt service for future capital investments, especially if it benefits system expansion.

- The Debt to Noncurrent Capital Asset Ratio compares total debt to noncurrent capital assets, which are also known as property, plant and equipment. This ratio begins at 0.22 or 22 percent debt to 78 percent noncurrent assets in 2017. Noncurrent capital assets increase by $20.6 million throughout the six-year history while debt increased by $6.2 million, and the ratio increases to 24 percent by 2022. Similar to the debt to net position ratio, these results indicate the utility has ample borrowing capacity and may consider utilizing debt service for future capital investments, especially if it benefits system expansion. A ratio of 40 percent debt to 60 percent equity or below is a general industry target.

9.3 Financial Plan

The water utility is responsible for generating sufficient revenue to meet all of its costs. The primary source of funding is derived from ongoing monthly service charges, with additional revenue coming from late penalties and interest earnings. The City controls the level of user charges and, with City Council approval, can adjust user charges as needed to meet financial objectives.

The financial plan can only confirm financial feasibility if it considers the total system costs of providing water services, both operating and capital. To meet these objectives, the following elements have been completed.

1. **Capital Funding Plan.** Identifies the total capital improvement plan (CIP) obligations of the planning period. The plan defines a strategy for funding the CIP, including an analysis of available resources from rate revenues, existing reserves, connection charge revenues, debt financing, and any special resources that may be readily available (e.g., grants, developer contributions, etc.). The capital funding plan impacts the financial plan through the use of debt financing (resulting in annual debt service) and the assumed rate revenue made available for capital funding.

2. **Financial Forecast.** Identifies future annual non-capital costs associated with the operation, maintenance, and administration of the water system. Included in the financial plan is a reserve analysis that forecasts cash flow and fund balance activity, along with testing for satisfaction of actual or recommended minimum fund balance policies. The financial plan ultimately evaluates the sufficiency of utility revenues in meeting all obligations, including cash uses such as operating expenses, debt service, capital outlays, and reserve contributions, as well as any coverage requirements associated with long-term debt. The plan also identifies the future adjustments required to fully fund all utility obligations in the planning period.

9.3.1 Capital Funding Plan

To properly evaluate future capital funding needs, capital costs were escalated by 3.00 percent annually to the year of planned spending. The CIP developed for this WSP identifies $143.3M in escalated project costs over the 11-year planning horizon from 2024-2034. The 20-year period, through 2043, includes $262.6M in total escalated project costs.

A summary of the 11-year and 20-year CIPs are shown in **Table 9-3**. As shown, each year has varied capital cost obligations depending on construction schedules and infrastructure planning needs.

Table 9-3 | 11-Year and 20-Year CIPs

Year	Unescalated $	Escalated $
2024	$ 15,368,740	$ 15,368,740
2025	13,020,848	13,411,473
2026	12,897,298	13,682,743
2027	10,674,810	11,664,653
2028	11,364,810	12,791,194
2029	10,214,810	11,841,764
2030	8,937,250	10,671,544
2031	10,647,750	13,095,389
2032	11,544,961	14,624,811
2033	9,369,039	12,224,471
2034	10,367,636	13,933,236
11-Year Total	**$ 124,407,951**	**$ 143,310,019**
2035 - 2043	77,003,728	119,267,070
20-Year Total	**$ 201,411,679**	**$ 262,577,089**

Table 9-4 provides more detail for the 11-year CIP.

Table 9-4 | 11-Year CIP (Escalated $)

Project	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Active Projects (In Design or Construction)											
104th Park Development (104th to 102nd Water Main Loop)	$ 350,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
104th Avenue SE PRV Replacement	390,475										
C St SW Preservation	901,038	928,069									
Coal Creek Springs Transmission Main Replacement	4,450,422										
D St SE and 23rd Street SE Storm Improvements	2,285,677										
Well 4 Facility Improvements	884,822										
Well 4 Electrical Improvements	200,000	875,500									
112th Pl SE Water Main Replacement	255,000	1,900,350									
Auburn Way South - Hemlock St SE to Poplar St SE		2,469,940									
Garden Avenue Realignment	699,797										
M Street NE Widening	37,000		339,488								
R Street SE Widening		103,000	1,763,734								
R St SE and 21st St SE Roundabout	61,897	497,490									
R St SE Preservation - 33rd St SE to 37th St SE	301,850										
Lea Hill Road/104th Ave SE Roundabout	100,000		159,135	655,636							
Fulmer Treatment Facility VFD Replacements	175,000										
Reservoirs 4 and 8 Seismic Rehabilitation	1,433,871										
12th St SE and Auburn Way South Water R&R	318,000	327,540									
2025 Local Street Preservation	65,000	679,800									
2026 Local Street Preservation	50,000	154,500	926,166								
Coal Creek Springs Flowmeter Replacement	375,017										
Comprehensive Water System Plan Update - 2024	250,000										
Reservoir 2 Valves	68,750	2,266,000									
Supply											
Cascade Water Alliance Water Purchase	934,810	962,854	991,740	1,021,492	1,052,137	1,083,701					
Water Resources Protection Program	87,700	61,800	63,654	65,564	67,531	69,556	71,643	73,792	76,006	78,286	80,635
Rehabilitate & Clean Wells 2 and 6 (3-year Cycle)		257,500			281,377			307,468			335,979
Well Inspection and Redevelopment Program			222,789	229,473							
Coal Creek Springs Rehabilitation	75,614			546,364	1,125,509	2,318,548	2,193,474				
Coal Creek Springs Chlorination Building Replacement							621,206	1,919,526			
Howard Road CCTF Expansion									570,047	1,304,773	
On-Site Chlorine Generation Systems (OSEC) at Wells 1 and 4			106,090	191,227							
Fulmer CCTF Replace On-Site Chlorine Generation System (OSEC)			159,135	382,454							
Well 5/5A Upgrades			1,007,855	289,573	1,688,263						
Well 7 Treatment Phase 1							1,791,078	3,193,982	7,600,620		
Well 7 Back-Up Power									525,660	2,165,974	
Well 7 Treatment Phase 2										2,158,095	5,106,882
Well 2 Replacement							477,621	1,918,603			
Algona Well 1 Study	50,000										
Storage											
Reservoir Repair and Replacements	192,000	61,800	63,654	65,564	67,531	69,556	71,643	73,792	76,006	78,286	80,635
Reservoir Painting (10-year Cycle)		257,500	1,591,350								
Academy PRV Project				513,582							
Reservoir Capital Improvements				513,582							
Valley Service Area Reservoir No. 3	50,000										
Pump Stations											
Intertie Booster Pump Station Improvements	75,000	257,500	2,121,800								
Lea Hill Pump Station Replacement				835,936	3,376,526	3,014,112					
Braunwood Pump Station Mechanical Upgrades	40,000										94,074
Game Farm Park Pump Station Mechanical Upgrades											94,074
Distribution System											
Annual Distribution System Improvements Program		412,000	2,652,250	2,731,818	2,813,772	2,898,185	2,985,131	3,074,685	3,166,925	3,261,933	4,801,325
Street Utility Improvements		619,030	654,575	1,420,545	1,463,161	1,507,056	1,552,268	1,598,836	1,646,801	1,696,205	1,747,091
Water Repair & Replacements		154,500	477,405	655,636	675,305	695,564	716,431	737,924	760,062	782,864	873,546
Water Trench Patches Program	160,000	164,800	169,744	174,836	180,081	185,484	191,048	196,780	202,683	208,764	215,027
West Hill Springs Transmission Main Replacement	50,000		212,180	1,257,729							
Lea Hill 648 Zoning Adjustment				113,644							
General											
Comprehensive Water System Plan Update - 2034										489,290	503,969
	$15,368,740	$13,411,473	$13,682,743	$11,664,653	$12,791,194	$11,841,764	$10,671,544	$13,095,389	$14,624,811	$12,224,471	$13,933,236

9.4 Available Funding Assistance and Financing Resources

9.4.1 City Resources

Resources appropriate for funding capital needs include accumulated cash in the capital fund, rate revenues designated for capital spending purposes, developer contributions, and capital-related charges such as system development charges. The first two resources will be discussed in the **Fiscal Policies** section of the **Financial Forecast**. Capital-related charges are discussed below.

9.4.1.1 System Development Charges

A connection charge such as the City's system development charge (SDC) refers to a one-time charge imposed on new customers as a condition of connecting to the water system. The purpose of the SDC is two-fold: 1) to promote equity between new and existing customers; and 2) to provide a source of revenue to fund capital projects necessary for meeting growth. This revenue can only be used to fund utility capital projects or to pay debt service incurred to finance those projects. In the absence of a connection charge, growth-related capital costs would be borne in large part by existing customers. In 2024, the City charged all new customers an SDC of $9,553 per meter capacity equivalent (MCE). MCEs are defined by the American Water Works Association and represent the maximum safe operating flow capacity in gallons per minute, relative to the base meter size.

9.4.1.2 Local Facilities Charges

While a connection charge is the manner in which new customers pay their share of system investment costs, local facilities charge funding is used to pay the costs of local facilities that connect each property to the system's infrastructure. Local facilities funding is often overlooked in rate forecasting because it is funded upfront by either connecting customers and developers, or through an assessment to properties, but never from rates.

A number of mechanisms can be considered toward funding local facilities. One of the following scenarios typically occurs: (a) the utility charges a connection fee based on the cost of the local facilities (under the same authority as the facilities assessment fee); (b) a developer funds an extension of the system to its development and turns those facilities over to the utility (contributed capital); or (c) a local assessment is set up called a Utility Local Improvement District (ULID/LID) or a Local Utility District (LUD), which collects tax revenue from benefited properties.

A local facilities charge (LFC) is a variation of the connection charge. It is a city-imposed charge to recover the cost related to service extension to local properties. Often called a front-footage charge and imposed on the basis of footage of the main "fronting" a particular property, it is usually implemented as a reimbursement mechanism to a city for the cost of a local facility that directly serves a property. It is a form of a connection charge and thus can accumulate up to 10 years of interest. It typically applies in instances when no developer-installed facilities are needed through developer extension due to the prior existence of available mains already serving the developing property.

The developer extension is a requirement that a developer install on-site and sometimes off-site improvements as a condition of extending service. These are in addition to the connection charge required and must be built to City standards. Part of the agreement between the City and the developer planning to extend service might include a latecomer agreement (also called payback agreements), resulting in a latecomer charge to new connections for the developer extension.

Latecomer charges are a variation of developer extensions, whereby new customers connecting to a developer-installed improvement make a payment to the City based on their share of the developer's cost. The City passes this charge on to the developer who installed the facilities. As part of the developer extension process, this defines the allocation of costs and records latecomer obligations on the title of affected properties. No interest is allowed, and the reimbursement agreement cannot exceed 20 years in duration.

ULID/LID is another mechanism for funding infrastructure that assesses benefited properties based on the special benefit received by the construction of specific facilities. Most often used for local facilities, some

ULIDs also recover related general facilities costs. Substantial legal and procedural requirements can make this a relatively expensive process, and there are mechanisms by which a ULID can be rejected.

9.4.2 Outside Resources

This section outlines various grant, loan, and bond opportunities available to the City through federal and state agencies to fund the CIP identified in the WSP.

9.4.2.1 Grants and Low-Cost Loans

Historically, federal and state grant programs were available to local utilities for capital funding assistance. However, these assistance programs have been mostly eliminated, substantially reduced in scope and amount, or replaced by loan programs. Remaining grant programs are generally lightly funded and heavily subscribed. Nonetheless, the benefit of low-interest loans makes the effort of applying worthwhile.

The State of Washington's Department of Commerce maintains a document currently entitled "*Funding Programs for Drinking Water and Wastewater Projects; Updated 3-5-2024*", which contains details on government programs, eligibility requirements, and contact information, should the City wish to inquire about program offerings and eligibility requirements.

9.4.2.2 Bond Financing

General Obligation Bonds – General obligation (G.O.) bonds are bonds secured by the full faith and credit of the issuing agency, committing all available tax and revenue resources to debt repayment. With this high level of commitment, G.O. bonds have relatively low interest rates and few financial restrictions. However, the authority to issue G.O. bonds is restricted in terms of the amount and use of the funds, as defined by the Washington constitution and statute. Specifically, the amount of debt that can be issued is linked to assessed valuation.

Revised Code of Washington (RCW) 39.36.020 states:

> (2)(a)(ii) Counties, cities, and towns are limited to an indebtedness amount not exceeding one and one half percent of the value of the taxable property in such counties, cities, or towns without the assent of three-fifths of the voters therein voting at an election held for that purpose.
>
> (b) In cases requiring such assent counties, cities, towns, and public hospital districts are limited to a total indebtedness of two and one-half percent of the value of the taxable property therein.

While bonding capacity can limit the availability of G.O. bonds for utility purposes, these can sometimes play a valuable role in project financing. A utility rate savings may be realized through two avenues: the lower interest rate and related bond costs, and the extension of repayment obligation to all tax-paying properties (not just developed properties) through the authorization of an ad valorem property tax levy.

Revenue Bonds – Revenue bonds are commonly used to fund utility capital improvements. The debt is secured by the revenues of the issuing utility. With this limited commitment, revenue bonds typically bear higher interest rates than G.O. bonds and require security conditions related to the maintenance of dedicated reserves (a bond reserve) and financial performance (added bond debt service coverage). The City agrees to satisfy these requirements by resolution as a condition of bond sale.

Revenue bonds can be issued in Washington without a public vote. There is no bonding limit, except perhaps the practical limit of the utility's ability to generate sufficient revenue to repay the debt and provide coverage. In some cases, poor credit might make issuing revenue bonds problematic.

9.4.3 Capital Financing Strategy

An ideal capital financing strategy would include the use of grants and low-cost loans when debt issuance is required. However, these resources are very limited and competitive in nature and do not provide a reliable source of funding for planning purposes. It is recommended that the City pursue these funding avenues but assume revenue bond financing to meet the needs which can't be met by available cash resources. The capital financing strategy developed to fund the CIP identified in this WSP assumes the following funding resources:

- Accumulated cash reserves,
- Transfers of excess cash (over minimum balance targets) from the Operating Fund,
- System development charge revenue,
- Interest earned on Capital Fund balances,
- Grant proceeds, and
- Revenue bond financing.

The cash resources described above are anticipated to fund 58.1 percent of the 11-year CIP and 56.4 percent of the 20-year CIP. The remaining funding is assumed to be from new debt obligations of $69.1M in the next 11-year planning period and an additional $45.3M between 2034-2043. Table 9-5 presents the 11-year and 20-year capital financing strategy.

Table 9-5 | 11-Year and 20-Year Capital Financing Strategy

Year	Capital Expenditures Escalated	System Development Charge Revenue	Grant Funding	Revenue Bond Proceeds	Cash / Reserve Funding	Total Financial Resources
2024	**$ 15,368,740**	$ 325,000	$ 2,717,531		$ 12,326,209	**$ 15,368,740**
2025	**13,411,473**	452,813		12,958,660	-	**13,411,473**
2026	**13,682,743**	468,497		3,541,340	9,672,907	**13,682,743**
2027	**11,664,653**	484,723		11,179,930	-	**11,664,653**
2028	**12,791,194**	501,511		6,320,070	5,969,613	**12,791,194**
2029	**11,841,764**	518,881		10,400,000	922,883	**11,841,764**
2030	**10,671,544**	536,853		-	10,134,691	**10,671,544**
2031	**13,095,389**	555,446		12,539,943	-	**13,095,389**
2032	**14,624,811**	574,684		2,260,057	11,790,070	**14,624,811**
2033	**12,224,471**	594,589		9,900,000	1,729,882	**12,224,471**
2034	**13,933,236**	615,182			13,318,054	**13,933,236**
Subtotal	**$ 143,310,019**	**$ 5,628,179**	**$ 2,717,531**	**$ 69,100,000**	**$ 65,864,309**	**$ 143,310,019**
2035 - 2043	**119,267,070**	6,589,599		45,300,000	67,377,472	**119,267,070**
Total	**$ 262,577,089**	**$ 12,217,778**	**$ 2,717,531**	**$ 114,400,000**	**$ 133,241,780**	**$ 262,577,089**

9.5 Financial Forecast

The financial forecast, or revenue requirement analysis, forecasts the amount of annual revenue that needs to be generated by user rates. The analysis incorporates operating revenues, O&M expenses, debt service payments, rate-funded capital needs, and any other identified revenues or expenses related to operations. The objective of the financial forecast is to evaluate the sufficiency of the current level of rates. In addition

to annual operating costs, the revenue needs also include debt covenant requirements and specific fiscal policies and financial goals of the City.

For this analysis, two revenue sufficiency tests have been developed to reflect the financial goals and constraints of the City: cash needs must be met; and debt coverage requirements must be realized. In order to operate successfully with respect to these goals, both tests of revenue sufficiency must be met.

Cash Test – The cash flow test identifies all known cash requirements for the City in each year of the planning period. Typically, these include O&M expenses, debt service payments, rate-funded system reinvestment funding or directly funded capital outlays, and any additions to specified reserve balances. The total annual cash needs of the City are then compared to projected cash revenues using the current rate structure. Any projected revenue shortfalls are identified, and the rate increases necessary to make up the shortfalls are established.

Coverage Test – The coverage test is based on a commitment made by the City when issuing revenue bonds and some other forms of long-term debt. For the purposes of this analysis, revenue bond debt is assumed for any needed debt issuance. As a security condition of issuance, the City would be required per covenant to agree that the revenue bond debt would have a higher priority for payment (a senior lien) compared to most other expenditures; the only outlays with a higher lien are O&M expenses. Debt service coverage is expressed as a multiplier of the annual revenue bond debt service payment. For example, a 1.00 coverage factor would imply that no additional cushion is required. A 1.25 coverage factor means revenue must be sufficient to pay O&M expenses, annual revenue bond debt service payments, and an additional 25.0 percent of annual revenue bond debt service payments. The excess cash flow derived from the added coverage, if any, can be used for any purpose, including funding capital projects. Targeting a higher coverage factor can help the City achieve a better credit rating and provide lower interest rates for future debt issues.

9.5.1 Current Financial Structure

The City maintains a fund structure and implements financial policies that target management of a financially viable and fiscally responsible water system.

9.5.1.1 Fiscal Policies

A summary of the key financial policies employed by the City, as well as those recommended and incorporated in the financial program, are discussed below.

Operating Reserve – Operating reserves are designed to provide a liquidity cushion to ensure that adequate cash working capital will be maintained to deal with significant cash balance fluctuations, such as seasonal fluctuations in billings and receipts, unanticipated cash expenses, or lower than expected revenue collections. Like other types of reserves, operating reserves also serve another purpose: they help smooth rate increases over time. Target funding levels for an operating reserve are generally expressed as a certain number of days of O&M expenses, with the minimum requirement varying with the expected revenue volatility. Industry practice for utility operating reserves ranges from 30 days (8.0 percent) to 120 days (33.0 percent) of O&M expenses, with the lower end more appropriate for utilities with stable revenue streams and the higher end more appropriate for utilities with significant seasonal or consumption-based fluctuations. The City's current goal is to maintain a minimum balance in the Operating Fund equal to 90 days of O&M expenses for working capital.

Capital Reserve – A capital contingency reserve is an amount of cash set aside in case of an emergency should a piece of equipment or a portion of the utility's infrastructure fail unexpectedly. The reserve also could be used for other unanticipated capital needs, including capital project cost overruns. Industry practices range from maintaining a balance equal to 1.0 to 2.0 percent of fixed assets, an amount equal to a 5-year rolling average of CIP costs, or an amount determined sufficient to fund equipment failure (other than catastrophic failure). The final target level should balance industry practices with the risk level of the City.

This financial plan targets a minimum balance in the water utility capital fund equal to 1.0 percent of fixed assets.

System Reinvestment – System reinvestment funding promotes system integrity through ongoing repair and replacement of system infrastructure. Ideally, a detailed asset management plan would guide the level of rate funded system reinvestment, however, in absence of this level of effort, annual depreciation expense is commonly used as a measure of the decline in asset value associated with routine use of the system. Particularly for utilities that do not already have an explicit system reinvestment policy in place, implementing a funding level based on full depreciation expense could significantly impact rates. An alternative benchmark is annual depreciation expense net of debt principal payments on outstanding debt. This approach recognizes that customers are still paying for certain assets through the debt component of their rate and intends to avoid simultaneously charging customers for an asset and its future replacement. The specific benchmark used to set system reinvestment funding targets is a matter of policy that must balance various objectives, including managing rate impacts, keeping long-term costs down, and promoting "generational equity" (i.e., not excessively burdening current customers with paying for facilities that will serve a larger group of customers in the future).

The City is currently phasing in system reinvestment funding, aiming to reach 100 percent of annual depreciation levels by 2030. With this phase-in strategy in place, the City is forecast to fund an average of $4.1 million in capital costs annually through dedicated rate revenues within the 11-year forecast period.

Debt Management – It is prudent to consider policies related to debt management as part of a broader utility financial policy structure. Debt management policies should be evaluated and formalized, including the level of acceptable outstanding debt, debt repayment, bond coverage, and total debt coverage targets. The City has three outstanding water revenue bonds, a Public Works Trust fund loan, and two other low interest loans. This forecast meets or exceeds the required revenue bond debt service coverage of 1.25.

9.5.1.2 Financial Forecast

The financial forecast is primarily based upon the City's budget through 2024 and takes into consideration other key factors and assumptions needed to develop a complete portrait of the City's annual water utility financial obligations. The following is a list of the key revenue and expense factors and assumptions used to develop the financial forecast.

- Growth – Rate revenue is escalated utilizing a 0.45 percent growth rate developed based on actual historical trends at the City.

- Revenue – The City has two general revenue sources: 1) water service charges (rate revenue); and 2) miscellaneous (non-rate) revenue. In the event of a forecasted annual shortfall, rate revenue can be increased to meet the annual revenue requirement. For the purpose of this financial forecast, rate revenues are forecasted to increase with customer growth. Non-rate revenues are

held constant throughout the forecast period, with the exception of interest earnings which are calculated based on projected balances and assumed investment rates.

- System Development Charge Revenue – the existing system development charges are applied to the projected new connections to forecast revenue. Connection charges are forecast to generate an average of $512,000 annually from 2024-2034. This equates to an average of 46 new MCEs per year. Connection charge revenue is directed towards annual capital needs.

- Expenses – O&M expense projections are based on the City's budget through 2024 with general cost inflation increases of 3.0 percent, labor cost inflation of 5.0 percent for 2025 and 2026, decreasing to 3.0 percent thereafter and benefit cost inflation increases of 12.50 percent for 2025 and 2026, decreasing to 5.5 percent per year thereafter. Budget figures were used for taxes in 2024. Future taxes are calculated based on forecasted revenues and prevailing tax rates.

    - Facilities GO Bond - In order to construct a new facility for Maintenance and Operations for the City, the water utility will fund part of a General Obligation Bond totaling approximately $39.1 million. Beginning in 2025, the water utility's proportionate share of the bond is forecasted at $333,000 annually for the remainder of the twenty-year forecast.

- Existing Debt – The water utility has six (6) outstanding debt issues: three (3) revenue bonds, one (1) Public Works Trust Fund (PWTF) loan and two (2) Drinking Water State Revolving Fund (DWSRF) loans. Total annual existing debt service obligations begin 2024 at $2.7 million, decreasing to $1.1 million by 2034 as four (4) of the six (6) loans are fully repaid.

- Future Debt – The capital financial strategy developed for this WSP forecasts the need for $69.1M in new debt proceeds in five (5) separate instances throughout the eleven-year forecast. The analysis performed assumes all new debt is through revenue bond financing. Annual new debt service obligations are forecasted to begin in 2025 at $1.5 million increasing to $6.1 million by 2034.

- Transfers to Capital - Operating fund balance above the minimum requirement is assumed to be available to fund capital projects and projected to be transferred to the Capital Fund each year, if needed. In total, the utility is forecast to fund $17.9 million in capital projects from excess operating fund cash within the 11-year forecast period.

Although the financial plan is completed through 2043, the rate strategy focuses on the shorter-term planning period of 2024 through 2034. It is recommended that the City revisit the proposed rates every 3 to 4 years to ensure that the rate projections developed remain adequate. Any significant changes should be incorporated into the financial plan and future rates should be adjusted as needed.

Table 9-6, following, summarizes the annual revenue requirements based on the forecast of revenues, expenditures, fund balances, and fiscal policies.

Table 9-6 | 11-Year Financial Forecast

Revenue Requirement	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Revenues											
Rate Revenues Under Existing Rates	$ 18,398,987	$ 18,480,409	$ 18,562,210	$ 18,644,392	$ 18,726,956	$ 18,809,906	$ 18,893,241	$ 18,976,964	$ 19,061,078	$ 19,145,583	$ 19,230,482
Non-Rate Revenues	711,618	995,023	921,087	742,167	760,542	763,594	775,863	779,012	795,263	798,519	810,558
Total Revenues	**$ 19,110,605**	**$ 19,475,432**	**$ 19,483,297**	**$ 19,386,559**	**$ 19,487,499**	**$ 19,573,500**	**$ 19,669,104**	**$ 19,755,976**	**$ 19,856,341**	**$ 19,944,102**	**$ 20,041,040**
Expenses											
Cash Operating Expenses	$ 14,490,240	$ 15,195,624	$ 15,775,495	$ 16,147,464	$ 16,560,290	$ 16,986,418	$ 17,429,740	$ 17,888,499	$ 18,366,342	$ 18,860,547	$ 19,374,767
Existing Debt Service	2,674,248	2,671,361	2,665,106	2,615,447	2,611,734	2,601,528	2,598,336	1,759,410	1,759,292	1,090,490	1,089,760
New Debt Service	-	1,455,336	1,455,336	2,998,874	2,998,874	3,916,177	3,916,177	5,221,569	5,221,569	6,094,771	6,094,771
Rate Funded System Reinvestment	1,738,857	1,037,921	2,016,114	1,877,607	3,393,539	4,213,598	5,626,454	5,888,362	6,180,858	6,425,348	6,704,012
Total Expenses	**$ 18,903,345**	**$ 20,360,242**	**$ 21,912,050**	**$ 23,639,392**	**$ 25,564,438**	**$ 27,717,721**	**$ 29,570,707**	**$ 30,757,840**	**$ 31,528,062**	**$ 32,471,155**	**$ 33,263,310**
Total Surplus (Deficiency)	**$ 207,259**	**$ (884,810)**	**$ (2,428,754)**	**$ (4,252,833)**	**$ (6,076,939)**	**$ (8,144,221)**	**$ (9,901,603)**	**$ (11,001,863)**	**$ (11,671,720)**	**$ (12,527,053)**	**$ (13,222,271)**
Annual Rate Adjustment	**0.00%**	**7.50%**	**9.50%**	**9.50%**	**9.50%**	**9.50%**	**9.50%**	**3.00%**	**3.00%**	**3.00%**	**3.00%**
Cumulative Annual Rate Adjustment	**0.00%**	**7.50%**	**17.71%**	**28.90%**	**41.14%**	**54.55%**	**69.23%**	**74.31%**	**79.54%**	**84.92%**	**90.47%**
Rate Revenues After Rate Increase	$ 18,398,987	$ 19,866,440	$ 21,850,041	$ 24,031,724	$ 26,431,269	$ 29,070,437	$ 31,973,157	$ 33,078,288	$ 34,221,651	$ 35,404,570	$ 36,628,414
Additional Taxes from Rate Increase	-	229,097	543,446	890,472	1,273,446	1,695,963	2,161,979	2,330,808	2,505,891	2,687,448	2,875,704
Net Cash Flow After Rate Increase	**$ 207,259**	**$ 272,124**	**$ 315,632**	**$ 244,027**	**$ 353,928**	**$ 420,347**	**$ 1,016,334**	**$ 768,653**	**$ 982,962**	**$ 1,044,486**	**$ 1,299,958**
Coverage After Rate Increases	3.00	2.10	2.40	1.91	2.24	2.19	2.52	2.41	2.50	2.43	2.51

The financial forecast indicates that at existing rate levels the utility will become deficient in 2025 as growth in expenses outpaces growth in revenues and the utility takes on additional debt obligations to fund capital infrastructure investment. The City has adopted a 7.50 percent increase for 2025, to resolve the remaining projected deficiency, rates will need to increase by 9.50 percent annually from 2026 through 2030, before decreasing to 3.00 percent annually through 2034.

9.5.1.3 City Funds and Reserves

Table 9-7 shows a summary of the projected Operating Fund and Capital Fund ending balances through 2034 based on the rate forecasts presented above. The Operating Fund is maintained above 90 days of O&M expenses. The Capital Fund balance meets or exceeds the minimum target of 1 percent of fixed assets in most years of the study timeframe with the exception of 2026, 2028 and 2030 where balances fall below target. Fund balances are rebuilt and meet or exceed target balances by the end of the eleven-year timeframe.

Table 9-7 | Ending Cash Balance Summary

Ending Fund Balances	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Operating Fund	$ 8,988,743	$ 9,260,867	$ 3,943,874	$ 4,036,866	$ 4,140,073	$ 4,246,604	$ 4,357,435	$ 4,472,125	$ 4,591,586	$ 4,715,137	$ 4,843,692
Capital Fund	2,019,201	6,659,039	1,226,711	9,587,690	1,038,144	4,653,056	1,096,853	9,910,203	3,003,538	8,649,973	3,293,834
Total	**$ 11,007,944**	**$ 15,919,905**	**$ 5,170,585**	**$ 13,624,556**	**$ 5,178,217**	**$ 8,899,660**	**$ 5,454,288**	**$ 14,382,328**	**$ 7,595,123**	**$ 13,365,110**	**$ 8,137,526**

9.6 Current and Projected Rates

9.6.1 Current Rates

The existing water rates are composed of a fixed monthly charge that varies by meter size and a variable consumption charge per hundred cubic feet (CCF) for all water usage. While fixed charges are consistent across customer classes for all meter sizes except one inch, usage charges are different for each customer class. Consumption for the single family class is divided into three escalating pricing tiers that are applied year-round. This type of inclining tier structure is designed to discourage discretionary usage of water and encourage conservation. All other customers are charged a uniform rate for all consumption used. Table 9-8 shows the existing City of Auburn water system rate schedule.

Table 9-8 | Existing Schedule of Rates

Description	2024 Existing
Monthly Fixed Charges (All Classes)	
3/4"	$ 21.08
1" - Single Family	21.08
1" - All Other Classes	23.66
1 1/2"	25.76
2"	29.69
3"	57.11
4"	71.66
6"	91.57
8"	118.30
10"	167.97
Volume Charges per CCF	
Single Family	
0-7 CCF	$ 4.18
7-15 CCF	5.11
Greater Than 15 CCF	5.81
Multi-Family	$ 5.00
Commercial	5.27
Manufacturing / Industrial	5.15
Schools	5.61
Municipal	5.19
Irrigation	6.94

9.6.2 Projected Rates

The financial forecast discussed above indicates the need for annual rate adjustments to satisfy all forecasted financial obligations. The City has adopted a 7.50 percent increase for 2025, with annual 9.50 percent increases forecasted from 2026 through 2030, and 3.00 percent increases from 2031 to 2034. Table 9-9 shows the projected rates with increases applied uniformly to the water fixed and volume components for all classes. A more detailed rate study that will analyze the projected increases beyond the current adopted rates will be conducted in 2025.

Table 9-9 | Proposed Schedule of Rates

Description	Existing	Proposed									
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Monthly Fixed Charges (All Classes)											
3/4"	$ 21.08	$ 22.66	$ 24.81	$ 27.17	$ 29.75	$ 32.58	$ 35.68	$ 36.75	$ 37.85	$ 38.99	$ 40.16
1" - Single Family	21.08	22.66	24.81	27.17	29.75	32.58	35.68	36.75	37.85	38.99	40.16
1" - All Other Classes	23.66	25.43	27.85	30.50	33.40	36.57	40.04	41.24	42.48	43.75	45.06
1 1/2"	25.76	27.69	30.32	33.20	36.35	39.80	43.58	44.89	46.24	47.63	49.06
2"	29.69	31.92	34.95	38.27	41.91	45.89	50.25	51.76	53.31	54.91	56.56
3"	57.11	61.39	67.22	73.61	80.60	88.26	96.64	99.54	102.53	105.61	108.78
4"	71.66	77.03	84.35	92.36	101.13	110.74	121.26	124.90	128.65	132.51	136.49
6"	91.57	98.44	107.79	118.03	129.24	141.52	154.96	159.61	164.40	169.33	174.41
8"	118.30	127.17	139.25	152.48	166.97	182.83	200.20	206.21	212.40	218.77	225.33
10"	167.97	180.57	197.72	216.50	237.07	259.59	284.25	292.78	301.56	310.61	319.93
Volume Charges per CCF											
Single Family											
0-7 CCF	$ 4.18	$ 4.49	$ 4.92	$ 5.39	$ 5.90	$ 6.46	$ 7.07	$ 7.28	$ 7.50	$ 7.73	$ 7.96
7-15 CCF	5.11	5.49	6.01	6.58	7.21	7.89	8.64	8.90	9.17	9.45	9.73
Greater Than 15 CCF	5.81	6.25	6.84	7.49	8.20	8.98	9.83	10.12	10.42	10.73	11.05
Multi-Family	$ 5.00	$ 5.38	$ 5.89	$ 6.45	$ 7.06	$ 7.73	$ 8.46	$ 8.71	$ 8.97	$ 9.24	$ 9.52
Commercial	5.27	5.67	6.21	6.80	7.45	8.16	8.94	9.21	9.49	9.77	10.06
Manufacturing / Industrial	5.15	5.54	6.07	6.65	7.28	7.97	8.73	8.99	9.26	9.54	9.83
Schools	5.61	6.03	6.60	7.23	7.92	8.67	9.49	9.77	10.06	10.36	10.67
Municipal	5.19	5.58	6.11	6.69	7.33	8.03	8.79	9.05	9.32	9.60	9.89
Irrigation	6.94	7.46	8.17	8.95	9.80	10.73	11.75	12.10	12.46	12.83	13.21

9.6.3 Conservation Based Rates

In 2003 the Washington State Legislature passed the Municipal Water Supply Efficiency Requirements Act. The Water Use Efficiency rules went into effect on January 22, 2007 and typically apply to Water System Plans that each jurisdiction is required to develop every six to ten years. The Revised Code of Washington (RCW) outlines the rules of this act, under RCW 70.119.180. In section 4(B), the RCW states that jurisdictions must perform an "evaluation of the feasibility of adopting and implementing water delivery rate structures that encourage water conservation." The City of Auburn currently charges their single family residential customers based on an inclining block rate structure to incentivize water use conservation, therefore no additional evaluation was performed.

9.7 Affordability

The Washington State Department of Health and the Department of Commerce Public Works Board use an affordability index to prioritize low-cost loan awards depending on whether rates exceed 2.5 percent of the median household income for the service area. The average median household income for the City was $87,406 between 2018 and 2022, expressed in 2022 dollars, according to the U.S. Census Bureau. The 2022 value is escalated based on the actual rate of inflation in 2023 of 4.31 percent and the 3.00 percent inflation rate used in the financial forecast to project the median household income in future years. Table 9-10

presents the City's monthly water bill, projected to 2034 and tested against the 2.5 precent monthly affordability threshold.

Table 9-10 | Community Affordability Test

Year	Inflation	Median HH Income	2.5% Monthly Threshold	Projected Monthly Bill	% of Median HH Income
2022		$ 87,406			
2023	4.31%	91,173			
2024	3.00%	93,908	$ 195.64	$ 50.34	0.64%
2025	3.00%	96,726	201.51	54.09	0.67%
2026	3.00%	99,627	207.56	59.25	0.71%
2027	3.00%	102,616	213.78	64.90	0.76%
2028	3.00%	105,695	220.20	71.05	0.81%
2029	3.00%	108,866	226.80	77.80	0.86%
2030	3.00%	112,132	233.61	85.17	0.91%
2031	3.00%	115,495	240.62	87.71	0.91%
2032	3.00%	118,960	247.83	90.35	0.91%
2033	3.00%	122,529	255.27	93.10	0.91%
2034	3.00%	126,205	262.93	95.88	0.91%

Applying the 2.5 percent monthly affordability test, the City's rates are forecasted to remain within the indicated affordability range through 2034.

9.8 Conclusion

The results of this analysis indicate that at existing rate levels the utility will be deficient beginning in 2025. To keep pace with expenses and prepare for new debt obligations needed to fund system infrastructure needs, the City has adopted a 7.50 percent rate increase in 2025. Forecasting into the future a 9.5 percent annual rate increase will be required from 2026 through 2030, followed by 3.00 percent increases through 2034. It is recommended that the City regularly review and update the key underlying assumptions that compose the multi-year financial plan to ensure that adequate revenues are collected to meet the City's total financial obligations.

POLICIES AND CRITERIA

INTRODUCTION

The City of Auburn (City) manages the water utility in accordance with established water- system policies that govern various facets of utility operations. City policies are established by the City in order to provide a vision or mission of the water utility and to provide a framework for the design, operation, and ongoing wellbeing of the City's water utility.

The policies included in this Water Comprehensive Plan are developed specifically for the City's multi-source municipal water system and seek to provide consistent treatment to all utility customers and to provide documentation to current water-system customers as well as those considering service from the City. It should be noted that what is included in these policies is limited to those things related to the water system and its design, maintenance, and operation. There are other policies and criteria that pertain to the water utility the City has in place regarding land use, development, and financial components, which are not directly addressed in this plan, that could still have an impact on the needs of the water system. These policies and criteria may include factors such as zoning regulations, building codes, infrastructure requirements, and financing options. These additional factors will be considered when planning for the water system, to meet the needs of the community in a sustainable and effective matter.

The City's Water Comprehensive Plan is based upon the following mission statement for the water utility:

"The City will provide for the efficient, environmentally sound and safe management of the existing and future water system within Auburn's service area."

The City's Water utility policies are grouped within goal statements that are headlined under the following categories:

- Business Practices
- Service Area
- Operations and Maintenance
- Financial
- Planning
- Environmental Stewardship
- Design and Construction

1.0 BUSINESS PRACTICES

Goal 1: To employ recognized best business practices resulting in creating a sustainable, efficient, and cost-effective operation of the water utility.

Policy 1.1 Element of City Comprehensive Plan

Incorporate the Water Comprehensive Plan as an Element of the City's Comprehensive Plan.

Policy 1.2 Water Service By Others

Water Service supplied by outside purveyors within Auburn City limits are required to obtain a franchise with the City and are required to conform to all federal, state, and local laws and regulations. [ACC 20.02.040 and 20.04]

Policy 1.3 Asset Improvements

The City will develop and implement system improvements, infrastructure renewal (repair, rehabilitation, or replacement), and operations and maintenance programs for the water system according to asset management principles that address levels of service, address the triple bottom line (economic, social, and environmental benefits and costs), minimize asset life cycle costs, and incorporate risk management into decision-making.

Policy 1.4 Connections to Water System

Any connection to the public water system requires obtaining an approved utility permit for service and said connection shall be made in accordance with City of Auburn Engineering Design and Construction Standards. [ACC 13.06.050, 13.06.090 and 13.06.100]

Policy 1.5 Asset Database

The City will maintain an asset database to be used in prioritizing asset maintenance and repair and replacement activities. The database includes asset age and material information, and will be validated and updated through inspections, records review, and other available information.

Policy 1.6 Condition Assessments of Assets

The City will perform condition assessments of assets through development and implementation of an inspection schedule for all assets.

Policy 1.7 Design Life of Assets

The City will assign industry standard design life for all assets. The actual physical assessment will be compared to the theoretical design life to determine the optimal economic life. The City will attempt to repair or replace system assets before they exceed their economic life.

Policy 1.8 Maintenance Activities for Asset Management

The City will conduct maintenance activities at a level that is consistent with optimizing system reliability, asset economic life, and system performance. The City will develop schedules for maintenance of all water system assets.

Policy 1.9 Addressing Water Quality Complaints

The City will monitor the frequency, location, and details of all water quality complaints. At a minimum, the City will respond, research the cause of, and propose control methods once an issue is verified and documented.

Policy 1.10 Security of Assets

Adequate measures will be taken to ensure system security. At a minimum, the City will maintain security at water facilities using the Supervisory Control and Data Acquisition system for intrusion alerts.

Policy 1.11 Public Health Protection

The City will conduct regular inspections of its water system and any non-public water supply systems connected to it, in collaboration with the Washington State Department of Health.

To protect the municipally owned water supply from contamination, the City will establish and publish rules and regulations as needed. The City will take all necessary measures to enforce the regulations to prevent any risks to public health associated with water supply contamination. [ACC 13.12.080]

Policy 1.12 Cross-Connection Prohibited

Installing or maintaining a cross connection which will endanger the water quality of the municipal water system is strictly prohibited and shall be abated immediately or water service may be discontinued. [ACC 13.12.040]

Policy 1.13 Cross-Connection Control

To obtain water service to a property, the City may require any customer to install a pressure reducing valve, backflow prevention assembly, or pressure relief valve or similar devices at any location where the City determines there is a need to protect the municipal water system. [ACC 13.12.070]

Policy 1.14 All Meters

All water meters owned by the City shall not be removed except by the City. Lost, broken, or damaged water meters shall be replaced or repaired by or under the direction of the City. [ACC 13.06.330]

Policy 1.15 Fire Hydrant Use

Fire hydrant use is a permitted activity unless that use is conducted by authorized City or Fire Authority employees. [ACC 13.06.415 & 13.12.035]

Policy 1.16 Delinquent Accounts

The City has established procedures for disconnecting water service to delinquent accounts for non-payment. [ACC 13.06.290]

Policy 1.17 Leak Adjustment

The City has established procedures for property owners to request a limited leak adjustment of the water bill for water that leaked from the service line between the City water meter and the point where the line enters the building.

2.0 SERVICE AREA

Goal 2: Ensure sustainable provision of retail water services through the development and implementation of policies that define the duty to serve and conditions of service, while adhering to best management practices to meet the needs of the community.

Policy 2.1 Wholesale Water

The City will plan to provide water service to wholesale customers with firm contracts. As supply

permits, the City may provide water to wholesale customers without firm contracts unilaterally or as part of a capital improvement partnership agreement.

Policy 2.2 Government Consistency

The City's Water Comprehensive Plan will be consistent with local, county, and state land use authorities.

Policy 2.3 Duty to Serve

The City commits to providing reliable water service to all customers within its Retail Water Service Area (RWSA) in compliance with Washington Administrative Code (WAC) 246-290-106. The City also ensures adherence to King County Codes 13.24.138 and 13.24.140 where applicable for areas outside city limits in unincorporated King County. Revisions to the City's RWSA shall be made only by written agreement and in accordance with local, county and state regulations.

Policy 2.4 Conditions of Service

For areas within the Retail Water Service Area, the City will provide water service to new customers, conditioned on the agreement that any infrastructure improvements provided by the developer/development is in compliance with City water system standards.

In addition, the City requires that residents within the City's Potential Annexation Areas will receive water services from the City, to the extent practical. The City will work with existing water purveyors within the City limits and within the City's Potential Annexation Areas in order to provide fair and equitable water service. New customers within the City's Potential Annexation Areas are to sign an Annexation Agreement before a Water Availability Certificate is issued.

Policy 2.5 Satellite Systems Assistance

The City recognizes there may be instances where satellite system water providers require assistance with providing water service. In these cases, the City may consider providing assistance on a case-by-case basis. The assistance could take a variety of forms, such as offering technical support and/or access to City infrastructure to help with the provision of water service. Ultimately, the decision to provide assistance will be based on the specific needs and circumstances of the water provider and will be made on a case-by-case basis after careful consideration.

Policy 2.6 Satellite System Connecting to City Service

The City will not assume ownership of any satellite water system unless it meets all current City standards. The responsibility and all costs to bring a satellite system up to City standards and any infrastructure necessary to connect the satellite system to the City's water system network, shall be the system owner(s). [ACC 13.06.150]

Policy 2.7 Water Supply Management and Planning

The City will promote effective water supply management and planning consistent with the "South King County Coordinated Water System Plan," as well as regional water supply and conservation goals.

Policy 2.8 Concurrency of Improvements for Service

Provision of water service, including supply, in the City's Retail Water Service Area is conditioned on concurrency with development and the necessary water facilities, including water right permit(s) and certificate(s), are available and adequate to serve the development at the time it is ready for occupancy and use, as required by the Water Comprehensive Plan. Water service may not always be immediately available for a new development. The property developer must provide the required water system facilities before the City can provide water service, if the facilities do not already exist, or are not under construction or under a binding development agreement.

3.0 OPERATIONS AND MAINTENANCE

Goal 3: Employ operations and maintenance best management practices, which includes a commitment to training and certification opportunities for its employees.

Policy 3.1 System Monitoring and Operation

The City will monitor the water system through the use of computerized control system and adjust operations as necessary for efficient water system operation.

Policy 3.2 Regular Inspection of Facilities

The City will conduct routine inspections and maintenance on its water facilities including wells, springs and booster pump stations, in accordance with the frequency outlined in the operation and maintenance section of the Water Comprehensive Plan.

Policy 3.3 Meter Reading

Water service meters shall be read regularly to document customers' water usage for billing purposes.

Policy 3.4 Customer Service

The City is committed to resolving customer complaints. All complaints are documented and reviewed and tended to by the appropriate staff member for investigation and resolution.

Policy 3.5 Pressure Reducing Valve Program

To maximize system operational efficiency, conserve resources and provide consistent water service to customers of the water system, the City will adjust all water pressure reducing valves to the proper setting based on the frequency outlined in the operation and maintenance chapter of the Comprehensive Water Plan.

Policy 3.6 Employee Certification

The City will pay for annual certification, provide time and tuition for certification training courses, and time for certification exams. In addition, the City will provide its staff opportunities for obtaining the continuing education required to maintain certification.

Policy 3.7 ADU Metering

Property owners with accessory dwelling units (ADUs) on a single-family property may choose to supply the ADU from a master meter serving both units or separate meter installed to serve the ADU at owner's expense. Water usage of each ADU will be billed to the property owner based on

readings from the master meter or individual meter serving the ADU, whichever is applicable.

4.0 FINANCIAL

Goal 4: Manage the water utility in a professional manner in compliance with applicable laws, regulations, and City financial policies, which requires ongoing monitoring of revenues and expenses in order to make prudent business decisions and report to City officials, as needed, regarding the status of utility operations.

Policy 4.1 Source Meters

All sources will be metered to measure the amount of water produced and calibrated annually to ensure an accurate accounting of water produced.

Policy 4.2 Fiscal Stewardship

All money due to the City for water service of any kind or for penalties relating to the municipally owned water system of the City shall be paid to the water fund. The water fund will not be commingled with any other fund or funds of the City. [ACC 13.06.030]

Policy 4.3 Rates and Charges

The City Council establishes rates and charges for water service to be paid by a customer receiving water service from the city. While the City reserves the right to discontinue service without notice, it is committed to maintaining water service during times of extreme weather conditions, when the National Weather Service issues heat-related warnings or advisories for Auburn, Washington, to ensure public safety. The City is not liable for damages resulting from service interruptions. [ACC 13.06.0657]

Policy 4.4 Self-Sufficient Funding

The City maintains the water utility fund as a self-supporting enterprise fund. Water utility revenues come primarily from customer charges and are dependent upon established rates. The Revised Code of Washington requires that utility funds be used only for stated utility purposes. Although General Fund revenues can be used to fund water utility programs, the City has a general policy of not doing so. The City budgeting process should include a balanced and controlled annual water utility budget. This requires careful preparation of expense and revenue projections that may be reviewed by City management, the general public, and the City Council before approval of any rate increases.

Policy 4.5 Capital Improvement Program Level

Funding for the Capital Improvement Program (CIP) identified in the budget will be maintained at a level sufficient to assure system integrity. To the extent that the annual level of the CIP investment can be managed by scheduling and scoping of projects, the funding will be provided at a uniform level to avoid significant fluctuations and to reduce impacts on the operating budget and related rate increases. The City will maintain a reasonable level of reserves in the CIP fund in order to manage cash flow variation caused by the nature of the cost and timing of projects. Utility sold revenue bonds, Utility Local Improvement Districts, State Public Works Trust Fund loans, any available grants, system development charges and developer contributions will be considered for funding the future CIP projects.

Policy 4.6 System Development Charges

A water utility systems development charge is imposed upon all lands inside the boundary of the City and all lands outside the boundary of the City, which utilize water facilities. The utility systems development charge as set forth in the City fee schedule will be computed to consider the future and/or current value of the utility system's fixed assets, excluding contributions by developers, and outstanding bonded indebtedness, and will also consider an appropriate service unit. [ACC 13.41.030]

Policy 4.7 Development Charge Cost Recovery

The City shall continue to recognize the overall system impacts of new development upon the City water system through the collection and appropriate use of system development charges or similar fees. [ACC 13.41.020]

Policy 4.8 Payback Agreement

Payback agreements for public street and utility system improvements may be approved by the City Council. The City engineer may execute the agreements once the City Council has granted approval. [ACC 13.25.050]

Policy 4.9 Water Rate Levels

Water rates will be set at a level sufficient to cover the on-going expenses of the water utility, including operations, maintenance, repair, replacement, and capital improvements, as well as the general business expenses. Additionally, rates shall account for the depreciation of assets to ensure that the utility has adequate funds to maintain its infrastructure and facilities. Furthermore, the rates shall enable the water utility to maintain sufficient reserves.

Policy 4.10 Water Rate Structure

The water-rate structure will be set by customer class based on costs to serve each customer class. The water-rate structure shall support water conservation and wise use of water resources objectives as required by State law.

Policy 4.11 Water Rate Equity

The water-rate structure will allocate costs between the different customer classes. Rates will be established on a "Cost of Service" basis so that each customer class pays its prorated share of the total costs needed to operate and maintain the water utility. All projected future costs will be allocated to each customer class by using established criteria that reflect the benefit that each customer class receives from the service. A Cost of Service and Rate Study will be performed periodically to ensure ongoing equity between customer classes.

Policy 4.12 Frequency of Water Rate Adjustments

Water rates will be evaluated as part of the water utility budgeting process to ensure that budgeted expenses, including the impact of increasing water-supply regulations, are reflected in current rates.

Policy 4.13 Financial Reserve Levels

The City shall maintain water utility cash balances to serve as a contingency reserve fund. The

fund should maintain a balance of $1,000,000 to cover working capital needs and emergency contingencies and cash flow fluctuations.

Policy 4.14 Charges for Services Outside the City Limits

The City may include a rate adjustment for water service outside the City limits.

Policy 4.15 Low-Income Assistance Program

The Utility Rate Exemption Program currently provides water rate assistance for specific low-income senior customers or for specific low-income totally or permanently disabled customers. [ACC 13.24.010]

5.0 PLANNING

Goal 5: Employ best management practices related to water supply planning and capital facility planning activities, which includes conditions for service extensions, fire system responsibility, oversizing, and service pressures and flow.

Policy 5.1 Service Extension

The City will consider extending water system services to areas within its existing RWSA, consistent with adopted annexation policies, and subject to the recovery of costs and the availability of sufficient financial and staffing resources. Property owners will be responsible for an equitable share of extension costs upon connection to the system.

Water system extensions must comply with current City codes and engineering design and construction standards. Connection to existing systems not meeting City water system standards must be upgraded at property owner's expense before service is provided.

To serve new developments, water system extensions must be built prior to or simultaneously with development, according to the size and configuration identified by the Comprehensive Water Plan. The City may participate in financing through System Development Charges credits, Local Improvements Districts (LID), and/or payback agreements, as allowed by law, to support such improvements.

All persons or LIDs desiring to extend City water mains in the City must extend across the full width of the property being served to accommodate future extensions. [ACC 13.08.020]

Policy 5.2 Facility Extension Agreement

The City requires a Facility Extension Agreement to be executed for all public water system extensions constructed by development.

Policy 5.3 System-Wide Reliability

The City shall invest the resources necessary to construct, maintain, and renew water-system infrastructure and equipment to ensure that customers are provided consistent, reliable service in accordance with WAC 246-290-420 Reliability and Emergency Response. Wherever possible, the City should anticipate system interruptions and design and operate the system to minimize the impact of such interruptions to customers.

Policy 5.4 Emergency Preparedness

The City shall update, as needed, a citywide Emergency Response Plan, complying with applicable RCW and WAC requirements, that will include the water system operations. The water system portion of the plan should ensure that adequate provisions are in place to provide for an organized response to the most likely kinds of emergencies that might endanger the health and safety of the public or the operation of the municipal water system.

Policy 5.5 Capital Facilities Plan

The City is required by the Washington State Growth Management Act to adopt a Capital Facilities Plan. The plan will include capital projects and capital project programs for the water utility for a six-year period. Identified projects and programs will be financially constrained and broken down into capacity and non-capacity projects and programs. The City will match revenue sources to capital projects based on sound fiscal policies.

Policy 5.6 Emergency Interties

The City should support emergency interties with adjacent water systems where there is a benefit to both water systems. Interties increase reliability of the City-wide water system during emergencies and other unusual operating circumstances.

Policy 5.7 Water Supply Interties

The City should consider water-supply interties on a case-by-case basis. Water supply interties should provide benefits to both water service providers and should not compromise the City's ability to serve its existing customers or its future water supply needs.

Policy 5.8 Water Supply Planning

The City's objective is to ensure a continuous, safe water supply to meet firm customer demands. Provision of water service must be consistent with the goals, objectives, and policies of the City of Auburn Comprehensive Water Plan. Effects of past water conservation will be considered when projecting future water needs. Future water demands will be estimated using existing water usage patterns and projected future populations developed by the City's comprehensive Plan and consistent with the Puget Sound Regional Council data.

Policy 5.9 Oversizing

When determined to be necessary by the City to install water lines larger than are required to serve adjacent properties, the City may enter into an agreement to compensate the developer for the difference in cost of the oversizing. [ACC 13.08.040]

Policy 5.10 Service Pressure

The City should provide potable water to customers in sufficient quantity to meet maximum day demands at a pressure that meets or exceeds all minimum applicable regulations, except during emergency conditions. Property owners may install private booster pumps to achieve higher pressures under supervision of the City and in accordance with WAC 246-290-230 Distribution Systems.

Policy 5.11 Water for Irrigation

Water used for irrigation by non-single-family residential customers shall be provided through an irrigation meter. Deduct meters shall not be used to supply water for irrigation. [ACC 13.06.230]

Policy 5.12 Water Meters

Water meters shall be placed on every domestic and irrigation service line. [ACC 13.06.320]

6.0 ENVIRONMENTAL STEWARDSHIP

Goal 6: Employ best management practices related to water environmental stewardship and the Water utility's dedication to develop and implement facilities and programs that will protect the environment, including water conservation, demand management and water shortage response.

Policy 6.1 Conservation Promotion

The City will promote water conservation and the efficient use of water resources to help ensure a sustainable water supply.

Policy 6.2 Water Shortage or Emergency Response

In the event of a current or threatened water-supply shortage, the Mayor may declare a water shortage or emergency and issue water use restrictions or conservation measures as necessary and consistent with the Water Shortage Response plan. The Public Works Department is responsible for implementing these measures and making reasonable attempts to notify affected customers. [ACC 13.14]

Policy 6.3 Water Quality Responsibility

The City shall provide water to all water-system customers that meet all state and federal water quality standards. The City shall take the actions necessary to ensure that all water quality standards are met to the point of delivery (meter). The customer is responsible for maintaining water quality from the meter to the actual point of use.

Policy 6.4 Water Resource Protection

The City shall maintain a Water Resource Protection Program that incorporates best management practices and adaptive management concepts, to protect the City's groundwater supplies from degradation.

The Comprehensive Water Plan shall provide for the evaluation of existing and potential future groundwater sources with regard to threats to the quantity and quality of such sources. The Plan shall ensure that strategies are established for the protection of groundwater sources that are used or likely to be used for public water supplies.

Policy 6.5 Sustainable Development

The City strives to be a sustainable community: meeting the needs of the present while preserving the ability of future generations to meet their own needs.

Policy 6.6 Springs Protection

Protection of the City's Coal Creek Springs and West Hill Spring watersheds, wells, and other

sources shall be a high priority in the designation of appropriate land uses in the vicinity of these areas and facilities.

Policy 6.7 Aquifer Recharge Area

The City shall consider the impacts of new development within aquifer recharge areas of potable water sources as part of its environmental review process and require any appropriate mitigation measures. [ACC 16.10.120.E]

Policy 6.8 Water Use Efficiency Goals

The City will continue implementation of its existing Water Use Efficiency Program. The City will target a 1 percent reduction in equivalent residential unit value for each year until reaching a planning Equivalent Residential Unit (ERU) value of 172 gpd/ERU. The goal of the City is to reduce peaking factors that occur during the high usage periods to maximize existing water supply sources. The city's goal shall be in compliance and consistent with all applicable local, state, and federal laws and regulations within the Retail Water Service Area.

Policy 6.9 Non-Revenue Water

The City will strive to maintain levels of water leakage for its distribution system at less than 10 percent.

Policy 6.10 Leak Detection

The City is committed to a tight, non-leaking water distribution system. Each year the City will check approximately one-quarter of the water distribution system for leakage.

Policy 6.11 Reclaimed Water

The City will explore opportunities and evaluate options for wastewater reuse and rainwater reclamation on a case by case basis. These can serve as cost-effective and environmentally beneficial sources of water thereby increasing the security and reliability of the drinking water supply.

Policy 6.12 Aquifer Storage and Recovery

The City shall consider the use of aquifer storage and recovery as a conservation and demand management tool to make best use of City water resources.

7.0 DESIGN AND CONSTRUCTION

Goal 7: Employ best management practices related to the design and construction of water facilities.

Policy 7.1 Service Ownership / Responsibility

The City shall own and maintain the service line between the main and the meter, the meter and setter, the meter box, and tail piece. The property owner shall own and maintain the service line from the tail piece to the point of service including pressure-reducing valves, pumps, or cross-connection assemblies beyond the meter. [ACC 13.06.027]

For unmetered connections (fire sprinklers), City ownership ceases at the fitting on the water line.

Where on-site fire hydrants are required, the City shall own the mains and hydrants located within established easements, unless the on-site mains and hydrants are located behind a master meter and designated as private.

Policy 7.2 Source of Supply

The City shall have sufficient system-wide supply facilities (including both permanent and emergency interties) to meet the Maximum Day Demand with the largest active water supply source out of service. Since power continuity is a concern, auxiliary power, such as an installed or portable generator of sufficient capacity to power the well or spring pumps should be provided.

Policy 7.3 Pump Stations

A minimum of two pumps or a complete spare pump will be provided for each distribution system pump station to provide flexibility and system redundancy. Where multiple pumps are provided, the pumps will be sized so that the station can meet Maximum Day Demand flow conditions with the largest pump out-of-service. If the area is not served by gravity by a reservoir, booster pumps (along with any supply available) will be sized to provide peak hour demand and fire demand for the service area should the largest pump be out-of- service. Since power continuity is a concern, auxiliary power, such as an installed or portable generator of sufficient capacity to power the station with any single pump out of service should be provided.

Policy 7.4 Storage Reservoirs

Reservoir redundancy is not a requirement for service areas where the Maximum Day Demand and fire demand can be met by supply or pumping.

Policy 7.5 Distribution System

The City will plan for and develop a dependable distribution network with pipeline redundancy for redirecting water to affected customers during pipeline failures and establishing multiple connections between service zones at various locations. While the aim is to create a looped water distribution system for reliability and fire flow, there may be cases where looping is not feasible, necessitating off-site improvements in developing areas. Larger water mains may be required for major distribution lines or areas with higher fire flow needs. Additionally, subdividing service area zones into smaller pressure zones aligned with topographic elevations guarantees consistent pressure in each zone.

Whenever a street is to be substantially reconstructed or a new street built, the City shall determine whether water facilities in the street right a way shall be constructed or brought up to the size and configuration indicated by the Water Plan and Comprehensive Plan.

Policy 7.6 Fire Flow Requirements

The City has established two distinct and independent parts to the municipal water-system fire flow requirements within the City Retail Water Service Area. The first is a fire flow requirement established by the Fire Authority as a building-specific fire flow based on building use and materials of construction. The second is a multi-source municipal water system level of service criterion. The City shall require that both parts of the fire flow requirements be met as a condition of development and as a condition of any extension of the City water system.

New development, redevelopment, or change in use or occupancy (as defined by Auburn City Code) shall meet the full fire flow requirements as established by this policy. Change of occupancy is not intended to include change of tenants or proprietors. The applicant shall be responsible for installing all necessary facilities needed to serve the property and for complying with the City's development, and design and construction standards to meet these requirements.

Fire flow requirements for existing structures and uses or occupancies are those that were required at the time of construction, as determined by the Fire Authority and the City's water utility (since 1995). Such existing structures shall not be required to upgrade the municipal water-system infrastructure to meet current fire flow and development standards. Similarly, the City shall not be obligated to upgrade the existing water- system infrastructure to meet current fire-flow criteria and standards. The City should consider the benefits of improved fire flows when analyzing the need, design, and merits of municipal water-system improvements.

Policy 7.7 Fire-Flow Improvements

As resources become available, the City shall make the City's municipal water-system improvements to meet the current fire flow criteria. Such system improvements may include replacing undersized water mains and pumping stations or correcting fire hydrant deficiencies of spacing and standardization where current standards are not met. When prioritizing and scheduling system improvements, the City capital facilities planning procedures should consider the severity of deficiencies. The City should seek opportunities to make improvements in conjunction with other City projects to achieve economic efficiency.

Policy 7.8 Fire-Flow Quantity

The quantity of water available for firefighting establishes an important level of service for a water system. The fire flow requirements shall be based on the minimum City fire flow requirements specified in the current City of Auburn Engineering Design Standards. Additional fire flow may be required per the International Fire Code.

Where the City determines higher fire flows are required than the minimums, the higher flow will be the criterion used to determine the required system improvements. Fire flows are to be provided during Maximum Day Demand at the pressure requirements discussed in the paragraphs on Distribution System.

Policy 7.9 Reservoir Sizing

The City reservoir storage components shall be sized to meet WAC 246-290-235 and Department of Health recommendations and requirements.

Policy 7.10 Individual Service Area Water Supply Requirements

The City will provide sufficient water supply capacity to meet Maximum Day Demand for each of the four service areas (Valley service area, Academy service area, Lea Hill service area and the Lakeland Hills service area) and any sub systems within these service areas utilizing a combination of reliable sources, reliable pump stations and reservoirs in accordance with system reliability criteria.

Policy 7.11 System Pressure

The City of Auburn has established a criterion for minimum pressure within the water distribution system of 30 psi for all new facilities during Peak Hour Demand.

The distribution system shall be capable of providing the required fire flow under Maximum Day Demand conditions. During these conditions, a minimum pressure of 20 psi is allowed at any point within the distribution system when firefighting storage and equalizing storage are depleted (WAC 246-290-230 Distribution Systems). The maximum target pressure within the water distribution system is 80 psi.

Policy 7.12 Elements of Required Storage

The City storage reservoir volume requirements are comprised of three separate categories: Equalizing Storage (when necessary), Fire Fighting Storage, and Emergency Storage. In addition, reservoirs may include a "dead storage" volume that is not useful because of the water system configuration.

Auburn will provide sufficient storage volume so that each storage component is provided separately, recognizing that a fire could occur during an emergency (supply or pump station out-of-service). As a result, nesting of storage (using the same storage for both emergency and firefighting) is not acceptable and the City requires these volumes to be stacked. Evaluation of the required reservoir volume must be done by analyzing each reservoir independently to ensure that adequate storage is provided to meet the needs of customers within the reservoir service area. Storage within a zone of higher elevation can be used to meet the storage requirements of lower zones served by the reservoir.

CITY OF AUBURN WASHINGTON
MAYOR NANCY BACKUS
25 WEST MAIN STREET, AUBURN, WA 98001
253-931-3000
AUBURNWA.GOV

DETERMINATION OF NON-SIGNIFICANCE (DNS)
City of Auburn Comprehensive Water Plan Update
SEP24-0015

The City of Auburn is issuing a Determination of Non-Significance (DNS) for the following described project. The permit applications and listed studies may be reviewed at the Auburn Department of Community Development at One E Main St., 2nd Floor, Customer Service Center, Auburn, WA 98001 and by visiting www.auburnwa.gov/landuse.

Proposal: The proposed non-project action includes adoption of the Comprehensive Water System Plan as an element of the city's Comprehensive Plan. The City of Auburn's Water System Plan (WSP) has been developed in accordance with Chapter 426-290 of the Washington Administrative Code (WAC), as presented in Washington State Department of Health (DOH) regulations for Group A Public Water Systems. This WSP supersedes the City of Auburn's 2015 WSP, approved on May 11, 2016, and the 2021 Limited WSP Update approved by DOH on December 16, 2021. The purposed of this WSP is to develop a long-term strategy for the City's Retail Water Service Area. Updated every ten years per DOH, the WSP evaluates the existing system and its ability to meet the anticipated requirements for water source, treatment, transmission, storge and distribution over the 20-year planning period.

Location: City-wide

Notice of Application:
Not applicable
Application Complete:
October 2, 2024
Permit Application:
September 6, 2024

File Nos.
SEP24-0015

Property Owner:
City of Auburn
25 W Main St.
Auburn WA, 98001

Applicant:
City of Auburn
Senait Gebreeyesus
25 W Main St.
Auburn WA, 98001

Studies/Plans Submitted with Application:
SEPA Environmental Checklist, prepared by City of Auburn, dated August 15, 2024
Draft Water System Plan, prepared by Consor, dated August 2024

Other Permits, Plans, and Approvals Needed:
Not Applicable.

Statement of Consistency and List of Applicable Development Regulations: This proposal is subject to and shall be consistent with the Auburn City Code, Comprehensive Plan, and Public Works Design and Construction Standards.

Lead Agency: City of Auburn. The lead agency for this proposal has determined that it does not have probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

SEPA Environmental Review: This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below.

Public Comment Period: This may be your only opportunity to comment on the environmental impact of the proposal. All persons may comment on this application. Comments must be in writing and submitted by **5:00 p.m. on October 22, 2024** to the mailing address of 25 W Main St., Auburn, WA, 98001 or emailed to the contact below. Any person wishing to become a party of record, shall include in their comments that they wish to receive notice of and participate in any hearings, if relevant, and request a copy of decisions once made. *The responsible official will reconsider the DNS based on timely comments and may retain, modify, or, if significant adverse impacts are likely, withdraw the DNS.* ***If the DNS is retained, it will be final after the expiration of the comment deadline.***

Any person aggrieved of the City's determination may file an appeal with the Auburn City Clerk at 25 West Main Street, Auburn, WA 98001-4998 within 14 days of the close of the comment period, or by 5:00 p.m. on September 9, 2024.

For questions regarding this project, please contact Dinah Reed, Senior Planner, at planning@auburnwa.gov or 253-931-3092.

Public Hearing: N/A

RESPONSIBLE SEPA OFFICIAL:
Alexandria D. Teague, Planning Services Manager

ADDRESS:
25 West Main St., Auburn, WA 98001
253-931-3090

DATE ISSUED: October 8, 2024 SIGNATURE: Alexandria D. Teague

Note: This determination does not constitute approval of the proposal. Approval of the proposal can only be made by the legislative or administrative body vested with that authority. The proposal is required to meet all applicable regulations.

SEPA[1] Environmental Checklist

Purpose of checklist

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization, or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. **You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown.** You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to **all parts of your proposal**, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for lead agencies

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B, plus the Supplemental Sheet for Nonproject Actions (Part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in "Part B: Environmental Elements" that do not contribute meaningfully to the analysis of the proposal.

[1] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/Checklist-guidance

A.Background

Find help answering background questions[2]

1. **Name of proposed project, if applicable:**

   City of Auburn, 2024 Comprehensive Water Plan

2. **Name of applicant:**

   City of Auburn, Public Works Department, Water Division

3. **Address and phone number of applicant and contact person:**

   Public Works Department

   25 West Main Street

   Auburn, WA 98001

   253-931-3010

   Senait Gebreeyesus, Water Utility Engineer

   253-804-5061

4. **Date checklist prepared:**

   August 15, 2024

5. **Agency requesting checklist:**

   City of Auburn

6. **Proposed timing of schedule (including phasing, if applicable):**

   The Comprehensive Water Plan is slated for adoption by December 2024. It outlines both short-term projects intended to be initiated over the next decade (2025-2034) and long-term projects forecasted for the following two decades (2035-2044). The exact locations of these projects are detailed within the proposed Comprehensive Water Plan.

7. **Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.**

   There are no current plans for further expansions or additional activities related to this proposal. This plan serves as a comprehensive outline for the City's capital improvement initiatives over the next ten years, with a vision extending to twenty years. Any projects that are not exempt from SEPA will undergo a detailed project-level review. The proposed locations of these projects are presented within the Comprehensive Water Plan.

8. **List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.**

[2] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-A-Background

The specific environmental documentation related to this proposal will be developed as individual projects are brought forward for implementation. Each project will undergo an environmental checklist and threshold determination based on its scope and impact.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

Currently, there are no known pending applications for government approvals directly affecting the properties covered by this proposal. However, there may be ongoing applications related to improvements within the water system, such as developer extensions and plat developments within the water service area.

10. List any government approvals or permits that will be needed for your proposal, if known.

The Comprehensive Water Plan requires approval from City of Auburn and the Washington State Department of Health.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The proposal involves adopting a new Comprehensive Water Plan to replace the City of Auburn's existing plan from 2015 and its limited update in 2021. This updated plan reflects the changes within the City's water system, identifies necessary system modifications, and details capital improvement projects designed to meet future water demands, system maintenance, and improvement activities. The maintenance of an up-to-date plan is crucial for compliance with Washington State Department of Health regulations and the Washington Growth Management Act. The plan encompasses the entire water service area, including most of the City limits, covering approximately 30 square miles.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The Comprehensive Water Plan applies to the City of Auburn's water service area, which includes most of the area within the City limits. Auburn is located between Seattle and Tacoma in both King County and Pierce County, Washington, spanning approximately 30 square miles.

B.Environmental Elements

1. Earth

Find help answering earth questions[3]

a. General description of the site:

Circle or highlight one: Flat, rolling, hilly, steep slopes, mountainous, other:

The project area features a varied terrain, including both flat regions and steep slopes.

b. What is the steepest slope on the site (approximate percent slope)?

The steepest slopes within the planning area can reach gradients as high as 100%. Notable steep slope areas are located east and north of the Green River on Lea Hill, south of the White River on Lakeland Hills, and along the West Valley Highway toward West Hill.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them, and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

The soils in the region predominantly consist of glacial and interglacial deposits in the uplands, with modern alluvium, undifferentiated deltaic deposits, and Osceola Mudflow in the valley. Soil textures range from gravelly, sandy loam to gravelly loam.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

There is potential for unstable soils on steep slopes in the identified areas. Geologic hazard zones, including those prone to volcanic activity, seismic events, landslides, and erosion, are mapped within the City's Comprehensive Plan and sensitive areas maps.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

This plan does not directly involve any filling, excavation, or grading activities. However, water system construction projects identified in the plan will likely require these activities, with specific details to be determined during individual project reviews.

f. Could erosion occur because of clearing, construction, or use? If so, generally describe.

While this non-project action does not directly cause erosion, individual projects will be reviewed for potential erosion impacts and corresponding mitigation measures.

[3] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-earth

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Water system projects typically do not create significant impervious surfaces, as most infrastructure is installed beneath existing roadways or in easements where structures are restricted, or within an existing building. Specific projects will be subject to environmental review before implementation.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any.

Although this non-project action does not involve direct earth disturbances, individual projects will include erosion and sedimentation control measures, with best management practices applied in areas prone to erosion.

2. Air

Find help answering air questions[4]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

This non-project action does not generate air emissions. However, specific construction projects will be evaluated for air quality impacts during their environmental review, and appropriate mitigation measures will be applied.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No off-site sources of emissions are expected to affect this proposal. However, individual projects will be assessed for air quality impacts during their environmental review.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Although this plan itself does not involve direct air emissions, standard emission controls will be implemented during the construction of projects recommended by this plan.

[4] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-Air

3. Water

Find help answering water questions[5]

a. Surface:

Find help answering surface water questions[6]

1. **Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.**

   The service area contains several significant water bodies, including the Green River and White River, as well as streams like Mill Creek and various drainage ways leading to these rivers. The area also includes numerous wetlands.

2. **Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.**

   This non-project action does not involve direct work near water bodies. However, the Comprehensive Water Plan recommends various water system improvements, including well rehabilitation and upgrades, which may occur near these water bodies. Such projects will undergo environmental review in compliance with the City's Shoreline Master Program.

3. **Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

   This plan itself does not involve the placement or removal of material in or near surface waters. However, future projects may involve such activities, which will be subject to environmental review.

4. **Will the proposal require surface water withdrawals or diversions? Give a general description, purpose, and approximate quantities if known.**

   The plan does not propose surface water withdrawals. The City's water supply primarily relies on a system of groundwater wells detailed in the comprehensive plan.

5. **Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

   While this plan does not involve direct action within floodplains, portions of the City's water service area are within or adjacent to floodplain areas. Individual projects will identify floodplain boundaries during their environmental review.

[5] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water
[6] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water/Environmental-elements-Surface-water

6. **Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

   This plan does not propose any discharges of waste materials into surface waters.

b. Ground:

Find help answering ground water questions[7]

1. **Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give a general description, purpose, and approximate quantities if known.**

   The adoption of the Comprehensive Water Plan does not entail direct groundwater withdrawals. The City's existing groundwater wells and their associated water rights are thoroughly documented in the plan.

2. **Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (domestic sewage; industrial, containing the following chemicals…; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

   No waste material will be discharged into the ground as a result of this plan.

c. Water Runoff (including stormwater):

1. **Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

   The adoption of this plan will not generate stormwater runoff. However, individual projects will be assessed for their potential to generate runoff during their environmental review.

2. **Could waste materials enter ground or surface waters? If so, generally describe.**

   This non-project action does not introduce the risk of waste materials entering ground or surface waters.

3. **Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.**

   The adoption of this plan will not affect drainage patterns. However, individual projects will be reviewed for such impacts.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

[7] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water/Environmental-elements-Groundwater

While the plan itself does not directly impact water resources, specific projects will include measures to control erosion, manage runoff, and mitigate drainage impacts as necessary, based on their environmental review.

4. Plants

Find help answering plants questions

a. Check the types of vegetation found on the site:

☐ **deciduous tree: alder, maple, aspen, other**

☐ **evergreen tree: fir, cedar, pine, other**

☐ **shrubs**

☐ **grass**

☐ **pasture**

☐ **crop or grain**

☐ **orchards, vineyards, or other permanent crops.**

☐ **wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other**

☐ **water plants: water lily, eelgrass, milfoil, other**

☐ **other types of vegetation**

This item does not apply to the current non-project action. The Plan area encompasses a diverse range of vegetation types. The presence and treatment of specific plant types will be addressed as part of individual construction projects within the Plan.

b. What kind and amount of vegetation will be removed or altered?

This inquiry is not applicable to the non-project action being undertaken. The adoption of the Comprehensive Water Plan itself will not result in any direct environmental changes, including the alteration of vegetation. However, specific projects and programs that stem from the Plan may involve the removal or modification of vegetation. The precise impacts of such actions are currently indeterminate. Each project will undergo environmental review to evaluate potential impacts and appropriate mitigation measures before execution.

c. List threatened and endangered species known to be on or near the site.

This question does not pertain to the current non-project action. Any threatened or endangered species in proximity to the proposed projects under this Plan will be identified during the environmental review process for each individual project.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any.

This item does not apply to the non-project action. Landscaping, the use of native plants, or other measures to preserve or enhance vegetation will be considered on a project-specific basis during environmental reviews before project implementation.

e. List all noxious weeds and invasive species known to be on or near the site.

This query is not applicable to this non-project action. Any noxious weeds or invasive species present in or near the recommended projects under this Plan will be identified during the environmental review process for each respective project.

5. Animals

Find help answering animal questions[8]

a. List any birds and other animals that have been observed on or near the site or are known to be on or near the site.

Examples include:

- **Birds: hawk, heron, eagle, songbirds, other:**
- **Mammals: deer, bear, elk, beaver, other:**
- **Fish: bass, salmon, trout, herring, shellfish, other:**

This question does not apply to the current non-project action, as the adoption of the Comprehensive Water Plan does not involve a specific site. A variety of species, such as those mentioned, may inhabit the Plan area. Specific projects will undergo environmental review to identify any species present before they are carried out.

b. List any threatened and endangered species known to be on or near the site.

According to the City of Auburn Comprehensive Plan, the water service area is home to species such as the Great Blue Heron and Bald Eagles. Additionally, Chinook Salmon, classified as endangered by the National Marine Fisheries Service, and Bull Trout, listed as endangered by the US Fish and Wildlife Service, are known to inhabit the area. Chinook Salmon are present in Mill Creek and the Green and White Rivers, while Bull Trout may be found in the Green and White Rivers.

c. Is the site part of a migration route? If so, explain.

This question does not pertain to the current non-project action. The adoption of the Comprehensive Water Plan does not involve any specific site. Migration routes of any threatened or endangered species in proximity to the recommended projects will be identified during the environmental review process for each individual project.

d. Proposed measures to preserve or enhance wildlife, if any.

This item does not apply to the current non-project action. The adoption of the Comprehensive Water Plan itself will not directly impact any listed species or their habitats. However, proposed improvement projects under the Plan may potentially affect listed species, though the specific impacts are not currently known. Environmental reviews for each project will assess potential impacts and propose

[8] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-5-Animals

appropriate mitigation measures and best management practices before project implementation.

e. List any invasive animal species known to be on or near the site.

This question does not apply to the current non-project action. Any invasive animal species in or near the proposed projects under this Plan will be identified during the environmental review process for each individual project.

6. Energy and natural resources

Find help answering energy and natural resource questions[9]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

This question does not apply to the current non-project action. The adoption of the Comprehensive Water Plan itself will not necessitate the use of energy. Specific projects will undergo individual reviews to determine their energy and natural resource needs.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

There will be no impact on the potential use of solar energy by adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any.

This question does not apply to the current non-project action. The adoption of the Comprehensive Water Plan itself will not directly result in energy conservation or control measures. However, certain programs and projects under the Plan may include energy-saving features. The exact conservation benefits of these measures are not yet known and will be evaluated on a case-by-case basis for each project.

7. Environmental health

Health Find help with answering environmental health questions[10]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur because of this proposal? If so, describe.

This item is not applicable to the current non-project action. The adoption of the Comprehensive Water Plan itself will not lead to environmental health hazards, such as exposure to toxic chemicals or the risk of fire and explosion. However, specific programs and projects within the Plan may pose such risks. The potential impacts of these actions are currently unknown. Each project will be subject to environmental review to assess potential risks and determine appropriate mitigation measures before implementation.

[9] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-6-Energy-natural-resou
[10] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-7-Environmental-health

1. **Describe any known or possible contamination at the site from present or past uses.**

   This item does not apply to the current non-project action. Specific projects will undergo individual environmental reviews before they are implemented to identify any potential site contamination.

2. **Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.**

   This question does not pertain to the current non-project action. Specific projects will be subject to environmental review to identify any existing hazardous chemicals or conditions that could impact project development or design.

3. **Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.**

   This item is not applicable to the current non-project action. Specific projects will be reviewed to determine if any toxic or hazardous chemicals might be used, stored, or produced during construction or operation.

4. **Describe special emergency services that might be required.**

   This item does not apply to the current non-project action. Specific projects will undergo environmental review to determine if any special emergency services might be required.

5. **Proposed measures to reduce or control environmental health hazards, if any.**

   This query does not apply to the current non-project action. Any measures to reduce or control environmental health hazards will be evaluated and proposed during the environmental review process for each specific project.

b. Noise

1. **What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?**

   This question does not apply to the current non-project action. Any noise affects will be evaluated as part of the individual projects.

2. **What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site)?**

   This item does not apply to the current non-project action. The adoption of the Comprehensive Water Plan itself will not generate noise. However, specific programs and projects under the Plan may produce noise, though the potential impacts are currently unknown. Each project will undergo environmental review to evaluate potential noise impacts and determine appropriate mitigation measures before implementation.

3. **Proposed measures to reduce or control noise impacts, if any:**

This inquiry does not apply to the current non-project action. Noise reduction measures will be considered and proposed during the environmental review process for each specific project.

8. Land and shoreline use

Find help answering land and shoreline use questions[11]

a. **What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.**

The water service area includes a mix of land uses, primarily residential, with other uses such as industrial, commercial, manufacturing, public, and park spaces also present.

b. **Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses because of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?**

The adoption of the Comprehensive Water Plan itself will not impact any remaining agricultural or forest land. Future projects under the Plan will be subject to environmental review to assess potential impacts and determine appropriate mitigation measures.

1. **Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how?**

No, the proposal will not impact surrounding working farm or forest land or their normal business operations.

c. **Describe any structures on the site.**

The water service area features various types of structures, including residential, commercial, institutional, manufacturing, and industrial buildings.

d. **Will any structures be demolished? If so, what?**

This question does not apply to the current non-project action. Any structures proposed for demolition will be identified during the environmental review process for each specific project.

e. **What is the current zoning classification of the site?**

The water service area encompasses various zoning districts within Auburn and unincorporated King and Pierce Counties. These districts include single-family and multi-

[11] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-8-Land-shoreline-use

family residential, light and heavy commercial, light and heavy industrial, public, and open spaces.

f. What is the current comprehensive plan designation of the site?

The water service area contains multiple Comprehensive Plan designations. The City of Auburn oversees the majority of this service area. Projects recommended by the Plan will be required to comply with the City's Shoreline program if they fall within the shoreline management area.

g. If applicable, what is the current shoreline master program designation of the site?

The City's shoreline designations include natural, shoreline residential, and urban conservancy. Projects recommended by the Plan will need to adhere to the City's Shoreline Master Program requirements.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Yes, the water service area includes lands classified as critical areas, such as wetlands, geologic hazard areas, aquifer recharge zones, habitat areas, groundwater protection areas, and frequently flooded areas.

i. Approximately how many people would reside or work in the completed project?

The water service area's population was estimated to be 63,450 in 2022, with projections indicating an increase to 85,519 by 2034 and 97,328 by 2035. The employment in the water service area was estimated to be 48,419 in 2021, with forecasts showing an increase to 59,205 in 2034 and 68,944 in 2044.

j. Approximately how many people would the completed project displace?

This question does not apply to the current non-project action. The adoption of the Comprehensive Water Plan will not displace any people. The Plan's programs and projects are not intended to cause displacement.

k. Proposed measures to avoid or reduce displacement impacts, if any.

This inquiry does not pertain to the current non-project action.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any.

The Comprehensive Water Plan has been developed in alignment with all relevant local, county, and state regulations. This includes the City Comprehensive Plan created under the Growth Management Act policies, the South King County Coordinated Water System Plan, and the Pierce County Comprehensive Plan.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

The Comprehensive Water Plan is fully compliant with existing local, county, and state regulations, including the City Comprehensive Plan, the South King County Coordinated Water System Plan, and the Pierce County Comprehensive Plan.

9. Housing

Find help answering housing questions[12]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

This query is not applicable to this non-project action. The adoption of the Comprehensive Water Plan does not involve the provision of housing units. The Plan is focused on water-related infrastructure and does not encompass housing development or residential unit allocation.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

This question is not applicable to this non-project action. The adoption of the Comprehensive Water Plan will not lead to the removal of any housing units. The Plan's scope is confined to water infrastructure and does not include the elimination or alteration of housing.

c. Proposed measures to reduce or control housing impacts, if any:

As this is a non-project action centered on water infrastructure, there are no housing impacts anticipated, and thus, no mitigation measures are proposed.

10. Aesthetics

Find help answering aesthetics questions[13]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

This question does not pertain to this non-project action. The adoption of the Comprehensive Water Plan will not result in the construction of any structures. Any future projects involving structures will determine the specifics, including height and materials, during their design phases.

b. What views in the immediate vicinity would be altered or obstructed?

This query is not applicable to this non-project action. The adoption of the Comprehensive Water Plan does not involve the construction of any structures that could obstruct or alter views in the vicinity.

c. Proposed measures to reduce or control aesthetic impacts, if any:

Future projects stemming from the Plan will undergo individual environmental reviews, where potential aesthetic impacts and appropriate mitigation measures will be assessed and implemented before construction begins.

[12] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-9-Housing
[13] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-10-Aesthetics

11. Light and glare

Find help answering light and glare questions[14]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

This question does not pertain to this non-project action. The adoption of the Comprehensive Water Plan will not result in the construction of any structures. Any future projects involving structures will determine the specifics, including height and materials, during their design phases.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

This query is not applicable to this non-project action. The adoption of the Comprehensive Water Plan does not involve the construction of any structures that could obstruct or alter views in the vicinity.

c. What existing off-site sources of light or glare may affect your proposal?

Future projects stemming from the Plan will undergo individual environmental reviews, where potential aesthetic impacts and appropriate mitigation measures will be assessed and implemented before construction begins.

d. Proposed measures to reduce or control light and glare impacts, if any:

This query is not applicable to this non-project action.

12. Recreation

Find help answering recreation questions

a. What designated and informal recreational opportunities are in the immediate vicinity?

The service area includes a variety of parks and recreational spaces. Additionally, there are rivers and streams within the water service area that offer recreational activities, and a golf course is also located nearby.

b. Would the proposed project displace any existing recreational uses? If so, describe.

This question does not apply to this non-project action. The adoption of the Comprehensive Water Plan will not displace any existing recreational uses.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Any specific projects resulting from the Plan will undergo environmental reviews where potential impacts on recreational activities will be evaluated, and corresponding mitigation measures will be developed before implementation.

[14] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-11-Light-glare

13. Historic and cultural preservation

Find help answering historic and cultural preservation questions[15]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

The water service area covers parts of the City of Auburn and Unincorporated King County. Numerous sites within these areas are listed on preservation registers and will be addressed through individual environmental reviews as specific construction projects are proposed.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

This query is not applicable to this non-project action. Individual projects will be subject to environmental reviews that will assess the presence and importance of such features before implementation.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

This question does not pertain to this non-project action. Specific projects will be reviewed through environmental assessments, which may include consultations with tribal entities, the Department of Archaeology and Historic Preservation, and the use of tools like archaeological surveys and historic maps.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

This non-project action does not require specific mitigation measures. However, individual projects will be reviewed, and necessary steps will be taken to protect cultural and historic resources as per applicable laws and guidelines.

[15] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-13-Historic-cultural-p

14. Transportation

Find help with answering transportation questions[16]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The service area is intersected by several streets and highways, including State Highways 18 and 167, Auburn Way North, Auburn Way South (SR 164), West Valley Highway, and 15th Street Northwest.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

The City of Auburn is currently served by Sound Transit, King County Metro, and Pierce Transit. Any areas within the City that are not served by public transit will be considered as individual construction projects are proposed.

c. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

This non-project action does not necessitate the construction of new roads or the improvement of existing transportation facilities.

d. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

This question does not apply to this non-project action. The adoption of the Comprehensive Water Plan will not involve the use of water, rail, or air transportation. However, some projects may occur near these transportation facilities and will be reviewed accordingly.

e. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

This question does not apply to this non-project action as the adoption of the Comprehensive Water Plan will not generate vehicular trips.

f. Will the proposal interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

This query is not applicable to this non-project action. The adoption of the Comprehensive Water Plan will not affect the transportation of agricultural or forest products. Any relevant projects will be reviewed for potential impacts during their environmental assessments.

[16] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-14-Transportation

g. Proposed measures to reduce or control transportation impacts, if any:

As this is a non-project action, no specific transportation impact mitigation measures are required.

15. Public services

Find help answering public service questions[17]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

This non-project action will not result in an increased demand for public services such as fire protection, police services, public transit, healthcare, or educational facilities.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Since the adoption of the Comprehensive Water Plan does not impact public services, no mitigation measures are proposed.

16. Utilities

Find help answering utilities questions[18]

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other:

The service area is equipped with a variety of utilities, including electricity, natural gas, water, refuse service, telephone, and sanitary sewer.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

The Comprehensive Water Plan recommends necessary repairs, replacements, improvements, and extensions to water system facilities to meet service level criteria established by local, county, and state regulations. These facilities include wells, springs, reservoirs, pump stations, pressure reducing stations, water mains, and related appurtenances. Each project will undergo an individual environmental review process. Water services will be provided by the City of Auburn's water division.

C.Signature

Find help about who should sign[19]

[17] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-15-public-services
[18] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-16-utilities
[19] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-C-Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

8/28/2024

X 

Signed by: Senait Gebreeyesus

Type name of signee: Senait Gebreeyesus

Position and agency/organization: Water Utility Engineer, City of Auburn

Date submitted: **August 15, 2024**

D.Supplemental sheet for nonproject actions

Find help for the nonproject actions worksheet[20]
Do not use this section for project actions.

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. **How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?**

   The adoption of the Comprehensive Water Plan is a non-project action and does not inherently increase discharges to water or air, nor does it contribute to noise production. However, the construction activities recommended in the Plan could result in temporary increases in exhaust emissions from construction equipment and dust from exposed soils. These impacts will be evaluated through environmental reviews before any project begins.

   - **Proposed measures to avoid or reduce such increases are:**

     No specific mitigation measures are proposed at this stage. The potential for discharges and emissions will be minimized by adhering to best management practices and ensuring that all designs and construction activities comply with local, state, and federal regulations. Each project will be reviewed individually by the appropriate agencies to assess and address environmental impacts.

[20] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-d-non-project-actions

2. **How would the proposal be likely to affect plants, animals, fish, or marine life?**

   The adoption of the Plan itself does not affect flora or fauna. It is anticipated that none of the proposed projects within the Plan will negatively impact fish or wildlife.

   - **Proposed measures to protect or conserve plants, animals, fish, or marine life are:**

     No specific conservation measures are proposed at this stage. Individual projects will undergo thorough reviews to ensure the protection of plants, animals, fish, and marine life, and appropriate agencies will be consulted as needed.

3. **How would the proposal be likely to deplete energy or natural resources?**

   The Comprehensive Water Plan is focused on maintaining and improving existing water infrastructure, which is not expected to have a significant impact on energy or natural resource depletion. However, individual projects will be evaluated to determine their specific impacts on these resources.

   - **Proposed measures to protect or conserve energy and natural resources are:**

     The Plan emphasizes maximizing gravity flow wherever possible to conserve energy. It also includes a water use efficiency program that aims to achieve significant water resource savings over time. Additionally, the Plan proposes improvements to pump stations to enhance efficiency, although the exact conservation benefits are currently unquantifiable. Each project will be individually assessed for energy and resource conservation by the relevant agencies.

4. **How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection, such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?**

   The proposed action, which involves adopting the Comprehensive Water Plan, is not expected to directly impact environmentally sensitive areas, such as parks, wilderness areas, wild and scenic rivers, threatened or endangered species habitats, historic or cultural sites, wetlands, floodplains, or prime farmlands. However, since the Plan outlines future programs and projects that could be near these sensitive areas, the exact nature of potential impacts remains undetermined at this stage. Any projects that could affect sensitive areas will be required to adhere to City policies and regulations designed to protect these resources.

   - **Proposed measures to protect such resources or to avoid or reduce impacts are:**

     The Plan does not inherently expand the authority of any entity—be it an individual, company, or agency—to initiate developments that might negatively impact sensitive areas. Each proposed project will undergo individual review and will need to obtain approval from the appropriate agencies before moving forward. Compliance with all relevant local, state, and federal regulations will be mandatory to ensure the protection of these sensitive environments.

5. **How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?**

The adoption of the Comprehensive Water Plan does not facilitate or promote land or shoreline uses that would be incompatible with existing land-use plans. Any specific projects arising from the Plan will be individually assessed through environmental reviews before they are implemented.

- **Proposed measures to avoid or reduce shoreline and land use impacts are:**

  Each project proposed under the Plan will be evaluated on its own merits, with oversight from the appropriate agencies to ensure that it aligns with existing land-use regulations. Adherence to applicable local, state, and federal guidelines will be enforced to prevent any negative impacts on land and shoreline use.

6. **How would the proposal be likely to increase demands on transportation or public services and utilities?**

   The adoption of the Comprehensive Water Plan itself will not directly lead to an increase in demand for transportation, public services, or utilities. In fact, the Plan is designed to address the City's water utility needs in response to anticipated population growth.

   - **Proposed measures to reduce or respond to such demand(s) are:**

     The Comprehensive Water Plan includes a range of projects and programs aimed at meeting the City's growing demand for water services. By planning for future needs, the Plan helps ensure that the City's infrastructure can accommodate growth without placing undue strain on existing transportation networks or public services.

7. **Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.**

   The 2024 Comprehensive Water Plan aligns with current legal frameworks designed to protect the environment, ensuring that all proposed projects and actions will be in full compliance with these regulations.

Local Government Consistency Determination Form

331-568 • 8/10/2023

Water System Name: City of Auburn PWS ID: 03350V

Planning/Engineering Document Title: Water System Plan Plan Date: August 2024

Local Government with Jurisdiction Conducting Review: City of Auburn

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, the reviewer should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on page 2.

Local Government Consistency Statement	For Use by Water System: Identify page(s) in submittal	For Use by Local Government: Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	2-19 to 2-21	Yes
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	2-23 to 2-33	Yes
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	2-6	Yes
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	1-21	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	5-1 to 5-4	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

A Teague

Signature

12/05/2024

Date

Alexandria Teague, Planning Services Manager, City of Auburn

Printed Name, Title, & Jurisdiction

Local Government Consistency Determination Form

331-568 • 8/10/2023

Water System Name: City of Auburn PWS ID: 03350V

Planning/Engineering Document Title: Water System Plan Plan Date: August 2024

Local Government with Jurisdiction Conducting Review: Derbyshire Scenic Acres Water Association

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

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Local Government Consistency Statement	For Use by Water System: Identify page(s) in submittal	For Use by Local Government: Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	2-19 to 2-21	Yes
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	2-23 to 2-33	Yes
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	2-6	Yes
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	1-21	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	5-1 to 5-4	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Jeffrey D. Morgan
Signature

08/21/2024
Date

President Derbyshire Scenicn Acres Water Association
Printed Name, Title, & Jurisdiction

Local Government Consistency Determination Form

331-568 • 8/10/2023

Water System Name: City of Auburn PWS ID: 03350V

Planning/Engineering Document Title: Water System Plan Plan Date: August 2024

Local Government with Jurisdiction Conducting Review: City of Sumner

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

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Local Government Consistency Statement	For Use by Water System: Identify page(s) in submittal	For Use by Local Government: Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	2-19 to 2-21	Yes
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	2-23 to 2-33	Yes
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	2-6	Yes
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	1-21	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	5-1 to 5-4	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Signature

9/11/2024
Date

Andrew Leach, Associate City Engineer, City of Sumner
Printed Name, Title, & Jurisdiction

Local Government Consistency Determination Form

331-568 • 8/10/2023

Water System Name: City of Auburn PWS ID: 03350V

Planning/Engineering Document Title: Water System Plan Plan Date: August 2024

Local Government with Jurisdiction Conducting Review: Lake Meridian Water District

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

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Local Government Consistency Statement	For Use by Water System Identify page(s) in submittal	For Use by Local Government Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	2-19 to 2-21	yes
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	2-23 to 2-33	yes
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	2-6	na
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	1-21	yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	5-1 to 5-4	yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Signature

10/9/2024
Date

Brent Lewis
Printed Name, Title, & Jurisdiction

Local Government Consistency Determination Form

331-568 • 8/10/2023

Water System Name: City of Auburn PWS ID: 03350V

Planning/Engineering Document Title: Water System Plan Plan Date: August 2024

Local Government with Jurisdiction Conducting Review: Highline Water District

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

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Local Government Consistency Statement	For Use by Water System: Identify page(s) in submittal	For Use by Local Government: Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	2-19 to 2-21	NA
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	2-23 to 2-33	NA
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	2-6	NA
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	1-21	NA
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	5-1 to 5-4	NA

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Signature

10/09/2024
Date

Jeremy S. DelMar, General Manager, Highline Water District
Printed Name, Title, & Jurisdiction

Local Government Consistency Determination Form

331-568 • 8/10/2023

Water System Name: City of Auburn PWS ID: 03350V

Planning/Engineering Document Title: Water System Plan Plan Date: August 2024

Local Government with Jurisdiction Conducting Review: Covington Water District

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

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Local Government Consistency Statement	For Use by Water System Identify page(s) in submittal	For Use by Local Government Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	2-19 to 2-21	na
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	2-23 to 2-33	na
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	2-6	na
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	1-21	na
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	5-1 to 5-4	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements
are consistent with adopted local plans and development regulations.

Thomas Keown

Signature

10/9/2024

Date

Thomas Keown, PE

Printed Name, Title, & Jurisdiction

Signature Certificate

Reference number: QLJNP-JWACY-HEWLE-LXXZD

Signer	Timestamp	Signature
Tom Keown Email: thomas.keown@covingtonwater.com		
Sent:	11 Oct 2024 14:54:05 UTC	
Viewed:	11 Oct 2024 15:25:33 UTC	
Signed:	11 Oct 2024 15:25:43 UTC	
Recipient Verification:		IP address: 73.221.31.45
✔Email verified	11 Oct 2024 15:25:33 UTC	Location: Tacoma, United States

Document completed by all parties on:
11 Oct 2024 15:25:43 UTC

Page 1 of 1

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Local Government Consistency Determination Form

331-568 • 8/10/2023

Water System Name: City of Auburn PWS ID: 03350V

Planning/Engineering Document Title: Water System Plan Plan Date: August 2024

Local Government with Jurisdiction Conducting Review: Tacoma Water

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

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Local Government Consistency Statement	For Use by Water System: Identify page(s) in submittal	For Use by Local Government: Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	2-19 to 2-21	Not Applicable
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	2-23 to 2-33	Not Applicable
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	2-6	Not Applicable
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	1-21	Not Applicable
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	5-1 to 5-4	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Signed by: Daniel Reisinger
Signature 1C1B63C1AF78469...

10/18/2024
Enter date
Date

Daniel Reisinger, Planning & Engineering, Tacoma Water
Printed Name, Title, & Jurisdiction



City Council Study Session Muni Services SFA
April 10, 2023 - 5:30 PM
City Hall Council Chambers
AGENDA
Watch the meeting LIVE!

Watch the meeting video
Meeting videos are not available until 72 hours after the meeting has concluded.

I. CALL TO ORDER

II. PUBLIC PARTICIPATION

A. Public Participation

The Auburn City Council Study Session Meeting scheduled for Monday, April 10, 2023 at 5:30 p.m. will be held in person and virtually.

Virtual Participation Link:

To view the meeting virtually please click the below link, or call into the meeting at the phone number listed below. The link to the Virtual Meeting is:

https://www.youtube.com/user/watchauburn/live/?nomobile=1

To listen to the meeting by phone or Zoom, please call the below number or click the link:

Telephone: 253 215 8782
Toll Free: 877 853 5257
Zoom: https://us06web.zoom.us/j/85044009173

B. Roll Call

III. AGENDA MODIFICATIONS

IV. ANNOUNCEMENTS, REPORTS, AND PRESENTATIONS

A. Auburn Valley Humane Society General Shelter Update (Thomas) (15 Minutes)

V. AGENDA ITEMS FOR COUNCIL DISCUSSION

A. Ordinance No. 6900 (Thomas) (20 Minutes)

An Ordinance amending Ordinance No. 6879, the 2023-2024 Biennial Operating Budget Ordinance, and Ordinance No. 6888, the 2023-2024 Biennial Capital Budget, authorizing amendment to the City of Auburn 2023-2024 Budget as set forth in Schedule “A” and Schedule “B”

B. Resolution No. 5701 (Thomas) (15 Minutes)

A Resolution reviewing a schedule of prices for services provided by the Auburn Valley Humane Society to ensure competitive service prices

C. 2024 Comprehensive Plan Update (Tate) (60 Minutes)

A presentation by City staff as an introduction to the Periodic Comprehensive Plan update due in 2024, including anticipated program milestones

D. Transportation Advisory Board 2022 Annual Report (Gaub) (10 Minutes)

E. 2022 State of Our Streets (SOS) Report (Gaub) (20 Minutes)

VI. ADJOURNMENT

Agendas and minutes are available to the public at the City Clerk's Office, on the City website (http://www.auburnwa.gov), and via e-mail. Complete agenda packets are available for review at the City Clerk's Office.

AGENDA BILL APPROVAL FORM

Agenda Subject:
Auburn Valley Humane Society General Shelter Update (Thomas) (15 Minutes)

Date:
April 4, 2023

Department:
Finance

Attachments:
AVHS Presentation

Budget Impact:

Administrative Recommendation:

For discussion only.

Background for Motion:

Background Summary:

Auburn Valley Humane Society (AVHS) is contracted to provide animal control services for the City of Auburn. As part of this contract, the Council periodically reviews the mandatory services and related fee schedule to ensure fees are competitive with other local shelters. Additionally, AVHS recently celebrated 10 years of operations and will be presenting a summary of their 10 years of service in Auburn.

Reviewed by Council Committees:

Councilmember:

Staff:

Meeting Date: April 10, 2023

Item Number:

City Council Study Session Muni Services SFA
April 10, 2023 - 5:30 PM
City Hall Council Chambers
AGENDA

Watch the meeting video

Meeting videos are not available until 72 hours after the meeting has concluded.

I. CALL TO ORDER

II. PUBLIC PARTICIPATION

A. Public Participation

The City Council Meeting was held in person and virtually.

B. Roll Call

Councilmembers present: Deputy Mayor James Jeyaraj, Bob Baggett, Kate Baldwin, Larry Brown, Cheryl Rakes, and Yolanda Trout-Manuel. Councilmember Robyn Mulenga was excused.

Department directors and staff members present include: Senior City Staff Attorney Harry Boesche, Assistant Chief of Police Samuel Betz, Director of Innovation and Technology David Travis, Director of Finance Jamie Thomas, Director of Community Development Jeff Tate, Assistant Director of Engineering Services Jacob Sweeting, Senior Traffic Engineer James Webb, Assistant Traffic Engineer Kenneth Clark, Senior Transportation Planner Cecile Malik, Economic Development Coordinator Abid Rahmani, Utility Engineering Manager Ryan Vondrak, Senior Planner Josh Steiner, Sewer Utility Engineer Robert Elwell, Water Utility Engineer Senait Gebreeyesus, Storm Drainage Engineer Tim Carlaw, Business Systems Analyst Chrissy Malave, and Deputy City Clerk Hannah Scholl.

III. AGENDA MODIFICATIONS

There were no modifications to the agenda.

IV. ANNOUNCEMENTS, REPORTS, AND PRESENTATIONS

A. Auburn Valley Humane Society General Shelter Update (Thomas) (15 Minutes)

Director Thomas introduced Phil Morgan, President of the Auburn Valley Humane Society (AVHS), who provided Council with an overview of the history of AVHS, the AVHS Thrift Store, and the merge with NW Spay &

Neuter Center, statistics over the last 10 years, special programs, fundraising events, pet licensing, services offered, and proposed fee increases.

Council discussed public stray intake statistics, number of Veterinarians and their compensation, breed restrictions, volunteer services, after hour emergency care, and revenue increases. Council thanked Phil for all his hard work over the years.

V. AGENDA ITEMS FOR COUNCIL DISCUSSION

A. Ordinance No. 6900 (Thomas) (20 Minutes)

An Ordinance amending Ordinance No. 6879, the 2023-2024 Biennial Operating Budget Ordinance, and Ordinance No. 6888, the 2023-2024 Biennial Capital Budget, authorizing amendment to the City of Auburn 2023-2024 Budget as set forth in Schedule “A” and Schedule “B”

Director Thomas provided Council with an overview of the 2023 Budget Amendment No. 1 including types of adjustments, summary of changes for the General Fund, General Fund impact, APRA projects budget, summary of changes for all other remaining funds; Hotel/Motel Tax, Parks Construction Fund, Mitigation Fee Fund, and the Capital Improvement Fund.

Council discussed the ARPA Funds, and the Broken Window Program.

Councilmember Baldwin requested to explore and discuss what it would look like to potentially add the Broken Window Repair Assistance Program as a line item in the Budget with an earmark of $100,000.00. Consensus was asked for and received.

B. Resolution No. 5701 (Thomas) (15 Minutes)

A Resolution reviewing a schedule of prices for services provided by the Auburn Valley Humane Society to ensure competitive service prices

Director Thomas provided Council with an overview of Resolution No. 5701.

Council discussed the proposed fees.

C. 2024 Comprehensive Plan Update (Tate) (60 Minutes)

A presentation by City staff as an introduction to the Periodic Comprehensive Plan update due in 2024, including anticipated program milestones

Planner Steiner provided Council with an overview of the 2024 Comprehensive Plan Framework and updates including the Community Development Elements, the purpose and scope, planning policies, state and regional requirements, and policy updates.

Council discussed the Planned Unit Development (PUD) requirements, the

Business Improvement Area (BIA) and Downtown Auburn Cooperative (DAC), demographics, historic preservation element, and the climate change element.

Coordinator Abid Rahmani provided Council with an overview of the Economic Development Element including the goals and objectives, challenges, policies and actions.

Council discussed unoccupied commercial spaces and policies.

Assistant Director Sweeting and Planner Malik provided Council with the Capital Facilities Element including the 2023-2028 Capital Facilities Plan, anticipated policy and framework. They also discussed the Transportation Element including the role within the Comprehensive Plan, required components, new approaches, and policy.

Manager Vondrak and Engineers Elwell, Carlaw, and Gebreeyesus provided Council with an overview of the Public Works Utilities Elements including general and private utilities, water, sanitary sewer, and storm drainage, considerations and policies.

Council discussed capacity planning, clean water, recycling, and illegal dumping.

Director Faber provided Council with an overview of the Parks, Recreation, and Open Space Element including anticipated policy and framework, and the timeline.

Council discussed number of park spaces and acres, and the Auburn Arts and Culture Center opening timeframe.

D. Transportation Advisory Board 2022 Annual Report (Gaub) (10 Minutes)

Planner Malik introduced Peter Di Turi, Board Chair of the Transportation Advisory Board (TAB), they provided Council with an overview of the TAB 2022 Annual Report including roles of staff and Board members, focus areas, and the 2023 workplan.

Council discussed the Sounder Train Schedule, and Light Rail opportunities for Auburn.

E. 2022 State of Our Streets (SOS) Report (Gaub) (20 Minutes)

Engineers Webb and Clark provided Council with an overview of the 2022 State of Our Streets including definitions, Pavement Condition Index, Summary of the 2022 Street Conditions, Local Street Program Fund, Arterial/Collector Program Fund, projects completed in 2022, future projects, and next steps.

Council discussed current and future projects.

VI. ADJOURNMENT

There being no further business to come before the Council, the meeting was adjourned at 8:46 p.m.

APPROVED this 1st day of May, 2023.

_____ _____

JAMES JEYARAJ, DEPUTY MAYOR Hannah Scholl, Deputy City Clerk

Agendas and minutes are available to the public at the City Clerk's Office, on the City website (http://www.auburnwa.gov), and via e-mail. Complete agenda packets are available for review at the City Clerk's Office.

CITY OF AUBURN WASHINGTON	**City Council Study Session Finance, Technology and Economic Development Special Focus Area** **July 10, 2023 - 5:30 PM** **City Hall Council Chambers** **AGENDA** **Watch the meeting LIVE!** **Watch the meeting video** Meeting videos are not available until 72 hours after the meeting has concluded.

I. CALL TO ORDER

II. PUBLIC PARTICIPATION

A. Public Participation

The Auburn City Council Study Session Meeting scheduled for Monday, July 10, 2023 at 5:30 p.m. will be held in person and virtually.

Virtual Participation Link:

To view the meeting virtually please click the below link, or call into the meeting at the phone number listed below. The link to the Virtual Meeting is:

https://www.youtube.com/user/watchauburn/live/?nomobile=1

To listen to the meeting by phone or Zoom, please call the below number or click the link:

Telephone: 253 205 0468
Toll Free: 888 475 4499
Zoom: https://us06web.zoom.us/j/85712628802

B. Roll Call

III. AGENDA MODIFICATIONS

IV. ANNOUNCEMENTS, REPORTS, AND PRESENTATIONS

V. AGENDA ITEMS FOR COUNCIL DISCUSSION

A. Ordinance No. 6911 (Thomas) (20 Minutes)

An Ordinance amending Ordinance No. 6879, the 2023-2024 Biennial Operating Budget Ordinance, and Ordinance No. 6888, the 2023-2024 Biennial Capital Budget, authorizing amendment to the City of Auburn 2023-2024 Budget as set forth in schedule “A” and schedule “B”

B. 2023 National Night Out Presentation (Tate) (15 Minutes)

An update on Auburn’s 2023 National Night Out event

C. Water System Comprehensive Plan Update - Policy Review (Gaub) (30 Minutes)

D. Inclusive Auburn Coalition Presentation (Goodson-Moore) (20 Minutes)

VI. FINANCE, TECHNOLOGY AND ECONOMIC DEVELOPMENT DISCUSSION ITEMS

A. Ordinance No. 6912 (Thomas) (10 Minutes)

An Ordinance amending Section 13.06.360 of the Auburn City Code (ACC), relating to City Utility Rates

B. Economic Development Update – 2nd Quarter 2023 (Tate) (15 Minutes)

An update on Economic Development Division activity

VII. ADJOURNMENT

Agendas and minutes are available to the public at the City Clerk's Office, on the City website (http://www.auburnwa.gov), and via e-mail. Complete agenda packets are available for review at the City Clerk's Office.

AGENDA BILL APPROVAL FORM

Agenda Subject:
Ordinance No. 6911 (Thomas) (20 Minutes)

Date:
June 5, 2023

Department:
Finance

Attachments:
Ordinance No. 6911 BA #2 Interoffice Memo
Ordinance No. 6911 2023-2024 Budget Amendment No. 2
BA #2 Schedule A
BA #2 Schedule B
BA #2 Presentation

Budget Impact:

Current Budget: $481,653,642.00

Proposed Revision: $12,359,913.00
Revised Budget: $494,013,555.00

Administrative Recommendation:

For discussion only.

Background for Motion:

Background Summary:

Ordinance No. 6911 (Budget Amendment #2) represents the second budget amendment for the 2023-2024 biennium. The second budget amendment of the biennium consists of adjustments to budgeted beginning fund balances, new expenditures offset by new revenues, and limited requests for new budget authority. For details, see that attached transmittal memorandum and supporting materials.

Reviewed by Council Committees:

Councilmember: Baldwin **Staff:** Thomas

Meeting Date: July 10, 2023 Item Number:

Interoffice Memorandum

To: City Council

From: **Jamie Thomas, Finance Director**

CC: Nancy Backus, Mayor

Date: July 3, 2023

Re: Ordinance #6911 – 2023-2024 Budget Amendment #2

Budget Amendment #2 is the second amendment of the City of Auburn's 2023-2024 biennial budget, and the second budget amendment for calendar year 2023. For details on specific requests to amend the 2023 budget, please refer to the accompanying ***Schedule A, Summary of 2023 Budget Adjustments by Fund***.

The main purpose of the second budget amendment of the year is to adjust budgeted 2023 beginning fund balances to match 2022 ending fund balances per accounting records at year end. City-wide 2023 budgeted beginning fund balances are adjusted by a net increase of $0.9 million.

Additional items included in this amendment are a conversion of one part-time FTE to full-time, closure of the BIA Fund, acceptance and expenditure of new grants, funding adjustments, limited new fund costs not anticipated in the 2023 budget, and transfer dollars among funds to enable certain amendments.

Adjust Budgeted Beginning Fund Balance: This amendment adjusts 2023 budgeted beginning fund balances to be equal to 2022 ending fund balances. Total adjustments by fund type are:

• General Fund (Fund 001)	$ 6,294,923
• Special Revenue Funds	398,519
• Debt Service Funds	-202,529
• Capital Funds	-2,545,105
• Enterprise Funds	-3,251,870
• Other Funds	218,961
TOTAL	**$ 912,899**

FTE Conversion: The Administration Department requests to reclassify one Multimedia Assistant position from 0.75 FTE to 1.0 FTE. The department has agreed to permanently reduce budget in other areas in order to fund this position, creating a net-zero impact to operating expenditures. The request is presented here for transparency and approval.

BIA Fund: The Business Improvement Area Fund was originally scheduled to be spent down and closed in 2024, with its activity moving to the General Fund. This timeline has been accelerated, and the fund will now be closed in 2023. This amendment requests an additional **$45,941** in budget authority in order to spend down the BIA Fund's remaining balance.

Grants: New grants and grant adjustments in this budget amendment total **$4,429,360** in revenues and **$4,930,516** in associated expenditures, including:

• General Fund (Fund 001)	$ 30,200
• Arterial Street Fund (Fund 102)	560,000
• Arterial Street Preservation Fund (Fund 105)[1]	1,284,356
• Municipal Park Construction Fund (Fund 321)	50,000
• Capital Improvement Projects Fund (Fund 328)[2]	1,104,610
• Local Revitalization Fund (Fund 330)	1,598,650
• Storm Drainage Capital Fund (Fund 462)[3]	302,700
TOTAL	**$ 4,930,516**

Funding Adjustments: Funding adjustment requests included in this budget amendment revise the revenue or expenditure authority for existing programs. Total expenditure funding adjustment requests net to **$1,995,945**, and include:

• Increase budget for M&O Facility Improvements (upgrade electrical service and add light duty maintenance bays)	$ 866,000
• Increase budget for C Street SW Preservation[4]	838,465
• Adjust fleet budget for prior year expenses	332,980
Carry forward water rights mitigation plan	230,000
• M&O Fuel Island Replacement	175,300
• Contribution of Affordable Housing Tax revenue to SKHHP	152,900
• Flock safety cameras and software for Police Department[5]	150,000
• Reallocate funding from Dykstra Footbridge to Arts & Culture Center[6]	100,000
• Increase budget for D Street SE/23rd Street SE Storm Improvements[7]	0
• Reschedule R Street SE Widening Project to future years	(830,000)
• Net other adjustments in this category	(19,700)
TOTAL	**$ 1,995,945**

[1] Includes Lea Hill Roundabout Project WSDOT grant and matching funds accelerated from 2024 to 2023.
[2] Includes Lea Hill Safe Routes to Schools grant and matching funds accelerated from 2024 to 2023.
[3] Includes unanticipated TIB grant for cp2102 4th Street Preservation.
[4] This expenditure increase is mitigated by $288,465 in expected revenue from a pavement mitigation agreement with Icon Materials, lowering the net fund balance impact to $550,000.
[5] This is a reallocation of funding from the ARPA-mitigated Cameras for Qualified Census Tracts project. This increase to the IT Operations Fund budget has an accompanying reduction in expense in the IT Capital Projects Fund.
[6] This is a reallocation of funding from the ARPA-mitigated Dykstra Footbridge project. This increase to the Capital Improvements Fund budget has an accompanying reduction in expense in the Municipal Park Construction Fund.
[7] This increase is offset by unanticipated grant revenue received for the 4th Street preservation project, so has a net zero impact on expenditures. The $302,700 increase is presented in the **Grants** section. It is included here for transparency.

New Funding Requests: Requests for new funding included in this budget amendment add spending authority for new programs and unexpected expenditures. Total new funding requests equal $903,100[8], and include:

• SKHHP and Habitat for Humanity affordable homeownership project	$ 300,000
• Utilize insurance recovery fund Auburn Avenue Theater rebuild	228,200
• Use of drug seizure funds to improve Auburn PD range	70,000
• Utilize insurance recovery to fund replacement of public art stolen from Centennial Park	55,900
• National Opioid Settlement funding	52,000
• 2024 Comprehensive Transportation Plan update	50,000
• Police supernumerary position fully reimbursed by Criminal Justice Training Center[9]	0
TOTAL	**$ 756,100**

Transfers: Transfers between funds to accomplish specific budget amendment requests total **$4,859,180**.

The following table summarizes the current and revised budget as a result of this amendment.

Table 1: 2023 Budget as Amended

2023 Amended Budget	**$ 481,653,642**
Budget Amendment #2 (Ord #6911)	12,359,913
Budget as Amended	**$494,013,555**

Attachments:

- ❖ 1. Proposed Ordinance #6911 (budget adjustment #2)
- ❖ 2. Summary of proposed 2023 budget adjustments by fund and department (Schedule A)
- ❖ 3. Summary of proposed changes to adopted 2023 budget by fund (Schedule B)

[8] The SKHHP homeownership project is recognized as a $300,000 expense in both the General Fund and SKHHP agency Fund for accounting purposes, but is only presented here once.

[9] Funding for one Officer to be assigned to CJTC for a 3-year duration. The reimbursement received for the Officer's costs will be used to fund a supernumerary position to backfill the Officer assigned to CJTC. No additional expenditure authority is authorized by this amendment, as supernumerary positions are not budgeted.

ORDINANCE NO. 6911

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AMENDING ORDINANCE NO. 6879, THE 2023-2024 BIENNIAL OPERATING BUDGET ORDINANCE, AND ORDINANCE NO. 6888, THE 2023-2024 BIENNIAL CAPITAL BUDET, AUTHORIZING AMENDMENT TO THE CITY OF AUBURN 2023-2024 BUDGET AS SET FORTH IN SCHEDULE "A" AND SCHEDULE "B"

WHEREAS, the Auburn City Council at its regular meeting of November 21, 2022, adopted Ordinances No. 6879 and 6888 which adopted the City of Auburn 2023-2024 Biennial budget; and

WHEREAS, the Auburn City Council at its regular meeting of April 14, 2023, adopted Ordinance No. 6900 (BA#1), which amended Ordinances No. 6879 and 6888 which adopted the City of Auburn 2023-2024 biennial budget; and

WHEREAS, the City of Auburn deems it necessary to appropriate additional funds to the various funds of the 2023 budget as outlined in this Ordinance (BA#2); and

WHEREAS, this Ordinance has been approved by one more than the majority of all councilpersons in accordance with RCW 35A.34.200.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON DO ORDAIN AS FOLLOWS:

Section 1. Amendment of the 2023-2024 Biennial Budget. The 2023-2024 Biennial Budget of the City of Auburn is amended pursuant to Chapter 35A.34 RCW, to reflect the revenues and expenditures as shown on Schedule "A" attached hereto and incorporated herein by reference. The Mayor of the City of Auburn,

Washington is hereby authorized to utilize revenue and expenditure amounts shown on said Schedule “A” and Schedule “B”. A copy of said Schedule “A” and Schedule “B” is on file with the City Clerk and available for public inspection.

Section 2. Implementation. The Mayor is authorized to implement those administrative procedures necessary to carry out the directives of this legislation.

Section 3. Severability. The provisions of this ordinance are declared to be separate and severable. The invalidity of any clause, sentence, paragraph, subdivision, section, or portion of this ordinance, or the invalidity of the application of it to any person or circumstance, will not affect the validity of the remainder of this ordinance, or the validity of its application to other persons or circumstances.

Section 4. Effective date. This Ordinance will take effect and be in force five days from and after its passage, approval, and publication as provided by law.

INTRODUCED: _____

PASSED: _____

APPROVED: _____

_____
NANCY BACKUS, MAYOR

ATTEST:

_____
Shawn Campbell, MMC, City Clerk

APPROVED AS TO FORM:

_____
Kendra Comeau, City Attorney

Published: _____

Schedule A
Summary of 2023 Budget Adjustments by Fund
Budget Amendment #2 (Ordinance #6911)

	Beg. Fund Balance	Revenues	Expenditures	Ending Fund Balance	OT/OG	Req No
General Fund (#001)						
2023 Adopted Budget	16,428,633	91,190,426	98,143,349	9,475,710		
Previous Budget Amendments	2,424,406	3,632,518	6,163,074	(106,150)		
2023 Amended Budget	18,853,039	94,822,944	104,306,423	9,369,560		
BA#2 (Ordinance #6911, Proposed):	6,294,923	2,658,100	2,791,100	6,161,923		
Administration:						
EMPG ARPA Funds	-	15,200	15,200	-	OT	001-01
Human Resources:						
HR Safety App/Dashboard	-	-	50,000	(50,000)	OT	001-02
City Attorney's Office:						
National Opioid Settlement	-	52,000	52,000	-	OT	001-03
Community Development:						
SKHHP Habitat for Humanity Project	-	300,000	300,000	-	OG	001-04
SKHHP Affordable Housing Tax Revenue	-	-	152,900	(152,900)	OG	001-05
Police Department:						
Move Vehicle Equipment Budget to PD	-	58,000	58,000	-	OT	001-06
Supernumerary position for Academy TAC Officer	-	147,000	-	147,000	OG	001-12
Public Works Department:						
2024 Comprehensive Transportation Plan	-	-	50,000	(50,000)	OT	001-07
Parks Department:						
King County Grant - Recreation	-	15,000	15,000	-	OT	001-08
Public Art Replacement	-	55,900	55,900	-	OT	001-09
Non Departmental:						
Adjust Beginning Balances	6,294,923	-	-	6,294,923	OT	001-10
Reclassify F106 Transfers	-	2,015,000	2,015,000	-	OT	001-11
Flock Safety Cameras	-	-	-	-	OG	001-13
Cp1612 - Auburn Arts & Culture Ctr. Renovation	-	-	-	-	OT	001-14
Equipment Rental Capital Reimbursements	-	-	27,100	(27,100)	OT	001-15
Revised 2023 Budget - Fund 001	25,147,962	97,481,044	107,097,523	15,531,483		

Schedule A
Summary of 2023 Budget Adjustments by Fund
Budget Amendment #2 (Ordinance #6911)

	Beg. Fund Balance	Revenues	Expenditures	Ending Fund Balance	OT/OG	Req No
Arterial Street Fund (#102)						
2023 Adopted Budget	965,783	9,085,192	9,360,894	690,081		
Previous Budget Amendments	898,237	6,459,803	7,358,040	-		
2023 Amended Budget	1,864,020	15,544,995	16,718,934	690,081		
BA#2 (Ordinance #6911, Proposed):	486,136	(245,100)	(205,000)	446,036		
Adjust Beginning Balances	486,136	-	-	486,136		102-01
F St SE Non-Motorized Imp.	-	-	65,000	(65,000)		102-02
R St SE/29th St SE Imp. - cp2116	-	(830,000)	(830,000)	-		102-03
2022 Arterial Ped & Bike Safety	-	24,900	-	24,900		102-04
R St SE/ 21st St SE Roundabout	-	-	-	-		102-05
Lea Hill Rd/104th Ave SE Imp.	-	560,000	560,000	-		102-06
Revised 2023 Budget - Fund 102	2,350,156	15,299,895	16,513,934	1,136,117		
Local Street Fund (#103)						
2023 Adopted Budget	1,932,689	2,598,000	2,036,300	2,494,389		
Previous Budget Amendments	937,353	1,261,108	2,195,661	2,800		
2023 Amended Budget	2,870,042	3,859,108	4,231,961	2,497,189		
BA#2 (Ordinance #6911, Proposed):	493,454	-	-	493,454		
Adjust Beginning Balances	493,454	-	-	493,454	OT	103-01
Reclassify F106 Transfers	-	-	-	-	OT	103-02
Revised 2023 Budget - Fund 103	3,363,496	3,859,108	4,231,961	2,990,643		
Hotel/Motel Tax Fund (#104)						
2023 Adopted Budget	480,179	143,900	177,100	446,979		
Previous Budget Amendments	-	-	8,000	(8,000)		
2023 Amended Budget	480,179	143,900	185,100	438,979		
BA#2 (Ordinance #6911, Proposed):	(15,880)	-	-	(15,880)		
Adjust Beginning Balances	(15,880)	-	-	(15,880)	OT	104-01
Revised 2023 Budget - Fund 104	464,299	143,900	185,100	423,099		

Schedule A
Summary of 2023 Budget Adjustments by Fund
Budget Amendment #2 (Ordinance #6911)

	Beg. Fund Balance	Revenues	Expenditures	Ending Fund Balance	OT/OG	Req No
Arterial Street Preservation Fund (#105)						
2023 Adopted Budget	2,699,358	4,041,772	4,100,000	2,641,130		
Previous Budget Amendments	1,950,254	763,876	2,714,130	-		
2023 Amended Budget	4,649,612	4,805,648	6,814,130	2,641,130		
BA#2 (Ordinance #6911, Proposed):	(611,342)	1,038,465	2,122,821	(1,695,698)		
Adjust Beginning Balances	(611,342)	-	-	(611,342)	OT	105-01
C Street SW Preservation	-	288,465	838,465	(550,000)	OT	105-02
Lake Tapps Pkwy/Sumner Hwy	-	750,000	1,284,356	(534,356)	OT	105-03
Revised 2023 Budget - Fund 105	4,038,270	5,844,113	8,936,951	945,432		
American Rescue Plan Act Fund Fund (#106)						
2023 Adopted Budget	-	4,030,000	4,030,000	-		
Previous Budget Amendments	-	3,057,286	3,057,286	-		
2023 Amended Budget	-	7,087,286	7,087,286	-		
BA#2 (Ordinance #6911, Proposed):	-	-	-	-		
Reclassify F106 Transfers	-	-	-	-	OT	106-01
Revised 2023 Budget - Fund 106	-	7,087,286	7,087,286	-		
Drug Forfeiture Fund (#117)						
2023 Adopted Budget	857,236	148,000	392,671	612,565		
Previous Budget Amendments	-	-	-	-		
2023 Amended Budget	857,236	148,000	392,671	612,565		
BA#2 (Ordinance #6911, Proposed):	279,779	-	70,000	209,779		
Adjust Beginning Balances	279,779	-	-	279,779	OT	117-01
Range Improvements	-	-	70,000	(70,000)	OT	117-02
Revised 2023 Budget - Fund 117	1,137,015	148,000	462,671	822,344		
Housing & Comm Develop Fund (#119)						
2023 Adopted Budget	42,842	650,000	650,000	42,842		
Previous Budget Amendments	-	366,330	366,330	-		
2023 Amended Budget	42,842	1,016,330	1,016,330	42,842		
BA#2 (Ordinance #6911, Proposed):	62	-	-	62		
Adjust Beginning Balances	62	-	-	62	OT	119-01
Revised 2023 Budget - Fund 119	42,904	1,016,330	1,016,330	42,904		

Schedule A
Summary of 2023 Budget Adjustments by Fund
Budget Amendment #2 (Ordinance #6911)

	Beg. Fund Balance	Revenues	Expenditures	Ending Fund Balance	OT/OG	Req No
Recreation Trails Fund (#120)						
2023 Adopted Budget	95,845	7,100	-	102,945		
Previous Budget Amendments	-	-	66,210	(66,210)		
2023 Amended Budget	95,845	7,100	66,210	36,735		
BA#2 (Ordinance #6911, Proposed):	1,324	-	-	1,324		
Adjust Beginning Balances	1,324	-	-	1,324	OT	120-01
Revised 2023 Budget - Fund 120	97,169	7,100	66,210	38,059		
BIA Fund (#121)						
2023 Adopted Budget	97,502	-	90,000	7,502		
Previous Budget Amendments	-	-	-	-		
2023 Amended Budget	97,502	-	90,000	7,502		
BA#2 (Ordinance #6911, Proposed):	38,439	-	45,941	(7,502)		
Adjust Beginning Balances	38,439	-	-	38,439	OT	121-01
BIA Fund Closeout	-	-	45,941	(45,941)	OT	121-02
Revised 2023 Budget - Fund 121	135,941	-	135,941	0		
Cumulative Reserve Fund (#122)						
2023 Adopted Budget	30,713,551	80,000	1,391,450	29,402,101		
Previous Budget Amendments	27,000	-	27,000	-		
2023 Amended Budget	30,740,551	80,000	1,418,450	29,402,101		
BA#2 (Ordinance #6911, Proposed):	(148,110)	-	500,000	(648,110)		
Adjust Beginning Balances	(148,110)	-	-	(148,110)	OT	122-01
Move Vehicle Equipment Budget to PD	-	-	-	-	OT	122-02
M&O Facility Improvement	-	-	500,000	(500,000)	OT	122-03
Revised 2023 Budget - Fund 122	30,592,441	80,000	1,918,450	28,753,991		

Schedule A
Summary of 2023 Budget Adjustments by Fund
Budget Amendment #2 (Ordinance #6911)

	Beg. Fund Balance	Revenues	Expenditures	Ending Fund Balance	OT/OG	Req No
Mitigation Fees Fund (#124)						
2023 Adopted Budget	10,976,167	1,601,200	7,043,982	5,533,385		
Previous Budget Amendments	4,998,798	-	5,348,798	(350,000)		
2023 Amended Budget	15,974,965	1,601,200	12,392,780	5,183,385		
BA#2 (Ordinance #6911, Proposed):	(125,343)	-	(931,000)	805,657		
Adjust Beginning Balances	(125,343)	-	-	(125,343)	OT	124-01
R St SE/29th St SE Imp. - cp2116	-	-	(830,000)	830,000	OT	124-02
R St SE/ 21st St SE Roundabout	-	-	(185,000)	185,000	OT	124-03
Lea Hill Rd/104th Ave SE Imp.	-	-	84,000	(84,000)	OT	124-04
Revised 2023 Budget - Fund 124	15,849,622	1,601,200	11,461,780	5,989,042		
2020 LTGO A&B Refunding Bonds Fund (#232)						
2023 Adopted Budget	662,707	1,507,600	1,507,600	662,707		
Previous Budget Amendments	-	-	-	-		
2023 Amended Budget	662,707	1,507,600	1,507,600	662,707		
BA#2 (Ordinance #6911, Proposed):	(202,544)	-	-	(202,544)		
Adjust Beginning Balances	(202,544)	-	-	(202,544)	OT	232-01
Revised 2023 Budget - Fund 232	460,163	1,507,600	1,507,600	460,163		
LID Guarantee Fund (#249)						
2023 Adopted Budget	1,687	10	-	1,697		
Previous Budget Amendments	-	-	-	-		
2023 Amended Budget	1,687	10	-	1,697		
BA#2 (Ordinance #6911, Proposed):	15	-	-	15		
Adjust Beginning Balances	15	-	-	15	OT	249-01
Revised 2023 Budget - Fund 249	1,702	10	-	1,712		

Schedule A
Summary of 2023 Budget Adjustments by Fund
Budget Amendment #2 (Ordinance #6911)

	Beg. Fund Balance	Revenues	Expenditures	Ending Fund Balance	OT/OG	Req No
Parks Construction Fund (#321)						
2023 Adopted Budget	**816,504**	**1,545,100**	**1,347,800**	**1,013,804**		
Previous Budget Amendments	542,340	1,070,503	1,746,333	(133,490)		
2023 Amended Budget	**1,358,844**	**2,615,603**	**3,094,133**	**880,314**		
BA#2 (Ordinance #6911, Proposed):	**2,616**	**(50,000)**	**(12,400)**	**(34,984)**		
Adjust Beginning Balances	**2,616**	**-**	**-**	**2,616**	**OT**	321-01
Reclassify F106 Transfers	**-**	**-**	**-**	**-**	**OT**	321-02
Fulmer Park Playground Replacement	**-**	**-**	**37,600**	**(37,600)**	**OT**	321-03
Grant for Auburndale Park	**-**	**50,000**	**50,000**	**-**	**OT**	321-04
Cp1612 - Auburn Arts & Culture Ctr. Renovation	**-**	**(100,000)**	**(100,000)**	**-**	**OT**	321-05
Revised 2023 Budget - Fund 321	**1,361,460**	**2,565,603**	**3,081,733**	**845,330**		
Capital Improvements Fund (#328)						
2023 Adopted Budget	**13,078,556**	**6,833,300**	**6,320,700**	**13,591,156**		
Previous Budget Amendments	5,608,124	4,459,499	10,127,623	(60,000)		
2023 Amended Budget	**18,686,680**	**11,292,799**	**16,448,323**	**13,531,156**		
BA#2 (Ordinance #6911, Proposed):	**(2,552,310)**	**1,045,810**	**1,204,610**	**(2,711,110)**		
Adjust Beginning Balances	**(2,552,310)**	**-**	**-**	**(2,552,310)**	**OT**	328-01
Reclassify F106 Transfers	**-**	**-**	**-**	**-**	**OT**	328-02
Lea Hill SRTS project	**-**	**(22,250)**	**136,550**	**(158,800)**	**OT**	328-03
WA St Heritage Grant -cp1612	**-**	**968,060**	**968,060**	**-**	**OT**	328-04
Cp1612 - Auburn Arts & Culture Ctr. Renovation	**-**	**100,000**	**100,000**	**-**	**OT**	328-05
Revised 2023 Budget - Fund 328	**16,134,370**	**12,338,609**	**17,652,933**	**10,820,046**		
Local Revitalization Fund (#330)						
2023 Adopted Budget	**245,831**	**256,200**	**500,000**	**2,031**		
Previous Budget Amendments	22,399	376,400	398,799	-		
2023 Amended Budget	**268,230**	**632,600**	**898,799**	**2,031**		
BA#2 (Ordinance #6911, Proposed):	**4,589**	**1,826,850**	**1,826,850**	**4,589**		
Adjust Beginning Balances	**4,589**	**-**	**-**	**4,589**	**OT**	330-01
Reclassify F106 Transfers	**-**	**-**	**-**	**-**	**OT**	330-02
CIP Auburn Avenue Theater – Insurance Recovery	**-**	**228,200**	**228,200**	**-**	**OT**	330-03
WA St Dir. Appropriation-cp2321	**-**	**1,498,650**	**1,498,650**	**-**	**OT**	330-04
Auburn Ave Theater -KC Grant	**-**	**100,000**	**100,000**	**-**	**OT**	330-05
Revised 2023 Budget - Fund 330	**272,819**	**2,459,450**	**2,725,649**	**6,620**		

Schedule A
Summary of 2023 Budget Adjustments by Fund
Budget Amendment #2 (Ordinance #6911)

	Beg. Fund Balance	Revenues	Expenditures	Ending Fund Balance	OT/OG	Req No
Water Fund (#430)						
2023 Adopted Budget	10,210,632	20,513,410	24,485,990	6,238,052		
Previous Budget Amendments	1,616,718	700,000	2,316,718	-		
2023 Amended Budget	11,827,350	21,213,410	26,802,708	6,238,052		
BA#2 (Ordinance #6911, Proposed):	161,751	-	2,430,000	(2,268,249)		
Adjust Beginning Balances	161,751	-	-	161,751	OT	430-01
Transfer from Water Fund to Water Capital Fund	-	-	2,200,000	(2,200,000)	OT	430-02
Water Rights Mitigation Plan	-	-	230,000	(230,000)	OT	430-03
Revised 2023 Budget - Fund 430	11,989,101	21,213,410	29,232,708	3,969,803		
Sewer Fund (#431)						
2023 Adopted Budget	9,299,995	9,573,200	10,346,701	8,526,494		
Previous Budget Amendments	565,640	-	565,640	-		
2023 Amended Budget	9,865,635	9,573,200	10,912,341	8,526,494		
BA#2 (Ordinance #6911, Proposed):	2,373,387	-	-	2,373,387		
Adjust Beginning Balances	2,373,387	-	-	2,373,387	OT	431-01
Revised 2023 Budget - Fund 431	12,239,022	9,573,200	10,912,341	10,899,881		
Storm Drainage Fund (#432)						
2023 Adopted Budget	12,957,725	11,087,600	10,729,632	13,315,693		
Previous Budget Amendments	586,240	-	586,240	-		
2023 Amended Budget	13,543,965	11,087,600	11,315,872	13,315,693		
BA#2 (Ordinance #6911, Proposed):	589,087	-	-	589,087		
Adjust Beginning Balances	589,087	-	-	589,087	OT	432-01
Revised 2023 Budget - Fund 432	14,133,052	11,087,600	11,315,872	13,904,780		
Sewer Metro Sub Fund Fund (#433)						
2023 Adopted Budget	3,328,134	20,613,900	20,586,400	3,355,634		
Previous Budget Amendments	-	-	-	-		
2023 Amended Budget	3,328,134	20,613,900	20,586,400	3,355,634		
BA#2 (Ordinance #6911, Proposed):	909,796	-	-	909,796		
Adjust Beginning Balances	909,796	-	-	909,796	OT	433-01
Revised 2023 Budget - Fund 433	4,237,930	20,613,900	20,586,400	4,265,430		

Schedule A
Summary of 2023 Budget Adjustments by Fund
Budget Amendment #2 (Ordinance #6911)

	Beg. Fund Balance	Revenues	Expenditures	Ending Fund Balance	OT/OG	Req No
Solid Waste Fund (#434)						
2023 Adopted Budget	2,135,607	26,646,830	26,533,984	2,248,453		
Previous Budget Amendments	-	-	-	-		
2023 Amended Budget	2,135,607	26,646,830	26,533,984	2,248,453		
BA#2 (Ordinance #6911, Proposed):	566,164	-	-	566,164		
Adjust Beginning Balances	566,164	-	-	566,164	OT	434-01
Revised 2023 Budget - Fund 434	2,701,771	26,646,830	26,533,984	2,814,617		
Airport Fund (#435)						
2023 Adopted Budget	601,969	1,653,800	1,988,188	267,581		
Previous Budget Amendments	968,496	-	968,496	-		
2023 Amended Budget	1,570,465	1,653,800	2,956,684	267,581		
BA#2 (Ordinance #6911, Proposed):	218,329	-	173,080	45,249		
Adjust Beginning Balances	218,329	-	-	218,329	OT	435-01
Fund Balance Transfer from Operating to Capital	-	-	173,080	(173,080)	OT	435-02
Revised 2023 Budget - Fund 435	1,788,794	1,653,800	3,129,764	312,830		
Cemetery Fund (#436)						
2023 Adopted Budget	1,812,215	1,432,300	2,308,402	936,113		
Previous Budget Amendments	-	-	-	-		
2023 Amended Budget	1,812,215	1,432,300	2,308,402	936,113		
BA#2 (Ordinance #6911, Proposed):	(160,795)	-	-	(160,795)		
Adjust Beginning Balances	(160,795)	-	-	(160,795)	OT	436-01
Revised 2023 Budget - Fund 436	1,651,420	1,432,300	2,308,402	775,318		
Water Capital Fund (#460)						
2023 Adopted Budget	3,321,676	10,752,092	13,041,560	1,032,208		
Previous Budget Amendments	4,991,035	2,002,363	6,993,398	-		
2023 Amended Budget	8,312,711	12,754,455	20,034,958	1,032,208		
BA#2 (Ordinance #6911, Proposed):	(2,207,912)	2,200,000	-	(7,912)		
Adjust Beginning Balances	(2,207,912)	-	-	(2,207,912)	OT	460-01
Transfer from Water Fund to Water Capital Fund	-	2,200,000	-	2,200,000	OT	460-02
Well Insp. & Redevelopment-wabd11	-	-	-	-	OT	460-03
Revised 2023 Budget - Fund 460	6,104,799	14,954,455	20,034,958	1,024,296		

Schedule A
Summary of 2023 Budget Adjustments by Fund
Budget Amendment #2 (Ordinance #6911)

	Beg. Fund Balance	Revenues	Expenditures	Ending Fund Balance	OT/OG	Req No
Sewer Capital Fund (#461)						
2023 Adopted Budget	8,687,557	377,200	5,992,500	3,072,257		
Previous Budget Amendments	3,122,956	-	3,122,956	-		
2023 Amended Budget	11,810,513	377,200	9,115,456	3,072,257		
BA#2 (Ordinance #6911, Proposed):	(1,189,867)	-	-	(1,189,867)		
Adjust Beginning Balances	(1,189,867)	-	-	(1,189,867)	OT	461-01
Revised 2023 Budget - Fund 461	10,620,646	377,200	9,115,456	1,882,390		
Storm Drainage Capital Fund (#462)						
2023 Adopted Budget	7,744,442	536,200	6,713,394	1,567,248		
Previous Budget Amendments	2,892,429	10,000	2,902,429	-		
2023 Amended Budget	10,636,871	546,200	9,615,823	1,567,248		
BA#2 (Ordinance #6911, Proposed):	(1,411,054)	302,700	452,700	(1,561,054)		
Adjust Beginning Balances	(1,411,054)	-	-	(1,411,054)	OT	462-01
CP2102 – 4th St Preservation	-	302,700	-	302,700	OT	462-02
D St SE /23rd St SE Storm Imp	-	-	302,700	(302,700)	OT	462-03
Equipment Rental Capital Reimbursements	-	-	150,000	(150,000)	OT	462-04
Revised 2023 Budget - Fund 462	9,225,817	848,900	10,068,523	6,194		
Airport Capital Fund (#465)						
2023 Adopted Budget	311,215	4,000,755	4,238,390	73,580		
Previous Budget Amendments	100,000	2,226,283	2,326,283	-		
2023 Amended Budget	411,215	6,227,038	6,564,673	73,580		
BA#2 (Ordinance #6911, Proposed):	(173,080)	173,080	-	-		
Adjust Beginning Balances	(173,080)	-	-	(173,080)	OT	465-01
Fund Balance Transfer from Operating to Capital	-	173,080	-	173,080	OT	465-02
Revised 2023 Budget - Fund 465	238,135	6,400,118	6,564,673	73,580		

Schedule A
Summary of 2023 Budget Adjustments by Fund
Budget Amendment #2 (Ordinance #6911)

	Beg. Fund Balance	Revenues	Expenditures	Ending Fund Balance	OT/OG	Req No
Cemetery Capital Fund (#466)						
2023 Adopted Budget	7,184	355,100	355,050	7,234		
Previous Budget Amendments	-	-	-	-		
2023 Amended Budget	7,184	355,100	355,050	7,234		
BA#2 (Ordinance #6911, Proposed):	5,106	-	-	5,106		
Adjust Beginning Balances	5,106	-	-	5,106	OT	466-01
Revised 2023 Budget - Fund 466	12,290	355,100	355,050	12,340		
Insurance Fund (#501)						
2023 Adopted Budget	1,710,775	12,000	182,500	1,540,275		
Previous Budget Amendments	-	-	-	-		
2023 Amended Budget	1,710,775	12,000	182,500	1,540,275		
BA#2 (Ordinance #6911, Proposed):	(221,809)	-	-	(221,809)		
Adjust Beginning Balances	(221,809)	-	-	(221,809)	OT	501-01
Revised 2023 Budget - Fund 501	1,488,966	12,000	182,500	1,318,466		
Workers' Comp Fund (#503)						
2023 Adopted Budget	3,102,720	1,144,900	750,700	3,496,920		
Previous Budget Amendments	-	-	-	-		
2023 Amended Budget	3,102,720	1,144,900	750,700	3,496,920		
BA#2 (Ordinance #6911, Proposed):	(189,205)	-	-	(189,205)		
Adjust Beginning Balances	(189,205)	-	-	(189,205)	OT	503-01
Revised 2023 Budget - Fund 503	2,913,515	1,144,900	750,700	3,307,715		
Facilities Fund (#505)						
2023 Adopted Budget	415,868	4,683,900	4,731,374	368,394		
Previous Budget Amendments	96,225	141,000	237,225	-		
2023 Amended Budget	512,093	4,824,900	4,968,599	368,394		
BA#2 (Ordinance #6911, Proposed):	(188,926)	-	-	(188,926)		
Adjust Beginning Balances	(188,926)	-	-	(188,926)	OT	505-01
Revised 2023 Budget - Fund 505	323,167	4,824,900	4,968,599	179,468		

Schedule A
Summary of 2023 Budget Adjustments by Fund
Budget Amendment #2 (Ordinance #6911)

	Beg. Fund Balance	Revenues	Expenditures	Ending Fund Balance	OT/OG	Req No
Innovation & Technology Fund (#518)						
2023 Adopted Budget	3,155,085	9,046,000	9,173,835	3,027,250		
Previous Budget Amendments	280,000	-	280,000	-		
2023 Amended Budget	3,435,085	9,046,000	9,453,835	3,027,250		
BA#2 (Ordinance #6911, Proposed):	(368,389)	150,000	650,000	(868,389)		
Adjust Beginning Balances	(368,389)	-	-	(368,389)	OT	518-01
Flock Safety Cameras	-	150,000	150,000	-	OG	518-02
Transfer from IT operations to capital	-	-	500,000	(500,000)	OT	518-03
Multimedia Assistant Reclass	-	-	-	-	OG	518-04
Revised 2023 Budget - Fund 518	3,066,696	9,196,000	10,103,835	2,158,861		
Equipment Rental Fund (#550)						
2023 Adopted Budget	1,769,286	3,527,200	3,564,826	1,731,660		
Previous Budget Amendments	-	-	-	-		
2023 Amended Budget	1,769,286	3,527,200	3,564,826	1,731,660		
BA#2 (Ordinance #6911, Proposed):	229,180	-	-	229,180		
Adjust Beginning Balances	229,180	-	-	229,180	OT	550-01
M&O Facility Improvement	-	-	-	-	OT	550-02
Revised 2023 Budget - Fund 550	1,998,466	3,527,200	3,564,826	1,960,840		
Equipment Rental Capital Fund (#560)						
2023 Adopted Budget	4,508,173	3,470,540	3,096,120	4,882,593		
Previous Budget Amendments	2,636,560	2,014,945	4,651,505	-		
2023 Amended Budget	7,144,733	5,485,485	7,747,625	4,882,593		
BA#2 (Ordinance #6911, Proposed):	(1,604,514)	985,100	1,316,280	(1,935,694)		
Adjust Beginning Balances	(1,604,514)	-	-	(1,604,514)	OT	560-01
Move Vehicle Equipment Budget to PD	-	(58,000)	(58,000)	-	OT	560-02
Equipment Rental Capital Reimbursements	-	177,100	332,980	(155,880)	OT	560-03
M&O Fuel Island Replacement	-	-	175,300	(175,300)	OT	560-04
M&O Facility Improvement	-	866,000	866,000	-	OT	560-05
Revised 2023 Budget - Fund 560	5,540,219	6,470,585	9,063,905	2,946,899		

Schedule A
Summary of 2023 Budget Adjustments by Fund
Budget Amendment #2 (Ordinance #6911)

	Beg. Fund Balance	Revenues	Expenditures	Ending Fund Balance	OT/OG	Req No
IT Capital Fund (#568)						
2023 Adopted Budget	237,354	674,700	585,300	326,754		
Previous Budget Amendments	464,000	264,000	715,500	12,500		
2023 Amended Budget	701,354	938,700	1,300,800	339,254		
BA#2 (Ordinance #6911, Proposed):	(589,119)	350,000	(150,000)	(89,119)		
Adjust Beginning Balances	(589,119)	-	-	(589,119)	OT	568-01
Flock Safety Cameras	-	(150,000)	(150,000)	-	OG	568-02
Transfer from IT operations to capital	-	500,000	-	500,000	OT	568-03
Revised 2023 Budget - Fund 568	112,235	1,288,700	1,150,800	250,135		
Fire Pension Fund (#611)						
2023 Adopted Budget	1,790,627	103,600	196,256	1,697,971		
Previous Budget Amendments	-	-	-	-		
2023 Amended Budget	1,790,627	103,600	196,256	1,697,971		
BA#2 (Ordinance #6911, Proposed):	99,905	-	-	99,905		
Adjust Beginning Balances	99,905	-	-	99,905	OT	611-01
Revised 2023 Budget - Fund 611	1,890,532	103,600	196,256	1,797,876		
SKHHP Fund (#654)						
2023 Adopted Budget	1,668,893	297,400	366,475	1,599,818		
Previous Budget Amendments	-	66,612	54,828	11,784		
2023 Amended Budget	1,668,893	364,012	421,303	1,611,602		
BA#2 (Ordinance #6911, Proposed):	76,098	1,012,009	300,000	788,107		
Adjust Beginning Balances	76,098	-	-	76,098	OT	654-01
SKHHP Habitat for Humanity Project	-	-	300,000	(300,000)	OG	654-02
SKHHP Housing Capital Fund Revenue	-	1,012,009	-	1,012,009	OT	654-03
Revised 2023 Budget - Fund 654	1,744,991	1,376,021	721,303	2,399,709		
Cemetery Endowment Fund (#701)						
2023 Adopted Budget	2,158,347	64,130	-	2,222,477		
Previous Budget Amendments	-	-	-	-		
2023 Amended Budget	2,158,347	64,130	-	2,222,477		
BA#2 (Ordinance #6911, Proposed):	42,958	-	-	42,958		
Adjust Beginning Balances	42,958	-	-	42,958	OT	701-01
Revised 2023 Budget - Fund 701	2,201,305	64,130	-	2,265,435		

Schedule A
Summary of 2023 Budget Adjustments by Fund
Budget Amendment #2 (Ordinance #6911)

	Beg. Fund Balance	Revenues	Expenditures	Ending Fund Balance	OT/OG	Req No
Grand Total - All Funds						
2023 Adopted Budget	**161,030,549**	**256,021,357**	**288,796,223**	**128,255,683**		
Previous Budget Amendments	35,729,210	28,872,526	65,298,502	(696,766)		
2023 Amended Budget	**196,759,759**	**284,893,883**	**354,094,725**	**127,558,917**		
TOTAL BA#2 (Ordinance #6911, Proposed):	**912,899**	**11,447,014**	**12,584,982**	**(225,069)**		
Revised 2023 Budget	**197,672,658**	**296,340,897**	**366,679,707**	**127,333,848**		
		494,013,555		**494,013,555**		

Schedule B
2023 Ending Fund Balance/Working Capital
by Fund

Fund	2023 Amended Beginning Balance	2023 Amended Ending Balance	BA#2 (ORD #6911) Revenues	BA#2 (ORD #6911) Expenditures	BA#2 (ORD #6911) Net Change in Fund Balance	Revised Ending Balance
General Fund (#001)	18,853,039	9,369,560	8,953,023	(2,791,100)	6,161,923	15,531,483
Arterial Street Fund (#102)	1,864,020	690,081	241,036	205,000	446,036	1,136,117
Local Street Fund (#103)	2,870,042	2,497,189	493,454	-	493,454	2,990,643
Hotel/Motel Tax Fund (#104)	480,179	438,979	(15,880)	-	(15,880)	423,099
Arterial Street Preservation Fund (#105)	4,649,612	2,641,130	427,123	(2,122,821)	(1,695,698)	945,432
American Rescue Plan Act Fund (#106)	-	-	-	-	-	-
Drug Forfeiture Fund (#117)	857,236	612,565	279,779	(70,000)	209,779	822,344
Housing & Comm Develop Fund (#119)	42,842	42,842	62	-	62	42,904
Recreation Trails Fund (#120)	95,845	36,735	1,324	-	1,324	38,059
BIA Fund (#121)	97,502	7,502	38,439	(45,941)	(7,502)	0
Cumulative Reserve Fund (#122)	30,740,551	29,402,101	(148,110)	(500,000)	(648,110)	28,753,991
Mitigation Fees Fund (#124)	15,974,965	5,183,385	(125,343)	931,000	805,657	5,989,042
2020 LTGO A&B Refunding Bonds Fund (#232)	662,707	662,707	(202,544)	-	(202,544)	460,163
SCORE Debt Service Fund (#238)	-	-	-	-	-	-
LID Guarantee Fund (#249)	1,687	1,697	15	-	15	1,712
Parks Construction Fund (#321)	1,358,844	880,314	(47,384)	12,400	(34,984)	845,330
Capital Improvements Fund (#328)	18,686,680	13,531,156	(1,506,500)	(1,204,610)	(2,711,110)	10,820,046
Local Revitalization Fund (#330)	268,230	2,031	1,831,439	(1,826,850)	4,589	6,620
Water Fund (#430)	11,827,350	6,238,052	161,751	(2,430,000)	(2,268,249)	3,969,803
Sewer Fund (#431)	9,865,635	8,526,494	2,373,387	-	2,373,387	10,899,881
Storm Drainage Fund (#432)	13,543,965	13,315,693	589,087	-	589,087	13,904,780
Sewer Metro Sub Fund (#433)	3,328,134	3,355,634	909,796	-	909,796	4,265,430
Solid Waste Fund (#434)	2,135,607	2,248,453	566,164	-	566,164	2,814,617
Airport Fund (#435)	1,570,465	267,581	218,329	(173,080)	45,249	312,830
Cemetery Fund (#436)	1,812,215	936,113	(160,795)	-	(160,795)	775,318
Water Capital Fund (#460)	8,312,711	1,032,208	(7,912)	-	(7,912)	1,024,296
Sewer Capital Fund (#461)	11,810,513	3,072,257	(1,189,867)	-	(1,189,867)	1,882,390
Storm Drainage Capital Fund (#462)	10,636,871	1,567,248	(1,108,354)	(452,700)	(1,561,054)	6,194
Airport Capital Fund (#465)	411,215	73,580	-	-	-	73,580
Cemetery Capital Fund (#466)	7,184	7,234	5,106	-	5,106	12,340
Insurance Fund (#501)	1,710,775	1,540,275	(221,809)	-	(221,809)	1,318,466
Workers' Comp Fund (#503)	3,102,720	3,496,920	(189,205)	-	(189,205)	3,307,715
Facilities Fund (#505)	512,093	368,394	(188,926)	-	(188,926)	179,468
Innovation & Technology Fund (#518)	3,435,085	3,027,250	(218,389)	(650,000)	(868,389)	2,158,861
Equipment Rental Fund (#550)	1,769,286	1,731,660	229,180	-	229,180	1,960,840
Equipment Rental Capital Fund (#560)	7,144,733	4,882,593	(619,414)	(1,316,280)	(1,935,694)	2,946,899
IT Capital Fund (#568)	701,354	339,254	(239,119)	150,000	(89,119)	250,135
Fire Pension Fund (#611)	1,790,627	1,697,971	99,905	-	99,905	1,797,876
SKHHP Fund (#654)	1,668,893	1,611,602	1,088,107	(300,000)	788,107	2,399,709
Cemetery Endowment Fund (#701)	2,158,347	2,222,477	42,958	-	42,958	2,265,435
Total	**196,759,759**	**127,558,917**	**12,359,913**	**(12,584,982)**	**(225,069)**	**127,333,848**

2023 Budget Amendment #2

CITY COUNCIL STUDY SESSION

JULY 10, 2023

Budget Adjustment #2

Types of Adjustments in BA#2

1. Adjust Beginning Fund Balance in each fund
2. New requests
3. Add grant funded programs
4. Adjust capital projects

General Fund – Summary of Changes

1. $6,294,923 net adjustment to Beginning Fund Balance
2. $133,000 in new requests (9 items)
   - Includes reinstating authority for a supernumerary in PD
3. $15,200 in new Grant funded programs (1 grant)

General Fund Adjustments – New Request Details and Fund Balance Impact

NEW REQUEST DETAILS

Description	Revenue	Expenditure	Net Impact	
HR Safety App	$ -	$ 50,000	$ (50,000)	*
2024 Transportation Comp Plan	-	50,000	(50,000)	*
Golf Course Equipment	-	27,100	(27,100)	*
National Opiod Settlement	52,000	52,000	-	
SKHHP Capital Project	300,000	300,000	-	
SHB 1406 Tax to SKHHP	-	152,900	(152,900)	
Training Officer at WSCJTC	147,000	-	147,000	
Reallocate Vehicle Budget	58,000	58,000	-	
Replace Stolen Art	55,900	55,900	-	
Total	**$ 612,900**	**$ 745,900**	**$ (133,000)**	

*2022 Carryforward items missed in BA#1

GENERAL FUND BALANCE IMPACT

Budgeted Ending Fund Balance	**$**	**9,369,560**
Add: 1/1/2023 Adjustment		6,294,923
Less: New Requests		(133,000)
Amended Ending Fund Balance	**$**	**15,531,483**

All Other Funds - Summary of Changes

1. $(5,382,024) Net Fund Balance Adjustments to all funds other than the General Fund
2. $626,921 in new requests (6 items)
3. $1,092,156 in grant funded projects (8 items)
4. $2,100 in capital projects (5 items)

All Other Funds – Detailed Requests

Type of Request	Description	Fund	Revenue	Expenditure	Net Impact
1x New Requests	Range Improvements	Drug Forfeiture	$ -	$ 70,000	$ (70,000)
1x New Requests	BIA Fund Closure	BIA Fund	-	45,941	(45,941)
1x New Requests	Equipment for Storm and Golf Course	Equipment Replacement	27,100	332,980	(305,880)
1x New Requests	Reimbursed Costs from Lumen	Arterial Street	24,900	-	24,900
1x New Requests	Water Rights Mitigation	Water Fund	-	230,000	(230,000)
Ongoing	Convert .75 FTE to 1.0 FTE Mutimedia Asst.	Mulitmedia	-	-	-
Grant Funded	Lea Hill Rd/104th Ave SE	Arterial Street	476,000	560,000	(84,000)
Grant Funded	Lake Tapps Pkwy	Arterial Street Preservation	750,000	1,284,356	(534,356)
Grant Funded	M&O Facility Improvements	Equipment Replacement	141,000	641,000	(500,000)
Grant Funded	R St SE/21st St SE Roundabout	Mitigation Fees	185,000	-	185,000
Grant Funded	Auburndale Park	Parks Construction	50,000	50,000	-
Grant Funded	LeaHill Safe Routes to School	Capital Improvement	(22,250)	136,550	(158,800)
Grant Funded	Arts and Culture Center	Capital Improvement	968,060	968,060	-
Grant Funded	Auburn Ave. Theater	Local Revitalization	1,826,850	1,826,850	-
Capital Projects	R St SE/29th St SE	Arterial Street	-	(830,000)	830,000
Capital Projects	F Street Non-Motorized Imp.	Arterial Street	-	65,000	(65,000)
Capital Projects	C Street SW Preservation	Arterial Street Preservation	288,465	838,465	(550,000)
Capital Projects	Fulmer Park	Parks Construction	-	37,600	(37,600)
Capital Projects	M&O Fuel Island	Equipment Replacement	-	175,300	(175,300)
Total			**$ 4,715,125**	**$ 6,432,102**	**$ (1,716,977)**

Next Steps:

July 17, 2023

- Adopt BA#2

AGENDA BILL APPROVAL FORM

Agenda Subject:
Water System Comprehensive Plan Update - Policy Review (Gaub) (30 Minutes)

Date:
July 3, 2023

Department:
Public Works

Attachments:
Presentation
Draft 2024 Water System Policies & Criteria

Budget Impact:
Current Budget: $0
Proposed Revision: $0
Revised Budget: $0

Administrative Recommendation:

For discussion only.

Background for Motion:

Background Summary:

The City is updating the Water System Comprehensive Plan (Plan) in coordination with the update of the City's overall Comprehensive Plan. The purpose of the Plan is to guide the City with respect to future activities and improvements for the Storm Drainage Utility.

The purpose of this discussion is to provide Council with the staff recommended policies to be incorporated into the Plan. The policies are the foundation of the Plan and outline how the water system should be operated and maintained and are grouped within goal statements that are headlined under the following categories:

- Business Practices
- Service Area
- Operations and Maintenance
- Financial
- Planning
- Environmental Stewardship
- Design and Construction

Staff will review the recommended policies as provided in the attachment with specific focus on the additions, changes and removals from the previous Plan.

Reviewed by Council Committees:

Councilmember: Brown
Staff: Gaub
Meeting Date: July 10, 2023
Item Number:

ENGINEERING SERVICES

WATER COMPREHENSIVE PLAN POLICY REVIEW

RYAN VONDRAK, UTILITIES ENGINEERING MANAGER
SENAIT GEBREEYESUS, WATER UTILITY ENGINEER

CITY COUNCIL STUDY SESSION
JULY 10, 2023

Public Works Department
Engineering Services • Airport Services • Maintenance & Operations Services

AUBURN VALUES

SERVICE
ENVIRONMENT
ECONOMY
CHARACTER
SUSTAINABILITY
WELLNESS
CELEBRATION

COUNCIL SCHEDULE OVERVIEW

April 10, 2023	• City Comprehensive Plan Overview
July 10, 2023	• General Water Policies Review & Discussion
2023 Date TBD	• Draft Plan Discussion
2024 Date TBD	• Final Draft Review & Discussion • Resolution for Adoption

SERVICE • ENVIRONMENT • ECONOMY • CHARACTER • SUSTAINABILITY • WELLNESS • CELEBRATION

GOALS – POLICIES

Goals

- Broad statements indicating a general aim or purpose to be achieved.

Policies

- Topic-specific statement providing guidelines for current and future decision-making.
- Indicates a clear commitment of the local legislative body.

SERVICE • ENVIRONMENT • ECONOMY • CHARACTER • SUSTAINABILITY • WELLNESS • CELEBRATION

GOALS – POLICIES

- Policies Format
  - Goal Statements
  - Policies Reflecting Goal Statements

1. BUSINESS PRACTICES

Goal 1.1: To employ recognized best business practices resulting in creating a sustainable, efficient, and cost-effective operation of the water utility.

Policy 1.1.1 Element of City Comprehensive Plan
Incorporate the Water Comprehensive Plan as an Element of the City's Comprehensive Plan.

Policy 1.1.2 Water Service By Others
Water Service supplied by outside purveyors within Auburn City limits are required to obtain a franchise with the City and are required to conform to all federal, state, and local laws and regulations. [ACC 20.02.040 and 20.04]

INTRODUCTION

- 4 Water Service Areas
  - Academy, Lakeland Hills, Lea Hill & Valley
- Sources of Water:
  - 7 active Wells, 2 Springs & 2 Interties
- ≈ 302 miles Water Main
- 15,047 Service Connections
- 10 Pump Stations
  - 2 Treatment Facilities
- 8 Reservoirs



Academy Pump Station

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WATER POLICY CATEGORIES

1. Business Practices
2. Service Area
3. Operations and Maintenance
4. Financial
5. Planning
6. Environmental Stewardship
7. Design and Construction

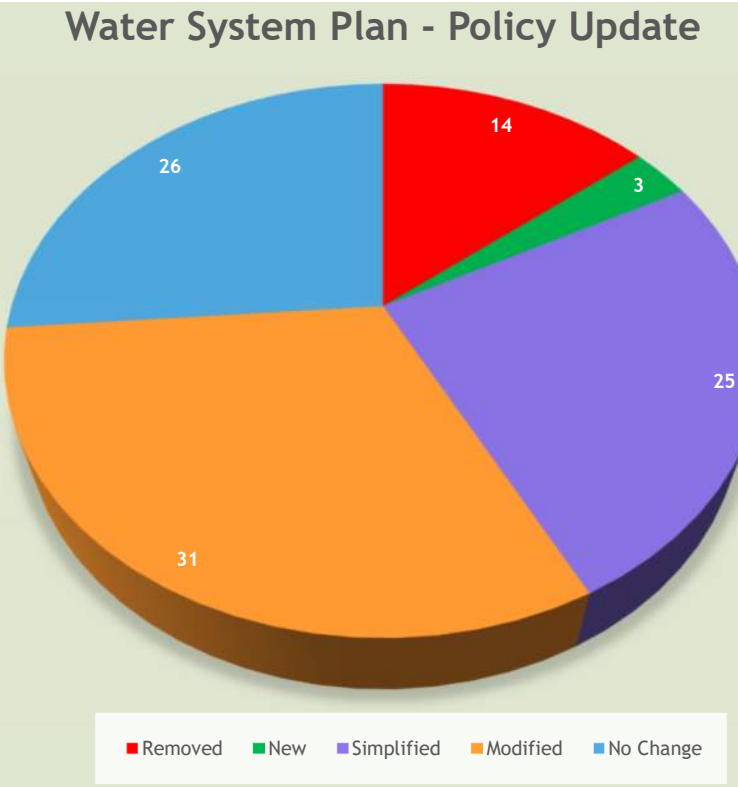
WATER POLICY UPDATE

- **Types of Updates (from Previously Adopted Plan)**

1. **Removed Policies**
2. **Simplified Policy Language**
3. **Modified Policies**
4. **New Policies**

WATER POLICY UPDATE

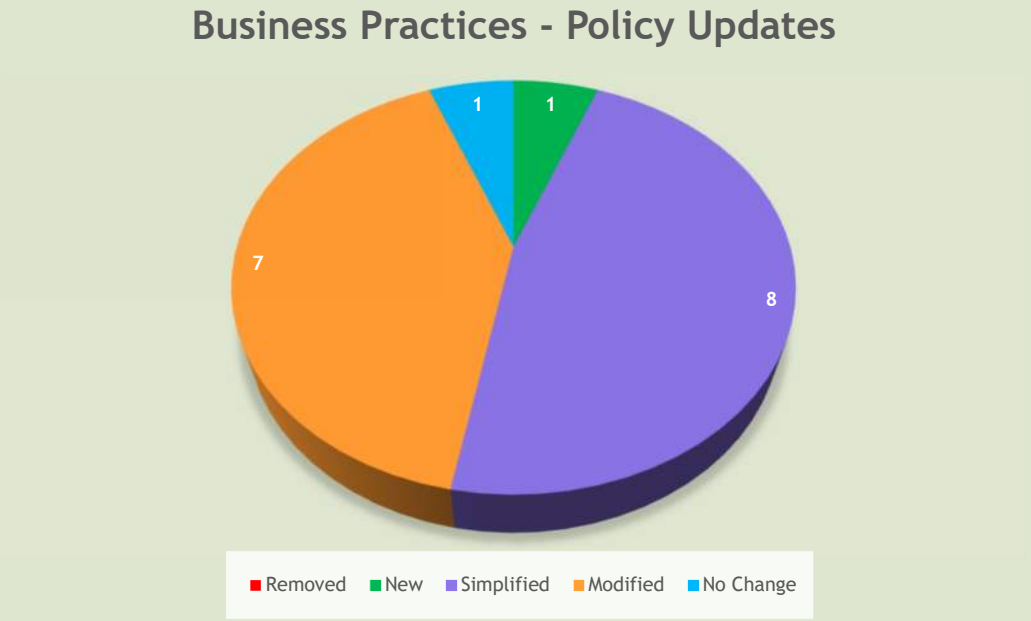
- **Policy Update Criteria**
  - Compliance with other Regulations
  - Increase Efficiency
  - Enhance Sustainability
  - Avoid Redundancy
  - Remove Action Plan
  - Minimize Circular References



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BUSINESS PRACTICES - GOAL

Goal 1: To employ recognized best business practices resulting in creating a sustainable, efficient, and cost-effective operation of the water utility.



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BUSINESS PRACTICES – MODIFIED POLICIES

- **Policy 1.2 Water Service By Others**
  - Water Service supplied by outside purveyors within Auburn City limits are required to obtain a franchise with the City and are required to conform to all federal, state, and local laws and regulations. [ACC 20.02.040 and 20.04]

- **Policy 1.3: Asset Improvements**
  - The City will develop and implement system improvements, infrastructure renewal (repair, rehabilitation, or replacement), and operations and maintenance programs for the water system according to asset management principles that address levels of service, address the triple bottom line (economic, social, and environmental benefits and costs), minimize asset life cycle costs, and incorporate risk management into decision-making.

- **Policy 1.6: Condition Assessments of Assets**
  - The City will perform condition assessments of assets through development and implementation of an inspection schedule for all assets.

BUSINESS PRACTICES – MODIFIED POLICIES

- **Policy 1.7: Design Life of Assets**
  - The City will assign industry standard design life for all assets. The actual physical assessment will be compared to the theoretical design life to determine the optimal economic life. The City will attempt to repair or replace system assets before they exceed their economic life.
- **Policy 1.9: Addressing Water Quality Complaints**
  - The City will monitor the frequency, location, and details of all water quality complaints. At a minimum, the City will respond, research the cause of, and propose control methods once an issue is verified and documented.

BUSINESS PRACTICES – MODIFIED POLICIES

- **Policy 1.11: Public Health Protection**
  - The City will conduct regular inspections of its water system and any non-public water supply systems connected to it, in collaboration with the Washington State Department of Health.
  - To protect the municipally owned water supply from contamination, the City will establish and publish rules and regulations as needed. The City will take all necessary measures to enforce the regulations to prevent any risks to public health associated with water supply contamination. [ACC 13.12.080]

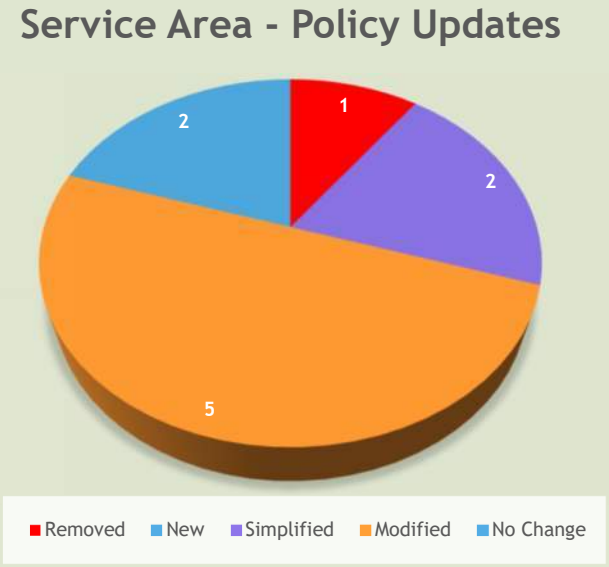
- **Policy 1.15: Fire Hydrant Use**
  - Fire hydrant use is a permitted activity unless that use is conducted by authorized City or Fire Authority employees. [ACC 13.06.415 & 13.12.035]

BUSINESS PRACTICES – NEW POLICIES

- **Policy 1.1: Element of City Comprehensive Plan**
  - **Incorporate the Water Comprehensive Plan as an Element of the City's Comprehensive Plan.**

SERVICE AREA - GOAL

Goal 2: Ensure sustainable provision of retail water services through the development and implementation of policies that define the duty to serve and conditions of service, while adhering to best management practices to meet the needs of the community.



SERVICE AREA – REMOVED POLICIES

- **Policy 3.3.7: Agency Coordination**
  - The City should coordinate closely with adjacent jurisdictions to determine applicable regulatory requirements, growth projections, and opportunities for joint projects. Agreements should be prepared between the pertinent parties on all joint projects.
  - The City shall protect the municipal water supply from adverse impacts resulting from the activities of adjacent purveyors.

SERVICE AREA – MODIFIED POLICIES

- **Policy 2.4: Conditions of Service**
  - For areas within the Retail Water Service Area, the City will provide water service to new customers, conditioned on the agreement that any infrastructure improvements provided by the developer/development is in compliance with City water system standards.
  - In addition, the City requires that residents within the City's Potential Annexation Areas will receive water services from the City, to the extent practical. The City will work with existing water purveyors within the City limits and within the City's Potential Annexation Areas in order to provide fair and equitable water service. New customers within the City's Potential Annexation Areas are to sign an Annexation Agreement before a Water Availability Certificate is issued.

SERVICE AREA – MODIFIED POLICIES

- **Policy 2.5: Satellite Systems Assistance**
  - The City recognizes there may be instances where satellite system water providers require assistance with providing water service. In these cases, the City may consider providing assistance on a case-by-case basis. The assistance could take a variety of forms, such as offering technical support and/or access to City infrastructure to help with the provision of water service. Ultimately, the decision to provide assistance will be based on the specific needs and circumstances of the water provider and will be made on a case-by-case basis after careful consideration.

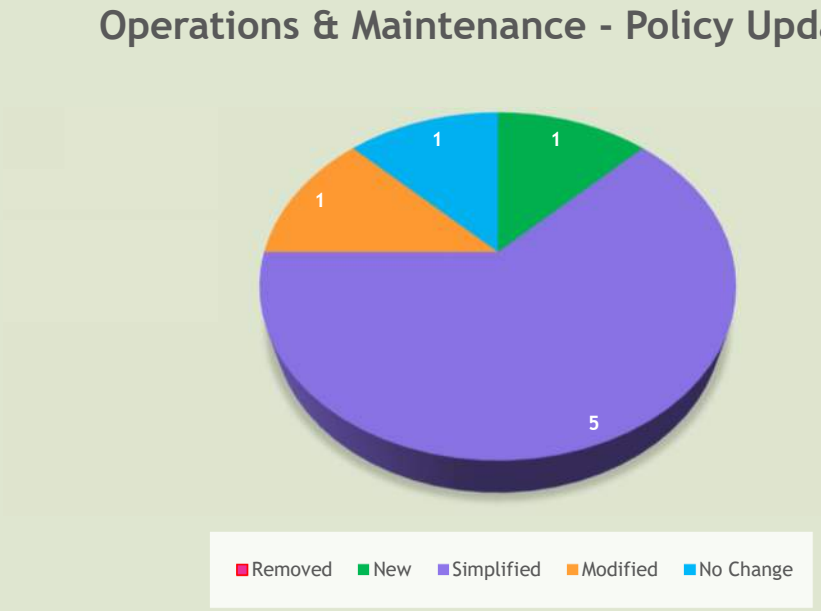
- **Policy 2.6: Satellite System Connecting to City Service**
  - The City will not assume ownership of any satellite water system, unless it meets all current City standards. The responsibility and all costs to bring a satellite system up to City standards and any infrastructure necessary to connect the satellite system to the City's water system network, shall be the system owner(s). [ACC 13.06.150]

SERVICE AREA – MODIFIED POLICIES

- **Policy 2.8: Concurrency of Improvements for Service**
  - **Provision of water service, including supply, in the City's Retail Water Service Area is conditioned on concurrency with development and the necessary water facilities, including water right permit(s) and certificate(s), are available and adequate to serve the development at the time it is ready for occupancy and use, as required by the Water Comprehensive Plan. Water service may not always be immediately available for a new development. The property developer must provide the required water system facilities before the City can provide water service, if the facilities do not already exist, or are not under construction or under a binding development agreement.**

OPERATIONS AND MAINTENANCE - GOAL

Goal 3: Employ operations and maintenance best management practices, which includes a commitment to training and certification opportunities for its employees.



OPERATIONS AND MAINTENANCE – MODIFIED POLICIES

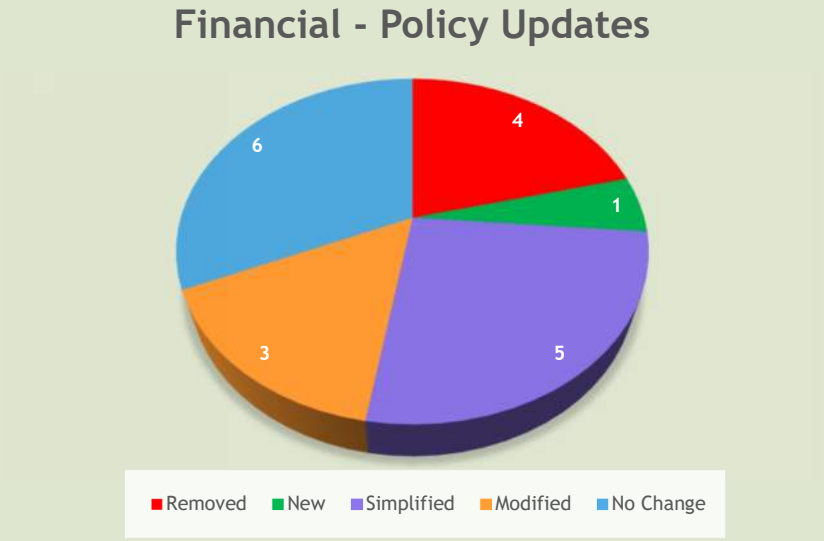
- **Policy 3.5: Pressure Reducing Valve Program**
  - To maximize system operational efficiency, conserve resources and provide consistent water service to customers of the water system, the City will adjust all water pressure reducing valves to the proper setting based on the frequency outlined in the operation and maintenance chapter of the Comprehensive Water Plan.

OPERATIONS AND MAINTENANCE – NEW POLICIES

- **Policy 3.7: ADU Metering**
  - **Property owners with accessory dwelling units (ADUs) on a single-family property may choose to supply the ADU from a master meter serving both units or separate meter installed to serve the ADU at owner's expense. Water usage of each ADU will be billed to the property owner based on readings from the master meter or individual meter serving the ADU, whichever is applicable.**

FINANCIAL - GOAL

Goal 4: Manage the water utility in a professional manner in compliance with applicable laws, regulations, and City financial policies, which requires ongoing monitoring of revenues and expenses in order to make prudent business decisions and report to City officials, as needed, regarding the status of utility operations.



FINANCIAL – REMOVED POLICIES

- **Policy 3.5.2: Water Use from Fire Hydrants**
  - All hydrant water sales shall be metered and require a hydrant meter use permit that authorizes the use of hydrants.

- **Policy 3.5.7: Capital Facilities Plan (summary)**
  - Fund utilities through user fees and grants.
  - Explore joint ventures for facility construction and coordination.
  - Provide assistance and funding for beneficial developer-initiated improvements.
  - Prioritize financial feasibility before constructing facilities.

FINANCIAL – REMOVED POLICIES

- **Policy 3.5.8: Capital Project**
  - Enterprise fund working capital in excess of that needed for operations may be used for capital needs in order to conserve the debt capacity of those funds for major facility expansions to meet future needs. [BBP Policies – 6, (Page 41)]

- **Policy 3.5.14: Water Rate Uniformity**
  - Water rates should be uniform for all water utility customers of the same class throughout the City.

FINANCIAL – MODIFIED POLICIES

- **Policy 4.7: Development Charge Cost Recovery**
  - The City shall continue to recognize the overall system impacts of new development upon the City water system through the collection and appropriate use of system development charges or similar fees. [ACC 13.41.020]

- **Policy 4.9: Water Rate Levels**
  - Water rates will be set at a level sufficient to cover the on-going expenses of the water utility, including operations, maintenance, repair, replacement, and capital improvements, as well as the general business expenses. Additionally, rates shall account for the depreciation of assets to ensure that the utility has adequate funds to maintain its infrastructure and facilities. Furthermore, the rates shall enable the water utility to maintain sufficient reserves.

FINANCIAL – MODIFIED POLICIES

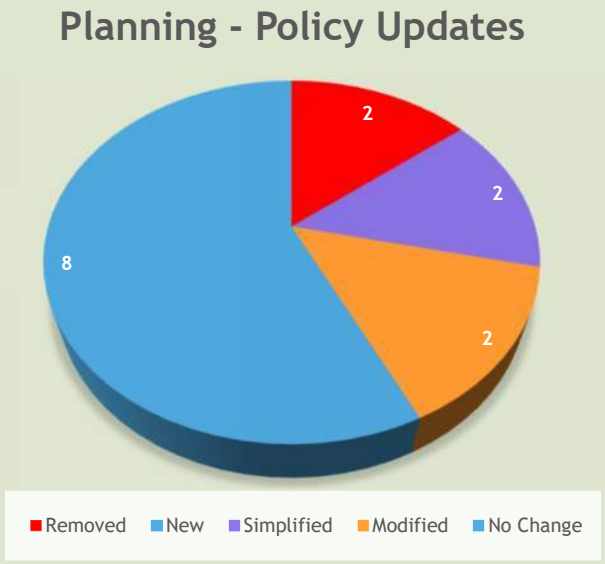
- **Policy 4.11: Water Rate Equity**
  - The water-rate structure will allocate costs between the different customer classes. Rates will be established on a "Cost of Service" basis so that each customer class pays its prorated share of the total costs needed to operate and maintain the water utility. All projected future costs will be allocated to each customer class by using established criteria that reflect the benefit that each customer class receives from the service. A Cost of Service and Rate Study will be performed periodically to ensure ongoing equity between customer classes.

FINANCIAL – NEW POLICIES

- **Policy 4.3: Rates and Charges**
  - **The City Council establishes rates and charges to be paid by a customer receiving water service from the City. As a condition of supplying a customer water service, the City reserves the right to temporarily discontinue service at any time without notice to the customer and the City will not be liable for damages for service interruptions or failure. [ACC 13.06.065]**

PLANNING - GOAL

Goal 5: Employ best management practices related to water supply planning and capital facility planning activities, which includes conditions for service extensions, fire system responsibility, oversizing, and service pressures and flow.



PLANNING – REMOVED POLICIES

- **Policy 3.6.1: Connections for Existing Wells (summary)**
  - Landowners must extend the municipal water system at their own cost when applying for water service. Owners near a water line must connect to the municipal system for new nonresidential construction.
  - Private well owners must seek authorization to transfer water rights and decommission wells before connecting to the municipal system. Auburn water system applicants must agree not to install irrigation wells.

- **Policy 3.6.6: Fire System Responsibility**
  - The City should provide and maintain water-system infrastructure to deliver adequate water for fire protection to retail customers served by the multi-source municipal water system. The multi-source water system, including water mains, storage facilities, hydrants, booster-pump stations, and related facilities, shall be designed to meet all applicable codes at the time of construction. The City should maintain, repair, or replace mains, lines, hydrants, and valves as necessary to keep the facilities in good working order.

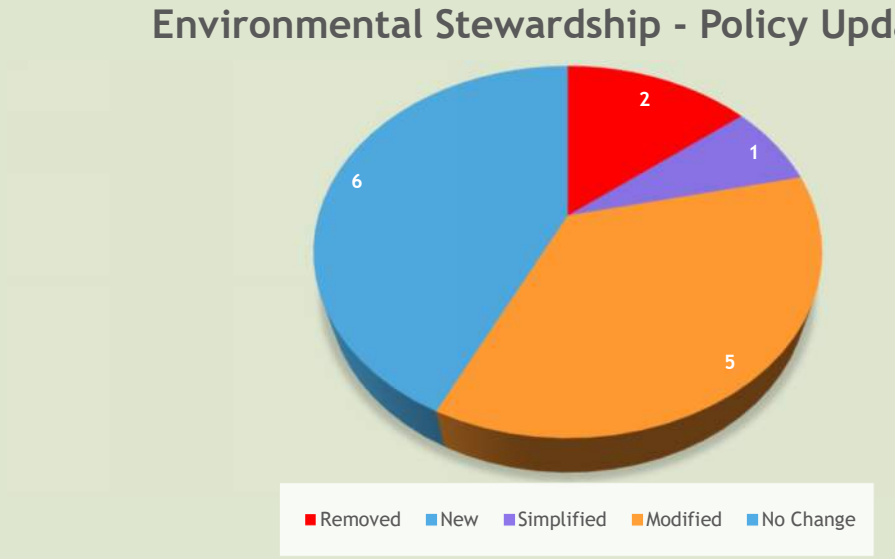
PLANNING – MODIFIED POLICIES

- **Policy 5.1: Service Extension (summary)**
  - Water system extensions must meet City codes and standards. Upgrades are required for systems not meeting City standards. Water mains must be extended across the full width of the property for future extensions.
  - Water system extensions for new developments should be built before or alongside development. Financing options like System Development Charges credits, Local Improvements Districts, and payback agreements may be utilized.

- **Policy 5.5: Capital Facilities Plan**
  - The City is required by the Washington State Growth Management Act to adopt a Capital Facilities Plan. The plan will include capital projects and capital project programs for the water utility for a six-year period. Identified projects and programs will be financially constrained and broken-down into capacity and non-capacity projects and programs. The City will match revenue sources to capital projects based on sound fiscal policies.

ENVIRONMENTAL STEWARDSHIP - GOAL

Goal 6: Employ best management practices related to water environmental stewardship and the Water utility's dedication to develop and implement facilities and programs that will protect the environment, including water conservation, demand management and water shortage response.



ENVIRONMENTAL STEWARDSHIP – REMOVED POLICIES

- **Policy 3.7.3: Natural Resources**
  - Promote conservation of energy, water, and other natural resources in the location and design of public facilities. [CFP Policy 3.1, (Page 13)]

- **Policy 3.7.9: Mining Impacts**
  - The City shall consider impacts of mining on groundwater and surface water quality as well as possible changes in hydrology as a result of the mining during the environmental review process and require appropriate mitigating measures to prevent water quality degradation. [EN-50, (Page 9-11)]

ENVIRONMENTAL STEWARDSHIP – MODIFIED POLICIES

- **Policy 6.2: Water Shortage or Emergency Response**
  - In the event of a current or threatened water-supply shortage, the Mayor may declare a water shortage or emergency and issue water use restrictions or conservation measures as necessary and consistent with the Water Shortage Response plan. The Public Works Department is responsible for implementing these measures and making reasonable attempts to notify affected customers. [ACC 13.14]

- **Policy 6.3: Water Quality Responsibility**
  - The City shall provide water to all water-system customers that meet all state and federal water quality standards. The City shall take the actions necessary to ensure that all water quality standards are met to the point of delivery (meter). The customer is responsible for maintaining water quality from the meter to the actual point of use.

ENVIRONMENTAL STEWARDSHIP – MODIFIED POLICIES

- **Policy 6.4: Water Resource Protection**
  - The City shall maintain a Water Resource Protection Program that incorporates best management practices and adaptive management concepts, to protect the City's groundwater supplies from degradation.
  - The Comprehensive Water Plan shall provide for the evaluation of existing and potential future groundwater sources with regard to threats to the quantity and quality of such sources. The Plan shall ensure that strategies are established for the protection of groundwater sources that are used or likely to be used for public water supplies.

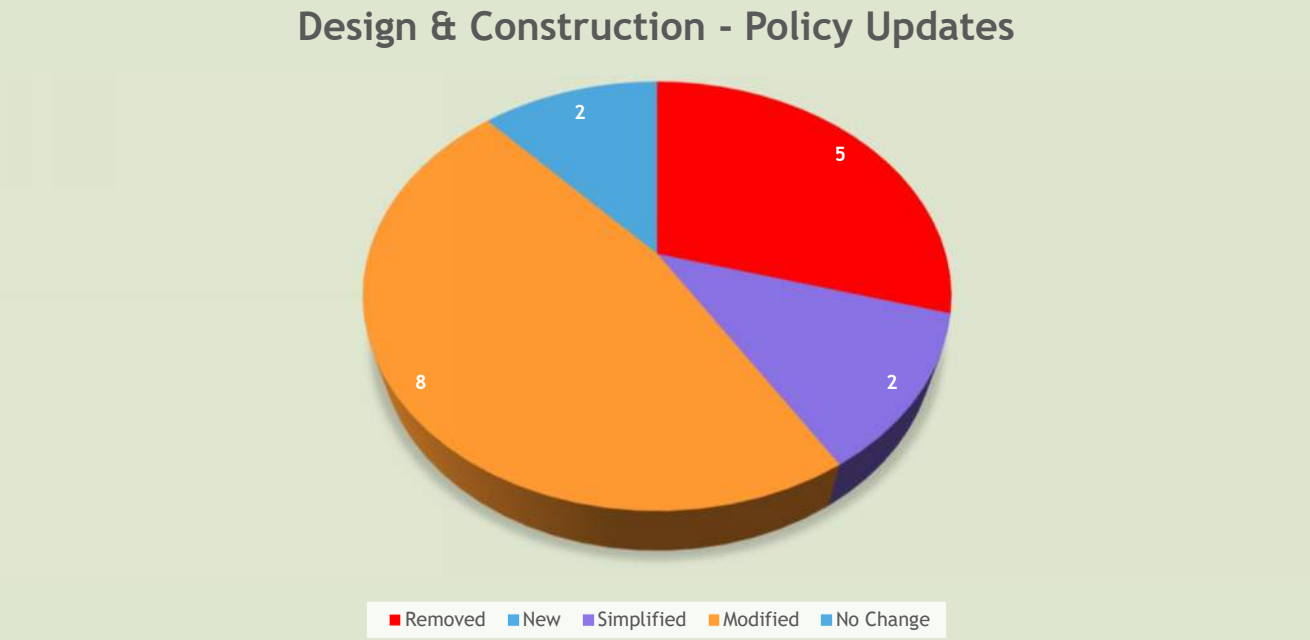
- **Policy 6.6: Springs Protection**
  - Protection of the City's Coal Creek Springs and West Hill Spring watersheds, wells, and other sources shall be a high priority in the designation of appropriate land uses in the vicinity of these areas and facilities.

ENVIRONMENTAL STEWARDSHIP – MODIFIED POLICIES

- **Policy 6.8: Water Use Efficiency Goals**
  - **The City will continue implementation of its existing Water Use Efficiency Program. The City will target a 1 percent reduction in equivalent residential unit value for each year until reaching a planning Equivalent Residential Unit (ERU) value of 172 gpd/ERU. A goal of the City is to reduce peaking factors that occur during the high usage periods to maximize existing water supply sources. City's goal shall be in compliance and consistent with all applicable local, state, and federal laws and regulations within the Retail Water Service Area.**

DESIGN AND CONSTRUCTION - GOAL

Goal 7: Employ best management practices related to the design and construction of water facilities.



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DESIGN AND CONSTRUCTION – REMOVED POLICIES

- **Policy 3.8.6: Fire Protection Services**
  - Services for fire protection are required to be installed with the proper backflow assemblies. It shall be mandatory for the installation to be made with an approved water flow alarm, as approved by the City and the chief of the Fire Authority, or their delegate, on each such service installation. [ACC 13.06.270]

- **Policy 3.8.10: Fire Flow Duration**
  - The time or duration, for which a fire flow is to be provided, is based on the quantity of fire flow required:
    - Required Fire Flow; Duration
      - 2,000 gpm or less: 2 hours
      - 2,001 to 3,000 gpm: 3 hours
      - 3,001 to 4,000 gpm: 4 hours
      - 4,001 to 5,000 gpm: 5 hours
      - 5,001 to 6,000 gpm: 6 hours
      - 6,001 to 7,000 gpm: 7 hours
      - 7,001 to 8,000 gpm: 8 hours

DESIGN AND CONSTRUCTION – REMOVED POLICIES

- **Policy 3.8.13: Construction Standards (summary)**
  - Projects must comply with standard plans and specifications from the Washington State Department of Transportation and County road standards. City will maintain services during construction and reconnect owner-maintained service pipes upon completion.

- **Policy 3.8.14: Hydrants (summary)**
  - Dead-end mains supplying hydrants over 50 feet must be at least 8 inches in size.
  - New hydrants in commercial, industrial, and multifamily residential areas must be supplied by at least 8-inch mains.
  - Hydrants must meet specific standards for valve opening, hose nozzles, steamer port, and connections.
  - Maximum distances between fire hydrants vary based on zone type.
  - Hydrant spacing requires approval from the Fire Authority, typically at street intersections.
  - Hydrant leads should be at least 6 inches in diameter, with leads over 50 feet being at least 8 inches in diameter.

DESIGN AND CONSTRUCTION – REMOVED POLICIES

- **Policy 3.8.15: Dead-End Mains**
  - **Provisions shall be made wherever appropriate in any project for looping all dead-end or temporarily dead-end mains. Construction plans must be approved by the appropriate water authority prior to the commencement of construction. Where it is not feasible at the time of approval and installation to loop a water system, the loop requirement may be relaxed if the intent of the code is met and a stub is provided on the main for future expansion. (Ordinance 3064 § 1, 1976) [ACC 13.16.090]**

DESIGN AND CONSTRUCTION – MODIFIED POLICIES

- **Policy 7.1: Service Ownership / Responsibility**
  - The City shall own and maintain the service line between the main and the meter, the meter and setter, the meter box, and tail piece. The property owner shall own and maintain the service line from the tail piece to the point of service including pressure-reducing valves, pumps, or cross-connection assemblies beyond the meter. [ACC 13.06.027]
  - For unmetered connections (fire sprinklers), City ownership ceases at the fitting on the water line. Where on-site fire hydrants are required, the City shall own the mains and hydrants located within established easements, unless the on-site mains and hydrants are located behind a master meter and designated as private.

- **Policy 7.2: Source of Supply**
  - The City shall have sufficient system-wide supply facilities (including both permanent and emergency interties) to meet the Maximum Day Demand with the largest active water supply source out of service. Since power continuity is a concern, auxiliary power, such as an installed or portable generator of sufficient capacity to power the well or spring pumps should be provided.

DESIGN AND CONSTRUCTION – MODIFIED POLICIES

- **Policy 7.3: Pump Stations**
  - A minimum of two pumps or a complete spare pump will be provided for each distribution system pump station to provide flexibility and system redundancy. Where multiple pumps are provided, the pumps will be sized so that the station can meet Maximum Day Demand flow conditions with the largest pump out-of-service. If the area is not served by gravity by a reservoir, booster pumps (along with any supply available) will be sized to provide peak hour demand and fire demand for the service area should the largest pump be out-of- service. Since power continuity is a concern, auxiliary power, such as an installed or portable generator of sufficient capacity to power the station with any single pump out of service should be provided.

- **Policy 7.4: Storage Reservoirs**
  - Reservoir redundancy is not a requirement for service areas where the Maximum Day Demand and fire demand can be met by supply or pumping.

DESIGN AND CONSTRUCTION – MODIFIED POLICIES

- **Policy 7.8: Fire-Flow Quantity**
  - The quantity of water available for firefighting establishes an important level of service for a water system. The fire flow requirements shall be based on the minimum City fire flow requirements specified in the current City of Auburn Engineering Design Standards. Additional fire flow may be required per the International Fire Code.
  - Where the City determines higher fire flows are required than the minimums, the higher flow will be the criterion used to determine the required system improvements. Fire flows are to be provided during Maximum Day Demand at the pressure requirements discussed in the paragraphs on Distribution System.

DESIGN AND CONSTRUCTION – MODIFIED POLICIES

- **Policy 7.9: Reservoir Sizing**
  - The City reservoir storage components shall be sized to meet WAC 246-290-235 and Department of Health recommendations and requirements.

- **Policy 7.11: System Pressure**
  - The City of Auburn has established a criterion for minimum pressure within the water distribution system of 30 psi for all new facilities during Peak Hour Demand.
  - The distribution system shall be capable of providing required fire flow under Maximum Day Demand conditions. During these conditions, a minimum pressure of 20 psi is allowed at any point within the distribution system when firefighting storage and equalizing storage are depleted (WAC 246-290-230 Distribution Systems). The maximum target pressure within the water distribution system is 80 psi.

DESIGN AND CONSTRUCTION – MODIFIED POLICIES

- **Policy 7.12: Elements of Required Storage**
  - The City storage reservoir volume requirements are comprised of three separate categories: Equalizing Storage (when necessary), Fire Fighting Storage, and Emergency Storage. In addition, reservoirs may include a "dead storage" volume that is not useful because of the water system configuration.
  - Auburn will provide sufficient storage volume so that each storage component is provided separately, recognizing that a fire could occur during an emergency (supply or pump station out-of-service). As a result, nesting of storage (using the same storage for both emergency and firefighting) is not acceptable and the City requires these volumes to be stacked. Evaluation of the required reservoir volume must be done by analyzing each reservoir independently to ensure that adequate storage is provided to meet the needs of customers within the reservoir service area. Storage within a zone of higher elevation can be used to meet the storage requirements of lower zones served by the reservoir.

WATER POLICY REVIEW

Any Questions?

POLICIES AND CRITERIA

INTRODUCTION

The City of Auburn (City) manages the water utility in accordance with established water- system policies that govern various facets of utility operations. City policies are established by the City in order to provide a vision or mission of the water utility and to provide a framework for the design, operation, and ongoing wellbeing of the City's water utility.

The policies included in this Water Comprehensive Plan are developed specifically for the City's multi-source municipal water system and seek to provide consistent treatment to all utility customers and to provide documentation to current water-system customers as well as those considering service from the City. It should be noted that what is included in these policies is limited to those things related to the water system and its design, maintenance, and operation. There are other policies and criteria that pertain to the water utility the City has in place regarding land use, development and financial components, which are not directly addressed in this plan, that could still have an impact on the needs of the water system. These policies and criteria may include factors such as zoning regulations, building codes, infrastructure requirements, and financing options. These additional factors will be considered when planning for the water system and to meet the needs of the community in a sustainable and effective matter.

The City's Water Comprehensive Plan is based upon the following mission statement for the water utility:

"The City will provide for the efficient, environmentally sound and safe management of the existing and future water system within Auburn's service area."

The City's Water utility policies are grouped within goal statements that are headlined under the following categories:

- Business Practices
- Service Area
- Operations and Maintenance
- Financial
- Planning
- Environmental Stewardship
- Design and Construction

1.0 BUSINESS PRACTICES

Goal 1: To employ recognized best business practices resulting in creating a sustainable, efficient, and cost-effective operation of the water utility.

Policy 1.1 Element of City Comprehensive Plan

Incorporate the Water Comprehensive Plan as an Element of the City's Comprehensive Plan.

Policy 1.2 Water Service By Others

Water Service supplied by outside purveyors within Auburn City limits are required to obtain a franchise with the City and are required to conform to all federal, state, and local laws and regulations. [ACC 20.02.040 and 20.04]

Policy 1.3 Asset Improvements

The City will develop and implement system improvements, infrastructure renewal (repair, rehabilitation, or replacement), and operations and maintenance programs for the water system according to asset management principles that address levels of service, address the triple bottom line (economic, social, and environmental benefits and costs), minimize asset life cycle costs, and incorporate risk management into decision-making.

Policy 1.4 Connections to Water System

Any connection to the public water system requires obtaining an approved utility permit for service and said connection shall be made in accordance with City of Auburn Engineering Design and Construction Standards. [ACC 13.06.050, 13.06.090 and 13.06.100]

Policy 1.5 Asset Database

The City will maintain an asset database to be used in prioritizing asset maintenance and repair and replacement activities. The database includes asset age and material information, and will be validated and updated through inspections, records review and other available information.

Policy 1.6 Condition Assessments of Assets

The City will perform condition assessments of assets through development and implementation of an inspection schedule for all assets.

Policy 1.7 Design Life of Assets

The City will assign industry standard design life for all assets. The actual physical assessment will be compared to the theoretical design life to determine the optimal economic life. The City will attempt to repair or replace system assets before they exceed their economic life.

Policy 1.8 Maintenance Activities for Asset Management

The City will conduct maintenance activities at a level that is consistent with optimizing system reliability, asset economic life, and system performance. The City will develop schedules for maintenance of all water system assets.

Policy 1.9 Addressing Water Quality Complaints

The City will monitor the frequency, location, and details of all water quality complaints. At a minimum, the City will respond, research the cause of, and propose control methods once an issue is verified and documented.

Policy 1.10 Security of Assets

Adequate measures will be taken to ensure system security. At a minimum, the City will maintain security at water facilities using the Supervisory Control and Data Acquisition system for intrusion alerts.

Policy 1.11 Public Health Protection

The City will conduct regular inspections of its water system and any non-public water supply systems connected to it, in collaboration with the Washington State Department of Health.

To protect the municipally owned water supply from contamination, the City will establish and publish rules and regulations as needed. The City will take all necessary measures to enforce the regulations to prevent any risks to public health associated with water supply contamination. [ACC 13.12.080]

Policy 1.12 Cross-Connection Prohibited

Installing or maintaining a cross connection which will endanger the water quality of the municipal water system is strictly prohibited and shall be abated immediately or water service may be discontinued. [ACC 13.12.040]

Policy 1.13 Cross-Connection Control

To obtain water service to a property, the City may require any customer to install a pressure reducing valve, backflow prevention assembly, or pressure relief valve or similar devices at any location where the City determines there is a need to protect the municipal water system. [ACC 13.12.070]

Policy 1.14 All Meters

All water meters owned by the City, shall not be removed except by the City. Lost, broken, or damaged water meters shall be replaced or repaired by or under the direction of the City. [ACC 13.06.330]

Policy 1.15 Fire Hydrant Use

Fire hydrant use is a permitted activity unless that use is conducted by authorized City or Fire Authority employees. [ACC 13.06.415 & 13.12.035]

Policy 1.16 Delinquent Accounts

The City has established procedures for disconnecting water service to delinquent accounts for non-payment. [ACC 13.06.290]

Policy 1.17 Leak Adjustment

The City has established procedures for property owners to request a limited leak adjustment of the water bill for water that leaked from the service line between the City water meter and the point where the line enters the building.

2.0 SERVICE AREA

Goal 2: Ensure sustainable provision of retail water services through the development and

implementation of policies that define the duty to serve and conditions of service, while adhering to best management practices to meet the needs of the community.

Policy 2.1 Wholesale Water

The City will plan to provide water service to wholesale customers with firm contracts. As supply permits, the City may provide water to wholesale customers without firm contracts unilaterally or as part of a capital improvement partnership agreement.

Policy 2.2 Government Consistency

The City's Water Comprehensive Plan will be consistent with local, county, and state land use authorities.

Policy 2.3 Duty to Serve

The City will plan to provide water service to all customers within the City's Retail Water Service Area (RWSA) in accordance with WAC 246-290-106. Revisions to the City's RWSA shall be made only by written agreement and in accordance with local, county and state regulations.

Policy 2.4 Conditions of Service

For areas within the Retail Water Service Area, the City will provide water service to new customers, conditioned on the agreement that any infrastructure improvements provided by the developer/development is in compliance with City water system standards.

In addition, the City requires that residents within the City's Potential Annexation Areas will receive water services from the City, to the extent practical. The City will work with existing water purveyors within the City limits and within the City's Potential Annexation Areas in order to provide fair and equitable water service. New customers within the City's Potential Annexation Areas are to sign an Annexation Agreement before a Water Availability Certificate is issued.

Policy 2.5 Satellite Systems Assistance

The City recognizes there may be instances where satellite system water providers require assistance with providing water service. In these cases, the City may consider providing assistance on a case-by-case basis. The assistance could take a variety of forms, such as offering technical support and/or access to City infrastructure to help with the provision of water service. Ultimately, the decision to provide assistance will be based on the specific needs and circumstances of the water provider and will be made on a case-by-case basis after careful consideration.

Policy 2.6 Satellite System Connecting to City Service

The City will not assume ownership of any satellite water system, unless it meets all current City standards. The responsibility and all costs to bring a satellite system up to City standards and any infrastructure necessary to connect the satellite system to the City's water system network, shall be the system owner(s). [ACC 13.06.150]

Policy 2.7 Water Supply Management and Planning

The City will promote effective water supply management and planning consistent with the "South King County Coordinated Water System Plan," as well as regional water supply and conservation

goals.

Policy 2.8 Concurrency of Improvements for Service

Provision of water service, including supply, in the City's Retail Water Service Area is conditioned on concurrency with development and the necessary water facilities, including water right permit(s) and certificate(s), are available and adequate to serve the development at the time it is ready for occupancy and use, as required by the Water Comprehensive Plan. Water service may not always be immediately available for a new development. The property developer must provide the required water system facilities before the City can provide water service, if the facilities do not already exist, or are not under construction or under a binding development agreement.

3.0 OPERATIONS AND MAINTENANCE

Goal 3: Employ operations and maintenance best management practices, which includes a commitment to training and certification opportunities for its employees.

Policy 3.1 System Monitoring and Operation

The City will monitor the water system through use of computerized control system and adjust operations as necessary for efficient water system operation.

Policy 3.2 Regular Inspection of Facilities

The City will conduct routine inspections and maintenance on its water facilities including wells, springs and booster pump stations, in accordance with the frequency outlined in the operation and maintenance section of the Water Comprehensive Plan.

Policy 3.3 Meter Reading

Water service meters shall be read regularly to document customers water usage for billing purposes.

Policy 3.4 Customer Service

The City is committed to resolving customer complaints. All complaints are documented and reviewed and tended to by the appropriate staff member for investigation and resolution.

Policy 3.5 Pressure Reducing Valve Program

To maximize system operational efficiency, conserve resources and provide consistent water service to customers of the water system, the City will adjust all water pressure reducing valves to the proper setting based on the frequency outlined in the operation and maintenance chapter of the Comprehensive Water Plan.

Policy 3.6 Employee Certification

The City will pay for annual certification, provide time and tuition for certification training courses, and time for certification exams. In addition, the City will provide its staff opportunities for obtaining the continuing education required to maintain certification.

Policy 3.7 ADU Metering

Property owners with accessory dwelling units (ADUs) on a single-family property may choose to supply the ADU from a master meter serving both units or separate meter installed to serve the ADU at owner's expense. Water usage of each ADU will be billed to the property owner based on readings from the master meter or individual meter serving the ADU, whichever is applicable.

4.0 FINANCIAL

Goal 4: Manage the water utility in a professional manner in compliance with applicable laws, regulations, and City financial policies, which requires ongoing monitoring of revenues and expenses in order to make prudent business decisions and report to City officials, as needed, regarding the status of utility operations.

Policy 4.1 Source Meters

All sources will be metered to measure the amount of water produced and calibrated annually to ensure an accurate accounting of water produced.

Policy 4.2 Fiscal Stewardship

All moneys due to the City for water service of any kind or for penalties relating to the municipally owned water system of the City shall be paid to the water fund. The water fund will not be commingled with any other fund or funds of the City. [ACC 13.06.030]

Policy 4.3 Rates and Charges

The City Council establishes rates and charges to be paid by a customer receiving water service from the City. As a condition of supplying a customer water service, the City reserves the right to temporarily discontinue service at any time without notice to the customer and the City will not be liable for damages for service interruptions or failure. [ACC 13.06.065]

Policy 4.4 Self-Sufficient Funding

The City maintains the water utility fund as a self-supporting enterprise fund. Water utility revenues come primarily from customer charges and are dependent upon established rates. The Revised Code of Washington requires that utility funds be used only for stated utility purposes. Although General Fund revenues can be used to fund water utility programs, the City has a general policy of not doing so. The City budgeting process should include a balanced and controlled annual water utility budget. This requires careful preparation of expense and revenue projections that may be reviewed by City management, the general public, and the City Council before approval of any rate increases.

Policy 4.5 Capital Improvement Program Level

Funding for the Capital Improvement Program (CIP) identified in the budget will be maintained at a level sufficient to assure system integrity. To the extent that the annual level of the CIP investment can be managed by scheduling and scoping of projects, the funding will be provided at a uniform level to avoid significant fluctuations and to reduce impacts on the operating budget and related rate increases. The City will maintain reasonable level of reserves in the CIP fund in order to manage cash flow variation caused by the nature of the cost and timing of projects. Utility sold

revenue bonds, Utility Local Improvement Districts, State Public Works Trust Fund loans, any available grants, system development charges and developer contributions will be considered for funding the future CIP projects.

Policy 4.6 System Development Charges

A water utility systems development charge is imposed upon all lands inside the boundary of the City and all lands outside the boundary of the City, which utilize water facilities. The utility systems development charge as set forth in the City fee schedule will be computed to consider the future and/or current value of the utility system's fixed assets, excluding contributions by developers, and outstanding bonded indebtedness, and will also consider an appropriate service unit. [ACC 13.41.030]

Policy 4.7 Development Charge Cost Recovery

The City shall continue to recognize the overall system impacts of new development upon the City water system through the collection and appropriate use of system development charges or similar fees. [ACC 13.41.020]

Policy 4.8 Payback Agreement

Payback agreements for public street and utility system improvements may be approved by the City Council. The City engineer may execute the agreements once City Council has granted approval. [ACC 13.25.050]

Policy 4.9 Water Rate Levels

Water rates will be set at a level sufficient to cover the on-going expenses of the water utility, including operations, maintenance, repair, replacement, and capital improvements, as well as the general business expenses. Additionally, rates shall account for the depreciation of assets to ensure that the utility has adequate funds to maintain its infrastructure and facilities. Furthermore, the rates shall enable the water utility to maintain sufficient reserves.

Policy 4.10 Water Rate Structure

The water-rate structure will be set by customer class based on costs to serve each customer class. The water-rate structure shall support water conservation and wise use of water resources objectives as required by State law.

Policy 4.11 Water Rate Equity

The water-rate structure will allocate costs between the different customer classes. Rates will be established on a "Cost of Service" basis so that each customer class pays its prorated share of the total costs needed to operate and maintain the water utility. All projected future costs will be allocated to each customer class by using established criteria that reflect the benefit that each customer class receives from the service. A Cost of Service and Rate Study will be performed periodically to ensure ongoing equity between customer classes.

Policy 4.12 Frequency of Water Rate Adjustments

Water rates will be evaluated as part of the water utility budgeting process to ensure that budgeted expenses, including the impact of increasing water-supply regulations, are reflected in current

rates.

Policy 4.13 Financial Reserve Levels

The City shall maintain water utility cash balances to serve as a contingency reserve fund. The fund should maintain a balance of $1,000,000 to cover working capital needs and emergency contingencies and cash flow fluctuations.

Policy 4.14 Charges for Services Outside the City Limits

The City may include a rate adjustment for water service outside the City limits.

Policy 4.15 Low-Income Assistance Program

The Utility Rate Exemption Program currently provides water rate assistance for specific low-income senior customers or for specific low-income totally or permanently disabled customers. [ACC 13.24.010]

5.0 PLANNING

Goal 5: Employ best management practices related to water supply planning and capital facility planning activities, which includes conditions for service extensions, fire system responsibility, oversizing, and service pressures and flow.

Policy 5.1 Service Extension

The City will consider extending water system services to areas within its existing RWSA, consistent with adopted annexation policies, and subject to the recovery of costs and the availability of sufficient financial and staffing resources. Property owners will be responsible for equitable share of extension costs upon connection to the system.

Water system extensions must comply with current City codes and engineering design and construction standards. Connection to existing systems not meeting City water system standards must be upgraded at property owner's expense before service is provided.

To serve new developments, water system extensions must be built prior to or simultaneously with development, according to the size and configuration identified by the Comprehensive Water Plan. The City may participate in financing through System Development Charges credits, Local Improvements Districts (LID), and/or payback agreements, as allowed by law, to support such improvements.

All persons or LIDs desiring to extend City water mains in the City must extend across the full width of the property being served to accommodate future extensions. [ACC 13.08.020]

Policy 5.2 Facility Extension Agreement

The City requires a Facility Extension Agreement to be executed for all public water system extensions constructed by development.

Policy 5.3 System-Wide Reliability

The City shall invest the resources necessary to construct, maintain, and renew water-system infrastructure and equipment to ensure that customers are provided consistent, reliable service in accordance with WAC 246-290-420 Reliability and Emergency Response. Wherever possible, the City should anticipate system interruptions and design and operate the system to minimize the impact of such interruptions to customers.

Policy 5.4 Emergency Preparedness

The City shall update, as needed, a citywide Emergency Response Plan, complying with applicable RCW and WAC requirements, that will include the water system operations. The water system portion of the plan should ensure that adequate provisions are in place to provide for an organized response to the most likely kinds of emergencies that might endanger the health and safety of the general public or the operation of the municipal water system.

Policy 5.5 Capital Facilities Plan

The City is required by the Washington State Growth Management Act to adopt a Capital Facilities Plan. The plan will include capital projects and capital project programs for the water utility for a six-year period of time. Identified projects and programs will be financially constrained and broken-down into capacity and non-capacity projects and programs. The City will match revenue sources to capital projects based on sound fiscal policies.

Policy 5.6 Emergency Interties

The City should support emergency interties with adjacent water systems where there is a benefit to both water systems. Interties increase reliability of the City-wide water system during emergencies and other unusual operating circumstances.

Policy 5.7 Water Supply Interties

The City should consider water-supply interties on a case-by-case basis. Water supply interties should provide benefits to both water service providers and should not compromise the City's ability to serve its existing customers or its future water supply needs.

Policy 5.8 Water Supply Planning

The City's objective is to assure a continuous, safe water supply to meet firm customer demands. Provision of water service must be consistent with the goals, objectives, and policies of the City of Auburn Comprehensive Water Plan. Effects of past water conservation will be considered when projecting future water needs. Future water demands will be estimated using existing water usage patterns and projected future populations developed by the City's comprehensive Plan and consistent with the Puget Sound Regional Council data.

Policy 5.9 Oversizing

When determined to be necessary by the City to install water lines larger than are required to serve adjacent properties, the City may enter into an agreement to compensate the developer for the difference in cost of the oversizing. [ACC 13.08.040]

Policy 5.10 Service Pressure

The City should provide potable water to customers in sufficient quantity to meet maximum day demands at a pressure that meets or exceeds all minimum applicable regulations, except during emergency conditions. Property owners may install private booster pumps to achieve higher pressures under supervision of the City and in accordance with WAC 246-290-230 Distribution Systems.

Policy 5.11 Water for Irrigation

Water used for irrigation by non-single-family residential customers, shall be provided through an irrigation meter. Deduct meters shall not be used to supply water for irrigation. [ACC 13.06.230]

Policy 5.12 Water Meters

Water meters shall be placed on every domestic and irrigation service line. [ACC 13.06.320]

6.0 ENVIRONMENTAL STEWARDSHIP

Goal 6: Employ best management practices related to water environmental stewardship and the Water utility's dedication to develop and implement facilities and programs that will protect the environment, including water conservation, demand management and water shortage response.

Policy 6.1 Conservation Promotion

The City will promote water conservation and the efficient use of water resources to help ensure a sustainable water supply.

Policy 6.2 Water Shortage or Emergency Response

In the event of a current or threatened water-supply shortage, the Mayor may declare a water shortage or emergency and issue water use restrictions or conservation measures as necessary and consistent with the Water Shortage Response plan. The Public Works Department is responsible for implementing these measures and making reasonable attempts to notify affected customers. [ACC 13.14]

Policy 6.3 Water Quality Responsibility

The City shall provide water to all water-system customers that meet all state and federal water quality standards. The City shall take the actions necessary to ensure that all water quality standards are met to the point of delivery (meter). The customer is responsible for maintaining water quality from the meter to the actual point of use.

Policy 6.4 Water Resource Protection

The City shall maintain a Water Resource Protection Program that incorporates best management practices and adaptive management concepts, to protect the City's groundwater supplies from degradation.

The Comprehensive Water Plan shall provide for the evaluation of existing and potential future groundwater sources with regard to threats to the quantity and quality of such sources. The Plan

shall ensure that strategies are established for the protection of groundwater sources that are used or likely to be used for public water supplies.

Policy 6.5 Sustainable Development

The City strives to be a sustainable community: meeting the needs of the present while preserving the ability of future generations to meet their own needs.

Policy 6.6 Springs Protection

Protection of the City's Coal Creek Springs and West Hill Spring watersheds, wells, and other sources shall be a high priority in the designation of appropriate land uses in the vicinity of these areas and facilities.

Policy 6.7 Aquifer Recharge Area

The City shall consider the impacts of new development within aquifer recharge areas of potable water sources as part of its environmental review process and require any appropriate mitigation measures.[ACC 16.10.120.E]

Policy 6.8 Water Use Efficiency Goals

The City will continue implementation of its existing Water Use Efficiency Program. The City will target a 1 percent reduction in equivalent residential unit value for each year until reaching a planning Equivalent Residential Unit (ERU) value of 172 gpd/ERU. A goal of the City is to reduce peaking factors that occur during the high usage periods to maximize existing water supply sources. City's goal shall be in compliance and consistent with all applicable local, state, and federal laws and regulations within the Retail Water Service Area.

Policy 6.9 Non-Revenue Water

The City will strive to maintain levels of water leakage for its distribution system at less than 10 percent.

Policy 6.10 Leak Detection

The City is committed to a tight, non-leaking water distribution system. Each year the City will check approximately one-quarter of the water distribution system for leakage.

Policy 6.11 Reclaimed Water

The City will explore opportunities and evaluate options for wastewater reuse and rainwater reclamation on a case by case basis. These can serve as cost-effective and environmentally beneficial sources of water thereby increasing the security and reliability of the drinking water supply.

Policy 6.12 Aquifer Storage and Recovery

The City shall consider the use of aquifer storage and recovery as a conservation and demand management tool to make best use of City water resources.

7.0 DESIGN AND CONSTRUCTION

Goal 7: Employ best management practices related to the design and construction of water facilities.

Policy 7.1 Service Ownership / Responsibility

The City shall own and maintain the service line between the main and the meter, the meter and setter, the meter box, and tail piece. The property owner shall own and maintain the service line from the tail piece to the point of service including pressure-reducing valves, pumps, or cross-connection assemblies beyond the meter. [ACC 13.06.027]

For unmetered connections (fire sprinklers), City ownership ceases at the fitting on the water line. Where on-site fire hydrants are required, the City shall own the mains and hydrants located within established easements, unless the on-site mains and hydrants are located behind a master meter and designated as private.

Policy 7.2 Source of Supply

The City shall have sufficient system-wide supply facilities (including both permanent and emergency interties) to meet the Maximum Day Demand with the largest active water supply source out of service. Since power continuity is a concern, auxiliary power, such as an installed or portable generator of sufficient capacity to power the well or spring pumps should be provided.

Policy 7.3 Pump Stations

A minimum of two pumps or a complete spare pump will be provided for each distribution system pump station to provide flexibility and system redundancy. Where multiple pumps are provided, the pumps will be sized so that the station can meet Maximum Day Demand flow conditions with the largest pump out-of-service. If the area is not served by gravity by a reservoir, booster pumps (along with any supply available) will be sized to provide peak hour demand and fire demand for the service area should the largest pump be out-of- service. Since power continuity is a concern, auxiliary power, such as an installed or portable generator of sufficient capacity to power the station with any single pump out of service should be provided.

Policy 7.4 Storage Reservoirs

Reservoir redundancy is not a requirement for service areas where the Maximum Day Demand and fire demand can be met by supply or pumping.

Policy 7.5 Distribution System

The City will plan for and develop a dependable distribution network with pipeline redundancy for redirecting water to affected customers during pipeline failures and establishing multiple connections between service zones at various locations. While the aim is to create a looped water distribution system for reliability and fire flow, there may be cases where looping is not feasible, necessitating off-site improvements in developing areas. Larger water mains may be required for major distribution lines or areas with higher fire flow needs. Additionally, subdividing service area zones into smaller pressure zones aligned with topographic elevations guarantees consistent pressure in each zone.

Whenever a street is to be substantially reconstructed or a new street built, the City shall determine

whether water facilities in the street right a way shall be constructed or brought up to the size and configuration indicated by the Water Plan and Comprehensive Plan.

Policy 7.6 Fire Flow Requirements

The City has established two distinct and independent parts to the municipal water-system fire flow requirements within the City Retail Water Service Area. The first is a fire flow requirement established by the Fire Authority as a building-specific fire flow based on building use and materials of construction. The second is a multi-source municipal water system level of service criterion. The City shall require that both parts of the fire flow requirements be met as a condition of development and as a condition of any extension of the City water system.

New development, redevelopment, or change in use or occupancy (as defined by Auburn City Code) shall meet the full fire flow requirements as established by this policy. Change of occupancy is not intended to include change of tenants or proprietors. The applicant shall be responsible for installing all necessary facilities needed to serve the property and for complying with the City's development, and design and construction standards in order to meet these requirements.

Fire flow requirements for existing structures and uses or occupancies are those that were required at the time of construction, as determined by the Fire Authority and the City's water utility (since 1995). Such existing structures shall not be required to upgrade the municipal water-system infrastructure to meet current fire flow and development standards. Similarly, the City shall not be obligated to upgrade the existing water- system infrastructure to meet current fire-flow criteria and standards. The City should consider the benefit of improved fire flows when analyzing the need, design, and merits of municipal water-system improvements.

Policy 7.7 Fire-Flow Improvements

As resources become available, the City shall make the City's municipal water-system improvements to meet the current fire flow criteria. Such system improvements may include replacing undersized water mains and pumping stations or correcting fire hydrant deficiencies of spacing and standardization where current standards are not met. When prioritizing and scheduling system improvements, the City capital facilities planning procedures should consider the severity of deficiencies. The City should seek opportunities to make improvements in conjunction with other City projects to achieve economic efficiency.

Policy 7.8 Fire-Flow Quantity

The quantity of water available for firefighting establishes an important level of service for a water system. The fire flow requirements shall be based on the minimum City fire flow requirements specified in the current City of Auburn Engineering Design Standards. Additional fire flow may be required per the International Fire Code.

Where the City determines higher fire flows are required than the minimums, the higher flow will be the criterion used to determine the required system improvements. Fire flows are to be provided during Maximum Day Demand at the pressure requirements discussed in the paragraphs on Distribution System.

Policy 7.9 Reservoir Sizing

The City reservoir storage components shall be sized to meet WAC 246-290-235 and Department of Health recommendations and requirements.

Policy 7.10 Individual Service Area Water Supply Requirements

The City will provide sufficient water supply capacity to meet Maximum Day Demand for each of the four service areas (Valley service area, Academy service area, Lea Hill service area and the Lakeland Hills service area) and any sub systems within these service areas utilizing a combination of reliable sources, reliable pump stations and reservoirs in accordance with system reliability criteria.

Policy 7.11 System Pressure

The City of Auburn has established a criterion for minimum pressure within the water distribution system of 30 psi for all new facilities during Peak Hour Demand.

The distribution system shall be capable of providing required fire flow under Maximum Day Demand conditions. During these conditions, a minimum pressure of 20 psi is allowed at any point within the distribution system when firefighting storage and equalizing storage are depleted (WAC 246-290-230 Distribution Systems). The maximum target pressure within the water distribution system is 80 psi.

Policy 7.12 Elements of Required Storage

The City storage reservoir volume requirements are comprised of three separate categories: Equalizing Storage (when necessary), Fire Fighting Storage, and Emergency Storage. In addition, reservoirs may include a "dead storage" volume that is not useful because of the water system configuration.

Auburn will provide sufficient storage volume so that each storage component is provided separately, recognizing that a fire could occur during an emergency (supply or pump station out-of-service). As a result, nesting of storage (using the same storage for both emergency and firefighting) is not acceptable and the City requires these volumes to be stacked. Evaluation of the required reservoir volume must be done by analyzing each reservoir independently to ensure that adequate storage is provided to meet the needs of customers within the reservoir service area. Storage within a zone of higher elevation can be used to meet the storage requirements of lower zones served by the reservoir.

AGENDA BILL APPROVAL FORM

Agenda Subject:
Ordinance No. 6912 (Thomas) (10 Minutes)

Date:
June 5, 2023

Department:
Finance

Attachments:
Ordinance 6912 Auburn Wholesale Rate update 2023
Exhibit A - Auburn Wholesale Water Rates 13-06-360
Memorandum Auburn Wholesale Water Rate
Auburn Wholesale Water Rate Presentation

Budget Impact:

Administrative Recommendation:

For discussion only.

Background for Motion:

Background Summary:

The City of Auburn has agreements to provide wholesale water to Lake Meridian Water District and the City of Algona. In 2022, the City contracted with FCS Group to perform a utility rate study, which included wholesale water rates, to review the adequacy of existing rates and propose new rates as appropriate. Ordinance 6912 amends section 13.06.360 of the City Code with proposed updates to the existing wholesale water rates in accordance with the findings of the FCS Group rate study analysis.

Reviewed by Council Committees:

Councilmember: Baldwin **Staff:** Thomas

Meeting Date: July 10, 2023 Item Number:

ORDINANCE NO. 6912

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AMENDING SECTION 13.06.360 OF THE AUBURN CITY CODE (ACC), RELATING TO CITY UTILITY RATES

WHEREAS, pursuant to its powers in RCW 35.92, the City has established a water utility to serve its residents;

WHEREAS, consistent with its responsibilities to operate this utility in a cost-effective manner and in a manner that reflects the City's actual operating costs, the City periodically reviews its utility rate structure to ensure that its rates are set appropriately;

WHEREAS, in 2022, the City consulted with FCS Group to study the City's current water utility rates (including wholesale rates) against the City's cost of service delivery and revenue requirements;

WHEREAS, following the FCS Group utility rate review for wholesale customers conducted at City staff request, City staff recommends that City water utility rates should be adjusted as reflected in this Ordinance.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, DO ORDAIN as follows:

Section 1. Amendment to City Code. Section 13.06.360 of the Auburn City Code is hereby amended to read as set forth in Exhibit A to this Ordinance.

Section 2. Implementation. The Mayor is authorized to implement those administrative procedures necessary to carry out the directives of this legislation.

Section 3. Severability. The provisions of this ordinance are declared to be separate and severable. The invalidity of any clause, sentence, paragraph, subdivision, section, or portion of this ordinance, or the invalidity of the application of it to any person or circumstance, will not affect the validity of the remainder of this ordinance, or the validity of its application to other persons or circumstances.

Section 4. Effective date. This Ordinance will take effect and be in force five days from and after its passage, approval, and publication as provided by law.

INTRODUCED: _____

PASSED: _____

APPROVED: _____

_____
NANCY BACKUS, MAYOR

ATTEST:

_____
Shawn Campbell, MMC, City Clerk

APPROVED AS TO FORM:

_____
Kendra Comeau, City Attorney

Published: _____

EXHIBIT A—ORD. 6912

ACC 13.06.360 Water service Rates – Generally.

A. Except as provided in subsections B and C of this section, effective January 1,2023, the monthly base rate for all water user classifications except interruptible wholesale shall be as set forth in Table 13.06.360-1 below.

Table 13.06.360-1.

	Monthly Charge		
Meter Size (inches)	**Effective January 1, 2023**	**Effective January 1, 2024**	**Effective January 1, 2025**
5/8, 3/4	$ 19.61	$ 21.08	$ 22.66
1 (Single-Family Residential)	$ 19.61	$ 21.08	$ 22.66
1 (All Other Classes)	$ 22.01	$ 23.66	$ 25.43
1-1/2	$ 23.96	$ 25.76	$ 27.69
2	$ 27.62	$ 29.69	$ 31.92
3	$ 53.13	$ 57.11	$ 61.39
4	$ 66.66	$ 71.66	$ 77.03
6	$ 85.18	$ 91.57	$ 98.44
8	$ 110.05	$ 118.30	$ 127.17
10	$ 156.25	$ 167.97	$ 180.57

	Charge per 100 cubic feet (ccf)		
Customer Class	**Effective January 1, 2023**	**Effective January 1, 2024**	**Effective January 1, 2025**
Single-Family Residential:			
0 to 7 ccf	$ 3.89	$ 4.18	$ 4.49
7.01 to 15 ccf	$ 4.75	$ 5.11	$ 5.49
Over 15 ccf	$ 5.40	$ 5.81	$ 6.25
Multifamily Residential	$ 4.65	$ 5.00	$ 5.38
Commercial	$ 4.90	$ 5.27	$ 5.67
Manufacturing/Industrial	$ 4.79	$ 5.15	$ 5.54
Schools	$ 5.22	$ 5.61	$ 6.03
Municipal/City Accounts	$ 4.83	$ 5.19	$ 5.58
Irrigation	$ 6.46	$ 6.94	$ 7.46
Wholesale (Algona)	$ 2.39	$ 2.45	$ 2.51

Fifty percent shall be added to all rates for water service for customers outside the city limits. City of Auburn utility taxes are included in the monthly rate for all customers except wholesale accounts. Wholesale rates exclude the 50 percent out-of-city service charge and state excise taxes.

B. Interruptible wholesale water supply customers shall pay monthly the sum of the following:

1. Standby Service Charge: the cost to maintain, repair, and replace the infrastructure required to provide water utility service to the interruptible wholesale water customer when the customer requests water supply from the city of Auburn. This is a fixed monthly charge and does not include the delivery of any quantity of water.

2. Usage Charge: the cost of water supply. The charge is based on actual water deliveries, if any, during the month times the usage rate.

3. Purchased Water Surcharge: In any month in which water is purchased from Tacoma Public Utilities or other external agency, the interruptible wholesale customer shall pay an additional charge of $1.82 per ccf, applied to the quantity of water purchased by the city of Auburn during the month to supply the interruptible wholesale customer.

Interruptible Wholesale Rates

Charge	Effective January 1, 2023	Effective January 1, 2024	Effective January 1, 2025
Standby Service Charge (per month)	$ 1,575.49	$ 1,583.74	$ 1,592.61
Usage Charge (per ccf)	$ 2.13	$ 2.19	$ 2.24
Purchased Water Surcharge (per ccf of water purchased)*	$ 1.82	$ 1.82	$ 1.82

* Subject to change if Tacoma Public Utilities updates its wholesale summer season peaking rate.

C. Water customers served by the City's Braunwood water system. City water customers served by the City's Satellite Water System for Braunwood Estates (approved by City Resolution 2114) shall be subject to the following monthly water service rates, effective January 1, 2023:

Monthly Charge

Meter Size (inches)	Effective January 1, 2023	Effective January 1, 2024	Effective January 1, 2025
3/4"	$ 19.61	$ 21.08	$ 22.66
1”	$ 19.61	$ 21.08	$ 22.66
1-1/2”	$ 23.96	$ 25.76	$ 27.69
2”	$ 27.62	$ 29.69	$ 31.92
3”	$ 53.13	$ 57.11	$ 61.39
4”	$ 66.66	$ 71.66	$ 77.03
6”	$ 85.18	$ 91.57	$ 98.44
8”	$ 110.05	$ 118.30	$ 127.17
10”	$ 156.25	$ 167.97	$ 180.57

Variable Charges based on ccf (100 cubic feet of water used)

Description	Effective January 1, 2023	Effective January 1, 2024	Effective January 1, 2025
B1 (0-7 ccf)	$3.89	$4.18	$4.49
B2 (7.01-15 ccf)	$4.75	$5.11	$5.49
B3 (15.01 – 25 ccf)	$5.40	$5.81	$6.25
B4 (25.01-38 ccf)	$6.00	$6.45	$6.93
B5 (38+ ccf)	$12.00	$12.90	$13.87

FCS GROUP
Solutions-Oriented Consulting

| Memorandum

To: Ingrid Gaub, P.E. Director of Public Works, City of Auburn **Date:** June 26, 2023

From: Angie Sanchez Virnoche, Principal, FCS GROUP

CC: Frank Downard, Ryan Vondrak

RE Wholesale Rate Update

INTRODUCTION

A Wholesale Water Rate Update is part of the 2022 contracted services with the City of Auburn under the Water, Sewer, and Storm Utilities Rate Study. The rate update is consistent with wholesale service agreements in effect and incorporates current conditions. The update uses the previously established wholesale rate study methodology for assignment of eligible asset infrastructure and utility operating costs.

The City currently has two wholesale water agreements in effect. One of the agreements is to provide permanent wholesale water services to the City of Algona (Algona). The other agreement is to provide interruptible wholesale service to Lake Meridian Water District (LMWD).

For both types of wholesale customers (permanent and interruptible) the City of Auburn charges wholesale rates that reflects the cost of providing the specific type of wholesale water service, with wholesale costs of service analyzed in the context of the overall City cost of water service. The cost-of-service analysis completed for this study is in accordance with the requirements of both Agreements.

WHOLESALE RATE UPDATE

The wholesale rate methodology used to establish and update wholesale rates is the Utility Basis approach. This approach recovers applicable operating and maintenance costs, plus a capital cost recovery based on the original cost of capital investment committed to the wholesale customer's service. The capital cost recovery includes two components: depreciation of fixed assets and a rate of return on the net investment or book value of those wholesale serving assets. The three key wholesale rate components are summarized below:

- ***Operating and Maintenance Expenses (O&M)*** – related to ongoing maintenance and operation of eligible assets.
- ***Annual Depreciation Expense*** – of eligible fixed assets related to the loss in value of facilities, not restored by current maintenance, due to wear and tear, decay, and obsolescence as useful life is consumed.
- ***Return on Investment*** – applied to net system investment intended to pay the annual interest cost of debt capital and provide owner equity return for the facilities used to provide water service.

WHOLESALE RATE UPDATE

The purpose of a cost-of-service analysis is to provide a rational basis for distributing the eligible costs of utility service to each customer based on the facilities used to deliver water service and in proportion to the demands they place on the system. The following list highlights some of the key documents and assumptions used in the development of the wholesale water rate update.

- 2022 operations and maintenance (O&M) budget, projected forward for the 2023 test year
- Debt service balance through 12/31/2022 (to calculate the weighted average cost of capital)
- Booked fixed assets through 12/31/2021 including original cost, accumulated depreciation, and annual depreciation
- Customer use and revenue for 2022
- Contract capacity demands per Agreements

Basis of Cost Allocation

Cost allocation is accomplished by developing customer specific allocation factors identifying characteristics including number of accounts, contracted peak demand, actual consumption levels, and share of eligible fixed assets. Allocation factors used in the wholesale rate update are summarized in **Exhibit 1**.

Exhibit 1: Summary of Key Allocation Factors

Allocation Factors				
	Algona	**LMWD**	**Retail**	**Total**
Accounts	0.0%	0.0%	100.0%	100.0%
Fixed Asset Allocation	2.0%	4.6%	93.4%	100.0%
% of Usage	5.7%	0.0%	94.3%	100.0%
Conservation	2.0%	0.0%	98.0%	100.0%
Contracted Demand Capacity	5.6%	12.6%	81.7%	100.0%

Notes: Algona few accounts do not show up due to rounding.

Allocation of Assets and Costs Relevant to Wholesale Water Customers

The City's water system asset schedule drives several calculations in the wholesale rate calculation, including both the allocation of capital assets (depreciation) and the allocation of asset-related operating costs to functions of service (and ultimately to wholesale customers). The 2023 rate update is based on plant-in-service for year-end 2021. A detailed asset-by-asset review was completed with the assistance of staff identifying assets by function as shown in **Exhibit 2** (e.g., Supply/Treatment, Storage, Pumping, Transmission/Distribution, etc.).

Exhibit 2: Total Existing System Assets

Functional Category	Total
Original Cost	
1 - Supply/Treatment	$ 46,221,039
2 - Pumping	9,919,079
3 - Storage	9,850,524
4 - Transmission & Distribution	100,882,465
5 - Meters & Services	7,261,201
6 - Hydrants	1,126,857
7 - General Plant	1,736,399
8 - Customer	62,150
Total Eligible Existing Assets	**$ 177,059,713**

The total system assets of $177.1 million are adjusted for contributed assets of $43.5 million and accumulated depreciation of $56.4 million to determine the net book value of system assets. **Exhibit 3** provides the functional detail of the calculated net book value ("rate base") of non-donated assets.

Exhibit 3: Functional Net Book Value (Rate Base)

Net Book Value (non-Donated Assets)	Total
1 - Supply/Treatment	$ 31,684,234
2 - Pumping	6,685,101
3 - Storage	4,631,462
4 - Transmission & Distribution	31,141,809
5 - Meters & Services	2,819,133
6 - Hydrants	23,286
7 - General Plant	179,348
8 - Customer	300
Net Book Value (Rate Base)	**$ 77,164,673**

During the detailed asset-by-asset review, staff identified which individual assets are used to provide wholesale service. Assets within each functional category were allocated to wholesale or City retail customers using the allocation basis shown in **Exhibit 4**.

Exhibit 4: Fixed Asset Allocation Basis

Functional Category	Allocation Basis
1 - Supply/Treatment	Share of system peak demand or Retail only
2 - Pumping	Share of system peak demand or Retail only
3 - Storage	Share of peak demand excluding Algona, contracted share of Lakeland Hills Reservoir, or Retail Only
4 - Transmission & Distribution	Retail only, Algona only or share of peak demand excluding Algona
5 - Meters & Services	Retail Only or Algona Only
6 – Hydrants	Retail Only
7 - General Plant	Retail Only or Common to All
8 – Customer	Retail Only or Customer Billing System

WHOLESALE RATE UPDATE: ALGONA

The allocated costs in the wholesale update for Algona include consideration that permanent wholesale water service is provided. The eligible assets and applicable operating and maintenance costs that comprise the return on rate base, depreciation and O&M costs for Algona are as follows:

Rate Base

Exhibit 5 shows the total eligible existing system assets identified for Algona by applying the fixed asset allocation basis in Exhibit 4. Algona assets total $3.5 million – roughly 2.0% of the total system existing assets.

Exhibit 5: Algona Eligible Assets

Functional Category	Algona
Original Cost	
1 - Supply/Treatment	$ 2,492,897
2 - Pumping	194,752
3 - Storage	273,020
4 - Transmission & Distribution	283,427
5 - Meters & Services	240,169
6 - Hydrants	-
7 - General Plant	33,237
8 - Customer	4
Total Eligible Existing Assets	**$ 3,517,506**

Exhibit 6 calculates the net book value for Algona after making deductions for assets that were paid for directly ($906K) and for accumulated depreciation on non-donated eligible assets ($672K).

Exhibit 6: Algona Net Book Value (Rate Base)

Net Book Value (non-Donated Assets)	Algona
1 - Supply/Treatment	$ 1,747,890
2 - Pumping	81,403
3 - Storage	31,712
4 - Transmission & Distribution	74,978
5 - Meters & Services	-
6 - Hydrants	-
7 - General Plant	3,490
8 - Customer	0
Net Book Value (Rate Base)	**$ 1,939,472**

Return on Investment

The return on investment (rate base) component of the revenue requirement is a function of the *rate base* and the *weighted average cost of capital* (WACC), which in turn is a function of the average rate on the City's outstanding debt and the assumed return on equity rate. The net book value is multiplied by the weighted average cost of capital to determine the return on rate base.

Weighted Average Cost of Capital (WACC)

The City's *outstanding debt rate* is currently 4.18% – a weighted average of the current outstanding six (6) bonds and loans.

For an *equity rate*, this analysis assumes a rate of 4.30%, representing the average of the 25-Bond Revenue Bond Index and 20-Bond GO Index as of Oct 2022 (these indices are published by *The Bond Buyer* at the time this update began). In our judgment, the average between these two indices is a rough approximation of what the City could expect to pay for a newly issued revenue bond series.

The equity rate of return generally incorporates a risk premium to compensate City ratepayers for the risk they are assuming as a result of the City's decision to secure excess supply capacity beyond the needs of the retail customer base. The City chose to forego this risk premium in prior analysis. For consistency, the risk premium has not been included in this update.

Exhibit 7 shows how the assumed equity rate of 4.18% is blended with the 4.30% average outstanding debt rate. Auburn's water capital structure is currently about 32% debt, 68% equity (total outstanding debt ÷ total net book value). Applying those weights to the average debt percentage and the assumed equity percentage, the City's weighted average cost of capital is 4.26%.

Exhibit 7: Rate of Return

Auburn Rate of Return			
	% of Net Book Value	Rate	Weighted Rate
Debt	32%	4.18%	1.33%
Equity	68%	4.30%	2.93%
Weighted Average Cost of Capital			**4.26%**

Exhibit 8 shows the return on investment component of the revenue requirement for Algona. This is calculated by multiplying the $1.9 million rate base by the 4.26% weighted average cost of capital.

Exhibit 8: Algona Return on Rate Base

Algona Rate Base	**$ 1,939,472**
Weighted Average Cost of Capital (WACC)	4.26%
Return on Investment	**$ 82,645**

Depreciation

Annual depreciation is calculated on the total assets identified in **Exhibit 5** and exclude amounts contributed by others. The annual depreciation value is calculated using the straight-line method. This method takes the value of an asset and reduces it uniformly over each period until it reaches the end of its useful life. Total depreciation for Algona eligible assets is approximately $40,737.

Operating & Maintenance Expenses

The 2023 operating budget is grouped into the cost centers of administration, finance, and operations. A line-by-line analysis was completed of the detailed accounts allocating each cost in part or in full to either wholesale or City retail customers using total fixed asset allocation, accounts, or percentage of use. Although most costs are allocated based on the percent of eligible fixed assets, utility billing costs were based on accounts and operating supplies, chemicals, utilities, and Tacoma water purchase emergency supply were based on percent of use. The result is approximately $285,476 of O&M expenses are assigned to Algona comprising 2.2% of total water system operating and maintenance expenses.

Total Algona-Cost of Service and Rate Calculation

Exhibit 9 summarizes the three components of the wholesale cost of service: return on investment, depreciation, and O&M costs - as well as the resulting Algona wholesale rate per hundred cubic feet

(CCF) of water use. The calculated rate of $2.39/CCF is an increase of $0.06 from the current rate of $2.33/CCF.

Exhibit 9: Total Algona Wholesale Cost of Service Rate

Wholesale Rate Calculation	Algona
Return on Rate Base	$ 82,645
Depreciation	40,737
O&M	285,476
Total Annual Costs	$ 408,857
2022 Use in CCF	*170,933*
Rate per CCF	**$ 2.39**

Projected Algona Rate Calculation

The rates in this analysis are based on the 2023 operating budget. Algona rates are composed of both a fixed meter charge, by size of meter, and the volume rate shown in **Exhibit 9**. The base meter rates will be tied to the retail rate charges by meter size (3 – 8" meters and 1 – 6" meter) that were updated during the retail rate study completed in 2022. The fixed charges are intended to pay for the replacement of the meters over time.

In between cost-of-service analysis updates, it has been City practice to adjust the rates each year based on the annual increase in the CPI-U for Seattle-Tacoma-Bellevue from October of one year to October of the next year. This is a practice that the City can continue to monitor adjusting as needed to align with underlying cost increases. **Exhibit 10** shows the Algona wholesale base and volume rates for 2023 - 2025. Future volume rates per CCF are adjusted by the five-year average (2016-2020) CPI-U for Seattle-Tacoma-Bellevue. Years 2021 and 2022 were excluded due to the higher than normal inflation rates experienced during that time.

Exhibit 10: Algona Proposed 2023 - 2025 Rates

Algona Rate Schedule	Current Rate	2023 Cost of Service	2024	2025
Estimated CPI Adjustment			2.50%	2.50%
Wholesale Rate per CCF				
City of Algona	$2.33	**$2.39**	**$ 2.45**	**$ 2.51**
Meter Charge per Month				
8" Meter	$ 102.37	**$ 110.05**	**$ 118.30**	**$ 127.17**
6" Meter	$ 79.24	**$ 85.18**	**$ 91.57**	**$ 98.44**

Under the terms of the agreement, the Algona rate change can take place whenever the cost-of-service analysis is updated. We recommend that the cost-of-service analysis be updated every 3-5 years, so that wholesale rates do not drift too far away from their underlying cost factors.

WHOLESALE RATE UPDATE: LAKE MERIDIAN WATER DISTRICT (LMWD)

Wholesale water service to LMWD is interruptible service. LMWD has indicated that they may request water service from Auburn, if needed. If Auburn has the supply available, Auburn will provide it to LMWD (as interruptible wholesale supply). It is likely that no service may be requested or delivered in any given year, yet facilities must be available and in good repair to provide service when requested. The existing utility basis methodology still applies in determining eligible costs and assets for LMWD. When and how the costs will be recovered will depend on use.

Per the Agreement with LMWD, the City will serve up to 2.5 million gallons a day if requested and available. The eligible assets and applicable operating and maintenance costs are based on this capacity commitment. The return on rate base, depreciation, and O&M costs allocable to LMWD are as follows:

Rate Base

Exhibit 11 shows the total eligible existing system assets identified for LMWD by applying the fixed asset allocation basis in Exhibit 4. LMWD assets total $8.1 million – roughly 4.5% of the total system existing assets.

Exhibit 11: LMWD Eligible Assets

Functional Category	LMWD
Original Cost	
1 - Supply/Treatment	$ 5,586,174
2 - Pumping	435,335
3 - Storage	550,103
4 - Transmission & Distribution	1,459,069
5 - Meters & Services	-
6 - Hydrants	-
7 - General Plant	76,607
8 - Customer	-
Total Eligible Existing Assets	**$ 8,107,288**

Notes: Transmission & Distribution includes Tacoma Pipeline 5 assets.

Exhibit 12 calculates the net book value for LWMD after making deductions for assets that were paid for directly ($1.8 million) and for accumulated depreciation on non-donated eligible assets ($2.0 million).

Exhibit 12: LMWD Net Book Value (Rate Base)

Net Book Value (non-Donated Assets)	LMWD
1 - Supply/Treatment	$ 3,915,780
2 - Pumping	182,682
3 - Storage	33,529
4 - Transmission & Distribution	168,262
5 - Meters & Services	-
6 - Hydrants	-
7 - General Plant	8,045
8 - Customer	-
Net Book Value (Rate Base)	**$ 4,308,298**

Notes: Transmission & Distribution includes Tacoma Pipeline 5 assets.

When water is not being delivered, the eligible assets are reduced by the $3.9 million supply/treatment net book value for a modified net book value (or rate base) of $392,518. The supply/treatment assets have been removed from allocable costs as water is not being delivered.

Exhibit 13: LMWD Net Book Value – Rate Base (No Supply/Treatment)

Net Book Value (non-Donated Assets)	LMWD (< Supply/Treat)
Net Book Value of Non-Donated Assets	
1 - Supply/Treatment	$ -
2 - Pumping	182,682
3 - Storage	33,529
4 - Transmission & Distribution	168,262
5 - Meters & Services	-
6 - Hydrants	-
7 - General Plant	8,045
8 - Customer	-
Net Book Value (Rate Base)	**$ 392,518**

Notes: Transmission & Distribution includes Tacoma Pipeline 5 assets.

Standby Charge

The charges applicable to LMWD include a standby charge that is paid monthly regardless of use. When water is used, a volume charge will apply in addition to the fixed stand-by charge.

The monthly standby charge is comprised of the following components:

- Annual depreciation of the facilities required to deliver service. The depreciation on the remaining assets is eligible as the City must maintain the delivery assets ready for operation. As shown in **Exhibit 14**, the supply/treatment assets have been eliminated from the stand-by charge as assets are not being utilized when water is not requested for delivery. The storage value is shown as zero as the eligible assets are fully depreciated or represent land which does not depreciate. The monthly depreciation amount on eligible assets totals $579.29 ($6,951 ÷ 12 months)

Exhibit 14: Annual Depreciation Eligible Assets – No Supply/Treatment

Depreciation on Non-Donated Assets	LMWD (< Supply/Treat)
Existing System Eligible Assets	
1 - Supply/Treatment	$ -
2 - Pumping	499
3 - Storage	-
4 - Transmission & Distribution	6,295
5 - Meters & Services	-
6 - Hydrants	-
7 - General Plant	158
8 - Customer	-
Total Existing System Assets Depreciation	**$ 6,951**

Note: Transmission & Distribution includes Tacoma Pipeline 5 assets.

- Tacoma Ready to Serve charge. This fixed charge to the City is based on contracted peak capacity and is a new cost addition for this update. The fixed charge is paid by the City to Tacoma to have water readily available when needed. The City pays this fixed charge per MGD of requested contract peak capacity regardless of use. This cost is allocated to LMWD based on the allocation of peak capacity to LMWD (12.63%) and recovered 50% in the standby charge. The remaining 50% of the allocated LMWD cost will be recovered in the volume charge when water is delivered.
- Meter charge equal to the retail rate by meter size intended to pay over time for the replacement of the 8" meter servicing the District.

Exhibit 15 summarizes the 2023-2025 standby charge paid monthly regardless of water being delivered or not to LMWD.

Exhibit 15: LMWD Monthly Standby Charge

	Current	2023	2024	2025
Mo. Depreciation on Eligible Assets	$ 1,045.55	$579.29	$ 579.29	$ 579.29
Tacoma Contract Peak Capacity (50% of eligible cost)		886.15	886.15	886.15
8" Meter Replacement (Retail Published Rate)	102.37	110.05	118.30	127.17
Total LMWD Mo. Standby Charge	**$ 1,147.92**	**$ 1,575.49**	**$ 1,583.74**	**$ 1,592.61**

In total, the calculated charge is higher than the current rate. There is a reduction in the depreciation charge as the eligible asset value has been reduced, likely due to retirements. However, the charge is increased with the addition of the Tacoma Ready to Serve charge which is a change from the last wholesale rate update.

Wholesale Rate Delivered Water

When water is requested and delivered, all wholesale rate components apply - rate of return on investment, depreciation, and O&M costs on the full eligible assets (including supply/treatment) as shown in **Exhibit 11** ($8.1 million).

Return on Investment

As noted previously, the return on investment (rate base) component of the revenue requirement is a function of the *rate base* and the *weighted average cost of capital* (WACC) – **Exhibit 7**, which in turn is a function of the average rate on the City's outstanding debt and the assumed return on equity

rate. The net book value is multiplied by the weighted average cost of capital to determine the return on rate base. **Exhibit 16** summarizes the total eligible assets and return under full service delivery.

Exhibit 16: LMWD Return on Rate Base

	LMWD
Eligible Rate Base	**$ 4,308,298**
Weighted Average Cost of Capital (WACC)	4.26%
Return on Investment	**$ 183,585**

The return listed in **Exhibit 16**, is recoverable when water is delivered. The unit cost associated with the return is $0.15/CCF. The calculation is derived by identifying the eligible assets and return on rate base of $183,585 divided by the contract demand capacity of 2.5 MGD (converted to CCF 2,500,000 MGD x 365 days ÷ 748 = 1,219,920 annual CCF).

Depreciation

Annual depreciation is calculated on the total net book value of eligible assets identified in Exhibit 12 ($4.3 million) and exclude amounts contributed by others as well as excludes the amount of depreciation recovered in the stand-by charge identified in **Exhibit 15**. The annual depreciation value is calculated using the straight-line method. This method takes the value of an asset and reduces it uniformly over each period until it reaches the end of its useful life. Depreciation for LMWD total eligible assets is approximately $91,222. Similar to the rate of return, the depreciation calculation is derived by taking the net amount divided by the annual contract demand in CCF resulting in $0.07/CCF.

Operating & Maintenance Expenses

As noted, when describing the Key Assumptions, a line-by-line analysis of the detailed 2023 budget was completed, allocating each O&M line item to either wholesale or City retail. The wholesale O&M unit costs are consistent for both wholesale customers and have been adjusted only for those O&M costs that have been identified as having a higher allocable cost resulting from the line-by-line analysis. As most costs are allocated based on the "by fixed assets" allocation factor, LMWD has a higher O&M allocation of total costs. This is due to the higher contractual amount of 2.50 MGD resulting in a higher allocation amount when water is delivered. The resulting cost differential of 1.26 is applied to the admin, finance, and operations cost centers. A factor was not applied for costs such as operating supplies, chemical analysis and the Tacoma emergency supply and standby contract peak capacity costs.

Total LMWD Delivered Water Rate

The delivered water rate for LMWD is shown in **Exhibit 17**. The rate is composed of a fixed monthly charge and a volume charge when water is delivered and available.

The fixed charge is the same as the standby charge shown in **Exhibit 15**. The volume charge is developed to recover eligible costs when water is requested and delivered. It should be noted that the volume charge includes the remaining 50% of the allocated LMWD costs related to the Tacoma Ready to Serve charge (incurred by the City to have water readily available) and eliminates the Tacoma Emergency Supply as City water sources are assumed when water is delivered. The unit cost per CCF is $2.13.

Exhibit 17: LMWD Delivered Water Rate

	2023 Rates
Fixed Monthly Charge	
Depreciation (standby portion)	$579.29
Contract Peak Capacity (50% of eligible total)	886.15
8" meter (published rate)	110.05
Total Fixed Monthly Charge	**$1,575.49**
Volume Charge (water delivery)	
Depreciation (not recovered in standby charge)	$0.07
Return	$0.15
O&M	
Admin Cost Centers	$0.55
Finance Cost Center	0.09
Operations Cost Center	0.48
Supplies	0.05
Chemical Analysis	0.02
Tacoma Emergency Supply	-
Tacoma Standby Contract Peak Capacity	0.03
Utilities	0.33
As all other (general)	0.05
Transfer/Taxes	0.30
Subtotal O&M	$1.91
Total Depreciation, Return, O&M, per CCF	**$2.13**

In between cost-of-service analysis updates, it has been City practice to adjust the rates each year based on the annual increase in the CPI-U for Seattle-Tacoma-Bellevue from October of one year to October of the next year. **Exhibit 18** shows the LMWD wholesale standby charge and usage charge for 2023 - 2025. Future usage charges per CCF are adjusted by the five-year average (2016-2020) CPI-U for Seattle-Tacoma-Bellevue. Years 2021 and 2022 were excluded due to the higher than normal inflation rates experienced during that time.

Exhibit 18: LWMP Proposed 2023 - 2025 Delivered Water Rates

	Current	2023	2024	2025
Mo. Depreciation on Eligible Assets	$ 1,045.55	$ 579.29	$ 579.29	$ 579.29
Tacoma Contract Peak Capacity (50% of eligible cost)		886.15	886.15	886.15
8" Meter Replacement (Retail Published Rate)	102.37	110.05	118.30	127.17
Total LMWD Mo. Standby Charge	**$ 1,147.92**	**$ 1,575.49**	**$ 1,583.74**	**$ 1,592.61**
Estimated CPI Adjustment			2.50%	2.50%
Usage Charge	**$ 2.07**	**$2.13**	**$2.19**	**$2.24**

The rates in this analysis are based on the 2023 operating budget. Under the terms of the agreement, the rate change can take place whenever the cost-of-service analysis is updated. We recommend that the cost-of-service analysis be updated every 3-5 years, so that the wholesale rates do not drift too far away from their underlying cost factors.

Wholesale Purchased Water Surcharge

The wholesale rate review includes updating the City's wholesale purchased water surcharge to cover costs when the City water resources are not sufficient and Tacoma water purchases are required to meet demands. The purchased water surcharge was developed using the LMWD costs of service

rates and the 2023 Tacoma wholesale rate published in the Tacoma Municipal Code, Title 12 Utilities – 12.10.400 Rates Inside and Outside City Limits.

Exhibit 19 details the calculation of the updated wholesale purchase water surcharge. Applicable costs include fixed costs that would remain regardless of the water source being used and include the administrative and finance cost centers along with transfer/taxes. The Tacoma Emergency Supply peaking rate and the Tacoma Ready to Serve charge would replace the variable costs associated with the City's own supply source inclusive of the operations center, supplies, chemical analysis, utilities and other. The current Tacoma published peaking rate is $2.569/CCF. In addition, as of the last update, Tacoma has imposed a fixed Ready to Serve charge. The LMWD eligible portion (based on peak capacity) of this cost is collected 50% from the standby fixed fee and 50% from the variable charge or $0.03/CCF. The total cost applicable when Tacoma water is used totals $3.76/CCF.

The difference between the total cost of $3.76 (when Tacoma water is being purchased) less the cost-of-service rate of $2.13 becomes the pre-tax purchased water surcharge of $1.63/CCF. This rate would be paid in addition to the regular volume charge. Additional City taxes would be assessed based on the higher costs/revenue received making the final purchased water surcharge rate, including taxes $1.82/CCF.

Exhibit 19 shows the costs that comprise the purchased water surcharge. The rates shown are for 2023. The Tacoma wholesale peaking rate may change again in 2024 per the published rates. It is recommended that the City monitor the published rates and update the purchased water surcharge in alignment with any changes. It should be noted that the surcharge has been reduced from the current rate of $3.31/CCF. This reduction is due to the restructuring of the Tacoma Wholesale rate to reduce the peak usage charge ($3.96 to $2.57/CCF) and add a Wholesale Ready to Serve Charge ($2,741.53) assessed per million gallons a day (MGD) of contracted peak capacity.

Exhibit 19: Purchased Water Surcharge Calculation

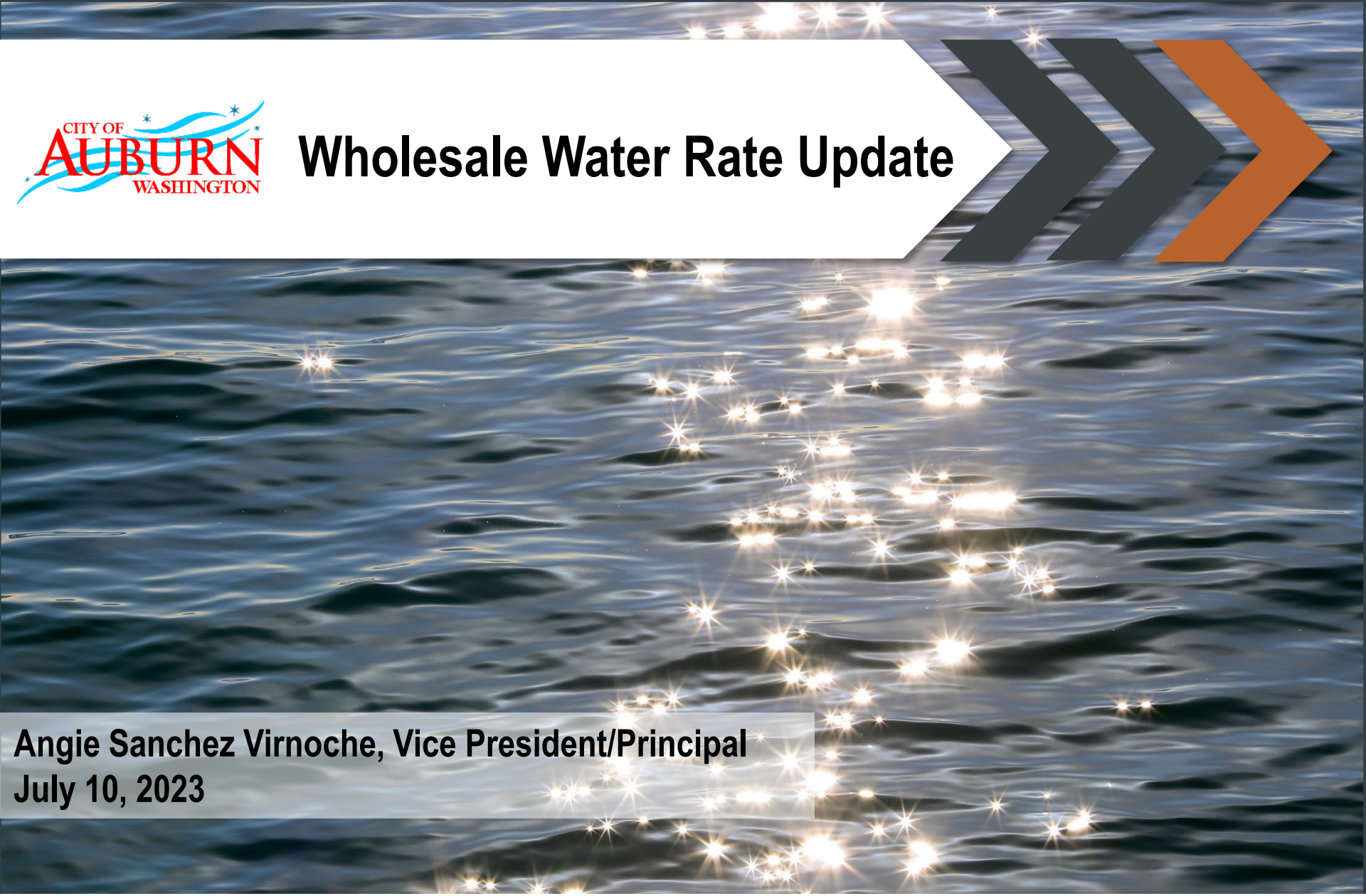
	2023 Rates	2023 Applicable Unit Costs/CCF
Volume Charge		
Depreciation (not recovered in standby charge)	$0.07	$0.07
Return	$0.15	$0.15
O&M		
Admin Cost Centers	$0.55	$0.55
Finance Cost Center	0.09	0.09
Operations Cost Center	0.48	-
Supplies	0.05	-
Chemical Analysis	0.02	-
Tacoma Emergency Supply	-	2.57
Tacoma Standby Contract Peak Capacity	0.03	0.03
Utilities	0.33	-
As all other (general)	0.05	-
Transfer/Taxes	0.30	0.30
Subtotal O&M	$1.91	$3.54
Total Depreciation, Return, O&M, per CCF	**$2.13**	**$3.76**
Total Recoverable Variable Costs	$2.13	
Calculated Total Costs w/ Tacoma Rate	3.76	
Cost Difference	$1.63	
Plus Additional Taxes	0.19	
Total Wholesale Purchased Water Surcharge /CCF	**$1.82**	

Summary

The Wholesale rates are updated for Algona and LMWD based on the water cost of service study completed in 2022. The rate projection for Algona includes a fixed charge per meter size based on the retail published meter charge rates plus an updated volume charge of $2.39/CCF, an increase of $0.06/CCF.

The rate for LMWD considers they are served as an interruptible customer. The stand-by charge has been updated for the retail published meter charge rate, depreciation on current eligible asset values and the Tacoma Ready to Serve charge. The rate is calculated at $1,575.49 per month. The volume charge has been updated to $2.13 from a current rate of $2.07 when water is requested and available based on 2023 budget operating costs. In addition, the wholesale purchased water surcharge intended to cover costs when the City is required to purchase Tacoma Water to meet demands, has been updated. The annual purchased water surcharge is calculated at $1.82 per CCF in addition to the general volume charge. The rate is down from the current surcharge of $3.31 per CCF due to the restructuring of rates by Tacoma that reduces the peak water consumption rate and adds a fixed ready to serve charge per MGD.

Wholesale Water Rate Update



Angie Sanchez Virnoche, Vice President/Principal

July 10, 2023

FCS GROUP
Solutions-Oriented Consulting

Background

- **Wholesale rate update part of greater utility rate study completed in 2022**
  - Last update in 2018
  - Per agreements

    "Auburn has created a customer classification for wholesale customers, and rates for service charges for wholesale customers shall be based on a rate study for the wholesale customer classification.''

    ''Wholesale water rates shall be based on costs of providing the service."
- **Two wholesale customers**
  - City of Algona – continual service wholesale customer
  - Lake Meridian Water District (LMWD) – interruptible "ready to serve" upon request

Wholesale Rate Methodology

- **Current update uses the previously established wholesale rate study methodology**
- **Using industry* accepted practice – "utility basis" methodology**
- **Methodology includes**
  - » Operating Costs – costs related to ongoing maintenance and operation of eligible assets
  - » Annual depreciation – of the facilities required to deliver service, related to the loss in value of facilities due to wear and tear, decay, and obsolescence
  - » Return - to provide a fair rate of return for the past investment made to finance facilities used to provide water service

*American Water Works Association Principles of Water Rates, Fees and Charges, M1 Manual

Algona Wholesale Water Rates

- **Charges composed of:**
  - Fixed meter charge, by size
  - Usage charge per hundred cubic feet

	Current Charges	COSA 2023	Proposed 2024	Proposed 2025
Meter Charge, per month per meter 6-inch – (1) 8-inch – (3)	 $85.18 $110.05	 $85.18 $110.05	 $91.57 $118.30	 $98.44 $127.17
Charge per 100 cubic feet (ccf)	$2.33	$2.39	$2.45	$2.51

COSA = cost of service analysis

LMWD Standby Charge

- **Charged each month**
- **Recovers the cost to maintain, repair, and replace delivery assets and provide the ability to serve if, and when requested (ready to serve)**
- **Charge Includes:**
  - » Depreciation on delivery assets
  - » Tacoma ready to serve charge (50% fixed charge/ 50% usage charge)
    - – City pays Tacoma "ready to serve charge" per month for each MGD of contracted peak capacity ($2,741.53/MGD)
  - » Meter charge (equal to retail rates)

	Current Charges	COSA 2023	Proposed 2024	Proposed 2025
Mo. Depreciation	$1,045.55	$579.29	$579.29	$579.29
Tacoma Ready to Serve	n/a	886.15	886.15	886.15
Meter Charge 8-inch – (1)	102.37	110.05	118.30	127.17
Total Mo Charge	$1,147.92	$1,575.49	$1,583.74	$1,592.61

MGD = million gallons per day

LMWD Delivery Charges

- **Delivery charge when using City of Auburn sources**

	Current Charge	COSA 2023	Proposed 2024	Proposed 2025
Charge per 100 cubic feet (ccf)	$2.07	$2.13	$2.19	$2.24

- **Purchase Water Surcharge**
  - » Applied to water purchased from Tacoma for delivery to LMWD
    - – Tacoma peaking rate $2.569/CCF
    - – 50% of ready to serve charge $0.03/CCF
  - » Total purchased water surcharge $1.82/CCF

CCF = 100 cubic feet

Summary of LMWD Rates

	Current Charges	COSA 2023	Proposed 2024	Proposed 2025
Standby Charge per month	$1,147.92	$1,575.49	$1,583.74	$1,592.61
Usage Charge:				
Usage Charge - per 100 cubic feet (ccf)	$2.07	$2.13	$2.19	$2.24
Purchased Water Surcharge per ccf of water purchased from Tacoma	$1.82	$1.82	$1.82	$1.82

- **Proposed charges based on interruptible/ready to serve upon request**
- **2023 cost of service analysis assumes no actual water deliveries**


Social Media
Teamwork
40%
30%
Questions/Discussion

AGENDA BILL APPROVAL FORM

Agenda Subject:
Economic Development Update – 2nd Quarter 2023 (Tate) (15 Minutes)

Date:
July 3, 2023

Department:
Community Development

Attachments:
Powerpoint Presentation

Budget Impact:
Current Budget: $0
Proposed Revision: $0
Revised Budget: $0

Administrative Recommendation:

Background for Motion:

Background Summary:
Economic Development staff will present on a quarterly basis an update on items being worked on throughout the year. This presentation will focus on the second quarter of 2023.

Reviewed by Council Committees:

Councilmember: Baldwin
Staff: Tate
Meeting Date: July 10, 2023
Item Number:

CITY COUNCIL PRESENTATION

ECONOMIC DEVELOPMENT QUARTER 2 UPDATE

PRESENTED BY DEPARTMENT OF COMMUNITY DEVELOPMENT

JENN FRANCIS
ECONOMIC DEVELOPMENT MANAGER

JULY 10, 2023

AUBURN VALUES

SERVICE
ENVIRONMENT
ECONOMY
CHARACTER
SUSTAINABILITY
WELLNESS
CELEBRATION

CITY OF AUBURN'S ECONOMIC DEVELOPMENT DIVISION

Jenn Francis
Economic Development Manager



Abid Rahmani
Economic Development Coordinator



TOPICS TO EXPLORE

- ❑ Downtown Auburn Cooperative & BIA Update
- ❑ Downtown Engagement
- ❑ Downtown Murals
- ❑ Downtown Ribbon Cuttings
- ❑ Explore Auburn Marketing Campaigns
- ❑ Auburn Area Chamber of Commerce
- ❑ Business Connect Events
- ❑ Comprehensive Plan Update
- ❑ Business Outreach Meetings
- ❑ Tourism/Explore Auburn Update
- ❑ Good Neighbor Agreement Meetings
- ❑ National Night Out – Downtown
- ❑ RFP for Web Location Intelligence Application
- ❑ What We are Working on for 3RD Quarter

DOWNTOWN AUBURN COOPERATIVE & BIA UPDATE

BIA ACTIVITY DURING 2nd QUARTER:

APRIL BIA MEETING WAS HELD, BUT THE MAY & JUNE MEETING WERE CANCELLED DUE TO A LACK OF QUORUM.

THE BIA HAS FUNDED SEVERAL PROJECTS THAT ARE ADMINISTERED AND IMPLEMENTED BY THE DAC.

THE PROJECTS THIS QUARTER INCLUDED PLANTERS & MURALS.



DAC & BIA PARTNERSHIP PROJECTS IN THE FUTURE

PAINTING: DOOR FRONTS OF SEVERAL BUILDINGS ON MAIN STREET

LIGHTING: THE DAC IS PLANNING TO HAVE SOLAR LIGHTS INSTALLED ALONG THE FRONT OF DOWNTOWN BUSINESSES.

THE DAC WILL HIRE A CONTRACTOR FOR INSTALLATION AND COMPLETE THE PROJECT IN PHASES.

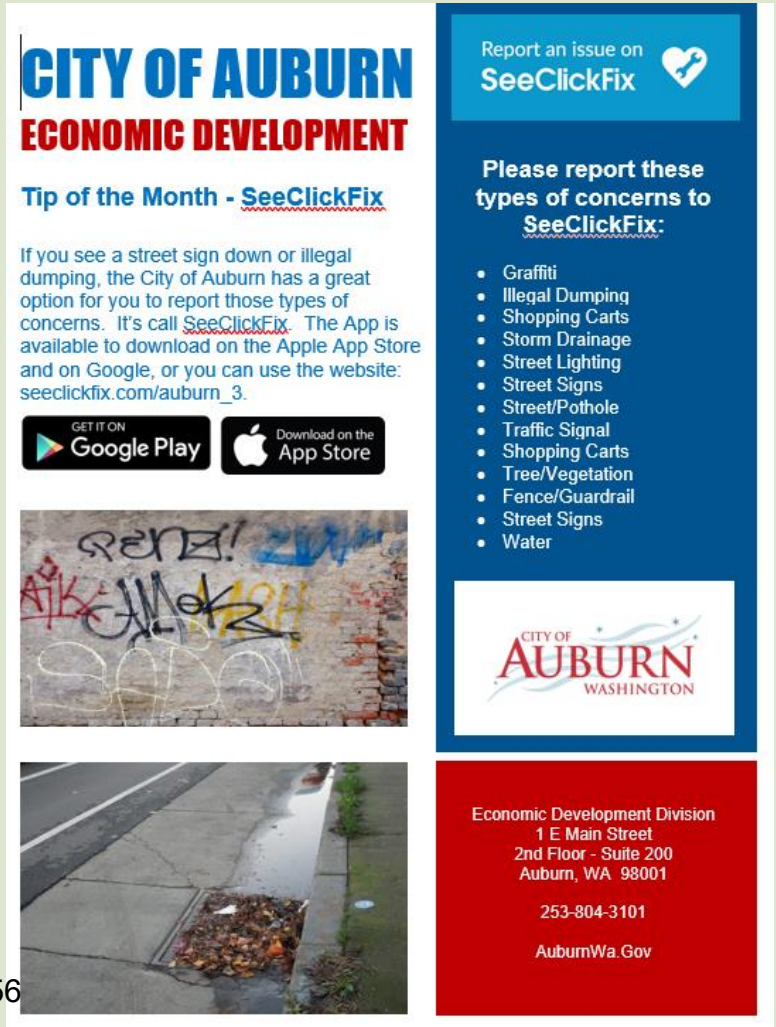
BIKE RACKS: DAC CONSIDERING THE PURCHASE AND INSTALLATION OF UP TO 6 ARTISTIC BIKE RACKS.

DOWNTOWN ENGAGEMENT

Monthly Engagement Flyer

Topics:

- SeeClickFix
- Crime Protection Through Environmental Design
- Downtown Neighborhood Watch Group
- Green River College Small Business Center
- Other?



DOWNTOWN ENGAGEMENT



THE 2nd PHASE OF PLACING NEW DOWNTOWN PLANTERS TOOK PLACE ON JUNE 14th, 2023.

THE DAC PLANTED PLANTS ON JUNE 17th.

SO FAR, 24 PLANTERS HAVE BEEN PLACED IN THE DOWNTOWN AREA, MOSTLY ON THE MAIN STREET.

THERE ARE 2 PLANTERS STILL AVAILABLE FOR ADOPTION. AND LOCATIONS STILL NEED TO BE APPROVED BY PUBLIC WORKS.



MURALS IN THE DOWNTOWN

DAC HAS DRAFTED A CONTRACT FOR BUSINESS OWNERS AND BUILDING OWNERS THAT OUTLINES EXPECTATION AND RELEASE CITY, DAC AND BIA FROM LIABILITY.

MANY BUSINESSES HAVE EXPRESSED INTEREST IN HAVING MURALS AND ARE WAITING FOR BUILDING OWNER APPROVAL.

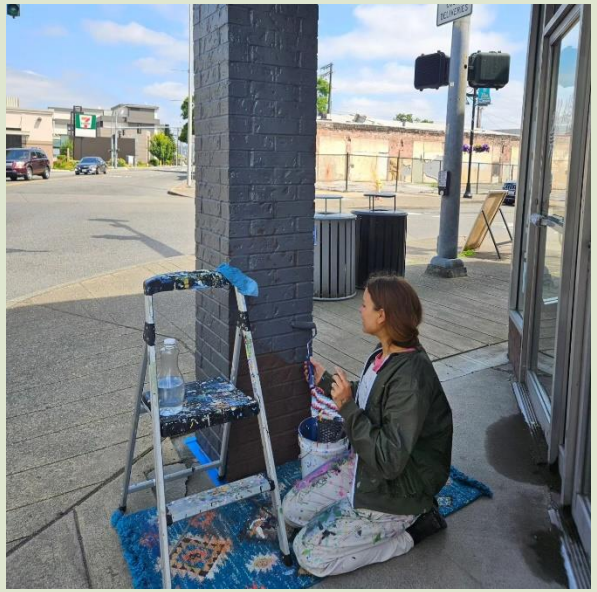
EXISTING MURALS: A STREET LEGAL, AGRISHOP, DAC OFFICE AND THE BUILDING ON THE CORNER OF AUBURN WAY N & MAIN STREET.

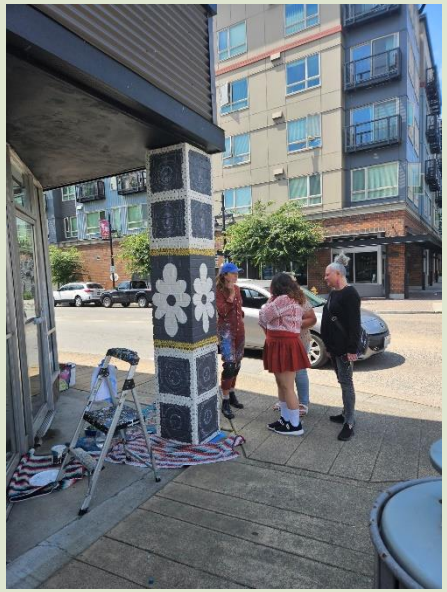
AND.....

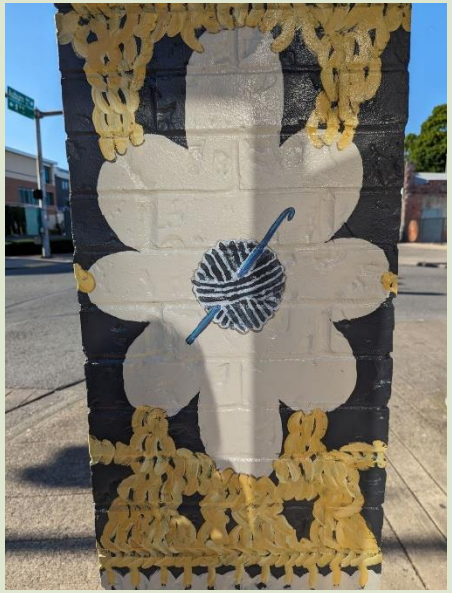


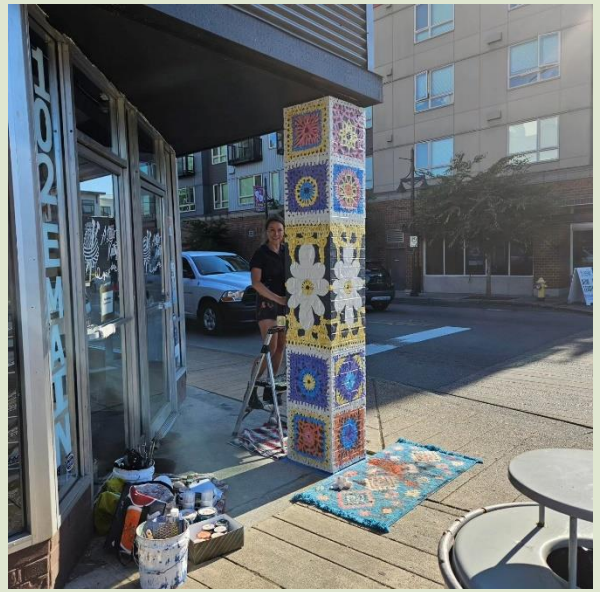
MURALS IN THE DOWNTOWN

A LITTLE KNITTY









DOWNTOWN BUSINESSES RIBBON CUTTINGS

3 RIBBON CUTTING CEREMONIES HAPPENED

- EMERALD CITY FASHION IN APRIL
- ROSES MAKERS MARKET BOUTIQUE IN MAY
- SMOKES ON MAIN IN JUNE



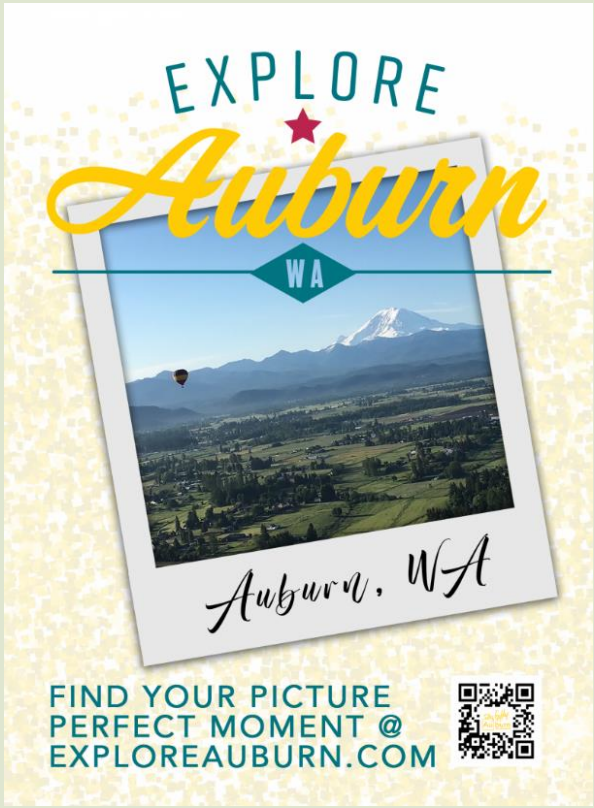


OUTLET COLLECTION MARKETING CAMPAIGN



Number of Pictures Posted with #EXPLOREAUBURN: 547

(Last Quarter was 342 posts)



#EXPLOREAUBURN

April Winner



The winning photo is chosen at random.

The prize includes 4 tickets to Emerald Downs, PNW Sticker, Explore Auburn logo gear (t-shirt, key chain, post card, etc.) and gift card to Gosanko Chocolate.

May Winner



PACIFIC RACEWAY MARKETING CAMPAIGN



NHRA RACE WEEKEND IS JULY 20TH – 23RD







PACIFIC RACEWAYS FANFEST 2023





NHRA FanFest 2023 will be held at Dave & Busters at The Outlet Collection on Thursday, July 20th from 5:00pm – 8:00pm.

The event will have food & beverages, drivers autograph signing opportunities, ticket raffles, and a chance to mingle with other NHRA fans.

BUSINESS CONNECT EVENTS











BUSINESS CONNECT EVENTS

The Average Attendance: 40

January – Outlet Collection
February – MakerSpace
March – Joy Hour
April – Junior Achievement
May – White River Amphitheatre
June – PNW Coffee Co. (with over 100 attendees)
July – Delayed
August – Alpine Ridge Insurance
September – Auburn Municipal Airport
October – West Valley Deli



ECONOMIC DEVELOPMENT ELEMENT - COMP PLAN



Anticipated Scope of Comprehensive Plan & Amendments

- **Auburn Comprehensive Plan Element – Community Development**
- **Economic Development Element**
  - **Identify Our Current Challenges**
    - *Missing or Under-Represented Sectors*
    - *Unoccupied Commercial Spaces*
  - **Identify Policies and Actions to Achieve Our Vision, Goals & Objectives**
    - *Choosing the Best Programs and Investments*
    - *Laying the Foundation for Future Regulations*
    - *Solidify Our High Priority Partnerships*
  - **Anticipated Policy and Framework Updates for 2024**
    - *Review Existing Policies and Update to Reflect Goals & Objectives*

BUSINESS OUTREACH MEETINGS

FOLLOW UP SAFETY MEETING

AUBURN MARKETPLACE & SURROUNDING AREA

WHEN
Tuesday, June 27th
4:00 – 6:00 pm

WHERE
City Hall Council Chambers
25 W Main Street,
Auburn, WA 98001

DISCUSSION TOPICS
Emphasis Patrols · Legislation Update · Feedback From Businesses · Crime Statistics

CITY OF AUBURN WASHINGTON

INVITATION TO MEET WITH MAYOR BACKUS

The Auburn Marketplace and surrounding businesses are very important to the vibrancy of our city.

Mayor Backus will be hosting a follow up meeting with business owners located between 15th St NW to 5th St NE and C St NW to A St NW regarding safety in that area – including by not limited to:

- Legislation Update
- City Initiated Actions
- Feedback from business owners
- Emphasis Patrol Update
- Crime Statistics

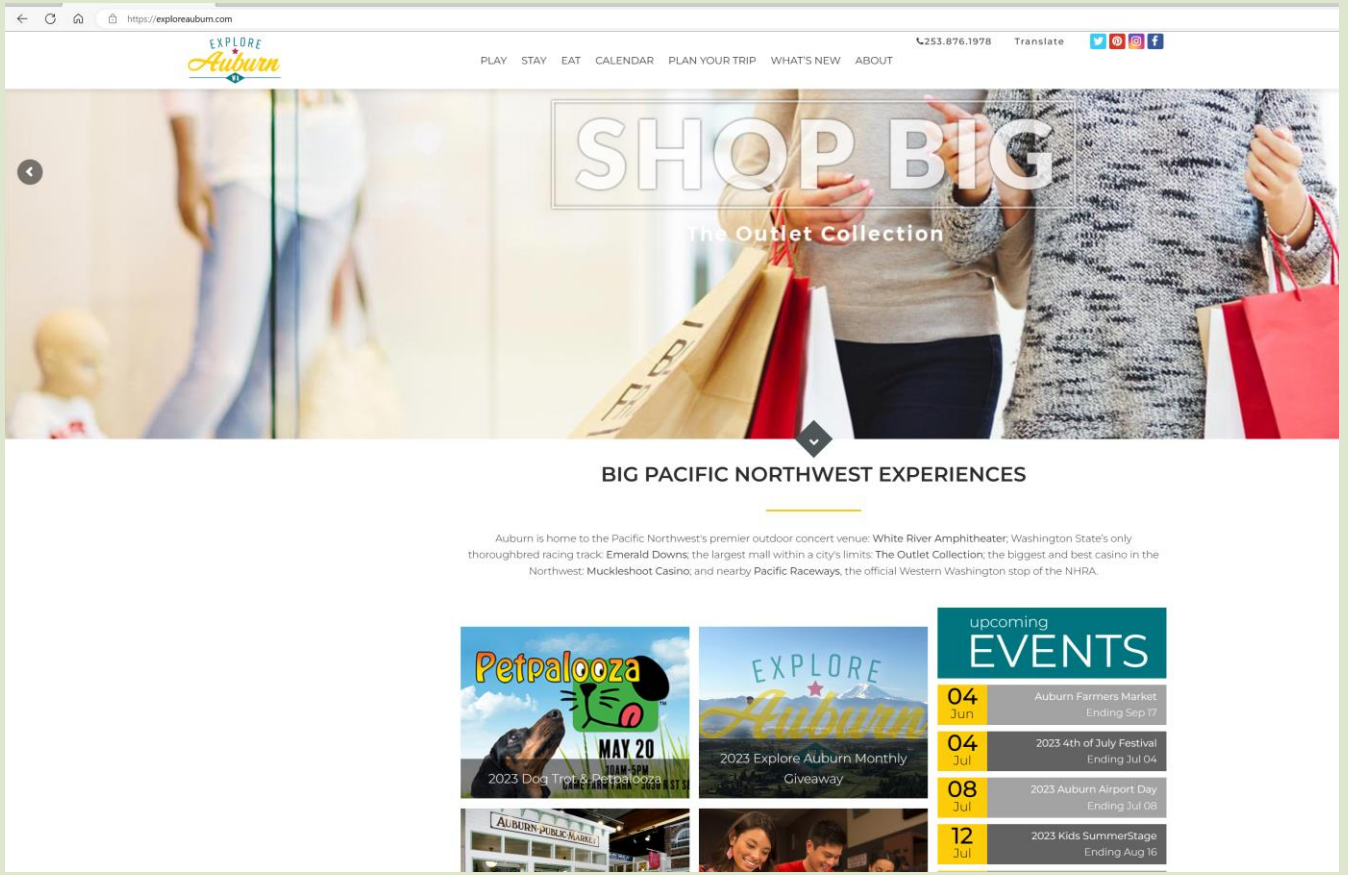
The City of Auburn is aware of the increase in incidents and would like to work with all stakeholders to find solutions that will increase safety and improve conditions overall.



TOURISM

The Auburn Area Chamber has been working with a consultant to update the Explore Auburn Website.

The goal is to have it launched by July 19th prior to the NHRA weekend events.



GOOD NEIGHBOR AGREEMENT
2ND QUARTERLY MEETING AT DON'S PLACE





- Meeting Held June 5th
- Currently Have 13 Residences and 13 Employees
- 6 More Units Should Be Opening Soon On The First Floor
- Compass Housing is Updating Security
- HealthPoint Comes Out Once A Week

NATIONAL NIGHT OUT PLANNING

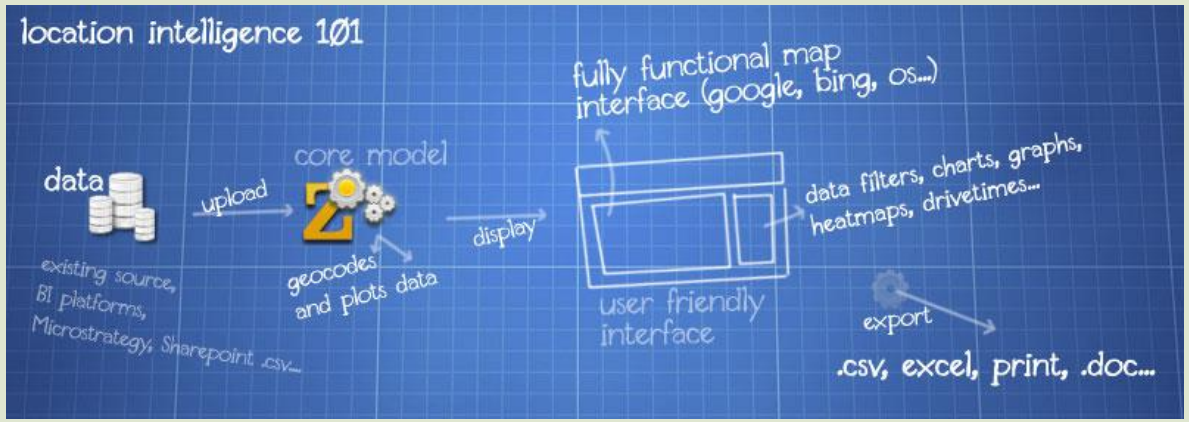
TUESDAY, AUGUST 1ST , 2023



DOWNTOWN – CITY HALL PLAZA
KICK OFF EVENT LOCATION

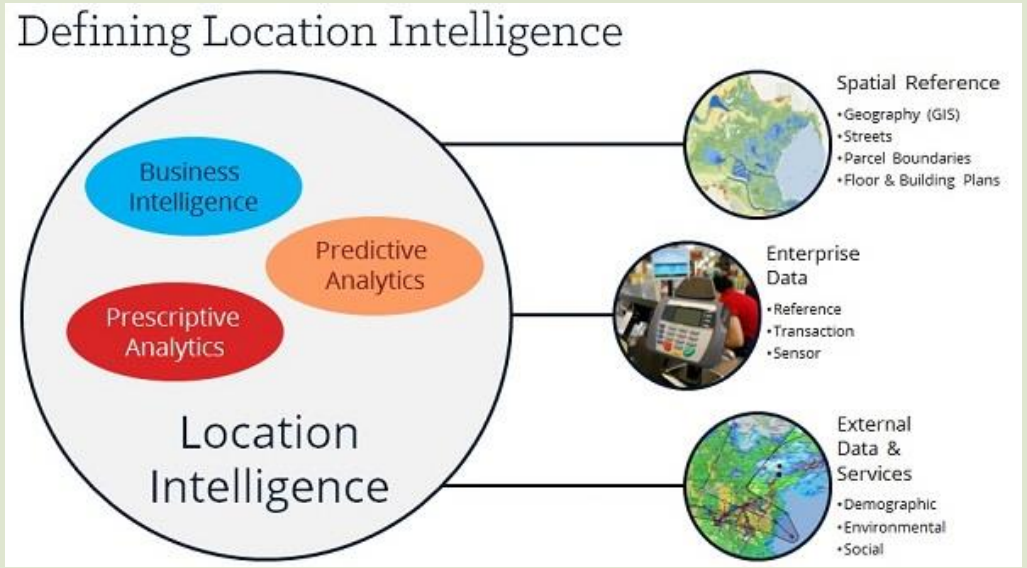
- FOOD
- BEER GARDEN
- ROOTBEER FLOAT GARDEN
- GAMES
- LIVE MUSIC
- LANDING SITE FOR DEBRIEF

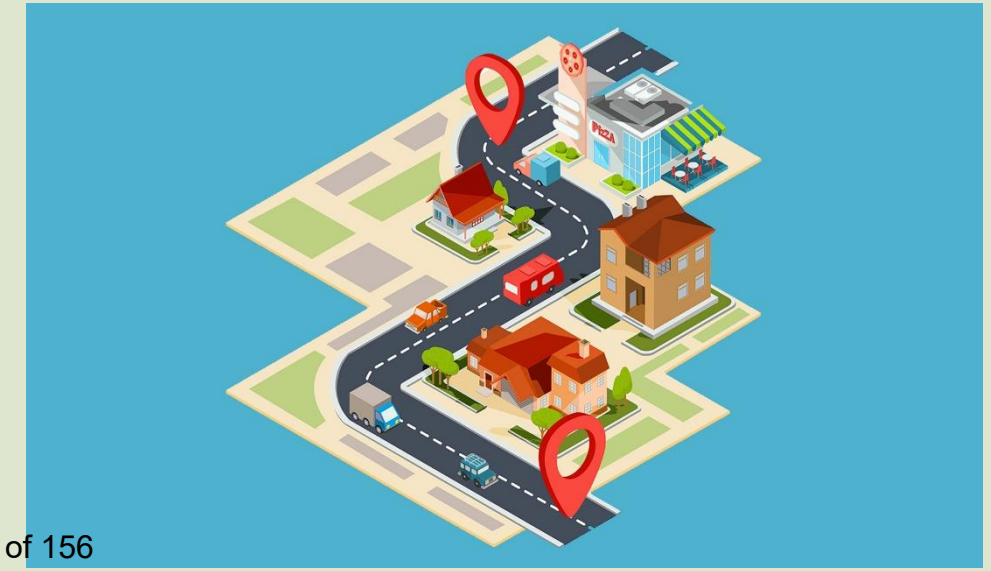
RFP FOR WEB LOCATION INTELLIGENCE APPLICATION



UPDATE ON NEXT STEP

APPLICATIONS WERE DUE JULY 5TH, 2023.





UPCOMING ECONOMIC DEVELOPMENT TOPICS FOR 3RD QUARTER

- ❑ DOWNTOWN ENGAGEMENT
- ❑ EXPLORE AUBURN WEBSITE UPDATE
- ❑ PACIFIC RACEWAYS UPDATE
- ❑ BUSINESS MEETING UPDATES
- ❑ SELECTING A VENDOR TO PROVIDE TRACKING AND METRICS OF ECONOMIC ACTIVITY
- ❑ COMP PLAN UPDATE
- ❑ NATIONAL NIGHT OUT UPDATE
- ❑ CIVICS ACADEMY UPDATE
- ❑ AND MORE….

QUESTIONS?

JENN FRANCIS, ECONOMIC DEVELOPMENT MANAGER

JFRANCIS@AUBURNWA.GOV

253-215-8744 - OFFICE

Department of Community Development

Planning • Building • Development Engineering • Permit Center
Economic Development • Community Services • Code Enforcement

AUBURN VALUES

SERVICE

ENVIRONMENT

ECONOMY

CHARACTER

SUSTAINABILITY

WELLNESS

CELEBRATION

CITY OF AUBURN WASHINGTON	**City Council Study Session Finance, Technology and Economic Development Special Focus Area** **July 10, 2023 - 5:30 PM** **City Hall Council Chambers** **MINUTES** **Watch the meeting LIVE!** **Watch the meeting video** Meeting videos are not available until 72 hours after the meeting has concluded.

I. CALL TO ORDER

II. PUBLIC PARTICIPATION

A. Public Participation

The City Council Meeting was held in person and virtually.

B. Roll Call

Councilmembers present: Deputy Mayor James Jeyaraj, Kate Baldwin, Larry Brown, Robyn Mulenga, Cheryl Rakes, and Councilmember Yolonda Trout-Manuel. Councilmember Bob Baggett attended the meeting virtually.

Department directors and staff members present included: City Attorney Kendra Comeau, Chief of Police Mark Caillier, Director of Public Works Ingrid Gaub, Director of Equity and Inclusion Brenda Goodson-Moore, Director of Innovation and Technology David Travis, Director of Human Resources Jamie Thomas, Financial Planning Manager Frank Downard, Neighborhood Programs Coordinator Chris Lovings, Utility Engineering Manager Ryan Vondrak, Water Engineer Senait Gebreeyesus, Diversity, Equity, and Inclusion Analyst Kia McGlone, Economic Development Manager Jenn Francis, Business Systems Analyst Jonathan Barbano, and City Clerk Shawn Campbell.

III. AGENDA MODIFICATIONS

Ordinance No. 6912 and Inclusive Auburn Coalition presentation were moved to presentations.

IV. ANNOUNCEMENTS, REPORTS, AND PRESENTATIONS

A. Ordinance No. 6912 (Thomas) (10 Minutes)

Manager Downard and Vice President, Angie Sanchez, with FCS Group provided Council with an overview of the Wholesale Water Rate Update including background, customers, methodology, the continual service rates, and standby charges.

Council discussed continuous water costs and water demands in regards to Tacoma Water.

B. Inclusive Auburn Coalition Presentation (Goodson-Moore) (20 Minutes)

Director Goodson-Moore and Analyst McGlone provided Council with an overview of the Office of Equity. She explained they are working on normalizing racial equity in the City and explained what normalizing racial equity means.

Diversity, Equity, Inclusion, and Justice (DEIJ) Consultant, Sapna Sopori, with Sapna Strategies provided Council with the plan for the Coalition. She reviewed the purpose of creating the Coalition, shared the job description for the Auburn Coalition membership, reviewed the groups that will be apart of the Coalition, the dispositions and skills to be a Coalition member, and reviewed the nomination process. Scott Miller reviewed what the goal for the Coalition is.

Council discussed makeup of the Coalition, the meeting locations, creating a toolbox, the work from the previous consultant, and frequency of updates to Council.

V. AGENDA ITEMS FOR COUNCIL DISCUSSION

A. Ordinance No. 6911 (Thomas) (20 Minutes)

An Ordinance amending Ordinance No. 6879, the 2023-2024 Biennial Operating Budget Ordinance, and Ordinance No. 6888, the 2023-2024 Biennial Capital Budget, authorizing amendment to the City of Auburn 2023-2024 Budget as set forth in schedule “A” and schedule “B”

Director Thomas provided Council with an overview of Ordinance No. 6911 regarding the second Budget Amendment including the adjustment of the beginning fund Balances, new requests, addition of grant funds, and adjustments to Capital Projects.

Council discussed the closure of the BIA fund.

B. 2023 National Night Out Presentation (Tate) (15 Minutes)

An update on Auburn’s 2023 National Night Out event

Neighborhood Coordinator Lovings provided Council with the 2023 National Night Out Presentation. He reviewed the Neighborhood Programs, provided a recap of the National Night Out event from 2022, and discussed the plan for the 2023 National Night Out.

Council discussed getting neighborhoods involved, and appreciation of the inclusive nature of the event.

C. Water System Comprehensive Plan Update - Policy Review (Gaub) (30 Minutes)

Manager Vondrak and Engineer Gebreeyesus provided Council with an overview of the Water System Comprehensive plan update, they reviewed the goals and polices of the update, an introduction into the water system including removal, addition and modification of polices in regarding business practices, service area goal, operation and maintenance goals, financial goals, planning, environmental stewardship, and design and construction goals.

Council discussed the reduction goals.

VI. FINANCE, TECHNOLOGY AND ECONOMIC DEVELOPMENT DISCUSSION ITEMS

A. Economic Development Update – 2nd Quarter 2023 (Tate) (15 Minutes)
An update on Economic Development Division activity

Councilmember Baldwin Chaired this section of the meeting.

Manager Francis provided Council with an overview of the Economic Development Second Quarter update. She reviewed the Downtown Auburn Cooperative and the BIA update including the partnership projects, downtown engagement, murals in the downtown, downtown business ribbon cutting, the Outlet Collection Marketing Campaign, the Pacific Raceway Marketing Campaign, Pacific Raceways NHRA FanFest 2023, Business Connect Events, the Economic Development element of the Comprehensive Plan, business outreach meetings, tourism, Good Neighbor Agreement, National Night Out, Request for Proposals for Web Location Intelligence Application, and plans for the next update.

Council discussed the SHAG allowance for tenant improvements, the advertising signs and return on investment, the Explore Auburn website, the Muckleshoot Tribal Hotel, the Muckleshoot Canoe Journey event, and partnership opportunities with the Muckleshoot Tribe.

Deputy Mayor announced that the Ad Hoc Committee for the Council Rules of Procedure has been formed and consists of himself, Councilmember Brown, and Councilmember Rakes. Councilmember Rakes will Chair the Committee and their first meeting is July 11, 2023.

VII. ADJOURNMENT

There being no further business to come before the Council, the meeting was adjourned at 7:58 p.m.

APPROVED this 17th day of July, 2023.

_____ _____

JAMES JEYARAJ, DEPUTY MAYOR Shawn Campbell, City Clerk

Agendas and minutes are available to the public at the City Clerk's Office, on the City website (http://www.auburnwa.gov), and via e-mail. Complete agenda packets are available for review at the City Clerk's Office.

TO BE COMPLETED
AT A LATER DATE

State of Washington
DEPARTMENT OF HEALTH
NORTHWEST DRINKING WATER REGIONAL OPERATIONS
20425 72nd Avenue South, Suite 310 • Kent Washington 98032-2388

RECEIVED
AUG 27 2021
City of Auburn
Public Works Dept

August 24, 2021

SUSAN FENHOUS, PE
WATER UTILITY ENGINEER
CITY OF AUBURN PUBLIC WORKS DEPARTMENT
25 WEST MAIN STREET
AUBURN WA 98001

Subject: Auburn, City of (ID#03350)
King County
Lead & Copper Rule – (b)3 Status Accepted

Dear Susan Fenhous:

Thank you for submitting your request for a "(b)3 determination" per Title 40 CFR Chapter 1 part 141.81(b)(3). The letter dated August 11, 2021 was received in this office on August 17, 2021.

The summary of the two sets of distribution system tap samples for lead and copper collected in November 2020 and May 2021 demonstrates that the City meets the criteria in Title 40 CFR Chapter 1 part 141.81(b)(3). Therefore, the City of Auburn is not required to collect and report optimal water quality parameters, more specifically the representative distribution system sampling for pH. Future revisions in the rules may be more stringent and require further action.

Sincerely,

Brietta Carter

Brietta Carter, PE
Regional Engineer
NW Office of Drinking Water

cc: Public Health – Seattle & King County
Joshua Flanders, Water Manager, City of Auburn
Tom Nicaise, Water Operations Supervisor, City of Auburn

ecc: Steve Hulsman, Source Monitoring Program

Appendix G - Summary of Water Service Area, Interlocal and Wholesale Agreements

Agency	Type of Document	Date of Approval	COA Resolution #
City of Tacoma	Franchise Agreement	Sep-1969	2383
Water District #111 (Lake Meridian Water District)	Service Boundary Agreement	Dec-1978	931
Water District #87	Acquisition Agreement	Jul-1982	1341
Water District #124	Service Boundary Agreement	Oct-1989	1021
Braunwood Estates	Satellite Water System Management Agreement	Aug-1990	2114
City of Bonney Lake	Interlocal Agreement	Aug-1994	2551
Covington Water District, Water District #111 (Lake Meridian Water District)	Interlocal Agreement	Sep-1996	2721
King County	Franchise Agreement	Nov-1996	2782
Pierce County	Service Area Boundary Agreement	Sep-1997	2873
City of Bonney Lake	Settlement Agreement	Mar-1998	2925
Lakeland Company, Inc.	Amendment to Lakeland Annexation & Utilities	May-1998	2955
Pierce County	Franchise Agreement	Oct-1998	5163
City of Bonney Lake	Service Area Agreement	Dec-1998	3018
City of Bonney Lake	Emergency Fire Flow Protection Agreement	Dec-1998	3019
WA Dept. of Health	Amendment to Bilateral Compliance Agreement	Mar-2000	3190
City of Kent	Emergency Water System Intertie Agreement	Aug-2001	3374
South King Co. Regional Water	Joint Operating Agreement	Sep-2001	3383
City of Bonney Lake	Emergency Water System Intertie Agreement	Mar-2002	3434
Covington Water District, Water District #111 (Lake Meridian Water District)	Emergency Water System Intertie Agreement	Apr-2002	3444
Lakehaven Utility District (Lakehaven Water & Sewer District)	Emergency Water System Intertie Agreement	Apr-2002	3443
City of Bonney Lake	Franchise Agreement	May-2002	5592
Covington Water District, Water District #111 (Lake Meridian Water District)	Interim Water Sales Agreement	Jun-2002	3482
WA Dept. of Health	Amendment to Bilateral Compliance Agreement	Jul-2002	N/A
City of Algona	Revised Water System Intertie Agreement	Oct-2002	3534
Water District #111 (Lake Meridian Water District)	Emergency Water System Intertie Agreement	Jun-2003	3614
City of Tacoma, Water Division	Turnout Construction Agreement	Sep-2003	3637
City of Pacific	Annexation/Deannexation Agreement	Oct-2003	3644
Voice Stream PCS III Corporation	Lease Agreement	Dec-2003	3649
Lakehaven Utility District (Lakehaven Water & Sewer District)	Franchise Agreement	Feb-2004	3650
Lakehaven Utility District (Lakehaven Water & Sewer District)	Water Service Boundary Agreement	Feb-2004	3652
City of Bonney Lake	Interlocal Agreement	Feb-2005	3760
Covington Water District, Water District #111 (Lake Meridian Water District)	Interim Water Sales Agreement	Feb-2005	3817
Cingular Wireless PCS, LLC.	Lease Agreement	Sep-2005	3886
Cascade Water Alliance, Tacoma	Wholesale Water Agreement	Oct-2005	N/A
Lakehaven Utility District (Lakehaven Water & Sewer District)	Termination of Emergency Water Supply Intertie Agreement	Apr-2006	4008
Clearwire LLC.	Lease Agreement	May-2006	4018
WA Dept. of Ecology	Cost Reimbursements Agreement	Jun-2006	4039
City of Kent, Water District #111	Water Service Boundary Agreement	Sep-2006	3920
City of Bonney Lake, Buckley, Sumner and Cascade Water Alliance	Lake Tapps Area Water Resources Agreement	Jan-2010	4563
City of Bonney Lake	Emergency Water System Intertie Agreement	May-2010	4596
Bonneville Power Administration (BPA)	Easement Usage Agreement	Jun-2010	N/A
Lakehaven Utility District (Lakehaven Water & Sewer District)	Emergency Water System Intertie Agreement	Oct-2010	4649

City of Tacoma	Emergency Water System Intertie Agreement	Oct-2010	4648
Water District #111 (Lake Meridian Water District)	Interim Water Sales Agreement	Dec-2010	4660
Covington Water District, Water District #111 (Lake Meridian Water District)	Pipeline Purchase, Transfer and Acquisition Agreement	Jun-2011	4725
Bonneville Power Administration (BPA)	Easement Usage Agreement	Feb-2012	N/A
Tacoma Public Utilites (TPU)	Wholesale Water Agreement	Jul-2012	Unknown
Cascade Water Alliance	Agreement for Purchase & Sale of Permanent and Reserve Wholesale Water Credits	Sep-2013	4986
City of Bonney Lake	Bonney Lake Water System Leak Detection Project Area Map	Feb-2014	N/A
Valley Communications Center	Lease Agreement	Feb-2014	5033
City of Bonney Lake	Auburn-Bonney Lake Water Service Boundary Map	Mar-2014	N/A
City of Tacoma	Wholesale Water Agreement	Sep-2014	5102
Muckleshoot Indian Tribe (MIT)	Casino Master Meter Easement	Jun-2015	5153
Pierce County	Standard Service Area Agreement	Nov-2015	5182
Lakehaven Utility District (Lakehaven Water & Sewer District)	Ratifying Franchise Agreement adopted by Resolution No. 3650	Oct-2016	6624
Covington Water District, Water District #111 (Lake Meridian Water District)	Interlocal Agreement #2 Amendment	Nov-2017	5332
Other Washington Agencies	Interlocal Agreement (Receiving and providing Water/Wastewater Mutual Aid	Mar-2018	5357

ORDINANCE NO. 2383

AN ORDINANCE OF THE CITY OF AUBURN, WASHINGTON, GRANTING TO THE CITY OF TACOMA AND ITS ASSIGNS, THE RIGHT, PRIVILEGE AND AUTHORITY TO CONSTRUCT AND MAINTAIN A TRANSMISSION MAIN IN CERTAIN STREETS IN THE CITY OF AUBURN FOR THE TRANSMISSION OF FRESH WATER FOR MUNICIPAL PURPOSES.

THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, DO ORDAIN AS FOLLOWS:

Section 1. GRANT AND TERMS. That there be and is hereby granted to the City of Tacoma a municipal corporation and its assigns, the right, privilege, authority and franchise for a period of fifty (50) years from and after passage of this Ordinance to lay down, build, construct and maintain and operate, through and across certain streets of the City of Auburn, underground pipes and conduits for thepurpose of transmitting fresh water for municipal purposes.

Section 2. TRANSMISSION MAIN. For the purpose aforesaid, the grantee and its assigns are hereby granted the right, liberty and privilege of laying down, relaying, connecting, disconnecting, and repairing such transmission main through and under the avenues, streets, lanes, alleys andpublic highways, and public parks and grounds of the City of Auburn as may be necessary, proper and convenient for transmitting the fresh water supply of the grantee through the city limits of the grantor.

Section 3. PLANS AND SPECIFICATIONS. Before said grantee and assigns shall begin the construction of the transmission main underneath the said streets or places in the City of Auburn, it shall file with the City Engineer of the grantor detailed plans, specifications and profiles of the pipeline and shall show the place in said streets or places proposed to be used for and/or crossed by said pipeline, the size of the pipeline and its depth from the surface of the ground. The said plans, specifications and profiles shall be approved by the City Engineer of the grantee and a permit granted for the same before any excavation or the construction of said pipes shall be commenced, which approval shall not be unreasonably withheld. The grantee upon receiving such construction permit shall hasten the work of construction with all convenient speed and shall repair the pavement or surface in as good condition as it was before being disturbed by said grantee and repair it with the same kind of material as now laid on said streets or surface and subject to the approval of the City Engineer of the grantor, shall place an inspector upon the said street during the reconstruction of the pavement thereon and the salary of such inspector shall be paid by the grantee, and said street shall not be torn up in any event for a longer period than ninety (90) days after the said grantee shall begin the work of construction. If the grantee shall fail to build said street or surface in

as good condition as it was before or shall fail to rebuild it at all, the grantor may proceed to repair said street or surface and charge the expense thereof to the grantee. All excavations shall be carefully guarded so as to prevent accidents by reason thereof, and the grantee shall save the grantor free and harmless of and from all costs, damages and expenses of any kind whatsoever occasioned by such work or by the maintenance of such conduits and pipes through and across the street or place and should any final judgment be recovered against said city on account of any damages, said grantee shall forthwith pay the same, including grantor's reasonable attorney fees and costs, after having been notified in writing to do so by the grantor, and the failure of said grantee to make such payment within a period of sixty (60) days after such notice has been given shall operate as a forfeiture of the rights and privileges herein granted; provided, however, that the grantor shall in any suit brought against it on account of such damages and within twenty (20) days after service of process upon it give written notice to the grantee of the pendency of said suit, and thereon, grantee shall have the option of defending said litigation on behalf of the City at its own cost.

Section 4. NOT TO INTERFERE WITH OTHER PIPES. Said pipes shall be laid down in such manner as not to interfere with the sewer or water pipes or any other pipes in said streets and places and all pipes and conduits to be laid down by the grantee shall be of first quality material.

Section 5. FRANCHISE NOT EXCLUSIVE. Nothing in this Ordinance shall be construed as granting to the said grantee and assigns an exclusive right or prevent the granting to other companies or individuals a franchise for like purposes.

Section 6. SERVICE AVAILABILITY. In the event that the City has need for additional domestic water and the grantee determines that it can provide such water from the transmission line and at the rates it charges other consumers, similarly located, the grantee shall so make available points of distribution in order to provide the additional supply so determined.

Section 7. ACCEPTANCE. In order to claim the rights and privileges granted by this franchise, the grantee or assigns shall, within thirty (30) days after the approval of this Ordinance, file with the City Clerk of the grantor its acceptance in writing of the franchise granted by this Ordinance.

Section 8. EFFECTIVE DATE. That this Ordinance shall take effect five (5) days from and after its passage, approval and publication as provided by law.

INTRODUCED: SEPTEMBER 2, 1969

PASSED: SEPTEMBER 15, 1969

APPROVED: SEPTEMBER 15, 1969

Robert E Gaines
MAYOR

ATTEST:

Gene Williams
City Clerk

APPROVED AS TO FORM:

Robert M. Lathe
City Attorney

PUBLISHED: In [illegible] News
Sept 7 1969

RESOLUTION NO. 931

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK OF THE CITY OF AUBURN, TO ENTER INTO AN AGREEMENT WITH KING COUNTY WATER DISTRICT NO. 111, FOR THE ESTABLISHMENT OF A BOUNDARY BETWEEN THE SERVICE AREAS OF THE PARTIES.

THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AT A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES:

THAT the Mayor and City Clerk of the City of Auburn, are hereby authorized to enter into an agreement with King County Water District No. 111, for the establishment of a boundary between the service areas of the parties. A copy of said agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

DATED and SIGNED this 4th day of December, 1978.

CITY OF AUBURN

Stanley P. Kerry
MAYOR

ATTEST:

Coralee A. McConnehey
City Clerk

Resolution No. 931
11-30-78

AGREEMENT ESTABLISHING USE AND

SERVICE AREAS OF THE PARTIES

AGREEMENT between King County Water District No. 111, a special purpose district of the state of Washington, hereinafter called "District," and the City of Auburn, a municipal corporation of the state of Washington, hereinafter called "City."

1. Purpose. The District and the City have previously informally agreed to the establishment of a boundary between the service areas of the two parties and are now desirous of confirming the previous understanding and agreement in writing.

2. Agreement. It is hereby agreed between the parties that the boundary between the areas served by each of the parties shall be as follows:

> Beginning at the intersection of a line which is 330 feet south of and parallel with the north line of Section 3, Township 21 North, Range 5 East, W.M. with the northwesterly margin of S.R. 18; thence west along a line which is 330 feet south of, and parallel with, the north line of Sections 3 and 4, to the west line of the northeast one quarter of said Section 4.

District shall serve the area lying generally north of said boundary line and City shall serve the area lying generally south of said boundary line.

DATED: 9 Nov, 1978.

KING COUNTY WATER DISTRICT NO. 111

By _____
Gary G. Cline, Commissioner

By _____
Robert R. Sparks, Commissioner

By _____
Charles E. Wilson, Commissioner

CITY OF AUBURN

By _____
Mayor

By _____
Clerk

RESOLUTION NO. 1341

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR OF THE CITY OF AUBURN, TO EXECUTE AN AGREEMENT BETWEEN THE CITY OF AUBURN AND KING COUNTY WATER DISTRICT NO. 87 CONCERNING THE TRANSFER OF KING COUNTY WATER DISTRICT NO. 87'S WATER SYSTEM TO THE CITY OF AUBURN.

THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

THE Mayor of the City of Auburn, Washington, is herewith authorized and directed to execute an Agreement between the City of Auburn and King County Water District No. 87 concerning the transfer of King County Water District No. 87's water system. A copy of said Agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

THE Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directions of this legislation.

DATED and SIGNED this 6th day of July, 1982.

CITY OF AUBURN

Bob Roegner

MAYOR

ATTEST:

Coralee McConnehey

City Clerk

Resolution No. 1341
7/6/82

AGREEMENT CONCERNING TRANSFER OF KING COUNTY
WATER DISTRICT NO. 87'S WATER SYSTEM TO THE
CITIES OF AUBURN AND KENT

April 1, 1982

IT IS AGREED by and between WATER DISTRICT 87, King County, a Washington Municipal Corporation ("WD 87"); and the Cities of AUBURN ("Auburn") and KENT, ("Kent") Washington, collectively, "the cities") as follows:

1. Authority

This agreement is entered into pursuant to RCW 35A.13.070, which authorizes one or more cities and water districts to contract regarding ownership of property, providing or water service, and operation of facilities.

2. Transfer of Water System

The ownership of WD 87's entire "water system" shall, as of the above date, be transferred and conveyed to Auburn and Kent, in the manner provided below.

The term "water system" shall include, but not be limited to, all WD 87 water mains and appurtenances; hydrants; easements; licenses; franchises; permits and facilities, rights and assets of any kind or nature whatsoever.

Said transfer is subject to the cities' performance of all of the terms and conditions of this agreement.

The cities hereby accept their respective portions of the water system on the terms of this agreement.

3. Division of System

The entire WD 87 water system lying southerly of the following described line will become the property of the Auburn and the remaining portion of the water system (lying northerly of the following described line) shall become the property of Kent:

> Starting at a point of intersection on the westerly boundary line of WD #87 which is the easterly margin of the Chicago Milwaukee and St Paul Railroad right-of-way with the southerly right-of-way line of S. 277th street and projecting easterly therefrom along said southerly right-of-way line to an intersection point with the easterly margin of the Burlington Northern Railroad right-of-way thence northerly therefrom along said easterly line to an intersection point with the northerly right-of-way line of S. 277th street thence projecting easterly therefrom along said northerly right-of-way line to the easterly boundary line of WD #87 which is the westerly line of S.S. Highway #5 (aka) East Valley Highway.

WD 87's customer records will be divided between the cities, according to the above division of the water system and any temporary services.

The limited hand tools and miscellaneous personal property owned by WD 87 will be transferred to Auburn.

4. Connection to Auburn System

The cost of inter-connecting the WD 87 water system to Auburn's water system shall be paid for from monies presently in the WD 87 maintenance fund.

The City of Kent is presently connected to the WD 87 water system, and no further connections are presently needed.

5. Costs and Expenses/WD 87 Money

The following shall be paid from WD 87 money, in the following order of priority:

WD 87 routine debts and expenses.

WD 87's attorney's fees for drafting of this agreement, and related work.

Any attorney's fees and/or costs in obtaining boundary review board or other governmental approvals (per paragraph 10 hereof).

Cost of inter-conecting the WD 87 system to Auburn's water system (per paragraph 4 hereof).

To the extent that any WD 87 money remains after payment of the above, the same shall be divided evenly between the cities proportionate to the number of WD 87 customers to be served permanently by the cities.

To the extent that the WD 87 funds are inadequate to pay all of the above, then the City of Auburn shall bear any remaining cost of inter-connecting the water systems. If there is insufficient WD 87 money to pay all of the other above-listed items in full (other than WD debts), then any amount remaining due shall be borne by the cities according to the same permanent customer ratio as above.

6. Service Interruptions

The cities each agree that transfer of the water system will not result in any interruption of water service to any WD 87 customer other than that normally experienced in the day-to-day operation of the respective water systems.

7. Water Rates

The cities each agree that former WD 87 customers shall, following transfer and in the future, be charged for water service, and pay the same connection and other charges, as the cities charge in each case, its other customers in the same class of service. Sevice shall also be of the same quality as that received by other customers in the same class.

8. Temporary Service

Auburn and Kent recognize, and agree, that until their respective water systems are readily available within the present WD 87 service area, each will have to extend temporary water service to existing customers on the opposite side from them on the above described boundary line. During such temporary service, the customers shall pay the serving city's rates and charges, and the serving city will maintain the water mains, hydrants and meters serving those temporary customers.

The city temporarily serving such customers will turn over the customers to the other city on request. Both cities agree to cooperate in the transition of these customers from one city to the other and agree that water service to the customers will not be interrupted unnecessarily during the transition.

No property temporarily served by one of the cities shall be assessed, or otherwise required to pay, for new water mains or facilities in order to transfer their services over to the other city unless said property is specifically benefitted beyond the availability of the existing service.

No new water services including five hydrants and five service lines will be connected to a water main owned by one city but temporarily being utilized to serve the above said customers (property), without the written consent of the other city.

9. Preferential Employment

The employees of WD 87 shall be entitled to offers of comparable full-time employment from both Auburn and Kent, in accordance with RCW 35.13A.090.

10. Governmental Approvals

If, in the opinion of either city, it is necessary to so obtain approval of this agreement by the King County Boundary Review Board, King County Council, and/or any other governmental body, then that city shall so notify the other parties to this agreement prior to transfer of WD 87's remaining monies to the cities.

The cities shall determine, between themselves, which city (or WD 87) shall obtain such approval(s). Regardless of who obtains the approval(s), the cost thereof shall be paid from WD 87 funds to the extent available.

11. Financial Records

WD 87's financial and other records are available on request, for inspection and copying by either of the cities.

12. WD 87 Indebtedness

WD 87 shall, as above, pay all of its debts from its present funds. WD 87 warrants that on the effective date of this agreement it will have no debts. Further WD 87 has no bonds, warrants or similar oblications outstanding, and will not issue any in the future. WD 87 also warrants that it does not have any ULID or other assessments receivable, and will not form any improvement districts in the future.

WD 87 warrants that, to the best of its knowledge and the knowlege of its Water Commissioners, there are no pending, asserted or threatened claims, suits or liens against it or any of its water system, monies or other assets. IF WD 87 or any its commissioners should receive notice or knowledge of any such claim, suit or lien prior to the effective date of this agreement, WD 87 will immediately notify other cities. The Water Commissioners of WD 87 shall not be personally liable for the foregoing warranties; and shall not be personally liable for performance of any of the terms of this agreement unless they shall, by Board of Water Commissioners's action, vote or otherwise cause te breach of this agreement.

13. WD 87 Continuing Authority.

Following the effective date of this agreement, WD 87 shall remain a municipal corporation, and its commissioners shall remain in office for at least their present terms of office, unless WD 87 is sooner dissolved as set forth below. During the continued existence of WD 87, its commissioner shall not exercise any rights, privileges, powers or functions provided by law to WD 87, except at the request of one or both of the cities. If such request is made by only one of the parties, then such actions shall be taken only with respect to that city's portion of the WD 87 water system. The WD 87 Commissioners shall not be obliged to undertake any action unless it is necessary to implement, clarify or carry out this agreement and, in such case, the other city(ies) requesting the action shall thereby agree to save the WD 87 Commissioners harmless from any liability in respect to the same.

14. Dissolution of WD 87.

Any one or more of the parties to this agreement, or anyone else having standing to do so, may petition and/or take such steps having standing to do so, may petition and/or take such steps as are necessary to dissolve WD 87 under any available statutory authority and procedure. In the event that WD 87 has not been dissolved within five (5) years of the effective date of this agreement, then the cities agree that they will immediately thereafter petition for the dissolution of WD 87 pursuant of RCW 57.90 governing the disincorporation of special districts that have not actively carried out any of the district's purposes or functions for a period of

five years, or any similar or other statutes then in effect. The cost of such disincorporation shall be borne by the cities in the same proportion as other expenses are provided for in this agreement.

15. Approval by Parties

This agreement shall be submitted to the governing bodies of each of the parties and approved by City Ordinance and Water District Resolution. Certified copies of said ordinances and resolution shall be furnished each of the parties to this agreement. Adoption of said ordinances and resolution shall serve in lieu of signature to this agreement. Notwithstanding the effective date set forth as the beginning of this agreement, this agreement shall be effective 45 days after it is approved by all three (3) parties.

DATED as of the date set forth hereinabove.

CITY OF AUBURN

CITY OF KENT

WATER DISTRICT NO. 87, KING COUNTY

RECEIVED BY
FINANCE DEPT.
OCT 0 9 1989

RESOLUTION NO. 1021

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR OF THE CITY OF AUBURN TO ENTER INTO A SERVICE AREA BOUNDARY AGREEMENT BETWEEN THE CITY OF AUBURN AND WATER DISTRICT NO. 124.

THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AT A REGULAR MEETING DULY ASSEMBLED HEREWITH RESOLVES THAT:

THE Mayor of the City of Auburn is herewith authorized to enter into a Service Area Boundary Agreement between the City of Auburn and Water District No. 124. A copy of said agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

DATED and SIGNED this 15th day of October, 1979.

8908240972

CITY OF AUBURN

Stanley P. Kersey
MAYOR

ATTEST:

Coralee A. McConnehey
City Clerk

RECEIVED THIS DAY
AUG 24 3 17 PM '89
BY THE DIVISION OF
RECORDS & ELECTIONS
KING COUNTY

89/08/24 #0972 A
RECD F 9.00
RECFEE 2.00
CASHSL ***11.00
55

Resolution No. 1021
10-12-79

SERVICE AREA BOUNDARY AGREEMENT

THIS AGREEMENT made and entered into this 20th day of November, 1979 by and between City of Auburn, a municipal corporation located in King County, Washington, hereinafter referred to as "City", and WATER DISTRICT NO. 124, a municipal corporation located in King County, Washington, hereinafter referred to as "District 124":

W I T N E S S E T H :

1. That the purpose of this Agreement is:

A) To define current service area boundaries, and

B) To establish a method for altering those boundaries in order to provide for:

1) Maximum efficient use of existing and future facilities.

2) Maximum flexibility between the service areas in order to allow the continued and future existence of interties between the parties herein.

3) Maximum public water system coordination.

4) Orderly and efficient public water system planning.

2. That the current service area boundary between the City and the District 124 is as is set forth on Exhibit "A" attached hereto and incorporated herein by reference.

3. That in the event either the City or District 124 desire to change the existing boundary such a change shall be by mutual agreement.

4. That provisions for looped systems and interties are to be encouraged so as to provide:

A) For the most efficient use of current and future facilities.

B) For maximum service to consumers at the lowest possible cost.

C) For mutual aid between the City and District 124 in the event of an emergency.

D) For maximum public water system coordination.

5. That both the City and District 124 recognize that they are "Purveyors" as defined in R.C.W. 70.116.030(4) and hereby acknowledge their duties under R.C.W. 70.116 and the regulations promulgated thereunder and adhere to the purposes described therein.

DATED this 20 TH day of NOVEMBER, 19 79.

CITY OF AUBURN
King County, Washington

Stanley R. Kinsey

WATER DISTRICT NO. 124
King County, Washington

President and Commissioner

Commissioner

Secretary and Commissioner

LEGAL DESCRIPTION OF SERVICE AREA BOUNDARY LINE BETWEEN CITY OF AUBURN AND KING COUNTY WATER DISTRICT #124

COMMENCING AT THE NORTHEAST CORNER OF LOT 5, BLOCK 39, JOVITA HEIGHTS, LOCATED IN THE SOUTHWEST QUARTER, SECTION 23, T. 21 N., R 4 E., W.M.;

THENCE NORTHWESTERLY TO A POINT ON THE NORTH LINE OF LOT 8, LOCATED 400' EAST OF THE NORTHWEST CORNER OF LOT 8, BLOCK 25, OF SAID JOVITA HEIGHTS, WHEREIN SAID LINE CROSSES THE EXISTING AUBURN CITY LIMITS LOCATED ON IOWA DRIVE;

THENCE NORTHERLY ALONG A LINE 400' EAST OF AND PARALLEL TO THE WEST LINE OF LOT 7 THROUGH LOT 1 OF BLOCK 25, JOVITA HEIGHTS, TO A POINT ON THE NORTH LINE OF SAID LOT 1;

THENCE EASTERLY 50'± ALONG THE NORTH LINE OF SAID LOT 1 TO THE SOUTHERLY EXTENSION OF THE EASTERLY RIGHT OF WAY LINE OF 58TH AVENUE SOUTH (PENNSYLVANIA AVENUE);

THENCE NORTHERLY ALONG SAID RIGHT OF WAY LINE TO THE SOUTH LINE OF SECTION 14, T. 21 N., R 4 E., W.M.;

THENCE EAST ALONG THE SOUTH LINE OF SECTION 14 TO THE SOUTH 1/4 CORNER OF SAID SECTION 14;

THENCE NORTH ALONG THE CENTERLINE OF SAID SECTION 14 TO THE INTERSECTION OF SAID CENTERLINE WITH THE CENTERLINE OF MOUNTAIN VIEW DRIVE (331ST STREET OR OLD CEMETARY HILL ROAD);

THENCE MEANDERING EASTERLY AND NORTHERLY ALONG THE CENTERLINE OF MOUNTAIN VIEW DRIVE TO THE INTERSECTION OF SAID STREET CENTERLINE WITH THE E-W CENTERLINE OF SECTION 14;

THENCE NORTHERLY ALONG THE SOUTHERLY EXTENSION OF HI-CREST DRIVE TO THE SOUTH LINE OF HI-CREST ADDITION NO. 2, LOCATED IN SECTION 14, T.21N., R. 4 E., W.M.;

THENCE WESTERLY ALONG SAID SOUTH LINE TO THE SOUTHWESTERLY CORNER OF SAID ADDITION (S.W. CORNER OF LOT 9);

THENCE NORTHEASTERLY ALONG THE WESTERLY LINE OF SAID HI-CREST ADDITION #2 TO THE NORTHWESTERLY CORNER OF SAID PLAT, WHICH IS ALSO THE SOUTHWEST CORNER OF KNICKERBOCKER HEIGHTS ADDITION;

THENCE NORTH ALONG THE WEST BOUNDARY OF SAID KNICKERBOCKER HEIGHTS ADDITION AND ALSO THE WEST BOUNDARY OF ABBY'S FIRST ADDITION TO A POINT ON THE SOUTH LINE OF SECTION 11, T. 21 N., R. 4 E., W.M.;

THENCE NORTHERLY ALONG THE WEST LINE OF THE E 1/2, E 1/2, SECTIONS 11 AND 2, T 21 N R. 4 E., W.M., TO A POINT 329' NORTH OF THE SOUTH LINE OF SAID SECTION 2;

THENCE NORTHEASTERLY A DISTANCE OF 2,150' MORE OR LESS, TO A POINT ON THE EAST LINE OF SAID SECTION 2, WHICH POINT IS LOCATED 655' SOUTH OF THE EAST 1/4 CORNER OF SECTION 2, T. 21 N., R 4 E., W.M.;

THENCE NORTH ALONG THE EAST LINE OF SAID SECTION 2 TO A POINT 836' NORTH OF THE EAST 1/4 CORNER OF SAID SECTION 2;

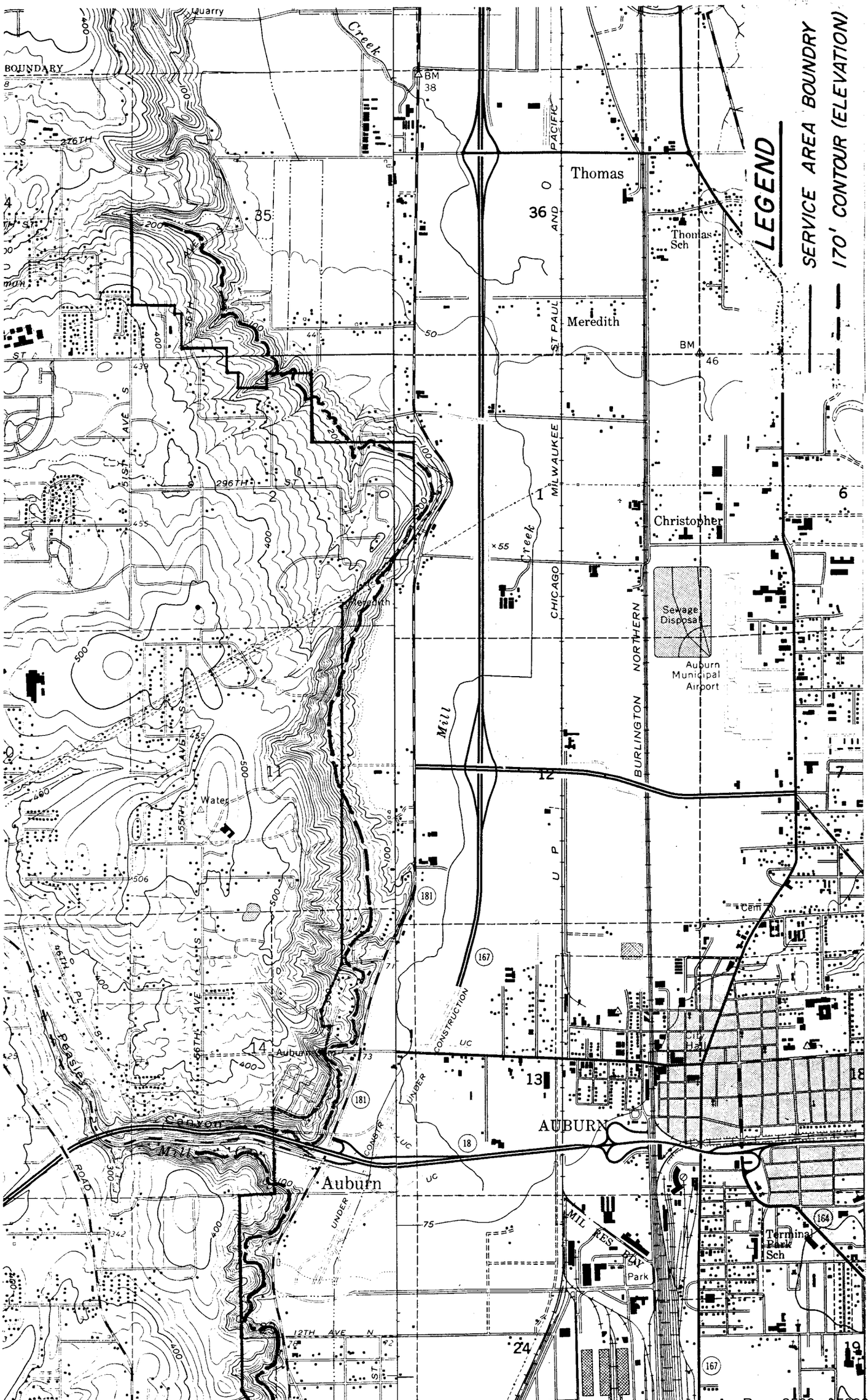
THENCE WEST TO THE WEST LINE OF THE E 1/2, E 1/2, SECTION 2, T.21N., R4E., W.M.;

THENCE NORTH ALONG SAID WEST LINE TO A POINT 351' SOUTH OF THE NORTH LINE OF SAID SECTION 2;

THENCE WESTERLY AND PARALLEL TO AND 351' SOUTH OF THE NORTH LINE OF SECTION 2, TO A POINT ON THE N-S CENTERLINE OF SAID SECTION 2;

THENCE SOUTHERLY 60' ALONG SAID N-S CENTERLINE;

THENCE WESTERLY AND NORTHERLY ALONG THE APRIL, 1979 BOUNDARY TO THE WEST 1/4 CORNER OF SECTION 35, T. 22 N., R 4 E., W.M., WHICH IS THE TERMINAL POINT OF THIS BOUNDARY DESCRIPTION:


LEGEND
SERVICE AREA BOUNDRY
170' CONTOUR (ELEVATION)
BOUNDARY
Quarry
Creek
BM 38
276TH ST
Thomas
Thomas Sch
PACIFIC AND
ST PAUL
Meredith
BM 46
MILWAUKEE
Christopher
Creek
CHICAGO NORTHERN
BURLINGTON
Sewage Disposal
Auburn Municipal Airport
296TH ST
Meredith
Mill
Water
55TH AVE S
66TH AVE S
66TH PL S
Pearsall Rd
Canyon
Mill
Auburn
UP
CONSTRUCTION
UC
UNDER
CONSTR
UC
AUBURN
MIL
RES
BAY
Park
Terminal
Park
Sch
12TH AVE N
Cem
181
167
18
164

RESOLUTION NO. 2 1 1 4

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE A SATELLITE WATER SYSTEM SERVICE CONTRACT FOR BRAUNWOOD ESTATES (PREVIOUSLY SALTMARK ESTATES)

THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. AUTHORIZATION. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute a Satellite Water System Service Contract for Braunwood Estates (previously Saltmark Estates). A copy of said Contract is attached hereto and denominated Exhibit "A".

Section 2. AUTHORITY. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

DATED and SIGNED this 6th day of August, 1990.

CITY OF AUBURN

MAYOR

ATTEST:

Robin Wohlhueter, City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds,
Acting City Attorney

CITY OF AUBURN

WATER DEPARTMENT

SATELLITE WATER SYSTEM SERVICE CONTRACT

FOR BRAUNWOOD ESTATES (PREVIOUSLY SALTMARK ESTATES)

IT IS AGREED by and between the CITY OF AUBURN ("the City") and the undersigned ("the Owners") as follows:

1. **Parties.** The City is a municipal corporation organized under and existing by virtue of Chapter 57 of the Revised Code of Washington. The Owners are, collectively, the owners of property provided water service by a water source and distribution system which is independent of and unconnected to another public or private water system (the "satellite system").

2. **Legal Description.** The property presently served, and to be served in the future, by the satellite system is located in King County, Washington and is legally described as follows:

   THE SW 1/4 OF THE NE 1/4 OF SECTION 33, TWP 21 N., R. 5 E., W.M. AND THE W 1/2 OF THE SE 1/4 OF THE NE 1/4 OF SECTION 33, TWP 21 N., R. 5 E., W.M.

   The above property is inside the City's service area under the South King County Coordinated Water Supply Plan.

3. **City Services.** The City will provide services to the satellite system, as identified below:

   * Operation and management of the satellite system from the tail piece on the house side of the meters to the well source.

   * Routine inspection, maintenance and repair of the satellite system in accordance with reasonable and accepted standards and practices for public water systems.

   * Emergency repairs, within a reasonable time after the owners have notified the City.

   * Preparation and filing of reports and other data (including water sample testing) as required.

4. **City Charges.** The property owners within the plat of Braunwood Estates agree to pay the following to the City:

   A. Services charges. The City will charge for the above-identified services at a rate equivalent to that

applied in the Auburn City Code, Title 13, Chapter 13.04.

B. Connection Charge. All persons connecting to the City's water system are obliged to pay a standard service installation charge as identified in the Auburn City Code, Title 13, Chapter 13.04.

C. Reserve Account. All parcels within said plat, upon connection to the City's water system, shall pay to the City one thousand dollars ($1,000) per parcel as a reserve account.

The reserve account can be utilized for water system repair, replacement or maintenance at the City's discretion, upon completion of the one (1) year maintenance period, as set out in the Developers Extension Agreement.

The property owners are not entitled to return of the reserve account money or interest on the reserve account, and the money in the account may be co-mingled with other Water Department funds.

5. **Terms and Conditions.** This Agreement includes all of the terms and conditions in the Auburn City Code as applicable and as amended in the future.

Without limiting the foregoing, it is agreed as follows:

A. The City owns the satellite water system and will provide service as set forth above, performed in accordance with accepted public utility practices.

B. The property owners hereby agree to limit the total number of connections irrigating their property at any one time to seven (7). The restrictive irrigation requirements shall be conducted by address on an odd and even number basis. The even numbered addresses shall be permitted to irrigate on even numbered calendar days, while the odd numbered addresses shall be permitted to irrigate on the odd numbered calendar days. The design of private irrigation systems shall be limited to a maximum of ten (10) gallons per minute total consumption for each lot.

C. The property owners hereby agree in the event that the satellite system water source is interrupted, due to unpredictable conditions, such as severe volume reductions, contaminated water or any other unforeseen condition, the City at its discretion may utilize the alternate well site as described on the development plan or any other reasonable measure to ensure a source of water.

D. The property owners will not be assessed a System Development Charge (SDC) as allowed for in the Auburn City Code, unless there is a failure of the existing system as described in paragraph 5. C. above and it is deemed necessary by the City in the event a suitable and reliable source of water cannot be developed and the City must utilize Water Department funds beyond the reserve account to provide an alternate water source.

E. The designed, approved and constructed satellite water system shall be limited to a maximum of thirteen (13) total single-family residential connections.

F. All customers must be connected to the satellite system via a meter supplied by the City, after property owner application. The service must be in accordance with the City of Auburn standards and the City's standard meter charge must be paid in advance of the City providing service.

6. **Source Interruption Responsibility.** Because a satellite system will receive water from a single well or aquifer and may be so located that no emergency water service is reasonably available, the City will not, under any circumstances, undertake liability for emergency or supplemental supply in the event of diminution in, loss of, or contamination of the satellite system's water supply.

7. **Waiver of Right to Protest Formation of a U.L.I.D.** The property owners waive any and all rights granted by statute or otherwise, to object to or protest against formation by the City of a Utility Local Improvement District for the purpose of constructing water improvements extending the City's system to provide City water to the properties. The foregoing does not waive the property owners' right to object to the amount of the property owners' assessment, in the manner provided by statute.

8. **Future Connection to City System.** If the City's water system were extended to provide City water in lieu of the present satellite system source, the present and future owners of the property agree to connect to the City's system, at their expense, in accordance with the terms and conditions of the Auburn City Code valid at the time of connection.

9. **Duration.** This Agreement shall remain in full force and effect until the City's basic system is extended to serve the satellite system area. Neither party may terminate this Agreement until that time.

10. **Integration.** This Agreement constitutes the entire agreement between the parties. There are no other verbal or written agreements or representations which modify or affect this Agreement.

11. **Covenant Running with the Property.** It is agreed that this Contract is a covenant running with the property described in Paragraph 2 above and any other properties receiving water in the future from the satellite system, and shall be binding on the owners of all such property, their heirs and successors and it shall be recorded as an encumbrance against each of the thirteen (13) land parcels.

Terra Belle, Inc.

Authorized signature

CITY OF AUBURN

MAYOR

ATTEST:

Robin Wohlhueter, City Clerk

APPROVED AS TO FORM:

City Attorney

Res 2114

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

On this 20th day of July, 1990, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared Alan Bart and Joanne Bart to me known to be the _____ President and _____ Secretary, respectively, of Tahoe Bart, Inc. the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute the said instrument and that the seal affixed in the corporate seal of said corporation.

Witness my hand and official seal hereto affixed the day and year first above written.

Barbara Hill
NOTARY PUBLIC IN AND FOR THE STATE OF WASHINGTON, RESIDING AT Kent

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

On this ____ day of _____, 19___, before me undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____, to me known to be the Mayor and City Clerk, respectively, of the City of Auburn, a municipal corporation, and the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute the said instrument and that the seal affixed is the corporate seal of said corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
NOTARY PUBLIC IN AND FOR THE STATE OF WASHINGTON, RESIDING AT _____

REF. FAC0694/E90-669

RESOLUTION NO. 2 5 5 1

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN INTERLOCAL AGREEMENT BETWEEN THE CITY OF AUBURN AND THE CITY OF BONNEY LAKE FOR OPERATING AND MAINTAINING A PUBLIC WATER SYSTEM.

WHEREAS, the cities of Auburn and Bonney Lake are responsible for operating and maintaining a public water system in accordance with federal, state and local laws and regulations; and

WHEREAS, the parties recognize the responsibility of public water utilities to provide for the highest quality of water and reliability of service to their customers at reasonable cost; and

WHEREAS, the parties further recognize that water resources are finite and vulnerable, and the prudent use and management of these resources requires cooperation among utilities;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute an Interlocal Agreement between the City of Auburn and the City of Bonney Lake for operating and maintaining a public water system in accordance with federal, state and local laws and regulations.

CITY ATTORNEY
City of Auburn
25 W. Main
Auburn, WA 98001
(206) 931-3030

A copy of said Agreement is attached hereto, designated as Exhibit "A" and incorporated by reference in this Resolution.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

DATED and SIGNED this 15th day of August, 1994.

CITY OF AUBURN

Charles A. Booth
MAYOR

ATTEST:

Robin Wohlhueter
Robin Wohlhueter,
City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds,
Acting City Attorney

CITY ATTORNEY
City of Auburn
25 W. Main
Auburn, WA 98001
(206) 931-3030

INTERLOCAL AGREEMENT BETWEEN THE CITY OF BONNEY LAKE AND THE CITY OF AUBURN

ORIGINAL

This agreement made and entered into this 15th day of August, 1994, by and between the City of Auburn (hereinafter referred to as "Auburn"), and the City of Bonney Lake (hereinafter referred to as "Bonney Lake"), WITNESSETH THAT:

WHEREAS, Auburn and Bonney Lake are responsible for operating and maintaining a public water system in accordance with federal, state and local laws and regulations, and

WHEREAS, the parties recognize the responsibility of public water utilities to provide for the highest quality of water and reliability of service to their customers at reasonable cost, and

WHEREAS, The parties further recognize that water resources are finite and vulnerable, and the prudent use and management of these resources requires cooperation among utilities, and

NOW, THEREFORE, the City of Bonney Lake and the City of Auburn enter into the following agreement.

A. RECITALS

1. Bonney Lake will sell water to Auburn for the purpose of serving a maximum of two rural-residential domestic service connections for lots that abut the Pierce/King County (Auburn City Limits) line, in vicinity of Kersey Way S. E.

2. City of Auburn would install their own meters to individual services and one of these services would be to tax lot 9056 on Kersey Way S. E., adjacent to the county line.

3. The meter shall be in the Bonney Lake water service area. (Pierce County) The City of Auburn shall pay the connection charge plus the actual cost of the meter installation. The City of Bonney Lake shall own the meter.

4. The size of the meter shall be determined by the City of Auburn.

5. All the properties served within the City of Auburn water service area will be the responsibility of the City of Auburn.

6. Bonney Lake will sell water to the City of Auburn at the standard Outside the City rates. Per Bonney Lake Municipal Code Section 13.04.100(C).

7. Bonney Lake shall only furnish domestic needs for the two (2) rural residential connections. Bonney Lake is not responsible for fire flow.

RES No. 2551
Exhibit "A"

8. The City of Auburn will require new service connections from this supply to be protected by a residential fire sprinkler system in accordance with Auburn Fire Department ordinance.

9. This agreement shall become null and void at the time Auburn has water available through it's own system to serve these properties.

10. The City of Bonney Lake shall use reasonable effort to provide a regular uninterrupted supply of water to Auburn. Bonney Lake shall not be liable for any shortage or interruption in delivery of water. In addition Bonney Lake shall not be liable for any failure, interruption or shortage of water or any loss or damage resulting therefrom, occasioned by any cause beyond the control of the City of Bonney Lake

11. Auburn shall be a customer of Bonney Lake and shall be given the same consideration as any other customer under the ~~City~~ Bonney Lake's rules, regulations, and Municipal Codes, for domestic service only.

12. This Agreement to provide water services by Bonney Lake shall continue from year to year on the anniversary date of the later approval date shown below, unless notice of intent not to renew this Agreement is provided by the Mayor of the City of Bonney Lake in writing to the Mayor of the City of Auburn on or before the anniversary date.

CITY OF AUBURN

Charles A. Booth
MAYOR

DATED: 8-15-94

ATTEST:
Robin Wohlhueter
City Clerk, City of Auburn

CITY OF BONNEY LAKE

Rex Sulfrez
MAYOR

DATED: 6-28-94

ATTEST:
Kathleen L. Clayton

APPROVED AS TO FORM:
Craig M. Mills
BONNEY LAKE CITY ATTORNEY

APPROVED AS TO FORM:
Acting City Attorney, City of Auburn

RES No. 2551
Exhibit "A"

RESOLUTION NO. 2721

A RESOLUTION OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK OF THE CITY OF AUBURN, TO EXECUTE INTERLOCAL AGREEMENT NO. 2 FOR THE LEA HILL INTERTIE PROJECT BETWEEN THE COVINGTON WATER DISTRICT, KING COUNTY WATER DISTRICT #111 AND THE CITY OF AUBURN.

THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREBY RESOLVES THAT:

SECTION 1. The Mayor and City Clerk of the City of Auburn, Washington, are hereby authorized to execute Interlocal Agreement No. 2 for the Lea Hill Intertie Project between the Covington Water District, King County Water District #111 and the City of Auburn. A copy of said Agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

SECTION 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

CITY ATTORNEY
City of Auburn
25 W. Main
Auburn, WA 98001
(206) 931-3030

Interlocal Agreement 2
for the
Lea Hill Intertie Project
between
Covington Water District,
King County Water District #111,
and the
City of Auburn

I. Project Title: Lea Hill Intertie, consisting of construction and operation of piping, pump stations, meters, and source facilities for a water supply intertie between the City of Auburn (Auburn), Covington Water District (CWD) and King County Water District #111 (WD111), jointly termed the Participants. The project facilities are as shown on Exhibit A - Facilities Plan.

II. General:

A. This Interlocal Agreement 2 (IA2) is consistent with the Joint Operating Agreement (JOA) of the South King County Regional Water Association (SKCRWA) dated 26 July 1995.

B. There is an immediate need to provide for additional water supply to meet the needs of CWD and WD111, and meet the emergency needs of Auburn.

C. Performance by Auburn under IA2 shall be subject to its pre-existing contractual and/or water supply obligations to Algona, Kent, Muckleshoot Indian Tribe, and Pacific. Future Interlocal Agreements shall be subject to the terms and conditions of IA2. It is the intent of Auburn to create a first in time, first in service approach to wholesale of water within the limitations of Auburn's water rights and/or supply capacity.

D. Auburn has the necessary water system capacity to meet a portion of the near term, interruptable, public water supply needs of CWD and WD111. CWD and WD111 have the necessary system capacity to meet a portion of the emergency needs of Auburn.

E. Each Participant desires to develop firm supplies to meet long term, continuing needs.

F. Each Participant hereby identifies its authorized representative as the "General Manager" of CWD, the "General Manager" of WD111, and as the "City Engineer" of Auburn.

G. For wholesale water purposes per Section 4. C. of the JOA, the following interties exist or are expected to exist in the near future for the Participants to IA2:

EXHIBIT "A"
CITY OF AUBURN
RESOLUTION NO. 2721
ADOPTED 09/03/96

1. CWD
   a) Auburn (future)
   b) Black Diamond (future)
   c) Tacoma (future)
   d) King County Water District 94 (future)
   e) WD111, and
   f) Cedar River Water and Sewer District.

2. WD111
   a) Auburn,
   b) CWD,
   c) Kent, and
   d) Soos Creek Water and Sewer District.

3. Auburn
   a) Algona,
   b) Kent,
   c) WD111,
   d) Pacific,
   e) Bonney Lake,
   f) Lakehaven Utility District (future),
   g) Muckleshoot Indian Tribe (future), and
   g) CWD (future).

H. Interlocal Agreement No. 1, 132nd Avenue Interim Intertie Project, dated 7 November 1995, is terminated by mutual agreement of the WD111 and Auburn upon completion of the improvements described in Exhibit B of this IA2.

III. Description of Project:

A. The project facilities are generally described in the Engineering Report prepared by EES, dated September 1995, and any subsequent amendments thereto.

B. The project includes design, construction, and operation of facilities to provide water as follows:

Year	Auburn Maximum Day Demand (mgd)	CWD Maximum Day Demand (mgd)	WD111 Maximum Day Demand (mgd)	Total Maximum Day Demand (mgd)
1998	2.0	1.0	2.0	5.0
2000	2.0	1.5	2.5	6.0
2002	2.0	2.5	2.5	7.0
2005	2.0	2.5	2.5	7.0
2010	2.0	2.5	2.5	7.0

EXHIBIT "A"
CITY OF AUBURN
RESOLUTION NO. 2721
ADOPTED 09/03/96

Additional water may be available as mutually agreed to by the Auburn City Council and the Board of Commissioners of either District. Water is to be provided from the Auburn system to the Lea Hill Reservoir Site, and then to the pipeline on 132nd SE running north to the Districts. The project will provide for flow control facilities as necessary and a master meter which will be used to measure the water supplied. The reverse order is used for water to be provided from the Districts to Auburn.

C. Respective Facility Ownership, Capacity Rights, and responsibility for operation, maintenance, and renewal and/or replacement (r/r) are as described in Exhibit B. Operational parameters shall be as defined in Exhibit C - Project Criteria.

D. Auburn will design, construct and maintain the facilities constructed under IA2 in accordance with reasonably accepted water utility standards for similar municipal water utilities. Facilities will be designed in compliance with the City's adopted design standards as described in the 1995 Comprehensive Water Plan.

E. The participants agree that an independent Value Engineering Analysis will be done at the 75 percent design level.

IV. Project Costs:

A. The project costs are estimated as shown on Exhibit D - Project Cost. Final project costs shall be reviewed and approved by the Participants. The Participants shall maintain individual cost records on their expenses for the project. Auburn will retain a consultant to maintain total cost records for the project.

B. Costs associated with the development of new water sources will be shared based on the basis quantity of water each Participant is allocated from the sources.

V. Project Financing: The Participants shall fully finance and pay for their proportionate share as shown in Exhibit D - Project Cost. The Districts shall deposit funds with Auburn to perform the project work for the proposed facilities in accordance with the schedule shown in Exhibit E - Project Schedule.

VI. Service Charges:

A. Auburn has prepared a Cost of Service Study to determine the cost of service to its customers. A customer classification for "wholesale" has been created, and rates for service charges shall be based on a rate study for the wholesale customer classification. Auburn will regularly update the cost of service analysis. Wholesale water rates will be based on costs of providing the service. Cost of developing the initial Cost of Service Study and Rate Study will be included within the project costs.

EXHIBIT "A"
CITY OF AUBURN
RESOLUTION NO. 2721
ADOPTED 09/03/96

B. WD111 and CWD shall provide a rate to Auburn to be applied for emergency service charges. Such rate shall be based on costs of providing the service, or, in the interim until a Cost of Service / Rate Study is completed, shall be equal to or less than Auburn's current wholesale rate.

C. Adjustments to the service charges will be made in accordance with Section 4.H. of the JOA.

VII. Project Coordination:

A. The Participants shall meet monthly for project coordination, or more frequently as needed.

B. Auburn will retain a consultant to be the overall Project Coordinator. Assignment of responsibilities to the Project Coordinator shall be by agreement of the Participants' authorized representatives.

C. The Participants shall be responsible for design, construction management, and commissioning of facilities to be constructed in conformity to facility ownership. Responsibilities may be assigned otherwise by agreement of the Participants' authorized representatives.

VIII. Conditions of Service:

A. Auburn does not presently have the necessary capacity (i.e., water supply and/or water rights) to guarantee delivery of firm uninterruptible water. It is acknowledged and agreed that in the event Auburn experiences any failure or decreased capacity for any reason or increased demand within its retail service area, the supply to the Districts may be immediately reduced or stopped under such conditions at the sole discretion of Auburn. The Districts agree that Auburn may take such action irrespective of any cost, investment in capacity, or other reliance which may have been placed upon the intertie facilities and interruptible water supply referenced in this IA2.

B. The Districts specifically acknowledge and agree that failure of Auburn to obtain additional primary water rights in excess of Auburn needs shall be cause for not bringing the Districts on a par with Auburn customers. For purposes of this IA2, on par shall mean: Upon receiving new primary water rights for additional water sources in the amount of at least 7 mgd the quantities of water described in paragraph III. B., the Districts will be served on the same basis and with the same reliability as service is provided to Auburn's retail customers, and Auburn will include the maximum total quantity of water cited in paragraph III. B. in all of its water system planning as if the quantity was served to direct service customers and any curtailment, restrictions or limitations on delivery would be on the same basis as curtailment, restrictions, or limitations on delivery to retail customers.

EXHIBIT "A"
CITY OF AUBURN
RESOLUTION NO. 2721
ADOPTED 09/03/96

C. The Participants will proceed with development and implementation of projects in accordance with the project schedule shown in Exhibit E to increase firm system capacity and a wholesale supply capacity as described in paragraph III. B., designed to ensure service to the Districts. It is anticipated the necessary projects required to provide firm supply will be proposed wells numbers 6 and 7 described in the City's 1995 Comprehensive Water Plan. The City has obtained Supplemental Water Rights for the proposed wells numbers 6 and 7. It is the intent of the Auburn to obtain Primary Water Rights for wells number 6 and 7 and additional new wells, if required, sufficient to provide the quantities of water described in paragraph III. B. which shall bring the Districts on a par with Auburn customers.

D. It is the intent of Auburn to provide the water described in paragraph III. B. whenever it is available subject to the limitations described in paragraphs VIII. A. and B. Auburn shall use reasonable diligence and best efforts to provide immediate notice in the event it becomes aware that it may not be able to fulfill the requirements of paragraph III. B. for any reason.

IX. Term of Duration of Agreement: This IA2 shall remain in full force unless terminated by mutual agreement of the Participants.

X. Amendments:

A. This IA2 may be amended only in writing by agreement signed by the Participants.

B. The authorized representatives shall have authority to update exhibits attached hereto. The exhibits shall be updated and/or revised only upon written agreement signed by the Participants' authorized representatives. Updates must be ratified by Auburn's City Council.

XI. Dispute Resolution:

A. Should a dispute arise between the participants regarding the technical aspects of the planning, design, construction, funding, or operation of the facilities contemplated under IA2, the authorized representatives of the participants, as defined in paragraph II. E., shall meet and select two persons who, along with the authorized representatives of the participants, will form a dispute resolution panel to resolve the dispute. Should the dispute resolution panel not be able to reach a mutually satisfactory resolution the dispute will be resolved as described below.

B. Legal disputes between the participants to IA2 shall be resolved through the use of mediation by a mediator mutually acceptable to the participants with each participant agreeing to equally share the cost of the mediator. Should the participants not be able to satisfactorily resolve the dispute through mediation, the forum for resolution shall be King County Superior Court. The substantially prevailing party will be entitled to attorney fees and costs.

EXHIBIT "A"
CITY OF AUBURN
RESOLUTION NO. 2721
ADOPTED 09/03/96

XII. Hold Harmless: Each Participant agrees to indemnify and hold harmless the other participant from and against any loss, cost, damage, or expense of any kind and nature arising out of injury to person or damage to property in any manner caused by the negligent act or omission of the indemnified individual participant in the performance of its work pursuant to or in connection with this IA2.

XIII. Severability: If any provision of this IA2 is invalid or unenforceable the remaining provisions shall remain in force and effect.

IN WITNESS WHEREOF, the Participants hereto have caused this IA2 to be executed by their proper Officers on the 2nd day of October, 1996.

City of Auburn

By: Charles A. Booth

Title: MAYOR

Attest:

By: Robin Warkentin

Approved as to Form:

By: Michael Reynolds

Covington Water District

By: Jim Hornsby

Title: President, Board of Commissioners

Date: 10/2/96

King County Water District #111

By: G. L. Randall

Title: PRES BD OF COMM

Date: 9/26/96

EXHIBIT "A"
CITY OF AUBURN
RESOLUTION NO. 2721
ADOPTED 09/03/96

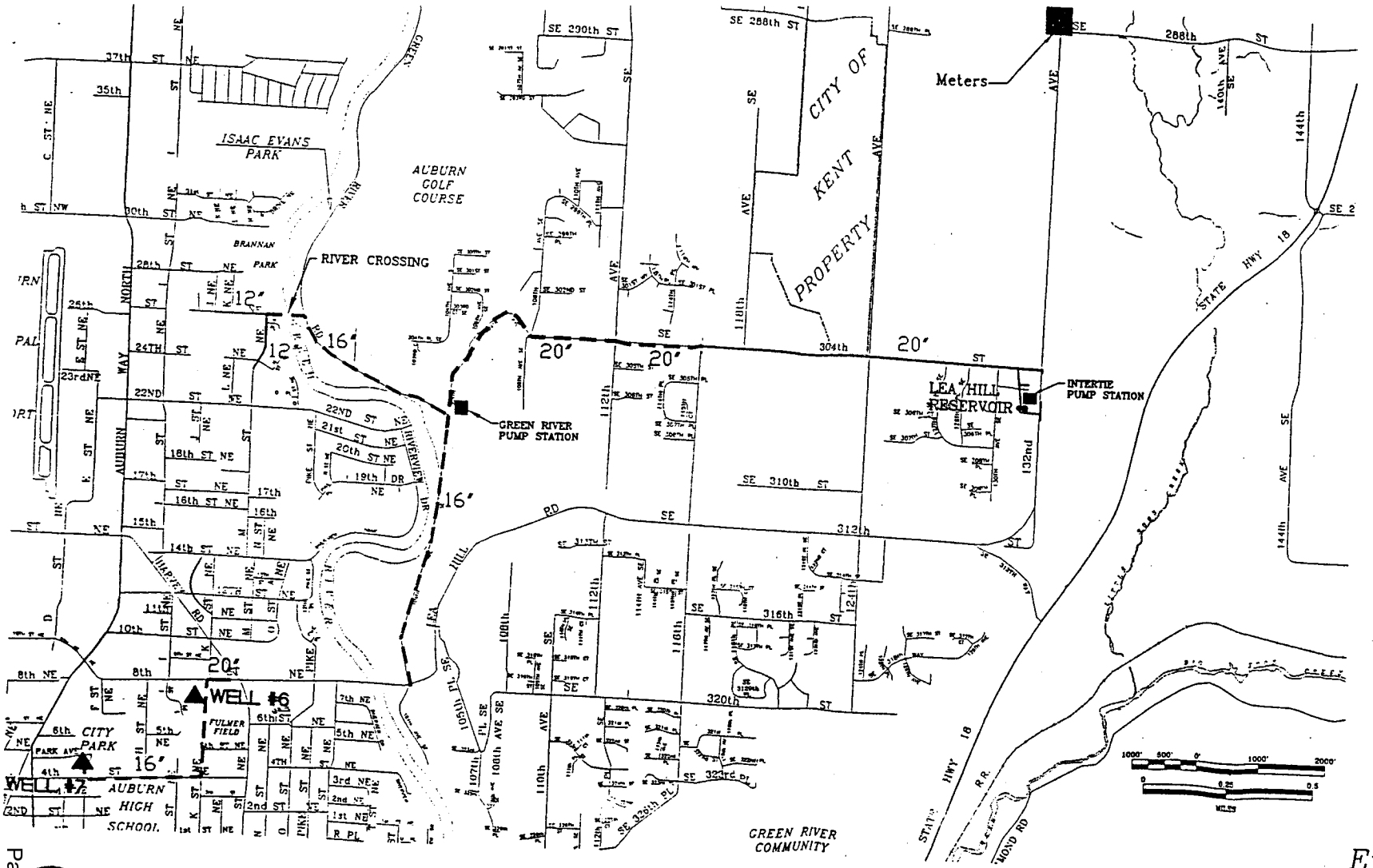


Exhibit A
Facilities Plan

to

Interlocal Agreement 2

for

Lea Hill Intertie Project

Exhibit A
Facilities Plan
(Continued)

Exhibit A
Update Approval

Auburn: _____, Dated: 11-10-97

CWD: _____, Dated: 10-09-97

WD111: _____, Dated: 11/6/97

Auburn: _____, Dated: _____

CWD: _____, Dated: _____

WD111: _____, Dated: _____

Auburn: _____, Dated: _____

CWD: _____, Dated: _____

WD111: _____, Dated: _____

Exhibit B
Facility Ownership, Capacity Rights, Operation, Maintenance, and Renewal and Replacement Responsibilities

to

Interlocal Agreement 2

for

Lea Hill Intertie Project

Facility	Location	Facility Ownership	Capacity Rights	Operation, Maintenance, & Renewal/Replacement Responsibility
New Lea Hill Pump Station	Green River Road & 104th SE	Auburn	WD111 2.5 MGD CWD 2.5 MGD	Auburn
Lea Hill Booster Pump Station	Lea Hill Reservoir Site	Auburn	WD111 and CWD 95% Auburn 5% (note 2)	Auburn
Flow Control, Telemetry	Lea Hill Reservoir Site	Auburn	WD111 and CWD 95% Auburn 5% (note 2)	Auburn
Meter Station	Intersection of 132nd SE and SE 288th Street	Auburn	WD111 and CWD 95% Auburn 5% (note 2)	Auburn
16-inch Waterline	Green River Road 26nd NE to 104th SE	Auburn	Note 3	Auburn
16-inch Green River crossing	Under Green River at 26nd NE	Auburn	Note 3	Auburn
16-inch Waterline	104th SE, NE 8th to Green River Road	Auburn	Note 3	Auburn
20-inch Waterline	SE 304th, New Lea Hill Pump Station to 116th SE	Auburn	Note 3	Auburn
Well #6	City	Auburn	Note 3	Auburn
Well #7	City	Auburn	Note 3	Auburn
16-inch Waterline & PRV	K Street SE, 22nd Street SE to 21st Street SE	Auburn	Note 3	Auburn
12-inch Waterline	M Street SE, Well 1 to 6th Street SE	Auburn	Note 3	Auburn
12-inch Waterline	6th Street SE, M Street SE to F Street SE	Auburn	Note 3	Auburn
12-inch Waterline	F Street SE, 6th Street SE to 2nd Street SE	Auburn	Note 3	Auburn

Note 2: Auburn capacity right is in recognition of the emergency capability of the facility.
Note 3: Capacity right is not specific to facility, however participation in constructing the facility provides capacity right to 5 MGD from Auburn's water system.

EXHIBIT "A"
CITY OF AUBURN
RESOLUTION NO. 2721
ADOPTED 09/03/96

Exhibit B
Update Approval

1. Auburn: _____, Dated: _____

   CWD: _____, Dated: _____

   WD111: _____, Dated: _____

2. Auburn: _____, Dated: _____

   CWD: _____, Dated: _____

   WD111: _____, Dated: _____

3. Auburn: _____, Dated: _____

   CWD: _____, Dated: _____

   WD111: _____, Dated: _____

EXHIBIT "A"
CITY OF AUBURN
RESOLUTION NO. 2721
ADOPTED 09/03/96

Exhibit C
Project Criteria
to
Interlocal Agreement 2
for
Lea Hill Intertie Project

Project Criteria:

- Waterlines shall be sized as shown on Exhibit A.
- No storage shall be included in the project. All storage required to enable the Districts to optimally use facilities constructed shall be provided by the Districts.
- Pumping Facilities shall be constructed to provide flow rates as described in paragraph III. B.
- The New Lea Hill Pump Station is to operate at design capacity with one pump in stand-by mode.
- The Lea Hill Booster Pump Station is to operate at design capacity with one pump in stand-by mode.
- Pump Stations to be designed with single speed pumps.
- Emergency Power not provided at pump stations.
- Flow rates to the Districts from Auburn through the facilities shall be set for constant flow for full 24 hour periods, subject to reasonable hydraulic and mechanical tolerances.
- The Districts will notify Auburn by 9:00 AM if the District requests adjustment of the desired pumping rate for the following day, except in case of an emergency.
- In the event Auburn desires emergency water from the Districts, the Districts will provide Auburn a daily estimate of the volume of water which will likely be available during the following 24 hour period.

Exhibit C
Update Approval

1. Auburn: _____, Dated: _____

   CWD: _____, Dated: _____

   WD111: _____, Dated: _____

2. Auburn: _____, Dated: _____

   CWD: _____, Dated: _____

   WD111: _____, Dated: _____

EXHIBIT "A"
CITY OF AUBURN
RESOLUTION NO. 2721
ADOPTED 09/03/96

Exhibit D
Project Costs
to
Interlocal Agreement No. 2
for
Lea Hill Intertie Project

Description	Total Est. Cost	Auburn Cost Percent	Auburn Cost	WD111 Cost Percent	WD111 Cost	CWD Cost Percent	CWD Cost
INSIDE AUBURN							
PIPING							
20" along 304th from Pump Station to 116th Ave SE (WS-105,106)	$570,000	10%	$57,000	45%	$256,500	45%	$256,500
16" on approx 26th from "M" to Pump Station (under Green R., incl crossing) (WS-102,103)	$395,000	20%	$79,000	40%	$158,000	40%	$158,000
16" east of Green River from 8th St. to Pump Station (WS-101)	$335,000	20%	$67,000	40%	$134,000	40%	$134,000
Meter Station @ 132nd SE and SE 288th	$35,000	5%	$1,750	47.5%	$16,625	47.5%	$16,625
12" M Street from Well 1 to 6th Street SE (WS-110)	$120,000	5%	$6,000	47.5%	$57,000	47.5%	$57,000
12' 6th Street SE from M Street to F Street (WS-111,WS-112)	$140,000	5%	$7,000	47.5%	$66,500	47.5%	$66,500
12" F Street from 6th Street to 2nd Street SE (WS-113)	$85,000	5%	$4,250	47.5%	$40,375	47.5%	$40,375
K Street Parallel pipeline and PRV (WS-114)	$65,000	5%	$3,250	47.5%	$30,875	47.5%	$30,875
PIPING SUBTOTAL	$1,745,000		$225,250		$759,875		$759,875
PUMP STATIONS							
Green River Pump Station (WS-104)	$350,000	10%	$35,000	45%	$157,500	45%	$157,500
Intertie Pump Station (WS-107)	$245,000	5%	$12,250	47.5%	$116,375	47.5%	$116,375
PUMP STATIONS SUBTOTAL	$595,000		$47,250		$273,875		$273,875
NEW SUPPLY FACILITIES							
Drill and Develop Well #6 and Well #7 (7 mgd) (S-106,S-108,S-109,S-110)	$1,250,000	28.6%	$357,143	35.7%	$446,429	35.7%	$446,429
TOTAL ESTIMATED CONSTRUCTION COST	$3,590,000	17.5%	$629,643	41.2%	$1,480,179	41.2%	$1,480,179
PRELIMINARY PROJECT COSTS							
Cost of Service Study / Rate Study Consultant Srevices (Jan 91 to Dec 94)	$41,000	62.2%	$25,502	18.9%	$7,749	18.9%	$7,749
Feasibility Studies and Water Rights Analysis	$41,522	33.3%	$13,841	33.3%	$13,841	33.3%	$13,841
Development of Interlocal Agreement	$9,406	33.3%	$3,135	33.3%	$3,135	33.3%	$3,135
Final Engineering Report	$7,198	17.5%	$1,262	41.2%	$2,968	41.2%	$2,968
PRELIMINARY PROJECT COSTS SUBTOTAL	$99,126		$43,740		$27,693		$27,693
AILLIED COST							
Contingency (15.0%)	$538,500	17.5%	$94,446	41.2%	$222,027	41.2%	$222,027
State Sales Tax (8.2%)	$294,380	17.5%	$51,631	41.2%	$121,375	41.2%	$121,375
Engineering Design (6.5%)	$233,350	17.5%	$40,927	41.2%	$96,212	41.2%	$96,212
Construction Engineering (7.5%)	$269,250	17.5%	$47,223	41.2%	$111,013	41.2%	$111,013
Legal (1.0%)	$35,900	17.5%	$6,296	41.2%	$14,802	41.2%	$14,802
Fiscal (1.0%)	$35,900	17.5%	$6,296	41.2%	$14,802	41.2%	$14,802
Administration (2.0%)	$71,800	17.5%	$12,593	41.2%	$29,604	41.2%	$29,604
Permits, Agency Approvals (3.0%)	$107,700	17.5%	$18,889	41.2%	$44,405	41.2%	$44,405
Engineering Surveys (2.5%)	$89,750	17.5%	$15,741	41.2%	$37,004	41.2%	$37,004
Land/ROW (3.3%)	$118,470	17.5%	$20,778	41.2%	$48,846	41.2%	$48,846
TOTAL ALLIED COST (50.0%)	$1,795,000		$314,821		$740,089		$740,089
TOTAL PROJECT COST	$5,484,126		$988,205		$2,247,960		$2,247,960

Exhibit D - Update approval

1. Auburn: _____; Dated: _____
   CWD: _____; Dated: _____
   WD111: _____; Dated: _____

2. Auburn: _____ Dated: _____
   CWD: _____ Dated: _____
   WD111: _____ Dated: _____

EXHIBIT "A"
CITY OF AUBURN
RESOLUTION NO. 2721
ADOPTED 09/03/96

Exhibit D
Project Costs
to
Interlocal Agreement No. 2
for
Lea Hill Intertie Project

revised 29 August 1997

DESCRIPTION	PR Numbers	Original Estimates		Revised 29-Aug-97		Auburn Cost Percent	Auburn Cost	WD111 Cost Percent	WD111 Cost	CWD Cost Percent	CWD Cost
CURRENT PROJECTS											
PIPING INSIDE AUBURN											
20" along 304th from Pump Station to 116th Ave SE (WS-105,106)	PR609	$570,000		$644,000		10%	$64,400	45%	$289,800	45%	$289,800
Sewer Line installed in same area for Auburn				$200,000		100%	$200,000	0%		0%	
16" on approx 26th from "M" to Pump Station	PR610	$395,000									
Green River Road (WS-103)				$265,000		20%	$53,000	40%	$106,000	40%	$106,000
Green River Crossing (WS-102)	PR615			$800,000		20%	$160,000	40%	$320,000	40%	$320,000
16" east of Green River from 8th St	PR611	$335,000		$379,000		20%	$75,800	40%	$151,600	40%	$151,600
to Pump Station (WS-101)											
Meter Stations		$35,000									
Covington Water District Meter	Covington P.O.					5%	$0	47.5%	$0	47.5%	$0
Water District #111 Meter	W.D.#111 P.O.			$22,000		5%	$1,100			95.0%	$20,900
PIPING SUBTOTAL				$22,000		5%	$1,100	95.0%	$20,900		
		$1,335,000		$2,332,000		23.8%	$555,400	38.1%	$888,300	38.1%	$888,300
PUMP STATIONS											
Green River Pump Station (WS-104)	PR612	$350,000		$660,000		10%	$66,000	45%	$297,000	45%	$297,000
Intertie Pump Station (WS-107)	PR613	$245,000		$570,000		5%	$28,500	47.5%	$270,750	47.5%	$270,750
PUMP STATIONS SUBTOTAL		$595,000		$1,230,000		7.7%	$94,500	46.2%	$567,750	46.2%	$567,750
NEW SUPPLY FACILITIES											
Well #6 (S-106, S-108)	PR585	$625,000									
Drill and Develop				$190,000		28.6%	$54,286	35.7%	$67,857	35.7%	$67,857
Conveyance Line				$0		28.6%	$0	35.7%	$0	35.7%	$0
Pump Station				$612,000		28.6%	$174,857	35.7%	$218,571	35.7%	$218,571
Well #6 Total		$625,000		$802,000			$229,143		$286,429		$286,429
Well #7 (S-109, S-110)	PR591	$625,000									
Drill and Develop				$190,000		28.6%	$54,340	35.7%	$67,830	35.7%	$67,830
Conveyance Line				$479,000		28.6%	$136,994	35.7%	$171,003	35.7%	$171,003
Pump Station				$630,000		28.6%	$180,180	35.7%	$224,910	35.7%	$224,910
Conservation Garden/Parks				$59,000		100.0%	$59,000	0.0%		0.0%	
Well #7 Total		$625,000		$1,358,000			$430,514		$463,743		$463,743
NEW SUPPLY FACILITIES SUBTOTAL		$1,250,000		$2,160,000		30.5%	$659,657	34.7%	$750,172	34.7%	$750,172
TOTAL ESTIMATED CONSTRUCTION COST		$3,180,000		$5,722,000		22.9%	$1,309,557	38.6%	$2,206,222	38.6%	$2,206,222
ALLIED COSTS											
Contingency		$477,000	15.0%	$572,200	10.0%	22.9%	$130,956	38.6%	$220,622	38.6%	$220,622
State Sales Tax		$260,760	8.2%	$492,092	8.6%	22.9%	$112,622	38.6%	$189,735	38.6%	$189,735
Water Supply Program *	PR616			$538,944		50.9%	$274,237	24.6%	$132,354	24.6%	$132,354
Engineering Design		$206,700	6.5%								
Portico Group				*$69,755*		*22.9%*	*$15,964*	*38.6%*	*$26,895*	*38.6%*	*$26,895*
MBEI				*$292,113*		*22.9%*	*$66,854*	*38.6%*	*$112,630*	*38.6%*	*$112,630*
S & B				*$22,500*		*22.9%*	*$5,149*	*38.6%*	*$8,675*	*38.6%*	*$8,675*
CH2M & Hill -- IA#2				*$247,093*		*22.9%*	*$56,551*	*38.6%*	*$95,271*	*38.6%*	*$95,271*
CH2M & Hill -- Horizontal Direction Drilling				*$135,000*		*20.0%*	*$27,000*	*40.0%*	*$54,000*	*40.0%*	*$54,000*
PGG -- Wells				*$48,420*		*22.9%*	*$11,082*	*38.6%*	*$18,669*	*38.6%*	*$18,669*
HDR				*$15,000*		*22.9%*	*$3,433*	*38.6%*	*$5,784*	*38.6%*	*$5,784*
Auburn				*$50,000*		*22.9%*	*$11,443*	*38.6%*	*$19,278*	*38.6%*	*$19,278*
Subtotal				$879,882		22.4%	$197,476	38.8%	$341,203	38.8%	$341,203
Engineering Construction		$238,500	7.5%								
Portico Group				*$7,751*		*22.9%*	*$1,774*	*38.6%*	*$2,988*	*38.6%*	*$2,988*
MBEI				*$32,457*		*22.9%*	*$7,428*	*38.6%*	*$12,514*	*38.6%*	*$12,514*
S & B				*$2,500*		*22.9%*	*$572*	*38.6%*	*$964*	*38.6%*	*$964*
CH2M & Hill -- IA#2				*$30,077*		*22.9%*	*$6,884*	*38.6%*	*$11,597*	*38.6%*	*$11,597*
PGG -- Wells				*$48,420*		*22.9%*	*$11,082*	*38.6%*	*$18,669*	*38.6%*	*$18,669*
Auburn Daily Inspection				*$350,000*		*22.9%*	*$80,102*	*38.6%*	*$134,949*	*38.6%*	*$134,949*
Subtotal				$471,205		22.9%	$107,842	38.6%	$181,682	38.6%	$181,682
Legal		$31,800	1.0%	$35,000		22.9%	$8,010	38.6%	$13,495	38.6%	$13,495
Fiscal		$31,800	1.0%								
CCA, Inc.				*$25,000*		*22.9%*	*$5,722*	*38.6%*	*$9,639*	*38.6%*	*$9,639*
Auburn				*$75,000*		*22.9%*	*$17,165*	*38.6%*	*$28,918*	*38.6%*	*$28,918*
Subtotal				$100,000		22.9%	$22,886	38.6%	$38,557	38.6%	$38,557
Administration	PR616	$63,600	2.0%								
Auburn				*$55,000*		*22.9%*	*$12,587*	*38.6%*	*$21,206*	*38.6%*	*$21,206*
HCWL				*$71,496*		*22.9%*	*$16,363*	*38.6%*	*$27,567*	*38.6%*	*$27,567*
Subtotal				$126,496		22.9%	$28,950	38.6%	$48,773	38.6%	$48,773
Permits, Agency Approvals		$95,400	3.0%	$75,000		22.9%	$17,165	38.6%	$28,918	38.6%	$28,918
Engineering Surveys		$79,500	2.5%	$60,000		22.9%	$13,732	38.6%	$23,134	38.6%	$23,134
Land Purchase/Use		$104,940	3.3%								
Green River Pump Station				*$50,000*		*22.9%*	*$11,443*	*38.6%*	*$19,278*	*38.6%*	*$19,278*
Well #6				*$50,000*		*22.9%*	*$11,443*	*38.6%*	*$19,278*	*38.6%*	*$19,278*
Well #7				*$50,000*		*22.9%*	*$11,443*	*38.6%*	*$19,278*	*38.6%*	*$19,278*
Subtotal				$150,000		22.9%	$34,330	38.6%	$57,835	38.6%	$57,835
TOTAL ALLIED COST		$1,590,000	50.0%	$3,500,819	61.2%	27.1%	$948,205	36.5%	$1,276,307	36.5%	$1,276,307
PRELIMINARY PROJECT COSTS											
Cost of Service Study / Rate Study *	Fully Complete	$41,000		$41,000		62.2%	$25,502	18.9%	$7,749	18.9%	$7,749
Consultant Services											
Feasibility Studies and Water Rights Analysis	Covington	$41,522		$41,522		33.3%	$13,841	33.3%	$13,841	33.3%	$13,841
Development of Joint Operating Agreement	and WD#111	$9,406		$16,652		37.5%	$6,244	25.0%	$4,163	37.5%	$6,245
Final Engineering Report	P.O.'s	$7,198		$7,198		22.9%	$1,647	38.6%	$2,775	38.6%	$2,775
PRELIMINARY PROJECT COSTS SUBTOTAL		$99,126		$106,372		44.4%	$47,234	26.8%	$28,528	26.8%	$30,610
TOTAL COSTS -- CURRENT PROJECTS		$4,869,126		$9,329,190		24.7%	$2,304,996	37.6%	$3,511,056	37.7%	$3,513,138
FUTURE PROJECTS											
12" M Street from Well 1 to 6th Street SE (WS-110)		$120,000		$120,000		5%	$6,000	47.5%	$57,000	47.5%	$57,000
12" 6th Street SE from M Street to F Street (WS-111,WS-112)		$140,000		$140,000		5%	$7,000	47.5%	$66,500	47.5%	$66,500
12" F Street from 6th Street to 2nd Street SE (WS-113)		$85,000		$85,000		5%	$4,250	47.5%	$40,375	47.5%	$40,375
K Street Parallel pipeline and PRV (WS-114)		$65,000		$65,000		5%	$3,250	47.5%	$30,875	47.5%	$30,875
TOTAL ESTIMATED CONSTRUCTION COSTS		$410,000		$410,000		5.0%	$20,500	47.5%	$194,750	47.5%	$194,750
TOTAL ALLIED COSTS		$205,000	50.0%	$205,000	50.0%	5.0%	$10,250	47.5%	$97,375	47.5%	$97,375
TOTAL COSTS -- FUTURE PROJECTS		$615,000		$615,000		5.0%	$30,750	47.5%	$292,125	47.5%	$292,125
Total Lea Hill Intertie Project Costs		$5,484,126		$9,944,190		23.5%	$2,335,746	38.2%	$3,803,181	38.3%	$3,805,263

Exhibit D - Update approval

1. Auburn:	Date: 11-10-97	2. Auburn:	Date:
CWD:	Date: 10-09-97	CWD:	Date:
WD111:	Date: 11-6-97	WD111:	Date:

Exhibit E - Project Schedule

to

Interlocal Agreement 2

for

Lea Hill Intertie Project

Activity	Date
Execute IA2	September 3, 1996
Rates for service charges provided	September 15, 1996
CWD and WD111 each to provide $200,000 deposit to Auburn	October 15, 1996
CWD and WD111 each to provide $200,000 deposit to Auburn	January 10, 1997
CWD and WD111 each to provide $400,000 deposit to Auburn	April 25, 1997
CWD and WD111 each to provide $500,000 deposit to Auburn	July 6, 1997
CWD and WD111 each to provide $500,000 deposit to Auburn	January 5, 1998
Complete Construction of Wells 6 and 7	January 15, 1998
CWD and WD111 each to provide $600,000 deposit to Auburn	April 6, 1998
Complete River Crossing	July 6, 1998
CWD and WD111 each to provide $500,000 deposit to Auburn	July 6, 1998
CWD and WD111 each to provide $350,000 deposit to Auburn	October 5, 1998
CWD and WD111 each to provide $350,000 deposit to Auburn	May 7, 1999
Complete Construction of Waterlines and Pump Stations	May 14, 1999
Commissioning	May 28, 1999

Exhibit E - Project Schedule
(Continued)

Activity	Date
Interim Project Cost Accounting	June 30, 1999
CWD and WD111 each to provide $200,000 deposit to Auburn	July 5, 1999
Balancing Payment per Interim Accounting	July 26, 1999
Obtain Primary Water Rights for Wells 6 and 7	January 3, 2000
Final project Cost Accounting	March 17, 2000
Final CWD and WD111 Balancing Payment to Auburn	April 17, 2000

Exhibit E
Update Approval

1. Auburn: _____, Dated: 11-10-97
   CWD: _____, Dated: 10-09-97
   WD111: _____, Dated: 11/6/97

2. Auburn: _____, Dated: _____
   CWD: _____, Dated: _____
   WD111: _____, Dated: _____

3. Auburn: _____, Dated: _____
   CWD: _____, Dated: _____
   WD111: _____, Dated: _____

REF. H:\PROJ\PR616-17\E97-954

ORIGINAL

RESOLUTION NO. 2 7 8 2

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE A NEW FRANCHISE AGREEMENT BETWEEN THE CITY OF AUBURN AND KING COUNTY TO CONSTRUCT, OPERATE AND MAINTAIN A WATER SYSTEM IN COUNCIL DISTRICTS 7, 9 AND 13, UNTIL YEAR 2021, AND A SHORT TERM FRANCHISE TO CONSTRUCT, OPERATE AND MAINTAIN A SEWER SYSTEM IN COUNCIL DISTRICT 7, 9 AND 13 UNTIL MARCH, 1998.

THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLE, HEREWITH RESOLVES THAT:

SECTION 1. AGREEMENT The Mayor of the City of Auburn is herewith authorized to execute a Franchise Agreement between the City of Auburn and King County to construct, operate and maintain a water system in Council Districts 7, 9 and 13, until year 2021, and a short term franchise to construct, operate and maintain a sewer system in Council Districts 7,9, and 13 until March, 1998. A copy of said Agreement is attached hereto, denominated as Exhibit "A", and a copy of King County Ordinance No. 12473 approving the franchise is

attached hereto denominated as Exhibit "B", and made a part hereof as though set forth in full herein.

SECTION 2. AUTHORIZATION. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

DATED and SIGNED this 18th day of November, 1996.

CITY OF AUBURN

Charles A. Booth

CHARLES A. BOOTH
MAYOR

ATTEST:

Robin Wohlhueter

Robin Wohlhueter
City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds,
City Attorney

12473

FRANCHISE NO.____

In the matter of the application for a franchise to operate, maintain, repair, and construct water mains and service lines, and appurtenances in, over, along, and under County roads and rights-of-way in King County, Washington.

The application of the CITY OF AUBURN for a franchise to operate, maintain, repair and construct water mains and service lines, and appurtenances in, over, along, and under County roads and rights-of-way located within the area described in attached Exhibit "A" has been heard on this 30th day of September, 1996. All of the property described in Exhibit "A" lies outside the limits of any incorporated Town or City.

Legal notice of the franchise application and of the hearing has been given as is required by law.

The King County Council, having considered the interests proposed and advanced, and finding that the granting of this franchise is in the public interest, ORDERS that a franchise be granted to the CITY OF AUBURN, the Grantee, subject to the conditions set forth in Exhibit "B" attached hereto, this franchise and Ordinance No. 12473. This franchise grants the right, privilege, authority and franchise to operate, maintain, repair and construct mains and service lines and appurtenances as a part of its distribution system in, over, along, and under County roads and rights-of-way located within the area described in Exhibit "A".

12473

This franchise is granted subject to all of the terms and conditions contained herein, within Ordinance No. 12473 and Exhibit "B", and shall expire in twenty-five years on 9/30, 2021.

Dated this 14th day of October, 1996.

KING COUNTY, WASHINGTON

BY Gary Locke

TITLE King County Executive

The undersigned accepts all the rights, privileges, and duties of this franchise subject to all terms, conditions, stipulations, and obligations contained herein, within Ordinance 12473 and Exhibit "B".

CITY OF AUBURN
GRANTEE

BY Charles A. Booth

TITLE Mayor

Dated this 26th day of November, 1996.

Exhibit "A"

Beginning at the northwest corner of the George E King Donation Land Claim No. 40 situate in Section 31, Township 22 North, Range 5 East, W.M. also known as the southeast corner of the R H Beatty Donation Land Claim No. 37 and No. 44 situate in Section 31, Township 22 North, Range 5 East, W.M. and in Section 36, Township 22 North, Range 4 East, W.M.; Thence westerly along the south boundary of said R H Beatty Donation Land Claim No. 37 and 44 and the south boundary of the John M. Thomas Donation Land Claim No. 42 situate in Section 36, Township 22 North, Range 4 East, W.M. to the easterly boundary of the corporate city limits of the City of Auburn as described in the City of Auburn annexation Ordinance No. 4770; Thence northerly along said easterly boundary of the corporate city limits, 49.5 feet; thence easterly along a line parallel with said south boundary of the John M Thomas Donation Land Claim No. 42 an the south boundary of said R H Beatty Donation Land Claim No. 37 and 44 to the east boundary of said R H Beatty Donation Land Claim No 37 and 44; Thence easterly along a line parallel with and 49.5 feet north, measured at right angles of the north boundary of said George E King Donation Land Claim No. 40, and along said parallel line extended easterly, to the thread of the Green River; Thence southerly along said thread of the Green River to the north boundary of said George E King Donation Land Claim No. 40, extended easterly; thence westerly to the point of beginning.

Together with:

Beginning with the northwest corner of Section 5, Township 21 North, Range 5 East, W.M. Thence easterly along the north boundary of said Section 5 to the thread of the Green River as described in the City of Auburn Annexation Ordinance No. 2511; Thence southerly along said thread of the Green River to the south boundary of Government No. 4, situate in Section 5, Township 21 North, Range 5 East, W.M., extended westerly; Thence easterly along said south boundary to the easterly margin of the Green River Road and the westerly boundary of the City of Auburn Annexation No. 4710; Thence northerly along said westerly boundary of the City of Auburn Annexation No. 4710 to the north boundary of the south 30.00 feet of Section 32, Township 22 North, Range 5 East, W.M.; Thence westerly along said north boundary to said thread of the Green River as described in the City of Auburn Annexation Ordinance No. 2511; Thence southerly along said thread of the Green River to said north boundary of Section 5.

Together with:

Beginning at the southwest corner of the S E 1/4 of the S W 1/4 of Section of Section 32, Township 22 North, Range 5 East, W.M.; Thence northerly along the west boundary of said S E 1/4 of the S W 1/4 of Section 32 to the north boundary of the South 30.00 feet of said Section 32; Thence easterly along said north boundary of Section 32 and along the north boundary of the south 30.00 feet of Section 33, Township 22 North, Range 5 East, W.M. to the west boundary of the east 285 feet of the S W 1/4 of said Section 33 as measured along the south boundary of said Section 33; Thence southerly along said west boundary to said south boundary of Section 33; Thence southerly along a line parallel with the east boundary of the West 1/2 of Section 4, Township 21 North, Range 5 East, W.M.; Thence easterly parallel with the north boundary of said Section 4, a distance of 100 feet; Thence southerly parallel with said east boundary of the West 1/2 of Section 4, a distance of 114.00 feet; Thence easterly parallel with said north boundary of Section 4, a distance of 155.00 feet to the west boundary of the east 30.00 feet of said West 1/2 of Section 4; Thence southerly along said west boundary of the east 30.00 feet to the south boundary of the North 1/2 of the South 1/2 of said Section 4; Thence easterly along said south boundary and along the south boundary of the North 1/2 of the South 1/2 of Section 3, Township 21 North, Range 5 East, W.M. to the northwesterly margin of Primary State Highway No. 2, also known as State Route 18; Thence southerly and westerly along said northwesterly margin to the easterly corporate

city limits of the City of Auburn; Thence northerly and westerly along said easterly corporate city limits of the City of Auburn to the south boundary of Government Lot No. 4 in Section 5, Township 21 North, Range 5 East, W.M. extended westerly; Thence easterly to the southeast corner of said Government Lot No 4; Thence northerly to the point of beginning.

Together with:

Beginning at the southwest corner of the N E 1/4 of the S W 1/4 of Section 21, Township 21 North, Range 5 East, W.M., said point located on the easterly corporate city limits of the City of Auburn; Thence northerly along said corporate city limits of the City of Auburn to the southeasterly margin of said Primary State Highway No. 2, also known as State Route No. 18; Thence northeasterly along said southeasterly margin to the thread of the Green River; Thence southeasterly along said thread of the Green River to the east boundary of Section 26, Township 21 North, Range 5 East, W.M.; Thence southerly along said east boundary of Section 26 and southerly along the east boundary of Section 35, Township 21 North, Range 5 East, W.M. to the southeast corner of said Section 35; Thence westerly along the south boundary of said Section 35 to the thread of the White River and the easterly corporate city limits of the City of Auburn; Thence north and westerly along said easterly corporate city limits of the City of Auburn to the point of beginning.

Together with:

Beginning at the southwest corner of Section 36, Township 22 North, Range 4 East, W.M.; Thence northerly along the westerly boundary of said Section 36 to the northerly margin of South 277th Street, also known as 52nd Street N W, which is the southerly corporate limits of the City of Kent; Thence easterly along said northerly margin of South 277th Street and along the southerly corporate limits of the City of Kent and along the northerly corporate limits of the City of Auburn to the westerly margin of Auburn Way North; Thence southeasterly along said westerly margin 2100 feet, more or less, to the westerly corporate city limits of the City of Auburn as described in the City of Auburn Ordinance No. 2511; Thence southerly along said westerly corporate city limits to the southerly boundary of the W A Cox Donation Land Claim No. 38 and 41; Thence westerly along said southerly boundary to the easterly boundary of the Plat of White River Valley Home Tracts as recorded in Volume 13 of Plats, Page 17, records of King County, Washington; Thence northerly along said easterly boundary of the Plat of White River Valley Home Tracts to the northeast corner of Tract 20 of said Plat of White River Valley Home Tracts; Thence westerly along the north boundary of said Tract 20 to the westerly margin of 80th Avenue South; Thence southerly along said westerly margin of 80th Avenue South to the southerly boundary of Section 36, Township 22 North, Range 4 East, W.M. Thence westerly to the point of beginning.

Less that portion of the above described franchise areas lying within the corporate city limits of the City of Auburn, Washington and less that portion of the above described franchise areas lying within the corporate city limits of the City of Kent, Washington.

EXHIBIT "B"

TERMS AND CONDITIONS APPLICABLE TO

UTILITIES FRANCHISES GRANTED BY KING COUNTY

THIS FRANCHISE is subject to the following terms and conditions:

1. DEFINITIONS

References to any County official or office also refers to any office that succeeds to any or all of the responsibilities of the named office or official. References to laws or "applicable laws" include federal, state, and local laws and regulations adopted pursuant to those laws; unless otherwise stated, references to laws include laws now in effect, as the same may be amended from time to time during the operation of this franchise. In addition, the following definitions shall apply:

Cable Services. The term "Cable Services" is used as defined in 47 United States Code 522 (5), as amended.

Cable System. The term "Cable System" is used as defined in 47 United States Code 522 (6), and King County Code 6.a.010 (J) as amended.

County Road Rights-of-Way. The term "County Road Rights-of-Way" includes any road, street, avenue, or alley located within the area described in the attached Exhibit "A", it does not include recreational or nature trails except where the trails intersect or are within roads, streets, avenues or alleys.

Director. The term "Director" refers to the chief executive of the King County Department of Transportation.

Grantee. The term "Grantee" refers to the CITY OF AUBURN its successors and those assignees approved pursuant to paragraph 16 herein.

Utility. The term "utility" refers either to the Grantee or, depending on the context, to any other person, firm, or corporation, public or private, which may hold a franchise to maintain and operate similar facilities in, under, over, across, and along any of the County property described in Exhibit "A".

Council. The term "Council" refers to the King County Council, acting in its official capacity.
Other Governing Body. The term "Other Governing Body" refers to any public official or other public board or body as may have the power and jurisdiction to permit or regulate the installation and maintenance of utilities and other facilities in, under, over, across, and along any of the county property described in Exhibit "A".

2. ACCEPTANCE BY GRANTEES OF TERMS AND CONDITIONS

The full acceptance of this franchise and all of its terms and conditions shall be filed with the Clerk of the Council within forty-five (45) days from _____, 19____, by the Grantee. Full acceptance of this franchise is a condition precedent to its taking effect, and unless this franchise is accepted within the time specified, this grant will be null and void and have no force or effect.

3. NON-EXCLUSIVE FRANCHISE

This franchise is not exclusive. It does not prohibit King County from granting franchises for other public or private utilities, in, under, over, across, and along any County property, including County road rights-of-way.

This franchise does not prevent or prohibit King County from constructing, altering, maintaining or using any County road rights-of-way covered by this franchise. King County retains full power to make all changes, relocations, repair, maintenance, etc. as it may deem fit.

4. JURISDICTION

This franchise is intended to convey limited rights and interest only as to those roads and rights- of-way in which King County has an actual interest. It is not a warranty of title or of interest in County road rights-of-way.

Whenever any of the County road rights-of-way as designated in this franchise, by reason of the subsequent incorporation of any Town or City or extension of the limits of any Town or City, shall later fall within the City or Town limits, this franchise shall continue in force and effect until such time as the incorporation and/or annexation is complete according to applicable State law, after which time the County will no longer have any responsibility for maintenance of any County roads, rights-of-way or other County property within the area of annexation/incorporation.

None of the rights granted to the Grantee shall affect the jurisdiction of King County over County road rights-of-way or the County's power to perform work upon its roadways, rights-of-way or appurtenant drainage facilities including by constructing, altering, renewing, paving, widening, grading, blasting or excavating.

All of the rights herein granted shall be subject to and governed by this franchise; provided, however, that nothing in this franchise may be construed in any way as limiting King County's rights to adopt ordinances which are necessary to protect the health, safety and welfare of the general public.

5. REGULATION OF USE AND CONTROL

This franchise does not deprive King County of any powers, rights, or privileges it now has or may later acquire in the future to regulate the use of and to control the County road rights-of-way covered by this franchise.

This franchise authorizes the use of County rights-of-way solely for the delivery by the Grantee of natural gas to it customers. Additional uses of County rights-of-way by the Grantee, including for cable communication services, shall first require a separate franchise from King County which conforms to the requirements of K.C.C. 6.27 as amended, or K.C.C. 6.27A as amended, and other applicable law.

Any use of the Grantee's equipment of facilities in County rights-of-way by others, including for telecommunication or cable communication services, is prohibited unless separately authorized and approved in writing by King County. The Grantee agrees that prior to authorizing any person to use the Grantee's equipment or facilities located in County rights-of-way, the Grantee will require the user to provide the Grantee with an affidavit that it has obtained the necessary franchise or other approval from the County to operate and provide the proposed service in County rights-of-way. At least thirty (30) day prior to executing any agreement with a potential user for the use of the Grantee's equipment or facilities, the Grantee shall fax the affidavit to the King County Office of Cable Communication at 206-296-0842.

6. EMINENT DOMAIN

This franchise and the limited rights and interests for the operation, maintenance, repair, and construction of Grantee's transmission and service lines and appurtenances are subject to the exercise of eminent domain. In the event of an exercise of eminent domain by King County, the value to be attributed to all the rights and interests granted under this franchise shall not exceed the actual amount the Grantee paid to King County in obtaining this franchise.

7. ENFORCEMENT

Failure of King County, on one or more occasions to exercise a right or to require compliance or performance under this franchise or any applicable law, shall not be deemed to constitute a waiver of such right or a waiver of compliance or performance, unless such right has been specifically waived in writing. Failure of King County to enforce or exercise its rights under any provision of this franchise or applicable law does not constitute a waiver of its rights to enforce or exercise a right in any other provision of this franchise or applicable law.

8. INDEMNITY AND HOLD HARMLESS

The Grantee agrees to indemnify and hold harmless King County as provided herein to the maximum extent possible under law. Accordingly, the Grantee agrees for itself, its successors, and assigns to defend, indemnify and hold harmless King County, its appointed and elected officials, and employees from and against liability for all claims, demands, suits, and judgments, including costs of defense thereof, for injury to persons, death, or property damage which is caused by, arises out of, or is incidental to Grantee's exercise of rights and privileges granted by this franchise. The Grantee's obligations under this section shall include:

(a) Indemnification for such claims whether or not they arise from the sole negligence of the Grantee, the concurrent negligence of both parties, or the negligence of one or more third parties.

(b) The duty to promptly accept tender of defense and provide defense to the County at the Grantee's own expense.

(c) Indemnification of claims made by the Grantee's own employees or agents.

(d) Waiver of the Grantee's immunity under the industrial insurance provisions of Title 51 RCW, which waiver has been mutually negotiated by the parties.

In the event it is necessary for the County to incur attorney's fees, legal expenses, or other costs to enforce the provisions of this section, all such fees, expenses and costs shall be recoverable from the Grantee.

In the event it is determined that RCW 4.24.115 applies to this franchise agreement, the Grantee agrees to defend, hold harmless and indemnify King County to the maximum extent permitted thereunder, and specifically for its negligence concurrent with that of King County to the full extent of Grantee's negligence. Grantee agrees to defend, indemnify and hold harmless the County for claims by Grantee's employees and agrees to waiver of its immunity under Title 51 RCW, which waiver has been mutually negotiated by the parties.

King County shall give the Grantee timely written notice of the making of any claim or of the commencement of any such action, suit, or other proceeding covered by the indemnity in this section. In the event any such claim arises, the County or any other indemnified party shall tender the defense thereof to the Grantee and the Grantee shall have the duty to defend, settle, or compromise any claims arising hereunder and the County shall cooperate fully therein.

Notwithstanding the above, the County shall have no obligation to tender a defense as a condition of the indemnity where there is a material conflict between the interests of the Grantee and King County.

9. VACATION

If at any time King County vacates any County road rights-of-way covered by this franchise, King County will not be held liable for any damages or loss to the Grantee by reason of such vacation. King County may, after giving thirty (30) days written notice to the Grantee, terminate this franchise with respect to any County road rights-of-way vacated.

10. REPAIR, REMOVAL OR RELOCATION

The Grantee hereby covenants, at its own expense, to repair, remove, or relocate existing facilities including all appurtenant facilities and service lines connecting its system to users, within King County road rights-of-way if such repair, removal, or relocation is required by King County for any County road purpose. Such repair, removal, or relocation shall not be unreasonably required.

The grantee shall, at no expense to the County, adjust, remove or relocate existing facilities within County road rights-of-way, including all appurtenant facilities and service lines connecting its system to users, if the County determines such adjustment, removal or relocation is reasonably necessary to allow for an improvement or alteration planned by the County in such road right-of-way. The County shall give the Grantee written notice of such requirement as soon as practicable, at the beginning of the pre-design stage for projects that are part of the County's capital improvement program, including such available information as is reasonably necessary for the Grantee to plan for such adjustment, removal or relocation.

For projects that are a part of the County's capital improvement program, in addition to any other notice given to the Grantee, the County shall provide a vertical and horizontal profile of the roadway and drainage facilities within it, both existing and as proposed by the County, and the proposed construction schedule; notwithstanding any permit conditions that may later be applied to the County project, this initial design information shall be given at least 180 days before construction is scheduled to begin, except in cases of urgent construction or emergencies. The Grantee shall respond to this notice, and to any later notices of revised designs based on permit conditions, within no more than thirty (30) days by providing to the County the best available information as to the location of all of the Grantee's facilities, including all appurtenant facilities and service lines connecting its system to users and all facilities that it has abandoned, within the area proposed for the public works project.

The County shall offer the Grantee the opportunity to participate in the preparation of bid documents for the selection of a contractor to perform the public works project as well as all required adjustments, removals or relocations of the Grantee's facilities. Such bid documents shall provide for an appropriate cost allocation between the parties. The County shall have sole authority to choose the contractor to perform such work. The Grantee and the County may negotiate an agreement for the Grantee to pay the County for its allocation of costs, but neither party shall be bound to enter into such an agreement. Under such an agreement, in addition to the Grantee's allocation of contractor costs, the Grantee shall reimburse the County for cost, such as for inspections or soils testing, related to the Grantee's work and reasonably incurred by the County in the administration of such joint construction contracts. Such costs shall be calculated as the direct salary cost of the time of County professional and technical personnel spent productively engaged in such work, plus overhead costs at the standard rate charged by the County on other similar projects, including joint projects with other County agencies.

11. REQUIREMENT OF CONSTRUCTION PERMITS

The Grantee, its successors or assigns, has the right, privilege, and authority to enter the County road rights-of-way for the purpose of operating, maintaining, repairing or construction its transmission and service lines and appurtenances on the condition that it obtains permits approved by the Director and Property Services Division and, when applicable, by the Department of Development and Environmental Services. Applications for work permits shall be presented to the Property Services Division which may require copies of plans, blueprints, cross-sections, or further detailing of work to be done. In the event of an emergency, the Grantee may immediately commence the necessary work and shall apply the next business day for the work permit. Any work done, whether by Grantee, its contractors, or third parties will include necessary paving, patching, grading and any other reasonably necessary repair or restoration to the County road rights-of-way. All work shall be done to the satisfaction of the Director.

All equipment, lines and appurtenances which are used in the operation, maintenance, repair or construction of the Grantee's service and which are located within the County road rights-of-way shall be considered to be part of the Grantee's system and shall be the responsibility of the Grantee. All permits for the operation, maintenance, repair or construction of said system shall be applied for and given in the name of the Grantee, who will be responsible for all work done under the permit. The Grantee remains responsible whether the work is done by the Grantee, its contractors, or by third parties.

The Grantee shall, at no expense to the County, assume the following obligations with respect to the facilities connected to its system that are within County road rights-of-way and which it does not own, including appurtenant facilities and service lines connecting its system to users:

(a) The Grantee shall apply for, upon request and on behalf of the owner of the facilities, a County right-of-way construction permit for any repairs required for such facilities; provided such owner agrees to reimburse the Grantee for all costs incurred by the Grantee and any other reasonable conditions the Grantee requires as a precondition to applying for the permit. All work to be performed in the County right-of-way shall comply with all conditions of the County permit and all applicable County requirements. The Grantee may at its option perform any part of the repair with its own forces or require the owner to employ a contractor for that purpose, provided such contractor is approved by the County;

(b) In the event that the County determines emergency repair of such facilities is necessary to halt or prevent significant damage to County road rights-of-way or significant threats to the health, safety and welfare of parties other than the owner or the occupants of the building served by such facilities, the Grantee shall take prompt remedial action to correct the emergency to the County's approval, which the County shall not unreasonably withhold;

(c) When the County or its contractor provides notice to the Grantee, pursuant to RCW 19.122, of its intent to excavate within County road rights-of-way, the Grantee shall provide to the County or its contractor the best information available from the Grantee's records or, where reasonable, from the use of locating equipment as to the location of such facilities, including surface markings where these would reasonably be of use in the excavation. If the Grantee fails to make good faith efforts to provide the above information within the deadlines provided by RCW 19.122, the Grantee shall hold the County harmless for all reasonable costs that result from damage to such facilities if such damage occurs as a result of the failure to provide such information. Nothing in this subsection is intended or shall be construed to create any rights in any third party or to form the basis for any obligation or liability on the part of the County or the Grantee toward any third party, nor is anything in this subsection intended to be construed to alter the rights and responsibilities of the parties under RCW 19.122, as amended.

12. RESTORATION OF COUNTY ROAD RIGHTS-OF-WAY

After work on, under or adjacent to County road rights-of-way, the Grantee is responsible for and will leave all County road rights-of-way in as good a condition as they were in before any work was done. In the event that the Grantee, its contractors, or third parties working under permit should fail to restore County road rights-of-way to the satisfaction of the Director, King County may make such repairs or restorations as are necessary to return the County road rights-of-way to its pre-work condition. Upon presentation of an itemized bill for repairs or restorations, including the costs of labor and equipment, the Grantee will pay the bill within thirty (30) days. If suit is brought upon the Grantee's failure to pay for repair and restoration, and if judgment in such a suit is entered in favor of King County, then the Grantee shall pay all of the actual costs, including interest from the date the bill was presented, disbursements, and attorney's fees and litigation related costs incurred.

13. PERFORMANCE OF WORK

The Grantee covenants that in consideration for the rights and privileges granted by this franchise, all work performed by the Grantee on County road rights-of-way shall conform to all County requirements including, but not limited to, the requirements of the current edition of the County Road Standards in force when the work is performed and all traffic control shall also conform to the current edition of the Manual of Uniform Traffic Control Devices in force when the work is performed.

14. BLASTING REQUIREMENTS

The right to operate, maintain, repair and construct Grantee's distribution and service lines and appurtenances granted by this franchise does not preclude King County, its agents or contractors from blasting, grading, or doing other road work to the Grantee's lines and appurtenances. Except in the case of an emergency, the Grantee will be given ten (10) business days written notice of any blasting so that the Grantee may protect its lines and appurtenances. If the Grantee notifies the County within ten (10) business days that the facilities will have to be relocated to protect them from blasting, the County will defer the blasting for up to ninety (90) days from the date of the original notice. In no event will the Grantee be given less than two (2) business days written notice of any blasting. Notification of any excavation shall be provided through the One-Call System as provided by RCW 19.122, as hereinafter amended.

15. SURVEY MARKERS AND MONUMENTS

It shall be the responsibility of the Grantee performing any construction work in the County road rights-of-way to restore any survey markers or monuments disturbed by such construction in accordance with RCW 58.09.130, and as hereinafter amended.

16. ASSIGNMENT

The Grantee shall not have the right to assign this franchise without the consent of the Metropolitan King County Council given by Ordinance. No assignment shall be effective unless an acceptance by the assignee of all rights, conditions, terms, provisions, and responsibilities contained within the franchise, as well as surety bonds which the Council deems necessary to be posted are received. Council approval of the assignment may be made subject to the assignee's acceptance of new or modified terms of the franchise.

17. EXPIRATION AND RENEWAL

To the extent described in Exhibit "A", all rights granted by this franchise to County road rights-of-way outside incorporated Towns and Cities apply to all existing County road rights-of-Way improved and unimproved and to all County road rights-of-way acquired by King County during the term of this franchise.

If the Grantee has initiated a renewal of this franchise before it expires, the County may, at its sole discretion, extend the term of the franchise on a month to month basis for up to one year. Should the County elect to extend the franchise, written notice shall be provided to the Grantee before the franchise expiration date.

If the Grantee has not applied for a renewal of this franchise before it expires, King County has the right to remove or relocate any lines and appurtenances of the Grantee as is reasonably necessary for the public's health, welfare, safety, or convenience including, but not limited to, the safe operation of County roads, franchise holders, or for the construction, renewing, altering, or improving of any County road right-of-way, or for the installation of lines and/or facilities of other franchise holders. Grantee shall be liable for the costs incurred in any removal or relocation of its lines and appurtenances under this section. Costs include the expense of labor and equipment.

Upon expiration of this franchise, the Grantee shall continue to be responsible for the operation and maintenance of existing facilities in the County road rights-of-way until removed, assigned to another franchised utility or abandoned; however, the Grantee shall not have the right to provide additional services or construct new facilities. King County will issue permits required for the repair and maintenance of the existing facilities in accordance with K.C.C. 14.44.055 as amended and Section 11 of this franchise. This section and sections 8, 10-13 and 15 of this franchise shall continue in force until such time as the lines are removed from County road rights-of-way, assigned to another franchised utility, or abandoned in place with the approval of the Manager of the Department of Transportation, Road Services Division.

18. RESERVATION OF RIGHTS

King County specifically reserves for itself the right to impose a utility tax on the Grantee if such taxing authority is granted by State of Washington and the local option is exercised by the King County Council.

King County also specifically reserves the right to exercise authority it has or may acquire in the future to secure and receive fair market compensation for the use of its property, pursuant to an ordinance. If King County elects to exercise such authority, the fair market compensation requirement for Grantee shall be imposed by ordinance not less than one hundred eighty (180) days after written notice ("Compensation Notice") is delivered to the Grantee, said Compensation Notice identifying with specificity the definition, terms and/or formula to be used in determining such fair market compensation. Acceptance of King County's definition terms and/or formula identified in the Compensation Notice will occur if the Grantee accepts in writing within thirty (30) days of receipt of the Compensation Notice; or, if Grantee takes no action in writing within thirty (30) days of receipt of the Compensation Notice; in which case the applicable ordinance that the King County Council passes will be determinative.

Nothing in this section shall be construed as an agreement by the Grantee of King County's right to exercise authority it has or may acquire in the future to secure and receive fair market compensation for the use of property. Nothing in this section shall be construed to prohibit the Grantee from challenging, in King County Superior Court or a court of competent jurisdiction, the legality of such right.

Grantee's rejection of the definition, terms, and/or formula identified in the Compensation Notice will only occur if such rejection is in written form, identifying with specificity the grounds for such rejection, and delivered to King County within thirty (30) days after receipt of the Compensation Notice, in which case the below identified arbitration terms will apply:

(a) The Grantee and King County will select one arbitrator each, and the two selected arbitrators will select a third arbitrator. If the two arbitrators have not selected a third arbitrator within thirty (30) days after the selection of the last selection of the two, either the Grantee or King County may apply to the presiding judge of the King County Superior Court for the appointment of a third arbitrator. The three arbitrators will determine the method for determining the fair market compensation for the County property used by the Grantee. The arbitration procedure employed shall be consistent with the rules and procedures of the American Arbitration Association. The decision of a majority of the arbitrators will bind both the Grantee and King County. At the conclusion of the arbitration, the arbitrators will submit written reports to the Grantee and King County which shall contain all pertinent evidence that led to their conclusion together with an explanation of their reasoning for such conclusion.

(b) The fees of the arbitrators selected by each party shall be paid by that party, and the fees of the third arbitrator shall be paid one-half by the County and the Grantee. The other costs of the proceeding shall be shared equally by the County and the Grantee.

(c) In event that the question of fair market compensation is not resolved prior to the effective date specified by the ordinance authorizing said compensation, the arbitration decision will be applied retroactively to the effective date in the ordinance. The Grantee will pay the retroactive sum plus interest in the amount of twelve percent (12%) per annum.

Nothing in this franchise may be construed to limit the exercise of authority now or later possessed by the County or any other governing body having competent jurisdiction to fix just, reasonable and compensatory rates or other requirements for services under this franchise. Nothing in this section shall be construed to prohibit the Grantee from challenging, in King County Superior Court or a court of competent jurisdiction, the authority of the County or any other governing body to fix rates or other requirements for services.

19. COMPLIANCE WITH LAWS

Grantee shall conform to all applicable federal, state and local laws and regulations including, but not limited to, the State Environmental Policy Act and King County environmental standards and ordinances.

20. NON-DISCRIMINATION CLAUSE

In all hiring or employment made possible or resulting from this franchise agreement, there shall be no discrimination against any employee or applicant for employment because of sex, sexual orientation, age, race, color, creed, national origin, marital status or the presence of any sensory, mental, or physical handicap, unless based upon a bona fide occupational qualification, and this requirement shall apply to but not be limited to the following: employment, advertising, lay-off or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

No person shall be denied, or subjected to discrimination in receipt of the benefit of any services or activities made possible by or resulting from this agreement on the grounds of sex, sexual orientation, race, color, creed, national origin, age except minimum age and retirement provisions, marital status, or the presence of any sensory, mental or physical handicap.

Any violation of this provision shall be considered a violation of a material provision of this agreement and shall be grounds for cancellation, termination or suspension in whole or in part, of the agreement by the County and may result in ineligibility for further County agreements.

The Grantee shall make the best efforts to make opportunities for employment and/or contracting services available to women and minority persons. The Grantee recognizes that King County has a policy of promoting affirmative action, equal opportunity and has resources available to assist Grantee in these efforts.

21. PENALTY FOR VIOLATION OF CONDITIONS

If the Grantee shall violate or fail to comply with any of the material terms, conditions, or responsibilities of this franchise through neglect or failure to obey or comply with any notice given the Grantee under the provisions of this franchise or if the Grantee abandons its franchise, the Council may revoke this franchise. King County shall give written notice of its intent to revoke this franchise. A public hearing shall be scheduled within forty-five (45) days following the notification. The decision to revoke this franchise will become effective ninety (90) days following the public hearing if the County, by ordinance, finds:

A. That the Grantee has not substantially cured the violation or failure to comply which was the basis of the notice; or

B. that the violation or failure to comply which was the basis of the notice is incapable of cure; or

C. that the Grantee has repeatedly violated or failed to comply with any of the material terms, conditions, or responsibilities of the franchise, even though the individual violations have been cured; and

D. that the revocation of the franchise is in the public interest.

During the forty-five (45) days following the notification, the Grantee shall have the opportunity to remedy the failure to comply.

22. RIGHT OF APPEAL

Decisions, requirements, or approvals of the Director are binding on the parties to this document. Appeals from the Director's determinations will be made by filing a complaint with the King County Superior Court.

23. SEVERANCE

This franchise gives effect to purposes and uses which are consistent with economical and efficient services rendered in the public interest. If any provision of this franchise, or its application is determined to be invalid by a court of law, then the remaining provisions of this franchise shall continue and remain valid unless the dominant purpose of the franchise would be prevented or the public interest is no longer served.

Revised 07/25/96

12473

FRANCHISE EXTENSION AGREEMENT

RECITALS

WHEREAS, the City of Auburn currently holds water and sewer Franchise 7543 granted by King County, Washington for the operation of its sewer and water system in unincorporated King County; and

WHEREAS, the City of Auburn franchise expired on November 30, 1994; and

WHEREAS, the City of Auburn has requested a renewal of said franchise; and

WHEREAS, a water and sewer franchise was approved by the Council under Ordinance 7543 on May 22, 1989. This extension is for the sewer portion only; and

WHEREAS, the water franchise for that portion of the water system will be incorporated in the franchise for proposed Ordinance No. 96-682, which consolidates all of the City of Auburn water franchises into one franchise agreement; and

WHEREAS, the City of Auburn, King County and the Utilities Technical Review Committee recommend that said franchise be extended until March 1, 1998 to give the City the opportunity to complete and obtain approval of its updated sewer comprehensive plan; and

WHEREAS, no objections have been raised to the granting of this request; and

WHEREAS, King County has approved the extension of this franchise until March 1, 1998 through the passage of Ordinance No. 12473 subject to the conditions contained in the ordinance and this agreement.

NOW, THEREFORE, King County, Washington and the City of Auburn, agree as follows:

1. The terms of King County Water and Sewer Franchise 7543 is hereby approved and extended so that it will now expire on March 1, 1998.

2. All other conditions of King County Water and Sewer Franchise 7543 shall remain in full force and effect and are not modified or amended by this agreement or Ordinance No. _____.

THIS AGREEMENT entered into this 26th day of November, 1996.

CITY OF AUBURN, WASHINGTON	KING COUNTY, WASHINGTON
BY: Charles A. Booth	BY: [signature]
TITLE: Mayor	TITLE:
DATE: 11-26-96	DATE: October 17, 1996

09/06/96
AUBRNSB2.96/MMc

CHRISTOPHER VANCE
Introduced By: Brian Derdowski
Proposed No: 96-682

ORDINANCE NO. 12473

AN ORDINANCE approving a franchise for the City of Auburn to construct, operate and maintain water system in Council Districts 7, 9 and 13, and a short term franchise to construct, operate and maintain a sewer system in Council Districts 7, 9 and 13, and authorizing the Executive to execute the franchise agreements.

STATEMENT OF FACTS:

1. The City of Auburn has filed an application for franchises in council districts 7, 9 and 13 to construct, operate and maintain water and sewer systems to serve residential, multi-family and commercial areas in accordance with R.C.W. 36.55.010 and K.C.C. 6.27.

2. The city's comprehensive plan for water was approved on June 17, 1996, by King County Ordinance 12342.

3. The city's sewer plan was approved in 1982. K.C.C. 13.24.110 requires that the sewer plan be updated by the end of 1996, and further, that it be updated every 6 years or that a demonstration be made that the plan is consistent with the 1994 King County Comprehensive Plan. There is no documentation offered to show that such a demonstration has been made.

4. The existing franchises expired in May of this year.

5. The application has been referred to the relevant county departments for review.

6. The King County executive has recommended approval of the franchise.

7. The Utilities Technical Review Committee reviewed and approved the district's franchise, legal description and map on April 26, 1995.

BE IT ORDAINED BY THE COUNCIL OF KING COUNTY:

SECTION 1. The granting of a franchise to the City of Auburn to construct, operate and maintain a water system within King County is hereby approved for a period of twenty-five years. The granting of a franchise extension to the City of Auburn to construct, operate and maintain a sewer system within King County until March 1, 1998 is hereby approved. The extension period is provided to allow time for the City to demonstrate its compliance with K.C.C. 13.24.110. The King County executive is authorized to enter into and execute the water system franchise and the sewer franchise extension for the terms specified, which by this reference is fully incorporated herein. Said franchises shall

include all of the general and special conditions required by the county.

SECTION 2. If within 45 days after the granting of this franchise, the applicant shall have failed to sign the written acceptance incorporated herein, then the rights and privileges granted herein shall be forfeited and said franchise shall be null and void.

INTRODUCED AND READ for the first time this 19th day of August, 1996.

PASSED by a vote of 12 to 0 this 30th day of September, 1996.

KING COUNTY, COUNCIL
KING COUNTY, WASHINGTON

Jane Hague
Chair

ATTEST:

Gerald A. Peterson
Clerk of the Council

APPROVED this 14th day of October, 1996.

King County Executive

Attachments:
A. Franchise Agreement for Water
B. Franchise Extension for Sewer

ORIGINAL

RESOLUTION NO. 2873

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE A SERVICE AGREEMENT ESTABLISHING WATER UTILITY SERVICE AREA BOUNDARIES BETWEEN THE CITY OF AUBURN AND THE CITY OF AUBURN AND PIERCE COUNTY.

WHEREAS, service area agreements are required by WAC 246-293-250 to help assure that water reserved for public water supply purposes with Pierce County will be utilized in the future in an efficient and planned manner.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES AS FOLLOWS:

Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute a Service Agreement establishing water utility service area boundaries between the City of Auburn and Pierce County. A copy of said Agreement is attached hereto and denominated as Exhibit "A" and incorporated herein by reference.

ORIGINAL

STANDARD SERVICE AGREEMENT
ESTABLISHING WATER UTILITY
SERVICE AREA BOUNDARIES

PREAMBLE

THIS AGREEMENT establishing water utility service area boundaries is entered into this day for purposes of identifying the external boundaries of the service area for which this water purveyor has assumed water service responsibility.

WHEREAS, service area agreements are required by WAC 246-293-250 to help assure that water reserved for public water supply purposes with Pierce County will be utilized in the future in an efficient and planned manner; and

WHEREAS, the designation of retail water service area and future service planning areas, together with the cooperation of other utilities, will help assure efficient planning to accommodate growth, avoid duplication of service, and facilitate the best use of resources;

WHEREAS, the responsibilities applicable to water purveyors are outlined in the Pierce County Coordinated Water System Plan (CWSP) and by the adopted rules and regulations of the Washington State Department of Health (DOH); and

WHEREAS, it is not the intent of this Agreement to give new authority or responsibilities to the water purveyor or to the County or State regulatory agencies, in addition to those requirements imposed by law; and

NOW, THEREFORE, the undersigned party, having entered into this Agreement by its signature, concur with and will abide by the following provisions:

Section 1. The terms used within the contract shall be as defined in the implementing regulations of Chapter 70.116 RCW, except as identified below.

A. Lead Agency shall mean the department or organization within Pierce County that has been designated by the Pierce County Executive as being administratively responsible for the coordination and filing of the Pierce County Water Service Area map, Standard Service Agreement Establishing Water Utility Service Area Boundaries, Agreements for Retail Service Areas, Utility Service Policies, and other administrative documents necessary for the implementation of the Pierce County CWSP.

B. Pierce County Coordinated Water System Plan (CWSP) shall mean the latest plan adopted by the Pierce County Council for public water systems within critical water supply service areas within Pierce County Council which identifies the present and future needs of the systems and sets forth means for meeting those needs in the most efficient manner possible.

C. Pierce County Water Service Area Map shall mean the map referenced in this Agreement for the retail service area signed by the water purveyor except as amended in accordance with the CWSP procedures, with the concurrence of the affected water purveyors, or by operation of law.

D. Retail Service Area shall mean the designated geographical area within Pierce County in which the undersigned water purveyor assumes full responsibility for providing water service to individual customers.

E. Utility Service Policies shall mean those policies and conditions of service that are attached to the provision of water service for individual customers. The identified policies and conditions of service are those conditions incorporated within the water purveyor's water system improvement and expansion plans required under the provisions of the Public Water Systems Coordination Act and DOH.

Section 2. Lead Agency. The lead agency for administering the Pierce County Water Utility service area agreements shall be the Pierce County Department of Public Works and Utilities unless otherwise established by the Pierce County Executive. The lead agency shall function only as a coordination center. The lead agency will maintain the original documents and will be responsible for updating the water system map and agreements as provided for in the CWSP.

Section 3. Authority. The authority for this Agreement is granted by the Public Water Systems Coordination Act of 1977, Chapter 70.116 RCW.

Section 4. Service Area Boundaries. The undersigned Water Purveyor acknowledges that the Pierce County Water Service Area Maps identifying its retail service area boundaries, dated July 8, 1997 and included as Attachment A to this Agreement, identify the Water purveyor's present and future service area within Pierce County. The undersigned further acknowledges that there are no service area conflicts with an adjacent water utility or purveyor, or, if such a conflict exists, agrees that no new water service will be extended within disputed areas except as stipulated in an adjudication by DOH, a final decision made by a court of competent jurisdiction, or by operation of law.

This agreement shall apply to service area boundaries claimed and identified in the above referenced maps. Revisions may be may require an amendment to the purveyor's or utility's service plans and shall be filed with the lead agency.

Section 5. Boundary Adjustments. If, at some time in the future it is in the best interests of the undersigned parties to make service area boundary adjustments, such modifications must be by: (1) written concurrence of all involved utilities and the proper legislative authority(ies), and must be noted and filed with the designated Pierce County lead agency and DOH; or (2) by operation of law. It is understood by the undersigned

utility that it may decline to provide service within its designated service area boundary, but in that case, an applicant may be referred to other adjacent purveyors or utilities or a new utility may be created and the original service area boundary will be adjusted accordingly.

Section 6. System Extension Policies. The undersigned utility agrees that in order to expand its existing water service area, (other than by addition of retail customers to existing water mains), or to serve in the capacity of a pre-qualified satellite system management agency (SSMA), it shall have adopted design standards and Utility Service extension policies. The design standards shall meet or exceed the Pierce County Water System Minimum Standards and Specifications.

A water utility anticipating expansion of retail service in unincorporated areas of Pierce County, or intending to operate as an SSMA, shall identify utility service policies in its updated water system plan. The undersigned utility agrees to identify, for information, its utility service policies or provide a copy of the updated water system plan to the Lead Agency prior to application for extension of its existing water system into new service areas within the unincorporated areas of Pierce County.

Municipalities further agree that if they identify a service area outside of their existing municipal corporate boundaries, the municipality will assume full responsibility for providing water service equivalent to the level of service provided for their customers inside the city limits with similar service requirements, and must also meet or exceed Pierce County's minimum design standards.

Section 7. Special Working Agreements. Special working agreements, if they exist and are relevant, between this water purveyor and an adjacent water purveyor shall be attached to this Agreement as Attachment B and incorporated herein by this reference.

Section 8. Compliance with the CWSP. Nothing in this Agreement shall waive any requirement of the state, federal or local government regarding the provision of water service. This Agreement shall comply with the interlocal agreement requirement of the CWSP.

IN WITNESS WHEREOF, the undersigned party has executed this Agreement as of 9/16/97.

City of Auburn
Water Purveyor

Charles A. Booth
Representative

Mayor
Title

EXHIBIT "A"Resolution No. 2873
September 15, 1997

Approved as to Form

Michael J. Reynolds, City Attorney

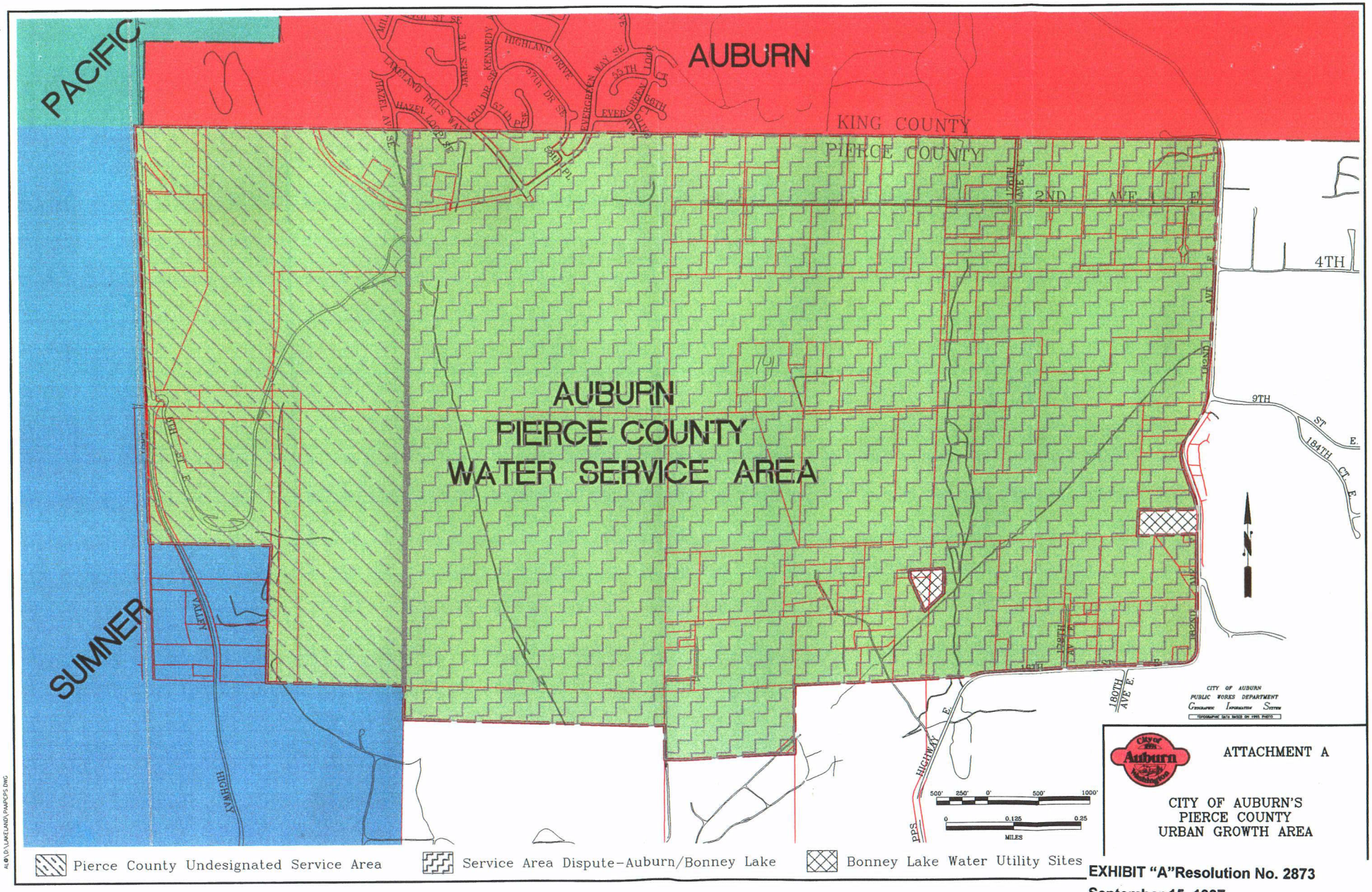
Attested to:

Robin Wohlhueter, City Clerk

PIERCE COUNTY PUBLIC WORKS & UTILITIES DEPARTMENT

Name 9-26-97 Date

Associate Planner
Title


PACIFIC
AUBURN
KING COUNTY
PIERCE COUNTY
SUMNER
AUBURN
PIERCE COUNTY
WATER SERVICE AREA
HIGHLAND DRIVE
HAZEL AVE SE
JAMES AVE SE
KENNEDY
EVERGREEN WAY SE
HAZELAND HILLS WAY
57TH PL SE
57TH DR SE
56TH
55TH
2ND AVE E
4TH
9TH ST E
184TH CT E
HIGHWAY
HIGHWAY E
180TH AVE E
CITY OF AUBURN
PUBLIC WORKS DEPARTMENT
Geographic Information System
500' 250' 0' 500' 1000'
0 0.125 0.25
MILES
Pierce County Undesignated Service Area
Service Area Dispute-Auburn/Bonney Lake
Bonney Lake Water Utility Sites
ATTACHMENT A
CITY OF AUBURN'S
PIERCE COUNTY
URBAN GROWTH AREA
EXHIBIT "A"Resolution No. 2873
September 15, 1997

Attachment B:

SPECIAL WORKING AGREEMENTS:

List of Special Working Agreements Included:

Potential Annexation Agreement between City of Auburn and City of Federal Way
Urban Service Area Agreement between City of Auburn and City of Pacific
Potential Annexation Agreement between City of Auburn and City of Sumner
Potential Annexation Agreement between City of Auburn and City of Kent

CITY CLERK'S OFFICE
CITY OF AUBURN
25 West Main
Auburn, WA 98001

RECEIVED
FEB 8 1996
KING COUNTY
RECORDER

11 312 20
A 3.16.7
O 3 4.1.12

file 12-

ORIGINAL
AG 95-238

RECEIVED
NOV 13 1995

AN AGREEMENT BETWEEN THE CITIES OF FEDERAL WAY AND AUBURN RELATING TO POTENTIAL ANNEXATION AREA DESIGNATION

THIS IS AN AGREEMENT between the Cities of Federal Way, a municipal corporation of the State of Washington ("Federal Way"), and Auburn, a municipal corporation of the State of Washington ("Auburn"), hereinafter collectively referred to as the "Cities."

RECITALS

A. Pursuant to RCW 36.70A.110(2), the Washington State Growth Management Act of 1990 as amended requires each City within the County to propose the location of an urban growth area, and

B. The Countywide Planning Policies adopted and approved by Ordinance 10450 on July 6, 1992 by the County Council and amended by Ordinance 11446 on July 19, 1994 and ratified by Cities within the County, establishes rules for designating potential annexation areas for cities within the countywide urban growth boundary, and

C. Countywide Planning Policy LU-31 states that in collaboration with adjacent counties and cities and King County, and in consultation with residential groups in affected areas, each City shall designate a Potential Annexation Area (PAA), and

D. It is in the public interest that the jurisdictions cooperate to designate logical and achievable PAA boundaries, and

NOW THEREFORE, the Cities hereby agree:

1. PURPOSE.

The purpose of this agreement is to confirm the decision made between the Cities for the identification of PAA boundaries.

2. DEFINITIONS.

Potential Annexation Area (PAA): The incorporated urban area adjacent to a City, within which urban growth shall be encouraged and phased, and which is expected to annex to the city. Annexation is expected to occur sometime during the next 20 years at which time the city will provide services and utilities. Potential Annexation Area is another term for a City's Urban Growth Area.

Urban Growth Areas: Areas proposed by the Cities and designated by the County within which urban growth shall be encouraged and phased and outside of which growth can occur only if it is not urban in nature. A City's Urban Growth Area is another term for its Potential Annexation Area.

9602210337

9602210337 09:16:00 AM KING COUNTY RECORDS 006 SN 12.00

REF: Resolution No. 2873
September 15, 1997

Urban Growth Boundary: The boundary marking the limit between the urban growth areas and other areas such as rural and resource area where urban growth is not permitted. The boundary shall be designated by the County in consultation with the appropriate Cities, under the requirement of the Growth Management Act, as amended.

3. PUBLIC PROCESS.

The designation of PAAs in Exhibit A (map) attached hereto and by this reference made a part of this agreement are of interest to a variety of affected parties, including property owners, area residents, the general public, special service districts and the municipalities.

4. RELATIONSHIP TO EXISTING LAWS AND STATUTES.

This Agreement in no way modifies nor supersedes existing laws and statues and is consistent with existing laws and statues. In meeting the commitments encompassed in this Agreement, all parties will comply with the requirements of the annexation Statutes, Open Public Meetings Act, State Environmental Policy Act, Growth Management Act and Countywide Planning Policies for King County.

5. RESPONSIBILITIES.

A. The Cities acknowledge the PAA boundary described in Exhibit A.

B. The Cities will only annex territory within their designated PAAs.

C. The Cities shall conduct a public involvement process that includes, but is not limited to workshops, surveys, or hearings in areas within the PAA, prior to the inclusion of any additional areas within the PAA.

9602210337

6. AMENDMENTS.

A. A city which desires to modify the Potential Annexation Area shall contact the other party to this Agreement to begin discussions regarding potential annexation area boundary amendments. The Cities agree to participate in such discussions when called. Either Party is authorized to call a meeting upon 30 days written notice.

B. The proposed amendments shall be supported by written evidence of a significant change in one of the criteria listed in paragraph 6D. Below. The Cities shall concur that the substantial change warrants an amendment to the original designated PAA.

C. A public process shall be conducted regarding an amendment to a potential annexation area as described in 5(C) above.

D. *Criteria for Designation of Potential Annexation Areas*

- Recognition of resident community identification.
- Financial and technical ability to provide municipal services.

- Creation of logical service areas (vehicular accessibility and utility construction).
- Recognition of physical boundaries.
  - Bodies of water
  - Topographical features
  - Watersheds
  - Freeways
- Protection of critical/resource areas significant to a particular jurisdiction.
  - Protection of critical areas
  - Opportunities for urban separators
- Logical boundaries.
  - Elimination of unincoporated islands
  - No overlapping potential annexation areas

E. The proposed amended PAA agreement shall be submitted to the respective legislative authorities for approval.

7. DURATION AND TERMINATION.

This Agreement is effective upon signature of both parties and shall continue in effect from year to year unless terminated by a six month written notice by one party to the others.

9602210337

8. SEVERABILITY CLAUSE.

Any provision of this Agreement which is declared invalid or illegal shall in no way affect or invalidate any other provision hereof and such other provisions shall remain in full force and effect.

9. INDEMNIFICATION.

A. The City of Federal Way shall indemnify and hold harmless the City of Auburn and its officers, agents and employees, or any of them from any and all claims, actions, suits, liability, loss, costs, expenses and damages of any nature whatsoever, by reason of or arising out of any negligent act or omission of the City of Federal Way, its officers, agents and employees, or any of them, in the performance of this Agreement. In the event that any such suit based upon such a claim, action, loss or damage is brought against the City of Auburn, the City of Federal Way shall defend the same at its sole cost and expense; provided, that the City of Auburn reserves the right to participate in such suit if any principle of governmental or public law is involved. If final judgment be rendered against the City of Auburn and its officers, agents and employees, or any of them, or jointly against the City of Federal Way and the City of Auburn and their respective officers, agents and employees, or any of them, the City of Federal Way shall satisfy the same, including all chargeable costs and attorney's fees.

B. In executing this Agreement, the City of Auburn does not assume liability or responsibility for or in any way release the City of Federal Way from any liability or responsibility which arises in whole or in part from the existence or affect of Federal Way City ordinances, rules or regulations. If any cause, claim, suit, action or administrative proceeding is commenced in which the enforceability and/or validity of any such Federal Way City ordinance, rule or regulation is at issue, the City of Federal

Way shall defend the same at its sole expense and if judgment is entered or damages are awarded against the City of Auburn, the City of Federal Way shall satisfy the same, including all chargeable costs and attorney's fees.

C. The City of Auburn shall indemnify and hold harmless the City of Federal Way and its officers, agents and employees, or any of them from any and all claims, actions, suits, liability, loss, costs, expenses and damages of any nature whatsoever, by reason of or arising out of any negligent act or omission of the City of Auburn, its officers, agents and employees, or any of them, in the performance of this Agreement. In the event that any such suit based upon such a claim, action, loss or damage is brought against the City of Federal Way, the City of Auburn shall defend the same at its sole cost and expense; provided, that the City of Federal Way reserves the right to participate in such suit if any principle of governmental or public law is involved. If final judgment be rendered against the City of Federal Way and its officers, agents and employees, or any of them, or jointly against the City of Federal Way and the City of Auburn and their respective officers, agents and employees, or any of them, the City of Auburn shall satisfy the same, including all chargeable costs and attorney's fees.

D. In executing this Agreement, the City of Federal Way does not assume liability or responsibility for or in any way release the City of Auburn from any liability or responsibility which arises in whole or in part from the existence or affect of Auburn City ordinances, rules or regulations. If any cause, claim, suit, action or administrative proceeding is commenced in which the enforceability and/or validity of any such Auburn City ordinance, rule or regulation is at issue, the City of Auburn shall defend the same at its sole expense and if judgment is entered or damages are awarded against the City of Federal Way, the City of Auburn shall satisfy the same, including all chargeable costs and attorney's fees.

9602210337

10. ADMINISTRATION.

This Agreement shall be administered by:

A. The Federal Way City Manager or the City Manager's designee, and

B. The Mayor of Auburn or the Mayor's designee.

CITY OF FEDERAL WAY

Kenneth E. Nyberg
City Manager

Date 11/3/95

CITY OF AUBURN

Charles A. Booth
Mayor

Date 10-6-95

Approved as to Form:

City Attorney

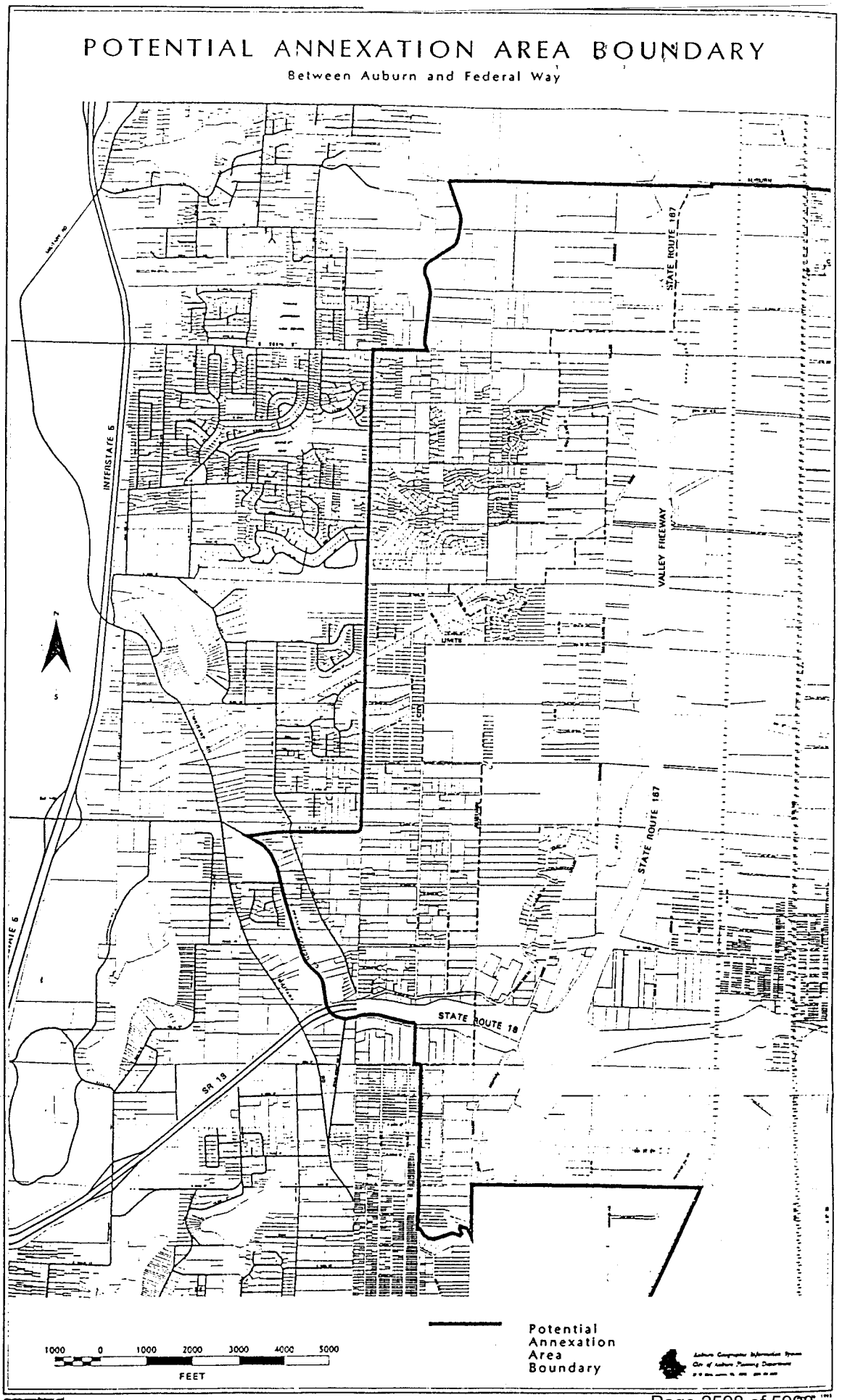
Approved as to Form:

City Attorney

BHS\FWAGRMT

9602210337

9602210337


POTENTIAL ANNEXATION AREA BOUNDARY
Between Auburn and Federal Way
INTERSTATE 5
STATE ROUTE 167
VALLEY FREEWAY
STATE ROUTE 18
SR 18
1000 0 1000 2000 3000 4000 5000
FEET
Potential Annexation Area Boundary

ORIGINAL

AN AGREEMENT BETWEEN THE CITIES OF PACIFIC AND AUBURN RELATING TO URBAN SERVICE AREA DESIGNATION

THIS IS AN AGREEMENT between the Cities of Pacific, a municipal corporation of the State of Washington ("Pacific"), and Auburn, a municipal corporation of the State of Washington ("Auburn"), hereinafter collectively referred to as the "Cities."

RECITALS

A. Pursuant to RCW 36.70A.110(2), the Washington State Growth Management Act of 1990 as amended requires each City within the County to propose the location of an urban growth area, and

B. The Pierce County Countywide Planning Policies adopted and approved by Resolution R92-86 on June 30, 1992 by the County Council and ratified by Cities within the County, establishes rules for designating City urban growth areas within the countywide urban growth boundary, and

C. The Pierce County Comprehensive Plan adopted and approved by Ordinance 94-82S by the County Council identifies an urban growth area overlap between the Cities of Auburn and Pacific.

D. It is in the public interest that the jurisdictions cooperate to designate logical and achievable urban growth area boundaries,

NOW THEREFORE, the Cities hereby agree:

1. PURPOSE.

The purpose of this agreement is to resolve the boundary overlap between the Cities of Auburn and Pacific.

2. DEFINITIONS.

Urban Service Area (USA): The incorporated urban area adjacent to a City, within which urban growth shall be encouraged and phased, and which is expected to annex to the city. Annexation is expected to occur sometime during the next 20 years at which time the city will provide services and utilities. Urban Service Area is another term for a City's Urban Growth Area.

Urban Growth Areas (UGA): Areas designated by the County within which urban growth shall be encouraged and phased and outside of which growth can occur only if it is not urban in nature. A City's Urban Growth Area is another term for its Urban Service Area.

Comprehensive Urban Growth Area Boundary (CUGA Boundary): The boundary marking the limit between the urban growth areas and other areas such as rural and resource area where urban growth is not permitted. The boundary shall be designated by the County in

consultation with the appropriate Cities, under the requirement of the Growth Management Act, as amended.

3. PUBLIC PROCESS.

The designation of USAs in Exhibit A (map) are of interest to a variety of affected parties, including property owners, area residents, the general public, special service districts and the municipalities.

4. RELATIONSHIP TO EXISTING LAWS AND STATUTES.

This Agreement in no way modifies nor supersedes existing laws and statues and is consistent with existing laws and statues. In meeting the commitments encompassed in this Agreement, all parties will comply with the requirements of the annexation statutes, Open Meetings Act, State Environmental Policy Act, Growth Management Act and the Pierce County Countywide Planning Policies.

5. RESPONSIBILITIES.

A. The Cities acknowledge the USA boundary as shown in Exhibit A. The City of Pacific urban service area boundary will not include any area shown in exhibit A.

B. The Cities will only annex territory within their designated USAs.

C. The Cities shall conduct a public involvement process that includes, but is not limited to workshops, surveys, or hearings in areas within the USA, prior to the inclusion of any additional areas within the USA.

6. AMENDMENTS.

A. A city which desires to modify the USA shall contact the other party to this Agreement to begin discussions regarding urban service area boundary amendments. The Cities agree to participate in such discussions when called. Either Party is authorized to call a meeting upon 30 days written notice.

B. The proposed modifications shall be supported by written evidence of a significant change in one of the criteria listed in paragraph 6D. Below. The Cities shall concur that the substantial change warrants an amendment to the original designated urban service area.

C. A public process shall be conducted regarding an amendment to an urban service area.

D. *Criteria for Designation of Potential Annexation Areas*

- Recognition of resident community identification.
- Financial and technical ability to provide municipal services.
- Creation of logical service areas (vehicular accessibility and utility construction).
- Recognition of physical boundaries.

Exhibit "A" Resolution No. 2763
Adopted 12/2/96

Bodies of water
Topographical features
Watersheds
Freeways

- Protection of critical/resource areas significant to a particular jurisdiction.
  Protection of critical areas
  Opportunities for urban separators
- Logical boundaries.
  Elimination of unincoporated islands
  No overlapping potential annexation areas

E. The proposed amended USA agreement shall be submitted to the respective legislative authorities for approval.

7. DURATION AND TERMINATION.

This Agreement is effective upon signature of both parties and shall continue in effect from year to year unless terminated by a six month written notice by one party to the others.

8. SEVERABILITY CLAUSE.

Any provision of this Agreement which is declared invalid or illegal shall in no way affect or invalidate any other provision hereof and such other provisions shall remain in full force and effect.

9. INDEMNIFICATION.

A. The City of Pacific shall indemnify and hold harmless the City of Auburn and its officers, agents and employees, or any of them from any and all claims, actions, suits, liability, loss, costs, expenses and damages of any nature whatsoever, by reason of or arising out of any negligent act or omission of the City of Pacific, its officers, agents and employees, or any of them, in the performance of this Agreement. In the event that any such suit based upon such a claim, action, loss or damage is brought against the City of Auburn, the City of Pacific shall defend the same at its sole cost and expense; provided, that that the City of Auburn reserves the right to participate in such suit if any principle of governmental or public law is involved. If final judgment be rendered against the City of Auburn and its officers, agents and employees, or any of them, the City of Pacific shall satisfy the same, including all chargeable costs and attorney's fees.

B. In executing this Agreement, the City of Pacific does not assume liability or responsibility for, or in any way release, the City of Auburn from any liability or responsibility which arises in whole or in part from the existence or affect City of Auburn ordinances, rules or regulations. If any cause, claim, suit, action or administrative proceedings is commenced in which the enforceability and/or validity of any such City of Auburn ordinance, rule or regulation is at issue, the City of Auburn shall defend the same at its sole expense and if judgment is entered or damages are

awarded against the City of Pacific, the City of Auburn shall satisfy the same, including all chargeable costs and attorney's fees.

C. The City of Auburn shall indemnify and hold harmless the City of Pacific and its officers, agents and employees, or any of them, from any and all claims, actions, suits, liability, loss, costs, expenses and damages of any nature whatsoever, by reason of our arising out of any negligent act or omission of the City of Auburn, its officers, agents or employees or any of them, relating to or arising out of the performance of this Agreement. In the event that any suit based on such a claim, action, loss or damage is brought against the City of Pacific, the City of Auburn shall defend the same at its sole costs and expense; provided by the City of Auburn retains the right to participate in and suit of any principle of government law is involved; and if final judgment be rendered against the City of Pacific, and its officers, agents and employees, or any of them, the City of Auburn shall satisfy the same, including all chargeable costs and attorney's fees.

D. In executing this Agreement, the City of Auburn does not assume liability or responsibility for or in any way release the City of Pacific from any liability or responsibility which arises in whole or in part from the existence or affect City of Pacific ordinances, rules or regulations. If any cause, claim, suit, action or administrative proceedings is commenced in which the enforceability and/or validity of any such City of Pacific ordinance, rule or regulation is at issue, the City of Pacific shall defend the same at its sole expense and if judgment is entered or damages are awarded against the City of Auburn, the City of Pacific shall satisfy the same, including all chargeable costs and attorney's fees.

10. ADMINISTRATION.

This Agreement shall be administered by:

A. The Mayor of Pacific or the Mayor's designee, and

B. The Mayor of Auburn or the Mayor's designee.

Exhibit "A" Resolution No. 2763
Adopted 12/2/96

CITY OF PACIFIC

Cheryl Bertsch
Mayor ProTem
Date 11/12/96

Approved as to Form:

City Attorney

CITY OF AUBURN

By Charles A. Booth
Charles A. Booth
Mayor

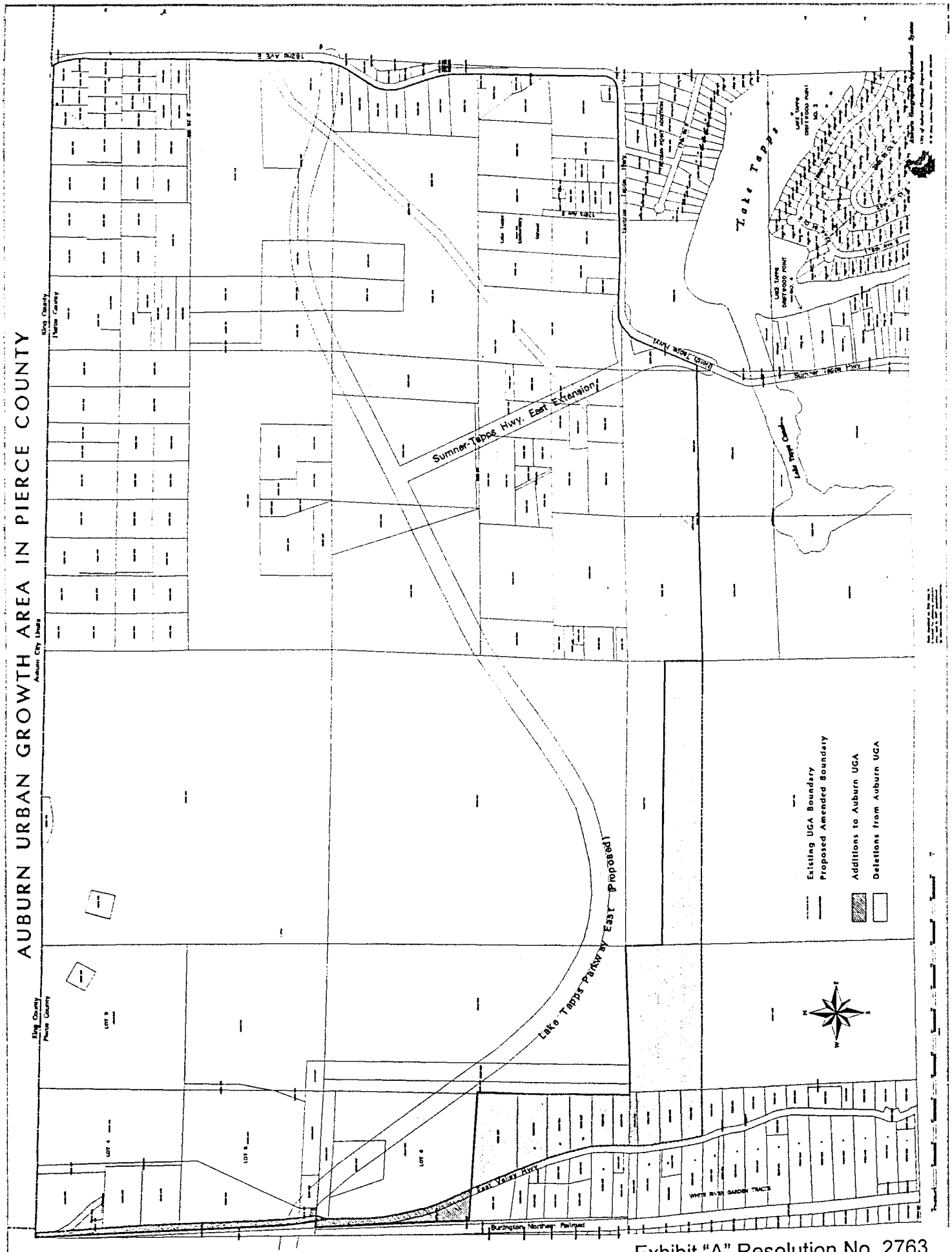
Date 12/5/96

Approved as to Form:

City Attorney

BHS\AGREEMT1

Exhibit "A" Resolution No. 2763
Adopted 12/2/96



REF: Resolution No. 2873
September 15, 1997

Exhibit "A" Resolution No. 2763
- Adopted 12/2/96

ORIGINAL

AN AGREEMENT BETWEEN THE CITIES OF SUMNER AND AUBURN RELATING TO POTENTIAL ANNEXATION AREA DESIGNATION

THIS AGREEMENT is entered into on this 16th day of JULY, 1996, by and between the City of Sumner, a municipal corporation of the State of Washington (hereinafter referred to as "Sumner") and the City of Auburn, a municipal corporation of the State of Washington (hereinafter referred to as "Auburn").

WHEREAS, pursuant to RCW 36.70A.110(2), the Washington State Growth Management Act of 1990 as amended, requires each city within Pierce County to propose the location of an urban growth area; and

WHEREAS, the King Countywide Planning Policies adopted and approved by Ordinance 10450 on July 6, 1992, by the King County Council and amended by Ordinance 11446 on July 19, 1994 and ratified by cities within King County, establish rules for designating potential annexation areas for cities within the countywide urban growth boundary; and

WHEREAS, King Countywide Planning Policy LU-31 states that each city shall designate a Potential Annexation Area (PAA) in collaboration with adjacent counties and cities and King County, and in consultation with residential groups in affected areas; and

WHEREAS, Pierce Countywide Planning Policies adopted and approved by Resolution No. R92-86 on June 30, 1992 by the Pierce County Council reestablish rules for designating urban growth areas for cities within Pierce County; and

WHEREAS, Pierce Countywide Planning Policy No. 1 on Urban Growth areas states "The County shall designate urban growth areas for the County and each municipality in the County based on consultations between the County and each municipality"; and

WHEREAS, the Pierce County Comprehensive Plan approved November 29, 1994 by the Pierce County Council establishes procedures for the adoption of Urban Service Areas (USA's) as a part of a Comprehensive Urban Growth Area (CUGA). The plan also adopts Urban Service Areas for the jurisdictions within Pierce County. The plan indicates an overlap of the USA's for the Cities of Auburn and Sumner in the general vicinity of an approved private development called Lakeland; and

WHEREAS, it is of mutual interest to Sumner and Auburn to resolve the overlaps between the Potential Annexation Areas in order to allow for continued land use and capital facility planning without threat of litigation or appeals; and

WHEREAS, in the spirit of cooperation and mutual understanding, Sumner and Auburn desire to address mutual interests, work together on issues of mutual benefit, and enter into agreements to work constructively on issues of concern; **NOW THEREFORE,**

Exhibit A Resolution No. 2762
August 5, 1996

In consideration of the mutual benefits, Sumner and Auburn hereby agree to the terms and conditions as set forth below:

SECTION 1. PURPOSE.

The purpose of this agreement is to confirm the decision made between Sumner and Auburn for the identification of Potential Annexation Area boundaries and Urban Service Areas.

SECTION 2. DEFINITIONS.

A. Potential Annexation Area (PAA): is a term used in the King Countywide Planning Polices meaning the incorporated urban area adjacent to a city, within which urban growth shall be encouraged and phased, and which is expected to annex to the city. Annexation is expected to occur sometime during the next twenty (20) years at which time the city will provide services and utilities. For purposes of this agreement, the term Potential Annexation Area is the same as Urban Service Area (USA) as applied in the Pierce County Comprehensive Plan.

B. Urban Growth Areas: means areas proposed by the Sumner and Auburn and designated by the county within which urban growth shall be encouraged and passed and outside of which growth can occur only if it is not urban in nature.

C. Urban Growth Boundary: means the boundary marking the limit between the urban growth areas and other areas such as rural and resource area where urban growth is not permitted. The boundary shall be designated by the county in consultation with Sumner and Auburn, under the requirements of the Growth Management Act.

SECTION 3. PUBLIC PROCESS.

The designation of PAAs in Exhibit A (map) attached hereto and by this reference made a part of this agreement are of interest to a variety of affected parties, including property owners, area residents, the general public, special service districts and the municipalities.

SECTION 4. RELATIONSHIP TO EXISTING LAWS AND STATUES.

This Agreement shall in no way modify nor supersede existing laws and statutes and is consistent with existing laws and statutes. In meeting the commitments encompassed in this Agreement, all parties shall comply with the requirements of the annexation statutes, Open Public Meetings Act, State Environmental Policy Act, Growth Management Act and Countywide Planning Policies for King and Pierce Counties.

SECTION 5. RESPONSIBILITIES.

A. Sumner and Auburn acknowledge the PAA boundary described in Exhibit A.

B. Sumner and Auburn shall only annex territory within their designated PAAs.

C. Sumner and Auburn shall conduct a public involvement process that includes, but is not limited to, workshops, surveys, or hearings in areas within the PAA prior to the inclusion of any additional areas within the PAA.

SECTION 6. JOINT PLANNING

Sumner and Auburn shall work cooperatively together in the planning and delivery of services to the respective PAA to the extent feasible as described below:

A. Sumner and Auburn shall initiate discussions between staff to review the feasibility of sharing the costs associated with the construction and operation of a water storage facility. Both cities shall also explore the possibility of shared water resources.

B. Sumner and Auburn shall work cooperatively on other issues of mutual concern which may arise including:
   1. Design, funding, and construction of the 8th Street Corridor from Lake Tapps to SR 167;
   2. Railroad traffic and the mitigation of increased rail activity on transportation;
   3. Mitigation of stormwater impacts to the valley;
   4. Modifications to the Mud Mountain Dam to reduce base flood levels;
   5. Joint fire services and operations such as training, hazardous spill response, mutual aide, and special operations;
   6. Bicycle and pedestrian trails connecting the Sumner and Auburn;
   7. Watershed planning and management related to the Stuck (White) River and its tributaries; and
   8. Joint planning and participation with Pierce County.

SECTION 7. AMENDMENTS.

A. A city which desires to modify the Potential Annexation Area shall contact the other party to this Agreement to begin discussions regarding potential annexation or boundary amendments. Sumner and Auburn agree to participate in such discussions when called. Either city is authorized to call a meeting upon providing the other city has at least a thirty (30) day written notice.

B. The proposed amendments shall be supported by written evidence of a significant change in one of the criteria listed in paragraph 7D below. Sumner and Auburn shall concur that the substantial change warrants an amendment to the original designated PAA.

C. A public process shall be conducted regarding an amendment to a potential annexation area as described in 5(c) above.

D. Criteria for Designation of Potential Annexation Areas

1. Recognition of resident community identification.
2. Financial and technical ability to provide municipal services.
3. Creation of logical service areas (vehicular accessibility and availability of utility service).
4. Recognition of physical boundaries.
   -bodies of water
   -topographical features
   -watersheds
   -freeways
5. Protection of critical/resource areas significant to a particular jurisdiction.
   -protection of critical areas
   -opportunities for urban separators
6. Logical boundaries.
   -elimination of unincorporated islands
   -no overlapping potential annexation areas

E. The proposed amended PAA agreement shall be submitted to the respective legislative authorities for approval.

SECTION 8. DURATION AND TERMINATION.

This Agreement shall be in effect upon signature of both parties and shall continue in effect from year to year unless terminated by a six month written notice by one party to the others.

SECTION 9. SEVERABILITY CLAUSE.

Any provision of this Agreement which is declared invalid or illegal shall in no way affect or invalidate any other provision hereof and such other provisions shall remain in full force and effect.

SECTION 10 ADMINISTRATION.

This Agreement shall be administered by the Mayor of the City of Sumner and the City of Auburn, or their designees.

CITY OF SUMNER

Robert A. Moltke, Mayor

7-16-96
Date

Attest:

City Clerk

Approved as to form:

City Attorney

CITY OF AUBURN

Charles A. Booth, Mayor

August 5, 1996
Date

Attest:

City Clerk

Approved as to form:

City Attorney

Exhibit A Resolution No. 2762
August 5, 1996

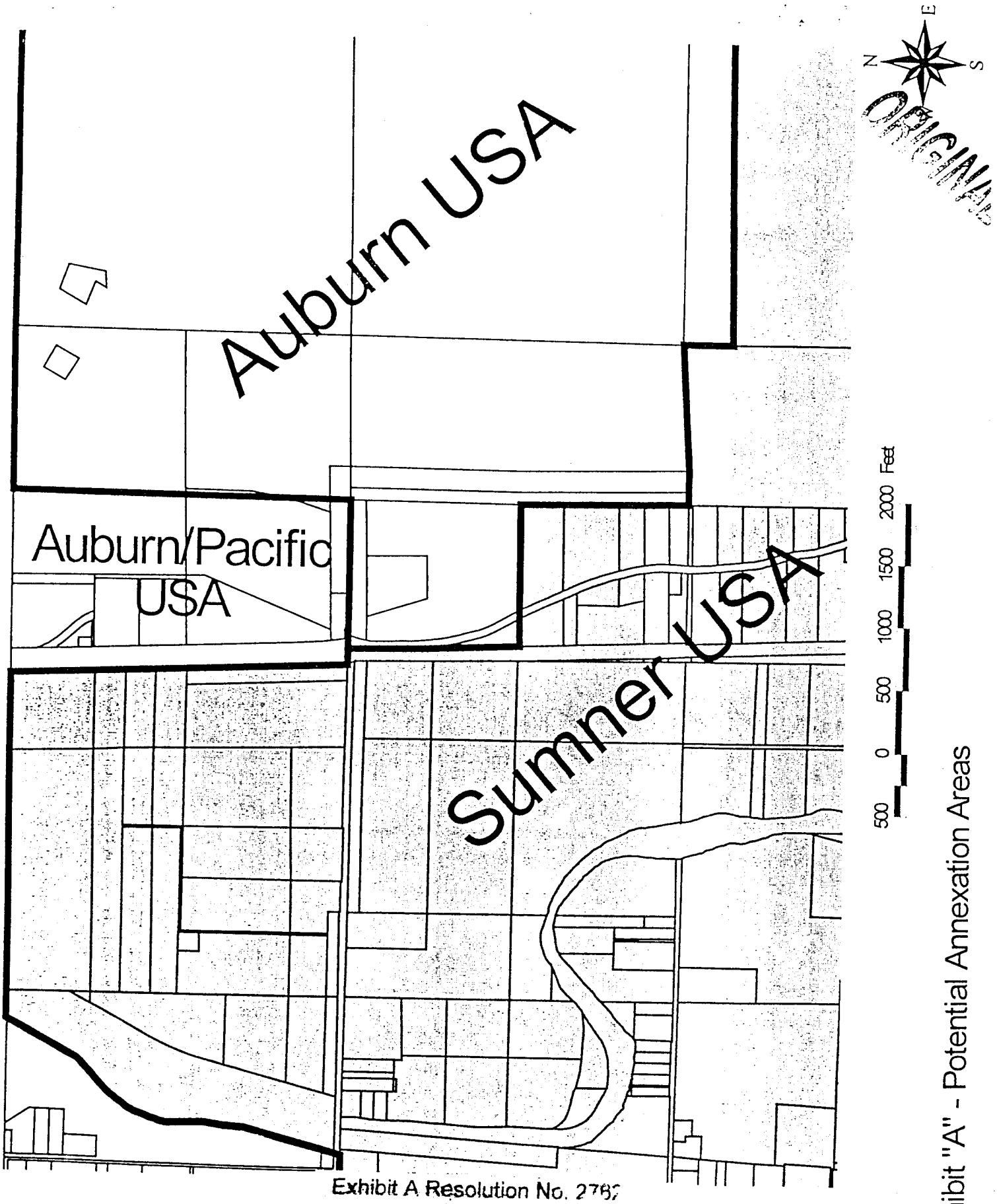
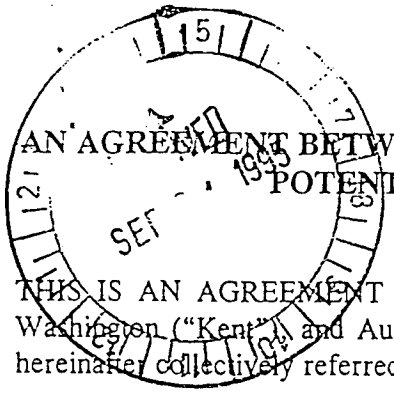


Exhibit "A" - Potential Annexation Areas

Exhibit A Resolution No. 2782
August 5, 1996

Mayor

ORIGINAL



AN AGREEMENT BETWEEN THE CITIES OF KENT AND AUBURN RELATING TO POTENTIAL ANNEXATION AREA DESIGNATION

THIS IS AN AGREEMENT between the Cities of Kent, a municipal corporation of the State of Washington ("Kent"), and Auburn, a municipal corporation of the State of Washington ("Auburn"), hereinafter collectively referred to as the "Cities."

RECITALS

A. Pursuant to RCW 36.70A.110(2), the Washington State Growth Management Act of 1990 as amended requires each City within the County to propose the location of an urban growth area, and

B. The Countywide Planning Policies adopted and approved by Ordinance 10450 on July 6, 1992 by the County Council and amended by Ordinance 11446 on July 19, 1994 and ratified by Cities within the County, establishes rules for designating potential annexation areas for cities within the countywide urban growth boundary, and

C. Countywide Planning Policy LU-31 states that in collaboration with adjacent counties and cities and King County, and in consultation with residential groups in affected areas, each City shall designate a Potential Annexation Area (PAA), and

D. It is in the public interest that the jurisdictions cooperate to designate logical and achievable PAA boundaries, and

NOW THEREFORE, the Cities hereby agree:

1. PURPOSE.

The purpose of this agreement is to confirm the decision made between the Cities for the identification of PAA boundaries.

2. DEFINITIONS.

Potential Annexation Area (PAA): The incorporated urban area adjacent to a City, within which urban growth shall be encouraged and phased, and which is expected to annex to the city. Annexation is expected to occur sometime during the next 20 years at which time the city will provide services and utilities. Potential Annexation Area is another term for a City's Urban Growth Area.

Urban Growth Areas: Areas proposed by the Cities and designated by the County within which urban growth shall be encouraged and phased and outside of which growth can occur only if it is not urban in nature. A City's Urban Growth Area is another term for its Potential Annexation Area.

Urban Growth Boundary: The boundary marking the limit between the urban growth areas and other areas such as rural and resource area where urban growth is not permitted. The boundary shall be designated by the County in consultation with the appropriate Cities, under the requirement of the Growth Management Act, as amended.

3. PUBLIC PROCESS.

The designation of PAAs in Exhibit A (map) attached hereto and by this reference made a part of this agreement are of interest to a variety of affected parties, including property owners, area residents, the general public, special service districts and the municipalities.

4. RELATIONSHIP TO EXISTING LAWS AND STATUTES.

This Agreement in no way modifies nor supersedes existing laws and statues and is consistent with existing laws and statues. In meeting the commitments encompassed in this Agreement, all parties will comply with the requirements of the annexation Statutes, Open Public Meetings Act, State Environmental Policy Act, Growth Management Act and Countywide Planning Policies for King County.

5. RESPONSIBILITIES.

A. The Cities acknowledge the PAA boundary described in Exhibit A.

B. The Cities will only annex territory within their designated PAAs.

C. The Cities shall conduct a public involvement process that includes, but is not limited to workshops, surveys, or hearings in areas within the PAA, prior to the inclusion of any additional areas within the PAA.

6. AMENDMENTS.

A. A city which desires to modify the Potential Annexation Area shall contact the other party to this Agreement to begin discussions regarding potential annexation area boundary amendments. The Cities agree to participate in such discussions when called. Either Party is authorized to call a meeting upon 30 days written notice.

B. The proposed amendments shall be supported by written evidence of a significant change in one of the criteria listed in paragraph 6D. Below. The Cities shall concur that the substantial change warrants an amendment to the original designated PAA.

C. A public process shall be conducted regarding an amendment to a potential annexation area as described in 5(C) above.

D. *Criteria for Designation of Potential Annexation Areas*

- Recognition of resident community identification.
- Financial and technical ability to provide municipal services.

- Creation of logical service areas (vehicular accessibility and utility construction).
- Recognition of physical boundaries.
  - Bodies of water
  - Topographical features
  - Watersheds
  - Freeways
- Protection of critical/resource areas significant to a particular jurisdiction.
  - Protection of critical areas
  - Opportunities for urban separators
- Logical boundaries.
  - Elimination of unincoporated islands
  - No overlapping potential annexation areas

E. The proposed amended PAA agreement shall be submitted to the respective legislative authorities for approval.

7. DURATION AND TERMINATION.

This Agreement is effective upon signature of both parties and shall continue in effect from year to year unless terminated by a six month written notice by one party to the others.

8. SEVERABILITY CLAUSE.

Any provision of this Agreement which is declared invalid or illegal shall in no way affect or invalidate any other provision hereof and such other provisions shall remain in full force and effect.

9. INDEMNIFICATION.

A. The City of Kent shall indemnify and hold harmless the City of Auburn and its officers, agents and employees, or any of them from any and all claims, actions, suits, liability, loss, costs, expenses and damages of any nature whatsoever, by reason of or arising out of any negligent act or omission of the City of Kent, its officers, agents and employees, or any of them, in the performance of this Agreement. In the event that any such suit based upon such a claim, action, loss or damage is brought against the City of Auburn, the City of Kent shall defend the same at its sole cost and expense; provided, that the City of Auburn reserves the right to participate in such suit if any principle of governmental or public law is involved. If final judgment be rendered against the City of Auburn and its officers, agents and employees, or any of them, or jointly against the City of Kent and the City of Auburn and their respective officers, agents and employees, or any of them, the City of Kent shall satisfy the same, including all chargeable costs and attorney's fees.

B. In executing this Agreement, the City of Auburn does not assume liability or responsibility for or in any way release the City of Kent from any liability or responsibility which arises in whole or in part from the existence or affect of Kent City ordinances, rules or regulations. If any cause, claim, suit, action or administrative proceeding is commenced in which the enforceability and/or validity of any such Kent City ordinance, rule or regulation is at issue, the City of Kent shall defend the same at its

sole expense and if judgment is entered or damages are awarded against the City of Auburn, the City of Kent shall satisfy the same, including all chargeable costs and attorney's fees.

C. The City of Auburn shall indemnify and hold harmless the City of Kent and its officers, agents and employees, or any of them from any and all claims, actions, suits, liability, loss, costs, expenses and damages of any nature whatsoever, by reason of or arising out of any negligent act or omission of the City of Auburn, its officers, agents and employees, or any of them, in the performance of this Agreement. In the event that any such suit based upon such a claim, action, loss or damage is brought against the City of Kent, the City of Auburn shall defend the same at its sole cost and expense; provided, that the City of Kent reserves the right to participate in such suit if any principle of governmental or public law is involved. If final judgment be rendered against the City of Kent and its officers, agents and employees, or any of them, or jointly against the City of Kent and the City of Auburn and their respective officers, agents and employees, or any of them, the City of Auburn shall satisfy the same, including all chargeable costs and attorney's fees.

D. In executing this Agreement, the City of Kent does not assume liability or responsibility for or in any way release the City of Auburn from any liability or responsibility which arises in whole or in part from the existence or affect of Auburn City ordinances, rules or regulations. If any cause, claim, suit, action or administrative proceeding is commenced in which the enforceability and/or validity of any such Auburn City ordinance, rule or regulation is at issue, the City of Auburn shall defend the same at its sole expense and if judgment is entered or damages are awarded against the City of Kent, the City of Auburn shall satisfy the same, including all chargeable costs and attorney's fees.

10. ADMINISTRATION.

This Agreement shall be administered by:

A. The Mayor of Kent or the Mayor's designee, and

B. The Mayor of Auburn or the Mayor's designee.

CITY OF KENT

Jim White
Mayor

Date 8-3-95

CITY OF AUBURN

Charles A. Booth
Mayor

Date 7-6-95

Approved as to Form:

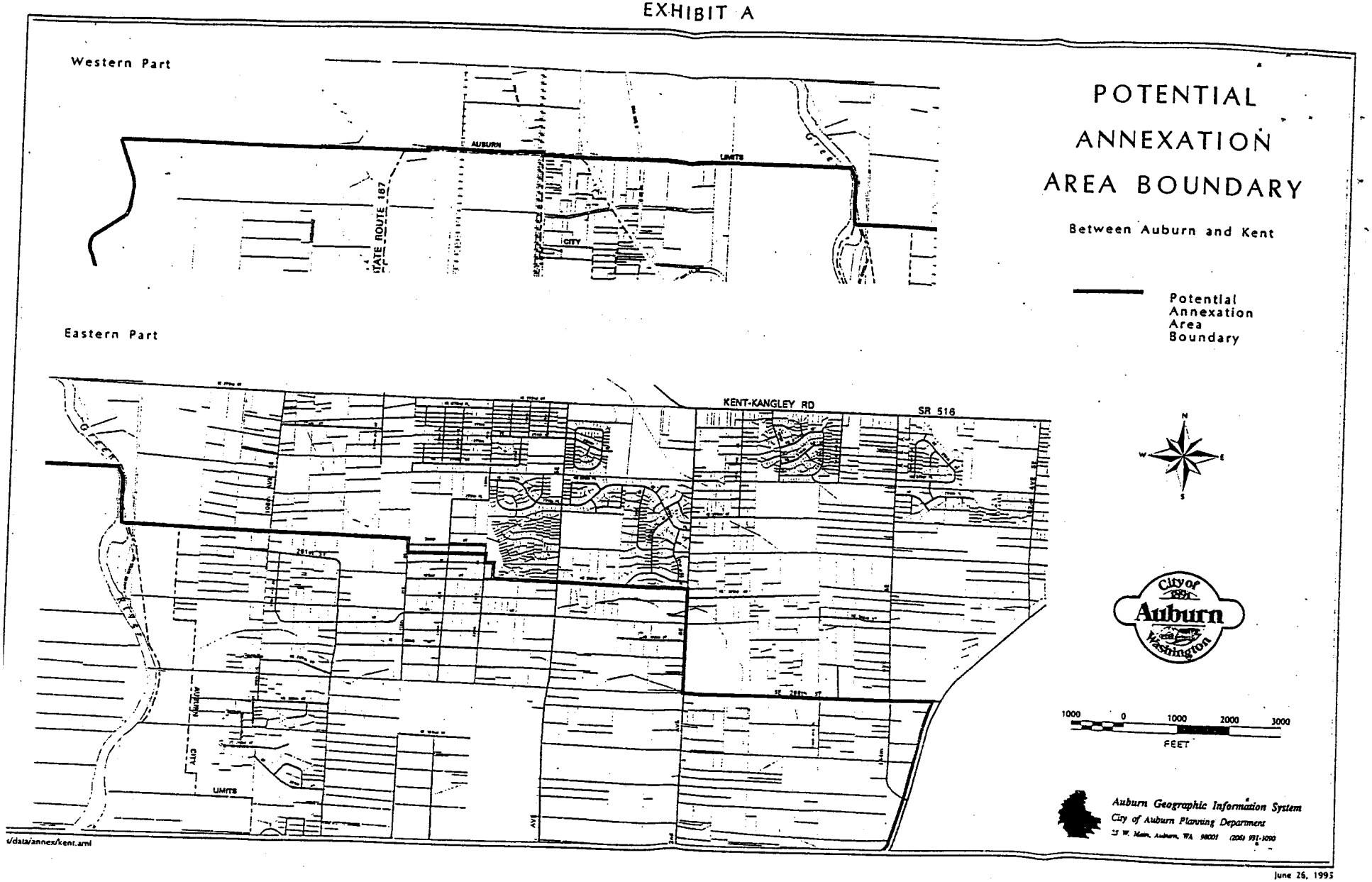
City Attorney

Approved as to Form:

City Attorney

BHS\KENTAGRT

EXHIBIT A



POTENTIAL ANNEXATION AREA BOUNDARY

Between Auburn and Kent

Potential Annexation Area Boundary

N
W
E
S

City of 1891 Auburn Washington

1000 0 1000 2000 3000
FEET

Auburn Geographic Information System
City of Auburn Planning Department
25 W. Main, Auburn, WA 98001 (206) 931-3090

June 26, 1995

REF: Resolution No. 2873
September 15, 1997

RESOLUTION NO. 2925

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE SETTLEMENT AGREEMENT BETWEEN THE CITY OF AUBURN AND THE CITY OF BONNEY LAKE.

WHEREAS, Auburn and Bonney Lake are currently involved in several related disputes regarding the provision of water service to a development known as "Lakeland Hills South" within Auburn's currently-designated Pierce County Potential Annexation Area; and

WHEREAS, Auburn is currently seeking to annex a portion of its Pierce County Potential Annexation Area; and

WHEREAS, Bonney Lake is currently opposing said annexation proposal; and

WHEREAS, Bonney Lake has initiated litigation against Auburn in Pierce County Superior Court alleging tortious interference with a contractual relationship; and

WHEREAS, Auburn has threatened legal and/or administrative action with respect to various water rights owned by Bonney Lake; and

WHEREAS, Bonney Lake has threatened legal and/or administrative action with respect to various water rights owned by Auburn; and

WHEREAS, the parties hereto desire to enter into a settlement agreement, the express intent of which is to settle all claims and disputes between Auburn and Bonney Lake relating to the provision of water service to Auburn's Pierce County Potential Annexation Area and related water rights issues; and

WHEREAS, Bonney Lake and Auburn are both desirous of entering into cooperative arrangements to provide for the efficient and cost-effective provision of water to their customers.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES AS FOLLOWS:

Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute the Settlement Agreement between the City and the City of Bonney Lake. A copy of said Settlement Agreement is attached hereto, designated as Exhibit "A" and incorporated by reference in this Resolution.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

DATED and SIGNED this 2nd day of March, 1998.

CITY OF AUBURN

Charles A. Booth

CHARLES A. BOOTH
MAYOR

ATTEST:

Danielle E. Daskam

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds

Michael J. Reynolds,
City Attorney

SETTLEMENT AGREEMENT

CITY OF AUBURN AND CITY OF BONNEY LAKE

THIS SETTLEMENT AGREEMENT ("Agreement") is entered into this 5th day of March, 1998, by and between the **CITY OF AUBURN**, ("Auburn"), a municipal corporation, and the **CITY OF BONNEY LAKE** ("Bonney Lake"), a municipal corporation.

WHEREAS, Auburn and Bonney Lake are currently involved in several related disputes regarding the provision of water service to a development known as Lakeland Hills South ("LHS") within Auburn's currently-designated Pierce County Potential Annexation Area ("PC PAA");

WHEREAS, Auburn is currently seeking to annex a portion of its PC PAA; and

WHEREAS, Bonney Lake is currently opposing said annexation proposal; and

WHEREAS, Bonney Lake has initiated litigation against Auburn in Pierce County Superior Court alleging tortious interference with a contractual relationship; and

WHEREAS, Auburn has threatened legal and/or administrative action with respect to various water rights owned by Bonney Lake; and

Exhibit "A"
Auburn Resolution No. 2925

WHEREAS, Bonney Lake has threatened legal and/or administrative action with respect to various water rights owned by Auburn; and

WHEREAS, the parties hereto desire to enter into a settlement agreement, the express intent of which is to settle all claims and disputes between Auburn and Bonney Lake relating to the provision of water service to Auburn's PC PAA and related water rights issues; and

WHEREAS, Bonney Lake and Auburn are both desirous of entering into cooperative arrangements to provide for the efficient and cost-effective provision of water to their customers.

NOW, THEREFORE, the parties agree as follows:

1. Bonney Lake's claims against Auburn in Pierce County Cause No. 97-2-05212-8 shall be dismissed with prejudice and without costs to either party.

2. Bonney Lake shall withdraw its opposition to Auburn's proposed annexation of a portion of Auburn's PC PAA in Pierce County Boundary Review Board Case No. A-97-5.

3. Auburn recognizes and agrees to Bonney Lake's exclusive right to serve with water all portions of Bonney Lake's water service area as designed by the 1995 Pierce County Coordinated Water System Plan for a period of seven years from the effective date of any Auburn annexation of

any area within such service area. It is understood that Auburn anticipates multiple annexation proceedings regarding such areas. Bonney Lake shall not oppose such annexation proposals, and pursuant to this paragraph, Bonney Lake shall have the exclusive right to serve each annexation area for seven years from the effective date of annexation.

4. Upon the expiration of each seven-year period, or sooner if requested by Bonney Lake, provided for in paragraph 3 with respect to a particular portion of Bonney Lake's water service area, Auburn shall, at its option, have the exclusive right to serve such area with water, subject to the further requirements and conditions contained in paragraphs 5 and 6 of this Agreement.

5. Upon the expiration of each seven-year period, or sooner if requested by Bonney Lake, provided for in paragraph 3 with respect to a particular portion of Bonney Lake's water service area, Bonney Lake shall, at Auburn's option, transfer to Auburn, by bill of sale, all of its ownership rights in water system facilities located within and used to serve such area, with the exception of facilities retained by Bonney Lake in accordance with paragraph 6, below. Auburn shall have no obligation to compensate Bonney Lake for such facilities as are transferred by Bonney Lake pursuant to this Section.

Facilities to be transferred pursuant to this paragraph shall include water pipes, but shall not include source or storage facilities, including but not limited to Bonney Lake's Tacoma Point Wells and Tacoma Point Reservoir, nor those facilities reserved to Bonney Lake under paragraph 6.

6. In contemplation of Auburn's anticipated eventual takeover of water service from Bonney Lake within Auburn's annexation area, and for the purpose of providing Bonney Lake a looped system after Auburn's takeover of water service within its annexed areas hereunder, Auburn shall, prior to the takeover of service within any portion of Bonney Lake's current water service area, construct or cause to be constructed and transfer or cause to be transferred to Bonney Lake, free of charge, future 12" water transmission line as shown on the attached Exhibit A to the southern boundary of Auburn's PC PAA; provided, that in the event the particular alignment shown on Exhibit A shall prove impractical or unavailable, such lines shall be constructed in an alignment as mutually agreed to by the parties. Auburn shall construct or cause these facilities to be constructed and transferred to Bonney Lake without regard to the progress or lack of progress of the development of LHS. Such facilities shall be constructed in accordance with applicable Bonney Lake standards. In addition, Auburn will

not take over water service from Bonney Lake, and Bonney Lake will retain ownership of its water system, within that area shown on Exhibit B, attached hereto. This area will remain part of Bonney Lake's water service area and the facilities serving it will remain part of Bonney Lake's water system in perpetuity, notwithstanding possible annexation of the area by Auburn at any time in the future.

7. Auburn shall guarantee Bonney Lake the right, in perpetuity, to transport water through Auburn's corporate boundaries within Pierce County, in order that Bonney Lake's ability to serve its water service area as recognized in this Agreement is not hindered or rendered impractical. Such guarantee shall be effectuated by the execution of such easements, agreements, franchises, licenses or other documents as are appropriate, on terms that are in no respect less favorable or advantageous to Bonney Lake than those governing the operations of Auburn's own water utility within its corporate limits. Auburn shall not condemn or otherwise interfere with any Bonney Lake water facilities covered by this paragraph or paragraph 6.

8. Neither Auburn nor any of its agents, employees, attorneys or contractors shall challenge, directly, indirectly or through third parties, through legal or administrative proceedings or any other means, Bonney Lake's

existing water rights, including but not limited to Bonney Lake's water rights associated with its Tacoma Point Wells. The rights associated with its Tacoma Point Wells are, specifically, as follows:

(1) Lake Tapps Water Co. Certificate No. C 2809-A, with a date of priority 1/23/57, for 100gpm and 45af;

(2) Tacoma Point Well No. 2 Certificate No. C G2-26853, with a date of priority of 2/5/86, for 1000gpm and 800af; and

(3) Tacoma Point Well No. 4 Permit Number G2-27693, with a date of priority of 1/30/90, for 1200gpm and 1600af.

Because of production problems associated with Bonney Lake's current wells at Tacoma Point, Auburn's agreement not to protest or interfere extends to and includes Bonney Lake's drilling of another well or wells at Tacoma Point to achieve full production of its certificated and permitted water rights. It also includes Bonney Lake's effort to proceed to certificate on its permit rights in Tacoma Point Well No. 4, referenced above. Bonney Lake agrees not to seek to increase its water rights in the Tacoma Point well field for any appropriation beyond these permitted/certificated levels. Bonney Lake shall not challenge, directly,

indirectly or through third parties, through legal or administrative proceedings or any other means, Auburn's existing water rights or Auburn's efforts to use those rights in order to serve its PC PAA with water, including any application to permit the withdrawal of water from wells located within LHS commonly known as Lakeland wells 5b and 5c, provided that such rights in Lakeland wells 5b and 5c are supplemental to Auburn's existing rights in wells 5 and 5a. For purposes of this paragraph, the word "challenge" shall include both direct actions, such as the filing of any lawsuit, complaint or letter of protest, as well as indirect actions, such as assisting, facilitating, encouraging or approving any such actions on the part of a third party. Each party will terminate and withdraw any pending challenges to the other's water rights that have been initiated.

Each party expressly reserves the right to challenge any application for new water right or change in water right that is made after the date of this Agreement; provided, that any application for certification of a water right for which a party already holds a permit shall not be deemed an application for new water right or change in water right made after the date of this Agreement.

9. In order to facilitate the practical and efficient provision of water service to the portion of LHS outside Bonney Lake's current water service area, the parties will work together cooperatively to agree on an amendment of their respective water service area boundaries in this area.

10. At such time as either party wishes to pursue the development of additional water source or supply or water storage facilities in the vicinity of LHS, the party will provide notice of same to the other party and the parties will thereupon meet to confer with respect to their respective needs and interests in regard to additional source, supply or storage. Should it appear that the interests of the parties are sufficiently aligned, the parties will mutually agree to join in the development of said additional source, supply or storage facilities, on such terms as the parties may agree are equitable.

11. In the future, at such time as Auburn's water system has been more fully developed in the area of LHS and/or on its common boundary with Bonney Lake's water service area, the parties may agree that it is in their mutual best interests, and the best interests of their respective customers, to enter into an agreement providing for one or more interties between their water systems to be constructed.

12. Each party agrees to sign such documents and to take such actions as are necessary to implement the purpose and intent of this Agreement.

13. Time is of the essence under this Agreement. The terms of this Agreement shall be specifically enforceable by the parties hereto.

14. Each of the individuals signing this Agreement on behalf of a party warrants that he/she has the authority to sign the Agreement and thereby to bind the party on whose behalf he/she signs.

15. This Agreement shall be binding on the heirs, successors and assigns of the parties.

16. This Agreement is designed strictly for the purpose of compromising disputed claims and avoiding the expense and risks of litigation. The Agreement shall be construed according to the fair intent of the language as a whole, and not for or against either party.

17. In the event of any disputes arising out of the implementation or enforcement of this Agreement, the parties agree to submit said disputes first to mediation and, if mediation is unsuccessful, then to binding arbitration in accordance with Ch. 7.04 RCW; provided, however, that each party reserves the right to seek injunctive or other similar equitable relief from a court of competent jurisdiction in

order to preserve the status quo pending any mediation or arbitration or to otherwise protect a right or remedy that might otherwise be lost if such interim relief were not obtained.

18. This Agreement shall not waive Auburn's right to assess and collect any taxes, assessments or fees which it is otherwise authorized under law to assess or collect on any water service; provided, that Auburn's assessment and collection of any such taxes, assessments or fees with respect to any area served with water by Bonney Lake shall be upon the same terms as Auburn's assessment and collection of any such taxes, assessments or fees with respect to areas served with water by Auburn.

CITY OF AUBURN

By: Charles A. Booth
CHARLES A. BOOTH

Its: Mayor

CITY OF BONNEY LAKE

By: Robert Penney

Its: MAYOR

Exhibit "A"
Resolution No. 2925

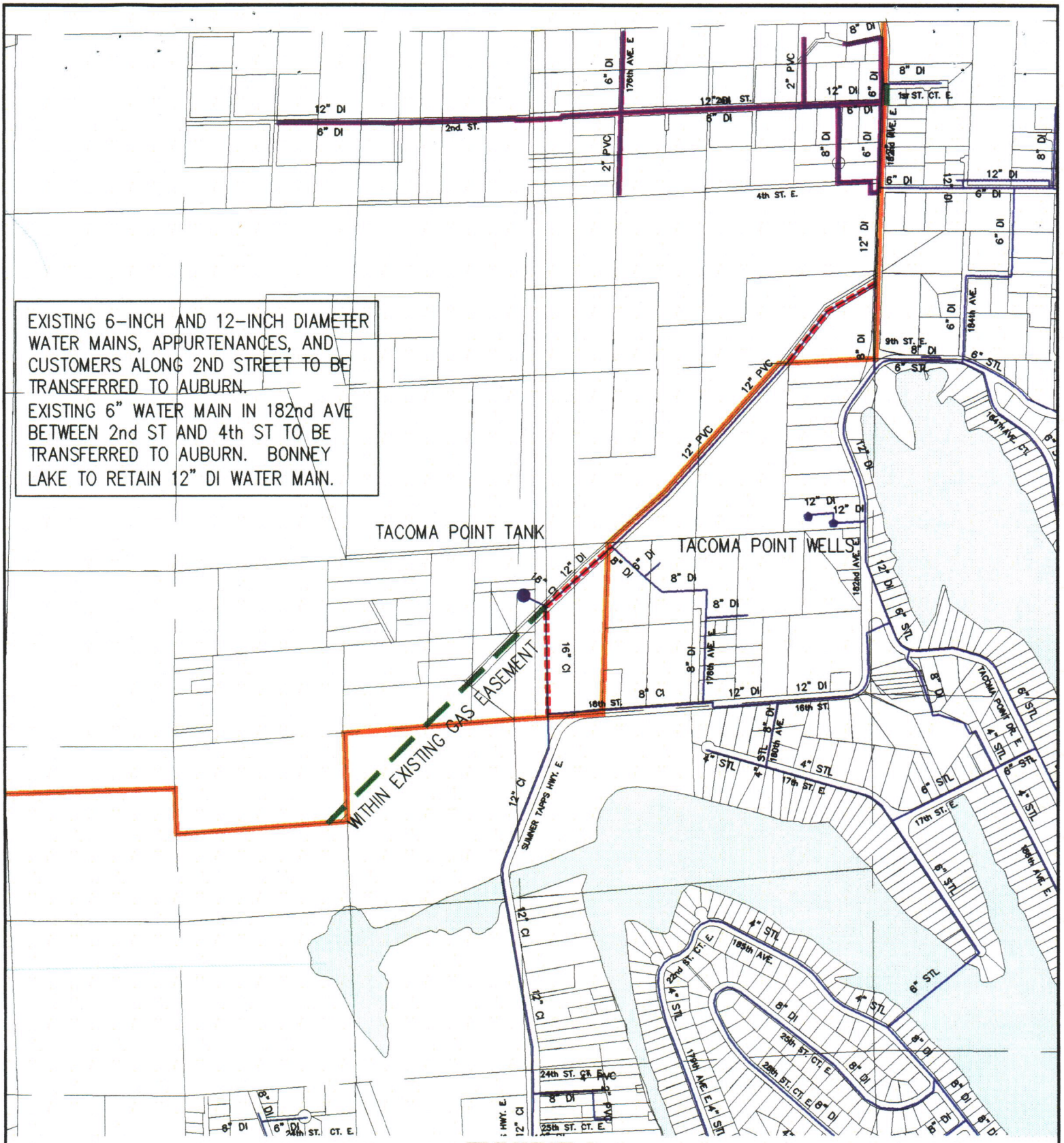


EXHIBIT A
CITY OF AUBURN AND CITY OF BONNEY LAKE SETTLEMENT AGREEMENT

LEGEND

- EXISTING BONNEY LAKE WATER MAIN
- PROPOSED 12" DIAMETER WATER MAIN TO BE PROVIDED BY AUBURN
- EXIST. BONNEY LAKE WATER MAIN IN FRANCHISE WITH AUBURN
- EXISTING BONNEY LAKE WATER MAIN TO BE TRANSFERRED TO AUBURN

Res 2925

SCALE: 1" = 1000'

BON\196-027\BL_AB-S2

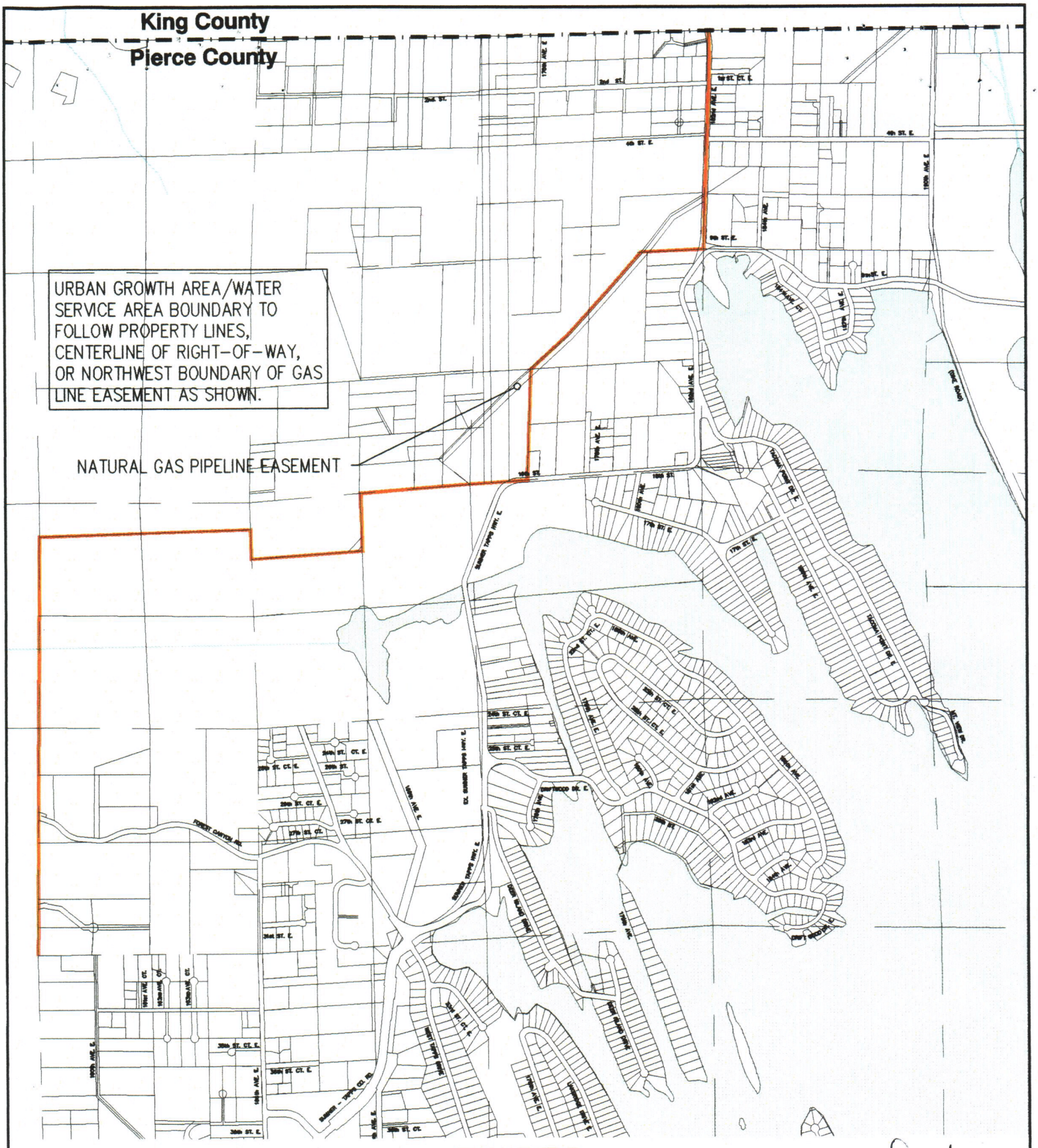


EXHIBIT B

CITY OF AUBURN AND CITY OF BONNEY LAKE SETTLEMENT AGREEMENT

AREA TO REMAIN IN BONNEY LAKE SERVICE AREA IN PERPETUITY.

BONNEY LAKE WATER SERVICE AREA BOUNDARY

Res 2925

SCALE: 1" = 1500'

\BON\196-027\BL_AB-S1

RESOLUTION NO. 2 9 5 5

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE FIRST AMENDMENT TO LAKELAND ANNEXATION AND UTILITIES AGREEMENT BETWEEN THE CITY AND THE LAKELAND COMPANY, INC.

WHEREAS, the City and The Lakeland Company, Inc. have previously entered into the Lakeland Annexation and Utilities Agreement in June, 1996; and

WHEREAS, disputes arose between the parties on the interpretation and enforcement of the said Agreement and the parties now desire to resolve any disputes with respect to that Agreement and with respect to all claims and obligations between the parties arising from events which pre-date the execution on of this Agreement.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES AS FOLLOWS:

Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute First Amendment to Lakeland Annexation and Utilities Agreement with The Lakeland Company, Inc. A copy of said Agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

DATED this 4th day of May, 1998.

CITY OF AUBURN

Charles A. Booth

CHARLES A. BOOTH
MAYOR

ATTEST:

Danielle E. Daskam

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds

Michael J. Reynolds,
City Attorney

PIERCE COUNTY, WA
9805210624
5-21-1998 01:49 pm
Fee Amt: $57.00

AUDITOR'S NOTE

LEGIBILITY FOR RECORDING AND COPYING UNSATISFACTORY IN A PORTION OF THIS INSTRUMENT WHEN RECEIVED

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):
1. Amendment to Lakeland Annexation and Utilities Agreement
2.
3.
4.

Reference Number(s) of Documents assigned or released: NONE

☒Additional reference #'s on page __3____ of document

Grantee (Last name first, then first name and initials)
1. The Lakeland Company
2.
3.
4.

Grantor: (Last name first)
1. AUBURN, CITY OF
2.
3.
4.

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)
SEC 6 TWP 20 N Range 5

☒ Additional legal is on page 31 of document.

Assessor's Property Tax Parcel/Account Number: 0520061012, 0520061013, 0520061014, 0520052038, 0520061015, 0520052039, 0520061016, 0520082006, 0520082010, 0520064000, 0520063000, 0520053001, 0520053004, 0520053014, 0520053004, 0520053014, 0520053004, 0520053014, 0520053008, 0520053042, 0520051032, 0520051001, 0520051003, 0520071001, 0520053041, 0520062007, 0520062027, 0520062028, 0520053038, 0520053030, 0520063000, 0520064000, 0520063008

☐ Assessor Tax # not yet assigned

9805210624

57

AMENDMENT
TO
LAKELAND ANNEXATION AND UTILITIES AGREEMENT

THIS AGREEMENT made and entered into this 14th day of May, 1998, by and between the **CITY OF AUBURN**, a municipal corporation, organized under Title 35A, Optional Municipal Code, hereinafter referred to as **"CITY"** and **THE LAKELAND COMPANY, INC.**, a Washington corporation, its heirs, successors and assigns and all related entities and all shareholders, and/or owners, jointly and severally and their marital communities, including all parties that have an interest in the property affected by this Agreement, herein referred to as **"TLC"**.

WHEREAS, the parties to this Agreement have previously entered into the Lakeland Annexation and Utilities Agreement, referred to as "PRE-ANNEXATION/UTILITIES

9805210624

AGREEMENT" in June, 1996, which agreement was approved by Auburn City Council under Ordinance No. 4867; and

WHEREAS, disputes arose between the parties on the interpretation and enforcement of the Pre-Annexation/Utilities Agreement referred to above, and the parties desire to resolve any disputes with respect to all claims and obligations between the parties arising from events which pre-date the execution of this Agreement; and

WHEREAS, the parties desire to end all disputes and claims, including any and all claims for damages, attorney fees and costs arising from events which pre-date the execution of this Agreement; and

WHEREAS, the parties have engaged in numerous meetings to resolve all issues between the parties and this Agreement reflects a compromised position between the parties for the purposes of attaining a complete settlement; and

WHEREAS, it is the intent of this Agreement that the agreement entitled Lakeland Annexation and Utilities Agreement, recorded under Recording No. 9608120131 shall remain in force and effect except as specifically amended by this Agreement; and

WHEREAS, the parties acknowledge that a dispute existed between the City of Bonney Lake and the CITY with respect to

9805210624

water service, which dispute has been settled between the City of Bonney Lake and the CITY and in such settlement comments were taken from TLC and incorporated into the final Settlement Agreement between the CITY and Bonney Lake; and

WHEREAS, it is the intent of the parties that the CITY proceed with the annexation of the TLC property and that TLC develops that property which is either annexed or will be annexed in accordance with the standards and land use polices and procedures of the CITY; and

WHEREAS, this Agreement and the requirements for any monetary payment from TLC to the CITY under this Agreement were specifically requested by TLC to result in a more marketable development for TLC and any payments are acknowledged to be not requested by the CITY but placed in the Agreement by TLC unilaterally and is not considered payment under RCW 82.02.020; and

WHEREAS, the parties acknowledge that TLC, in cooperation with the State of Washington and other local government units, other than the City of Auburn, is proceeding with the construction of the certain portions of the Lake Tapps Parkway East, as defined in a mitigation agreement executed between Pierce County and TLC and that the CITY has no responsibility to construct, make any

payments nor guarantee in any way any obligations for the construction of TLC's portion of the Parkway project. However, the parties acknowledge the importance of this construction project to TLC and that the execution of this Agreement is vital to TLC's ability to secure financing for its construction, and understand that the sole purpose of the expedited handling of this Agreement is to obtain a resolution of disputes prior to May 4, 1998. May 4, 1998 is a TLC funding date which requires this Agreement for TLC to obtain the necessary funding to construct this roadway; and

WHEREAS, the parties acknowledge the existence of an Agreement referred to as the "Crabtree Agreement" and agree that the settlement provisions in this Agreement settle all disputes including but not limited to any claims that TLC may have as a successor under the Crabtree Agreement; and

WHEREAS, the Crabtree Agreement and all its terms, including those terms relating to customer equivalent charges for services, expire on June 6, 1998; and

WHEREAS, the parties agree that TLC has had input with regard to the resolution of the CITY and the City of Bonney Lake dispute and agree that the settlement provisions in this Agreement settle any claims TLC may have against the CITY with respect to water, including but not limited to the

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providing of water, the providing of water pressure, fire flow or any other claims related to the water utility.

NOW, THEREFORE, BASED UPON MUTUAL COVENANTS TO BE DERIVED, THE PARTIES AGREE AS FOLLOWS:

1. LAKELAND ANNEXATION AND UTILITIES AGREEMENT:

The parties reaffirm the terms and conditions of the Lakeland Annexation and Utilities Agreement recorded under Recording No. 9608120131, except as specifically amended herein.

This Agreement affects that real property identified on the map attached hereto and incorporated by reference as Exhibit "1" and legally described on attached Exhibit "2", hereafter referred to as "TLC Property".

3. DEVELOPMENTAL APPROVALS FROM PIERCE COUNTY:

The parties acknowledge that as provided in the PRE-ANNEXATION/UTILITIES AGREEMENT, paragraphs 2.2,2.9,2.13, and 4.1, prior to annexation of the subject project TLC, must obtain developmental approvals from Pierce County and in so doing agrees to comply with the Pierce County requirements and the CITY standards and land use polices and procedures.

In the event that the imposition of CITY standards on a development application submitted to Pierce County for

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an area not yet annexed to the CITY would result in the denial of the application by Pierce County, then the Pierce County standard will prevail. The CITY agrees to provide sewer service consistent with the terms and conditions of this Agreement.

4. POLICE AND FIRE SERVICES:

Upon annexation the CITY will provide to the area annexed, police and fire services that it provides to its other citizens. Fire service shall be provided to the annexed property provided that TLC has met all requirements of ACC Titles 15, and Chapter 13.16 as it relates to fire flow, and provided that the CITY may contract fire services if it cannot practicably provide fire service to some of the annexed area. Sprinklers shall be required for multifamily and commercial development. Sprinklers shall be required for single-family residential development only if necessary to satisfy the CITY's fire flow standards as described in Title 15.

5. PARKS:

Paragraph 4.5, "Parks", of the PRE-ANNEXATION/ UTILITIES AGREEMENT, is amended to read as follows:

4.5(a) TLC shall dedicate to CITY, one developed 15-acre park, one undeveloped 15-acre park, two developed 5-acre parks, and a linear park along Lakeland Hills Way for a total of approximately 42.91 acres.

4.5(b) The parks will be located as indicated on Exhibit 1. Except for the linear park and Park P4, the topography and soil conditions shall be approved by the CITY to ensure each site is suitable for active park use. The CITY has reviewed Park P4 and agrees to accept this undeveloped park "as is". The park locations indicated on Exhibit 1 are acceptable to the CITY. However, the parties acknowledge that in order to locate the parks where indicated on Exhibit 1, TLC must obtain a major amendment approval pursuant to Pierce County Code. TLC agrees to process the major amendment application by submitting an application to the CITY and Pierce County concurrently within 30-days of execution of this Agreement. While reserving the right to review any other aspects of the major amendment, the CITY agrees not to object to the proposed park locations.

4.5(c) As soon as reasonably possible upon legal segregation, but no later than six months after approval of the preliminary plat for Lakeland Division One,

TLC shall dedicate Park P4 to the CITY. The linear park depicted on Exhibit 1 shall be designed to standards approved by the CITY Parks Director and shall be developed concurrent with construction of Lakeland Hills Way. The CITY agrees that TLC's commitment to dedicate Park P4 and the linear park, as described in this Agreement, satisfies the CITY's concurrency and mitigation requirements for issuance of 800 residential building permits. Prior to the issuance of residential building permits for 801 dwelling units within the PUD, TLC shall develop and dedicate Park P2 to the CITY or make arrangements for dedication and use acceptable to the CITY as necessitated by financing. CITY and TLC agree that upon dedication of Parks P2 and P4, TLC shall have satisfied concurrency requirements for the issuance of residential building permits for a total of 2,173 dwelling units. Thereafter, prior to the issuance of residential building permits for dwelling units in excess of a total of 2,173, CITY and TLC agree that additional park improvements must be dedicated to CITY (or the land dedicated, the improvements bonded, and an improvement schedule agreed upon) consistent with the formula described below:

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The ratio of improved parks required per thousand population shall be calculated based upon the following mathematical assumptions:

3,408 units approved in Lakeland South

42.91 acres of both improved and unimproved parks required

2.8 residents per household assumed for conversion of people to units

Accordingly the ratio of improved park required per thousand population shall be calculated as follows:

Total	(42.91 acs / (3408 x 2.8 = 9542)) = 4.5 acres combined parks/1000 population
Less	(15.0 acs / (739 x 2.8 = 2069)) = 7.25 acres of unimproved park/1000
	(27.91 acs /(2669 x 2.8 = 7473)) = 3.73 acres of unimproved park/1000

Based upon the foregoing calculations, TLC shall be entitled to the issuance of 95.62 residential building permits for each acre of improved park dedicated to the CITY (or unimproved/bonded park) dedicated to the CITY.

4.4 TLC and CITY shall work cooperatively in development of specific plans that meet CITY park standards. Each party shall respond promptly to proposals and submittals relating to the design and construction of park improvements. The CITY reserves final approval authority of park plans and CITY approval must be granted prior to

construction. The level of improvements required in Parks P1, P2 and P3 shall be based upon $1.82 per square foot of total park areas for P1, P2 and P3. The cost per square foot is based upon improvements made to Lakeland Hills Park in 1992 and the improvements shall be made at that rate adjusted by Consumer Price Index from 1992 until the date of Park plan approval by the CITY. The CITY has the right to distribute improvement funds between and among the Parks but in any event, TLC's financial obligation shall not exceed the total per square foot cost as specified above.

4.5(d) The CITY shall assume the responsibility for proper maintenance of the parks dedicated to it, provided, however, that the CITY may allow TLC to provide additional maintenance within parks dedicated to the CITY with the CITY's written consent. Except for Park P4, TLC must give CITY 1-year notice prior to dedication of any park land to the CITY.

4.5(e) TLC and/or appropriate homeowner associations, agree to develop, own, maintain, repair, and pay real estate taxes and assessments (if any) on all other park areas indicated on Exhibit 1 which are less than five acres in size.

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4.5(f) The CITY agrees that TLC's satisfactory performance of the terms contained in this Section of the Agreement shall constitute full and complete satisfaction of the CITY's park standards and requirements and shall be deemed to meet all park mitigation and concurrency requirements for the development of the TLC Property.

4.5(g) TLC agrees that any park impact fees paid to Pierce County pursuant to Pierce County requirements will not affect or reduce the park commitments to the CITY contained in this Agreement.

4.5(h) In addition to the parks referenced in this Section, TLC agrees to develop recreational trails within the relocated power line haul road depicted on Exhibit 1 pursuant to a design and construction schedule to be mutually determined by CITY and TLC. Upon completion of trail construction, maintenance of this recreational trail shall be the responsibility of the CITY.

6. INSPECTING AGENCY:

A building permit that has been issued by Pierce County shall be inspected by Pierce County even if the subject property is annexed after permit approval. Building permits approved by the CITY shall be inspected by the CITY.

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7. COVENANT RUNNING WITH THE LAND:

The parties agree that this Agreement is a covenant running with the land and is binding and benefiting the TLC Property. In order to insure that purchasers of homes, rental, commercial or other properties may obtain title free of the encumbrances of this Agreement, the issuance of a building permit for such property shall be satisfactory evidence of compliance with all provisions of this Agreement.

8. SCHOOL IMPACT FEE ORDINANCE:

The parties acknowledge that at the request of the Dieringer School District, and without objection by TLC, the CITY has enacted a School Impact Fee Ordinance. TLC agrees not to challenge the School Impact Fee Ordinance and agrees not challenge any school impact fees up to $1425 for single-family and $750 for multifamily. The CITY reserves the right to increase the above fees in the future, TLC reserves the right to challenge any school impact fees which exceed the above stated amounts.

9. PROTOCOL FOR SUBMISSION OF APPLICATIONS:

Paragraph 4.1(b) of the PRE-ANNEXATION/UTILITIES AGREEMENT is amended as follows:

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For TLC Property not yet annexed, and therefore under Pierce County jurisdiction, development applications shall be submitted to Pierce County. However, TLC agrees to simultaneously submit all such applications, except single-family building and grading permits, to the CITY. Except as provided in paragraph 2 of this Agreement, TLC agrees to comply with all applicable CITY standards and land use polices and procedures as determined by City Planning Director. Failure to comply with the provisions of this paragraph shall be determined a "Default" of this Agreement. To assure such compliance, TLC agrees to pay to CITY liquidated damages in the amount of $1,000 per day for each day that development is in Default. Notwithstanding any other provision of this Agreement, the liquidated damages shall not begin to accrue if the Default is cured within thirty (30) days from the date that the CITY mails or delivers written notice of the Default to The Lakeland Company, PO Box 3866, Bellevue, Washington 98009 If any Default is capable of being cured and the cure cannot be reasonable completed within the thirty (30) day cure period, the cure period shall be extended up to ninety (90) days so

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long as TLC has commenced action to cure within the thirty (30) day cure period and is proceeding to cure the Default with due diligence.

The decision of the CITY Planning Director may be appealed to the CITY Hearing Examiner within thirty (30) days from the date written decision. The day of filing of the appeal to the Hearing Examiner shall stay accrual of the liquidated damages. The stay of damages shall be released on the effective date of the Hearing Examiner's written decision. If the Hearing Examiner's decision is appealed, pursuant to paragraph 5.3 of the PRE-ANNEXATION/UTILITIES AGREEMENT, accrual of liquidated damages shall be stayed again until a written decision is issued by the mediator/arbitrator pursuant to provisions of Section 5.3 of the PRE-ANNEXATION/UTILITIES AGREEMENT. However, in no event shall any stay following appeal of the Hearing Examiner's decision exceed ninety (90) days.

Those permit applications filed with Pierce County which are considered complete and approved by Pierce County before annexation shall be built in compliance with the conditions placed upon it by Pierce County and pursuant to the conditions of this Agreement.

10. RELEASES:

The parties to this Agreement hereby release, discharge, resolve and settle any and all claims arising from events which pre-date the execution of this Agreement including their officials, employees, staff, consultants, shareholders, owners, attorneys, and including attorney fees and costs, including but not limited to claims involving providing of water or other utilities and any claims that TLC may claim to have under the Crabtree Agreement. This Agreement is not intended to waive or release any claims or address any disputes or potential disputes that TLC may have with the City of Bonney Lake.

11. TRANSPORTATION:

Paragraph 4.3 of the PRE-ANNEXATION/UTILITIES AGREEMENT is replaced in its entirety by the following:

TLC agrees to pay the CITY at the time a building permit is issued by either CITY or Pierce County, the following:

(1) $839.57 per detached single-family residential unit,

(2) $544.94 per attached single-family or multifamily unit,

(3) $187.26 per residence for residential units within the senior housing zone, and

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(4) $2.18 per gross foot of commercial or retail structures.

For building permits which are issued by Pierce County prior to execution of this Agreement, TLC shall pay the above amounts for such permits within 30 days of execution of this Agreement.

The fee amounts described above shall be adjusted to reflect the increase in the Consumer Price Index for the Seattle-Metropolitan area beginning as the base year January 1, 2000 and on January 1st each year thereafter the percentage difference of each year shall equal the adjustment

Payment of these fees shall constitute complete satisfaction of any transportation mitigation and concurrency requirements for the development of the TLC Property.

TLC agrees that all streets shall be constructed consistent with CITY standards including design criteria, construction specifications, operational criteria, and approved engineering submittals, except that the CITY may agree to modify the standards for private streets.

The parties acknowledge that there is a transportation cap which will allow a generation of up to

800 pm peak hour trips for TLC development and that the development of TLC property subject to this Agreement cannot exceed that capacity cap until the extension of Lakeland Hills Way to the Lake Tapps Parkway and the construction of TLC's portion of the Lake Tapps Parkway East connection 8th Street East as required in the TLC/Pierce County transportation mitigation agreement. The Lake Tapps Parkway East project is identified as Lake Tapps Parkway East (WEST), MAP ID No. 166, in the 1998-2003 Transportation Improvement Program for Pierce County. Upon completion of The Lake Tapps Parkway East connection to 8th Street East as described in the TLC/Pierce County transportation mitigation agreement, the transportation cap shall expire.

The calculation of peak hour trips shall be determined at building permit approval.

The CITY shall consider the 800 pm peak hour trips to be present in the transportation system in its review of development applications for property not included in Exhibits 1 and 2.

12. STORM WATER:

Paragraph 4.4(a) of the PRE-ANNEXATION/UTILITIES AGREEMENT is amended as follows:

The CITY agrees to receive the storm water from the

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Lakeland property described herein subject to the construction and dedication of necessary infrastructure which meets CITY standards including design criteria, construction specifications, operational criteria, and approved engineering submittals upon the effective date of annexation under the same terms and conditions as storm water is received from other developments within the CITY, including payment of any charges required by the CITY's utility ordinances provided, the water received from properties in TLC property not yet annexed shall be of the same quality and flow rate as from the property prior to development, shall not exceed the capacity of the CITY's existing storm drainage system, and shall be subject to the same charges as any other property in the CITY for storm water.

The CITY and TLC acknowledge that substantial mater storm drainage planning has been completed for TLC properties in the form of the Comprehensive Drainage Plan Lakeland Hills Development Area, prepared by CH2Mhill Engineers, dated March 1991 and the Lakeland Hills South Development Area Conceptual Storm Drainage Plan, prepared by Stephen/Dowl Engineers, dated March 1995. Both parties also acknowledge that supplemental drainage basin information

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will need to be developed by TLC to address changed conditions such as the Lake Tapps Parkway, certain differences between CITY and County standards, and impacts associated with grading activities. In addition, the parties agree that TLC will need to continue to develop more precise drainage subbasin planning information to insure the adequacy and timely staging of necessary storm drainage facilities associated with specific development proposals.

13. SANITARY SEWER:

Paragraph 4.4(b) "SEWER", PRE-ANNEXATION/UTILITIES AGREEMENT is replaced in its entirety as follows:

The CITY shall allow the TLC Property to connect to the CITY's sanitary sewer utility under the same terms and conditions as if the property were within the CITY limits subject to obtaining expanded service area boundaries and all other terms of this Agreement, including, but not limited to, Section 3. The CITY shall apply to Pierce County for any franchise that would be required for the property not yet annexed with the understanding that applying for the franchise and any subsequent Pierce County approval does not waive any conditions set forth herein for the provision of sanitary sewer service.

For the orderly development of its property TLC

will need sanitary sewer from the CITY prior to CITY's annexation of the subject property. TLC agrees to construct all sanitary sewer in accordance with CITY standards including design criteria, construction specifications, operational criteria and approved engineering submittals, and the CITY agrees, upon verification, of TLC's compliance with its standards to connect to the CITY system the TLC system for sanitary sewer upon payment of all charges set forth in Auburn City Code.

The CITY and TLC acknowledge that substantial master sanitary sewer planning has been completed for TLC properties in the form of the Comprehensive Sanitary Sewer Study Lakeland Hills Development Area, prepared by Dowl Engineers, dated March 1991. Both parties also acknowledge that supplemental sanitary sewer information will need to be developed by TLC to address changed conditions such as density changes and impacts associated with grading activities. In addition, the parties agrees that TLC will need to continue to develop more precise sanitary sewer subbasin planning information to insure the adequacy and timely staging of necessary storm drainage facilities associated with specific development proposals.

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14. WATER:

Paragraph 4.4(c) is amended as follows:

The parties acknowledge that pursuant to the Settlement Agreement with the City of Bonney Lake, the City of Bonney Lake is the water purveyor for portions of the TLC Property as set forth in the Settlement Agreement. In the event the CITY determines that the City of Bonney Lake water system fails to provide adequate fire flow pursuant to Title 15 of the Auburn City Code the CITY agrees to work in good faith with the City of Bonney Lake in an attempt to help achieve a system which meets the CITY requirements for the provision of urban water services.

Immediately upon legal segregation of the relevant parcels, TLC shall convey title to the CITY of the following: the water wells commonly known as 5b and 5c, the water rights it owns or controls on such wells, and the property depicted on the easements which were granted to the CITY as indicated in Exhibit 3. The CITY and TLC agree that the use of the real property described in Exhibit 3 shall be subject to the restrictions indicated in Exhibit 4.

As consideration for TLC's conveyance of the water wells and the real property described in Exhibit 3, the CITY agrees to pay TLC the appraised value for the land and a

mutually agreeable fair market value for the wells up to a maximum of $370,000, adjusted at 10% per annum until closing of the conveyance. TLC agrees to convey the subject property free and clear of all liens and encumbrances and provide the CITY with a policy of title insurance in the value of the purchase price insuring the property free and clear of all liens and encumbrances and agrees to provide a Statutory Warranty Deed.

16. FIRE:

The parties acknowledge that the property subject to this Agreement which is not yet annexed may not be provided fire service directly by the CITY. TLC shall arrange for fire service coverage through Fire District 22 and any agreement between TLC and Fire District 22 shall contain provisions which allow termination upon annexation by the CITY, so that the property may be served by the CITY if the CITY chooses to provide fire services directly rather than by contract. Upon forty-five (45) days written notice from the City of its intent to provide fire service directly or by contract with another service provider, TLC agrees to provide Fire District 22 thirty (30) days written notice of termination. For all building permits issued subsequent to the forty-five (45) day notice period, TLC agrees to pay

mitigation fees to the CITY at the time of building permit issuance for developments within the annexed property, in the amounts indicated below:

1. $419.78 per detached single-family residential unit.

2. $272.47 per attached single or multi-family residential unit.

3. $93.63 per residential unit within the Senior Housing Zone.

4. $1.09 per gross foot of commercial or retail structures.

The above amounts shall be adjusted to reflect the increase in the Consumer Price Index for the Seattle-Metropolitan area beginning as the base year January 1, 2000 and on January 1st of each year thereafter the percentage difference shall equal the adjustment. Payment of these fees shall constitute complete satisfaction of any fire service mitigation and concurrency requirements by CITY for the property described herein.

17. PENDING APPLICATIONS IN PIERCE COUNTY:

The development applications indicated on Exhibit 5, attached hereto and incorporated by reference, were submitted to Pierce County by TLC prior to annexation. The CITY agrees to allow TLC to process the applications indicated on Exhibit 5 through Pierce County's development

review process to issuance of a final decision, even if the subject property is annexed to the CITY prior to completion of the Pierce County review process.

CITY OF AUBURN

Charles A. Booth

CHARLES A. BOOTH
MAYOR

ATTEST:

Danielle E. Daskam

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds,
City Attorney

9805210624

THE LAKELAND COMPANY, INC.

By: Charles K. Henderson

Its: Chairman of the Board

STATE OF WASHINGTON)
)ss
COUNTY OF KING)

On this 14th day of May, 1998, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared Charles K. Henderson, to me known to the Chairman, of **THE LAKELAND COMPANY, INC.**, the corporation that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that he/she is authorized to execute said instrument on behalf of said corporation.

GIVEN UNDER my hand and official seal the date hereinabove set forth.

PAMELA S. BURKE NOTARY PUBLIC COMMISSION EXPIRES 5-15-00 STATE OF WASHINGTON

Pamela S. Burke

Pamela S. Burke
NOTARY PUBLIC in and for the State of Washington, residing at Bellevue

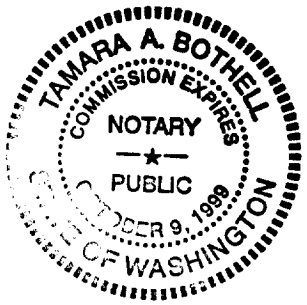
MY COMMISSION expires: 5-15-2000

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STATE OF WASHINGTON)
)ss
COUNTY OF KING)

On this 11th day of May, 1998, before me, the undersigned, a Notary Public in and for the State of Washington, personally appeared CHARLES A. BOOTH and DANIELLE E. DASKAM, personally known to me to be the Mayor and City Clerk, respectively, of the **CITY OF AUBURN**, the corporation that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said municipal corporation for the uses and purposes mentioned in the instrument.

GIVEN UNDER my hand and official seal the date hereinabove set forth.



Tamara A. Bothell
Tamara A. Bothell
NOTARY PUBLIC in and for the State of Washington, residing at King Co.
MY COMMISSION expires: 10-9-99

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EXHIBIT 1

EXHIBIT 1
First Amendment to Lakeland Annexation
and Utilities Agreement

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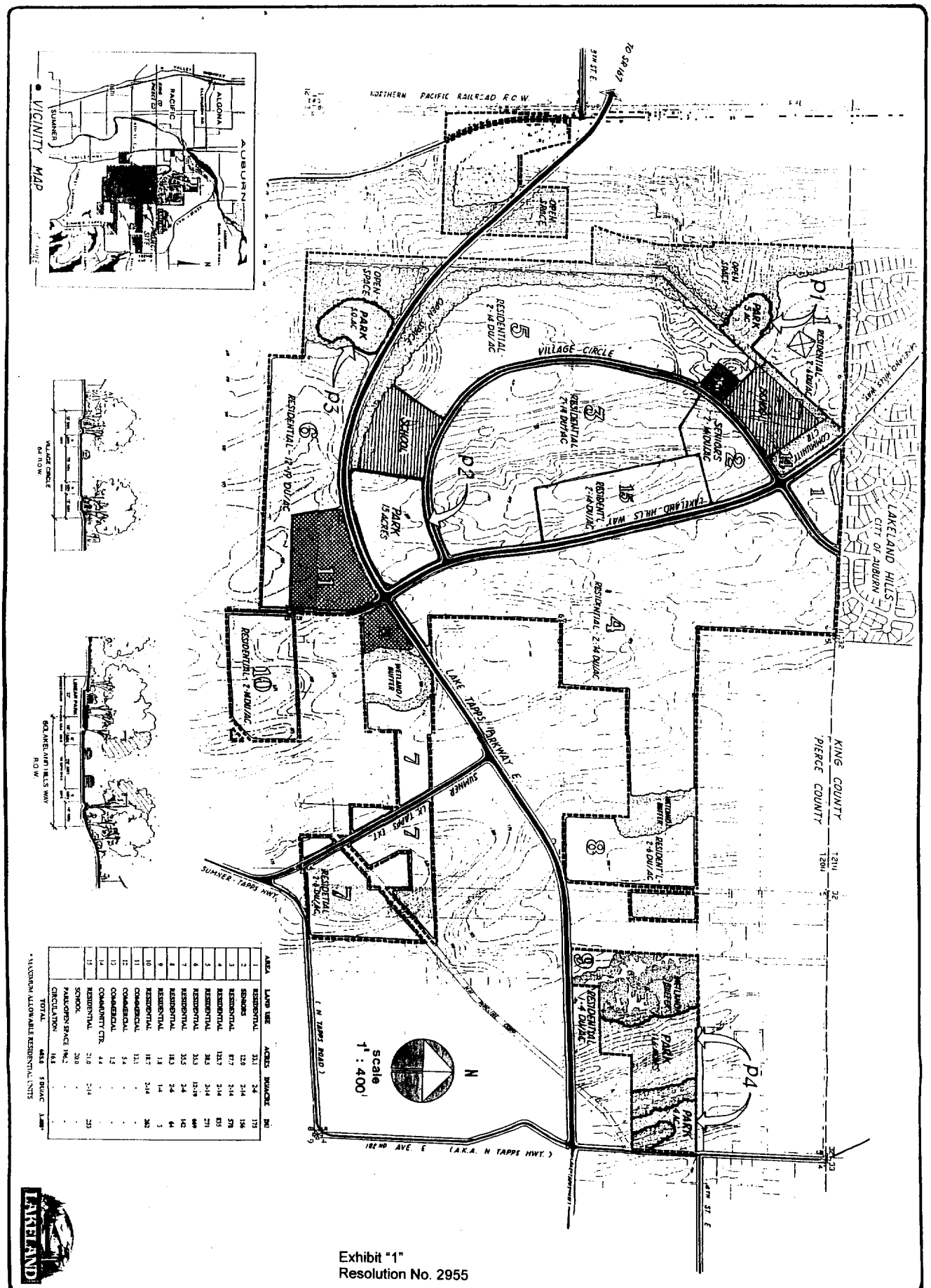


Exhibit "1"
Resolution No. 2955

FINAL DEVELOPMENT PLAN FOR LAKELAND

ESM inc.

ORDINANCE NO. 5 1 6 3

AN ORDINANCE OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE A NEW FRANCHISE AGREEMENT BETWEEN THE CITY OF AUBURN AND PIERCE COUNTY TO CONSTRUCT, OPERATE AND MAINTAIN WATER PIPELINES FOR A WATER SYSTEM OVER, IN, ALONG, ACROSS, UNDER, AND UPON CERTAIN PUBLIC ROADS AND HIGHWAYS IN PIERCE COUNTY, WASHINGTON UNTIL SEPTEMBER, 2003.

WHEREAS, the City of Auburn wishes to expand their water line system to areas outside the current boundaries; and

WHEREAS, the City of Auburn has applied to Pierce County and has been granted a nonexclusive franchise to construct and maintain water pipelines with appurtenances for a water system in, across, under, upon, along and over certain public roads and highways in Pierce County, Washington, as hereinafter set forth;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, DO ORDAIN AS FOLLOWS:

Section 1. AGREEMENT. The Mayor of the City of Auburn is herewith authorized to execute a Franchise Agreement between the City of Auburn and Pierce County to construct, operate, and maintain water pipelines for a water system over, in, across, under, and upon certain public roads and highways in Pierce County Washington. A copy of said Agreement is attached hereto, denominated as Exhibit "A", and a copy of Pierce County Ordinance No. 98-72 approving the franchise is

attached hereto denominated as Exhibit "B", and made a part hereof as though set forth in full herein.

Section 2. AUTHORIZATION. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. This Ordinance shall take effect and be in force five (5) days from and after its passage, approval and publication, as provided by law.

INTRODUCED: October 19, 1998

PASSED: October 19, 1998

APPROVED: October 19, 1998

Charles A. Booth

CHARLES A. BOOTH
MAYOR

ATTEST:

Danielle E. Daskam

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds,
City Attorney

Published: 10-23-98

PIERCE COUNTY, WA
9812020061
12-2-1998 08:52 am
Fee Amt: $28.00

RECEIVED
DEC 16 1998
PIERCE COUNTY COUNCIL

Return Address
Sandy Bassett
Pierce County Council
930 Tacoma Ave S, Room 1046
Tacoma, WA 98402

Please print legibly or type information.

Document Title(s) (Or transactions contained therein):
1. Ordinance NO: 98-72
2.
3.
4.

DEC 31 1998
CITY OF AUBURN
CITY CLERKS OFFICE

Grantor(s) (Last name first, then first name and initials):
1. Pierce County
2.
3.
4.
5. ☐ Additional Names on Page _____ of Document

Grantee(s) (Last name first, then first name and initials):
1. Ordinance Number 98-72
2.
3.
4.
5. ☐ Additional Names on Page _____ of Document.

Legal Description (Abbreviated: i.e., lot, block, plat; or section, township, range):
in Sections 5, 6, 7 & 8, Township 20 North, Range 4 East.

Legal Description is on Page 5 & 6 of Document.

Reference Number(s) (Of documents assigned or released):
n/a

☐ Additional Reference Numbers on Page _____ of Document

Assessor's Property Tax Parcel/Account Number
Not assigned.

The Auditor/Recorder will rely on the information provided on this cover sheet. The staff will not read the document to verify the accuracy or completeness of the indexing information provided herein.

9812020061

FILE NO. 80 PROPOSAL NO. 98-72

Sponsored by: Councilmember Jan Shabro

Requested by: County Executive/Public Works and Utilities Department

ORDINANCE NO. 98-72

AN ORDINANCE OF THE PIERCE COUNTY COUNCIL GRANTING A NON-EXCLUSIVE FRANCHISE TO THE CITY OF AUBURN, A MUNICIPAL CORPORATION OF THE STATE OF WASHINGTON, FOR LOCATION OF WATER LINES ON CERTAIN COUNTY-OWNED RIGHTS-OF-WAY; AND AUTHORIZING THE COUNTY EXECUTIVE TO EXECUTE THE FRANCHISE.

WHEREAS, The City of Auburn, a municipal corporation of the State of Washington, has applied for a non-exclusive franchise to construct, operate, and maintain a water line system in, across, over, upon, along, and under certain County roads, highways, and other County property in Pierce County, Washington, as hereinafter set forth; and

WHEREAS, Said application came on regularly for hearing before the Pierce County Council on the date set forth below under the provisions of Chapter 36.55, State Session Laws of 1937; and

WHEREAS, It appears to the Council that notice of said hearing has been duly given to the public and those interested in providing the same service applied for by the applicant as required by law and that it is in the public interest to grant the franchise; NOW, THEREFORE, BE IT ORDAINED by the Council of Pierce County:

Section 1. A non-exclusive franchise, a copy of which is attached hereto and identified as Exhibit "A", is hereby given and

Exhibit "B", Ordinance 5163

9812020061

ORDINANCE NO. 98-72, continued

granted to the City of Auburn, a municipal corporation of the State of Washington, hereinafter referred to as the Grantee, for a period of five years, from and after the date of filing of the franchise to be granted with the Clerk of the Pierce County Council.

Section 2. The City of Auburn must indicate its full acceptance of this franchise and all its terms and conditions within thirty days from the effective date of this Ordinance. Said acceptance is to be in writing and filed with the Clerk of the Pierce County Council and shall be a condition precedent to the validity of said franchise, and unless the franchise is accepted within such time, this grant of permission shall be null and void.

Section 3. The Executive of Pierce County is hereby authorized to execute said franchise.

PASSED this 15th day of September, 1998.

ATTEST:

PIERCE COUNTY COUNCIL
Pierce County, Washington

Clerk of the Council

Council Chair

Approved as to Form Only:

PIERCE COUNTY EXECUTIVE

Deputy Prosecuting Attorney

Approved ✓ Vetoed ___ this 18th day of Sept. 1998.

Approved s to Insurance and Bond Requirements Only:

Risk Management

PUBLIC HEARING NOTICE DATE: September 2 & 9, 1998
EFFECTIVE DATE: September 28, 1998

9812020061

EXHIBIT "A" TO ORDINANCE NO. 98-72

In the Matter of the Application of the City of Auburn, a municipal corporation of the State of Washington, for a franchise to construct, operate and maintain water pipelines for a Water System over, in, along, across, under and upon certain Public Roads and Highways in Pierce County Washington)

EXHIBIT "A"

F R A N C H I S E

Application of City of Auburn, a municipal corporation of the State of Washington, for a non-exclusive franchise to construct and maintain water pipelines with appurtenances for a water system in, across, under, upon, along and over certain public roads and highways in Pierce County, Washington, as hereinafter set forth, having come on regularly for hearing before the County Council of Pierce County, Washington, under the provisions of Chapter 36.55, Revised Code of Washington, and it appearing to the Council that notice of said Hearing has been duly given as required by law, and that it is in the public interest to grant the franchise herein granted;

NOW, THEREFORE, IT IS ORDERED, that a franchise be, and the same is hereby given and granted to City of Auburn, a municipal corporation of the State of Washington, hereinafter called the "Grantee" for a term of five (5) years from and after the date of filing this franchise with the Clerk of the Pierce County Council. This franchise is a license for the privilege, and authority to construct, maintain, and operate for the said period of time, a water pipeline with appurtenances for a water system in, across, under,

Exhibit "A", Ordinance 5163

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upon, along and over the public roads and highways in Pierce County, Washington, to wit:

BEGINNING AT THE EASTERLY MARGIN OF THE BURLINGTON NORTHERN RAILROAD RIGHT-OF-WAY, AKA NORTHERN PACIFIC RAILROAD RIGHT-OF-WAY, AT THE NORTH BOUNDARY OF SECTION 1, TOWNSHIP 20 NORTH, RANGE 4 EAST, WM.; THENCE EASTERLY ALONG SAID NORTH BOUNDARY OF SECTION 1, TO THE NORTHWEST CORNER OF SECTION 6, TOWNSHIP 20 NORTH, RANGE 5 EAST, WM.; THENCE EASTERLY ALONG THE NORTH BOUNDARY OF SAID SECTION 6 AND ALONG THE NORTH BOUNDARY OF SECTION 5, TOWNSHIP 20 NORTH, RANGE 5 EAST, WM. TO THE NORTHEAST CORNER OF SAID SECTION 5; THENCE SOUTHERLY ALONG THE EAST BOUNDARY OF SAID SECTION 5 TO THE EASTERLY MARGIN OF 182nd AVENUE EAST; THENCE SOUTHERLY ALONG SAID EASTERLY MARGIN OF 182nd AVENUE EAST TO THE SOUTHERLY MARGIN OF 16th STREET EAST, AKA NORTH TAPPS ROAD; THENCE WESTERLY ALONG SAID SOUTHERLY MARGIN OF 16th STREET EAST TO A POINT ON THE SOUTH BOUNDARY OF THE NORTH 30.00 FEET OF THE NORTHEAST QUARTER OF SECTION 8, TOWNSHIP 20 NORTH, RANGE 5 EAST, WM.; THENCE WESTERLY ALONG SAID SOUTH BOUNDARY OF THE NORTH 30.00 FEET OF THE NORTHEAST QUARTER OF SECTION 8 TO THE SOUTHWEST CORNER THEREOF; THENCE NORTHERLY ALONG THE WESTERLY BOUNDARY OF SAID NORTHEAST QUARTER OF SECTION 8 TO THE NORTHWEST CORNER THEREOF; THENCE WESTERLY ALONG SAID NORTH BOUNDARY OF SECTION 8 TO THE NORTHEAST CORNER OF THE NORTH HALF OF THE NORTHWEST QUARTER OF SAID NORTHWEST QUARTER OF SECTION 8; THENCE SOUTHERLY ALONG THE EAST BOUNDARY OF SAID NORTH HALF OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 8 TO THE SOUTHEAST CORNER THEREOF; THENCE WESTERLY ALONG

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THE SOUTH BOUNDARY OF SAID NORTH HALF OF THE NORTHWEST QUARTER OF NORTHWEST QUARTER OF SECTION 8 TO THE SOUTHWEST CORNER THEREOF; THENCE NORTHERLY ALONG THE WEST BOUNDARY OF SAID SECTION 8 TO THE SOUTHEAST CORNER OF THE NORTH 330.00 FEET OF THE NORTHEAST QUARTER OF SECTION 7, TOWNSHIP 20 NORTH, RANGE 5 EAST, WM.; THENCE WESTERLY ALONG THE SOUTH BOUNDARY OF SAID NORTH 330.00 FEET OF THE NORTHEAST QUARTER OF SECTION 7 TO THE SOUTHWEST CORNER THEREOF; THENCE NORTHERLY TO THE SOUTHEAST CORNER OF THE SOUTHWEST QUARTER OF SAID SECTION 6; THENCE WESTERLY ALONG THE SOUTH BOUNDARY OF SAID SECTION 6 TO THE SOUTHEAST CORNER OF GOVERNMENT LOT No. 7 IN SAID SECTION 6; THENCE NORTHERLY ALONG THE EAST BOUNDARY OF SAID GOVERNMENT LOT No. 7 TO THE NORTHEAST CORNER THEREOF; THENCE WESTERLY ALONG THE NORTH BOUNDARY OF SAID GOVERNMENT LOT No. 7 TO THE EASTERLY MARGIN OF SAID BURLINGTON NORTHERN RAILROAD RIGHT-OF-WAY; THENCE NORTHERLY ALONG SAID EASTERLY MARGIN OF THE BURLINGTON NORTHERN RAILROAD RIGHT-OF-WAY TO THE POINT OF BEGINNING.

I

In the construction and installations of water system appurtenances and the excavation of trenches on county roads for the purposes of laying, relaying, connecting, disconnecting, and repairing mains and pipes and making connections between the same to the dwellings and other buildings of the consumers, the Grantee shall be governed by and conform to the general rules adopted by the Public Works and Utilities - Transportation Services of Pierce County, Washington; and the Grantee, at no expense to the County, shall

complete all such work and shall repair the county roads and leave the same in as good condition as before the work was commenced; PROVIDED, HOWEVER, that no such work shall be done prior to the obtaining of a permit therefor issued by the Pierce County Public Works and Utilities Director (hereinafter "Director"), which permits shall set forth conditions pertaining to the work to be done and specifications for the restoration of the roads to the same condition as they were prior to such work; and PROVIDED FURTHER, the Director may in his or her discretion require a bond in a sum sufficient to guarantee to Pierce County that such roads shall be restored to the same condition as existed prior to such work. If the Grantee does not repair the county roads to the satisfaction of the Director, the County Department of Public Works and Utilities - Transportation Services may, at its sole discretion, repair such county roads, or cause them to be repaired, and the Grantee hereby agrees to reimburse the County of Pierce for the cost of such work, including overhead costs.

II

The water mains and pipes shall be laid down as directed by the Director at a depth of not less than thirty-six inches below the surface of the ground along the county roads, and in such a manner as not to interfere unnecessarily with the construction of sewers and drains, nor with the grading of the county roads. All surface appurtenances to the water system shall be installed or constructed as approved by the Director.

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III

All work done under this franchise shall be done in a thorough and professional manner. During the laying of water pipes and conduits and the digging of ditches therefor, the Grantee shall leave ditches in such a way as to interfere as little as possible with public travel and shall take all due and necessary precautions to insure that damage or injury shall not occur or arise by reason of such work; and that where any ditches or trenches are left open at night, the Grantee shall place at all crossings suitable lights in such a position to guard against danger, and the Grantee shall be liable for all property damage or personal injury which may be caused by reason of any injury sustained through its negligence by reason of any person, animal or property being injured through any negligence of the Grantee, or by reason of any damage caused through the neglect to properly guard any ditches or trenches dug or maintained by the Grantee. The Director may specify actions to be taken to insure the safety of the public and the Grantee shall comply with such specifications.

IV

The County of Pierce, in the granting of this franchise does not waive any rights which it now holds or may hereafter acquire and this order shall not be construed so as to deprive the County of Pierce of any powers, rights, or privileges which it now has or may hereafter acquire, including the right of eminent domain, to regulate the use and control of the county roads covered by this franchise, or to go upon any and all county roads and highways for the purpose of

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constructing and improving the same in such a manner as the County of Pierce, or its representatives may elect.

V

Grantee shall provide a certificate of insurance showing evidence of commercial general liability and property damage liability insurance, which includes but is not limited to, the operations of the Grantee, the Grantee's protective liability, products-completed operations coverage, broad form blanket contractual liability:

COVERAGES	LIMITS OF LIABILITY
Commercial General Liability Insurance Bodily Injury Liability	$1,000,000 Each Occurrence
Property Damage Liability	$250,000 Each Occurrence
	or COMBINED SINGLE LIMIT COVERAGE OF $1,000,000

The general requirements of the policy shall contain:

Pierce County is named as an additional insured as respects in this lease and such insurance as is carried by the Grantee for the operation of its facility.

In the event of non-renewal, cancellation or material change in the coverage provided, thirty days written notice will be furnished to the County prior to the date of non-renewal, cancellation, or change. Such notice shall be

sent to the Director, Public Works and Utilities - Transportation Services, 2401 South 35th Street, Suite 150, Tacoma, Washington 98409.

Pierce County has no obligation to report occurrences to the insurance companies unless a claim is filed with the Pierce County Council; and Pierce County has no obligations to pay premiums.

The Grantee's insurance policies shall contain a "cross liability" endorsement substantially as follows: The inclusion of more than one Insured under this policy shall not affect the rights of any Insured as respects any claim, suit, or judgment made or brought by or for any other insured or by or for any employee of any other Insured. This policy shall protect each Insured in the same manner as though a separate policy has been issued to each, except that nothing herein shall operate to increase the company's liability beyond the amount or amounts for which the company would have been liable had only one Insured been named.

The Grantee's insurance is primary over any insurance that may be carried by Pierce County. Grantee agrees to provide proof of insurance each year to Pierce County.

The Grantee agrees to defend, indemnify, and save harmless

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Pierce County, its appointed and elected officials and employees, from and against all loss or expense, including but not limited to, judgments, settlements, attorney's fees and costs by reasons of any and all claims and demands upon the County, its elected or appointed officials or employees for damages because of personal or bodily injury including death at any time resulting therefrom, sustained by any person or persons, and on account of damage to property including loss of use thereof, whether such injury to persons or damage to property is due to the negligence of the Grantee, its contractors, its or their employees or agents, Pierce County, its appointed or elected officers, or its employees or agents, except only such injury or damage as shall have been occasioned by the sole negligence of Pierce County, its appointed or elected officials or employees.

If the claim, suit, or action for injuries, death, or damages as provided for in the preceding paragraph of this franchise agreement is caused by or results from the concurrent negligence of (a) Pierce County or Pierce County's agents or employees, and (b) the Grantee, or the Grantee's agents or employees, the indemnity provisions provided for in the preceding paragraph of this franchise shall be valid and enforceable only to the extent of the Grantee's negligence.

Grantee specifically and expressly waives any immunity under Industrial Insurance Title 51 RCW, and acknowledges that this waiver was mutually agreed upon by the parties herein.

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VI

If, at any time, the County of Pierce shall vacate any public street, road or alley which is subject to rights granted by this franchise, the Pierce County Council may, at their option, and by giving thirty days written notice to the Grantee, its successors and assigns, terminate this franchise with reference to such county road, street, or alley so acquired and the County of Pierce shall not be liable for any damages or loss to the Grantee by reason of such termination.

VII

If, at any time, a new county road is created or established, and constructed, or an existing county road is reconstructed, realigned, or its grade is changed, or if sewer or drainage facilities, or any other facilities, within future or existing county road right-of-way are constructed, reconstructed, maintained, or relocated (all such work to be called "County Projects" hereinafter) and if the installation of the facilities as allowed in this franchise) and all supplements and changes thereto, should interfere in any manner with any such county projects then the Grantee at no expense to the Pierce County shall, upon notice, change the location or adjust the elevation of its facilities so that such facilities shall not interfere with such county projects.

When relocation of Grantee's facilities are required by such county projects the following procedures shall be followed:

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1. Pierce County shall make available to Grantee a list of anticipated projects for each new budget period as soon as is reasonably practicable.

2. Pierce County shall provide to Grantee two sets of preliminary plans for individual projects as soon as such plans are developed to a state of reasonable certainty, and shall advise Grantee of the anticipated date of start of work on such projects.

3. Grantee shall, when requested by Pierce County in writing, locate their facilities in the field, show those locations on one set of the preliminary plans provided, and return that set to Pierce County Public Works and Utilities - Transportation Services within four weeks of receiving the written request.

4. Pierce County shall provide to Grantee final plans for such projects as soon as such plans are available and shall confirm or correct the anticipated date of start of work on such projects.

5. Pierce County shall assist Grantee in determining how its facilities shall be relocated. Such assistance by Pierce County shall include, at a minimum, copies of plans (as required above) and specifications for such county projects, and information known to Pierce County as to

existing survey control available for location of such county projects. Such assistance shall not subject Pierce County to any liability for the costs of relocating the subject facilities a second time if Grantee incorrectly relocated its facilities the first time.

6. When requested, Pierce County and Grantee shall meet to discuss how county projects and utility relocations can be accomplished with the least impact on the other. Pierce County's decision shall be final in such matters, but shall not be unreasonable.

7. Relocation of Grantee's facilities shall be completed in a timely manner defined as follows:

> Relocation of Grantee's facilities shall normally be accomplished in advance of county projects. In the event relocation of Grantee's facilities shall be done concurrently with such projects, Pierce County shall be so notified and agree to a written schedule for relocation. Compliance with such a written schedule shall be Grantee's duty. In no event shall relocation of Grantee's facilities interfere with the prosecution of county projects.

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8. If Grantee should not relocate its facilities in a timely manner as required above, Pierce County may relocate, or cause to be relocated, such facilities of Grantee as Pierce County deems necessary, and in the manner Pierce County deems necessary, in its sole discretion. Grantee hereby indemnifies and holds Pierce County, its employees, officers, officials and agents totally free and harmless from all and any liability which may arise from damages caused by the relocation by Pierce County of the facilities of Grantee, even if such damages and liability arise from the negligence of Pierce County, its employees, officers, officials and agents.

9. Grantee hereby indemnifies and hold harmless Pierce County, its officers, officials, and employees, from damages which may arise from Grantees's failure to relocate its facilities in accordance with the dates for completion of relocation of facilities set forth above, or any other act or omission by Grantee, its contractor(s), agents, officers, or employees related to the provisions of this franchise.

10. It shall be conclusively presumed that Pierce County will have suffered damages as a result of exercising its rights as set forth in Item 8, above, and compensation for such damages will be difficult to ascertain, and, therefore, Grantee shall compensate Pierce County for

such damages in the amount of twice the amount of the cost of such relocation of Grantee's facilities by Pierce County.

11. The exercise of its rights, as set forth in Item 8, above, by Pierce County in no way relieves Grantee of completing and/or finalizing the relocation of its facilities at no expense to Pierce County if the relocation work done by Pierce County is incomplete.

12. In the event a law suit is brought by Pierce County against Grantee to collect damages presumed under Item 10, above, for the exercise by Pierce County of its rights under Item 8, above, Grantee hereby agrees the only issue will be the actual cost to Pierce County for relocating Grantee's facilities. The party prevailing in such an action shall be allowed its legal fees and costs.

VIII

The Grantee shall not sell, transfer, or assign this franchise without first securing the written permission to do so upon such terms and conditions as determined by the Council of Pierce County. If such permission is granted, the terms and conditions set forth herein shall be binding on the Grantee's successors and assigns unless others are imposed by the Council of Pierce County when such permission is granted.

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IX

This franchise is granted upon the further express condition that it shall not be an exclusive franchise and shall not, in any manner, prohibit the County of Pierce from granting any other franchise over, in, along, under, upon, and across any of the said county roads of any kind and character or territories that may be deemed proper by the Pierce County Council, and this franchise shall not in any way prevent the County of Pierce from using the county roads and highways, or affect the jurisdiction over them and every part of them by the County of Pierce with full power to make the necessary repairs, changes and alterations in the same and like manner as though this franchise had never been granted.

Pierce County reserves for itself the right to so change, amend, modify or amplify this franchise to conform to any state statute, order of the Washington Utilities and Transportation Commission or county regulation, ordinance or right-of-way regulation, as may hereafter be enacted, adopted or promulgated. And this franchise may be terminated at any time upon ninety days written notice to the Grantee to terminate this franchise if the Grantee fails to comply with its terms and conditions, or if the Grantee fails to comply with such changes, amendments, modifications or amplifications and upon termination Pierce County shall have a lien upon all equipment and materials erected or placed under this franchise, which lien may be enforced to reimburse Pierce County for any reasonable expenses and payments incurred in terminating this franchise and to cure defaults by the Grantee.

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Grantee agrees to and shall provide available financial information to the County upon reasonable request. Grantee agrees to and shall during regular business hours and at its office located in Pierce County, Washington, allow agents of Pierce County access for inspection and reproduction of all of Grantee's business records, gross revenue reports, or rules and regulations relevant to a determination of the gross revenues received by Grantee from the area served by the facilities permitted by this franchise.

X

In the event that the territory covered by this franchise shall at any time during the franchise period be included within the limits of any incorporated city or town, the authorities of said city or town shall have the right, to be exercised at their discretion, to acquire by purchase or condemnation, any part of such pipes, conduits and water system other than transmission lines at a price to be based upon the reasonable value of the same at the time, without any additional value for the franchise or any unexpired period thereof, and upon such acquirement, this grant and franchise shall immediately terminate.

XI

Grantee acknowledges that Pierce County Charter Section 9.20 franchises provides in part: "All franchises shall be subject to the right of the County, or the people acting for themselves through referendum, to repeal for cause, amend, or modify the franchise in the interest of the public" and agrees to said condition.

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EXHIBIT "A" TO 98-12

XII

Any failure to render adequate service to the patrons of said water system, or the discontinuance of such water services without fault on the part of the patron or patrons involved, for a period of thirty days, shall work a forfeiture of this franchise, at the discretion of the Pierce County Council unless the failure should result from causes beyond human control.

XIII

Venue and jurisdiction for any controversy arising from this franchise shall be in Pierce County, Washington.

XIV

The full acceptance of this franchise and all its terms and conditions within thirty days from September 28, 1998, by the City of Auburn, a municipal corporation of the State of Washington, in writing, is to be filed with the Clerk of the Pierce County Council and shall be a condition precedent to its taking effect, and unless the franchise is accepted within such time, this franchise shall be null and void.

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Pursuant to RCW 36.55.080, a copy of this franchise shall be recorded in the Office of the Pierce County Auditor.

DATED at Tacoma, Washington, this 26th day of October, 19____.

Pierce County Executive

City of Auburn, a municipal corporation of the State of Washington accepts and agrees to comply with all the terms and conditions of this franchise.

Name

Charles A. Booth
Name Printed

Mayor
Title

City of Auburn, a municipal corporation of the State of Washington

October 19, 1998
Date

9812020061

Pierce County

Office of the County Council

930 Tacoma Avenue South, Room 1046
Tacoma, Washington 98402-2176
(253) 798-7777
FAX (253) 798-7509
1-800-992-2456

STATE OF WASHINGTON)
)
COUNTY OF PIERCE)

I, SANDY BASSETT, Deputy Clerk of the Pierce County Council, do hereby certify that the attached is a full, true, and correct copy of the following document:

ORDINANCE NO. 98-72

The original of this document is currently located in the Office of the Pierce County Council, 930 Tacoma Avenue South, Room 1046, Tacoma, Washington 98402.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of Pierce County, Washington, this 20th day of November, 1998.

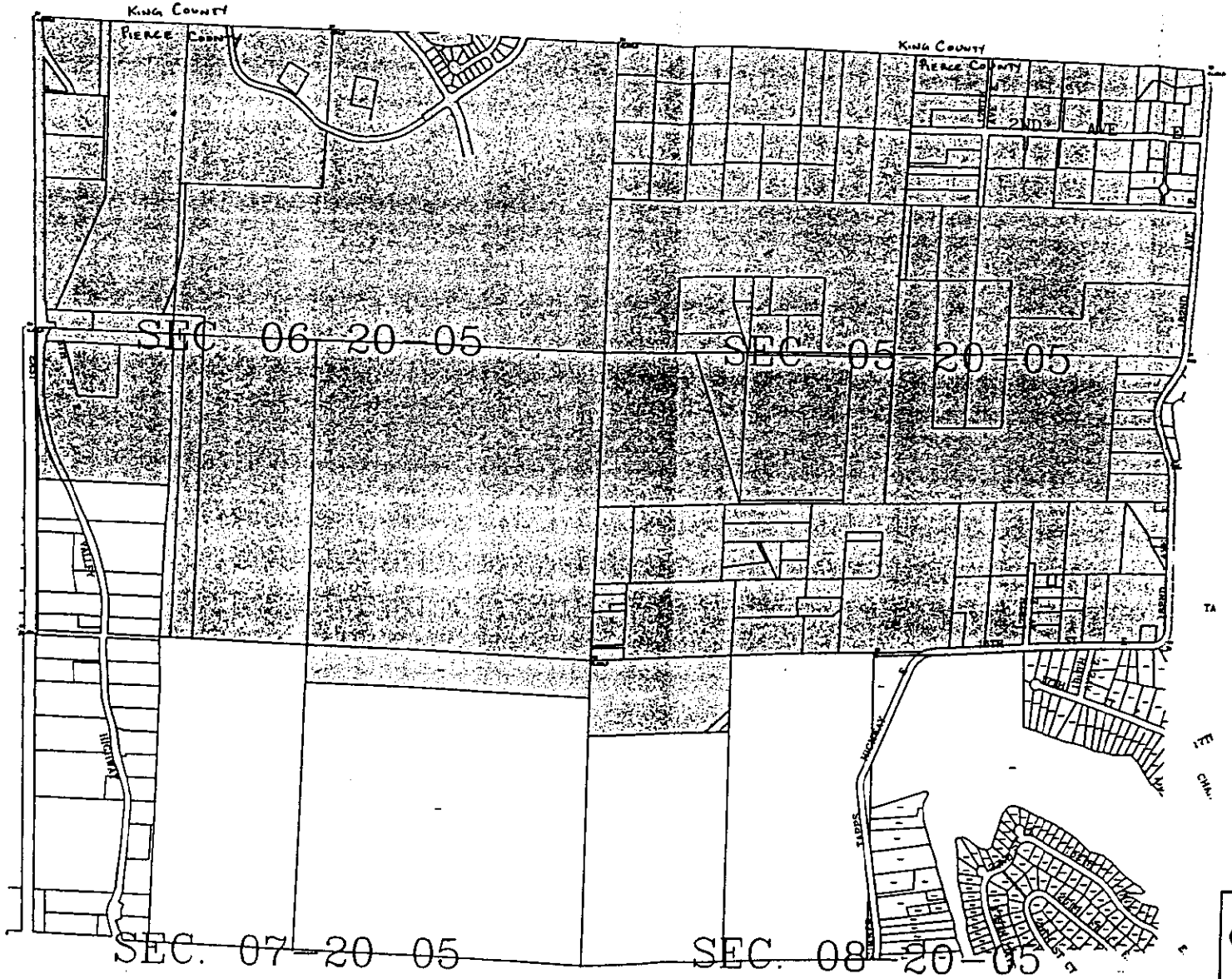
PIERCE COUNTY COUNCIL
PIERCE COUNTY, WASHINGTON

Sandy Bassett

Sandy Bassett
Deputy Clerk of the Council

9812020061

SEC. 01-20-04



UTILITIES SECTION
ENGINEERING DIVISION

NORTH PIERCE COUNTY
WATER FRANCHISE AREA
EXHIBIT A-2

EXHIBIT "A" TO 98-72

Pursuant to RCW 36.55.080, a copy of this franchise shall be recorded in the Office of the Pierce County Auditor.

DATED at Tacoma, Washington, this 26th day of October, 1998.

Pierce County Executive

City of Auburn, a municipal corporation of the State of Washington accepts and agrees to comply with all the terms and conditions of this franchise.

Charles A. Booth
Name

Charles A. Booth
Name Printed

Mayor
Title

City of Auburn, a municipal corporation of the State of Washington

October 19, 1998
Date

RESOLUTION NO. 3018

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE A SERVICE AREA AGREEMENT BETWEEN THE CITY AND THE CITY OF BONNEY LAKE TO ESTABLISH A BOUNDARY BETWEEN THEIR CONTIGUOUS SERVICE AREA RELATING TO WATER SERVICE.

WHEREAS, Bonney Lake is engaged in the business of providing water service to the public located in certain areas of Pierce County in the State of Washington; and

WHEREAS, the City of Auburn is engaged in the business of providing water service to the public located in certain areas of King and Pierce Counties in the State of Washington; and

WHEREAS, the parties desire to enter into a formal Service Area Agreement to establish a boundary between their contiguous service area in Pierce County in order to avoid any duplication or overlap of water service and to provide the most efficient service to their respective customers; and

WHEREAS, the City of Auburn and the City of Bonney Lake have entered into a Settlement Agreement related to water service to the Lakeland Hills South development in which, according to Section 9, the Cities have agreed to work together cooperatively to facilitate a practical efficient boundary between the two systems.

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute a Service Area Agreement between the City and the City of Bonney Lake to establish a boundary between their contiguous service area relating to water service. A copy of said Agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

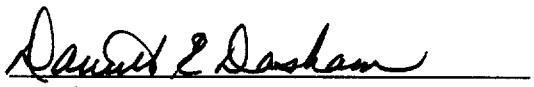
DATED this 7th day of December, 1998.

CITY OF AUBURN

Charles A. Booth

CHARLES A. BOOTH
MAYOR

ATTEST:



Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:



Michael J. Reynolds,
City Attorney

SERVICE AREA AGREEMENT

This Agreement, dated December 10, 1998, is made and entered into by and between the City of Bonney Lake, a Washington municipal corporation, **("Bonney Lake")** and the City of Auburn, a Washington municipal corporation **("Auburn").**

Whereas, Bonney Lake is engaged in the business of providing water service to the public located in certain areas of Pierce County in the State of Washington. **Auburn** is engaged in the business of providing water service to the public located in certain areas of King and Pierce Counties in the State of Washington, and;

Whereas, the parties desire to enter into a formal service area agreement to so establish a boundary between their contiguous service area in Pierce county in order to avoid any duplication or overlap of water service and to provide the most efficient service to their respective customers, and;

Whereas, The City of Auburn and the City of Bonney Lake have entered into a Settlement Agreement related to water service to the Lakeland Hills South development in which, according to section 9, the Cities have agreed to work together cooperatively to facilitate a practical efficient boundary between the two systems.

Bonney Lake and **Auburn** therefore agree as follows:

1. This Agreement is entered into pursuant to the Pierce County Coordinated Water System Plan which Plan and Appendices are incorporated herein by this reference.

2. The contiguous water service boundary between **Bonney Lake** and **Auburn** is agreed upon by both parties as shown on the attached maps (Exhibit "A") and as described in Exhibit "B", which by this reference are incorporated herein.

3. **Bonney Lake** and **Auburn** may by mutual written amendment(s) to this Agreement make such adjustments to the service boundary as they may mutually agree upon from time to time so that water service to new service locations in close proximity to the service boundary may be provided in an efficient, effective and economical manner. Any such adjustments shall be documented by modifying the attached maps which when so modified and agreed to by the parties shall constitute amendments to this Agreement. Minor adjustments consisting of ten acres or less may be authorized by the Public Works Director or Superintendent of each party.

4. Except as specifically set forth herein, this Agreement shall not modify the Settlement Agreement referenced above.

IN WITNESS WHEREOF, we have hereunto set our hands and seals.

CITY OF AUBURN

Charles A. Booth

CHARLES A. BOOTH, MAYOR

ATTEST:

Danielle E. Daskam

Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds, City Attorney

STATE OF WASHINGTON)
) ss.
County of King)

I certify that I know or have satisfactory evidence that Charles A. Booth and Danielle E. Daskam were the persons who appeared before me, and said persons acknowledged that they signed this instrument, on oath stated that they were authorized to execute the instrument and acknowledged it as the **MAYOR** and **CITY CLERK** of the CITY OF AUBURN to be the free and voluntary act of such parties for the uses and purposes mentioned in this instrument.

Dated 12-21-98

NOTARY PUBLIC STATE OF WASHINGTON OCTOBER 9, 1999

Tamara A Bothell

Notary Public in and for the State of Washington
residing at King Co
My appointment expires 10-9-99

CITY OF BONNEY LAKE

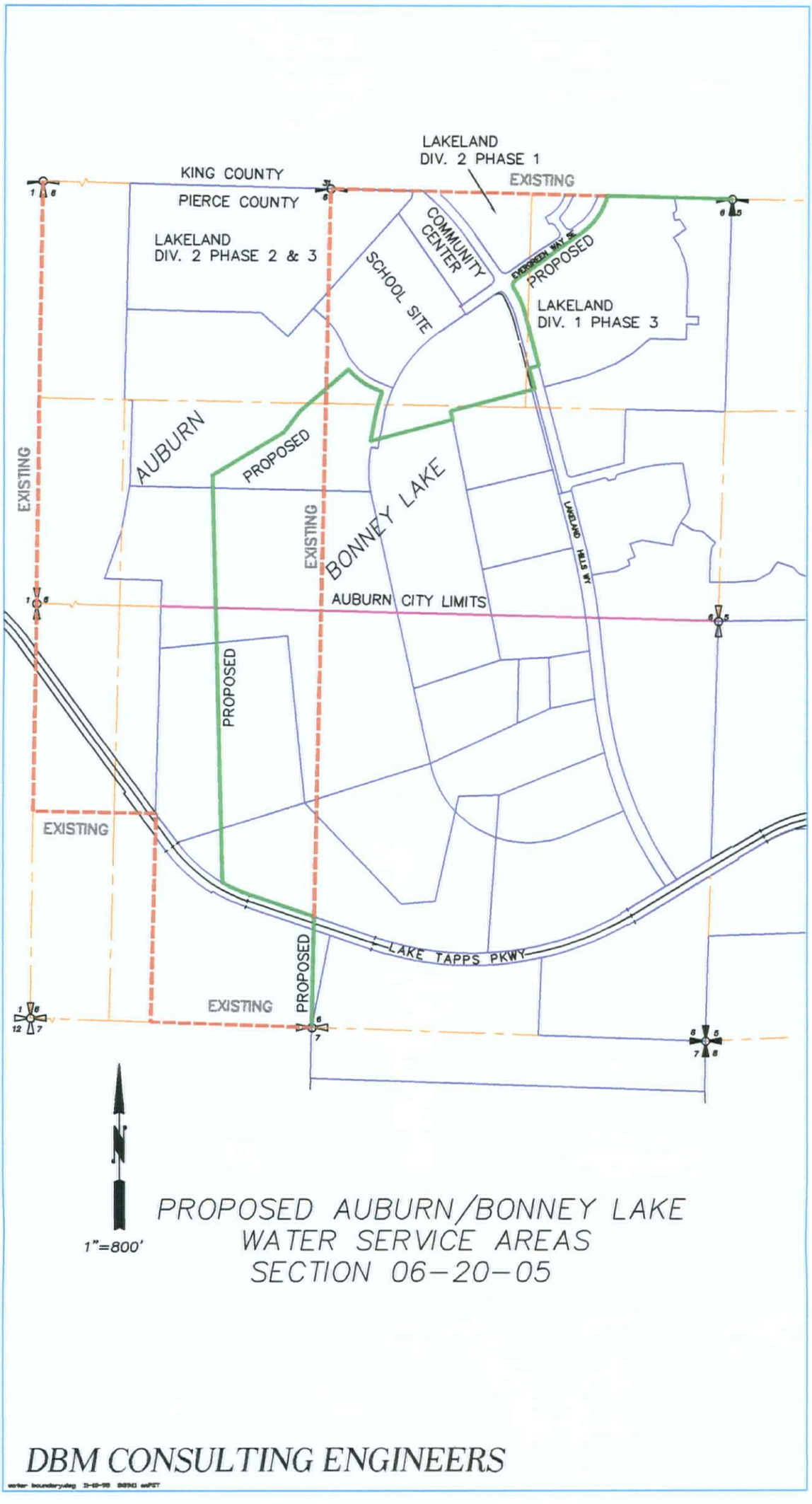
BOB YOUNG, MAYOR

STATE OF WASHINGTON)
) ss.
County of Pierce)

I certify that I know or have satisfactory evidence that Bob Young was the person who appeared before me, and said person acknowledged that they signed this instrument, on oath stated that they were authorized to execute the instrument and acknowledged it as the **MAYOR** of the CITY OF BONNEY LAKE to be the free and voluntary act of such parties for the uses and purposes mentioned in this instrument.

Dated 12-10-98

Mona R. Musgrave
Notary Public in and for the State of Washington
residing at Bonney Lake
My appointment expires 9-1-2002



PROPOSED AUBURN/BONNEY LAKE
WATER SERVICE AREAS
SECTION 06-20-05

DBM CONSULTING ENGINEERS

Exhibit "B"

LEGAL DESCRIPTION FOR PROPOSED AUBURN/BONNEY LAKE WATER SERVICE AREAS OF SECTION 6, TOWNSHIP 20 NORTH, RANGE 5 EAST OF W.M., PIERCE COUNTY, WASHINGTON;
LINE DESCRIBED AS THE BORDER BETWEEN THE CITY OF AUBURN AND BONNY LAKE WATER SERVICE AREAS MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING FROM THE SOUTH QUARTER CORNER OF SECTION 6, TOWNSHIP 20 NORTH, RANGE 5 EAST; THENCE NORTH 01°12' 59" EAST A DISTANCE OF 713.61 FEET TO THE NORTHERLY MARGIN OF LAKE TAPPS PARKWAY EAST;
THENCE IN A NORTHWESTERLY DIRECTION ALONG THE NORTH LINE OF SAID PARKWAY, NORTH 71° 22' 39" WEST A DISTANCE OF 440.58 FEET TO THE BEGINNING OF A CURVE TO THE RIGHT HAVING A RADIUS POINT BEARING NORTH 18° 37' 21" EAST A DISTANCE OF 960.00 FEET;
THENCE ALONG THE ARC OF SAID CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 11° 22' 29", AN ARC DISTANCE OF 190.59 FEET;
THENCE LEAVING SAID MARGIN NORTH 01° 28' 45" WEST A DISTANCE OF 2,629.81 FEET;
THENCE NORTH 58° 56' 04" EAST A DISTANCE OF 532.96 FEET;
THENCE NORTH 37° 29' 20" EAST A DISTANCE OF 178.29 FEET;
THENCE NORTH 49° 21' 27" EAST A DISTANCE OF 410.04 FEET TO A POINT OF A NON-TANGENT CURVE TO THE LEFT HAVING A RADIUS POINT BEARING NORTH 49° 37' 08" EAST HAVING A DISTANCE OF 454.00 FEET;
THENCE ALONG THE ARC OF SAID CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 27° 21' 25" AN ARC DISTANCE OF 216.77 FEET;
THENCE SOUTH 67° 44' 15" EAST A DISTANCE OF 47.08 FEET TO A POINT OF A NON-TANGENT CURVE TO THE LEFT HAVING A RADIUS POINT BEARING SOUTH 69° 16' 55" EAST A DISTANCE OF 927.50 FEET THENCE ALONG THE ARC OF SAID CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 10° 09' 01" AN ARC DISTANCE OF 164.31 FEET;
THENCE SOUTH 10° 34' 04" WEST A DISTANCE OF 163.57 FEET;
THENCE IN A NORTHEASTERLY DIRECTION ALONG THE NORTH LINE OF LOT G OF BOUNDARY LINE ADJUSTMENT RECORDED UNDER AUDITOR'S FILE #9808310329, NORTH 75° 13' 36" EAST A DISTANCE OF 548.99 FEET TO THE EASTERLY LINE OF LOT G;
THENCE NORTH 11° 28' 56" WEST A DISTANCE OF 56.64 FEET TO THE SOUTHERLY LINE OF LOT B PER SAID BOUNDARY LINE ADJUSTMENT;
THENCE NORTH 75° 13' 36" EAST A DISTANCE OF 560.63 FEET TO THE WESTERLY MARGIN OF LAKELAND HILLS WAY S.E.;
THENCE NORTH 14° 46' 24" WEST A DISTANCE OF 138.04 FEET;
THENCE LEAVING SAID WESTERLY MARGIN NORTH 75° 13' 36" EAST A DISTANCE OF 63.00 FEET TO THE EASTERLY MARGIN OF LAKELAND HILLS WAY S.E.;
THENCE IN A NORTHWESTERLY DIRECTION ALONG SAID MARGIN NORTH 14° 46' 24" WEST A DISTANCE OF 353.16 FEET TO THE BEGINNING OF A

CURVE TO THE LEFT HAVING A RADIUS POINT BEARING SOUTH 75° 13 ' 36" WEST A DISTANCE OF 545.67 FEET;
THENCE ALONG THE ARC OF SAID CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 19° 07' 09" AN ARC DISTANCE OF 182.08 FEET TO THE POINT OF A CURVE TO THE RIGHT HAVING A RADIUS POINT BEARING NORTH 60° 27' 56" EAST A DISTANCE OF 35.00 FEET;
THENCE ALONG THE ARC OF SAID CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 84° 32' 04" AN ARC DISTANCE OF 51.64 FEET; THENCE NORTH 55° 00' 00" EAST A DISTANCE OF 208.52 FEET; THENCE NORTH 53° 05' 27" EAST A DISTANCE OF 150.08 FEET;
THENCE NORTH 55° 00' 00' EAST A DISTANCE OF 166.23 FEET TO THE BEGINNING OF A CURVE TO THE LEFT HAVING A RADIUS POINT BEARING NORTH 35° 00' 00" WEST A DISTANCE OF 430.00 FEET;
THENCE ALONG THE ARC OF SAID CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 37° 44' 40" AN ARC DISTANCE OF 283.27 FEET TO THE POINT OF A CURVE TO THE LEFT HAVING A RADIUS POINT BEARING NORTH 72° 44'00" WEST A DISTANCE OF 1,030.00 FEET;
THENCE ALONG THE ARC OF SAID CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 00° 56' 13" AND AN ARC DISTANCE OF 16.84 FEET TO THE NORTHERLY SECTION LINE OF SECTION 6, TOWNSHIP 20 NORTH, RANGE 5 EAST;
THENCE ALONG THE NORTH LINE OF SECTION 6 SOUTH 88° 34' 43" EAST A DISTANCE OF 808.23 FEET TO THE NORTHEAST CORNER OF SAID SECTION 6 TERMINUS OF SAID BOUNDARY

98119C.001

RESOLUTION NO. 3 0 1 9

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN EMERGENCY FIRE FLOW PROTECTION AGREEMENT BETWEEN THE CITY AND THE CITY OF BONNEY LAKE.

WHEREAS, by Resolution No. 2925 the City of Auburn approved an agreement with Bonney Lake on water service; and

WHEREAS, by unanimous adoption at the March 2, 1998 Council Workshop, Bonney Lake approved an agreement with the City of Auburn on water service; and

WHEREAS, the Lakeland PUD in Pierce County is located in the Bonney Lake water service area as defined in the 1995 Pierce County Coordinated Water System Plan; and

WHEREAS, in the Lakeland Annexation and Utilities Agreement, Ordinance No. 4867, and Amendment to the Lakeland Annexation and Utilities Agreement, Resolution No. 2955, The Lakeland Company, hereinafter referred to as TLC agreed to comply with City of Auburn's urban service standards; and

WHEREAS, by separate agreement The Lakeland PUD in Pierce County is served by the Auburn Fire Department, as agreed in Section 16 of the Amendment to the Lakeland Annexation and Utilities Agreement, Resolution No. 2955, and the Lakeland Annexation and Utilities Agreement, Ordinance No. 4867; and

WHEREAS, the City of Auburn's minimum fire flow service standard is 2500 gpm for 3 hours with residual pressure of 20 psi, as defined in the 1995 Comprehensive Water Plan and amended in 1997 by Ordinance No. 5051; and

WHEREAS, TLC desires to build Multi-Family Developments Division 1 Phase 4 (1P4) and Lots 5, 6, and 7, hereinafter referred to as the "Multifamily Development Area", in the immediate future, within the Lakeland PUD in the Bonney Lake Water Service Area; and

WHEREAS, TLC has requested Bonney Lake enter into an agreement with the City of Auburn to provide an emergency intertie for fire flow in order that TLC's development meet AUBURN's fire flow service standards; and

WHEREAS, Bonney Lake is unable at this time to meet AUBURN's fire flow requirements and desires to enter into an agreement for an emergency intertie for fire flow for the proposed Lakeland Company "Multifamily Development Area"; and

WHEREAS, the City of Auburn's water service area abuts BONNEY LAKE's water service area, and Auburn's system has adequate infrastructure to provide the emergency intertie for fire flow protection to the "Multifamily Development Area"; and

WHEREAS, AUBURN is willing to provide emergency fire flow to TLC's proposed "Multifamily Development Area", in consideration of Lakeland's agreement to pay to the City of Auburn a fire flow development charge; and

WHEREAS, TLC, pursuant to a separate agreement, has agreed to compensate the City of Auburn for Auburn's providing to Bonney Lake, pursuant to this agreement, an intertie for emergency fire flows to the proposed "Multifamily Development Area".

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute an Emergency Fire Flow Protection Agreement between the City and the City of Bonney Lake. A copy of said Agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

DATED this 7th day of December, 1998.

CITY OF AUBURN

Charles A. Booth

CHARLES A. BOOTH
MAYOR

ATTEST:

Danielle E. Daskam

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds

Michael J. Reynolds,
City Attorney

EMERGENCY FIRE FLOW PROTECTION AGREEMENT

City of Auburn and the City of Bonney Lake

THIS AGREEMENT made and entered into by and between the City of Auburn, hereinafter referred to as "AUBURN" and the City of BONNEY LAKE, hereinafter referred to as "BONNEY LAKE".

WITNESSETH:

WHEREAS, By Resolution 2925 AUBURN approved an agreement with BONNEY LAKE on water service, and

WHEREAS, By unanimous adoption at the March 2, 1998 Council Workshop, BONNEY LAKE approved an agreement with AUBURN on water service, and

WHEREAS, the Lakeland PUD in Pierce County is located in the BONNEY LAKE water service area as defined in the 1995 Pierce County Coordinated Water System Plan, and

WHEREAS, in the Lakeland Annexation and Utilities Agreement, Ord. 4867, and Amendment to the Lakeland Annexation and Utilities Agreement, Res. 2955, The Lakeland Company, hereinafter referred to as TLC agreed to comply with AUBURN's urban service standards, and

WHEREAS, by separate agreement The Lakeland PUD in Pierce County is served by the AUBURN Fire Department, as agreed in Section 16 of the Amendment to the Lakeland Annexation and Utilities Agreement, Res. 2955, and the Lakeland Annexation and Utilities Agreement, Ord. 4867, and

WHEREAS, AUBURN's minimum fire flow service standard is 2500 gpm for 3 hours with residual pressure of 20 psi, as defined in the 1995 Comprehensive Water Plan and amended in 1997 by Ordinance 5051, and

WHEREAS, TLC desires to build Multi-Family Developments Division 1 Phase 4 (1P4) and Lots 5, 6, and 7, hereinafter referred to as the "MULTIFAMILY DEVELOPMENT AREA", in the immediate future, within the Lakeland PUD in the BONNEY LAKE Water Service Area,

WHEREAS, TLC has requested BONNEY LAKE enter into an agreement with AUBURN to provide an emergency intertie for fire flow in order that TLC's development meet AUBURN's fire flow service standards, and

WHEREAS, BONNEY LAKE is unable at this time to meet AUBURN's fire flow requirements and desires to enter into an agreement for an emergency intertie for fire flow for the proposed Lakeland Company "MULTIFAMILY DEVELOPMENT AREA", and

WHEREAS, AUBURN's water service area abuts BONNEY LAKE's water service area, and AUBURN's system has adequate infrastructure to provide the emergency intertie for fire flow protection to the "MULTIFAMILY DEVELOPMENT AREA", and

WHEREAS, AUBURN is willing to provide emergency fire flow toTLC's proposed "MULTIFAMILY DEVELOPMENT AREA", in consideration of Lakeland's agreement to pay to AUBURN a fire flow development charge, and

WHEREAS, TLC, pursuant to a separate agreement, has agreed to compensate AUBURN for AUBURN's providing to BONNEY LAKE, pursuant to this agreement, an intertie for emergency fire flows to the proposed "MULTIFAMILY DEVELOPMENT AREA, and

NOW THEREFORE, IT IS MUTUALLY AGREED as follows:

1. In the event a fire flow emergency occurs within the Lakeland South Multi-Family Developments of Division 1 Phase 4 (1P4) and Lots 5, 6, and 7, hereinafter referred to as the "MULTIFAMILY DEVELOPMENT AREA", requiring fire flows beyond what the BONNEY LAKE System can deliver, the AUBURN Fire Chief, or his/her designee, is hereby authorized to open the valve in the water main between the two systems to provide the required fire flow.

2. The authorization granted in section 1 above herein is intended to serve as emergency fire flow protection for the "MULTIFAMILY DEVELOPMENT AREA", only. Water shall not be withdrawn from the AUBURN Water System for any other purpose than that described in section 1, without prior written approval from AUBURN.

3. A fire flow emergency is defined as a fire event that requires fire flow capacity beyond that which the BONNEY LAKE System is able to provide as required under AUBURN's 1995 Comprehensive Water Plan and amended in 1997 by Ordinance 5051, to the "MULTIFAMILY DEVELOPMENT AREA".

4. In the event if it becomes necessary for the AUBURN Fire Chief or his/her designee to open the valve as described in the above sections no fees will be charged to BONNEY LAKE for water consumed.

5. This agreement does not authorize or permit AUBURN to utilize water from the BONNEY LAKE Water System.

6. This agreement shall terminate when BONNEY LAKE provides documentation that demonstrates to AUBURN that infrastructure has been developed to meet AUBURN's urban service standards for fire flow.

7. Each participant agrees to defend, indemnify and hold harmless the other participant from and against any liability, loss, cost, damage, or expense of any kind and nature arising out of injury to person or damage to property in any manner caused by the negligent act or omission of the indemnifying individual participant in performance of its work pursuant to in connection with this agreement.

8. Should a dispute arise between the parties that cannot be resolved satisfactorily, a mediator mutually acceptable to the parties shall resolve the dispute through the use of mediation at equal cost to each party. Should the parties not be able to satisfactorily resolve the dispute through mediation, the forum for resolution shall be Pierce County Superior Court. The prevailing party will be entitled to attorney fees and costs.

9. If any provision of this agreement shall be unenforceable or invalid for any reason, the remaining sections shall be in force and effect.

10. In the event TLC fails to make payment as provided in its Emergency Fire Flow Protection Agreement with AUBURN, AUBURN is under no obligation to provide emergency fire flow to BONNEY LAKE for the MULTI-FAMILY DEVELOPMENT AREA.

IN WITNESS WHEREOF, we have hereunto set our hands and seals.

CITY OF AUBURN

Charles A. Booth

CHARLES A . BOOTH
MAYOR

ATTEST:

Danielle E Daskam

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds,
City Attorney

STATE OF WASHINGTON)
)ss.
County of King)

I certify that I know or have satisfactory evidence that Charles A. Booth and Danielle E. Daskam were the persons who appeared before me, and said persons acknowledged that they signed this instrument, on oath stated that they were authorized to execute the instrument and acknowledged it as the **MAYOR** and **CITY CLERK** of the CITY OF AUBURN to be the free and voluntary act of such parties for the uses and purposes mentioned in this instrument.

Dated 12-21-98

TAMARA A. BOTHELL NOTARY PUBLIC COMMISSION EXPIRES OCTOBER 9, 1999 STATE OF WASHINGTON

Tamara A Bothell

Tamara A Bothell
Notary Public in and for the State of Washington
residing at King Co
My appointment expires 10-9-99

CITY OF BONNEY LAKE

BOB YOUNG, MAYOR

STATE OF WASHINGTON)
) ss.
County of Pierce)

I certify that I know or have satisfactory evidence that Bob Young was the person who appeared before me, and said person acknowledged that they signed this instrument, on oath stated that they were authorized to execute the instrument and acknowledged it as the **MAYOR** of the CITY OF BONNEY LAKE to be the free and voluntary act of such parties for the uses and purposes mentioned in this instrument.

Dated 12-10-98

Mona R. Musgrave
Notary Public in and for the State of Washington
residing at Bonney Lake
My appointment expires 9-1-2002

LM/bd

REF. H:/FAC/FAC2385/E98-1268

RESOLUTION NO. 3190

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AMENDMENT NO. 1 TO THE BILATERAL COMPLIANCE AGREEMENT BETWEEN THE CITY AND THE STATE DEPARTMENT OF PUBLIC HEALTH.

WHEREAS, the City entered into a Bilateral Compliance Agreement in 1996, which identified a step plan to meet the provisions of the Lead and Copper Rule of the Safe Drinking Water Act; and

WHEREAS, the step plan must be expanded to include treatment for Well 6 and Well 7, as they are supplemental supply for the City's water system; and

WHEREAS, it has been determined the timeline for completion of the project must be expanded to account for the development of the new wells;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

SECTION 1. The Mayor and City Clerk of the City of Auburn, Washington, are herewith authorized to execute Amendment No. 1 to the Bilateral Compliance Agreement between the City of Auburn and the State Department of Health, including treatment for Well 6 and Well 7 and modifying

the timeline for the treatment facility to be operational. A copy of said Amendment is attached hereto and denominated as Exhibit "A".

SECTION 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

DATED and SIGNED this 6TH day of March, 2000.

CITY OF AUBURN

Charles A. Booth

CHARLES A. BOOTH
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds,
City Attorney

BILATERAL COMPLIANCE AGREEMENT
Amendment No. 1

Water System Name: City of Auburn Water System

Subject: Compliance with the Lead and Copper Rule, Chapter 246-290-WAC

The following compliance agreement is hereby established between the Department of Health (hereafter, Department), and City of Auburn Water System (hereafter, City).

The Department and the City agree on the following corrosion control issues, approaches and schedules:

1. Auburn has slightly exceeded the copper action level at the 90th percentile per the Lead and Copper Rule (1.5 and 1.57 mg/L copper at 90th percentile compared to standard of 1.3 mg/L copper for medium size systems).

2. The best utility system approach is to adjust the pH of the water in the distribution system to reduce corrosiveness towards copper, and may include other appropriate measures such as replacement of susceptible materials, changes to electrical grounding practices, etc.

3. Corrosion control optimization is realized when the elevated pH levels will have caused the following:

    - Copper levels are reduced and maintained below the action level of 1.3 mg/L at the 90th percentile (see items 4 and 5 for clarifications);

    - No significant adverse impacts of the treatment on bacteriological quality in the distribution system;

    - No significant adverse impacts of the treatment on domestic customer satisfaction (e.g., red water due to disturbances in unlined cast irons); and

    - No significant adverse impact on commercial and industrial customers, health care facilities, and wastewater facilities.

    Any significant adverse impacts occurring as a result of corrosion control will be investigated and documented along with possible mitigation measures in a report prepared by the City and submitted to DOH.

Exhibit "A", Resolution 3190

4. The 90th percentile copper level will be calculated using the original 60 monitoring sites per the Lead and Copper Rule plus an estimated 30 additional monitoring sites in the vicinity of untreated sources. Results of all analyses of samples from all monitoring sites in the system will be evaluated in one sampling pool to determine Lead and Copper Rule Compliance. The limits of the zones surrounding untreated sources are depicted on Exhibit 1.

5. Untreated sources of supply will be sampled within the limits of the zones of influence using the number of connections and the population of the zone and a factor of 2.5 people per connection as a conversion factor as follows:

Population	Number of Sample Sites
<100	5
101—500	10
501—3,300	20
3,301—10,000	40

Sample sites will be selected per the Lead and Copper Rule. Any previous monitoring sites in the untreated zones of influence will be retained and can be used in lieu of a new site.

6. Treatment is anticipated in 4 stages at this time.

Source	Stage
Coal Creek Springs, plus blending of well (#4)	1
Well #2, 6 and 7	1
Well #1	To be determined.
Well #4	2. if needed
West Hill Springs	3, if needed
Wells 5 and 5A (Lakeland Hills)	No treatment. Monitoring indicates supply is not corrosive.
Wells 3Aand3B	To be determined.
Future Sources	To be determined.

7. Monitoring will be conducted after each stage to determine if optimization is achieved. If optimization is achieved, no further treatment stages are needed. If optimization is not achieved, the City plans to proceed to next stage with Department approval.

8. Schedule for Stage 1.

Project Schedule for Stage 1	Date
Submit Lead and Copper Compliance Report DOH July 1, 1995 – Schedule Met	July 19, 1995
Finalized BCA (assumed start)	October 7, 1996
Submit 30% Design Reports for Coal Creek and Fulmer Field to DOH	October -- 1999
DOH Approval of 30 % Design Reports	Pending
BCA Amendment No. 1	March 20 , 2000
Submit Final Plans and Specifications	September 15, 2000
DOH Approval of the Final Plans and Specifications	October 12, 2000
Complete Construction of Facilities	July 18, 2002
Monitoring Report - 2 Rounds	July 17, 2003
Submit Report to Determine if System is Optimized	October 23, 2003

9. If the Lead and Copper Rule is amended or changed, the Department and City will review the changes and their effects on the City, and if needed, will jointly renegotiate this agreement.

The City of Auburn agrees to perform the following:

Submit a project report and construction documents. In accordance with WAC 246-290-110 and 120 submit for review and approval a project report (Predesign Engineering Report) and construction documents (plans and specifications) for the installation of the corrosion control treatment equipment approved by the Department.

Construct corrosion control treatment facilities. Complete the installation of Stage 1 corrosion control treatment facilities in accordance with Department approved construction documents prior to July 18, 2002.

Monitor water quality parameters. Monitor water quality parameters in accordance with Title 40 CFR Chapter 1 Part 141.87(c), (d), and (e) beginning on July 19, 2002.

Monitor tap water quality for lead and copper. Monitor tap water quality in accordance with Title 40 CFR Chapter 1 Part 141.86 (d) and complete two six-month monitoring compliance periods prior to July 19, 2003.

Well #4. Discharge Well #4 into Reservoir #1 for blending under normal operating procedures. Monthly production records will be kept to document where the water is directed and made available to the Department upon request. Department will allow Well No. 4 to be discharged directly into the distribution system should distribution system pressure drop below 35 psi during an emergency (fire, main break, etc.).

Optimization Report. Prepare and submit an optimization report that addresses copper monitoring results, any significant adverse effects that may reasonably be associated with corrosion control, any copper staining incidents that occur in the untreated zones of influence, and any copper staining or corrosion incidents in new construction. The report will document what action the City plans to take to address these occurrences. Further, the optimization report will recommend a pH operating range for optimization and will recommend if Stage 2 treatment needs to be implemented.

The Department of Health agrees to:

Concur with Optimization. The Department agrees that optimization is achieved, that Auburn will be considered in compliance with the LCR, and that no further stages of implementation will be required when the following conditions are met.

- Copper levels are reduced and maintained below the action level of 1.3 mg/L at the 90th percentile (see items 4 and 5 for clarifications);
- No significant adverse impacts of the treatment on bacteriological quality in the distribution system;
- No significant adverse impacts of the treatment on domestic customer satisfaction; and
- No significant adverse impact on commercial and industrial customers, health care facilities, and wastewater facilities.

The Department will also consider the Optimization Report in determining compliance with the LCR.

Defer enforcement. The Department shall not initiate any enforcement actions for violations of the Lead and Copper Rule as long as the conditions of this agreement are being met.

Renegotiate agreement. The Department will negotiate the level of activity or the schedules in this agreement if requested by the City.

Terminate agreement. The Department agrees to terminate this agreement within 30 days upon request by the City.

All documents or reports required by this agreement, questions about compliance and request to modify this agreement shall be directed to DOH—Northwest Drinking Water Operations, 1511 3rd Avenue, Suite 719, Seattle, Washington 98101.

CITY OF AUBURN

Charles A. Booth

Charles A. Booth, Mayor

Date 3-6-2000

ATTEST:

Danielle E. Daskam

Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds, City Attorney

WASHINGTON STATE DEPARTMENT HEALTH

BY: Robert E James

Authorized Signature

Robert E. James

Print or Type Name

TITLE: Regional Engineer

Date February 14, 2000

Phone (206) 464-7671

LRM/bd

REF. H:\PROJ\PR629-21\E00-133

RECEIVED

FEB 14 2000

NW DRINKING WATER

Exhibit 1
Auburn Water System
Limits of Zones of Influences for Untreated Sources

RESOLUTION NO. 3374

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, REPEALING RESOLUTION NO. 3358 AND THE AUTHORIZATION THEREFOR AND APPROVING THIS RESOLUTION NO.3374 AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN EMERGENCY WATER SYSTEM INTERTIE AGREEMENT BETWEEN THE CITY OF AUBURN AND THE CITY OF KENT.

WHEREAS, Resolution No. 3358 authorizing the execution of an Emergency Water System Intertie Agreement was approved by the City Council on June 18, 2001; and

WHEREAS, the Emergency Water System Intertie Agreement attached as Exhibit "A" to Resolution No. 3358 was a draft of the final Emergency Water System Intertie Agreement agreed to by Auburn and Kent; and

WHEREAS, changes were made by both parties to the draft agreement attached to Resolution No. 3358 that were intended to be in the agreement executed by both parties; and

WHEREAS, pursuant to RCW 35A.11.040, Auburn and Kent have legal authority to exercise their powers and perform any of their functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Kent have legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, the City of Auburn and the City of Kent currently have an emergency water system intertie; and

WHEREAS, the existing intertie station is going to be removed and relocated as part of the South 277th Street Improvement project; and

WHEREAS, a temporary emergency water system intertie will be constructed and available for use during the South 277th Street Improvement project; and

WHEREAS, an agreement outlining the design, construction and operation of the temporary and permanent emergency water system intertie is needed.

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. Pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Kent have legal authority to cooperate with other localities on the basis of mutual advantage and provision of services.

Section 2. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute the Emergency Water System Intertie Agreement which was agreed to between the City and the City of Kent. A copy of said Agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

Section 3. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

DATED this 6th day of August, 2001.

CITY OF AUBURN

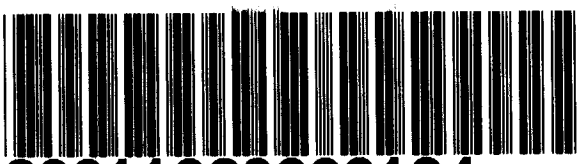
Charles A. Booth
CHARLES A. BOOTH
MAYOR

ATTEST:

Danielle E. Daskam
Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds
Michael J. Reynolds,
City Attorney



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PACIFIC NW TIT AG 12.00
PAGE 001 OF 005
10/23/2001 09:12
KING COUNTY, WA

DEC 10 2001
CITY OF AUBURN

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):
1. EMERGENCY WATER SYSTEM INTERTIE AGREEMENT (RES 3374)

Reference Number(s) of Documents assigned or released: 5112

☐ Additional reference #'s on page _____ of document

FILED BY PNWT
W1295-12

Grantor(s) (Last name first, then first name and initials)
1. Auburn, City of

Said document(s) were filed for record by Pacific Northwest Title as accommodation only. It has not been examined as to proper execution or as to its effect upon title.

Grantee: (Last name first)
1. Kent, City of

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

N/A Government Interlocal

Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number

N/A Government Interlocal

☐ Assessor Tax # not yet assigned

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EMERGENCY WATER SYSTEM INTERTIE AGREEMENT
Kent/Auburn Intertie Agreement No. 1

THIS AGREEMENT made and entered into by and between the City of Auburn, hereinafter referred to as Auburn, and, the City of Kent, hereinafter referred to as Kent, for the purposes of planning, designing, constructing, maintaining, and operating an emergency system intertie between the respective parties,

WITNESSETH:

WHEREAS, both Cities have water facilities in the vicinity, and

WHEREAS, both Cities can increase fire protection and emergency water supply reliability for their customers, and

WHEREAS, the Cities are willing to provide the necessary services to increase fire fighting and emergency supply reliability upon the terms and conditions set forth herein,

NOW, THEREFORE, IT IS MUTUALLY AGREED as follows:

1. The emergency water system intertie is intended to be operated manually as a two way emergency supply between the Auburn and Kent Systems. The intertie facility shall be located near South 277th Street at the Water Service Area Boundaries between the two cities. An existing intertie located at B Street NE and South 277th Street will be replaced with a temporary metering station and eventually a permanent metering station. Final location and configuration of the facilities shall be determined at the time of final design.

2. The emergency water system intertie shall be operated only in the event of an emergency. For purposes of this agreement, an emergency shall be defined as resulting from a water shortage, a major water line break, fire demand, contamination to the water supply system, mechanical equipment failure, electrical equipment failure or Puget Sound Energy facility failure, or any other agreed upon emergency within the water supply system.

3. Auburn has acquired the right of way for the metering station and Kent will design and administer the contract for the construction of the temporary facilities within the right of way acquired by the City of Auburn. The permanent facilities will be constructed as part of the South 277th Street Improvement Project. All of the facilities will be designed and constructed in accordance with reasonably accepted water utility standards for similar municipal water utilities. Auburn will own and maintain the piping, interior

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equipment, emergency meter and interior appurtenances, and all piping up to the Kent side of the vault for both the temporary and permanent metering stations.

4. Upon completion of construction, Auburn will transfer ownership of all exterior appurtenances, and all piping which is located on the Kent side of the vault, to Kent. Kent will own and maintain the exterior appurtenances and all piping on Kent's side of the vault.

5. Each City will each have unlimited access to the vault via a dual padlock or ownership of keys to the vault.

6. Each City will operate the respective normally locked valve inside of the vault. Auburn will solely unlock and operate the locked valve on Auburn's side of the meter and Kent will solely unlock and operate the locked valve on Kent's side of the meter.

7. The procedure for operating the intertie in the event of such emergency shall be as follows:

   A. Each City shall determine that an emergency of sufficient magnitude has occurred which warrants the need to request that the intertie be activated.

   B. The Public Works Director or appointed person or authorized personnel shall provide a verbal request to the other City's Public Works Director or appointed person. Upon agreement that an emergency exists which shall allow for the intertie to be opened, the intertie will be activated as soon as reasonably possible. Both Cities' personnel shall be present at the vault to open the valves to activate the facility.

   C. The City requesting the activation shall provide a written confirmation of the request not less than 24 hours after the verbal request, or on the first day of normal business after the verbal request.

   D. The intertie shall remain activated until the City requesting activation determines that the need for activation of the emergency intertie has ceased and shall request in writing to close the intertie.

   E. In case of emergency or whenever the public health, safety, or the equitable distribution of water so demands, the City supplying the water may change, reduce or limit the time for or temporarily discontinue the supply of water without notice; water service may be temporarily interrupted, limited for purposes of making repairs,

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2001 102 3000194

extensions or doing other necessary work; and the City supplying the water shall not be responsible for any damage resulting from interruption, change or failure of the water supply, and the City receiving the water (City requesting activation) shall save and hold harmless the City supplying the water from any loss, damages or suites to or by customers of the City receiving the water resulting from interruption, change or failure of water supply provided by this Agreement, except damages arising out of the City supplying the water's negligence. Prior to a planned interruption or limiting of service, the City supplying the water will notify the City receiving the water of such not less than three days prior to the service disruption. The City supplying the water agrees to use best efforts and reasonable diligence to notify the City receiving the water as soon after it becomes aware of the need for service disruption and further will, to the extent practical, limit the service disruption to daylight hours.

8. Auburn shall read the meter upon activation and upon deactivation of the intertie. The city supplying the water shall verify the information and shall then calculate and invoice the other City for the water used during the request. The invoice shall be calculated by the total water used during the event. The rate shall be at the current Auburn or Kent Wholesale Rate depending on which city is supplying the water. This shall be complete payment for the water, labor, and administration of activating the intertie.

9. The total project costs shall include costs for consulting design service, and construction. These costs shall be paid for by the City of Kent. The project costs shall be reviewed and agreed upon by Public Work Directors of both Cities at the beginning and end of each stage described above. Each City is responsible for associated staff, administration and legal costs associated with the implementation of the agreement.

10. To the extent allowed by law, the City of Kent shall defend, indemnify, and hold harmless the City of Auburn, its elected officials, employees and agents from and against any and all suits, claims, actions, losses, costs, expenses of litigation, attorney's fees, penalties and damages of whatsoever kind or nature arising out of or in connection with or incident to an act or omission of the City of Kent, its employees, agents, and contractors in the performance of the City of Kent's obligations under the Agreement and this Amendment. This indemnification provision shall include, but is not limited to, all claims against the City of Auburn by an employee or former employee of the City of Kent or its contractors and, as to such claims, the City of Kent expressly waives all immunity and limitation of liability under Title 51 RCW.

2001 102 3000194

To the extent allowed by law, the City of Auburn shall defend, indemnify and hold harmless the City of Kent, its elected officials, employees and agents from and against any and all suits, claims, actions, losses, costs, expenses of litigation, attorney's fees, penalties, and damages or whatsoever kind or nature arising our of, in connection with or incident to an act or omission of the City of Auburn, its employees, agents, and contractors in the performance of the City of Auburn's obligations under this Agreement. This indemnification obligation shall include, but is not limited to, all claims against the City of Kent by an employee or former employee of the City of Auburn or its contractors and, as to such claims, the City of Auburn expressly waives all immunity and limitation of liability under Title 51 RCW.

11. This Agreement shall remain in force until terminated by either party hereto upon 60-days written notice to the other party. Any project costs, incurred up to the date of such notice, as described herein, shall be shared in accordance with the provisions of this Agreement.

IN WITNESS WHEREOF, we have hereunto set our hands and seals.

CITY OF AUBURN
King County, Washington

By: Charles A. Booth 08-07-01
Mayor Date

Approved as to form:

By: [signature] 7/17/01
City Attorney Date

CITY OF KENT
King County, Washington

By: [signature]
Mayor Date 8-29-01
JIM WHITE

Approved as to form:

By: [signature] 8-29-01
ASST. City Attorney Date
SIMON STOCKTER

H:\WQWATER UTILITY\INTERTIES\KENT\KENT EIA - FINAL.DOC

RESOLUTION NO. 3383

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO PERFORM THE NECESSARY ADMINISTRATIVE MEASURES TO APPROVE AUBURN'S WITHDRAWAL FROM THE EXISTING SOUTH KING COUNTY REGIONAL WATER ASSOCIATION JOINT OPERATING AGREEMENT, DATED OCTOBER 8, 1996, AND TO INDICATE AUBURN'S ACCEPTANCE AND CONTINUANCE AS A SIGNATORY MEMBER OF THE REVISED SOUTH KING COUNTY REGIONAL WATER ASSOCIATION JOINT OPERATING AGREEMENT DATED DECEMBER 19, 2000.

WHEREAS, Auburn is a member of the South King County Regional Water Association (SKCRWA) consisting of the cities of Algona, Black Diamond, Kent, and Pacific, and Lakehaven Utility District, Soos Creek Water & Sewer District, and King County Water District #111 as authorized by Resolution No. 2568, adopted June 5, 1995, and modified by Resolution No. 2781, adopted December 2, 1996; and

WHEREAS, the Board of Directors of the SKCRWA saw a need to make certain amendments to the Joint Operating Agreement, dated October 8, 1996, to provide clarification to the intent of the agreement; and

WHEREAS, the Board of Directors of the SKCRWA have now prepared and recommended for approval by each participatory member an update of the Joint Operating Agreement to which Auburn is a signatory member.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES AS FOLLOWS:

Section 1. The Mayor and City Clerk of the City of Auburn are hereby authorized to perform the necessary administrative measures to approve Auburn's withdrawal from the existing SKCRWA Joint Operating Agreement, dated October 8, 1996, and to indicate Auburn's acceptance and continuance as a signatory member of the revised SKCRWA Joint Operating Agreement, dated December 19, 2000. A copy of said Agreement is attached hereto and denominated as Exhibit "A" and incorporated by reference in this Resolution.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

DATED and SIGNED this 4th day of September, 2001.

CHARLES A. BOOTH
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds,
City Attorney



Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Interlocal Agreement – South King County Regional Water Association Joint Operating Agreement

Reference Number(s) of Documents assigned or released:
☐ Additional reference #'s on page _____ of document

13/31
FILED BY PNWT
W3474-12

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
South King County Regional Water Association

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number

N/A

☐ Assessor Tax # not yet assigned

examined as to [illegible] or as to its effect upon title.

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SOUTH KING COUNTY REGIONAL WATER ASSOCIATION
JOINT OPERATING AGREEMENT
December 19, 2000

WHEREAS, an adequate and safe water supply for South King County Regional Water Association (SKCRWA) and its members is vital to both existing citizens and in implementing the long-term comprehensive plans of SKCRWA members; and

WHEREAS, the State and SKCRWA prepared a Coordinated Water System Plan (CWSP) for South King County; and

WHEREAS, projects that provide for the coordinated and cooperative use and operation of supply, transmission, storage, treatment, and pumping facilities to minimize cost, provide for improved water quality, protect the environment, provide for emergency needs, and maximize the best use of the resource is in the best interest of the citizens of the region;

WHEREAS, the current and near-term water needs of the local governments and SKCRWA require steps to establish a cooperative subregional water supply system; and

WHEREAS, the SKCRWA is committed to cooperate toward regional solutions for both emergency and long range water supply needs: and

WHEREAS, the SKCRWA signatory members developed a Joint Operating Agreement in 1995 and revised the Joint Operating Agreement in 1996 and now want to further revise the Agreement.

NOW THEREFORE, the SKCRWA signatory members of this Joint Operating Agreement (JOA), agree as follows:

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1. **GENERAL**

A. The Signatory Members acknowledge the requirement to incorporate land use planning as defined by the Growth Management Act with water supply planning; and

B. The Signatory Members recognize the benefits of developing a subregional water supply system that will allow the optimum use of surface and groundwater to better manage and protect the area's water resources; and

C. The Signatory Members will hold an Annual Meeting about September 30th to review the status of this JOA and any Amendments as well as other problems of mutual concern. The specific date, time, and location of the meeting will be set by mutual agreement.

D. Merger shall mean when two signatory members merge or when a signatory member and a non-signatory member merge.

E. Termination – This agreement shall cease to be binding on or to any signatory member that is not in good standing or whenever a merger occurs.

2. **INTENT**

A. The general intent is to create a method for the Signatory Members to cooperatively use certain existing facilities and construct new facilities needed to develop a subregional water system. The Signatory Members may mutually agree by Interlocal Agreement to produce additional water and distribute it within the Subregional Service Area, with or without change to their retail service area.

B. The JOA provides a framework for joint development of specific projects that may include two or more Participants. Each facility, project, and/or intertie shall be developed under a separate Interlocal Agreement (IA) consistent with this JOA subject to approval by appropriate affected city council and/or water district boards. The specific intent of this JOA is to make provisions for a standardized form to create or expand cooperative agreements to meet the public water supply needs for both emergency and long-term use, and to establish a basis for agreement between Participants for financing, ownership, construction, and operation of mutually beneficial projects required to achieve cooperative objectives. These projects may include common facilities with other Agencies outside the SKCRWA planning area.

Interlocal Agreements (IA) negotiated under the provisions of this JOA shall speak for themselves and should reference the version of the JOA, which is in place at the time that the agreement is reached. It is the intent of the Signatory Members that any Interlocal Agreements negotiated under the JOA would survive the withdrawal of a Signatory Member from the JOA or from the South King County Regional Water Association.

It is further the specific intent of this JOA to preserve Signatory Members' existing water rights and protect the established or planned interest and needs of each Signatory Member with respect to sources of water.

Suggested content for an Interlocal Agreement is shown in Exhibit A.

C. It is the desire of the Signatory Members that this JOA be incorporated into the South King County CWSP at the next update.

D. The term "Participant" as used in this JOA shall mean all the signatories of an IA consistent with and implemented subsequent to this JOA.

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E. The term "Signatory Members" as used in this JOA shall mean a member, in good standing, of the South King County Regional Water Association who has signed this JOA. Good standing includes but is not limited to being current on all dues to the SKCRWA.

3. SUBREGIONAL SERVICE AREA AND FACILITIES

A. "Subregional Service Area " shall mean the Signatory Members' Designated Water Service Areas identified in the CWSP or as approved by amendments to the CWSP or as identified in a Signatory Member's approved Comprehensive Water Plan.

B. "Subregional Facilities" shall mean:

(a) that portion of the Participants' sources, interties, transmission, and storage systems required to supply water to the service areas of the Participants or new facilities as defined by a separate IA pursuant to this JOA.

(b) those designated capacities within a Participant system as specifically defined in an appropriate IA.

C. "Facility Ownership". Ownership of the physical facilities that exist on the date of this JOA shall remain with the individual Signatory Members. Unless otherwise agreed to within a specific IA, ownership and operational responsibilities of new facilities shall be based generally on location in designated service areas, with capacity rights defined by appropriate IA.

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4. WATER SUPPLY - CAPACITY RIGHTS

A. Capacity Rights - Participants may purchase capacity by IA. Any changes in these capacity rights shall be recognized by an IA, approved by the appropriate affected city councils and/or water district boards.

B. Additional JOA Participants - Other agencies may purchase capacity rights in subregional facilities subject to the provisions of paragraph 4.C. Other agencies who become Signatory Members of the SKCRWA and become Participants in future projects undertaken under this JOA and future IAs will be assessed past costs associated with development of this JOA as specified in Exhibit B.

C. Wholesaling Water -

a) A Signatory Member may wholesale water through lease or otherwise, delivered through subregional facilities to areas outside of the Signatory Member's Service Area, so long as the other Signatory Members' capacity rights are not negatively impacted. Signatory Members of the SKCRWA agree that, where feasible and mutually beneficial, they will coordinate planning and development of water resources.

b) Signatory Members further agree that prior to entering into any agreement to deliver long term water supply or construct joint facilities with a non-Signatory Member agency, they will first make a good faith effort to offer such supplies and/or capacities to Signatory Members (provide the right of first refusal). Such offers shall be made on a cost of service basis as established by separate IA. Signatory Members shall have 60 days to respond.

c) Signatory Members agree that when entering into any agreement to deliver long term water supply or construct joint facilities with a non-Signatory Member agency in accordance with this JOA, they will include and collect for remittance to the SKCRWA a fee for reimbursement of the costs for development of the JOA as specified in Exhibit B.

d) Regular meetings of the SKCRWA shall be the forum for making Signatory Members aware of discussions regarding water sales and joint projects, however all offers of participation or requests for participation shall be in writing with copies to other Signatory Members.

D. Conservation - All Participants will develop and implement a conservation plan that is consistent with State guidelines. Additional or supplemental conservation requirements beyond basic programs may be included in a specific Interlocal Agreement.

E. Curtailment - In general, curtailment for delivery of "firm water" shall be on a uniform percentage basis for both wholesale and retail customers and curtailment for delivery of "interruptible water" shall be on a "last in first out" basis as determined by the date of formal agreement. Specific curtailment requirements and provisions shall be included in Interlocal Agreements implemented under this JOA.

F. Quality - An objective of the Signatory Members is to maintain the quality of the water in the subregional facilities at or above the quality required by the State drinking water standards. The purchasing Participant will be responsible for ensuring water quality blending analyses and other water quality issues are resolved to their own satisfaction. The Signatory Members may meet periodically to ensure that water quality and operational issues are addressed, and that needed

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information is exchanged in a timely fashion. The written results of these meetings will be circulated in a timely manner to all members and participants and reviewed at the annual meeting.

G. Additional Facilities - Projected needs will be identified by the Participants based on the Participant's designated service areas. As five or more years may be needed to bring major new source capacity capabilities on line, five-year and ten-year forecasts are required, and must be updated whenever a Participant becomes aware of any significant change in their forecast demand. These will be discussed jointly as they arise, and reviewed at the annual meeting.

H. Financing - Each Project IA will include pertinent details of financing for that project. Financial participation in existing and additional facilities will be based on each Participant's projected need for each facility, as designated capacity rights.

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I. Cost of Service Charge - The Signatory Members and Participants will establish wholesale water sales charges for both emergency and long-term supply that include: (1) capital cost, (2) fixed operating cost, and (3) a variable operating cost based on quantity of water delivered based on actual costs of providing the service.

Fixed and variable operating and maintenance costs payments will be made monthly per meter and use rates. Projected annual rate adjustments and documentation shall be provided at the annual meeting. Any rate increase will be effective beginning January 1, of the following year.

(1) The Rates and Charges for the capital, operation, and maintenance of the system shall be based on the following:

(a) Capital Cost - Those construction related costs incurred for Capacity Rights. Capital Costs for facilities contracted solely for a specific project (described in an IA) are allocated based on designated capacity to be purchased.

Capital costs shall include the debt service for each Participant. Such debt service shall be defined as the actual debt service on debt issued for the Participant's proportionate share of capacity rights, or if no debt is issued for the Participant's costs by the financing Participant, the amortized value at the interest rate of the most recent revenue bond issued by the financing Participant over 20 years. However, should all capital costs be paid in full by any Participant purchasing capacity rights prior to the time of the financing Participant incurring the costs, no interest charges shall be assigned to the Participant purchasing capacity rights.

Capital Costs associated with a supplying Participant's construction of their internal water system facilities may be included in the fixed and variable operating costs as appropriate, using cost of service principles, in the same manner as those costs are included in the supplying Participant's customer rate base.

(b) Fixed Operating Cost - The cost of labor, supervision, supplies, utilities, services, taxes, insurance, and all other costs required to operate and maintain the system other than those items included under Variable Operating Cost. The operating cost will include an allocation for renewal and replacement.

(c) Variable Operating Cost - Those costs directly proportionate to the volume of water produced, including chemicals, electric power, and other costs required to meet customer and system needs not included in (a) and (b) above.

(2) Accounting

Subregional facilities accounting shall be documented in accordance with generally accepted accounting practices acceptable to the Participants.

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5. ADMINISTRATIVE, LEGAL AND OTHER PROVISIONS

A. Each Signatory Member shall designate in writing their representative responsible for coordination and implementation of the JOA and the subsequent IAs. The designated individuals will be the primary contact for all project approvals and communication and shall prepare and publish a schedule and plan to facilitate the planning, design and day-by-day operation of facilities associated with the subsequent IAs.

B. Signatory Members in good standing may propose Amendments to this JOA at any time. Signatory Members in good standing shall vote on proposed Amendments at the Annual Meeting. A quorum of Signatory Members present shall approve any Amendments to this JOA prior to their submittal to Signatory Members city councils and/or utility district boards for approval. A Special Meeting of the Signatory Members may be called for the purpose of amending this JOA by two thirds of the Signatory Members in good standing.

C. A Signatory Member may withdraw from this JOA by providing 120 days notice to other Signatory Members. Notice shall be provided to each Signatory Member in writing and shall include the reason for withdrawal.

D. Any Signatory Member that withdraws from the SKCRWA also withdraws from this JOA.

E. This JOA shall remain in full force unless terminated in writing by mutual agreement of all Signatory Members in good standing. Termination of the JOA or withdrawal by any signatory member shall not affect any Interlocal Agreements negotiated under a JOA.

F. A Signatory Member who merges with any Agency which is not a Signatory Member of this JOA must withdraw from the JOA. The merged agency would then be allowed to reapply for Signatory Membership in the JOA as the merged Agency.

IN WITNESS WHEREOF, the SKCRWA members hereto have caused this agreement to be executed by their proper Officers on the 21 day of May 2002.

200207160007600

By: Glenn Lubliner
Title: Mayor
City of Algona
Date: 8-7-01

Attest:
By:

Approved As To Form:
By: George S Kelley

By: Charles A. Booth
Title: Mayor
City of Auburn
Date: September 4, 2001

Attest:
By: Daniel E Dashan

Approved As To Form:
By: Judith C Runeman
for Michael Reynolds

By:_____
Title:_____
City of Black Diamond
Date:_____

Attest:

By:_____

Approved As To Form:

By:_____

By: Jim White
Title: Mayor
City of Kent
Date: 4-4-01

Attest:

By:_____

Approved As To Form:

By: BCV
Brett C. Vinson
Assistant city attorney

2000760 09/07/2001

By:_____
Title:_____
Lakehaven Utility District
Date:_____

Attest:

By:_____

Approved As To Form:

By:_____

By: _____
Title: DISTRICT MN
Soos Creek Water and Sewer District
Date: 4/4/01

Attest:

By: _____

Approved As To Form:

By: _____

By: _____
Title: Commissioner
King County Water District #111
Date: 4-16-01

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Attest:

By: _____

Approved As To Form:

By: _____

By: _____
Title: _____
City of Pacific
Date: _____

Attest:

By: _____

Approved As To Form:

By: _____

South King County
Regional Water Association
Joint Operating Agreement

Exhibit A
Check List for Interlocal Agreements

2002071600760

1. Project Title

2. General

   - List of Utilities to be parties to the Interlocal Agreement (IA) and approval of the appropriate city councils and/or water district boards.
   - Consistency with the Joint Operating Agreement (JOA).
   - Description of need for the project.
   - Listing of potential wholesale customers for the water in accordance with Section 4.C of the JOA.
   - Recognition of assessment of costs associated with development of JOA in accordance with Section 4.B of the JOA.
   - Recognition of right of first refusal to excess capacity of Signatory Members of the South King County Regional Water Association (SKCRWA) in accordance with Section 4.C of the JOA.
   - Recognition that capacity and water rights are available to meet the needs of the IA.

3. Description of Project

   - Include a drawing (or description) which identifies all the facilities to be considered within the IA. Included within the description should be all jointly or solely owned facilities that are to be operated or paid for by a party to the IA.
   - Description of long term ownership of the facility.
   - Identification of the party responsible for operation and/or maintenance of the facility.
   - Identification of the party responsible for payment for the design and construction of the facility.

4. Project Costs, Financing, Capacity Rights

   - Description of all project costs and the allocation to each party.
   - Definition of capacity rights for all facilities.
   - Definition of cost sharing for long-term maintenance for each facility.
   - Definition of method of reimbursement for moneys expended (if required).
   - Description of any applicable latecomer fees or hook-up charges.
   - Description of requirements for record keeping and monitoring of costs.

5. Project Design and Construction Management

   - Definition of overall project management responsibilities.
   - Definition of design and construction management responsibilities for individual facilities.
   - Description of basic periodic meeting schedule for review of project progress.

6. Conditions of Service
    - Limitations to source sharing or delivery of water (if any).
    - Design criteria for the project facilities.
    - Minimum and maximum flow rates and pressures.
    - Items specifically excluded from the project.

7. Term of Duration of the Agreement

    - Discussion of the length of time the agreement is in effect as well as the method to terminate the agreement and succeeding agencies' obligations.

8. Amendments

    - Method by which the agreement could be amended.

9. Hold Harmless, Liability Language, etc.

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South King County
Regional Water Association
Joint Operating Agreement

Exhibit B
Computation of Charges

Initial Computation based on 8 shares.

$ 16,652	Cost to develop JOA (from Covington and WD 111).
8	
$ 2,081	Initial "charge" for a share.

Cost to the three participants of IA2.

Covington and Auburn, three share	$ 6,244
WD 111, two shares =	$ 4,163

Final Computation based on 12 shares.

$ 16,652	
12	
$ 1,388	

Ultimate use charge

Algona and Black Diamond, one share =	$ 1,388
WD 111, two shares =	$ 2,775
Auburn, Kent, Covington WD, Lakehven UD, 0r Soos Creek W&SD, three shares =	$ 4,163

Reimbersement for Development and initial use (to Covington, WD 111,and Auburn)

$ 16,652 Cost for development.

Covington	WD 111	Auburn	
$ 8,326	$ 8,326	$ -	development cost
$ 6,244	$ 4,163	$ 6,244	use charge IA2
$ 2,081	$ 4,163	$ (6,244)	
$ 2,081	$ 4,163	$ -	recovery charge IA2 (Auburn)
$ 6,244	$ 4,163	$ 6,244	
$ 4,163	$ 2,775	$ 4,163	ultimate use charge
$ 2,081	$ 1,388	$ 2,081	remaining reimb.
$ 463	$ 463	$ 463	recovery charge IA3 (Algona)
$ 1,619	$ 925	$ 1,619	remaining reimb.

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REVISED BYLAWS
of
REGIONAL WATER ASSOCIATION OF SOUTH KING COUNTY

I. MEMBERSHIP

A. Regular Members. Governmental Bodies providing water service in South King County are entitled to regular membership in this Corporation, upon approval by the Board of Directors and payment of any then required fees and/or dues.

The term "member" as used in these Bylaws shall mean "regular member" unless otherwise designated.

B. Affiliate Members. Any governmental body, Association of Water Purveyors, water purveyor, individual or business, may become an Affiliate Member upon approval by the Board of Directors and payment of any then required fees and/or dues,

Affiliate Members have no proprietary or other interest in the Corporation; are not entitled to vote: are not entitled to attend meetings as a matter of right: and have no right to participate in any distributions, in dissolution or otherwise, by the Corporation.

Affiliate Members may, with the approval of the Board of Directors, attend any regular meeting and participate in all discussions at any regular meeting.

C. Assignment. Neither regular nor affiliate membership in this Corporation is assignable by the member.

II. DIRECTORS

A. Number. The Articles of Incorporation provide for not less than three nor more than twenty-five Directors. At the present, there shall be as many Directors as there shall be regular members, plus the Alternate Directors provided for herein below. The number of Directors and Alternate Directors may be changed by the membership at any regular meeting or at a special meeting called for that purpose.

B. Qualifications. Directors and Alternate Directors must be elected officials or the designee of members of the Corporation. Each regular member shall be entitled to select one Director and two Alternate Directors provided herein below.

C. Selection and Term. Directors and Alternate Directors shall normally be selected by the Regular Member prior to the Annual Meeting and serve for a term of one year, or until such time

thereafter as their successors shall be selected by the Regular Member. Notice of selection shall be in a written form satisfactory to the Board of Directors.

D. Alternate Directors. In the absence of a Director at a meeting of the Board of Directors, or in the event that a Director is unavailable or unable to act on any matter between meetings, an Alternate Director representing the same member may attend the meeting and vote and/or act outside a meeting. Members may designate the order in which their Alternate Directors may act. In the absence of such designations it shall be as agreed by that member's Alternate Directors.

E. Vacancies. The Regular Member in accordance with the Selection requirements of these Bylaws shall fill any vacancies occurring among its Directors and Alternate Directors.

F. Board of Directors. The Director from each Regular Member, or in the absence of the Director, the Alternate Director shall constitute the Board of Directors of the Corporation.

No one need look beyond the fact that a vote or act was performed by either a Director or an Alternate Director. All such votes and actions shall be binding on the Corporation and may be relied upon as the act of the Board of Directors and the Corporation by all persons dealing with the Corporation.

G. Compensation. Directors shall not receive any compensation for acting as such but may be reimbursed for expenses incurred in the business of the Corporation, provided the expenses were approved in advance by the Board of Directors or Executive Committee.

III. AFFILIATE DELEGATES

A. Affiliate Delegates. Each Affiliate Member shall be entitled to an Affiliate Delegate and an Alternate Affiliate Delegate.

A. Qualifications. Affiliate Delegates and Alternate Affiliate Delegates may be elected officials of or a designee of the Affiliate Member.

C. Selection and Term. Affiliate Delegates and Alternate Affiliate Delegates shall be selected by the Affiliate Member and serve until such time thereafter as their successors shall be selected by the Affiliate Member. Notice of selection shall be in a written form satisfactory to the Board of Directors.

D. Vacancies. The Affiliate Member in accordance with the selection requirements of these Bylaws shall fill any vacancies occurring among its Affiliate Delegates and Alternate Affiliate Delegates.

F. Compensation. Affiliate Delegates and Alternate Affiliate Delegates shall not receive any compensation from the Corporation.

IV. OFFICERS AND COMMITTEES

A. Number. The Officers of the Corporation shall be a President, Vice- President, Secretary and a Treasurer. In addition to the foregoing, the Board of Directors may elect such assistant or other Officers as the Board, from time to time, deems appropriate.

B. Term. Officers shall be elected by the Board of Directors at the Annual Meeting of the Board of Directors, and shall serve for a term of one year, commencing on their election, or until such time as their successors are elected.

C. Vacancies. The Board of Directors may fill a vacancy in any office for the un-expired portion of the term.

D. Qualifications. No person may serve as an Officer of the Corporation unless he/she is also a Director or Alternate Director.

E. President. The President shall be the managing Executive Officer of the Corporation and shall be subject to the ultimate authority of the Board of Directors and/or any Executive or other committees appointed by it, have general charge of the business of the Corporation.

The President shall, together with the Secretary, execute all documents and instruments which are required in the ordinary course of the Corporation's business or which are required by law to be executed by the Corporation.

F. Vice-President. In the absence of the President, or his/her inability or refusal to act, the Vice-President shall perform the duties of the President, and, when so acting, shall have all the powers of and be subject to all of the restrictions upon the President.

G. Secretary. The Secretary shall, in person or through any Assistant Secretary or authorized employee: (a) Keep the minutes of all meetings; (b) give all notices which must be given under these Bylaws or by statute: (c) be custodian of the corporate records and seal; and (d) in general, perform all of the duties incident to the office of Secretary and such other duties as, from time to time, may be assigned to him/her by the President or by the Board of Directors.

H. Treasurer. The Treasurer shall, in person or through any Assistant Treasurer or authorized employee: (a) Have charge and custody of all funds and securities of the Corporation; (b) deposit all corporate moneys in the name of the Corporation in such Banks as shall be selected by the Board Of Directors: and (c) in general, perform all of the duties incident to the office of Treasurer

and such other duties as, from time to time, may be assigned to him/her by the President or by the Board of Directors.

I. **Assistant Secretary and Assistant Treasurer**. Any Assistant Secretary or Assistant Treasurer, when elected, may act in the absence, death, inability or refusal to act, of the Secretary or Treasurer, respectively. In addition, any Assistant Secretary or Treasurer shall perform such duties as shall be assigned to him/her, from time to time, by the Board of Directors or the Secretary or Treasurer.

J. **Executive Committee.** The President, Vice-President, Secretary and Treasurer shall constitute the Executive Committee of the Corporation and shall be allowed to act on behalf of the Board of Directors whenever action is required and it is not practicable for the Board of Directors to call a meeting and act. Any action of the Executive Committee shall require the votes of three of the Executive Committee members. Actions taken by the Executive Committee shall be brought to the next Regular Meeting of the Board of Directors for ratification.

K. **Audit Committee.** The President shall annually appoint an Audit Committee. The Audit Committee shall review the financial condition and financial transactions of the Corporation at the end of each calendar year. The Audit Committee shall include the Treasurer, as chair, and at least two additional Delegates or Alternate Delegates from different Members. The Audit Committee shall report its findings to a Regular Meeting of the Board of Directors.

K. **Evaluation Committee.** The President shall annually appoint an Evaluation Committee. The Evaluation Committee shall complete a performance review and evaluation of any employees of the Corporation. Employee reviews and evaluations shall normally be completed by December 1, and shall generally cover the previous 12 months. The President shall serve as chair of the Evaluation Committee and the committee shall include at least two additional Delegates or Alternate Delegates from different Members. The Evaluation Committee shall report its findings to a Regular Meeting of the Board of Directors.

L. **Other Committees.** The President, with the approval of the Board of Directors, may establish other committees as may be appropriate to conduct the business of the Corporation. The President shall appoint the members of and the chair for any committee established under this paragraph. Committees shall consist of at least three Delegates or Alternate Delegates from different Members. Affiliate Members may serve on committees established under this paragraph, with full participation in discussion and other committee work, however Affiliate Members shall have no vote in the committee. Committees established under this paragraph shall terminate in 12 months from the time of formation, unless reestablished by the Board of Directors. Committees formed under this paragraph shall report to the Board of Directors at a Regular Meeting of the Board of Directors.

V. MEETINGS

A. Regular Meetings. The Board of Directors shall generally meet monthly at a regularly scheduled time and place as necessary to conduct the business of the Corporation. The Board of Directors may change the time and place of Regular Meetings or cancel a Regular Meeting as necessary to meet the needs of the Directors and the Corporation. The Directors shall be notified in writing of the time and place of regular meetings. Upon each Director being so notified, no further notice of regular meetings need be given unless the time and place thereof is changed.

B. Annual Meeting. The Annual Meeting of the Board of Directors shall be the January Regular Meeting of the Board of Directors.

C. Joint Operating Agreement Annual Meeting. The Regular Members who are signatory members of the Joint Operating Agreement shall normally hold a Joint Operating Agreement Annual Meeting in September. The Board of Directors shall set the time and place for the Joint Operating Agreement Annual Meeting and the President shall preside. All business of the Joint Operating Agreement Annual Meeting shall be conducted with the same procedures and manner as other meetings of the Corporation, except as required by the terms of the Joint Operating Agreement. The Directors of signatory members of the Board of Directors shall be notified in writing of the time and place of the Joint Operating Agreement. Upon each Director being so notified, no further notice of regular meetings need be given unless the time and place thereof is changed.

D. Special Meetings. Special meetings of the Board of Directors may be called at any time by or at the request of the President or any three Directors. The President or Directors calling the special meeting shall give notice of the purpose thereof to the Corporation. The Secretary shall then fix the date, place and time of the meeting and give notice thereof, and of its purpose to all of the Directors at least five days in advance of the meeting.

E. Quorum. A majority of the Regular Members of the Corporation, present in person or by proxy shall constitute a quorum for the transaction of business at any meeting of the Board of Directors.

The vote of a majority of the Regular Members present, in person or by proxy, shall be necessary for the adoption of any matters unless a greater percentage is required by state law.

F. Informal Action. Any action which must or might be taken at a meeting of the Board of Directors, or any committee thereof, may be taken without a meeting if a consent in writing, setting forth the action so taken, shall be signed by all of the Directors or committee members as the case may be.

VI. VOTING

A. General. Each Regular Member shall be entitled to one vote on each matter submitted to a vote at a meeting of the Corporation. .

B. Proxies. Regular Members may vote in person or by proxy. A proxy, to be valid, must be in writing; signed by the member; and submitted to the Corporation prior to voting. No proxy shall be valid after thirteen months from the date of its execution, unless otherwise provided in the proxy

C. Mail Voting. At the discretion of the Board of Directors, voting may be conducted by mail. In such case, a written ballot shall be sent to each Regular Member at least twenty days in advance of the date for canvass of the votes. The written ballot shall contain and describe the issues or persons to be voted upon and shall provide space for the Regular Member to vote for or against the issue or for the candidates of his or her choice.

VII. CORPORATION FUNDS

A. Deposits. All funds of the Corporation, other than a reasonable amount for petty cash, shall be deposited, in the name of the Corporation, in such banks or other depositories as the Board of Directors shall select.

B. Checks. All disbursements by the Corporation, other than small amounts from petty cash, shall be by check, drawn direct to the ultimate payees and signed by at least two Directors of the Corporation.

VIII. EMPLOYEES

A. Employees. The Board of Directors may employ or appoint such organizations and persons, as it deems appropriate, and shall establish or approve salaries and/or other charges for such services. Employees shall not be elected or appointed officials, or employees of any regular member entity, and shall serve at the will of the Board of Directors. The Regional Water Association of South King County is an at will employer.

B. Annual Review. Annually, the Board of Directors, with the assistance of the Evaluation Committee, shall review the performance and compensation of any employees of the Corporation.

IX. MEMBER AGREEMENTS

A. Member Agreements. From time to time, the Board of Directors may offer member agreements to members for consideration and or participation. Approval or participation in any agreement so offered shall not be a condition of membership in the Corporation.

B. Joint Operating Agreement. The South King County Regional Water Association Joint Operating Agreement is a Member Agreement as defined in these Bylaws. As such, participation in the Joint Operating Agreement is not a condition of membership in the Corporation.

X. AMENDMENTS

The Board of Directors, may adopt new Bylaws, or may alter, amend or repeal these Bylaws, at a Regular Meeting, or at a Special Meeting, provided such meeting is held with proper notice as required by these Bylaws or through the mail voting procedures of the Corporation.

XII. DUES AND CHARGES

Membership fees, dues and/or other charges; the time for payment thereof; and procedures in the event of delinquency; shall be as established, from time to time, by the Board of Directors.

XII. CONTRACTS, LOANS AND CHECKS

A. Contracts. The Board of Directors may authorize any Officer or Officers, agent or agents, to enter into any contract or execute and deliver any instrument in the name of and on behalf of the Corporation, and such authority may be general or confined to specific instances.

A. Loans. No loans shall be contracted on behalf of the Corporation and no evidences of indebtedness shall be issued in its name unless authorized by a resolution of the Board of Directors, or the Executive Committee, if such authority is delegated it by the Board of Directors. Such authority when granted may be general or confined to specific instances.

C. Loans to Directors and Officers. The Corporation shall make no loans to its Directors or Officers. Any director who votes for or assents to the making of a loan to a Director or Officer of the Corporation, and any Officer or Officers participating in the making of such loan, shall be jointly and severally liable to the Corporation for the amount of such loan until repayment thereof.

XIII. SEAL

The Board of Directors shall provide for a corporate seal, which shall have inscribed thereon the name of the Corporation and the words. "State of Washington', and "Corporate Seal". Until changed by the Board of Directors, the Corporations seal shall be that affixed to this page.

ADOPTED this 21 day of January, 2002

DIRECTOR

DIRECTOR

DIRECTOR

DIRECTOR

DIRECTOR

DIRECTOR

RESOLUTION NO. 3434

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN EMERGENCY WATER SYSTEM INTERTIE AGREEMENT BETWEEN THE CITY OF AUBURN AND THE CITY OF BONNEY LAKE.

WHEREAS, pursuant to RCW 35A.11.040, Auburn and Bonney Lake have legal authority to exercise their powers and perform any of their functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Bonney Lake have legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, the City of Auburn and the City of Bonney Lake currently have water facilities in the vicinity; and

WHEREAS, both cities can increase fire protection and emergency water supply reliability for their customers; and

WHEREAS, both cities are willing to provide the necessary services to increase fire fighting and emergency supply reliability upon the terms and conditions set for in the Emergency Water System Intertie Agreement.

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. Pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Bonney Lake have legal authority to cooperate with other localities on the basis of mutual advantage and provision of services.

Section 2. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute an Emergency Water System Intertie Agreement between the City and the City of Bonney Lake. A copy of said Agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

Section 3. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

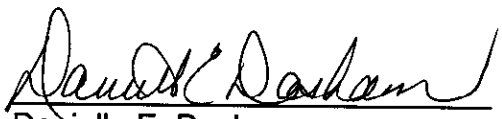
DATED this 19 day of MARCH, 2002.

CITY OF AUBURN



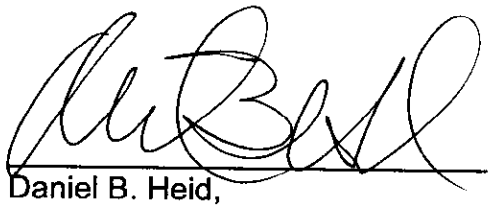
PETER B. LEWIS
MAYOR

ATTEST:



Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:



Daniel B. Heid,
City Attorney



Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET 5/03

Document Title(s) (or transactions contained therein):

FILED BY ONWT
W3474-12

Interlocal Agreement – Emergency Water System Intertie Agreement

Reference Number(s) of Documents assigned or released:
☐ Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
Bonney Lake, City of

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number

N/A

☐ Assessor Tax # not yet assigned

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EXHIBIT A

EMERGENCY WATER SYSTEM INTERTIE AGREEMENT
Bonney Lake/Auburn Intertie Agreement No. 3

THIS AGREEMENT made and entered into by and between the City of Auburn, hereinafter referred to as Auburn, and, the City of Bonney Lake, hereinafter referred to as Bonney Lake, for the purposes of planning, designing, constructing, maintaining, and operating an emergency system intertie between the respective parties,

WITNESSETH:

WHEREAS, both Cities have water facilities in the vicinity, and

WHEREAS, both Cities can increase fire protection and emergency water supply reliability for their customers, and

WHEREAS, the Cities are willing to provide the necessary services to increase fire fighting and emergency supply reliability upon the terms and conditions set forth herein,

NOW, THEREFORE, IT IS MUTUALLY AGREED as follows:

1. The emergency water system intertie is designed to be operated manually as a two way emergency supply between the Auburn and Bonney Lake Systems. The facility shall be located in Evergreen Way SE at the Water Service Area Boundaries between the two cities. Final location and configuration of the facilities shall be determined at the time of final design. Initially the Intertie is assumed to be a one-way supply from Bonney Lake to Auburn.

2. The emergency water system intertie shall be operated only in the event of an emergency. For purposes of this agreement, an emergency shall be defined as resulting from a water shortage, a major water line break, fire demand, contamination to the water supply system, mechanical equipment failure, electrical equipment failure or Puget Sound Energy facility failure, or any other agreed upon emergency within the water supply system.

3. Auburn will design and administer the contract for the construction of the metering station. The facility will be designed and constructed in accordance with reasonably accepted water utility standards for similar municipal water utilities. Auburn will own and maintain the piping, interior equipment, emergency meter and interior appurtenances, and all piping up to the Bonney Lake side of the vault for the metering station.

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4. Upon completion of construction, Auburn will transfer ownership of all exterior appurtenances, and all piping, which is located on the Bonney Lake side of the vault, to Bonney Lake. Bonney Lake will own and maintain the exterior appurtenances and all piping on Bonney Lake's side of the vault.

5. Each City will each have unlimited access to the vault via a dual padlock or ownership of keys to the vault.

6. Each City will operate the respective normally locked valve inside of the vault. Auburn will solely unlock and operate the locked valve on Auburn's side of the meter and Bonney Lake will solely unlock and operate the locked valve on Bonney Lake's side of the meter.

7. The procedure for operating the intertie in the event of such emergency shall be as follows:

   A. Each City shall determine that an emergency of sufficient magnitude has occurred which warrants the need to request that the intertie be activated.

   B. The Public Works Director or appointed person or authorized personnel shall provide a verbal request to the other City's Public Works Director or appointed person. Upon agreement that an emergency exists which shall allow for the intertie to be opened, the intertie will be activated as soon as reasonably possible. Both Cities' personnel shall be present at the vault to open the valves to activate the facility.

   C. The City requesting the activation shall provide a written confirmation of the request not less than 24 hours after the verbal request, or on the first day of normal business after the verbal request.

   D. The intertie shall remain activated until the City requesting activation determines that the need for activation of the emergency intertie has ceased and shall request in writing to close the intertie.

   E. In case of emergency or whenever the public health, safety, or the equitable distribution of water so demands, the City supplying the water may change, reduce or limit the time for or temporarily discontinue the supply of water without notice; water service may be temporarily interrupted, limited for purposes of making repairs, extensions or doing other necessary work; and the City supplying the water shall not be responsible for any damage resulting from interruption, change or failure of the water supply, and the City

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receiving the water (City requesting activation) shall save and hold harmless the City supplying the water from any loss, damages or suites to or by customers of the City receiving the water resulting from interruption, change or failure of water supply provided by this Agreement, except damages arising out of the City supplying the water's negligence. Prior to a planned interruption or limiting of service, the City supplying the water will notify the City receiving the water of such not less than three days prior to the service disruption. The City supplying the water agrees to use best efforts and reasonable diligence to notify the City receiving the water as soon after it becomes aware of the need for service disruption and further will, to the extent practical, limit the service disruption to daylight hours.

8. Auburn shall read the meter upon activation and upon deactivation of the intertie. The city supplying the water shall verify the information and shall then calculate and invoice the other city for the water used during the request. The invoice shall be calculated by the total water used during the event. The rate shall be at the current Auburn Wholesale Rate or the lowest Bonney Lake retail rate depending on which city is supplying the water. This shall be complete payment for the water, labor, and administration of activating the intertie.

9. The total project costs shall include costs for consulting design service, and construction. Auburn shall bear the total project costs, until and unless it can be demonstrated that Bonney Lake can benefit from the intertie. At such time, the parties agree to negotiate the fair share of the total actual project costs that correspond to the benefit Bonney Lake could receive. Bonney Lake agrees to pay such fair share of the total project costs upon billing for same by Auburn. Bonney Lake will have the right to build an intertie from Auburn to Bonney Lake at another location. Bonney Lake will bear the cost of building a separate intertie. Each City is responsible for associated staff, administration and legal costs associated with the implementation of the agreement.

10. To the extent allowed by law, the City of Bonney Lake shall defend, indemnify, and hold harmless the City of Auburn, its elected officials, employees and agents from and against any and all suits, claims, actions, losses, costs, expenses of litigation, attorney's fees, penalties and damages of whatsoever kind or nature arising out of or in connection with or incident to an act or omission of the City of Bonney Lake, its employees, agents, and contractors in the performance of the City of Bonney Lake's obligations under the Agreement and this Amendment. This indemnification provision shall include, but is not limited to, all claims against the City of Auburn by an employee or former employee of the City of Bonney Lake or its contractors and, as to such claims, the City of

Bonney Lake expressly waives all immunity and limitation of liability under Title 51 RCW.

To the extent allowed by law, the City of Auburn shall defend, indemnify and hold harmless the City of Bonney Lake, its elected officials, employees and agents from and against any and all suits, claims, actions, losses, costs, expenses of litigation, attorney's fees, penalties, and damages or whatsoever kind or nature arising our of, in connection with or incident to an act or omission of the City of Auburn, its employees, agents, and contractors in the performance of the City of Auburn's obligations under this Agreement. This indemnification obligation shall include, but is not limited to, all claims against the City of Bonney Lake by an employee or former employee of the City of Auburn or its contractors and, as to such claims, the City of Auburn expressly waives all immunity and limitation of liability under Title 51 RCW.

11. This Agreement shall remain in force until terminated by either party hereto upon 60-days written notice to the other party. Any project costs, incurred up to the date of such notice, as described herein, shall be shared in accordance with the provisions of this Agreement.

IN WITNESS WHEREOF, we have hereunto set our hands and seals.

CITY OF AUBURN
King County, Washington

By: _____
Mayor Date

Approved as to form:

By: _____
City Attorney Date

CITY OF BONNEY LAKE
Pierce County, Washington

By: _____
Mayor Date

Council Auth 4-9-02 Res 940

Approved as to form:

By: _____
City Attorney Date

200207160000761

RESOLUTION NO. 3444

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN EMERGENCY WATER SYSTEM INTERTIE AGREEMENT BETWEEN THE CITY OF AUBURN AND COVINGTON WATER DISTRICT AND WATER DISTRICT #111.

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn, Covington Water District (Covington) and Water District #111 (#111) have legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, Auburn has existing water interties and associated water supply agreements with Covington and #111, and

WHEREAS, Auburn will enter into Emergency Water Supply Agreement No. 1 with Lakehaven Utility District, hereinafter referred to as "LUD", whereby LUD can provide water it has available, in the event of an emergency, and

WHEREAS, the LUD Intertie No. 1 and agreement can increase the reliability of Auburn's water supply for Covington and #111 if water is available from LUD in the event of an emergency,

WHEREAS, it is in the public interest for the parties herein to enter into an emergency water supply agreement,

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. Pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn, Covington and #111 have legal authority to cooperate with other localities on the basis of mutual advantage and provision of services.

Section 2. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute the Emergency Water System Intertie Agreement between the City and Covington Water District and Water District #111 with minor administrative changes if required. A copy of said Agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

Section 3. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

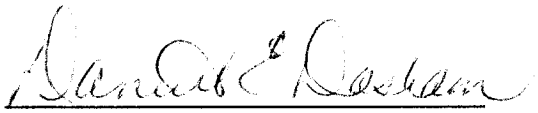
DATED this 1st day of April, 2002.

CITY OF AUBURN



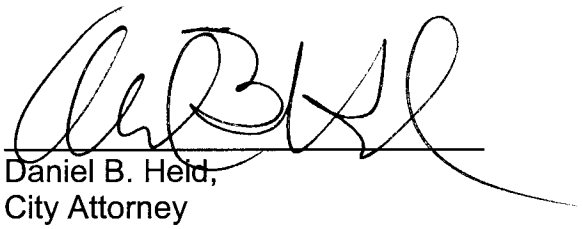
PETER B. LEWIS
MAYOR

ATTEST:



Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:



Daniel B. Heid,
City Attorney

EMERGENCY WATER SUPPLY AGREEMENT
Auburn/Covington/Water District #111

THIS AGREEMENT made and entered into by and between the City of Auburn, hereinafter referred to as "Auburn", and Covington Water District, hereinafter referred to as "Covington", and Water District #111, hereinafter referred to as "#111".

WITNESSETH:

WHEREAS, Auburn has existing water interties and associated water supply agreements with Covington and #111, and

WHEREAS, Auburn has entered into Emergency Water Supply Agreement No. 1 with Lakehaven Utility District, hereinafter referred to as "LUD", whereby LUD can provide water it has available, in the event of an emergency, and

WHEREAS, the LUD Intertie No. 1 and agreement can increase the reliability of Auburn's water supply for Covington and #111 if water is available from LUD in the event of an emergency,

WHEREAS, it is in the public interest for the parties herein to enter into an emergency water supply agreement,

NOW, THEREFORE, IT IS MUTUALLY AGREED as follows:

1. **Intertie Project Description.** LUD has granted to Auburn the right to connect, for the purposes described herein, an emergency intertie and appurtenances to the end of the 16-inch water main located in the vicinity of 15th Street Northwest and Terrace Drive in Auburn, Washington, more specifically shown on Exhibit A. The intertie facility shall be sited on property owned by Auburn.

2. **Intertie Project Payment.** Covington and #111 agree to pay for the design and construction of the emergency intertie described in Paragraph No. 1, and the replacement of +/- 140 linear feet of existing water main with a 16-inch transmission line in 15th St NW, between "R" St. NW and the proposed intertie vault. Covington will act as the contracting agency, paying for purchase and installation of the facilities described herein. Water District #111 will act as the design agency, providing design and construction support services. At the completion of construction, the total of design, construction support, purchase, and installation costs shall be summed and divided evenly between Covington and #111. The intertie facilities and piping are to be designed and constructed in accordance with Auburn's design standards. The emergency intertie shall comply with all LUD resolutions and rules applicable to a connection to LUD's water system including, but not limited to, the requirements that the LUD provide written approval of plans and specifications for the connection of intertie facilities prior to construction. Upon completion of the emergency intertie project, Covington will transfer to

Auburn through Bill of Sale all facilities constructed under this Agreement. Auburn will transfer through Bill of Sale to LUD ownership of and maintenance responsibility for the meter, associated appurtenances necessary to monitor emergency use of the intertie, the gate valve upstream of the vault and all piping upstream of that gate valve. Auburn will retain ownership of and maintenance responsibility for the vault, control valve, and all other piping and appurtenances.

3. **Intertie Project Purpose.** The emergency intertie described in Paragraph No. 1 herein is being installed to provide an emergency water supply. In the event Auburn perceives that curtailment of water supply to Covington or #111 will be necessary, Auburn will notify the parties of the situation and request whether or not the parties would like the LUD intertie activated. If Covington or #111 would like the LUD intertie activated, the requesting party must submit such request to Auburn in writing. Upon receipt of a request from Covington or #111, Auburn will submit a written request to LUD. Water shall not be withdrawn from the supply without the prior written approval of LUD. At the time approval is sought, Auburn shall state the requested time of commencement of use, the expected duration of withdrawal and quantity of water to be withdrawn. Auburn shall request an extension or termination of intertie operation in writing, if the duration of expected withdrawal is extended or shortened.

4. **Payment of Service and Quantity Charges.** Covington and #111 shall pay Auburn all monthly service charges, and quantity charges for any water received from LUD for the benefit of Covington and #111. Monthly service and quantity charge rates shall be established by LUD resolution for the use of an 8-inch meter and the applicable water rate. The rate for emergency water use will be the greater of LUD's rate to Auburn plus a wheeling charge, or the Auburn Wholesale rate for Covington and #111 as established by City Ordinance. These rates may be revised without notice to Covington and #111 and such revised rates shall apply to emergency water deliveries made pursuant to this agreement. Examples of the current rates are included in Exhibit B.

5. **Conditions of Use.**

   (a.) In the event LUD determines that the use of the emergency intertie is or will impose a negative impact to the public health, safety, or the equitable distribution of water within LUD, LUD may change, reduce or limit the time of use, or temporarily discontinue the supply of water without notice;
   (b.) In the event LUD must change, reduce, limit or temporarily discontinue service, Auburn may be required to change, reduce or limit the time of use, or temporarily discontinue the supply of water without notice to Covington and #111;
   (c.) Water service may be temporarily interrupted, limited for purposes of making repairs, extensions or doing other necessary work; and
   (d.) Prior to a planned interruption or limiting of service as set forth in (c) above the City will notify Covington and #111 of such planned

interruption or limiting of service. The City agrees to use best efforts to notify Covington and #111 as soon after it becomes aware of the need for such a service disruption.

(e.) Activation procedures are as described in Exhibit C

6. **Water Quality.** Water available to the parties to this Agreement shall be in compliance with all applicable state and federal drinking water laws, regulations and standards.

7. **Discontinuation of Use.** In the event of non-performance of any provision herein by Covington and/or #111, Auburn may shut off water supplied pursuant to this Agreement.

8. **Hold Harmless.** Covington and #111 agree to indemnify, defend and hold harmless Auburn, its officers, directors, employees and agents, and their successors and assigns, from any and all costs or claims arising out of or in any way resulting from Covington's and #111's default, failure of performance, or negligent conduct associated with this Agreement, and any failure of the Auburn water system to deliver flow to Covington and #111, in whole or in part, as described in this Agreement. This indemnification provision shall include, but is not limited to, all claims against Auburn by an employee or former employee of Covington and #111 or their contractors and, as to such claims, Covington and #111 expressly waive all immunity and limitation of liability under Title 51 RCW.

   Auburn agrees to indemnify, defend and hold harmless Covington and #111, their officers, directors, employees and agents, and their successors and assigns, from any and all costs or claims arising out of or in any way resulting from Auburn's default, or negligent conduct associated with this Agreement. This indemnification provision shall include, but is not limited to, all claims against Covington and #111 by an employee or former employee of Auburn or its contractors and, as to such claims, Auburn expressly waives all immunity and limitation of liability under Title 51 RCW.

9. **Agreement Termination.** This Agreement may be terminated by mutual agreement of all parties hereto upon 60-days written notice to the other parties.

10. **Dispute Resolution.** The parties shall make good faith efforts to resolve by informal discussion any dispute arising under or in connection with this Agreement. If at any time a party to this Agreement determines that such informal discussions will not result in a resolution of the dispute, such party may request formal discussion by all parties identified in Paragraph 11. If formal discussion by the parties identified in Paragraph 11 does not resolve the dispute, a settlement conference shall be held within thirty (30) days of the unsuccessful resolution meeting. The settlement conference will be held at the Seattle office of Judicial Arbitration and Mediation Services, Inc. ("JAMS"). The complaining party must contact JAMS to schedule the conference. The parties may agree on a retired judge from the JAMS panel.

If they are unable to agree, JAMS will provide a list of three available judges and each party may strike one. The remaining judge will serve as the mediator at the settlement conference.

11. **Notices.** Notices should be sent to the parties at the following addresses:

Public Works Director
City of Auburn
25 West Main Street
Auburn, WA 98001

General Manager
Covington Water District
18631 SE 300th Place
Covington, WA 98042

General Manager
Water District #111
27224 144th Avenue SE
Covington, WA 98042

IN WITNESS WHEREOF, we have hereunto set our hands and seals.

CITY OF AUBURN
King County, Washington

By:_____ 4/1/02
Mayor Date

Approved as to form:

By:_____ 3/14/02
City Attorney Date

COVINGTON WATER DISTRICT
King County, Washington

By:_____
General Manager Date

Approved as to form:

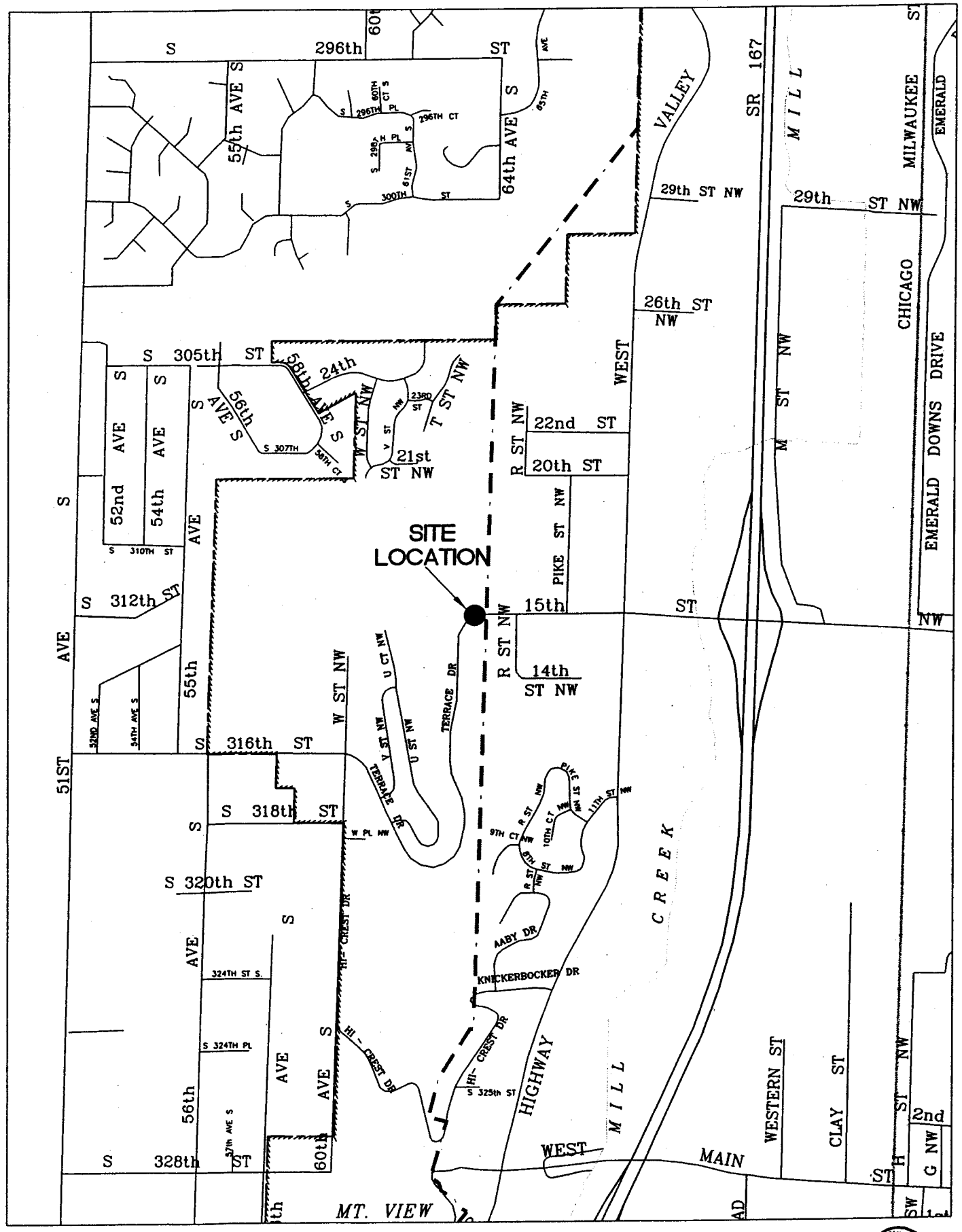
By:_____
General Counsel Date

WATER DISTRICT #111
King County, Washington

By:_____
General Manager Date

Approved as to form:

By:_____
General Counsel Date



LEGEND

AUBURN CITY LIMITS

WATER SERVICE AREA BOUNDARY

EXHIBIT A

GENERAL VICINITY MAP
OF INTERTIE FACILITIES

Plotted: OCTOBER 10, 2001

KAREN ● D:\STORM\FLOODIN.DWG

Exhibit B

EMERGENCY WATER SUPPLY AGREEMENT
Auburn/ Covington/Water District #111

Example of Monthly Meter Cost:

In accordance with Auburn/LUD Emergency Intertie Agreement #1, LUD currently does not have an adopted monthly rate for an 8" meter, and would use Tacoma Public Utilities' (TPU) monthly meter rate until such time as Lakehaven adopts a rate for this size meter.

TPU's rate for an 8" meter is	$804.00 (Effective 4/23/01)
Cost to Covington and #111	$402.00 each

Example of Emergency Water Rates in 2002

Emergency Intertie Water Use Rate (based on LUD rate to Auburn)	$1.092 /ccf in 2002
Auburn Wheeling Rate	$0.15 /ccf
Total	$1.242 /ccf
Auburn Water Utility Rates (Ord 5291)	
Wholesale #111 (and Covington)	$1.10 /ccf*
Covington and #111 Water Use Rate equals	$1.242 /ccf in 2002

* Rate subject to change due to a proposed take or pay agreement between Auburn and Covington and #111

Exhibit C

EMERGENCY WATER SUPPLY AGREEMENT

Auburn/ Covington/Water District #111

Operation Procedures

1. Water supply requests of Covington and/or #111, or any combination of the two, plus Auburn water use exceeds available supply from Auburn due to an emergency.

2. Auburn determines that it can not provide requested supply and therefore must curtail flow to Covington and/or #111. Auburn notifies Covington and #111 of need to curtail.

3. Covington and/or #111 request Lakehaven Intertie be activated by Auburn.

4. Auburn notifies Lakehaven of emergency and asks how much water Lakehaven can supply and for how long.

5. Lakehaven responds with rate and duration.

6. Auburn requests Intertie be activated for a given flow rate and duration.

7. a) If Lakehaven plus Auburn supply will be greater or equal to the supply requested by Covington and #111

   Flush line, read the meter and open the intertie
   When the emergency is over, close intertie and read meter

   b) If Lakehaven plus Auburn supply still is less than the requested supply, Auburn notifies Covington and #111 of available supply and requests a breakdown of how the LUD supply plus the Auburn supply is to be distributed. When this information is received:

   Flush line, read the meter and open the intertie
   When the emergency is over, close intertie and read meter

Deactivation

8. If Auburn determines that the water supply emergency is over and it can supply Auburn plus Covington and #111's requested water supply without use of the LUD intertie, Auburn will request of LUD that the intertie be closed.

9. If LUD determines that it must reduce or terminate supply, LUD will notify Auburn (subject to Paragraph 5 (a) of this Agreement). Auburn will notify Covington and #111 (subject to Paragraph 5 (b) of this Agreement) that flow will be curtailed, and request how the parties would like any available water distributed.

RESOLUTION NO. 3443

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN EMERGENCY WATER SYSTEM INTERTIE AGREEMENT BETWEEN THE CITY OF AUBURN AND LAKEHAVEN UTILITY DISTRICT.

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Lakehaven Utility District (LUD) have legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, the City has water facilities in the vicinity of a water main of LUD, and

WHEREAS, the City can increase the reliability of water for its customers, including Covington Water District and Water District No. 111, if water is available from LUD in the event of an emergency, and

WHEREAS, LUD is willing to provide to the City emergency service upon the terms and conditions set forth herein,

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. Pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Lakehaven Utility District have legal authority to cooperate with other localities on the basis of mutual advantage and provision of services.

Section 2. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute the Emergency Water System Intertie Agreement between

the City and Lakehaven Utility District with minor administrative changes if required. A copy of said Agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

Section 3. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

DATED this 1st day of April, 2002.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney



200307150000707
PACIFIC NW TIT AG 27.00
PAGE 001 OF 009
07/15/2003 10:15
KING COUNTY, WA

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Interlocal Agreement – Emergency Water Supply Agreement

9/27 PNWT
WR131-12

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Said Grantor(s) is/are not of record as owner(s) of the property. Title is accommodation only. It has not been examined as to its sufficiency or as to its effect upon the title.

Grantee/Assignee/Beneficiary: (Last name first)
1. Lakehaven Utility District

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number
N/A

☐ Assessor Tax # not yet assigned

EMERGENCY WATER SUPPLY AGREEMENT
Lakehaven/Auburn Intertie No. 1

THIS AGREEMENT made and entered into by and between the City of Auburn, hereinafter referred to as "City", and Lakehaven Utility District, hereinafter referred to as "District".

WITNESSETH:

WHEREAS, the City has water facilities in the vicinity of a water main of the District, and

WHEREAS, the City can increase the reliability of water for its customers, including Covington Water District and Water District No. 111, if water is available from the District in the event of an emergency, and

WHEREAS, the District is willing to provide to the City emergency service upon the terms and conditions set forth herein,

NOW, THEREFORE, IT IS MUTUALLY AGREED as follows:

1. The District hereby grants to the City the right to connect, for the purposes described herein, a water meter and appurtenances to the end of the 16-inch water main located in the vicinity of 15th Street Northwest and Terrace Drive in King County, Washington, more specifically shown on Exhibit A. The intertie facility shall be sited on property owned by the City.

2. The meter described in Paragraph No. 1 herein is installed to provide an emergency water supply. Water shall not be withdrawn from the supply without the prior written approval of the District. At the time approval is sought, the City shall state the requested time of commencement of use, the expected duration of withdrawal and the quantity of water to be withdrawn. The City shall request in writing an extension of, or reduction in the duration of the withdrawal if the duration of the withdrawal is expected to vary from the original estimate. The District and City shall read the meter upon activation and upon deactivation of the intertie. The District may periodically bill the City for water used while the intertie is in operation or may bill for all such use after the withdrawal has ended.

3. It is anticipated by the parties that because the facility will be funded by agencies with emergency or interruptible water supply agreements with the City (specifically Covington Water District and Water District #111), the City may be called upon by adjoining agencies to provide an emergency supply of water beyond the City's ability to produce such supply, and therefore requests for emergency service under this Agreement may originate on behalf of those adjoining agencies.

4. Upon completion of the Emergency Intertie construction, the District will own and maintain the meter, associated appurtenances necessary to monitor emergency use of the intertie, the gate valve upstream of the vault and all piping upstream of the meter. The City will own and maintain the vault, control valve, and all other piping and appurtenances downstream of the meter (see Exhibit B). The City and the District shall have mutual access to the vault for periodic inspection and maintenance or repair of their respective facilities.

5. The City shall comply with all District resolutions and rules applicable to a connection to the District's water system including, but not limited to, the requirement that the District provide written approval of plans and specifications for the connection of intertie facilities prior to construction.

6. The City shall pay to the District the base monthly service charge and quantity charge for any water received. Monthly service and quantity charge rates shall be established or amended by District resolution for the use of an eight (8)-inch meter and the applicable water rate. The rate for emergency water use will be the greater of the District's adopted summer non-residential (Commercial/Public Authority) water rate or the City of Tacoma's (Tacoma) adopted wholesale water rate plus a District wheeling rate determined by the District. Examples of the current rates are included in Exhibit C. The District or Tacoma may revise these rates from time to time without notice to the City and such revised rates shall apply to emergency water deliveries made pursuant to this agreement.

7. This Agreement shall not authorize or permit the City to take water from the connection described herein beyond what is described in paragraph 2, 3, and Exhibit D.

8. Conditions
   (a.) In the event the District determines that the use of the emergency intertie is or will impose a negative impact to the public health, safety, or the equitable distribution of water within the District, the District may change, reduce or limit the time for, or temporarily discontinue, the withdrawal of water without notice;
   (b.) Water service may be temporarily interrupted or otherwise limited for purposes of making repairs, extensions or doing other necessary work to the water system; and
   (c.) Prior to a planned interruption or limiting of service as set forth in (b) above the District will notify the City of such planned interruption or limiting of service. The District agrees to use best efforts to notify the City as soon after it becomes aware of the need for such a service disruption.
   (d.) Operating conditions are as described in Exhibit C

9. Payment of all invoices for services and charges from the District shall be paid within 45 days of the invoice date.

10. In the event of non-performance of any provision herein by the City, District may shut off water supplied pursuant to this Agreement.

11. The use of this intertie is contingent upon receiving approval of same from the Department of Health pursuant to applicable regulations.

12. The City agrees to indemnify, defend and hold harmless the District, its officers, directors, employees and agents, and their successors and assigns, from any and all costs or claims arising out of or in any way resulting from the City's default, failure of performance, or negligent conduct associated with this Agreement. This indemnification provision shall include, but is not limited to, all claims against the District by an employee or former employee of the City or their contractors and, as to such claims, the City expressly waives all immunity and limitation of liability under Title 51 RCW.

The District agrees to indemnify, defend and hold harmless the City, its officers, directors, employees and agents, and their successors and assigns, from any and all costs or claims arising out of or in any way resulting from the District's default, failure of performance or negligent conduct associated with this Agreement. This indemnification provision shall include, but is not limited to, all claims against the City by an employee or former employee of the District or its contractors and, as to such claims, the District expressly waives all immunity and limitation of liability under Title 51 RCW.

13. The parties shall make good faith efforts to resolve by informal discussion any dispute arising under or in connection with this Agreement. Should a dispute arise between the parties that cannot be resolved satisfactorily, a mediator mutually acceptable to the parties shall resolve the dispute through the use of mediation at equal cost to each party. Should the Parties not be able to satisfactorily resolve the dispute through mediation, the forum for resolution shall be the King County Superior Court. The prevailing party shall be entitled to attorney fees and costs.

14. This Agreement may be terminated by either party hereto upon 60-days written notice to the other party.

15. Notices should be sent to the City and the District at the following addresses:

Public Works Director
City of Auburn
25 West Main Street
Auburn, WA 98001

General Manager
Lakehaven Utility District
P.O. Box 4249
Federal Way, WA 98003

IN WITNESS WHEREOF, we have hereunto set our hands and seals.

CITY OF AUBURN
King County, Washington

By: _____ 6/13/03
Mayor Date

Approved as to form:

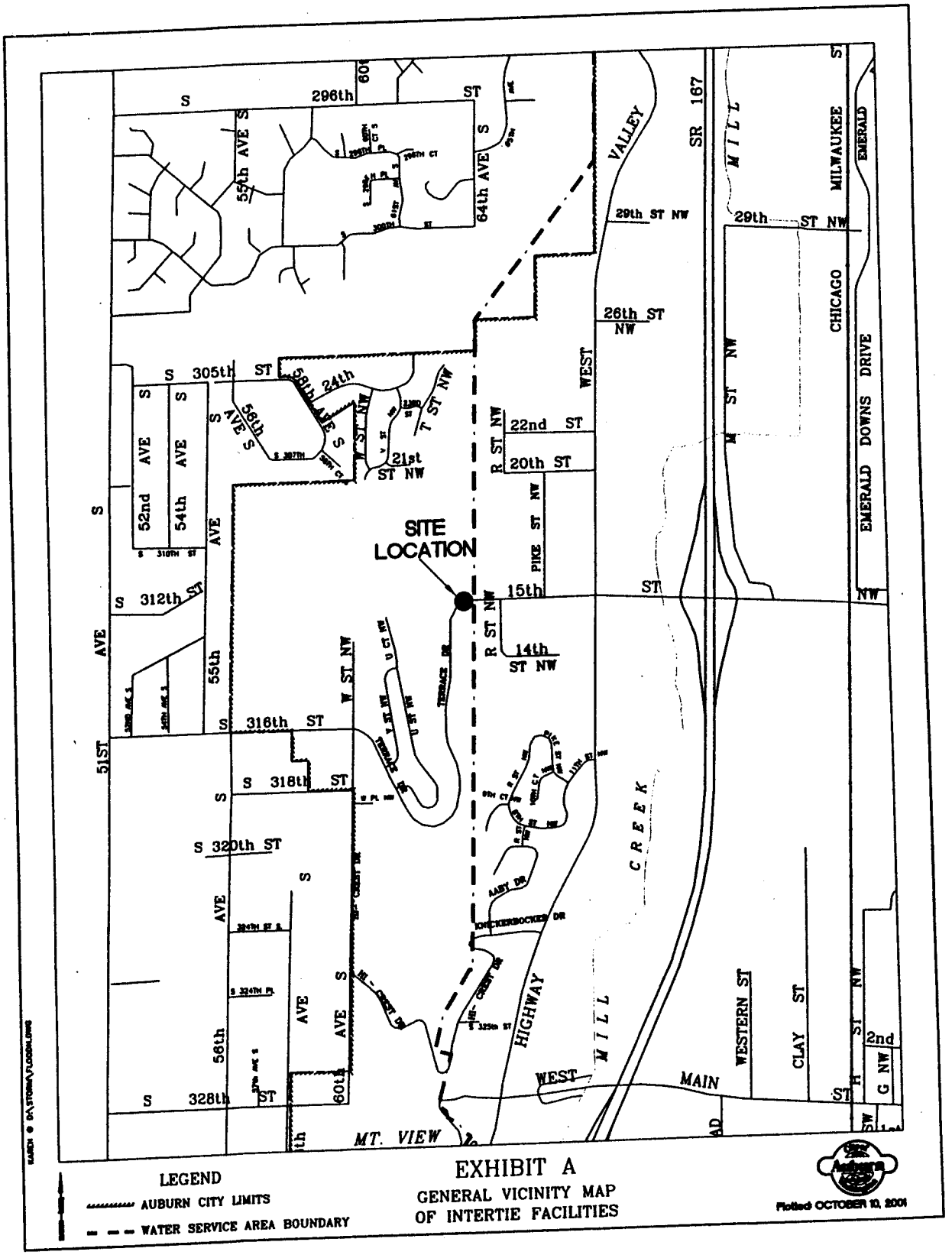
By: _____ 6/10/03
City Attorney Date

LAKEHAVEN UTILITY DISTRICT
King County, Washington

By: _____ 6/25/03
General Manager Date

Approved as to form:

By: _____ 6/25/03
General Counsel Date


SITE LOCATION
S 296th ST
55th AVE S
64th AVE S
SR 167
VALLEY
MILL
MILWAUKEE
EMERALD
29th ST NW
CHICAGO
EMERALD DOWNS DRIVE
26th ST NW
WEST
S 305th ST
56th AVE S
24th ST NW
21st ST NW
22nd ST NW
20th ST NW
R ST NW
PIKE ST NW
52nd AVE S
54th AVE S
S 312th ST
15th ST NW
14th ST NW
55th AVE S
W ST NW
S 316th ST
51ST AVE S
S 318th ST
S 320th ST
56th AVE S
60th AVE S
CREEK
HIGHWAY
MILL
WESTERN ST
CLAY ST
2nd
WEST MAIN
S 328th ST
MT. VIEW
LEGEND
AUBURN CITY LIMITS
WATER SERVICE AREA BOUNDARY
EXHIBIT A
GENERAL VICINITY MAP
OF INTERTIE FACILITIES
Plotted OCTOBER 10, 2001

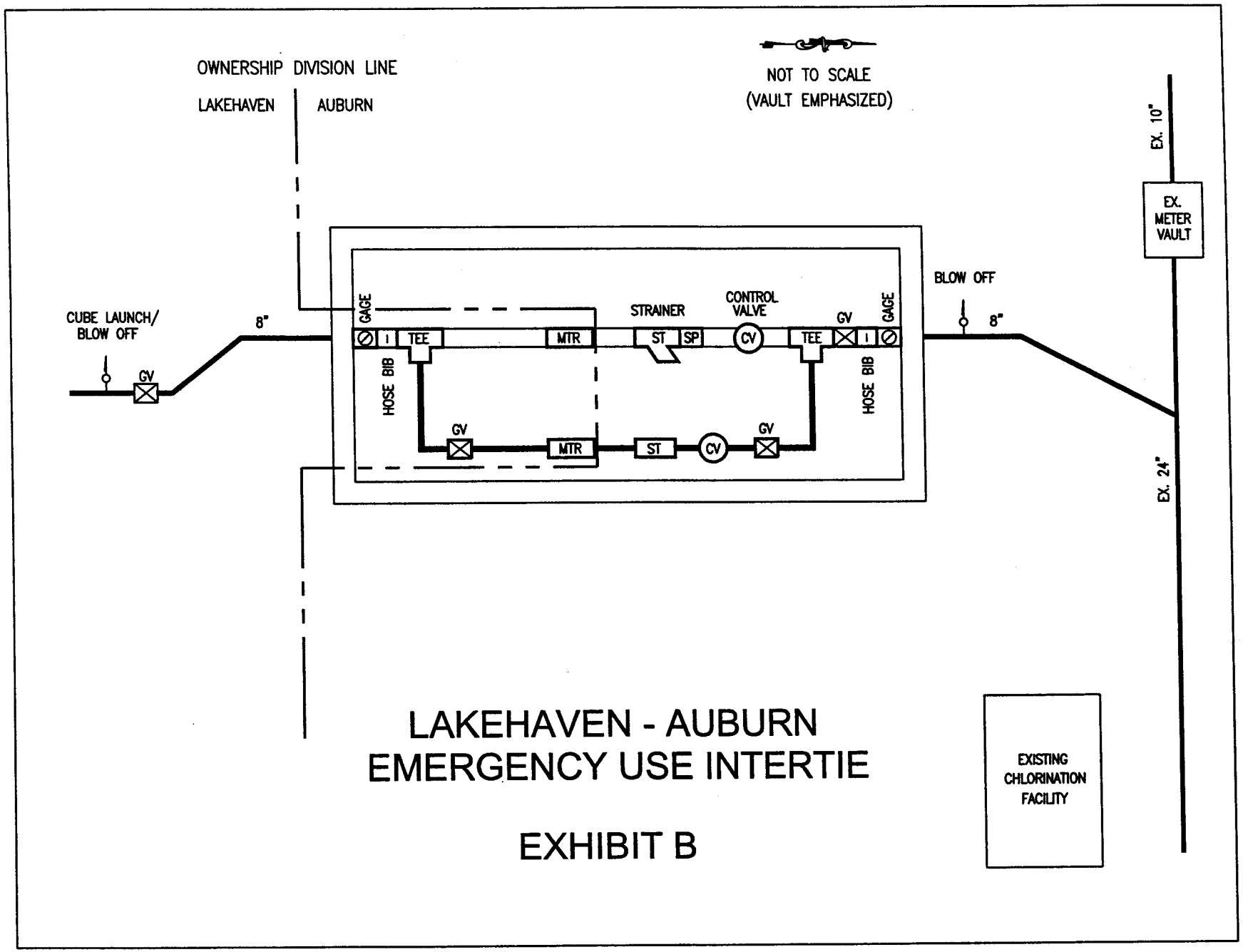

OWNERSHIP DIVISION LINE
LAKEHAVEN
AUBURN
NOT TO SCALE
(VAULT EMPHASIZED)
EX. 10"
EX. METER VAULT
CUBE LAUNCH/ BLOW OFF
GV
8"
GAGE
I
TEE
MTR
STRAINER
ST
SP
CONTROL VALVE
CV
GV
TEE
I
GAGE
HOSE BIB
GV
MTR
ST
CV
GV
HOSE BIB
BLOW OFF
8"
EX. 24"
EXISTING CHLORINATION FACILITY
LAKEHAVEN - AUBURN
EMERGENCY USE INTERTIE
EXHIBIT B

Exhibit C

Example of Monthly Meter Cost:

Lakehaven currently does not have an adopted monthly rate for an 8" meter, and would use an amount near Tacoma's monthly meter rate until such time as Lakehaven adopts a rate for this size meter.

Tacoma's rate for an 8" meter is	$815.04 (Effective 4/23/01)
Lakehaven's proposed starting monthly rate:	$804.00

Example of Emergency Water Rates in 2002

Lakehaven Utility District Rates (Resolution 99-906)

Commercial/Public Authority Water Rate	1.060 $/ccf (Effective 1/1/2000)

City of Tacoma Rates (Ordinance No. 26800) plus Lakehaven Wheeling Rate

Summer Wholesale Water Rate to Lakehaven	0.912 $/ccf (Effective 4/22/02)
Lakehaven Wheeling Rate	0.180 $/ccf (Current Estimate)
Total	1.092 $/ccf

Emergency Water Use Rate equals	1.092 $/ccf in 2002

Exhibit D
Operating Conditions

1. Prior to intertie activation the 16" water main upstream of the District's meter shall be flushed by the District. Any costs incurred by the District beyond labor time and the cost of water used for the flushing operation shall be paid by the City.

2. The City will maintain a back pressure-sustaining feature within the metering facility in order to maintain adequate pressure within the District's service area while also preventing uncontrolled flows. The District will maintain the right to authorize or direct the City to change the minimum up-stream pressure setting if an adjustment is warranted to increase flow capacity or maintain adequate pressure in the District's distribution system. The initial settings for the pressure-sustaining valve shall be noted on the approved construction plans and shall be stored in a waterproof container in the vault. Records of any future revised pressure settings shall be maintained and noted on the "record drawings" for the metering facility retained by the parties, and the information stored in the vault shall be updated.

3. The City will control the delivery flow rate from Lakehaven. The current estimated maximum allowable flow rate from Lakehaven is 1750 gpm (or 2.5 mgd) more or less, so long as Lakehaven customers are not impacted. The City's system has the capacity to receive water at a maximum instantaneous rate of up to approximately 5 mgd.

4. The District and City will coordinate the telemetry system so each will receive the signal required for its operation and monitoring.

ORDINANCE NO. 5592

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE A FRANCHISE AGREEMENT BETWEEN THE CITY OF BONNEY LAKE AND THE CITY OF AUBURN, ALLOWING THE CITY OF BONNEY LAKE TO CONNECT, INSTALL, OPERATE, MAINTAIN AND REPAIR A WATER SYSTEM, FACILITIES, AND APPURTENANCES IN, OVER, ALONG, ACROSS AND UNDER THE FRANCHISE AREA FOR THE PURPOSE OF PROVIDING WATER SERVICE.

WHEREAS, the City of Auburn and the City of Bonney Lake have entered into a Settlement Agreement, executed March 5, 1998 pursuant to Resolution 2925 adopted March 2, 1998, related to water service to the Lakeland Hills South development in which, according to Section 3, Auburn recognizes and agrees to Bonney Lake's exclusive right to serve with water all portions of Bonney Lake's water service area as designated by the 1995 Pierce County Coordinated Water System Plan; and

WHEREAS, the City of Auburn and the City of Bonney Lake have entered into a Service Area Agreement, executed December 10, 1998 pursuant to Resolution 3018 adopted December 7, 1998, which revised the boundary between their respective water service areas; and

WHEREAS, the City of Auburn has annexed portions of the City of Bonney Lake's water service area; and

WHEREAS, according to Section 7 of said Settlement Agreement, the City of Auburn guaranteed the City of Bonney Lake the right to transport water through Auburn's corporate boundaries within Pierce County; and

WHEREAS, Section 7 of said Settlement Agreement states that the guarantee to transport water shall be effectuated by the execution of easements, agreements, franchises, licenses or other documents as are appropriate; and

WHEREAS, the City of Bonney Lake desires to connect, install, operate, maintain and repair a water system, facilities, and appurtenances in, over, along, across and under the franchise area for the purpose of providing water service.

WHEREAS, in order to maintain control over the use of City of Auburn right-of-ways by utilities operating within the City of Auburn, it is appropriate to enter into franchise agreements with such utilities; and

WHEREAS, City of Bonney Lake is such a utility, and has negotiated this franchise agreement with the City of Auburn acceptable to both parties; and

WHEREAS, the City of Auburn has determined that it is in the best interests of the public to grant the City of Bonney Lake a franchise on the terms and conditions set forth in this Agreement.

NOW, THEREFORE, CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, DO ORDAIN AS FOLLOWS:

Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute a Franchise Agreement between the City of Bonney Lake and the City. A copy of said Agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

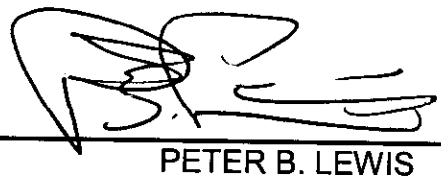
Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. This Ordinance shall take effect and be in force five (5) days from and after its passage, approval and publication, as provided by law.

INTRODUCED: May 6, 2002

PASSED: May 6, 2002

APPROVED: May 6, 2002



PETER B. LEWIS
MAYOR

ATTEST:

Danielle Daskam
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid
City Attorney

Published: 5/10/02

2

200212300566 16 PGS
12-30-2002 10:22am $34.00
PIERCE COUNTY, WASHINGTON

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Franchise Agreement

16/34
PNWT
P-W4866-12

Reference Number(s) of Documents assigned or released:

☐ Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
Bonney Lake, City of

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

Portion of Section 6, Section 5, Section 7 and Section 8, Township 20 North, Range 5 East WM

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number

N/A

☐ Assessor Tax # not yet assigned

EXHIBIT "A"

CITY OF AUBURN, WASHINGTON
FRANCHISE AGREEMENT WITH THE CITY OF BONNEY LAKE

WHEREAS, the City of Auburn and the City of Bonney Lake have entered into a Settlement Agreement, executed March 5, 1998 pursuant to Resolution 2925 adopted March 2, 1998, related to water service to the Lakeland Hills South development in which, according to Section 3, Auburn recognizes and agrees to Bonney Lake's exclusive right to serve with water all portions of Bonney Lake's water service area as designated by the 1995 Pierce County Coordinated Water System Plan; and

WHEREAS, the City of Auburn and the City of Bonney Lake have entered into a Service Area Agreement, executed December 10, 1998 pursuant to Resolution 3018 adopted December 7, 1998, which revised the boundary between their respective water service areas; and

WHEREAS, the City of Auburn has annexed portions of the City of Bonney Lake's water service area; and

WHEREAS, according to Section 7 of said Settlement Agreement, the City of Auburn guaranteed the City of Bonney Lake the right to transport water through Auburn's corporate boundaries within Pierce County; and

WHEREAS, Section 7 of said Settlement Agreement states that the guarantee to transport water shall be effectuated by the execution of easements, agreements, franchises, licenses or other documents as are appropriate; and

WHEREAS, the City of Bonney Lake desires to connect, install, operate, maintain and repair a water system, facilities, and appurtenances in, over, along, across and under the franchise area for the purpose of providing water service.

WHEREAS, in order to maintain control over the use of City of Auburn right-of-ways by utilities operating within the City of Auburn, it is appropriate to enter into franchise agreements with such utilities; and

WHEREAS, City of Bonney Lake is such a utility, and has negotiated this franchise agreement with the City of Auburn acceptable to both parties; and

WHEREAS, the City of Auburn has determined that it is in the best interests of the public to grant the City of Bonney Lake a franchise on the terms and conditions set forth in this Agreement.

NOW, THEREFORE THE CITY OF AUBURN AND THE CITY OF BONNEY LAKE AGREE AS FOLLOWS:

SECTION 1 DEFINITIONS

Where used in this franchise ("Franchise"), the following definitions shall apply:

1.1 "Franchisee" means the City of Bonney Lake, a Washington municipal corporation, and its respective successors and assigns.

1.2 "City" means the City of Auburn, a Washington municipal corporation.

1.3 "Franchise Area" means all of the public roads, streets, avenues, alleys, highways, and other rights-of-way of the City as now laid out, platted, dedicated or improved; and any and all public roads, streets, avenues, alleys, highways, and other rights-of-way that may hereafter be laid out, platted, dedicated or improved within the area as described with Exhibit "1" attached hereto, which is by this reference incorporated, as if fully set forth herein; provided, that the Franchise Area shall not include or convey any right to Franchisee to install facilities on or to otherwise use City owned or leased properties outside the Franchise Area.

1.4 "Facilities" means the Franchisee's water system, lines, mains, appurtenances, and all other necessary or convenient facilities for the purpose of providing water service.

1.5 "Ordinance" means this ordinance setting forth the terms and conditions of the franchise granted to the Franchisee.

SECTION 2 FRANCHISE GRANT

Subject to the terms and conditions set forth in this ordinance, the City grants to the Franchisee the right to construct and install water pipelines and appurtenances and to excavate trenches in City roads for the purposes of constructing, installing, operating, maintaining, removing, and replacing mains and pipes and making connections between the same to the dwellings and other buildings of the consumers. In exercising the foregoing rights, the Franchisee shall be governed by and conform to the general rules adopted by the Public Works Department of the City of Auburn, and the Franchisee, at no expense to the City, shall complete all work and shall replace and restore the City roads to the condition of the City roads existing immediately prior to such disturbance; PROVIDED, HOWEVER, that no such work shall be done prior to the obtaining of a permit therefor issued by the City's Public Works Director (hereinafter "Director"), which permit shall set forth conditions pertaining to the work to be done and specifications for the restoration of the roads to the same condition as they were prior to such work. If the Franchisee does not repair the City roads to the satisfaction of the Director, the City may, at its sole discretion, repair such City roads, or cause them to be repaired, and the Franchisee hereby agrees to reimburse the City for the cost of such work, including overhead costs.

SECTION 3 FRANCHISE TERM

This Franchise is and shall remain in full force and effect from the effective date of this Ordinance forward, for a period not to exceed seven (7) years from the effective date of any Auburn annexation of any area within the boundary defined in Exhibit 1, for said area, but subject to earlier termination in accordance with the terms and conditions of the Settlement Agreement, provided, that this Franchise shall not take effect and the Franchisee shall have no rights under this Franchise unless the Franchisee files a written acceptance of this Franchise with the City pursuant to Section 4 of this Agreement.

SECTION 4 ACCEPTANCE BY GRANTEE OF TERMS AND CONDITIONS

The full acceptance of this Franchise and all of its terms and conditions shall be filed with the City Clerk within forty-five (45) days from the date of this Ordinance, by the Franchisee. Full acceptance of this Franchise is a condition precedent to its taking effect, and unless this Franchise is accepted within the time specified, this grant will be null and void and have no force or effect.

SECTION 5 NON-EXCLUSIVE FRANCHISE

This Franchise is not exclusive. It does not prohibit the City from granting franchises for other public or private utilities in, over, along, across, and under any City property, including the Franchise Area. This Franchise does not prevent or prohibit the City from constructing, altering, maintaining or using any of the Franchise Area. The City retains full power to make all changes, relocations; repair, maintenance or other work to or in the Franchise Area as the City deems fit.

SECTION 6 JURISDICTION

This Franchise is intended to convey limited rights and interest only as to those roads and rights-of-way in which the City has an actual interest. It is not a warranty of title or of interest in City road rights-of-way. None of the rights granted to the Franchisee shall affect the jurisdiction of the City over City road rights-of-way or the City's power to perform work upon its roadways, rights-of-way or appurtenant drainage facilities including by constructing, altering, renewing, paving, widening, grading, blasting or excavating.

SECTION 7 REGULATION OF USE AND CONTROL

This Franchise does not deprive the City of any powers, rights, or privileges it now has or may later acquire in the future to regulate the use of and to control the City road rights-of-way covered by this Franchise. The City reserves the right and power at all times to exercise its police powers with respect to the time, manner and location of the placement of the Franchisee's Facilities.

SECTION 8 EMINENT DOMAIN

This Franchise and the limited rights and interests granted by this Franchise are subject to the exercise of eminent domain. In the event of an exercise of eminent domain by the City, the value to be attributed to all the rights and interests granted under this Franchise shall not exceed the actual amount the Franchisee paid to the City in obtaining this Franchise.

SECTION 9 VACATION

If at any time the City vacates any City rights-of-way covered by this Franchise, the City will not be held liable for any damages or loss to the Franchisee by reason of such vacation. The City may, after giving thirty (30) days written notice to the Franchisee terminate this Franchise with respect to any City road or rights-of-way vacated.

SECTION 10 ENFORCEMENT

The City's failure to enforce any provision of this Franchise does not constitute a waiver of its right to enforce that provision or any other provision of this Franchise.

SECTION 11 INDEMNITY AND HOLD HARMLESS

11.1 The Franchisee shall defend, indemnify and hold harmless the City, its appointed and elected officials, and its employees and agents from and against liability for all claims, actions, injuries, demands, liabilities, losses, costs, damages and judgments, including costs of defense thereof, (collectively referred to as "damages") for injury to persons, death or property damage caused by, arising out of, or incidental to the Franchisee's exercise of the rights and privileges granted by this Franchise, except for damages caused by or arising out of the City's sole negligence. In the event that any such claim or demand for damages is presented to or filed with the City, or if any suit or action is initiated against the City based on such claims or demands for damages, the City shall promptly notify the Franchisee of the claim, demand, suit or action and the Franchisee shall have the right, at its election and its sole cost and expense, to settle and compromise such claim, demand, suit or action, or defend the same at the Franchisee's sole cost and expense.

11.2 If it is determined that RCW 4.24.115 applies to this Franchise, the Franchisee agrees to defend, hold harmless and indemnify the City to the maximum extent permitted under that statute, and specifically for the Franchisee's negligence concurrent with that of the City to the full extent of the Franchisee's negligence.

SECTION 12 INSURANCE

12.1 The Franchisee shall keep a policy of insurance in force with a minimum limit of five million dollars ($5,000,000.00). Verification of insurance coverage is a condition precedent to the effectiveness of this Agreement.

12.2 The insurance shall be maintained in full force and effect at the Franchisee's sole expense throughout the term of the Franchise, and, should such insurance be terminated, this Agreement shall terminate as of the date of the termination of insurance coverage.

12.3 The coverage provided by the Franchisee's insurance policies shall be primary to any insurance maintained by the City except as to losses or damages attributable to the sole negligence of the City. Any insurance maintained by the City that might relate to this Franchise shall be in excess to the Franchisee's insurance and shall not contribute with or to it. The City has no obligation to report occurrences to the insurance companies unless a claim is filed with the City's City Council; and the City has no obligations to pay the Franchisee's premiums.

12.4 The Franchisee shall be solely and completely responsible to perform all work related to this Franchise in compliance with all applicable federal, state, county and city statutes, rules, regulations, ordinances, orders and codes. The Franchisee's attention is directed to the requirements of the Washington Industrial Safety and Health Act, Chapter 49.17 RCW. The Franchisee shall be solely and completely responsible for safety and safety conditions on its job sites and for its work within the Franchise Area, including the safety of all persons and property during performance of any works therein. The services of the City or City's consultant personnel in conducting construction review of the Franchisee's work relating to the Franchise is not intended to include review of the adequacy of the Franchisee's work methods, equipment, scaffolding, or trenching, or safety measures in, on or near such Franchise Area or job site. The Franchisee shall provide

safe access for the City and its inspectors to adequately inspect the work and its conformance with applicable statutes, ordinances, rules, regulations, and the Franchise.

SECTION 13 INSTALLATION, REPAIR, REMOVAL OR RELOCATION

13.1 The Franchisee shall, at no expense to the City, expeditiously repair all existing Facilities that it owns within the Franchise Area, including any damage caused directly or indirectly by its Facilities, all appurtenant Facilities and service lines connecting its system to users, if the City requires such repair for any reasonable purpose.

13.2 The Franchisee shall, at no expense to the City, adjust, remove or relocate existing Facilities within the Franchise Area, including all appurtenant Facilities and service lines connecting its system to users, if the City determines such adjustment, removal or relocation is reasonably necessary to allow for an improvement or alteration planned by the City. The City shall give the Franchisee written notice of such requirement as soon as practicable. The written notice shall include all available information, such as plans and specifications, as is reasonably necessary for the Franchisee to plan for such adjustment, removal or relocation.

13.3 Franchisee's Facilities shall be constructed, installed, maintained and repaired within the Franchise Area so as to provide safety of persons and property, and not interfere with the free passage of traffic, all in accordance with the laws of the State of Washington, and the ordinances, resolutions, rules and regulations of the City.

13.4 For projects that are a part of the City's capital improvement program, in addition to any other notice given to the Franchisee, the City shall provide a copy of the capital improvement plan and six (6) year transportation improvement plan when requested. Further the City shall provide a vertical and horizontal profile of the roadway and drainage facilities within it, both existing and as proposed by the City, and the proposed construction schedule. The initial design information shall be given at least one hundred and eighty (180) days before construction is scheduled to begin, except in cases of urgent construction or emergencies. The Franchisee shall respond to this notice, and to any later notices of revised designs, within twenty (20) days of the date of the notice, by providing to the City the Franchisee's best available information as to the location of all the Franchisee's Facilities, including all appurtenant Facilities and service lines connecting its system to users and all Facilities that it has abandoned, within the area proposed for the project.

13.5 The City shall offer the Franchisee the opportunity to participate in the preparation of bid documents for the selection of a contractor to perform the public works project as well as all required adjustments, removals or relocations of the Franchisee's Facilities. The City shall have sole authority to choose the contractor to perform such work. Such bid documents shall provide for an appropriate cost allocation between the parties. In addition to the Franchisee's allocation of contractor costs, the Franchisee shall reimburse the City for all costs, to include but not be limited to legal, engineering, inspections, administration and/or soils testing, related to the Franchisee's work and reasonably incurred by the City in the administration of such joint construction contracts. Such costs shall include the direct salary cost of the time of City professional and technical personnel, including the City's consultants, spent productively engaged in such work, plus overhead costs at the standard rate charged by the City on other similar projects.

13.6 It is understood that emergency situations may arise that could threaten public health and/or continued operation of the Franchisee's utility system and the Franchisee may be unable to notify the City in the manner prescribed in Section 14 of this Franchise. In such a situation the Franchisee shall immediately correct the hazardous situation and continue to use best efforts to contact the City staff. The Emergency Phone Number for the City of Auburn is (253) 931-3053, and the City of Bonney Lake is (253) 862-8602. Dialing 911 is advised for emergency situations.

SECTION 14 REQUIREMENT OF CONSTRUCTION PERMITS

14.1 The Franchisee has the right, privilege and authority to enter the City road rights-of-way for the purpose of constructing, installing, operating, maintaining, replacing or repairing its Facilities on the condition that it obtains construction, excavation, and right-of-way use permits issued by the City. Any work performed, whether by Franchisee, its contractors, or third parties, shall include necessary paving, patching, grading and any other reasonably necessary repair or restoration to the City rights-of-way. All work shall be done to the City's satisfaction.

14.2 All equipment, pipelines and appurtenances which are used in the construction, installation, operation, maintenance or repair of the Franchisee's Facilities and which are located within the City road rights-of-way and owned by the Franchisee shall be considered to be part of the Franchisee's system and shall be the responsibility of the Franchisee. All permits for the construction, installation, operation, maintenance or repair of the Franchisee's system shall be applied for and given in the name of the Franchisee, who will be responsible for all work done under the permit. The Franchisee remains responsible whether the work is performed by the Franchisee, its contractors, or by third parties.

14.3 When required by the Public Works Director, the Franchisee shall post a bond to the City in the amount sufficient for any road repair or restoration. The amount of the bond shall be set by the City and must be filed with the City before a permit will be issued.

SECTION 15 PERFORMANCE OF WORK

15.1 Any work performed by the Franchisee in the Franchise Area shall conform to all City ordinances and requirements including, but not limited to, Auburn City Code and the City's Design and Construction Standards in force when the work is performed. All traffic control shall conform to the current edition of the Uniform Traffic Control Devices in force when the work is performed.

15.2 If work performed under this Franchise makes it necessary to turn off or diminish water pressure to any fire hydrant, the Franchisee shall notify the City's Fire Department by telephone and by written notice, that water pressure or fire flow conditions have been affected. Except in the case of an emergency, the notice shall be provided at least 48 hours prior to the water pressure being turned off or diminished. If more than one fire hydrant will be affected, the Franchisee shall provide a map of the affected area to the Fire Department. Out-of-service fire hydrants must be identified as not operational by covering with a properly secured burlap or plastic bag. Fire hydrants should be returned to full service as soon as reasonably possible or no longer than two working days from the

date service was diminished. The Franchisee shall notify the City's Fire Department when the hydrant is returned to full service.

SECTION 16 RESTORATION OF CITY RIGHTS-OF-WAY

After performing work on, under or adjacent to City road rights-of-way, the Franchisee is responsible for and shall leave all City road rights-of-way in the condition of the City roads rights-of-way existing immediately prior to such disturbance. If the Franchisee, its contractors, or third parties working under permit should fail to diligently restore City road rights-of-way to the satisfaction of the City, the City may make such repairs or restorations as are necessary to return the City road rights-of-way to a condition reasonably comparable to the condition of the City roads rights-of-way existing immediately prior to such disturbance. Upon presentation of an itemized bill for repairs or restorations, including all applicable costs, both direct and indirect, to include but not be limited to the cost of labor, tools, materials and equipment, the Franchisee shall pay the bill within sixty-five (65) days.

SECTION 17 GUARANTEE

The Franchisee shall guarantee work and materials furnished and completed by the Franchisee under this Franchise for a period of two (2) years from the date the City approves the work and/or restoration.

SECTION 18 INFORMATION ON LOCATION OF FACILITIES

Prior to the effective date of this ordinance, the Franchisee shall provide the City with all information requested by the City regarding the location of the Franchisee's current Facilities, including but not limited to copies of all record drawings for such Facilities. If the Franchisee performs any work to install, repair, reconstruct, or replace Facilities in the Franchise Area after this ordinance's effective date, the Franchisee shall provide the City with all information requested by the City regarding the location of those Facilities, including but not limited to copies of record drawings.

SECTION 19 COORDINATION OF WORK IN FRANCHISE AREA

To facilitate the coordination of work in City rights-of-way, if either the Franchisee or the City plans to make excavations in the Franchise Area, the party planning such excavation shall provide written notice to the other of the planned excavation, affording the other party the opportunity to share in the excavation; provided, that (1) such joint use shall not unreasonably delay the work of the party causing the excavation to be made, (2) such joint use shall be arranged and accomplished on terms and conditions satisfactory to both parties, and (3) either party may deny such request for safety reasons.

SECTION 20 BLASTING REQUIREMENTS

The Franchisee's right to construct, install, operate, maintain and repair Facilities does not preclude the City, its agents or contractors from blasting, grading, or doing other road work contiguous to the Franchisee's Facilities. When practical, the City shall give the Franchisee forty-eight (48) hours notice of blasting or excavating.

SECTION 21 SURVEY MARKERS AND MONUMENTS

Before any work is performed under this Franchise, the Franchisee shall establish two or more reference marks to all monuments and markers of every nature relating to

subdivisions, plats, rights-of-way, and all other surveys. The reference points shall be located so that they will not be disturbed during any of Franchisee's operations under this Franchise. The method of referencing monuments or other markers or points shall be approved by the City before placement. The replacement of all markers or monuments disturbed during any construction of the Franchisee shall be made as promptly as conditions permit. The cost of monuments or markers lost, destroyed, or disturbed and the expense or replacement with approved markers or monuments shall be borne by the Franchisee.

SECTION 22 RESERVATION OF RIGHTS

22.1 The City reserves the right to impose a utility tax on the Franchisee, and/or to charge the Franchisee a reasonable fee for services provided or rights granted under this Franchise, to the extent authorized by law.

22.2 The Franchisee agrees that it shall be subject to all authority now or later possessed by the City or any other governing body having competent jurisdiction to fix just, reasonable and compensatory rates for services under this Franchise.

22.3 The City reserves the right, upon thirty (30) days written notice to the Franchisee, to amend or modify the provisions or conditions of this Franchise to conform to any state, county, federal, or City statute, ordinance, rule or regulation. The City may terminate this Franchise upon thirty (30) days written notice to the Franchisee if the Franchisee fails or refuses to comply with such amendment or modification.

SECTION 23 ASSIGNMENT

The Franchisee shall not have the right to assign this Franchise without the written consent of the City. No assignment shall be effective unless an acceptance by the assignee of all rights, conditions, terms, provisions and responsibilities contained within the Franchise, as well as surety bonds which the City deems necessary to be posted, are received as allowed by law. The City's approval of the assignment may be made subject to the assignee's acceptance of new or modified terms of the Franchise.

SECTION 24 PENALTY FOR VIOLATION OF CONDITIONS

If the Franchisee fails to comply with any material term, condition or responsibility under this Franchise, the City may provide the Franchisee with written notice of the City's intent to revoke the Franchise if the Franchisee's failure is not cured within thirty (30) days of the date of the notice. During the thirty (30) days following the date of the notice, the Franchisee shall have the opportunity to remedy the failure to comply. A public hearing shall be scheduled before the Auburn City Council at least thirty (30) days following the notification on the issue of the revocation. If at the hearing, the City Council finds that grounds exist to revoke the Franchise under this paragraph and that the revocation is in the public interest, the City Council may by ordinance revoke the Franchise. The revocation shall be effective ninety (90) days after the public hearing.

SECTION 25 EXPIRATION AND RENEWAL

25.1 If the Franchisee requests a renewal of this Franchise prior to its expiration date, the City may, at the City's sole discretion, extend the term of this Franchise for up to one year beyond the expiration date to allow for processing of the renewal. If the

City elects to extend the term of this Franchise, written notice of the extension shall be provided to the Franchisee prior to the Franchise expiration date.

25.2 If the Franchisee has not requested a renewal of this Franchise prior to its expiration date, the City has the right, upon thirty (30) day's prior notice to the Franchisee, to remove or relocate any of the Franchisee's Facilities as is reasonably necessary for the public's health, welfare or safety, or for the construction, alteration, or improvement of the Franchise Area, or for the construction or installation of lines or facilities of other franchise holders. The Franchisee shall be liable for costs incurred in any removal or relocation of the Franchisee's Facilities under this section.

25.3 Upon the expiration of this Franchise, the Franchisee shall continue to be responsible for the operation and maintenance of the Franchisee's existing facilities in the Franchise Area, but shall not have the right to provide additional services. This Section and Sections 11, 13, 14, 15, 16, 19, and 21 of this Franchise shall continue in force until such time as the Franchisee's Facilities are abandoned to the City in accordance with the terms and conditions of the Settlement Agreement.

SECTION 26 COMPLIANCE WITH LAWS

The Franchisee shall conform to all applicable federal, state and local laws and regulations including, but not limited to, the State Environmental Policy Act and the City's Environmental Standards and Ordinances.

SECTION 27 NON-DISCRIMINATION CLAUSE

In all hiring or employment made possible or resulting from this Franchise, there shall be no discrimination against any employee or applicant for employment because of sex, sexual orientation, age, race, color, national origin, marital status or the presence of any sensory, mental, or physical handicap, unless based upon a bona fide occupation qualification. No person shall be denied or subjected to discrimination in receipt of the benefit of any services or activities made possible by or resulting from this agreement on the grounds of sex, sexual orientation, race, color, national origin, age, except minimum age and retirement provisions, marital status, or the presence of any sensory, mental or physical handicap.

SECTION 28 NOTICE

Any notice or information required or permitted under this Franchise may be sent to the following addresses unless otherwise specified:

City of Auburn:
City Engineer
25 West Main Street
Auburn, WA 98001-4998
253-931-3010

City of Bonney Lake:
Public Works Director
19306 Bonney Lake Blvd.
Bonney Lake, WA 98390-0944
253-862-8602

SECTION 29 ATTORNEYS' FEES
If either party commences litigation against the other party relating to the performance or alleged breach of this Franchise, the prevailing party shall be entitled to all costs, including reasonable attorneys' fees incurred, relating to such litigation, including those incurred in any appeal.

SECTION 30 SEVERANCE
If any term, provision, condition or portion of this Franchise is held to be invalid, such invalidity shall not affect the validity of the remaining portions of this Franchise which shall continue in full force and effect, unless the dominant purpose of the Franchise would be prevented or the public interest would no longer be served, as determined by the City.

SECTION 31 EFFECTIVE DATE
This ordinance having been introduced at least five days prior to its date of passage and submitted to the city attorney, and being approved by at least a majority of the entire city council at a regular city council meeting, shall take effect and be in force five days after its passage, approval and publication as required by law.

SECTION 32 EXISTING UTILITIES
This Franchise shall govern City of Bonney Lake, new and existing water Facilities within the City of Auburn.

PASSED by Auburn's City Council this 6th day of May, 2002.

APPROVED by Auburn's Mayor this 6th day of May, 2002.

PETER B. LEWIS, Mayor
City of Auburn

ATTEST/AUTHENTICATE:

DANIELLE E. DASKAM, Auburn City Clerk — 5/7/02 Date

APPROVED AS TO FORM:

DANIEL B. HEID, Auburn City Attorney — Date

THE CITY OF BONNEY LAKE, a municipal corporation of the State of Washington, accepts all the rights, privileges and duties of this franchise subject to all terms, conditions, stipulations and obligations contained herein.

PASSED by Bonney Lake's City Council this 26th day of March, 2002.

APPROVED by Bonney Lake's Mayor this 27th day of March, 2002.

Robert L. Young, Mayor
City of Bonney Lake

ATTEST:

Gayle Blatcher, Bonney Lake City Clerk Date 3/27/02

APPROVED AS TO FORM:

James Dionne for, Bonney Lake City Attorney 3/26/02 Date

FILED WITH THE CITY CLERK: _____

PASSED BY AUBURN'S CITY COUNCIL: _____

PUBLISHED: _____

EFFECTIVE DATE: _____

AUBURN ORDINANCE NO: 5592

BONNEY LAKE ~~ORDINANCE~~ Resolution NO: 965

Exhibit 1

AUBURN/BONNEY LAKE WATER FRANCHISE AREA LEGAL DESCRIPTION

THAT PORTION OF SECTION 6, TOWNSHIP 20 NORTH, RANGE 5 EAST, W.M., SECTION 5, TOWNSHIP 20 NORTH, RANGE 5 EAST, W.M., SECTION 8, TOWNSHIP 20 NORTH, RANGE 5 EAST, W.M., SECTION 7, TOWNSHIP 20 NORTH, RANGE 5 EAST, W.M., PIERCE COUNTY, WASHINGTON; DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTH QUARTER CORNER OF SAID SECTION 6; THENCE NORTH 01°12'59" EAST A DISTANCE OF 713.61 FEET TO THE NORTHERLY MARGIN OF LAKE TAPPS PARKWAY EAST; THENCE IN A NORTHWESTERLY DIRECTION ALONG THE NORTH LINE OF SAID PARKWAY, NORTH 71°22'39" WEST A DISTANCE OF 440.58 FEET TO THE BEGINNING OF A CURVE TO THE RIGHT HAVING A RADIUS POINT BEARING NORTH 18°37'21" EAST A DISTANCE OF 960.00 FEET; THENCE ALONG THE ARC OF SAID CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 11°22'29", AN ARC DISTANCE OF 190.59 FEET; THENCE LEAVING SAID MARGIN NORTH 01°28'45" WEST A DISTANCE OF 2,629.81 FEET; THENCE NORTH 58°56'04" EAST A DISTANCE OF 532.96 FEET; THENCE NORTH 37°29'20" EAST A DISTANCE OF 178.29 FEET; THENCE NORTH 49°21'27" EAST A DISTANCE OF 410.04 FEET TO A POINT OF A NON-TANGENT CURVE TO THE LEFT HAVING A RADIUS POINT BEARING NORTH 49°37'08" EAST HAVING A DISTANCE OF 454.00 FEET; THENCE ALONG THE ARC OF SAID CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 27°21'25" AN ARC DISTANCE OF 216.77 FEET; THENCE SOUTH 67°44'15" EAST A DISTANCE OF 47.08 FEET TO A POINT OF A NON-TANGENT CURVE TO THE LEFT HAVING A RADIUS POINT BEARING SOUTH 69°16'55" EAST A DISTANCE OF 927.50 FEET; THENCE ALONG THE ARC OF SAID CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 10°09'01" AN ARC DISTANCE OF 164.31 FEET; THENCE SOUTH 10°34'04" WEST A DISTANCE OF 163.57 FEET; THENCE IN A NORTHEASTERLY DIRECTION ALONG THE NORTH LINE OF LOT G OF BOUNDARY LINE ADJUSTMENT RECORDED UNDER AUDITOR'S FILE #9808310329, NORTH 75°13'36" EAST A DISTANCE OF 548.99 FEET TO THE EASTERLY LINE OF LOT G; THENCE NORTH 11°28'56" WEST A DISTANCE OF 56.64 FEET TO THE SOUTHERLY LINE OF LOT B PER SAID BOUNDARY LINE ADJUSTMENT; THENCE NORTH 75°13'36" EAST A DISTANCE OF 560.63 FEET TO THE WESTERLY MARGIN OF LAKELAND HILLS WAY SE; THENCE NORTH 14°46'24" WEST A DISTANCE OF 138.04 FEET; THENCE LEAVING SAID WESTERLY MARGIN NORTH 75°13'36" EAST A DISTANCE OF 63.00 FEET TO THE EASTERLY MARGIN OF LAKELAND HILLS WAY SE; THENCE IN A NORTHWESTERLY DIRECTION ALONG SAID MARGIN NORTH 14°46'24" WEST A DISTANCE OF 353.16 FEET TO THE BEGINNING OF A CURVE TO THE LEFT HAVING A RADIUS POINT BEARING SOUTH 75°13'36" WEST A DISTANCE OF 545.67 FEET; THENCE ALONG THE ARC OF SAID CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 19°07'09" AN ARC DISTANCE OF 182.08 FEET TO THE POINT OF A CURVE TO THE RIGHT HAVING A RADIUS POINT BEARING NORTH 60°27'56" EAST A DISTANCE OF 35.00 FEET; THENCE ALONG THE ARC OF SAID CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 84°32'04" AN ARC DISTANCE OF 51.64 FEET; THENCE NORTH 55°00'00" EAST A DISTANCE OF 208.52 FEET; THENCE NORTH 53°05'27" EAST A DISTANCE OF 150.08 FEET; THENCE NORTH 55°00'00' EAST A DISTANCE OF 166.23 FEET TO THE BEGINNING OF A CURVE TO THE LEFT HAVING A RADIUS POINT BEARING NORTH 35°00'00" WEST A DISTANCE OF 430.00 FEET; THENCE ALONG THE ARC OF SAID CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 37°44'40" AN ARC DISTANCE OF 283.27 FEET TO THE POINT OF A CURVE TO THE LEFT HAVING A RADIUS POINT BEARING NORTH 72°44'00" WEST A DISTANCE OF 1,030.00 FEET; THENCE ALONG THE ARC OF SAID CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 00°56'13" AND AN ARC DISTANCE OF 16.84 FEET TO THE NORTHERLY SECTION LINE OF SECTION 6, TOWNSHIP 20 NORTH, RANGE 5 EAST; THENCE ALONG THE NORTH LINE OF SECTION 6, SOUTH 88°34'43" EAST A DISTANCE OF 808.23 FEET TO THE NORTHEAST CORNER OF SAID SECTION 6; THENCE EASTERLY ALONG THE NORTH BOUNDARY OF SAID SECTION 5 TO THE NORTHEAST CORNER THEREOF; THENCE SOUTHERLY ALONG THE EAST BOUNDARY OF SAID SECTION 5 TO THE SOUTHEAST CORNER

THEREOF; THENCE WESTERLY ALONG THE SOUTH BOUNDARY OF SAID SECTION 5 TO THE SOUTH QUARTER CORNER THEREOF; THENCE WESTERLY ALONG THE NORTH BOUNDARY OF SAID SECTION 8 TO THE NORTHEAST CORNER OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 8; THENCE SOUTHERLY ALONG THE EAST BOUNDARY OF SAID NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 8 TO THE SOUTH BOUNDARY OF THE NORTH HALF OF SAID NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 87; THENCE WESTERLY ALONG SAID SOUTH BOUNDARY TO THE EAST BOUNDARY OF SAID SECTION 7; THENCE NORTHERLY ALONG SAID EAST BOUNDARY TO THE SOUTH BOUNDARY OF THE NORTH 330.00 FEET OF THE NORTHEAST QUARTER OF SAID SECTION 7; THENCE WESTERLY ALONG SAID SOUTH BOUNDARY OF THE NORTH 330.00 FEET OF THE NORTHEAST QUARTER OF SAID SECTION 7 TO THE WEST BOUNDARY OF SAID NORTHEAST QUARTER OF SECTION 7; THENCE NORTHERLY ALONG SAID WEST BOUNDARY TO THE SAID SOUTH QUARTER CORNER OF SECTION 6 AND THE POINT OF BEGINNING

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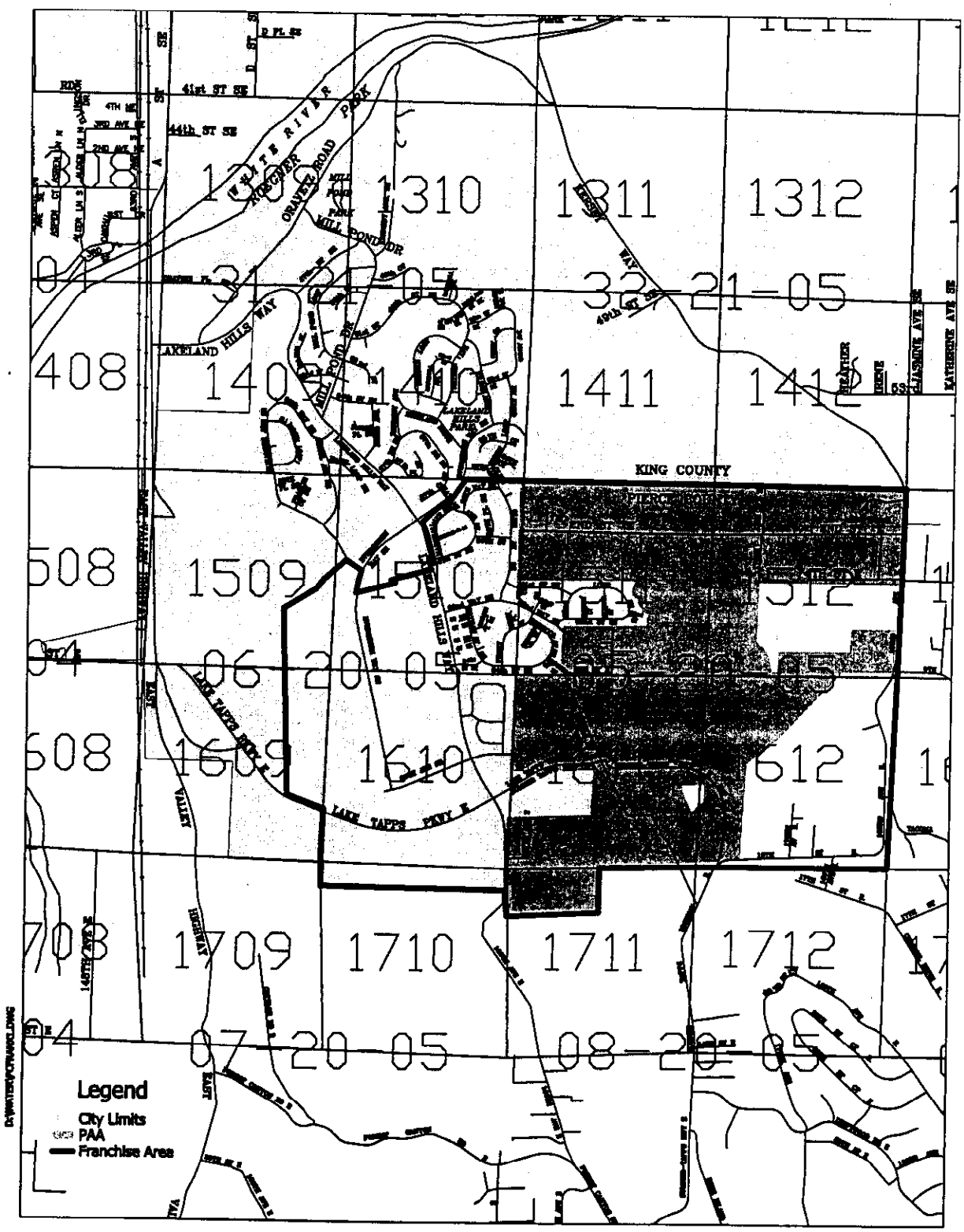

KING COUNTY
LAKELAND HILLS WAY
LAKE TAPPS PKWY E
41st ST SE
44th ST SE
49th ST SE
Legend
City Limits
PAA
Franchise Area

Exhibit 1

RESOLUTION NO. 3482

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN INTERIM WATER SALES AGREEMENT BETWEEN THE CITY OF AUBURN AND COVINGTON WATER DISTRICT AND WATER DISTRICT No. 111.

WHEREAS, Covington Water District (Covington), King County Water District No. 111 (WD 111) and the City of Auburn (Auburn) are authorized to enter into this Agreement under the authority of their respective enabling legislation and under the authority of Chapter 39.34 RCW, the Interlocal Cooperation Act; and

WHEREAS, the parties desire to avoid unpredictable water sales and create a predictable and reliable cost for wholesale water to be sold by Auburn to Covington and WD 111, and

WHEREAS, it is in the public interest for the parties herein to enter into an interim water sales agreement,

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. Pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn, Covington and WD 111 have legal authority to cooperate with other localities on the basis of mutual advantage and provision of services.

Section 2. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute the Interim Water Sales Agreement between Auburn and Covington and WD 111 with minor administrative changes if required. A copy of said

Agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

Section 3. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 4. This resolution shall be in full force and affect upon passage and signatures hereon.

DATED this 17th day of June, 2002.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001



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PAGE 001 OF 008
07/14/2003 15:21
KING COUNTY, WA

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Interlocal Agreement (RES 3482) Interim Water Sales Agreement

3/26 PNLT
W6178.12

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
1. Covington Water District
2. King County Water District 111

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number

N/A

☐ Assessor Tax # not yet assigned

Exhibit "A"

INTERIM WATER SALES AGREEMENT
between
COVINGTON WATER DISTRICT,
KING COUNTY WATER DISTRICT NO. 111
and the
CITY of AUBURN

This Agreement ("Agreement") is made and entered into this 14 day of June, 2002, by and between Covington Water District (Covington) a Municipal Corporation, King County Water District No. 111 (WD lll), a Municipal Corporation (collectively referred to herein as "the Districts") and the City of Auburn (Auburn), a Municipal Corporation.

Recitals:

A. The parties to this Agreement are also parties to "Interlocal Agreement 2 for the Lea Hill Intertie Project between Covington Water District, King County Water District #111, and the City of Auburn" ("IA2").

B. The parties desire to avoid unpredictable water sales and create a predictable and reliable cost for wholesale water to be sold by Auburn to the Districts.

C. By guaranteeing a minimum purchase of water for a given period of time, i.e., a take or pay approach, the cost of water, which to a significant extent is based on peaking factors, can be minimized for all of Auburn's customers.

D. This Agreement is intended to establish a rate for a fixed block of water for the mutual benefit of the parties of this Agreement.

E. It is in the interest of the Districts to have a predictable supply of water available, and in Auburn's interest to have a predictable and consistent source of revenue from the sale of such water.

F. The parties are authorized to enter into this Agreement under the authority of their respective enabling legislation and under the authority of Chapter 39.34 RCW, the Interlocal Cooperation Act.

G. The 1.5 million gallons of water per day ("MGD") take or pay water provided for in this Agreement is a portion of and not in addition to the 5 MGD as addressed in IA2.

Now, therefore, in consideration of the mutual covenants and promises contained herein, and for other good and valuable consideration, the adequacy of which is hereby acknowledged, the parties hereby agree as follows:

1) **TAKE OR PAY:** The Districts agree to purchase an average of 1.5 MGD of water from Auburn on a take or pay basis. Take or pay shall mean that the Districts shall pay for 1.5 MGD whether or not the water is actually taken by the Districts (the "take or pay" water also referred to in this Agreement as "the Block" of water; provided the Block of water may be modified as set forth in Paragraph 4 "Annual Review and Adjustment" herein). If the Districts cannot accept 1.5 mgd due to an emergency, as

defined in Paragraph 6, they will be billed for the water they receive at the Block rate.

2) **CHARGES FOR WATER:** The Districts shall pay the rate per one hundred cubic feet of water ("CCF") for the 1.5 MGD Block shown in Exhibit 1, attached hereto, which is by this reference incorporated, except as further addressed in Paragraph 3 herein. Any water taken in excess ("Excess Water") of the Block during the winter (October 1 through May 31) shall be billed at the winter overage rate shown in Exhibit 1 and during the summer (June 1 through September 30) shall be billed at the summer overage rate shown in Exhibit 1. Any water taken during an emergency within the Covington and/or WD 111 systems, as defined in Paragraph 6, shall be billed at the 1.5 mgd Block rate. Auburn shall send one monthly bill to WD 111 for all water purchased by the Districts.

3) **QUANTITY AVAILABLE / DELIVERED:** The 1.5 MGD Block of water shall be defined as a block of water to be delivered at an average rate of 1.5 MGD measured over a rolling 3 day period with total quantities delivered within any single day being no more than 10% more or less than 1.5 MGD. If the Districts are unable for any reason to accept the Block of water, the minimum monthly payment shall be 1.5 MGD multiplied by the rate then in effect pursuant to Paragraph 2 above. If Auburn is unable to deliver the amount of water requested by the Districts, up to the Block of water, then Auburn will bill the Districts for the amount of water actually delivered at the

block rate pursuant to Paragraph 2 above. For the take or pay water Block provided for herein, the Districts will be served on the same basis and with the same reliability as service is provided to Auburn's retail customers, and any curtailment, restrictions or limitations on delivery shall be on same basis as curtailment, restrictions or limitations on delivery to Auburn's retail customers.

4) **ANNUAL REVIEW AND ADJUSTMENT:** The initial Block of 1.5 MGD shall remain in effect through December 31, 2005. Each year, the "take or pay" Block may be adjusted by mutual agreement. By September 1 of each year the Districts shall notify Auburn of their intent to continue without change or request an increase in the Block quantity. Any requested change in the Block quantity would be effective January 1 of the year following the request. In the event that neither party communicates its intent under this provision, the Block shall be deemed to continue unchanged.

5) **TERM:** This Agreement shall remain in full force and effect from the first day of the month following the execution of this Agreement through December 31, 2005; provided that this Agreement shall automatically be renewed for an additional year at the conclusion of the term of this Agreement or any extension thereof unless any party provides the others with notice of an intent not to extend this Agreement, which notice shall be received by the other parties not less than one year prior to the expiration of the term of this Agreement or any extension thereof. The termination of this Agreement shall

not affect any rights or obligations under IA2.

6) **EMERGENCIES:** For purposes of this Agreement, an emergency shall be defined as resulting from a water shortage, a major water line break, fire demand, contamination to the water supply system, mechanical equipment failure, electrical equipment failure or Puget Sound Energy facility failure, or any other mutually agreed upon emergency within the water supply system. An emergency period shall be for no more than five (5) working days without written request by the Districts and approval by Auburn in writing to extend the emergency period.

The City may change, reduce or limit the time for or temporarily discontinue any water supplied for an emergency in excess of the Block quantity without notice. Prior to a planned interruption or limiting of emergency service, the City will notify the Districts of such not less than three days prior to the service disruption. The City agrees to use best efforts and reasonable diligence to notify the Districts as soon after it becomes aware of the need for emergency service disruption and further will, to the extent practical, limit the service disruption to daylight hours.

7) **JOINT AND SEVERAL OBLIGATION:** The obligation of the Districts as set forth therein shall be a Joint and Several obligation of the Districts. Allocation of the take or pay Block of water and the payment for such water shall be negotiated between the Districts outside of this Agreement.

In witness whereof the participants hereto have caused this Agreement to be executed by their proper officers on the 17th day of June, 2002.

City of Auburn by: _____

Title: Mayor

Approved as to form by: _____

Title: Daniel B. Heid, City Attorney

Covington Water District by: _____

Title: General Manager

King County
Water District #111 by: _____

Title: GENERAL MANAGER

Exhibit "A"
Resolution 3482

Interim Water Sales Agreement
Between
Covington Water District,
King County Water District No. 111
And the
City of Auburn

Exhibit 1

Take or Pay Monthly Rates				
Year	Base Charge*	1.5 MGD Rate	Winter Overage	Summer Overage
2002	$175.00	$0.70	$0.80	$1.85
2003	$175.00	$0.75	$0.85	$2.00
2004	$175.00	$0.80	$0.90	$2.10
2005	$175.00	$0.85	$0.95	$2.20

* Covington and WD 111 are each responsible for paying a Base Charge of $175.00 per month per district.

Exhibit "A"
Resolution 3482

STATE OF WASHINGTON

DEPARTMENT OF HEALTH

20435 72nd Ave. S., Suite 200, K17-12 • Kent, Washington 98032-2358

COPY

Chris T.

FYI

RECEIVED
JUL 12 2002
MAYOR'S OFFICE

July 10, 2002

PETER B LEWIS, MAYOR
CITY OF AUBURN
25 W MAIN ST
AUBURN WA 98001

Subject: Auburn Water System (ID# 03350)
King County
Bilateral Compliance Agreement Amendment No. 2 - Revision of Schedule Only

Honorable Mayor Lewis:

We have discussed schedule modifications to our Bilateral Compliance Agreement (BCA) with Duane Huskey of your staff. The Department is in agreement with the proposed modifications. The BCA was last revised on March 6, 2000 with Amendment No. 1. With your permission and by way of this letter, the BCA is hereby modified with Amendment No. 2 as noted below:

8. Schedule for Stage 1.

Complete Construction of Facilities	**September 18, 2002**
Monitoring Report – 2 Rounds	**September 17, 2003**
Submit Report to Determine if System is Optimized	**December 23, 2003**

The City of Auburn agrees to perform the following:

Construct corrosion control treatment facilities. Complete the installation of Stage 1 corrosion control treatment facilities in accordance with Department approved construction documents prior to **September 18, 2002.**

Monitor water quality parameters. Monitor water quality parameters in accordance with Title 40 CFR Chapter 1 Part 141.87 (c), (d), and (e) beginning on **September 19, 2002.**

Monitor tap water quality for lead and copper. Monitor tap water quality in accordance with Title 40 CFR Chapter 1 Part 141.86 (d) and complete two six-month monitoring compliance periods prior to **September 19, 2003.**

If you have any questions or comments, please call me at (253) 395-6764.

Sincerely,

James Nilson PE
Regional Engineer
NW Drinking Water Operations

cc: Public Health – Seattle & King County
Karen Heneghan – DOH
Ingrid Salmon – DOH

RESOLUTION NO. 3534

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE A REVISED WATER SYSTEM INTERTIE AGREEMENT NO. 3A BETWEEN THE CITY OF AUBURN AND THE CITY OF ALGONA.

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Algona have legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, the City of Auburn and the City of Algona executed Interlocal Agreement No. 3 (IA No. 3), dated August 19, 1996; and

WHEREAS, information and exhibits in IA No. 3 need to be updated to reflect current status; and

WHEREAS, the Algona well and water right were not completely conveyed by Algona to Auburn as intended under IA No. 3; and

WHEREAS, it is the desire of Algona and Auburn to finalize the IA No. 3 agreement with respect to facilities constructed and agree on a method of payment for constructed and proposed facilities.

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. Pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Algona have legal authority to cooperate with other localities on the basis of mutual advantage and provision of services.

Section 2. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute a revised Water System Intertie Agreement No. 3A between the City and the City of Algona. A copy of said Agreement is attached hereto, denominated as Exhibit "1" and made a part hereof as though set forth in full herein.

Section 3. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

DATED this 21st day of October, 2002.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney



200301130000705
PACIFIC NW TIT AG 50.00
PAGE 001 OF 032
01/13/2003 09:44
KING COUNTY, WA

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

31/49
PNWT
W4881-12

Interlocal Agreement

Reference Number(s) of Documents assigned or released:

☐ Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
Algona, City of

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number

N/A

☐ Assessor Tax # not yet assigned

WATER SYSTEM INTERTIE AGREEMENT
Algona/Auburn Intertie Agreement No. 3A

THIS AGREEMENT made and entered into by and between the City of Auburn, hereinafter referred to as "Auburn", and, the City of Algona, hereinafter referred to as "Algona", for the purposes of modifying Interlocal Agreement 3 between Algona and Auburn and establishing a payment schedule for the system intertie between the respective parties,

WITNESSETH:

WHEREAS, both Cities have executed Interlocal Agreement 3 (IA#3) for the Algona Intertie Project dated August 19, 1996; and

WHEREAS, both Cities agreed that the following facilities were to be built and funded in part or in whole by Algona as a part of IA#3:

1. Five (5) Meter Stations
2. A Future Reservoir in Lakeland Hills
3. Wells 6 and 7; and

WHEREAS, this agreement identifies one time capital facilities charges for the above referenced projects that serve to increase the capacity of service to the City of Algona; and

WHEREAS, Algona agreed to deed over its primary Water Right(s) (instantaneous flow rate (Qi) of 500 gpm, annual flow rate (Qa) of 175 acre feet per year), well facilities and well property protection zone easement to Auburn in exchange for Auburn providing a portion of the Algona long term water supply; and

WHEREAS, the Cities agreed to terminate a number of preexisting agreements; and

WHEREAS, Algona agreed to implement a water conservation program consistent with Auburn's conservation program; and

WHEREAS, Algona agreed to maintain its 100,000 gallons of system storage, participate in an additional 100,000 gallons of storage in the Auburn system or provide for the storage otherwise; and

WHEREAS, Algona granted Auburn permission to construct, own, operate, maintain, repair and replace Auburn water facilities within Algona right of way at Auburn expense; and

WHEREAS, the Boeing Company "Welded Duct Facility" was transferred to Algona as a direct service customer and the existing meter was converted to a master meter; and

WHEREAS, a 180,000 gallon share of the IA#3 proposed 1.7 million gallon Lakeland Hills Reservoir was to be financed by Algona in accordance with the Algona January 1997 Water

System Plan and with Auburn storage criteria in accordance with the schedule contained in Exhibit D of IA#3; and

WHEREAS, Auburn agreed to provide Algona up to 525,000 gallons of average day demand (ADD) and 1,114,000 gallons of maximum day demand (MDD) through 2014; and

WHEREAS, the estimated project costs were shown in Exhibit D of IA#3 and those estimated costs were understated; and

WHEREAS, the Algona City well and associated water rights were not completely conveyed by Algona to Auburn as intended under IA#3, and

WHEREAS, it is the desire of Algona and Auburn to finalize the IA#3 agreement with respect to facilities constructed and agree on a method of payment for constructed and proposed facilities

NOW, THEREFORE, IT IS MUTUALLY AGREED as follows:

In order to provide for the construction and operation of water supply facilities, piping and meters for a water supply intertie, and reservoir capacity, all between Auburn and Algona, the Participants mutually agree:

1. Interlocal Agreement 3 (IA#3) for the Algona Intertie Project between the City of Algona and the City of Auburn, dated August 19, 1996 and adopted by City of Auburn Resolution No. 2770 is hereby superceded by this Agreement.

2. Algona shall convey to Auburn Algona's City well and any and all associated water rights by Bill of Sale, included as Exhibit F. The well location is depicted on Exhibit A. In addition, Algona shall convey a Well Site Easement included as Exhibit G, and Access Easement included as Exhibit H for the aforementioned well. All costs for said conveyances will be included within the costs of projects planned under this Agreement. In event of future well abandonment by Auburn, any and all related easements shall be vacated by Auburn, and Algona and others shall no longer be bound thereby.

3. Algona shall have and implement a conservation program. The conservation program shall, at a minimum, be consistent with Auburn's conservation program and include field testing for leak detection, repair of leaks and public information actions equal to Auburn's public information actions. Algona's water conservation plan shall be included in the 2002 Algona Water System Plan.

4. So long as it continues to purchase wholesale water from Auburn, Algona shall continue to maintain and provide no less than the existing storage in its 100,000 gallon reservoir in its westerly service area. Alternately, Algona may elect to increase participation by 100,000 gallons within the future Auburn reservoir per Exhibit B herein, or acquire storage otherwise (such as

from Lakehaven Utility District) and terminate the continued operation of the existing reservoir in its westerly service area.

5. Algona hereby grants Auburn the right to construct, own, operate, maintain, repair, and replace Auburn's municipal water system including pipes, fire hydrants, valves, meters, and other appurtenances located within Algona right-of-way as shown on Exhibit A, in perpetuity per the terms and conditions herein.

5.1. Auburn shall provide to Algona copies of available record drawings showing the location of Auburn's water system within Algona right-of-way.

5.2. Except for the normal operation of Auburn's water system, Auburn shall notify Algona prior to any major waterline improvements or replacements which may interfere with or disrupt any other utilities and/or passage of traffic within Algona. Algona shall notify Auburn prior to any street or other utility improvement which may interfere or disrupt Auburn's water system.

5.3. Auburn shall be responsible to pay for costs associated with improvements to Auburn's water system including necessary street patches. In the event that Algona constructs any street improvements on those rights-of-way containing Auburn's water system, Auburn shall be responsible to adjust all water system appurtenances to finish grade, including lowering or raising said pipelines at conflict with Algona improvements.

6. Algona agrees to financially participate in the supplemental supply development of a portion of Auburn's Well # 6 and Well # 7, in accordance with Exhibit D.

7. This Agreement shall include construction and operation of up to five individual master meter stations. Three master meter stations, including the one currently serving the Boeing "Welded Duct Facility", and two installed under IA#3 are as shown on Exhibit A. The remaining two meter stations will be located and constructed at the discretion of Algona. For adequate water distribution to be obtained, it may also be necessary for Algona to construct additional piping and connections, at its own expense.

8. Algona agrees to transfer title to Auburn for any water lines between existing master meter stations and the existing Auburn mains. Any piping between future master meter stations and Auburn mains will be similarly transferred by Algona to Auburn. Title will be transferred with a bill of sale and the water pipe will be regulated under Paragraphs 5 and 13 of this Agreement.

9. This Agreement shall include future construction of a reservoir by Auburn within the Lakeland Hills development area within Pierce County, Washington. The volume of the new reservoir is presently estimated to be approximately 2.65 million gallons, and this capacity is to be shared with Algona. Financial participation is to be based on a capacity percentage basis by any and all municipalities sharing in the capacity, whether the actual storage volume usage for

any such municipality is directly derived from the reservoir or not. Algona's capacity shall be 180,000 gallons, exclusive of the provision of Paragraph 4 of this Agreement.

10. Algona projects the need for supply source in the following quantities:

Year	Average Daily Demand (mgd)	Maximum Daily Demand (mgd)
2004	0.457	0.945
2009	0.491	1.029
2014	0.525	1.114

11. Additional water supply may be available as mutually agreed to in writing by the Auburn City Council and the Algona City Council.

12. Respective facility ownership, capacity rights, and responsibility for operation, maintenance, and renewal and/or replacement (r/r) are as specifically described in Exhibit B. Operational parameters shall be as specifically defined in Exhibit C.

13. Distribution water pipelines within the city limits of a Participant shall be owned and the responsibility of that Participant, with the exception of Auburn facilities specifically identified on Exhibit A, and permitted by Paragraph 5.

14. Retail customers whose property lies within the city limits of a Participant shall be the retail customers of that Participant.

15. For Auburn facilities within Algona, as specifically identified on Exhibit A, Algona hereby grants a franchise to Auburn.

16. Auburn shall design, construct and maintain its facilities constructed under this Agreement in accordance with the design standards described in the 2001 Auburn Comprehensive Water Plan, and the updates thereto.

17. Both Participants shall exercise good faith and use best efforts in estimating project costs. However, the foregoing notwithstanding, each Participant shall be responsible for and shall pay for one hundred percent (100%) of its actual, proportionate share of the project costs, regardless of the estimate. The project costs are estimated as shown in Exhibit D. The Participants shall maintain individual cost records of their expenses for the project. Auburn will maintain overall coordinated project cost records. Algona has the right to review the design of each project in Exhibit D, prior to the project being bid. Auburn shall allow sufficient time in the project schedule for this review. Should potential cost savings to the design be identified that are not in conflict with accepted industry design standards, Algona and Auburn shall work in good faith and cooperatively to incorporate the potential cost savings into the final design.

18. The Participants shall fully finance and pay for their proportionate share of cost as shown in Exhibit D. Algona shall deposit funds with Auburn to perform the project work for the proposed facilities in accordance with the schedule shown in Exhibit E. As future actual costs of projects in Exhibit D are determined, Auburn will notify Algona of such updates and the authorized representatives will execute an update to Exhibit D which will supercede all prior dated versions of Exhibit D.

19. Auburn has prepared a cost of service study to determine the cost of service to its customers. A customer classification for "wholesale-Algona" has been created, and rates for service charges are based on a rate study for this customer classification. Auburn will regularly update the cost of service analysis. Wholesale water rates to Algona will be based on costs of providing the service.

20. For purposes of this Agreement, each Participant identifies its authorized representative as the "Mayor" of Algona and as the "City Engineer" of Auburn.

21. The Participants shall meet as needed for project coordination.

22. The Participants shall be responsible for design, construction management, and commissioning of all facilities to be constructed in accordance with ownership of the facility. Responsibilities may be assigned otherwise by agreement of the Participants' authorized representatives.

23. It is acknowledged and agreed that in the event Auburn experiences any system failure or decreased capacity for any reason, the supply to Algona may be curtailed to an equal percentage of use as Auburn's curtailment is implemented. Such curtailment shall be imposed by Algona on Algona retail customers immediately and simultaneously as such curtailment is imposed by Auburn on Auburn retail customers.

24. It is the intent of Auburn to provide the water described in Paragraph 10 whenever it is available subject to the limitations described in Paragraph 23. Auburn shall use reasonable diligence and best efforts to provide immediate notice in the event it becomes aware that it may not be able to fulfill the requirements of Paragraph 10 for any reason.

25. Auburn possesses the short-term (approximately five (5) years) capacity to meet the storage requirements for Algona. Long-term storage requirements for Algona shall be met by Algona financial participation within the next increment of storage to be constructed by Auburn. Algona's minimum financial participation shall provide for construction of storage volume capacity of 180,000 gallons, inclusive of standby, equalization, and fire protection volume storage. Such 180,000 gallon capacity is in addition to Algona's existing 100,000 gallon reservoir storage in its westerly service area.

26. Algona's water supply needs above the 0.525 mgd average daily demand, and the 1.114 mgd maximum daily demand, both identified in Paragraph 10 will be dependent upon negotiation of an amendment to this Agreement.

27. This Agreement shall remain in full force unless terminated by mutual agreement of the Participants.

28. This Agreement may be amended only in writing by approval signed by the Participants.

29. The authorized representatives shall have authority to update Exhibits attached hereto. The Exhibits shall be updated and/or revised only upon written agreement signed by the Participants' authorized representatives. Updates must be ratified by each Participant's City Council.

30. Algona agrees to indemnify, defend and hold harmless Auburn, its officers, directors, employees and agents, and their successors and assigns, from any and all costs or claims arising out of or in any way resulting from Algona's default, failure of performance, or negligent conduct associated with this Agreement. It is further agreed that Auburn shall provide water to Algona consistent with its provision of water to all of its retail water customers, and the failure of the Auburn water system to deliver flow to Algona, in whole or in part, as described in this Agreement, so long as Auburn is providing water to Algona consistent with its provision of water to the rest of its retail water customers, and consistent herewith, shall not give rise to an action against Auburn, and Algona agrees to indemnify, defend and hold harmless Auburn, its officers, directors, employees and agents, and their successors and assigns, from any and all costs or claims arising out of or in any way resulting from any such failure of the Auburn water system to deliver flow to Algona, in whole or in part. This indemnification provision shall include, but is not limited to, all claims against Auburn by an employee or former employee of Algona or their contractors and, as to such claims, Algona expressly waives all immunity and limitation of liability under Title 51 RCW.

Auburn agrees to indemnify, defend and hold harmless Algona, their officers, directors, employees and agents, and their successors and assigns, from any and all costs or claims arising out of or in any way resulting from Auburn's default, or negligent conduct associated with this Agreement. This indemnification provision shall include, but is not limited to, all claims against Algona by an employee or former employee of Auburn or its contractors and, as to such claims, Auburn expressly waives all immunity and limitation of liability under Title 51 RCW.

31. The parties shall make good faith efforts to resolve by informal discussion any dispute arising under or in connection with this Agreement. If at any time either party to this Agreement determines that such informal discussions will not result in a resolution of the dispute, such party may request formal discussion by both parties. If formal discussion by the parties does not resolve the dispute, a settlement conference shall be held within thirty (30) days of the unsuccessful resolution meeting. The settlement conference will be held at the Seattle office of Judicial Arbitration and Mediation Services, Inc. ("JAMS"). The complaining party must contact JAMS to schedule the conference. The parties may agree on a retired judge from the JAMS panel. If they are unable to agree, JAMS will provide a list of three available judges and each party may strike one. The remaining judge will serve as the mediator at the settlement conference.

32. If any provision of this Agreement is invalid or unenforceable the remaining provisions shall remain in force and effect.

IN WITNESS WHEREOF, the Participants hereto have caused this Agreement to be executed by their proper Officers on the date shown below.

City of Auburn

By: _____

Its: Mayor

Date: 10/21/02

Attest by: _____

Approved as to Form by: _____

City of Algona

By: _____

Its: Mayor

Date: 11-6-02

Attest by: _____

Approved as to Form by: _____

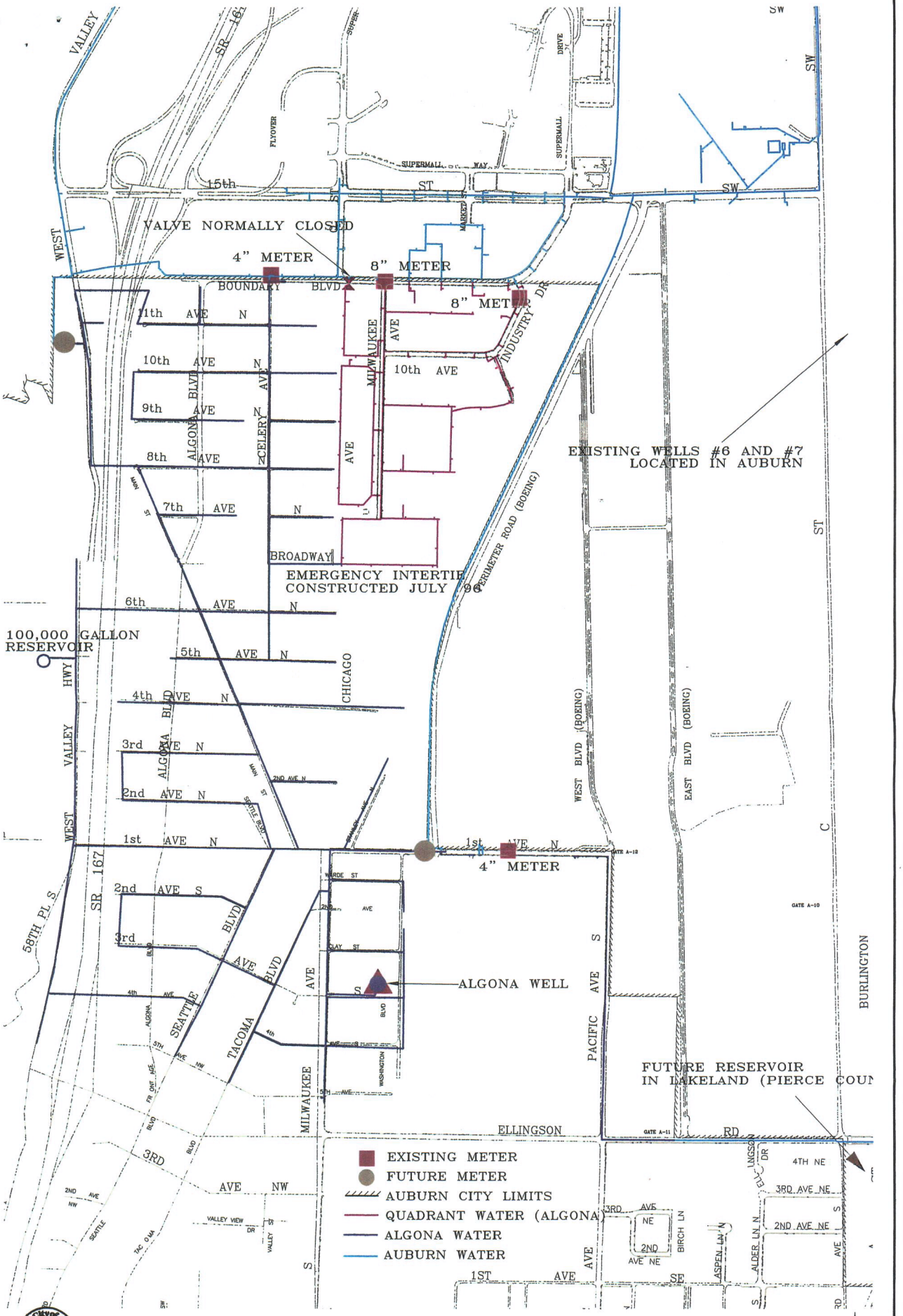


EXHIBIT A – FACILITIES LAYOUT PLAN
IA #3A
ALGONA INTERTIE PROJECT

SCALE: 1"=800'

Exhibit A
Facilities Layout Plan

WATER SYSTEM INTERTIE AGREEMENT
Algona/Auburn Intertie Agreement No. 3A
(continued)

Update Approval

1. Auburn: _____, Dated: _____

   Algona: _____, Dated: _____

2. Auburn: _____, Dated: _____

   Algona: _____, Dated: _____

3. Auburn: _____, Dated: _____

   Algona: _____, Dated: _____

Exhibit B
Facility Ownership, Capacity Rights, Operation, Maintenance, and Renewal and Replacement Responsibilities
to
WATER SYSTEM INTERTIE AGREEMENT
Algona/Auburn Intertie Agreement No. 3A

Facility	Location	Facility Ownership	Capacity Rights	Operation, Maintenance, & Renewal/Replacement Responsibility
Meter Station 1, existing for Boeing	200' easterly of the Intersection of 1st Avenue North and Perimeter Road	Auburn	100% Algona	Auburn
Meter Station 2, existing	Intersection of Milwaukee Avenue and Boundary Boulevard	Auburn	100% Algona	Auburn
Meter Station 3, existing	Intersection of Industry Drive North and Boundary Boulevard	Auburn	100% Algona	Auburn
Meter Station 4 future	Presently unknown, but probably near intersection of West Valley Highway and Boundary Boulevard extended	Auburn	100% Algona	Auburn
Meter Station 5 future	Presently unknown, but probably near intersection of UP RR and 1st Avenue North	Auburn	100% Algona	Auburn
Algona Well, existing	+/-150' northwesterly of intersection of Washington Boulevard and 3rd Ave South	Auburn	100% Auburn	Auburn
Lakeland Hills Reservoir, future	Lakeland Hills, Pierce County	Auburn	180,000 gallons Algona; remainder Auburn	Auburn
Supply (Qi) existing supplemental water rights	Well #6, Fulmer Field Well #7, City Park	Auburn	1,114,000 gpd Algona; remainder Auburn	Auburn

Exhibit B
Facility Ownership, Capacity Rights, Operation, Maintenance, and Renewal and Replacement Responsibilities
to
WATER SYSTEM INTERTIE AGREEMENT
Algona/Auburn Intertie Agreement No. 3A
(continued)

Update Approval

1. Auburn: _____, Dated: _____

   Algona: _____, Dated: _____

2. Auburn: _____, Dated: _____

   Algona: _____, Dated: _____

Exhibit C
Project Criteria
to
WATER SYSTEM INTERTIE AGREEMENT
Algona/Auburn Intertie Agreement No. 3A

Project Criteria:

- Meter Stations to be sized on flow volume criteria as opposed to line size.
- Maximum (Qi) daily demand flow is 1.114 million gallons per day for total of all meter stations supply to Algona, except in case of fire or emergency.
- Maximum annual (Qa) average daily demand flow is 0.525 million gallons per day for total of all meter stations supply to Algona.
- Each meter station shall be calibrated annually for the first three years of operations, and thereafter at the discretion of Auburn.
- Reservoir capacity for Algona is 180,000 gallons of the estimated 2.65 mg total capacity in the proposed Lakeland Hills Reservoir.
- Total of all meter stations supply to Algona necessary for peak hourly flow and fire flow shall be determined by Algona, and such data provided to Auburn for meter station design and/or station design review.

Update Approval

1. Auburn: _____, Dated: _____

   Algona: _____, Dated: _____

2. Auburn: _____, Dated: _____

   Algona: _____, Dated: _____

Exhibit D
Project Cost Estimate
to
WATER SYSTEM INTERTIE AGREEMENT
Algona/Auburn Intertie Agreement No. 3A

	IA#3		Incurred Costs To Date	
Description	Estimated Cost	Expenditures to Date	Auburn	Algona
METER STATIONS	(includes allied costs)			
2-inch @ Boeing	N/A	N/A	N/A	N/A
8-inch @ Industry Drive	$25,740	$76,723	$31,757	$44,966
8-inch @ Milwaukee	$25,740	$76,723	$31,757	$44,966
8-inch (Future)	$28,600	N/A	0%	100%
8-inch (Future)	$31,460	N/A	0%	100%
Subtotal Meter Stations	**$111,540**	**$153,446**	**$63,514**	**$89,932**
SUPPLY FACILITIES				
Well #6		$1,057,507	$990,514	$66,993
Well #7		$2,387,050	$2,235,829	$151,221
Subtotal Supply Facilities	**$1,787,500**	**$3,444,557**	**$3,226,343**	**$218,214**
PRELIMINARY COSTS				
Algona Well/Water Rights Conveyance	$5,000	$5,000	$5,000	$0
Algona Water Rights	N/A	N/A	$30,000	($30,000)
Well Easements	$2,000	$2,000	$2,000	$0
SKCRWA JOA Development	$5,800	$5,800	$0	$5,800
COS/Rate Study	$1,627	$1,627	$0	$1,627
Subtotal Preliminary Costs	**$14,427**	**$14,427**	**$37,000**	**($22,573)**
COSTS TO DATE	**N/A**	**$3,612,430**	**$3,326,857**	**$285,573**
PAYMENTS TO DATE	**N/A**	**N/A**	**($3,326,857)**	**($85,300)**
BALANCE OWING	**N/A**	**N/A**	**$0**	**$200,273**
STORAGE FACILITIES				
Lakeland Hills Res.	$2,700,000	N/A	$2,520,000	$180,000
Subtotal Storage Facilities	**$2,700,000**	**N/A**	**$2,520,000**	**$180,000**
Estimated Total PROJECT COST	**$4,613,467**	**$6,312,430**	**$5,846,857**	**$465,573**

Update Approval

1. Auburn: _____, Dated: _____

   Algona: _____, Dated: _____

2. Auburn: _____, Dated: _____

   Algona: _____, Dated: _____

Exhibit E - Project Schedule
to
WATER SYSTEM INTERTIE AGREEMENT
Algona/Auburn Intertie Agreement No. 3A

Activity	Date
Execute Interlocal Agreement #3	Completed
Complete master meter stations design for initial two stations	Completed
Algona to provide well, water rights and easements conveyance to Auburn	November 2002
Award master meter stations construction contract	Completed
Complete construction of master meter stations #2 and #3	Completed
Final master meter stations and conveyance project cost accounting	Completed
Interim payment of $85,300 from Algona	Completed
Final Auburn Wells 6 and 7 cost accounting	Completed
Execute Interlocal Agreement #3A	November 2002
Future construction of master meter stations #4 and #5	To be determined
Algona to provide $200,273 to Auburn for partial payment of cost incurred to date	31 March 2003
Algona to provide $180,000 to Auburn for partial payment for future Reservoir	Due at Construction Contract Award
Final project cost accounting	31 March 2008
Final IA #3A balancing payment from Algona	30 April 2008

Exhibit E - Project Schedule
to
WATER SYSTEM INTERTIE AGREEMENT
Algona/Auburn Intertie Agreement No. 3A

Update Approval

1. Auburn: _____, Dated: _____

   Algona: _____, Dated: _____

2. Auburn: _____, Dated: _____

   Algona: _____, Dated: _____

Exhibit F – Bill of Sale for Algona's Well
to
WATER SYSTEM INTERTIE AGREEMENT
Algona/Auburn Intertie Agreement No. 3A
(follows)

Return Address:
City of Auburn
City Clerk
25 West Main
Auburn, WA 98001

Above this line reserved for recording information.

BILL OF SALE

Reference # (if applicable):	N/A	Additional on page: _____
Grantor/Borrower:	1) City of Algona	2)
		Additional on page: _____
Grantee/Assignee/Beneficiary:	**City of Auburn**	
Legal Description/STR:	NW, SW1/4, 25-21-4E	Additional on page: _____
Assessor's Tax Parcel ID#:	954300-0570	

KNOW ALL MEN BY THESE PRESENTS that for and in consideration of the sum of ONE DOLLAR ($1.00), and for the consideration of incorporating the facilities into the City system, and other good and sufficient consideration, receipt whereof is hereby acknowledged, the undersigned Grantor City of Algona, a Municipal Corporation in King County, Washington, do by these presents hereby convey, setover, assign, transfer and warrant to the City of Auburn, a Municipal Corporation in King County, Washington, a well and waterworks supplying water for public use, the associated ground water right (EXHIBIT 'A', Certificate Number GI-22769C), and all appurtenances or any other associated public facility generally consisting of a ten (10) inch casing to approximately 65 feet below ground surface. Situated within the following described real property.

See EXHIBIT 'B' ATTACHED HERETO AND BY THIS REFERENCE MADE A PART HEREOF.

and the said Grantor(s) hereby warrant(s) that they are the sole owner(s) of all the property above conveyed; that they have full power to convey the same and that they will defend the title of the said Grantee against any and all persons lawfully making claim thereto, and indemnify the City of Auburn for any costs, including Attorney fees in defending title.

IN WITNESS WHEREOF the Grantor(s) has/have executed these presents this _____ day of _____, 2002.

City of Algona, GRANTOR

_____

GLENN WILSON, MAYOR

STATE OF WASHINGTON)
)ss.
County of King)

I certify that I know or have satisfactory evidence that _____ _____ is the person who appeared before me, and said person acknowledged that he/she signed this instrument, on oath stated that he/she was authorized to execute the instrument and acknowledged it as the _____ of _____ _____, a Municipal Corporation, to be the free and voluntary act of such party for the uses and purposes mentioned in this instrument.

Dated _____

_____

_____
Notary Public in and for the State of Washington
residing at _____
My appointment expires_____

File: 4.1
REF. H:\FORMS\FC089 (R 4/01)

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
December 10, 1976	G1-22769	G1-22769P	G1-22769C

NAME
CITY OF ALGONA

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
402 Warde Street	Algona	Washington	98002

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
Well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	500	175.0

QUANTITY, TYPE OF USE, PERIOD OF USE
Municipal supply - continuously

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
400 feet east and 1200 feet south from west quarter corner of Sec. 25

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, E. OR W. W.M.	W.R.I.A.	COUNTY
NW¼SW¼	25	21	4 E.	10	King

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
28	4	Woods Algona Add. Div. 1

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by City of Algona

PROVISIONS

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Redmond *Washington, this* 15th *day of* November, *19* 78

Department of Ecology

ENGINEERING DATA OK

by ROBERT K. McCORMICK, Regional Manager

FOR COUNTY USE ONLY

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PROOF OF APPROPRIATION OF WATER

APPLICATION NUMBER	PERMIT NUMBER
	GI - 22760P

NAME OF PERMITTEE: CITY OF ALGONA

POST OFFICE ADDRESS	CITY	STATE	ZIP CODE
402 Warde Street	Algona	WA	98002

ACTUAL WORKS OF DIVERSION AND CONSTRUCTION: Well

PURPOSE OF USE TO WHICH WATER IS TO BE PUT: Municipal Water Supply

DATE WATER WAS ORIGINALLY APPLIED TO BENEFICIAL USE	IF USED FOR IRRIGATION, NUMBER OF ACRES ACTUALLY IRRIGATED
April 27, 1977	

IF SOURCE IS A WELL, IS AN ACCESS PORT NOW INSTALLED	MONTHS DURING WHICH WATER IS USED
[X] YES [ ] NO	All

PUMP SIZE: 500 gal per minute

ACTUAL AMOUNT WITHDRAWN OR DIVERTED FROM PERMANENT SYSTEM	
Average 17,554 GF per day	[ ] GPM [ ] CFS

HAVE ALL PROVISIONS AS REQUIRED BY PERMIT BEEN ACCOMPLISHED	IF NOT, EXPLAIN
[XX] YES [ ] NO	

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS USED (USE ADDITIONAL SHEET IF NECESSARY)

Well site: Block 4, Lots 23-30; Woods Algona Division No. 1 as recorded in book of Plats, Vol 19 Page 36, records of King County, Washington

Water used in City of Algona; Washington.
Description of City Limits: All that portion of Sections 23, 24, 25, 26 and 35 and 36 Township 21 North, Range 4 East, W.M. described as follows:
BEGINNING at the northwest corner of the southeast one-quarter of Section 23, Township 21 North, Range 4 East W.M. and running thence easterly along the North line of said southeast one-quarter to the northeast corner thereof: thence easterly along the north line of the southwest one-quarter of Section 24, Township 21 north, Range 4 east, W.M. to a point on the easterly margin of the joint C.M. & St. P. & O.W.R.R. Railway's right-of-way: thence southwesterly along said easterly margin to an intersection with the northerly margin of the right-of-way of South 360th Street: thence easterly along said northerly margin of South 360th Street to an intersection with the easterly margin of the right-ofway of 76th Avenue South: thence southerly along said easterly margin of 76th Avenue South to an intersection with the northerly line of the Southwest one-quarter of the Southeast one-quarter of Section 25, Township 21

STATE OF WASHINGTON,
County of King } ss.

OK FEES CERTIFIED ISSUE PERMIT PER PERMIT 10-29-78 JF.

I, John E. Mallett, being first sworn, depose and say that I have read the above and foregoing proof of appropriation; that I know the contents thereof; and that the facts therein stated are true.

USE LEGAL ON PERMIT

IN WITNESS WHEREOF, I have hereunto set my hand this 10th day of October, 19 78

John E. Mallett
Permittee Signature

Subscribed and sworn to before me this 10th day of October, 19 78

Margaret A. Grace
Notary Public

rrr 040-1-76

Exhibit G – Well Site Easement

to

WATER SYSTEM INTERTIE AGREEMENT

Algona/Auburn Intertie Agreement No. 3A

(follows)

Return Address:
City of Auburn
City Clerk
25 West Main
Auburn, WA 98001

Above this line reserved for recording information.

EASEMENT

Well Site Easement

Reference # (if applicable):	N/A	Additional on page: _____
Grantor/Borrower:	1) City of Algona	2)
		Additional on page: _____
Grantee/Assignee/Beneficiary:	**City of Auburn**	
Legal Description/STR:	NW, SW1/4, 25-21-4E	Additional on page: _____
Assessor's Tax Parcel ID#:	954300-0570	

For and in consideration of the sum of one dollar ($1.00) and other good and valuable consideration in hand paid, receipt of which is hereby acknowledged, and for benefits to be derived by the Grantor herein, Grantor, City of Algona, a municipal corporation of King County, Washington, hereby conveys and warrants to the City of Auburn, Grantee herein, a municipal corporation of King County, Washington, its successors and assigns, a perpetual Nonexclusive Easement under, over, through and across the following described real property for the purpose of operating, maintaining, installing and decommissioning a well and waterworks supplying water for public use AND APPURTENANCES THEREOF, said real property being described as follows:

SEE EXHIBITS "A" AND "B" ATTACHED HERETO AND BY THIS REFERENCE MADE A PART HEREOF.

This easement is given under the threat of and in lieu of Eminent Domain.

Said Grantee shall have the absolute right, at times as may be necessary, for immediate entry upon said Easement for the purpose of maintenance, inspection, construction, repair, reconstruction or decommissioning of the above improvements without incurring any legal obligation or liability therefore.

Said Grantee shall have the absolute right to place any type of driving surface within said Easement deemed necessary by the Grantee.

Said Grantor shall not in any way block, restrict or impede access and egress to or from said Easement, and/or in any way block, restrict or impede full use of the real property within the above-described Easement by said Grantee for the above-described purposes. Said Grantor may fence across said Easement and/or along the boundaries of said Easement provided that a gate is constructed in said fence. Said gate shall be of sufficient length and location to allow the Grantee full use of, and access and egress to and from the real property within the above-described Easement. If said gate is to be locked, keys shall be provided to the Grantee.

This Easement shall be a covenant running with the above-described real property and burden said real estate, and shall be binding on the successors, heirs and assigns of all parties hereto.

Dated this _____ day of _____, 2002.

City of Algona, GRANTOR

_____

GLENN WILSON, MAYOR

STATE OF WASHINGTON)
)ss.
County of King)

I certify that I know or have satisfactory evidence that _____ _____and _____ is/are the person(s) who appeared before me, and said individual(s) acknowledged that he/she/they signed this instrument and acknowledged it to be his/her/their free and voluntary act for the uses and purposes mentioned in this instrument.

Dated _____

_____

_____

Notary Public in and for the State of Washington
residing at _____
My appointment expires _____

REF. H:\FORMS\FC087 (4/98)

EXHIBIT "A"

ALGONA WATER WELL EASEMENT
3RD AVENUE SOUTH AND WASHINGTON BOULEVARD

THAT PORTION OF LOTS 23 AND 24 AND 25 AND 26 AND 27 AND 28 AND 29 AND 30, ALL IN BLOCK 4 OF WOOD'S ALGONA ADDITION, DIVISION NUMBER 1 TO THE CITY OF SEATTLE AS RECORDED IN VOLUME 19 OF PLATS, PAGE 36, RECORDS OF KING COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF SAID LOT 30; THENCE NORTH 01°31'15" EAST ALONG THE WEST BOUNDARY OF SAID LOT 30, A DISTANCE OF 13.12 FEET; THENCE SOUTH 88°28'45" EAST, 49.52 FEET TO THE TRUE POINT OF BEGINNING; THENCE NORTH 01°31'15" EAST, 100.00 FEET; THENCE SOUTH 88°28'45" EAST, 100.00 FEET; THENCE SOUTH 01°31'15" WEST, 80.00 FEET; THENCE SOUTH 88°28'45" EAST, 117 FEET MORE OR LESS TO THE WEST MARGIN OF WASHINGTON BOULEVARD; THENCE SOUTHERLY 20.00 FEET MORE OR LESS ALONG SAID WEST MARGIN OF WASHINGTON BOULEVARD TO A POINT WHICH BEARS SOUTH 88°28'45" EAST FROM SAID TRUE POINT OF BEGINNING; THENCE NORTH 88°28'45" WEST, 217 FEET MORE OR LESS TO SAID TRUE POINT OF BEGINNING.

SITUATE IN THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 25, TOWNSHIP 21 NORTH, RANGE 4 EAST, W. M.

EXHIBIT "B"

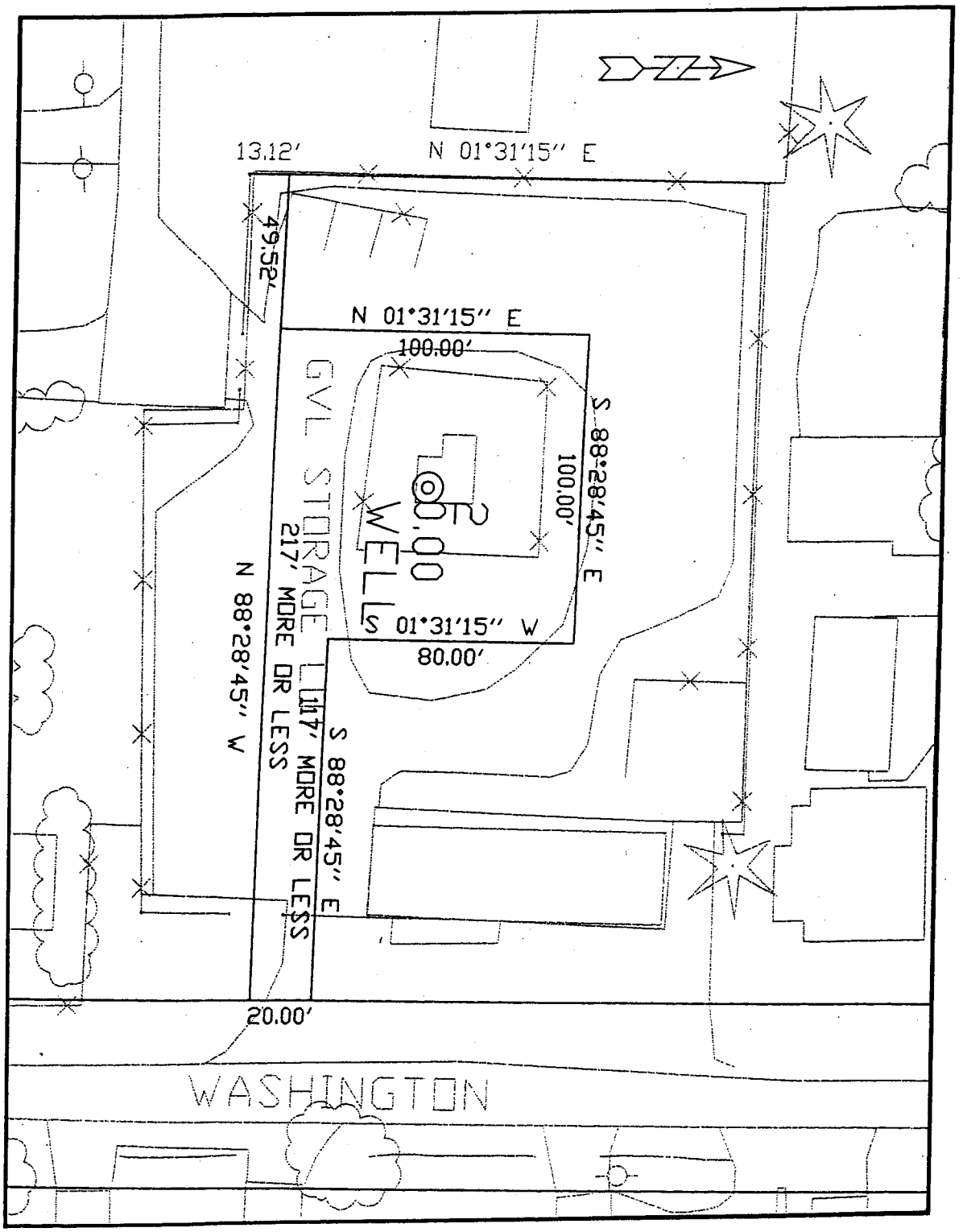

13.12'
N 01°31'15" E
49.52'
N 01°31'15" E
100.00'
S 88°28'45" E
100.00'
WELL
S 01°31'15" W
80.00'
GVL STORAGE
N 88°28'45" W
217' MORE OR LESS
S 88°28'45" E
117' MORE OR LESS
20.00'
WASHINGTON

Exhibit H – Access Easement

to

WATER SYSTEM INTERTIE AGREEMENT

Algona/Auburn Intertie Agreement No. 3A

(follows)

Return Address:
City of Auburn
City Clerk
25 West Main
Auburn, WA 98001

Above this line reserved for recording information.

EASEMENT

Access Easement

Reference # (if applicable):	N/A	Additional on page: _____
Grantor/Borrower:	1) City of Algona	2)
		Additional on page: _____
Grantee/Assignee/Beneficiary:	**City of Auburn**	
Legal Description/STR:	NW, SW1/4, 25-21-4E	Additional on page: _____
Assessor's Tax Parcel ID#:	954300-0570	

For and in consideration of the sum of one dollar ($1.00) and other good and valuable consideration in hand paid, receipt of which is hereby acknowledged, and for benefits to be derived by the Grantor herein, Grantor, City of Algona, a municipal corporation of King County, Washington, hereby conveys and warrants to the City of Auburn, Grantee herein, a municipal corporation of King County, Washington, its successors and assigns, a perpetual Nonexclusive Easement under, over, through and across the following described real property for the purpose of ingress and egress, said real property being described as follows:

SEE EXHIBITS "A" AND "B" ATTACHED HERETO AND BY THIS REFERENCE MADE A PART HEREOF.

This easement is given under the threat of and in lieu of Eminent Domain.

Said Grantee shall have the absolute right, at times as may be necessary, for immediate entry upon said Easement for the purpose of maintenance, inspection, construction, repair or reconstruction of the above improvements without incurring any legal obligation or liability therefore.

Said Grantee shall have the absolute right to place any type of driving surface within said Easement deemed necessary by the Grantee.

Said Grantor shall not in any way block, restrict or impede access and egress to or from said Easement, and/or in any way block, restrict or impede full use of the real property within the

above-described Easement by said Grantee for the above-described purposes. Said Grantor may fence across said Easement and/or along the boundaries of said Easement provided that a gate is constructed in said fence. Said gate shall be of sufficient length and location to allow the Grantee full use of, and access and egress to and from the real property within the above-described Easement. If said gate is to be locked, keys shall be provided to the Grantee.

This Easement shall be a covenant running with the above-described real property and burden said real estate, and shall be binding on the successors, heirs and assigns of all parties hereto.

Dated this _____ day of _____, 2002.

City of Algona, GRANTOR

_____

GLENN WILSON, MAYOR

STATE OF WASHINGTON)
)ss.
County of King)

I certify that I know or have satisfactory evidence that _____ and _____ is/are the person(s) who appeared before me, and said **individual(s)** acknowledged that he/she/they signed this instrument and acknowledged it to be his/her/their free and voluntary act for the uses and purposes mentioned in this instrument.

Dated _____

_____

_____
Notary Public in and for the State of Washington
residing at _____
My appointment expires _____

REF. H:\FORMS\FC087 (4/98)

EXHIBIT "A"

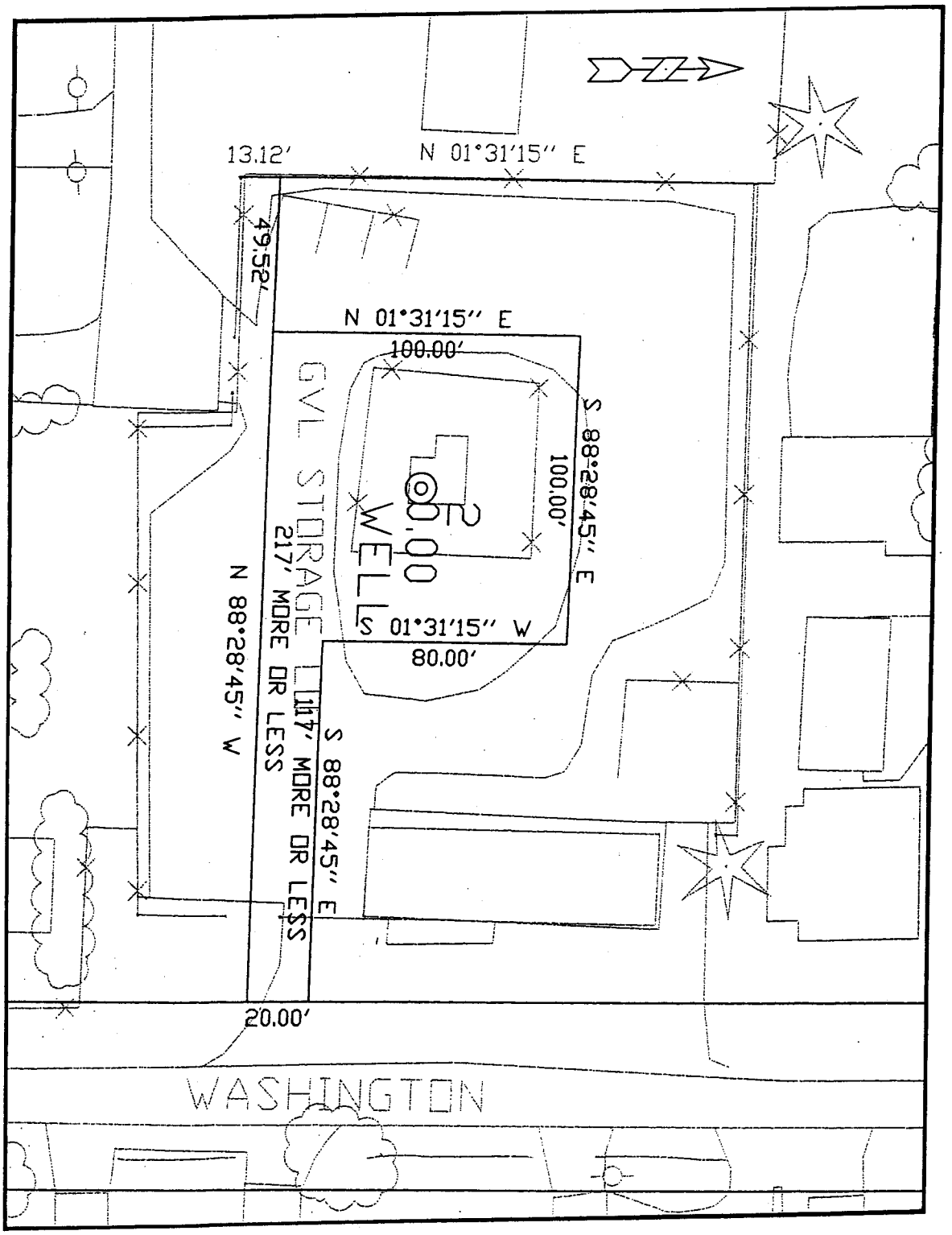
ALGONA WATER WELL EASEMENT
3RD AVENUE SOUTH AND WASHINGTON BOULEVARD

THAT PORTION OF LOTS 23 AND 24 AND 25 AND 26 AND 27 AND 28 AND 29 AND 30, ALL IN BLOCK 4 OF WOOD'S ALGONA ADDITION, DIVISION NUMBER 1 TO THE CITY OF SEATTLE AS RECORDED IN VOLUME 19 OF PLATS, PAGE 36, RECORDS OF KING COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF SAID LOT 30; THENCE NORTH 01°31'15" EAST ALONG THE WEST BOUNDARY OF SAID LOT 30, A DISTANCE OF 13.12 FEET; THENCE SOUTH 88°28'45" EAST, 49.52 FEET TO THE TRUE POINT OF BEGINNING; THENCE NORTH 01°31'15" EAST, 100.00 FEET; THENCE SOUTH 88°28'45" EAST, 100.00 FEET; THENCE SOUTH 01°31'15" WEST, 80.00 FEET; THENCE SOUTH 88°28'45" EAST, 117 FEET MORE OR LESS TO THE WEST MARGIN OF WASHINGTON BOULEVARD; THENCE SOUTHERLY 20.00 FEET MORE OR LESS ALONG SAID WEST MARGIN OF WASHINGTON BOULEVARD TO A POINT WHICH BEARS SOUTH 88°28'45" EAST FROM SAID TRUE POINT OF BEGINNING; THENCE NORTH 88°28'45" WEST, 217 FEET MORE OR LESS TO SAID TRUE POINT OF BEGINNING.

SITUATE IN THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 25, TOWNSHIP 21 NORTH, RANGE 4 EAST, W. M.

EXHIBIT "B"


13.12'
N 01°31'15" E
49.52'
N 01°31'15" E
100.00'
S 88°28'45" E
100.00'
WELL
S 01°31'15" W
80.00'
GVL STORAGE LLC
N 88°28'45" W
217' MORE OR LESS
S 88°28'45" E
117' MORE OR LESS
20.00'
WASHINGTON

RESOLUTION NO. 3 6 1 4

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE AN EMERGENCY WATER SYSTEM INTERTIE AGREEMENT BETWEEN THE CITY OF AUBURN AND KING COUNTY WATER DISTRICT NO. 111

WHEREAS, Auburn and King County Water District No. 111 have legal authority to exercise their powers and perform any of their functions as set forth in RCW 39.34, the Interlocal Cooperation Act; and

WHEREAS, pursuant to RCW 39.34, Auburn and King County Water District No. 111 have legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, the City of Auburn and King County Water District No. 111 currently have water facilities in the vicinity; and

WHEREAS, both agencies can increase fire protection and emergency water supply reliability for their customers; and

WHEREAS, both agencies are willing to provide the necessary services to increase fire fighting and emergency supply reliability upon the terms and conditions set forth in the Emergency Water System Intertie Agreement.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. Pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and King County Water District No. 111 have legal authority to cooperate with other localities on the basis of mutual advantage and provision of services.

Section 2. The Mayor is hereby authorized to execute an Emergency Water System Intertie Agreement between the City and King County Water District No. 111 in the form substantially as the agreement attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 3. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 4. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

DATED this 2nd day of June, 2003.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

EMERGENCY WATER SYSTEM INTERTIE AGREEMENT
Water District No. 111/Auburn Intertie Agreement No. 1

THIS AGREEMENT made and entered into by and between the City of Auburn, hereinafter referred to as Auburn, and the Water District No. 111, hereinafter referred to as the District, for the purposes of maintaining and operating emergency system interties between the respective parties.

WITNESSETH:

WHEREAS, Auburn and the District executed an interlocal agreement regarding the Duberry Hill Development Project on July 17, 2000; and

WHEREAS, Section I(b) of that agreement states that a new interlocal agreement shall be adopted for the operation of the emergency interties established under that agreement; and

WHEREAS, both Auburn and the District have water facilities in the vicinity, and

WHEREAS, the District can increase fire protection and emergency water supply reliability for their customers in the Duberry Hill development, and

WHEREAS, Auburn can increase fire protection and emergency water supply reliability for their customers in the vicinity of the Duberry Hill development when the District connects the development to the District water system, and

WHEREAS, Auburn and the District are willing to provide the necessary services to increase fire fighting and emergency supply reliability upon the terms and conditions set forth herein,

NOW, THEREFORE, IT IS MUTUALLY AGREED as follows:

1. Interlocal Agreement regarding the Duberry Hill Development Project between the City of Auburn and Water District No. 111, dated July 17, 2000 and adopted by City of Auburn Resolution No. 3237 is hereby superceded by this Agreement.

2. The emergency water system interties are to be operated manually as a emergency supply whereby Auburn can supply water to the Duberry Hill development for the District and the District can provide water to the Auburn system once the District connects it's system to the Duberry Hill development. There are two intertie facilities, which are located near the intersection of 124th Avenue SE and SE 300th and the intersection of 127th Place SE and SE 300th at the Water Service Area Boundary between Auburn and the District.

3. The emergency water system interties shall be closed during normal operating conditions and will be opened only with prior authorization by Auburn or the District in the event of an emergency. For purposes of this agreement, an emergency shall be defined as resulting from a water shortage (not to exceed seven (7) calendar days), a major water line break, fire demand, contamination to the water supply system, mechanical equipment failure, electrical equipment failure or Puget Sound Energy facility failure, or any other agreed upon emergency within the water supply system.

4. The two valves that constitute the emergency water system interties and all piping leading up to the valves from the Auburn distribution system shall be owned and maintained by Auburn. All piping leading up to the valves from the District distribution system shall be owned and operated by the District.

5. The procedure for operating the intertie in the event of such emergency shall be as follows:

   A. Auburn or the District shall determine that an emergency of sufficient magnitude has occurred which warrants the need to request that the intertie be activated.

   B. Authorized personnel shall provide a verbal request to the system that will be supplying the water. Upon agreement that an emergency exists which shall allow for the intertie to be opened, the intertie will be activated as soon as reasonably possible. Personnel from Auburn and the District shall be present to activate the valve(s).

   C. The party requesting emergency water shall provide a written confirmation of the request not less than 24 hours after the verbal request, or on the first day of normal business after the verbal request.

   D. The intertie shall remain activated until the party requesting emergency water determines that the need for activation of the emergency intertie has ceased and shall request in writing that the intertie be closed.

   E. In case of emergency or whenever the public health, safety, or the equitable distribution of water so demands, either party may change, reduce or limit the time for or temporarily discontinue the supply of water without notice; water service may be temporarily

interrupted, limited for purposes of making repairs, extensions or doing other necessary work; and shall not be responsible for any damage resulting from interruption, change or failure of the water supply, and the receiving party shall save and hold harmless the providing party from any loss, damages or suits to or by customers of the receiving party resulting from interruption, change or failure of water supply provided by this Agreement, except damages arising out of the providing party's negligence. Prior to a planned interruption or limiting of service, the providing party will notify the receiving party of such not less than three days prior to the service disruption. The providing party agrees to use best efforts and reasonable diligence to notify the receiving party as soon after it becomes aware of the need for service disruption and further will, to the extent practical, limit the service disruption to daylight hours.

6. To the extent allowed by law, the District shall defend, indemnify, and hold harmless Auburn, its elected officials, employees and agents from and against any and all suits, claims, actions, losses, costs, expenses of litigation, attorney's fees, penalties and damages of whatsoever kind or nature arising out of or in connection with or incident to an act or omission of the District, its employees, agents, and contractors in the performance of the District's obligations under this Agreement. This indemnification provision shall include, but is not limited to, all claims against Auburn by an employee or former employee of the District or its contractors and, as to such claims, the District expressly waives all immunity and limitation of liability under Title 51 RCW.

   To the extent allowed by law, Auburn shall defend, indemnify and hold harmless the District, its elected officials, employees and agents from and against any and all suits, claims, actions, losses, costs, expenses of litigation, attorney's fees, penalties, and damages or whatsoever kind or nature arising our of, in connection with or incident to an act or omission of Auburn, its employees, agents, and contractors in the performance of Auburn's obligations under this Agreement. This indemnification obligation shall include, but is not limited to, all claims against the District by an employee or former employee of Auburn or its contractors and, as to such claims, Auburn expressly waives all immunity and limitation of liability under Title 51 RCW.

7. This Agreement shall remain in force until terminated by either party hereto upon 60-days written notice to the other party.

IN WITNESS WHEREOF, we have hereunto set our hands and seals.

CITY OF AUBURN
King County, Washington

By: JUN 2 2003
Mayor Date

WATER DISTRICT NO. 111
King County, Washington

By: 6-9-03
District Manager Date

Approved as to form:

By:
City Attorney Date

Approved as to form:

By:
General Counsel Date

H:\WQWATER UTILITY\INTERTIES\WD111\DUBERRY EIA 051403.DOC

RESOLUTION NO. **3637**

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, SUPERCEDING RESOLUTION NO. 3543 AND AUTHORIZING THE MAYOR TO EXECUTE A TURNOUT CONSTRUCTION AGREEMENT BETWEEN THE CITY OF AUBURN AND THE CITY OF TACOMA WATER DIVISION

WHEREAS, Auburn and Tacoma are responsible for operating and maintaining public water systems in accordance with federal, state and local laws and regulations, and

WHEREAS, the parties recognize that water resources are finite and vulnerable, and the prudent use and management of these resources requires cooperation among water utilities, and

WHEREAS, Auburn and Tacoma entered into a Turnout Construction Agreement authorized by City of Auburn Resolution No. 3543, dated November 18, 2002, for the construction of one turnout, and

WHEREAS, Auburn and Tacoma have determined that it would be beneficial to construct two additional turnouts, and

WHEREAS, Auburn has water facilities in the vicinity of the Tacoma Second Supply Project pipeline, and Auburn will have an agreement with one or more SSP Partner to purchase water that will be delivered via the SSP, and

pursuant to this agreement construction of the turnout to the SSP is set forth which turnout will be used for delivering and metering the purchased water, and

WHEREAS, this agreement will supercede the Turnout Construction Agreement authorized by City of Auburn Resolution No. 3543, dated November 18, 2002.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. This resolution shall supercede Resolution No. 3543, and authorizes the Mayor to execute the Turnout Construction Agreement between the City and the City of Tacoma Water Division, in substantial conformity with the agreement attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

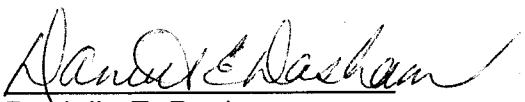
Dated and Signed this 15th day of September 2003.

CITY OF AUBURN



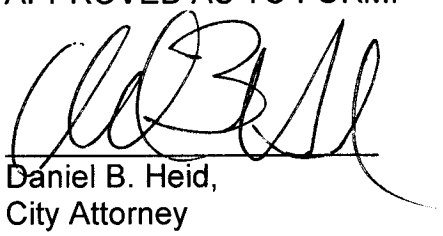
PETER B. LEWIS
MAYOR

ATTEST:



Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:



Daniel B. Heid,
City Attorney

TURNOUT

CONSTRUCTION AGREEMENT

BETWEEN TACOMA WATER

AND CITY OF AUBURN

This agreement made and entered into this 9th day of Oct, 2003, by and between the City of Auburn (hereinafter referred to as "Auburn") and City of Tacoma Water Division (dba Tacoma Water and hereinafter referred to as "Tacoma"), WITNESSETH THAT:

A. RECITALS:

WHEREAS, Auburn and Tacoma are responsible for operating and maintaining public water systems in accordance with federal, state and local laws and regulations, and

WHEREAS, the parties recognize that water resources are finite and vulnerable, and the prudent use and management of these resources requires cooperation among water utilities, and

WHEREAS, Auburn and Tacoma have previously entered into a Turnout Construction Agreement authorized by City of Auburn Resolution No. 3543, dated November 18, 2002, for the construction of one turnout, and

WHEREAS, Auburn and Tacoma have determined that it would be beneficial to construct two additional turnouts, and

WHEREAS, Auburn has water facilities in the vicinity of the Tacoma Second Supply Project (SSP) pipeline, and Auburn will have an agreement with one or more SSP Partner to purchase water that will be delivered via the SSP, and pursuant to this agreement construction of the turnout to the SSP is set forth which turnout will be used for delivering and metering the purchased water.

NOW THEREFORE, IT IS MUTUALLY AGREED as follows:

B. The Turnout Construction Agreement between Tacoma Water and City of Auburn dated November 8, 2002, and adopted by City of Auburn Resolution 3543 dated November 18, 2002, is hereby superceded by this Agreement.

C. DEFINITIONS:

The definition of certain terms, when used in this agreement, are as follows:

TURNOUT means a physical connection between water mains of the two parties to this agreement, at specifically identified points, where water may be transferred

from the supplies of one system to the transmission or distribution facilities of the other.

ISOLATION VALVE means a positive shut-off valve that shall be installed immediately downstream of the water meter vault at the point in each water system that is used to accept or deliver water through the turnout. The isolation valve is defined as part of the system connected to the turnout and not part of the turnout. Each connected system has sole responsibility for providing and operating their isolation valve.

TURNOUT CAPACITY means the maximum flow capacity for water to be delivered through a turnout as agreed upon by the parties to this agreement. Turnout facilities shall be designed so as to be capable of conveying no less than the maximum agreed upon flow.

SSP means the Second Supply Project (to bring water to the SSP Partners)

SSP ISOLATION VALVE means a positive shut-off valve that shall be installed at the point in each water system that is used to accept or deliver water through the turnout. The SSP isolation valve is defined as part of the system connected to the turnout upstream of the meter vault. Each connected system has sole responsibility for providing the SSP isolation valve. Tacoma will be responsible for operating the SSP isolation valve.

SSP PARTNERS refers to the City of Kent, Tacoma Water, Covington Water District and Lakehaven Utility District.

D. PURCHASE OF WATER FOR THIS TURNOUT:

The purchase of water to be delivered via this subject turnout shall be by a separate agreement with one or more of the SSP Partners and Auburn. This Turnout Construction Agreement does not guarantee any rights to use or purchase water from any of the SSP Partners. Tacoma will only allow Auburn, its successors and assigns, to obtain water via the subject turnout after the applicable SSP partner has advised Tacoma in writing that an acceptable agreement for water purchase has been executed. In delivering water via the subject turnouts, Tacoma will be relying on directions and/or confirmation from the SSP partner as to the timing and quantities of water deliveries and all other aspects of providing water via the subject turnouts. In the event of a disagreement between Auburn and the applicable SSP Partner pertaining to entitlement to continued water delivery via the subject turnouts, Tacoma is entitled to rely on the written directions or instructions of the SSP partner. Therefore, Auburn agrees that it shall not file any claim or legal action against Tacoma when Tacoma's actions are consistent with the written directions or instructions from the applicable SSP partner from which Auburn has contractual arrangements to purchase water.

E. CONDITIONS:

1. The TURNOUTS described in Exhibits A, B-1, B-2 and B-3 attached to this agreement shall be governed by the terms of this agreement. No future TURNOUTS shall be permissible without a subsequent and separate written agreement between the parties.

2. The cost of design and construction of the TURNOUTS and installation of the meters shall be the responsibility of Auburn, and the design and construction shall be subject to Tacoma's review, inspection and approval.

3. By this agreement Auburn agrees that the ownership of the SSP ISOLATION VALVES directly off of the SSP Project, piping from the SSP ISOLATION VALVES to the meters or spools, the meters or spools, meter vaults, pipe stubs out from the vaults and telemetry shall be with Tacoma (see Exhibit A for more information), with all capital costs to be paid by Auburn. Maintenance and operation of the SSP ISOLATION VALVES, piping and meters will be performed solely by Tacoma, and Auburn will be invoiced for such costs and shall reimburse Tacoma. Meter vault maintenance costs and any cost for maintaining any equipment such as pumps, buildings and other appurtenances downstream of the meter shall also be the responsibility of Auburn. In addition, in the event any of the facilities require replacement or upgrading, this cost is Auburn's responsibility. In the event that access or other permits are necessary for Tacoma to operate and maintain the subject facilities, Auburn shall provide the necessary permits, which shall also become an exhibit to this agreement. (See Exhibit A for a plan showing the facilities and the responsibility of the parties).

4. Upon completion of the construction of the Turnouts, Tacoma will own the meters and associated appurtenances necessary to monitor use of the turnouts.

5. Auburn shall comply with all applicable laws and requirements including City of Tacoma ordinances/resolutions and Customer Service Policies and/or other rules applicable to a connection to Tacoma's water system including, but not limited to, the requirements that Tacoma provide written approval of plans and specifications for the connection of turnout facilities prior to construction.

6. Auburn agrees that it shall make payment of all invoices for services and charges from Tacoma within 45 days of the invoice date. Late payment shall result in a late payment charge of 1% on the unpaid balance, and failure to pay any invoice or bill related to this agreement within 60 days of mailing may result in Tacoma's termination of water service at the turnout.

7. Notices should be sent to Auburn and to Tacoma at the following addresses:

Water Superintendent
Tacoma Water
P. O. Box 11007
Tacoma, WA 98411

Public Works Director
City of Auburn
25 West Main
Auburn, WA 98001-4998

8. Neither this Agreement nor any right or privilege herein shall be assigned by any party without the written consent of the other parties.

9. Uncontrollable forces or state or federal law changes may occur during the time this Agreement is in place. Neither of the parties hereto shall be considered to be in default in respect to any obligations hereunder if prevented from fulfilling such obligations by reason or uncontrollable forces or material changes in state or federal law or enforcement thereof. Parties rendered unable to fulfill any obligation hereunder by reason of an uncontrollable force or material change in state or federal law shall exercise due diligence to deal with such uncontrollable force with all reasonable dispatch and to take actions consistent with the purpose of this agreement.

10. This Agreement describes the entire relationship of the parties with regard to the subject matter herein concerned. Except as maybe explicitly provided otherwise herein, the parties are independent agencies and shall not be deemed to be partners, joint ventures, principals, or agents or each other for any purpose whatsoever. Each party shall have and maintain sole and complete control over all of its employees, agents and operations. Except as may otherwise be explicitly provided herein, or in separate agreement, each and all of the obligations, responsibilities, and liabilities of the parties under and in connection with this Agreement are several, and not joint, and no separate legal or administrative entity will be created to fulfill the purposes of this Agreement.

11. Except as expressly set forth in this Agreement, none of the provisions of this Agreement shall inure to the benefit or be enforceable by any third party.

12. The invalidity or unenforceability of any provision of this Agreement shall not affect the other provisions hereof, and this Agreement shall be construed in all respects as if such invalid or unenforceable provisions were omitted.

13. No change, amendment or modification or any provision of this Agreement shall be valid unless set forth in a written amendment to this Agreement signed by all parties.

14. The SSP Partners must approve this Agreement.

IN WITNESS WHEREOF, the following parties have duly executed this agreement on the date written above:

City of Tacoma
Department of Public Utilities
Water Division

By: Kenneth J. Merry
Title: Water Superintendent

Approved as to form & legality:
Asst City Attorney

City of Auburn

By:
Title:

Approved as to form & legality:

Approved by the SSP Project Partners at their Project Committee meeting held on September 12, 2003.

EXHIBIT A

TURNOUT DESCRIPTION

A. TURNOUT #1: A turnout between a 60" diameter water line owned by Tacoma and a 16" diameter water line containing Auburn water. The turnout is located at the intersection of 132nd Avenue SE and SE 296th Street extended. The turnout consists of 12" diameter piping with 12" diameter valves to control flow. A 6-inch diameter water meter will be used to measure the volume of water transferred between the two systems. The meter will be contained in a concrete vault buried in the Second Supply Pipeline right-of-way. Second Supply Pipeline construction drawings 15-19-62 and 15-19-69 are attached and show the detail for the turnout vault construction.

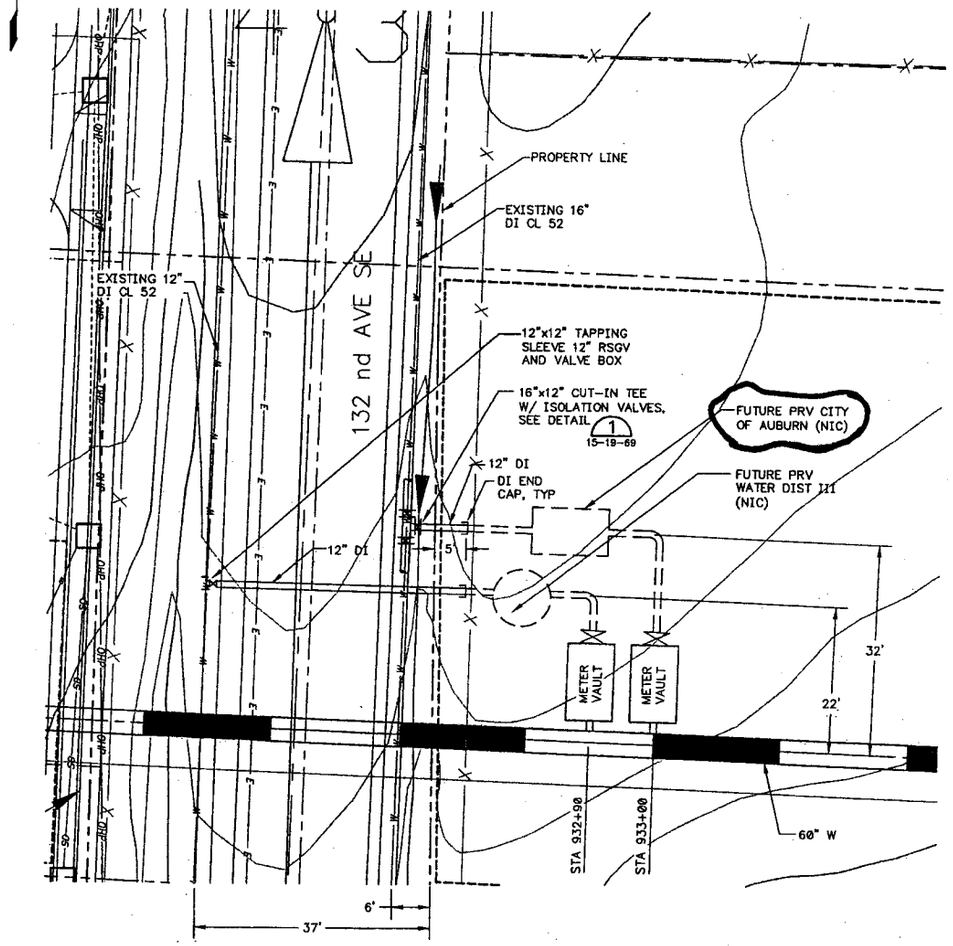
The turnout is designed to be capable of conveying at least 3000 gallons per minute from Tacoma owned facilities to Auburn with approximately 125-foot differential in hydrostatic pressure under normal operating conditions.

B. TURNOUT #2: A 12-inch turnout connection located on the east side of B Street NW and approximately 32nd Street NW between Tacoma's 60"diameter Second Supply Pipeline and Auburn's 16" diameter water line in B Street. An 8-inch diameter water meter will be used to measure the volume of water transferred between the two systems. Second Supply Pipeline construction drawings 15-25-29 and 15-21-62 are attached and show the details for the turnout vault construction.

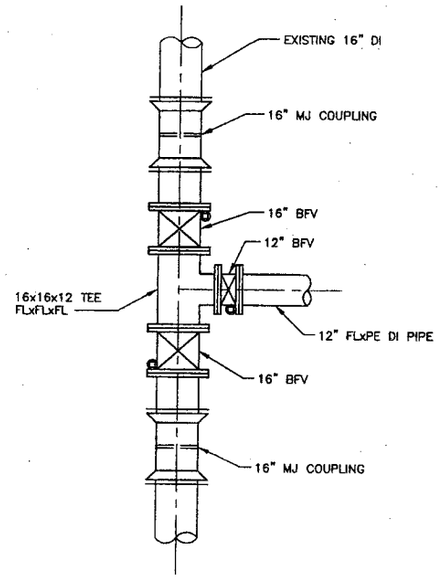
The turnout is designed to be capable of conveying at least 8300 gallons per minute from Tacoma owned facilities to Auburn with approximately 405-foot differential in hydrostatic pressure under normal operating conditions.

C. TURNOUT #3: A 12-inch turnout connection located at approximately K Street NE and approximately 32nd Street NE between Tacoma's 60" diameter Second Supply Pipeline and Auburn's adjacent water line. An 8-inch diameter water meter will be used to measure the volume of water transferred between the two systems. Second Supply Pipeline construction drawings 15-25-29 and 15-21-66 are attached and show the details for the turnout vault construction.

The turnout is designed to be capable of conveying at least 8300 gallons per minute from Tacoma owned facilities to Auburn with approximately 405-foot differential in hydrostatic pressure under normal operating conditions.



SERVICE CINNECTION PLAN
SCALE:1" =20'



16" CONNECTION DETAIL 1 15-19-69
SCALE:1/2" =1'-0"

NOTE:

1. DUCTILE IRON PIPE TO BE CLASS 52 WITH RESTRAINED JOINTS.
2. PROVIDE 14 DAYS NOTICE TO WATER DISTRICT NO III PRIOR TO MAKING INTERCONNECTIONS.
3. TRENCH BACKFILL AND SURFACE RESTORATION SHALL BE PER DETAIL 1 15-20-72
4. BUTTERFLY VALVES SHALL CONFORM TO AWWA/C504 250 PSI RATING. PROVIDE EXTENSION STEM AND VALVE BOX TO GRADE.

DATUM
HORIZONTAL DATUM:
WASHINGTON COORDINATE SYSTEM, NORTH ZONE NAD 83/91
VERTICAL DATUM:
NGVD-29

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

MICHAEL P. BLANCHETTE STATE OF WASHINGTON 21511 REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 3/13/04

TIMOTHY A. LARSON STATE OF WASHINGTON 16978 REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 11/04/02

NO.	REVISION	DATE	BY	APP'D.	REV. COMP.
6					
5					
4					
3					
2					
1					

CH2MHILL | MWH MONTGOMERY WATSON HARZA | HDR Engineering, Inc.

REFERENCE

DATE APRIL 16, 2002
DESIGN M. BLANCHETTE
DRAWN B. KEEVER
CHECKED

W.O. 73005
DISTRICT PROJECT NUMB. PLSNA083
DISTRICT FILE NUMB.
FIELD BOOK
DATA FILE

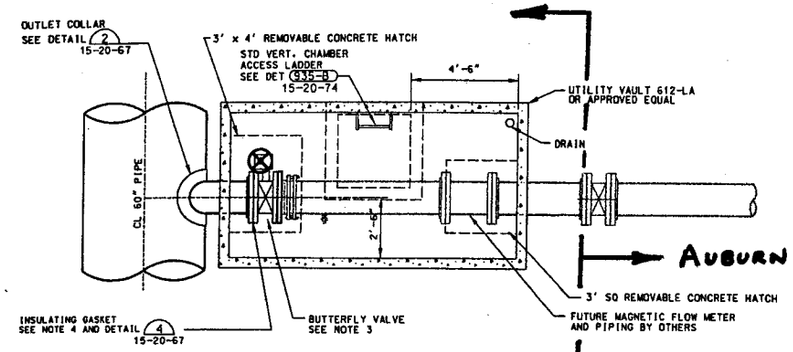
APPROVED
MANAGER

TACOMA WATER
TACOMA PUBLIC UTILITIES

TACOMA SECOND SUPPLY PROJECT

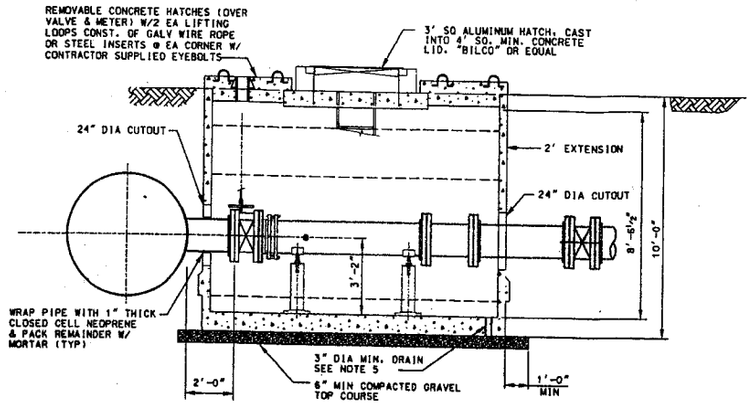
MIDDLE REACH - EASTERN SECTION
SERVICE CONNECTION DETAILS
132ND AVE SE

SCALE
HORZ: 1" = 10'
VERT: 1" = 10'
DRAWING NO.
15-19-69
SHEET 50 OF 115



PLAN

CONSTRUCTION, O&M BY TACOMA



SECTION

SERVICE CONNECTION TABLE						
LOCATION	SIZE	WATYER PURVEYOR	CONTACT	TELEPHONE NUMBER	PRV VAULT	LINE TAP SEE NOTE 6
STA 905+35	12	CITY OF KENT	DON WIGSTROM	253-856-5500	FUTURE	FUTURE
STA 933+00	12	CITY OF AUBURN	DUANE HUSKY	253-804-5062	FUTURE	YES
STA 932+90	12	WATER DISTRICT 111	TOM DOZALL	253-631-3770	FUTURE	YES
STA 985+35	12	COVINGTON WATER DISTRICT	JAY GIBSON	253-631-0565	FUTURE	FUTURE
STA 1130+00	12	COVINGTON WATER DISTRICT	JAY GIBSON	253-631-0560	FUTURE	FUTURE

NOTE:

1 GROUNDING MATS FOR VAULTS NOT SHOWN. SEE DETAIL 1/15-20-65

2 ALL FLANGES SHALL BE ANSI/ASME B 16.5 (CLASS 300)

3 BUTTERFLY VALVES SHALL CONFORM TO AWWA/C 504 250 PSI WHERE WORKING PRESSURE IS LESS THAN OR EQUAL TO 250 PSI. USE HIGH PRESSURE 300 PSI VALVES FOR WORKING PRESSURE GREATER THAN 250 PSI. WHERE BURIED, PROVIDE EXTENSION STEM AND VALVE BOX TO GRADE.

4 TYPE "I" TEST STATION TO BE LOCATED AT EACH INSULATING GASKET PER DETAIL 6 ON DRAWING 15-20-64.

5 IN AREAS OF HIGH WATER OR WHEN DIRECTED BY THE ENGINEER, OMIT CHAMBER DRAIN & GRAVEL AND PLACE 12" DIA CONCRETE PIPE 12" LONG IN BASE SLAB. PIPE BOTTOM WITH 3" OF CONCRETE & PLACE 3/8" PLATE COVER RECESS FLUSH WITH SLAB. DRILL 5-1" DIA EQUALLY SPACED HOLES IN PLATE & HOT DIP GALVANIZE.

6 SEE PLAN AND PROFILE DRAWINGS FOR INFORMATION ON REQUIRED LINE TAPS FOR UTILITIES RECEIVING A WATER SERVICE.

SERVICE CONNECTION AND METER TURNOUT VAULT (1)

3/8"=1'-0"

GREGORY S. HARRIS — STATE OF WASHINGTON — 15981 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES: 6/17/04

GREGORY A. ARKANSAS — STATE OF WASHINGTON — 15981 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES: 11/04/02

NO.	REVISION	DATE	BY	APP'D.	REV. COMP.
6					
5					
4					
3					
2					
1					

CH2MHILL — MWH — HDR Engineering, Inc.

REFERENCE

DATE 04/15/2002
DESIGN TAL/LCS
DRAWN DGP/SRD
CHECKED DRM

W.O. 73005
CADET PROJECT NAME PLSNAD83
CADET FILE NAME
FIELD BOOK
DATA FILE

APPROVED — MANAGER

TACOMA WATER
TACOMA PUBLIC UTILITIES

TACOMA SECOND SUPPLY PROJECT

MIDDLE REACH - EASTERN SECTION

SERVICE CONNECTION VAULT DETAILS

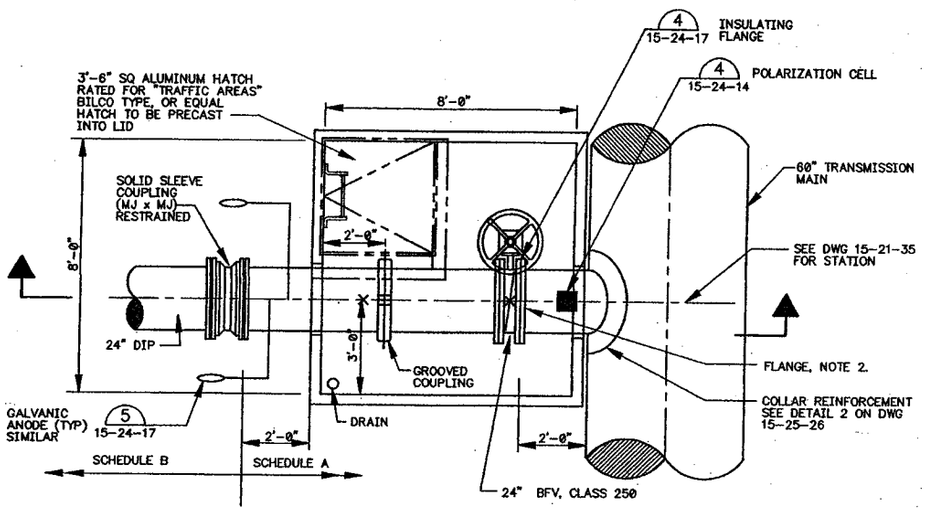
SCALE 3/8"=1'-0"

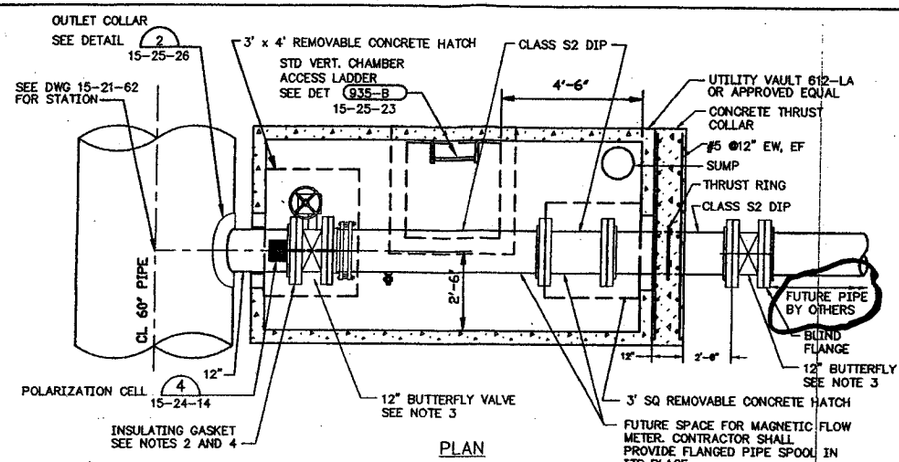
DRAWING NO. 15-19-62

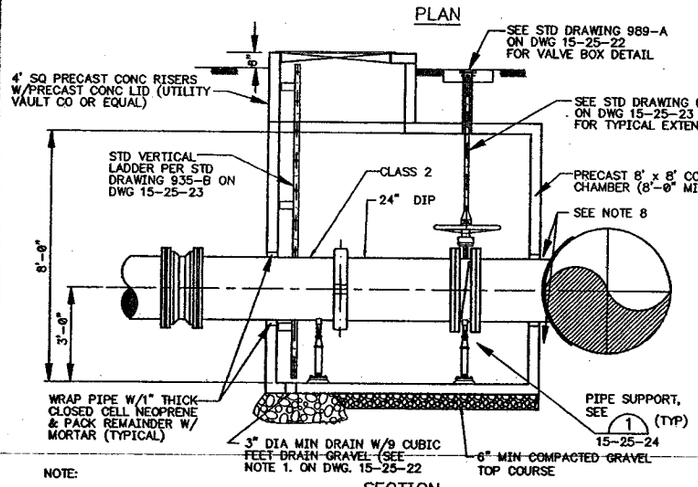
SHEET 43 OF 115

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

G:\PROJECTS\Tacoma Second Supply\Middle Reach\Eastern Section\Drawings\Details\15-19-62.dgn 15-Apr-2002 08:20:26 Adobe PDF Settings: Adobe Standard







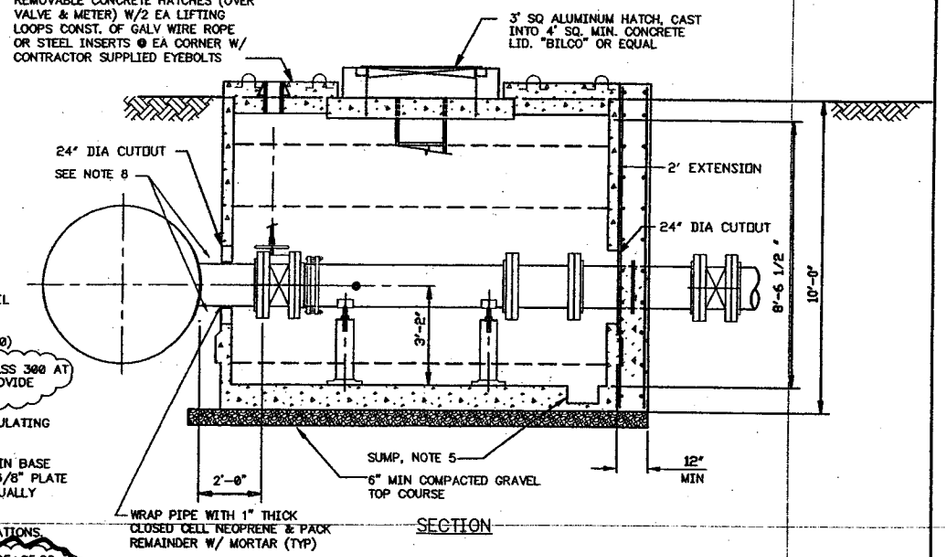
NOTE:
GROUNDING MAT AND POLARIZATION CELL NOT SHOWN. SEE DETAIL 1 15-24-15 AND DETAIL 4 15-24-14

24" TURNOUT VALVE VAULT 1

SCALE 1/2" = 1'-0"

NOTES:

1. GROUNDING MATS FOR VAULTS NOT SHOWN. SEE DETAIL 1/15-24-15
2. ALL FLANGES SHALL BE ANSI/ASME B 16.5 (CLASS 300)
3. 12" BUTTERFLY VALVES SHALL BE HIGH PRESSURE CLASS 300 AT STA 765+85.22 AND STA 803+50. WHERE BURIED, PROVIDE EXTENSION STEM AND VALVE BOX TO GRADE.
4. TYPE "I" TEST STATION TO BE LOCATED AT EACH INSULATING GASKET PER DETAIL 6 ON DRAWING 15-24-14.
5. FOR SUMP, PLACE 12" DIA CONCRETE PIPE 12" LONG IN BASE SLAB. PIPE BOTTOM WITH 3" OF CONCRETE & PLACE 3/8" PLATE COVER RECESS FLUSH WITH SLAB. DRILL 5-1" DIA EQUALLY SPACED HOLES IN PLATE & HOT DIP GALVANIZE.
6. SEE PLAN AND PROFILE DRAWINGS FOR TURNOUT LOCATIONS.
7. REGARDING THE 12" SERVICE CONNECTIONS AT STA 765+85.22 AND STA 803+50, CONTACT DUANE HUSKY AT THE CITY OF AUBURN (253-804-5062) 2 WEEKS PRIOR TO INSTALLATION.
8. PROVIDE CLSM BACKFILL IN PIPE BASE AND PIPE ZONE BETWEEN 60" PIPE & VAULT.



12" SERVICE CONNECTION AND METER TURNOUT VAULT 2

1/2"=1'-0"

NO.	REVISION	DATE	BY	APP'D.	REV. COMPL.
1	ADDENDUM NO. 1	1/31/03	PLM	TAL	

CH2MHILL | MWH Montgomery Watson Harza | HDR Engineering, Inc.

REFERENCE

DATE JAN 2003
DESIGN
DRAWN SDS
TRACED
CHECKED

W.O. 71881
DIRECT PROJECT NAME: PLONAD83
DIRECT FILE NAME:
FIELD BOOK
DATA FILE

APPROVED

TACOMA WATER
TACOMA PUBLIC UTILITIES

TACOMA SECOND SUPPLY PROJECT

MIDDLE REACH – WESTERN SECTION
STANDARD DETAILS
TURN-OUT VALVE VAULTS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

SCALE AS SHOWN

DRAWING NO. 15-25-29

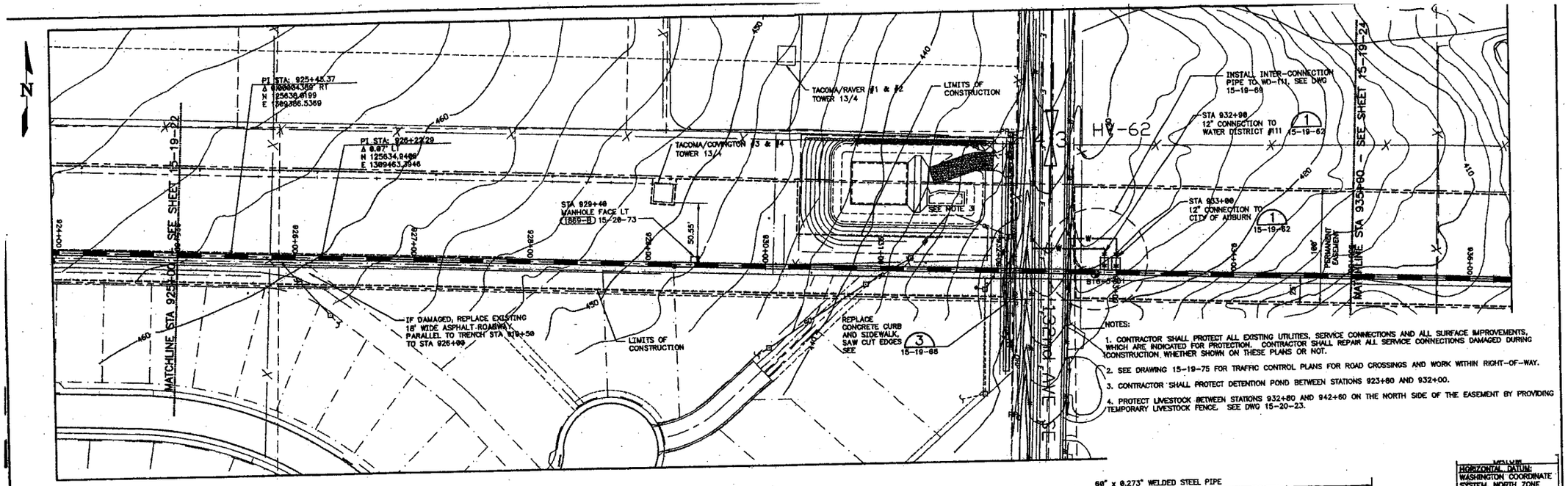
SHEET 152 OF 207

ARTHUR L. STORM — EXPIRES 9/30/04
DAVID G. HARRIS — EXPIRES 11/24/04

Exhibit B-1

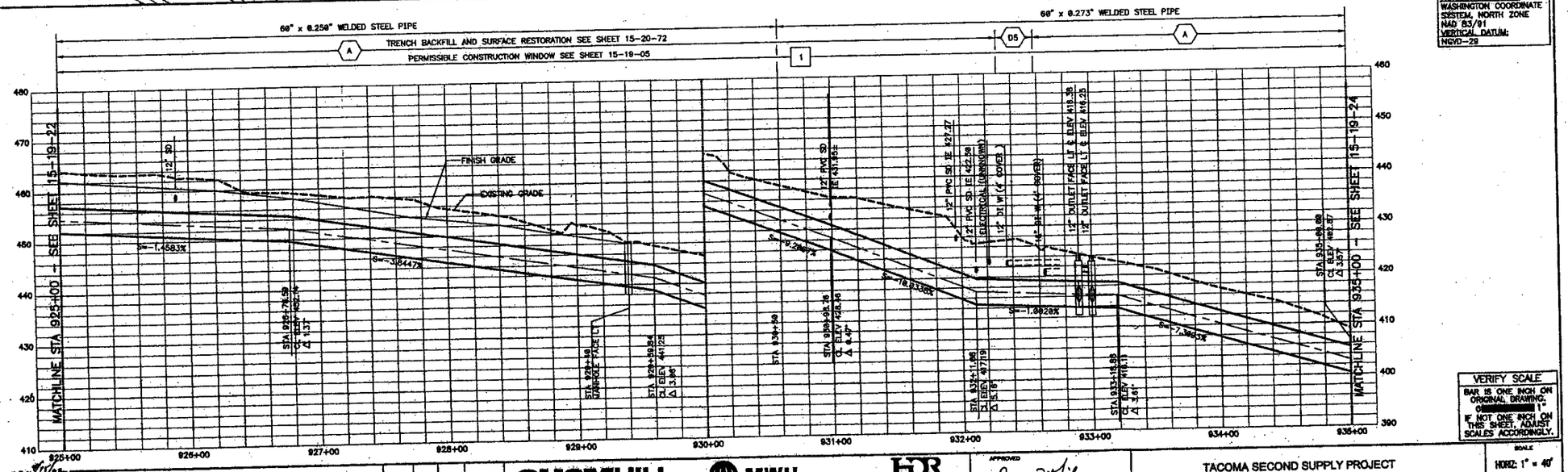
General Vicinity Map of Turnout #1 Facilities

(SSP construction drawing 15-19-23)



NOTES:

1. CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES, SERVICE CONNECTIONS AND ALL SURFACE IMPROVEMENTS, WHICH ARE INDICATED FOR PROTECTION. CONTRACTOR SHALL REPAIR ALL SERVICE CONNECTIONS DAMAGED DURING CONSTRUCTION, WHETHER SHOWN ON THESE PLANS OR NOT.
2. SEE DRAWING 15-19-75 FOR TRAFFIC CONTROL PLANS FOR ROAD CROSSINGS AND WORK WITHIN RIGHT-OF-WAY.
3. CONTRACTOR SHALL PROTECT DETENTION POND BETWEEN STATIONS 923+80 AND 932+00.
4. PROTECT LIVESTOCK BETWEEN STATIONS 932+80 AND 942+60 ON THE NORTH SIDE OF THE EASEMENT BY PROVIDING TEMPORARY LIVESTOCK FENCE. SEE DWG 15-20-23.



HORIZONTAL DATUM:
WASHINGTON COORDINATE SYSTEM, NORTH ZONE
NAD 83/91
VERTICAL DATUM:
NGVD-29

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL | MWH MONTGOMERY WATSON HARZA | HDR Engineering, Inc.

APPROVED

TACOMA WATER
TACOMA PUBLIC UTILITIES

TACOMA SECOND SUPPLY PROJECT

MIDDLE REACH – EASTERN SECTION
PLAN AND PROFILE
STA 925+00 TO 935+00

SCALE
HORZ: 1" = 40'
VERT: 1" = 10'

DRAWING NO.
15-19-23

SHEET 12 OF 115

NO.	REVISION	DATE	BY	APP'D.	REV. COMP.
6					
5					
4					
3					
2					
1					

REFERENCE

DATE APRIL 16, 2002
DESIGN M. BLANCHETTE
DRAWN E. CLEAVER
CHECKED

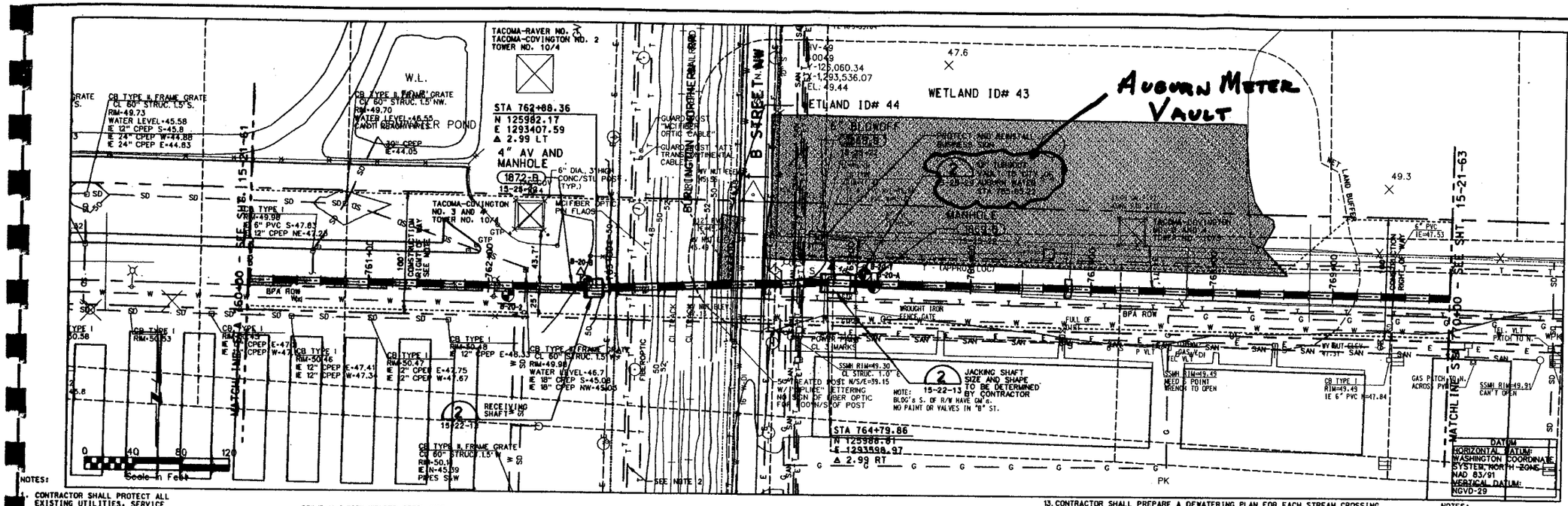
W.O. 73005
CH2M PROJECT MGR. PLSHADE3
CH2MHILL FILE PATH
FIELD BOOK
DATA FILE

EXPIRES: 9/19/04
EXPIRES: 11/30/04

Exhibit B-2

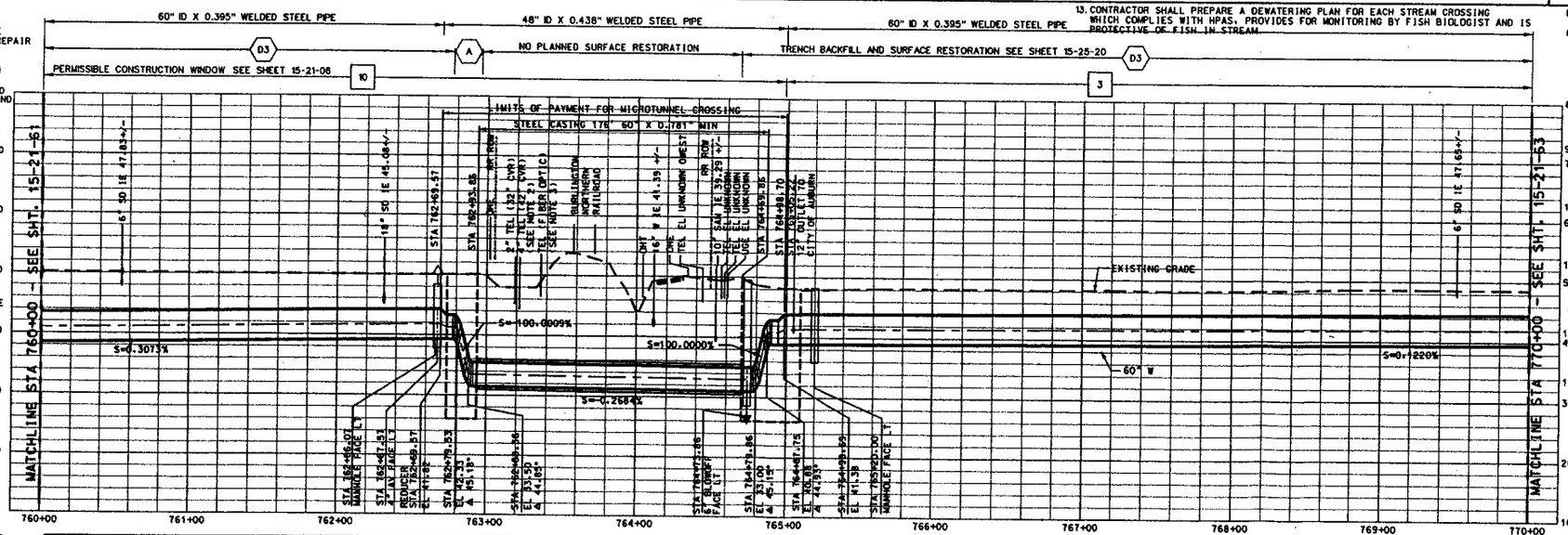
General Vicinity Map of Turnout #2 Facilities

(SSP construction drawing 15-21-62)



NOTES:

1. CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES, SERVICE CONNECTIONS, AND SURFACE IMPROVEMENTS UNLESS OTHERWISE INDICATED. CONTRACTOR SHALL REPAIR ALL SERVICE CONNECTIONS AND UTILITIES DAMAGED DURING CONSTRICTION WHETHER SHOWN ON THESE PLANS OR NOT.
2. ATT FIBER OPTIC CABLE IN 4" AND 2" PVC CONDUIT. CALL SHEIKH MOMD AT 206-349-0180 FOR FURTHER INFORMATION AND TO COORDINATE WITNESSING OF WORK IN THIS AREA.
3. CONTACT MIKE STAFFORD AT MCI WORLD COM AT 206-730-9306 FOR FURTHER INFORMATION.
4. EASEMENT THROUGH EMERALD DOWNS IS OWNED IN FEE BY CITY OF TACOMA.
5. SIGNIFICANT DEWATERING IS ANTICIPATED IN THE AUBURN VALLEY FROM APPROXIMATELY STA T12+00 TO STA 840+00. CONTRACTOR IS RESPONSIBLE FOR THE CARE OF THIS WATER AND COMPLIANCE WITH APPLICABLE WATER QUALITY REGULATIONS SEE SPECIFICATION SECTION 02140.
6. TEMPORARY FILL MAY BE PLACED IN DITCH AT STA 764+00 IF NECESSARY TO STABILIZE AREA FOR TUNNELING.
7. SEE DRAWING 15-23-62 FOR REDUCED CONSTRUCTION LIMITS THROUGH WETLAND, EROSION CONTROL MEASURES, AND RESTORATION PLANS.



13. CONTRACTOR SHALL PREPARE A DEWATERING PLAN FOR EACH STREAM CROSSING WHICH COMPLIES WITH HPAS. PROVIDES FOR MONITORING BY FISH BIOLOGIST AND IS PROTECTIVE OF FISH IN STREAM.

NOTES:

8. WETLANDS IMPACTED BY CONSTRUCTION SHALL BE RESTORED TO ORIGINAL GRADE USING WETLAND SOILS. WETLAND SOILS, INCLUDING TOP SOIL SHALL BE SEGREGATED AND STOCKPILED FOR RESTORATION OF WETLANDS AND WETLAND BUFFERS. NO TEMPORARY STOCKPILING OF SOILS WILL BE ALLOWED WITHIN WETLANDS OR WETLAND BUFFERS.
9. TIMBER MATTS MAY BE REQUIRED TO ENSURE CONSTRUCTION EQUIPMENT HAS ADEQUATE TRACTION IN WETLANDS AND TO AVOID OVER COMPACTION OF SOILS.
10. SEE SHEET 15-22-40 FOR TRAFFIC CONTROL PLANS FOR ROAD CROSSINGS AND WORK WITHIN ROAD RIGHT OF WAY UNTIL CROSSING RESTORED.
11. CONTRACTOR SHALL MAINTAIN ACCESS TO BUSINESSES DURING WORKING AND NON-WORKING HOURS. TEMPORARY CLOSURES SHALL BE COORDINATED WITH PROPERTY OWNER AND TENANTS.
12. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNERS REGARDING UTILITIES, ACCESS AND RELATED CONSTRUCTION ISSUES.
13. USE TYPE II PIPE BEDDING AND PIPE ZONE BACKFILL FROM STA 749+30 TO STA 803+00. SEE SECTION 2200-2.2.0.1b.

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

EXPIRES: 02/15/03 — 11/13/03
EXPIRES: 11/04/04 — 11/04/03

NO.	REVISION	DATE	BY	APP'D.	REV. COMP.
6					
5					
4					
3					
2					
1					

CH2MHILL — MWH MONTGOMERY WATSON HARZA — HDR HDR Engineering, Inc.

REFERENCE

DATE JAN 2003
DESIGN LCS
DRAWN DGP/SN/JES
DETAILED
CHECKED WAC/GSH

W.O. 71001
CADET PROJECT NAME PLNAD83
CADET FILE NAME
FIELD BOOK
DATA FILE

APPROVED
MANAGER

TACOMA WATER
TACOMA PUBLIC UTILITIES

TACOMA SECOND SUPPLY PROJECT

MIDDLE REACH – WESTERN SECTION

PLAN AND PROFILE
STA 760+00 TO STA 770+00

SCALE
HORIZ: 1"=40'
VERT: 1"=10'

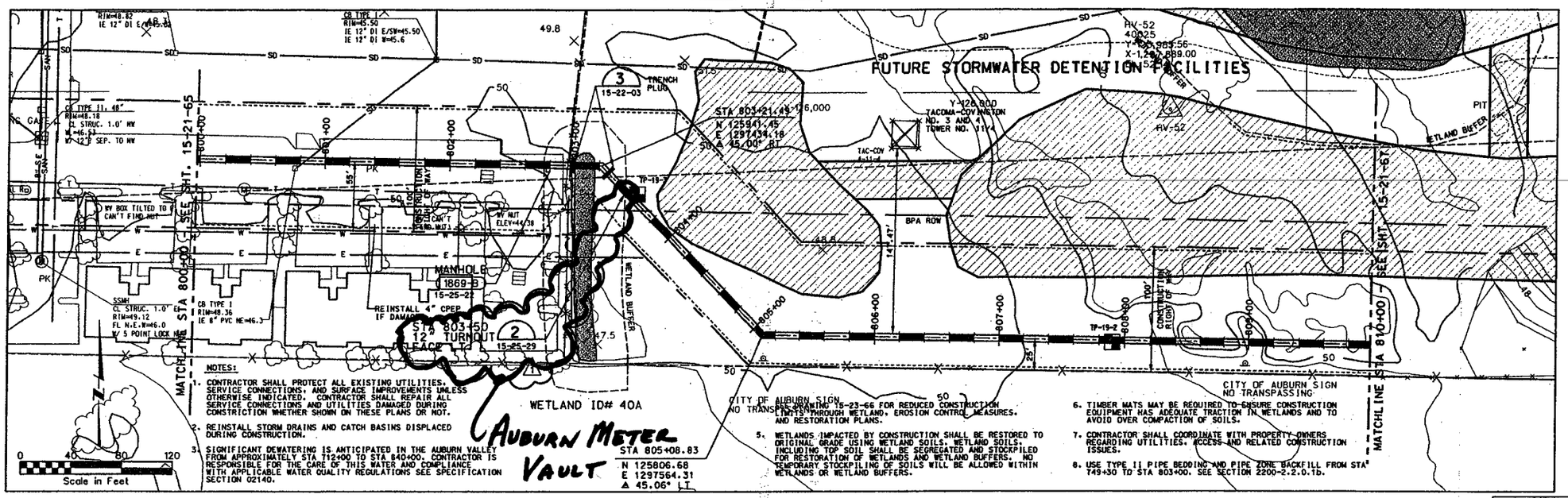
DRAWING NO.
15-21-62

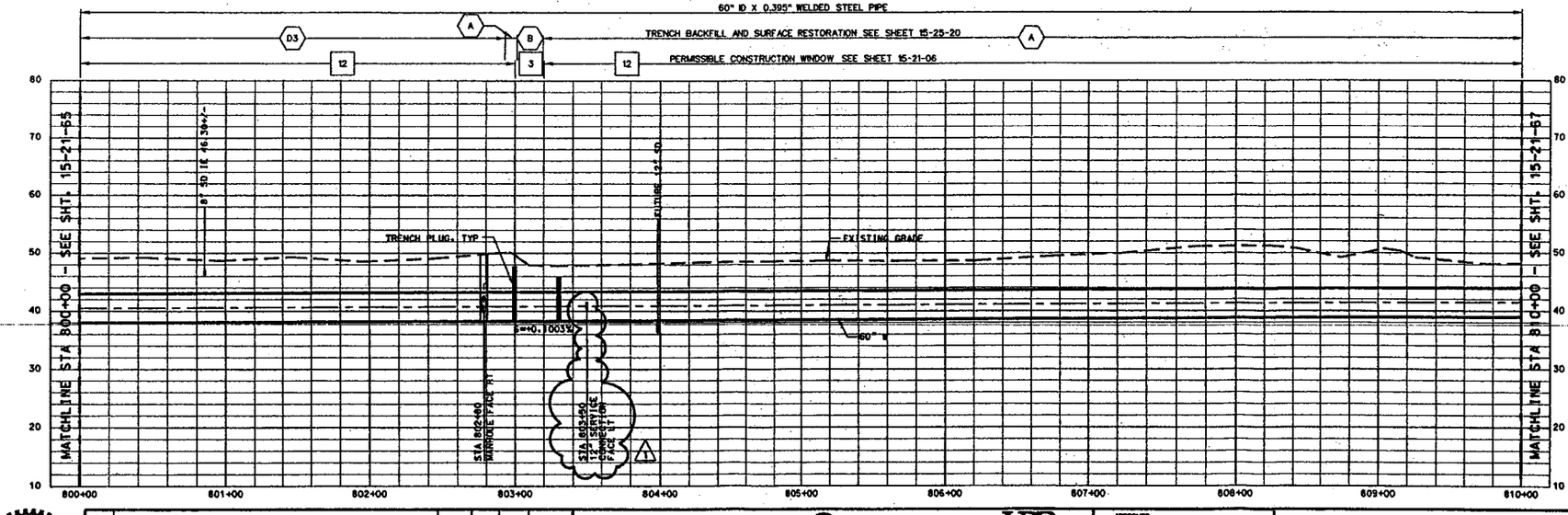
SHEET 46 OF 207

Exhibit B-3

General Vicinity Map of Turnout #3 Facilities

(SSP construction drawing 15-21-66)





DATUM
HORIZONTAL DATUM:
WASHINGTON COORDINATE SYSTEM, NORTH ZONE
NAD 83/91
VERTICAL DATUM:
NGVD-29

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

NO.	REVISION	DATE	BY	APP'D.	REV. COMP.
6					
5					
4					
3					
2					
1	ADDENDUM NO. 1	9/31/03	LCS	TAL	

CH2MHILL — MWH — HDR Engineering, Inc.

REFERENCE

DATE JAN 2003
DESIGN LCS
DRAWN DGP/SN/JES
DETAILED
CHECKED WAC/GSH

W.O. 71001
CADET PROJECT BASE PLSNAD83
CADET FILE BASE
FIELD BOOK
DATA FILE

APPROVED
MANAGER

TACOMA WATER
TACOMA PUBLIC UTILITIES

TACOMA SECOND SUPPLY PROJECT
MIDDLE REACH - WESTERN SECTION
PLAN AND PROFILE
STA 800+00 TO STA 810+00

SCALE
HORIZ: 1"=40'
VERT: 1"=10'
DRAWING NO.
15-21-66
SHEET 50 OF 207

CONSULTANTS IND NO.

EXPIRES: 02/18/05
EXPIRES: 11/04/04

G:\tpu\TSSP Middle Segment-Western Section\Design\Drawings\Plan+Profiles\15-21-66.dgn 10/05/03 10:05:44 AM

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001



200602100022 63
PACIFIC NW TIT INTERLOCA 91.00
PAGE001 OF 060
02/10/2006 15:46
KING COUNTY, WA

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Interlocal Agreement (RES 3644)

Reference Number(s) of Documents assigned or released:
☐ Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
1. Pacific, City of

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number
N/A

☐ Assessor Tax # not yet assigned

Said document(s) were filed for record by Pacific Northwest Title as accommodation only. It has not been examined as to proper execution or as to its affect upon title.

RESOLUTION NO. **3644**

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, RELATING TO THE ANNEXATION OF A PORTION OF PROPERTY TO THE CITY OF AUBURN SIMULTANEOUSLY TO ITS DEANNEXATION FROM THE CITY OF PACIFIC, PURSUANT TO RCW 35.10.217(2)

WHEREAS, the City Council of the City of Auburn adopted Resolution No. 3617 on May 19, 2003, and Resolution No. 3619 on June 16, 2003, notifying the King County Boundary Review Board of the City's intent to annex property to the City of Auburn simultaneous to its de-annexation from the City of Pacific; and

WHEREAS, the City Council of the City of Pacific has concurred with the annexation and de-annexation through its Resolution No. 527 on May 27, 2003, and Resolution No. 530 on June 9, 2003; and

WHEREAS, the King County Boundary Review Board has consented to and approved the annexation and de-annexation; and

WHEREAS, in connection with such annexation/de-annexation, the cities of Auburn and Pacific have committed to coordinate and cooperate with respect to any planning, transportation, utility or development issues that affect the cities; and

WHEREAS, the annexation/de-annexation will result in a change in the water service areas of the cities; and

WHEREAS, Pacific desires to be granted the right to a future franchise for ingress, egress and utilities in the vicinity of the King/Pierce County line on East Valley Highway in order to access the parcels to the west of the Burlington Northern Santa Fe right-of-way; and

WHEREAS, Auburn desires to be granted a franchise for its existing facilities in A Street SE remaining in Pacific after the annexation/de-annexation; and

WHEREAS, the cities wish to amend the existing emergency intertie agreements and relocate the emergency intertie facility serving Pacific on Lakeland Hills Way; and

WHEREAS, the cities have mutual interests in the development "Vista Heights" that currently straddles the existing cities' boundaries and will be completely contained within Auburn when the annexation/de-annexation is finalized; and

WHEREAS, Auburn desires to treat and retain public storm water in public facilities; and

WHEREAS, Auburn and Pacific have agreed that Pacific will, by bill of sale, transfer their interest in the public facilities within the annexation/de-annexation area to Auburn; and

WHEREAS, Auburn and Pacific have agreed that Auburn will provide operation and maintenance services for the portion of A Street SE remaining in Pacific; and

WHEREAS, the requirements of the State Environmental Policy Act and applicable Environmental Procedures have been complied with; and

WHEREAS, a Public Hearing was held on October 6, 2003, for which notice was provided pursuant to the requirements of RCW 35.10.217(2) and at which hearing all persons wishing to speak to the annexation and de-annexation were heard; and

WHEREAS, the City Council of the City of Auburn passed its Resolution No. 3643 on October 6, 2003, finalizing the annexation of a portion of property to the City of Auburn and simultaneous to its de-annexation from the City of Pacific.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor is hereby authorized to execute agreements in substantial conformity with the following agreements attached hereto and incorporated herein by this reference:

The Water Service Area Adjustment Agreement marks as Exhibit A,

The Emergency Water System Intertie Agreement marked as Exhibit B,

The Auburn Franchise Agreement With the City of Pacific marked as Exhibit C,

The Pacific Franchise Agreement with the City of Auburn marked as Exhibit D

The Vista Heights Development Agreement marked as Exhibit E,

The Bill of Sale for infrastructure being transferred from Pacific to Auburn marked as Exhibit F, and

An interlocal agreement for maintenance and operation services on a portion of A Street SE attached as Exhibit G.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation, including transmitting a copy of this Resolution to the City Clerk of Pacific.

Section 3. This Resolution shall shall take effect and be in full force upon passage and signatures hereon.

DATED and SIGNED this 20th day of October 2003.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

EXHIBIT A
WATER SERVICE AREA AGREEMENT

This Agreement made and entered into by and between the City of Pacific, a Washington municipal corporation, ("**Pacific**") and the City of Auburn, a Washington municipal corporation ("**Auburn**").

Whereas, Pacific is engaged in the business of providing water service to the public located in certain areas of King County in the State of Washington. Auburn is engaged in the business of providing water service to the public located in certain areas of King and Pierce Counties in the State of Washington, and;

Whereas, the parties desire to enter into a formal service area agreement to revise the boundary between their contiguous service areas in King county in order to avoid any duplication or overlap of water service and to provide the most efficient service to their respective customers, and;

Whereas, Auburn and Pacific have by resolution annexed/de-annexed an area legally described in Attachment "1" attached hereto and shown on the map (Attachment "2") attached hereto. The Cities have agreed to work together cooperatively to facilitate a practical efficient boundary between the two systems.

Pacific and **Auburn** therefore agree as follows:

1. This Agreement is entered into pursuant to the South King County Coordinated Water System Plan which Plan and Appendices are incorporated herein by this reference.

2. The contiguous water service boundary between **Pacific** and **Auburn** is agreed upon by both parties as shown on the attached map (Attachment "2") and as legally described in Attachment "3", which by this reference are incorporated herein.

3. **Pacific** and **Auburn** may by mutual written amendment(s) to this Agreement make such adjustments to the service boundary as they may mutually agree upon from time to time so that water service to new service locations in close proximity to the service boundary may be provided in an efficient, effective and economical manner. Any such adjustments shall be documented by modifying the attached maps which when so modified and agreed to by the parties shall constitute amendments to this Agreement. Minor adjustments consisting of ten acres or less may be authorized by the Public Works Director of the City of Auburn and the Community Development Director of the City of Pacific.

4. Except as specifically set forth herein, this Agreement shall not modify the Resolutions regarding the Annexation/De-annexation process referenced above.

5. **Auburn** will work with Pacific to assist in the negotiations with a Tacoma Second Supply Project Partner (SSP Partner) for future water supply for **Pacific**. The rate for water sold to Pacific from a SSP Partner shall be the rate charged Auburn for the water plus a wheeling charge to be established using cost of service principles.

6. **Pacific** will pay Auburn its costs associated with increasing the capacity of the Auburn Tacoma Second Supply Pipeline connection(s) to allow the wheeling of up to one (1) million gallon per day peak day demand and up to one half million gallon per day average day demand through Auburn to Pacific.

7. Water available to the **Pacific** pursuant to this Agreement shall be in compliance with all applicable state and federal drinking water laws, regulations and standards.

8. If **Pacific** requires additional or different treatment facilities in order for the wheeled water to comply with their water quality goals or standards then **Pacific** will install such treatment facilities on the **Pacific** side of the intertie meters at their expense. If **Auburn** and **Pacific** determine that treatment is required to meet the mutual water quality goals and standards then the treatment facilities will be installed as near the point of connection to the Tacoma pipeline as practical. The treatment facility costs will be shared based upon the capacity required by each city.

IN WITNESS WHEREOF, the parties have executed this Agreement effective as of the date last written below.

CITY OF AUBURN
King County, Washington

PETER B. LEWIS, MAYOR

Date OCT 2 0 2003

CITY OF PACIFIC
King County, Washington

Howard Erickson

HOWARD ERICKSON, MAYOR

Date October 31, 2003

ATTEST:

Danielle E. Daskam, CMC, City Clerk

ATTEST:

Randy Reed, CMC, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

APPROVED AS TO FORM:

Albert A. Abuan, City Attorney

ATTACHMENT 1

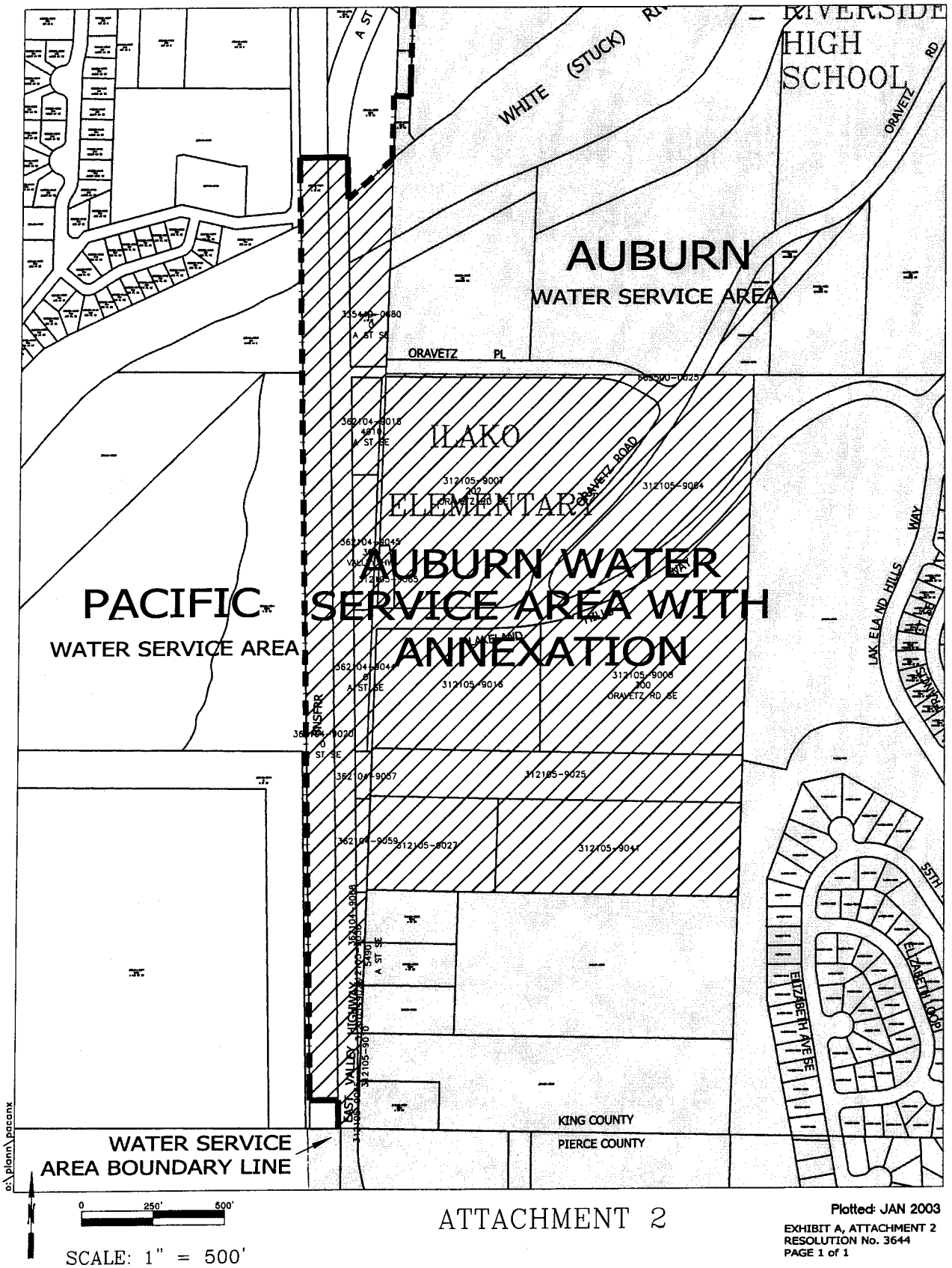
ANNEXATION LEGAL DESCRIPTION
AREA IN VICINITY OF "A" STREET SOUTHEAST (EAST VALLEY HIGHWAY) AND LAKELAND HILLS WAY SOUTHEAST

THAT PORTION OF GOVERNMENT LOTS 3 AND 4 IN THE SOUTHWEST QUARTER OF SECTION 31, TOWNSHIP 21 NORTH, RANGE 5 EAST, W. M., AND THE EAST HALF OF SECTION 36, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF SAID GOVERNMENT LOT 3 IN SECTION 31, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M., SAID CORNER ALSO BEING AN ANGLE POINT IN THE WEST BOUNDARY OF THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE NORTHWEST CORNER OF THE LANDS DESCRIBED IN CITY OF PACIFIC ANNEXATION ORDINANCE NUMBER 319;
THENCE EAST ALONG THE NORTH LINE OF SAID GOVERNMENT LOT 3, AND THE BOUNDARY COMMON TO SAID LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 319 A DISTANCE OF 1280 FEET MORE OR LESS TO THE NORTHEAST CORNER OF SAID GOVERNMENT LOT 3;
THENCE SOUTH ALONG THE EAST LINE OF SAID GOVERNMENT LOTS 3 AND 4, AND THE BOUNDARY COMMON TO SAID LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 319 TO THE SOUTHEAST CORNER OF SAID CITY OF PACIFIC ORDINANCE 319 AND TO A LINE PARALLEL WITH AND 825 FEET NORTHERLY OF THE SOUTH LINE OF SAID GOVERNMENT LOT 4;
THENCE WEST ALONG THE BOUNDARY COMMON TO SAID LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 319, AND ALONG SAID PARALLEL LINE A DISTANCE OF 1300 FEET, MORE OR LESS, TO THE WEST LINE OF SAID SECTION 31;
THENCE SOUTH ALONG THE WEST LINE OF SAID SECTION 31 AND THE BOUNDARY COMMON TO THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226 TO THE SOUTHWEST CORNER OF SAID SECTION 31;
THENCE WEST ALONG THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 36, TOWNSHIP 21 NORTH, RANGE 4 EAST AND ALONG THE SOUTH LINE OF THE LANDS ANNEXED TO THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226 A DISTANCE OF 70 FEET, MORE OR LESS, TO THE EAST LINE OF THE BURLINGTON NORTHERN SANTA FE (BNSF) RAILROAD RIGHT-OF-WAY (100 FEET IN WIDTH);
THENCE NORTH ALONG SAID EAST LINE OF THE BNSF RAILROAD RIGHT-OF-WAY TO A LINE PARALLEL WITH AND 100 FEET NORTHERLY OF SAID SOUTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 36;
THENCE WEST ALONG LAST SAID PARALLEL LINE 100 FEET TO THE WEST LINE OF SAID BURLINGTON NORTHERN SANTA FE (BNSF) RAILROAD RIGHT-OF-WAY;
THENCE NORTH ALONG SAID WEST LINE OF THE BNSF RAILROAD RIGHT-OF-WAY A DISTANCE OF 3280 FEET, MORE OR LESS, TO A LINE PARALLEL WITH AND 1884 FEET SOUTHERLY (WHEN MEASURED ALONG THE WEST LINE OF SAID RAILROAD RIGHT-OF-WAY) FROM THE NORTH LINE OF THE NORTHWEST QUARTER OF SAID SECTION 36;
THENCE EASTERLY ALONG LAST SAID PARALLEL LINE A DISTANCE OF 175 FEET, MORE OR LESS, TO THE EAST RIGHT-OF WAY LINE OF EAST VALLEY HIGHWAY ("A" STREET SE);
THENCE SOUTHERLY ALONG SAID EAST RIGHT-OF-WAY LINE A DISTANCE OF 150 FEET, MORE OR LESS, TO THE NORTH BANK OF THE WHITE RIVER (STUCK RIVER);
THENCE NORTHEASTERLY ALONG SAID NORTH BANK OF THE WHITE RIVER A DISTANCE OF 200 FEET, MORE OR LESS, TO THE LINE COMMON TO THE LANDS ANNEXED TO THE CITY OF

AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226, AND THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 31, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M.;
THENCE SOUTH ALONG SAID LINE COMMON TO THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226, AND THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 31 A DISTANCE OF 700 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

SITUATE IN KING COUNTY, WASHINGTON.



ATTACHMENT 2

Plotted: JAN 2003
EXHIBIT A, ATTACHMENT 2
RESOLUTION No. 3644
PAGE 1 of 1

ATTACHMENT 3

WATER SERVICE AGREEMENT LINE – BOUNDARY AFTER ANNEXATION
(IN THE E 1/2 OF SEC. 36 TWP 21N, R 4E, AND W 1/2 OF SEC. 31 TWP 21N, R 5E. W.M.)

COMMENCING AT THE SOUTHEAST CORNER OF SECTION 36, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M., SAID CORNER ALSO BEING THE SOUTHWEST CORNER OF THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE SOUTHEAST CORNER OF THE LANDS ANNEXED TO THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226;
THENCE WEST ALONG THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 36, AND ALONG SAID SOUTH LINE OF THE LANDS ANNEXED TO THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226 A DISTANCE OF 70 FEET, MORE OR LESS, TO THE EAST LINE OF THE BURLINGTON NORTHERN SANTA FE (BNSF) RAILROAD RIGHT-OF-WAY (100 FEET IN WIDTH) AND THE TRUE POINT OF BEGINNING OF THIS WATER SERVICE AGREEMENT LINE;
THENCE NORTH ALONG SAID EAST LINE OF THE BNSF RAILROAD RIGHT-OF-WAY TO A LINE PARALLEL WITH AND 100 FEET NORTHERLY OF SAID SOUTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 36;
THENCE WEST ALONG SAID PARALLEL LINE 100 FEET TO THE WEST LINE OF SAID BURLINGTON NORTHERN SANTA FE (BNSF) RAILROAD RIGHT-OF-WAY;
THENCE NORTH ALONG SAID WEST LINE OF THE BNSF RAILROAD RIGHT-OF-WAY A DISTANCE OF 3280 FEET, MORE OR LESS, TO A LINE PARALLEL WITH AND 1884 FEET SOUTHERLY (WHEN MEASURED ALONG THE WEST LINE OF SAID RAILROAD RIGHT-OF-WAY) FROM THE NORTH LINE OF THE NORTHWEST QUARTER OF SAID SECTION 36;
THENCE EASTERLY ALONG LAST SAID PARALLEL LINE A DISTANCE OF 175 FEET, MORE OR LESS, TO THE EAST RIGHT-OF WAY LINE OF EAST VALLEY HIGHWAY ("A" STREET SE);
THENCE SOUTHERLY ALONG SAID EAST RIGHT-OF-WAY LINE A DISTANCE OF 150 FEET, MORE OR LESS, TO THE NORTH BANK OF THE WHITE RIVER (STUCK RIVER);
THENCE NORTHEASTERLY ALONG SAID NORTH BANK OF THE WHITE RIVER A DISTANCE OF 200 FEET, MORE OR LESS, TO THE LINE COMMON TO THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226, AND THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 36;
THENCE NORTH ALONG THE LINE COMMON TO THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226, AND THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 36 A DISTANCE OF 258 FEET, MORE OR LESS, TO THE NORTHWEST CORNER OF THE LANDS CONVEYED TO THE CITY OF AUBURN BY DEED RECORDED UNDER RECORDING NUMBER 8009050525, RECORDS OF SAID COUNTY;
THENCE EAST 50 FEET ALONG THE NORTH LINE OF SAID LANDS TO THE NORTHEAST CORNER THEREOF;
THENCE NORTH 346.82 FEET TO A POINT 50 FEET EAST OF THE SOUTHWEST CORNER OF TRACT "B" OF CITY OF AUBURN LOT LINE ADJUSTMENT LLA-5-87 RECORDED UNDER RECORDING NUMBER 8704220781, RECORDS OF KING COUNTY;
THENCE WEST ALONG THE SOUTH LINE OF SAID TRACT "B" TO THE SOUTHWEST CORNER OF SAID TRACT "B" AND THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 36;
THENCE NORTH ALONG THE WEST LINE OF SAID TRACT "B", THE LINE COMMON TO THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226, AND THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 36 A DISTANCE OF 54.22 FEET, MORE OR LESS, TO SAID EAST RIGHT-OF-WAY LINE OF EAST VALLEY HIGHWAY ("A" STREET SE);
THENCE SOUTHWESTERLY ALONG SAID EAST RIGHT-OF-WAY LINE TO THE SOUTHEAST CORNER OF THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 1171;

THENCE WEST ALONG SAID SOUTH LINE TO THE SOUTHWEST CORNER OF THE LANDS DESCRIBED IN SAID CITY OF AUBURN ORDINANCE NUMBER 1171;
THENCE NORTHERLY ALONG THE WEST LINE OF THE LANDS DESCRIBED IN SAID CITY OF AUBURN ORDINANCE NUMBER 1171 TO THE NORTH LINE OF SAID SECTION 36 AND THE TERMINUS OF THIS WATER SERVICE AGREEMENT LINE.

SITUATE IN KING COUNTY, WASHINGTON.

EXHIBIT B

EMERGENCY WATER SYSTEM INTERTIE AGREEMENT
Pacific/Auburn Intertie Agreement No. 3

THIS AGREEMENT made and entered into by and between the City of Auburn, hereinafter referred to as Auburn, and, the City of Pacific, hereinafter referred to as Pacific, for the purposes of planning, designing, constructing, maintaining, and operating an emergency system intertie between the respective parties,

WITNESSETH:

WHEREAS, both Cities have water facilities in the vicinity, and

WHEREAS, both Cities can increase fire protection and emergency water supply reliability for their customers, and

WHEREAS, the Cities are willing to provide the necessary services to increase fire fighting and emergency supply reliability upon the terms and conditions set forth herein,

NOW, THEREFORE, IT IS MUTUALLY AGREED as follows:

1. The Cities hereby concurrently terminate, with the execution of this Agreement the Water Sales Agreement Between City of Auburn and City of Pacific, dated November 4, 1991 and the Water Service Agreement dated July 27, 1984.

2. The four-inch (4") water service connection on Ellingson Road near Pacific's well field will continue to function as an emergency water supply under the terms and conditions of this agreement and the supply of emergency water through this facility will be one-way from Auburn to Pacific.

3. The new emergency water system intertie will be designed to be operated manually as a two way emergency supply between the Auburn and Pacific Systems. The facility shall be located on East Valley Highway in the vicinity of the Water Service Area Boundaries between the two cities. Final location and configuration of the facilities shall be determined at the time of final design.

4. The emergency water system interties shall be operated only in the event of an emergency. For purposes of this agreement, an emergency shall be defined as resulting from a water shortage, a major water line break, fire demand, contamination to the water supply system, mechanical

equipment failure, electrical equipment failure or Puget Sound Energy facility failure, or any other agreed upon emergency within the water supply system.

5. Auburn will design and administer the contract for the construction of the new metering station. The facility will be designed and constructed in accordance with reasonably accepted water utility standards for similar municipal water utilities. Construction of the metering station will occur in the future at a mutually agreed upon time. Auburn will own and maintain the piping, interior equipment, emergency meter and interior appurtenances, and all piping up to the Pacific side of the vault for the metering station.

6. Upon completion of construction, Auburn will transfer ownership of all exterior appurtenances, and all piping that is located on the Pacific side of the vault, to Pacific. Pacific will own and maintain the exterior appurtenances and all piping on Pacific's side of the vault.

7. Each City will have unlimited access to the vault via a dual padlock or ownership of keys to the vault.

8. Each City will operate the respective normally locked valve inside of the vault. Auburn will solely unlock and operate the locked valve on Auburn's side of the meter and Pacific will solely unlock and operate the locked valve on Pacific's side of the meter.

9. The procedure for operating the interties in the event of such emergency shall be as follows:

   A. Each City shall determine that an emergency of sufficient magnitude has occurred which warrants the need to request that the one or both interties be activated.

   B. Upon agreement that an emergency exists, the authorized representative of each City shall allow for one or both of the interties to be opened. The intertie(s) will be activated as soon as reasonably possible. Both Cities' personnel shall be present at the vault(s) to open the valves to activate the facility.

   C. The City requesting the activation shall provide a written confirmation of the request not less than 24 hours after the verbal request, or on the first day of normal business after the verbal request.

D. The intertie(s) shall remain activated until the City requesting activation determines that the need for activation of the emergency intertie(s) has ceased and shall request in writing to close the intertie.

E. In case of emergency or whenever the public health, safety, or the equitable distribution of water so demands, the City supplying the water may change, reduce or limit the time for or temporarily discontinue the supply of water without notice; water service may be temporarily interrupted, limited for purposes of making repairs, extensions or doing other necessary work; and the City supplying the water shall not be responsible for any damage resulting from interruption, change or failure of the water supply, and the City receiving the water (City requesting activation) shall save and hold harmless the City supplying the water from any loss, damages or suites to or by customers of the City receiving the water resulting from interruption, change or failure of water supply provided by this Agreement, except damages arising out of the City supplying the water's negligence. Prior to a planned interruption or limiting of service, the City supplying the water will notify the City receiving the water of such not less than three days prior to the service disruption. The City supplying the water agrees to use best efforts and reasonable diligence to notify the City receiving the water as soon after it becomes aware of the need for service disruption and further will, to the extent practical, limit the service disruption to daylight hours.

10. Auburn shall read the meter(s) upon activation and upon deactivation of the intertie(s). The City supplying the water shall verify the information and shall then calculate and invoice the other City for the water used during the request. The total water used during the event shall be used to calculate the invoice. The rate for water consumed through the emergency interties shall be at the Auburn Wholesale Rate to Algona in effect at the time the water is used. This shall be complete payment for the water, labor, and administration of activating the intertie(s).

11. The total project costs for the construction of the new intertie shall include costs for consulting design service, and construction. Auburn shall bear the project costs in exchange for facilities transferred to Auburn as a part of the Lakeland Hills area annexation/de-annexation. Each City is responsible for associated staff, administration and legal costs associated with this implementation of the agreement.

12. To the extent allowed by law, the City of Pacific shall defend, indemnify, and hold harmless the City of Auburn, its elected officials, employees and agents from and against any and all suits, claims, actions, losses, costs,

expenses of litigation, attorney's fees, penalties and damages of whatsoever kind or nature arising out of or in connection with or incident to an act or omission of the City of Pacific, its employees, agents, and contractors in the performance of the City of Pacific's obligations under the Agreement and this Amendment. This indemnification provision shall include, but is not limited to, all claims against the City of Auburn by an employee or former employee of the City of Pacific or its contractors and, as to such claims; the City of Pacific expressly waives all immunity and limitation of liability under Title 51 RCW.

To the extent allowed by law, the City of Auburn shall defend, indemnify and hold harmless the City of Pacific, its elected officials, employees and agents from and against any and all suits, claims, actions, losses, costs, expenses of litigation, attorney's fees, penalties, and damages or whatsoever kind or nature arising our of, in connection with or incident to an act or omission of the City of Auburn, its employees, agents, and contractors in the performance of the City of Auburn's obligations under this Agreement. This indemnification obligation shall include, but is not limited to, all claims against the City of Pacific by an employee or former employee of the City of Auburn or its contractors and, as to such claims, the City of Auburn expressly waives all immunity and limitation of liability under Title 51 RCW.

13. This Agreement shall remain in force until terminated by either party hereto upon 60-days written notice to the other party. Any project costs, incurred up to the date of such notice, as described herein, shall be shared in accordance with the provisions of this Agreement.

14. Water available to the Pacific pursuant to this Agreement shall be in compliance with all applicable state and federal drinking water laws, regulations and standards.

15. If Pacific requires additional or different treatment facilities in order for the water received under this agreement to comply with their water quality goals or standards then Pacific will install such treatment facilities on the Pacific side of the intertie meters at their expense.

16. If Auburn requires additional or different treatment facilities in order for the water received under this agreement to comply with their water quality goals or standards then Auburn will install such treatment facilities on the Auburn side of the intertie meters at their expense.

IN WITNESS WHEREOF, the parties have executed this Agreement effective as of the date last written below.

CITY OF AUBURN
King County, Washington

PETER B. LEWIS, MAYOR

Date OCT 2 0 2003

ATTEST:

Danielle E. Daskam, CMC, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

CITY OF PACIFIC
King County, Washington

HOWARD ERICKSON, MAYOR

Date October 31, 2003

ATTEST:

Randy Reed, CMC, City Clerk

APPROVED AS TO FORM:

Albert A. Abuan, City Attorney

EXHIBIT "C"

CITY OF AUBURN, WASHINGTON
FRANCHISE AGREEMENT WITH THE CITY OF PACIFIC

WHEREAS, the City of Auburn (Auburn) and the City of Pacific (Pacific) have agreed to the annexation/de-annexation a portion of property described in Attachment "1" relating to among other things East Valley Highway (EVH) from the north end of the White River bridge to the King-Pierce County line in which, Auburn recognizes and agrees to Pacific's right to access a portion of EVH near the King/Pierce County line for ingress, egress and utilities; and

WHEREAS, Auburn and Pacific have entered into a Water Service Area Agreement, which revised the boundary between their respective water service areas; and

WHEREAS, the City of Auburn and Pacific have entered into an Emergency Water System Intertie Agreement; and

WHEREAS, according to said Emergency Water System Intertie Agreement, Auburn guaranteed Pacific the right to wheel water through Auburn's water system for an associated wheeling charge; and

WHEREAS, in order to maintain control over the use of Auburn right-of-ways by Pacific within Auburn, it is appropriate to enter into franchise agreements with Pacific; and

WHEREAS, Pacific has negotiated this franchise agreement with Auburn acceptable to both parties; and

WHEREAS, Auburn has determined that it is in the best interests of the public to grant Pacific a franchise on the terms and conditions set forth in this Agreement.

NOW, THEREFORE THE CITY OF AUBURN AND THE CITY OF PACIFIC AGREE AS FOLLOWS:

SECTION 1 DEFINITION

Where used in this franchise ("Franchise"), the following definitions shall apply:

1.1 "Franchisee" means the City of Pacific, a Washington municipal corporation, and its respective successors and assigns.

1.2 "City" means the City of Auburn, a Washington municipal corporation.

1.3 "Franchise Area" means that portion of East Valley Highway where Pacific will own, operate and maintain utilities as described with Attachment 2" attached hereto, which is by this reference incorporated, as if fully set forth herein; provided, that the Franchise Area shall not include or convey any right to Franchisee to install facilities on or to otherwise use City owned or leased properties outside the Franchise Area.

1.4 "Facilities" means the Franchisee's utility system, lines, mains, appurtenances, and all other necessary or convenient facilities for the purpose of providing water service.

1.5 "Agreement" means this Agreement setting forth the terms and conditions of the franchise granted to the Franchisee.

SECTION 2 FRANCHISE GRANT

Subject to the terms and conditions set forth in this Agreement, the City grants to the Franchisee the right to construct and install water pipelines and appurtenances and to excavate trenches in City roads for the purposes of constructing, installing, operating, maintaining, removing, and replacing mains and pipes and making connections between the same to the dwellings and other buildings of the consumers. In exercising the foregoing rights, the Franchisee shall be governed by and conform to the general rules adopted by the Public Works Department of the City of Auburn, and the Franchisee, at no expense to the City, shall complete all work and shall replace and restore the City roads to the condition of the City roads existing immediately prior to such disturbance; PROVIDED, HOWEVER, that no such work shall be done prior to the obtaining of a permit therefor issued by the City's Public Works Director (hereinafter "Director"), which permit shall set forth conditions pertaining to the work to be done and specifications for the restoration of the roads to the same condition as they were prior to such work. If the Franchisee does not repair the City roads to the satisfaction of the Director, the City may, at its sole discretion, repair such City roads, or cause them to be repaired, and the Franchisee hereby agrees to reimburse the City for the cost of such work, including overhead costs.

SECTION 3 FRANCHISE TERM

This Franchise is and shall remain in full force and effect from the effective date of this Agreement forward, for a period not to exceed twenty-five (25) years from the effective date of this Agreement provided, that this Franchise shall not take effect and the Franchisee shall have no rights under this Franchise unless the Franchisee files a written acceptance of this Franchise with the City pursuant to Section 4 of this Agreement.

SECTION 4 ACCEPTANCES BY GRANTEE OF TERMS AND CONDITIONS

The full acceptance of this Franchise and all of its terms and conditions shall be filed with the City Clerk within forty-five (45) days from the date of this Agreement, by the Franchisee. Full acceptance of this Franchise is a condition precedent to its taking effect, and unless this Franchise is accepted within the time specified, this grant will be null and void and have no force or effect.

SECTION 5 NON-EXCLUSIVE FRANCHISE

This Franchise is not exclusive. It does not prohibit the City from granting franchises for other public or private utilities in, over, along, across, and under any City property, including the Franchise Area. This Franchise does not prevent or prohibit the City from constructing, altering, maintaining or using any of the Franchise Area. The City retains full power to make all changes, relocations; repair, maintenance or other work to or in the Franchise Area as the City deems fit.

SECTION 6 JURISDICTIONS

This Franchise is intended to convey limited rights and interest only as to those roads and rights-of-way in which the City has an actual interest. It is not a warranty of title or of interest in City road rights-of-way. None of the rights granted to the Franchisee shall affect the jurisdiction of the City over City road rights-of-way or the City's power to perform work upon its roadways, rights-of-way or appurtenant drainage facilities including by constructing, altering, renewing, paving, widening, grading, blasting or excavating.

SECTION 7 REGULATIONS OF USE AND CONTROL

This Franchise does not deprive the City of any powers, rights, or privileges it now has or may later acquire in the future to regulate the use of and to control the City road rights-of-way covered by this Franchise. The City reserves the right and power at all times to exercise its police powers with respect to the time, manner and location of the placement of the Franchisee's Facilities.

SECTION 8 EMINENT DOMAIN

This Franchise and the limited rights and interests granted by this Franchise are subject to the exercise of eminent domain. In the event of an exercise of eminent domain by the City, the value to be attributed to all the rights and interests granted under this Franchise shall not exceed the actual amount the Franchisee paid to the City in obtaining this Franchise.

SECTION 9 VACATION

If at any time the City vacates any City rights-of-way covered by this Franchise, the City will not be held liable for any damages or loss to the Franchisee by reason of such vacation. The City may, after giving thirty (30) days written notice to the Franchisee terminate this Franchise with respect to any City road or rights-of-way vacated.

SECTION 10 ENFORCEMENT

The City's failure to enforce any provision of this Franchise does not constitute a waiver of its right to enforce that provision or any other provision of this Franchise.

SECTION 11 INDEMNITIES AND HOLD HARMLESS

11.1 The Franchisee shall defend, indemnify and hold harmless the City, its appointed and elected officials, and its employees and agents from and against liability for all claims, actions, injuries, demands, liabilities, losses, costs, damages and

judgments, including costs of defense thereof, (collectively referred to as "damages") for injury to persons, death or property damage caused by, arising out of, or incidental to the Franchisee's exercise of the rights and privileges granted by this Franchise, except for damages caused by or arising out of the City's sole negligence. In the event that any such claim or demand for damages is presented to or filed with the City, or if any suit or action is initiated against the City based on such claims or demands for damages, the City shall promptly notify the Franchisee of the claim, demand, suit or action and the Franchisee shall have the right, at its election and its sole cost and expense, to settle and compromise such claim, demand, suit or action, or defend the same at the Franchisee's sole cost and expense.

11.2 If it is determined that RCW 4.24.115 applies to this Franchise, the Franchisee agrees to defend, hold harmless and indemnify the City to the maximum extent permitted under that statute, and specifically for the Franchisee's negligence concurrent with that of the City to the full extent of the Franchisee's negligence.

SECTION 12 INSURANCE

12.1 The Franchisee shall keep a policy of insurance in force with a minimum limit of five million dollars ($5,000,000.00). Verification of insurance coverage is a condition precedent to the effectiveness of this Agreement.

12.2 The insurance shall be maintained in full force and effect at the Franchisee's sole expense throughout the term of the Franchise, and, should such insurance be terminated, this Agreement shall terminate as of the date of the termination of insurance coverage.

12.3 The coverage provided by the Franchisee's insurance policies shall be primary to any insurance maintained by the City except as to losses or damages attributable to the sole negligence of the City. Any insurance maintained by the City that might relate to this Franchise shall be in excess to the Franchisee's insurance and shall not contribute with or to it. The City has no obligation to report occurrences to the insurance companies unless a claim is filed with the City's City Council; and the City has no obligations to pay the Franchisee's premiums.

12.4 The Franchisee shall be solely and completely responsible to perform all work related to this Franchise in compliance with all applicable federal, state, county and city statutes, rules, regulations, Ordinances, orders and codes. The Franchisee's attention is directed to the requirements of the Washington Industrial Safety and Health Act, Chapter 49.17 RCW. The Franchisee shall be solely and completely responsible for safety and safety conditions on its job sites and for its work within the Franchise Area, including the safety of all persons and property during performance of any works therein. The services of the City or City's consultant personnel in conducting construction review of the Franchisee's work relating to the Franchise is not intended to include review of the adequacy of the Franchisee's work methods, equipment, scaffolding, or trenching, or safety measures in, on or near such Franchise Area or job site. The Franchisee shall provide safe access for the City and its inspectors to adequately inspect the work and its conformance with applicable statutes, Ordinances, rules, regulations, and the Franchise.

SECTION 13 INSTALLATIONS, REPAIR, REMOVAL OR RELOCATION

13.1 The Franchisee shall, at no expense to the City, expeditiously repair all existing Facilities that it owns within the Franchise Area, including any damage caused directly or indirectly by its Facilities, all appurtenant Facilities and service lines connecting its system to users, if the City requires such repair for any reasonable purpose.

13.2 The Franchisee shall, at no expense to the City, adjust, remove or relocate existing Facilities within the Franchise Area, including all appurtenant Facilities and service lines connecting its system to users, if the City determines such adjustment, removal or relocation is reasonably necessary to allow for an improvement or alteration planned by the City. The City shall give the Franchisee written notice of such requirement as soon as practicable. The written notice shall include all available information, such as plans and specifications, as is reasonably necessary for the Franchisee to plan for such adjustment, removal or relocation.

13.3 Franchisee's Facilities shall be constructed, installed, maintained and repaired within the Franchise Area so as to provide safety of persons and property, and not interfere with the free passage of traffic, all in accordance with the laws of the State of Washington, and the Ordinances, resolutions, rules and regulations of the City.

13.4 For projects that are a part of the City's capital improvement program, in addition to any other notice given to the Franchisee, the City shall provide a copy of the capital improvement plan and six (6) year transportation improvement plan when requested. Further the City shall provide a vertical and horizontal profile of the roadway and drainage facilities within it, both existing and as proposed by the City, and the proposed construction schedule. The initial design information shall be given at least one hundred and eighty (180) days before construction is scheduled to begin, except in cases of urgent construction or emergencies. The Franchisee shall respond to this notice, and to any later notices of revised designs, within twenty (20) days of the date of the notice, by providing to the City the Franchisee's best available information as to the location of all the Franchisee's Facilities, including all appurtenant Facilities and service lines connecting its system to users and all Facilities that it has abandoned, within the area proposed for the project.

13.5 The City shall offer the Franchisee the opportunity to participate in the preparation of bid documents for the selection of a contractor to perform the public works project as well as all required adjustments, removals or relocations of the Franchisee's Facilities. The City shall have sole authority to choose the contractor to perform such work. Such bid documents shall provide for an appropriate cost allocation between the parties. In addition to the Franchisee's allocation of contractor costs, the Franchisee shall reimburse the City for all costs, to include but not be limited to legal, engineering, inspections, administration and/or soils testing, related to the Franchisee's work and reasonably incurred by the City in the administration of such joint construction contracts. Such costs shall include the direct salary cost of the time of City professional and technical personnel, including the City's consultants, spent productively engaged in such work, plus overhead costs at the standard rate charged by the City on other similar projects.

13.6 It is understood that emergency situations may arise that could threaten public health and/or continued operation of the Franchisee's utility system and the Franchisee may be unable to notify the City in the manner prescribed in Section 14 of this Franchise. In such a situation the Franchisee shall immediately correct the hazardous situation and continue to use best efforts to contact the City staff. The Emergency Phone Number for the City of Auburn is (253) 931-3010, and the City of Pacific is (253) 929-1110. Dialing 911 is advised for emergency situations.

SECTION 14 REQUIREMENTS OF CONSTRUCTION PERMITS

14.1 The Franchisee has the right, privilege and authority to enter the City road rights-of-way for the purpose of constructing, installing, operating, maintaining, replacing or repairing its Facilities on the condition that it obtains construction, excavation, and right-of-way use permits issued by the City. Any work performed, whether by Franchisee, its contractors, or third parties, shall include necessary paving, patching, grading and any other reasonably necessary repair or restoration to the City rights-of-way. All work shall be done to the City's satisfaction.

14.2 All equipment, pipelines and appurtenances which are used in the construction, installation, operation, maintenance or repair of the Franchisee's Facilities and which are located within the City road rights-of-way and owned by the Franchisee shall be considered to be part of the Franchisee's system and shall be the responsibility of the Franchisee. All permits for the construction, installation, operation, maintenance or repair of the Franchisee's system shall be applied for and given in the name of the Franchisee, who will be responsible for all work done under the permit. The Franchisee remains responsible whether the work is performed by the Franchisee, its contractors, or by third parties.

14.3 When required by the Public Works Director, the Franchisee shall post a bond to the City in the amount sufficient for any road repair or restoration. The amount of the bond shall be set by the City and must be filed with the City before a permit will be issued.

SECTION 15 PERFORMANCE OF WORK

15.1 Any work performed by the Franchisee in the Franchise Area shall conform to all City Ordinances and requirements including, but not limited to, Auburn City Code and the City's Design and Construction Standards in force when the work is performed. All traffic control shall conform to the current edition of the Uniform Traffic Control Devices in force when the work is performed.

15.2 If work performed under this Franchise makes it necessary to turn off or diminish water pressure to any fire hydrant, the Franchisee shall notify the City's Fire Department by telephone and by written notice, that water pressure or fire flow conditions have been affected. Except in the case of an emergency, the notice shall be provided at least 48 hours prior to the water pressure being turned off or diminished.

If more than one fire hydrant will be affected, the Franchisee shall provide a map of the affected area to the Fire Department. Out-of-service fire hydrants must be identified as not operational by covering with a properly secured burlap or plastic bag. Fire hydrants should be returned to full service as soon as reasonably possible or no longer than two working days from the date service was diminished. The Franchisee shall notify the City's Fire Department when the hydrant is returned to full service.

SECTION 16 RESTORATION OF CITY RIGHTS-OF-WAY

After performing work on, under or adjacent to City road rights-of-way, the Franchisee is responsible for and shall leave all City road rights-of-way in the condition of the City roads rights-of-way existing immediately prior to such disturbance. If the Franchisee, its contractors, or third parties working under permit should fail to diligently restore City road rights-of-way to the satisfaction of the City, the City may make such repairs or restorations as are necessary to return the City road rights-of-way to a condition reasonably comparable to the condition of the City roads rights-of-way existing immediately prior to such disturbance. Upon presentation of an itemized bill for repairs or restorations, including all applicable costs, both direct and indirect, to include but not be limited to the cost of labor, tools, materials and equipment, the Franchisee shall pay the bill within sixty-five (65) days.

SECTION 17 GUARANTEES

The Franchisee shall guarantee work and materials furnished and completed by the Franchisee under this Franchise for a period of two (2) years from the date the City accepts the work and/or restoration.

SECTION 18 INFORMATION ON LOCATION OF FACILITIES

Prior to the effective date of this Agreement, the Franchisee shall provide the City with all information requested by the City regarding the location of the Franchisee's current Facilities, including but not limited to copies of all record drawings for such Facilities. If the Franchisee performs any work to install, repair, reconstruct, or replace Facilities in the Franchise Area after this Agreement's effective date, the Franchisee shall provide the City with all information requested by the City regarding the location of those Facilities, including but not limited to copies of record drawings.

SECTION 19 COORDINATION OF WORK IN FRANCHISE AREA

To facilitate the coordination of work in City rights-of-way, if either the Franchisee or the City plans to make excavations in the Franchise Area, the party planning such excavation shall provide written notice to the other of the planned excavation, affording the other party the opportunity to share in the excavation; provided, that (1) such joint use shall not unreasonably delay the work of the party causing the excavation to be made, (2) such joint use shall be arranged and accomplished on terms and conditions satisfactory to both parties, and (3) either party may deny such request for safety reasons.

SECTION 20 REIMBURSEMENTS OF COSTS

The Franchisee shall reimburse and pay to the City the amount of actual administrative expenses incurred by the City, which are directly or indirectly related to the receipt, review and approval of this Franchise. In the event of non-payment thereafter, the Franchisee shall pay the City's reasonable attorneys' fees and other costs incurred in collecting such amount. Payment must be made within sixty-five (65) days of the Franchisee's receipt of the City's bill/invoice. If payment is not paid in full within the sixty-five (65) days, this Franchise shall become null and void.

SECTION 21 BLASTING REQUIREMENTS

The Franchisee's right to construct, install, operate, maintain and repair Facilities does not preclude the City, its agents or contractors from blasting, grading, or doing other road work contiguous to the Franchisee's Facilities. When practical, the City shall give the Franchisee forty-eight (48) hours notice of blasting or excavating.

SECTION 22 SURVEY MARKERS AND MONUMENTS

Before any work is performed under this Franchise, the Franchisee shall establish two or more reference marks to all monuments and markers of every nature relating to subdivisions, plats, rights-of-way, and all other surveys. The reference points shall be located so that they will not be disturbed during any of Franchisee's operations under this Franchise. The method of referencing monuments or other markers or points shall be approved by the City before placement. The replacement of all markers or monuments disturbed during any construction of the Franchisee shall be made as promptly as conditions permit. The cost of monuments or markers lost, destroyed, or disturbed and the expense or replacement with approved markers or monuments shall be borne by the Franchisee.

SECTION 23 RESERVATIONS OF RIGHTS

The City reserves the right, upon thirty (30) days written notice to the Franchisee, to amend or modify the provisions or conditions of this Franchise to conform to any state, county, federal, or city statute, ordinance, rule or regulation. The City may terminate this Franchise upon thirty (30) days written notice to the Franchisee if the Franchisee fails or refuses to comply with such amendment or modification.

SECTION 24 ASSIGNMENT

The Franchisee shall not have the right to assign this Franchise without the written consent of the City. No assignment shall be effective unless an acceptance by the assignee of all rights, conditions, terms, provisions and responsibilities contained within the Franchise, as well as surety bonds which the City deems necessary to be posted, are received as allowed by law. The City's approval of the assignment may be made subject to the assignee's acceptance of new or modified terms of the Franchise.

SECTION 25 PENALTY FOR VIOLATION OF CONDITIONS

If the Franchisee fails to comply with any material term, condition or responsibility under this Franchise, the City may provide the Franchisee with written notice of the City's intent to revoke the Franchise if the Franchisee's failure is not cured within thirty (30) days of the date of the notice. During the thirty (30) days following the date of the notice, the Franchisee shall have the opportunity to remedy the failure to comply. A public hearing shall be scheduled before the Auburn City Council at least thirty (30) days following the notification on the issue of the revocation. If at the hearing, the City Council finds that grounds exist to revoke the Franchise under this paragraph and that the revocation is in the public interest, the City Council may by ordinance revoke the Franchise. The revocation shall be effective ninety (90) days after the public hearing.

SECTION 26 EXPIRATION AND RENEWAL

26.1 If the Franchisee requests a renewal of this Franchise prior to its expiration date, the City may, at the City's sole discretion, extend the term of this Franchise for up to one year beyond the expiration date to allow for processing of the renewal. If the City elects to extend the term of this Franchise, written notice of the extension shall be provided to the Franchisee prior to the Franchise expiration date.

26.2 If the Franchisee has not requested a renewal of this Franchise prior to its expiration date, the City has the right, upon thirty (30) day's prior notice to the Franchisee, to remove or relocate any of the Franchisee's Facilities as is reasonably necessary for the public's health, welfare or safety, or for the construction, alteration, or improvement of the Franchise Area, or for the construction or installation of lines or facilities of other franchise holders. The Franchisee shall be liable for costs incurred in any removal or relocation of the Franchisee's Facilities under this section.

26.3 Upon the expiration of this Franchise, the Franchisee shall continue to be responsible for the operation and maintenance of the Franchisee's existing facilities in the Franchise Area, but shall not have the right to provide additional services. This Section and Sections 11, 13, 14, 15, 16, 19, and 22 of this Franchise shall continue in force until such time as the Franchisee's Facilities are abandoned to the City in accordance with the terms and conditions of the Annexation Resolution.

SECTION 27 COMPLIANCE WITH LAWS

The Franchisee shall conform to all applicable federal, state and local laws and regulations including, but not limited to, the State Environmental Policy Act and the City's Environmental Standards and Ordinances.

SECTION 28 NON-DISCRIMINATION CLAUSES

In all hiring or employment made possible or resulting from this Franchise, there shall be no discrimination against any employee or applicant for employment because of sex, sexual orientation, age, race, color, national origin, marital status or the presence of any sensory, mental, or physical handicap, unless based upon a bona fide occupation qualification. No person shall be denied or subjected to discrimination in receipt of the benefit of any services or activities made possible by or resulting from this agreement

on the grounds of sex, sexual orientation, race, color, national origin, age, except minimum age and retirement provisions, marital status, or the presence of any sensory, mental or physical handicap.

SECTION 29 NOTICES

Any notice or information required or permitted under this Franchise may be sent to the following addresses unless otherwise specified:

City of Auburn:
City Engineer
25 West Main Street
Auburn, WA 98001-4998
253-931-3010

City of Pacific:
Community Development Director
100 3rd Avenue S.E.
Pacific, WA 98047
253-929-1110

SECTION 30 ATTORNEYS' FEES

If either party commences litigation against the other party relating to the performance or alleged breach of this Franchise, the prevailing party shall be entitled to all costs, including reasonable attorneys' fees incurred, relating to such litigation, including those incurred in any appeal.

SECTION 31 SEVERANCES

If any term, provision, condition or portion of this Franchise is held to be invalid, such invalidity shall not affect the validity of the remaining portions of this Franchise which shall continue in full force and effect, unless the dominant purpose of the Franchise would be prevented or the public interest would no longer be served, as determined by the City.

SECTION 32 EFFECTIVE DATE

This Agreement having been introduced at least five days prior to its date of passage and submitted to the city attorney, and being approved by at least a majority of the entire city council at a regular city council meeting, shall take effect and be in force five days after its passage, approval and publication as required by law.

SECTION 33 EXISTING UTILITIES

This Franchise shall govern City of Pacific, new utility Facilities within the City of Auburn.

IN WITNESS WHEREOF, the parties have executed this Agreement effective as of the date last written below.

CITY OF AUBURN
King County, Washington

PETER B. LEWIS, MAYOR

Date OCT 2 0 2003

ATTEST:

Danielle E. Daskam, CMC, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

CITY OF PACIFIC
King County, Washington

HOWARD ERICKSON, MAYOR

Date October 31, 2003

ATTEST:

Randy Reed, CMC, City Clerk

APPROVED AS TO FORM:

Albert A. Abuan, City Attorney

ATTACHMENT 1

ANNEXATION LEGAL DESCRIPTION
AREA IN VICINITY OF "A" STREET SOUTHEAST (EAST VALLEY HIGHWAY) AND LAKELAND HILLS WAY SOUTHEAST

THAT PORTION OF GOVERNMENT LOTS 3 AND 4 IN THE SOUTHWEST QUARTER OF SECTION 31, TOWNSHIP 21 NORTH, RANGE 5 EAST, W. M., AND THE EAST HALF OF SECTION 36, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF SAID GOVERNMENT LOT 3 IN SECTION 31, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M., SAID CORNER ALSO BEING AN ANGLE POINT IN THE WEST BOUNDARY OF THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE NORTHWEST CORNER OF THE LANDS DESCRIBED IN CITY OF PACIFIC ANNEXATION ORDINANCE NUMBER 319;
THENCE EAST ALONG THE NORTH LINE OF SAID GOVERNMENT LOT 3, AND THE BOUNDARY COMMON TO SAID LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 319 A DISTANCE OF 1280 FEET MORE OR LESS TO THE NORTHEAST CORNER OF SAID GOVERNMENT LOT 3;
THENCE SOUTH ALONG THE EAST LINE OF SAID GOVERNMENT LOTS 3 AND 4, AND THE BOUNDARY COMMON TO SAID LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 319 TO THE SOUTHEAST CORNER OF SAID CITY OF PACIFIC ORDINANCE 319 AND TO A LINE PARALLEL WITH AND 825 FEET NORTHERLY OF THE SOUTH LINE OF SAID GOVERNMENT LOT 4;
THENCE WEST ALONG THE BOUNDARY COMMON TO SAID LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 319, AND ALONG SAID PARALLEL LINE A DISTANCE OF 1300 FEET, MORE OR LESS, TO THE WEST LINE OF SAID SECTION 31;
THENCE SOUTH ALONG THE WEST LINE OF SAID SECTION 31 AND THE BOUNDARY COMMON TO THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226 TO THE SOUTHWEST CORNER OF SAID SECTION 31;
THENCE WEST ALONG THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 36, TOWNSHIP 21 NORTH, RANGE 4 EAST AND ALONG THE SOUTH LINE OF THE LANDS ANNEXED TO THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226 A DISTANCE OF 70 FEET, MORE OR LESS, TO THE EAST LINE OF THE BURLINGTON NORTHERN SANTA FE (BNSF) RAILROAD RIGHT-OF-WAY (100 FEET IN WIDTH);
THENCE NORTH ALONG SAID EAST LINE OF THE BNSF RAILROAD RIGHT-OF-WAY TO A LINE PARALLEL WITH AND 100 FEET NORTHERLY OF SAID SOUTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 36;
THENCE WEST ALONG LAST SAID PARALLEL LINE 100 FEET TO THE WEST LINE OF SAID BURLINGTON NORTHERN SANTA FE (BNSF) RAILROAD RIGHT-OF-WAY;
THENCE NORTH ALONG SAID WEST LINE OF THE BNSF RAILROAD RIGHT-OF-WAY A DISTANCE OF 3280 FEET, MORE OR LESS, TO A LINE PARALLEL WITH AND 1884 FEET SOUTHERLY (WHEN MEASURED ALONG THE WEST LINE OF SAID RAILROAD RIGHT-OF-WAY) FROM THE NORTH LINE OF THE NORTHWEST QUARTER OF SAID SECTION 36;
THENCE EASTERLY ALONG LAST SAID PARALLEL LINE A DISTANCE OF 175 FEET, MORE OR LESS, TO THE EAST RIGHT-OF WAY LINE OF EAST VALLEY HIGHWAY ("A" STREET SE);
THENCE SOUTHERLY ALONG SAID EAST RIGHT-OF-WAY LINE A DISTANCE OF 150 FEET, MORE OR LESS, TO THE NORTH BANK OF THE WHITE RIVER (STUCK RIVER);

THENCE NORTHEASTERLY ALONG SAID NORTH BANK OF THE WHITE RIVER A DISTANCE OF 200 FEET, MORE OR LESS, TO THE LINE COMMON TO THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226, AND THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 31, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M.;
THENCE SOUTH ALONG SAID LINE COMMON TO THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226, AND THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 31 A DISTANCE OF 700 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

SITUATE IN KING COUNTY, WASHINGTON.

Attachment 2

CITY OF PACIFIC – DESCRIPTION CROSSING EAST VALLEY HIGHWAY

BEGINNING AT INTERSECTION OF THE EAST MARGIN OF THE EAST VALLEY HIGHWAY ("A" STREET SOUTHEAST) AND THE NORTH LINE OF TOWNSHIP 20 NORTH, RANGE 5 EAST, W.M.;
THENCE SOUTHERLY ALONG SAID EAST MARGIN OF THE EAST VALLEY HIGHWAY A DISTANCE OF 50 FEET;
THENCE WEST TO THE EAST LINE OF THE BURLINGTON NORTHERN SANTA FE (BNSF) RAILROAD RIGHT-OF-WAY (100 FEET IN WIDTH);
THENCE NORTHERLY ALONG SAID EAST LINE OF THE BNSF RAILROAD RIGHT-OF-WAY A DISTANCE OF 150 FEET;
THENCE EAST TO SAID EAST MARGIN OF THE EAST VALLEY HIGHWAY;
THENCE SOUTHERLY ALONG SAID EAST MARGIN OF THE EAST VALLEY HIGHWAY A DISTANCE OF 100 FEET TO THE POINT OF BEGINNING.

SITUATE IN KING AND PIERCE COUNTIES, WASHINGTON.

EXHIBIT D

CITY OF PACIFIC, WASHINGTON
FRANCHISE AGREEMENT WITH THE CITY OF AUBURN

WHEREAS, the City of Auburn (Auburn) and the City of Pacific (Pacific) have agreed to the annexation/de-annexation a portion of property described in Attachment "1" relating to among other things East Valley Highway (EVH) from the north end of the White River bridge to the King-Pierce County line in which, Auburn recognizes and agrees to Pacific's right to access a portion of EVH near the King/Pierce County line for ingress, egress and utilities; and

WHEREAS, Auburn and Pacific have entered into a Water Service Area Agreement, which revised the boundary between their respective water service areas; and

WHEREAS, the City of Auburn and Pacific have entered into an Emergency Water System Intertie Agreement; and

WHEREAS, in order to maintain control over the use of City of Pacific right-of-way by utilities operating within the City of Pacific, it is appropriate to enter into franchise agreements with such utilities; and

WHEREAS, City of Auburn is such a utility, and has negotiated this franchise agreement with the City of Pacific acceptable to both parties; and

WHEREAS, the City of Pacific has determined that it is in the best interests of the public to grant the City of Auburn a franchise on the terms and conditions set forth in this Agreement; now, therefore

THE CITY COUNCIL OF THE CITY OF PACIFIC, WASHINGTON, DO ORDAIN AS FOLLOWS:

SECTION 1 DEFINITIONS

Where used in this franchise ("Franchise"), the following definitions shall apply:

1.1 "Franchisee" means the City of Auburn, a Washington municipal corporation, and its respective successors and assigns.

1.2 "City" means the City of Pacific, a Washington municipal corporation.

1.3 "Franchise Area" means the Right of Way of A Street SE as described in Attachment "2" attached hereto, which is by this reference incorporated, as if fully set forth herein; provided, that the Franchise Area shall not include or convey any right to Franchisee to install facilities on or to otherwise use City owned or leased properties outside the Franchise Area.

1.4 "Facilities" means the Franchisee's water system, lines, mains, appurtenances, and all other necessary or convenient facilities for the purpose of providing water service.

1.5 "Agreement" means this Agreement setting forth the terms and conditions of the franchise granted to the Franchisee.

SECTION 2 FRANCHISE GRANT

Subject to the terms and conditions set forth in this Agreement, the City grants to the Franchisee the right for the construction and installation of water pipeline, appurtenances and the excavation of trenches on City roads for the purposes of constructing, installing, operating, maintaining, removing, and replacing mains and pipes and making connections between the same to the dwellings and other buildings of the consumers, the Franchisee shall be governed by and conform to the general rules adopted by the Public Works Department of the City of Pacific, and the Franchisee, at no expense to the City, shall complete all such work and shall replace and restore the City roads to a condition reasonably comparable to the condition of the City roads existing immediately prior to such disturbance; PROVIDED, HOWEVER, that no such work shall be done prior to the obtaining of a permit therefor issued by the City's Community Development Director (hereinafter "Director"), which permit shall set forth conditions pertaining to the work to be done and specifications for the restoration of the roads to the same condition as they were prior to such work. If the Franchisee does not repair the City roads to the satisfaction of the Director, the City may, at its sole discretion, repair such City roads, or cause them to be repaired, and the Franchisee hereby agrees to reimburse the City for the cost of such work, including overhead costs.

SECTION 3 FRANCHISE TERM

This Franchise is and shall remain in full force and effect for a period of twenty-five (25) years from the effective date of this Agreement; provided, that this Franchise shall not take effect and the Franchisee shall have no rights under this Franchise unless the Franchisee files a written acceptance of this Franchise with the City pursuant to Section 4 of this Agreement.

SECTION 4 ACCEPTANCE BY GRANTEE OF TERMS AND CONDITIONS

The full acceptance of this Franchise and all of its terms and conditions shall be filed with the City Clerk within forty-five (45) days from the date of this Agreement, by the Franchisee. Full acceptance of this Franchise is a condition precedent to its taking effect, and unless this Franchise is accepted within the time specified, this grant will be null and void and have no force or effect.

SECTION 5 NON-EXCLUSIVE FRANCHISE

This Franchise is not exclusive. It does not prohibit the City from granting franchises for other public or private utilities in, over, along, across, and under any City property,

including the Franchise Area. This Franchise does not prevent or prohibit the City from constructing, altering, maintaining or using any of the Franchise Area. The City retains full power to make all changes, relocations, repair, maintenance or other work to or in the Franchise Area as the City deems fit.

SECTION 6 JURISDICTIONS

This Franchise is intended to convey limited rights and interest only as to those roads and rights-of-way in which the City has an actual interest. It is not a warranty of title or of interest in City road rights-of-way. None of the rights granted to the Franchisee shall affect the jurisdiction of the City over City road rights-of-way or the City's power to perform work upon its roadways, rights-of-way or appurtenant drainage facilities including by constructing, altering, renewing, paving, widening, grading, blasting or excavating.

SECTION 7 REGULATION OF USE AND CONTROL

This Franchise does not deprive the City of any powers, rights, or privileges it now has or may later acquire in the future to regulate the use of and to control the City road rights-of-way covered by this Franchise. The City reserves the right and power at all times to exercise its police powers with respect to the time, manner and location of the placement of the Franchisee's Facilities.

SECTION 8 EMINENT DOMAIN

This Franchise and the limited rights and interests granted by this Franchise are subject to the exercise of eminent domain. In the event of an exercise of eminent domain by the City, the value to be attributed to all the rights and interests granted under this Franchise shall not exceed the actual amount the Franchisee paid to the City in obtaining this Franchise.

SECTION 9 VACATION

If at any time the City vacates any City rights-of-way covered by this Franchise, the City will not be held liable for any damages or loss to the Franchisee by reason of such vacation. The City may, after giving thirty (30) days written notice to the Franchisee terminate this Franchise with respect to any City road or rights-of-way vacated.

SECTION 10 ENFORCEMENT

The City's failure to enforce any provision of this Franchise does not constitute a waiver of its right to enforce that provision or any other provision of this Franchise.

SECTION 11 INDEMNITIES AND HOLD HARMLESS

11.1 The Franchisee shall defend, indemnify and hold harmless the City, its appointed and elected officials, and its employees and agents from and against liability for all claims, actions, injuries, demands, liabilities, losses, costs, damages and judgments, including costs of defense thereof, (collectively referred to as "damages") for injury to persons, death or property damage caused by, arising out of, or incidental

to the Franchisee's exercise of the rights and privileges granted by this Franchise, except for damages caused by or arising out of the City's sole negligence. In the event that any such claim or demand for damages is presented to or filed with the City, or if any suit or action is initiated against the City based on such claims or demands for damages, the City shall promptly notify the Franchisee of the claim, demand, suit or action and the Franchisee shall have the right, at its election and its sole cost and expense, to settle and compromise such claim, demand, suit or action, or defend the same at the Franchisee's sole cost and expense.

11.2 If it is determined that RCW 4.24.115 applies to this Franchise, the Franchisee agrees to defend, hold harmless and indemnify the City to the maximum extent permitted under that statute, and specifically for the Franchisee's negligence concurrent with that of the City to the full extent of the Franchisee's negligence.

SECTION 12 INSURANCE

12.1 The Franchisee being a municipality in the State of Washington shall be self-insured through the Washington Cities Insurance Association (WCIA). If required by Pacific, Auburn shall request the WCIA to provide Pacific with a letter sent from the WCIA evidencing such an insurance policy to be in force.

12.2 The insurance shall be maintained in full force and effect at the Franchisee's sole expense throughout the term of the Franchise. The City shall be given at least forty-five (45) days written notice that the Franchisee is no longer a member of the WCIA. Such notice to the City shall be by certified mail, sent to City of Pacific; Public Works Dept.; 100 3rd SE; Pacific, Washington 98047

12.3 The coverage provided by Auburn's insurance policies shall be primary to any insurance maintained by Pacific except as to losses or damages attributable to the sole negligence of Pacific. Any insurance maintained by Pacific that might relate to this Franchise shall be in excess to Auburn's insurance and shall not contribute with or to it. Pacific has no obligation to report occurrences to the insurance companies unless a claim is filed with Pacific's City Council; and Pacific has no obligations to pay Auburn's premiums.

12.4 The Franchisee shall be solely and completely responsible to perform all work related to this Franchise in compliance with all applicable federal, state, county and city statutes, rules, regulations, ordinances, orders and codes. The Franchisee's attention is directed to the requirements of the Washington Industrial Safety and Health Act, Chapter 49.17 RCW. The Franchisee shall be solely and completely responsible for safety and safety conditions on its job sites and for its work within the Franchise Area, including the safety of all persons and property during performance of any works therein. The services of the City or City's consultant personnel in conducting construction review of the Franchisee's work relating to the Franchise is not intended to include review of the adequacy of the Franchisee's work methods, equipment, scaffolding, or trenching, or safety measures in, on or near such Franchise Area or job site. The Franchisee shall provide safe access for the City and its inspectors to

adequately inspect the work and its conformance with applicable statutes, ordinances, rules, regulations, and the Franchise.

SECTION 13 INSTALLATION, REPAIR, REMOVAL OR RELOCATION

13.1 The Franchisee shall, at no expense to the City, expeditiously repair all existing Facilities that it owns within the Franchise Area, including any damage caused directly or indirectly by its Facilities, all appurtenant Facilities and service lines connecting its system to users, if the City requires such repair for any reasonable purpose.

13.2 The Franchisee shall, at no expense to the City, adjust, remove or relocate existing Facilities within the Franchise Area, including all appurtenant Facilities and service lines connecting its system to users, if the City determines such adjustment, removal or relocation is reasonably necessary to allow for an improvement or alteration planned by the City. The City shall give the Franchisee written notice of such requirement as soon as practicable. The written notice shall include all available information, such as plans and specifications, as is reasonably necessary for the Franchisee to plan for such adjustment, removal or relocation.

13.3 Franchisee's Facilities shall be constructed, installed, maintained and repaired within the Franchise Area so as to provide safety of persons and property, and not interfere with the free passage of traffic, all in accordance with the laws of the State of Washington, and the ordinances, resolutions, rules and regulations of the City.

13.4 For projects that are a part of the City's capital improvement program, in addition to any other notice given to the Franchisee, the City shall provide a vertical and horizontal profile of the roadway and drainage facilities within it, both existing and as proposed by the City, and the proposed construction schedule. The initial design information shall be given at least thirty (30) days before construction is scheduled to begin, except in cases of urgent construction or emergencies. The Franchisee shall respond to this notice, and to any later notices of revised designs, within twenty (20) days of the date of the notice, by providing to the City the Franchisee's best available information as to the location of all the Franchisee's Facilities, including all appurtenant Facilities and service lines connecting its system to users and all Facilities that it has abandoned, within the area proposed for the project.

13.5 The City shall offer the Franchisee the opportunity to participate in the preparation of bid documents for the selection of a contractor to perform the public works project as well as all required adjustments, removals or relocations of the Franchisee's Facilities. The City shall have sole authority to choose the contractor to perform such work. Such bid documents shall provide for an appropriate cost allocation between the parties. In addition to the Franchisee's allocation of contractor costs, the Franchisee shall reimburse the City for all costs, to include but not be limited to legal, engineering, inspections, administration and/or soils testing, related to the Franchisee's work and reasonably incurred by the City in the administration of such joint construction contracts. Such costs shall include the direct salary cost of the time of City professional

and technical personnel, including the City's consultants, spent productively engaged in such work, plus overhead costs at the standard rate charged by the City on other similar projects.

13.6 It is understood that emergency situations may arise that could threaten public health and/or continued operation of the Franchisee's utility system and the Franchisee may be unable to notify the City in the manner prescribed in Section 14 of this Franchise. In such a situation the Franchisee shall immediately correct the hazardous situation and continue to use best efforts to contact the City staff. The Emergency Phone Number for the City of Pacific is 253-929-1110, and the City of Auburn is 253-931-3048. Dialing 911 is advised for emergency situations.

SECTION 14 REQUIREMENT OF CONSTRUCTION PERMITS

14.1 The Franchisee has the right, privilege and authority to enter the City road rights-of-way for the purpose of constructing, installing, operating, maintaining, replacing or repairing its Facilities on the condition that it obtains construction, excavation, and right-of-way use permits issued by the City. Any work performed, whether by Franchisee, its contractors, or third parties, shall include necessary paving, patching, grading and any other reasonably necessary repair or restoration to the City rights-of-way. All work shall be done to the City's satisfaction.

14.2 All equipment, lines and appurtenances which are used in the construction, installation, operation, maintenance or repair of the Franchisee's Facilities and which are located within the City road rights-of-way and owned by the Franchisee shall be considered to be part of the Franchisee's system and shall be the responsibility of the Franchisee. All permits for the construction, installation, operation, maintenance or repair of the Franchisee's system shall be applied for and given in the name of the Franchisee, who will be responsible for all work done under the permit. The Franchisee remains responsible whether the work is performed by the Franchisee, its contractors, or by third parties.

14.3 When required by the Director, the Franchisee shall post a bond to the City in the amount sufficient for any road repair or restoration. The amount of the bond shall be set by the City and must be filed with the City before a permit will be issued.

SECTION 15 PERFORMANCE OF WORK

15.1 Any work performed by the Franchisee in the Franchise Area shall conform to all City ordinances and requirements including, but not limited to, Chapter 13.12 PMC and the City's Road Standards in force when the work is performed. All traffic control shall conform to the current edition of the Uniform Traffic Control Devices in force when the work is performed.

15.2 If work performed under this Franchise makes it necessary to turn off or diminish water pressure to any fire hydrant, the Franchisee shall notify the City's Fire Department by telephone and by written notice, that water pressure or fire flow conditions have been affected. Except in the case of an emergency, the notice shall be

provided at least 48 hours prior to the water pressure being turned off or diminished. If more than one fire hydrant will be affected, the Franchisee shall provide a map of the affected area to the Fire Department. Out-of-service fire hydrants must be marked to indicate that it is not operational.

SECTION 16 RESTORATION OF CITY RIGHTS-OF-WAY

After performing work on, under or adjacent to City road rights-of-way, the Franchisee is responsible for and shall leave all City road rights-of-way in a condition reasonably comparable to the condition of the City roads rights-of-way existing immediately prior to such disturbance. If the Franchisee, its contractors, or third parties working under permit should fail to diligently restore City road rights-of-way to the satisfaction of the City, the City may make such repairs or restorations as are necessary to return the City road rights-of-way to a condition reasonably comparable to the condition of the City roads rights-of-way existing immediately prior to such disturbance. Upon presentation of an itemized bill for repairs or restorations, including all applicable costs, both direct and indirect, to include but not be limited to the cost of labor, tools, materials and equipment, the Franchisee shall pay the bill within sixty-five (65) days.

SECTION 17 GUARANTEE

The Franchisee shall guarantee work and materials furnished and completed by the Franchisee under this Franchise for a period of two (2) years from the date the City approves the work and/or restoration.

SECTION 18 INFORMATION ON LOCATION OF FACILITIES

Prior to the effective date of this Agreement, the Franchisee shall provide the City with all information requested by the City regarding the location of the Franchisee's current Facilities, including but not limited to copies of all record drawings for such Facilities. If the Franchisee performs any work to install, repair, reconstruct, or replace Facilities in the Franchise Area after this Agreement's effective date, the Franchisee shall provide the City with all information requested by the City regarding the location of those Facilities, including but not limited to copies of record drawings.

SECTION 19 COORDINATION OF WORK IN FRANCHISE AREA

To facilitate the coordination of work in City rights-of-way, if either the Franchisee or the City plans to make excavations in the Franchise Area, the party planning such excavation shall provide written notice to the other of the planned excavation, affording the other party the opportunity to share in the excavation; provided, that (1) such joint use shall not unreasonably delay the work of the party causing the excavation to be made, (2) such joint use shall be arranged and accomplished on terms and conditions satisfactory to both parties, and (3) either party may deny such request for safety reasons.

SECTION 20 REIMBURSEMENT OF COSTS

The Franchisee shall reimburse and pay to the City the amount of actual administrative expenses incurred by the City which are directly or indirectly related to the receipt, review and approval of this Franchise. In the event of non-payment thereafter, the Franchisee shall pay the City's reasonable attorneys' fees and other costs incurred in collecting such amount. Payment must be made within sixty-five (65) days of the Franchisee's receipt of the City's bill/invoice. If payment is not paid in full within the sixty-five (65) days, this Franchise shall become null and void.

SECTION 21 BLASTING REQUIREMENTS

The Franchisee's right to construct, install, operate, maintain and repair Facilities does not preclude the City, its agents or contractors from blasting, grading, or doing other road work contiguous to the Franchisee's Facilities. When practical, the City shall give the Franchisee forty-eight (48) hours notice of blasting or excavating.

SECTION 22 SURVEY MARKERS AND MONUMENTS

Before any work is performed under this Franchise, the Franchisee shall establish two or more reference marks to all monuments and markers of every nature relating to subdivisions, plats, rights-of-way, and all other surveys. The reference points shall be located so that they will not be disturbed during any of Franchisee's operations under this Franchise. The method of referencing monuments or other markers or points shall be approved by the City before placement. The replacement of all markers or monuments disturbed during any construction of the Franchisee shall be made as promptly as conditions permit. The cost of monuments or markers lost, destroyed, or disturbed and the expense or replacement with approved markers or monuments shall be borne by the Franchisee.

SECTION 23 RESERVATION OF RIGHTS

The City reserves the right, upon thirty (30) days written notice to the Franchisee, to amend or modify the provisions or conditions of this Franchise to conform to any state, county, federal, or city statute, ordinance, rule or regulation. The City may terminate this Franchise upon thirty (30) days written notice to the Franchisee if the Franchisee fails or refuses to comply with such amendment or modification.

SECTION 24 ASSIGNMENT

The Franchisee shall not have the right to assign this Franchise without the written consent of the City. No assignment shall be effective unless an acceptance by the assignee of all rights, conditions, terms, provisions and responsibilities contained within the Franchise, as well as surety bonds which the City deems necessary to be posted, are received. The City's approval of the assignment may be made subject to the assignee's acceptance of new or modified terms of the Franchise.

SECTION 25 PENALTY FOR VIOLATION OF CONDITIONS

If the Franchisee fails to comply with any material term, condition or responsibility under this Franchise, the City may provide the Franchisee with written notice of the City's intent to revoke the Franchise if the Franchisee's failure is not cured within thirty (30) days of the date of the notice. During the thirty (30) days following the date of the notice, the Franchisee shall have the opportunity to remedy the failure to comply. A public hearing shall be scheduled before the Pacific City Council at least thirty (30) days following the notification on the issue of the revocation. If at the hearing, the City Council finds that grounds exist to revoke the Franchise under this paragraph and that the revocation is in the public interest, the City Council may by Agreement revoke the Franchise. The revocation shall be effective ninety (90) days after the public hearing.

SECTION 26 EXPIRATION AND RENEWAL

26.1 If the Franchisee requests a renewal of this Franchise prior to its expiration date, the City may, at the City's sole discretion, extend the term of this Franchise for up to one year beyond the expiration date to allow for processing of the renewal. If the City elects to extend the term of this Franchise, written notice of the extension shall be provided to the Franchisee prior to the Franchise expiration date.

26.2 If the Franchisee has not requested a renewal of this Franchise prior to its expiration date, the City has the right, upon thirty (30) day's prior notice to the Franchisee, to remove or relocate any of the Franchisee's Facilities as is reasonably necessary for the public's health, welfare or safety, or for the construction, alteration, or improvement of the Franchise Area, or for the construction or installation of lines or facilities of other franchise holders. The Franchisee shall be liable for costs incurred in any removal or relocation of the Franchisee's Facilities under this section.

26.3 Upon the expiration of this Franchise, the Franchisee shall continue to be responsible for the operation and maintenance of the Franchisee's existing facilities in the Franchise Area, but shall not have the right to provide additional services. This Section and Sections 11, 13, 14, 15, 16, 19, and 22 of this Franchise shall continue in force until such time as the Franchisee's Facilities are removed from the Franchise Area or abandoned in place with approval of the City.

SECTION 27 COMPLIANCE WITH LAWS

The Franchisee shall conform to all applicable federal, state and local laws and regulations including, but not limited to, the State Environmental Policy Act and the City's Environmental Standards and Ordinances.

SECTION 28 NON-DISCRIMINATION CLAUSES

In all hiring or employment made possible or resulting from this Franchise, there shall be no discrimination against any employee or applicant for employment because of sex, sexual orientation, age, race, color, national origin, marital status or the presence of any

sensory, mental, or physical handicap, unless based upon a bona fide occupation qualification. No person shall be denied or subjected to discrimination in receipt of the benefit of any services or activities made possible by or resulting from this agreement on the grounds of sex, sexual orientation, race, color, national origin, age, except minimum age and retirement provisions, marital status, or the presence of any sensory, mental or physical handicap.

SECTION 29 NOTICES

Any notice or information required or permitted under this Franchise may be sent to the following addresses unless otherwise specified:

City of Pacific:
City Community Development Director
100 - 3rd Avenue S.E.
Pacific, Washington 98047
253-929-1110

City of Auburn:
City Engineer
25 West Main Street
Auburn, WA 98001-4998
253-931-3010

SECTION 30 ATTORNEYS' FEES

If either party commences litigation against the other party relating to the performance or alleged breach of this Franchise, the prevailing party shall be entitled to all costs, including reasonable attorneys' fees incurred, relating to such litigation, including those incurred in any appeal.

SECTION 31 SEVERANCE

If any term, provision, condition or portion of this Franchise is held to be invalid, such invalidity shall not affect the validity of the remaining portions of this Franchise which shall continue in full force and effect, unless the dominant purpose of the Franchise would be prevented or the public interest would no longer be served, as determined by the City.

SECTION 32 EFFECTIVE DATE

This Agreement having been introduced at least five days prior to its date of passage and submitted to the city attorney, and being approved by at least a majority of the entire city council at a regular city council meeting, shall take effect and be in force five days after its passage, approval and publication as required by law.

SECTION 33 EXISTING UTILITIES

This Franchise shall govern Franchisee's new and existing Facilities within the City of Pacific.

IN WITNESS WHEREOF, the parties have executed this Agreement effective as of the date last written below.

CITY OF AUBURN
King County, Washington

PETER B. LEWIS, MAYOR

Date OCT 2 0 2003

ATTEST:

Danielle E. Daskam, CMC, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

CITY OF PACIFIC
King County, Washington

HOWARD ERICKSON, MAYOR

Date October 31, 2003

ATTEST:

Randy Reed, CMC, City Clerk

APPROVED AS TO FORM:

Albert A. Abuan, City Attorney

Exhibit D
Resolution No 3644
Page 11 of 11

ATTACHMENT 1

ANNEXATION LEGAL DESCRIPTION
AREA IN VICINITY OF "A" STREET SOUTHEAST (EAST VALLEY HIGHWAY) AND LAKELAND HILLS WAY SOUTHEAST

THAT PORTION OF GOVERNMENT LOTS 3 AND 4 IN THE SOUTHWEST QUARTER OF SECTION 31, TOWNSHIP 21 NORTH, RANGE 5 EAST, W. M., AND THE EAST HALF OF SECTION 36, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF SAID GOVERNMENT LOT 3 IN SECTION 31, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M., SAID CORNER ALSO BEING AN ANGLE POINT IN THE WEST BOUNDARY OF THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE NORTHWEST CORNER OF THE LANDS DESCRIBED IN CITY OF PACIFIC ANNEXATION ORDINANCE NUMBER 319;
THENCE EAST ALONG THE NORTH LINE OF SAID GOVERNMENT LOT 3, AND THE BOUNDARY COMMON TO SAID LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 319 A DISTANCE OF 1280 FEET MORE OR LESS TO THE NORTHEAST CORNER OF SAID GOVERNMENT LOT 3;
THENCE SOUTH ALONG THE EAST LINE OF SAID GOVERNMENT LOTS 3 AND 4, AND THE BOUNDARY COMMON TO SAID LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 319 TO THE SOUTHEAST CORNER OF SAID CITY OF PACIFIC ORDINANCE 319 AND TO A LINE PARALLEL WITH AND 825 FEET NORTHERLY OF THE SOUTH LINE OF SAID GOVERNMENT LOT 4;
THENCE WEST ALONG THE BOUNDARY COMMON TO SAID LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 319, AND ALONG SAID PARALLEL LINE A DISTANCE OF 1300 FEET, MORE OR LESS, TO THE WEST LINE OF SAID SECTION 31;
THENCE SOUTH ALONG THE WEST LINE OF SAID SECTION 31 AND THE BOUNDARY COMMON TO THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226 TO THE SOUTHWEST CORNER OF SAID SECTION 31;
THENCE WEST ALONG THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 36, TOWNSHIP 21 NORTH, RANGE 4 EAST AND ALONG THE SOUTH LINE OF THE LANDS ANNEXED TO THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226 A DISTANCE OF 70 FEET, MORE OR LESS, TO THE EAST LINE OF THE BURLINGTON NORTHERN SANTA FE (BNSF) RAILROAD RIGHT-OF-WAY (100 FEET IN WIDTH);
THENCE NORTH ALONG SAID EAST LINE OF THE BNSF RAILROAD RIGHT-OF-WAY TO A LINE PARALLEL WITH AND 100 FEET NORTHERLY OF SAID SOUTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 36;
THENCE WEST ALONG LAST SAID PARALLEL LINE 100 FEET TO THE WEST LINE OF SAID BURLINGTON NORTHERN SANTA FE (BNSF) RAILROAD RIGHT-OF-WAY;
THENCE NORTH ALONG SAID WEST LINE OF THE BNSF RAILROAD RIGHT-OF-WAY A DISTANCE OF 3280 FEET, MORE OR LESS, TO A LINE PARALLEL WITH AND 1884 FEET SOUTHERLY (WHEN MEASURED ALONG THE WEST LINE OF SAID RAILROAD RIGHT-OF-WAY) FROM THE NORTH LINE OF THE NORTHWEST QUARTER OF SAID SECTION 36;
THENCE EASTERLY ALONG LAST SAID PARALLEL LINE A DISTANCE OF 175 FEET, MORE OR LESS, TO THE EAST RIGHT-OF WAY LINE OF EAST VALLEY HIGHWAY ("A" STREET SE);
THENCE SOUTHERLY ALONG SAID EAST RIGHT-OF-WAY LINE A DISTANCE OF 150 FEET, MORE OR LESS, TO THE NORTH BANK OF THE WHITE RIVER (STUCK RIVER);

THENCE NORTHEASTERLY ALONG SAID NORTH BANK OF THE WHITE RIVER A DISTANCE OF 200 FEET, MORE OR LESS, TO THE LINE COMMON TO THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226, AND THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 31, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M.;
THENCE SOUTH ALONG SAID LINE COMMON TO THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226, AND THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 31 A DISTANCE OF 700 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

SITUATE IN KING COUNTY, WASHINGTON.

ATTACHMENT 2

PORTION OF "A" STREET SOUTHEAST WITHIN THE CITY OF PACIFIC (IN THE NE QUARTER OF SECTION 36, TWP 21N, R 4E, W.M.)

THAT PORTION OF THE NORTHEAST QUARTER OF SECTION 36, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 1171, SAID CORNER BEING ON THE EAST MARGINAL LINE OF THE EAST VALLEY HIGHWAY (ALSO KNOWN AS STATE HIGHWAY NO. 5 AND AS "A" STREET SOUTHEAST);
THENCE SOUTHWESTERLY 600 FEET, MORE OR LESS, ALONG SAID EAST MARGINAL LINE TO A LINE PARALLEL WITH AND 1884 FEET SOUTHERLY (WHEN MEASURED ALONG THE WEST LINE OF THE BURLINGTON NORTHERN SANTA FE RAILROAD RIGHT-OF-WAY) FROM THE NORTH LINE OF THE NORTHWEST QUARTER OF SAID SECTION 36;
THENCE WESTERLY ALONG SAID PARALLEL LINE TO THE WESTERLY RIGHT-OF WAY LINE OF SAID EAST VALLEY HIGHWAY ("A" STREET SE);
THENCE NORTHERLY ALONG SAID WESTERLY RIGHT-OF-WAY LINE A DISTANCE OF 600 FEET, MORE OR LESS, TO THE SOUTH LINE OF SAID LANDS ANNEXED UNDER CITY OF AUBURN ORDINANCE NUMBER 1171;
THENCE EASTERLY ALONG SAID SOUTH LINE TO THE POINT OF BEGINNING.

SITUATE IN KING COUNTY, WASHINGTON.

Exhibit E

INTERLOCAL AGREEMENT
regarding the
PROPOSED VISTA HEIGHTS DEVELOPMENT AT LAKELAND
City of Pacific and City of Auburn

This Agreement is entered into between the City of Pacific, a municipal corporation under the laws of Washington State, hereinafter referred to as "Pacific", and the City of Auburn, a municipal corporation formed under the laws of Washington State, hereinafter referred to as "Auburn".

WHEREAS, Pacific and Auburn have agreed that Auburn will assume SEPA lead agency responsibilities for a proposed residential development known as "Vista Heights at Lakeland," hereinafter referred to as the "Development," that is situated on adjoining parcels, one with tax identification number 312105-9008 (hereinafter referred to as "Site 7"), in Pacific, and one with tax identification number 312105-9006 (hereinafter referred to as "Site 8"), in Auburn; and

WHEREAS, Pacific and Auburn have agreed that Site 7 will be annexed into Auburn; and

WHEREAS, Pacific and Auburn previously executed an Interlocal Agreement dated July 24, 2000 regarding Emergency Fire Flow Protection for Site 7 from Auburn and domestic water service for Site 7 from Pacific; and

WHEREAS, upon completion of the Annexation, Site 7 will be served with water for domestic use and emergency fire flow protection by Auburn;

NOW, THEREFORE, IT IS MUTUALLY AGREED as follows:

1. The *Interlocal Agreement regarding Emergency Fire Flow Protection for the Proposed Vista Heights Development At Lakeland, City of Pacific and City of Auburn* is superceded by this agreement.

2. Pacific shall be responsible for collecting Auburn's traffic mitigation fee of $677.71 per single family residential lot if building permits are issued by Pacific prior to the completion of the annexation and the funds will be transmitted to Auburn.

3. Auburn shall be responsible for collecting Pacific's parks mitigation fee of $600.00 per single-family residential lot as authorized by applicable Pacific SEPA finding, Ordinance or Resolution if building permits are issued by Auburn subsequent to the completion of the annexation and the funds will be transmitted to Pacific.

4. Pacific shall be responsible for assisting Auburn in obtaining clear title to the storm water facilities and the underlying property that store and treat public storm water.

5. Each participant to this Agreement shall indemnify and hold the other harmless from and against any liability, loss, cost, damage, or expense of any kind and nature arising out of injury to person or damage to property in any manner, caused by the negligent act or omission of the indemnifying individual participant to this Agreement in the performance of its work or execution of its obligations under the terms of this Agreement. Each participant to this Agreement shall indemnify and hold the other harmless from all damages, which may occur as a result of any failure to comply with the provisions of Chapter 82.02 RCW or other applicable law.

6. Should a dispute arise between the parties that cannot be resolved satisfactorily, a mediator mutually acceptable to the parties shall resolve the dispute through the use of mediation at equal cost to each party. Should the Parties not be able to satisfactorily resolve the dispute through mediation, the forum for resolution shall be the King County Superior Court. The prevailing party shall be entitled to attorney fees and costs.

IN WITNESS WHEREOF, the parties have executed this Agreement effective as of the date last written below.

CITY OF AUBURN
King County, Washington

PETER B. LEWIS, MAYOR

Date OCT 2 0 2003

ATTEST:

Danielle E. Daskam, CMC, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

CITY OF PACIFIC
King County, Washington

HOWARD ERICKSON, MAYOR

Date October 31, 2003

ATTEST:

Randy Reed, CMC, City Clerk

APPROVED AS TO FORM:

Albert A. Abuan, City Attorney

Return Address:
City of Auburn
City Clerk
25 West Main
Auburn, WA 98001



20040211001982
PACIFIC NW TIT BS 24.00
PAGE001 OF 006
02/11/2004 15:13
KING COUNTY, WA

Exhibit F

Above this line reserved for recording information.

BILL OF SALE

Reference # (if applicable):	N/A
Grantor/Borrower:	**City of Pacific**
Grantee/Assignee/Beneficiary:	**City of Auburn**
Legal Description/STR:	SW ¼, 31-21-05E, & E ½, 36-21-04E
Assessor's Tax Parcel ID#:	312105-9007, 9008, 9016, 9025, 9026, 9027, 9036, 9041, 9044, 9064, 9065, 9066, 9068. 362104-9018, 9020, 9044, 9045, 9057, 9059, & 9068. 362104-9018 & 9045. 335440-0680.

6/24 PNWT
W7634-12

KNOW ALL MEN BY THESE PRESENTS that for and in consideration of the relocation of the water system Emergency Intertie Facility, and for the consideration of incorporating the facility into the City system, and other good and sufficient consideration, receipt whereof is hereby acknowledged, the undersigned Grantor, City of Pacific, a Municipal Corporation in King County, Washington does by these presents hereby convey, setover, assign, transfer and warrant to the City of Auburn, a Municipal Corporation in King County, Washington,

STREETS	
Lakeland Hills Way	775 LF of 72 foot wide ROW,
Lakeland Hills Way	725 LF of 60 foot wide ROW,
East Valley Highway	2,650 LF of 70 foot wide ROW,
Oravetz Rd.	744 LF of 60foot wide ROW,
Oravetz Place SE	1,030 LF of 10 wide ROW,
S 376th ST.	120 LF of 30 foot wide ROW.

STREETLIGHTS

Lakeland Hills Way	7 each 400-watt luminaire, & 4 each 250-watt luminaire
East Valley Highway	6 each 400-watt luminaire
Oravetz Rd.	4 each 250-watt luminaire, & 1 each 150-watt luminaire

WATER MAIN

Lakeland Hills Way	1,650 LF of 12-inch pipe
East Valley Highway	2,000 LF of 12-inch pipe
Oravetz Rd.	900 LF of 12-inch pipe
Oravetz Place SE	1,250 LF of 12-inch pipe

PRESSURE REDUCING STATION

Lakeland Hills Way	One Water Pressure Reducing Station

STORM SEWER

Lakeland Hills Way	920 LF of 24-inch, 740 LF of 18-inch & 380 LF of 12-inch storm pipe
East Valley Highway	141 LF of 24-inch, 1,405 LF of 12-inch, & 37 LF of 8-inch storm pipe
Oravetz Rd.	900 LF of 24-inch, and 156 LF of 12-inch storm pipe

STORM DETENTION PONDS

Lakeland Hills Way	Detention Pond #1, Detention Pond #2 and 130 LF of 24-inch storm pipe

BRIDGE

East Valley Highway	White "Stuck" River Bridge.

and all appurtenances or any other associated public facility as shown on the public facility extension plans constructed by Public or Private entities associated with the Pacific Annexation. Situated within the following described real property.

See ATTACHMENTS '1' and '2' ATTACHED HERETO AND BY THIS REFERENCE MADE A PART HEREOF

and the said Grantor hereby warrants that it is the sole owner of all the property above conveyed; that it has full power to convey the same and that it will defend the title of the said Grantee against any and all persons lawfully making claim thereto, and indemnify the City of Auburn for any costs, including Attorney fees in defending title.

IN WITNESS WHEREOF the Grantor has executed these presents this 31st day of October, 2003.

Howard Erickson October 31, 2003
Mayor Date

ATTEST:

Randy Reed
City Clerk

APPROVAL AS TO FORM

Albert A. Abuan
City Attorney

STATE OF WASHINGTON)
)ss.
County of King)

On this 31 day of October, 2003 before me, the undersigned, a Notary Public in and for the State of Washington, personally appeared Howard Erickson Randy Reed and Albert A. Abuan, to me known to be the Mayor and City Clerk of the City of Pacific, the municipal corporation of the State of Washington, in the forgoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said municipal corporation for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute said instrument on behalf of said municipal corporation.

IN WITNESS WHEREOF, I have hereto set my hand and affixed my official seal the date hereinabove set forth.

Catherine A Roppo

CATHERINE A ROPPO
Notary Public in and for the State of Washington
residing at Graham
My appointment expires 10-9-2007

CATHERINE A. ROPPO NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES 10-9-07

ATTACHMENT 1

PROPOSED ANNEXATION LEGAL DESCRIPTION
AREA IN VICINITY OF "A" STREET SOUTHEAST (EAST VALLEY ROAD) AND LAKELAND HILLS WAY SOUTHEAST

THAT PORTION OF GOVERNMENT LOTS 3 AND 4 IN THE SOUTHWEST QUARTER OF SECTION 31, TOWNSHIP 21 NORTH, RANGE 5 EAST, W. M., AND THE EAST HALF OF SECTION 36, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF SAID GOVERNMENT LOT 3 IN SECTION 31, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M., SAID CORNER ALSO BEING AN ANGLE POINT IN THE WEST BOUNDARY OF THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE NORTHWEST CORNER OF THE LANDS DESCRIBED IN CITY OF PACIFIC ANNEXATION ORDINANCE NUMBER 319;

THENCE EAST ALONG THE NORTH LINE OF SAID GOVERNMENT LOT 3, AND THE BOUNDARY COMMON TO SAID LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 319 A DISTANCE OF 1280 FEET MORE OR LESS TO THE NORTHEAST CORNER OF SAID GOVERNMENT LOT 3;

THENCE SOUTH ALONG THE EAST LINE OF SAID GOVERNMENT LOTS 3 AND 4, AND THE BOUNDARY COMMON TO SAID LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 319 TO THE SOUTHEAST CORNER OF SAID CITY OF PACIFIC ORDINANCE 319 AND TO A LINE PARALLEL WITH AND 825 FEET NORTHERLY OF THE SOUTH LINE OF SAID GOVERNMENT LOT 4;

THENCE WEST ALONG THE BOUNDARY COMMON TO SAID LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 319, AND ALONG SAID PARALLEL LINE A DISTANCE OF 1300 FEET, MORE OR LESS, TO THE WEST LINE OF SAID SECTION 31;

THENCE SOUTH ALONG THE WEST LINE OF SAID SECTION 31 AND THE BOUNDARY COMMON TO THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226 TO THE SOUTHWEST CORNER OF SAID SECTION 31;

THENCE WEST ALONG THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 36, TOWNSHIP 21 NORTH, RANGE 4 EAST AND ALONG THE SOUTH LINE OF THE LANDS ANNEXED TO THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226 A DISTANCE OF 70 FEET, MORE OR LESS, TO THE EAST LINE OF THE BURLINGTON NORTHERN SANTA FE (BNSF) RAILROAD RIGHT-OF-WAY (100 FEET IN WIDTH);

THENCE NORTH ALONG SAID EAST LINE OF THE BNSF RAILROAD RIGHT-OF-WAY TO A LINE PARALLEL WITH AND 100 FEET NORTHERLY OF SAID SOUTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 36;

THENCE WEST ALONG LAST SAID PARALLEL LINE 100 FEET TO THE WEST LINE OF SAID BURLINGTON NORTHERN SANTA FE (BNSF) RAILROAD RIGHT-OF-WAY;

THENCE NORTH ALONG SAID WEST LINE OF THE BNSF RAILROAD RIGHT-OF-WAY A DISTANCE OF 3280 FEET, MORE OR LESS, TO A LINE PARALLEL WITH AND 1884 FEET SOUTHERLY (WHEN MEASURED ALONG THE WEST LINE OF SAID RAILROAD RIGHT-OF-WAY) FROM THE NORTH LINE OF THE NORTHWEST QUARTER OF SAID SECTION 36;

THENCE EASTERLY ALONG LAST SAID PARALLEL LINE A DISTANCE OF 175 FEET, MORE OR LESS, TO THE EAST RIGHT-OF WAY LINE OF EAST VALLEY HIGHWAY ("A" STREET SE);

THENCE SOUTHERLY ALONG SAID EAST RIGHT-OF-WAY LINE A DISTANCE OF 150 FEET, MORE OR LESS, TO THE NORTH BANK OF THE WHITE RIVER (STUCK RIVER);

THENCE NORTHEASTERLY ALONG SAID NORTH BANK OF THE WHITE RIVER A DISTANCE OF 200 FEET, MORE OR LESS, TO THE LINE COMMON TO THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226, AND THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 31, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M.;

THENCE SOUTH ALONG SAID LINE COMMON TO THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2271 AND THE CITY OF PACIFIC BY CITY OF PACIFIC ORDINANCE NUMBER 226, AND THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 31 A DISTANCE OF 700 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

SITUATE IN KING COUNTY, WASHINGTON.

ATTACHMENT 2

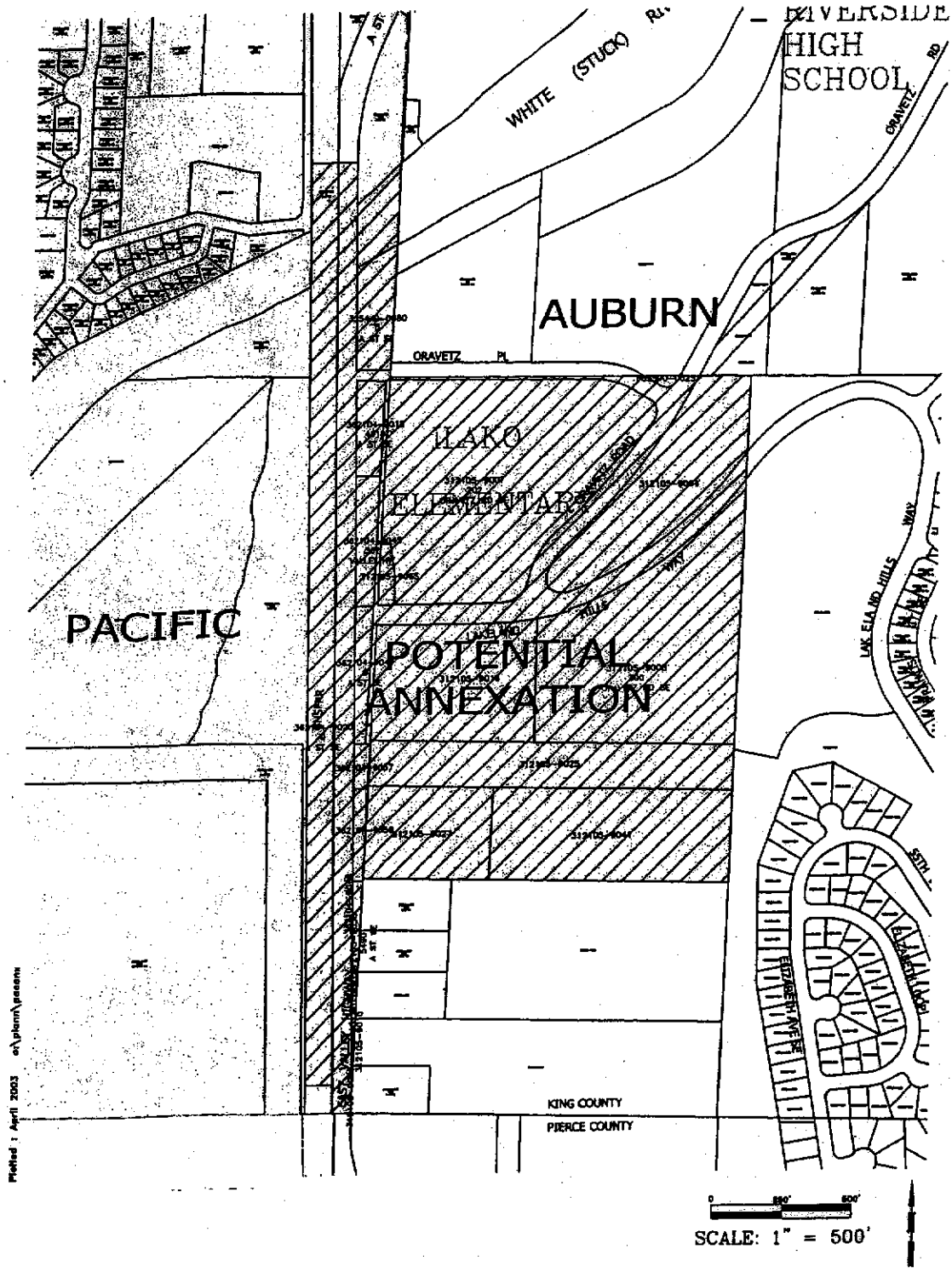


Exhibit F, Attachment 2
Resolution No. 3644
Page 1 of 1

EXHIBIT G

AN INTERLOCAL AGREEMENT BETWEEN THE CITY OF AUBURN AND THE CITY OF PACIFIC FOR MAINTENANCE AND OPERATION SERVICES ON 'A' STREET SE

Pursuant to the Interlocal Cooperation Act codified as RCW 39.34, this Agreement is made and entered into this day by and between the **CITY OF AUBURN**, hereafter called "**AUBURN**", and the **CITY OF PACIFIC**, hereafter called "**PACIFIC**", to provide Right of Way maintenance and operation services on A Street SE as legally described on Attachment 1 and shown on Attachment 2.

WHEREAS, PACIFIC will not have the organization and personnel to provide Right of Way maintenance and operation services at the stated location; and

WHEREAS, PACIFIC desires to provide quality maintenance and operation activities for it's Right of Way; and

WHEREAS, AUBURN is able to provide such maintenance and operation services for PACIFIC, and

WHEREAS, it is for the public benefit that AUBURN and PACIFIC cooperate to provide safe and effective maintenance and operation activities; and

NOW THEREFORE, AUBURN and PACIFIC hereby agree:

1. **BASIC SERVICES:**

AUBURN will provide maintenance and operation activities at the area legal activities described in Attachment 1 and shown on Attachment 2:

A. Locate underground facilities for utilities or other digging operations except the Pacific waterlines.

B. Maintain public storm drainage facilities.

C. Maintain the existing street light system.

D. Maintain subgrade, pavement and pavement markings.

E. Maintain signing per the "Manual of Uniform Traffic Control Devices".

2. **AUBURN AND PACIFIC COORDINATION:**

AUBURN will identify a contact person to handle day-to-day operational problems related to the Basic Services. PACIFIC will identify a contact person for the same purposes. Emergency work to protect the public safety will be handled, as the AUBURN contact person deems necessary.

3. **PERSONNEL AND EQUIPMENT:**

A. AUBURN is acting herein as an independent contractor so that:

1. Control of personnel standards of performance, discipline and all other aspects of performance shall be governed entirely by AUBURN

2. Except as described in Sections 3.C. below, all persons rendering services hereunder shall be for all purposes employees of AUBURN

B. AUBURN shall furnish all personnel, resources, and materials deemed by AUBURN as necessary to provide maintenance services as outlined in Section 1 above.

C. In the event AUBURN uses contract services to perform one or more of the Basic Services for PACIFIC, the appropriate supervision and inspection of the contractor's work will be performed by AUBURN.

4. PACIFIC'S RESPONSIBLITIES

In support of AUBURN providing services for PACIFIC in Sections 1 and 2, PACIFIC shall:

A. Authorize AUBURN to perform maintenance services outlined in Section 1 within the City Limits of PACIFIC for the purposes of carrying out this Agreement.

B. PACIFIC will adopt by reference all AUBURN codes necessary to provide authority for AUBURN to perform service of this Agreement.

5. INDEMNIFICATION:

A. In executing this Agreement, AUBURN does not assume liability or responsibility for or in any way release PACIFIC's responsibility or liability which arises in part from the existence, validity or effect of PACIFIC's ordinances, rule, or regulations. In any such cause, claim, suit, action and administration proceeding commences, PACIFIC shall defend the same at its sole expense and if judgment is entered or damages are awarded against PACIFIC, AUBURN, or both, PACIFIC shall satisfy the sam3e, including chargeable costs and attorney's fees.

B. PACIFIC shall indemnify and hold harmless AUBURN and its officers, agents, and employees, from and against any and all claims, actions, suits liability, loss costs and expense, and damages of any nature whatsoever, which are caused by or result from a negligent act or omission of AUBURN, it's officers, agents, and employees in performing services pursuant to this Agreement.

6. NON-DISCRIMINATION:

AUBURN and PACIFIC certify that both agencies are equal opportunity employers.

7. AUDITS AND INSPECTIONS:

All records and documents with respect to this Agreement shall be subjected to inspection, review or audit by AUBURN or PACIFIC for the duration of this Agreement.

8. AMENDMENTS:

The Agreement may be amended in writing at any time by mutual agreement of both parties.

9. ENTIRE AGREEMENT:

The two parties agree that this Agreement is a complete expression of the terms hereto and any oral representations or understandings are not incorporated herein.

10. AGREEMENT ADMINISTRATION:

The parties shall appoint representatives to review Agreement performances and resolve problems, which cannot be dealt with by PACIFIC and AUBURN's contact persons.

11. INVALID PROVISIONS:

If any provision of this Agreement is held invalid, the remainder of the Agreement shall not be affected thereby if such remainder would then continue to serve the purpose and objective of the parties.

IN WITNESS WHEREOF, the parties have executed this Agreement effective as of the date last written below.

CITY OF AUBURN
King County, Washington

PETER B. LEWIS, MAYOR

Date OCT 2 0 2003

ATTEST:

Danielle E. Daskam, CMC, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

CITY OF PACIFIC
King County, Washington

HOWARD ERICKSON, MAYOR

Date October 31, 2003

ATTEST:

Randy Reed, CMC, City Clerk

APPROVED AS TO FORM:

Albert A. Abuan, City Attorney

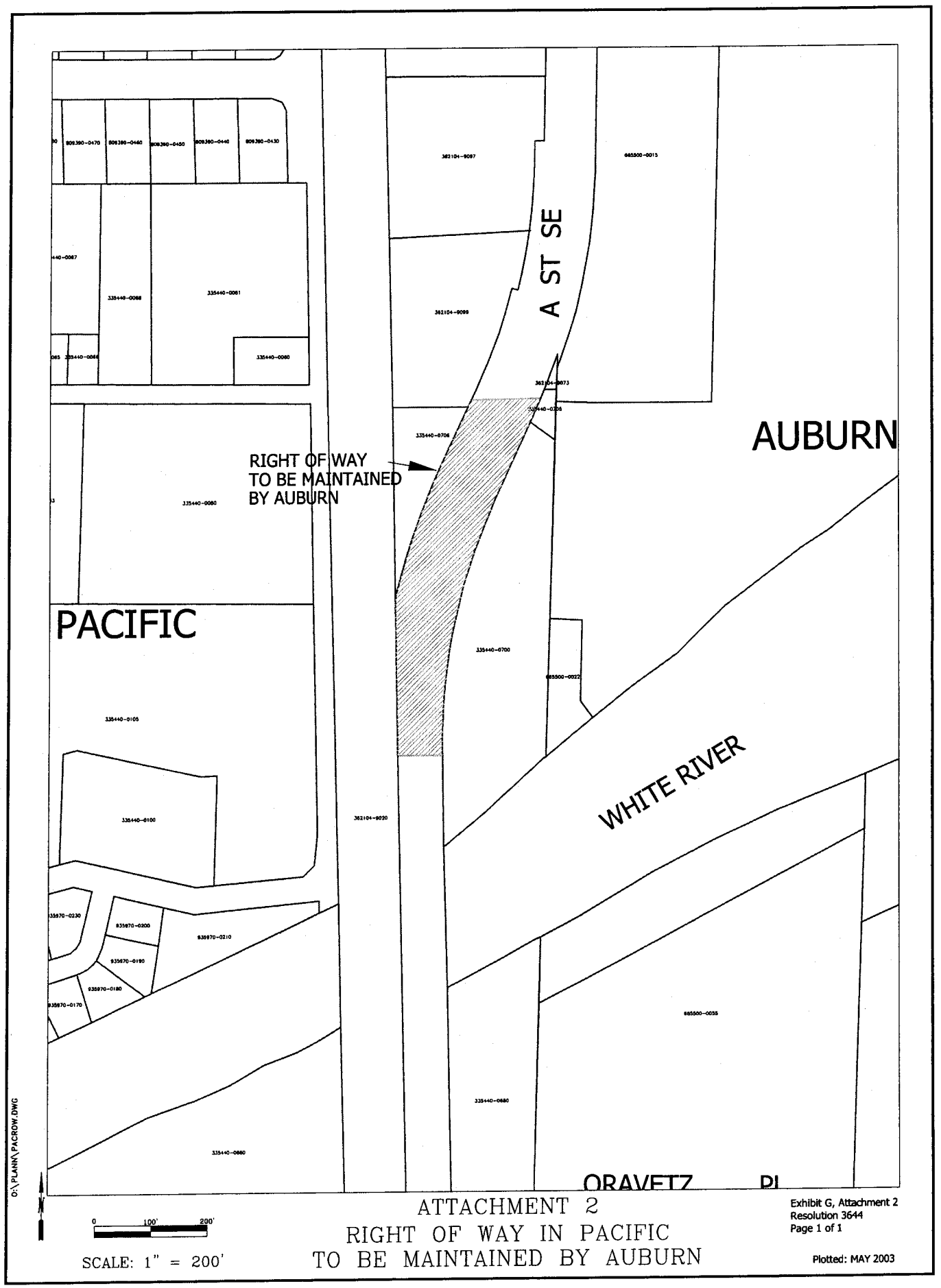
ATTACHMENT 1

PORTION OF "A" STREET SOUTHEAST WITHIN THE CITY OF PACIFIC (IN THE NE QUARTER OF SECTION 36, TWP 21N, R 4E, W.M.)

THAT PORTION OF THE NORTHEAST QUARTER OF SECTION 36, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF THE LANDS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 1171, SAID CORNER BEING ON THE EAST MARGINAL LINE OF THE EAST VALLEY HIGHWAY (ALSO KNOWN AS STATE HIGHWAY NO. 5 AND AS "A" STREET SOUTHEAST);
THENCE SOUTHWESTERLY 600 FEET, MORE OR LESS, ALONG SAID EAST MARGINAL LINE TO A LINE PARALLEL WITH AND 1884 FEET SOUTHERLY (WHEN MEASURED ALONG THE WEST LINE OF THE BURLINGTON NORTHERN SANTA FE RAILROAD RIGHT-OF-WAY) FROM THE NORTH LINE OF THE NORTHWEST QUARTER OF SAID SECTION 36;
THENCE WESTERLY ALONG SAID PARALLEL LINE TO THE WESTERLY RIGHT-OF WAY LINE OF SAID EAST VALLEY HIGHWAY ("A" STREET SE);
THENCE NORTHERLY ALONG SAID WESTERLY RIGHT-OF-WAY LINE A DISTANCE OF 600 FEET, MORE OR LESS, TO THE SOUTH LINE OF SAID LANDS ANNEXED UNDER CITY OF AUBURN ORDINANCE NUMBER 1171;
THENCE EASTERLY ALONG SAID SOUTH LINE TO THE POINT OF BEGINNING.

SITUATE IN KING COUNTY, WASHINGTON.


A ST SE
AUBURN
RIGHT OF WAY
TO BE MAINTAINED
BY AUBURN
PACIFIC
WHITE RIVER
ORAVETZ
PL
0
100'
200'
SCALE: 1" = 200'
ATTACHMENT 2
RIGHT OF WAY IN PACIFIC
TO BE MAINTAINED BY AUBURN
Exhibit G, Attachment 2
Resolution 3644
Page 1 of 1
Plotted: MAY 2003
O:\PLANN\PACROW.DWG

RESOLUTION NO. 3649

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE A LEASE AGREEMENT BETWEEN THE CITY AND VOICESTREAM PCS III CORPORATION, FOR THE PURPOSE OF LEASING SPACE ON THE LAKELAND HILLS WATER TOWER FOR COMMUNICATION EQUIPMENT

WHEREAS, the City of Auburn has facilities from which cellular and telecommunication equipment could be attached; and

WHEREAS, Voicestream PCS III Corporation has sought use of such facilities and has negotiated an agreement for use thereof with terms acceptable to the City.

THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREBY RESOLVES as follows:

Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute a Lease Agreement between the City and VoiceStream PCS III Corporation, for the purpose of leasing space on the Lakeland Hills water tower for communication equipment, in substantial conformity with the agreement attached hereto, marked as Exhibit "I" and incorporated herein by this reference.

Section 2. That the Mayor is authorized to implement such other administrative procedures as may be necessary to carry out the directives of this legislation.

SECTION 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 17th day of Nov, 2003.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

Exhibit "I"

SITE LEASE AGREEMENT

THIS SITE LEASE AGREEMENT("Lease") is by and between City of Auburn, ("Landlord") and VoiceStream PCS III Corporation, a Delaware corporation (Tenant").

1. Lease Agreement.

(a) Landlord hereby leases to Tenant a portion of the real property legally described as follows: THE SOUTH 175.00 FEET OF THE EAST 110.00 FEET OF THE WEST 1,393.00 FEET OF THE SOUTHEAST QUARTER OF SECTION 31, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M., CITY OF AUBURN, RECORDS OF KING COUNTY, WASHINGTON, (collectively referred to hereinafter as the "Property"). The lease includes the right to operate a personal communications service antenna installation on the Landlord's water reservoir, on the terms and conditions set forth herein.

(b) The Tenant agrees to the lease, subject to the following terms and conditions. Landlord hereby leases to Tenant the use of that portion of the Property as generally described and depicted in the attached Exhibit A, (collectively referred to hereinafter as the "Lease Area"). The Lease Area, located at Lakeland Hills Water Reservoir facility, Auburn, Washington, comprises approximately an area not to exceed 2,740 square feet.

(c) The lease shall be nonexclusive and shall not preclude the Landlord from granting a similar lease, right, license, franchise, etc., to other carriers or other persons for telecommunications or any other purpose.

2. Term. The initial term of this Lease shall be five (5) years commencing on the date of execution of the Agreement (the "Commencement Date"), and terminating at midnight on the last day of the initial term (the "Initial Term").

3. Antenna Facilities. Tenant may use the Lease Area for the transmission and reception of radio communication signals and for the construction, installation, operation, maintenance, repair, removal or replacement of related facilities necessary for the operation of a telecommunications facility as well as for access and utilities. Tenant may only place its ground based telecommunications equipment within the portion of the Lease Area identified as the "Compound" on Exhibit A. Tenant may install and maintain landscape plantings within the Lease Area. In addition to using the Lease Area, Tenant may utilize the Property to install and use underground conduits that begin at the Lease Area, cross the Property in a generally straight line to the base of the water reservoir (Reservoir) and then extend up the side of the Reservoir to antennas which Tenant will install on the railing of the Reservoir, as shown in Exhibit A (hereinafter referred to as "Antenna Facilities").

4. Rent. Tenant shall pay Landlord, as rent, Twelve Thousand and no/100 dollars ($12,000.00) per year ("Rent"). Rent shall be payable within twenty (20) days following the Commencement Date and thereafter the Rent will be payable yearly, no later than the anniversary of the Commencement Date to City of Auburn Water Utility Fund, Account Number 430.369.900, at Landlord's address specified in Section 12 below. The Rent shall increase annually over the Rent payable the preceding year by not less than three and one half percent (3.5%). If the average increase in the Consumer Price Index – Urban for the Seattle – Tacoma – Bremerton area (CPI) is greater than three and one half percent (3.5%) over the period of the Term, or any Renewal Term, then the rate at which the Rent is increased annually during the following Renewal Term shall be adjusted to that CPI based average percentage rate. If the average increase in the CPI is less than or equal to three and one half percent (3.5%) over the period of the Term, or any Renewal Term, then the rate at which the Rent is increased annually during the following Renewal Term shall be three and one half percent (3.5%). It shall be the responsibility of the Landlord to track the CPI and notify the Tenant of increases or reductions in the Rent. Landlord shall notify Tenant within 90

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days of the commencement of the Renewal Term as to the revised rate at which the Rent shall be increased annually thereafter. Landlord will invoice Tenant for back Rent due or refund over payment as necessary to correct the payment received for the first year of the Renewal Term. If at any time the CPI ceases to incorporate a significant number of items, if a substantial change is made in the method of establishing the CPI, or if issuance of the CPI shall be discontinued, then the Landlord and Tenant shall mutually agree upon another standard recognized cost of living index issued by the United States Government, provided that if the parties cannot reach agreement on such other standard cost of living index, then the Landlord shall select the index closest to the CPI. In either case, the substitute index chosen shall result in increases in the Rent similar to those that had been, or would have been, generated by the CPI. If this Lease is terminated at a time other than on the anniversary of the Commencement Date, Rent shall be prorated as of the date of termination for any reason (other than a default by Tenant) and all prepaid Rent shall be refunded to Tenant within sixty (60) days.

5. Renewal. Tenant may extend this Lease for (5) additional, five-year terms (each a "Renewal Term"). Each Renewal Term shall be on the same terms and conditions as set forth herein, including the Rent increase set forth in Section 4, above. This Lease shall automatically renew for each successive Renewal Term unless Tenant notifies Landlord, in writing, of Tenant's intention not to renew this Lease, at least ninety (90) days prior to the expiration of the Initial Term or any Renewal Term. Landlord may, during any Renewal Term, notify Tenant, in writing, of Landlord's intention not to renew this Lease for an additional Renewal Term, which notice shall be provided to Tenant at least one hundred and eighty (180) days prior to the expiration of the then in effect Renewal Term. If Tenant shall remain in possession of the Lease Area at the expiration of this Lease or any Renewal Term without a written agreement, such tenancy shall be deemed a month-to-month tenancy under the same terms and conditions of this Lease.

6. Interference. Tenant shall not use the Lease Area in any way which interferes with the use of the Property by Landlord. Tenant's Antenna Facilities and the use thereof shall not interfere with the use of any other communication or similar equipment of any kind and nature owned or operated by Landlord or other lessee, licensees, franchisees etc., on the Property except as might be permitted by applicable laws, provided, however that subsequent to the installation by Tenant of the Antenna Facilities, Landlord agrees to exercise reasonable care to assure equipment of subsequent providers leasing space on the Property does not interfere with Tenants Antenna Facilities operations. The Landlord, however, is not in any way responsible or liable for any interference with Tenants use of Landlords Property, which may be caused by the use and operation of any other tenant's equipment, even if caused by new technology. In the event that any other tenant's activities interfere with Tenant's use of Landlord's property, and Tenant cannot work out this interference with other tenant's, Tenant may, upon 30 days notice to Landlord, terminate this lease and restore the Landlord's Property to its original condition, reasonable wear and tear excepted.

7. Improvements; Utilities; Access.

(a) Tenant shall have the right, at its expense, to erect and maintain on the Lease Area, improvements, personal property and facilities necessary to operate its communications system, including, equipment shelters and/or cabinets and related cables and utility lines and a location based system, including coaxial cable, base units and other associated equipment as such location based system may be permitted by any county, state or federal agency/department. Tennant shall have the right, at its expense, to erect and maintain on the Property including on Landlord's water reservoir, improvements, personal property and facilities necessary to operate its communications system, including, radio transmitting and receiving antennas and related cables and conduits and other associated equipment as such location based system may be permitted by any county, state or federal agency/department. Tenant shall have the right to alter, replace, and expand within the confines of the Lease Area as defined in Section 1 and without interference to other providers / tenants, enhance and upgrade the Antenna Facilities at any time during the term of this Lease. Tenant shall cause all construction to occur lien-free and in compliance with all applicable laws and ordinances. Landlord acknowledges that it shall not interfere with any aspects of construction, including, attempting to direct construction personnel as to the location of or method of installation of the Antenna Facilities. The

Antenna Facilities shall remain the exclusive property of Tenant. Tenant shall have the right to remove the Antenna Facilities at any time during and upon the expiration or termination of this Lease.

(b) Tenant, at its expense, may use any and all appropriate means of restricting access to the Compound, including, without limitation, the construction of a fence.

(c) Tenant shall, at Tenant's expense, keep and maintain the Lease Area and Antenna Facilities now or hereafter located on the Property in commercially reasonable condition and repair during the term of this Lease, normal wear and tear excepted. Upon termination or expiration of this Lease, the Lease Area and Antenna Facilities areas shall be returned to Landlord in good, usable condition, normal wear and tear excepted, within ninety (90) days.

(d) Tenant shall have the right to install utilities, power and telephone, at Tenant's expense, and to improve the present utilities on the Property (including, but not limited to, the installation of emergency power generators). Landlord agrees to cooperate with Tenant in its reasonable efforts to acquire necessary utility service. Tenant shall, wherever practicable, install separate meters for utilities used on the Property by Tenant. Landlord shall diligently correct any variation, interruption or failure of utility service within Landlord's control.

(e) Prior to installation of equipment, Tenant shall submit for Landlord review and approval, which approval shall not be unreasonably withheld or delayed, an electrical and grounding connection plan that assures no interference with the water tank cathodic protection system. The plan shall include a 3 " minimum diameter common use conduit enclosure for cables from the ground level to top of tank. This conduit may be utilized by other telecommunication providers until such time as it is filled to capacity, at which time new providers will need to pay for upsizing. Upon Landlord approval of the plans, Tenant may proceed to install and operate the Antenna Facilities.

(f)Tennant shall have the right during the Initial Term and of this Lease and any Renewal Term for ingress and egress to the Property over the south fifteen (15) feet of Lot 6, Lakeland Hills Division Number 3, Extension, according to the plat thereof recorded in Volume 145 of Plats, pages 72 and 73, in King County Washington.

(g) Tenant shall have 24-hours-a-day, 7-days-a-week access to the Lease Area ("Access") at all times during the Initial Term of this Lease and any Renewal Term. In the event Landlord, its employees or agents unreasonably deny Access to Tenant, its employees or agents, Tenant shall, without waiving any other rights that it may have at law or in equity, deduct from Rent amounts due under this Lease an amount equal to fifty and no/100 dollars per day for each day that Access is impeded or denied. Access to Landlord facilities beyond the Lease Area, including but not limited to the water reservoir site and the water reservoir, require 48 hours notice to the Water Division Supervisor of the City of Auburn Water Utility (phone: 253-931-3066). Access to Landlord facilities will only occur with Landlord supervision. Tenant agrees to reimburse Landlord for Landlord expenses attributed to supervising Tenant while accessing Landlord facilities. The hourly rate for Landlord supervision during City standard office hours will be $31.50 per hour in calendar year 2003. The hourly rate shall increase annually on January 1st over the hourly rate payable the preceding year by not less than three and one half percent (3.5%) or the CPI – Urban for the Seattle / Tacoma area whichever is the greater, unless a different hourly rate amount is negotiated.

8. Termination. Except as otherwise provided herein, this Lease may be terminated, without any penalty or further liability as follows:

(a) upon thirty (30) days' written notice by Landlord if Tenant fails to cure a default for payment of amounts due under this Lease within that thirty (30) day period;

(b) immediately if Tenant notifies Landlord of unacceptable results of any title report, environmental or soil tests prior to Tenant's installation of the Antenna Facilities on the Lease Area, or if Tenant is unable to

obtain, maintain, or otherwise forfeits or cancels any license (including, without limitation, an FCC license), permit or any Governmental Approval necessary to the installation and/or operation of the Antenna Facilities or Tenant's business;

(c) upon ninety (90) days' written notice by Tenant if the Lease Area or the Antenna Facilities are, or become unacceptable under Tenant's design or engineering specifications for its Antenna Facilities or the communications system to which the Antenna Facilities belong;

(d) immediately upon written notice by Tenant if the Lease Area or the Antenna Facilities are destroyed or damaged so as in Tenant's reasonable judgment to substantially and adversely affect the effective use of the Antenna Facilities. In such event, all rights and obligations of the parties shall cease as of the date of the damage or destruction, and Tenant shall be entitled to the reimbursement on a prorated basis of any Rent prepaid by Tenant. If Tenant elects to continue this Lease, then all Rent shall abate until the Lease Area and/or the Antenna Facilities are restored to the condition existing immediately prior to such damage or destruction; or

(e) at the time title to the Property transfers to a condemning authority, pursuant to a taking of all or a portion of the Property sufficient in Tenant's determination to render the Lease Area unsuitable for Tenant's use. Landlord and Tenant shall each be entitled to pursue their own separate awards with respect to such taking.

(f) Landlord may terminate this Lease if Landlord needs the Lease Area for expansion of Landlord's responsibility to provide its services, and Landlord has no reasonable or economical alternative site available, provided Landlord provides Tenant written notice 12 months in advance of Landlord's need to re establish the Landlord's sole use of the Lease Area. Upon Tenant's receipt of written notice, Tenant shall have six (6) months to submit to Landlord alternative locations for its Antenna Facilities. Such alternative locations may be on the Property or other properties owned or managed by Landlord. Landlord shall evaluate such alternatives and advise Tenant in writing if one or more of the alternatives is suitable to accommodate Tenant's Antenna Facilities. If so requested by the Landlord, Tenant shall submit additional relevant information to assist the Landlord in making such evaluation. Landlord shall give each alternative proposed by Tenant full and fair consideration, within a reasonable time so as to allow for the relocation work to be performed in a timely manner. In the event Landlord ultimately determines not less than ninety (90) days from the termination date that there is no other reasonable alternative, Tenant shall remove its Antenna Facilities as otherwise provided in this Section 7 (c) of this Lease. If an alternative location for Tenant's Antenna Facilities is found, Landlord and Tenant agree to enter into a new Lease Agreement with the same terms and conditions of this Lease.

(g) If for reasons related to public health, safety or welfare, or for any operational need of the Water Utility, Landlord determines that this Lease must be terminated, then Landlord reserves rights of unilateral termination and will do so by providing Tenant with a six month written notice.

(h) Tenant shall be entitled to a pro rata refund of its prepaid Rent for any termination of this Lease by Landlord pursuant to Subsection 8(f) or 8(g).

9. Default and Right to Cure. Notwithstanding anything contained herein to the contrary and without waiving any other rights granted to it at law or in equity, each party shall have the right, but not the obligation, to terminate this Lease on written notice pursuant to Section 12 hereof, to take effect immediately, if the other party (i) fails to perform any covenant for a period of thirty (30) days after receipt of written notice thereof to cure or (ii) commits a material breach of this Lease and fails to diligently pursue such cure to its completion after sixty (60) days' written notice to the defaulting party.

10. Taxes. Landlord shall pay when due all real property taxes or other fees and assessments for the Property, including the Lease Area. In the event that Landlord fails to pay any such real property taxes or other fees and assessments, Tenant shall have the right, but not the obligation, to pay such owed amounts and deduct them from Rent amounts due under this Lease. Notwithstanding the

foregoing, Tenant shall pay any personal property tax, State leasehold tax, excise tax, real property tax or any other tax or fee which are directly attributable to the presence or installation of the Tenant's Antenna Facilities, only for so long as this Lease has not expired of its own terms or is not terminated by either party. Landlord hereby grants to Tenant the right to challenge, whether in a Court, Administrative Proceeding, or other venue, on behalf of Landlord and/or Tenant, any personal property or real property tax assessments, State leasehold tax or excise tax that may affect Tenant. If Landlord receives notice of any personal property or real property tax assessment, State leasehold tax or excise tax against the Landlord, which may affect Tenant and is directly attributable to Tenant's installation, Landlord shall provide timely notice of the assessment to Tenant sufficient to allow Tenant to consent to or challenge such assessment. Further, Landlord shall provide to Tenant any and all documentation associated with the assessment and shall execute any and all documents reasonably necessary to effectuate the intent of this Section 10.

11. Insurance and Subrogation and Indemnification.

(a) Tenant shall provide Commercial General Liability Insurance naming Landlord (the City of Auburn) as additional insured in an aggregate amount of Two Million and no/100 dollars ($2,000,000.00). Tenant may satisfy this requirement by obtaining the appropriate endorsement to any master policy of liability insurance Tenant may maintain.

(b) Tenant shall indemnify, protect, defend and hold Landlord and its employees and agents harmless from and against any and all claims, liabilities, judgments, costs, damages, and expenses, including reasonable attorney's fees, arising out of or in any way related to the Antenna Facilities, including, but not limited to, the installation, maintenance, operation or removal thereof, except to the extent that such claim, liability, judgment, cost, damage or expense arises out of the sole negligent act or omission, or willful misconduct of Landlord or its employees or agents. Landlord shall not be liable to Tenant, its agents, employees and contractors for damage to the Antenna Facilities or any other property belonging to Tenant from any cause, except for any damage caused by the sole negligent act or omission or willful misconduct of Landlord or its employees or agents. Tenant waives all claims against Landlord and its employees and agents for damage to persons or Antenna Facilities or property arising for any reason other than a claim based on the sole negligent act or omission or willful misconduct of Landlord or its employees or agents. Landlord and its employees and agents shall have no liability to Tenant for any interruption of any utility service unless solely caused by the negligent act or omission or willful misconduct of Landlord or its employees or agents.

Should a court of competent jurisdiction determine that this Lease is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Tenant and the Landlord, its officers, officials, employees and volunteers, the Landlord's liability hereunder shall be only to the extent of the Landlord's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes the Tenant's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties. The provisions of this section shall survive the expiration or termination of this Lease.

12. Notices. All notices, requests, demands and other communications shall be in writing and are effective three (3) days after deposit in the U.S. mail, certified and postage paid, or upon receipt if personally delivered or sent by next-business-day delivery via a nationally recognized overnight courier to the addresses set forth below. Landlord or Tenant may from time to time designate any other address for this purpose by providing written notice to the other party.

If to Tenant, to:

VoiceStream Wireless Corporation
Attn: PCS Lease Administrator
12920 SE 38th Street
Bellevue, WA 98006

With a copy to:

VoiceStream PCS III Corporation
Attn: Lease Administration Manager
19807 North Creek Parkway
Bothell, WA 98011

With a copy to:

VoiceStream Wireless Corporation
Attn: Legal Department
12920 SE 38th Street
Bellevue, WA 98006

If to Landlord, to:

Public Works Director
City of Auburn
25 West Main St.
Auburn, WA 98001

With a copy to:

City Attorney
City of Auburn
25 West Main St.
Auburn, WA 98001

13. Quiet Enjoyment, Title and Authority. Landlord covenants and warrants to Tenant that (i) Landlord has full right, power and authority to execute this Lease; (ii) it has good and unencumbered title to the Property free and clear of any liens or mortgages, except those disclosed to Tenant and which will not interfere with Tenant's rights to or use of the Lease Area; and (iii) execution and performance of this Lease will not violate any laws, ordinances, covenants, or the provisions of any mortgage, lease, or other agreement binding on Landlord.

14. Environmental Laws. Landlord represents that it has no knowledge of any substance, chemical or waste (collectively, "Hazardous Substance") on the Property that is identified as hazardous, toxic or dangerous in any applicable federal, state or local law or regulation. Landlord and Tenant shall not introduce or use any Hazardous Substance on the Property in violation of any applicable law. Landlord shall be responsible for, and shall promptly conduct any investigation and remediation as required by any applicable environmental laws, for all spills or other releases of any Hazardous Substance not caused in whole or in part by Tenant, that have occurred or which may occur on the Property. Each party agrees to defend, indemnify and hold harmless the other from and against any and all administrative and judicial actions and rulings, claims, causes of action, demands and liability (collectively, "Claims") including, but not limited to, damages, costs, expenses, assessments, penalties, fines, losses, judgments and reasonable attorney fees that the indemnitee may suffer or incur due to the existence or discovery of any Hazardous Substances on the Property or the migration of any Hazardous Substance to other properties or the release of any Hazardous Substance into the environment (collectively, "Actions"), that relate to or arise from the indemnitor's activities on the Property. Landlord agrees to defend, indemnify and hold Tenant harmless from Claims resulting from Actions on the Property not caused by Landlord or Tenant prior to and during the Initial Term and any Renewal Term of this Lease. The indemnifications in this section specifically include, without limitation, costs incurred in connection with any investigation of site conditions or any cleanup, remedial, removal or restoration work required by any governmental authority. This Section 14 shall survive the termination or expiration of this Lease.

15. Assignment and Subleasing. All of the terms and provisions contained herein shall inure to the benefit of and shall be binding upon the parties hereto and their respective heirs, legal representatives, successors and assigns. This Agreement shall not be assigned by Tenant without the express written consent of the Landlord, which consent shall not be unreasonably withheld, delayed or conditioned. Any attempted assignment in violation of this Section shall be void. The transfer of the rights and obligations of Tenant to a parent, subsidiary, or other affiliate of Tenant, or to any successor-in-interest or entity

acquiring fifty-one percent (51%) or more of Tenant's stock or assets, shall not be deemed an assignment. Tenant shall give to Landlord thirty (30) days' prior written notice of any such transfer.

Additionally, Tenant may, upon notice to Landlord, mortgage or grant a security interest in this Lease and the Antenna Facilities, and may assign this Lease and the Antenna Facilities to any mortgagees or holders of security interests, including their successors or assigns (collectively "Mortgagees"), provided such Mortgagees agree to be bound by the terms and provisions of this Lease. In such event, Landlord shall execute such consent to leasehold financing as may reasonably be required by Mortgagees. Landlord agrees to notify Tenant and Tenant's Mortgagees simultaneously of any default by Tenant and to give Mortgagees the same right to cure any default as Tenant or to remove any property of Tenant or Mortgagees located on the Lease Area, except that the cure period for any Mortgagees shall not be less than thirty (30) days after receipt of the default notice, as provided in Section 9 of this Lease. All such notices to Mortgagees shall be sent to Mortgagees at the address specified by Tenant. Failure by Landlord to give Mortgagees such notice shall not diminish Landlord's rights against Tenant, but shall preserve all rights of Mortgagees to cure any default and to remove any property of Tenant or Mortgagees located on the Lease Area.

16. Successors and Assigns. This Lease granted herein shall run with the land, and shall be binding upon and inure to the benefit of the parties, their respective successors, personal representatives and assigns. This Agreement shall not be assigned by Tenant without the express written consent of the Landlord, which consent shall not be unreasonably withheld, delayed or conditioned.

17. Removal of Antenna Facilities. The Antenna Facilities are and shall remain the property of the Tenant and upon the expiration or earlier termination of this Lease, Tenant shall, at Tenant's sole cost and expense, remove the Antenna Facilities and restore the Lease Area to its original condition, normal wear and tear excluded.

18. Miscellaneous.

(a) The substantially prevailing party in any litigation, including any arbitration to which the parties shall submit, arising hereunder shall be entitled to its reasonable attorneys' fees and court costs, including appeals, if any.

(b) This Lease constitutes the entire agreement and understanding of the parties, and supersedes all offers, negotiations and other agreements. There are no representations or understandings of any kind not set forth herein. Any amendments to this Lease must be in writing and executed by both parties. At such time as the Auburn City Council approves any regulation affecting telecommunications, Tenant agrees to amend this Lease, as determined by the Landlord in order to comply with any future ordinance related to telecommunications provided, however, that in no event shall such regulation (i) materially interfere with or affect Tenant's operation of its Antenna Facilities; or (ii) increase Tenant's financial obligations under the terms of this Lease, except as provided herein, or impose some new financial obligations not already contemplated by this Lease. No amendment, change or modification of this Lease shall be valid, unless in writing and signed by all parties hereto.

(c) Each party agrees to cooperate with the other in executing any documents (including a Memorandum of Lease in substantially the form attached hereto as Exhibit B) necessary to protect its rights or use of the Lease Area. The Memorandum of Lease may be recorded in place of this Lease by either party. In the event the Property is encumbered by a mortgage or deed of trust, Landlord agrees, upon request of Tenant, to obtain and furnish to Tenant a non-disturbance and attornment agreement for each such mortgage or deed of trust, in a form reasonably acceptable to Tenant. Tenant may obtain title insurance on its interest in the Lease Area.

(d) This Lease shall be construed in accordance with the laws of the state in which the Property is located.

(e) If any term of this Lease is found to be void or invalid, such finding shall not affect the remaining terms of this Lease, which shall continue in full force and effect. The parties agree that if any provisions are deemed not enforceable, they shall be deemed modified to the extent necessary to make them enforceable. No provision of this Lease will be deemed waived by either party unless expressly waived in writing signed by the waiving party. No waiver shall be implied by delay or any other act or omission of either party. No waiver by either party of any provision of this Lease shall be deemed a waiver of such provision with respect to any subsequent matter relating to such provision.

(f) The persons who have executed this Lease represent and warrant that they are duly authorized to execute this Lease in their individual or representative capacity as indicated.

(g) This Lease may be executed in any number of counterpart copies, each of which shall be deemed an original, but all of which together shall constitute a single instrument.

(h) All Exhibits referred to herein and any Addenda are incorporated herein for all purposes. The parties understand and acknowledge that Exhibit A (the Lease Area, Compound, and Antenna Facilities location within the Property), and Exhibit B (Memorandum of Lease) are attached to this Site Lease Agreement. The terms of all Exhibits are incorporated herein for all purposes.

(i) If Landlord is represented by any broker or any other leasing agent, Landlord is responsible for all commission fees or other payment to such agent, and agrees to indemnify and hold Tenant harmless from all claims by such broker or anyone claiming through such broker. If Tenant is represented by any broker or any other leasing agent, Tenant is responsible for all commission fee or other payment to such agent, and agrees to indemnify and hold Landlord harmless from all claims by such broker or anyone claiming through such broker.

19. Headings. The caption and paragraph headings used in this Lease are inserted for convenience of reference only and are not intended to define, limit or affect the interpretation or construction of any term or provision hereof.

20. Liens. Except with respect to activities for which Landlord is responsible, Tenant shall pay as due all claims for work done on, and for services rendered or material furnished to, the Antenna Facility, and shall keep the Antenna Facility free from all liens.

The effective date of this Lease is the date of execution by the last party to sign (the "Effective Date").

LANDLORD: City of Auburn

By: _____

Printed Name: Peter B. Lewis

Its: Mayor

Date: 12-4-03

Taxpayer ID Number: 91-6001228

TENANT: VoiceStream PCS III Corporation, a Delaware corporation

By: _____

Printed Name: ~~Beth Pearson~~ Beth Pearson Director of Legal Affairs

Its: ~~Vice President, Western Region~~ Director of Legal Affairs

Date: 12/3/03

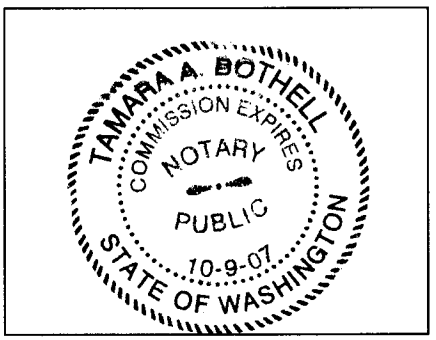
Approved as to form:
Regional Corporate Attorney

Exhibit I
Resolution No. 3649
Page 9 of 10

STATE OF WA)
) ss.
COUNTY OF King)

I certify that I know or have satisfactory evidence that Peter B. Lewis is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the Mayor, of City of Auburn, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: 12-4-03



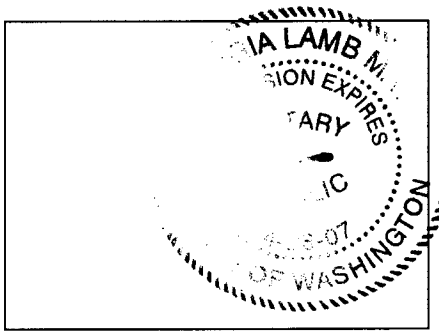
Tamara A Bothell
Notary Public
Print Name Tamara A. Bothell
residing at King Co.
My commission expires 10-9-07

(Use this space for notary stamp/seal)

STATE OF WA)
) ss.
COUNTY OF King)

I certify that I know or have satisfactory evidence that ~~Bryon Gunnerson~~ Beth Pearson is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the ~~Vice President, Western Region~~ Director of Legal Affairs of VoiceStream PCS III Corporation, a Delaware corporation, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: 12/3/03



Georgia Lamb May
Notary Public
Print Name Georgia Lamb May
residing at Bellevue, WA
My commission expires 4/20/07

(Use this space for notary stamp/seal)

EXHIBIT A

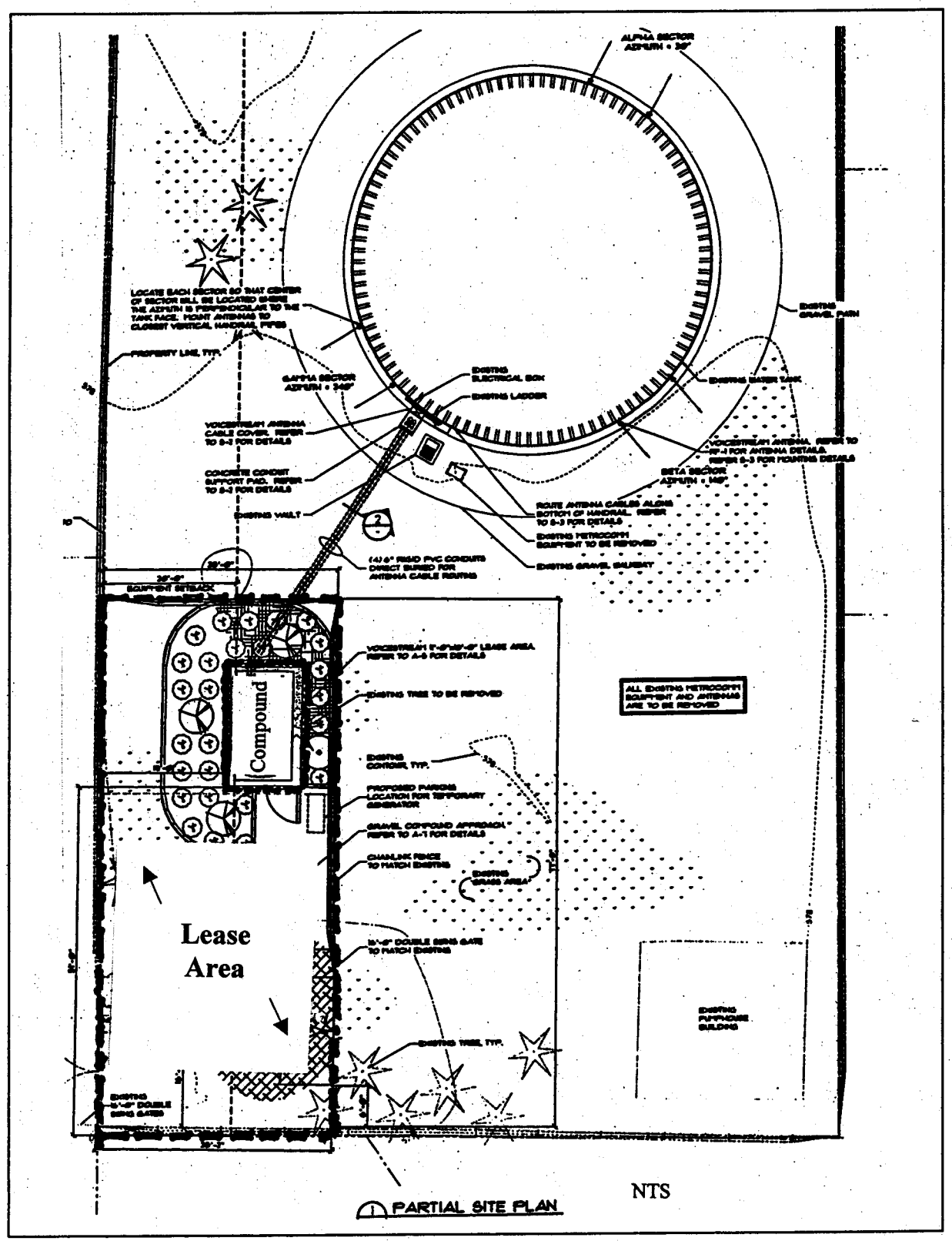


Exhibit A – Lease Area
Resolution No. 3649
Page 1 of 1

RESOLUTION NO. **3650**

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE A FRANCHISE AGREEMENT BETWEEN THE LAKEHAVEN UTILITY DISTRICT AND THE CITY OF AUBURN, ALLOWING THE LAKEHAVEN UTILITY DISTRICT TO CONNECT, INSTALL, OPERATE, MAINTAIN AND REPAIR WATER SYSTEM, FACILITIES, AND APPURTENANCES IN, OVER, ALONG, ACROSS AND UNDER THE FRANCHISE AREA FOR THE PURPOSE OF PROVIDING WATER SERVICE

WHEREAS, the Lakehaven Utility District currently owns, operates, and maintains a water system within Auburn's public right of way located in the franchise area; and

WHEREAS, the Lakehaven Utility District is seeking a new comprehensive franchise with Auburn for public water facilities installed within Auburn's current and future public right of way; and

WHEREAS, in order to maintain control over the use of City of Auburn right-of-ways by utilities operating within the City of Auburn, it is appropriate to enter into franchise agreements with such utilities; and

WHEREAS, Lakehaven Utility District is such a utility, and has negotiated this franchise agreement with the City of Auburn acceptable to both parties; and

WHEREAS, the City of Auburn has determined that it is in the best interests of the public to grant the Lakehaven Utility District a water franchise on the terms and conditions set for in this Agreement.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor of the City of Auburn is herewith authorized to execute a Franchise Agreement between the Lakehaven Utility District and the City of Auburn in substantial conformity with the Agreement attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. This resolution shall be in full force and effect upon passage and signatures hereon.

DATED this 2nd day of February, 2004.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney



Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Franchise Agreement (Resolution No. 3650)

16/34 PNWT
W9249-12

Reference Number(s) of Documents assigned or released:
☐ Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
1. Lakehaven Utility District

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number
N/A

☐ Assessor Tax # not yet assigned

EXHIBIT "A"

CITY OF AUBURN, WASHINGTON
WATER FRANCHISE AGREEMENT
WITH THE LAKEHAVEN UTILITY DISTRICT

THIS FRANCHISE AGREEMENT, made and entered into this 23rd day of September, 2004, by and between the CITY OF AUBURN, Washington and the LAKEHAVEN UTILITY DISTRICT:

WITNESSETH:

WHEREAS, the Lakehaven Utility District currently owns, operates, and maintains a water system within Auburn's public right-of-way located in the franchise area; and

WHEREAS the Lakehaven Utility District is seeking to establish a comprehensive franchise with the City of Auburn for water system lines within Auburn's current and future public right-of-way; and

WHEREAS, in order to maintain control over the use of City of Auburn rights-of-way by utilities operating within the City of Auburn, it is appropriate to enter into franchise agreements with such utilities; and

WHEREAS, Lakehaven Utility District is such a utility, and has negotiated this franchise agreement with the City of Auburn acceptable to both parties; and

WHEREAS, the City of Auburn has determined that it is in the best interests of the public to grant the Lakehaven Utility District a franchise on the terms and conditions set forth in this franchise agreement.

NOW, THEREFORE THE CITY OF AUBURN AND THE LAKEHAVEN UTILITY DISTRICT AGREE AS FOLLOWS:

SECTION 1 DEFINITIONS

Where used in this franchise agreement ("Franchise"), the following definitions shall apply:

1.1 "Franchisee" means the Lakehaven Utility District, a Washington municipal corporation, and its respective successors and assigns.

1.2 "City" means the City of Auburn, a Washington municipal corporation.

1.3 "Franchise Area" means all of the public roads, streets, avenues, alleys, highways, and other rights-of-way of the City as now laid out, platted, dedicated or improved; and any and all public City roads, streets, avenues, alleys, highways, and other rights-of-way that may hereafter be laid out, platted, dedicated or improved within the area in which the City has jurisdiction, as described in Attachment 1 and as depicted in

Attachment 2, both attachments attached hereto, which is by this reference incorporated as if fully set forth herein; provided, that the Franchise Area shall not include or convey any right to the Franchisee to install facilities on, or to otherwise use, City owned or leased properties; and provided that the terms of this franchise (i.e., permitting and enforcement) shall not apply to those public roads, streets, avenues, alleys, highways, and other rights-of-way that may hereafter be laid out, platted, dedicated or improved within the area as described in Attachment 1 and depicted in Attachment 2 until such time that the City has assumed jurisdiction thereof.

1.4 "Facilities" means the Franchisee's water system, lines, mains, pump stations, appurtenances, and all other necessary or convenient appurtenances for the purpose of providing water service.

SECTION 2 FRANCHISE GRANT

Subject to the terms and conditions set forth in this Franchise, the City grants to the Franchisee the right to construct, own and maintain its Facilities, including, but not limited to, water pipelines, pump stations, and appurtenances within the City's public right-of-way and the Franchisee's water service area. In exercising authority to construct and install its Facilities and to excavate trenches in City roads for the purposes of constructing, installing, operating, maintaining, removing, and replacing its Facilities, and making connections between the same to the dwellings and other buildings of the consumers, the Franchisee shall be governed by and conform to the general rules adopted by the Public Works Department of the City, and the Franchisee, at no expense to the City, shall complete all work and shall replace and restore the City roads to the condition of the City roads existing immediately prior to such disturbance; PROVIDED, HOWEVER, that no such work shall be done prior to the obtaining of a permit therefor issued by the City's Public Works Director (hereinafter "Director"), which permit shall set forth conditions pertaining to the work to be done and specifications for the restoration of the roads to the same condition as they were immediately prior to such work. If the Franchisee does not repair the City roads to the satisfaction of the Director, the City may, at its sole discretion, repair such City roads, or cause them to be repaired, and the Franchisee hereby agrees to reimburse the City for the cost of such work, including reasonable overhead costs.

SECTION 3 FRANCHISE TERM

This Franchise shall take full force and effect five calendar days after being approved by the City, and shall be valid for a period of 25 years, expiring in 2029; provided, that this Franchise shall not take effect and the Franchisee shall have no rights under this Franchise unless the Franchisee files a written acceptance of this Franchise with the City pursuant to Section 4 of this Franchise.

SECTION 4 ACCEPTANCE BY FRANCHISEE OF TERMS AND CONDITIONS

The full acceptance of this Franchise and all of its terms and conditions shall be filed with the City Clerk within forty-five (45) days from the date of the resolution approving this Franchise by the Franchisee's duly elected Board of Commissioners. Full acceptance of this Franchise is a condition precedent to its taking effect, and unless this Franchise is

accepted within the time specified, this grant will be null and void and have no force or effect.

SECTION 5 NON-EXCLUSIVE FRANCHISE

This Franchise is not exclusive. It does not prohibit the City from granting franchises for other public or private utilities in, over, along, across, and under any City property, including the Franchise Area. This Franchise does not prevent or prohibit the City from constructing, altering, maintaining or using any of the Franchise Area. The City retains full power to make all changes, relocations; repair, maintenance or other work to or in the Franchise Area as the City deems fit.

SECTION 6 JURISDICTION

This Franchise is intended to convey limited rights and interest only as to those roads and rights-of-way in which the City has an actual interest within the Franchise Area. It is not a warranty of title or of interest in City road rights-of-way. None of the rights granted to the Franchisee shall affect the jurisdiction of the City over City road rights-of-way or the City's power to perform work upon its roadways, rights-of-way or appurtenant drainage facilities including by constructing, altering, renewing, paving, widening, grading, blasting or excavating. The parties shall comply with all applicable rules and regulations pertaining to them in connection with the matters covered herein.

SECTION 7 REGULATION OF USE AND CONTROL

This Franchise does not deprive the City of any powers, rights, or privileges it now has or may later acquire in the future to regulate the use of and to control the City road rights-of-way covered by this Franchise. The City reserves the right and power at all times to exercise its police powers with respect to the time, manner and location of the placement of the Franchisee's Facilities.

SECTION 8 EMINENT DOMAIN

This Franchise and the limited rights and interests granted by this Franchise are subject to the exercise of eminent domain. In the event of an exercise of eminent domain by the City, the value to be attributed to all the rights and interests granted under this Franchise shall not exceed the actual amount the Franchisee paid to the City in obtaining this Franchise.

SECTION 9 VACATION

If at any time the City vacates any City rights-of-way covered by this Franchise, the City will not be held liable for any damages or loss to the Franchisee by reason of such vacation. The City may, after giving thirty (30) days written notice to the Franchisee, terminate this Franchise with respect to any City road or rights-of-way vacated. However, should Franchisee notify the City that an easement is required for existing or proposed facilities within the proposed vacation area, the City shall withhold approval of such vacation until the Franchisee has notified the City that the necessary easement(s) have been secured, or provisions otherwise made to maintain the viability and use of existing Facilities.

SECTION 10 ENFORCEMENT

The City's failure to enforce any provision of this Franchise does not constitute a waiver of its right to enforce that provision or any other provision of this Franchise.

SECTION 11 INDEMNITY AND HOLD HARMLESS

11.1 The Franchisee shall defend, indemnify and hold harmless the City, its appointed and elected officials, and its employees and agents from and against liability for all claims, actions, injuries, demands, liabilities, losses, costs, damages and judgments, including costs of defense thereof, (collectively referred to as "damages") for injury to persons, death or property damage caused by, arising out of, or incidental to the Franchisee's exercise of the rights and privileges granted by this Franchise, except for damages caused by or arising out of the City's sole negligence. In the event that any such claim or demand for damages is presented to or filed with the City, or if any suit or action is initiated against the City based on such claims or demands for damages, the City shall promptly notify the Franchisee of the claim, demand, suit or action and the Franchisee shall have the right, at its election and its sole cost and expense, to settle and compromise such claim, demand, suit or action, or defend the same at the Franchisee's sole cost and expense.

11.2 If it is determined that RCW 4.24.115 applies to this Franchise, the Franchisee agrees to defend, hold harmless and indemnify the City to the maximum extent permitted under that statute, and specifically for the Franchisee's negligence concurrent with that of the City to the full extent of the Franchisee's negligence.

SECTION 12 INSURANCE

12.1 The Franchisee shall keep a policy of insurance in force with a minimum limit of five million dollars ($5,000,000.00). Verification of insurance coverage is a condition precedent to the effectiveness of this Franchise.

12.2 The insurance shall be maintained in full force and effect at the Franchisee's sole expense throughout the term of the Franchise, and, should such insurance be terminated, this Franchise shall terminate as of the date of the termination of insurance coverage.

12.3 The coverage provided by the Franchisee's insurance policies shall be primary to any insurance maintained by the City, except as to losses or damages attributable to the sole negligence of the City. Any insurance maintained by the City that might relate to this Franchise shall be in excess to the Franchisee's insurance and shall not contribute with or to it. The City has no obligation to report occurrences to the insurance companies unless a claim is filed with the City's City Council; and the City has no obligations to pay the Franchisee's premiums.

12.4 The Franchisee shall be solely and completely responsible to perform all work related to this Franchise in compliance with all applicable federal, state, county and city statutes, rules, regulations, ordinances, orders and codes. The Franchisee's attention is directed to the requirements of the Washington Industrial Safety and Health Act, Chapter 49.17 RCW. The Franchisee shall be solely and completely responsible for

safety and safety conditions on its job sites and for its work within the Franchise Area, including the safety of all persons and property during performance of any works therein. The services of the City or City's consultant personnel in conducting construction review of the Franchisee's work relating to the Franchise is not intended to include review of the adequacy of the Franchisee's work methods, equipment, scaffolding, or trenching, or safety measures in, on or near such Franchise Area or job site. The Franchisee shall provide safe access for the City and its inspectors to adequately inspect the work and its conformance with applicable statutes, ordinances, rules, regulations, and the Franchise.

SECTION 13 INSTALLATION, REPAIR, REMOVAL OR RELOCATION

13.1 The Franchisee shall, at no expense to the City, expeditiously repair all existing Facilities that it owns within the Franchise Area, including any damage caused directly or indirectly by its Facilities, all appurtenant Facilities and service lines connecting its system to users, if the City requires such repair for any reasonable purpose.

13.2 The Franchisee shall, at no expense to the City, adjust, remove or relocate existing Facilities within the Franchise Area, including all appurtenant Facilities and service lines connecting its system to users, if the City determines such adjustment, removal or relocation is reasonably necessary to allow for an improvement or alteration planned by the City. The City shall give the Franchisee written notice of such requirement as soon as practicable. The written notice shall include all available information, such as plans and specifications, as is reasonably necessary for the Franchisee to plan for such adjustment, removal or relocation.

13.3 Franchisee's Facilities shall be constructed, installed, maintained and repaired within the Franchise Area so as to provide safety of persons and property, and not interfere with the free passage of traffic, all in accordance with the laws of the State of Washington, and the ordinances, resolutions, rules and regulations of the City.

13.4 For projects that are a part of the City's capital improvement program, in addition to any other notice given to the Franchisee, the City shall provide a copy of the capital improvement plan and six (6) year transportation improvement plan when requested. Further, the City shall provide a horizontal plan and vertical profile of the roadway and drainage facilities within it, both existing and as proposed by the City, and the proposed construction schedule. The initial design information shall be given at least one hundred and eighty (180) days before construction is scheduled to begin, except in cases of urgent construction or emergencies. The Franchisee shall respond to this notice, and to any later notices of revised designs, within twenty (20) days of the date of the notice, by providing to the City the Franchisee's best available information as to the location of all the Franchisee's Facilities, including all appurtenant Facilities and service lines connecting its system to users, and all Facilities that it has abandoned, within the area proposed for the project.

13.5 The City shall offer the Franchisee the opportunity to participate in the preparation of bid documents for the selection of a contractor to perform the public works project as well as all required adjustments, removals or relocations of the Franchisee's Facilities. The City shall have sole authority to choose the contractor to perform such

work. Such bid documents shall provide for an appropriate cost allocation between the parties. In addition to the Franchisee's allocation of contractor costs, the Franchisee shall reimburse the City for all costs, to include but not be limited to legal, engineering, inspections, administration and/or soils testing, related to the Franchisee's work and reasonably incurred by the City in the administration of such joint construction contracts. Such costs shall include the direct salary cost of the time of City professional and technical personnel, including the City's consultants, spent productively engaged in such work, plus overhead costs at the standard rate charged by the City on other similar projects. The specific terms of the joint participation on any public work shall be as set forth in a written agreement between the parties.

13.6 It is understood that emergency situations may arise that could threaten public health and/or continued operation of the Franchisee's utility system and the Franchisee may be unable to notify the City in the manner prescribed in Section 14 of this Franchise. In such a situation the Franchisee shall immediately correct the hazardous situation and continue to use best efforts to contact the City staff. The Emergency Phone Number for the City of Auburn is (253) 931-3048, and that for the Lakehaven Utility District is (253) 941-1516. Dialing 911 is advised for emergency situations that may result in imminent threats to life and/or property.

SECTION 14 REQUIREMENT OF CONSTRUCTION PERMITS

14.1 The Franchisee has the right, privilege and authority to enter the City road rights-of-way for the purpose of constructing, installing, operating, maintaining, replacing or repairing its Facilities on the condition that it obtains construction, excavation, and right-of-way use permits issued by the City. Any work performed, whether by Franchisee, its contractors, or third parties, shall include necessary paving, patching, grading and any other reasonably necessary repair or restoration to the City rights-of-way. All work shall be done to the City's satisfaction.

14.2 All equipment, pipelines and appurtenances which are used in the construction, installation, operation, maintenance or repair of the Franchisee's Facilities and which are located within the City road rights-of-way and owned by the Franchisee shall be considered to be part of the Franchisee's system and shall be the responsibility of the Franchisee. All permits for the construction, installation, operation, maintenance or repair of the Franchisee's system shall be applied for and given in the name of the Franchisee, who will be responsible for all work done under the permit. The Franchisee remains responsible whether the work is performed by the Franchisee, its contractors, or by third parties.

14.3 When required by the City's Public Works Director, the Franchisee shall post a bond to the City in the amount sufficient for any road repair or restoration. The amount of the bond shall be set by the City and must be filed with the City before a permit will be issued.

SECTION 15 PERFORMANCE OF WORK

15.1 Any work performed by the Franchisee in the Franchise Area shall conform to all City ordinances and requirements including, but not limited to, Auburn City Code and the City's Design and Construction Standards in force when the work is performed. All traffic control shall conform to the current edition of the Manual of Uniform Traffic Control Devices in force when the work is performed.

15.2 If work performed under this Franchise makes it necessary to turn off or diminish water pressure or potential flow to any fire hydrant, the Franchisee shall notify the City's Fire Department by telephone and by written notice, that water pressure or fire flow conditions have been affected. Except in the case of an emergency, the notice shall be provided at least 48 hours prior to the water pressure or potential flow being suspended or diminished. If more than one fire hydrant will be affected, the Franchisee shall provide a map of the affected area to the Fire Department. Out-of-service fire hydrants must be identified as not operational by covering with a properly secured burlap or plastic bag. Fire hydrants should be returned to full service as soon as reasonably possible or no longer than two working days from the date service was suspended or diminished. The Franchisee shall notify the City's Fire Department when the hydrant(s) is/are returned to full service.

SECTION 16 RESTORATION OF CITY RIGHTS-OF-WAY

After performing work on, under or adjacent to City road rights-of-way, the Franchisee is responsible for and shall leave all City road rights-of-way in the condition of the City road rights-of-way existing immediately prior to such disturbance. If the Franchisee, its contractors, or third parties working under permit should fail to diligently restore City road rights-of-way to the satisfaction of the City, the City may make such repairs or restorations as are necessary to return the City road rights-of-way to a condition reasonably comparable to the condition of the City road rights-of-way existing immediately prior to such disturbance. Upon presentation of an itemized invoice for repairs or restorations, including all applicable costs, both direct and indirect, to include, but not be limited to, the cost of labor, tools, materials and equipment, the Franchisee shall pay the invoice within sixty-five (65) days of its receipt and approval.

SECTION 17 INFORMATION ON LOCATION OF FACILITIES

The Franchisee shall provide the City with all information requested by the City regarding the location of the Franchisee's current Facilities, including, but not limited to, copies of all record drawings for such Facilities. If the Franchisee performs any work to install, repair, reconstruct, or replace Facilities in the Franchise Area after this Franchise's effective date, the Franchisee shall provide the City with all information requested by the City regarding the location of those Facilities, including, but not limited to, copies of record drawings.

SECTION 18 COORDINATION OF WORK IN FRANCHISE AREA

To facilitate the coordination of work in City rights-of-way, if either the Franchisee or the City plans to make excavations in the Franchise Area, the party planning such excavation shall provide written notice to the other of the planned excavation, affording the other party the opportunity to share in the excavation; provided, that (1) such joint use shall not unreasonably delay the work of the party causing the excavation to be made, (2) such joint use shall be arranged and accomplished on terms and conditions satisfactory to both parties, and (3) either party may deny such request for safety reasons.

SECTION 19 BLASTING REQUIREMENTS

The Franchisee's right to construct, install, operate, maintain and repair Facilities does not preclude the City, its agents or contractors from blasting, grading, or doing other road work contiguous to the Franchisee's Facilities. When practical, the City shall give the Franchisee forty-eight (48) hours notice of blasting or excavating.

SECTION 20 SURVEY MARKERS AND MONUMENTS

Before any work is performed under this Franchise, the Franchisee shall establish two or more reference marks to all monuments and markers of every nature relating to subdivisions, plats, rights-of-way, and all other surveys. The reference points shall be located so that they will not be disturbed during any of Franchisee's operations under this Franchise. The method of referencing monuments or other markers or points shall be approved by the City before placement. The replacement of all markers or monuments disturbed during any construction of the Franchisee shall be made as promptly as conditions permit. The cost of monuments or markers lost, destroyed, or disturbed and the expense or replacement with approved markers or monuments shall be borne by the Franchisee.

SECTION 21 RESERVATION OF RIGHTS

21.1 The City reserves the right to impose, to the extent authorized by law, a utility tax on the Franchisee and/or to charge the Franchisee a reasonable fee for services provided or rights granted under this Franchise.

21.2 The Franchisee agrees that it shall be subject to all authority now or later possessed by the City or any other governing body having competent jurisdiction to fix just, reasonable and compensatory rates for services under this Franchise.

21.3 The City reserves the right, upon thirty (30) days written notice to the Franchisee, to amend or modify the provisions or conditions of this Franchise to conform to any state, county, federal, or City statute, ordinance, rule or regulation. The City may terminate this Franchise upon thirty (30) days written notice to the Franchisee if the Franchisee fails or refuses to comply with such amendment or modification.

SECTION 22 ASSIGNMENT

The Franchisee shall not have the right to assign this Franchise without the written consent of the City. No assignment shall be effective unless an acceptance by the assignee of all rights, conditions, terms, provisions and responsibilities contained within the Franchise, as well as surety bonds which the City deems necessary to be posted, are received as allowed by law. The City's approval of the assignment may be made subject to the assignee's acceptance of new or modified terms of the Franchise.

SECTION 23 PENALTY FOR VIOLATION OF CONDITIONS

If the Franchisee fails to comply with any material term, condition or responsibility under this Franchise, the City may provide the Franchisee with written notice of the City's intent to revoke the Franchise if the Franchisee's failure is not cured within thirty (30) days of the date of the notice. During the thirty (30) days following the date of the notice, the Franchisee shall have the opportunity to remedy the failure to comply. A public hearing shall be scheduled before the Auburn City Council at least thirty (30) days following the notification on the issue of the revocation. If at the hearing, the City Council finds that grounds exist to revoke the Franchise under this paragraph and that the revocation is in the public interest, the City Council may by resolution revoke the Franchise. The revocation shall be effective ninety (90) days after the public hearing.

SECTION 24 EXPIRATION AND RENEWAL

24.1 If the Franchisee requests a renewal of this Franchise prior to its expiration date, which renewal shall be granted, on terms reasonable to the parties, unless the City can demonstrate, in good faith, that such renewal would be contrary to its operation of the right of way, the City may, at the City's sole discretion, extend the term of this Franchise for up to one year beyond the expiration date to allow for processing of the renewal. If the City elects to extend the term of this Franchise, written notice of the extension shall be provided to the Franchisee prior to the Franchise expiration date.

24.2 If the Franchisee has not requested a renewal of this Franchise prior to its expiration date, the City has the right, upon thirty (30) day's prior notice to the Franchisee, to remove or relocate any of the Franchisee's Facilities as is reasonably necessary for the public's health, welfare or safety, or for the construction, alteration, or improvement of the Franchise Area, or for the construction or installation of lines or facilities of other franchise holders. The Franchisee shall be liable for costs incurred in any removal or relocation of the Franchisee's Facilities under this section.

24.3 Upon the expiration of this Franchise, the Franchisee shall continue to be responsible for the operation and maintenance of the Franchisee's existing facilities in the Franchise Area, but shall not have the right to provide additional services. This Section and Sections 11, 13, 14, 15, 16, 18, and 20 of this Franchise shall continue in force until such time as the Franchisee's Facilities are abandoned to the City's satisfaction.

SECTION 25 COMPLIANCE WITH LAWS

The Franchisee shall conform to all applicable federal, state and local laws and regulations including, but not limited to, the State Environmental Policy Act and the City's Environmental Standards and Ordinances.

SECTION 26 NON-DISCRIMINATION CLAUSE

In all hiring or employment made possible or resulting from this Franchise, there shall be no discrimination against any employee or applicant for employment because of sex, sexual orientation, age, race, color, national origin, marital status or the presence of any sensory, mental, or physical handicap, unless based upon a bona fide occupation qualification. No person shall be denied or subjected to discrimination in receipt of the benefit of any services or activities made possible by or resulting from this Franchise on the grounds of sex, sexual orientation, race, color, national origin, age, except minimum age and retirement provisions, marital status, or the presence of any sensory, mental or physical handicap.

SECTION 27 NOTICE

All notices between the two agencies hereunder may be delivered or mailed. If mailed, they shall be sent to the following respective addresses:

City of Auburn:
City Engineer
25 West Main Street
Auburn, WA 98001-4998
Tel: 253-931-3010

Lakehaven Utility District:
General Manager
31627 1st Ave South
PO Box 4249
Federal Way, WA 98063-4249
Tel: 253-941-1516

or to such other representative addresses as either party may hereafter from time to time designate in writing. All notices and payments mailed by regular post (including first class) shall be deemed to have been given on the second business day following the date of mailing, if properly mailed and addressed. Notices and payments sent by certified or registered mail shall be deemed to have been given on the day next following the date of mailing, if properly mailed and addressed. For all types of mail, the postmark affixed by the United States Postal Service shall be conclusive evidence of the date of mailing.
If an emergency situation develops, it is recommended that the City or the Franchisee call 911 to solicit an emergency response.

SECTION 28 ATTORNEYS' FEES

If either party shall be required to bring any action to enforce any provision of this Franchise, or shall be required to defend any action brought by the other party with respect to this Franchise, and in the further event that one party shall substantially prevail in such action, the losing party shall, in addition to all other payments required therein, pay all of the prevailing party's reasonable costs in connection with such action, including such sums as the court or courts may adjudge reasonable as attorney's fees in trial court and in appellate courts.

SECTION 29 SEVERANCE

If any term, provision, condition or portion of this Franchise is held to be invalid, such invalidity shall not affect the validity of the remaining portions of this Franchise which shall continue in full force and effect, unless the dominant purpose of the Franchise would be prevented or the public interest would no longer be served, as determined by the City.

SECTION 30 EFFECTIVE DATE

The resolution approving the Franchise, having been introduced at least five days prior to its date of passage and submitted to the city attorney, and being approved by at least a majority of the entire city council at a regular city council meeting, shall take effect and be in force five calendar days after its passage and approval by both parties to this Franchise.

SECTION 31 EXISTING UTILITIES

This Franchise shall govern existing and future water system facilities currently owned, operated and maintained by Lakehaven Utility District within the City of Auburn.

SECTION 32 DISPUTE RESOLUTION

In the event that a dispute arises with regard to the terms of this Franchise Agreement, either party may request that the dispute be submitted to non-binding mediation or arbitration prior to court action. Such request for non-binding mediation or arbitration shall be made in writing and mailed by first class, U.S. Mail to the other party. The mediator or arbitrator shall be chosen by agreement of the parties. Either party may refuse to submit to the dispute resolution process. Refusal to engage in the dispute resolution process shall not prejudice the refusing party in any way.

IN WITNESS WHEREOF the parties hereto have executed this Franchise Agreement as of the day and year first above written.

LAKEHAVEN UTILITY DISTRICT

Approved by Resolution No. 2004-1006 of the Lakehaven Utility District, Federal Way, Washington, at its regular meeting held on the 8th day of January, 2004.

By:

Donald T. Perry, General Manager
Lakehaven Utility District

Approved as to form:

Steven H. Pritchett, General Counsel
Lakehaven Utility District

CITY OF AUBURN

By:

Peter B. Lewis, Mayor
City of Auburn

Attest:

Danielle Daskam, City Clerk

Approved as to form:

Daniel B. Heid, City Attorney

AUBURN RESOLUTION NO: 3650

LAKEHAVEN REFERENCE NUMBER: 2004-1006

Attachment 1

Auburn Ordinance No. 3650

Description of Lakehaven Utility District's Water Franchise Area

BEGINNING AT THE SOUTHWEST CORNER OF SECTION 23, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

THENCE NORTH ALONG THE WEST LINE OF SAID SECTION 23 TO THE NORTHWEST CORNER OF SAID SECTION 23 AND THE SOUTHEAST CORNER OF SECTION 15, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

THENCE WESTERLY ALONG THE SOUTH LINE OF SAID SECTION 15 TO THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF SAID SECTION 15;

THENCE NORTHERLY ALONG THE NORTH-SOUTH CENTERLINE OF SAID SECTION 15 TO THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF SECTION 10, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

THENCE NORTHERLY ALONG THE NORTH-SOUTH CENTERLINE OF SAID SECTION 10 TO THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF SECTION 3, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

THENCE NORTHERLY ALONG THE NORTH-SOUTH CENTERLINE OF SAID SECTION 3 TO THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF SECTION 34, TOWNSHIP 22 NORTH, RANGE 4 EAST, W.M.;

THENCE NORTHERLY ALONG THE WEST LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 34 TO THE NORTHWEST CORNER OF SAID SOUTHEAST QUARTER OF SAID SECTION 34;

THENCE EASTERLY ALONG THE NORTHERLY LINE OF SAID SOUTHEAST QUARTER OF SAID SECTION 34 TO THE NORTHWEST CORNER OF THE SOUTHWEST QUARTER OF SECTION 35, TOWNSHIP 22 NORTH, RANGE 4 EAST, W.M.;

THENCE EASTERLY ALONG THE EAST-WEST CENTERLINE OF SAID SECTION 35 TO THE NORTHWEST CORNER OF THE SOUTHWEST QUARTER OF SECTION 36, TOWNSHIP 22 NORTH, RANGE 4 EAST, W.M.;

THENCE EASTERLY ALONG THE NORTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 36 TO THE NORTHEAST CORNER OF SAID SOUTHWEST QUARTER OF SAID SECTION 36;

THENCE SOUTHERLY ALONG THE NORTH-SOUTH CENTERLINE OF SAID SECTION 36 TO THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF SECTION 1, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

THENCE SOUTHERLY ALONG THE NORTH-SOUTH CENTERLINE OF SAID SECTION 1 TO THE SOUTHEAST CORNER OF THE SOUTHWEST QUARTER OF SAID SECTION 1;

THENCE WESTERLY ALONG THE SOUTH LINE OF SAID SECTION 1 TO THE NORTHEAST CORNER OF SECTION 11, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

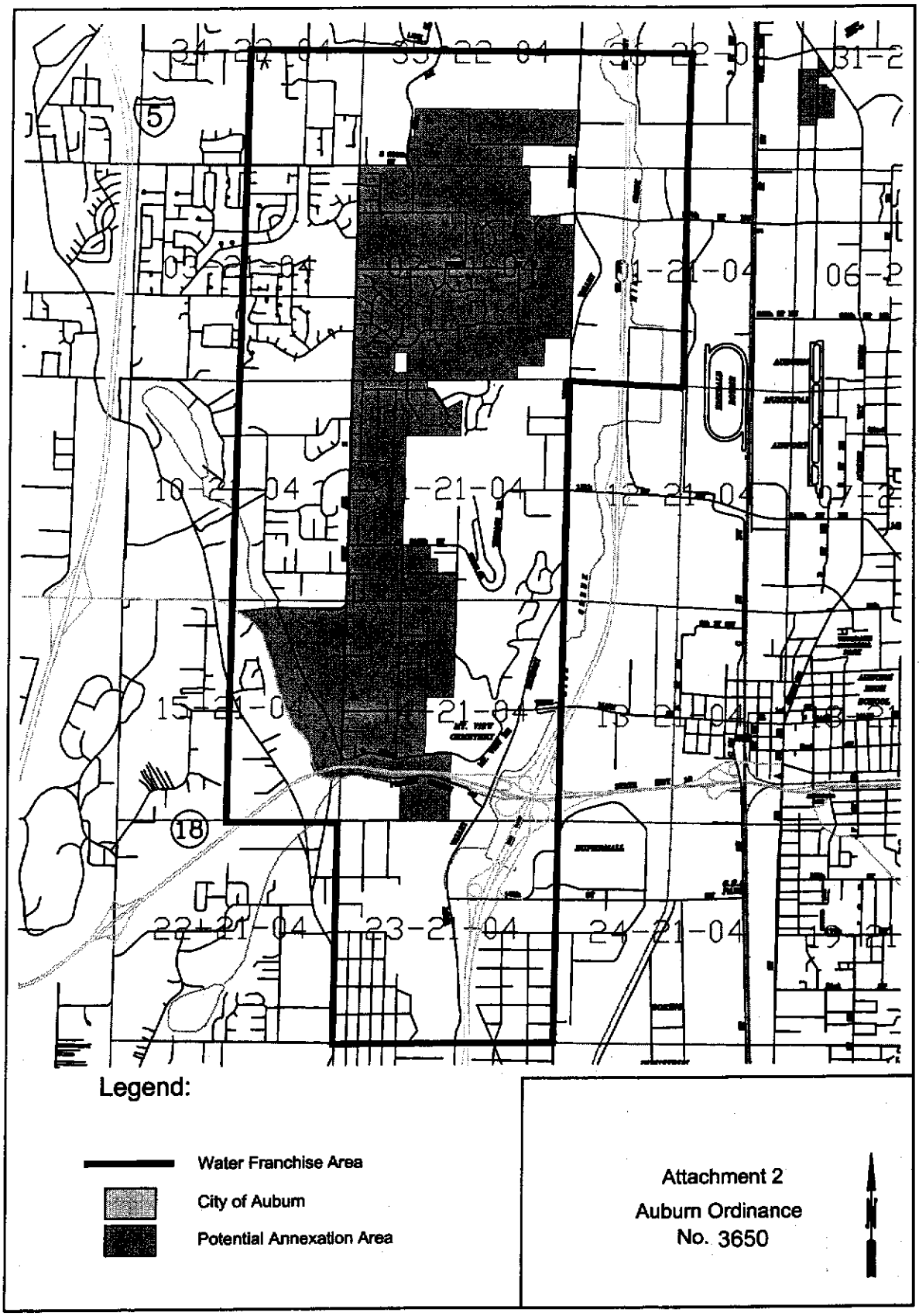
THENCE SOUTHERLY ALONG THE EAST LINE OF SAID SECTION 11 TO THE NORTHEAST CORNER OF THE NORTHEAST QUARTER OF SECTION 14, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

THENCE SOUTHERLY ALONG THE EAST LINE OF SAID SECTION 14 TO THE NORTHEAST CORNER OF THE NORTHEAST QUARTER OF SECTION 23, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

THENCE SOUTHERLY ALONG THE EAST LINE OF SAID SECTION 23 TO THE SOUTHEAST CORNER OF SAID SECTION 23;

THENCE WESTERLY ALONG THE SOUTH LINE OF SAID SECTION 23 TO THE POINT OF BEGINNING.

SITUATE IN KING COUNTY, WASHINGTON.


5
18
Legend:
Water Franchise Area
City of Auburn
Potential Annexation Area
Attachment 2
Auburn Ordinance
No. 3650

RESOLUTION NO. **3652**

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE AN INTERLOCAL AGREEMENT ESTABLISHING WATER SERVICE BOUNDARIES BETWEEN THE LAKEHAVEN UTILITY DISTRICT AND THE CITY OF AUBURN

WHEREAS, pursuant to RCW 35.A.11.040, Auburn has the legal authority to exercise its powers and perform any of its functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn has the legal authority to cooperate with other localities and utilities on the basis of mutual advantage and the efficient provision of municipal services; and

WHEREAS, pursuant to RCW 35A.21.150, Auburn has the legal authority to maintain a water system; and

WHEREAS, pursuant to RCW 57.08.044, Lakehaven has the legal authority, whether by contract or otherwise, to provide water service to property owners in areas outside existing district boundaries; and

WHEREAS, the parties recognize the responsibility of public water utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, Lakehaven's 1998 Draft Comprehensive Water System Plan notes a region within Auburn's Potential Annexation Area (hereinafter referred to as "Auburn's PAA") to which Lakehaven intends to provide water service; and

WHEREAS, Lakehaven is currently providing water service within Auburn's PAA; and

WHEREAS, portions of the Lakehaven water system have been sized and are situated so as to be capable of affording water to a portion of Auburn's PAA; and

WHEREAS, Auburn has evaluated water service issues and determined that it is not cost feasible to provide direct water service within its PAA adjacent to Lakehaven's water infrastructure; and

WHEREAS, Lakehaven's delivery of water service to these areas will provide the maximum efficiency in the use of existing and future facilities and water planning;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor of the City of Auburn is herewith authorized to execute a Water Service Boundary Agreement between the Lakehaven Utility District and the City of Auburn in substantial conformity with the agreement

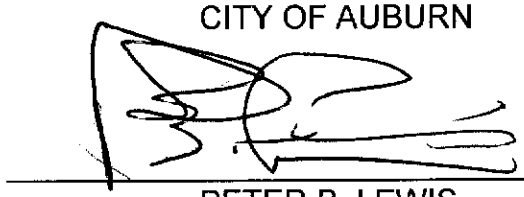
attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. This resolution shall be in full force and effect upon passage and signatures hereon.

DATED this 2nd day of February, 2004.

CITY OF AUBURN



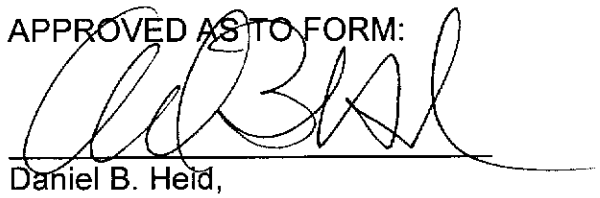
PETER B. LEWIS
MAYOR

ATTEST:



Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:



Daniel B. Heid,
City Attorney



Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

19/37 Pmnt
W9278-12

Interlocal Agreement (RES 3652)

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
1. Lakehaven Utility District

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number
N/A

☐ Assessor Tax # not yet assigned

EXHIBIT "A"

LAKEHAVEN UTILITY DISTRICT and CITY OF AUBURN INTERLOCAL AGREEMENT ESTABLISHING WATER SERVICE BOUNDARIES

THIS AGREEMENT, made and entered into this 23rd day of September, 2004, by and between **LAKEHAVEN UTILITY DISTRICT**, a Washington municipal corporation (hereinafter referred to as "Lakehaven"), and the **CITY OF AUBURN**, a Washington municipal corporation, (hereinafter referred to as "Auburn"), both being duly organized and existing under and by virtue of the laws of the State of Washington,

WITNESSETH:

WHEREAS, pursuant to RCW 35.A.11.040, Auburn has the legal authority to exercise its powers and perform any of its functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn has the legal authority to cooperate with other localities and utilities on the basis of mutual advantage and the efficient provision of municipal services; and

WHEREAS, pursuant to RCW 35A.80.010, Auburn has the legal authority to maintain a water system; and

WHEREAS, pursuant to RCW 57.08.005(3) and 57.08.044, Lakehaven, as a special purpose water/sewer district, has the legal authority, whether by contract or otherwise, to provide water service to property owners in areas outside existing district boundaries; and

WHEREAS, the parties recognize the responsibility of public water utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, Lakehaven's adopted and approved 1998 Comprehensive Water System Plan notes a region within Auburn's Potential Annexation Area (hereinafter referred to as "Auburn's PAA") to which Lakehaven intends to provide water service; and

WHEREAS, Lakehaven is currently providing water service within Auburn's PAA; and

WHEREAS, portions of the Lakehaven water system have been sized and are situated so as to be capable of affording water service to a portion of Auburn's PAA; and

WHEREAS, Auburn has evaluated water service issues and determined that it is not cost effective to provide direct water service within its PAA adjacent to Lakehaven's water infrastructure; and

WHEREAS, Lakehaven's delivery of water service to these areas will provide the maximum efficiency in the use of existing and future facilities and water planning;

NOW, THEREFORE:

IT IS HEREBY AGREED by and between the parties hereto as follows:

1. Water Service Area. The parties have agreed to a mutual water service planning boundary as depicted on the maps attached hereto as Attachment 1 and legally described in Attachment 2, which are by this reference incorporated herein. Both parties further agree that, through this designation of the service boundary, Lakehaven shall provide water service to properties mutually within its water service area and Auburn's PAA, also depicted on Attachment 1, in accordance with and subject to the terms and conditions of this Agreement.

2. Management, Regulation and Control of Water System. Lakehaven shall have the sole responsibility and authority to construct, maintain, manage, conduct and operate its water system within the area mutually designated as Lakehaven's water service area and Auburn's PAA as depicted in Attachment 1, together with any additions, extensions and betterments thereto. Lakehaven shall also be responsible for obtaining all necessary governmental franchises, approvals, easements and permits for the installation of the water system and improvements to be located therein.

3. Service Rates and Connection Charges.

a) **Permit Required.** No connection shall be made to Lakehaven's water system unless the property owner first pays the associated fees and submits the proper information to obtain a Lakehaven water connection permit, and otherwise meets the requirements for service as provided in duly adopted Resolutions of Lakehaven. The connection shall be subject to inspection for compliance with Lakehaven's standards as adopted at the time the connection is made.

b) **Rates.** The rates charged to the water customer by Lakehaven mutually within Lakehaven's water service area and Auburn's PAA, as depicted on Attachment 1, shall be fixed, altered, regulated and otherwise controlled by Lakehaven pursuant to the limitation on such authority as set forth in Chapter 57 RCW, or other applicable laws.

4. Water Availability Certificates. Lakehaven shall continue to issue water availability certificates for property located both within Auburn's PAA, as depicted in Attachment 1 and Lakehaven's Water Service Area.

5. Future Annexations. Each of the parties agree that Lakehaven shall provide water service to the area depicted in Attachment 1 without regard to the present corporate boundaries of the parties and without regard to future corporate boundaries as they may be periodically altered through annexation.

6. Lakehaven Comprehensive Water Planning. The terms of this Agreement will be included as an amendment to Lakehaven's Comprehensive Water System Plan. Lakehaven will submit to Auburn all Comprehensive Water System Plans and amendments thereto involving areas and/or system improvements within Auburn's PAA, as depicted in Attachment 1.

7. Auburn Comprehensive Water Planning. The terms of this Agreement will be included as an amendment to Auburn's Comprehensive Water Plan. Auburn will submit to Lakehaven all Comprehensive Water System Plans and amendments thereto involving area and/or system improvements within Auburn's PAA, as depicted in Attachment 1.

8. Reliance. Each party hereto acknowledges that the terms hereof will be relied upon by the other in its comprehensive planning to meet the needs of the service area designated herein.

9. Liability. The parties agree that this Agreement shall not be a source of liability for either party for any failure or interruption of service in the service area of the other party, as designated herein.

10. Government Approvals. Auburn will give notice of the adoption of this Agreement to Metropolitan/King County, to the Department of Ecology, to the Department of Health, and to any other agency with jurisdiction over, or other interest in, the terms hereof, and the parties shall cooperate and assist each other in all reasonable manner in procuring any necessary approvals hereof by those agencies.

11. Boundary Review Board. In the event that implementation of the terms hereof results in permanent water service to areas that will be outside the respective service boundaries of Lakehaven or Auburn, the parties will, at the time of such service, jointly seek King County Boundary Review Board approval of such service in accordance with RCW 57.08.047.

12. Service Amendments. Any changes to the service areas described herein shall be by mutual written agreement. Each party, through Auburn's Director of Public Works and Lakehaven's General Manager respectively, may give written permission to the other, on a case-by-case basis, to provide service to the other party's adjacent or

nearby water service area based upon considerations of economic efficiency. Such written permission(s) shall be filed with this agreement for future reference.

13. Alteration, Amendment or Modification. Lakehaven and Auburn hereby reserve the right to alter, amend or modify the terms and conditions of this Agreement only upon written consent of both parties to such alteration, amendment or modification.

14. Indemnification and Hold Harmless. Each Party hereto agrees to protect, defend, and indemnify the other Party, its officers, officials, employees and agents from any and all cost, claims judgements and/or awards of damages, arising out of or in any way resulting from the Party's default, failure of performance, or negligent conduct associated with this agreement, by the Party, its employees, subcontractors or agents. Each Party agrees that its obligations under this provision extend to any claim, demand, and/or cause of action brought by or on behalf of any of its employees, or agents. The foregoing indemnity is specifically and expressly intended to constitute a waiver of each Party's immunity under Washington's Industrial Insurance Act, RCW Title 51, as respects the other Party only, and only to the extent necessary to provide each Party with a full and complete indemnity of claims made by the other Party's employees. The Parties acknowledge that these provisions were specifically negotiated and agreed upon by them.

15. Miscellaneous. Auburn and Lakehaven agree that within the area depicted in Attachment 3, existing water customers are currently served by Auburn and that for the purposes of efficiency, water service to these customers shall be transferred to Lakehaven. Service shall be provided by a direct connection with Lakehaven's system at "R" Street NW and Abby Drive, and temporarily by a Booster Pump Station from Auburn's water system on Knickerbocker Drive until such time as a secondary waterline is constructed from Lakehaven's system and paid for pursuant to Attachment 4.

16. Integration. This agreement constitutes the entire agreement of the parties regarding the subject matter hereof, and there are no other representations or oral agreements other than those listed herein, which vary the terms of this agreement. Future agreements may occur between the parties to transfer additional or future service areas by mutual agreement.

17. Obligation Intact. Nothing herein shall be construed to alter the rights, responsibilities, liabilities, or obligations of either Lakehaven or Auburn regarding provision of water service, except as specifically set forth herein.

LAKEHAVEN UTILITY DISTRICT

Approved by Resolution No. 2004-1006 of the Lakehaven Utility District, Federal Way, Washington, at its regular meeting held on the 8th day of January, 2004.

By:

Donald T. Perry, General Manager
Lakehaven Utility District

Approved as to form:

Steven H. Pritchett, General Counsel
Lakehaven Utility District

CITY OF AUBURN

Approved by Resolution No. 3652 of the City of Auburn, Washington, at its regular meeting held on the 2nd day of February, 2004.

By:

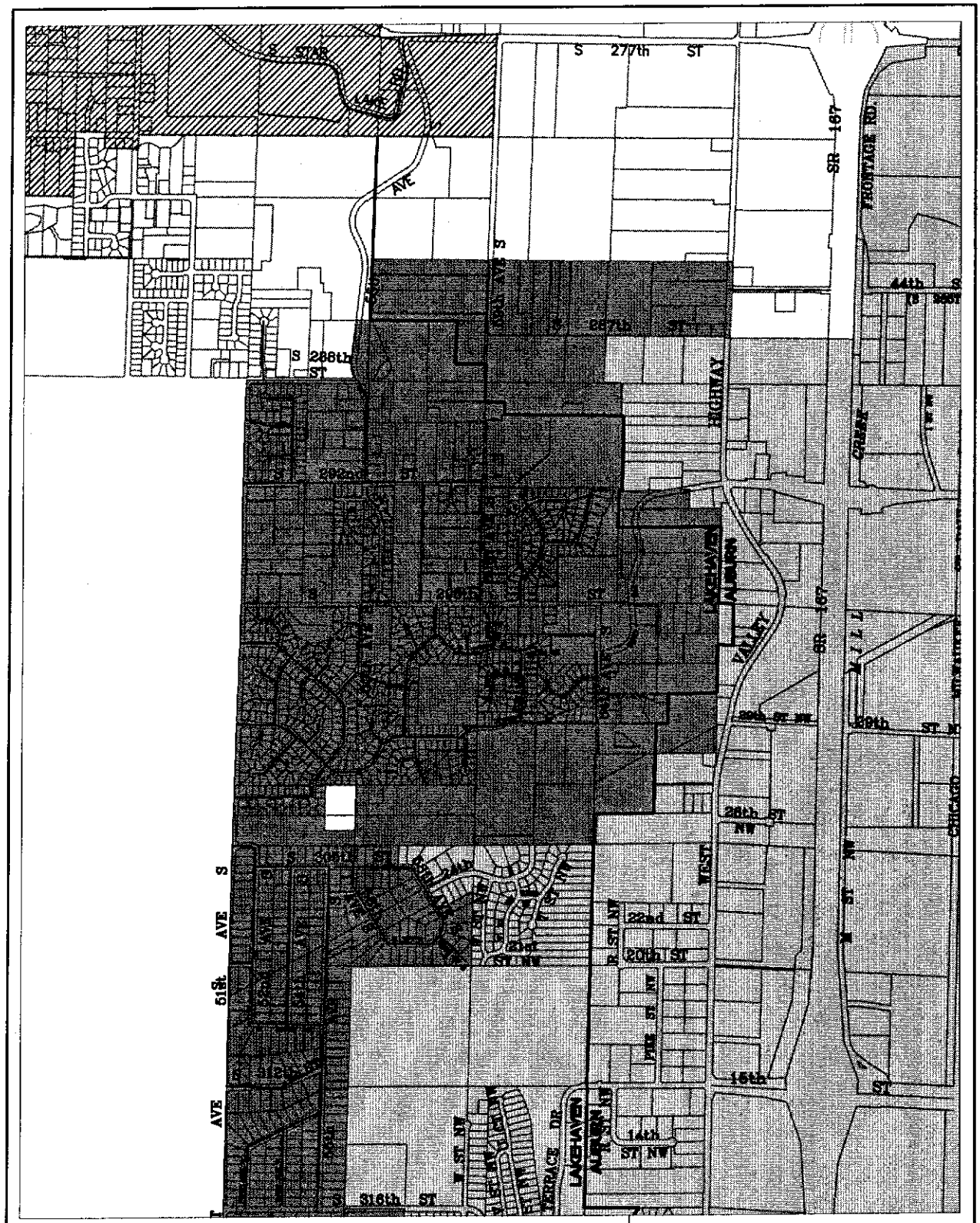
Peter B. Lewis, Mayor
City of Auburn

Attest:

Danielle Daskam, City Clerk

Approved as to form:

Daniel B. Heid, City Attorney



LEGEND

- AUBURN CITY LIMITS
- AUBURN PAA
- PROPOSED WATER SERVICE BOUNDARY
- HIGHLINE SERVICE AREA

SCALE 1" = 1500'

Note: Information shown is for general reference purposes only and does not necessarily represent exact geographic or cartographic data as mapped.

ATTACHMENT 1

LAKEHAVEN - AUBURN INTERLOCAL AGREEMENT ESTABLISHING WATER SERVICE BOUNDARIES

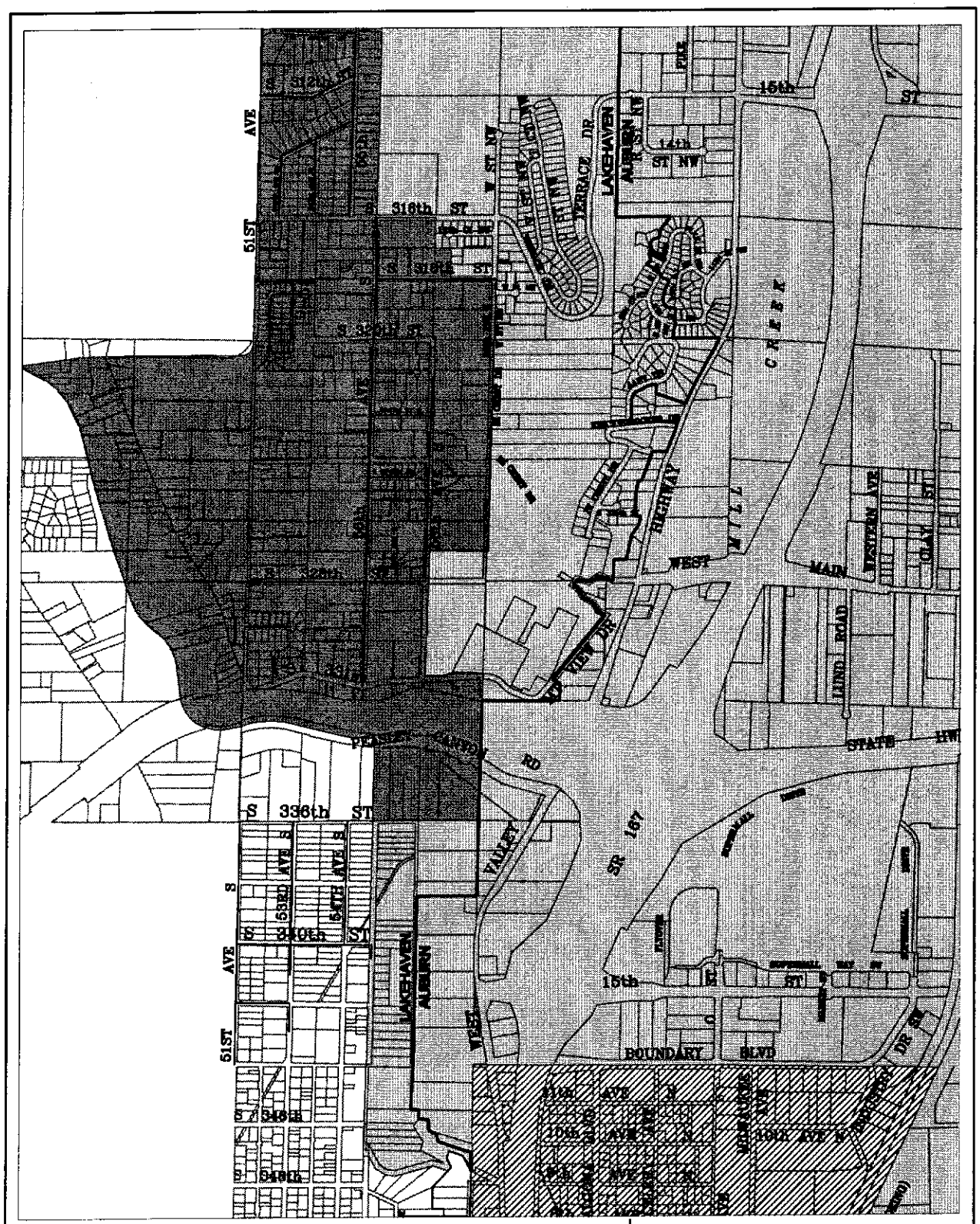
PLEASE INITIAL IF APPROVED

DEC 2008

LAKEHAVEN _____ AUBURN _____

PAGE 1/2

Karen—d:\water\lakemps.dwg



LEGEND

- AUBURN CITY LIMITS
- AUBURN PAA
- PROPOSED WATER SERVICE BOUNDARY
- ALGONA CITY LIMITS

SCALE: 1" = 1500'

Note: Information shown is for general reference purposes only and does not necessarily represent exact geographic or cartographic data as mapped.

ATTACHMENT 1

LAKEHAVEN - AUBURN INTERLOCAL AGREEMENT ESTABLISHING WATER SERVICE BOUNDARIES

PLEASE INITIAL IF APPROVED

DEC 2003

LAKEHAVEN _____ AUBURN _____

PAGE 2/2

Attachment 2

LAKEHAVEN UTILITY DISTRICT and CITY OF AUBURN INTERLOCAL AGREEMENT ESTABLISHING WATER SERVICE BOUNDARIES

BOUNDARY DESCRIPTION

BEGINNING at a point 170 feet east of the Northwest corner of the Northeast quarter of the Southwest quarter of Section 35, Township 22 North, Range 4 East, W.M., in King County, Washington;

THENCE south 1990 feet, more or less, to the North line of the South half of the South half of the Southwest quarter of said Section 35;

THENCE easterly along said North line to a point 300 feet west of the East line of the Southwest quarter of said Section 35;

THENCE south to a point 170 feet north of the South line of the Southwest quarter of said Section 35;

THENCE east 300 feet, more or less, to the East line of the Southwest quarter of said Section 35;

THENCE southerly along said East line to the South line of said Section 35;

THENCE continuing southerly along the West line of the Northeast quarter of Section 2, Township 21 North, Range 4 East, W.M., in King County, Washington, a distance of 221.12 feet;

THENCE easterly, parallel with the North line of said subdivision, 220.20 feet;

THENCE southerly, parallel with the West line of said subdivision, 130 feet;

THENCE easterly along the North line of Lots 1 and 2 of King County Short Plat No. 781092 as recorded under Recording Number 8112210440,records of King County, Washington, a distance of 1306.40 feet, more or less, to the Northeast corner of said Lot 2;

THENCE south along the East line of said Lot 2 a distance of 802.22 feet, more or less, to the Southeast corner of said Lot 2;

THENCE easterly, a distance of 6 feet, more or less to the Northeast corner of Tract A of Eastview Vista according to the plat thereof recorded in Volume 108, Pages 51 through 53, records of King County, Washington;

THENCE south, a distance of 34 feet, more or less, to an angle point in the boundary of said Tract A;

THENCE west, a distance of 34.80 feet, more or less, to an angle point in the boundary of said Tract A;

THENCE south, a distance of 400.44 feet, along the East line of said Tract A to a point 835.56 feet north of the South line of the Northeast quarter of said Section 2;

THENCE east, parallel the South line of the Northeast quarter of said Section 2, a distance of 1140.8 feet, more or less, to the East line of said Section 2;

THENCE south, a distance of 835.56 feet along said East line, to the Northwest corner of the Southwest quarter of Section 1, Township 21 North, Range 4 East, W.M., in King County, Washington;

THENCE east, parallel to the North line of the Southwest quarter of said Section, a distance of 149.18 feet;

THENCE south, parallel to the West line of the Southwest quarter of said Section, a distance of 450 feet;

THENCE west, parallel to the North line of the Southwest quarter of said Section, a distance of 149.18 feet to the East line of Southeast quarter of Section 2, Township 21 North, Range 4 East, W.M., in King County, Washington;

THENCE south, a distance of 532.51 feet along said East line to the North line of the South half of the South half of the North half of said subdivision;

THENCE westerly, along said North line of said subdivision, 518.77 feet;

THENCE southerly, parallel with the East line of said subdivision, 328.01 feet, more or less, to the South line of said subdivision;

THENCE westerly, along the South line of said subdivision, 130.02 feet, more or less to the Northeast corner of the West half of the Southeast quarter of the Southeast quarter of said Section 2;

THENCE southerly, along the East line of said subdivision, 984.40 feet, to the North line of the South half of the South half of last said subdivision;

THENCE westerly, along the North line of said subdivision, 650 feet, more or less, to the East line of the Southwest quarter of the Southeast quarter of said Section 2;

THENCE southerly, along said East line, 328.77 feet, more or less, to the South line of last said subdivision;

THENCE continuing southerly, along the West line of the East half of the East half of Section 11 Township 21 North, Range 4 East, W.M., in King County, Washington, a distance of 3950.28 feet, more or less to the Northwest corner of the Southeast quarter of the Southeast quarter of said Section;

THENCE easterly, along the North line of said subdivision, a distance of 588.55 feet to the most Easterly corner of Tract A of Vistara Division 2 according to the plat thereof recorded in Volume 186, Pages 70 through 76, records of King County, Washington;

THENCE southwesterly along the most Easterly line of said Tract A, a distance of 184.6 feet to the Northeast corner of Lot 16 of said plat of Vistara Division 2;

THENCE southerly along the Easterly line of said Lot 16 a distance of 76 feet;

THENCE southwesterly along last said Easterly line 77.96 feet;

THENCE southerly along last said Easterly line 51.73 feet;

THENCE southeasterly along last said Easterly line 78.15 feet;

THENCE southeasterly along said Easterly line and along the Northeast line of tract B of said plat 168 feet to the West Right-of-Way line of "R" Street Northwest as recorded in said plat;

THENCE southerly along said West Right-of Way line, a distance of 40 feet, more or less, to the most Easterly corner of Lot 18 of said plat;

THENCE northwesterly along the Northeast boundary of said Lot 18, a distance of 188.08 feet;

THENCE southeasterly along the Westerly boundary of said Lot 18, a distance of 83.72 feet, more or less, to the most Northerly corner of Lot 19 of said plat;

THENCE southwesterly along the Westerly boundary of said Lot 19, a distance of 64.76 feet;

THENCE southeasterly along the Southwesterly boundary of said Lot 19, a distance of 154.16 feet, to the most Southerly corner of said Lot 19;

THENCE southeasterly along a line crossing said Right-of-Way to the most Northerly corner of Lot 26 of said plat;

THENCE southeasterly along the Northeast boundary of said Lot 26, a distance of 97.69 feet;

THENCE southerly along the Easterly boundaries of Lots 26, 25, 24 of said plat, a distance of 177.26 ft, more or less, to the Northeast corner of Lot 31 of Vistara Division 1 according to the plat thereof recorded in Volume 174, Pages 78 through 83 and according to Alteration Number 1 thereof recorded in Volume 186, Pages 31 through 33, records of King County, Washington;

THENCE southerly and southeasterly along the Eastern boundaries of Lots 31, 32, and 33 of said plat, a distance of 152.14 feet to the Northwest corner of Lot 34 of said plat;

THENCE easterly along the Northerly boundaries of Lots 34 and 35 of said plat, a distance of 80.00 feet to the Northeast corner of Lot 35 of said plat;

THENCE southerly along the Easterly boundary of Lot 35, a distance of 118.02 feet, to the Southeast corner of said lot 35;

THENCE southerly along a line, crossing the 8th Street Northwest Right-of-Way, to the Northeast corner of Lot 14 of said plat;

THENCE continuing southerly along the Eastern boundaries of Lots 14 and 13 of said plat, a distance of 153.10 feet to the North Line of Section 14, Township 21 North, Range 4 East, W.M., in King County, Washington;

THENCE East along said North line, a distance of 501.28 feet, more or less, to the West Right-of-Way line of State Route 181, also known as West Valley Highway;

THENCE southwesterly along said West Right-of-Way line, a distance of 790.91 feet to the Northeast corner of Lot 3 according to the Replat of Lot 4 Block 1 Knickerbocker Heights as recorded in Volume 90, Page 39, records of King County, Washington;

THENCE northwesterly along the Northerly boundary of said Lot 3 a distance of 342.6 feet, more or less, to the Southwest corner of Lot 2 of said Replat;

THENCE north a distance of 100 feet, more or less, along the East line of Lot 1, Auburn Short Plat 0001-89, as recorded under Recording No. 8906271138, records of King County, Washington;

THENCE westerly and southwesterly a distance of 253.5 feet, more or less, along the Northern boundary of said Lot 1 to the most Northerly corner of Lot 2 of said Short Plat;

THENCE southerly a distance of 359.06 feet, more or less, along the Westerly boundaries of Lots 2, 3, and 4 of said Short Plat to the North margin of the Knickerbocker Drive Right-of Way;

THENCE easterly along said North margin of Knickerbocker Drive Right-of Way, a distance of 475 feet, more or less, to the West line of the State Route 181 Right-of-Way which parallels the centerline of State Route 181 Right-of-Way;

THENCE southwesterly along said West line of said State Route 181 Right-of-Way to the Southern terminus of the Northeast corner radius of Lot 2, Block 3, of Knickerbocker Addition, according to the plat thereof, as recorded in Volume 45, Page 93, records of King County, Washington;

THENCE continuing southwesterly along said West line of said State Route 181 Right-of-Way, a distance of 246.18 feet, to the Southeast corner of said Lot 2;

THENCE west along the South line of said Lot 2, a distance of 150 feet;

THENCE southerly and parallel to said Right-of-Way, a distance of 343.66 feet, more or less, to a point on the North line of Lot 3, King County Short Plat No. SP-18-76, as recorded under Recording No. 7611240117, records of King County, Washington;

THENCE westerly along said North line, a distance of 43.82 feet, more or less, to the Northwest corner of said Lot 3;

THENCE southerly along the West line of said Lot 3, a distance of 120.53 feet, to the Southwest corner of said Lot 3;

THENCE westerly along the South line of Lot 2 of last said short plat, a distance of 5 feet more or less to the Northeast corner of Hi-Crest Number 2, according to the Plat thereof recorded in Volume 64, Page 58, records of King County, Washington;

THENCE south along the East line of said plat, a distance of 270 feet, to the Southeast corner of Lot 13 of said plat;

THENCE easterly along the Easterly extension of the South line of said Lot 13, a distance of 58.92 feet;

THENCE southerly, a distance of 94.97 feet to the Northeast corner of Lot B of City of Auburn Lot Line Adjustment 10-87 recorded under Recording Number 8705190464, records of King County, Washington;

THENCE southerly along the easterly boundary of said Lot B a distance of 9.82 feet;

THENCE southwesterly along said Easterly boundary a distance of 127.12 feet;

THENCE southerly parallel with said State Route 181 Right of Way to a line parallel with and 228 feet Northerly of the South line of the Northeast quarter of said Section 14.

THENCE west along said parallel line to a point 80 feet East of the West line of the Southeast quarter of the Northeast quarter of said Section 14;

THENCE south along last said parallel line a distance of 228 feet to the South line of the Northeast quarter of said Section 14 and the centerline of Mountain View Drive;

THENCE westerly along said centerline, a distance of 10 feet, more or less to the point where the centerline of said Mountain View Drive diverges from the South line of said Section 14;

THENCE northwesterly along said centerline, a distance of 154 feet;

THENCE southwesterly along said centerline, a distance of 140 feet;

THENCE northwesterly along said centerline, a distance of 138 feet;

THENCE southwesterly along said centerline, a distance of 80 feet;

THENCE southeasterly along said centerline, a distance of 114 feet;

THENCE southeasterly along said centerline, a distance of 63 feet;

THENCE southeasterly along said centerline, a distance of 140 feet;

THENCE southeasterly along said centerline, a distance of 95 feet;

THENCE southeasterly along said centerline, a distance of 101 feet;

THENCE southwesterly along said centerline, a distance of 910 feet, more or less, to the intersection of the Northwesterly prolongation of the Southwesterly line of the lands described in instrument filed under Recording Number 8512300596, Records of King County, Washington;

THENCE southwesterly along last said line to a point on the West line of the east 470.26 feet of the Northwest quarter of the Southeast quarter of said Section 14 which is 190.27 feet northerly of the South line of said subdivision;

THENCE southerly along the West line of the east 470.26 feet of said Northwest quarter of said Southeast quarter of said Section 14, a distance of 190.27 feet, more or less to the North line of Southwest quarter of the Southeast quarter of said Section 14;

THENCE west along said North line, a distance of 839.29 feet, more or less, to the Northwest corner of said subdivision;

THENCE south along the West line of said subdivision, a distance of 1313.19 feet, more or less, to the Northeast corner of the Northwest quarter of Section 23, Township 21 North, Range 4 East, W.M.;

THENCE south along the East line of said subdivision, a distance of 821.24 feet;

THENCE west, parallel to the North line of the Northwest quarter of said Section 23, a distance of 653.06 feet, more or less, to the Northerly projection of the centerline of 58th Avenue South;

THENCE southerly, along said centerline of 58th Avenue South, to the North line of the Southwest quarter of said Section 23;

THENCE south parallel to the East line of said subsection, a distance of 496 feet, more or less, to the North line of Lot 3, Block 25 of Jovita Heights, according to the plat thereof, as recorded in Volume 20, Page 12, records of King County, Washington;

THENCE east along the North line of said Lot 3, a distance of 80 feet, more or less, to the Northeast corner of said Lot 3;

THENCE southerly along the East line of said Lot 3 and the East line of Lot 4 of said plat to the Northerly margin of Iowa Drive according to said Plat of Jovita Heights, a distance of 92.82 feet;

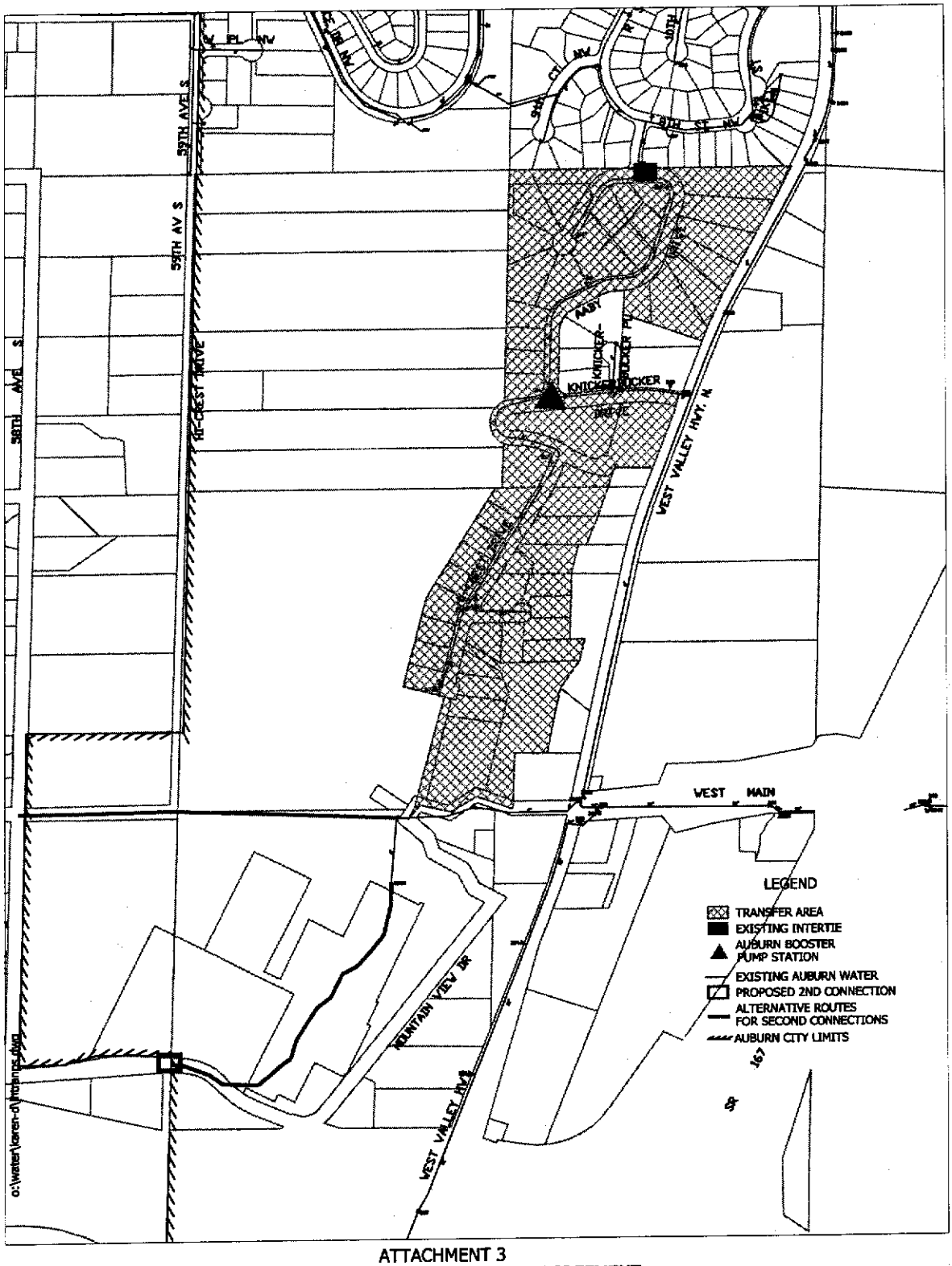
THENCE easterly along said Northerly margin, a distance of 107.89 feet;

THENCE southerly along said Northerly margin, a distance of 114.85 feet;

THENCE southeasterly along said Northerly margin, a distance of 93.86 feet;

THENCE southeasterly along said Northerly margin, a distance of 81.99 feet;

THENCE southeasterly along said Northerly margin, a distance of 390 feet, more or less, to the East line of the Southwest quarter of said Section 23 and the terminus of this boundary description.



ATTACHMENT 3
LAKEHAVEN - AUBURN INTERLOCAL AGREEMENT
ESTABLISHING WATER SERVICE BOUNDARIES
TRANSFER AREA MAP

Attachment 4

LAKEHAVEN UTILITY DISTRICT and CITY OF AUBURN INTERLOCAL AGREEMENT ESTABLISHING WATER SERVICE BOUNDARIES

TRANSFER AREA CONDITIONS

1. Auburn will transfer ownership of the water infrastructure within the area depicted on Attachment 3, including but not limited to, the Booster Pump Station on Knickerbocker Drive, via Bill-of-Sale to Lakehaven. Auburn will also ensure the subject water facilities are in good operational condition and provide all documents and drawings pertaining to as-built information and operational manuals for the facilities.

2. Since Lakehaven's existing system alone can not currently provide minimum fire flow requirements, additional water system facility improvements will be required. The facility improvements (hereinafter referred to as the "secondary water line") include approximately 2000 feet of 8-inch water main and a Pressure Reducing Valve (PRV) station. The water main will connect between Lakehaven's water system in its 578-pressure zone, through a PRV station, to the existing water main in Hi-Crest Drive. Two possible routes for the secondary water line are depicted on Attachment 3, but the actual route for the secondary water line shall be the one deemed by both parties to the Agreement to be most beneficial and efficient of all alternatives identified and analyzed at the time design commences, and not necessarily limited to the two routes depicted.

3. Auburn shall design the secondary water line in accordance with Lakehaven's standards, and provide permanent easements as necessary.

4. Lakehaven shall have the secondary water line constructed and will be reimbursed for funds used to construct the secondary water line, including interest, by a Charge-in-lieu-of-Assessment applied to adjacent benefiting lands (currently Auburn's property) that the secondary water line is intended to serve and by applying a surcharge on Lakehaven's water rates to the transferring customers. The surcharge shall be the difference between Auburn's water rates and Lakehaven's water rates and shall remain in place until all amounts owing from the construction of the secondary water line are paid. When all costs have

been reimbursed, the surcharge will no longer apply and the transferred customers will revert to Lakehaven's then-current rates.

5. Auburn shall permanently make available to Lakehaven the current equivalent annual and instantaneous quantity of water necessary to serve the transferring area in exchange for full credit against applicable Capital Facilities Charges of Lakehaven.

6. The current equivalent annual quantity of water is approximately 255 gallons/day/Equivalent Residential Unit (transfer area has ~ 42 ERU's). The instantaneous quantities are defined historically by the total existing Booster Pump Station capacity. The existing Booster Pump Station has a 90 gpm pump and a 300 gpm pump. The water shall be used as needed to provide domestic water service or emergency fire flows. The water rate Lakehaven will pay Auburn shall be Auburn's current wholesale water rate it charges the City of Algona, or the Lakehaven emergency water rate as determined in accordance with the Emergency Water Supply Agreement for the Lakehaven/Auburn Intertie No. 1 as adopted by Auburn Resolution 3443, whichever is less.

PNWF W2305-12

200508220499 8 PGS
08-22-2005 10:30am $0.00
PIERCE COUNTY, WASHINGTON

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Interlocal Agreement (RES 3760)

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
1. Bonney Lake, City of

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number
N/A

☐ Assessor Tax # not yet assigned

#39

RESOLUTION NO. 3760

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN ADDENDUM TO AN INTERLOCAL AGREEMENT BETWEEN THE CITY OF AUBURN AND THE CITY OF BONNEY LAKE FOR THE ESTABLISHMENT OF SANITARY SEWER SERVICE BOUNDARIES

WHEREAS, in March of 1998 the City Council of the City of Auburn adopted Resolution No. 2925 authorizing the Mayor and City Clerk to execute a settlement agreement that was subsequently signed by the City of Auburn and the City of Bonney Lake; and

WHEREAS, among other items, that settlement agreement set forth a water service area boundary between the City of Auburn and the City of Bonney Lake; and

WHEREAS, subsequent to approval of the settlement agreement the Potential Annexation Areas (PAA) for the City of Auburn and City of Bonney Lake were amended to coincide with the water service area boundary; and

WHEREAS, since the time of the agreement it has been found that a parcel was divided by the water service area boundary set forth in said settlement agreement, and by the subsequent PAA boundary established based on the water service area boundary, and said parcel lies partially within and partially outside of the Auburn PAA; and

WHEREAS, part of the Lake Tapps Parkway East extension's right-of-way also lies partially within and partially outside of the Auburn water service area boundary established by the settlement agreement, and partially within and partially outside the subsequent PAA boundary established based on the water service area boundary; and

WHEREAS, sound growth management and transportation planning principles are best served by including entire parcels and entire street right-of-ways entirely within a PAA.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

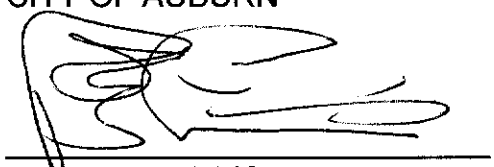
Section 1. The Mayor and City Clerk are hereby authorized to execute Addendum No. 1 to the Settlement Agreement between the City of Auburn and the City of Bonney Lake in substantial conformity with the Addendum attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 2. That the Mayor is authorized to implement such other administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 7th day of February, 2005.

CITY OF AUBURN



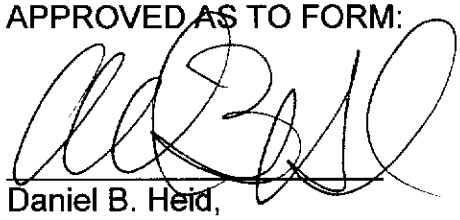
PETER B. LEWIS
MAYOR

ATTEST:



Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:



Daniel B. Heid,
City Attorney

ADDENDUM NO. 1

ADDENDUM TO SETTLEMENT AGREEMENT BETWEEN THE CITY OF BONNEY LAKE AND THE CITY OF AUBURN RELATING TO WATER SERVICE AREA BOUNDARY

THIS ADDENDUM is made and entered into this 14th day of February, 2005, by and between the **CITY OF BONNEY LAKE**, a municipal corporation of the State of Washington (hereinafter referred to as "Bonney Lake") and the **CITY OF AUBURN**, a municipal corporation of the State of Washington (hereinafter referred to as the "Auburn"), as an addendum to the Settlement Agreement between the parties executed on the 5th day of March, 1998.

W I T N E S S E T H:

WHEREAS, in March 1998 the City Council of the City of Auburn passed Resolution No. 2925 authorizing the Mayor and City Clerk to execute a settlement agreement that was subsequently signed by the City of Auburn and the City of Bonney Lake; and

WHEREAS, among other items, the settlement agreement set forth a water service area boundary between the City of Auburn and the City of Bonney Lake; and

WHEREAS, Exhibit B to the settlement agreement implied that Auburn's Urban Growth Area (UGA) was established to conform with the water service area boundary set forth in the settlement agreement; and

WHEREAS, subsequent to approval of the settlement agreement the Potential Annexation Area (PAA) for the City of Auburn was amended to coincide with the water service area boundary; and

WHEREAS, Exhibit B to the settlement agreement stated that the UGA and water service area boundary was established to follow property lines; and

WHEREAS, since the time of the agreement it has been found that a parcel was divided by the water service area boundary set forth in said settlement agreement, and by the subsequent PAA boundary established based on the water service area boundary, and said parcel lies partially within and partially outside of the Auburn PAA; and

WHEREAS, part of the Lake Tapps Parkway East extension's right-of-way also lies partially within and partially outside of the Auburn water service area boundary established by the settlement agreement, and partially within and partially outside the subsequent PAA boundary established based on the water service area boundary; and

WHEREAS, sound growth management and planning principles are best served by including entire parcels within a PAA.

NOW THEREFORE in consideration of their mutual covenants, conditions and promises, the PARTIES DO HEREBY AGREE as follows:

ITEM ONE: ADDITION OF PROPERTY
The Settlement Agreement is revised to include a portion of Pierce County parcel # 052005-4046, a portion of the Lake Tapps Parkway as it extends from the west boundary of 182nd Ave East west to Auburn's existing Urban Growth Area, and a portion of the natural gas pipe line parcel as noted in the attached Exhibit C. Exhibit C, attached hereto and incorporated by reference as if fully set forth herein, shall provide both a graphical representation and a legal description for the parcels that are to be included in Auburn's UGA for urban services and incorporated into the area that Bonney Lake shall be the water purveyor for within Auburn's UGA as defined in the original settlement agreement between Auburn and Bonney Lake.

ITEM TWO: REMAINING TERMS UNCHANGED:
That all other provisions of the Settlement Agreement between the parties executed on the 5th day of March, 1998, shall remain unchanged, and in full force and effect.

IN WITNESS WHEREOF the parties hereto have executed this Agreement as of the day and year first above written.

CITY OF BONNEY LAKE

ROBERT YOUNG, Mayor

Attest:

Harwood Edvalson, City Clerk

Approved as to form:

James Dionne, City Attorney

CITY OF AUBURN

PETER B. LEWIS, Mayor

Attest:

Danielle E. Daskam. City Clerk

Approved as to form:

Daniel B. Heid, City Attorney

EXHIBIT C

ADDENDUM 1

AUBURN BONNEY LAKE SETTLEMENT AGREEMENT

LEGAL DESCRIPTION OF AREA

THAT PORTION OF SECTION 5, TOWNSHIP 20 NORTH, RANGE 5 EAST, W.M. IN PIERCE COUNTY WASHINGTON, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF THE WEST HALF OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 5;

THENCE WESTERLY ALONG THE SOUTH LINE OF THE NORTH HALF OF THE SOUTHEAST QUARTER OF SAID SECTION 5 A DISTANCE OF 1360 FEET, MORE OR LESS, TO THE NORTHWESTERLY LINE OF THE LANDS CONVEYED TO EL PASO NATURAL GAS COMPANY BY DEED RECORDED UNDER PIERCE COUNTY AUDITOR'S NUMBER 2410280;

THENCE NORTHEASTERLY ALONG SAID NORTHWESTERLY LINE A DISTANCE OF 1880 FEET, MORE OR LESS, TO THE NORTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 5;

THENCE EASTERLY ALONG THE NORTH LINE OF SAID SOUTHEAST QUARTER A DISTANCE OF 700 FEET, MORE OR LESS, TO THE WEST LINE OF THE LANDS GRANTED TO PIERCE COUNTY FOR 182ND AVENUE EAST DESCRIBED IN DEED RECORDED UNDER PIERCE COUNTY AUDITOR'S NUMBER 2257762;

THENCE SOUTHERLY ALONG THE WEST LINE OF 182ND AVENUE EAST AS DESCRIBED IN SAID INSTRUMENT A DISTANCE OF 40 FEET, MORE OR LESS, TO THE SOUTH LINE OF THE LANDS CONVEYED TO PIERCE COUNTY IN DEED RECORDED UNDER AUDITORS FILE NUMBER 9902110924;

THENCE WESTERLY ALONG LAST SAID SOUTH LINE AND ALONG THE SOUTH LINE OF THE LANDS CONVEYED TO PIERCE COUNTY IN DEED RECORDED UNDER AUDITORS FILE NUMBER 200405180889 AND DEPICTED IN MAP ON FILE IN THE OFFICE OF THE DIRECTOR OF PIERCE COUNTY PUBLIC WORKS AND UTILITIES IN TACOMA, WASHINGTON, ENTITLED "LAKE TAPPS PARKWAY EAST – RIGHT OF WAY PLAN - CRP 5486" AND BEARING APPROVAL DATE OF NOVEMBER 17, 2003, A DISTANCE OF 600 FEET, MORE OR LESS, TO THE EAST LINE OF THE WEST HALF OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 5;

THENCE SOUTHERLY ALONG THE EAST LINE OF SAID WEST HALF OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 5 A DISTANCE OF 1220 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

H:\StaffFiles\WQ\Utility - Sewer\la\Bonney Lake\Addendum Soldement Legal Description.DOC

EXHIBIT C

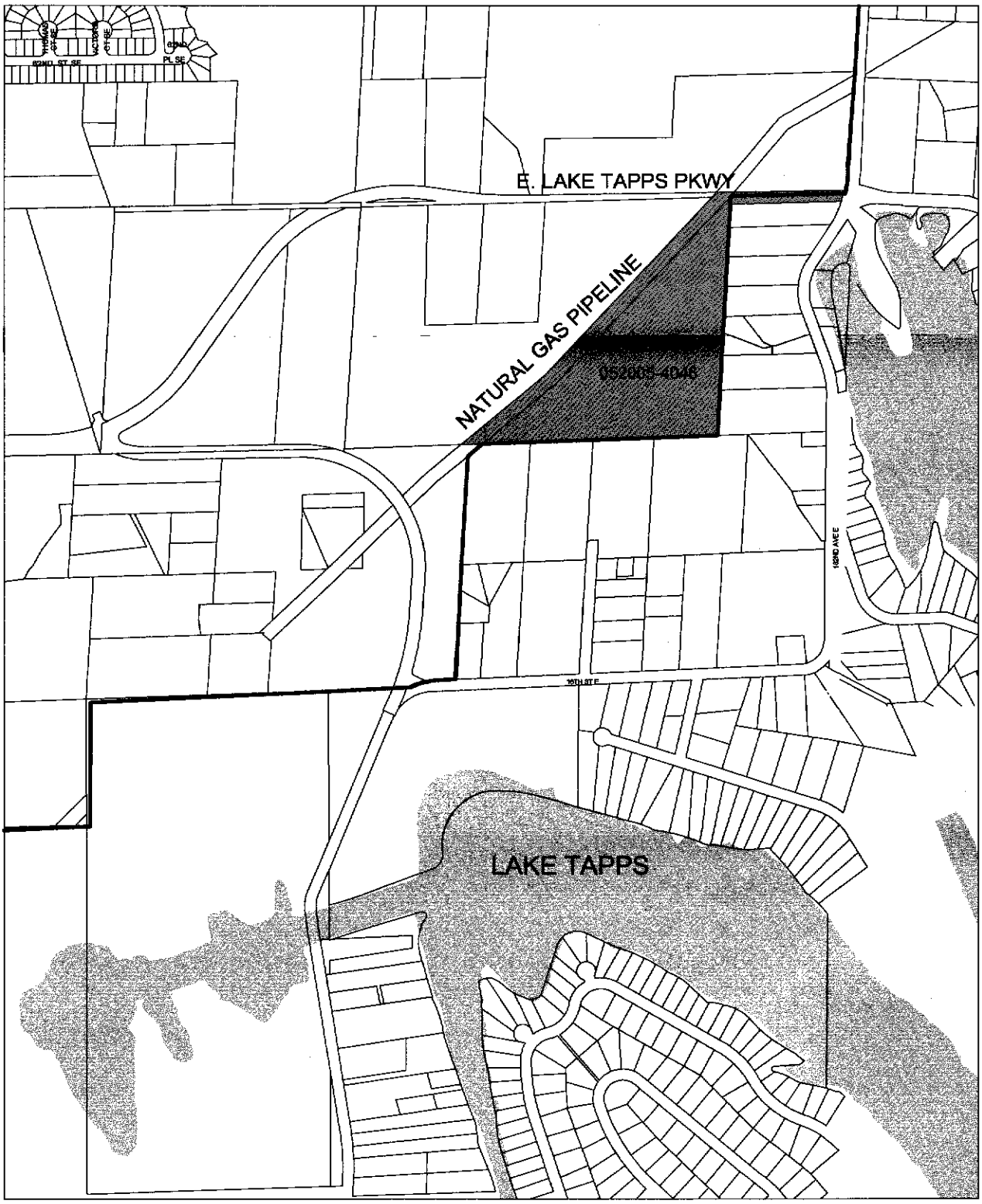


EXHIBIT A
RESOLUTION NO. 3760
PAGE 4 OF 4

EXHIBIT C
ADDENDUM NO. 1 TO THE MARCH 98
AUBURN - BONNEY LAKE
SETTLEMENT AGREEMENT
PAGE 2 OF 2

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001



200602100022 55
PACIFIC NW TIT INTERLOCA 44.00
PAGE001 OF 013
02/10/2006 15:46
KING COUNTY, WA

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Interlocal Agreement (Resolution No. 3817) PNWT-W3326-12 (13)/44

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)

1. Covington Water District
2. King County Water District No. 111

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number
N/A

☐ Assessor Tax # not yet assigned

Said document(s) were filed for record by Pacific Northwest Title as accommodation only. It has not been examined as to proper execution or as to its affect upon title.

RESOLUTION NO. 3817

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN INTERIM WATER SALES AGREEMENT BETWEEN THE CITY OF AUBURN AND COVINGTON WATER DISTRICT AND WATER DISTRICT NO. 111

WHEREAS, the City Council of the City of Auburn, Washington, adopted Resolution No. 3482 on June 17, 2002, authorizing the execution of an Interim Water Sales Agreement between Covington Water District (Covington), King County Water District No. 111 (WD 111) and the City of Auburn (Auburn) under the authority of their respective enabling legislation and under the authority of Chapter 39.34 RCW, the Interlocal Cooperation Act; and

WHEREAS, the parties desire to continue the intent of the Agreement to avoid unpredictable water sales and create a predictable and reliable cost for wholesale water to be sold by Auburn to Covington and WD 111; and

WHEREAS, it is in the public interest for the parties herein to continue the intent of the interim water sales agreement; and

WHEREAS, this Agreement supersedes and replaces the Interim Water Sales Agreement between Auburn, Covington and WD 111, which was approved by Resolution No. 3482 and executed on June 17, 2002.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor is hereby authorized to execute an Interim Water Sales Agreement between Auburn and Covington and WD 111 in substantial conformity with the agreement attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 2. That the Mayor is authorized to implement such other administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 22nd day of February, 2005.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

Exhibit "A"

INTERIM WATER SALES AGREEMENT
between
COVINGTON WATER DISTRICT,
KING COUNTY WATER DISTRICT NO. 111
and the
CITY of AUBURN

This Agreement ("Agreement") is made and entered into this 22nd day of February 2005, by and between Covington Water District (Covington) a Municipal Corporation, King County Water District No. 111 (WD III), a Municipal Corporation (collectively referred to herein as "the Districts") and the City of Auburn (Auburn), a Municipal Corporation.

Recitals:

A. The parties to this Agreement are also parties to "Interlocal Agreement 2 for the Lea Hill Intertie Project between Covington Water District, King County Water District #111, and the City of Auburn" ("IA2").

B. The parties desire to avoid unpredictable water sales and create a predictable and reliable cost for wholesale water to be sold by Auburn to the Districts.

C. By guaranteeing a minimum purchase of water for a given period of time, i.e., a take or pay approach, the cost of water, which to a significant extent is based on peaking factors, can be minimized for all of Auburn's customers.

D. This Agreement is intended to establish a rate for a fixed block of water for the mutual benefit of the parties of this Agreement.

E. It is in the interest of the Districts to have a predictable supply of water available, and in Auburn's interest to have a predictable and consistent source of revenue from the sale of such water.

F. The parties are authorized to enter into this Agreement under the authority of their respective enabling legislation and under the authority of Chapter 39.34 RCW, the Interlocal Cooperation Act.

G. The 1.5 million gallons of water per day ("MGD") take or pay water provided for in this Agreement is a portion of and not in addition to the 5 MGD as addressed in IA2.

Now, therefore, in consideration of the mutual covenants and promises

contained herein, and for other good and valuable consideration, the adequacy of which is hereby acknowledged, the parties hereby agree as follows:

1) **TAKE OR PAY:** The Districts agree to purchase an average of 1.5 MGD of water from Auburn on a take or pay basis. Take or pay shall mean that the Districts shall pay for 1.5 MGD whether or not the water is actually taken by the Districts (the "take or pay" water also referred to in this Agreement as "the Block" of water; provided

the Block of water may be modified as set forth in Paragraph 5 "Annual Review and Adjustment" herein). If the Districts cannot accept 1.5 mgd due to an emergency, as defined in Paragraph 7, they will be billed for the water they receive at the Block rate.

2) **CHARGES FOR WATER:** The Districts shall pay the rate per one hundred cubic feet of water ("CCF") for the 1.5 MGD Block shown in Exhibit 1, attached hereto, which is by this reference incorporated, except as further addressed in Paragraph 3 herein. Any water taken in excess ("Excess Water") during the summer (June 1 through September 30) shall be billed at the summer overage rate shown in Exhibit 1. Any water taken during an emergency within the Covington and/or WD 111 systems, as defined in Paragraph 7, shall be billed at the 1.5 mgd Block rate. Auburn shall send one monthly bill to WD 111 for all water purchased by the Districts.

3) **QUANTITY AVAILABLE / DELIVERED:** The 1.5 MGD Block of water shall be defined as a block of water to be delivered at an average rate of 1.5 MGD measured over a rolling 3 day period with total quantities delivered within any single day being no more than 10% more or less than 1.5 MGD at the Auburn Intertie Pump Station meter (Master Meter). If the Districts are unable for any reason to accept the Block of water, the minimum monthly payment shall be 1.5 MGD multiplied by the rate then in effect pursuant to Paragraph 2 above. If Auburn is

unable to deliver the amount of water requested by the Districts, up to the Block of water, then Auburn will bill the Districts for the amount of water actually delivered at the block rate pursuant to Paragraph 2 above. For the take or pay water Block provided for herein, the Districts will be served on the same basis and with the same reliability as service is provided to Auburn's retail customers, and any curtailment, restrictions or limitations on delivery shall be on same basis as curtailment, restrictions or limitations on delivery to Auburn's retail customers.

4) **ANNUAL TRUE UP OF THE TAKE OR PAY QUANTITY**

DELIVERED: The Master Meter is located at the Lea Hill Intertie Pump Station to measure the flow of water.

The Master Meter will be read in January of each year to adjust for differences between the Master Meter and the water calculated to have been sold under this "take or pay" agreement. Billing for differences between the Master Meter and the calculated quantities will be charged or credited at the "take or pay" rate to the District's accounts.

5) **ANNUAL REVIEW AND ADJUSTMENT:** The initial Block of 1.5 MGD shall remain in effect through December 31, 2010. Each year, the "take or pay" Block may be increased by mutual agreement. By September 1 of each year the Districts shall notify Auburn of their

intent to continue without change or request an increase in the Block quantity. Any requested change in the Block quantity would be effective January 1 of the year following the request. In the event that neither party communicates its intent under this provision, the Block shall be deemed to continue unchanged.

6) **TERM:** This Agreement shall remain in full force and effect from the first day of the month following the execution of this Agreement through December 31, 2010; provided that this Agreement shall automatically be renewed for an additional year at the conclusion of the term of this Agreement or any extension thereof unless any party provides the others with notice of an intent not to extend this Agreement, which notice shall be received by the other parties not less than one year prior to the expiration of the term of this Agreement or any extension thereof. The termination of this Agreement shall not affect any rights or obligations under IA2.

7) **EMERGENCIES:** For purposes of this Agreement, an emergency shall be defined as resulting from a water shortage, a major water line break, fire demand, contamination to the water supply system, mechanical equipment failure, electrical equipment failure or Puget Sound Energy facility failure, or any other mutually agreed upon emergency within the water supply system. An emergency period shall be for no more than five (5) working days without written request

by the Districts and approval by Auburn in writing to extend the emergency period. The City may change, reduce or limit the time for or temporarily discontinue any water supplied for an emergency in excess of the Block quantity without notice. Prior to a planned interruption or limiting of emergency service, the City will notify the Districts of such not less than three days prior to the service disruption. The City agrees to use best efforts and reasonable diligence to notify the Districts as soon after it becomes aware of the need for emergency service disruption and further will, to the extent practical, limit the service disruption to daylight hours.

8) **JOINT AND SEVERAL OBLIGATION:** The obligation of the Districts as set forth therein shall be a Joint and Several obligation of the Districts. Allocation of the take or pay Block of water and the payment for such water shall be negotiated between the Districts outside of this Agreement.

9) **PRIOR AGREEMENT SUPERSEDED:** This Agreement supersedes and replaces the Interim Water Sales Agreement between Auburn, Covington and WD 111 executed on June 17, 2002.

In witness whereof the participants hereto have caused this Agreement to be executed by their proper officers on the 22nd day of February, 2005.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

[redacted]

COVINGTON WATER DISTRICT

JUDY NELSON
GENERAL MANAGER

ATTEST:

APPROVED AS TO FORM:

District Attorney

KING COUNTY WATER DISTRICT NO. 111

WILLIAM C. HALL
GENERAL MANAGER

ATTEST:

APPROVED AS TO FORM:

District Attorney

[redacted]

Interim Water Sales Agreement
Between
Covington Water District,
King County Water District No. 111
And the
City of Auburn

Exhibit 1

Take or Pay Monthly Rates				
Year	Base Charge*	1.5 MGD and Winter Overage Rate	Summer Overage	
2005	$175.00	$0.85	1.5 MGD rate + $0.25	
2006	$175.00	$0.85	1.5 MGD rate + $0.25	
2007	$175.00	$0.85	1.5 MGD rate + $0.25	
2008	$175.00	0.85 X CPI**	1.5 MGD rate + $0.25	
2009	$175.00	2008 Rate X CPI**	1.5 MGD rate + $0.25	
2010	$175.00	2009 Rate X CPI**	1.5 MGD rate + $0.25	

*Covington and WD 111 are each responsible for paying a Base Charge of $175.00 per month per district.
** CPI means the Consumer Price Index – Urban for the Seattle – Tacoma – Bremerton area for the month of October of the prior year, divided by the October value of the year prior to that (see example below).

Example:

CPI for 2008 equals the October 2007 CPI value divided by the October 2006 value.

[redacted]

RESOLUTION NO. 3886

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE A LEASE AGREEMENT BETWEEN THE CITY AND NEW CINGULAR WIRELESS PCS, LLC, FOR THE PURPOSE OF LEASING PROPERTY FOR COMMUNICATION EQUIPMENT

THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREBY RESOLVES as follows:

Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute a Lease Agreement between the City and New Cingular Wireless PCS, LLC, in substantial conformity with the agreement attached hereto, for the purpose of leasing property at 5702 South 316th Street, Auburn, for communication equipment. A copy of said Agreement is attached hereto and denominated Exhibit "A" and incorporated herein by this reference.

Section 2. That the Mayor is authorized to implement such other administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 19th day of Sept, 2005.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

SITE LEASE AGREEMENT

THIS SITE LEASE AGREEMENT ("Lease") is by and between the City of Auburn, a municipal corporation under the existing laws of the State of Washington, having a mailing address of 25 West Main, Auburn, WA 98001 ("Landlord") and New Cingular Wireless PCS, LLC, a Delaware limited liability company, successor in interest to AT&T Wireless Services of Washington, LLC, an Oregon limited liability company, dba AT&T Wireless, by AT&T Wireless Services, Inc., a Delaware corporation, its Member, having a mailing address of 6100 Atlantic Boulevard, Norcross, GA 30071 ("Tenant").

1. Lease Agreement.

(a) Landlord hereby leases to Tenant a portion of the real property legally described as follows:

> **"THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 11, TOWNSHIP 21 NORTH, RANGE 4 EAST W.M., EXCEPT THE WEST 663 FEET OF THE NORTH 663 FEET OF THE SOUTH 693 FEET THEREOF, AND EXCEPT THE SOUTH 30 FEET THEREOF CONVEYED TO THE CITY OF AUBURN FOR SOUTH 316TH STREET, BY INSTRUMENT RECORDED UNDER RECORDING NO. 8503210865 AS PROVIDED BY RESOLUTION NO. 1565 OF THE CITY OF AUBURN; SITUATE IN THE CITY OF AUBURN, COUNTY OF KING, STATE OF WASHINGTON",**

(collectively referred to hereinafter as the "Property").

The Lease includes the right to operate a personal communications service antenna installation on Landlord's property, on the terms and conditions set forth herein.

(b) Tenant agrees to the Lease, subject to the following terms and conditions. Landlord hereby leases to Tenant the use of that portion of the Property as legally described as follows:

> **"COMMENCING AT THE SOUTHEAST CORNER OF THE WEST 663.0 FEET OF THE NORTH 663.0 FEET OF THE SOUTH 693.0 FEET OF THE NORTHEAST ONE QUARTER OF THE SOUTHWEST ONE QUARTER OF SECTION 11, TOWNSHIP 21 NORTH, RANGE 4 E., W.M.; THENCE NORTH 0° 25' 35" EAST ALONG THE EAST LINE OF SAID PARCEL 249.00 FEET; THENCE SOUTH 89 ° 34' 25" EAST 40.00 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING SOUTH 89 ° 34' 25" EAST 80.00 FEET; THENCE SOUTH 0 ° 25' 35" WEST 75.00 FEET; THENCE NORTH 89 ° 34' 25" WEST 80.00 FEET; THENCE NORTH 0 ° 25' 35" EAST 75.00 FEET TO THE TRUE POINT OF BEGINNING; SITUATED IN THE CITY OF AUBURN, RECORDS OF KING COUNTY, WASHINGTON"**

(collectively referred to hereinafter as the "Lease Area").

The Lease Area, located at 5702 South 316th Street, Auburn, Washington, comprises approximately an area not to exceed 6,000 square feet.

(c) The Lease shall be nonexclusive and shall not preclude Landlord from granting a similar lease, right, license, franchise, etc., to other carriers or other persons for telecommunications or any other purpose, so long as the subsequent agreement protects Tenant's rights granted by this Lease.

(d) Landlord further hereby leases to Tenant the use of that portion of the Property as legally described as follows:

"BEGINNING AT THE SOUTHEAST CORNER OF THE WEST 663.0 FEET OF THE NORTH 663.0 FEET OF THE SOUTH 693.0 FEET OF THE NORTHEAST ONE QUARTER OF THE SOUTHWEST ONE QUARTER OF SECTION 11, TOWNSHIP 21 NORTH RANGE 4 E., W.M.; THENCE NORTH 0 ° 25' 35" EAST 249.00 FEET; THENCE SOUTH 89 ° 34' 25" EAST 40.00 FEET; THENCE SOUTH 0 ° 25' 35" WEST 75.00 FEET THENCE SOUTH 89 ° 34' 25" EAST 80.00 FEET; THENCE SOUTH 0 ° 25' 35" WEST 47.00 FEET; THENCE NORTH 89 ° 34' 25" WEST 90.00 FEET; THENCE SOUTH 0 ° 25' 35" WEST 40.00 FEET; THENCE SOUTH 48 ° 00' 00" EAST 80.00 FEET; THENCE SOUTH 23 ° 30' 00" EAST 33.60 FEET MORE OR LESS TO THE NORTH MARGIN OF SOUTH 316TH STREET; THENCE SOUTH 88 ° 39' 09" WEST ALONG SAID NORTH MARGIN 103.52 TO THE POINT OF BEGINNING; SITUATED IN THE CITY OF AUBURN, RECORDS OF KING COUNTY, WASHINGTON"

(collectively referred to hereinafter as the "Access and Utility Easement").

The Access and Utility Easement comprises approximately an area not to exceed 16,155 square feet.

2. Term. The initial term of this Lease shall be five (5) years commencing on September 1, 2005 ("Commencement Date"), and terminating at midnight on the last day of the initial term ("Initial Term").

3. Antenna Facilities. Tenant may use the Lease Area for the transmission and reception of radio communication signals and for the construction, installation, operation, maintenance, repair, removal or replacement of related facilities necessary for the operation of a telecommunications facility as well as for access and utilities. These facilities include an antenna tower (not to exceed 150 feet in height) and base, together with a supporting outbuilding for housing of electronic equipment related to the antennas and wireless communications system and an emergency generator (collectively, the "Antenna Facilities"), the maintenance of which shall not violate ACC 8.28.010 regarding noise.

4. Rent. Tenant shall pay Landlord, as rent, Twelve Thousand and no/100 dollars ($12,000.00) per year ("Rent"). Rent shall be payable within twenty (20) days following the Commencement Date and thereafter the Rent will be payable yearly, no later than the anniversary of the Commencement Date to City of Auburn Water Utility Fund, Account Number 430.369.900, at Landlord's address specified in Section 12 below. The Rent shall increase annually over the Rent payable the preceding year in proportion to the increase of the "All Items" category of the Consumer Price Index for Urban Wage Earners and Clerical Workers published by the Bureau of Labor Statistics of the U.S. Department of Labor for Seattle-Everett Metropolitan Area (the "Index"). The first adjustment shall be based on the amount, if any, by which the Index for the 12th month of the Lease term has increased over the Index for the month preceding the commencement of the lease term. Subsequent adjustments will be based on the amount, if any, by which the Index for each subsequent 12th month of the Lease term has increased over the Index for the 12th month of the preceding 12-month period. It shall be the responsibility of the Landlord to track the CPI and notify the Tenant of increases or reductions in the Rent. Landlord shall notify Tenant within 90 days of the commencement of the Renewal Term as to the revised

rate at which the Rent shall be increased annually thereafter. Landlord will invoice Tenant for back Rent due or refund over payment as necessary to correct the payment received for the first year of the Renewal Term. If at any time the CPI ceases to incorporate a significant number of items, if a substantial change is made in the method of establishing the CPI, or if issuance of the CPI shall be discontinued, then the Landlord and Tenant shall mutually agree upon another standard recognized cost of living index issued by the United States Government, provided that if the parties cannot reach agreement on such other standard cost of living index, then the Landlord shall select the index closest to the CPI. In either case, the substitute index chosen shall result in increases in the Rent similar to those that had been, or would have been, generated by the CPI. If this Lease is terminated at a time other than on the anniversary of the Commencement Date, Rent shall be prorated as of the date of termination for any reason (other than a default by Tenant) and all prepaid Rent shall be refunded to Tenant within sixty (60) days.

5. Renewal. Tenant may extend this Lease for (5) additional, five-year terms (each a "Renewal Term"). Each Renewal Term shall be on the same terms and conditions as set forth herein, including the Rent increase set forth in Section 4, above. This Lease shall automatically renew for each successive Renewal Term unless Tenant notifies Landlord, in writing, of Tenant's intention not to renew this Lease, at least ninety (90) days prior to the expiration of the Initial Term or any Renewal Term. Landlord may, during any Renewal Term, notify Tenant, in writing, of Landlord's intention not to renew this Lease for an additional Renewal Term, which notice shall be provided to Tenant at least one hundred and eighty (180) days prior to the expiration of the then in effect Renewal Term. Landlord may, during the final one hundred and eighty (180) days of the Initial Term or any Renewal Term, conduct a market survey to determine the fair market value of the Lease. The Rent for the next Renewal Term will be established by the results of the market survey with each subsequent years Rent governed by the terms of Section 4, however, under no circumstance will the Rent decrease as a result of the market survey below the amount of the most recently established rate in existence prior to the market survey. If Landlord and Tenant cannot reach agreement on the Rent for the next Renewal Term **prior to the end of the initial or any renewal term** the Lease will not renew. If Tenant shall remain in possession of the Lease Area at the expiration of this Lease or any Renewal Term without a written agreement, such tenancy shall be deemed a month-to-month tenancy under the same terms and conditions of this Lease.

6. Interference. Tenant and Landlord shall not operate in a manner which interferes with the other party's operations on the Property. Tenant's Antenna Facilities and the use thereof shall not interfere with the use of any other communication or similar equipment of any kind and nature owned or operated by Landlord or other lessee, licensees, franchisees, etc., existing and operating on the Property prior in time to the commencement of this Lease, and subsequent to the installation by Tenant of the Antenna Facilities, Landlord agrees to exercise reasonable care to assure equipment of subsequent providers leasing space on the Property does not interfere with Tenant's Antenna Facilities operations. The Landlord, however, is not in any way responsible or liable for any interference with Tenant's use of Landlords Property, which may be caused by the use and operation of any other tenant's equipment, even if caused by new technology, so long as such equipment continues to operate within its existing frequencies and in compliance with all applicable laws and FCC rules and regulations. In the event there is interference between Tenant and any third party, such interference will be resolved by and between the parties affected; however, if such interference cannot be resolved to Tenant's satisfaction within forty-eight (48) hours from commencement of such interference, then the parties acknowledge that Tenant will suffer irreparable injury, and therefore, Tenant will have the right, in addition to any other rights that it may have at law or in equity, to terminate this Lease upon 30 days notice to Landlord and restore the Landlord's Property to its original condition, reasonable wear and tear and loss due to casualty or other causes beyond Tenant's control excepted.

7. Improvements; Utilities; Access.

(a) Tenant shall have the right, at its expense, to erect and maintain on the Lease Area, improvements, personal property and facilities necessary to operate its communications system, including, antenna tower and base, radio transmitting and receiving antennas, and related cables and conduits, equipment shelters and/or cabinets and related cables and utility lines and a location based system, including coaxial cable, base units and other associated equipment as such location based system may be permitted by any county, state or federal agency/department. Tenant shall have the right to alter, replace, and expand within the confines of the Lease Area as defined in Section 1 and without interference to other providers / tenants, enhance and upgrade the Antenna Facilities at any time during the term of this Lease. Tenant shall cause all construction to occur lien-free and in compliance with all applicable laws and ordinances. Landlord acknowledges that it shall not interfere with any aspects of construction, including, attempting to direct construction personnel as to the location of or method of installation of the Antenna Facilities. The Antenna Facilities shall remain the exclusive property of Tenant. Tenant shall have the right to remove the Antenna Facilities at any time during and upon the expiration or termination of this Lease.

(b) Tenant shall, at its sole expense, secure the Lease Area with a perimeter security fence including a gate at the entrance.

(c) Tenant shall, at Tenant's expense, keep and maintain the Lease Area and Antenna Facilities now or hereafter located on the Property in commercially reasonable condition and repair during the term of this Lease, normal wear and tear and loss due to casualty or other causes beyond Tenant's control excepted. Upon termination or expiration of this Lease, the Lease Area and Antenna Facilities areas shall be returned to Landlord in good, usable condition, normal wear and tear and loss due to casualty or other causes beyond Tenant's control excepted, within ninety (90) days.

(d) Tenant shall have the right to install utilities, power and telephone, at Tenant's expense, and to improve the present utilities on the Property (including, but not limited to, the installation of emergency power generators). Landlord agrees to cooperate with Tenant in its reasonable efforts to acquire necessary utility service. Tenant shall, wherever practicable, install separate meters for utilities used on the Property by Tenant. Landlord shall diligently correct any variation, interruption or failure of utility service within Landlord's control.

(e) Tenant shall have 24-hours-a-day, 7-days-a-week access to the Lease Area ("Access") at all times during the Initial Term of this Lease and any Renewal Term. In the event Landlord, its employees or agents unreasonably deny Access to Tenant, its employees or agents, Tenant shall, without waiving any other rights that it may have at law or in equity, deduct from Rent amounts due under this Lease an amount equal to Fifty and no/100 Dollars ($50.00) per day for each day that Access is impeded or denied.

8. Termination. Except as otherwise provided herein, this Lease may be terminated, without any penalty or further liability as follows:

(a) upon thirty (30) days' written notice by Landlord if Tenant fails to cure a default for payment of amounts due under this Lease within that thirty (30) day period;

(b) immediately if Tenant is unable to obtain, maintain, or otherwise forfeits or cancels any license (including, without limitation, an FCC license), permit or any Governmental Approval necessary to the installation and/or operation of the Antenna Facilities or Tenant's business;

(c) upon ninety (90) days' written notice by Tenant if the Lease Area or the Antenna Facilities are, or become unacceptable under Tenant's design or engineering specifications for its Antenna Facilities or the communications system to which the Antenna Facilities belong;

(e) at the time title to the Property transfers to a condemning authority, pursuant to a taking of all or a portion of the Property sufficient in Tenant's determination to render the Lease Area unsuitable for Tenant's use. Landlord and Tenant shall each be entitled to pursue their own separate awards with respect to such taking.

(f) Landlord may terminate this Lease if Landlord needs the Lease Area for expansion of Landlord's responsibility to provide its services, and Landlord has no reasonable or economical alternative site available, provided Landlord provides Tenant written notice twelve (12) months in advance of Landlord's need to re-establish Landlord's sole use of the Lease Area. Upon Tenant's receipt of written notice, Tenant shall have six (6) months to submit to Landlord alternative locations for its Antenna Facilities. Such alternative locations may be on the Property or other properties owned or managed by Landlord. Landlord shall evaluate such alternatives and advise Tenant in writing if one or more of the alternatives is suitable to accommodate Tenant's Antenna Facilities. To be a suitable alternative location, such location will not unreasonably result in any interruption of the communications service of Tenant on Landlord's Property; nor will it impair, or in any manner alter, the quality of communications service provided by Tenant on and from Landlord's owned or managed properties. Tenant shall submit additional relevant information to assist the Landlord in making such evaluation. Landlord shall give each alternative location proposed by Tenant full and fair consideration, within a reasonable time so as to allow for the relocation work to be performed in a timely manner. If, in Tenant's reasonable judgment, no suitable alternative location can be found, Tenant shall remove its Antenna Facilities as otherwise provided in this Section 7 (c) of this Lease. If an alternative location for Tenant's Antenna Facilities is found, Landlord and Tenant agree to enter into a new Lease Agreement with the same terms and conditions of this Lease.

(g) If, during the term of this Lease there is a determination made pursuant to an official unappealable order of the Federal Communications Commission or any other applicable law, order, ordinance, regulation, directive, or standard as stated above that use of the Antenna Facilities by the Tenant poses a human health hazard which cannot be remediated, then (a) Tenant shall immediately cease all operations of the Antenna Facilities, and (b) the Lease shall terminate as of the date of such order without further liability. If for reasons related to public health, safety or welfare, Landlord determines that this Lease must be terminated, then Landlord reserves rights of unilateral termination and will do so by providing Tenant with a six (6) month written notice.

(h) Tenant shall be entitled to a pro rata refund of its prepaid Rent for any termination of this Lease by Landlord pursuant to Subsection 8(f) or 8(g).

9. Default and Right to Cure. Notwithstanding anything contained herein to the contrary and without waiving any other rights granted to it at law or in equity, each party shall have the right, but not the obligation, to terminate this Lease on written notice pursuant to Section 12 hereof, to take effect immediately, if the other party (i) fails to perform any covenant for a period of thirty (30) days after receipt of written notice thereof to cure or (ii) commits a material breach of this Lease and fails to diligently pursue such cure to its completion after sixty (60) days' written notice to the defaulting party.

10. Taxes. Landlord shall pay when due all real property taxes or other fees and assessments for the Property, including the Lease Area. In the event that Landlord fails to pay any such real property taxes or other fees and assessments, Tenant shall have the right, but not the obligation, to pay such owed amounts and deduct them from Rent amounts due under this Lease. Notwithstanding the foregoing, Tenant shall pay any personal property tax, State leasehold tax, excise tax, real property tax or any other tax or fee which are directly attributable to the presence or installation of Tenant's Antenna Facilities, only for so long as this Lease has not expired of its own terms or is not terminated by either party. Landlord hereby grants to Tenant the right to challenge, whether in a Court, Administrative Proceeding, or other venue, on behalf of Landlord and/or Tenant, any personal property or real property tax assessments, State leasehold

(d) immediately upon written notice by Tenant if the Lease Area or the Antenna Facilities are destroyed or damaged so as in Tenant's reasonable judgment to substantially and adversely affect the effective use of the Antenna Facilities. In such event, all rights and obligations of the parties shall cease as of the date of the damage or destruction, and Tenant shall be entitled to the reimbursement on a prorated basis of any Rent prepaid by Tenant. If Tenant elects to continue this Lease, then all Rent shall abate until the Lease Area and/or the Antenna Facilities are restored to the condition existing immediately prior to such damage or destruction; or

(e) at the time title to the Property transfers to a condemning authority, pursuant to a taking of all or a portion of the Property sufficient in Tenant's determination to render the Lease Area unsuitable for Tenant's use. Landlord and Tenant shall each be entitled to pursue their own separate awards with respect to such taking.

(f) Landlord may terminate this Lease if Landlord needs the Lease Area for expansion of Landlord's responsibility to provide its services, and Landlord has no reasonable or economical alternative site available, provided Landlord provides Tenant written notice twelve (12) months in advance of Landlord's need to re-establish Landlord's sole use of the Lease Area. Upon Tenant's receipt of written notice, Tenant shall have six (6) months to submit to Landlord alternative locations for its Antenna Facilities. Such alternative locations may be on the Property or other properties owned or managed by Landlord. Landlord shall evaluate such alternatives and advise Tenant in writing if one or more of the alternatives is suitable to accommodate Tenant's Antenna Facilities. To be a suitable alternative location, such location will not unreasonably result in any interruption of the communications service of Tenant on Landlord's Property; nor will it impair, or in any manner alter, the quality of communications service provided by Tenant on and from Landlord's owned or managed properties. Tenant shall submit additional relevant information to assist the Landlord in making such evaluation. Landlord shall give each alternative location proposed by Tenant full and fair consideration, within a reasonable time so as to allow for the relocation work to be performed in a timely manner. If, in Tenant's reasonable judgment, no suitable alternative location can be found, Tenant shall remove its Antenna Facilities as otherwise provided in this Section 7 (c) of this Lease. If an alternative location for Tenant's Antenna Facilities is found, Landlord and Tenant agree to enter into a new Lease Agreement with the same terms and conditions of this Lease.

(g) If, during the term of this Lease there is a determination made pursuant to an official unappealable order of the Federal Communications Commission or any other applicable law, order, ordinance, regulation, directive, or standard as stated above that use of the Antenna Facilities by the Tenant poses a human health hazard which cannot be remediated, then (a) Tenant shall immediately cease all operations of the Antenna Facilities, and (b) the Lease shall terminate as of the date of such order without further liability. If for reasons related to public health, safety or welfare, Landlord determines that this Lease must be terminated, then Landlord reserves rights of unilateral termination and will do so by providing Tenant with a six (6) month written notice.

(h) Tenant shall be entitled to a pro rata refund of its prepaid Rent for any termination of this Lease by Landlord pursuant to Subsection 8(f) or 8(g).

9. Default and Right to Cure. Notwithstanding anything contained herein to the contrary and without waiving any other rights granted to it at law or in equity, each party shall have the right, but not the obligation, to terminate this Lease on written notice pursuant to Section 12 hereof, to take effect immediately, if the other party (i) fails to perform any covenant for a period of thirty (30) days after receipt of written notice thereof to cure or (ii) commits a material breach of this Lease and fails to diligently pursue such cure to its completion after sixty (60) days' written notice to the defaulting party.

10. Taxes. Landlord shall pay when due all real property taxes or other fees and assessments for the Property, including the Lease Area. In the event that Landlord fails to pay

any such real property taxes or other fees and assessments, Tenant shall have the right, but not the obligation, to pay such owed amounts and deduct them from Rent amounts due under this Lease. Notwithstanding the foregoing, Tenant shall pay any personal property tax, State leasehold tax, excise tax, real property tax or any other tax or fee which are directly attributable to the presence or installation of Tenant's Antenna Facilities, only for so long as this Lease has not expired of its own terms or is not terminated by either party. Landlord hereby grants to Tenant the right to challenge, whether in a Court, Administrative Proceeding, or other venue, on behalf of Landlord and/or Tenant, any personal property or real property tax assessments, State leasehold tax or excise tax that may affect Tenant. If Landlord receives notice of any personal property or real property tax assessment, State leasehold tax or excise tax against the Landlord, which may affect Tenant and is directly attributable to Tenant's installation, Landlord shall provide timely notice of the assessment to Tenant sufficient to allow Tenant to consent to or challenge such assessment. Further, Landlord shall provide to Tenant any and all documentation associated with the assessment and shall execute any and all documents reasonably necessary to effectuate the intent of this Section 10.

11. Insurance and Subrogation and Indemnification.

(a) Tenant shall provide Commercial General Liability Insurance naming Landlord (the City of Auburn) as additional insured in an aggregate amount of Two Million and no/100 dollars ($2,000,000.00). Tenant may satisfy this requirement by obtaining the appropriate endorsement to any master policy of liability insurance Tenant may maintain.

(b) Tenant shall indemnify, protect, defend and hold Landlord and its employees and agents harmless from and against any and all claims, liabilities, judgments, costs, damages, and expenses, including reasonable attorney's fees, arising out of or in any way related to Tenant's operation of the Antenna Facilities, including, but not limited to, the installation, maintenance, operation or removal thereof, except to the extent that such claim, liability, judgment, cost, damage or expense arises out of the negligent act or omission, or willful misconduct of Landlord or its employees or agents. Landlord shall not be liable to Tenant, its agents, employees and contractors for damage to the Antenna Facilities or any other property belonging to Tenant from any cause, except for any damage caused by the negligent act or omission or willful misconduct of Landlord or its employees or agents. Tenant waives all claims against Landlord and its employees and agents for damage to persons or Antenna Facilities or property arising for any reason other than a claim based on the negligent act or omission or willful misconduct of Landlord or its employees or agents. Landlord and its employees and agents shall have no liability to Tenant for any interruption of any utility service unless caused by the negligent act or omission or willful misconduct of Landlord or its employees or agents.

Should a court of competent jurisdiction determine that this Lease is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Tenant and the Landlord, its officers, officials, employees and volunteers, the Landlord's liability hereunder shall be only to the extent of the Landlord's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes the Tenant's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties. The provisions of this section shall survive the expiration or termination of this Lease.

12. Notices. All notices, requests, demands and other communications shall be in writing and are effective three (3) days after deposit in the U.S. mail, certified and postage paid, or upon receipt if personally delivered or sent by next-business-day delivery via a nationally recognized overnight courier to the addresses set forth below. Landlord or Tenant may from time to time designate any other address for this purpose by providing written notice to the other party.

If to Tenant, to:

c/o Cingular Wireless LLC
Attn: Network Real Estate Administration
6100 Atlantic Boulevard
Norcross, GA 30071
Re: Site – SS02_Auburn

With a copy to:

Cingular Wireless PCS, LLC
Attn: Legal Department
15 East Midland Avenue
Paramus, NJ 07652
Re: Site – SS02_Auburn

If to Landlord, to:

Public Works Director
City of Auburn
25 West Main St.
Auburn, WA 98001

With a copy to:

City Attorney
City of Auburn
25 West Main St.
Auburn, WA 98001

13. Quiet Enjoyment, Title and Authority. Landlord covenants and warrants to Tenant that (i) Landlord has full right, power and authority to execute this Lease; (ii) it has good and unencumbered title to the Property free and clear of any liens or mortgages, except those disclosed to Tenant and which will not interfere with Tenant's rights to or use of the Lease Area; and (iii) execution and performance of this Lease will not violate any laws, ordinances, covenants, or the provisions of any mortgage, lease, or other agreement binding on Landlord.

14. Environmental Laws. Landlord represents that it has no knowledge of any substance, chemical or waste (collectively, "Hazardous Substance") on the Property that is identified as hazardous, toxic or dangerous in any applicable federal, state or local law or regulation. Landlord and Tenant shall not introduce or use any Hazardous Substance on the Property in violation of any applicable law. Landlord shall be responsible for, and shall promptly conduct any investigation and remediation as required by any applicable environmental laws, for all spills or other releases of any Hazardous Substance not caused in whole or in part by Tenant, that have occurred or which may occur on the Property. Each party agrees to defend, indemnify and hold harmless the other from and against any and all administrative and judicial actions and rulings, claims, causes of action, demands and liability (collectively, "Claims") including, but not limited to, damages, costs, expenses, assessments, penalties, fines, losses, judgments and reasonable attorney fees that the indemnitee may suffer or incur due to the existence or discovery of any Hazardous Substances on the Property or the migration of any Hazardous Substance to other properties or the release of any Hazardous Substance into the environment (collectively, "Actions"), that relate to or arise from the indemnitor's activities on the Property. Landlord agrees to defend, indemnify and hold Tenant harmless from Claims resulting from Actions on the Property not caused by Landlord or Tenant prior to and during the Initial Term and any Renewal Term of this Lease. The indemnifications in this section specifically include, without limitation, costs incurred in connection with any investigation of site conditions or any cleanup, remedial, removal or restoration work required by any governmental authority. This Section 14 shall survive the termination or expiration of this Lease.

15. Assignment and Subleasing. All of the terms and provisions contained herein shall inure to the benefit of and shall be binding upon the parties hereto and their respective heirs, legal representatives, successors and assigns. This Lease shall not be assigned by Tenant without the express written consent of Landlord, which consent shall not be unreasonably withheld, delayed or conditioned. Any attempted assignment in violation of this Section shall be void. The transfer of the rights and obligations of Tenant to a parent, subsidiary, or other affiliate of Tenant, or to any successor-in-interest or entity acquiring fifty-one percent (51%) or more of Tenant's stock or assets, shall not be deemed an assignment. Tenant shall give to Landlord thirty (30) days' prior written notice of any such transfer.

Additionally, Tenant may, upon notice to Landlord, mortgage or grant a security interest in this Lease and the Antenna Facilities, and may assign this Lease and the Antenna Facilities to any mortgagees or holders of security interests, including their successors or assigns (collectively "Mortgagees"), provided such Mortgagees agree to be bound by the terms and provisions of this Lease. In such event, Landlord shall execute such consent to leasehold financing as may reasonably be required by Mortgagees. Landlord agrees to notify Tenant and Tenant's Mortgagees simultaneously of any default by Tenant and to give Mortgagees the same right to cure any default as Tenant or to remove any property of Tenant or Mortgagees located on the Lease Area, except that the cure period for any Mortgagees shall not be less than thirty (30) days after receipt of the default notice, as provided in Section 9 of this Lease. All such notices to Mortgagees shall be sent to Mortgagees at the address specified by Tenant. Failure by Landlord to give Mortgagees such notice shall not diminish Landlord's rights against Tenant, but shall preserve all rights of Mortgagees to cure any default and to remove any property of Tenant or Mortgagees located on the Lease Area.

The Lease Area shall be used exclusively as a site for a wireless telecommunications facility. The Tenant may allow use of all or a portion of the Lease Area or their Antenna Facilities by others, with prior written approval of the Landlord.

16. Removal of Antenna Facilities. The Antenna Facilities are and shall remain the property of the Tenant and upon the expiration or earlier termination of this Lease, Tenant shall, at Tenant's sole cost and expense, remove the Antenna Facilities and restore the Lease Area to its original condition, normal wear and tear and loss due to casualty or other causes beyond Tenant's control excluded.

17. Miscellaneous.

(a) The substantially prevailing party in any litigation, including any arbitration to which the parties shall submit, arising hereunder shall be entitled to its reasonable attorneys' fees and court costs, including appeals, if any.

(b) This Lease constitutes the entire agreement and understanding of the parties, and supersedes all offers, negotiations and other agreements. There are no representations or understandings of any kind not set forth herein. Any amendments to this Lease must be in writing and executed by both parties. At such time as the Auburn City Council approves any regulation affecting telecommunications, Tenant agrees to amend this Lease, as determined by the Landlord in order to comply with any future ordinance related to telecommunications provided, however, that in no event shall such regulation (i) materially interfere with or affect Tenant's operation of its Antenna Facilities; or (ii) increase Tenant's financial obligations under the terms of this Lease, except as provided herein, or impose some new financial obligations not already contemplated by this Lease. No amendment, change or modification of this Lease shall be valid, unless in writing and signed by all parties hereto.

(c) Each party agrees to cooperate with the other in executing any documents (including a Memorandum of Lease in substantially the form attached hereto as Exhibit A) necessary to protect its rights or use of the Lease Area. The Memorandum of Lease may be recorded in place of this Lease by either party. In the event the Property is encumbered by a mortgage or deed of trust, Landlord agrees, upon request of Tenant, to obtain and furnish to Tenant a non-disturbance and attornment agreement for each such mortgage or deed of trust, in a form reasonably acceptable to Tenant. Tenant may obtain title insurance on its interest in the Lease Area.

(d) This Lease shall be construed in accordance with the laws of the state in which the Property is located.

(e) If any term of this Lease is found to be void or invalid, such finding shall not affect the remaining terms of this Lease, which shall continue in full force and effect. The parties agree that if any provisions are deemed not enforceable, they shall be deemed modified to the extent necessary to make them enforceable. No provision of this Lease will be deemed waived by either party unless expressly waived in writing signed by the waiving party. No waiver shall be implied by delay or any other act or omission of either party. No waiver by either party of any provision of this Lease shall be deemed a waiver of such provision with respect to any subsequent matter relating to such provision.

(f) The persons who have executed this Lease represent and warrant that they are duly authorized to execute this Lease in their individual or representative capacity as indicated.

(g) This Lease may be executed in any number of counterpart copies, each of which shall be deemed an original, but all of which together shall constitute a single instrument.

(h) All Exhibits referred to herein and any Addenda are incorporated herein for all purposes. The parties understand and acknowledge that Exhibit A (Memorandum of Lease) is attached to this Site Lease Agreement. The terms of all Exhibits are incorporated herein for all purposes.

(i) If Landlord is represented by any broker or any other leasing agent, Landlord is responsible for all commission fees or other payment to such agent, and agrees to indemnify and hold Tenant harmless from all claims by such broker or anyone claiming through such broker. If Tenant is represented by any broker or any other leasing agent, Tenant is responsible for all commission fee or other payment to such agent, and agrees to indemnify and hold Landlord harmless from all claims by such broker or anyone claiming through such broker.

18. Headings. The caption and paragraph headings used in this Lease are inserted for convenience of reference only and are not intended to define, limit or affect the interpretation or construction of any term or provision hereof.

19. Liens. Except with respect to activities for which Landlord is responsible, Tenant shall pay as due all claims for work done on, and for services rendered or material furnished to, the Antenna Facility, and shall keep the Antenna Facility free from all liens.

LANDLORD: City of Auburn

By: _____
Peter B. Lewis

Its: Mayor

Date: SEP 19 2005

Taxpayer ID Number: 91-6001228

TENANT:

New Cingular Wireless PCS, LLC
a Delaware limited liability company

By: _____
Print Name: E. DON MACLEOD
Its: EXECUTIVE DIRECTOR
Date: 8-18-05

(acknowledgements to follow on next page)

STATE OF WA)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that Peter B Lewis is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the MAYOR, of City of Auburn, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: Sept. 19, 2005

Daniel E Daskam
Notary Public
Print Name Danielle E Daskam
residing at Enumclaw
My commission expires 10-25-07

DANIELLE E. DASKAM
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES
10-25-07

(Use this space for notary stamp/seal)

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that E. DON MacLEOD is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the EXECUTIVE DIRECTOR, of New Cingular Wireless PCS, LLC, the limited liability company, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: 8.10.05

Heather M Wright
Notary Public
Print Name HEATHER M WRIGHT
residing at SEATTLE, WA
My commission expires 3.14.09

Notary Public
State of Washington
HEATHER MAREE WRIGHT
My Appointment Expires Mar 14, 2009

(Use this space for notary stamp/seal)

Exhibit A

MEMORANDUM OF LEASE

to the Site Lease Agreement executed on the 19th day of Sept, 2005, by and between the City of Auburn, as Landlord, and New Cingular Wireless PCS, LLC, as Tenant.

(MOL to follow on next page)

Return to:

Graham & Dunn PC/Busch
Pier 70
2801 Alaskan Way
Suite 300
Seattle, WA 98121

Re: Cell Site #SS02; Cell Site Name: Auburn

State: Washington
County: King

MEMORANDUM
OF
LEASE

THIS MEMORANDUM OF LEASE is by and between the City of Auburn, a municipal corporation under the existing laws of the State of Washington, having a mailing address of 25 West Main, Auburn, WA 98001 ("Landlord") and New Cingular Wireless PCS, LLC, a Delaware limited liability company, having a mailing address of 6100 Atlantic Boulevard, Norcross, GA 30071 ("Tenant").

1. Landlord and Tenant entered into a certain Site Lease Agreement ("Lease") on the 19th day of Sept, 2005, for the purpose of installing, operating and maintaining a communications facility and other improvements. All of the foregoing are set forth in the Lease.

2. Landlord is leasing to Tenant a portion of the Property described in Exhibit A annexed hereto.

3. The initial term of the five (5) years commences on September 1, 2005. The Lease will automatically renew for five (5) separate consecutive periods of five (5) years each upon the same terms and conditions of the Lease, unless Tenant notifies Landlord in writing of Tenant's intention not to renew the Lease at least ninety (90) days prior to the expiration of the existing term. Unless earlier terminated, the Lease will expire on August 31, 2035.

4. This Memorandum of Lease is not intended to amend or modify, and shall not be deemed or construed as amending or modifying, any of the terms, conditions or provisions of the Lease, all of which are hereby ratified and affirmed. In the event of a conflict between the provisions of this Memorandum of Lease and the provisions of the Lease, the provisions of the Lease shall control.

5. The Lease shall be binding upon and inure to the benefit of the parties and their respective heirs, successors, and assigns, subject to the provisions of the Lease.

IN WITNESS WHEREOF, the parties have executed this Memorandum of Lease as of the day and year first above written.

LANDLORD: City of Auburn

By: _____
Peter B. Lewis
Its: Mayor
Date: SEP 19 2005

Taxpayer ID Number: 91-6001228

TENANT:

New Cingular Wireless PCS, LLC,
a Delaware limited liability company

By: _____
Print Name: E. DAN MACLEOD
Its: EXECUTIVE DIRECTOR
Date: 8-10-05

(acknowledgements to follow on next page)

STATE OF WA)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that Peter B. Lewis is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the MAYOR, of City of Auburn, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: Sept 19, 2005

Danielle E Daskam

Notary Public
Print Name Danielle E Daskam
residing at Enumclaw
My commission expires 10-25-07

DANIELLE E. DASKAM
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES
10-25-07

(Use this space for notary stamp/seal)

STATE OF WASHINGTON)
) ss.
COUNTY OF KING.)

I certify that I know or have satisfactory evidence that E. DON MACLEOD is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the EXECUTIVE DIRECTOR, of New Cingular Wireless PCS, LLC, the limited liability company, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: 8.10.05

Heather M Wright

Notary Public
Print Name HEATHER M. WRIGHT
residing at SEATTLE, WA
My commission expires 3.14.09

Notary Public
State of Washington
HEATHER MAREE WRIGHT
My Appointment Expires Mar 14, 2009

(Use this space for notary stamp/seal)

EXHIBIT A
DESCRIPTION OF PROPERTY

to the Memorandum of Lease executed on the 19th day of Sept, 2005 by and between the City of Auburn, as Landlord, and New Cingular Wireless PCS, LLC, as Tenant.

The Property is described and/or depicted as follows:

"THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 11, TOWNSHIP 21 NORTH, RANGE 4 EAST W.M., EXCEPT THE WEST 663 FEET OF THE NORTH 663 FEET OF THE SOUTH 693 FEET THEREOF, AND EXCEPT THE SOUTH 30 FEET THEREOF CONVEYED TO THE CITY OF AUBURN FOR SOUTH 316TH STREET, BY INSTRUMENT RECORDED UNDER RECORDING NO. 8503210865 AS PROVIDED BY RESOLUTION NO. 1565 OF THE CITY OF AUBURN; SITUATE IN THE CITY OF AUBURN, COUNTY OF KING, STATE OF WASHINGTON",

AGREEMENT FOR THE SALE OF WHOLESALE WATER

BETWEEN THE CITY OF TACOMA, DEPARTMENT OF PUBLIC UTILITIES, WATER DIVISION

AND

CASCADE WATER ALLIANCE

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This Agreement for the Sale of Wholesale Water ("Agreement") between the City of Tacoma, Department of Public Utilities, Water Division (Tacoma) and Cascade Water Alliance ("Cascade"), is made and entered into effective this 13th day of October, 2005 (Effective Date). Tacoma and Cascade are sometimes referred to herein in the singular as "Party" and in the plural as "Parties".

WHEREAS, Tacoma is a municipality organized and operating under the laws of the State of Washington; and

WHEREAS, Cascade is a public nonprofit corporation established by Interlocal Contract under the authority of Chapter 39.34 RCW, the Interlocal Cooperation Act, and incorporated under Chapter 24.03 to further the interests of its members with respect to water supply and to work cooperatively with other water supply entities; and

WHEREAS, Tacoma and Cascade have the responsibility to plan, design, construct and operate water supply facilities to meet the municipal, commercial and industrial water supply needs of their respective customers and member organizations; and

WHEREAS, Tacoma, which has nearly completed the construction of its Second Supply Project, expects to have the supply capacity, together with Tacoma's other water resources, to meet Tacoma's projected water supply needs for the next fifty years, in addition to meeting a portion of the water needs of Tacoma's project partners, Lakehaven Utility District, Covington Water District and the City of Kent; and

WHEREAS, Cascade is contracting for, and has plans to construct additional water supplies to supplement its existing water supplies to meet its immediate and long-term water supply needs; and

WHEREAS, Tacoma and Cascade are each seeking cost effective ways to utilize available regional capacity, and to plan for water resources to meet the full future water supply needs of their respective customers; and

WHEREAS, Cascade could make beneficial use of available supply in Tacoma's Second Supply Project both permanently and in the near term until such time as other water resources are available to meet the needs of Cascade and its member utilities; and

WHEREAS, Cascade wishes to purchase from Tacoma, and Tacoma wishes to sell to Cascade a supply of water both permanently and for a finite period of years.

NOW, THEREFORE, the Parties agree as follows.

1. DEFINITIONS

1.1 When used with initial capitalization in this Agreement, the following terms shall have the meanings set forth below.

1.1.1 "Due Date" means the date by which payment of any invoice issued pursuant to section 10 of this Agreement is due to Tacoma, which date shall be the close of business on the thirtieth (30th) day after an invoice is issued, provided, however, that if such thirtieth day falls on a Saturday, Sunday or legal holiday observed by Tacoma, the Due Date shall be extended until the close of business of the next regular business day of Tacoma.

1.1.2 "Effective Date" shall have the meaning given such term in section 3.

1.1.3 "Flow Control Valve" means the valve located in the vicinity of the Point(s) of Delivery for Cascade that controls the volume of water that is delivered to Cascade.

1.1.4 "Howard Hanson Dam Additional Storage Project" or "Storage Project" shall have the meaning given such term in the Project Agreement.

1.1.5 "Implementation Agreement" means a written agreement executed by the Superintendent of Tacoma Water and the General Manager of Cascade setting out the understandings of the Parties regarding the implementation and administration of this Agreement as set forth in section 2.

1.1.6 "Initial Delivery Date" means the date on which Tacoma actually commences delivery of wholesale water pursuant to the terms of this Agreement.

1.1.7 "Interest Rate" means for each day that it is applied a rate equal to one-three hundred and sixty-fifth (1/365) of the prime interest rate for preferred customers established from time to time by the Bank of America, or such other bank as may be designated by the Parties, plus three (3) percentage points.

1.1.8 "Interconnection Facilities" mean the facilities, other than the Wholesale Service Connection, that need to be constructed by Cascade to take delivery of wholesale water through the Wholesale Service Connection and convey such water to Cascade's transmission main.

1.1.9 "Isolation Valve" means a positive shut off valve that shall be

installed at the location in each water system that is used to accept or deliver water through the Wholesale Service Connection.

1.1.10 "Minimum Monthly Bill" shall have the meaning given such term in section 9.2.

1.1.11 "Operating Year" means any consecutive twelve (12) month period commencing on each July 1st, and ending on the following June 30th.

1.1.12 "Pea k Season" means the period starting June 1 and ending September 31 during each year during the Term.

1.1.13 "Peaking Factor" means the factor set forth in section 6.3.

1.1.14 "Project Agreement" means the Second Supply Project Agreement between the City of Tacoma and the City of Kent, Covington Water District and Lakehaven Utility District.

1.1.15 "Project Operator" means Tacoma in its role as the party responsible for the operation and maintenance of the Tacoma Second Supply Project.

1.1.16 "Requested Initial Delivery Date" means the date designated by Cascade pursuant to section 5.2 for Tacoma to commence delivery of wholesale water pursuant to section 6 of this Agreement.

1.1.17 "Second Diversion Right or Permit and First Diversion Claim" means those water rights that authorize Tacoma to divert and use water from the Green River (together, the Diversion Rights).

1.1.18 "Surcharge Rate" means a rate equal to four times the highest wholesale water rate for sales to Cascade for the period of excess use.

1.1.19 "TMC" means the City of Tacoma 's Municipal Code.

1.1.20 "Uncontrollable Force" means any event or occurrence that is beyond the reasonable control of a Party and which by the exercise of due diligence and reasonable foresight such Party could not have reasonably been expected to avoid or remove, and includes but is not limited to flood, earthquake, storm, accident, fire, lightning and other natural catastrophes, epidemic, war, labor or material shortage, strike or labor dispute, acts of terrorism or sabotage, and also includes restraint by an order of a court of competent jurisdiction or by regulatory authorities against any action taken or not taken by a Party, after a good faith effort by such Party to obtain: (a)

relief from such order; or (b) any necessary authorizations or approvals from any governmental agency or regulatory authority.

1.1.21 "Wholesale Service Connection" means a physical connection between water mains of the Parties to this Agreement, at a specifically identified point or points, where water will be transferred from one Party's system to the facilities of the other Party.

1.1.22 "Wholesale Water Sales" means sales of water by Tacoma to entities that are not retail customers of Tacoma and which resell to end users the water that they purchase from Tacoma.

2. IMPLEMENTATION AGREEMENTS AND EXHIBITS TO THE AGREEMENT

2.1 The Superintendent of Tacoma Water and the General Manager of Cascade may, at their discretion, execute Implementation Agreements regarding the implementation or administration of this Agreement in a manner that does not affect the substantive rights of the parties under this Agreement.

2.2 The following exhibits, which are attached to this Agreement, are hereby made a part of and incorporated into this Agreement as if fully set forth herein:

Exhibit A - Map locating the Wholesale Service Connection, delivery meter and related facilities.
Exhibit B - Sample Weekly Operations Report
Exhibit C - Arbitration Procedures

The Superintendent of Tacoma Water and the General Manager of the Cascade are authorized to prepare Exhibits showing the Wholesale Service Connection and the location of the delivery meter upon the installation of those facilities and to adopt such Exhibits for purposes of this Agreement.

2.3 If and to the extent that there is a conflict between the terms set forth in an Implementation Agreement or in any of the foregoing Exhibits and those set forth in the body of this Agreement, the terms set forth in the body of this Agreement shall prevail.

3. EFFECTIVE DATE AND TERM OF THE AGREEMENT

3.1 This Agreement shall take effect when executed by the Parties, and shall remain in full force and effect until the date that Tacoma ceases making Wholesale Water Sales, unless terminated (in whole or in part) earlier in accordance with sections 11, 12 or 24 ("Term"). The Term of this Agreement may be extended by written agreement of the Parties.

3.2 All obligations incurred during the Term shall survive the termination or expiration of this Agreement.

4. SALE AND PURCHASE OF WHOLESALE WATER

4.1 For the Term of this Agreement, Tacoma agrees to sell and make available to Cascade, and Cascade agrees to accept delivery of and pay for quantities of wholesale water, all pursuant to the provisions of this Agreement.

4.2 The water sold by Tacoma to Cascade pursuant to this Agreement shall be water available from the Diversion Rights. The use made of such wholesale water shall be subject to the restrictions on the place of use applicable to the Diversion Rights, copies of which have been provided to Cascade by Tacoma.

5. COMMENCEMENT OF WHOLESALE WATER DELIVERIES

5.1 Tacoma shall stand ready to commence deliveries of the amounts of wholesale water set forth in section 6 not later than October 1, 2008. If the Howard Hanson Storage Project is not operational by October 1, 2012, then Tacoma may, based on Tacoma's forecast of its water supplies without the Howard Hanson Storage Project, reduce its obligation to sell water to Cascade under section 6.2 (including a reduction to zero deliveries) by providing written notice to Cascade of such reduction to its water deliveries not less than ninety (90) days prior to the date the adjusted deliveries will commence.

5.2 Except as provided in section 5.1 deliveries of wholesale water by Tacoma to Cascade pursuant to section 6 shall commence on the Requested Initial Delivery Date designated by Cascade by written notice provided to Tacoma not less than ninety (90) days prior to the Requested Initial Delivery Date, which date cannot occur prior to October 1, 2008.

6. WHOLESALE WATER SUPPLY

6.1 From the Initial Delivery Date until the date that Tacoma ceases making Wholesale Water Sales, Tacoma shall make available to Cascade at the Wholesale Service Connection wholesale water in the amount of four million gallons per day (4 MGD) at a uniform hourly delivery rate.

6.2 In addition to the wholesale water deliveries set forth in section 6.1, on and after the Initial Delivery Date, Tacoma shall make available to Cascade at the Wholesale Service Connection wholesale water in the following amounts:

6.2.1 From the Initial Delivery Date through December 31, 2026, six million gallons per day (6 MGD) at a uniform hourly delivery rate.

6.2.2 From January 1, 2027 through December 31, 2027, 4 million gallons per day (4 MGD) at a uniform hourly delivery rate.

6.2.3 From January 1, 2028 through December 31, 2028, three million gallons per day (3 MGD) at a uniform hourly delivery rate.

6.2.4 From January 1, 2029 through December 31, 2029, two million gallons per day (2 MGD) at a uniform hourly delivery rate.

6.2.5 From January 1, 2030 through December 31, 2030, one million gallons per day (1 MGD) at a uniform hourly delivery rate.

6.2.6 On and after January 1, 2031, Tacoma shall have no obligation to provide to Cascade and Cascade shall have no right to receive from Tacoma wholesale water deliveries pursuant to this section 6.2.

6.3 The wholesale water deliveries set forth in sections 6.1 and 6.2 may, as requested by Cascade, be increased during the Peak Season by a Peaking Factor of 1.33. For example, application of the Peaking Factor to the wholesale water deliveries set forth in section 6.1 would result in deliveries of 5.32 million gallons per day.

6.4 Cascade may request in writing that Tacoma investigate the feasibility of providing to Cascade wholesale water on a temporary basis in addition to the amounts set forth in sections 6.1 and 6.2. The written request from Cascade to Tacoma shall state with specificity the wholesale water amounts requested (including Peak Season deliveries), the requested commencement date and termination date of such deliveries. Upon receipt of such written request, Tacoma will review its water demand and supply forecasts expeditiously to determine if, in the sole judgment of Tacoma, it will have sufficient water supplies to fulfill the request for additional deliveries of wholesale water in whole or in part. In the event that Tacoma determines that it can fulfill, in whole or in part, the request of Cascade for additional deliveries of wholesale water, such additional deliveries shall be priced according to Tacoma's wholesale water rate, which additional supply shall be subject to the Surcharge Rate only if Cascade takes such temporary water in excess of the amounts which Tacoma has agreed to supply. Tacoma and Cascade shall, prior to the commencement of such additional deliveries, execute an agreement setting forth all of the terms and conditions applicable to such additional temporary deliveries.

7. WHOLESALE WATER QUALITY, DELIVERY PRESSURE AND METERING

7.1 The quality of wholesale water made available to Cascade pursuant to section 6 shall be in compliance with all applicable state and federal drinking water laws, regulations and standards, and at the pressures agreed to by the Parties.

7.2 The amounts of wholesale water made available to Cascade will be measured by a delivery meter located at or in the vicinity of the Wholesale Service Connection, as agreed to by the Parties.

8. WHOLESALE SERVICE CONNECTION AND INTERCONNECTION FACILITIES

8.1 All costs associated with the design and construction of the Wholesale Service Connection, including the water main, service pipe, automated remote valve shut off, meter(s), appurtenances and vaults, shall be the responsibility of Cascade. Tacoma shall be responsible for preparation of the design of the Wholesale Service Connection and for the cost of repair and maintenance of the Wholesale Service Connection up to and including the outlet of the meter. The meter(s) shall be located as close to the Wholesale Service Connection as possible. Tacoma will coordinate the design and construction of the Wholesale Service Connection with Cascade. All Wholesale Service Connections with Tacoma are required to have automated meter reading (AMR) installed on them. Cascade will be responsible for the costs of installing the phone connection for the AMR and the costs to install the equipment with the meter.

8.2 Cascade shall be responsible for designing, engineering, permitting, constructing and financing any and all Interconnection Facilities necessary for Cascade to accept delivery of the wholesale water made available by Tacoma pursuant to section 6.

8.3 Cascade will submit to Tacoma for review, revision and approval the designs, specifications and construction schedule for the Interconnection Facilities. Tacoma will not unreasonably delay its review of designs, specifications and construction schedules submitted to it by Cascade, and will not unreasonably withhold its approval of such designs, specifications and construction schedule.

8.4 Cascade will not commence construction of the Interconnection Facilities unless and until Cascade has received from Tacoma approved designs, specifications, and construction schedule (as such documents may be revised by Tacoma).

8.5 Cascade will construct and operate the Interconnection Facilities in a manner that is consistent with the provisions of all permits, regulatory approvals and agreements governing the construction and operation of the Second Supply Project.

8.6 Prior to the submission to Tacoma of designs, specifications and construction schedule for the Interconnection Facilities, Cascade and Tacoma will negotiate a mutually agreeable amount of compensation payable by Cascade to Tacoma for the use of any property, rights of way and for work performed by Tacoma staff and consultants in facilitating the construction of Interconnection Facilities, exclusive of the activities undertaken by Tacoma pursuant to section 8.3.

8.7 Cascade agrees that Tacoma owns the Isolation Valve directly off of the Tacoma system, piping from the Tacoma Isolation Valve to the meter, the meter vault and the meter and telemetry equipment, all as will be set forth on Exhibit A. Maintenance and operation costs for this equipment are the responsibility of Tacoma. Any capital costs related to this equipment, including upgrades or replacement and renewal are the responsibility of Cascade.

8.8 The Wholesale Service Connection shall be governed by the terms of this Agreement. No future Wholesale Service Connections shall be permissible without a subsequent and separate written agreement between the Parties. Neither Party shall be obligated to agree to or execute any agreement or permit with the other Party to construct additional Wholesale Service Connection(s).

9. PRICING OF WHOLESALE WATER

9.1 Commencing with the month in which deliveries of wholesale water to Cascade pursuant to section 6 begin, and for each month thereafter during the Term, Cascade will pay to Tacoma a monthly payment equal to the amount of wholesale water delivered in such month, as measured at the delivery meter, times the wholesale water service rate plus the readiness to serve charge as set forth in TMC Section 12.10.400 of the City of Tacoma Water Rates and Regulations (or the successor TMC Section), subject to Cascade's obligation to pay the Minimum Monthly Bill in accordance with section 9.2

9.2 Regardless of whether Cascade has or has not established a Requested Initial Delivery Date, Cascade shall for the period 2009 through 2026 pay not less than the Minimum Monthly Bill. The Minimum Monthly Bill shall be determined by multiplying the Minimum Daily Purchase Amount ("P") set forth below, times the number of days in each month ("D"), times the wholesale water service rate ("R"), (P x D x R = monthly minimum payment).

Calendar Year	Minimum Daily Purchase Amount (in MGD)
2009	2.0
2010	2.0
2011	2.0
2012	3.0
2013	3.0

2014	3.0
2015	4.0
2016	4.0
2017	4.0
2018	5.0
2019	5.0
2020	6.0
2021	6.0
2022	7.0
2023	7.0
2024	8.0
2025	8.0

Provided, however, after the Initial Delivery Date, whenever Tacoma declares a supply curtailment or cannot otherwise deliver the minimum water supply Cascade shall be billed only for the water actually delivered.

9.3 In the event that the sum of the Minimum Monthly Bills for a calendar year exceeds the sum of the payments made by Cascade during such calendar year pursuant to Section 9.1, then Tacoma will bill Cascade in February of the immediately following calendar year during the period of 2010 through 2026 the amount by which the sum of the Minimum Monthly Bills for such calendar year exceeded the payments made pursuant to Section 9.1 during such calendar year.

9.4 The water service rate and the readiness to serve charge may be periodically adjusted and shall be applicable as set forth in the rate schedule as adopted by the Public Utility Board and Tacoma City Council.

9.5 Cascade shall pay Tacoma System Development Charges ("SDCs") of $16,484,000 for water supplied pursuant to section 6.1 as follows:

9.5.1 Within one-hundred and twenty (120) days of the Effective Date, Cascade will pay Tacoma an initial payment of twenty percent (20%) of the SDCs or $3,296,800.

9.5.2 After such initial payment, the remaining balance of the SDCs will be paid in not more than ten (10) equal annual payments, with the first such payment due on the first anniversary of the Effective Date and thereafter on each successive anniversary until the SDCs are paid in full.

9.6. Cascade shall pay Tacoma a Capacity Reservation Fees ("CRFs") of $9,420,442 for water supplied pursuant to section 6.2 as follows:

9.6.1 Within one-hundred and twenty (120) days of the Effective Date, Cascade will pay Tacoma an initial payment of twenty percent (20%) of

the CRFs or $1,884,088.

9.6.2 After such initial payment, the remaining balance of the CRFs will be paid in not more than ten (10) equal annual payments, with the first such payment due on the first anniversary of the Effective Date and thereafter on each successive anniversary until paid in full.

9.7 In addition to the annual payments pursuant to sections 9.5 and 9.6, Cascade will on the same date pay Tacoma interest calculated on a monthly basis (the first day of every month) on the outstanding unpaid balance of the SDCs and CRFs calculated using the prime interest rate, as reported by the Wall Street Journal ten days before the date that the monthly interest calculation is made, minus two percent (2%). Cascade may, at its election, prepay all or any portion of the SDCs and/or CRFs outstanding balance, in which case the interest accrued to the date of such prepayment shall also be paid to Tacoma, and the remaining unpaid balance shall be paid in equal installments.

9.8 If Tacoma exercises its option pursuant to section 5.1 to reduce water deliveries under section 6.2, then the CRFs payable under section 9.6 will be reduced proportionately. For example, if the total deliveries under section 6.2 are reduced by Tacoma by twenty percent (20%), then the total amount of CRFs payable under section 9.5 will be reduced by twenty percent (20%). Such reduction will be accomplished by first eliminating any CRFs not yet paid by CWA, and then by Tacoma refunding to Cascade any CRFs (or portions thereof) already paid starting with the most recent CRFs payment made by Cascade until such proportionate reduction is achieved. Any such refunds shall include interest calculated from the date of payment to the date of the refund, at the interest rate described in section 9.7. Any such refund shall be paid by Tacoma to Cascade within ninety (90) days of the notice issued pursuant to section 5.1.

9.9 An interest component will be paid by Tacoma to Cascade on the CRF payments eliminated or refunded pursuant to section 9.8. For the CRFs (or portions thereof) that are eliminated or refunded pursuant to section 9.8, the interest component will be calculated from the Effective Date to the date the payment of any refund is due pursuant to section 9.8. Such interest component will be the sum of the annual interest calculated for each of the years that the amount refunded or eliminated was outstanding, using the interest rate for each such year charged Cascade by Tacoma pursuant to section 9.7.

10. PAYMENTS

10.1 Tacoma shall prepare and forward to Cascade in the first week of each month during the Term an invoice for the payment of amounts due pursuant to this Agreement for the preceding month. Each such invoice shall set forth the payment due from Cascade to Tacoma. In addition, during the first week of each February during the

2010 through 2026 period, when required pursuant to section 9.3, Tacoma shall prepare and forward to Cascade an invoice for any amounts due to Tacoma under section 9.3.

10.2 Cascade may request from Tacoma, and Tacoma shall promptly provide to Cascade, any documentation or other information that Cascade may reasonably require to understand the nature of the costs contained in any invoice issued pursuant to this section 10.

10.3 Payment of any and all invoices forwarded to Cascade by Tacoma pursuant to this section 10 shall be due and payable by Cascade on or before the Due Date, with payment to be made by wire transfer or such other means as agreed to by Tacoma and Cascade.

10.4 If full payment of any invoice is not received by Tacoma on or before the Due Date, such payment shall be considered past due, and the unpaid amount of such invoice shall accrue interest at the Interest Rate. Further, if an invoice or any portion thereof remains unpaid for a period of thirty (30) days after the Due Date, Tacoma may elect to suspend deliveries due to Cascade pursuant to section 6 until Cascade has paid all amounts due and owing, and any late payment charges due thereon.

10.5 If Cascade disputes all or any portion of an invoice issued by Tacoma pursuant to this section 10, Cascade shall pay such invoice in full, and shall indicate in writing to Tacoma the portions of the invoice that Cascade disputes and the reasons therefore. The Parties shall make a good faith effort to resolve such dispute. If such efforts are unsuccessful, either Cascade or Tacoma may seek resolution of the dispute pursuant to section 21.

10.6 If the resolution of any dispute over an invoice, whether by agreement of the Parties or by dispute resolution pursuant to section 21, results in the payment of money from Tacoma to Cascade, such payment shall include an interest payment for the period commencing with the date the disputed invoice was paid, and ending on the date the payment resolving the dispute is made to the Cascade, calculated using the Interest Rate.

10.7 Cascade hereby covenants and agrees that it shall establish, maintain and collect rates or charges for water and other services, facilities and commodities sold, furnished or supplied by it to its members which shall be adequate to provide revenues sufficient to enable Cascade to make the payments required to be made pursuant to the terms of this Agreement, and to pay all other charges and obligations payable from or constituting a charge or lien upon such revenues.

10.8 Payments by Cascade of SDCs, CRFs or of amounts under each invoice issued pursuant to this section 10 shall constitute an operating expense for water purchased by Cascade.

11. PLANNING AND COORDINATION

11.1 Cascade will develop a long-term supply plan and acquire additional water supplies to establish a firm supply for its members. Cascade shall provide to Tacoma a copy of such long-term supply plan, which plan shall also demonstrate that Cascade has planned for and has the ability to develop sufficient water supplies for its members to replace the wholesale water deliveries set forth in section 6.2 upon the expiration of such water delivery obligation under this Agreement. If Cascade cannot demonstrate by December 1, 2015 to the satisfaction of Tacoma that it will develop sufficient replacement water supplies to replace the water sale set forth in section 6.2, then the water delivery obligation set forth in section 6.2 may be terminated in whole or in part by Tacoma no sooner than January 1, 2016 by providing Cascade written notice of such termination six months prior to date of termination established by Tacoma in such written notice. In such event, the water delivery obligation of Tacoma to Cascade under this Agreement shall be limited to the delivery obligation set forth in sections 6.1 and 6.3.

11.2 In the event that Tacoma exercises it right to terminate its entire delivery obligation under section 6.2 pursuant to section 11.1, then Tacoma will make a payment to Cascade not later than sixty (60) days after the effective date of such termination. If such termination occurs in 2016, the payment from Tacoma to Cascade will be the sum of $4,148,111. If such termination occurs in any year subsequent to 2016, the payment due from Tacoma to Cascade shall be reduced by the amount of $415,000 for each year after 2016 that such termination occurs. If Tacoma only terminates its delivery obligation under section 6.2 in part, then the payment due from Tacoma to Cascade will be prorated to reflect the percentage of the total water deliveries under section 6.2 that were terminated pursuant to section 11.1. For example, if twenty percent (20%) of the total water delivery obligation under section 6.2 is terminated pursuant to section 11.1, then the payment due by Tacoma to Cascade will equal twenty percent (20%) of $4,146,111.

11.3 The Parties will seek to adopt conservation plans and to coordinate regional supply scheduling and other operational programs that promote efficient use of water supplies, facilities, financial and staff resources.

12. TERMINATION OF THE SECTION 6.2 WATER DELIVERIES

If after October 1, 2008 Tacoma has stood ready to serve water pursuant to Section 6 for a five year period, and during such period Cascade has not established a Requested Initial Delivery Date for the delivery amounts set out in section 6.2, then Tacoma may terminate its water delivery obligations under section 6.2 of this Agreement by providing Cascade written notice of such termination not less than one hundred eighty (180) days prior to the date of termination specified in such notice. In the event of such termination, Cascade shall not be obligated to make any further annual payments under section 9.6. The permanent supply purchased by Cascade under section 6.1 of this Agreement, and all payment obligations associated therewith, shall be unaffected by such termination.

13. WATER MANAGEMENT AND SCHEDULING

13.1 Not later than May 1 of each year during the Term prior to a year in which deliveries will be made pursuant to section 6, Cascade will submit to Tacoma a written draft operating plan for the next Operating Year. Each such draft operating plan will include, but not be limited to, the amount of Diversion Rights water that Cascade expects to receive pursuant to this Agreement in each week during the next Operating Year.

13.2 Scheduling Delivery of Wholesale Water within an Operating Year

13.2.1 Prior to 10:00 A.M. on any Thursday during each Operating Year, Cascade may submit to Tacoma, in the manner and in the form established by Tacoma, a schedule for wholesale water deliveries for the following seven (7) days. Such schedule shall contain at a minimum a uniform rate of water deliveries for each day of the schedule, and shall take effect on the day following the Thursday the schedule is submitted. Schedules so submitted shall remain in effect until replaced by a subsequent schedule submitted in accordance with this subsection 13.2.1. Tacoma shall take all reasonable actions required to ensure that the amount of wholesale water scheduled by Cascade is available to it.

13.2.2 Tacoma may revise schedules submitted pursuant to subsection 13.2.1, if and to the extent any such schedule calls for deliveries that are in excess of Cascade's rights under this Agreement or is inconsistent with Project operating constraints. Tacoma shall notify Cascade if its schedule is revised pursuant to this subsection 13.2.2. In the event that a change in circumstances necessitates a change to a schedule then in effect, Cascade may request a change to such schedule, and Tacoma shall take all reasonable actions to accommodate such schedule change.

13.3 As Project Operator, Tacoma reserves the right to revise schedules submitted by Cascade as Tacoma determines may be necessary to comply with permits, authorizations, regulations or orders applicable to the Project, or to deal with Uncontrollable Forces that affect the ability to fulfill such schedules. Tacoma will provide Cascade with as much notice as is practicable under the circumstances of any such revision, and Tacoma shall treat Cascade the same as other wholesale customers in making such revisions.

14. METER OWNERSHIP, CALIBRATION AND MAINTENANCE

14.1 The cost of installing the initial and any replacement delivery meter shall be borne by Cascade.

14.2 Tacoma shall be responsible for the calibration and testing of the delivery meter. No less frequently than once each year the delivery meter shall be tested for accuracy, and the results of such testing shall be made available to Cascade at no charge. The costs of the annual delivery meter test shall be billed to Cascade. In addition to the annual meter test, Cascade may test the delivery meter at any reasonable time and at Cascade's expense. The results of any additional delivery meter test shall be made available to Tacoma at no charge.

14.3 Tacoma shall establish the size and the flow range within which the delivery meter must operate. Should Tacoma determine that the delivery meter is operating outside the flow range so established, it shall notify Cascade in writing of such operation, and the size of the replacement meter needed to operate within the flow range. Tacoma shall provide Cascade an opportunity to discuss the problem with the existing delivery meter, and the need for the proposed replacement delivery meter. After providing such written notice, Tacoma may replace the faulty delivery meter and bill Cascade for the costs of procuring and installing such meter, and Cascade shall be obligated to pay such bill.

14.4 The Flow Control Valve for Cascade shall be owned by and shall be under the control of Cascade. Cascade shall be responsible for the operation and control of its Flow Control Valve. Upon reasonable notice to Cascade, Tacoma shall have the right to enter the meter and/or valve vault or vaults of Cascade for any reason related to this Agreement or the Project Agreement.

14.5 Tacoma shall have access to, but not control of, the control signals from each meter station, and access to the vault in which the delivery meter is located. The costs of equipment necessary to receive any such control signals shall be borne by Cascade.

15. WHOLESALE WATER DELIVERIES IN EXCESS OF SCHEDULES

15.1 Nothing in this Agreement shall prohibit Cascade from requesting, or Tacoma from agreeing to deliver, permanent wholesale water in excess of the limits set forth in section 6.

15.1.1 Such agreed upon deliveries will not be subject to the Surcharge Rate.

15.1.2 Unless otherwise agreed to by the Parties, such deliveries shall be priced in accordance with section 9.1; provided that additional permanent water shall be subject to a full SDC offset by a credit in the amount of any Capacity Reservation Fee paid for water supplied pursuant to section 6.2 converted to permanent supply.

15.2 Should Tacoma determine that Cascade is receiving deliveries of wholesale water at the Wholesale Service Connection in excess of its scheduled amounts, Tacoma shall notify Cascade of the excess deliveries, and Cascade shall promptly take the steps necessary to reduce its deliveries to amounts equal to its scheduled amounts, or to revise its schedules to reflect the level of deliveries it is receiving.

15.3 If Cascade has not taken action to revise its schedules or to reduce its deliveries to a level equal to its scheduled amounts within twenty-four hours of receiving notice from Tacoma pursuant to subsection 15.2, Tacoma may take any action it deems necessary to reduce the deliveries to a level equal to Cascade's scheduled amounts, and charge Cascade the Surcharge Rate for any excess deliveries made after the expiration of the twenty-four hour notice period.

16. SHARING WATER SHORTAGES

In the event there is a water shortage or drought that requires Tacoma to institute a water rationing or water use restriction program for Tacoma's retail customers, Tacoma will institute reductions to deliveries of wholesale water made pursuant to this Agreement that are comparable in magnitude and duration to those Tacoma imposes on its retail customers.

17. TITLE AND RISK OF LOSS

Title and risk of loss to wholesale water delivered by Tacoma to Cascade pursuant to section 6 of this Agreement will pass from Tacoma to Cascade when such wholesale water reaches that portion of the Interconnection Facilities owned by Cascade.

18. REGULATORY COMPLIANCE

Cascade understands and agrees that the operation of the Project, and the water available from the Diversion Rights is subject to permits, authorization, and the jurisdiction of regulatory agencies and courts with the authority to issue orders and regulations regarding the Project and the Diversion Rights water. Cascade understands and agrees that Tacoma as Project Operator must comply with all such valid permits, authorizations, orders and regulations, and that such valid permits, authorizations, orders and regulations may affect the ability of Tacoma to fulfill its wholesale water deliveries under this Agreement.

19. NO RIGHT OR CLAIM TO WATER

Cascade and each of its members agrees that they have only a contract right to wholesale water as set forth in section 6 of this Agreement, and further agrees they have no claim or right to a supply of water from Tacoma upon the expiration or termination of this Agreement on any basis whatsoever.

20. AUDITS AND ACCESS TO RECORDS

Upon reasonable prior notice to Tacoma, Cascade, or any consultant of Cascade, shall be given access during normal business hours to the books, records and accounts related to this Agreement in the possession of Tacoma at the location where such books, records and accounts are located. Tacoma shall not be obligated to collate, organize or analyze the information sought by Cascade or by Cascade's consultant. Cascade shall pay Tacoma its established rate for any documents reproduced for Cascade or its consultant.

21. DISPUTE RESOLUTION

21.1 Any and all disputes arising under this Agreement shall be resolved pursuant to this section 21.

21.2 The Parties shall make good faith efforts to resolve by informal discussion any dispute arising under this Agreement.

21.3 If at any time during the good faith efforts to resolve any dispute arising under this Agreement either of the Parties determines that such informal discussions will not result in a resolution of the issue(s) in dispute, such Party may initiate the dispute resolution process in accordance with Exhibit C. Any such dispute resolution process shall be conducted pursuant to the provisions of Exhibit C.

21.4 In the event that a Party moves to set aside or modify the final report of the referee in court, and that Party is not the prevailing party in the final disposition of the dispute through the judicial proceedings (including any appeals), then the moving Party will be obligated to pay all of the costs incurred by the other Party in the dispute resolution process (including any judicial proceedings), which costs shall include, but not be limited, to attorneys fees.

21.5 Pending resolution of any dispute, the Parties shall continue to fulfill their respective duties under this Agreement.

22. UNCONTROLLABLE FORCES

22.1 A Party shall not be in breach of this Agreement as a result of such Party's failure to perform its obligations under this Agreement, other than the obligation to pay money when due and owing, when such failure is due to an Uncontrollable Force, to the extent that such Party, despite the exercise of due diligence, is unable to remove such Uncontrollable Force. Nothing in this Agreement shall be construed to require any Party to prevent or settle any strike or labor dispute in order to obtain relief under this section 22.

22.2 Any Party subject to an Uncontrollable Force that may impair its performance under this Agreement shall notify the other Party as soon as practicable. Any

Party subject to an Uncontrollable Force shall be excused from performance under this Agreement only for the duration of and to the extent of the Uncontrollable Force. Any Party subject to an Uncontrollable Force shall take all reasonable actions to remove the Uncontrollable Force. Neither the occurrence of an Uncontrollable Force nor the provisions of this section 22 shall relieve any Party of its obligation to pay money when due under the terms of this Agreement.

22.3 Uncontrollable Force shall not relieve Cascade of its payment obligations hereunder, except that Cascade shall not be required to make payments pursuant to section 9.1 for more than 6 months after water deliveries from Tacoma cease, and Cascade's obligation to make payment under section 9.1 shall not be reinstated until monthly water deliveries from Tacoma re-commence.

23. NOTICES

23.1 All notices, requests, demands, waivers, consents and other communications required hereunder shall be in writing, and shall be delivered by one or more of the following means: (i) in person, (ii) by overnight delivery service, (iii) by first class mail with postage prepaid, (iv) by facsimile providing confirmation of completed transmission, or (v) by such other means as may be approved by the Parties. Service of any such notice, request, demand, waiver, consent or other communication shall be deemed to have been duly given and to have become effective upon receipt.

23.2 Any and all notices, demands, waivers, consents and other communications shall be forwarded to each of the Parties at the following addresses:

To Tacoma:
Water Superintendent
Tacoma Water
P. O. Box 11007
Tacoma, WA 98411

To Cascade:
Manager
Cascade Water Alliance
1400 112th Avenue S.E. – Suite 220
Bellevue, WA 98004

23.3 Either Party may change the address to which notices shall be sent by giving notice of such change in accordance with subsection 23.1.

24. DEFAULT OF OBLIGATION

24.1 If Cascade fails to make any payment in full when due under this Agreement for a period of ninety (90) days or more after the Due Date, Tacoma shall make written demand upon Cascade to make payment in full within ten (10) days of the

date of such written demand. If the failure to pay is not cured with the ten (10) day time period, Cascade shall be deemed to be in default.

24.2 In addition to the remedies provided in section 10, if Cascade has been in default of payment for a period of sixty (60) days or more, then Tacoma may terminate this Agreement by providing Cascade with written notice not less than six (6) months prior to the date of termination set forth in such written notice.

25. REPRESENTATIONS AND WARRANTIES

25.1 The Parties hereby represent and warrant to one another the following:

25.1.1 Each Party is duly authorized and validly existing under the laws of, and is authorized to exercise it powers, rights and privileges and is in good standing in, the State of Washington, and has full power and authority to carry on its business as presently conducted and execute this Agreement and perform the transactions on its part contemplated by this Agreement.

25.1.2 The execution, delivery and performance of this Agreement, and the consummation of the transactions contemplated hereby have been duly authorized by the appropriate board or council, and no other act or proceeding on the part of any Party is necessary to authorize this Agreement, or the transactions contemplated hereby.

25.1.3 The execution, delivery and performance by each of the Parties of this Agreement does not: (a) contravene any law; or (b) conflict with or result in a breach of or default under any material agreement or instrument to which any Party is a party or by which it is bound.

25.1.4 There are no actions, suits, claims or proceedings pending or, to the best of each Party's knowledge, threatened against either Party that is likely to impair the consummation or the transactions contemplated hereby.

25.1.5 This Agreement, when executed and delivered, will constitute a valid and binding obligation of each Party, and will be enforceable against each such Party in accordance with its terms.

26. ASSIGNMENT AND OTHER ARRANGEMENTS

The rights and obligations of this Agreement may not be sold, assigned or otherwise transferred in whole or in part by Cascade or Tacoma without the prior written consent of the other, which consent shall not be unreasonably withheld; provided that should Cascade dissolve, then Tacoma will extend to any individual member of Cascade,

or any combination thereof, the right to assume Cascade's rights and obligations under this Agreement.

27. WAIVERS

Except as otherwise provided herein or as agreed to by the Parties, no provision of this Agreement may be waived except as documented or confirmed in writing. Any waiver at any time by a Party of its rights with respect to a default under this Agreement or with any other matter arising in connection therewith, shall not be deemed a waiver with respect to any subsequent default or matter. Either Party may waive any notice or agree to accept a shorter notice than specified in this Agreement. Such waiver of notice or acceptance of shorter notice by a Party at any time regarding a notice shall not be considered a waiver with respect to any subsequent notice required by this Agreement.

28. AMENDMENTS

No change, amendment or modification of any provision of this Agreement shall be valid unless set forth in a written amendment to this Agreement signed by the Parties.

29. ENTIRE AGREEMENT

This Agreement sets forth the entire agreement of the Parties, and supersedes any and all prior agreements with respect to the subject matter of this Agreement. The rights and obligations of the Parties hereunder shall be subject to and shall be governed by this Agreement.

30. INTERPRETATION OF THE AGREEMENT

The Parties participated in the drafting of this Agreement. In interpreting this Agreement, no inference shall be drawn against either Party as the drafter of this Agreement. The headings used herein are for convenience of reference only, and shall not affect the meaning or interpretation of this Agreement.

31. GOVERNING LAW AND VENUE

This Agreement shall be governed by and construed in accordance with the laws of the State of Washington (regardless of the laws that might otherwise govern under applicable principles of conflicts of law of such state). Except in respect of a lawsuit or judicial action or proceeding commenced by a third party in another jurisdiction, the Parties (i) agree that any lawsuit, judicial action or proceeding arising out of or relating to this Agreement must be heard in the Superior Court of the State of Washington, in and for the County of Snohomish or Thurston, or the United States District Court for the Western District of Washington, (ii) waive any objection to the laying of venue of any such suit, action or proceeding, (iii) irrevocably submit to the jurisdiction of any such

court in any such lawsuit or judicial action or proceeding, and (iv) consent to service of process by mail in respect to any such lawsuit or judicial action or proceeding.

32. DUTY OF GOOD FAITH

The Parties agree that in taking actions or making determinations required or provided for under this Agreement, each Party shall act in fairness and in good faith.

33. COUNTERPARTS

This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the Parties have duly executed this Agreement on the date first above written.

City of Tacoma
Department of Public Utilities

By: _____

Title: Director of Utilities

Approved as form:

_____
Chief Assistant City Attorney

Cascade Water Alliance:

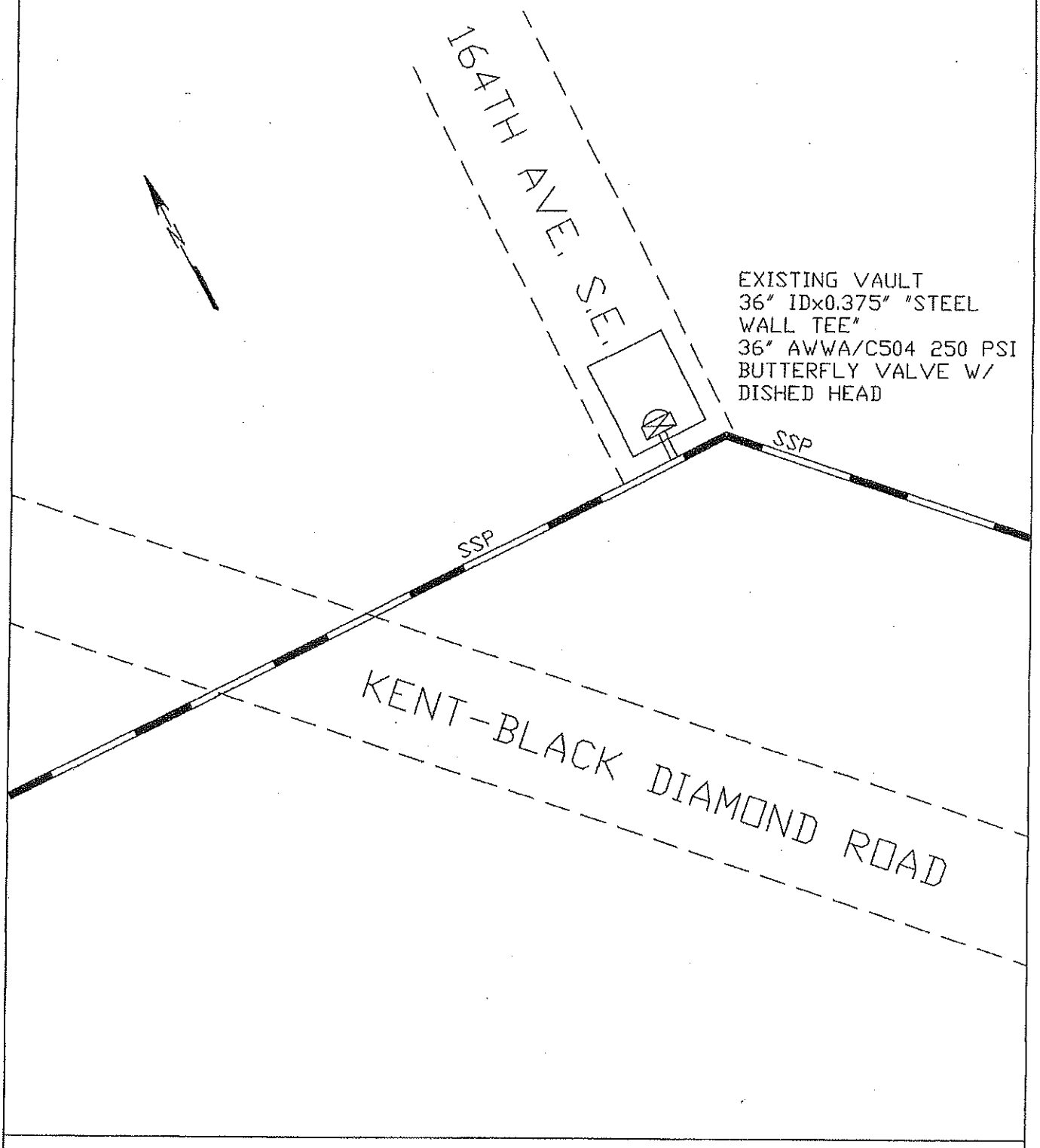
By: _____

Title: Chair

Approved as form:

_____

CONCEPTUAL WHOLESALE SERVICE CONNECTION TO CASCADE WATER ALLIANCE



DEPARTMENT OF PUBLIC UTILITIES – TACOMA WATER

Date 9/30/05 Project SSP W.O.	EXHIBIT 'A'	SCALE N.T.S.	
Design PML Drawn SRL Digitize SRL Check	MANAGER	DRAWING	

SAMPLE WEEKLY OPERATIONS REPORT
Exhibit 'B'

SSP Weekly 8 AM Operations Report — WEEK OF 12/26/2005 TO 1/1/2006

		Monday 29	Tuesday 30	Wednesday 31	Thursday 1	Friday 2	Saturday 3	Sunday 4
INSTANTANEOUS SOURCE DATA								
Howard Hanson Reservoir	-FEET							
Green River at Palmer	-CFS							
Limit at Palmer	-CFS							
Green River at Auburn	-CFS							
Limit at Auburn	-CFS							
Reservoir Inflow	-CFS							
Available 2nd Water Right Diversion	-MGD							
24 HOUR SOURCE DATA								
TOTAL DIVERSION	-MG							
1ST DIVERSION								
2ND DIVERSION								
HEADWORKS FLOW METER, P-1	-MG							
HEADWORKS FLOW METER, SSP	-MG							
NF WELLS	-MG							
WATER QUALITY DATA (P5 at Headworks)								
TURBIDITY (Max.) RIVER	-NTU							
FINISHED WATER	-NTU							
WATER TEMP. (Min.)	-F							
FLUORIDE (Ave.)	-mg/L							
CL RESIDUAL (Ave.)	-PPM							
UVT	%							
PH (Ave.)								
PARTICIPANT DELIVERY (previous day)								
TACOMA METER TOTAL	-MG							
ADJUSTED TOTAL	-MG							
SW 356TH & 15 AVE SW	-MG							
WHOLESALE CUSTOMER METERS	-MG							
CASCADE WATER ALLIANCE	-MG							
KENT METER TOTAL	-MG							
ADJUSTED TOTAL	-MG							
217th Ave SE 288th ST	-MG							
124TH AVE SE & SE 296TH ST	-MG							
120TH AVE SE & SE 296TH ST	-MG							
COVINGTON WD METER TOTAL	-MG							
ADJUSTED TOTAL	-MG							
22048 SE 288th St.	-MG							
188TH AVE SE & SE 304TH ST	-MG							
148TH AVE SE & SE 296TH ST	-MG							
LAKEHAVEN UD METER TOTAL	-MG							
ADJUSTED TOTAL	-MG							
44th AVE. S. & 313th SST	-MG							
1ST WAY S & S 332ND ST	-MG							
SW 356TH ST & 15TH AVE SW	-MG							
TOTAL OF ALL DELIVERY METERS	-MG							
DIFFERENCE FROM SSP METER	-MG							
% OF TOTAL								
TACOMA 2nd Div SHARE	-MG							
TACOMA O&M SHARE	-MG							
KENT 2nd div / O&M SHARE	-MG							
COVINGTON WD 2nd div / O&M SHAR	-MG							
LAKEHAVEN UD 2nd div / O&M SHARE	-MG							
PARTICIPANT SCHEDULES (previous day)								
TACOMA PROJECT	-MG							
TACOMA 1ST DIV	-MG							
KENT PROJECT	-MG							
KENT 1ST DIV	-MG							
COVINGTON WD PROJECT	-MG							
COVINGTON WD 1ST DIV	-MG							
LAKEHAVEN UD PROJECT	-MG							
LAKEHAVEN UD 1ST DIV	-MG							
SCHEDULE DEVIATIONS (previous day)								
TACOMA	-MG							
KENT	-MG							
COVINGTON WD	-MG							
LAKEHAVEN UD	-MG							

Exhibit C – Dispute Resolution Procedures

The following procedures shall govern the resolution of any dispute arising under the Agreement between the Parties that cannot be resolved by good-faith negotiations between the Parties, unless the Parties mutually agree to use different procedures to resolve a specific dispute by executing a document setting forth such different procedures. The Parties agree that these dispute resolution procedures are intended to be used in conjunction with and governed by R.C.W 4.48, and both Parties hereby waive their right to a trial by jury for any dispute arising under this Agreement.

1. The Party that believes that continued good-faith negotiations will not produce a resolution of the issue(s) that is the subject of such negotiations will notify the other Party in writing that they are invoking the dispute resolution procedures of this Exhibit C.

2. Within twenty (20) days of the date of such notice invoking the dispute resolution procedures of this Exhibit C, the Parties shall meet and select an individual to recommend to the court as referee of the dispute resolution process in accordance with R.C.W. 4.48.020. The Parties shall select an individual who is qualified as a juror as provided by statute, competent as a juror between the Parties, a duly admitted and practicing attorney, and has experience presiding over civil litigation of contract disputes. The Parties will use the following procedure to select the recommended referee:

    2.1 Each Party will make a list of three individuals that are qualified pursuant to section 2 to serve as referee and exchange such list with the other Party. If the Parties agree upon a person from either list, or if both Parties list the same person, that person will be the recommended referee.

    2.2 If the Parties are unable to agree upon a referee after exchanging their respective lists, they will make a joint list setting forth all six candidates from the two lists.

3. Upon the selection of the recommended referee, or the creation of the joint list pursuant subsection 2.2, the Party that invoked the dispute resolution procedures shall file a complaint in the superior court of the appropriate county as set forth in section 31 of the Agreement, setting forth the issues(s) in dispute, and the other Party shall file an answer to such complaint. Not later than twenty (20) days after the filing of the answer, the Parties shall jointly file a motion, with the Agreement (including Exhibit C) attached, with the court requesting an order of reference that:

    3.1 Directs that the issue(s) raised by the complaint and answer be resolved pursuant to R.C.W. 4.48 by reference to a referee;

3.2 Appoints pursuant to R.C.W. 4.48.020 either the recommended referee selected by the Parties pursuant to 2.1, or a single referee from the joint list prepared pursuant to subsection 2.2; and

3.3 Directs the referee conduct the proceeding in accordance with the procedures set out in sections 4-10 of this Exhibit C.

4. In accordance with R.C.W 4.48.060, the Parties hereby waive their rights to discovery and cross-examination, and direct that the proceeding be conducted in the same manner as a motion for summary judgment as follows:

4.1 The Parties shall present their respective positions by written briefs and affidavits, and without testimonial evidence or cross-examination;

4.2 Oral argument will be conducted before the referee; and

4.3 The burdens of proof and persuasion that pertain in a civil trial shall apply, rather than those that apply to motions for summary judgment.

5. After appointment of the referee, the Parties shall endeavor in good faith to prepare for the referee a joint statement of facts and the questions to be decided in the proceeding. In the absence of an agreed to joint statement of facts and questions to be decided, each Party may include its own statement of facts and questions to be decided in its initial brief.

6. Within ninety (90) days after the submission of the joint statement of facts and questions to be decided, or within ninety (90) days after the appointment of the referee if the Parties cannot agree to a joint submission of facts and questions to be decided, each Party shall submit to the referee a one page statement of the proposed resolution and/or award it seeks for each of the issues in dispute, and its initial brief. The statement and initial brief (excluding any attached affidavits or evidentiary documents) shall not exceed fifty (50) 8 ½ x 11" double spaced pages with 1 ½ inch margins, number 12 point type face. The statement and initial brief shall be filed simultaneously by e-mail and regular mail with the referee and opposing Party.

7. Within thirty (30) days after the date the Parties filed their initial briefs, the Parties shall file their respective reply briefs with the referee and the opposing Party. The reply briefs (excluding any attached affidavits or evidentiary documents) shall not exceed twenty-five (25) 8 ½ x 11" double spaced pages with 1 ½ inch margins, number 12 point type face. The reply briefs shall be filed simultaneously by e-mail and regular mail with the referee and opposing Party.

8. After the reply briefs have been filed, if the referee deems that additional responses are needed, then the referee may request the Parties file a

supplemental brief only as to those specific matters or questions raised by the referee. Such supplemental briefs shall be limited to fifteen (15) 8 ½ x 11" double spaced pages with 1 ½ inch margins, number 12 point type face, and filed at such time as requested by the referee. Any such supplemental briefs shall be filed simultaneously by e-mail and regular mail upon the referee and opposing Party.

9. When all briefs have been filed, the referee will schedule oral argument on the issue(s) in dispute.

10. After the completion of oral argument, the referee will prepare his/her proposed report in accordance with R.C.W. 4.48.70 and shall provide a copy of the proposed report to the Parties, who shall have the right to suggest changes and modifications to the proposed report, all in accordance with R.C.W. 4.48.110. The referee will file the final report with the court within twenty (20) days of the completion of the process under R.C.W.4.48.110.

11. Either Party may move the court to modify or set aside, in whole or in part, the final report of the referee. If the court modifies or sets aside, in whole or in part, the final report of the referee and makes another reference, then this Exhibit C shall also apply to such reference.

12. Except as provided in section 21 of the Agreement, each Party shall be responsible for its own costs of the dispute resolution process (including any judicial proceedings), and the Parties shall each pay one-half of the other costs of the dispute resolution proceeding, including the fees of the referee. The fees of the referee shall be established in accordance with R.C.W. 4.48.100.

CITY OF AUBURN WASHINGTON

Daily Cash Balance Report - Summarized

Printed: 03 May 2011, 11:00 AM
User: tashton

Date From: Wednesday, April 27, 2011 Date To: Wednesday, April 27, 2011

Payment Type	Debit	Credit	Net
Cash			
Payment	$1,621.32	$133.99	$1,487.33
Total for Cash	**$1,621.32**	**$133.99**	**$1,487.33**
Check			
Payment	$1,748,549.07	$40.00	$1,748,509.07
Total for Check	**$1,748,549.07**	**$40.00**	**$1,748,509.07**
Direct Deposit			
Payment	$839,114.35	$0.00	$839,114.35
Total for Direct Deposit	**$839,114.35**	**$0.00**	**$839,114.35**
Master Card			
Payment	$3,899.84	$0.00	$3,899.84
Total for Master Card	**$3,899.84**	**$0.00**	**$3,899.84**
Online Mastercard			
Payment	$145.00	$0.00	$145.00
Total for Online Mastercard	**$145.00**	**$0.00**	**$145.00**
Online Visa			
Payment	$347.00	$0.00	$347.00
Total for Online Visa	**$347.00**	**$0.00**	**$347.00**
VISA			
Payment	$3,349.53	$0.00	$3,349.53
Refund	$0.00	$300.00	($300.00)
Total for VISA	**$3,349.53**	**$300.00**	**$3,049.53**
Total	**$2,597,026.11**	**$473.99**	**$2,596,552.12**

RESOLUTION NO. 4008

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO TERMINATE EMERGENCY WATER SUPPLY INTERTIE AGREEMENT NO. 2 BETWEEN THE CITY OF AUBURN AND LAKEHAVEN UTILITY DISTRICT

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, the City of Auburn and Lakehaven Utility District entered into Emergency Water Supply Intertie Agreement #2 in 1998; and

WHEREAS, Lakehaven Utility District and City of Auburn Interlocal Agreement (Resolution No. 3652) establishing water service boundaries has been executed; and

WHEREAS, portions of the Lakehaven water system have been constructed to supply water to apportion of Auburn's PAA; and

WHEREAS, Auburn has evaluated water service issues and determined that it is not cost feasible to provide direct water service within its PAA above the 160-foot elevation adjacent to Lakehaven's water infrastructure; and

WHEREAS, Lakehaven's delivery of water service to these areas will provide the maximum efficiency in the use of existing and future facilities and water planning; and

WHEREAS, the constructed intertie facility is within the Lakehaven Utility District water service area and would need to be relocated to serve as an emergency connection; and

WHEREAS, if an emergency intertie is required one would be constructed at the location covered under emergency water supply agreement no.1.

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. The Mayor of the City of Auburn is herewith authorized to terminate the Emergency Water Supply Intertie Agreement No. 2 between the City and Lakehaven Utility District attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. This resolution shall be in full force and effect upon passage and signatures hereon.

DATED this 17th day of April, 2006.

CITY OF AUBURN

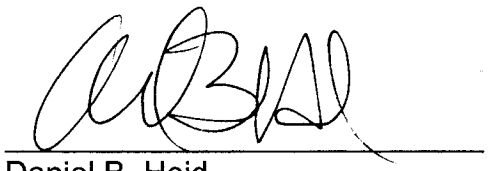
PETER B. LEWIS
MAYOR

ATTEST:



Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:



Daniel B. Heid,
City Attorney

EMERGENCY WATER SUPPLY AGREEMENT
Lakehaven/Auburn Intertie No. 2

THIS AGREEMENT made and entered into by and between the City of Auburn, hereinafter referred to as City, and Lakehaven Utility District, hereinafter referred to as "District".

WITNESSETH:

WHEREAS, the City has water facilities in the vicinity of a water main of the District, and

WHEREAS, the City can increase fire protection reliability for its customers if water is available from the District, and

WHEREAS, the District is willing to provide to the City service necessary to increase fire fighting reliability upon the terms and conditions set forth herein,

NOW, THEREFORE, IT IS MUTUALLY AGREED as follows:

1. The District hereby grants to the City the right to connect a water meter and appurtenances to the end of the 8-inch water main located in a vault at the intersection of "R" Street NW on Abby Drive in King County, Washington.

2. The meter described in Paragraph No. 1 herein is installed to increase fire fighting reliability or emergency water supply. Water shall not be withdrawn from the supply without the prior written approval of the District. At such time the City shall state the requested time of commencement, duration of use and quantity of water to be so used.

3. The City shall comply with all District resolutions and rules relating to connection to the District's water system including, but not limited to, the District's written approval of plans and specifications for the connection prior to construction.

4. The City shall pay to the District the same connection fee, rates and charges and monthly service charges, except for capital facilities charge, as are established from time to time by District resolution and as are applicable to the use of a six (6)-inch meter. The current monthly service charge for a six (6)-inch meter is $238.20 per month. The current rate for water use is $ 0.48/ccf for winter usage (November - June) and $ 0.96/ccf for summer usage (July - October) and these rates shall be in effect until such time as the District amends its rate resolution or until a meter of different size is utilized.

5. This Agreement shall not authorize or permit the City to take water from the connection described herein beyond what is described in paragraph 2.

ORIGINAL

Exhibit "A", Resolution No. 2954

6. The cost of the meter installation pursuant to this Agreement shall be fully reimbursed by the City and shall become the property of the District upon completion of installation.

7. (a.) In case of emergency or whenever the public health, safety, or the equitable distribution of water so demands, the District may change, reduce or limit the time for or temporarily discontinue the supply of water without notice; (b.) Water service may be temporarily interrupted, limited for purposes of making repairs, extensions or doing other necessary work; and (c.) The District shall not be responsible for any damage resulting from interruption, change or failure of the water supply, and the City shall save and hold harmless the District from any loss, damages or suites to or by customers of the City resulting from interruption, change or failure of water supply provided by this Agreement, except damages arising out of the District's negligence. Prior to a planned interruption or limiting of service, the District will notify the City of such not less than three days prior to the service disruption. The District agrees to use best efforts and reasonable diligence to notify City as soon after it becomes aware of the need for service disruption and further will, to the extent practical, limit the service disruptions to daylight hours.

8. In the event of non-performance of any provision herein by the City, District may shut off water supplied pursuant to this Agreement.

9. This Agreement may be terminated by either party hereto upon 60-days written notice to the other party.

IN WITNESS WHEREOF, we have hereunto set our hands and seals.

CITY OF AUBURN
King County, Washington

By: Charles A. Booth 5-6-98
Mayor Date

Approved as to form:
By: 4/23/98
City Attorney Date

LAKEHAVEN UTILITY DISTRICT
King County, Washington

By: Donald T. Davis 5/15/98
General Manager Date

Approved as to form:
By: 5/18/98
General Counsel Date

ORIGINAL

RESOLUTION NO. 4018

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE A LEASE AGREEMENT BETWEEN THE CITY AND CLEARWIRE LLC, FOR THE PURPOSE OF LEASING PROPERTY FOR COMMUNICATION EQUIPMENT

THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREBY RESOLVES as follows:

Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute a Lease Agreement between the City and Clearwire LLC, for the purpose of leasing space on the Lakeland Hills water reservoir, for communication equipment. A copy of said Agreement is attached hereto and denominated Exhibit "A" and incorporated herein.by this reference.

Section 2. That the Mayor is authorized to implement such other administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 1st day of May, 2006.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

SITE LEASE AGREEMENT

THIS SITE LEASE AGREEMENT ("Lease") is by and between the City of Auburn, a municipal corporation under the existing laws of the State of Washington, having a mailing address of 25 West Main, Auburn, WA 98001 ("Landlord") and, Clearwire LLC, a Nevada limited liability company, ("Tenant").

1. Lease Agreement. Landlord hereby leases to Tenant the property generally described and depicted in Exhibit A, Memorandum of Lease, attached hereto and incorporated by reference ("Lease Area"), including space on Landlord's water tank located on the Property ("Water Tank Area"), said lease area being a portion of the real property legally described in Exhibit A ("Property"). The Lease shall be nonexclusive and shall not preclude Landlord from granting a similar lease, right, license, franchise, etc., to other carriers or other persons for telecommunications or any other purpose, so long as the subsequent agreement protects Tenant's rights granted by this Lease.

2. Term. This Lease shall commence on the date of full execution hereof ("Commencement Date"), and run for a period of five (5) years terminating at midnight on the fifth anniversary of the Commencement Date ("Initial Term").

3. Tenant's Use of the Lease Area - Antenna Facilities.

(a) Tenant's use of the Lease Area and Property shall be strictly limited to those uses set forth in this Section 3. Tenant may use the Lease Area for the transmission and reception of radio communication signals and for the construction, installation, operation, maintenance, repair, removal or replacement of related facilities necessary for the operation of a telecommunications facility as well as for access and utilities. Tenant may place its ground based telecommunications equipment only within the portion of the Lease Area identified as the "Compound" on Exhibit A. Tenant may install antennas within the Water Tank Area.

(b) Tenant shall have the right, at its expense, to erect and maintain on the Lease Area, improvements, personal property and facilities necessary to operate its communications system, including, radio transmitting and receiving antennas, and related cables and conduits, equipment shelters and/or cabinets and related cables and utility lines and a location based system, including coaxial cable, base units and other associated equipment as such location based system may be permitted by any county, state or federal agency/department. Tenant shall have the right to alter, replace, and expand within the confines of the Lease Area as defined in Section 1 and without interference to other providers / tenants, enhance and upgrade the Antenna Facilities at any time during the term of this Lease. Tenant shall cause all construction and operation to occur lien-free and in compliance with all applicable laws and ordinances. Landlord acknowledges that it shall not interfere with any aspects of construction, including, attempting to direct construction personnel as to the location of or method of installation of the Antenna Facilities. The Antenna Facilities shall remain the exclusive property of Tenant. Tenant shall have the right to remove the Antenna Facilities at any time during and upon the expiration or termination of this Lease.

(c) Tenant shall, at Tenant's expense, keep and maintain the Lease Area and Antenna Facilities now or hereafter located on the Property in commercially reasonable condition and repair during the term of this Lease, normal wear and tear and loss due to casualty or other causes beyond Tenant's control excepted. Tenant may install and maintain landscape plantings within the Lease Area. Tenant shall replace any existing landscape plantings damaged during the installation or operation of Tenant's Antenna Facilities. Upon termination or expiration of this Lease, the Lease Area shall be returned to Landlord in good, usable condition, normal wear and

tear and loss due to casualty or other causes beyond Tenant's control excepted, within ninety (90) days.

(d) Tenant shall remove any and all telecommunications equipment and appurtenances installed by Metricom, Inc. on the Water Tank or Property. Rather than removing Metricom, Inc. equipment and appurtenances, Tenant may choose to utilize all or a portion of the equipment and appurtenances if it is in good and safe working order. Any Metricom, Inc. equipment removed by Tenant is to be disposed of legally at Tenant's expense.

(e) In addition to using the Lease Area, Tenant may utilize the Property to install and use underground conduits running from the Compound in a generally straight line to the base of the Water Tank and then extend up the side of the Water Tank to the Antenna Facilities.

(f) Tenant shall have the right to install utilities, power and telephone, at Tenant's expense, and to improve the present utilities on the Property (including, but not limited to, the installation of emergency power generators). Landlord agrees to cooperate with Tenant in its reasonable efforts to acquire necessary utility service. Tenant shall, wherever practicable, install separate meters for utilities used on the Property by Tenant. Landlord shall diligently correct any variation, interruption or failure of utility service within Landlord's control.

(g) Prior to installation of equipment, Tenant shall submit for Landlord review and approval, which approval shall not be unreasonably withheld or delayed, an electrical and grounding connection plan that assures no interference with the Water Tank cathodic protection system. The plan shall include a 3" minimum diameter common use conduit enclosure for cables from the ground level to top of tank. This conduit may be utilized by other telecommunication providers until such time as it is filled to capacity, at which time new providers will need to pay for upsizing. Upon Landlord approval of the plans, Tenant may proceed to install and operate the Antenna Facilities.

4. Rent.

(a) Tenant shall pay Landlord, as rent, $12,000 Thousand and no/100 dollars ($12,000.00) per year ("Rent"). Rent shall be payable within twenty (20) days following the Commencement Date and thereafter the Rent will be payable yearly, no later than the anniversary of the Commencement Date to City of Auburn Water Utility Fund, Account Number 430.369.900, at Landlord's address specified in Section 13 below. The Rent shall increase annually over the Rent payable the preceding year in proportion to the increase of the "All Items" category of the Consumer Price Index for Urban Wage Earners and Clerical Workers published by the Bureau of Labor Statistics of the U.S. Department of Labor for Seattle-Everett Metropolitan Area (the "Index"). The first adjustment shall be based on the amount, if any, by which the Index for the 12th month of the Lease term has increased over the Index for the month preceding the commencement of the lease term. Subsequent adjustments will be based on the amount, if any, by which the Index for each subsequent 12th month of the Lease term has increased over the Index for the 12th month of the preceding 12-month period. It shall be the responsibility of the Landlord to track the CPI and notify the Tenant of increases or reductions in the Rent. Landlord shall notify Tenant within 90 days of the commencement of the Renewal Term as to the revised rate at which the Rent shall be increased annually thereafter. Landlord will invoice Tenant for back Rent due or refund over payment as necessary to correct the payment received for the first year of the Renewal Term. If at any time the CPI ceases to incorporate a significant number of items, if a substantial change is made in the method of establishing the CPI, or if issuance of the CPI shall be discontinued, then the Landlord and Tenant shall mutually agree upon another standard recognized cost of living index issued by the United States Government, provided that if the parties cannot reach agreement on such other standard cost of living index, then the Landlord shall select the index closest to the CPI. In either case, the substitute index chosen shall result in increases in the Rent similar to those that had been, or would have been, generated by the CPI. If this Lease is terminated for any reason (other than a default by Tenant) at a time other than on

the anniversary of the Commencement Date, Rent shall be prorated as of the date of termination and all prepaid Rent shall be refunded to Tenant within sixty (60) days.

(b) In addition to the monetary rent described in section 4 (a), Tenant shall provide Landlord with twenty-five (25) Clearwire base data service accounts, or equivalent, for Landlord use. Tenant shall cover any service charges for the accounts provided to Landlord under this Agreement for the duration of the Initial Term and any Renewal Terms. Landlord may require additional service accounts, each additional account requested by Landlord and provided by Tenant, shall reduce the annual rent by Twenty-Five Dollars ($25.00) per month. Landlord agrees to purchase from Tenant, at Tenant's cost, any communication hardware required to utilize the accounts provided by Tenant under this Agreement.

5. Renewal. Tenant may extend this Lease for (5) additional, five-year terms (each a "Renewal Term"). Each Renewal Term shall be on the same terms and conditions as set forth herein, including the Rent increase set forth in Section 4, above. This Lease shall automatically renew for each successive Renewal Term unless Tenant notifies Landlord, in writing, of Tenant's intention not to renew this Lease, at least ninety (90) days prior to the expiration of the Initial Term or any Renewal Term. Landlord may, during any Renewal Term, notify Tenant, in writing, of Landlord's intention not to renew this Lease for an additional Renewal Term, which notice shall be provided to Tenant at least one hundred and eighty (180) days prior to the expiration of the then in effect Renewal Term. If Tenant shall remain in possession of the Lease Area at the expiration of this Lease or any Renewal Term without a written agreement, such tenancy shall be deemed a month-to-month tenancy under the same terms and conditions of this Lease.

6. Interference. Tenant and Landlord shall not operate in a manner which interferes with the other party's operations on the Property. Tenant's Antenna Facilities and the use thereof shall not interfere with the use of any other communication or similar equipment of any kind and nature owned or operated by Landlord or other lessee, licensees, franchisees, etc., existing and operating on the Property prior in time to the commencement of this Lease, and subsequent to the installation by Tenant of the Antenna Facilities, Landlord agrees to exercise reasonable care to assure equipment of subsequent providers leasing space on the Property does not interfere with Tenant's Antenna Facilities operations. The Landlord, however, is not in any way responsible or liable for any interference with Tenant's use of Landlords Property, which may be caused by the use and operation of any other tenant's equipment, even if caused by new technology, so long as such equipment continues to operate within its existing frequencies and in compliance with all applicable laws and FCC rules and regulations. In the event there is interference between Tenant and any third party, such interference will be resolved by and between the parties affected; however, if such interference cannot be resolved to Tenant's satisfaction within forty-eight (48) hours from commencement of such interference, then the parties acknowledge that Tenant will suffer irreparable injury, and therefore, Tenant will have the right, in addition to any other rights that it may have at law or in equity, to terminate this Lease upon 30 days notice to Landlord and restore the Landlord's Property to its original condition, reasonable wear and tear and loss due to casualty or other causes beyond Tenant's control excepted.

7. Access.

(a) Tenant shall have the right during the Initial Term and of this Lease and any Renewal Term for ingress and egress to the Property over the south fifteen (15) feet of Lot 6, Lakeland Hills Division Number 3, Extension, according to the plat thereof recorded in Volume 145 of Plats, pages 72 and 73, in King County Washington.

(b) Tenant shall have 24-hours-a-day, 7-days-a-week access to the Lease Area ("Access") at all times during the Initial Term of this Lease and any Renewal Term. In the event Landlord, its employees or agents unreasonably deny Access to Tenant, its employees or agents, Tenant shall, without waiving any other rights that it may have at law or in equity, deduct from Rent

amounts due under this Lease an amount equal to fifty and no/100 dollars per day for each day that Access is impeded or denied. Access to Landlord facilities beyond the Lease Area, including but not limited to the water reservoir site and the water reservoir, require 48 hours notice to the Water Division Supervisor of the City of Auburn Water Utility (phone: 253-931-3066). Access to Landlord facilities will only occur with Landlord supervision. Tenant agrees to reimburse Landlord for Landlord expenses attributed to supervising Tenant while accessing Landlord facilities. The hourly rate for Landlord supervision during City standard office hours will be $32.50 per hour in calendar year 2006. The hourly rate shall increase annually on January 1st over the hourly rate payable the preceding year by not less than three and one half percent (3.5%) or the CPI – Urban for the Seattle / Tacoma area whichever is the greater, unless a different hourly rate amount is negotiated.

8. Termination. Except as otherwise provided herein, this Lease may be terminated, without any penalty or further liability as follows:

(a) upon thirty (30) days' written notice by Landlord if Tenant fails to cure a default for payment of amounts due under this Lease within that thirty (30) day period;

(b) immediately if Tenant is unable to obtain, maintain, or otherwise forfeits or cancels any license (including, without limitation, an FCC license), permit or any Governmental Approval necessary to the installation and/or operation of the Antenna Facilities or Tenant's business;

(c) upon ninety (90) days' written notice by Tenant if the Lease Area or the Antenna Facilities are, or become unacceptable under Tenant's design or engineering specifications for its Antenna Facilities or the communications system to which the Antenna Facilities belong;

(d) immediately upon written notice by Tenant if the Lease Area or the Antenna Facilities are destroyed or damaged so as in Tenant's reasonable judgment to substantially and adversely affect the effective use of the Antenna Facilities. In such event, all rights and obligations of the parties shall cease as of the date of the damage or destruction, and Tenant shall be entitled to the reimbursement on a prorated basis of any Rent prepaid by Tenant. If Tenant elects to continue this Lease, then all Rent shall abate until the Lease Area and/or the Antenna Facilities are restored to the condition existing immediately prior to such damage or destruction; or

(e) at the time title to the Property transfers to a condemning authority, pursuant to a taking of all or a portion of the Property sufficient in Tenant's determination to render the Lease Area unsuitable for Tenant's use. Landlord and Tenant shall each be entitled to pursue their own separate awards with respect to such taking.

(f) Landlord may terminate this Lease if Landlord needs the Lease Area for expansion of Landlord's responsibility to provide its services, and Landlord has no reasonable or economical alternative site available, provided Landlord provides Tenant written notice twelve (12) months in advance of Landlord's need to re-establish Landlord's sole use of the Lease Area. Upon Tenant's receipt of written notice, Tenant shall have six (6) months to submit to Landlord alternative locations for its Antenna Facilities. Such alternative locations may be on the Property or other properties owned or managed by Landlord. Landlord shall evaluate such alternatives and advise Tenant in writing if one or more of the alternatives is suitable to accommodate Tenant's Antenna Facilities. To be a suitable alternative location, such location will not unreasonably result in any interruption of the communications service of Tenant on Landlord's Property; nor will it impair, or in any manner alter, the quality of communications service provided by Tenant on and from Landlord's owned or managed properties. Tenant shall submit additional relevant information to assist the Landlord in making such evaluation. Landlord shall give each alternative location proposed by Tenant full and fair consideration, within a reasonable time so as to allow for the relocation work to be performed in a timely manner. If, in Tenant's reasonable judgment, no suitable alternative location can be found, Tenant shall remove its Antenna Facilities as otherwise provided in this Section 3 (c) of this Lease. If an alternative location for Tenant's Antenna Facilities is found,

Landlord and Tenant agree to enter into a new Lease Agreement with the same terms and conditions of this Lease.

(g) If, during the term of this Lease there is a determination made pursuant to an official unappealable order of the Federal Communications Commission or any other applicable law, order, ordinance, regulation, directive, or standard as stated above that use of the Antenna Facilities by the Tenant poses a human health hazard which cannot be remediated, then (a) Tenant shall immediately cease all operations of the Antenna Facilities, and (b) the Lease shall terminate as of the date of such order without further liability. If for reasons related to public health, safety or welfare, Landlord determines that this Lease must be terminated, then Landlord reserves rights of unilateral termination and will do so by providing Tenant with a six (6) month written notice.

9. Default and Right to Cure. Notwithstanding anything contained herein to the contrary and without waiving any other rights granted to it at law or in equity, each party shall have the right, but not the obligation, to terminate this Lease on written notice pursuant to Section 13 hereof, to take effect immediately, if the other party (i) fails to perform any covenant for a period of thirty (30) days after receipt of written notice thereof to cure or (ii) commits a material breach of this Lease and fails to diligently pursue such cure to its completion after sixty (60) days' written notice to the defaulting party.

10. Taxes. Landlord shall pay when due all real property taxes or other fees and assessments for the Property, including the Lease Area. In the event that Landlord fails to pay any such real property taxes or other fees and assessments, Tenant shall have the right, but not the obligation, to pay such owed amounts and deduct them from Rent amounts due under this Lease. Notwithstanding the foregoing, Tenant shall pay any personal property tax, State leasehold tax, excise tax, real property tax or any other tax or fee which are directly attributable to the presence or installation of Tenant's Antenna Facilities, only for so long as this Lease has not expired of its own terms or is not terminated by either party. Landlord hereby grants to Tenant the right to challenge, whether in a Court, Administrative Proceeding, or other venue, on behalf of Landlord and/or Tenant, any personal property or real property tax assessments, State leasehold tax or excise tax that may affect Tenant. If Landlord receives notice of any personal property or real property tax assessment, State leasehold tax or excise tax against the Landlord, which may affect Tenant and is directly attributable to Tenant's installation, Landlord shall provide timely notice of the assessment to Tenant sufficient to allow Tenant to consent to or challenge such assessment. Further, Landlord shall provide to Tenant any and all documentation associated with the assessment and shall execute any and all documents reasonably necessary to effectuate the intent of this Section.

11. Indemnification.

(a) Tenant shall defend, indemnify, and hold harmless the Landlord, its officers, officials, employees and volunteers from and against any and all claims, suits, actions, or liabilities for injury or death of any person, or for loss or damage to property, which arises out of Tenant's use of Premises, or from the conduct of Tenant's business, or from any activity, work or thing done, permitted, or suffered by Tenant in or about the Premises, except only such injury or damage as shall have been occasioned by the sole negligence of the Landlord.

(b) Should a court of competent jurisdiction determine that this Lease is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Tenant and the Landlord, its officers, officials, employees and volunteers, the Landlord's liability hereunder shall be only to the extent of the Landlord's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes the Tenant's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This

waiver has been mutually negotiated by the parties. The provisions of this section shall survive the expiration or termination of this Lease.

(c) The Tenant and the City waive all rights against each other, any of their Subcontractors, Sub-subcontractors, agents and employees, each of the other, for damages caused by fire or other perils to the extend covered by Builders Risk insurance or other property insurance obtained pursuant to the Insurance Requirements Section of this Lease or other property insurance applicable to the work. The policies shall provide such waivers by endorsement or otherwise.

12. Insurance.

The Tenant shall procure and maintain for the duration of the Lease, insurance against claims for injuries to persons or damage to property which may arise from or in connection with the performance of the work hereunder by the Tenant, its agents, representatives, or employees.

(a) Minimum Scope of Insurance. Tenant shall obtain insurance of the types described below:

(1) Automobile Liability insurance covering all owned, non-owned, hired, and leased vehicles. Coverage shall be written on Insurance Services Office (ISO) form CA 00 01 or a substitute form providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage.

(2) Commercial General Liability insurance shall be written on ISO occurrence form CG 00 01 and shall cover liability arising from premises, operations, independent tenants, products-completed operations, stop gap liability, and personal injury and advertising injury and liability assumed under an insured contract. The Commercial General Liability insurance shall be endorsed to provide the Aggregate Per Project Endorsement ISO form CG 25 03 11 85. There shall be no endorsement or modification of the Commercial General Liability insurance for liability arising from explosion, collapse, or underground property damage. The Landlord shall be named as an additional insured under the Tenant's Commercial General Liability insurance policy with respect to the work performed for the Landlord using ISO Additional Insured Endorsement CG 20 10 10 01 and Additional Insured-Completed Operations endorsement CG 20 37 10 01 or substitute endorsements providing equivalent coverage.

(3) Workers' Compensation coverage as required by the Industrial Insurance laws of the State of Washington.

(b) Minimum Amounts of Insurance. Tenant shall maintain the following insurance limits:

(1) Automobile Liability insurance with a minimum combined single limit for bodily injury and property damage of $1,000,000 per accident.

(2) Commercial General Liability insurance shall be written with limits no less than $1,000,000 each occurrence, $2,000,000 general aggregate and a $2,000,000 products-completed operations aggregate limit.

(c) Other Insurance Provisions. The insurance policies are to contain, or be endorsed to contain, the following provisions for Automobile Liability, Professional Liability, and Commercial General Liability insurance:

(1) The Tenant's insurance coverage shall be primary insurance as respects the Landlord. Any insurance, self-insurance, or insurance pool coverage maintained by the Landlord shall be in excess of the Tenant's insurance and shall not contribute with it.

(2) The Tenant's insurance shall be endorsed to state that coverage shall not be cancelled by either party except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the Landlord.

(d) Acceptability of Insurers. Insurance is to be placed with insurers with a current A.M. Best rating of not less than A:VII.

(e) Verification of Coverage. The Tenant shall furnish the Landlord with documentation of insurer's A.M. Best rating and with original certificates and a copy of amendatory endorsements, including but not necessarily limited to the additional insured endorsement, evidencing the insurance requirements of the Consultant before commencement of the work.

(f) Subcontractors. The Tenant shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractors. All coverages for subcontractors shall be subject to all of the same insurance requirements as stated herein for the Tenant.

(g) No Limitation. Tenant's maintenance of insurance as required by the Lease shall not be construed to limit the liability of the Tenant to the coverage provided by such insurance, or otherwise limit the Landlord's recourse to any remedy available at law or in equity.

13. Notices. All notices, requests, demands and other communications shall be in writing and are effective three (3) days after deposit in the U.S. mail, certified and postage paid, or upon receipt if personally delivered or sent by next-business-day delivery via a nationally recognized overnight courier to the addresses set forth below. Landlord or Tenant may from time to time designate any other address for this purpose by providing written notice to the other party.

If to Tenant, to:

Clearwire LLC
Attn: Site Property Manager
5808 Lake Washington Blvd NE, Suite 300
Kirkland, WA 98033
Telephone: 425-216-7600
Fax: 425-216-7900

With a copy to:

Clearwire LLC
Attention: Legal Department
5808 Lake Washington Blvd NE, Suite 300
Kirkland, WA 98033
Telephone: 425-216-7600
Fax: 425-216-7900

If to Landlord, to:

Public Works Director
City of Auburn
25 West Main St.
Auburn, WA 98001

With a copy to:

City Attorney
City of Auburn
25 West Main St.
Auburn, WA 98001

14. Quiet Enjoyment, Title and Authority. Landlord covenants and warrants to Tenant that (i) Landlord has full right, power and authority to execute this Lease; (ii) it has good and unencumbered title to the Property free and clear of any liens or mortgages, except those disclosed to Tenant and which will not interfere with Tenant's rights to or use of the Lease Area; and (iii) execution and performance of this Lease will not violate any laws, ordinances, covenants, or the provisions of any mortgage, lease, or other agreement binding on Landlord.

15. Environmental Laws. Landlord represents that it has no knowledge of any substance, chemical or waste (collectively, "Hazardous Substance") on the Property that is identified as hazardous, toxic or dangerous in any applicable federal, state or local law or regulation. Landlord and Tenant shall not introduce or use any Hazardous Substance on the Property in violation of any

applicable law. Landlord shall be responsible for, and shall promptly conduct any investigation and remediation as required by any applicable environmental laws, for all spills or other releases of any Hazardous Substance not caused in whole or in part by Tenant, that have occurred or which may occur on the Property. Each party agrees to defend, indemnify and hold harmless the other from and against any and all administrative and judicial actions and rulings, claims, causes of action, demands and liability (collectively, "Claims") including, but not limited to, damages, costs, expenses, assessments, penalties, fines, losses, judgments and reasonable attorney fees that the indemnitee may suffer or incur due to the existence or discovery of any Hazardous Substances on the Property or the migration of any Hazardous Substance to other properties or the release of any Hazardous Substance into the environment (collectively, "Actions"), that relate to or arise from the indemnitor's activities on the Property. Landlord agrees to defend, indemnify and hold Tenant harmless from Claims resulting from Actions on the Property not caused by Landlord or Tenant prior to and during the Initial Term and any Renewal Term of this Lease. The indemnifications in this section specifically include, without limitation, costs incurred in connection with any investigation of site conditions or any cleanup, remedial, removal or restoration work required by any governmental authority. This Section 15 shall survive the termination or expiration of this Lease.

16. Assignment and Subleasing.

(a) The Tenant may not sublease any portion of the Lease Area, or grant any rights to the Lease Area to any third parties except as specifically set for in this Lease.

(b) All of the terms and provisions contained herein shall inure to the benefit of and shall be binding upon the parties hereto and their respective heirs, legal representatives, successors and assigns. This Lease shall not be assigned by Tenant without the express written consent of Landlord, which consent shall not be unreasonably withheld, delayed or conditioned. Any attempted assignment in violation of this Section shall be void. The transfer of the rights and obligations of Tenant to a parent, subsidiary, or other affiliate of Tenant, or to any successor-in-interest or entity acquiring fifty-one percent (51%) or more of Tenant's stock or assets, shall not be deemed an assignment. Tenant shall give to Landlord thirty (30) days' prior written notice of any such transfer.

(c) Additionally, Tenant may, upon notice to Landlord, mortgage or grant a security interest in this Lease and the Antenna Facilities, and may assign this Lease and the Antenna Facilities to any mortgagees or holders of security interests, including their successors or assigns (collectively "Mortgagees"), provided such Mortgagees agree to be bound by the terms and provisions of this Lease. In such event, Landlord shall execute such consent to leasehold financing as may reasonably be required by Mortgagees. Landlord agrees to notify Tenant and Tenant's Mortgagees simultaneously of any default by Tenant and to give Mortgagees the same right to cure any default as Tenant or to remove any property of Tenant or Mortgagees located on the Lease Area, except that the cure period for any Mortgagees shall not be less than thirty (30) days after receipt of the default notice, as provided in Section 9 of this Lease. All such notices to Mortgagees shall be sent to Mortgagees at the address specified by Tenant. Failure by Landlord to give Mortgagees such notice shall not diminish Landlord's rights against Tenant, but shall preserve all rights of Mortgagees to cure any default and to remove any property of Tenant or Mortgagees located on the Lease Area.

17. Removal of Antenna Facilities. The Antenna Facilities are and shall remain the property of the Tenant and upon the expiration or earlier termination of this Lease, Tenant shall, at Tenant's sole cost and expense, remove the Antenna Facilities and restore the Lease Area to its original condition, normal wear and tear and loss due to casualty or other causes beyond Tenant's control excluded.

18. Miscellaneous.

(a) The substantially prevailing party in any litigation, including any arbitration to which the parties shall submit, arising hereunder shall be entitled to its reasonable attorneys' fees and court costs, including appeals, if any.

(b) This Lease constitutes the entire agreement and understanding of the parties, and supersedes all offers, negotiations and other agreements. There are no representations or understandings of any kind not set forth herein. Any amendments to this Lease must be in writing and executed by both parties. At such time as the Auburn City Council approves any regulation affecting telecommunications, Tenant agrees to amend this Lease, as determined by the Landlord in order to comply with any future ordinance related to telecommunications provided, however, that in no event shall such regulation (i) materially interfere with or affect Tenant's operation of its Antenna Facilities; or (ii) increase Tenant's financial obligations under the terms of this Lease, except as provided herein, or impose some new financial obligations not already contemplated by this Lease. No amendment, change or modification of this Lease shall be valid, unless in writing and signed by all parties hereto.

(c) Each party agrees to cooperate with the other in executing any documents (including a Memorandum of Lease in substantially the form attached hereto as Exhibit A) necessary to protect its rights or use of the Lease Area. The Memorandum of Lease may be recorded in place of this Lease by either party. In the event the Property is encumbered by a mortgage or deed of trust, Landlord agrees, upon request of Tenant, to obtain and furnish to Tenant a non-disturbance and attornment agreement for each such mortgage or deed of trust, in a form reasonably acceptable to Tenant. Tenant may obtain title insurance on its interest in the Lease Area.

(d) This Lease shall be construed in accordance with the laws of the state in which the Property is located.

(e) If any term of this Lease is found to be void or invalid, such finding shall not affect the remaining terms of this Lease, which shall continue in full force and effect. The parties agree that if any provisions are deemed not enforceable, they shall be deemed modified to the extent necessary to make them enforceable. No provision of this Lease will be deemed waived by either party unless expressly waived in writing signed by the waiving party. No waiver shall be implied by delay or any other act or omission of either party. No waiver by either party of any provision of this Lease shall be deemed a waiver of such provision with respect to any subsequent matter relating to such provision.

(f) The persons who have executed this Lease represent and warrant that they are duly authorized to execute this Lease in their individual or representative capacity as indicated.

(g) This Lease may be executed in any number of counterpart copies, each of which shall be deemed an original, but all of which together shall constitute a single instrument.

(h) All Exhibits referred to herein and any Addenda are incorporated herein for all purposes. The parties understand and acknowledge that Exhibit A (Memorandum of Lease) is attached to this Site Lease Agreement. The terms of all Exhibits are incorporated herein for all purposes.

(i) If Landlord is represented by any broker or any other leasing agent, Landlord is responsible for all commission fees or other payment to such agent, and agrees to indemnify and hold Tenant harmless from all claims by such broker or anyone claiming through such broker. If Tenant is represented by any broker or any other leasing agent, Tenant is responsible for all commission fee or other payment to such agent, and agrees to indemnify and hold Landlord harmless from all claims by such broker or anyone claiming through such broker.

19. Headings. The caption and paragraph headings used in this Lease are inserted for convenience of reference only and are not intended to define, limit or affect the interpretation or construction of any term or provision hereof.

20. Liens. Except with respect to activities for which Landlord is responsible, Tenant shall pay as due all claims for work done on, and for services rendered or material furnished to, the Antenna Facility, and shall keep the Antenna Facility free from all liens.

LANDLORD: City of Auburn

By: _____
Peter B. Lewis, Mayor

Date: MAY 1 2006

Taxpayer ID Number: 91-6001228

TENANT: Clearwire LLC, a Nevada limited liability company

By: _____
Print Name: John Saw
Its: VP
Date: 5/12/06

(acknowledgements to follow on next page)

STATE OF WA)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that Peter B Lewis is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the Mayor, of City of Auburn, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: May 1, 2006

Daniel E Daskam
Notary Public
Print Name Danielle E Daskam
residing at Enumclaw
My commission expires 10-25-07

DANIELLE E. DASKAM NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES 10-25-07

(Use this space for notary stamp/seal)

STATE OF Washington)
) ss.
COUNTY OF King)

I certify that I know or have satisfactory evidence that John Saw is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the VP, of Clearwire the limited liability company, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: May 2, 2006

Rachel Nessa Titus
Notary Public
Print Name Rachel Nessa Titus
residing at Seattle
My commission expires 9/19/09

RACHEL NESSA TITUS NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES 9-19-09

(Use this space for notary stamp/seal)

Exhibit A

MEMORANDUM OF LEASE

to the Site Lease Agreement executed on the 1st day of MAY, 2006, by and between the City of Auburn, as Landlord, and Clearwire, as Tenant.

(MOL to follow on next page)

Return to:

Auburn City Clerk
25 West Main Street
Auburn, WA 98001

MEMORANDUM
OF
LEASE

THIS MEMORANDUM OF LEASE is by and between the City of Auburn, a municipal corporation under the existing laws of the State of Washington, having a mailing address of 25 West Main, Auburn, WA 98001 ("Landlord") and Clearwire LLC ("Tenant").

1. Landlord and Tenant entered into a certain Site Lease Agreement ("Lease") on the 1st day of May, 2006, for the purpose of installing, operating and maintaining a communications facility and other improvements. All of the foregoing are set forth in the Lease.

2. Landlord is leasing to Tenant a portion of the Property described in Exhibit 1 annexed hereto.

3. The initial term of the five (5) years commences on September 1, 2005. The Lease will automatically renew for five (5) separate consecutive periods of five (5) years each upon the same terms and conditions of the Lease, unless Tenant notifies Landlord in writing of Tenant's intention not to renew the Lease at least ninety (90) days prior to the expiration of the existing term. Unless earlier terminated, the Lease will expire on August 31, 2035.

4. This Memorandum of Lease is not intended to amend or modify, and shall not be deemed or construed as amending or modifying, any of the terms, conditions or provisions of the Lease, all of which are hereby ratified and affirmed. In the event of a conflict between the provisions of this Memorandum of Lease and the provisions of the Lease, the provisions of the Lease shall control.

5. The Lease shall be binding upon and inure to the benefit of the parties and their respective heirs, successors, and assigns, subject to the provisions of the Lease.

IN WITNESS WHEREOF, the parties have executed this Memorandum of Lease as of the day and year first above written.

LANDLORD: City of Auburn

By: _____
Peter B. Lewis
Its: Mayor
Date: MAY 1 2006

Taxpayer ID Number: 91-6001228

TENANT:

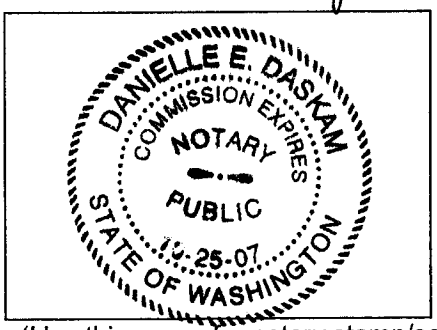
By: _____
Print Name: John Saw
Its: VP
Date: 5/12/06

(acknowledgements to follow on next page)

STATE OF WA)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that Peter B. Lewis is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the Mayor, of City of Auburn, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: May 1, 2006



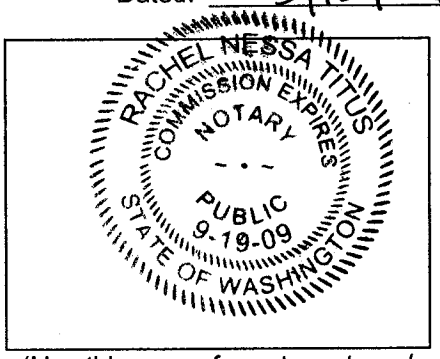
Danielle E Daskam
Notary Public
Print Name Danielle E Daskam
residing at Enumclaw
My commission expires 10-25-07

(Use this space for notary stamp/seal)

STATE OF Washington)
) ss.
COUNTY OF King)

I certify that I know or have satisfactory evidence that John Sahr is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the VP, of Cleanire, the limited liability company, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: 5/12/06



Rachel Nessa Titus
Notary Public
Print Name Rachel Nessa Titus
residing at Seattle
My commission expires 9/19/09

(Use this space for notary stamp/seal)

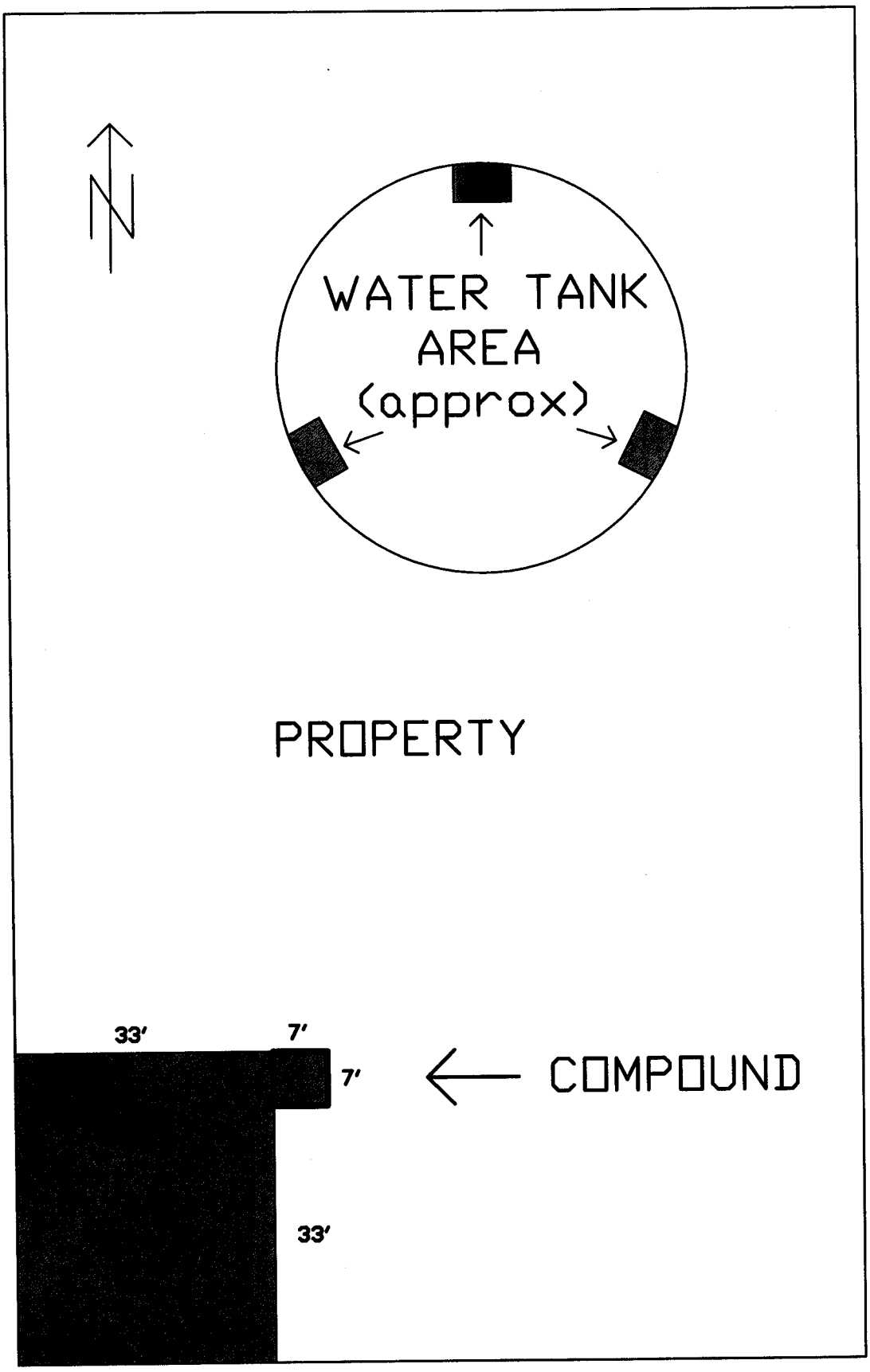


Exhibit 1 - Description of Lease Area

84-3121-85 (1710)
A-3-17 Public Works



20060714002416
PACIFIC NW TIT MEMO 37.00
PAGE001 OF 006
07/14/2006 15:57
KING COUNTY, WA

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

6/37

Memorandum of Lease

Reference Number(s) of Documents assigned or released: PNWT-W4295-12
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)

City of Auburn

Grantee/Assignee/Beneficiary: (Last name first)
1. Clearwire LLC

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

South 175 feet of east 110 feet of the west 1,393 feet of SE ¼ of Section 31, Township 21 North, Range 5 East

☒ Additional legal is on page 5 of document.

Assessor's Property Tax Parcel/Account Number
3121059047

☐ Assessor Tax # not yet assigned

Said document(s) were filed for record by Pacific Northwest Title as accommodation only. It has not been examined as to proper execution or as to its affect upon title.

Return to:

Auburn City Clerk
25 West Main Street
Auburn, WA 98001

MEMORANDUM
OF
LEASE

THIS MEMORANDUM OF LEASE is by and between the City of Auburn, a municipal corporation under the existing laws of the State of Washington, having a mailing address of 25 West Main, Auburn, WA 98001 ("Landlord") and Clearwire LLC ("Tenant").

1. Landlord and Tenant entered into a certain Site Lease Agreement ("Lease") on the 1st day of May, 2006, for the purpose of installing, operating and maintaining a communications facility and other improvements. All of the foregoing are set forth in the Lease.

2. Landlord is leasing to Tenant a portion of the Property described in Exhibit 1 annexed hereto.

3. The initial term of the five (5) years commences on September 1, 2005. The Lease will automatically renew for five (5) separate consecutive periods of five (5) years each upon the same terms and conditions of the Lease, unless Tenant notifies Landlord in writing of Tenant's intention not to renew the Lease at least ninety (90) days prior to the expiration of the existing term. Unless earlier terminated, the Lease will expire on August 31, 2035.

4. This Memorandum of Lease is not intended to amend or modify, and shall not be deemed or construed as amending or modifying, any of the terms, conditions or provisions of the Lease, all of which are hereby ratified and affirmed. In the event of a conflict between the provisions of this Memorandum of Lease and the provisions of the Lease, the provisions of the Lease shall control.

5. The Lease shall be binding upon and inure to the benefit of the parties and their respective heirs, successors, and assigns, subject to the provisions of the Lease.

IN WITNESS WHEREOF, the parties have executed this Memorandum of Lease as of the day and year first above written.

LANDLORD: City of Auburn

By: _____
Peter B. Lewis
Its: Mayor
Date: MAY 1 2006

Taxpayer ID Number: 91-6001228

TENANT:

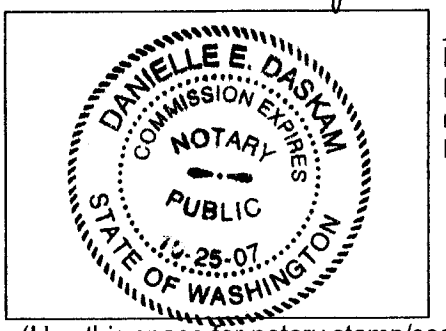
By: _____
Print Name: John Saw
Its: VP
Date: 5/12/06

(acknowledgements to follow on next page)

STATE OF WA)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that Peter B. Lewis is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the Mayor, of City of Auburn, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: May 1, 2006



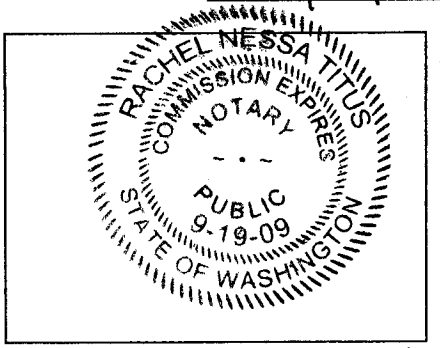
Notary Public Danielle E Daskam
Print Name Danielle E Daskam
residing at Enumclaw
My commission expires 10-25-07

(Use this space for notary stamp/seal)

STATE OF Washington)
) ss.
COUNTY OF King)

I certify that I know or have satisfactory evidence that John Saw is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the VP, of Oceanire, the limited liability company, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: 5/12/06



Notary Public Rachel Nessa Titus
Print Name Rachel Nessa Titus
residing at Seattle
My commission expires 9/19/09

(Use this space for notary stamp/seal)

EXHIBIT 1

1. **DESCRIPTION OF PROPERTY**

The Property is described and/or depicted as follows:

THE SOUTH 175.00 FEET OF THE EAST 110.00 FEET OF THE WEST 1,393.00 FEET OF THE SOUTHEAST QUARTER OF SECTION 31, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M., CITY OF AUBURN, RECORDS OF KING COUNTY, WASHINGTON

2. **DESCRIPTION OF LEASE AREA**

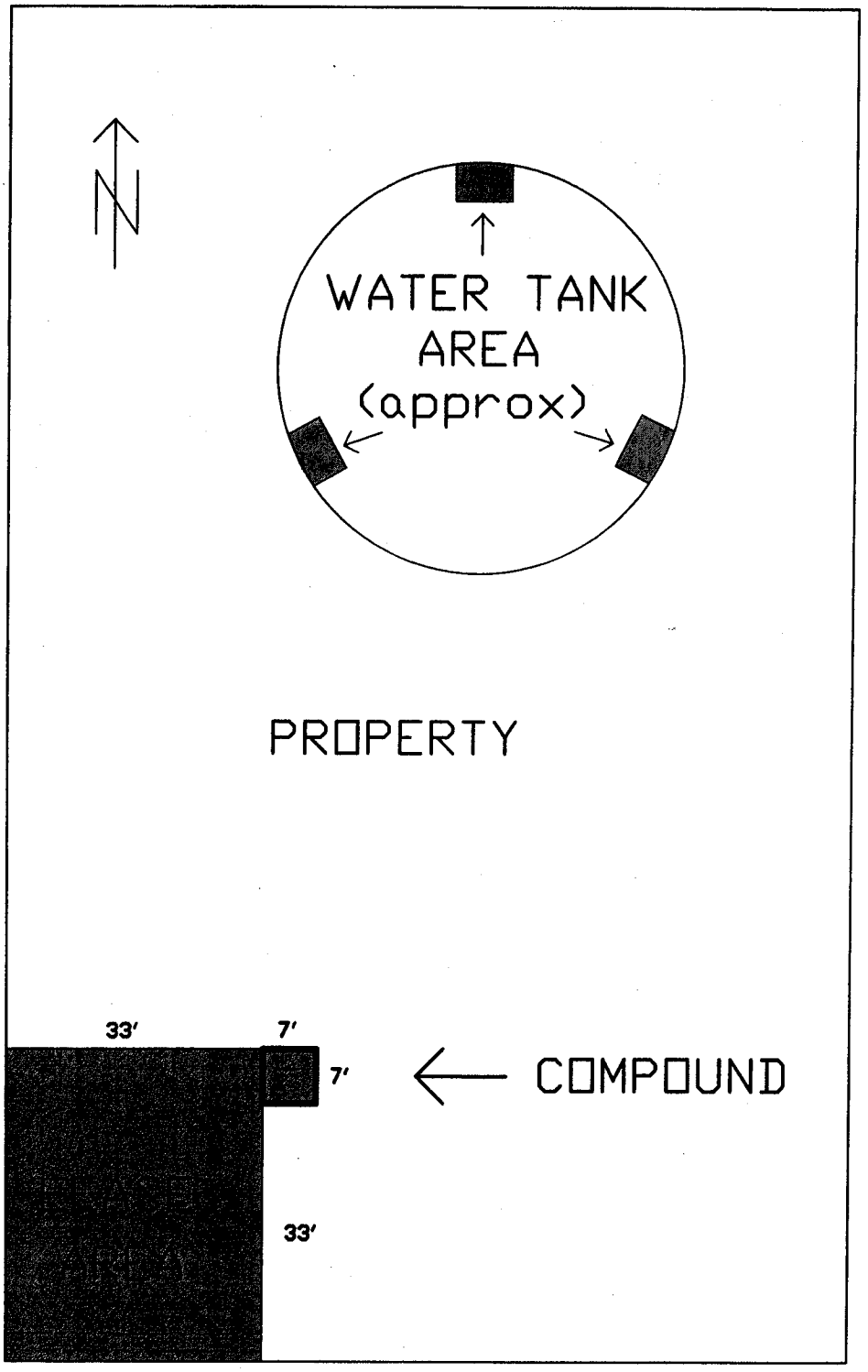


Exhibit 1 - Description of Lease Area

RESOLUTION NO. 4039

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN AGREEMENT BETWEEN THE CITY OF AUBURN AND THE WASHINGTON STATE DEPARTMENT OF ECOLOGY FOR COST REIMBURSEMENTS RELATING TO THE CITY'S WATER RIGHTS APPLICATION

WHEREAS, The City of Auburn has applied to the Department of Ecology for an additional water right for municipal water supply use; and

WHEREAS, the Department of Ecology will incur costs in processing the City's application, including fees paid to consultants to review certain aspects of the City's application; and

WHEREAS, the costs of processing such applications are born by the applicant; and

WHEREAS, it is in the public interest for the parties to enter into an agreement for the City to reimburse the Department of Ecology for its costs in processing the City's water rights application,

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, KING COUNTY, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor of the City of Auburn and the Auburn City Clerk are hereby authorized to execute an Agreement between the City of Auburn and the Washington State Department of Ecology for cost reimbursements

relating to the city's water rights application, which agreement shall be in substantial conformity with the Agreement a copy of which is attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. This resolution shall be in full force and affect upon passage and signatures hereon.

DATED and SIGNED this 5th day of June 2006.

CITY OF AUBURN

PETER B. LEWIS
Mayor

Attest:

Danielle E. Daskam
City Clerk

Approved as to Form:

Daniel B. Heid
City Attorney

Washington State Department of Ecology
Cost-Reimbursement Agreement (CRA)

Between the
Washington State Department of Ecology
and
City of Auburn

Water Right Application G1-28404;
CRA Project No.9R46

PART A
SPECIAL TERMS AND CONDITIONS AND SCOPE OF WORK

Current For: FY 2005-06

Contents:

		Page
I.	Applicant Information	1
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III.	Performance Security	2
IV.	Scope Of Work – *Tasks, Budget Detail, Schedule*	2
V.	Effective Date	5
VI.	Entire Agreement And Signatures	5

I. Applicant Information

Project Manager/Primary Point of Contact

Name: Duane Huskey, Utility Engineer
Address: 25 West Main Street
City, State: Auburn, WA
Zip Code: 98001-4998
Telephone: 253-804-5062
E-mail: dhuskey@auburnwa.gov
Fax: 253-931-3053

Billing Address

Name: Same as Left
Address:
City, State:
Zip Code:
Telephone:
E-Mail:
Fax:

II. Ecology Information

Project Manager/Primary Point of Contact:

Name: Jim Roth
Address: PO Box 47615
City, State, Zip: Olympia, WA, 98504-7615
Telephone #: 360-407-7036
E-mail: JROT461@ECY.WA.GOV
Fax: 360-407-7153

III. Performance Security

Performance Security Option Selected, Dollar Amount, And, If Applicable, Holding Institution (Pursuant To Section II.B.6. Of Part B – General Terms And Conditions):

Performance Security Option of $10,000 in an interest bearing account.

IV. Scope Of Work - *Tasks, Budget Detail, Schedule*

The City of Auburn is applying for an additional water right for municipal water supply use. The City of Auburn has submitted one application for a new groundwater right, G1-28404, requesting 12,500 gallons per minute (gpm) of instantaneous use, with an annual requested quantity of 13,443 acre-feet per year.

Ecology's consultant, Geomatrix, will be tasked to complete the water-right processing Phase I work establishing senior water right applications that would be considered in the 'same source of supply' as the City's application, thus requiring processing in accordance with RCW 90.03.265. In conducting this determination, Geomatrix will define the source of water that the City of Auburn proposes using for municipal water supply and the universe of applications requiring processing based on the following considerations:

- Hydraulic continuity between points of withdrawal;
- Sharing of a common recharge (catchment) area;
- Sharing of a common flow regime; and
- Isolation from other sources by the presence of effective barriers to hydraulic flow.

Sources of information for the 'same source of supply' determination will include area topography, geologic structures, well log review, area water level measurements, aquifer characteristics, and other information such as available groundwater modeling studies (see Task 1 below).

Consistent with the provisions of Part B — General Terms and Conditions as well as the provisions of RCW 43.21A.690 and RCW 90.03.265, the following describes the specific tasks, budget detail, and schedule for the scope of work to be performed by Ecology and its consultant, Geomatrix, to be subsequently reimbursed by the City of Auburn pursuant to this CRA.

Accordingly, the Parties signatory to this Agreement agree:

Phase I
Reimbursable Tasks with Associated Budget Detail and Schedule

Task 1: Water Right Application Review and Data Gap Summary. This task will include:

- Review of hydrologic and hydrogeologic data from the files available through Ecology, the City of Auburn, the City's consultant, and other sources;
- Determination of senior applicants in the same source of water supply, preparation of a technical memorandum summarizing the same source determination, and assembly of a final list of senior applications requiring processing;
- Review of City of Auburn's and senior water right application files to identify intent, available supporting information, and potential data gaps;
- Review conceptual mitigation options proposed by the City of Auburn, and meet with applicant and Ecology to discuss comments. It is assumed that final mitigation plans will not be submitted by the applicant until Phase II processing;
- Initial contact with senior applicants, including confirming the applicants' intent to pursue the water rights in question, and preparation of letters requesting any additional supporting information, including mitigation proposals;
- Attendance at meetings and participation in conference calls with Ecology staff in Bellevue and with the City and its consultant in Auburn, as requested; and
- Preparation of a memorandum Phase I report summarizing data gaps and issues to be resolved prior to completing ROEs for the set of applications requiring processing.

Task 2: Preparation of Scope of Work, Schedule, and Budget for Phase II. This task will include:

- Development of a scope of work to complete processing and preparation of ROEs water right applications submitted by the City of Auburn, as well as senior applicants within the same source of water.
- Development of the estimated schedule and budget for completion of the scope of work for Phase II.

Consultant Phase I Costs-

Phase 1 – Information Review and Associated Tasks:
Estimated Number of Consultant Hours = 363 Hours

- Estimated Consultant Cost = $ 49,843.00
- Estimated Phase I Completion Date = 12 Weeks From Effective Date
-

Ecology Direct and Backfill Cost–

- Estimated Number of Ecology Hours to be Billed to Applicant for Direct Work on Project = 50 Hours
- Estimated Ecology Costs to be Billed to Applicant for Direct Work on Project = $ 2,750
- Estimated Backfill Dollars Available for Backfill Consultant Cost = $4,000 (50 hours x $135/hr average consultant rate = [$6,750- $2,750 (Ecology direct cost)] = $4,000.

Phase 1 Informational Task, Budget, and Schedule Summary

Tasks	Budget	Schedule
A. Phase I	$ 49,843	12 weeks from Ecology Signature of Geomatrix Work Assignment
B. Ecology Direct Costs	$ 2,750	
C. Ecology Backfill Costs	$ 4,000	
TOTAL	$ 56,593	

Notes:

1. Total Budget Phase I $ 56,593
2. Cost Reimbursement End Date = June 30, 2007
3. Informational task, budget, and schedule summary presented here is for informational purposes only. Ecology tracks and manages task, budget, and schedule.
4. A formal written and signed amendment to this CRA is required to extend the total project budget amount or final completion date stated herein.

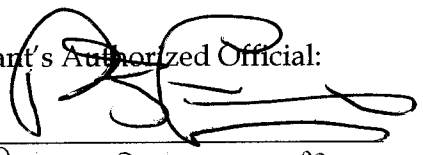
V. Effective Date

The effective date of this CRA, as well as any formal written and signed amendment, is the date of signature by the Washington State Department of Ecology.

VI. Entire Agreement And Signatures

The Parties hereto have agreed to the tasks, budget detail, and schedule described herein Part A. This entire agreement, consisting of Part A — Special Terms and Conditions and Scope of Work, Part B — General Terms and Conditions, and any formal written and signed amendment, can only be modified by a subsequent formal written and signed amendment as described in Section II.E.3. of Part B — General Terms and Conditions.

Applicant's Authorized Official:

By: 
Title: Peter B Lewis, Mayor
Date: June 5, 2006
Address: 25 W. Main St.
City, State, Zip: Auburn WA 98001
Telephone #: 253-931-3041
E-mail: plewis@auburnwa.gov
Fax: 253-288-3132

Ecology's Authorized Official:

By: Kenneth Slattery
Title: Program Manager
Date: 6/16/06
Address: P.O. Box 47600
City, State, Zip: Olympia, WA. 98504
Telephone #: 360-407-6600
E-mail:
Fax: 360-407-7153

RESOLUTION NO. 3920

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE AN INTERLOCAL AGREEMENT ESTABLISHING WATER SERVICE BOUNDARIES BETWEEN THE CITY OF KENT, KING COUNTY WATER DISTRICT NO. 111, AND THE CITY OF AUBURN

WHEREAS, pursuant to RCW 35.A.11.040, Auburn has the legal authority to exercise its powers and perform any of its functions as set forth in RCW 39.34; and

WHEREAS, pursuant to Chapter 39.34 RCW, the Interlocal Cooperation Act, Auburn has the legal authority to cooperate with other localities and utilities on the basis of mutual advantage and the efficient provision of municipal services; and

WHEREAS, pursuant to Chapter 39.34 RCW, the Interlocal Cooperation Act, Kent has the legal authority to cooperate with other localities and utilities on the basis of mutual advantage and the efficient provision of municipal services; and

WHEREAS, pursuant to Chapter 39.34 RCW, the Interlocal Cooperation Act, WD #111 has the legal authority to cooperate with other localities and utilities on the basis of mutual advantage and the efficient provision of municipal services; and

WHEREAS, the parties recognize the responsibility of public water utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, Kent owns, and desires to be the water service provider for a property currently within the corporate limits of Kent, and within the service areas of Auburn and WD #111; and

WHEREAS, pursuant to Chapter 70.116 RCW, Public Water System Coordination Act, the Parties determined and agreed upon the water service areas between the Parties as set forth in the South King County Coordinated Water System Plan ("Plan") and the Parties now desire to modify their water service area boundaries as agreed in this Agreement.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor of the City of Auburn is herewith authorized to execute a Water Service Boundary Agreement between the City of Kent, King County Water District No. 111, and the City of Auburn in substantial conformity with the agreement attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. This resolution shall be in full force and effect upon passage and signatures hereon.

DATED this 5th day of September, 2006.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001



RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Interlocal Agreement (Resolution No. 3920)

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document PNWT-W5083-12

10/4

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
1. Kent, City of
2. King County Water District No. 111

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number
N/A

☐ Assessor Tax # not yet assigned

Said document(s) were filed for record by Pacific Northwest Title as accommodation only. It has not been examined as to proper execution or as to its effect upon title.

EXHIBIT "A"

CITY OF KENT, KING COUNTY WATER DISTRICT NO. 111 and CITY OF AUBURN INTERLOCAL AGREEMENT ESTABLISHING WATER SERVICE BOUNDARIES

THIS AGREEMENT ("Agreement"), made and entered into this 5th day of September, 2006, by and between the **City of Kent**, a Washington municipal corporation ("Kent"), **King County Water District No. 111**, a Washington municipal corporation ("WD #111"), and the **CITY OF AUBURN**, a Washington municipal corporation, ("Auburn"), all being duly organized and existing under and by virtue of the laws of the State of Washington (individually a "Party" and collectively the "Parties).

WITNESSETH:

WHEREAS, pursuant to RCW 35.A.11.040, Auburn has the legal authority to exercise its powers and perform any of its functions as set forth in RCW 39.34; and

WHEREAS, pursuant to Chapter 39.34 RCW, the Interlocal Cooperation Act, Auburn has the legal authority to cooperate with other localities and utilities on the basis of mutual advantage and the efficient provision of municipal services; and

WHEREAS, pursuant to Chapter 39.34 RCW, the Interlocal Cooperation Act, Kent has the legal authority to cooperate with other localities and utilities on the basis of mutual advantage and the efficient provision of municipal services; and

WHEREAS, pursuant to Chapter 39.34 RCW, the Interlocal Cooperation Act, WD #111 has the legal authority to cooperate with other localities and utilities on the basis of mutual advantage and the efficient provision of municipal services; and

WHEREAS, the parties recognize the responsibility of public water utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, Kent owns, and desires to be the water service provider for a property currently within the corporate limits of Kent, and within the service areas of Auburn and WD #111; and

WHEREAS, pursuant to Chapter 70.116 RCW, Public Water System Coordination Act, the Parties determined and agreed upon the water service areas between the Parties as set forth in the South King County Coordinated Water System

Plan ("Plan") and the Parties now desire to modify their water service area boundaries as agreed in this Agreement.

NOW, THEREFORE, in consideration of the terms and conditions set forth herein, the Parties agree as follows:

1. Water Service Area. WD #111 and Auburn agree to relinquish to Kent the water service area depicted on the map attached hereto as Attachment 1 and legally described in Attachment 2, which are by this reference incorporated herein. The Parties agree that the South King County Coordinated Water System Plan and the water service area boundaries as set forth in the Plan shall be modified to be in accordance with the Parties' water service area boundaries as set forth in Attachment 1.

2. Management, Regulation and Control of Water System. Kent, WD #111 and Auburn shall have the sole responsibility and authority to construct, maintain, manage, conduct and operate their water systems within their designated water service areas as depicted in Attachment 1, together with any additions, extensions and betterments thereto.

3. Future Annexations. The Parties agree that Kent shall provide water service to the area depicted in Attachment 1 without regard to the present corporate boundaries of the Parties and without regard to future corporate boundaries as they may be periodically altered through annexation.

4. Kent Comprehensive Water Planning. The terms of this Agreement will be included as an amendment to Kent's Comprehensive Water System Plan. Kent will submit to Auburn and WD #111 its Comprehensive Water System Plans and amendments thereto.

5. WD #111 Comprehensive Water Planning. The terms of this Agreement will be included as an amendment to WD #111's Comprehensive Water Plan. WD #111 will submit to Kent and Auburn its Comprehensive Water System Plans and amendments thereto.

6. Auburn Comprehensive Water Planning. The terms of this Agreement will be included as an amendment to Auburn's Comprehensive Water Plan. Auburn will submit to Kent and WD #111 its Comprehensive Water System Plans and amendments thereto.

7. Reliance. Each Party hereto acknowledges that the terms hereof will be relied upon by the other in its comprehensive planning to meet the needs of the service area designated herein.

8. Liability. Except as set forth in Section 12 regarding default, failure to perform or negligent conduct, the Parties agree that this Agreement shall not be a source of liability between the Parties for any failure or interruption of service in the service area of any Party as designated in this Agreement.

9. Government Notifications. Auburn will give notice of the adoption of this Agreement to Metropolitan/King County, to the Washington State Department of Health, to the South King County Regional Water Association, to the Water Utility Coordinating Committee, and to any other agency with jurisdiction over, or interest in, the terms hereof, and the Parties shall cooperate and assist each other in all reasonable manner in procuring any necessary approvals hereof by those agencies.

10. Boundary Review Board. In the event that implementation of the terms herein result in permanent water service to areas that will be outside the respective service boundaries of Kent, WD #111 or Auburn, the Parties will, at the time of such service, jointly file a notice of intention with the King County Boundary Review Board in accordance with Chapter 36.93.090 RCW and Chapter 57.08.047 RCW.

11. Alteration, Amendment or Modification. Kent, WD #111 and Auburn hereby reserve the right to alter, amend or modify the terms and conditions of this Agreement only upon written agreement of the Parties to such alteration, amendment or modification.

12. Indemnification and Hold Harmless. Each Party hereto agrees to protect, defend, and indemnify the other Parties, their officers, officials, employees and agents from any and all cost, claims, judgments and/or awards of damages, arising out of or in any way resulting from the indemnifying Party's, its employees, subcontractors or agents default, failure of performance, or negligent conduct associated with this agreement. Each Party agrees that its obligations under this provision extend to any claim, demand, and/or cause of action brought by or on behalf of any of its employees, or agents. The foregoing indemnity is specifically and expressly intended to constitute a waiver of each Party's immunity under Washington's Industrial Insurance Act, RCW Title 51, as respects the other Parties only, and only to the extent necessary to provide each Party with a full and complete indemnity of claims made by the other Party's employees. The Parties acknowledge that these provisions were specifically negotiated and agreed upon by them.

13. Integration. This Agreement constitutes the entire agreement of the Parties regarding the subject matter hereof, and there are no other representations or oral agreements other than those listed herein, which vary the terms of this Agreement. Future agreements may occur between the Parties to transfer additional or future service areas by mutual agreement.

14. Obligation Intact. Nothing herein shall be construed to alter the rights, responsibilities, liabilities, or obligations of Kent, WD #111 or Auburn regarding provision of water service, except as specifically set forth herein.

15. Duration. This Agreement shall take effect on the last day approved by all of the Parties and shall remain in effect until modified by written agreement of the Parties.

16. Recording. Pursuant to RCW 39.34.040, following the approval and execution of this Agreement by the Parties, this Agreement shall be filed with the King County Auditor.

CITY OF KENT

Approved by Motion No. _____ of the City of Kent, Kent, Washington, at its regular meeting held on the 1st day of August, 2006.

By:

Suzette Cooke, Mayor
City of Kent

Approved as to form:

Kristin M. Lamson, Asst., City Attorney
City of Kent

KING COUNTY WATER DISTRICT NO. 111

Approved by Resolution No. _____ of the King County Water District No. 111, Kent, Washington, at its regular meeting held on the 8th day of June, 2006.

By:

Patrick Hanis, President
King County Water District No. 111

Approved as to form:

John W. Milne, General Counsel
King County Water District No. 111

CITY OF AUBURN

Approved by Resolution No. 3920 of the City of Auburn, Washington, at its regular meeting held on the 5th day of September, 2006.

By:

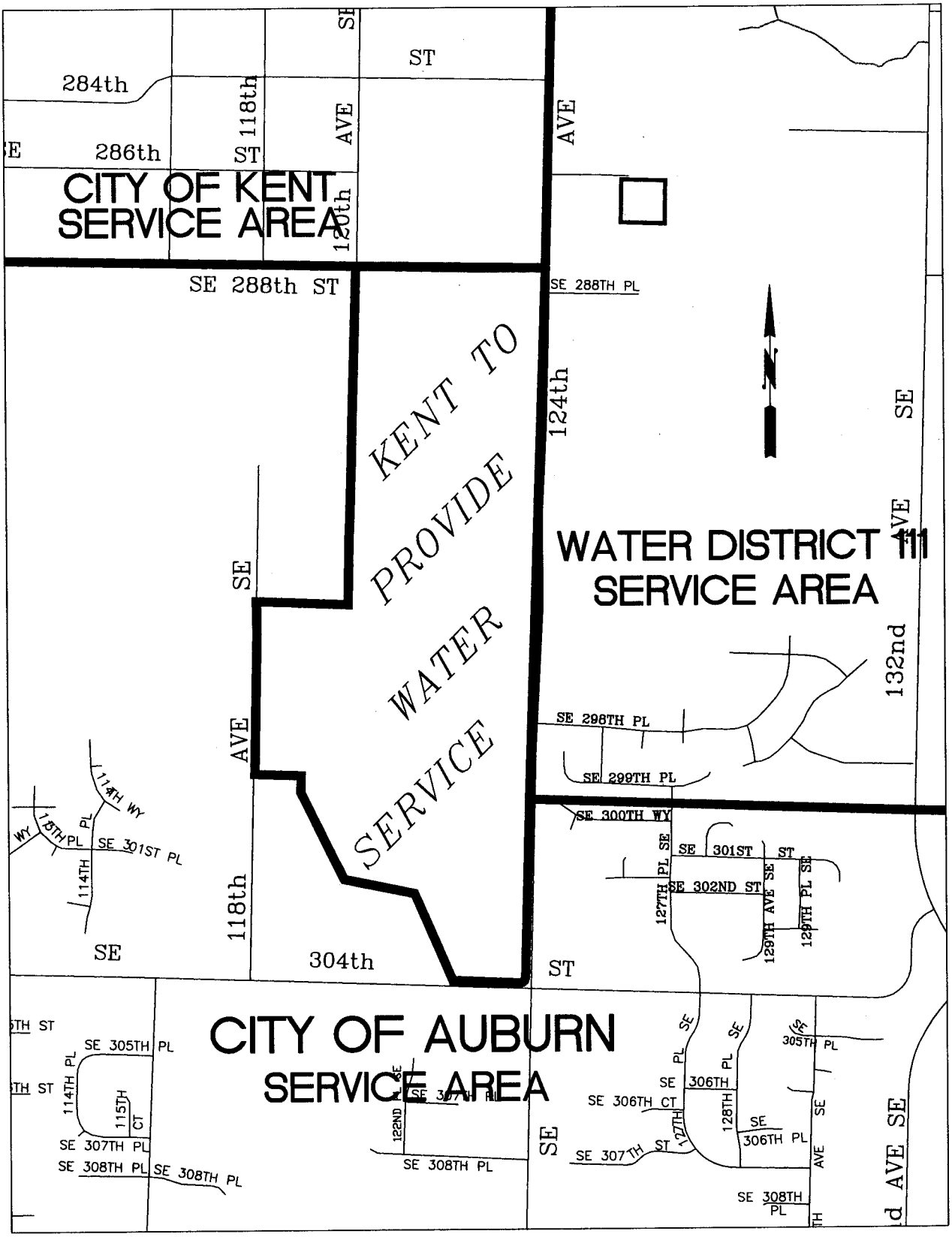
Peter B. Lewis, Mayor
City of Auburn

Attest:

Danielle Daskam, City Clerk

Approved as to form:

Daniel B. Heid, City Attorney



CITY OF KENT
KING COUNTY WATER DISTRICT NO. 111
AND CITY OF AUBURN
INTERLOCAL AGREEMENT ESTABLISHING
WATER SERVICE BOUNDARIES
ATTACHMENT 1

Attachment 2

Legal Description

THAT PORTION OF THE NORTHWEST QUARTER AND THE SOUTHWEST QUARTER OF SECTION 4, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M. IN KING COUNTY WASHINGTON, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF GOVERNMENT LOT 3 IN SAID SECTION 4;

THENCE WEST ALONG THE NORTH LINE OF SAID GOVERNMENT LOT 3 A DISTANCE OF 30 FEET TO THE WEST MARGIN OF 124TH AVENUE SOUTHEAST AND THE TRUE POINT OF BEGINNING;

THENCE SOUTH ALONG SAID WEST MARGIN TO THE NORTHERLY MARGIN OF SOUTHEAST 304TH STREET;

THENCE WESTERLY ALONG SAID NORTHERLY MARGIN OF SE 304TH STREET TO THE SOUTHEAST CORNER OF THE PLAT OF CRYSTAL MEADOWS AS RECORDED IN VOLUME 194 OF PLATS AT PAGES 66 AND 67, RECORDS OF KING COUNTY;

THENCE NORTHWESTERLY ALONG THE NORTHEASTERLY EDGE OF SAID PLAT TO THE MOST NORTHERLY CORNER OF LOT 10 OF SAID PLAT;

THENCE WESTERLY ALONG THE NORTH EDGE OF SAID PLAT TO THE NORTHWEST CORNER OF LOT 15 OF SAID PLAT;

THENCE SOUTHERLY ALONG THE WEST LINE OF SAID LOT 15 TO A POINT 50 FEET NORTH OF THE SOUTHEAST CORNER OF TRACT 11 OF THE PLAT OF THE SOUND TRUSTEE COMPANY'S THIRD ADDITION, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 13 OF PLATS AT PAGE 100, RECORDS OF KING COUNTY, WASHINGTON;

THENCE NORTHWESTERLY TO A POINT ON THE NORTH LINE OF THE SOUTH HALF OF SAID TRACT 11, SAID POINT LYING 135 FEET WEST OF THE EAST LINE OF SAID TRACT 11;

THENCE CONTINUING NORTHWESTERLY TO A POINT ON THE NORTH LINE OF SAID TRACT 11, SAID POINT LYING 313.36 FEET WEST OF THE NORTHEAST CORNER OF SAID TRACT 11;

THENCE WESTERLY ALONG THE LINE COMMON TO TRACTS 10 AND 11 OF SAID PLAT OF THE SOUND TRUSTEE COMPANY'S THIRD ADDITION TO THE SOUTHWEST CORNER OF THE EAST HALF OF THE SOUTH 120 FEET OF SAID TRACT 10;

THENCE NORTHERLY ALONG THE WEST LINE OF THE EAST HALF OF THE SOUTH 120 FEET OF SAID TRACT 10 TO THE NORTHWEST CORNER OF THE EAST HALF OF THE SOUTH 120 FEET OF SAID TRACT 10;

THENCE WEST ALONG THE NORTH LINE OF THE SOUTH 120 FEET OF SAID TRACT 10 TO THE WEST LINE OF SAID TRACT 10;

THENCE NORTH ALONG SAID WEST LINE OF SAID TRACT 10 AND THE WEST LINE OF TRACT 9 OF SAID PLAT OF THE SOUND TRUSTEE COMPANY'S THIRD ADDITION TO THE NORTHWEST CORNER OF SAID TRACT 9;

THENCE EAST ALONG THE NORTH LINE OF SAID TRACT 9 TO THE NORTHEAST CORNER OF SAID TRACT 9 AND THE WEST LINE OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 4;

THENCE NORTH ALONG LAST SAID WEST LINE AND THE WEST LINE OF GOVERNMENT LOT 3 OF SAID SECTION 4 TO THE NORTHWEST CORNER OF SAID GOVERNMENT LOT 3;

THENCE EAST ALONG THE NORTH LINE OF SAID GOVERNMENT LOT 3 TO THE TRUE POINT OF BEGINNING.

RESOLUTION NO. 4563

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO SIGN THE 2010 LAKE TAPPS AREA WATER RESOURCES AGREEMENT

WHEREAS, Cascade Water Alliance ("Cascade") has entered into an agreement with Puget Sound Energy "PSE" to purchase PSE's interest in Lake Tapps, and associated equipment related to PSE's former power generation operations at Lake Tapps; and

WHEREAS, Cascade has applied to the Washington State Department of Ecology ("Ecology") for a permit to utilize Lake Tapps as a municipal water supply, although said permit has not yet been granted. This application will convert the water right from its current hydropower production purpose, which is a non-consumptive use that keeps water in the basin, to a recreation and municipal water supply purpose, which is a consumptive use that will result in water being taken out of the basin. The cities of Auburn, Bonney Lake, Buckley, and Sumner ("Four Cities") believe that this conversion and removal of water from the watershed of origin, without addressing the needs of communities in the watershed, is inconsistent with the goals and intent of state laws including laws relating to growth management, watershed planning, water resource management and environmental policy; and the Cities intend for this Agreement to, at least partially, address the Cities' concerns about removal of substantial amounts of water from the basin; and

WHEREAS, each of the Four Cities is located in close proximity to Lake Tapps, and Bonney Lake borders on the Lake; and,

WHEREAS, Lake Tapps is an important resource for the Four Cities and the East Pierce County region, for both recreation and municipal water supply purposes; and

WHEREAS, each of the Four Cities is located in close proximity to the White River, and three of the cities (Auburn, Buckley and Sumner) border on the River; and

WHEREAS, the White River is an important resource for the Four Cities and the watershed for fisheries, recreation and municipal water supply purposes; and

WHEREAS, the Four Cities each have a duty and responsibility to provide water to serve their growing communities, and face significant challenges securing future water supplies in a basin that is closed to new withdrawals; and

WHEREAS, Cascade also has purchased significant amounts of water from, and paid system development charges to, Tacoma Public Utilities ("TPU") for municipal water; and

WHEREAS, the Four Cities each have a present need for additional water, but Cascade's ownership of the Lake Tapps water right and its operation and utilization of the Lake as a municipal water supply may impair the Four Cities' ability to secure future water supplies for their citizens; and

WHEREAS, ensuring that the Four Cities can meet the future water demands of their growing communities is in the public interest; and

WHEREAS, in recognition of the need to maintain Lake Tapps as a recreation resource, Cascade has entered into a Definitive Agreement with the

Lake Tapps Community Council ("LTCC") that obligates Cascade to maintain water levels in the Lake at "normal full pool" during the summer months; and

WHEREAS, the Four Cities seek to mitigate the possible adverse effects of Cascade's operation of Lake Tapps on the Four Cities while cooperating with Cascade's efforts to develop Lake Tapps as a water supply source.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, HEREBY RESOLVES as follows:

Section 1. The Mayor of the City of Auburn and the Auburn City Clerk are hereby authorized to execute the 2010 Lake Tapps Area Water Resources Agreement which agreement shall be in substantial conformity with the Agreement a copy of which is attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

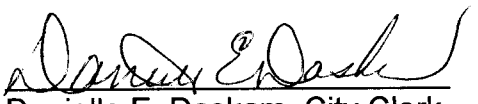
Section 3. This resolution shall be in full force and effect upon passage and

Dated and Signed this 19th day of January, 2010.

CITY OF AUBURN

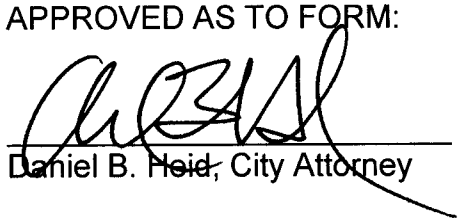
for PETER B. LEWIS
MAYOR

ATTEST:



Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:



Daniel B. ~~Heid~~, City Attorney



Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein): 13\74

Interlocal Agreement

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Cascade Water Alliance
Pkwy W4022-4

Grantee/Assignee/Beneficiary: (Last name first)

1. Auburn, City of
2. Bonney Lake, City of
3. Buckley, City of
4. Sumner, City of

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number
N/A

☐ Assessor Tax # not yet assigned

Said document(s) were filed for record by Pacific Northwest Title as an accommodation only. It does not insure the validity or sufficiency thereof.

2010 LAKE TAPPS AREA WATER RESOURCES AGREEMENT AMONG THE CITIES OF AUBURN, BONNEY LAKE, BUCKLEY AND SUMNER, AND CASCADE WATER ALLIANCE

THIS LAKE TAPPS AREA WATER RESOURCES AGREEMENT ("Agreement") made and entered into on the 5th day of February, 2010, by and among the CITY OF AUBURN, ("Auburn"), the CITY OF BONNEY LAKE, ("Bonney Lake") the CITY OF BUCKLEY, ("Buckley") the CITY OF SUMNER, ("Sumner") (all municipal corporations of the State of Washington, collectively, the "Four Cities") and the CASCADE WATER ALLIANCE, a Washington non-profit corporation ("Cascade"). The Four Cities and Cascade together are sometimes collectively referred to as the "Parties."

DEFINITIONS:

"**Water Right**" shall mean the water right applications submitted to the Department of Ecology ("Ecology") S2-29920, R2-29935, and S2-29934 in their current form or as may be modified and as approved by Ecology .

"**Cascade's Tacoma Wholesale Agreement**" means *the Agreement For The Sale of Wholesale Water Between The City of Tacoma, Department of Public Utilities, Water Division and Cascade Water Alliance*, dated October 13, 2005. The terms "**Capacity Reservation Fee**," "**Peaking Factor,**" and "**System Development Charges**" are used in this Agreement as defined in Cascade's Tacoma Wholesale Agreement.

"**City**" means one of the Four Cities individually.

"**Other Agreements**" means the *Agreement Regarding Reservoir Management Between PSE and the Lake Tapps Community*, dated March 31, 2004*; the White River Management Agreement Between the Puyallup Tribe of Indians, the Muckleshoot Indian Tribe, and Cascade Water Alliance*, dated August 6, 2008; the *Lake Tapps Water Rights Settlement Agreement,* dated August 6, 2008*;* the *Natural Resources Enhancement Agreement with the Puyallup Tribe of Indians,* dated August 6, 2008; and the *2009 Agreement Regarding Lake Tapps between Cascade Water Alliance and the Lake Tapps Community*, dated May 13, 2009.

TERMS OF AGREEMENT

In consideration of their mutual covenants, conditions and promises, **THE PARTIES HERETO AGREE** as follows:

EFFECTIVE DATE AND TERM: This Agreement shall take effect when executed by the Parties and shall remain in full force and effect for fifty (50) years, unless terminated (in whole or in part) earlier in accordance with Sections 4 and 10. Provided, that any actions taken to enforce this Agreement before it expires, any conditions contained in permits issued pursuant to or implementing the terms of this Agreement, and any contracts to purchase water shall survive this Agreement. The Term of this Agreement may be extended by written agreement of the Parties.

CASCADE'S RESPONSIBILITIES:

1. **Lake Tapps Municipal Advisory Group.** Cascade agrees to the establishment of the Lake Tapps Municipal Advisory Group as follows:

   a. The Lake Tapps Municipal Advisory Group shall consist of the elected Mayors of each of the Four Cities and three (3) members of the Cascade Board of Directors (the Cascade Board). If any of the Four Cities becomes a Member of Cascade, the Mayor of that City will not be considered a member of the Lake Tapps Municipal Advisory Group unless appointed as a representative of the Cascade Board.

   b. The Lake Tapps Municipal Advisory Group will be a non-voting entity with the purpose of: (1) advising the Four Cities of proposed or pending Cascade decisions or actions related to the management of Lake Tapps that may affect the Four Cities; (2) advising Cascade of any issue that the Four Cities may have related to Cascade's management of Lake Tapps; (3) seeking cooperative resolution of any issues raised by Cascade or the Four Cities; and (4) any other matters related to the implementation of provisions of this Agreement.

   c. The Lake Tapps Municipal Advisory Group will meet at least twice annually, with such meetings to be generally held in early/mid October and early/mid April, or as otherwise agreed by the members. Meetings may include staff of Cascade and the Four Cities as determined by the group. At the regular meeting of the Cascade Board immediately following a meeting of the Lake Tapps Municipal Advisory Group, a representative of the group will report on the issues discussed and present any recommendations for cooperative resolution of any issues discussed.

2. **Remedies for Negative Impact on Water Supply**. In accordance with the terms of this Agreement, if Cascade's Lake Tapps water supply operations result in a negative impact to the water supplies of one of the Four Cities that is not a Cascade member, the City claiming a negative impact must notify Cascade of their claim and give Cascade at least sixty days to resolve the claimed impact. If Cascade fails to resolve the claimed negative impact or disputes that the negative impact exists, the City claiming the negative impact may pursue existing legal remedies in accordance with state and federal law. If a court

determines that a negative impact has occurred, Cascade shall implement a remedy acceptable to the claiming City or, if the affected City or Cities and Cascade can not agree on a remedy, the court shall establish the terms for the remedy.

3. **Water Supply Assistance.** Cascade agrees to assist the Four Cities in their efforts to meet their respective projected 50-year water needs by implementing one or more of the following measures:

   a. **Tacoma Wholesale Water.** Through December 31, 2026, Cascade shall make available the following water supply that may be purchased by the Four Cities either individually or jointly: up to six (6) million gallons per day (MGD) under section 6.2 of Cascade's Tacoma Wholesale Agreement (hereinafter referred to as "Cascade's Guaranteed Reserve Capacity") and up to four (4) MGD under section 6.1 of Cascade's Tacoma Wholesale Agreement (hereinafter referred to as "Cascade's Permanent Capacity") under the following conditions:

      1) For water supply from Cascade's Guaranteed Reserve Capacity to be available throughout the year, the City agrees to pay to Cascade an amount equal to the Capacity Reservation Fee (CRF) paid to Tacoma multiplied by the amount to be purchased in MGD ($1,570,074.00 per MGD). It is understood that this Guaranteed Reserve Capacity water includes a peaking factor of 1.33 for the months of June through September and the City agrees to pay this fee.

      2) For water supply from Cascade's Guaranteed Reserve Capacity to be available only during the peak season (June through September), the City agrees to pay to Cascade an amount equal to a pro-rated portion of the Capacity Reservation Fee paid to Tacoma multiplied by the amount to be purchased in MGD (1/3 of the CRF or $523,358.00 per MGD). It is understood that this Guaranteed Reserve Capacity water includes a peaking factor of 1.33 for the months of June through September and the City agrees to pay this fee.

      3) For water supply from Cascade's Permanent Capacity to be available either during peak period only or throughout the year, the City agrees to pay to Cascade an amount equal to the System Development Charge (SDC) paid by Cascade to Tacoma multiplied by the amount to be purchased in MGD ($4,121,000 per MGD) prorated by the number of months the water will be used each year. (For example, if a City purchases 1 MGD only from June through September, it would pay 1/3 of the SDC, or $1,373,667 per MGD.) It is understood that this Permanent Capacity water includes a peaking factor of 1.33 for the months of June through September and the City agrees to pay this fee.

4) Each City that purchases water under this Section 3 of this Agreement will designate a delivery point and either pay Tacoma directly or reimburse Cascade for costs incurred to install necessary service taps, meters or vaults. Any infrastructure beyond the designated delivery point that may be required to deliver the purchased water to retail customers will be solely the responsibility of the City.

5) Each City that purchases water under this Section 3 of this Agreement will provide Cascade with the necessary delivery scheduling information required under Cascade's Tacoma Wholesale Agreement, and will reimburse Cascade for all wholesale charges from Tacoma associated with deliveries at the City's delivery point, in accordance with the provisions of Section 9.1 of Cascade's Tacoma Wholesale Agreement, except for Cascade's obligation to pay the Minimum Monthly Bill.

6) At any time prior to December 31, 2026, any of the Four Cities that have entered into wholesale water purchase agreements with Cascade under this Section 3 of this Agreement may ask Cascade to request that Tacoma make permanent the amount of water being purchased from Cascade under this Section 3 in accordance with section 15.1 of Cascade's Tacoma Wholesale Agreement. If approved by Tacoma, the requesting City agrees to pay to Cascade any amounts due from Cascade to Tacoma pursuant to section 15.1.2 of Cascade's Tacoma Wholesale Agreement for the duration of Cascade's obligation to Tacoma.

7) Cascade shall not terminate, relinquish or amend Cascade's Tacoma Wholesale Agreement in any way that adversely impacts the Four Cities' ability to purchase water as set forth in this Agreement without the prior express written consent of the Four Cities.

b. **Regional Reserved Water.** Through December 31, 2030, Cascade will provide Lake Tapps Region Reserved Water ("Regional Reserved Water") to assist the Four Cities to secure or apply for alternative water supplies or water rights under the following conditions:

1) Cascade will include Regional Reserved Water, consistent with this Agreement, in its State Environmental Policy Act (SEPA) Draft Environmental Impact Statement (DEIS) regarding the Lake Tapps Water Rights and Supply Project.

2) Subject to the SEPA DEIS process, Cascade will request approval by Ecology of the Lake Tapps municipal water right application as follows:

(a) Regional Reserved Water in an amount of seven (7) cubic feet per second (cfs) annual average (Qa) and ten (10) cfs maximum instantaneous (Qi) would be reserved for the use by any or all of the Four Cities to mitigate impacts on the White River of new water rights or changes to existing water rights.

(b) Regional Reserved Water would not be diverted into Lake Tapps, but instead be allowed to flow down the White River for potential use by any of the Four Cities.

3) If such Regional Reserved Water is approved by the Department of Ecology as provide in this Agreement, use of such Regional Reserved Water may be included as part of a water right application submitted individually by any of the Four Cities. Ecology approval of water rights utilizing Regional Reserved Water must be secured by the City on or before December 31, 2030. Beneficial use of such Regional Reserved Water will take place consistent with approved development schedules included in those water right approvals. Any Regional Reserved Water not authorized for use in a water right approved by December 31, 2030, shall revert to Cascade.

4) Cascade shall have no other obligation or involvement in any water right applications submitted by the Four Cities utilizing the Regional Reserved Water. Any concerns Cascade may have regarding a City's application shall be raised pursuant to the dispute resolution provisions of Section 18 of this Agreement, prior to pursuing any legal action, including administrative appeals.

5) Within 90 days of any of the Four Cities receiving final approval of new or changed water rights incorporating use of Regional Reserved Water, that City shall pay Cascade a one-time Regional Water Charge equal to $743,950.00 per cfs. If the water right includes seasonal limitations on use of Regional Reserved Water, the Regional Water Charge shall be pro-rated to reflect the seasonal availability of such water.

c. **Water from Tailrace.** Subject to availability and to supporting findings in a report of examination for one of the Four Cities' new or changed water right applications, Cascade would provide water by releasing water from the Lake Tapps Project tailrace to the White River, on terms to be negotiated by Cascade and the requesting City.

d. **Support.** In order to support the efforts made by any of the Four Cities to acquire new water rights or transfer existing water rights, and upon request by any of the Four Cities, Cascade shall provide technical support, in the form of access to existing modeling and any other technical documentation available to Cascade. Upon request of the Four

Cities and so long as consistent with Other Agreements and approvals related to the Lake Tapps Project, Cascade shall also provide letters or other documentation in support of actions taken by the Four Cities to secure new water rights or transfers of water rights, including but not limited to letters of support in establishing a finding of overriding considerations of the public interest by the Department of Ecology pursuant to RCW 90.54.020(3)(a).

4. Termination. Cascade's obligations under Sections 1 through 3 of this Agreement are in force and effect as to each City only so long as that City fulfills its obligations under this Agreement and has not appealed the Water Right.

5. Local Franchise and Permit Requirements. When operating in any of the Four Cities' municipal boundaries, Cascade will comply with all of that City's franchise and permitting requirements.

CITIES' RESPONSIBILITIES:

6. Purchase of Tacoma Wholesale Water. The Four Cities, collectively or individually, at each City's sole discretion, agree to buy water under Cascade's Tacoma Wholesale Agreement at the rates, including connection and wholesale charges as set forth in this Agreement. The Four Cities shall be responsible for dividing the purchased capacity among themselves, and shall negotiate wheeling or other applicable agreements either with Cascade or directly with Tacoma Water. Except as expressly provided otherwise in this Agreement, the Four Cities agree to be bound by the terms of the Cascade's Tacoma Wholesale Agreement.

7. Dismissal of Litigation. Within fifteen (15) business days after filing and/or recording of this Agreement, Auburn will withdraw and dismiss its pending lawsuit, with prejudice, against Cascade (King County Case Number 05-2-35788-6).

8. Four Cities Support of the Water Right. So long as the EISs are issued by Cascade and the Water Right is approved by Ecology consistent with this Agreement, the Four Cities will support the EISs and the Water Right.

9. Municipal Advisory Group. The Four Cities, represented by their duly elected Mayors, will participate in the Lake Tapps Municipal Advisory Group as described in this Agreement.

10. Amending Legislation. Within thirty (30) days of issuance of the Water Right consistent with this Agreement, the Four Cities will support legislation amending RCW 39.34.215 by deleting subsections (4) (c) and (5).

11. Termination. The Four Cities' obligations under Sections 6 through 10 of this Agreement

are in force and effect only so long as Cascade fulfills its obligations under this Agreement and the ROEs issued by Ecology for the Water Right are consistent with this Agreement regarding the Regional Reserved Water.

GENERAL

12. Indemnification. Each Party shall indemnify and hold the other Parties and their agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, losses, damages, or costs, of whatsoever kind or nature, brought against that Party arising out of, in connection with, or incident to the execution of this Agreement and/or the Indemnifying Party's performance or failure to perform any aspect of this Agreement; provided, that nothing herein shall require an Indemnifying Party to hold harmless or defend any other Party, its agents, employees and/or officers from any claims arising from the sole negligence of that other Party, its agents, employees, and/or officers. No liability shall attach to any Party by reason of entering into this Agreement except as expressly provided herein.

13. Compliance with regulations and laws. The parties shall comply with all applicable rules and regulations pertaining to them in connection with the matters covered herein.

14. Assignment. No Party shall assign this Agreement or any interest, obligation or duty therein without the express written consent of all other parties.

15. Attorneys' Fees. If any party shall be required to bring any action to enforce any provision of this Agreement, or shall be required to defend any action brought by the other party with respect to this Agreement, and in the further event that one party shall substantially prevail in such action, the losing party shall, in addition to all other payments required therein, pay all of the prevailing party's reasonable costs in connection with such action, including such sums as the court or courts may adjudge reasonable as attorney's fees in the trial court and in any appellate courts.

16. Notices. All notices and payments hereunder may be delivered or mailed. If mailed, they shall be sent to the following respective addresses:

City of Auburn
25 West Main
Auburn, WA 98001-4998
Attn: Public Works Director
Phone:(253) 931-3000
Fax: (253) 931-3053

City of Bonney Lake
19306 Bonney Lake Blvd.
Bonney Lake, WA 98391
Attn: Public Works Director
Phone: (253) 862-8602
Fax: (253) 862-8538

City of Buckley
933 Main St
PO Box 1960
Buckley, WA 98321
Attn: City Administrator
Phone: (360) 829-1921
Fax: (360) 829-2659

City of Sumner
1104 Maple St.
Sumner, WA 98390
Attn: Public Works Director
Phone: (253) 863-8300
Fax: (253) 299-5509

Cascade Water Alliance
11400 SE 8th Street, Suite 440
Bellevue, Washington 98004
Attn: Chief Executive Officer
Phone: (425) 453-0930
Fax: (425) 425-453-0953

General Counsel, Cascade Water Alliance
GordonDerr, LLP
2025 First Avenue South, Suite 500
Seattle, Washington 98128-3140
Phone: (206) 382-9540
Fax: (206) 625-0675

or to such other respective addresses as any party hereto may hereafter from time to time designate in writing. All notices and payments mailed by regular post (including first class) shall be deemed to have been given on the second business day following the date of mailing, if properly mailed and addressed. Notices and payments sent by certified or registered mail shall be deemed to have been given on the next business day following the date of mailing, if properly mailed and addressed. For all types of mail, the postmark affixed by the United States Postal Service shall be conclusive evidence of the date of mailing.

17. Enforceability: The Parties intend this Agreement to be certain and enforceable, as well as a mechanism for ongoing collaboration as to any issues that may arise in connection with implementation of the Agreement. Except as necessary for compliance with and enforcement of this Agreement, the parties do not intend this Agreement to modify their respective rights or authorities.

18. Dispute Resolution. In the event that any dispute arises between Cascade and the Four Cities, the aggrieved Party shall give a notice of the dispute to the other Party as provided in Section 16. Cascade and the Four Cities shall, within five (5) days of such notice, each nominate a senior officer of its management to meet at a mutually agreed location, to attempt to resolve such dispute. The Parties shall each designate a representative(s) to confer on the best and most cost effective way to resolve the dispute. By mutual agreement, they may choose direct negotiations or mediation. If there is no agreement between the Parties on how to proceed within thirty (30) days, either Party may pursue legal action; provided however, no Party shall be precluded from filing an appeal or action to prevent the expiration of a time period for filing or any statute of limitations.

19. Non-Waiver. No delay or failure by a Party to exercise any of its rights, powers or remedies under this Agreement following any breach by another Party shall be construed to be a waiver of any such breach, or any acquiescence therein, or of or in any similar breach thereafter occurring, nor shall any waiver of any single breach be deemed a waiver of any other breach theretofore or thereafter occurring.

20. Severability. In the event that any of the terms of this Agreement are in conflict with any rule of law or statutory provision or otherwise unenforceable, such terms will be deemed stricken from this Agreement, but such invalidity or unenforceability will not invalidate any of the other terms of this Agreement, and this Agreement will continue in force, unless the invalidity or unenforceability of any such provisions hereof does substantial violence to, or where the invalid or unenforceable provisions comprise an integral part of, or are otherwise inseparable from, the remainder of this Agreement.

21. No Third Party Beneficiary. This Agreement is for the sole and exclusive benefit of the Parties and is not intended to and shall not confer any rights or benefits on any third party not a signatory hereto.

22. Amendment. This Agreement only may be amended or supplemented in a writing signed by the Parties.

23. Survival of Claims. Any claim that a Party has asserted by raising it under the Dispute Resolution provisions of this Agreement prior to the termination of this Agreement and that may reasonably be interpreted or construed to survive the termination of this Agreement shall survive the termination of this Agreement.

24. Signature in Counterpart. This Agreement may be executed in any number of counterparts and all of those counterparts taken together shall constitute one and the same instrument.

25. Further Assurances. Each Party covenants and agrees to do all things necessary or advisable in order to confirm and better assure the intent and purposes of this Agreement.

26. Authority. Each party, by executing this Agreement warrants that it has duly approved this Agreement and has the power to enter into this Agreement and to enforce its terms.

27. Good Faith Commitment to Support Agreement. The Parties covenant and agree to act in good faith and to support the terms and validity of this Agreement. Cascade shall, during the term of this Agreement, support and defend the validity of the Agreement and shall not seek, either directly or indirectly, to invalidate the Agreement or undermine or modify its terms and conditions through administrative, legislative, judicial or other means.

28. Nondiscrimination. Each of the parties, for itself, its heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree that it will comply with pertinent statutes, Executive Orders and such rules as are promulgated to assure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or the presence of any sensory, mental or physical handicap be discriminated against or receive discriminatory treatment by reason thereof.

29. Applicable Law. This Agreement shall be deemed to be made and construed in accordance with the laws of the State of Washington jurisdiction and venue for any action arising out of this Agreement shall be in Pierce County, Washington.

30. Captions. The captions in this Agreement are for convenience only and do not in any way limit or amplify the provisions of this Agreement.

31. No Additional Entities Created. Unless otherwise specifically provided herein, no separate legal entity is created hereby, as each of the parties is contracting in its capacity as a municipal corporation of the State of Washington; or as a Washington non-profit Corporation. The identity of the parties hereto is as set forth hereinabove.

32. Integrated Agreement. This Agreement constitutes the entire agreement between the parties. There are no terms, obligations, covenants or conditions other than those contained herein. No modifications or amendments of this Agreement shall be valid or effective unless evidenced by an agreement in writing signed by all parties.

33. Filing. Copies of this Agreement shall be filed with the King County Auditor's Office; the Pierce County Auditor's Office; the Secretary of State of the State of Washington; and the respective Clerks of the parties hereto.

IN WITNESS WHEREOF the parties hereto have executed this Agreement as of the day and year first above written.

CITY OF AUBURN

2/5/10
Peter B. Lewis, Mayor Date

Attest:

2/5/10
Danielle Daskam, City Clerk Date

Approved as to Form:

2-1-2010
Daniel B. Heid, City Attorney Date

CITY OF BONNEY LAKE

2/5/10
Neil Johnson, Mayor Date

Attest:

2/5/10
Harwood T. Edvalson, CMC Date

Approved as to Form:

2-2-10
James Dionne, City Attorney Date

CITY OF BUCKLEY

2/5/10
Pat Johnson, Mayor Date

Attest:

2-10-10
Joanne Starr, Deputy City Clerk Date

Approved as to Form:

2/9/10
Kathleen Callison, Date
Law Office of Kathleen Callison, P.S.

CITY OF SUMNER

2/5/10
Dave Enslow, Mayor Date

Attest:

2/10/10
Terri Berry, CMC, City Clerk Date

Approved as to Form:

2/4/10
Brett Vinson, City Attorney Date

CASCADE WATER ALLIANCE

Chuck Clarke, CEO Date

CASCADE WATER ALLIANCE

2/5/10
Perese Richmond, Date
General Counsel

STATE OF WASHINGTON)
)ss.
COUNTIES OF KING AND PIERCE)

I, Danielle Daskam, the duly appointed, qualified City Clerk of the City of Auburn, a Municipal Corporation and Code City, situate in the counties of King and Pierce, State of Washington, do hereby certify that the foregoing is a full, true and correct copy of the agreement entitled 2010 Lake Tapps Area Water Resources Agreement Among the Cities of Auburn, Bonney Lake, Buckley and Sumner and Cascade Water Alliance on file with the City Clerk of the City of Auburn.

I certify that said agreement was duly approved by the Council by Resolution No. 4563 on January 19, 2010 and the agreement signed by the Mayor of the said City of Auburn on the 5th day of February, 2010.

Witness my hand and the seal of the City of Auburn this 16th day of February, 2010.

Danielle Daskam, City Clerk
City of Auburn

February 5, 2010

Mr. Chuck Clarke
CEO, Cascade Water Alliance
11400 SE 8th Street, Suite 440
Bellevue, WA 98004

Dear Mr. Clarke,

The Cities of Auburn, Bonney Lake, Buckley, and Sumner have completed negotiations with Cascade Water Alliance on the 2010 Lake Tapps Area Water Resources Agreement (Agreement), whereby Cascade agreed to assist the cities in meeting their respective future water supply needs. As the four Mayors representing the Cities of Auburn, Bonney Lake, Buckley, and Sumner we have found it prudent to submit this letter to you on behalf of our cities detailing the projected timing and quantity of our respective water supply needs for the resources being made available to our cities by Cascade. The projected amounts needed and the times at which water will be needed are based on current planning data. We understand that the quantities listed below are subject to the following combined limits in the Agreement: (1) with respect to Regional Reserved Water for mitigation purposes, 7 cfs for average daily demand and 10 cfs for peak demand; and (2) with respect to Tacoma Wholesale Water, 6 million gallons per day (MGD) of Cascade's Guaranteed Reserve Capacity and four 4 MGD of Cascade's Permanent Capacity, plus a peaking factor of 1.33.

The Cities agree among themselves that the sources of supply provided by Cascade Water Alliance will be allocated as outlined below for each source provided, and that these allocations will be needed by approximately the years listed below. Any changes of allocation between the cities from the amounts reflected below will be subject to mutual written agreement of all four cities and a revised notice to Cascade.

City of Auburn Schedule and Allocation:

Mitigation Flows (Regional Reserved Water):

MGD ADD	MGD Peak	CFS Peak
1.3	2.5	3.88

Temporary Block Water (Guaranteed Reserve Capacity):
Auburn plans to take delivery of not to exceed 5 MGD of this water supply in three (3) increments by year-end 2018.

Permanent Block Water (Cascade's Permanent Capacity):
Auburn plans to take delivery of not to exceed 2MGD ADD, 3.32 MGD Peak of this water supply in two increments by year-end 2018.

City of Bonney Lake Schedule and Allocation:

Mitigation Flows (Regional Reserved Water):

MGD ADD	MGD Peak	CFS Peak
1.0	2.0	3.1

Temporary Block Water (Guaranteed Reserve Capacity):
Bonney Lake declines to purchase any temporary block water.

Permanent Block Water (Cascade's Permanent Capacity):
Bonney Lake plans to take delivery by year-end 2018 of not to exceed 1.54 MGD ADD, 2 MGD Peak of this supply for the months of June through September only.

City of Buckley Schedule and Allocation:

Mitigation Flows (Regional Reserved Water):

MGD ADD	MGD Peak	CFS Peak
0.71	1.3	2.0

Temporary Block Water (Guaranteed Reserve Capacity):
Buckley reserves the right to purchase up to one MGD of temporary block water.

Permanent Block Water (Cascade's Permanent Capacity):
Buckley would purchase permanent block water if Regional Reserved Water cannot be utilized.

City of Sumner Schedule and Allocation:

Mitigation Flows (Regional Reserved Water):

MGD ADD	MGD Peak	CFS Peak
0.42	0.65	1.0

Subject to permitting decisions to be made by Department of Ecology, Sumner may not need peak flows above the average of 0.42 MGD (0.65 cfs).

Temporary Block Water (Guaranteed Reserve Capacity):
Sumner would not purchase temporary block water.

Permanent Block Water (Cascade's Permanent Capacity):
Sumner would not purchase permanent block water.

CITY OF AUBURN

2/3/10

Peter B. Lewis, Mayor — Date

CITY OF BONNEY LAKE

2/5/10

Neil Johnson, Mayor — Date

CITY OF BUCKLEY

2/5/10

Pat Johnson, Mayor — Date

CITY OF SUMNER

2/5/10

Dave Enslow, Mayor — Date

RESOLUTION NO. 4596

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN EMERGENCY WATER SYSTEM INTERTIE AGREEMENT BETWEEN THE CITY OF AUBURN AND THE CITY OF BONNEY LAKE

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Bonney Lake have legal authority to cooperate with other localities on the basis of mutual advantage and provision or services; and

WHEREAS, the Cities have previously entered into an Emergency Water System Intertie Agreement in order to increase fire protection and emergency water supply reliability for their customers; and

WHEREAS, the Cities are willing to continue to provide these necessary services to increase fire fighting and emergency supply reliability; and

WHEREAS, the Cities wish to enter into a new Intertie Agreement.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor and City Clerk of the City of Auburn are hereby authorized to execute an Emergency Water System Intertie Agreement with the City of Bonney Lake in substantially the same form as attached hereto as Exhibit "A," which is made a part hereof as though set forth in full herein.

Section 2. Implementation. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this resolution.

Section 3. Effective Date. This Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 3rd day of May, 2010.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

EMERGENCY WATER SYSTEM INTERTIE AGREEMENT
Bonney Lake/Auburn

THIS AGREEMENT made and entered into by and between the City of Auburn, ("Auburn"), and, the City of Bonney Lake, ("Bonney Lake"), for the purposes of planning, designing, constructing, maintaining, and operating an emergency system intertie between the respective parties,

WITNESSETH:

WHEREAS, both Cities have water facilities in the vicinity, and

WHEREAS, both Cities can increase fire protection and emergency water supply reliability for their customers, and

WHEREAS, the Cities are willing to provide the necessary services to increase fire fighting and emergency supply reliability upon the terms and conditions set forth herein,

NOW, THEREFORE, IT IS MUTUALLY AGREED as follows:

1. The emergency water system intertie is designed to be operated manually as a two way emergency supply between the Auburn and Bonney Lake Systems. The facility is located in Evergreen Way SE at the Water Service Area Boundaries between the two cities. The primary purpose of the intertie is to provide water during an emergency. For purposes of this agreement, an emergency shall be defined as resulting from a water shortage, a major water line break, fire demand, contamination to the water supply system, mechanical equipment failure, electrical equipment failure or Puget Sound Energy facility failure, or any other agreed upon emergency within the water supply system. The maximum duration of an emergency is seven (7) days.

   However, in certain situations such as prolonged equipment repair, the intertie may need to be open for longer than seven (7) days. The party requesting the extended use of the intertie shall notify the other party of this need forty eight (48) hours before the end of the emergency period, and shall provide the other party a written estimate of how long it intends to take water as soon as practicable.

   Tacoma Intertie Operation: At times, in order to meet its own water supply demands as well as Auburn's, Bonney Lake may need to activate its emergency intertie agreement with Tacoma Public Utilities ("TPU"). Auburn agrees that while the TPU Intertie is open that water flowing

through the Auburn/Bonney Lake intertie shall be assumed to be TPU water.

Auburn shall be held to the same conditions as Bonney Lake in its Wholesale Water Agreement with TPU. Water supplied to Bonney Lake by TPU during peak demand periods requires a matching amount of use during the last quarter of the year in order to qualify for wholesale consumption rates versus higher rates used during peak demand periods.

Auburn shall purchase water during the last quarter of the year from Bonney Lake and TPU until this consumption formula is satisfied. For purposes of satisfying the consumption formula, the water supplied to Auburn during the last quarter of the year is not to be used solely for peak demand periods; rather it is to be used for non-recurring maintenance and repair purposes, preferably not during peak demand periods.

2. Auburn will own and maintain the piping, interior equipment, meter and interior appurtenances, and all piping up to the Bonney Lake side of the vault for the metering station.

3. Bonney Lake will own and maintain the exterior appurtenances and all piping on Bonney Lake's side of the vault.

4. Each City will each have unlimited access to the vault via a dual padlock or ownership of keys to the vault.

5. Each City will operate its respective normally-locked valve inside of the vault. Auburn will solely unlock and operate the locked valve on Auburn's side of the meter and Bonney Lake will solely unlock and operate the locked valve on Bonney Lake's side of the meter.

6. The procedure for operating the intertie in the event of such emergency shall be as follows:

   A. Each City shall determine that an emergency as defined in this Agreement has occurred which warrants the need to request that the intertie be activated.

   B. The Public Works Director or designee of the requesting party shall provide a verbal request to the other City's Public Works Director or designee. Upon agreement that an emergency exists which shall allow for the intertie to be opened, the intertie will be activated as soon as reasonably possible. Both Cities' personnel shall be present at the vault to open the valves to activate the facility.

C. The City requesting the activation shall provide a written confirmation of the request not less than 24 hours after the verbal request, or on the first day of normal business after the verbal request.

7. The intertie shall remain activated until the City requesting activation determines that the need for activation of the emergency intertie has ceased and shall request in writing to close the intertie.

8. In case of emergency or whenever the public health, safety, or the equitable distribution of water so demands, the City supplying the water may change, reduce or limit the time for or temporarily discontinue the supply of water without notice; water service may be temporarily interrupted, limited for purposes of making repairs, extensions or doing other necessary work. The City supplying the water shall not be responsible for any damage resulting from interruption, change or failure of the water supply, and the City receiving the water (City requesting activation) shall save and hold harmless the City supplying the water from any loss, damages or suits to or by customers of the City receiving the water resulting from interruption, change or failure of water supply provided by this Agreement, except damages arising out of the City supplying the water's negligence. Prior to a planned interruption or limiting of service, the City supplying the water will notify the City receiving the water of such not less than three days prior to the service disruption. The City supplying the water agrees to use best efforts and reasonable diligence to notify the City receiving the water as soon after it becomes aware of the need for service disruption and further will, to the extent practical, limit the service disruption to daylight hours.

9. Auburn and Bonney Lake staff shall read the meter upon activation and upon deactivation of the intertie. The city supplying the water shall verify the information and shall then calculate and invoice the other city for the water used during the request. The invoice shall be calculated by the total water used during the event.

10. The rate paid for water shall be determined by one of three scenarios under which water is taken through the intertie. The scenarios are described as follows:

A. Emergency Water. This is short term water taken over a period not to exceed seven (7) days. This rate relies on locally produced water and does not include TPU intertie water. The rate for this scenario shall be at the lowest current Auburn or Bonney Lake Residential Rate for service outside City boundaries depending on which city is supplying the water. This shall be complete payment for the water, labor, and administration of activating the intertie.

B. Prolonged Equipment Repair Water. This water is taken over a period exceeding seven (7) days as needed to complete lengthy repairs. The rate for this scenario shall be at the Auburn or Bonney Lake Residential Rate actually charged for service outside City boundaries depending on which city is selling the water plus 10%. This shall be complete payment for the water, labor, and administration of activating the intertie.

C. TPU Intertie Water. If Bonney Lake needs to open the TPU intertie to meet system demands while Auburn is taking water from Bonney Lake then all water flowing to Auburn as measured by the Auburn/Bonney Lake intertie meter shall be considered TPU water. The rate for TPU water shall be the wholesale rate set forth in Tacoma Municipal Code 12.10.400, as currently adopted by the Tacoma Public Utility (TPU) Board and Tacoma City Council. In this scenario only the TPU rate with an additive wheeling fee shall apply regardless of the time the intertie is activated. When the TPU Intertie is opened or closed to support Auburn, Bonney Lake shall notify Auburn that same day.

Auburn understands that Bonney Lake will incur additional costs when they activate the TPU intertie. The costs include but are not limited to increased system operation costs i.e. pumping treatment and sampling; and administrative costs such as meter reads, and Tacoma and Auburn accounting and billing. Since these costs are not easily separated from normal water system operation costs, Bonney Lake and Auburn agree that these costs be compensated using a "Wheeling" fee. The Wheeling fee shall be calculated as percentage of the total cost of the water taken through the Auburn/Bonney Lake intertie meter. The Wheeling fee rate shall be 15% of the total cost of TPU water taken by Auburn.

Not later than 30 days after the Bonney Lake/TPU intertie is deactivated, Bonney Lake will submit a reconciliation bill for the quantity of water supplied to Auburn during the period the Bonney Lake/Auburn intertie is activated. In addition, Bonney Lake reserves the right to request monthly reimbursement if the intertie remains open for a prolonged period.

11. Each City is responsible for associated staff, administration and legal costs associated with the implementation of the agreement.

12. To the extent allowed by law, each party shall defend, indemnify, and hold harmless the other party, its elected officials, employees and agents from and against any and all suits, claims, actions, losses, costs, expenses of litigation, attorney's fees, penalties and damages of whatsoever kind or

nature arising out of or in connection with or incident to an act or omission of the indemnifying party, its employees, agents, and contractors in the performance of the indemnifying party's obligations under the Agreement and this Amendment. This indemnification provision shall include, but is not limited to, all claims against each party by an employee or former employee of the indemnifying party or its contractors and, as to such claims, each party expressly waives all immunity and limitation of liability under Title 51 RCW.

13. This Agreement shall remain in force until terminated by either party hereto upon 60-days written notice to the other party. .

14. This Agreement contains the entire agreement of the parties with respect to the subject matter of this Agreement, and supersedes all prior negotiations, agreements and understandings with respect thereto. This Agreement may only be amended by a written document duly executed by all parties.

IN WITNESS WHEREOF, we have hereunto set our hands and seals.

CITY OF AUBURN
King County, Washington

By: 4/28/10
Peter B Lewis, Mayor Date

CITY OF BONNEY LAKE
Pierce County, Washington

By: 4/28/10
Neil Johnson, Jr., Mayor Date

Attest:

4/28/10
Danielle Daskam, City Clerk Date

Attest:

4/28/10
Harwood T. Edvalson, City Clerk Date

Approved as to form:

4/1/10
Daniel B. Heid, City Attorney Date

Approved as to form:

5/4/10
James J. Dionne, City Attorney Date

Department of Energy

Bonneville Power Administration
28401 Covington Way SE
Kent, WA 98042

LAND USE AGREEMENT

June 16, 2010

In reply refer to:	TERR/Covington
Case No.	20100419
Tract No.:	3C-T-10-A-73
Line:	Tacoma-Covington No. 3
Line:	Tacoma-Grand Coulee No. 1 (oper as Tacoma-Covington No. 4)
ADNO:	8242
Location:	btwn towers 10/4 and 10/5

Applicant:
City of Auburn
Public Works Dept
25 West Main St
Auburn, WA 98001

Landowner:
Stobie & Trussler
3240 B Street
Auburn, WA 98001

Bonneville Power Administration (BPA) hereby agrees to the City of Auburn's use of BPA's easement area for construction/installation, use, and maintenance of a Tacoma waterline - B Street NW Intertie Project CP1011. The vaults and pumping facilities are approved in the proposed location.

The location of the City of Auburn's use is partially within the NE1/4 SE1/4 of Section 1, Township 21N, Range 4E, Willamette Meridian, King County, State of Washington, as shown on the attached segment of BPA Drawing No. 106910, marked as Exhibit A.

This Agreement is revocable at will by BPA and does not modify, change or otherwise alter the rights BPA acquired by Deed. BPA may terminate this agreement upon 30 days written notice.

CITY OF AUBURN AGREES THAT FOLLOWING ITEMS ARE MANDATORY.

1. **A copy of this permit shall be physically located at the project during construction activities.**
2. Inform BPA once the construction of the approved use is complete.
3. Construction equipment shall maintain a minimum distance of 20 feet between the equipment and transmission line conductors at all times. Do not measure this with measuring tape, pole, or other physical means.
4. To ensure the safety of workers and the uninterrupted operation of the BPA transmission facilities, the City of Auburn shall employ a BPA approved safety watcher during any construction activities occurring under the conductors (wires) when operating any equipment that has the potential to reach or come within 20 feet of the conductors (wires). Please contact this office for a current list of BPA approved Safety Watchers.

5. It has been determined that the 17'x 8' vault is HS-20 rated and the surface will be at grade. The lid however is not HS-20 rated and therefore requires placement of bollards and the approval of BPA Transmission Line Maintenance to drive around this portion of the right-of-way.
6. The pipeline shall be buried with a minimum cover of 36 inches.
7. All uses of the right-of-way shall meet local/state/federal/national codes.
8. Mark the location of underground water lines with permanent signs , and maintain such signs, where they enter and leave BPA's right-of-way, and at any angle points with the right-of-way. BPA will not be responsible for damage to facilities not visibly marked.
9. No grade changes to facilitate construction or disposal of overburden shall be allowed. Any damage to BPA property resulting from the proposed right-of-way or access road use shall be repaired at the applicant's expense.
10. Access to BPA transmission line system by BPA and/or its contractors shall not be obstructed at any time.
11. No storage of flammable materials or refueling of vehicles or equipment within the easement area.
12. No refueling of vehicles or equipment is allowed on the right-of-way.
13. Restore BPA's right-of-way to its original condition, or better following construction.

No changes or additions to the use of the right-of-way is allowed without BPA's review and written approval. Any other uses and utilities on the right-of-way must be applied for separately.

The subject use of this easement area has been determined not to be a hazard to, or an interference with, BPA's present use of this easement for electric transmission line purposes. Accordingly, there is no present objection to such use. However, if such use should, at any time, become a hazard to the presently installed electrical facilities of BPA, or any facilities added or constructed in the future, or if such use should interfere with the inspection, maintenance, or repair of the same, or with the access along such easement, the City of Auburn will be required to stop the use or remove such hazard or interference from the right-of-way at no expense to BPA.

The City of Auburn agrees to assume risk of loss, damage, or injury which may result from the use of the easement area, except for such loss, damage, or injury for which BPA may be responsible under the provisions of the Federal Tort Claims Act, 62 Stat. 982, as amended. It is understood that any damage to BPA's property caused by or resulting from use of the easement area may be repaired by BPA, and the actual cost of such repair shall be charged against and be paid by the City of Auburn.

The following items are advisory in nature, but should be given due consideration.

- Nuisance shocks may occur within the right-of-way. Grounding metal objects helps to reduce the level of shock. It is suggested that road building / construction equipment be grounded with a drag chain.
- Construction/installation, use, and maintenance of the waterline intertie shall be at no cost to BPA.
- BPA shall not be liable for damage to City of Auburn's or Stobie & Trussler's property, facilities, or injury to persons that might occur during maintenance, reconstruction, or future construction of BPA facilities as a result of the City of Auburn's facilities being within the right-of-way.
- BPA seeks help maintaining the integrity of the electrical transmission system. Please report any Vandalism or Theft to the BPA Crime Witness program at 1-800-437-2744. Cash rewards of up to

- $ 25,000 will be paid should information lead to the arrest and conviction of persons committing a crime.

Official communication should be directed to, Bonneville Power Administration, Real Estate Field Services-TERR, 28401 Covington Way SE, Kent, WA or by telephoning 1-800-836-6619 with questions or concerns.

Please note that BPA is not the owner of this property. If the City of Auburn is not the owner, permission to use this property must also be obtained from the owner(s). There may also be other uses of the property that might be located within the same area as this project. This agreement is subject to those other rights.

This Land Use Agreement becomes effective upon the signature of all parties. This agreement is entered into with the express understanding that it is not assignable or transferable to other parties without the prior written consent of BPA.

I HAVE READ, UNDERSTAND AND CONCUR WITH THE TERMS OF THIS AGREEMENT:

Applicant's Name
City of Auburn
Peter B. Lewis, Mayor

6/30/10
Date

I HAVE READ, UNDERSTAND AND CONCUR WITH THE TERMS OF THIS AGREEMENT:

Owner's Name
Stobie & Trussler

8-5-10
Date

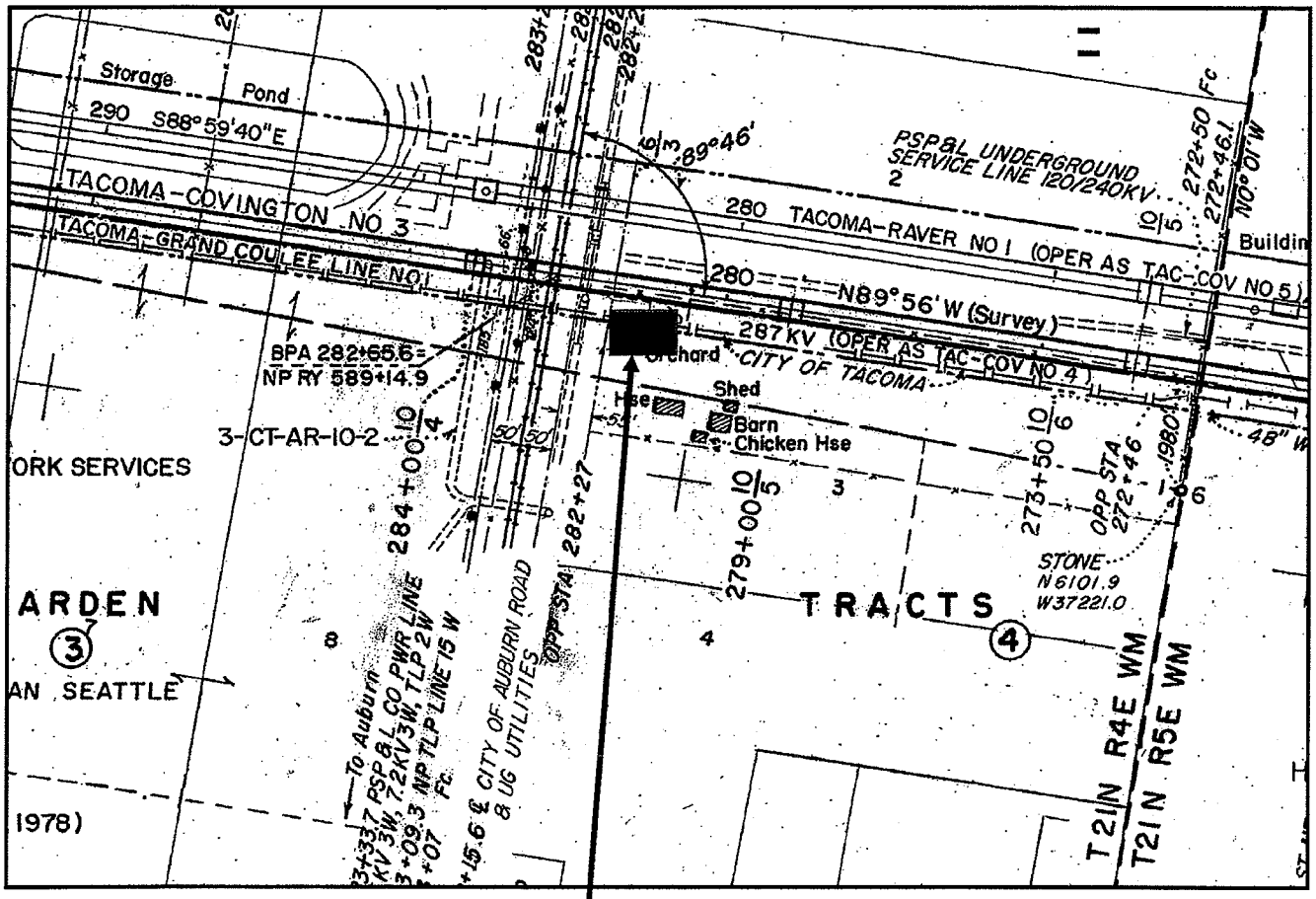
THIS AGREEMENT IS HEREBY AUTHORIZED
Dated this 17 day of Aug, 2010.

Michelle E. Doiron
Realty Specialist for

Bcc:
M. Wolcott – TER-3
N. Meisner – TERR-3
K. Ross – TFCF – Covington

Official File – TR/3 (Case No. 20100419)

SEC 01 T21N R4E WM
KING COUNTY, WASHINGTON



APPROXIMATE LOCATION OF
Waterline connection to Tacoma PUD

UNITED STATES DEPARTMENT OF THE INTERIOR
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

TACOMA-COVINGTON NO 3
230 KV TRANSMISSION LINE
SHORT MILE 40 FROM TACOMA (5200')

RIGHT OF WAY		DESIGN			
Drawn NTA		Drawn		Approved Dates	For Chief of Design
Traced EN	Engineer	Traced	Engineer	DATE 10-27-60	SHEET OF
Checked HAK	Unit Head	Checked	Unit Head	Ser. 106910	Dwg. 171-11-D

EXHIBIT A
CASE 20100419
Tract ID: 3C-T-10-A-73
Lines: Tacoma-Covington #3;
Tacoma-Grand Coulee #1 (Tac-Cov #4)

City of Auburn
Waterline connection

RESOLUTION NO. 4649

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND THE CITY CLERK TO EXECUTE AN EMERGENCY WATER SYSTEM INTERTIE AGREEMENT BETWEEN THE CITY OF AUBURN AND THE LAKEHAVEN UTILITY DISTRICT

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Lakehaven have legal authority to cooperate with other localities on the basis of mutual advantage and provision or services; and

WHEREAS, the parties wish to enter into an Emergency Water System Intertie Agreement in order to increase fire protection and emergency water supply reliability for their customers;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, HEREBY RESOLVES as follows:

Section 1. That the Mayor and City Clerk are hereby authorized to execute an Emergency Water System Intertie Agreement with the Lakehaven Utility District in substantially the same form as attached hereto as Exhibit "A," which is made a part hereof as though set forth in full herein.

Section 2. That the Mayor is authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 18th day of October, 2009.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

EMERGENCY WATER AGREEMENT
Lakehaven/Auburn Intertie No. 2

THIS AGREEMENT made and entered into by and between the City of Auburn, hereinafter referred to as City, and Lakehaven Utility District, hereinafter referred to as "District".

WITNESSETH:

WHEREAS, the City has water facilities in the vicinity of a water main of the District, and

WHEREAS, the City can increase water system reliability in emergencies for its customers if water is available from the District, and

WHEREAS, the District is willing to provide to the City water service necessary to increase the water system's reliability upon the terms and conditions set forth herein,

NOW, THEREFORE, IT IS MUTUALLY AGREED as follows:

1. The District hereby grants to the City the right to connect a water meter and flow control valve, and appurtenances to the end of the 6-inch water main located in a vault near the intersection of Knickerbocker Road and Abby Drive in King County, Washington.

2. The meter and flow control valve described in Paragraph No. 1 is installed to increase the reliability of the City water system to meet demand during emergencies.

3. For purposes of this agreement, "emergency " shall mean a water shortage, a major water line break, fire demand, contamination to the water supply system, mechanical equipment failure, electrical equipment failure or Puget Sound Energy facility failure, or any other event agreed upon between the Parties..

4. The procedure for operating the intertie in the event of such an emergency shall be as follows:

   a. The City and District shall each determine that an emergency has occurred that warrants the need to request that the intertie be activated.

   b. The Public Works Director or designee of the City shall provide a verbal request to the District General Manager or designee stating the requested time of commencement, and estimated duration and quantity of water to be so used. Upon verbal agreement by the District that an emergency exists, the intertie will be

activated as soon as reasonably possible. District and City personnel shall be present at the vault to activate the facility.

c. The City shall provide a written confirmation of the request not less than 24 hours after the verbal request, or on the first day of normal business after the verbal request.

d. Subject to condition in paragraph 10, the intertie shall remain activated until the City determines that the need for activation of the emergency intertie has ceased. The Public Works Director or designee of the City shall provide a verbal request to the District General Manager or designee that the intertie be closed. The City shall provide written confirmation within 24 hours after the verbal request, or on the first day of normal business after the verbal request.

e. This emergency intertie facility is limited to a maximum flow-rate of 800-GPM (gallons-per-minute).

5. The City and District staff shall read the meter upon activation and deactivation of the intertie. The District shall then calculate and invoice the City for the water used during the request. The invoice shall be calculated based on the total water used during the event.

6. The City shall comply with all District resolutions and rules relating to connection to the District's water system, unless modified by this agreement.

7. The City shall pay to the District the same connection fee, rates and charges and monthly service charges, except for capital facilities charge, as are established from time to time by District resolution and as are applicable to the use of a six (6)-inch meter. The current monthly service charge for a six (6)-inch meter is $287.04 per month. The current rate for water use is $ 1.24/ccf for winter usage (November - June) and $ 2.56/ccf for summer usage (July - October) and these rates shall be in effect until such time as the District amends its rate resolution or until a meter of different size is utilized.

8. This Agreement shall not authorize or permit the City to take water from the connection described herein beyond what is described in Paragraph No. 4.

9. All costs of the meter and flow control installation including, but not limited to, time and materials expended on improvements pursuant to this Agreement, shall be fully reimbursed by the City. Any materials provided shall become the property of the District upon completion of installation.

10. (a.) In case of emergency or whenever the public health, safety, or the equitable distribution of water so demands, the District may change, reduce or limit the delivery rate or time, or temporarily discontinue the emergency water connection to the City

without notice; (b.) Water service may be temporarily interrupted, limited for purposes of making repairs, extensions or doing other necessary work; and (c.) The District shall not be responsible for any damage resulting from interruption, change or failure of the emergency water connection, and the City shall save and hold harmless the District from any loss, damages or suits to or by customers of the City resulting from interruption, change or failure of water supply provided by this Agreement, except damages arising out of the District's negligence. Prior to a planned interruption or limiting of service, the District will notify the City of such not less than three days prior to the service disruption. The District agrees to use best efforts and reasonable diligence to notify City as soon after it becomes aware of the need for service disruption.

11. To the extent allowed by law, each party shall defend, indemnify, and hold harmless the other party, its elected officials, employees and agents from and against any and all suits, claims, actions, losses, costs, expenses of litigation, attorney's fees, penalties and damages of whatsoever kind or nature arising out of or in connection with or incident to an act or omission of the indemnifying party, its employees, agents, and contractors in the performance of the indemnifying party's obligations under the Agreement. This indemnification provision shall include, but is not limited to, all claims against each party by an employee or former employee of the indemnifying party or its contractors and, as to such claims, each party expressly waives all immunity and limitation of liability under Title 51 RCW.

12. In the event of non-performance of any provision herein by the City, District may shut off water supplied pursuant to this Agreement.

13. This Agreement may be terminated by either party hereto upon 60-days written notice to the other party.

IN WITNESS WHEREOF, we have hereunto set our hands and seals.

CITY OF AUBURN
King County, Washington

By: _____
Mayor Date

LAKEHAVEN UTILITY DISTRICT
King County, Washington

By: _____ 11/15/10
General Manager Date

Approved as to form:

By: _____ 10/18/10
City Attorney Date

Approved as to form:

By: _____ 11/12/2010
General Counsel Date

RESOLUTION NO. 4648

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND THE CITY CLERK TO EXECUTE AN EMERGENCY WATER SYSTEM INTERTIE AGREEMENT BETWEEN THE CITY OF AUBURN AND THE CITY OF TACOMA

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Tacoma have legal authority to cooperate with other localities on the basis of mutual advantage and provision or services; and

WHEREAS, the Cities wish to enter into an Emergency Water System Intertie Agreement in order to increase fire protection and emergency water supply reliability for their customers;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, HEREBY RESOLVES as follows:

Section 1. That the Mayor and City Clerk are hereby authorized to execute an Emergency Water System Intertie Agreement with the City of Tacoma in substantially the same form as attached hereto as Exhibit "A," which is made a part hereof as though set forth in full herein.

Section 2. That the Mayor is authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 18th day of October, 2009.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

for Daniel B. Heid, City Attorney

EMERGENCY INTERTIE AGREEMENT

BETWEEN

CITY OF TACOMA AND CITY OF AUBURN

This emergency intertie agreement ("Agreement") is made by and between the City of Tacoma, Department of Public Utilities, Water Division d/b/a Tacoma Water, a municipal corporation (hereafter "Tacoma"), and the City of Auburn, a municipal corporation (hereafter "Auburn"). Tacoma and Auburn collectively shall be referred to as the "Parties" or either Tacoma or Auburn may be referred to as "Party" when appropriate.

A. RECITALS:

WHEREAS, Auburn and Tacoma are responsible for operating and maintaining their public water systems in accordance with federal, state and local laws and regulations, and

WHEREAS, the Parties recognize the responsibility of public water utilities to provide for the highest quality of water and reliability of service to their customers at reasonable cost, and

WHEREAS, the Parties further recognize that water resources are finite and vulnerable, and the prudent use and management of these resources requires cooperation among water utilities, and

WHEREAS, Auburn has requested that an intertie be established with Tacoma, to be available in case of emergency need, and Auburn does have water system facilities nearby that can be interconnected so as to be mutually beneficial to both utilities during periods of system emergency, and

WHEREAS, the Parties recognize that Auburn intends to use this intertie for wholesale service in the future,

NOW THEREFORE, it is agreed that Auburn and Tacoma may provide for interties of water mains and the terms and conditions contained herein shall apply.

B. DEFINITIONS:

The definition of certain terms, as used later in this Agreement, are as follows:

INTERTIE: A physical connection between water mains of the two Parties to this Agreement, at specifically identified points, where water may be transferred from the supplies of one system to the transmission or distribution facilities of the other.

SURPLUS PRODUCTION CAPACITY: Volumetric rate of available water supply, from the sources of the supplying water system, which can be transferred through an

intertie after all service requirements to the customers of the supplying system have been met.

ISOLATION VALVE: A positive shut off valve which shall be installed at the point in each water system which is used to accept or deliver water through the intertie. Each connected system has sole responsibility for providing and operating their isolation valve.

INTERTIE CAPACITY: The flow capacity for water to be delivered through an intertie as agreed upon by the Parties to this Agreement. Intertie facilities shall be designed so as to be capable of conveying no less than the agreed upon flow.

EMERGENCY: Defined as resulting from a water shortage, a major water line break, fire demand, contamination of the water supply system, mechanical equipment failure, electrical equipment failure, or any other agreed upon emergency affecting the water supply system.

C. CONDITIONS

1. GENERAL: The intertie described in exhibits A and B attached to this document shall be governed by the terms of this agreement. No future interties shall be permissible without a subsequent and separate written agreement between the Parties, which agreement may supplement this agreement. Neither Party shall be obligated to agree to or execute any such agreement or permit the other Party to construct additional connections.

2. PURPOSE: The intertie described in exhibits A and B attached to this document shall be utilized only in emergency situations unless converted by mutual Agreement to a regular wholesale service. Tacoma will first determine that surplus production capacity is available before providing water for an emergency situation.

3. CAPITAL COSTS: The cost of construction of the proposed intertie, to include all facilities and equipment necessary to deliver water, installation of the meter and vault and connection to Tacoma Water's Pipeline 5 (STA 765+05) at "B" Street NW shall be the responsibility of Auburn. As used in this paragraph, "cost of construction" shall include, but not be limited to, all actual costs of labor, materials, permitting, equipment, engineering, legal, publication, SEPA compliance, and any costs customarily incurred in such projects. The meter and vault will be designed, constructed and owned by Tacoma. Auburn has deposited $ 61,700.00 with Tacoma to cover the estimated costs. If Tacoma determines that the initial deposit is not sufficient to pay for all costs of construction, Auburn shall deposit such additional amounts with Tacoma as Tacoma requires to complete design and construction of the project. If the cost of construction is less than the deposit, Tacoma shall refund the remaining balance.

4. MAINTENANCE COSTS: Each utility shall be responsible for operating and maintaining their facilities including isolation and flow control valves as applicable (see Exhibit A). Vault and meter maintenance costs shall be the responsibility of Tacoma.

Should Tacoma ever need Auburn to relocate their infrastructure to accommodate a Tacoma Water project, Auburn will do so at their own cost.

5. OPERATING PROTOCOL: The Party requesting water shall submit a written request to the supplying Party and the supplying Party must give written permission prior to the transference of any water to the requesting Party. Should a situation arise necessitating the supply of water immediately a verbal request shall initially be sufficient followed by a written request. Verbal authorization, however, must be obtained from the supplying Party before obtaining any water. Each Party shall designate, in writing, a person or persons who have authority to evaluate such a verbal request and determine whether such a request should be granted.

6. NOTICE: All notices, requests, demands and other communications hereunder shall be in writing and shall be deemed given if personally delivered or mailed, certified mail, return receipt requested, or sent by overnight carrier to the following addresses:

If to Tacoma:
Ms. Linda McCrea
Water Superintendent
PO Box 11007
Tacoma, WA 98411
Phone: (253) 502-8245
Fax: (253) 502-8694

If to City of Auburn:
Mr. Dan Repp
Utilities Engineer
1 East Main Street
Auburn, WA 98001
Phone: (253) 804-5062
Fax: (253) 931-3053

7. COMMODITY COST: Tacoma will supply Auburn with water at the wholesale water service rate as identified in TMC Section 12.10.400, City of Tacoma Water Rates and Regulations. Invoices will include a monthly ready to serve charge based on meter size and consumption charges based on water used. Consumption charges will be at the constant use rate for the first 30 days of use. If use exceeds 30 days the Superintendent will have the discretion to reclassify the consumption charge to the summer season peaking rate. These water rates are periodically adjusted and shall be applicable as set forth in the rate schedule as adopted by the Public Utility Board and Tacoma City Council.

8. CONVERSION OF SERVICE: Establishment of an emergency intertie and providing emergency water shall not be considered a commitment of water availability for future retail or wholesale service. Conversion of an emergency intertie to retail or wholesale service will require an assessment of water availability, a decision to serve by the appropriate body, payment of a system development charge, and a commitment to comply with applicable rate and service policies.

9. INDEMNITY: Neither Party shall be liable for failure to deliver water to the other Party at any time. If water is provided, it shall be provided only from surplus production and/or storage capacity of the supplying utility as determined at the time of intertie operation. Each Party understands and acknowledges that the other Party makes no warranties or

assurances as to water availability, pressure or volume at any given time relating to the intertie.

10. TERMINATION OF SERVICE: Termination of this intertie agreement by either Party shall be preceded by not less than one (12) calendar months written notice to the other Party.

Dated this 18th day of October, 2010.

CITY OF TACOMA

By: Linda McCrea
Linda McCrea, Water Superintendent

CITY OF AUBURN

By: _____
Mayor

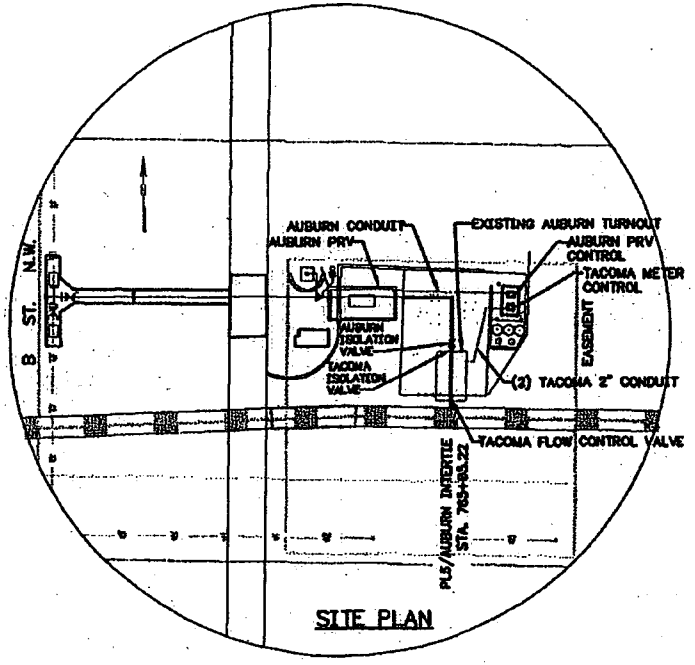
Approved as to form and legality

By: William Fosbre
Chief Assistant City Attorney

Approved as to form and legality

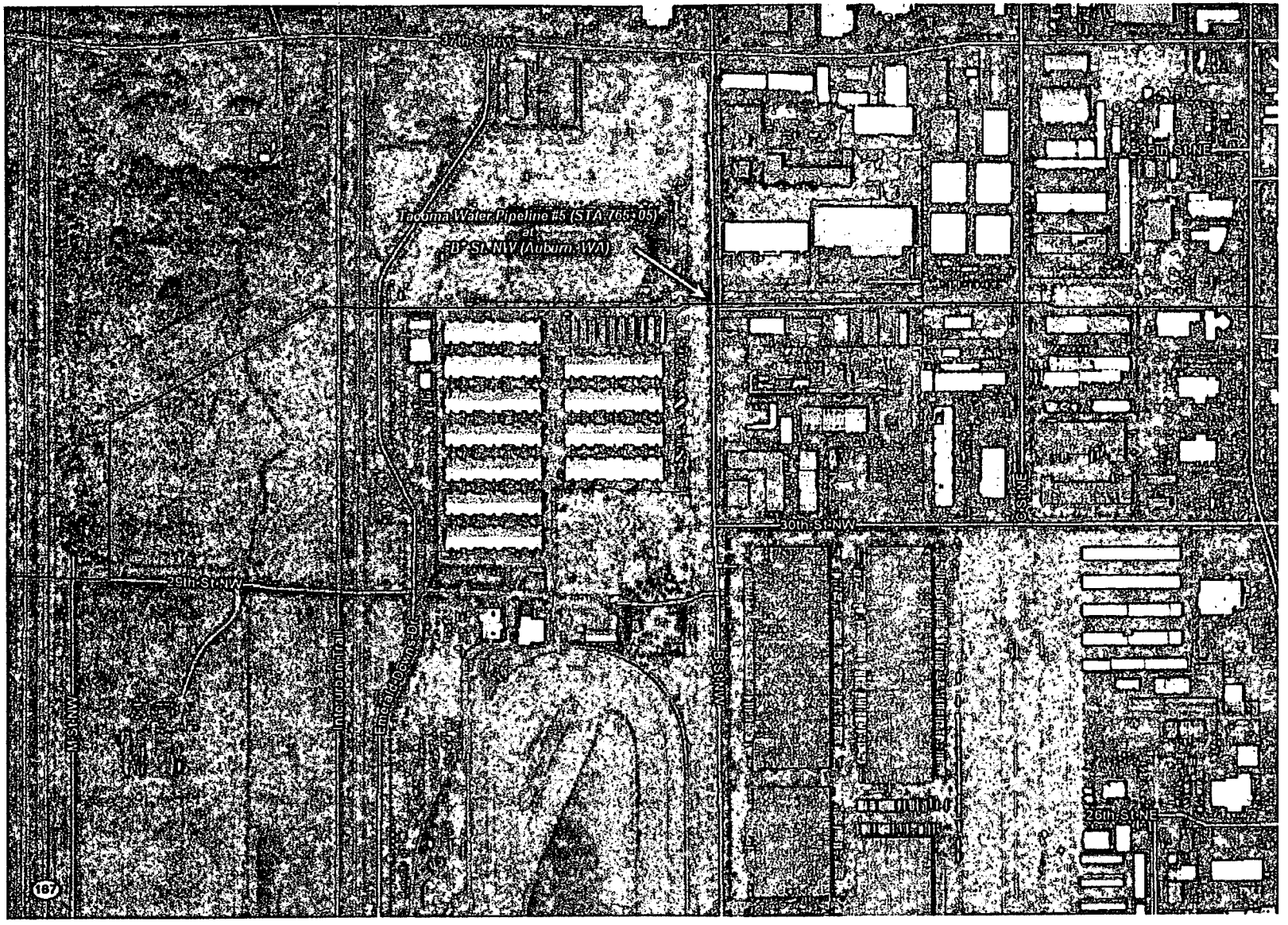
By: _____
Attorney

EXHIBIT A
EMERGENCY INTERTIE CONNECTION SPECIFICATIONS



Intertie Location	Connection	Meter	Elevation (ft.)		Operating Pressure (psi)		Flow Capacity (gpm)
	Size	Size	Tacoma	Auburn	Tacoma	Auburn	To/From Utility
Tacoma Water Pipeline 5 (STA 765+05) At "B" St. NW (Auburn, WA)	12"	6"	44.21	45.24	309	80	2,200

EXHIBIT B
GENERAL LOCATION MAP



RESOLUTION NO. 4660

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN INTERIM WATER SALES AGREEMENT BETWEEN THE CITY OF AUBURN AND KING COUNTY WATER DISTRICT NO. 111

WHEREAS, the City adopted Resolution No 2721 executing an Interlocal Agreement No. 2 for the Lea Hill Intertie Project between the Covington Water District, King County Water District No. 111 and the City of Auburn; and

WHEREAS, to avoid unpredictable water sales and to create a predictable and reliable cost for wholesale water to be sold by the City to the Covington and King County Water District, on June 17, 2002, the City adopted Resolution No. 3482, which authorized the execution of an Interim Water Sales Agreement between the parties; and

WHEREAS, on February 22, 2005, the prior Interim Water Sales Agreement was superseded and replaced with a new agreement per Resolution No. 3817; and

WHEREAS, Covington has opted out of the original agreement; and

WHEREAS, The City and the King County Water District No. 111 wish to continue their prior arrangement;

WHEREAS, in keeping with the original intent of the parties to create a predictable and reliable cost for wholesale water, it is appropriate for the City to

enter into a new Interim Water Sales Agreement with King County Water District No. 111 which would supersede and replace the prior agreement.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, KING COUNTY, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor of the City of Auburn and the Auburn City Clerk are hereby authorized to execute an Interim Water Sales Agreement between the City of Auburn and King County Water District No. 111, in substantial conformity with the Agreement attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. This resolution shall be in full force and effect upon passage and signatures hereon.

Dated and Signed this 6th day of December, 2010.

CITY OF AUBURN

PETER B. LEWIS, MAYOR

ATTEST:

Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

INTERIM WATER SALES AGREEMENT
between
KING COUNTY WATER DISTRICT NO. 111
and the
CITY of AUBURN

This Agreement ("Agreement") is made and entered into this 6th day of December, 2010 by and between King County Water District No. 111, a Municipal Corporation ("District") and the City of Auburn, a Municipal Corporation ("Auburn") (individually a "Party" and collectively the "Parties").

Recitals:

A. The Parties are also parties to "Interlocal Agreement 2 for the Lea Hill Intertie Project between King County Water District #111, and the City of Auburn" ("IA2").

B. The Parties desire to avoid unpredictable water sales and create a predictable and reliable cost for wholesale water to be sold by Auburn to the District.

C. By guaranteeing a minimum purchase of water for a given period of time, the cost of water, which to a significant extent is based on peaking factors, can be minimized for all of Auburn's customers.

D. This Agreement is intended to establish a rate for a fixed block of water for the mutual benefit of the Parties.

E. It is in the interest of the District to have a predictable supply of water available, and in Auburn's interest to have a predictable and consistent source of revenue from the sale of such water.

F. The Parties are authorized to enter into this Agreement under the authority of their respective enabling legislation and under the authority of Chapter 39.34 RCW, the Interlocal Cooperation Act.

G. The Parties intend that the take or pay water provided for in this Agreement is a portion of and not in addition to the 2.5 MGD allocated to the District as addressed in IA2.

Now, therefore, in consideration of the mutual covenants and promises contained herein, and for other good and valuable consideration, the adequacy of which is hereby acknowledged, the Parties hereby agree as follows:

1) **TAKE OR PAY:** The District agrees to purchase a minimum block of water as identified in this Agreement from Auburn on a "take or pay" basis. For purposes of this Agreement, a "Block" shall mean either an average of 0.75 MGD of water between the time period of October 1 and May 31, or an average of 1.0 MGD of water between the time period of June 1 and September 30. "Take or pay" shall mean that, in the absence of an emergency as set forth in Section 7 of this Agreement, the District shall pay for the Block of

water whether or not the water is actually taken by the District, subject to the provisions of Section 2 herein.

2) **CHARGES FOR WATER:** On a monthly basis, the District will pay, as shown on Exhibit 1 attached hereto and incorporated herein by this reference, the Base Charge, plus the Block Rate. In addition to the Base Charge and the Block Rate, any water taken in excess of the Block amount ("Excess Water") during any month shall be billed at the appropriate overage rate shown in Exhibit 1; provided, that: 1) any water taken during an emergency, as defined in Paragraph 7, shall be billed at the Block Rate, and 2) if Auburn is unable to deliver up to the Block quantity of water requested by the District, then Auburn shall only bill the District for the amount of water actually delivered at the Block Rate. Auburn shall send a monthly bill to WD 111 for all water purchased by the District.

3) **QUANTITY AVAILABLE / DELIVERED:** The Block quantity shall be calculated as the amount of water to be delivered at an average rate of either 0.75 MGD or 1.0 MGD (depending on the season) measured over a rolling 3 day period, with total quantities delivered within any single day being within 10%, plus or minus, of the Block quantity in effect at the time as measured at the Auburn Intertie Pump Station meter ("Master Meter"). For the Block quantity, the District will be

served on the same basis and with the same reliability as service is provided to Auburn's retail customers, and any curtailment, restrictions or limitations on delivery shall be on same basis as curtailment, restrictions or limitations on delivery to Auburn's retail customers.

4) **ANNUAL RECONCILIATION:** The Master Meter is located at the Lea Hill Intertie Pump Station to measure the flow of water. The Master Meter will be read in January of each year to adjust for differences between the Master Meter and the water calculated to have been sold under this Agreement. If there is a difference between the Master Meter and the calculated quantities, Auburn will either charge or credit the District's account at the Block Rate.

5) **ANNUAL REVIEW AND ADJUSTMENT:** The initial Block of either 0.75 MGD or 1.0 MGD (depending on the season) shall remain in effect through December 31, 2015. Each year, the Block may be adjusted by mutual agreement. By September 1 of each year the District shall notify Auburn of its intent to continue without change or request an increase or decrease in writing of the Block quantity desired. Auburn will review its ability to approve the change and may approve any requested change in the Block quantity up to but not to exceed 1.5 MGD which would become effective January 1 of the year following the request. If Auburn determines it cannot approve the

request it will communicate this information to the District before October 1, and continue to provide the same amount as during the current year. In the event that neither Party communicates its intent to adjust the Block under this provision, the Block shall be deemed to continue unchanged.

6) **TERM:** This Agreement shall remain in full force and effect from the first day of the month following the execution of this Agreement through December 31, 2015. The Agreement shall automatically be renewed for an additional year at the conclusion of the term of this Agreement or any extension thereof unless either Party provides the other with notice of an intent not to extend this Agreement, which notice shall be received by the other Party not less than one year prior to the expiration of the term of this Agreement or any extension thereof. The termination of this Agreement shall not affect any rights or obligations under IA2.

7) **EMERGENCIES:** For purposes of this Agreement, an emergency shall be defined as a need for water resulting from a water shortage, a major water line break, fire demand, contamination to the water supply system, mechanical equipment failure, electrical equipment failure or Puget Sound Energy facility failure, or any other mutually agreed upon event within the water supply system. An emergency period shall be

for no more than five (5) working days without written request by the District and approval by Auburn in writing to extend the emergency period. The City may change, reduce or limit the time for or temporarily discontinue any water supplied for an emergency in excess of the Block quantity without notice. Prior to a planned interruption or limiting of emergency service, the City will notify the District of the interruption or limiting not less than three days prior to the service disruption. The City agrees to use best efforts and reasonable diligence to notify the District as soon after it becomes aware of the need for emergency service disruption and further will, to the extent practical, limit the service disruption to daylight hours.

8) **PRIOR AGREEMENT SUPERSEDED:** This Agreement supersedes and replaces the Interim Water Sales Agreement between Covington Water District, King County Water District No. 111 and the City of Auburn dated February 22, 2005.

In witness whereof the Parties have caused this Agreement to be executed by their duly authorized representatives on the 6th day of December, 2010.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

KING COUNTY WATER DISTRICT NO. 111

WILLIAM C. HALL
GENERAL MANAGER

ATTEST:

APPROVED AS TO FORM:

District Attorney

Interim Water Sales Agreement
Between
King County Water District No. 111
And the
City of Auburn

Exhibit 1

Take or Pay Monthly Rates				
Year	Base Charge (per month)	Block and Winter Overage Rate (per ccf)	Summer Overage (per ccf)	
2010	$175.00	$0.91	Block rate + $0.25	
2011	$175.00	0.91 X CPI*	Block rate + $0.25	
2012	$175.00	2011 Rate X CPI*	Block rate + $0.25	
2013	$175.00	2012 Rate X CPI*	Block rate + $0.25	
2014	$175.00	2013 Rate X CPI*	Block rate + $0.25	
2015	$175.00	2014 Rate X CPI*	Block rate + $0.25	

* CPI means the Consumer Price Index – Urban for the Seattle – Tacoma – Bremerton area for the month of October of the prior year, divided by the October value of the year prior to that (see example below).

Example:

CPI for 2011 equals the October 2010 CPI value divided by the October 2009 CPI value.

RESOLUTION NO. 4725

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO NEGOTIATE AND EXECUTE A PURCHASE AGREEMENT WITH COVINGTON WATER DISTRICT AND KING COUNTY WATER DISTRICT #111

WHEREAS, the Covington Water District and King County Water District #111 (the Districts) have surplus infrastructure in the form of a water main on 132nd Ave Southeast; and

WHEREAS, the City has a need for an additional water main on 132nd Ave SE as part of a programmed capital project; and

WHEREAS, the Districts are willing to sell the water main to the City; and

WHEREAS, purchase of the water main will avoid various environmental and traffic impacts and the risk associated with construction of a new main; and

WHEREAS, purchase of the water main will eliminate the additional burden on finite staff resources to design and construct a new water main.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. That the Mayor is authorized to negotiate an Agreement with Covington Water District and King County Water District #111, and the Mayor and the City Clerk are authorized to execute such agreement as negotiated within budgetary and scoping parameters.

Section 2. That the Mayor is authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 5th day of July, 2011.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

PIPELINE TRANSFER AND ACQUISITION AGREEMENT

This Agreement ("Agreement") is by and between the City of Auburn, a Washington municipal corporation ("City"), Covington Water District, a Washington municipal corporation ("CWD"), and King County Water District No. 111, a Washington municipal corporation ("WD 111") (CWD and WD 111, collectively the "Districts") (the Districts and City, collectively the "Parties") for the purposes set forth below.

RECITALS

A. The City owns and operates a system of water supply within its corporate and water service area boundaries, and the Districts own and operate systems of water supply within their respective corporate and water service area boundaries.

B. The Parties previously entered into agreements providing for the construction of certain facilities to provide for the conveyance and sale by the City of wholesale water supply to the Districts. Specifically, the Parties entered into an agreement entitled "Interlocal Agreement No. 1" dated November 7, 1995 ("IA1") which provided for the construction of certain facilities to provide for the conveyance of wholesale water supply by the City to the Districts, the obligations to pay for such facilities, and the allocation of capacity rights among the Parties to such facilities; pursuant to IA1, a 16-inch waterline, among other facilities, was installed from SE 298th Street to SE 288th Street in 132nd Avenue SE and the Districts own such waterline and 95% of the capacity of such waterline in 132nd Avenue SE.

C. The Parties also entered into an agreement entitled "Interlocal Agreement No. 2" dated October 2, 1996 ("IA2") which also provided for the construction of certain additional facilities to provide for the conveyance of wholesale water supply by the City to the Districts, the obligations to pay for such facilities, and the allocation of capacity rights among the Parties to such facilities; and IA1 was terminated and superseded upon the completion of the construction of the water facilities described in IA2.

D. The City has been providing water supply to the Districts in accordance with the terms and conditions of IA2 through the water facilities constructed pursuant to IA1 and IA2. However, the City has proposed to the Districts that the City purchase a portion of the 16-inch waterline in 132nd Avenue SE owned by the Districts located between SE 299th Street north to the Regional Water Supply System pipeline managed by the City of Tacoma as depicted on **Exhibit A** attached hereto and incorporated herein by this reference (the "Pipeline").

E. The Districts have agreed to transfer ownership of the Pipeline and its capacity to the City, and the City has agreed to accept ownership of the Pipeline and its capacity according to the terms and conditions of this Agreement.

F. After title to the Pipeline is transferred to the City, the City shall have the responsibility to operate, maintain, repair and replace the Pipeline.

AGREEMENT

NOW, THEREFORE, in consideration of the following terms and conditions, the Parties agree as follows:

1. City Acquisition of Pipeline. The City shall acquire from the Districts exclusive title to the Pipeline, along with all appurtenances associated with the Pipeline as provided in this Agreement. The Pipeline consists of that portion of the 16-inch waterline in 132nd Avenue SE between SE 299th Street north to the Regional Water Supply System pipeline managed by the City of Tacoma of approximately one thousand two hundred thirty (1,230) lineal feet consisting of water pipeline, valves, fittings, and appurtenances as depicted on **Exhibit A**.

2. Transfer of Pipeline and Capacity. Districts shall convey the Pipeline and the Pipeline's capacity to the City as follows:

A. Districts shall transfer the Pipeline and its capacity to the City in consideration of the City's payment in the amount of Two Hundred Fifteen Thousand Two Hundred Fifty Dollars ($215,250.00) together with sales tax at the rate of 9.5% thereon to each District ($20,448.75).

B. In consideration of the Districts' transfer of the Pipeline and its capacity to the City, the City shall accept ownership of the Pipeline and operate, maintain, repair and replace the Pipeline and the City will continue to deliver water through the Pipeline to WD 111 in accordance with IA2 and any other agreements the Parties have or may have. The City shall provide WD 111 with water supply pursuant to IA2 and any other agreements the Parties have or may have at a point of delivery as depicted on Exhibit A such that WD 111 may continue to provide necessary supply to its customers served from the Pipeline.

3. Indemnification and Hold Harmless. The City shall indemnify, defend and hold harmless Districts, its elected and appointed officers, employees and agents from and against any and all claims, losses, damages, judgments or liability, including attorneys' fees, arising from injury or death to persons or damage to property occasioned by any act, omission or failure of City, its elected and appointed officers, agents or employees in the performance of this Agreement. This shall include, but is not limited to, any liabilities resulting from:

A. Construction of upgrades to the Pipeline undertaken by the City.

B. Leaks or breaks in the Pipeline after the execution of this Agreement.

C. Prior and future actions of City and its agents other than Districts.

4. Closing. The Parties shall not be obligated to close the City's acquisition of the Pipeline unless and until each Party has performed its covenants and obligations as follows.

A. Closing shall occur on or before the 21 day of September 2011 at the City's offices located at 25 West Main St., Auburn, Washington, or at such other time and place agreeable to the Parties.

B. At closing the Districts shall deliver to the City:

1. A Bill of Sale in the form attached hereto as **Exhibit B** and incorporated herein by this reference transferring to the City all of the Districts' right, title and interest in the Pipeline and its capacity and warranting that Districts have exclusive title to the Pipeline and its full capacity, excepting that portion owned by the City. Other than the above warranties, the Bill of Sale shall indicate that the sale is an "As Is, Where Is" sale, with no other warranties, express or implied.

2. "As Built" Pipeline documents in the possession of Districts.

C. At closing, the City shall deliver to the Districts:

1. Funds in the amount of Four Hundred Thirty Thousand Five Hundred Dollars ($430,500.00) in the form of payments of Two Hundred Fifteen Thousand Two Hundred Fifty Dollars ($215,250.00) to each District, together with sales tax at the rate of 9.5% thereon (totaling $40,897.50 or $20,448.75 to each District).

D. When the requirements of Sections 4(B) and 4(C) herein have been fulfilled, this transaction shall be closed without further instruction from the Parties.

E. To the extent that there are any taxes, special assessments or utility service fees relating to the Pipeline or its use that are the legal obligation of one Party but are attributable in part to a time period during which that Party did not have possession of the Pipeline, then the Parties will share in the obligation to pay such taxes, assessments or fees on the basis of a proration as of Closing. The City may record the Bill of Sale, assignments and other transfer documents as it desires and shall pay the cost thereof.

5. Transfer of Responsibility.

A. Effective 12:01 a.m. on the day immediately following Closing, the Districts relinquish responsibility for the Pipeline to the City, and the City assumes responsibility for the Pipeline on that date, including the obligation to operate, maintain, repair and replace the Pipeline.

B. Effective 12:01 a.m. on the day immediately following Closing, the City shall assume and be fully responsible for the Pipeline at the City's sole cost and expense. The Pipeline shall be operated by City to provide water supply to WD 111 and any other lawful purpose.

6. Severability. The invalidity or unenforceability of any provisions of this Agreement shall not affect the other provisions hereof, and this Agreement shall be construed in all respect as if such invalid or unenforceable provisions were omitted.

7. Amendment. No change, amendment or modification of any provisions of the Agreement shall be valid unless set forth in a written amendment to this Agreement signed by the Parties.

8. Authorization. By signing this Agreement, each Party certifies that it has the authority to bind its respective governing bodies to all of the terms and conditions of this Agreement.

9. Effective Date. This Agreement shall be effective upon the date of the last signature below.

City of Auburn, a Washington municipal corporation

By: _____
Its: MAYOR
Dated: 08/26/2014

Attest:
City Clerk
By: _____

Approved as to form:

By: _____
Auburn City Attorney

King County Water District No. 111, a Washington municipal corporation

By: William C. Hall
Its: General Manager
Dated: August 22, 2011

Approved as to form:

By: _____
District Attorney

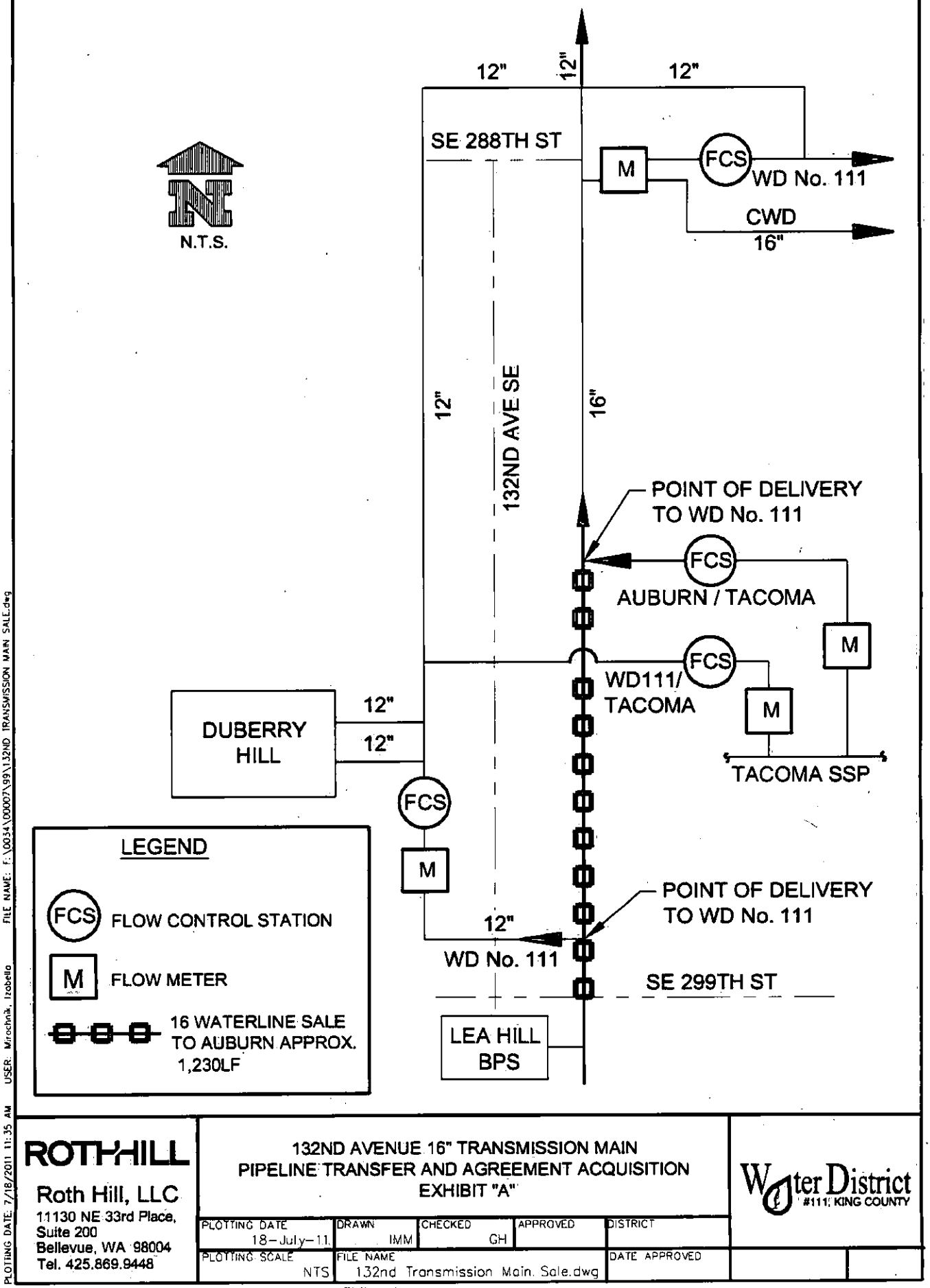
Covington Water District, a Washington municipal corporation

By: Jeanne Marsh
Its: General Manager
Dated: Aug. 17, 2011

Approved as to form:

By: Eric Jirmondt
District Attorney

Exhibit "A"



PLOTTING DATE: 7/18/2011 11:35 AM USER: Mirochnik, Izabella FILE NAME: F:\0034\00007\99\132ND TRANSMISSION MAIN SALE.dwg

ROTH HILL

Roth Hill, LLC
11130 NE 33rd Place,
Suite 200
Bellevue, WA 98004
Tel. 425.869.9448

132ND AVENUE 16" TRANSMISSION MAIN
PIPELINE TRANSFER AND AGREEMENT ACQUISITION
EXHIBIT "A"

PLOTTING DATE	DRAWN	CHECKED	APPROVED	DISTRICT
18-July-11	IMM	GH		
PLOTTING SCALE	FILE NAME			DATE APPROVED
NTS	132nd Transmission Main Sale.dwg			

Water District #111, KING COUNTY

BILL OF SALE

WATER PIPELINE

Covington Water District, a Washington municipal corporation, and King County Water District No. 111, a Washington municipal corporation (collectively the "Districts"), transfer and convey to the City of Auburn, a Washington municipal corporation ("City"), the following described personal property:

> a 16-inch waterline in 132nd Avenue SE between SE 299th Street north to the Regional Water Supply System pipeline managed by the City of Tacoma consisting of approximately one thousand two hundred thirty (1,230) lineal feet of water pipeline, valves, fittings, and appurtenances as depicted on **Exhibit A** attached hereto and incorporated herein by this reference (the "Pipeline").

This transfer and conveyance is made in consideration of the City's payment of Four Hundred Thirty Thousand Five Hundred Dollars ($430,500.00) in the form of payments of Two Hundred Fifteen Thousand Two Hundred Fifty Dollars ($215,250.00) to each District, together with sales tax at the rate of 9.5% thereon (totaling $40,897.50 or $20,448.75 to each District), and the City's agreement to own and operate the Pipeline as part of the City's water supply. Districts further transfer, convey and assign to the City any and all warranties related to the Pipeline, provided, the Districts make no representations or warranties regarding the existence or status of any warranties related to the Pipeline.

Districts warrants that they have exclusive title to the Pipeline and its full capacity, excepting that portion of the capacity presently owned by the City, and that the Pipeline was accepted for public use as facilities of the Districts. Other than the foregoing warranties, the transfer and conveyance of the Pipeline by the Districts to the City is "As Is", Where Is" with no other warranties, express or implied.

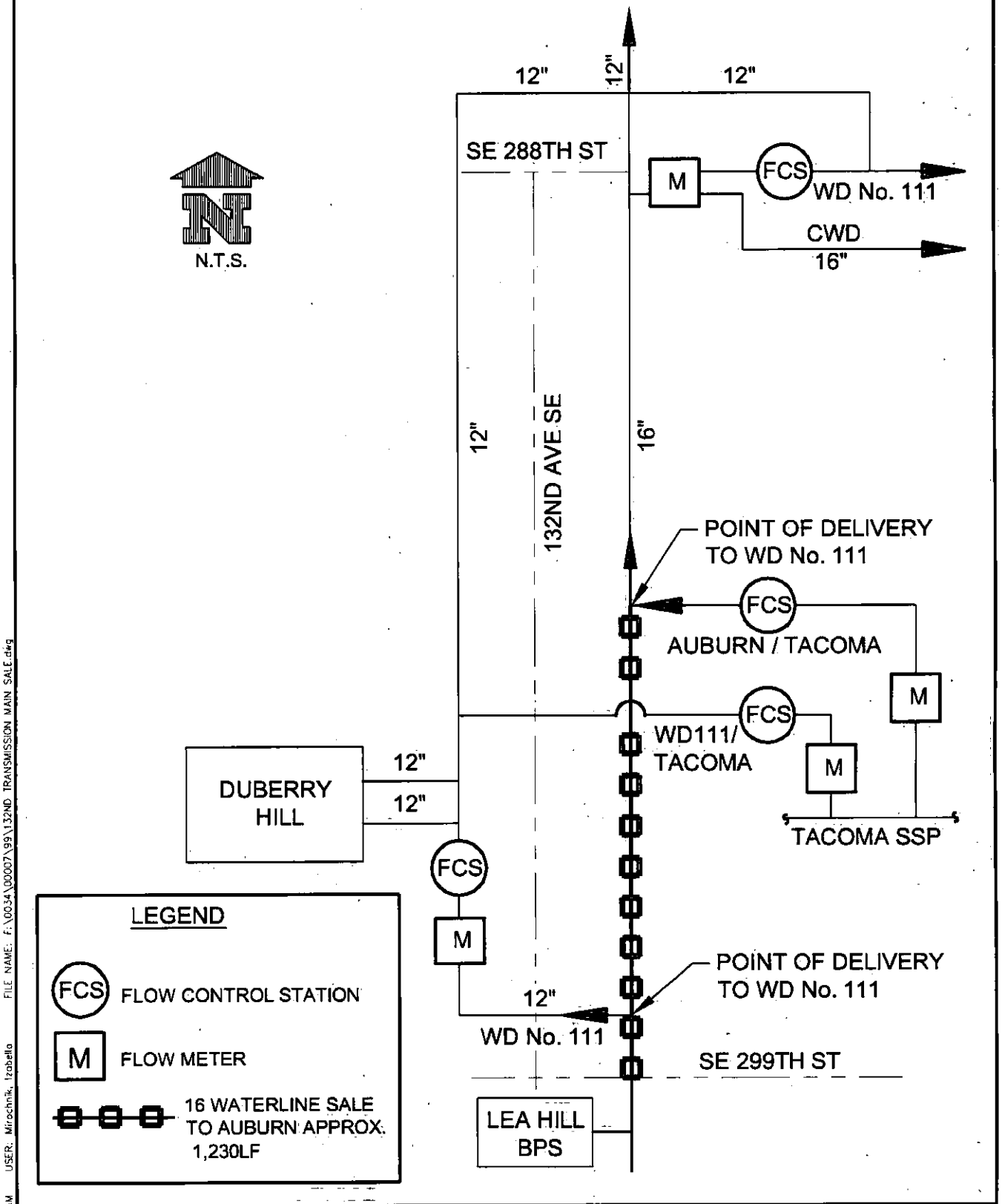
Dated this 22nd day of August, 2011.
King County Water District No. 111

By William C. Hall
Its: General Manager

Dated this 17 day of August, 2011.
Covington Water District

By Jeanne Marx
Its: General Manager

Exhibit "A"



PLOTTING DATE: 7/18/2011 11:35 AM USER: Mirochnik, Izabella FILE NAME: F:\0034\00007\99\132ND TRANSMISSION MAIN SALE.dwg

ROTHHILL
Roth Hill, LLC
11130 NE 33rd Place,
Suite 200
Bellevue, WA 98004
Tel. 425.869.9448

132ND AVENUE 16" TRANSMISSION MAIN
PIPELINE TRANSFER AND AGREEMENT ACQUISITION
EXHIBIT "A"

Water District #111, KING COUNTY

PLOTTING DATE	DRAWN	CHECKED	APPROVED	DISTRICT
18-July-11	IMM	GH		
PLOTTING SCALE	FILE NAME			DATE APPROVED
NTS	132nd Transmission Main Sale.dwg			

Department of Energy
Bonneville Power Administration
28401 Covington Way
Kent, WA 98042

February 7, 2012

In reply to: TERR/Covington
BPA Case No. 20120039

Tract No. 2C-T-2-A; 3C-T13-85
Line Name: Tacoma-Raver No. 1 & 2 (operated as same)
Tacoma-Covington No. 3 (operated as same)
Tacoma-Grand Coulee (operated as Tacoma-Covington No. 4)
ADNO 8246, 8247, 8242, 8244;
Structure 13/4 - 13/5

Ms. Leah Dunsdon
City of Auburn
25 West Main Street
Auburn, WA 98001-3058

LAND USE AGREEMENT

Bonneville Power Administration (BPA) hereby agrees to your use of BPA's easement area for construction/installation, use, and maintenance of a water system intertie - pressure reducing/flow control station/telemetry shelter and improved access road with gate.

The location of your use is partially within the NW1/4 SW1/4 of Section 3, Township 21 North, Range 5 East, Willamette Meridian, King County, State of Washington, as shown on the attached segment of BPA Drawing No. 150023, marked as Exhibit A and City of Auburn drawing marked as Exhibits B, C, D, E and F.

You shall not make any changes or additions to your use of the right-of-way without BPA's review and written approval. Any other uses and utilities on the right-of-way must be applied for separately.

Please note that BPA is not the owner of this property. If you are not the owner, you must obtain the owner's permission to use this property. There may also be other uses of the property that might be located within the same area as your project. This agreement is subject to those other rights.

This agreement is entered into with the express understanding that it is not assignable or transferable to other parties without the prior written consent of BPA. This agreement is

revocable at will by BPA and does not modify, change, or otherwise alter the rights BPA acquired by Deed. BPA may terminate this agreement upon 30 days written notice. The subject use of this easement area has been determined not to be a hazard to, or an interference with, BPA's present use of this easement for electric transmission line purposes. Accordingly, there is no present objection to such use. However, if BPA should determine at any time, that your use has become a hazard to the presently installed electrical facilities of BPA, or any facilities added or constructed in the future, or if such use should interfere with the inspection, maintenance, or repair of the same, or with the access along such easement, you will be required to stop your use or remove such hazard or interference from the right-of-way at no expense to BPA.

BY ACCEPTING THIS LAND USE AGREEMENT YOU ARE AGREEING TO THE FOLLOWING CONDITIONS

1. Because of other potential uses in the area of your project, BPA requires that you have a utility locate done prior to construction commencing.
2. Maintain a minimum distance of at least 15 feet between your facilities and the transmission line conductors (wires).
3. Maintain a minimum distance of at least 50 feet between your facilities and the transmission line structures.
4. Construction equipment shall maintain a minimum of 15 feet between the equipment and transmission line conductors at all times. Do not measure this with measuring tape, pole or by other physical means.
5. To ensure safety of workers and uninterrupted operation of transmission lines, applicant shall employ a BPA approved safety watcher during construction activities occurring under the conductors (wires) or lifting of equipment that may come in contact with the conductors (wires). **Please contact BPA for a current list of BPA approved Safety Watchers.**
6. Equipment, machinery, and vehicles traveling on BPA's right-of-way shall come no closer than 25 feet to any BPA structure or guy anchor ground attachment point.
7. No storage of flammable materials or refueling of vehicles or equipment on BPA property.
8. Overburden grade changes to existing ground elevations while excavating on right-of-way is prohibited.
9. All use of the right of way shall meet local/state/federal/national codes.
10. Design and build the water main intertie, pressure reducing station and access road constructed within the BPA's property to withstand HS-20 loading for BPA's heavy vehicles.
11. Bury and maintain the water main, drainage lines, and conduits to a depth of 36 inches or comply with applicable NESC, national, state, and/or local standards, which ever is greater.

12. All underground cables/wires shall be placed in conduit.
13. Mark the location of the underground water main and conduits with permanent signs and maintain such signs where they enter and leave BPA's right-of-way, and at any angle points within the right-of-way.
14. Access to BPA transmission line system by BPA and/or its contractors shall not be obstructed at any time.
15. BPA shall have the right to use the access road for access to its structures, both to and along its transmission lie right of way.
16. The access road will only be used by the utilities.
17. Replace gate with an adequate gate in the fence of not less than 16 feet in width for the passage of BPA vehicles. The approved location of the gate is as shown on attached exhibit B. Gates may be locked provided a BPA lock is also included in the locking mechanism.

IN ADDITION, THE FOLLOWING IS BROUGHT TO YOUR ATTENTION

You agree to assume risk of loss, damage, or injury which may result from your use of the easement area, except for such loss, damage, or injury for which BPA may be responsible under the provisions of the Federal Tort Claims Act, 62 Stat. 982, as amended. It is understood that any damage to BPA's property caused by or resulting from your use of the easement area may be repaired by BPA, and the actual cost of such repair shall be charged against and be paid by you.

Construction/installation, use, and maintenance of the water system intertie - pressure reducing/flow control station/telemetry shelter and improved access road with gate shall be at no cost to BPA.

Nuisance shocks are common on high voltage transmission right of way. Plan your uses taking this into consideration.

BPA seeks your help maintaining the integrity of the electrical transmission system. Please report any Vandalism or Theft to the BPA Crime Witness program at 1-800-437-2744. Cash rewards of up to $25,000 will be paid should information lead to the arrest and conviction of persons committing a crime.

BPA shall not be liable for damage to your property, facilities, or injury to persons that might occur during maintenance, reconstruction, or future construction of BPA facilities as a result of your facilities being within the right-of-way.

If you have any questions or concerns, please notify this BPA Realty Office. You may direct any communication to Bonneville Power Administration, Real Property Field Services (TERR/Covington) 28401 Covington Way, Kent, WA 98042, or by telephoning Timothy C. Wicks at 253-631-9154.

A copy of this agreement shall be physically located at the project during construction activities.

THIS LAND USE AGREEMENT BECOMES EFFECTIVE UPON THE SIGNATURE OF ALL PARTIES.

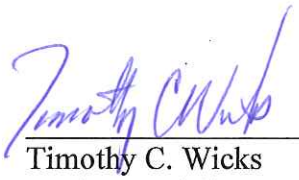
I HAVE READ, UNDERSTAND, AND CONCUR WITH THE TERMS OF THIS AGREEMENT:



Applicants Name

2/10/12
Date

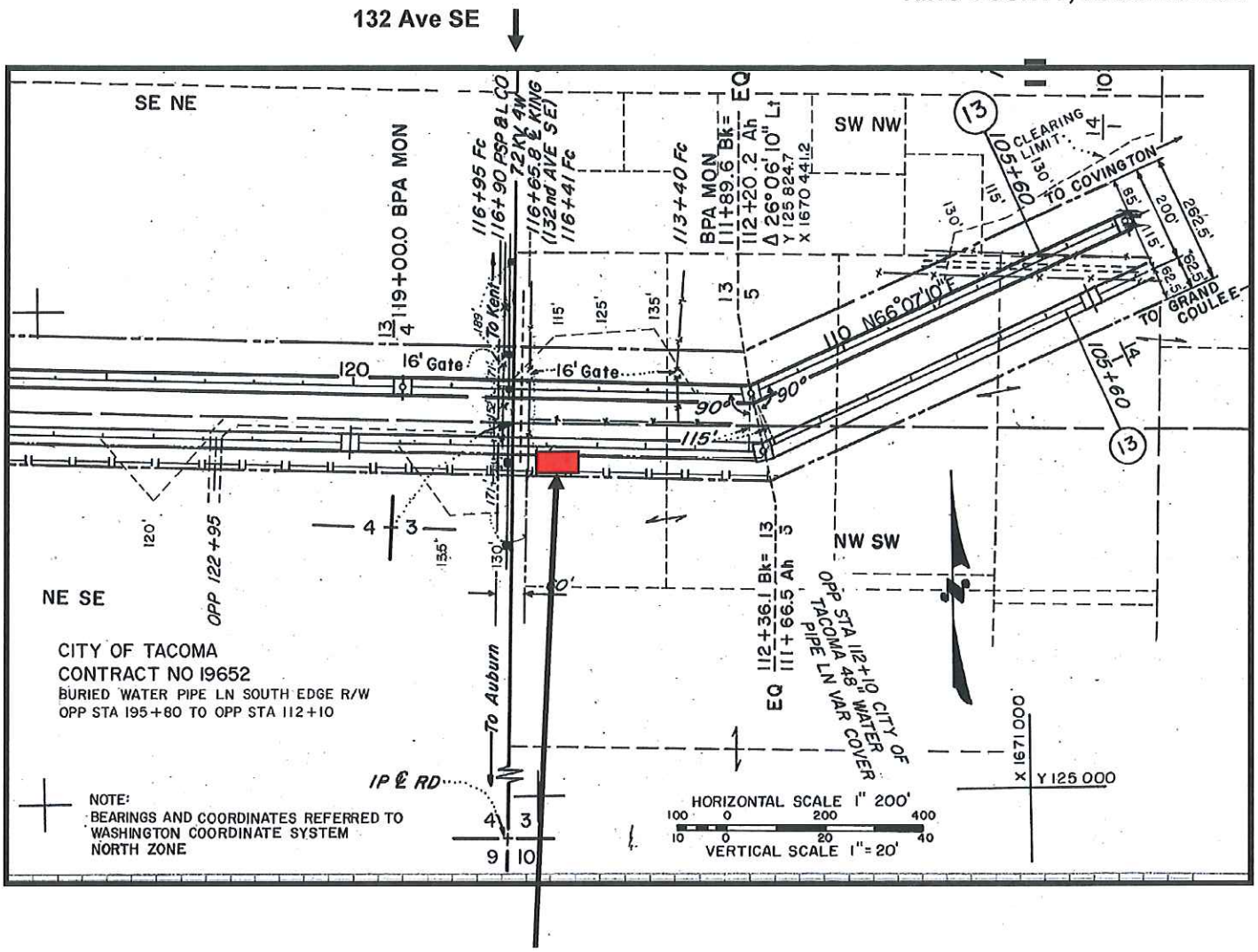
THIS AGREEMENT IS HEREBY AUTHORIZED BY BONNEVILLE POWER ADMINISTRATION:



Timothy C. Wicks
Realty Specialist

02/16/2012
Date

SEC 3 T21N R5E WM
KING COUNTY, WASHINGTON



APPROXIMATE LOCATION OF
pressure reducing/flow control station, telemetry shelter and improved access road with gate

UNITED STATES DEPARTMENT OF THE INTERIOR
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

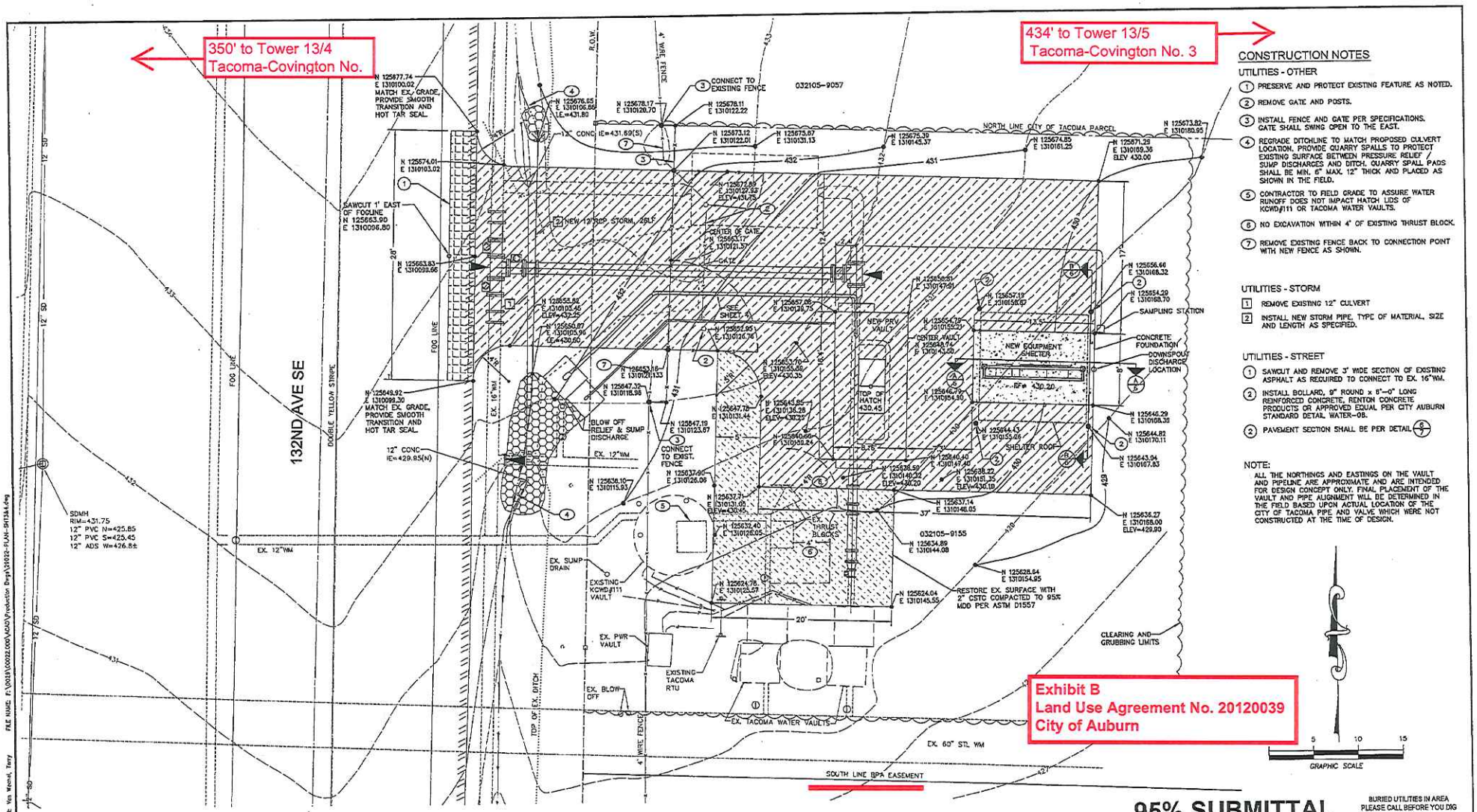
TACOMA-RAVER NO 1 & 2
TACOMA-COVINGTON SEC
500 KV. TRANSMISSION LINE
LONG MILE 13 OF 24 MILES FROM TACOMA (5296.2)

RIGHT OF WAY		DESIGN AB		
Design DLM		Design RG		Approved: M.W. Batcheller
Drawn CLM	Engineer	Drawn DLM	Engineer	Date: 1-7-70 for Chief, Branch of Transmission Design
Checked EHN	Unit Head	Checked KHC	Unit Head	R/W DATE 8-22-68 DES DATE 6-21-69

150023 DTM-D WO 145-25

EXHIBIT A
CASE 20120039
Tract ID: 2C-T-2-A-16; 3C-T-13-A-85
Lines: Tacoma-Raver #1&2; Tac-Cov #3; Tacoma-Grand Coulee (oper as Tac-Cov #4)

City of Auburn
Watermain system Intertie and pressure reducing station



No.	Date	Revision

DRAWN TO SCALE, SCALE MAY BE DISTORTED FROM REPRODUCTION

RECORD DRAWING CERTIFICATION

These drawings conform to the Contractor's construction records.

Drawn By: Date

Construction Inspection

	BY	DATE
Drawn	TVW	
Reviewed	LDS	
Approved	LDS	

SCALE: 1" = 10' H

ONE INCH AS DRAWN

File:

LANCE D. STEVENS STATE OF WASHINGTON 25674 REGISTERED PROFESSIONAL ENGINEER

CITY OF AUBURN WASHINGTON

PUBLIC WORKS DEPARTMENT
25 West Main Street
Auburn, Washington

REVIEWED BY: DATE:

Project Manager

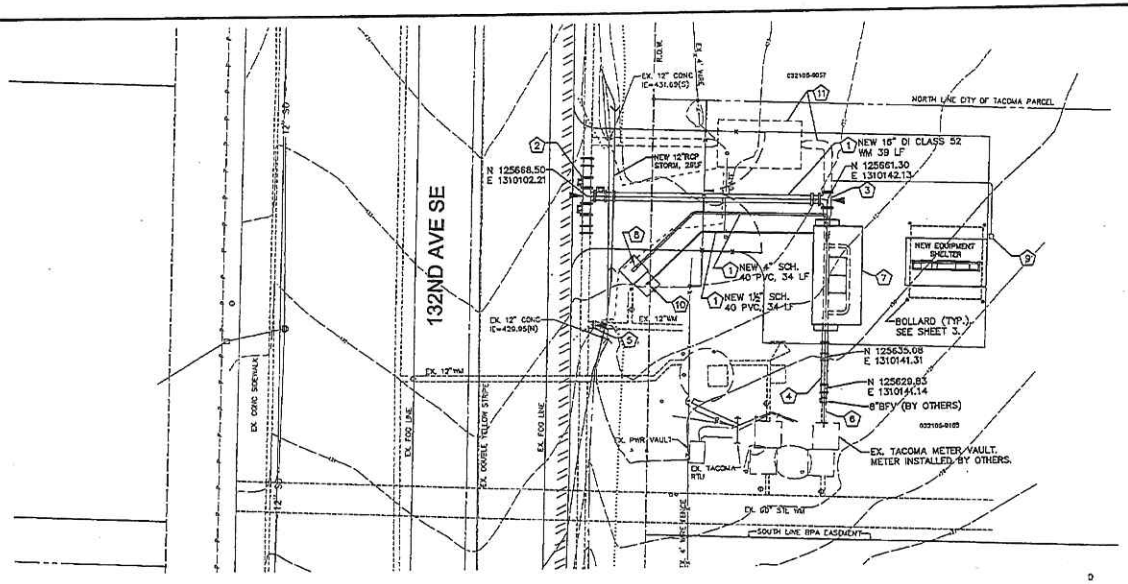
Construction Manager

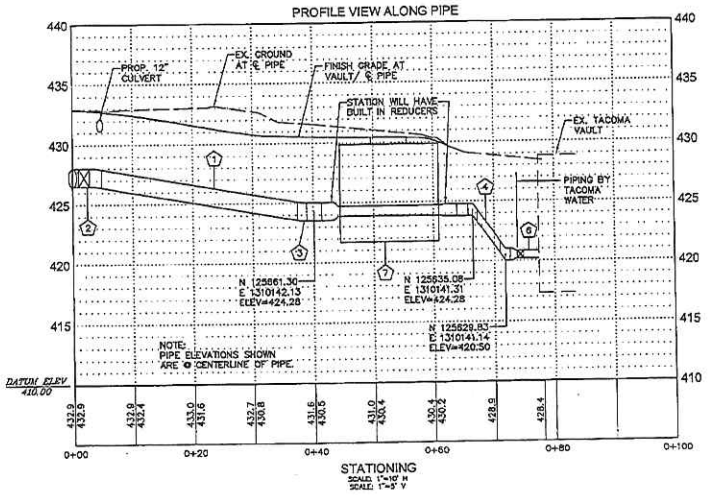
ROTHHILL
Roth Hill, LLC Tel 425.869.9448 www.rothhill.com
11130 NE 33rd Place, Suite 200 Bellevue, WA 98004

132ND AVE SE TACOMA PIPELINE 5 INTERTIE
SITE PLAN
STORM, PAVEMENT & RESTORATION

PROJECT NUMBER CP1103
CONTRACT NUMBER 12-01
SHEET 3 OF 19

FILE NAME: F:\0018\00022.000\VIDAD\Production Dwgs\22022-PLAN-SHT3&4.dwg
USER: Von Wenck, Terry
PLOTTING DATE: 11/21/2011 2:34 PM





CONSTRUCTION NOTES

UTILITIES - WATER

1. INSTALL NEW WATER PIPE, TYPE OF MATERIAL, SIZE AND LENGTH AS SPECIFIED.
2. CUT INTO EXISTING 16" DI WATER MAIN. INSTALL:
   - 1–16"x16" TEE (FLxFL)
   - 3–16" BUTTERFLY VALVES (FLxFL)
   - 1–16" 11¼° VERT. BEND (FLxRJ)
   - 2–16" FL. CPLG. ADAPT. (FLxMJ)
   - 3–16" SLEEVES (MJ)
   - 3–16" DI SPOOLS (LF AS REQ'D)

   CONCRETE BLOCKING PER CITY OF AUBURN STANDARD DETAIL WATER–01
3. 1–16"x16" TEE (FLxFL)
   1–16" 11¼° VERT. BEND (FLxRJ)
   1–16" BLIND FLANGE
   CONCRETE BLOCKING PER CITY OF AUBURN STANDARD DETAIL WATER–01
4. 1–12" DI FL. SPOOL (LF AS REQ'D)
   1–12" 45° VERT BEND (RJxRJ)
   1–12" DI SPOOL (LF AS REQ'D)
   1–12"45° VERT. BEND (FLxRJ)
   1–12"x8" REDUCER (FLxFL)
   CONCRETE BLOCKING PER CITY OF AUBURN STANDARD DETAIL WATER–01
5. ABANDON EXISTING 12"WM AND REMOVE EX. BO ASSY AND GATE VALVE. INSTALL :
   1–12"BLIND FL
   CONCRETE BLOCKING PER CITY OF AUBURN STANDARD DETAIL WATER–01
6. 8"WATER MAIN AND BFV (BY OTHERS)
7. INSTALL NEW PRV STATION . SEE FOUNDATION DETAIL 5/7
   INSTALL INLET & OUTLET CONCRETE THRUST BLOCKING PER DETAIL 3/7
8. INSTALL NEW 6" BLOW OFF RELIEF DISCHARGE, SEE DETAIL 1/7
   N 125650.53
   E 1310110.01
9. INSTALL NEW SAMPLING STATION W / ¾" BALL VALVE, SEE DETAIL 4/7
   N 125654.77
   E 1310169.36
10. INSTALL NEW 1½" SUMP DISCHARGE, SEE DETAIL 2/7
    N 125647.96
    E 1310112.01
11. FUTURE VAULT AND MAIN ALIGNMENT. (NOT PART OF THIS CONTRACT)

NOTE:
ALL THE NORTHINGS AND EASTINGS ON THE VAULT AND PIPELINE ARE APPROXIMATE AND ARE INTENDED FOR DESIGN CONCEPT ONLY. FINAL PLACEMENT OF THE VAULT AND PIPE ALIGNMENT WILL BE DETERMINED IN THE FIELD BASED UPON ACTUAL LOCATION OF THE CITY OF TACOMA PIPE AND VALVE WHICH WERE NOT CONSTRUCTED AT THE TIME OF DESIGN.

Exhibit C
Land Use Agreement No. 20120039
City of Auburn

95% SUBMITTAL

BURIED UTILITIES IN AREA
PLEASE CALL BEFORE YOU DIG
811

No.	Date	Revision

DRAWN TO SCALE, SCALE MAY BE DISTORTED FROM REPRODUCTION

RECORD DRAWING CERTIFICATION

These drawings conform to the Contractor's construction records.

Drawn By: Date

Construction Inspection

	BY	DATE
Drawn	TYW	
Reviewed	LDS	
Approved	LDS	

SCALE: 1" = 10' H, 1" = 5' V
ONE INCH AS DRAWN

File:

JAMES D. STEPHEN — STATE OF WASHINGTON — 20370 — REGISTERED PROFESSIONAL ENGINEER

CITY OF AUBURN WASHINGTON
PUBLIC WORKS DEPARTMENT
25 West Main Street
Auburn, Washington

REVIEWED BY: DATE:
Project Manager
Construction Manager

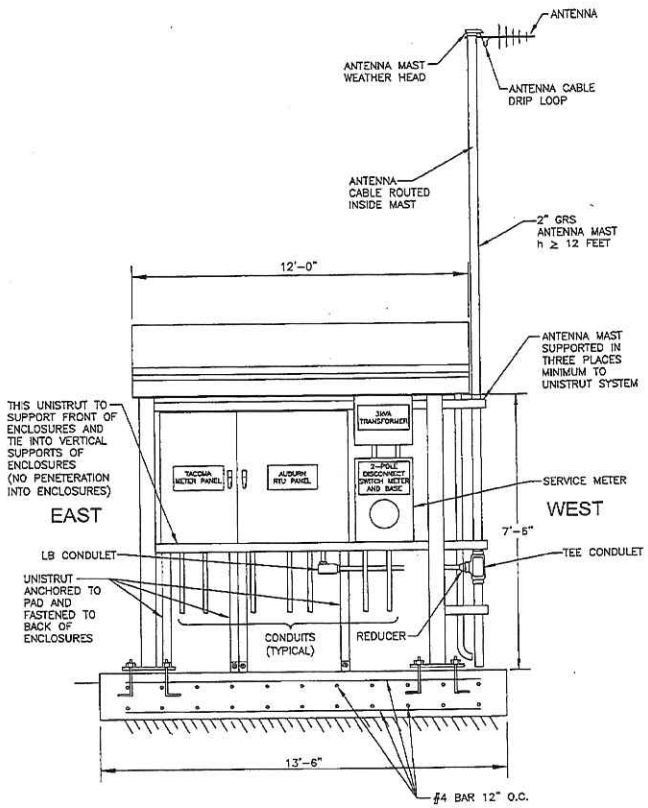
ROTHHILL
Roth Hill, LLC Tel 425.869.8448 www.rothhill.com
11120 NE 33rd Place, Suite 200 Bellevue, WA 98004

132ND AVE SE TACOMA PIPELINE 5 INTERTIE
WATER PLAN & PROFILE

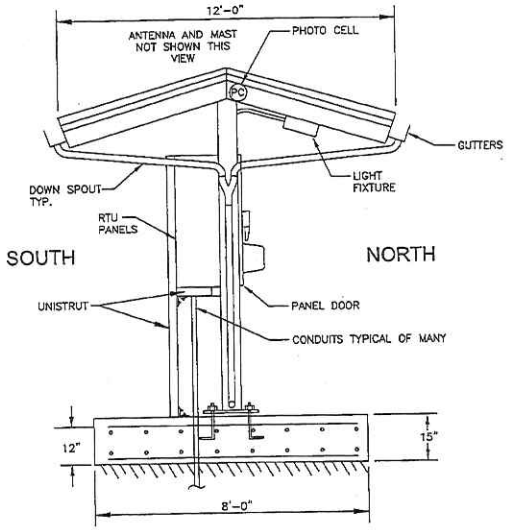
PROJECT NUMBER: CP1103
CONTRACT NUMBER: 12-01
SHEET 4 OF 19

PLOTTING DATE: 11/21/2011 2:34 PM USER: Van Walsh, Terry FILE NAME: F:\0019\0032.003\CAD\Production Dwg\V32022-PLAN-SHT3&4.dwg

SEE SPECIFICATION SECTION 8-26 FOR EQUIPMENT SHELTER INFORMATION.



NORTH ELEVATION SECTION (A/6)
NTS



EAST ELEVATION SECTION (B/6)
NTS

Exhibit D
Land Use Agreement No. 20120039
City of Auburn

95% SUBMITTAL

BURIED UTILITIES IN AREA PLEASE CALL BEFORE YOU DIG 811

No.	Date	Revision

DRAWN TO SCALE, SCALE MAY BE DISTORTED FROM REPRODUCTION

RECORD DRAWING CERTIFICATION

These drawings conform to the Contractor's construction records.

Drawn By: Date

Construction Inspector

	BY	DATE
Drawn	TVW	
Reviewed	LDS	
Approved	LDS	

SCALE: NOT TO SCALE

ONE INCH AS DRAWN

File:

LANCE D. STEPHENS STATE OF WASHINGTON 45074 REGISTERED PROFESSIONAL ENGINEER

CITY OF AUBURN WASHINGTON

PUBLIC WORKS DEPARTMENT
25 West Main Street
Auburn, Washington

REVIEWED BY: DATE:

Project Manager

Construction Manager

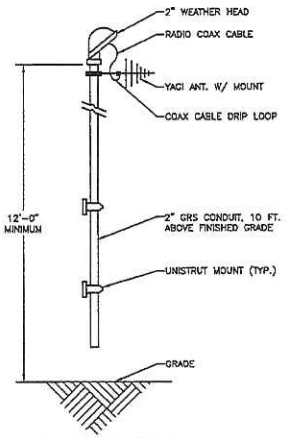
ROTH HILL

Roth Hill, LLC Tel 425.889.2448 www.rothhill.com
11120 NE 33rd Place, Suite 200 Bellevue, WA 98004

132ND AVE SE TACOMA PIPELINE 5 INTERTIE
EQUIPMENT SHELTER

PROJECT NUMBER	CP1103
CONTRACT NUMBER	12-01
SHEET	6
OF	19

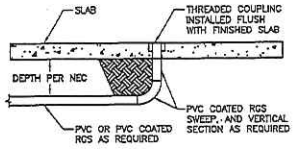
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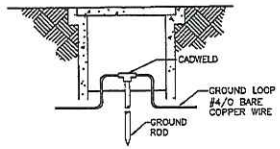
TYPICAL POLE MOUNTED ANTENNA DETAIL 1
SCALE: NONE

NOTES:

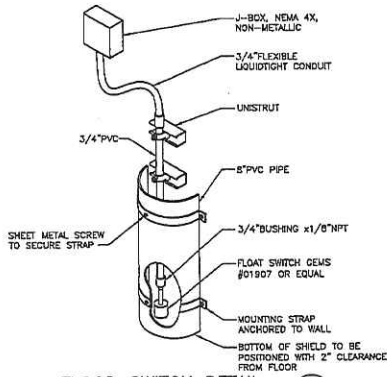
1. MAST SIZE AS REQUIRED TO PROVIDE 80 MPH WIND LOADING.
2. ALL MOUNTING HARDWARE AND BRACKETS SHALL BE GALVANIZED STEEL.



CONCRETE SLAB PENETRATION 2
SCALE: NONE

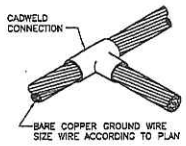


GROUND WELL DETAIL 3
SCALE: NONE



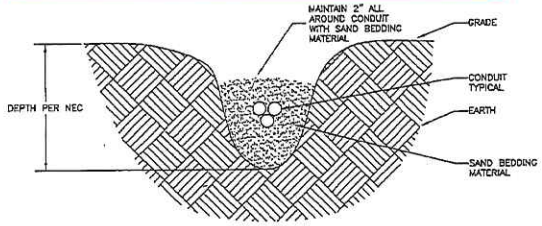
FLOOD SWITCH DETAIL 4
SCALE: NONE

Exhibit E
Land Use Agreement No. 20120039
City of Auburn

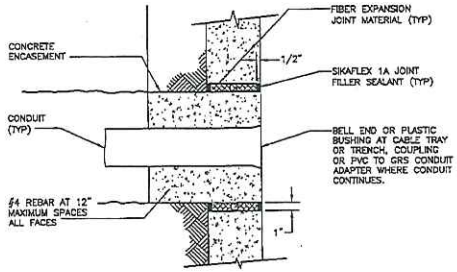


CADWELD DETAIL 5
SCALE: NONE

Per BPA
Minimum cover 24" or meet local/state/federal/ national codes whichever is greater.



CONDUIT INSTALLATION DETAIL 6
SCALE: NONE



NOTE:
PROVIDE CONDUIT IDENTIFICATION FOR ALL CONDUITS AT HANDHOLES AND MANHOLES.

CONCRETE ENCASED CONDUIT ENTRANCE DETAIL 7
SCALE: NONE

95% SUBMITTAL

No.	Date	Revision

DRAWN TO SCALE, SCALE MAY BE DISTORTED FROM REPRODUCTION

RECORD DRAWING CERTIFICATION

These drawings conform to the Contractor's construction records.

Drawn By: Date

Construction Inspection

	BY	DATE
Drawn	MEZ	8/1/11
Reviewed	AS	10/07/11
Approved		

File: CP1103-SHT12_S2.dwg

CITY OF AUBURN WASHINGTON
PUBLIC WORKS DEPARTMENT
25 West Main Street
Auburn, Washington

REVIEWED BY: (Leah Dundon) Project Manager — DATE: (XX/XX/11)
Construction Manager

L2 Systems, LLC

132ND AVE S.E. TACOMA PIPELINE 5 INTERTIE
ELECTRICAL DETAILS

PROJECT NUMBER CP1103
CONTRACT NUMBER 12-01
SHEET 9 OF 19

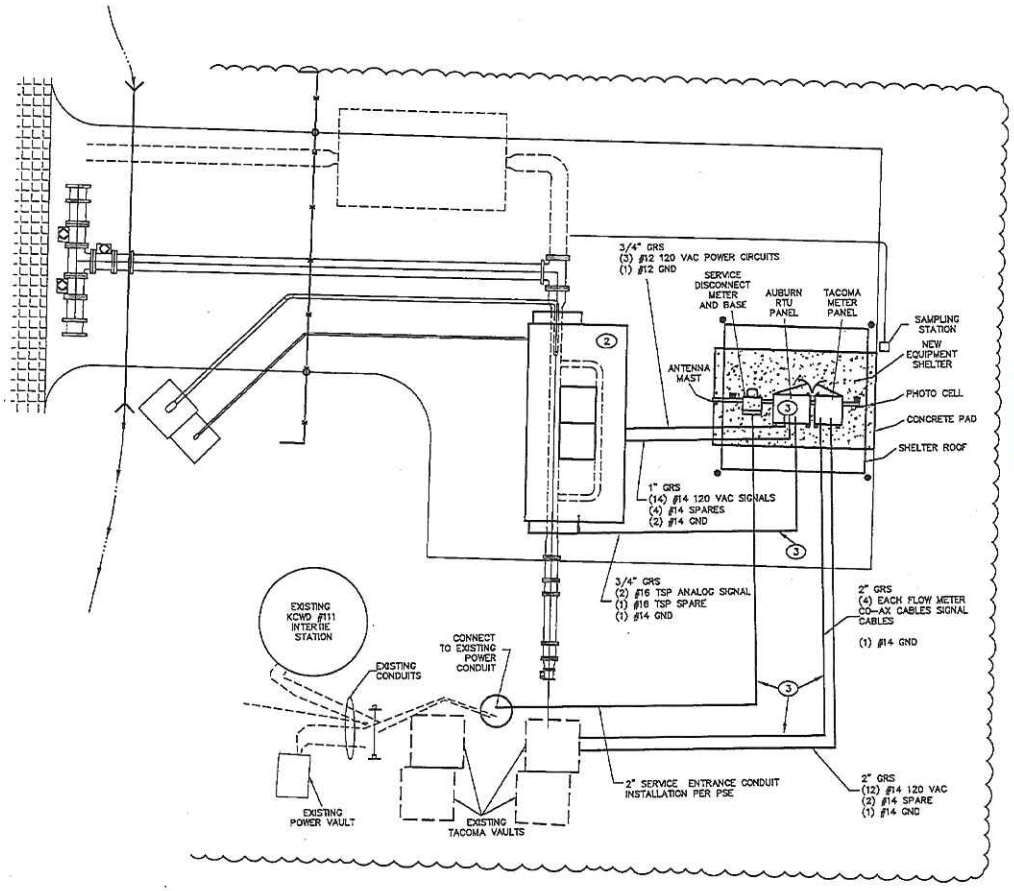
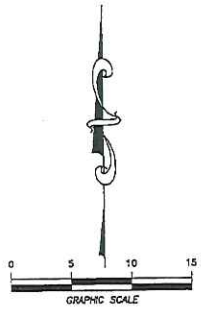


Exhibit F
Land Use Agreement No. 20120039

NOTES:
1). CONDUIT PATHS SHOWN MIGHT NOT BEE THE MOST EFFICIENT METHOD OF INSTALLATION
2). PRV VAULT ELECTRICAL DETAILS ARE SHOWN ON SHEET 11
3). ELECTRICAL PANEL INSTALLATION DETAILS AT THE NEW SHELTER ARE SHOWN ON SHEET 12



95% SUBMITTAL

No.	Date	Revision

DRAWN TO SCALE, SCALE MAY BE DISTORTED FROM REPRODUCTION

RECORD DRAWING CERTIFICATION

These drawings conform to the Contractor's construction records.

Drawn By: Date

Construction Inspection

	BY	DATE
Drawn	MEZ	8/1/11
Reviewed	AS	10/7/11
Approved		

SCALE AS NOTED

File: CP1103-SHT10_PLN.dwg

LANCE D. STEVENS — STATE OF WASHINGTON — 45274 — REGISTERED PROFESSIONAL ENGINEER

CITY OF AUBURN WASHINGTON

PUBLIC WORKS DEPARTMENT
25 West Main Street
Auburn, Washington

REVIEWED BY: (Land Use Division) DATE: (10/07/11)

Project Manager

Construction Manager

L2 Systems, LLC

132ND AVE SE TACOMA PIPELINE 5 INTERTIE
ELECTRICAL SITE PLAN

PROJECT NUMBER CP1103
CONTRACT NUMBER 12-01
SHEET 10 OF 19

PLOTTING DATE: 11/21/2011 2:37 PM USER: Van Wetzel, Terry FILE NAME: F:\0231\00022\001\A001\Sht Dwgs\SSE PLANS\CP1103-SHT10_SITE.dwg

TACOMA WATER

3628 South 35th Street
Tacoma, Washington 98409-3192

TACOMA PUBLIC UTILITIES

July 11, 2012

RECEIVED

JUL 12 2012

City of Auburn
Public Works Department

Mr. Dennis Dowdy
Public Works Director
25 West Main Street
Auburn, WA 98001-4998

RE: City of Auburn – Tacoma Water Wholesale Agreement

Dear Mr. Dowdy:

We are delighted to be transmitting your original copy of the fully executed Wholesale Water Agreement between our two agencies.

Also enclosed with this letter is an invoice for the System Development Charge outlined in the Section C.4 of the agreement. In accordance with your instructions, we have prepared a lump sum invoice.

I understand that the last details of each point of connection are being completed, and that supply is available currently at the B Street location, and will be soon at the 132nd Ave. location.

We look forward to a long-term relationship with the City as we work conjunctively on drinking water issues, and other matters of importance related to the Green River, and will include Auburn as we move forward with a broader initiative of communication and collaboration with all our Wholesale partners. If any question of quality or service arises, please feel free to contact me at (253) 502-8245 anytime or Chris McMeen at (253) 502-8210.

Sincerely,

Linda McCrea

Linda McCrea
Superintendent

cc: Chris McMeen, Tacoma Water

Enclosures: Wholesale Agreement
System Development Charge Invoice

RECEIVED
JUL 03 2012
WATER QUALITY
TACOMA PUBLIC UTILITIES

WHOLESALE WATER AGREEMENT BETWEEN TACOMA WATER AND CITY OF AUBURN

This wholesale water agreement ("Agreement") is made by and between the City of Tacoma, Department of Public Utilities, Water Division d/b/a Tacoma Water, a municipal corporation (hereafter "Tacoma"), and the City of Auburn, a municipal corporation (hereafter "Auburn") pursuant to Tacoma Municipal Code 12.10.400 E. Tacoma and Auburn collectively shall be referred to as the "Parties" or either Tacoma or Auburn may be referred to as "Party" when appropriate.

A. RECITALS:

WHEREAS, Tacoma has evaluated its wholesale projections in its demand forecast and has determined that adequate water resources are available to serve those projected demands; and

WHEREAS, the Parties are responsible for operating and maintaining their respective water systems in accordance with federal, state and local laws and regulations; and

WHEREAS, the Parties further recognize that water resources are finite and valuable, and the prudent use and management of these resources requires cooperation among water utilities; and

WHEREAS, Auburn has requested and Tacoma has agreed to provide a wholesale water supply to Auburn, and Tacoma is able and willing to provide the requested quantity of water on the terms and conditions as herein provided, now therefore;

For and in consideration of the mutual covenants, conditions and payments to be made as set forth herein, the Parties hereto agree as follows:

B. DEFINITIONS:

The meaning of certain words or terms, when used in this Agreement, is as follows:

1. "Wholesale Service Connection" means a physical connection between water mains of the two Parties to this Agreement, at a specifically identified point or points, where water may be transferred from one Party's system to the transmission or distribution facilities of the other Party.

2. "Isolation Valve" means a positive shut off valve that shall be installed at the location in each water system that is used to accept or deliver water through the Wholesale Service Connection. Each Party has sole responsibility for operating their Isolation Valve.

3. "Wholesale Service Connection Capacity" means the maximum flow capacity for water to be delivered through a Wholesale Service Connection as agreed upon by the Parties to this Agreement. Wholesale service connection facilities shall be designed so as to be capable of conveying no less than the agreed upon Wholesale Service Connection Capacity.

4. "Tacoma Municipal Code (TMC") means the City of Tacoma's municipal code.

5. "Emergency" means an unforeseen event that causes damage or disrupts normal operations and requires immediate action to protect public health and safety including exclusively when water system repairs are necessary due to a water system failure or when there is a water supply shortfall.

6. "Wholesale Water Service" means water provided by Tacoma pursuant to TMC 12.10.400 E to community water systems that are in compliance with Washington State Department of Health regulations and who adopt a water conservation program substantially equivalent to Tacoma's program and agree to abide by Tacoma's Water Shortage Response Plan as a condition of service.

C. CONDITIONS:

The responsibilities of the parties to this contract are set forth below:

1. General. Tacoma agrees to furnish the Wholesale Service Connection Capacity to Auburn of a quality that will satisfy all requirements of the Federal Safe Drinking Water Act as amended, and shall be in accordance with the terms and conditions of this Agreement.

2. Wholesale Water Rates. Tacoma will supply Auburn with water at the Wholesale Water Service rate as identified in TMC Section 12.10.400, and the parties will be bound by the City of Tacoma Water Regulations-Rates as found in Chapter 12.10 TMC. Invoices will include a monthly ready to serve charge based on meter size and consumption charges based on water used. These water rates (and regulations) are periodically adjusted and shall be applicable as set forth in the rate schedule as adopted by the Public Utility Board and Tacoma City Council. The water supplied to Auburn must be used on a year-around basis where the average summer day use divided by the average winter day use results in a summer/winter ratio of 2.5 or less, as set forth in TMC 12.10.400.

3. Billing. Tacoma shall utilize regular meter reads secured from SCADA signals that Auburn shall deliver to the Tacoma Water Control Center to calculate a statement of charges for water service. In the event SCADA signals are unavailable, monthly manual reads will be used in lieu until such time that SCADA signals are restored. Tacoma shall strive to provide the statement of charges on a monthly basis, and payment shall be due to Tacoma pursuant to TMC 12.10.060. In accordance with TMC 12.01.030, no late charges shall be applied if payment of the balance due is received within 24 days of the date on the initial billing.

4. System Development Charge. Upon Auburn's payment of the full charge or the initial time installment payment to Tacoma for Tacoma's System Development Charge (SDC) of $5,196,600.00, Tacoma will commit and agrees to supply to Auburn Wholesale Water Service. Auburn agrees to pay the full balance of the SDC Charge within thirty (30) days of execution of this agreement. At its option, Auburn may pay at least 20 percent (20%) of the SDC amount within thirty (30) days of execution of this agreement, and then shall pay the SDC balance with interest over up to ten years as authorized by the Tacoma Municipal Code, as further set forth below.

   If paying in installments, Auburn agrees to pay the SDC balance in ten annual installments commencing on the first annual anniversary date of this agreement. In addition to the annual SDC installment, Auburn shall also pay interest, calculated on a monthly basis (the first day of every month) on the outstanding principal SDC balance amount at "prime" minus 2% interest rate, as reported by the Wall Street Journal ten days before the date that the monthly interest calculation is made. The interest amount paid by Auburn shall be paid to Tacoma along with the annual installment payment. Provided however, Auburn may prepay (without penalty) a portion or all of the outstanding SDC amount, in which case the accrued interest to date of such prepayment shall also be paid to Tacoma.

5. Water Rights. Tacoma certifies that it holds sufficient water rights to provide the quantities of Wholesale Water Service requirement by the Agreement to Auburn for the duration of the term of this Agreement as described in section 16.

6. Quantity of Wholesale Water Service. Tacoma will make available, and upon Auburn's request, supply Wholesale Water Service to Auburn in the quantity of up to 1,000,000 gallons per day (gpd) of water for average day use, up to 1,800,000 gpd for peak day use and up to 1,620,000 gpd for four-day peak use. Tacoma further agrees to supply at Auburn's Option to exercise no later than December 31, 2015, an additional quantity of 1,000,000 gallons per day (gpd) of water for average day use, 1,800,000 gpd for peak day use and 1,620,000 gpd for four-day peak use, under the same terms and SDC rates of this agreement.

7. Reliability . The Parties agree that Tacoma will supply Wholesale Water Service pursuant to this Agreement with the same degree of reliability and surety of supply as water provided by Tacoma to its existing customers and as allowed under TMC 12.10.150. In non-emergency situations Tacoma will provide 30 days notice to Auburn before temporarily requiring the changing, reducing, limiting or discontinuance of the use of water.

8. Additional Water. Auburn may purchase water for Emergency purposes in excess of the amount set forth in paragraph 6 above on a short term basis from Tacoma if in Tacoma's sole discretion sufficient surplus water is available. Auburn shall be entitled to purchase such water in accordance with the terms of this Agreement at the then current wholesale rate, and the applicable sections of Chapter 12, Tacoma Municipal Code.

9. Connections. The Wholesale Service Connections described in Exhibit "A" shall be governed by the terms of this Agreement. No future Wholesale Service Connections shall be permissible without a subsequent and separate written agreement between the Parties, which agreement may supplement this Agreement. Neither Party shall be obligated to agree to or execute any agreement or permit with the other Party to construct additional water Wholesale Service Connection(s).

10. Capital and Maintenance Costs. Auburn agrees that Tacoma Water owns the Isolation Valve directly off of the Tacoma Water system, piping from the Tacoma Water Isolation Valve to the meter, the meter vault and the meter, meter isolation valve, and certain telemetry equipment. Maintenance and operation costs for this equipment are Tacoma Water's responsibility. Any capital costs related to this equipment, including upgrades or replacement and renewal are Tacoma's responsibility. Tacoma agrees that Auburn owns the piping and other appurtenances, including certain telemetry components, downstream of the Tacoma Water Meter Vault. Maintenance and operation costs and any capital costs related to upgrades or replacements of this equipment are Auburn's responsibility. Exhibit "B" identifies the location of the two interties, and illustrates the responsible Party for physical infrastructure components (except telemetry components).

11. Transferability. The rights and obligations of this Agreement are transferable to heirs, successors and assignees of the Parties.

12. Resale. Wholesale water provided under this Agreement by Tacoma to Auburn may be resold by Auburn to another water purveyor.

13. Conservation. As a requirement of providing Wholesale Water Service to Auburn under this agreement and pursuant to Chapter 12.10 TMC Auburn shall implement a water conservation program substantially equivalent to Tacoma's program and shall abide by Tacoma's Water Shortage Response Plan ("Plan") as

provided under TMC 12.10.150. If requested Tacoma will invite Auburn to participate in the planning and implementation process for conservation programs as they are developed and will share available conservation resources where beneficial to both Parties. The Parties agree to meet every two years to review and evaluate operational experience with regards to water use and conservation.

14. Mutual Aid. Tacoma and Auburn agree to provide water service related mutual aid, to the extent possible, during times of extraordinary need and emergency operations experienced by either Party.

15. Indemnification. Neither Party shall be monetarily liable to the other Party or its respective customers for failure to supply and deliver water to the other at any time or for any reason. The Parties shall indemnify and hold each other harmless from any and all third party claims, lawsuits, or proceedings in arbitration resulting from any failure of either Party to supply and deliver water in accordance with the terms and conditions of this Agreement. However, each Party shall have the right to have this Agreement specifically enforced in equity.

16. Term. This Agreement shall remain in effect so long as Tacoma remains in the business of providing water, or its successors in interest to its water system remain in the business of providing water, and so long as Auburn meets the terms and conditions of this Agreement.

17. Dispute Resolution. In the event of a disagreement over any aspect of this Agreement, except as herein further provided, it is agreed that any dispute shall be submitted to binding arbitration pursuant to Chapter 7.04 RCW. The Parties shall agree upon who will arbitrate the dispute, and upon failure to reach agreement within a reasonable period of time, the presiding judge of the Pierce County Superior Court may be asked to appoint an arbitrator from one of the recognized dispute resolution services. The Party that substantially prevails in the arbitration proceeding shall be awarded its reasonable attorney fees and costs. If neither Party substantially prevails in the arbitration proceeding, the Parties shall each bear their respective costs and divide the mutual costs associated with the arbitration equally.

18. Notice. All notices, requests, demands and other communications hereunder shall be in writing and shall be deemed given if personally delivered or mailed, certified mail, return receipt requested, or sent by overnight carrier to the following addresses:

If to Tacoma:
Water Superintendent
PO Box 11007
Tacoma, WA 98411
Phone: (253) 502-8245

If to Auburn:
Public Works Director
1 East Main Street
Auburn, WA 98001
Phone: (253) 804-5062

Fax: (253) 502-8694 Fax: (253) 931-3053

Operational communication protocols shall be fully described in the jointly developed Operational Protocols required under item 22 below.

19. Invalidity. If any term of this Agreement is found to be void or invalid, such invalidity shall not affect the remaining terms of this Agreement, which shall continue in full force and effect. The parties shall agree that if any provisions are voided by a court or otherwise deemed not enforceable, the parties shall negotiate in good faith to develop replacement provisions that are as close as possible to the intent of the parties expressed in the invalid provisions.

20. Counterparts. This Agreement may be executed in any number of counterpart copies, each of which shall be deemed an original, but all of which together shall constitute a single instrument.

21. Authority to Bind. Each of the Parties to this Agreement certifies that the person signing this Agreement has authority to bind the respective governing bodies to all of the terms and conditions of the Agreement herein.

22. Operational Coordination. Water supply directly off the Tacoma Water transmission system affects flow, pressure, and treatment, and diurnal consistency of demand is critical. The two Parties agree to jointly develop and maintain Operating Protocols for items including the scheduling of water demand to assure consistent flow control and treatment, routine operational communication, emergency shutdown, emergency contacts, and other items the Parties determine appropriate.

23. This agreement replaces the EMERGENCY AGREEMENT BETWEEN CITY OF TACOMA AND CITY OF AUBURN dated October 18, 2010.

Dated this 16th day of July, 2012.

City of Tacoma:
Department of Public Utilities
Water Division

Linda A. McCrea
Water Superintendent

City of Auburn:
Mayor

Approved as to form & legality:

Approved as to form & legality:

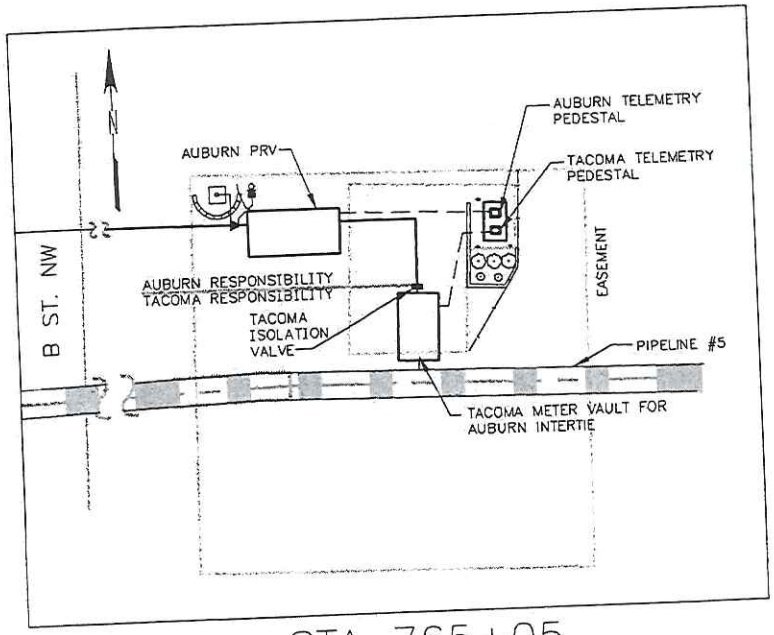
Approved
Finance Director

EXHIBIT "A"

WHOLESALE SERVICE CONNECTIONS SPECIFICATIONS

Intertie Location	Connection	Meter	Static Elevation (ft)		Operating Pressure (psi)		Flow Capacity (gpm)	Flow Capacity **(mgd)**
	Size	Size	Tacoma	Auburn	Tacoma	Auburn	To/From Utility	To/From Utility
Tacoma Water Pipeline 5 at 3200 "B" St. NW Auburn, WA .(STA 765+05)	12"	6"	894 (NGVD29)	253 (NAVD88)	309	80	2,200	3.2
Tacoma Water Pipeline 5 at 29600 132nd Ave SE, Kent, WA (STA 933+00)	12"	8"	894 (NGVD29)	579 (NAVD88)	173	80	4,500 (PRV 2,200)	6.5 (PRV 3.2)

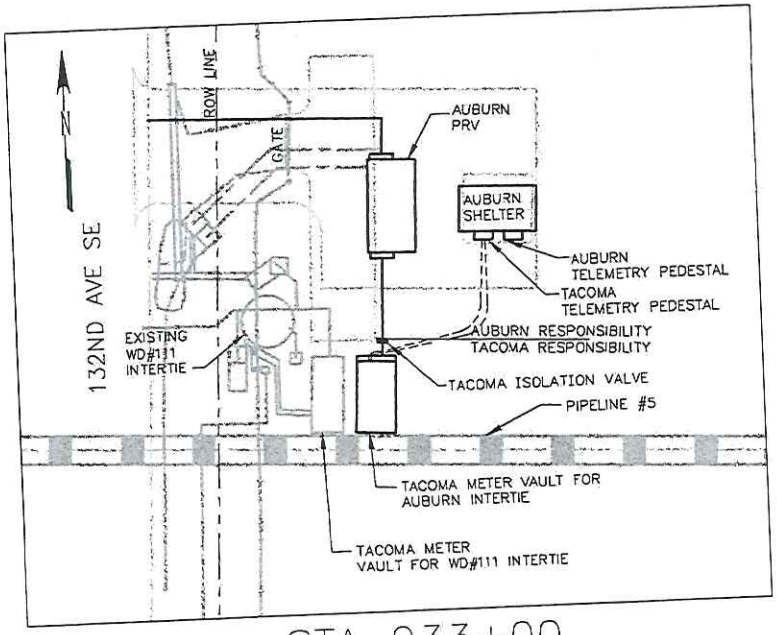
Note: For connection specific elevations remember the NGVD29 (Tacoma) Datum is 3.47 feet higher than the NAVD88 (Auburn) Datum.



STA 765+05

3200 B ST NW, AUBURN, WA

SCALE: N.T.S.



STA 933+00

29600 132nd AVE. SE, KENT, WA

SCALE: N.T.S.

EXHIBIT B

RESOLUTION NO. 4986

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AGREEMENTS BETWEEN THE CITY OF AUBURN AND CASCADE WATER ALLIANCE FOR THE PURCHASE AND SALE OF CREDITS RELATING TO PERMANENT AND RESERVE WHOLESALE WATER SUPPLY CAPACITY

WHEREAS, the City of Auburn has a duty and responsibility to provide water to its community; and

WHEREAS, in February 2010, the City of Auburn entered into the 2010 Lake Tapps Area Water Resources Agreement that provided, among other things, for Cascade Water Alliance (Cascade) to assist the City in meeting its projected 50-year water supply needs; and

WHEREAS, in February 2013, Cascade informed the City of the availability of a water supply opportunity; and

WHEREAS, the City confirmed its desire to purchase a System Development Charge Credit from Cascade for both 4 Million Gallon per Day ("MGD") Permanent, and 6 MGD Reserve Wholesale Water Supply.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. That the Mayor and City Clerk are hereby authorized to execute Agreements between the City and Cascade Water Alliance for the Purchase and Sale of Credits Relating to Permanent and Reserve Wholesale Water Supply Capacity, which agreements shall be in substantial conformity with the agreements attached hereto as Exhibits A and B and incorporated herein by this reference.

Section 2. That the Mayor is authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 3rd day of September, 2013.

CITY OF AUBURN

PETER B. LEWIS, MAYOR

ATTEST:

Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

AGREEMENT FOR THE PURCHASE AND SALE OF CREDITS RELATING TO PERMANENT WHOLESALE WATER SUPPLY CAPACITY

THIS AGREEMENT ("Agreement") is made and entered into as of this 10th day of September 2013 ("Effective Date"), by and between the City of Auburn, Washington ("Auburn"), and Cascade Water Alliance, a joint municipal utilities services authority organized under Chapter 39.106 RCW ("Cascade"). The City and Cascade are sometimes referred to collectively as the "Parties" and individually as a "Party."

RECITALS

WHEREAS, in 2005, in order to meet Cascade's immediate and long-term water supply needs, Cascade purchased from Tacoma a supply of water both permanently and for a finite period of years pursuant to an "Agreement for the Sale of Wholesale Water";

WHEREAS, on February 5, 2010, Cascade and the Cities of Bonney Lake, Buckley, Sumner and Auburn entered the 2010 Lake Tapps Area Water Resources Agreement (the "Four Cities Agreement") that provided, among other things, for Cascade to assist the four cities in meeting their projected 50-year water supply needs;

WHEREAS, on December 31, 2012, Cascade and Tacoma entered the Amended and Restated Agreement for the Sale of Wholesale Water (the "Amended and Restated Agreement") that provided, among other things, for Tacoma to make available to the four cities a water supply to be purchased directly from Tacoma as a wholesale customer and to recognize credit for the System Development Charges that Cascade had previously paid to Tacoma;

WHEREAS, Cascade and Tacoma sent a letter, dated February 11, 2013, to inform Auburn of the availability of the "substitute" water supply opportunity and related time limitations and procedures for acting on the opportunity ("Joint Letter");

WHEREAS, Auburn timely approved, signed, and delivered the Confirmation Notice, dated May 21, 2013, to confirm Auburn's election of the substitute supply opportunity and its desire to purchase a System Development Charge Credit from Cascade as to the 4 MGD Wholesale Water Supply ("Confirmation Notice"); and

WHEREAS, the Joint Letter and Confirmation Notice are set forth in Exhibit A hereto and are incorporated by reference in this Agreement;

NOW, THEREFORE, IN CONSIDERATION of the recitals stated above, which are incorporated herein, and the mutual covenants and conditions herein contained, the Parties agree as follows:

AGREEMENT

1. Definitions.

"4 MGD Wholesale Water Supply" means an average annual 4 MGD wholesale water supply from Tacoma, with a Peaking Factor of 1.33, and a maximum peak day of 5.32 MGD, all as provided in the Amended and Restated Agreement.

"Amended and Restated Agreement" means the "Amended and Restated Agreement for the Sale of Wholesale Water" by and among Cascade and the City of Tacoma, Department of Public Utilities, Water Division, dated December 31, 2012.

"Confirmation Notice" means the document, dated May 21, 2013, in which Auburn confirmed its election of the substitute supply opportunity in fulfillment of Cascade's obligation in the Four Cities Agreement to assist with Auburn's projected 50-year water supply needs (attached in Exhibit A).

"Four Cities Agreement" means the "2010 Lake Tapps Area Water Resources Agreement among the Cities of Auburn, Bonney Lake, Buckley and Sumner, and Cascade Water Alliance," dated February 5, 2010.

"MGD" means million gallons per day.

"Joint Letter" means the letter, dated February 11, 2013, from Cascade and Tacoma to Cities of Auburn, Bonney Lake, Buckley and Sumner that is attached hereto in Exhibit A.

"Notice of Confirmation of System Development Charge Credit" means a notice, given by Cascade to Tacoma at the request of Auburn, confirming the amount of the System Development Charge Credit (if any) to be applied to the System Development Charge otherwise due and payable by Auburn to Tacoma in connection with a wholesale water supply agreement.

"System Development Charge" or "SDC" means the system development charge imposed upon wholesale customers by Tacoma in its wholesale water regulations.

"System Development Charge Credit" means a credit to be applied in a wholesale water supply agreement against the System Development Charge otherwise due and payable by Auburn to Tacoma. The System Development Charge Credit is expressed in million gallons per day (MGD) units and in dollars.

"Tacoma" means the City of Tacoma, Department of Public Utilities, Water Division.

2. Term of Agreement.

This Agreement takes effect on the first date that both Parties have duly approved, signed, and delivered the Agreement to the other Party. The term of the Agreement will commence on the effective date and will end on December 31, 2029 or the date that Auburn has fully paid Cascade for the price of the System Development Charge Credit consistent with Sections 3 and 4 of this Agreement.

3. Purchase of 4 MGD System Development Charge Credit & Price.

Auburn agrees to purchase and Cascade agrees to sell a System Development Charge Credit regarding the 4 MGD Wholesale Water Supply in the quantity of 2.5 MGD annual supply capacity (3.32 MGD peak supply capacity).

In consideration for said System Development Charge Credit, Auburn will pay to Cascade a total price of $7,893,300.00 as of the date that this Agreement takes effect. The parties agree that Auburn will pay interest at an annual rate of 3.2% on the balance due beginning in 2017 and continuing until the balance is fully paid and this Agreement terminates.

Auburn will pay the total price by making an annual payment in 2017-2029 according to the annual payment schedule set forth in Section 4 below. This schedule incorporates interest at a rate of 3.2% on the balance due, beginning in 2017. Under this schedule the total of annual payments including interest is $10,105,806.00.

4. Annual Payment Schedule.

Auburn will make annual installment payments to Cascade to pay for the System Development Charge Credit as to the 4 MGD Wholesale Water according to the following payment schedule:

Payment Schedule

Year	Amount
2014	0
2015	0
2016	0
2017	$252,586
2018	$252,586
2019	$252,586
2020	$934,805

Year	Amount
2022	$934,805
2023	$934,805
2024	$934,805
2025	$934,805
2026	$934,805
2027	$934,805
2028	$934,805

2021	$934,805

2029	$934,805
Total	$10,105,806

Each year the annual payment shall due and payable by Auburn to Cascade on or before June 30 of the year in which such payment is due. If full payment of any annual payment is not received by Cascade on or before the date due, such payment shall be considered past due, and the unpaid amount shall accrue additional interest, from the date due until the date paid, at a rate per day equal to 0.03 percent per day. Upon not less than fifteen (15) days' advance notice to Cascade, the City may in any given year prepay without penalty any one or more of the next successive annual payments. Upon such notice, Cascade will provide Auburn documentation of the amount due for such payment, and adjustments to any remaining payment schedule, net of related interest incorporated into the above payment schedule.

5. Notice of Confirmation of System Development Charge Credit.

Within 30 days after this Agreement takes effect, Cascade will send to the Tacoma Water Superintendent a Notice of Confirmation of System Development Charge Credit regarding the 4 MGD Wholesale Water Supply in the quantity of 2.5 MGD annual supply capacity. Cascade will provide a copy of the Notice to Auburn when it is sent to Tacoma.

6. Wholesale Water Supply Purchase Negotiations with Tacoma.

In order to use the System Development Charge Credit and secure a wholesale water supply from Tacoma, Auburn acknowledges that it must make an offer, complete negotiations, and enter a wholesale water supply agreement with Tacoma consistent with the Joint Letter and Confirmation Notice set forth in Exhibit A and with the Amended and Restated Agreement. Auburn acknowledges and agrees that Cascade makes no representations or warranties as to the outcome of such negotiations, the Tacoma wholesale water supply that Auburn may (or may not) be able to purchase, or otherwise.

7. Effect on Four Cities Agreement.

The Parties agree that this Agreement constitutes full performance by Cascade of its obligations under Section 3(a) of the Four Cities Agreement. Accordingly, Section 3(a) of the Four Cities Agreement shall be of no further force or effect as between Cascade and Auburn. Other provisions of the Four Cities Agreement are unaffected by this Agreement and remain effective according to their terms.

8. Notices.

All notices and payments hereunder may be delivered or mailed. If mailed, they shall be sent to the following respective addresses:

Cascade Water Alliance:
520 112th Avenue NE, Suite 400
Bellevue, Washington 98004
Attn: Chief Executive Officer
Phone: (425) 453-0930
Fax: (425) 425-453-0953

City of Auburn:
Attn: Dennis Dowdy
25 W Main St
Auburn WA 98001
Phone: (253)931-3010
Fax: (253)931-3053

A Party may change its address from time to time by providing notice to the other Party. All notices and payments mailed by regular post (including first class) shall be deemed to have been given on the second business day following the date of mailing, if properly mailed and addressed. Notices and payments sent by certified or registered mail shall be deemed to have been given on the next business day following the date of mailing, if properly mailed and addressed. For all types of mail, the postmark affixed by the United States Postal Service shall be conclusive evidence of the date of mailing.

9. Dispute Resolution.

In the event that any dispute arises between Cascade and Auburn, the aggrieved Party shall give a notice of the dispute to the other Party. Cascade and Auburn shall, within five (5) days of such notice, each nominate a senior officer of its management to meet at a mutually agreed location, to attempt to resolve such dispute. The Parties shall each designate a representative(s) to confer on the best and most cost effective way to resolve the dispute. By mutual agreement, they may choose direct negotiations or mediation. If there is no agreement between the Parties on how to proceed within thirty (30) days, either Party may pursue legal action; provided, however, no Party shall be precluded from filing an appeal or action to prevent the expiration of a time period for filing or any statute of limitations.

If a Party fails to perform its obligations hereunder, then it shall be in default hereunder unless the defaulting Party cures an event of default, whether monetary or non-monetary, within thirty (30) days after receiving written notice from the other Party of such default.

Subject to the procedures set forth in Section 9 (Dispute Resolution), if a Party is in breach or default of its obligations arising under this Agreement, the other Party shall have and shall be entitled to exercise any and all remedies available to it at law or in equity (including the right to specifically enforce this Agreement), all of which remedies shall be cumulative.

11. Attorneys' Fees.

If any Party shall be required to bring any action to enforce any provision of this Agreement, or shall be required to defend any action brought by the other Party with respect to this Agreement, and in the further event that one Party shall substantially prevail in such action, the losing Party shall, in addition to all other payments required therein, pay all of the prevailing Party's reasonable costs in connection with such action, including such sums as the court or courts may adjudge reasonable as attorney's fees in the trial court and in any appellate courts.

12. No Assignment.

This Agreement is specific to the Parties and may not be assigned in whole or in part.

13. Non-Waiver.

No delay or failure by a Party to exercise any of its rights, powers or remedies under this Agreement following any breach by another Party shall be construed to be a waiver of any such breach, or any acquiescence therein, or of or in any similar breach thereafter occurring, nor shall any waiver of any single breach be deemed a waiver of any other breach theretofore or thereafter occurring.

14. No Third Party Beneficiary.

This Agreement is for the sole and exclusive benefit of the Parties and is not intended to and shall not confer any rights or benefits on any third party not a signatory hereto.

15. Integrated Agreement.

This Agreement constitutes the entire agreement between the Parties with respect to the subject matter hereof and supersedes all prior or contemporaneous understandings or agreements with respect thereto; provided, however, that this Agreement shall be interpreted or construed together with the Amended and Restated Agreement, the Joint Letter, and the Confirmation Notice. No modifications or amendments of this Agreement shall be valid or effective unless evidenced by an agreement in writing signed by the Parties.

16. Signature in Counterparts.

This Agreement may be executed in counterparts and all of those counterparts taken together shall constitute one and the same instrument.

17. Representations of the Parties.

Each Party represents and warrants that it has duly approved, executed, and delivered this Agreement and that it has all necessary authority to enter into this Agreement and to perform its terms and obligations. Each Party represents and warrants that the approval, execution, and delivery have been duly authorized by the appropriate board or council, and no other act or proceeding on the part of any Party is necessary to authorize entry into or performance of this Agreement.

IN WITNESS WHEREOF, the Parties have duly executed this Agreement as of the Effective Date.

City of Auburn:

By: _____

Title: MAYOR

Date: SEP 10 2013

ATTEST

_____
City Clerk

APPROVED AS TO FORM

_____
City Attorney

Cascade Water Alliance:

By: Chuck Clarke Chuck Clarke

Title: Chief Executive Officer

Date: 9/18/13

Exhibit A

[Joint Letter signed by Cascade and Tacoma, dated February 11, 2013, and the Confirmation Notice signed by Auburn, dated May 21, 2013.]

CASCADE WATER ALLIANCE

TACOMA WATER
TACOMA PUBLIC UTILITIES

February 11, 2013

The Honorable Pete Lewis
City of Auburn
25 West Main Street
Auburn, WA 98001

The Honorable Pat Johnson
City of Buckley
933 Main Street
Buckley, WA 98321

The Honorable Neil Johnson
City of Bonney Lake
19306 Bonney Lake Blvd.
Bonney Lake, WA 98391

The Honorable Dave Enslow
City of Sumner
1104 Maple Street
Sumner, WA 98390

Re: Cascade Water Alliance and Tacoma Water Substitute Wholesale Water Supply Availability – Time is of the Essence (*Sent by Email and US Mail*)

Dear Mayors:

As you may be aware, the Cascade Water Alliance and City of Tacoma have been in ongoing discussions about potential changes to the 2005 Water Supply Agreement. In late 2012 a new agreement was reached and signed which benefits not only Tacoma and Cascade but also the Four Cities of Auburn, Bonney Lake, Buckley and Sumner. This new agreement preserves the right of the four cities under the 2009 Cascade/Four Cities Agreement and allows a new time sensitive supply option to be jointly offered to the four cities from Cascade and Tacoma.

The Cascade Water Alliance (Cascade), in cooperation with Tacoma Water, is offering the availability of a substitute wholesale water supply ("Substitute Supply") and to provide this notice of a limited period of time for your Cities to take action on this unique opportunity. Cascade and Tacoma have entered into a Restated and Amended Agreement for the Sale of Wholesale Water, which replaces the 2005 agreement between the parties for purchase and sale of wholesale water. The 2005 agreement is included as one of the "water supply assistance" measures in the 2010 Lake Tapps Area Water Resources Agreement between Cascade and your cities (the "Four Cities Agreement").

In the Restated and Amended Agreement, Cascade has agreed to relinquish its right to take delivery of the Substitute Supply. This water is now available to the Cities to purchase directly from Tacoma as a wholesale customer. Cascade has, however, previously paid capacity charges for this wholesale water supply. If your City now desires to purchase the Substitute Supply directly from Tacoma and takes action described in this letter, Cascade is willing to sell your City a credit (reflecting the amounts that Cascade has previously paid to Tacoma) that can be

applied against System Development Charges that would otherwise be due to Tacoma ("SDC Credit"). The amount and availability of any SDC Credit will be determined by Cascade in accordance with the terms set forth in the Confirmation Notice that is attached to this letter. You must act promptly, however, in order to secure the opportunity to obtain an SDC Credit from Cascade.

This letter provides Cascade's formal notice of the limited window of time for your City to act, the Confirmation Notice that you must return to Cascade to apply for a SDC Credit, and general guidance as to how Cascade and Tacoma intend to cooperate to facilitate the implementation of the Restated and Amended Agreement.

Limited Time to Act

You must act within 120 days from the first meeting of Tacoma, Cascade and the Four Cities to confirm your interest in this opportunity by delivering a signed "Confirmation Notice" to Cascade in the form attached to this letter. This opportunity expires at the end of 120 days. During this 120-day period, the quantity allocation among and between the Four Cities as stated in the Four Cities letter to Cascade, dated February 5, 2010, shall be recognized by Cascade and shall determine the maximum allocation of the Substitute Supply (and the Residual Wholesale Water Supply) among the Cities (unless the Four Cities jointly agree to reallocation in accordance with the Four Cities Agreement). A City has until the expiration date to deliver an executed Confirmation Notice to Cascade. If you select this opportunity by acting within the 120 days, then you have until March 1, 2018 to purchase (or agree to purchase) an SDC Credit from Cascade. (In anticipation of the required steps with Tacoma described below, it is advisable for your City to complete the SDC purchase agreement with Cascade in advance of March 2018 to allow your City adequate time for the Tacoma steps.) If you select this opportunity by acting within the 120 days, then you will also have until March 1, 2018 to submit a Wholesale Water Agreement with Tacoma that is eligible for the SDC Credit.

If you do not confirm your selection by delivering a Confirmation Notice to Cascade by the deadline, then you decline the Substitute Supply opportunity stated in this letter. In that event, you will still be able to purchase wholesale water supply (if any water supply capacity remains available) from Tacoma on terms consistent with Section 3(a) of the Four Cities Agreement. However, you will not be eligible for an SDC Credit.

Next Steps with Cascade

If you deliver the Confirmation Notice within the 120-day deadline stated above and select this Substitute Supply opportunity, then you will need to complete the following steps with Cascade:

(a) Confirmation to Cascade that your City will proceed with the Substitute Supply opportunity stated herein, and that it fully substitutes for Section 3(a) of the Four Cities Agreement which will have no further force or effect.

(b) Agree with Cascade for payment terms to Cascade for the SDC credit.

(c) Upon completion of the items in (a) and (b) above, Cascade will send Notice of Confirmation of System Development Charge Credit to Tacoma.

Next Steps with Tacoma Water

If you deliver the Confirmation Notice to Cascade within the deadline stated above and select this opportunity, then you would also need to complete the following steps with Tacoma in order to submit a timely offer to purchase all or a portion of the Substitute Supply. The procedures and requirements that must be followed to submit such an offer are set forth in Section 6 and Section 7 of the Restated and Amended Agreement (attached for reference). It is important to read these procedures and requirements carefully as any offer you make must be in strict compliance with these procedures and requirements. These procedures and requirements are briefly summarized as follows:

(a) In order to obtain a SDC Credit, Tacoma must be in receipt of a Notice of Confirmation of System Development Charge Credit from Cascade.

(b) Prior to submitting your offer to purchase water from Tacoma, you must obtain Tacoma's written review and approval of the Wholesale Water Supply Agreement (including any proposed modifications thereof) pursuant to which such offer is to be made to Tacoma.

(c) Your offer to Tacoma must be submitted in the form of duplicate executed originals of the Wholesale Water Supply Agreement, in strict conformity with the form of the Wholesale Water Supply Agreement approved by Tacoma.

(d) No later than March 1, 2018, you must deliver your offer to Tacoma, Attention: Water Superintendent, Tacoma Water, 3628 South 35th Street, Tacoma, WA 98409, and obtain Tacoma's acknowledgment of the time and date of Tacoma's receipt of such offer.

Clarifications

While we are pleased to present this opportunity to your City, we want to avoid any confusion as to what this opportunity is and is not. For avoidance of doubt, this letter does not constitute a modification or waiver of any of the procedures or requirements set forth in the Restated and Amended Agreement. This letter does not constitute an offer by Tacoma to sell a wholesale water supply to any person or entity. Any such sale by Tacoma is subject to and contingent upon the negotiation, execution and delivery of a mutually acceptable Wholesale Water Supply Agreement.

Conclusion

Cascade and Tacoma are pleased to provide the availability of Substitute Supply, and look forward to receiving your offer to purchase, should you desire to do so, in accordance with the

guidelines set forth above. We will be contacting your office within the next week to schedule a meeting to present and discuss this opportunity.

Sincerely,

Chuck Clarke
Chief Executive Officer
Cascade Water Alliance

Linda A. McCrea
Superintendent
Tacoma Water

Confirmation Notice

To Be Delivered to Cascade Water Alliance 120 days From the First Meeting of Tacoma, Cascade and The Four Cities

The City of _____ ("City") confirms receipt of the letter, dated _____, from Cascade Water Alliance ("Cascade") and Tacoma Water presenting the availability of a substitute wholesale water supply ("Substitute Supply"). The City understands that the Substitute Supply is an alternative to the provisions of Section 3(a) of the 2010 Lake Tapps Area Water Resources Agreement between Cascade and the Cities of Auburn, Bonney Lake, Buckley, and Sumner (the "Four Cities Agreement"). The City understands that the Substitute Supply requires the City to enter a wholesale water supply agreement with Tacoma Water to be negotiated and offered to Tacoma Water by March 1, 2018 as described in the above-referenced letter. The City understands that Cascade Water Alliance is offering to sell a System Development Charge Credit to the City on the terms and conditions stated on Exhibit 1 attached hereto, provided that by March 1, 2018 Cascade and the City need to enter an agreement to confirm the purchase and sale and Cascade's provision of a Notice of Confirmation of System Development Charge ("SDC") Credit to Tacoma Water.

Now, therefore, the City of _____ hereby confirms and agrees as follows:

(a) The City the elects the "Substitute Supply" opportunity described herein as an alternative that fully substitutes for section 3(a) of the Four Cities Agreement.

(b) The City provides this Confirmation Notice with respect to the following portion of the Substitute Supply:
4 MGD wholesale supply: _____
6 MGD wholesale supply: _____

(c) By selecting the "Substitute Supply" alternative, the City agrees that Cascade has fully performed and satisfied all obligations to the City under 3(a) of the Four Cities agreement.

(d) The City agrees that section 3(a) of the Four Cities Agreement shall be of no further force or effect as between Cascade and the City.

(e) The City and Cascade shall proceed with diligence to negotiate an agreement for purchase of an SDC Credit consistent with the terms outlined in Exhibit 1.

CONFIRMED, ACCEPTED AND AGREED TO BY THE CITY OF _____ on this _____ day of _____, 2013.

By _____

_____

[Name]

Mayor

CITY OF AUBURN WASHINGTON

Peter B. Lewis, Mayor

25 West Main Street * Auburn WA 98001-4998 * www.auburnwa.gov * 253-931-3000

May 21, 2013

Cascade Water Alliance
Attn: Chuck Clarke, Chief Executive Officer
520 112th Avenue NE, Suite 400
Bellevue, Washington 98004

Re: Confirmation Notice – City of Auburn's Response to Cascade's Offer of Substitute Supply

Dear Mr. Clarke,

On May 6th, 2013 the Auburn City Council approved Resolution 4951 authorizing the City of Auburn to begin negotiations with Cascade Water Alliance in response to your February 11, 2013 offer.

Enclosed please find a signed original of the City's confirmation notice

Our Public Works Director will be in touch with you soon to begin discussion of the city's desires to make use of the Substitute Supply.

Sincerely,

Pete Lewis
Mayor

Enclosures

cc: Dennis Dowdy, Director of Public Works

Received
MAY 23 2013

Confirmation Notice
To Be Delivered to Cascade Water Alliance 120 days From the First Meeting of Tacoma, Cascade and The Four Cities

The City of Auburn ("City") confirms receipt of the letter, dated February 11, 2013, from Cascade Water Alliance ("Cascade") and Tacoma Water presenting the availability of a substitute wholesale water supply ("Substitute Supply") The City understands that the Substitute Supply is an alternative to the provisions of Section 3(a) of the 2010 Lake Tapps Area Water Resources Agreement between Cascade and the Cities of Auburn, Bonney Lake, Buckley, and Sumner (the "Four Cities Agreement") The City understands that the Substitute Supply requires the City to enter a wholesale water supply agreement with Tacoma Water to be negotiated and offered to Tacoma Water by March 1, 2018 as described in the above-referenced letter. The City understands that Cascade Water Alliance is offering to sell a System Development Charge Credit to the City on the terms and conditions stated on Exhibit 1 attached hereto, provided that by March 1, 2018 Cascade and the City need to enter an agreement to confirm the purchase and sale and Cascade's provision of a Notice of Confirmation of System Development Charge ("SDC") Credit to Tacoma Water.

Now, there fore, the City of Auburn hereby confirms and agrees as follows:

(a) The City the elects the "Substitute Supply" opportunity described herein as an alternative that fully substitutes for section 3(a) of the Four Cities Agreement provided that the City can negotiate acceptable terms with Cascade to provide and finance the necessary water supply SDC credits.

(b) The City provides this Confirmation Notice with respect to the following portion of the Substitute Supply.
4 MGD wholesale supply: 4 MGD
6 MGD wholesale supply: Possible option of 3 MGD

(c) By selecting the "Substitute Supply" alternative, the City agrees that upon execution of a new Substitute Supply agreement with Cascade to provide SDC Credits for 4 MGD of supply, Cascade will have fully performed and satisfied all obligations to the City under 3(a) of the Four Cities agreement.

(d) The City agrees that section 3(a) of the Four Cities Agreement shall be of no further force or effect as between Cascade and the City when a new substitute supply agreement with Cascade is executed.

(e) The City and Cascade shall proceed with diligence to negotiate an agreement for purchase of an SDC Credit consistent with the terms outlined in Exhibit 1 (Attached).

CONFIRMED, ACCEPTED AND AGREED TO BY THE CITY OF AUBURN on this 21st day of May, 2013:

By: _____
Pete Lewis, Mayor

Exhibit 1

TERMS FOR 4 CITIES SUBSTITUTE SUPPLY OFFER

I. This offer is structured to fulfill Cascade's obligations to make available Tacoma water as described in the existing "4 Cities Agreement ". Availability of the terms of this offer is contingent upon written acceptance of the substitution of this supply offer for the commitment defined in Section 3.a of that 4 Cities Agreement specifically:

a. Paragraph 3A, providing options for purchase of Cascade's contracted Tacoma supply capacity, is replaced by the substitute capacity offer defined in this proposal.

b. Paragraph 3A is confirmed in writing to be fully satisfied by acceptance of this substitute capacity offer.

c. Upon expiration of the substitute capacity offer on December 31, 2017, all Cascade obligations to make Tacoma water available are deemed fulfilled and terminated.

d. The substitute capacity offer must be accepted and executed no later than 120 days from the first meeting of Tacoma, Cascade and the Four Cities and the offer is withdrawn after expiration date. [Actual commitment to purchase water under those terms, once accepted, can occur anytime through 2017 as further delineated in section II.c below]

II. **Substitute Capacity Offer**

a. The following capacity is made available:

i. 9.3 mgd of average supply and a peak supply of 11.3 mgd. [This is the remaining available capacity of Cascade's purchases from Tacoma.]

ii. Cascade offers all capacity as firm and permanent. Cascade will be responsible for any transactions needed to convert reserve capacity to permanent capacity.

iii. All capacity will be offered as year-round capacity with the following structure: for each 1 mgd of year-round capacity, a peak season ratio of up to 1.33 will be available for purchase. The peak: annual ratio of 1.33:1.0 is based on the Tacoma capacity owned by Cascade, which originally totaled 10 mgd annual average and 13.3 mgd peak season. Cities may elect peak ratios ranging from 1.0 to 1.33, subject to total capacity limits defined in the attached table.

iv. Tacoma will provide wholesale service contingent on execution of a wholesale supply agreement defining terms for service and related charges. A sample agreement form is provided.

b. The following price and financial terms are offered:

i. Capacity will be offered at a price of 75% of the SDC ($3.17 per gallon * 75% = $2.3775 per gallon) originally paid by Cascade. This charge will apply to annual capacity and to incremental peak season capacity.

1. For example, for a purchase of 1 mgd annual / 1.3 mgd peak season, the cost will be 1 mgd * $2.3775 million + 0.3 mgd * $2.3775 million = $3,090,750. A purchase of 1 mgd annual with no peak season increment would cost $2,377,500.

ii. Payments for capacity purchase will be to Cascade; when the purchase involves conversion of reserve capacity, Cascade may opt to direct all or part of the payment to Tacoma.

iii. For each purchase, the following financing terms are available:

1. Full payment of purchase price upon execution of purchase; or
2. Payment of 20% of purchase price upon execution; remainder financed on a note over 5 years at 3.3% interest with level annual payments due upon each anniversary date. Purchaser would be free to pay off note at any time.

iv. Wholesale rates for service and delivery are as defined by agreement with Tacoma (see also below).

c. The following schedule applies to the substitute offer.

i. The substitute capacity offer must be accepted and executed no later than 120 days after the first meeting of Tacoma, Cascade and the Four Cities and the offer is withdrawn after expiration date. If not accepted during this period, then the existing terms of paragraph 3.a would remain in effect.

ii. During the period from execution of this substitute offer until December 31, 2015, each City may elect to purchase its related share of capacity at any time. Shares of capacity can also be re-assigned upon notice provided to Cascade by both parties of such intent.

iii. Beginning January 1, 2016 and extending through December 31, 2017, any City may offer to purchase any or all capacity remaining available on a first come, first serve basis. Cascade will notify the Cities of available capacity early in 2016.

iv. After December 31, 2017, no substitute supply capacity will be available.

v. Participants in this substitute capacity offer are free to transfer rights to purchase to other participants, but only to other participants, provided that Cascade receives clear and binding direction to this effect from both parties.

III. ***Special Situation***. Bonney Lake previously acquired 2 mgd of peak season (June-September) capacity, with no right of service in the off-peak period. This is equivalent in quantity to 2.0 mgd peak and 0.7 mgd average annual. This leaves related off-peak capacity with no corresponding right of service in the peak period.

1. Bonney Lake is offered revision of this capacity right to 2 mgd peak together with 1.50 mgd annual capacity.
2. This offer to revise the capacity structure is made available for 90 days after the effective date of Bonney Lake's acceptance of the substitute capacity offer.
3. Purchase Price for this revision is the extension of existing payments by one year (to include 2019), a net cost addition of $391,222.
4. If Bonney Lake does not approve this extension prior to the expiration date, then other parties are free to acquire the related off-peak capacity as a part of a year-round capacity purchase at an incremental price of $391,222.

IV. Integration of Cascade and Tacoma obligations under this substitute capacity offer:

a. As defined in the revised agreement between Cascade and Tacoma, it is the intent of Cascade and Tacoma that any purchases under this offer are subject to execution of an agreement for wholesale service with Tacoma. Cascade would have no ongoing role in delivering wholesale water after execution of such agreement with Tacoma.

b. Tacoma will commit to supply water purchased under this agreement, subject to execution of a wholesale water agreement acceptable to Tacoma and generally defined in a draft wholesale agreement.

i. Tacoma will work with the purchaser to establish a mutually acceptable delivery point or points, to be defined in the wholesale water agreement

ii. No SDCs will be due to Tacoma for water capacity purchased under this agreement.

iii. The purchaser will be subject to Tacoma wholesale rates.

Substitute Offer of Available Tacoma Supply Capacity					
	Total	**Auburn**	**Bonney Lake**	**Buckley**	**Sumner**
Capacity Availability Previously Requested by the 4 Cities	9.2 mgd average / 13.33 mgd peak	7.0 mgd average / 10 0 mgd peak	1.5 mgd average / 2.0 mgd peak	0.7 mgd average / 1.33 mgd peak	0.0 mgd average / 0 0 mgd peak
Additional Capacity in Substitute Offer	0.8 mgd average / 0 00 mgd peak	0.5 mgd average / 0 0 mgd peak	0.0 mgd average / 0 0 mgd peak	0.3 mgd average / 0.0 mgd peak.	0 0 mgd average / 0.0 mgd peak
Previous Purchases			0.7 mgd average / 2.0 mgd peak [2.0 mgd peak season with no off-peak supply requires an annual average of 0.7 mgd to be delivered]		
Remaining Available Capacity for Purchase	***10.0 mgd average / 13.33 mgd peak***	***7.5 mgd average / 10.0 mgd peak***	***0.8 mgd average / 0.0 mgd peak***	***1.0 mgd average / 1.33 mgd peak***	***0.0 mgd average / 0.0 mgd peak***

AGREEMENT FOR THE PURCHASE AND SALE OF CREDITS RELATING TO FINITE WHOLESALE WATER SUPPLY CAPACITY

THIS AGREEMENT ("Agreement") is made and entered into as of this 10th day of September 2013 ("Effective Date"), by and between the City of Auburn, Washington ("Auburn"), and Cascade Water Alliance, a joint municipal utilities services authority organized under Chapter 39.106 RCW ("Cascade"). The City and Cascade are sometimes referred to collectively as the "Parties" and individually as a "Party."

RECITALS

WHEREAS, in 2005, in order to meet Cascade's immediate and long-term water supply needs, Cascade purchased from Tacoma a supply of water both permanently and for a finite period of years pursuant to an "Agreement for the Sale of Wholesale Water";

WHEREAS, on February 5, 2010, Cascade and the Cities of Bonney Lake, Buckley, Sumner and Auburn entered the 2010 Lake Tapps Area Water Resources Agreement (the "Four Cities Agreement") that provided, among other things, for Cascade to assist the four cities in meeting their projected 50-year water supply needs;

WHEREAS, on December 31, 2012, Cascade and Tacoma entered the Amended and Restated Agreement for the Sale of Wholesale Water (the "Amended and Restated Agreement") that provided, among other things, for Tacoma to make available to the four cities a water supply to be purchased directly from Tacoma as a wholesale customer and to recognize credit for the System Development Charges that Cascade had previously paid to Tacoma;

WHEREAS, Cascade and Tacoma sent a letter, dated February 11, 2013, to inform Auburn of the availability of the "substitute" water supply opportunity and related time limitations and procedures for acting on the opportunity ("Joint Letter");

WHEREAS, Auburn timely approved, signed, and delivered the Confirmation Notice, dated May 21, 2013, to confirm Auburn's election of the substitute supply opportunity and its desire to purchase a System Development Charge Credit from Cascade as to the 6 MGD Wholesale Water Supply ("Confirmation Notice");

WHEREAS, Cascade paid a capacity reservation fee to Tacoma that covers a portion of the System Development Charge for 6 MGD Wholesale Water Supply and Auburn will owe Tacoma the remaining balance of any System Development Charges for Auburn's desired quantity, net of the credit purchased from Cascade under this Agreement;

WHEREAS, the Joint Letter and Confirmation Notice are set forth in Exhibit A hereto and are incorporated by reference in this Agreement; and

WHEREAS, the Parties have addressed the purchase of credits for the permanent, or 4 MGD Wholesale Water Supply, in a separate agreement, and the Parties set forth their agreement for purchase of credits for the 6 MGD Wholesale Water Supply in this Agreement.

NOW, THEREFORE, IN CONSIDERATION of the recitals stated above, which are incorporated herein, and the mutual covenants and conditions herein contained, the Parties agree as follows:

AGREEMENT

1. Definitions.

"6 MGD Wholesale Water Supply" means an average annual of 6 MGD wholesale water supply from Tacoma, with a Peaking Factor of 1.33, and a maximum peak day of 7.98 MGD, all as provided in the Amended and Restated Agreement. The 6 MGD Wholesale Water Supply is the Tacoma supply of water for a finite period of years.

"Amended and Restated Agreement" means the "Amended and Restated Agreement for the Sale of Wholesale Water" by and among Cascade and the City of Tacoma, Department of Public Utilities, Water Division, dated December 31, 2012.

"Confirmation Notice" means the document, dated May 21, 2013, in which Auburn confirmed its election of the substitute supply opportunity in fulfillment of Cascade's obligation in the Four Cities Agreement to assist with Auburn's projected 50-year water supply needs (attached in Exhibit A).

"Four Cities Agreement" means the "2010 Lake Tapps Area Water Resources Agreement among the Cities of Auburn, Bonney Lake, Buckley and Sumner, and Cascade Water Alliance," dated February 5, 2010.

"MGD" means million gallons per day.

"Joint Letter" means the letter, dated February 11, 2013, from Cascade and Tacoma to Cities of Auburn, Bonney Lake, Buckley and Sumner that is attached hereto in Exhibit A.

"Notice of Confirmation of System Development Charge Credit" means a notice, given by Cascade to Tacoma at the request of Auburn , confirming the amount of the System Development Charge Credit (if any) to be applied to the System Development Charge otherwise due and payable by Auburn to Tacoma in connection with a wholesale water supply agreement.

"System Development Charge" or "SDC" means the system development charge imposed upon wholesale customers by Tacoma in its wholesale water regulations.

"System Development Charge Credit" means a credit to be applied in a wholesale water supply agreement against the System Development Charge otherwise due and payable by Auburn to Tacoma. The System Development Charge Credit is expressed in million gallons per day (MGD) units and in dollars.

"Tacoma" means the City of Tacoma, Department of Public Utilities, Water Division.

2. Term of Agreement.

This Agreement takes effect on the first date that both Parties have duly approved, signed, and delivered the Agreement to the other Party. The term of the Agreement will commence on the effective date and will end on December 31, 2029 or the date that Auburn has fully paid Cascade for the price of the System Development Charge Credit consistent with Sections 3 and 4 of this Agreement. In the event that Auburn elects not to confirm a quantity consistent with the terms of this Agreement or by notice selects a quantity of zero (0.000 MGD), then this Agreement will terminate.

3. Purchase of 6 MGD System Development Charge Credit & Price.

Subject to Section 5 of this Agreement, Auburn agrees to purchase and Cascade agrees to sell a System Development Charge Credit regarding the 6 MGD Wholesale Water Supply in a maximum quantity of up to 2.763 MGD annual supply capacity (3.68 MGD peak supply capacity). Auburn shall confirm the specific quantity of the 6 MGD Wholesale Water Supply it will purchase in accordance with the procedure set forth in Section 5 below.

Until Auburn confirms its System Development Charge Credit with Cascade consistent with Section 5 and enters a wholesale water supply agreement with Tacoma as set forth in the Joint Letter, Auburn will not have access to the 6 MGD Wholesale Water Supply. After Auburn has confirmed its System Development Charge Credit with Cascade consistent with Section 5 and entered a wholesale water supply agreement with Tacoma, then Auburn may begin to take delivery of wholesale water from Tacoma.

In consideration for said System Development Charge Credit, Auburn will pay to Cascade a total price of $1,427,864.00, as of the date that this Agreement takes effect, for the quantity of 2.763 MGD annual supply capacity (3.68 MGD peak supply capacity). The parties agree that Auburn will pay interest at an annual rate of 3.2% on the balance due beginning in 2017 and continuing until the balance is fully paid and this Agreement terminates. Auburn will pay the total price by making an annual payment in 2017-2029 according to the annual payment schedule set forth in Section 4 below. This schedule incorporates interest at a rate of 3.2% on the balance due, beginning in 2017. Under this schedule the total of annual payments including interest is $1,977,128.00. In the event that Auburn confirms an amount less than the maximum quantity of 2.763 MGD annual supply capacity (3.68 MGD peak supply capacity), the total applicable price and payment schedule will be adjusted downward on a pro rata basis. If Auburn elects not to confirm a quantity, or by notice selects a quantity of zero (0.000 MGD), then no payment shall be due.

4. Annual Payment Schedule.

Auburn will make annual installment payments to Cascade to pay for the System Development Charge Credit as to the 6 MGD Wholesale Water Supply. In the event that Auburn purchases a System Development Charge Credit in the quantity of 2.763 MGD annual supply capacity (3.68 MGD peak supply capacity), then the following payment schedule shall apply:

Payment Schedule

Year	Amount
2014	0
2015	0
2016	0
2017	$45,692
2018	$45,692
2019	$45,692
2020	$45,692
2021	$45,692

Year	Amount
2022	$45,692
2023	$45,692
2024	$45,692
2025	$45,692
2026	$45,692
2027	$506,736
2028	$506,736
2029	$506,736
Total	$1,977,128

In the event that Auburn purchases a System Development Charge Credit in a quantity less than 2.763 MGD annual supply capacity, then the Parties shall calculate and determine the applicable total price and payment schedule and the Parties shall agree on an updated payment schedule that will be documented as Exhibit B to this Agreement.

Each year the annual payment shall due and payable by Auburn to Cascade on or before June 30 of the year in which such payment is due. If full payment of any annual payment is not received by Cascade on or before the date due, such payment shall be considered past due, and the unpaid amount shall accrue interest, from the date due until the date paid, at a rate per day equal to 0.03 percent per day. Upon not less than fifteen (15) days' advance notice to Cascade, the City may in any given year prepay without penalty any one or more of the next successive annual payments. Upon such notice, Cascade will provide Auburn documentation of the amount due for such payment, and adjustments to any remaining payment schedule, net of related interest incorporated into the above payment schedule.

5. Auburn Confirmation of Purchase Quantity & Termination Right

On or before June 30, 2017, Auburn shall give notice to Cascade as to the specific quantity of the System Development Charge Credit that it will purchase, up to a maximum of 2.763 MGD annual supply capacity (3.68 MGD peak supply capacity). Auburn's notice must identify and confirm one of the following three courses of action:

a) Auburn confirms purchase of a System Development Charge Credit in the quantity of 2.763 MGD annual supply capacity (3.68 MGD peak supply capacity).

b) Auburn confirms purchase of a System Development Charge Credit in a specific quantity less than 2.763 MGD annual supply capacity (peak supply capacity to be determined by Cascade).

c) Auburn confirms that it will not purchase an SDC Credit as to the 6 MGD Wholesale Water Supply, in which event this Agreement shall terminate and, except for Section 9, be of no further force or effect.

If Auburn fails to give such notice to Cascade by June 30, 2017, or by notice selects a quantity of zero (0.000 MGD), then no payment shall be due and this Agreement will terminate.

.

In order to facilitate communications, the Parties agree to meet and confer during the month of March 2017, or before, about status of water supply planning and this Agreement.

6. Notice of Confirmation of System Development Charge Credit.

Within 30 days after Auburn gives its notice to Cascade under Section 5 of this Agreement, Cascade will send to the Tacoma Water Superintendent a Notice of Confirmation of System Development Charge Credit regarding the 6 MGD Wholesale Water Supply. Cascade will provide a copy of the Notice to Auburn when it is sent to Tacoma.

7. Terms and Conditions of 6 MGD System Development Charge Credit.

Auburn acknowledges that, as stated in the Amended and Restated Agreement, Cascade has paid to Tacoma a capacity reservation fee (*i.e.*, $1,570,074.00 per MGD) for the 6 MGD Wholesale Water Supply that Tacoma will recognize as an System Development Charge Credit if all requirements of the Amended and Restated Agreement and the Joint Letter are met. However, the capacity reservation fee paid to Tacoma by Cascade covers only a portion of the System Development Charge for the 6 MGD Wholesale Water Supply. Accordingly, Auburn specifically acknowledges and agrees that it will pay Tacoma the remaining balance of any System Development Charges owing for Auburn's desired quantity, net of the SDC Credit obtained from Cascade. Auburn specifically acknowledges and agrees that Tacoma's SDC could increase and that Auburn will bear any increase in Tacoma's SDCs that may take effect before Auburn and Tacoma enter a wholesale water supply agreement.

Auburn understands that additional SDC payments to Tacoma will be required to convert the 6 MGD Wholesale Water Supply to permanent supply, in the event Auburn elects to do so pursuant to a future Auburn-Tacoma agreement. As an example calculation of Auburn's combined costs based on Tacoma's current SDC, the Parties have included an illustrative example in Exhibit C attached hereto. Exhibit C is not binding on any Party or Tacoma, and Exhibit C contains assumptions about Tacoma's SDC and interest rates in the future that may or may not turn out to be accurate. Accordingly, Cascade makes no representations or warranties about the accuracy of Exhibit C.

8. Wholesale Water Supply Purchase Negotiations with Tacoma.

In order to use the System Development Charge Credit and secure a wholesale water supply from Tacoma, Auburn acknowledges that it must make an offer, complete negotiations, and enter a wholesale water supply agreement with Tacoma consistent with the Joint Letter and Confirmation Notice set forth in Exhibit A and with the Amended and Restated Agreement. Auburn acknowledges and agrees that Cascade makes no representations or warranties as to the outcome of such negotiations, the Tacoma wholesale water supply that Auburn may (or may not) be able to purchase, or otherwise.

9. Effect on Four Cities Agreement.

The Parties agree that this Agreement constitutes full performance by Cascade of its obligations under Section 3(a) of the Four Cities Agreement. Accordingly, Section 3(a) of the Four Cities Agreement shall be of no further force or effect as between Cascade and Auburn. Other provisions of the Four Cities Agreement are unaffected by this Agreement and remain effective according to their terms. This section 9 shall survive termination of the Agreement in the event that Auburn elects not to purchase an SDC Credit.

10. Notices.

All notices and payments hereunder may be delivered or mailed. If mailed, they shall be sent to the following respective addresses:

Cascade Water Alliance:
520 112th Avenue NE, Suite 400
Bellevue, Washington 98004
Attn: Chief Executive Officer
Phone: (425) 453-0930
Fax: (425) 425-453-0953

City of Auburn:
Attn: Dennis Dowdy
25 W Main St
Auburn WA 98001
Phone: (253)931-3010
Fax: (253)931-3053

A Party may change its address from time to time by providing notice to the other Party. All notices and payments mailed by regular post (including first class) shall be deemed to have been given on the second business day following the date of mailing, if properly mailed and addressed. Notices and payments sent by certified or registered mail shall be deemed to have been given on the next business day following the date of mailing, if properly mailed and addressed. For all types of mail, the postmark affixed by the United States Postal Service shall be conclusive evidence of the date of mailing.

11. Dispute Resolution.

In the event that any dispute arises between Cascade and Auburn, the aggrieved Party shall give a notice of the dispute to the other Party. Cascade and Auburn shall, within five (5) days of such notice, each nominate a senior officer of its management to meet at a mutually agreed location, to attempt to resolve such dispute. The Parties shall each designate a representative(s) to confer on the best and most cost effective way to resolve the dispute. By

mutual agreement, they may choose direct negotiations or mediation. If there is no agreement between the Parties on how to proceed within thirty (30) days, either Party may pursue legal action; provided, however, no Party shall be precluded from filing an appeal or action to prevent the expiration of a time period for filing or any statute of limitations.

If a Party fails to perform its obligations hereunder, then it shall be in default hereunder unless the defaulting Party cures an event of default, whether monetary or non-monetary, within thirty (30) days after receiving written notice from the other Party of such default.

Subject to the procedures set forth in Section 9 (Dispute Resolution), if a Party is in breach or default of its obligations arising under this Agreement, the other Party shall have and shall be entitled to exercise any and all remedies available to it at law or in equity (including the right to specifically enforce this Agreement), all of which remedies shall be cumulative.

12. Attorneys' Fees.

If any Party shall be required to bring any action to enforce any provision of this Agreement, or shall be required to defend any action brought by the other Party with respect to this Agreement, and in the further event that one Party shall substantially prevail in such action, the losing Party shall, in addition to all other payments required therein, pay all of the prevailing Party's reasonable costs in connection with such action, including such sums as the court or courts may adjudge reasonable as attorney's fees in the trial court and in any appellate courts.

13. No Assignment.

This Agreement is specific to the Parties and may not be assigned in whole or in part.

14. Non-Waiver.

No delay or failure by a Party to exercise any of its rights, powers or remedies under this Agreement following any breach by another Party shall be construed to be a waiver of any such breach, or any acquiescence therein, or of or in any similar breach thereafter occurring, nor shall any waiver of any single breach be deemed a waiver of any other breach theretofore or thereafter occurring.

15. No Third Party Beneficiary.

This Agreement is for the sole and exclusive benefit of the Parties and is not intended to and shall not confer any rights or benefits on any third party not a signatory hereto.

16. Integrated Agreement.

This Agreement constitutes the entire agreement between the Parties with respect to the subject matter hereof and supersedes all prior or contemporaneous understandings or agreements with respect thereto; provided, however, that this Agreement shall be interpreted or construed together with the Amended and Restated Agreement, the Joint Letter, and the Confirmation Notice. No modifications or amendments of this Agreement shall be valid or effective unless evidenced by an agreement in writing signed by the Parties.

17. Signature in Counterparts.

This Agreement may be executed in counterparts and all of those counterparts taken together shall constitute one and the same instrument.

18. Representations of the Parties.

Each Party represents and warrants that it has duly approved, executed, and delivered this Agreement and that it has all necessary authority to enter into this Agreement and to perform its terms and obligations. Each Party represents and warrants that the approval, execution, and delivery have been duly authorized by the appropriate board or council, and no other act or proceeding on the part of any Party is necessary to authorize entry into or performance of this Agreement.

IN WITNESS WHEREOF, the Parties have duly executed this Agreement as of the Effective Date.

City of Auburn:

By: _____

Title: MAYOR

Date: SEP 10 2013

ATTEST

_____
City Clerk

APPROVED AS TO FORM

_____
City Attorney

Cascade Water Alliance:

By: Chuck Clarke

Title: Chief Executive Officer

Date: 9/18/13

Exhibit A

[Joint Letter signed by Cascade and Tacoma, dated February 11, 2013, and the Confirmation Notice signed by Auburn, dated May 21, 2013.]

CASCADE
WATER ALLIANCE

WATER
TACOMA PUBLIC UTILITIES

February 11, 2013

The Honorable Pete Lewis
City of Auburn
25 West Main Street
Auburn, WA 98001

The Honorable Pat Johnson
City of Buckley
933 Main Street
Buckley, WA 98321

The Honorable Neil Johnson
City of Bonney Lake
19306 Bonney Lake Blvd.
Bonney Lake, WA 98391

The Honorable Dave Enslow
City of Sumner
1104 Maple Street
Sumner, WA 98390

Re: Cascade Water Alliance and Tacoma Water Substitute Wholesale Water Supply Availability – Time is of the Essence (*Sent by Email and US Mail*)

Dear Mayors:

As you may be aware, the Cascade Water Alliance and City of Tacoma have been in ongoing discussions about potential changes to the 2005 Water Supply Agreement. In late 2012 a new agreement was reached and signed which benefits not only Tacoma and Cascade but also the Four Cities of Auburn, Bonney Lake, Buckley and Sumner. This new agreement preserves the right of the four cities under the 2009 Cascade/Four Cities Agreement and allows a new time sensitive supply option to be jointly offered to the four cities from Cascade and Tacoma.

The Cascade Water Alliance (Cascade), in cooperation with Tacoma Water, is offering the availability of a substitute wholesale water supply ("Substitute Supply") and to provide this notice of a limited period of time for your Cities to take action on this unique opportunity. Cascade and Tacoma have entered into a Restated and Amended Agreement for the Sale of Wholesale Water, which replaces the 2005 agreement between the parties for purchase and sale of wholesale water. The 2005 agreement is included as one of the "water supply assistance" measures in the 2010 Lake Tapps Area Water Resources Agreement between Cascade and your cities (the "Four Cities Agreement").

In the Restated and Amended Agreement, Cascade has agreed to relinquish its right to take delivery of the Substitute Supply. This water is now available to the Cities to purchase directly from Tacoma as a wholesale customer. Cascade has, however, previously paid capacity charges for this wholesale water supply. If your City now desires to purchase the Substitute Supply directly from Tacoma and takes action described in this letter, Cascade is willing to sell your City a credit (reflecting the amounts that Cascade has previously paid to Tacoma) that can be

applied against System Development Charges that would otherwise be due to Tacoma ("SDC Credit"). The amount and availability of any SDC Credit will be determined by Cascade in accordance with the terms set forth in the Confirmation Notice that is attached to this letter. You must act promptly, however, in order to secure the opportunity to obtain an SDC Credit from Cascade.

This letter provides Cascade's formal notice of the limited window of time for your City to act, the Confirmation Notice that you must return to Cascade to apply for a SDC Credit, and general guidance as to how Cascade and Tacoma intend to cooperate to facilitate the implementation of the Restated and Amended Agreement.

Limited Time to Act

You must act within 120 days from the first meeting of Tacoma, Cascade and the Four Cities to confirm your interest in this opportunity by delivering a signed "Confirmation Notice" to Cascade in the form attached to this letter. This opportunity expires at the end of 120 days. During this 120-day period, the quantity allocation among and between the Four Cities as stated in the Four Cities letter to Cascade, dated February 5, 2010, shall be recognized by Cascade and shall determine the maximum allocation of the Substitute Supply (and the Residual Wholesale Water Supply) among the Cities (unless the Four Cities jointly agree to reallocation in accordance with the Four Cities Agreement). A City has until the expiration date to deliver an executed Confirmation Notice to Cascade. If you select this opportunity by acting within the 120 days, then you have until March 1, 2018 to purchase (or agree to purchase) an SDC Credit from Cascade. (In anticipation of the required steps with Tacoma described below, it is advisable for your City to complete the SDC purchase agreement with Cascade in advance of March 2018 to allow your City adequate time for the Tacoma steps.) If you select this opportunity by acting within the 120 days, then you will also have until March 1, 2018 to submit a Wholesale Water Agreement with Tacoma that is eligible for the SDC Credit.

If you do not confirm your selection by delivering a Confirmation Notice to Cascade by the deadline, then you decline the Substitute Supply opportunity stated in this letter. In that event, you will still be able to purchase wholesale water supply (if any water supply capacity remains available) from Tacoma on terms consistent with Section 3(a) of the Four Cities Agreement. However, you will not be eligible for an SDC Credit.

Next Steps with Cascade

If you deliver the Confirmation Notice within the 120-day deadline stated above and select this Substitute Supply opportunity, then you will need to complete the following steps with Cascade:

(a) Confirmation to Cascade that your City will proceed with the Substitute Supply opportunity stated herein, and that it fully substitutes for Section 3(a) of the Four Cities Agreement which will have no further force or effect.

(b) Agree with Cascade for payment terms to Cascade for the SDC credit.

(c) Upon completion of the items in (a) and (b) above, Cascade will send Notice of Confirmation of System Development Charge Credit to Tacoma.

Next Steps with Tacoma Water

If you deliver the Confirmation Notice to Cascade within the deadline stated above and select this opportunity, then you would also need to complete the following steps with Tacoma in order to submit a timely offer to purchase all or a portion of the Substitute Supply. The procedures and requirements that must be followed to submit such an offer are set forth in Section 6 and Section 7 of the Restated and Amended Agreement (attached for reference). It is important to read these procedures and requirements carefully as any offer you make must be in strict compliance with these procedures and requirements. These procedures and requirements are briefly summarized as follows:

(a) In order to obtain a SDC Credit, Tacoma must be in receipt of a Notice of Confirmation of System Development Charge Credit from Cascade.

(b) Prior to submitting your offer to purchase water from Tacoma, you must obtain Tacoma's written review and approval of the Wholesale Water Supply Agreement (including any proposed modifications thereof) pursuant to which such offer is to be made to Tacoma.

(c) Your offer to Tacoma must be submitted in the form of duplicate executed originals of the Wholesale Water Supply Agreement, in strict conformity with the form of the Wholesale Water Supply Agreement approved by Tacoma.

(d) No later than March 1, 2018, you must deliver your offer to Tacoma, Attention: Water Superintendent, Tacoma Water, 3628 South 35th Street, Tacoma, WA 98409, and obtain Tacoma's acknowledgment of the time and date of Tacoma's receipt of such offer.

Clarifications

While we are pleased to present this opportunity to your City, we want to avoid any confusion as to what this opportunity is and is not. For avoidance of doubt, this letter does not constitute a modification or waiver of any of the procedures or requirements set forth in the Restated and Amended Agreement. This letter does not constitute an offer by Tacoma to sell a wholesale water supply to any person or entity. Any such sale by Tacoma is subject to and contingent upon the negotiation, execution and delivery of a mutually acceptable Wholesale Water Supply Agreement.

Conclusion

Cascade and Tacoma are pleased to provide the availability of Substitute Supply, and look forward to receiving your offer to purchase, should you desire to do so, in accordance with the

guidelines set forth above. We will be contacting your office within the next week to schedule a meeting to present and discuss this opportunity.

Sincerely,

Chuck Clarke
Chief Executive Officer
Cascade Water Alliance

Linda A. McCrea
Superintendent
Tacoma Water

Confirmation Notice

To Be Delivered to Cascade Water Alliance 120 days From the First Meeting of Tacoma, Cascade and The Four Cities

The City of _____ ("City") confirms receipt of the letter, dated _____, from Cascade Water Alliance ("Cascade") and Tacoma Water presenting the availability of a substitute wholesale water supply ("Substitute Supply"). The City understands that the Substitute Supply is an alternative to the provisions of Section 3(a) of the 2010 Lake Tapps Area Water Resources Agreement between Cascade and the Cities of Auburn, Bonney Lake, Buckley, and Sumner (the "Four Cities Agreement"). The City understands that the Substitute Supply requires the City to enter a wholesale water supply agreement with Tacoma Water to be negotiated and offered to Tacoma Water by March 1, 2018 as described in the above-referenced letter. The City understands that Cascade Water Alliance is offering to sell a System Development Charge Credit to the City on the terms and conditions stated on Exhibit 1 attached hereto, provided that by March 1, 2018 Cascade and the City need to enter an agreement to confirm the purchase and sale and Cascade's provision of a Notice of Confirmation of System Development Charge ("SDC") Credit to Tacoma Water.

Now, therefore, the City of _____ hereby confirms and agrees as follows:

(a) The City the elects the "Substitute Supply" opportunity described herein as an alternative that fully substitutes for section 3(a) of the Four Cities Agreement.

(b) The City provides this Confirmation Notice with respect to the following portion of the Substitute Supply

4 MGD wholesale supply: _____

6 MGD wholesale supply: _____

(c) By selecting the "Substitute Supply" alternative, the City agrees that Cascade has fully performed and satisfied all obligations to the City under 3(a) of the Four Cities agreement.

(d) The City agrees that section 3(a) of the Four Cities Agreement shall be of no further force or effect as between Cascade and the City.

(e) The City and Cascade shall proceed with diligence to negotiate an agreement for purchase of an SDC Credit consistent with the terms outlined in Exhibit 1.

CONFIRMED, ACCEPTED AND AGREED TO BY THE CITY OF _____ on this _____ day of _____, 2013:

By _____

_____

[Name]

Mayor

CITY OF
AUBURN
WASHINGTON

Peter B. Lewis, Mayor
25 West Main Street * Auburn WA 98001-4998 * www.auburnwa.gov * 253-931-3000

May 21, 2013

Cascade Water Alliance
Attn. Chuck Clarke, Chief Executive Officer
520 112th Avenue NE, Suite 400
Bellevue, Washington 98004

Re: Confirmation Notice – City of Auburn's Response to Cascade's Offer of Substitute Supply

Dear Mr. Clarke,

On May 6th, 2013 the Auburn City Council approved Resolution 4951 authorizing the City of Auburn to begin negotiations with Cascade Water Alliance in response to your February 11, 2013 offer.

Enclosed please find a signed original of the City's confirmation notice.

Our Public Works Director will be in touch with you soon to begin discussion of the city's desires to make use of the Substitute Supply.

Sincerely,

Pete Lewis
Mayor

Enclosures

cc: Dennis Dowdy, Director of Public Works

Received
MAY 23 2013

Confirmation Notice
To Be Delivered to Cascade Water Alliance 120 days From the First Meeting of
Tacoma, Cascade and The Four Cities

The City of Auburn ("City") confirms receipt of the letter, dated February 11, 2013, from Cascade Water Alliance ("Cascade") and Tacoma Water presenting the availability of a substitute wholesale water supply ("Substitute Supply") The City understands that the Substitute Supply is an alternative to the provisions of Section 3(a) of the 2010 Lake Tapps Area Water Resources Agreement between Cascade and the Cities of Auburn, Bonney Lake, Buckley, and Sumner (the "Four Cities Agreement"). The City understands that the Substitute Supply requires the City to enter a wholesale water supply agreement with Tacoma Water to be negotiated and offered to Tacoma Water by March 1, 2018 as described in the above-referenced letter. The City understands that Cascade Water Alliance is offering to sell a System Development Charge Credit to the City on the terms and conditions stated on Exhibit 1 attached hereto, provided that by March 1, 2018 Cascade and the City need to enter an agreement to confirm the purchase and sale and Cascade's provision of a Notice of Confirmation of System Development Charge ("SDC") Credit to Tacoma Water.

Now, there fore, the City of Auburn hereby confirms and agrees as follows.

(a) The City the elects the "Substitute Supply" opportunity described herein as an alternative that fully substitutes for section 3(a) of the Four Cities Agreement provided that the City can negotiate acceptable terms with Cascade to provide and finance the necessary water supply SDC credits.

(b) The City provides this Confirmation Notice with respect to the following portion of the Substitute Supply:
4 MGD wholesale supply: 4 MGD
6 MGD wholesale supply: Possible option of 3 MGD

(c) By selecting the "Substitute Supply" alternative, the City agrees that upon execution of a new Substitute Supply agreement with Cascade to provide SDC Credits for 4 MGD of supply, Cascade will have fully performed and satisfied all obligations to the City under 3(a) of the Four Cities agreement.

(d) The City agrees that section 3(a) of the Four Cities Agreement shall be of no further force or effect as between Cascade and the City when a new substitute supply agreement with Cascade is executed.

(e) The City and Cascade shall proceed with diligence to negotiate an agreement for purchase of an SDC Credit consistent with the terms outlined in Exhibit 1 (Attached).

CONFIRMED, ACCEPTED AND AGREED TO BY THE CITY OF AUBURN on this 21st day of May, 2013:

By: _____
Pete Lewis, Mayor

Exhibit 1

TERMS FOR 4 CITIES SUBSTITUTE SUPPLY OFFER

I. This offer is structured to fulfill Cascade's obligations to make available Tacoma water as described in the existing "4 Cities Agreement ". Availability of the terms of this offer is contingent upon written acceptance of the substitution of this supply offer for the commitment defined in Section 3.a of that 4 Cities Agreement specifically:

a. Paragraph 3A, providing options for purchase of Cascade's contracted Tacoma supply capacity, is replaced by the substitute capacity offer defined in this proposal.

b. Paragraph 3A is confirmed in writing to be fully satisfied by acceptance of this substitute capacity offer.

c. Upon expiration of the substitute capacity offer on December 31, 2017, all Cascade obligations to make Tacoma water available are deemed fulfilled and terminated.

d. The substitute capacity offer must be accepted and executed no later than 120 days from the first meeting of Tacoma, Cascade and the Four Cities and the offer is withdrawn after expiration date. [Actual commitment to purchase water under those terms, once accepted, can occur anytime through 2017 as further delineated in section II.c below.]

II. **Substitute Capacity Offer**

a. The following capacity is made available:

i. 9.3 mgd of average supply and a peak supply of 11.3 mgd. [This is the remaining available capacity of Cascade's purchases from Tacoma]

ii. Cascade offers all capacity as firm and permanent. Cascade will be responsible for any transactions needed to convert reserve capacity to permanent capacity.

iii. All capacity will be offered as year-round capacity with the following structure: for each 1 mgd of year-round capacity, a peak season ratio of up to 1.33 will be available for purchase. The peak: annual ratio of 1.33:1.0 is based on the Tacoma capacity owned by Cascade, which originally totaled 10 mgd annual average and 13.3 mgd peak season. Cities may elect peak ratios ranging from 1.0 to 1 33, subject to total capacity limits defined in the attached table.

iv. Tacoma will provide wholesale service contingent on execution of a wholesale supply agreement defining terms for service and related charges. A sample agreement form is provided.

b. The following price and financial terms are offered:

i. Capacity will be offered at a price of 75% of the SDC ($3.17 per gallon * 75% = $2.3775 per gallon) originally paid by Cascade This charge will apply to annual capacity and to incremental peak season capacity.

1. For example, for a purchase of 1 mgd annual / 1.3 mgd peak season, the cost will be 1 mgd * $2 3775 million + 0 3 mgd * $2 3775 million = $3,090,750. A purchase of 1 mgd annual with no peak season increment would cost $2,377,500.

ii. Payments for capacity purchase will be to Cascade; when the purchase involves conversion of reserve capacity, Cascade may opt to direct all or part of the payment to Tacoma

iii For each purchase, the following financing terms are available.

1. Full payment of purchase price upon execution of purchase; or
2. Payment of 20% of purchase price upon execution; remainder financed on a note over 5 years at 3.3% interest with level annual payments due upon each anniversary date. Purchaser would be free to pay off note at any time.

iv. Wholesale rates for service and delivery are as defined by agreement with Tacoma (see also below).

c. The following schedule applies to the substitute offer:

i. The substitute capacity offer must be accepted and executed no later than 120 days after the first meeting of Tacoma, Cascade and the Four Cities and the offer is withdrawn after expiration date. If not accepted during this period, then the existing terms of paragraph 3.a would remain in effect.

ii. During the period from execution of this substitute offer until December 31, 2015, each City may elect to purchase its related share of capacity at any time. Shares of capacity can also be re-assigned upon notice provided to Cascade by both parties of such intent.

iii. Beginning January 1, 2016 and extending through December 31, 2017, any City may offer to purchase any or all capacity remaining available on a first come, first serve basis. Cascade will notify the Cities of available capacity early in 2016.

iv. After December 31, 2017, no substitute supply capacity will be available.

v. Participants in this substitute capacity offer are free to transfer rights to purchase to other participants, but only to other participants, provided that Cascade receives clear and binding direction to this effect from both parties.

III. ***Special Situation***. Bonney Lake previously acquired 2 mgd of peak season (June-September) capacity, with no right of service in the off-peak period. This is equivalent in quantity to 2.0 mgd peak and 0.7 mgd average annual. This leaves related off-peak capacity with no corresponding right of service in the peak period.

1. Bonney Lake is offered revision of this capacity right to 2 mgd peak together with 1.50 mgd annual capacity.
2. This offer to revise the capacity structure is made available for 90 days after the effective date of Bonney Lake's acceptance of the substitute capacity offer.
3. Purchase Price for this revision is the extension of existing payments by one year (to include 2019), a net cost addition of $391,222.
4. If Bonney Lake does not approve this extension prior to the expiration date, then other parties are free to acquire the related off-peak capacity as a part of a year-round capacity purchase at an incremental price of $391,222.

IV. Integration of Cascade and Tacoma obligations under this substitute capacity offer:

a. As defined in the revised agreement between Cascade and Tacoma, it is the intent of Cascade and Tacoma that any purchases under this offer are subject to execution of an agreement for wholesale service with Tacoma. Cascade would have no ongoing role in delivering wholesale water after execution of such agreement with Tacoma.

b. Tacoma will commit to supply water purchased under this agreement, subject to execution of a wholesale water agreement acceptable to Tacoma and generally defined in a draft wholesale agreement.

   i. Tacoma will work with the purchaser to establish a mutually acceptable delivery point or points, to be defined in the wholesale water agreement.

   ii. No SDCs will be due to Tacoma for water capacity purchased under this agreement.

   iii. The purchaser will be subject to Tacoma wholesale rates.

Substitute Offer of Available Tacoma Supply Capacity					
	Total	**Auburn**	**Bonney Lake**	**Buckley**	**Sumner**
Capacity Availability Previously Requested by the 4 Cities	9 2 mgd average / 13 33 mgd peak	7.0 mgd average / 10.0 mgd peak	1.5 mgd average / 2.0 mgd peak	0.7 mgd average / 1.33 mgd peak	0.0 mgd average / 0.0 mgd peak
Additional Capacity in Substitute Offer	0.8 mgd average / 0.00 mgd peak	0 5 mgd average / 0 0 mgd peak	0.0 mgd average / 0.0 mgd peak	0.3 mgd average / 0.0 mgd peak.	0.0 mgd average / 0.0 mgd peak
Previous Purchases			0.7 mgd average / 2 0 mgd peak [2.0 mgd peak season with no off-peak supply requires an annual average of 0.7 mgd to be delivered]		
Remaining Available Capacity for Purchase	***10.0 mgd average / 13.33 mgd peak***	***7.5 mgd average / 10.0 mgd peak***	***0.8 mgd average / 0.0 mgd peak***	***1.0 mgd average / 1.33 mgd peak***	***0.0 mgd average / 0.0 mgd peak***

Exhibit B

Updated Annual Payment Schedule

(To be completed by the Parties in the event Auburn confirms the purchase of an SDC credit in a quantity less than 2.763 MGD annual supply capacity)

Year	Amount
2014	0
2015	0
2016	0
2017	$_____
2018	$_____
2019	$_____
2020	$_____
2021	$_____
2022	$_____
2023	$_____
2024	$_____
2025	$_____
2026	$_____
2027	$_____
2028	$_____
2029	$_____
Total	$_____

Exhibit C

Illustrative Example of Total Auburn SDC Payments for Reserve Capacity

Year	Payment to Cascade	*Estimated Payment to Tacoma*	Total Estimated SDC Payment
2014	$0	*$0*	$0
2015	$0	*$0*	$0
2016	$0	*$0*	$0
2017	$45,692	*$234,283*	$279,974
2018	$45,692	*$234,283*	$279,974
2019	$45,692	*$234,283*	$279,974
2020	$45,692	*$1,183,994*	$1,229,686
2021	$45,692	*$1,183,994*	$1,229,686
2022	$45,692	*$1,183,994*	$1,229,686
2023	$45,692	*$1,183,994*	$1,229,686
2024	$45,692	*$1,183,994*	$1,229,686
2025	$45,692	*$1,183,994*	$1,229,686
2026	$45,692	*$1,183,994*	$1,229,686
2027	$506,736	*$0*	$506,736
2028	$506,736	*$0*	$506,736
2029	$506,736	*$0*	$506,736

Notes:

1) Estimated Payment to Tacoma is based on the following assumptions which are not assured: a) the current SDC; b) an interest rate of 3.2%, and c) a note term of 10 years structured with the first three years bearing only interest payments. Actual payments will be subject to Auburn's completion of a wholesale supply agreement with Tacoma and related terms
2) Does not include estimates of actual water rates for wholesale service from Tacoma.

RESOLUTION NO. 5033

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE A LEASE AGREEMENT BETWEEN THE CITY OF AUBURN AND VALLEY COMMUNICATIONS CENTER AND RATIFYING AND CONFIRMING PRIOR ACTS

WHEREAS, the City of Auburn owns real property commonly known as Water Reservoir 5 located in Auburn, Washington; and

WHEREAS, the Valley Communications Center ("ValleyCom") desires to lease a portion of the existing structures located on the property for an amount that is acceptable to the City; and,

WHEREAS, because of ValleyCom's operational requirements, the City administration granted them early access to the site in order to install and begin operating the communications equipment

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, KING COUNTY, WASHINGTON, HEREBY RESOLVES as follows

Section 1. The Mayor is hereby authorized to execute a Lease Agreement between the City of Auburn and Valley Communications Center, which lease shall be in substantial conformity with the Lease Agreement attached hereto as Exhibit "1" and incorporated herein by this reference

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. All prior acts consistent with the intent of this resolution are hereby ratified and confirmed

Section 4. This resolution shall be in full force and effect upon passage and signatures hereon.

Dated and Signed this 18th day of February, 2014

CITY OF AUBURN

Nancy Backus

NANCY BACKUS, MAYOR

ATTEST:

Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

Daniel B Heid, City Attorney

EXHIBIT 1

LEASE AGREEMENT

This Lease is entered into the date fully executed by and between the City of Auburn, a Washington municipal corporation ("Landlord"), and VALLEY COMMUNICATIONS CENTER, a Washington interlocal government agency and instrumentality of its member governments ("Tenant").

RECITALS

A. Landlord is owner in fee simple or benefits from easements on parcels of land located in King County, Washington, legally described on the attached **Exhibit A**, and commonly known as Water Reservoir 5.

B. Tenant provides emergency communications and dispatch services for several municipalities and desires a nonexclusive lease for the portion of the Property described on the attached **Exhibit B**, for equipment installation and maintenance of a paging transmitter, antenna system, generator, and associated electronics, as described on the attached **Exhibit C**.

C. Accordingly, the parties are entering into this Lease on the terms and conditions set forth below.

AGREEMENT

In consideration of their mutual covenants, the parties agree as follows:

1. PREMISES

Landlord leases to Tenant a portion of certain existing structures located at 1326 57th Drive SE, Auburn, WA and described in **Exhibit "A"** ("Property"). The portion of the Property to be leased by Landlord to Tenant is more particularly described in **Exhibit "B"** ("Premises") which is attached and incorporated into this Lease.

2. CONSIDERATION

As consideration for this Lease, Tenant shall pay to Landlord the sum of One Thousand and no Dollars ($1,000.00) per month. Leasehold Excise Tax does not apply.

3. USE

Tenant shall use the Premises for a paging transmitter, antenna system, and associated electronics. A general description of the plans and specifications for equipment installation is attached as **Exhibit "C"** ("Improvements"). No use shall be made of Premises, or act done in or about the Premises, that is illegal, unlawful, or violates zoning codes. Tenant shall not commit, or allow to be committed upon the Premises, any waste or any public or private nuisance. Tenant will comply, at Tenant's own cost and expense, with all reasonable orders, notices, regulations or

requirements of any municipality, state or other governmental authority respecting the use of the Premises.

Tenant's installation, operation and maintenance of the Improvements on the Premises may not damage or interfere in any way with Landlord's or Landlord's other Tenants' use of the Property. Tenant will immediately cease, upon written notice from Landlord, all such actions that materially interfere with Landlord's use of the Property, provided however, that Tenant may then terminate the Lease. Landlord reserves the right to take any action it deems necessary in its reasonable discretion to repair, maintain, alter or improve the Premises in connection with its public service operations.

Tenant requires access twenty-four (24) hours per day, seven (7) days per week, for three hundred and sixty-five (365) days per year to the leased cabinet space in order to maintain the Public Safety critical infrastructure equipment (radio transmitter and associated equipment). Tenant access to the equipment cabinet area and antenna system (water reservoir) shall be gained by contacting the Landlord on-call water operations at 253-876-1985 or 253-876-1953. Landlord water operations staff shall meet the Tenant on site (within sixty (60) minutes of receiving the call) and grant access to the water facility

4. TERM AND TERMINATION

A. The term of this Lease shall begin On the last date signed by the parties. This Lease shall continue for a period of five (5) years from the Effective Date, unless sooner terminated as hereinafter provided. The parties may mutually agree to exercise the option to extend this lease for two (2) additional five (5) year terms by written amendment pursuant to the terms and conditions herein.

B. This Lease may be terminated by either party after a minimum 150 days' written notice of an intention to do so. By the effective date of the termination, Tenant will remove all of its equipment from the Premises at its sole expense. If Tenant does not remove its equipment from the Premises by the effective date of the termination, Tenant may not enter the Premises except upon written authorization of the Landlord, and Landlord may remove the equipment and invoice Tenant for the cost, which Tenant shall pay within thirty (30) days of receipt.

5. UTILITIES

Tenant shall be responsible for obtaining all required utility services at no cost to the Landlord.

6. REGULAR MAINTENANCE

Tenant shall, at Tenant's sole expense, perform all reasonable maintenance of, and keep in good repair, the Improvements and equipment installed on the Premises. All RF equipment or related improvements installed shall meet or exceed manufacture specifications and FCC requirements.

7. INSURANCE

Tenant shall, at Tenant's expense, maintain commercial general liability insurance, written on an occurrence basis with limits no less than $1,000,000 combined single limit per occurrence, and not less than $2,000,000.00 general aggregate, for personal injury, bodily injury and property damage.

All such insurance shall be issued by carriers acceptable to Landlord and shall contain a provision whereby the carrier agrees not to cancel or materially modify the insurance without thirty (30) days' prior written notice to the Landlord. Tenant shall furnish Landlord with a Certificate of Insurance, including a copy of the endorsement naming the Landlord as an additional insured.

No use shall be made or permitted to be made of the Premises, which will increase the existing rate of insurance upon the Premises (without consent of Landlord and compensation for increased premiums), or cause the cancellation of any insurance policy covering the Premises, or any part thereof, nor shall Tenant sell, or permit to be kept, used or sold in or about the Premises, any article that may be prohibited by the standard form of property insurance policies.

8. CONSTRUCTION DEFECTS:

The Tenant has inspected and knows the condition of the Premises, and it is understood and agreed that the Premises are leased on an "as is" basis, without any obligation on the part of the Landlord to make any changes, improvements or to incur any expenses whatsoever for the maintenance or repair of the Premises, except as required by law. If a defective condition is caused directly or indirectly by the Tenant or Tenant's guest, licensee, or any other person(s) acting with permission of or under the control or direction of Tenant, the Landlord shall have no obligation to repair that defect, and the Tenant shall immediately repair the defect at Tenant's cost. The Tenant shall have no defense against the Landlord to remedy the defective condition. This applies also where Tenant unreasonably fails to notify the Landlord of the condition or to allow Landlord access to the Premises for the purpose of repair.

9. ALTERATIONS

With the exception of Improvements depicted in **Exhibit C**, Tenant shall not make any alterations to the Premises without obtaining the consent of Landlord in writing first, which shall not be unreasonably withheld. All alterations, additions and improvements that are made by Tenant shall be at the sole cost and expense of Tenant. If the Tenant performs work with the consent of the Landlord, Tenant agrees to comply with all laws, ordinances, rules, regulations of the appropriate governing authority. Radio system equipment installed by Tenant will not be considered an improvement or alteration.

10. INDEMNIFICATION/HOLD HARMLESS

Landlord and Tenant shall each defend, indemnify and hold the other, and their

respective officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with the performance of this Lease, except for injuries and damages caused by the negligence or willful misconduct of the other. Landlord will not be liable to Tenant for damage to its equipment or property from any cause except to the extent damage is caused by Landlord's negligence or willful misconduct. Landlord will not be liable to Tenant for any interruption of utility services or theft of equipment.

11. LIENS

Tenant shall keep the leased Premises free from any mechanic, labor or material man liens arising out of any work performed, materials furnished, or obligations incurred by Tenant or Tenant's agents, contractors, or subtenant, in connection with work of any character performed or claimed to have been performed on the Premises or Improvements by or at the direction of Tenant; provided, however, that Tenant shall have the right to contest the validity or amount of any such lien or claimed lien. In the event of such contest, Tenant shall give to Landlord reasonable security as may be demanded by Landlord to ensure payment thereof and prevent any sale, foreclosure or forfeiture of the Premises or Improvements by reason of non-payment. Tenant will immediately pay a judgment rendered with all proper costs and charges and shall have such liens released or judgment satisfied at Tenant's own expense.

12. ASSIGNMENT

Tenant shall not assign or transfer this Lease or any interest therein. without the prior written consent of Landlord. Tenant shall not sublet the whole or any part of the Premises without the prior written consent of Landlord. This Lease or any interest therein shall not be assignable by operation of law or by any process or proceeding of any court or otherwise, without the prior written consent of Landlord.

13. ACCESS

A. Right of Entry. Landlord will allow Tenant access to the Premises upon signature by the authorized officers of each Party, notwithstanding further ratification of this Lease by the governing bodies of each Party.

B. Tenant will allow Landlord or Landlord's agents free access at all reasonable times to the Premises for the purposes of inspection, provided that Landlord shall not interfere unduly with Tenant's operations. This right shall not be construed as an agreement on the part of the Landlord to inspect to ascertain the condition of the Premises, or to make repairs, additions, or alterations.

14. DAMAGE OR DESTRUCTION, REPAIR OR REPLACEMENT

In the event the Premises is damaged to such extent as to render the Premises untenable in whole or in a substantial part thereof, or is destroyed, the Tenant shall give Landlord or Landlord's agent immediate written notice thereof, and, it shall be optional with the Landlord to repair or rebuild the same. Landlord shall have not more than fifteen (15) days after date of such notification to notify the Tenant in

writing of Landlord's intentions to repair or rebuild the Premises, or the part damaged. If Landlord elects to repair or rebuild the Premises, Landlord shall prosecute the work of repairing or rebuilding without unnecessary delay. If Landlord elects not to repair or rebuild the Premises this Lease shall be terminated immediately and Landlord shall not be obligated to provide Tenant another facility to lease. Any unused portion of Rent paid by Tenant in advance shall be prorated and returned to Tenant within thirty (30) days of termination under section 16. In the event Landlord requires relocation of tenant equipment, tenant shall be given 60 days notice to relocate equipment at tenants expense.

15. CONDEMNATION.

A. Landlord and Tenant will give to the other immediate written notice of the receipt of notice of any proceedings with respect to a condemnation and of any intention of any authority to exercise the power of eminent domain.

B. If all of the Premises are taken by any lawful authority under the power of eminent domain for a period which will end on or extend beyond the expiration of the term of this Lease, this Lease terminates as of the date the condemning authority takes possession, and Tenant will have no claim or interest in or to any award of just compensation except that the Tenant will be entitled to any amount equal to the fair market value of the Tenant's leasehold interest in any improvement taken by the condemning authority made to the Premises by the Tenant, but not to exceed the amount of that part, if any, of the award attributable to the value of the improvements.

C. If part of the Premises are taken by any lawful authority under the power of eminent domain for a period which will end on or extend beyond the expiration of the term of this Lease, Landlord or Tenant may choose to terminate the Lease, the Rent will be reduced in the same proportion that the value of the portion of the Premises to be taken bears to the value of the entire Premises as of the date the condemning authority takes possession. Tenant will have no claims or interest in or to any award of just compensation or damages except that the Tenant will be entitled to an amount equal to the fair market value of the Tenant's leasehold interest in the part taken by the condemning authority of any improvements made to the Premises by the Tenant, but not exceed the amount of that part, if any, of the award attributable to the value of the improvements.

D. If temporary use of all or a portion of the Premises is taken by any lawful authority for a period, which would reduce the leasehold and consequently, would cause the Premises to be untenable for the Use by Tenant for the purposes set forth in Section 2 of this Lease titled "Use," at Tenant's determination, then Landlord or Tenant may choose to terminate this Lease. If Landlord or Tenant elect to terminate this Lease, the Lease will terminate the date the condemning authority takes possession and Tenant will have no claim or interest in or to any award of just compensation except that the Tenant will be entitled to an amount equal to the fair market value of the Tenant's leasehold interest in any improvements made to the Premises by the Tenant. Any unused portion of Rent paid by Tenant in advance shall be prorated and returned to Tenant within thirty (30) days of termination under section 17. If neither Landlord or Tenant elects to terminate this Lease, the Lease will

continue in full force and Tenant will be entitled to receive any award from the condemning authority for the use of all or part of the Premises, EXCEPT that Tenant may elect to have the Rent reduced by the amount proportionally attributable to any partial temporary taking, in which event the Tenant shall not be entitled to any portion of the award attributable to said use.

E. It is understood and agreed that Tenant shall not be party to any negotiation or proceedings at law wherein Landlord claims compensation other than that which is defined statutorily as constituting "just compensation."

16. NOTICES

All notices to be given by the parties hereto shall be in writing and may either be served personally or may be deposited in the United States Mail, postage prepaid, by either registered mail or by regular mail with certificate of mailing obtained. Notices shall be mailed to the addresses below, or a later changed addressed provided in writing to the party:

LANDLORD:

City of Auburn
Attn: Facilities Manager
25 West Main Street
Auburn, WA 98001-4998

TENANT:

Valley Communications Center
Attn: Technical Services Manager
27519 – 108th Avenue Southeast
Kent, WA 98030

17. DEFAULT

If Tenant shall violate, default or not comply with any of the material covenants, agreements or provisions of this Lease, Landlord will give Tenant sixty (60) days' written notice to cure such default. If Tenant does not cure the default within that sixty (60) day period, then Landlord may cancel this Lease by giving sixty (60) days' written notice of cancellation.

18. NON-WAIVER

The failure of the Landlord to insist upon strict performance of any of the covenants and agreements of this Lease, or to exercise any option herein conferred in any one or more instances, shall not be construed to be a waiver or relinquishment of any such, or any other covenant or agreements, but the same shall be and remain in full force and effect.

19. SEVERABILITY

If any term or provision of this Lease or the application of any term or provision to any person or circumstance is invalid or unenforceable, the remainder of this Lease, or the application of the term or provision to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected and will continue in full force.

20. COSTS AND ATTORNEYS FEES

In any claim or lawsuit for damages arising from the parties' performance of this Lease, each party shall pay all its legal costs and attorney's fees incurred in defending or bringing such claim or lawsuit, including all appeals, in addition to any other recovery or award provided by law; provided, however, nothing in this paragraph shall be construed to limit either party's right to indemnification under Section 9 of this Lease.

21. VENUE AND JURISDICTION

This Lease shall be construed in accord with the Laws of the State of Washington. Venue and jurisdiction for the resolution of disputes shall be in the Superior Court for King County, Washington.

22. HEIRS AND SUCCESSORS

Subject to the provision pertaining to assignment and subletting, the covenants and agreements of this Lease shall be binding upon the heirs, legal representatives, successors and assigns of any or all of the parties.

23. HOLDOVER

If the Tenant shall, without the written consent of Landlord, holdover after the expiration of the term of this Lease, that tenancy shall be deemed a month to month tenancy, terminable as provided by the laws of the State of Washington. During any holdover tenancy, Landlord and Tenant will be bound by all of the terms, covenants, and conditions of this Lease.

24. CAPTIONS AND CONSTRUCTION

The captions in this Lease are for the convenience of the reader and are not to be considered in the interpretation of its terms.

25. ENTIRE AGREEMENT AND EFFECTIVE DATE

This Lease contains the entire agreement between the parties and, in executing it, Landlord and Tenant do not rely upon any statement, promise, or representation, whether oral or written, not expressed herein. No subsequent agreement may modify this Lease unless it is in writing and signed by the parties or their authorized agents. This Agreement shall be effective upon the last day executed ("Effective Date").

26. WARRANT OF AUTHORITY TO EXECUTE

Each person executing this Lease warrants that he/she has the requisite authority to bind the party for whom that person is executing.

IN WITNESS, this Lease is executed and shall become effective as of the last date signed below. The foregoing conditions are mutually agreed to by the Landlord and the Tenant.

TENANT:
VALLEY COMMUNICATIONS CENTER

Lora Ueland
Print Name: LORA UELAND
Its: EXECUTIVE DIRECTOR
Date: 1/29/14

LANDLORD:
CITY OF AUBURN

Nancy Backus
By: Nancy Backus
Its: Mayor
Date: 1-9-14

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

On this _____ day of _____, 2013, before me a Notary Public in and for the State of Washington, personally appeared _____, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person who executed this instrument and acknowledged it to be his/her free and voluntary act and deed for the uses and purposes mentioned in this instrument.

-Notary Seal Must Appear Within This Box-

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first above written.

_____

_____
NOTARY PUBLIC, in and for the State
of Washington, residing at _____
My appointment expires _____

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

On this _____ day of _____, 2013, before me a Notary Public in and for the State of Washington, personally appeared _____, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person who executed this instrument and acknowledged it to be his/her free and voluntary act and deed for the uses and purposes mentioned in this instrument.

-Notary Seal Must Appear Within This Box-

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first above written.

_____

_____
NOTARY PUBLIC, in and for the State
of Washington, residing at _____
My appointment expires _____

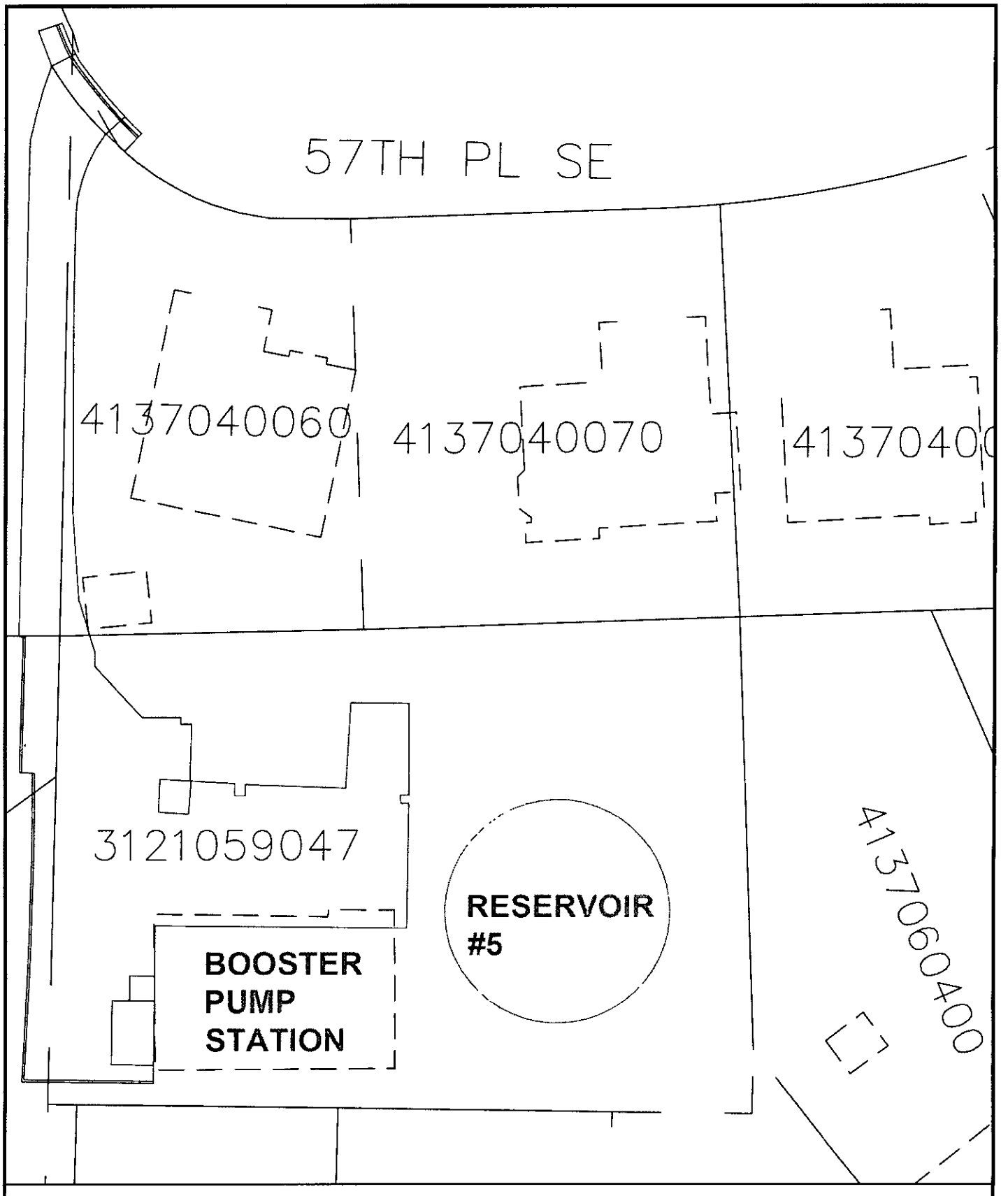


EXHIBIT A
RESERVOIR #5 PARCELS
SCALE: 1" = 30'

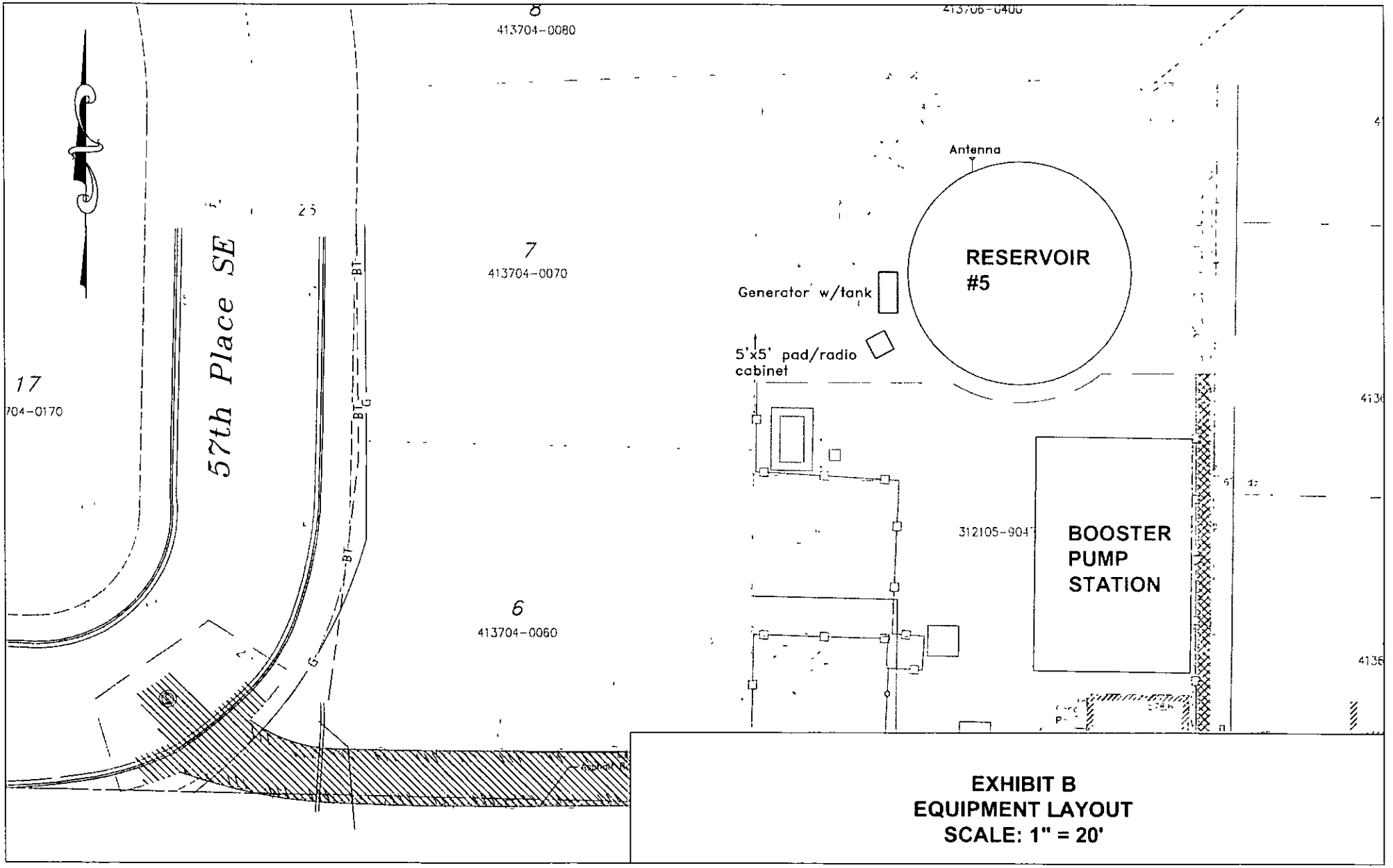

8
413704-0080
413706-0400
Antenna
RESERVOIR
#5
Generator w/tank
5'x5' pad/radio
cabinet
7
413704-0070
25
57th Place SE
17
704-0170
BT
G
312105-9041
BOOSTER
PUMP
STATION
6
413704-0060
EXHIBIT B
EQUIPMENT LAYOUT
SCALE: 1" = 20'

EXHIBIT C

VALLEY COMMUNICATIONS CENTER EQUIPMENT

VHF Paging Equipment:
The equipment will be installed in an outdoor cabinet secured to a 5' x 5' cement pad and located next to the existing radio equipment per Exhibit B. The outdoor cabinet measures 30"W x 30"D x 84"H. See Spec sheet below for more details.

VHF Antenna:
The Antenna will be of a similar style to a Sinclair SD212 and will be mounted on the outside tank railing per Exhibit B. 7/8" coaxial cable will be connected to the antenna and routed along the tank railing and down the side of the tank utilizing the existing cable tray and connected to the paging equipment. See antenna Spec sheet below for more details.

Generator and Tank:
The EATON EGENX17 17KW generator and tank will be mounted on a 5' x 10' cement pad with an auto transfer switch. The generator fuel source will be either Diesel or Propane. The generator type and configuration may change depending on permitting. See Generator Spec sheet below for more details.

Utilities:
T1 circuit will be installed in the existing outdoor enclosure that is mounted on the tank. The existing breaker panel in the same outdoor enclosure will be upgraded to accommodate two 120vac 20 amp circuits. Separate conduit will be installed between the enclosure and paging cabinet.

SINCLAIR
Superior then, Superior now.
A Norsat Company | Norsat

Antennas
Low Band, Aviation, and VHF Antennas
SD212 Series

SD212-SF2P4SNM(D00) 2 dipole, 5.5 dBd, offset, 138-174 MHz

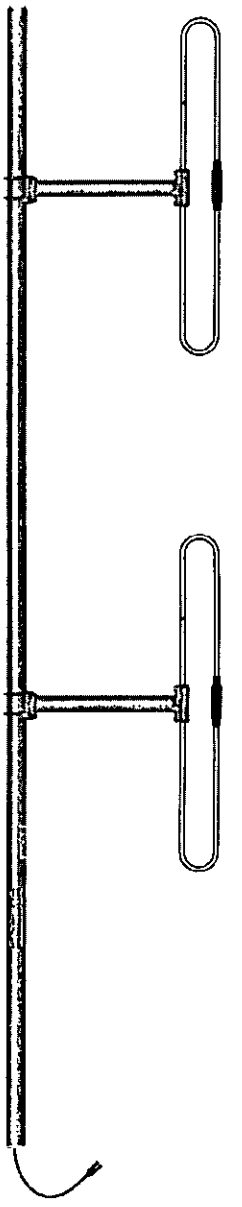
- Covers the entire 138-174 MHz frequency range
- 5.5 dBd gain with offset pattern
- 300 Watt power handling
- Can be top or side mounted (Universal mount)

Recommend SMK-125-A3 or SMK-125-A7 for Offset Side Mount. Available from Sinclair separately.

The SD212 series is a 2-bay exposed dipole antenna designed for applications where moderate gain is required. These premium-quality antennas are well suited to public safety applications.

The design of these antennas provides for coverage from 118 to 225 MHz in 3 sub bands, 118-138 MHz for civil aviation applications, 138-174 MHz for private mobile networks, and public safety, and 220-225 MHz for transportation networks.

The standard connector offered is N male which is terminated on a 1 foot cable.



www.sinctech.com

Region	United States	Europe, Middle East and Africa	Caribbean and Latin America	Canada and rest of the world
Telephone	USA: 1 800 263 3275	International: +44 (0) 1487 84 28 19	International: +1 905 726 7676	Canada: 1 800 263 3275 International +1 905 727 0165
E-mail	salesusa@sinctech com	salesuk@sinctech com	salesla@sinctech com	salescan@sinctech.com

Sinclair s commitment to product leadership may result in improvement or change to this product
Copyright © Sinclair Technologies

SINCLAIR
Superior then, Superior now.
A Norsat Company | Norsat International Inc

Antennas
Low Band, Aviation, and VHF Antennas
SD212 Series

Electrical Specifications

Frequency Range	MHz	138 to 174
Bandwidth	MHz	36
Connector		N-Male
Gain (nominal)	dBd (dBi)	5 5 (7.6)
Input VSWR (max)		1 5:1
Polarization		vertical
Impedance	Ω	50
Pattern		Offset
Horizontal beamwidth (typ)	degrees	210
Vertical beamwidth (typ)	degrees	34
Average Power Input (max)	W	300
Lightning protection		DC ground
Electrical tilt (available)		0,2,4,6,8, or 10 degrees

Mechanical Specifications

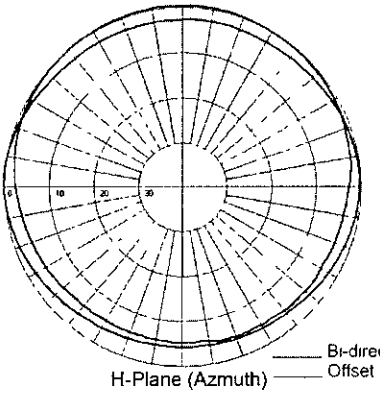
Depth	in (mm)	2.5 (64)
Length/ Height	in (mm)	120 (3048)
Width	in (mm)	23 (584)
Base pipe diameter	in (mm)	1.9 (48)
Base pipe mounting length	in (mm)	36 (914)
Radiating element material		aluminum
Base pipe material		aluminum
Weight	lbs (kg)	20 (9.08)
Weight iced	lbs (kg)	46 (20 88)
Mounting Hardware (Optional)		Clamp005, Clamp015, or Clamp130
Actual Shipping weight	lbs (kg)	34 (15.44)
Shipping dimensions	in (mm)	124x26x6 (3150x660x152)
Mounting configurations		Universal Mount
Recommended For Offset Side Mount		SMK-125-A3 or SMK-125-A7

Environmental Specifications

Temperature range	°F (°C)	-40 to +140 (-40 to +60)	
Wind Loading Area (Flat Plate Equivalent)	ft² (m²)	1 83 (0 17)	
Wind Loading Area (1/2" ice)	ft² (m²)	3.25 (0.3)	*1
Rated wind velocity (no ice)	mph (km/h)	145 (233)	
Rated wind velocity (1/2" radial ice)	mph (km/h)	110 (177)	
Lateral thrust (100 mph No Ice)	lbs (N)	68 (302.5)	*2
Torsional moment (100 mph No Ice)	ft-lbs (Nm)	34 (45 9)	*3
Bending moment (100 mph No Ice)	ft-lbs (Nm)	218 (294 3)	*4
Tip deflection (100 mph No Ice)	degrees	0 88	*5

Notes
*1 0 5" radial ice
*2 Value based on 100 mph with 0" ice
*3 Value based on 100 mph with 0" ice
*4 Value based on 100 mph with 0" ice
*5 Value based on 100 mph with 0" ice

Ordering Information
Clamps must be ordered separately



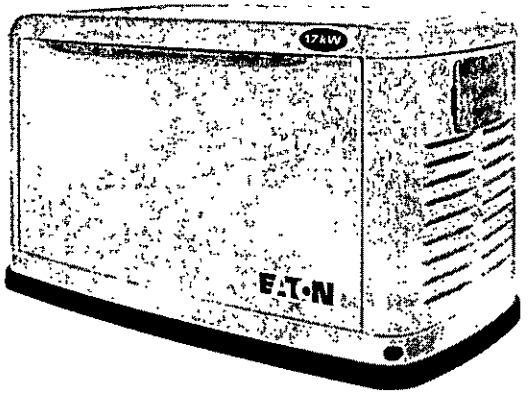
H-Plane (Azmuth)

www.sinctech.com

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Standby Generators Air Cooled 17kW



Gas Engine Generator Sets

Continuous Standby Power Rating:

- EGEN17 (Steel) - 17 kW 60Hz
- EGEN17A (Aluminum) - 17 kW 60Hz

Features:

- True Power® Electrical Technology
- Two Line LCD Digital Controller
- Electronic Governor
- External Main Circuit Breaker, System Status & Maintenance Interval LED's and GFCI Duplex Outlet
- Flexible Fuel Line Connector
- Composite Mounting Pad
- Natural Gas or LP Gas Operation
- UL 2200 Listed

Benefits:

- Total commitment to component testing, reliability, environmental, destruction and life, plus testing to applicable CSA, NEMA, EGSA, and other standards
- True Power® Electrical Technology Superior harmonics and sine wave form produce less than 5% Total Harmonic Distortion for utility quality power This allows confident operation of sensitive electronic equipment and micro-chip based appliances, such as variable speed HVAC.
- Test Criteria:
  - Prototype Tested Nema Mg1-22 Evaluation
  - System Torsional Tested
  - Motor Starting Ability
- Solid-state, frequency compensated voltage regulation This state-of-the-art power maximizing regulation system is standard on all Eaton models. It provides optimized fast response to changing load conditions and maximum motor starting capability by electronically torque-matching the surge loads to the engine
- Single source service response from the industry's best dealer network provides parts and service know-how for the entire unit

E·T·N

Table 1. Features

	Features	Benefits
Engine	• OHVI Design • "Spiny-lok" cast iron cylinder walls Electronic ignition/spark advance • Full pressure lubrication system • Low oil pressure shutdown system • High temperature shutdown	• Maximizes engine "breathing' for increased fuel efficiency Plateau honed cylinder walls and plasma moly rings help engine run cooler, reducing oil consumption Because heat is the primary cause of engine wear, the OHVI has a significantly longer life than competitive engines • Rigid construction and added durability provide long engine life • These features combine to assure smooth, quick starting every time • Superior lubrication to all vital bearings means better performance, less maintenance and significantly longer engine life Now featuring a 2 year/200 hour oil change interval • Superior shutdown protection prevents catastrophic engine damage due to low oil • Prevents damage due to overheating
Generator	• Revolving field • Skewed stator • Displaced phase excitation • Automatic voltage regulation • UL 2200 Listed	• Allows for smaller, light weight unit that operates 25% more efficiently than a revolving armature generator • Produces a smooth output waveform for compatibility with electronic equipment • Maximizes motor starting capability • Regulates the output voltage to ±2% prevents damaging voltage spikes • For your safety
Transfer Switch	Sold Separately	
Controls	• Manual/Auto/Off switch • Utility voltage sensing • Utility interrupt delay • Engine warm-up • Engine cool-down • Seven day exerciser • Timed Trickle Battery charger • Main Line Circuit Breaker • Electronic governor	• Selects the operating mode • Constantly monitors utility voltage, setpoints 65% dropout, 75% pick-up, of standard voltage • Prevents nuisance start-ups of the engine, adjustable 10-30 seconds • Ensures engine is ready to assume the load, setpoint approximately 10 seconds • Allows engine to cool prior to shutdown, setpoint approximately 1 minute • Operates engine to prevent oil seal drying and damage between power outages • Maintains battery charge level to insure starting • Protects generator from overload • Maintains constant 60 Hz frequency
Unit	• Weather protective enclosure • Enclosed critical grade muffler • Small, compact, attractive	• Ensures protection against mother nature Hinged key locking roof panel for security Lift-out front for easy access to all routine maintenance items Electrostatically applied textured epoxy paint for added durability EGEN17A has aluminum enclosure • Quiet, critical grade muffler is mounted inside the unit to prevent injuries • Makes for an easy, eye appealing installation
Installation System	• 1' Flexible Fuel Line Connector • Composite Mounting Pad	• Easy Installation

Table 2. Specifications

Generator	EGEN17	EGEN17A
Rated Maximum Continuous Power Capacity (LP)	17,000 Watts*	
Rated Maximum Continuous Power Capacity (NG)	16,000 Watts*	
Rated Voltage	120/240	
Rated Maximum Continuous Load Current 240 Volts	70 8 LP/66 6 NG	
Total Harmonic Distortion	Less than 5%	
Main Line Circuit Breaker	65 Amp	
Phase	1	
Number of Rotor Poles	2	
Rated AC Frequency	60Hz	
Power Factor	1	
Battery Requirement (not included)	Group 26R, 12 Volts & 525 Cold-cranking Amps Min	
Unit Weight	455 Pounds	421 Pounds
Dimensions (L" x W" x H")	48 x 25 x 29	
Sound output in dB(A) at 23 ft. with generator operating at normal load	66	
Sound output in dB(A) at 23 ft. with generator in Quiet-Test™ low speed exercise mode	60	
Engine		
Type of Engine	OHVI V-TWIN	
Number of Cylinders	2	
Rated Horsepower	32 @ 3,600 rpm	
Displacement	992cc	
Cylinder Block	Aluminum w/ Cast Iron Slv	
Valve Arrangement	Overhead Valve	
Ignition System	Solid-state w/ Magneto	
Governor System	Electronic	
Compression Ratio	9 5:1	
Starter	12 Vdc	
Oil Capacity Including Filter	Approx 1 9 Qts	
Operating RPM	3,600	
Fuel Consumption **Natural Gas** **cu.ft./hr: 1/2 Load / Full Load** **Liquid Propane** **ft3/hr (gal/hr): 1/2 Load / Full Load**	 183 / 261 59 (1 61) / 94 (2 57)	
Required fuel pressure to generator fuel inlet at all load ranges 5 to 7 inches of water column for natural gas, 10 to 12 inches of water column for LP gas		
Controls		
2-Line Plain Text LCD Display	Simple user interface for ease of operation	
Mode Switch **-Auto** **-Off** **-Manual/Test (start)**	 Automatic Start on Utility failure 7 day exerciser Stops unit Power is removed Control and charger still operate Start with starter control, unit stays on If utility fails, transfer to load takes place	
Engine Start Sequence	Cyclic cranking 16 sec on, 7 rest (90 sec maximum duration)	
Engine Warm-up	10 seconds	
Engine Cool-Down	1 minute	
Starter Lock-out	Starter cannot re-engage until 5 sec after engine has stopped	
2.5 Amp Timed Trickle Battery Charger	Standard	
Automatic Voltage Regulator w/Overvoltage Protection	Standard	
Automatic Low Oil Pressure Shutdown	Standard	
Overspeed Shutdown	Standard / /2Hz	
Overcrank Protection	Standard	
Safety Fuse	Standard	
All ratings in accordance with BS5514, ISO3046 and DIN6271 * Maximum wattage & current are subject to & limited by such factors as fuel Btu content, ambient temperature, altitude, engine power & condition, etc Maximum power decreases about 3 5 percent for each 1,000 feet above sea level, and also will decrease about 1 percent for each 12° C (10° F) above 15 5° C (60°F)		

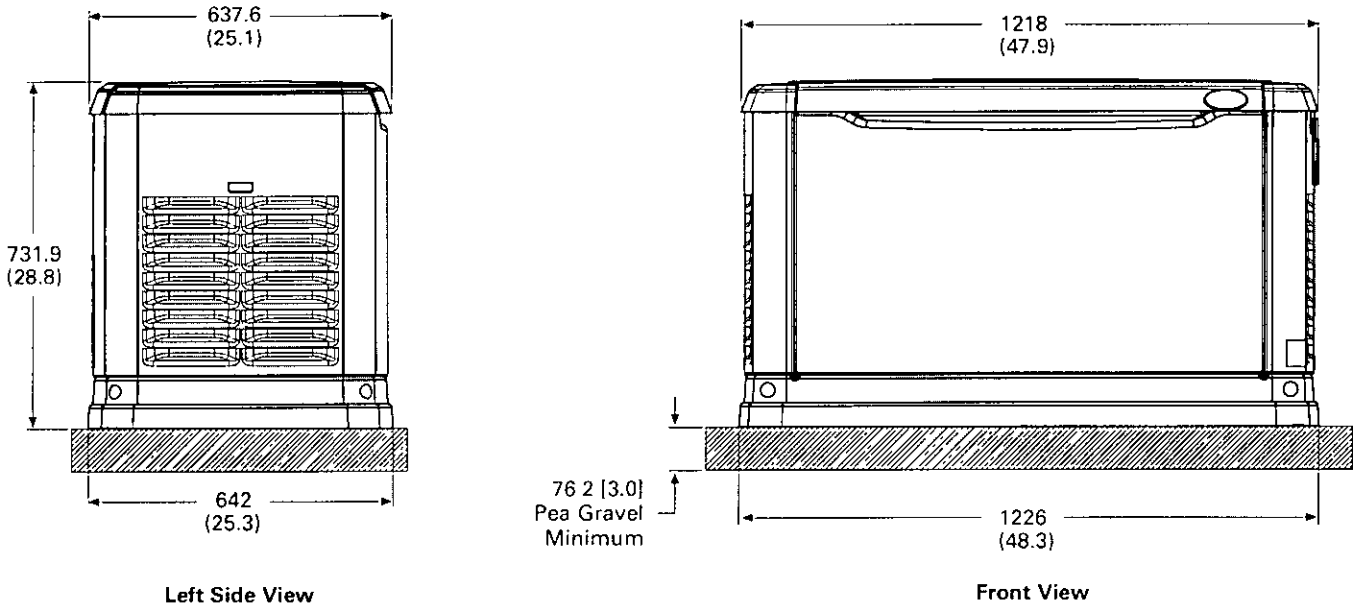


Figure 1. Air Cooled Generator 17kW

Design and specifications subject to change without notice
Dimensions shown are approximate Contact your Eaton Salesperson for certified drawings Do not use these dimensions for installation purposes

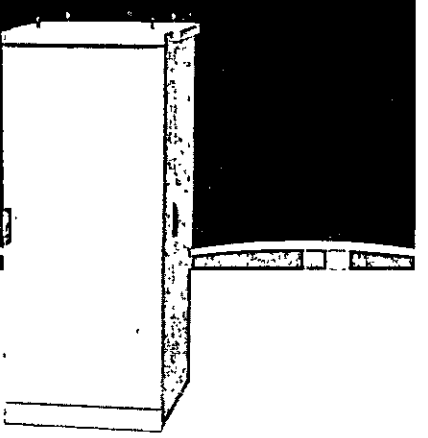
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August 2009

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FlexSure® FLX36-3030

Power and Equipment Enclosure Solutions



Purcell Systems' Flexible EncloSure (FlexSure®) solution architecture allows the rapid creation and growth of virtually any outdoor cabinet configuration by leveraging pre-engineered common interchangeable components. The FlexSure® series is available in 12, 16, 20, 25, and 36 RU equipment bay options.

FlexSure® enclosures are UL 508 Listed, and certified by independent third-party Nationally Recognized Testing Laboratories to Telcordia GR-487 A wide range of thermal management system technologies and capacities ensures that the equipment you deploy in the cabinet will operate within its design parameters with the highest reliability and lowest Total Cost of Ownership. Options include battery backup, AC/DC power termination and distribution, cross connect and line protection, equipment and enclosure mounting features.

Applications

Provides a secure, thermally-controlled environment for any electronic equipment supporting a wide-range of Cable/MSO, Energy/Utility, Land Mobile Radio, Transportation, U.S. Government/Military, and Wireless and Wireline Telecommunication applications.

Product Features:

- Telcordia GR-487 certified, UL508 Listed
- Highly flexible and scalable
- Energy efficient advanced thermal solutions
- Field upgradeable
- AC and DC power options
- Pad, pole, wall, H-frame mounting options

The Purcell Advantage

Purcell Systems designs and manufactures thermally-managed outdoor enclosures that meet the exact needs of the enclosed equipment for network operators and utilities. Our enclosures provide comparable solutions to prefabricated buildings, containers and shelters at a fraction of the cost. Both standard and custom enclosures are delivered with the following capabilities:

Choice of Options: Pre-engineered and interchangeable modules provide optimal configurations with minimal cost and lead time.

Thermal Management: The industry's widest selection of heating and cooling systems ensures the most efficient thermal management solution with the lowest energy consumption.

Lowest Total Cost of Ownership: Engineering analysis and modeling ensures your enclosure configuration minimizes installation, maintenance, repair, capital, and operational expenses

Equipment Integration and Staging: Electronic equipment can be staged and installed in our enclosures prior to final deployment and installation.

Fanatical Service®: A national service organization with 24/7/365 access means procurement, installation, support, and warranty requests are addressed immediately.

Purcell® SYSTEMS

FlexSure® FLX36-3030

Dimensions and Expansion Options				Thermal Management Systems			
Exterior Dimensions		Rack Units	Side Chamber Options	Heat Exchanger			Air Conditioner
No battery pedestal	30"W x 30"D x 74"H 762mm x 762mm x 1880mm	36RU	+10"W +16"W	39W/°C 741W	70W/°C 1330W	99W/°C 1881W	2K BTU/585W with 500W heater 4K BTU/1172W with 1500W heater 6K BTU/1758W with 1500W heater
14" battery pedestal	30"W x 30"D x 84"H 762mm x 762mm x 2134mm						
16" battery pedestal	30"W x 30"D x 86"H 762mm x 762mm x 2184mm						

Specifications

EXTERIOR

Construction
- Frame: 0.090" Corrosion resistant aluminum, dual wall construction
- Finish: Ultra-light gray polyester powder coat
- Weight (Base Configuration) 375 lbs

Door/Side/Top Panels
- Doors: Front and rear doors, left or right open, front and rear hatches
- Door Handles. Pad-lockable
- Door Hinges. Hidden hinges
- Side Panels: Removable for field expandability for extra bays and side chambers

Cable Entry
- Ingress/Egress Knockouts on bottom/rear/side
- Protection Plastic/rubber glands

Battery Pedestal
- Ventilated compartment
- 14" or 16" Height: Supports up to 190 Ahr -48 Volt batteries
- Battery Heater Mat: Up to 280 Watts
- Compatible with pad, pole, or wall mount

Side Chamber
- Side chambers: One or two, 10", or 16" depth
- 19" or 23" Equipment rails

Mounting Options
- Anchor plate kit for concrete pad mounting
- Pole mount kit (up to 25 RU models)
- Plinth: 4" Height, standard footprint
- Corrosion inhibiting pad gasket

INTERIOR

Equipment Mounting
- 19" or 23" Equipment rails. Configurable locations front-to-back
- Second set of 19" or 23" rails optional

AC Power Termination and Distribution
- Load Center Locations: Internal to side chamber, or internal to equipment bay
- 8-12 Position internal load centers
- Up to 100 Amp main breaker
- Surge Protection Device (SPD)
- Generator Inlet: 30/60/100 Amp

DC Power Systems and Distribution
- Multiple suppliers and configurations available

Other Options
- Convenience Outlets: 15 or 20A, GFCI or standard
- Bonding and Grounding: Isolated or integrated, up to 10 positions
- Alarm Blocks. Up to 20 positions (includes intrusion and thermal alarms)
- Accessories: Document holder, service light, laptop tray

OTHER

Agency Compliance
- Telcordia GR-487 Issue 2
- UL Listed – UL508A
- NEMA 3R

Environmental
- IP Protection: IP 54
- Maximum earthquake risk Zone-4 (as per Telcordia GR-63)

Warranty
- 5 Years on enclosure, 1 year on thermal system

Purcell SYSTEMS
16125 East Euclid Avenue
Spokane, Washington 99216
509.755.0341
www.purcellsystems.com

FLX36-3030 2012-11-08
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Patents Pending Due to continual product enhancements, specifications may change without notice

RESOLUTION NO. 5102

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE A WHOLESALE WATER AGREEMENT BETWEEN THE CITY OF AUBURN AND THE CITY OF TACOMA

WHEREAS, the City of Auburn is obligated to provide an adequate water supply to meet customer demand; and

WHEREAS, the City has adopted a combined water supply strategy that includes improving City sources to fully utilize its water rights and purchasing water from adjacent purveyors; and

WHEREAS, on June 4, 2012, the City of Auburn City Council adopted Resolution No. 4822 authorizing the Mayor to execute a Wholesale Water Agreement with the City of Tacoma, which agreement allowed the City to purchase water in keeping with the City's supply strategy; and

WHEREAS, in July 2012, the City of Auburn entered into the Wholesale Water Agreement with the City of Tacoma, Department of Public Works, Water Division (Tacoma) to purchase 1.0 million gallons per day (MGD) (annual average daily use) water at a wholesale rate; and

WHEREAS, in September 2013, the City of Auburn entered into the Agreement for the Purchase and Sale of Credits Relating to Permanent Wholesale Water Supply Capacity with Cascade Water Alliance (Cascade) for 2.5 MGD (annual average daily use) of Tacoma water; and

WHEREAS, the City desires to enter into a Wholesale Agreement with the City of Tacoma to utilize the 2.5 MGD water purchased from Cascade along with the existing 1.0 MGD, for a total of 3.5 MGD annual average daily use.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, KING COUNTY, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor is hereby authorized to execute a Wholesale Water Agreement between the City of Auburn and the City of Tacoma, which agreement shall be in substantial conformity with agreement attached hereto as Exhibit "A" and incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. This Resolution shall be in full force and effect upon passage and signatures hereon.

Dated and signed this 6th day of October, 2014.

CITY OF AUBURN

Nancy Backus
NANCY BACKUS, MAYOR

ATTEST:

Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

WHOLESALE WATER SUPPLY AGREEMENT

This WHOLESALE WATER SUPPLY AGREEMENT ("Agreement"), by and between the City of Tacoma, Department of Public Utilities, Water Division ("Tacoma"), and the City of Auburn ("City"), is made and entered into as of this 28th day of October (2014) ("Effective Date"). Tacoma and City are sometimes referred to collectively as the "Parties" and individually as a "Party." This Agreement is made with reference to the following facts:

RECITALS

WHEREAS, Tacoma is a municipality organized and operating under the laws of the State of Washington and operates a water utility pursuant to RCW 35.92.010;

WHEREAS, pursuant to RCW 35.92.170-.200, Tacoma is authorized to operate a water utility outside its geographical boundaries and to sell surplus water to customers outside of Tacoma's city limits;

WHEREAS, City is a noncharter code city organized and operating as a municipal corporation under the laws of the State of Washington;

WHEREAS, City and Tacoma have previously entered into a "Wholesale Water Agreement" dated July 6, 2012, pursuant to which Tacoma is required to provide, upon City's request, a wholesale water supply of up to 1 MGD (annual average daily use, subject to certain 2.0 MGD peak day and 1.8 MGD peak period limitations set forth therein), for use by City in connection with the prudent use and management of its water system (the "Existing Agreement");

WHEREAS, Tacoma and Cascade Water Alliance, a joint municipal utilities services authority ("Cascade"), have heretofore entered into an "Amended and Restated Agreement for the Sale of Wholesale Water" dated December 31, 2012 (the "Cascade/Tacoma Agreement");

WHEREAS, pursuant to Section 6 of the Cascade/Tacoma Agreement, Tacoma has available surplus water and is willing to sell to City a 2.5 MGD (annual average daily use) wholesale water supply, which is a portion of the 4 MGD (annual average daily use) wholesale water supply that is available as of the Effective Date to sell to City pursuant to the Cascade/Tacoma Agreement;

WHEREAS, the Parties desire, by this Agreement, to amend and restate the Existing Agreement;

WHEREAS, Tacoma is willing to make a 3.5 MGD (1.0 MGD + 2 5 MGD) (annual average daily use) wholesale water supply available to City as a direct wholesale customer of Tacoma in accordance with the terms and conditions of this Agreement, which is a combination of the 1 MGD wholesale water supply currently provided under the Existing

Agreement and the 2.5 MGD available pursuant to the Cascade/Tacoma Agreement, subject to certain peak-period limitations set forth below;

WHEREAS, pursuant to the requirements of RCW 35.92.010, the Parties specifically find that this Agreement will at a minimum generate revenues sufficient for Tacoma to cover the marginal cost of the available surplus water supplied to City; and

WHEREAS, City is willing to purchase and accept delivery of such wholesale water supply from Tacoma as a direct wholesale customer of Tacoma in accordance with the terms and conditions of this Agreement.

NOW, THEREFORE, IN CONSIDERATION of the mutual covenants and conditions herein contained, the Parties agree as follows:

AGREEMENT

1. DEFINITIONS

For purposes of this Agreement, the following terms defined herein shall have the following meanings, whether singular or plural:

"Applicable Law" means any applicable and binding statute, law, rule, regulation, code, ordinance, judgment, decree, writ, legal requirement or order, and the written interpretations thereof, of any national, federal, state or local Governmental Authority having jurisdiction over the Parties or the performance of this Agreement.

"Cascade" shall have the meaning set forth in the Recitals.

"Cascade/Tacoma Agreement" shall have the meaning set forth in the Recitals.

"City" shall have the meaning set forth in the preamble of this Agreement.

"City Hazardous Substances" means any Hazardous Substances generated, transported, kept, handled, stored, placed, discharged or released by City, or by anyone directly or indirectly retained or employed by City, in connection with the performance of this Agreement.

"City Isolation Valve" means a positive shut-off valve owned and operated by City as part of the Interconnection Facilities.

"Dispute" shall have the meaning set forth in Section 17.1.

"Draft Operating Plan" means a non-binding informational plan intended to advise Tacoma of the amount of the Wholesale Water Supply that City anticipates it will use during the period starting June 1 and ending September 31 each year during the Term.

"Effective Date" shall have the meaning set forth in the preamble of this Agreement.

"Existing Agreement" shall have the meaning set forth in the Recitals.

"Flow Control Valve" means the valve that controls the volume of water that is delivered to City and is more particularly described in Exhibit A.

"Governmental Authority" means (a) any federal, national, state, tribal, county, municipal or local government (whether domestic or foreign), or any political subdivision thereof; (b) any court or administrative tribunal; (c) any other governmental, quasi-governmental, judicial, public or statutory instrumentality, authority, body, agency, bureau or entity of competent jurisdiction; or (d) any nongovernmental agency, tribunal or entity that is vested by a governmental agency with applicable jurisdiction.

"Hazardous Substances" means any substance or material regulated or governed by Applicable Law; any substance, emission or material now or hereafter deemed by any Governmental Authority or Applicable Law to be a "regulated substance," "hazardous material," "hazardous waste," "hazardous constituent," "hazardous substance," "dangerous material," "dangerous waste," "dangerous substance," "toxic substance," "radioactive substance" or a "pesticide"; and any other substance with properties that are harmful or deleterious to human health or to the environment.

"Interconnection Facilities" means all facilities, other than the Wholesale Service Connections, that are necessary for City to access and take delivery of the Wholesale Water Supply at the Wholesale Service Connections and to convey such water to City's transmission and distribution systems. Interconnection Facilities include the City Isolation Valve and such other pressure-reducing valves, power service, storm drainage, vaults, telecommunications service, conduit, controllers, pedestals and boxes operated by City as part of the Interconnection Facilities. For avoidance of doubt, Interconnection Facilities do not include the Wholesale Service Connections or any other facilities owned and operated by Tacoma that are necessary to deliver the Wholesale Water Supply to the Wholesale Service Connections.

"Meter" means the delivery metering equipment determined by Tacoma to be necessary for the implementation of this Agreement.

"Operating Protocols" shall have the meaning set forth in Section 11.3.

"Party" or "Parties" shall have the meaning set forth in the preamble of this Agreement.

"Person" means any individual, corporation, municipal corporation, company, voluntary association, partnership, incorporated organization, trust or limited liability company, or any other entity or organization, including any Governmental Authority.

"Project" means that certain water supply project commonly referred to as the Second Supply Project, which is owned and operated by Tacoma in order to meet Tacoma's future water supply requirements and to increase regional supply, with the participation of its project partners the City of Kent, the Covington Water District and the Lakehaven Utility District in

accordance with the terms and conditions of the 2002 Second Supply Project Partnership Agreement.

"Prudent Utility Practices" means, at any particular time, any of the practices, methods, decisions and acts that (a) in the exercise of a Party's reasonable judgment in light of the facts known at the time, would have been expected to accomplish the desired result consistent with Applicable Law, reliability, efficiency, economy, safety and expedition commonly engaged in or approved by the water supply industry in the United States prior thereto; and (b) in the case of Tacoma, includes all practices and methods needed to comply with the Wholesale Water Regulations. It is recognized that the term "Prudent Utility Practices" is not intended to be limited to the optimum practices, methods or acts to the exclusion of all others, but rather refers to a spectrum of possible practices, methods or acts that could have been expected to accomplish the desired result consistent with Applicable Law, reliability, efficiency, economy, safety and expedition.

"Schedule" shall have the meaning set forth in Section 11.2.

"System Development Charge" means the system development charge imposed upon wholesale customers by the Wholesale Water Regulations.

"Tacoma" shall have the meaning set forth in the preamble of this Agreement.

"Tacoma Indemnitees" means Tacoma and Tacoma's directors, officers, employees, agents, servants, elected officials and representatives, and the respective successors and assigns of each and all of the foregoing.

"Tacoma Isolation Valve" means a positive shut-off valve installed at the Wholesale Service Connections and that is more particularly described in Exhibit A.

"Telemetry Equipment" means a data-acquisition system owned and operated by Tacoma that is used to send signals from the Meter in support of operations and all appurtenances thereto.

"Temporary Wholesale Water Supply" shall have the meaning set forth in Section 19.

"Term" shall have the meaning set forth in Section 21.

"Uncontrollable Force" means any event or circumstance (or combination thereof) and the continuing effects of any such event or circumstance (whether or not such event or circumstance was foreseeable or foreseen by the Parties) that delays or prevents performance by a Party of any of its obligations under this Agreement. An Uncontrollable Force shall include the following:

(i) flood, earthquake, drought, climate change, storm, fire, lightning and other natural catastrophes;

(ii) acts of public enemies, armed conflicts, acts of foreign enemies, acts of terrorism (whether domestic or foreign, state-sponsored or otherwise), war (whether declared or undeclared), blockade, insurrection, riot, civil disturbance, revolution or sabotage;

(iii) any form of compulsory government acquisition or condemnation or change in Applicable Law (other than such acquisition, condemnation or change by City) that affect the performance of the Parties' obligations under this Agreement;

(iv) accidents or other casualty, damage, loss or delay during transportation, explosions, fire, epidemics, quarantines or criminal acts that affect the performance of the Parties' obligations under this Agreement;

(v) labor disturbances, stoppages, strikes, lock-outs or other industrial actions affecting the Parties or any of their contractors, subcontractors (of any tier), agents or employees;

(vi) inability, after the use of commercially reasonable efforts, to obtain any consent or approval from any Governmental Authority (other than City) that affects the performance of the Parties' obligations under this Agreement;

(vii) inability, after the use of commercially reasonable efforts, to obtain any consent or approval from any Person required by a Party in connection with this Agreement; and

(viii) third-party litigation contesting all or any portion of the right, title and interest of a Party in any service, property or other item to be provided to the other Party in connection with this Agreement.

Notwithstanding the foregoing, the insufficiency of funds, the financial inability to perform or any changes in such Party's cost of performing its obligations hereunder shall not constitute an Uncontrollable Force, and neither Party may raise a claim for relief hereunder, in whole or in part, in connection with such event or circumstance.

"Wholesale Service Connections" means a physical connection(s) between water mains of the Parties and is the point of delivery of the Wholesale Water Supply. The Wholesale Service Connections are more particularly described in Exhibit A and include the Tacoma Isolation Valve and the Flow Control Valve.

"Wholesale Water Regulations" means all applicable terms and conditions of the Tacoma Municipal Code, including but not limited to Chapters 12.01 and 12.10 thereof, as such terms and conditions may now exist or may hereafter be changed, deleted, supplemented, modified or amended. The Wholesale Water Regulations include Tacoma's "Customer Service Policies" and such other rules, regulations, policies and guidelines as

Tacoma shall, from time to time, adopt and apply on a uniform basis to Tacoma's wholesale customers.

"Wholesale Water Service" shall have the meaning set forth in Section 4.2.

"Wholesale Water Supply" means a quantity of water of up to 3.5 MGD (annual average daily demand), subject to the following peak-period limitations:

(a) 5.12 MGD during any consecutive twenty-four (24) hour period, and

(b) 4.92 MGD during any consecutive ninety-six (96) hour period.

2. EXHIBITS TO THIS AGREEMENT

This Agreement includes the Exhibits listed below, and any reference in this Agreement to an "Exhibit" by letter designation or title shall mean one of the Exhibits identified below. If there is an express conflict between the provisions contained within the body of this Agreement and the provisions of any Exhibit hereto, then the body of this Agreement shall take precedence, except that with respect to technical specifications and requirements pertaining to the design, engineering, operation or testing of the Wholesale Service Connections, the conflicting Exhibit shall take precedence.

Exhibit A: Wholesale Service Connections
Exhibit B: Dispute Resolution Procedures

3. AMENDMENT AND RESTATEMENT OF EXISTING AGREEMENT

The rights and obligations of the Parties arising under the Existing Agreement shall remain in full force and effect and unchanged by this Agreement for the period beginning on July 6, 2012, and ending on the Effective Date. From and after the Effective Date, this Agreement fully restates, replaces and supersedes the Existing Agreement and shall govern and control the rights and obligations of the Parties with respect to the subject matter of the Existing Agreement, as amended and restated in its entirety by this Agreement. Except as otherwise provided by this Section 3, from and after the Effective date, the Existing Agreement is null, void and no longer of any force or effect.

4. WHOLESALE WATER SERVICE

4.1 Subject to the terms and conditions of this Agreement, during the Term, Tacoma agrees to sell and deliver the Wholesale Water Supply to City, and City agrees to purchase and take delivery of the Wholesale Water Supply from Tacoma. The Wholesale Water Supply may be resold by City to another water purveyor, subject to the terms and conditions of this Agreement.

4.2 The Wholesale Water Supply shall be provided to City as wholesale water service subject to and in compliance with the Wholesale Water Regulations, Applicable Law,

Prudent Utility Practices and the terms and conditions of this Agreement ("Wholesale Water Service"). Except as otherwise provided by this Agreement, City shall be subject to and governed by the Wholesale Water Regulations. If, however, there is an express conflict or inconsistency between the terms and conditions of this Agreement and the terms and conditions of the Wholesale Water Regulations, then the terms and conditions of this Agreement shall take precedence, govern and control.

4.3 The Wholesale Water Service shall be provided to City with the same degree of reliability and certainty of supply as water provided by Tacoma to its existing wholesale customers (including limitations thereof, such as provisions of the Wholesale Water Regulations pertaining to interruption of service). The Wholesale Water Service provided to City is not for the purpose of providing fire flows or for fire suppression purposes, and Tacoma does not warrant that the flow and pressure of the Wholesale Water Service provided to City will meet Wholesale Water Regulations or Applicable Law related to providing fire flows or for fire suppression purposes. City acknowledges it is solely responsible for compliance with Applicable Law related to fire flows and fire suppression. The Parties acknowledge that Wholesale Water Service is inherently subject to disruption, interruption, suspension, curtailment and fluctuation. Tacoma shall not have any liability to City or any other Person for any disruption, interruption, suspension, curtailment or fluctuation in the Wholesale Water Service.

5. WHOLESALE WATER SERVICE CHARGES AND FEES

City shall pay Tacoma all charges, fees and other amounts for the Wholesale Water Service as shall be due and payable, from time to time, pursuant to the Wholesale Water Regulations. All rates, charges, fees and other amounts due Tacoma for the Wholesale Water Service pursuant to the Wholesale Water Regulations are subject to periodic adjustment by the Public Utility Board and Tacoma City Council. At any time during the Term, the applicable rate, charge, fee or other amount due Tacoma from City for the Wholesale Water Service shall be the rate, charge, fee or amount as shall then be in effect.

6. SYSTEM DEVELOPMENT CHARGES

As of the Effective Date, the System Development Charge due and payable to Tacoma pursuant to the Existing Agreement has been fully paid by City to Tacoma pursuant to the terms and conditions of the Existing Agreement. A System Development Charge for a wholesale water supply of 2.5 MGD has been paid by Cascade to Tacoma pursuant to the terms and conditions of the Cascade/Tacoma Agreement. The remaining System Development Charge due Tacoma from City pursuant to the Wholesale Water Regulations has, as of the Effective Date, been fully paid to Tacoma by or on behalf of City.

7. PAYMENTS

Amounts due Tacoma from City for the Wholesale Water Service shall be determined, billed and collected by Tacoma and paid by City in accordance with the procedures for billings, collections and payments set forth in the Wholesale Water Regulations.

8. WHOLESALE WATER DELIVERIES

From and after the Effective Date, the Wholesale Water Supply shall be made available to City at the Wholesale Service Connections. The delivery and receipt of water, and the transfer of title to and custody and control of such water, shall occur at the Wholesale Service Connections. Upon City's acceptance of such water at the Wholesale Service Connections, City assumes full responsibility for such water, its quality, and the means, methods and facilities necessary to connect, receive, transport, deliver and use such water as a source of water for resale by City to City's retail customers.

9. WHOLESALE WATER CONNECTIONS AND INTERCONNECTION FACILITIES

9.1 From and after the Effective Date, Tacoma shall be responsible for the maintenance and operation of the Wholesale Service Connections in a manner that is consistent with Applicable Law and Prudent Utility Practices. If at any time during the Term Tacoma shall determine a need to upgrade, replace or modify any of the Wholesale Service Connections, in whole or in part, Tacoma shall so notify City, and cause such upgrade, replacement or modification to occur at such time, place and manner and with such labor, design, materials and equipment as Tacoma shall determine, in its sole discretion. No wholesale service connections other than the Wholesale Service Connections are authorized by this Agreement, and no other such connections shall be allowed without a subsequent and separate written agreement between the Parties. Neither Party shall be obligated to agree to or execute any agreement or permit with the other Party to construct or use any additional wholesale service connection.

9.2 From and after the Effective Date, City shall, at its expense, cause the Interconnection Facilities to be constructed, tested, maintained and available for normal and reliable commercial operations. City shall submit to Tacoma for review and approval the designs, specifications and construction schedule for any material repairs or replacements of the Interconnection Facilities, or for any expansions, improvements or upgrades of the Interconnection Facilities. Tacoma will not unreasonably delay its review of the designs, specifications and construction schedule submitted to it by City and will not unreasonably withhold its approval of such designs, specifications and construction schedule. City will not commence any such repairs, replacements, expansions, improvements or upgrades of the Interconnection Facilities unless and until City has received approved designs, specifications and construction schedule from Tacoma. City shall construct and operate the Interconnection Facilities in a manner that is consistent with Applicable Law; the approved designs, specifications and construction schedule; the provisions of all permits, regulatory approvals and agreements governing the construction and operation of the Interconnection Facilities; and Prudent Utility Practices. City shall own and operate the Interconnection Facilities and shall be responsible for the repair and maintenance thereof.

9.3 Without limiting the generality of the foregoing, City shall:

(a) be responsible for the operation and control of the City Isolation Valve and any pressure-reducing valves, controllers, pedestals and boxes operated by City as part of the Interconnection Facilities; and

(b) provide a sufficient permitted discharge location for sump pump discharge for the Wholesale Service Connections vault.

9.4 If, at any time or from time to time during the Term, Tacoma determines a need to repair, maintain, replace, renew, expand or improve any of Tacoma's infrastructure, facilities or systems and such work requires the relocation of all or any portion of the Interconnection Facilities, Tacoma shall, not less than one hundred twenty (120) days prior to the commencement of such work, request by written notice to City that City relocate such Interconnection Facilities so as to accommodate the time, place and manner of Tacoma's work. Upon receipt of such notice from Tacoma, City shall promptly so relocate such Interconnection Facilities at City's sole cost and expense.

10. METER AND TELEMETRY EQUIPMENT

10.1 Tacoma shall, at City's expense, provide for the procurement, installation, repair, replacement, calibration and testing of the Meter and the Telemetry Equipment. Such costs paid by City to Tacoma are considered funds provided in aid of construction. City shall provide, at its expense, a sufficient and reliable source of power and communications to the Meter and the Telemetry Equipment. Tacoma shall determine the size of the Meter and the flow range within which the Meter must operate.

10.2 Tacoma shall perform the calibration and testing of the Meter. During the Term, Tacoma shall periodically test the Meter for accuracy, and the results of such testing shall be made available to City. City may also test the Meter at any reasonable time and at City's expense. The results of any Meter test conducted by City shall be made available to Tacoma at no charge. A Meter accuracy measurement of two percent (2%) or better shall be considered within calibration tolerance.

10.3 If a Party shall require access to any area under the care, custody or control of the other Party for purposes of this Section 10, then such Party may request such access, subject to the other Party's prior approval, which such approval shall not be unreasonably withheld, conditioned or delayed.

11. WATER MANAGEMENT AND SCHEDULING

11.1 On or before May 1 of each year during the Term, City shall provide Tacoma with a Draft Operating Plan.

11.2 Prior to 10:00 a.m. on any Thursday during the Term, City may submit to Tacoma, in the manner and in the form established by Tacoma, a schedule for wholesale

water deliveries for the following seven (7) days ("Schedule"). The Schedule shall contain at a minimum a uniform rate of water deliveries for each day of the Schedule, and shall take effect on the day following the Thursday the Schedule is submitted. Schedules so submitted shall remain in effect until replaced by a subsequent Schedule submitted in accordance with this Section 11.2.

11.3 The Parties agree to jointly develop and maintain operating protocols for items including the scheduling of water demand to assure consistent flow control and treatment, routine operational communication, emergency shutdown, emergency contacts and other items the Parties determine appropriate ("Operating Protocols"). The Operating Protocols shall be subject to Tacoma's approval, which such approval shall not be unreasonably withheld, conditioned or delayed.

11.4 Tacoma reserves the right to modify, suspend, change or amend Schedules and Operating Protocols as necessary to comply or conform with this Agreement, the Wholesale Water Regulations, Applicable Law, or Prudent Utility Practices, or to respond to Uncontrollable Forces. Tacoma will provide City with thirty (30) days' advance notice of any modifications, suspensions, changes or amendments to the Operating Protocols; provided, however, if the need to modify, suspend, change or amend the Operating Protocols is attributable to Uncontrollable Forces, then Tacoma shall provide as much notice as is practicable under the circumstances.

12. CONSERVATION AND PLANNING

12.1 The Parties will seek to coordinate regional supply, planning, scheduling and operational programs that promote efficient use of water supplies, facilities, finances and staff resources. If requested by Tacoma, City shall participate in the planning and implementation process for conservation programs as they are developed and will share available conservation resources where beneficial to both Parties. In the event there is a water shortage or drought that requires Tacoma to institute water rationing or water use restrictions, Tacoma may institute reductions to deliveries of the Wholesale Water Supply consistent with the Wholesale Water Regulations and Prudent Utility Practices.

12.2 During the Term, City shall implement and maintain a water conservation and water curtailment program substantially equivalent to Tacoma's program. Tacoma reserves the right to reduce or discontinue Wholesale Water Service in the event City fails to adopt and conform its use of the Wholesale Water Supply to Tacoma's Water Shortage Response Plan.

13. RISK OF LOSS

13.1 Title to and risk of loss of water delivered by Tacoma to City pursuant to Section 8 shall pass from Tacoma to City at the Wholesale Service Connections.

13.2 Title to the Wholesale Service Connections, the Meter and the Telemetry Equipment shall be vested in Tacoma. Except as otherwise provided by Section 10.2, City shall have no right to operate, suspend, curtail, design, construct, test, maintain, repair,

improve, replace and use the Wholesale Service Connections, the Meter and the Telemetry Equipment. Title to the Interconnection Facilities shall be vested in City. Tacoma shall have no right or responsibility to operate, suspend, curtail, design, construct, test, maintain, repair, improve, replace or use the Interconnection Facilities.

14. INDEMNIFICATION

City shall defend, indemnify and hold each and all of the Tacoma Indemnitees harmless from and against any and all claims, liens, demands, actions, losses, damages, costs, expenses and liabilities (including attorneys' fees) arising directly or indirectly from or in connection with:

(a) the transportation, storage, sale, delivery and use of any water delivered to City in accordance with this Agreement;

(b) the negligent, reckless, or otherwise tortious acts or omissions of City, or of anyone directly or indirectly retained or employed by City, in performance of this Agreement;

(c) any material breach, failure, inconsistency, inaccuracy or default of any one or more representations made to Tacoma in Section 20;

(d) the use or resale of the Wholesale Water Supply for fire flows or fire suppression purposes, or

(e) City Hazardous Substances.

Nothing herein shall, however, require City to defend, indemnify and hold harmless the Tacoma Indemnitees for that portion (if any) of any such liability that is so proportionately and legally attributable to the negligent acts or omissions of any one or more of the Tacoma Indemnitees. As between the Parties and solely for the purpose of the indemnities contained in this Section 14, City expressly waives any immunity, defense or protection that may be granted to it under the Washington State Industrial Insurance Act, Title 51 RCW, or any other industrial insurance, workers' compensation or similar laws of the State of Washington to the fullest extent permitted by Applicable Law. This Section 14 shall not be interpreted or construed as a waiver of City's right to assert such immunity, defense or protection directly against any of its own employees or any such employee's estate or other representatives. This Section 14 has been mutually negotiated by the Parties and shall survive the expiration or termination of this Agreement.

NKB
City's Initials

15. REGULATORY COMPLIANCE

The Wholesale Water Service is provided subject to Applicable Law (including permits, authorization and the jurisdiction of a Governmental Authority to issue orders and

regulations regarding the Wholesale Water Service, the Wholesale Water Supply and the Project). City understands and agrees that Tacoma must comply with all such laws, permits, authorizations, orders and regulations, and that such laws, permits, authorizations, orders and regulations are an Uncontrollable Force to the extent that they affect the ability of Tacoma to fulfill its obligations under this Agreement.

16. NO RIGHT OR CLAIM TO WATER RIGHTS

By this Agreement, City secures a contractual right to receive Wholesale Water Service and to accept delivery from Tacoma of the Wholesale Water Supply as a wholesale customer. By this Agreement, City acquires no right, title or interest in or to (a) the Project, the Wholesale Service Connection, the Meter or the Telemetry Equipment; or (b) any water rights, water claims, water permits or water certificates.

17. DISPUTE RESOLUTION

17.1 Any and all claims, controversies or disputes arising out of, relating to or in connection with this Agreement (each, a "Dispute") as between the Parties shall be resolved in accordance with the Dispute resolution procedures set forth in this Section 17.

17.2 The Parties shall inform one another promptly following the occurrence or discovery of any item or event that would reasonably be expected to result in a Dispute required to be resolved in accordance with this Dispute resolution procedure. The initial mechanism to resolve Disputes will involve negotiations between the Parties' representatives, so designated by the Parties by notice given pursuant to Section 23.

17.3 If the Parties cannot resolve a Dispute satisfactorily within ten (10) days after receipt of the initial notice in accordance with Section 17.2, either Party may deliver to the other Party notice of the Dispute with a detailed description of the underlying circumstances of such Dispute. The Dispute notice shall include a schedule of the availability of the notifying Party's senior officers duly authorized to settle the Dispute during the thirty (30) day period following the delivery of the Dispute notice. The recipient Party shall, within three (3) business days following receipt of the Dispute notice, provide to the notifying Party a parallel schedule of availability of the recipient Party's senior officers duly authorized to settle the Dispute. Following delivery of the respective senior officers' schedules of availability, the senior officers of the notifying Party and the recipient Party shall meet and confer, as often as they deem reasonably necessary during the remainder of the thirty (30) day period, in good-faith negotiations to resolve the Dispute to the satisfaction of both Parties.

17.4 If at any time during the good-faith efforts to resolve any Dispute arising under this Agreement either of the Parties determines that such informal discussions will not result in a resolution of the issue or issues in Dispute, such Party may initiate the Dispute resolution process in accordance with the provisions of Exhibit B.

17.5 Pending resolution of any Dispute, the Parties shall continue to fulfill their respective duties under this Agreement.

18. DEFAULT AND REMEDIES

18.1 If a Party fails to perform its obligations hereunder, then it shall be in default hereunder unless the defaulting Party cures:

(a) a monetary event of default within thirty (30) days after receiving written notice from the other Party of such monetary default; and

(b) a non-monetary event of default within sixty (60) days after receiving a notice of default from the non-defaulting Party; provided, however, that if the nature or extent of the obligation or obligations is such that more than sixty (60) days are required, in the exercise of commercially reasonable diligence, to cure such non-monetary default, then the defaulting Party shall not be in default if it commences such performance within such sixty (60) day period and thereafter pursues the same to completion with commercially reasonable diligence.

18.2 Except as otherwise provided by the Wholesale Water Regulations, and subject to the procedures set forth in Section 17, if a Party is in breach or default of its obligations arising under this Agreement, the other Party shall have and shall be entitled to exercise any and all remedies available to it at law or in equity (including the right to specifically enforce this Agreement), all of which remedies shall be cumulative. If either Party elects to pursue singularly any remedy available to it under this Section 18, then such Party may at any time thereafter continue to pursue or cease pursuing that remedy and simultaneously elect to pursue any other remedy available to it under this Section 18.

19. ADDITIONAL WATER

During the Term, City may request that Tacoma supply City with wholesale water on a temporary basis in addition to the Wholesale Water Supply ("Temporary Wholesale Water Supply"). The availability of the Temporary Wholesale Water Supply for sale by Tacoma to City at any time or from time to time during the Term shall be determined by Tacoma in its sole discretion. If Tacoma shall determine that some or all of the Temporary Wholesale Water Supply is available for sale to City, it may be sold, scheduled, priced and delivered to City on such terms and conditions as may then be acceptable to the Parties upon approval of the Parties' applicable governing bodies. Without limiting the generality of the foregoing, any such sales shall be subject to the Wholesale Water Regulations (as applicable), the System Development Charge, the availability of resources, and the disruption, interruption, suspension and curtailment of the Temporary Wholesale Water Supply by Tacoma at any time.

20. REPRESENTATIONS OF THE PARTIES

20.1 Each Party is duly authorized and validly existing under the laws of, is authorized to exercise its powers, rights and privileges under the laws of, and is in good standing in the State of Washington, and has full power and authority to carry on its business

as presently conducted, to execute this Agreement and to perform the transactions on its part contemplated by this Agreement.

20.2 The execution, delivery and performance of this Agreement, and the consummation of the transactions contemplated hereby, have been duly authorized by the appropriate board or council, and no other act or proceeding on the part of a Party is necessary to authorize this Agreement, or the transactions contemplated hereby.

20.3 The execution, delivery and performance by each of the Parties of this Agreement does not (a) contravene Applicable Law; or (b) conflict with or result in a breach of or default under any material agreement or instrument to which any Party is a party or by which it is bound.

20.4 There are no actions, suits, claims or proceedings pending or, to the best of each Party's knowledge, threatened against either Party that is likely to impair the consummation or the transactions contemplated hereby.

21. TERM

The term of this Agreement (the "Term") shall commence as of the Effective Date and shall remain in full force and effect until the date that Tacoma ceases making wholesale water sales in accordance with the Wholesale Water Regulations.

22. UNCONTROLLABLE FORCES

If performance of this Agreement or of any obligation hereunder (other than the insufficiency of funds, the financial inability to perform or changes in a Party's cost of performing its obligations) is prevented or substantially restricted or interfered with by reason of an Uncontrollable Force, the affected Party, upon giving notice to the other Party, shall be excused from such performance to the extent of and for the duration of such prevention, restriction or interference. The affected Party shall use its reasonable efforts to avoid or remove such causes of nonperformance and shall continue performance hereunder whenever such causes are removed.

23. NOTICES

23.1 All notices or other communications required or permitted by this Agreement must be in writing and be personally delivered, delivered by recognized overnight courier service or given by mail or via facsimile. Any notice given by mail must be sent, postage prepaid, by certified or registered mail, return receipt requested. All notices must be addressed to the Parties at the following addresses or at such other addresses as the Parties may from time to time direct in writing:

Tacoma:	Water Superintendent P.O. Box 11007 Tacoma, WA 98411 Phone: (253) 502-8245 Fax: (253) 502-8694
City:	Assistant Director of Engineering/City Engineer 25 West Main Street Auburn, WA 98001 Phone: (253) 931-3010 Fax: (253) 931-3053

23.2 Any notice will be deemed to have been given (a) if personally delivered, when delivered, (b) if delivered by courier service, one (1) business day after deposit with the courier service, (c) if mailed, two (2) business days after deposit at any post office in the United States, and (d) if delivered via facsimile, the same day as verified; provided that any verification that occurs after 5:00 p.m. on a business day, or at any time on a Saturday, Sunday or holiday, will be deemed to have occurred as of 9:00 a.m. on the following business day.

24. MISCELLANEOUS

24.1 The rights and obligations of the Parties arising under this Agreement may not be sold, assigned or otherwise transferred in whole or in part by a Party without the prior written consent of the other Party, which consent shall not be unreasonably withheld or delayed. Subject to the foregoing, this Agreement shall be binding upon the Parties' respective successors and permitted assigns.

24.2 The Parties agree that in taking actions or making determinations required or provided for under this Agreement, each Party shall act in fairness and in good faith. The Parties will cooperate and use commercially reasonable efforts to facilitate the implementation of all aspects of this Agreement. During the Term, each Party, upon the request of the other Party, shall, without further consideration, execute, deliver and acknowledge all such further documents and do and perform all such other acts and things as either Party may reasonably request to effectively carry out the intent of this Agreement.

24.3 A Party shall not have the right to offset any amounts owed to the other Party pursuant to this Agreement against any amounts due from the other Party pursuant to this Agreement, nor may a Party offset any amounts due to the other Party pursuant to this Agreement against any amounts owed by the other Party pursuant to this Agreement. A Party may not withhold any payment due the other Party by reason of a Dispute; such payment shall be paid "under protest" and any and all Disputes with respect to such payment shall be resolved pursuant to Section 17.

24.4 Any of the terms or conditions of this Agreement may be waived at any time and from time to time, in a signed writing, by the Party or Parties entitled to the benefit of

such terms or conditions. Any waiver given by a Party shall be narrowly construed to specifically waive, in time and subject, only the express matter contained in such waiver. The failure of either Party to insist on or enforce strict performance of any provision of this Agreement or to exercise any right or remedy under this Agreement or Applicable Law will not be construed as a waiver or relinquishment to any extent of the right to assert or rely upon any such provision, right or remedy in that or any other instance; rather, the same will be and remain in full force and effect. Tacoma's review, revision or approval of or comment upon any matter arising under this Agreement, or Tacoma's failure to review, revise, approve or comment upon any matter arising under this Agreement, shall not in any way (a) relieve or release City from any of its obligations arising under this Agreement, or (b) subject Tacoma to any liability with respect to such matter.

24.5 This Agreement shall be governed by and construed in accordance with the laws of the State of Washington (regardless of the laws that might otherwise govern under applicable principles of conflict of laws of such state). Except with respect to a lawsuit or judicial action or proceeding commenced by a third party in another jurisdiction and subject to Exhibit B, the Parties will (a) agree that any lawsuit, judicial action or proceeding arising out of or relating to this Agreement must be heard in the Superior Court of the State of Washington, in and for the County of Pierce, or the United States District Court for the Western District of Washington in Tacoma; (b) waive any objection to the laying of venue of any such suit, action or proceeding; and (c) irrevocably submit to the jurisdiction of any such court in any such lawsuit, judicial action or proceeding.

24.6 Terms defined in a given number, tense or form shall have the corresponding meaning when used in this Agreement with initial capitals in another number, tense or form. References containing terms such as "hereof," "herein," "hereto," "hereinafter" and other terms of like import are not limited in applicability to the specific provision within which such references are set forth but instead refer to this Agreement taken as a whole. "Includes" or "including" shall not be deemed limited by the specific enumeration of items, but shall be deemed without limitation. The term "or" is not exclusive. The headings contained in this Agreement are included solely for the convenience of the Parties. Accounting terms used but not defined herein have the meanings given to them under generally accepted accounting principles in the United States consistently applied throughout the specified period and in the immediately prior comparable period. The term "day" means a calendar day unless otherwise specified as a "business day"; a business day means a day, other than a Saturday or Sunday or public holiday, on which banks are generally open for business in Pierce County, Washington.

24.7 Any provisions of this Agreement prohibited or rendered unenforceable by Applicable Law shall be ineffective only to the extent of such prohibition or unenforceability without invalidating the remaining provisions of this Agreement. In such event, the remainder of this Agreement will remain valid and enforceable. Upon such determination that any term or other provision is prohibited or rendered unenforceable, the Parties shall negotiate in good faith to modify this Agreement so as to effect the original intent of the Parties as closely as possible in an acceptable manner to the end that transactions contemplated under this Agreement are fulfilled to the greatest extent possible.

24.8 This Agreement may be amended only by an instrument in writing executed by the Parties that expressly refers to this Agreement and states that it is an amendment hereto. This Agreement constitutes the entire agreement between the Parties and supersedes all other prior agreements and understandings, oral and written, between the Parties with respect to the subject matter hereof. No amendment, modification or waiver of any provision of this Agreement will be valid unless set forth in a written instrument signed by both Parties. If a Party becomes aware of a conflict between this Agreement and any other agreement in place between such Party and any Person, it will promptly notify such other Party, and the Parties will work in good faith to resolve the conflict.

24.9 Nothing contained in this Agreement shall be deemed or construed by the Parties, or by any third party, as creating the relationship of principal and agent, or of partnership or of joint venture, between the Parties. Neither Party shall enter into any contract, agreement or other commitment, or incur any obligation or liability, in the name of or otherwise on behalf of the other Party. This Agreement shall create no rights, responsibilities and/or obligations in, to or from any Persons other than Tacoma and City.

24.10 Sections 13,14,16,17,18, 20, 24.5 and all other terms and conditions of this Agreement that must be reasonably construed to survive the expiration or termination of this Agreement in order to give full force and effect to the intent of the Parties as set forth herein shall survive the expiration or termination of this Agreement, regardless of whether such survival is expressly specified herein.

24.11 This Agreement may be executed in several counterparts, each of which shall be deemed to be an original and all of which together shall constitute one and the same instrument.

24.12 This Agreement has been negotiated on an arm's-length basis by the Parties and their respective counsel and shall be interpreted fairly in accordance with its terms and without any strict construction in favor of or against either Party.

IN WITNESS WHEREOF, the Parties have duly executed this Agreement as of the Effective Date.

Dated this 10th day of November, 2014.

City of Tacoma

Department of Public Utilities
Water Division

Linda A. McCrea
Water Superintendent

City of Auburn

Nancy Backus
Mayor

Approved as to form:

Chief Deputy City Attorney

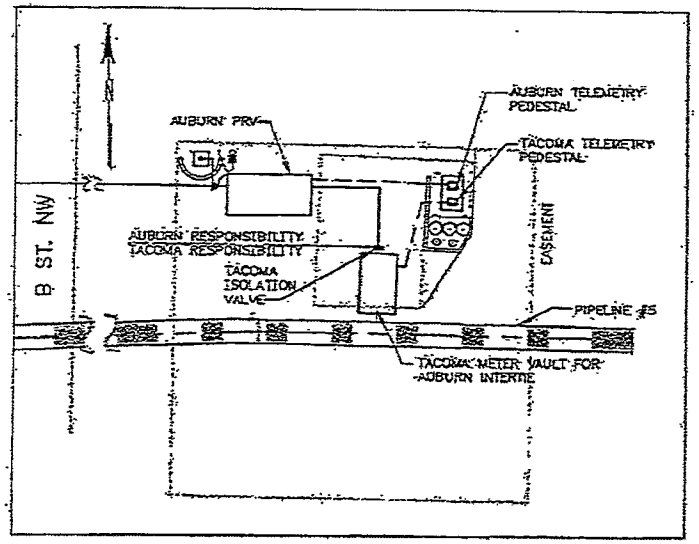
Approved as to form:

EXHIBIT "A"

WHOLESALE SERVICE CONNECTIONS SPECIFICATIONS

Intertie Location	Connection	Meter	Static Elevation (ft)		Operating Pressure (psi)		Flow Capacity (gpm)	Flow Capacity (mgd)
	Size	Size	Tacoma	Auburn	Tacoma	Auburn	To/From Utility	To/From Utility
Tacoma Water Pipeline 5 at 3200 "B" St. NW Auburn, WA (STA 765+05)	12"	6"	894 (NGVD29)	253 (NAVD 88)	309	80	2,200	3.2
Tacoma Water Pipeline 5 at 29600 132nd Ave SE, Kent, WA (STA 933+00)	12"	8"	894 (NGVD29)	579 (NAVD 88)	173	80	4,500 (PRV 2,200)	6.5 (PRV 3.2)

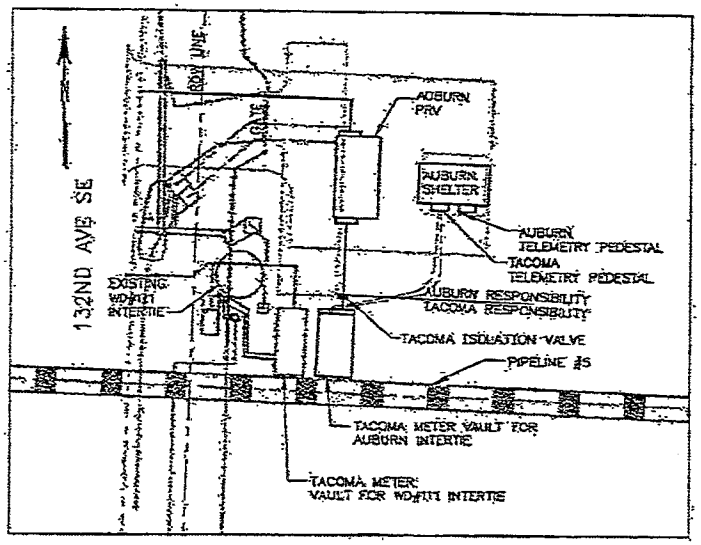
Note: For connection specific elevations remember the NGVD29 (Tacoma) Datum is 3.47 feet higher than the NAVD88 (Auburn) Datum.



STA 765+05

3200 B ST NW, AUBURN, WA

SCALE: N.T.S.



STA 933+00

29600 132nd AVE. SE, KENT, WA

SCALE: N.T.S.

Exhibit B

Dispute Resolution Procedures

The following procedures shall govern the resolution of any dispute arising under the Wholesale Water Supply Agreement dated [illegible] (the "Agreement") between the Parties that cannot be resolved by good-faith negotiations between the Parties, unless the Parties mutually agree to use different procedures to resolve a specific dispute by executing a document setting forth such different procedures. The Parties agree that these dispute resolution procedures are intended to be used in conjunction with and governed by Chapter 4.48 RCW, and both Parties hereby waive their right to a trial by jury for any dispute arising under the Agreement.

1. The Party that believes that continued good-faith negotiations will not produce a resolution of the issue or issues that are the subject of such negotiations will notify the other Party in writing that it is invoking the dispute resolution procedures of this Exhibit B.

2. Within twenty (20) days of the date of such notice invoking the dispute resolution procedures of this Exhibit B, the Parties shall meet and select an individual to recommend to the court as referee of the dispute resolution process in accordance with RCW 4.48.020. The Parties shall select an individual who is qualified as a juror as provided by statute, is competent as a juror between the Parties, is a duly admitted and practicing attorney, and has experience presiding over civil litigation of contract disputes. The Parties will use the following procedure to select the recommended referee:

   2.1 Each Party will make a list of three individuals that are qualified pursuant to Paragraph 2 to serve as referee and exchange such list with the other Party. If the Parties agree upon a person from either list, or if both Parties list the same person, that person will be the recommended referee.

   2.2 If the Parties are unable to agree upon a referee after exchanging their respective lists, they will make a joint list setting forth all six candidates from the two lists.

3. Upon the selection of the recommended referee, or the creation of the joint list pursuant to Subparagraph 2.2 of this Exhibit B, the Party that invoked the dispute resolution procedures shall file a complaint, in the superior court of the appropriate county as set forth in Section 24.5 of the Agreement, setting forth the issue or issues in dispute, and the other Party shall file an answer to such complaint. Not later than twenty (20) days after the filing of the answer, the Parties shall jointly file a motion, with the Agreement (including this Exhibit B) attached, with the court requesting an order of reference that:

3.1 Directs that the issue or issues raised by the complaint and answer be resolved pursuant to Chapter 4.48 RCW by reference to a referee;

3.2 Appoints, pursuant to RCW 4.48.020, either the recommended referee selected by the Parties pursuant to Subparagraph 2.1 of this Exhibit B, or a single referee from the joint list prepared pursuant to Subparagraph 2.2 of this Exhibit B; and

3.3 Directs the referee to conduct the proceeding in accordance with the procedures set out in Paragraphs 4-10 of this Exhibit B.

4. In accordance with RCW 4.48.060, the Parties hereby waive their rights to discovery and cross-examination, and direct that the proceeding be conducted in the same manner as a motion for summary judgment as follows:

4.1 The Parties shall present their respective positions by written briefs and affidavits, and without testimonial evidence or cross-examination;

4.2 Oral argument will be conducted before the referee; and

4.3 The burdens of proof and persuasion that pertain in a civil trial shall apply, rather than those that apply to motions for summary judgment.

5. After appointment of the referee, the Parties shall endeavor in good faith to prepare for the referee a joint statement of facts and the questions to be decided in the proceeding. In the absence of an agreed-to joint statement of facts and questions to be decided, each Party may include its own statement of facts and questions to be decided in its initial brief.

6. Within ninety (90) days after the submission of the joint statement of facts and questions to be decided, or within ninety (90) days after the appointment of the referee if the Parties cannot agree to a joint submission of facts and questions to be decided, each Party shall submit to the referee a one-page statement of the proposed resolution and/or award it seeks for each issue in dispute, and its initial brief. The statement and initial brief (excluding any attached affidavits or evidentiary documents) shall not exceed fifty (50) 8½" x 11" double-spaced pages with 1½-inch margins and 12-point typeface. The statement and initial brief shall be filed simultaneously by e-mail and regular mail with the referee and opposing Party.

7. Within thirty (30) days after the date the Parties filed their initial briefs, the Parties shall file their respective reply briefs with the referee and the opposing Party. The reply briefs (excluding any attached affidavits or evidentiary documents) shall not exceed twenty-five (25) 8½" x 11" double-spaced pages with 1½-inch margins and 12-point typeface. The reply briefs shall be filed simultaneously by e-mail and regular mail with the referee and opposing Party.

8. After the reply briefs have been filed, if the referee deems that additional responses are needed, then the referee may request that the Parties file a supplemental brief only as to those specific matters or questions raised by the referee. Such supplemental briefs shall be limited to fifteen (15) 8½" x 11" double-spaced pages with 1½-inch margins and 12-point typeface, and shall be filed at such time requested by the referee. Any such supplemental briefs shall be filed simultaneously by e-mail and regular mail upon the referee and opposing Party.

9. When all briefs have been filed, the referee will schedule oral argument on the issue or issues in dispute.

10. After the completion of oral argument, the referee will prepare his or her proposed report in accordance with RCW 4.48.70 and shall provide a copy of the proposed report to the Parties, who shall have the right to suggest changes and modifications to the proposed report, all in accordance with RCW 4.48.110. The referee will file the final report with the court within twenty (20) days of the completion of the process under RCW 4.48.110.

11. Either Party may move the court to modify or set aside, in whole or in part, the final report of the referee. If the court modifies or sets aside, in whole or in part, the final report of the referee and makes another reference, then this Exhibit B shall also apply to such reference.

12. Each Party shall be responsible for its own costs of the dispute resolution process (including any judicial proceedings), and the Parties shall each pay one-half of the other costs of the dispute resolution proceeding, including the fees of the referee. The fees of the referee shall be established in accordance with RCW 4.48.100.

RESOLUTION NO. 5153

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE THE INTERLOCAL AGREEMENT BETWEEN THE CITY OF AUBURN AND THE MUCKLESHOOT INDIAN TRIBE FOR THE ALLOTMENT M-TWO SUBDIVISION AND CASINO PREMISES UTILITY ISOLATION

WHEREAS, the City of Auburn and the Muckleshoot Indian tribe (MIT) have worked together to provide utility services for those portions of the Muckleshoot Reservation property located within the City, having heretofore entered into master development agreements and utility easement agreements; and

WHEREAS, MIT desires to develop a certain portion of its property for a residential subdivision and wishes to utilize a portion of City property for access and storm drainage utilities for the MIT Allotment M2 Subdivision; and

WHEREAS, the City of Auburn desires to complete premise isolation improvements at the MIT Casino Property for the protection of the City's potable water system; and

WHEREAS, the City of Auburn and MIT have negotiated terms and conditions of an interlocal agreement with respect to the exchange of property rights and the completion of improvements by both parties to the benefit of both the City and MIT, which terms and conditions are acceptable to both parties.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. That the Mayor is hereby authorized to execute an Interlocal Agreement between the City and the Muckleshoot Indian Tribe for the Allotment M-2

Subdivision and Casino Premises Utility Isolation which agreement shall be in substantial conformity with the agreement attached hereto as Exhibit 1 and incorporated herein by this reference.

Section 2. That the Mayor is authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 6th day of July, 2015.

CITY OF AUBURN

Nancy Backus

NANCY BACKUS, MAYOR

ATTEST:

Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

CITY OF AUBURN – MUCKLESHOOT INDIAN TRIBE
INTERLOCAL AGREEMENT FOR THE ALLOTMENT M-2 SUBDIVISION AND CASINO PREMISES UTILITY ISOLATION

THIS INTERLOCAL AGREEMENT made and entered into, pursuant to the Interlocal Cooperation Act, Chapter 39.34 of the Revised Code of Washington, The Constitution of the Muckleshoot Tribe of Indians, and 25 U.S.C. § 81, on the 17th day of July, 2015, by and between the CITY OF AUBURN, a municipal corporation of the State of Washington (the "City"), and the Muckleshoot Indian Tribe, a sovereign jurisdiction located within the State of Washington ("MIT"), (together, the "Parties")

RECITALS:

1. MIT intends to develop a portion of parcel of property which is identified as King County Tax Parcel Number 2021059001, such Real Property as legally described on Exhibit A, located on the northeast corner of R Street SE and Old Howard Road (the "Parcel") within the boundaries of the MIT reservation boundary and known as the Parcel B Allotment M-2; and specifically, the MIT is developing the southwest corner of the Parcel B Allotment M-2 with a residential plat (known as "Allotment M-2 Subdivision"); and

2. The parties agree that the City shall transfer ownership of a triangular portion of an adjacent parcel of City-owned land which is identified as King County Tax Parcel No. 2021059019 ("Parcel 2021059019)" Real Property as legally described on Exhibit B and the triangular portion (approximately 5,165 square feet) which is necessary for access to be transferred as depicted on Exhibit "C", to MIT in exchange for MIT constructing for the City a storm drainage infiltration facility and storm line; and

3. The City requires premise isolation on large commercial water systems such as the MIT Casino Facility ("Casino"), which requires constructing two master meters and premise isolation (backflow prevention) systems on Casino Property; and

4. The Parties previously entered into a Water or Sanitary Sewer Service Line Agreement ("Service Line Agreement") dated May 14, 2004 (Recording No. 20040603002585), attached as Exhibit "D", for the Casino Property (which is legally described on Exhibit A of the Service Line Agreement), which provided the City with the right to access, inspect, construct, operate, maintain, repair, replace and enlarge water or sanitary sewer lines within Casino Property; and

5. The Parties agree that it is in their mutual interest to grant each other the necessary rights and responsibilities to do all other things agreed to be necessary to implement this Agreement.

NOW THEREFORE in consideration of their mutual covenants, conditions and promises, **THE PARTIES HERETO DO HEREBY AGREE** as follows:

The Parties shall consult with each other on a government-to-government basis in order to achieve their mutual goals and implement this Agreement.

A. CITY'S RESPONSIBILITIES

1. Short-plat the northwest portion of the adjacent City-owned parcel (Parcel No. 2021059019), the approximate location and extent of the triangular portion to be short-platted is depicted on Exhibit "C". The City shall record the short plat, then transfer ownership of the newly-created triangular parcel to MIT in exchange for MIT's construction of the storm drainage facilities described in Paragraphs A.4 and B.5 hereinafter.

2. Construct, at no cost to MIT, two (2) premise isolation facilities including master meters, backflow assemblies, piping, and disconnection of existing piping to adjacent parcels north and east of the Casino Property, as the City determines, is necessary to supply the Casino with domestic water and fire flows. The City will provide final design documents of the two (2) premise isolation facilities and a demo plan for disconnection of existing piping to MIT prior to construction. City understands that the revenues for MIT are contingent upon the access and service quality at the Casino. For that reason, City will agree to require their contractors to complete construction activities between the months of June and August, and between the hours of 5 a.m. and 2 p.m. for the work to occur within the Casino Property to provide the least disruptive customer access and water service interruption.. Contractors will be required to use equipment and implement a demo plan that does not interfere with ingress and egress of delivery trucks in the driveway located at the rear of the Casino. Upon completion of construction, the City shall convey all City-owned water system infrastructure behind the master meter vault (i.e., on the Casino side of the vault) to MIT. This shall include the new backflow prevention equipment, piping, hydrants, and other appurtenances. At the same time, the City shall convey all City-owned sewer system infrastructure that is located within the Casino property to MIT.

3. The City represents and warrants that the new premise isolation facilities once installed by or on behalf of the City shall not unreasonably adversely impact the Casino.

4. The City shall allow MIT access to construct a storm water infiltration facility, a storm drain line, and relocate the existing chain-link fence on City property (Parcel 2021059019) just south of the southern MIT property line separating the MIT (Parcel 2021059001) and City properties through a temporary construction and access easement. The system shall intercept storm water drainage located near the northeast corner of the City's property, be linked to a MIT storm infiltration system by means of a raised berm and connection pipe(s), and shall divert

overflow stormwater through a new pipe to an existing City storm line in Howard Road SE. City shall apply for, obtain and pay for any permits required to construct the storm drain system on City property if such permits are required beyond the development permit MIT is obtaining from the City for its Allotment M-2 Subdivision. City shall be entitled to inspect the work within City properties to insure it meets the City's requirements. MIT access to the City's properties shall be restricted to normal working hours on normal business days.

B. MIT RESPONSIBILITIES

1. Grant permits to the City of Auburn and right of entry agreements as necessary to allow the City to construct, operate and maintain two (2) Master Water Meter Assemblies (Master Meter Assemblies) and their associated piping from the Right-of-Way to the Master Meter Assemblies for the Casino on the Casino Property. MIT shall honor the Water or Sanitary Sewer Service Line Agreement, Reference Recording No. 20040603002585 and attached hereto as Exhibit "D", which provides access to the Master Meter Assemblies wherever located or relocated on the Casino Property for as long as the City provides water service to the Casino Property. The approximate location and extent of the Master Meter Assemblies is shown in Exhibit "E". Should MIT determine the need to relocate any part of the Master Meter Assemblies, MIT shall provide the City no less than 90 days' notice and the Parties shall meet to discuss and agree to the optimal new location. Should MIT's construction plan for the Casino Property include building or installing an obstruction or impediment including but not limited to fences, rockeries, or trees within ten (10) feet of the Master Meter Assemblies, the parties shall meet to determine whether relocation of the assemblies is necessary to maintain access to the meters. Any such reasonable relocation costs of the Master Meter Assemblies shall be paid by MIT.

2. MIT shall own and maintain the Casino Property water system infrastructure behind (downstream of) the City Master Meter Assemblies as described herein including required annual testing and reporting to the City for the two backflow assemblies required for premise isolation.

3. MIT shall own and maintain the Casino Property sewer system infrastructure located within the Casino Property.

4. Execute necessary utility access easement documents for the City-owned utilities serving the Allotment M-2 Subdivision by the MIT. The City shall record the approved easements.

5. MIT shall design and construct at its own expense a storm water infiltration facility, drainage line, and relocation of the existing chain-link fence on City property (Parcel 2021059019) just to the south of the southern MIT property line separating MIT (Parcel 2021059001) and City properties. The system shall intercept storm water drainage located near

the northeast corner of the City's property, be linked to a MIT storm infiltration system by means of a raised berm and connection pipe(s) and shall divert overflow stormwater through a new pipe to an existing City storm line in Howard Road SE. MIT shall access the site and secure it when they or their agents leave the site. MIT shall complete the work and upon completion of all work leave the site in a condition acceptable to the City.

6. Provide the City with an electronic AutoCAD file of the proposed subdivision and access road that references city survey monuments to facilitate plotting the proposed easement and associated setbacks on the existing city water property.

7. MIT shall complete the necessary legal descriptions and drawings in paper, mylar and electronic formats for the City's use in creating the short plat on Tax Parcel 2021059019.

C. INSURANCE

1. Throughout the period of performance of this Agreement for all construction related activities, the Parties or their respective Contractors shall carry and maintain commercial general liability insurance with limits of not less than one million dollars ($1,000,000.00) per occurrence for bodily injury, including death, and one million dollars ($1,000,000.00) per occurrence for property damage or, alternatively, one million dollars ($1,000,000.00) per occurrence combined single limit for bodily injury and property damage combined, and two million dollars ($2,000,000.00) general aggregate.

2. This insurance shall be in a form and with an insurer acceptable to the City's insurance carrier and shall contain coverage for all premises and operation, broad form property damage, contractual liability (including without limitation that specifically mentioned in the Agreement, and products and contemplated operations insurance. In addition, the insurance for construction work performed by the City or its Contractor shall be in the form acceptable to MIT and consistent with the City's requirements.

3. This insurance shall provide coverage for explosion, collapse, underground excavation, and lateral support.

4. Any policy or policies that provide the insurance required in this Agreement shall name the other Party as an additional insured on a separate endorsement, to the extent of the contractual obligations set forth here. If the Contractor, as the Agent of MIT, provides the required insurance, then such insurance shall name both the MIT and the City as additional insured.

5. Before the beginning of any construction work required under this Agreement, each Party shall provide the other Party for review and approval, a certificate of insurance reflecting

full compliance with the requirements set forth in this Agreement. The certificate shall be kept current and in compliance throughout the construction work until final acceptance by the other Party and for two years thereafter for products and contemplated operations liability, and shall provide for 30 days advance written notice to the City if cancellation or material change adversely affect the interests of the other Party.

6. Throughout the period of performance of the Agreement, MIT shall cover or maintain insurance in compliance with the applicable worker's compensation laws, with respect to all of its respective employees working on or about the facility site, regardless of whether such coverage or insurance is mandatory or merely elective under the law.

7. For the purposes hereof, the period of performance of this Agreement includes and refers to the time during which any party hereto is obligated to perform tasks required herein.

D. INDEMNIFICATION

1. MIT shall indemnify and hold the City and its agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, losses, damages, or costs, of whatsoever kind or nature, brought against the City arising out of, in connection with, or incident to the execution of this Agreement and/or the MIT's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of the City, its agents, employees, and/or officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of the MIT; and provided further, that nothing herein shall require the MIT to hold harmless or defend the City, its agents, employees and/or officers from any claims arising from the sole negligence of the City, its agents, employees, and/or officers. No liability shall attach to the City by reason of entering into this Agreement except as expressly provided herein.

2. The City shall indemnify and hold MIT and its agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, losses, damages, or costs, of whatsoever kind or nature, brought against MIT arising out of, in connection with, or incident to the execution of this Agreement and/or the City's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of MIT, its agents, employees, and/or officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of the City; and provided further, that nothing herein shall require the City to hold harmless or defend MIT, its agents, employees and/or officers from any claims arising from the sole negligence of MIT, its agents, employees, and/or officers. No liability shall attach to MIT by reason of entering into this Agreement except as expressly provided herein.

E. WAIVER OF SUBROGATION

1. MIT and the City hereby mutually release each other from liability and waive all right of recovery against each other for any loss caused by fire or other perils which can be insured against under fire insurance contracts including any extended coverage endorsements thereto which are customarily available from time to time in the State of Washington, provided, that this paragraph shall be inapplicable to the extent that it would have the effect of invalidating any insurance coverage of MIT or the City.

F. WAIVER OF SOVEREIGN IMMUNITY

1. MIT agrees to a limited waiver of sovereign immunity. MIT does hereby expressly waive its right to sovereign immunity and its right to assert sovereign immunity defense in the courts of the State of Washington for the limited purpose of any legal claim or complaint for the interpretation and/or enforcement of this Agreement, and/or for any complaints or counterclaims for monetary damages or equitable relief for any breach of this Agreement, and/or for the enforcement of any final judgment by any court of the State of Washington regarding such matters. This limited waiver of immunity is solely for the benefit of the City of Auburn for the purposes stated herein, and the Tribe does not waive its sovereign immunity as to any party other than the City. The Tribe agrees not to invoke sovereign immunity as a defense up to the limits of the insurance policy in connection with the enforcement of the rights of the City.

2. MIT consents to the jurisdiction of the Washington State Superior Court in the event that either Party deems it necessary to institute legal action or proceedings to enforce any right or obligation under this Agreement; the Parties further agree that any such action or proceedings shall be brought in the superior court situated in King County, Washington.

G. COMPLIANCE WITH REGULATIONS AND LAWS

1. The parties shall comply with all applicable rules and regulations pertaining to them in connection with the matters covered herein.

H. ASSIGNMENT

1. The parties shall not assign this Agreement or any interest, obligation or duty therein without the express written consent of the other party.

I. ATTORNEYS' FEES

1. If either party shall be required to bring any action to enforce any provision of this Agreement, or shall be required to defend any action brought by the other party with respect to this Agreement, and in the further event that one party shall substantially prevail in such action, the losing party shall, in addition to all other payments required therein, pay all of the prevailing party's reasonable costs in connection with such action, including such sums as the court or courts may adjudge reasonable as attorney's fees in the trial court and in any appellate courts.

J. NOTICES

1. All notices and payments hereunder may be delivered or mailed. If mailed, they shall be sent to the following respective addresses:

To MIT (Notice):
Muckleshoot Indian Tribe
39015 172nd Avenue SE
Auburn, WA 98092
Attn: Office of the Tribal Attoney
Phone: 253-939-3311

To MIT (Payment):
Muckleshoot Indian Tribe
39015 172nd Avenue SE
Auburn, WA 98092
Attn: Finance Department Mgr.
Phone: 253-939-3311

To the City:
City of Auburn
25 West Main
Auburn, WA 98001-4998
Attn: Ingrid Gaub, City Engineer
Phone:(253) 931-3010
FAX (253) 931-3053

or to such other respective addresses as either party hereto may hereafter from time to time designate in writing. All notices and payments mailed by regular post (including first class) shall be deemed to have been given on the second business day following the date of mailing, if properly mailed and addressed. Notices and payments sent by certified or registered mail shall be deemed to have been given on the day next following the date of mailing, if properly mailed and addressed.

For all types of mail, the postmark affixed by the United States Postal Service shall be conclusive evidence of the date of mailing.

K. MISCELLANEOUS

1. All of the covenants, conditions and agreements in this Agreement shall extend to and bind the legal successors and assigns of the parties hereto.

2. The captions in this Agreement are for convenience only and do not in any way limit or amplify the provisions of this Agreement.

3. The duration of this Agreement shall be perpetual.

4. No separate legal entity is created by this Agreement.

5. The funding of the respective obligations of the parties shall be out of the respective general funds/current expenses of the parties, except as otherwise specifically provided.

6. The performances of the duties of the parties provided hereby shall be done in accordance with standard operating procedures and customary practices of the parties.

7. The oversight and administration of the Agreement shall be by the respective named representatives identified in Paragraph J hereof, or their designees.

8. If any term or provision of this Agreement or the application thereof to any person or circumstance shall, to any extent, be held to be invalid or unenforceable by a final decision of any court having jurisdiction on the matter, the remainder of this Agreement or the application of such term or provision to persons or circumstances other than those as to which it is held invalid or unenforceable shall not be affected thereby and shall continue in full force and effect, unless such court determines that such invalidity or unenforceability materially interferes with or defeats the purposes hereof, at which time the City shall have the right to terminate the Agreement.

9. This Agreement constitutes the entire agreement between the parties. There are no terms, obligations, covenants or conditions other than those contained herein. No modifications or amendments of this Agreement shall be valid or effective unless evidenced by an agreement in writing signed by both parties.

10. Copies of this Agreement shall be filed with the King County Recorder's Office; the Secretary of State of the State of Washington; and the respective Clerks of the parties hereto.

IN WITNESS WHEREOF the parties hereto have executed this Agreement as of the day and year first above written.

MUCKLESHOOT INDIAN TRIBE

By: _____

Its: Tribal Council Chairperson

CITY OF AUBURN

Nancy Backus

Nancy Backus, Mayor

Attest: _____

City Clerk

Approved as to form:

_____, Asst. City Atty.

Auburn City Attorney

STATE OF WASHINGTON)
) ss.
COUNTY OF King)

ON THIS 17th day of July, 2015, before me, personally appeared Virginia Cross, to me known to be the Chairperson of the Muckleshoot Indian Tribe, the Tribe that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said Tribal Community for the uses and purposes therein mentioned, and on oath stated that he/she was authorized to execute said instrument.

WITNESS my hand and official seal hereto the day and year in this certificate first above written.

DERYL JUNE BROWN-ARCHER NOTARY PUBLIC COMMISSION EXPIRES 1-19-18 STATE OF WASHINGTON

Deryl June Brown-Archer
NOTARY PUBLIC in and for the State of Washington, residing at Federal Way, WA
My Commission Expires: 1/19/18

STATE OF WASHINGTON)
) ss.
COUNTY OF _____)

ON THIS 22nd day of July, 2015 before me, personally appeared Nancy Backus and Danielle Daskam to me known to be the Mayor and City Clerk of the CITY OF AUBURN, a municipal corporation, the corporation that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute said instrument.

WITNESS my hand and official seal hereto the day and year in this certificate first above written.

SHAWN K. CAMPBELL NOTARY PUBLIC COMMISSION EXPIRES 4-08-16 STATE OF WASHINGTON

Shawn Campbell
NOTARY PUBLIC in and for the State of Washington, residing at Auburn, WA
My Commission Expires: 4/09/2016

EXHIBIT A
LEGAL DESCRIPTION OF MIT REAL PROPERTY

TAX PARCEL 2021059001 (Allotment M-2)

United States Department of the Interior
Bureau of Indian Affairs
Title Status Report

Report Certification Time and Date: 08/04/2014 11:51:13 AM
Requestor: MHENSEL Date/Time: 08/04/2014 15:38:46

Land Legal Description

Land Area	Land Area Name	Tract Number	LTRO	Region	Agency	Resources
109	MUCKLESHOOT	2	PORTLAND, OR	NORTHWEST REGIONAL OFFICE	PUGET SOUND AGENCY	Both

Section	Township	Range	State	County	Meridian	Legal Description	Acres
20	021.00N	005.00E	WASHINGTON	KING	Willamette		76.840

METES AND BOUNDS: GOVERNMENT LOT 1 AND GOVERNMENT LOT 2 AND THE NE¼ SW¼ OF SECTION 20, T.21N., R.5E., WILLAMETTE MERIDIAN, KING COUNTY, WASHINGTON, EXCEPT THE WEST 30.00 FEET OF SAID GOVERNMENT LOTS 1 AND 2, CONTAINING, AFTER SAID EXCEPTION, 76.84 ACRES, MORE OR LESS.

TOTAL TRACT ACRES: 76.840

Title Status

Tract 109 2 is held by the United States of America in trust for the land owner(s) with trust interests and/or by the land owner(s) with restricted interests and/or fee simple interests, as listed in Appendix "A" attached to and incorporated in this Title Status Report.

The title to Tract 109 2 is current, complete, correct, and without defect. Ownership is in unity and interests are owned in the following title status: trust, fee, restricted.

The tract ownership is encumbered by the title documents as listed on Appendix "B" attached to and incorporated in this Title Status Report.

The following notes apply to this land title:

Fee (Other) THIS REPORT DOES NOT CERTIFY THE OWNERSHIP OF FEE SIMPLE OWNER INTERESTS AND MAKES NO CLAIM OR REPRESENTATION CONCERNING CURRENT OWNERSHIP OF SAID INTERESTS.

This report does not cover encroachments nor any other rights that might be disclosed by a physical inspection of the premises, nor questions of location or boundary that an accurate survey may disclose. This Report also does not cover encumbrances, including but not limited to irrigation charges, unpaid claims, not filed or recorded in this Land Titles and Records Office. This report does not state the current ownership of the interests owned in fee simple but states the ownership at the time the interest ceased to be held in trust or restricted ownership status.

This Title Status Report is a true and correct report of the status of title to the real estate described herein according to the official land records recorded and maintained in this office.

/s/ Michele Hensel
Manager

United States Department of the Interior
Bureau of Indian Affairs
Title Status Report

Report Certification Time and Date: 01/21/2015 09:19:58 AM
Requestor: MHENSEL Date/Time: 02/18/2015 10:30:43

Land Legal Description

Land Area	Land Area Name	Tract Number	LTRO	Region	Agency	Resources
109	MUCKLESHOOT	2 -A	PORTLAND, OR	NORTHWEST REGIONAL OFFICE	PUGET SOUND AGENCY	Both

Section	Township	Range	State	County	Meridian	Legal Description	Acres
20	021.00N	005.00E	WASHINGTON	KING	Willamette		.910

METES AND BOUNDS: THE WEST 30.00 FEET OF GOVERNMENT LOT 1 AND GOVERNMENT LOT 2 OF SECTION 20, T. 21 N., R. 5 E., WILLAMETTE MERIDIAN, KING COUNTY, WASHINGTON, CONTAINING 0.91 ACRES, MORE OR LESS.

TOTAL TRACT ACRES: .910

Title Status

Tract 109 2 -A is held by the United States of America in trust for the land owner(s) with trust interests and/or by the land owner(s) with restricted interests and/or fee simple interests, as listed in Appendix "A" attached to and incorporated in this Title Status Report.

The title to Tract 109 2 -A is current, complete, correct, and without defect. Ownership is in unity and interests are owned in the following title status: trust, restricted.

The tract ownership is encumbered by the title documents as listed on Appendix "B" attached to and incorporated in this Title Status Report.

No Tract Notes or Coded Remarks for this tract.

This report does not cover encroachments nor any other rights that might be disclosed by a physical inspection of the premises, nor questions of location or boundary that an accurate survey may disclose. This Report also does not cover encumbrances, including but not limited to irrigation charges, unpaid claims, not filed or recorded in this Land Titles and Records Office. This report does not state the current ownership of the interests owned in fee simple but states the ownership at the time the interest ceased to be held in trust or restricted ownership status.

This Title Status Report is a true and correct report of the status of title to the real estate described herein according to the official land records recorded and maintained in this office.

EXHIBIT B
LEGAL DESCRIPTION OF CITY OF AUBURN REAL PROPERTY

TAX PARCEL 2021059019

THAT PORTION OF THE NORTH HALF OF THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 20, TOWNSHIP 21 NORTH, RANGE 5 EAST, LYING AND SITTING ON THE NORTHEASTERLY SIDE OF THAT PORTION OF AUBURN-ENUMCLAW ROAD RUNNING IN A NORTHWESTERLY AND SOUTHEASTERLY DIRECT THROUGH THE SAME, RECORDS OF KING COUNTY, WASHINGTON.

EXHIBIT C
DEPICTION OF PROPERTY TRANSFER

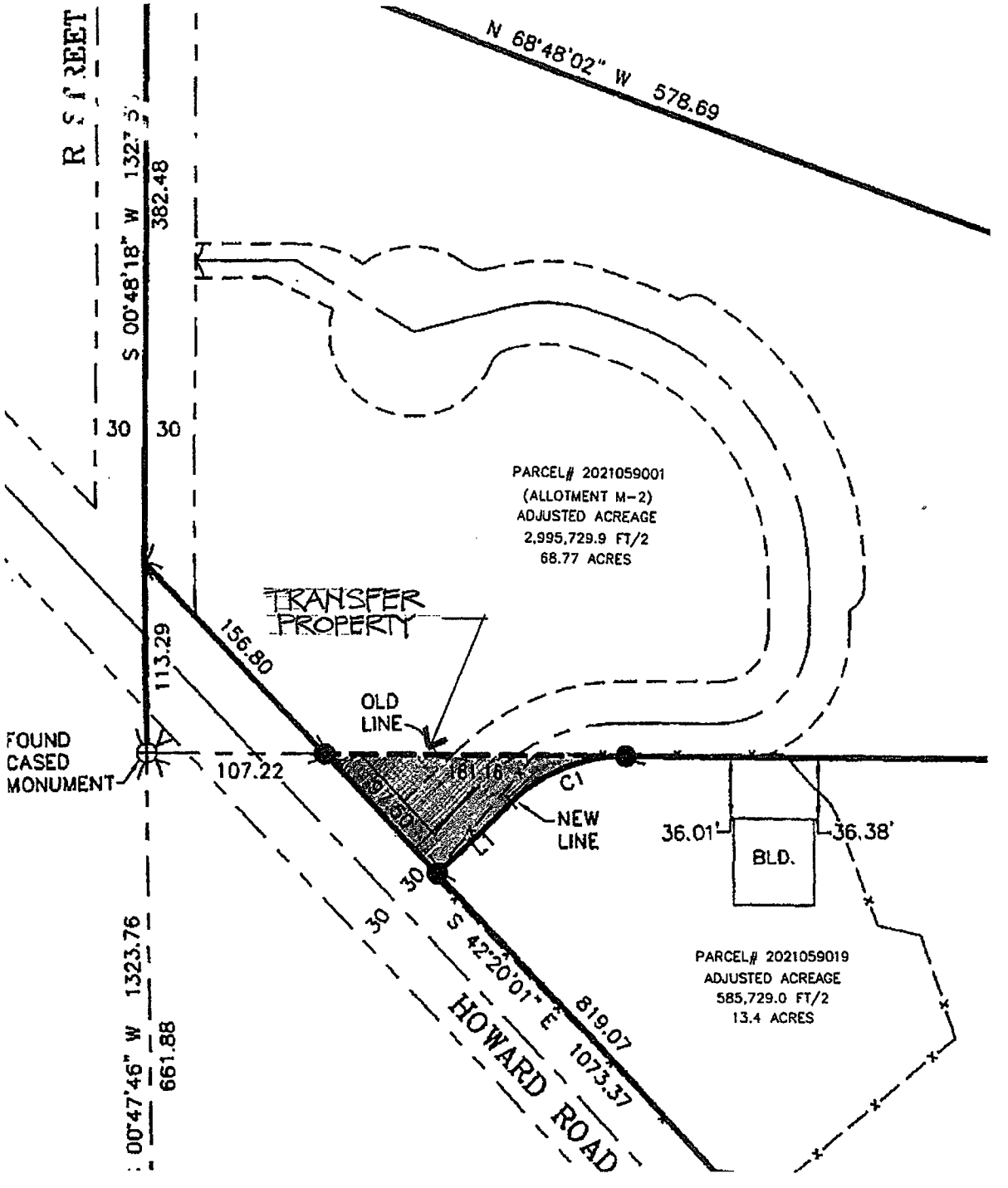


EXHIBIT D



RETURN ADDRESS
City of Auburn
ATTN
25 West Main Street
Auburn, WA 98001-4998

WATER OR SANITARY SEWER SERVICE LINE AGREEMENT

REFERENCE #	
GRANTOR	THE MUCKLESHOOT INDIAN TRIBE
GRANTEE:	CITY OF AUBURN
SHORT LEGAL	SE 1/4 Sec 20, Twp. 21 N, Rg 5E, W.M
ASSESSOR'S PROPERTY TAX PARCELS	202105-9044, 202105-9045 AND 202105-9059

7/25 PNWT
W8073.12

For and in consideration of One Dollar ($1 00) and other valuable consideration, the receipt of which is hereby acknowledged, THE MUCKLESHOOT INDIAN TRIBE ("Grantor" herein), hereby grants and conveys to the CITY OF AUBURN, a Washington municipality ("Grantee" herein), for the purposes hereinafter set forth a water or sanitary sewer line right-of-way over, across and under the following described real property (the "Property" herein) in KING COUNTY, Washington

Exhibit "A" attached hereto and by this reference made a part heteof

Except as may be otherwise set forth herein Grantee's rights shall be exercised upon that portion of the Property (the "Right-of-Way" herein) described as follows

A Right-of-Way fifteen (15) feet in width having seven and one-half (7 5) feet of such width on each side of a centerline described as follows

The Centerline of Grantee's facilities as constructed or to be constructed extended or relocated, lying within the above described Property as more particularly depicted on the document marked as Exhibit"B" attached hereto and by this reference made a part hereof

1 **Purpose.** Grantee shall have the right to access, inspect, construct, operate, maintain, repair, replace and enlarge one or more water distribution lines or sanitary sewer lines over

and/or under the Right-of-Way together with all necessary or convenient appurtenances thereto, which may include but are not limited to the following

For water distribution lines Backflow assemblies, water mains, hydrants, meters and meter boxes, blowoff assemblies and appurtenances

For sanitary sewers manholes, cleanouts and sewer mains

Following the initial construction of its facilities, Grantee may from time to time construct such additional lines and other facilities as it may require Grantee shall have the right to place any type of driving surface within said Right-of-Way not inconsistent with Grantor's use of the Property

Grantor additionally grants to Grantee the use of such additional area immediately adjacent to the Right-of-Way area as shall be required for the construction, reconstruction, maintenance and operation of said water or sewer facilities The use of such additional area shall be held to a reasonable minimum and in the case of any damage or disruption of the premises, the Grantee shall return the Property to a condition as reasonably comparable to its condition as it existed immediately before entry and/or work was made thereon by the Grantee or its agents

2 **Access.** Grantee shall have the right of access to the Right-of-Way over and across the Property to enable Grantee to exercise its rights hereunder, provided, that Grantee shall compensate Grantor for any damage to the Property caused by the exercise of the rights granted herein Grantor shall not in any way block, restrict or impede access and egress to or from said Right-of-Way, and/or in any way block, restrict or impede full use of the real property within the above-described Right-of-Way by the Grantee for the above-described purposes

3 **Grantor's Use of Right-of-Way.** Grantor reserves the right to use the Right-of-Way for any purpose not inconsistent with the rights herein granted, provided, that Grantor shall not take actions that may adversely affect the integrity of the water facilities located within the Right-of-Way, such as excavation or filling, without first notifying Grantee of the proposed activity Grantee shall have the right to inspect any activities of Grantor that may adversely affect the water facilities, and take appropriate action to protect the water facilities

4 **Indemnity.** By accepting and recording this service line agreement, Grantee agrees to indemnify and hold harmless Grantor from any and all claims for injuries and/or damages suffered by any person, which may be caused by the Grantee's exercise of the rights herein granted, provided, that Grantee shall not be responsible to Grantor for any injuries and/or damages to any person caused by acts or omission of Grantor

5. **Abandonment or Termination.** The rights herein granted shall continue until such time as Grantee ceases to use the Right-of-Way In the event that Grantor desires to terminate this service line agreement, the Grantor shall provide Grantee with funds sufficient to install any necessary backflow preventor or preventors on Grantee's waterlines located outside the subject property that connect to the subject property

6. **Cooperation and Coordination.** Grantor and Grantee agree to cooperate in the implementation of this service line agreement and to coordinate their respective duties and activities relating to this service line agreement with each other.

Dated this 14th day of MAY, 2004

GRANTOR
THE MUCKLESHOOT INDIAN TRIBE

By _____
Print Name JOHN DANIELS, JR.

GRANTEE
CITY OF AUBURN

_____
Peter B Lewis, Mayor

Attest

_____
Danielle E Daskam City Clerk

Approved as to form

_____
Daniel B Heid, City Attorney

STATE OF WASHINGTON)
)SS.
COUNTY OF KING)

On this 14th day of May, 2004, before me the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared John Daniels, Jr. to me known to be the Chairman of THE MUCKLESHOOT INDIAN TRIBE, the Tribe that executed the foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said Tribal Community for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument

Witness my hand and official seal hereto affixed the day and year above written

KENNETH H. LEWIS NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES 6-20-04

_____
Notary Public in and for the State of Washington Residing at Puyallup
My commission expires June 20, 2004

SERVICE LINE AGREEMENT Page 3

EXHIBIT "A"

Attached hereto and made a part hereof
Electric Service Line Agreement dated MAY 14, 2004

LEGAL DESCRIPTION PARCEL 1-REC. NO. 9308182077

That portion of the W½SE¼ of Section 20, Township 21 North, Range 5 East, W.M., in King County, Washington, being more particularly described as follows: Commencing at the south quarter corner of said Section 20; thence North 00 degrees 00 minutes 04 seconds East along the north-south centerline of said Section 1073.05 feet to a point on the north margin of Primary State Highway No. 5, according to the plan on file in the Office of the State Highway Department, approved June 17, 1941; thence South 69 degrees 34 minutes 32 seconds East along said margin 24.06 feet to the point of beginning; thence continuing South 69 degrees 34 minutes 32 seconds East along said margin 38.97 feet to the beginning of a curve, concave to the northeast having a radius of 5680.00 feet; thence along the arc of said curve and margin, passing through a central angle of 10 degrees 23 minutes 18 seconds, a distance of 1029.85 feet, more or less, to the southwest corner of that certain parcel of land conveyed to Bush, Road and Hitchings, P.S. Inc. by deed recorded under King County recording No. 6598081; thence North 26 degrees 52 minutes 41 seconds East along the westerly line of said parcel 161.09 feet (161.04 feet per deed) to the northwest corner thereof; thence South 79 degrees 50 minutes 21 seconds East (South 79 degrees 47 minutes 09 seconds East per deed) along the north line of said parcel, 175 feet to a point on the west margin of Dogwood Street southeast as established by deed recorded under King County recording No. 5110135; thence along said margin North 00 degrees 27 minutes 58 seconds East 39.46 feet to the southeast corner of that certain parcel of land conveyed to the Southland Corporation by deed recorded under King County recording No. 6534478; thence North 81 degrees 27 minutes 51 seconds West (North 80 degrees 48 minutes 37 seconds West per deed) along the south line of said parcel 170 feet, more or less, to the southwest corner thereof; thence North 00 degrees 27 minutes 58 seconds East (parallel to the west margin of Dogwood Street per deed) along the west line of said parcel 82.30 feet to the northwest corner thereof; said corner also being a point on the south line of that certain tract of land conveyed to Robert E. Dowd and Margaret H. Dowd, husband and wife, herein after called the Dowd tract, by deed recorded under King County recording No. 5379802, said corner also being a point on a curve, said curve being concentric with and 330 feet northerly of the centerline of said Primary State Highway No. 5, the center of said curve bears North 09 degrees 11 minutes 21 seconds East 5400.00 feet distant; thence in a northwesterly direction along the arc of said curve and the south line of said Dowd tract, passing through a central angle of 01 degrees 57 minutes 02 seconds a distance of 183.83 feet, more or less to the southwest corner of said Dowd tract; thence North 00 degrees 27 minutes 58 seconds East (due north per deed) 173.32 feet, more or less along the west line of said Dowd tract to the northwest corner thereof; thence South 89 degrees 32 minutes 02 seconds East (due East per deed) 180 feet, more or less, along the north line of said Dowd tract to a point 120 feet west of the west margin of Dogwood Street southeast as established by deed recorded under King County recording No. 5110135; thence leaving said Dowd tract and running North 00 degrees 27 minutes 58 seconds east (parallel to the east line of said subdivision per deeds of record) 217.98 feet; thence South 89 degrees 32 minutes 02 seconds East (due east per deeds of record) 120 feet to a point on the west margin of Dogwood Street southeast as established by deed recorded under recording No. 5110134; thence along said margin North 00 degrees 27 minutes 58 seconds East 388.31 feet, more or less, to the north line of that certain parcel of land conveyed to Commonwealth Investors Group by deed recorded under King County recording No. 6285466; thence North 89 degrees 32 minutes 02 seconds West (North 89 degrees 31 minutes 21 seconds West per deed) along the north line of said Commonwealth Investors Group parcel 1271.57 feet; thence South 00 degrees 29 minutes 50 seconds West 537.31 feet; thence South 01 degree 12 minutes 52 seconds West 291.28 feet to the point of beginning; except that portion thereof conveyed to the United States of America in trust for the

A-1

Muckleshoot Indian Tribe by deed recorded under King County recording No. 8403080814; except that portion thereof, if any, lying north of the south line of Skycrest Terrace Division No. 2, according to the plat thereof recorded in Volume 101 of Plats, Page 55, records of King County, Washington; and except that portion thereof, if any, lying north of the south line of Greentree, a Condominium, according to the map and plans thereof recorded in Volume 22 of Condominiums, Pages 78 through 81, records of King County, Washington, containing after said exceptions, 23.5 acres, more or less. Situate in the County of King, State of Washington

Title to the land herein described shall be subject to any existing easements for public roads and highways, for public utilities, and for railroads and pipelines and any other rights of way of record.

LEGAL DESCRIPTION PARCEL 2-REC. NO. 8403080814

THAT PORTION OF THE WEST HALF OF THE SOUTHEAST QUARTER OF SECTION 20, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M., IN KING COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

COMMENCING AT THE INTERSECTION OF THE WEST LINE OF SAID SOUTHEAST QUARTER AND THE CENTERLINE OF STATE HIGHWAY NO. 164; THENCE SOUTH 69° 31' 40" EAST, ALONG SAID CENTERLINE, A DISTANCE OF 48 83 FEET TO A POINT OF CURVATURE TO THE LEFT, THE CENTER OF WHICH BEARS NORTH 20° 28' 20" EAST, A DISTANCE OF 5730.00 FEET; THENCE ALONG SAID CENTERLINE AND SAID CURVE TO THE LEFT, HAVING A RADIUS OF 5730 00 FEET, THROUGH A CENTRAL ANGLE OF 04° 51' 45", AN ARC DISTANCE OF 486.29 FEET, thence NORTH 13° 44' 33" EAST, A DISTANCE OF150 09 FEET TO THE TRUE POINT OF BEGINNING, THENCE NORTH 13° 44' 33" EAST, A DISTANCE OF 175.00 FEET; THENCE SOUTH 76° 15' 27" EAST, A DISTANCE OF 373.37 FEET, THENCE SOUTH 13° 44' 33" WEST, A DISTANCE OF 175 00 FEET; THENCE NORTH 76° 15' 27" WEST, A DISTANCE OF 373.37 FEET TO THE TRUE POINT OF BEGINNING.

RETYPED FOR FORM IN COMPLIANCE WITH KING COUNTY RECORDING REQUIREMENTS

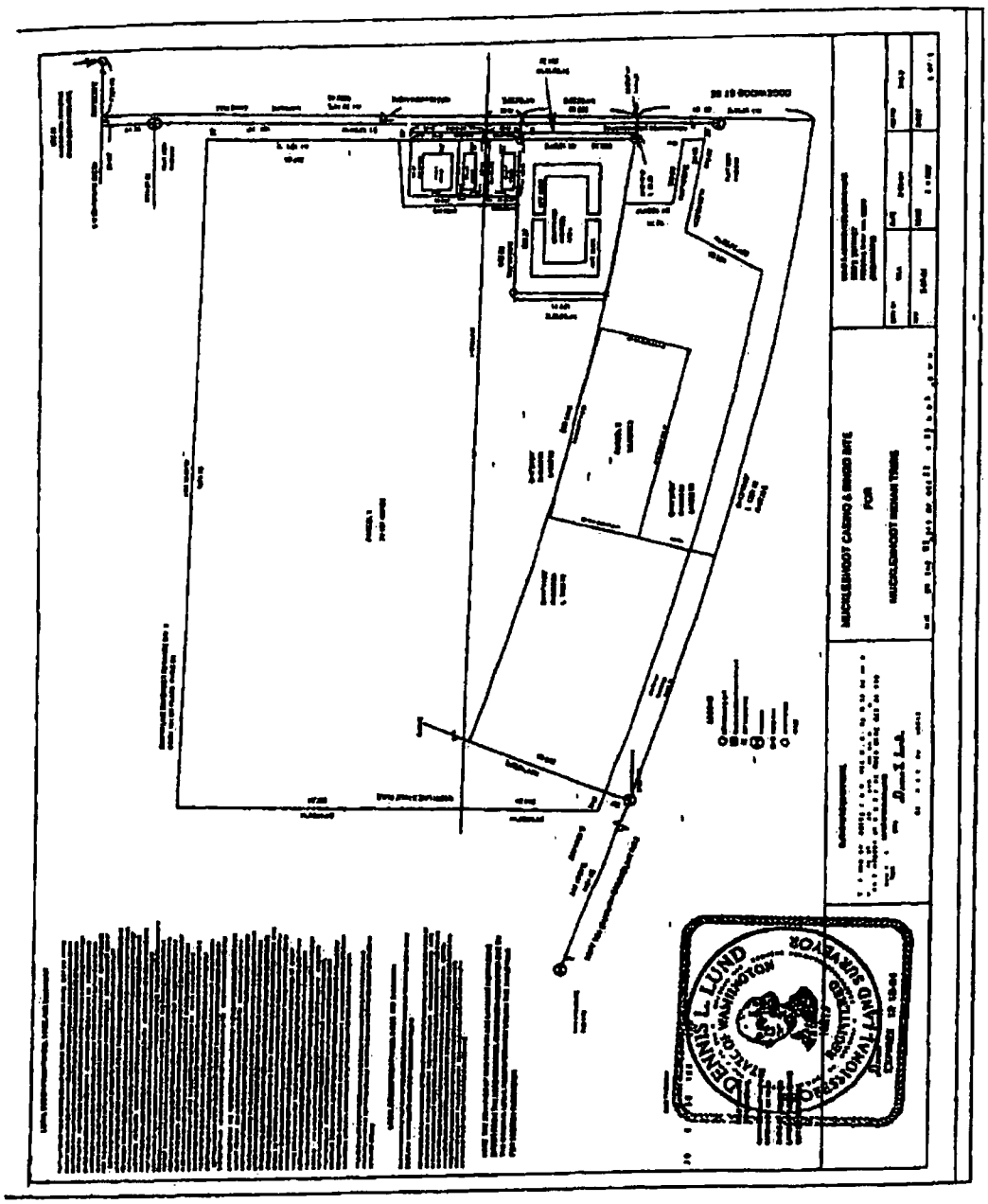


EXHIBIT B

LEGAL DESCRIPTION PARCEL 1-REC. NO. 9308182077

THAT PORTION OF THE W1/2 OF THE SE1/4 OF SECTION 20, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M., IN KING COUNTY, WASHINGTON, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTH QUARTER OF SAID SECTION 20; THENCE N0°10'04"E ALONG THE NORTH-SOUTH CENTERLINE OF SAID SECTION 1073.05 FEET TO A POINT ON THE NORTH MARGIN OF PRIMARY STATE HIGHWAY NO. 6, ACCORDING TO THE PLAN ON FILE IN THE OFFICE OF THE STATE HIGHWAY DEPARTMENT, APPROVED JUNE 17, 1911; THENCE S89°34'32"E ALONG SAID MARGIN 24.06 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING S89°34'32"E ALONG SAID MARGIN 38.97 FEET TO THE BEGINNING OF A CURVE, CONCAVE TO THE NORTHEAST HAVING A RADIUS OF 5680.00 FEET; THENCE ALONG THE ARC OF SAID CURVE AND MARGIN, PASSING THROUGH A CENTRAL ANGLE OF 10°23'18", A DISTANCE OF 1029.86 FEET, MORE OR LESS TO THE SOUTHWEST CORNER OF THAT CERTAIN PARCEL OF LAND CONVEYED TO BUSH, ROED AND HITCHINGS, P.S. INC. BY DEED RECORDED UNDER KING COUNTY RECORDING NO. 6599091; THENCE N25°53'41"E ALONG THE WESTERLY LINE OF SAID PARCEL 161.59 FEET (161.64 FEET PER DEED) TO THE NORTHWEST CORNER THEREOF; THENCE S79°59'21"E (S78°47'09"E PER DEED) ALONG THE NORTH LINE OF SAID PARCEL, 175 FEET TO A POINT ON THE WEST MARGIN OF DOGWOOD STREET SOUTHEAST AS ESTABLISHED BY DEED RECORDED UNDER KING COUNTY RECORDING NO. 5110136; THENCE ALONG SAID MARGIN N0°27'09"E 99.48 FEET TO THE SOUTHEAST CORNER OF THAT CERTAIN PARCEL OF LAND CONVEYED TO THE SOUTHLAND CORPORATION BY DEED RECORDED UNDER KING COUNTY RECORDING NO. 6594478; THENCE N81°27'51"W (N80°48'37"W PER DEED) ALONG THE SOUTH LINE OF SAID PARCEL 130 FEET, MORE OR LESS, TO THE SOUTHWEST CORNER THEREOF; THENCE N0°27'09"E (PARALLEL TO THE WEST MARGIN OF DOGWOOD STREET PER DEED) ALONG THE WEST LINE OF SAID PARCEL 62.39 FEET TO THE NORTHWEST CORNER THEREOF; SAID CORNER ALSO BEING A POINT ON THE SOUTH LINE OF THAT CERTAIN TRACT OF LAND CONVEYED TO ROBERT E. DOWD AND MARGARET H. DOWD, HUSBAND AND WIFE, HEREIN AFTER CALLED THE DOWD TRACT, BY DEED RECORDED UNDER KING COUNTY RECORDING NO. 5370022, SAID CORNER ALSO BEING A POINT ON A CURVE, SAID CURVE BEING CONCENTRIC WITH AND 330 FEET NORTHERLY OF THE CENTERLINE OF SAID PRIMARY STATE HIGHWAY NO. 6, THE CENTER OF SAID CURVE BEARS N39°11'21"E 5400.00 FEET DISTANT; THENCE IN A NORTHWESTERLY DIRECTION ALONG THE ARC OF SAID CURVE AND THE SOUTH LINE OF SAID DOWD TRACT, PASSING THROUGH A CENTRAL ANGLE OF 1°57'02" A DISTANCE OF 183.93 FEET, MORE OR LESS TO THE SOUTHWEST CORNER OF SAID DOWD TRACT; THENCE N0°27'09"E (DUE NORTH PER DEED) 173.32 FEET, MORE OR LESS ALONG THE WEST LINE OF SAID DOWD TRACT TO THE NORTHWEST CORNER THEREOF; THENCE S89°32'51"E (DUE EAST PER DEED) 180 FEET, MORE OR LESS, ALONG THE NORTH LINE OF SAID DOWD TRACT TO A POINT 130 FEET WEST OF THE WEST MARGIN OF DOGWOOD STREET SOUTHEAST AS ESTABLISHED BY DEED RECORDED UNDER KING COUNTY RECORDING NO. 5110136; THENCE LEAVING SAID DOWD TRACT AND RUNNING N0°27'09"E (PARALLEL TO THE EAST LINE OF SAID SUBDIVISION PER DEEDS OF RECORD) 217.85 FEET; THENCE S89°32'51"E (DUE EAST PER DEEDS OF RECORD) 129 FEET TO A POINT ON THE WEST MARGIN OF DOGWOOD STREET SOUTHEAST AS ESTABLISHED BY DEED RECORDED UNDER RECORDING NO. 5110134; THENCE ALONG SAID MARGIN N0°27'09"E 369.21 FEET, MORE OR LESS, TO THE NORTH LINE OF THAT CERTAIN PARCEL OF LAND CONVEYED TO COMMONWEALTH INVESTORS GROUP BY DEED RECORDED UNDER KING COUNTY RECORDING NO. 8205468; THENCE N89°32'02"W (N89°31'21"W PER DEED) ALONG THE NORTH LINE OF SAID COMMONWEALTH INVESTORS GROUP PARCEL 1271.57 FEET; THENCE S0°29'09"W 637.31 FEET; THENCE S1°12'52"W 291.36 FEET TO THE POINT OF BEGINNING; EXCEPT THAT PORTION THEREOF CONVEYED TO THE UNITED STATES OF AMERICA IN TRUST FOR THE MUCKLESHOOT INDIAN TRIBE BY DEED RECORDED UNDER KING COUNTY RECORDING NO. 8403080814; EXCEPT THAT PORTION THEREOF, IF ANY, LYING NORTH OF THE SOUTH LINE OF SKYCREST TERRACE DIVISION NO. 2, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 101 OF PLATS, PAGE 66, RECORDS OF KING COUNTY, WASHINGTON; AND EXCEPT THAT PORTION THEREOF, IF ANY, LYING NORTH OF THE SOUTH LINE OF GREENTREE, A CONDOMINIUM, ACCORDING TO THE MAP AND PLANS THEREOF RECORDED IN VOLUME 23 OF CONDOMINIUMS, PAGES 78 THROUGH 81, RECORDS OF KING COUNTY, WASHINGTON, CONTAINING AFTER SAID EXCEPTIONS, 23.6 ACRES, MORE OR LESS. SITUATE IN THE COUNTY OF KING, STATE OF WASHINGTON.

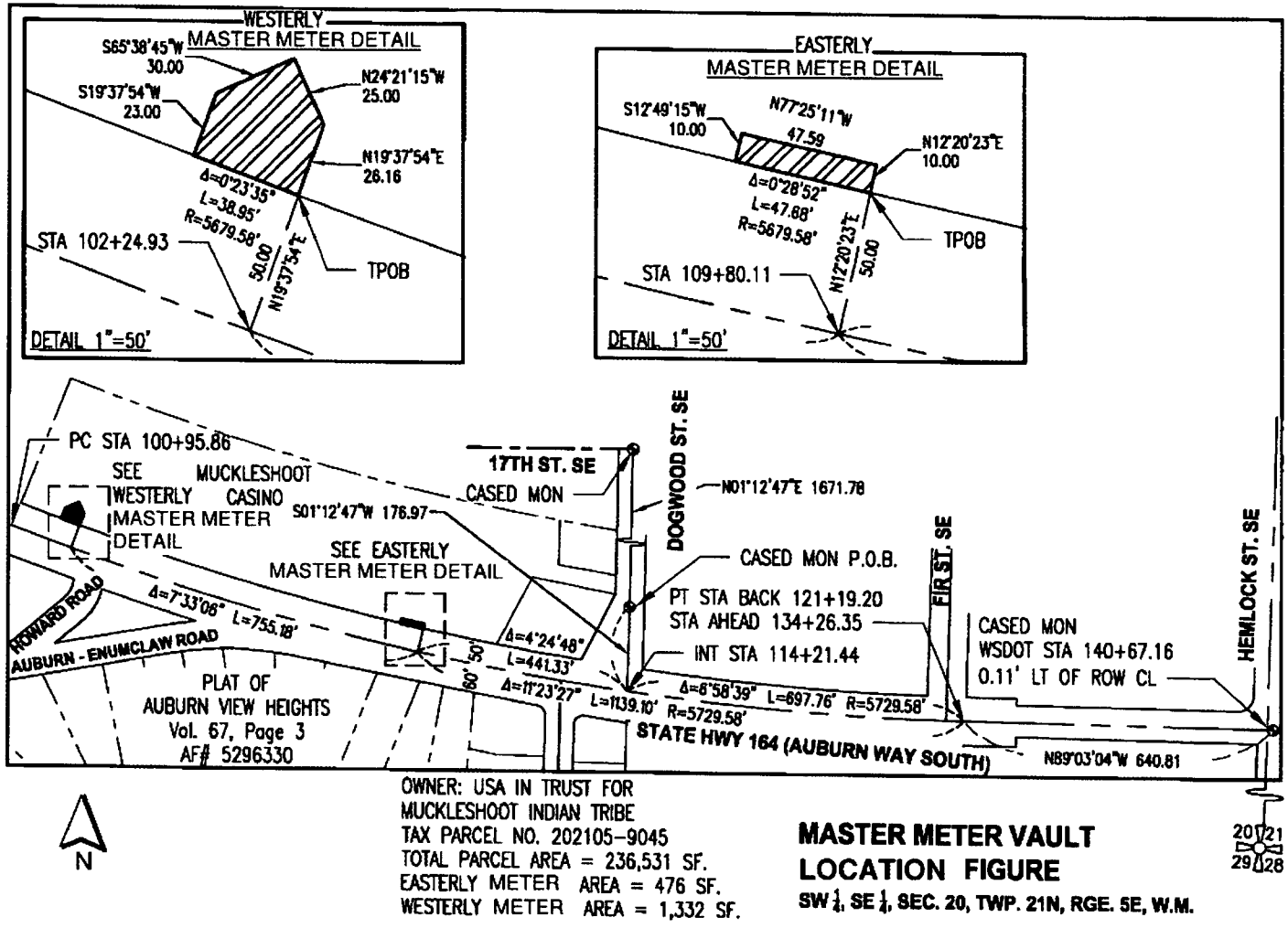
TITLE TO THE LAND HEREIN DESCRIBED SHALL BE SUBJECT TO ANY EXISTING EASEMENTS FOR PUBLIC ROADS AND HIGHWAYS, FOR PUBLIC UTILITIES, AND FOR RAILROADS AND PIPELINES AND ANY OTHER RIGHTS OF WAY OF RECORD.

LEGAL DESCRIPTION PARCEL 2-REC. NO. 8403080814

THAT PORTION OF THE WEST HALF OF THE SOUTHEAST QUARTER OF SECTION 20, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M., IN KING COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

COMMENCING AT THE INTERSECTION OF THE WEST LINE OF SAID SOUTHEAST QUARTER AND THE CENTERLINE OF STATE HIGHWAY NO. 164; THENCE S89°31'40"E, ALONG SAID CENTERLINE A DISTANCE OF 45.03 FEET TO A POINT OF CURVATURE TO THE LEFT, THE CENTER OF WHICH BEARS N0°28'20"E, A DISTANCE OF 5730.00 FEET; THENCE ALONG CENTERLINE AND SAID CURVE TO THE LEFT, HAVING A RADIUS OF 5730.00 FEET THROUGH A CENTRAL ANGLE OF 4°51'43" AN ARC DISTANCE OF 486.29 FEET; THENCE N13°44'37"E, A DISTANCE OF 180.09 FEET TO THE TRUE POINT OF BEGINNING; THENCE N13°44'37"E A DISTANCE OF 175.00 FEET; THENCE S76°15'23"E A DISTANCE OF 373.37 FEET; THENCE S13°44'37"W A DISTANCE OF 175.00 FEET; THENCE N76°15'23"W A DISTANCE OF 373.37 FEET TO THE TRUE POINT OF BEGINNING.

EXHIBIT E
LOCATION AND EXTENT OF MASTER METER ASSEMBLIES



OWNER: USA IN TRUST FOR
MUCKLESHOOT INDIAN TRIBE
TAX PARCEL NO. 202105-9045
TOTAL PARCEL AREA = 236,531 SF.
EASTERLY METER AREA = 476 SF.
WESTERLY METER AREA = 1,332 SF.

MASTER METER VAULT LOCATION FIGURE
SW ¼, SE ¼, SEC. 20, TWP. 21N, RGE. 5E, W.M.

RESOLUTION NO. 5182

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE A SERVICE AREA AGREEMENT BETWEEN THE CITY OF AUBURN AND PIERCE COUNTY, ESTABLISHING WATER UTILITY SERVICE AREA BOUNDARIES

WHEREAS, the City of Auburn is a water purveyor located partly within Pierce County, Washington; and

WHEREAS, service area agreements are required by WAC 246-293-250 to help assure that water reserved for public water supply purposes will be utilized in the future in an efficient and planned manner; and

WHEREAS, in conformity with the requirements of WAC 246-293-250, the City of Auburn and Pierce County, Washington, have developed a water utility service area agreement establishing water utility service area boundaries, with terms acceptable to both entities.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor is hereby authorized to execute a Service Agreement between the City of Auburn and Pierce County, which agreement shall be in substantial conformity with the agreement a copy of which is attached hereto, denominated as Exhibit A, incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. This Resolution shall be in full force and effect upon passage and signatures hereon.

DATED and SIGNED this 16th day of November 2015.

CITY OF AUBURN

Nancy Backus
NANCY BACKUS, Mayor

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

RESOLUTION No. 5182

EXHIBIT A

STANDARD SERVICE AGREEMENT ESTABLISHING WATER UTILITY SERVICE AREA BOUNDARIES

City of Auburn
STANDARD SERVICE AGREEMENT ESTABLISHING WATER UTILITY SERVICE AREA BOUNDARIES

PREAMBLE

THIS AGREEMENT establishing water utility service area boundaries is entered into this day for purposes of identifying the external boundaries of the service area for which this water purveyor has assumed water service responsibility.

WHEREAS, service area agreements are required by WAC 246-293-250 to help assure that water reserved for public water supply purposes within Pierce county will be utilize din the future in an efficient and planned manner; and

WHEREAS, the designation of retail water service area and future service planning areas, together with the cooperation of other utilities, will help assure efficient planning to accommodate growth, avoid duplication f service, and facilitate the best use of resources; and

WHEREAS, the responsibilities applicable to water purveyors are outlined in the Pierce County Coordinated Water System Plan (CWSP) and by the adopted rules and regulations of the Washington State Department of Health (DOH); and

Whereas, IT IS NOT THE INTENT OF THIS Agreement to give new authority or responsibilities to the water purveyor or to the County or State regulatory agencies, in addition to those requirements imposed by law; and

NOW, THEREFORE, the undersigned party, having entered into this Agreement by its signature, concurs with and will abide by the following provisions:

Section 1. The terms used within the contract shall be as defined in the implementing regulations of Chapter 70.116 RCW, except as identified below.

A. Lead Agency shall mean the department or organization within Pierce County that has been designated by the Pierce County Executive as being administratively responsible for the coordination and filing of the Pierce County Water Service Area map, Standard Service Agreement Establishing Water Utility Service Area Boundaries, Agreements for Retail Service Areas, Utility Service Policies, and other administrative documents necessary for the implementation of the Pierce County CWSP.

B. Pierce County Coordinated Water System Plan (CWSP) shall mean the plan adopted by the Pierce County Council for public water systems within critical water supply service areas within Pierce County which identifies the present and future needs of the systems and sets forth means for meeting those needs in the most efficient manner possible.

C. Pierce County Water Service Area Map shall mean the map reference din this Agreement for the retail service area signed by the water purveyor, except as amended in accordance with the CWSP procedures and with the concurrence of the affected water purveyors.

AUBURN COPY

D. Retail Service Area shall mean the designated geographical area within Pierce County in which the undersigned water purveyor assumes full responsibility for providing water service to individual customers.

E. Utility Service Policies shall mean those policies and conditions of service that area attached to the provision of water service for individual customers. The identified policies and conditions of service are those conditions incorporated within the water purveyor's water system improvement and expansion plans required under the provisions of the Public Water Systems Coordination Act and DOH.

Section 2. Lead Agency. The lead agency for administering the Pierce county Water Utility service area agreements shall be the Pierce County Department of Planning and Land Services unless otherwise established by the Pierce County Executive. The lead agency shall function only as a coordination center. The lead agency will maintain the original documents and will be responsible for updating the water system map and agreements as provided for in the CWSP.

Section 3. Authority. The authority for this Agreement is granted by the Public Water Systems Coordination Act of 1977, Chapter 70.116 RCW.

Section 4. Service Area Boundaries. The undersigned Water Purveyor acknowledges that the Pierce County Water Service Area Maps identifying its retail service area boundaries, dated July 28, 2015 and included as Attachment A to this Agreement, identify the water purveyor's present and future service area. The undersigned further acknowledges that there are no service area conflicts with an adjacent water utility or purveyor, or, if such a conflict exists, agrees that no new water service will be extended within disputed areas except as stipulate din an adjudication by DOH.

This Agreement shall apply to service areas existing as of August 1994, and to the service area boundaries identified in the above referenced maps, or as shown on current revisions thereof, provided that no revisions of service areas shown on these maps shall be made without prior written concurrence of the water utilities/purveyors involved and such written concurrence is filled with the Lead Agency. Revisions may also require an amendment to the purveyor's or utility's service plans.

Section 5. Boundary Adjustments. If, at some time in the future, it is in the best interest of the undersigned parties to make service area boundary adjustments, such modifications must be by written concurrence of all involved utilities and the proper legislative authority(ies), and must be noted an filed with the designated Pierce County lead agency and DOH. It is understood by the undersigned utility that it may decline to provide service within its designated service area boundary, but in that case, an applicant may be referred to other adjacent purveyors or utilities or a new utility may be created and the original service area boundary will be adjusted accordingly.

Section 6. System Extension Policies. The undersigned utility agrees that in order to expand its existing water service area, (other than by addition of retail customers to existing water mains), or to serve in the capacity of a pre-qualified satellite system management agency (SSMA), it shall have adopted design standards and Utility Service extension policies. The design standards shall meet or exceed the pierce County Water System Minimum Standards and Specifications.

A water utility anticipating expansion of retail service in unincorporated areas of Pierce County, or intending to operate as an SSMA, shall identify utility service policies in its updated water system plan. The undersigned utility agrees to identify, for information, its utility service policies or provide a copy of the updated water system plan to the Lead Agency prior to application for extension of its existing water system into new service areas within the unincorporated areas of Pierce County.

Municipalities further agree that if they identify a service area outside of their existing municipal corporate boundaries, the municipality will assume full responsibility for providing water service equivalent to the level of service provided for their customers inside the city limits with similar service requirements, and must also meet or exceed Pierce County's minimum design standards.

Section 7. Special Working Agreements. Special working agreements, if they exist and are relevant, between this water purveyor and any adjacent water purveyor shall be attached to this Agreement as Attachment B and incorporated herein by this reference.

Section 8. Compliance with the CWSP. Nothing in this Agreement shall waive any requirement of the state, federal, or local government regarding the provision of water service. This Agreement shall comply with the interlocal agreement requirement of the CWSP.

IN WITNESS WHEREOF, the undersigned party has executed this Agreement as of

11/16/2015
Date

City of Auburn
Water Purveyor

Nancy Backus
Representative

Mayor
Title

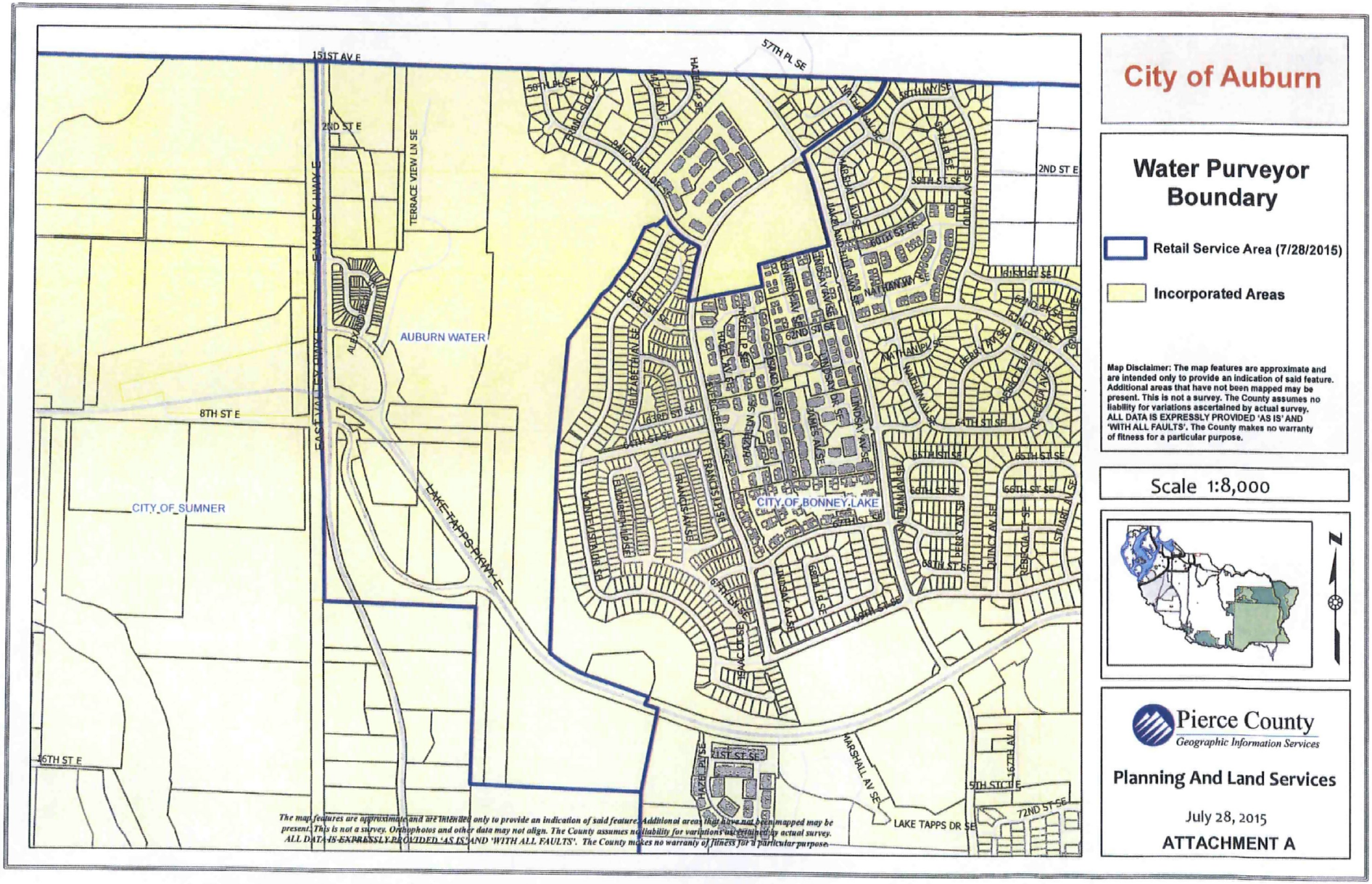
Receipt Acknowledged:

Pierce County Planning and Land Services Department

10/6/2015
Date

STANDARD SERVICE AGREEMENT
ATTACHMENT B

Utility shall include copies of separate agreements, relating to common service areas, transfer arrangements, special working agreements, and/or retail service agreements with adjacent utilities. These agreements will be included by reference in this Interlocal Agreement.



City of Auburn

Water Purveyor Boundary

Retail Service Area (7/28/2015)

Incorporated Areas

Map Disclaimer: The map features are approximate and are intended only to provide an indication of said feature. Additional areas that have not been mapped may be present. This is not a survey. The County assumes no liability for variations ascertained by actual survey. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. The County makes no warranty of fitness for a particular purpose.

Scale 1:8,000

N

Pierce County
Geographic Information Services

Planning And Land Services

July 28, 2015

ATTACHMENT A

STANDARD SERVICE AGREEMENT
ATTACHMENT B

Utility shall include copies of separate agreement, relating to common service areas, transfer arrangements, special working agreements, and/or retail service agreements with adjacent utilities. These agreements will be included by reference in this Interlocal Agreement.

Interlocal Agreement Among the Cities of Auburn and Bonney Lake for Revision of Water District Boundaries
Agreement Between the Cities of Pacific and Auburn Relating to Urban Service Area Designation
Agreement Between the Cities of Sumner and Auburn Relating to Potential Annexation Area Designation

INTERLOCAL AGREEMENT AMONG THE CITIES OF AUBURN AND BONNEY LAKE FOR REVISION OF WATER DISTRICT BOUNDARIES

THIS INTERLOCAL AGREEMENT is made and entered into, pursuant to the Interlocal Cooperation Act, Chapter 39.34 of the Revised Code of Washington, on the 14th day of April, 2015, by and among the CITY OF AUBURN ("COA")and the CITY OF BONNEY LAKE, municipal corporations of the State of Washington (collectively, the "Cities").

RECITALS:

1. **WHEREAS,** the Cities each own and operate public water systems pursuant to Chapter 70.119_RCW, are purveyors of potable water, and provide water services within the boundaries of the Cities' respective water service areas; and,

2. **WHEREAS,** the City of Auburn is presently revising and updating its six-year comprehensive water plan, as required by the state Department of Health pursuant to RCW 70.116 and WAC 246-290-100; and

3. **WHEREAS,** the Cities' respective water services areas adjoin and abut one another in the "Lakeland Hills South" area of Pierce County, where the Cities' water service areas are demarcated by an border or boundary line identified and described in service area agreement dated December 10, 1998 (approved by and appended to COA Res. No. 3018) ("Service Area Agreement"); and

4. **WHEREAS,** Cities' respective water rights and obligations had been the subject of litigation which was resolved amicably pursuant to settlement agreement between the Cities dated March 5, 1998 (approved by and appended to COA Res. No. 2925) (the "March 1998 Settlement Agreement"), the terms and conditions of which continue to apply to the Cities and shall be interpreted consistently with the change in boundary lines agreed upon herein; and

5. **WHEREAS,** on February 14, 2005, the Cities executed an addendum to the March 1998 Settlement Agreement, to revise the boundary relating to one tax parcel, which does not otherwise affect the March 1998 Settlement Agreement; and

6. **WHEREAS,** the Cities mutually desire to revise and adjust the border line separating their respective water service areas, presently described in Service Area Agreement, as amended by the February 14, 2005 addendum to the March 1998 Settlement Agreement.

NOW THEREFORE in consideration of their mutual covenants, conditions and promises, **THE CITIES DO HEREBY AGREE** as follows:

1. The boundary line between and separating the Cities' respective water service areas, previously established and described in Service Area Agreement, as amended by the

February 14, 2005 addendum to the March 1998 Settlement Agreement, is hereby revised and adjusted pursuant to the legal descriptions and surveyor's map attached hereto as Exhibit "A" and Exhibit "B", respectively; and

2. This revision of water service area boundary lines shall be effective immediately.

IN WITNESS WHEREOF the parties hereto have executed this Agreement as of the day and year first above written.

CITY OF AUBURN

John Holman, Deputy Mayor
for Nancy Backus 4-7-14
Nancy Backus, Mayor Date

Attest:

City Clerk

Approved as to Form:

4-1-15
Daniel B. Heid, City Attorney Date

CITY OF BONNEY LAKE

5/5/15
Neil Johnson, Mayor Date

Attest:

City Clerk

Approved as to Form:

5/1/15
Kathleen Haggard, City Attorney Date

Exhibit "A"

Legal Description for Water Service Area

Legal description for the updated Auburn/Bonney Lake Water Service Areas of Section 6, Township 20 North, Range 5 East, W.M., in Pierce County, Washington to supersede and replace the description contained in Service Area Agreement dated December 10, 1998 (City of Auburn Resolution 3018);

A Line described as the border between the City of Auburn and Bonney Lake Water Service Areas more fully described as follows (using basis of bearings of Record of Survey recorded under Auditor's File Number 200102265002 and plat of Verona recorded under Auditor's File Number 200310145002 records of Pierce County):

Beginning at the South Quarter Corner of said Section 6, thence N 11°23'51" E a distance of 706.18 feet to the south line of Lot 4 of City of Auburn Short Plat SPL01-0007 recorded under Auditor's File Number 200211145001 records of said county;

Thence S 71°21'43" E along said south line a distance of 290.27 feet to the beginning of a curve to the left having a radius of 1940.00 feet;

Thence southeasterly 284.29 feet along said curve through a central angle of 08°23'46";

Thence S 83°10'43" E along said south line a distance of 73.72 feet to the beginning of a curve to the left having a radius of 1937.00 feet;

Thence easterly 463.31 feet along said curve feet through a central angle of 13°42'17" to the most southeasterly corner of said Lot 4;

Thence N 20°03'29" W along the east line of said Lot 4 a distance of 26.26 feet to the most southerly corner of Lot 62 of the plat of Verona recorded under Auditor's File Number 200310145002, records of said county;

Thence northwesterly and northerly along the southwesterly line of said plat of Verona the following courses and distances:

N 81°07'30" W a distance of 359.40 feet;
N 69°56'06" W a distance of 202.35 feet;
N 67°01'04" W a distance of 214.84 feet;
N 54°28'29" W a distance of 68.34 feet;
N 06°34'57" E a distance of 144.08 feet;
N 00°41'55" E a distance of 125.75 feet;
N 27°10'17" W a distance of 85.46 feet;
N 37°27'03" W a distance of 91.12 feet;
N 52°37'34" W a distance of 191.60 feet;
N 61°56'46" W a distance of 51.06 feet;
N 77°45'32" W a distance of 89.47 feet;
S 87°24'50" W a distance of 96.39 feet;

S 75°52'22" W a distance of 123.67 feet;
S 66°03'17" W a distance of 126.14 feet;
N 70°27'52" W a distance of 122.25 feet;
N 35°32'56" W a distance of 149.01 feet;
N 14°48'47" W a distance of 67.81 feet;
N 24°51'43" W a distance of 82.36 feet;
N 09°22'10" W a distance of 313.13 feet;
N 06°04'45" W a distance of 184.91 feet;
N 12°13'20" W a distance of 198.22 feet;
N 00°12'03" W a distance of 186.02 feet to the southwest corner of Lot 33 of Verona Division 2 recorded under Auditors File Number 200502175007, records of said county;

Thence along the westerly line of said plat of Verona Division 2 the following courses and distances:

N 00°12'03" W a distance of 76.43 feet;
N 11°19'16" E a distance of 94.45 feet;
N 34°03'49" E a distance of 361.98 feet;
N 15°33'17" E a distance of 93.08 feet;
N 00°29'31" E a distance of 443.26 feet;
N 03°22'34" W a distance of 148.01 feet;
N 34°01'25" E a distance of 159.32 feet;
N 49°38'41" E a distance of 74.88 feet;
N 40°40'05" E a distance of 51.82 feet;
N 32°41'03" E a distance of 101.58 feet;
N 38°36'53" E a distance of 82.95 feet;
N 27°59'38" E a distance of 62.43 feet;
N 26°06'34" E a distance of 277.03 feet;
N 73°07'14" E a distance of 30.00 feet;
S 58°56'19" E a distance of 45.00 feet;
N 49°08'11" E a distance of 99.74 feet to the most northerly corner of Tract A of said plat of Verona Division 2 and the southerly margin of Panorama Drive SE as described in Warranty Deed recorded under Auditor's File Number 200105040368, said corner being at a point of non-tangent curve to the left having a radius of 454.00 feet (the radius center bears N61°35'41"E);

Thence southeasterly 311.66 feet along said curve and said southerly margin through a central angle of 39°19'56";

Thence continuing along said southerly margin S 67°44'15" E a distance of 23.06 feet to the beginning of a curve to the right having a radius of 25.00 feet;

Thence southeasterly and southerly 37.96 feet along said curve through a central angle of 86°59'27", an arc length of 37.96 feet to the westerly margin of Evergreen Way SE as described in Warranty Deed recorded under Auditor's File Number 200105040368 and the beginning of a reverse curve to the left having a radius of 927.50 feet;

Thence southerly 140.60 feet along said curve and said westerly margin through a central angle of 08°41'08", an arc length of 140.60 feet;

Thence N 55°00'00" E along said southeasterly margin of Evergreen Way SE a distance of 166.23 feet to the beginning of a curve to the left having a radius of 430.00 feet;

Thence northeasterly 283.27 feet along said curve and said southeasterly margin through a central angle of 37°44'40" to the beginning of a compound curve to the left having a radius of 1030.00 feet;

Thence northeasterly 16.98 feet along said curve and said southeasterly margin through a central angle of 00°56'40" to the most northerly northwest corner of Lot 22 of said plat of Lakeland Division 1, Phase 2, and the north line of Section 6, Township 20 North, Range 5 East, W.M.;

Thence along last said north line S 88°34'43"E a distance of 808.02 feet to the northeast corner of Said Section 6 and the terminus of this line description.

The basis of bearings for this description is Record of Survey for Segregation prepared by Apex Engineering dated February 26, 2001 and recorded under Auditors File Number 200102265002, records of Pierce County, Washington.

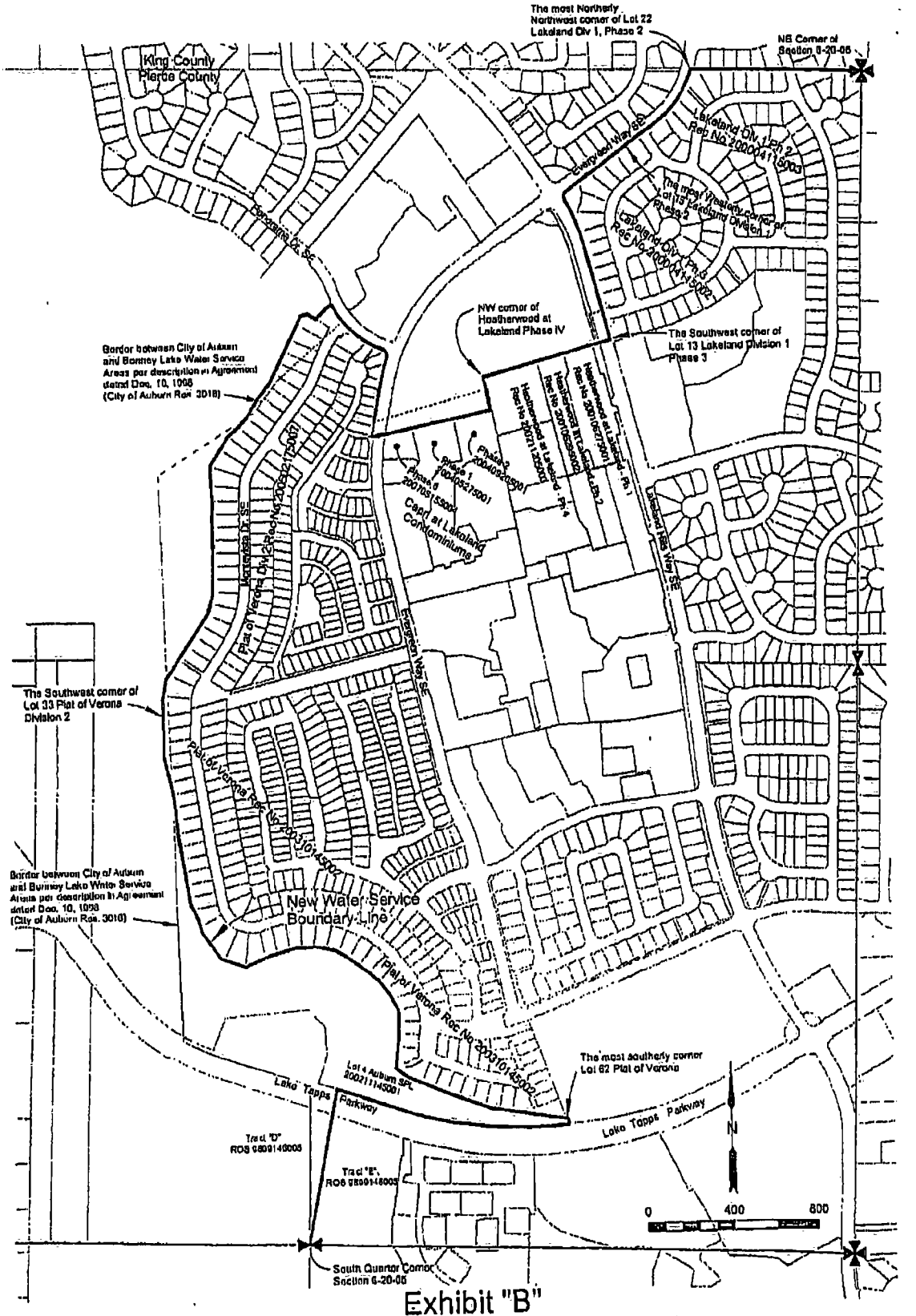


Exhibit "B"

Auburn-Bonney Lake Water Service Boundary

Map updated 01-13-2016

ORIGINAL

AN AGREEMENT BETWEEN THE CITIES OF PACIFIC AND AUBURN RELATING TO URBAN SERVICE AREA DESIGNATION

THIS IS AN AGREEMENT between the Cities of Pacific, a municipal corporation of the State of Washington ("Pacific"), and Auburn, a municipal corporation of the State of Washington ("Auburn"), hereinafter collectively referred to as the "Cities."

RECITALS

A. Pursuant to RCW 36.70A.110(2), the Washington State Growth Management Act of 1990 as amended requires each City within the County to propose the location of an urban growth area, and

B. The Pierce County Countywide Planning Policies adopted and approved by Resolution R92-86 on June 30, 1992 by the County Council and ratified by Cities within the County, establishes rules for designating City urban growth areas within the countywide urban growth boundary, and

C. The Pierce County Comprehensive Plan adopted and approved by Ordinance 94-82S by the County Council identifies an urban growth area overlap between the Cities of Auburn and Pacific.

D. It is in the public interest that the jurisdictions cooperate to designate logical and achievable urban growth area boundaries,

NOW THEREFORE, the Cities hereby agree:

1. PURPOSE.

The purpose of this agreement is to resolve the boundary overlap between the Cities of Auburn and Pacific.

2. DEFINITIONS.

Urban Service Area (USA): The incorporated urban area adjacent to a City, within which urban growth shall be encouraged and phased, and which is expected to annex to the city. Annexation is expected to occur sometime during the next 20 years at which time the city will provide services and utilities. Urban Service Area is another term for a City's Urban Growth Area.

Urban Growth Areas (UGA): Areas designated by the County within which urban growth shall be encouraged and phased and outside of which growth can occur only if it is not urban in nature. A City's Urban Growth Area is another term for its Urban Service Area.

Comprehensive Urban Growth Area Boundary (CUGA Boundary): The boundary marking the limit between the urban growth areas and other areas such as rural and resource area where urban growth is not permitted. The boundary shall be designated by the County in

REF: Resolution No. 2873
September 15, 1997

Exhibit "A" Resolution No. 2763
Adopted 12/2/96

consultation with the appropriate Cities, under the requirement of the Growth Management Act, as amended.

3. PUBLIC PROCESS.

The designation of USAs in Exhibit A (map) are of interest to a variety of affected parties, including property owners, area residents, the general public, special service districts and the municipalities.

4. RELATIONSHIP TO EXISTING LAWS AND STATUTES.

This Agreement in no way modifies nor supersedes existing laws and statues and is consistent with existing laws and statues. In meeting the commitments encompassed in this Agreement, all parties will comply with the requirements of the annexation statutes, Open Meetings Act, State Environmental Policy Act, Growth Management Act and the Pierce County Countywide Planning Policies.

5. RESPONSIBILITIES.

A. The Cities acknowledge the USA boundary as shown in Exhibit A. The City of Pacific urban service area boundary will not include any area shown in exhibit A.

B. The Cities will only annex territory within their designated USAs.

C. The Cities shall conduct a public involvement process that includes, but is not limited to workshops, surveys, or hearings in areas within the USA, prior to the inclusion of any additional areas within the USA.

6. AMENDMENTS.

A. A city which desires to modify the USA shall contact the other party to this Agreement to begin discussions regarding urban service area boundary amendments. The Cities agree to participate in such discussions when called. Either Party is authorized to call a meeting upon 30 days written notice.

B. The proposed modifications shall be supported by written evidence of a significant change in one of the criteria listed in paragraph 6D. Below. The Cities shall concur that the substantial change warrants an amendment to the original designated urban service area.

C. A public process shall be conducted regarding an amendment to an urban service area.

D. *Criteria for Designation of Potential Annexation Areas*

- Recognition of resident community identification.
- Financial and technical ability to provide municipal services.
- Creation of logical service areas (vehicular accessibility and utility construction).
- Recognition of physical boundaries.

Exhibit "A" Resolution No. 2763
Adopted 12/2/96

Bodies of water
Topographical features
Watersheds
Freeways

- Protection of critical/resource areas significant to a particular jurisdiction.
  Protection of critical areas
  Opportunities for urban separators
- Logical boundaries.
  Elimination of unincoporated islands
  No overlapping potential annexation areas

E. The proposed amended USA agreement shall be submitted to the respective legislative authorities for approval.

7. DURATION AND TERMINATION.

This Agreement is effective upon signature of both parties and shall continue in effect from year to year unless terminated by a six month written notice by one party to the others.

8. SEVERABILITY CLAUSE.

Any provision of this Agreement which is declared invalid or illegal shall in no way affect or invalidate any other provision hereof and such other provisions shall remain in full force and effect.

9. INDEMNIFICATION.

A. The City of Pacific shall indemnify and hold harmless the City of Auburn and its officers, agents and employees, or any of them from any and all claims, actions, suits, liability, loss, costs, expenses and damages of any nature whatsoever, by reason of or arising out of any negligent act or omission of the City of Pacific, its officers, agents and employees, or any of them, in the performance of this Agreement. In the event that any such suit based upon such a claim, action, loss or damage is brought against the City of Auburn, the City of Pacific shall defend the same at its sole cost and expense; provided, that that the City of Auburn reserves the right to participate in such suit if any principle of governmental or public law is involved. If final judgment be rendered against the City of Auburn and its officers, agents and employees, or any of them, the City of Pacific shall satisfy the same, including all chargeable costs and attorney's fees.

B. In executing this Agreement, the City of Pacific does not assume liability or responsibility for, or in any way release, the City of Auburn from any liability or responsibility which arises in whole or in part from the existence or affect City of Auburn ordinances, rules or regulations. If any cause, claim, suit, action or administrative proceedings is commenced in which the enforceability and/or validity of any such City of Auburn ordinance, rule or regulation is at issue, the City of Auburn shall defend the same at its sole expense and if judgment is entered or damages are

awarded against the City of Pacific, the City of Auburn shall satisfy the same. including all chargeable costs and attorney's fees.

C. The City of Auburn shall indemnify and hold harmless the City of Pacific and its officers, agents and employees, or any of them, from any and all claims, actions, suits. liability, loss, costs, expenses and damages of any nature whatsoever, by reason of our arising out of any negligent act or omission of the City of Auburn, its officers, agents or employees or any of them, relating to or arising out of the performance of this Agreement. In the event that any suit based on such a claim, action, loss or damage is brought against the City of Pacific, the City of Auburn shall defend the same at its sole costs and expense; provided by the City of Auburn retains the right to participate in and suit of any principle of government law is involved; and if final judgment be rendered against the City of Pacific, and its officers, agents and employees, or any of them, the City of Auburn shall satisfy the same, including all chargeable costs and attorney's fees.

D. In executing this Agreement, the City of Auburn does not assume liability or responsibility for or in any way release the City of Pacific from any liability or responsibility which arises in whole or in part from the existence or affect City of Pacific ordinances, rules or regulations. If any cause, claim, suit, action or administrative proceedings is commenced in which the enforceability and/or validity of any such City of Pacific ordinance, rule or regulation is at issue, the City of Pacific shall defend the same at its sole expense and if judgment is entered or damages are awarded against the City of Auburn, the City of Pacific shall satisfy the same. including all chargeable costs and attorney's fees.

10. ADMINISTRATION.

This Agreement shall be administered by:

A. The Mayor of Pacific or the Mayor's designee, and

B. The Mayor of Auburn or the Mayor's designee.

Exhibit "A" Resolution No. 2763
Adopted 12/2/96

CITY OF PACIFIC

Cheryl Bertsch
Mayor ProTem
Date 11/12/96

Approved as to Form:

City Attorney

CITY OF AUBURN

By Charles A. Booth
Charles A. Booth
Mayor

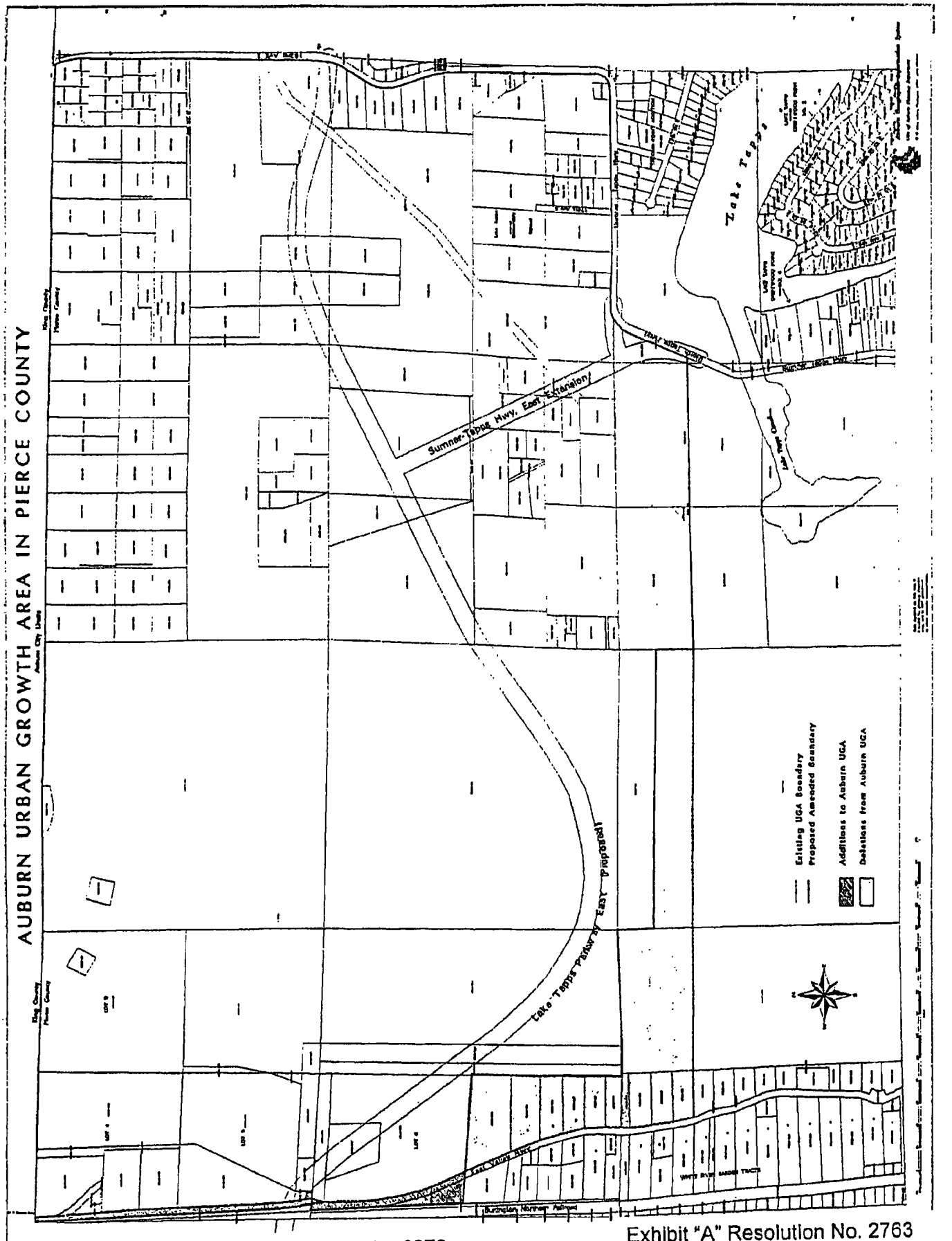
Date 12/5/96

Approved as to Form:

City Attorney

BHS\AGREEMT1

Exhibit "A" Resolution No. 2763
Adopted 12/2/96



REF: Resolution No. 2873
September 15, 1997

Exhibit "A" Resolution No. 2763
Adopted 12/2/96

REF: Resolution No. 2873
September 15, 1997

ORIGINAL

AN AGREEMENT BETWEEN THE CITIES OF SUMNER AND AUBURN RELATING TO POTENTIAL ANNEXATION AREA DESIGNATION

THIS AGREEMENT is entered into on this 16th day of JULY, 1996, by and between the City of Sumner, a municipal corporation of the State of Washington (hereinafter referred to as "Sumner") and the City of Auburn, a municipal corporation of the State of Washington (hereinafter referred to as "Auburn").

WHEREAS, pursuant to RCW 36.70A.110(2), the Washington State Growth Management Act of 1990 as amended, requires each city within Pierce County to propose the location of an urban growth area; and

WHEREAS, the King Countywide Planning Policies adopted and approved by Ordinance 10450 on July 6, 1992, by the King County Council and amended by Ordinance 11446 on July 19, 1994 and ratified by cities within King County, establish rules for designating potential annexation areas for cities within the countywide urban growth boundary; and

WHEREAS, King Countywide Planning Policy LU-31 states that each city shall designate a Potential Annexation Area (PAA) in collaboration with adjacent counties and cities and King County, and in consultation with residential groups in affected areas; and

WHEREAS, Pierce Countywide Planning Policies adopted and approved by Resolution No. R92-86 on June 30, 1992 by the Pierce County Council reestablish rules for designating urban growth areas for cities within Pierce County; and

WHEREAS, Pierce Countywide Planning Policy No. 1 on Urban Growth areas states "The County shall designate urban growth areas for the County and each municipality in the County based on consultations between the County and each municipality"; and

WHEREAS, the Pierce County Comprehensive Plan approved November 29, 1994 by the Pierce County Council establishes procedures for the adoption of Urban Service Areas (USA's) as a part of a Comprehensive Urban Growth Area (CUGA). The plan also adopts Urban Service Areas for the jurisdictions within Pierce County. The plan indicates an overlap of the USA's for the Cities of Auburn and Sumner in the general vicinity of an approved private development called Lakeland; and

WHEREAS, it is of mutual interest to Sumner and Auburn to resolve the overlaps between the Potential Annexation Areas in order to allow for continued land use and capital facility planning without threat of litigation or appeals; and

WHEREAS, in the spirit of cooperation and mutual understanding, Sumner and Auburn desire to address mutual interests, work together on issues of mutual benefit, and enter into agreements to work constructively on issues of concern; **NOW THEREFORE,**

Exhibit A Resolution No. 2762
August 5, 1996

In consideration of the mutual benefits, Sumner and Auburn hereby agree to the terms and conditions as set forth below:

SECTION 1. PURPOSE.

The purpose of this agreement is to confirm the decision made between Sumner and Auburn for the identification of Potential Annexation Area boundaries and Urban Service Areas.

SECTION 2. DEFINITIONS.

A. Potential Annexation Area (PAA): is a term used in the King Countywide Planning Polices meaning the incorporated urban area adjacent to a city, within which urban growth shall be encouraged and phased, and which is expected to annex to the city. Annexation is expected to occur sometime during the next twenty (20) years at which time the city will provide services and utilities. For purposes of this agreement, the term Potential Annexation Area is the same as Urban Service Area (USA) as applied in the Pierce County Comprehensive Plan.

B. Urban Growth Areas: means areas proposed by the Sumner and Auburn and designated by the county within which urban growth shall be encouraged and passed and outside of which growth can occur only if it is not urban in nature.

C. Urban Growth Boundary: means the boundary marking the limit between the urban growth areas and other areas such as rural and resource area where urban growth is not permitted. The boundary shall be designated by the county in consultation with Sumner and Auburn, under the requirements of the Growth Management Act.

SECTION 3. PUBLIC PROCESS.

The designation of PAAs in Exhibit A (map) attached hereto and by this reference made a part of this agreement are of interest to a variety of affected parties, including property owners, area residents, the general public, special service districts and the municipalities.

SECTION 4. RELATIONSHIP TO EXISTING LAWS AND STATUES.

This Agreement shall in no way modify nor supersede existing laws and statutes and is consistent with existing laws and statutes. In meeting the commitments encompassed in this Agreement, all parties shall comply with the requirements of the annexation statutes, Open Public Meetings Act, State Environmental Policy Act, Growth Management Act and Countywide Planning Policies for King and Pierce Counties.

SECTION 5. RESPONSIBILITIES.

A. Sumner and Auburn acknowledge the PAA boundary described in Exhibit A.

B. Sumner and Auburn shall only annex territory within their designated PAAs.

C. Sumner and Auburn shall conduct a public involvement process that includes, but is not limited to, workshops, surveys, or hearings in areas within the PAA prior to the inclusion of any additional areas within the PAA.

SECTION 6. JOINT PLANNING

Sumner and Auburn shall work cooperatively together in the planning and delivery of services to the respective PAA to the extent feasible as described below:

A. Sumner and Auburn shall initiate discussions between staff to review the feasibility of sharing the costs associated with the construction and operation of a water storage facility. Both cities shall also explore the possibility of shared water resources.

B. Sumner and Auburn shall work cooperatively on other issues of mutual concern which may arise including:
   1. Design, funding, and construction of the 8th Street Corridor from Lake Tapps to SR 167;
   2. Railroad traffic and the mitigation of increased rail activity on transportation;
   3. Mitigation of stormwater impacts to the valley;
   4. Modifications to the Mud Mountain Dam to reduce base flood levels;
   5. Joint fire services and operations such as training, hazardous spill response, mutual aide, and special operations;
   6. Bicycle and pedestrian trails connecting the Sumner and Auburn;
   7. Watershed planning and management related to the Stuck (White) River and its tributaries; and
   8. Joint planning and participation with Pierce County.

SECTION 7. AMENDMENTS.

A. A city which desires to modify the Potential Annexation Area shall contact the other party to this Agreement to begin discussions regarding potential annexation or boundary amendments. Sumner and Auburn agree to participate in such discussions when called. Either city is authorized to call a meeting upon providing the other city has at least a thirty (30) day written notice.

B. The proposed amendments shall be supported by written evidence of a significant change in one of the criteria listed in paragraph 7D below. Sumner and Auburn shall concur that the substantial change warrants an amendment to the original designated PAA.

C. A public process shall be conducted regarding an amendment to a potential annexation area as described in 5(c) above.

D. Criteria for Designation of Potential Annexation Areas

1. Recognition of resident community identification.
2. Financial and technical ability to provide municipal services.
3. Creation of logical service areas (vehicular accessibility and availability of utility service).
4. Recognition of physical boundaries.
   -bodies of water
   -topographical features
   -watersheds
   -freeways
5. Protection of critical/resource areas significant to a particular jurisdiction.
   -protection of critical areas
   -opportunities for urban separators
6. Logical boundaries.
   -elimination of unincorporated islands
   -no overlapping potential annexation areas

E. The proposed amended PAA agreement shall be submitted to the respective legislative authorities for approval.

SECTION 8. DURATION AND TERMINATION.

This Agreement shall be in effect upon signature of both parties and shall continue in effect from year to year unless terminated by a six month written notice by one party to the others.

SECTION 9. SEVERABILITY CLAUSE.

Any provision of this Agreement which is declared invalid or illegal shall in no way affect or invalidate any other provision hereof and such other provisions shall remain in full force and effect.

Exhibit A Resolution No. 2762
August 5, 1996

SECTION 10 ADMINISTRATION.

This Agreement shall be administered by the Mayor of the City of Sumner and the City of Auburn, or their designees.

CITY OF SUMNER

Robert A. Moltke, Mayor

7-16-96
Date

Attest:

City Clerk

Approved as to form:

City Attorney

CITY OF AUBURN

Charles A. Booth, Mayor

August 5, 1996
Date

Attest:

City Clerk

Approved as to form:

City Attorney

REF: Resolution No. 2873
September 15, 1997

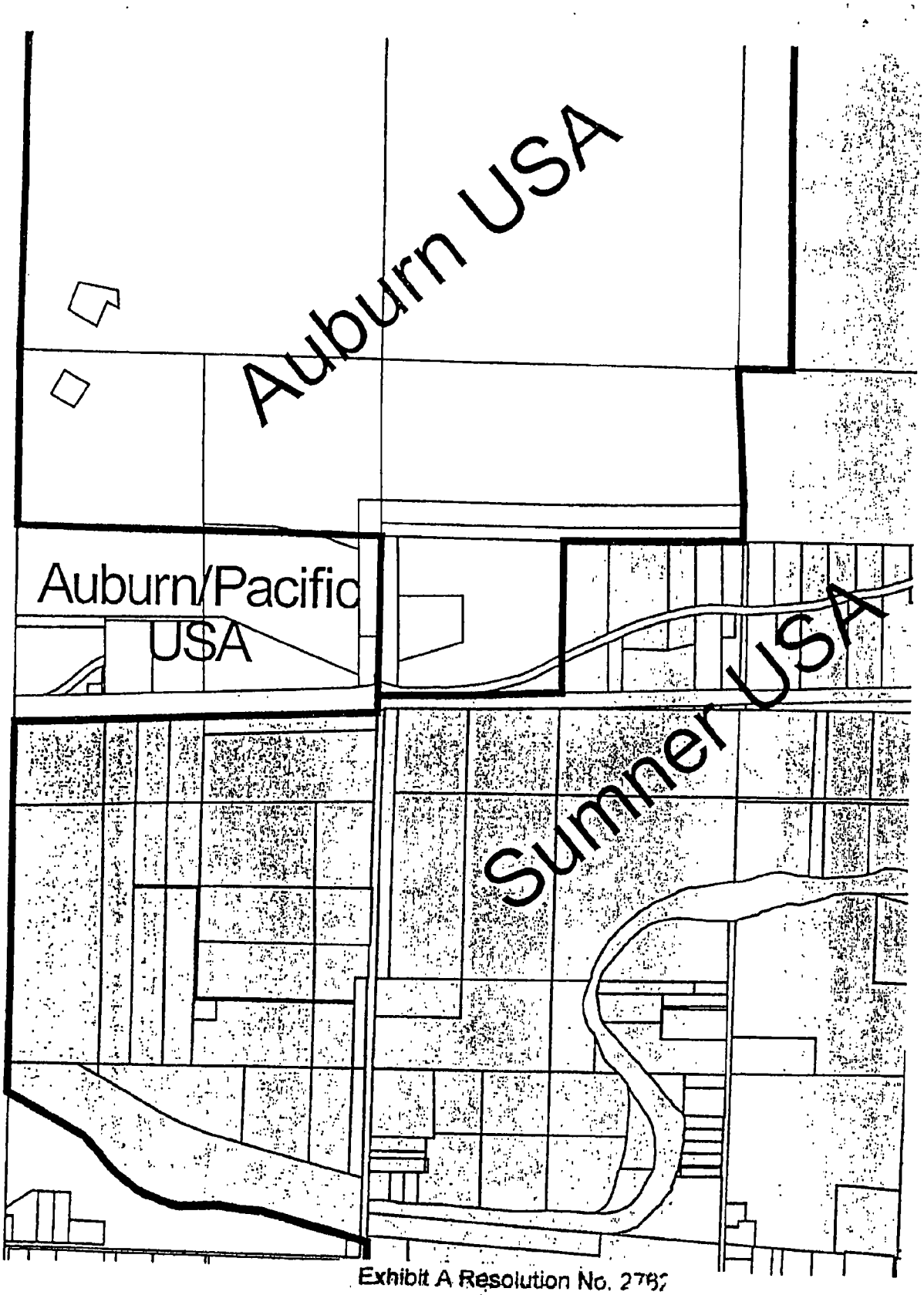


Exhibit "A" - Potential Annexation Areas

Exhibit A Resolution No. 2787
August 5, 1996

November 19, 2015

Chad Williams, Senior Planner
Pierce County Department of Planning and Land Services
2401 South 35th Street
Tacoma, WA 98409

RE: Service Area Agreement

Dear Chad Williams

On November 16, 2015 the City of Auburn City Council passed Resolution 5182 authorizing a water service area agreement between the City of Auburn and Pierce County. I have included a fully signed original. Please send me a recorded copy of the agreement at your earliest convenience. Thank you.

City of Auburn
Attn: Shawn Campbell
25 West Main Street
Auburn, WA 98001

Sincerely,

Shawn Campbell
Deputy City Clerk

ORDINANCE NO. 6624

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, RATIFYING THE FRANCHISE AGREEMENT WITH LAKEHAVEN UTILITY DISTRICT ADOPTED BY RESOLUTION NO. 3650

WHEREAS, the Lakehaven Utility District currently owns, operates, and maintains a water system within the City of Auburn's public rights-of-way within the City of Auburn corporate boundary; and

WHEREAS, in 2004, the City and Lakehaven Utility District negotiated a franchise agreement that was approved by the City Council through Resolution Number 3650; and

WHEREAS, Revised Code of Washington 35A.47.040 includes certain procedural requirements not typically followed when adopting a resolution; and

WHEREAS, the City wishes to ensure that the benefits and obligations inured to Lakehaven Utility District through Resolution Number 3650 are not invalidated by any procedural deficiency; and

WHEREAS, ratification of Resolution Number 3650 by this Ordinance will resolve any omission in the procedural requirements of RCW 35A.47.040 and conform to the City's standard practice of franchise adoption by ordinance; and

WHEREAS, following proper notice, the City Council held a public hearing on ratification of Resolution Number 3650; at which time interested citizens were heard in a full public proceeding affording opportunity for comment by any and all persons desiring to be heard; and

WHEREAS, from information presented at such public hearing, and from facts and circumstances developed or discovered through independent study and investigation, the City Council now deems it appropriate and in the best interest of the City and its inhabitants that Resolution Number 3650 be ratified.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, DO ORDAIN as follows:

Section 1. Grant of Franchise The provisions of Resolution Number 3650, attached hereto as Exhibit A and incorporated herein by this reference, are hereby adopted as if fully set forth herein.

Section 2. Implementation. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directions of this legislation.

Section 3. Severability. The provisions of this ordinance are declared to be separate and severable. The invalidity of any clause, sentence, paragraph, subdivision, section or portion of this ordinance, or the invalidity of the application thereof to any person or circumstance shall not affect the validity of the remainder of this ordinance, or the validity of its application to other persons or circumstances.

Section 4. Effective date. This Ordinance shall take effect and be in force five days from and after its passage, approval and publication as provided by law.

INTRODUCED: NOV 21 2016
PASSED: NOV 21 2016
APPROVED: NOV 21 2016

CITY OF AUBURN

NANCY BACKUS, MAYOR

ATTEST:

Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

Published: November 25, 2016 in The Seattle Times

RESOLUTION NO. **3650**

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE A FRANCHISE AGREEMENT BETWEEN THE LAKEHAVEN UTILITY DISTRICT AND THE CITY OF AUBURN, ALLOWING THE LAKEHAVEN UTILITY DISTRICT TO CONNECT, INSTALL, OPERATE, MAINTAIN AND REPAIR WATER SYSTEM, FACILITIES, AND APPURTENANCES IN, OVER, ALONG, ACROSS AND UNDER THE FRANCHISE AREA FOR THE PURPOSE OF PROVIDING WATER SERVICE

WHEREAS, the Lakehaven Utility District currently owns, operates, and maintains a water system within Auburn's public right of way located in the franchise area; and

WHEREAS, the Lakehaven Utility District is seeking a new comprehensive franchise with Auburn for public water facilities installed within Auburn's current and future public right of way; and

WHEREAS, in order to maintain control over the use of City of Auburn right-of-ways by utilities operating within the City of Auburn, it is appropriate to enter into franchise agreements with such utilities; and

WHEREAS, Lakehaven Utility District is such a utility, and has negotiated this franchise agreement with the City of Auburn acceptable to both parties; and

WHEREAS, the City of Auburn has determined that it is in the best interests of the public to grant the Lakehaven Utility District a water franchise on the terms and conditions set for in this Agreement.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor of the City of Auburn is herewith authorized to execute a Franchise Agreement between the Lakehaven Utility District and the City of Auburn in substantial conformity with the Agreement attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. This resolution shall be in full force and effect upon passage and signatures hereon.

DATED this 2nd day of February, 2004.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney



Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Franchise Agreement (Resolution No. 3650)

16/34 PNWT
W 9249-12

Reference Number(s) of Documents assigned or released:

☐ Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)

Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)

1. Lakehaven Utility District

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number

N/A

☐ Assessor Tax # not yet assigned

EXHIBIT "A"

CITY OF AUBURN, WASHINGTON
WATER FRANCHISE AGREEMENT
WITH THE LAKEHAVEN UTILITY DISTRICT

THIS FRANCHISE AGREEMENT, made and entered into this 23rd day of September, 2004, by and between the CITY OF AUBURN, Washington and the LAKEHAVEN UTILITY DISTRICT:

WITNESSETH:

WHEREAS, the Lakehaven Utility District currently owns, operates, and maintains a water system within Auburn's public right-of-way located in the franchise area; and

WHEREAS the Lakehaven Utility District is seeking to establish a comprehensive franchise with the City of Auburn for water system lines within Auburn's current and future public right-of-way; and

WHEREAS, in order to maintain control over the use of City of Auburn rights-of-way by utilities operating within the City of Auburn, it is appropriate to enter into franchise agreements with such utilities; and

WHEREAS, Lakehaven Utility District is such a utility, and has negotiated this franchise agreement with the City of Auburn acceptable to both parties; and

WHEREAS, the City of Auburn has determined that it is in the best interests of the public to grant the Lakehaven Utility District a franchise on the terms and conditions set forth in this franchise agreement.

NOW, THEREFORE THE CITY OF AUBURN AND THE LAKEHAVEN UTILITY DISTRICT AGREE AS FOLLOWS:

SECTION 1 DEFINITIONS

Where used in this franchise agreement ("Franchise"), the following definitions shall apply:

1.1 "Franchisee" means the Lakehaven Utility District, a Washington municipal corporation, and its respective successors and assigns.

1.2 "City" means the City of Auburn, a Washington municipal corporation.

1.3 "Franchise Area" means all of the public roads, streets, avenues, alleys, highways, and other rights-of-way of the City as now laid out, platted, dedicated or improved; and any and all public City roads, streets, avenues, alleys, highways, and other rights-of-way that may hereafter be laid out, platted, dedicated or improved within the area in which the City has jurisdiction, as described in Attachment 1 and as depicted in

Attachment 2, both attachments attached hereto, which is by this reference incorporated as if fully set forth herein; provided, that the Franchise Area shall not include or convey any right to the Franchisee to install facilities on, or to otherwise use, City owned or leased properties; and provided that the terms of this franchise (i.e., permitting and enforcement) shall not apply to those public roads, streets, avenues, alleys, highways, and other rights-of-way that may hereafter be laid out, platted, dedicated or improved within the area as described in Attachment 1 and depicted in Attachment 2 until such time that the City has assumed jurisdiction thereof.

1.4 "Facilities" means the Franchisee's water system, lines, mains, pump stations, appurtenances, and all other necessary or convenient appurtenances for the purpose of providing water service.

SECTION 2 FRANCHISE GRANT

Subject to the terms and conditions set forth in this Franchise, the City grants to the Franchisee the right to construct, own and maintain its Facilities, including, but not limited to, water pipelines, pump stations, and appurtenances within the City's public right-of-way and the Franchisee's water service area. In exercising authority to construct and install its Facilities and to excavate trenches in City roads for the purposes of constructing, installing, operating, maintaining, removing, and replacing its Facilities, and making connections between the same to the dwellings and other buildings of the consumers, the Franchisee shall be governed by and conform to the general rules adopted by the Public Works Department of the City, and the Franchisee, at no expense to the City, shall complete all work and shall replace and restore the City roads to the condition of the City roads existing immediately prior to such disturbance; PROVIDED, HOWEVER, that no such work shall be done prior to the obtaining of a permit therefor issued by the City's Public Works Director (hereinafter "Director"), which permit shall set forth conditions pertaining to the work to be done and specifications for the restoration of the roads to the same condition as they were immediately prior to such work. If the Franchisee does not repair the City roads to the satisfaction of the Director, the City may, at its sole discretion, repair such City roads, or cause them to be repaired, and the Franchisee hereby agrees to reimburse the City for the cost of such work, including reasonable overhead costs.

SECTION 3 FRANCHISE TERM

This Franchise shall take full force and effect five calendar days after being approved by the City, and shall be valid for a period of 25 years, expiring in 2029; provided, that this Franchise shall not take effect and the Franchisee shall have no rights under this Franchise unless the Franchisee files a written acceptance of this Franchise with the City pursuant to Section 4 of this Franchise.

SECTION 4 ACCEPTANCE BY FRANCHISEE OF TERMS AND CONDITIONS

The full acceptance of this Franchise and all of its terms and conditions shall be filed with the City Clerk within forty-five (45) days from the date of the resolution approving this Franchise by the Franchisee's duly elected Board of Commissioners. Full acceptance of this Franchise is a condition precedent to its taking effect, and unless this Franchise is

accepted within the time specified, this grant will be null and void and have no force or effect.

SECTION 5 NON-EXCLUSIVE FRANCHISE

This Franchise is not exclusive. It does not prohibit the City from granting franchises for other public or private utilities in, over, along, across, and under any City property, including the Franchise Area. This Franchise does not prevent or prohibit the City from constructing, altering, maintaining or using any of the Franchise Area. The City retains full power to make all changes, relocations; repair, maintenance or other work to or in the Franchise Area as the City deems fit.

SECTION 6 JURISDICTION

This Franchise is intended to convey limited rights and interest only as to those roads and rights-of-way in which the City has an actual interest within the Franchise Area. It is not a warranty of title or of interest in City road rights-of-way. None of the rights granted to the Franchisee shall affect the jurisdiction of the City over City road rights-of-way or the City's power to perform work upon its roadways, rights-of-way or appurtenant drainage facilities including by constructing, altering, renewing, paving, widening, grading, blasting or excavating. The parties shall comply with all applicable rules and regulations pertaining to them in connection with the matters covered herein.

SECTION 7 REGULATION OF USE AND CONTROL

This Franchise does not deprive the City of any powers, rights, or privileges it now has or may later acquire in the future to regulate the use of and to control the City road rights-of-way covered by this Franchise. The City reserves the right and power at all times to exercise its police powers with respect to the time, manner and location of the placement of the Franchisee's Facilities.

SECTION 8 EMINENT DOMAIN

This Franchise and the limited rights and interests granted by this Franchise are subject to the exercise of eminent domain. In the event of an exercise of eminent domain by the City, the value to be attributed to all the rights and interests granted under this Franchise shall not exceed the actual amount the Franchisee paid to the City in obtaining this Franchise.

SECTION 9 VACATION

If at any time the City vacates any City rights-of-way covered by this Franchise, the City will not be held liable for any damages or loss to the Franchisee by reason of such vacation. The City may, after giving thirty (30) days written notice to the Franchisee, terminate this Franchise with respect to any City road or rights-of-way vacated. However, should Franchisee notify the City that an easement is required for existing or proposed facilities within the proposed vacation area, the City shall withhold approval of such vacation until the Franchisee has notified the City that the necessary easement(s) have been secured, or provisions otherwise made to maintain the viability and use of existing Facilities.

SECTION 10 ENFORCEMENT

The City's failure to enforce any provision of this Franchise does not constitute a waiver of its right to enforce that provision or any other provision of this Franchise.

SECTION 11 INDEMNITY AND HOLD HARMLESS

11.1 The Franchisee shall defend, indemnify and hold harmless the City, its appointed and elected officials, and its employees and agents from and against liability for all claims, actions, injuries, demands, liabilities, losses, costs, damages and judgments, including costs of defense thereof, (collectively referred to as "damages") for injury to persons, death or property damage caused by, arising out of, or incidental to the Franchisee's exercise of the rights and privileges granted by this Franchise, except for damages caused by or arising out of the City's sole negligence. In the event that any such claim or demand for damages is presented to or filed with the City, or if any suit or action is initiated against the City based on such claims or demands for damages, the City shall promptly notify the Franchisee of the claim, demand, suit or action and the Franchisee shall have the right, at its election and its sole cost and expense, to settle and compromise such claim, demand, suit or action, or defend the same at the Franchisee's sole cost and expense.

11.2 If it is determined that RCW 4.24.115 applies to this Franchise, the Franchisee agrees to defend, hold harmless and indemnify the City to the maximum extent permitted under that statute, and specifically for the Franchisee's negligence concurrent with that of the City to the full extent of the Franchisee's negligence.

SECTION 12 INSURANCE

12.1 The Franchisee shall keep a policy of insurance in force with a minimum limit of five million dollars ($5,000,000.00). Verification of insurance coverage is a condition precedent to the effectiveness of this Franchise.

12.2 The insurance shall be maintained in full force and effect at the Franchisee's sole expense throughout the term of the Franchise, and, should such insurance be terminated, this Franchise shall terminate as of the date of the termination of insurance coverage.

12.3 The coverage provided by the Franchisee's insurance policies shall be primary to any insurance maintained by the City, except as to losses or damages attributable to the sole negligence of the City. Any insurance maintained by the City that might relate to this Franchise shall be in excess to the Franchisee's insurance and shall not contribute with or to it. The City has no obligation to report occurrences to the insurance companies unless a claim is filed with the City's City Council; and the City has no obligations to pay the Franchisee's premiums.

12.4 The Franchisee shall be solely and completely responsible to perform all work related to this Franchise in compliance with all applicable federal, state, county and city statutes, rules, regulations, ordinances, orders and codes. The Franchisee's attention is directed to the requirements of the Washington Industrial Safety and Health Act, Chapter 49.17 RCW. The Franchisee shall be solely and completely responsible for

safety and safety conditions on its job sites and for its work within the Franchise Area, including the safety of all persons and property during performance of any works therein. The services of the City or City's consultant personnel in conducting construction review of the Franchisee's work relating to the Franchise is not intended to include review of the adequacy of the Franchisee's work methods, equipment, scaffolding, or trenching, or safety measures in, on or near such Franchise Area or job site. The Franchisee shall provide safe access for the City and its inspectors to adequately inspect the work and its conformance with applicable statutes, ordinances, rules, regulations, and the Franchise.

SECTION 13 INSTALLATION, REPAIR, REMOVAL OR RELOCATION

13.1 The Franchisee shall, at no expense to the City, expeditiously repair all existing Facilities that it owns within the Franchise Area, including any damage caused directly or indirectly by its Facilities, all appurtenant Facilities and service lines connecting its system to users, if the City requires such repair for any reasonable purpose.

13.2 The Franchisee shall, at no expense to the City, adjust, remove or relocate existing Facilities within the Franchise Area, including all appurtenant Facilities and service lines connecting its system to users, if the City determines such adjustment, removal or relocation is reasonably necessary to allow for an improvement or alteration planned by the City. The City shall give the Franchisee written notice of such requirement as soon as practicable. The written notice shall include all available information, such as plans and specifications, as is reasonably necessary for the Franchisee to plan for such adjustment, removal or relocation.

13.3 Franchisee's Facilities shall be constructed, installed, maintained and repaired within the Franchise Area so as to provide safety of persons and property, and not interfere with the free passage of traffic, all in accordance with the laws of the State of Washington, and the ordinances, resolutions, rules and regulations of the City.

13.4 For projects that are a part of the City's capital improvement program, in addition to any other notice given to the Franchisee, the City shall provide a copy of the capital improvement plan and six (6) year transportation improvement plan when requested. Further, the City shall provide a horizontal plan and vertical profile of the roadway and drainage facilities within it, both existing and as proposed by the City, and the proposed construction schedule. The initial design information shall be given at least one hundred and eighty (180) days before construction is scheduled to begin, except in cases of urgent construction or emergencies. The Franchisee shall respond to this notice, and to any later notices of revised designs, within twenty (20) days of the date of the notice, by providing to the City the Franchisee's best available information as to the location of all the Franchisee's Facilities, including all appurtenant Facilities and service lines connecting its system to users, and all Facilities that it has abandoned, within the area proposed for the project.

13.5 The City shall offer the Franchisee the opportunity to participate in the preparation of bid documents for the selection of a contractor to perform the public works project as well as all required adjustments, removals or relocations of the Franchisee's Facilities. The City shall have sole authority to choose the contractor to perform such

work. Such bid documents shall provide for an appropriate cost allocation between the parties. In addition to the Franchisee's allocation of contractor costs, the Franchisee shall reimburse the City for all costs, to include but not be limited to legal, engineering, inspections, administration and/or soils testing, related to the Franchisee's work and reasonably incurred by the City in the administration of such joint construction contracts. Such costs shall include the direct salary cost of the time of City professional and technical personnel, including the City's consultants, spent productively engaged in such work, plus overhead costs at the standard rate charged by the City on other similar projects. The specific terms of the joint participation on any public work shall be as set forth in a written agreement between the parties.

13.6 It is understood that emergency situations may arise that could threaten public health and/or continued operation of the Franchisee's utility system and the Franchisee may be unable to notify the City in the manner prescribed in Section 14 of this Franchise. In such a situation the Franchisee shall immediately correct the hazardous situation and continue to use best efforts to contact the City staff. The Emergency Phone Number for the City of Auburn is (253) 931-3048, and that for the Lakehaven Utility District is (253) 941-1516. Dialing 911 is advised for emergency situations that may result in imminent threats to life and/or property.

SECTION 14 REQUIREMENT OF CONSTRUCTION PERMITS

14.1 The Franchisee has the right, privilege and authority to enter the City road rights-of-way for the purpose of constructing, installing, operating, maintaining, replacing or repairing its Facilities on the condition that it obtains construction, excavation, and right-of-way use permits issued by the City. Any work performed, whether by Franchisee, its contractors, or third parties, shall include necessary paving, patching, grading and any other reasonably necessary repair or restoration to the City rights-of-way. All work shall be done to the City's satisfaction.

14.2 All equipment, pipelines and appurtenances which are used in the construction, installation, operation, maintenance or repair of the Franchisee's Facilities and which are located within the City road rights-of-way and owned by the Franchisee shall be considered to be part of the Franchisee's system and shall be the responsibility of the Franchisee. All permits for the construction, installation, operation, maintenance or repair of the Franchisee's system shall be applied for and given in the name of the Franchisee, who will be responsible for all work done under the permit. The Franchisee remains responsible whether the work is performed by the Franchisee, its contractors, or by third parties.

14.3 When required by the City's Public Works Director, the Franchisee shall post a bond to the City in the amount sufficient for any road repair or restoration. The amount of the bond shall be set by the City and must be filed with the City before a permit will be issued.

SECTION 15 PERFORMANCE OF WORK

15.1 Any work performed by the Franchisee in the Franchise Area shall conform to all City ordinances and requirements including, but not limited to, Auburn City Code and the City's Design and Construction Standards in force when the work is performed. All traffic control shall conform to the current edition of the Manual of Uniform Traffic Control Devices in force when the work is performed.

15.2 If work performed under this Franchise makes it necessary to turn off or diminish water pressure or potential flow to any fire hydrant, the Franchisee shall notify the City's Fire Department by telephone and by written notice, that water pressure or fire flow conditions have been affected. Except in the case of an emergency, the notice shall be provided at least 48 hours prior to the water pressure or potential flow being suspended or diminished. If more than one fire hydrant will be affected, the Franchisee shall provide a map of the affected area to the Fire Department. Out-of-service fire hydrants must be identified as not operational by covering with a properly secured burlap or plastic bag. Fire hydrants should be returned to full service as soon as reasonably possible or no longer than two working days from the date service was suspended or diminished. The Franchisee shall notify the City's Fire Department when the hydrant(s) is/are returned to full service.

SECTION 16 RESTORATION OF CITY RIGHTS-OF-WAY

After performing work on, under or adjacent to City road rights-of-way, the Franchisee is responsible for and shall leave all City road rights-of-way in the condition of the City road rights-of-way existing immediately prior to such disturbance. If the Franchisee, its contractors, or third parties working under permit should fail to diligently restore City road rights-of-way to the satisfaction of the City, the City may make such repairs or restorations as are necessary to return the City road rights-of-way to a condition reasonably comparable to the condition of the City road rights-of-way existing immediately prior to such disturbance. Upon presentation of an itemized invoice for repairs or restorations, including all applicable costs, both direct and indirect, to include, but not be limited to, the cost of labor, tools, materials and equipment, the Franchisee shall pay the invoice within sixty-five (65) days of its receipt and approval.

SECTION 17 INFORMATION ON LOCATION OF FACILITIES

The Franchisee shall provide the City with all information requested by the City regarding the location of the Franchisee's current Facilities, including, but not limited to, copies of all record drawings for such Facilities. If the Franchisee performs any work to install, repair, reconstruct, or replace Facilities in the Franchise Area after this Franchise's effective date, the Franchisee shall provide the City with all information requested by the City regarding the location of those Facilities, including, but not limited to, copies of record drawings.

SECTION 18 COORDINATION OF WORK IN FRANCHISE AREA

To facilitate the coordination of work in City rights-of-way, if either the Franchisee or the City plans to make excavations in the Franchise Area, the party planning such excavation shall provide written notice to the other of the planned excavation, affording the other party the opportunity to share in the excavation; provided, that (1) such joint use shall not unreasonably delay the work of the party causing the excavation to be made, (2) such joint use shall be arranged and accomplished on terms and conditions satisfactory to both parties, and (3) either party may deny such request for safety reasons.

SECTION 19 BLASTING REQUIREMENTS

The Franchisee's right to construct, install, operate, maintain and repair Facilities does not preclude the City, its agents or contractors from blasting, grading, or doing other road work contiguous to the Franchisee's Facilities. When practical, the City shall give the Franchisee forty-eight (48) hours notice of blasting or excavating.

SECTION 20 SURVEY MARKERS AND MONUMENTS

Before any work is performed under this Franchise, the Franchisee shall establish two or more reference marks to all monuments and markers of every nature relating to subdivisions, plats, rights-of-way, and all other surveys. The reference points shall be located so that they will not be disturbed during any of Franchisee's operations under this Franchise. The method of referencing monuments or other markers or points shall be approved by the City before placement. The replacement of all markers or monuments disturbed during any construction of the Franchisee shall be made as promptly as conditions permit. The cost of monuments or markers lost, destroyed, or disturbed and the expense or replacement with approved markers or monuments shall be borne by the Franchisee.

SECTION 21 RESERVATION OF RIGHTS

21.1 The City reserves the right to impose, to the extent authorized by law, a utility tax on the Franchisee and/or to charge the Franchisee a reasonable fee for services provided or rights granted under this Franchise.

21.2 The Franchisee agrees that it shall be subject to all authority now or later possessed by the City or any other governing body having competent jurisdiction to fix just, reasonable and compensatory rates for services under this Franchise.

21.3 The City reserves the right, upon thirty (30) days written notice to the Franchisee, to amend or modify the provisions or conditions of this Franchise to conform to any state, county, federal, or City statute, ordinance, rule or regulation. The City may terminate this Franchise upon thirty (30) days written notice to the Franchisee if the Franchisee fails or refuses to comply with such amendment or modification.

SECTION 22 ASSIGNMENT

The Franchisee shall not have the right to assign this Franchise without the written consent of the City. No assignment shall be effective unless an acceptance by the assignee of all rights, conditions, terms, provisions and responsibilities contained within the Franchise, as well as surety bonds which the City deems necessary to be posted, are received as allowed by law. The City's approval of the assignment may be made subject to the assignee's acceptance of new or modified terms of the Franchise.

SECTION 23 PENALTY FOR VIOLATION OF CONDITIONS

If the Franchisee fails to comply with any material term, condition or responsibility under this Franchise, the City may provide the Franchisee with written notice of the City's intent to revoke the Franchise if the Franchisee's failure is not cured within thirty (30) days of the date of the notice. During the thirty (30) days following the date of the notice, the Franchisee shall have the opportunity to remedy the failure to comply. A public hearing shall be scheduled before the Auburn City Council at least thirty (30) days following the notification on the issue of the revocation. If at the hearing, the City Council finds that grounds exist to revoke the Franchise under this paragraph and that the revocation is in the public interest, the City Council may by resolution revoke the Franchise. The revocation shall be effective ninety (90) days after the public hearing.

SECTION 24 EXPIRATION AND RENEWAL

24.1 If the Franchisee requests a renewal of this Franchise prior to its expiration date, which renewal shall be granted, on terms reasonable to the parties, unless the City can demonstrate, in good faith, that such renewal would be contrary to its operation of the right of way, the City may, at the City's sole discretion, extend the term of this Franchise for up to one year beyond the expiration date to allow for processing of the renewal. If the City elects to extend the term of this Franchise, written notice of the extension shall be provided to the Franchisee prior to the Franchise expiration date.

24.2 If the Franchisee has not requested a renewal of this Franchise prior to its expiration date, the City has the right, upon thirty (30) day's prior notice to the Franchisee, to remove or relocate any of the Franchisee's Facilities as is reasonably necessary for the public's health, welfare or safety, or for the construction, alteration, or improvement of the Franchise Area, or for the construction or installation of lines or facilities of other franchise holders. The Franchisee shall be liable for costs incurred in any removal or relocation of the Franchisee's Facilities under this section.

24.3 Upon the expiration of this Franchise, the Franchisee shall continue to be responsible for the operation and maintenance of the Franchisee's existing facilities in the Franchise Area, but shall not have the right to provide additional services. This Section and Sections 11, 13, 14, 15, 16, 18, and 20 of this Franchise shall continue in force until such time as the Franchisee's Facilities are abandoned to the City's satisfaction.

SECTION 25 COMPLIANCE WITH LAWS
The Franchisee shall conform to all applicable federal, state and local laws and regulations including, but not limited to, the State Environmental Policy Act and the City's Environmental Standards and Ordinances.

SECTION 26 NON-DISCRIMINATION CLAUSE
In all hiring or employment made possible or resulting from this Franchise, there shall be no discrimination against any employee or applicant for employment because of sex, sexual orientation, age, race, color, national origin, marital status or the presence of any sensory, mental, or physical handicap, unless based upon a bona fide occupation qualification. No person shall be denied or subjected to discrimination in receipt of the benefit of any services or activities made possible by or resulting from this Franchise on the grounds of sex, sexual orientation, race, color, national origin, age, except minimum age and retirement provisions, marital status, or the presence of any sensory, mental or physical handicap.

SECTION 27 NOTICE
All notices between the two agencies hereunder may be delivered or mailed. If mailed, they shall be sent to the following respective addresses:

City of Auburn:
City Engineer
25 West Main Street
Auburn, WA 98001-4998
Tel: 253-931-3010

Lakehaven Utility District:
General Manager
31627 1st Ave South
PO Box 4249
Federal Way, WA 98063-4249
Tel: 253-941-1516

or to such other representative addresses as either party may hereafter from time to time designate in writing. All notices and payments mailed by regular post (including first class) shall be deemed to have been given on the second business day following the date of mailing, if properly mailed and addressed. Notices and payments sent by certified or registered mail shall be deemed to have been given on the day next following the date of mailing, if properly mailed and addressed. For all types of mail, the postmark affixed by the United States Postal Service shall be conclusive evidence of the date of mailing.
If an emergency situation develops, it is recommended that the City or the Franchisee call 911 to solicit an emergency response.

SECTION 28 ATTORNEYS' FEES
If either party shall be required to bring any action to enforce any provision of this Franchise, or shall be required to defend any action brought by the other party with respect to this Franchise, and in the further event that one party shall substantially prevail in such action, the losing party shall, in addition to all other payments required therein, pay all of the prevailing party's reasonable costs in connection with such action, including such sums as the court or courts may adjudge reasonable as attorney's fees in trial court and in appellate courts.

SECTION 29 SEVERANCE
If any term, provision, condition or portion of this Franchise is held to be invalid, such invalidity shall not affect the validity of the remaining portions of this Franchise which shall continue in full force and effect, unless the dominant purpose of the Franchise would be prevented or the public interest would no longer be served, as determined by the City.

SECTION 30 EFFECTIVE DATE
The resolution approving the Franchise, having been introduced at least five days prior to its date of passage and submitted to the city attorney, and being approved by at least a majority of the entire city council at a regular city council meeting, shall take effect and be in force five calendar days after its passage and approval by both parties to this Franchise.

SECTION 31 EXISTING UTILITIES
This Franchise shall govern existing and future water system facilities currently owned, operated and maintained by Lakehaven Utility District within the City of Auburn.

SECTION 32 DISPUTE RESOLUTION
In the event that a dispute arises with regard to the terms of this Franchise Agreement, either party may request that the dispute be submitted to non-binding mediation or arbitration prior to court action. Such request for non-binding mediation or arbitration shall be made in writing and mailed by first class, U.S. Mail to the other party. The mediator or arbitrator shall be chosen by agreement of the parties. Either party may refuse to submit to the dispute resolution process. Refusal to engage in the dispute resolution process shall not prejudice the refusing party in any way.

IN WITNESS WHEREOF the parties hereto have executed this Franchise Agreement as of the day and year first above written.

LAKEHAVEN UTILITY DISTRICT

Approved by Resolution No. 2004-1006 of the Lakehaven Utility District, Federal Way, Washington, at its regular meeting held on the 8th day of January, 2004.

By:

Donald T. Perry, General Manager
Lakehaven Utility District

Approved as to form:

Steven H. Pritchett, General Counsel
Lakehaven Utility District

CITY OF AUBURN

By:

Peter B. Lewis, Mayor
City of Auburn

Attest:

Danielle Daskam, City Clerk

Approved as to form:

Daniel B. Heid, City Attorney

AUBURN RESOLUTION NO: 3650

LAKEHAVEN REFERENCE NUMBER: 2004-1006

Attachment 1

Auburn Ordinance No. 3650

Description of Lakehaven Utility District's Water Franchise Area

BEGINNING AT THE SOUTHWEST CORNER OF SECTION 23, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

THENCE NORTH ALONG THE WEST LINE OF SAID SECTION 23 TO THE NORTHWEST CORNER OF SAID SECTION 23 AND THE SOUTHEAST CORNER OF SECTION 15, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

THENCE WESTERLY ALONG THE SOUTH LINE OF SAID SECTION 15 TO THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF SAID SECTION 15;

THENCE NORTHERLY ALONG THE NORTH-SOUTH CENTERLINE OF SAID SECTION 15 TO THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF SECTION 10, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

THENCE NORTHERLY ALONG THE NORTH-SOUTH CENTERLINE OF SAID SECTION 10 TO THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF SECTION 3, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

THENCE NORTHERLY ALONG THE NORTH-SOUTH CENTERLINE OF SAID SECTION 3 TO THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF SECTION 34, TOWNSHIP 22 NORTH, RANGE 4 EAST, W.M.;

THENCE NORTHERLY ALONG THE WEST LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 34 TO THE NORTHWEST CORNER OF SAID SOUTHEAST QUARTER OF SAID SECTION 34;

THENCE EASTERLY ALONG THE NORTHERLY LINE OF SAID SOUTHEAST QUARTER OF SAID SECTION 34 TO THE NORTHWEST CORNER OF THE SOUTHWEST QUARTER OF SECTION 35, TOWNSHIP 22 NORTH, RANGE 4 EAST, W.M.;

THENCE EASTERLY ALONG THE EAST-WEST CENTERLINE OF SAID SECTION 35 TO THE NORTHWEST CORNER OF THE SOUTHWEST QUARTER OF SECTION 36, TOWNSHIP 22 NORTH, RANGE 4 EAST, W.M.;

THENCE EASTERLY ALONG THE NORTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 36 TO THE NORTHEAST CORNER OF SAID SOUTHWEST QUARTER OF SAID SECTION 36;

THENCE SOUTHERLY ALONG THE NORTH-SOUTH CENTERLINE OF SAID SECTION 36 TO THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF SECTION 1, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

THENCE SOUTHERLY ALONG THE NORTH-SOUTH CENTERLINE OF SAID SECTION 1 TO THE SOUTHEAST CORNER OF THE SOUTHWEST QUARTER OF SAID SECTION 1;

THENCE WESTERLY ALONG THE SOUTH LINE OF SAID SECTION 1 TO THE NORTHEAST CORNER OF SECTION 11, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

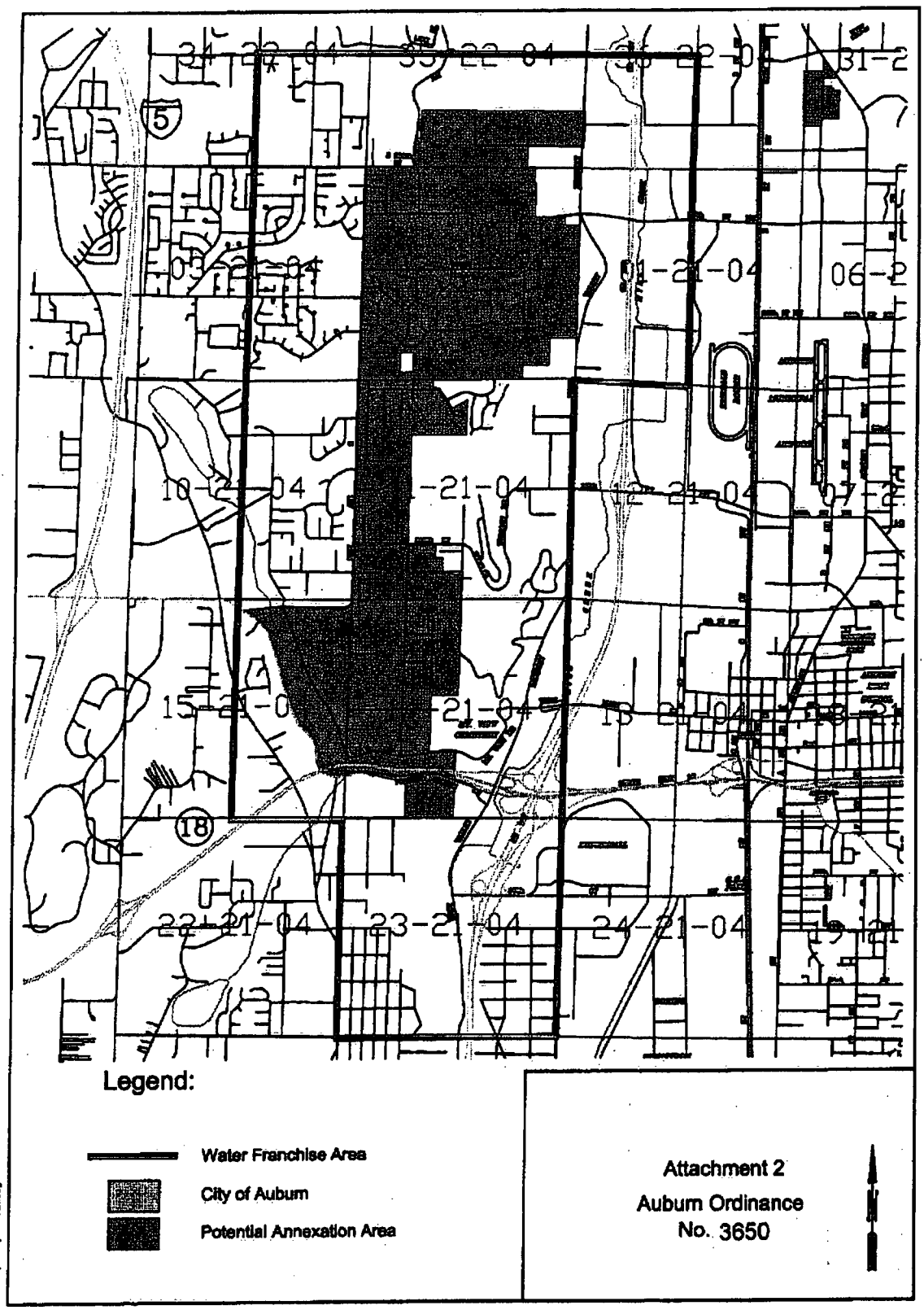
THENCE SOUTHERLY ALONG THE EAST LINE OF SAID SECTION 11 TO THE NORTHEAST CORNER OF THE NORTHEAST QUARTER OF SECTION 14, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

THENCE SOUTHERLY ALONG THE EAST LINE OF SAID SECTION 14 TO THE NORTHEAST CORNER OF THE NORTHEAST QUARTER OF SECTION 23, TOWNSHIP 21 NORTH, RANGE 4 EAST, W.M.;

THENCE SOUTHERLY ALONG THE EAST LINE OF SAID SECTION 23 TO THE SOUTHEAST CORNER OF SAID SECTION 23;

THENCE WESTERLY ALONG THE SOUTH LINE OF SAID SECTION 23 TO THE POINT OF BEGINNING.

SITUATE IN KING COUNTY, WASHINGTON.


5
18
Legend:
Water Franchise Area
City of Auburn
Potential Annexation Area
Attachment 2
Auburn Ordinance
No. 3650

RESOLUTION NO. 5 3 3 2

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE A FIRST AMENDMENT TO INTERLOCAL AGREEMENT 2 FOR THE LEA HILL INTERTIE PROJECT BETWEEN COVINGTON WATER DISTRICT, KING COUNTY WATER DISTRICT NO. 111 AND THE CITY OF AUBURN

WHEREAS, in 1996, the City of Auburn, Covington Water District and King County Water District No. 111, entered into an Interlocal Agreement (IA2) for the Lea Hill Intertie Project, which provided, in part, for the construction and operation of certain water facilities to be jointly funded by the parties and owned and operated by the City; and

WHEREAS, IA2 also provided for the City to make water supply available to the Districts in an interruptible basis, until and unless the City were to acquire additional firm water rights, in which case, the City's supply of water to its IA2 partners would have increased; and

WHEREAS, the City was not yet successful in acquiring additional water rights; and

WHEREAS, in accordance with changes since IA2 was negotiated, the Parties recognize that some changes in circumstances require the clarification of the terms and conditions of the Interlocal Agreement, including that Covington no longer desires to be a party to the Agreement; and

WHEREAS, King County Water District No. 111 and the City would like to make certain clarifications and modifications, including further definition of the duration of the Agreement.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. That the Mayor is hereby authorized to execute the First Amendment to IA2 for the Lea Hill Intertie Project Between Covington Water District, King County Water District No. 111 and the City of Auburn, which amendment shall be in substantial conformity with the amendment attached hereto as Exhibit A and incorporated herein by this reference.

Section 2. That the Mayor is authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 4th day of December, 2017.

CITY OF AUBURN

Nancy Backus
NANCY BACKUS, MAYOR

ATTEST:

Danielle E. Daskam
Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

FIRST AMENDMENT TO INTERLOCAL AGREEMENT 2 FOR THE LEA HILL INTERTIE PROJECT BETWEEN COVINGTON WATER DISTRICT, KING COUNTY WATER DISTRICT NO. 111, AND THE CITY OF AUBURN

THIS FIRST AMENDMENT TO INTERLOCAL AGREEMENT 2 ("**First Amendment**"), is made and entered into by and between Covington Water District, a Washington municipal corporation ("Covington"), King County Water District No. 111, a Washington municipal corporation ("WD 111") (Covington and WD 111 are referred to collectively as the "Districts"), and the City of Auburn, a Washington municipal corporation ("City"), (individually a "Party" and collectively the "Parties") for the purposes set forth below.

1. RECITALS.

1.1. The Parties entered into Interlocal Agreement 2 for the Lea Hill Project ("IA2") in 1996 providing, in part, for the construction and operation of certain water facilities to be jointly funded by the Parties and owned and operated by the City ("Project"). IA2 provided for the City to make water supply available to the Districts.

1.2. The Parties recognize that some changes in circumstances require the clarification of the terms and conditions of IA2, including that Covington no longer desires to be a party to IA2 and therefore desires to terminate any rights and obligations it may have with respect to IA2. WD 111 and the City also desire to make certain clarifications and modifications to IA2, including the further definition of the duration of IA2.

1.3. The Parties are authorized by chapter 39.34 RCW, the Interlocal Cooperation Act, to enter into interlocal agreements for joint action.

Now, therefore, in consideration of the following terms and conditions, the Parties agree as follows:

2. AGREEMENT.

2.1. The recitals set forth above are incorporated herein in full by this reference.

2.2 As of the Effective Date of this First Amendment, Covington shall no longer be a party to IA2 and shall have no further rights or obligations with respect to IA2 or this First Amendment.

2.3 Section IX. "Term of Duration of Agreement" of IA2 is hereby modified and amended to read as follows:

> IX. Term of Duration of Agreement: Unless terminated sooner by mutual agreement of the Parties, this IA2 shall have a term of sixty (60) years commencing from the Effective Date of this First Amendment.

2.4 Section VIII.A. "Conditions of Service" of IA2 is hereby modified and amended to read as follows:

VIII.A. Auburn will continue to honor the provisions of IA2 with respect to providing water supply to WD 111 on an interruptible basis upon request from WD 111 for such service, subject to the availability of Auburn's water supply to provide water service as reasonably determined by Auburn. Auburn does not presently have the necessary capacity (i.e., water supply and/or water rights) to guarantee delivery of firm uninterruptible water. It is acknowledged and agreed that in the event Auburn experiences any failure or decreased capacity for any reason or increased demand within its retail service area as it currently exists or may exist in the future, the supply to WD 111 may be immediately reduced or stopped under such conditions at the reasonable discretion of Auburn. WD 111 agrees that Auburn may take such action irrespective of any costs, investment in capacity, or other reliance which may have been placed upon the intertie facilities and interruptible water supply referenced in this IA2.

2.5 Section VI.A. "Service Charges" 2.8.1 of the Agreement is hereby modified and amended to read as follows:

VI.A. Auburn retail water customers and wholesale water customers are treated differently. Retail customers for Auburn include all citizens and properties within Auburn's retail service area as it currently exists or may exist in the future. Auburn has created a customer classification for wholesale customers, and rates for service charges for wholesale customers shall be based on a rate study for the wholesale customer classification. Auburn will charge WD 111 a wholesale rate based on a rate study regularly done in Auburn's normal course of business and as approved and adopted by the City of Auburn's City Council. Wholesale water rates shall be based on costs of providing the service.

2.6 A new subsection F. is added to Section III. "Description of Project" as follows:

III.F. Auburn agrees to continue to operate and configure its water system to make wholesale water service available to WD 111 through the present WD 111 connection to Auburn's water system on 132nd Avenue NE south of SE 299th Street (referred to as the "DuBerry Intertie") or through such other connection point(s) as may be mutually agreed to by Auburn and WD 111.

2.7 Except as expressly set forth in this First Amendment, all other provisions of IA2 shall remain unchanged, and in full force and effect. Each reference in IA2 to itself shall be deemed also to refer to this First Amendment.

2.8 Auburn will work with WD 111 to further review the language of IA2 to determine whether other updates or amendments are appropriate.

2.9 This First Amendment to IA2 is contingent on final approval by the Auburn City Council, the WD 111 Board of Commissioners, and the Covington Board of Commissioners. Staff and counsel of the Parties recommend the approval of this First Amendment to their respective City Council and Board of Commissioners.

2.10 All capitalized terms used but not defined in this First Amendment shall have the same meanings as defined in IA2.

2.11 This First Amendment shall be effective on the date whereby it has been executed by all of the Parties ("Effective Date").

2.12 Pursuant to RCW 39.34.040, this First Amendment shall be filed with the King County Auditor upon full execution or listed on the City's and WD 111's respective web sites listed by subject matter.

KING COUNTY WATER DISTRICT NO. 111

By: _____
Its: _____
Dated: _____

COVINGTON WATER DISTRICT

By: _____
Its: _____
Dated: _____

CITY OF AUBURN

By: _____
Nancy Backus, Mayor
Dated: _____

Attest:

By: _____
City Clerk

Approved as to form:

By: _____
City Attorney

FIRST AMENDMENT TO INTERLOCAL AGREEMENT 2 FOR THE LEA HILL INTERTIE PROJECT BETWEEN COVINGTON WATER DISTRICT, KING COUNTY WATER DISTRICT NO. 111, AND THE CITY OF AUBURN

THIS FIRST AMENDMENT TO INTERLOCAL AGREEMENT 2 ("**First Amendment**"), is made and entered into by and between Covington Water District, a Washington municipal corporation ("Covington"), King County Water District No. 111, a Washington municipal corporation ("WD 111") (Covington and WD 111 are referred to collectively as the "Districts"), and the City of Auburn, a Washington municipal corporation ("City"), (individually a "Party" and collectively the "Parties") for the purposes set forth below.

1. RECITALS.

1.1. The Parties entered into Interlocal Agreement 2 for the Lea Hill Project ("IA2") in 1996 providing, in part, for the construction and operation of certain water facilities to be jointly funded by the Parties and owned and operated by the City ("Project"). IA2 provided for the City to make water supply available to the Districts.

1.2. The Parties recognize that some changes in circumstances require the clarification of the terms and conditions of IA2, including that Covington no longer desires to be a party to IA2 and therefore desires to terminate any rights and obligations it may have with respect to IA2. WD 111 and the City also desire to make certain clarifications and modifications to IA2, including the further definition of the duration of IA2.

1.3. The Parties are authorized by chapter 39.34 RCW, the Interlocal Cooperation Act, to enter into interlocal agreements for joint action.

Now, therefore, in consideration of the following terms and conditions, the Parties agree as follows:

2. AGREEMENT.

2.1. The recitals set forth above are incorporated herein in full by this reference.

2.2 As of the Effective Date of this First Amendment, Covington shall no longer be a party to IA2 and shall have no further rights or obligations with respect to IA2 or this First Amendment.

2.3 Section IX. "Term of Duration of Agreement" of IA2 is hereby modified and amended to read as follows:

> IX. Term of Duration of Agreement: Unless terminated sooner by mutual agreement of the Parties, this IA2 shall have a term of sixty (60) years commencing from the Effective Date of this First Amendment.

2.4 Section VIII.A. "Conditions of Service" of IA2 is hereby modified and amended to read as follows:

VIII.A. Auburn will continue to honor the provisions of IA2 with respect to providing water supply to WD 111 on an interruptible basis upon request from WD 111 for such service, subject to the availability of Auburn's water supply to provide water service as reasonably determined by Auburn. Auburn does not presently have the necessary capacity (i.e., water supply and/or water rights) to guarantee delivery of firm uninterruptible water. It is acknowledged and agreed that in the event Auburn experiences any failure or decreased capacity for any reason or increased demand within its retail service area as it currently exists or may exist in the future, the supply to WD 111 may be immediately reduced or stopped under such conditions at the reasonable discretion of Auburn. WD 111 agrees that Auburn may take such action irrespective of any costs, investment in capacity, or other reliance which may have been placed upon the intertie facilities and interruptible water supply referenced in this IA2.

2.5 Section VI.A. "Service Charges" 2.8.1 of the Agreement is hereby modified and amended to read as follows:

VI.A. Auburn retail water customers and wholesale water customers are treated differently. Retail customers for Auburn include all citizens and properties within Auburn's retail service area as it currently exists or may exist in the future. Auburn has created a customer classification for wholesale customers, and rates for service charges for wholesale customers shall be based on a rate study for the wholesale customer classification. Auburn will charge WD 111 a wholesale rate based on a rate study regularly done in Auburn's normal course of business and as approved and adopted by the City of Auburn's City Council. Wholesale water rates shall be based on costs of providing the service.

2.6 A new subsection F. is added to Section III. "Description of Project" as follows:

III.F. Auburn agrees to continue to operate and configure its water system to make wholesale water service available to WD 111 through the present WD 111 connection to Auburn's water system on 132nd Avenue NE south of SE 299th Street (referred to as the "DuBerry Intertie") or through such other connection point(s) as may be mutually agreed to by Auburn and WD 111.

2.7 Except as expressly set forth in this First Amendment, all other provisions of IA2 shall remain unchanged, and in full force and effect. Each reference in IA2 to itself shall be deemed also to refer to this First Amendment.

2.8 Auburn will work with WD 111 to further review the language of IA2 to determine whether other updates or amendments are appropriate.

2.9 This First Amendment to IA2 is contingent on final approval by the Auburn City Council, the WD 111 Board of Commissioners, and the Covington Board of Commissioners. Staff and counsel of the Parties recommend the approval of this First Amendment to their respective City Council and Board of Commissioners.

2.10 All capitalized terms used but not defined in this First Amendment shall have the same meanings as defined in IA2.

2.11 This First Amendment shall be effective on the date whereby it has been executed by all of the Parties ("Effective Date").

2.12 Pursuant to RCW 39.34.040, this First Amendment shall be filed with the King County Auditor upon full execution or listed on the City's, Covington's and WD 111's respective web sites listed by subject matter.

KING COUNTY WATER DISTRICT NO. 111
By: _____ Patrick M. Hanis
Its: Board President
Dated: 11/22/2017

COVINGTON WATER DISTRICT
By: _____
Its: General Manager
Dated: DEC 04 2017

CITY OF AUBURN
By: Nancy Backus
Nancy Backus, Mayor
Dated: DEC 04 2017

Attest:

By: _____

Approved as to form:

_____

RESOLUTION NO. 5357

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO SIGN AN INTERLOCAL AGREEMENT WITH OTHER WASHINGTON AGENCIES FOR THE PURPOSE OF RECEIVING AND PROVIDING WATER/WASTEWATER MUTUAL AID IN THE EVENT OF AN EMERGENCY

WHEREAS, pursuant to RCW 35.A.11.040, Auburn has the legal authority to exercise its powers and perform any of its functions as set forth in RCW 39.34; and

WHEREAS, local governments throughout the State of Washington have signed on to an interlocal agreement for the provision of water/wastewater mutual aid in the event of an emergency, identified as the Water/Wastewater Agency Response Network (WARN); and

WHEREAS, mutual aid agreements improve City response to emergencies and disasters; and

WHEREAS, the City Council finds that joining WARN will benefit public health safety and welfare.

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, RESOLVES as follows:

Section 1. The Mayor is hereby authorized to sign on to the interlocal agreement for the Water/Wastewater Agency Response Network, in substantial conformity with the agreement attached hereto, marked as Exhibit A and incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directions of this legislation.

Section 3. This Resolution shall take effect and be in force upon passage and signatures thereon.

DATED and SIGNED on this 2nd day of April, 2018.

CITY OF AUBURN

Nancy Backus

NANCY BACKUS, MAYOR

ATTEST:

Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

Mutual Aid and Assistance Agreement for Washington State for Intrastate Water/Wastewater Agency Response Network (WARN)
As of: 04/13/09

This Agreement ("Agreement") is made and entered into by public water and wastewater utilities that have executed this Agreement.

ARTICLE I
PURPOSE

Recognizing that emergencies may require aid or assistance in the form of personnel, equipment, and supplies from outside the area of impact, the signatories hereby establish an Intrastate Network for Mutual Aid and Assistance (the "Network"). Through the Network, Members (as further defined in this Agreement) may coordinate response activities and share resources during emergencies.

ARTICLE II
DEFINITIONS

A. Authorized Official – An employee or officer of a Member agency that is authorized to:

1. Request assistance;
2. Offer assistance;
3. Decline to offer assistance;
4. Decline to accept offers of assistance, and
5. Withdraw assistance under this Agreement.

B. Emergency – A natural or human-caused event or circumstance causing, or imminently threatening to cause, loss of life, injury to person or property, human suffering, significant financial loss, or damage to environment. For example, Emergencies may include fire, explosion, flood, severe weather, drought, earthquake, volcanic activity, spills or releases of oil or hazardous material, contamination, utility or transportation emergencies, disease, blight, infestation, civil disturbance, riot, intentional acts, sabotage and war that are, or could reasonably be beyond the capability of the services, personnel, equipment, and facilities of a Member to fully manage and mitigate by itself.

C. Member – Any public agency which provides supply, transmission or distribution of water; or collection, conveyance or treatment services of storm water or waste water that executes this Agreement (individually a "Member" and collectively the "Members"). The Members are further classified as follows:

1. Requesting Member – A Member who requests aid or assistance under the Network.
2. Responding Member – A Member that responds to a request for aid or assistance under the Network.

D. Period of Assistance – The period of time when a Responding Member

assists a Requesting Member in response to a Request for Assistance. The Period of Assistance commences when personnel, equipment, or supplies depart from Responding Member's facility and ends when all of the resources return to the Responding Member's facility (*i.e.*, portal to portal).

E. National Incident Management System (NIMS): The national, standardized system for incident management and response that sets uniform processes and procedures for emergency response operations.

F. Associate – Any non-utility participant approved by the Statewide Committee that provides a support role for the Network (such as the State Department of Health). An Associate does not execute this Agreement.

ARTICLE III
ADMINISTRATION

The Network is administered through Regional Committees and a Statewide Committee.

A. Regional Committees. The State is divided into regions that are geographically the same as the existing Department of Health Office of Drinking Water regions of the state, with the exception that the eastern region is divided to create a central region. Each region has a Regional Committee. Each Member within a region may appoint one person to be a member of its Regional Committee. Only those Regional Committee members appointed by Members are entitled to vote on matters before the Regional Committee. An Associate may be a non-voting member of a Regional Committee. Each Regional Committee shall elect a Chair by majority vote of the voting members of that Regional Committee and shall meet annually to review the operations and procedures of the Network.

B. Statewide Committee. The Chairs of the Regional Committees are the voting members of the Statewide Committee. An Associate may be a non-voting member of the Statewide Committee. Further, the Statewide Committee also may include as non-voting members representatives from the Washington State Department of Health Office of Drinking Water, Washington State Department of Ecology, Washington State Emergency Management Division, Rural Community Assistance Corporation, Evergreen Rural Water of Washington, Washington State Public Health Laboratory, EPA Region 10, Washington Association of Sewer and Water Districts, and the Washington PUD Association. Under the leadership of a Statewide Committee Chair elected by majority vote of the voting members of the Statewide Committee, the Statewide Committee shall plan and coordinate emergency planning and response activities for the Network.

C. Members' administrative activities shall be voluntary and members shall not be required to finance the administration of the Network, nor shall the Network hold real or personal property.

ARTICLE IV
PROCEDURES

In coordination with the Regional Committees, and emergency management and public health systems of the State, the Statewide Committee shall develop and adopt operational and planning procedures for the Network that are consistent with this Agreement. The Statewide Committee shall review these procedures at least annually and shall update them as needed.

ARTICLE V
REQUESTS FOR ASSISTANCE

A. Member Information: Promptly after executing this Agreement, the signatory Member shall deliver the following to the Statewide Committee: (1) a certified copy of the action of Member's governing body that authorized the signing of this Agreement and (2) an original signed Agreement. Each Member shall identify an Authorized Official and one alternate Authorized Official. Each Member shall provide current 24-hour contact information for its Authorized Officials to the Statewide Committee, which shall maintain a current list of all Members and the contact information for their Authorized Officials. The Statewide Committee shall provide to all Members an updated version of this list annually and whenever there is an addition or withdrawal of a Member and whenever there is a change of Authorized Officials' contact information.

B. Request for Assistance. In the event of an Emergency, a Member's Authorized Official may request mutual aid and assistance from Members ("Request for Assistance"). Requests for Assistance may be made orally or in writing, provided that when a Request for Assistance is made orally, the Requesting Member shall, as soon as practicable, identify and transmit in writing the personnel, equipment and supplies requested. Requesting Members shall direct Requests for Assistance to Authorized Officials. The Statewide Committee shall provide specific protocols for Requests for Assistance as part of the procedures created pursuant to Article IV of this Agreement.

C. Response to a Request for Assistance – Members are not obligated to respond to a Request for Assistance. After a Member receives a Request for Assistance, the receiving Member's Authorized Official shall evaluate whether to respond to the Request for Assistance, whether resources are available to respond, or if other circumstances would hinder response. Following the evaluation, the Authorized Official shall inform, as soon as possible, the Requesting Member whether the Member will respond to the Request for Assistance. If the Member is willing and able to provide assistance, the Member shall inform the Requesting Member of the type of available resources and the approximate arrival time of such assistance.

D. Discretion of Responding Member's Authorized Official – No Member has any duty to respond to a Request for Assistance. When a Member receives a Request for Assistance, the Authorized Official shall have sole and absolute discretion

as to whether or not to respond to the Request for Assistance, and if responding in the affirmative, to determine the availability of resources to be made available to the Requesting Member. The response of a Member's Authorized Official regarding the availability of resources to a Requesting Member shall be final.

E. No Liability for Failure to Respond – No Member will be liable to any other Member for deciding not to respond to a Request for Assistance or otherwise failing to respond to a Request for Assistance. All Members hereby waive all claims against all other Members arising from or relating to any Member's decision to not respond to a Request for Assistance or to any Member's failure to respond to a Request for Assistance.

ARTICLE VI
RESPONDING MEMBER PERSONNEL

A. National Incident Management System-When providing assistance under this Agreement, the Requesting Member and Responding Member are encouraged (but are not obligated) to be organized and function under NIMS.

B. Coordination and Records – Employees of the Responding Member will remain under the direction and control of the Responding Member to the fullest extent possible. The Responding Member is an independent contractor at all times. The Requesting Member's Authorized Official shall coordinate response activities with the designated supervisor(s) of the Responding Member(s). The Responding Member's designated supervisor(s) shall keep accurate records of work performed by personnel during the Period of Assistance and for the equipment and supplies provided during work.

C. Food and Shelter – Whenever practical, Responding Member personnel must be self sufficient for up to seventy-two (72) hours. Whenever practical, the Requesting Member shall supply adequate food and shelter for Responding Member personnel. If the Requesting Member is unable to provide food and shelter for Responding Member personnel, the Responding Member's designated supervisor is authorized to secure the food and shelter necessary to meet the needs of its personnel.

D. Communication – The Requesting Member shall provide Responding Member personnel with communications equipment as available, radio frequency information to program existing radios if appropriate, or telephone contact numbers, in order to facilitate communications with local responders and utility personnel. Each Requesting Member shall provide contact information for an individual with whom Responding Member's personnel may coordinate while en-route for access, staging instructions and other logistical requirements.

E. Status - Unless otherwise provided by law, the Responding Member's officers and employees shall have the same powers, duties, rights, privileges, and immunities as if they were performing their duties in the jurisdiction in which they are

normally employed.

F. Licenses and Permits – To the extent permitted by law, Responding Member personnel that hold licenses, certificates, or permits evidencing professional, mechanical, or other skills shall be allowed to carry out activities and tasks relevant and related to their respective credentials during a Period of Assistance.

ARTICLE VII
RIGHT TO WITHDRAW RESOURCES

A. Right to Withdraw - A Responding Member may withdraw some or all of its resources at any time for any reason, as determined in the Responding Member's sole and absolute discretion. The Responding Member shall communicate written or oral notice of intention to withdraw all or some of a Responding Member's resources to the Requesting Member's Authorized Official as soon as practicable under the circumstances. To the greatest extent possible, but without limiting in any way a Responding Member's sole and absolute discretion, a Responding Member's determination to withdraw some or all of its resources provided to a Requesting Member should consider the status of the incident and incident stability, to minimize any adverse impacts from the withdrawal of resources by a Responding Member.

B. No Liability for Withdrawal - No Member will be liable to any other Member for first responding to a Request for Assistance by providing resources (such as personnel, materials, and equipment) and later withdrawing or refusing to continue to provide some or all of those resources. All Members hereby waive all claims against all Members arising from or relating to such a withdrawal or refusal.

ARTICLE VIII
COST- REIMBURSEMENT

The Requesting Member shall reimburse the Responding Member for all costs incurred by the Responding Member during a Period of Assistance, unless otherwise agreed in writing by both Members.

A. Personnel – The Requesting Member shall reimburse the Responding Member for personnel costs incurred for work performed during a Period of Assistance. Responding Member personnel costs will be calculated according to the terms provided in their employment contracts, hourly rate schedules or other conditions of employment. The Responding Member's designated supervisor(s) shall keep accurate records of work performed by personnel during a Period of Assistance. The Requesting Member shall include in its reimbursement of the Responding Member all personnel costs, including salaries or hourly wages, costs for fringe benefits, and indirect costs.

Unless otherwise agreed in writing, the Requesting Member shall reimburse the Responding Member for all reasonable and necessary costs associated with providing food and shelter for the Responding Member's personnel, if the food and shelter are

not provided by the Requesting Member. The Requesting Member is not required to reimburse the Responding Member for food and shelter costs in excess of State per diem rates unless the Responding Member demonstrates in writing that the excess costs were reasonable and necessary under the circumstances.

B. Equipment – The Requesting Member shall reimburse the Responding Member for the use of equipment during a Period of Assistance, including, but not limited to, reasonable rental rates, all fuel, lubrication, maintenance, transportation, and loading/unloading of loaned equipment. The Requesting Member shall return all equipment to the Responding Member in good working order as soon as is practicable and reasonable under the circumstances. If equipment cannot be returned in good working order, then Requesting Member shall either provide in-kind replacement equipment to Responding Member at no cost to Responding Member or pay to Responding Member the actual replacement cost of the equipment. Reimbursement rates for equipment use will be no less than the Federal Emergency Management Agency's (FEMA) Schedule of Equipment Rates. If a Responding Member uses rates different from those in the FEMA Schedule of Equipment Rates, the Responding Member shall provide such rates orally or in writing to the Requesting Member prior to supplying the equipment. If reimbursement rates are to be different than those in the FEMA Schedule of Equipment rates, Responding Member and Requesting Member shall agree in writing on which rates will be used prior to dispatch of the equipment to the Requesting Member. Requesting Member shall reimburse for equipment not referenced on the FEMA Schedule of Equipment Rates based on actual recovery of costs. If a Responding Member is required to lease equipment while its equipment is being repaired because of damage due to use during a Period of Assistance, Requesting Member shall reimburse Responding Member for such rental costs.

C. Materials and Supplies – The Requesting Member shall reimburse the Responding Member in kind or at actual replacement cost, plus handling charges, for use of expendable or non-returnable supplies by the Responding Member during a Period of Assistance. The Responding Member shall not charge direct fees or rental charges to the Requesting Member for other supplies and reusable items that are returned to the Responding Member in a clean, damage-free condition. Reusable supplies that are returned to the Responding Member with damage will be treated as expendable supplies for purposes of cost reimbursement.

D. Payment Period – In order to be reimbursed, the Responding Member shall provide an itemized bill to the Requesting Member no later than ninety (90) days following the end of the Period of Assistance for all expenses incurred by the Responding Member while providing assistance to a Requesting Member under this Agreement. The Responding Member may request additional time to submit the itemized bill, and Requesting Member shall not unreasonably withhold consent to such a request. The Requesting Member shall pay the itemized bill in full on or before the forty-fifth (45^{th}) day following the billing date. The Requesting Member may request additional time to pay the itemized bill, and Responding Member shall not unreasonably withhold consent to such a request, but in no event will payment in full occur later than one year after the date a final itemized bill is submitted to the

Requesting Member. If a Responding Member disputes a portion of an itemized bill, the Requesting Member shall promptly pay those portions of the bill not under dispute, pending the resolution of the payment of the disputed portion of the bill.

E. Records - Where a Responding Member provides assistance to a Requesting Member under this Agreement, both Members shall provide the other Member access to the books, documents, notes, reports, papers and other records relevant to this Agreement for the purposes of reviewing the accuracy of a cost bill or making or undergoing a financial, maintenance or regulatory audit. Both Members shall maintain these records for at least three (3) years or longer where required by law.

ARTICLE IX
DISPUTES
NEGOTIATION

Members shall first attempt to resolve any controversy, claim or other dispute arising out of or relating to this Agreement by direct negotiation.

MEDIATION

To the extent not resolved by direct negotiation, Members shall mediate any controversy, claim or other dispute arising out of or relating to this Agreement. Mediation is a condition precedent to arbitration. Unless the disputing Members agree otherwise, the mediation will be administered by the American Arbitration Association (AAA) under its Construction Industry Mediation Procedures. The disputing Members shall pay in equal shares the mediator's fee and any filing fees. Unless otherwise agreed by the disputing Members, the disputing Members shall (1) hold the mediation no later than thirty (30) days after a disputing Member delivers a request for mediation to the other disputing Members and (2) hold the mediation at the location of the Requesting Member. Agreements reached in mediation will be enforceable as settlement agreements.

ARBITRATION

To the extent not resolved by mediation, Members shall arbitrate all controversies, claims and other disputes arising out of or relating to this Agreement. Unless the disputing Members agree otherwise, the arbitration will be administered by the AAA in accordance with its Construction Industry Arbitration Rules in effect on the date a disputing Member makes a demand for arbitration. A disputing Member may make a demand for arbitration before negotiation or mediation if it appears that a claim might be barred by a statute of limitations if the demand were made after the negotiation or mediation. However, in such a case the arbitration will be stayed until the conclusion of negotiation and mediation. The decision and award rendered by the arbitrator(s) shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

ARTICLE X
DUTY TO INDEMNIFY

To the extent of its fault, a Member shall defend, indemnify, and hold harmless all other Members, their elected officials, Authorized Officials, officers, employees and agents from any and all costs, claims, judgments, losses, awards of damage, injury, death and liability of every kind, nature and description, including the reasonable cost of defense and attorneys' fees, directly or indirectly arising from or relating to this Agreement (collectively, "Indemnified Claims"). This indemnity obligation extends to all Indemnified Claims against a Member by an employee or former employee of another Member, and for this purpose, by mutual negotiation, each Member hereby expressly waives, with respect to each other Member only, all immunity and limitation under any applicable industrial insurance act, including Title 51 of the Revised Code of Washington, other worker compensation acts, disability benefit acts or other employee benefit act of any jurisdiction which would otherwise be applicable in the case of Indemnified Claims.

ARTICLE XI
WORKER'S COMPENSATION AND SITE CONDITIONS

The Responding Member is responsible for providing worker's compensation benefits and administering worker's compensation for its employees. The Requesting Member is responsible for providing worker's compensation benefits and administering worker's compensation for its employees.

Each Member shall promptly identify to the other Members concerns about site safety, environmental concerns, and other working conditions. The Safety Officer appointed within the Incident Command System during the Period of Assistance shall address specific safety conditions and mitigations.

ARTICLE XII
NOTICE

Unless otherwise provided in this Agreement, all notices must be in writing. Notice to a Member must be delivered to the Member's Authorized Official.

ARTICLE XIII
EFFECTIVE DATE

This Agreement shall be effective with respect to each Member when that Member's authorized representative executes the Agreement. The Statewide Committee shall maintain a master list of all Members.

ARTICLE XIV
WITHDRAWAL

A Member may withdraw from this Agreement at any time by providing to the Statewide Committee Chair written notice of withdrawal signed by the withdrawing Member's Authorized Official or other person authorized by the withdrawing Member's governing body. Any withdrawal will be effective upon receipt by the Statewide Committee Chair of the notice of intent to withdraw. If there is no Statewide Committee Chair, the withdrawing Member shall provide written notice to each Member in its region, and the withdrawal will be effective upon delivery of those notices. Once withdrawal from this Agreement is effective, the withdrawing Member will have no further obligations under this Agreement, except that withdrawal from this Agreement will not affect any indemnification or reimbursement obligation under this Agreement that arises prior to the effective date of the withdrawal.

ARTICLE XV
TERMINATION

This Agreement shall terminate in its entirety when there are less than two Members. Termination of this Agreement will not affect any indemnification or reimbursement obligation under this Agreement arising prior to the termination. The Statewide Committee Chair shall provide written notice of termination to all remaining Members of the Agreement.

ARTICLE XVI
AMENDMENT

This Agreement may be amended if, after written notice of a proposed amendment to all Members, the proposed amendment is approved by a majority of Members in each region. The Statewide Committee Chair shall provide written notice to all Members of approved amendments. Approved amendments will take effect sixty (60) days after the date the notice is sent to the Members.

ARTICLE XVII
SEVERABILITY

The parties agree that if any term or provision of this Agreement is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the Agreement did not contain the particular term or provision held to be invalid.

ARTICLE XVIII
PROHIBITION ON THIRD PARTIES AND ASSIGNMENT OF RIGHTS/DUTIES

Notwithstanding rights of subrogation asserted by a Member's insurance provider, this Agreement is for the sole benefit of the Members and no other person or entity shall have any rights under this Agreement as a third party beneficiary nor shall any Member owe duty to a third party not a signatory of this Agreement by virtue of this Agreement. Assignments of benefits and delegations of duties created by this

Agreement are prohibited and of no effect.

ARTICLE XIX
GOVERNING LAW

This Agreement is governed by the law of the State of Washington, specifically RCW 39.34, Interlocal Cooperation Act.

ARTICLE XX
EXECUTION IN COUNTERPARTS

This Agreement may be executed in any number of counterparts and by different parties in separate counterparts. Each counterpart when so executed shall be deemed to be an original and all of which together shall constitute one and the same Agreement.

The water and wastewater utility listed below executed this Agreement on this 2nd day of April 2018

Water/Wastewater Utility: City of Auburn

By: _____

Title: Acting Public Works Director

Ingrid Gaub
Please Print Name

By: Nancy Backus

Title MAYOR

NANCY BACKUS
Please Print Name

Approved as to form

By: _____
Attorney for Member

Daniel B. Heid
Please Print Name

WATER FACILITIES INVENTORY (WFI) FORM

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

ONE FORM PER SYSTEM

Quarter: 1
Updated: 12/15/2023

Printed: 2/27/2024
WFI Printed For: On-Demand
Submission Reason: Pop/Connect Update

RETURN TO: Central Services - WFI, PO Box 47822, Olympia, WA, 98504-7822 or email wfi@doh.wa.gov

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
03350 V	AUBURN CITY OF	KING	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS

JOSHUA A. FLANDERS [WATER MANAGER]
25 W MAIN
AUBURN, WA 98001

7. OWNER NAME & MAILING ADDRESS

AUBURN, CITY OF
SENAIT GEBREEYESUS
25 W MAIN
AUBURN, WA 98001

WATER UTILITY ENGINEER

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION	
Primary Contact Daytime Phone: (253) 876-1998		Owner Daytime Phone: (253) 804-5061	
Primary Contact Mobile/Cell Phone: (253) 261-1689		Owner Mobile/Cell Phone: (253) 261-9109	
Primary Contact Evening Phone: (xxx)-xxx-xxxx		Owner Evening Phone: (xxx)-xxx-xxxx	
Fax:	E-mail: jxxxxxxs@auburnwa.gov	Fax: (253) 288-7406	E-mail: sxxxxxxs@auburnwa.gov

11. SATELLITE MANAGEMENT AGENCY - SMA (check only one)

- [x] Not applicable (Skip to #12)
- [ ] Owned and Managed
- [ ] Managed Only
- [ ] Owned Only

SMA NAME: _____ SMA Number:

12. WATER SYSTEM CHARACTERISTICS (mark all that apply)

- [x] Agricultural
- [x] Commercial / Business
- [x] Day Care
- [x] Food Service/Food Permit
- [ ] 1,000 or more person event for 2 or more days per year
- [x] Hospital/Clinic
- [x] Industrial
- [x] Licensed Residential Facility
- [x] Lodging
- [x] Recreational / RV Park
- [x] Residential
- [x] School
- [ ] Temporary Farm Worker
- [x] Other (church, fire station, etc.): _____

13. WATER SYSTEM OWNERSHIP (mark only one)

- [ ] Association
- [x] City / Town
- [ ] County
- [ ] Federal
- [ ] Investor
- [ ] Private
- [ ] Special District
- [ ] State

14. STORAGE CAPACITY (gallons)

15,700,000

- SEE NEXT PAGE FOR A COMPLETE LIST OF SOURCES -

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
03350 V	AUBURN CITY OF	KING	A	Comm

15	16	17	18									19			20	21						22	23	24			
	SOURCE NAME	INTERTIE	SOURCE CATEGORY									USE				TREATMENT						DEPTH		SOURCE LOCATION			
Source Number	LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER. Example: WELL #1 XYZ456 IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME Example: SEATTLE	INTERTIE SYSTEM ID NUMBER	WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY / INF. GALLERY	OTHER	PERMANENT	SEASONAL	EMERGENCY	SOURCE METERED	NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	DEPTH TO FIRST OPEN INTERVAL IN FEET	CAPACITY (GALLONS PER MINUTE)	1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	SPRING #1-COAL CREEK					X						X			Y		X				X		3500	SE SW	28	21N	05E
S02	SPRING #2-WEST HILL					X						X			Y		X						600	SW NE	11	21N	04E
S03	WELL #1		X									X			Y		X				X	125	2100	NE NE	19	21N	05E
S04	WELL #2				X							X			Y		X				X	242	2000	NW NE	18	21N	05E
S05	WELL #3A		X											X	Y	X						285	0	NE SW	30	21N	05E
S06	WELL #5		X									X			Y	X						320	650	SW SE	31	21N	05E
S07	WELL #4		X									X			Y		X					296	2600	NW NE	30	21N	05E
S08	WELL #3B		X											X	Y	X						309	0	NE SW	30	21N	05E
S10	WELL 5A		X									X			Y		X					510	180	SE SE	31	21N	05E
S11	WELL #7				X							X			Y		X				X	234	0	NW NW	18	21N	05E
S12	WELL #6				X							X			Y		X				X	237	2200	NW NE	18	21N	05E
S13	WELL 5B (ACJ529)		X											X	Y		X	X				710	0	SW NE	06	20N	05E
S14	WELLS 2, 6 & 7			X								X			Y		X				X	234	4200	NW NE	18	21N	05E
S15	38150/Kent	38150 1												X	Y	X							0			00N	00E
S16	07650/Bonney Lake	07650 H												X	Y	X							0			00N	00E
S17	41997/Lakehaven	41997 9												X	Y	X							0			00N	00E
S18	86800 Tacoma/B Street	86800 N												X	Y	X							0	SE NW	18	21N	05E
S19	Tacoma/132nd Ave SE	86800 N												X	Y	X							0	SE NW	18	21N	05E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
03350 V	AUBURN CITY OF	KING	A	Comm

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED CONNECTIONS
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)		22338	Unspecified
A. Full Time Single Family Residences (Occupied 180 days or more per year)	11818		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	1052		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	10520		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	1946	1946	
28. TOTAL SERVICE CONNECTIONS		24284	

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 61455

30. PART-TIME RESIDENTIAL POPULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many part-time residents are present each month?												
B. How many days per month are they present?												

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?	408660	408660	408660	408660	408660	408660	408660	408660	408660	408660	408660	408660
B. How many days per month is water accessible to the public?	31	28	31	30	31	30	30	31	31	30	30	31

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population?	37871	37871	37871	37871	37871	37871	37871	37871	37871	37871	37871	37871
B. How many days per month are they present?	31	28	31	30	31	30	30	31	31	30	30	31

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	100	100	100	100	100	100	100	100	100	100	100	100

34. NITRATE SCHEDULE	QUARTERLY	ANNUALLY	ONCE EVERY 3 YEARS
(One Sample per source by time period)			

35. Reason for Submitting WFI:

☐ Update - Change ☐ Update - No Change ☐ Inactivate ☐ Re-Activate ☐ Name Change ☐ New System ☐ Other _____

36. I certify that the information stated on this WFI form is correct to the best of my knowledge.

SIGNATURE: _____ **DATE:** _____

PRINT NAME: _____ **TITLE:** _____

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Water Facilities Inventory (WFI)

Report Create Date:	2/27/2024		
Water System Id(s):	03350		
Print Data on Distribution Page:	ALL		
Print Copies For:	DOH Copy		
Water System Name:	ALL		
County:	-- Any --		
Region:	ALL		
Group:	ALL		
Type:	ALL		
Permit Renewal Quarter:	ALL		
Water System Is New:	ALL		
Water System Status:	ALL		
Water Status Date From:	ALL	**To**	ALL
Water System Update Date	ALL	**To**	ALL
Owner Number:	ALL		
SMA Number:	ALL		
SMA Name:	ALL		
Active Connection Count From:	ALL	**To:**	ALL
Approved Connection Count	ALL	**To:**	ALL
Full-Time Population From:	ALL	**To:**	ALL
Water System Expanding	ALL		
Source Type:	ALL		
Source Use:	ALL		
WFI Printed For:	On-Demand		

WATER FACILITIES INVENTORY (WFI) FORM

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

ONE FORM PER SYSTEM

Quarter: 2
Updated: 02/22/2024

Printed: 2/27/2024
WFI Printed For: On-Demand
Submission Reason: Contact Update

RETURN TO: Central Services - WFI, PO Box 47822, Olympia, WA, 98504-7822 or email wfi@doh.wa.gov

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
03336 E	BRAUNWOOD ESTATES	KING	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS

JOSHUA A. FLANDERS [WATER MANAGER]
25 W MAIN
AUBURN, WA 98001

7. OWNER NAME & MAILING ADDRESS

AUBURN, CITY OF
SENAIT GEBREEYESUS — WATER UTILITY ENGINEER
25 W MAIN
AUBURN, WA 98001

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION	
Primary Contact Daytime Phone: (253) 876-1998		Owner Daytime Phone: (253) 804-5061	
Primary Contact Mobile/Cell Phone: (253) 261-1689		Owner Mobile/Cell Phone: (253) 261-9109	
Primary Contact Evening Phone: (xxx)-xxx-xxxx		Owner Evening Phone: (xxx)-xxx-xxxx	
Fax:	E-mail: jxxxxxxxs@auburnwa.gov	Fax: (253) 288-7406	E-mail: sxxxxxxs@auburnwa.gov

11. SATELLITE MANAGEMENT AGENCY - SMA (check only one)

- [x] Not applicable (Skip to #12)
- [ ] Owned and Managed
- [ ] Managed Only
- [ ] Owned Only

SMA NAME: _____ SMA Number:

12. WATER SYSTEM CHARACTERISTICS (mark all that apply)

- [ ] Agricultural
- [ ] Commercial / Business
- [ ] Day Care
- [ ] Food Service/Food Permit
- [ ] 1,000 or more person event for 2 or more days per year
- [ ] Hospital/Clinic
- [ ] Industrial
- [ ] Licensed Residential Facility
- [ ] Lodging
- [ ] Recreational / RV Park
- [x] Residential
- [ ] School
- [ ] Temporary Farm Worker
- [ ] Other (church, fire station, etc.): _____

13. WATER SYSTEM OWNERSHIP (mark only one)

- [ ] Association
- [x] City / Town
- [ ] County
- [ ] Federal
- [ ] Investor
- [ ] Private
- [ ] Special District
- [ ] State

14. STORAGE CAPACITY (gallons)

33,000

15	16	17	18 SOURCE CATEGORY									19 USE			20	21 TREATMENT						22	23	24 SOURCE LOCATION			
Source Number	LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER. Example: WELL #1 XYZ456 IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME Example: SEATTLE	INTERTIE SYSTEM ID NUMBER	WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY / INF. GALLERY	OTHER	PERMANENT	SEASONAL	EMERGENCY	SOURCE METERED	NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	DEPTH TO FIRST OPEN TERVAL IN FEET	CAPACITY (GALLONS PER MINUTE)	1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	Hidden Valley Well		X										X			Y		X					352	20	SE NE	33	21N	05E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
03336 E	BRAUNWOOD ESTATES	KING	A	Comm

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED CONNECTIONS
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)		12	13
A. Full Time Single Family Residences (Occupied 180 days or more per year)	12		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	0		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	0		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	0	0	0
28. TOTAL SERVICE CONNECTIONS		12	13

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 30

30. PART-TIME RESIDENTIAL POPULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many part-time residents are present each month?												
B. How many days per month are they present?												

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?												
B. How many days per month is water accessible to the public?												

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population?												
B. How many days per month are they present?												

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	1	1	1	1	1	1	1	1	1	1	1	1

34. NITRATE SCHEDULE	QUARTERLY	ANNUALLY	ONCE EVERY 3 YEARS
(One Sample per source by time period)			

35. Reason for Submitting WFI:

☐ Update - Change ☐ Update - No Change ☐ Inactivate ☐ Re-Activate ☐ Name Change ☐ New System ☐ Other _____

36. I certify that the information stated on this WFI form is correct to the best of my knowledge.

SIGNATURE: _____ **DATE:** _____

PRINT NAME: _____ **TITLE:** _____

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Water Facilities Inventory (WFI)

Report Create Date:	2/27/2024		
Water System Id(s):	03336		
Print Data on Distribution Page:	ALL		
Print Copies For:	DOH Copy		
Water System Name:	ALL		
County:	-- Any --		
Region:	ALL		
Group:	ALL		
Type:	ALL		
Permit Renewal Quarter:	ALL		
Water System Is New:	ALL		
Water System Status:	ALL		
Water Status Date From:	ALL	**To**	ALL
Water System Update Date	ALL	**To**	ALL
Owner Number:	ALL		
SMA Number:	ALL		
SMA Name:	ALL		
Active Connection Count From:	ALL	**To:**	ALL
Approved Connection Count	ALL	**To:**	ALL
Full-Time Population From:	ALL	**To:**	ALL
Water System Expanding	ALL		
Source Type:	ALL		
Source Use:	ALL		
WFI Printed For:	On-Demand		

Water Right Self-Assessment Form for Water System Plans

331-372 • 1/13/2017

All water right permits, claims, and certificates must be evaluated in a water right self-assessment for all sources used to supply the water system. The self-assessment compares the parameters and other limitations of existing water rights against current and forecasted water production, as described in your water system plan, to determine whether the rights are adequate to serve your system's current and future water needs.

You must account for all sources of supply and total quantities of water withdrawn from the source. If you purchase water from another purveyor through a non-emergency intertie, you must complete the INTERTIES section of the self-assessment.

A Note on Exempt Wells

If you're seeking DOH approval of a new Group A or Group B water system using an exempt well, you must complete the self-assessment, although certain fields will not apply. Talk to your DOH regional planner about using the Water Right Self-Assessment form for a Small Water System Management Program instead of this version.

Local governments must ensure that an adequate potable water supply is available from the exempt well before issuing a building permit. Before developing a permit exempt well, check with your local authorities on their criteria for establishing an adequate potable water supply for your planned public water system.

Water Right Parameters

Below is a brief description of the parameters associated with a typical water right. For the self-assessment, you only need to describe the last two bulleted items if they apply to your water rights.

Source Type – this refers to whether the source is surface water, groundwater or a spring.

Source Location – this refers to the location of points of groundwater withdrawal or surface water diversion for each right.

Purpose of Use – this refers to the type of use, such as municipal water supply, community domestic, industrial or agricultural purposes.

Place of Use – this describes where water can be put to beneficial use under the right. Under the 2003 Municipal Water Law, RCW 90.03.386, the place of use for a water right held for municipal water supply purposes may be the system's service area as identified in an approved water system plan or small water system management program. See Ecology Policy 2030 for information on how Ecology administers the Municipal Water Law.

Washington State Department of Health

If you need this publication in an alternative format, call 800.525.0127 (TDD/TTY call 711). This and other publications are available at www.doh.wa.gov/drinkingwater.

Period of Use – this refers to time-of-year limitations in which the water right may be put to use. If any water right has a time-of-year limitation, please include this information in the INTERRUPTIBLE WATER RIGHTS section.

Provisions or Limiting Conditions – this refers to any provisions or conditions placed on the water right. If a water right has a limiting condition or other provision, such as a collection and reporting requirement, other than a time-of year limitation, include this information in the ADDITIONAL COMMENTS section at the bottom of the self-assessment and in the water system plan narrative.

See Ecology Policy 1040 for more information on water right terminology. If you have questions about your water rights, please contact the Ecology regional office in your area.

Completing the Water Right Self-Assessment Form

The self-assessment is a Word document to allow users to make changes or to expand the document. You may use another format, if preferred, as long as all required information is included. Below is a description of all fields and how to complete them. This form is divided into four different sections. Each section is described in the headings below.

See the column identifiers (A, B, C, etc) at the bottom of each column for guidance in completing the necessary calculations.

Water Right Permit, Certificate, or Claim Number: This number is assigned by Ecology when a permit application is filed. It's listed at the top of the permit or certificate. For water right claims, this is the registration number stamped in the lower left hand corner of the claim form.

WFI Source #: Identify the individual sources (e.g. well #1, well #2) as defined on the DOH Water Facilities Inventory form. If a water right is associated with multiple sources, list all sources in the same row in this column. If a source is associated with multiple water rights, identify each water right on a separate row.

If you have any source(s) that is not currently being used (categorized as standby, back-up, or emergency), and the source has an associated water right that is not listed in column #1, please include the source and water right information in the ADDITIONAL COMMENTS section. This will identify that the source is still intended for a beneficial use under RCW 90.03.015(4). See Ecology Policy 1040.

EXISTING WATER RIGHTS SECTION *(olive green color, top section)*

This section refers to existing water rights. It does not include any water right applications that have been submitted to Ecology.

Primary Qi (Instantaneous Quantity): This is also known as instantaneous flow rate. It's the amount of water allowed to be taken under the right from the source during a period of peak operation. For surface water, this is generally expressed in terms of cubic feet per

second (cfs). For groundwater, this is generally expressed in terms of gallons per minute (gpm). One cfs equals 448.8 gpm. Please indicate the units of measurement you are using for each source. If there are situations where the flow rate will be limited (e.g. limitations established on the source when other sources are utilized), please note them in the ADDITIONAL COMMENTS section in the form and in the WSP narrative.

Non-Additive Qi: This term was formally known as "supplemental." Your water rights may use the old terminology. See Ecology Policy 1040 for more information. Not all water rights have non-additive quantities. If a water right has non-additive Qi quantities, include the non-additive quantity in this field. This is generally listed in the "quantity, type of use, period of use" section on both permits and certificates. *Non-additive quantities should not be included in the primary Qi totals.*

Primary Qa (Annual Quantity): This is the amount of water that can be taken from the source under the right on an annual basis. It's usually expressed in terms of acre-feet. An acre-foot is the amount of water necessary to submerge an acre of land to a depth of one foot. One acre-foot equals 43,560 cubic feet or 325,851 gallons of water.

Non-Additive Qa: This term was formerly known as "supplemental." Your water rights may use the old terminology. See Ecology Policy 1040 for more information. Not all water rights have non-additive quantities. If a water right has non-additive Qa quantities, include the non-additive quantity in this field. This is generally listed in the "quantity, type of use, period of use" section on both permits and certificates. *Non-additive quantities should not be included in the primary Qa totals.*

CURRENT SOURCE PRODUCTION SECTION *(light green color, top section)*

This section refers to how much water is withdrawn from the source under each water right for the most recent full calendar year. You will need to determine any excess or deficiency for each water right after calculating how much water was withdrawn compared to how much water is allowed under each water right. If demand has decreased over past years, you may wish to include historic maximum production information in the ADDITIONAL COMMENTS section. This will provide a more complete picture of the use of your water rights.

Use the water use data and demand projections from your water system plan to define current and projected water needs. You can determine if you'll need additional water rights based on the comparison of existing water rights, current water production, and projected 10- and 20-year needs.

Total Qi (Instantaneous Quantity): This refers to the total maximum instantaneous flow rate withdrawn from the source under each water right during the most recent calendar year. For surface water, this is expressed in terms of cubic feet per second (cfs). For groundwater, this is expressed in terms of gallons per minute (gpm). One cfs equals 448.8 gpm.

Current Excess or Deficiency (Qi): Please calculate the excess or deficiency for each water right after comparing the total amount withdrawn against each water right. Please use parentheses for deficient amounts.

Total Qa (Annual Quantity): This refers to the total volume of water withdrawn from each source under each water right during the most recent calendar year. It's usually expressed in acre-feet.

Current Excess or Deficiency (Qa): Please calculate the excess or deficiency for each water right after comparing the total amount withdrawn against each water right. Please use parentheses for deficient amounts.

10-YEAR FORECASTED SOURCE PRODUCTION SECTION *(light blue color, top section)*

This section refers to how much water you project to withdraw from each source in ten years as determined in your water system plan. Please complete this section in the same manner (using the same units of measurement) as the current source production section using your 10-year forecasted amounts.

20-YEAR FORECASTED SOURCE PRODUCTION SECTION *(darker blue color, top section)*

This section refers to how much water you project to withdraw from each source in twenty years as determined in your water system plan. Please complete this section in the same manner (using the same units of measurement) as the current source production section using your 20-year forecasted amounts. If you are unable to provide 20-year forecasts for each source, you may choose to include the combined 20-year total at the bottom.

PENDING WATER RIGHTS SECTION *(second section of form)*

Please complete this section for any water right applications that have been submitted to Ecology. Please include the application number, whether it's a new or a change application, the date submitted, and the total quantities requested.

INTERTIES SECTION *(third section of form)*

This section must be completed by purveyors who purchase any amount of wholesale water. If your system sells water to another public water system, include the quantity sold in the CURRENT SOURCE PRODUCTION section.

Purchasers of wholesale water must account for all water obtained through the intertie for non-emergency supply purposes. This is to ensure that all sources of supply are considered when evaluating whether new water rights are needed within 20 years.

Please identify the maximum quantity of water, expressed in the same manner as the above sections, allowed under each intertie contract. If there are limiting conditions or temporary

agreements that effect the long-term use of the intertie, you must account for such limiting conditions when evaluating the current and forecasted water supply needs in your water system plan.

Finally, purchasers of wholesale water are responsible for ensuring that the underlying water right (held by the purveyor selling water) are adequate for such use. You should confirm that the selling system has accounted for the wholesale area in their water system plan to ensure that the water right authorizes the distribution of water through the intertie.

INTERRUPTIBLE WATER RIGHTS SECTION *(bottom section of form)*

This section refers to water rights that have an annual time-of-year interruption. Please complete this section for any water right listed in the above fields that has a time-of-year interruption. Please include the water right number, describe the limitation, and the time period of interruption. Purveyors with interruptible rights should develop a water shortage response plan as part of their water system plan to describe how demand will be met during periods of interruption through aggressive demand-side conservation, fixing leaks or other means.

ADDITIONAL COMMENTS SECTION *(bottom section of form)*

If the system has any source that is not currently being used on a regular basis (such a source may be categorized as stand-by, back-up, emergency), you should identify the source in this section if the source has an associated water right that is not listed in the above sections. The purpose is to identify that such water rights are still intended for a future beneficial use as required under RCW 90.03.015(4). See Page 2, Item 9 (b) in ECY Policy 2030. For these water rights, please briefly describe the future intended use of the source and when you expect to utilize the water right. This does not refer to sources categorized as seasonal sources.

You should also include any other comments in this section that will explain aspects of your water right portfolio that are not identified above.

Water Right Self-Assessment Form for Water System Plan

Mouse-over any link for more information. Click on any link for more detailed instructions.

Water Right Permit, Certificate, or Claim # *If water right is interruptible, identify limitation in yellow section below	WFI Source # If a source has multiple water rights, list each water right on separate line	Existing Water Rights Qi= Instantaneous Flow Rate Allowed (GPM) Qa= Annual Volume Allowed (Acre-Feet/Year) This includes wholesale water sold				Current Source Production – Most Recent Calendar Year Qi = Max Instantaneous Flow Rate Withdrawn (GPM or CFS) Qa = Annual Volume Withdrawn (Acre-Feet/Year) This includes wholesale water sold				10-Year Forecasted Source Production (determined from WSP) This includes wholesale water sold				20-Year Forecasted Source Production (determined from WSP) This includes wholesale water sold			
		Primary Qi Maximum Rate Allowed	Non-Additive Qi Maximum Rate Allowed	Primary Qa Maximum Volume Allowed	Non-Additive Qa Maximum Volume Allowed	Total Qi Maximum Instantaneous Flow Rate Withdrawn	Current Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume Withdrawn	Current Excess or (Deficiency) Qa	Total Qi Maximum Instantaneous Flow Rate in 10 Years	10-Year Forecasted Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume in 10 Years	10-Year Forecasted Excess or (Deficiency) Qa	Total Qi Maximum Instantaneous Flow Rate in 20 Years	20-Year Forecasted Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume in 20 Years	20-Year Forecasted Excess or (Deficiency) Qa
00857 S1*01304 C	Coal Creek Springs	6,732		9,410		4,383	2,349	3,758	5,652	5,715	1,017	8,097	1,313	6,685	47	8,781	629
03560 G1*04731C	Well 1, 6, & 7	2,200		1,120		2,100	100	786	334	2,200	0	1,120	0	2,200	0	1,120	0
G1-00277C	Well 2, 6, & 7	2,400		1,360	2,480	2,062	338	1,360	0	2,400	0	1,360	0	2,400	0	1,360	0
G1-23629C	Well 3A & 3B, 6, & 7	2,800		3,600		592	2,208	0	3,600	2,022	778	574	3,026	2,800	0	717	2,883
G1-20391C	Well 4, 6, and 7	2,800		3,600		2,388	412	681	2,919	2,800	0	3,038	562	2,800	0	3,409	191
G1-23633C	Wells 5, 5A, 5B, &5C	1,000		720		730	270	191	529	952	48	437	283	1,000	0	560	160
G1-25518	Well 5A	167		0	187	90	77	0	0	117	50	0	0	167	0	0	0
G1-22769 C	Algona Well	500		175		0	500	0	175	0	500	0	175	0	500	0	175
S1-049354CL	West Hill Springs	625		1,010		563	62	481	529	625	0	1,010	0	625	0	1,010	0
	TOTALS =	19,224		20,995		12,909	6,315	7,257	13,738	16,831	2,393	15,636	5,359	18,677	547	16,957	4,038
Column Identifiers for Calculations:		A		B		C	=A-C	D	=B-D	E	= A-E	F	=B-F	G	=A-G	H	=B-H

PENDING WATER RIGHT APPLICATIONS: Identify any water right applications that have been submitted to Ecology.

Application Number	New or Change Application?	Date Submitted	Quantities Requested			
			Primary Qi	Non-Additive Qi	Primary Qa	Non-Additive Qa
G1-28404	New	1/5/2006	12,500		13,443	

INTERTIES: Systems receiving wholesale water complete this section. Wholesaling systems must include water sold through intertie in the current and forecasted source production columns above.

Name of Wholesaling System Providing Water	Quantities Allowed In Contract		Expiration Date of Contract	Currently Purchased Current quantity purchased through intertie				10-Year Forecasted Purchase Forecasted quantity purchased through intertie				20-Year Forecasted Purchase Forecasted quantity purchased through intertie			
	Maximum Qi Instantaneous Flow Rate	Maximum Qa Annual Volume		Maximum Qi Instantaneous Flow Rate	Current Excess or (Deficiency) Qi	Maximum Qa Annual Volume	Current Excess or (Deficiency) Qa	Maximum Qi 10-Year Forecast	Future Excess or (Deficiency) Qi	Maximum Qa 10-Year Forecast	Future Excess or (Deficiency) Qa	Maximum Qi 20-Year Forecast	Future Excess or (Deficiency) Qi	Maximum Qa 20-Year Forecast	Future Excess or (Deficiency) Qa
Tacoma Public Utilities	**3,560**	**3,920**		**0**	**3,560**	**0**	**3,920**	**0**	**3,560**	**0**	**3,920**	**1,253**	**2,307**	**0**	**3,920**
TOTALS =	3,560	3,920		0	3,560	0	3,920	0	3,560	0	3,920	0	3,560	0	3,920
Column Identifiers for Calculations:	A	B		C	=A-C	D	=B-D	E	=A-E	F	=B-F	G	=A-G	H	=B-H

INTERRUPTIBLE WATER RIGHTS: Identify limitations on any water rights listed above that are interruptible.

Water Right #	Conditions of Interruption	Time Period of Interruption
1		
2		
3		

ADDITIONAL COMMENTS:

Current and proposed Qi and Qa quantities for Well 5A (G1-25518) are included with G1-23633C.
Current Well 6 Qa = 1,435 AF which was distributed between G1*04731C, G1-00277C, and G1-20391C.
Current Well 7 Qa = 0 AF.
10-year and 20-year forecasted Qi and Qa includes providing an annual average of 2.5 MGD from Coal Creek Springs to the Muckleshoot Indian Tribe (MIT) for a hatchery.
G1-25173C is a non-municipal water right issued to serve the Braunwood satellite system, so is not listed.
S1-049354CL (West Hill Springs) is a claim filed under RCW 90.14.061; quantities can only be validated per RCW 90.14.081.

RECEIVED
SEP 18 1997
KING COUNTY
RECORDER

City of Auburn
Public Works Department
25 West Main Street
Auburn, WA 98001

WASHINGTON STATE DEPARTMENT OF ECOLOGY

STATE OF WASHINGTON
SUPERSEDING CERTIFICATE OF WATER RIGHT

Replaces Certificate of Water Right issued on March 11, 1935
and Certificate of Change issued on November 18, 1964

Document Title: Certificate of Water Right

Agency: Department of Ecology
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, WA 98008-5452

Applicant: City of Auburn/Public Works
25 West Main Street
Auburn, WA 98001

Reference Number: N/A

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
April 22, 1925	1304	549	857

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)
Coal Creek Springs	Stuck River

MAX. CUBIC FEET PER SECOND	MAX. GALLONS PER MINUTE	MAX. ACRE-FEET PER YEAR
15.0	N/A	9410

QUANTITY	TYPE OF USE	PERIOD OF USE
N/A	Municipal	Continuously

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
SE SW	28	21	5E	10	King

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
N/A	N/A	N/A	N/A	N/A	King

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

9709260227 09:27:00 AM KING COUNTY RECORDS 002 THS 9.00

LEGAL DESCRIPTION FOR LOCATION OF DIVERSION/WITHDRAWAL

256 feet north and 2548 feet west of the SE corner of Section 28.

LEGAL DESCRIPTION FOR PROPERTY ON WHICH WATER IS TO BE USED

Area served by the City of Auburn as identified in their latest approved water system plan and periodic updates consistant with coordinated water supply plans, including interties for wholesale water delivery to the service areas of any water purveyors that have approved interlocal agreements with the City of Auburn.

PROVISIONS

All conditions and requirements contained in reports of examination or permits previously issued apply to this certificate unless specifically noted below.

Issuance of this water right may be subject to implementation of the minimum requirements established in the Conservation Planning Requirements, Guidelines and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the State's water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant may be required to prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

9709260277

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for non-use of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Bellevue, Washington, this 16th day of Sept., 1997.

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

ENGINEERING DATA
OK _____
ECY 040-1-2 (Rev. 8-97)

Tom Fitzsimmons
Department of Ecology

By _____
Ray Hellwig, Section Supervisor

CERTIFICATE RECORD NO. — 2 — PAGE NO. — 857 —

STATE OF WASHINGTON, COUNTY OF — King —

CERTIFICATE OF WATER RIGHT

(For rights perfected under original, supplemental or secondary permits)

(In accordance with the provisions of Chapter 117, Laws of Washington for 1917, and the regulations of the State Supervisor of Hydraulics thereunder)

This is to certify, that — City of Auburn —, of — Auburn —, State of — Washington — has made application to the State Supervisor of Hydraulics of Washington, for a right to the use of the waters of — Coal Creek Springs —, a tributary of — Stuck River — for the purposes of — Municipal purposes and power —, under Appropriation Permit No. — 549 — issued by the State Supervisor of Hydraulics, and the right to the use of said waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Hydraulics of Washington and entered of record in Book — 2 — at Page — 857 — on the — 11th — day of — March —, 19 35, that the hereby confirmed dates from — April 22nd, 1935 —; that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed — 15.0 — cubic feet per second. A description of the lands under such right, and to which the water hereby confirmed is appurtenant, or for other purposes, the place where such water is put to beneficial use, is as follows:

PLACE OF USE					
Section	Township	Range			
— 20 —	21 N. —	5 E.W.M. — $N\frac{1}{2}$ of $SW\frac{1}{4}$ of $SW\frac{1}{4}$ —			
— 13 —	21 N. —	4 E.W.M. — S 7/8 of $E\frac{1}{2}$			
— 18 —	21 N. —	5 E.W.M. — South 7/8			
— 19 —	21 N. —	5 E.W.M. — North $\frac{1}{2}$			
— 24 —	21 N. —	4 E.W.M. — North $\frac{1}{2}$ of East $\frac{1}{2}$			

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Section 39, Chapter 117, Session Laws 1917.

Witness the seal of the State Supervisor of Hydraulics affixed this — 11th — day of — March —, A.D. 19 35 —

Supervisor of Hydraulics

5812517

FILE
VOL
AC-
LID-
IMPV.-
SUBJT.
Coal Creek

CERTIFICATE OF CHANGE OF PURPOSE OF USE OF WATER

In accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto and rules thereunder of the State Supervisor of the Division of Water Resources.

THIS IS TO CERTIFY That the City of Auburn of Auburn, Washington, has complied with all of the requirements of Section 90.03.380 Revised Code of Washington, and is hereby granted a permit to change the purpose of use of waters of Coal Creek Springs in the amount of 15 cubic feet per second as granted in water right certificate No. 857; That such water had been used for the purpose of municipal water supply and power.

That the purpose of use of said waters has been changed to municipal water supply.

WITNESS THE SEAL and SIGNATURE of the Supervisor of the Division of Water Resources of the State of Washington, affixed this 13 day of November, 1964.

M. G. WALKER, SUPERVISOR
DIVISION OF WATER RESOURCES

RECORDED:
Volume 2, Page 826
Records of Change
of Purpose of Use
of Water
ENGINEERING DATA

O.K. J.W.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
WATER RIGHT CLAIMS REGISTRATION

WATER RIGHT CLAIM

RECD. JAN 28 1974 CITY OF AUBURN DEPT. OF PUBLIC WORKS

RECEIVED DEPARTMENT OF ECOLOGY DEC 17 1973

CASH ___ OTHER ___ NONE ___

1. NAME City of Auburn

ADDRESS 20 "A" St. N. W.

Auburn, WA ZIP CODE 98002

2. SOURCE FROM WHICH THE RIGHT TO TAKE AND MAKE USE OF WATER IS CLAIMED: Surface (SURFACE OR GROUND WATER)

W.R.I.A. 09 (LEAVE BLANK)

A. IF GROUND WATER, THE SOURCE IS N/A

B. IF SURFACE WATER, THE SOURCE IS Springs

3. THE QUANTITIES OF WATER AND TIMES OF USE CLAIMED:

A. QUANTITY OF WATER CLAIMED 625 G.P.M. (CUBIC FEET PER SECOND OR GALLONS PER MINUTE) PRESENTLY USED 625 G.P.M.

B. ANNUAL QUANTITY CLAIMED 1010 (ACRE FEET PER YEAR) PRESENTLY USED 1010

C. IF FOR IRRIGATION, ACRES CLAIMED N/A PRESENTLY IRRIGATED N/A

D. TIME(S) DURING EACH YEAR WHEN WATER IS USED: Continually - January through December

4. DATE OF FIRST PUTTING WATER TO USE: MONTH Prior to 1907 See Attached Ordinance No. 123 YEAR ___

5. LOCATION OF THE POINT(S) OF DIVERSION/~~WITHDRAWAL~~: 500 FEET North AND 150 FEET East FROM THE Center of Section 11 CORNER OF SECTION N/A

BEING WITHIN The SE 1/4 of the NW 1/4 and the SW 1/4 of the NE 1/4 and the NE 1/4 of the SW 1/4 LESS the SW 1/4 of the NE 1/4 of the SW 1/4 OF SECTION 11 T. 21 N., R. 4 (E.OR W.) W.M.

THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, LOT N/A BLOCK N/A OF N/A (GIVE NAME OF PLAT OR ADDITION)

6. LEGAL DESCRIPTION OF LANDS ON WHICH THE WATER IS USED: Corporate limits of the City of Auburn.

COUNTY King

7. PURPOSE(S) FOR WHICH WATER IS USED: Municipal Supply

8. THE LEGAL DOCTRINE(S) UPON WHICH THE RIGHT OF CLAIM IS BASED: Vested Right (Continuous use since prior to 1907)

THE FILING OF A STATEMENT OF CLAIM DOES NOT CONSTITUTE AN ADJUDICATION OF ANY CLAIM TO THE RIGHT TO USE OF WATERS AS BETWEEN THE WATER USE CLAIMANT AND THE STATE OR AS BETWEEN ONE OR MORE WATER USE CLAIMANTS AND ANOTHER OR OTHERS. THIS ACKNOWLEDGEMENT CONSTITUTES RECEIPT FOR THE FILING FEE.

DATE RETURNED THIS HAS BEEN ASSIGNED WATER RIGHT CLAIM REGISTRY NO. WAI 140 03354

I HEREBY SWEAR THAT THE ABOVE INFORMATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

X CITY OF AUBURN By [signature]

DATE December 7, 1973

IF CLAIM FILED BY DESIGNATED REPRESENTATIVE, PRINT OR TYPE FULL NAME AND MAILING ADDRESS OF AGENT BELOW.

Pat Nevins, P.E., Director of Public Works
City of Auburn
20 "A" St. N. W., Auburn, WA 98002

☐ ADDITIONAL INFORMATION RELATING TO WATER QUALITY AND/OR WELL CONSTRUCTION IS AVAILABLE.

SELECTION - DEPARTMENT OF ECOLOGY

RETURN ALL THREE COPIES WITH CARBONS INTACT. ALONG WITH YOUR FEE TO:
DEPARTMENT OF ECOLOGY
WATER RIGHT CLAIMS REGISTRATION
OLYMPIA, WASHINGTON 98504

City of Auburn
Public Works Department
25 West Main Street
Auburn, WA 98001



STATE OF WASHINGTON
SUPERSEDING CERTIFICATE OF WATER RIGHT
Replaces Certificate of Water Right issued on February 5, 1960



Document Title: Certificate of Water Right

Agency: Department of Ecology
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, WA 98008-5452

Applicant: City of Auburn
Public Works Dept.
25 West Main Street
Auburn, WA 98001

Reference Number: N/A

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
November 12, 1957	4731	4592	3560-A

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)
Well #1	N/A

MAX. CUBIC FEET PER SECOND	MAX. GALLONS PER MINUTE	MAX. ACRE-FEET PER YEAR
N/A	2200	1120

QUANTITY	TYPE OF USE	PERIOD OF USE
N/A	Municipal	Continuously

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
NE NE	19	21	5E	9	King

PARCEL # N/A

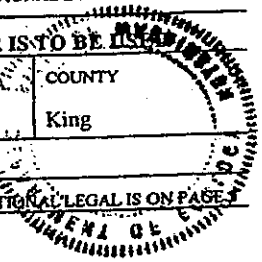
ADDITIONAL LEGAL IS ON PAGE 2

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
N/A	N/A	N/A	N/A	N/A	King

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2



9709260278

9709260278 09:27:00 AM KING COUNTY RECORDS 002 THS 9.00

LEGAL DESCRIPTION FOR LOCATION OF DIVERSION/WITHDRAWAL

...th and 125 feet east of SW corner of NE quarter NE quarter Section 19.

LEGAL DESCRIPTION FOR PROPERTY ON WHICH WATER IS TO BE USED

...ed by the City of Auburn as identified in their latest approved water system plan and periodic ...sistent with coordinated water supply plans, including interties for wholesale water delivery to ...areas of any water purveyors that have approved interlocal agreements with the City of Auburn.

PROVISIONS

...ions and requirements contained in reports of examination or permits previously issued apply to ...this unless specifically noted below.

...of this water right is subject to the implementation of the minimum requirements established in ...rvation Planning Requirements, Guideline and Requirements for Public Water Systems ...Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July ...as revised.

...W 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be ...ed in the management of the states water resources, and must be considered as a potential new ...water. Accordingly, as part of the terms of this water right, the applicant shall prepare and ...a water conservation plan approved by Department of Health. The standards for such a plan ...obtained from either the Department of Health or the Department of Ecology.

...to monitor the resource, static water level (SWL) shall be measured at least once each month. ...ments shall be taken after the pump has been shut off and the water level in the well has been ...d. The data shall be maintained and made available to Ecology upon request. However, ...Water Resources Section (NWRO) shall be notified if the SWL is determined to be below the ...ously recorded at that time of year.

...use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided ...RCW 90.03.390, and 90.44.020.

...ficate of water right is specifically subject to relinquishment for non-use of water as ...in RCW 90.14.180.

Given under my hand and the seal of this office at Bellevue, Washington, this 16th day of September, 1997.

Tom Fitzsimmons
Department of Ecology

By _____
Ray Hellwig, Section Supervisor

...(Rev. 8-97)

Well 2

S. F. No. 7361—1-57—3M. 47578.

5130217
NE 19-21-5

VOL 7 PAGE 13
AC 12

A 3-13.13

CERTIFICATE RECORD NO. 8 PAGE NO. 3560-A

STATE OF WASHINGTON, COUNTY OF King

Certificate of Ground Water Right

Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.

THIS IS TO CERTIFY *That* CITY OF AUBURN WATER DEPARTMENT

of Auburn, Washington, *has made proof to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use of the ground waters of a* well

located within (NE¼NE¼) Government Lot 8

Sec. 19, *Twp.* 21 *N., R.* 5 E. *W. M.,*

for the purpose of municipal supply

under and subject to provisions contained in Ground Water Permit No. 4592 *issued by the State Supervisor of Water Resources and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Water Resources of Washington and entered of record in Volume* 8 *at page* 3560-A; *that the right hereby confirmed dates from* November 12, 1957; *that the quantity of ground water under the right hereby confirmed for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed* 2200 gallons per minute; 1120 acre-feet per year for municipal supply.

A description of the lands to which such ground water right is appurtenant, and the place where such water is put to beneficial use, is as follows:

City of Auburn, King County, Washington.

The right to the use of the ground water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1929.

WITNESS the seal and signature of the State Supervisor of Water Resources affixed this 5th *day of* February, 1960.

ENGINEERING DATA

O.K. SL

M. B. Walker
State Supervisor of Water Resources.

City of Auburn
Public Works Department
25 West Main Street
Auburn, WA 98001

STATE OF WASHINGTON
SUPERSEDING CERTIFICATE OF WATER RIGHT
Replaces Certificate of Water Right issued on November 14, 1972

RECEIVED
SEP 18 1997
KING COUNTY RECORDER

Document Title: Certificate of Water Right

Agency: Department of Ecology
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, WA 98008-5452

Applicant: City of Auburn
Public Works Dept.
25 West Main Street
Auburn, WA 98001

Reference Number: N/A

9709260279

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
February 26, 1968	9229	8732	G1-00277C

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)
Well #2	N/A

MAX. CUBIC FEET PER SECOND	MAX. GALLONS PER MINUTE	MAX. ACRE-FEET PER YEAR
N/A	2400	3840

QUANTITY	TYPE OF USE	PERIOD OF USE
N/A	Municipal	Continuously

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
N/A	18	21	5E	9	King

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
N/A	N/A	N/A	N/A	N/A	King

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

9709260279 09:27:00 AM KING COUNTY RECORDS 002 THS 9.00

9709260279

LEGAL DESCRIPTION FOR LOCATION OF DIVERSION/WITHDRAWAL

685 feet south and 610 feet east from North quarter of Section 18.

Within Government Lots 9 & 10

LEGAL DESCRIPTION FOR PROPERTY ON WHICH WATER IS TO BE USED

Area served by City of Auburn as identified in their latest approved water system plan and periodic updates consistant with coordinated water supply plans, including interties for wholesale water delivery to the service areas of any water purveyors that have approved interlocal agreements with the City of Auburn.

PROVISIONS

All conditions and requirements contained in reports of examination or permits previously issued apply to this certificate unless specifically noted below.

Issuance of this water right is subject to the implementation of the minimum requirements established in the Conservation Planning Requirements, Guideline and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the states water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

In order to monitor the resource, static water level (SWL) shall be measured at least once each month. Measurements shall be taken after the pump has been shut off and the water level in the well has been stabilized. The data shall be maintained and made available to Ecology upon request. However, Ecology's Water Resources Section (NWRO) shall be notified if the SWL is determined to be below the level normally recorded at that time of year.

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for non-use of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Bellevue, Washington, this 18 *day of* Sept., *1997.*

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

ENGINEERING DATA
OK W
ECY 040-1-2 (Rev. 8-97)

Tom Fitzsimmons
Department of Ecology

By _____
Ray Hellwig, Section Supervisor

S. F. No. 7361—(Rev. 6-70).

CERTIFICATE RECORD NO. - , PAGE NO. G1-00277C

STATE OF WASHINGTON, COUNTY OF King

CERTIFICATE OF GROUND WATER RIGHT

(Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology thereunder.)

7211300429

THIS IS TO CERTIFY *That* CITY OF AUBURN

of Auburn, Washington, *has made proof to the satisfaction of the Department of Ecology of a right to the use of the public ground waters of the State of Washington from* a well *located within* abandoned White River bed, in the City of Auburn, between Government Lots 9 and 10.

Sec. 18, *Twp.* 21 *N., R.* 5 E *W.M.,*

for the purpose(s) of municipal supply

under and specifically subject to provisions contained in Ground Water Permit No. 8732 *issued by the Department of Ecology and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the Department of Ecology and entered of record in Volume* - *at page* G1-00277C *; that the priority of the right hereby confirmed dates from* February 26, 1968 *; that the quantity of ground water under the right hereby confirmed for the aforesaid purposes, is limited to an amount actually beneficially used for said purposes, and shall not exceed* 2400 gallons per minute; 3840 acre-feet per year, to supply a projected population of 40,000 by 1980 continuously each year

A description of the lands to which such ground water right is appurtenant is as follows:

Area served by the City of Auburn.

The right to use of water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390 and 90.44.020.

This certificate of ground water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and seal of this office at Olympia, Washington, this 14th *day of* November, 19 72.

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

Engineering Data

OK

JOHN A. BIGGS, *Director*
Department of Ecology

by R. Jerry Bolles

NOV-30-72 00107 7211300129 ——RF 2.00 Wea 2

Ground Water Permit No. 8732

Certificate of Ground Water Right

Recorded in the Department of Ecology, Olympia, Washington, in Book No. ——— of Ground Water Right Certificates, on page GI-00277C, on the 14th day of November 19 72

STATE OF WASHINGTON, County of ——— } ss.

I certify that the within was received and duly recorded by me in Volume ——— of Book of Water Right Certificates, at page ——— on the ——— day of ———, 19——

———

STATE PRINTING PLANT, OLYMPIA, WASHINGTON

Filed for Record at Request of
City of Ruston
Address 2224 N. Pearl St.
Ruston, Wash. 98402

1972 NOV 30 AM 11 11

AUDITOR
RECORDS & ELECTIONS
KING COUNTY, WASH.

City of Auburn
Public Works Department
25 West Main Street
Auburn, WA 98001

STATE OF WASHINGTON
SUPERSEDING CERTIFICATE OF WATER RIGHT
Replaces Certificate of Water Right issued on September 15, 1988

RECEIVED
SEP 18 1997
KING COUNTY RECORDER

Document Title: Certificate of Water Right

Agency: Department of Ecology
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, WA 98008-5452

Applicant: City of Auburn
Public Works Dept.
25 West Main Street
Auburn, WA 98001

Reference Number: N/A

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
July 8, 1980	G1-23629	G1-23629 P	G1-23629 C

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

9709260281

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)
Wells (3A & 3B)	N/A

MAX. CUBIC FEET PER SECOND	MAX. GALLONS PER MINUTE	MAX. ACRE-FEET PER YEAR
N/A	2800	3600

QUANTITY	TYPE OF USE	PERIOD OF USE
N/A	Municipal	Continuously

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
NE SW	30	21	5E	9	King

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
N/A	N/A	N/A	N/A	N/A	King

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

RECORDED IN KING COUNTY, WASHINGTON
SEP 18 1997

9709260281 09:27:00 AM KING COUNTY RECORDS 002 THS

LEGAL DESCRIPTION FOR LOCATION OF DIVERSION/WITHDRAWAL

Well 3A: 853 feet west and 326 feet south of center of Section 30.

Well 3B: 812 feet west and 326 feet south of center of Section 30.

LEGAL DESCRIPTION FOR PROPERTY ON WHICH WATER IS TO BE USED

Area served by City of Auburn as identified in their latest approved water system plan and periodic updates consistent with coordinated water supply plans, including interties for wholesale water delivery to the service areas of any water purveyors that have approved interlocal agreements with the City of Auburn.

PROVISIONS

9709260281

All conditions and requirements contained in reports of examination or permits previously issued apply to this certificate unless specifically noted below.

All water wells constructed within the State shall meet the minimum standards for well construction and maintenance as provided under RCW 18.104, Washington Water Well Construction Act of 1972, and Chapter 173-160 WAC, Minimum Standards for Construction and Maintenance of Wells.

An approved metering device shall be installed and maintained in accordance with RCW 90.03.360, WAC 508-64-020 through -040. Meter readings shall be recorded at least monthly.

The well or wells under this appropriation right shall not be screened, perforated or open to water bearing materials shallower than 180 feet below ground surface at the well site.

Issuance of this water right is subject to the implementation of the minimum requirements established in the Conservation Planning Requirements, Guideline and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the states water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

In order to monitor the resource, static water level (SWL) shall be measured at least once each month. Measurements shall be taken after the pump has been shut off and the water level in the well has been stablilized. The data shall be maintained and made available to Ecology upon request. However, Ecology's Water Resources Section (NWRO) shall be notified if the SWL is determined to be below the level normally recorded at that time of year.

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for non-use of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Bellevue, Washington, this 16th day of April, 1997.

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

Tom Fitzsimmons
Department of Ecology

By _____
Ray Hellwig, Section Supervisor

ENGINEERING REVIEW
OK _____

ECY 040-1-2 (Rev. 8-97)

Well #3 Ab

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

8809190660

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
July 8, 1980	G1-23629	G1-23629P	G1-23629C

NAME
City of Auburn

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
25 West Main Street	Auburn	Washington	98002

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
Well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
—	2,800	3,600.0

QUANTITY, TYPE OF USE, PERIOD OF USE
Municipal Water Supply - continuously

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
762' West and 267' South of center of Section 30.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NE¼ SW¼	30	21	5E	9	King

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by City of Auburn, situated within King County, Washington.

—

88/09/19 #0665
RECD F 6.00
CASHSL

SEP 19 2 00 PM 1988

BY THE KING COUNTY
RECORDS & ELECTIONS
KING COUNTY

FILED for Record at Request of
Name City of Auburn
Address 25 West Main St
Auburn, WA 98001

PROVISIONS

All water wells constructed within the state shall meet the minimum standards for construction and maintenance as provided under RCW 18.104 (Washington Water Well Construction Act of 1971) and Chapter 173-160 WAC (Minimum Standards for Construction and Maintenance of Water Wells).

An approved measuring device shall be installed and maintained in accordance with RCW 90.03.360, WAC 508-64-020 through WAC 508-64-040 (Installation, operation and maintenance requirements attached hereto).

8809190660

The well or wells under this appropriation right shall not be screened, perforated or open to water bearing materials shallower thant 180' below ground surface at the well site.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Redmond *Washington, this* 15th *day of* September, *19* 88

Department of Ecology

ENGINEERING DATA OK

by Nancy Ellison, Regional Manager

FOR COUNTY USE ONLY

City of Auburn
Public Works Department
25 West Main Street
Auburn, WA 98001

WASHINGTON STATE DEPARTMENT OF ECOLOGY

STATE OF WASHINGTON
SUPERSEDING CERTIFICATE OF WATER RIGHT
Replaces Certificate of Water Right issued on September 15, 1988

RECEIVED
SEP 18 1997
KING COUNTY RECORDER

Document Title: Certificate of Water Right

Agency: Department of Ecology
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, WA 98008-5452

Applicant: City of Auburn
Public Works Dept.
25 West Main Street
Auburn, WA 98001

Reference Number: N/A

9709260280

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
December 29, 1972	G1-20391	G1-20391 P	G1-20391 C

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)
Well #4	N/A

MAX. CUBIC FEET PER SECOND	MAX. GALLONS PER MINUTE	MAX. ACRE-FEET PER YEAR
N/A	2800	3600

QUANTITY	TYPE OF USE	PERIOD OF USE
N/A	Municipal	Continuously

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
NW NE	30	21	5E	9	King

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
N/A	N/A	N/A	N/A	N/A	King

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

9709260280 09:27:00 AM KING COUNTY RECORDS 002 IHS

LEGAL DESCRIPTION FOR LOCATION OF DIVERSION/WITHDRAWAL

900 feet east and 500 feet south of North quarter corner of Section 30.

LEGAL DESCRIPTION FOR PROPERTY ON WHICH WATER IS TO BE USED

Area served by City of Auburn as identified in their latest approved water system plan and periodic updates consistent with coordinated water supply plans, including interties for wholesale water delivery to the service areas of any water purveyors that have approved interlocal agreements with the City of Auburn.

PROVISIONS

9709260280

All conditions and requirements contained in reports of examination or permits previously issued apply to this certificate unless specifically noted below.

The well or wells under this appropriation right shall not be screened, perforated or open to water bearing materials shallower than 180 feet below ground surface at the well site.

All water wells constructed within the State shall meet the minimum standards for well construction and maintenance as provided under RCW 18.104, Washington Water Well Construction Act of 1972, and Chapter 173-160 WAC, Minimum Standards for Construction and Maintenance of Wells.

An approved metering device shall be installed and maintained in accordance with RCW 90.03.360, WAC 508-64-020 through -040. Meter readings shall be recorded at least monthly.

Issuance of this water right is subject to the implementation of the minimum requirements established in the Conservation Planning Requirements, Guideline and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the states water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

In order to monitor the resource, static water level (SWL) shall be measured at least once each month. Measurements shall be taken after the pump has been shut off and the water level in the well has been stabilized. The data shall be maintained and made available to Ecology upon request. However, Ecology's Water Resources Section (NWRO) shall be notified if the SWL is determined to be below the level normally recorded at that time of year.

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for non-use of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Bellevue, Washington, this 16th *day of* Sept., *1997.*

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

ENGINEERING DATA
OK
ECY 040-1-2 (Rev. 8-97)

Tom Fitzsimmons
Department of Ecology

By _____
Ray Hellwig, Section Supervisor

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

8809190659

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
December 29, 1972	G1-20391	G1-20391P	G1-20391C

NAME
City of Auburn

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
25 West Main Street	Auburn	Washington	98001-4998

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
Well #4

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
---	2,800	3,600.0

QUANTITY, TYPE OF USE, PERIOD OF USE
Municipal Water Supply - continuously

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION-WITHDRAWAL
900' East and 500' South of N¼ corner of Section 30.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NW¼ NE¼	30	21	5	9	King

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by City of Auburn, situated within King County, Washington.

88/09/19 #0659
RECD F 6.00
CASHSL ****6.0
11

FILED for Record at Request of
Name City of Auburn
Address 25 West Main St.
Auburn, WA. 98001

SEP 19 2 04 PM '88
BY THE DIVISION OF RECORDS & ELECTIONS
KING COUNTY

RECORDED

8809190659

The well or wells under this appropriation right shall not be screened, perforated or open to water bearing materials shallower than 180' below ground surface at the well site.

All water wells constructed within the state shall meet the minimum standards for construction and maintenance as provided under RCW 18.104 (Washington Water Well Construction Act of 1971) and Chapter 173-160 WAC (Minimum Standards for Construction and Maintenance of Water Wells).

An approved measuring device shall be installed and maintained in accordance with RCW 90.03.360, WAC 508-64-020 through WAC 508-64-040 (Installation, operation and maintenance requirements attached hereto).

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use here described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Redmond *Washington, this* 15th *day of* September, *19* 88

Department of Ecology

ENGINEERING DATA OK

by Nancy Ellison, Regional Manager

FOR COUNTY USE ONLY

200403050011 81
AUBURN CITY OF CERT 20.00
PAGE001 OF 002
03/05/2004 12.14
KING COUNTY, WA

City of Auburn
25 West Main Street
Auburn, WA 98001

WASHINGTON STATE DEPARTMENT OF ECOLOGY

STATE OF WASHINGTON
SUPERSEDING CERTIFICATE OF WATER RIGHT

Document Title: Certificate of Water Right

Agency: Department of Ecology
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, WA 98008-5452

Applicant:
City of Auburn
25 West Main Street
Auburn, WA 98001

Reference Number:

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
June 23, 1980	G1-23633	G1-23633P	G1-23633C

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)
Wells 5, 5A, 5B, & 5C	N/A

MAX CUBIC FEET PER SECOND	MAX GALLONS PER MINUTE	MAX ACRE-FEET PER YEAR
N/A	1000	720

QUANTITY/TYPE OF USE/PERIOD OF USE

720 Acre-feet per year — Municipal supply — Year-round, as needed

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

Parcel # 1421049093

Well 5: SW¼ SE¼ of Section 31, T. 21 N., R. 5 E.W.M., located 556 feet East, 328 feet North of the South quarter corner of Section 31; King County

Well 5A: SE¼ SE¼ of Section 31, T. 21 N., R. 5 E W.M., located 880 feet North, 1050 feet west of the Southeast corner of Section 31,

Well 5B: SW¼ NE¼ of Section 6, T. 20 N., R 5 E.W.M., located approximately 1450 feet West, 2250 feet South of the Northeast corner of Section 6; Pierce County

Well 5C: SW¼ NE¼ of Section 6, T. 20 N , R. 5 E.W.M., located approximately 1525 feet West and 2400 feet South of the Northeast corner of Section 6, Pierce County.

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The area served by the City of Auburn as identified in their latest approved water system plan and periodic updates consistent with coordinated water supply plans, including interties for wholesale water delivery to the service areas of any water purveyors that have approved inter local agreements with the City of Auburn

PROVISIONS

"The total instantaneous withdrawal rate for Well 5, Well 5A, Well 5B, and Well 5C authorized by this certificate shall not exceed 1,000 gpm The total annual withdrawal rate for Well 5, Well 5A, Well 5B, and Well 5C shall not exceed 720 acre-feet per year "

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use," Chapter 173-173 WAC

Water use data shall be recorded monthly The maximum rate of diversion/withdrawal and the annual total volume shall be submitted to Ecology by January 31 of each calendar year

The following information shall be included with each submittal of water use data owner, contact name if different, mailing address, daytime phone number, WRIA, Permit/Certificate/Claim No , source name, annual quantity used including units, maximum rate of diversion including units,

1 monthly meter readings including units,
2 peak monthly flow including units,
3 Department of Health WFI water system number and source number(s),

and period of use In the future, Ecology may require additional parameters to be reported or more frequent reporting Ecology prefers web based data entry, but does accept hard copies Ecology will provide forms and electronic data entry information

Chapter 173-173 WAC describes the requirements for data accuracy, device installation and operation, and information reporting It also allows a water user to petition Ecology for modifications to some of the requirements Installation, operation and maintenance requirements are contained in the document entitled "Water Measurement Device Installation and Operation Requirements "

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions

Issuance of this water right is subject to the implementation of the minimum requirements established in the Conservation Planning Requirements, Guideline and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994 and as revised

Under RCW 90 03 005 and 90 54 020(6), conservation and improved water use efficiency must be emphasized in the management of the State's water resources, and must be considered as a potential new source of water Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology

Water Resources Act of 1971 specifies certain criteria regarding utilization and management of the waters of the state in the best public interest Use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment

The right to use of the waters aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90 03 380, 90 03 390, and 90 44 020

This certificate of water right is specifically subject to relinquishment for non-use of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Bellevue, Washington,
this 19th *day of* FEBRUARY, *2004*

DEPARTMENT OF ECOLOGY
STATE OF WASHINGTON
REVIEW
ECY 040-1-2 (Rev 8-97)

Linda Hoffman
Department of Ecology

By _____
Daniel Swenson, Section Supervisor

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
October 10, 1989	G1-25518	G1-25518 P	G1-25518 C

NAME
City of Auburn Public Works Department/Lakeland Hills North

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
25 West Main Street	Auburn	Washington	98001

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	167	187 non-cumulative*

QUANTITY, TYPE OF USE, PERIOD OF USE

Community domestic supply - continuously

* The annual quantity is supplemental to existing rights.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL

880 feet north and 1050 feet west of the southeast corner of Section 31

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SE¼ SE¼	31	21	5E	10	King

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

City of Auburn water service area as identified in the latest approved Water System Plan, and interties for wholesale water delivery to the service areas of any water purveyors that have approved interlocal agreements with the City of Auburn.

PROVISIONS

Installation and maintenance of an access port as described in Ground Water Bulletin No. 1 is required. An air line and gauge may be installed in addition to the access port.

An approved measuring device shall be installed and maintained in accordance with RCW 90.03.360, WAC 508-64-020 through 508-64-040. Meter readings shall be recorded monthly and this data shall be maintained and be made available to the Department of Ecology upon request.

In order to monitor the resource, static water level (SWL) shall be measured at least once each month. Measurements shall be taken after the pump has been shut off and the water level in the well has been stabilized. The data shall be maintained and made available to Ecology upon request. However, Ecology's Water Resources Section (NWRO) shall be notified if the SWL is determined to be below the level normally recorded at that time of year.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Bellevue, Washington,

this 27th day of November, 1996.

Department of Ecology

ENGINEERING DATA

by _____

Raymond K. Hellwig, Regional Supervisor, Shorelands and Water Resources

FOR COUNTY USE ONLY

Water Rights 8C

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

Northwest Regional Office, 3190 - 160th Ave S.E. • Bellevue, Washington 98008-5452 • (206) 649-7000

July 20, 1995

City of Auburn
25 West Main Street
Auburn, Washington 98001-4998

Dear Sir or Madam:

Re: Change Application for Ground Water Certificates 3560-A, G1-00277C, G1-20391C, and G1-23629C

Your change application has been approved. However, superseding certificates for 3560-A, G1-00277C, G1-20391C, and G1-23629C will not be issued until the authorized change has been accomplished. If the 30 day appeal period expires with no appeal, this letter and the accompanying Report of Examination (ROE) would become the legal instruments authorizing the change.

When wells 6 and 7 have been drilled and connected to Auburn's delivery system, notify this office in writing that the change as authorized in the ROE is completed. The notice shall include water well reports documenting well development in the same aquifer and statutory recording fees for issuing superseding certificates as indicated below.

$20.00 payable to the Department of Ecology and
$32.00 payable to the County Auditor.

This letter and the enclosed Report of Examination constitute our determination and order. Any person wishing to appeal this action may obtain review by submitting a written request, within thirty (30) days of receipt of this order, to the Washington Pollution Control Hearings Board, 4224 - 6th Avenue S.E., Bldg. #2, Lacey, WA 98504-0903. Concurrently send to the Director of the Department of Ecology, Mail Stop 7600, P.O. Box 47600, Olympia, Washington 98504-7600, a copy of the request for review. These procedures are consistent with the provisions of Chapter 43.21B RCW and the rules and regulations adopted thereunder.

Sincerely,

R. K. Hellwig

Raymond K. Hellwig
Northwest Regional Office

RKH:ms
Enclosures

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
REPORT OF EXAMINATION
FOR CHANGE OF WATER RIGHTS

Request: The City of Auburn wants to change existing ground water certificates 3560-A, G1-00277C, G1-20391C, and G1-23629C by adding two supplemental wells (#6 and #7) to each of the four certificates.

Recommend: That two supplemental wells (well 6 and well 7) be added to certificates 3560-A, G1-00277C, G1-20391C, and G1-23629C. All other conditions and terms pertaining to the certificates remain unchanged.

Superseding certificates will be issued when the following conditions are met.

Both wells (#6 and #7) are drilled, completed, and connected to Auburn's water delivery system.

Water well reports for wells (#6 and #7) are filed with Ecology documenting development in the same aquifer as wells under certificates 3560-A, G1-00277C, G1-20391C, and G1-23629C.

SUPPORT DATA

Background

Application of Change for: Ground Water Certificates 3560-A, G1-00277C, G1-20391C, and G1-23629C.

Name: City of Auburn

Date submitted: May 19, 1995

Request: Add two supplemental wells (#6 and #7) to each of the referenced certificates which share a common ground water source.

Use: Municipal water supply

Legal notice: Published in the Valley Daily News on June 9 and 16, 1995. No protests filed.

Investigation

Location: City of Auburn in southeast King County

Water supply sources: Auburn has seven wells plus West Hill Springs, and Coal Creek Springs.

Service area: The City of Auburn and surrounding areas including interties as described in their current water system plan.

Water rights: Auburn currently holds a combined total of 12,520 Acre Feet per year (AF/yr) in certificated water rights. The certificates pertaining to this application for change were issued as follows:

Cert. 3560-A (well 1), 2200 gallons per minute (gpm), 1120 AF/yr.

Cert. G1-00277C (well 2), 2400 gpm, 3840 AF/yr.

Cert. G1-20391C (well 4), 2800 gpm, 3600 AF/yr.

Cert. G1-23629C (wells 3A & 3B), 2800 gpm, 3600 AF/yr.

The proposed change would add wells (#6 and #7) as yet to be drilled to each of the four certificates to provide system flexibility and operational reliability. The instantaneous and annual quantities authorized by each certificate would remain unchanged.

Valley aquifer: According to a hydrogeologic study and report prepared by the consulting firm of Hart Crowser for Auburn, wells 1,2,3A,3B, and 4 are all developed in the same aquifer known as the Auburn Valley Aquifer.

Well 1 is in the NE1/4NE1/4, Sec. 19, T. 21N, R. 5E

Well 2 is in the NE1/4, Sec. 18, T. 21N, R. 5E

Wells 3A & 3B are in the NE1/4SW1/4, Sec. 30, T. 21N, R. 5E

Well 4 is in the NW1/4NE1/4, Sec. 30, T. 21N, R. 5E

The proposed supplemental wells are to be located as follows:

Well 6 in the NE1/4, Sec. 18, T. 21N, R. 5E

Well 7 in the NW1/4, Sec. 18, T. 21N, R. 5E

Staff hydrogeologist reviewed data on existing wells and the Hart Crowser report and confirms that all existing wells are developed in the same aquifer and are hydraulically connected to each other; therefore, it can be considered as being part of a very large well field. The aquifer covers an area of approximately four miles by one and one half miles. The proposed wells will be located between the other existing wells and within the area covered by the Auburn Valley Aquifer.

Well development: Auburn plans to drill well 6 by December 1996 and drill well 7 by October 1997. Both wells will be connected to Auburn's water delivery system by December 1997.

Prior to issuing any superseding certificates, copies of the water well reports must be filed with Ecology to document completion and document that the wells are developed in the same aquifer as the certificated wells.

Conclusion:

In accordance with RCW Chapters 90.03 and 90.44, I find that Auburn has water rights to approve the request for change to add supplemental wells, that the change is for a beneficial use and will not impair existing rights or be detrimental to the public welfare.

REPORT BY: Janet Jong **DATE:** 7/24/95

CITY OF ALGONA
402 Warde Street
ALGONA, WASHINGTON 98001-8505

ADMINISTRATION	833-2897
PUBLIC WORKS	833-2741
POLICE	833-2743
FAX	939-3366

October 4, 1996

Chris Thorn,
Water Quality Programs Coordinator
Department of Public Works
City of Auburn
25 West Main,
Auburn, WA 98001

Dear Mr. Thorn,

Enclosed please find completed Exhibits F and G to the Interlocal Agreement #3 between Auburn and Algona. We would appreciate recorded copies when available.

Thank you,

Diane Jenks

DIANE M. JENKS,
Administrative Director

EXHIBIT F. Algona Well Facility and Water Right Conveyance

WARRANTY DEED

The GRANTOR, THE CITY OF ALGONA, on this 4th day of October, 1996, for and in consideration of the sum of $1.00, receipt of which is hereby acknowledged, and for benefits to be derived by the GRANTOR herein, hereby conveys and warrants to the CITY OF AUBURN, GRANTEE, the following well facility and Certificated Ground Water G1-227769C situated in the County of King, State of Washington:

Well Facility. The well, piping, and appurtenances generally consist of 10 inch casing to approximately 65 feet below ground surface.

Ground Water Certificated Right: G1-22769C. This Ground Water Right is certificated to provide water on a continuous basis for municipal purposes pursuant to RCW 90.03.290. Further, this water right is certificated to provide an instantaneous rate of withdrawal (Qi) of 500 gpm, and an annual quantity/rate of withdrawal (Qa) of 175 acre feet per year. As a water right applied to municipal purposes, the instantaneous (Qi) and annual (Qa) amounts authorized for withdrawal within GW Certificate G1-22769C are not subject to relinquishment pursuant to RCW 90.14.140(2)(d).

Dated this 4th day of October, 1996.

Glenn Wilson
GRANTOR - CITY OF ALGONA

STATE OF WASHINGTON)
) ss
COUNTY OF KING)

On this 4th day of October, 1996, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared Glenn Wilson, to me known as the Mayor, for the City of Algona, the municipal jurisdiction that executed the above and foregoing instrument and acknowledged that he signed the same as the legally authorized representative of the City of Algona as his free and voluntary act and deed, for the uses and purposes therein mentioned.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal on the date hereinabove set forth.

Diane M Jenka
NOTARY PUBLIC in and for the STATE of WASHINGTON, residing at Puyallup
My Commission expires May 10, 1997

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
December 10, 1976	G1-22769	G1-22769P	G1-22769C

NAME
CITY OF ALGONA

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
402 Warde Street	Algona	Washington	98002

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
Well

(TRIBUTARY OF (IF SURFACE WATERS))

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	500	175.0

QUANTITY, TYPE OF USE, PERIOD OF USE
Municipal supply - continuously

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
400 feet east and 1200 feet south from west quarter corner of Sec. 25

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, E. OR W.) W.M.	W.R.I.A.	COUNTY
NE¼SW¼	25	21	4 E.	10	King

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
28	4	Woods Algona Add. Div. 1

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by City of Algona

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PROOF OF APPROPRIATION OF WATER

	PERMIT NUMBER: G1--22759P
NAME OF PERMITTEE: CITY OF ALGONA	
POST OFFICE ADDRESS: 402 Kanda Street, Algona, STATE: WA, ZIP CODE: 98002	
PRINCIPAL PURPOSE FOR WHICH WATER IS USED: Municipal Water Supply	
DATE OF PRIORITY - DATE OF APPLICATION FOR PERMITTED USE: April 17, 197	IF USED FOR IRRIGATION, NUMBER OF ACRES ACTUALLY IRRIGATED:
IF SOURCE IS A WELL, IS AN ACCESS HOLE NOW INSTALLED? [X] YES [ ] NO	PERIOD DURING WHICH WATER IS USED: All
RATE OF DIVERSION: 500 gal per minute	
AMOUNT AUTHORIZED TO BE DIVERTED FROM PERMANENT SYSTEM: Average 11,564 CF per day	[ ] GPM [ ] CFS
HAVE ALL PROVISIONS AS REQUIRED BY PERMIT BEEN ACCOMPLISHED? [X] YES [ ] NO	IF NO, EXPLAIN:

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS USED (USE ADDITIONAL SHEET IF NECESSARY)

Well site: Block 4, Lots 23-30, Woods Algona Division No. 1 as recorded in book of Plats, Vol. 10 Page 36, records of King County, Washington

Place of use: Water used in City of Algona, Washington.

Description of City Limits: All that portion of Sections 23, 24, 25, 26 and 35 and 36 Township 21 North, Range 4 East, W.M. described as follows:

BEGINNING at the northwest corner of the southeast one-quarter of Section 23, Township 21 North, Range 4 East W.M. and running thence easterly along the North line of said southeast one-quarter to the northeast corner thereof; thence easterly along the north line of the southwest one-quarter of Section 24, Township 21 north, Range 4 east W.M. to a point on the easterly margin of the Joint C.M. & St. P. & O.W.R.R. Railway's right-of-way; thence southwesterly along said easterly margin to an intersection with the northerly margin of the right-of-way of South 360th Street; thence easterly along said northerly margin of South 360th Street to an intersection with the easterly margin of the right-of-way of 76th Avenue South; thence southerly along said easterly margin of 76th Avenue South to an intersection with the northerly line of the Southwest one-quarter of the Southeast one-quarter of Section 25, Township 21

OK-FEES
ISSUE CERTIFICATE
PER PERMIT
10-2-78

STATE OF WASHINGTON, County of King } ss

I, John F. Watchett, being first duly sworn, depose and say that I have read the above and foregoing proof of appropriation; that I know the contents thereof, and that the facts therein stated are true.

USE PERMIT

IN WITNESS WHEREOF, I have hereunto set my hand this 10th day of October, 19 78

John F. Watchett
Permittee Signature

Subscribed and sworn to before me this 10th day of October, 1978

Margaret J. Gerard
Notary Public

ECY 040-1-26

AFTER RECORDING, RETURN TO:

City of Auburn
25 West Main Street
Auburn, WA 98001-4998
ATTN: City Clerk

EXHIBIT G

Well and Ingress / Egress Easement

For and in consideration of the sum of one dollar ($1.00) and other good and valuable consideration, receipt of which is hereby acknowledged, and for benefits to be derived by the Grantor herein, Grantor, City of Algona, a Municipal Corporation of the State of Washington, hereby conveys and warrants to the City of Auburn, Grantee herein, a Municipal Corporation of the State of Washington, its successors and assigns, a perpetual Nonexclusive Easement under, over, through and across the following described real property for the purpose of laying, maintaining, and/or installing groundwater well facilities and appurtenances thereof, said real property being described as follows:

> Well and Protection Zone. A circle of land consisting of a 100 foot radius, centered on and surrounding the existing well facilities located on Lots 25-30 inclusive, Block 4, Woods Algona Addition, Division 1, according to the Plat thereof, as recorded in Volume 19 of Plats, page 36, in the records of King County, Washington.

Said Grantee shall have the absolute right, at times as may be necessary, for immediate ingress / egress over the regularly traveled portion of said Lots 25-30 inclusive, Block 4, for the purpose of maintenance, inspection, construction, operation, repair or reconstruction of the well facilities without incurring any legal obligation or liability therefore.

Said Grantor shall not in any way block, restrict or impede access and ingress / egress to or from said Easement, and/or in any way block, restrict or impede full use of the real property within the above-described Easement by said Grantee for the above-described purposes. Said Grantor may fence across said Easement and/or along the boundaries of said Easement provided that a gate is constructed in said fence. Said gate shall be of sufficient length and location to allow the Grantee full use of, and access and ingress / egress to and from the real property within the above-described Easement. If said gate is to be locked, keys shall be provided to the Grantee.

This Easement shall be a covenant running with the above-described real property and burden said real estate, and shall be binding on the successors, heirs and assigns of all parties hereto.

In the event of future well abandonment by Grantee, this easement shall be vacated by Grantee, and Grantor shall no longer be bound hereby.

IN WITNESS WHEREOF, said corporation has caused this instrument to be executed by its property officers this 4TH day of October, 1996.

City of Algona, GRANTOR

BY _____
GLENN WILSON, MAYOR

BY _____
, CITY CLERK

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Well Driller's Copy

PERMIT

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
January 14, 1988	G1-25173	G1-25173P	

NAME
Summersett E & L

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
13477 N.E. 132nd Street	Kirkland	Washington	98034

The applicant is, pursuant to the Report of Examination which has been accepted by the applicant, hereby granted a permit to appropriate the following described public waters of the State of Washington, subject to existing rights and to the limitations and provisions set out herein.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
Well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
---	20	6.5

QUANTITY, TYPE OF USE, PERIOD OF USE
Group domestic supply - continuously (13 homes)

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
1025' north and 1324' east from center of Section 33.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NE¼	33	21	5E	10	King

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

SW¼ NE¼ Section 33, T.21N., R.5E., and W½ of the SE¼ NE¼

DESCRIPTION OF PROPOSED WORKS

G1-25173
6" well, 352' deep, 19,000 gallon storage, five 119 gallon pressure tanks, two 55 gpm booster pumps, 4" main lines.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	February 15, 1991	February 15, 1992

PROVISIONS

Installation and maintenance of an access port as described in Ground Water Bulletin No. 1 is required. An air line and gauge may be installed in addition to the access port.

An approved measuring device shall be installed and maintained in accordance with RCW 90.03.360, WAC 508-64-020 through WAC 508-64-040 (Installation, operation and maintenance requirements attached hereto).

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or fail to give notice to the Department of Ecology on forms provided by that Department documenting such compliance.

Given under my hand and the seal of this office at Redmond *Washington, this* 15th *day of* February, *19* 90.

Department of Ecology

ENGINEERING DATA
OK

by Herman H. Huggins
Herman H. Huggins
Section Supervisor
Water Resources

HYDRAULIC MODEL CALIBRATION AND HYDRANT TESTING PLAN

Technical Memorandum

Date: May 6, 2022

Project: 22-3425

To: Susan Fenhaus, City of Auburn

From: Stephanie Ard, PE
Murraysmith

Re: Hydraulic Model Calibration

Background

The City of Auburn (City) has retained Murraysmith to update their Comprehensive Water System Plan. As part of this scope, Murraysmith will utilize the City's hydraulic model to analyze the system's capacity to meet existing and projected future demands. To ensure the model as accurate as possible, hydrant flow and pressure field data will be used to calibrate model parameters.

The process for hydrant testing is described in this memo.

Task Goals

The goal of this model calibration is to match model and field pressures and flows. During the calibration, system field data will be compared to model simulation results and the model will be updated to better reflect the existing system conditions. The calibration process ensures that the model accurately represents real-world conditions. Common model adjustments include pipeline friction coefficients adjustments (within standard ranges based on pipe age and material) and operational settings adjustments to match the actual system operations.

Field Testing Process

Flow and pressure testing in the field is a critical step for calibrating the City's existing hydraulic model. It provides the real-world data that will be used to ensure the model replicates existing system conditions.

Testing Locations

A total of thirty (30) test locations have been identified for calibration testing, as shown in Attachment 1. If field conditions make a test location impossible or impractical, a new location will

be selected that is close to the original location. Any new locations should be as similar as possible to the original location considering pressure zone, pipe size, and dead ends. Any changes in test location should be documented (marked on a map and written in the data collection log) to ensure that test results are accurately represented in the model during the calibration process.

Procedure

Flow and pressure tests will be conducted using at least two adjacent hydrants. One hydrant is used to measure pressure and at least one other hydrant is opened to create a pressure drop in the system (see Figure 1, below). Record results from the tests on the Data Collection sheet, provided in Attachment 2. The recommended testing process is as follows:

1. Locate the flow and pressure hydrants indicated on Attachment 1 in the field. It is advisable for City staff to review or visit each proposed flow location prior to field testing to evaluate the risks of flooding and mark the hydrants involved in testing. If time does not permit review of the locations in advance, flow test locations may need to be changed in the field and any changes should be indicated. It is important to keep the pressure and flow hydrant adjacent, if possible.

2. Flush the "pressure hydrant" to remove sediment, and then install the pressure gauge. Open hydrant, confirm no leakage, and then measure the static pressure. Recorded "static pressure" on the Data Collection sheet.

3. Install pitot pressure measurement gauge on the "flow hydrant." If possible, the gauge should be directly connected to the hydrant, without the use of a hose. Open hydrant, confirm no leakage, and then measure the static pressure. Recorded "flow static pressure" on the Data Collection sheet.

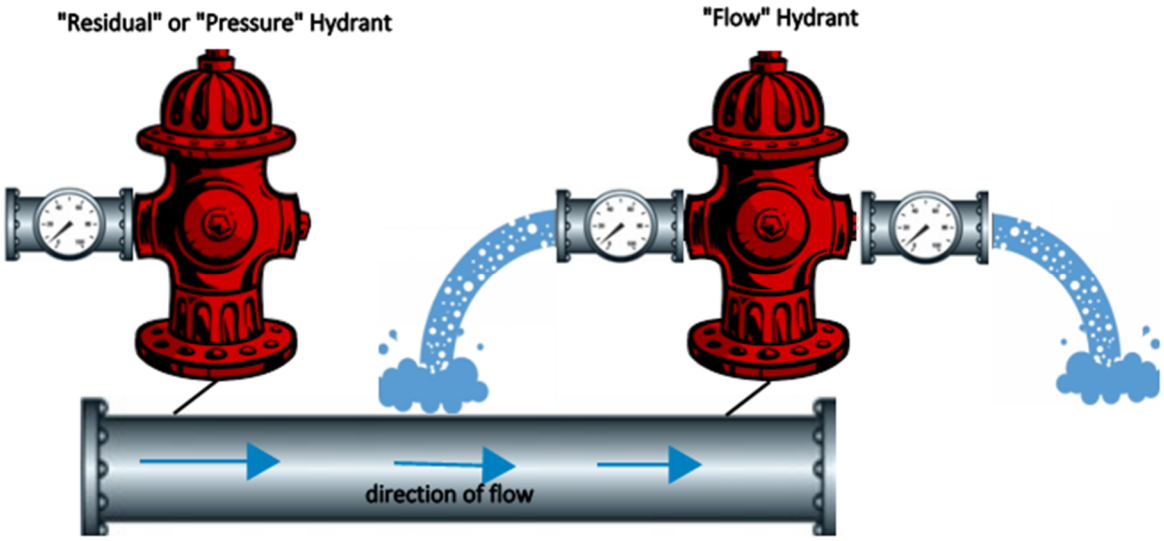
4. As the "flow hydrant" discharges, monitor the pressure at the "pressure hydrant" until it drops at least 10 psi and stabilizes. This process can take up to five minutes. Record "residual pressure" and "pitot pressure" on the Data Collection sheet.

    a. If the 10-psi pressure drop cannot be realized with a single flow hydrant, select a second flow hydrant near the pressure and first flow hydrant. Flow measurements will need to be recorded at all flow hydrants. If the test is near a facility, the 10 psi may not be realized. If this is the case, add a note on the Data Collection sheet.

    b. If the pressure does not stabilize after 5 minutes, record a couple of values.

5. Close both hydrants. Remove equipment. Clean up site, as necessary.

Figure 1 | Example Test Configuration



Additional Testing Notes

- Field testing should be completed in less than one week of field time by City crews.
- Open and close the hydrants slowly to prevent water hammer and potential system damage.
- Estimate discharge path prior start of flow test to ensure the flowed water does not cause erosion or flooding. If necessary, use sand bags or a diffuser to divert water to appropriate drainages.
- Measure and note the size of the orifice a flow hydrant. These measurements are used to translate the pressure measurement from the pitot gauge into a flow rate. Note any non-typical outlet geometry or signs of excessive corrosion or damage that could affect the accuracy of the measurement.

Boundary Conditions

In addition to flow and pressure data collected at the hydrants, system boundary conditions are required to calibrate the model. To accurately represent system conditions during flow testing, supervisory control and data acquisition (SCADA) information for all facilities will be used in the model to represent system conditions during testing including the following.

- Water levels in reservoirs.
- Well and booster pump status and flow rates.
- Intertie flow rates (as applicable).
- Valve status and flow rates (as available).

The SCADA information should be recorded and provided at time intervals small enough to show the testing, preferably one-minute increments. If SCADA is not available at the facilities, a person should be at the station to manually record information for the facilities that are anticipated to contribute flow during the testing period.

Equipment

One crew of 2-4 City staff (if possible, the same people for the duration of testing) with the appropriate vehicle and equipment will be required to conduct the pressure and flow tests. All fire flow test equipment should be calibrated before field use to confirm measurement accuracy. This can be done by calibrating to manufacturer recommendations or comparing with other pressure reading instruments. Flowed hydrants make considerable noise, and the two hydrants may not be in direct line of sight of one another, so radios or phones are a good idea for communicating between the operator at the pressure hydrant and the operators at the flowed hydrants. A list of field equipment includes:

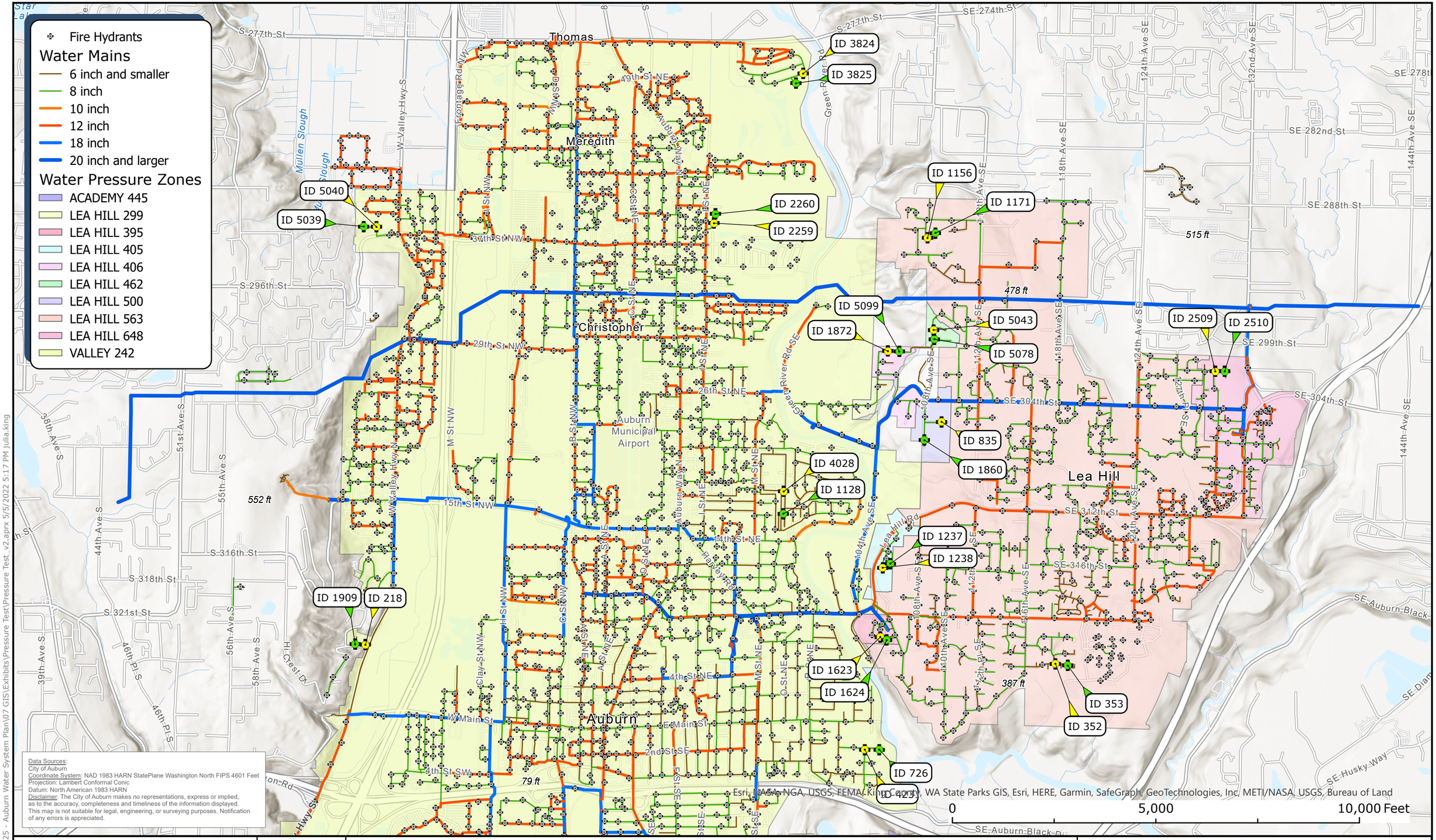
Equipment List

- Two manually read pressure gauges
- Two pitot gauges or pitot diffusers
- Radios/phones for communication between pressure and flow hydrant
- Spray paint for marking pressure and flow hydrants (optional)
- Hydrant Testing Plan map (Provided by Murraysmith)
- Data Collection sheet to record pressure and flow measurements (Provided by Murraysmith)
- Sandbags for flow tests (as needed)
- Safety equipment including cones for traffic control
- Equipment necessary for accessing and opening all hydrants/valve vaults

Next Steps

Once testing is complete, the City shall submit the completed Data Collection sheet, marked-up Hydrant Testing Plan map, and the requested boundary conditions data to Murraysmith. Please also provide any additional notes or information that may be helpful to understanding how the system was operating at the time of these tests. This information will be compared to model simulation results to calibrate the hydraulic model. Based on the results of this calibration process, additional questions may arise.

Attachment 1 – Testing Locations



murraysmith

City of Auburn
Water System Plan

Hydrant Testing Plan
North

May 2022

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Fire Hydrants
- Pressure Hydrant
- Flow Hydrant
- Fire Hydrants

Water Mains
- 6 inch and smaller
- 8 inch
- 10 inch
- 12 inch
- 18 inch
- 20 inch and larger

Water Pressure Zones
- ACADEMY 350
- ACADEMY 445
- ACADEMY 531
- ACADEMY 585
- LAKELAND 330
- LAKELAND 390
- LAKELAND 440
- LAKELAND 441
- LAKELAND 446
- LAKELAND 485
- LAKELAND 545
- LAKELAND 575
- LAKELAND 630
- LAKELAND 670
- LAKELAND 697
- VALLEY 242

ID 1791
ID 601
ID 572
ID 438
ID 2223
ID 2224
ID 2353
ID 2354
ID 5889
ID 5888
ID 948
ID 949
ID 3382
ID 1350
ID 3489
ID 2443
ID 1359
ID 1358
ID 5156
ID 5230
ID 3708
ID 3709
ID 5836
ID 5835
ID 1770
ID 1765
ID 1744
ID 1732
ID 4282
ID 4281
ID 4285
ID 3863

79 ft
509 ft
568 ft
514 ft

Stuck
Algona
Pacific
Dieringer

4th St SW
15th St SW
W Valley Hwy S
Algona Blvd N
Celery Ave
Perimeter Rd
Main St
3rd Ave S
Ellingson Rd
S 372nd St
1st Ave E
3rd Ave SW
S 376th St
51st Ave S
Milwaukee Blvd S
Butte Ave
3rd Ave SE
Jovita Blvd E
2nd St E
Butte Ave SE
8th St E
C St SW
A St SE
B St SE
D St SE
12th St SE
17th St SE
21st St SE
29th St SE
33
37th St SE
41st St SE
E St SE
F St SE
M St SE
R St SE
Howard Rd
Stuck River Dr
Riverview Dr
Orvieto Rd SE
W Valley Hwy E
Evergreen Way SE
SE Auburn Black Diamond Rd
SE Lake Holm Rd
SE Green Valley Rd
Scenic Dr SE
Dogwood St SE
White River
Auburn Way S
148th Ave SE
Bridget Ave SE
Foster Ave SE
53rd St SE
55th St SE
4th St E
Edwards Rd E
62nd Ave SE
Auburn

Data Sources:
City of Auburn
Coordinate System: NAD 1983 HARN StatePlane Washington North FIPS 4601 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983 HARN
Disclaimer: The City of Auburn makes no representations, express or implied, as to the accuracy, completeness and timeliness of the information displayed. This map is not suitable for legal, engineering, or surveying purposes. Notification of any errors is appreciated.

Esri, NASA, NGA, USGS, FEMA, King County, WA State Parks GIS, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land

0 5,000 10,000 Feet

murraysmith

N W E S

City of Auburn
Water System Plan

Hydrant Testing Plan
South

May 2022

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Attachment 2 – Hydrant Testing Data Collection Form

Client: City of Auburn
Project: Water System Plan Update
Task: Hydraulic Model Calibration - Hydrant Flow Testing

Model Calibration: Hydrant & Pressure Data Collection														
Test ID	Location	Pressure Zone		Date of Test	Time of Test	Flow Hydrant				Pressure Hydrant			Notes
		Pressure Zone	Facility ID			Flow Hydrant	Flow Static Pressure (psi)	Pitot Pressure (psi)	Total Flow (gpm)	Residual/ Static Hydrant	Static Pressure (psi)	Residual Pressure (psi)	

HYDRAULIC MODEL CALIBRATION RESULTS

Client: City of Auburn

Project: 2024 Water System Plan Update

Model Calibration: Hydrant Test Vs. Model Static Pressure Comparison							
General Info		Pressure Comparison Post Calibration					
Test ID	Residual Hydrant	Field Static Pressure (psi)	Model Static Pressure (psi)	Difference (psi)	Field Pressure Drop (psi)	Model Pressure Drop (psi)	Difference (psi)
1	2223	84	83.32	-0.68	16	12.79	-3.21
2	572	82	80.54	-1.46	21	15.47	-5.53
3	553	78	78.44	0.44	12	9.36	-2.64
4	5888	70	73.84	3.84	6	6.01	0.01
5	948	72	72.47	0.47	7	5.89	-1.11
6	1350	65	66.32	1.32	17	17.16	0.16
7	3709	74	75.62	1.62	41	41.26	0.26
8	4285	59	61.07	2.07	7	11.07	4.07
9	4282	51	53.53	2.53	3	0.39	-2.61
10	5230	64	64.04	0.04	13	7.35	-5.65
11	5836	70	70.82	0.82	14	14.77	0.77
12	1358	101	79.33	--*	35	4.19	--*
13	1765	66	67.05	1.05	1	1.96	0.96
14	2443	66	66.17	0.17	20	17.67	-2.33
15	1744	65	62.87	-2.13	9	3.05	-5.95
16	1623	65	64.89	-0.11	16	15.65	-0.35
17	1238	72	73.12	1.12	9	7.64	-1.36
18	1872	60	65.72	5.72	11	8.7	-2.3
19	5043	67	66.57	-0.43	19	18.18	-0.82
20	835	58	64.15	6.15	15	20.06	5.06
21	352	65	65.04	0.04	7	10.71	3.71
22	1156	62	64.15	2.15	4	9.12	5.12
23	1587	63	64.96	1.96	12	8.07	-3.93
24	2509	78	78.71	0.71	-15	-15.06	-0.06
25	1791	50	50.85	0.85	1	3.36	2.36
26	2353	48	47.71	-0.29	4	7.92	3.92

27	218	73	70.88	-2.12	19	15.74	-3.26
28	423	73	73.64	0.64	6	9.27	3.27
29	4028	0	78.92	--**	0	1.1	1.1
30	2259	83	81.34	-1.66	3	1.96	-1.04
31	3824	83	83.38	0.38	5	9.4	4.4
32	5040	87	82.81	-4.19	12	11.11	-0.89
33	2002	87	84.68	-2.32	4	1.99	-2.01
34	2212	85	83.26	-1.74	1	1.38	0.38
35	5759	76	74.71	-1.29	2	1.26	-0.74
36	275	73	68.92	-4.08	1	2.41	1.41
37	1230	68	66.09	-1.91	1	2.07	1.07
38	1897	73	70.33	-2.67	2	2.02	0.02
39	2271	61	59.03	-1.97	1	2.83	1.83
40	5682	68	65.53	-2.47	3	5.66	2.66

Notes:

*Test Voided - appears that there was a misread of the static pressure or a partially opened zone valve at time of test. The recorded HGL is equivalent to the zone supplying the PRV. Checked static pressure again no 2/8/2024 and static pressure was consistent with a setting of 69 psi (HGL of 555').

**Test Voided - no Static Pressure provided

Client: City of Auburn

Project: 2024 Water System Plan Update

Model Calibration: Hydrant & Pressure Data Collection						
Static Pressure and Total Flow Results						
Test ID	Pressure Zone	Date of Test	Time of Test	Flow Hydrant	Flow Static Pressure (psi)	Total Flow (gpm)
1	Academy 350	5/16/2022	7:35-7:40	2224	85	1050
2	Academy 445	5/16/2022	8:07-8:13	438	79	1000
3	Academy 445	5/16/2022	8:30-8:38	552	80	700
4	Academy 531	5/16/2022	8:54-9:04	5889	72	1100
5	Academy 585	5/16/2022	9:25-9:33	949	82	1100
6	Lakeland 390	5/16/2022	9:59-10:09	3382	62	915
7	Lakeland 440	5/16/2022	10:45-10:55	3708	70	650
8	Lakeland 441	5/16/2022	12:15-12:35	3863	56	1000
9	Lakeland 446	5/16/2022	12:50-1:00pm	4281	56	1025
10	Lakeland 485	5/16/2022	1:20-1:30pm	5156	77	1100
11	Lakeland 545	5/16/2022	1:46-2:01pm	5835	63	950
12	Lakeland 575	5/17/2022	7:02-7:22	1359	95	1050
13	Lakeland 630	5/17/2022	7:31am	1770	60	1050
14	Lakeland 670	5/17/2022	8:04-8:17	3489	70	825
15	Lakeland 697	5/17/2022	8:32-8:42	1732	64	1075
16	Lea Hill 395	5/17/2022	9:09 9:19	1624	66	825
17	Lea Hill 405	5/17/2022	9:32-9:42	1237	64	1000
18	Lea Hill 406	5/17/2022	9:59-10:09	5099	58	850
19	Lea Hill 462	5/17/2022	10:25-10:35	5078	79	1100
20	Lea Hill 500	5/17/2022	12:15-12:25	1860	82	1100
21	Lea Hill 563	5/17/2022	12:57-1:57pm	353	70	1075
22	Lea Hill 563	5/18/2022	8:33-8:45	1171	50	950
23	Lea Hill 563	5/17/2022	1:40-2:30	1588	70	1075
24	Lea Hill 648	5/18/2022	8:00-8:10	2510	72	1250
25	Valley 242	5/18/2022	9:15-9:25	601	49	900
26	Valley 242	5/18/2022	9:45-9-:55	2354	49	875

27	Valley 242	5/18/2022	10:20-10:32	1909	78	900
28	Valley 242	5/19/2022	8:15-8:20	726	73	975
29	Valley 242	5/19/2022	12:00-12:05	1128	0	1120
30	Valley 242	5/19/2022	8:45-8:50	2260	84	1100
31	Valley 242	5/19/2022	9:15-9:20	3825	83	1100
32	Valley 242	5/19/2022	10:15-10:20	5039	80	1150
33	Valley 242	5/19/2022	10:30-10:35	2050	89	1125
34	Valley 242	5/19/2022	1:30-1:35pm	3386	85	1200
35	Valley 242	5/19/2022	1:45-1:50pm	244	76	1150
36	Valley 242	5/19/2022	2:00 2:15pm	4258	73	1120
37	Valley 242	5/20/2022	8:30-8:45	5021	67	975
38	Valley 242	5/20/2022	9:35am	1898	74	1150
39	Valley 242	5/20/2022	9:05-9:20	2270	64	1025
40	Valley 242	5/20/2022	2:08-2:18pm	5683	79	1100

Client: City of Auburn

Project: 2024 Water System Plan Update

Model Calibration: HGL Comparison							
General Info			HGL Comparison				
Test ID	Original Pressure Zone Name	Updated Pressure Zone Name	Field Static Pressure (psi)	Original Zone HGL (ft)	HGL from Field Test (ft)	Difference	Notes
1	Academy 350	Academy 400	84	350	404	53.8	Changed to Academy 400
2	Academy 445	Academy 470	82	445	472	27.4	Changed to Accademy 470
3	Academy 445	Academy 445	78	445	468	23.0	Changed to Accademy 470
4	Academy 531	Academy 531	70	531	537	5.6	
5	Academy 585	Academy 585	72	585	587	2.0	
6	Lakeland 390	Lakeland 390	65	390	399	9.4	
7	Lakeland 440	Lakeland 450 and Lakeland 505	74	440	505	65.4	Split zone into two pressure Zones: Lakeland 450 and Lakeland 505
8	Lakeland 441	Lakeland 385	59	441	387	-53.7	Changed to Lakeland 385
9	Lakeland 446	Lakeland 415	51	446	416	-30.2	Changed to Lakeland 415
10	Lakeland 485	Lakeland 455	64	485	458	-26.9	Changed to Lakeland 455
11	Lakeland 545	Lakeland 545	70	545	543	-1.8	
12	Lakeland 575	Lakeland 560	101	575	629	54.4	Changed to Lakeland 560
13	Lakeland 630	Lakeland 630	66	630	635	4.5	
14	Lakeland 670	Lakeland 670	66	670	678	8.1	
15	Lakeland 697	Lakeland 697	65	697	713	16.5	
16	Lea Hill 395	Lea Hill 395	65	395	397	2.3	
17	Lea Hill 405	Lea Hill 405	72	405	401	-4.3	
18	Lea Hill 406	Lea Hill 406	60	406	393	-13.3	
19	Lea Hill 462	Lea Hill 480	67	462	484	21.5	Changed to Lea Hill 480
20	Lea Hill 500	Lea Hill 500	58	500	485	-14.8	
21	Lea Hill 563	Lea Hill 563	65	563	573	10.2	
22	Lea Hill 563	Lea Hill 563	62	563	569	6.2	
23	Lea Hill 563	Lea Hill 563	63	563	570	6.5	
24	Lea Hill 648	Lea Hill 648	78	648	654	5.5	
25	Valley 242	Valley 242	50	242	248	6.0	

26	Valley 242	Valley 242	48	242	251	8.5	
27	Valley 242	Valley 242	73	242	247	4.6	
28	Valley 242	Valley 242	73	242	246	4.2	
29	Valley 242	Valley 242	0	242	66	-176.1	
30	Valley 242	Valley 242	83	242	250	7.8	
31	Valley 242	Valley 242	83	242	249	7.1	
32	Valley 242	Valley 242	87	242	260	17.7	
33	Valley 242	Valley 242	87	242	250	7.8	
34	Valley 242	Valley 242	85	242	249	7.3	
35	Valley 242	Valley 242	76	242	248	5.5	
36	Valley 242	Valley 242	73	242	249	7.4	
37	Valley 242	Valley 242	68	242	249	7.2	
38	Valley 242	Valley 242	73	242	250	8.4	
39	Valley 242	Valley 242	61	242	248	5.7	
40	Valley 242	Valley 242	68	242	244	2.1	

For questions, call Kristina Westbrook,
King County Reclaimed Water Program Manager at (206) 296-5279
www.kingcounty.gov/reclaimedwater

King County

Water Reclamation Evaluation Checklist
For Systems with 1,000 or more Connections

The County and State recognize that changing conditions could initiate a need to respond in new ways to future water quality standards, wastewater discharge requirements, take advantage of advances in treatment technologies and/or allow our region to be positioned to respond to changes associated with climate change and population growth.

In 2003, Chapter 90.46 of the Revised Code of Washington (RCW) was amended to require public water systems serving 1,000 or more connections to evaluate opportunities for reclaimed water when completing their water system plans. Please use this checklist to meet King County consistency requirements in responding to this legislation.

Please use this checklist, including the inventory template, to ensure that your water system plan includes sufficient information about opportunities for reclaimed water and your system's efforts to develop those opportunities. If a question is not applicable or the information is unavailable, then answer, "unknown" or "n/a." King County will consider the checklist completed if each answer is filled in with the best available information, even if the utility states that it is not aware of any reclaimed water opportunities within its service area.

Water System Name: City of Auburn
Date: 03/11/2024
PWS ID# 03350V
Contact: Senait Gebreeyesus

1. **Identifying Potential Future Demand for Reclaimed Water:** King County maintains a database and map of potential reclaimed water users for evaluating future projects. Please use the template below, or similar table, to provide information to assist King County in further researching these potential uses.
   - **Large Utility Water Users** (choose one):
     - ☐ Attached is an inventory of twenty large (above 20,000 gallons/month on average), non single-family residential, water users served by our utility that have a potential for reclaimed water use, or
     - ☑ Attached is an inventory of our utility's top twenty water users, or
     - ☐ The information requested is unknown or not available.
       Additional Comments: _____
   - **Large Self Suppliers** (choose one):
     - ☐ Attached is an inventory of large, self-supplied water users within our water utility's service boundaries - especially those near wastewater treatment plants, mainlines, outfalls, and pump stations or similar reclaimed water facilities), or
     - ☑ The information requested is unknown or not available.
       Additional Comments: _____
   - **Other** (choose one):
     - ☐ Attached is an inventory of other water users (such as those that are clustered near one another and could be served by a single system) that may be likely candidates for reclaimed water use, or
     - ☑ The information requested is unknown or not available.
       Additional Comments: _____

2. **Environmental Commitment**: Are you a city/town, or providing water service to a city/town, that has made commitments within resource management plans, salmon recovery plans, or other environmental initiatives for which there is a potential opportunity for using reclaimed water to assist in meeting commitments? (choose one)

☐ Yes, here are plans that have potential for reclaimed water use in our service area to meet the above commitments:

_____

_____

☑ The information requested is unknown, not available.
Additional Comments: _____

3. **Identifying Areas of Potential Use of Reclaimed Water for Environmental Benefit:**
Below are ***examples*** of uses of reclaimed water ***that comply with State, Federal and other reclaimed water environmental, health and safety standards***. All of these uses are currently in effect somewhere in Washington State. To the best of your knowledge, are any of these potential uses for reclaimed water applicable to your area?

River Augmentation (choose one):

☐ Yes, our water rights are limited by instream flows. For more information, King County may contact:

_____

_____

☑ The information requested is unknown, or not available.
Additional Comments: _____

Groundwater Recharge (choose one):

☐ Yes, we withdraw water from an aquifer that is in a groundwater management area, or from a declining aquifer, where water levels may need to be replenished or to maintain aquifer storage. For more information, King County may contact:

_____

☑ The information requested is unknown, or not available.
Additional Comments: _____

Water Rights Mitigation (choose one):

☑ Yes, our area is pursuing, or planning to pursue, new or additional water rights, and there may be an opportunity to use reclaimed water for mitigation of those new water rights. For more information, King County may contact:
Application G1-28404. Contact Ingrid Gaub, 253-804-3113

☐ The information requested is unknown, or not available.
Additional Comments: _____

Potential Areas of Environmental Need (choose one):

☐ Yes, parts of our service area include potential environmental enhancement locations, such as wetlands enhancement, aquifer recharge, stream flow augmentation, that might be candidates for reclaimed water use. For more information, King County may contact:

_____

☑ The information requested is unknown, or not available.
Additional Comments: _____

4. **Local Reclaimed Water Legislation**: If water reclamation is mandated for this water system through local government agreement, contract, local regulations, ordinances, or other mechanisms, please provide a copy of the governing mechanism (choose one).

   ☐ Yes, local legislation exists in our area in support of reclaimed water use. The following relevant legislation is attached (please list titles of documents):

   _____

   _____

   ☑ No water reclamation legislation exists, or is known to exist, at a local level in our service area.

5. **Coordination with Local Wastewater Utility:** Include a brief description of your interactions with any wastewater or reclaimed water utility (King County or other) adjacent to your service area to evaluate any potential opportunities to develop reclaimed water (choose one).

   ☑ Describe if applicable:
   The City of Auburn's policy is to coordinate with King County to explore potential opportunities for water reclamation.

   ☐ None. Additional Comments: _____

Template for
Inventory of Water Users and Identification of Potential Reclaimed Water Users

Site Owner or Site Name	Site Address (for general mapping purposes)	Estimated Annual Water Use	Water uses not requiring potable water[1]	Is this a Potential Reclaimed Water Customer?
Boeing	700 15th St SW	188,246,355 gal.	?	Yes
Muckleshoot Casino	2402 Auburn Way S	32,219,539 gal.		No
Auburn Manor	210 37th St SE	22,827,838 gal.		No
Copper Gate	4750 Auburn Way N	14,905,895 gal.		No? (new)
Emerald Downs	2828 Emerald Downs Dr.	29,984,048 gal.	12,095,080	Yes
White River Estates	4248 A St. SE	15,270,794 gal.		No
Laundry Facility	1600 M ST. NW	25,749,807 gal.		No? (new)
Promenade Apartments	12902 SE 312th St	15,666,411 gal.		No? (new)
MultiCare	202 N Division St	13,091,590 gal.		No
Villas/Reserve	1107 A St NE	11,592,354 gal.		No? (new)
Walmart/Supermall	1200 Supermall Way	13,991,247 gal.	1,319,101	Yes
Auburn Dairy	702 W Main St	10,548,203 gal.		No
Rio Verde	1402 22nd St NE	12,753,400 gal.		No
College Place	31600 126th Ave SE	11,624,762 gal.		No? (new)
Skylark Village	900 29th St SE	12,359,952 gal.		No? (new)
The River Estates	3611 I St. NE	10,086,593 gal.		No? (new)
Safeway	3520 Pacific Ave S	9,678,279 gal.		No
Adventist Academy	32nd St SE & Wyman Dr.	9,028,734 gal.	?	Yes
Forest Villa (PIC)	4205 Auburn Way S	9,163,094 gal.		No
Tall Cedars	40137th St SE	6,759,209 gal.		No

[1] See Washington State Reclamation and Reuse Standards, September 1997, Section 1, Articles 1-5 for allowable uses of reclaimed water. http://www.ecy.wa.gov/PROGRAMS/WQ/reclaim/standards.html

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Date Submitted: 4/14/2021

Water Use Efficiency
Annual Performance Report - 2020

WS Name: Auburn City of

Water System ID# : 03350 WS County: KING

Report submitted by: *Susan Fenhaus*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period _____ To _____

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*2,312,559,400*	gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*2,165,043,100*	gallons	
Distribution System Leakage – Annual Volume TP – AC	*147,516,300*	gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*6.4 %*		
3-year annual average - %	*4.5 %*		*2018, 2019, 2020*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *10/25/2014*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

1 percent reduction per year in equivalent residential unit values over 6-year planning period (2015-2020).

Customer (Demand Side) Goal Progress:

In 2020, due to Covid-19, no low flow shower heads were given and no applications for WaterSense® toilet rebates were processed.

The goal of 1 percent reduction per year in equivalent residential unit (ERU) values over the 6-year planning period was adopted on 10/25/2014. The change of ERU values from year 2019 to 2020 was 168 to 179, a 6.5% increase, the value of 168 for year 2019 is the lowest value achieved so far.

The City continued to implement WUE program measures such as bills showing consumption history, water saving device kits and conservation pricing.

Additional Information Regarding Supply and Demand Side WUE Efforts

In 2020, the City continued efforts to reduce unaccounted-for water, performing leak detection and repair, metering hydrant use and repairing breaks. As a result, the Distribution System Leakage for year 2020 was 6.4%, below the 10% target. The rolling 3-year average was 4.5%, meeting the WUE rule of at or below 10%.

In 2020, the City continued to implement the WaterSense® toilet rebate program, providing customers a $100 rebate per toilet for the replacement of up to two old toilets with new high efficiency toilets with the WaterSense® label.

The City continued to implement the low flow shower head giveaway program, providing free low flow shower heads so that customers could replace their higher flow ones.

The City continued to perform large meter consumption and meter register checking and calibration.

The City continued to educate customers about water use efficiency practices.

The City continued to encourage the use of water conserving plants in landscaping for both public and private projects.

The City continued to use an inclining block rate for the quantity of water consumed to promote water conservation and customer notification of any high or abnormal water consumption.

The City continued to utilize the AMI (Advanced Metering Infrastructure) system to better understand usage, proactively and more efficiently and effectively manage the water resources and respond better to customers. The City completed the replacement of all small and large water meters in 2017 as part of the AMI implementation.

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January	01/07/2020	43.3	51.6
February	02/18/2020	43.2	49.1
March	03/10/2020	43.3	50.0
April	04/16/2020	42.6	51.7
May	05/06/2020	42.7	51.3
June	06/05/2020	42.6	51.7
July	07/20/2020	43.1	53.1
August	08/01/2020	44.6	53.5
September	09/01/2020	45.3	54.0
October	10/19/2020	45.1	53.2
November	11/20/2020	44.8	52.5
December	12/02/2020	44.1	53.2

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth: 339.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft) 0.1'

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft) 47.28582N, 122.21645W

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface) depth below top of casing

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7) 120.8'

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? 13,616,000

Month	Volume of Water Produced in gallons
January	153,656,000
February	146,249,000
March	161,764,000
April	162,137,000
May	187,153,000
June	197,198,000
July	263,820,000
August	293,885,000
September	237,212,000
October	171,856,000
November	155,010,000
December	159,250,000

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☑ No ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Date Submitted: 5/12/2022

Water Use Efficiency
Annual Performance Report - 2021

WS Name: Auburn City of

Water System ID# : 03350 WS County: KING

Report submitted by: *Susan Fenhaus*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2021* To *12/31/2021*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*2,453,684,600*	gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*2,251,573,400*	gallons	
Distribution System Leakage – Annual Volume TP – AC	*202,111,200*	gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*8.2 %*		
3-year annual average - %	*7.0 %*		*2019, 2020, 2021*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *08/02/2021*

Has goal been changed since last performance report? *Yes*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Decrease the planning ERU value (gpd/ERU) 1 percent annually from the current planning ERU value of 179 gpd/ERU, which is the 75th percentile of the 7 years of historical data (2014-2020). Revaluate goal when the planning ERU value reaches less than 172 gpd/ERU.

Customer (Demand Side) Goal Progress:

In 2021, the City processed 5 applications for WaterSense® toilet rebates for an estimated consumption savings (reduction) of 40,920 gallons per year.

Decreasing the planning ERU value (gpd/ERU) 1 percent annually from the current planning ERU value of 179 gpd/ERU was adopted on 8/2/2021. The change of ERU values from year 2020 to 2021 was 179 to 182, a 1.7% increase, the value of 168 for year 2019 is the lowest value achieved so far.

The City continued to implement WUE program measures such as bills showing consumption history, water saving device kits and conservation pricing.

Additional Information Regarding Supply and Demand Side WUE Efforts

In 2021, the City continued efforts to reduce unaccounted-for water, performing leak detection and repair, metering hydrant use and repairing breaks. As a result, the Distribution System Leakage for year 2021 was 8.2%, below the 10% target. The rolling 3-year average was 7.0%, meeting the WUE rule of at or below 10%.

In 2021, the City continued to implement the WaterSense® toilet rebate program, providing customers a $100 rebate per toilet for the replacement of up to two old toilets with new high efficiency toilets with the WaterSense® label.

The City continued to implement the low flow shower head giveaway program, providing free low flow shower heads so that customers could replace their higher flow ones.

The City continued to perform large meter consumption and meter register checking and calibration.

The City continued to educate customers about water use efficiency practices.

The City continued to encourage the use of water conserving plants in landscaping for both public and private projects.

The City continued to use an inclining block rate for the quantity of water consumed to promote water conservation and customer notification of any high or abnormal water consumption.

The City continued to utilize the AMI (Advanced Metering Infrastructure) system to better understand usage, proactively and more efficiently and effectively manage the water resources and respond better to customers. The City completed the replacement of all small and large water meters in 2017 as part of the AMI implementation.

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January	01/11/2021	35.1	21.5
February	02/02/2021	41.9	22.7
March	03/11/2021	48.1	
April	04/12/2021	46.2	25.3
May	05/11/2021	45.1	24.0
June	06/01/2021	44.7	23.4
July	07/02/2021	43.1	22.1
August	08/01/2021	41.4	20.6
September	09/11/2021	40.4	20.2
October	10/22/2021	40.7	21.2
November	11/30/2021	46.9	
December	12/08/2021	47.4	26.8

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth: 298.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft) 0.1

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft) 47.29780N, 122.21294W

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface) depth above the probe

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7) 27.7'

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? 13,080,000

Month	Volume of Water Produced in gallons
January	162,246,000
February	145,212,000
March	169,190,000
April	179,441,000
May	204,398,000
June	252,258,000
July	304,515,000
August	299,897,000
September	229,711,000
October	177,834,000
November	165,938,000
December	173,023,000

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☑ No ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Date Submitted: 5/31/2023

Water Use Efficiency
Annual Performance Report - 2022

WS Name: Auburn City of

Water System ID# : 03350 WS County: KING

Report submitted by: *Senait Gebreeyesus*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period _____ To _____

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*2,425,214,900*	gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*2,215,863,800*	gallons	
Distribution System Leakage – Annual Volume TP – AC	*209,351,100*	gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*8.6 %*		
3-year annual average - %	*7.7 %*		*2020, 2021, 2022*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *08/02/2021*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Decrease the planning ERU value (gpd/ERU) 1 percent annually from the current planning ERU value of 179 gpd/ERU, which is the 75th percentile of the 7 years of historical data (2014-2020). Revaluate goal when the planning ERU value reaches less than 172 gpd/ERU.

Customer (Demand Side) Goal Progress:

In 2022, the City processed 6 applications for WaterSense® toilet rebates for an estimated consumption savings (reduction) of 81,840 gallons per year.

Decreasing the planning ERU value (gpd/ERU) 1 percent annually from the current planning ERU value of 179 gpd/ERU was adopted on 8/2/2021. The change of ERU value from year 2021 to 2022 was 182 to 173, a 4.9% decrease, the value of 168 for year 2019 is the lowest value achieved so far.

The City continued to implement WUE program measures such as bills showing consumption history, consumer web portal to check consumption, customer possible leak alert, water saving device kits and conservation pricing.

Additional Information Regarding Supply and Demand Side WUE Efforts

In 2022, the City continued efforts to reduce unaccounted-for water, performing leak detection and repair, metering hydrant use and repairing breaks. The Distribution System Leakage for year 2022 was 8.6%, below the 10% target. The rolling 3-year average was 7.7%, meeting the WUE rule of at or below 10%.

In 2022, the City continued to implement the WaterSense® toilet rebate program, providing customers a $100 rebate per toilet for the replacement of up to two old toilets with new high efficiency toilets with the WaterSense® label.

The City continued to implement the low flow shower head giveaway program, providing free low flow shower heads so that customers could replace their higher flow ones.

The City continued to perform large meter consumption and meter register checking and calibration.

The City continued to educate customers about water use efficiency practices.

The City continued to encourage the use of water conserving plants in landscaping for both public and private projects.

The City continued to use an inclining block rate for the quantity of water consumed to promote water conservation and customer notification of any high or abnormal water consumption.

The City continued to utilize the AMI (Advanced Metering Infrastructure) system to better understand usage, proactively and more efficiently and effectively manage the water resources and better response to customers. The City completed the replacement of all small and large water meters in 2017 as part of the AMI implementation.

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January	01/19/2022	51.0	30.0
February	02/03/2022	50.0	30.0
March	03/02/2022	49.0	
April	04/05/2022	49.0	27.0
May	05/20/2022	47.0	27.0
June	06/16/2022	47.0	27.0
July	07/27/2022	45.0	22.0
August	08/02/2022	43.0	22.0
September	09/06/2022	42.0	21.0
October	10/02/2022	41.0	
November	11/03/2022	41.0	
December	12/07/2022	42.0	23.0

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth: 298.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft) 0.1

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft) 47.29780N, 122.21294W

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface) Depth above the probe

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7) 27.7

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? 12,780,000

Month	Volume of Water Produced in gallons
January	176,940,100
February	154,504,000
March	173,420,000
April	161,478,000
May	167,443,000
June	196,910,000
July	287,090,000
August	303,981,000
September	246,949,000
October	192,973,000
November	155,639,000
December	170,211,000

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☑ No ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

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Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Date Submitted: 5/31/2023

Water Use Efficiency
Annual Performance Report - 2022

WS Name: BRAUNWOOD ESTATES

Water System ID# : 03336 WS County: KING

Report submitted by: *Senait Gebreeyesus*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period _____ To _____

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*1,181,230* gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*1,103,440* gallons	
Distribution System Leakage – Annual Volume TP – AC	*77,790* gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*6.6 %*	
3-year annual average - %	*5.1 %*	*2020, 2021, 2022*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *08/02/2021*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Decrease the planning ERU value (gpd/ERU) 1 percent annually from the current planning ERU value of 179 gpd/ERU, which is the 75th percentile of the 7 years of historical data (2014-2020). Revaluate goal when the planning ERU value reaches less than 172 gpd/ERU.

Customer (Demand Side) Goal Progress:

Decreasing the planning ERU value (gpd/ERU) 1 percent annually from the current planning ERU value of 179 gpd/ERU was adopted on 8/2/2021. The change of ERU value from year 2021 to 2022 was 429 to 251, a 41.5% decrease, the value of 251 for this year is the lowest value achieved so far.

The City continued to implement WUE program measures such as bills showing consumption history, consumer web portal to check consumption, customer possible leak alert, water saving device kits and conservation pricing.

Additional Information Regarding Supply and Demand Side WUE Efforts

All meters in the Braunwood system have been replaced in 2017 as part of the Advanced Metering Infrastructure (AMI) project. The Distribution System Leakage for year 2022 was 6.6%, below the 10% target. The rolling 3-year average was 5.1%, meeting the WUE rule of at or below 10%.

In 2022, the City continued to implement the WaterSense® toilet rebate program, providing customers a $100 rebate per toilet for the replacement of up to two old toilets with new high efficiency toilets with the WaterSense® label.

The City continued to implement the low flow shower head giveaway program, providing free low flow shower heads so that customers could replace their higher flow ones.

The City continued to educate customers about water use efficiency practices.

The City continued to encourage the use of water conserving plants in landscaping for both public and private projects.

The City continued to use an inclining block rate for the quantity of water consumed to promote water conservation and customer notification of any high or abnormal water consumption.

The City continued to utilize the AMI (Advanced Metering Infrastructure) system to better understand usage, proactively and more efficiently and effectively manage the water resources and better response to customers.

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January	01/05/2022	59.0	21.0
February	02/05/2022	59.0	21.0
March	03/04/2022	59.0	21.0
April	04/04/2022	59.0	22.0
May	05/10/2022	59.0	22.0
June	06/08/2023	59.0	21.0
July	07/07/2023	60.0	22.0
August	08/07/2023	60.0	22.0
September	09/04/2023	59.0	21.0
October	10/04/2023	59.0	21.0
November	11/11/2023	60.0	21.0
December	12/02/2023	59.0	22.0

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number: 21/05-34E

Well depth: 352.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)	0.1
Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)	
Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)	47.26779 N, 122.17083 W
Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)	depth above the probe
Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)	220'

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? 12,578

Month	Volume of Water Produced in gallons
January	61,600
February	53,400
March	60,300
April	72,800
May	54,500
June	102,500
July	194,100
August	214,800
September	135,000
October	104,800
November	65,500
December	64,800

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☑ No ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

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CITY OF AUBURN WASHINGTON	**Public Works Committee** **October 20, 2014 - 3:30 PM** **Annex Conference Room 2** **MINUTES**

I. CALL TO ORDER

Chairman Wayne Osborne called the meeting to order at 3:30 p.m. in Conference Room #2, located on the second floor of Auburn City Hall, One East Main Street, Auburn, Washington.

A. Roll Call

Chairman Wayne Osborne, Vice-Chair Bill Peloza, and Member Claude DaCorsi were present. Also present during the meeting were: Mayor Nancy Backus, Community Development & Public Works Director Kevin Snyder, Assistant Director of Engineering/City Engineer Ingrid Gaub, Assistant City Engineer Jacob Sweeting, Utility Engineering Manager Lisa Tobin, Transportation Manager Pablo Para, Water Utility Engineer Susan Fenhaus, Planning & Design Services Manager Elizabeth Chamberlain, Financial Planning Manager Bob Brooks, Water Manager Allen Hunter and Public Works Secretary Molly Mendez.

B. Announcements

1. Announcements
   Public comment will be accepted on Discussion Item E.

C. Agenda Modifications

There was one agenda modification, removing Action Item A, Public Works Project No. C512A, from the agenda.

II. CONSENT AGENDA

A. Approval of Minutes
Public Works Committee to approve the minutes of the October 6, 2014 Public Works Committee meeting

It was moved by Vice-Chair Peloza, seconded by Member DaCorsi, that the Committee approve the Public Works Committee Meeting minutes for date, October 6, 2014.

Motion carried 3-0.

III. ACTION

A. Public Works Project No. C512A (Wickstrom)
Award Contract No. 13-12, to Gary Harper Construction, Inc. on their Low Bid of $870,696.00 plus Washington State Sales Tax of $82,716.12 for a Total Contract Price of $953,412.12 for Project No. C512A, Well 4 Emergency Power Improvements

Action Item A was removed from the agenda.

B. Resolution No. 5108 (Tobin)
A Resolution of the City Council of the City of Auburn, Washington, Authorizing the Public Works Committee to Appoint the City of Auburn Representatives to the King County Metropolitan Water Pollution Abatement Advisory Committee

Utility Engineering Manager Tobin provided a brief background summary of Resolution No. 5108 and reviewed the draft letter identifying the City's representative and alternates. There were no questions from the Committee.

It was moved by Vice-Chair Peloza, seconded by Member DaCorsi, that the Committee adopt Resolution No. 5108.

Motion carried 3-0.

IV. DISCUSSION ITEMS

A. Ordinance No. 6534 (Chamberlain)
An Ordinance of the City Council of the City of Auburn, Washington, amending Section 18.29.060 of the Auburn City Code related to floor area ratio in the Downtown Urban Center Zone.

For the purpose of these minutes, this item was discussed after Discussion Item C.

Planning & Design Services Manager Chamberlain provided a brief background summary of Ordinance No. 6534. Chamberlain stated Ordinance No. 6534 already went before the Planning Commission which held a public hearing on October 7, 2014. There was no public testimony. The Planning Commission recommended approval of the code change. Ordinance No. 6534 also went to the Planning and Community Development Committee on October 13, 2014 and the Committee concurred with Planning Commission's recommendation.

Planning & Design Services Manager Chamberlain responded to a question asked by Chairman Osborne regarding the building height limit of 75 feet and that this could be reviewed in the City's Comprehensive Planning effort.

In response to a question asked by Chairman Osborne, Planning & Design Services Manager Chamberlain provided definition of "life of the project" as mentioned on page 29 of the packet.

B. Ordinance No. 6537 (Chamberlain)
An Ordinance of the City Council of the City of Auburn, Washington, amending Section 17.09.010 of the Auburn City Code related to short plat thresholds.

Planning & Design Services Manager Chamberlain provided a brief background summary of Ordinance No. 6537. There were no questions from the Committee.

C. System Development Charges (Tobin/Fenhaus)

For the purpose of these minutes, this item was discussed before Discussion Item A.

Utility Engineering Manager Tobin invited Financial Planning Manager Brooks and Water Utility Engineer Fenhaus to join her at the table as this has been a collaborative effort.

Using a slideshow presentation, Utilities Engineering Manager Tobin briefed the Committee on the System Development Charges.

This was followed by a group discussion.

The Committee reached consensus on Option 1 – Full Water and Sewer SDC increase to be effective in January 2015, with annual updates to the Water, Sewer, and Storm SDCs in subsequent years based on the Construction Cost Index (CCI), but not to be an annual change less than zero.

Staff will provide a similar briefing for the full council before the proposed fee schedule is brought to the council for action.

D. Cross Connection Control Program (Fenhaus)

For the purpose of these minutes, this item was discussed after Discussion Item B.

Water Utility Engineer Fenhaus provided informational materials which explained the Cross Connection Control Program. Fenhaus briefly reviewed the presentation materials with the Committee.

Water Utility Engineer Fenhaus introduced Allen Hunter, the Water Manager at Maintenance and Operations, to the Committee. Water Utility Engineer Fenhaus mentioned that Water Manager Hunter has extensive knowledge with cross connection as he used to be the Cross Connection Specialist.

Water Manager Hunter further explained that Washington Administrative Code requires Public Water Systems to address "Table 9 Facilities" which are facilities that could pose a health concern because of the risk of death, spread of disease or illness. The Department of Health has mandated water systems to concentrate on medical facilities. The City program has identified 65 facilities within that category, and to date, 55 of them have the required premise isolation with the approved backflow device. The staff continue to work with the remaining 10. The Washington Administrative Code also requires Public Water Systems to track backflow assemblies used to protect the water system. The City currently tracks 2600 assemblies, all of which require annual testing by the owner.

Following a question asked by Member DaCorsi, Water Utility Engineer Fenhaus explained the City process for existing facilities.

E. Water Use Efficiency Program (Fenhaus)

Water Utility Engineer Fenhaus indicated this is Chapter 8 of the Water System Comprehensive Plan. Fenhaus noted that a requirement for putting together a Water Use Efficiency Program is to hold a public meeting where public comments are accepted. There were no public comments received.

Water Utility Engineer Fenhaus pointed out some highlights as seen in the memorandum on page 48 of the packet.

There was a group discussion regarding Distribution System Leakage following a question asked by Chairman Osborne.

Water Utility Engineer Fenhaus will investigate the numbers in the chart on page 70 of the packet, specifically the "Schools" column as pointed out by Vice-Chair Peloza.

Water Utility Engineer Fenhaus responded to a question asked by Chairman Osborne regarding the average consumption per account (single family) on the chart on page 72 of the packet.

F. Capital Project Status Report (Sweeting)

Item 6 – CP1024 – AWS and M Street SE Intersection Improvements:
Assistant City Engineer Sweeting provided the Committee with a project status update in response to a question asked by Member DaCorsi.

Item 10 – CP1308 – BNSF Utility Crossings Project:
Chairman Osborne requested staff keep the Committee updated on this project as this contractor has not been used by the City before.

Assistant City Engineer Sweeting indicated staff will keep the Committee informed.

Item 28 – CP1406 – West Main Street Traffic Signal Upgrades:
Assistant City Engineer Sweeting replied to a question asked by Vice-Chair Peloza regarding the completion date of this project.

G. Significant Infrastructure Projects by Others - Public Works Status Report (Gaub)

There were no questions from the Committee.

H. Action Tracking Matrix (Gaub)

Assistant Director of Engineering/City Engineer Gaub reviewed the previous discussion on the 105th Place SE at 107th with committee; staff indicated they would investigate the site to see whether additional signage could be installed in the interim until the repair work could be done next year. Staff is completing this investigation.

Assistant City Engineer Sweeting noted this section of the road is scheduled with the capital projects to go out early next year. Sweeting advised the Committee that this is Item 17 on the Capital Project Status Report.

V. ADJOURNMENT

There being no further business to come before the Public Works Committee, the meeting was adjourned at 5:03 p.m.

Approved this 3rd day of November, 2014.

_____	_____
Wayne Osborne	Molly Mendez
Chairman	Public Works Department Secretary

Report Form

Consumer Confidence Report Certification Form

331-203 • Updated 3/6/2023

Consumer Confidence Reports are due before July 1, 2023

You need to complete the following.

1. **Before July 1, 2023**, mail or otherwise directly deliver a copy of your 2021 Consumer Confidence Report (CCR) to your water system customers. Keep a copy for your records.

2. **Before July 1, 2023**, mail or email a copy of your CCR to the regional office for your county (information on back)**.**

3. **By October 1, 2023*** complete and send this certification form to the regional office with your CCR.

***Note**: We are better able to properly credit your water system when we receive both documents, together, before the July 1 deadline.*

Certification for

Water System Name City of Auburn

Water System ID Number 03350 Water System County King and Pierce

Date delivered Mail and electronically delivered in June, 2023

URL (if delivered electronically) auburnwa.gov/water

In compliance with the CCR requirements in WAC 246-290-72001 through -72012, I confirm that:

- The CCR has been appropriately delivered to customers who use this water system.
- All information contained in this report is correct.
- The monitoring data stated in the CCR matches information submitted to Washington State Department of Health, Office of Drinking Water.

Certified by

Signature 

Printed Name Jirong Lu

Phone 253-876-1977 Date 6/26/2023

Report Form

Consumer Confidence Report Certification Form

331-203 • Updated 3/6/2023

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You need to complete the following.

1. **Before July 1, 2023**, mail or otherwise directly deliver a copy of your 2021 Consumer Confidence Report (CCR) to your water system customers. Keep a copy for your records.

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3. **By October 1, 2023*** complete and send this certification form to the regional office with your CCR.

***Note**: We are better able to properly credit your water system when we receive both documents, together, before the July 1 deadline.*

Certification for

Water System Name Braunwood Estates

Water System ID Number 03336 Water System County King

Date delivered Mail delivered in June, 2023

URL (if delivered electronically) _____

In compliance with the CCR requirements in WAC 246-290-72001 through -72012, I confirm that:

- The CCR has been appropriately delivered to customers who use this water system.
- All information contained in this report is correct.
- The monitoring data stated in the CCR matches information submitted to Washington State Department of Health, Office of Drinking Water.

Certified by

Signature 

Printed Name Jirong Lu

Phone 253-876-1977 Date 6/26/2023

RESIDENTIAL LEAD AND COPPER MONITORING

Residential lead and copper sampling was conducted in Summer 2021 to determine the concentrations of lead and copper that leach from residential water pipes and fixtures. Lead results ranged from <1 ppb to 6.6 ppb. Copper results ranged from <0.02 ppm to 0.294 ppm. The 90th percentile results for lead and copper were 1.3 ppb and 0.056 ppm respectively, which are below the Action Level for lead (15 ppb) and for copper (1.3 ppm). If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing.

The Auburn Water Utility is responsible for providing high quality drinking water, but cannot control the variety of materials used in its customers' plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for thirty seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at **800-426-4791** or at **epa.gov/lead**.

WATER USE EFFICIENCY

The main components of the City of Auburn Water Use Efficiency(WUE) program are managing the water distribution system to minimize water loss, and encouraging responsible use of water by our customers.

Water loss is the difference between the total water produced and the water used by our customers, presented here as a percentage of water produced. The City of Auburn Water Utility goal since 1999 has been to maintain water loss at or below 10 percent. In accordance with the Water Use Efficiency reporting requirements, the water loss for year 2022 is **8.6%**. The three year average for the years up to and including 2022 was **7.7%**. In an effort to limit water loss, the Utility performs annual system leak detection and repair; tests production and service meters, calibrating or replacing them as required; and issues permits for water withdrawal from hydrants.

Responsible water use by our customers is promoted by the Utility through educational programs for school children and homeowners. Quantifying the benefit of educational programs and corresponding behavioral changes is difficult, but reductions in water use and/or waste can have a significant impact on the amount of water used as a whole. The City of Auburn is committed to efficiently managing the water distribution system and encourages you to use water wisely.

The City's Water Use Efficiency Annual Performance Report and other information regarding Auburn's Water Use Efficiency program are available on the City of Auburn's website at visit **auburnwa.gov/water**.

FLUORIDE

The City of Auburn does not add fluoride to your drinking water. In 2022, Fluoride levels present in Auburn's water range from 0.0-0.2 ppm. If you have questions about fluoride for dental use, please consult with your doctor or dentist. For more information on fluoride in drinking water, visit the Environmental Protection Agency (EPA) website at **epa.gov/ground-water-and-drinking-water**.

CROSS CONNECTION PROGRAM

Protecting Our Water System From Contamination

A cross connection is a connection between a water pipe and a source of contamination. Examples of cross connections within the home include hose ends submerged in pools, hot tubs or buckets, irrigation systems and most hose-end spray applicators. Cross connections are extremely dangerous because they provide opportunities for contaminated fluids to be pulled back into the water system.

To protect our water supply, avoid using hose-end sprayers and maintain an air gap by keeping the hose end above the water surface when filling containers. Irrigation systems are required to have a backflow assembly. Backflow assemblies require a plumbing permit, must be inspected by a cross connection specialist, and must be tested by a certified tester when installed, and yearly thereafter. For more information or a list of certified testers, call the Water Division at **253-931-3048** or visit **auburnwa.gov/water**.



PARAMETER	STANDARDS		SAMPLE RESULTS		ADDITIONAL INFORMATION
	MCLG	MCL	Average	Range	Typical Source/Comments
INORGANIC SUBSTANCE					
Arsenic (ppb)	0	10		ND - 1.8	Erosions of natural deposits. Most recent sampling date and data are from the most recent testing done in accordance with the regulations.
Nitrate (ppm)	10	10		0.30 - 3.25	Natural deposits, fertilizer, septic tanks
VOLATILE ORGANIC SUBSTANCE					
Haloacetic Acids (ppb)	NA	60		ND	By-product of drinking water disinfection
Total Trihalomethanes (ppb)	NA	80		9.03 - 10.41	By-product of drinking water disinfection
OTHER MONITORED SUBSTANCE					
Chlorine Residual (ppm)	4 (MRDL)	4 (MRDLG)	0.59	0.40 - 0.77	Measure of disinfectant added to water
Manganese (ppb)		50 (SMCL)		ND	Black to brown color, black staining; Bitter metallic taste
UNIT DESCRIPTION					

NA: Not applicable
ND: Not detected
ppm: parts per million, or milligrams per liter (mg/l)
ppb: parts per billion, or micrograms per liter (µg/l)

DEFINITIONS

MCL | Maximum Contaminant Level
The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG | Maximum Contaminant Level Goal
The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL | Maximum Residual Disinfectant Level
The highest level of a disinfectant allowed in drinking water.

MRDLG | Maximum Residual Disinfectant Level Goal
The level of a drinking water disinfectant below which there is no known or expected risk to health.

SMCL | Secondary Maximum Contaminant Level
The secondary standards are set to give public water systems some guidance on removing those chemicals to levels that are below what most people will find to be noticeable. They are non-mandatory and non-enforceable.

REQUIRED HEALTH INFORMATION FROM THE EPA

HEALTH ISSUES

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. Environmental Protection Agency (EPA)/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the EPA's Safe Water Drinking Hotline at **800-426-4791**.

CONTAMINANTS AND REGULATIONS

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline at **800-426-4791**. The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Microbial contaminants, such as viruses and bacteria, may come from septic systems, livestock and wildlife. Inorganic contaminants, such as salts and metals, can be naturally occurring or result from urban stormwater run-off, septic systems or fertilizer use. Pesticides and herbicides may come from a variety of sources such as agriculture, urban stormwater run-off and residential uses. Organic chemical contaminants, including synthetic and volatile organic chemicals, are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater run-off, and septic systems. Radioactive contaminants can be naturally occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations set limits for contaminants in bottled water that are intended to provide similar protection for public health.

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

В этом сообщении содержится важная информация о воде, которую вы пьёте. Попросите кого-нибудь перевести для вас это сообщение или поговорите с человеком, который понимает его содержание.

Tài liệu này có tin tức quan trọng về nước uống của quý vị. Hãy nhờ người dịch cho quý vị, hoặc hỏi người nào hiểu tài liệu này.

此报告包含有关您的饮用水的重要信息。请人帮您翻译出来，或请看懂此报告的人将内容说给您听。

이 보고서에는 귀하의 식수에 대한 중요한 내용이 실려있습니다. 그러므로 이 보고서를 이해할 수 있는 사람한테 번역해 달라고 부탁하시기 바랍니다.

CITY OF AUBURN WASHINGTON

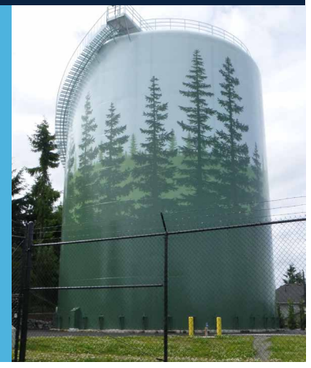
Public Works Department
City of Auburn
25 W Main Street
Auburn WA 98001-4998

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AUBURN WATER UTILITY
2022 WATER QUALITY REPORT

THE AUBURN WATER UTILITY IS PROUD TO PRESENT YOU WITH OUR 2022 WATER QUALITY REPORT.

This report is a snapshot of 2022 water quality. The test results in this report show that Auburn's water meets or surpasses all federal and state standards for public drinking water. Auburn's water comes from a combination of wells drawing water from deep below the city, and springs located near the walls of the valley. Water from the valley wells and springs is distributed to the entire Auburn service area. Additional wells are located in Lakeland Hills and serve Auburn customers in that neighborhood.



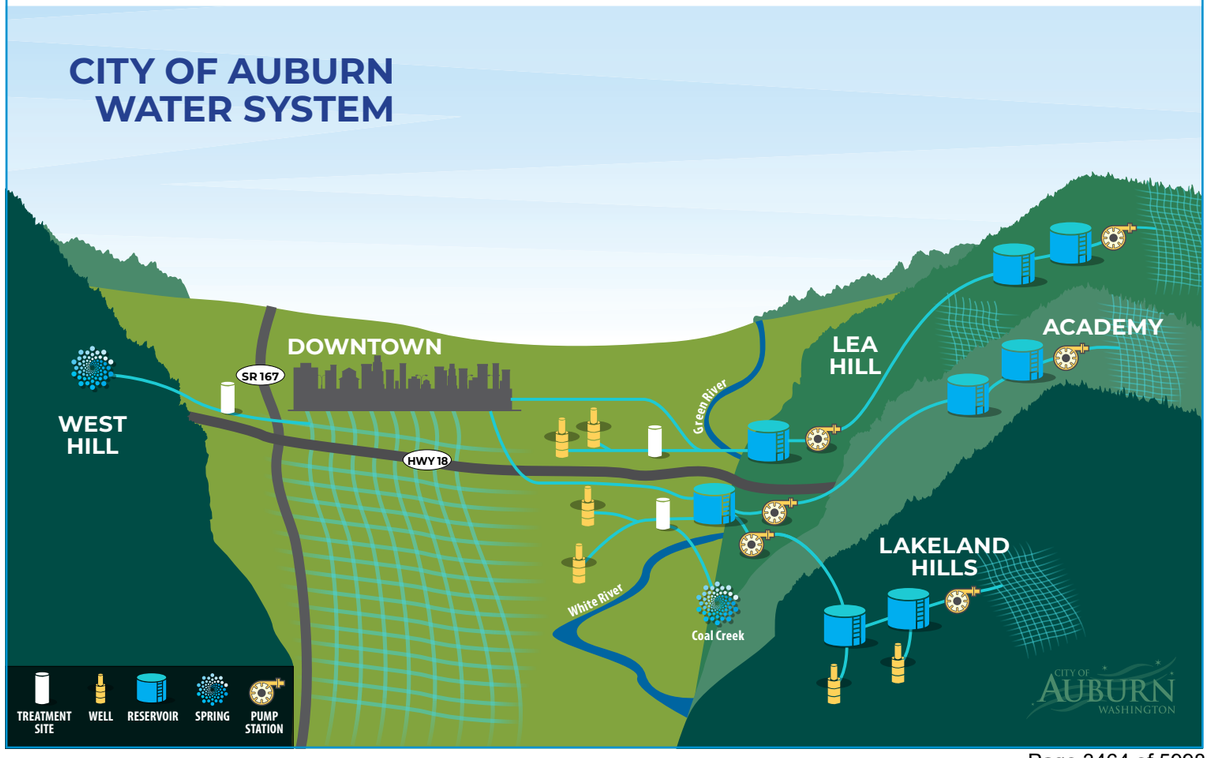
AUBURN WATER UTILITY
2022 WATER QUALITY REPORT

Auburn provides water to its customers from 4 active wells and 2 springs located in the Valley. Auburn customers in Lakeland Hills get their water from 2 active wells in that area. The wells are 290 to 750 feet deep and produce from 180 to 3,500 gallons per minute (gpm) of water. The Springs produce from 600 to 3,800 gpm of water. To supplement the demand in Lakeland Hills, water from the Valley is also provided from the Terrace View Pump Station located at Alexander Place and Terrace View Drive SE.

Water quality is generally very good and requires minimal treatment and the water is soft to moderately hard. Water from wells and springs is aerated for pH adjustment through two corrosion control facilities, and chlorine is added for disinfection. Auburn does not add fluoride to its water. Fluoride is a naturally-occurring element in groundwater, and is detected at levels up to 0.2 parts per million (ppm) in Auburn's sources. For the latest map showing fluoride levels throughout the City, please visit **auburnwa.gov/water**.

Although most wells and springs are in the Valley, water storage tanks/reservoirs are generally located at the highest elevation in the hills so that water from these tanks can flow by gravity to our customers. Auburn has 8 reservoirs with a total storage capacity of 15.8 million gallons.

Auburn has 6 active pump stations that pump water from the Valley up to the hills to the reservoirs, and boost it to higher elevations and pressure on the hills. Auburn also has 36 Pressure Reducing Valve (PRV) stations to keep the pressure in the water mains at acceptable levels. These PRVs are located at various elevations in the hills.



AUBURN WATER UTILITY
2022 WATER QUALITY REPORT

HIDDEN VALLEY ACRES

THE AUBURN WATER UTILITY IS PROUD TO PRESENT YOU WITH OUR 2022 WATER QUALITY REPORT.

The water which we provide to your home comes from a deep well located in your neighborhood. This report is a snapshot of 2022 water quality.

DEFINITIONS

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The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG | Maximum Contaminant Level Goal
The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL | Maximum Residual Disinfectant Level
The highest level of a disinfectant allowed in drinking water.

MRDLG | Maximum Residual Disinfectant Level Goal
The level of a drinking water disinfectant below which there is no known or expected risk to health.

ND | Not Detected

PARAMETER	STANDARDS		SAMPLE RESULTS	ADDITIONAL INFORMATION
	MCLG	MCL		Typical Source/Comments
INORGANIC SUBSTANCE				
Nitrate (ppm)	10	10	0.47	Natural deposits, fertilizer, septic tanks
SYNTHETIC ORGANIC SUBSTANCE				
PFOA (ppt)	N/A	10	ND	Run-off or leaching from firefighting foam, Industrial discharge, landfills and wastewater treatment plants
PFOS (ppt)		15		
PFHxS (ppt)		65		
PFNA (ppt)		9		
PFBS (ppt)		345		
RADIOACTIVE SUBSTANCE				
Gross Alpha		15 (PCi/L)	<3	Erosion of natural deposits
Radium 228		5 (PCi/L)	0.764	Erosion of natural deposits
OTHER MONITORED SUBSTANCE				
Chlorine Residual (ppm)	4 (MRDL)	4 (MRDLG)	Average 0.55 Range 0.42 - 0.75	Measure of disinfectant added to the water

UNIT DESCRIPTION

ppm: parts per million, or milligrams per liter (mg/l)

ppb: parts per billion, or micrograms per liter (µg/l)

ppt: parts per trillion, or nanograms per liter (ng/l)

REQUIRED HEALTH INFORMATION FROM THE EPA

HEALTH ISSUES

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. Environmental Protection Agency (EPA)/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the EPA's Safe Drinking Water Hotline at **800-426-4791**.

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FLUORIDE

The City of Auburn does not add fluoride to your drinking water at Hidden Valley Acres. If you have questions about fluoride for dental use, please consult with your doctor or dentist. For more information on fluoride in drinking water, visit the Environmental Protection Agency (EPA) website at **epa.gov**.

WATER USE EFFICIENCY

The main components of the City of Auburn Water Use Efficiency (WUE) program are managing the water distribution system to minimize water loss, and encouraging responsible use of water by our customers.

Water loss is the difference between the total water produced and the water used by our customers, presented here as a percentage of water produced. The City of Auburn Water Utility goal since 1999 has been to maintain water loss at or below 10%. In 2022, the Hidden Valley Acres water loss was approximately **6.6%**, below the 10% target. The rolling 3-year average was **5.1%**, meeting the WUE rule of at-or-below 10%.

Responsible water use by our customers is promoted by the Utility through educational programs for school children and homeowners. Quantifying the benefit of educational programs and corresponding behavioral changes is difficult, but reductions in water use and/or waste can have a significant impact on the amount of water use as a whole. The City of Auburn is committed to efficiently managing the water distribution system and encourages you to use water wisely.

CROSS CONNECTION

CROSS CONNECTION CONTROL PROGRAM: PROTECTING OUR WATER SYSTEM FROM CONTAMINATION

A cross connection is a connection between a water pipe and a source of contamination. Examples of cross connections within the home include hose ends submerged in pools, hot tubs or buckets, irrigation systems and most hose-end spray applicators. Cross connections are extremely dangerous because they provide opportunities for contaminated fluids to be pulled back into the water system.

To protect our water supply, avoid using hose-end sprayers and maintain an air gap by keeping the hose end above the water surface when filling containers. Irrigation systems are required to have a backflow assembly. Backflow assemblies require a plumbing permit, must be inspected by a cross connection specialist, and must be tested by a certified tester when installed, and yearly thereafter.
For more information or a list of certified testers, see **auburnwa.gov/water** or call the Water Division at **253-931-3048**.

LEAD AND COPPER

RESIDENTIAL LEAD AND COPPER MONITORING:

Residential lead and copper sampling was conducted in Summer 2021 to determine the concentrations of lead and copper that leach from residential water pipes and fixtures. Lead results ranged from <1 ppb to 1 ppb. Copper from 0.035 ppm to 0.16 ppm. The 90th percentile results for lead and copper were 1 ppb and 0.16 ppm respectively. The Action Level for lead is 15 ppb and for copper is 1.3 ppm. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Auburn Water Utility is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for thirty seconds to two minutes before using water for drinking or cooking.

If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at **800-426-4791** or at **epa.gov**.

HIDDEN VALLEY ACRES' WATER SOURCE

Hidden Valley Acres gets its water from a well 6 inches in diameter and 352 feet in depth located in the neighborhood. The City of Auburn refers to this separate source and its distribution system as Braunwood Water System. The well which was drilled in 1989 has a capacity of 20 gallons per minute. The pump house building consists of a well, pumps, pipes, controls and other mechanical and electrical equipment. The site is also equipped with a generator for emergency power.

A 33,000-gallon concrete storage tank 20 feet in diameter and 15 feet in depth is located adjacent to the pump house. Sensors control when the well pump turns on to fill the reservoir. High level and low level alarms are tied into the City's Supervisory Control and Data Acquisition (SCADA) system.

Water from the reservoir is pumped to 3 pressure vessels by 3 booster pumps (1 for emergency) where domestic pressure is maintained at around 60 pounds per square inch (psi) and then distributed to the customers in the neighborhood through 4 inch diameter underground ductile iron pipes.

Water quality is generally very good and requires minimal treatment and the water is soft. Inside the pump house, chlorine is added for disinfection. No fluoride is added to this water.

The annual water supply is limited by the water right certificate limit that was issued by the Department of Ecology and the system is not connected to the City's main water system and does not benefit from any other water sources. Therefore, water usage monitoring and conservation efforts are critical in the Hidden Valley Acres area to avoid emergency water restrictions, penalties, and potential shut-downs.



Braunwood Pump House



Braunwood Reservoir

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

В этом сообщении содержится важная информация о воде, которую вы пьёте. Попросите кого-нибудь перевести для вас это сообщение или поговорите с человеком, который понимает его содержание.

Tài liệu này có tin tức quan trọng về nước uống của quý vị. Hãy nhờ người dịch cho quý vị, hoặc hỏi người nào hiểu tài liệu này.

此报告包含有关您的饮用水的重要信息。请人帮您翻译出来，或请看懂此报告的人将内容说给您听。

이 보고서에는 귀하의 식수에 대한 중요한 내용이 실려있습니다. 그러므로 이 보고서를 이해할 수 있는 사람한테 번역해 달라고 부탁하시기 바랍니다.

The Auburn Water Utility is part of the Public Works Department, which receives oversight from the Auburn City Council. Regular Council meetings occur on the first and third Mondays of the month at the Auburn City Hall at 7:00 p.m. The public is welcome to attend.

Water Utility Information	**253-931-3010**
Maintenance & Operations	**253-931-3048**
Billing Information	**253-931-3038**

City of Auburn	**auburnwa.gov**
Washington State Dept. of Health	**doh.wa.gov/community-and-environment/drinking-water**
Environmental Protection Agency	**epa.gov/ground-water-and-drinking-water**

Coliform Monitoring Plan for: City of Auburn Water Division

A. System Information

Water System Name	**County**	**System I.D. Number**
City of Auburn Water Division	King and Pierce	03350V
Name of Plan Preparer	**Position**	**Daytime Phone #**
Chris Thorn	Water Quality Programs Coordinator	(253) 804-5065
Sources: Source Name, Well Depth, Pumping Capacity	**Valley, Lea Hill, Academy Service Area Sources** Coal Creek Springs (3,500 gpm) West Hill Springs (600 gpm) Well #1 (125 feet, 2,100 gpm) Well #2 (242 feet, 2,000 gpm) Well #3A (285 feet, Emergency, 0 gpm) Well #3B (309 feet, Emergency, 0 gpm) Well #4 (296 feet, 2,600 gpm) Well #6 (237 feet, 2,100 gpm) Well #7 (234 feet, 0 gpm)) **Lakeland Service Area Sources** Well #5 (320 feet, 650 gpm) Well #5A (510 feet, 180 gpm) Well #5B (710, Emergency, 0 gpm)	
Storage: List and Describe	Reservoir #1 – 5 million gallons Reservoir #2 – 3.6 million gallons Reservoir #8A – 1.2 million gallons Reservoir #8B – 1.5 million gallons Reservoir #4A – 1 million gallons Reservoir #4B – 1.4 million gallons Reservoir #5 – 1 million gallons Reservoir #6 – 1.5 million gallons	
Treatment: Source Name & Process	The City's water treatment includes chlorination, corrosion control, and metals removal Coal Creek Springs - chlorination to achieve 4-log treatment. Corrosion control at Howard Road CCT West Hill Springs - gaseous chlorination Well #1 – hypochlorite chlorination. Corrosion	

	control at Howard Road CCT Well #2, #6. and #7 – chlorinated and corrosion control in Fulmer Field CCT Well #3A and #3B – not operated Well #4 – hypochlorite chlorination Well #5 – not chlorinated Well #5A – hypochlorite chlorination Well #5B not in service – has ability to provide chlorination. Iron and manganese treatment available.
Pressure Zones: Number and name	Academy 350 – Academy service area Academy 445- Academy service area Academy 531 - Academy service area Academy 585 - Academy service area Lakeland 330 – Lakeland service area Lakeland 390 – Lakeland service area Lakeland 440– Lakeland service area Lakeland 441 – Lakeland service area Lakeland 446 – Lakeland service area Lakeland 485 – Lakeland service area Lakeland 545 – Lakeland service area Lakeland 575 – Lakeland service area Lakeland 630 – Lakeland service area Lakeland 670 – Lakeland service area Lakeland 697 – Lakeland service area Lea Hill 299 – Lea Hill service area Lea Hill 395 – Lea Hill service area Lea Hill 405– Lea Hill service area Lea Hill 406 – Lea Hill service area Lea Hill 462 – Lea Hill service area Lea Hill 500 – Lea Hill service area Lea Hill 563 – Lea Hill service area Lea Hill 648 – Lea Hill service area Valley 242 – Valley service area Valley 288 – Valley service area
Population by Service Area (2020)	Academy – 8,807 Lakeland – 5,831 Lea Hill - 13,844 Valley - 32,973 Total – 61,455
Number of Routine Samples Required Monthly by Regulation: 100	**Number of Sample Sites Needed to Represent the Distribution System:** 70
***Request DOH Approval of Triggered** **Yes** ☐ **No** ☒	

Source Monitoring Plan?	

B. Laboratory Information

Laboratory Name Water Management Laboratories, Inc.	Office Phone # **(253) 531-3121**
Address 1515 80th Street E Tacoma, WA 98404	**After Hours #** **(253) 841-0732**
Hours of Operation Monday–Friday 8:00 a.m. to 5:00 p.m. Saturday 9:00 a.m. to 12:00 p.m.	
Contact Name Christa Garrettson	
Emergency Laboratory Name Spectra Laboratories, LLC	**Office Phone #** **(253) 272-4850**
Address 2221 Ross Way Tacoma, WA 98421	**After Hours #**
Hours of Operation Monday–Friday 8:00 a.m. to 5:00 p.m.	
Contact Name Jeffrey Cooper	

C. Wholesaling of Groundwater

	Yes	No
We are a consecutive system and purchase groundwater from another water system.	☐	☒
If yes, Water System Name: _____ Contact Name: _____ Telephone Numbers: _____		
We sell groundwater to other public water systems.	☒	☐

If yes, Water System Name: ___City of Algona_____ Contact Name: Matt Bailey_____ Telephone Numbers: (253) 833-2897 _____	

D. Routine and Repeat Sample Locations

Location/Address for Routine Sample Sites	**Location/Address for Repeat Sample Sites**	Routine Sample Site Pressure Zone
C-1. 31512 115th Pl SE	C-1a. 31515 115th Pl SE	Lea Hill 563 zone
	C-1b. 31521 115th Pl SE	
C-2. 13006 305th Pl SE	C-2a. 13002 305th Pl SE	Lea Hill 648 zone
	C-2b. 13021 305th Pl SE	
C-3. 11517 305th Pl SE	C-3a. 11522 305th Pl SE	Lea Hill 563 zone
	C-3b. 11511 305th Pl SE	
C-4. 10417 301st St SE	C-4a. 10422 301st St SE	Lea Hill 406 zone
	C-4b. 10411 301st St SE	
C-5. 1212 12th St NE	C-5a. 1208 12th St NE	Valley 242 zone
	C-5b. 1201 M St NE	
C-6. 3816 I Pl NE	C-6a. 3806 I Pl NE	Valley 242 zone
	C-6b. 3824 I Pl NE	
C-7. 3705 W Valley Hwy N (across from 1410 37th St NW)	C-7a. 3615 W Valley Hwy N	Valley 242 zone
	C-7b. 3705 W Valley Hwy N	
C-8. 311 2nd St NE	C-8a. 309 2nd St NE	Valley 242 zone
311 in front of	C-8b. 318 2nd St NE	
C-9. 2635 Forest Ridge Dr SE	C-9a. 2705 Forest Ridge Dr SE	Academy 445 zone
	C-9b. 2750 Forest Ridge Dr SE	
C-10. 3614 Orchard St SE	C-10a. 6315 37th St SE	Academy 585 zone

Location/Address for Routine Sample Sites	**Location/Address for Repeat Sample Sites**	Routine Sample Site Pressure Zone
	C-10b. 6316 37th St SE	
C-11. 3602 A St SE	C-11a. 3414 A St SE	Valley 242 zone
	C-11b. 4026 A St SE	
C-12. 810 37th St SE	C-12a. 809 37th St SE	Valley 242 zone
	C-12b. 746 37th St SE	
C-13. 5110 Mill Pond Dr SE	C-13a. 801 52nd St SE	Lakeland 575 zone
	C-13b. 5012 Mill Pond DR SE	
C-14. 5501 James Ave SE	C-14a. 5515 James Ave SE	Lakeland 630 zone
	C-14b. 5405 James Ave SE	
C-15. 1505 West Valley Hwy S	C-15a. 907 West Valley Hwy S	Valley 242 zone
	C-15b. 1602 West Valley Hwy S	
C-16. 2820 V Ct SE	C-16a. 2811 V Ct SE	Academy 350 zone
	C-16b. 2831 V Ct SE	
C-17. 5705 37th St SE	C-17a. 5805 37th St SE	Academy 585 zone
	C-17b.5702 37th St se	
C-18. 3029 Scenic Dr SE	C-18a. 3045 Scenic Dr SE	Academy 445 zone
	C-18b. 3022 Scenic Dr SE	
C-19. 5208 Nathan Loop SE	C-19a. 5207 Nathan Loop SE	Lakeland 697 zone
	C-19b. 5213 Nathan Loop SE	
C-20. 211 14th St SE	C-20a. 218 14th St SE	Valley 242 zone
	C-20b. 202 14th St SE	
C-21. 901 W Main St	C-21a. 899 W Main St	Valley 242 zone
	C-21b. 1025 W Main St	
C-22. 4430 B St NW	C-22a. 4302 B St NW	Valley 242 zone
	C-22b. 4450 B St NW	
C-23. 4002 Auburn Way N	C-23a. 3920 Auburn Way N	Valley 242 zone
	C-23b. 722 40th St NE	

Location/Address for Routine Sample Sites	**Location/Address for Repeat Sample Sites**	Routine Sample Site Pressure Zone
C-24. 931 17th St NE	C-24a. 1022 17th St NE	Valley 242 zone
	C-24b. 932 17th St NE	
C-25. 1905 19th Dr NE	C-25a. 2005 19th Dr NE	Valley 242 zone
	C-25b. 1905 19th Dr NE	
C-26. 10804 299th Pl SE	C-26a. 29821 108th Ave SE	Lea Hill 462 zone
	C-26b. 10891 299th Pl SE	
C-27. 10823 292nd St SE	C-27a. 10803 292nd St SE	Lea Hill 563 zone
	C-27b. 10827 292nd St SE	
C-28. 30510 122nd Pl SE	C-28a. 30518 122nd Pl SE	Lea Hill 563 zone
	C-28b. 12121 se 304th Ct	
C-29. 11655 323rd Pl SE	C-29a. 11643 323rd Pl SE	Lea Hill 563 zone
	C-29b. 11808 323rd Pl SE	
C-30. 31423 Lea Hill Rd	C-30a. 31261 Lea Hill Rd	Lea Hill 405 zone
	C-30b. 31929 Lea Hill Rd	
C-31. 5503 Elizabeth Ave SE	C-31a. 5407 Elizabeth Ave SE	Lakeland 630 zone
	C-31b. 5521 Elizabeth Ave SE	
C-32. 4947 Diana Ct SE	C-32a. 502 50th St SE	Lakeland 440 zone
	C-32b. 452 50th St SE	
C-33. 2808 R Pl SE	C-33a. 2819 R Pl SE	Valley 242 zone
	C-33b. 2807 R Pl SE	
C-34. 3501 Auburn Way S #1	C-34a. 3501 Auburn Way S #58	Academy 445 zone
	C-34b. 3501 Auburn Way S #5	
C-35. 2015 Fir St SE	C-35a. 2005 Fir St SE	Academy 445 zone
	C-35b. 3020 21st St SE	
C-36. 404 26th St SE	C-36a. 412 26th St SE	Valley 242 zone
	C-36b. 2614 D St SE	
C-37. 408 V Pl SE	C-37a. 410 V Pl SE	Valley 242 zone

Location/Address for Routine Sample Sites	**Location/Address for Repeat Sample Sites**	Routine Sample Site Pressure Zone
	C-37b. 411 V Pl SE	
C-38. 32013 104th Pl SE	C-38a. 31900 104th Pl SE	Valley 242 zone
	C-38b. 32023 104th Pl SE	
C-39. 11307 313th Pl SE	C-39a. 11315 313th Pl SE	Lea Hill 563 zone
	C-39b. 11209 313th Pl SE	
C-40. 31926 120th Pl SE	C-40a. 31914 120th Pl SE	Lea Hill 563 zone
	C-40b. 11901 se 320th	
C-41. 30038 125th Ct SE	C-41a. 30027 125th Ct SE	Lea Hill 563 zone
	C-41b. 30022 125th Ct SE	
C-42. 1011 Pike St NW	C-42a. 1502 10th Ct NW	Valley 242 zone
	C-42b. 1003 Pike St NW	
C-43. 21 49th St NE	C-43a. 15 49th St NE	Valley 242 zone
	C-43b. 45 49th St NE	
C-44. 2300 E St NE	C-44a. 2131 E St NE	Valley 242 zone
	C-44b. 2340 E St NE	
C-45.1101 D St NE (Fire Dept)	C-45a. 340 15th St NE	Valley 242 zone
	C-45b. 901 Auburn Way N	
C-46. 710 47th St SE	C-46a. 706 47th St SE	Lakeland 390 zone
	C-46b. 714 47th St SE	
C-47. 2001 36th St SE	C-47a. 3501 V St SE	Valley 242 zone
	C-47b. 3507 V St SE	
C-48. 3410 Olympic St SE	C-48a. 3502 Olympic St SE	Valley 242 zone
	C-48b. 3308 Olympic St SE	
C-49. 5413 33rd St SE	C-49a. 5420 33rd St SE	Academy 585 zone
	C-49b. 5401 33rd St SE	
C-50. 2610 17th St SE	C-50a. 2702 17th St SE	Academy 445 zone
	C-50b. 2513 17th St SE	

Location/Address for Routine Sample Sites	**Location/Address for Repeat Sample Sites**	Routine Sample Site Pressure Zone
C-51. 1220 20th Ct SE	C-51a. 1925 N Ct SE	Valley 242 zone
	C-51b. 1921 O Ct SE	
C-52. 921 H St SE	C-52a. 915 H St SE (Museum)	Valley 242 zone
	C-52b. 724 9th St SE	
C-53. 10 R Pl NE	C-53a. 16 R Pl NE	Valley 242 zone
	C-53b. 12 R Pl NE	
C-54. 32313 105th Pl SE	C-54a. 32406 107th ave se	Lea Hill 563 zone
	C-54b. 10517 323rd St SE	
C-55. 32307 111th Pl SE	C-55a. 32317 111th Pl SE	Lea Hill 563 zone
	C-55b. 11007 322nd St SE	
C-56. 12444 318th Way SE	C-56a. 12428 318th Way SE	Lea Hill 563 zone
	C-56b. 31709 125th Pl SE	
C-57. 30121 114th Pl SE	C-57a. 30115 114th Pl SE	Lea Hill 563 zone
	C-57b. 30216 114th Pl SE	
C-58. 29304 112th Ave SE	C-58a. 29300 112th Ave SE	Lea Hill 563 zone
	C-58b. 29401 112th Ave SE	
C-59. 1211 30th St NE	C-59a. 1212 30th St NE	Valley 242 zone
	C-59b. 1203 30th St NE	
C-60. 2001 R St NW	C-60a. 2101 R St NW	Valley 242 zone
	C-60b. 1501 20th St NW	
C-61. 2607 T St SE	C-61a. 2604 T St SE	Valley 242 zone
	C-61b. 2707 T St SE	
C-62. 30521 108th Ave SE	C-62a. 10815 305th Pl SE	Lea Hill 500 zone
	C-62b. 30441 108th Ave SE	
C-63. 4517 Kennedy Ave SE	C-63a. 4501 Kennedy Ave SE	Lakeland 390 zone
	C-63b. 4701 Kennedy Ave SE	
C-64. 2193 53rd ST SE	C-64a. 5340 Udall St SE	Lakeland 545 zone

Location/Address for Routine Sample Sites	Location/Address for Repeat Sample Sites	Routine Sample Site Pressure Zone
	C-64b. 5320 Udall St SE	
C-65. 4517 Victoria Ave SE (next to storm pond)	C-65a. 2241 53rd St SE	Lakeland 485 zone
	C-65b. 5206 Victoria Ave SE	
C-66. 2501 56th St SE	C-66a. 5602 Bennett Ave SE	Lakeland 697 zone
	C-66b. 5602 Charlotte Ave SE	
C-67. 2503 56th St SE	C-67a. 5522 Bennett Ave SE	Lakeland 630 zone
	C-67b. 5539 Charlotte Ave SE	
C-68. 29037 118th Ave SE	C-68a. 29809 118th Ave SE	Lea Hill 563 zone
	C-68b. 29040 118th Ave SE	
C-69. 104 60th St SE	C-69a. 5680 A St SE	Valley 242 zone
	C-69b. 6021 Alexander Ave SE	
C-70. 1509 51st St SE	C-70a. 1454 51st St SE	Valley 242 zone
	C-70b. 1518 51st St SE	

Important Notes for Sample Collector:

1. Collect samples early in the month and early in the week.
2. Do not collect sample(s) in a week when there is a holiday or when a key staff member is on vacation.
3. If a sample site is no longer a good sample site, substitute an acceptable site in the same area. If the condition change cannot be resolved, choose a permanent new sample site and update this CMP.
4. Always review the lab results for your coliform samples.

E. Reduced Triggered Source Monitoring Justification

Auburn is not requesting reduced triggered source monitoring approval. When Auburn is notified of a routine distribution sample that is total coliform positive in Auburn's distribution system or in one of Auburn's wholesale customers systems (and the sample is not invalidated under WAC 246-290-320 (d)), triggered source water monitoring is required within 24 hours of said notification. **Triggered source water monitoring requires collecting one sample at each groundwater source that was in use at the time the total coliform positive sample was collected.** The source samples are to be collected prior to treatment (i.e. raw water samples), and are to be analyzed for E. coli.

F. Routine Sample Rotation Schedule

Week	Routine Site(s)
1	C-1 through C-18 and C-36 through C-42
2	C-19 through C-35 and C-54 through C-61
3	C-36 through C-53 and C-1 through C-7
4	C-54 through C-70 and C-19 through C26

G. Routine Sample Locations - Month Following Unsatisfactory Samples

Location/Address for Routine Sample Site(s) Unsatisfactory the Previous Month	Location/Address for the five Routine Sample Sites
The month after a coliform positive sample, one hundred (100) routine samples will be submitted in accordance with Section A of this plan.	

H. *E. coli*-present response plans

Distribution System *E. coli* Response Checklist					
Background Information	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
We inform staff members about activities within the distribution system that could affect water quality.	☒	☐	☐	☐	
We document all water main breaks, construction & repair activities, and low pressure and outage	☒	☐	☐	☐	

Distribution System *E. coli* Response Checklist					
incidents.					
We can easily access and review documentation on water main breaks, construction & repair activities, low pressure and outage incidents.	☒	☐	☐	☐	
Our Cross-Connection Control Program is up-to-date.	☒	☐	☐	☐	
We test all cross-connection control devices annually as required, with easy access to the proper documentation.	☒	☐	☐	☐	
We routinely inspect all treatment facilities for proper operation.	☒	☐	☐	☐	
We have procedures in place for disinfecting and flushing the water system if it becomes necessary.	☒	☐	☐	☐	
We can activate an emergency intertie with an adjacent water system in an emergency.	☒	☐	☐	☐	
We have a map of our service area boundaries.	☒	☐	☐	☐	
We have consumers who may not have access to bottled or boiled water.	☐	☒	☐	☐	
There is a sufficient supply of bottled water immediately available to our customers who are unable to boil their water.	☒	☐	☐	☐	
We have identified the contact person at each day care, school, medical facility, food service, and other customers who may have difficulty responding to a Health Advisory.	☐	☒	☐	☐	
We have messages prepared and translated into different languages to ensure our consumers will understand them.	☐	☒	☐	☒	Update
We have the capacity to print and distribute the required number of notices in a short time period.	☒	☐	☐	☐	
Policy Direction	**Yes**	**No**	**N/A**	**To Do List**	
We have discussed the issue of *E. coli*-present sample results with our policy makers.	☒	☐	☐	☒	Inform new members
If we find *E. coli* in a routine distribution sample, the policy makers want to wait until repeat test results are available before issuing advice to water system customers.	☒	☐	☐	☐	

Potential Public Notice Delivery Methods	**Yes**	**No**	**N/A**	**To Do List**	

It is feasible to deliver a notice going door-to-door.	☐	☒	☐	☐	
We have a list of all of our customers' addresses.	☒	☐	☐	☐	
We have a list of customer telephone numbers or access to a Reverse 9-1-1 system.	☒	☐	☐	☐	
We have a list of customer email addresses.	☒	☐	☐	☐	
We encourage our customers to remain in contact with us using social media.	☒	☐	☐	☐	
We have an active website we can quickly update to include important messages.	☒	☐	☐	☐	
Our customers drive by a single location where we could post an advisory and expect everyone to see it.	☐	☒	☐	☐	
We need a news release to supplement our public notification process.	☒	☐	☐	☐	

E. coli-Present Triggered Source Sample Response Checklist – All Sources

Background Information	Yes	No	N/A	To Do List	To Do
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☒	☐	☐	☐	
We address any significant deficiencies identified during a sanitary survey.	☒	☐	☐	☐	
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	☐ ☐	☒ ☐	☐ ☒	☐ ☐	
We routinely inspect our well site(s).	☒	☐	☐	☐	
We have a good raw water sample tap installed at each source.	☒	☐	☐	☐	
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☒	☐	☐	☐	

Public Notice	Yes	No	N/A	To Do List	
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☒	☐	☐	☐	

We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☒	☐	☐	☒	Update
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☒	☐	☐	☒	Update

E. coli-Present Triggered Source Sample Response Checklist–Source S01 Coal Creek Springs

Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
We can stop using this source and still provide reliable water service to our customers.	☐	☒	☐	☐	
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☒ for Valley	☒ for Academy	☐	☐	
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐	
We can quickly replace our existing source of supply with a more protected new source.	☐	☒	☐	☐	
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**	
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _0.8____ mg/L	☒	☐	☐	☐	
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☒	☐	☐	☐	
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☒	☐	☐	
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☒	☐	☐	

E. coli-Present Triggered Source Sample Response Checklist–Source S02 West Hill Springs

Alternate Sources	Yes	No	N/A	To Do List	To Do
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐	
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☒	☐	☐	☐	
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐	
We can quickly replace our existing source of supply with a more protected new source.	☐	☒	☐	☐	
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**	
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _0.8____ mg/L	☒	☐	☐	☒	
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☒	Confirm equipment and steps required
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☒	☐	☐	
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☒	☐	☐	

E. coli-Present Triggered Source Sample Response Checklist–Source S03 Well No. 1

Alternate Sources	Yes	No	N/A	To Do List	To Do
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐	

We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☒	☐	☐	☐	
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐	
We can quickly replace our existing source of supply with a more protected new source.	☐	☒	☐	☐	
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _0.8____ mg/L	☒	☐	☐	☒	
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☒	Confirm equipment and steps required
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☒	☐	☐	
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☒	☐	☐	

E. coli-Present Triggered Source Sample Response Checklist–Source S04 Well No. 2

Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐	
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☒	☐	☐	☐	
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐	

We can quickly replace our existing source of supply with a more protected new source.	☐	☒	☐	☐	
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _0.9____ mg/L	☒	☐	☐	☒	
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☒	Confirm equipment and steps required
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☒	☐	☐	
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☒	☐	☐	

E. coli-Present Triggered Source Sample Response Checklist–Source S05 Well No. 3A (Not Operated)

Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
We can stop using this source and still provide reliable water service to our customers.	☐	☐	☒	☐	
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☐	☒	☐	
We can provide bottled water to all or part of the distribution system for an indefinite period.	☐	☐	☒	☐	
We can quickly replace our existing source of supply with a more protected new source.	☐	☐	☒	☐	
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus	☐	☐	☒	☐	

treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L					
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☒	☐	
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☐	☒	☐	
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☐	☒	☐	

E. coli-Present Triggered Source Sample Response Checklist–Source S06 Well No. 5

Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐	
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☒	☐	☐	☐	
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐	
We can quickly replace our existing source of supply with a more protected new source.	☐	☒	☐	☐	
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☒	☐	☒	Add permanent chlorination
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☒	Confirm equipment and steps required
We can reduce the production capacity of our	☐	☒	☐	☐	

pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.					
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☒	☐	☐	

E. coli-Present Triggered Source Sample Response Checklist–Source S07 Well No. 4

Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐	
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☒ for Valley	☒ for Academy	☐	☐	
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐	
We can quickly replace our existing source of supply with a more protected new source.	☐	☒	☐	☐	
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _0.7____ mg/L	☒	☐	☐	☒	
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☒	Confirm equipment and steps required
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☒	☐	☐	
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus	☐	☒	☐	☐	

treatment with chlorine.					

***E. coli*-Present Triggered Source Sample Response Checklist–Source S08 Well No. 3B (Not Operated)**					
Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
We can stop using this source and still provide reliable water service to our customers.	☐	☐	☒	☐	
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☐	☒	☐	
We can provide bottled water to all or part of the distribution system for an indefinite period.	☐	☐	☒	☐	
We can quickly replace our existing source of supply with a more protected new source.	☐	☐	☒	☐	
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☐	☒	☐	
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☒	☐	
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☐	☒	☐	
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☐	☒	☐	

E. coli-Present Triggered Source Sample Response Checklist–Source S10 Well No. 5A

Alternate Sources	Yes	No	N/A	To Do List	To Do
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐	
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☒	☐	☐	☐	
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐	
We can quickly replace our existing source of supply with a more protected new source.	☐	☒	☐	☐	
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _0.7____ mg/L	☒	☐	☐	☒	
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☒	Confirm equipment and steps required
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☒	☐	☐	
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☒	☐	☐	

E. coli-Present Triggered Source Sample Response Checklist–Source S11 Well No. 7

Alternate Sources	Yes	No	N/A	To Do List	To Do
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐	
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for	☒	☐	☐	☐	

several months).					
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐	
We can quickly replace our existing source of supply with a more protected new source.	☐	☒	☐	☐	
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _0.9____ mg/L	☒	☐	☐	☒	
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☒	Confirm equipment and steps required
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☒	☐	☐	
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☒	☐	☐	

E. coli-Present Triggered Source Sample Response Checklist–Source S012 Well No. 6

Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐	
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☒	☐	☐	☐	
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐	
We can quickly replace our existing source of supply with a more protected new source.	☐	☒	☐	☐	
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus	☒	☐	☐	☒	

treatment (CT = 6) before the first customer. If yes, at what concentration? _0.9____ mg/L					
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☒	Confirm equipment and steps required
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☒	☐	☐	
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☒	☐	☐	

E. coli-Present Triggered Source Sample Response Checklist–Source S013 Well No. 5B (Seasonal)

Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
We can stop using this source and still provide reliable water service to our customers.	☐	☐	☒	☐	
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☐	☒	☐	
We can provide bottled water to all or part of the distribution system for an indefinite period.	☐	☐	☒	☐	
We can quickly replace our existing source of supply with a more protected new source.	☐	☐	☒	☐	
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**	**To Do**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☐	☒	☐	
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☒	☐	
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the	☐	☐	☒	☐	

amount of time the water stays in the system before the first customer to achieve CT = 6.					
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☐	☒	☐	

Distribution System *E. coli* Response Plan

If we have E. coli in our distribution system we will immediately:

1. Call DOH.
2. Collect repeat and triggered source samples per Part D. Collect additional investigative samples as necessary.
3. Inspect our water system facilities, including wholesale interties, for proper operation.
4. Interview staff to determine whether anything unusual was happening in the water system service area, especially since the previous month's sample(s).
5. Review new construction activities, water main breaks, and pressure outages that may have occurred during the previous month.
6. Review Cross-Connection Control Program status.
7. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

E. coli–Present Triggered Source Sample Response Plan – Source S01 Coal Creek Springs

If we have E. coli in Source S01 Coal Creek Springs water we will immediately:

1. Call DOH.
2. Distribute required notice, including to City of Algona and KC WD#111.
3. Interview staff. Inspect spring facilities for signs of contamination source.
4. Ask DOH to review our Contact Time analysis and acknowledge that we provide 4-log virus treatment before the first customer.

E. coli–Present Triggered Source Sample Response Plan – Source S02 West Hill Springs

If we have E. coli in Source S02 West Hill Springs water we will immediately:

1. Shutdown S02 West Hill Springs
2. Call DOH.
3. Distribute required notice, including to City of Algona and KC WD#111.
4. Interview staff. Inspect spring facility and transmission main for signs of contamination source.
5. In concert with DOH, begin work on corrective action plan to provide 4-log virus treatment before the first customer.

E. coli–Present Triggered Source Sample Response Plan – Source S03 Well No. 1

If we have E. coli in Source S03 Well No. 1 water we will immediately:

1. Shutdown S03 Well No. 1
2. Call DOH.
3. Distribute required notice, including to City of Algona and KC WD#111.
4. Interview staff. Inspect well facility for signs of contamination source.
5. In concert with DOH, begin work on corrective action plan to provide 4-log virus treatment before the first customer.

E. coli–Present Triggered Source Sample Response Plan – Source S04 Well No. 2

If we have E. coli in Source S04 Well No. 2 water we will immediately:

1. Shutdown S04 Well No. 2
2. Call DOH.
3. Distribute required notice, including to City of Algona and KC WD#111.
4. Interview staff. Inspect well facility, including Well 6, for signs of contamination source.
5. In concert with DOH, begin work on corrective action plan to provide 4-log virus treatment before the first customer.

E. coli–Present Triggered Source Sample Response Plan – Source S05 Well No. 3A

If we have E. coli in Source S05 Well No. 3A water we will immediately:

1. Shutdown S05 Well No. 3A
2. Call DOH.
3. Distribute required notice, including to City of Algona and KC WD#111.
4. Interview staff. Inspect well facility for signs of contamination source.
5. Keep contaminated well off-line until 4-log virus treatment is designed, approved, and installed.

E. coli–Present Triggered Source Sample Response Plan – Source S06 Well No. 5

If we have E. coli in Source S06 Well No. 5 water we will immediately:

1. Shutdown Source S06 Well No. 5.
2. Call DOH.
3. Distribute required notice.
4. Interview staff. Inspect well facility for signs of contamination source.
5. In concert with DOH, begin work on corrective action plan to provide 4-log virus treatment before the first customer.

E. coli–Present Triggered Source Sample Response Plan – Source S07 Well No. 4

If we have E. coli in Source S07 Well No. 4 water we will immediately:

1. Shutdown S07 Well No. 4
2. Call DOH.
3. Distribute required notice, including to City of Algona and KC WD#111.
4. Interview staff. Inspect well facility for signs of contamination source.
5. In concert with DOH, begin work on corrective action plan to provide 4-log virus treatment before the first customer.

E. coli–Present Triggered Source Sample Response Plan – Source S08 Well No. 3B

If we have E. coli in Source S08 Well No. 3B water we will immediately:

1. Shutdown S08 Well No. 3B
2. Call DOH.
3. Distribute required notice, including to City of Algona and KC WD#111.
4. Interview staff. Inspect well facility for signs of contamination source.
5. Keep contaminated well off-line until 4-log virus treatment is designed, approved, and installed.

E. coli–Present Triggered Source Sample Response Plan – Source S10 Well No. 5A

If we have E. coli in Source S10 Well No. 5A water we will immediately:

1. Shutdown S10 Well No. 5A
2. Call DOH.
3. Distribute required notice.
4. Interview staff. Inspect well facility for signs of contamination source.
5. In concert with DOH, begin work on corrective action plan to provide 4-log virus treatment.

E. coli–Present Triggered Source Sample Response Plan – Source S11 Well No. 7

If we have E. coli in Source S11 Well No. 7 water we will immediately:

1. Shutdown Source S07 Well No. 7.
2. Call DOH.
3. Distribute required notice, including to City of Algona and KC WD#111.
4. Interview staff. Inspect well facility for signs of contamination source.
5. Keep contaminated well off-line until 4-log virus treatment is designed, approved, and installed.

E. coli–Present Triggered Source Sample Response Plan – Source S12 Well No. 6

If we have E. coli in Source S12 Well No. 6 water we will immediately:

1. Shutdown S12 Well No. 6
2. Call DOH.
3. Distribute required notice, including to City of Algona and KC WD#111.
4. Interview staff. Inspect well facility, including Well 2, for signs of contamination source.
5. In concert with DOH, begin work on corrective action plan to provide 4-log virus treatment.

E. coli–Present Triggered Source Sample Response Plan – Source S13 Well No. 5B

If we have E. coli in Source S13 Well No. 5B water we will immediately:

1. Shutdown S13 Well No. 5B
2. Call DOH.
3. Distribute required notice.
4. Interview staff. Inspect well facility for signs of contamination source.
5. Keep contaminated well off-line until 4-log virus treatment is designed, approved, and installed.

E. coli–Present Triggered Source Sample Response Plan – Howard Road CCF (TW-S01-CCS)

If we have E. coli in Howard Road CCF (TW-S01-CCS) water we will immediately:

1. Call DOH.
2. Distribute required notice, including to City of Algona and KC WD#111.
3. Interview staff. Inspect Howard Road CCF and Coal Creek Springs.
4. If contamination is from Howard Road CCF, begin work on corrective action plan.
5. If contamination is from Coal Creek Springs, then keep the contaminated source off-line until 4-log virus treatment is designed, approved, and installed.

E. coli–Present Triggered Source Sample Response Plan – Fulmer CCF (TW-S14-WF)

If we have E. coli in Fulmer CCF (TW-S14-WF) water we will immediately:

1. Shutdown S04 Well No. 2, SO11 Well No. 6, and SO12 Well No. 7.
2. Call DOH.
3. Distribute required notice, including to City of Algona and KC WD#111.
4. Interview staff. Inspect Fulmer CCF, Well No.2, Well No. 6, and Well No. 7 for signs of contamination source.
5. If contamination is from Fulmer CCF, begin work on corrective action plan.
6. If contamination is from a well, then keep the contaminated well off-line until 4-log virus treatment is designed, approved, and installed. In concert with DOH, determine if contamination source can be isolated and allow non-contaminated wells to be brought on-line.

I. System Map

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water
DOH 331-464
December 2011

Stage 2 DBP Monitoring Plan - Groundwater (Reduced Monitoring)

System Name	City of Auburn
PWSID#	03350V
Date	3/6/2018
Completed by	Chris Thorn
Population	55000

Initial Stage 2 Sampling Period First sampling period following **March 7, 2018**

Number of Samples Required 2 Dual Sample Sets per Year

Samples must be a dual sample set: one at the location and during the quarter with the highest TTHM single measurement and one at the location and during the quarter with the highest HAA5 single measurement.

	Stage 2 Compliance Monitoring Site ID	Projected Sampling Date
Highest TTHM Site	3705 West Valley Hwy N (C-7)	August
Highest HAA5 Site	3615 Orchard St SE (C-10)	August
Backup High TTHM	710 47th St SE (C-46)	
Backup High HAA5	5208 Nathan Loop SE (C-19)	

If any annual or triennial sample exceeds the MCL (0.080 ug/l for TTHM or 0.060 ug/l for HAA5) you must begin quarterly monitoring for both TTHM and HAA5 for at least four consecutive quarters to determine if you exceed the MCL.

To remain on reduced monitoring:

The TTHM LRAA must be less than or equal to 0.060 mg/l AND the HAA LRAA must be less than or equal to 0.045 mg/l at each monitoring location.

What happens if you exceed any of the above levels?

You must return to routine monitoring.

Determining Compliance

Our system is required to monitor annually (triennially). For compliance, we will determine that each sample taken is less than the MCL. If any sample exceeds the MCL, we must increase monitoring to dual sample sets once per quarter (taken every 90 days) at all locations. If the locational running annual average (LRAA) exceeds the MCL for either TTHM (0.080 mg/l) or HAA5 (0.060 mg/l), an MCL violation will have occurred. The LRAA is calculated based on four consecutive quarters of monitoring. Compliance will then be achieved if the TTHM and the HAA5 LRAA at each monitoring location for the four most recent quarters is less than or equal to 0.080 mg/l for TTHM and less than or equal to 0.060 mg/l for HAA5.

Disinfectant Monitoring for TTHM and HAA5

Chlorine residuals must be measured at the same time and place as routine or repeat coliform samples
MRDL for chlorine and chloramines = 4.0 mg/l as Cl_2

Determining Compliance for disinfectant residuals

Compliance is based on the running annual average (RAA) of 12 consecutive months
Daily residual measurements will / will not be included in the compliance calculations (circle one)

Attach a distribution map with sample locations

Comments

You will need to print a hard copy for your records and make it available upon request. You do not need to submit a copy to DOH.

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD call (800) 833-6388.

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water
DOH 331-464
Updated July 2012

Stage 2 DBP Monitoring Plan - Groundwater (Routine Monitoring)

System Name	Braunwood Estates
PWSID#	03336E
Date	7/30/2013
Completed by	Chris Thorn
Population	30

Initial Stage 2 Sampling Period First sampling period following **October 1, 2013**

Number of Samples Required 2 Samples per Year (1 TTHM and 1 HAA5)

You are required to take individual TTHM and HAA5 samples (instead of a dual sample set at the locations with the highest TTHM and HAA5 concentrations, respectively. If the highest TTHM and HAA5 concentrations occur at the same location (and month, if monitored annually) only one location with a dual sample set per monitoring period is needed.

	Stage 2 Compliance Monitoring Site ID	Projected Sampling Date
Highest TTHM Site	4431 47th St SE (A-8)	August
Highest HAA5 Site	4431 47th St SE (A-8)	August

If any annual sample exceeds the MCL (0.080 ug/l for TTHM or 0.060 ug/l for HAA5) you must begin quarterly monitoring for both TTHM and HAA5 for at least four consecutive quarters to determine if you exceed the MCL.

Determining Compliance for TTHM and HAA5

Our system is required to monitor annually. For compliance, we will determine that each sample taken is less than the MCL. If any sample exceeds the MCL, we must increase monitoring to dual sample sets once per quarter (taken every 90 days) at all locations. If the locational running annual average (LRAA) exceeds the MCL for either TTHM (0.080 mg/l) or HAA5 (0.060 mg/l), an MCL violation will have occurred. The LRAA is calculated based on four consecutive quarters of monitoring. Compliance will then be achieved if the TTHM and the HAA5 LRAA at each monitoring location for the four most recent quarters is less than or equal to 0.080 mg/l for TTHM and less than or equal to 0.060 mg/l for HAA5.

Disinfectant Monitoring

Chlorine residuals must be measured at the same time and place as routine or repeat coliform samples
MRDL for chlorine and chloramines = 4.0 mg/l as Cl_2

Determining Compliance for disinfectant residuals

Compliance is based on the running annual average (RAA) of 12 consecutive months
Daily residual measurements will / will not be included in the compliance calculations (circle one)

Attach a distribution map with sample locations

Comments

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ENGINEERING DESIGN STANDARDS

City of Auburn
Engineering Services
Public Works Department
25 West Main Street
Auburn, WA 98001-4998

Approved By:

Jacob Sweeting, P.E.
Assistant Director of Engineering Services/City Engineer

2/15/2024
Date

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ENGINEERING DESIGN STANDARDS

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Chapter 1: General Information

1.00 Preface

Per Auburn City Code (ACC) 12.04.020, all public work construction contracts of the City, including but not limited to streets and sidewalks, storm water and sanitary sewer systems, and water systems, and all work within City public right-of-way performed by the City and others shall conform to the Engineering Design Standards (EDS). The EDS applies to City capital projects and for work performed by developers and others under construction permits (CON), grading permits (GRA), storm permits (STM), other utility permits, and public facility extensions (FAC). The City of Auburn has adopted the EDS to require the standardization of design and construction elements for consistency, to assure that public safety needs are met, and to comply with Local, State, and Federal regulations.

The design requirements contained within this manual do not set legal standards of care but provide guidance for possible engineering treatment under some circumstances.

Compliance with these standards does not alleviate the design engineer from using sound professional engineering practices and meeting the requirements of the specific utility in question. The design criteria contained herein are the minimum acceptable under standard conditions. Special conditions may require more stringent requirements that will be addressed during the plan review process.

1.01 Definitions

Note that additional definitions are included in the documents referenced in **Section 1.03.**

AASHTO – American Association of State Highway and Transportation Officials.

Access Point – A driveway or private street that connects to the general public street system. A public street is not considered an access point.

ACC – Auburn City Code.

Activity Centers – Locations such as schools, parks, retail areas and shopping centers, places of employment, or public service areas that attract people.

Accessible – Meeting Americans with Disabilities Act (ADA) requirements as established by the City's ADA Transition Plan.

ADT – Average Daily Traffic. The total two-directional volume of traffic passing through a given point during a given time period, divided by the number of days in that time period.

Aggregate – A mixture of various soil components (e.g., sand, gravel, and silt).

Alley – Right-of-way, usually narrower than a street with an all-weather surface, which provides access to the rear boundary of 2 or more residential or non-residential properties and is not intended for general traffic circulation. An alley is considered to be a classification of roadway/street.

Apartment – See ACC Chapter 18.04**.**

Applicant – The owner or their agent seeking approval from the city for any land use or other related permit or approval referenced in City of Auburn Code and which requires utilization of these Standards. References: See Developer.

Appurtenance – Equipment and/or accessories that are a necessary part of an operating utility system or subsystem.

APWA – American Public Works Association.

ASTM – American Society for Testing and Materials.

Backfill – Replacement of excavated material with suitable material compacted as specified.

Backwater – Water held back by some obstruction, natural or artificial.

Backwater Curve – A plot of depth versus location along the channel containing backwater.

Bicycle Facilities – A general term referring to improvements that accommodate or encourage bicycling, including parking facilities, bike racks, bicycle route mapping and bicycle route development.

Boring/Jacking – Grade and alignment-controlled mechanical or other method of installing a pipe or casing under a street without disturbing the surrounding medium.

Breakaway Structure or Breakaway Design – A structure or installation that has been crash tested in accordance with National Cooperative Highway Research Program procedures. (NCHRP 230).

Capacity – (1) The maximum number of vehicles that have a reasonable expectation of passing over a given roadway or section of roadway in one direction during a given time period under prevailing roadway and traffic conditions. (2) The volume of liquid or gas that can be transported by a pipe. (3) The load-carrying limit of a structure.

Casing – A larger pipe enclosing a another pipe that directly encloses a transmitted fluid or gas for the purpose of providing structural or other protection to the carrier and/or to allow for carrier replacement without re-excavation, jacking or boring.

CF – Cubic Feet.

Channelization – The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands or other suitable means to facilitate the safe and orderly movement of both vehicles and pedestrians.

Check – A short section of built-up channel placed in a canal or irrigation ditch and provided with gates or flashboards to control flow or raise upstream level for diversion.

City – The City of Auburn.

City Council – The City legislative authority.

City Engineer – The City Engineer for the City of Auburn. References: See Engineer.

Clean-Out – A pipe through which plumbing snakes can be pushed to unplug a sewer.

Clear Zone – The total streetside border area, starting at the edge of traveled way, available for safe use by errant vehicles. This area may consist of a shoulder, a recoverable slope, a non-recoverable slope, and/or a clear run-out area. The desired width is dependent upon the traffic volumes, speeds, and the streetside geometry.

Coating – Protective material applied to the exterior of a pipe or conduit to prevent or reduce abrasion and/or corrosion damage.

Commercial Property Use – Property with residential developments with four or more dwelling units per parcel or commercial developments. This is consistent with building permit administration in City of Auburn.

Conduit – An enclosed tubular runway for protecting wires or cables.

Contractor – The individual, partnership, firm, corporation or joint venture, contracting with the Developer to do prescribed work.

Concrete Thrust Blocking – Concrete that is used to support fittings in water mains.

Control Zone – That streetside area defined by the "Control Zone Distance Table"; found in Appendix 5 of the WSDOT Utilities Manual, within the street right-of-way in which placement of utility objects is controlled.

Corporation Stop – A brass fitting used to connect service lines to a water main.

Cover – Depth to top of pipe, conduit, casing, or gallery below the grade of a street or ditch.

Cross Connection – Connecting fire, irrigation and drinking water supplies together, or connecting storm and sanitary sewers together.

Cul-de-sac – A street closed at one end by widened pavement of sufficient width for vehicles to turn around.

CSBC – Crushed Surfacing Base Course.

CSTC – Crushed Surfacing Top Course.

CTP – The City of Auburn's current Comprehensive Transportation Plan. See **Section 1.03.03.**

CY – Cubic Yard.

Dead End Street – Street that accesses the roadway system only at one end. See also Stub End Street.

Dedication – The transfer of land or the interest of land by the owner of such land to the City for public uses, reserving no other rights than such are compatible with the full exercise and enjoyment of the uses the property has been dedicated.

Design Speed – Design speed is the maximum safe speed that can be maintained when conditions are so favorable that the design features of the highway govern.

Detention Tanks and Vaults – Detention tanks and vaults are underground facilities for the storage of surface water.

Developer – The Owner and any agent of the Owner authorized to represent the Owner. References see Applicant.

Development – All structures and other modifications of the natural site above and below ground on a particular site.

Domestic Water Service – Any service that connects directly to plumbing within a structure and is used for drinking, cooking, washing, and other standard uses of potable water.

Drain – Appurtenances to discharge accumulated liquids from casings or other enclosures.

Driveway – An access point providing motorized access to/from property(s), shared driveway or alleys to a street (public or private) or shared driveway. Driveway access roads and aprons are considered parts of a driveway.

Driveway Access Road – Driveway driving surface, including approach and adjacent non-motorized facilities (where present).

Driveway Approach – The portion of a driveway access road that connects the driving surface on the property(s), private street, or alley to the driveway apron.

Driveway Apron – The improved area that connects a driveway approach to a street, alley, or shared driveway which includes, when present, the sloped areas (wings) to the adjacent sidewalk or landscape strip, and also includes the area between the curb or edge of pavement and the back of the pedestrian pathway. Flush curbs across commercial driveway aprons are considered to be part of the driveway apron.

Easement – A right to use or control the property of another for designated purposes.

Edge of Traveled Way – The face of curb for streets that are or will be constructed to urban standards and the edge of pavement (not shoulder) for streets that are, or will be constructed to rural standards.

Embankment – A raised structure constructed of natural soil from an excavation or borrow source.

Encroachment – Occupancy of City right-of-way by non-roadway structures or other objects of any kind.

Engineer – The City Engineer for City of Auburn or any designee thereof.

Fixed Object – Any object that is not intended to move or break away upon impact.

Franchise – Occupancy and use document granted by the City required for occupancy of street rights of way.

Geometrics – The arrangement of the visible elements of a street such as alignment, grade, sight distance, widths, and slopes.

Grade – Rate or percent of change in slope, either ascending or descending from or along the roadway. It is measured along the centerline of the roadway or access point.

Gravity Distribution – A water supply that uses natural flow from an elevated tank or mountain reservoir to supply pressure.

Hazard – A side slope, an object, water, or a drainage device that, if impacted, would apply unacceptable impact forces on the vehicle occupants or place the occupants in a hazardous position. It may be either natural or man-made.

Hydraulic Analysis – A report that details the engineering process used to analyze water pressures, flow requirements, and velocities, for a development and the impacts on the system network as a result of the development.

Hydraulic Jump – The rapid change in the depth of flow from a low stage to a high stage resulting in an abrupt rise of water surface.

Impervious Layer – A geologic layer through which no water can pass.

Infiltration – (1) The act of stormwater permeating into the ground. (2) Groundwater that enters sewer pipe through cracks and joints, or the movement of water through the upper soil.

Interception – Rain that falls on vegetation and other impervious objects, which evaporates without contributing to the runoff.

Intersection – The connection of two or more public or private streets excluding alleys, driveways, and shared access roads.

Intersection Sight Distance – The distance required for a vehicle, traveling at or near the design speed to reduce its speed to avoid overtaking another vehicle, which has entered the intersection from another street. The entering vehicle can be making right, left-turning movements or crossings.

Island – A defined area between traffic lanes for control of vehicle movements and/or for pedestrian refuge.

Joint Use Driveway Tract – A jointly owned and maintained tract or easement serving 2 properties.

Landing – A road or driveway approach area to any public or private road.

Lateral – A sewer line that goes off at right angles to another.

Manhole – An opening in an underground utility system into which workers or others may enter for the purpose of making installations, inspections, repairs, connections, cleaning, and testing.

Main – A principal pipe in a system that distributes water or collects sewage.

Median – That portion of a divided roadway separating the traveled ways for traffic in opposite directions.

MPH – Miles per hour.

MSE Walls – Mechanically Stabilized Earth Walls.

MUTCD – Refers to the latest edition of the Manual of Uniform Traffic Control Devices as adopted by the Washington State Department of Transportation and as modified by applicable WAC and RCW.

Neighborhood – For the purposes of these design standards, a neighborhood is considered to be one or more residential subdivisions and parcels that are interconnected by local residential streets and typically bound by arterial and collector streets or other boundaries such as rivers, critical slopes, or jurisdictional boundaries.

Nonpotable – Fluid that is not for human consumption, but may be used for other purposes, such as sewage and stormwater runoff. Gas mains are also considered nonpotable.

Outfall – The pipe that discharges completely treated wastewater or stormwater runoff into a lake, stream, or river.

Pavement – The combination of gravel base, crushed rock, and asphalt concrete pavement placed on a subgrade to support the traffic load and distribute it to the subgrade.

Pavement Width – The distance measured from face of curb to face of curb for curbed sections of roadway or the distance measured from outside edge of shoulder to outside edge of shoulder for shouldered sections of roadway.

PC – Point of Curvature.

Peak-Hour – That period experiencing the highest volume of traffic.

Peak Period – Two hours during any a.m. or p.m. period when vehicle arrival and departure from the site or corridor is the highest.

Pipe – A structural tubular product designed, tested, and produced for the transmittance of specific liquids and gases under specific conditions.

Posted Speed – Is the signed speed limit along a street.

Potable – Water that is Drinkable.

PRC – Point of reverse curvature.

Pressure – Internal gage pressure in a pipe in pounds per square inch, gage (psig).

Private Street – A privately owned and maintained access provided for by a tract, easement or other legal means.

Professional Engineer – An engineer licensed to practice in the State of Washington.

Professional Land Surveyor – A surveyor licensed to practice in the State of Washington.

Public Street – A publicly owned facility that provides access, including the roadway and all other improvements.

Relocation – Planned change of location of an existing facility to a more advantageous place without changing the character or general physical nature of the facility.

Redevelopment – See ACC 13.48.010.

Replacement – Installation of a like element of a utility system or subsystem in the same or near-same physical location normally due to damage, wear or obsolescence of the element.

Restoration – All work necessary to replace, repair or otherwise restore the right-of-way and all features contained within to the same or equal condition as before any change or construction thereto.

Right-of-way (R/W) – All property in which the City has any form of ownership or title, and which is held for public street purposes, regardless of whether or not any street exists thereon or whether or not it is used, improved, or maintained for public travel.

Riprap – Pieces of broken stone used to protect the sides of waterways from erosion.

Roadway Intersection – location where two or more roadways intersect, including private roads but excluding alley's, driveways, shared driveways, and access tracts.

Rural – All lands regardless of current comprehensive plan designation not meeting the definition of Urban.

Separate Turn Lane – An auxiliary lane for traffic in one direction which has been physically separated from the intersection area by a traffic island or stripe. Separate turn lanes may be included within intersections or separated from intersection areas by traffic islands.

SF – Square Feet.

Shared Driveway – Driveway that provides access from a public or private street to more than one parcel or a driveway that provides access from a public or private street to a single parcel across one or more other parcels and/or an access tract or easement.

Shared Driveway Access Road – Shared driveway driving surface, including approach and non-motorized facilities (where present), but excluding parking lot drive aisles.

Shoulder – That portion of the roadway contiguous with the traveled way for accommodating stopped vehicles, for emergency use, and for lateral support of base and surface courses.

Slab – A cast concrete member of uniform thickness.

Standards – The City of Auburn Engineering Design Standards.

Stopping Sight Distance – The distance needed for a vehicle traveling at or near to stop before reaching a stationary object in its path.

Street or Roadway – A public way open for the passage of vehicles and persons. Limits include the outside edge of sidewalks, or curbs and gutters, or side ditches, including the appertaining shoulder and all slopes, ditches, channels, waterways, and other features necessary for proper drainage and protection within the right-of-way.

Street Frontage – Any part of private or public property that borders a public street.

Street Tree – A tree placed within the public right-of-way.

Substantial – In the sole opinion of the City Engineer, of ample or considerable amount, quantity, or size.

Surface Retention – That part of a storm that does not immediately appear as infiltration or surface runoff. Retention is made up of depression storage, interception, and evaporation.

Traffic Control – Those activities necessary to safeguard the general public, as well as all workers, during the construction and maintenance of roadway and other facilities within the right-of-way.

Traveled Way – That portion of the roadway intended for the movement of vehicles, exclusive of shoulders.

Trenched – Installation of a utility in an open excavation.

Trip – A one-direction movement that begins at the origin and ends at the destination. For example, a trip movement from a residence to a work place is a trip from home to work.

Trip Generation – A general term describing the analysis and application of the relationships that exist between the trip makers, the traffic study area, and the trip making. It relates to the number of trip ends in any part of the traffic study area.

Uniform Flow – Flow that has a constant depth, volume, and shape along its course.

Unopened Right-of-way – A City right-of-way that exists by dedication or deed, but for which no vehicular roadway has been constructed by the City or other parties, and the street is not maintained by the City.

Utility – A company providing such public services as gas, electric power, telephone, water, sewer, or cable television, whether or not such company is privately owned or owned by a governmental entity.

Wetpond – A stormwater pond that has been designed to retain a permanent pool of water "wetpool" to provide treatment of storm runoff.

Wetpool – The permanent pool of water retained in a wetpond or wetvault.

Wetvault – A stormwater vault that has been designed to retain a permanent pool of water "wetpool" to provide treatment of storm runoff.

1.02 Contact Information

Permit Center
Physical address:
Auburn Professional Plaza – Customer Service Center (2nd Floor)
One East Main Street
Mailing address:
25 West Main Street
Auburn, Washington 98001-4998
Email address: permitcenter@auburnwa.gov

Public Works Department – Engineering Services:
Phone:(253) 931-3010

Department of Community Development:
Building Phone: (253) 931-3020
Planning Phone: (253) 931-3090
Email address: development@auburnwa.gov and/or permitcenter@auburnwa.gov

1.03 City Reference Material

Unless noted otherwise, reference material referred to herein may be obtained from the City of Auburn's website or by clicking on the hyperlink below:

Auburn Reference Material

1.03.01 City of Auburn Surface Water Management Manual (SWMM)

The City of Auburn Surface Water Management Manual (SWMM) is the 2019 Department of Ecology Stormwater Management Manual for Western Washington (DOE SWMMWW) and the City of Auburn Supplemental Manual. The SWMM is a manual of specific requirements related to storm drainage management. See **Section 8.07** for more information.

1.03.02 City of Auburn Engineering Construction Standards (ECS)

The Engineering Construction Standards (ECS) sets forth the standards used during the construction of all civil projects within the City's jurisdiction, including the extension of public water, sanitary sewer, storm drainage, and transportation facilities by private developments. The ECS includes three separate documents: General Special Provisions, Technical Special Provisions, and Standard Details. The General and Technical Special Provisions supplement and modify the current "Washington State Department of Transportation (WSDOT/APWA) Standard Specifications for Road, Bridge and Municipal Construction." The Standard Details, are comprised of the City's construction and design detail drawings for temporary erosion control, grading, water, sanitary sewer, storm drainage, and street work within the City. The Standard Details are supplemented by the "Washington State Department of Transportation's (WSDOT) Standard Plans."

The referenced details and plans in these Design Standards shall be the standard except as modified by the General and Technical Special Provisions and by this document, the Design Standards.

1.03.03 Planning Documents

The following planning documents can be found on the City's website or by clicking on the hyperlinks below:

Auburn Comprehensive Plan

Transportation Improvement Program

Comprehensive Transportation Plan

2016 Comprehensive Sewer Plan

2015 Comprehensive Water Plan

2015 Comprehensive Storm Drainage Plan

1.03.04 Informational Handouts

Handouts are currently available from the City to aid the public in planning and constructing development projects within the City of Auburn. Contact the Permit Center or see the City's website by clicking on the hyperlink below (select 'Information Handouts') for the most current list available:

https://www.auburnwa.gov/city_hall/public_works/standards_publications

1.03.05 Additional Technical Information

Additional design guidance and standards for specialized facilities such as pump stations, pressure reducing stations, and others are not included herein, but may be provided by the City as guidance to supplement efforts during design discussions.

1.03.06 Other Reference Material

The following publications are to be used for design applications and can typically be found on the publishing agency's website. In case of conflict between City publications and those referenced below, the City publication will take precedence:

A. Auburn City Code (ACC) related to development requirements.

B. Washington State Department of Transportation (WSDOT) "Standard Specifications for Street, Bridge and Municipal Construction" as amended by the City's Special Provisions (Part 1 of the Construction Standards). These will be referred to in City publications as the "WSDOT Standard Specifications."

C. Washington State Department of Transportation (WSDOT) "Design Manual" (latest edition).

D. Washington State Department of Transportation (WSDOT) "Standard Plans."

E. American Association of State Highway and Transportation Officials' (AASHTO) "A Policy on Geometric Design of Highways and Streets" (latest edition).

F. FHWA and Washington State Department of Transportation, MUTCD.

G. Transportation Research Board's (TRB) Roundabouts: An Informational Guide, 2nd Edition (NCHRP 672).

H. State of Washington Department of Ecology's "Criteria for Sewage Works Design" (latest edition).

I. State of Washington Department of Health (DOH) "Water Systems Design Manual" (latest edition).

J. American Water Works Association (AWWA) Standard Specifications (latest edition).

K. "IES Lighting Handbook" (Illuminating Engineering Society of North America) (latest edition).

L. American National Standard for Roadway Lighting ANSI/IESNA RP-8-00 (latest edition).

1.04 Deviation from Standards

In some cases, City standards may not best address a particular engineering application. In these instances, a design deviation from the City's standards may be requested from the City Engineer. Except deviations for City capital improvement projects, deviations shall be made using the City's Deviation Request Application and shall include applicable engineering justification for the deviation. Deviation requests and supporting justification must be sealed by a professional engineer. The City Engineer will evaluate the request and notify the applicant of a decision within 15 working days upon receipt of a complete deviation request or with the completion of the first review of the development review plans or plats (for Short Plats, Plats, FAC's and Grading Permits), whichever is later. Additional City review time may be required in certain circumstances and will be coordinated with the applicant. For deviation applications that are associated with a preliminary plat application submitted in compliance with ACC 17.10, the deviation application and a recommendation from the City Engineer must accompany the preliminary plat to the hearing examiner. The hearing examiner must obtain the concurrence of the City Engineer for any requests to modify any City of Auburn design or construction standard. Approved deviations must be shown on the final civil site improvement plans as specified in **Chapter 3.**

Deviations for City capital improvement projects will be reviewed and approved by the City Engineer during design review. The City Engineer signing the final plans as approved for construction constitute approval of any deviations from these Standards.

1.04.01 General Deviations

General deviations apply to all engineering design standards except for the Surface Water Management Manual's Minimum Requirement deviations.

The engineering design deviation, with compelling supporting justification, shall clearly demonstrate the engineering design standard for which the deviation is being sought is not physically or technically possible, would have undesirable impacts to public or private infrastructure and property, or would impact critical areas.

Additionally, the proposed deviation will meet or exceed the corresponding City standard for the following applicable criteria:

A. The functional intent of the design element.

B. Safety factors associated with the design element.

C. Operational concerns associated with the design element.

D. Maintenance concerns associated with the design element.

E. Liability concerns associated with the design element.

F. The capacity and/or efficiency of the design element.

G. The design life, historical performance, and durability of the design element.

H. The aesthetic and visual impacts of the design element.

I. The cost effectiveness and availability of any replacement components or materials.

J. Consistency with the spirit and purpose of the corresponding City design standard.

K. Demonstration that the environment will not be adversely affected.

L. Supported by published industry standards.

M. The effect on buildable lands within the City of Auburn.

1.04.02 Surface Water Management Manual (SWMM) Deviations

A deviation request from any of the 10 Minimum Requirements in the SWMM goes through a different process which includes a public notice requirement. This is to ensure that the Department of Ecology mandated surface water regulations are complied with. The 10 Minimum Requirements of the SWMM can be found in **Section 8.07**.

Requests for deviations from the 10 Minimum Requirements of the SWMM shall be in accordance with ACC 13.48.226 and these standards.

1.04.03 Appeal of City Engineer's Decision

Appeal of the City Engineer's decision shall follow the following procedure:

The applicant shall have 15 working days from the date of receipt of the City Engineer's decision in which to submit a written notice to the Public Works Director contesting the decision of the City Engineer. The Public Works Director shall then have 15 working days to notify the applicant

of a decision to uphold or modify the City Engineer's decision. For appeals of engineering deviations requests, the Public Works Director's determination shall be final.

1.04.04 Changes to Standards

Per ACC 12.04.010, the City Engineer is authorized to make any additions, deletions, or modifications stated in these Standards with consultation with the City Council on policy issues or broad Citywide implications.

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Chapter 2: Plan Approval Process

2.00 Preface

This Chapter contains standards and procedures that apply to the review and approval process for civil engineering plans. Development or redevelopment of property within the City of Auburn, and/or within the limits of Auburn's Utility Service Area, that require civil engineered plans to support a development action must follow the processes outlined in the subsections below.

2.01 Types of Plans

This section contains information regarding the types of civil engineering plans submitted to the City. Specific plan requirements are described in detail in **Chapter 3**.

2.01.01 Grading (GRA) Plans

Grading plans are required prior to the issuance of a Grading Permit and before commencement of construction, if triggered per ACC 15.74.

2.01.02 Building Site Plans

A Building Site Plan includes all civil site development requirements including site layout, building location, site access, parking, code required landscaping, utility service, and storm drainage control. An approved Site Plan is required prior to the issuance of a Building Permit and before commencement of construction.

A building Site Plan is required for all new non-residential developments and residential construction of 3 units or more per lot.

2.01.03 Public Facility Extension (FAC) Plans and Agreement

City of Auburn approved Public Facilities Extension (FAC) Plans and an executed FAC Agreement are required prior to construction of City of Auburn infrastructure (sanitary sewer, water, storm drainage, and/or transportation facilities) by any party other than the City of Auburn.

2.01.04 Other Plans

Some projects may also require other types of plans. The requirements for these additional plans will usually be addressed early in the submittal process. These plans could include, but are not limited to, the following:

A. Landscape plans, prepared in accordance with ACC 18.50.

B. Land clearing plans, prepared in accordance with ACC 15.74.

C. Irrigation plans, prepared in accordance with ACC 18.50.

D. Critical Area restoration/enhancement plans, prepared in accordance with ACC 16.10.

E. Retaining Wall Plans and Structural Calculations.

F. Illumination/Site Lighting Plans, prepared in accordance with ACC 18.55.

2.02 Review and Approval Process

2.02.01 Submittals

When submitting civil engineering plans to the City for review, the following steps are required to insure a complete submittal and timely approval of civil engineering plans:

A. Applicants are encouraged to meet with City staff prior to plan submittal. Information on applying for a Pre-Application Meeting is available through the City of Auburn Permit Center. All plans and associated documents submitted to the City will be assigned a project number and receive a preliminary review to make sure they adequately address the minimum requirements of a complete application. Any such plans and associated documents not meeting these requirements will be returned to the applicant or the applicant's designee as unacceptable for review, with a written explanation of necessary corrections required prior to the subsequent resubmission.

B. Prior to preparing civil engineering plans for submittal, the applicant shall review the submittal requirements outlined in the Civil Submittal Handout (FAC & GRA) on the City's website under Forms. This packet provides a summary of the Engineering Design Standard sections that apply to civil plan preparation but does not substitute for a thorough review of the Engineering Design Standards.

C. Civil Engineering plans and associated documents are to be submitted to the City for processing. All submittal documents (Reports & Plans) must be single .pdfs and not require collating, with file names that clearly state the document type and may be submitted through www.MyBuildingPermit.com. If you have any questions regarding the application process or submittal requirements please contact the City Permit Center at permitcenter@auburnwa.gov, (253) 931-3020 or Development Engineering at development@auburnwa.gov, (253) 876-1969, or in person at the City of Auburn Permit Center on the Second Floor of the Auburn Professional Plaza, One East Main Street.

D. After the receipt of a completed Civil Submittal, the City will make a preliminary review of the plans and supporting data to verify the scope of the proposed extension(s) and check for completeness of the application. The City requires 28 calendar days from the date of initial submittal, to determine if the application is complete. However, typical review times are generally shorter than this. Once the City is satisfied with the completeness of the application, the applicant will receive payment instructions, and once the application fees have been paid, the 1st detailed civil submittal review will begin.

E. Once the length of the public extension(s) and/or hours required for review/inspection have been verified/calculated, 30% of the review and inspection fees are due with the application for 2nd review. Detailed FAC Plan review work for the 2nd review will not continue until 30% of the review and inspection fee is paid. If no 2nd review is needed, then payment of the full review and inspection fee is due before the City signs the facility extension agreement.

F. All proposed public right-of-way dedications shall be dedicated to the City prior to start of construction with the exception of plats and short plats. A title report pulled within 30 calendar days of the application will be required to confirm property ownership and to verify that the portions of the property dedicated as right-of-way and/or easements have been cleared of encumbrances. The applicant is responsible for clearing all encumbrances the City determines to be inconsistent or in conflict with the intended purpose of the dedications. Title insurance shall be provided to the City for right-of-way dedications in the amount of $50.00 per square foot of right-of-way area dedicated, or other amount as proposed by the Developer

and accepted by the City Engineer. Refer to the Right-of-Way Dedication Handout on the City's website under Forms for additional information. Easements shall be executed by the Applicant prior to start of construction. Easement documents will be held by the City until the end of construction, at which time the easement exhibits and descriptions may need to be updated by the Applicant, based on as-built conditions, except easements that are being granted by someone other than the Applicant which will be recorded prior to the start of construction. Once the easements are confirmed to match field conditions, the easements will be recorded by the City.

G. The following applicable information may be required along with the plan submittal:

   1. Title report.
   2. The final biologist report, including the wetland mitigation plan, when appropriate.
   3. Traffic reports.
   4. A copy of other applicable applications (Short Subdivisions, Subdivisions, etc.).
   5. Letter indicating how SEPA and/or other applicable application conditions have been accounted for in the development/plan process.

H. All final plans, calculations, or reports submitted for review shall be stamped by a Professional Engineer. Electronically signed seals will only be accepted if they meet the requirements of WAC 196-23-070.

I. Where the plan review process is running concurrent with other applications (SEPA, Subdivisions, etc.), the above-referenced information may not be available at time of plan submittal. In such instances, other required applications shall be provided prior to final plan approval.

J. All final approved Plan submittals shall include the associated electronic AutoCAD files.

K. If the project is to be phased, phasing plans must be submitted per the requirements specified herein.

2.02.02 City Review

The City will review plans and associated calculations, reports, and AutoCAD files for conformance with City development requirements, standards, and policies. Marked up construction drawings, calculations, reports, and written plan review comments will be returned to the applicant's designated contact person for revisions. The applicant's engineer shall revise construction drawings, calculations, or reports to address City plan review comments and provide comprehensive comment responses in a unique color directly on the marked-up documents along with the updated documents or in other formats as determine to be acceptable by the City Engineer, or designee. The revised drawings (the required number will be determined by the City) and associated calculations and reports, along with the redline comments, shall be resubmitted to the City for additional review.

2.02.03 Plan Approval

Once the plan review process is completed and all City review comments have been addressed, the City will request that one electronic copy of the sealed plans and reports be submitted for approval.

Final reproducible plans shall be produced in .pdf format, signed and stamped by a professional engineer and provided to the City for approval signatures, along with the final AutoCAD files. Electronically signed seals must meet the requirements of WAC 196-23-070 and also provide permissions for City staff to apply signatures to the approved plans. The City will return the signed and approved plans to the Applicant.

All applicable AutoCAD files shall be submitted to the City on a compact disk or electronically transferred to development@auburnwa.gov for integration into the City's Geographic Information System (GIS). For more information on AutoCAD file submittal, please see **Appendix F** of **Chapter 3**.

2.02.04 Construction Plan Revision

If after plan approval the applicant desires to make changes to the approved plan(s), a revised plan(s) reflecting such changes shall be required. In some cases, minor changes may be considered and approved by the City Engineer without a formal plan revision. City Inspectors may not authorize changes to the approved plans. The following is the general process required for submitting revisions to the approved plans after plan approval:

A. Provide a written summary of the proposed plan/report changes to the Development Review Engineer assigned to the project and include development@auburnwa.gov on the email correspondence.

B. Submit for City review, comment, and approval, the revised plans.

C. Changes on the plans can be clouded for ease of review but will need to be removed prior to approval of the construction plan revision.

D. Provide the text "REVISION" in 0.2" height bold text above the **Approval Block (B-3) in Appendix A** on all sheets that are being revised and submitted for review.

E. Provide a date and brief revision description in the revision title block.

F. Include the cover sheet of the plans even if revisions are not proposed on the cover sheet as the cover sheet is the sheet that has approval lines for the Planner and City Engineer.

The following list are examples of changes that would require a formal plan revision process (Note that this list does not include all potential changes that would require a plan revision process):

A. Alternative pavement section;

B. Revised structural elements such as walls;

C. Revised City utility location of 2 feet or more horizontally or vertically;

D. Addition of structures such as catch basis and manholes;

E. Revised driveway location, width, or alignment;

F. Change in storm pond facility embankment slopes;

G. Addition of temporary irrigation;

H. Phasing Construction.

2.02.05 Project Close Out

The following is the general process required for accepting construction completion on a project:

Construction Record Drawings (also referred to as the Construction Redlines) refer to the field changes the Applicant clearly tracks and marks on the final approved and signed plans that are retained throughout construction, in accordance with the requirements specified in the Construction Standards.

After completion of construction, the Applicant shall submit the Construction Record Drawings to the City electronically for review and comment. After the City has concurred the Construction Record Drawings reflect the as-built conditions and meet City record drawing standards, as described in the City Construction Standards, the Applicant shall utilize them to produce the Final As-built Record Drawing set for submission to the City. A copy of the "Record Construction Document Packet" which outlines the complete record drawing process in detail can be obtained from the City.

The Applicant shall also provide the City the current AutoCAD drawing files to reflect any revisions that occurred after plan approval and submit an electronic PDF set to the City.

The City will apply an 'As-Built' stamp on each sheet of the submitted Final As-built Record Drawing set and apply a "Record Drawing Certification" block on the Cover sheet. The Record Drawing Certification will be signed by the City and the Final As-built Record Drawings will be archived and imported into the City's GIS database.

A final Stormwater Site Plan certification letter shall be stamped, signed and submitted by the Engineer of Record to the City verifying that the storm facilities were installed as designed or note any minor changes during construction that require no changes to the Stormwater Site Plan report.

Submit an electronic copy of the Stormwater Site Plan report and Geotechnical Report if there have been changes during construction.

The following shall also be completed for projects prior to project close out:

A. All legal documents, including Utility Easements, shall be updated as needed, executed, and recorded.

B. FAC Agreement shall be recorded.

C. For all FACs, a "Developer Contributions Document" for all public transportation, water, sewer, and storm facilities constructed as part of the project shall be obtained from the City, completed, and returned electronically to the City.

D. All Warranty Bonds or Assignments of Funds for the 1 to 2-year warranty period shall be in place.

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Chapter 3: Plan Preparation Requirements

3.00 Preface

This Chapter describes City requirements for plans submitted to the City for review and approval. Civil engineering plans must meet these standards in order to move through the review process in an efficient manner and in order to receive approval.

3.01 General Requirements

The following general requirements apply to civil engineering plans submitted for review and approval by the City:

A. The general construction requirements for the City shall be those contained in the City of Auburn's current Engineering Construction Standards Manual which supplements or modifies the "Washington State Department of Transportation (WSDOT) Standard Specifications for Road, Bridge and Municipal Construction," except where supplemented or modified by the City in this manual.

B. The civil engineering plans shall reference City Standard Specifications, Standard Details, and WSDOT Standard Plans as necessary. The City's Standard Specifications and Standard Details are contained in the Engineering Construction Standards, a copy of which shall be on-site during construction.

C. All civil engineering plans and reports shall be prepared and sealed by a professional engineer.

D. Property surveys shall be performed and prepared per WAC 332-130-145, sealed and signed by a professional land surveyor and be tied to the current City datum (NAVD 88) and horizontal control datum shall be NAD83 (1991) as officially adjusted and published by the National Geodetic Survey. (WAC 332-160-060 and RCW 58.20). A list of City Benchmarks is available upon request.

E. All civil engineering plans and calculations shall be neat, uncluttered, legible, and in conformance with the requirements herein.

F. All plans shall be prepared utilizing AutoCAD software in accordance with the standards specified herein.

G. For a Development project, all deviations from City's Engineering Design and Construction Standards must be shown on the plans with a note call-out and description that references the City assigned deviation number and deviation approval date. The format of these callouts and note descriptions shall be as shown in **Appendix C** of this Chapter.

H. Except as approved otherwise by the City Engineer, a project may qualify for a Minor Grading Permit Submittal. Refer to **Appendix E** for project thresholds to quality for a Minor Grading Permit and the submittal requirements.

3.02 Plan Format

The City requires that plan sets be submitted in an order consistent with this section. Depending on the complexity or simplicity of the project, the amount of detail and content required will be subject to change. Depending on the scope of the project the civil site improvement plans may be comprised of a combination of the grading, site and facility extension (FAC) plan elements outlined below to create a set of Civil Site Improvement Plans.

Civil Site Improvement Plans shall consist of the following sheets:

A. Cover sheet (See **Section 3.04.01**).

B. Temporary Erosion and Sediment Control (TESC)/Demo Sheet (Land Clearing when applicable) (See **Section 3.04.02**).

C. Grading and Private Storm Drainage Plan (See **Section 3.04.03**).

D. Utility Plan and Profiles if applicable (See **Sections 3.04.07 & 3.04.09**).

E. Street and/or Storm Plan and Profiles if applicable (See **Sections 3.04.08 & 3.04.09**).

F. Street Cross-Sections and Additional Street Elements if applicable (See **Section 3.04.09**).

G. Cross-Sections (See **Section 3.04.04**).

H. Details (See **Section 3.04.05**).

I. Street and/or Site and Landscape Plan (See **Section 3.04.10**).

J. Irrigation Plan if applicable (See **Section 3.04.11**).

If a separate associated grading plan has been submitted and approved, those areas covered under the grading plans will not need to be readdressed in the building site plans.

3.03 General Plan Requirements

3.03.01 Standard Plan Format

Applicable information in this section shall be shown on the plan set.

A. Each sheet of the plan set shall be stamped by a professional engineer.

B. North arrow.

C. The title block shall include the development/Capital project title (in bold print), the name, address and phone number of the firm preparing the plan and the owner/developer, a revision block (showing the date of the latest revision), page of pages numbering, and sheet title (e.g., road and storm drainage, grading, erosion/sedimentation control, water and sanitary sewer).

D. Indicate units of measurement for all slope callouts as either percent (%) or feet per foot (ft./ft.). Do not mix units of measurement on a plan set.

E. Provide all match lines with matched sheet numbers (stationing).

F. The street classification shall be provided under the street name on all plan views.

G. For the approved Development project plans, a City of Auburn approval block (4”x2”) shall be provided in lower right corner of each plan sheet except for the cover sheet which shall be per Section 3.04.01. Show project reference numbers (BLD for Building Permit, FAC for Public Facility Extension Plan, STM for Storm Permit and/or GRA for Grading/Erosion Control Permit) in the approval block area. A blank Auburn Engineering approval block is shown as **Approval Block (B-1) in Appendix A** of this Chapter.

H. The locations of the title blocks, approval blocks, and engineer’s stamp shall remain consistent throughout all the plan sheets.

I. All survey monuments as defined by WAC 332-120-020 within 25 feet of proposed ground disturbing activities shall be shown on the plans and the plans shall indicate the Department of Natural Resources permit number(s) issued for disturbance and re-setting/replacement of the monuments in accordance with Section 10.18 of the Engineering Design Standards. In addition to those typically found marking the City's Right of Way, survey monuments include, but are not limited to, set property corners, curb pins, reference or offset points, etc.

3.03.02 Drafting Standards

Drafting requirements are as follows:

A. Plan sheets should be formatted to print on 22"x34" size paper. Any variation must be approved by the City prior to plan submittal. Approved plans shall be produced per **Section 2.02.03** of the Engineering Design Standards. Margins should be set to provide for ½ size drawings to fit on 11"x 17" sheet size.

B. Lettering size shall be no smaller than one tenth (1/10) of an inch in height and shall be uppercase. Callouts and other information shall be printed horizontally in most cases.

C. Existing features shall be shown with dashed lines and/or screened back APWA line types and symbols (screening 45%).

D. Proposed features shall be shown with APWA symbols and line types. The intent is to clearly distinguish existing features from proposed improvements.

E. Minimum scale shall be:

- Site work: 1" = 40' horizontal.
- Public facility work: 1" = 20' horizontal.

Vertical scales are to be 1/10th the horizontal scale except for public facility work in areas with steep slopes, 1" = 5' may be used in place of 1" = 2'.

Use a scale that best utilizes paper space and gives the best overall view of the site.

F. Use APWA AutoCAD symbols and line types in the legend to identify both existing and proposed improvements and utilities.

G. Electronic AutoCAD files shall be prepared in accordance with the Layers Standard included in **Appendix F** of this Chapter. A .dwt file containing the AutoCAD layers can be found on the City's website or by clicking on the following hyperlink: Development AutoCAD Layers and Linetypes

H. Electronic AutoCAD files shall be geo-referenced per the standards specified herein.

3.04 Plan Sheet Elements

The following section covers the basic elements that are required to be shown on the different plan sheets. While all plan sets will have a cover sheet, there are other sheets covered here that may or may not be included in a particular projects plan set.

3.04.01 Cover Sheet

The Cover Sheet and General Information Sheet(s) shall incorporate all the requirements listed in **Section 3.02**, plus the following applicable items:

A. A general scaled site plan covering an area approximately 10 inches square.

B. Vicinity map (approximate scale) with north arrow covering an area approximately 5 inches square.

C. Site address.

D. Owner/Applicant, address, contact, phone number, and e-mail address.

E. Engineer/Surveyor/Architect address, contact, phone number, and e-mail address.

F. Elevations with City datum (NAVD 88) tied to City benchmarks with reference to the benchmarks' numbers and locations indicated. Horizontal control information (NAD83). See **Appendix E** of this Chapter for more information on survey requirements.

G. Monuments used for horizontal control per the City's horizontal control datum NAD83 (1991) with a description of the monument and northing and easting.

H. The permit number in 1 inch bold lettering shall be above the title block (located on the right side of the sheet) on the cover sheet only.

I. Sheet Index with reference to all civil, landscape, critical area mitigation and lighting plan sheets.

J. Legend of all existing and proposed lines and symbols used on the plans.

K. Full legal description(s) including quarter section, section, township, and range.

L. Parcel number(s).

M. Site zoning and adjacent zoning (may be shown on a separate vicinity map sheet).

N. Applicable plat name and lot numbers.

O. Applicable site information including the number of parking spaces required and the number of parking spaces provided.

P. Type of building construction as defined by the adopted Building Code and the building height as defined in **Appendix D** of the International Fire Code.

Q. Site access including adjacent driveways, roadways, and intersections that may have an impact on the location and type of site access.

R. An overall site plan key map shall be shown if the scope of work requires that the site plan be divided between 4 or more plan sheets, unless otherwise directed by the city.

S. Construction Sequence outlining a basic construction schedule for all elements of the project. (See **Section 5.05** for a sample construction sequence related to storm and TESC elements) In addition, depending upon the nature of the project, the construction of some public facilities may also dictate separate construction sequencing requirements that will also need to be indicated on the plans.

T. The City of Auburn General Notes as shown in **Appendix B** of this Chapter.

U. Provide a list of the additional non-building permits required for this project. The City will update this list with the 1st review comments.

V. Indicate approximate fill and excavation quantities in CY. Refer to the Civil Submittal Handout (FAC & GRA) located on the City's website for required format.

W. Storm drainage related quantities and information required to support calculation of System Development Charges (SDC). Refer to the Civil Submittal Handout (FAC & GRA) located on the City's website for required format.

X. The City of Auburn Engineering Approval Block, (min size 2" x 8.5") as shown in **Appendix A** of this Chapter. A blank Auburn Engineering approval block is shown as **Approval Block (B-3) in Appendix A** of this Chapter.

3.04.02 Temporary Erosion and Sediment Control (TESC) Plan Sheet

TESC design shall be in accordance with **Chapter 5 – TESC, Clearing, and Grading**, and include the following applicable items:

A. Marked clearing work limits, environmentally sensitive areas and their buffers, and trees that are to remain.

B. Indicate the location of the construction entrance.

C. Provide onsite stormwater facilities during construction.

D. Indicate the minimum temporary erosion control measures to be used on the site during construction, this may include, silt fencing, interceptor ditches, detention or retention facilities, flow control structures, etc.

E. Show containment locations for storing pollutants, including waste materials and demolition debris, prior to their removal from site.

F. All existing site features and conditions shall be shown on this sheet including the existing topography.

G. This sheet may also function as a demolition site plan and indicate all existing features and structures to be removed/demolished and those that will remain.

H. Provide the Auburn Grading and Erosion Control Notes as shown in **Appendix B** of this section.

3.04.03 Grading and Private Storm Drainage Plan Sheet

The Grading design shall be in accordance with **Chapter 5 – TESC, Clearing, and Grading**, and include the following applicable items:

A. Indicate slope of any fill or cut slopes.

B. Show or provide reference for type of fill material and associated compaction requirements or provide a reference to the approved Geotechnical Report with a date of the report, the firm that prepared it and the section in the report to reference.

C. Show existing significant trees and their dripline (6 inches in diameter and larger for evergreens and 4 inches in diameter or larger for deciduous). Indicate if tree is to either be retained or removed.

D. Provide storm drainage retention or detention facilities including City control structure, water surface (W.S.) elevations, seasonal high groundwater elevation, orifice sizes, design storms for the W.S. elevations, and release rates.

E. Show horizontal setback between the bottom of any fill placement and the top of the bank of a defined drainage channel per requirements noted in **Section 5.03**.

F. Show typical ditch sections.

G. Show connections of building roof and foundation drains to the site drainage system.

H. Show the existing topography shaded back and overlaid by the proposed grades.

I. Show existing and finished elevations and contours. Spot elevations may be required for relatively flat sites to supplement the contour elevations as necessary to adequately reflect existing and finish grades. Provide spot elevations along property line and a minimum of 30 feet beyond property line (at least 50-foot intervals).

J. Provide notes to protect and maintain erosion control facilities during grading operations.

K. Provide arrows to indicate drainage flow direction on paved surfaces.

L. Show layout of the entire storm drainage pipe with length, slope, and material type labeled and direction of flow indicated.

M. Provide site specific details and cross-section sheets for storm drainage detention or retention facilities.

N. Indicate the emergency overflow to the public storm system.

O. Show berm dimensions, materials, compaction requirements for ditches and detention ponds where applicable. When projects include storm ponds, include a storm pond profile sheet with seasonal high groundwater elevation, or reference to Geotechnical Engineering report detailing an accepted alternative analysis.

P. Show locations of manholes and catch basins, indicating type, stationing, offset, lid type, rim, and invert elevations. Number manholes and catch basins consecutively.

Q. Show existing and proposed sanitary sewers and water mains, identifying crossing and minimum vertical distance between utilities.

R. Provide type of material and size of energy dissipaters (riprap, etc.).

S. Provide details and cross sections of all low impact development, water quality, and flow control facilities for stormwater runoff.

T. Show trash racks, if applicable.

U. Show locations, widths, and types of easements.

V. Show locations and types of pumps, if applicable.

W. Provide planting and seeding requirements with establishment procedure in construction sequence for water quantity and quality systems.

X. Show finish floor elevations.

Y. Show the controlling downstream storm drainage elevations including the associated design conditions.

Z. For ponds, provide: aesthetics, fencing, power (if applicable), maintenance access, control structure, critical water surface elevations, and other items, such as walls and liners.

AA. Address bypass surface flows.

BB. Address subsurface flows and indicate water surface elevations.

3.04.04 Cross-Section Sheet

The Cross-Section plan sheet(s) shall be provided for projects that propose grading activities 10 feet or closer to the property line, excavations over 5 feet or fill over 8 inches in depth or more and have the following applicable items:

A. Cross-sections for fill and grading shall be shown through all properties to at least 30 feet beyond the property lines. Adequate cross-sections shall be shown to represent the site. At a minimum this shall include one shown in the north direction (west-east from left to right) and one shown in the east direction (south-north from left to right) cross-section.

B. This sheet may also contain cross-sections for the temporary storm drainage pond.

C. The scale used for the site cross-sections on this sheet should match the scale on the other sheets.

D. Some projects may be able to combine the cross-section sheet with the grading sheet depending on the complexity of the project.

3.04.05 Detail Sheet

The Detail sheet(s) shall have the following applicable items:

A. Any detail that is specific to this project.

B. City of Auburn Standard Details are not to be shown on this sheet unless they need to be modified for a project specific application, in which case the detail would be shown with the modifications explicitly called out/labeled and shall not include the City Engineer's signature from the original detail.

C. Storm control manholes shall be shown on this sheet.

D. This sheet shall contain cross-sections for the storm facility.

E. City of Auburn Standard Details and WSDOT Standard Plans are to be called out on the applicable plan sheet using the detail or standard plan number.

3.04.06 Utility Plan Sheets

The plan set shall include an overall utility plan that shows the private connections to the public water and sanitary sewer systems, together with the storm drainage system and proposed landscaping, and any required extensions of the public water and sanitary sewer systems. The overall utility plan shall be clearly visible on one to two plan sheets, with a maximum scale of 1"=100'. The overall utility plan is required in addition to plan/profile sheets prepared at the minimum scale defined in Section 3.03.02.E.

The scale of the plans may need to be increased to improve visibility. Construction Note Callouts shall be shown in the plan view (e.g., manholes, catch basins, etc.).

The more detailed Utility Plan sheet(s) shall have the applicable items identified in the following

sections.

3.04.06.A Water

Water system design shall be in accordance with **Chapter 7 – Water Facilities**, and shall include the following items:

A. Water pipe and fitting size, location, and type of material.

B. Details of connections to existing water mains, including details on the type(s) of connection fittings used.

C. Valve size, locations, type, and fittings.

D. Fire hydrant location(s).

E. Air/vacuum relief valve and blow-off locations.

F. Pressure reducing stations and associated valves, vaults and bypass piping as required.

G. Concrete blocking, mechanical or flanged joint, or restrained joint or locking gasket.

H. Water main, water meter, air and vacuum relieve valve, blowoff assembly, fire hydrant easements, and all appurtenances.

I. Meter size and service line size, material type, and location.

J. Irrigation meter size and service line size, material type, and location.

K. Proposed fire line, FDC line, and PIV locations. Provide a note with the underground fire line noting that a separate fire permit will be required for the underground fire line between the connection to the public water main to the building.

L. Backflow prevention assembly and detector check meter size, type and location.

M. For buildings requiring fire sprinklers, the fire sprinkler notes shall be shown on the plan, as shown in **Appendix B** of this Chapter.

N. Table or call out showing physical separation in feet between water lines and other utilities at crossings, when a profile is not required.

O. Cross connection control notes included in **Appendix B** of this Chapter.

P. For plat or road projects, provide unique stationing down the center of the road with the appropriate offset at all water main appurtenances. For all other projects, provide unique stationing down the center of the water main tied into known survey control.

Q. Private water mains and hydrants are labeled as “Private” or “PVT” when applicable.

3.04.06.B Sanitary Sewer

Sanitary sewer system design shall be in accordance with **Chapter 8 – Sanitary Sewer and Storm Drainage Facilities**, and include the following items:

A. Sanitary sewer pipe size, locations, and type of material.

B. Location of manholes. Indicate type of manhole, stationing, offset, and number manholes consecutively. During the City review process, manhole numbers shall be assigned by the City to be incorporated into the next submittal.

C. Indicate knockouts in manholes for future connections.

D. The direction of sewage flow shall be indicated with an arrow at the manhole. Proposed sewer shall have solid arrowheads while existing pipe and manholes shall be shown in ghost or screened lines with the arrowhead and manhole not filled. The location of the frame and cover on the manhole, positioned over the widest part of the shelf and not over a flow channel, shall be shown.

E. Drop manholes, if approved, are to be detailed on the plans.

F. Length, slope, type and class of material, and inverts for side sewers.

G. Stationing for side sewers, measured from downstream manholes.

H. Connection of a side sewer to the City's sanitary sewer pipe shall be indicated with a tee.

I. Locations of sanitary sewer cleanouts.

J. Locations of sanitary sewer easements.

K. Clearly define right-of-way and adjacent property lines. Parcel numbers for all lots adjacent to the improvements shall be indicated, with existing or proposed finished floor elevations.

L. Floor drains, drains from other covered areas potentially subject to pollutants, and wash areas within parking lots shall be connected to the sanitary sewer through an approved oil/water separator.

3.04.06.C Storm Drainage

Grading and Storm Drainage system design shall be in accordance with **Chapter 5 – TESC, Clearing, and Grading**, and **Chapter 8 – Sanitary Sewer and Storm Drainage Facilities** (which incorporates by reference the SWMM), and include the following applicable items:

A. The layout of all the storm drainage pipes with the length, slope, and material type indicated in the labeling of the storm drainage pipes. Provide arrows to indicate the direction of flow into the structures.

B. Typical ditch section.

C. Location of manholes and catch basins. Indicate type, stationing, offset, type of lid, rim and invert elevations, and number manholes and catch basins consecutively.

D. Existing and proposed sanitary sewers and water mains. Identify crossings and minimum distance between utilities.

E. Building downspouts or footing drain locations, inverts and connections to the storm drain system.

F. For single-family home sites, indicate means for collection and discharge of water from roof, foundation drains, wall drains, and driveways.

G. Provide arrows to indicate drainage direction in parking lots, roadway intersections and cul-de-sacs.

H. Reference to the detail/BMP and/or cross-section sheets for storm drainage detention or retention facilities such as the control discharge structure and pond cross-sections. Indicate water surface elevations, allowable discharge rates, and design storms.

I. Show an emergency overflow to the public storm drainage system.

J. Berm dimensions, material, and compaction requirements for ditches and detention ponds.

K. Indicate type of material and size of energy dissipaters (riprap, etc.).

L. Provide details of the storm drainage water quality facility.

M. Limits of surface water ponding within parking lots.

N. Trash racks.

O. Location and widths of easements.

P. Location and type of pumps.

Q. Stormwater treatment/quality control facility location, length, width, slopes, and cross-section.

R. Planting and seeding requirements with establishment procedure (construction sequence) for water quantity or quality systems.

S. Finish floor elevations of all buildings.

T. Indicate separation from any pipe, infiltration trench, open ditch, water quality and stormwater facilities to any property line, structure and obstruction.

U. For ponds, provide landscaping, fencing, maintenance access, critical water surface elevations, and other items, such as walls and liners.

V. Number the storm drain structures (Numbers will be provided by the City prior to final plan approval).

W. Low Impact Development (LID) facility location, length, width, slopes, and cross-section.

X. Provide the Auburn Storm Drainage Detention Pond Notes as shown in **Appendix B** of this Chapter when public detention ponds are proposed.

3.04.07 Utility Profile Sheet

Utility Profiles are to be included on the associated utility plan sheet(s) with plan view above the profile view and corresponding unique stationing. All existing and proposed parallel and crossing utilities shall be shown on the profile.

3.04.07.A Storm Drainage

Profiles shall be created for all designed storm systems. These profiles are to include the following items where applicable:

A. Structure size, location, type, station, invert elevation, type of lid or grate, rim elevation, stationing and offset.

B. Pipe size, type of material, slope (ft./ft.), and lineal footage.

C. Utility crossings shall identify size and type of utilities involved.

D. Ditches, size, type, and slope.

E. Existing and finished grade along pipe centerline.

F. Connections to existing structures.

3.04.07.B Water

Profiles shall be provided for all public water systems, including on-site systems and systems within the street/City right of way and easements, These profiles shall include the following items where applicable:

A. Pipe size, type of material, lineal footage, cover, stationing and offset.

B. Utility crossings shall identify size and type of utility involved.

C. Existing and finished grade along pipe centerline.

D. Connections to existing mains and fittings.

E. Label fittings and valves, including concrete blocking.

3.04.07.C Sanitary Sewer

A profile will be required for all public sanitary sewer mains. These profiles are to include the following items where applicable:

A. Structure size, location, type, station, invert elevations, type of lid, rim elevation, stationing and offset.

B. Pipe size, type of material, slope (ft./ft.), and lineal footage.

C. Utility crossings shall identify size and type of utility involved.

D. Existing and finished grade along pipe centerline.

E. Connections to existing structures.

F. Side sewer locations, stationing and offset.

3.04.08 Public Street Plan and Profile Sheet

When a project includes construction within a public street, excluding utility connections, both a plan and a profile shall be included in the plan set. The Public Street Plan and Profile sheet(s), when required, shall have the applicable items identified below:

3.04.08.A Plan View

The plan view shall include the following items where applicable:

A. Plan views shall be drawn at a 1” = 20’ scale.

B. Existing and proposed rights-of-way.

C. Existing and proposed contours and elevations.

D. Existing and proposed street names.

E. Existing and proposed centerline bearing and distance.

F. Existing and proposed signs and traffic control devices.

G. Existing and proposed storm drainage systems.

H. Existing and proposed sewers and water mains. Identify crossings and minimum distances between utilities.

I. Horizontal curves.

J. Horizontal stationing.

K. Location of curbs, sidewalks, wheelchair ramps, and driveways (by station).

L. Locations of monuments at all centerline intersections, cul-de-sacs, PCs, and PTs by station.

M. Street luminaires, conduit for street lights, traffic signals, and traffic signal loop detectors located within the vicinity of the project.

N. Mailbox types and locations where new or relocated mailboxes are proposed. Submit to postmaster for approval.

O. Address any horizontal utility conflicts in plan.

P. Street landscaping, if required.

Q. Construction limits.

R. Slope excavation and/or embankment limits.

S. Pavement and lane tapers.

T. Identify any non-standard street cross slopes.

U. ADA Maximum Extent Feasible (MEF) documented on the Plans with a notation indicating the deficiency and that the curb ramp was designed to the MEF.

V. All proposed and existing underground and overhead utilities shall be shown and labeled on the plan in grayscale. The locations shall be coordinated and approved through the appropriate utility purveyor.

3.04.08.B Profile

The profile shall include the following items where applicable:

A. Profiles shall be drawn using 1” = 20’ horizontal and 1” = 2’ vertical scales. 1” = 5’ vertical scale may be used in place of 1” = 2’ in areas with steep slopes.

B. Existing and proposed centerline road grade.

C. Existing and proposed storm drainage systems.

D. Existing and proposed sewers and water mains (use ghost lines). Identify crossings and minimum distances between utilities.

E. Existing and proposed flowline grades.

F. Finish grade elevations every 50 feet and every 25 feet for vertical curves along design centerlines.

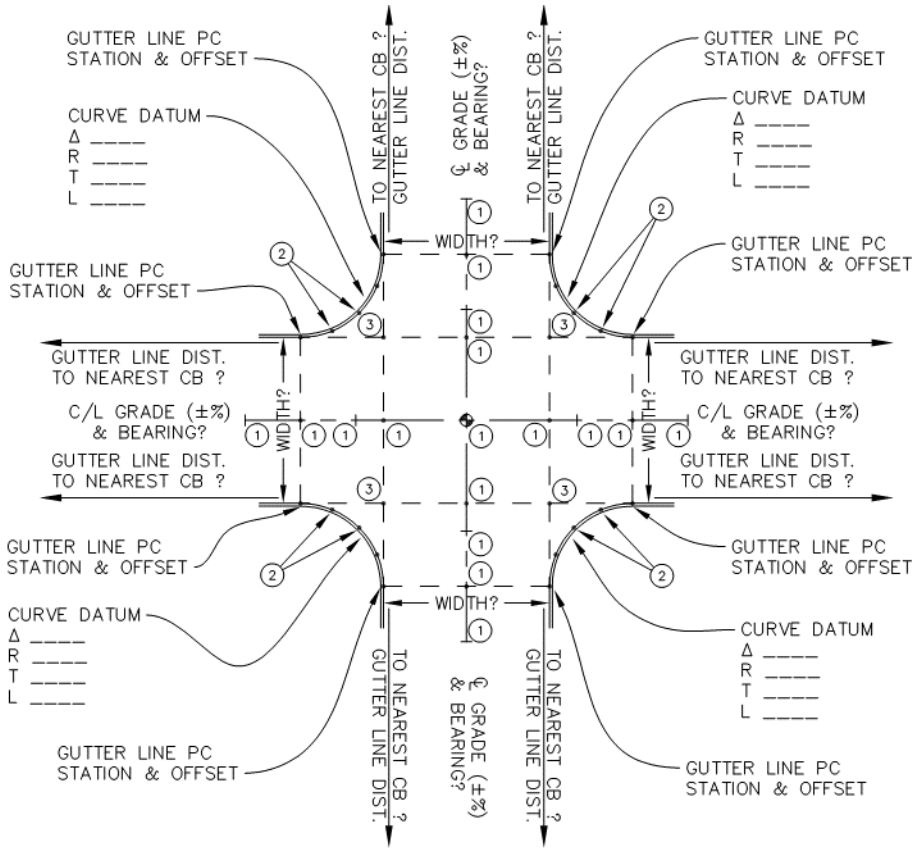
G. Vertical curve information in profile section.

H. Address vertical utility conflicts in profile.

3.04.08.C Intersections

Intersection plans shall be 20 scale drawings in conformance with **Figure 3-1** below:

Figure 3-1 Intersection Plan Sheet Requirements



NOTES:

A. LABEL INTERSECTION & STATIONING. SHOW FINISH ELEVATIONS AT:

(1) CENTER LINES, AS SHOWN.

(2) GUTTER LINE RADII: PC'S, PT'S, ¼ POINTS, & HIGH/LOW POINTS.

(3) GUTTER LINE PI'S.

B. IF RADIUS POINT FOR R.O.W. & GUTTER LINE DIFFER, PROVIDE DATA OF R.O.W. CURVE.

C. LABEL CENTERLINE INTERSECTION EQUATION STATIONS (IF APPLICABLE).

3.04.08.D Typical Roadway Sections

Typical roadway sections shall show pavement depths, widths and materials, cross-slopes of pavement (%), centerline, dimensioned right-of-way lines, curb and gutter, ditches, embankment and excavation slopes (1H:1V), walls, etc. Typical sections will be labeled within identified station ranges.

3.04.08.E Striping and Signing

Provide maximum 40 scale plans per these Standards, Auburn City Code, WSDOT and MUTCD, including lane markers, pavement markings, and signing.

3.04.08.F Signalization

Provide 20 scale separate detailed signalization plan per City of Auburn Standards, including poles, bases, conduits, and traffic loops.

Signal Plan Sheet

1. The plan sheet shall conform to the following requirements:
    a. For areas that require greater detail (such as the corner that has the controller), a blown-up detail may be necessary at a 1″=10′ scale.
    b. All proposed signal equipment, including signal poles, mast arms, heads, signs, junction boxes, conduit, loops, controller, and service cabinet shall be shown as bold.
    c. All existing and proposed right-of-way information shall be shown and labeled on the plan, including easements needed for signal equipment. The line type shall be different for easements and right-of-way.
    d. All proposed curb, sidewalk, proposed striping, and existing curb/striping (to remain) information shall be shown on the plan in gray scale (screened back).
    e. Sight triangle lines shall be shown on plans in gray scale.
    f. All proposed and existing underground and overhead utilities shall be shown and labeled on the plan in gray scale.
    g. Provide on the plan signal construction notes as shown in **Appendix B** of this chapter.
2. Construction notes shall contain, but not be limited to:
    a. Signal pole and foundation installation (including pole type, mast arm length, and installation of items on the pole).
    b. Controller cabinet and foundation installation.
    c. Coordination of utility removal/relocation.
    d. Coordination of connection of power, and power source type.
    e. Interconnect connection to other signals.
    f. Removal of existing signal and/or street light equipment.
3. Displays: The plan sheet shall include the following displays:
    a. Phase diagram display.
    b. Signal display showing signal layout of all vehicle signal heads and pedestrian heads.
4. Detection: The plan sheet shall include:
    a. Stop bar, intermediate and advanced loop location, and numbering.
    b. Pedestrian push button location.
    c. Preemption detection location and numbering.
5. Signal Poles and Associated Equipment: The plan sheet shall contain, but not be limited to:

a. Signal Pole Locations and Numbering: The locations shall be called out by the major arterial station and offset.
b. Signal head location and numbering.
c. Pedestrian head location and numbering.

6. Controller and Service Location:

   At least one corner of the controller/service foundation shall be called out by the major arterial station and offset. The footprint of the foundation shall be shown on the plans with the controller and service cabinets oriented on the foundation as they would be placed in the field. If the information required to show all the controller/service conduit connections and foundation footprint makes the plan too cluttered, a blown-up detail of the corner containing this information is needed at a 1″=10′ scale.

7. Power Source Location:

   The location of the power source shall be identified on the plans.

8. Wire Schedule:

   a. A wire schedule table shall include run numbers, conduit size, wire type, and comments.
   b. Comments shall include, but not be limited to, number of twisted loop pairs for runs between the detection loops and adjacent junction box, identification of spare conduits, conduits utilized only by interconnect or illumination, and power cables.
   c. For designs that include modifications to an existing signal, all existing wire runs affected by the design shall be shown on the wire schedule.

9. Junction box type and approximate location.

10. Signing:

    a. Signs shall be shown on all mast arms. Signs that are post mounted but are signal related (such as a “signal ahead” sign) shall be shown on the signal plan.
    b. A sign display shall be shown on the plan with the MUTCD sign designation, dimensions, and lettering type for all signs.
    c. Indicate removal of existing stop signs after signal is in operation.
    d. Installation of “New Signal Ahead” or “Signal Revision Ahead” signs.

11. Other Illumination:

    a. Proposed illumination that will use the signal service cabinet, but is located outside the four quadrants of the intersection, shall be shown as proposed on a separate illumination plan sheet. On the signal plan sheet, the illumination shall be shown as gray scale and labeled as “proposed illumination, see illumination plans.” However, once the illumination enters the quadrants of the intersection (i.e., when it is using the same junction box as the signal equipment), it shall be shown as proposed on the signal plan and gray scale on the illumination plan.
    b. Indicate the circuit that street lights are on.

Wire Diagram Plan

In general, the wire diagram shall include the following:

1. All signal heads, pedestrian heads, pedestrian push buttons, luminaires, preemption detectors, loops, and junction boxes drawn in schematic forms.

2. All termination points in the controller cabinet. The wire diagram shall include every termination point the controller will have, including those that may not be used for this particular signal design.

3. All wiring associated with the items above, as well as the wiring for interconnect. The wire diagram shall show how these items are connected to the controller.

4. Location of wire splices.

5. All termination numbering at each end of each wire. For example, the 5-conductor cable connecting a signal head to the controller shall have the termination numbering called out at the signal head and in the termination points in the controller.

6. All wire colors at each end of the wire.

7. A call out to each wire run noting the number and type of each wire.

8. Intersection schematic with a north arrow showing approach phase.

9. Pole, signal head, pedestrian head, preemption detection, and loops shall be numbered on the wire diagram.

Pole Schedule Plan

The pole schedule shall include the following:

1. A signal standard detail chart.

2. Pole orientation attachment and base detail, pole foundation detail, and signal standard detail.

3.04.08.G Illumination

A. Street Light Plans shall be labeled as Street Light Plans, and shall be prepared, stamped, signed, and dated by a professional engineer.

B. Street Light Plans will include references to all applicable City of Auburn Standard Details and/or Washington State Department of Transportation (WSDOT) Standard Plans, or copies of other specific details applicable to the project shall be shown on the plans.

C. Plans should show any proposed street trees and underground utilities in the background.

D. Street Light Plans shall be provided on separate and uncluttered sheets that do not show unrelated street, utilities, or on-site improvements. Street Light Plans shall be drawn to a maximum engineer's scale of 1" = 40'.

E. Street Light Plans shall at a minimum include the following applicable items for new or existing street lighting system:

1. Lighting schedule with the following information in a table format:
    a. Luminaire make and model
    b. Lamp/Ballast type
    c. Lamp wattage
    d. Uniformity Ratio
    e. Minimum Light Level
    f. Average Maintained Light Level
    g. Light standard type
    h. Mounting height (ft.)
    i. Bracket or davit arm length (ft.)
    j. Light distribution pattern
    k. Luminaire spacing distance (ft.)
2. Light standard locations by station and offset from the centerline of the street to the center of the light standard. Show all existing street lights for a distance of 500 feet in both directions from the limits of the project site, including both sides of the street(s) and in medians.

F. Wiring/Conduit schedule with the following information in a table format:

1. Circuit number
2. Conduit size, material, and purpose (street lighting, traffic signal interconnect, spares, etc.).

G. Location of points of service (the PSE connection or service location and the new or existing City Electrical Service Cabinet(s).

H. Location of junction boxes. Indicate junction box type and purpose (lighting, traffic signal, etc.).

I. Existing topography, including but not limited to the location of driveways, street trees (including species), street intersections, overhead utilities (including maximum and minimum heights), underground utilities (including sizes), medians, curb, and lane widths (pavement markings).

3.04.08.H Streetscape

Provide information on planting of the public landscape strips along the street frontage. Information shall include the following:

A. Type and size of trees.

B. Tree spacing.

C. Type of ground cover.

D. Root control/barrier.

E. Irrigation if applicable.

F. Show all proposed and existing surface features and underground utilities.

3.04.08.I Other Features

Include locations of any other feature including mailboxes and bus stops. Any mailbox placement that requires approval from the postmaster shall include the Postmaster **Approval Block (B-2) in Appendix A** of this chapter.

3.04.09 Site and Landscape Plan Sheet

The site and landscape sheets (separate plans may be more appropriate), when required, shall have the following applicable items:

A. Demonstrate conformance with ACC 18.50, “LANDSCAPING AND SCREENING” and ACC 18.52 “OFF-STREET PARKING AND LOADING”.

B. Label name, classification, and boundary of adjacent streets both public and private.

C. Pavement types with unique hatching.

D. Site signage and striping.

E. The boundaries and dimensions of site.

F. Show and label any easements.

G. Show and label any critical areas and buffers affecting the site.

H. The location of on-site buildings and their eaves or protrusions (decks, porches, covered entries, etc.) and other site features (generators, compressors, retaining walls, fuel tanks, etc.).

I. The location of on-site parking stalls, drive aisles, and loading/unloading areas and required fire lanes with dimensions.

J. The location and size of landscape areas (measured to the inside of curbs).

K. Landscape area calculations as required by ACC 18.50.040, “Landscape development standards.”

L. The species (common and scientific name), condition (bare root, balled & bur lapped) or containerized) and size of planting materials (shown within a “planting schedule”).

M. Notation of which species are native to, or adapted to the Pacific Northwest (minimum 50%).

N. Site preparation specifications (removal of construction debris, soil amendment, fertilizer, etc.).

O. The location and type of non-vegetated groundcovers such as rock, mulch, etc.

P. The location, size, and proposed screening of outdoor storage areas and dumpster/refuse areas.

Q. The location, species, and size (diameter at DBH) of all existing trees and measures to protect them.

R. Show all proposed and existing surface features and underground and above-ground utilities affecting the site.

S. Landscaping notes, including:

   a. Plant materials list substitutions requiring city approval and possibly "as-built plans."

   b. Planting notes (e.g., when to remove tree stakes).

   c. Soil quality and installation.

   d. Maintenance after installation.

T. Site furnishings such as light posts, bike racks, benches, trash cans, and shopping cart racks.

3.04.10 Site Irrigation Plan sheet

The site irrigation sheets, when required, shall have the following applicable items:

A. The connection point to the City system, together with the water meter size.

B. The size, location, and type of the backflow prevention.

C. The proposed layout of the irrigation system.

D. Be consistent with the site's building and landscaping plans.

E. Show the existing and/or proposed location of all parcel lines.

3.04.11 Critical Area Restoration/Mitigation

A critical area restoration or mitigation sheet, when required, shall include the items as required by the City pursuant to ACC 16.10 and 15.68.

3.04.12 Phasing Plans

Applications that propose to complete projects in phases shall submit a phasing plan which incorporates all required conditions of approval and details infrastructure improvements and sequencing of the phases. Prior to occupancy of any buildings within a phased project, complete construction, inspection, acceptance, and transfer of ownership to the City via Bill of Sale as well as recorded easements are required for all public utilities (water, sewer, & storm) serving the building and public road improvements/right of way dedications must be complete. If the private utilities are proposed to be constructed in phases, the points of connection between phases and how the future phases will be constructed without affecting the operation of the previous phases must be shown.

Phasing plans are subject to approval by the City Engineer and Building Official and shall include the following information:

1. Illustrative maps for each proposed phase which clearly mark in heavy lines the boundaries of the subject phase, label the phase alphabetically (to avoid confusion with lot numbers), and depict roads, lots, infrastructure, easements, dedications and open space which are included within the subject phase. The plan shall also illustrate those proposed improvements which mitigate impacts associated with the unbuilt portions of the project which are not located within the boundaries of the subject phase. Previously established phases, including roads, lots, infrastructure, easements, dedications, and open space, should be shown on the map shaded or gray-scaled. All phasing maps shall be drawn at the same scale.

2. A narrative description or table which describes each phase and its associated improvements. In addition, the narrative or table shall demonstrate that each phase would comprise a “stand-alone” development which, should no subsequent phases be constructed, would meet or exceed City standards and all other conditions of approval. The narrative should also describe the proposed timeline for completion of the entire project. The narrative must address emergency access, street improvements, and alternative construction access.

Appendix A – Approval Blocks

Sample Approval Block (B-1):

PROJECT REF: _____

THESE PLANS ARE APPROVED FOR CONFORMANCE WITH THE CITY OF AUBURN'S REQUIREMENTS.

DEV. REVIEW ENGINEER: _____

DATE APPROVED: _____

Sample Postmaster Approval Block (B-2):

CITY OF AUBURN POSTMASTER APPROVAL

APPROVED BY: _____

TITLE/POSITION: _____

DATE APPROVED: _____

Sample Engineering Approval Block (B-3):

CITY OF AUBURN APPROVALS

THIS PLAN SET FOR PROJECT _____, SHEETS ___ TO ___ ARE APPROVED FOR CONSTRUCTION BY:

_____ , P.E., CITY ENGINEER: _____ DATE: _____

_____, DEV. REVIEW ENGINEER: _____ DATE: _____

_____, PLANNER: _____ DATE: _____

Appendix B – Standard Notes

The following General Notes shall apply to Development projects:

GENERAL NOTES

1. CONSTRUCTION SHALL CONFORM TO THE CITY OF AUBURN'S ENGINEERING DESIGN AND CONSTRUCTION STANDARDS, EXCEPT AS OTHERWISE APPROVED BY DEVIATION, AND BE IN ACCORDANCE WITH THE APPROVED PLANS. ANY CHANGES FROM THE APPROVED PLAN WILL REQUIRE APPROVAL FROM THE OWNER, ENGINEER OF RECORD, AND THE CITY.

2. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE "WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT) STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION (CURRENT EDITION)," EXCEPT WHERE SUPPLEMENTED OR MODIFIED BY THE CITY'S CONSTRUCTION STANDARDS MANUAL. THE ABOVE DOCUMENTS SHALL BE AVAILABLE AT THE JOB SITE DURING CONSTRUCTION.

3. A PRE-CONSTRUCTION MEETING SHALL BE REQUIRED PRIOR TO THE START OF ALL CONSTRUCTION. CONTACT THE PUBLIC WORKS DEPARTMENT AT (253) 931-3010, TO SCHEDULE A MEETING.

4. UNLESS STATED OTHERWISE, LOCATIONS SHOWN FOR EXISTING UTILITIES ARE APPROXIMATE. THE CONTRACTOR IS CAUTIONED THAT OVERHEAD UTILITY LINES MAY NOT BE SHOWN ON THE DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE TRUE ELEVATIONS AND LOCATIONS OF ALL UNDERGROUND UTILITIES AND THE EXTENT OF ANY HAZARD CREATED BY OVERHEAD UTILITY LINES. IDENTIFICATION, LOCATION, MARKING, AND RESPONSIBILITY FOR UNDERGROUND FACILITIES OR UTILITIES, IS GOVERNED BY THE PROVISIONS OF SECTION 19.122 REVISED CODE OF WASHINGTON (RCW). PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL CALL ONE-CALL (811) FOR UTILITY LOCATIONS (WATER, SANITARY SEWER, STORM SEWER, GAS, POWER, TELEPHONE, AND CABLE).

5. IF A PROPOSED ROUTE IS NOT INCLUDED ON THESE PLANS, A PROPOSED ROUTE AND SCHEDULE FOR HAULING MATERIAL TO THE SITE SHALL BE SUBMITTED TO THE CITY FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION. IF THE CITY BELIEVES THAT THE PROPOSED HAUL ROUTE WILL ADVERSELY IMPACT THE STREET NETWORK, A SEPA AMENDMENT MAY BE REQUIRED TO EVALUATE THE IMPACTS AND DETERMINE MITIGATION REQUIREMENTS BEFORE BEGINNING WORK. HAULING MAY BE LIMITED TO APPROPRIATE OFF-PEAK HOURS OR ALTERNATIVE ROUTES, AS DETERMINED BY THE CITY.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PUBLIC SAFETY ON AND AROUND THE PROJECT. PRIOR TO THE START OF WORK, ALL METHODS AND EQUIPMENT USED FOR TRAFFIC CONTROL AND STREET MAINTENANCE SHALL BE SUBMITTED TO THE CITY FOR APPROVAL. CONTRACTORS AND THEIR SURETY SHALL BE LIABLE FOR INJURIES AND DAMAGES TO PERSONS AND PROPERTY SUFFERED BECAUSE OF CONTRACTORS OPERATIONS OR NEGLIGENCE CONNECTED WITH THEM.

7. ALL CONSTRUCTION SURVEYING FOR EXTENSIONS OF PUBLIC FACILITIES SHALL BE DONE UNDER THE DIRECTION OF A WASHINGTON LICENSED LAND SURVEYOR OR A WASHINGTON LICENSED PROFESSIONAL CIVIL ENGINEER.

8. CERTIFIED DRAWINGS ARE REQUIRED PRIOR TO PROJECT ACCEPTANCE. REFER TO THE CITY'S "DEVELOPMENT RECORD CONSTRUCTION DOCUMENT" HANDOUT.

GRADING AND EROSION CONTROL NOTES

1. WITHIN THE CITY OF AUBURN, ALL REQUIRED SEDIMENTATION AND EROSION CONTROL FACILITIES INDICATED ON THE PLANS MUST BE CONSTRUCTED AND IN OPERATION PRIOR TO LAND CLEARING AND/OR OTHER CONSTRUCTION ACTIVITIES. THESE FACILITIES SHALL BE MAINTAINED AND UPGRADED, IF NECESSARY, TO ENSURE THAT SEDIMENT-LADEN WATER AND STORM DRAINAGE RUNOFF DOES NOT IMPACT THE ADJACENT PROPERTIES, NATURAL DRAINAGE WAYS, OR THE EXISTING CITY STORM DRAINAGE SYSTEM.

2. THE SOURCES FOR ALL MATERIAL IMPORTED TO THE SITE SHALL BE APPROVED BY THE CITY.

3. THE STORM DRAINAGE DETENTION (RETENTION IF INFILTRATION SYSTEM IS USED), SEDIMENTATION AND EROSION CONTROL FACILITIES DEPICTED ON THE APPROVED DRAWINGS ARE INTENDED TO BE MINIMUM REQUIREMENTS TO MEET ANTICIPATED SITE CONDITIONS. ADDITIONAL DRAINAGE AND EROSION CONTROL FACILITIES MAY BE REQUIRED AS SITUATIONS WARRANT DURING CONSTRUCTION. THE IMPLEMENTATION, MAINTENANCE, REPLACEMENT AND ADDITIONS TO THESE CONTROL SYSTEMS SHALL BE THE RESPONSIBILITY OF THE PERMITEE.

4. THE TEMPORARY EROSION CONTROL FACILITIES, INCLUDING ALL PERIMETER CONTROLS AND THE DETENTION (RETENTION IF INFILTRATION SYSTEM IS USED), CONTROL PONDS, SHALL REMAIN IN PLACE UNTIL FINAL SITE CONSTRUCTION IS COMPLETED. AFTER CITY APPROVAL, THE CONTRACTOR WILL BE RESPONSIBLE FOR REMOVING ALL TEMPORARY FACILITIES.

5. THE CONTRACTOR WILL BE REQUIRED TO WATER THE SITE, AS NECESSARY, TO REDUCE DUST EMISSIONS AS A RESULT OF CONSTRUCTION ACTIVITY.

6. NO TRACKING IN THE ROADWAY IS ALLOWED. IF SEDIMENT IS TRACKED ONTO THE ROAD, THE ROAD SHALL BE THOROUGHLY AND IMMEDIATELY CLEANED BY SHOVELING OR PICKUP SWEEPING. TRANSPORT SEDIMENT TO A CONTROLLED SEDIMENT DISPOSAL AREA. KEEP STREETS CLEAN AT ALL TIMES.

7. ALL AREAS OF ACTIVE EARTHWORK WHICH HAVE THE POTENTIAL FOR EROSION AND SEDIMENTATION IMPACTS ON ADJACENT PROPERTIES, NATURAL DRAINAGE WAYS, OR THE EXISTING CITY STORM DRAINAGE SYSTEM MUST BE STABILIZED ACCORDING TO THE FOLLOWING SCHEDULE: FROM MAY 1 TO SEPTEMBER 30, AREAS AT FINAL GRADE AND THOSE THAT ARE SCHEDULE TO REMAIN UN-WORKED FOR MORE THAN SEVEN (7) DAYS SHALL BE STABILIZED. FROM OCTOBER 1 TO APRIL 30 EARTHWORK ACTIVITIES SHALL BE CONDUCTED IN STAGES IN ORDER TO MINIMIZE SOIL EXPOSURE. EXPOSED

SOILS THAT WILL REMAIN UN-WORKED FOR MORE THAN TWO (2) DAYS SHALL BE STABILIZED IMMEDIATELY.

STORM DRAINAGE DETENTION POND NOTES

PUBLICLY OWNED AND MAINTAINED DETENTION FACILITIES SHALL MEET THE FOLLOWING REQUIREMENTS:

1. ALL POND CONSTRUCTION, LANDSCAPING, AND TEMPORARY IRRIGATION, IF USED AS NOTED BELOW, SHALL BE COMPLETED PRIOR TO SCHEDULING AN INITIAL PUNCHLIST INSPECTION. THE GRASS SHALL HAVE SPROUTED OVER AT LEAST 80% OF THE AREA TO BE SEEDED.

2. ALL POND ACCESS RAMPS SHALL BE CONSTRUCTED WITH A MINIMUM OF 8" COMPACTED BASE COURSE TOPPED WITH A MINIMUM OF 2" COMPACTED TOP COURSE. THE POND RAMP SUBGRADE SHALL BE COMPACTED TO A MINIMUM OF 95% MODIFIED PROCTOR.

3. THE POND SIDE SLOPES SHALL BE SCARIFIED, AND ALL VEGETATIVE AND CONSTRUCTION DEBRIS AND ROCKS LARGER THAN 2 INCHES SHALL BE REMOVED PRIOR TO HYDROSEEDING. HYDROSEEDING SHALL BE APPLIED OVER THE ENTIRE DETENTION POND BOTTOM (OR ON THE SLOPES ABOVE THE WATER QUALITY ELEVATION FOR WETPONDS) UP TO THE TOP OF THE BERM.

4. THE POND BOTTOM AND ALL INTERIOR SIDE SLOPES PER REQUIREMENT 3 ABOVE SHALL BE SEEDED WITH THE FOLLOWING GRASS MIXTURE:

TURF-TYPE TALL FESCUE AT	40%;
TURF-TYPE PERENNIAL RYE AT	30%;
RED FESCUE AT	25%;
COLONIAL BENTGRASS AT	5%

5. APPLICATION RATE: HYDROSEED AT 60 LBS/ACRE; HAND SEED AT 2 LBS/1,000 SQUARE FEET.

6. THE NEED FOR WATERING TO ESTABLISH THE HYDROSEEDING WILL DEPEND ON WHAT TIME OF YEAR THE HYDROSEEDING IS APPLIED AND HOW LONG IT TAKES FOR THE SEED TO BE ESTABLISHED. IF A TEMPORARY IRRIGATION SYSTEM IS USED, IT SHALL BE ATTACHED TO THE FENCE OR PLACED AT LOCATIONS THAT DO NOT INTERFERE WITH MOWING.

7. THE CONTRACTOR IS RESPONSIBLE FOR WEED CONTROL AND REMOVAL OF LITTER PRIOR TO PLANTING AND THROUGHOUT THE PLANT ESTABLISHMENT PERIOD.

8. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING THE TEMPORARY IRRIGATION SYSTEM PRIOR TO EXPIRATION OF THE 1-YEAR WARRANTY PERIOD.

FIRE SPRINKLER SYSTEMS NOTES

SPRINKLER SYSTEMS SHALL MEET CITY OF AUBURN STANDARD 7.06.02 AND THE FOLLOWING REQUIREMENTS:

1. PROPOSED FIRE LINE TO BE SIZED BY A FIRE PROTECTION ENGINEER.

2. BACKFLOW PROTECTION IS REQUIRED ON FIRE SPRINKLER LINES.

3. A SEPARATE DETAILED PLAN OF THE UNDERGROUND FIRE SPRINKLER SUPPLY LINE SHALL BE APPROVED BY THE FIRE MARSHAL AND INSTALLED BY A WASHINGTON STATE CERTIFIED LEVEL “U” CONTRACTOR IN ACCORDANCE WITH WAC 212-80-010.

4. A POST INDICATOR VALVE SHALL BE INSTALLED ON THE FIRE SPRINKLER SUPPLY LINE TO ISOLATE THE SYSTEM FROM THE CITY’S WATER SYSTEM WHEN REQUIRED FOR REPAIR.

5. BLOCKING, PIPING, AND RODDING DETAILS SHALL BE PROVIDED WITHIN THE SUBMITTAL.

6. APPROVAL OF THE CIVIL PLANS DOES NOT APPROVE THE INSTALLATION OF THE SPRINKLER SYSTEM SUPPLY PIPING.

CROSS CONNECTION CONTROL NOTES

CROSS CONNECTION CONTROL SHALL MEET THE FOLLOWING REQUIREMENTS:

1. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE INSTALLED IN A MANNER THAT WILL ALLOW PROPER OPERATION, AND IN-LINE TESTING AND MAINTENANCE.

2. A BACKFLOW ASSEMBLY PERMIT IS REQUIRED FOR ALL ASSEMBLIES INSTALLED WITHIN THE CITY OF AUBURN, AND/OR THE CITY’S WATER DISTRIBUTION SYSTEM.

3. BACKFLOW ASSEMBLIES MUST BE ON THE CURRENT WASHINGTON STATE DEPARTMENT OF HEALTH – BACKFLOW ASSEMBLIES APPROVED FOR INSTALLATION LIST.

4. BACKFLOW ASSEMBLIES MUST BE TESTED BY A STATE CERTIFIED BACKFLOW ASSEMBLY TESTER, AND INSPECTED AND APPROVED BY A CITY OF AUBURN CROSS CONNECTION CONTROL SPECIALIST.

5. UPON RECEIVING APPROPRIATE FEE PAYMENTS AND VERIFYING THAT REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) HAS BEEN INSTALLED (NOT BY CITY), THE CITY WILL INSTALL THE DOMESTIC METER INSIDE THE DOMESTIC METER BOX. THE PASSING TEST REPORT FOR THE RPBA MUST BE RECEIVED BY THE CITY WITHIN 72 HOURS OF THE INSTALLATION OF THE DOMESTIC METER.

6. UPON RECEIVING APPROPRIATE FEE PAYMENTS AND VERIFYING THAT DOUBLE CHECK VAULT ASSEMBLY (DCVA) HAS BEEN INSTALLED (NOT BY CITY), THE CITY WILL INSTALL THE IRRIGATION METER INSIDE THE IRRIGATION METER BOX. THE PASSING TEST REPORT FOR THE DCVA MUST BE RECEIVED BY THE CITY WITHIN 72 HOURS OF THE INSTALLATION OF THE IRRIGATION METER.

7. DOUBLE CHECK VALVE ASSEMBLY (DCVA, NOT BY CITY) TO BE INSTALLED BY THE CONTRACTOR ONTO THE FIRE SERVICE LINE, THE PASSING TEST REPORT FOR THE DCVA MUST BE RECEIVED BY THE CITY WITHIN 72 HOURS OF THE CONNECTION OF THE BUILDING FIRE SERVICE LINE TO THE CITY MAIN.

SIGNAL CONSTRUCTION NOTES

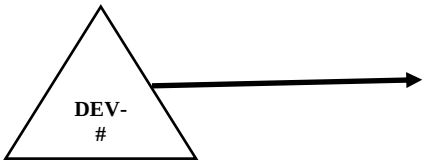
1. THE LOCATION OF ALL CONDUIT, JUNCTION BOXES, AND CABINETS SHOWN ON THIS PLAN ARE FOR GRAPHIC PRESENTATION ONLY AND FINAL LOCATION SHALL BE DETERMINED BY THE ENGINEER.

2. ALL TRAFFIC SIGNAL AND PEDESTRIAN HEADS AND PUSH BUTTONS SHALL BE SECURELY AND COMPLETELY COVERED WHILE SIGNAL IS NOT IN OPERATION.

3. ALL CONDUCTORS FOR SIGNAL HEADS, LOOPS, PEDESTRIAN HEADS, PUSH BUTTONS AND STREET LIGHTS SHALL BE LABELED IN EACH JUNCTION BOX.

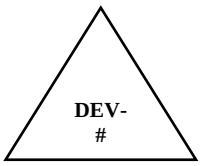
Appendix C – Deviations, Maximum Extents Feasible, and Deferral/Fee-In-Lieu

Plan Sheet Deviation Call-Out:



- Leader arrow points to deviation location.
- DEV-# is the City assigned deviation number.

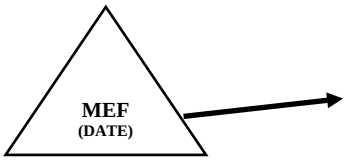
Plan Sheet Deviation Description:



SECTION X.X.X OF THE _____, APPROVED _____.

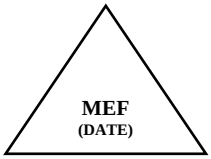
- Description is included with the construction notes on the plan sheet where the deviation is located.
- Description includes a specific citation to the Construction Standards, Design Standards, or SWMM Supplement, as applicable to the Deviation Request.
- Includes approval date in mm/dd/yyyy format.
- Includes a brief description stating why the deviation was allowed, as provided by the City.

Plan Sheet Maximum Extents Feasible (MEF) Call-Out:



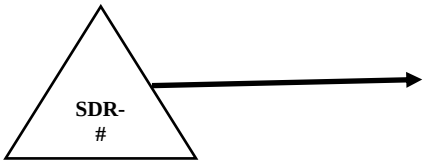
- Leader arrow points to the MEF location. Date is City approval date in mm/dd/yyyy format.

Plan Sheet MEF Description:



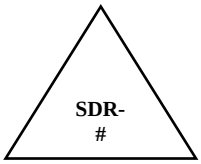
- Description is included with the construction notes on the plan sheet where the MEF is located.
- Description explains what aspect of the facility does not meet ADA requirements and what is constraining it from meeting requirements.
- Includes approval date in mm/dd/yyyy format.

Plan Sheet Deferral (Street Delay) or Fee-In-Lieu Call-Out:



- Leader arrow points to deviation location.
- SDR-# is the City assigned street delay number.

Plan Sheet Deferral (Street Delay) or Fee-In-Lieu Description:



- Description is included with the construction notes on the plan sheet where the deferred improvements would have been located.
- Description includes a summary of the deferred improvements.

Appendix D – Survey Standards

COA Horizontal Datum & Basis of Bearing Information (Ref RCW 58.09.060; WAC 332-130-050)

The City of Auburn's horizontal datum is NAD83(1991), Washington State Plane Coordinates, North Zone, 4601

Basis of Bearings: Provide the observed or calculated bearing between two existing, recoverable monuments, along with NAD83(1991) coordinates and an accurate physical description of the monuments, including type, size and date visited. Clearly depict on the survey map ties to the project site from the basis of bearings.

For Example:

HORIZONTAL DATUM
NAD83(1991), Washington State Plane Coordinates, North Zone, 4601
Basis of Bearings:
The monumented centerline of 17th Street NE from COA Mon 509-036 at the intersection of Auburn Way North to COA Mon 509-010 at the intersection of I Street NE = S 89°04'04" E

COA Mon 509-036	**COA Mon 509-010**
N: 121004.23	**N: 120994.54**
E: 1296131.38	**E: 1296726.97**
DESC: Encased brass disk with "X"	**DESC: Encased brass disk with punch**

COA Vertical Datum & Benchmark Information (Ref WAC 332-130-050)

The City's vertical datum is NAVD88

Provide Project Benchmark information that includes a physical description of the benchmark, date visited and elevation. Clearly depict the project benchmark on the survey map. If the project benchmark is located a significant distance from the project site, it is recommended that a site benchmark be established in close proximity to the project site and also clearly labeled and depicted on the survey map.

For example:

VERTICAL DATUM
NAV88
Project Benchmark: COA 509-036 (BM B19)
Brass disk in concrete in monument case at SI of Auburn Way North & 17th St NE
Elevation = 65.99 (NAVD88)

Appendix D – Survey Standards (continued)

-- Existing Conditions – Topographic Map Checklist (Ref. WAC 332-130-145)

Topographic elements on maps—Requirements. For the purposes of this section, topographic elements consist of information shown on a map which depicts the horizontal and vertical positions of natural and/or fabricated features and existing terrain surfaces.

The following requirements shall apply to maps that include topographic elements, prepared by professionals registered under chapters 18.43 and 18.210 RCW.

The following elements must be included on every map that includes topographic elements:

☐	1	Name, stamp and dated signature of professional land surveyor licensed in State of Washington who prepared the map drawing.
☐	2	Contact information including company name, address, email address and phone number
☐	3	Location of site, including address (if applicable), tax parcel number, and quarter, quarter section, township and range
☐	4	Legend of symbols used. Symbol size matches in legend and in depiction.
☐	5	North Arrow.
☐	6	Map scale and graphic scale bar
☐	7	Legal description of the subject real property
☐	8	**Horizontal datum**: NAD83(1991), Washington State Place Coordinates (WSPC), North Zone.
☐	9	**Basis of Bearings statement:** Provide the observed or calculated bearing between two existing, recoverable monuments, along with NAD83(1991) coordinates and an accurate physical description of the monuments, including type, size and date visited. Clearly depict on the survey map ties to the project site from the basis of bearings.
☐	10	**Vertical Datum:** NAVD88
☐	11	**Basis of elevations statement:** a listing of reference benchmarks shall be included on the topographic map including elevations, descriptions and date visited.
☐	12	Listing of project benchmarks established on-site or in vicinity including descriptions and elevations clearly labeled and depicted in the map.
☐	13	Statement of horizontal control accuracy per WAC 332-130
☐	14	Clearly depict and label contours and intervals.
☐	15	Statement of elevation and contour accuracy.
☐	16	Statement on intended use and limitations of topographic elements shown on the map.
☐	17	Statement on the source of boundary information and methods used to relate area mapped to said boundaries. Provide indexing information for all record documents referenced.
☐	18	Statement specifying the source of all utilities depicted on the map (such as “surface markings”, “as-built drawings”, “potholing” or “field measurements”)
☐	19	Statement specifying the accuracy of all utilities depicted on the map (such as “locations of underground utilities shown hereon are based upon field measurements” or “…based upon City of Auburn Project CP1099 As-Built drawings”)
☐	20	Statement specifying the scope of work between the project owner and professional land surveyor regarding the comprehensiveness, exclusions, and limits of the utility investigations leading to utility depictions.

Appendix E – Minor Grading Permit Criteria

Except as approved otherwise by the City Engineer, projects meeting all of the following criteria qualify for a Minor Grading Permit Submittal:

A. The project is located on a single family parcel with an existing home, and does not include the construction of a new single family home (accessory dwelling unit is not considered a single family home) or the project is a remodel/tenant improvement on a non-residential project with all work occurring inside the existing building that is not exempt from a grading permit per ACC 15.74.

B. The project does not include the construction of public improvements and right of way dedications.

C. Project does not construct walls that are over 7-feet tall that are within a setback area (typically within 10 feet from the property line).

D. Combined cut and fill earthwork is less than 200 CY. Earthwork is calculated by adding cut and fill quantities together, no net earthwork volume.

E. Grading activities do not change existing drainage patterns and are not within 10-feet of the property line.

F. Project disturbs less than 1 acre of area.

G. Total area of new and/or replaced hard surfaces is less than 5,000 SF.

H. The project is a remodel/tenant improvement on a non-residential project that is inside of a building that is not exempt from a grading permit per ACC 15.74.

A project proposing 2,000 SF or more of new and/or replaced hard surfaces may qualify for a Minor Grading Permit in circumstances where the 2,000 SF threshold is exceeded due to utility work. Restoration associated with the utility work must replace the ground surface with in-kind materials with similar runoff characteristics. Applicability of this criteria to be determined at the discretion of the City Engineer, or designee.

Submittal Requirements – Refer to the Minor Grading Permit Guide on the City's website under Forms for minimum submittal requirements.

Contact the Development Engineering team at development@auburnwa.gov for a plan template, if eligible for the scope of work proposed.

All other projects requiring a Grading Permit shall submit a Grading Permit per the Civil Submittal Handout.

Appendix F – AutoCAD Layers Standards

FORMAT: Digital files shall be provided in AutoCAD 2019 (2018 format) or older ".DWG" format. All support files required to display or plot the files in the same manner as developed shall be delivered along with these files. Scanned hard copy drawings using raster-to-vector conversion will not be an acceptable digital format. AutoCAD files shall be prepared in accordance with the Layers Standard included in Appendix F, Chapter 3 of the City of Auburn Engineering Design Standards and the latest version of the United States National CAD Standard (NCS).

MEDIA: Digital files shall be submitted via an electronic delivery method acceptable to the City of Auburn. Disks and/or drives shall be clearly labeled with the project name, drawing name(s), name of the drafting/engineering company or individual(s), date, and appropriate City of Auburn identifiers (e.g., BLD#, FAC#, etc.).

SPATIAL REFERENCES: Drawings will be at full scale and shall be accurately located in State Plane Coordinates Washington North Zone, 4601, and tied to two existing and recoverable City of Auburn horizontal control monuments. Datum will be noted on the drawings. All drawings shall use survey control datum NAD 83/91 for horizontal control and NAVD 88 for vertical control.

CONTENTS: The digital drawing files shall include, at a minimum, the following:

The overall project site plan showing new and existing construction, property lines, easements, and survey references.
New and existing water, sanitary sewer, and storm drainage elements showing location, size, and material of utility lines and structures.
Separate layering showing existing impervious surfaces, new impervious surfaces, and annotation on the area of each in square foot units. Layer features for impervious surfaces shall be created from closed polylines to aid in verifying calculations of impervious surface area.

DOCUMENTATION: Final recorded changes shall be clearly reflected when Certified Record Construction Drawings are processed. Proposed features shall use the layer names and descriptions given below. Any layers included that do not meet the descriptions below shall be accompanied by a detailed list of layers and layer descriptions.

Appendix F – AutoCAD Layers Standards (continued)

Proposed Feature	AutoCAD Layer Name
Commercial Fiber – Polyline	C-COMM-FIBR
Conduit: Polyline	C-COMM-CDNT
Easements – Polygon	C-PROP-ESMT
Power Service Cabinets – Point	C-POWR-VALT
Sewer Cleanouts – Point	C-SSWR-SSCO
Sewer Laterals – Polyline	C-SSWR-LATR
Sewer Mains: Polyline	C-SSWR-PIPE
Sewer Manholes – Point	C-SSWR-MHOL
Sidewalks – Polygon	C-PVMT-CONC-SDWK
Storm Catch Basins – Point	C-STRM-STRC
Storm Culverts – Polyline	C-STRM-CULV
Storm Manholes – Point	C-STRM-MHOL
Storm Pipes – Polyline	C-STRM-PIPE
Street Lights – Point	C-POWR-LITE
Street Painted Lines – Polyline	C-ROAD-MRKG
Traffic Signal Cabinets – Point	T-POWR-SGNL-CBNT
Traffic Signal Poles – Point	T-POWR-SGNL-POLE
Traffic Signs – Point	C-SITE-SIGN
Traffic Vaults	T-POWR-VALT
Utility Poles – Point	C-POWR-POLE
Water Auxiliary Equipment – Point	C-WATR-FTTG
Water Hydrants – Point	C-WATR-FHYD
Water Laterals – Polyline	C-WATR-LATR
Water Mains – Polyline	C-WATR-PIPE
Water Meters – Point	C-WATR-METR
Water Valves – Point	C-WATR-VALV
Wetlands – Polygon	C-WETL-DELN

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Chapter 4: Report Preparation Requirements

4.00 Preface

This Chapter describes how technical engineering reports are to be laid out to meet City requirements and provide a format that is easy to follow and understand. Reports need to meet these basic standards in order to move through the review process in an efficient manner.

4.01 General Requirements

The following general requirements shall be met for all technical engineering reports being submitted for review and approval:

A. All reports and calculations shall be prepared, stamped, signed, and dated by a professional engineer.

B. The topographic map prepared for the project shall be prepared, stamped, signed, and dated by a professional land surveyor.

C. All reports and calculations shall be neat, uncluttered, legible, and in conformance with the requirements herein.

D. All engineering reports shall be bound with the civil engineer's stamp clearly visible.

E. Reports shall reference City Standards as necessary.

F. All reports shall be provided in electronic format (PDF).

4.02 Report Types and Requirements

The following are basic types of reports submitted as supporting project information. Depending on the complexity or simplicity of the project and its location, the amount of detail, and the number and types of reports required will be subject to change. The examples given are the typical reports required for a standard project, there may be other reports required that are specific to a particular project.

4.02.01 Geotechnical Reports

Geotechnical reports are required to support the design and construction of various facilities as specified in the ACC, these design standards, the SWMM, the Engineering Construction Standards, and other documents. The geotechnical report format shall include (at a minimum) the following applicable items:

A. Title page including project name and address.

B. General information, which includes existing site conditions.

C. Site history including any prior grading.

D. Subsurface soil information and conditions including seasonal high groundwater and impermeable layer elevations. Seasonal groundwater levels shall be determined using groundwater monitoring well(s) and shall be required where consideration of groundwater levels is a design consideration.

E. Soil log information and locations of explorations.

F. Soil characteristics including suitability for fill and compaction requirements.

G. Slope stability analysis.

H. Seismic hazards.

I. Geological hazard areas as defined in the ACC 16.10.

J. Site plan showing the topography and proposed structures and paving.

K. Grading information including depth of cuts and recommended slopes.

L. Recommendations on temporary erosion and sediment control.

M. Conclusions and recommendations for foundations.

N. Appendix with test pit and boring logs.

O. Information on infiltration rates for use in designing low impact design facilities, retention ponds and infiltration trenches.

P. California Bearing Ratio (CBR) information for pavement design per Section 10.05 or AASHTO Pavement Design.

Q. Additional requirements for geotechnical reports are included in Volume I of the SWMM.

4.02.02 Stormwater Site Plan Report

The Stormwater Site Plan Report shall contain the information as noted in Appendix I-I of Volume I of the SWMM.

4.02.03 Critical Area Report

A. Title Page including project name, contact information for property owner, applicant, and preparer, a description of the proposal, site address, and the parcel number.

B. Identify all local, state, and other critical area related permits/approvals required for the proposal.

C. Indicate accuracy of the report.

D. Documentation of field work (such as field data sheets, and rating worksheets in the case of wetlands).

E. Description of methodologies used in the study.

F. Identify and characterize all critical areas including wetlands, streams, water bodies, buffers, regulatory floodplain, wildlife habitat, groundwater protection areas, critical erosion hazard areas, landslide hazard areas, seismic hazard and volcanic hazard areas on or adjacent (within 300 feet of the project boundaries) to the proposed project area.

G. Provide location and critical area rating/classification (if applicable) and required buffers based on a professional survey. Provide the classification according to ACC 16.10.080, “Classification and rating of critical areas” and identify the classification according to other agency standards for which permits/approvals are required.

H. A description of proposed actions, including estimated area of impacts to the critical area(s), and the impact to buffer(s).

I. An assessment of probable temporary, permanent, and cumulative impacts to the critical area(s) and buffer(s).

J. Mitigation measures proposed and relationship to applicable mitigation standards.

K. Scaled site plan.

L. Qualifications of person(s) preparing the report.

4.02.04 Traffic Impact Analysis

A. Title Page including project name and address.

B. Executive Summary.

C. Table of Contents.

D. Introduction consisting of a description of the project, location, site plans with access to city streets, circulation network, land use and zoning, phasing plan, project developer and contact person, reference other studies.

E. Traffic Analysis to include assumptions, existing and projected traffic volumes, project trip generations, trip distribution, level of service (LOS), and warrant analysis.

F. Appendix with all calculations.

G. Information as specified in **Section 10.01** of these design standards.

4.02.05 Construction Stormwater Pollution Prevention Plan (SWPPP)

See **Section 5.01.03** of these design standards and Section 2 of Volume II of the SWMM.

4.02.06 Other Reports

Other reports may be required on a site-specific basis. The specific information required in these reports shall be determined during the SEPA process or by the department requiring the report. These reports shall include the following basic items:

A. Title page including project name and address.

B. General information, which includes existing site conditions.

C. Site plan showing the topography, proposed structures, and paving.

D. Conclusions and recommendations.

E. Appendix with collected field information.

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Chapter 5 TESC, Clearing and Grading

5.00 Preface

Temporary Erosion and Sediment Control (TESC), clearing, and grading shall conform to the requirements herein.

Compliance with these standards does not alleviate the design engineer from using sound professional engineering practices. The design criteria contained herein are the minimum acceptable under standard conditions. Special conditions may require more stringent requirements that will be addressed during the plan review process.

The purpose of these requirements is to provide the design criteria necessary to preserve the City of Auburn's water courses; minimize surface and ground water quality degradation; control sedimentation in creeks, streams, rivers, ponds, lakes, and other water bodies; protect adjacent and downstream property owners from increased runoff rates which could cause erosion and flooding; and ensure the safety and stability of City of Auburn's roads and rights-of-way.

5.01 Temporary Erosion and Sediment Control (TESC)

TESC design requirements shall meet design criteria requirements as identified in Volume II of the City of Auburn Surface Water Management Manual (SWMM), and follow City of Auburn grading requirements.

All TESC measures regardless of design and implementation must meet the latest Nephelometric Turbidity Units (NTU) test requirements. The City may conduct tests and if the applicable limits are not met, the project will be halted until such time as it is brought into compliance.

The temporary sedimentation facilities (ponds and traps) shall be defined as the active storage available a minimum of 1 foot above the seasonal high ground water.

Any project with exposed soil meeting the requirements of the Chapter 2 of Volume II of the SWMM shall prepare a Stormwater Pollution Prevention Plan (SWPPP). The plan shall follow the SWPPP Template (available at the Dept. of Ecology's website) or City of Auburn Short Form (where approved by the City) from the SWMM.

For land clearing requirements see ACC 15.74 Plans for Land Clearing shall follow the requirements for Grading.

The TESC plan shall also include a construction sequence element which clearly identifies the timing and methodology required to:

A. Contain areas of active earthwork to prevent uncontrolled discharge of storm drainage.

B. Minimize erosion and the extent and time soils are exposed on-site.

C. Prevent tracking of sediment onto City streets.

D. Protect permanent on-site and off-site storm drainage systems.

5.02 Grading

The following section establishes the requirements for grading. These requirements do not supersede nor are they intended to be inconsistent with any landscaping requirement established by the Zoning Ordinance or other City action. A grading permit shall be required except for the situations described in ACC 15.74.050 and the following scenario:

A. The City Engineer may approve the broadcasting of less than 500 CY of topsoil, peat, sawdust, mulch, bark, chips, or solid nutrients used for landscaping or soil conditioning on a lot, tract or parcel of land during any 24-month period, provided the finished depth does not increase the grade from the existing grade by more than 8 inches.

5.03 Cut and Fill

Cut and fill slopes are subject to the requirements of ACC 16.10. Permanent cut and fill slopes shall be constructed no steeper than two horizontal to one vertical (2:1). Permanent cut and fill slopes within the public right of way or within 5 feet of a roadway shall be no steeper than three horizontal to one vertical (3:1). See **Section 5.04** for additional information.

Temporary fills, such as fill material placed for preloading of building pads, may use a slope one and one-half horizontal to one vertical (1.5:1).

Slopes shall be stabilized by terracing, cat tracking, jute mat, grass sod, hydro-seeding, or by other planting or surfacing materials acceptable to the City.

The City Engineer may require geotechnical analysis for the following:

A. As supporting documentation for deviation from these standards.

B. Cut or fill existing slopes of greater than five horizontal to one vertical (5:1).

C. Slopes with sub-surface or surface water flows.

D. In areas of questionable soils conditions or slope stability.

E. Where the length of the slope requires terracing.

Additional requirements for placement of fill material are as follows:

A. A minimum horizontal setback of 5 feet shall be provided between the bottom of any fill placement and the top of the bank of any defined drainage channel.

B. When filling a site, particular care shall be taken to prevent impeding the existing upstream surface drainage flow.

C. Prior to any fill being placed all vegetation, topsoil and other unsuitable material shall be removed unless dictated otherwise by the geotechnical engineer.

D. Fill material shall be placed in lifts of no more than 12 inches and compacted to 90% or greater of the maximum dry density as determined by ASTM D1557 Modified Proctor or as directed by the geotechnical engineer.

5.04 Retaining Walls

Except retaining walls built with City capital projects or through deviation, retaining walls will be located outside the public right-of-way such that they do not support the public right-of-way, be privately owned and maintained, and are subject to ACC Title 15. In addition to the standard deviation criteria, a deviation request for a wall in the right-of-way or supporting the right-of-way would need to address the risk to the right-of-way if the wall was not adequately maintained or was otherwise compromised and digging restrictions associated with the wall that could complicate or compromise use of the right-of-way for utilities, street lighting, and other use. Walls within or adjacent to the right-of-way shall be placed to address clear zone and vehicle recovery requirements per WSDOT Design Manual M 22-01 Chapter 1600.

Retaining wall systems with a vertical difference of 30-inches or greater require protective fencing along the top edge for safety. Per ACC 12.12.232, maintaining barriers or fences

between the edge of pavement or back of curb along any public street and the abutting property (defined by ACC 12.12.020 as “sidewalk”), where the sidewalk is elevated more than two feet above the abutting property is the responsibility of the abutting property owner.

Retaining walls require the wall owner to have property rights of sufficient terms and area, in the opinion of the City Engineer, to allow for construction, access, maintenance, repair, removal, and reconstruction of the wall. The minimum easement width required for walls that are less than 10 feet tall is 10 feet centered on the wall face and a minimum of 5 feet beyond any and all structural elements behind the wall. The minimum easement width required for walls 10 feet and taller is 15 feet and shall include a maintenance road along the wall base that is fenced and gated.

Public walls shall be reinforced concrete walls or block walls as directed by the City Engineer. Other wall types require deviation to be considered for City ownership and maintenance.

Tiebacks, pins, geogrids, anchors, footings, and any other elements of private walls are not allowed within the right-of-way.

5.04.01 Underdrains

Underdrains are required for all retaining walls over 4 feet in height (i.e., concrete walls, MSE walls, soil nail walls, block retaining walls, etc.).

A minimum 6-inch diameter perforated or slotted drainpipe shall be placed in a shallow excavated trench located along the inside edge of the keyway. The pipe shall be bedded on and surrounded by “Gravel Backfill for Drains” (WSDOT/APWA 9-03.12(4)) to a minimum height of 18 inches above the bottom of the pipe. A filter fabric shall surround the gravel backfill and shall have a minimum of 1 foot overlap along the top surface of the gravel. The perforated pipe shall be connected to a storm drain system or to an acceptable outfall.

5.04.02 Rock Walls

Rock Walls may be used for containment of cut slopes or fill embankment up to a maximum height of 8 feet. Rock Walls over 4 feet in height, surcharged, or in areas of questionable soil stability will require an engineered design. The engineered design shall include a soils investigation and report by a geotechnical engineer and calculations to support the rockery design.

The rock material shall be as rectangular as possible. No stone shall be used that does not extend through the wall. The quarried rock shall be hard, sound, durable, and free from weathered portions, seams, cracks, and other defects. The rock density shall be a minimum of 160 pounds per CF, measured accordingly to WSDOT test method 107 (Bulk Specific Gravity – S.S.D. basis).

5.04.03 Block Retaining Walls

Block retaining walls, (e.g., Keystone, Allan Block, Ecology Block) may be used for containment of cut slopes or fill embankment. Block retaining walls over 4 feet in height, surcharged, or in areas of questionable soil stability will require an engineered design. The engineered design shall include a soils investigation and report by a geotechnical engineer and structural calculations to support the block wall design.

Blocks used for retaining walls shall be in good condition and structurally sound; cracked and/or broken blocks are not acceptable. Unless designed as a gravity wall (ecology blocks), block walls over 4 feet in height shall employ geo-grid type material to increase the structural stability of the wall.

5.04.04 Reinforced Concrete Walls

Reinforced concrete walls or cast-in-place concrete walls may be used for containment of cut slopes or fill embankment. Concrete retaining walls over 4 feet in height, surcharged, or in areas of questionable soil stability will require an engineered design. The engineered design shall include a soils investigation and report by a geotechnical engineer and structural calculations to support the concrete wall design.

A minimum 3,000-psi structural reinforced concrete shall be used in the design of concrete retaining walls.

5.04.05 Mechanically Stabilized Earth Walls (MSE Walls)

MSE walls may be used in conjunction with other retaining walls or as a stand-alone application when constructing fill slopes. MSE walls will require an engineered design. The engineered design shall include a soils investigation and report by a geotechnical engineer and calculations to support the MSE wall design.

MSE walls shall employ well-draining structural soil compacted to the geotechnical engineer's specifications.

MSE walls are not allowed in the right-of-way.

5.05 Construction Sequence

A construction sequence is intended to ensure that the timing and installation of storm drainage and erosion control measures are in place prior to activities that may cause erosion to occur. The following elements are to be included in a construction sequence:

A. Establishment of clearing and grading limits.

B. Construction of temporary construction entrance.

C. Construction of perimeter ditches, filter fabric fences, and other erosion control devices as shown.

D. Construction of storm drainage control (applicant to be specific) facilities including emergency overflow as applicable.

E. Construction of ditches and swales as necessary to direct all surface water to the storm drainage control (be specific) facilities as clearing and grading progress. Prevention of uncontrolled surface water being allowed to leave the site at any time during the grading operations.

F. Establishment of at what point grading activities can begin, which is usually only after all perimeter drainage and erosion control measures are in place.

For sites with a final development plan, the following shall also be addressed when applicable:

A. Installation of on-site permanent storm drainage, sanitary sewer, and water facilities.

B. Site paving.

C. Indicate at what point building construction may begin.

D. A description of how to transition from the temporary to permanent storm facilities.

E. The possibilities of any phased construction.

F. Any off-site public or private improvements including the general timing and duration.

G. The removal of all TESC measures at project completion upon City approval.

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Chapter 6: Placement and Easement Requirements for City Facilities

6.00 Preface

This chapter includes placement and easement standards for all three City utilities (water, sanitary sewer, and storm drainage), City telecommunications, street lighting and other facilities such as power service cabinets, traffic signal poles, and traffic signal controller cabinets. Additional standards for City utilities are included in **Chapters 7, 8, and 9** of this document and in the Surface Water Management Manual (SWMM). **Chapter 9** describes specific additional requirements for City and non-City facilities, including utilities, within the public right-of-way. Chapter 10 includes specific requirements for street lighting and other street related facilities.

Compliance with these standards does not alleviate the design engineer from using sound professional engineering practices. The design criteria contained herein are the minimum acceptable under standard conditions. Special conditions may require more stringent requirements that will be addressed during the plan review process.

6.01 Easements

Public Utility Easements are required for the placement, operation, and maintenance of City facilities located outside the public right-of-way and not in tracts/parcels owned by the City for the specific use of the City facility. Easements shall encompass all portions of the facilities including, but not limited to, valves, manholes, hydrants, meters, catch basins, channels, access roads, vaults, junction boxes, foundations, junction boxes, and other appurtenances. Easement requirements for storm ponds, ditches, and channels are specified in the SWMM.

6.01.01 Easement Width

Easement widths for City facilities shall provide adequate space for access, operations, maintenance, repair, and open cut replacements.

Table 6-1 shows minimum required easement widths for City Utility pipes and appurtenances based on depth of pipe/appurtenance. Under certain circumstances (e.g., steep slopes, pipe diameters greater than 12 inches, excessive depths) the City may require wider easements than shown in the table. Minimum easement widths for non-pipe facilities and appurtenances, such as channels and ditches, shall be the minimum width required for the City to access, operate, maintain, repair, and replace the facility and to meet the other requirements specified herein and in the SWMM.

Table 6-1 Minimum Easement Width for City Utilities

PIPE INVERT DEPTH, FEET	EASEMENT WIDTH, FEET
< 10	15
10 – 15	25
15 – 20	30
> 20	40

Table 6-2 shows minimum easement widths for City conduits, including, but not limited to, conduits for street lighting, telecommunications, and traffic control device systems.

Table 6-2 Minimum Easement Width for City Conduit

CONDUIT COVER DEPTH, FEET	EASEMENT WIDTH, FEET
2 - 3	5
>3 - 5	7
>5 – 7	10
>7	To be determined by City Engineer, or designee

Easements for non-linear facilities such as traffic signal cabinets, street lights, and power service cabinets shall encompass the entire perimeter of the facility plus a minimum of 2 foot offset distance for the facility edges. Additional offset may be required and determined by the City Engineer, or designee, to be required for facility maintenance, operations, repair, and replacement.

6.01.02 Easement Form

Easements shall be provided on the City's standard easement form, with a separate easement for each facility. A legal description of the easement and the property that the easement encumbers, along with a sketch showing both, shall be stamped and signed by a professional land surveyor and incorporated into the easement form as exhibits. The legal descriptions and sketch shall have margins acceptable to the County of recording. The easements may also be described and recorded on a final plat document. Encumbrances that would conflict with the City's rights and ability to access, operate, maintain, repair, and replace the facilities require release/clearing from title.

The City will record approved easements in the appropriate County prior to acceptance of the public facilities unless part of a final plat document.

6.01.03 Location of Facilities within Easement

Facilities shall be located within the easement as follows:

The preferred location of pipes, channels, structures, and appurtenances is to be centered within the easement. Where facilities are not centered in the easement, additional easement width may be required and it shall be demonstrated, to the satisfaction of the City Engineer, or designee, that the placement will not impede the City's ability to access, operate, maintain, repair, and replace the facilities using typical City practices.

Utility facilities must be located within the easement so that each pipe face or edge of channel, structure, or appurtenance is no closer than 5 feet from its adjacent easement boundary. Telecommunications facilities must be located within the easement so that each conduit, vault, or appurtenance is no closer than 2 feet from its adjacent easement boundary.

6.02 Utility Pipe Separation

6.02.01 Potable and Non-Potable Separation Requirements

The requirements of this section are based on WAC 246-290-200, Washington State Department of Health (DOH), and the Washington State Department of Ecology (DOE). Potable

pipes include pipes conveying water for domestic purposes, including domestic service and irrigation service lines. Non-potable pipes include, but are not limited to, pipes conveying sewage, storm drainage, natural gas, gasoline, and oxygen. Natural gas service lines, drain pipes (yard drains, down spout drains, and wall drains), and storm drain catch basin lateral pipes that carry runoff from a cumulative area of 5,000 SF or less, are not subject to the potable/non-potable separation requirements, but are still subject to general separation requirements as specified herein. The following requirements apply to separation between pipes and appurtenances of potable and non-potable materials:

A. A Minimum of 10 feet horizontal separation is required between the outside walls/limits of parallel facilities where the crown of the non-potable pipe is less than 18 inches lower than the invert of the potable pipe.

B. A Minimum of 4 feet horizontal separation is required between the outside walls/limits of parallel facilities where the crown of the non-potable pipe is at least 18 inches lower than the invert of the potable pipe.

C. The invert of the potable pipe is required to be a minimum of 18 inches above the pipe crown of the non-potable pipe at crossings.

Where meeting separation requirements would require pumping/pressurization of an existing or new gravity non-potable pipe, the separation requirements may be reduced with the following additional requirements:

A. For construction of new potable pipes, the potable pipe shall be encased with ductile iron or steel pipe designed to withstand a minimum static pressure of 150 psi and extending at least 10 feet to either side of the crossing per **City of Auburn Standard Detail W-26**.

B. For construction of new non-potable pipes, the non-potable pipe shall be encased in controlled density fill for at least 10 feet to either side of the crossing.

C. Where non-potable pipe crosses over potable pipe, 18-inches of separation shall be maintained and one or both utilities will be encased, as deemed necessary by the City Engineer or designee.

6.02.02 General Separation Requirements

The following separation requirements are in addition to the other separation requirements specified herein. Placement of new City utility facility mains shall be done in a manner that allows the City to access, operate, maintain, repair, and replace the facilities without impacting other adjacent facilities or structures in the vicinity. Facilities shall be located a minimum horizontal distance of 10 feet from above-ground structures and their foundations. Except as noted above (for crossings of potable water), underground facilities that cross each other shall have a minimum separation of 12 inches. Non-potable facilities require a minimum horizontal distance of 5 feet from all other underground utilities. Where 12 inch vertical separation cannot be achieved, use of an Ethafoam pad between the utilities may be permitted by the City Engineer or designee.

Additional separation of City utility facilities from structures may be required where soil conditions are poor, facility depth is greater than 10 feet, or other conditions are present that require additional separation to ensure the City may access, operate, repair, and replace the facilities using standard City methods. The minimum separation between an underground facility and an adjacent structure shall be such that the zone of influence from the weight of a structure shall be below the invert of the underground facility.

6.03 Utility Access Roads

Public utilities within a utility easement, tract, or parcel that have appurtenances such as manholes, catch basins, stormwater ponds, vaults, fire hydrants, valves, blowoffs, etc. shall have an access road. The access road shall be constructed of gravel, asphalt, pervious concrete or pervious asphalt, or other surface material as approved by the City Engineer, and shall conform to the following requirements:

A. Maximum vertical profile shall be 12% for public facilities and 15% for private facilities.

B. A paved commercial driveway apron meeting City design standards shall be required for both public and private access where access roads connect to paved public roadways.

C. The driveway approach section of the access road shall not exceed a vertical profile of 5% for a minimum distance of 25 feet measured from the back of the driveway entrance. See City of Auburn Standard Detail T-34.

D. The minimum access road length shall be 50 feet as measured from the back of the driveway entrance. See City of Auburn Standard Detail T-34.

E. Access to the access road shall be limited by a double-posted gate with a minimum width of 15 feet (if the gate is connected to a fence), removable bollards, or other approved equal.

F. Except as noted in **Section 7.06.04**, access roads shall be a minimum of 15 feet in width on curves and 12 feet in width on straight sections, centered within the easement. Easement width will need to be increased at curves to accommodate the wider road and adjacent ditch described below. A hammerhead or a turnaround meeting IFC standards is required at the end of all access roads unless drive-through access is provided.

G. For access roads determined by the City Engineer, or designee, to require access by vactor trucks or other large vehicles, inside turning radii shall be a minimum of 45 feet. For all other access roads, minimum inside turning radii shall be 28 feet. Turning analysis may be required to verify movement of equipment.

H. Access roads whose vertical profile is greater than 8% shall be asphalt paved. See **Table 10-7** for paved access road requirements.

I. Unpaved gravel access roads and pond ramps shall meet the requirements of **Table 10-7**.

J. The access road shall have a cross slope of 2%.

K. Access roads will be constructed with appropriate drainage to prevent stormwater ponding on the road.

L. Access roads cut into a hillside will require regrading of the adjacent slopes. To reduce the length of unimpeded slope and to collect and reduce the probable impacts of sheet flow on the slope face, install benches at least 10 feet wide into the slopes adjacent to the access road, with 30 feet maximum vertical spacing between benches. On the uphill slope face, the first bench shall be adjacent to the ditch.

Chapter 7: Water Facilities

7.00 Preface

The design and construction of public and private Water Facilities shall conform to the State of Washington Department of Health (DOH) Design Standards for Group A Public Water Systems, the Standard Specifications of the American Water Works Association (AWWA), and the most recent published and adopted edition of the Uniform Plumbing Code (UPC), unless modified herein.

Compliance with these standards does not alleviate the design engineer from using sound professional engineering practices. The design criteria contained herein are the minimum acceptable under standard conditions. Special conditions may require more stringent requirements that will be addressed during the plan review process. Contact the City of Auburn Public Works Department for specific requirements for the design of pump stations, wells, reservoirs, treatment systems, and other special facilities.

The design criteria used to estimate future line capacities are established in the City's Comprehensive Water Plan. Anyone proposing to extend or modify the City's water system should contact the Public Works Department for information. Applicants needing to construct public water improvements shall enter into a Developer Public Facility Extension Agreement (FAC) with the City. The City's Permit Center can provide information on this agreement as well as applicable permit and connection fee estimates.

7.01 Water Mains and Appurtenances

7.01.01 Materials

Unless otherwise approved by the City Engineer, all water mains shall be the following:

Pipe Type	Construction Standard	Notes
Ductile Iron Pipe, Special Class 52 or 53*	9-30.1(1) (Ductile Iron Pipe)	Asphaltic coating on the exterior and cement mortar lining on the interior

* Class 53 is required for installations with less than 42-inches of cover.

The list of acceptable valves, fittings, and other appurtenances for water facility construction is subject to change as new and improved components become available. Refer to the Construction Standards for the most current information on these requirements.

7.01.02 Water Main Sizing and Main Extensions

New water mains shall be sized to meet flow/demands, pressure requirements and pipe velocity constraints, and as follows:

A. Water mains serving only properties and developments requiring 1,500 GPM @ 2 Hours per **Section 7.05.03** shall be a minimum of 8 inches in diameter.

B. Water mains serving properties and developments requiring 2,500 GPM @ 3 Hours per **Section 7.05.03** shall be a minimum of 12 inches in diameter.

C. Water mains serving properties and development requiring more than 2,500 GPM @ 3 Hours per **Section 7.05.03** shall require hydraulic analysis per **Section 7.06** for sizing and in no case shall be less than 12 inches in diameter.

D. The minimum allowed diameter of a water main in a cul-de-sac, shared access driveway, or dead end street serving only single family/duplex residential properties may be reduced to 4 inches after the last fire hydrant connection serving the cul-de-sac, shared access driveway, or dead end street, unless the City Engineer determines the water main in the cul-de-sac, shared access driveway, or dead end street may be extended in the future or unless minimum pressure requirements cannot be achieved.

Public water main extensions are required where a new service is being requested and there is no existing water main fronting the property(ies) or the existing water main does not extend across the full width of the property(ies) being developed, and shall be as follows:

A. Water main extensions shall be extended to and across the entire property frontage of the parcel being served. For cul-de-sacs or other similar instances where extending across the property frontage is not feasible, main extensions shall meet all other requirements herein, necessary to address fire flow and pressure requirements.

B. Water mains may be required to be extended beyond the property frontage or looped, as determined by the City Engineer, to address system deficiencies created by the development. Water main loops shall have a minimum of two separate connection points to the existing water system, with sufficient valves so that water can be delivered through either connection point independent of the other.

C. In addition to the water main extensions required in item A) and B) above, the City may require properties with service connections on more than one frontage to extend water main(s) across the frontage(s) with the service connection(s), as determined necessary by the City Engineer to accommodate future water system extensions and connections.

D. Water main extensions that may serve adjacent property or to which adjacent property may connect future extension(s), require additional easements, as determined by the City Engineer or designee, to be needed to accommodate the future connections.

7.01.03 Water Main Upsizing

Public water main upsizing is required where a new or modified service is taken from an existing water main that fails to meet minimum pressure requirements per **Section 7.01.05**, fire flow requirements per **Section 7.05.03**, or pipe velocity constraints per Section **7.01.04**, as demonstrated by a hydraulic analysis per **Section 7.06**. In such cases main upsizing shall be as follows:

A. Existing water mains shall be upsized, at a minimum, across the entire property frontage of the parcel being served.

B. Existing water mains may be required to be upsized beyond the property frontage, as determined by the City Engineer, to address system deficiencies created by the development.

C. When main upsizing is required, in no case shall the mains be upsized to be less than the minimum sizes for new mains identified in **Section 7.01.02**.

7.01.04 Water Main Velocities

All water mains shall meet the following velocity requirements:

A. The maximum flow velocity in distribution mains shall not exceed 8 feet per second under Peak Hour Demand (PHD) conditions. Maximum flow velocities in distribution mains may be exceeded under fire flow conditions, but in no case shall velocities exceed 18 feet per second when applying Maximum Day Demand plus Fire Flow (MDD + FF) conditions.

B. The maximum flow velocity in transmission mains shall not exceed 5 feet per second under PHD conditions.

7.01.05 Water Main Pressure

All water mains shall meet the following minimum pressure requirements under the conditions listed:

A. Peak Hour Demand - 30 psi

B. Max Day Demand Plus Fire Flow – 20 psi

7.01.06 Water Main Location

Water mains shall be installed with no less than 42 inches and no more than 72 inches of finished cover. The City Engineer or designee, may grant exceptions to the minimum and maximum cover requirements and may require measures to mitigate impacts of the decreased or increased cover. Said exceptions will only be considered based on the potential impacts to City utilities of constructing the water main within the allowed cover ranges and topographic constraints. When a reduction in pipe cover is granted, in no case shall the finished cover be less than 30 inches.

Public water mains shall be located in the public right-of-way or within a public water utility easement. Public water mains within a utility easement with appurtenances such as hydrants, valves, blowoffs, etc. shall have an access road to such appurtenances conforming to **Chapter 6**. Water mains located in the public right-of-way shall meet the requirements of **Chapter 9**.

For separation requirements between utilities, see **Chapter 6**.

7.01.07 Water Main Appurtenances and Fittings

A. Blow off assemblies (See **City of Auburn Standard Detail W-03 or W-04**) are required on dead-end water mains with a diameter of 6 inches or less; hydrants are required for dead-end mains over 6 inches in diameter. Blow off assemblies shall also be installed at the low point of a depressed “sag” section of a water main, except where a fire hydrant is installed within 50 feet of said area or on a short segment (20 feet or less) where the water main dips under other utilities. Blow off assemblies shall be placed in a level, clear area within the right-of-way or easement, be located as close to the main as possible, and be easily accessible to the City.

B. Combination air and vacuum relief valves (See **City of Auburn Standard Detail W-02**) are required at high points in water mains when an abrupt vertical change in pipe elevation exceeds one pipe diameter, except where fire hydrants are installed within 50 feet of said area. Combination air and vacuum relief valves shall also be installed at the end of all dead-end water mains in addition of a blowoff or fire hydrant, when there is a vertical change in pipe elevation that

exceeds one pipe diameter, and the dead end main is greater than 50 feet in length. Combination air and vacuum relief valves shall be placed within a level clear area within the right-of-way or easement, be located as close to the main as possible, and be easily accessible to the City.

C. All buried bends shall have mechanical restrained joints and concrete thrust blocking or flanged joints and concrete thrust blocking (See **City of Auburn Standard Detail W-01**). 90 degree bends are not allowed when making vertical pipeline adjustments.

D. Tees shall have flanged joints unless there is no valve against the Tee, in which case the Tee may be flanged or mechanical restrained joints. Tees shall include concrete thrust blocking (See **City of Auburn Standard Detail W-01**). When connecting to an existing water main, a tapping tee and valve may be used, if only a single valve is needed at the tee, or unless otherwise approved or required by the City Engineer or designee.

E. Tapping tees are not allowed on commercial fire lines or other water taps needing uninterruptible service; a cut-in tee or installed tee is required.

F. Size-on-size taps are not allowed unless authorized by the City Engineer or designee.

G. The maximum allowable deflection per joint for ductile iron water mains shall be half of the maximum joint deflection specified by the pipe manufacturer or 4 degrees, whichever is lesser.

7.02 Water Services

See **City of Auburn Standard Details W-06, W-13 through W-16a, and W-20.**

The City owns and shall maintain the water service line from the public main to the meter, the meter and setter, the meter radio, the meter tailpiece, and the meter box. The property owner owns and shall maintain the tailpiece connection fitting, shut-off valve, service line after the shut-off valve, and other facilities such as pressure reducing valves, pumps, or backflow prevention assemblies behind the meter.

For fire sprinkler connections, City ownership and maintenance responsibilities cease at the valve installed at the point of connection between the main and the fire service line.

7.02.01 Domestic Services

Domestic water services shall meet the following requirements:

A. Each parcel receiving water service shall have its own meter. Non-single-family developments with multiple buildings on a single parcel shall have a meter for each building unless otherwise authorized by the City Engineer or designee.

B. Water services shall be installed per City of Auburn Standard Details. All existing services shall be replaced when installing new water mains required for the project. The City will furnish and install the meter for services of 2 inches and smaller unless directed otherwise by the City Engineer.

C. Water meters 3 inches and larger will be purchased from the City and installed by the developer/contractor under City observation. Where vaults are required, the vault roof shall contain a 2-inch port for remote reading device.

D. Water meters shall be installed off City owned water mains and shall be located as close to the water main from which the service is taken as possible, while

meeting all other requirements as specified herein, with the distance not to exceed 50 feet.

E. Water meters serving residential lots shall be located in the right-of-way along the frontage of the lot being served. Water meters serving residential lots without right-of-way frontage (such as lots that access the right-of-way via a shared driveway access road) shall be placed in the right-of-way adjacent to the access connection (driveway connection) to the roadway.

F. Water meters shall be placed in landscape strips. If there is no landscape strip, the meter shall be placed behind the sidewalk (in a public water utility easement if not in right-of-way). If there is no landscape strip or sidewalk, the meter shall be placed at the right-of-way limits in a level area, outside of vehicle or pedestrian travel paths, outside parking areas, and away from obstructions.

G. Meters in landscape strips and other landscaped or unimproved areas shall be set 2 inches above the finished grade including landscaping and mulch.

H. Water meters that cannot be placed in the right-of-way while meeting other water meter location requirements may be placed within a public water utility easement adjacent to the right-of-way.

I. Commercial and industrial sites shall have meters located near driveway entrances within the right-of-way or within public water utility easements in landscape islands located near access driveways when, placement in right-of-way, attempting to meet other location requirements of this section, is not practical.

J. Meters may not be placed within sidewalks or pedestrian travel pathways except in cases where obstructions prevent the meter box from being placed behind the sidewalk or in a landscape strip (where a landscape strip is present). In such conditions, the meter box shall be placed in the back of the sidewalk.

K. The water service diameter and meter size shall be sized per Tables 610.3 and 610.4 of the current Uniform Plumbing Code and, upon request by the City Engineer or designee, supporting documentation of the meter size selection provided to the City. The length of the private service line between the right-of-way line and the structure shall not exceed 300 feet.

L. When installing multiple services to a public main, a minimum horizontal spacing of 5 feet shall be used between the corporation stops and tapping tees when the existing main material is ductile iron. A minimum spacing of 10 feet shall be used between the corporation stops and tapping tees on all other types of existing water main materials.

M. Domestic water services shall be connected to the public water main. Domestic water services shall not be connected to private water mains.

7.02.02 Other Services

Irrigation and other non-domestic water services shall meet all the above requirements as well as the following:

A. An Irrigation meter shall be installed in cases where water is used for landscape purposes by non-single-family customers and does not enter the sanitary sewer system.

B. For fire sprinkler service line requirements, see **Section 7.05.02**.

C. Cross connection control devices shall be installed per **Section 7.04**.

7.02.03 Service Abandonment

Services shall be abandoned when properties are redeveloped, and existing services will no longer be used. The following actions are required after removal of the meter:

A. Obtain the necessary permits (e.g., for work in the right-of-way, for meter abandonment)

B. Shut off the corporation stop at the main.

C. Disconnect the service line from the corporation stop.

D. Remove the meter box.

E. Restore the roadway or other surface(s) disturbed by construction activities (e.g., trench patch/overlay).

7.03 Water Valves

Water valves shall be as specified in the Construction Standards and the requirements of this section. See **City of Auburn Standard Details W-17 through W-19** for valve box and extensions.

Water valves shall be of the resilient wedge gate variety. Butterfly valves shall be placed on water mains 14" or larger in diameter. Valves larger than 12 inches may require the valve to be turned on its side with a gear to maintain minimum cover.

Water valves shall be located as follows:

A. Water valves shall be installed at a maximum spacing of 400 feet and at the intersection of lateral lines. A maximum of 20 service connections between valves shall be maintained except on dead end residential streets where up to 30 service connections between valves are allowed.

B. Water valves shall be located in clusters at tees and crosses when possible and shall be located so that each leg of the main line system can be isolated separately.

C. When extending public water mains, a water valve may be required near the end of lines where future extensions are projected.

D. Water valves shall not be placed within the wheel path of vehicle traffic.

A gravel or paved road surface may be required within the public water utility easement as needed to allow access to valves and other appurtenances.

Valves shall be adjusted to final grade in accordance with **City of Auburn Standard Detail T-05.**

7.04 Cross Connection Control

See **City of Auburn Standard Details W-22 through W-25.**

Water Systems shall be designed to protect the City water system from contamination via cross connection control in accordance with Washington State Law (WAC 246-290-490), Auburn City Code (ACC), the City's Cross Connection Control Program manual, and these design standards. Premises isolation shall be provided on service connections and proposed building tenant improvements in accordance with these standards.

7.04.01 Domestic Services

Backflow protection assemblies shall be installed on all new non-single family service connections. Backflow protection assemblies shall be installed on existing non-single family service connections as directed by the City Cross Connection Specialist. The type of backflow protection assembly shall be as determined by the City Cross Connection Specialists:

A. A Reduced Pressure Backflow Assembly (RPBA) shall be installed adjacent to the meter or at an alternate location where the service line enters the building. RPBA assemblies installed at an alternate location, require the approval of the City, shall have no connections between the meter and the assembly, and shall be installed with adequate drainage to accommodate discharges from the RPBA.

B. A Double Check Valve Assembly (DCVA) for domestic service shall be installed adjacent to the meter, unless installed at an alternate location approved by the City Cross Connection Specialists.

7.04.02 Irrigation Services

A backflow prevention assembly shall be installed on all irrigation service connections. The layout of the backflow prevention assembly shall be per **City of Auburn Standard Detail W-06** for single family residential services up to 2 inches and per **City of Auburn Standard Detail W-20** for non-single family residential services. The minimum level of backflow prevention required shall be provided by a Double Check Valve Assembly (DCVA) per **City of Auburn Standard Detail W-24**. A higher degree of protection may be required if deemed necessary by the City, which may include a Reduced Pressure Backflow Assembly (RPBA) per **City of Auburn Standard Detail W-22**.

The backflow prevention assembly shall be installed adjacent to the meter.

7.04.03 Fire Line Connections

A backflow prevention assembly shall be installed on all fire service connections. The layout of the backflow prevention assembly shall be per **City of Auburn Standard Detail W-09** for single-family residential services up to 2-inches and per **City of Auburn Standard Detail W-20** for non-single-family residential services. The minimum level of backflow prevention required shall be provided by a Double Check Valve Assembly (DCVA) per **City of Auburn Standard Detail W-24**. A higher degree of protection may be required if deemed necessary by the City, which may include a Reduced Pressure Backflow Assembly (RPBA) per **City of Auburn Standard Detail W-22**.

The backflow prevention assembly shall be located in the building riser room for non-single-family residential services.

7.04.04 General

A. A DCVA shall be installed to provide adequate access for inspection, testing and maintenance.

B. A DCVA located outside the building shall be installed in a vault, as described on **City of Auburn Standard Detail W-24.**

C. A DCVA located inside the building shall be installed per **City of Auburn Standard Detail W-25**.

D. An RPBA shall be installed in an above ground enclosure or at alternate location with no connections between the meter and assembly (See **City of Auburn Standard Detail W-23**). An RPBA is required for all services utilizing chemicals.

E. Prior to installation, 2 sets of backflow prevention assembly plans, including the connection point to the City main, shall be submitted for review and approval by the City.

F. Only assemblies listed on the current list of Backflow Prevention Assemblies Approved for Installation in Washington State shall be allowed. This list is maintained by the State of Washington and is available from the City.

G. When multiple buildings are proposed on a parcel the building backflow prevention devices shall all be located outside the buildings or all be located inside the buildings per City of Auburn Standards.

7.05 Fire Systems

7.05.01 Fire Hydrant Assemblies

See **City of Auburn Standard Details W-07 & W-08.**

Fire Hydrant Assemblies shall meet the following requirements:

A. Fire hydrant service lines shall be installed at right angles to 8 inch minimum diameter supply mains.

B. Fire hydrants shall stand plumb, be set to meet manufacturer's specification for ground bury line, and have a clear, level area around the hydrant with a radius of no less than 36 inches.

C. Fire hydrants shall be located no closer than 50 feet to the surrounding structures, or at a distance as determined by the Fire Marshal and approved by the City Engineer or designee. Fire hydrants shall be located such that no portion of the fire hydrant is within 5 feet of any portion of a driveway (including throat, apron, and wings).

D. Fire hydrants shall be provided with two 2½ inch National Standard Thread (NST) hose ports and one 4½ inch NST by 5 inch hose port with a Storz adapter and cap.

E. The pumper port shall face the street or fire access road and be readily accessible to any fire vehicle for firefighting and pumping operations. There shall be at least 18 inches clear from the face of the pumper port to the edge of pedestrian or traveled ways.

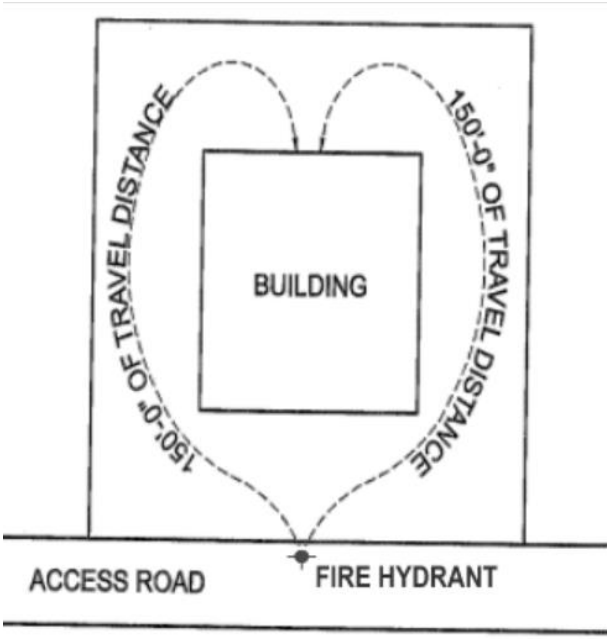
F. The service line from the supply main to the fire hydrant shall be 6 inches in diameter unless the service line extends over 50 feet in length, in which case the service line shall be 8 inches in diameter. Service lines shall be restrained when the length of service line exceeds one pipe length.

G. Fire hydrants shall be installed with a maximum spacing of 600 feet along streets in single-family zones and 300 feet in all other zones.

H. The maximum distance allowed from any part of a single-family residential structure to the closest fire hydrant is 450 feet.

I. Buildings, other than single-family residences, located with portions of the building more than 150 feet in vehicular travel (see figure below) from a fire

hydrant assembly or with building fire flow over 2500 gpm, shall require on-site fire hydrant assemblies. A maximum length of 150 feet of water main serving a single fire hydrant shall be allowed. Any length greater than 150 feet will require the fire hydrant(s) to be served by a water main that loops around the building, or complex of buildings, and reconnects back to the distribution supply main.



7.05.02 Private Fire Hydrants and Water Mains

Private fire hydrant assemblies and associated water mains serving the fire hydrants shall meet all of the same standards as is for public facilities identified in these standards, including the following requirements:

A. The City Engineer, or designee, may require fire hydrants and water mains installed on private property solely for the purpose of providing fire protection to be privately owned and maintained by the benefitting property.

B. Privately owned and maintained fire hydrants shall be painted Safety red per the City Construction Standards to distinguish between publicly owned and privately owned fire hydrants.

C. Ownership of privately owned water mains begins immediately downstream of the valve at the point of connection to the public water main.

D. Private fire hydrant water mains require backflow protection in the form of a Double Check Detector Assembly (DCDA) to be installed on private property as close to the connection to the public main as possible.

E. Privately owned fire hydrants require fire hydrant use permits to be issued for non-maintenance activities to record the amount of water being used for said activity.

7.05.02 Fire Sprinkler Systems

Fire Sprinkler Systems shall meet the following requirements:

A. Any contractor offering to design, install, test, and/or provide maintenance of fire sprinkler systems in the State of Washington must be licensed with the State Fire Marshal's Office, Licensing Section.

B. Fire sprinkler systems shall be required in commercial/industrial and multifamily buildings according to the adopted fire code regulations. Sprinkler systems may be required in single-family residences when determined by the City and the Fire Authority.

C. Fire sprinkler supply lines for commercial buildings, unless designed by a Fire Protection Engineer, shall be a minimum of 8 inches in diameter.

D. Fire sprinkler supply lines for non-single-family buildings shall be connected to a looped water main.

E. Fire sprinkler supply lines shall be separated from the public water main by a valve located at the point of connection. The fire sprinkler supply line shall be installed with a cut-in tee and shall have a 3-valve cluster unless otherwise approved by the City Engineer.

F. The design of fire sprinkler supply lines for single-family/duplex shall be in accordance with **City of Auburn Standard Detail No. W-09.**

G. A Washington State Certified Level "U" contractor shall install underground fire sprinkler supply lines in accordance with WAC 212-80-010. Prior to installation, 3 sets of underground fire sprinkler supply line plans shall be submitted to the City for approval by the Fire Marshal. Both a State Certified Level "U" contractor and a Fire Protection Engineer shall stamp these plans. A letter from a state certified sprinkler system designer stating "FOR DESIGN PURPOSES ONLY" may be attached in lieu of a stamp from the Fire Protection Engineer.

H. A post indicator valve (PIV) shall be installed on the fire sprinkler supply line between the public water main and the building. PIV's shall be located in such a manner as to be easily visible to Fire Department personnel. A wall-mounted PIV may be installed when the exterior wall of the building is of non-combustible construction. A detail containing this information shall be included with the submitted plans.

I. Fire Department Connections (FDC's) shall be placed within 50 feet of a fire hydrant or as directed by the Fire Marshal. FDC's must be identified and approved by the Fire Marshal.

J. New water mains shall be constructed with valves on each side of fire line taps.

K. Fire sprinkler systems shall have backflow prevention in accordance with **Section 7.04**.

L. Fire sprinkler service lines shall not be connected to fire hydrant service lines.

M. Flow-through fire sprinkler systems may be installed for single family residential only. Design shall be according to NFPA 13D. Backflow prevention is not required for flow-through systems.

7.05.03 Fire Flows

New developments, redevelopment of existing sites, or changes in land use are required to meet the minimum City fire flow requirements listed below while maintaining the required minimum pressures. The developer shall provide information to the City to define the project specific fire flow requirements.

The minimum fire flow requirements within the Auburn Water Service areas are:

A. Single-Family Residential: 1,500 GPM @ 2 Hours

B. Industrial/Commercial/Multi-Family: 2,500 GPM @ 3 Hours

Additional fire flow may be required per ACC 15.36A.

Minimum fire flows outside Auburn Water Service areas shall be determined by the water service provider and the Fire Marshal.

When a hydraulic analysis is required to demonstrate the system meets fire flow and minimum pressure requirements, the developer may request that the City perform hydraulic modeling to support the hydraulic analysis at the applicants cost and the City may or may not agree to provide the modeling depending on resource availability and other considerations. See **Section 7.06** for hydraulic analysis requirements.

The Developer shall be responsible for any on-site and/or off-site improvements such as water main extensions, additional connections, fire hydrants, etc. to meet these requirements.

7.05.04 Fire Authority and Hydrant Access

Fire Authority and hydrant access shall meet the following requirements:

A. Access shall be a minimum of 20 feet wide with a minimum vertical clearance of 13½ feet.

B. Access roads shall be designed using a minimum inside radius of 28 feet and a minimum outside radius of 48 feet.

C. Except as noted otherwise in these standards, access that exceeds 150 feet in length from the face of curb or edge of the existing asphalt of the public road and does not return to a public road shall provide a turnaround within 150 feet of the dead-end. If a hammerhead configuration is utilized for the turnaround, it shall be designed per Figure D103.1 and Table D103.4 in Appendix D of the International Fire Code, or acceptable equivalent. If a cul-de-sac is utilized for the turnaround, it shall be designed per the City of Auburn Design Standards.

D. Single-family residential driveways shall have an 18 foot wide driveway apron and a minimum 20 foot wide paved surface to a location where all portions of a dwelling unit structure are no more than 150-ft, as measured by an unobstructed route around the exterior of the building.

7.06 Hydraulic Analysis

7.06.01 General

Hydraulic analysis is required for all new or modified connection(s) to an existing main(s), except when determined by the City Engineer, or designee, to not be required. In determining if an exception from the hydraulic analysis requirement is appropriate, the City Engineer, or designee, will consider whether the existing main meets sizing requirements for new mains per

Section 7.02.02 and the proposed use of the modified or new service connection(s). When a hydraulic analysis is required for a project, it shall include the following:

A. The hydraulic analysis shall be signed and sealed by a professional engineer.

B. Include a description of the project, location, and identify existing water facilities adjacent to the project boundaries.

C. Include a site map showing the project boundaries.

D. Include locations of proposed new or upsized water mains to be installed as part of the project, including pipe diameters and the locations of fire hydrants, if known.

E. For developments that are not solely single-family/duplex residential, provide the proposed type and size of meter(s) and backflow device(s).

F. Show the source node provided by the City with Hydraulic Grade Line (HGL) and existing pressure information.

G. Show on-site demand calculations.

H. Input tables shall be provided for each of the pipes showing the following minimum information:

Pipe No.	Pipe Nodes (Begin and End)	Length (ft)	Diameter (in)	Friction Coefficient

I. Input tables shall be provided for each of the nodes showing the following minimum information:

Node. No.	Connecting Pipes	Elevation (ft)	Demand (gpm)

J. A separate analysis and calculations shall be conducted for Maximum Day Demand (MDD), Maximum Day plus Fire Flow (MDD + FF), and Peak Hour Demand (PHD) scenarios. Explain any assumptions made.

K. Output calculation results for pipes shall include, at a minimum, the following information:

Pipe No.	Flow Rate (gpm)	Velocity (fps)	Head Loss (ft)

L. Output calculation results for nodes shall include, at a minimum, the following information:

Node No.	HGL (ft)	Pressure (psi)	Elevation (ft)	Demand (gpm)

M. Provide a summary table for each scenario analyzed (MDD, PHD, and MDD + FF) and include minimum and maximum static and residual pressures.

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Chapter 8: Sanitary Sewer and Storm Drainage Facilities

8.00 Preface

Compliance with these standards does not alleviate the design engineer from using sound professional engineering practices. The design criteria contained herein are the minimum acceptable under standard conditions. Special conditions may require more stringent requirements that will be addressed during the plan review process.

The City's Comprehensive Sanitary Sewer Plan and Comprehensive Storm Drainage Plan establish basins and design parameters used to estimate future line capacities. Anyone proposing to extend or modify the City's sanitary sewer system and/or storm drainage system should contact the Public Works Department for information on proposed line sizes and locations.

Sanitary Sewer:

The design of sanitary sewer facilities shall be in conformance with the State of Washington Department of Ecology's "Criteria for Sewage Works Design" manual (DOE Sewer Manual) unless modified herein. These standards are set forth as a minimum requirement for the planning and design of gravity sanitary sewer facilities. Sewage pump stations and special facilities are not included within this design manual due to the complexity of these facilities. When designing pump stations and special facilities, please contact the City of Auburn Engineering Services for specific requirements.

In lieu of constructing a public sewer system, the developer of a single, non-residential lot may construct a private sewer system, in accordance with the standards for public sanitary sewer systems consisting of manholes and sewer mains. The property owner is responsible for maintenance and repair of the private system. This option is only available if the sewer extension would not serve any additional upstream properties. Private sewer systems are not allowed in the public rights of way except where permitted through franchise agreement or right-of-way use permit.

Storm Drainage:

These storm drainage requirements provide the design criteria necessary to preserve the City of Auburn's water courses; to minimize surface and ground water quality degradation; to control the sedimentation in creeks, streams, rivers, ponds, lakes, and other water bodies; to protect adjacent and downstream property owners from increased runoff rates, which could cause erosion and flooding; to ensure the safety of City of Auburn's roads and rights-of-way; to decrease drainage-related damage to both public and private property, and to control runoff from development, redevelopment and construction sites. The design of storm drainage facilities shall be in conformance with the City of Auburn Surface Water Management Manual (SWMM) to comply with the Western Washington Phase II Municipal Stormwater Permit issued by the State of Washington Department of Ecology.

8.01 Sanitary Sewer and Storm Mains

8.01.01 Sizing/Slope

All new mains shall be sized as indicated in the City's current Comprehensive Plan. For lines not specified in the plan, the applicant must design the line with sufficient capacity to convey any future flows (based on current land use designations).

Sanitary sewer mains shall be designed and constructed to provide a minimum cleaning velocity of 2 ft/s when flowing at 80% full. If at final build out the planned contributing area will not achieve this capacity, additional provisions may be required.

Analysis of storm drainage pipe systems shall be per the requirements of the SWMM. The following are the minimum slopes for the corresponding Sanitary Sewer pipe sizes:

Table 8-1 Sanitary Sewer Pipe Sizes and Slopes

Pipe Diameter	Minimum Slope
8 inches*	0.50%
10 inches	0.30%
12 inches	0.25%
18 inches	0.15%

* Minimum sanitary sewer pipe size

8.01.02 Location

Standard installation depth for sanitary sewer mains is between 6 feet and 15 feet below the finished surface elevation. Mains less than 6 feet deep and over 15 feet deep, require approval by the City Engineer, or designee, and additional provisions may be required .

Mains shall be located in the public right-of-way or within a public utility easement per **Chapter 6**. Mains within a utility easement with appurtenances such as manholes shall have an access road to such appurtenances conforming to **Chapter 6**. Mains located in the public right-of-way shall meet the requirements of **Chapter 9**.

When the potential exists to serve upstream properties, mains shall extend through the property being served, through the shared driveway or access tract serving the property(s), or across the entire length of the lot frontage at the depth necessary to serve the upstream properties, as determined by the City Engineer or designee.

For separation requirements between utilities, see **Chapter 6**.

8.01.03 Material

The following is the City's list of required sanitary sewer and storm drainage pipe materials and depth criteria.

Table 8-2 Sanitary Sewer and Storm Drainage Pipe Material and Cover

Pipe Type	Construction Standard	Minimum Pipe Cover**	Maximum Pipe Depth
Solid Wall Polyvinyl Chloride (PVC) Pipe, SDR-21*****	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)	18 inches	22 feet
Solid Wall Polyvinyl Chloride (PVC) Pipe, SDR-35 (Requires 14 foot lengths.*****	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)	3 feet	18 feet
Solid Wall Polyvinyl Chloride (PVC) Pipe, PS46 (Requires 14 foot lengths.*****	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)	3 feet	18 feet
Solid Wall Polyvinyl Chloride (PVC) Pipe, C900	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)	12 inches	30 feet*
Ductile Iron Pipe, Special Class 50	9-05.13 (Ductile Iron Sewer Pipe)	6 inches	30 feet*
High Density Polyethylene Sanitary Sewer Pipe (HDPE)***	9-05.23 (High Density Polyethylene Pipe (HDPE))	2 feet	30 feet*
Triple Wall Polypropylene Culvert and Storm Sewer Pipe****	9-05.24(1) (Polypropylene Culvert Pipe and Storm Sewer Pipe)	N/A	N/A

* Sanitary sewers and storm drainage pipes deeper than 30 feet will require pre-approval from the City Engineer or designee.

** Minimum cover is depth of cover excluding cover depth provided by flexible pavements. No portion of any pipe shall be allowed within 6 inches of the bottom of the flexible or concrete pavement.

*** The design engineer is responsible for specifying a thickness ratio adequate to withstand all loads anticipated for this application.

**** For use in Storm Drainage applications only.

***** These are the City preferred material types that must be utilized unless depth, loading, or other conditions necessitate the use of other material types indicated in the table. Consideration of alternate material type requires deviation.

8.02 Sanitary Sewer and Storm Drainage Structures

8.02.01 Type and Size

Manholes, Catch Basins, and Inlets shall be constructed per the following:

Table 8-3 Sanitary Sewer and Storm Drainage Structure Types

Type	Construction Standard	Notes
Manhole (48-inch to 60-inch)	WSDOT Standard Plan B-15.20 or B-15.60 with an eccentric cone	
Manhole (72-inch to 96-inch)	WSDOT Standard Plan B-15.40 with a flat top instead of riser	
Catch Basin Type I	WSDOT Standard Plan B-5.20	15-inch diameter max. pipe size, 5-foot max. depth to invert.
Catch Basin Type II	WSDOT Standard Plan B-10.20	
Concrete Inlet	WSDOT Standard Plan B-25.60	15-inch diameter max. pipe size, 5-foot max. depth to invert., only utilized for single pipe and where a full depth catch basin is not feasible.
Cement Concrete Curb and Gutter Pan	WSDOT Standard Plan F-10.16	Utilized along curb and gutter sections.
Rectangular Vaned Grate	WSDOT Standard Plan B-30.30	Utilized for all catch basins along curb and gutter sections unless in a sag condition.
Rectangular Frame (Reversible)	WSDOT Standard Plan B-30.10	Utilized for all catch basins.
Combination Inlet	WSDOT Standard Plan B-25.20	Utilized in sag conditions along curb and gutter.

Shallow manholes (32”-50” deep) shall conform to **City of Auburn Standard Detail S-06** and may only be used upon approval of the City Engineer or designee.

Additional design provisions may be required by the City Engineer or designee for manholes over 20 feet deep.

Manhole diameters shall meet the following requirements based on the manhole depth and the size, number, and configuration of pipes entering as shown on **Table 8-3**.

Manholes shall provide a minimum of 0.10 foot of drop between the inlet pipe and the outlet pipe. Pipes of differing diameters shall be aligned so that the crowns of the pipes match. Where the slope of a pipe entering or exiting a manhole is greater than 5%, the slope shall be continued through the manhole and the invert elevations indicated on the plans.

Manholes are to be channeled from the entering pipe to the outlet pipe, with the sidewalls of the channel extended above the top of the largest connected pipe. See **City of Auburn Standard Detail S-08**. When making a new connection to an existing manhole, the manhole shall be rechanneled to match the new pipe configuration.

Table 8-4 Sanitary Sewer and Storm Drainage Structure Sizing

Manhole Diameter	Number & Diameter of pipes/ Connections Allowed	Depth of Manhole
48” Diameter	1 Pipe, 21” 2 Pipes, 12” – 18” 3 Pipes, 8” – 10”	4’ Minimum 12’ Maximum
54” Diameter	1 Pipe, 36” 2 Pipes, 21” – 30” 3 Pipes, 12” – 18” 4 Pipes, 8” – 10”	6’ Minimum 15’ Maximum
60” Diameter	1 Pipe, 42” 2 Pipes, 24” – 36” 3 Pipes, 15” – 21” 4 Pipes, 10” – 12” 5 Pipes, 8”	8’ Minimum 20’ Maximum
72” Diameter	1 Pipe, 48” – 54” 2 Pipes, 36” – 42” 3 Pipes, 18” – 24” 4 Pipes, 12” – 15” 5 Pipes, 8” – 10”	8’ Minimum 25’ Maximum

Pipes entering manholes must have a minimum of 8 inches between their penetrations on the inside of the manhole (See **City of Auburn Standard Detail S-08**).

The angle between inlet pipes and the outlet pipe shall not be less than 90-degrees.

Drop manholes are discouraged and require approval from City Engineer or designee. When approved, drop manholes shall be inside drops conforming to **City of Auburn Standard Detail S-05**.

8.02.02 Structure Locations

The design of new sanitary sewer and storm drainage conveyance systems shall be done in a manner that minimizes the total number of structures (manholes and catch basins), using the following criteria:

A. Structures shall be installed at a maximum spacing of 400 feet apart along the main.

B. A structure shall be installed at all junctions of two or more mains.

C. A structure is required whenever connecting to a main with an 8-inch or larger diameter pipe.

D. A structure shall be installed at all changes in vertical slope, horizontal direction, and/or pipe size.

E. In cases where a sewer main steeper than 5% must turn 90-degrees through a manhole, a transition manhole is required at least 20 feet upstream to reduce the pipe slope to a maximum of 2% and/or to change the angle to 45-degrees.

F. All public sanitary sewer lines shall end with a manhole. All end of the line sanitary sewer manholes with no side sewers connected directly to them shall conform to **City of Auburn Standard Detail S-07**.

G. Sanitary sewer manholes are not to be located within the limits of surface water ponding or flow lines associated with stormwater runoff.

H. Structure covers shall be located outside the wheel paths of roadways and outside driveway aprons.

I. Structures shall not be located within sidewalks, landscape strips trails, or curb and gutters, except as approved by the City Engineer, or Designee. In cases where structures are located in walking paths, the structure cover shall be non-skid, smooth top.

J. Cleanouts are not an acceptable alternative for structures (manholes or catch basins) except they may be used with City Engineer or designee approval at the end of a sanitary sewer main, when the future extension of the sanitary sewer main is planned, and the current end point is not a practical location for a manhole. When approved by the City Engineer or designee, public cleanouts shall conform to **City of Auburn Standard Detail S-03.**

K. Structures shall not be located on portions of streets or access roads with a slope greater than 8%.

L. Structures shall be subject to the separation requirements from buildings and structures specified in **Chapter 6**.

M. Structures set in gravel areas shall be set at the center of a 6-foot concrete apron flush with the finished grade of the apron.

N. Structures set in landscaped or unimproved areas shall be set 6 inches to 12 inches higher than the surrounding terrain and provided with a 6-foot diameter concrete apron around the manhole lid.

O. Frames and covers shall conform to **City of Auburn Standard Detail S-04**.

P. Structures shall be adjusted to grade per **City of Auburn Standard Detail T-05**. Rubberized adjustment rings may be required in certain circumstances as determined by the City Engineer.

8.03 Sanitary Side Sewers

See **City of Auburn Standard Details S-01, S-02 & S-03.**

Side sewers are defined as that portion of the sewer system that extends from 2 feet outside of the outer foundation wall of the structure to the public sanitary sewer main. The City maintains the portion of the side sewer located within the right-of-way. The property owner owns and maintains the portion of the side sewer located outside of the public right-of-way. Side sewers located within easements are the property owners' responsibility to maintain.

Side sewers shall meet the following requirements and shall be laid out per **Figure 8-01**:

A. A separate and independent side sewer from the public main shall be provided for each and every parcel.

B. A separate and independent side sewer from the public main shall be provided for each non-single family building on a parcel.

C. Side sewers within the public right-of-way and side sewers serving non-single family development shall be a minimum of 6-inches in diameter. The private portion of side sewers serving single family residences may be 4-inches in diameter within the parcel that it serves.

D. 6-inch diameter side sewers shall be connected to the public sanitary sewer main by the use of a tee (**City of Auburn Standard Detail S-01**) or connected directly to a manhole located along the public main. All side sewer manhole connections shall incorporate a channeled or rechanneled manhole.

E. Side sewers with a diameter of 8-inches or greater shall be connected to the sanitary sewer system by use of a sanitary sewer manhole which shall be channeled or rechanneled.

F. When constructing sanitary sewer mains in new developments, side sewer installation shall extend from the connection on the main line to the edge of any utility easements or the public right-of-way, whichever is further.

G. When installing new sanitary sewer mains or replacing existing mains in developed areas, side sewers shall be installed for all existing occupied structures and any buildable lots. Side sewers shall extend to the property lines and their location shall be clearly marked in conformance with **City of Auburn Standard Detail S-01**.

H. The maximum length of side sewer from the sanitary sewer main to the building shall not exceed 150 feet. The City Engineer or designee may allow this length to be exceeded in instances where the side sewer can maintain a 2% slope, a public sewer extension built to shorten the side sewer would not serve any other potential customers. Where the maximum length is exceeded and the minimum slope maintained, the City Engineer or designee may require additional cleanouts or other measures to mitigate the additional length.

I. Side sewers shall be designed and constructed with a minimum 2% slope from the building to the tee or manhole connection. Where site constraints require that the slope be less than 2%, the City Engineer or designee may require larger diameter pipe and/or additional cleanouts.

J. When an immediate connection to a building is not being made, side sewers shall be designed to provide a minimum depth at the property line of 5 feet below the floor to be served or 6 feet below the street, whichever is deeper. In cases of vacant properties with no anticipated building elevation, the side sewer shall be constructed at a 2% slope from the tee.

K. Side Sewers shall not have horizontal or vertical bends located within the right-of-way.

L. Side sewers shall have a minimum cover of 5 feet at the edge of right-of-way.

M. Side sewers shall be a minimum of 5 feet from potable water service lines.

N. Side sewer cleanouts shall be installed within 3 feet of the building foundation providing an access point into said line for future maintenance.

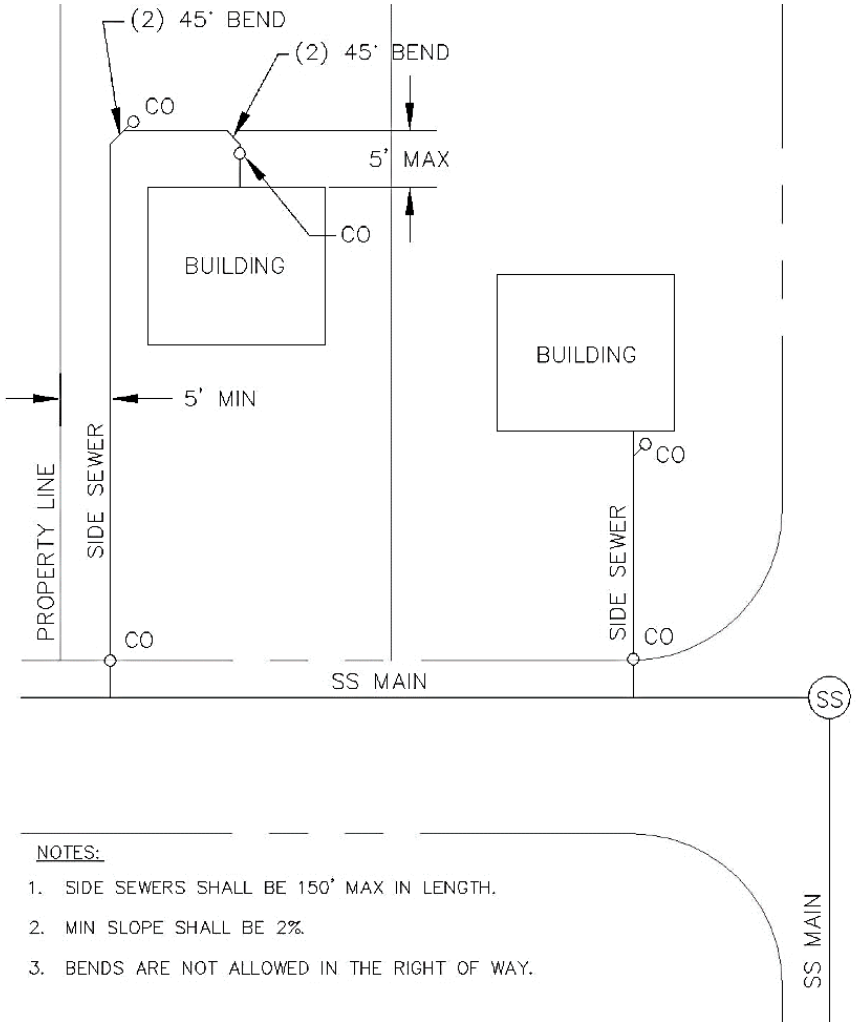
O. Side sewer cleanouts shall be installed at the edge of the property owner's side of the public right-of-way line or utility easement where the ownership of the side sewer changes from private to public.

P. Sanitary sewer cleanouts shall be installed in side sewers every 100 feet and for each change in direction totaling 90 degrees. See **Figure 8-01**.

Q. If the private portion of the side sewer crosses another private property other than the property being served, a minimum of a 10 foot wide private sewer easement (5 feet on either side of the pipe centerline) must be obtained granting the property owner being served permission to cross said property.

R. All side sewers must use push on gasketed joints. Glued joints are not allowed outside the building footprint.

Figure 8-01 Side Sewer Layout



8.04 Oil/Water Separators

Prior to discharging into the sanitary sewer system, oil separation facilities shall be used in pre-treating drainage flows from fuel islands, trash enclosures, wash pads, and floor drains where (in the opinion of the City Engineer or designee) heavy concentrations of oil may occur.

Pads with drains for trash enclosures and wash pads intended for washing the exterior surfaces of vehicles shall drain to a catch basin with a downturned 90-degree elbow prior to discharge to the sanitary sewer. Oil/water separators for other applications shall meet the following design criteria:

A. A forebay to collect floatable and the larger settleable solids.

B. A surface accessible inspection T inside the first chamber at the inflow pipe and a sample T at the last chamber at the outflow pipe.

C. Access to the separator shall be maintained free for inspection at all times.

D. A maximum of 200 SF of uncovered area open to rainfall may discharge to the separator. Refer to BMP S441 in the SWMM for applications where this may apply.

E. If a pump mechanism is required to convey the discharge from the site to the sanitary sewer system, the pump must be designed for discharge to a controlled gravity outlet flow into the City system.

F. The separator shall have a valve on the discharge pipe that can be closed during cleaning and in the event of a spill.

G. All piping entering and leaving the separator must be 6 inches minimum diameter.

H. Access points in the top of the separator vault must be provided to allow a minimum twelve-inch diameter access for observation and maintenance to all chambers of the separator.

I. Access doors shall be galvanized spring-assisted diamond plate with a penta-head bolt-locking latch and recessed lift handle.

J. Access doors must open a full 180 degrees.

8.05 Pressurized Sewer Systems

Private low pressure sewer systems are allowed only where the existing public system has already been extended to, or is within 200 feet of, the subject property and the elevation differences between the public sewer main and the subject property do not allow for a gravity connection. Extension of a private gravity sewer main onto the property(s) may be required if such extension could make gravity sewer service possible. Sewage from pressurized systems must be discharged into a minimum 6-inch diameter private gravity side sewer prior to connecting to the public portion of the side sewer.

Low pressure sewer systems are not allowed in public right-of-way or public easements.

Low pressure sewer systems shall be owned and maintained by those connecting to it. Systems serving multiple properties shall be within easements or tracts dedicated or owned by all properties connecting to the system.

All other proposed pressurized systems require deviation(s). In addition to the standard deviation considerations required by these standards, deviations requesting pressurized systems must show that extension of the public systems as intended per the Sewer Comprehensive Plan to serve the property(s) and that serving the property(s) with septic system(s) are not feasible. Septic systems may only be considered infeasible if there is no form or scale of a septic system(s) that the County would accept for at least one form of development of the property(s) that would be allowed under the current zoning and land use regulations. Determination that septic system(s) are not feasible require written documentation from the County.

8.06 Sanitary Sewer Meters

The use of sewer meters shall only be allowed if it is determined by the City Engineer that a sewer meter is the appropriate device for the accurate measurement of wastewater being sent into the public sewer system.

8.07 Storm Drainage System Requirements

All requests for developing a storm drainage system must comply with the City of Auburn Surface Water Management Manual (SWMM). The City has adopted the 2019 Department of Ecology Stormwater Management Manual for Western Washington and the City of Auburn Supplemental Manual as the SWMM. The Supplemental Manual provides guidance for applying specific sections of the Ecology document within the City of Auburn. All references to the City's SWMM include both documents. The City's Supplemental Manual can be found utilizing the following hyperlink:

Supplemental Manual

Storm drainage system design is guided by the 10 Minimum Requirements for Stormwater Management, listed below. The applicability of the Minimum Requirements is based on project size and the total new and/or replaced hard surfaces created by the project. It is recommended that the Minimum Requirements, especially LID, are considered at the beginning of project design to ensure that the required elements can be included in the project. The SWMM also addresses modeling standards and design criteria for conveyance, storage, treatment facilities, and other drainage system structures.

The SWMM is divided into five volumes that address different aspects of storm drainage system design. These volumes and the key components for design and application submittal are:

Volume I – What Requirements Apply to My Site?

The 10 Minimum Requirements (MR) for Stormwater Management are:

MR #1: Preparation of Stormwater Site Plans

MR #2: Construction Stormwater Pollution Prevention Plan

MR #3: Source Control of Pollution

MR #4: Preservation of Natural Drainage Systems and Outfalls

MR #5: On-Site Stormwater Management

MR #6: Runoff Treatment

MR #7: Flow Control

MR #8: Wetlands Protection

MR #9: Operations and Maintenance

MR #10: Off-Site Analysis and Mitigation (Supplemental Manual)

Volume II – Construction Stormwater Pollution Prevention

Volume III – Choosing, Modeling, and Documenting Your BMPs

Volume IV – Source Control BMP Library

Volume V – Runoff Treatment, Flow Control, and LID BMP Library

Chapter 9: Facilities in the Right of Way

9.00 Preface

The design of public and private facilities located within City right-of-way shall be in conformance with these standards. For the purposes of these standards, “facilities” shall include City owned and non-City owned potable water, irrigation water, sanitary sewer, storm drain, gas, communications, electrical, illumination, and any other utility facility and their appurtenances. This Chapter also covers non-utility facilities such as building foundation elements, awnings, and private signs.

When a non-City sponsored project requires the relocation of private utilities due to public utility extensions or other City required improvements, the cost of relocation of the private utility shall be borne by the developer.

9.01 Franchise/Public Way Agreement Requirement

Private facilities within the City right-of-way require prior approval from the City. Except as allowed otherwise by Auburn City Code, owners of private facilities in the right-of-way shall have a current franchise, public way agreement, or Right-of-Way Use Permit consistent with Title 20 and/or Title 13 and/or Title 12, if applicable, of the Auburn City Code.

9.02 Construction Permit Requirement

Any non-City entity intending to construct, repair, or replace any facility in City right-of-way shall apply for a construction permit. Applications for constructions permits can be made directly through MyBuildingPermit.com. A City permit must be obtained prior to any work within the City right-of-way.

9.03 Design Criteria

The City has established the following minimum requirements to ensure the efficient construction of facilities with the least impact to City transportation and public utility infrastructure:

A. Public water, sewer, storm, and telecommunications facilities shall be constructed per the Engineering Design and Construction Standards.

B. Private underground facilities shall be installed with no less than 36 inches of finished cover.

C. Private underground facilities shall be located a minimum horizontal distance of 5 feet from buildings and public facilities.

D. When crossing public underground facilities, private underground facilities shall be located a minimum vertical distance of 12 inches from the public utility. Additional separation may be required between potable and non-potable pipes per **Chapter 6** of these Engineering Design Standards.

E. Manholes, valve boxes, power vaults, etc., that are located in the paved area of a street shall be located outside of the wheel paths of vehicles and flush with the pavement surface.

F. The design of underground facilities shall seek to minimize the number of required structures and redundant pipes/conduits.

G. Structures located within parking lots, sidewalks, and paths/trails shall also be flush with the surface. In areas where traffic will pass over the structure, load-bearing lids shall be incorporated in the design.

H. Repair of existing cement concrete roadway panels shall be per **City of Auburn Standard Detail T-27.**

I. The City Engineer may allow required restoration overlays per **City of Auburn Standard Details T-02 and T-02A** of individual trenches to be deferred where a program or project exists that would complete the restoration/overlay of multiple trenches as a single project or effort. In all cases, permanent repair of the trench is required per **City of Auburn Standard Detail T-01** with the trench construction and backfill and cannot be deferred or delayed.

9.04 Pavement Trenching and Restoration

Trenching, backfill, and restoration shall, within paved areas, be per **City of Auburn Standard Details T-01 and T-02**. Manhole covers, valve covers, vault lids, and other utility appurtenances within pavement restoration areas, including areas of grind and overlay, shall be first lowered beneath the final wear course, paved over, and then raised to final grade per **City of Auburn Standard Detail T-05** and per the Construction Standards. This requirement may be waived by the City Engineer or designee when the total area of the final wear course paving area is less than 100 SF.

The City Engineer may allow required restoration overlays per **City of Auburn Standard Details T-02 and T-02A** of individual trenches to be deferred where a program or project exists that would complete the restoration/overlay of multiple trenches as a single project or effort. In all cases, permanent repair of the trench is required per **City of Auburn Standard Detail T-01** with the trench construction and backfill and cannot be deferred or delayed.

9.04.01 Perpendicular Trenching in Asphalt Pavement

Trenching through and within intersections is considered perpendicular trenching.

A. Perpendicular trench backfill shall be in accordance with **City of Auburn Standard Detail T-01.**

B. Pavement restoration shall match existing pavement type and thickness with a minimum thickness of 4-inches.

C. After trenching, the adjacent pavement on each side of the trench shall be sawcut and removed (full depth) to a minimum of 12 inches from the edges of trench to reveal a clean pavement edge to patch against. This is referred to as the “T-cut”.

D. In the process of perpendicular trenching, if the remaining section of pavement between the edge of T-cut and the edge of the pavement/gutter is less than 4 feet wide, the restoration/overlay will extend to the edge of the pavement/gutter.

E. In the process of perpendicular trenching, remaining sections of pavement between the edge of T-cut and lane line/lane edges less than 4 feet wide, shall be included in the restoration/overlay area.

F. When more than 1 perpendicular trench is constructed along a roadway, pavement areas between the limits of the restoration/overlay limits that are less than 10 feet wide are to be added to the required restoration/overlay area.

G. Perpendicular trenching to roadways may not be allowed on newer roads or streets that have been constructed or overlaid within the last five years.

H. Perpendicular trenching may not be allowed or may be limited to off-peak hours and/or weekends on principal arterials or where the construction activity will seriously impede large volume traffic patterns. Utility connections that have to be made within the roadway will be allowed after approval from the City.

I. Jacking/boring alternatives may be required as substitute methods for perpendicular trenching.

J. The minimum pavement patch width and overlay restoration for perpendicular/transverse trenches shall be per **City of Auburn Standard Detail T-02.**

K. When multiple trenches are required in close proximity, the asphalt patch shall encompass all the trenches.

L. The longitudinal edge of the perpendicular asphalt patch shall not lie within the wheel paths of vehicles.

M. Requirements for curb ramp installation, replacement, and/or upgrade associated with the utility trench work shall be in accordance with **Chapter 10**.

9.04.02 Longitudinal Trenching in Asphalt Pavement

Trenching outside of intersection limits (curb returns) and running parallel, or within 30 degrees of parallel, to the edge of pavement/flowline is considered longitudinal trenching.

A. Longitudinal trench backfill shall be in accordance with **City of Auburn Standard Detail T-01**.

B. Pavement restoration shall match existing pavement type and thickness with a minimum thickness of 4-inches.

C. After trenching, the adjacent pavement on each side of the trench shall be sawcut and removed (full depth) to a minimum of 12 inches from the edges of trench to reveal a clean pavement edge to patch against. This is referred to as the “T-cut”.

D. In the process of longitudinal trenching, if the remaining section of pavement between the edge of T-cut and the edge of the pavement/gutter is less than 4 feet wide, the restoration/overlay will extend from the trench to the edge of the pavement/gutter.

E. In the process of longitudinal trenching, remaining sections of pavement between the edge of T-cut and adjacent lane line/lane limits less than 4 feet wide, shall be included in the restoration/overlay area.

F. When more than 1 longitudinal trench is constructed along a roadway, pavement areas between the limits of the restoration/overlay limits that are less than 5 feet wide are to be added to the required restoration/overlay area.

G. The longitudinal edges of the asphalt patch shall not lie within the wheel paths of vehicles.

H. The minimum pavement patch width and overlay restoration for longitudinal trenches shall be per **City of Auburn Standard Detail T-02**.

I. For streets that have been constructed or overlaid within the last 5 five years the City Engineer may require additional restoration area.

J. For streets that have been constructed or overlaid within the last 5 five years, or for principal arterials where open trenching will impede large volume traffic patterns, the City Engineer may require that trenchless techniques be used as an alternative. The City Engineer may require that trenchless techniques be limited to off peak hours and/or weekends.

K. Requirements for curb ramp installation, replacement, and/or upgrade associated with the utility trench work shall be in accordance with **Chapter 10**.

L. The City Engineer may allow trench restoration/overlay of individual trenches to be included in a program or project to complete the restoration/overlay of multiple trenches as a single project or effort.

9.04.03 Trenching in Cement Concrete Pavement

A. Repair of existing cement concrete roadway panels shall be per **City of Auburn Standard Detail T-27.**

B. The edges of trenches in concrete pavement shall be sawcut prior to excavation to avoid damaging the slab. Concrete slabs 6 inches and over shall be drilled for the installation of dowels. Dowels shall be 1 and 1¼ inches in diameter, 18 inches long, and spaced 12 inches center to center.

C. The minimum pavement patch width for concrete trenches shall be 4 feet.

D. In the process of trenching concrete, if the section of pavement between the trench and the edge of the existing concrete panel is less than 4 feet, the section shall be removed and replaced.

E. Longitudinal trenches in concrete may be repaved with an asphalt pavement thickness of equivalent strength upon City approval.

9.05 Non-Pavement Trenching

Trenching in areas other than paved surfaces, including sidewalks, gravel shoulders, and landscape strips, shall conform, where applicable, to the previous sections and replace the disturbed material in kind or as directed by the City. Utility trench bedding and backfill shall conform to **City of Auburn Standard Detail T-01** and to the Construction Standards.

9.06 Aboveground Facilities

Unless otherwise provided in a public way agreement, franchise, or lease, all facilities must be located underground. Exceptions to this standard are as follows:

A. Fire Hydrants, Blow-offs, Air/Pressure Relief

B. Pipe and cable crossings of rivers and freeways

C. High voltage electrical facilities (transmission lines and substations)

D. Illumination and signal facilities

E. Telephone pedestals

F. Aerial cables hung on existing utility poles (with approval of City Engineer)

G. Small Wireless Facilities

H. Other facilities, that in the opinion of the City Engineer, cannot be reasonably constructed underground.

Where underground requirements do not apply, the following parameters shall be addressed in locating or relocating aboveground utilities:

A. Clear Zone Requirements: Non-breakaway utility poles and other fixed aboveground utility structures shall meet the clear zone requirements of these design standards, See **Chapter 10**. Respective utility owners shall be responsible for securing easements from adjacent property where clear zone requirements cannot be met within the public right of way.

B. ADA Requirements: Utility poles and other aboveground utility structures shall not be located within the sidewalk. This requirement may be waived by the City Engineer if the pole location in the sidewalk allows a minimum of 48 inches of unobstructed pedestrian travel way and the pole/structure meets clear zone/lateral separation requirements described in **Chapter 10**.

C. Utility poles and other aboveground utility structures shall be compatible with driveways, intersections, and all other road features. They shall not interfere with sight distance, road signing, traffic signals, culverts, etc. The City Engineer may require poles to be relocated to meet this requirement.

D. No utility pole or other aboveground utility structures shall be located in such a way as to pose a hazard to the general public. Utility companies shall locate and replace poles and other structures with primary consideration given to public safety and roadway functionality.

E. New overhead power and communications wires and appurtenances shall comply with the vertical clearance requirements established by WAC-468-34-290. Except as may be determined otherwise by the City Engineer to address safety issues, for the purposes of this overhead clearance requirement, replacement of existing facilities and overlashing of existing cables/wires that do not reduce the existing minimum vertical clearances are not considered to be new. Whether considered to be new or not, plans for overhead power and communications wires and appurtenances must show the existing and proposed vertical clearance of the facilities being installed or modified at each midspan location between poles.

F. If allowed by the City Engineer, wireless and radio facilities that are not considered Small Wireless Facilities per ACC 20.14 are subject to the concealment standards cited in **Chapter 9**.

G. A net increase in the number of poles is not allowed except that the City Engineer may determine that additional poles with service lines only serving properties not included in the project (no distribution lines) may be allowed. In making this determination, the City Engineer will consider the potential impact to structures of undergrounding service line connections.

9.07 Building and Structure Related Facilities

Permanent buildings, building shoring systems that would leave any elements in the right-of-way after construction, footings and foundations, and privately owned walls, gates, and fences are not allowed in the public right-of-way.

Facilities such as Awnings, overhangs, and elevated decks/patios/railing (only in the Downtown Urban Center Zone), and bus shelters may be permitted by the City Engineer with special conditions and considered on a case-by-case basis and subject to ACC 12.60.

9.08 Small Wireless Facilities

This section describes design standards for Small Wireless Facilities as set forth in ACC 20.14. The purpose of these standards is to provide concealment and safety standards for Small Wireless Facilities in the public right-of-way.

9.08.01 General Requirements

A. Small wireless facilities will comply with applicable Federal Communications Commission (FCC), Federal Aviation Administration (FAA), state, and City regulations and standards.

B. A Small Wireless Facility will not be used for mounting signs, billboards or message displays except as approved by the City for the purpose of providing concealment.

C. No lights, other than street lights, are permitted on any pole or antenna unless required by the Federal Communications Commission, the Federal Aviation Administration, or the City.

D. No Small Wireless Facility may be attached to a tree or any other vegetation.

E. Installation of a new pole in the public right of way to serve a Small Wireless Facility will not be allowed whenever an existing pole or other structure in the public right of way can meet technical and network location requirements and the owner of said pole or structure grants permission for the Small Wireless Facility Attachment. If the existing pole or structure does not meet the City's design standards or other requirements, with agreement from its owner, it may be replaced with a pole or structure that meets the design requirements and these standards. In these cases, all attachments must be transferred from the existing pole to the new pole and the existing pole must be completely removed and surface restored.

F. Small Wireless Facilities and all associated facilities, including support poles or structures, will be free from all manufacturer decals and/or logos.

G. Generators are not permitted for Small Wireless Facilities. A battery backup may be permitted through the submittal of a concealment plan and emergency spill response plan.

H. Installation of Small Wireless Facilities is not allowed where it would create a sight distance issue for vehicular or non-motorized traffic, identified in the City of Auburn Engineering Design and Construction Standards.

I. Applications for Small Wireless Facilities will include plans that conform to the plan requirements described in the City of Auburn Design and Construction Standards. Concealment plans will include photos of the proposed site location(s) with overlaid renderings of the proposed Small Wireless Facilities to demonstrate the facility's adherence to concealment standards.

J. Small Wireless Facilities may not share power service connections with City facilities unless specified otherwise in the applicable use agreement for City-owned property.

K. Record Construction Drawings are required in accordance with the City of Auburn Engineering Design and Construction standards.

9.08.02 Attachments to City Facilities

A. Attachment, modification, relocation, or replacement of City facilities requires an executed agreement with the City in addition to any applicable franchise or public right-of-way agreements.

B. Attachment to an existing City pole requires calculations sealed by a Professional Engineer that shows the existing pole can support the Small Wireless Facility. Where the existing facility being attached to is a City owned street light, signal pole, sign support structure, or Dynamic Message Sign (DMS) support structure, calculations must show compliance with the strength and loading parameters stated in the City's Construction Standards. The loading calculations will include consideration of potential future loading with planned or potential future City facility attachments.

C. Small Wireless Facilities are not permitted on City street light poles where they would interfere with street lighting, City banners, flower baskets, holiday lighting, holiday decorations, or other City uses of the pole.

D. Replaced City light poles will be of the same color and similar style as adjacent existing City light poles, unless otherwise approved by the City Engineer. Where a City light pole has been replaced or relocated the davit arm length will be replaced as needed to place the luminaire in-line with the other luminaires along the roadway and in accordance with City design standards.

E. Installation of Small Wireless Facilities on City facilities within secured sites is not allowed. Secure City facilities are those facilities that are enclosed by a fence with locked gate access and typically include water reservoirs, water treatment plants, pump stations, and water wells.

F. Installation of Small Wireless Facilities on traffic signal mast arms is not allowed.

9.08.03 General Pole Requirements

A. Installation of Small Wireless Facilities on poles intended to break-away from vehicular impact is not allowed.

B. New, replaced, or relocated poles are not allowed within the clear zone (as identified in the City of Auburn Engineering Design and Construction Standards). For the purposes of determining clear zone requirements, poles with Small Wireless Facilities attached are considered utility poles.

C. Small Wireless Facilities will be mounted such that no portion of the facility, including antenna, are higher than 50 feet, or 10% higher than the height of buildings or structures immediately adjacent to the right-of-way, or the Small Wireless Facility attachment does not extend the height of the pole to more than 50 feet or by more than 10 percent, whichever is greater.

D. A pole that is relocated or replaced for the purpose of attaching a Small Wireless Facility is considered an existing structure.

9.08.04 Wiring and Conduit

A. All wiring must be inspected and accepted by Washington Department of Labor and Industries and associated documentation provided to the City prior to being placed into service.

B. Except on wooden poles and other support structures where internal routing is not feasible, all cables, wires, and fiber must be routed internally in the pole or support structure and must not be visible externally.

C. Wiring, cables, and fiber associated with the Small Wireless Facility will be in their own conduit, interducts, and channels so they are not co-mingled with conduits and cables serving other uses. Electrical wiring will be separated from communications wiring with interduct or separate channels.

D. All interducts, channels, cables, and wiring will be clearly labeled at the pole ends, handholes, junction boxes, and other termination points. Record construction drawings will show and label all cables/wiring, interduct, and channels.

9.08.05 Concealment

Small Wireless Facilities will be screened, concealed, or camouflaged employing the best available technology, such as compatible materials, shrouding, location, color, and other tactics to minimize visibility of the facility.

Pole mounted equipment, antenna, conduits, cables, mounting hardware, and other visible components will match the color of the pole they are attached to unless specifically approved by the City. The City Engineer or the City Engineer's designee will consider the cumulative visual effects on the visual character of the surrounding area of Small Wireless Facilities mounted on existing structures and/or located on a given permitted site in evaluating concealment requirements.

Where conduit or cables are mounted external to the support structure, the outside cable conduit or cable will be the color of the support structure, and the City may require that the cable be placed in conduit. Full concealment of all conduits, cables, wires, and fiber is required within mounting brackets, shrouds, canisters, or sleeves if attaching to exterior antennas or equipment.

9.08.06 Pole Mounted Antennas and Equipment

Antennas will be located, mounted and designed so that visual and aesthetic impacts upon surrounding land uses and structures are minimized, and so that they blend into the existing environment.

Panel antennas shall not be mounted more than 12 inches from the surface of the utility pole, with the distance measured from inside edge of the antenna to the surface of the pole, unless an additional distance is required by the pole owner. An applicant may install a side-mounted canister antenna, so long as the inside edge of the antenna is no more than 12 inches from the surface of the pole.

Pole mounted equipment other than the antenna(s), electric meter, and disconnect switch must be concealed within equipment enclosures. Equipment enclosures will be installed flush to the pole and not extend more than 24 inches from the face of the pole.

All attachments to a pole that are projecting, or any equipment or appurtenance mounted on the ground, will comply with the Engineering Design and Construction Standards, the Americans with Disabilities Act (ADA) standards and will not obstruct an existing or planned sidewalk or walkway.

All proposed projecting attachments to the pole will provide a minimum vertical clearance of 12 feet over sidewalks, 16 feet over driveways, and 20 feet over roadways.

9.08.07 Non-Pole Mounted Equipment

A. Non-pole mounted equipment facilities will be placed underground if doing so is technically feasible and would not defeat the purpose of the facility.

B. Above ground equipment facilities that are not pole mounted will be screened from any street and adjacent property with fencing, landscaping, shrouding, topography, or a combination of these methods,

C. Above ground equipment facilities that are not pole mounted will be treated with graffiti resistant paint or material.

9.08.08 Strand Mounted Small Wireless Facilities

A. Each strand mounted Small Wireless Facility will not exceed three CFin volume.

B. The strand mounted Small Wireless Facility will be placed as close as possible to the nearest utility pole, but no more than five feet from the pole unless a greater distance is technically necessary or required by the pole owner for safety clearance.

C. No strand mounted Small Wireless Facility will be located in or above the portion of the roadway open to vehicular or non-motorized traffic.

D. Strand mounted small wireless facilities must be installed to cause the least visual impact and with the minimum excess exterior cabling or wires (other than the original strand) necessary to meet the technological needs of the facility.

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Chapter 10: Transportation

10.00 Preface

The intent of this Chapter is to encourage the uniform development of an integrated and accessible transportation system that will support all modes. Through the implementation of these standards, streets are built as transportation facilities as well as public space, contributing positively to the character of the City. These standards help create an efficient multimodal transportation system while minimizing environmental impacts to the community.

The design of Streets within the City of Auburn shall conform to the standards provided herein. The current editions of the American Association of State Highway and Transportation Officials (AASHTO), FHWA and Washington State Department of Transportation, MUTCD, and the State of Washington Department of Transportation (WSDOT) standards shall be utilized by the City Engineer when the design standards, standard specifications, or standard drawings are not covered by the scope of the City's standards.

The design criteria used to estimate future street usage are established in the City's Comprehensive Transportation Plan (CTP).

All streets shall be designed and constructed to comply with Federal Americans with Disabilities Act (ADA) laws. Additional guidelines and information can be found at WSDOT's ADA web page by clicking on the following hyperlink:

https://wsdot.wa.gov/about/americans-disabilities-act-ada

10.01 Development Activity Requirements

10.01.01 Traffic Impact Analysis

Per the Comprehensive Transportation Plan (CTP), development shall not be allowed when the impacts of the development on the transportation system degrade the level of service (LOS) below the adopted LOS standard, unless the impacts are mitigated by the improvements provided by the development. For more details regarding level of service standards and when mitigation is triggered, see the CTP.

A traffic impact analysis (TIA) is used to identify capacity and safety concerns, to assist in the evaluation of site design as it relates to traffic engineering issues, and to identify appropriate solutions and mitigation.

Projected trip generation shall be calculated based on the current edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.

10.01.01.A When Traffic Impact Analyses are Required

To adequately assess a development's traffic impact, the City Engineer, or designee, may require a TIA. The requirement for a TIA will be based on the size of the development proposed, existing street and intersection conditions, traffic volumes, crash history, safety considerations, community concerns, and other pertinent factors relating to traffic impacts attributable to the development. A traffic impact analysis is required for development activities that create one or more of the following conditions:

A. The development could potentially affect an intersection or corridor where an existing level of service is at or below standard.

B. The development generates more than 30 PM or AM peak hour trips on a corridor or intersection.

C. The development may potentially affect the implementation of the street system as outlined in the Comprehensive Transportation Plan and Six Year Transportation Improvement Program (TIP), or of any other documented transportation project.

D. The development proposes a rezone of the subject property.

E. The original Traffic Impact Analysis for a future development is outdated due to changes in traffic volumes in the vicinity of the proposed project or approved pipeline projects or a change in the proposed land use's trip generation and/or distribution.

F. The development could potentially affect safety or requires an analysis to assist in designing appropriate access.

G. Special event land uses which do not exhibit typical trip generation characteristics may require unique analysis, including but not limited to weekend and off-peak scenarios, and AM versus PM time frames. Examples of such uses would be school, concert stadiums, racetracks or uses which exhibit substantial traffic peaking associated with special events that are scheduled on a periodic basis. The traffic analysis for such uses may include a traffic management plan to control traffic impacts associated with the special events.

10.01.01.B Elements of a Traffic Impact Analysis

Development activities have a wide range of considerations and potential issues that vary depending on the proposed development and its setting. The TIA will be cooperatively scoped by the developer and City Engineer, or designee. However, the City Engineer, or designee, will make the final decision regarding what analyses must be included in the TIA. The TIA may include all or some of the following analyses:

A. Vehicle level of service analyses (Intersection delay and Intersection queueing).

B. Analysis of proposed street connections to other new and existing streets and resulting volumes to demonstrate the requirements of **Section 10.03.01** are met.

C. Critical gap analyses.

D. Roundabout analyses.

E. Traffic signal warrant analyses.

F. Stop control warrant analyses.

G. Turn lane warrant analyses.

H. Traffic calming evaluation.

I. Access management evaluation.

J. Mitigation identification and analyses confirm proposed mitigation addresses impacts. See Mitigation Identification section.

K. Neighborhood Circulation Plan. See Neighborhood Circulation Plan section.

L. Truck trip generation and routing analysis.

M. Evaluation of existing transit services and facilities and identification of modified or new transit services and facilities needed to serve the project.

N. Other analyses and information as required by the City Engineer, or designee.

10.01.01.C Mitigation Identification and Recommendation

To address the potential adverse impacts of a development activity and to fulfill an identified need for public services within the impacted area related to the development, the TIA shall identify any impacts and needs required to be addressed by the development. The TIA shall identify measures to address the impacts and needs and demonstrate through modeling and/or other analyses that the proposed measures provide adequate mitigation and fulfillment of the needs. The developer is responsible for mitigating on-site and off-site deficiencies for present and proposed phases of the development. The TIA shall propose improvements necessary for safe and efficient traffic flow and bicycle, pedestrian, and transit movement and access proportional to the identified impacts. Build-out year, and project phasing impacts shall be considered. Long range forecast modeling is required for proposed zoning changes or non-conforming uses. All or some of the following items are to be included in the mitigation identification:

A. Measures for mitigating on-site impacts and proposed mitigation.

B. Measures for mitigating off-site impacts and proposed mitigation.

C. Discussion of whether on-site and off-site improvements are justified, reasonably related to, and proportional to the impacts of the proposed development. In situations where mitigation of a development's impacts provides mitigation beyond what is caused by the development and beyond the required half street improvements, the City Engineer may consider under certain conditions and in accordance with applicable City Code, a traffic impact fee credit and/or a payback agreement.

D. Any requirements or mitigation measures associated with the Neighborhood Circulation Plan.

The Traffic Impact Analysis shall clearly state the mitigation measures recommended by the analysis and shall summarize how the recommended mitigations are proportional to the identified impacts. The recommended mitigation measures shall be explained in sufficient detail in the analysis to allow them to be understood and evaluated. The recommendation shall also include the following:

A. Clear statements of the applicant's recommended mitigation measures.

B. Conceptual plans depicting recommended mitigation improvements and their relationship to existing and proposed conditions if drawings are needed.

10.01.02 Neighborhood Circulation Plan

Per ACC 17.16, a Neighborhood Circulation Plan is a conceptual plan that outlines the vehicular and nonmotorized circulation within and between a proposed subdivision and the surrounding area consistent with the CTP. Per ACC 17.10, a Neighborhood Circulation Plan is required with all subdivision applications that meets the requirements of ACC 17.16 and RCW 58.17.110(2) for safe walking paths for students. This requirement applies to both residential and non-residential subdivisions. To satisfy this requirement, plans and supporting documentation (such as a TIA where applicable), must satisfy and demonstrate the following:

A. The planned street system must be compatible with the CTP. Development which is proposed in areas of the city which have a planned street system which

is a part of the comprehensive plan or the city's six-year plan, and any other street plan, shall make provisions for such streets and must not cause implementation of such street plans to become unattainable.

B. Make provisions for, and not otherwise obstruct, planned routes or facilities for bicycles, equestrian, or other nonmotorized transportation mode which is a part of the CTP or Transportation Improvement Plan (TIP).

C. Provide a nonmotorized circulation system that is integrated into the overall subdivision and the surrounding area as follows:

- Includes an integrated nonmotorized circulation system that connects buildings, open spaces, and parking areas with the adjacent street sidewalk system.
- Provides connections to existing or potential future trails/pedestrian routes on adjacent properties unless there are physical constraints such as sensitive areas that preclude the construction of a pedestrian connection.

D. For residential subdivisions, in coordination with the applicable school district(s), identify walking routes for students within the subdivision for which bus services are not provided or planned to be provided by the school district(s). At locations where the identified route is not on a sidewalk meeting minimum City standards or where the route crosses a roadway, the project shall include enhancements to meet the requirements of RCW 58.17.110(2). Enhancements shall be identified, designed, and documented by a professional engineer and are subject to acceptance by the City Engineer. In deciding whether the proposed enhancements are acceptable the City Engineer will consider factors such as operations, maintenance, and replacement. Roadway crossings at uncontrolled intersection legs or not at intersections shall require enhancement per **Section 10.09.05**.

10.01.03 Half Street Improvements

10.01.03.A Half-Street Triggers

The requirements described in this section are in addition to any requirements determined during the SEPA process and/or the traffic study process described in **Section 10.01.01**, to mitigate localized impacts of the proposed development activity. This section describes the requirements for public improvements triggered by permitted actions as set forth in ACC 12.64A.

10.01.03.B Half-Street Extents

A public street or alley frontage that requires public improvements is referred to as a "Half-Street". The Half-Street extents are determined using the frontage street's cross section applicable to the street's roadway classification as defined in the CTP. The Half-Street may apply to an existing roadway or to a planned roadway which has not yet been built and extends along the entire length of the subject property frontage(s) with vehicular and/or non-motorized access. When Half-Streets connect to an intersection, the nearest corner of the intersection on the side being improved shall be designed and constructed for the full build-out of the street and shall extend, at a minimum, the intersection curb returns. Half-Street elements may extend beyond the property frontage(s) as described herein to transition to existing improvements or to provide additional improvements as described in **Section 10.01.04**. Half-Street requirements associated with alley frontage is described in **Section 10.01.03.E**.

10.01.03.C Half-Street Width

Along existing roadways, the Half-Street width is the area from the planned right-of-way limits to the planned roadway centerline based on the roadway classification and the typical cross sections in **Section 10.03.06**. Along planned or unimproved roadways, the Half-Street width is either 1) the area from the planned right-of-way limits to the planned roadway centerline or 2) the area from the planned right-of-way limits to the limit required to provide 24 feet of pavement, whichever is greater.

10.01.03.D Required Half-Street New Improvements

Half-Streets shall include construction of the following elements: paved roadway, sidewalks, curb/gutter, street landscaping, street lighting system, storm drainage, and conduit for City telecommunications. Half-street improvements to planned or unimproved roadways shall include improvements to the un-finished side of the roadway (opposite of the subject property frontage), as follows: temporary curbing, shoulders, clear zones, guardrail, slope treatments, and drainage accommodations to assure proper drainage, bank stability, and traffic safety.

If a Half-Street does not connect at both ends to other streets, construction of a permanent or temporary cul-de-sac will be required.

Where Half-Streets are connected to existing streets, lane markings transition tapers are required in accordance with AASHTO where edges of pavement do not match. Pavement transition tapers shall be constructed to a minimum of 5:1 or as constrained by the existing right-of-way.

All public utility improvements required for the project and service connections in the right-of-way shall be installed during the Half-Street construction. The Half-Street will be designed to provide drainage for the constructed portion of the street and to connect to the existing storm drain systems (where present), or be designed to allow for connection of the system to future planned storm drain systems.

10.01.03.E Required Half-Street Existing Improvements

Half-Street improvements shall include removing and replacing existing driveway aprons that do not meet current ADA requirements. Half-Street improvements shall include addressing sidewalk obstructions in the Half-Steet area, including, but not limited to, replacing existing sidewalk areas that are an ADA obstruction.

Additionally, the City Engineer may make a determination that existing improvements within the Half-Street that do not conform to current City standards require improvement, upgrade, modification, or re-construction. In making this determination, the City Engineer will consider the proportionality of the required work to the potential impacts of the project, pedestrian and vehicular safety, ADA requirements, consistency and conformity with adjacent existing and planned improvements, and other factors as deemed relevant by the City Engineer. As part of this determination, the City Engineer may require existing driveway access(es) that do not meet current standards to be removed, relocated, and modified.

10.01.03.F Half-Street ROW Dedication

Right-of-way dedication is required for areas of the subject property within the Half-Street area along all frontages that are not already dedicated as right-of-way. Additional right-of-way dedication may be required as determined by the City Engineer per **Section 10.01.04**.

10.01.03.G Alley Half-Streets

Half-Street improvements in alleys shall include paving the alley to a width of 20 feet along the frontage of the property and, if the property frontage extends to the connection(s) of the alley to the roadway, the improvements shall also include construction of commercial driveway apron(s) at the alley entrance(s). Where a driveway apron already exists, the project shall be required to remove and replace it if the apron does not meet ADA requirements. Additional Half-Street improvements in alleys for projects constructing anything other than one single family residential unit shall include paving the alley to a width of 20 feet along the frontage limits and to the alley's roadway connection. For right-of-way dedication purposes, the Half-Street width along alley frontage is the area between the planned or existing centerline of the alley and the alley limits along the frontage (typically 10 feet offset towards the frontage along the planned or existing alley centerline), as determined by the City Engineer. The required paving width is reduced, as needed, to provide the maximum paved width available within the limits of the existing right-of-way and right-of-way dedicated by the project.

10.01.04 Additional Public Improvements

Additional public improvements besides the Half-Street improvements may be required as determined by the City Engineer to be necessary to mitigate the impacts of the development activity that may include the following improvements, not necessarily located on the property frontage:

A. Additional street lighting.

B. Additional storm drainage systems.

C. Traffic control and other safety systems including, but not limited to, roadway channelization, signage, non-motorized safety, and traffic calming.

D. Dedication of public right-of-way on public street frontages without vehicular or non-motorized access.

E. Off-site improvements identified in the TIA and/or through the SEPA process.

10.01.05 Deferred Public Improvements

Public improvements triggered per ACC 12.64A and/or undergrounding of overhead wiring triggered per ACC 13.32A for which the City Engineer has approved deferral or payment of a fee-in-lieu shall be documented on the Plans with a notation indicating the City street delay application number (SDR-####) and the applicable agreement(s) shall be signed by the applicant and returned to the City prior to Plan approval. Agreements associated with grading permit(s) shall be executed by the City and recorded prior to issuance of notice to proceed with construction activities. Agreements associated with FAC plans/agreements shall be executed and recorded by the City with final acceptance of the FAC.

10.02 Right of Way

Required right-of-way widths are shown on the typical cross sections in this Chapter. The required right-of-way will depend upon the width of the street and other improvements. Additional right-of-way may be required for bike/pedestrian trails, retaining walls, or storm facilities, for example. Right-of-way requirements may be variable within a street corridor due to intersections, turn lanes, bus loading zones, and other street features. Right-of-way radii required at intersections is shown on **Table 10-6**.

Right-of-way shall be conveyed to the City on a recorded plat, by a right-of-way dedication, or

a separate instrument. Right-of-way shall be free of title encumbrances that, in the opinion of the City Engineer, would conflict or inhibit existing or future use of the right-of-way and/or present an unacceptable risk or burden on the City. Right-of-way dedications shall require title insurance as deemed appropriate by the City Engineer.

10.03 Roadway Network

New streets and/or new street systems, other than local residential streets serving residential neighborhoods, shall be configured in conformance with the CTP guidelines and policies. Where the comprehensive plan lacks clear guidance to address a particular situation, the City may require traffic studies and other supporting analysis to help define the configuration and nature of the planned street system.

Streets and street networks will be configured to deter speeding and cut-through traffic. Cut-through traffic is traffic that utilizes local street(s) to connect from one arterial or collector street to another arterial or collector street. Traffic calming measures may also be required to deter speeding and cut-through traffic.

10.03.01 Connections and Vehicle Volumes

Analysis of proposed street connections to other new and existing streets and resulting volumes shall be submitted to demonstrate the requirements of this section are met.

Connection of new streets to existing streets or connections within new proposed street networks shall not be allowed if the connections result in traffic volumes in excess of the upper limit of the average daily traffic volume range for the roadway's classification as listed in **Table 10-1** below.

The layout of local street networks shall be such that the number of local street connections to arterials and collectors is the minimum number of connections required to limit the design ADT on existing and planned local streets in the network to be within the ADT range listed in **Table 10-1** below. This requirement generally limits local street networks with only a single connection to an arterial or collector street to 100 or less units. Traffic volume limits shall not restrict the improvement of an existing parcel to include one single family residential unit.

Table 10-1 Traffic Volumes by Roadway Classification

Roadway Classification*	Average Daily Traffic (ADT)
Principal Arterial	Over 15,000
Minor Arterial	10,000 – 15,000
Residential Collector	2,500 – 10,000
Non-Residential Collector	2,500 – 5,000
Rustic Collector	1,000 – 5,000
Local Residential	Up to 1,200
Local Non-Residential	Up to 1,200
Rustic Residential	Up to 1,000

* Roadway classifications are listed from highest to lowest classification.

10.03.02 Intersection Layout and Spacing

The horizontal approach angle of street intersections shall be between 85° and 95° at the centerlines of intersecting streets. Intersections shall be aligned so that opposing single left turn lanes and through lanes are not offset more than 4 feet as measured from the lane centerline approach tangent.

Intersection spacing for classified roadways shall be determined by the City Engineer on a case-by-case basis using the CTP, AASHTO, and contextual considerations. Local roadway intersections shall meet the minimum centerline spacing requirements as shown in **Figure 10-1** below. Local roadways shall not exceed 1,300 feet in length between intersections.

Figure 10-1 Minimum Local Street Intersection Spacing from Centerline to Centerline



10.03.03 Intersection Control (Local Residential Streets)

New local street intersections shall be designed with sufficient intersection sight distance such that all intersection legs do not require stop control. Design speeds for approaches without intersection control may be lowered per **Table 10-3** when the intersection includes a center traffic island and design speed justification documentation is provided. Projects creating new intersections or modifying existing intersections of local residential streets are required to provide analysis and documentation justifying the proposed intersection control approach.

10.03.04 Intersection Control (Traffic Signals and Roundabouts)

Per the City's Comprehensive Transportation Plan, roundabouts are generally preferred over traffic signals. Where a traffic signal is warranted, an evaluation to determine the feasibility of installing a roundabout instead of a traffic signal will be performed. The feasibility criteria will include right-of-way constraints and property impacts, critical areas, geometrics, context, and other factors as determined to be relevant.

Roundabouts shall be designed per WSDOT Design Manual Chapter 1320 and the Transportation Research Board's (TRB) Roundabouts: An informational Guide, 2nd Edition – Second Edition (NCHRP 672).

Traffic signals shall be designed per **Section 10.21.12**.

10.03.05 Dead End Streets and Cul-De-Sacs

New streets shall be planned, designed and constructed to connect to existing or future streets except when the City Engineer has determined that a new dead-end street is allowed. Where a dead-end street is allowed, the City Engineer will determine whether the dead-end street is considered permanent or temporary. In making these determinations, the City Engineer will

consider whether or not a future through street to connect adjacent properties and/or other streets is reasonably anticipated, feasible, needed, and desirable. Existing dead-end streets shall be linked to new or existing streets as determined by the City Engineer to be required. The following requirements apply to dead-end streets:

A. Dead-end streets that exceed 150 feet in length shall end in a cul-de-sac per the requirements of **Table 10-2**.

B. Dead-end streets shall not be more than 800 feet in length as measured from the center of the nearest intersection to the center of the cul-de-sac.

C. Dead-end streets shall not serve more than 30 dwelling units unless secondary emergency vehicle access is provided. See **Section 10.08.10** for emergency vehicle access driveway requirements.

D. Dead-end streets determined by the City Engineer to be temporary shall include a sign posted at the end of the road indicating the road is planned to be extended in the future and to contact the City of Auburn Public Works Department for further information.

E. When applicable, non-motorized paths shall be provided at the end of dead-end streets to connect to adjacent streets, trails, schools, parks, neighborhoods, or other features.

Table 10-2 Cul-De-Sac Design Requirement

Requirement	Temporary Cul-De-Sac	Permanent Cul-De-Sac
Maximum cross slope and vertical grade as measured from center of cul-de-sac to all points along the curb	5%	5%
Minimum paved surface diameter	65 feet	75 feet
ROW Diameter (Easement allowed for temporary cul-de-sac)	65 feet	90 feet
Sidewalk width (street lights, fire hydrants, and other pathway obstructions must be placed in easement behind the sidewalk)	Not Required	7 feet

10.03.06 Street Classifications

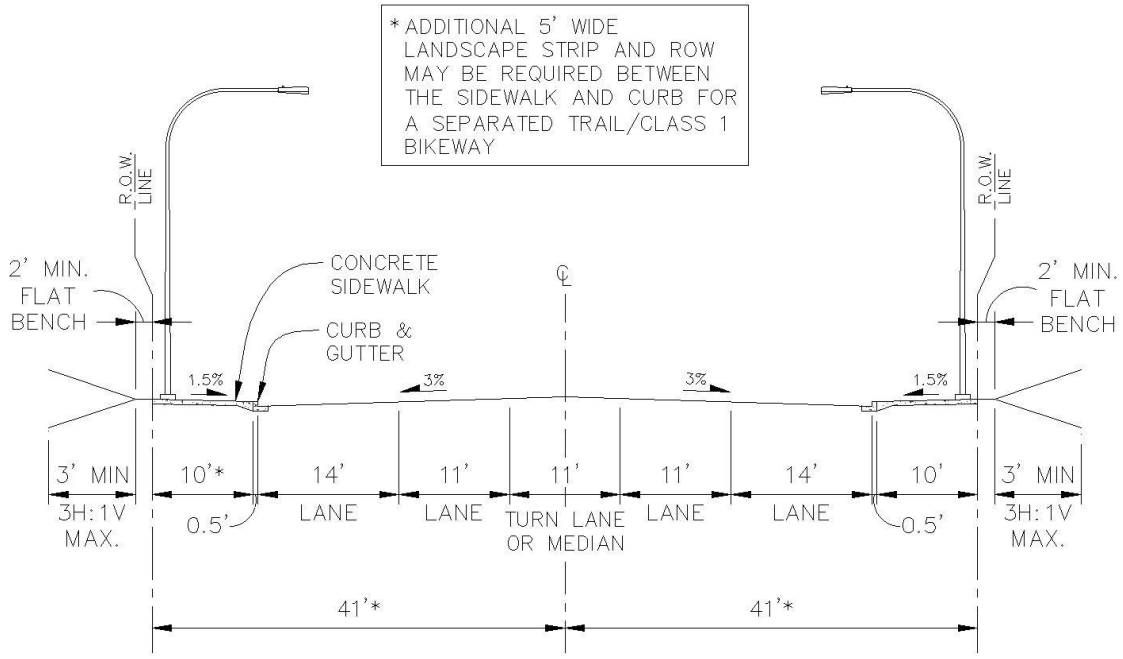
The following section contains descriptions of the street classifications used in the City and typical cross-sections for each street classification. Under certain circumstances, typically to mitigate operational or a safety conditions, the City Engineer may require variations from the typical cross-sections. Examples of these variations include, but are not limited to acceleration and deceleration lanes, right and left turn pockets/lanes, and modified lane widths. Where required, left turn pockets shall be a minimum of 11 feet wide with right turn pockets a minimum of 14 feet wide.

Roadway travel width is measured from the face of curb to the face of curb. Sidewalk width excludes the width of the curb where present. Non-motorized facilities such as sidewalks and bikeways shall be incorporated into the roadway cross sections per the CTP and as determined by the City Engineer to be needed to comply with the City's Complete Streets Policy (See ACC Chapter 12.06).

10.03.06.A Principal Arterial

Principal Arterials are designed to move traffic between locations within the region and to access the freeways. Design emphasis is placed on providing movement of inter-city rather than intra-city traffic. Direct access to multi-family, commercial and industrial land uses is permitted, but managed to improve safety and reduce congestion. Direct access to single family residential land uses is not allowed unless there is no other access point available. Parking is generally not allowed on principal arterials except in certain areas of the Downtown Urban Center (See **Figure 10-14**) and other areas where parking is not prohibited due to specific circumstances. Auburn Way South is a principal arterial that, from the State Route 18 interchange to the southeastern City limits, is also State Route 164 and subject to both City and Washington State Department of Transportation (WSDOT) requirements.

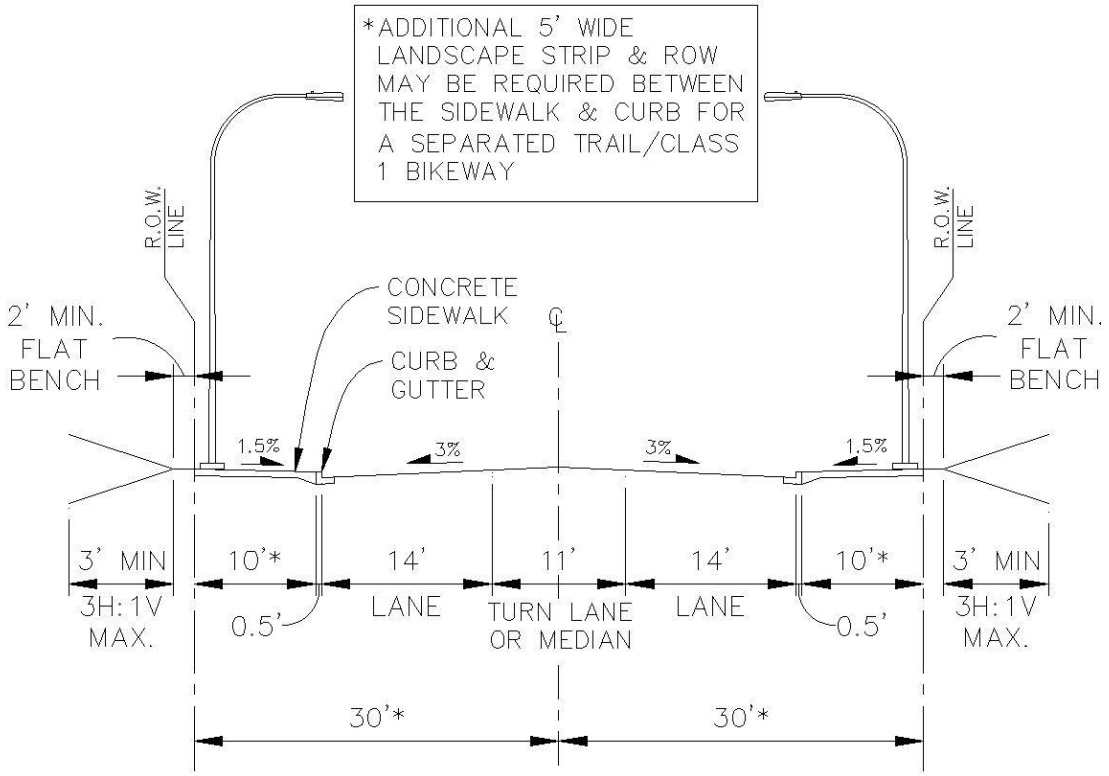
Figure 10-2 Principal Arterial Typical Cross Section



10.03.06.B Minor Arterial

Minor Arterials interconnect and augment principal arterials and provide service to trips of moderate length at a somewhat lower level of travel mobility than principal arterials. Relative to principal arterials, the minor arterial street system consists of facilities that place more emphasis on land access than the higher system and offers a lower level of traffic mobility. Minor Arterials may serve secondary traffic generators such as community business centers, athletic fields, neighborhood shopping centers, major parks, multifamily residential areas, medical centers, large church complexes, hospitals, and traffic from neighborhood to neighborhood within the City. Parking is generally not allowed on principal arterials except in certain areas of the Downtown Urban Center (See **Figure 10-14**) and other areas where parking is not prohibited due to specific circumstances.

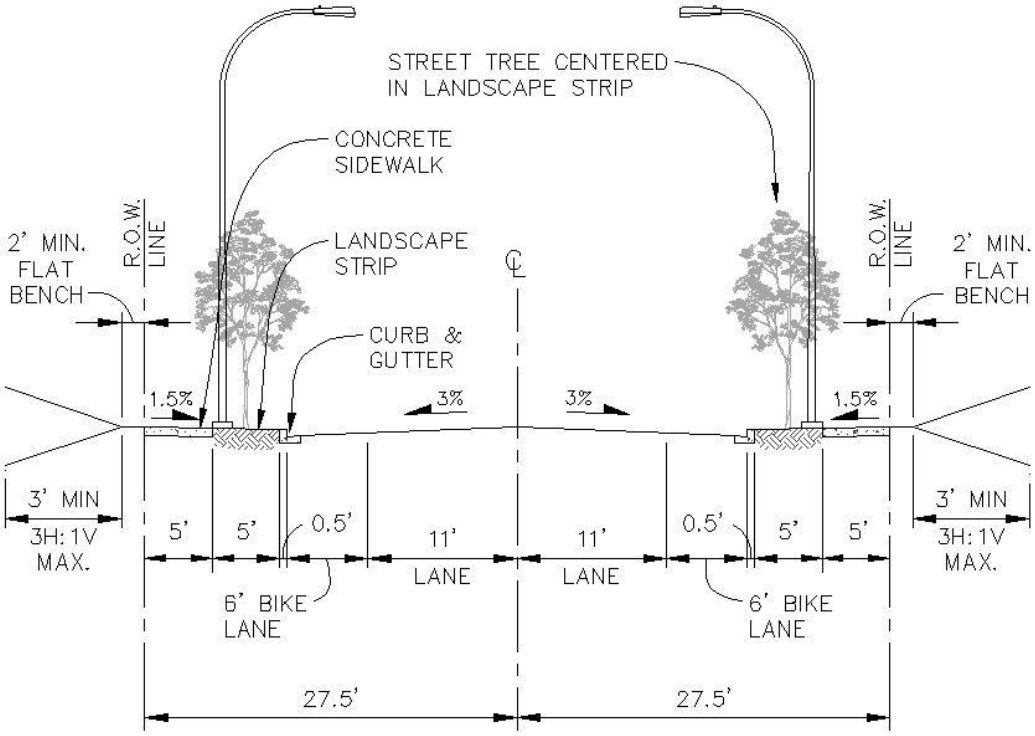
Figure 10-3 Minor Arterial Typical Cross Section



10.03.06.C Residential Collector

Residential collectors are used to connect local residential streets to arterial streets. Traffic using residential collectors is typically generated by single and multi-family residential neighborhoods, light commercial areas, neighborhood parks, and institutional use (schools, churches, community centers). Residential collectors are not intended to serve truck traffic or traffic between arterials. As residential collectors are intended to provide vital links in the City's non-motorized transportation network, they include bike lanes and sidewalks. The current standard configuration for residential collectors does not allow for parking on either side of the roadway. Direct access to residential collector streets from single family residential uses is discouraged but is allowed where no other access is available. Residential collector streets typically require a center left turn lane at an approach to an intersection with another collector or an arterial street. A center turn lane and/or median may be required on residential collectors in other circumstances as determined to be applicable by the City Engineer.

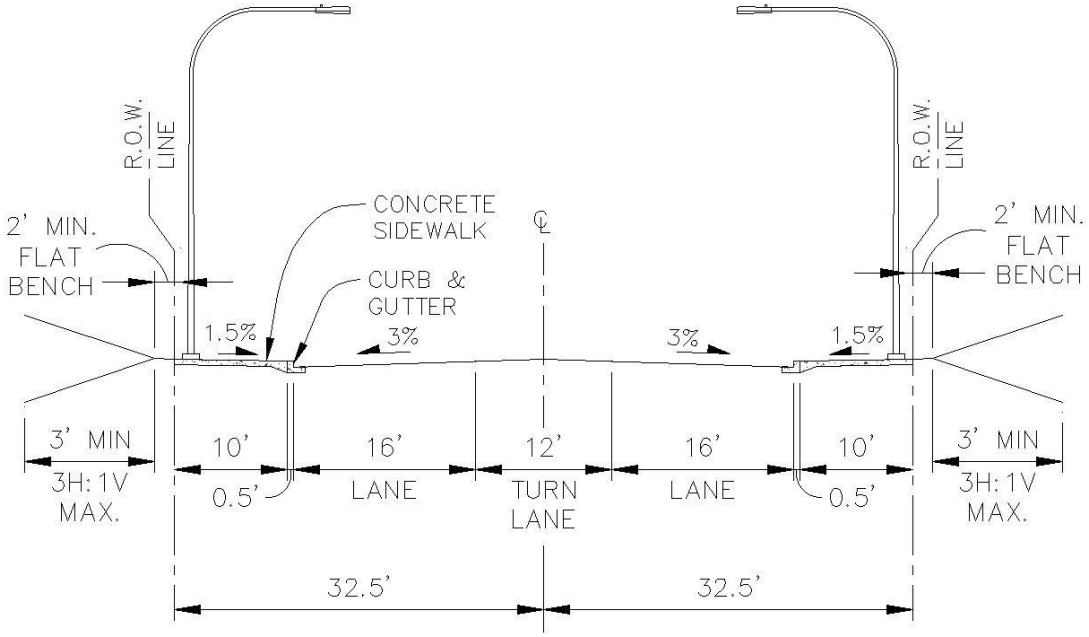
Figure 10-4 Residential Collector Cross Section



10.03.06.D Non-Residential Collector

Non-residential collectors are used to connect local non-residential streets to arterial streets. Traffic using residential collectors is typically generated by industrial and heavy commercial land uses and therefore, are intended to serve truck traffic. Non-residential collectors are not intended to carry vehicular traffic between arterials. The current standard configuration for non-residential collectors does not allow for parking on either side of the roadway. However, there are many examples of existing non-residential collector streets built to previous standards that allow parking on one or both sides of the street. Non-residential collector streets have wide lanes to help facilitate turning movements for trucks.

Figure 10-5 Non-Residential Collector Cross Section



10.03.06.E Local Residential

Local residential streets provide access to abutting residential land use and are designed to convey residential traffic to higher classification streets. A local street network usually carries no through traffic and includes a series of short interconnected streets and cul-de-sacs. Local residential streets are not intended to serve truck traffic or through traffic. Local residential streets provide non-motorized connections from residential dwelling units via sidewalks and the roadway. The current standard configuration for local streets allows for parking on one side of the roadway. Local streets are not striped with lane markings except as directed by the City Engineer.

Figure 10-6 Local Residential Cross Section

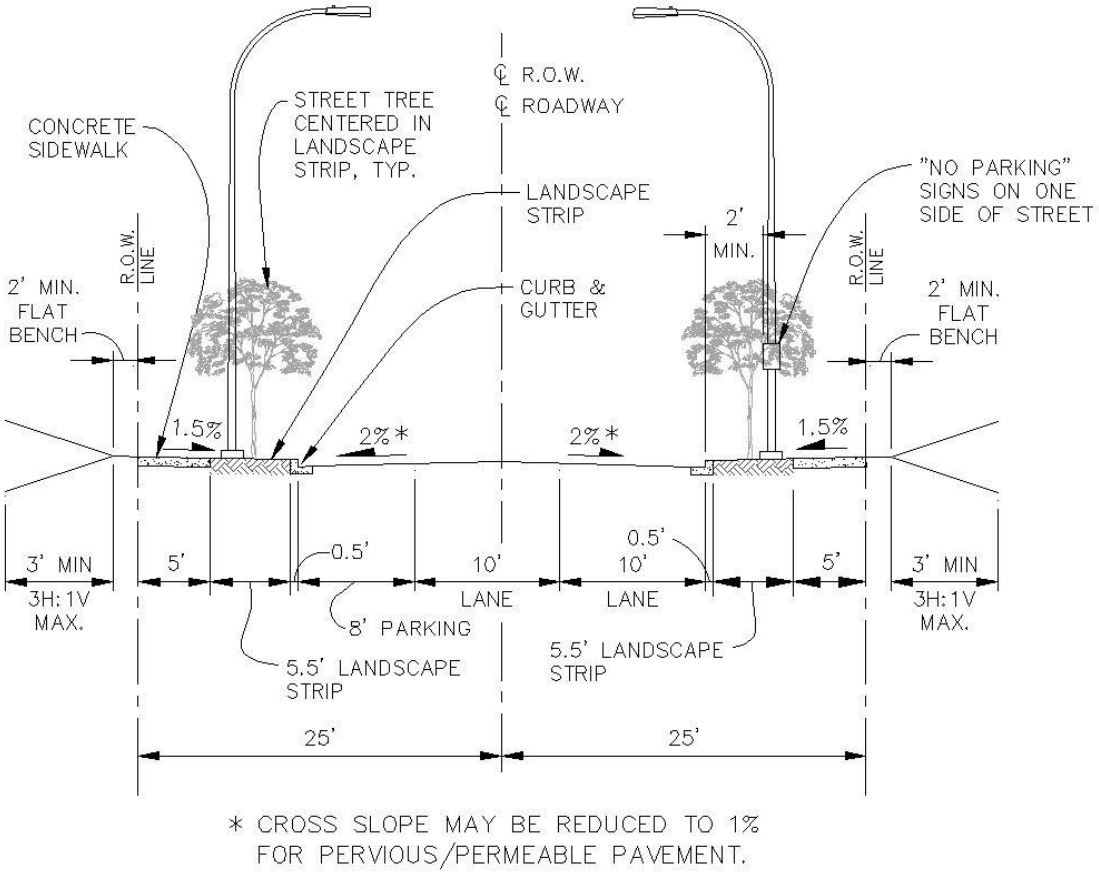
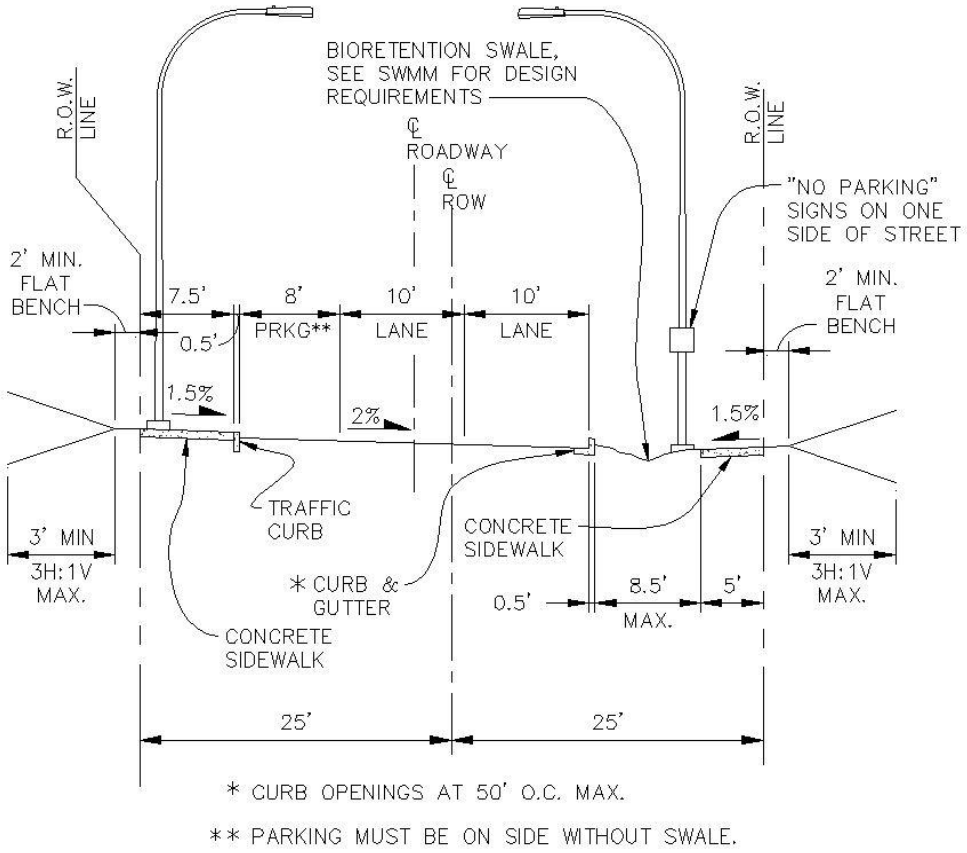


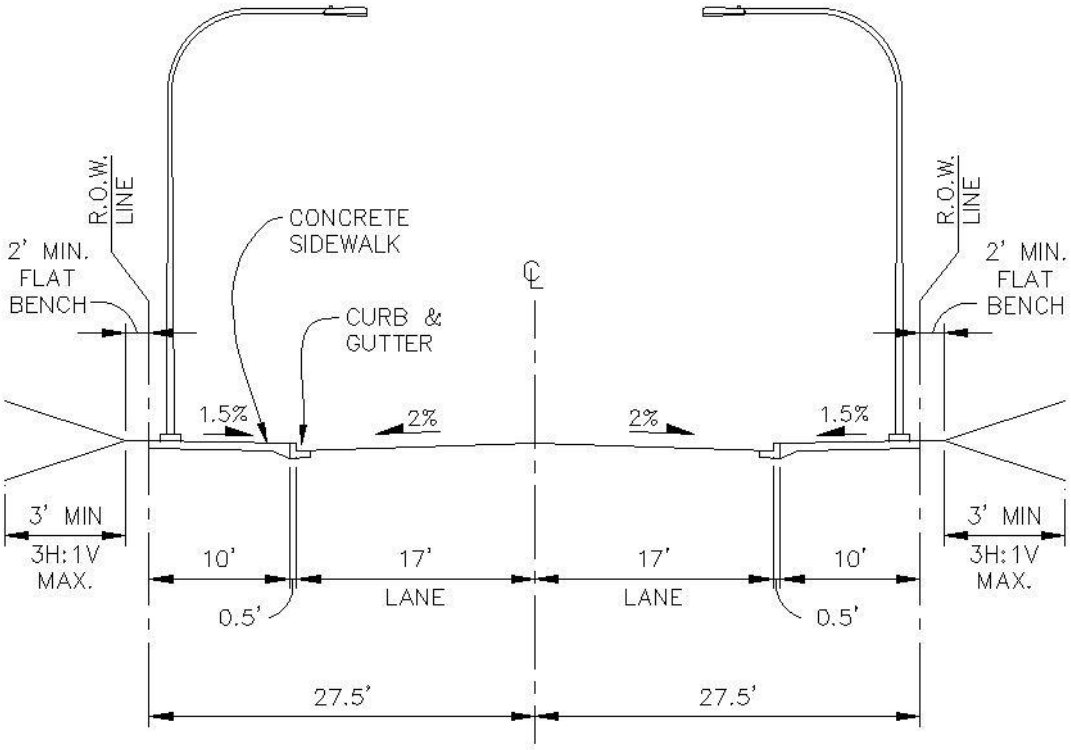
Figure 10-6A Local Residential Cross Section – Alternate w/ Bioretention Swale



10.03.06.F Local Non-Residential

Local non-residential streets provide access to abutting heavy commercial and industrial land uses and are designed to conduct traffic between those uses and higher order streets. A local non-residential street usually carries no through traffic and includes a small network of short interconnected streets and cul-de-sacs. The wide lanes of local non-residential streets are intended to serve the turning movements of truck traffic. Parking is typically not allowed on local non-residential streets and the street is marked with a centerline.

Figure 10-7 Local Non-Residential Cross Section



10.03.06.G Rustic Streets

Rustic streets serve the City's residential conservancy zoning designation. For additional information regarding the context of these roads, see the CTP. Rustic collectors are a type of residential collector street. Rustic residential streets are a type of local residential streets.

Figure 10-8 Rustic Collector Cross Section

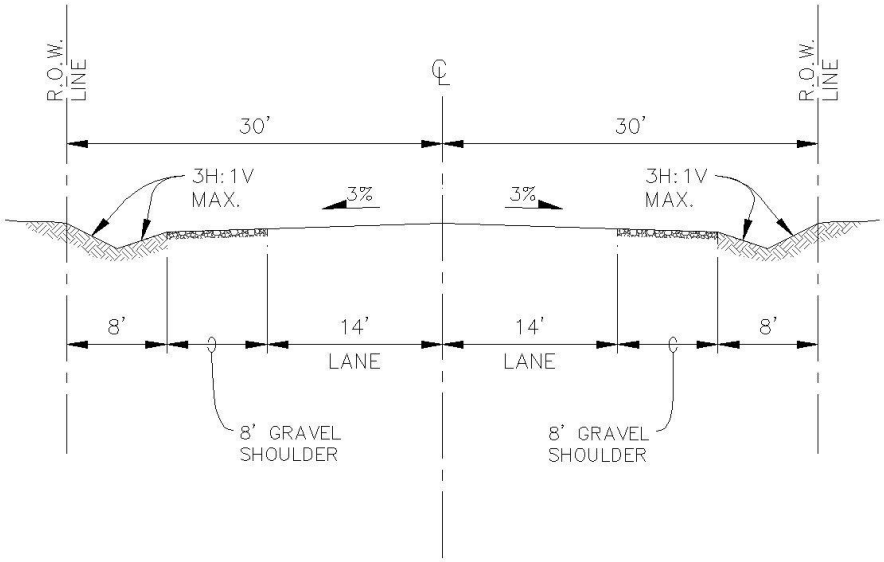
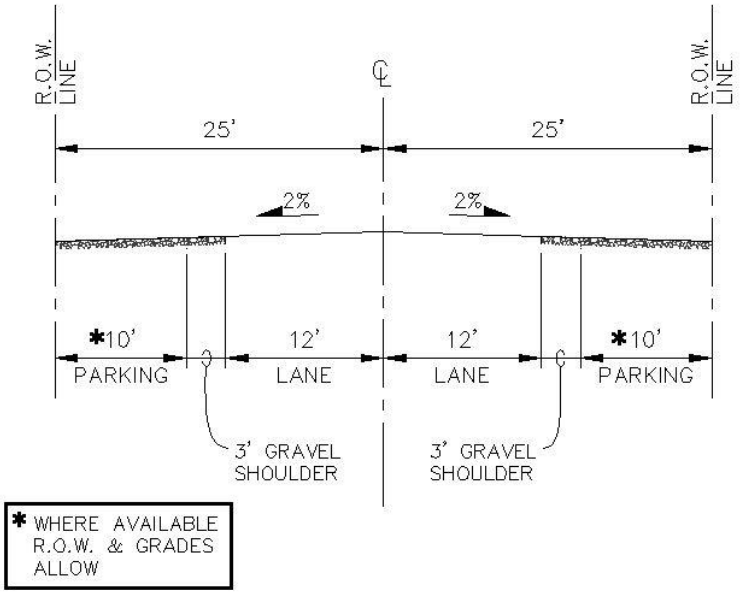


Figure 10-9 Rustic Residential Cross Section



10.03.07 Alleys

Alleys provide vehicular access to abutting properties and are not intended for general traffic circulation. Dead-end alleys are generally unacceptable; however, where dead-end alleys are determined suitable by the City Engineer, for short term or temporary applications, they shall be provided with adequate turnaround facilities at the dead-end. All new alleys shall be private. New alleys and existing alleys being improved shall meet the following requirements:

A. Minimum width of 20 feet of asphalt pavement.

B. Curb and gutter, sidewalk, lighting, and landscaping are not required along alleys.

C. Alleys may be paved with either a crown at centerline with asphalt wedge curbs on both sides to control drainage or be sloped to one side with an asphalt wedge curb on one side to control drainage. When necessary, storm drainage conveyance systems shall be installed along the alley to address storm drainage runoff from the paved surface.

D. Alleys shall connect to City streets via a commercial driveway apron. Alleys serving alley loaded lots shall include provisions for unimpeded vehicular circulation along the alley, and provisions for adequate sight distances along both the alley at driveways and at intersections with public streets.

10.03.08 Private Streets

The City Engineer will determine on a case-by-case basis whether or not a private street will be allowed. Private streets are generally discouraged and will only be considered for approval by the City Engineer under the following circumstances:

A. The street does not provide a current or future planned connection between public roadways.

B. The street does not provide current or future access to properties other than those whom would own the private street.

C. The street would not result in land locking present or planned parcels.

D. The street would only serve a single planned single family residential short subdivision, apartment, townhome, condominium, industrial, or commercial development project. Private streets are not allowed for residential subdivisions not meeting the definition of “Short Subdivision” per ACC 17.04.330.

E. The street would connect directly to a public street.

Roadway geometrics of private streets will be in conformance with the street standards that most closely reflect their intended use, with a minimum of 36 feet of pavement width or 28 feet of pavement width with a marked fire lane on one side.

Private streets shall be located within permanently established tracts or easements. A capable, legally responsible owner or homeowners’ association shall be established to maintain private streets. A plat or short plat with private streets requires an executed recorded Private Street Maintenance Agreement and a Storm Water Easement and Maintenance Agreement that obligate the future property owners to maintain the infrastructure indefinitely.

10.03.09 Downtown Urban Center Standards

Streets in the downtown urban center (DUC) zone, as defined in the Comprehensive Plan zoning map, require sidewalks, street lights, street corners, crosswalks, and traffic signals that differ from other streets. In 2007, the City Council passed Resolution 4271 that approved and adopted for inclusion into the Engineering Design Standards the Auburn Sidewalk Design Guidelines (Guidelines). Since then, the Guidelines have been revised in consultation with the Downtown Redevelopment Committee (formerly a committee of City Council members) and at various Council Study Sessions. The Guidelines are included in the sections referenced below and are no longer a separate document:

A. Sidewalks, Street Trees, Driveway Transitions, and Street Corners (See **Section 10.09.01 and Section 10.12**)

B. Crosswalks (See **Section 10.09.06**)

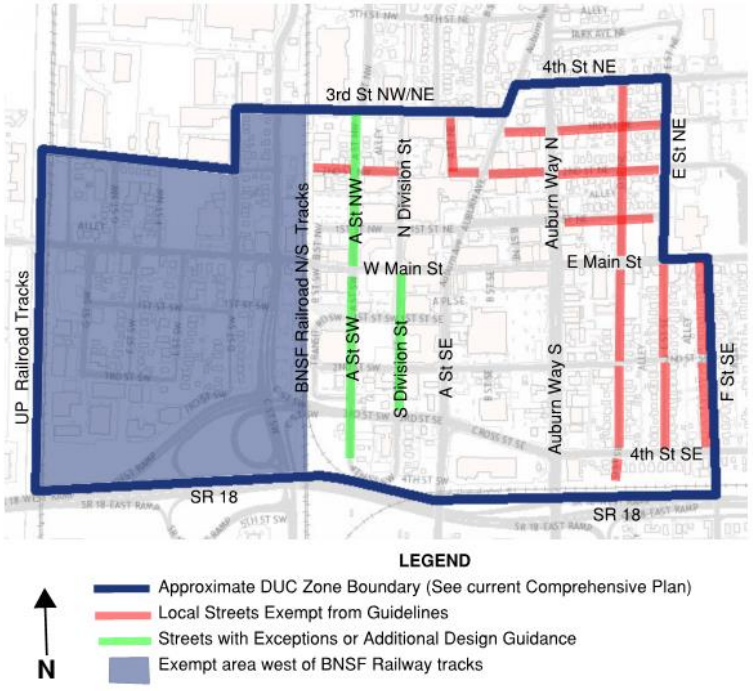
C. Street Lighting (See **Section 10.16.03**)

D. Traffic Signals (See **Section 10.21.12**)

Where the DUC zone boundaries are shown along or within a street, the Guidelines apply to both sides of the street and extend to the curb returns of the exempt street. **Figure 10-10** illustrates the DUC zone and the applicability of the Guidelines within it. All local streets, except N. Division Street and B Street NW, are exempt from the Guidelines. South Division Street from 3rd Street SE/SW through W Main St, also referred to as the "Promenade" and incorporates specialized sidewalks and pedestrian crosswalks that vary from the Guidelines.

Additionally, in the DUC zone, street cross sections generally have one travel lane in each direction and parking on both sides of the street, regardless of the street classification.

Figure 10-10 Downtown Sidewalk Design Guidelines Applicability Map



10.04 Road Design Geometrics

10.04.01 Sight Distance

Minimum sight distance requirements are to be determined using the current edition of AASHTO's "A Policy on Geometric Design of Highway Streets". Roadway geometry shall be designed such that sight lines are unobstructed and within right-of-way, tract, or sight distance easement. Where AASHTO provides guidance for both a "desirable" sight distance and a "minimum" sight distance, the "desirable" sight distance shall be the City's required sight distance. Sight distance calculations supporting the roadway design geometrics shall be included in the plans.

10.04.02 Posted and Design Speeds

Posted speeds for new arterial and collector roadways shall be determined by the City Engineer and Comprehensive Transportation Plan policies. Posted speeds for new non-arterial or collector roadways and the design speeds for all existing roadways shall be per **Table 10-3**.

Table 10-3 Existing Road Design Speeds

	Arterial and Collector Streets	Local and Rustic Residential	Local Non-Residential	Shared Driveway Access Roads and Alleys
Posted Speed (mph)	Varies	25	30	Not Posted
Design Speed (mph)	Posted + 10 mph or 85th percentile per a speed study conducted within 1-year, whichever is greater.	30	35	15
Reduced Design Speed (mph)*	N/A	20	25	N/A

* Reduced design speed may be used within 150 feet of the following:

1) Permanent dead end

2) Permanent cul-de-sac

3) End of road @ T-Intersection

4) On stop controlled approach to local/local Intersection

5) On approaches to local/local intersection with a traffic circle (design speed justification documentation required)

10.04.03 Curves

Design calculations supporting the design of roadway curves shall be included in the plans.

Horizontal curves shall be designed to provide the minimum radii required for vehicles to safely negotiate a turn without leaving their driving lane and shall in no case violate minimum sight distance requirements.

Sections of straight roadway must be designed between curves to avoid quick left-right transitions that could potentially lead to loss of vehicular control. Where reverse curves are superelevated, tangents between curves shall be of sufficient length to accommodate

transitions into and out of the superelevated sections per AASHTO.

Vertical curves are required where a change in vertical alignment equals or exceeds a 1% algebraic grade difference. Crest vertical curves shall be designed to provide the required minimum stopping sight distance for the streets design speed. Sag vertical curve lengths shall be designed to provide headlight sight distance equal to or greater than the design speed stopping sight distance. All vertical curves must be symmetrical, parabolic, and meet AASHTO standards.

10.04.04 Vertical Grades

Table 10-4 Vertical Grades by Roadway Type

	Arterial	Collector & Local Non-Residential	Local Residential & Rustic Residential	Shared Driveway Access Roads & Alleys
Maximum Vertical Grade	6%	8%	8% (may be increased to 10% without deviation where all other geometric design requirements are met)	10% (may be increased to 12% without deviation in access roads without existing or planned public utilities)
Minimum Vertical Grade	0.5%	0.5%	0.5%	0.5%

Deviations to the maximum allowed vertical street grades of arterial and collector roadways shall generally not be granted unless it can be demonstrated that, and the City Engineer determines that, the public benefits significantly outweigh any potential detriments.

Deviations will only be considered for up to an 8% maximum grade for arterials and a 10% maximum grade for collector streets. If approved, deviations for roadway grades above 8% may trigger the additional following design considerations, as determined to be necessary by the City Engineer:

A. Increased travel lane widths

B. Enhanced Paving Section

C. Incorporation of Separated Multi-use trail

D. Incorporation of Median Islands

E. Enhanced Intersection/Signal Improvements

10.04.05 Cross Slopes

Cross slopes shall be as shown in the typical cross sections except roads with vertical grades of greater than 6% where cross slopes may be increased up to 3% and cross slopes of roadways constructed with pervious/permeable pavement may be reduced to 1%. Superelevation design shall be per AASHTO.

Intersections shall be designed to drain away from the higher classification street. Grades shall match at the center of intersections for equal classification streets. At intersections of differing classification streets, the crown shall be carried through the intersection for the higher classification.

10.04.06 Intersection Landings

The intersection landing approach is a defined segment of the street before the intersection and is measured back from the point of tangency of the curb radius on each approach to the intersection. Minimum requirements for intersection landings are shown in **Table 10-5**. Minimum requirements for driveway landings, which include landings for shared driveway access roads and alleys, are included in **Section 10.08.05**.

Table 10-5 Intersection Landing Requirements

	Arterial	Non-Arterial Roadways	Shared Driveway Access Roads & Alleys
Minimum Landing Approach Length (ft)	30	20	12
Maximum Landing Approach Grade	3%	5%	5%

10.04.07 Curb and Right-of-Way Radius

Table 10-6 lists minimum required curb and right-of-way radii. Intersections serving transit routes require analysis to determine if increased radii is needed. The analysis will demonstrate that busses may execute a right turn at 9 mph without crossing lanes or encroaching onto the adjacent curb. The design vehicle will be the largest bus expected currently or planned to be utilized at the intersection. The City Engineer may determine that additional right-of-way is required at or near intersections to accommodate auxiliary traffic lanes and equipment for existing or future traffic signals and street lights. At intersections with two different street classifications, the highest classification for curb radii shall be used except at intersections with local residential streets where the lowest order street shall be used.

Table 10-6 Minimum Curb and ROW Radii

Roadway	Minimum Intersection ROW Radii (ft)	Minimum Intersection Curb Radii (ft)
Principal Arterial	29.5	40
Minor Arterial	24.5	35
Residential Collector	14.5	25
Non-Residential Collector	19.5	30
Rustic Collector	17	30
Local Residential	9	20
Local Non-Residential	19.5	30
Rustic Residential	7	20

10.05 Pavement Design

Pavement design of public streets is based on the street classification per the CTP, subgrade conditions, and whether or not the street is on a transit or freight route. Pavement design of private streets will be in conformance with the street standards that most closely reflect their intended use. Roadway paving shall be asphalt except where cement concrete is approved by

the City Engineer.

10.05.01 Simplified Asphalt Pavement Design

The simplified pavement design approach described in this section may be utilized as a simplified approach to determine the required pavement section except for the following streets for which pavement sections must be designed per the current AASHTO design procedure:

A. Principal arterials

B. Designated transit and freight routes per the CTP

C. Streets where subgrade California Bearing Ratio (CBR) values are less than 3

This simplified approach has been developed so that extensive data and computer analysis is not necessary for developing pavement designs for most projects. The approach requires determination of the street's subgrade conditions and street classification which are then utilized to determine the required pavement design section. The California Bearing Ratio (CBR) shall be used to classify existing subgrade soils as poor, medium, good, or excellent.

The subgrade under the proposed street shall be evaluated by an independent testing laboratory or geotechnical firm to determine the CBR of the subgrade. The proposed roadway shall have a minimum of one test for every 1,000 feet of road and/or for every obvious change in subgrade material. With approval from the City Engineer, or designee, other information such as soils testing data from adjacent projects and field observations may be utilized instead of testing where, in the opinion of the City Engineer or designee, the information provides sufficient data to classify the soil type.

Table 10-7 Simplified Asphalt Pavement Section Design Chart

	Soil Type			
Street Type	Poor (CBR 3-5)	Medium (CBR 6-10)	Good (CBR 11-20)	Excellent (CBR >20)
Unpaved Utility Access Roads	2" CSTC 12" Base Course Geotextile Fabric	2" CSTC 8" Base Course	2" CSTC 8" Base Course	2" CSTC 8" Base Course
Alleys, Access Roads, Locals	6" HMA CL 1/2" 11.5" CSBC Geotextile Fabric	6" HMA CL 1/2" 7.5" CSBC	6" HMA CL 1/2" 4" CSBC	5" HMA CL 1/2" 4" CSBC
Collectors	7" HMA CL 1/2" 14" CSBC Geotextile Fabric	7" HMA CL 1/2" 9" CSBC	7" HMA CL 1/2" 6" CSBC	7" HMA CL 1/2" 4" CSBC
Minor Arterials	9" HMA CL 1/2" 18.5" CSBC Geotextile Fabric	9" HMA CL 1/2" 11" CSBC	7" HMA CL 1/2" 9.5" CSBC	7" HMA CL 1/2" 6" CSBC

10.05.02 AASHTO Asphalt Pavement Design

Engineered pavement designs may be utilized regardless of whether or not the simplified approach is applicable. Engineered pavement designs shall follow the latest "AASHTO Guide for Design of Pavement Structures" for flexible pavements except that the minimum asphalt pavement thicknesses shall apply:

Table 10-8 AASHTO Pavement Design Minimum Require Asphalt Pavement Thickness

Street Type	Minimum Asphalt Pavement Thickness
Local, Alley, Access Road/Tract	5"
Collectors and Arterials	7"

The subgrade under the proposed street shall be evaluated by an independent testing laboratory or geotechnical firm to determine the CBR and/or Resilient Modulus (M_r) of the subgrade for the pavement design. The proposed roadway shall have a minimum of one test for every 1,000 feet of road and/or for every obvious change in subgrade material. Documentation for these required tests shall be included in the Pavement Design Report.

For projects where a traffic analysis report was not required, to determine the amount of traffic for which a street is to be designed, contact the City to obtain the most recent street classification and traffic counts. Traffic counts are done assuming there is a 50/50 split in the direction of traffic. 100% of the 50/50 split must be assumed in the design lane, regardless of the number of lanes in each direction.

The existing traffic levels shall then be inflated to match the projected traffic at the end of the roadways design life (in most cases a twenty-year design life will be used). The annual rate of growth is 1.5% for residential streets and 3.5% for commercial/industrial streets and arterials streets. The minimum pavement section shall be as determined by the pavement design using the AASHTO pavement design approach with a 20-year service life except as limited by **Table 10-8**. The Reliability Level factors used in pavement design shall be in accordance with the following table:

Table 10-9 Pavement Design – Reliability Factors

Functional Classification	Required Level of Reliability	
	Urban	Rural
Principal Arterials	95	90
Minor Arterials	90	
Collectors	90	
Local	85	

10.05.03 Pavement Design Report

All pavement designs (whether per the AASHTO method or per the simplified approach) shall be documented in a Pavement Design Memorandum stamped and signed by a Professional Engineer and may be included in the project Geotechnical Report where applicable.

The report shall include a narrative of the site conditions, geotechnical boring logs, testing results, calculations, the pavement analysis, and applicable background information for review and approval. The report must contain all calculations regarding the pavement design, including spreadsheets, all variables and assumptions, as well as geotechnical engineering information on the subgrade soils.

10.05.04 Permeable Pavements

Pervious Cement and Asphalt Concrete Pavement must be designed by a professional engineer. The design shall be documented by a report that includes relevant calculations, data collection, and assumptions. The report must provide evidence that the permeable surfaces are designed to have at least a 30-year service life given the anticipated vehicle counts and vehicle classifications. The minimum pavement design section shall be as follows:

A. 6-inch-thick wearing course of porous asphalt or pervious concrete; over

B. 6-inch reservoir course (Permeable Ballast per Section 9-03.9(2) of the Construction Standards); over

C. Geotextile (Non-Woven, Moderate Survivability per Section 9-33.2(1) of the Construction Standards); over

D. Where treatment is required, and native subsoils do not meet water quality design criteria per the SWMM: 18-inch runoff treatment layer with specifications per the SWMM.

Permeable pavements shall be designed and constructed per the SWMM and the Construction Standards.

Pervious cement and porous asphalt concrete pavement within the public right-of-way shall not be utilized for storm water management of runoff from areas outside the public right-of-way.

10.05.05 Pavement Surface Restoration and Preservation

Restoration of pavement disturbed by trenching or other activities shall be per **Chapter 9**. When the total surface restoration area exceeds 1,000 SF feet, pavement core sample(s) are required to be collected in the required restoration area to determine the existing pavement thickness. The City Engineer, or designee, may waive or reduce the coring requirement where other information is available to determine the existing pavement thickness. This information could include, but is not limited to, as-built records, coring samples from other work at the same location, or observations made by the City during construction work at the same location. Where the existing pavement to be removed and replaced does not meet current City standards, the City Engineer, or designee, may determine that pavement replacement to meet City Standards is required. Minimum pavement restoration and widening width is 2 feet.

10.06 Roadside Design

10.06.01 Roadway Edge

Roadway edges shall be per the typical sections included in **Section 10.03.06**. Concrete curb and gutter shall be constructed per WSDOT Standard Plan F-10.12**.** Curbs that are not along stormwater flow paths shall be constructed as cement concrete traffic curb per WSDOT Standard Plan F-10.12. Rustic roads within the City may be designed with a gravel shoulder (minimum of 3 inches Crushed Surfacing Top Coarse (CSTC) over 8 inches of Gravel Base. Drainage inlets and grates along curbs shall be constructed per WSDOT Standard Plan F-10.16. Roadway edges without curbs shall include a marked fog line per **WSDOT Standard Plan M-20.10-04**.

10.06.02 Clear Zone – Lateral Separation from Fixed Objects

The following standards provide guidance for the required separation distance from roadway vehicle travel ways and fixed objects for many, but not all, roadways in Auburn. The following standards apply to all new or replaced facilities and do not obligate the City to retrofit or replace existing facilities for the sole purpose of meeting the standards below.

The City has adopted 4 feet as the minimum lateral separation from the edge of motor vehicular travel way to fixed objects for streets with vertical curbs within the urban environment. Utility and traffic signal poles along streets with vertical curbs within the urban environment, as defined in Chapter 10 of the AASHTO Roadside Design Guide require minimum 6 feet lateral separation from edge of motorized vehicular travel way. For the purpose of determining lateral separation, the distance from the edge of vehicular travel way on streets with on-street parking or bike lanes is measured from the edge of the parking area or bike lane along the motor vehicle travel way.

Under many conditions, additional lateral separation shall be required to provide adequate clear zone per the AASHTO Roadside Design Guide. These conditions include, but are not limited

to: streets without vertical curbs, horizontal curves, proximity to driveways, high design speeds (in excess of 45 mph), merge locations, crash history, roadways that are not built per existing City standards, and other conditions as deemed applicable by the City Engineer. Reduced minimum lateral separation along roadways with design speeds of 35 mph or less is allowed for street trees centered within landscape strips and for mailboxes. Minimum lateral separation from the face of curb to any roadside object (regardless if fixed or non-fixed) is 2 feet.

10.06.03 Traffic Barriers

Evaluation of roadside conditions, including embankments, for traffic barriers, including guardrail installations, shall be in accordance with the WSDOT Design Manual.

Guardrail installations shall conform to WSDOT Standard Plan C-1, Beam Guardrail Type 1. End anchors shall conform to WSDOT Standard Plan C-6, Beam Guardrail Anchor Type 1.

10.07 On-Street Parking

On-street parking is generally not allowed on arterial, collector, and local non-residential streets. For Local Residential streets where parking is allowed on one side only and there are landscape strips present on both sides of the road, the parking shall be placed on the side of the street that can accommodate the most parking. Pavement parking space demarcations shall not be used except as directed by the City Engineer.

Parking is not allowed at any of the following locations. Signage, curb, and pavement markings are not required to establish these restrictions except as determined otherwise by the City Engineer, or designee, or as specified otherwise below:

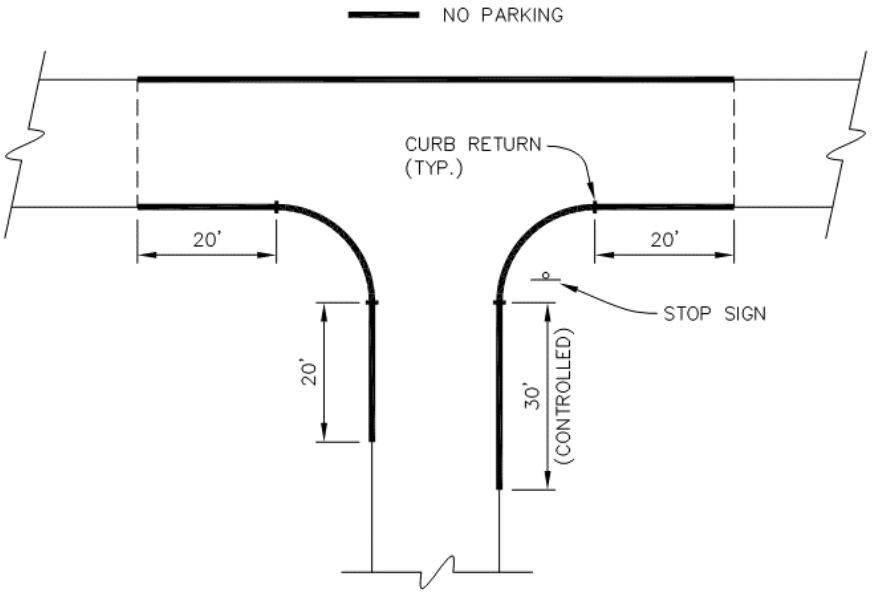
A. Within fire lanes. Fire lanes shall require pavement marking and/or signage.

B. Within 20 feet of an uncontrolled intersection measured from the point of tangency on the entering curb radius.

C. Within 30 feet of a stop, yield or signal controlled intersection measured from the point of tangency on the entering curb radius.

D. Within any intersection. For “T” intersections, the no parking limits shall apply to both sides of the through street (top of the “T”). See **Figure 10-11** below.

Figure 10-11 - T-Intersection Parking Restrictions



E. In front of or within 15 feet of each side of a fire hydrant.

F. In front of or within 5 feet of each side of a driveway.

G. Where mid-block crosswalks are installed, no parking shall be allowed on either side of the street within 50 feet in advance of the nearest edge of the crosswalk and within 20 feet past the furthest edge of the crosswalk. In no case shall the advance parking restriction for crosswalks be less than the minimum stopping sight distance of the roadway.

Additional parking restriction may be required depending upon roadway geometrics, adjacent land use, and the proximity to bridges and railroads.

No parking signage shall be per **City of Auburn Standard Detail T-40**.

10.08 Driveways

Construction of driveway access to the public street right-of-way requires prior approval by the City Engineer, or designee. Connection between the driveway and street shall be with a driveway apron per **City of Auburn Standard Detail T-34 or T-35** except a driveway connection to a street that does not have curb/gutter and sidewalk may be with an apron constructed of the same material, thickness, and strength as the street with tapered corners that accommodate the largest vehicles anticipated to utilize the driveway apron.

Work that requires any portion of a driveway apron to be replaced triggers the requirement to upgrade/replace the entire driveway to meet ADA standards.

10.08.01 Number of Driveways

Regardless if a project includes one or multiples parcels, it is limited to one driveway access to a City street (including alleys) with the following exceptions:

A. Single family residential subdivision projects are allowed one driveway access to each single family residential parcel when all of the driveway accesses for the project are to a local residential roadway, alley, or a shared access tract/driveway.

B. Additional driveway(s) may be provided to satisfy International Fire Code Requirements IFC). These additional driveways are subject to the requirements of Emergency Vehicle Access Driveways per the IFC and these Engineering Design Standards. See **Section 10.08.10** for emergency vehicle access driveway requirements.

Subdivisions with a driveway access to a roadway classified higher than local residential or for non-single family residential projects shall be limited to a single access tract/driveway for the entire subdivision.

10.08.02 Driveway Classifications, Widths, and Spacing

Driveway spacing shall be per **City of Auburn Standard Detail T-04**. When the minimum spacing is not obtainable, to address safety concerns, or to mitigate impacts of traffic flow, the City Engineer, or designee, may determine that two contiguous parcels require a single driveway centered on the property line.

Driveway widths are measured across the driveway apron, excluding driveway wings/ramps. Spacing between driveways is measured from the limits the driveway apron wings/ramps.

Residential Driveway – A driveway serving one single family residential property or a duplex is a residential driveway. Residential driveway aprons width is 11 feet minimum and 18 feet maximum.

Commercial/Industrial Driveway - A driveway serving a commercial, industrial, or residential with 3 or more dwelling units (except accessory dwelling units) parcel is a commercial/industrial driveway. Commercial/Industrial driveway aprons shall be 24 feet wide except, the City may require commercial/industrial driveways along arterial roadways to be wider to accommodate the largest types of vehicles frequenting the parcel (design vehicle). These driveways shall be designed to accommodate design vehicle egress/ingress such that the design vehicle can make its turning movements without dragging outside the apron, does not swing into opposing traffic lanes, and can enter the driveway while another design vehicle is waiting at the driveway to exit. In these cases, design vehicle justification and turning templates are required.

Shared Driveways – A driveway serving two or more residential or commercial/industrial parcels is a shared driveway. See **City of Auburn Standard Detail T-31** and **Section 10.08.07**.

10.08.03 Driveway Lay Out

Driveways and on-site parking, other than that for single-family residences on local residential street or alleys, shall be designed such that vehicle-backing maneuvers will not occur onto the street. A properly designed driveway shall allow the largest typical vehicle that will use the driveway (i.e., tractor-trailers at large warehouses, delivery trucks at mini marts) to enter and exit the site without encroaching into opposing traffic lanes, including two-way left turn lanes.

When designing site layout and driveway access, internal circulation shall be such that on-site traffic will not backup the driveway impeding vehicles in the public street. The City may require

sites with internal traffic congestion to design driveways with long throat lengths to provide extra storage to avoid impacting City streets.

Per ACC 18.52.050, commercial and industrial driveways shall have at least a 40 foot throat from the street (not be intersected by parking aisle, parking space, or another access driveway for a minimum distance of 40 feet from the street right-of-way). The City Engineer may require additional throat distance or may allow less throat distance with the consideration of the following: classification and volumes of street from which access is being taken, total number of parking stalls, design vehicle for parking lot, size of parcel and parking area to which the driveway is providing access, and queueing analysis. If a gate is proposed across a driveway it shall be located a minimum distance of the largest vehicle accessing the site (excluding emergency vehicles), measured from the right-of-way line, unless there is adequate room for parking outside the travel lane(s) without blocking non-motorized facilities.

Driveways connecting non-single family residential development to non-local roadways shall accommodate waste management and other service vehicles serving the development such that the service vehicles do not stop on the roadway (they enter the site, perform services, and exit the site).

10.08.04 Driveway Locations

When a property has frontage on two or more streets (or alleys), the driveway will be located on the lowest classification of street (or alley).

Driveway accesses with any portion of the driveway (including wings) within the "Functional Intersection Boundary" shall be either prohibited or restricted. See **Table 10-10** and **Figures 10-12** and **10-13.** Single family residential driveways on local residential streets are exempt from functional intersection boundary requirements.

The functional intersection boundary is the portion of the street leading up to the intersection required to allow vehicle movements and storage. This is the area where drivers identify the situation, change lanes, come to a stop, and wait before proceeding through the intersection. The functional length of an intersection is measured from the point of curvature/point of tangency (PC/PT) of the curb return. Driveway restrictions include prohibiting either all left turn movements, left turns from, or left turns to the subject driveway.

The City Engineer may also impose driveway restrictions at other locations when a safety hazard is identified or to mitigate impacts to traffic flow along a classified street. Such restrictions shall be incorporated into the design of the driveway in a manner that strives to maintain existing access turning movements to other adjacent properties.

Table 10-10 Distance Requirements for Functional Intersection Boundaries

Posted Speed (mph)	Speed (ft./sec)	Reaction Time (sec)	Decision Distance (ft.) "d_1"	Lane Change Distance (ft.) "d_2"*	Braking Distance (ft.) "d_3"	Storage Length (ft.) "d_4"	Distance A (Approaching) (ft.)	Distance A (Departing) (ft.)	Distance B (ft.)
25	37	1.0	37	25	60	50	135	80	172
30	44	1.0	44	40	86	50	176	107	220
35	51	1.0	51	60	118	100	278	140	329
40	59	1.0	59	85	154	100	339	179	405
45	66	1.0	66	105	194	100	399	216	465

* For single lane approaches where a lane change is not possible, "d_2" should be omitted.

Figure 10-12 Functional Length Diagram of an Intersection with Right and/or Left-Turn Lane

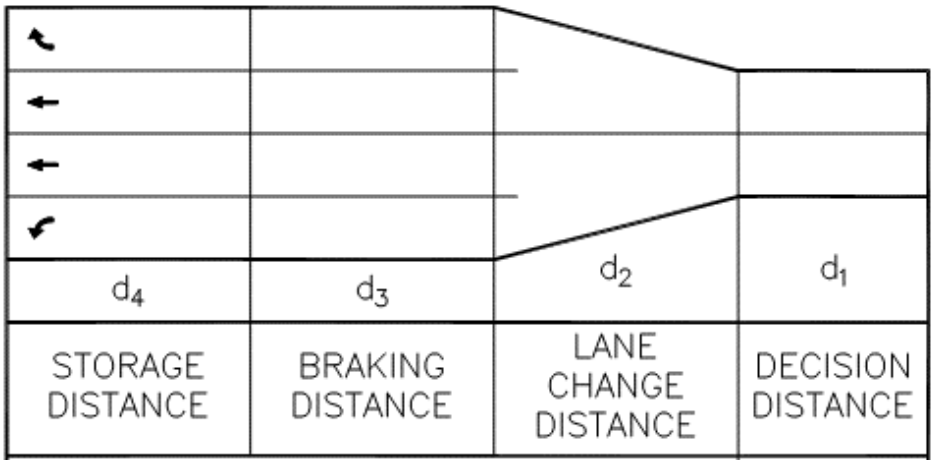
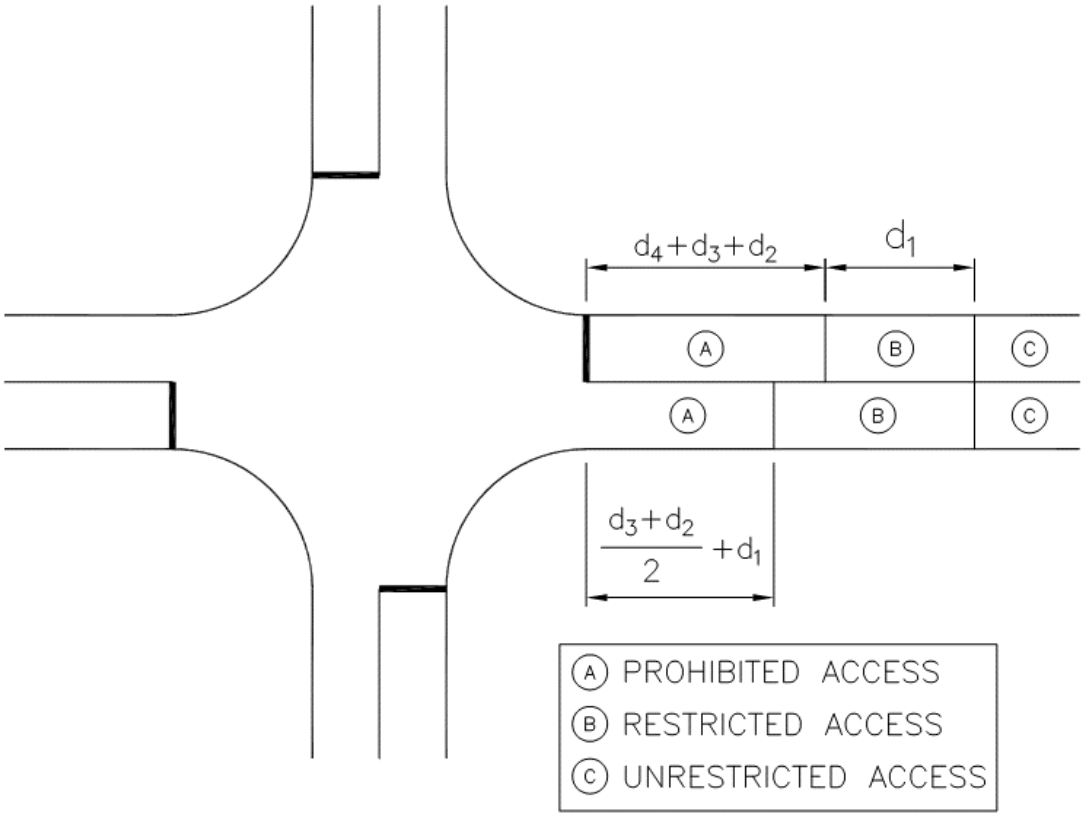


Figure 10-13 Functional Intersection Boundary Restricted Access Diagram



10.08.05 Driveway Alignment (Horizontal and Vertical)

The angle between the centerline of a driveway approach and the edge of a street travel way shall not be less than 85 degrees or greater than 95 degrees unless a “pork chop” or other

access control device is allowed. Where the edge of the roadway is curved, such as in cul-de-sacs, the angle will be measured from the tangential line to the travel way edge at the intersection of the driveway approach centerline.

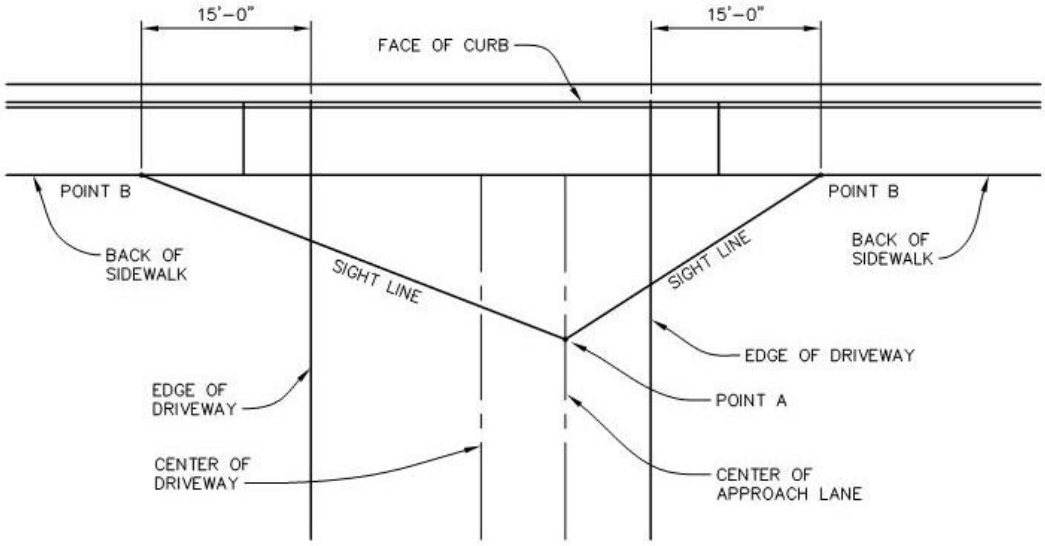
The vertical grade behind the driveway apron shall not exceed 5% for a distance of 12 feet beyond back of sidewalk or right of way line except for the alternate driveway type per **City of Auburn Standard Detail T-35** where the 5 foot driveway ramp grade may be up to 10%. Driveways shall be designed to preclude vehicles from dragging when entering or exiting the site.

10.08.06 Driveway Sight Distance

Minimum sight distance requirements for driveways are to be determined using the current edition of the WSDOT Design Manual M 22.01.22 (Chapter 1340). Easements may be required to meet sight distance requirements.

The minimum sight distance for pedestrian safety shall be as shown in **Figure 10-14** and determined as follows: The driver of an exiting vehicle shall be able to view a one-foot-high object 15 feet away from the edges of the exiting lane or lanes, measured at the back of the sidewalk, when the driver's eye is 14 feet behind the back of the sidewalk.

Figure 10-14 - Pedestrian Sight Distance



10.08.07 Shared Driveway Access Roads

Residential shared driveway access roads may serve a maximum of 6 residential units except where a proposed single family residential unit, to be located on an existing lot, would exceed this threshold. Shared driveway access roads are privately owned and shall be maintained by the property owners who use them to access their property or as otherwise stipulated in the tract easement dedication documents or private agreements. Maintenance of shared driveway access roads shall not be the responsibility of the City.

Shared driveway access roads shall include storm drainage facilities in accordance with these standards. Shared driveway access roads shall have only a single connection to the

public/private roadway, except where an additional gated access exclusively for emergency vehicles and/or maintenance vehicles may be allowed.

The following requirements apply to shared driveway access roads except that one or more of the requirements may be waived by the City Engineer, or designee, for development of a single-family residence on an existing platted lot that only has access to an existing shared driveway where inclusion of the requirement would require additional property rights beyond the applicant's control, modification of existing building(s) and structure(s), impacts to critical areas, or other reason as deemed acceptable by the City Engineer:

A. **Easement/Tract Width:** Set within dedicated and recorded easement or tract with a minimum width of 22 feet for access roads serving 2 or less residential units, 26.5 feet for access roads serving 3 or more residential units, 35 feet for access roads serving commercial use(s), and 41 feet for access roads serving industrial use(s).

B. **Pavement Width:** Minimum asphalt pavement width of 20 feet for access roads serving residential unit(s), 24 feet for access roads serving commercial uses, and 30 feet for access roads serving industrial uses.

C. **Turnaround:** All access road ends that are 150 feet or more from the connection to the public/private roadway connection shall include turnarounds. If a hammerhead configuration is utilized for the turnaround, it shall be designed per Figure D103.1 in Appendix D of the International Fire Code or equivalent as determined to be acceptable by the City Engineer, or designee. If a cul-de-sac is utilized for the turnaround, it shall be designed per the City of Auburn Design Standards. The turnaround area must be paved and lie entirely within the access tract or easement.

D. **Length:** Maximum length of 600 feet as measured along the centerline of the access road to the centerline of the street to which the access road connects. Where an access road has multiple centerlines (due to a "T" or other discontinuous configuration, the total length is measured along all centerlines of the access road).

E. **Grades/Curves:** Geometrics per **Section 10.04**.

F. **Sidewalks:** Shared driveway access roads that serve 2 or less residential units or provide emergency access only do not require sidewalk along the access road. Access roads serving 3 or more residential units require sidewalk, curb and gutter along one side of the access road. Access roads serving commercial or industrial property(s) require sidewalk, curb and gutter along both sides of the access road. The minimum sidewalk width shall be 5 feet (not including curb) and shall be separated from the vehicular egress/ingress with curb and gutter. Where sidewalks are required and the residential units are along only one side of the access road, the sidewalk shall be placed on the side of the road with the residential units.

G. **Signage:** Identified as a fire lane with pavement markings and/or signage per ACC 10.36.175(E) such that a minimum clear width of 20 feet, free of parked vehicles or other obstructions, is provided. Signed as private drives inclusive of all addresses being served off the access road per **City of Auburn Standard Detail T-26**.

H. Edges of access roads without curb/gutter and sidewalk will have an asphalt wedge curb per **City of Auburn Standard Detail T-41**, along the edge(s) to which the roadway drains, if any. Wedge curb may be excluded/modified as required to accommodate drainage facilities serving the access road. Where

curb, gutter, and sidewalk are present along the shared access road, driveway connections to property(s) from the shared access road shall be by residential driveway apron.

I. Driveway connections to property(s) on the access tract are configured such that vehicles backing out of the driveway are able to turn around without entering another property.

10.08.08 Controlled Driveways

Where a driveway connection meets a signal warrant that cannot be addressed without a signal or roundabout, the City Engineer may allow signalized or roundabout access to a public street from a private access. In such situations, dedication to the City of any right-of-way necessary for maintaining and operating the intersection will be required. Additional mitigation measures may be required to ensure safe and efficient access to the public street. The private leg of the intersection within the right-of-way shall be designed to the applicable public street standard as determined by the City Engineer.

10.08.09 Restricted Access Driveways

Restricted Access Driveways are used to restrict turning movements out of or into driveways. Turning restrictions at driveway locations shall be by one or more of the following methods as deemed appropriate by the City Engineer, or designee:

A. Median Islands

B. Mountable Curbs

C. Pork Chops

D. Signage (turn restriction signage must be placed in the right-of-way)

10.08.10 Emergency Vehicle Access Driveways

Local street networks with over 30 dwelling units that do not have more than one street connection to a collector or arterial roadway are required to have a second access from the local street network to a collector or arterial via an emergency access driveway. The emergency vehicle access must be gated and restricted to emergency vehicles only with a knox lock. Non-motorized access may also be provided at the emergency vehicle access. Emergency access roadways shall meet the requirements for shared access driveways.

10.09 Sidewalks

Streets shall include sidewalks as shown on the typical sections in **Section 10.03** and as designated in the CTP. The City Engineer may determine that sidewalk widths that differ from the typical sections and CTP are required.

Sidewalks with landscape strips shall be per **City of Auburn Standard Detail T-13**.

Sidewalks without landscape strips shall be per **City of Auburn Standard Detail T-15**.

Pervious sidewalks shall be per **City of Auburn Standard Detail T-14**.

10.09.01 Downtown Sidewalks

The following requirements apply to sidewalks subject to DUC zone guidelines:

A. Shall be per **City of Auburn Standard Detail T-15** and will also include a 2-foot x 2-foot square scoring pattern with a light broom finish with minimal scoring depth to allow for easy cleaning.

B. Shall be a minimum of 10 feet in width except sidewalks along A Street NE/NW may be 7 1/2 feet wide at some locations, as determined by the City Engineer.

C. Shall include a single row of bricks to be used at transition points such as driveways per in **City of Auburn Standard Detail T-44**.

D. Shall include street trees per **City of Auburn Standard Detail T-06**. Where the tree planter area encroaches upon the minimum pedestrian clearance width, a tree grate shall be required per **City of Auburn Standard Detail T-30**. Pervious concrete sidewalks shall not be allowed where tree grates are required.

E. Shall include decorative street corners as follows:

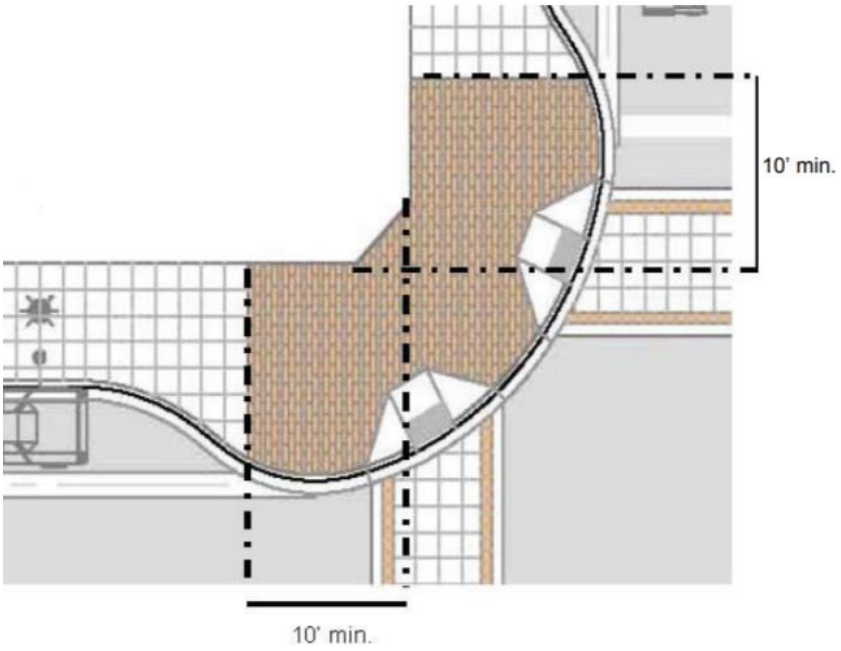
   i. Corner bulbs shall be integrated into corners where on-street parking is allowed, dependent upon the adjacent street geometry, presence of bus routes or other large vehicle use, as determined by the City Engineer.

   ii. All street corners where a corner bulb is required or where both legs of the street corner have sidewalks that are at least 10-feet wide shall be constructed of brick pavers in a rectangular pattern as shown in the figure below. The specific type of brick pavers shall be approved by the City, including shape, size, and color. The brick pavers shall be set on a concrete base.

   iii. The bulb-out layout and limits shall generally be as depicted in **Figure 10-15**. The City Engineer, or designee, shall determine specific design parameters for bulb-outs on a case-by-case basis.

   iv. Construction of a new or replaced curb ramp on a street corner that does not meet the DUC zone standards shall require the street corner to be re-built in its entirety to meet the DUC zone standards.

Figure 10-15 Downtown Street Corner Illustration



10.09.02 Meandering Sidewalks

The City Engineer may approve meandering sidewalks along a corridor when the sidewalk, landscaping, lighting, signing, right-of-way, and other surface features are integrated into the design of the improvements. Additional right-of-way (or an easement) may be required to accommodate the meander of the sidewalk and other surface features.

10.09.03 Accessibility

All sidewalk cross slopes shall be designed to 1.5% and not exceed 2%. Sidewalk grade shall not exceed the grade of the adjacent street centerline, except at driveways and curb ramps. All sidewalks shall maintain a minimum walking zone of 5 feet in width, free of all obstructions including utilities, signage, street trees, furniture or other elements, permanent or temporary.

Sidewalks require a minimum overhead clearance from trees, street signs, and vegetation of 7-feet and a minimum overhead clearance of 10-feet from all other objects.

10.09.04 Curb Ramps

See WSDOT Standard Plans F-40.12, F-40.15 & F-40.16.

Curb ramps shall be provided at all intersections and pedestrian crossings having vertical curb sections. Every curb ramp shall have at least one receiving ramp. Existing curbed radius return access points also require curb ramps. All curb ramps shall have detectable warning patterns formed with manufactured truncated domes in accordance with WSDOT Standard Plan F-45.10. Truncated dome color shall be yellow except in the downtown urban core area where truncated dome color shall be brick red. Pervious cement concrete ramps and landings shall not be allowed.

For any deficient element that does not meet ADA requirements, designers shall document the deficiency via a Maximum Extent Feasible (MEF) document stamped and signed by a

professional engineer. The MEF document will be reviewed for acceptance by the City. MEF's shall also be documented on the Plans with a notation indicating the deficiency and that the curb ramp was designed to the MEF per **Chapter 3, Appendix C** of these standards.

Trenching work and the associated patching and surface restoration that traverse crosswalks/pedestrian pathways (crossings) shall not trigger the requirement to replace curb ramps that do not meet current ADA standards at the crossing, unless, the cumulative width of surface restoration at the crossing for all work associated with the project equals or exceeds 50% of the crossing width, as measured from curb face or pavement edge at the pedestrian pathway entry into the vehicle travel way to curb face or pavement edge at the pedestrian pathway departure from the vehicle travel way. This distance is measured through medians, islands, and other pedestrian refuge areas. If the cumulative width of all surface restoration at a crossing equals or exceeds 50% of the crossing width, then the curb ramp(s) that intercept the impacted crosswalk that do not meet current ADA standards must be upgraded/replaced, including signal push-button replacement/relocation where applicable per **Section 10.21.12** of these Standards.

Whenever any portion of a curb ramp or intersection corner without a curb ramp is replaced or upgraded for any reason, the entire curb ramp or a new curb ramp is required to meet ADA standards and installation of curb ramp(s) on the receiving end(s) is required if not already present.

10.09.05 Crosswalks

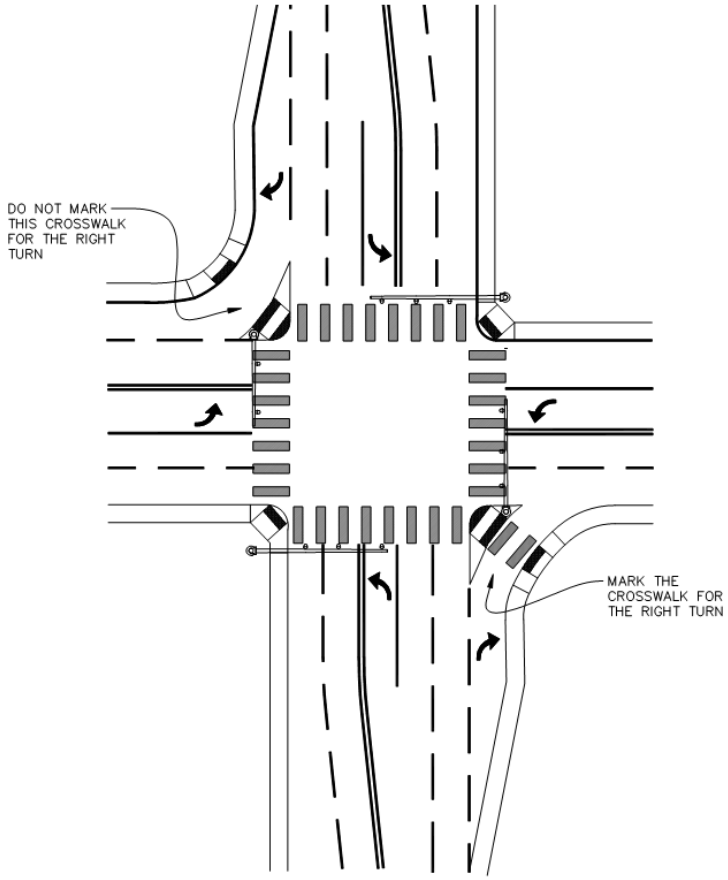
Per RCW 46.04.160, crosswalks exist at all roadway intersections, whether marked or un-marked, and regardless of whether there are sidewalks at the intersection. Crosswalks also exist at non-intersection locations where they have been established with crosswalk markings (such as a midblock crossing). For the purposes of these standards, intersections are as defined in Chapter 1 of these standards.

Marked crosswalks shall be per WSDOT Standard Plan M-15.10 except where DUC zone standards apply marked crosswalk shall be per **Section 10.09.06**.

Crosswalks will be marked at the following intersection locations, except where pedestrian facilities are NOT present:

A. Traffic signal and stop controlled intersections as shown in the figure below:

Figure 10-16 Marked Crosswalks at Signalized Intersections



B. Yield controlled approaches to roundabouts.

C. Stop controlled approaches at intersections within the Downtown Urban Center.

D. Stop controlled approaches to Arterial Streets (Principal or Minor Arterials).

E. Stop controlled approaches at the intersection of two or more arterial and/or collector Streets.

F. Stop controlled approaches of Local Streets to Non-Residential Collector Streets.

Crosswalks at non-intersection locations, and intersection locations not listed above, are by-default not marked and when they are marked require enhancement(s) that reduce traffic speeds, shorten crossing distance, increase driver awareness of the crossing, and/or provide active warning of pedestrian presence. Selection of appropriate enhancements requires analysis and documentation by a professional engineer. Enhancements may include, but are not limited to, signage, rapid rectangular flashing beacon(s), and/or bulb-outs.

Permanently closed crosswalks across arterial and collector streets shall have signage indicating that pedestrian crossing is prohibited (**No Pedestrian Crossing Sign, MUTCD R9-3**). A supplementary plaque with arrow (**Use Crosswalk Plaque w/Arrow MUTCD R9-3bP**) will be included with the no pedestrian crossing sign where the closed crosswalk is at an intersection where one crosswalk is closed, and the adjacent crosswalk is open and at locations where an open crosswalk exists only in one direction from the closed crosswalk.

10.09.06 Downtown Crosswalks

Marked crosswalks subject to DUC zone standards shall be per **City of Auburn Standard Detail T-43**.

An existing marked crosswalk that does not meet the requirements of the Guidelines shall be re-built in its entirety to meet the requirements of the Guidelines with the any of the following construction activities:

A. On an arterial street, full depth pavement re-construction across half or more of the crosswalk width.

B. On a non-arterial street, surface pavement restoration across half or more of the crosswalk width.

The crosswalk width is measured from face of curb or pavement edge at the pedestrian pathway entry into the vehicle travel way to curb face or pavement edge at the pedestrian pathway departure from the vehicle travel way. This distance is measured through medians, islands, and other pedestrian refuge areas.

10.10 Bikeways

See **City of Auburn Standard Detail T-17** and WSDOT Standard Plan M-9.50.

Bikeways shall be incorporated into street and trail networks in accordance with the CTP and the typical sections in **Section 10.03**.

Bikeways shall be designed in accordance with AASHTO's current "Guide for the Development of Bicycle Facilities", the MUTCD, this section, and applicable City of Auburn standard details.

The City of Auburn's bicycle network consists of various classification bikeways. Typically, these bikeways are shared with other transportation modes, although they may be provided exclusively for bicycle use. Bikeways are categorized as follows: Class I, II, or III Bikeways.

10.10.01 Class I Bikeway

Class I Bikeways are facilities shared with other non-motorized modes and are physically separated from motorized vehicle roadways. For the purposes of this section, Class I Bikeway design standards are for bicycle facilities that generally parallel a roadway with minimal crossflow by motor vehicles. When required, Class I Bikeways shall be designed for two-way traffic. Class I Bikeways that are part of the City's Future Trails and Bicycle Network shall be public and shall be located within public right-of-way, tracts or easements.

Class I Bikeways shall be either asphalt or cement concrete, at the discretion of the City Engineer or designee. Asphalt bikeways shall have a minimum pavement section of 2 inches of CL ½" asphalt concrete pavement over 6 inches of Crushed Surfacing Base Course (CSBC). Cement concrete bikeways shall be per **City of Auburn Detail T-13**. When the California Bearing Ratio (CBR) of the existing soil is 5 or less, an additional 6 inches of gravel base shall be required. When the trail is also utilized as a vehicular service road, the pavement design shall be the Access Road classification on **Table 10-5**. Class I Bikeways shall be a minimum width of 10 feet and be separated from the vehicular travel way by a landscape strip or other

physical buffer with a minimum 5 foot width.

Where Class I Bikeways are intersected by driveways appropriate signing and pavement markings shall be provided consistent with requirements for midblock crossings.

10.10.02 Class II Bikeway

Class II Bikeways, or “Bike Lanes,” are incorporated within the roadway section adjacent to vehicle travel lanes. Bike lanes are exclusive one-way bicycle facilities delineated by pavement markings and signage. Bicycle traffic is carried in the same direction as the adjacent motorized vehicle traffic.

Bike lanes shall have a minimum width of 6 feet as measured from nearest edge of the travel way to face of curb, edge of pavement, or edge of parking lane. Bike lanes shall have the same pavement section as the adjacent roadway. Buffering from the vehicle travel ways may be required as determined by the City Engineer.

10.10.03 Class III Bikeway

Class III Bikeways, or “Shared Lanes,” are facilities shared by bicyclists and motorized vehicles Class III Bikeways may or may not be delineated with shared use pavement markings and signage as determined by the City Engineer. Generally, lower-speed/lower-volume streets are adequate for bicycle travel, so additional signing and pavement markings for bicycle use are unnecessary.

10.11 Landscape Strips

Landscape strips are required per the typical sections in **Section 10.03**. Landscape strips are also included as part of separated trails/Class I Bikeways. Landscape strips shall be located between the back of the curb and the sidewalk. Landscape strips shall meet the following requirements:

A. 5 foot minimum width.

B. Minimum 8 inch deep amended soils as bedding over minimum 4 inch layer of scarified/tilled base soils all free of rocks, construction debris, slurry, and other construction material.

C. Graded towards the curb at approximately 1.5%. Other grades may be allowed where it can be demonstrated to not cause drainage or maintenance issues.

D. Planted with grass or shrubs, vegetation groundcover, and street trees. Shrubs and vegetative groundcover must be low maintenance, minimal debris dropping, and not present a tripping hazard to pedestrians. Landscape strips shall not include gravel, rocks, or other aggregate. Artificial turf may be placed in landscape strips subject to the following requirements:

   i. Must have lifelike individual blades of grass that emulate natural turf in look and color (green).

   ii. Indoor or outdoor plastic or nylon carpeting is not allowed.

   iii. Pile height must be at least 1.5 inches and have a face weight of 50 ounces per square yard.

   iv. A minimum eight-year manufacturer’s warranty that protects against color fading and decreased pile height is required.

   v. Must not utilize rubber infill.

vi. Must be free of tears, bulges, wrinkles, ripples, and frayed edges.

vii. Must be anchored.

viii. Must be installed with the grain pointing in a single direction.

ix. Edges must be trimmed to fit against all regular and irregular edges to resemble a natural look.

x. Must be a minimum water permeability of thirty inches per hour per square yard after installation.

E. Driveways, lighting, fire hydrants, junction boxes, water meters and other appurtenances shall be configured such that no landscape strip has a net landscaped surface area (landscape strip area minus areas occupied by non-landscape features) of less than 50 SF and no portion of a landscaped surface within a landscape strip has a width less than 2 feet.

Landscape strips along local residential streets may be constructed as bioretention swales to provide low impact development (LID) surface water management. Bioretention swales in the public right-of-way shall be designed to collect, treat, and infiltrate runoff from the public right-of-way. If, after runoff from the public right-of-way has been accounted for, additional capacity remains in the bioretention swale, the bioretention swale may be utilized to treat and infiltrate runoff from adjacent private single family residential property(s) with a maintenance agreement between the City and property(s) draining to the swale that requires those property(s) to maintain the swale in perpetuity. The bioretention swale shall be designed and constructed in accordance with the SWMM. Street trees shall not be placed in landscape strips constructed as bioretention swales. Instead, required street trees shall be placed on adjacent private properties and/or tracts.

10.12 Street Trees

See **City of Auburn Standard Detail T-06**.

Street trees are required for local residential streets, residential collector streets, and streets within the DUC zone (except along Auburn Way).

10.12.01 Species Selection, Placement, and Spacing

Where street trees are required, they shall be installed at a spacing of 40 feet on center or no closer than 1-1/2 times the mature diameter of the tree canopy, whichever is greater. Street trees shall be placed such that the center of the tree trunk is at 2-1/2 feet from the back of the adjacent curb or centered in the landscape strip, whichever is greater. Selection of tree species, placement, and spacing requires consideration of the following:

A. **Sight Lines:** Trees shall be placed so that they do not obstruct the view of any street intersection, driveway, or visibility of any traffic control device or sign. Sight distance triangles may be required to analyze and confirm visibility at street intersections is not blocked by tree(s).

B. **Planting Next to a Building**: Where a building is placed close to the sidewalk, the mature size of a tree should be considered when selecting species. Trees with a pyramidal, columnar, or oval shaped canopy are preferable; a tree with a round head is generally unsuitable in this situation.

C. **Overhead Wires**: When trees must be planted directly under or when the mature canopy is within 12 feet of overhead utility lines, species with a mature maximum height of 25 feet or less must be selected.

D. **Street Lighting**: Street and pedestrian lights should be placed between street trees. The trees shall be located at least half their mature canopy width or 20 feet from street lights, whichever is greater.

E. **Underground Utilities:** Trees shall be planted to avoid impacts on underground utilities.

F. **Clearance:** Trees shall be pruned as they grow to provide at least 8 feet vertical clearance above sidewalks and 14 feet of vertical clearance above roadway surfaces.

Table 10-11 provides a selection of acceptable species of trees. Many other trees are appropriate and alternative selections may be proposed if desired. Alternative plant choices must be evaluated and approved by the City Engineer, or designee. Needled evergreens and trees with mature heights of over 35 feet are not allowed.

A. **Round:** These are generally wide spreading trees that need more space than other shapes.

B. **Oval:** Taller than they are wide and cause less interference with traffic.

C. **Columnar:** Useful in locations where there is little available room between the street and buildings, awnings, or other features. Branches of columnar trees tend to grow up rather than out. Many branch lower than other types of trees without causing problems with traffic or pedestrians.

D. **Pyramid:** Also called cone, typically broad at the base of the canopy and are somewhat pointed at the top. Planted close together, pyramidal trees can screen unwanted views or create vistas. Lower branches sometimes droop with age and may have to be limbed up in later years to provide the needed clearance.

E. **Vase:** (sometimes also called “v-shaped”) have canopies that are narrow toward the bottom and broad at the top. V-shaped trees may have arching branches that form a canopy over both street and sidewalk. They generally do not cause problems with overhead power lines or traffic.

Table 10-11 Street Trees

Common Name	Mature Height (ft.)	Mature Canopy Width (ft.)	Sidewalk Landscape Areas	Medians	Canopy Shape
Amur Maple 'Flame'	20	20	x		Round
Mt. St. Helens Plum 'Frankthrees'	20	20	x	x	Round
Rocky Mt Glow Maple 'Schmidt'	25+	15	x	x	Round
Flowering Plum 'Krauter Vesuvius'	30	15	x	x	Round
Pear 'Autumn Blaze'	30	25	x		Round
Pacific Sunset Maple 'Warrens Red'	30	25	x	x	Round
Serviceberry 'Princess Diana'	20	15	x		Round
Serviceberry 'Autumn brilliance'	20	15	x		Round
Queen Elizabeth Maple 'Evelyn'	35	30	x		Oval
Red Fox Katsura	30	16	x	x	Oval
Frans Fontain Hornbeam	35	15	x	x	Columnar
Cherry 'Columnarus'	35	15	x	x	Columnar
Cherry 'Spire'	30	10	x	x	Columnar
Pyramidal European Hornbeam 'Fastigiata'	35	25	x	x	Columnar
Red Obelisk	35	12	x	x	Columnar
"Marilee"	24	10	x	x	Pyramid
Pear 'Redspire'	35	25	x	x	Pyramid
Linden 'Redmond'	35	20	x	x	Pyramid
Chancelor Linden 'Chancole'	35	20	x	x	Pyramid
Flowering Cherry 'Amanogowa'	20	6	x	x	Vase
Flowering Cherry 'Akebono'	25	25	x		Vase

10.12.02 Root Direction Devices

Trees within sidewalks, landscape strips, and on public or private property that are within 10-feet of a street or sidewalk require root barrier devices to deflect tree roots downward into the soil. The root barrier will be placed on all sides of the tree root ball. For a tree outside the street cross section, the barriers may be omitted on the side of the tree root ball that is parallel and opposite to the street. Plan submissions shall indicate the location of root barriers and provide a specification sheet on the product to be used.

10.13 Ground Cover

Ground cover and shrubs plantings in landscape strips and medians shall adhere to the requirements of this section. Except street trees, landscape strips and median plantings shall have a mature height of less than 3 feet. **Table 10-9** provides several acceptable species of ground cover and shrubs. Many other types of plants may be appropriate and alternative selections may be proposed if desired. Alternative plant choices must be evaluated and approved by the City Engineer, or designee. The SWMM shall be utilized to select groundcover plantings within the wet areas of bioretention facilities.

Groundcover shall be planted from either four-inch pot with 12-inch spacing or one-gallon pot

with 18-inch spacing. Alternative spacing of particular species may be approved by the City Engineer, or designee, if documentation concerning the effectiveness of the groundcover is submitted with the landscape plan.

Table 10-12 Ground Cover

Common Name	Mature Height (ft.)	Can be utilized in: M (Medians), L (Landscape Strips)	Minimum Planting Area Width (ft.)
Kinnikinnick Bearberry	0.5 to 1	M, L	5’ to 6’
California Wild Lilac	1.5	M	6’ to 8’
Bearberry Cotoneaster	< 2	M	5 to 6’
Purple Leaf Winter Creeper	1.5	M	6’ to 8’
Blue Chip Juniper/Hughes Juniper	1	M	6’ to 8’
Siberian Carpet Cypress	1.5	M	7’ to 8’
Evergreen Bramble	1	M	6’
Mother of Thyme	0.25	M	1
Otto Lyuken	3	M	6
Japanese Barberry	4	M	5
Wings of Gold	3 – 4	M	3
Periwinkle	0.5	M	1.5’

10.14 Irrigation Systems

Irrigation systems for landscape strips in the public right of way shall conform to ACC 12.12.236 and shall adhere to the standards specified in the City of Auburn Construction Standards.

10.15 Mailboxes

See **City of Auburn Standard Details T-07, T-08 & T-09.**

Locating and installing mailboxes in connection with the construction or reconstruction of a City street shall follow AASHTO and Post Office guidelines.

Mailboxes shall be located a minimum of 2 feet back from the face of curb on streets which have a curb. For streets without a curb, setbacks shall be determined using ASSHTO standards. When locating mailboxes, access, sight distance, parking, and landscaping requirements shall be taken into account. Final locations shall be detailed on the civil plans and approved by the serving Post Office and the City Engineer.

When mailboxes are located in the sidewalk, individually or in clusters, sidewalks shall be widened to provide a minimum 5 feet of clearance around the mailboxes. Widening of the sidewalk may require the dedication of additional right-of way or easement.

The owners or residents served by mailboxes will install and thereafter maintain their own individual, clustered, or separated mailboxes as instructed by the U.S. Postal Service.

10.16 Illumination

10.16.01 Street Lighting Design

Street lighting design shall be in conformance with the design criteria in the most recent edition of the IES Lighting Handbook (Illuminating Engineering Society of North America) and applicable WSDOT and City of Auburn Design and Construction Standards.

Table 10-13 provides minimum lighting design criteria, lamp attachment types, heights, davit arm lengths, and typical spacing for various roadway classifications in the City. The schedule is based on typical straight roadway sections with a staggered lighting configuration. Wider road sections, curves, intersections, cul-de-sacs, single sided lighting configurations require additional analysis to determine the spacing, height, and davit arm lengths required to achieve the required lighting levels.

Street light standards shall be staggered from one side of the roadway to the other, except where site constraints make single sided lighting more feasible and equally effective. Street lights on streets with median islands 8 feet in width and greater shall be located in the medians using dual davit arms to light the street on both sides of the median. The Applicant shall provide project specific lighting calculations that demonstrate minimum illumination levels will be met. Light level calculations shall be done ignoring any existing substandard luminaires (PSE lights on wood poles, etc.).

Special consideration shall be given to light levels at crosswalks, curves, conflict points and street ends. The locations of street lights shall take into consideration any obstacles which may screen or impede lighting levels such as street trees and awnings. Minimum separation between street trees and street lights shall be 20 feet or ½ the mature tree canopy width, whichever is greater.

Marked crosswalks at traffic signal controlled intersections and sidewalks in the Downtown Urban Corridor (DUC) zone shall be lit to an average of 2-foot candles. All other marked crosswalks will be lit to a minimum of 1-½ times the required average light level per **Table 10-13**.

10.16.02 Luminaries

All City street lights shall be LED. Acceptable light fixtures/luminaries are shown on **City of Auburn Standard Detail T-37**. Use of other fixtures requires documentation showing they meet all applicable City standards and approved by the City Engineer, or designee.

Street and Pedestrian Luminaires shall operate on 240 Volt AC and all luminaires shall be full cutoff. All luminaires shall be provided with wattage labels for positive identification of Lamp (See **Table 10-10**). A maximum of 5% voltage drop across each circuit will be permitted.

All City Street lights must support dimming and have PCR7 photocell receptacle and utilize a Sensus wireless control node.

Table 10-13 Lighting Design Criteria

Street Classification	Lamp Attachment Type (See City of Auburn Standard Detail T-37)	Avg. Light Level (ft-candle)	Max. Uniformity Ratio	Min. Light Level (ft-candle)	Luminaire Mounting Height (ft)	Spacing* (ft)	Davit ** Arm Length (ft)
Principal Arterial	Type A	1.4	3 To 1	0.2	35**	190	12
Minor Arterial	Type B	0.9	3 To 1	0.2	35	190	12
Minor Arterial w/Center Turn Lane or Median	Type B	0.9	3 To 1	0.2	35	190	12
Non-Residential Collector	Type B	0.9	3 To 1	0.2	35	200	12
Residential Collector	Type D	0.6	3 To 1	0.2	30	175	14
Residential Collector w/Center Turn Lane or Median	Type D	0.6	3 To 1	0.2	30	175	14
Local Non-Residential	Type D	0.6	3 To 1	0.2	35	160	12
Rustic Roads*		N/A	N/A	N/A	N/A	N/A	N/A
Local Residential and Local Residential Alternate	Type F	0.4	6 To 1	0.1	30	185	8

* Lighting for rustic roads shall be at intersections only and meet the design criteria for Local Residential Roads.

** Davit arm lengths may change based on approved roadway cross section.

10.16.03 Light Poles

City street light poles shall be “cobra head” style per **City of Auburn Standard Detail T-19** except for streets within the DUC zone that shall be per **City of Auburn Standard Detail T-28 or T-39**. An alternate street light may be utilized along local residential streets per **City of Auburn Standard Detail T-29**.

Light Standards handholes shall be four inches by six inches nominal non-flush type in accordance with **City of Auburn Standard Detail T-19** with tamper resistant screws.

All light poles shall be placed on a foundation. Foundations for light standards shall conform to **City of Auburn Standard Details T-19, T-28, or T-29.**

Luminaire wiring, conduit, and pole placement within street cross sections that have curb, gutter, and sidewalks shall be per **City of Auburn Standard Detail T-18.**

10.16.04 Service Cabinet, Foundation, Conduit

See **City of Auburn Standard Detail T-21.**

All new luminaires shall be connected on an electrical circuit that is connected to a power source through a service cabinet. The service cabinet shall be within 50 feet of the Puget Sound Energy (PSE) point of service connection.

Service cabinets shall be installed within right-of-way, easement, or City property behind the sidewalk and at locations that do not impede maintenance access or sight distance. The cabinet shall be located in the center of the system so there are a near equal number of lights being

served on separate circuits from each side of the cabinet. The cabinet shall be labeled with "COA Lighting" and service site address.

The number of luminaires per service will be based upon the type of luminaire and the capacity of the service. Testing may be required to determine if additional luminaires may be added to an existing service.

Service cabinets shall be in conformance with the City of Auburn Engineering Construction Standards. All new luminaires shall have a 7 pin PCR7 receptacle and come with a Sensus VantagePoint wireless control node.

Street light conduit shall be per the City of Auburn Construction Standards.

10.17 Junction Boxes

See **City of Auburn Standard Detail T-20**.

Junction boxes shall be of the type specified on the plans and shall conform to the requirements of WSDOT Standard Plan J-40.10. All junction boxes shall be locking.

Type 1 junction boxes shall be located adjacent to the sidewalk within the landscaping strip, if provided, or adjacent to the back of sidewalk if there is not a landscape, or within the shoulder of a non-curbed roadway. Junction boxes remaining or placed within the sidewalk or walking paths shall have non-slide lids.

10.18 Survey Monuments

See **City of Auburn Standard Detail T-46.**

Survey monuments shall be placed or replaced in accordance with WAC 332-120 (Survey Monuments – Removal or Destruction), and RCW 58-09.120 and good practice in land surveying. Monuments are required along the centerline of improvement of all new or reconstructed streets. Monuments shall be placed at intersections, points of curvature (PC), and points of tangency (PT).

Unless approved otherwise by the City Engineer or designee, ground disturbing activities within 25 feet of an existing survey monument requires securing of a permit from the Department of Natural Resources in advance of those activities. All existing survey monuments that are disturbed, lost, or destroyed during construction shall be replaced by a registered land surveyor registered in the State of Washington at the expense of the responsible party. Any monuments set shall be permanently marked with the certificate number of the Professional Land Surveyor (PLS) setting it (which shall be the same PLS that prepares and certifies the associated monument recording information).

10.19 Bollards

See **City of Auburn Standard Detail T-03.**

When necessary to deny vehicle access to an easement, tract, or trail (except for maintenance vehicles) the point of access shall be closed by a line of bollards. These shall include one or more fixed bollards on each side of the traveled way and removable, locking bollards across the traveled way. Spacing shall provide one bollard on centerline of the trail and other bollards at a spacing of 3 feet on center. Where pedestrian access is intended, bollards shall include at least one space between them of 5 feet. Bollards are considered fixed roadside objects and shall meet separation requirements described in **Section 10.17**.

Emergency vehicle access roads shall not be blocked with bollards. Emergency vehicle access roads will be blocked with a gate and knox-lock.

10.20 Bus Transit Facilities

Transit facilities in the City of Auburn will be coordinated with the relevant transit agency.

When determined appropriate by the City Engineer, or requested by a transit service agency, an applicant for new or expanded development is required to consult with King County METRO, Pierce Transit, Sound Transit, and/or the Muckleshoot Indian Tribal Transit to determine the practicality of how the site can be served by transit-oriented improvements such as bus pullout lanes, bus stops, or other appurtenances.

Bus stops are located, designed and installed as part of a cooperative effort between the City and the operating transit agency. Bus stops are managed as part of a right of way use permit granted by the City to the operating transit agency. In general bus stop location and design decisions should follow the facility design guidelines of the operating transit agency.

10.20.01 Bus Stops Locations

In general bus stop location and design decisions should follow the facility design guidelines of the operating transit agency. The following are guidelines that indicate where bus stops are appropriate:

A. Projected or existing passenger boardings demand warrant a stop.

B. The stop is not at a location where traffic level of service standards are not being met or where the stop would cause traffic operations to drop below traffic level of service standards.

C. The stop does not obstruct minimum required sight distances.

D. The location meets the facility guidelines and fleet specifications of the operating transit agency.

E. The stop is required to meet all applicable ADA requirements.

10.20.02 Bus Stops Features

In general bus stop location and design decisions should follow the facility design guidelines of the operating transit agency. The following are some guidelines that would indicate what type of treatment would be appropriate by type of bus stop.

A. Shelters should be installed at bus stops with an existing or estimated 25 or more boarding per day.

B. Benches should be installed at bus stops with an existing or estimated 15 or more boarding per day.

C. Trash receptacles should be installed and maintained by the operating transit agency at all bus shelters. A sign should be placed indicating that the shelter stop is maintained by the operating transit agency and giving specific contact information to report problems with the stop including a phone number.

D. At all bus stops experiencing 15 or more boarding per day trash receptacles may be placed by the City or adopt a spot group and should be maintained by the City or the adopt a stop group.

E. Information schedules and schedule holders shall be placed at all inbound stops (stops where buses are headed toward a major Central Business District), at all transfer points and at heavily used outbound stops.

F. Additional bus stop lighting should be provided at locations where lighting levels are determined to be less than 1 foot candle.

10.20.03 Bus Pullout Lanes

The City Engineer may determine that bus pullout lanes are required where bus queuing or staging is required. In making this determination, the City Engineer will consider the following:

A. Traffic volumes, bus frequency, and ridership volumes.

B. Traffic impacts of an in-lane stop vs a pullout.

C. Posted speed limits.

Bus pullout locations shall meet the following requirements:

A. Placement of bus pullouts shall be on the far side of signalized intersections and non-signalized intersections immediately following the intersection. Distance between pullouts should not be less than 1,000 feet.

B. Pullouts should be constructed on both sides of a two-way street in a complementary pair.

C. When locating a bus pullout consideration shall be given to existing access points and where passengers have access to sidewalks, crosswalks, ramps, or other pedestrian facilities. Consideration shall also be given to trip attractors, and activity centers.

D. Bus pullouts shall be designed to provide for a bus leaving the pullout lane to enter traffic with minimum required entering sight distance per AASHTO.

E. Bus pullouts shall be located along roadways meeting minimum stop sight distance requirements per AASHTO.

10.21 Traffic Control Facilities

Traffic control facilities are all signs, signals, markings, medians, curbing, and other features used to regulate, warn, or guide traffic. All traffic control devices shall meet the requirements of the MUTCD and the standards herein.

10.21.01 Median Islands

The City Engineer may determine that a median island is needed to provide the following:

A. Manage/restrict access along a corridor.

B. Provide a traffic calming element.

C. Provide pedestrian refuge.

D. Improve roadway aesthetics.

E. Separate opposing travel lanes.

Median Islands shall be designed using the same geometric criteria as the street on which they will be constructed. Medians shall also meet the following requirements:

A. All edges shall require concrete curb per WSDOT Standard Plan F-10.12. Median edges towards which runoff flows shall include concrete curb and gutter per WSDOT Standard Plan F-10.12**.** The face of curb shall be offset at least 1 foot from the edge of adjacent travel way.

B. Median ends shall include reverse curves of the curb lane with 20 foot minimum radii to accommodate turning vehicles and street sweeping.

C. Minimum median width is 4 feet.

D. Median landscaping is not allowed on medians less than 9 feet wide and shall conform to the requirements of **Sections 10.11, 10.12 and 10.13.** Landscaped medians shall include irrigation systems. Landscaped medians shall provide a 1 foot wide, 6-inch thick, concrete maintenance apron around the perimeter of the median behind the curb.

E. Median hardscape shall be stamped concrete with colors and patterns as determined to be required by the City Engineer or designee.

F. Street lights on streets with median islands 8 feet in width and greater shall be located in the medians using dual davit arms to light the street on both sides of the median.

G. Medians with street lights and/or landscaping will be designed to allow maintenance of the lights or vegetation without requiring full closure of a travel direction(s).

10.21.02 Mountable Curbs

Mountable (also referred to as “C” Curbs), are curbs used for the restriction of turning movements and to aid in the channelizing of traffic. The City Engineer may determine that mountable curbs may be required in order to control access along a corridor within the restricted zones of any functional intersection boundary as defined in **Section 10.08.04**.

Mountable Curbs constructed to retrofit existing roadways shall be constructed per **City of Auburn Standard Detail T-32**. Mountable Curbs constructed on new roadway surfaces shall be cast-in-place curb per **City of Auburn Standard Detail T-47**. All Mountable Curb shall be painted to match the adjacent roadway striping (yellow or white) and shall be marked with raised pavement markers and flexible tubular delineators at the beginning and end sections as shown on **City of Auburn Standard Detail T-32**. Mountable curbs shall be designed to account for roadway drainage.

10.21.03 “Pork Chop” Islands

“Pork Chop” Islands are barrier islands used to restrict turning movements at driveways. The City Engineer may determine that a pork chop is required where left turns are restricted and other physical barriers such as median Islands or curbing is not feasible. When required, pork chops shall be accompanied by appropriate turn restriction signage in the right-of-way and pavement markings.

10.21.04 Signage

All signing shall be per the MUTCD and City of Auburn Engineering Construction Standards.

Applicants shall be responsible for providing and installing all traffic control signs, including but not limited to street name signs, regulatory signs, warning signs, barricades, and bicycle/pedestrian signs as required.

Sign posts shall be installed per **City of Auburn Standard Detail T-24.**

Mast arm mounted street name signs shall be per **City of Auburn Standard Detail T-25.**

Post mounted street name signs shall be per **City of Auburn Standard Detail T-26.**

10.21.05 Left Turn Lane Channelization

See WSDOT Standard Plans M-3.20 & M-3.40**.**

Single direction left-turn lane channelization shall include a minimum of 150 feet of full-width lane. The standard width of a left-turn lane will be 11 feet. Left-turn arrows per WSDOT Standard Plan M-24.40 shall be installed 25 feet behind the stop bar. Additional storage may be required for long vehicles, anticipated left-turn queues longer than the minimum storage, or to ensure that a left-turn lane is not blocked by an adjacent through queue. If storage length exceeds 150 feet, auxiliary turn arrows will be installed at 100 foot intervals. Deviation requests from the minimum left-turn lane storage requirements will need a traffic study submittal and approval by the City Engineer.

The installation of two-way left-turn lanes on City streets will be determined by the City Engineer based on street classifications and left turn requirements. The minimum width of a two-way left-turn lane shall be 11 feet. The delineation lines shall be Single Broken Yellow and a Single Solid Yellow along the opposing lanes per the MUTCD. Two-way traffic arrows shall be spaced every 250 feet along this lane with a minimum of one per block.

Left-turn lane at end of two-way left-turn lanes shall conform to WSDOT Standard Plan M-3.40.

Dual left turn lanes shall conform to WSDOT Standard Plan M-3.50.

10.21.06 Right Turn Lane Channelization

See WSDOT Standard Plan M-5.10

Right-turn lane pocket channelization shall include a minimum of 150 feet of full-width lane. The standard width of a right-turn lane will be 11 feet. Additional storage may be required for long vehicles, to accommodate anticipated right-turn queues longer than the minimum storage, or to ensure that a right-turn lane is not blocked by a through queue. Deviation requests from the minimum right-turn lane storage requirements will need a traffic study submittal and approval by the City Engineer. Right-turn arrows shall conform to WSDOT Standard Plan M-5.10.

"ONLY" lettering per WSDOT 80.10 is required where a through lane converts to a turn lane and other circumstances as determined by the City Engineer.

10.21.07 Lane Division

See WSDOT Standard Plan M-20.10 and **City of Auburn Standard Detail T-12.**

All pavement markings used to separate or channelize traffic shall conform to the referenced Standard Plans and to the City of Auburn Construction Standards.

Lane division pavement markings on Local Residential streets are not required, except as may be deemed necessary by the City Engineer.

10.21.08 Painted Islands

Painted islands will be allowed on a case-by-case basis with approval from the City Engineer. Pavement markings for painted islands shall meet the MUTCD requirements.

10.21.09 Other Pavement Markings

Railroad crossing marking shall be per the standard symbol shown on WSDOT Standard Plan M-11.10.

10.21.10 Construction Area Temporary Traffic Control

The contractor shall be responsible to provide and maintain all signs, barriers, warning lights, striping, and flag control required for maintaining public safety in construction areas. Traffic control shall be maintained at all times when construction is in progress on all streets, and access points in the construction area.

Construction activities will not be allowed in the public right of way without an approved traffic control plan. Contractor to refer to the Construction Standards for further details.

10.21.11 Roadway Barricades

Barricades shall conform to the standards described in the MUTCD.

Type I or Type II barricades may be used when traffic is maintained through an area being constructed/reconstructed.

Type III barricades may be used when streets are closed to traffic. Where provision must be made for access of equipment and authorized vehicles, the Type III barricades may be provided with movable sections that can be closed when work is not in progress, or with indirect openings that will discourage public entry. Where job site access is provided through the Type III barricades, the developer or contractor shall assure proper closure at the end of each working day.

Type III barricades shall be used at the end of a local access street terminating abruptly without cul-de-sac bulb or on temporarily stubbed off streets. Each such barricade shall be used together with an end-of-road marker. See **City of Auburn Standard Detail T-45**.

10.21.12 Traffic Signals

Traffic signals shall be designed and constructed in accordance with Sections 8-20, 9-29, and other applicable sections of the Construction Standards. Traffic signal facilities shall utilize video vehicular detection. Induction loops or other solution are only allowed where the City Engineer, or designee, has determined that video detection is not feasible. Wherever existing induction loops are damaged and require replacement, *the City Engineer may require their replacement with video detection. WSDOT Standard Plans shall be utilized except the following elements that shall be per City of Auburn Standard Details:*

Traffic Signal in the DUC Zone: **City of Auburn Standard Detail T-38**

Traffic Signal Controller and Foundation: **City of Auburn Standard Detail T-22**

Telecommunication and Luminaire Electrical Trench: **City of Auburn Standard Detail T-23**

The following definitions are referenced when determining what upgrades to pedestrian push-button and pedestrian signal head systems are triggered by development/construction activity:

A. **Functionally Accessible:** For pedestrian pushbuttons and pedestrian signal heads to be considered accessible from a functionality standpoint, they must be of the brands, makes, and models that are specified by the current Engineering Construction Standards.

B. **Location Accessible:** For pedestrian pushbuttons to be considered accessible from a location standpoint, they must be between 42 and 46 inches in height measured vertically from the centerline of the pushbutton and the adjacent level landing and the pushbutton must be 10 inches or less measured horizontally from the adjacent level landing.

In accordance with the City's adopted ADA Transition Plan, modification, or expansion of any portion of the electrical systems of a signalized intersection or enhanced crossing requires making all pedestrian pushbuttons and pedestrian signal heads at the intersection or crossing Functionally Accessible. Construction, modification, removal or replacement of any portion of any curb ramp at a signalized intersection or enhanced crossing requires making the pedestrian pushbutton serving the new, modified, or replaced ramp Location Accessible and making all of the pedestrian pushbuttons and pedestrian signal heads at the intersection or crossing Functionally Accessible.

10.21.13 Traffic Calming

The City Engineer may determine that traffic calming features are required on existing or new streets to address cut-through or speeding concerns. Potential traffic calming features include varying roadway sections, traffic circles, chicanes, medians, bulb-outs, raised intersections, and raised crosswalks. Speed cushions are not an acceptable traffic calming approach except when considered and installed as either: 1) Part of the City's Neighborhood Traffic Calming Program, or 2) With approval from the City Engineer, as mitigation on existing roadways where development activity creates the potential for cut-through and/or speeding traffic and the City Engineer determines that other traffic calming approaches would not be applicable or appropriate.

Where speed cushions are installed, they will be per **City of Auburn Standard Detail T-42.**

10.22 City Telecommunication Facilities

10.22.01 Preface

The design of City Telecommunications facilities, including intelligent transportation systems (ITS) and general communications fiber located within City right-of-way and easements shall be in conformance with these standards.

City telecommunications facilities shall be included in the Public Facility Extension Agreement (FAC) between the developer and the City when the Agreement includes street improvements per ACC 12.64A.

10.22.02 Design Criteria

The City has established the following minimum requirements to ensure the efficient construction of City telecommunication facilities with the least impact to City transportation and other utility infrastructure. The design of City telecommunications facilities shall also meet the requirements of **Chapter 9.**

Unless approved otherwise by the City Engineer, or designee, City telecommunications conduits and related facilities are required in conjunction with all street improvements constructing sidewalks, traffic signals, or traffic beacons and may be required with other improvements as determined by the City Engineer, or designee, in accordance with ACC 12.64A. When required, facilities shall extend the full length of the street improvement. Placement of the facilities shall accommodate connection with other existing or future telecommunication facilities within the corridor.

10.22.03 Conduits

City telecommunication conduits shall be 3-inch PVC Schedule 40 and shall have a minimum of 24 inches of cover and, except for street crossings, shall be located under the sidewalk per **City of Auburn Standard Detail T-23**. If no sidewalk is included in the scope of the required

street improvements, the conduit will be installed in the most feasible location within the street construction limits as directed by the City Engineer, or designee. Roadway crossings shall be minimized, and sweeps shall be long sweep 90-degree bends. Trace wire shall be placed within the conduit.

10.22.04 Splice Vaults and Pull Boxes

When required, splice vaults and pull boxes shall be per WSDOT Standard Plans J-90.21 and J-90.10, respectively, except that lid marking lettering shall be as specified in the Construction Standards and lids shall not be marked with WSDOT logos or text indicating WSDOT. Splice vaults shall be placed every 1,500 feet. Pull boxes shall be placed every 500 feet and at all intersections.

STANDARD DETAILS

February 2024

City of Auburn
Engineering Services
Public Works Department
25 West Main Street
Auburn, WA 98001-4998

Approved By:

Jacob Sweeting, P.E. — 2/7/24
Assistant Director of Engineering Services/City Engineer — Date

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PREFACE FOR THE CITY OF AUBURN STANDARD DETAILS

Per Auburn City Code (ACC) 12.04.020, all public work construction contracts of the City, including but not limited to streets and sidewalks, storm water and sanitary sewer systems, and water systems, and all work within City public right-of-way performed by the City and others shall conform to the Engineering Construction Standards (ECS). The ECS apply to City capital projects and to work performed by developers and others under construction permits (CON), grading permits (GRA), storm permits (STM), other utility permits, and public facility extensions (FAC). The City of Auburn has adopted the ECS to require the standardization of design and construction elements for consistency, to assure that public safety needs are met, and to comply with Local, State, and Federal regulations. This Standard Details document is a sub-part of the ECS.

Unless otherwise noted, references to specifications sections in the Standard Details refer to the Washington State Department of Transportation's (WSDOT) Standard Specifications (M41-10) for Road, Bridge and Municipal Construction, 2024 edition publication (Standard Specifications), as modified by City of Auburn Special Provisions.

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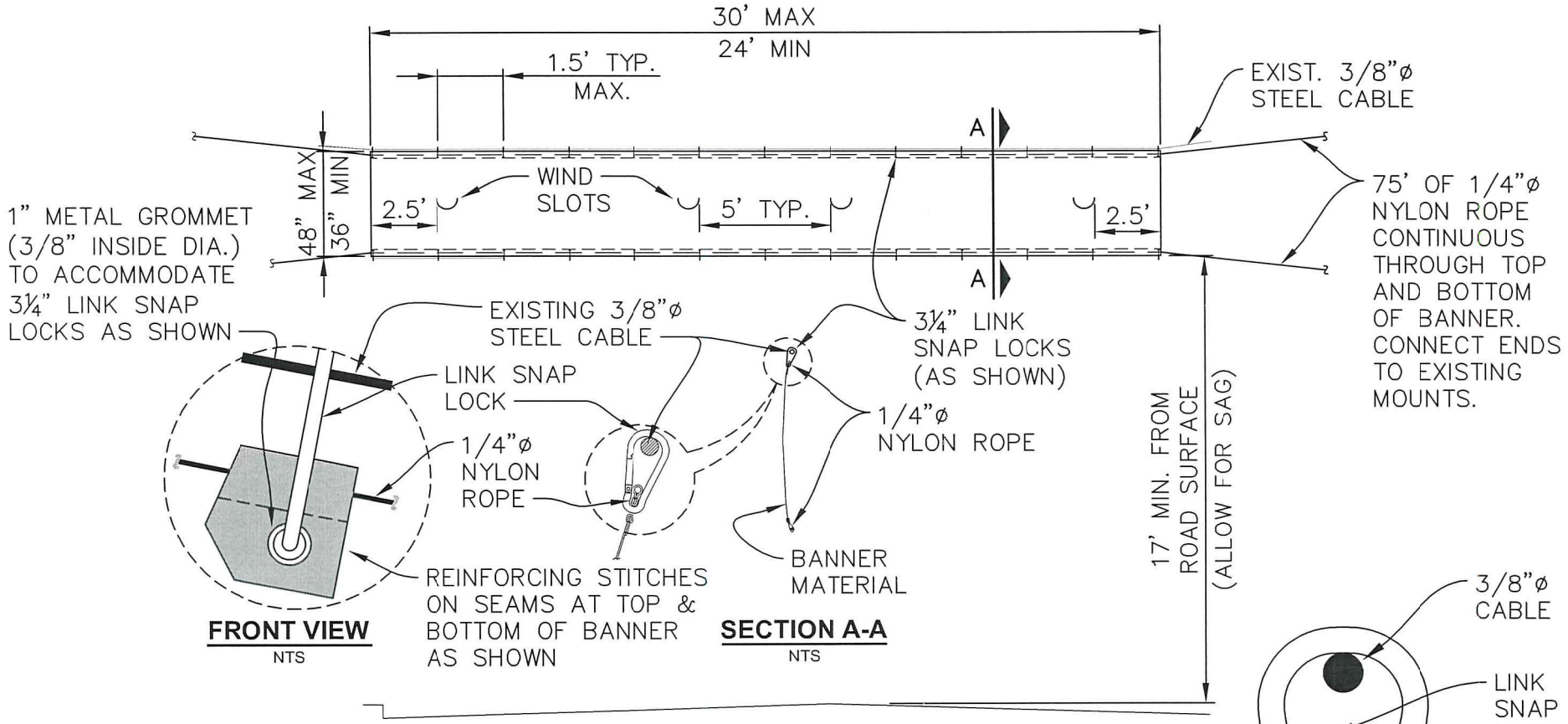
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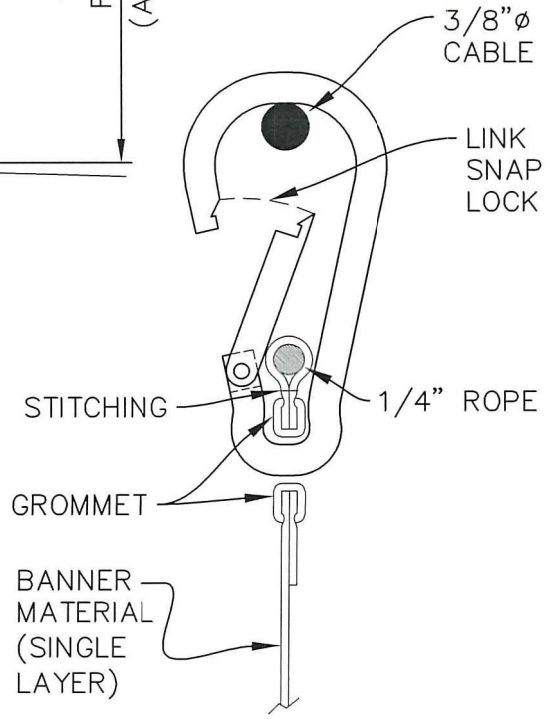
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FRONT VIEW
NTS

SECTION A-A
NTS



SIDE VIEW
NTS

NOTES:

1. WIND SLOT SHALL BE 6" DIAMETER HALF CIRCLE, MINIMUM. THEY MAY BE LOCATED IN AREAS WHICH DO NOT DETRACT FROM THE BANNER.
2. WIND SLOTS SHALL BE SPACED ONE SLOT PER 5 FT. OF BANNER LENGTH.
3. BANNER SHALL BE DURABLE TEARING RESISTANT MATERIAL, I.E., NYLON, VINYL, ETC.
4. BANNER SHALL BE CONNECTED TO EXISTING CABLE WITH DETACHABLE 3¼"" LINK SNAP LOCKS AS SHOWN. OTHER METAL RING TYPES WILL NOT BE ACCEPTED. APPLICANT SHALL PROVIDE A MINIMUM OF 40 LINK SNAP LOCKS INSTALLED ON THE TOP AND BOTTOM OF BANNER AS SHOWN (20 ON EACH SIDE). NOT ALL LOCATIONS REQUIRE LINK SNAP LOCKS ON THE BOTTOM. APPLICANT TO VERIFY DURING BANNER APPLICATION SUBMITTAL.
5. REINFORCING STITCHES SHALL BE PROVIDED ON SEAMS AT TOP & BOTTOM OF BANNER.
6. BANNER SHALL BE CONSTRUCTED USING A SINGLE LAYER OF BANNER MATERIAL. DOUBLE SIDED BANNERS SHALL HAVE PRINT ON BOTH SIDES OF THE SINGLE LAYER MATERIAL.
7. BANNER CONSTRUCTION SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO BANNER BEING DEPLOYED AT THE PERMITTED LOCATION.

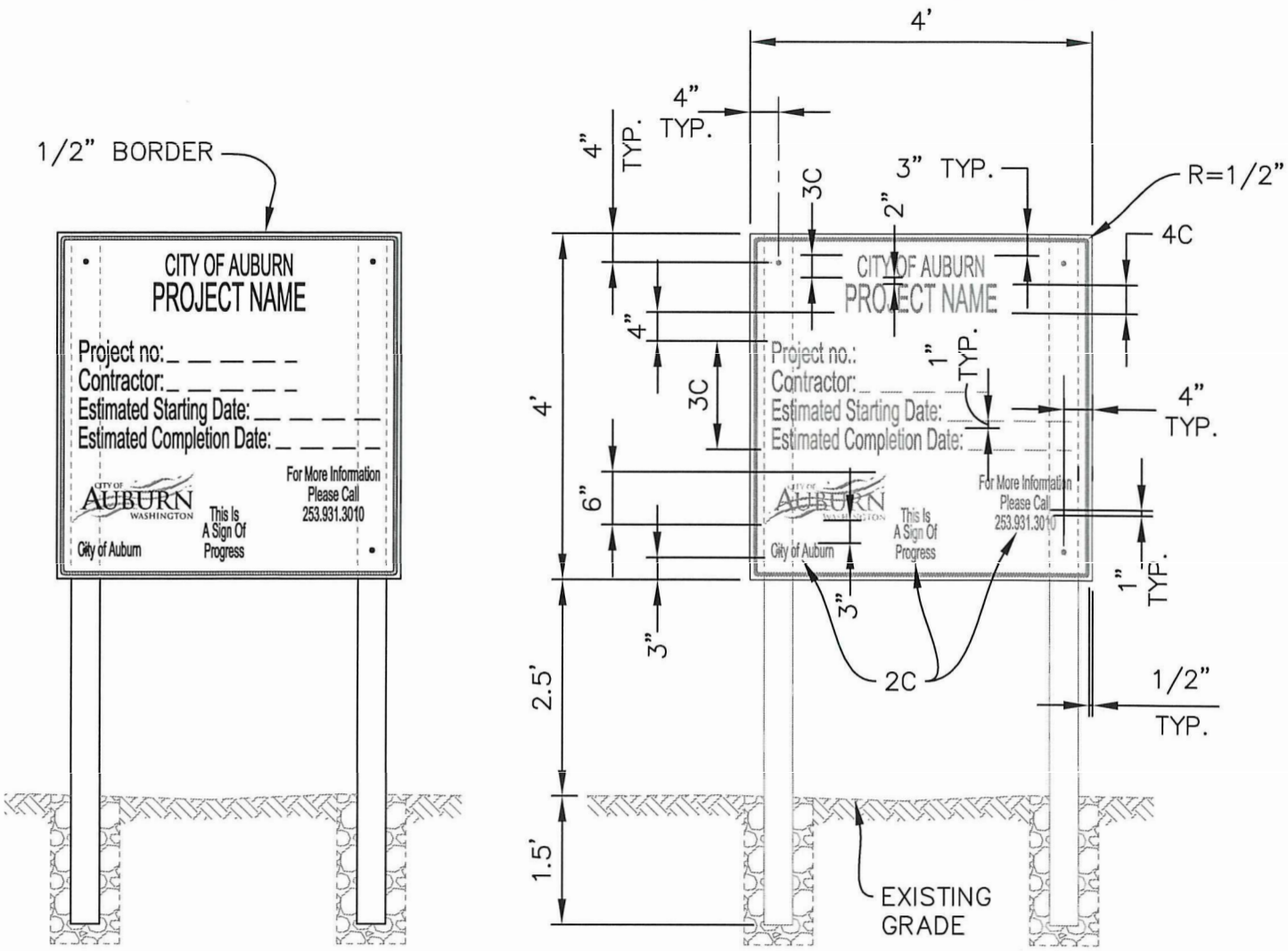
APPROVED BY CITY ENGINEER: Chris Upthegrove DATE: 12/26/19

CITY OF AUBURN WASHINGTON

PUBLIC WORKS DEPARTMENT

BANNER DETAIL

STANDARD DETAIL: G-01.3



CONSTRUCTION NOTES:

1. SIGN BOARD SHALL BE CONSTRUCTED FROM 4'x4'x3/4" EXTERIOR MARINE PLYWOOD.
2. ALL LETTERS AND NUMERALS SHALL BE SERIES C.
3. LETTERING SHALL BE BLACK ON WHITE BACKGROUND USING 3M SCOTCHLITE EC FILM SERIES 1700 OVER 3M DIAMOND GRADE VIP OR BETTER.
4. SIGN AND POSTS SHALL BE PLANTED INTO AN UNYIELDING SOIL AND REINFORCED BY TAMPING GRAVEL OR SMALL ROCKS WHEN NECESSARY TO ASSURE RESISTANCE AGAINST STRONG WIND. BRACING MAY BE REQUIRED AT SOME LOCATIONS AS DIRECTED BY THE ENGINEER.
5. SIGN BOARD SHALL BE FABRICATED AND MOUNTED ON 2 EACH 4"x4"x8' POSTS WITH THE FOLLOWING GALVANIZED FASTENERS AND SIZES AS INDICATED:

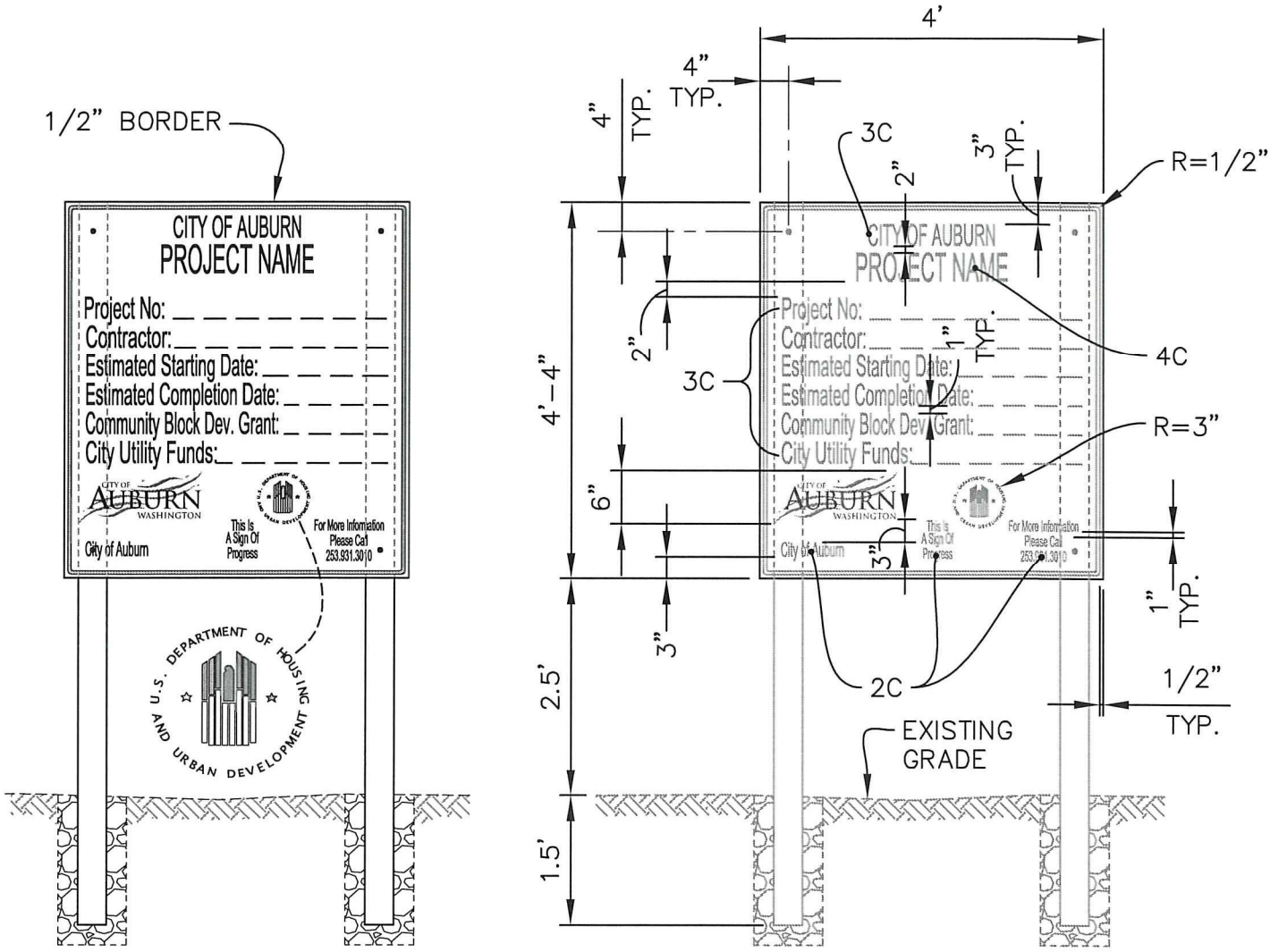
   4 EA. 1/4" DIA.x6"

   4 EA. 1/4" NUTS

   8 EA. 1/4" WASHERS

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	TEMPORARY CONSTRUCTION SITE SIGN BOARD (4'x4')
	8/5/2016		
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: G-22.1

Plotted by: Craig Dobyns on 7/13/2016 File location: M:\Construction Standard Details\Approved Drawing Files (dwg)\General\STDETL-6-02.1



CONSTRUCTION NOTES:

1. SIGN BOARD SHALL BE CONSTRUCTED FROM 3/4" EXTERIOR MARINE PLYWOOD.
2. ALL LETTERS AND NUMERALS SHALL BE SERIES C.
3. LETTERING SHALL BE BLACK ON WHITE BACKGROUND USING 3M SCOTCHLITE EC FILM SERIES 1700 OVER 3M DIAMOND GRADE VIP OR BETTER.
4. SIGN AND POSTS SHALL BE PLANTED INTO AN UNYIELDING SOIL AND REINFORCED BY TAMPING GRAVEL OR SMALL ROCKS WHEN NECESSARY TO ASSURE RESISTANCE AGAINST STRONG WIND. BRACING MAY BE REQUIRED AT SOME LOCATIONS AS DIRECTED BY THE ENGINEER.
5. SIGN BOARD SHALL BE FABRICATED AND MOUNTED ON 2 EACH 4"x4"x8' POSTS WITH THE FOLLOWING GALVANIZED FASTENERS AND SIZES AS INDICATED:

   4 EA. 1/4" DIA.x6"

   4 EA. 1/4" NUTS

   8 EA. 1/4" WASHERS

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	TEMPORARY H.U.D. CONSTRUCTION SITE SIGN BOARD (4'x4')
	8/5/2016		
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: G-04.1

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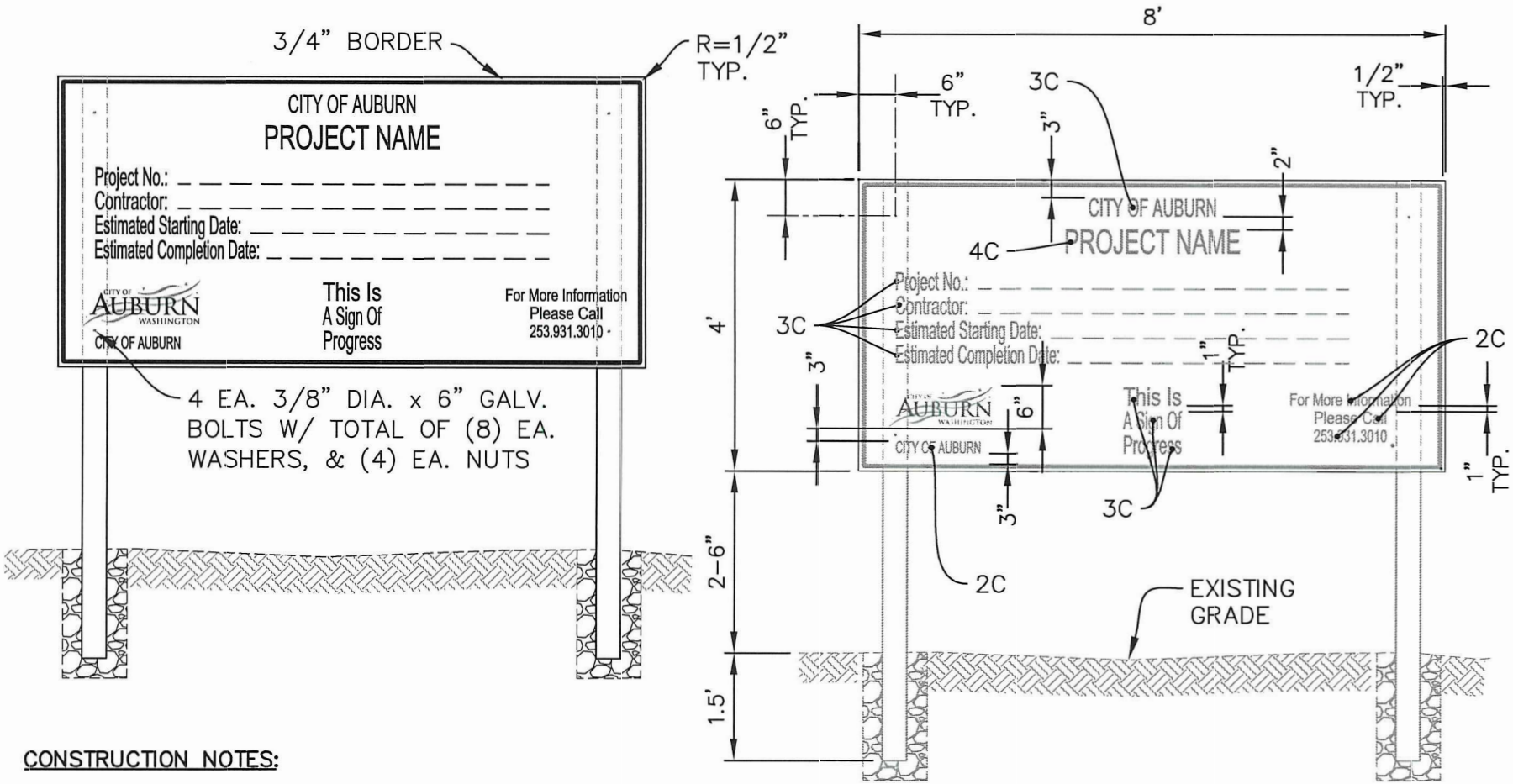
APPROVED BY CITY ENGINEER: [signature] DATE: 8/15/2016

COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.

CITY OF AUBURN WASHINGTON

TEMPORARY CONSTRUCTION SITE SIGN BOARD (8'x4')

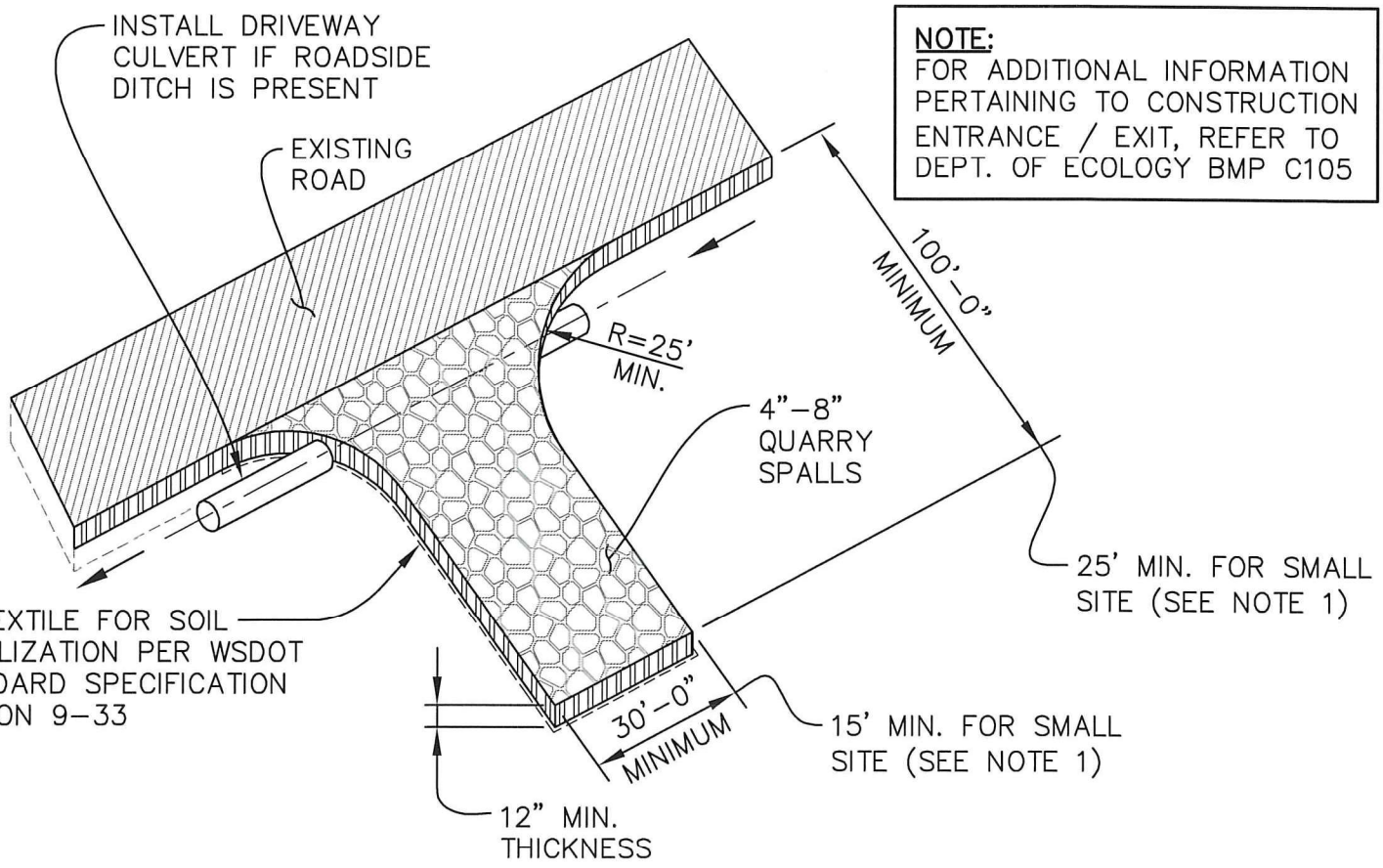
STANDARD DETAIL: G-05.1



CONSTRUCTION NOTES:

1. SIGN BOARD SHALL BE CONSTRUCTED FROM 4'x4'x3/4" EXTERIOR MARINE PLYWOOD.
2. ALL LETTERS AND NUMERALS SHALL BE SERIES C.
3. LETTERING SHALL BE BLACK ON WHITE BACKGROUND USING 3M SCOTCHLITE EC FILM SERIES 1700 OVER 3M DIAMOND GRADE VIP OR BETTER.
4. SIGN AND POSTS SHALL BE PLANTED INTO AN UNYIELDING SOIL AND REINFORCED BY TAMPING GRAVEL OR SMALL ROCKS WHEN NECESSARY TO ASSURE RESISTANCE AGAINST STRONG WIND. BRACING MAY BE REQUIRED AT SOME LOCATIONS AS DIRECTED BY THE ENGINEER.
5. SIGN BOARD SHALL BE FABRICATED AND MOUNTED ON 2 EACH 4"x4"x8' POSTS WITH THE FOLLOWING GALVANIZED FASTENERS AND SIZES AS INDICATED:

   4 EA. 3/8" DIA.x6"
   4 EA. 3/8" NUTS
   8 EA. 3/8" WASHERS



NOTE:
FOR ADDITIONAL INFORMATION PERTAINING TO CONSTRUCTION ENTRANCE / EXIT, REFER TO DEPT. OF ECOLOGY BMP C105

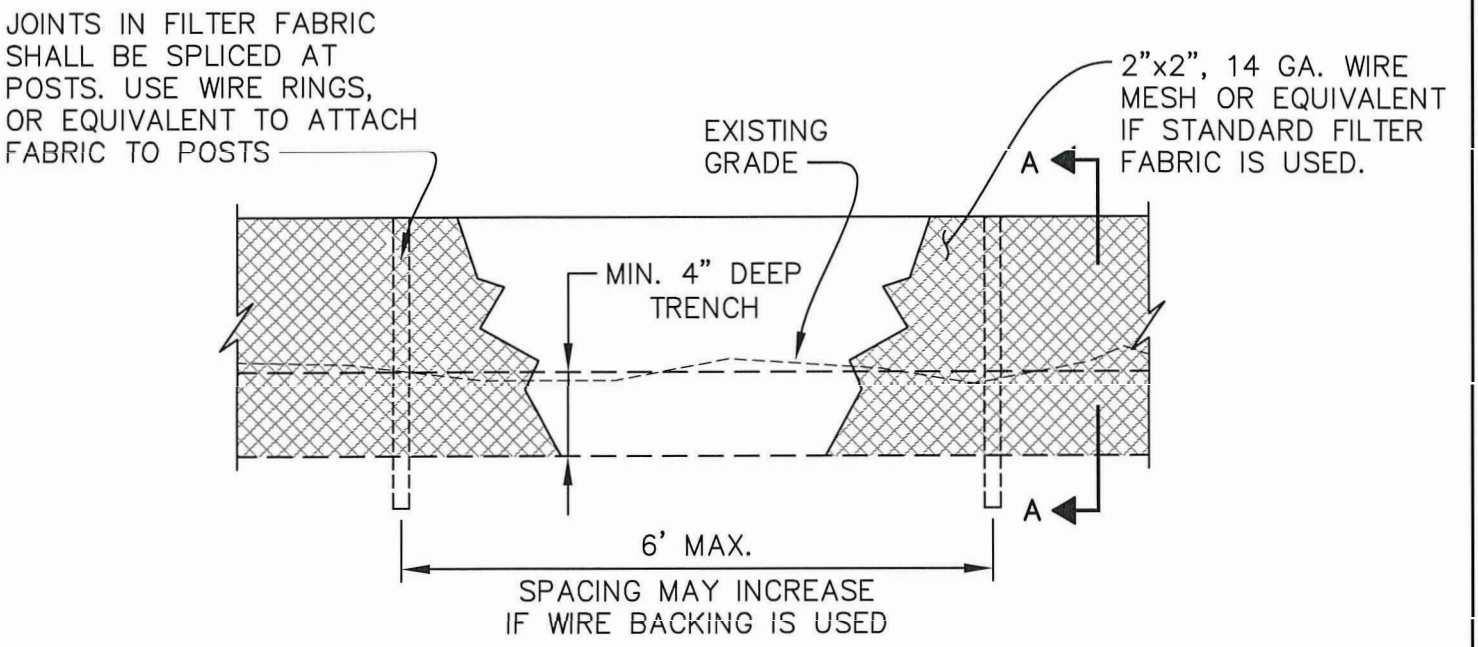
MAINTENANCE STANDARDS:

1. SMALL SITE IS DEFINED AS A SITE THAT ADDS OR REPLACES LESS THAN 5,000 SQUARE FEET OF IMPERVIOUS SURFACE & DISTURBS LESS THAN ONE ACRE.
2. QUARRY SPALLS PLUS WOVEN GEOTEXTILE FABRIC UNDER ROCK SHALL BE ADDED AS NEEDED TO KEEP THE ENTRANCE IN CONFORMANCE WITH THESE STANDARDS.
3. IF THE ENTRANCE IS NOT PREVENTING SEDIMENT FROM BEING TRACKED ONTO PAVEMENT, THEN ALTERNATIVE MEASURES TO KEEP THE STREETS FREE OF SEDIMENT SHALL BE USED. THIS MAY INCLUDE SHOVELING, PICKUP SWEEPING, & HAND SWEEPING, AN INCREASE IN THE ENTRANCE DIMENSIONS, OR THE INSTALLATION OF A SELF-CONTAINED WHEEL WASH STATION, (REFER TO DOE BMP C-106 FOR MORE INFORMATION).
4. ANY SEDIMENT THAT IS TRACKED ONTO STREET PAVEMENT SHALL BE REMOVED IMMEDIATELY BY SHOVELING, PICKUP SWEEPING, & HAND SWEEPING. THE SEDIMENT COLLECTED BY SWEEPING SHALL BE REMOVED OR STABILIZED ONSITE. PAVEMENT SHALL NOT BE CLEANED BY WASHING DOWN THE STREET, EXCEPT WHEN SWEEPING IS INEFFECTIVE & THERE IS A THREAT TO PUBLIC SAFETY. IF IT IS NECESSARY TO WASH THE STREETS, A CONSTRUCTION OF A SMALL SUMP SHALL BE CONSIDERED. SEDIMENT WOULD THEN BE WASHED INTO THE SUMP.
5. ANY ROCK SPALLS THAT ARE LOOSENED FROM THE DRIVEWAY PAD & ONTO THE ROADWAY SHALL BE REMOVED IMMEDIATELY. VACTOR TRUCK MUST BE USED TO CLEAN CATCH BASIN IF IT BECOMES PLUGGED.
6. VEHICLES SHALL NOT ENTER OR EXIT THE SITE OTHER THAN THE CONSTRUCTION ENTRANCE(S).
7. REMOVE TEMPORARY CONSTRUCTION ENTRANCE/EXIT UPON COMPLETION OF THE ON-SITE WORK.

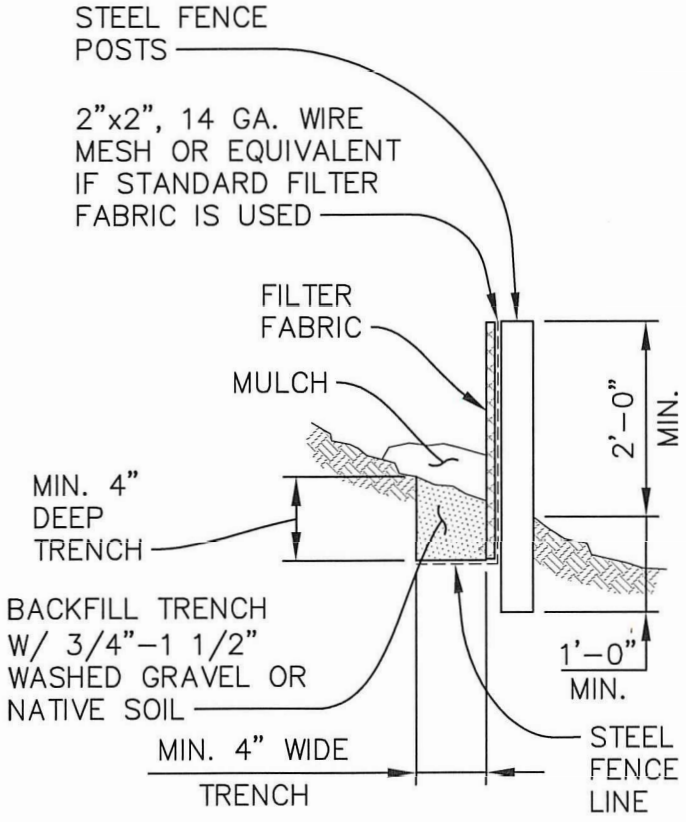
APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	TEMPORARY CONSTRUCTION ENTRANCE / EXIT
	8/5/2016		

COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT. STANDARD DETAIL: E-01.1

Plotted by: Craig Dobyns on 7/13/2016 File location: M:\Construction Standard Details\Approved Drawing Files (dwg)\Erosion Control\STDETL-E-01.1



SILT FENCE
NOT TO SCALE



SECTION A-A
NOT TO SCALE

MAINTENANCE STANDARDS:

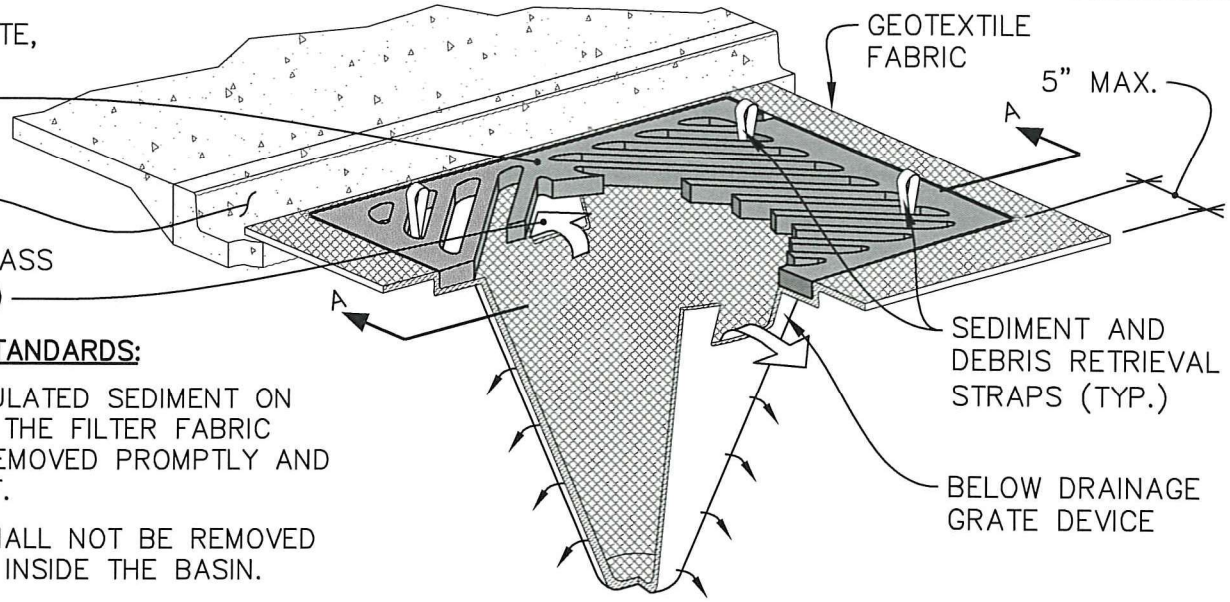
1. INSPECT WEEKLY ON ACTIVE SITES, MONTHLY ON INACTIVE SITES, & AFTER EACH STORM EVENT TO VERIFY PROTECTION IS STILL ADEQUATE. ANY DAMAGE SHALL BE REPAIRED IMMEDIATELY.
2. IF CONCENTRATED FLOWS ARE EVIDENT UPHILL OF THE FENCE, THEY MUST BE INTERCEPTED AND CONVEYED TO A SEDIMENT POND.
3. THE UPHILL SIDE OF THE FENCE SHALL BE PERIODICALLY CHECKED FOR SIGNS OF CLOGGING CAUSING CHANNELIZATION OF THE FLOWS PARALLEL TO THE FENCE. IN SUCH CASE, REPLACE THE FENCE AND OR REMOVE THE TRAPPED DEBRIS AND SEDIMENT.
4. SEDIMENT AND DEBRIS BUILD UP MUST BE REMOVED WHEN 6" HIGH.
5. REMOVE AND REPLACE DETERIORATED FILTER FABRIC DUE TO ULTRAVIOLET BREAKDOWN.
6. UPON COMPLETION OF WORK AND WHEN ALLOWED BY THE CITY OF AUBURN, THE CONTRACTOR SHALL REMOVE ALL FILTER FABRIC FENCE AND GRAVEL. PROVIDE FINISH GRADES WITH SURFACING MATERIAL AND LANDSCAPING AS REQUIRED.

NOTES:

1. FILTER FABRIC FENCES SHALL BE INSTALLED ALONG CONTOUR WHENEVER POSSIBLE.
2. FOR ADDITIONAL TECHNICAL INFORMATION, REFER TO WSDOE BMP C233.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	SILT CONTROL FENCE
	8/5/2016		
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.		STANDARD DETAIL:	E-02.1

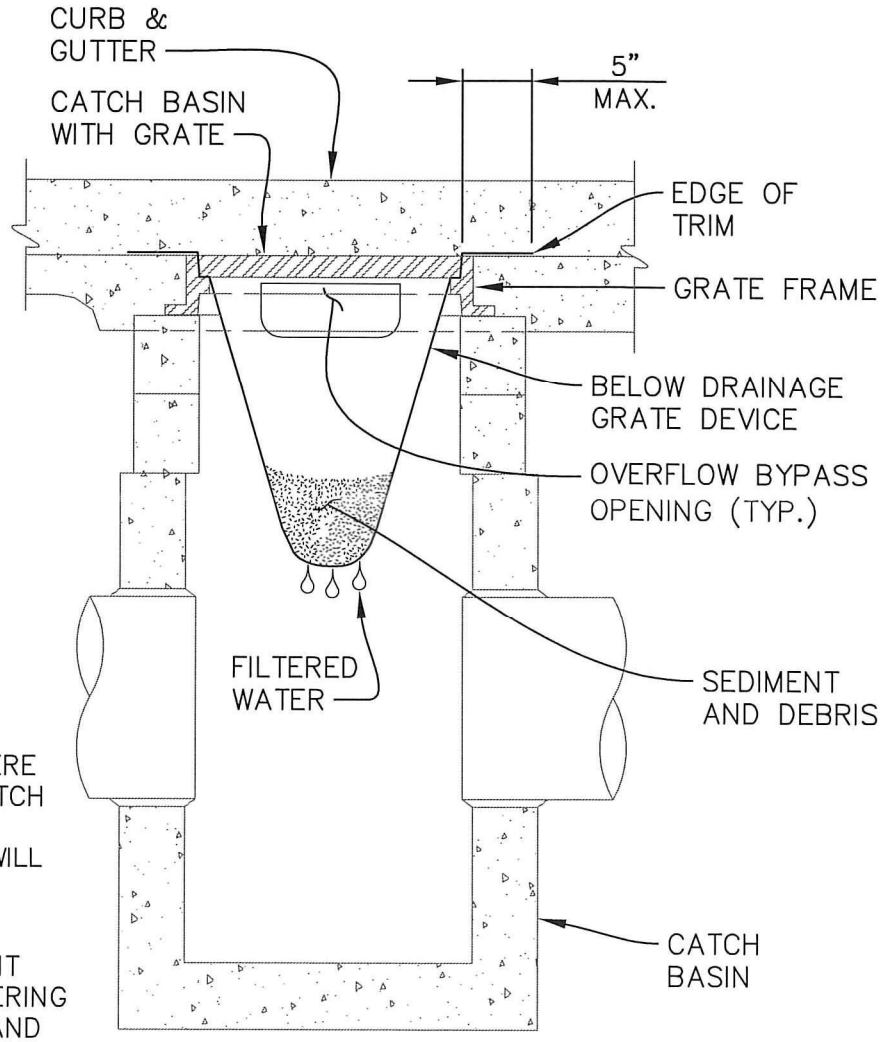
Plotted by: Craig Dobyns on 7/13/2016 File location: M:\Construction Standard Details\Approved Drawing Files (dwg)\Erosion Control\STDETL-E-02.1



SCHEMATIC DETAIL VIEW
NOT TO SCALE

MAINTENANCE STANDARDS:

1. ANY ACCUMULATED SEDIMENT ON OR AROUND THE FILTER FABRIC SHALL BE REMOVED PROMPTLY AND DISPOSED OF.
2. SEDIMENT SHALL NOT BE REMOVED WITH WATER INSIDE THE BASIN.
3. REGULAR MAINTENANCE IS REQUIRED. INSPECT WEEKLY ON ACTIVE SITES, MONTHLY ON INACTIVE SITES, & AFTER EACH STORM EVENT TO VERIFY PROTECTION IS STILL ADEQUATE. REPLACE AS NEEDED.
4. ANY SEDIMENT IN THE CATCH BASIN INSERT SHALL BE REMOVED WHEN IT HAS FILLED 1/3 OF THE STORAGE CAPACITY OF THE FILTER DEVICE.
5. THE GEOTEXTILE FABRIC FILTER MEDIA SHALL BE INSPECTED AFTER EACH STORM EVENT & CLEANED OR REPLACED WHEN 1/3 OF STORAGE CAPACITY IS REACHED, OR MONTHLY, UNDER NORMAL WEATHER CONDITIONS, WHICHEVER OCCURS FIRST.
6. REMOVE CATCH BASIN INLET PROTECTION DEVICE UPON COMPLETION OF THE WORK.



SECTION A–A
NOT TO SCALE

NOTES:

1. THIS DEVICE IS APPLICABLE TO WHERE PONDING OF WATER ABOVE THE CATCH BASIN WILL NOT CAUSE TRAFFIC PROBLEMS AND WHERE OVERFLOW WILL NOT RESULT
2. THIS INSERT DEVICE SHALL HAVE A MINIMUM OF 0.5 C.F. OF STORAGE. IT SHALL ALSO PROVIDE FOR DE–WATERING STORED SEDIMENT, AN OVERFLOW, AND EASE OF MAINTENANCE.
3. FOR ADDITIONAL TECHNICAL INFORMATION, REFER TO WSDOE BMP C220.

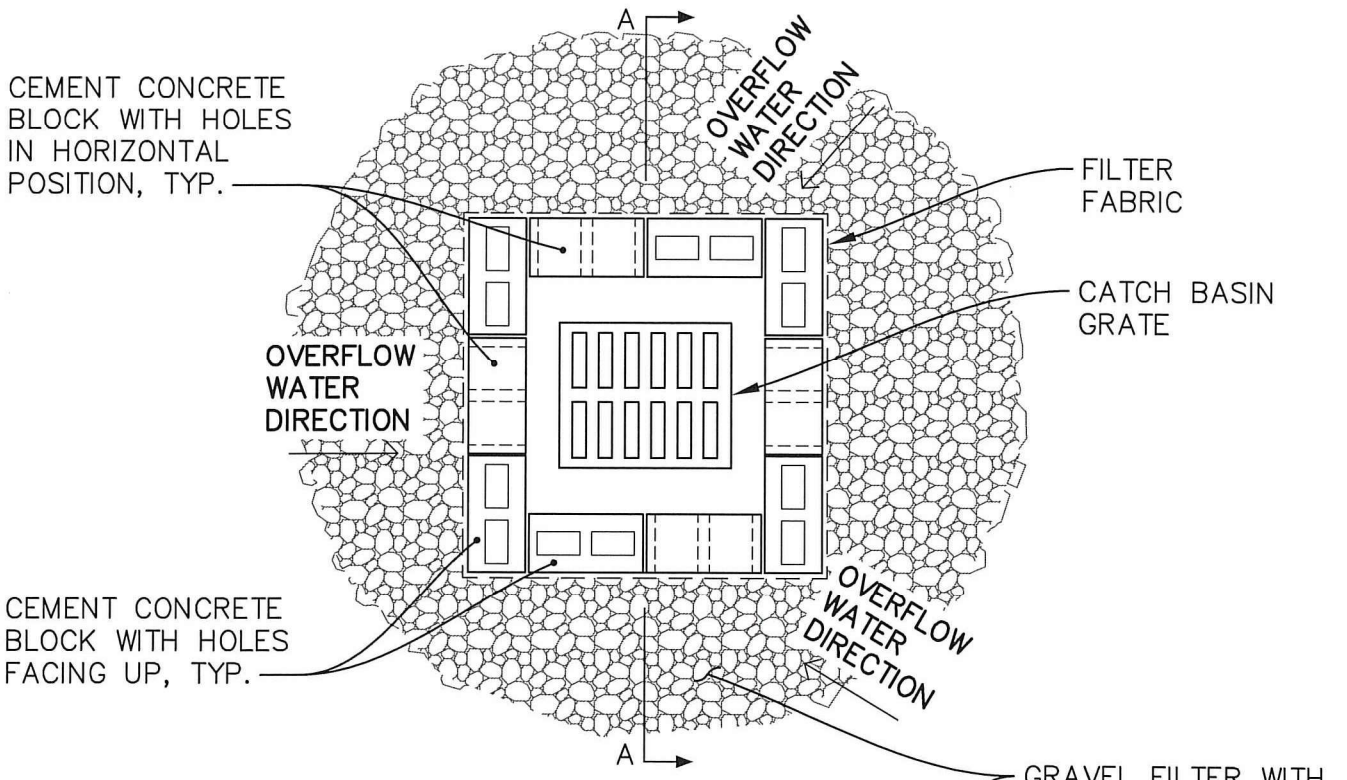
APPROVED BY CITY ENGINEER: DATE: 2/20/2018

CITY OF AUBURN WASHINGTON

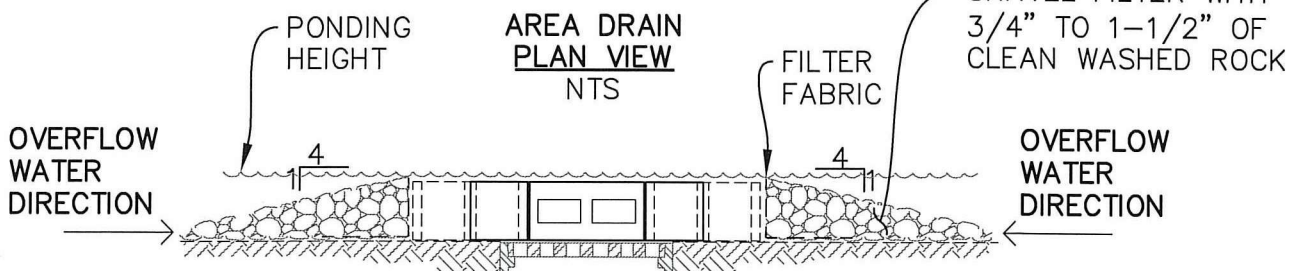
CATCH BASIN INLET PROTECTION

COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT. STANDARD DETAIL: E 3683.0

Plotted by: Craig Dobyns on 2/2/2018 File location: M:\Construction Standard Details\Current Working DWG\Erosion Control\STDETL-E-03.2

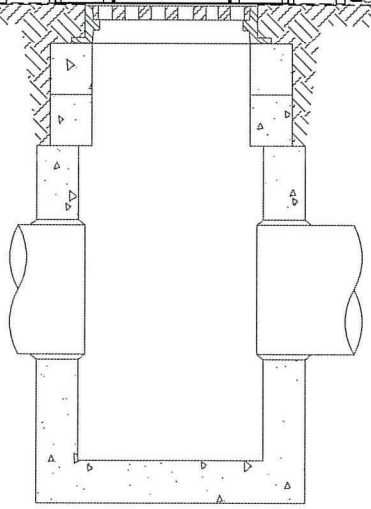


AREA DRAIN
PLAN VIEW
NTS

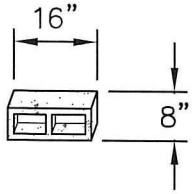


MAINTENANCE STANDARDS:

1. ANY ACCUMULATED SEDIMENT ON OR AROUND THE GRAVEL FILTER SHALL BE REMOVED PROMPTLY AND DISPOSED OF.
2. SEDIMENT SHALL NOT BE REMOVED WITH WATER INSIDE THE CATCH BASIN.
3. INSPECT WEEKLY ON ACTIVE SITES, MONTHLY ON INACTIVE SITES, & AFTER EACH STORM EVENT TO VERIFY PROTECTION IS STILL ADEQUATE. REPLACE AS NEEDED.
4. REMOVE CATCH BASIN PROTECTION UPON COMPLETION OF PROJECT.
5. THIS DETAIL IS APPLICABLE ONLY WHERE PAVEMENT DOES NOT EXIST AROUND THE CATCH BASIN.



SECTION A-A
NTS



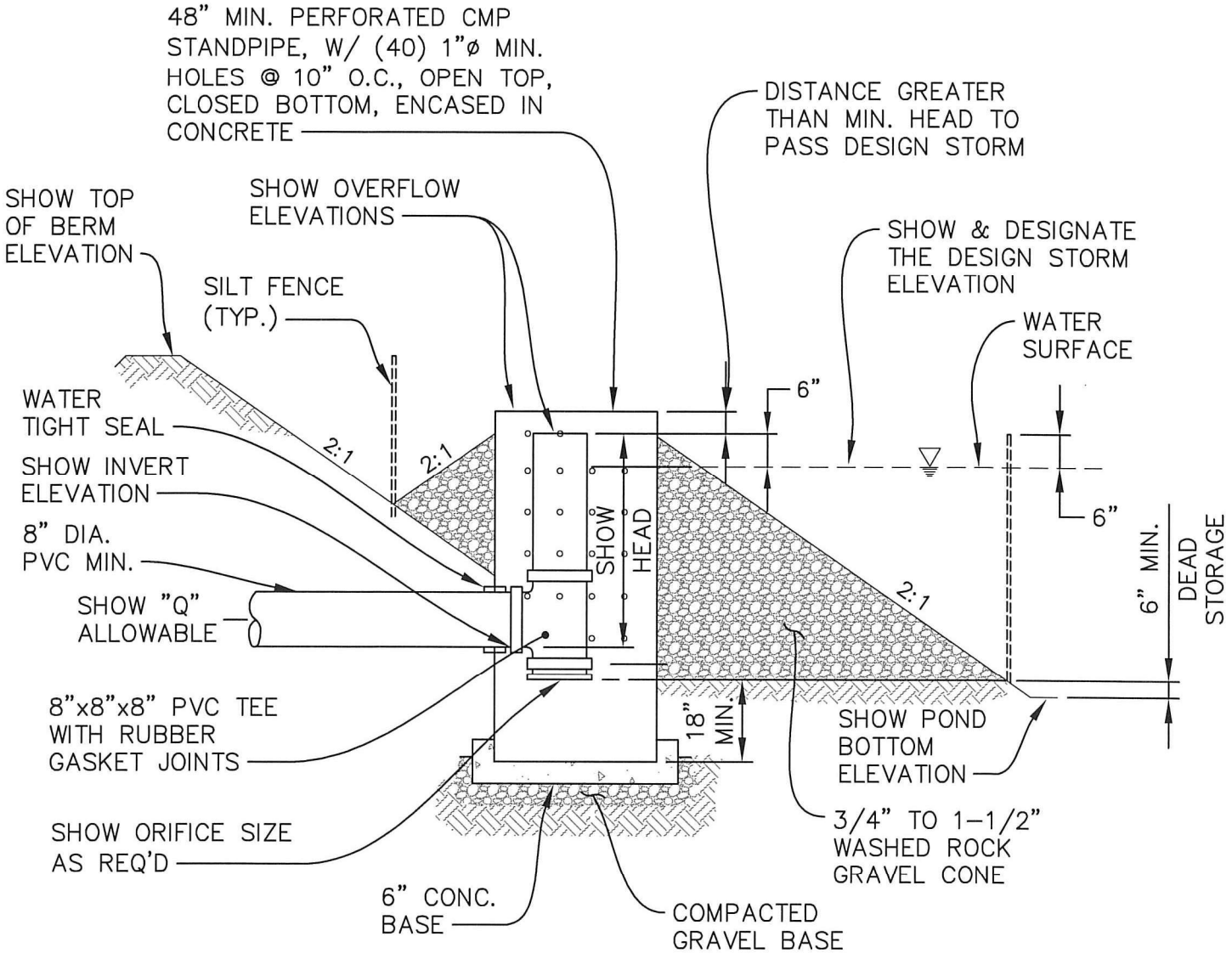
TYPICAL CEMENT CONCRETE BLOCK
NTS

NOTES:

1. BASIN INLET IN SOME AREAS MAY REQUIRE (2) STACKS OF CEMENT CONCRETE BLOCKS, AS DIRECTED BY THE ENGINEER.
2. FOR ADDITIONAL TECHNICAL INFORMATION, REFER TO WSDOE BMP C220.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	ALTERNATE CATCH BASIN INLET PROTECTION
[signature]	2/20/2018		
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: E-04.2

Plotted by: Craig Dobyns on 1/23/2018 File location: M:\Construction Standard Details\Current Working DWG\Erosion Control\STDETL-E-04.2

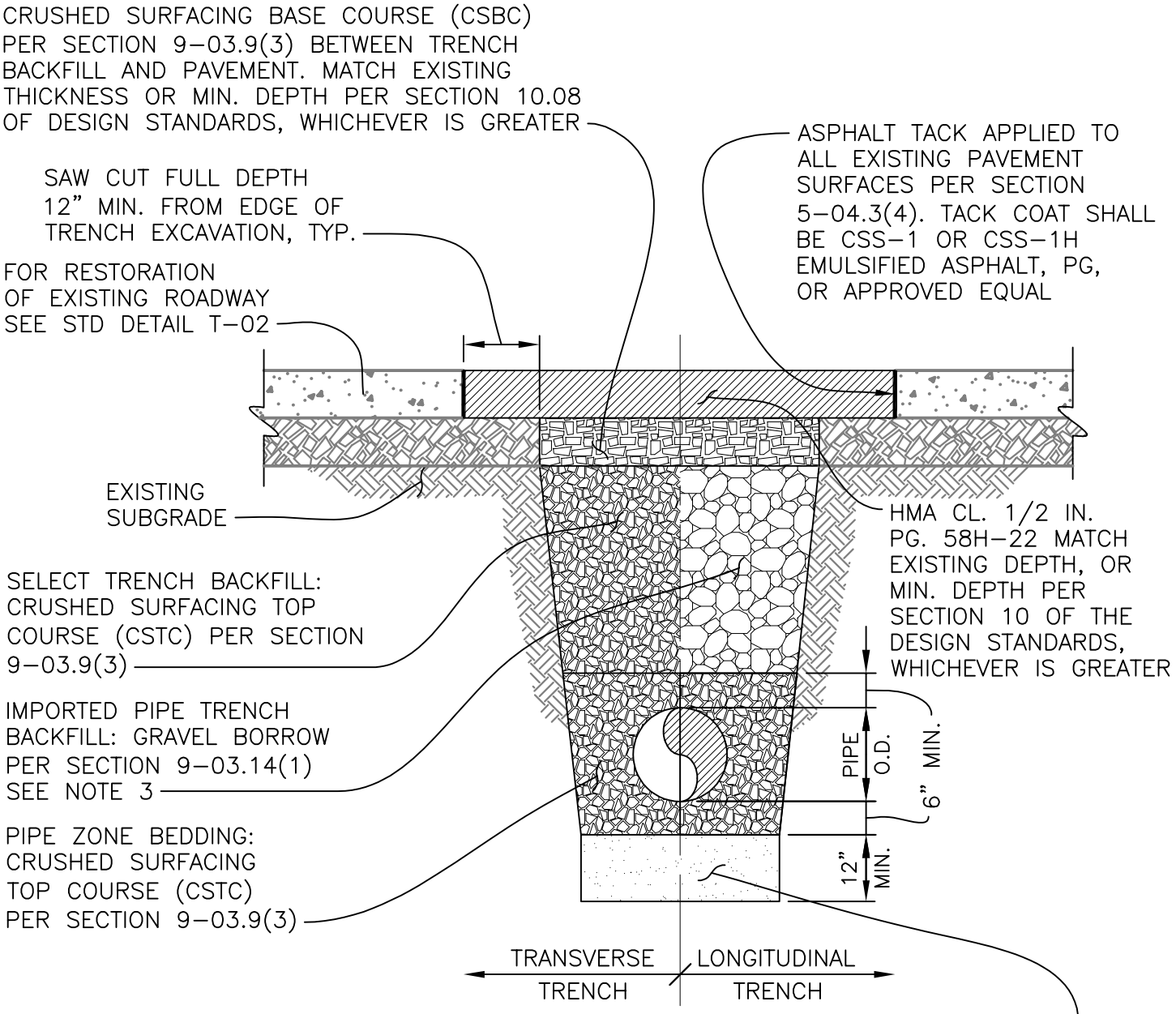


NOTES:

1. PROVIDE A RIP RAP LINED SPILLWAY, 6" MINIMUM ABOVE STANDPIPE, OPEN TOP.
2. A MULTIPLE PHASE POND SEPARATED BY PERVIOUS GRAVEL WINDOW MAY BE REQUIRED TO CONTROL AND TRAP SEDIMENT, AND TO REDUCE DISCHARGE ENERGY.
3. POND CHARACTERISTICS SUCH AS DESIGN VOLUME, INFLOW, OUTFLOW, AND MAXIMUM HEAD SHALL BE SHOWN ON PLANS.
4. THE OUTLET PIPE SHALL BE A MINIMUM OF 8" DIAMETER.
5. INDICATE SEASONAL HIGH GROUND WATER ELEVATION.
6. THIS DETAIL IS FOR DESIGN GUIDANCE ONLY, THE ENGINEER IS RESPONSIBLE FOR PROVIDING THE NECESSARY ELEVATIONS AND ORIFICE SIZES.
7. REFER TO WSDOE BMP 220 FOR ADDITIONAL INFORMATION.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	GRADING/EROSION DISCHARGE CONTROL STRUCTURE
	8/5/2016		
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: E-05.1

Plotted by: Craig Dobyns on 7/13/2016 File location: M:\Construction Standard Details\Approved Drawing Files (dwg)\Erosion Control\STDETL-E-05.1

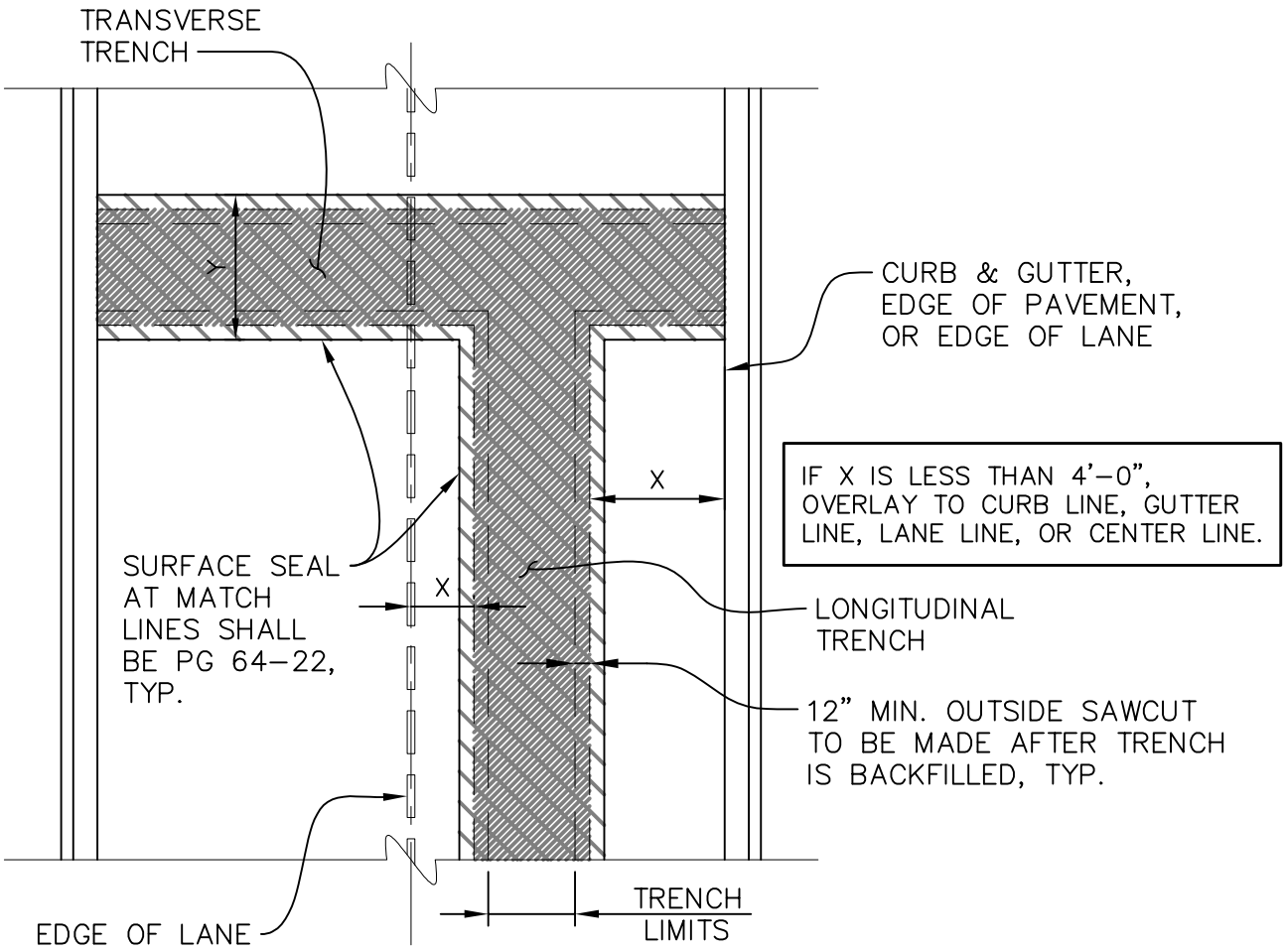


NOTES:

1. TRANSVERSE TRENCHES ARE TRENCHES THAT RUN PERPENDICULAR OR DIAGONAL ACROSS THE TRAVELED WAY OF THE ROAD. LONGITUDINAL TRENCHES ARE TRENCHES THAT RUN PARALLEL WITH THE TRAVELED WAY OF THE ROAD.
2. ALL BACKFILL SHALL BE COMPACTED TO 95% MAXIMUM DENSITY.
3. MAY USE NATIVE MATERIAL FOR LONGITUDINAL TRENCH BACKFILL IF MATERIAL MEETS REQUIREMENTS OF SECTION 9-03.14(1).

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 2/7/24	CITY OF AUBURN WASHINGTON	TYPICAL PIPE TRENCH BACKFILL
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-01.6

Plotted by: Craig Dobyns on 1/10/2024 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-01.6



TYPE OF STREET	Y
PRINCIPAL ARTERIAL	50'
MINOR ARTERIAL	40'
COLLECTOR	30'
LOCAL	20'

LEGEND:

GRIND & OVERLAY (2" MIN. DEPTH, 4' MIN. WIDTH)

FULL PAVEMENT DEPTH REPLACEMENT (SEE STD. DTL. T–01)

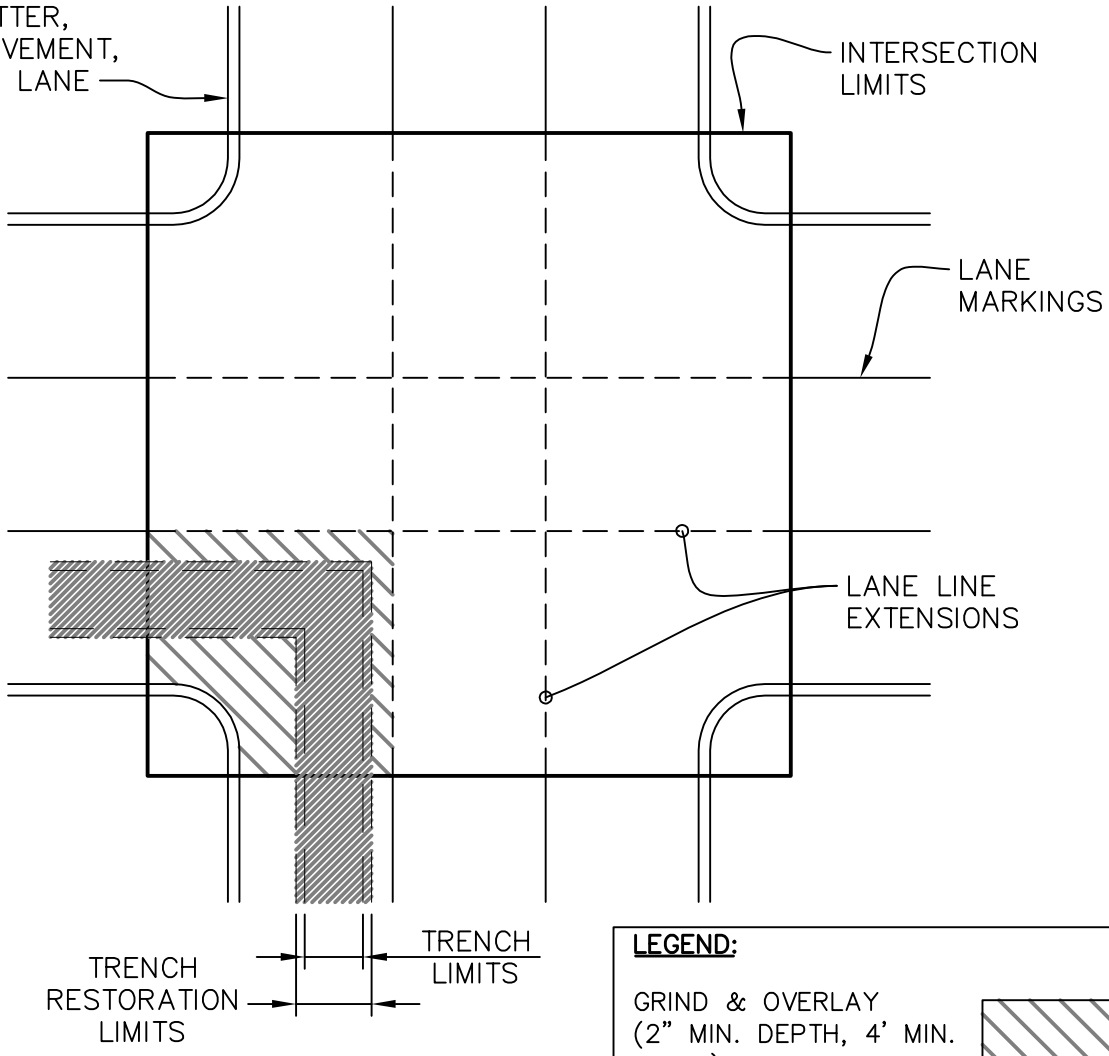
FULL DEPTH SAWCUT

NOTES:

1. ADDITIONAL RESTORATION OVERLAY MAY BE REQUIRED AS DIRECTED BY ENGINEER.
2. TRENCHES IN/ACROSS INTERSECTIONS SHALL BE RESTORED PER T–02A.
3. PAVEMENT SECTION SHALL MATCH EXISTING PAVEMENT THICKNESS AND GRADE, OR PER SECTION 10.05 OF THE DESIGN STANDARDS, WHICHEVER IS THICKER/STRONGER.
4. WHERE THE TRENCH CROSSES A CROSSWALK/PEDESTRIAN PATH AND THE TOTAL RESTORATION WIDTH EQUALS OR EXCEEDS HALF THE PEDESTRIAN PATH LENGTH, THE CONTRACTOR SHALL UPGRADE EXISTING CURB RAMPS THAT DO NOT MEET CURRENT ADA STANDARDS OR INSTALL NEW CURB RAMPS IF NOT PRESENT.

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 2/9/2023	CITY OF AUBURN WASHINGTON	EXISTING ROADWAY RESTORATION OF UTILITY TRENCHES
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T–02.5

Plotted by: Craig Dobyns on 1/6/2022 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-02.4



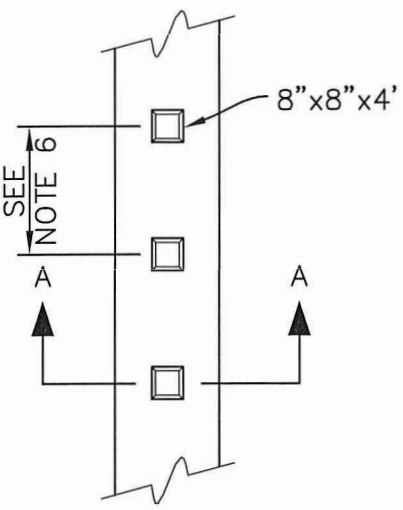
3

NOTES:

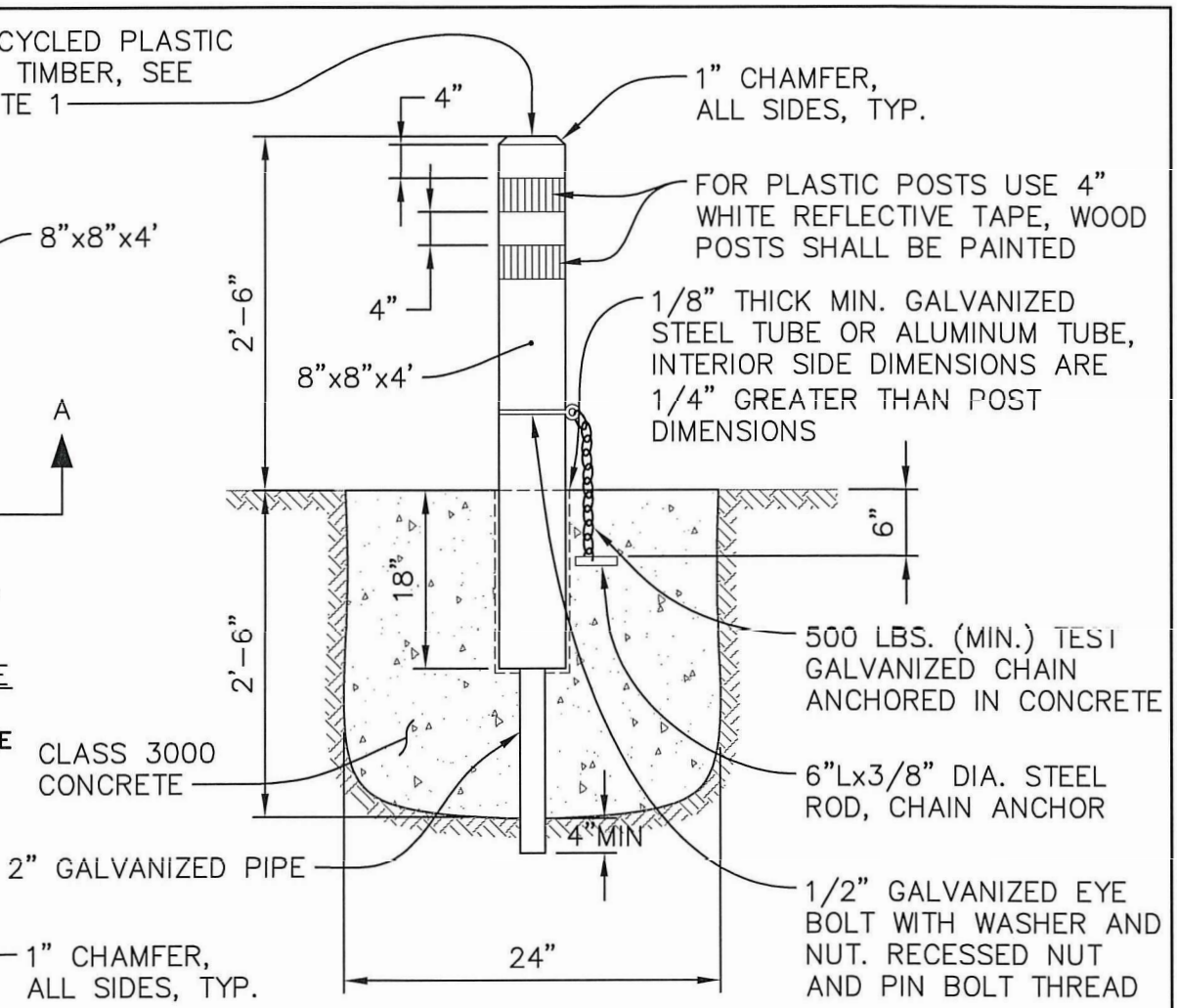
1. ADDITIONAL RESTORATION OVERLAY MAY BE REQUIRED AS DIRECTED BY ENGINEER.
2. PAVEMENT SECTION SHALL MATCH EXISTING PAVEMENT THICKNESS AND GRADE, OR PER SECTION 10.05 OF THE DESIGN STANDARDS, WHICHEVER IS THICKER/STRONGER.
3. WHERE NO LANE MARKINGS EXIST, THE INTERSECTION SHALL BE BROKEN INTO FOUR QUADRANTS.
4. WHENEVER TRENCH RESTORATION LIMITS CROSS INTO LANE LINE EXTENSION SECTION(S) OR QUADRANTS(S), GRIND AND OVERLAY RESTORATION LIMITS SHALL INCLUDE THE FULL EXTENT OF EACH SECTION OR QUADRANT THE IMPROVEMENTS IMPACT.
5. WHERE THE TRENCH CROSSES A CROSSWALK/PEDESTRIAN PATH AND THE TOTAL RESTORATION WIDTH EQUALS OR EXCEEDS HALF THE PEDESTRIAN PATH LENGTH, THE CONTRACTOR SHALL UPGRADE EXISTING CURB RAMPS THAT DO NOT MEET CURRENT ADA STANDARDS OR INSTALL NEW CURB RAMPS IF NOT PRESENT.
6. TRENCH BACKFILL SHALL CONFORM TO STD DETAIL T-01.

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 2/9/2023	CITY OF AUBURN WASHINGTON	EXISTING ROADWAY RESTORATION OF UTILITY TRENCHES IN INTERSECTION
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-02A.3

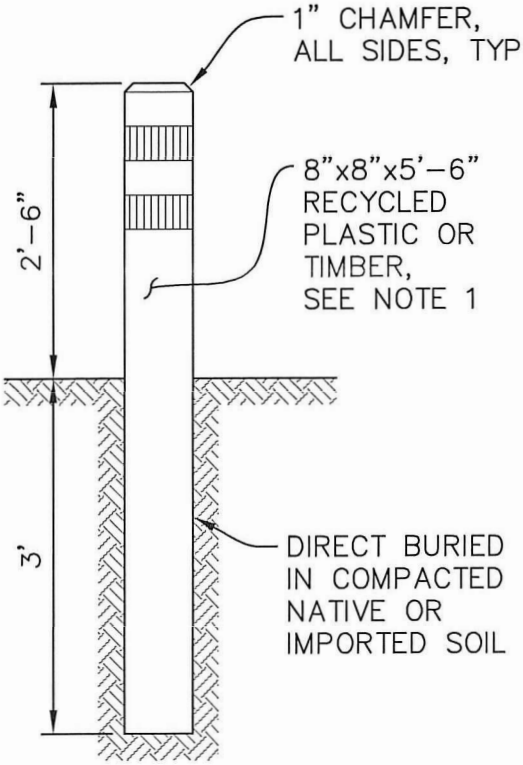
Plotted by: Craig Dobyns on 1/6/2022 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-02A.2



REMOVABLE BOLLARD
NOT TO SCALE



SECTION A–A
NOT TO SCALE



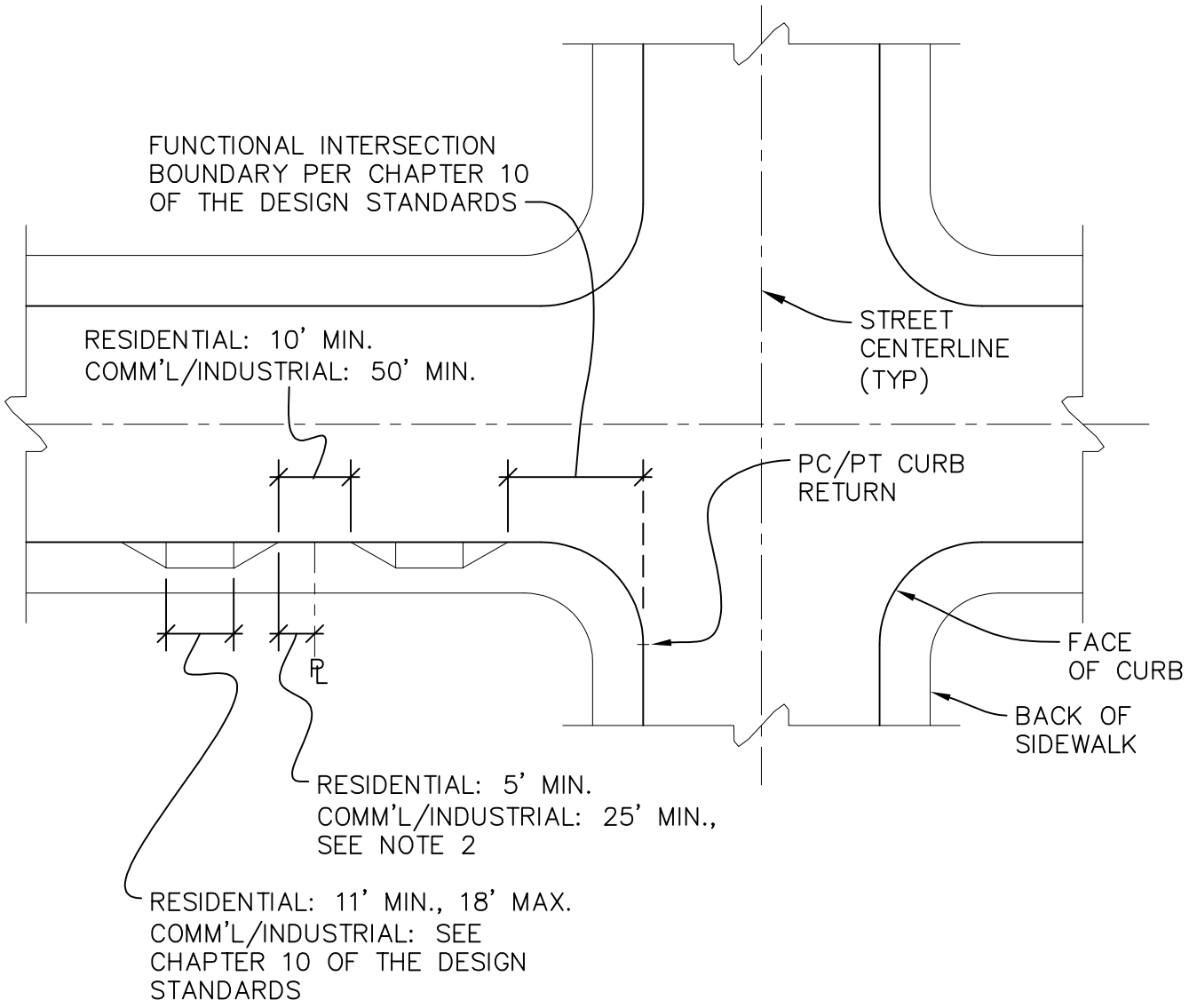
FIXED BOLLARD
NOT TO SCALE

NOTES:

1. RECYCLED PLASTIC BOLLARDS SHALL BE WHITE. TIMBER SHALL BE DOUGLAS FIR OF DENSE CONSTRUCTION GRADE, AND SHALL BE PRESSURE TREATED WITH WEATHER BORNE PRESERVATIVE (ACA, CCA, ACZA) IN ACCORDANCE WITH REQUIREMENTS OF SEC. 9-09.3(1) (GENERAL REQUIREMENTS) OF WSDOT STANDARD SPECIFICATIONS AND CITY'S AMENDMENTS THERETO. TOP 5" OF TIMBER SHALL BE PAINTED WHITE.
2. GALVANIZED STEEL TUBE SHALL CONFORM TO ASTM A53 GRADE A.
3. NUTS, BOLTS, & WASHERS SHALL CONFORM TO ASTM A307.
4. ALL STEEL PARTS SHALL BE GALVANIZED.
5. CEMENT CONCRETE SHALL BE CLASS 3000.
6. MINIMUM OF 5'-0" O.C. SPACING.
7. BOLLARD SHALL BE PLUMBED VERTICALLY IN ALL DIRECTIONS.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	TYPICAL BOLLARD INSTALLATION
	2/20/2018		
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: T-03.2

Plotted by: Craig Dobyns on 2/2/2018 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-03.2

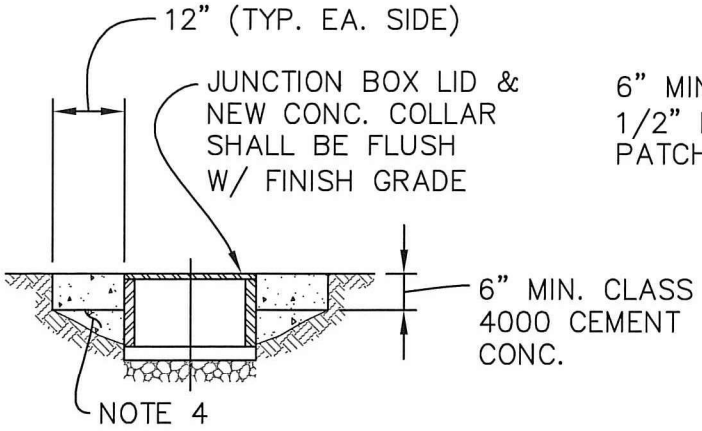


NOTES:

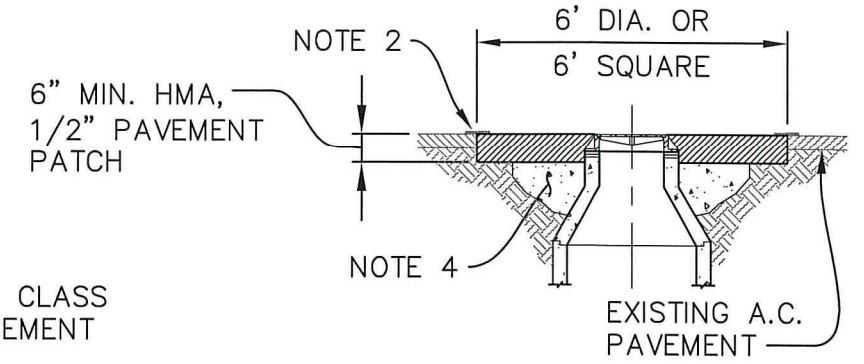
1. DRIVEWAY TO BE CONSTRUCTED PER STANDARD DETAIL T–34 OR T–35.
2. DOES NOT APPLY TO SHARED DRIVEWAYS IN ACCESS TRACTS/EASEMENTS AND EXISTING PANHANDLE/FLAG LOTS.

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 3/1/2023	CITY OF AUBURN WASHINGTON	DRIVEWAY WIDTHS AND LOCATION
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T–04.6

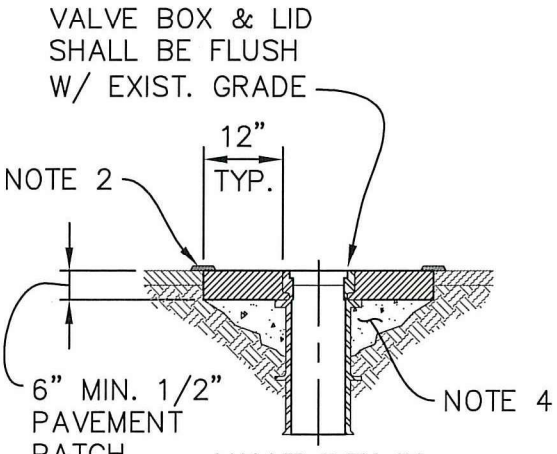
Plotted by: Craig Dobyns on 2/20/2023 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-04.6



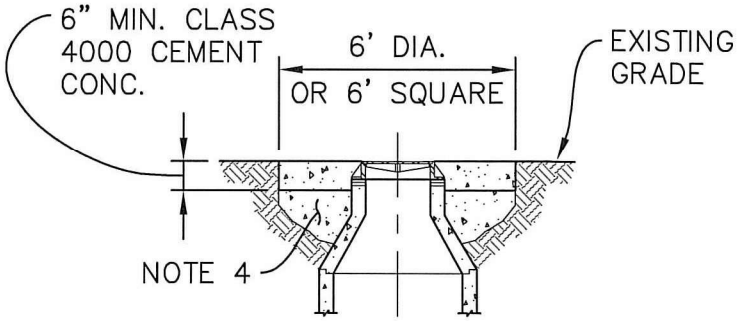
JUNCTION BOX IN UNIMPROVED OR PARTIAL ASPHALT AREA
NOT TO SCALE



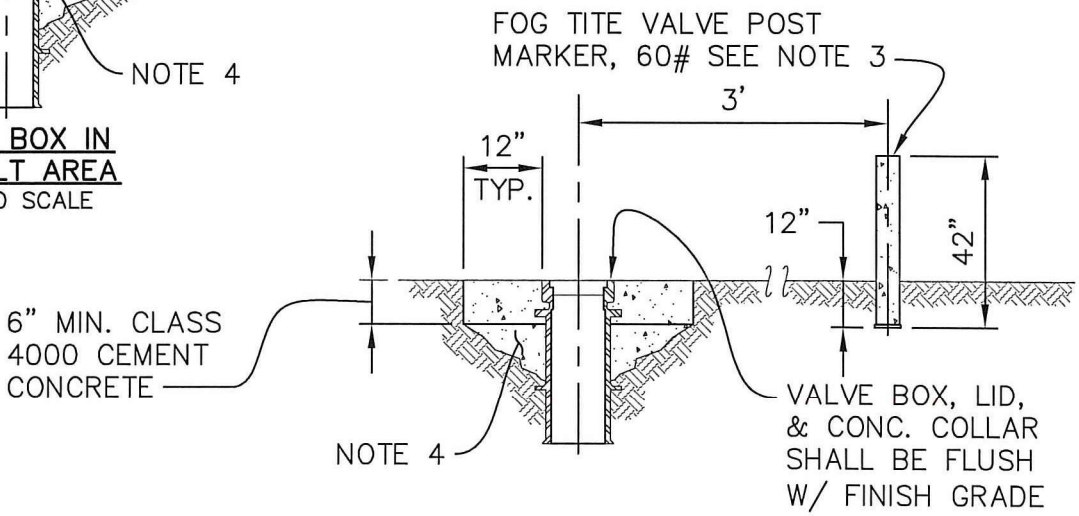
MANHOLE (OR CB) IN ASPHALT AREA
NOT TO SCALE



VALVE BOX IN ASPHALT AREA
NOT TO SCALE



MANHOLE OR CATCH BASIN IN UNIMPROVED AREA
NOT TO SCALE



VALVE BOX IN UNIMPROVED AREA
NOT TO SCALE

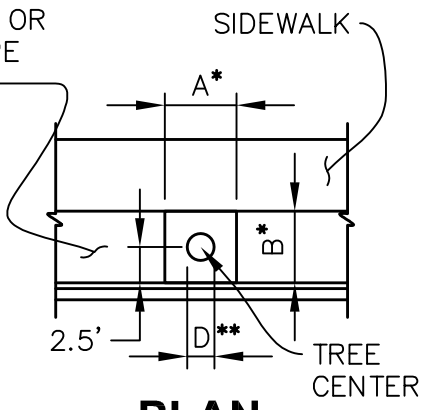
NOTES:

1. ADJUSTMENT OF SANITARY SEWER AND STORM STRUCTURES SHALL BE PER SECTION 7-05.3(1). ADJUSTMENT OF WATER UTILITY STRUCTURES SHALL BE PER SECTION 7-12.3(2).
2. SURFACE SEAL AT MATCHLINE SHALL BE CSS-1 OR CSS-1H EMULSIFIED ASPHALT OR PG.
3. VALVE IN UNIMPROVED AREAS SHALL HAVE A VALVE POST MARKER.
4. FILL ANY VOIDS OR DISTURBED AREAS BELOW 6" WITH QUICK SETTING CEMENT CONCRETE, DEPTH AS REQUIRED.
5. RISER RING HEIGHT 2" MIN. 25" MAX. ANY ADJUSTMENT OVER 18" REQUIRES A HAND HOLD.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	ADJUSTMENT OF NEW AND EXISTING UTILITY STRUCTURES TO FINISH GRADE
	2/20/2018		
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.		STANDARD DETAIL:	T-05.2

Plotted by: Craig Dobyns on 2/15/2018 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-05.2

*TREE IN SIDEWALK, SQUARE MULCH AREA: A=5' B=5'
**TREE IN LANDSCAPE STRIP, CIRCULAR MULCH AREA: D=1' MIN., 2' MAX.



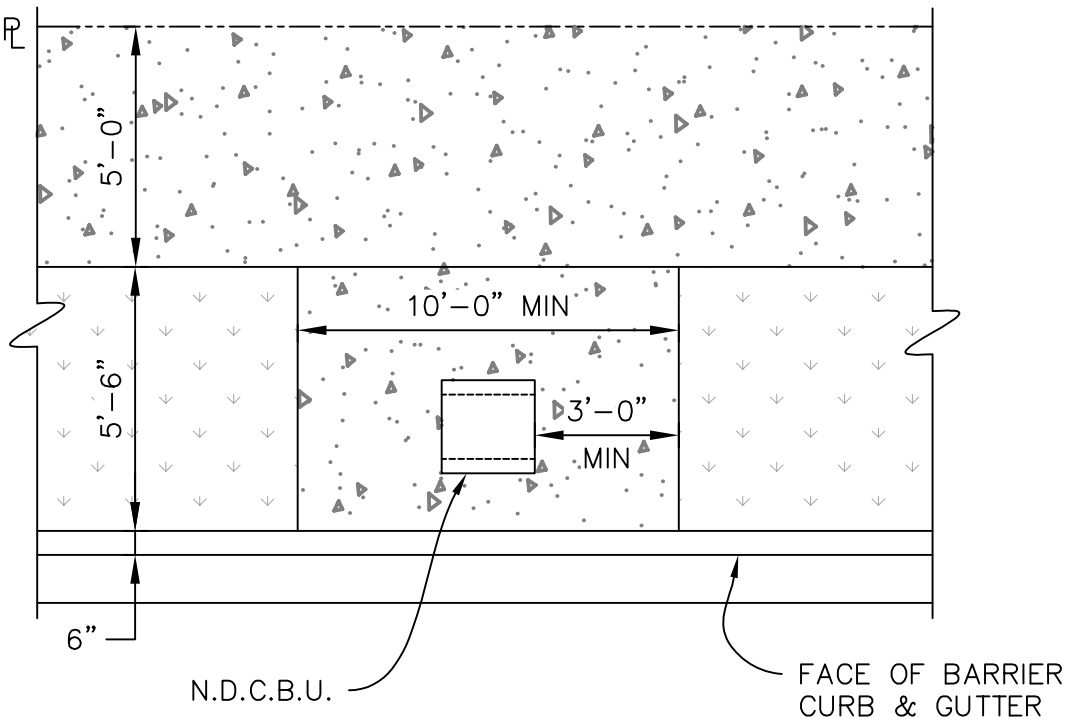
PLAN
NTS

NOTES:

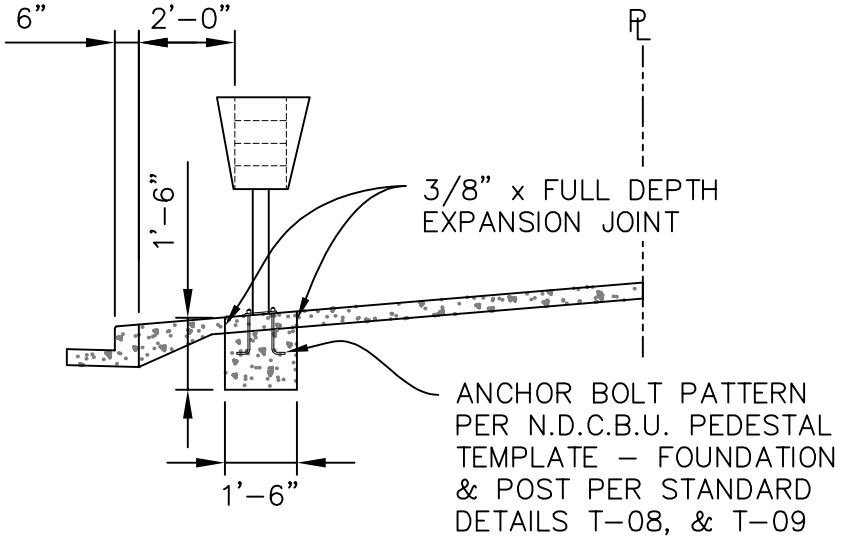
1. PLANT TREES 1" HIGHER THAN GROWN IN NURSERY.
2. TREE PIT SHALL NOT BE LESS THAN 2 TIMES THE ROOT BALL DIAMETER.
3. STREET TREES SHALL BE SELECTED FROM THE CITY APPROVED LIST OF STREET TREES.
4. INSTALL A MINIMUM 18" TO 24" DEEP ROOT CONTROL BARRIER AT GRADE TO AT LEAST 6" BELOW ROOT BALL. ROOT BARRIER MATERIAL SHALL BE PER SECTION 10 OF THE DESIGN STDS.
5. TREE SHALL HAVE MIN. 2" DIAMETER TRUNK AT 2' ABOVE ROOT BALL WHEN PLANTED.
6. STREET TREE IN SIDEWALK AREA MAY REQUIRE TREE GRATE PER STD DETAIL T-30 TO PROVIDE MIN. PEDESTRIAN CLEARANCE.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	STREET TREE DETAIL
Jacob Sweeting	2/7/24		
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-06.6

Plotted by: Craig Dobyns on 1/12/2024 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-06.6



PLAN VIEW



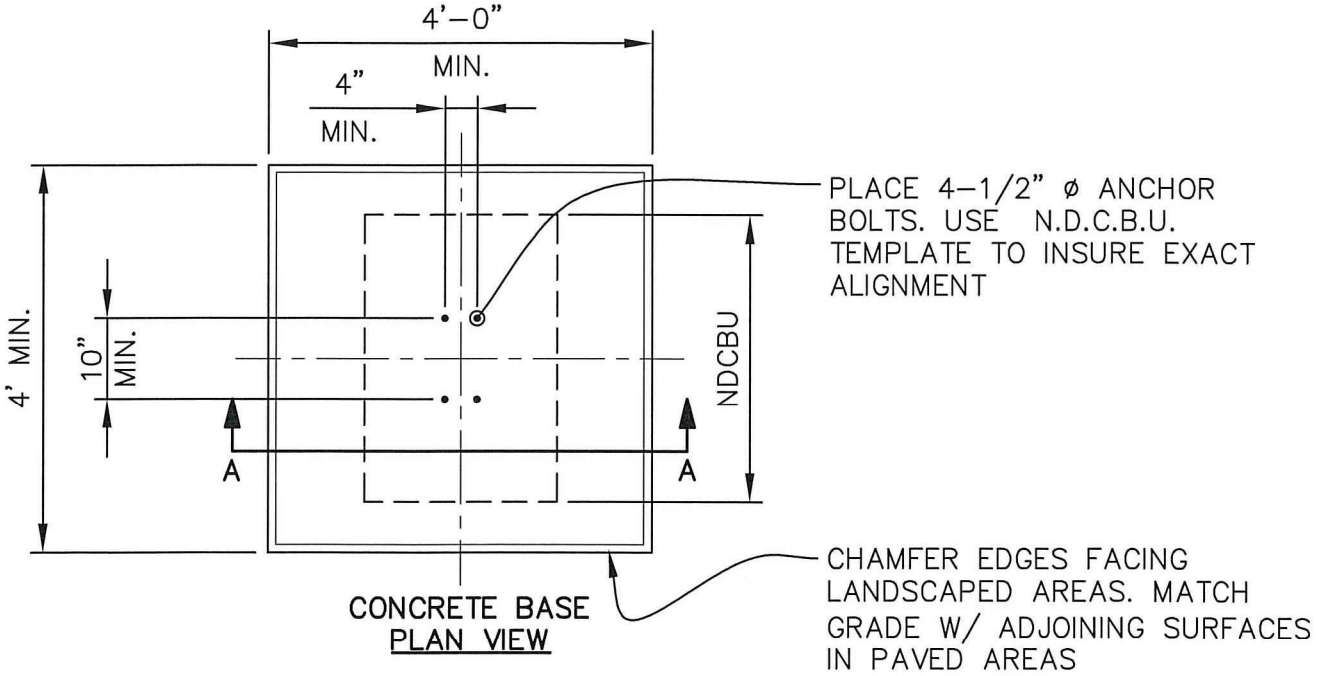
SIDE VIEW

NOTE:

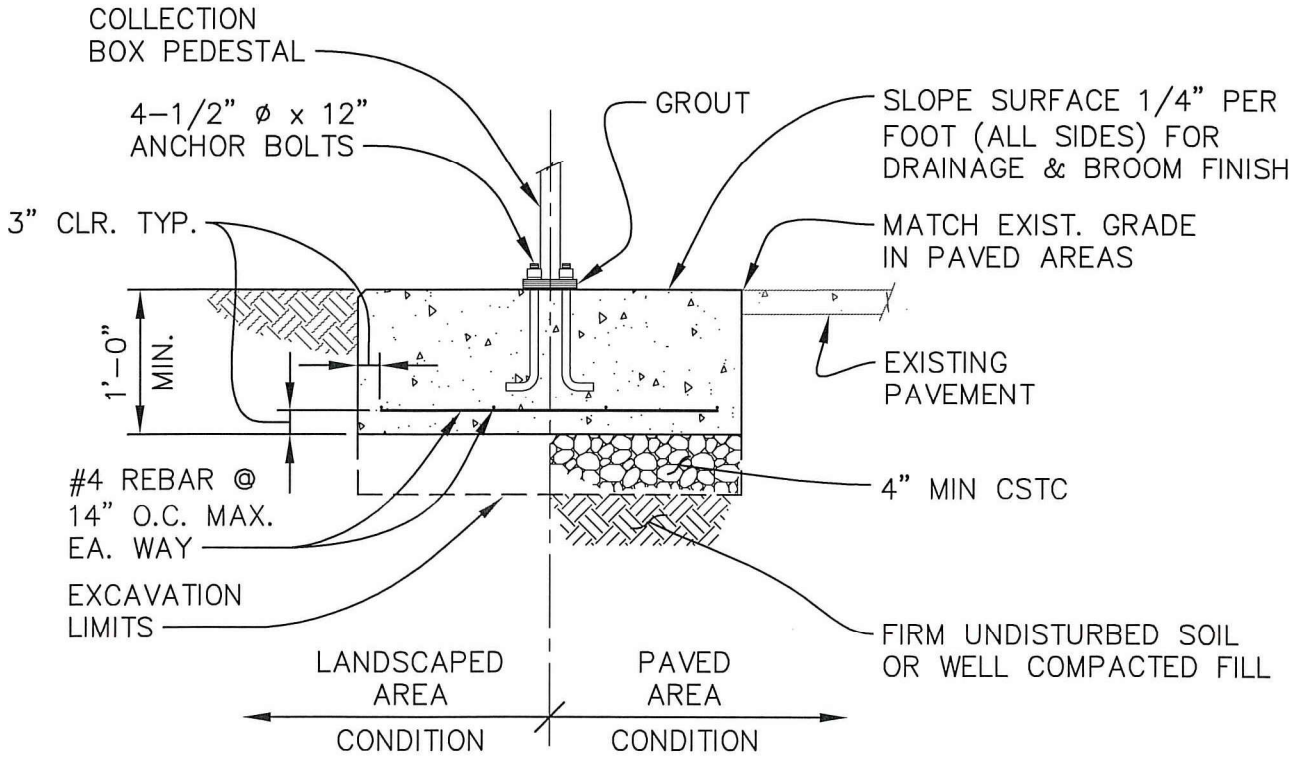
MAILBOX LOCATIONS SHALL BE COORDINATED WITH THE SERVING POST OFFICE AND APPROVED BY THE CITY OF AUBURN.

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 1/17/2022	CITY OF AUBURN WASHINGTON	NEIGHBORHOOD DELIVERY & COLLECTION BOX UNIT (N.D.C.B.U.) INSTALLATION
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T–07.2

Plotted by: Craig Dobyns on 1/6/2022 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-07.2



CONCRETE BASE
PLAN VIEW



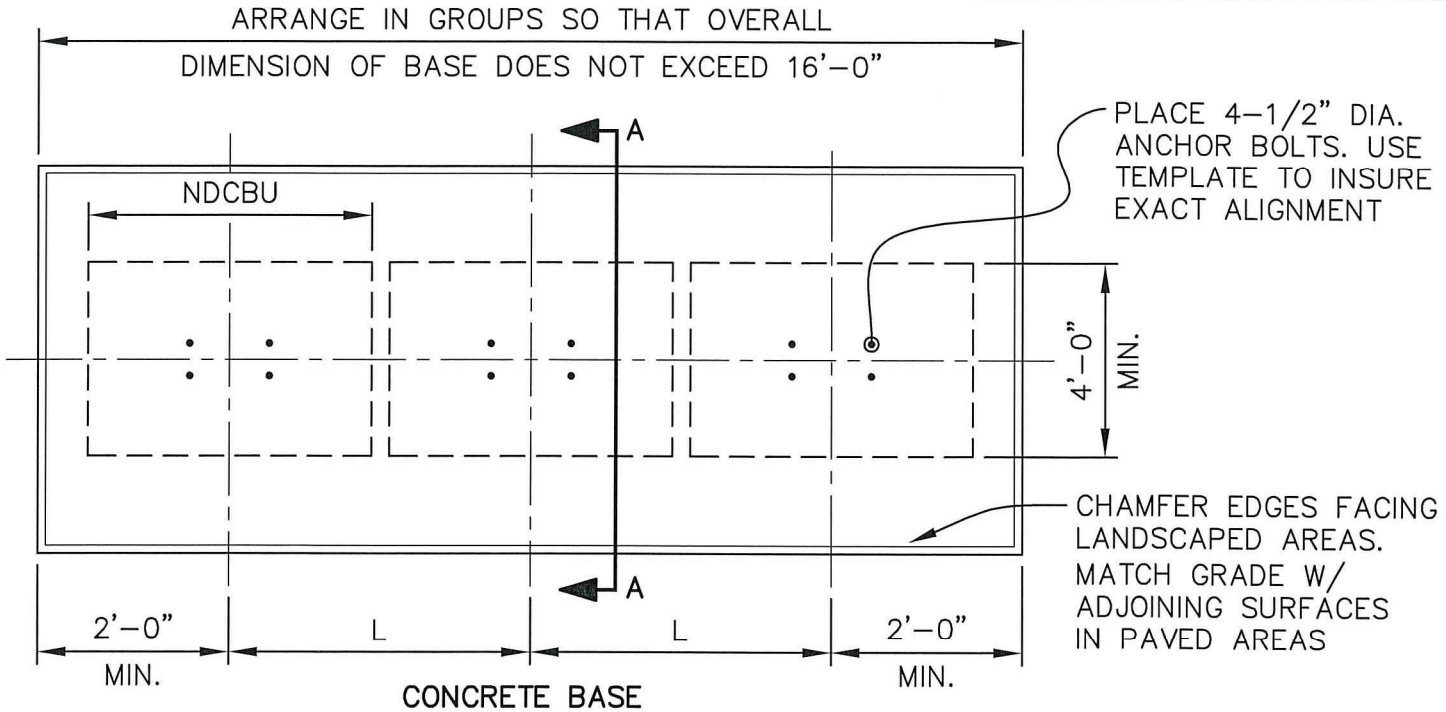
SECTION A–A

NOTES:

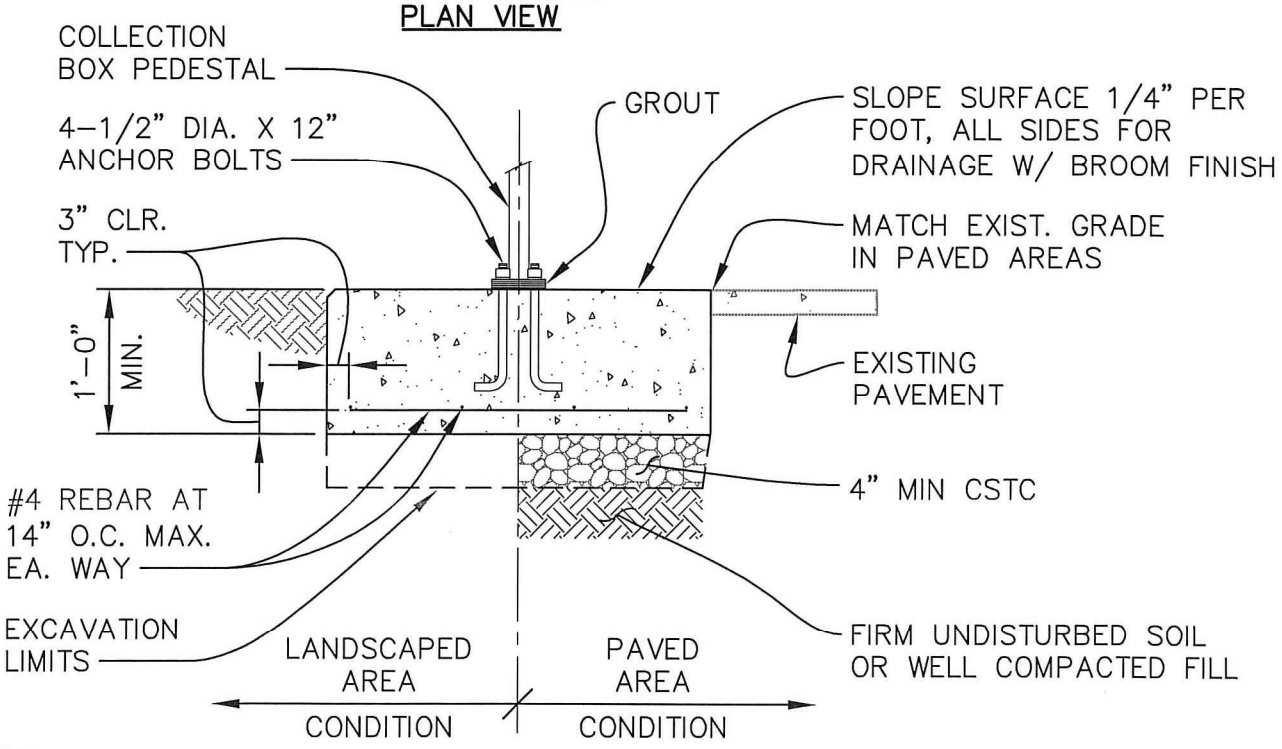
1. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, CONTAIN 4% MIN. TO 6% MAX. AIR ENTRAINMENT AND BE PLACED WITH A 3–1/2" TO 4–1/2" SLUMP IN ACCORDANCE WITH ACI 301.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 40.
3. ANCHOR BOLTS SHALL CONFORM TO ASTM A307, GALVANIZED CARBON STEEL OR ASTM A193, B8M (316) STAINLESS STEEL.
4. GROUT SHALL BE NON–SHRINK, NON–METALLIC.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	NEIGHBORHOOD DELIVERY & COLLECTION BOX UNIT (N.D.C.B.U.) SINGLE UNIT
	2/20/2018		
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.		STANDARD DETAIL:	T–08.2

Plotted by: Vlad Rubashka on 1/18/2018 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-08.2



CONCRETE BASE
PLAN VIEW



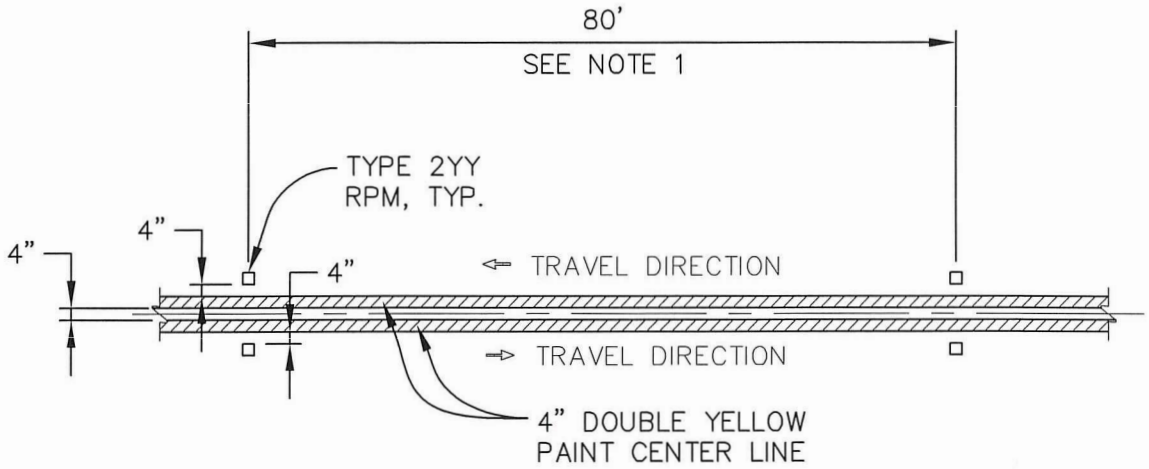
SECTION A–A

NOTES:

1. CONCRETE BASE DIMENSION "L" IS THE WIDTH OF NDCBU PLUS 2". FOUNDATION CAN BE EXTENDED BY LENGTH "L" TO ACCOMODATE ADDITIONAL UNITS.
2. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, CONTAIN 4% MIN. TO 6% MAX. AIR ENTRAINMENT AND BE PLACED W/ A 3 1/2" TO 4 1/2" SLUMP IN ACCORDANCE W/ ACI 301.
3. REINFORCING STALL SHALL CONFORM TO ASTM A615, GRADE 40.
4. ANCHOR BOLTS SHALL CONFORM TO ASTM A307, GALVANIZED CARBON STEEL OR ASTM A193, B8M (316) STAINLESS STEEL.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	NEIGHBORHOOD DELIVERY & COLLECTION BOX UNIT (N.D.C.B.U.) MULTIPLE UNITS
	2/20/2018		
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: T-09.2

Plotted by: Vlad Rubashka on 1/18/2018 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-09.2



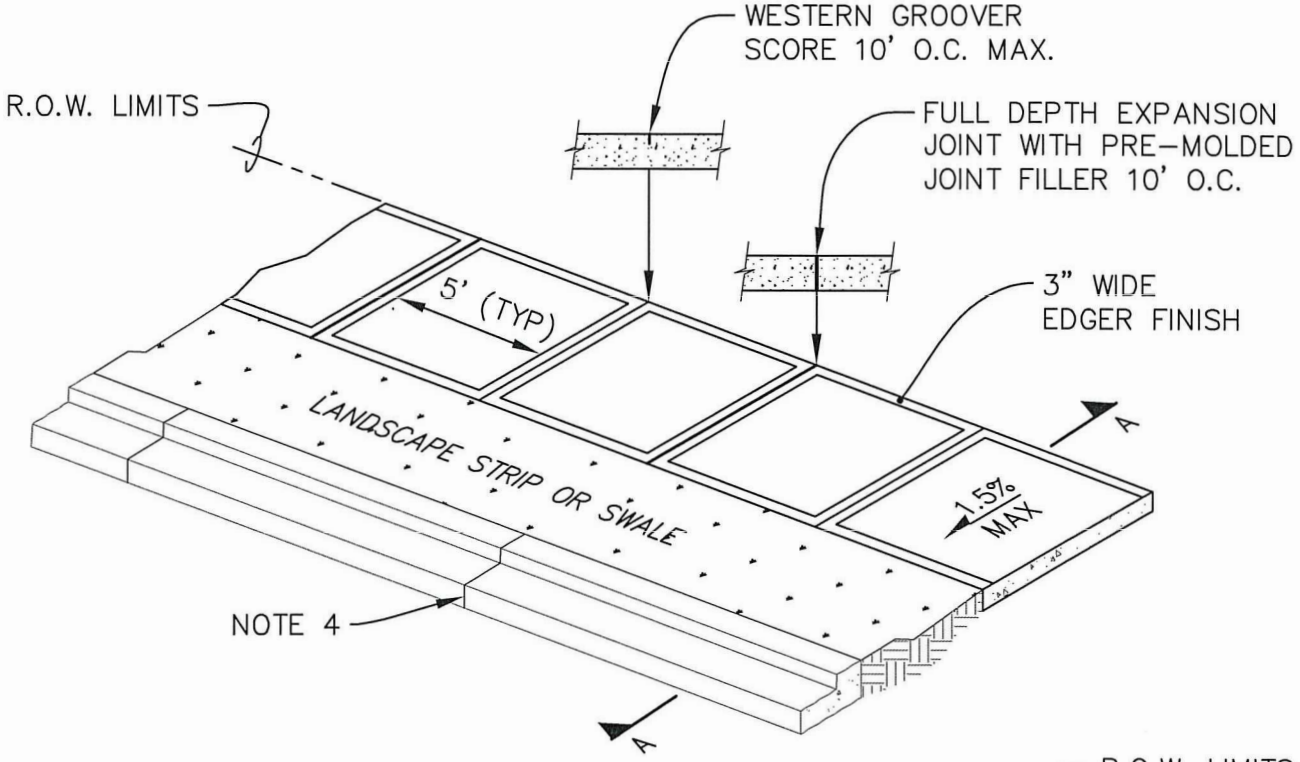
PLAN
DOUBLE CENTERLINE

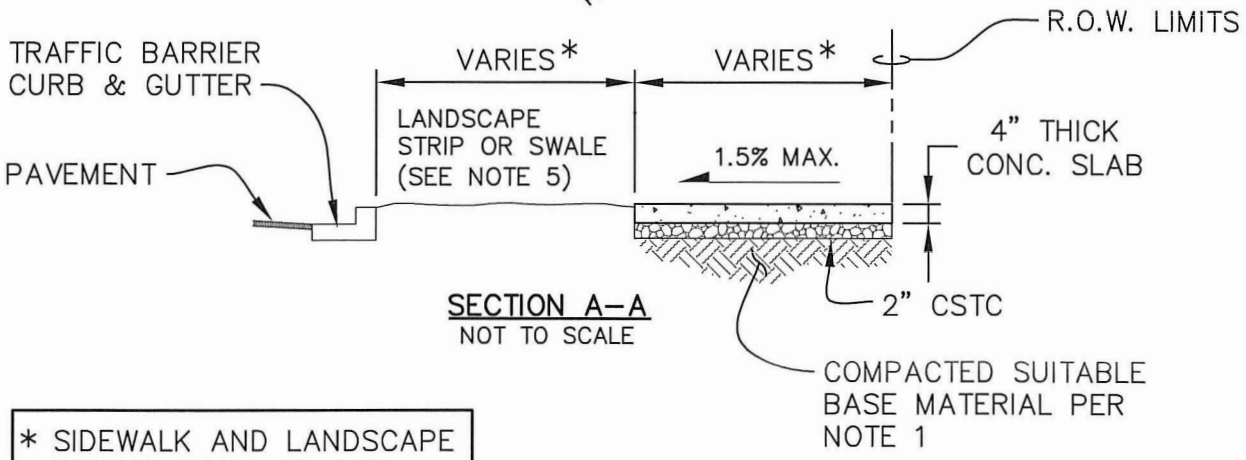
NOTES:

1. RAISED PAVEMENT MARKERS SHALL BE SPACED AT 80' (FT.) INTERVALS ON TANGENTS AND ON HORIZONTAL CURVES W/ A RADIUS OF 1500' (FT.) OR MORE, AND 40' (FT.) INTERVALS ON HORIZONTAL CURVES HAVING RADII OF LESS THAN 1500' (FT.).

APPROVED BY CITY ENGINEER: FOR Jacob Sunding	DATE: 10/14/16	CITY OF AUBURN WASHINGTON	DOUBLE CENTERLINE WITH RAISED PAVEMENT MARKERS
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: T-12.1

Plotted by: Craig Dobyns on 9/12/2016 File location: M:\Construction Standard Details\Approved Drawing Files (dwg)\Traffic\STDETL-T-12.1





SECTION A-A
NOT TO SCALE

* SIDEWALK AND LANDSCAPE WIDTHS SHALL BE PER STREET CLASSIFICATION.

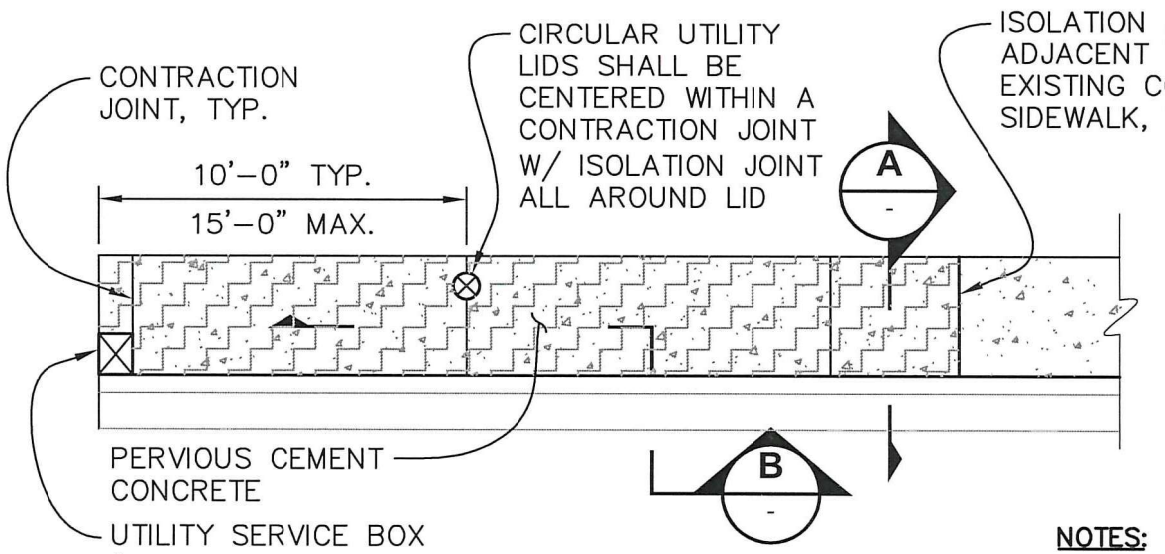
NOTES:

1. PLACE CEMENT CONCRETE ON COMPACTED SUITABLE BASE, AS PER SPECIFICATION SECTION 2-06.3 AND AS APPROVED BY THE ENGINEER.
2. CEMENT CONCRETE SHALL BE CLASS 3000 PER SPECIFICATION SECTION 6-02.3 WITH 5% AIR ENTRAINMENT.
3. INSPECTION REQUIRED FOR FORM AND SUB GRADE APPROVAL BEFORE POURING CONCRETE.
4. MATCH JOINTS ON SIDEWALK WITH JOINTS ON CURB OR AT 10' O.C.
5. LANDSCAPE STRIP SHALL GENERALLY BE GRADED TOWARDS THE CURB AT 1.5%. OTHER GRADES MAY BE ALLOWED WHERE IT CAN BE DEMONSTRATED TO NOT CAUSE DRAINAGE OR MAINTENANCE ISSUES.

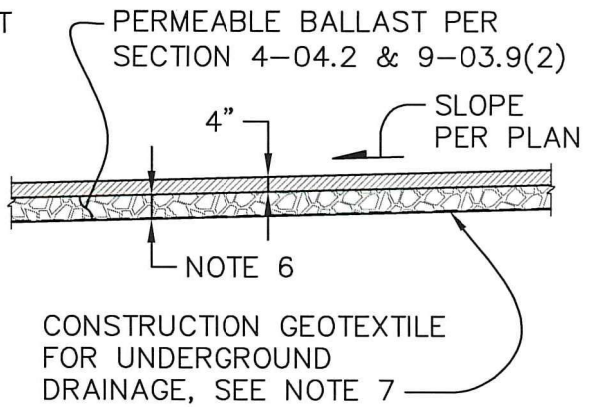
APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	CEMENT CONCRETE SIDEWALK WITH LANDSCAPE STRIP
	2/20/2018		
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.		STANDARD DETAIL:	T-13.2

Plotted by: Craig Dobyns on 2/2/2018 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-13.2

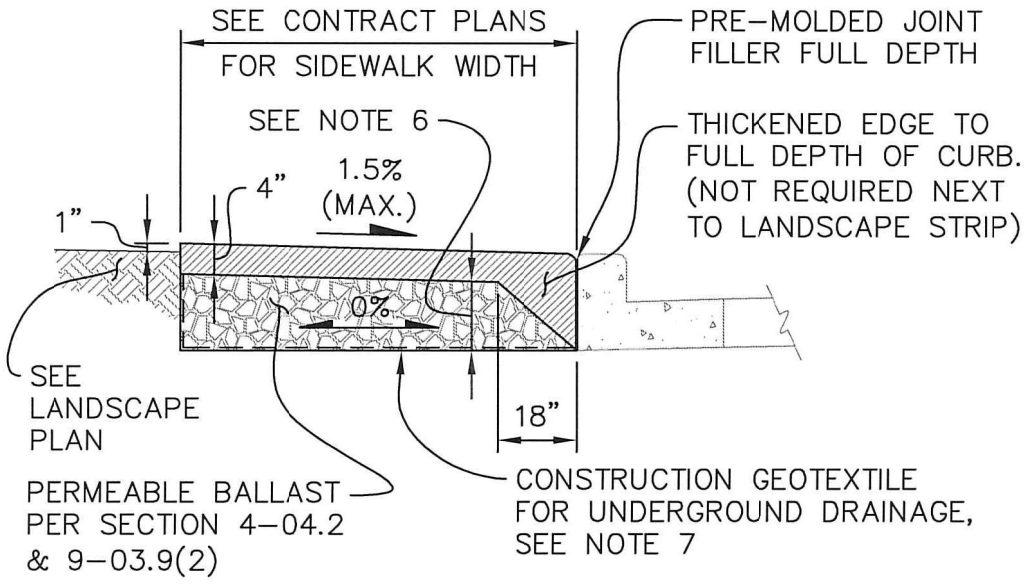
Plotted by: Craig Dobyns on 8/1/2016 File location: M:\Construction Standard Details\Approved Drawing Files (dwg)\Traffic\STDETL-T-14.1



PLAN
NTS



SECTION B
NTS



SECTION A
NTS

NOTES:

1. ISOLATION JOINTS SHALL BE FULL DEPTH WITH 3/8" PREMOLDED JOINT FILLER.
2. CONTRACTION JOINTS SHALL HAVE A MINIMUM DEPTH OF 1/3 OF THE PERVIOUS CONCRETE THICKNESS AND 1/8" MAXIMUM WIDTH (UNLESS OTHERWISE APPROVED BY THE ENGINEER).
3. ALL JOINTS SHALL BE CLEAN & EDGED WITH A 1/2" RADIUS EDGER.
4. SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH SECTION 2-06.3(3) (SUBGRADE FOR PERMEABLE PAVEMENTS). ALL SOFT & YIELDING FOUNDATION MATERIAL SHALL BE REMOVED & REPLACED WITH PERMEABLE BALLAST
5. FOR BALLAST DEEPER THAN CURB, PROVIDE A GEOMEMBRANE BARRIER BETWEEN PERMEABLE BALLAST & ROAD SECTION UNLESS ADJACENT ROAD IS PERMEABLE AS REQUIRED BY THE ENGINEER.
6. DEPTH OF PERMEABLE BALLAST VARIES. SEE SWMM FOR SPECIFIC REQUIREMENTS.
7. CONSTRUCTION GEOSYNTHETIC MAY BE REQUIRED BETWEEN NATIVE SOILS & PERMEABLE BALLAST IF DIRECTED BY THE ENGINEER. WHEN REQUIRED, THE GEOTEXTILE SHALL BE CLASS A, MODERATE SURVIVABILITY PER SECTION 9.33.2(1) TABLES 1 & 2 (UNLESS OTHERWISE APPROVED BY THE ENGINEER).

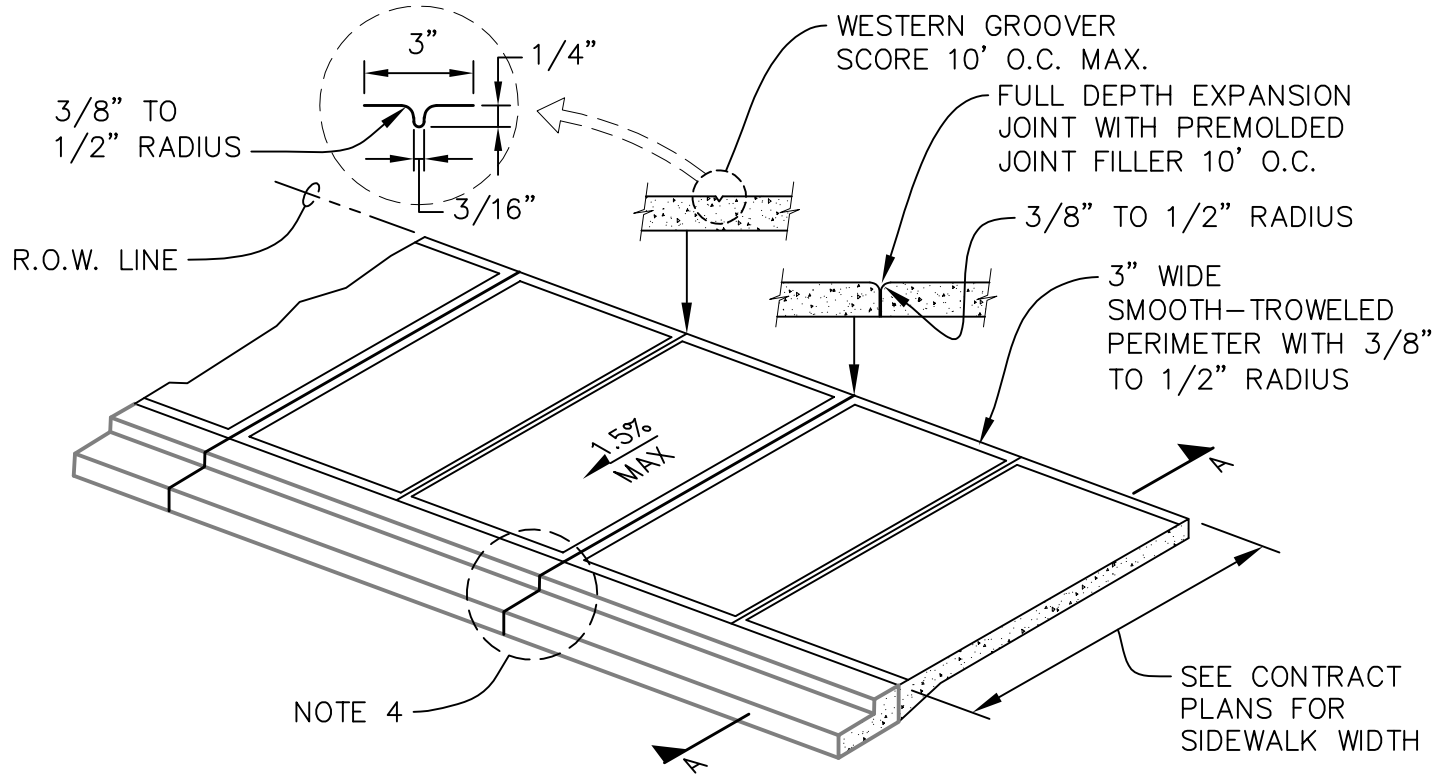
APPROVED BY CITY ENGINEER: Paul Sachs DATE: 8/5/2016

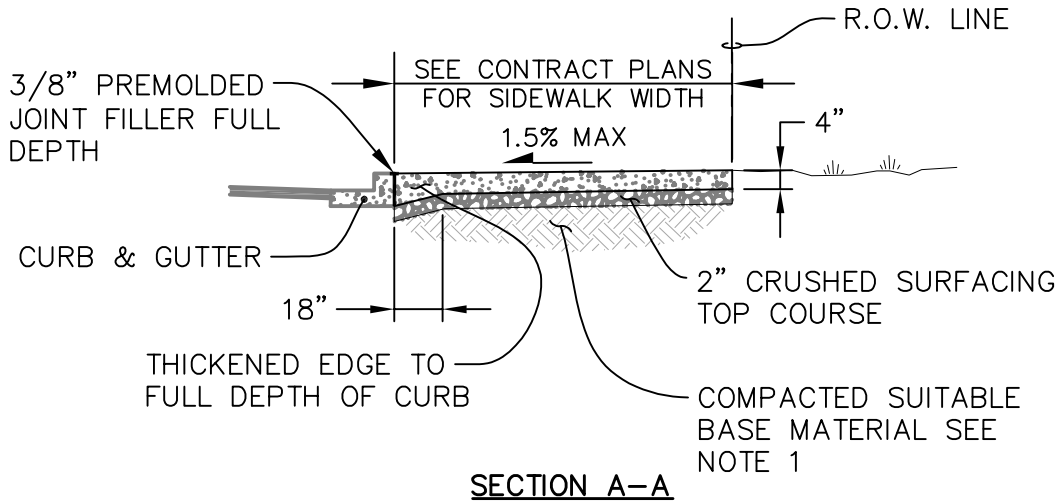
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.

CITY OF AUBURN WASHINGTON

PERVIOUS CEMENT CONCRETE SIDEWALK

STANDARD DETAIL: T-14.1





SECTION A-A
NOT TO SCALE

NOTES:

1. PLACE CEMENT CONCRETE ON COMPACTED SUITABLE BASE, AS PER SPECIFICATION SECTION 2-06.3 AND AS APPROVED BY THE ENGINEER.
2. CEMENT CONCRETE SHALL BE CLASS 3000 PER SPECIFICATION SECTION 6-02.3.
3. INSPECTION REQUIRED FOR FORM AND SUB GRADE APPROVAL BEFORE POURING CONCRETE.
4. MATCH EXPANSION JOINTS ON SIDEWALK WITH EXPANSION JOINTS ON CURB OR AT 10' O.C.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	CEMENT CONCRETE SIDEWALK WITHOUT LANDSCAPE STRIP
Jacob Sweeting	02/09/2023		
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-15.2

Plotted by: Craig Dobyns on 2/8/2023 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-15.2

PUBLIC WORKS DEPARTMENT

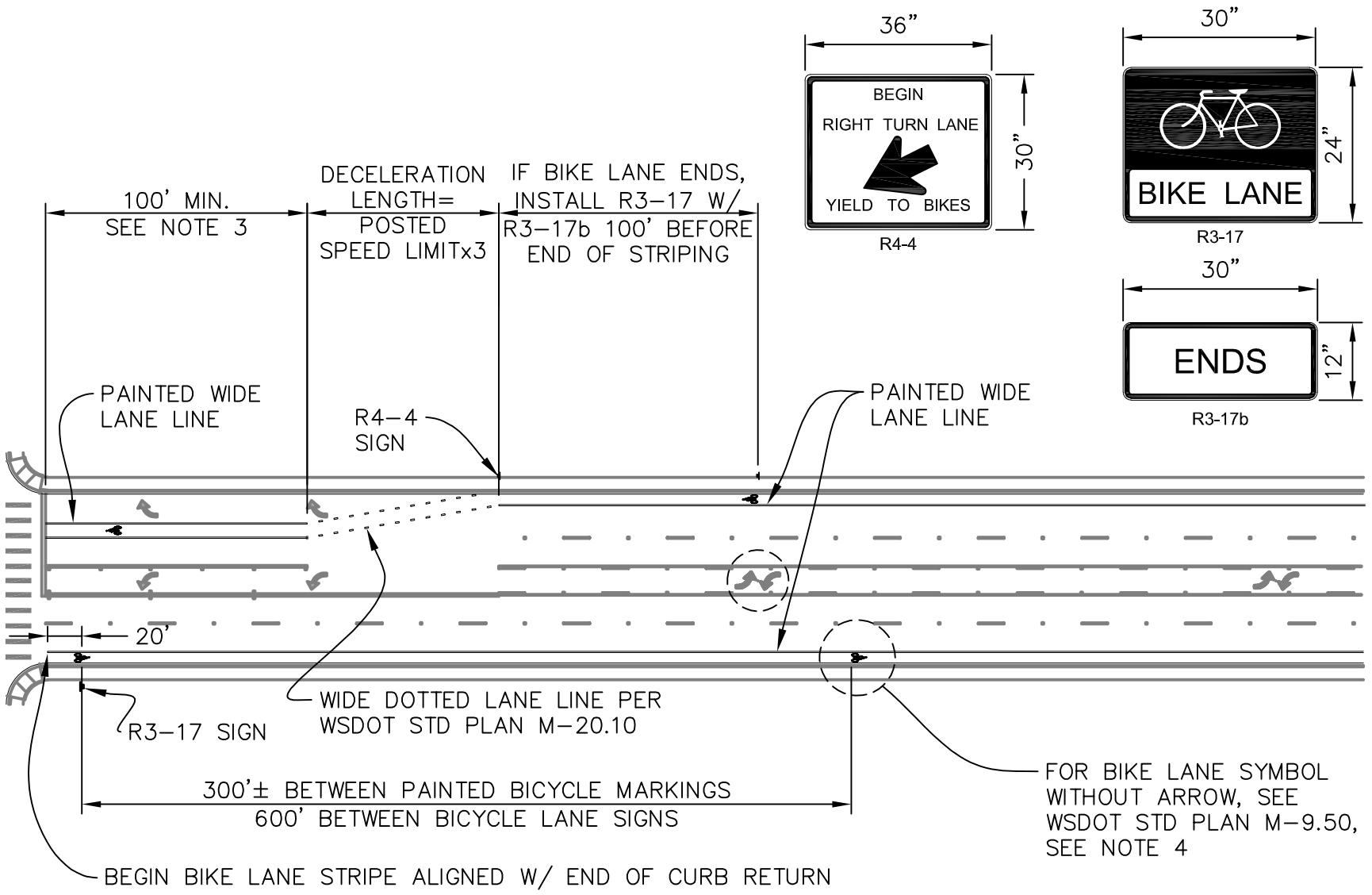
APPROVED BY CITY ENGINEER: Jason Sweeting

DATE: 1/17/2022

CITY OF AUBURN WASHINGTON

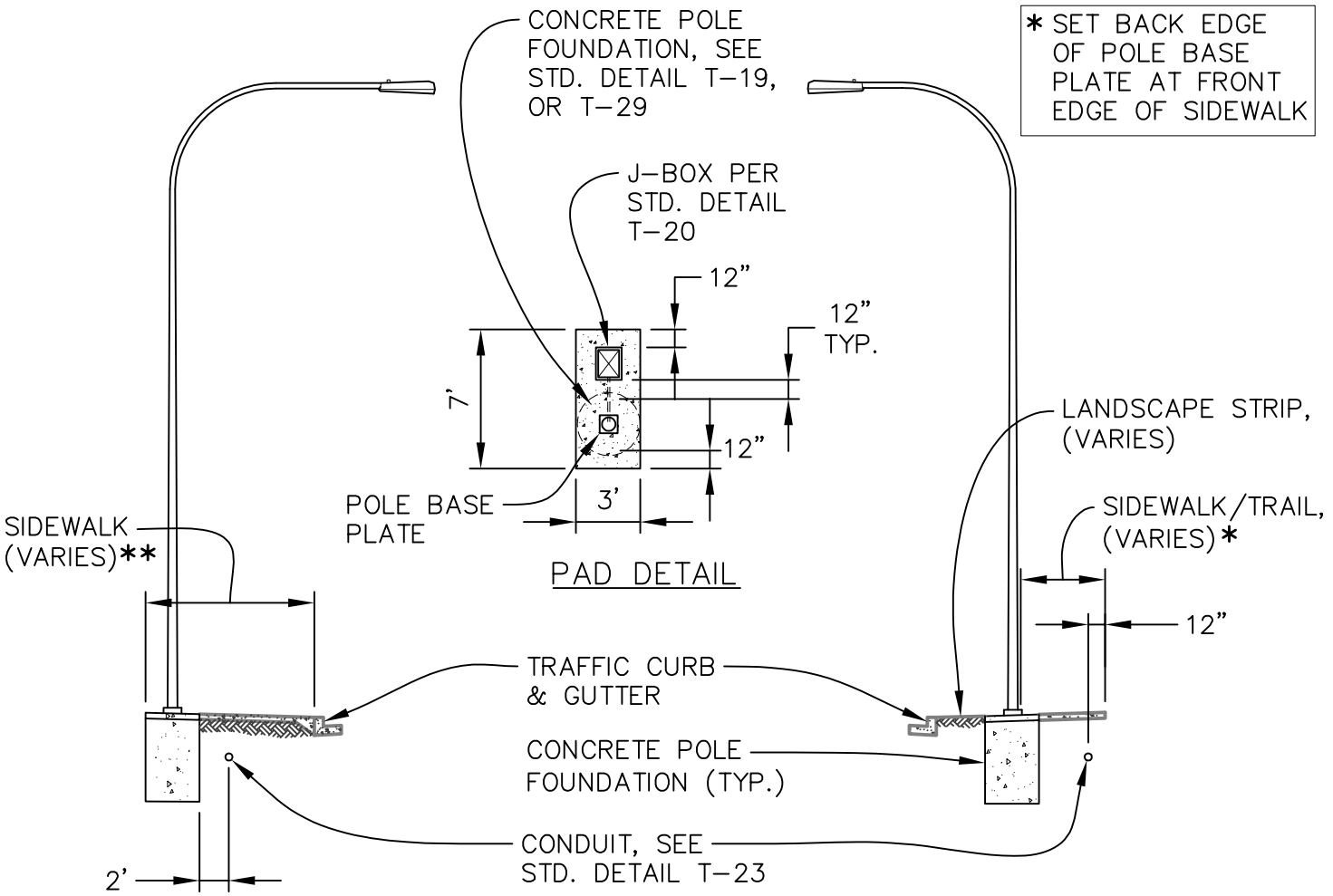
BICYCLE LANE MARKINGS

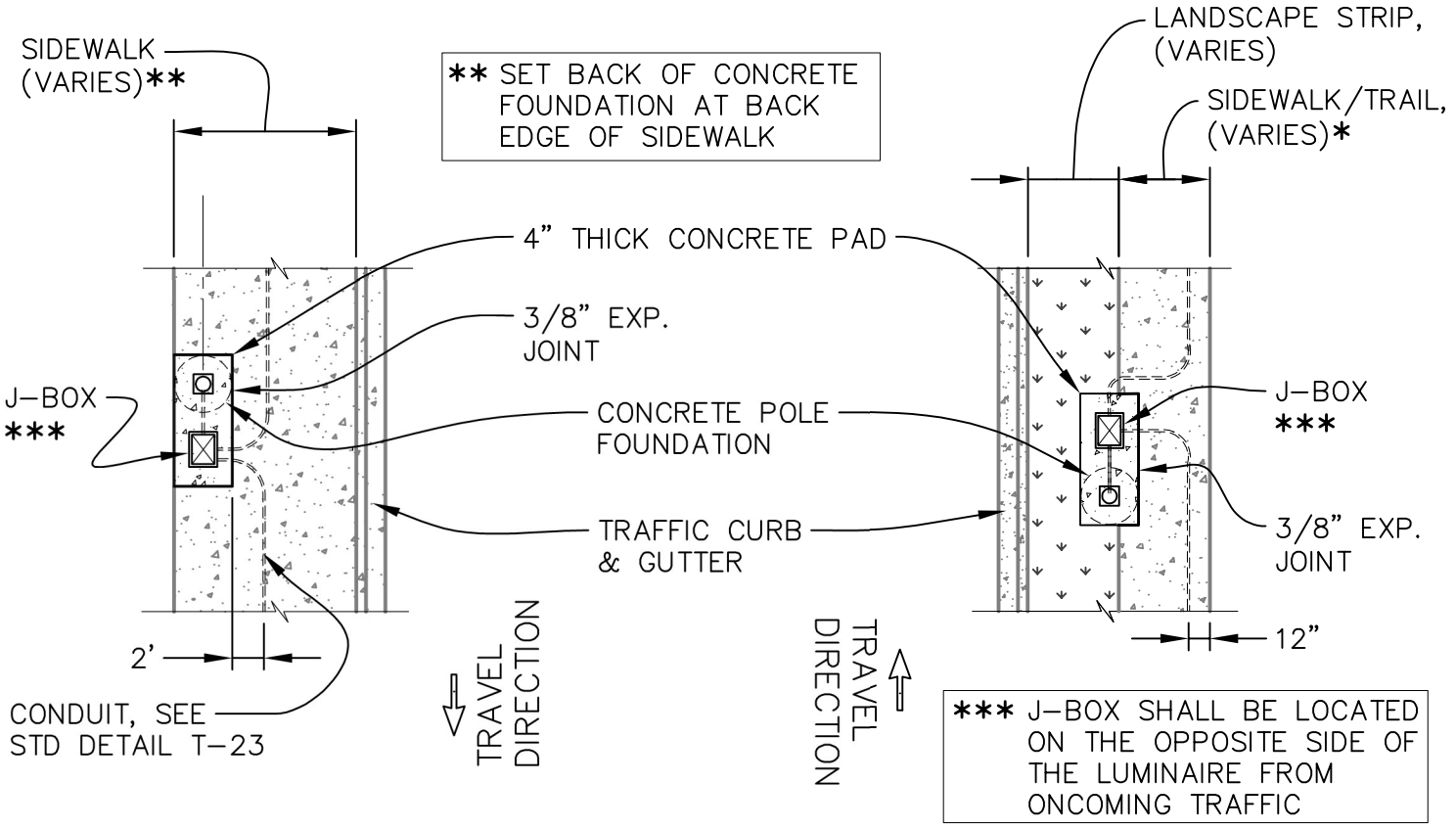
STANDARD DETAIL: T-17.3



NOTES:

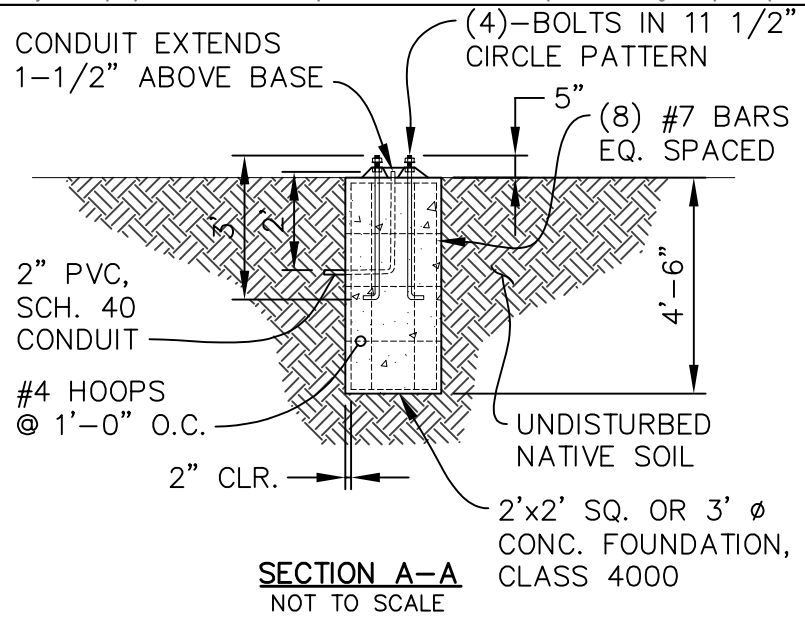
1. BIKE LANE WIDTH SHALL BE 6' WIDE, MINIMUM.
2. RIGHT TURN LANE LENGTH SHALL BE DETERMINED BY THE 95TH PERCENTILE OF THE QUEUE LENGTH VALUE.
3. LENGTH SHORTER THAN 100' MAY BE JUSTIFIED WITH TRAFFIC STUDIES.
4. BICYCLE RIDER SYMBOL DESIGNATING BICYCLE LANE SHALL BE INSTALLED WITH WHITE PAINT.



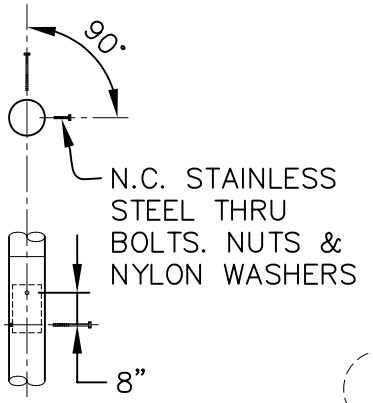


APPROVED BY CITY ENGINEER:	DATE:		LUMINAIRE AND CONDUIT LAYOUT DETAIL
Jacob Sweeting	01/05/2021	CITY OF AUBURN WASHINGTON	
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-18.3

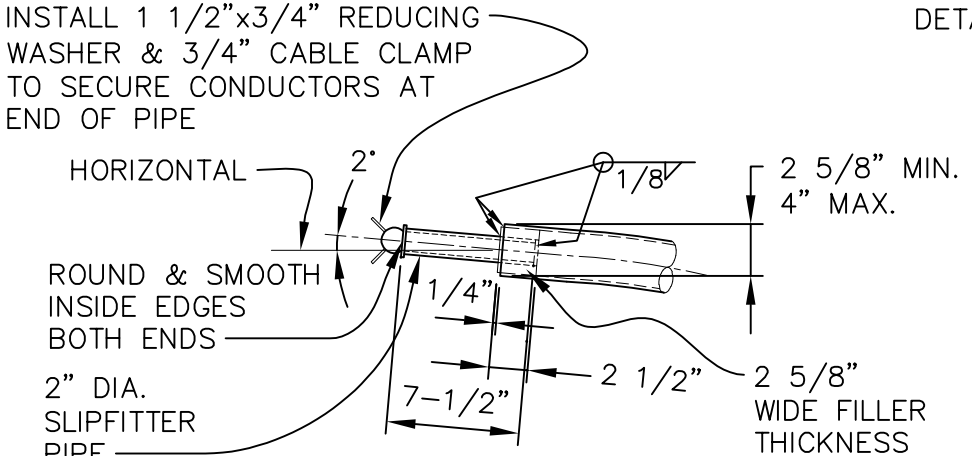
Plotted by: Craig Dobyns on 12/09/20 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-18.3



SECTION A-A
NOT TO SCALE



DAVIT ARM ATTACHMENT
NOT TO SCALE



DAVIT ARM END
NOT TO SCALE

ELEVATION
NOT TO SCALE

NOTES:

1. POLE ASSEMBLIES DESIGNED TO SUPPORT MAXIMUM LUMINAIRE SIZE OF 1.5 SQ. FT. E.P.A. AND 60 LBS. IN A 100 MPH ISOTACH/130 MPH GUST VELOCITY WIND.
2. 4043 FILLER WIRE USED FOR WELDING.
3. ONLY THE BASE FLANGE WELDS ARE HEAT TREATED.
4. BASE FLANGE SHALL ACCOMMODATE 11" TO 12" BOLT CIRCLE.
5. 1"-8NC STEEL ANCHOR BOLT ASTM A576, AISI GRADE 1021-1046, 50,000 PSI=MIN. YIELD MEAN DIA. OF ROD STOCK 0.908± 0.011", OUT OF ROUND TOLERANCE: ± 0.012" ROLLED OR CUT THREADS PER A307, CLASS 2A, TOP 10" GALV. PER ASTM A153 COMPLETE WITH (8) 1" 8NC GALV. STL. HEX NUTS & (8) 1" GALV. STL. FLAT WASHERS.
6. SEE SECTION 10 OF THE DESIGN STANDARDS.
7. SEE STD. DETAIL T-18 FOR POLE, CONDUIT, AND FOUNDATION PLACEMENT.

APPROVED BY CITY ENGINEER: Jason Sweeting
DATE: 2/7/24
CITY OF AUBURN WASHINGTON
PUBLIC WORKS DEPARTMENT
LUMINAIRE POLE
STANDARD DETAIL: T-19.4

APPROVED BY CITY ENGINEER:

DATE: 2/20/2018

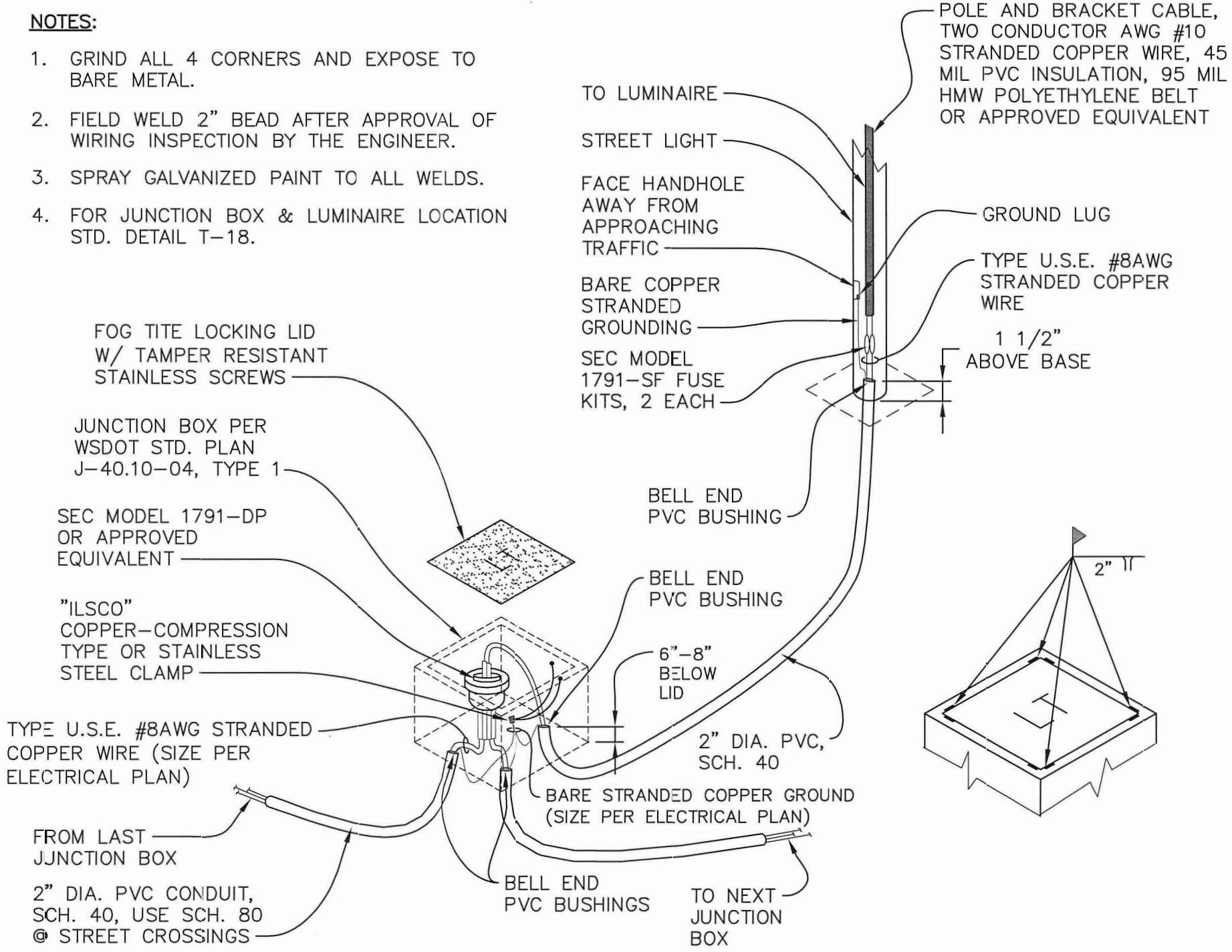
CITY OF AUBURN WASHINGTON

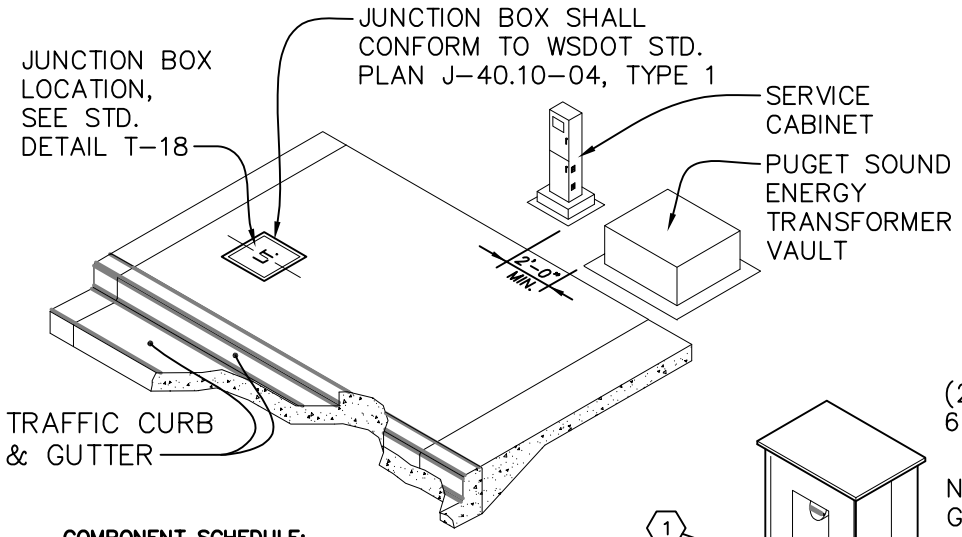
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.

STANDARD DETAIL: UNIFORM LUMINAIRE WIRING DETAIL

NOTES:

1. GRIND ALL 4 CORNERS AND EXPOSE TO BARE METAL.
2. FIELD WELD 2" BEAD AFTER APPROVAL OF WIRING INSPECTION BY THE ENGINEER.
3. SPRAY GALVANIZED PAINT TO ALL WELDS.
4. FOR JUNCTION BOX & LUMINAIRE LOCATION STD. DETAIL T-18.





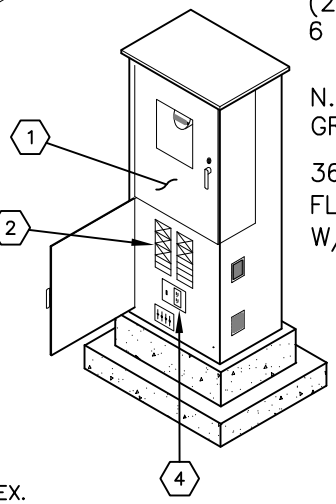
COMPONENT SCHEDULE:

1. METERBASE: 100 AMP, 4 JAW, B-LINE U264, MANUAL BYPASS TYPE, W/ 5th JAW AT 9:00 POSITION, (CONTRACTOR TO VERIFY W/ SERVING UTILITY).
2. PANELBOARD: 120/240 VAC, 100 AMP SILVER PLATED COPPER BUS, 1 PHASE, 3 WIRE, 12 CIRCUIT MAIN BREAKER: 100 AMP FRAME, 100 AMP TRIP, EATON #BAB2100 (BACK-FED) 10K AIC BOLT-ON BRANCH BREAKERS, EATON TYPE BAB
   - (2)-20/2 ILLUMINATION BRANCH A1 & B2
   - (1)-20/1 GROUND FAULT RECEPTACLE BRANCH
4. GROUND FAULT RECEPTACLE: 20 AMP, 120 VAC DUPLEX.
5. CABINET:

   NEMA 3R, PADMOUNT, 1/8" ALUMINUM 5052-H32 CONSTRUCTION, DRIP HOOD, OPEN BOTTOM FRAMED W/ 2" ANGLE, 2-SCREENED & GASKETED VENTS.

   DOORS: HEAVY DUTY WELDED HINGES, LIFT-OFF TYPE STAINLESS STEEL VAULT HANDLES W/ 3-POINT LATCH, PADLOCKABLE METERING DOOR. "BEST" CX LOCK W/ BLUE CORE ON DISTRIBUTION DOOR, CLOSED CELL NEOPRENE GASKET, 1/4" POLISHED WIRE GLASS METER VIEWING PORT.

   FINISH: MILL FINISH ALUMINUM.



SKYLINE SERIES 47700-A1-R3, METERED, LOCKABLE SERVICE CABINET. CABINET MUST BE LOCATED WITHIN 50' OF DESIGNATED POWER SOURCE. (ADDRESS & USE REQ'D ON PHENOL TAG FOR PSE METER).

INSTALL & CONNECT TO GROUND RODS PER WSDOT 8-20.3(9), CASE NOT REQ'D IF GROUND IS IN J-BOX

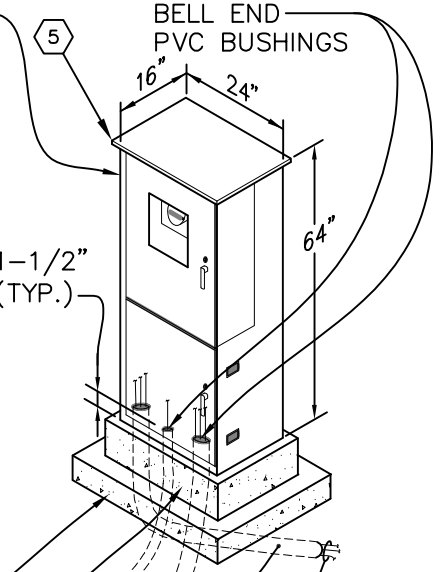
(2) GROUND RODS REQ'D, 6 FT. APART, MIN.

N.E.C. SERVICE GROUND

36"x28"x6" CONC. BASE FLUSH W/ SIDEWALK REINF. W/ 6"x6"x#10 W.W.F.

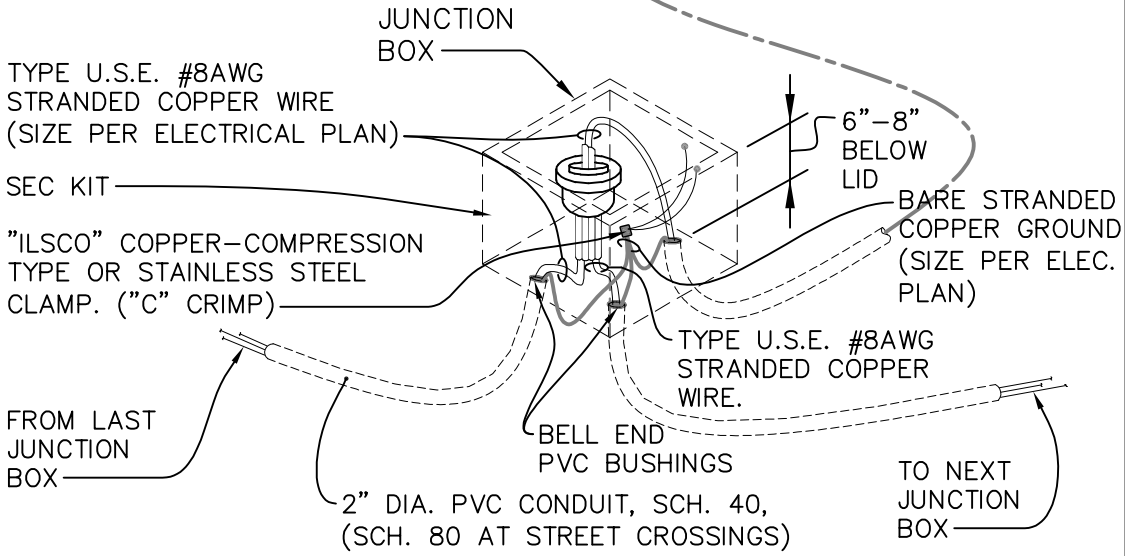
1/2" DIA. PVC, SCH. 40, CONDUIT (OR APPROVED EQUIV.)

28"X20"X9" CONC. PEDESTAL. CABINET MOUNTED TO PEDESTAL W/ (4) HOT DIPPED, GALVANIZED FOUNDATION BOLTS, NUTS, & WASHERS



2" DIA. PVC, SCH. 40, OR APPROVED EQ.

AWG U.S.E. STRANDED COPPER. WIRE SIZE TO MEET N.E.C. IT ENTERS CABINET ON LEFT SIDE.



APPROVED BY CITY ENGINEER: Jon Ousterling

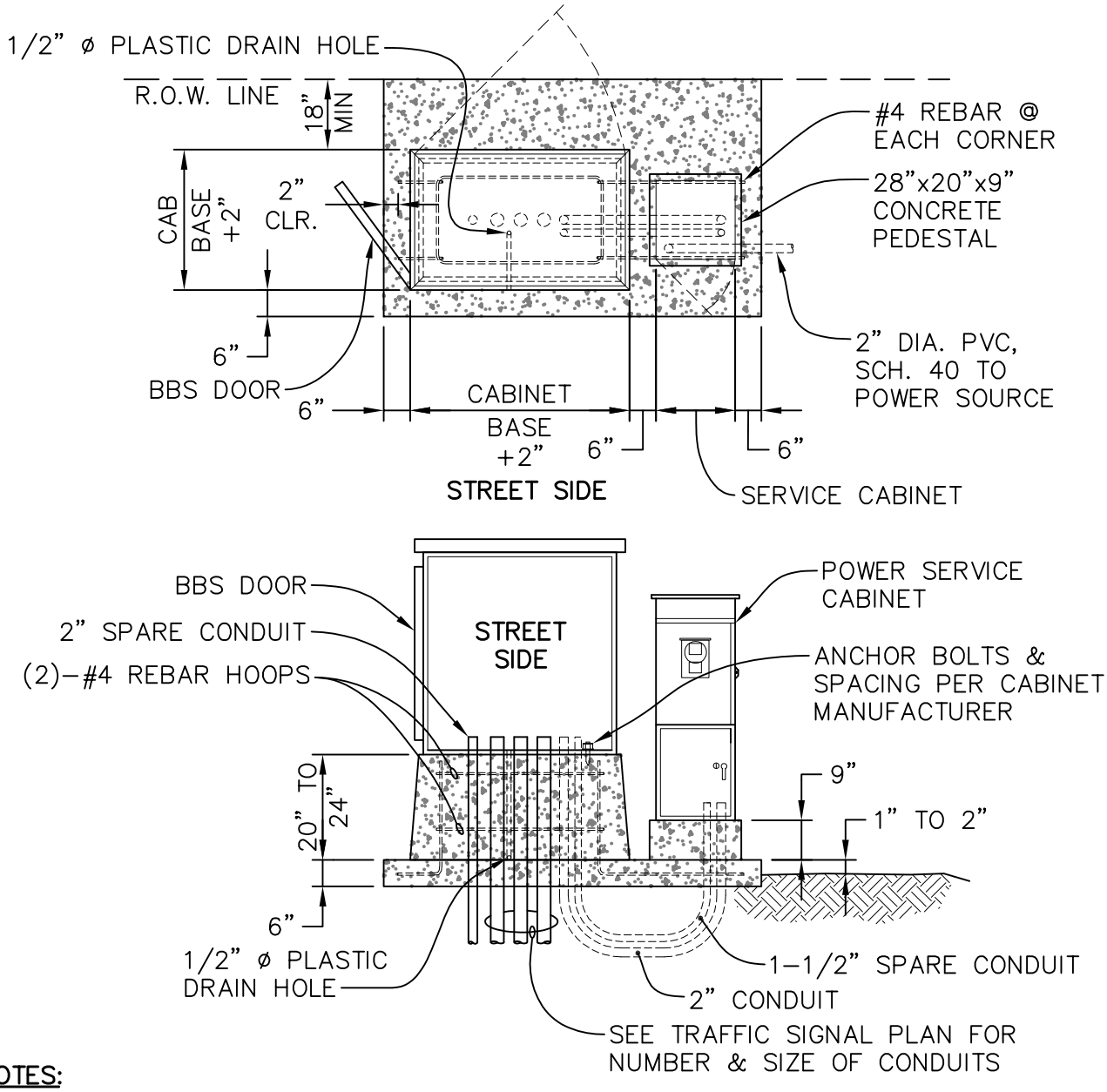
DATE: 1/17/2022

CITY OF AUBURN WASHINGTON

PUBLIC WORKS DEPARTMENT

POWER SERVICE CABINET DETAIL

STANDARD DETAIL: T-21.4

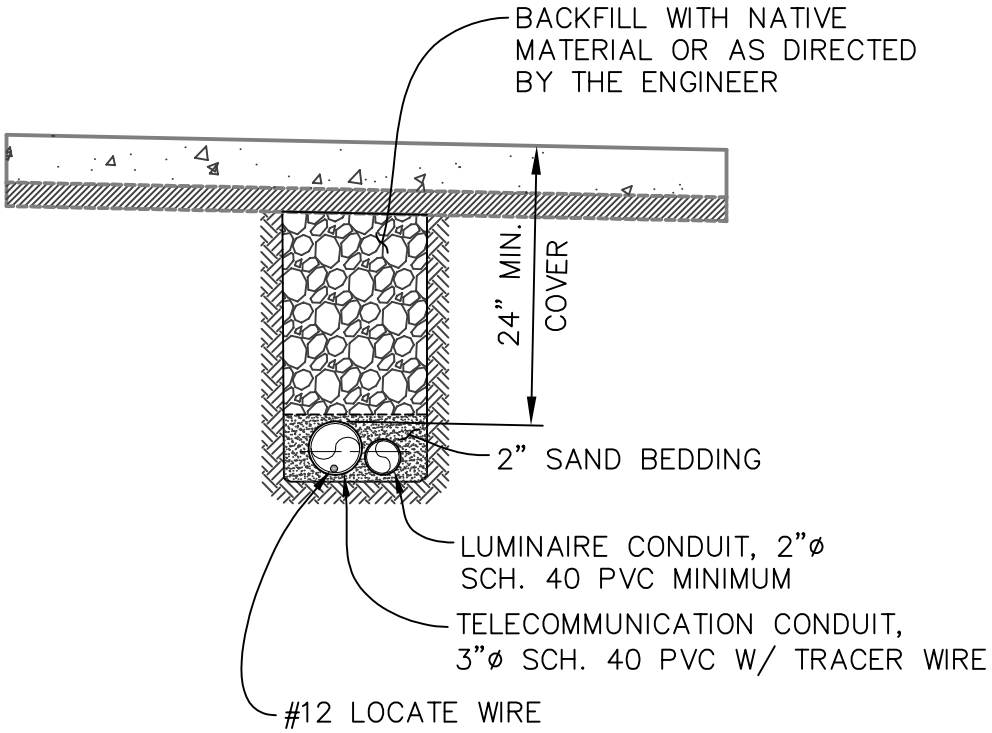


NOTES:

1. FOUNDATION SHALL BE CONSTRUCTED WITH CLASS 3000 CONCRETE WITH 3/4" CHAMFERED EDGE ON THE LOWER PAD.
2. CONDUITS SHALL BE EXTENDED NO MORE THAN 2" ABOVE CONCRETE SURFACE, ALIGNED, AND CENTERED ON CABINET.
3. CABINET POWER CONDUIT SHALL BE ON THE RIGHT SIDE WHEN FACING FRONT OF CABINET.
4. 2" DIA. SPARE CONDUIT SHALL BE INSTALLED AND RUN INTO THE JUNCTION BOX.
5. ENDS OF 1/2" DIA. DRAIN POLY TUBING SHALL BE CUT FLUSHED WITH CONCRETE SURFACE.
6. 1-1/2" DIA. SPARE CONDUIT SHALL BE INSTALLED AND RUN INTO SERVICE CABINET.
7. JOINT BETWEEN CABINET AND FOUNDATION SHALL BE SEALED USING A CLEAR WATERPROOF ADHESIVE CAULK.

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 1/17/2022	CITY OF AUBURN WASHINGTON	TRAFFIC SIGNAL CONTROLLER & FOUNDATION DETAIL
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-22.4

Plotted by: Craig Dobyns on 1/6/2022 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-22.4

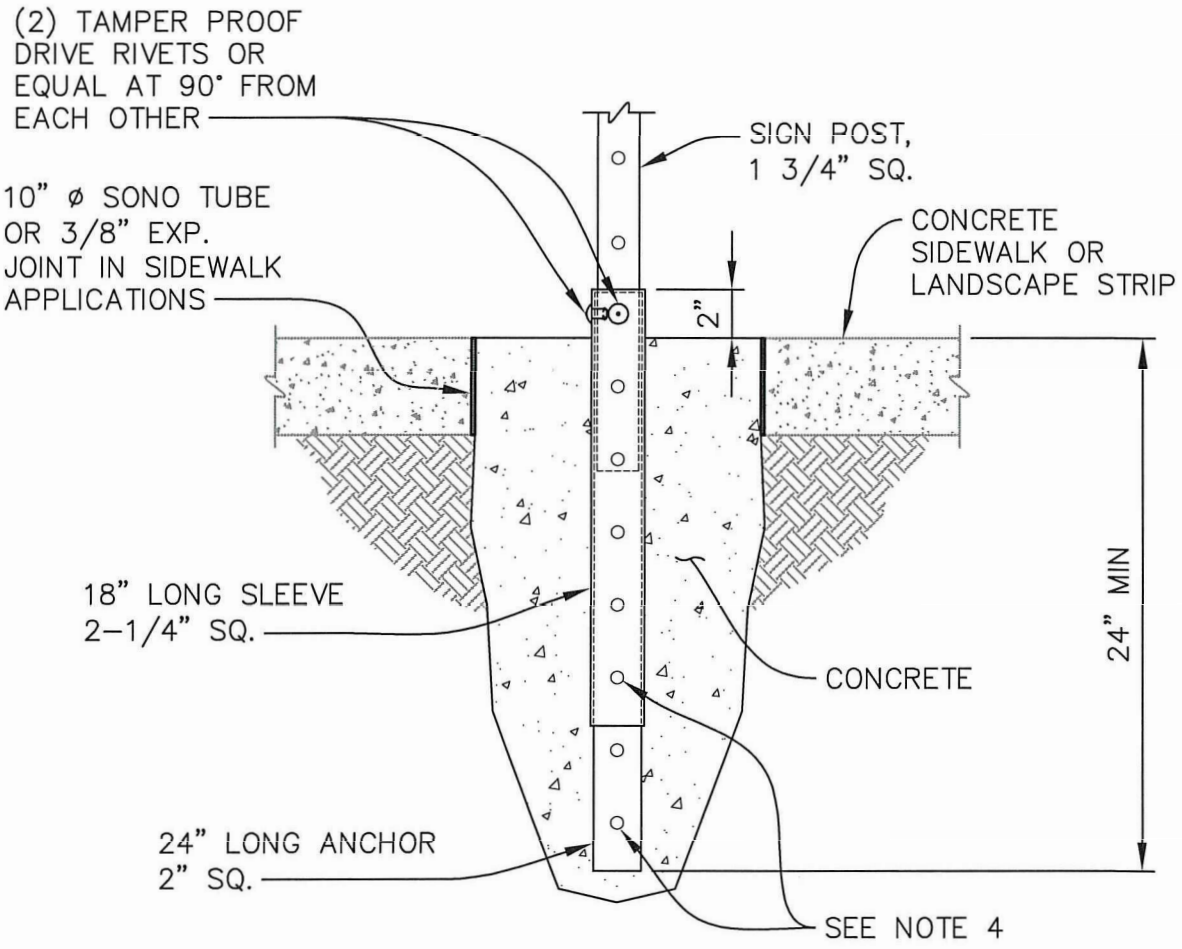


NOTES:

1. PULL STRING SHALL BE INSTALLED IN ALL SPARE CONDUIT.
2. SEE STD. DETAIL T–18 FOR CONDUIT PLACEMENT.

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 01/05/2021	CITY OF AUBURN WASHINGTON	TELECOMMUNICATION AND LUMINAIRE ELECTRICAL TRENCH
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T–23.3

Plotted by: Craig Dobyns on 12/30/2020 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-23.3



NOTES:

1. ALL TUBING MATERIAL SHALL BE "UNISTRUT TELESPAR" TYPE GALVANIZED STEEL (ASTM A570 GRADE 33) OR ENGINEER APPROVED EQUIVALENT.
2. SIDEWALKS AND PAVED AREAS SHALL BE CORE DRILLED BEFORE SIGN INSTALLATION.
3. SIGNS SHALL HAVE A MIN. HEIGHT OF 7 FT. FROM THE LOWER EDGE OF THE SIGN TO SIDEWALK GRADE, AND A 2 FT. LATERAL OFFSET FROM THE FACE OF CURB TO THE NEAR EDGE OF SIGN. SIGN LOCATION SHALL BE AS SHOWN ON PLANS AND PER MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D).
4. WRAP ANCHOR TUBING WITH TAPE BEFORE PLACING IN CONCRETE.
5. DEMONSTRATE SIGN POST IS REMOVABLE BEFORE RIVETING.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	TYPICAL SIGN POST INSTALLATION
	2/20/2018		
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: T-24.2

Plotted by: Craig Dobyns on 2/2/2018 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-24.2

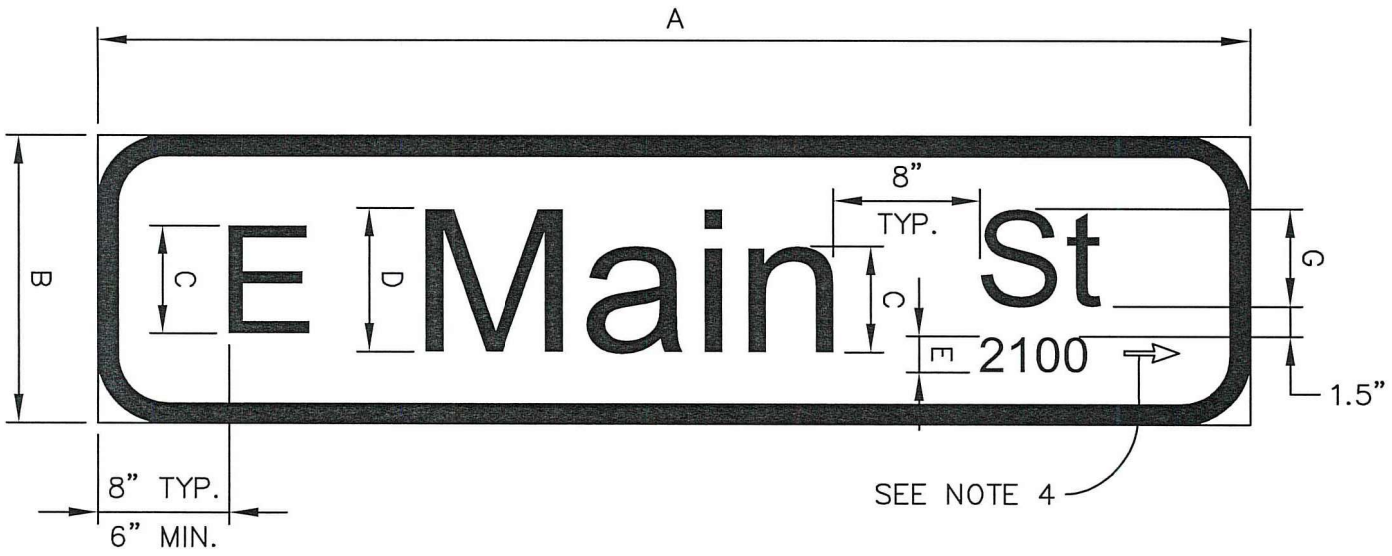
APPROVED BY CITY ENGINEER: Daniel Sell DATE: 8/5/2016

COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.

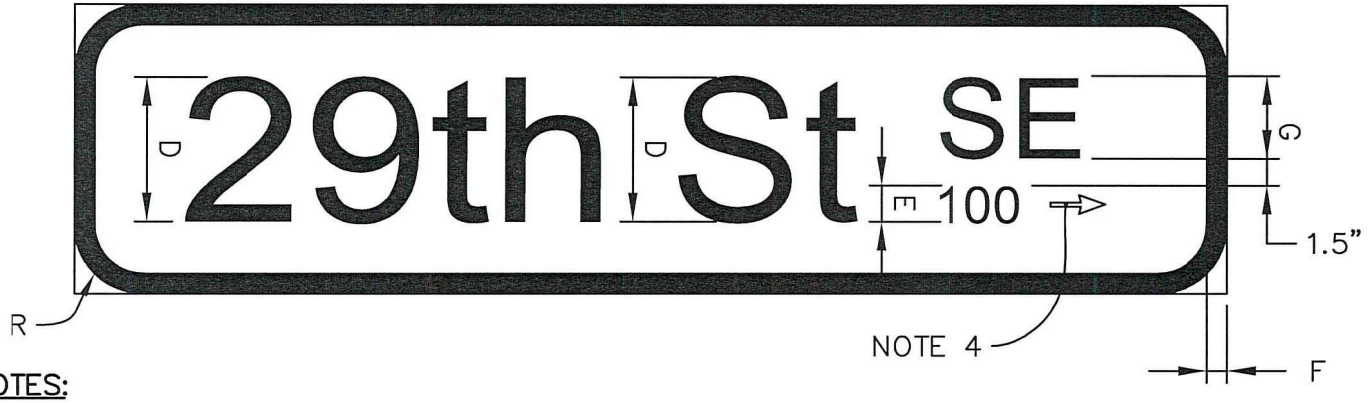
CITY OF AUBURN WASHINGTON

MAST ARM MOUNTED, STREET NAME SIGN DETAIL

STANDARD DETAIL: T-25.1



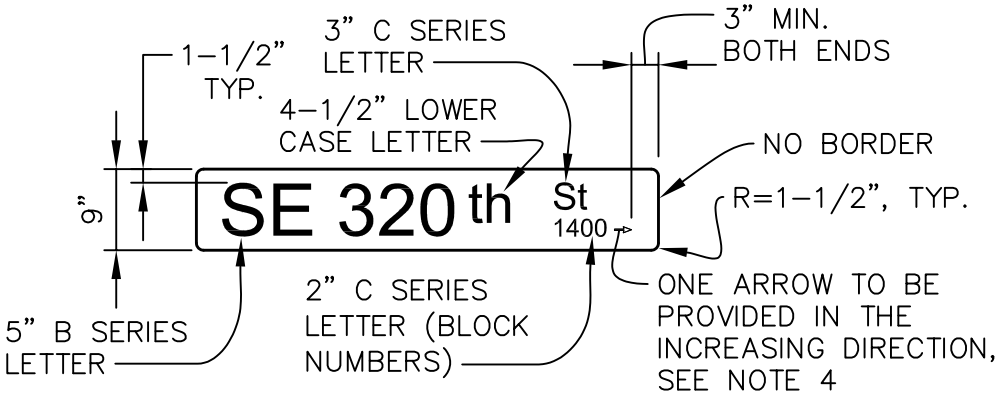
SIGN STANDARDS	
DIMENSION	INCHES
A	VARIES
B	16
C	6
D	8
E	2
F	1 1/4
G	4 1/2
R	3



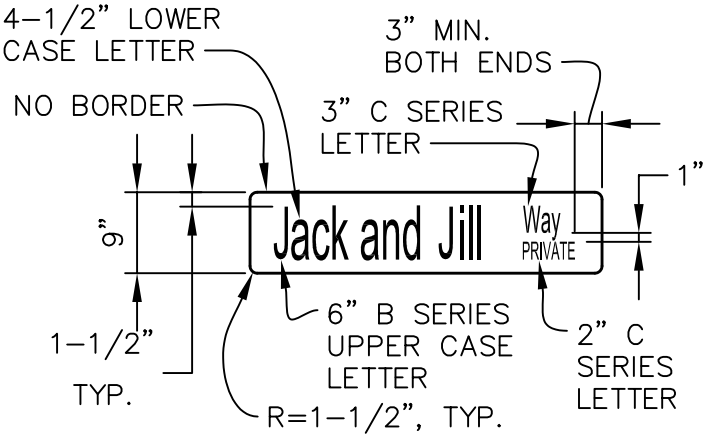
NOTES:

1. SIGN BLADES SHALL BE 0.125" THICK TEMPERED ALUMINUM ALLOY.
2. BACKGROUND FOR STREET NAME SIGNS SHALL BE GREEN COLOR, ENGINEERING GRADE REFLECTIVE SHEETING.
3. ALL LETTERING AND 1-1/4" BORDER FOR STREET NAME SIGNS SHALL BE WHITE COLOR, REFLECTIVE HIGH INTENSITY GRADE SHEETING.
4. ARROW ON THE RIGHT SIDE OF THE BLOCK NUMBER INDICATES AN INCREASING BLOCK NUMBER IN THE ARROW DIRECTION.
5. FOR GUIDANCE ON LETTERING AND NUMERAL WIDTHS AND SPACING, SEE WSDOT "SIGN FABRICATION MANUAL" APPENDIX C.
6. ENGINEER APPROVAL OF SIGN PROOF(S) REQUIRED BEFORE FABRICATION.

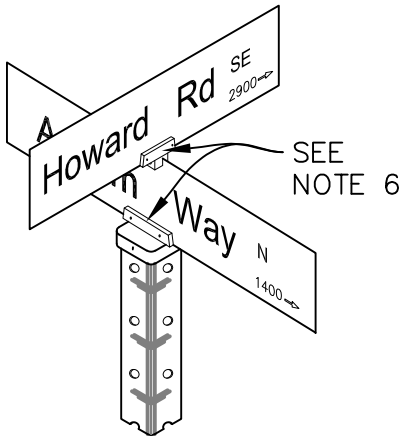
STREET NAME STANDARD	
NAME	ABBREVIATION
AVENUE	Ave
BOULEVARD	Blvd
COURT	Ct
DRIVE	Dr
LANE	Ln
LOOP	Lp
PARKWAY	Pkwy
PLACE	Pl
ROAD	Rd
STREET	St
STREET SOUTHEAST	St SE
WAY	Way

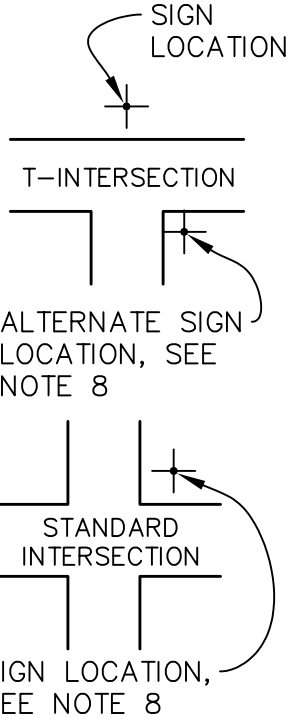


PUBLIC ROAD SIGN



PRIVATE ROAD SIGN





SIGN PLACEMENT

EXAMPLES:

124th Ave SE 31600 | M St SE 20 | W Main St 25 | 37th St SE 1400

Howard Rd SE 2900 — NORTH VIEW

Auburn Way N 2900 — EAST VIEW

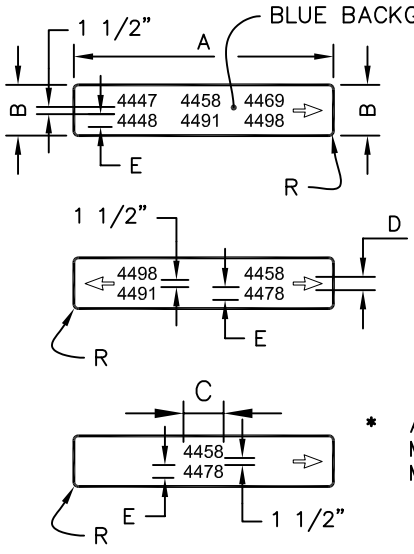
Howard Rd SE 2900 — SOUTH VIEW

Auburn Way N 2900 — WEST VIEW

NOTES:

1. NAME PLATE SHALL BE 9" WIDE X VARIABLE LENGTH OF FLAT BLANK, 0.080 GAUGE ALUMINUM, TREATED WITH ALODINE 1200 CONVERSION COATING, ZUMAR OR APPROVED EQUIVALENT.
2. BACKGROUND FOR PUBLIC ROAD STREET NAME SIGNS SHALL BE GREEN COLOR, ENGINEERING GRADE REFLECTIVE SHEETING.
3. BACKGROUND FOR PRIVATE ROAD STREET NAME SIGNS SHALL BE BLUE COLOR, ENGINEERING GRADE REFLECTIVE SHEETING.
4. ALL LETTERING FOR STREET NAME SIGNS SHALL BE WHITE COLOR, REFLECTIVE HIGH INTENSITY GRADE SHEETING.
5. POST INSTALLATION SHALL CONFORM TO REQUIREMENTS SET BY STANDARD DETAIL T-24.
6. HARDWARE SHALL BE ZUMAR STYLE 850FL2, 808F90A, OR APPROVED EQUIVALENT.
7. MOUNTING HEIGHT SHALL BE 8'-0".
8. WHEN AN INTERSECTION IS STOP SIGN CONTROLLED, THE STREET NAME SIGN SHALL BE PLACED ON THE SAME POST AND ABOVE THE STOP SIGN.
9. ENGINEER APPROVAL OF SIGN PROOF(S) SHALL BE REQUIRED BEFORE FABRICATION.

PRIVATE TRACT SIGNS:

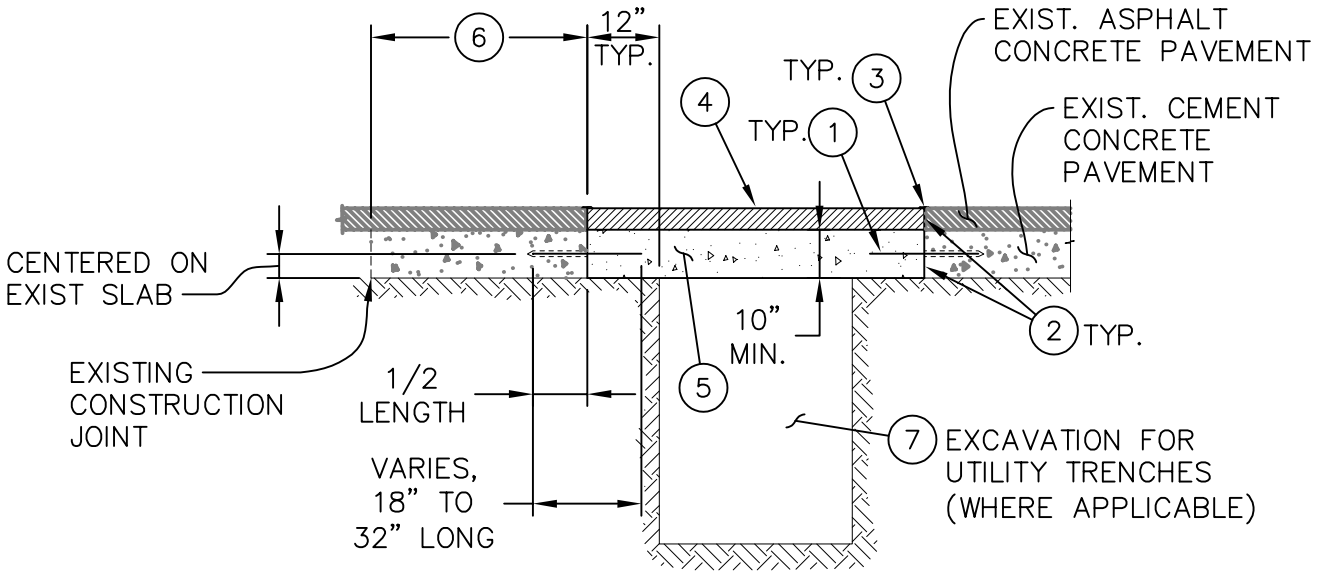


PRIVATE TRACT SIGN STANDARDS	
DIMENSION	INCHES
A	42*
B	12
C	12*
D	4
E	4
R	1½

* ADDITIONAL REQUIREMENTS MAY APPLY OR DIMENSIONS MAY VARY.

APPROVED BY CITY ENGINEER:	DATE:		
Jacob Sweeting	02/09/2023	CITY OF AUBURN WASHINGTON	POST MOUNTED, STREET NAME SIGN DETAIL
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-26.4

Plotted by: Craig Dobyns on 1/23/2023 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-26.4

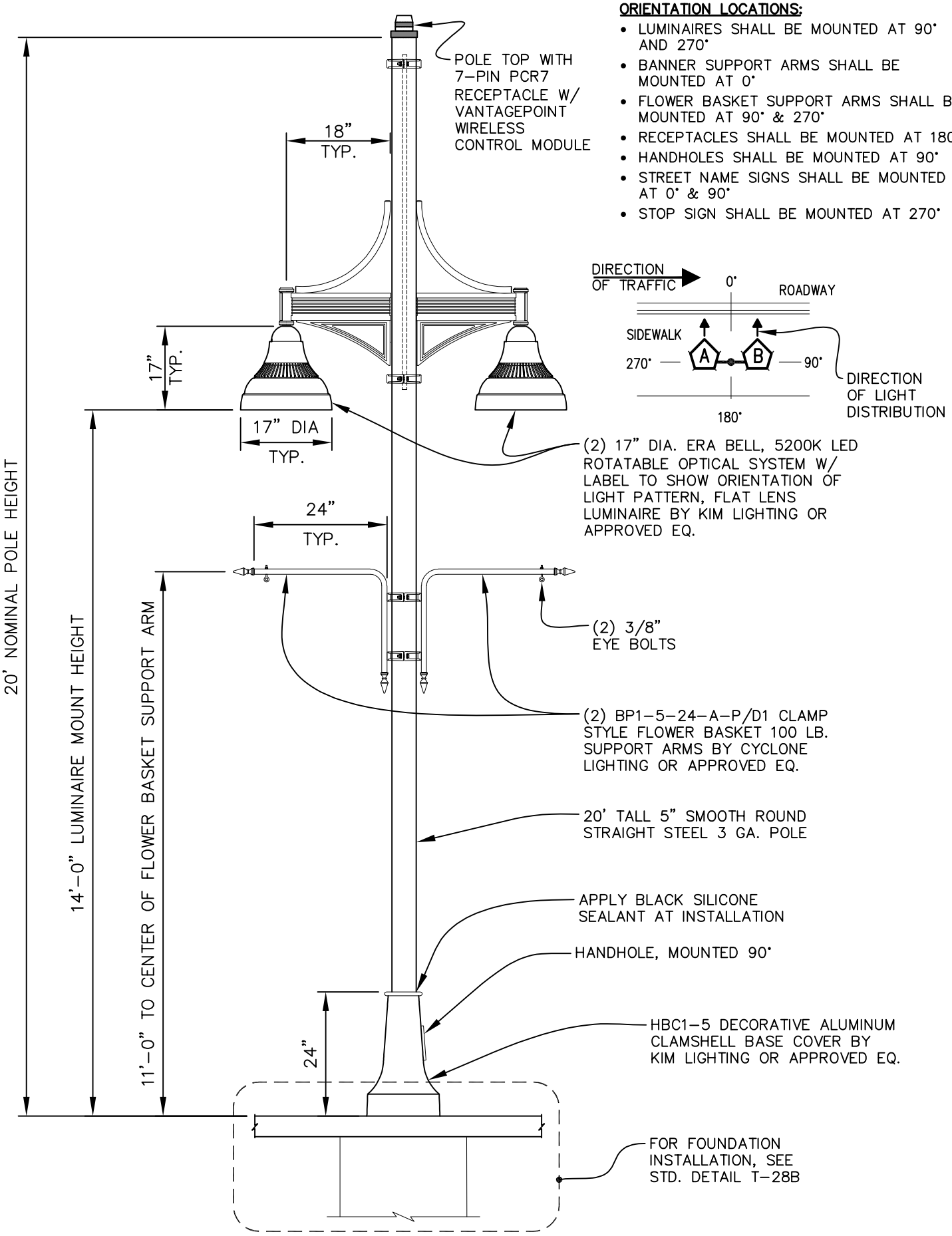


NOTES:

1. FOR TRANSVERSE JOINTS CONSTRUCTION, THE DOWEL BARS SHALL BE 1 1/2" DIA. x 18" LONG AND INSTALLED AT 12" ON CENTER. FOR LONGITUDINAL JOINTS CONSTRUCTION, TIE BARS SHALL BE #5 x 32" LONG AND INSTALLED AT 36" ON CENTER. DRILL HOLES TO EXISTING ADJACENT CONCRETE PANELS AND PARALLEL TO EXISTING GRADE. HOLES SHALL BE BLOWN CLEAN WITH COMPRESSED AIR PRIOR TO APPLYING EPOXY RESIN INTO THE HOLES. THEN INSERT EPOXY RESIN COATED BARS IN THE HOLES SUCH THAT THE BACK OF THE HOLES ARE FILLED FIRST.
2. APPLY HOT POURED ELASTIC TYPE SEALANT TO ENTIRE EDGE AND FULL DEPTH OF THE JOINTS BEFORE PAVING.
3. APPLY SURFACE SEAL WITH ASPHALT CEMENT AR-4000 AT MATCHLINES.
4. WHERE REPLACEMENT OF EXISTING ASPHALT CONCRETE PAVEMENT IS REQUIRED, APPLY NEW HMA CL. 1/2" TO MATCH EXISTING THICKNESS.
5. MATCH THICKNESS OF EXISTING CEMENT CONCRETE PAVEMENT, BUT IN NO CASE SHALL IT BE LESS THAN 10". CEMENT CONCRETE SHALL BE CL. 4000 WITH 5% AIR ENTRAINMENT. TRAFFIC SHALL BE KEPT OFF NEW PAVEMENT FOR 7 DAYS OR UNTIL DESIGN STRENGTH IS ACHIEVED, WHICHEVER COMES FIRST.
6. WHENEVER A REMAINING CONCRETE PANEL IS 3' WIDE OR LESS IN ANY DIRECTION FROM EXISTING CONSTRUCTION JOINT TO NEW CONSTRUCTION JOINT, IT SHALL BE REMOVED AND REPLACED AS PART OF THE NEW PANEL.
7. BEDDING/BACKFILL SHALL BE PER STANDARD DETAIL T-01.

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 02/09/2023	CITY OF AUBURN WASHINGTON	REPAIR OF EXISTING CEMENT CONCRETE PANEL IN ROADWAY
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-27.2

Plotted by: Craig Dobyns on 2/6/2023 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-27.1



ORIENTATION LOCATIONS:

- LUMINAIRES SHALL BE MOUNTED AT 90° AND 270°
- BANNER SUPPORT ARMS SHALL BE MOUNTED AT 0°
- FLOWER BASKET SUPPORT ARMS SHALL BE MOUNTED AT 90° & 270°
- RECEPTACLES SHALL BE MOUNTED AT 180°
- HANDHOLES SHALL BE MOUNTED AT 90°
- STREET NAME SIGNS SHALL BE MOUNTED AT 0° & 90°
- STOP SIGN SHALL BE MOUNTED AT 270°

APPROVED BY CITY ENGINEER: Jacob Sweeting

DATE: 1/17/2022

CITY OF AUBURN WASHINGTON

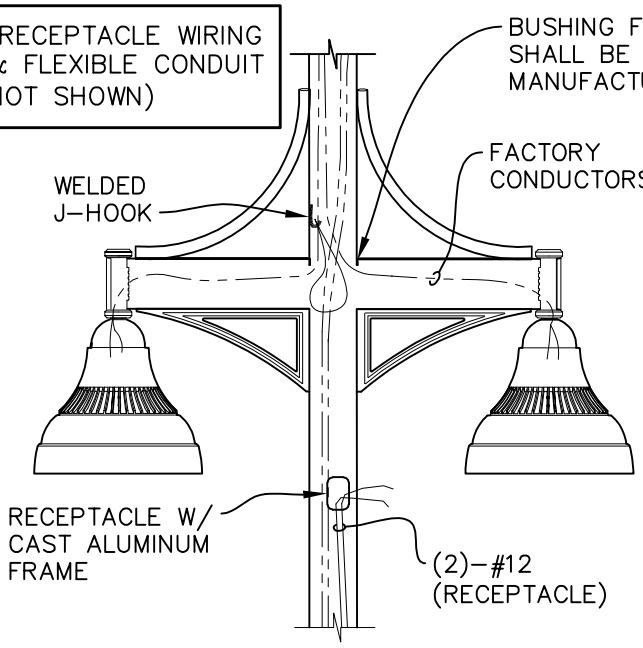
DOWNTOWN PEDESTRIAN POLE MOUNT LIGHTING STANDARD

PUBLIC WORKS DEPARTMENT

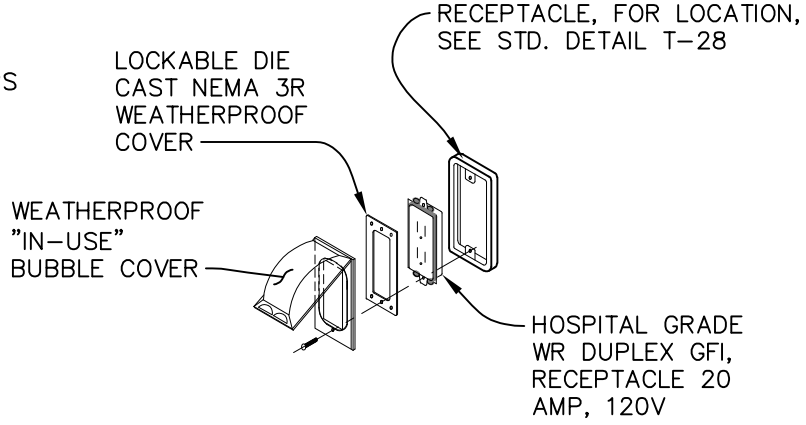
STANDARD DETAIL: T-28.4

Plotted by: Craig Dobyns on 1/6/2022 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-28.4

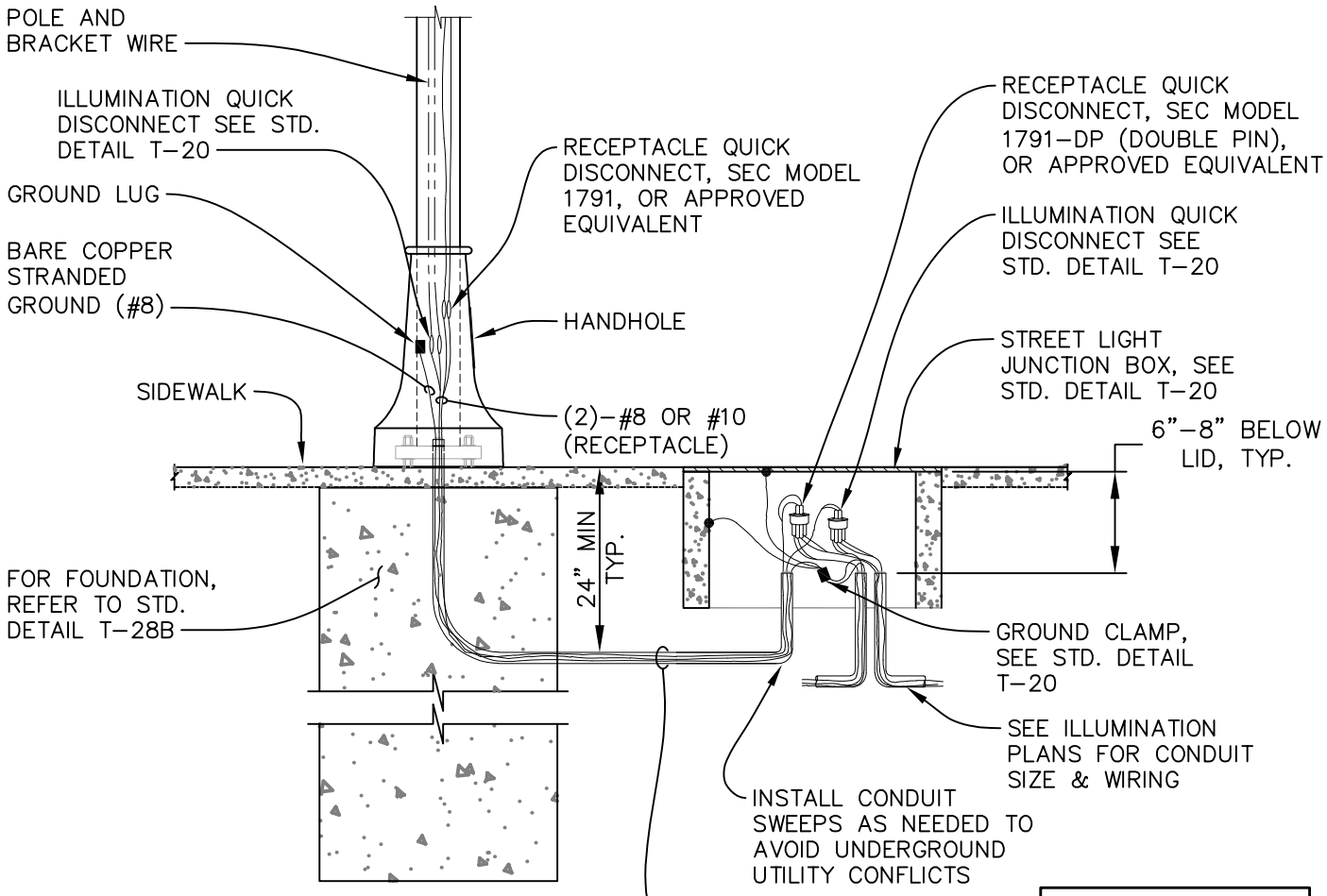
(RECEPTACLE WIRING & FLEXIBLE CONDUIT NOT SHOWN)



LUMINAIRE WIRING
NOT TO SCALE



POLE RECEPTACLE
NOT TO SCALE

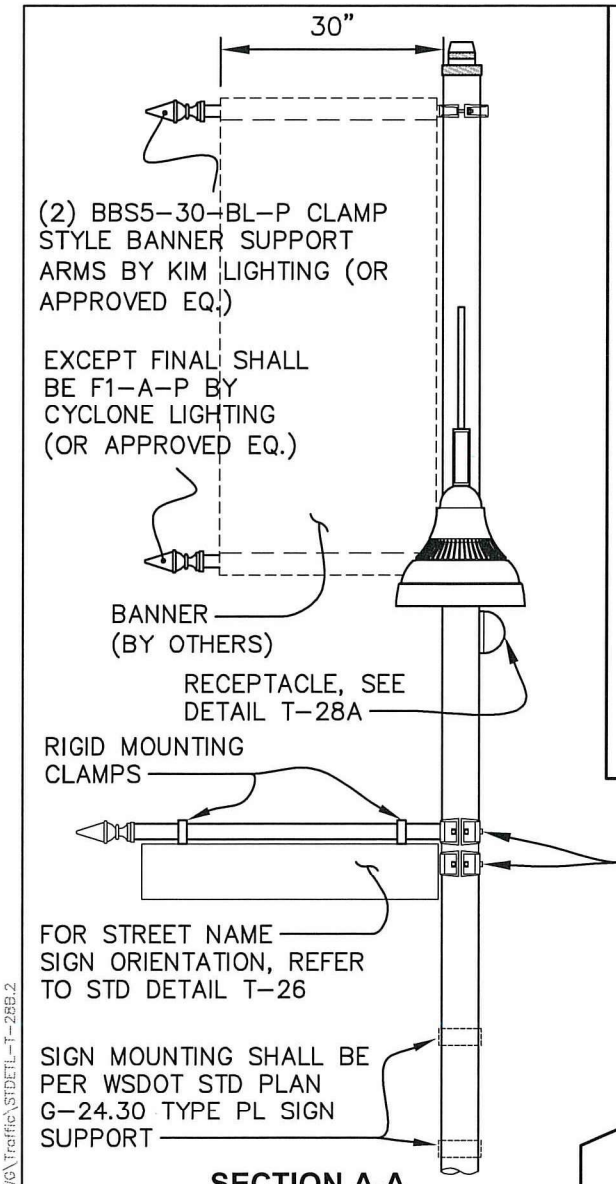


TYPICAL LUMINAIRE/ JUNCTION BOX WIRING
NOT TO SCALE

* REFER TO STD. DETAIL T-20 FOR INFORMATION NOT SHOWN
* SPARE/EMPTY CONDUITS SHALL CONTAIN DETECTABLE PULL TAPE

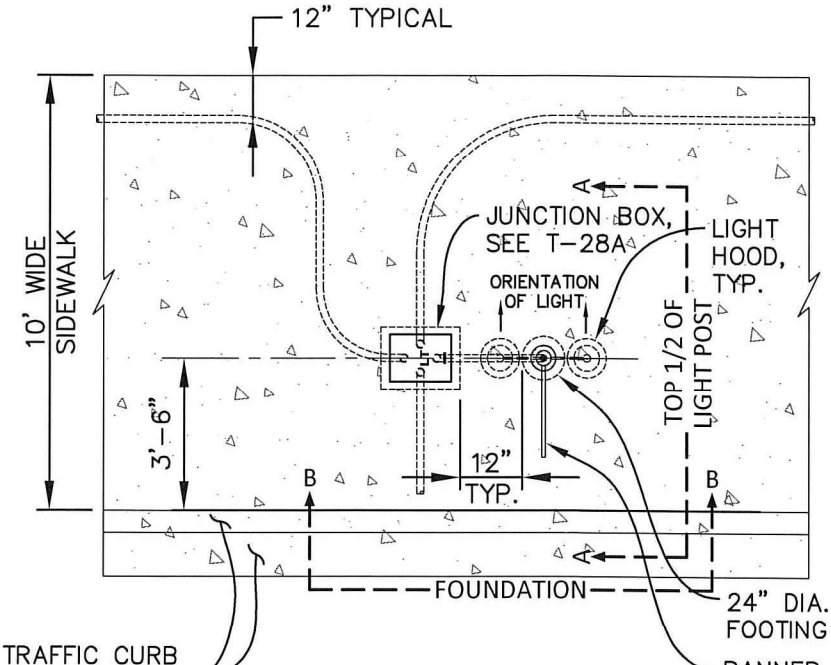
APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 02/09/2023	CITY OF AUBURN WASHINGTON	DOWNTOWN PEDESTRIAN POLE MOUNT LIGHTING STANDARD
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-28A.4

Plotted by: Craig Dobyns on 2/6/2023 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-28A.4



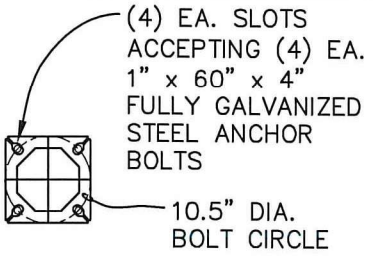
SECTION A-A

NTS



PLAN VIEW

NTS

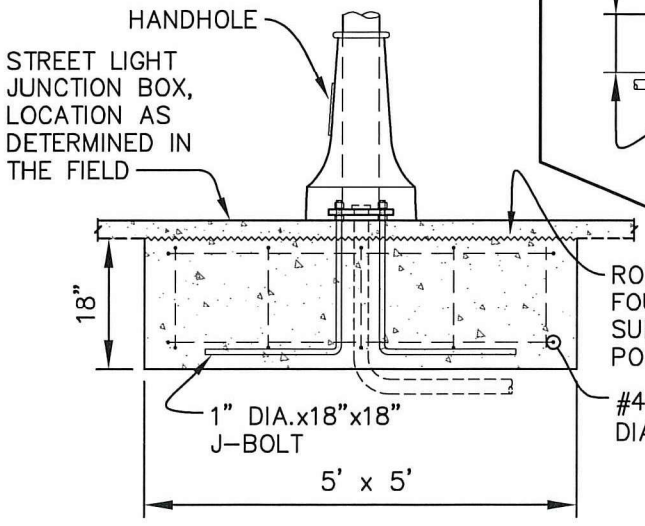


BASE PLATE

NTS

SECTION B-B

NTS



ALTERNATE BASE (SPREAD FOOTING)

NTS

APPROVED BY CITY ENGINEER: DATE: 12/31/18

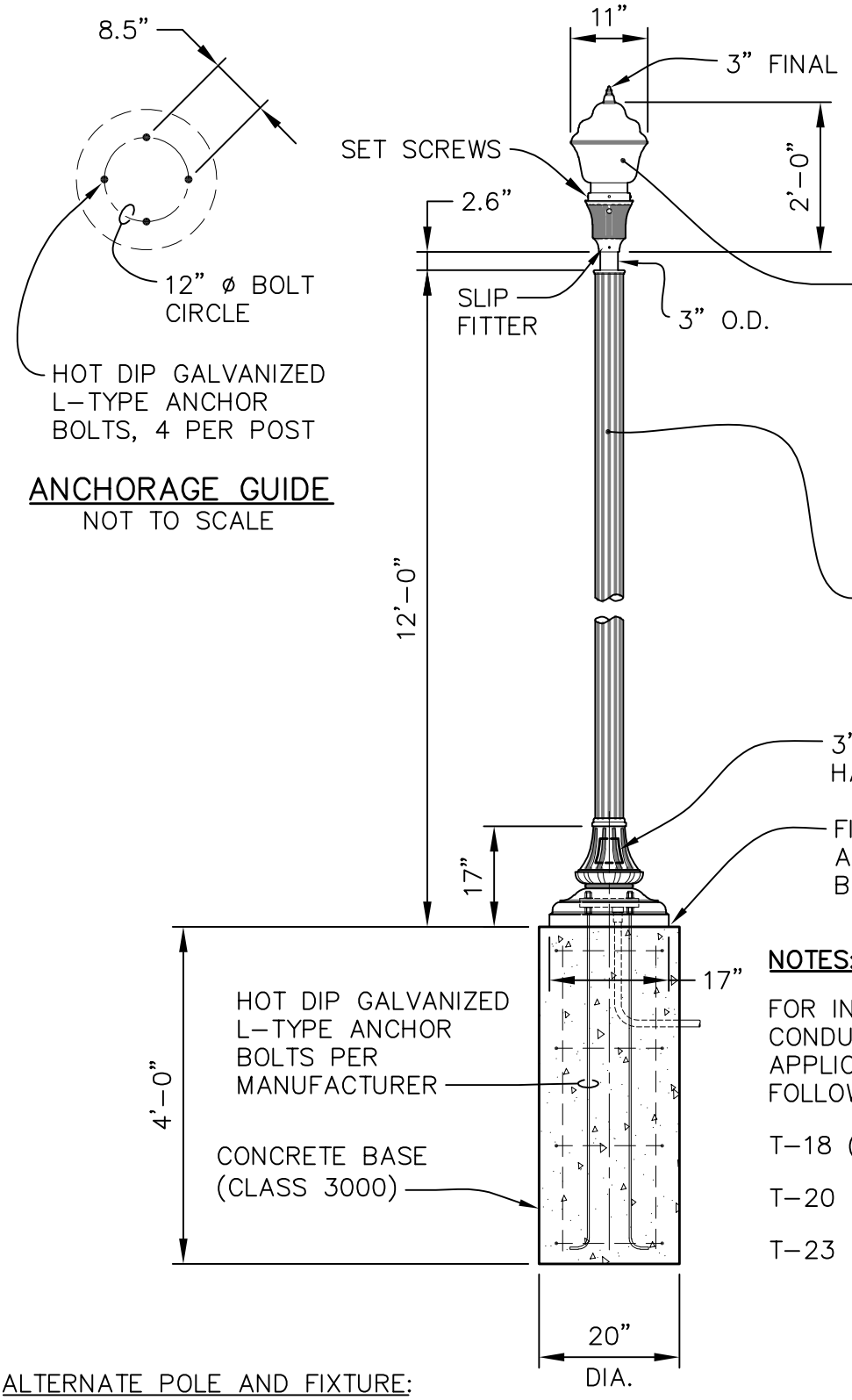
CITY OF AUBURN WASHINGTON

DOWNTOWN PEDESTRIAN POLE MOUNT LIGHTING STANDARD

PUBLIC WORKS DEPARTMENT

STANDARD DETAIL: T-28B.2

Plotted by: Craig Dobyns on 12/31/2018 File location: N:\Construction Standard Details\Current Working DWG\Traffic\STDETIL-T-28B.2



ANCHORAGE GUIDE
NOT TO SCALE

ELEVATION
NOT TO SCALE

NOTES:

FOR INSTALLATION OF ELECTRICAL CONDUIT AND JUNCTION BOX, SEE APPLICABLE PORTIONS OF THE FOLLOWING STANDARD DETAILS:

T–18 (LUMINAIRE & CONDUIT LAYOUT)

T–20 (LUMINAIRE WIRING)

T–23 (ELECTRICAL TRENCH)

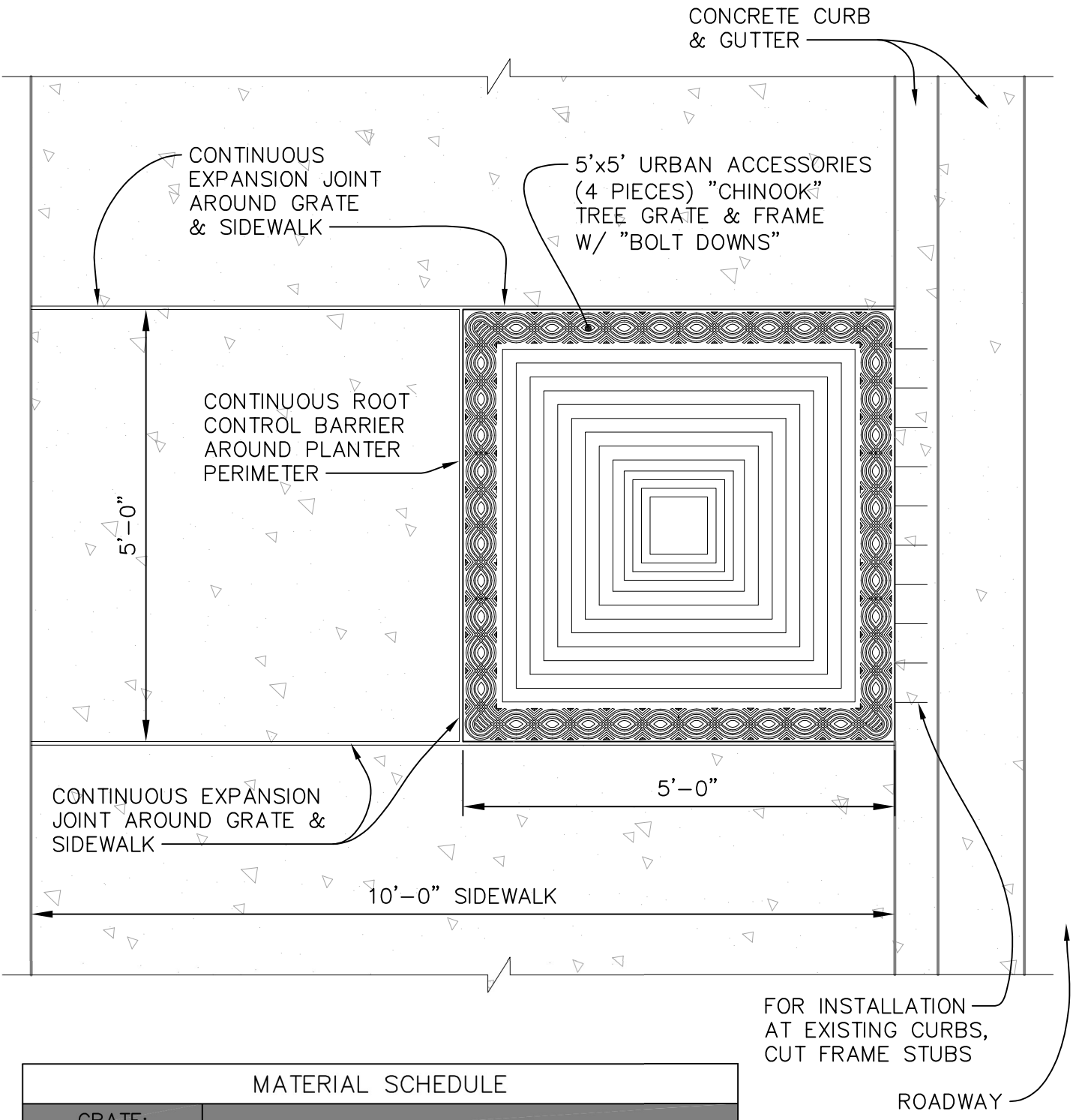
ALTERNATE POLE AND FIXTURE:

KING LUMINAIRE WITH FIELD SWITCHABLE DIMABLE DRIVER:
K445–T1GR–IV–60
(SSL)–4004–120: 277V–K24–(MOD)PR7–3K

HAPCO ARLEN LIGHT POLE:
37936–012 (GREEN OR BLACK)

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 1/17/2022	CITY OF AUBURN WASHINGTON	LOCAL RESIDENTIAL ORNAMENTAL STREET LIGHTING STANDARD
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T–29.5

Plotted by: Craig Dobyns on 1/6/2022 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL–T–29.5



MATERIAL SCHEDULE	
GRATE:	
MATERIAL	GREY IRON ASTM A48 CLASS 358 OR BETTER
FINISH	NATURAL PATINA OF RAW IRON
FRAME:	
MATERIAL	MILD STEEL ASTM A36
FINISH	NATURAL PATINA OF RAW STEEL
LOAD RATING: PEDESTRIAN	

APPROVED BY CITY ENGINEER: Jacob Sweeting

DATE: 01/05/2021

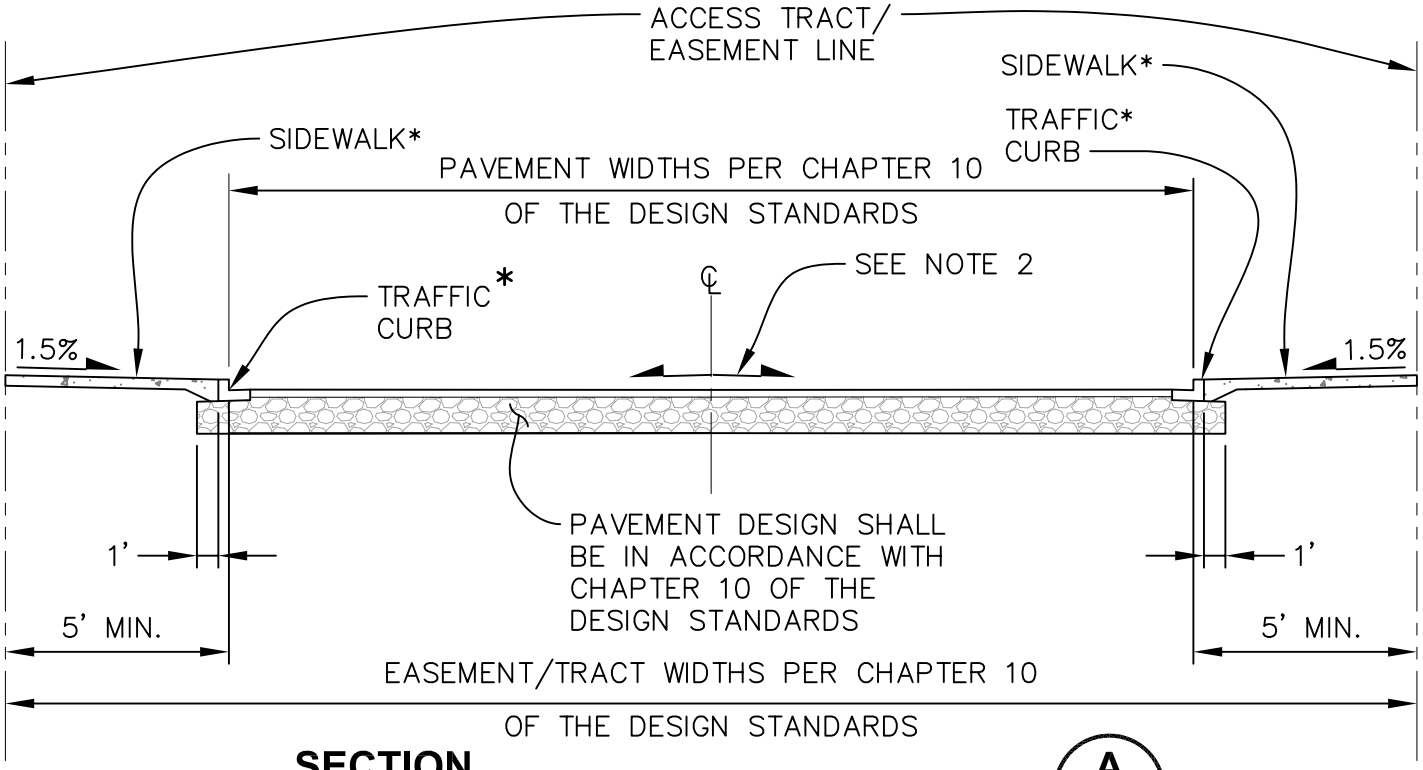
CITY OF AUBURN WASHINGTON

TYPICAL PLAN
FOR TREE GRATE

PUBLIC WORKS DEPARTMENT

STANDARD DETAIL: T-30.2

Plotted by: Craig Dobyns on 12/16/2020 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-30.2

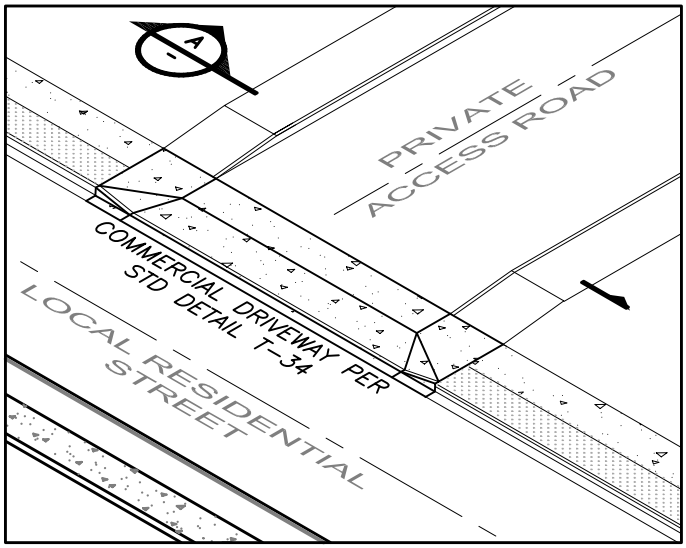


SECTION A-
NTS

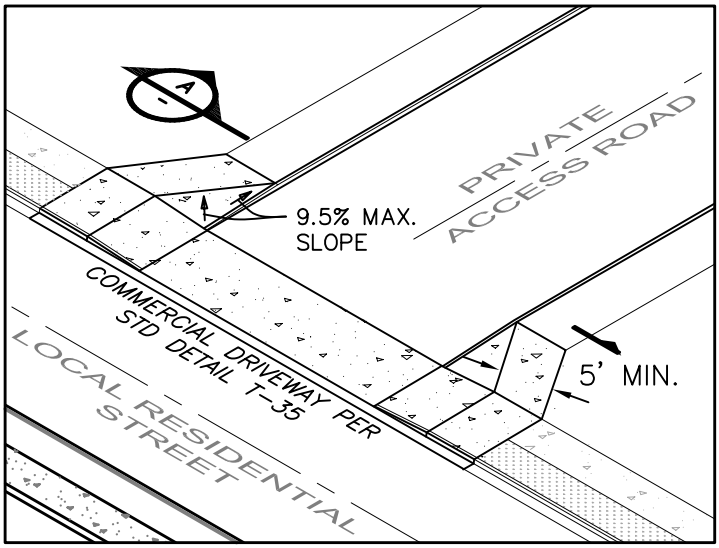
NOTES:

1. CEMENT CONCRETE TRAFFIC CURB & GUTTER SHALL BE IN ACCORDANCE W/ WSDOT STANDARD PLAN F-10.12
2. SIDEWALK SHALL BE PER STD. DETAIL T-13, T-14, OR T-15.

* CURB AND SIDEWALK REQUIRED ON BOTH SIDES OF ACCESS ROAD/DRIVEWAY FOR COMMERCIAL AND INDUSTRIAL USE. CURB AND SIDEWALK REQ'D ON ONE SIDE OF ACCESS ROAD/DRIVEWAY FOR RESIDENTIAL (3 OR MORE UNITS). CURB AND SIDEWALK MAY BE OMITTED WHERE ACCESS ROAD/DRIVEWAY SERVES 2 OR LESS RESIDENTIAL UNITS.



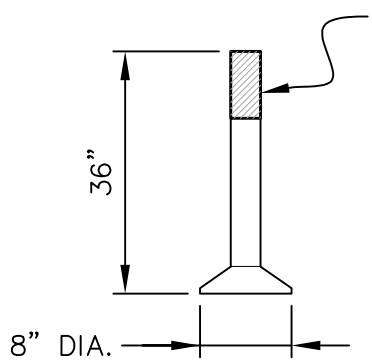
ISOMETRIC
NTS



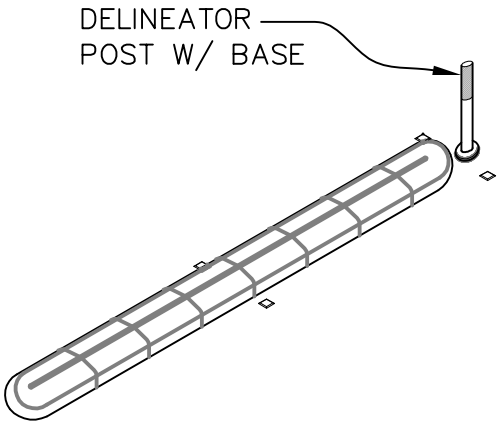
ISOMETRIC
NTS

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 02/09/2023	CITY OF AUBURN WASHINGTON	PRIVATE ACCESS ROAD / SHARED DRIVEWAY
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-31.5

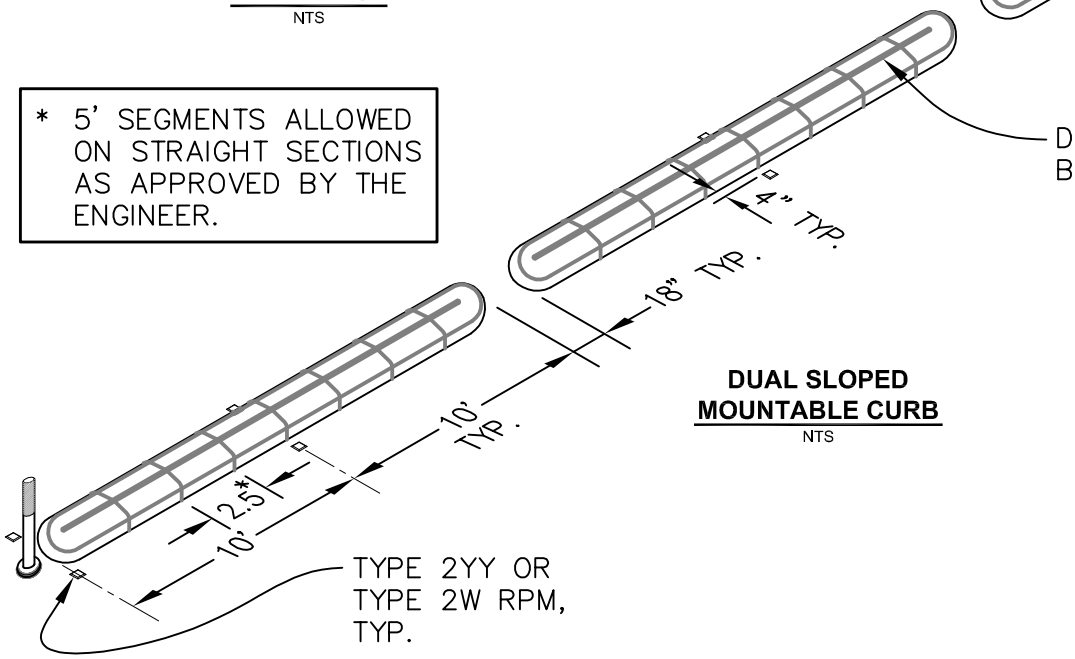
Plotted by: Craig Dobyns on 2/9/2023 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-31.5



DELINEATOR
NTS



* 5' SEGMENTS ALLOWED ON STRAIGHT SECTIONS AS APPROVED BY THE ENGINEER.



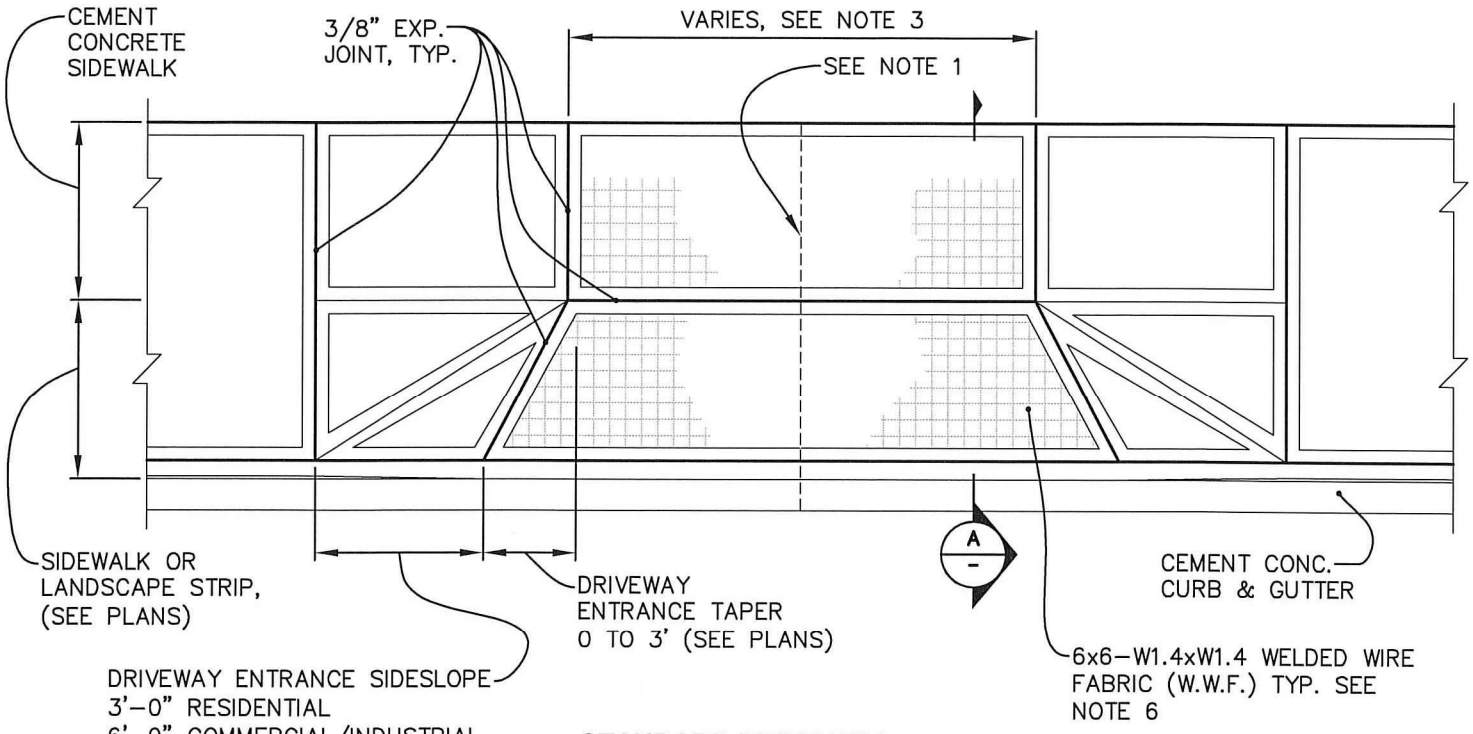
DUAL SLOPED MOUNTABLE CURB
NTS

NOTES:

1. PRECAST CONCRETE DUAL FACED, SLOPED MOUNTABLE CURB SHALL BE PER WSDOT STANDARD PLAN F-10.64, 12" WIDE.
2. CURB SHALL BE INSTALLED USING EPOXY ADHESIVE PER WSDOT STANDARD SPECIFICATION 9-26.2. EPOXY SHALL BE APPLIED AT A RATE OF ONE GALLON PER SEVEN FEET OF CURBING.
3. CURB SHALL BE INSTALLED IN 20' SEGMENTS, WITH 18" OPENING BETWEEN ENDS, OR MODIFIED TO FIT FIELD DIMENSIONS AS APPROVED BY THE ENGINEER.
4. CURB AND DELINEATOR SHALL BE THE SAME COLOR AS THE CHANNELIZATION STRIPE.
5. DELINEATOR BASE SHALL BE AFFIXED TO PAVEMENT WITH FLEXIBLE BITUMINOUS PAVEMENT MARKER ADHESIVE PER WSDOT STANDARD SPECIFICATION 9-02.1(8).
6. RPM'S SHALL BE PLACED AT EACH APPROACH END OF THE CURBING AND CENTERED ON EACH SECTION AS SHOWN. THEY SHALL BE THE SAME COLOR AS THE CHANNELIZATION STRIPE.
7. THIS DETAIL IS USED TO RETRO-FIT EXISTING STREETS. NEW CONSTRUCTION SHALL REQUIRE CAST-IN-PLACE CURBS.

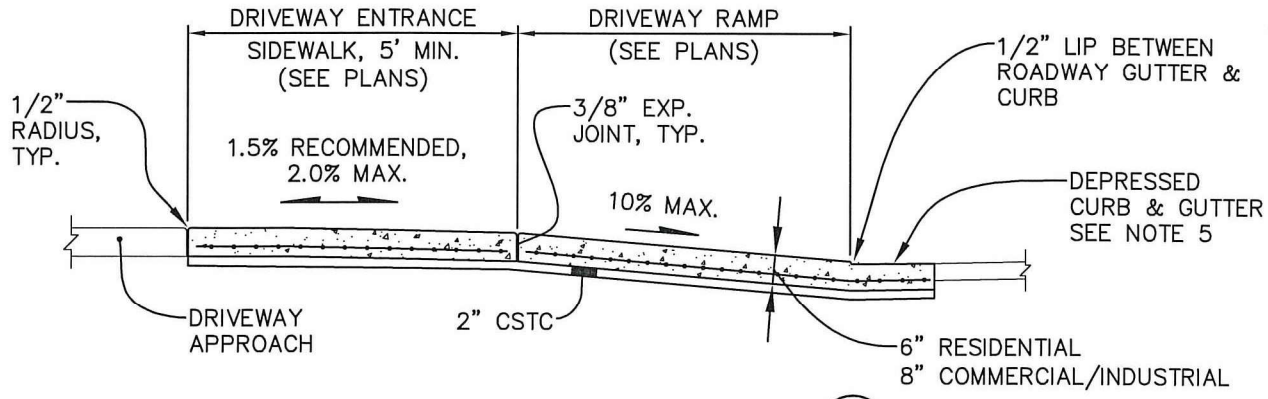
APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	PRECAST CONCRETE DUAL FACED SLOPED MOUNTABLE CURB RETROFIT
Jacob Sweeting	01/05/2021		
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-32.3

Plotted by: Craig Dobyns on 12/30/2020 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-32.3



STANDARD DRIVEWAY

NTS



SECTION A

NTS

NOTES:

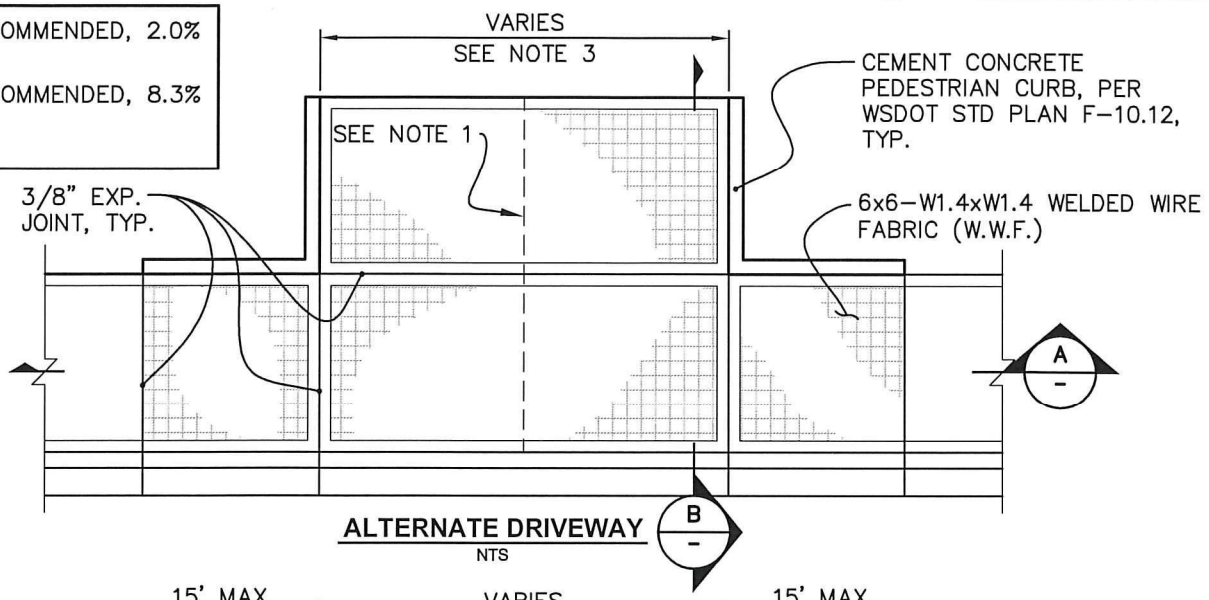
1. WHEN THE DRIVEWAY WIDTH EXCEEDS 15'(FT), CONSTRUCT A FULL DEPTH EXPANSION JOINT WITH 3/8" JOINT FILLER ALONG THE DRIVEWAY CENTERLINE. SEE WSDOT STANDARD PLAN F-30.10. CONSTRUCT EXPANSION JOINTS PARALLEL WITH THE CENTERLINE AS REQUIRED AT 15'(FT) MAXIMUM SPACING WHEN DRIVEWAY WIDTHS EXCEED 30'(FT).
2. RESIDENTIAL DRIVEWAY SERVING 2 OR MORE LIVING UNITS AND/OR THAT CONNECT TO AN ACCESS ROAD SHALL BE CONSTRUCTED AS A COMMERCIAL/INDUSTRIAL DRIVEWAY.
3. SEE STANDARD DETAIL T-04 FOR DRIVEWAY WIDTHS AND LOCATIONS.
4. CONCRETE SHALL BE CLASS 4000 WITH 5% AIR ENTRAINMENT WITH A BROOM FINISH PARALLEL TO CURB LINE.
5. DEPRESSED CURB FOR HEAVY COMMERCIAL/INDUSTRIAL DRIVEWAYS SHALL BE POURED INTEGRAL/MONOLITHIC TO DRIVEWAY.
6. WELDED WIRE FABRIC (W.W.F.) SHALL BE PLACED 3" FROM BOTTOM, AND 2" FROM ALL OTHER LIMITS. WELDED WIRE FABRIC (W.W.F.) NOT REQUIRED FOR RESIDENTIAL DRIVEWAYS.
7. WHEN DRIVEWAY OPENING IS TO BE CONSTRUCTED WHERE CURB EXISTS, THE ENTIRE CURB AND GUTTER SECTION SHALL BE REMOVED TO THE NEAREST EXPANSION JOINT ON EACH SIDE OF THE OPENING AND REPLACED.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	STANDARD DRIVEWAY – OFFSET APRON
	2/23/2018		
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: T-34.1

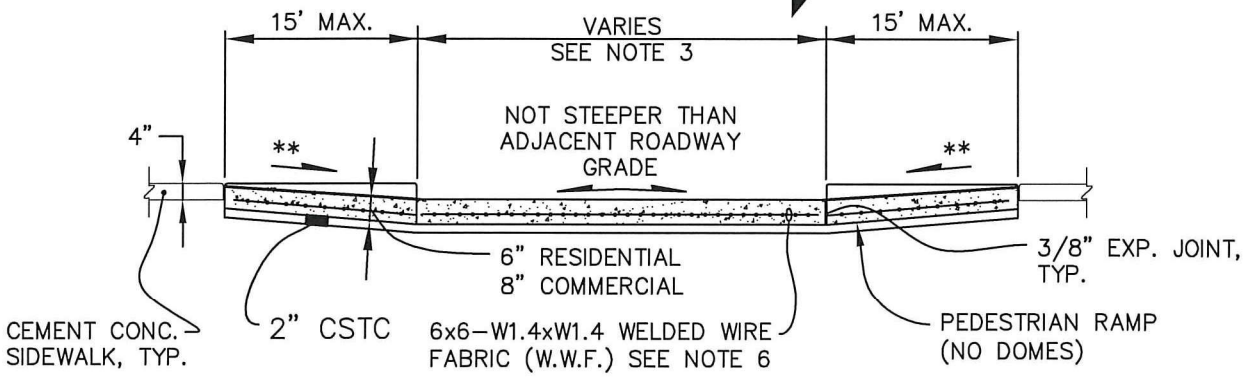
Plotted by: Craig Dobyns on 2/22/2018 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-34.1

* 1.5% RECOMMENDED, 2.0% MAX.

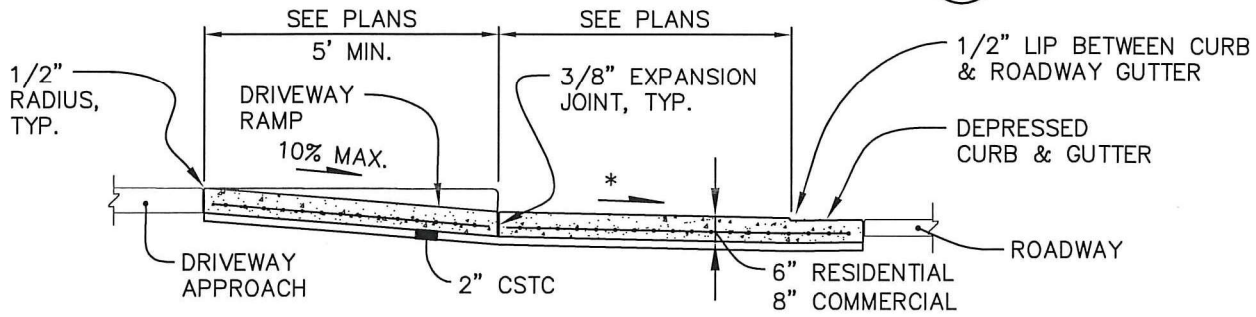
** 7.5% RECOMMENDED, 8.3% MAX.



ALTERNATE DRIVEWAY
NTS



SECTION A
NTS



SECTION B
NTS

NOTES:

1. WHEN THE DRIVEWAY WIDTH EXCEEDS 15'(FT), CONSTRUCT A FULL DEPTH EXPANSION JOINT WITH 3/8" JOINT FILLER ALONG THE DRIVEWAY CENTERLINE. SEE WSDOT STANDARD PLAN F-30.10. CONSTRUCT EXPANSION JOINTS PARALLEL WITH THE CENTERLINE AS REQUIRED AT 15'(FT) MAXIMUM SPACING WHEN DRIVEWAY WIDTHS EXCEED 30'(FT).
2. RESIDENTIAL DRIVEWAY SERVING 2 OR MORE LIVING UNITS AND/OR THAT CONNECT TO AN ACCESS ROAD SHALL BE CONSTRUCTED AS A COMMERCIAL/INDUSTRIAL DRIVEWAY.
3. SEE STANDARD DETAIL T-04 FOR DRIVEWAY WIDTHS AND LOCATIONS.
4. CONCRETE SHALL BE CLASS 4000 WITH 5% AIR ENTRAINMENT WITH A BROOM FINISH PARALLEL TO CURB LINE.
5. DEPRESSED CURB FOR HEAVY COMMERCIAL/INDUSTRIAL DRIVEWAYS SHALL BE POURED INTEGRAL/MONOLITHIC TO DRIVEWAY.
6. WELDED WIRE FABRIC (W.W.F.) SHALL BE PLACED 3" FROM BOTTOM, AND 2" FROM ALL OTHER LIMITS. WELDED WIRE FABRIC (W.W.F.) NOT REQUIRED FOR RESIDENTIAL DRIVEWAYS.
7. WHEN DRIVEWAY OPENING IS TO BE CONSTRUCTED WHERE CURB EXISTS, THE ENTIRE CURB AND GUTTER SECTION SHALL BE REMOVED TO THE NEAREST EXPANSION JOINT ON EACH SIDE OF THE OPENING AND REPLACED.

APPROVED BY CITY ENGINEER:	DATE: 2/23/2018	CITY OF AUBURN WASHINGTON	ALTERNATE DRIVEWAY – INLINE (DROP) APRON
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: T-35.1

Plotted by: Craig Dobyns on 2/23/2018 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-35.1

STREET LIGHTING LAMP SCHEDULE					
STREET CLASSIFICATION	LAMP TYPE	UPDATED SPEC. LEOTEK PART #	WATTAGE	ALTERNATE SPEC. AEL PART #	WATTAGE
PRINCIPAL ARTERIAL	TYPE A	GCL2-80J-MV-40K-3R-GY-295-PCR7-WL	206	ATB2 P601 MVOLT R3 MP NL P7	175
MINOR ARTERIAL	TYPE B	GCM3-60J-MV-40K-2R-GY-185-PCR7-WL	123	ATBO P303 MVOLT R2 MP NL P7	106
MINOR ARTERIAL W/ CENTER TURN LANE OR MEDIAN	TYPE B	GCM3-60J-MV-40K-2R-GY-185-PCR7-WL	123	ATBO P303 MVOLT R2 MP NL P7	106
NON-RESIDENTIAL COLLECTOR	TYPE B	GCM3-60J-MV-40K-2R-GY-185-PCR7-WL	123	ATBO P303 MVOLT R2 MP NL P7	106
RESIDENTIAL COLLECTOR	TYPE D	GCJ3-30J-MV-40K-2R-GY-090-PCR7-WL	64	ATBO P203 MVOLT R2 MP NL P7	70
RESIDENTIAL COLLECTOR WITH CENTER TURN LANE OR MEDIAN	TYPE D	GCJ3-30J-MV-40K-2R-GY-090-PCR7-WL	64	ATBO P203 MVOLT R2 MP NL P7	70
LOCAL NON-RESIDENTIAL	TYPE D	GCJ3-30J-MV-40K-2R-GY-090-PCR7-WL	64	ATBO P203 MVOLT R2 MP NL P7	70
LOCAL RESIDENTIAL AND LOCAL RESIDENTIAL ALTERNATIVE *	TYPE F	GCJ1-30J-MV-40K-2R-GY-055-PCR7-WL	34	ATBMic P104 MVOLT R2 MP NL P7	37

* SEE STD DETAIL T-29 FOR LOCAL RESIDENTIAL ORNAMENTAL OPTION.

NOTE:
SEE SECTION 9-29.10 OF THE SPECIAL PROVISIONS FOR REQUIREMENTS OF BRANDS NOT LISTED IN THIS SCHEDULE

APPROVED BY CITY ENGINEER: Jason Gruening
DATE: 2/7/24

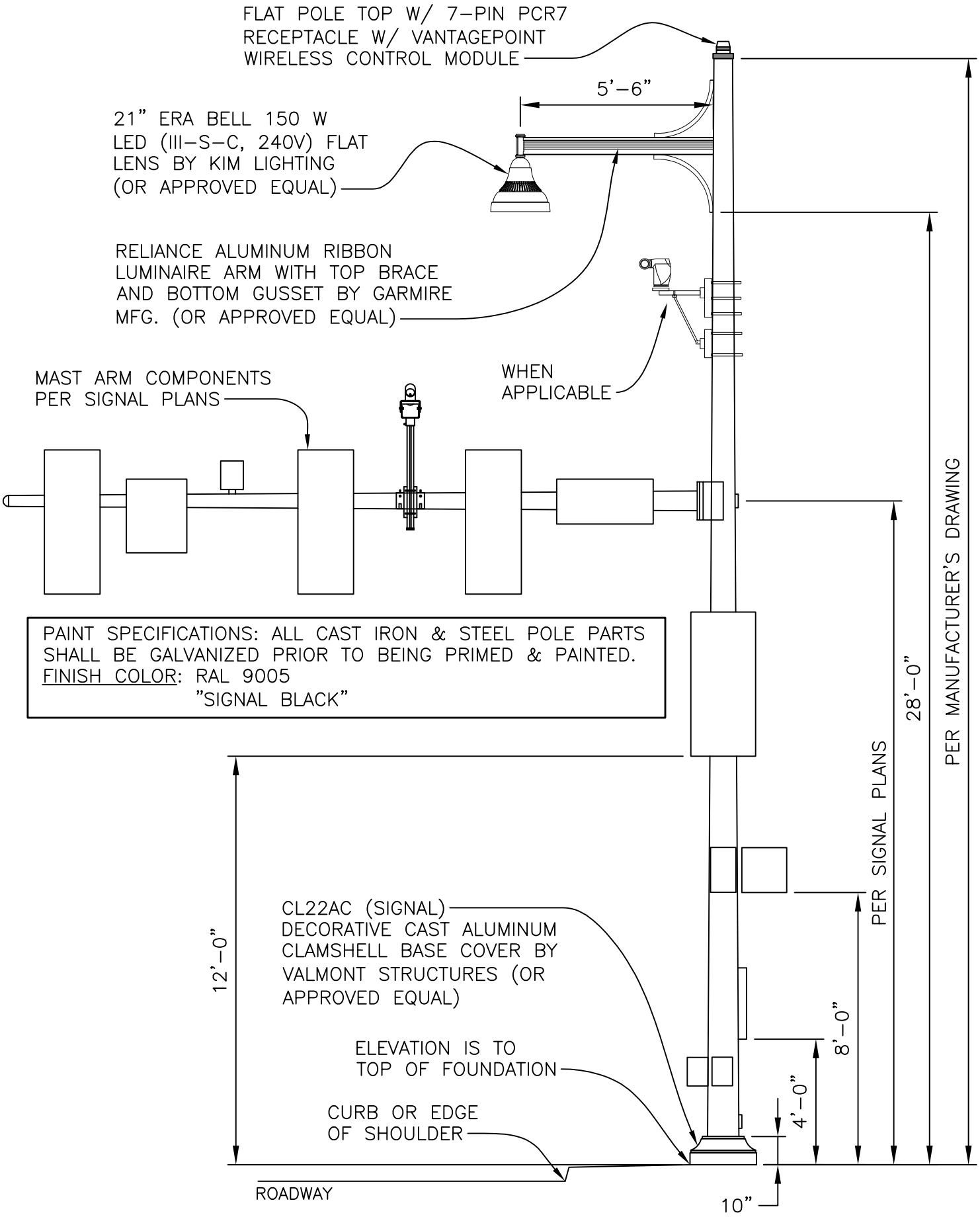
CITY OF AUBURN WASHINGTON

STREET LIGHTING LAMP SCHEDULE

PUBLIC WORKS DEPARTMENT

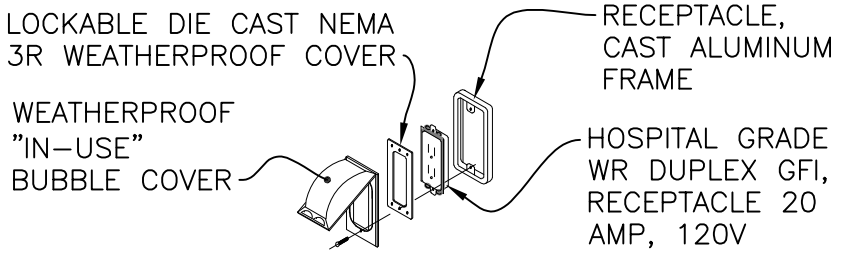
STANDARD DETAIL: T-37.6

Plotted by: Craig Dobyns on 1/10/2024 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-37.6



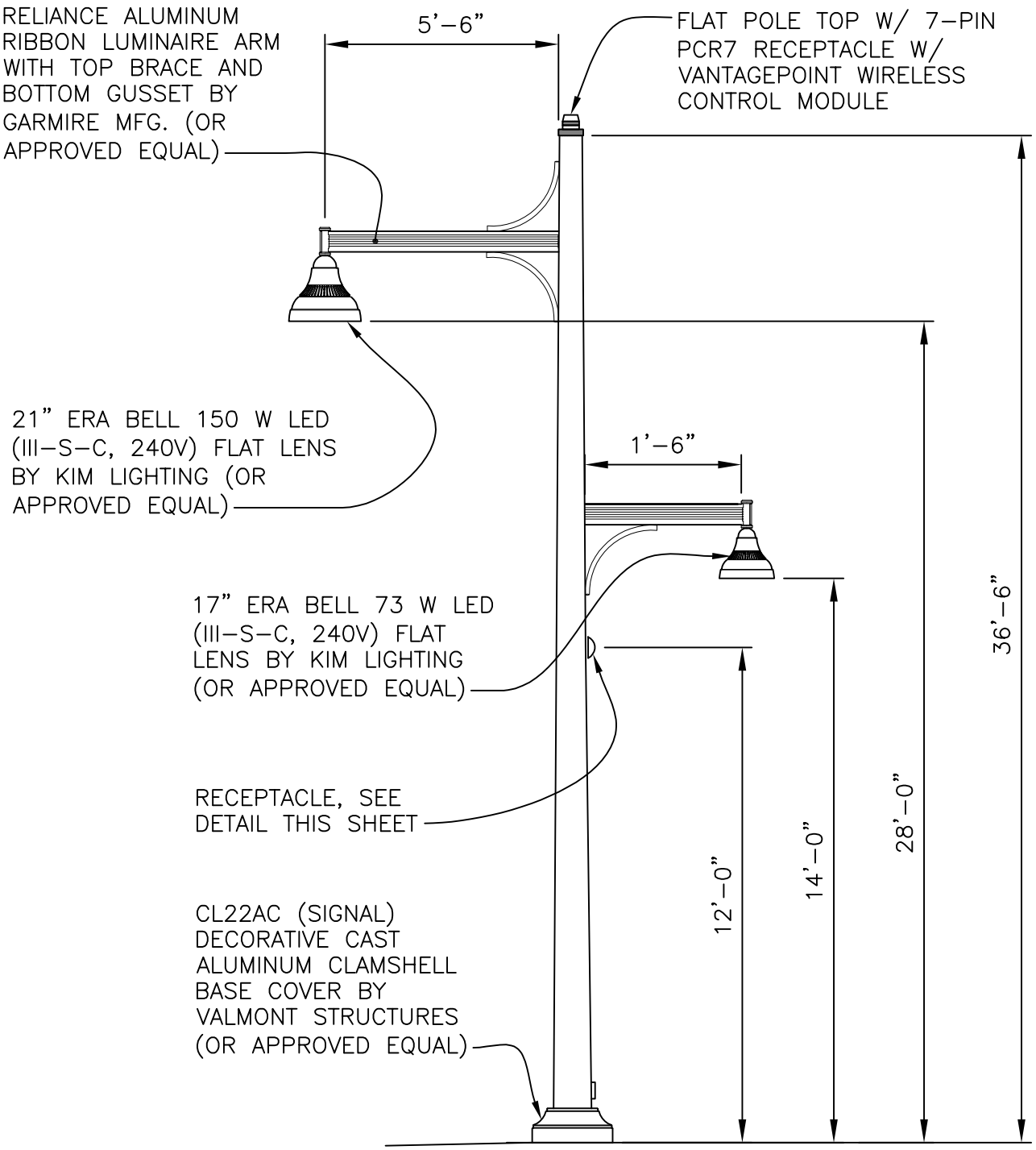
APPROVED BY CITY ENGINEER: Jacob Sweeting DATE: 1/17/2022	CITY OF AUBURN WASHINGTON	DOWNTOWN DECORATIVE TYPE III COMBO LIGHTING & MAST ARM SIGNAL
PUBLIC WORKS DEPARTMENT		STANDARD DETAIL: T-38.3

Plotted by: Craig Dobyns on 1/6/2022 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-38.3



POLE RECEPTACLE
NOT TO SCALE

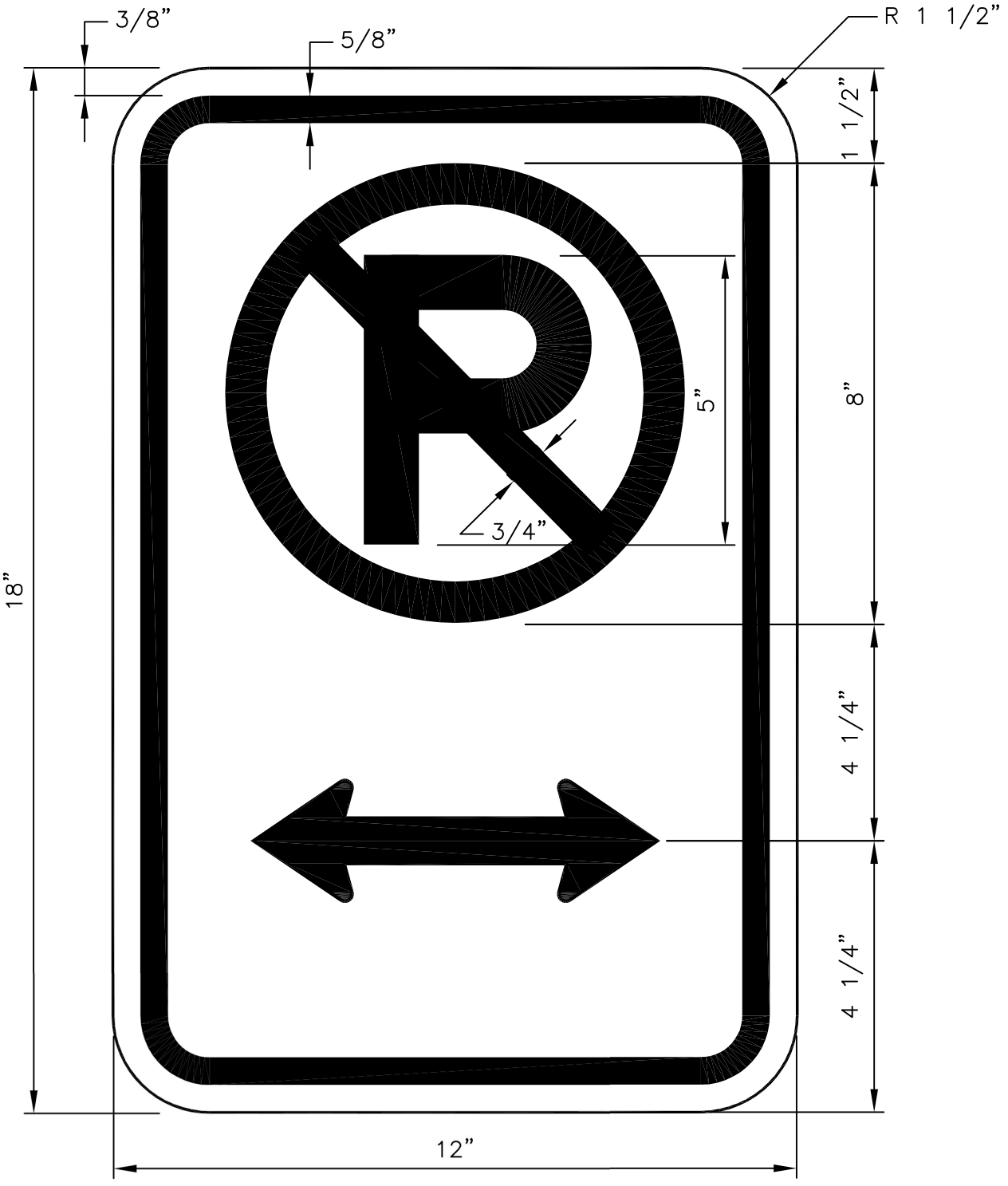
PAINT SPECIFICATIONS: ALL CAST IRON AND STEEL POLE PARTS SHALL BE GALVANIZED PRIOR TO BEING PRIMED AND PAINTED.
FINISH COLOR: RAL 9005 "SIGNAL BLACK"



TALL DECORATIVE POLE
NOT TO SCALE

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 1/17/2022	CITY OF AUBURN WASHINGTON	DOWNTOWN DECORATIVE LIGHT POLE
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-39.3

Plotted by: Craig Dobyns on 1/6/2022 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-39.3

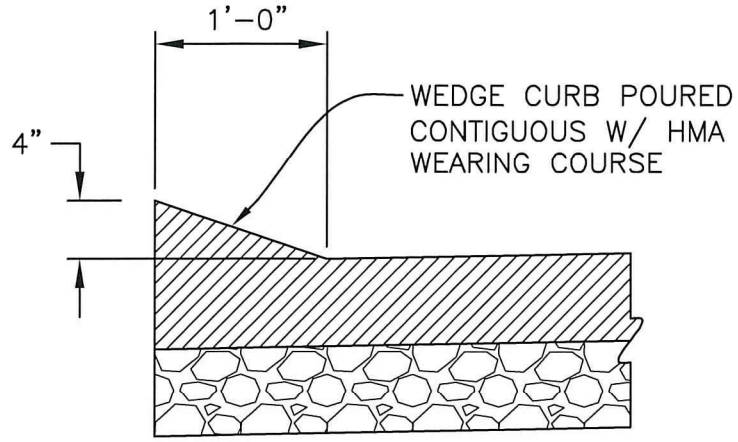


COLORS:		
LEGEND, CIRCLE, DIAGONAL, BORDER, & ARROW*	–	RED (RETROREFLECTIVE)
SYMBOL	–	BLACK
BACKGROUND	–	WHITE (RETROREFLECTIVE)

* USE SINGLE ARROW LEFT OR RIGHT AS APPROPRIATE

APPROVED BY CITY ENGINEER:	DATE:		"NO PARKING" SIGN
Jacob Sweeting	01/05/2021	CITY OF AUBURN WASHINGTON	
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T–40.2

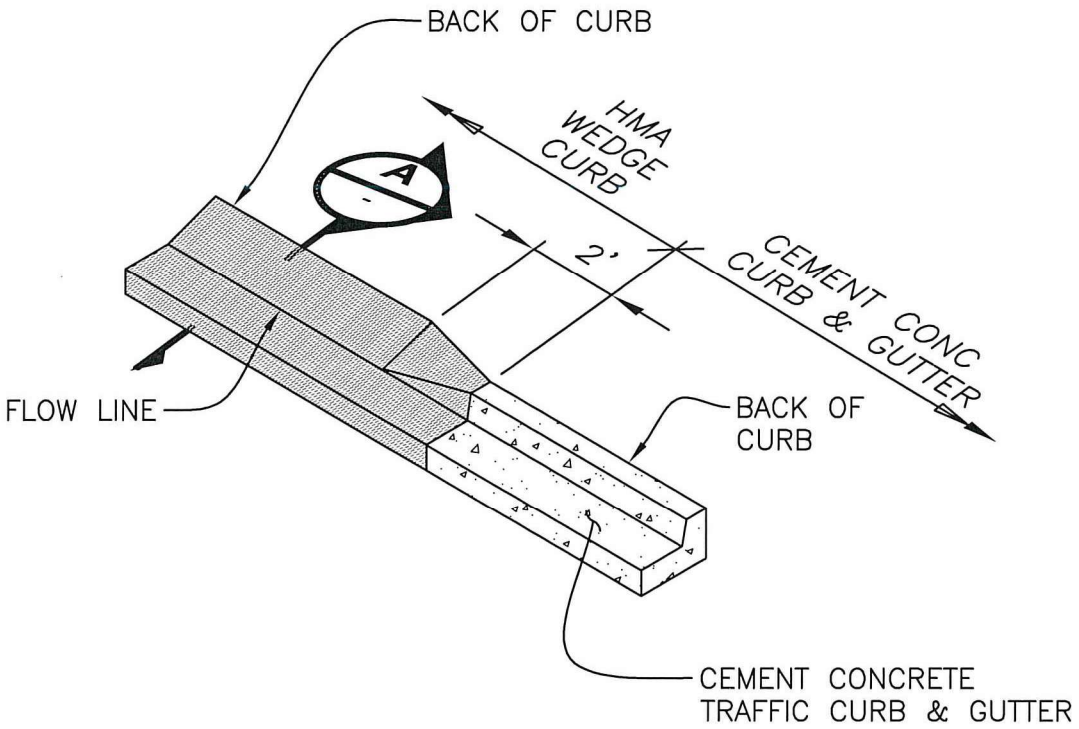
Plotted by: Craig Dobyns on 12/31/2020 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-40.2



ASPHALT WEDGE CURB

NTS

A
-



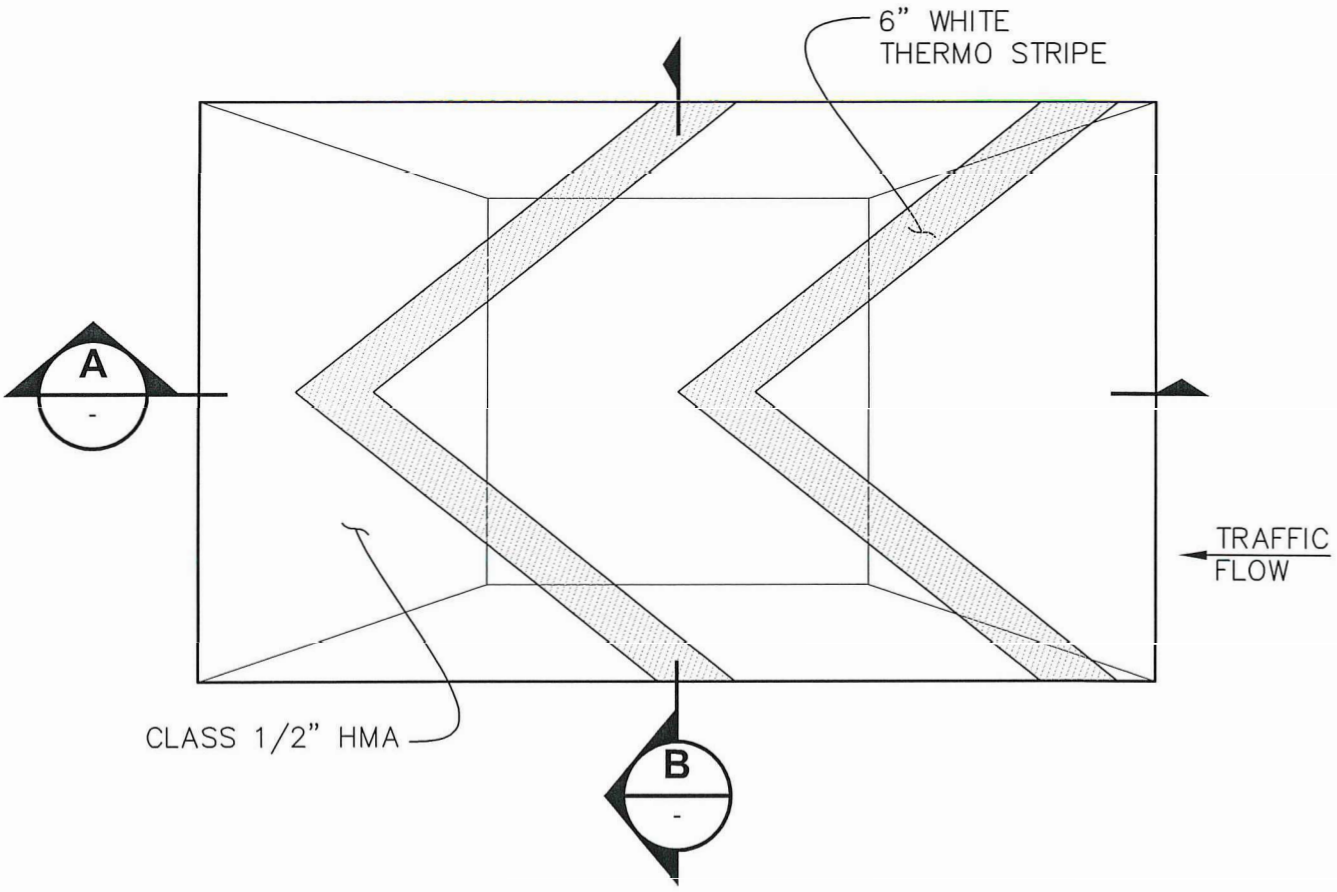
CONCRETE TRAFFIC CURB & GUTTER TO HMA WEDGE CURB TRANSITION

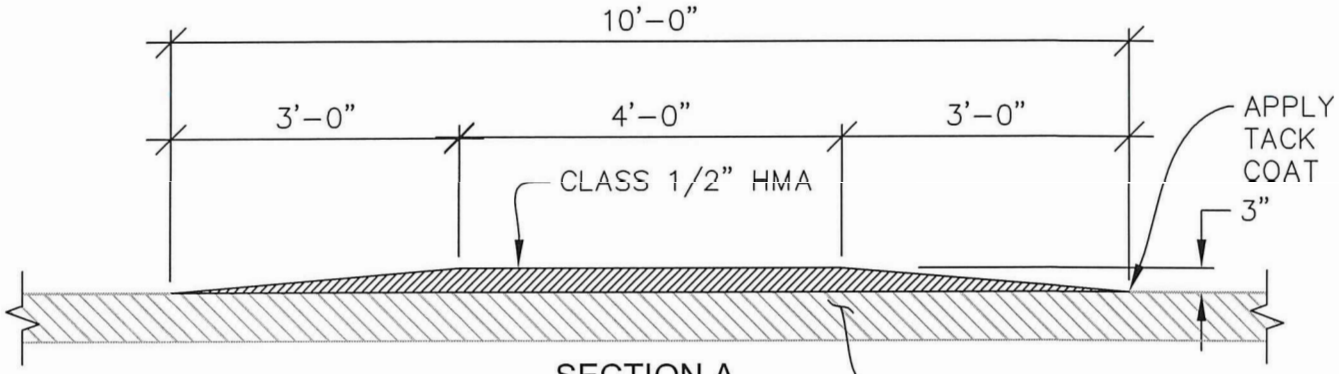
NTS

B
-

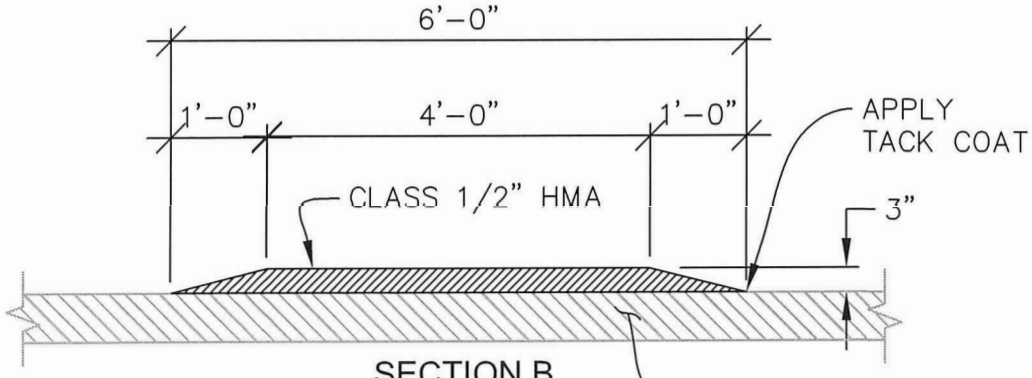
APPROVED BY CITY ENGINEER: David Greening	DATE: 12/31/18	CITY OF AUBURN WASHINGTON	CONCRETE TRAFFIC CURB & GUTTER TO HMA WEDGE CURB TRANSITION
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-41.1

Plotted by: Craig Dobyns on 12/31/2018 File location: W:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-41.1



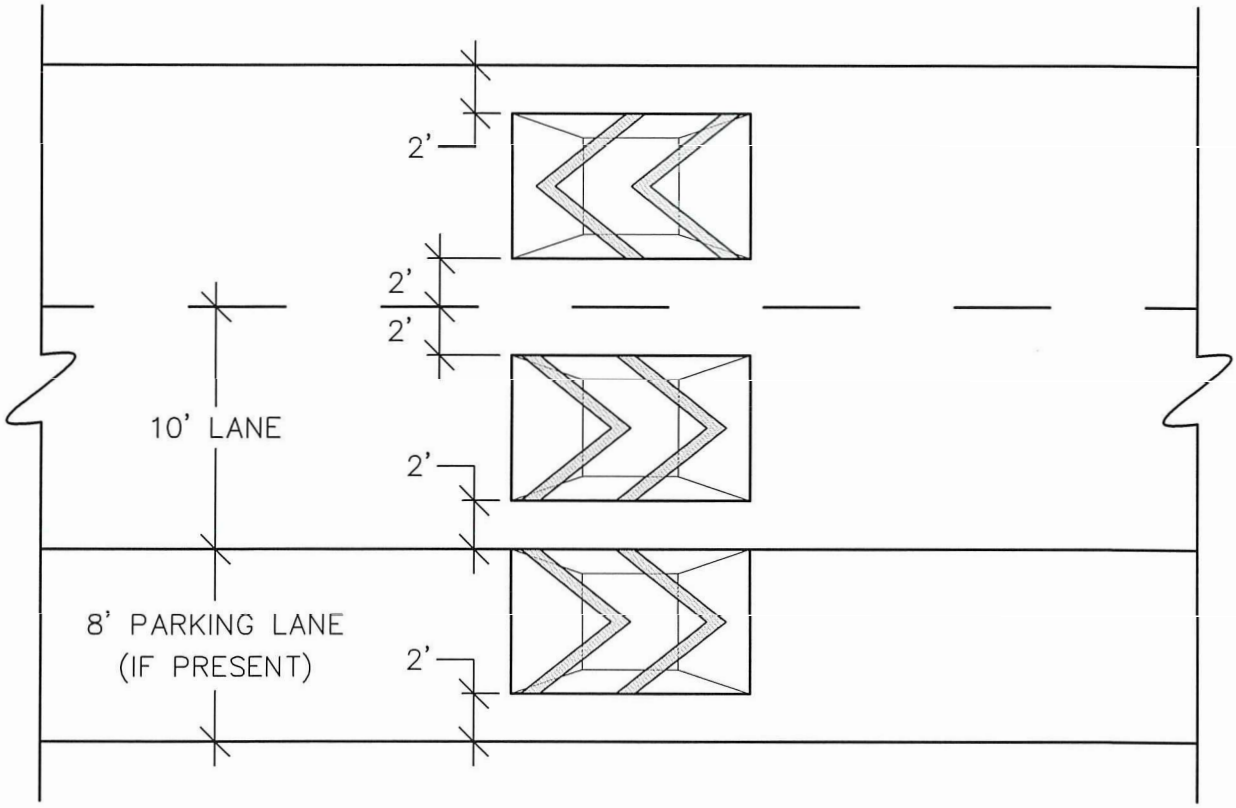


SECTION A
SCALE: 6" = 1'-0"



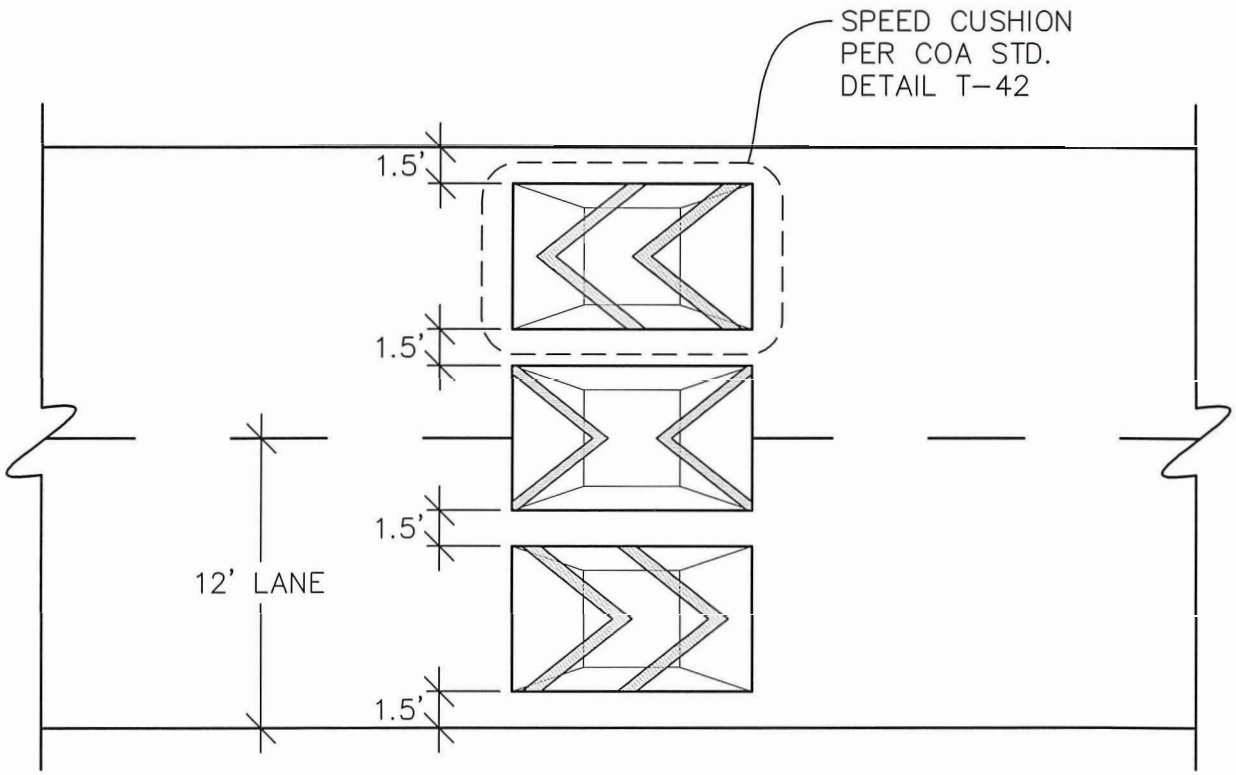
SECTION B
SCALE: 6" = 1'-0"

APPROVED BY CITY ENGINEER: Jacob Sheeley DATE: 12/16/19	CITY OF AUBURN WASHINGTON	SPEED CUSHION DETAIL
PUBLIC WORKS DEPARTMENT		STANDARD DETAIL: T-42.1



28' ROADWAY

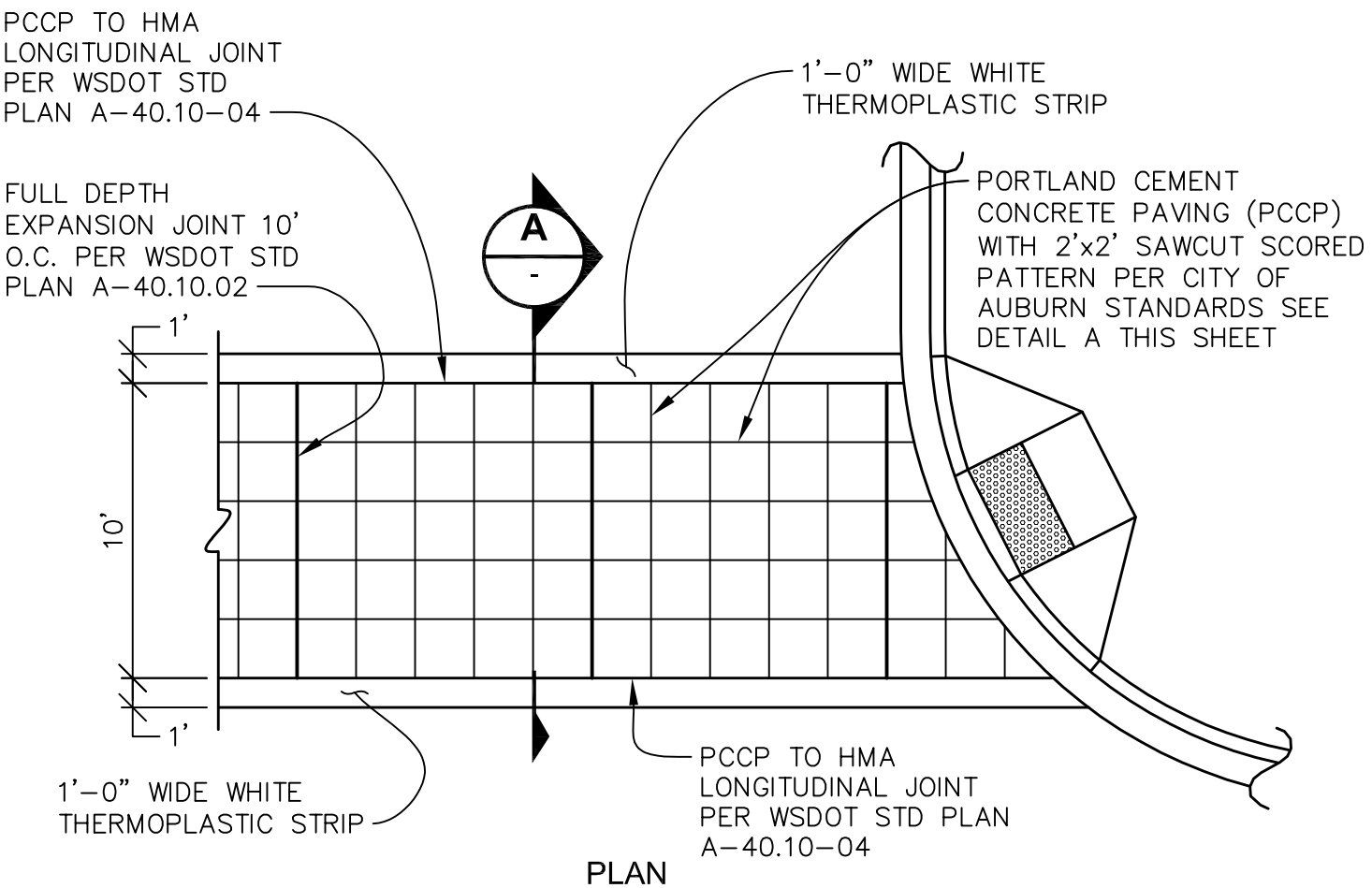
SCALE: 6" = 1'-0"



24' ROADWAY

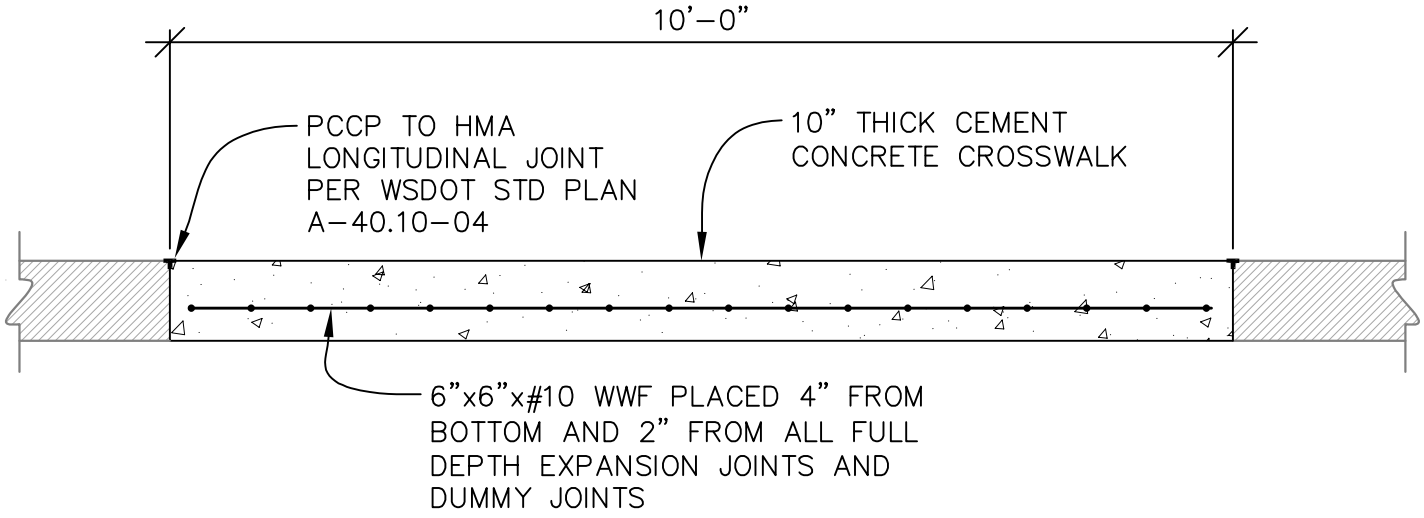
SCALE: 6" = 1'-0"

APPROVED BY CITY ENGINEER: Jacob Sreeling DATE: 12/26/19	CITY OF AUBURN WASHINGTON	SPEED CUSHION PLAN
PUBLIC WORKS DEPARTMENT		STANDARD DETAIL: T-42A.1



PLAN

SCALE: 6" = 1'-0"

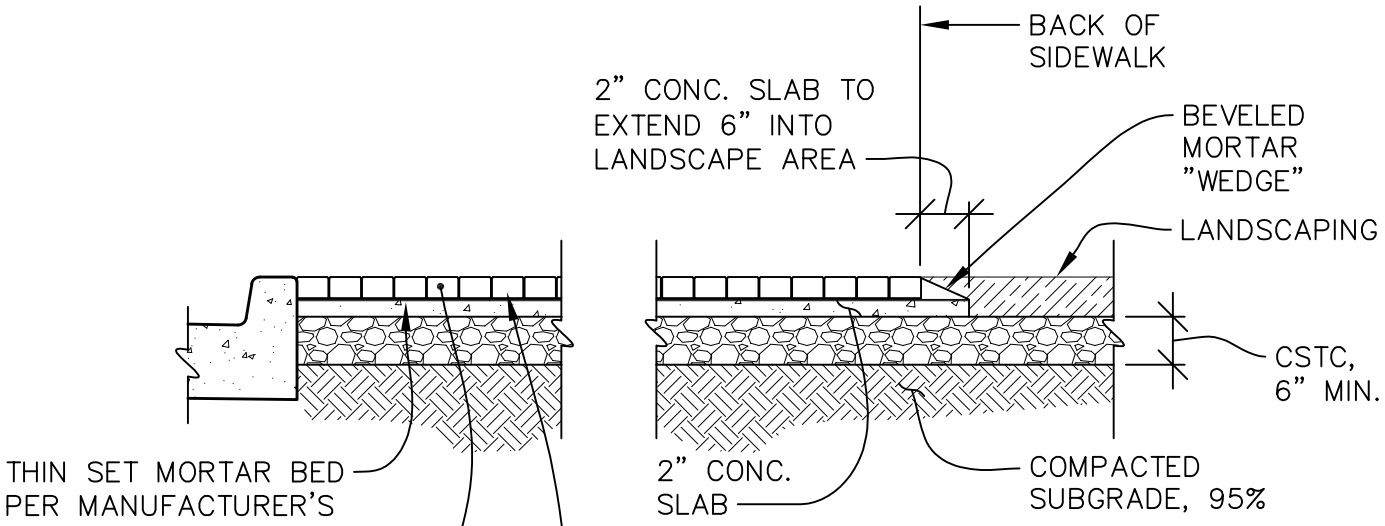


SECTION A

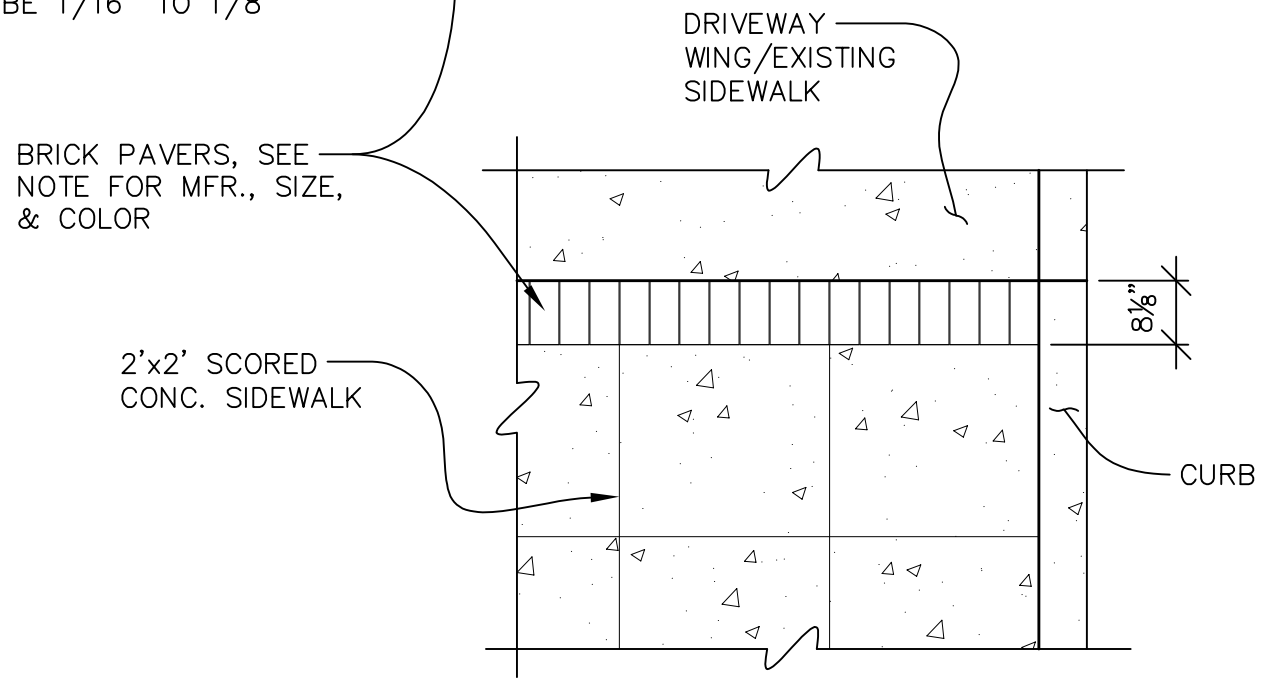
SCALE: 6" = 1'-0"

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 1/17/2022	CITY OF AUBURN WASHINGTON	DOWNTOWN PEDESTRIAN CROSSWALK
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-43.2

Plotted by: Craig Dobyns on 1/6/2022 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-43.2



SECTION
NTS

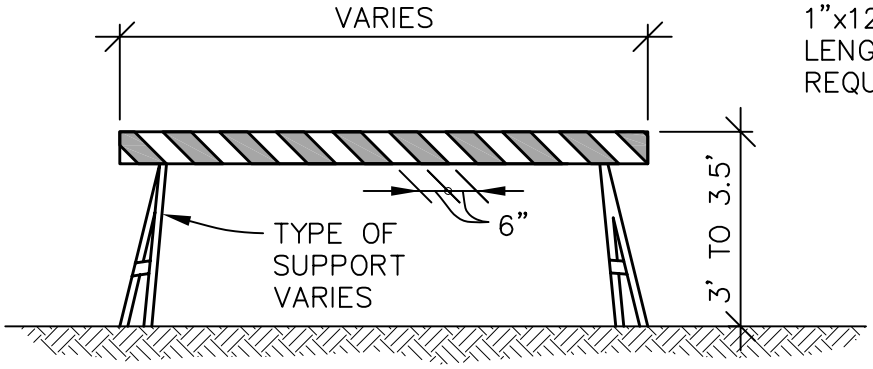


PLAN
NTS

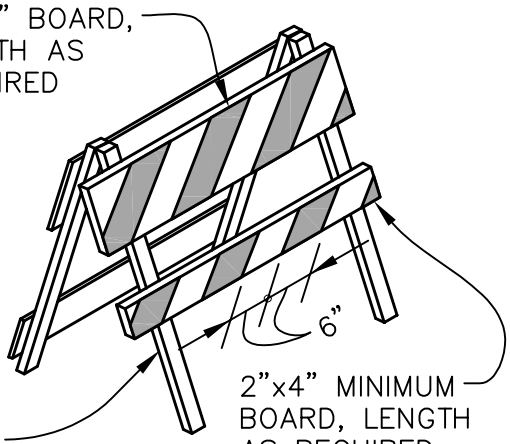
NOTE:
BRICKS TO BE MORTAR SET, ONE ROW STACK PATTERN, HOLLAND 6CM PAVERS BY MUTUAL MATERIALS.
COLOR: RED RUSTIC BLEND
SIZE: 2⅜"x7⅞"x3^{15}⁄$_{16}$" (60x200x100 mm)

APPROVED BY CITY ENGINEER:	DATE:		
Jacob Sweeting	02/09/2023	CITY OF AUBURN WASHINGTON	DOWNTOWN BRICK PAVER BAND
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-44.3

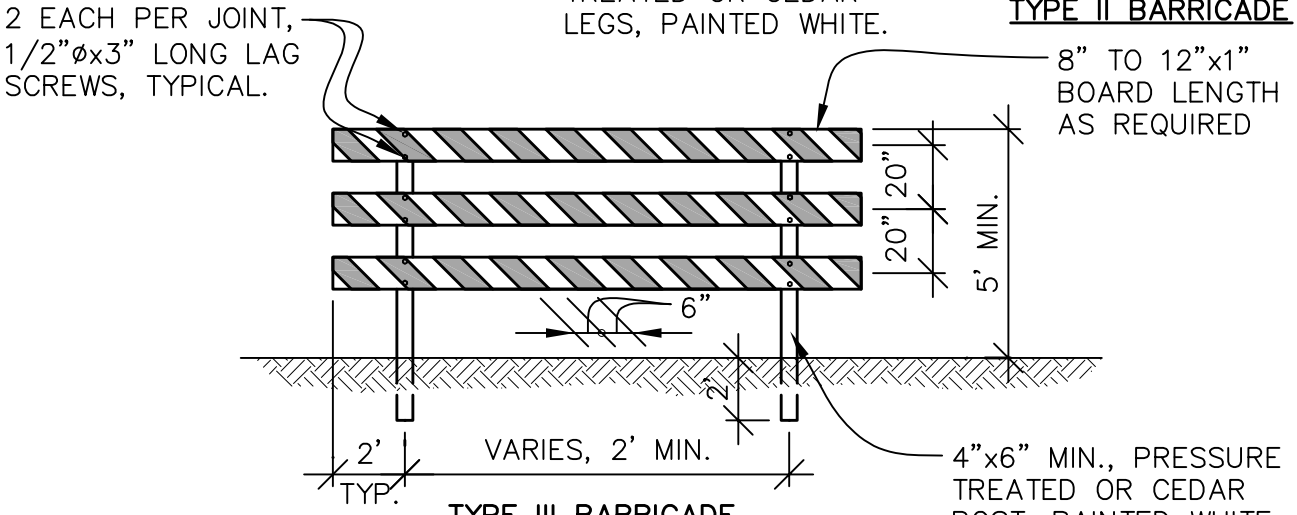
Plotted by: Craig Dobyns on 2/6/2023 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-44.3



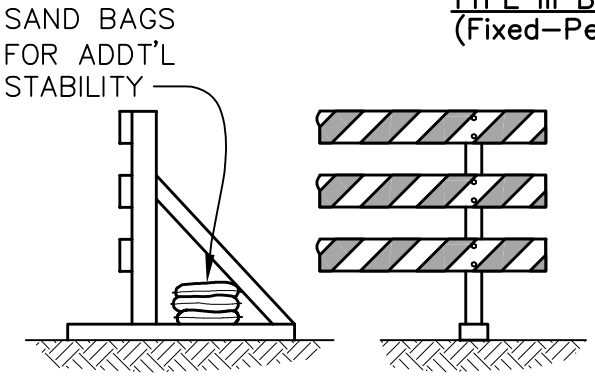
TYPE I BARRICADE



TYPE II BARRICADE



TYPE III BARRICADE
(Fixed–Permanent)



TYPE III BARRICADE
(Movable–Temporary)

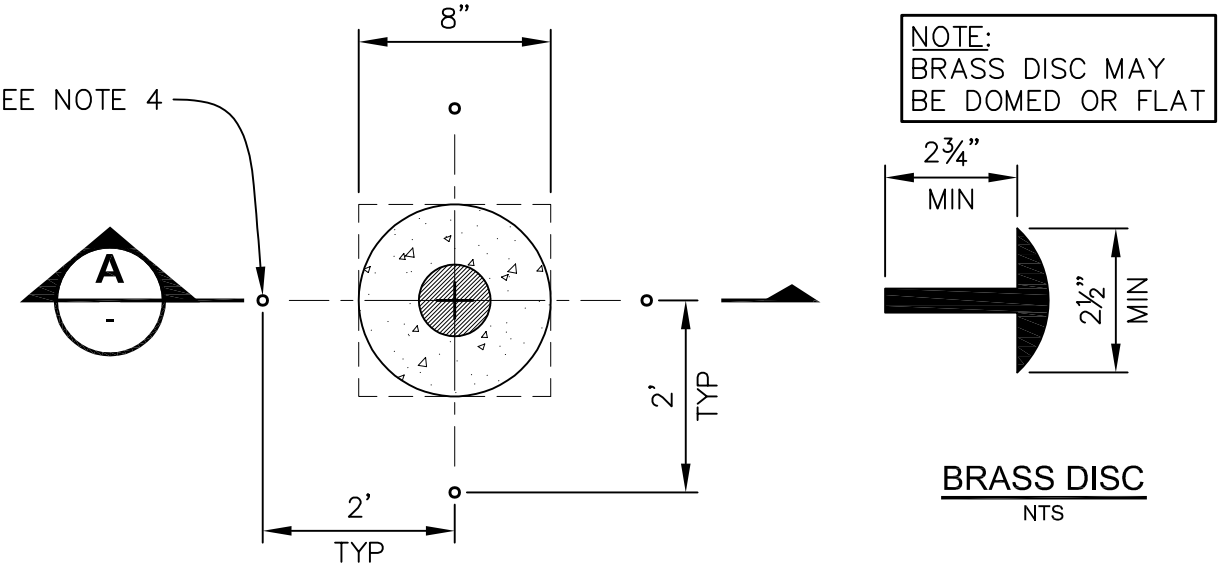
BARRICADE DIMENSIONS			
TYPE	I	II	III
RAIL WIDTH	8" MIN. 12" MAX.	8" MIN. 12" MAX.	8" MIN. 12" MAX.
RAIL LENGTH	2' MIN.	2' MIN.	4' MIN.
RAIL HEIGHT	3' MIN.	3' MIN.	5' MIN.
FRAME TYPE	DEMOUNTABLE OR HEAVY "A"	LIGHT "A" FRAME	POST OR SKIDS
APPLICATION	MOVEABLE	PORTABLE	MOVEABLE OR PERMANENT

NOTES:

1. TEMPORARY BARRICADE SHALL HAVE ORANGE AND WHITE STRIPE, PERMANENT BARRICADE SHALL HAVE RED AND WHITE REFLECTORIZED PAINT.
2. STRIPES SHALL BE SLANTED DOWNWARD AT 45° ANGLE AND IN THE DIRECTION OF THE SIDE TO PASS. THEY WILL BE SLANTED IN BOTH DIRECTIONS FROM THE MIDDLE IF TRAFFIC PASSES AROUND BOTH ENDS.
3. STRIPE WIDTH SHALL BE 6", 4" IF RAILS ARE LESS THAN 3' LONG.
4. SEE TABLE FOR BARRICADE DIMENSIONS.
5. FABRICATION PER MUTCD SECTION 6C.

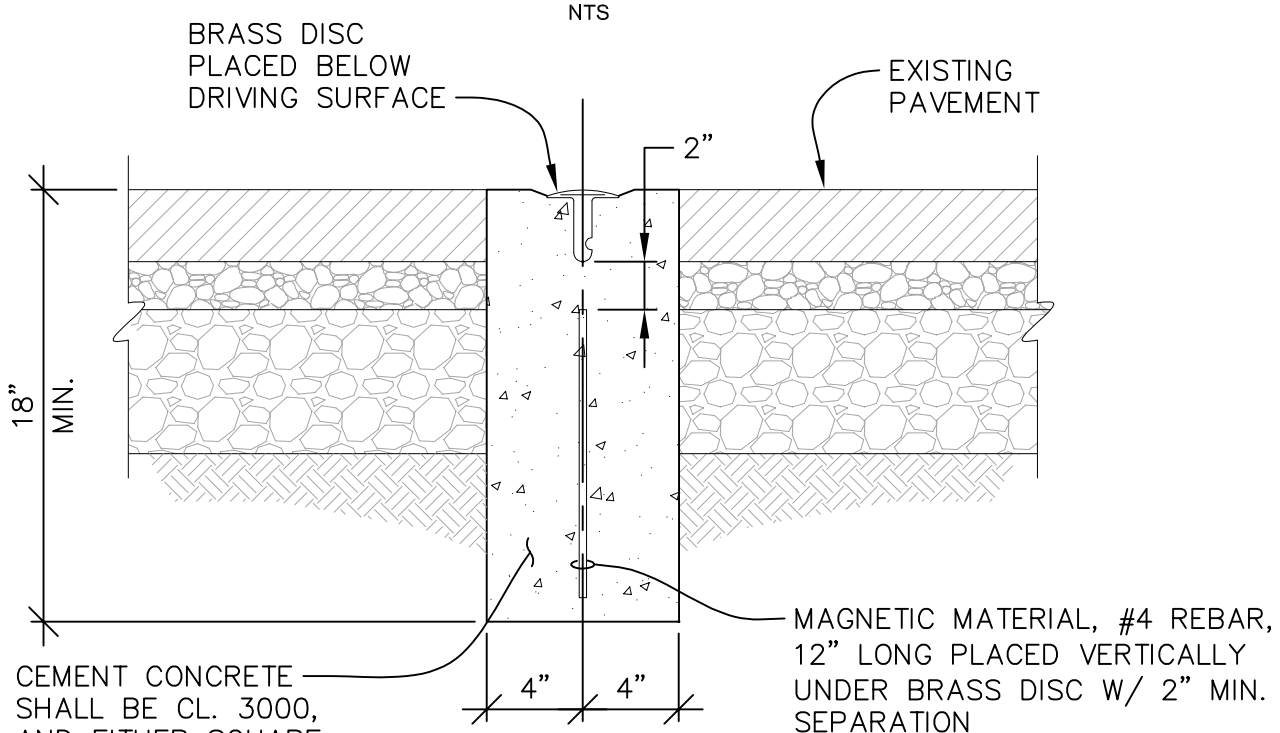
APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 1/17/2022	CITY OF AUBURN WASHINGTON	TYPICAL TRAFFIC BARRICADES
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T–45.2

Plotted by: Craig Dobyns on 1/6/2022 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-45.2



PLAN
NTS

BRASS DISC
NTS



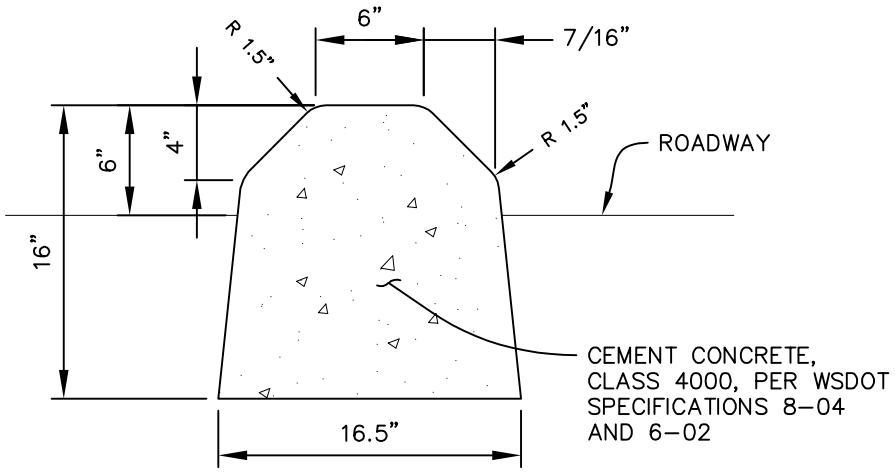
SECTION A
NTS

NOTES:

1. THIS TYPE MAY BE USED ON ALL CITY STREETS EXCEPT FOR SR–164 WHERE MONUMENT SHALL BE INSTALLED PER WSDOT STANDARD PLAN A–10.30–00.
2. BRASS DISC SHALL BE MARKED BY AN "X" AT THE INTERSECT LOCATION AND MARKED PER RCW 58.09.120.
3. THE REQUIREMENTS OF WAC 332–120 SHALL BE MET PRIOR TO AND FOR THE REMOVAL OR DESTRUCTION OF A SURVEY MONUMENT.
4. PK NAIL STRADDLES WHICH ARE A STRAIGHT LINE INTERSECTION OF MONUMENT INTERSECT LOCATION.

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 02/09/2023	CITY OF AUBURN WASHINGTON	POURED IN PLACE MONUMENT TYPE A MODIFIED
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T–46.3

Plotted by: Craig Dobyns on 2/8/2023 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-46.3

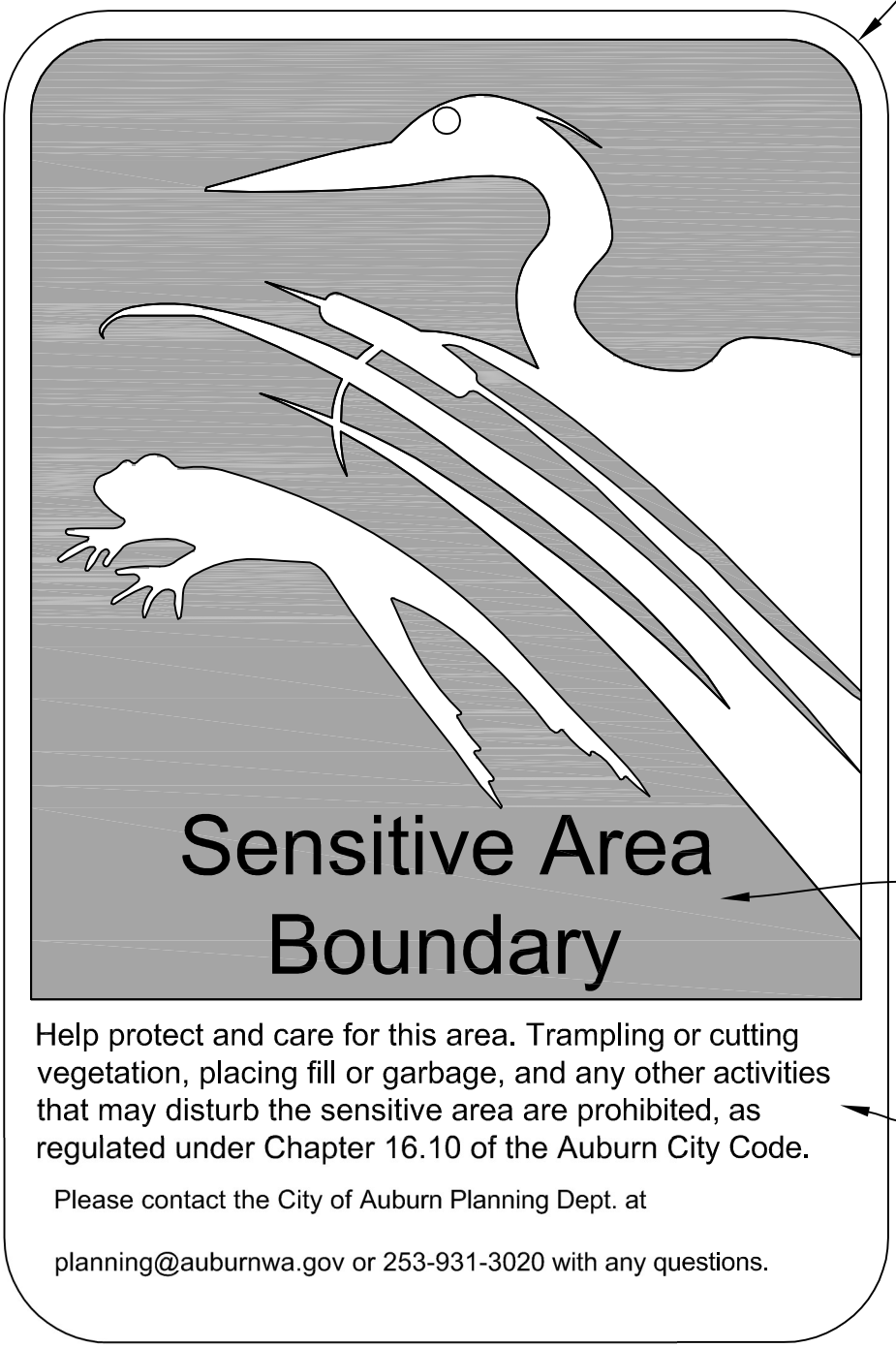


CAST-IN-PLACE DUAL-FACED MOUNTABLE CEMENT CONCRETE TRAFFIC CURB

NTS

APPROVED BY CITY ENGINEER:	DATE:		CAST-IN-PLACE DUAL MOUNTABLE CEMENT CONCRETE TRAFFIC CURB
Jacob Sweeting	01/05/2021	CITY OF AUBURN WASHINGTON	
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-47.1

Plotted by: Craig Dobyns on 12/10/2020 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-47.1



SIGN FACE IS DIGITALLY PRINTED TEAL C:100 M:0 Y:30 K:6 AND BLACK C:100 M:100 Y:100 K:100 ON 3 MIL. CALANDERED WHITE VINYL THEN LAMINATED WITH A 2.5 MIL. LAMINATE. THIS SIGN FACE IS THEN MOUNTED TO .080" THICK 5052 H38 ANODIZED ALUMINUM.

CITY OF AUBURN
SENSITIVE AREA SIGN
COMMERCIAL AQUATIC

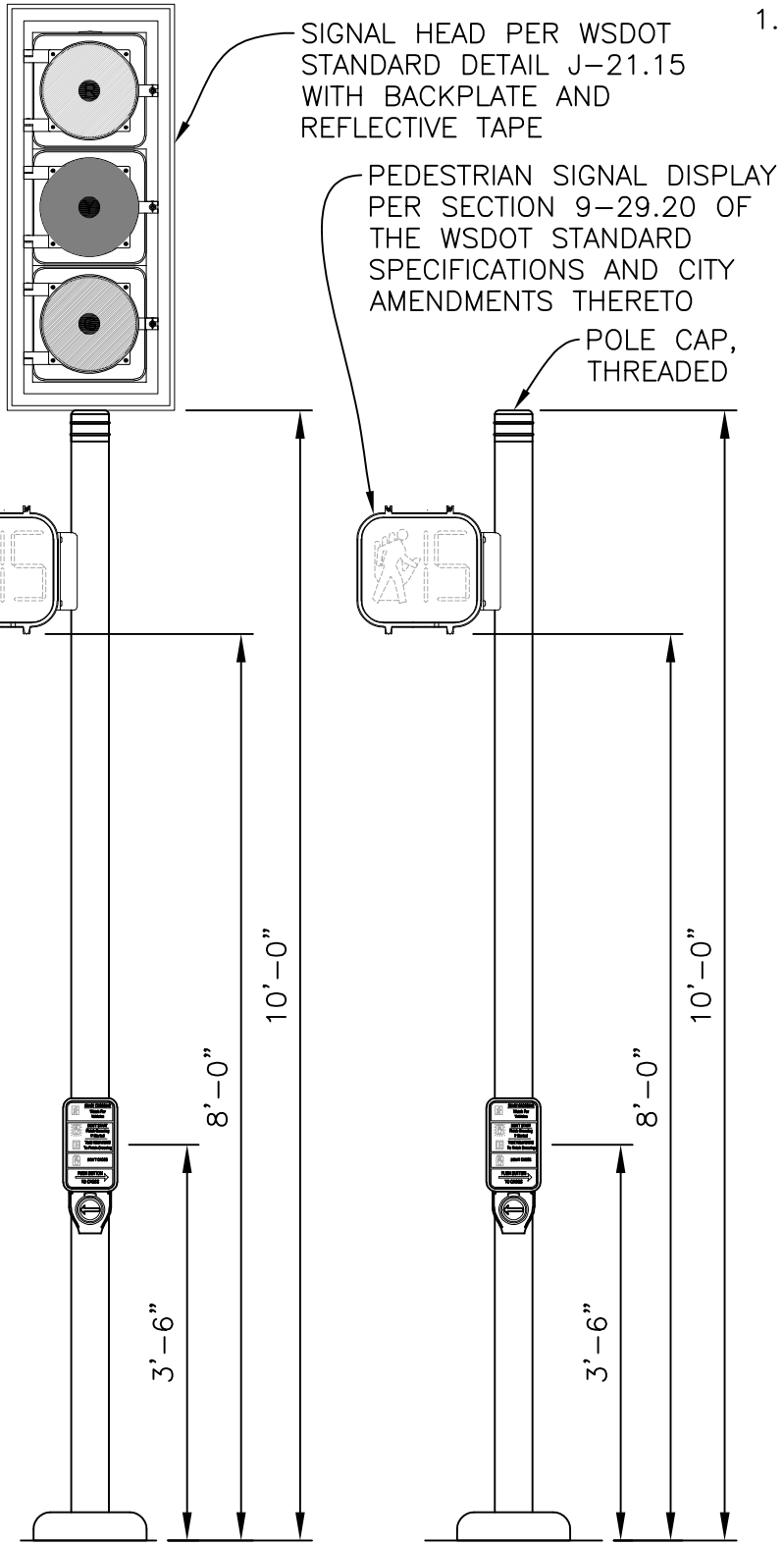
NTS

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 01/05/2021	CITY OF AUBURN WASHINGTON	SENSITIVE AREA SIGN COMMERCIAL AQUATIC
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-48.1

Plotted by: Craig Dobyns on 12/16/2020 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-48.1

NOTES:

1. ALL CAST IRON AND STEEL POLE PARTS SHALL BE GALVANIZED PRIOR TO BEING PRIMED AND PAINTED. FINISH COLOR: RAL 9005 "SIGNAL BLACK".



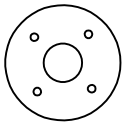
DECORATIVE TYPE 1 PPB ASSEMBLY (WITH SIGNAL HEAD)
NOT TO SCALE

DECORATIVE TYPE 1 ASSEMBLY
NOT TO SCALE

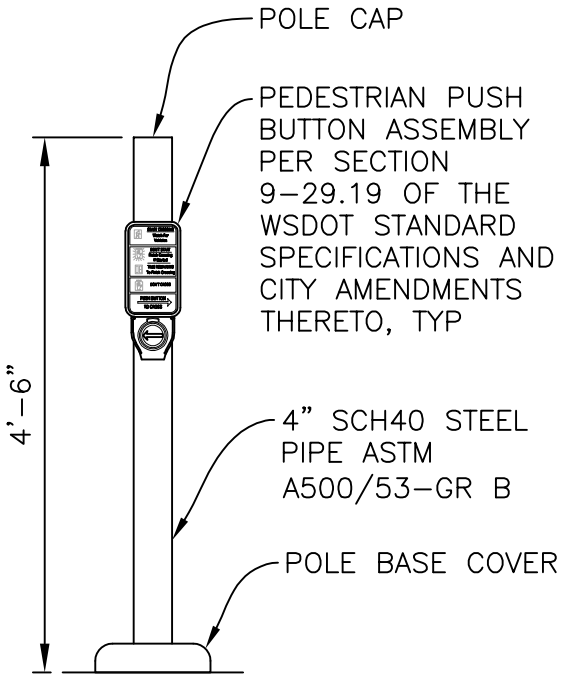
KIM PARTS:
POLE CAP: 17095-1-BL-P
OR APPROVED EQUIVALENT

BASE COVER: BC4RABL OR APPROVED EQUIVALENT

PLATE SIZE: 1/2" ASTM A-36
BASE PLATE: 11-1/4" O.D ROUND
BOLT CIRCLE: 7"
BOLT HOLES: 3/4"



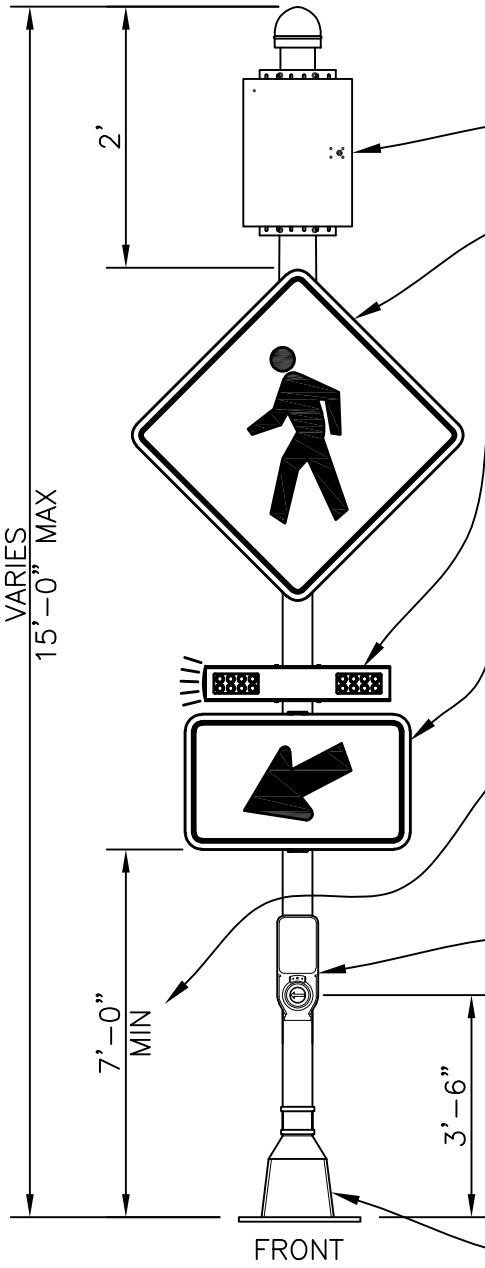
BASE PLATE
NOT TO SCALE



DECORATIVE TYPE 1 PPB POST
NOT TO SCALE

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 1/17/2022	CITY OF AUBURN WASHINGTON	DOWNTOWN PEDESTRIAN PUSH BUTTON STANDARDS
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-49.1

Plotted by: Craig Dobyns on 1/6/2022 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-49.1



RRFB CONTROL BOX (WHEN SHOWN ON PLANS)

TWO SIGNS MOUNTED BACK TO BACK

TWO RRFB LIGHT BARS W/ PEDESTRIAN CONFIRMATION LIGHT MOUNTED BACK TO BACK (SEE STD DTL T-50b, NOTE 3)

W16-7PL AND W16-7PR 12"x24" TWO SIGNS MOUNTED BACK TO BACK, (ARROW SHALL POINT TO CROSSWALK)

HEIGHT SHALL BE SUCH THAT BEACON VISIBILITY TO VEHICLES IS NOT BLOCKED BY SIGNAGE OR OTHER ROADSIDE FEATURES

APS PUSHBUTTON ASSEMBLY TACTILE ARROW ON BUTTON SHALL POINT TO CROSSWALK, LOCATION TO BE COORDINATED IN THE FIELD WITH ENGINEER

PELCO OR EQUIV. BREAKAWAY BASE (SEE STD DTL T-50b, NOTE 4)

RRFB ASSEMBLY

N.T.S.



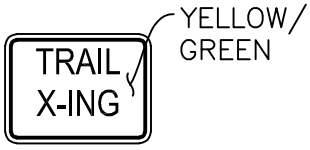
R1-5B
(ONLY AT MULTI-LANE CROSSINGS WHERE STOP BARS ARE INSTALLED)

NOTE:
CROSSINGS AT MID-BLOCK/NON-INTERSECTION LOCATIONS SHALL INCLUDE THERMOPLASTIC STOP BARS.



W11-15 (30"x30")
or
(36"x36")

(TRAIL CROSSINGS)



W11-15P (24"x18")

(WHERE CONNECTING TRAIL IS NOT ALIGNED ALONG ROADWAY)



S1-1
(30"x30")
or
(36"x36")

(SCHOOL CROSSINGS)



W11-2
(30"x30")
or
(36"x36")

(STANDARD CROSSINGS)

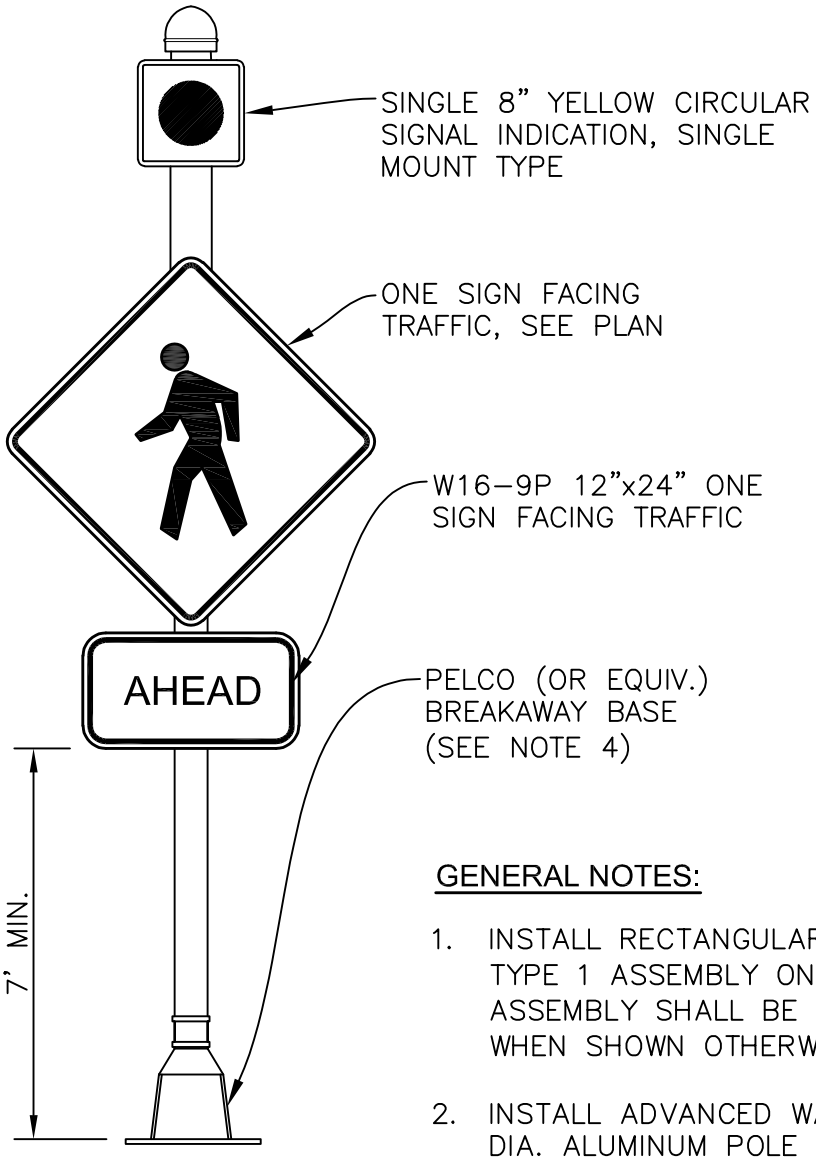
SIGN TYPE AND SIZE AS NOTED IN THE PLANS

SIGNING OPTIONS

N.T.S.

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 02/09/2023	CITY OF AUBURN WASHINGTON	RRFB AND ADVANCED WARNING ASSEMBLY DETAILS
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-50a.1

Plotted by: Craig Dobyns on 2/8/2023 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-50a.1



FRONT

ADVANCE WARNING BEACON ASSEMBLY

N.T.S.

GENERAL NOTES:

1. INSTALL RECTANGULAR RAPID FLASHING BEACON (RRFB) TYPE 1 ASSEMBLY ON 4" DIA. ALUMINUM POLE. RRFB ASSEMBLY SHALL BE INSTALLED ON EACH SIDE (EXCEPT WHEN SHOWN OTHERWISE ON THE PLANS).

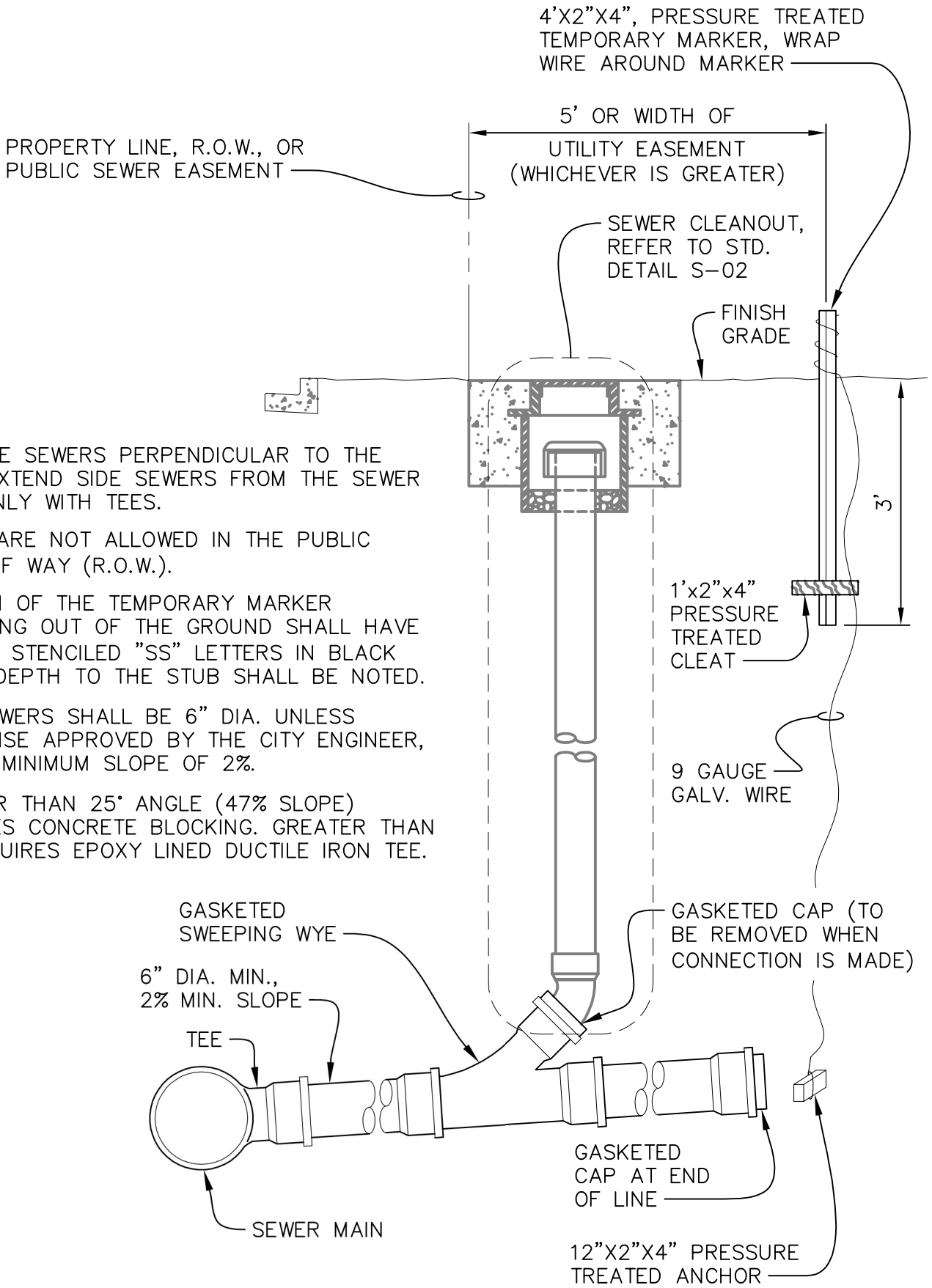
2. INSTALL ADVANCED WARNING BEACON ASSEMBLY ON 4" DIA. ALUMINUM POLE ONE PER EACH SIDE OF THE STREET, INCLUDING ALL NECESSARY HARDWARE WHEN SHOWN ON THE PLANS.

3. RRFB WILL BE APPROXIMATELY 5 INCHES WIDE BY 2 INCHES HIGH, WITH A MINIMUM OF 7 INCHES BETWEEN EACH RRFB INDICATOR BOTH SIDES, INCLUDING A PEDESTRIAN CONFIRMATION LIGHT PER EACH SIDE OF THE STREET, INCLUDING ALL NECESSARY HARDWARE.

4. INSTALL CONC. TYPE 1 FOUNDATION PER WSDOT STD PLAN J-21.10-04 WITH PELCO (OR APPROVED EQUIVALENT) BREAKAWAY BASE AND ANCHOR BOLTS. CONTRACTOR TO VERIFY BOLT PATTERN PRIOR TO PLACING CONCRETE.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	ADVANCED WARNING BEACON & RRFB NOTES
Jacob Sweeting	02/09/2023		
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: T-50b.1

Plotted by: Craig Dobyns on 2/8/2023 File location: M:\Construction Standard Details\Current Working DWG\Traffic\STDETL-T-50b.1



NOTES:

1. LAY SIDE SEWERS PERPENDICULAR TO THE MAIN. EXTEND SIDE SEWERS FROM THE SEWER MAIN ONLY WITH TEES.
2. BENDS ARE NOT ALLOWED IN THE PUBLIC RIGHT OF WAY (R.O.W.).
3. PORTION OF THE TEMPORARY MARKER EXTENDING OUT OF THE GROUND SHALL HAVE 2" HIGH STENCILED "SS" LETTERS IN BLACK PAINT, DEPTH TO THE STUB SHALL BE NOTED.
4. SIDE SEWERS SHALL BE 6" DIA. UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER, WITH A MINIMUM SLOPE OF 2%.
5. GREATER THAN 25° ANGLE (47% SLOPE) REQUIRES CONCRETE BLOCKING. GREATER THAN 45° REQUIRES EPOXY LINED DUCTILE IRON TEE.

APPROVED BY CITY ENGINEER:	DATE:		
Jacob Sweeting	01/05/2021	CITY OF AUBURN WASHINGTON	SIDE SEWER STUB
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: S-01.2

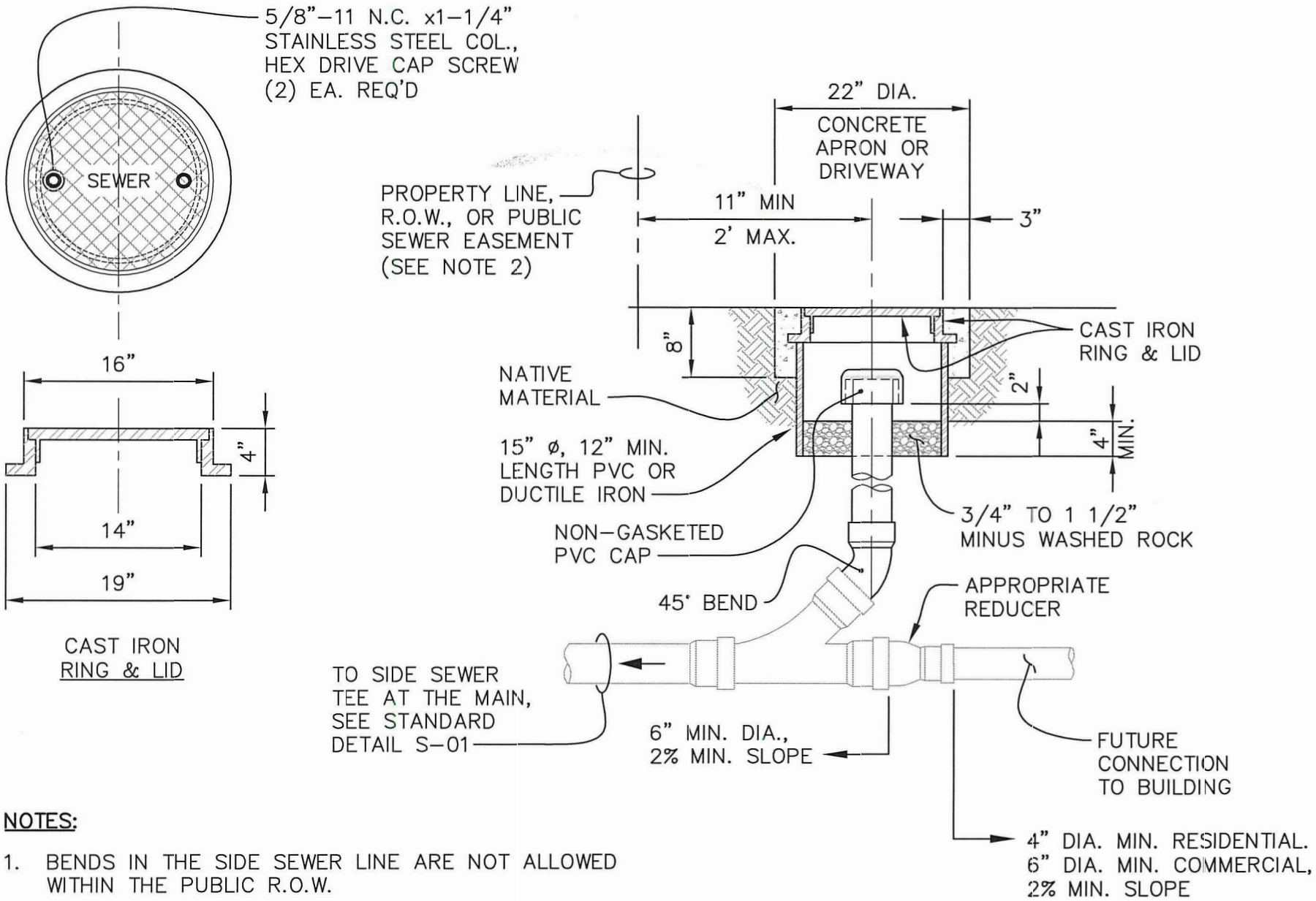
Plotted by: Craig Dobyns on 12/16/2020 File location: M:\Construction Standard Details\Current Working DWG\Sewer and Storm\STDETL-S-01.2

APPROVED BY CITY ENGINEER: Shut Gal DATE: 1/31/2017

COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT. STANDARD DETAIL: S-02.2

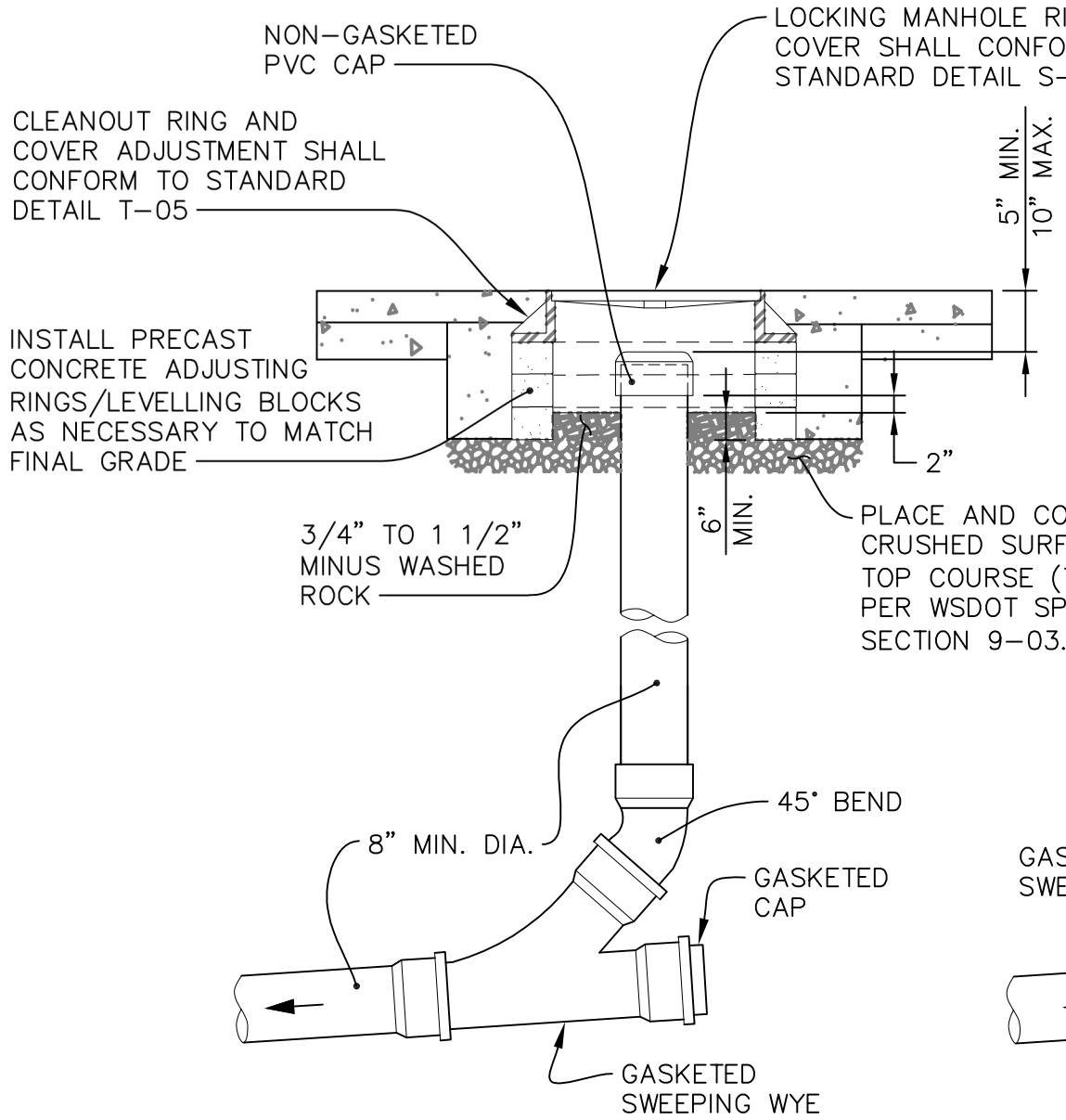
CITY OF AUBURN WASHINGTON

PRIVATE SANITARY SIDE SEWER CLEAN OUT



NOTES:

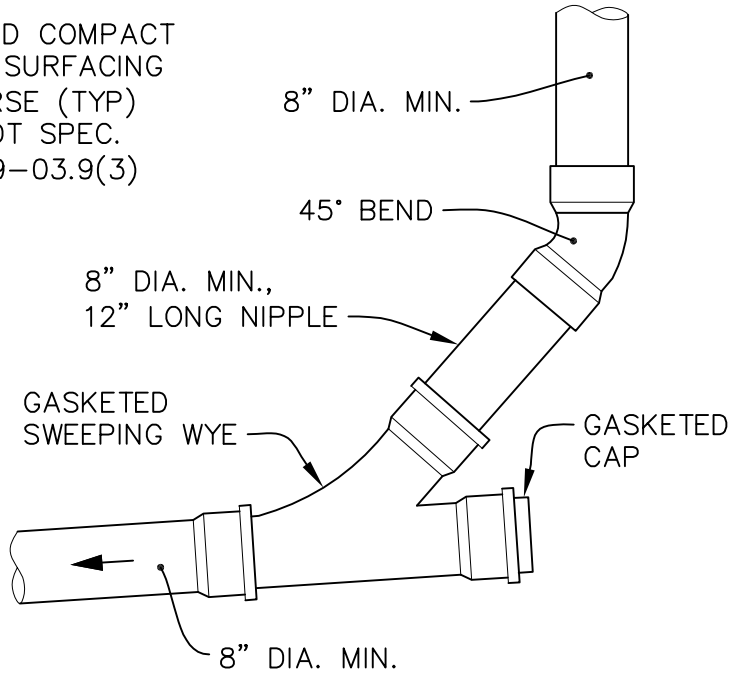
1. BENDS IN THE SIDE SEWER LINE ARE NOT ALLOWED WITHIN THE PUBLIC R.O.W.
2. CLEAN OUTS MAY BE ESTABLISHED ON BACKSIDE OF UTILITY EASEMENTS IF APPROVED BY CITY ENGINEER.
3. ADDITIONAL CLEAN OUTS ARE REQUIRED ON SIDE SEWER LINE WITHIN PRIVATE PROPERTY WHEN CUMULATIVE BENDS ON SIDE SEWER LINE EQUALS OR EXCEEDS 135°



STANDARD INSTALLATION

NTS

NOTE:
MANHOLES ARE REQUIRED AT UPSTREAM END OF ALL SEWER MAINS.



ALTERNATE INSTALLATION

NTS

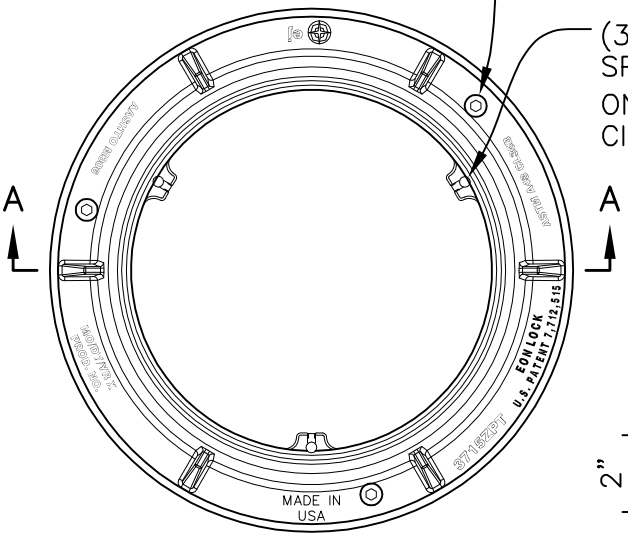
APPROVED BY CITY ENGINEER: Chris Sweeting

DATE: 01/05/2021

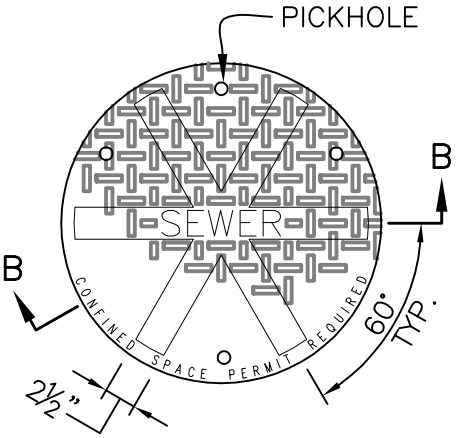
PUBLIC WORKS DEPARTMENT

PUBLIC SIDE SEWER CLEANOUT (8" OR LARGER)

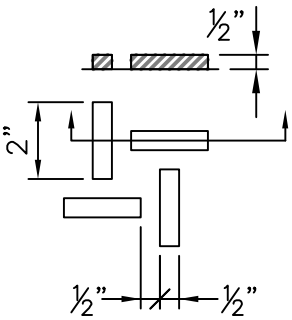
STANDARD DETAIL: S-03.2



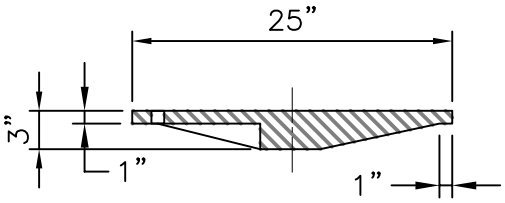
FRAME - PLAN
NTS



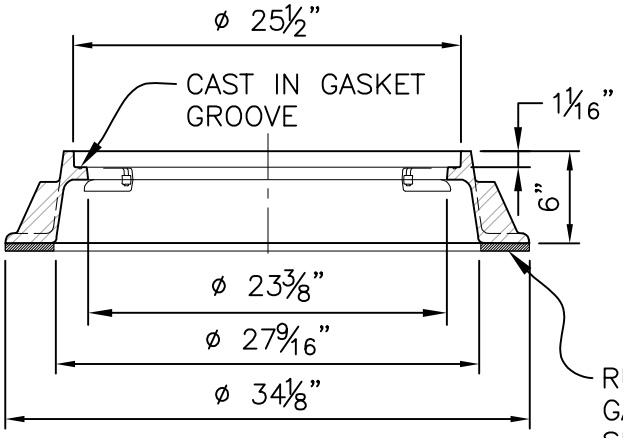
COVER - PLAN
NTS



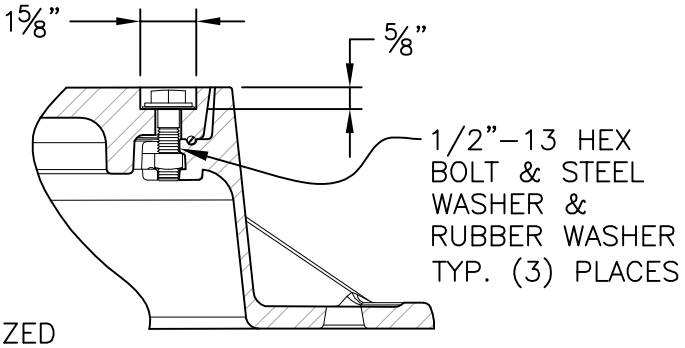
NONSKID PATTERN



SECTION B-B
NTS



SECTION A-A
NTS



BOLT DETAIL
NTS

NOTES:

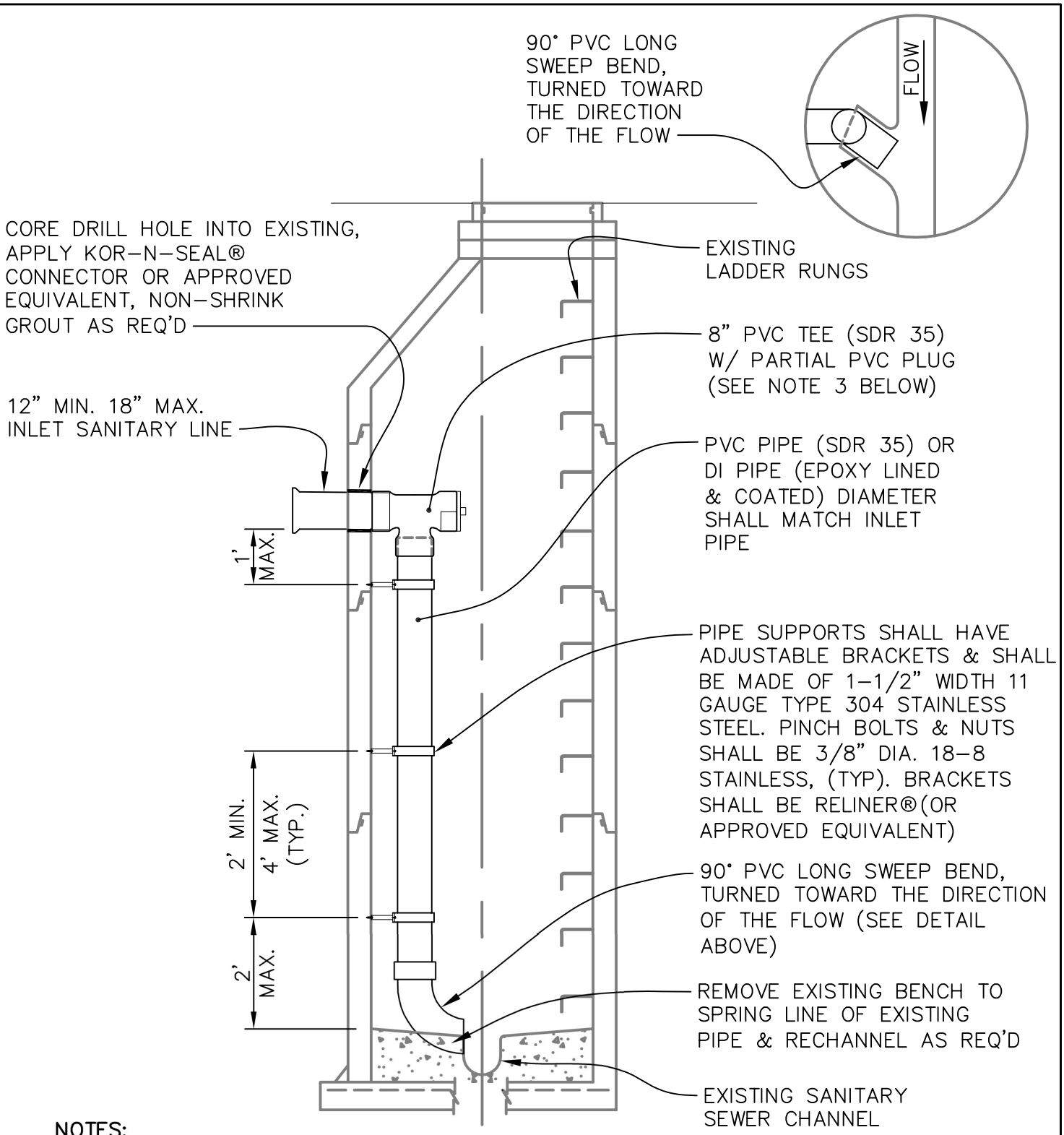
1. COVERS SHALL HAVE THEIR USE CAST IN 2" RAISED LETTERS: 'SEWER' FOR SANITARY SEWERS, 'DRAIN' FOR STORM SEWERS AND 'WATER' FOR WATER CONVEYANCE. THE WORDS 'CONFINED SPACE PERMIT REQUIRED' SHALL BE CAST IN 1" LETTERS AS SHOWN.
2. GRAY OR DUCTILE IRON FRAME AND DUCTILE IRON COVER WITH MINIMUM WEIGHTS AS FOLLOWS:

   FRAME = 210 LBS.

   COVER = 150 LBS.
3. PROVIDE SLIP RESISTANT COATING IN PAVED AREAS.
4. WHEN CALLED FOR IN THE CONTRACT DOCUMENTS, INSTALL INFRA–RISER PRODUCT NUMBER IC2431F0050F BY EJCO PER MANUFACTURER RECOMMENDATIONS (OR APPROVED EQUAL).

APPROVED BY CITY ENGINEER:	DATE:		
Jacob Sweeting	01/05/2021	CITY OF AUBURN WASHINGTON	24" DIA. MANHOLE FRAME AND COVER
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: S–04.4

Plotted by: Craig Dobyns on 12/16/2020 File location: M:\Construction Standard Details\Current Working DWG\Sewer and Storm\STDETL–S–04.4



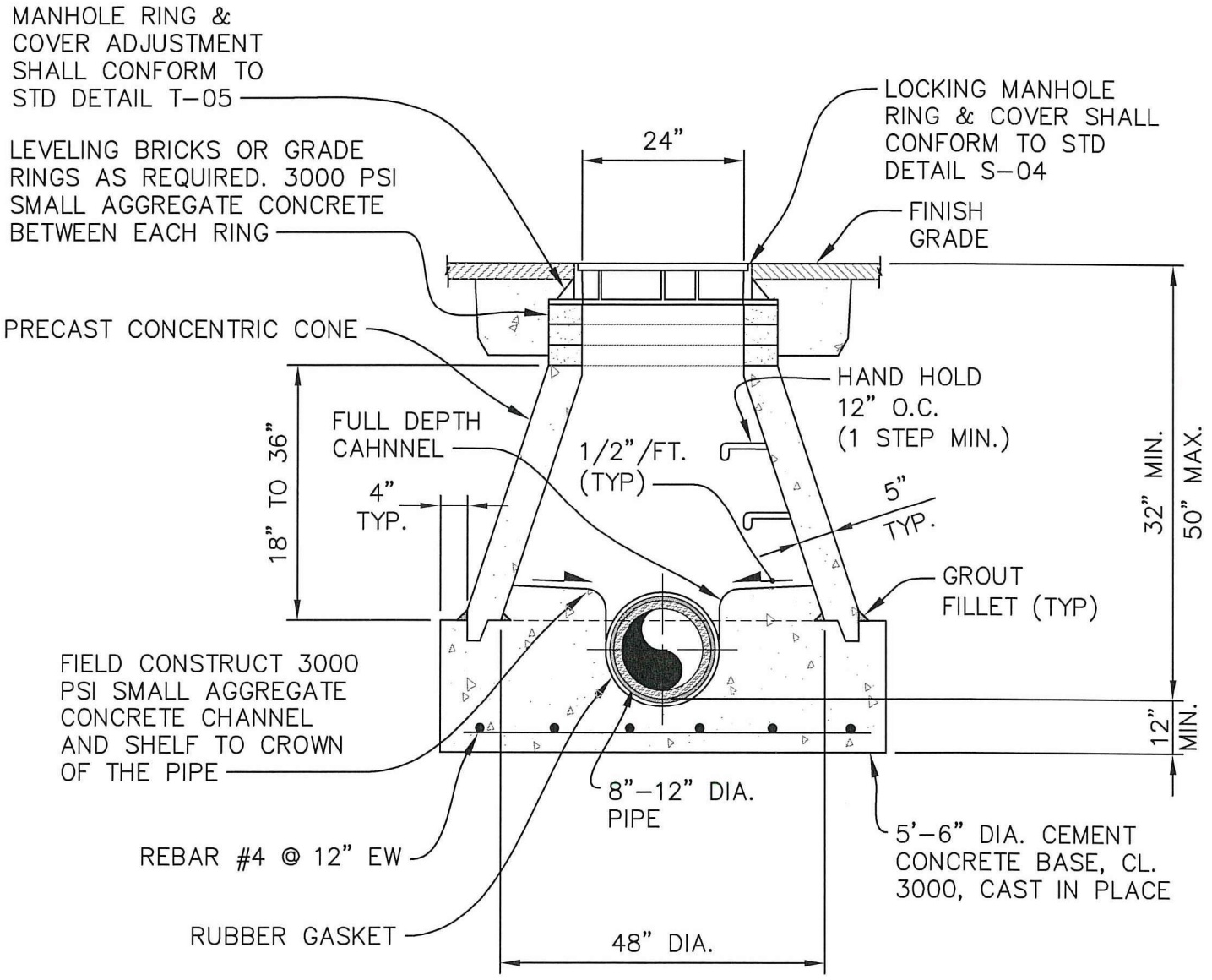
NOTES:

1. TYPE 1 MANHOLE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. DETAIL MAY ALSO BE APPLIED TO TYPE 2 & 3 MANHOLES.
2. DROP CONNECTIONS TO EXISTING 48" OR LARGER MANHOLES ONLY WITH ENGINEER APPROVAL.
3. PLUG TO BE CUT TO LEAVE 60% OF PIPE DIAMETER OPEN FOR MAINTENANCE ACCESS.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	RETROFIT EXISTING MANHOLE WITH INSIDE DROP
Jacob Sweeting	01/05/2021		
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: S-05.2

Plotted by: Craig Dobyns on 12/10/2020 File location: M:\Construction Standard Details\Current Working DWG\Sewer and Storm\STDETL-S-05.2

NOTE:
CITY ENGINEER APPROVAL IS REQUIRED BEFORE USING THIS DETAIL

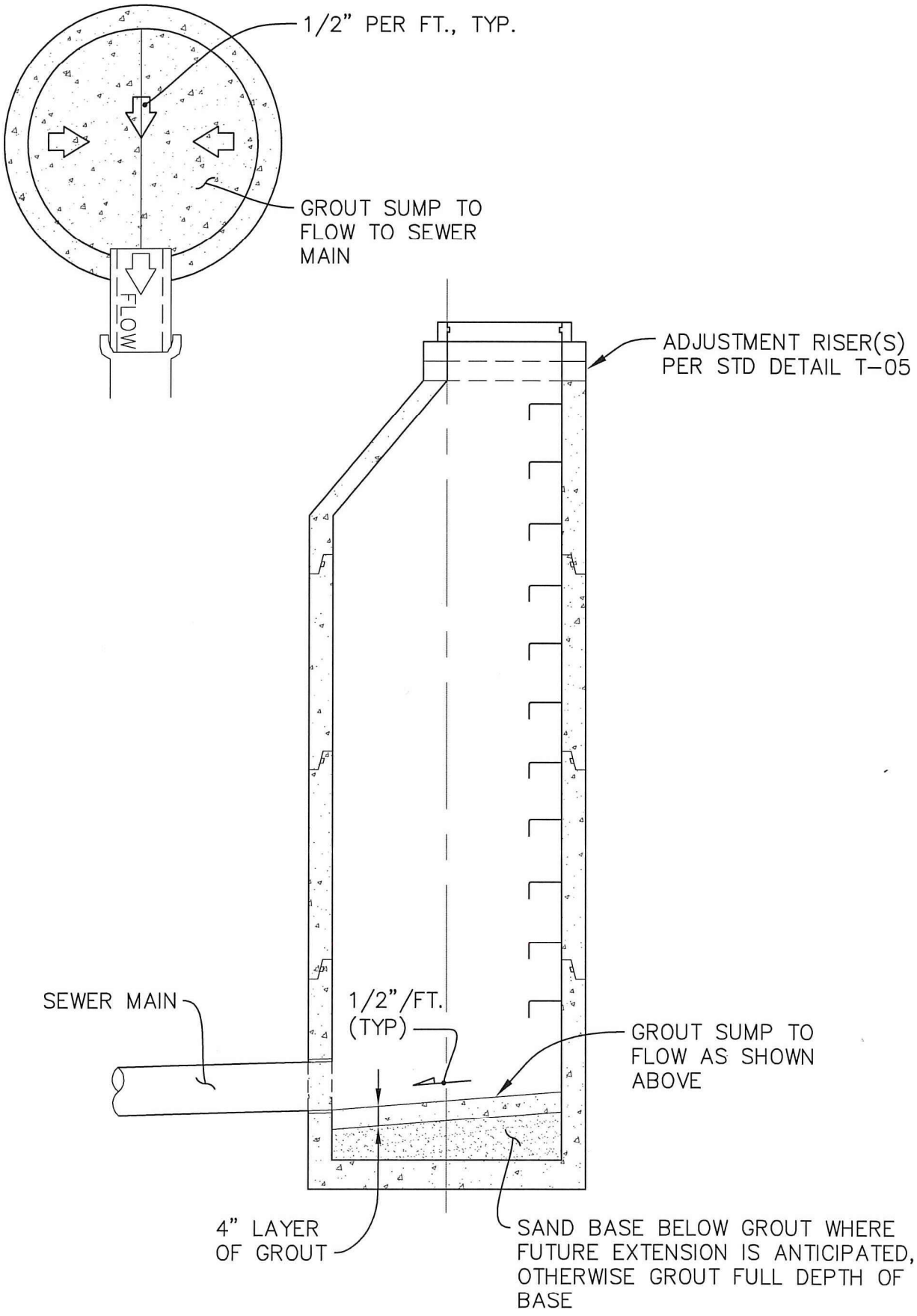


ALTERNATE:
MANUFACTURED BASE WITH FLAT TOP, FRAME AND COVER IS ACCEPTABLE

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	EXTRA SHALLOW MANHOLE DETAIL
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: S-06.1

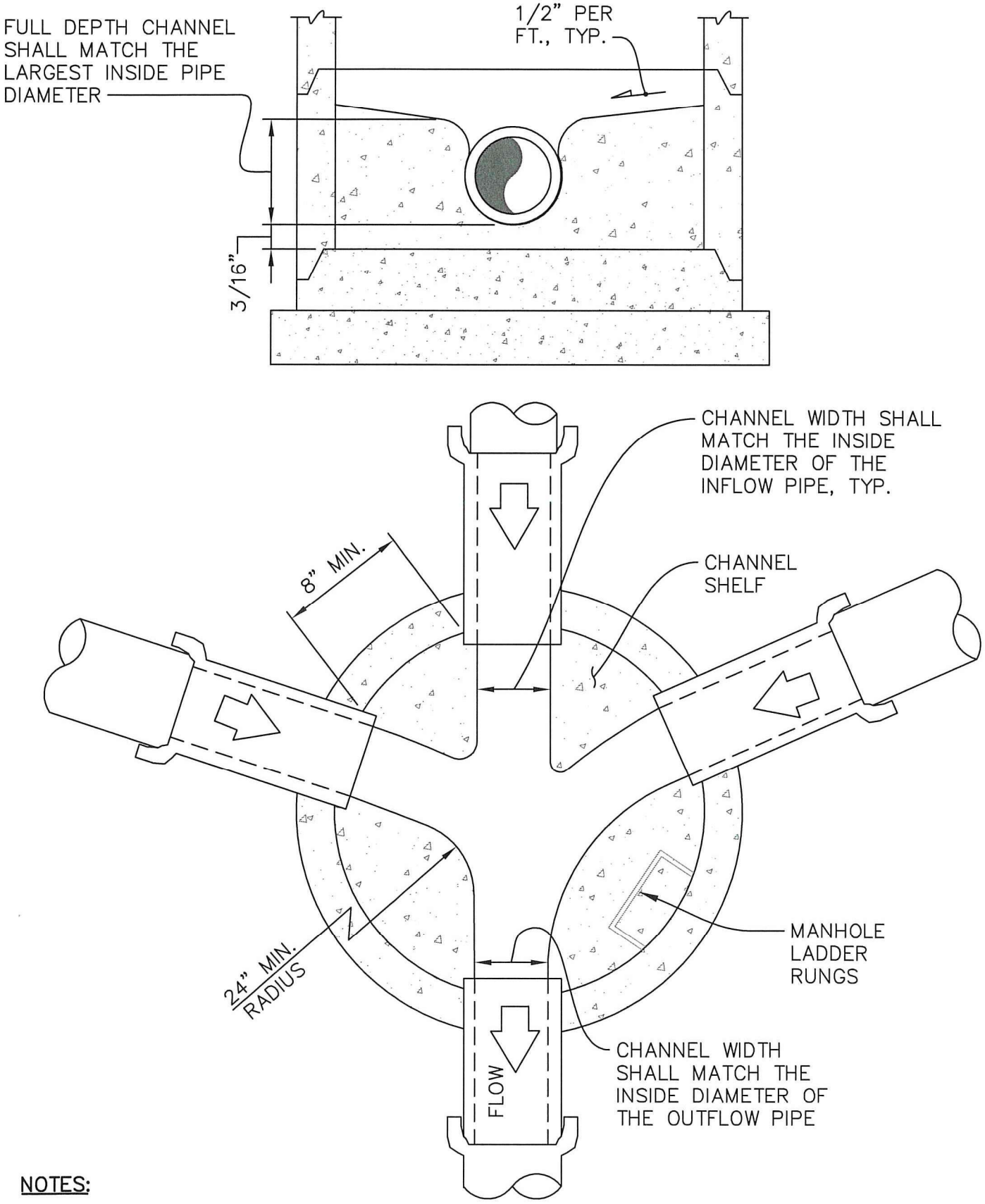
8/5/2016

Plotted by: Craig Dobyns on 7/13/2016 File location: N:\Construction Standard Details\Approved Drawing Files (dwg)\Sewer and Storm\STDETL-S-06.1



APPROVED BY CITY ENGINEER:	DATE: 2/20/2018	CITY OF AUBURN WASHINGTON	MANHOLE AT END OF SANITARY SEWER LINE
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: S-07.2

Plotted by: Vlad Rubashka on 1/17/2018 File location: M:\Construction Standard Details\Current Working DWG\Sewer and Storm\STDETL-S-07.2



NOTES:

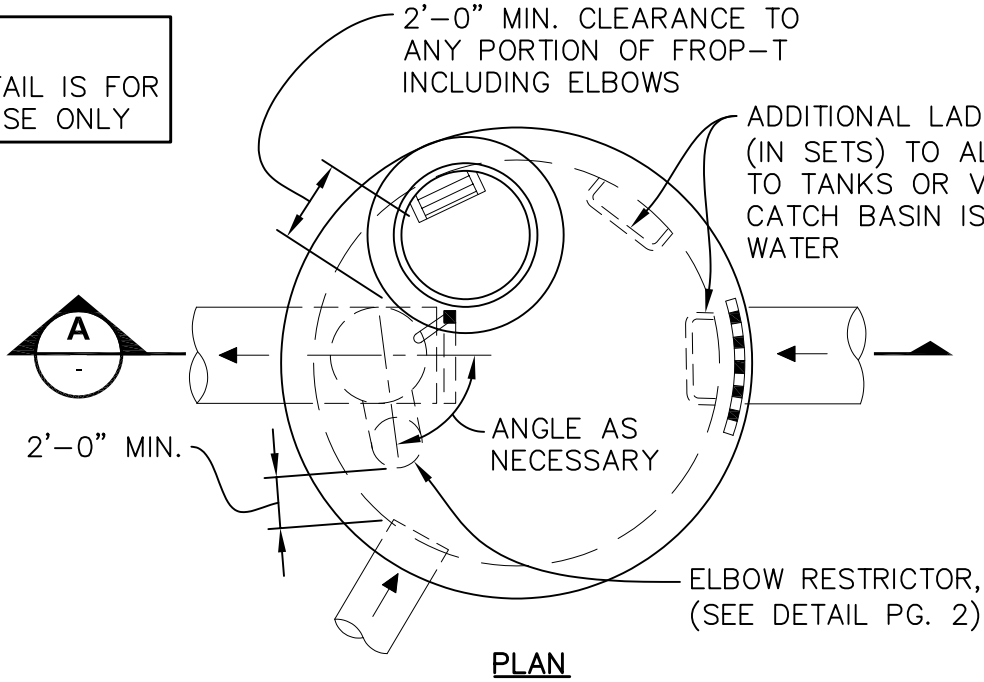
1. NO STEPS OVER PIPES OR MANHOLE CHANNELS. WHEN POSSIBLE, STEPS SHALL BE POSITIONED OVER THE LARGEST BENCH AREA.
2. FAST SETTING CONCRETE SHALL NOT BE USED.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	MANHOLE CHANNEL CONSTRUCTION
	8/5/2016		

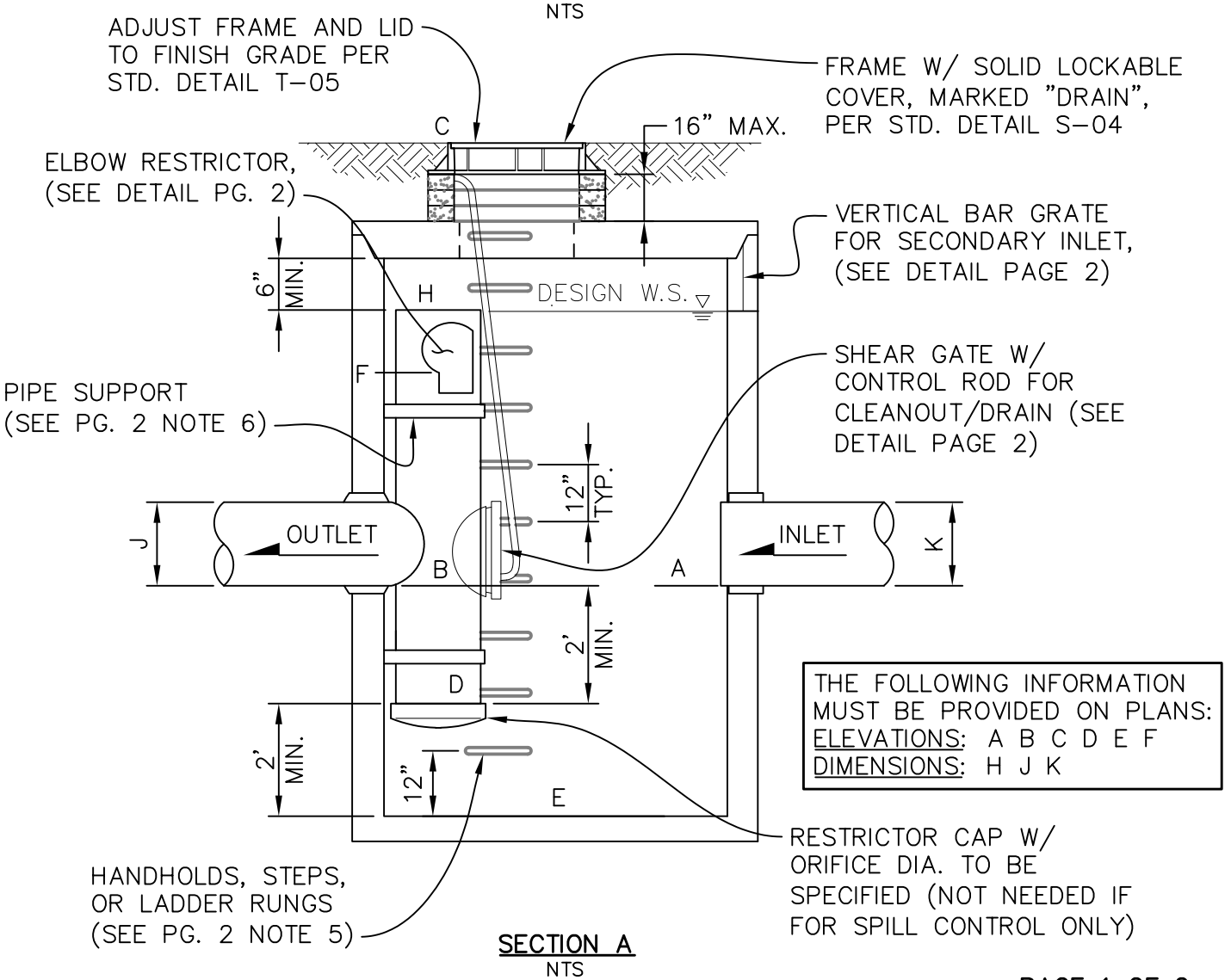
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT. STANDARD DETAIL: S-08.1

Plotted by: Craig Dobyns on 7/13/2016 File location: W:\Construction Standard Details\Approved Drawing Files (dwg)\Sewer and Storm\STDETL-S-08.1

NOTE:
THIS DETAIL IS FOR STORM USE ONLY



PLAN
NTS

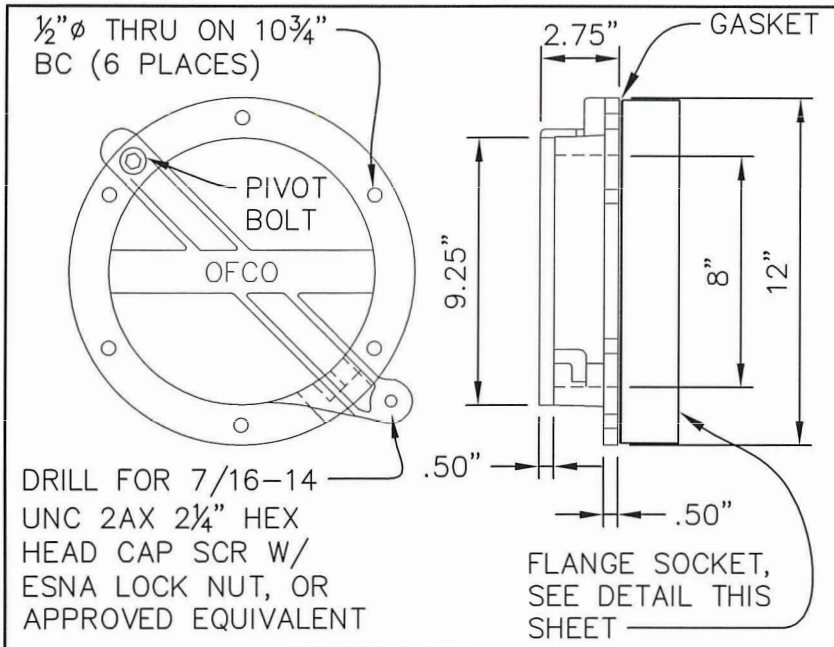


THE FOLLOWING INFORMATION MUST BE PROVIDED ON PLANS:
ELEVATIONS: A B C D E F
DIMENSIONS: H J K

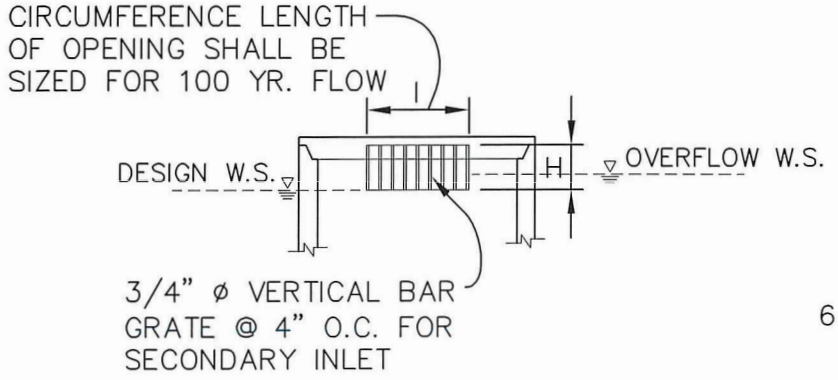
SECTION A
NTS

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 02/09/2023	CITY OF AUBURN WASHINGTON	FLOW RESTRICTOR
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: S-09.3

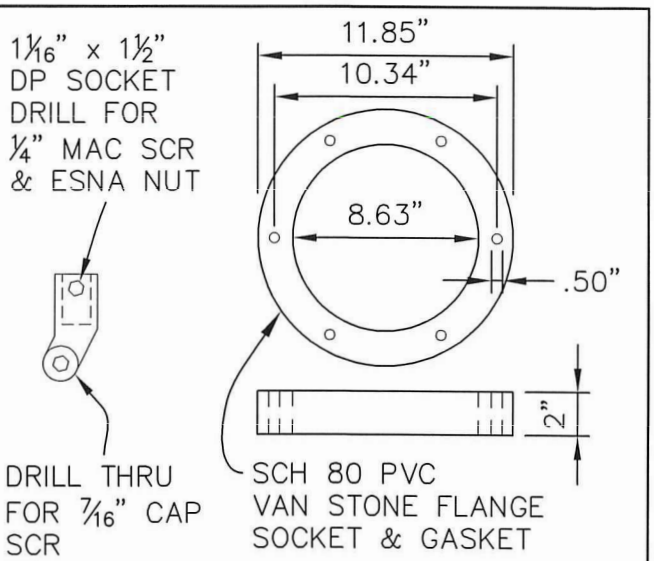
Plotted by: Craig Dobyns on 1/23/2023 File location: M:\Construction Standard Details\Current Working DWG\Sewer and Storm\STDETL-S-09.3



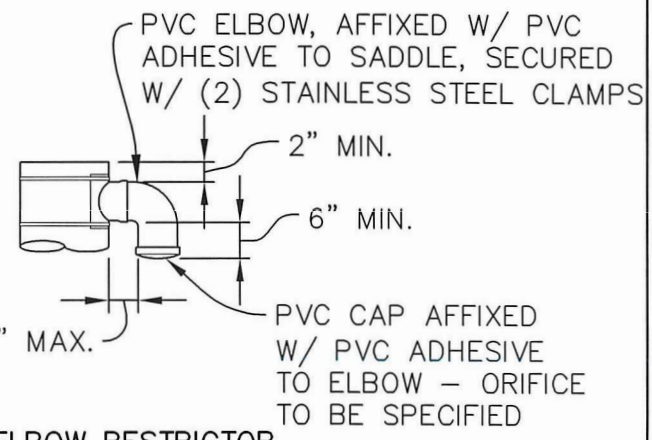
SHEAR GATE
NTS



VERTICAL BAR GRATE
NTS



FLANGE SOCKET
NTS



ELBOW RESTRICTOR
NTS

NOTE:
THIS DETAIL IS FOR STORM USE ONLY

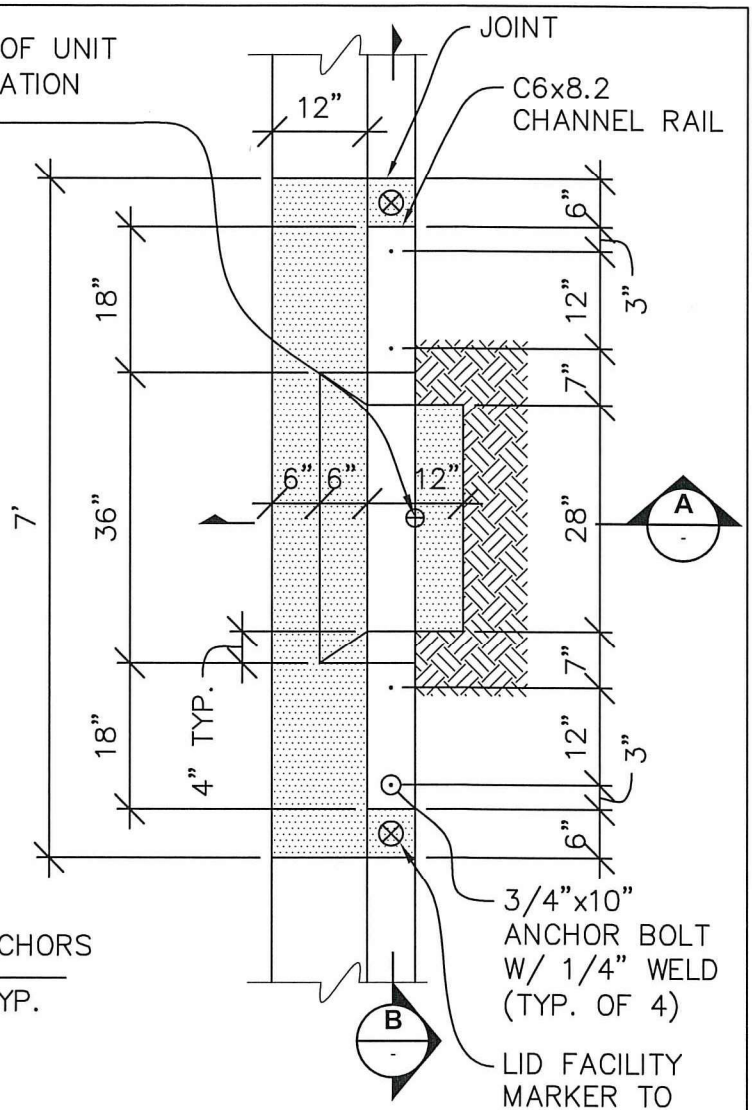
NOTES:

1. USE A MINIMUM OF 54" DIA. TYPE 2 CATCH BASIN.
2. OUTLET CAPACITY SHALL BE 100–YR. DEVELOPED PEAK FLOW.
3. RESTRICTOR TO BE MADE WITH NON–GASKETED PVC, SDR–35.
4. FLOW RESTRICTOR TO BE CONNECTED TO OUTLET PIPE WITH GASKETED CONNECTION OR ROMAC COUPLER.
5. BASIN LID FRAME AND LADDER RUNGS OR STEPS ARE OFFSET SO THAT:
   A. RESTRICTOR IS VISIBLE FROM TOP.
   B. ACCESS SPACE IS CLEAR OF RISER AND RESTRICTOR.
   C. COVER FRAME IS CLEAR OF CURB.
6. PROVIDE AT LEAST TWO 3"x0.090 GAUGE TYPE 304 STAINLESS STEEL SUPPORT BRACKET EPOXY ANCHORED 2" INTO CONCRETE WALL WITH MAX. 3' VERTICAL SPACING.
7. LOCATE ELBOW RESTRICTOR AS NECESSARY TO PROVIDE MINIMUM CLEARANCE AS SHOWN. PIPE SIZES AND SLOPE PER PLAN. SHOW ALLOWABLE DISCHARGE "Q"

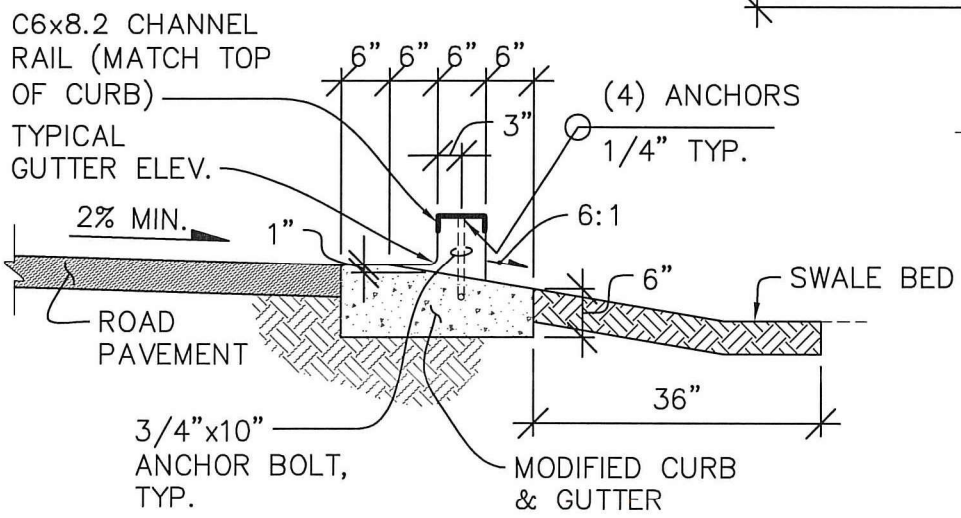
APPROVED BY CITY ENGINEER: Jacob Sweetwood DATE: 12/20/19	CITY OF AUBURN WASHINGTON	FLOW RESTRICTOR
PUBLIC WORKS DEPARTMENT		STANDARD DETAIL: S–09a.2

CURB OPENING INLET NOTES:

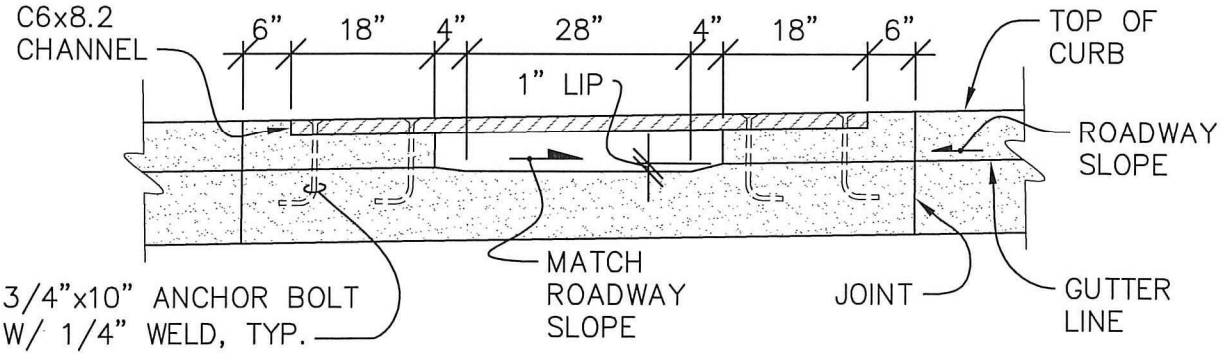
1. STRUCTURE SHALL BE MONOLITHIC AIR–ENTRAINED CLASS 3000 CONCRETE.
2. HOT DIP GALVANIZE C6x8.2 CHANNEL & ANCHOR BOLTS AFTER FABRICATION.



PLAN
NTS



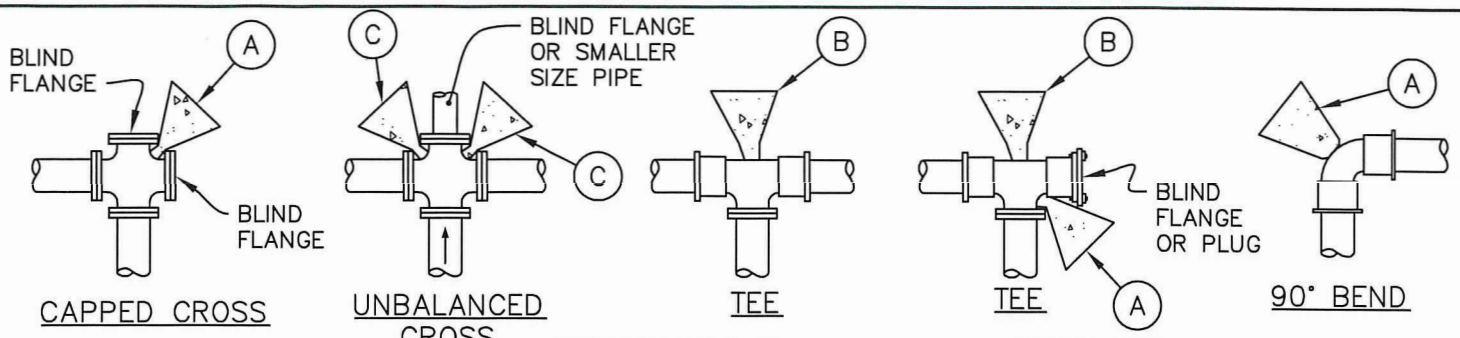
SECTION A
NTS

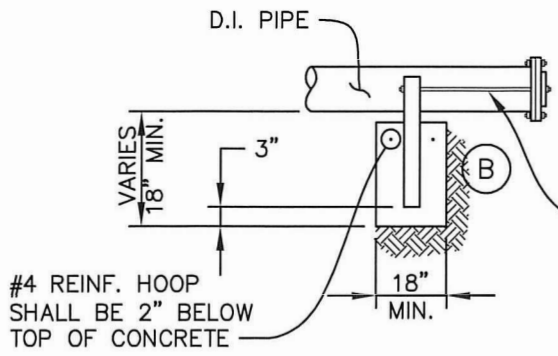


SECTION B
NTS

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	COVERED CURB OPENING INLET
	2/20/2018		
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: S-10.1

Plotted by: Vlad Rubashka on 1/10/2018 File location: M:\Construction Standard Details\Current Working DWG\Sewer and Storm\STDETL-S-10.1



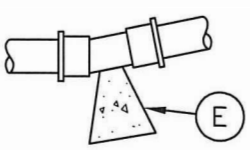


TIE BACK BLOCK DETAIL

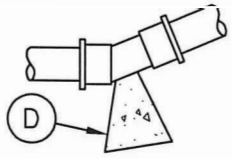
NOTE:
SEE STD. DETAIL W-03 FOR TYPICAL BLOW OFF ASSEMBLY. MAINTAIN 2" CLEARANCE BETWEEN CONCRETE AND PIPE

FOR PIPE SIZES UNDER 12" USE 2 3/4" ø HOT DIPPED GALV. THREADED RODS FOR 12" & 14" USE 4 3/4" ø HOT DIPPED GALV. RODS

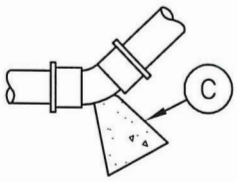
HORIZ OR UPWARD VERT. BENDS



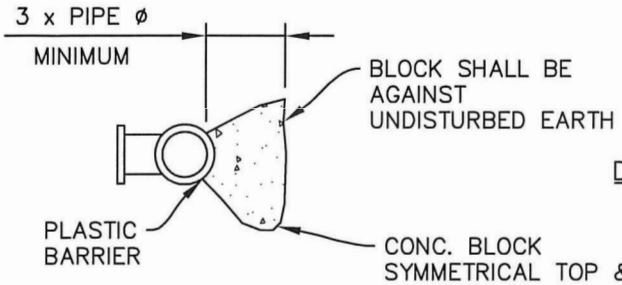
11 1/4° BEND



22 1/2° BEND



45° BEND





DOWNWARD VERTICAL BEND

NOTES:

1. BEARING AREA OF CONC. THRUST BLOCK IS BASED ON 200 PSI PRESSURE AND SAFE SOIL BEARING LOAD OF 2000 PSF.
2. AREAS MUST BE ADJUSTED FOR OTHER PIPE SIZES, PRESSURES, AND SOIL CONDITIONS.
3. CONCRETE BLOCKING SHALL BE CAST IN PLACE AND HAVE A MINIMUM OF 1/4 SQUARE FOOT BEARING AGAINST THE FITTING.
4. THE BLOCK SHALL BEAR AGAINST THE FITTINGS ONLY AND SHALL BE CLEAR OF JOINTS TO PERMIT TAKING UP AND DISMANTLING OF JOINT.
5. THE CONTRACTOR SHALL INSTALL BLOCKING ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.
6. USE 2" THICK STYROFOAM TO FORM THE CONCRETE BLOCKING. PLASTIC SHALL BE INSTALLED BETWEEN ALL CONCRETE BLOCKING AND FITTINGS.
7. RESTRAINED JOINTS ARE REQUIRED WHERE BEARING SOILS OR FILL MATERIAL ARE DETERMINED BY THE ENGINEER TO BE UNSUITABLE TO PROVIDE ADEQUATE BEARING LOAD, OR THIS SOIL HAS BEEN DISTURBED.

THRUST BLOCK TABLE
MIN. BEARING AGAINST UNDISTURBED SOIL

PIPE SIZE	(A) SQ. FT.	(B) SQ. FT.	(C) SQ. FT.	(D) SQ. FT.	(E) SQ. FT.
4"	3	3	2	2	2
6"	4	3	2	2	2
8"	7	5	4	2	2
10"	11	8	6	3	2
12"	16	11	9	5	3
14"	22	15	12	6	3
16"	29	20	16	8	4
18"	36	25	20	10	5
20"	45	32	24	13	6
22"	54	38	29	15	8
24"	64	45	35	18	9
28"	87	62	48	24	12
30"	101	71	55	28	14
36"	145	102	78	40	20
42"	197	139	107	55	27
48"	257	181	140	71	36

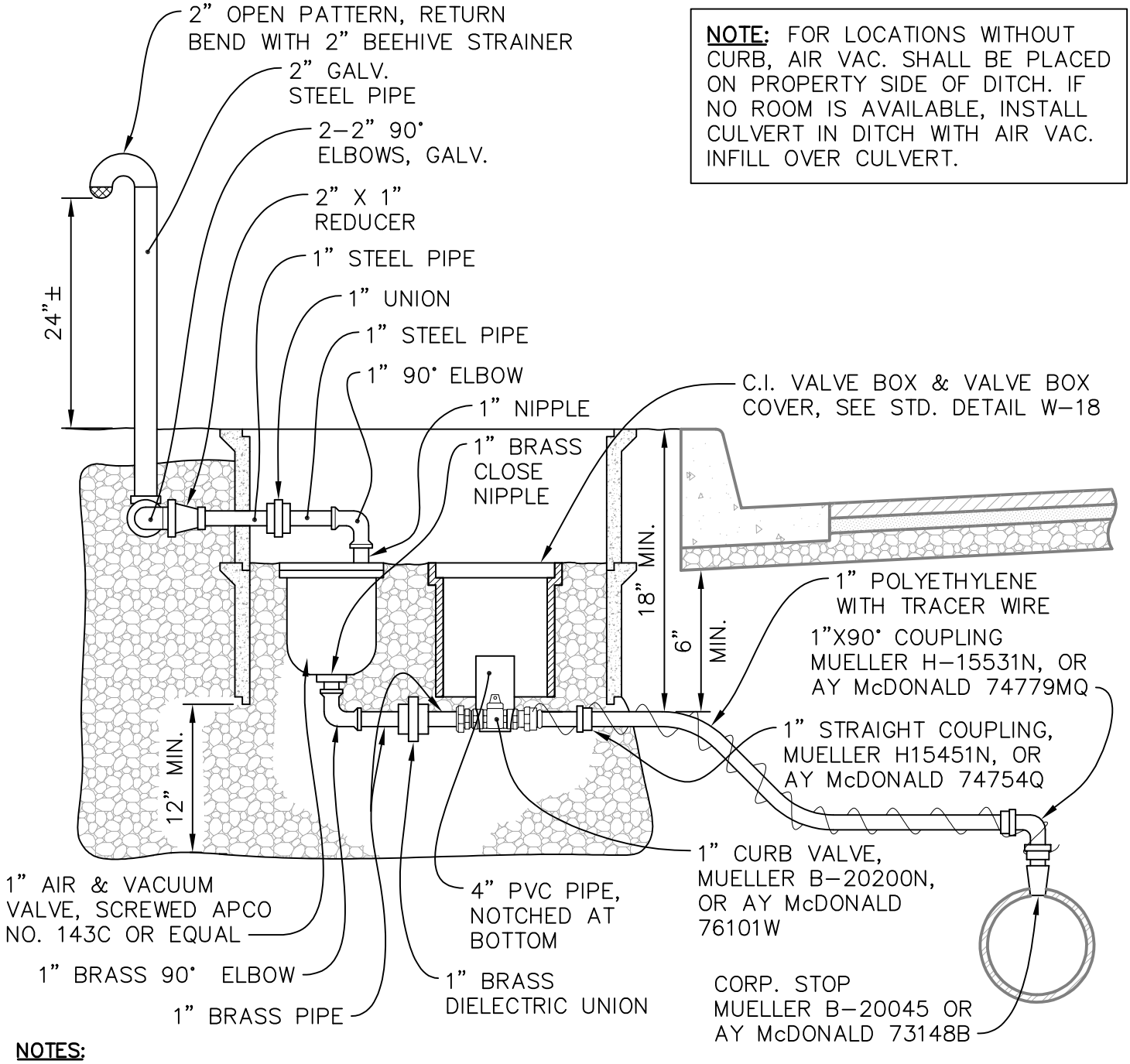
APPROVED BY CITY ENGINEER: DATE: 9/8/2016

CITY OF AUBURN WASHINGTON

WATER MAIN BLOCKING

COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT. STANDARD DETAIL: W-01.1

Plotted by: Craig Dobyns on 8/10/2016 File location: M:\Construction Standard Details\Approved Drawing Files (dwg)\Water\STDETL-W-01.1



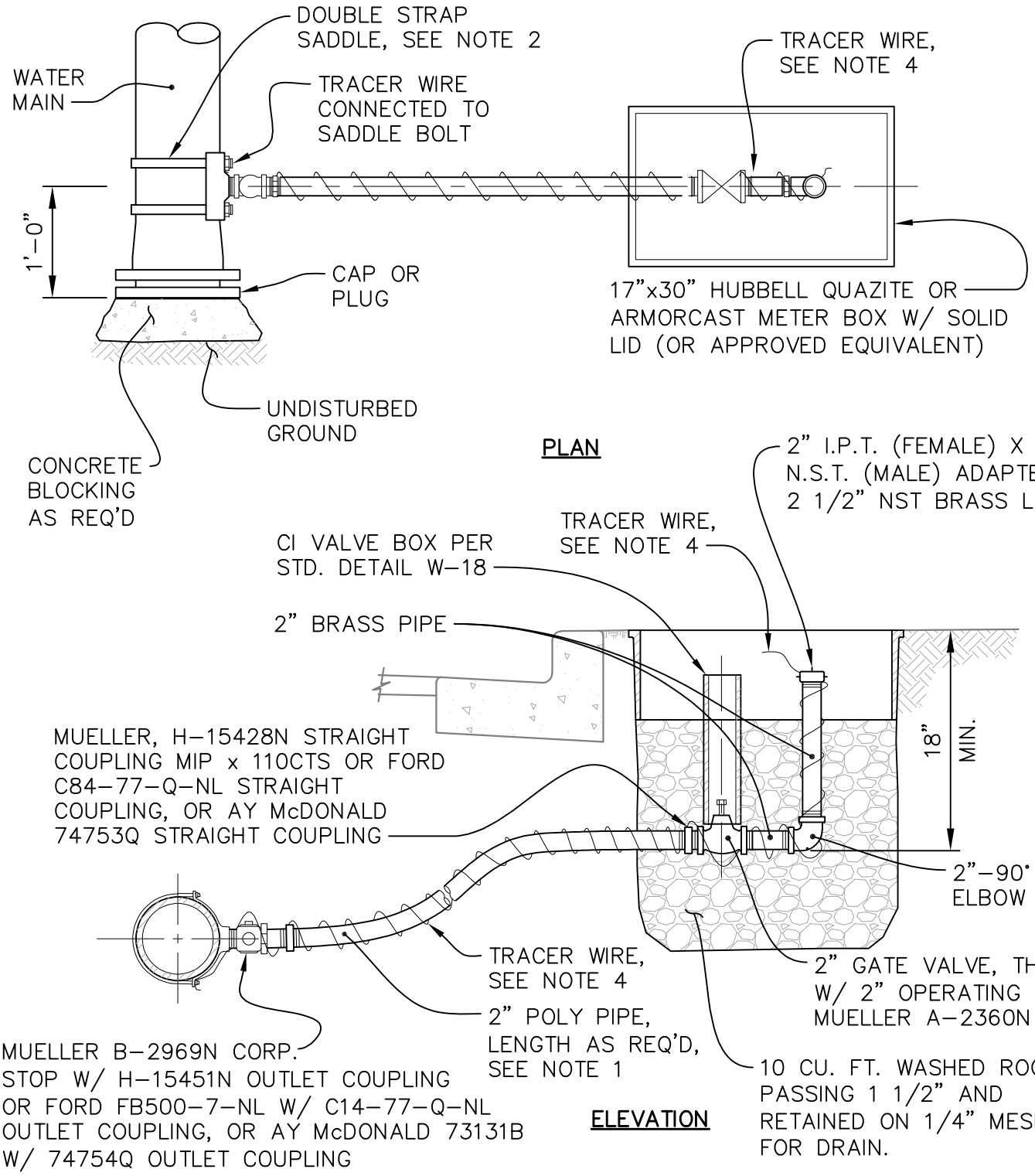
NOTE: FOR LOCATIONS WITHOUT CURB, AIR VAC. SHALL BE PLACED ON PROPERTY SIDE OF DITCH. IF NO ROOM IS AVAILABLE, INSTALL CULVERT IN DITCH WITH AIR VAC. INFILL OVER CULVERT.

NOTES:

1. AIR VALVE TO BE INSTALLED IN 17" X 30" HUBBELL QUAZITE OR ARMORCAST METER BOX W/ SOLID DUCTILE COVER, EAST JORDAN IRON WORKS (OR APPROVED EQUIVALENT).
2. BED WITH 3/4" WASHED ROCK, PASSING 1 1/2" AND RETAINED ON 1/4" MESH FOR DRAIN.
3. POLYETHYLENE PIPE SHALL BE AS SPECIFIED IN SECTION 9–30.6(3) OF THE CONSTRUCTION STANDARDS AND THE CONTRACT PROVISIONS.
4. DIELECTRIC UNIONS ARE REQUIRED FOR JOINING DISSIMILAR MATERIAL TYPES.
5. MAINTAIN POSITIVE GRADE FROM MAIN TO VALVE.
6. IN LIEU OF 2" BEEHIVE STRAINER, CONTACT CITY WATER DEPT. FOR LIST OF DOH APPROVED STRAINERS.
7. WHEN INSTALLED IN CONJUNCTION WITH A FIRE HYDRANT ON A DEAD END MAIN, THE AIR VAC SHALL BE INSTALLED AFTER THE FIRE HYDRANT.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	TYPICAL AIR AND VACUUM RELIEF VALVE DETAIL
Jacob Sweeting	2/7/24		
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: W–02.6

Plotted by: Craig Dobyns on 1/24/2024 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL–W–02.6

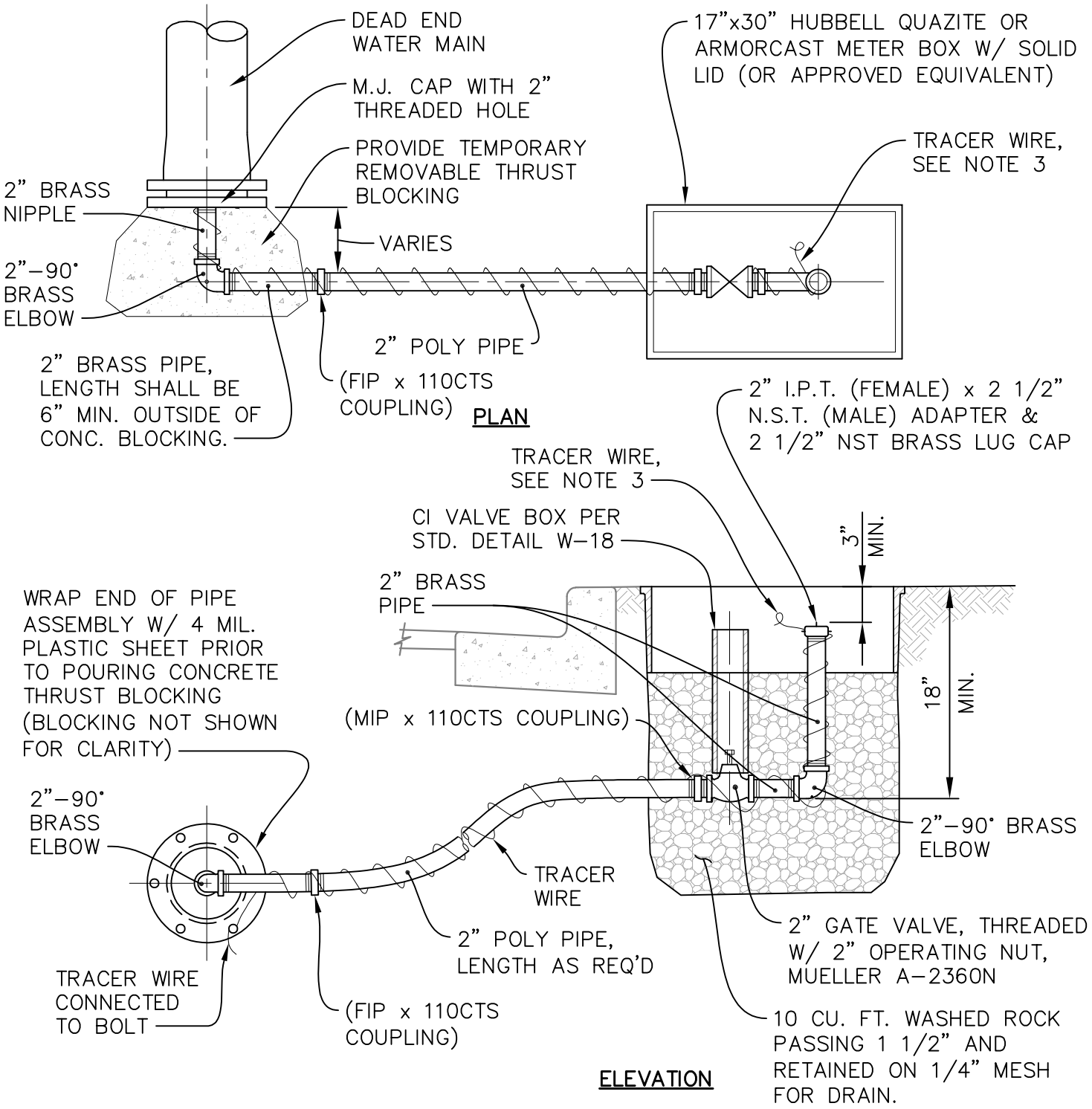


NOTES:

1. 2" POLY PIPE SHALL BE AS SPECIFIED IN SECTION 9-30.6(3) OF THE CONSTRUCTION STANDARDS AND THE CONTRACT PROVISIONS.
2. SADDLE SHALL BE AS SPECIFIED IN SECTION 9-30.6(1) OF THE CONSTRUCTION STANDARDS AND THE CONTRACT PROVISIONS.
3. FOR LOCATIONS WITHOUT CURB, BLOWOFF SHALL BE PLACED ON PROPERTY SIDE OF THE DITCH. IF NO ROOM IS AVAILABLE, INSTALL CULVERT IN DITCH W/ BLOWOFF IN FILL OVER CULVERT.
4. TRACER WIRE SHALL BE INSULATED #10 COPPER WIRE, BARED AT ENDS.

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 2/7/24	CITY OF AUBURN WASHINGTON	2" PERMANENT BLOW OFF ASSEMBLY
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: W-03.5

Plotted by: Craig Dobyns on 1/24/2024 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL-W-03.5

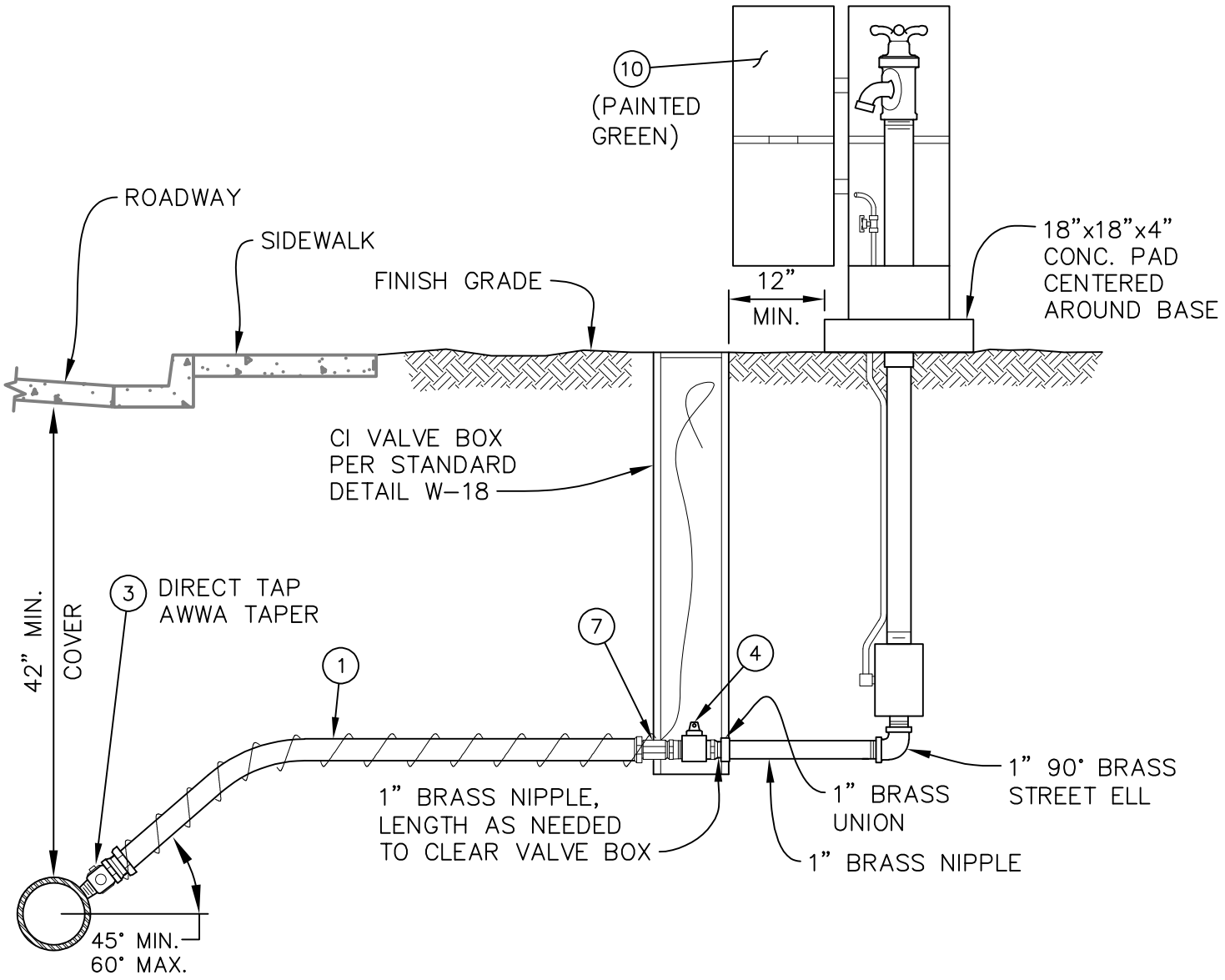


NOTES:

1. 2" POLY PIPE SHALL BE AS SPECIFIED IN SECTION 9-30.6(3) OF THE CONSTRUCTION STANDARDS AND THE CONTRACT PROVISIONS.
2. TEMPORARY BLOWOFFS SHALL BE USED ON ALL DEAD END WATERLINES WITH LOCATION OF BLOWOFF BOX AS SHOWN ON THE PLAN OR WHERE DIRECTED BY THE ENGINEER.
3. TRACER WIRE SHALL BE INSULATED #10 COPPER WIRE, BARED AT ENDS.
4. GATE VALVE SHALL BE AS SPECIFIED IN SECTION 9-30.3(1) OF THE CONSTRUCTION STANDARDS AND THE CONTRACT PROVISIONS.

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 1/17/2022	CITY OF AUBURN WASHINGTON	TEMPORARY BLOW OFF DETAIL
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: W-04.4

Plotted by: Craig Dobyns on 1/6/2022 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL-W-04.4



MATERIAL LIST

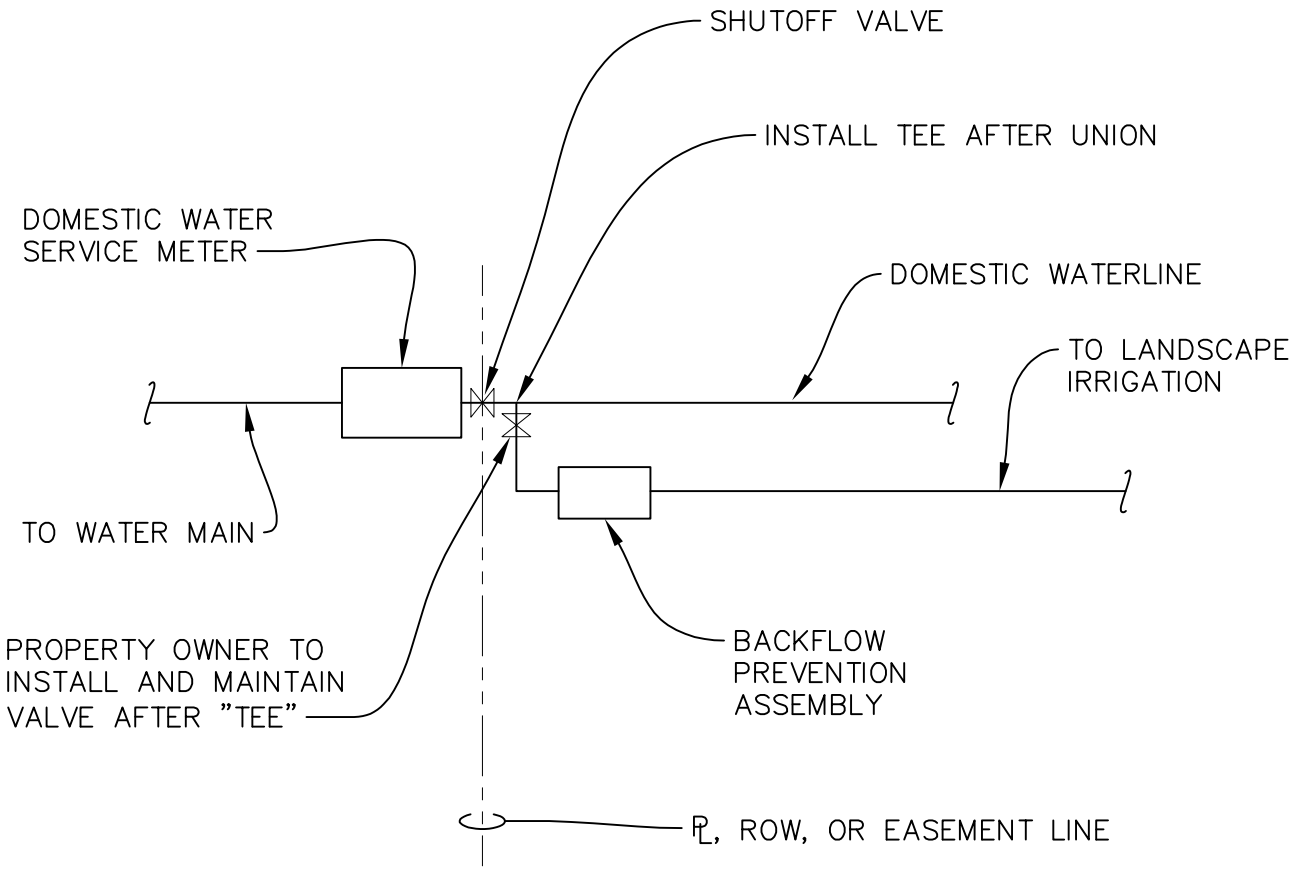
ITEM NO.	DESCRIPTION	FORD PART #	MUELLER PART #	AY McDONALD PART #
1	1" TYPE K COPPER OR CTS POLY PIPE	PER TABLE ON STD DTL W-15	PER TABLE ON STD DTL W-15	PER TABLE ON STD DTL W-15
3	1" CORP STOP	PER TABLE ON STD DTL W-15	PER TABLE ON STD DTL W-15	PER TABLE ON STD DTL W-15
4	CURB VALVE	PER TABLE ON STD DTL W-15	PER TABLE ON STD DTL W-15	PER TABLE ON STD DTL W-15
7	1" COUPLING	PER TABLE ON STD DTL W-15	PER TABLE ON STD DTL W-15	PER TABLE ON STD DTL W-15

NOTES:

1. ALL PIPE AND FITTINGS TO BE ASSEMBLED W/ TEFLON AND PIPE DOPE UNLESS OTHERWISE NOTED.
2. SERVICE LINES SHALL BE INSTALLED PERPENDICULAR TO THE WATER MAIN.
3. THE SERVICE LINE SHALL BE INSTALLED TO ALLOW FOR THE FAR SIDE OF THE SAMPLE STATION TO BE INSTALLED IN THE ROW OR EASEMENT LINE, UNLESS OTHERWISE DIRECTED BY THE CITY.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	WATER SAMPLING STATIONING DETAIL
Jacob Sweeting	2/7/24		
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: W-05.4

Plotted by: Craig Dobyns on 1/24/2024 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL-W-05.4



PLAN
NTS

NOTES:

1. BACKFLOW ASSEMBLY SHALL BE PER DESIGN STANDARDS.
2. THIS DETAIL IS APPLICABLE TO SINGLE FAMILY RESIDENCE ONLY.

APPROVED BY CITY ENGINEER:	DATE:		3/4" TO 2" IRRIGATION FROM DOMESTIC SERVICE LINE (SINGLE FAMILY)
Jacob Sweeting	01/05/2021	CITY OF AUBURN WASHINGTON	
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: W-06.3

Plotted by: Craig Dobyns on 12/30/2020 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL-W-06.3

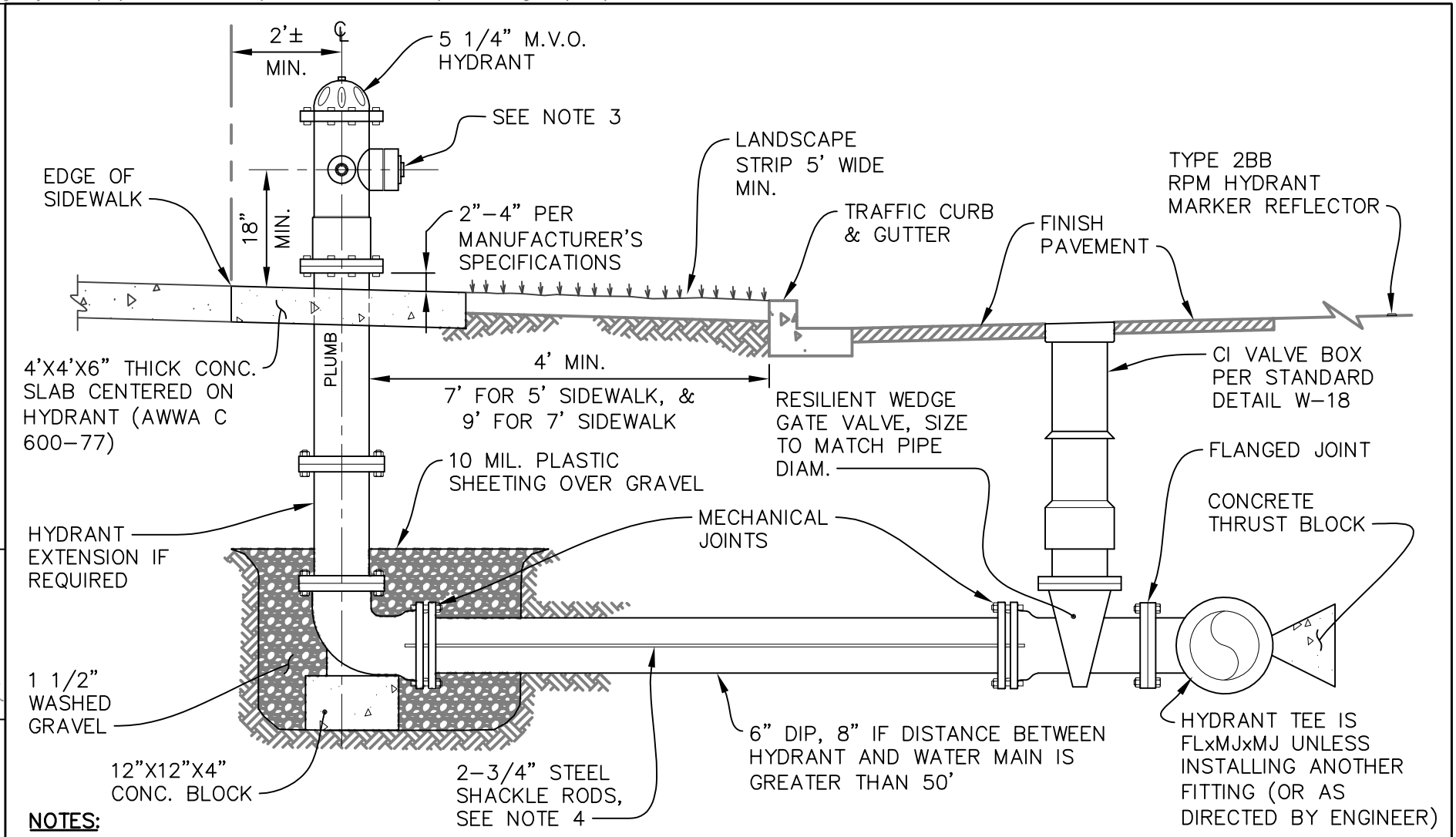
PUBLIC WORKS DEPARTMENT

APPROVED BY CITY ENGINEER: Jason Thueringer DATE: 02/09/2023

CITY OF AUBURN WASHINGTON

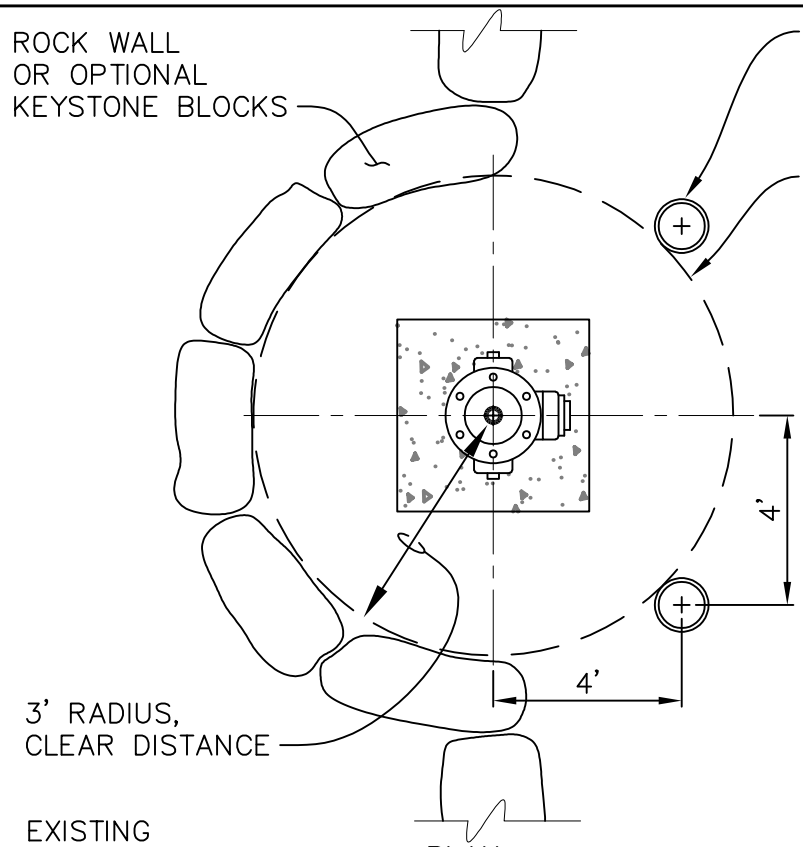
5 1/4" M.V.O. HYDRANT SETTING DETAIL

STANDARD DETAIL: W-07.3

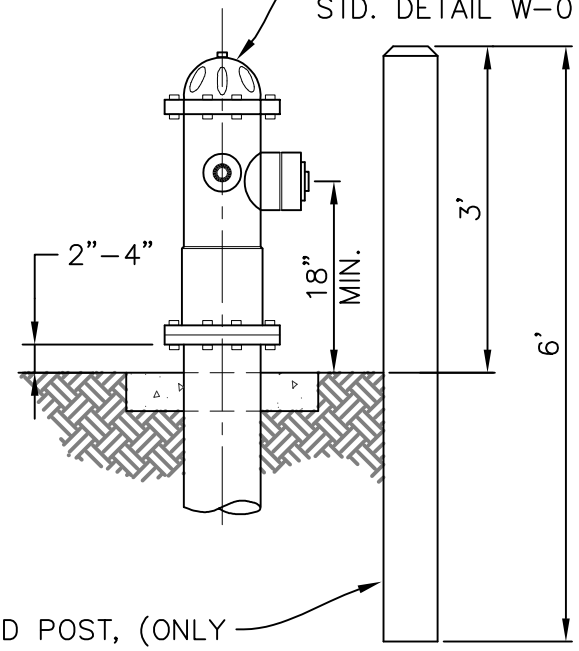


NOTES:

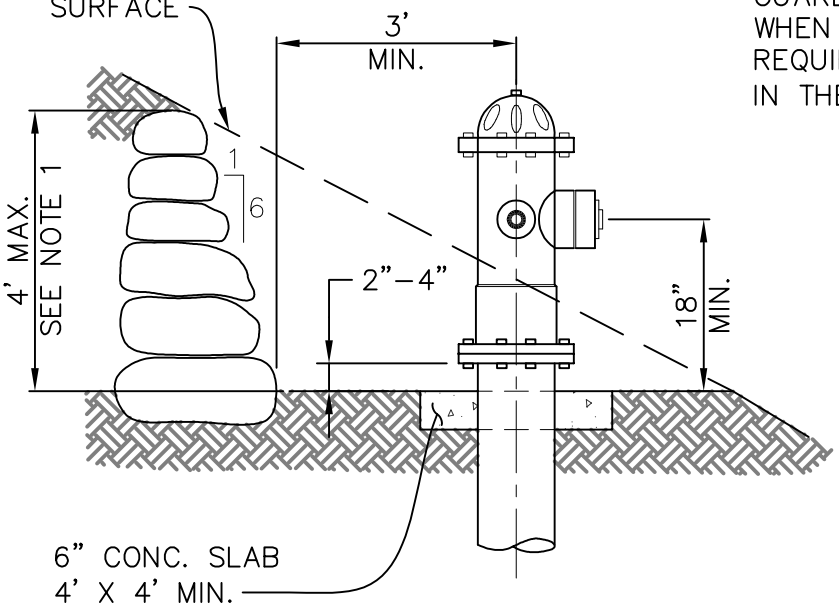
1. HYDRANT SHALL BE LOCATED WITHIN THE LANDSCAPE STRIP. WHERE LANDSCAPE STRIP IS NOT PRESENT OR IS LESS THAN 5' WIDE, HYDRANT AND PAD SHALL BE PLACED BEHIND THE SIDEWALK IN R.O.W. OR EASEMENT.
2. WHERE NO CURB & GUTTER IS INSTALLED, FIRE HYDRANT SHALL BE LOCATED (IN RELATION TO STREET CENTER LINE) AS INDICATED ON THE DRAWINGS.
3. HYDRANTS SHALL HAVE 2-2 1/2" NATIONAL STANDARD THREAD (NST) HOSE PORTS & 1-4 1/2" NST WITH 5" STORZ ADAPTER AND CAP.
4. MEGA-LUGS OR PUSH-ON JOINT RESTRAINTS MAY BE USED IN PLACE OF SHACKLE RODS WITH PRIOR ENGINEER APPROVAL.
5. ENSURE 5' MINIMUM CLEARANCE TO OBSTACLES FROM CENTERLINE OF HYDRANT.
6. REMOVE CHAINS.



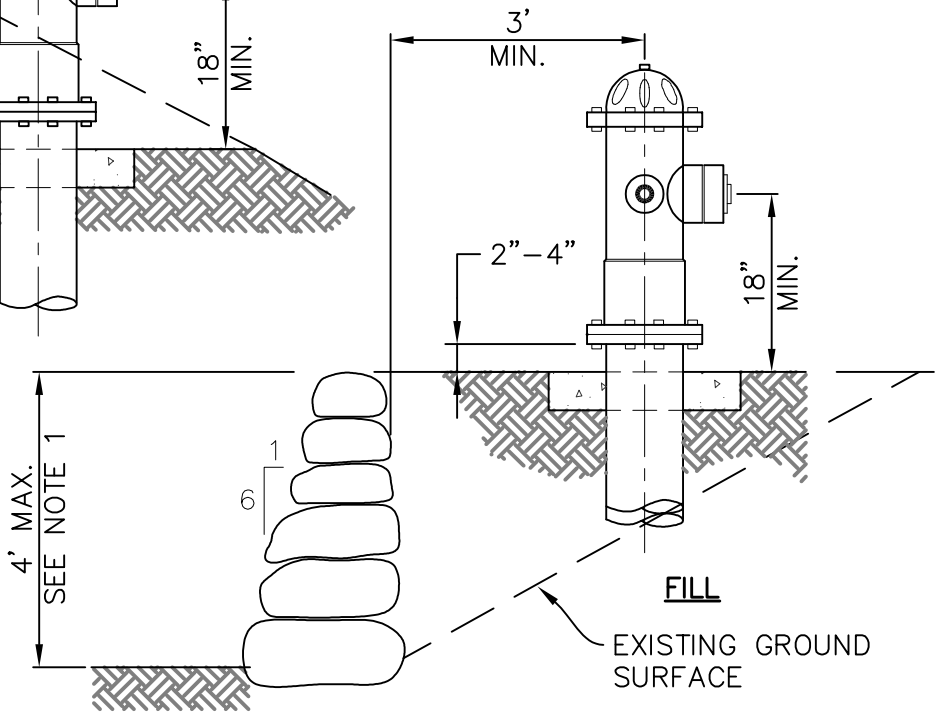
PLAN



GUARD POST ELEVATION



CUT



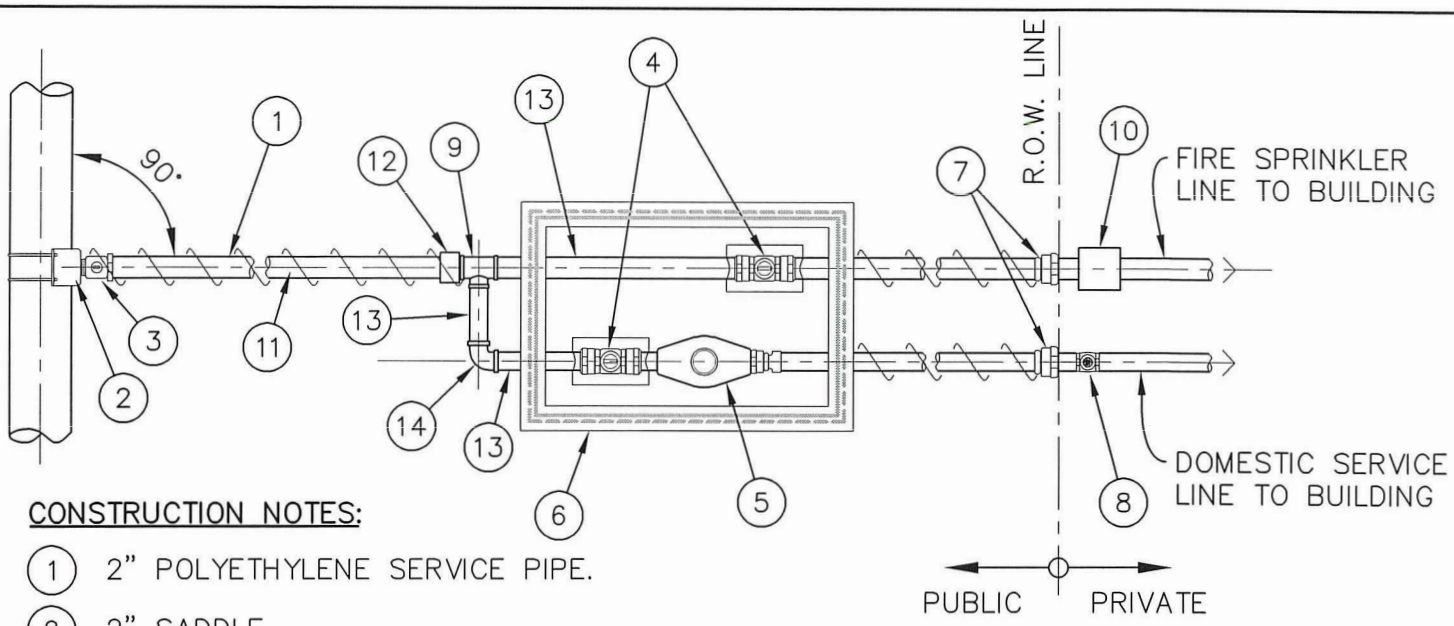
FILL

NOTES:

1. SEE PLAN FOR WALLS EXCEEDING 4'-0" IN HEIGHT.

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 2/7/24	CITY OF AUBURN WASHINGTON	FIRE HYDRANT LOCATION IN CUT OR FILL W/ GUARD POSTS
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: W-08.3

Plotted by: Craig Dobyns on 1/12/2024 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL-W-08.3



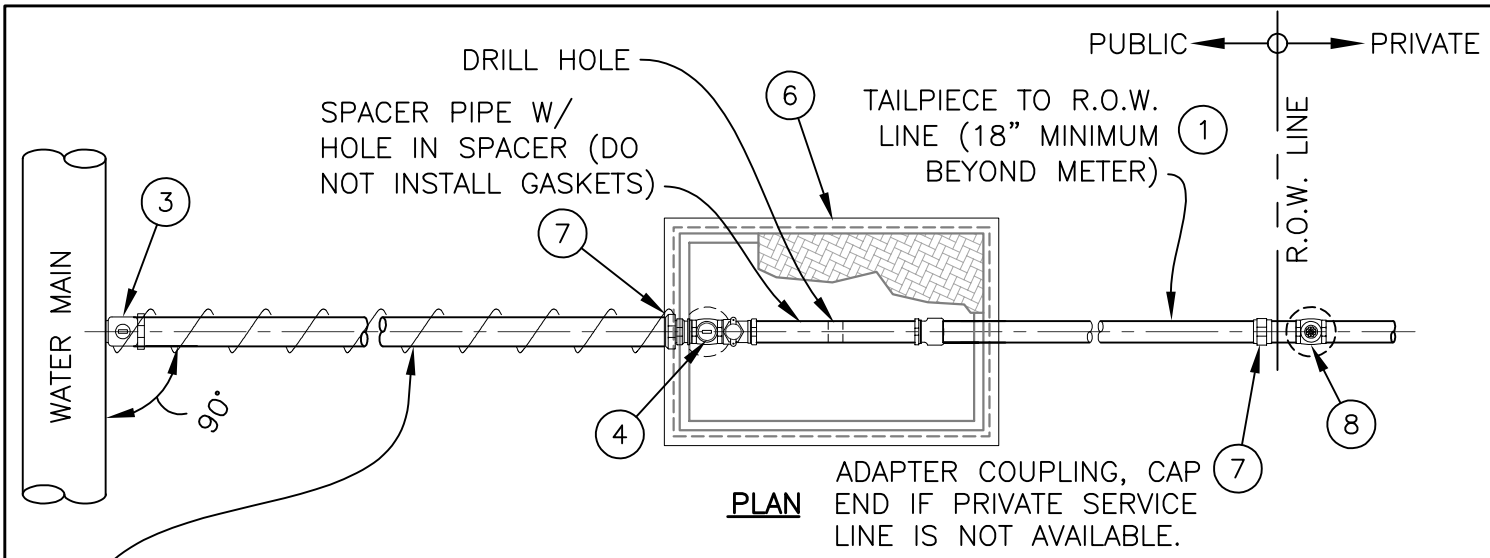
CONSTRUCTION NOTES:

1. 2" POLYETHYLENE SERVICE PIPE.
2. 2" SADDLE.
3. 2" CORPORATION STOP.
4. CURB VALVE WITH COUPLINGS AND LOCK WING EARS, ENCASED VERTICALLY BY 3" DIA. SCH. 40 PVC PIPE, NOTCHED AT BOTTOM TO FIT OVER COUPLINGS. FIRE LINE PVC PIPE SHALL BE PAINTED RED TO IDENTIFY AS A FIRE LINE.
5. METER YOLK WITH SPACER PIPE W/ HOLE IN SPACER. DO NOT INSTALL GASKETS.
6. 17"x30" METER BOX.
7. ADAPTER COUPLING, TEMPORARILY CAP IF PRIVATE SIDE CONNECTION IS NOT READY.
8. SHUT OFF VALVE ON DOMESTIC LINE (CUSTOMER TO INSTALL AND MAINTAIN).
9. 2"x2"x*" TEE, WHERE *" IS METER SIZE IN INCHES (1" MINIMUM) FOR DOMESTIC LINE.
10. BACKFLOW PREVENTION ASSEMBLY ON FIRE SPRINKLER LINE (CUSTOMER TO INSTALL AND MAINTAIN).
11. #10 INSULATED COPPER TRACER WIRE.
12. 2" ADAPTER (MIPxCOMP)
13. *" BRASS NIPPLE, LENGTH AS NEEDED.
14. *" BRASS ELBOW

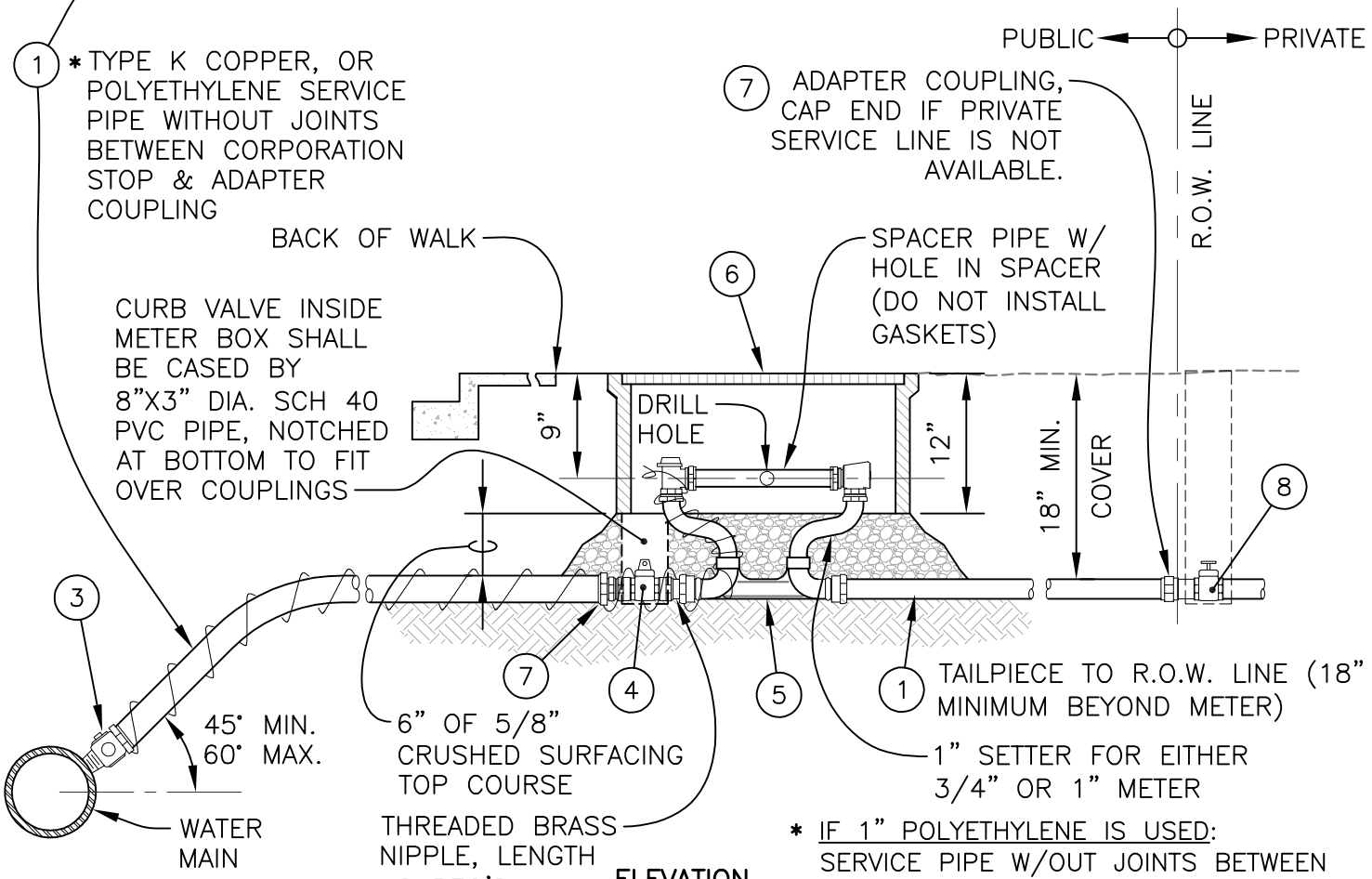
NOTES:

1. THIS DETAIL IS APPLICABLE TO SINGLE FAMILY RESIDENCES ONLY.
2. CONNECTION TO CITY WATER MAIN PER CITY OF AUBURN REQUIREMENTS.
3. BACKFLOW PREVENTION ASSEMBLY SHALL BE PER DESIGN STANDARDS.
4. PLANS FOR SEPARATE FIRE SPRINKLER LINE MUST BE SUBMITTED AND APPROVED BY THE FIRE MARSHAL PRIOR TO INSTALLATION.
5. NO DETAIL IS REQUIRED FOR FLOW-THROUGH FIRE SPRINKLER SYSTEMS.
6. SEE STANDARD DETAIL W-15 FOR MATERIAL SCHEDULE.

APPROVED BY CITY ENGINEER: Jacob Sweeting DATE: 12/26/19	CITY OF AUBURN WASHINGTON	2" FIRE SPRINKLER LINES WITH 3/4" to 2" DOMESTIC SERVICE LINE
PUBLIC WORKS DEPARTMENT		STANDARD DETAIL: W-09.3



PLAN



ELEVATION

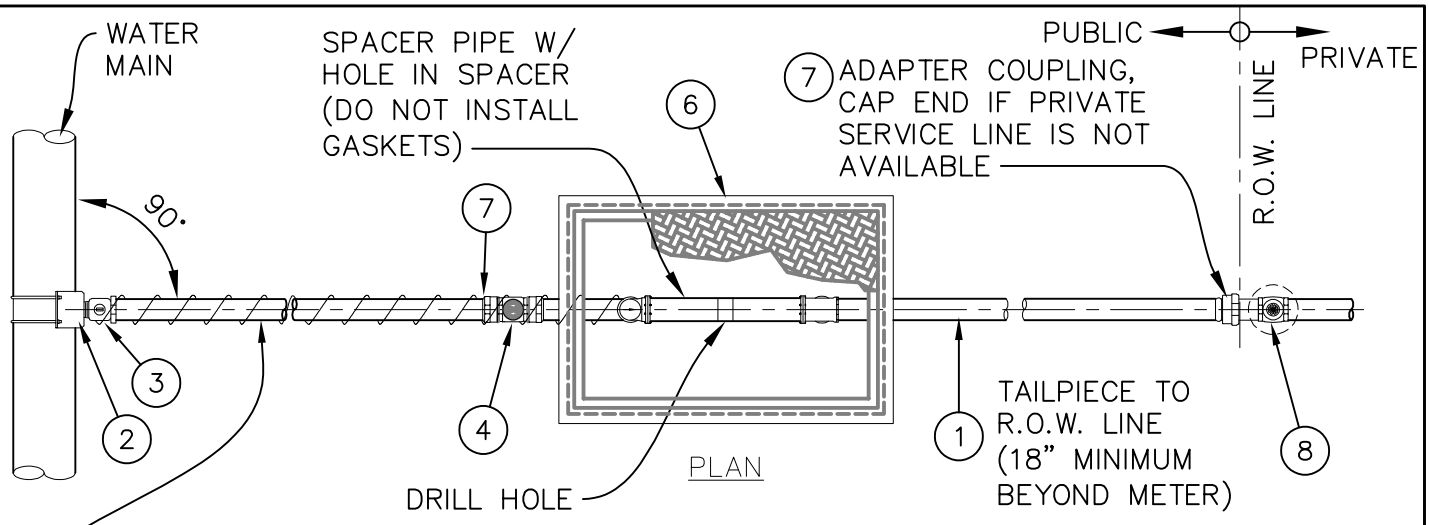
NOTES:

1. SEE STANDARD DETAIL W-15 FOR MATERIAL SCHEDULE.
2. ALL DOMESTIC SERVICE LINES FROM THE WATER MAIN, INCLUDING THE METER YOKE, SHALL BE A MINIMUM OF 1" IN DIAMETER.
3. METER PROVIDED BY CITY, CONNECTIONS MADE FROM EXISTING WATER MAIN SHALL BE INSTALLED BY THE CITY OF AUBURN AND PAID FOR BY THE APPLICANT OR CONTRACTOR.
4. METER LAY LENGTH 1" METER = 10-3/4"

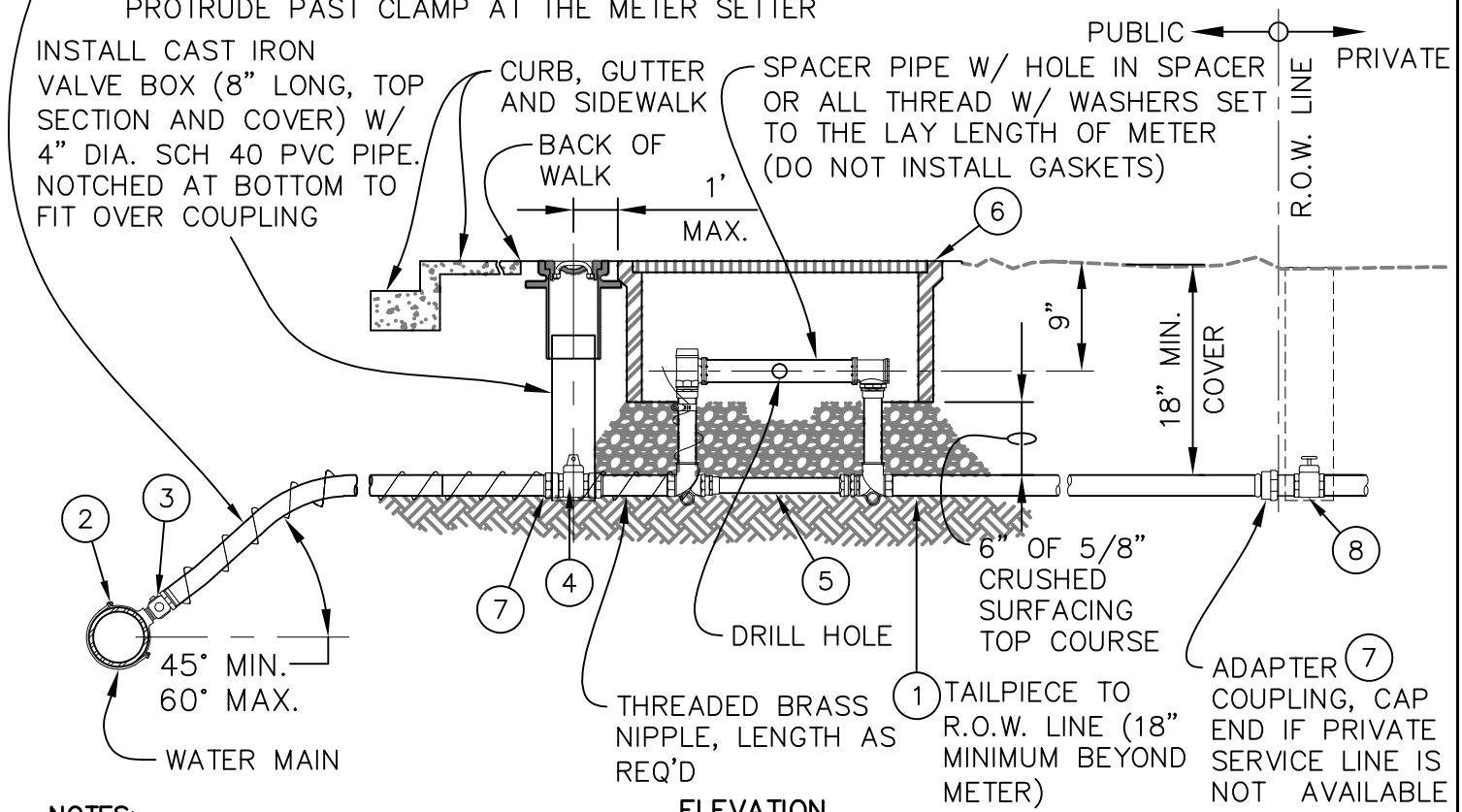
* IF 1" POLYETHYLENE IS USED: SERVICE PIPE W/OUT JOINTS BETWEEN CORP. STOP AND CURB VALVE AND WRAPPED W/ #10 INSULATED COPPER TRACER WIRE. ATTACH BARE TRACER WIRE TO CORP. STOP AND WRAP IT AROUND THE HDPE PIPE AND METER SETTER AS SHOWN W/ HIGH TORQUE SMOOTH STAINLESS STEEL HOSE CLAMPS. A MINIMUM OF 8" BARE WIRE SHALL PROTRUDE PAST CLAMP AT THE METER SETTER

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 2/7/24	CITY OF AUBURN WASHINGTON	1" WATER SERVICE INSTALLATION
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: W-13.6

Plotted by: Craig Dobyns on 1/24/2024 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL-W-13.6



1 SERVICE PIPE W/OUT JOINTS BETWEEN CORP. STOP AND CURB VALVE AND WRAPPED W/ #10 INSULATED COPPER TRACER WIRE. ATTACH BARE TRACER WIRE TO CORP. STOP AND WRAP IT AROUND THE HDPE PIPE AND METER SETTER AS SHOWN W/ HIGH TORQUE SMOOTH STAINLESS STEEL HOSE CLAMPS. A MINIMUM OF 8" BARE WIRE SHALL PROTRUDE PAST CLAMP AT THE METER SETTER



ELEVATION

NOTES:

1. SEE STANDARD DETAIL W–15 FOR MATERIAL SCHEDULE.
2. ALL DOMESTIC SERVICE LINES FROM THE WATER MAIN TO THE ADAPTER COUPLING, STRAIGHT COUPLING, OR CURB VALVE, SHALL BE A MINIMUM OF 1" IN DIAMETER.
3. METER PROVIDED BY CITY, CONNECTIONS MADE FROM EXISTING WATER MAIN SHALL BE INSTALLED BY THE CITY OF AUBURN AND PAID FOR BY THE APPLICANT OR CONTRACTOR.
4. METER LAY LENGTHS: 1.5" METER = 13" || 2" METER = 17"

APPROVED BY CITY ENGINEER: Jacob Sweeting	DATE: 1/17/2022	CITY OF AUBURN WASHINGTON	1 1/2" & 2" WATER SERVICE
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: W–14.3

Plotted by: Craig Dobyns on 1/6/2022 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL–W–14.3

WATER SERVICE MATERIAL SCHEDULE

(1) THE CITY OF AUBURN ALLOWS 1" TO 2" POLYETHYLENE SDR-9 (IN COPPER TUBE SIZES) W/ STAINLESS STEEL LINERS IN ALL COUPLINGS & WRAPPED W/ A #10 INSULATED COPPER TRACER WIRE WRAPPED AROUND HDPE PIPE AS SHOWN. FOR 1" COPPER, IT SHALL BE TYPE K COPPER TUBING W/OUT TRACER WIRE FOR WATER SERVICE & TAILPIECE CONNECTION, IN ACCORDANCE W/ STANDARD SPECIFICATION SECTION 9-30.6(3). ALL CONNECTIONS TO POLYETHYLENE OR COPPER TUBING SHALL BE W/ MUELLER 110 COMPRESSION CONNECTIONS OR EQUAL. TAILPIECE SHALL EXTEND TO R.O.W. LINE (18" MINIMUM BEYOND METER) & SHALL BE THE SAME SIZE AS THE SERVICE LINE.

(2) SADDLES FOR 1", 1-1/2", OR 2" PIPE TAPS SHALL BE EPOXY COATED OR E-COATED DUCTILE IRON W/ DOUBLE STAINLESS STEEL STRAPS & NEOPRENE GASKETS. SADDLES SHALL HAVE I.P.S. FEMALE THREADS.

(8) CONTRACTOR SHALL FURNISH & INSTALL PRIVATE SERVICE LINE SHUT-OFF VALVE & RISER. FOR CAPITAL PROJECTS, SEE CONTRACT DOCUMENTS, OTHERWISE PROPERTY OWNER TO INSTALL PRIVATE SERVICE LINE SHUT-OFF VALVE AT POINT OF CONNECTION.

METER LOCATIONS:

1. WHERE LANDSCAPE STRIPS ARE PLANNED OR EXIST, THE METER & METER BOX WILL BE PLACED BETWEEN THE BACK OF THE CURB & THE SIDEWALK, ADJACENT TO THE SIDEWALK IF ROOM PERMITS;
2. WHERE THE SIDEWALK IS LOCATED ADJACENT TO THE BACK OF THE CURB OR THE LANDSCAPE STRIP IS TOO NARROW TO ACCOMMODATE THE METER BOX, THE METER & METER BOX WILL BE PLACED ADJACENT TO & AT THE BACK OF SIDEWALK;
3. WHERE METERS & METER BOXES ARE LOCATED IN THE STREET OR SIDEWALK OR IN LOCATIONS WHICH ARE SUBJECTED TO VEHICULAR TRAFFIC, INCLUDING DRIVEWAYS, ETC., A TRAFFIC BEARING METER BOX & LID OF APPROPRIATE LOAD RATING SHALL BE PROVIDED AS SPECIFIED (EAST JORDAN IRON WORKS, OR EQUAL).
4. LOCATE CURB VALVE IN THE METER BOX WHERE POSSIBLE & 1 FT. OUTSIDE IF NO ROOM INSIDE METER BOX IS AVAILABLE.
5. OFF STREET METER LOCATION SHALL BE APPROVED BY THE CITY.

SCHEDULE NO. & PART	SERVICE LINE SIZE & MUELLER/AY McDONALD/FORD CATALOG NO. OR APPROVED EQUAL		
	1"	1-1/2"	2"
(3) CORP. STOP	DIRECT TAP OPTION: MUELLER B-25008N, AY McDONALD 74701BQ, OR FORD FB1000-4-Q-NL SADDLE OPTION: MUELLER B-20013N W/ H-15451N OUTLET COUPLING, AY McDONALD 73131B W/ 74754Q OUTLET COUPLING, OR FORD FB500-4-NL W/ C14-44-Q-NL OUTLET COUPLING	MUELLER B-2969N W/ H-15451N OUTLET COUPLING, AY McDONALD 73131B W/ 74754Q, OR FORD FB500-6-NL W/ C14-66-Q-NL OUTLET COUPLING	MUELLER B-2969N W/ H-15451N OUTLET COUPLING, AY MCDONALD 73131B W/ 74754Q, OR FORD FB500-7-NL W/ C14-77-Q-NL OUTLET COUPLING
(4) CURB VALVE	MUELLER B-20200N, AY McDONALD 76101W, OR FORD B11-444W-NL	MUELLER B-20200N, AY MCDONALD 76101W, OR FORD B11-666W-NL	MUELLER B-20200N, AY MCDONALD 76101W, OR FORD B11-777W-NL
(5) METER YOKE	MUELLER B-2404R-2N W/ H-14222N INLET & H-14227N OUTLET COUPLINGS, 12" RISER OR AY McDONALD 723-412WDDQ44 W/ MUELLER H-10879 5/8"x3/4"x1", AY McDONALD 710J24KIT, OR FORD VBH74-12W-14-44-Q-NL ADAPTERS FOR 3/4" METERS	MUELLER B-2423-2N W/ H-15428N OUTLET COUPLING, AY McDONALD 720B612WDFF 665.8 W/ 74753Q, OR FORD VBH76-12B-11-66-NL W/ C84-66-Q-NL OUTLET COUPLING, 12" RISER	MUELLER B-2423-2N W/ H-15428N OUTLET COUPLING, AY MCDONALD 720B612WDFF 775.8 W/ 74753Q OR FORD VBH77-12B-11-77-NL W/ C84-77-Q-NL OUTLET COUPLING, 12" RISER
(6) METER BOX	HUBBELL QUAZITE OR ARMORCAST (NOT PERMITTED FOR USE IN PEDESTRIAN PATHWAYS) 13"x24"x12" POLYMER CONCRETE BOX & COVER W/ READER LID & 2" AMR PORT W/ (2) 2 ½ X 3 MOUSEHOLES (BO3132412M)	HUBBELL QUAZITE OR ARMORCAST (NOT PERMITTED FOR USE IN PEDESTRIAN PATHWAYS), 17"x30"x12" POLYMER CONCRETE BOX & COVER W/ READER LID & 2" AMR PORT & W/ (2) 2 ½ x 3 MOUSEHOLES (BO3173012M)	
(7) COUPLING	MUELLER H-15428N, AY McDONALD 74753Q, OR FORD C84-44-Q-NL	MUELLER H-15428N, AY McDONALD 74753Q OR FORD C84-66-Q-NL	MUELLER H-15428N, AY McDONALD 74753Q, OR FORD C84-77-Q-NL
(8) SHUT-OFF VALVE	MUELLER B-20200N W/ B-20298-99000 LEVER HANDLE, OR AY McDONALD 76101W W/ 6120B LEVER HANDLE W/ 10" IRRIGATION BOX AND 8" PVC RISER		

APPROVED BY CITY ENGINEER: Jacob Sweeting DATE: 2/7/24

CITY OF AUBURN WASHINGTON

WATER METER LOCATION & MATERIAL SCHEDULE

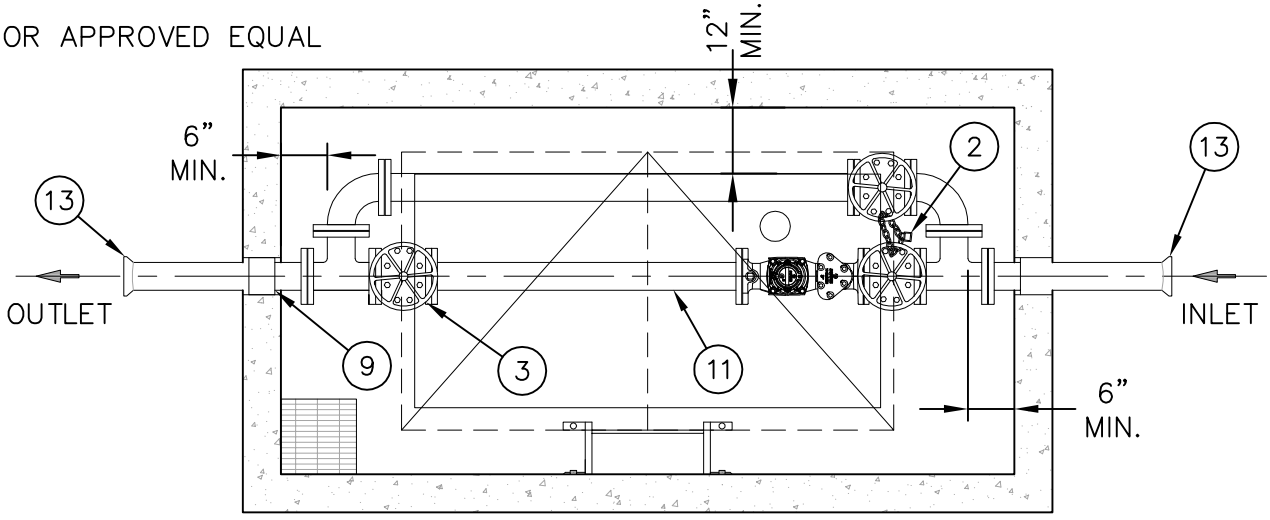
PUBLIC WORKS DEPARTMENT

STANDARD DETAIL: W-15.8

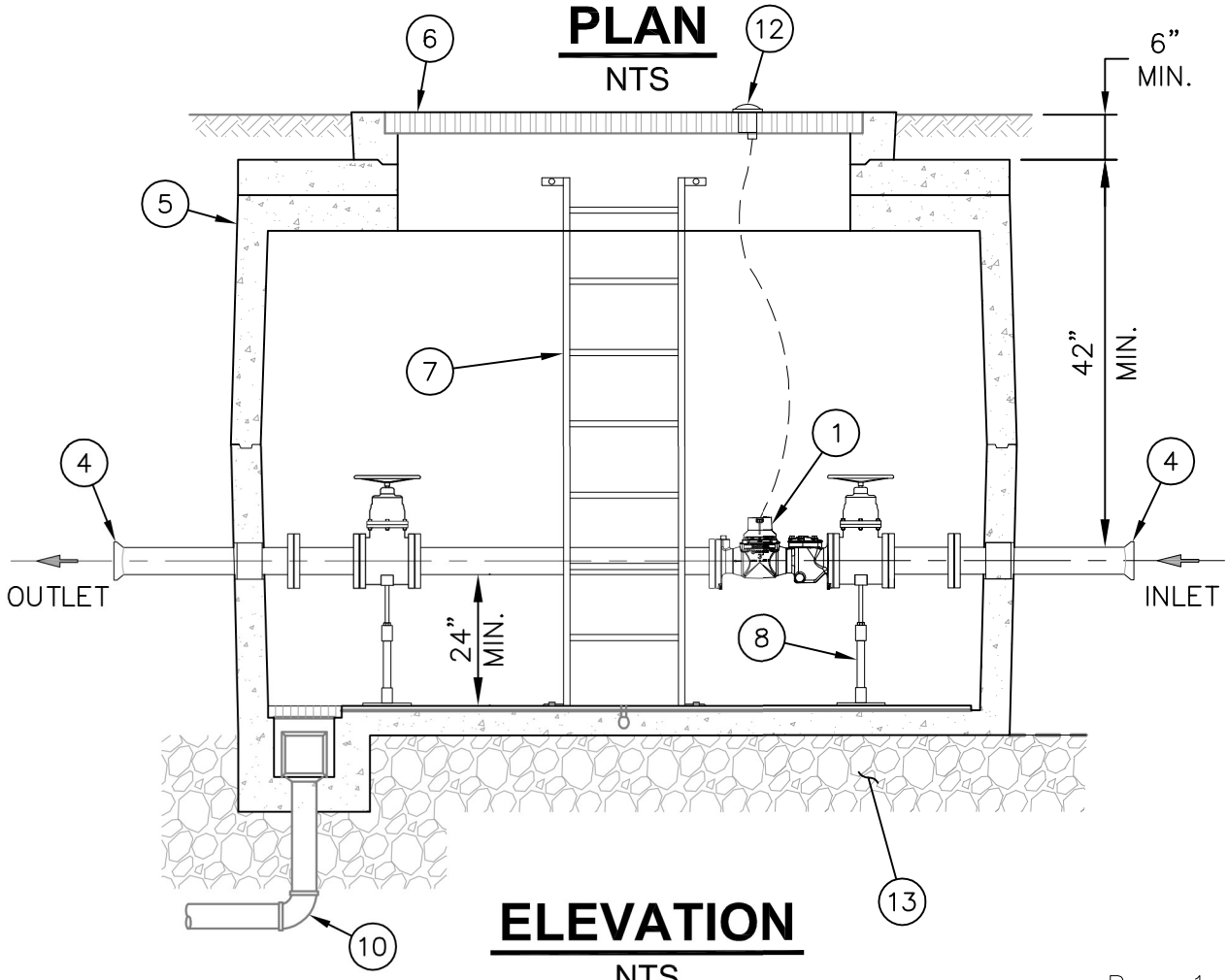
Plotted by: Craig Dobyns on 1/24/2024 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL-W-15.8

METER SIZE	MAIN LINE	BYPASS	METER LENGTH FLG. TO FLG.	MIN. LENGTH	MIN. WIDTH	MIN. HEIGHT	OLDCASTLE VAULT MODEL**	GRANITE VAULT MODEL**
3"	3" D.I.P.	3" D.I.P.	17"	8'–4"	4'–4"	6'–2"	4484–LA	4x8 MV
4"	4" D.I.P.	4" D.I.P.	20"	8'–4"	4'–4"	6'–2"	4484–LA	4x8 MV
6"	6" D.I.P.	6" D.I.P.	24"	10'–6"	5'–0"	6'–2"	5106–LA	5x10 MV
8"	8" D.I.P.	8" D.I.P.	30 1/8"	12'–0"	6'–0"	6'–5"	612–LA	6x12 MV
10"	10" D.I.P.	10" D.I.P.	41 7/8"	14'–0"	8'–0"	6'–5"	814–LA	8x14 MV

** OR APPROVED EQUAL



PLAN
NTS



ELEVATION
NTS

APPROVED BY CITY ENGINEER: Jacob Sweeting
DATE: 01/05/2021
CITY OF AUBURN WASHINGTON
3" OR LARGER WATER METER INSTALLATION
PUBLIC WORKS DEPARTMENT
STANDARD DETAIL: W–16.3

Plotted by: Craig Dobyns on 12/10/2020 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL–W–16.3

BILL OF MATERIALS

PART NO.	QUANTITY	DESCRIPTION
1	1	METER PROVIDED BY CITY FOR CONTRACTOR INSTALLATION: SENSUS OMNI C2 COMPOUND METER OR APPROVED EQUAL FLANGED WITH BUILT-IN STRAINER AND ENCODERS COMPATIBLE WITH CURRENT SENSUS AMR/AMI SYSTEM
2	1	LOCK WITH CHAINS
3	3	AWWA C-509 OR C-515 GATE VALVE COMPLETE WITH HAND WHEEL
4	2	FIRST JOINT OUTSIDE VAULT REQUIRES FIELD LOK GASKET OR OTHER FORM OF JOINT RESTRAINT
5	1	PRECAST CONCRETE VAULT COMPLETE WITH COLLAR, C555 WHITE INTERIOR PAINT
6	1	36"x72" ALUMINUM HATCH H20-44 CLASS B, STATIC LOADING WITH HOLD OPEN ARM
7	1	O.S.H.A. APPROVED SAFETY LADDER W/ TELESCOPING SAFETY POST (IF VAULT IS OVER 30" DEEP). BOLT LADDER TO VAULT FLOOR AND TO VAULT WALL
8	2	GALVANIZED STEEL ADJUSTABLE PIPE SUPPORT
9	2	MEGALUG OR ROMAGRIP SEALED IN CONCRETE FILLING KNOCKOUT
10	1	SUMP DRAIN, CONNECT TO CITY STORM SYSTEM, IF GRAVITY DRAIN IS NOT FEASIBLE, A SUMP PUMP WITH CHECK VALVE ON DISCHARGE LINE IS REQUIRED
11	1	SPOOL, MINIMUM LENGTH 2'-0", ONE END OF SPOOL TO BE INSTALLED WITH A UNI-FLANGE W/ RESTRAINT LUGS.
12	1	2" AMR PORT
13	AS REQ'D	5/8" MINUS CRUSHED ROCK FOUNDATION WITH COMPACTED DEPTH OF 12" MINIMUM

STANDARD FABRICATION & FINISHING SPECIFICATION

1. ALL STEEL PIPE SHALL BE SANDBLASTED, EPOXY LINED AND COATED TO AWWA C-120 AND NSF-61 SPECIFICATIONS. FINISH COATING SHALL BE BLUE ENAMEL.
2. GATE VALVE ON THE BYPASS SHALL BE NORMALLY CLOSED AND LOCKED WITH THE GATE VALVE ON THE MAIN LINE AS SHOWN AND KEYS GIVEN TO THE CITY.
3. DUCTILE IRON PIPE SHALL BE ACCORDING TO 9-30.1(1) OF THE STANDARD SPECIFICATIONS.

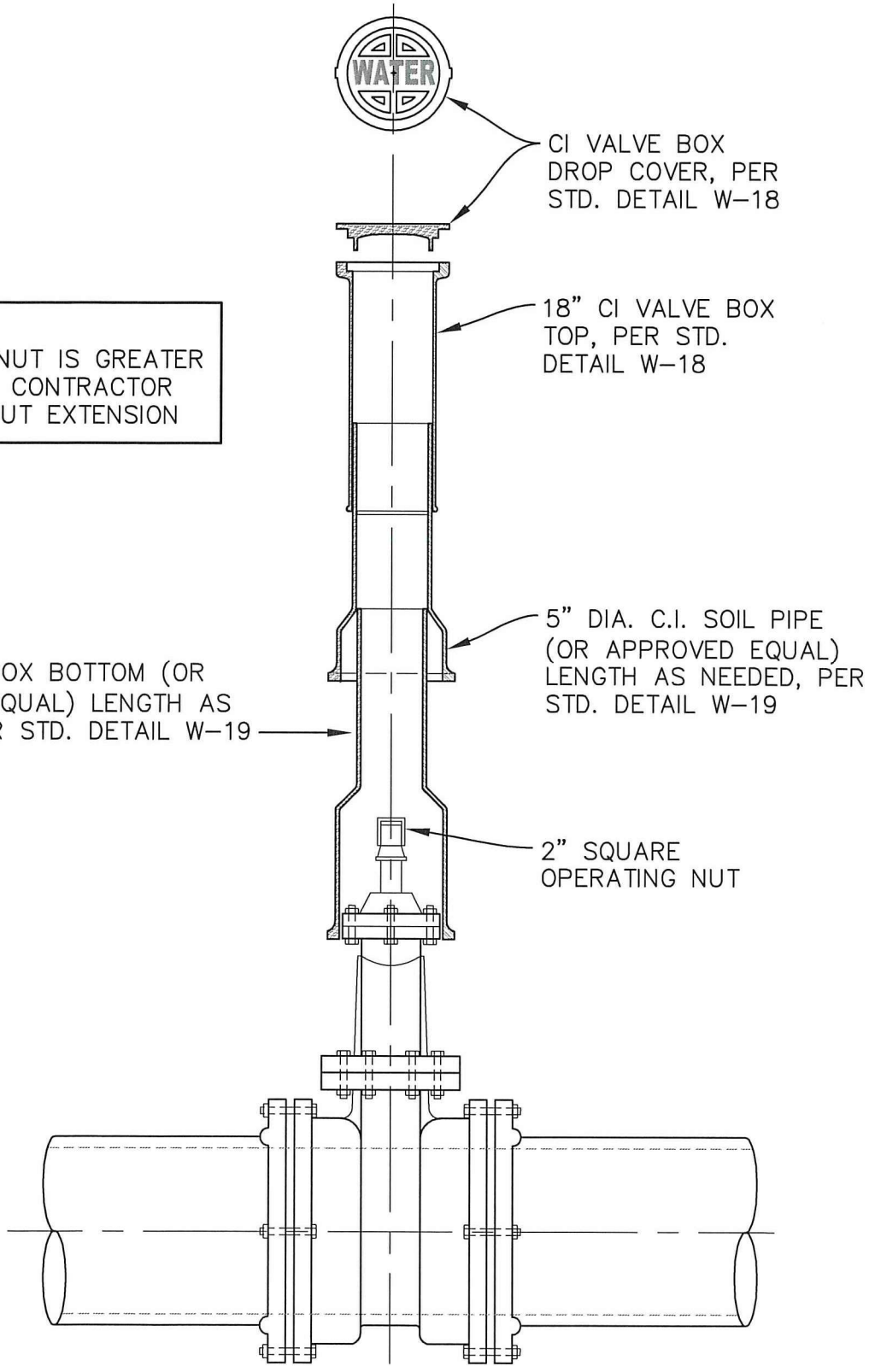
APPROVED BY CITY ENGINEER: Craig Dobyns

DATE: 01/05/2021

PUBLIC WORKS DEPARTMENT

3" OR LARGER WATER METER INSTALLATION

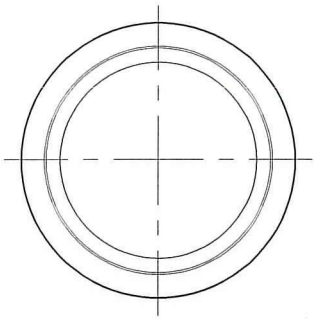
STANDARD DETAIL: W-16a.4



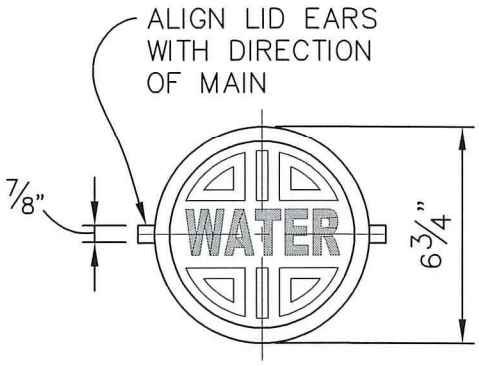
NOTE:
IF DEPTH OF NUT IS GREATER THAN 7 FEET, CONTRACTOR TO PROVIDE NUT EXTENSION

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	VALVE WRENCH EXTENSION BOX
	8/5/2016		
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: W-17.1

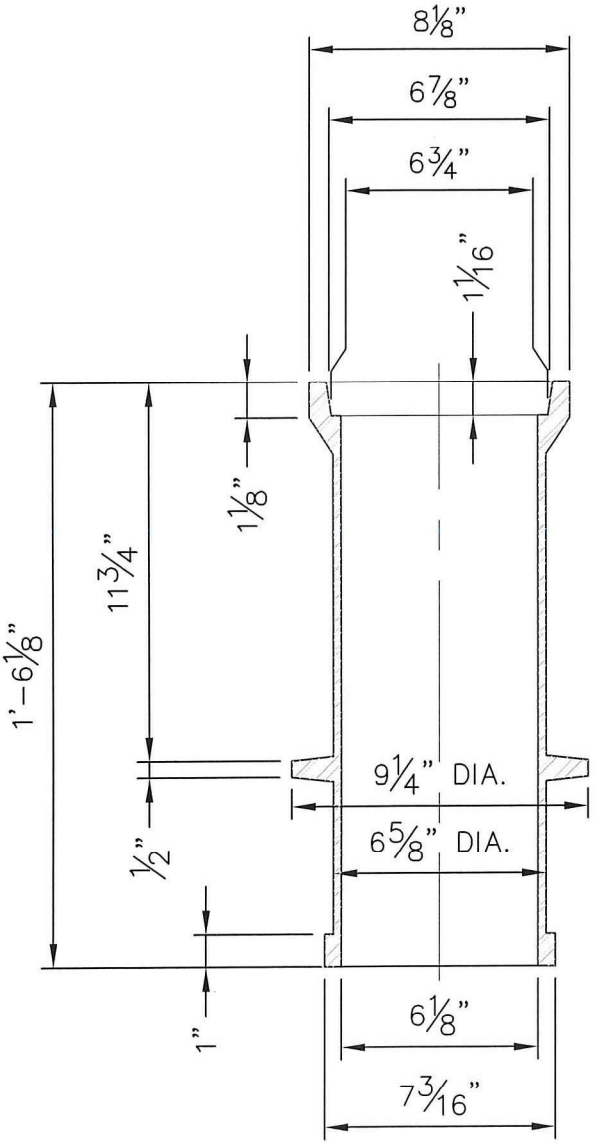
Plotted by: Craig Dobyns on 7/13/2016 File location: M:\Construction Standard Details\Approved Drawing Files (dwg)\Water\STDETL-W-17.1



TOP VIEW

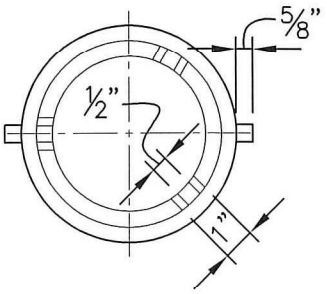


TOP VIEW

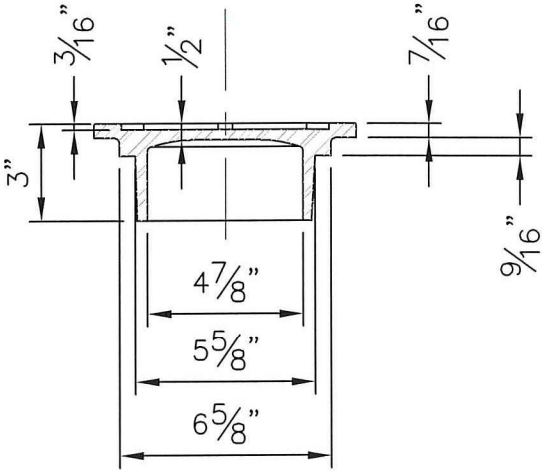


18" CAST IRON VALVE BOX TOP & COVER

NOT TO SCALE



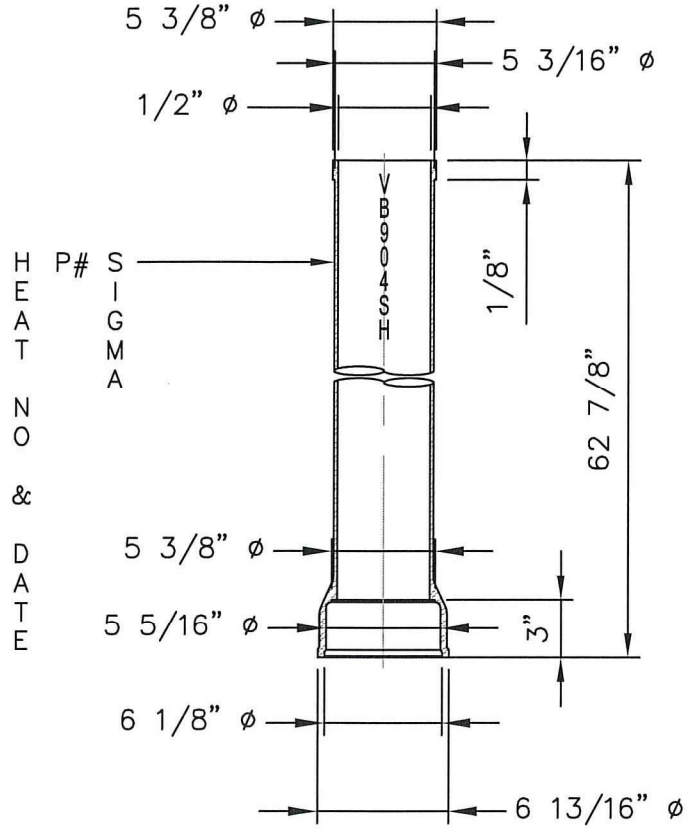
BOTTOM VIEW



VALVE BOX DROP COVER

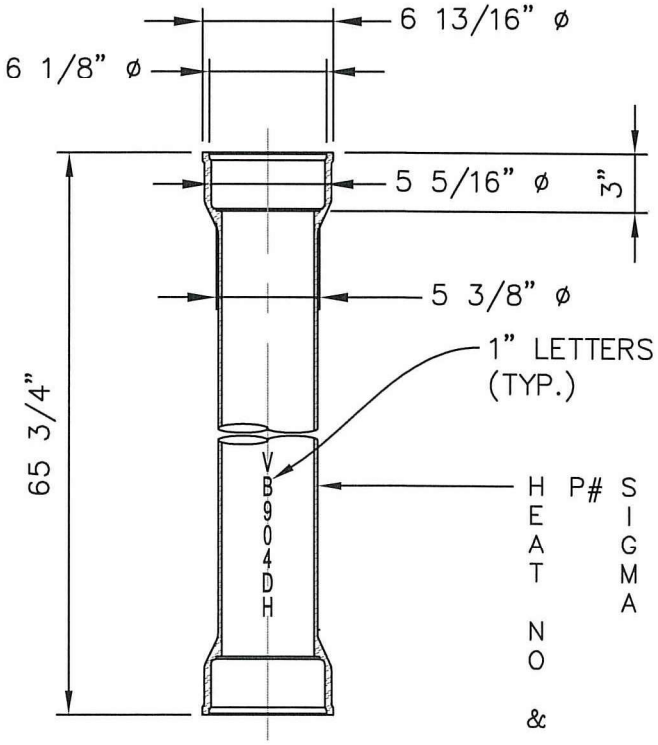
NOT TO SCALE

APPROVED BY CITY ENGINEER: Jacob Sweeting DATE: 12/20/19	CITY OF AUBURN WASHINGTON	C.I. VALVE BOX TOP & VALVE BOX COVER
PUBLIC WORKS DEPARTMENT		STANDARD DETAIL: W-18.3



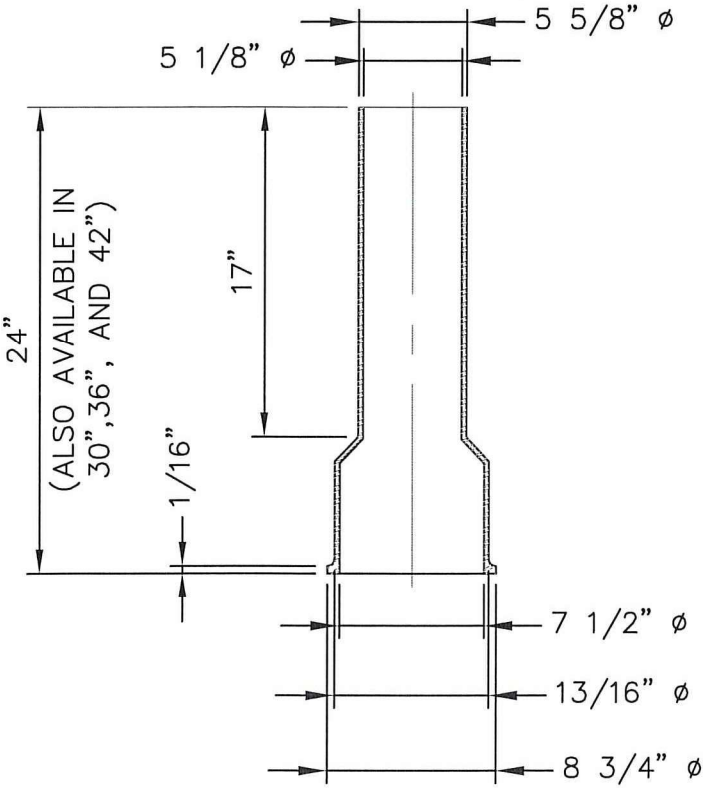
SINGLE HUB 5" C.I. SOIL PIPE VALVE BOX EXTENSION

NOT TO SCALE



DOUBLE HUB 5" C.I. SOIL PIPE VALVE BOX EXTENSION

NOT TO SCALE

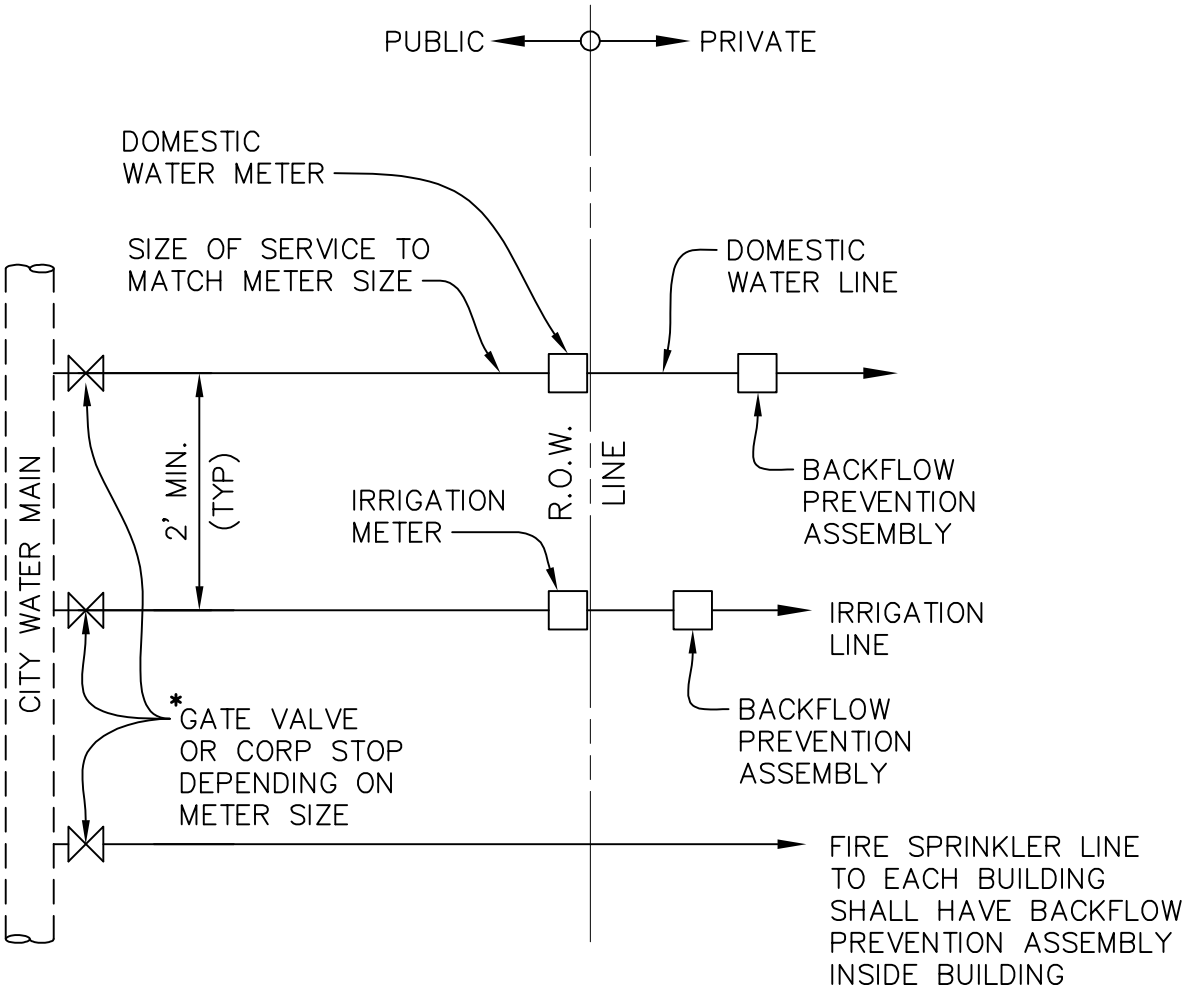


C.I. VALVE BOX BOTTOM

NOT TO SCALE

APPROVED BY CITY ENGINEER: [signature]	DATE: 8/5/2016	CITY OF AUBURN WASHINGTON	5" C.I. SOIL PIPE VALVE BOX EXTENSION & C.I. VALVE BOX BOTTOM
COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.			STANDARD DETAIL: W-19.1

Plotted by: Craig Dobyns on 7/13/2016 File location: N:\Construction Standard Details\Approved Drawing Files (dwg)\Water\STDETL-W-19.1



NOTES:

1. CONNECTION TO CITY WATER MAIN PER CITY OF AUBURN REQUIREMENTS.
2. BACKFLOW ASSEMBLY IS REQUIRED ON FIRE SPRINKLER, DOMESTIC, & IRRIGATION LINES. TYPE OF ASSEMBLY SHALL BE PER DESIGN STANDARDS.
3. PLANS FOR SEPARATE FIRE SPRINKLER LINE MUST BE SUBMITTED & APPROVED BY THE FIRE MARSHAL PRIOR TO INSTALLATION, AND SHALL BE DESIGNED BY A FIRE PROTECTION ENGINEER.

* FOR METERS 2" OR LESS USE CORP STOP & FOR METERS LARGER THAN 2" USE GATE VALVE WITH 2" STANDARD OPERATING NUT & COA VALVE BOX TO SURFACE.

APPROVED BY CITY ENGINEER:	DATE:		NON-SINGLE FAMILY SERVICE LINES
Jacob Sweeting	01/05/2021	CITY OF AUBURN WASHINGTON	
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: W-20.3

Plotted by: Craig Dobyns on 12/30/2020 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL-W-20.3

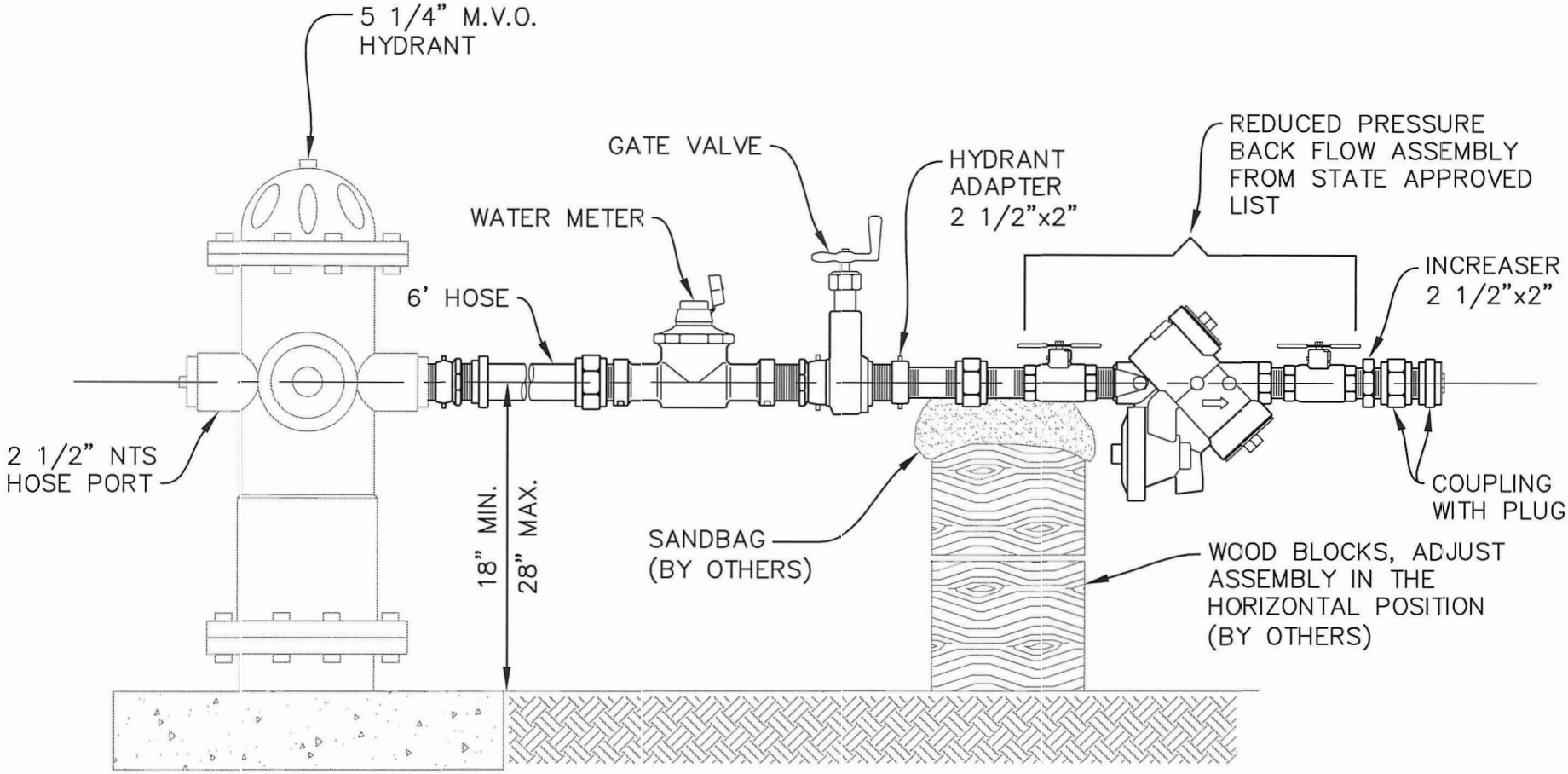
APPROVED BY CITY ENGINEER: Phil Sab DATE: 8/5/2016

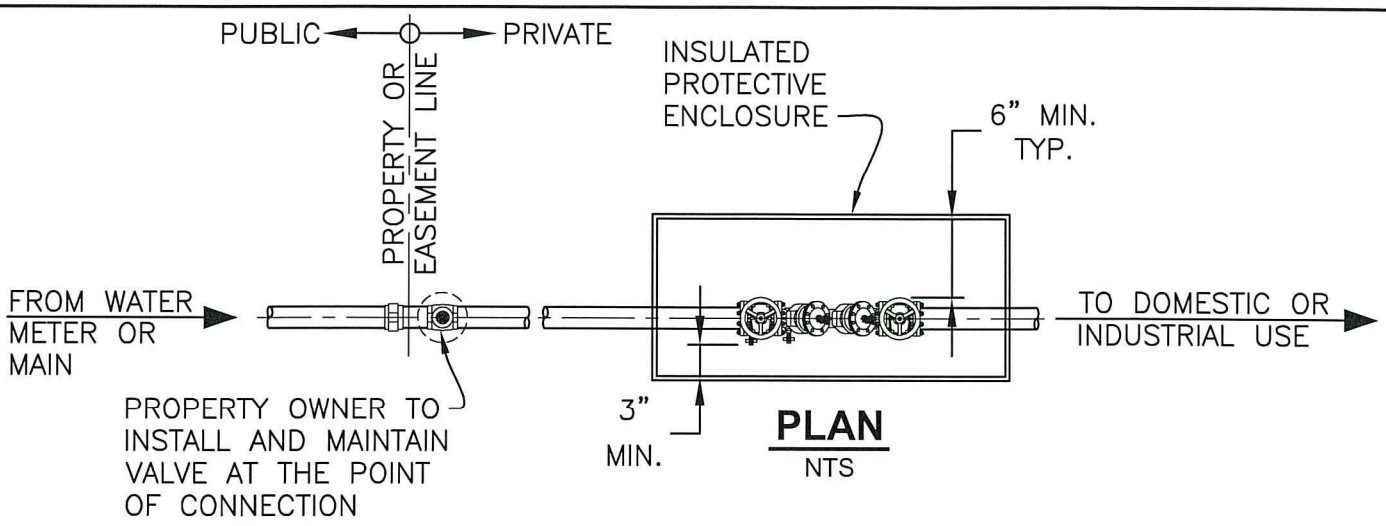
CITY OF AUBURN WASHINGTON

COMMUNITY DEVELOPMENT & PUBLIC WORKS DEPT.

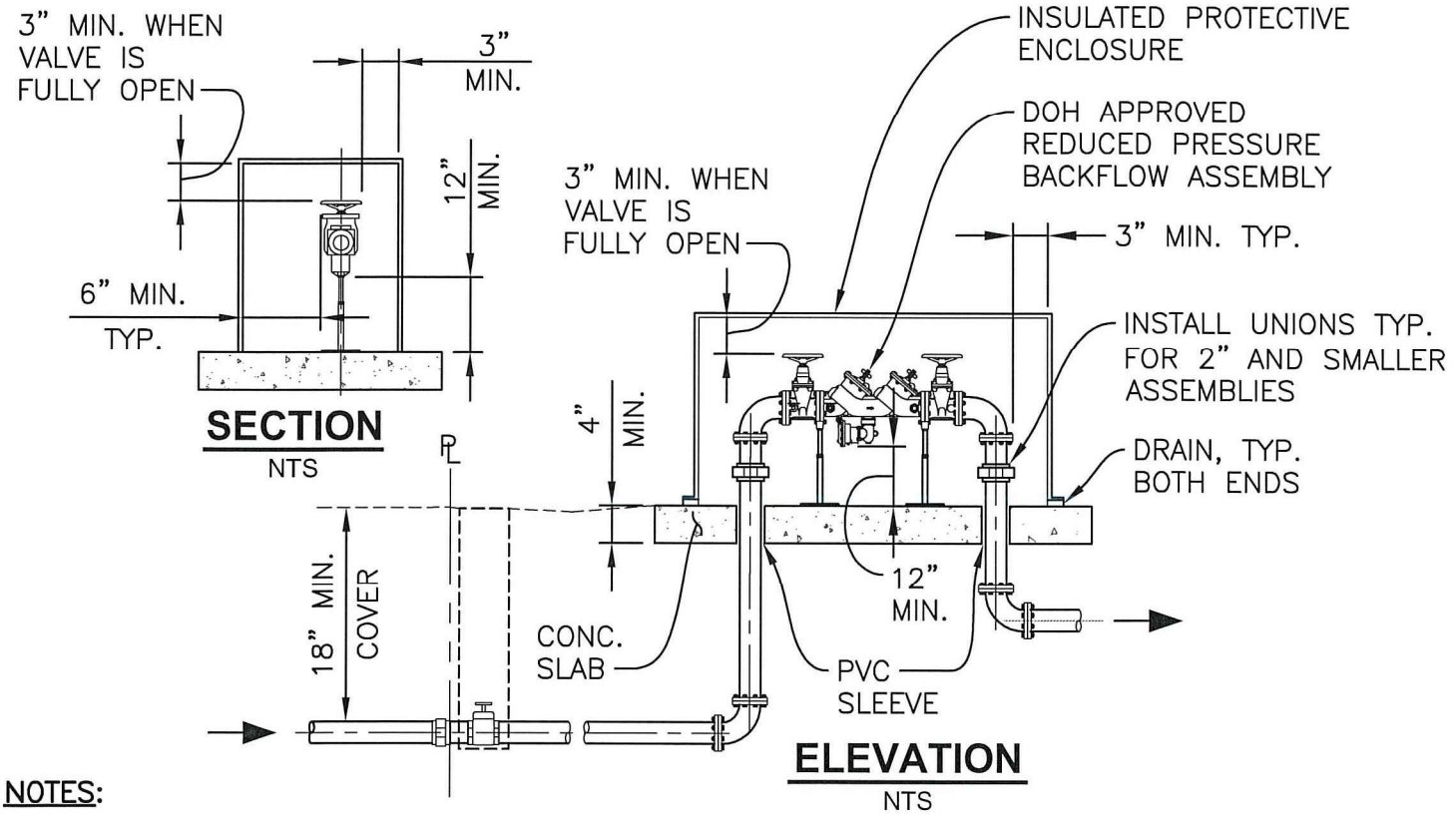
TEMP. COMBINATION HYDRANT METER/ REDUCED PRESSURE BACKFLOW ASSY.

STANDARD DETAIL: W-21.1





PLAN
NTS



SECTION
NTS

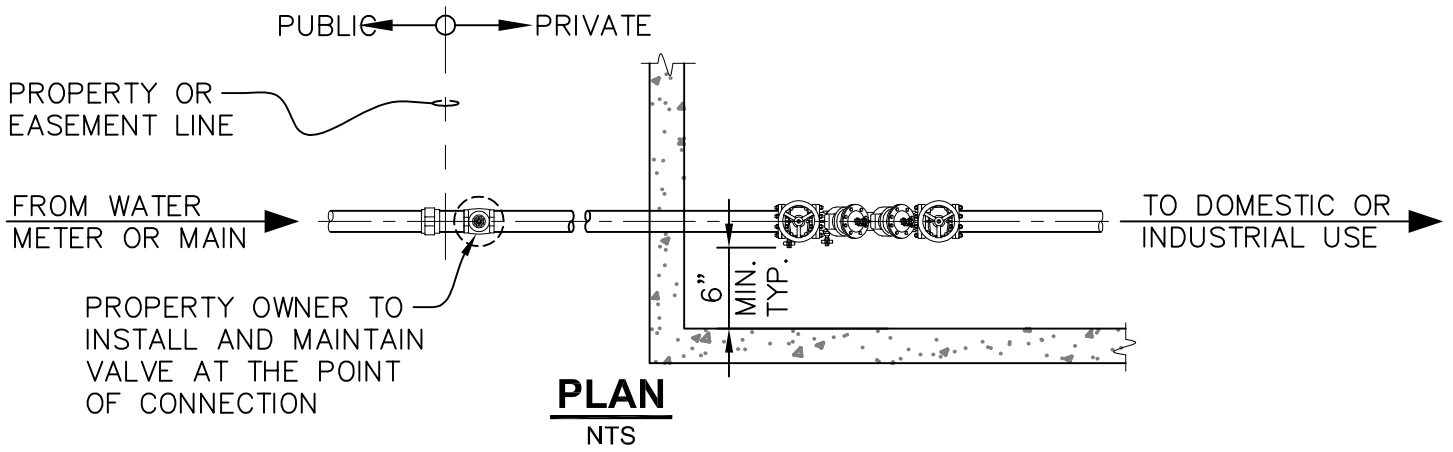
ELEVATION
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NOTES:

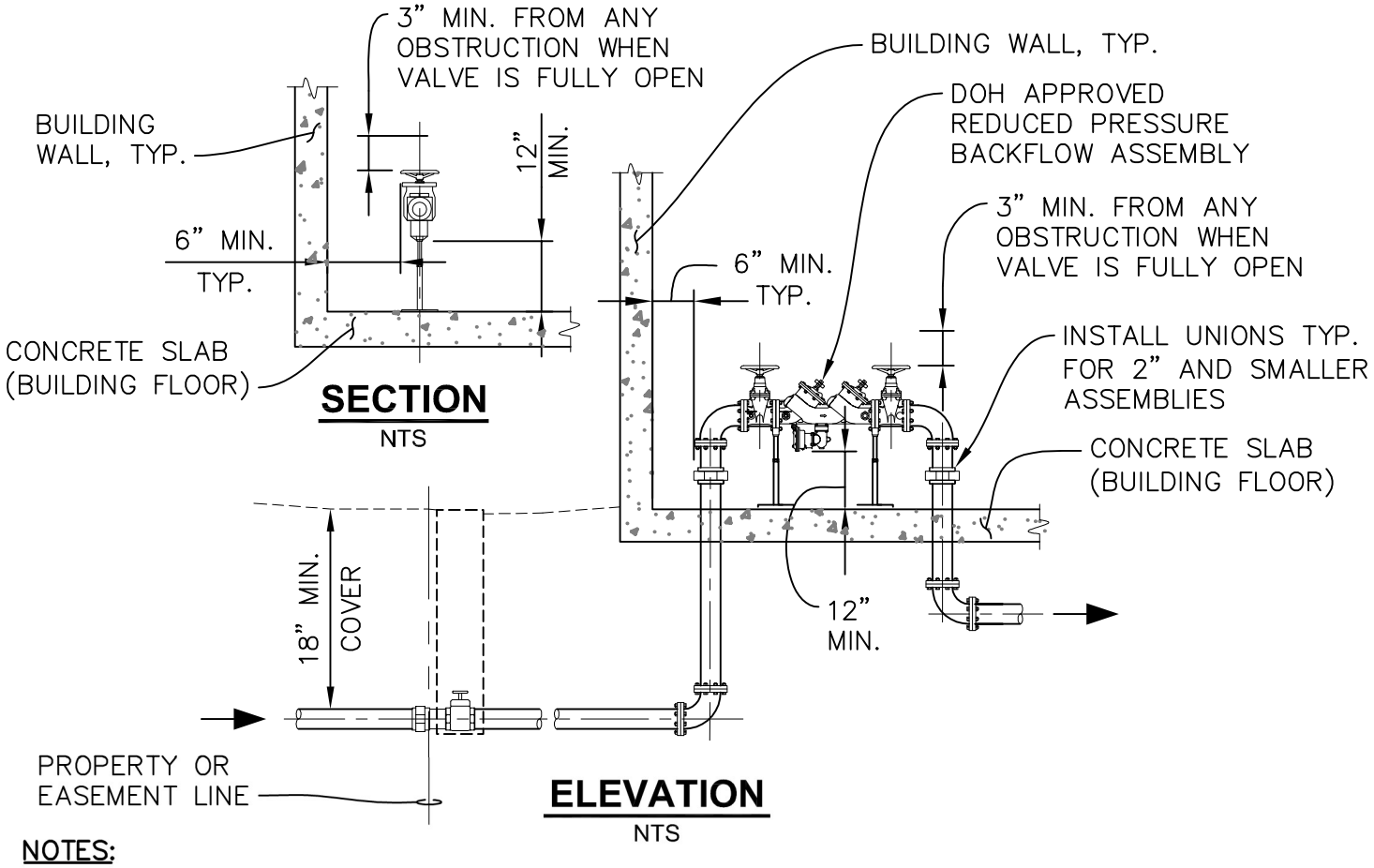
1. INSULATED PROTECTIVE ENCLOSURE MUST COMPLY WITH THE AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) 1060 OUTDOOR ENCLOSURES FOR BACKFLOW PREVENTION ASSEMBLIES. IT SHALL BE LOCKABLE WITH A KEY LOCK OR PADLOCK AND SHALL ALLOW FOR MINIMUM CLEARANCES AND PROVIDE ADEQUATE DRAINAGE.
2. RPBA SHALL BE INSTALLED ADJACENT TO THE METER AND HAVE NO BRANCH CONNECTION BETWEEN THE METER AND THE BACKFLOW ASSEMBLY. INSTALL RPBA HORIZONTALLY.
3. BACKFLOW ASSEMBLY MUST BE APPROVED FOR USE IN WASHINGTON STATE BY THE DEPARTMENT OF HEALTH (DOH). IT MUST BE TESTED BY A STATE CERTIFIED "BAT" AT THE TIME OF INSTALLATION, ANNUALLY, AFTER THE ASSEMBLY IS REPAIRED, MOVED OR AFTER AN INCIDENT AT OWNER'S EXPENSE.
4. BACKFLOW ASSEMBLY SHALL BE PURCHASED AND INSTALLED AS A UNIT, AS SHIPPED BY THE MANUFACTURER, WITH NO MODIFICATIONS TO ANY PART OF THE ASSEMBLY.
5. A MINIMUM OF TWO SUPPORTS MUST FIRMLY ANCHOR THE ASSEMBLY.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	REDUCED PRESSURE BACKFLOW ASSY. (OUTSIDE INSTALLATION)
[signature]	12/31/18		
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: W-22.2

Plotted by: Craig Dobyns on 12/31/2018 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL-W-22.2



PLAN
NTS



SECTION
NTS

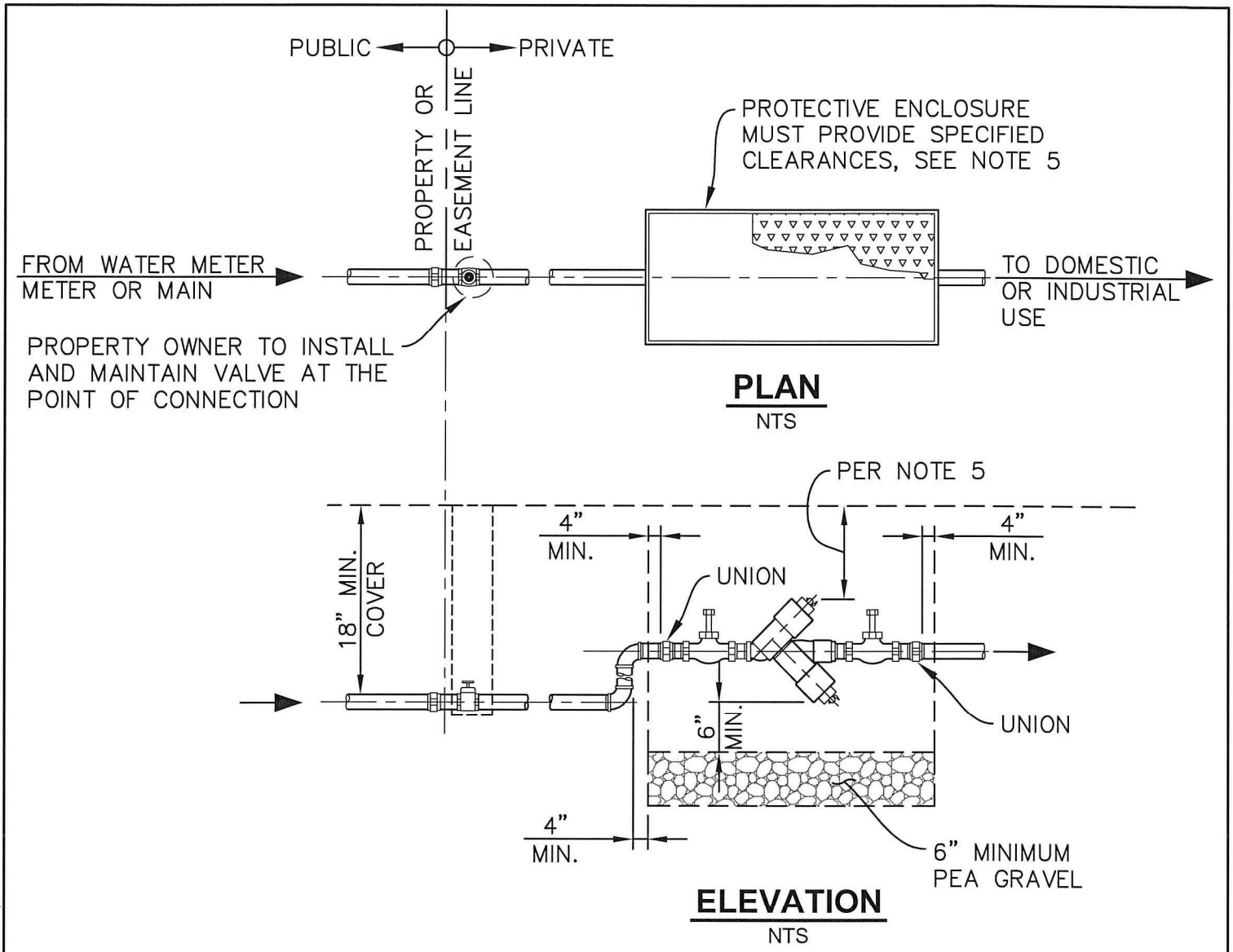
ELEVATION
NTS

NOTES:

1. RPBA INSTALLED INSIDE BUILDING SHALL HAVE NO BRANCH CONNECTIONS BETWEEN THE METER AND THE BACKFLOW ASSEMBLY. INSTALL RPBA HORIZONTALLY.
2. BACKFLOW ASSEMBLY MUST BE APPROVED FOR USE IN WASHINGTON STATE BY THE DEPARTMENT OF HEALTH (DOH). IT MUST BE TESTED BY A STATE CERTIFIED "BAT" AT THE TIME OF INSTALLATION, ANNUALLY, AFTER THE ASSEMBLY IS REPAIRED, MOVED OR AFTER AN INCIDENT AT OWNER'S EXPENSE.
3. BACKFLOW ASSEMBLY SHALL BE PURCHASED AND INSTALLED AS A UNIT, AS SHIPPED BY THE MANUFACTURER, WITH NO MODIFICATIONS TO ANY PART OF THE ASSEMBLY.
4. A MINIMUM OF TWO SUPPORTS MUST FIRMLY ANCHOR THE ASSEMBLY.
5. ADEQUATE DRAINAGE MUST BE PROVIDED.

APPROVED BY CITY ENGINEER:	DATE:		
Jacob Sweeting	01/05/2021	CITY OF AUBURN WASHINGTON	REDUCED PRESSURE BACKFLOW ASSY. (INSIDE INSTALLATION)
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: W-23.3

Plotted by: Craig Dobyns on 12/10/2020 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL-W-23.3

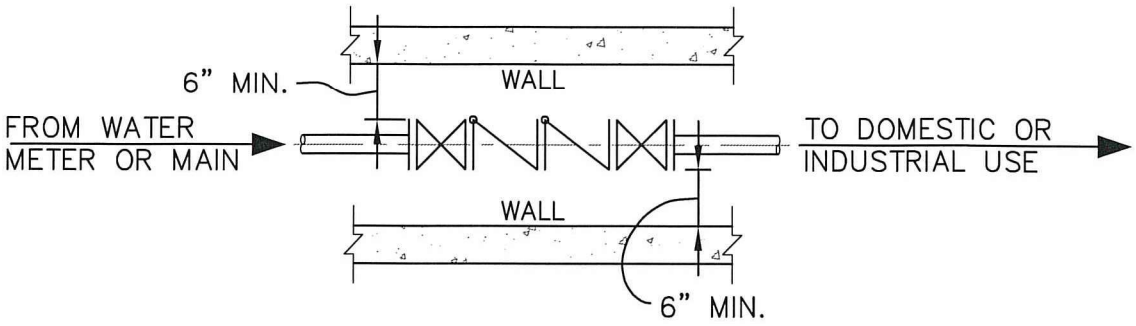


NOTES:

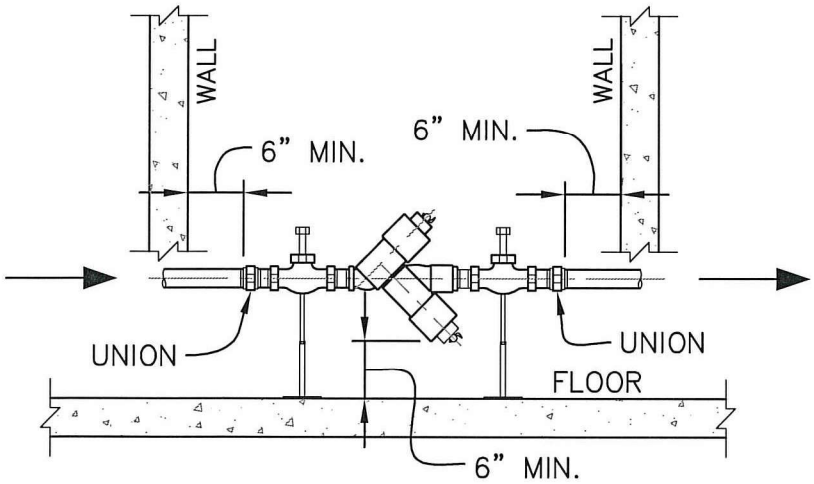
1. BACKFLOW ASSEMBLY MUST HAVE ADEQUATE SPACE CONSIDERATIONS FOR PROPER TESTING AND MAINTENANCE. A MINIMUM OF 12" CLEARANCE FROM ANY OBSTRUCTIONS ON THE TEST SIDE. A MINIMUM OF 6" CLEARANCE BELOW ASSEMBLY AND A MINIMUM OF 6" OF PEA GRAVEL IN THE BOTTOM OF THE BOX. THE MINIMUM CLEARANCE FROM THE TOP OF THE PEA GRAVEL TO THE BOTTOM OF THE ASSEMBLY IS 6".
2. DCVA MUST BE INSTALLED WITH TEST COCKS FACING UP. TEST COCKS MUST BE PLUGGED WITH BRASS OR PLASTIC PLUGS. INSTALL DCVA HORIZONTALLY.
3. BACKFLOW ASSEMBLY MUST BE APPROVED FOR USE IN WASHINGTON STATE BY THE DEPARTMENT OF HEALTH (DOH). IT MUST BE TESTED BY A STATE CERTIFIED "BAT" AT THE TIME OF INSTALLATION, ANNUALLY, AFTER THE ASSEMBLY IS REPAIRED, MOVED OR AFTER AN INCIDENT AT OWNER'S EXPENSE.
4. BACKFLOW ASSEMBLY SHALL BE PURCHASED AND INSTALLED AS A UNIT, AS SHIPPED BY THE MANUFACTURER, WITH NO MODIFICATIONS TO ANY PART OF THE ASSEMBLY.
5. MINIMUM CLEARANCE AT ABOVE ASSEMBLY SHALL BE: 9" (FOR 3/4" METER), 12" (FOR 1" METER), AND 14" (FOR 1 1/2" & 2" METER).

APPROVED BY CITY ENGINEER: Craig Mercuri DATE: 12/31/18	CITY OF AUBURN WASHINGTON	DOUBLE CHECK VALVE ASSEMBLY (OUTSIDE INSTALLATION)
PUBLIC WORKS DEPARTMENT		STANDARD DETAIL: W-24.2

Plotted by: Craig Dobyns on 12/31/2018 File location: N:\Construction Standard Details\Current Working DWG\Water\STDETL-W-24.2



PLAN
NTS



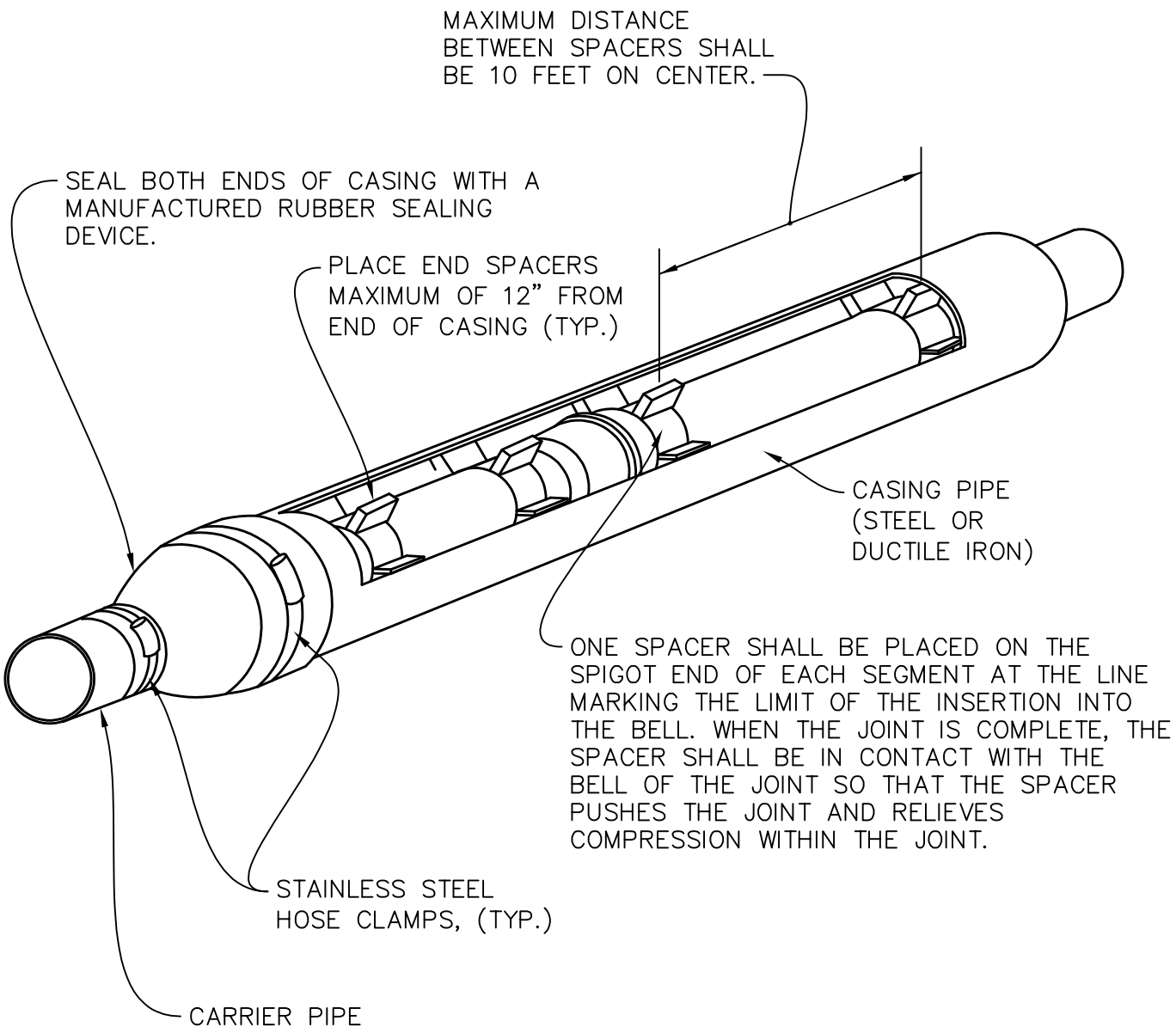
ELEVATION
NTS

NOTES:

1. BACKFLOW ASSEMBLY MUST HAVE ADEQUATE SPACE CONSIDERATIONS FOR PROPER TESTING AND MAINTENANCE. A MINIMUM OF 6" SIDE CLEARANCE BETWEEN DCVA AND WALL OR ANY OBSTRUCTIONS AND A MINIMUM OF 6" CLEARANCE BELOW ASSEMBLY SHALL BE PROVIDED.
2. DCVA MUST BE INSTALLED WITH TEST COCKS FACING UP. TEST COCKS MUST BE PLUGGED WITH BRASS OR PLASTIC PLUGS.
3. DCVA INSTALLED INSIDE BUILDING SHALL HAVE NO BRANCH CONNECTIONS BETWEEN THE METER AND THE BACKFLOW ASSEMBLY. INSTALL DCVA HORIZONTALLY.
4. BACKFLOW ASSEMBLY MUST BE APPROVED FOR USE IN WASHINGTON STATE BY THE DEPARTMENT OF HEALTH (DOH). IT MUST BE TESTED BY A STATE CERTIFIED "BAT" AT THE TIME OF INSTALLATION, ANNUALLY, AFTER THE ASSEMBLY IS REPAIRED, MOVED OR AFTER AN INCIDENT AT OWNER'S EXPENSE.
5. BACKFLOW ASSEMBLY SHALL BE PURCHASED AND INSTALLED AS A UNIT, AS SHIPPED BY THE MANUFACTURER, WITH NO MODIFICATIONS TO ANY PART OF THE ASSEMBLY.
6. TWO SUPPORTS, EITHER WALL OR FLOOR, ONE ON EACH SIDE OF THE ASSEMBLY, MUST FIRMLY ANCHOR THE ASSEMBLY.

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	DOUBLE CHECK VALVE ASSEMBLY (INSIDE INSTALLATION)
	12/31/18		
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: W-25.2

Plotted by: Craig Dobyns on 12/31/2018 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL-W-25.2



PIPE CASING

NTS

NOTES:

1. CASING SPACERS SHALL BE "CENTER POSITIONING" TYPE.
2. MINIMUM RUNNER WIDTH SHALL BE 2 INCHES.
3. RUNNER HEIGHT SHALL BE SIZED TO PROVIDE:
   - 3.1. MINIMUM 0.75" BETWEEN CARRIER PIPE BELL AND CASING PIPE WALL AT ALL TIMES.
   - 3.2. MINIMUM 1" CLEARANCE BETWEEN RUNNERS AND TOP OF CASING WALL TO PREVENT JAMMING DURING INSTALLATION.
4. SPACER BAND WIDTH SHALL BE 8".

APPROVED BY CITY ENGINEER:	DATE:	CITY OF AUBURN WASHINGTON	PIPE CASING DETAIL
Jacob Sweeting	02/09/2023		
PUBLIC WORKS DEPARTMENT			STANDARD DETAIL: W-26.2

Plotted by: Craig Dobyns on 2/9/2023 File location: M:\Construction Standard Details\Current Working DWG\Water\STDETL-W-26.2

TECHNICAL SPECIAL PROVISIONS

February 2024

City of Auburn
Engineering Services
Public Works Department
25 West Main Street
Auburn, WA 98001-4998

Approved By:

Jacob Sweeting

2/15/2024

Jacob Sweeting, P.E.
Assistant Director of Engineering Services/City Engineer

Date

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PREFACE FOR THE
CITY OF AUBURN
TECHNICAL SPECIAL PROVISIONS

Per Auburn City Code (ACC) 12.04.020, all public work construction contracts of the City, including but not limited to streets and sidewalks, storm water and sanitary sewer systems, and water systems, and all work within City public right-of-way performed by the City and others shall conform to the Engineering Construction Standards (ECS). The ECS apply to City capital projects and to work performed by developers and others under construction permits (CON), grading permits (GRA), storm permits (STM), other utility permits, and public facility extensions (FAC). The City of Auburn has adopted the ECS to require the standardization of design and construction elements for consistency, to assure that public safety needs are met, and to comply with Local, State, and Federal regulations.

The Technical Special Provisions is a sub-part of the ECS and includes the following elements:

A) By reference, Divisions 2 through 9 of the Washington State Department of Transportation's (WSDOT) Standard Specifications (M41-10) for Road, Bridge and Municipal Construction, 2024 edition publication (Standard Specifications). The Standard Specifications are available at https://wsdot.wa.gov/engineering-standards/all-manuals-and-standards/manuals/standard-specifications-road-bridge-and-municipal-construction. Terms and conditions in the Standard Specifications that reference the following elements apply only to City Contracts and do not apply to CON, GRA, or FAC work: Bidding, Award, Claims, Payment, Measurement, Liquidated Damages, Compensation, Sales Tax, Requests to Sublet, and other terms and conditions that are specific a contractual obligations between the City and Contractor.

B) Special Provisions are adopted by the City that supplement, delete, replace, and revise the Standard Specifications. The Special Provisions include references that indicate the applicability of the special provision, the date it was last updated, and the source of the special provision contents:

("Applicability", "Month" "Year" "Specification Source")

Where "Applicability" indicates "City Contracts" the specification applies only to capital projects under contract with the City. Where applicability indicates "Non-City Contracts" the specification only applies to projects and work that is not a capital project under contract with the City. Where "Applicability" is omitted, the specification applies to all work.

C) Additional special provisions may be adopted on a project specific basis and provided separately with the specific project and/or permit that they apply to and are referred to as Project Specific Special Provisions.

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DIVISION 2 Earthwork

2-01 Clearing, Grubbing and Roadside Cleanup

2-01.1 Description

(December 2016 City of Auburn GSP)

Supplement this section with the following:

Clearing and grubbing shall be done to the construction limits shown on the Plans. When no clearing and grubbing limits are shown, the clearing and grubbing limits shall be the smallest area required to complete the other Contract Work.

2-01.2 Disposal of Usable Material and Debris

2-01.2(1) Disposal Method No. 1 – Open Burning

(December 2016 City of Auburn GSP)

Delete this section and replace it with the following:

Open burning will not be permitted on this project.

2-01.2(3) Disposal Method No. 3 - Chipping

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Woodchips shall not be utilized on the project site unless approved by the Engineer. Wood chips shall be disposed of by Disposal Method No. 2 – Waste Site.

2-01.3 Construction Requirements

(January 2018 City of Auburn GSP)

Supplement this section with the following:

Where the Plans indicate clearing and grubbing on private property, the terms of the easement agreements referenced in Section 1-07.24 (Rights of Way) shall dictate if the property owners are responsible for relocating trees, shrubs, or other landscaping from the work area, and the required advance notice to the property owner(s) from the Contractor. Absent of these stipulations, respective property owners are responsible for relocating or removing trees, shrubs, or any other landscaping material within the work areas that they wish to save, unless specified elsewhere in the contract documents, and the Contractor shall notify property owners a minimum of 7 calendar days in advance of clearing the site, to allow the owner time to remove landscape material.

2-02 Removal of Structures and Obstructions

2-02.1 Description

(January 2018 City of Auburn GSP)

Supplement this section with the following:

Items in the Plans designated to be removed are to be included in the lump sum bid price for “Removal of Structures and Obstructions.” If the Plans or other Contract Documents

provide quantities, they are estimates only and are provided for Contractor convenience as a basis for bidding only. The Contractor shall verify the listed items and quantities, as shown on the Plans, before bidding. When included in the Proposal, The lump sum bid price for "Removal of Structures and Obstructions" shall include all work specified in Section 2-02 (Removal of Structures and Obstructions), unless there is a separate and applicable pay item included in the Proposal.

Removal of all asphalt and/or cement concrete pavement, cement and/or asphalt flatwork (including sidewalks, driveways, and ramps), and curb and gutter, is included in the bid item price for "Roadway Excavation, Incl. Haul", unless specified otherwise.

2-02.3 Construction Requirements

2-02.3(2) Removal of Bridges, Box Culverts, and other Drainage Structures

(January 2017 City of Auburn GSP)

Supplement this section with the following:

The Contractor shall remove storm drainage structures as described in the Plans. The resultant void shall be backfilled with Gravel Borrow per Section 9-03.14(1) (Gravel Borrow), unless otherwise noted. All material removed from the site shall be properly disposed of, unless otherwise identified to be salvaged.

2-02.3(3) Removal of Pavement, Sidewalks, Curbs and Gutters

(City Contracts, December 2016 City of Auburn GSP)

Supplement this section with the following:

Saw cutting costs shall be included in the bid item for which the sawcut is being made and no separate payment for saw cutting shall be made.

(January 2018, City of Auburn GSP)

Add the following new section including subsections:

2-02.3(4) Removal and Resetting of Miscellaneous Items

(August 2016, City of Auburn GSP)

The Contractor shall remove and reset miscellaneous items as described in the Plans. Unless a separate and applicable pay item is included in the Proposal, removal and resetting of miscellaneous items shall be paid under the lump sum bid item "Removal and Resetting of Miscellaneous Items". When included in the Proposal ,Items listed in the Plans to be removed and reset are to be included in the lump sum bid price for "Removal and Resetting of Miscellaneous Items." If the Plans or other contract documents provide quantities, they are estimates only and are provided for Contractor convenience as a basis for bidding only. The Contractor shall verify the listed items and quantities, as shown on the Plans, before bidding.

2-02.3(4)A Remove and Reset Fencing

(January 2018 City of Auburn GSP)

This work consists of removing and resetting fencing as shown on the Plans. The Contractor is responsible for ensuring that any remaining fence and fence to be reset is

undamaged. The Contractor shall repair any damage caused by the Contractor's negligence at no additional cost to the City. Costs for the replacement of fencing components and finishes (such as gates, posts, foundations, fabric, stain, and other material) required for the resetting of removed fence shall be included in the costs for removing and resetting the fence.

For the protection of pets and security of the property, the Contractor shall schedule removal of fencing with the property owner at least 5 working days in advance. Unless approved by the property owner, no site shall be left unfenced.

2-02.3(4)B Remove and Reset Private Signs

(August 2016 City of Auburn GSP)

Where shown on the Plans, the Contractor shall remove existing private signs for placement in new locations.

The Contractor is responsible for ensuring that the sign(s) and mounting apparatus(es) remain undamaged. Any damage caused by the Contractor's negligence shall be repaired or replaced by the Contractor at the Contractor's expense. The new cement concrete foundation(s) shall be equal or larger in size than the existing foundation(s), unless otherwise designated in the Contract Documents.

All electrical work shall be performed in accordance with applicable subsections of Section 8-20 (Illumination, Traffic Signal Systems, and Electrical) of the Standard Specifications and as amended by these Special Provisions.

2-02.3(4)C Remove and Reset Private Luminaires

(August 2016 City of Auburn GSP)

Where shown on the Plans, the Contractor shall move existing private luminaires to new locations.

Following removal of the existing light fixture, the Contractor shall protect the fixture and all component parts from loss or damage until such time as the fixture is relocated. Any damage caused by the Contractor's negligence shall be repaired or replaced by the Contractor at the Contractor's expense. The new cement concrete foundation(s) shall be equal or larger in size than the existing foundation(s), unless otherwise designated in the Contract Documents.

All electrical work shall be performed in accordance with applicable subsections of Section 8-20 (Illumination, Traffic Signal Systems, and Electrical) of the Standard Specifications and as amended by these Special Provisions.

(September 2019 City of Auburn GSP)

Add the following new section:

2-02.3(5) Salvage

All casings, pipe, frames, grates, covers, traffic signal equipment, poles, luminaires and other material of recoverable value identified to be salvaged from the project shall be carefully delivered to the City of Auburn Maintenance & Operations Facility (1305 "C" Street SW) in their existing condition.

Items have been identified in the Plans.

The Contractor shall provide notice to the Engineer a minimum of 3 working days prior to delivery of any salvaged item.

All costs for salvaging and delivering salvaged items to the City shall be included in the appropriate unit Bid prices for the work involved and no further compensation will be paid.

Following removal items to be salvaged, the Contractor shall protect the items and all component parts from loss or damage until such time as all they are delivered by the Contractor to the City of Auburn Maintenance and Operations Facility. The Contractor shall replace lost, damaged, or destroyed items in kind, at the Contractor's expense. The Contractor shall coordinate the receiving of salvaged items by the City. The Contractor shall label any salvaged traffic signal poles, mast arms, and signal/lighting equipment with the City contract number and location from which they were salvaged. Labels shall be removable weather proof tags that will not damage or mark the salvaged item.

2-02.4 Measurement

(City Contracts, April 2022 City of Auburn GSP)

Supplement this section with the following:

Removal of cement concrete or asphalt flatwork will be measured by the square yard.

Removal of asphalt pavement will be measured by the square yard.

Removal of pipe will be measured by the linear foot of pipe removed outside the limits of other trench excavations.

Removal of curb and gutter will be measured by the linear foot.

Removal and reset fence will be measured by the linear foot.

Removal of catch basin will be measured per each.

Remove and reset private sign will be measured per each.

Removal of manhole will be measured per each.

2-02.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Remove and Reset Miscellaneous Items", Per Lump Sum
"Remove and Reset Fencing", Per Lineal Foot
"Remove and Reset Private Sign", Per Each
"Removal of Cement Concrete of Asphalt Flat Work", Per Square Yard
"Removal of Curb and Gutter", Per Lineal Foot
"Removal of Asphalt Pavement", Per Square Yard
"Removal of Pipe", Per Lineal Foot
"Remove Manhole", Per Each
"Remove Catch Basin", Per Each

The Contract price for “Remove and Reset Fencing” and “Remove and Reset Private Sign” shall be full pay for all labor, tools, and equipment to complete the work outlined in according to the Construction Plans and these Specifications.

The unit Contract price for “Removal of Cement Concrete of Asphalt Flat Work” shall be full pay for all labor, tools, and equipment to remove and dispose of the concrete flat work, including industrial or commercial driveways, saw cutting and any dowel bars or reinforcing steel, at the locations shown on the Contract plans.

Removal items include all applicable costs including, but not limited to, sawcutting, excavation, stockpiling, haul, disposal, furnishing (when the backfill material is not included in the Proposal) and installing backfill as specified, and protecting adjacent items to remain.

2-03 Roadway Excavation And Embankment

2-03.1 Description

(City Contracts, August 2016 City of Auburn GSP)

The second paragraph is revised as follows:

The work excludes these items if they are listed as individual bid items in the Proposal or if the specifications indicate the payment for these items is included with any other item(s) listed in the Proposal:

1. Haul.
2. Excavation for structures and ditches.
3. Removal of unsuitable materials.
4. Removal Items being separately paid for under Section 2-02 of these contract documents.

(December 2016 City of Auburn GSP)

Supplement this section with the following:

Any excavation beyond the set limits, unless ordered by the Engineer in writing, shall not be paid for. The Contractor, at Contractor expense, shall provide all work and material required to return these over excavated areas to their set limits or original conditions.

2-03.3 Construction Requirements

2-03.3(3) Excavation Below Subgrade

(January 2018 City of Auburn GSP)

Supplement this section with the following:

The Contractor shall remove and dispose of unsuitable roadway subgrade material. The Contractor shall replace the removed material with crushed surfacing base course per Section 9-03.9(3) (Crushed Surfacing), unless otherwise specified in the Contract Documents. When specified in the Plans, the Contractor shall place construction geo-synthetic beneath the crushed surfacing base course.

2-03.3(7) Disposal of Surplus Material

2-03.3(7)C Contractor-Provided Disposal Site

(February 2023 City of Auburn GSP)

Supplement this section with the following:

If, during the course of this project, it becomes necessary to dispose of either excess or unsuitable materials, the additional following requirements shall be observed:

1. In no case shall any waste materials be disposed of on any site within the City limits of Auburn, unless the Contractor has a valid Grading (Fill) Permit according to Section 1-07.5(7) (City of Auburn Requirements) in this document;

2. Grading (Fill) Permits are issued by the City of Auburn Community Development Department after all conditions have been met to the satisfaction of the City Engineer;

3. The Grading Permits are issued to the legal owner of the property. Any questions regarding the requirements should be directed to the City of Auburn Community Development Services at 253.931.3020 (Option 3) or permitcenter@auburnwa.gov;

4. Any waste material disposed of outside the City limits of Auburn shall be at the Contractor's risk. The Contractor is responsible for complying with all local codes and ordinances;

5. Time lost by failure to satisfy these requirements shall be insufficient reason for granting extensions of Contract time.

(City Contracts, February 2023 City of Auburn GSP)

Supplement this section with the following:

6. Failure to comply with the above requirements shall be grounds to withhold payment of money due until such time as the requirements have been satisfied;

2-03.3(14) Embankment Construction

(December 2016 City of Auburn GSP)

Supplement this section with the following:

Embankments shall be constructed in compacted layers of uniform thickness by Method C of Section 2-03.3(14)C (Compacting Earth Embankments).

2-03.4 Measurement

(City Contracts, February 2023 City of Auburn GSP)

All references in this section to measurement of roadway excavation are replaced with the following:

Excavation that is not classified as Structure Excavation under Section 2-09 (Structure Excavation) and is not included under other bid items listed in the Proposal shall be measured and paid at the unit contract price per cubic yard for "Roadway Excavation Including Haul".

The original ground elevation will be determined only once on this project. Measurement for Roadway Excavation and Embankment will be based on the original ground elevations recorded before the award of this Contract, and the alignment, profile, grade, and roadway section as shown in the Plans. Control stakes will be set during construction to provide the Contractor with alignment, slope, and grade information for the construction of excavation and embankments.

If discrepancies are discovered in the ground elevations that will change the original bid quantities of earthwork by more than 25%, the original computations of earthwork quantities will be adjusted accordingly.

Earthwork quantities will be computed, either manually or electronically, by using the average end area method.

With at least 2 business days advance request to the Engineer, electronic copies of the ground cross-section notes will be made available for the bidder's inspection before the opening of bids at the City of Auburn Public Works Department, Customer Service Center, One East Main Street, Auburn, Washington. Upon award of the Contract, copies of the original ground cross-sections will be furnished the successful bidder upon request to the Engineer.

”Gravel Backfill for Roadway Subgrade” will be measured per ton of material placed and compacted as roadway subgrade.

2-03.5 Payment

(City Contracts, January 2018 City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

“Gravel Backfill for Roadway Subgrade”, Per Ton

Payment for “Gravel Backfill for Roadway Subgrade” shall include all costs to remove and dispose of material that is unsuitable for the roadway subgrade and all costs to furnish and install crushed surfacing base course. When a bid item is not included in the proposal for channel excavation or ditch excavation all costs shall be included in the bid item price for ‘Roadway Excavation, Including Haul’.

2-04 Haul

2-04.2 Hauling on other than City Streets

(January 2017 City of Auburn GSP)

Supplement this section with the following:

If the sources of materials provided by the Contractor necessitate hauling over roads other than City of Auburn streets, the Contractor shall, at the Contractor’s expense, make all arrangements for the use and cleaning, if necessary, of the haul routes.

2-04.4 Measurement

(City Contracts, December 2016 City of Auburn GSP)

Delete this section and replace it with the following:

No measurement shall be made for hauling.

2-04.5 Payment

(City Contracts, December 2016 City of Auburn GSP)

Delete this section and replace it with the following:

All costs associated with hauling materials of any description to, from, and within the project site shall be included in the appropriate unit Bid prices in the Proposal and no further compensation will be paid.

2-06 Subgrade Preparation

2-06.3 Construction Requirements

2-06.3(1) Subgrade for Surfacing

(September 2020 City of Auburn GSP)

Supplement this section with the following:

Before placing base course, subgrade shall be shaped to conform to the "typical cross-section" shown in the Plans. Adequate water shall be spread on the subgrade to obtain optimum moisture content for compaction. The subgrade shall be graded to a uniform cross-section true to line and grade and compacted as directed by the Engineer prior to placing base material.

(March 9, 2016 APWA GSP)

Add the following new section:

2-06.3(3) Subgrade for Permeable Pavements

Before placing permeable ballast for Porous HMA/WMA, the Contractor shall bring the Subgrade to the required line, grade, and cross-section. The Contractor shall compact the Subgrade to a depth of 6 inches to at least 90 percent, but not more than 92 percent, of the maximum density as determined by the compaction control tests described in Section 2-03.3(14)D. Two (2) density tests will be conducted for every 5,000 square feet of prepared subgrade; or four (4) tests per 200 lineal feet of roadway or sidewalk. All subgrade shall be firm and unyielding as determined by the Engineer.

The Contractor shall take measures to protect the prepared and approved subgrade from traffic, water run-on, standing water, or other damage. Subgrade that has been over compacted, shall be scarified to a minimum depth of eight (8) inches and recompacted.

Material used to protect the Subgrade from traffic or provide access to adjacent facilities shall be removed and the subgrade compacted prior to placing geotextile, if used and/or permeable ballast.

2-06.5 Measurement and Payment

(City Contracts, March 9, 2016 APWA GSP)

Supplement this section with the following:

Measurement for Subgrade for Permeable Pavement will be in accordance with 2-06.5.

2-06.5(1) Subgrade Constructed Under Same Contract

(City Contracts, January 2018 City of Auburn GSP)

The second sentence of the first paragraph is deleted.

Supplement this section with the following:

"Subgrade Preparation," for building a Subgrade for surfacing or treated base, will be measured by the square yard of full depth (subgrade to surface) roadway constructed or re-constructed. Quantities for "Subgrade Preparation" will be measured at a width of 1 foot beyond the outside face of curbs or 18-inches beyond the edge of pavement where no curbs are installed.

Payment will be made for each of the following Bid items that are included in the Proposal:

"Subgrade Prep", Per Square Yard

2-07 Watering

2-07.3 Construction Requirements

(December 2016 City of Auburn GSP)

Supplement this section with the following:

The Contractor shall water to control dust and shall have a water truck available for watering.

2-07.4 Measurement

(City Contracts, January 2017 City of Auburn GSP)

Delete this section and replace it with the following:

No Measurement for water will be made.

(February 2023 City of Auburn GSP)

Add the following new section:

2-07.4(1) Water from City Hydrants

The Contractor shall obtain a Fire Hydrant Meter Permit from the City of Auburn Permit Center (1 East Main Street) before taking of water from hydrants. Water will be furnished by the City from the fire hydrant to be designated at the time a Fire Hydrant Meter Permit is obtained and in accordance with the terms of the Fire Hydrant Meter Permit. To obtain a Fire Hydrant Meter Permit the Contractor shall complete a hydrant permit application

at MyBuildingPermit.com. The Contractor shall pay all permit fee(s) and deposit(s). The deposit covers the use of a water meter, hydrant wrench, brass adapter, backflow prevention device and hydrant gate valve, and is refundable if returned in acceptable condition. When the meter, hydrant wrench, backflow prevention device, and gate valve are returned in an acceptable condition and all water usage fees have been paid, the deposit will then be refunded to the Contractor. The Contractor shall pay a base fee for a 3" meter size per month and all water usage will be paid by the applicant at the commercial customer class rate per hundred cubic feet. Fees, deposits, and rates shall be as published in Auburn City Code 13.06.511 and 13.06.360 at the time of hydrant permit application submission.

The Contractor shall furnish all required equipment and material necessary for transporting the water from the hydrant, including gauges for testing (except the meter, wrench and valve as stated above).

(City Contracts, February 2023 City of Auburn GSP)

Supplement this section with the following:

The Contractor shall be responsible to contact the City and verify hydrant fee and water usage rates when preparing the bid. Adjustment of these rates by the City will not be the basis for any contract unit price adjustment.

END OF DIVISION 2

DIVISION 3 Aggregate Production and Acceptance

3-04 Acceptance of Aggregate

3-04.3 Construction Requirements

3-04.3(8) Price Adjustment for Quality of Aggregate

(December 2016 City of Auburn GSP)

Delete this section and replace it with the following:

No aggregate compliance price adjustments shall be made.

END OF DIVISION 3

DIVISION 4 Bases

No Revisions.

END OF DIVISION 4

DIVISION 5 Surface Treatments and Pavements

5-04 Hot Mix Asphalt

(July 18, 2018 APWA GSP)

Delete Section 5-04 and amendments, Hot Mix Asphalt and replace it with the following:

5-04.1 Description

This Work shall consist of providing and placing one or more layers of plant-mixed hot mix asphalt (HMA) on a prepared foundation or base in accordance with these Specifications and the lines, grades, thicknesses, and typical cross-sections shown in the Plans. The manufacture of HMA may include warm mix asphalt (WMA) processes in accordance with these Specifications. WMA processes include organic additives, chemical additives, and foaming.

HMA shall be composed of asphalt binder and mineral materials as may be required, mixed in the proportions specified to provide a homogeneous, stable, and workable mixture.

(January 2017, City of Auburn GSP)

Supplement this section with the following:

HMA Class 3/8-inch, Class 1/2-inch, and Class 3/4-inch are designated as leveling or wearing courses. HMA Class 1-inch is designated as a pavement base course. All mixtures are considered dense graded HMA.

(Non-City Contracts, February 2023, City of Auburn GSP)

Supplement this section with the following:

The Contractor shall be responsible for performing all sampling, testing, and reporting described throughout Section 5-04 at its own cost.

5-04.2 Materials

(July 18, 2018 APWA GSP)

Materials shall meet the requirements of the following sections:

Asphalt Binder	9-02.1(4)
Cationic Emulsified Asphalt	9-02.1(6)
Anti-Stripping Additive	9-02.4
HMA Additive	9-02.5
Aggregates	9-03.8
Recycled Asphalt Pavement	9-03.8(3)B
Mineral Filler	9-03.8(5)
Recycled Material	9-03.21
Portland Cement	9-01

Sand	9-03.1(2)
(As noted in 5-04.3(5)C for crack sealing)	
Joint Sealant	9-04.2
Foam Backer Rod	9-04.2(3)A

The Contract documents may establish that the various mineral materials required for the manufacture of HMA will be furnished in whole or in part by the Contracting Agency. If the documents do not establish the furnishing of any of these mineral materials by the Contracting Agency, the Contractor shall be required to furnish such materials in the amounts required for the designated mix. Mineral materials include coarse and fine aggregates, and mineral filler.

The Contractor may choose to utilize recycled asphalt pavement (RAP) in the production of HMA. The RAP may be from pavements removed under the Contract, if any, or pavement material from an existing stockpile.

The Contractor may use up to 20 percent RAP by total weight of HMA with no additional sampling or testing of the RAP. The RAP shall be sampled and tested at a frequency of one sample for every 1,000 tons produced and not less than ten samples per project. The asphalt content and gradation test data shall be reported to the Contracting Agency when submitting the mix design for approval on the QPL. The Contractor shall include the RAP as part of the mix design as defined in these Specifications.

The grade of asphalt binder shall be as required by the contract. Blending of asphalt binder from different sources is not permitted.

The Contractor may only use warm mix asphalt (WMA) processes in the production of HMA with 20 percent or less RAP by total weight of HMA. The Contractor shall submit to the Engineer for approval the process that is proposed and how it will be used in the manufacture of HMA.

Production of aggregates shall comply with the requirements of Section 3-01.

Preparation of stockpile site, the stockpiling of aggregates, and the removal of aggregates from stockpiles shall comply with the requirements of Section 3-02.

(January 2018, City of Auburn GSP)

Supplement this section with the following:

The crack sealant material shall be rubberized asphalt per Section 9-04.2(1) (Hot Poured Joint Sealants).

5-04.2(1) How to Get an HMA Mix Design on the QPL

(July 18, 2018 APWA GSP)

If the contractor wishes to submit a mix design for inclusion in the Qualified Products List (QPL), please follow the WSDOT process outlined in Standard Specification 5-04.2(1).

5-04.2(1)A Vacant

5-04.2(2) Mix Design – Obtaining Project Approval

(July 18, 2018 APWA GSP)

No paving shall begin prior to the approval of the mix design by the Engineer.

Nonstatistical evaluation will be used for all HMA not designated as Commercial HMA in the contract documents.

Commercial evaluation will be used for Commercial HMA and for other classes of HMA in the following applications: sidewalks, road approaches, ditches, slopes, paths, trails, gores, prelevel, and pavement repair. Other nonstructural applications of HMA accepted by commercial evaluation shall be as approved by the Project Engineer. Sampling and testing of HMA accepted by commercial evaluation will be at the option of the Project Engineer. The Proposal quantity of HMA that is accepted by commercial evaluation will be excluded from the quantities used in the determination of nonstatistical evaluation.

Nonstatistical Mix Design. Fifteen days prior to the first day of paving the contractor shall provide one of the following mix design verification certifications for Contracting Agency review;

- The WSDOT Mix Design Evaluation Report from the current WSDOT QPL, or one of the mix design verification certifications listed below.
- The proposed HMA mix design on WSDOT Form 350-042 with the seal and certification (stamp & sig-nature) of a valid licensed Washington State Professional Engineer.
- The Mix Design Report for the proposed HMA mix design developed by a qualified City or County laboratory that is within one year of the approval date.**

The mix design shall be performed by a lab accredited by a national authority such as Laboratory Accreditation Bureau, L-A-B for Construction Materials Testing, The Construction Materials Engineering Council (CMEC's) ISO 17025 or AASHTO Accreditation Program (AAP) and shall supply evidence of participation in the AASHTO: resource proficiency sample program.

Mix designs for HMA accepted by Nonstatistical evaluation shall;

- Have the aggregate structure and asphalt binder content determined in accordance with WSDOT Standard Operating Procedure 732 and meet the requirements of Sections 9-03.8(2), except that Hamburg testing for ruts and stripping are at the discretion of the Engineer, and 9-03.8(6).
- Have anti-strip requirements, if any, for the proposed mix design determined in accordance with AASHTO T 283 or T 324, or based on historic anti-strip and aggregate source compatibility from previous WSDOT lab testing.

At the discretion of the Engineer, agencies may accept verified mix designs older than 12 months from the original verification date with a certification from the Contractor that the materials and sources are the same as those shown on the original mix design.

Commercial Evaluation Approval of a mix design for "Commercial Evaluation" will be based on a review of the Contractor's submittal of WSDOT Form 350-042 (For commercial mixes, AASHTO T 324 evaluation is not required) or a Mix Design from the current WSDOT QPL or from one of the processes allowed by this section. Testing of the HMA by the Contracting Agency for mix design approval is not required.

For the Bid Item Commercial HMA, the Contractor shall select a class of HMA and design level of Equivalent Single Axle Loads (ESAL's) appropriate for the required use.

5-04.2(2)B Using Warm Mix Asphalt Processes

(July 18, 2018 APWA GSP)

The Contractor may elect to use additives that reduce the optimum mixing temperature or serve as a compaction aid for producing HMA. Additives include organic additives, chemical additives and foaming processes. The use of Additives is subject to the following:

- Do not use additives that reduce the mixing temperature more than allowed in Section 5-04.3(6) in the production of mixtures.
- Before using additives, obtain the Engineer's approval using WSDOT Form 350-076 to describe the proposed additive and process.

5-04.3 Construction Requirements

5-04.3(1) Weather Limitations

(July 18, 2018 APWA GSP)

Do not place HMA for wearing course on any Traveled Way beginning October 1st through March 31st of the following year without written concurrence from the Engineer.

Do not place HMA on any wet surface, or when the average surface temperatures are less than those specified below, or when weather conditions otherwise prevent the proper handling or finishing of the HMA.

Minimum Surface Temperature for Paving

Compacted Thickness (Feet)	Wearing Course	Other Courses
Less than 0.10	55◦F	45◦F
0.10 to .20	45◦F	35◦F
More than 0.20	35◦F	35◦F

5-04.3(2) Paving Under Traffic

(July 18, 2018 APWA GSP)

When the Roadway being paved is open to traffic, the requirements of this Section shall apply.

The Contractor shall keep intersections open to traffic at all times except when paving the intersection or paving across the intersection. During such time, and provided that there has been an advance warning to the public, the intersection may be closed for the minimum time required to place and compact the mixture. In hot weather, the Engineer may require the application of water to the pavement to accelerate the finish rolling of the pavement and to shorten the time required before reopening to traffic.

Before closing an intersection, advance warning signs shall be placed and signs shall also be placed marking the detour or alternate route.

During paving operations, temporary pavement markings shall be maintained throughout the project. Temporary pavement markings shall be installed on the Roadway prior to opening to traffic. Temporary pavement markings shall be in accordance with Section 8-23.

All costs in connection with performing the Work in accordance with these requirements, except the cost of temporary pavement markings, shall be included in the unit Contract prices for the various Bid items involved in the Contract.

5-04.3(3) Equipment

5-04.3(3)A Mixing Plant

(July 18, 2018 APWA GSP)

Plants used for the preparation of HMA shall conform to the following requirements:

1. **Equipment for Preparation of Asphalt Binder** – Tanks for the storage of asphalt binder shall be equipped to heat and hold the material at the required temperatures. The heating shall be accomplished by steam coils, electricity, or other approved means so that no flame shall be in contact with the storage tank. The circulating system for the asphalt binder shall be designed to ensure proper and continuous circulation during the operating period. A valve for the purpose of sampling the asphalt binder shall be placed in either the storage tank or in the supply line to the mixer.
2. **Thermometric Equipment** – An armored thermometer, capable of detecting temperature ranges expected in the HMA mix, shall be fixed in the asphalt binder feed line at a location near the charging valve at the mixer unit. The thermometer location shall be convenient and safe for access by Inspectors. The plant shall also be equipped with an approved dial-scale thermometer, a mercury actuated thermometer, an electric pyrometer, or another approved

thermometric instrument placed at the discharge chute of the drier to automatically register or indicate the temperature of the heated aggregates. This device shall be in full view of the plant operator.

3. **Heating of Asphalt Binder** – The temperature of the asphalt binder shall not exceed the maximum recommended by the asphalt binder manufacturer nor shall it be below the minimum temperature required to maintain the asphalt binder in a homogeneous state. The asphalt binder shall be heated in a manner that will avoid local variations in heating. The heating method shall provide a continuous supply of asphalt binder to the mixer at a uniform average temperature with no individual variations exceeding 25°F. Also, when a WMA additive is included in the asphalt binder, the temperature of the asphalt binder shall not exceed the maximum recommended by the manufacturer of the WMA additive.
4. **Sampling and Testing of Mineral Materials** – The HMA plant shall be equipped with a mechanical sampler for the sampling of the mineral materials. The mechanical sampler shall meet the requirements of Section 1-05.6 for the crushing and screening operation. The Contractor shall provide for the setup and operation of the field testing facilities of the Contracting Agency as provided for in Section 3-01.2(2).
5. **Sampling HMA** – The HMA plant shall provide for sampling HMA by one of the following methods:
    a. A mechanical sampling device attached to the HMA plant.
    b. Platforms or devices to enable sampling from the hauling vehicle without entering the hauling vehicle.

5-04.3(3)B Hauling Equipment

(July 18, 2018 APWA GSP)

Trucks used for hauling HMA shall have tight, clean, smooth metal beds and shall have a cover of canvas or other suitable material of sufficient size to protect the mixture from adverse weather. Whenever the weather conditions during the work shift include, or are forecast to include, precipitation or an air temperature less than 45°F or when time from loading to unloading exceeds 30 minutes, the cover shall be securely attached to protect the HMA.

The contractor shall provide an environmentally benign means to prevent the HMA mixture from adhering to the hauling equipment. Excess release agent shall be drained prior to filling hauling equipment with HMA. Petroleum derivatives or other coating material that contaminate or alter the characteristics of the HMA shall not be used. For live bed trucks, the conveyer shall be in operation during the process of applying the release agent.

5-04.3(3)C Pavers

(July 18, 2018 APWA GSP)

HMA pavers shall be self-contained, power-propelled units, provided with an internally heated vibratory screed and shall be capable of spreading and finishing courses of HMA plant mix material in lane widths required by the paving section shown in the Plans.

The HMA paver shall be in good condition and shall have the most current equipment available from the manufacturer for the prevention of segregation of the HMA mixture installed, in good condition, and in working order. The equipment certification shall list the make, model, and year of the paver and any equipment that has been retrofitted.

The screed shall be operated in accordance with the manufacturer's recommendations and shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, segregating, or gouging the mixture. A copy of the manufacturer's recommendations shall be provided upon request by the Contracting Agency. Extensions will be allowed provided they produce the same results, including ride, density, and surface texture as obtained by the primary screed. Extensions without augers and an internally heated vibratory screed shall not be used in the Traveled Way.

When specified in the Contract, reference lines for vertical control will be required. Lines shall be placed on both outer edges of the Traveled Way of each Roadway. Horizontal control utilizing the reference line will be permitted. The grade and slope for intermediate lanes shall be controlled automatically from reference lines or by means of a mat referencing device and a slope control device. When the finish of the grade prepared for paving is superior to the established tolerances and when, in the opinion of the Engineer, further improvement to the line, grade, cross-section, and smoothness can best be achieved without the use of the reference line, a mat referencing device may be substituted for the reference line. Substitution of the device will be subject to the continued approval of the Engineer. A joint matcher may be used subject to the approval of the Engineer. The reference line may be removed after the completion of the first course of HMA when approved by the Engineer. Whenever the Engineer determines that any of these methods are failing to provide the necessary vertical control, the reference lines will be reinstalled by the Contractor.

The Contractor shall furnish and install all pins, brackets, tensioning devices, wire, and accessories necessary for satisfactory operation of the automatic control equipment.

If the paving machine in use is not providing the required finish, the Engineer may suspend Work as allowed by Section 1-08.6. Any cleaning or solvent type liquids spilled on the pavement shall be thoroughly removed before paving proceeds.

(January 2018, City of Auburn GSP)

Supplement this section with the following:

When laying HMA, the paver shall be operated at a uniform forward speed consistent with the plant production rate and roller train capacity to result in a continuous operation. The auger speed and flight gate opening shall be adjusted to coordinate with the operation.

5-04.3(3)D Material Transfer Device or Material Transfer Vehicle

(October 2019, City of Auburn GSP)

A Material Transfer Device/Vehicle (MTD/V) only applies to paving on State Routes and within the right of way of the State, unless other-wise required by the contract.

When used, the MTD/V shall mix the HMA after delivery by the hauling equipment and prior to laydown by the paving machine. Mixing of the HMA shall be sufficient to obtain a uniform temperature throughout the mixture. If a windrow elevator is used, the length of the windrow may be limited in urban areas or through intersections, at the discretion of the Engineer.

To be approved for use, an MTV:

1. Shall be self-propelled vehicle, separate from the hauling vehicle or paver.
2. Shall not be connected to the hauling vehicle or paver.
3. May accept HMA directly from the haul vehicle or pick up HMA from a windrow.
4. Shall mix the HMA after delivery by the hauling equipment and prior to placement into the paving machine.
5. Shall mix the HMA sufficiently to obtain a uniform temperature throughout the mixture.

To be approved for use, an MTD:

1. Shall be positively connected to the paver.
2. May accept HMA directly from the haul vehicle or pick up HMA from a windrow.
3. Shall mix the HMA after delivery by the hauling equipment and prior to placement into the paving machine.
4. Shall mix the HMA sufficiently to obtain a uniform temperature throughout the mixture.

5-04.3(3)E Rollers

(July 18, 2018 APWA GSP)

Rollers shall be of the steel wheel, vibratory, oscillatory, or pneumatic tire type, in good condition and capable of reversing without backlash. Operation of the roller shall be in accordance with the manufacturer's recommendations. When ordered by the Engineer for any roller planned for use on the project, the Contractor shall provide a copy of the manufacturer's recommendation for the use of that roller for compaction of HMA. The number and weight of rollers shall be sufficient to compact the mixture in compliance with the requirements of Section 5-04.3(10). The use of equipment that results in crushing of the aggregate will not be permitted. Rollers producing pickup, washboard, uneven compaction of the surface, displacement of the mixture or other undesirable results shall not be used.

5-04.3(4) Preparation of Existing Paved Surfaces

(July 18, 2018 APWA GSP)

When the surface of the existing pavement or old base is irregular, the Contractor shall bring it to a uniform grade and cross-section as shown on the Plans or approved by the Engineer.

Preleveling of uneven or broken surfaces over which HMA is to be placed may be accomplished by using an asphalt paver, a motor patrol grader, or by hand raking, as approved by the Engineer.

Compaction of preleveling HMA shall be to the satisfaction of the Engineer and may require the use of small steel wheel rollers, plate compactors, or pneumatic rollers to avoid bridging across preleveled areas by the compaction equipment. Equipment used for the compaction of preleveling HMA shall be approved by the Engineer.

Before construction of HMA on an existing paved surface, the entire surface of the pavement shall be clean. All fatty asphalt patches, grease drippings, and other objectionable matter shall be entirely removed from the existing pavement. All pavements or bituminous surfaces shall be thoroughly cleaned of dust, soil, pavement grindings, and other foreign matter. All holes and small depressions shall be filled with an appropriate class of HMA. The surface of the patched area shall be leveled and compacted thoroughly. Prior to the application of tack coat, or paving, the condition of the surface shall be approved by the Engineer.

A tack coat of asphalt shall be applied to all paved surfaces on which any course of HMA is to be placed or abutted; except that tack coat may be omitted from clean, newly paved surfaces at the discretion of the Engineer. Tack coat shall be uniformly applied to cover the existing pavement with a thin film of residual asphalt free of streaks and bare spots at a rate between 0.02 and 0.10 gallons per square yard of retained asphalt. The rate of application shall be approved by the Engineer. A heavy application of tack coat shall be applied to all joints. For Roadways open to traffic, the application of tack coat shall be limited to surfaces that will be paved during the same working shift. The spreading equipment shall be equipped with a thermometer to indicate the temperature of the tack coat material.

Equipment shall not operate on tacked surfaces until the tack has broken and cured. If the Contractor’s operation damages the tack coat it shall be repaired prior to placement of the HMA.

The tack coat shall be CSS-1, or CSS-1h emulsified asphalt. The CSS-1 and CSS-1h emulsified asphalt may be diluted once with water at a rate not to exceed one part water to one part emulsified asphalt. The tack coat shall have sufficient temperature such that it may be applied uniformly at the specified rate of application and shall not exceed the maximum temperature recommended by the emulsified asphalt manufacturer.

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The Contractor shall remove existing pavement markers, lane markers, and plastic markings.

5-04.3(4)A Crack Sealing

5-04.3(4)A1 General

(November 2019 City of Auburn GSP)

When the Proposal includes a pay item for crack sealing, seal all cracks ¼ inch in width and greater.

Cleaning: Ensure that cracks are thoroughly clean, dry and free of all loose and foreign material when filling with crack sealant material. Use a hot compressed air lance to dry and warm the pavement surfaces within the crack immediately prior to filling a crack with the sealant material. Do not overheat pavement. Do not use direct flame dryers. Routing cracks is not required.

Hot Poured Sealant: For cracks that are to be filled with hot poured sealant, apply the material in accordance with these requirements and the manufacturer's recommendations. Furnish a Type 1 Working Drawing of the manufacturer's product information and recommendations to the Engineer prior to the start of work, including the manufacturer's recommended heating time and temperatures, allowable storage time and temperatures after initial heating, allowable reheating criteria, and application temperature range. Confine hot poured sealant material within the crack. Clean any overflow of sealant from the pavement surface. If, in the opinion of the Engineer, the Contractor's method of sealing the cracks with hot poured sealant results in an excessive amount of material on the pavement surface, stop and correct the operation to eliminate the excess material.

5-04.3(4)B Soil Residual Herbicide

(November 2019 City of Auburn GSP)

The Contractor shall apply one application of an approved soil residual herbicide. Any area that has not been paved within the 24 hour time limit or that has been rained on, shall be treated again at the Contractor's expense. The herbicide shall be applied uniformly in accordance with the manufacturer's recommendations.

Use herbicide registered with the Washington State Department of Agriculture for use under pavement. Before use, obtain the Engineer's approval of the herbicide and the proposed rate of application. Include the following information in the request for approval of the material:

- Brand Name of the Material;
- Manufacturer;
- Environmental Protection Agency (EPA) Registration Number;
- Material Safety Data Sheet; and
- Proposed Rate of Application

5-04.3(4)C Pavement Repair

(July 18, 2018 APWA GSP)

The Contractor shall excavate pavement repair areas and shall backfill these with HMA in accordance with the details shown in the Plans and as marked in the field. The Contractor

shall conduct the excavation operations in a manner that will protect the pavement that is to remain. Pavement not designated to be removed that is damaged as a result of the Contractor's operations shall be repaired by the Contractor to the satisfaction of the Engineer at no cost to the Contracting Agency. The Contractor shall excavate only within one lane at a time unless approved otherwise by the Engineer. The Contractor shall not excavate more area than can be completely finished during the same shift, unless approved by the Engineer.

Unless otherwise shown in the Plans or determined by the Engineer, excavate to a depth of 1.0 feet. The Engineer will make the final determination of the excavation depth required. The minimum width of any pavement repair area shall be 40 inches unless shown otherwise in the Plans. Before any excavation, the existing pavement shall be sawcut or shall be removed by a pavement grinder. Excavated materials will become the property of the Contractor and shall be disposed of in a Contractor-provided site off the Right of Way or used in accordance with Sections 2-02.3(3) or 9-03.21.

Asphalt for tack coat shall be required as specified in Section 5-04.3(4). A heavy application of tack coat shall be applied to all surfaces of existing pavement in the pavement repair area.

Placement of the HMA backfill shall be accomplished in lifts not to exceed 0.35-foot compacted depth. Lifts that exceed 0.35-foot of compacted depth may be accomplished with the approval of the Engineer. Each lift shall be thoroughly compacted by a mechanical tamper or a roller.

(April 2020, City of Auburn GSP)

Supplement this section with the following:

HMA for pavement repair shall be HMA Class 1/2-inch PG 58H-22 or as shown in the Plans. Pavement repair areas shown in the Plans, if any, are for reference only. The repair areas shall be as directed by the Engineer in the field.

5-04.3(5) Producing/Stockpiling Aggregates and RAP

(July 18, 2018 APWA GSP)

Aggregates and RAP shall be stockpiled according to the requirements of Section 3-02. Sufficient storage space shall be provided for each size of aggregate and RAP. Materials shall be removed from stockpile(s) in a manner to ensure minimal segregation when being moved to the HMA plant for processing into the final mixture. Different aggregate sizes shall be kept separated until they have been delivered to the HMA plant.

5-04.3(5)A Vacant

5-04.3(6) Mixing

(July 18, 2018 APWA GSP)

After the required amount of mineral materials, asphalt binder, recycling agent and anti-stripping additives have been introduced into the mixer the HMA shall be mixed until complete and uniform coating of the particles and thorough distribution of the asphalt binder throughout the mineral materials is ensured.

When discharged, the temperature of the HMA shall not exceed the optimum mixing temperature by more than 25°F as shown on the reference mix design report or as approved by the Engineer. Also, when a WMA additive is included in the manufacture of HMA, the discharge temperature of the HMA shall not exceed the maximum recommended by the manufacturer of the WMA additive. A maximum water content of 2 percent in the mix, at discharge, will be allowed providing the water causes no problems with handling, stripping, or flushing. If the water in the HMA causes any of these problems, the moisture content shall be reduced as directed by the Engineer.

Storing or holding of the HMA in approved storage facilities will be permitted with approval of the Engineer, but in no event shall the HMA be held for more than 24 hours. HMA held for more than 24 hours after mixing shall be rejected. Rejected HMA shall be disposed of by the Contractor at no expense to the Contracting Agency. The storage facility shall have an accessible device located at the top of the cone or about the third point. The device shall indicate the amount of material in storage. No HMA shall be accepted from the storage facility when the HMA in storage is below the top of the cone of the storage facility, except as the storage facility is being emptied at the end of the working shift.

Recycled asphalt pavement (RAP) utilized in the production of HMA shall be sized prior to entering the mixer so that a uniform and thoroughly mixed HMA is produced. If there is evidence of the recycled asphalt pavement not breaking down during the heating and mixing of the HMA, the Contractor shall immediately suspend the use of the RAP until changes have been approved by the Engineer. After the required amount of mineral materials, RAP, new asphalt binder and asphalt rejuvenator have been introduced into the mixer the HMA shall be mixed until complete and uniform coating of the particles and thorough distribution of the asphalt binder throughout the mineral materials, and RAP is ensured.

5-04.3(7) Spreading and Finishing

(July 18, 2018 APWA GSP)

The mixture shall be laid upon an approved surface, spread, and struck off to the grade and elevation established. HMA pavers complying with Section 5-04.3(3) shall be used to distribute the mixture. Unless otherwise directed by the Engineer, the nominal compacted depth of any layer of any course shall not exceed the following:

HMA Class 1”	0.35 feet
HMA Class ¾” and HMA Class ½”	
wearing course	0.30 feet
other courses	0.35 feet

HMA Class ⅜"	0.15 feet

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the paving may be done with other equipment or by hand.

When more than one JMF is being utilized to produce HMA, the material produced for each JMF shall be placed by separate spreading and compacting equipment. The intermingling of HMA produced from more than one JMF is prohibited. Each strip of HMA placed during a work shift shall conform to a single JMF established for the class of HMA specified unless there is a need to make an adjustment in the JMF.

(November 2019 City of Auburn GSP)

Supplement this section with the following:

In all instances, wearing courses of 3 inches or greater shall be created using a maximum depth of 1 ½-inch lifts.

5-04.3(8) Aggregate Acceptance Prior to Incorporation in HMA

(July 18, 2018 APWA GSP)

For HMA accepted by nonstatistical evaluation the aggregate properties of sand equivalent, uncompacted void content and fracture will be evaluated in accordance with Section 3-04. Sampling and testing of aggregates for HMA accepted by commercial evaluation will be at the option of the Engineer.

5-04.3(9) HMA Mixture Acceptance

(July 18, 2018 APWA GSP)

Acceptance of HMA shall be as provided under nonstatistical, or commercial evaluation.

Nonstatistical evaluation will be used for the acceptance of HMA unless Commercial Evaluation is specified.

Commercial evaluation will be used for Commercial HMA and for other classes of HMA in the following applications: sidewalks, road approaches, ditches, slopes, paths, trails, gores, prelevel, temporary pavement, and pavement repair. Other nonstructural applications of HMA accepted by commercial evaluation shall be as approved by the Engineer. Sampling and testing of HMA accepted by commercial evaluation will be at the option of the Engineer.

The mix design will be the initial JMF for the class of HMA. The Contractor may request a change in the JMF. Any adjustments to the JMF will require the approval of the Engineer and may be made in accordance with this section.

HMA Tolerances and Adjustments

1. **Job Mix Formula Tolerances** – The constituents of the mixture at the time of acceptance shall be within tolerance. The tolerance limits will be established as follows:

   For Asphalt Binder and Air Voids (Va), the acceptance limits are determined by adding the tolerances below to the approved JMF values. These values will also be the Upper Specification Limit (USL) and Lower Specification Limit (LSL) required in Section 1-06.2(2)D2

Property	Non-Statistical Evaluation	Commercial Evaluation
Asphalt Binder	+/- 0.5%	+/- 0.7%
Air Voids, Va	2.5% min. and 5.5% max	N/A

   For Aggregates in the mixture:

   a. First, determine preliminary upper and lower acceptance limits by applying the following tolerances to the approved JMF.

Aggregate Percent Passing	Non-Statistical Evaluation	Commercial Evaluation
1", ¾", ½", and 3/8" sieves	+/- 6%	+/- 8%
No. 4 sieve	+/-6%	+/- 8%
No. 8 Sieve	+/- 6%	+/-8%
No. 200 sieve	+/- 2.0%	+/- 3.0%

   b. Second, adjust the preliminary upper and lower acceptance limits determined from step (a) the minimum amount necessary so that none of the aggregate properties are outside the control points in Section 9-03.8(6). The resulting values will be the upper and lower acceptance limits for aggregates, as well as the USL and LSL required in Section 1-06.2(2)D2.

2. Job Mix Formula Adjustments – An adjustment to the aggregate gradation or asphalt binder content of the JMF requires approval of the Engineer. Adjustments to the JMF will only be considered if the change produces material of equal or better quality and may require the development of a new mix design if the adjustment exceeds the amounts listed below.

   a. **Aggregates** –2 percent for the aggregate passing the 1½″, 1″, ¾″, ½″, ⅜″, and the No. 4 sieves, 1 percent for aggregate passing the No. 8 sieve, and 0.5 percent for the aggregate passing the No. 200 sieve. The adjusted JMF shall be within the range of the control points in Section 9-03.8(6).

   b. **Asphalt Binder Con**tent – The Engineer may order or approve changes to asphalt binder content. The maximum adjustment from the approved mix design for the asphalt binder content shall be 0.3 percent

5-04.3(9)A Vacant

5-04.3(9)B Vacant

5-04.3(9)C Mixture Acceptance – Nonstatistical Evaluation

(July 18, 2018 APWA GSP)

HMA mixture which is accepted by Nonstatistical Evaluation will be evaluated by the Contracting Agency by dividing the HMA tonnage into lots.

5-04.3(9)C1 Mixture Nonstatistical Evaluation – Lots and Sublots

(July 18, 2018 APWA GSP)

A lot is represented by randomly selected samples of the same mix design that will be tested for acceptance. A lot is defined as the total quantity of material or work produced for each Job Mix Formula placed. Only one lot per JMF is expected. A sublot shall be equal to one day's production or 800 tons, whichever is less except that the final sublot will be a minimum of 400 tons and may be increased to 1200 tons.

All of the test results obtained from the acceptance samples from a given lot shall be evaluated collectively. If the Contractor requests a change to the JMF that is approved, the material produced after the change will be evaluated on the basis of the new JMF for the remaining sublots in the current lot and for acceptance of subsequent lots. For a lot in progress with a CPF less than 0.75, a new lot will begin at the Contractor's request after the Engineer is satisfied that material conforming to the Specifications can be produced.

Sampling and testing for evaluation shall be performed on the frequency of one sample per sublot.

5-04.3(9)C2 Mixture Nonstatistical Evaluation Sampling

(July 18, 2018 APWA GSP)

Samples for acceptance testing shall be obtained by the Contractor when ordered by the Engineer. The Contractor shall sample the HMA mixture in the presence of the Engineer and in accordance with AASH-TO T 168. A minimum of three samples should be taken for each class of HMA placed on a project. If used in a structural application, at least one of the three samples shall to be tested.

Sampling and testing HMA in a Structural application where quantities are less than 400 tons is at the discretion of the Engineer.

For HMA used in a structural application and with a total project quantity less than 800 tons but more than 400 tons, a minimum of one acceptance test shall be performed. In all cases, a minimum of 3 samples will be obtained at the point of acceptance, a minimum of one of the three samples will be tested for conformance to the JMF:

- If the test results are found to be within specification requirements, additional testing will be at the Engineer's discretion.
- If test results are found not to be within specification requirements, additional testing of the remaining samples to determine a Composite Pay Factor (CPF) shall be performed.

5-04.3(9)C3 Mixture Nonstatistical Evaluation – Acceptance Testing

(July 18, 2018 APWA GSP)

Testing of HMA for compliance of V_a will at the option of the Contracting Agency. If tested, compliance of V_a will use WSDOT SOP 731.

Testing for compliance of asphalt binder content will be by WSDOT FOP for AASHTO T 308.

Testing for compliance of gradation will be by FOP for WAQTC T 27/T 11.

5-04.3(9)C4 Mixture Nonstatistical Evaluation – Pay Factors

(July 18, 2018 APWA GSP)

For each lot of material falling outside the tolerance limits in 5-04.3(9), the Contracting Agency will determine a Composite Pay Factor (CPF) using the following price adjustment factors:

Table of Price Adjustment Factors	
Constituent	**Factor "f"**
All aggregate passing: 1½″, 1″, ¾″, ½″, ⅜″ and No.4 sieves	2
All aggregate passing No. 8 sieve	15
All aggregate passing No. 200 sieve	20
Asphalt binder	40
Air Voids (Va) (where applicable)	20

Each lot of HMA produced under Nonstatistical Evaluation and having all constituents falling within the tolerance limits of the job mix formula shall be accepted at the unit Contract price with no further evaluation. When one or more constituents fall outside the nonstatistical tolerance limits in the Job Mix Formula shown in Table of Price Adjustment Factors, the lot shall be evaluated in accordance with Section 1-06.2 to determine the appropriate CPF. The nonstatistical tolerance limits will be used in the calculation of the CPF and the maximum CPF shall be 1.00. When less than three sublots exist, backup samples of the existing sublots or samples from the Roadway shall be tested to provide a minimum of three sets of results for evaluation.

5-04.3(9)C5 Vacant

5-04.3(9)C6 Mixture Nonstatistical Evaluation – Price Adjustments

(July 18, 2018 APWA GSP)

For each lot of HMA mix produced under Nonstatistical Evaluation when the calculated CPF is less than 1.00, a Nonconforming Mix Factor (NCMF) will be determined. The NCMF equals the algebraic difference of CPF minus 1.00 multiplied by 60 percent. The total job mix compliance price adjustment will be calculated as the product of the NCMF, the quantity of HMA in the lot in tons, and the unit Contract price per ton of mix.

If a constituent is not measured in accordance with these Specifications, its individual pay factor will be considered 1.00 in calculating the Composite Pay Factor (CPF).

5-04.3(9)C7 Mixture Nonstatistical Evaluation – Retests

(July 18, 2018 APWA GSP)

The Contractor may request a sublot be retested. To request a retest, the Contractor shall submit a written request within 7 calendar days after the specific test results have been received. A split of the original acceptance sample will be retested. The split of the sample will not be tested with the same tester that ran the original acceptance test. The sample will be tested for a complete gradation analysis, asphalt binder content, and, at the option of the agency, V_a. The results of the retest will be used for the acceptance of the HMA in place of the original sublot sample test results. The cost of testing will be deducted from any monies due or that may come due the Contractor under the Contract at the rate of $500 per sample.

5-04.3 (9)D Mixture Acceptance – Commercial Evaluation

(July 18, 2018 APWA GSP)

If sampled and tested, HMA produced under Commercial Evaluation and having all constituents falling within the tolerance limits of the job mix formula shall be accepted at the unit Contract price with no further evaluation. When one or more constituents fall outside the commercial tolerance limits in the Job Mix Formula shown in 5-04.3(9), the lot shall be evaluated in accordance with Section 1-06.2 to determine the appropriate CPF. The commercial tolerance limits will be used in the calculation of the CPF and the maximum CPF shall be 1.00. When less than three sublots exist, backup samples of the existing sublots or samples from the street shall be tested to provide a minimum of three sets of results for evaluation.

For each lot of HMA mix produced and tested under Commercial Evaluation when the calculated CPF is less than 1.00, a Nonconforming Mix Factor (NCMF) will be determined. The NCMF equals the algebraic difference of CPF minus 1.00 multiplied by 60 percent. The Job Mix Compliance Price Adjustment will be calculated as the product of the NCMF, the quantity of HMA in the lot in tons, and the unit Contract price per ton of mix.

If a constituent is not measured in accordance with these Specifications, its individual pay factor will be considered 1.00 in calculating the Composite Pay Factor (CPF).

5-04.3(10) HMA Compaction Acceptance

(July 18, 2018 APWA GSP)

HMA mixture accepted by nonstatistical evaluation that is used in traffic lanes, including lanes for intersections, ramps, truck climbing, weaving, and speed change, and having a specified compacted course thickness greater than 0.10-foot, shall be compacted to a specified level of relative density. The specified level of relative density shall be a Composite Pay Factor (CPF) of not less than 0.75 when evaluated in accordance with Section 1-06.2, using a LSL of 92.0 (minimum of 92 percent of the maximum density). The maximum density shall be determined by WSDOT FOP for AASHTO T 729. The specified level of density attained will be determined by the evaluation of the density of the pavement. The density of the pavement shall be determined in accordance with WSDOT FOP for WAQTC TM 8, except that gauge correlation will be at the discretion of the Engineer, when using the nuclear density gauge and WSDOT SOP 736 when using cores to determine density.

Tests for the determination of the pavement density will be taken in accordance with the required procedures for measurement by a nuclear density gauge or roadway cores after completion of the finish rolling.

If the Contracting Agency uses a nuclear density gauge to determine density the test procedures FOP for WAQTC TM 8 and WSDOT SOP T 729 will be used on the day the mix is placed and prior to opening to traffic.

Roadway cores for density may be obtained by either the Contracting Agency or the Contractor in accordance with WSDOT SOP 734. The core diameter shall be 4-inches minimum, unless otherwise approved by the Engineer. Roadway cores will be tested by the Contracting Agency in accordance with WSDOT FOP for AASHTO T 166.

If the Contract includes the Bid item “Roadway Core” the cores shall be obtained by the Contractor in the presence of the Engineer on the same day the mix is placed and at locations designated by the Engineer. If the Contract does not include the Bid item “Roadway Core” the Contracting Agency will obtain the cores.

For a lot in progress with a CPF less than 0.75, a new lot will begin at the Contractor’s request after the Engineer is satisfied that material conforming to the Specifications can be produced.

HMA mixture accepted by commercial evaluation and HMA constructed under conditions other than those listed above shall be compacted on the basis of a test point evaluation of the compaction train. The test point evaluation shall be performed in accordance with instructions from the Engineer. The number of passes with an approved compaction train, required to attain the maximum test point density, shall be used on all subsequent paving.

HMA for preleveling shall be thoroughly compacted. HMA that is used for preleveling wheel rutting shall be compacted with a pneumatic tire roller unless otherwise approved by the Engineer.

Test Results

For a sublot that has been tested with a nuclear density gauge that did not meet the minimum of 92 percent of the reference maximum density in a compaction lot with a CPF below 1.00 and thus subject to a price reduction or rejection, the Contractor may request that a core be used for determination of the relative density of the sublot. The relative density of the core will replace the relative density determined by the nuclear density gauge for the sublot and will be used for calculation of the CPF and acceptance of HMA compaction lot.

When cores are taken by the Contracting Agency at the request of the Contractor, they shall be requested by noon of the next workday after the test results for the sublot have been provided or made available to the Contractor. Core locations shall be outside of wheel paths and as determined by the Engineer. Traffic control shall be provided by the Contractor as requested by the Engineer. Failure by the Contractor to provide the requested traffic control will result in forfeiture of the request for cores. When the CPF for the lot based on the results of the HMA cores is less than 1.00, the cost for the coring will be deducted from any monies due or that may become due the Contractor under the Contract at the rate of $200 per core and the Contractor shall pay for the cost of the traffic control.

5-04.3(10)A HMA Compaction – General Compaction Requirements

(July 18, 2018 APWA GSP)

Compaction shall take place when the mixture is in the proper condition so that no undue displacement, cracking, or shoving occurs. Areas inaccessible to large compaction equipment shall be compacted by other mechanical means. Any HMA that becomes loose, broken, contaminated, shows an excess or deficiency of asphalt, or is in any way defective, shall be removed and replaced with new hot mix that shall be immediately compacted to conform to the surrounding area.

The type of rollers to be used and their relative position in the compaction sequence shall generally be the Contractor’s option, provided the specified densities are attained. Unless the Engineer has approved otherwise, rollers shall only be operated in the static mode when the internal temperature of the mix is less than 175°F. Regardless of mix temperature, a roller shall not be operated in a mode that results in checking or cracking of the mat. Rollers shall only be operated in static mode on bridge decks.

5-04.3(10)B HMA Compaction – Cyclic Density

(July 18, 2018 APWA GSP)

Low cyclic density areas are defined as spots or streaks in the pavement that are less than 90 percent of the theoretical maximum density. At the Engineer’s discretion, the Engineer may evaluate the HMA pavement for low cyclic density, and when doing so will follow WSDOT SOP 733. A $500 Cyclic Density Price Adjustment will be assessed for any 500-foot section with two or more density readings below 90 percent of the theoretical maximum density.

5-04.3(10)C Vacant

5-04.3(10)D HMA Nonstatistical Compaction

5-04.3(10)D1 HMA Nonstatistical Compaction – Lots and Sublots

(July 18, 2018 APWA GSP)

HMA compaction which is accepted by nonstatistical evaluation will be based on acceptance testing performed by the Contracting Agency dividing the project into compaction lots.

A lot is represented by randomly selected samples of the same mix design that will be tested for acceptance. A lot is defined as the total quantity of material or work produced for each Job Mix Formula placed. Only one lot per JMF is expected. A sublot shall be equal to one day's production or 400 tons, whichever is less except that the final sublot will be a minimum of 200 tons and may be increased to 800 tons. Testing for compaction will be at the rate of 5 tests per sublot per WSDOT T 738.

The sublot locations within each density lot will be determined by the Engineer. For a lot in progress with a CPF less than 0.75, a new lot will begin at the Contractor's request after the Engineer is satisfied that material conforming to the Specifications can be produced.

HMA mixture accepted by commercial evaluation and HMA constructed under conditions other than those listed above shall be compacted on the basis of a test point evaluation of the compaction train. The test point evaluation shall be performed in accordance with instructions from the Engineer. The number of passes with an approved compaction train, required to attain the maximum test point density, shall be used on all subsequent paving.

HMA for preleveling shall be thoroughly compacted. HMA that is used to prelevel wheel ruts shall be compacted with a pneumatic tire roller unless otherwise approved by the Engineer.

5-04.3(10)D2 HMA Compaction Nonstatistical Evaluation – Acceptance Testing

(July 18, 2018 APWA GSP)

The location of the HMA compaction acceptance tests will be randomly selected by the Engineer from within each sublot, with one test per sublot.

5-04.3(10)D3 HMA Nonstatistical Compaction – Price Adjustments

(July 18, 2018 APWA GSP)

For each compaction lot with one or two sublots, having all sublots attain a relative density that is 92 percent of the reference maximum density the HMA shall be accepted at the unit Contract price with no further evaluation. When a sublot does not attain a relative density that is 92 percent of the reference maximum density, the lot shall be evaluated in accordance with Section 1-06.2 to determine the appropriate CPF. The maximum CPF

shall be 1.00, however, lots with a calculated CPF in excess of 1.00 will be used to offset lots with CPF values below 1.00 but greater than 0.90. Lots with CPF lower than 0.90 will be evaluated for compliance per 5-04.3(11). Additional testing by either a nuclear moisture-density gauge or cores will be completed as required to provide a minimum of three tests for evaluation.

For compaction below the required 92% a Non-Conforming Compaction Factor (NCCF) will be determined. The NCCF equals the algebraic difference of CPF minus 1.00 multiplied by 40 percent. The Compaction Price Adjustment will be calculated as the product of CPF, the quantity of HMA in the compaction control lot in tons, and the unit Contract price per ton of mix.

5-04.3(11) Reject Work

5-04.3(11)A Reject Work General

(July 18, 2018 APWA GSP)

Work that is defective or does not conform to Contract requirements shall be rejected. The Contractor may propose, in writing, alternatives to removal and replacement of rejected material. Acceptability of such alternative proposals will be determined at the sole discretion of the Engineer. HMA that has been rejected is subject to the requirements in Section 1-06.2(2) and this specification, and the Contractor shall submit a corrective action proposal to the Engineer for approval.

5-04.3(11)B Rejection by Contractor

(July 18, 2018 APWA GSP)

The Contractor may, prior to sampling, elect to remove any defective material and replace it with new material. Any such new material will be sampled, tested, and evaluated for acceptance.

5-04.3(11)C Rejection Without Testing (Mixture or Compaction)

(City Contracts, July 18, 2018 APWA GSP)

The Engineer may, without sampling, reject any batch, load, or section of Roadway that appears defective. Material rejected before placement shall not be incorporated into the pavement. Any rejected section of Roadway shall be removed.

No payment will be made for the rejected materials or the removal of the materials unless the Contractor requests that the rejected material be tested. If the Contractor elects to have the rejected material tested, a minimum of three representative samples will be obtained and tested. Acceptance of rejected material will be based on conformance with the nonstatistical acceptance Specification. If the CPF for the rejected material is less than 0.75, no payment will be made for the rejected material; in addition, the cost of sampling and testing shall be borne by the Contractor. If the CPF is greater than or equal to 0.75, the cost of sampling and testing will be borne by the Contracting Agency. If the material is rejected before placement and the CPF is greater than or equal to 0.75, compensation for

the rejected material will be at a CPF of 0.75. If rejection occurs after placement and the CPF is greater than or equal to 0.75, compensation for the rejected material will be at the calculated CPF with an addition of 25 percent of the unit Contract price added for the cost of removal and disposal.

5-04.3(11)D Rejection - A Partial Sublot

(July 18, 2018 APWA GSP)

In addition to the random acceptance sampling and testing, the Engineer may also isolate from a normal sublot any material that is suspected of being defective in relative density, gradation or asphalt binder content. Such isolated material will not include an original sample location. A minimum of three random samples of the suspect material will be obtained and tested. The material will then be statistically evaluated as an independent lot in accordance with Section 1-06.2(2).

5-04.3(11)E Rejection - An Entire Sublot

(July 18, 2018 APWA GSP)

An entire sublot that is suspected of being defective may be rejected. When a sublot is rejected a minimum of two additional random samples from this sublot will be obtained. These additional samples and the original sublot will be evaluated as an independent lot in accordance with Section 1-06.2(2).

5-04.3(11)F Rejection - A Lot in Progress

(July 18, 2018 APWA GSP)

The Contractor shall shut down operations and shall not resume HMA placement until such time as the Engineer is satisfied that material conforming to the Specifications can be produced:

1. When the Composite Pay Factor (CPF) of a lot in progress drops below 1.00 and the Contractor is taking no corrective action, or
2. When the Pay Factor (PF) for any constituent of a lot in progress drops below 0.95 and the Contractor is taking no corrective action, or
3. When either the PFi for any constituent or the CPF of a lot in progress is less than 0.75.

5-04.3(11)G Rejection - An Entire Lot (Mixture or Compaction)

(July 18, 2018 APWA GSP)

An entire lot with a CPF of less than 0.75 will be rejected.

5-04.3(12) Joints

5-04.3(12)A HMA Joints

5-04.3(12)A1 Transverse Joints

(July 18, 2018 APWA GSP)

The Contractor shall conduct operations such that the placing of the top or wearing course is a continuous operation or as close to continuous as possible. Unscheduled transverse joints will be allowed and the roller may pass over the unprotected end of the freshly laid mixture only when the placement of the course must be discontinued for such a length of time that the mixture will cool below compaction temperature. When the Work is resumed, the previously compacted mixture shall be cut back to produce a slightly beveled edge for the full thickness of the course.

A temporary wedge of HMA constructed on a 20H:1V shall be constructed where a transverse joint as a result of paving or planing is open to traffic. The HMA in the temporary wedge shall be separated from the permanent HMA by strips of heavy wrapping paper or other methods approved by the Engineer. The wrapping paper shall be removed and the joint trimmed to a slightly beveled edge for the full thickness of the course prior to resumption of paving.

The material that is cut away shall be wasted and new mix shall be laid against the cut. Rollers or tamping irons shall be used to seal the joint.

5-04.3(12)A2 Longitudinal Joints

(July 18, 2018 APWA GSP)

The longitudinal joint in any one course shall be offset from the course immediately below by not more than 6 inches nor less than 2 inches. All longitudinal joints constructed in the wearing course shall be located at a lane line or an edge line of the Traveled Way. A notched wedge joint shall be constructed along all longitudinal joints in the wearing surface of new HMA unless otherwise approved by the Engineer. The notched wedge joint shall have a vertical edge of not less than the maximum aggregate size or more than ½ of the compacted lift thickness and then taper down on a slope not steeper than 4H:1V. The sloped portion of the HMA notched wedge joint shall be uniformly compacted.

5-04.3(12)A3 Asphalt Concrete Pavement Butt Joints

(April 2020 City of Auburn GSP)

The Contractor shall provide butt joints where the new asphalt concrete pavement meets the existing pavement as shown on the Plans in a manner to produce a smooth riding connection to the existing pavement. The depth of butt joint required shall be determined by the depth of new asphalt concrete pavement specified on the Plans, but not less than 2 inches. The surface elevation of new and existing Asphalt Concrete Pavement shall be the same at all butt joints.

All asphalt concrete joints shall be sealed with asphalt binder PG 58H-22 per Section 9-02 (Bituminous Materials).

5-04.3(12)B Bridge Paving Joint Seals

5-04.3(12)B1 HMA Sawcut and Seal

(July 18, 2018 APWA GSP)

Prior to placing HMA on the bridge deck, establish sawcut alignment points at both ends of the bridge paving joint seals to be placed at the bridge ends, and at interior joints within the bridge deck when and where shown in the Plans. Establish the sawcut alignment points in a manner that they remain functional for use in aligning the sawcut after placing the overlay.

Submit a Type 1 Working Drawing consisting of the sealant manufacturer's application procedure.

Construct the bridge paving joint seal as specified ion the Plans and in accordance with the detail shown in the Standard Plans. Construct the sawcut in accordance with the detail shown in the Standard Plan. Construct the sawcut in accordance with Section 5-05.3(8)B and the manufacturer's application procedure.

5-04.3(12)B2 Paved Panel Joint Seal

(July 18, 2018 APWA GSP)

Construct the paved panel joint seal in accordance with the requirements specified in section 5-04.3(12)B1 and the following requirement:

1. Clean and seal the existing joint between concrete panels in accordance with Section 5-01.3(8) and the details shown in the Standard Plans.

5-04.3(13) Surface Smoothness

(July 18, 2018 APWA GSP)

The completed surface of all courses shall be of uniform texture, smooth, uniform as to crown and grade, and free from defects of all kinds. The completed surface of the wearing course shall not vary more than ⅛ inch from the lower edge of a 10-foot straightedge placed on the surface parallel to the centerline. The transverse slope of the completed surface of the wearing course shall vary not more than ¼ inch in 10 feet from the rate of transverse slope shown in the Plans.

When deviations in excess of the above tolerances are found that result from a high place in the HMA, the pavement surface shall be corrected by one of the following methods:

1. Removal of material from high places by grinding with an approved grinding machine, or
2. Removal and replacement of the wearing course of HMA, or
3. By other method approved by the Engineer.

Correction of defects shall be carried out until there are no deviations anywhere greater than the allowable tolerances.

Deviations in excess of the above tolerances that result from a low place in the HMA and deviations resulting from a high place where corrective action, in the opinion of the Engineer, will not produce satisfactory results will be accepted with a price adjustment. The Engineer shall deduct from monies due or that may become due to the Contractor the sum of $500.00 for each and every section of single traffic lane 100 feet in length in which any excessive deviations described above are found.

When utility appurtenances such as manhole covers and valve boxes are located in the traveled way, the utility appurtenances shall be adjusted to the finished grade prior to paving. This requirement may be waived when requested by the Contractor, at the discretion of the Engineer or when the adjustment details provided in the project plan or specifications call for utility appurtenance adjustments after the completion of paving.

Utility appurtenance adjustment discussions will be included in the Pre-Paving planning (5-04.3(14)B3). Submit a written request to waive this requirement to the Engineer prior to the start of paving.

5-04.3(14) Planing (Milling) Bituminous Pavement

(July 18, 2018 APWA GSP)

The planing plan must be approved by the Engineer and a pre planing meeting must be held prior to the start of any planing. See Section 5-04.3(14)B2 for information on planing submittals.

Locations of existing surfacing to be planed are as shown in the Drawings.

Where planing an existing pavement is specified in the Contract, the Contractor must remove existing surfacing material and to reshape the surface to remove irregularities. The finished product must be a prepared surface acceptable for receiving an HMA overlay.

Use the cold milling method for planing unless otherwise specified in the Contract. Do not use the planer on the final wearing course of new HMA.

Conduct planing operations in a manner that does not tear, break, burn, or otherwise damage the surface which is to remain. The finished planed surface must be slightly grooved or roughened and must be free from gouges, deep grooves, ridges, or other imperfections. The Contractor must repair any damage to the surface by the Contractor’s planing equipment, using an Engineer approved method.

Repair or replace any metal castings and other surface improvements damaged by planing, as determined by the Engineer.

A tapered wedge cut must be planed longitudinally along curb lines sufficient to provide a minimum of 4 inches of curb reveal after placement and compaction of the final wearing course. The dimensions of the wedge must be as shown on the Drawings or as specified by the Engineer.

A tapered wedge cut must also be made at transitions to adjoining pavement surfaces (meet lines) where butt joints are shown on the Drawings. Cut butt joints in a straight line with vertical faces 2 inches or more in height, producing a smooth transition to the existing adjoining pavement.

After planing is complete, planed surfaces must be swept, cleaned, and if required by the Contract, patched and preleveled.

The Engineer may direct additional depth planing. Before performing this additional depth planing, the Contractor must conduct a hidden metal in pavement detection survey as specified in Section 5-04.3(14)A.

(November 2019, City of Auburn GSP)

Supplement this section with the following:

The full depth beginning and end of each lane of planing shall be squared-off to form a uniform, transverse joint.

The Contractor shall provide for safe vehicle travel over existing manholes, valve boxes, catch basins, etc., for planed areas opened to traffic. Before opening the roadway to traffic, any delaminating of the planed asphalt surface shall be removed and the resulting holes patched with HMA. Also, the surface shall be cleaned by sweeping to remove dust and foreign matter. Where the plans call for a grind an overlay, the overlay work shall commence within 5 working days of completing the pavement grinding except where specified otherwise in the Contract.

Planing tailings may be used as trench backfill. Planing tailings may also be used as crushed surfacing when mixed with Crushed Surfacing per Section 9-03.9(3) (Crushed Surfacing) per Section 4-04.3(3) (Mixing).

5-04.3(14)A Pre-Planing Metal Detection Check

(July 18, 2018 APWA GSP)

Before starting planing of pavements, and before any additional depth planing required by the Engineer, the Contractor must conduct a physical survey of existing pavement to be planed with equipment that can identify hidden metal objects.

Should such metal be identified, promptly notify the Engineer.

See Section 1-07.16(1) regarding the protection of survey monumentation that may be hidden in pavement.

The Contractor is solely responsible for any damage to equipment resulting from the Contractor’s failure to conduct a pre-planing metal detection survey, or from the Contractor’s failure to notify the Engineer of any hidden metal that is detected.

5-04.3(14)B Paving and Planing Under Traffic

5-04.3(14)B1 General

(July 18, 2018 APWA GSP)

In addition the requirements of Section 1-07.23 and the traffic controls required in Section 1-10, and unless the Contract specifies otherwise or the Engineer approves, the Contractor must comply with the following:

1. Intersections:
    a. Keep intersections open to traffic at all times, except when paving or planing operations through an intersection requires closure. Such closure must be kept to the minimum time required to place and compact the HMA mixture, or plane as appropriate. For paving, schedule such closure to individual lanes or portions thereof that allows the traffic volumes and schedule of traffic volumes required in the approved traffic control plan. Schedule work so that adjacent intersections are not impacted at the same time and comply with the traffic control restrictions required by the Traffic Engineer. Each individual intersection closure or partial closure, must be addressed in the traffic control plan, which must be submitted to and accepted by the Engineer, see Section 1-10.2(2).
    b. When planing or paving and related construction must occur in an intersection, consider scheduling and sequencing such work into quarters of the intersection, or half or more of an intersection with side street detours. Be prepared to sequence the work to individual lanes or portions thereof.
    c. Should closure of the intersection in its entirety be necessary, and no trolley service is impacted, keep such closure to the minimum time required to place and compact the HMA mixture, plane, remove asphalt, tack coat, and as needed.
    d. Any work in an intersection requires advance warning in both signage and a number of Working Days advance notice as determined by the Engineer, to alert traffic and emergency services of the intersection closure or partial closure.
    e. Allow new compacted HMA asphalt to cool to ambient temperature before any traffic is allowed on it. Traffic is not allowed on newly placed asphalt until approval has been obtained from the Engineer.
2. Temporary centerline marking, post-paving temporary marking, temporary stop bars, and maintaining temporary pavement marking must comply with Section 8-23.
3. Permanent pavement marking must comply with Section 8-22.

5-04.3(14)B2 Submittals – Planing Plan and HMA Paving Plan

(July 18, 2018 APWA GSP)

The Contractor must submit a separate planing plan and a separate paving plan to the Engineer at least 5 Working Days in advance of each operation’s activity start date. These

plans must show how the moving operation and traffic control are coordinated, as they will be discussed at the pre-planing briefing and pre-paving briefing. When requested by the Engineer, the Contractor must provide each operation's traffic control plan on 24 x 36 inch or larger size Shop Drawings with a scale showing both the area of operation and sufficient detail of traffic beyond the area of operation where detour traffic may be required. The scale on the Shop Drawings is 1 inch = 20 feet, which may be changed if the Engineer agrees sufficient detail is shown.

The planing operation and the paving operation include, but are not limited to, metal detection, removal of asphalt and temporary asphalt of any kind, tack coat and drying, staging of supply trucks, paving trains, rolling, scheduling, and as may be discussed at the briefing.

When intersections will be partially or totally blocked, provide adequately sized and noticeable signage alerting traffic of closures to come, a minimum 2 Working Days in advance. The traffic control plan must show where police officers will be stationed when signalization is or may be, countermanded, and show areas where flaggers are proposed.

At a minimum, the planing and the paving plan must include:

1. A copy of the accepted traffic control plan, see Section 1-10.2(2), detailing each day's traffic control as it relates to the specific requirements of that day's planing and paving. Briefly describe the sequencing of traffic control consistent with the proposed planing and paving sequence, and scheduling of placement of temporary pavement markings and channelizing devices after each day's planing, and paving.
2. A copy of each intersection's traffic control plan.
3. Haul routes from Supplier facilities, and locations of temporary parking and staging areas, including return routes. Describe the complete round trip as it relates to the sequencing of paving operations.
4. Names and locations of HMA Supplier facilities to be used.
5. List of all equipment to be used for paving.
6. List of personnel and associated job classification assigned to each piece of paving equipment.
7. Description (geometric or narrative) of the scheduled sequence of planing and of paving, and intended area of planing and of paving for each day's work, must include the directions of proposed planing and of proposed paving, sequence of adjacent lane paving, sequence of skipped lane paving, intersection planing and paving scheduling and sequencing, and proposed notifications and coordinations to be timely made. The plan must show HMA joints relative to the final pavement marking lane lines.
8. Names, job titles, and contact information for field, office, and plant supervisory personnel.
9. A copy of the approved Mix Designs.
10. Tonnage of HMA to be placed each day.
11. Approximate times and days for starting and ending daily operations.

5-04.3(14)B3 Pre-Paving and Pre-Planing Briefing

(July 18, 2018 APWA GSP)

At least 2 Working Days before the first paving operation and the first planing operation, or as scheduled by the Engineer for future paving and planing operations to ensure the Contractor has adequately prepared for notifying and coordinating as required in the Contract, the Contractor must be prepared to discuss that day's operations as they relate to other entities and to public safety and convenience, including driveway and business access, garbage truck operations, Metro transit operations and working around energized overhead wires, school and nursing home and hospital and other accesses, other contractors who may be operating in the area, pedestrian and bicycle traffic, and emergency services. The Contractor, and Subcontractors that may be part of that day's operations, must meet with the Engineer and discuss the proposed operation as it relates to the submitted planing plan and paving plan, approved traffic control plan, and public convenience and safety. Such discussion includes, but is not limited to:

1. General for both Paving Plan and for Planing Plan:
    a. The actual times of starting and ending daily operations.
    b. In intersections, how to break up the intersection, and address traffic control and signalization for that operation, including use of peace officers.
    c. The sequencing and scheduling of paving operations and of planing operations, as applicable, as it relates to traffic control, to public convenience and safety, and to other con-tractors who may operate in the Project Site.
    d. Notifications required of Contractor activities, and coordinating with other entities and the public as necessary.
    e. Description of the sequencing of installation and types of temporary pavement markings as it relates to planning and to paving.
    f. Description of the sequencing of installation of, and the removal of, temporary pavement patch material around exposed castings and as may be needed
    g. Description of procedures and equipment to identify hidden metal in the pavement, such as survey monumentation, monitoring wells, street car rail, and castings, before planning, see Section 5-04.3(14)B2.
    h. Description of how flaggers will be coordinated with the planing, paving, and related operations.
    i. Description of sequencing of traffic controls for the process of rigid pavement base repairs.
    j. Other items the Engineer deems necessary to address.
2. Paving – additional topics:
    a. When to start applying tack and coordinating with paving.
    b. Types of equipment and numbers of each type equipment to be used. If more pieces of equipment than personnel are proposed, describe the sequencing of the personnel operating the types of equipment. Discuss

the continuance of operator personnel for each type equipment as it relates to meeting Specification requirements.

c. Number of JMFs to be placed, and if more than one JMF how the Contractor will ensure different JMFs are distinguished, how pavers and MTVs are distinguished if more than one JMF is being placed at the time, and how pavers and MTVs are cleaned so that one JMF does not adversely influence the other JMF.

d. Description of contingency plans for that day's operations such as equipment breakdown, rain out, and Supplier shutdown of operations.

e. Number of sublots to be placed, sequencing of density testing, and other sampling and testing.

5-04.3(15) Sealing Pavement Surfaces

(July 18, 2018 APWA GSP)

Apply a fog seal where shown in the plans. Construct the fog seal in accordance with Section 5-02.3. Unless otherwise approved by the Engineer, apply the fog seal prior to opening to traffic.

5-04.3(16) HMA Road Approaches

(July 18, 2018 APWA GSP)

HMA approaches shall be constructed at the locations shown in the Plans or where staked by the Engineer. The Work shall be performed in accordance with Section 5-04.

5-04.3(17) Asphalt Cold Patch

(November 2019, City of Auburn GSP)

"Asphalt Cold Patch" for temporary pavement patching and temporary pedestrian ramps or walkways shall be placed by the Contractor immediately upon the request of Engineer as required for maintenance of traffic as specified in Section 1-07.23(1) (Construction Under Traffic) in this document. "The Asphalt Cold Patch" shall be removed in its entirety before asphalt concrete pavement is placed.

5-04.3(18) Porous HMA

(November 2019, City of Auburn GSP)

Subgrade Preparation and Permeable Ballast/Choker Course Placement

The Contractor shall prepare subgrade in conformance with Section 2-06 and in accordance to the Plans except that subgrade soil shall be compacted to 90 percent of the maximum density under the tests described in Section 2-03.3(14)D.

Protect gravel borrow subgrade to remain. Keep traffic off of the prepared subgrade during construction. Final 12-inch excavation of gravel borrow subgrade to be done at time of placement of permeable ballast/choker course in order to protect the existing subgrade infiltration capabilities. Final excavation shall proceed as machinery is pulling back and travelling on preliminary grade as final grade is excavated.

To prevent compaction when installing the permeable ballast/choker course, these materials shall be dumped onto the subgrade from the edge of the installation and pushed out onto the

subgrade. Subsequent load shall be dumped from the top of the sand filter sand and permeable ballast/choker course as the installation progresses.

Maintain flow diversion measures to prevent runoff and sediment from entering the work limits. Remove debris or sediment that has accumulated on the finished subgrade after viewing and before placing permeable ballast/choker course.

Place and compact permeable ballast/choker course aggregate to the grades indicated on the Plans in 6-inch maximum compacted lifts. Compaction shall be performed using a 10-ton vibratory drum compactor. The required compaction effort for each aggregate type shall be determined using a test strip. Compact the test strip using a predetermined number of passes with the compactor. Measure the density of the permeable ballast/choker course using a nuclear densometer gauge in backscatter mode. Perform additional passes with the roller and measure the aggregate density again. Repeat until the increase in density achieved with the additional passes of the compactor is less than or equal to 1.2 pounds per cubic foot on average. The number of passes with the compactor required to achieve this density shall be used to compact the remainder of the aggregate for the project. Compaction testing using the nuclear densometer gauge shall be used to confirm compaction at a frequency of one test per 2,000 square feet.

Protect placed aggregate from stormwater run-on and contamination from adjacent exposed soils.

Pervious Asphalt Concrete Pavement

The Contractor shall prepare and place asphalt pavement in conformance with Section 5-04.

Testing and acceptance requirements for Commercial HMA described in Section 5-04 of the Standard Specifications and of these Special Provisions shall apply to pervious asphalt concrete.

Transport the mix to the job site in clean vehicles with smooth dump beds that have been sprayed with a non-petroleum release agent. Limit the time of haul to avoid drainage of the asphalt to the bottom of the truck bed. The mix should be covered during transportation to prevent cooling and the formation of lumps.

Pavement shall be laid utilizing a self-propelled paving machine of 5-foot-minimum width and laser plane control or unit with an activated screed or strike-off assembly, capable of being heated if necessary, and capable of spreading and finishing the mixture without segregation for the widths and thicknesses required.

Roller shall be steel tandem drum-type, static-type of a 5 to 10 ton size. Maximum loading shall be 265 lbs. per linear inch of drum. The asphalt pavement shall be rolled a minimum of two rollings. The surface shall receive a final rolling utilizing a one-ton roller to remove all roller marks and imperfections in the surface.

Compaction shall be commenced when the asphalt mix temperature mix is at a range of 200 degrees to 240 degrees F.

Compacted depth of pervious asphalt pavement of any layer shall not exceed 0.25 foot.

Allow the pervious pavement to cure for 24 hours before applying any vehicular traffic loading.

5-04.4 Measurement

(City Contracts, November 2019 City of Auburn GSP)

HMA Cl. ___ PG ___, HMA for ___ Cl. ___ PG ___, and Commercial HMA will be measured by the ton in accordance with Section 1-09.2, with no deduction being made for the weight of asphalt binder, mineral filler, or any other component of the mixture. If the Contractor elects to remove and replace mix as allowed by Section 5-04.3(11), the material removed will not be measured.

Roadway cores will be measured per each for the number of cores taken.

Preparation of untreated roadway will be measured by the mile once along the centerline of the main line Roadway. No additional measurement will be made for ramps, Auxiliary Lanes, service roads, Frontage Roads, or Shoulders. Measurement will be to the nearest 0.01 mile.

Pavement repair excavation will be measured by the square yard of surface marked prior to excavation.

Asphalt for prime coat will be measured by the ton in accordance with Section 1-09.2.

Prime coat aggregate will be measured by the cubic yard, truck measure, or by the ton, whichever is designated in the Proposal.

Asphalt for fog seal will be measured by the ton, as provided in Section 5-02.4.

Planing bituminous pavement will be measured by the square yard.

Temporary pavement marking will be measured by the linear foot as provided in Section 8-23.4.

No measurement for Water will be made.

Asphalt Cold Patch will be measured by the ton of cold patch furnished and installed.

Rubberized Asphalt for Crack Sealing" will be measured by the ton.

Porous HMA will be measured by the ton.

No measurement for Soil Residual Herbicide will be made.

No measurement for Longitudinal Joint Seals will be made.

5-04.5 Payment

(City Contracts, July 18, 2018 APWA GSP)

Payment will be made for each of the following Bid items that are included in the Proposal:

"HMA Cl. ___ PG ___", per ton.

"HMA for Approach Cl. ___ PG ___", per ton.

"HMA for Preleveling Cl. ___ PG ___", per ton.

"HMA for Pavement Repair Cl. ___ PG ___", per ton.

"Commercial HMA", per ton.

The unit Contract price per ton for "HMA Cl. ___ PG ___", "HMA for Approach Cl. ___ PG ___", "HMA for Preleveling Cl. ___ PG ___", "HMA for Pavement Repair Cl. ___ PG ___", and "Commercial HMA" shall be full compensation for all costs, including anti-stripping additive, incurred to carry out the requirements of Section 5-04 except for those costs included in other items which are included in this Subsection and which are included in the Proposal.

"Preparation of Untreated Roadway", per mile.

The unit Contract price per mile for "Preparation of Untreated Roadway" shall be full pay for all Work described under 5-04.3(4) , with the exception, however, that all costs involved in patching the Roadway prior to placement of HMA shall be included in the unit Contract price per ton for "HMA Cl. ___ PG ___" which was used for patching. If the Proposal does not include a Bid item for "Preparation of Untreated Roadway", the Roadway shall be prepared as specified, but the Work shall be included in the Contract prices of the other items of Work.

"Preparation of Existing Paved Surfaces", per mile.

The unit Contract Price for "Preparation of Existing Paved Surfaces" shall be full pay for all Work described under Section 5-04.3(4) with the exception, however, that all costs involved in patching the Roadway prior to placement of HMA shall be included in the unit Contract price per ton for "HMA Cl. ___ PG ___" which was used for patching. If the Proposal does not include a Bid item for "Preparation of Untreated Roadway", the Roadway shall be prepared as specified, but the Work shall be included in the Contract prices of the other items of Work.

"Crack Sealing", by force account.

"Crack Sealing" will be paid for by force account as specified in Section 1-09.6. For the purpose of providing a common Proposal for all Bidders, the Contracting Agency has entered an amount in the Proposal to become a part of the total Bid by the Contractor.

"Pavement Repair Excavation Incl. Haul", per square yard.

The unit Contract price per square yard for “Pavement Repair Excavation Incl. Haul” shall be full payment for all costs incurred to perform the Work described in Section 5-04.3(4) with the exception, however, that all costs involved in the placement of HMA shall be included in the unit Contract price per ton for “HMA for Pavement Repair Cl. ___ PG ___”, per ton.

“Asphalt for Prime Coat”, per ton.

The unit Contract price per ton for “Asphalt for Prime Coat” shall be full payment for all costs incurred to obtain, provide and install the material in accordance with Section 5-04.3(4).

“Prime Coat Agg.”, per cubic yard, or per ton.

The unit Contract price per cubic yard or per ton for “Prime Coat Agg.” shall be full pay for furnishing, loading, and hauling aggregate to the place of deposit and spreading the aggregate in the quantities required by the Engineer.

“Asphalt for Fog Seal”, per ton.

Payment for “Asphalt for Fog Seal” is described in Section 5-02.5.

“Longitudinal Joint Seal”, per linear foot.

The unit Contract price per linear foot for “Longitudinal Joint Seal” shall be full payment for all costs incurred to perform the Work described in Section 5-04.3(12).

“Planing Bituminous Pavement”, per square yard.

The unit Contract price per square yard for “Planing Bituminous Pavement” shall be full payment for all costs incurred to perform the Work described in Section 5-04.3(14).

“Temporary Pavement Marking”, per linear foot.

Payment for “Temporary Pavement Marking” is described in Section 8-23.5.

“Water”, per M gallon.

Payment for “Water” is described in Section 2-07.5.

“Job Mix Compliance Price Adjustment”, by calculation.

"Job Mix Compliance Price Adjustment" will be calculated and paid for as described in Section 5-04.3(9)C6.

"Compaction Price Adjustment", by calculation.

"Compaction Price Adjustment" will be calculated and paid for as described in Section 5-04..3(10)D3.

"Roadway Core", per each.

The Contractor's costs for all other Work associated with the coring (e.g., traffic control) shall be incidental and included within the unit Bid price per each and no additional payments will be made.

"Cyclic Density Price Adjustment", by calculation.

"Cyclic Density Price Adjustment" will be calculated and paid for as described in Section 5-04.3(10)B.

(City Contracts, April 2020, City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Asphalt Cold Patch", Per Ton

The unit contract price per ton for "Asphalt Cold Patch," shall be full compensation for all costs incurred to carry out the requirements of Section 5-04.3(17) (Asphalt Cold Patch) except for those costs included in other items which are included in this sub-section and which are included in the proposal.

"Rubberized Asphalt for Crack Sealing", Per Ton

The unit contract price for "Rubberized Asphalt for Crack Sealing" shall be full pay for all costs of material, labor, tools, and equipment necessary for the application of the crack sealant as specified including all costs associated with preparation, placing, blotting, and spreading sand.

"Porous HMA", Per Ton

If HMA can be installed with a paving machine, it will not be paid for as "Commercial HMA", but instead will be paid for as "HMA Cl. ___ PG ___.

All costs associated with providing, placing, and sealing new joints in the asphalt concrete shall be included in the unit Contract price for "HMA Cl. ___ PG ___".

All cost incurred to obtain, provide and install herbicide for "Soil Residual Herbicide" in accordance with Section 5-04.3(4)B shall be included in the unit contract price per ton for HMA.

Longitudinal Joint Seals between the HMA and cement concrete pavement shall be included in the unit contract price per ton of the HMA.

Hot or cold mix asphalt concrete for temporary patches shall not be measured for separate payment. All costs associated with temporary patches shall be included in the appropriate unit bid prices for the work involved.

5-05 Cement Concrete Pavement

5-05.3 Construction Requirements

5-05.3(1) Concrete Mix Design for Paving

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Proportioning of Concrete

A. The Contractor shall design the concrete mix determining the proportions of Portland cement, coarse and fine aggregate, and water necessary to produce a workable concrete meeting the following requirements:
   (1) A compressive strength of 4,000 psi at 28 calendar days.
   (2) A maximum slump of 3 inches for fixed form paving and 2 ½ inches for slip form paving.
   (3) If air-entrained concrete is used, the mix shall contain no more than 6 percent entrained air as determined by AASHTO T 152.

B. The Contractor shall design the mix on the basis of an absolute volume method such as outlined in the American Concrete Institute (ACI) Standard 211.1, “Recommended Practice for Selecting Proportions for Normal Weight Concrete”.

C. Water reducing, set retarding or superplasticizer chemical admixtures may be used at the option of the Contractor but subject to approval by the Engineer. The Contractor shall indicate in advance the particular type and name product of admixtures that they proposes to use and only such admixtures approved by the Engineer may be incorporated into the concrete mix. Admixtures selected for use shall be compatible with all other components of the concrete. The use of calcium chloride as an admixture will not be permitted.

D. The Contractor shall submit for the record, not later than 15 calendar days prior to the start of paving operations, the proposed mix design including the aggregates grading to be used. The submission shall be accompanied with certified laboratory reports on the tests performed on the trial mixes. In the event that the concrete mix designed by the Contractor does not produce concrete of the specified strength and workability, the Contractor shall adjust the mix as required to meet the specified requirements at no additional cost to the City and shall submit new certified test results.

E. In the event the Contractor elects to use an air-entraining admixture, they shall determine by trials the amount of the selected admixture that will produce

concrete having the desired air content and the amount shall not be varied except as approved by the Engineer. The admixture shall be added during batching at the plant in accordance with the admixture manufacturer's recommendations.

F. The Contractor shall determine the proportions and batch weights for air-entrained concrete in the same manner as for regular concrete provided, however, that in making such adjustments as may be necessary by reason of air-entrainment, the minimum quantity of fine aggregate and the minimum quantity of water shall be used which will provide concrete of the required workability.

G. Whenever the Contractor modifies the concrete mix, other than minor adjustments in the relative quantities of fine and coarse aggregates, they shall submit a copy of the new mix design, together with certified copies of tests results, to the Engineer.

H. No change in the sources or character of the materials shall be made without due notice to the Engineer. No new materials shall be used until approved by the Engineer and until new trial mixes have been designed, tested and accepted.

5-05.3(8) Joints

(August 2016, City of Auburn GSP)

The first paragraph is revised to read:

The Contractor shall submit for approval to the Engineer a Joint Plan at least 10 working days prior to the commencement of any pavement construction. Transverse and longitudinal joints shall be contraction or through joints (including construction joints). Joints shall be constructed in accordance with the detail shown in the Contract Plans and shall be of the type and at the locations indicated on the Contract Plans. The faces of all joints shall be constructed perpendicular to the surface of the cement concrete pavement.

5-05.3(8)D Isolation Joints

(January 2017, City of Auburn GSP)

Delete this section and replace it with the following:

Isolation joints are placed only where shown on the Plans. The joint alignment shall be at right angles to the Pavement Structure centerline unless otherwise specified in the Contract.

Longitudinal isolation joints shall be constructed with premolded material, ½-inch in thickness and conform to Section 9-04.1(2) (Premolded Joint Filler for Expansion Joints). They shall extend from 1 inch below the bottom of pavement to ¾ inch below the top of pavement.

The joint material shall be held accurately in place during the placing and finishing of the concrete by a bulkhead, a holder, metal cap or any other approved method. The joint shall be perpendicular to the paved surface and the holder shall be in place long enough to prevent sagging of the joint material.

A wood filler strip or metal cap shall be placed on the top of the premolded joint filler to form the groove ¾ inch deep, and shall remain in place until after the finishing and the concrete is sufficiently set to resist sloughing in the groove. The joint filler shall be stapled together at the ends to preserve continuity.

Immediately after removal of side forms, the edges of the pavement shall be carefully inspected and wherever the joint filler is not fully exposed, the concrete shall be chipped down until the edge of the filler is fully exposed for the entire depth.

(August 2016, City of Auburn GSP)

Add the following new section:

5-05.3(8)E Sealing through Joints

After the pavement is cured and before carrying any traffic, the space left by the removal of the wood filler strip or the metal cap above the top of the expansion joint filler strip shall be thoroughly cleaned of all loose material. The ¾ inch wide groove shall be completely free of any projecting concrete from the sides and the groove shall be continuous across the slab to each edge. It shall then be filled level with the pavement surface with joint sealant meeting the requirements of Section 9-04.2 (Joint Sealants).

The joint sealant material shall be heated and placed in accordance with the manufacturer's instructions. Burned material will be rejected. The through joint groove shall be dry at the time of pouring the sealing compound.

Add the following new section:

5-05.3(9) Integral Cement Concrete Curb on New Pavement

(August 2016, City of Auburn GSP)

Integral doweled curb on new pavement shall be constructed as shown in the Contract Plans.

The pavement width shall be extended to the back of the curb. The pavement where the curb is to be placed shall be roughened or otherwise treated so that a permanent bond can be secured between the curb and the pavement. Curing compound shall not be used on the pavement where the curb is to be constructed.

Curb shall be constructed in accordance with Section 8-04.3(1) (Cement Concrete Curbs, Gutters and Spillways) and the Contract Plans.

5-05.3(10) Tie Bars and Corrosion Resistant Dowel Bars

(August 2016, City of Auburn GSP)

The first paragraph is revised to read:

Epoxy-coated tie bars shall be placed at all longitudinal contraction and construction joints, in accordance with the requirements shown in the Contract Plans. In addition, epoxy-coated dowel bars shall be installed when concrete curbs are constructed on top of concrete pavement in accordance with the requirements shown in the Contract Plans.

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Curb dowels shall be placed at 28 inches on center in the fresh concrete pavement. Curb dowels shall be placed in all segments of curbing that is full depth and shall be placed in transition areas for curb cuts in which a minimum of 1 inch of cover from the top of the finished curb can be achieved.

Dowel bars shall be set while the concrete is still plastic enough to not require hammering them into place.

(September 2016, City of Auburn GSP)

Add the following new section including subsections:

5-05.3(23) Cement Concrete Pavement for Alley

(September 2016, City of Auburn GSP)

This work consists of placing Cement concrete pavement for alleyways.

5-05.3(23)A Pavement and Alley Requirements

(August 2016, City of Auburn GSP)

Cement concrete pavement for alleys shall meet the requirements of Section 5-05 (Cement Concrete Pavement). Alleys shall meet the requirements for driveways in Section 8-06 (Cement Concrete Driveway Entrances).

5-05.3(23)B Extra Concrete for Alley Approach Ramp

(August 2016, City of Auburn GSP)

When constructing and finishing cement concrete Alley pavement, the Engineer may in some cases require the Contractor to place additional concrete over the surface of the Alley pavement to serve as an integral ramp or vehicular access to abutting private property. Additional thickness for such ramps shall not exceed 6 inches above the original planned concrete surface at any point, and will be addressed in accordance with Section 1-04.4 (Changes).

5-05.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Supplement this section with the following:

Measurement for “Cement Concrete Pavement – Crosswalk” will be by the square yard.

Measurement for Cement Concrete Pavement – Including Dowels will be by the square yard of concrete in place, including the area placed underneath curbs. No deduction will be made for castings in pavement.

5-05.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

“Cement Concrete Pavement – Including Dowels”, Per Square Yard

"Cement Concrete Pavement – Crosswalk", Per Square Yard

The unit contract price per square yard for "Cement Concrete Pavement – Including Dowels," shall be full compensation for all costs incurred to carry out the requirements of

The unit contract price for "Cement Conc. Pavement – Crosswalk" shall be full pay for all costs of labor, tools, materials, and equipment necessary to complete the cement concrete pavement to the lines, grades, and depths specified on the Plans including the saw cutting of the grid pattern and other finishing requirements.

Section 5-05 (Cement Concrete Pavement) at the thickness required in the Plans including furnishing and installing epoxy coated dowel bars and tie bars, block outs, joints, thickened edges, and integral curbs on concrete pavement in accordance to the Standard Details and Contract Plans.

(February 2023, City of Auburn GSP)

Supplement Division 5 with the following section, including subsections:

5-06 Pervious Concrete Pavement

5-06.1 Description

This work shall consist of constructing a pervious cementitious pavement composed of 66nclude66 cement concrete on a prepared subgrade or subbase in accordance with these Specifications and in conformity with the lines grades, thicknesses, and typical cross-sections shown in the Plans or established by the Engineer.

5-06.2 Materials

Materials shall meet the requirements of the following sections:

Portland Cement	9-01
Aggregates for Portland Cement Concrete	9-03.1
Premolded Joint Filler for Expansion Joints	9-04.1(2)
Curing Materials and Admixtures	9-23
Water	9-25

Hydration stabilizing admixtures shall conform to the requirements of Section 9-23.6(3) or 9-23.6(5).

Synthetic Fibers for Concrete

When specified synthetic fibers to be included in the mix for 66nclude66 cement concrete shall conform to the requirements of ASTM D 7508/7508M.

5-06.3 Construction Requirements

5-06.3(1) Pervious Concrete Construction Meeting

Prior to the start of construction of the pervious concrete pavement section, including excavation of the pavement section, the Contractor shall coordinate, schedule and attend a

preconstruction meeting for the pervious concrete pavement. The following are required to attend the meeting:

1. Contracting Agency representative.
2. General Contractor's representative(s).
3. Engineer of Record for the pervious concrete pavement.
4. Concrete placement lead person(s).
5. Associated Subcontractor's representative.
6. Pervious concrete Supplier's representative.
7. Material Testing Laboratory's representative.

The meeting shall cover all aspects of the work including, but not limited to:

1. Submittals.
2. Short and long term schedule.
3. Inspection of the Work.
4. Protection of the Work.
5. Pervious concrete placement.
6. Curing.
7. Materials.
8. Specifications.
9. Testing.
10. Test panel and JMF.
11. Acceptance criteria.

5-06.3(2) Pervious Concrete Mix Design

The Contractor shall provide a mix design for pervious concrete and shall submit the mix design to the Engineer in writing. Pervious concrete shall not be placed in the test panels without a mix design that has been reviewed and accepted by the Engineer.

5-06.3(2)A Mix Design Criteria

The Contractor shall include the following elements and results of the described procedures in the proposed mix design:

1. A unique identification number for the mix design that is approved for the Job Mix Formula (JMF).
2. Portland cement shall be Type I, Type II, Type I-II Type IP, or Type IS.
3. The cementitious content, including pozzolans if used, shall be a minimum of 480 pounds per cubic yard.
4. The mix shall incorporate a hydration stabilizing admixture.

5. Synthetic microfibers may be utilized at the manufacturer's recommended dosage rate.
6. The water / cement ratio shall not exceed 0.35.
7. No more than 25 percent of 68nclude68 cement in the mix, by weight, may be replaced by fly ash, ground granulated blast furnace slag, or a combination of both.
8. Coarse aggregate shall conform to Section 9-03.1(4), AASHTO Grading No.8.

5-06.3(2)B Job Mix Formula (JMF)

The approved mix design established through the approved test panel becomes the JMF.

5-06.3(3) Submittals

In accordance to Section 1-05.3, the Contractor shall submit the following items to the Engineer for acceptance prior to placing any pervious concrete pavement:

1. The source of all materials proposed for use in constructing pervious concrete pavement.
2. Batch weights for all constituents of one (1) cubic yard of the proposed pervious concrete mix.
3. The specific gravity (SSD) of all aggregates to be used in the proposed pervious concrete mix.
4. The proposed gradation of coarse aggregates used in pervious concrete.
5. The designed volume in cubic feet of all proposed components for 1(one) cubic yard of the proposed pervious concrete mix.
6. The design water / cement ratio of the proposed mix design.
7. The fresh density of the proposed pervious concrete mixture as determined by ASTM C1688.
8. Catalogue cuts and Certificates of Compliance for all proposed admixtures.
9. Mill Certification of the 68nclude68 cement and pozzolans, if used, for the current lot to be used in the production of the proposed pervious concrete mix. The Contractor shall maintain this submittal throughout the duration of the project as lots change.
10. Current certification by the National Ready Mix Concrete Association (NRMCA) for the batch plant(s) to be used in the production of pervious concrete.
11. Current certifications by the NRMCA for the trucks to be used in transporting pervious concrete from the batch plant to the point of placement.
12. Qualification documentation for current certifications by the NRMCA for the Contractor's personnel who will be installing pervious concrete. See Section 5-06.3(10)A. Valid acceptable documentation is the NRMCA issued wallet card or certification certificate.
13. At the time of delivery of the material to the site, the Contractor shall provide an original Certificate of Compliance for each truckload of pervious concrete. The Certificate of Compliance shall include information noted in Section 6-02.3(5)B. If the Certificate of Compliance from the concrete producer is not provided to the Engineer upon delivery, the truckload shall not be placed.

5-06.3(4) Equipment

Equipment necessary for handling materials, mixing, delivering, and performing all parts of the Work, shall be in good repair, designed for the task, and operated by trained and qualified personnel.

5-06.3(4)A Batching Plant and Equipment

Pervious concrete shall be centrally mixed in a plant with a current NRMCA certification.

5-06.3(4)B Mixer Trucks

Pervious concrete shall be transported to the location by truck mixers, non-agitating trucks shall not be used for the transport of pervious concrete. The drums on mixer trucks used to transport pervious concrete shall have fins that are not excessively worn, damaged or have excessive concrete buildup. Mixer trucks shall have a current NRMCA certification.

5-06.3(4)C Side Forms

Pervious concrete shall be placed in stationary forms. If pervious concrete is to be placed against a curb, previously placed concrete, or other existing structure, they may be used as a side form for the pervious concrete paving. Forms for pervious concrete shall be made of steel or wood and shall be in good condition, and shall be capable of being anchored in place so that they will be true to grade, line and slope. Forms shall be sufficiently rigid to maintain specified tolerances and capable of supporting concrete and mechanical concrete placing equipment. Forms shall be in good condition, straight, clean, free of debris, non-adherent rust and hardened concrete.

Set, align, and brace forms so that they hardened pavement meets the lines, grades and slopes as shown in the drawings. Apply form-release agent to the form face, which will be in contact with concrete, immediately before placing concrete. Form release agent shall not be applied to previously placed concrete. Previously placed pavement shall be protected from damage.

The Contractor shall inspect all forms for line, grade and slope. No pervious concrete shall be placed until the forms have been inspected by the Engineer.

5-06.3(4)D Finishing Equipment

Finishing equipment for pervious concrete paving shall be designed for the intended work, shall be clean and in good operating condition.

Equipment used for striking off the pervious concrete shall leave a smooth surface at the planned grades and shall not cause excess paste to be left on, or drawn to, the surface. If rollers or spinning screeds are used to compact, they shall be of sufficient weight and width to compact the pervious concrete uniformly through its depth and to grade without marring the surface. Equipment used for compacting pervious concrete shall not cause the surface to close or otherwise clog and shall produce a surface that is free of ridges or other imperfections. Tools used for producing joints shall be designed and manufactured for the purpose and shall not otherwise damage or mar the surface.

Vibrating equipment shall not be used for placement or compaction of pervious concrete.

5-06.3(5) Measuring and Batching Materials

Measuring and batching materials for pervious concrete pavement shall conform to the requirements of Section 5-05.3(4).

5-06.3(6) Acceptance

For acceptance, pervious concrete pavement will be divided into lots as follows: A single lot (lot) is represented by the lesser of: one (1) day's production or 360 square yards of pervious concrete in place. Where the Contractor has more than one crew placing pervious concrete, lots will be associated with each crew. Representative lot size will be determined to the nearest square yard. If no sample is taken on a Day, that Day's quantities may be included in the next or previous Day's lot(s). The Engineer may isolate an area of pervious concrete within a lot that is deemed to be defective in any way and such an area will be considered to be a new lot for purposes of acceptance. New lots determined in this manner shall be extended as necessary such that they are bounded by planned joints. Acceptance of a lot of pervious concrete pavement will be based on the following criteria:

1. Grade: Conform to the dimensions, lines, slopes and grades specified on the plans. Pervious concrete pavement shall be true to planned grades and shall not deviate from grade more than ¼ inch in ten (10) feet. Where abutting existing facilities such as sidewalks, walkways, curbs, driveways or other pavements, the pervious concrete shall be flush.

2. Conformance to JMF: The pervious concrete pavement used shall conform to the mix design for the JMF within the limits as set forth in Section 6-02.3(5)C and as determined from the accepted test panel.

3. Compacted Thickness and Average Hardened Density: After a minimum of seven (7) calendar days of curing, remove and measure three (3) cores from each lot. Remove cores in accordance with ASTM C42/C42M. Measure the length of each core in accordance with ASTM C1542/1542M. No single core shall be less than 3/4 inch of the design depth on the drawings. The average of all cores from a lot shall be within minus 3/8 inch of the design depth on the plans. After length is measured, measure hardened density of each core in the lot in accordance with ASTM C1754/C1754M. The hardened density from a lot must be within +/- 5 percent of the average hardened density of the JMF (approved test panel).

4. Infiltration Rate: The infiltration rate at any single test point shall not be less than 100 inches per hour.

5. Fresh Density: The fresh density of each lot will be measured by ASTM C1688 at the point of placement shall be within +/- five (5) pounds per cubic foot of the fresh density determined from the JMF (approved test panel).

6. Appearance: The appearance of each lot shall be consistent with the JMF (approved test panel). The pervious concrete pavement shall have a consistent surface texture, shall not be raveled, shall be free of ridges or other surface imperfections, shall have joints that are in the specified location and are constructed per specification, and shall be free of cracks.

Testing for acceptance will be performed by the Engineer.

5-06.3(6)A Infiltration Rate of Placed Pavement

The infiltration rate of the pervious concrete shall be determined at four (4) random locations within each lot. The locations for conducting infiltration tests will be determined by the Engineer. The Contractor shall coordinate and schedule testing with the Engineer a minimum of five (5) Working Days in advance. The infiltration rate on the finished surface will be determined in accordance with ASTM C1701, except the infiltration ring diameter may be 12-inches to 24-inches in diameter. The infiltration test will be conducted after a minimum of seven (7) calendar days of curing has occurred.

If the measured infiltration rate is less than 100 inches/hour at any test location, the Contractor may request in writing that the Engineer perform additional infiltration tests for the purpose of assessing overall infiltration performance and/or determining a defective lot in accordance with Section 5-06.3(6). The determination of a defective lot, or lots, and the extent(s), will be by the Engineer. The cost of additional testing shall borne by the Contractor.

5-06.3(7) Rejection

Pervious concrete may be rejected by the Contractor for any reason.

A truckload of pervious concrete will be rejected if the Certificate of Compliance is not provided at the time of delivery of the material to the site. See Section 5-06.3(4)B.

Pervious concrete that is improperly cured or is allowed to freeze during the initial seven (7) day curing period will be rejected.

Pervious concrete pavement that does not meet the acceptance criteria put forth in Section 5-06.3(6) will be rejected by the Engineer on a lot by lot basis.

During the removal process of the rejected pavement, The Contractor shall implement measures to protect the adjacent pervious concrete pavement to remain. If pervious concrete pavement becomes damaged by the Contractor during removal of the rejected pavement then additional pavement areas may be rejected by the Engineer to the next planned joint.

Fresh pervious concrete that has been rejected by the Engineer, or the Contractor, shall not be placed, or shall be removed and replaced, at no additional cost.

5-06.3(8) Mixing Pervious Concrete

Batch, mix and deliver pervious concrete in compliance with ASTM C94/C94M except that pervious concrete shall not be transit mixed or shrink mixed. If water is added to the mix after it is delivered on site, the fresh density for the pervious concrete shall meet the requirements of the approved JMF referenced in this section.

5-06.3(8)A Limitations of Mixing Pervious Concrete

Mixing and placing concrete shall be discontinued when a descending air temperature in the shade away from artificial heat reaches 40º F and shall not be resumed until an ascending air temperature in the shade and away from artificial heat reaches 40º F.

The temperature of fresh pervious concrete shall not be less than 55° F, nor more than 90° F when placed.

Pervious concrete shall not be mixed with aggregates at less than 32° F.

5-06.3(9) Subgrade Preparation And Base

Prepare and protect subgrade in accordance with Section 2-06.

Prepare and protect subbase in accordance with Section 4-04.

5-06.3(10) Placing, Spreading, Finishing, Edging, Tolerances, and Curing

Pervious concrete shall not be placed, compacted or finished when the natural light is inadequate, unless an adequate lighting system is in operation. The adequacy of light will be determined by the Engineer.

Wet the surface of the subbase with water immediately before placing pervious concrete. Deposit concrete either directly from the transporting equipment or by conveyor on the subbase, unless otherwise specified. Pervious concrete shall not be placed on frozen subbase. Deposit concrete between the forms to an approximately uniform height. Spread the concrete using mechanized equipment or hand tools. Vibrating equipment shall not be used for spreading pervious concrete.

Strike off concrete between forms using a form-riding paving machine, roller screed, or spinning screed.

Compact concrete to a uniformly dense structure without clogging the surface with paste.

Finish the pervious concrete to a uniform, open-textured surface to match the appearance of the approved JMF test panel.

Edges shall be hand tooled to a radius of ¼ inch.

Curing materials for pervious concrete shall be in place no more than 20 minutes of discharge onto the subbase. The pavement surface and all exposed edges shall be completely covered with sheet curing materials conforming to Section 9-23.1. The curing material shall secured at all exterior edges and interior laps without damaging the pervious concrete. The method of securing the curing material shall prevent wind from removing the sheet and from blowing under the sheet across the surface of the concrete. Cure the pavement for a minimum of seven (7) uninterrupted days.

All traffic (foot and vehicular), staging, stockpiling or other work shall be kept off of the pervious concrete pavement during the curing period. Any testing for acceptance shall not occur until the end of the curing period.

Protect concrete from freezing and cold weather in accordance with 5-06.3(12).

5-06.3(10)A Contractor's Qualifications

The contractor shall employ no less than one (1) National Ready Mixed Concrete Association (NRMCA) certified Pervious Concrete Craftsman for each crew, who must be on site, over-seeing the work during all pervious concrete placement; or employ no less than three (3) NRMCA Certified Pervious Concrete Installers per crew, who must be on site working during each pervious concrete placement. The minimum number of certified individuals must be present on each crew for every pervious concrete placement, including the test panel placements, and a certified individual must be in charge of the placement crew and procedures.

If, in the opinion of the Engineer, personnel used for installing pervious concrete are unqualified, inattentive to quality, or unsafe, they shall be removed or reassigned from installation of pervious concrete at the written request of the Engineer.

5-06.3(10)B Test Panel

Production placement of pervious concrete shall not occur until the Contractor has completed a test panel of pervious concrete pavement that meets all of the acceptance criteria described herein and is accepted by the Engineer.

The Contractor shall construct a test panel utilizing a minimum of seven (7) cubic yards of pervious concrete. If multiple pavement section depths are shown on the plans, a test panel shall be constructed for each pavement section depth/thickness. The width of the test panel shall have a width no smaller than the greatest width to be used during the construction and installation of the pervious concrete onsite. The test panel(s) shall include at least one joint and at the spacing specified on the plans and specifications. Test panels may be placed non-contiguously. The test panel(s) shall be equivalent and representative of the production pervious concrete pavement in all aspects including subbase, depth, joints, method of placement, curing, and preparation. Construction and evaluation of the test panel shall occur as follows:

1. Notify the Engineer at least ten (10) Working Days before installing pervious concrete test panels.
2. Coordinate the location of the test panel with the Engineer.
3. Install the test panel in accordance with the Specifications and Drawings.
4. Notify the Engineer when the test panel is ready for inspection and acceptance testing.
5. Acceptance testing will be conducted in accordance with Section 5-03.3(6).
6. Remove, replace, and dispose of any unsatisfactory portions of test panels as determined by the Engineer, at no additional cost to the Contracting Agency.

Failure to install acceptable test panel(s) of pervious concrete will indicate an unapproved test panel(s) and require new test panel(s) for review.

The completed and approved test panel(s) shall establish the JMF.

The approved test panel shall meet the requirements of Section 5-03.3(6).

Upon successful completion of the infiltration test, unless otherwise determined by the Engineer, three (3), cores will be cut in accordance with ASTM C42 and will be used to validate the mix design under the acceptance criteria of Section 5-06.3(6). Cores shall be taken at the same location where the infiltration test was conducted. The average hardened density of the cores shall be the hardened density used for the JMF. The hardened density of each core used for determining the JMF shall be within five (5) percent of the mean value of the three cores. Core holes shall be filled by the Contractor with pervious concrete meeting the proposed JMF and shall match adjacent pavement color, texture and grade.

The completed and accepted test panels shall be maintained and protected throughout the duration of the Work and may not be demolished and disposed of without written permission from the Engineer. If the test panel(s) is incorporated into the Work, it shall remain in place accepted as a single lot.

5-06.3(11) Joints

Construct joints at the locations, depths and with horizontal dimensions indicated on plans unless noted otherwise in this section. Joints shall be of three (3) types: construction, contraction, isolation. Construction joints shall be formed at the end of a day's work or when

necessary to stop production for any reason. Contraction joints shall be used to control random cracking. Isolation joints shall be used where the pervious concrete abuts existing facilities or where shown on the Plans.

5-06.3(11)A Construction Joints

Construction joints shall be located at the location of a planned contraction or isolation joint. Construction joints are to be formed by placing a header between the forms, at right angles, to the full depth of the finished pervious concrete, and set to the height of the forms. Pervious concrete shall be placed against the header and compacted and finished as normal, including edging. The header shall remain in place until paving resumes.

5-06.3(11)B Contraction Joints

Contraction joints (transverse and longitudinal) shall be constructed at the locations and intervals shown in the Contract. Contraction joints shall be a depth of 1/3 the thickness of the pervious concrete pavement section and have a width of no more than 1/4 inch. Contraction joints shall not be saw cut unless specifically noted on the Plans. Saw cut joints shall have a minimum width of 1/8 inch. Plastic formed contraction joints shall be tooled on both sides of the joint with a radius of ½ inch. Tool joint to the depth and width in fresh concrete immediately after the concrete is compacted.

5-06.3(11)C Isolation Joints

Isolation joints shall be placed where the pervious concrete abuts existing structures or where shown on the Plans. Isolation joints shall continue through the depth of the pervious concrete using a 3/8 inch premolded joint filler meeting the requirements of Section 9-04.1(2). Isolation joints may be formed by forming a construction joint and affixing the premolded joint filler against one side of the joint and placing fresh pervious concrete against it. Isolation joints and filler shall be flush with the surrounding pervious concrete and shall not deviate from the acceptance criteria for smoothness as shown in Section 5-06.3(6). The edge of the pervious concrete adjacent the premolded joint filler shall be hand tooled with a ½ inch radius.

5-06.3(12) Cold Weather Work

When concrete is being placed and the ambient air temperature is expected to drop below 35° F during the day or night, the Contractor shall protect the concrete from freezing. The Contractor shall submit for approval a Cold Weather Plan prior to placing concrete when ambient air temperature below 35° F is anticipated, or when requested by the Engineer. When a Cold Weather Plan is required, pervious concrete shall not be placed without an approved Cold Weather Plan.

Under the Cold Weather Plan, the Contractor shall, provide a sufficient supply of straw, hay, blankets, or other suitable blanketing material and spread it over the pavement to a sufficient depth to prevent freezing of the concrete. The blanket material shall be placed on top of the sheet curing materials and covered with a layer of burlap or plastic sheeting, weighted or anchored to prevent the wind from displacing the insulation. At no time during the curing period shall the temperature of the pervious concrete be allowed to drop below 55° F. The Engineer may require recording thermometers if daytime temperature is below 50°. The curing period may be extended by the Engineer if the pervious concrete temperature has been allowed to drop below 55° F.

The cold weather protection shall be maintained for seven (7) days. Pervious concrete that has frozen during this period will be rejected.

5-06.3(13) Protection of Pervious Concrete Pavement

As part of the Construction Stormwater Pollution Prevention plan (SWPPP), rain runoff, surface water of any kind and sediment shall be prevented from entering the area of pervious concrete construction, including excavation, until the pervious concrete application has cured, testing is completed and determined to meet specifications and the adjacent areas that sheet flow/drain onto the pervious concrete are permanently stabilized from erosion and plantings are established. Once pavement is placed, flow diversion measures and protective covers shall continually be maintained until adjacent areas are permanently stabilized and concrete has been accepted. Construction vehicular traffic shall not be allowed onto the pervious concrete pavement.

Do not open the pavement to vehicular traffic until the concrete has cured for at least seven (7) uninterrupted days, testing has been completed, and the pavement has been accepted by the Engineer.

The Contractor shall take every precaution to protect the pervious concrete pavement from damage, including the introduction of foreign materials to the surface, throughout the course of the work. Pervious concrete pavement that is damaged or has been adversely impacted by the introduction of foreign materials shall be remediated to the satisfaction of the Engineer or rejected and replaced to the nearest joint.

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with the following subsections:

5-06.4 Measurement

Measurement for “Pervious Concrete Pavement – Sidewalk” will be by the square yard of finished surface of pervious concrete walk. No measurement will be made for blocked out areas, castings or other discontinuities in the sidewalk nine (9) square feet or larger.

Measurement for “Pervious Concrete Pavement-Vehicular” will be by the square yard for the finished surface of pervious concrete pavement. No Measurement will be made for blocked out areas, castings or other discontinuities in the pavement nine (9) square feet or larger.

5-06.5 Payment

Payment will be made in accordance with Section 1-04.1, for each of the following Bid Items that are included in the Proposal:

“Pervious Concrete Pavement – Sidewalk”, Per Square Yard

“Pervious Concrete Pavement – Vehicular”, Per Square Yard

The Unit contract price per square yard for “Pervious Concrete Pavement – Sidewalk” shall be full pay for furnishing all labor, tools, equipment and materials required to construct the pervious concrete sidewalk as specified in this Section, including but not limited to; performing mix designs, and placing pervious concrete.

The Unit contract price for “Pervious Concrete Pavement-Vehicular” shall be full pay for furnishing all labor, tools, equipment and materials required to construct the pervious concrete pavement as specified in this Section, including but not limited to; performing mix designs, and placing pervious concrete.

(February 2023, City of Auburn GSP)

Supplement Division 5 with the following section, including subsections:

5-07 Textured Asphalt

5-07.1 Description

This work consists of texturing and coloring asphalt concrete pavement in areas indicated on the Contract Drawings. Work includes imprinting the hot mix asphalt surface with a textured finish, and coating the finish surface with a colored epoxy material. All imprinting work shall be performed by an Authorized Street Print Applicator or substituted in its entirety with an approved equivalent described here in accordance with 1-06.7(4) (Proposed Equivalents).

5-07.2 Materials

The following specifications and methods are referenced as part of these Special Provisions.

American Society for Testing and Materials

1) ASTM D-4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Tester
2) ASTM D-4060 Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
3) ASTM D-2697 Standard Test Method for Volume of Nonvolatile Matter in Clear or Pigmented Coatings

5-07.2(1) Coating Material

The coating material shall be a premium high performance material consisting of epoxy modified acrylic polymers blended with sand and aggregate, “StreetBond SP150E,” or an approved equivalent.

5-07.2(2) Colorant

The colorant shall be a highly concentrated, high quality, UV stable pigment blend designed to be added to coating material to provide color to the coating. The colorant shall be StreetBond Colorant, with the color “Bedrock,” and the same colorant shall be used in each coating layer applied to the asphalt surface. One pint of StreetBond Colorant shall be used with one 5-gallon pail of StreetBond SP150E Coating Material.

5-07.3 Construction Requirements

The Contractor shall follow the latest StreetPrint Application Procedures as issued by Integrated Paving Concepts Inc.

5-07.3(1) Textured Asphalt Terms

Textured Asphalt Pavement shall be described as “StreetPrint Pavement Texturing”, “StreetPrint”, or approved equivalent pavement on the Contract Plans and documents related to the project.

Pavement Texturing is defined as a finishing system, which treats the surface of Hot Mix Asphalt (HMA) by imprinting fully compacted asphalt pavement with “grid style” or other

styles of depressions to replicate, in relief, the concrete grout depressions common to hand-laid brick or cobblestone, or any other design as shown on the Plans or described in the specifications, and coating the imprinted asphalt surface using an approved surfacing system. This system shall be the "StreetPrint" system utilizing the "StreetBond HW Surfacing System" or an approved equivalent.

Imprinting Asphalt Concrete Pavement is defined as pressing flexible templates into hot, ***fully-compacted***, Asphalt Concrete Pavement to create the appearance of grout lines or patterns in the asphalt surface.

Surfacing System is defined as multiple applications of premium coating material, and shall be StreetBond HW Surfacing System applying StreetBond SP150E.

"Authorized StreetPrint Applicator" is a contractor licensed by Integrated Paving Concepts Inc., (Tel. 800-688-5652), and shall have a foreman, supervisor or lead hand on site who has successfully completed a StreetPrint Level 1 or Level II Accreditation Training Program.

5-07.3(2) Certification

The contractor shall furnish certification of test results showing that surfacing materials has the following properties:

1. Adhesion (PLI) To an Asphalt substrate (ASTM D-4541) Result: Cohesive failure of asphalt prior to adhesive failure.
2. Taber Abrasion H-10(Dry Wear Index) (ASTM D-4060). Maximum of 0.98 grams/1000 cycles after 7 calendar days cure.
3. Solids by Volume (%) (ASTM D-2697). Minimum = 24 +/-2%.

5-07.3(3) Equipment

All equipment, tools, and machines used to perform the work shall be maintained in satisfactory working order at all times. Descriptive information on the surfacing application equipment shall be submitted to the Engineer for approval not less than 5 working days before the work starts.

5-07.3(3)A Templates

Templates shall be manufactured from flexible, woven wire rope cut and welded into the patterns used for imprinting Asphalt Concrete Pavement.

5-07.3(3)B Reciprocating Infra-Red Heater

Reciprocating Infra-Red Heater shall be used to apply heat to the asphalt surface in designated areas for imprinting. The heating equipment used shall allow continuous monitoring of the surface temperature to ensure the asphalt does not over heat and burn. Equipment that is specifically excluded from this section shall not be used for reheating of the asphalt in any form, including direct flame heaters.

5-07.3(3)C Vibratory Plate Compactor

Vibratory Plate Compactor shall be used for pressing the wire templates into the heated asphalt to create the specified pattern.

5-07.3(3)D Spray Equipment

Spray Equipment shall be capable of applying the coating material to the asphalt surface in a controlled thin film.

5-07.3(4) Construction

5-07.3(4)A Surface Preparation Prior to Coating

The asphalt surface shall be free of dirt, debris, oil or anything that will adversely affect the adhesion of the new coating system. All loose material on the asphalt surface shall be removed and prior to applying the coatings, the asphalt surface shall be completely dry.

5-07.3(4)B Layout and Imprinting

Layout and imprinting of the pattern into the surface of the HMA is shown in the Plans.

5-07.3(4)C Heating of Asphalt

Direct flame heaters shall not be allowed for the purpose of heating the asphalt. Hot air portable heaters may only be used for heating isolated areas. The temperature of the asphalt surface shall be regularly monitored during the reheating process. The asphalt pavement shall be adequately heat soaked (softened) to a depth of at least 1/2 inch, without burning the asphalt. If during the re-heating process the surface is overheated and begins to emit black smoke, the contractor shall stop work immediately. The damaged surface area shall be removed by milling the upper 1-1/2 inch and replaced by a partial depth patch with the topmost layer matching the existing surface layer mix and binder. Patching and all work associated with the repair effort shall be at no cost to the City.

5-07.3(4)D Sample Area

Prior to installing the Surfacing System to the entire project, a sample area shall be completed. Upon approval from the Engineer for appearance of color, the Contractor may proceed with completing the Surfacing System installation.

5-07.3(4)E Coating Installation

The Contractor shall apply the Surfacing System only when the air temperature is at least 50°F and rising, and will not drop below 50°F within 8 hours of application of the coating material. There should be no precipitation expected within 2 hours after applying the final layer of coating material.

5-07.3(5) Quality Control

5-07.3(5)A General

At all times the Contractor shall have a representative familiar with all manufacturer's recommendations for products used on site, or if the StreetPrint process is utilized then a foreman, supervisor or lead hand who is registered with Integrated Paving Concepts, Inc., as a Level 1 or Level II Accredited StreetPrint Installer shall be onsite at all times during installation; certification must be submitted for approval 5 working days prior to commencing construction.

5-07.3(5)B Stamping Depth

Upon completion, the patterned area shall be checked for proper depth of print. 98% of the stamped area shall have an imprint depth of 1/4 inch. If any sample areas have an imprint depth that is less than 1/4 inch, those areas shall be re-heated and re-stamped prior to applying the coatings.

5-07.3(5)C Coating Thickness

The total thickness shall be monitored by measuring the volume of material used per unit area. For this project an average coverage area for the combined coating layers shall be per manufacturer's recommendation or 150 square feet coated per 5-gallon pail of StreetBond SP150E material used. The Contractor shall provide proof of material usage.

5-07.3(5)D Protection of Existing Pavement Markings

The Contractor shall protect all existing pavement markings from contamination from the asphalt sealant including any existing markings on curbing. All disturbed pavement markings shall be returned to their original condition, at no additional cost to the City as specified in Section 8-22 (Pavement Markings).

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with these subsections:

5-07.4 Measurement

Measurement for "Textured Asphalt" shall be by the square yard of surface area completed.

5-07.5 Payment

Payment will be made for each of the following Bid items that are included in the Proposal:

"Textured Asphalt", Per Square Yard

The unit contract price for "Textured Asphalt" shall be full pay for all costs of labor, tools, and equipment necessary to install the asphalt texturing, including heating, imprinting, and coloring the asphalt.

Costs for placing and compacting the HMA Cl. ½ inch pavement receiving the texturing shall be paid for as indicated in Section 5-04 (Hot Mix Asphalt) of these Special Provisions.

(February 2023, City of Auburn GSP)

Supplement Division 5 with the following section, including subsections:

5-08 Stamped Colored Cement Concrete

5-08.1 Description

This work shall be for the completion of stamped concrete medians as indicated on the Plans.

5-08.2 Materials

Stamped concrete shall be air entrained concrete Class 4000 in accordance with the requirements of Section 6-02.

Solomon Liquid Colors Inc. colorant (Solomon Colors, PO Box 8288, Springfield, Illinois 62791. Phone (800) 624-0261 / (217) 522-3112. Fax (800) 624-3147 / (217) 522-3145. Web Site www.solomoncolors.com. E-Mail sgs@solomoncolors.com.), or approved equivalent, shall be added to the concrete mixture per the following specifications:

Colorant Material Specifications:

- Color: ColorFlo Liquid Color
- Name: Dark Redwood
- Number: 489
- Compliance: ASTM C 979.
- Material: Predispersed iron oxide pigments containing high pigment solids in aqueous base liquid.

Produce uniform and consistent color.

- Permanent, inert, stable to atmospheric conditions, sunfast, weather resistant, alkali resistant, water insoluble, lime proof, and nonbleeding.
- Free of deleterious fillers and extenders.
- Particle Size: 95 to 99 percent minus 325 mesh.
- Specific Gravity: 1.9 to 2.0.

Color Mixing Specifications:

- Mixer shall be loaded to a minimum of 40% capacity to ensure good color suspension.
- The mix design shall be consistent and the water cement ratio shall be maintained with a maximum 4 inch slump.
- The Contractor shall reverse the drum, bringing the concrete to the back of the truck, prior to adding color to the ready mix truck.
- The Contractor shall mix the concrete at high speed for a minimum of 5 minutes before pouring concrete.

5-08.3 Construction Requirements

Construction Requirements for Stamped Colored Concrete:

- Measuring, Batching, Mixing, and Delivering Concrete: As specified in Section 6-02, except as specified in this section.
    1. Measure, batch, mix, and deliver concrete with pigments in accordance with manufacturer's instructions.
    2. Ensure mixer is clean and free of washout water before loading.
    3. Load mixer to a minimum of 40 percent capacity.
    4. Do not load mixer beyond recommended capacity.
    5. Add concrete materials to mixer in same order for each batch.
    6. Do not add pigment to mixer as first concrete material.
    7. Maintain consistent amounts of batch water in each batch.
- Placing, Finishing, and Curing Concrete: As specified in Section 6-02, except as specified in this section.
    1. Place, finish, and cure concrete with pigments in accordance with manufacturer's instructions.
    2. Allow excess surface water to evaporate before finishing.
    3. Do not over-finish surface. Avoid burning surface.
    4. Do not fog with water or cover surface of colored concrete during initial curing process for a minimum of 48 hours.
- Add liquid pigments to concrete batch automatically by use of metering, volumetric, or weight measuring system or manually by weight or volume in accordance with manufacturer's instructions.
- Recycle liquid pigments while in their container before use to ensure uniformity and proper viscosity.
- Add liquid pigments to concrete batch after prewetted aggregate and before cement addition.

Calcium chloride shall not be permitted in the concrete mix, as it causes discoloration.

Forms shall be as specified in Section 8-14.3(2).

Cleaning:

- Clean concrete of efflorescence in accordance with manufacturer's instructions.
- Ensure concrete has sufficiently cured before cleaning.
- Use concrete cleaner approved by pigment manufacturer. Do not use cleaners containing acid.
- Apply cleaner in accordance with cleaner manufacturer's instructions.

5-08.3(1) Stamping

The Contractor shall apply a Brickform, or approved equivalent, Antique Release agent, to the concrete as soon as all standing water has disappeared from the concrete surface and prior to beginning the stamping process.

The Contractor shall apply a Brickform, or approved equivalent, concrete sealer to the finished concrete after it has cured for 28 calendar days.

While the initially finished concrete is plastic, the Contractor shall accurately align and place stamp "skins" or semi rigid mats in sequence and changing direction of patterns as necessary to produce the pattern shown in the Plans. The Contractor shall uniformly load mats and press into concrete to produce the required imprint pattern and depth of imprint on the concrete surface. The Contractor shall remove the stamp mats immediately. The Contractor shall hand stamp edges and surfaces unable to be imprinted by stamp mats.

The Contractor shall utilize a stamping template that matches the pattern specified in the Plans. Upon completion, the patterned area shall be checked for proper depth of print. 98% of the stamped area shall have an imprint depth of 1/4 inch. If any sample areas have an imprint depth that is less than 1/4 inch, those areas shall be re-stamped prior to applying the coatings. The stamped pattern shall be neat, with clean lines and intersections.

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with these subsections:

5-08.4 Measurement

Measurement for "Colored Stamped Cement Concrete" shall be per Square Yard.

5-08.5 Payment

Payment will be made for each of the following Bid items that are included in the Proposal:

"Colored Stamped Cement Concrete", Per Square Yard

The unit contract price for "Colored Stamped Cement Concrete" shall be full pay for all costs of labor, tools, materials, and equipment necessary to mix, pour, grade, finish, stamp, apply the colored release agent, apply the concrete sealer, and color the stamped concrete.

(February 2023, City of Auburn GSP)

Supplement Division 5 with the following section, including subsections:

5-09 Slurry Seal Surface Treatment

5-09.1 Description

This work consists of applying an emulsified asphalt slurry seal to prepared designated street surfaces in complete and strict accordance with these Special Provisions.

The slurry seal surface shall consist of a mixture of emulsified asphalt, mineral aggregate, and water, properly proportioned, mixed, and spread evenly on the surface as specified in this document. The cured slurry shall have a homogenous appearance, fill all cracks, adhere firmly to the surface, and have a skid resistant texture.

5-09.1(1) Applicable Specifications

The following specifications and methods are referenced as part of these Special Provisions:

AASHTO __ American Association of State Highway Testing Officials;
ASTM __ American Society for Testing and Materials;
ISSA __ International Slurry Seal Association.

5-09.2 Materials

5-09.2(1) Asphalt Emulsion

Emulsified asphalt shall conform to the requirement of ASTM or ISSA Specification for type SS1h, CSS1h, or Quick Setting Mixing Grade Emulsion.

5-09.2(2) Aggregate

The mineral aggregate shall consist of natural or manufactured sand, slag, crusher fines, and others or a combination thereof. Smooth-textured sand of less than 1.25% water absorption shall not exceed 50% of the total combined aggregate. The aggregate shall be clean and free of vegetable matter and other deleterious substances. When tested by AASHTO T176 or ASTM D2419, the aggregate blend shall have a sand equivalent of not less than 45. When tested according to AASHTO T104 or ASTM C88 the aggregate shall show a loss of not more than 15%. When tested according to AASHTO T-96 or ASTM C131 the aggregate shall show a loss of not more than 35. Mineral fillers such as Portland Cement, limestone dust, fly ash, and others shall be considered part of the blended aggregate and shall be used in minimum required amounts and must meet the gradation requirements of ASTM D242. Mineral fillers shall only be used if needed to improve the workability of the mix or gradation of the aggregate.

The combined mineral aggregate shall conform to the following gradation:

Sieve Size	Percent Passing (Type III)
½ inch – (12.5mm)	
3/8 inch – (9.5mm)	100
No. 4 (4.75mm)	70-90
No. 8 (2.36mm)	45-70
No. 16 (1.18mm)	28-50
No. 30 (0.600mm)	19-34
No. 50 (0.300mm)	12-25
No. 100 (0.150mm)	7-18
No. 200 (0.75mm)	5-15
Theoretical Asphalt **Content % Dry**	
Aggregate	6.5-12

5-09.2(3) Water

All water used with the slurry mixture shall be potable and free from harmful soluble salts.

5-09.2(4) Laboratory Testing

Sources for all materials shall be identified before they are required for use on the project. All samples must be taken according to previously mentioned procedures. All

materials shall be pretested in a qualified laboratory to determine their suitability for use in slurry. The theoretical asphalt content shall be determined. The laboratory shall also determine if mineral filler is required, and if so, how much should be used. Test samples shall be made and tested on a Wet Track Abrasion Machine.

The Contractor must submit the complete laboratory analysis and test report with abraded and unabraded slurry test samples, to the Engineer before application of the slurry seal can begin.

5-09.2(5) Stockpiling Of Aggregates

Precautions shall be taken to insure that stockpiles do not become contaminated with oversized rock, clay, silt, or excessive amounts of moisture. The stockpile shall be kept in areas that drain readily. Segregation of the aggregate will not be permitted.

5-09.2(6) Storage

The Contractor shall provide suitable storage facilities for the asphalt emulsion. The container shall be equipped to prevent water from entering the emulsion. Suitable heat shall be provided, if necessary, to prevent freezing.

5-09.2(7) Sampling

The Contractor shall furnish samples of materials and of the finished slurry surface during progress of the work. The Contractor may be requested to supply test reports as additional materials arrive.

5-09.2(8) Verification

Each machine will make test strips after calibration and before construction. Test strips shall be a portion of the project. Samples of the Slurry Seal will be taken and verification made as to mix consistency and proportioning. Verification of the rate of application will also be made. If any of the tests fail to meet minimum standards, additional test strips will be required until the Engineer approves each unit. These additional test strips will be performed at no additional cost to the City. Any unit failing to pass the tests after the third trial will not be permitted to work on the project. Test strips must be accepted or rejected within 24 hours after application.

5-09.3 Construction Requirements

5-09.3(1) Equipment

All equipment, tools, and machines used to perform this work shall be maintained in satisfactory working order at all times. Descriptive information on the slurry mixing and application equipment shall be submitted to the Engineer for approval not less than 5 working days before the work starts.

5-09.3(1)A Slurry Mixing Equipment

The slurry-mixing machine shall be a continuous flow-mixing unit and shall be capable of accurately delivering a predetermined proportion of aggregate, water, and asphalt emulsion to the mixing chamber and to discharge the thoroughly mixed product on a continuous basis. The aggregate shall be pre-wetted immediately before mixing with the emulsion. The mixing unit of the mixing chamber shall be capable of thoroughly blending all ingredients. No violent mixing is permitted. The mixing machine shall be equipped with an

approved fines feeder that provides an accurate metering device or method to introduce a predetermined proportion of mineral filler into the mixer at the same time and location as the aggregate. The fines feeder shall be used whenever added mineral filler is a part of the aggregate blend.

5-09.3(1)B Slurry Spreading Equipment

A mechanical type squeegee distributor shall be attached to the mixing machine. It shall be equipped with flexible material in contact with the pavement and shall be maintained to prevent loss of slurry from the distributor. It shall also be adjustable to ensure uniform spread. There shall be a steering device and a flexible strike-off. The spreader box shall have an adjustable width. The box shall be kept clean, and build-up of asphalt and aggregate on the box will not be permitted. The Engineer shall approve the use of burlap drags or other drags.

5-09.3(1)C Cleaning Equipment

Power brooms, power blowers, air compressors, water flushing equipment, and hand brooms shall be suitable for cleaning the surface and cracks of the old surface.

5-09.3(1)D Auxiliary Equipment

The Contractor shall provide hand squeegees, shovels, and other equipment as necessary to perform the required work.

5-09.3(1)E Calibration

Each slurry-mixing unit used to perform the work shall be calibrated in the presence of the Engineer, before construction. Documentation of previous calibration that covers the exact materials being used may be an acceptable substitute provided they were made during the same calendar year. The documentation shall include an individual calibration of each material at various settings that can be related to the machine's metering device(s). No machine will be allowed to work on the project until calibration has been completed and accepted.

5-09.3(2) Preparation of Surface

Immediately before applying the slurry, the surface shall be cleaned of all loose material, silt spots, vegetation, and other objectionable material. Any standard cleaning method to clean pavements is acceptable, except water flushing which is not permitted in areas where there are numerous cracks present in the pavement surface. The Engineer shall give final approval of the surface preparation.

5-09.3(3) Composition and Rate of Application of the Slurry Mix

The amount of asphalt emulsion to be blended with the aggregate shall be as determined by the laboratory report after final adjustment in the field. A minimum amount of water shall be added as necessary to obtain a fluid and homogeneous mixture. The rate of application shall be at least 15 pounds per square yard but not greater than 20 pounds per square yard.

Adjustment may be required during construction based on field conditions. The Engineer will give final approval for all such adjustments.

5-09.3(4) Weather Limitations

The slurry seal surface shall not be applied if either the pavement or air temperatures are 55 degrees F or below and falling, but may be applied when both the air and pavement temperatures are 45 degrees F or above and rising. The mixture should not be applied if high relative humidity prolongs curing beyond a reasonable time.

5-09.3(5) Traffic Control

The Contractor is responsible for all Traffic Control. Suitable methods such as barricades, flaggers, pilot cars, etc., shall be used to protect the uncured slurry surface from all types of traffic. Any damage caused by the Contractor's negligence to the uncured slurry will be the responsibility of the Contractor. The Engineer shall give final approval to the traffic control methods used.

5-09.3(6) Application of Slurry Surfaces

5-09.3(6)A General

The surface may be pre-wetted by fogging ahead of the slurry box if required by local conditions. Water used in pre-wetting the surface shall be applied at a rate so that the entire surface is damp with no apparent flowing water in front of the slurry box. The slurry mixture shall be of the desired consistency when deposited on the surface and no additional elements shall be added. Total time of mixing shall not exceed 4 minutes. A sufficient amount of slurry shall be carried in all parts of the spreader at all times so that complete coverage is obtained. No lumping, balling or unmixed aggregate shall be permitted. If the coarse aggregate settles to the bottom of the mix, the slurry will be removed from the pavement. No excessive breaking of the emulsion will be allowed in the spreader box. No streaks, such as those caused by oversized aggregate, will be left in the finished pavement.

5-09.3(6)B Joints

Neither excessive build-up nor unsightly appearance shall be permitted on longitudinal or transverse joints.

5-09.3(6)C Hand Work

Approved squeegees shall be used to spread slurry in areas not accessible to the slurry mixer. Care shall be exercised so that no unsightly appearance results from handwork.

5-09.3(6)D Curing

Treated areas will be allowed to cure until the Engineer permits their opening to traffic.

Rolling is normally not required on slurry surfaces. However, in areas of slow turning traffic the paved surface should be rolled by a five-ton roller. The paved area should be subjected to a minimum of five coverages. If a pneumatic roller is used, it should be operated at a tire pressure of 50 pounds per square inch.

5-09.3(6)E Protection of Existing Monuments and Utility Covers

The Contractor shall protect all existing survey monuments and utility covers during the resurfacing operation by placing a paper plate or similar material over them. Following the resurfacing operation, paper plates or similar materials shall then be removed to leave the monuments clean and exposed.

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with these subsections:

5-09.4 Measurement

"Slurry Seal Surface Treatment" will be measured by the square yard of work completed and accepted.

5-09.5 Payment

Payment will be made for each of the following Bid items that are included in the Proposal:

"Slurry Seal Surface Treatment", Per Square Yard

Payment for "Slurry Seal Surface Treatment" shall include all costs to complete the work, including, but not limited to surface preparation, calibration, furnishing and applying slurry treatment, and curing.

(February 2023, City of Auburn GSP)

Supplement Division 5 with the following section, including subsections:

5-10 Non-Woven Fabric for Pavement Overlays

(January 2018, City of Auburn GSP)

5-10.1 Description

(January 2018, City of Auburn GSP)

This work consists of placing Non-woven Fabric for pavement overlays as shown in the Plans.

5-10.2 Materials

(April 2020, City of Auburn GSP)

Asphalt Binder PG 58H-22 per Section 9-02 (Bituminous Materials).

Fabric: Non-woven polypropylene material.

Elastic Recovery, at 15 pounds wet or dry	**100%**
Weight	**3 to 5 oz./square yard**
Tensile Strength, either direction	**80 pounds minimum**
Elongation	**50% minimum**
Asphalt Retention	**0.2 gallons/square yard minimum**
Melting Point	**300 degrees or greater**
Minimum Width	**75 inches**

5-10.3 Construction Requirements

(January 2018, City of Auburn GSP)

Equipment Requirements

All equipment, tools, and machines are subject to the approval of the Engineer.

Surface cleaning equipment shall be capable of removing oil, grease, and other objectionable materials from the pavement surface.

Application equipment shall consist of brooms and distributor. The distributor shall have a capacity of not less than 1,000 gallons. Asphalt shall be uniformly applied at the specified rate.

The distributor shall be equipped with a 10-foot spray bar and extensions, pressure pump and gauge, volume gauge located to be easily read by an inspector from the ground, a tachometer to accurately control the speed and spread of the asphalt, and two thermometers indicating continuous asphalt temperatures, (one of which is permanently installed).

An independent power unit developing a minimum of 25-psi pressure at the spray bar shall supply power for the pressure pump.

Surface Preparation

The pavement surface shall be dry and free of all foreign materials such as dirt, grease, oil, etc. Cracks shall be filled per Section 5-04.3(4)A (Crack Sealing). Holes shall be repaired per Section 5-04.3(4)C (Pavement Repair).

Where existing Asphalt Concrete Pavement depths are 2 inches or less, soil residual herbicide shall be applied to the roadway surface per Section 5-04.3(4)B (Soil Residual Herbicide).

Asphalt Application

The asphalt, with a minimum temperature of 290 degrees F, shall be sprayed uniformly at the rate of 0.25 to 0.30 gallons per square yard over the area to be fabric covered. The Contractor shall shield the preceding application to avoid laps and ridges where separate applications of asphalt meet. In inaccessible areas asphalt application may be provided by a suitable hand sprayer.

Fabric Application

The Contractor shall not begin fabric application until the Engineer has determined that all materials, equipment, and labor are ready.

Fabric cannot be moved once placed, therefore, the initial alignment is very important. If alignment is to be changed, the fabric shall be cut and realigned with an overlapping joint a minimum of 6 inches in the direction of traffic. Fabric shall be also lapped a minimum of 6 inches at transverse and longitudinal fabric joints. The lapped top 6 inches of fabric shall be folded back and asphalt shall be applied to the bottom fabric at the rate of 0.05 gallons per square yard. The top fabric shall be immediately replaced and the joint shall be broomed and squeegeed to form a smooth, tight lapjoint.

The fabric shall be broomed into the asphalt eliminating all air bubbles. Air bubble removal can be best accomplished by brooming from the center of the fabric toward the outer edges.

Membrane Curing

The entire surface of the fabric shall be pneumatically rolled until the fabric is well embedded into the asphalt.

Asphalt Concrete Overlay

The asphalt concrete overlay shall immediately follow the fabric installation in accordance with Section 5-04 (Hot Mix Asphalt (HMA)).

The fabric manufacturer's recommendations and requirements regarding asphalt temperature, protection of fabric, rolling temperature and techniques, etc., shall be followed.

A representative of the manufacturer shall be on the project at the beginning of fabric placement. The representative shall remain on the site until the Contractor has demonstrated to the Engineer an understanding required to satisfactorily perform the work.

The Contractor shall not place more fabric than can be overlaid in the same day.

No fabric, except that which is required for normal lapped joints, shall be exposed to traffic. If traffic must drive on the fabric, the fabric shall be dusted with sand to prevent vehicles from picking up the asphalt. Before resuming asphalt overlay, the sand shall be swept clean from the fabric.

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with these subsections:

5-10.4 Measurement

(City Contracts, January 2018, City of Auburn GSP)

"Non-Woven Fabric" will be measured by the square yard of area actually covered.

5-10.5 Payment

(City Contracts, January 2018, City of Auburn GSP)

Payment will be made for each of the following Bid items that are included in the Proposal:

"Non-Woven Fabric", Per Square Yard

Payment for "Non-Woven Fabric" shall include all costs to complete the work, including, but not limited to surface preparation, furnishing and applying asphalt, furnishing and applying fabric, and curing.

(February 2023, City of Auburn GSP)

Supplement Division 5 with the following section, including subsections:

5-11 High Friction Surface Treatment

5-11.1 Description

This work consists of applying a High Friction Surface Treatment (HFST) consisting of one application of a single layer of a binder resin system covered with a single layer of calcined bauxite aggregate as shown.

5-11.1(1) Definitions

High Friction Surface Treatment (HFST) – A product composed of calcined bauxite bound with a polymeric resin.

5-11.2 Materials

5-11.2(1) Aggregate

Furnish calcined bauxite aggregate meeting the requirements listed below. Deliver the aggregate to the construction site in super sacks labeled clearly for identification. Provide aggregate that is virgin, clean, dry, and free from foreign matter. A sample of the aggregate lot/batch shall be supplied upon request.
Aggregate Requirements

Property	Test Method	Requirement
Aggregate Gradation: % Passing the #4 sieve Minimum % Passing the #6 sieve Maximum % Passing the #16 sieve	AASHTO T27 & T11	 100 95 5
Los Angeles Abrasion, % Max (Loss after 100 Revolutions)	AASHTO T96	10
Moisture Content, % Maximum	AASHTO T 255 (note 1)	0.2
Aluminum Oxide Content, % Minimum	ASTM C-25	87

Notes 1: For each application, perform AASHTO T 255 within 3 hours of and prior to placement of the HFST material.

5-11.2(2) Binder Resin System

Provide a modified binder resin system, meeting the requirements below, recommended by the manufacturer as suitable for use on the intended pavement surface and for the potential range of atmospheric exposure. A sample of the resin binder system for each lot/batch shall be supplied upon request.

Epoxy Resin Binder Material Properties Requirements

Property	Test Method	Requirements Polymeric Resin
Viscosity, Poises	ASTM D 2556 (note 1)	Class C: 7 – 30
Gel Time	AASHTO M 235 (note 2)	Class C: 10 minute: min.
Ultimate Tensile Strength, psi	AASHTO M 235 (note 3)	2,000 – 5,000
Elongation at Break	AASHTO M 235 (note 4)	30 – 70%
Water Absorption, %	AASHTO M 235 (note 5)	1 max.

Durometer Hardness (Shore D)	AASHTO D2240 (note 6)	60 – 80
Compressive Strength, psi	ASTM C 579 (note 7)	1,000 min. (3 hours) 5,000 min. (7 days)
Cure Rate (Dry through time), hours	ASTM D 1640, 55 mil wet thickness @ 75 °F (note 8)	3 max.
Mixing Ratio	Provide manufacturer's recommendations a minimum of 60 days prior to construction.	Per Manufacturer
Adhesion Strength, psi @ 24 hrs	ASTM D 7234 (note 9)	250 min. or 100% substrate failure
Infrared Spectrum	AASHTO T 237	Note 10

Notes:

1. Prepare a one pint sample per manufacturer's recommendation and mix for 2 to 3 minutes before testing. Use X1.1 for Spindle Selection. Perform testing at a temperature of 73 ± 2°F [23 ± 1°C].
2. Prepare a 60g sample per manufacturer's recommendation. Perform testing at a temperature of 73 ± 2°F [23 ± 1 °C].
3. Prepare sample as per manufacturer's recommendation. Prepare Type I specimens in accordance with ASTM D638. Cure specimens for 7 days at 73 ± 2°F [23 ± 1 °C] and 50 ± 2°F [10 ± 1 °C]. Test specimens at 73 ± 2°F [23 ± 1°C] without delay.
4. Prepare sample as per manufacturer's recommendation. Prepare Type I specimens in accordance with ASTM D638. Cure specimens for 7 days at 73 ± 2°F [23 ± 1 °C] and 50 ± 2°F [10 ± 1 °C]. Test specimens at 73 ± 2°F [23 ± 1°C] without delay
5. Prepare sample as per manufacturer's recommendation. Cure specimens for 7 days at 73 ± 2°F [23 ± 1°C] and 50± 2°F [10 ± 1°C]. Test specimens at 73 ± 2°F [23 ± 1°C] without delay after immersion.
6. Prepare sample as per manufacturer's recommendation. Use the Type 1 Precision-Type D Durometer Method. Cure specimens for 7 days at 73 ± 2°F [23 ± 1°C] and 50 ± 2°F [10 ± 1°C]. Test specimens at 73 ± 2°F [23 ± 1°C] without delay.
7. Prepare sample as per manufacturer's recommendation. Prepare specimen according to Method "B", 2" x 2" cube, using 2.75 parts of sand to one part of mixed polymer resin binder by volume. Sand shall meet ASTM C778, 20-30 sand. Cure specimens at 73 ± 2°F [23 ± 1°C] and 50 ± 2°F [10 ± 1°C]. Test specimens at 73 ± 2°F [23 ± 1°C] without delay.
8. Prepare sample as per manufacturer's recommendation. Prepare a specimen of 50-55 wet mil thickness. Cure specimens for 3 hours max at 73 ± 2°F [23 ± 1°C] and 50± 2°F [10 ± 1°C]. Test specimens at 73 ± 2°F [23 ± 1°C] without delay.
9. Prepare sample as per manufacturer's recommendation. Use method D, E, or F with a 2 inch loading fixture. Cure specimens for 24 hours at 73 ± 2°F [23 ± 1°C] and 50± 2°F [10 ± 1°C]. Test specimens at 73 ± 2°F [23 ± 1°C] without delay.

10. To be established by each manufacturer for each individual component and combination of components.

5-11.2(3) Manufacturer's Certificate of Compliance

Submit a Manufacturer's Certificate of Compliance and supporting tests for the Binder Resin System and HFST aggregate demonstrating compliance with these specification requirements a minimum of 14 calendar days prior to the start of HFST Work.

5-11.2(4) Quality Control (QC) Plan

Submit a QC Plan to the Project Manager for approval at least 30 days prior to the placement. The QC Plan shall show proposed methods to control the equipment, materials, mixing, and paving operations to ensure conformance with these specifications. Discuss the QC Plan requirements at the pre-construction, pre-placement, and progress meetings. The QC Plan shall contain at a minimum the following information.

(a) Key Personnel and contact information.
(b) Moisture control methods of aggregate.
I List of manufacturer recommendations for the following:
Method of Surface Preparation and required surface condition for adequate bonding;
Crack Repair and slurry requirements;
Weather, moisture and temperature requirements and a plan for the chance/or occurrence of a rain event;
Mixing ratio and application rates for polymer resin and aggregate;
Application methods; and
Curing time and requirements for opening to traffic.
(d) Cleaning and maintenance schedule for truck mounted application machine, including metering and monitoring deviceI(e) Corrective actions that will be taken for unsatisfactory construction practices and d eviations from specifications.

The QC Plan shall designate a QC Manager, who shall have full authority to institute any action necessary for the successful operation of the QC Plan. The QC Manager shall be on the jobsite at all times during placement of the HFST.

A field technician shall be present at the job site unless otherwise approved in the QC Plan. The field technician shall be responsible for the required field quality control sampling and testing in conformance with the approved quality control plan and contract documents. All sampling shall be performed in the presence of and in locations as directed by the Engineer. Maintain and make available upon request complete records of sampling, testing, actions taken to correct problems, and quality control inspection results. Any deviation from the approved QC Plan shall be cause for immediate suspension of operations.

5-11.3 Construction Requirements

5-11.3(1) Equipment

Provide a Truck Mounted Application Machine, air compressor, portable shot blast equipment, regenerative air sweeper and other necessary equipment to insure efficient

operation and construction to meet specified results. Provide equipment in sufficient number and capacities that will provide coordinated and uniform progress of the work. .

5-11.3(1)A Truck Mounted Application Machine

The HFST application machine shall be an HFST system manufacturer approved self-propelled, fully automated truck mounted application machine capable of continuously applying resin and aggregate at a uniform thickness and rate, respectively, in varying widths of up to 12 ft.

The application machine shall be capable of continuously and thoroughly mixing epoxy resin binder components to the ratio recommended by the epoxy resin binder manufacturer (±2 percent by volume). The epoxy resin binder shall be uniformly applied to the pavement surface at a minimum coverage rate of 12 gals/min with a uniform application thickness of 55-65 mils.

The aggregate shall be applied by the same application machine which includes an aggregate drop spreader capable of mechanically continuously spreading bauxite aggregate at a rate of 12-15 lb/sqyd, with a maximum height from spreader to pavement surface of 12 in. to achieve proper spread of aggregate. The use of chip spreaders, vehicle tires, rollers, vibratory compactors or devices that throw loose aggregate onto any part of the live roadway lanes will not be allowed to apply the aggregate onto the wet uncured resin.

The HFST application machine shall be capable of the uniform application of the epoxy resin binder and aggregate at a minimum continuous application rate of 2,300 sq yd/hour.

5-11.3(1)B Air Compressor

The air compressor shall be capable of producing a minimum pressure of 90 psi at the end of the discharge hose. The air stream shall discharge onto the pavement through an appropriate air lance. The tool lubricator shall be bypassed and a filter installed on the discharge valve to keep water and oil out of the line.

5-11.3(1)C Shot Blasting Equipment

Furnish mono-directional or bi-directional electric powered shot blast machines with single or multiple blast wheels that cover a width of at least 2.5 feet per pass, and conform to EPA air pollution requirements by containing dust and steel abrasive media. If the equipment is not equipped for simultaneous bi-directional blasting, make separate passes in opposite direction to ensure equal cleaning on all side of exposed aggregate.

5-11.3(1)D Regenerative Air Sweeper (RAS)

The Regenerative Air Sweeper (RAS) shall be self-propelled with power brooms capable of cleaning the existing pavement and removing loose aggregate without dislodging the bonded HFST aggregate. The regenerative air vacuum sweeper shall blast re-circulated, filtered air through a vacuum head having a minimum width of 6.0 feet at a minimum rate of 10,000 cubic feet per minute. The RAS shall be capable of being used without water for dust suppression to ensure a dry surface will be maintained.

5-11.3(2) Labor

5-11.3(2)A Manufa’turer's Representative

The manufacturer of the binder resin system is required to have a representative at the pre-construction or pre-placement meeting and at the construction site to provide technical assistance to the Engineer and Contractor personnel before placement of the high friction surface treatment and as necessary during the surface preparation, material placement and during any necessary corrective actions. Follow the recommendations of the manufa’turer's representative when installing the HFST. Instruct the manufa’turer's representative to alert the Contractor and the Engineer of anything that could affect the performance of ’he HFST.

5-11.3(2)B Applicator Qualifications

A minimum of 10 calendar days prior to the pre-placement meeting, the Contractor shall submit these following qualifications: a minimum of 3 projects with the’owner's contact information on which the HFST Contractor has installed a cumulative minimum of 10,000 square yards of HFST using applicator vehicle equipped with an automated continuous application device within the past three years demonstrating a friction reading of 65 FN40R or higher when tested in accordance to ASTM E 274, or 0.80 when tested according to ASTM E 1911. An installer who does not meet this minimum shall be allowed if they are certified by the manufacturer to install and a manufa’turer's representative is onsite during all installations.

5-11.3(2)C Quality Control Personnel

QC Manager, Field Technician

5-11.3(3) Construction

5-11.3(3)A General

Do not begin HFST installation until all materials and equipment necessary to perform the installation and all required repairs are at the job site.

(a) Season, Weather & Temperature Limitations – Apply the epoxy resin binder material on dry surfaces (including no condensation moisture from construction vehicles in front of binder application), when the ambient temperature is within the following range.

Minimum Temperature (surface and ambient): The minimum temperature at time of placement shall be 55 ˚F and rising, unless the epoxy resin manufacturer can provide test data to support installations at lower temperatures.

Maximum Temperature (surface and ambient): The maximum temperature at time of placement shall be 105 ˚F or when the anticipated weather conditions or pavement surface temperature would prevent the proper application of the surface treatment in accordance with the manufacturer’s recommendations.

Ensure the epoxy resin components are capable of being mixed at lower than ambient temperatures in the event that the components are stored outdoors.

Do not place HFST within 72 hours of a rain event, and when rain is forecast within 24 hours of application. When there is a 40% or greater chance of rain forecasted within 24 hours of application the Contractor will discuss a plan of action as required by 5-06.2(4), Quality Control (QC) Plan. Do not place the high friction surface treatment if the material can't be applied, cured and open to traffic prior to the ambient temperature decreasing to 40ºF, surface temperature decreasing to 50ºF and/or it begins to rain; or the contractor will remove and replace said section of treatment.

There shall be no visible, or near surface moisture present in or on the pavement surface at the time of application of the HFST. A plastic sheet left taped in place for a minimum of two hours, according to ASTM D 4263, shall be used to identify moisture in the pavement.

(b) Handling of Mate–ials - Deliver aggregate to the construction site in clearly labeled bags or sacks that are uniquely identifiable and shall include the following: manufactures batch #, lot # and date. Protect materials from moisture and contaminants. Protect the epoxy resin binder materials from temperatures according to the manufacturer's requirements.

Pre-Placement Me–ting - Five (5) working days prior to the Contractor beginning the work, a pre-activity meeting will be held between the Contractor, resin binder system manufa'turer's representative, the Engineer and such other interested parties as may be invited. The purpose of the pre-activity meeting wil

(c) l be:

1. To review the initial progress schedule;
2. To establish a working understanding among the various parties associated or affected by the work;
3. To establish and review procedures for progress payment, notifications, approvals, submittals, etc.
4. To establish working hours for the work;
5. To review safety standards and traffic control; and
6. To discuss such other related items as may be pertinent to the work.

5-11.3(3)B Surface Preparation:

Prior to placement of the HFST remove, or protect as shown all reflective markers, durable pavement markings, and legends from pavement surfaces by hydro, sand or shot blasting. Cover or otherwise protect all drainage structures, utility covers, expansion joints, curbs, and any other structure within the enclosed surface area of HFST prior to HFST placement.

Temporarily block all drains and catch basins while preparing the surface and placing the HFST. Do not allow any sawing, sandblasting, shot-blasting, sweeping, water blasting, cleaning, flushing, or HFST material to enter drains, or catch basins.

The surface to receive the HFST shall be thoroughly clean, dry and free of all dust, oil, debris and other deleterious materials. Pavement surfaces contaminated with oils, greases, or other deleterious materials not removed by the surface preparation shall be washed with a detergent solution, rinsed with clean water, and dried using a hot compressed air lance.

Where HFST will be applied on either new ACP or new concrete surface or patches in a project, construct the HFST a minimum of 30 days after placement of underlying and adjacent pavement.

Clean asphalt pavement surfaces using mechanical sweepers and high pressure air wash with sufficient oil traps. Mechanically sweep all surfaces to remove dirt, loose aggregate, debris, and deleterious material. Vacuum sweep or air wash using a minimum of 180 cfm of clean and dry compressed air, all surfaces to remove all dust, debris, and deleterious material. Maintain the tip of the air lance within 12 inches of the surface.

Clean concrete pavement surfaces by shot blasting and vacuum sweeping. Shot blast all surfaces to remove all curing compounds, loosely bonded mortar, surface carbonation, and deleterious material. The prepared surface shall comply with the International Concrete Repair Institute (ICRI) standard for surface roughness CSP 5. After shot blasting, vacuum sweep or air wash, with a minimum of 180 cfm of clean and dry compressed air, all surfaces to remove all dust, debris, and deleterious material. Maintain air lance perpendicular to the surface and the tip of the air lance within 12 in. of the surface.

Do not allow HFST materials to cover or penetrate joints in concrete pavements.

Clean and fill all cracks greater than ¼ inch in width and/or depth. Fill cracks with a slurry created with the epoxy resin binder and aggregate specified herein. Once the slurry in the pretreated areas has gelled proceed with the installation of the high friction surface treatment.

Do not allow general traffic on the prepared pavement surfaces.

A prime coat shall be applied if required by the epoxy resin binder system manufacturer. The prime coat shall be applied in accordance with the epoxy resin binder system manufa’turer's recommended application procedures.

Do not place HFST on new ACP or concrete pavements prior to the elapse of a 30 calendar day cure period.

5-11.3(3)C Installation

The binder resin system shall be mixed and placed onto the pavement using a Truck Mounted Application Machine at a uniform application thickness of 50-65 mils (25-32 sf /gal). If recommended by the Binder manufacturer, use a heated metering pump. The binder resin system shall be blended and mixed within 2% of the ratio recommended by the manufacturer and shall be continuously applied once blended. Flow meter readings shall be recorded and supplied to the Engineer.

Immediately and prior to the epoxy resin system gelling, apply the calcined bauxite aggregate using the same integrated application truck and at a uniform rate of 12-15 lbs. per square yard. Completely cover the Binder Resin System with the aggregate to achieve a uniform surface with no exposed resin binder visible on the surface.

It is the responsibility of the HFST installer to ensure full embedment of the calcined bauxite aggregate.

Irregular areas or areas outside the travel lane of less than 250 square yards in area that are inaccessible to truck mounted application machine may be placed by hand methods in accordance with the epoxy resin binder system manufa'turer's recommendations.

Cover wet spots with the aggregate prior to the gelling of the epoxy resin binder system. Equipment and traffic shall not be allowed on the HFST until cured to the epoxy resin binder system manufacturer's recommendations.

A new continuous section of HFST placement shall be delineated whenever the following occur:

- Installation process stops for a period of time exceeding the curing time of the resin binder, resulting in a cold joint in the HFST.

  Any time there is a change in the installation process, such as a switch from machine applied to hand applied or hand applied to machine ap

- plied

Place the calcined bauxite fully covering the polymer binder such that none of the binder is exposed. Do not allow the mixed material to separate, cure, dry, be exposed or otherwise harden in such a way as to impair retention and bonding of the high friction surfacing aggregate. Remove and replace any section of wet, uncured resin that is contacted by foreign material or becomes contaminated at the contractor's expense.

Recovered, uncontaminated, clean and dry calcined bauxite aggregate may only be reused once. Recovered aggregate must be blended with new aggregate at a rate of 3:1 (three parts of new calcined bauxite to one part recovered bauxite). Provide a written record of the recovered aggregate and mark containers holding the recovered aggregate as "Recovered Calcined Bauxite" with the project number.

5-11.3(3)D Clean up

Remove excess and loose aggregate from the traveled way and shoulders using the Regenerative Air Sweeper following initial installation once the application has cured. Sweep an application of HFST on highway ramps a second time 24-48 hours after application. Sweep the entire HFST application area a final time 3-5 days after installation and as directed by the Engineer.

5-11.3(3) E- Post-installation Dynamic Friction Testing

The agency will use Dynamic Friction Testing (DFT) to measure the friction characteristics of the high friction surface treatment in accordance with ASTM E 1911 within five days after the placement (once the surface is deemed cured) of each continuous section and again 90 days after the initial test of each continuous section. The initial test of the surface may be conducted as early as the same day and as late as the 5th day. The earliest the Agency may conduct the second round of testing on each continuous section shall be a minimum of 90 days after the installation. A minimum DFT result of 0.90 is required within 5 days after placement of the high friction surface treatment and a minimum of 0.80 is required 90 days after completion of the high friction surface treatment for each reading.

a) The DFT testing will be conducted on each continuous section as stated below.

The first test location should be within the first 25 LF of the continuous section, and the second test should be at least 200 LF beyond the first test, unless the continuous section is less than 225 LF, in which case it should be located at the approximate midpoint of the continuous section. Each subsequent test should be conducted 200 LF beyond the last test for each continuous section. If the first four DFT testing results are satisfactory, the frequency of testing may be decreased to one DFT test for every 1000 LF as approved by the Engi

b) neer.

Each test location shall contain 3 separate tests. Each test shall report the DFT values for 12, 24, and 36

c) mph.

Testing will be conducted in right or left wheel path of a lane, approximately 3 LF from the centerline or shoulder stripe or in the apparent wheel

d) path.

Additional DFT tests will be conducted at the location of any surface anomalies or deficiencies, at the discretion of the Engineer. Anomalies which may require an additional test from the agency include but are not limite

e) d to:

1) Locations where the resin shows through the aggregate.

Locations of surface defects/impressions from construction operations (e.g. wheel and foot tra

2) cks).

Locations of manual patching after completion of installa

3) tion.

Test locations where the friction values are as described in item (g) b

4) elow.

f) Note the location of any continuous sections where any friction values fall below the specification limit of 0.90 at 35 mph.

Note any continuous sections where the friction values from the two DFT tests differ by more than 10 percent, regardless of whether the friction value was above the

specification limit. Note any continuous sections with a single DFT test where the friction value differs by more than 10 percent from the previous continuous sec

g) tion.

5-11.3(3)F Post-installation Bond Strength Test

Before opening to traffic, perform a minimum of two bond strength tests and no less than two bond tests per 500 feet of each HFST placement per ASTM D 7234 for each complete placement in the presence of and at locations designated by the Engineer. Cut 2 or 3 inch diameter cores and conduct bond tests on the cores.

The bond tests consist of:

- Coring through the HFST and approximately 1 inch into the existing pavement surface.
- Attaching a device to the top of the core.
- Exerting a tensile load to the core sufficient to cause failure or achieve 250 psi, whichever occurs first.

Perform bond tests when the pavement surface temperature is less than 80 °F.

A successful test is the failure of the substrate, or 250 psi loading without failure of the HFST-substrate bond.

After coring and testing, restore the area voided by the cores by blowing with compressed air and filling with HFST material.

Additional bond strength tests may be required by the Engineer. Additional bond strength tests, performed by the Contractor when required by the Engineer that show successful results will be paid in accordance with Section 1-09.6. The Engineer may self-perform bond strength tests, in addition to those performed by the Contractor to the same limits shown above.

5-11.3(4) Maintenance

5-11.3(4)A Correction of Defects

Correct all defects in material and work, as directed, at no additional cost to the Agency, according to the following:

Remove and replace high friction surface treatment that the Engineer determines has any raveling, delamination, streaking, bond test failure or failure to meet the DFT friction values following initial testing and the testing done after a minimum of 90 days following placement. Ensure the minimum replacement is the full lane width and no less than ten feet long and as approved by the Engineer. Replace with acceptable high friction surface treatment at the Contractor’s expense. Replaced areas will be retested and evaluated according to 5-06.3(3)E and 5-06.3(3)F for acceptance or further corrective action.

Any roadway features disturbed by the work or the Contractor's operations shall be restored in like kind materials and design as directed by the Engineer at no additional cost to the agency.

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with these subsections:

5-11.4 Measurement

The quantities of high friction surface treatment will be measured on a square yard basis, and will be the sealed surface area, and will be limited to the neat lines and dimensions shown or directed.

5-11.5 Payment

Payment will be made for each of the following Bid items that are included in the Proposal:

"High Friction Surface Treatment", per Square Yard

The unit Contract price per square yard for "High Friction Surface Treatment" shall be full compensation for all costs incurred to carry out the requirements of Section 5-06 including but not limited to furnishing and placing all materials and equipment, labor, testing, retesting, road surface preparation and incidentals necessary to complete the work as specified.
Payment for work done under this section will be limited to 90% upon passing 5-day DFT testing and 100% following passing 90 day DFT testing

No separate or additional payment will be made for reinstallation and retesting of HFST where the initial installation was determined to be defective.

END OF DIVISION 5

DIVISION 6 Structures

6-02 Concrete Structures

6-02.1 Description

(January 2017 City of Auburn GSP)

Supplement this section with the following:

This work shall consist of constructing cast-in-place cement concrete walls as shown on the Plans.

6-02.4 Measurement

(City Contracts, January 2017 City of Auburn GSP)

Supplement this section with the following:

"Cement Concrete Wall" shall be measured by the square foot, from the bottom of the concrete footing to the top of the finished wall.

6-02.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Cement Concrete Wall", Per Square Foot

The Unit contract price per square foot for "Cement Concrete Wall" shall be full pay for all labor, tools, equipment and materials required to construct the wall, including all costs for formwork, weep holes, reinforcement and other integral items to the construction and function of the wall structure.

6-07 PAINTING

6-07.1 Description

(February 2024 City of Auburn GSP)

Supplement this section with the following:

This work shall consist of painting and applying painting systems to metal roadway luminaires and metal luminaire parts to downtown decorative lighting and traffic signals.

6-07.2 Materials

(January 2018 City of Auburn GSP)

Supplement this section with the following:

Paint materials shall comply with the requirements in Section 9-08 unless described in this section.

The Contractor shall submit 3 samples of the color specified, textures, and gloss for approval. Metal coupon samples shall be 3 inches by 5 inches. Paint color and paint system shall be as shown in the following table for the following items:

Specification Section	Item	Paint Color	Paint system
9-29.6(1)A	New Decorative Traffic Signal Poles and Mast arms, Luminaire Arms	RAL #9004 "Signal Black"	Polyester TGIC Powder Coating by Tiger Drylac (or approved alternate))
9-29.10(2)	New Decorative Roadway Luminaires	RAL #9004 "Signal Black"	Polyester TGIC Powder Coating by Tiger Drylac (or approved alternate)

All steel hardware components and materials shall be galvanized to meet ASTM 153 requirements.

6-07.3(10)H Paint System

(January 2018 City of Auburn GSP)

Delete this section and replace it with the following:

The paint system applied to new steel surfaces shall consist of the following five-coat system:

Primer Stripe Coat:	Section 9-08.1(2)F
Primer Coat:	Section 9-08.1(2)F
Intermediate Stripe Coat:	Section 9-08.1(2)G
Intermediate Coat:	Section 9-08.1(2)G
Top Coat:	Section 9-08.1(2)H

The powder coat system shall be factory primed and powder coat to a minimum of 3.0-mils in accordance to the manufacturer's recommendation and shall meet the following performance requirements when performed at a minimum film thickness of 3.0 mils:

Property	Specification	Performance Requirement
Salt Spray Resistance	ASTM B117	Minimum required by the Specification
Humidity Resistance	ASTM D2247	Minimum required by the Specification
Weatherability	ASTM 336	Minimum required by the Specification

Chemical and Solvent Resistance	-	Polyester family of powder coatings shall have a good resistance to most chemicals and solvents except alkalis and ketones. Verification should be made for each chemical or solvent proposed for use with the coating.

The paint system shall be approved for exterior application and UV-resistant.

Surface finish shall be of consistent and uniform color, texture, and gloss to match the approved sample.

6-07.3(10)I Paint Color

(January 2018 City of Auburn GSP)

Supplement this section with the following:

Surface finish shall be of consistent and uniform color, texture, and gloss to match the approved sample.

Prepare surfaces and touch-up damaged, missed and discolored areas to bring coating system to full dry film thickness, in color and gloss matching that of adjacent coated areas.

(January 2018 City of Auburn GSP)

Add the following new section:

6-07.3(15) Painting of Aluminum Surfaces

All aluminum items specified herein to be powder coated shall be factory primed and powder coated in accordance with the manufacturer's recommendations.

The paint color of aluminum surfaces shall be per 6-07.2

6-07.5 Payment

(City Contracts, January 2018 City of Auburn GSP)

Supplement this section with the following:

Measurement and payment for all painting and finishes shall be included in the lump sum bid item price for "Traffic Signal System_____" including all labor, equipment, materials and tools necessary to complete the work required by the Specifications.

END OF DIVISION 6

DIVISION 7 Drainage Structures, Storm Sewers, Sanitary Sewers, Water Mains and Conduits

7-01 Drains

7-01.2 Materials

(August 2016 City of Auburn GSP)

Replace the first two paragraphs after the list of materials with the following:

Non-perforated drainpipe shall be manufactured of polyvinyl chloride (PVC) and shall meet the requirements of Section 9-05.12 and perforated drain pipe shall be manufactured of PVC and meet the requirements of Section 9-05.2(6). Trench drains shall be Polydrain Part No. 420 with stainless steel grates Polydrain Part No. 440 or approved equivalent placed on cement concrete Class 4000 per Section 6-02 (Concrete Structures).

7-01.3 Construction Requirements

(January 2018 City of Auburn GSP)

Supplement this section with the following:

PVC drain pipe shall be used to connect existing roof drains and downspouts to the roadway drainage system. The amount of pipe shown in the proposal is approximate and provided for bidding purposes only.

The trench drain shall be installed per the manufacturer's recommendations and shall be flush with the cement concrete surface to provide the proper surface drainage control. The trench drain shall be connected to the nearest catch basin with drain pipe as shown on the Plans.

7-01.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Trench Drain", Per Linear Foot

(City Contracts, August 2016, City of Auburn GSP)

Revise reference to payment for Drain Pipe to the following:

The unit contract price for "Drain Pipe - ___In. Diam." Per linear foot shall be full pay for all work to complete the installation, including structure excavation and installation of bedding and backfill.

The unit contract price for "Trench Drain" per linear foot shall be full pay for all work to complete the installation, including structure excavation and installation of bedding and backfill.

7-04 Storm Sewers

7-04.2 Materials

(October 2021 City of Auburn GSP)

Replace the first paragraph and list of materials with the following:

Only the pipe materials listed below are approved for use on City storm sewer systems. Materials shall be in accordance with all provisions of the following sections:

Solid Wall Polyvinyl Chloride (PVC) Pipe, SDR-35	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)
Solid Wall Polyvinyl Chloride (PVC) Pipe, SDR-21	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)
Solid Wall Polyvinyl Chloride (PVC) Pipe, C900	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)
Ductile Iron Pipe, Special Class 50	9-05.13 (Ductile Iron Sewer Pipe)
High Density Polyethylene Pipe (HDPE)	9-05.23 (High Density Polyethylene Pipe (HDPE))
Triple Wall Polypropylene Culvert and Storm Sewer Pipe	9-05.24(1) (Polypropylene Culvert Pipe and Storm Sewer Pipe)

The laying length for PVC (SDR-35) shall not exceed 14 feet.

7-04.3 Construction Requirements

7-04.3(1)F Low Pressure Air Test for Storm Sewers Constructed of Non Air-Permeable Materials

(January 2017 City of Auburn GSP)

Supplement this section with the following:

If the test shows zero leakage after a five-minute test time, the Engineer has the authority to accept and end the test immediately.

(January 2017 City of Auburn GSP)

Add the following new section:

7-04.3(1)G Television Inspection

All of the provisions of 7-17.3(2)H (Television Inspection) shall apply.

7-04.4 Measurement

(City Contracts, January 2017 City of Auburn GSP)

Supplement this section with the following:

The television inspection work will be measured per linear foot.

7-04.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Solid Wall PVC Storm Pipe, SDR-35, ___ In. Diam.", Per Linear Foot

"Solid Wall PVC Storm Pipe, SDR-21, ___ In. Diam.", Per Linear Foot

"Ductile Iron Pipe, Special Class 52, Storm Pipe, ___ In. Diam.", Per Linear Foot

"Storm Sewer Television Inspection", Per Linear Foot

The unit contract price per linear foot for "Storm Sewer Television Inspection" shall be full pay for all work to complete the Television Inspection including all associated cleaning and flushing.

(City Contracts, October 2021 City of Auburn GSP)

Revise references to payment for storm sewer pipe to the following:

The unit contract price per linear foot for storm sewer pipe of the kind and size specified shall be full pay for all work to complete the installation including the following:

- Furnishing and installing pipe, pipe fittings, and other pipe appurtenances.
- Adjusting inverts to manholes and catch basins
- Testing of pipes
- Sawcutting (including additional sawcutting for pavement restoration)
- Trenching
- Structure Excavation Class B (including haul)
- Installing bedding and backfill materials within the trench
- Furnishing and installing temporary patches or steel plates over unfinished portions of trenches crossing traveled ways
- Disposal of surplus trench excavation
- General pipe installation work including plugs and connections
- Plugging existing pipes for abandonment
- Temporary plugs, bypass pumping, or both
- Normal Dewatering and disposal of groundwater

7-05 Manholes, Inlets, Catch Basins, and Drywells

7-05.2 Materials

(November 2020 City of Auburn GSP)

Supplement this section with the following:

Manholes shall be complete with frames and covers. All manhole frames and covers shall be bolt-down and from East Jordan Iron Works: EJ product #00370781 (Eon #3715ZPT Frame and #3705CPT Cover) for Sanitary Sewer and EJ product #00370782 (Eon #3717ZPT

Frame and #3705CPT Cover) for Storm Drainage, or approved equivalent. Catch Basins shall be complete with frames and grates unless otherwise specified on the Plans to be provided with solid metal covers or manhole frames and covers. Castings for manhole frames shall be gray iron or ductile iron and covers and grates shall be ductile iron. All storm sewer grates shall have the words "OUTFALL TO STREAMS, DUMP NO POLLUTANTS" cast in place. Manhole and catch basin steps and handholds shall be steel-reinforced copolymer polypropylene (ASTM D4101) with ½ inch steel reinforcing bar (ASTM A615 Grade 60) and in conformance with ASTM C478.

The fabricator of all precast sanitary manholes shall seal them with Tamoseal Cement Based Waterproof Finish or approved equivalent applied to all interior and exterior surfaces in accordance with the manufacturer's recommendations. The Contractor shall have adequate product on hand to seal any field modifications to sanitary sewer manholes.

(August 2016 City of Auburn GSP)

Add the following new section:

7-05.2(1) Trash Racks

Trash racks shall be constructed in accordance with Section 6-02 (Concrete Structures), 6-03 (Steel Structures), and as detailed in the Plans.

7-05.3 Construction Requirements

(January 2017 City of Auburn GSP)

Supplement this section with the following:

All pipes entering or leaving new or existing manholes, catch basins or inlets shall be placed on firmly compacted bedding, particularly within the area of the manhole excavation, which normally is deeper than that of the pipe trench. Special care shall be taken to see that the openings through which pipes or adapters penetrate the manhole are completely and firmly rammed full of non-shrink grout to ensure water tightness.

Manhole adapters shall be provided when connecting PVC or Polyethylene pipes to any new or existing manholes, catch basins or inlets. All manhole adapters for PVC and Polyethylene pipe shall be of a style as required and manufactured for the specific application with sufficient tangent at the ends to allow for proper joint connections. Field fabricated manhole adapters will not be permitted. All manhole adapters must have approval from the Engineer in writing before being installed.

See Section 2-09.3(3)D (Shoring and Cofferdams) for "Shoring or Extra Excavation Class B" and Section 7-08 (General Pipe Installation Requirements) for foundation material and imported bedding and backfill materials.

7-05.3(1) Adjusting Manholes & Catch Basins to Grade

(November 2020 City of Auburn GSP)

Supplement this section with the following:

Manholes or catch basins shall not be adjusted to finish grade until the asphalt paving is completed, at which time the center of each structure shall be carefully relocated from references previously established by the Contractor. The pavement shall be cut in a restricted area and the base material removed to permit removal of the frame or ring. The structure shall be adjusted to finish grade. Temporary access to manholes and catch basins shall be provided as soon as practical after paving.

The frame or ring shall be placed on concrete blocks and/or wedged up to the desired grade. When the Contract Plans call for rubberized adjustment risers, they shall be the Infra-Riser manufactured by EJCO, or approved equivalent. The asphalt concrete pavement shall be cut and removed, the dimensions of which shall be equal to the inside dimensions of the opening plus 2 feet. The base materials and crushed rock shall be removed and Class 3000 cement concrete shall be placed so that the entire volume of the excavation is replaced to within, but not to exceed 6 inches of the finished pavement surface. A quick setting admixture shall be added to the cement concrete backfill. Once manholes or catch basins have been adjusted to finished grade and the cement concrete backfill has cured (the day following placing the cement concrete), HMA Class ½-inch shall be placed and compacted with hand tampers and a patching roller within 48 hours.

7-05.3(3) Connections to Existing Manholes

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Where shown in the Plans, new storm drain lines shall be extended to connect to an existing manhole. The pipe extension shall be the same diameter as the existing pipe. Dissimilar pipes shall be joined per Section 7-08.3(2)G (Jointing of Dissimilar Pipe) of these Special Provisions.

(August 2016 City of Auburn GSP)

Add the following new section:

7-05.3(5) Channels for Manholes

Channels for manholes shall be made to conform accurately to the sewer grade, and shall be brought together smoothly with well-rounded junctions. Channel sides shall be carried up vertically to the crown elevation of the various pipes, and the concrete shelf between channels shall be smoothly finished and warped evenly with slopes to drain towards the manhole outflow.

Channels for manholes shall be constructed with non-shrinking mortar. Mortar shall be composed of approximately one part Type II Portland Cement, 1½ to 2 parts sand, and 2 to 3 fluid ounces of water-reducing retarder per sack of cement. Sand, cement, and water shall be as specified for concrete. Water-reducing retarder shall meet ASTM C494 specification for chemical admixture for concrete.

(August 2016 City of Auburn GSP)

Add the following new section:

7-05.3(6) New Castings

Where new castings are indicated to be installed on existing structures in the Plans, the Contractor shall furnish and install new castings of the type specified. Casting shall include frame and grate, or ring and cover and new adjustment section(s) as necessary to set the casting to final grade. Install to the finished grade as shown.

Salvaged castings shall be cleaned and delivered to the City of Auburn as specified in Section 2-02.3(5) (Salvage).

7-05.4 Measurement

(City Contracts, August 2016 City of Auburn GSP)

Replace the first paragraph with the following:

Manholes, catch basins, and other structures listed in this section will be measured per each complete structure installed without adjustment for height.

(City Contracts, April 2019 City of Auburn GSP)

Replace the third paragraph with the following:

No measurement will be made for adjustment of new structures. Adjustment of existing manholes and catch basins will be measured per each.

(City Contracts, August 2016 City of Auburn GSP)

Replace the fourth paragraph with the following:

No measurement for structure excavation class B or structure excavation class B including haul will be made.

7-05.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

Payment will be made in accordance with Section 1-04.1 (Intent of the Contract) for the following bid items:

"Manhole Ring and Solid Cover", Per Each

"Trash Rack", Per Each

"Connect to Existing Catch Basin", Per Each

"Connect to Existing Manhole", Per Each

The unit contract prices per each for "Connect to Existing Catch Basin" and "Connect to Existing Manhole" shall be full pay for all work to complete the connection including all materials, labor, and equipment to extend the new pipe and connect to the existing structure.

The unit contract price per each for "Manhole Ring and Solid Cover" shall be full pay for all work, equipment and materials necessary to remove the existing manhole ring and cover and furnish and install a new manhole ring and cover, and to complete final adjustment to finish grade (including asphalt concrete patches).

(City Contracts, August 2022 City of Auburn GSP)

Revise references to payment for manholes, catch basins, and other structures listed in this section to the following:

The unit contract price per each for manholes, catch basins, and other structures listed in this section shall be full pay for all work to complete the installation including the following:

- Furnishing and installing structures, and structure accessories
- Testing of structures

- Sawcutting (including additional sawcutting for pavement restoration)
- Trenching
- Structure Excavation Class B (including haul).
- Installing bedding and backfill materials
- Furnishing and installing temporary patches or steel plates over unfinished portions of trenches crossing traveled ways
- Disposal of surplus excavation
- General structure installation work
- Plugging existing pipes for abandonment
- Extending existing pipes for making connections
- Connecting both new and existing pipes to the new drainage structure
- Temporary plugs, bypass pumping, or both
- Normal Dewatering and disposal of groundwater
- Protection of the structures during other work including construction of the roadway subgrade.
- Adjustment of the castings to final grade, including the castings and the surface restoration (including HMA pavement patching)

7-07 Cleaning Existing Drainage Structures

7-07.5 Payment

(City Contracts, November 2019 City of Auburn GSP)

Delete this section and replace it with the following:

Costs for the cleaning of facilities installed by the Contractor are included in the costs for those facilities and no separate payment for cleaning those facilities shall be made. Costs for cleaning existing facilities that accumulate debris, obstruction due to the Contractor's activities or due to inadequate temporary erosion and sedimentation control measures are the sole responsibility of the Contractor and no payment shall be made.

7-08 General Pipe Installation Requirements

7-08.1 Description

(January 2017 City of Auburn GSP)

Delete this section and replace it with the following:

This information shall cover the general requirements for installing culverts, storm sewers, sanitary sewers, and water mains. The Contractor shall also follow all provisions of Sections 7-02 (Culverts), 7-04 (Storm Sewers), 7-09 (Water Mains), 7-17 (Sanitary Sewers), and 1-07.23 (Public Convenience and Safety) as it applies to the specific kind of work. In case of conflicting specifications between Section 7-08 and 7-09, the specifications of Section 7-09 shall take precedence for the installation of water mains and appurtenances.

7-08.2 Materials

(January 2018 City of Auburn GSP)

Delete this section and replace it with the following:

Imported bedding, backfill and foundation material shall meet the requirements of the following sections:

Pipe Zone Bedding and Select Trench Backfill	9-03.9(3) (Crushed Surfacing)
Pipe Foundation Material	9-03.10 (Aggregate for Gravel base)
Imported Pipe Trench Backfill	9-03.14(1) (Gravel Borrow)
Controlled Density Fill for Trench Backfill	2-09.3(1)E (Backfilling)

7-08.3 Construction Requirements

7-08.3(1) Excavation and Preparation of Trench

7-08.3(1)A Trenches

(April 2017 City of Auburn GSP)

The second sentence of the third paragraph is deleted.

(January 2018 City of Auburn GSP)

The first sentence of the eighth paragraph is deleted and replaced with the following:

If any of the excavated (also referred to as native) material meets the specifications of material listed in Section 7-08.2 (Materials), the Engineer may require that native material, in the quantity required, be selectively removed, stockpiled separately, and used as pipe zone bedding, foundation material, or trench backfill instead of the quantities of pipe zone bedding, foundation material, or trench backfill respectively.

7-08.3(1)B Shoring

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Shoring shall meet the requirements of Section 2-09.3(3)D (Shoring and Cofferdams), the Occupational Safety and Health Act (OSHA), and the Washington Industrial Safety and Health Act of 1973 (WISHA), Chapter 296-155 WAC, and RCW Chapter 49.17, shall apply to all excavation, trenching and ditching operations on this project. All trenches four (4) feet and over in depth shall be shored in compliance with applicable Federal and State regulations. Extra Excavation Class B will be allowed only with the approval of the Engineer.

7-08.3(2)B Pipe Laying – General

(January 2017 City of Auburn GSP)

Supplement this section with the following:

The Contractor shall use neat, vertical full-depth saw cuts for trenching through existing asphalt or cement concrete pavement surfaced areas.

All pipe shall be neatly cut using an approved mechanical cutter without causing damage to the pipe.

7-08.3(2)G Jointing of Dissimilar Pipe

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Where new pipe is connected to existing pipe, the Contractor shall verify the type of existing pipe and join pipes with a pipe adapter specifically manufactured for joining the pipes involved.

(August 2016 City of Auburn GSP)

Add the following new section:

7-08.3(2)J Joining High Density Polyethylene Pipe (HDPE) Pipe

Sections of HDPE shall be joined into continuous lengths on the job site above ground. The joining shall be the butt fusion method and shall be performed in strict accordance with the pipe manufacturer's recommendations. The butt fusion equipment used in the joining procedures shall be capable of meeting all conditions recommended by the pipe manufacturer, including but not limited to, temperature requirements of 400 degrees F, alignment, and 75 psi interfacial fusion pressure.

(August 2016 City of Auburn GSP)

Add the following new section:

7-08.3(2)K Packaging, Handling, Storage High Density Polyethylene Pipe (HDPE) Pipe

The manufacturer shall package the pipe in a manner designed to deliver the pipe to the project neatly, intact, and without physical damage. The transportation carrier shall use appropriate methods and intermittent checks to insure the pipe is properly supported, stacked, and restrained during transport such that the pipe is not nicked, gouged, or physically damaged. Pipe shall be stored on clean, level ground to prevent undue scratching or gouging of the pipe. If the pipe must be stacked for storage, such stacking shall be done in accordance with the pipe manufacturer's recommendations. The handling of the pipe shall be done in such a manner that it is not damaged by dragging over sharp objects or cut by chokers or lifting equipment.

Sections of pipe having been discovered with cuts or gouges in excess of 10% of the wall thickness of the pipe shall be cut out and removed. The undamaged portions of the pipe shall be rejoined using butt fusion joining method.

Fused segments of pipe shall be handled so as to avoid damage to the pipe. When lifting fused sections of pipe, chains or cable type chokers must be avoided. Nylon slings are preferred. Spreader bars are recommended when lifting long fused sections. Care must be exercised to avoid cutting or gouging the pipe.

(August 2016 City of Auburn GSP)

Add the following new section:

7-08.3(2)L Dewatering Trenches

Where water is encountered in the trench, it shall be removed during pipe-laying operations and the trench so maintained until the ends of the pipe are sealed and provisions are made to prevent floating of the pipe. Trench water or other deleterious materials shall not be allowed to enter the pipe at any time.

"Normal Trench Dewatering" is defined as dewatering methods occurring in, or directly adjacent to, the trench, including trash pumps, sump pumps, or other methods in the excavated areas. "Normal Trench Dewatering" does not include a dewatering system such as well points, well screens, or deep wells. All "Normal Trench Dewatering" work associated with maintaining a trench suitable for pipeline construction will be included in the cost of the pipes or other facilities being installed.

Where groundwater cannot be removed using "Normal Trench Dewatering" methods, the Contractor shall provide a dewatering system that will be used to lower the water table 2 feet below the depth of excavation. See Section 8-05 (Dewatering System) for dewatering system requirements. The dewatering plan must be received 10 calendar days prior to dewatering operations and approved by the Engineer before underground utility installation begins.

7-08.3(3) Backfilling

(January 2017 City of Auburn GSP)

Supplement this section with the following:

The Engineer may require "Controlled Density Fill" where uniform compaction around other utilities, foundations or other fixed objects is not possible.

7-08.3(4) Plugging Existing Pipe

(January 2018 City of Auburn GSP)

Delete this section and replace it with the following:

All existing sanitary sewer, storm, and drain pipes shown on the Plans to be abandoned and plugged, shall be plugged on the inlet and outlet ends for a distance of three times the diameter with Class 3000 cement concrete. Care shall be used in placing the concrete in the pipe to ensure that the openings are completely filled and thoroughly plugged.

All existing water pipes shown on the Plans to be abandoned and plugged, shall be plugged on the ends with Mechanical Joint plugs.

All existing sanitary sewer, storm, and water pipes shown on the Plans to be abandoned and filled, shall be filled with concrete that has a compressive strength of 1,500 psi or less for the entire length of pipe specified.

The Contractor shall seal abandoned or filled pipe connections at manholes or catch basins with Class 3000 cement concrete and grout to provide a smooth, watertight seal.

(November 2019 City of Auburn GSP)

Add the following new section:

7-08.3(5) Pipe Trench Restoration

Trenches excavated as part of a new street construction shall be completed to subgrade before placing surfacing materials and sidewalks. Final restoration will be completed with the street surfacing.

In existing streets, sidewalks and other native or landscaped areas, the restoration shall be to a minimum of the existing adjacent surfaces. Asphalt and cement concrete pavement, sidewalks, etc., shall be replaced upon a firm unyielding base to match existing

surface thickness. Unless otherwise shown on the plans, the minimum asphalt concrete pavement replacement section shall be 2 inches thick.

7-08.4 Measurement

(City Contracts, January 2017 City of Auburn GSP)

Supplement this section with the following:

Measurement for "Imported Pipe Trench Backfill", "Select Pipe Trench Backfill", "Pipe Zone Bedding" and "Pipe Foundation Material" will be by the ton.

"Controlled Density Fill (CDF) for Trench Backfill" and "Controlled Density Fill (CDF) for Filling Pipe" will be measured by the cubic yard.

7-08.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Delete this section and replace it with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Pipe Foundation Material", Per Ton

"Pipe Zone Bedding", Per Ton

"Select Pipe Trench Backfill", Per Ton

"Imported Pipe Trench Backfill", Per Ton

"Controlled Density Fill (CDF) for Trench Backfill", Per Cubic Yard

"Controlled Density Fill (CDF) for Filling Pipe", Per Cubic Yard

The unit contract price for "Pipe Foundation Material", "Pipe Zone Bedding", "Select Pipe Trench Backfill," "Imported Pipe Trench Backfill", "Controlled Density Fill (CDF) for Trench Backfill" shall include all costs associated furnishing the material and all costs associated with the over-excavation and disposal of the surplus and unsuitable trench excavation replaced by these items.

The unit contract price for "Controlled Density Fill (CDF) for Filling Pipe" shall include all costs associated with furnishing and placing the material, including labor and equipment.

All costs associated with trenching, installing bedding and backfill materials within a trench, disposal of surplus trench excavation, general pipe installation work including "Normal Trench Dewatering," plugs and connections, and plugging existing pipes for abandonment shall be included in the unit contract price for the type and size of pipe installed.

"Structure Excavation Class B" and "Structure Excavation Class B Including Haul" for pipe trenching in accordance with all provisions of Section 2-09 (Structure Excavation) shall be included in the unit contract price for the type and size of pipe installed.

Payment for pipe trench restoration will be made under the applicable items listed in the Proposal Form. If no pay items for the materials required for the trench restoration are included in the bid proposal, pipe trench restoration shall be included in the unit contract price for the type and size of pipe installed.

7-09 Water Mains

7-09.1 Description

(January 2017 City of Auburn GSP)

Supplement this section with the following:

The Contractor shall also follow the requirements of Section 7-08 (General Pipe Installation Requirements). In case of conflicting specifications between Section 7-08 and 7-09, the specifications of Section 7-09 shall take precedence for the installation of water mains and appurtenances.

7-09.2 Materials

(January 2018 City of Auburn GSP)

Delete 'Aggregates' and the reference sections pertaining to Foundation Material, Gravel Backfill for Pipe Zone Bedding, Pipe Zone Bedding, and Trench backfill, from the list in the first paragraph.

Supplement this section with the following:

Ductile Iron Pipe per Section 9-30.1(1) with Ductile Iron Fittings per Section 9-30.2(1) shall be the only pipe and fitting materials allowed for water systems owned by the City of Auburn.

7-09.3(10) Backfilling Trenches

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Water mains shall be installed with 42-inch minimum finished pipe cover, unless the Engineer determines less cover is adequate where existing facilities, not to be relocated, might interfere with the pipe laying operation.

7-09.3(13) Handling of Pipe

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Strict adherence to the requirements preventing debris from entering the pipe will be required, including plugging of pipe during transport, storage, and placement. If, in the opinion of the Engineer, any pipe or fitting has been installed with dirt, foreign material, or diesel residue in it, it shall be removed, cleaned, and re-laid at Contractor expense.

7-09.3(19) Connections

7-09.3(19)A Connections to Existing Mains

(January 2017 City of Auburn GSP)

Supplement this section with the following:

The Contractor shall field verify all existing piping, dimensions, and elevations to ensure proper fit prior to any connections being made to existing mains.

7-09.3(19)B Maintaining Service

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Water main shut-offs shall be in accordance with Section 1-07.17(1) (Disruption to City Water Services).

7-09.3(21) Concrete Thrust Blocking

(January 2018 City of Auburn GSP)

Supplement this section with the following:

Where trench conditions are such that thrust restraint is not accomplishable with concrete, the Contractor shall provide restrained joints in accordance with Section 9-30.2(6) (Restrained Joints) to replace or supplement concrete blocking or anchors. Supplement and replacement restrained joints shall be provided as recommended by the manufacturer and approved by the Engineer.

7-09.3(23) Hydrostatic Pressure Test

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Add the following sentence at the beginning of the first paragraph:

Hydrostatic tests shall be made on all new pipeline in accordance with the applicable portions of this Standard Specification and ANSI/AWWA C600, except as modified in this document.

Add the following sentence between the first and second sentence of the first paragraph:

Test pressures shall not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed, resilient-seated gate valves or butterfly valves.

Add the following sentence at the end of the second paragraph:

Sections of pipe between valves shall be pressure tested immediately upon completion of each section. Each section shall be immediately backfilled upon the Engineer approving the hydrostatic pressure test results.

7-09.3(24) Disinfection of Water Mains

(December 2021 City of Auburn GSP)

Supplement this section with the following:

The City will take bacteriological test samples. If no appropriate appurtenance is available, the Contractor may be required to install corporation stops in the main at all locations required to take bacteriological test samples. If original test samples prove unsatisfactory, a charge of $100.00 will be made for processing each additional sample.

7-09.3(24)J Preventing Reverse Flow

(November 2019 City of Auburn GSP)

Supplement this section with the following:

Prior to beginning the water main installation, the Contractor shall prepare a Prevention of Reverse Flow Plan per Section 1-06 (Control of Material), showing the intended method, in detail, which will be incorporated to insure the prevention of reverse flows from entering the existing distribution system. The plan shall meet the requirement of WAC 246-902-490.

The Contractor shall consider this plan as a submittal, and submit it per the specifications in Section 9-38 (Submittal Approval). The Engineer must approve this plan prior to the Contractor starting work on the water main.

7-09.3(24)N Final Flushing and Testing

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Accomplish line flushing in accordance with the latest provisions of AWWA C601. Flush all dead end mains with a temporary blow off. The Contractor is responsible for disposal of water flushed from the line. An approved bacteriological test is required before connection to the existing system. The City will measure water consumed for flushing.

The Contractor shall submit a de-chlorination plan per Section 1-06 (Control of Material) indicating how chlorine concentration and pH adjustment will be achieved per this Section. All costs to submit the plan shall be included in the unit contract price per linear foot of pipe.

(July 2021 City of Auburn GSP)

Add the following section:

7-09.3(25) Pipe Casing

Steel casing pipe shall meet ASTM A-53, having a minimum tensile strength of 60,000 psi and a minimum yield strength of 35,000 psi. Minimum wall thicknesses for casing diameter 14” shall be 0.25”. All joints shall be welded. Provide shop applied polyamide epoxy-coal tar anticorrosive coating on casing exterior conforming to AWWA C210. Minimum coating thickness of 16 mils dry film thickness (DFT), do not exceed manufacturer’s maximum thickness. A ductile iron casing meeting the requirements of water pipe may be used in lieu of steel.

The carrier pipe shall be installed with casing spacers as shown on the plans. Spacers shall be designed for center restraint and provide a maximum space of 1-inch between the upper runners and the inside of the steel casing. The spacers shall prevent the pipe bells from touching the inside of the casing. Metal components of casing spacers shall be Type 304 (18-8) 14-gauge (minimum) stainless steel. The liner shall be neoprene rubber or PVC, and the runners shall be polyethylene.

Where casing spacers must be custom designed to account for a specific grade of the carrier pipe inside the casing, submittals must be provided which include drawings and dimensions for each of the casing spacers and the respective location of each of the spacers relative to the casing and carrier pipe.

Casing end seals shall be 1/8-inch thick synthetic rubber, pull on type, with stainless steel bands and clamps.

7-09.4 Measurement

(City Contracts, January 2017 City of Auburn GSP)

Supplement this section with the following:

Measurement for payment of "Connect to Existing Water Main" will be per each.

(City Contracts, July 2021 City of Auburn GSP)

Supplement this section with the following:

Cased crossings will be measured by the linear foot of casing installed.

7-09.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Connect to Existing Water Main", Per Each

"2-In. Blowoff Assembly", Per Each

The unit contract price per each for "Connection to Existing Water Main" shall include all costs for furnishing labor, materials, and equipment necessary to cut into the main and make the connection complete in place including verification of existing condition, temporary blocking, capping, temporary blow offs and other items required for testing including all required notifications to water users of disruptions to their service.

The unit contract price per each for "2-Inch Blow Off Assembly" shall be full pay for all work to install the blow off assembly, including but not limited to excavating, backfilling, laying and jointing pipe, tapping the main, corporation stop, pipe and fittings, gate valve, meter box, and cover and cleanup.

The cost of valve assemblies shall be paid for under separate bid items.

Where bolted flanged joint pipe is used on this project, the flange shall be attached to "Special Class 53 D.I. Pipe" and payment will be at the same rate as the unit contract price for "Special Class 52 D.I. Pipe", unless otherwise specified.

(July 2021 City of Auburn GSP)

Supplement this section with the following:

"Cased Crossing" Per LF

The unit contract price per linear foot for "Cased Crossing" shall include all costs for furnishing labor, materials, and equipment necessary to construct a cased crossing in accordance with the detail shown on the Plans, where designated on the Plans or by the Engineer.

(City Contracts, October 2021 City of Auburn GSP)

All references to payment for water pipe is revised to the following:

The unit contract price per linear foot for water main pipe listed in this section shall be full pay for all work to complete the installation including the following:

- Furnishing and installing pipe, pipe accessories, and other appurtenances.
- Sawcutting (including additional sawcutting for pavement restoration)
- Trenching
- Structure Excavation Class B (including haul).
- Installing bedding and backfill materials
- Furnishing and installing temporary patches or steel plates over unfinished portions of trenches crossing traveled ways
- Disposal of surplus excavation
- General pipe installation work
- Plugging existing pipes for abandonment
- Extending existing pipes for making connections
- Preparation and implementation of reverse flow prevention plan
- Preparation and implementation of a de-chlorination plan
- Normal Dewatering and disposal of groundwater
- Disinfection, flushing and testing of pipe
- Protection of the pipe during other work including construction of the roadway subgrade.

7-12 Valves for Water Mains

7-12.3 Construction Requirements

(January 2018 City of Auburn GSP)

Add the following new section:

7-12.3(2) Adjust Valve Boxes

The Contractor shall adjust water valve boxes to finish grade as specified in the Plans and in accordance with the applicable City of Auburn Standard Details. Water valve boxes shall be accessible at all times.

Valve boxes shall not be adjusted to finish grade until the asphalt paving is completed, at which time, each valve box shall be carefully relocated from references previously established by the Contractor. The pavement shall be cut in a restricted area and the base material removed to permit adjustment.

The base materials and crushed rock shall be removed and Class 3000 cement concrete shall be placed so that the entire volume of the excavation is replaced to within, but not to exceed 6 inches of the finished pavement surface. A quick setting admixture shall be added to the cement concrete backfill. Once the valve boxes have been adjusted to finished grade and the cement concrete backfill has cured (the day following placing the cement concrete), HMA Class ½-inch shall be placed and compacted with hand tampers and a patching roller within 48 hours.

(August 2016 City of Auburn GSP)

Add the following new section:

7-12.3(3) Combination Air Release/Air Vacuum Valve Assembly

"Combination Air Release/Air Vacuum Valve Assembly" shall be constructed at locations shown on the Plans and shall be a minimum of 1 inch diameter in accordance with the applicable City of Auburn Standard Detail(s).

(August 2016 City of Auburn GSP)

Add the following new section:

7-12.3(4) Valve Wrench Extension Box

The Contractor shall furnish and install valve wrench extension boxes where the valve nut will exceed 48 inches below the top of the finished valve box and finish grade, where shown on the Plans, in accordance with the applicable City of Auburn Standard Detail(s) for deep buried valves.

7-12.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Adjust Valve Box", Per Each

The unit contract prices for "Adjust Valve Box" shall be full pay for all work including providing all materials, equipment and labor to lower the structure b120nclude120laning and adjust structures to finish grade after the overlay is complete (including asphalt concrete patches).

(January 2017 City of Auburn GSP)

The second paragraph is revised to read:

The unit contract price per each for the valves specified shall be full pay for all work, equipment, and materials to furnish and install each valve complete in place on the water main, including trenching, jointing, blocking of valve, painting, disinfecting, hydrostatic testing, valve box, valve wrench extension box, marker post, and final adjustment to finish grade (including asphalt concrete patches).

7-14 Hydrants

7-14.3 Construction Requirements

(January 2017 City of Auburn GSP)

Supplement this section with the following:

A type 2BB Blue Raised Pavement Marker(s) is required at each hydrant location. Location of the blue marker shall be 1-foot offset of centerline in the direction of the hydrant at each hydrant location. Hydrants located within 50-feet of the curb face of an intersection shall be marked on both streets. The reflective surfaces of the raised pavement markers shall

be perpendicular to the flow of traffic. The Raised Pavement Markers shall be installed in accordance with Section 8-09 (Raised Pavement Markers).

7-14.3(1) Setting Hydrants

(February 2024 City of Auburn GSP)

Delete this section and replace it with the following:

Where shown in the Plans, the "Hydrant Assembly" shall be installed perpendicular to the supply main. A 6-inch resilient-wedge gate valve with valve box in accordance with Section 7-12 (Valves for Water Mains) shall be installed on each hydrant supply line.

All hydrants shall be inspected upon delivery in the field to ensure proper working order. After installation, fire hydrants, auxiliary gate valves, and other appurtenances thereto shall be subjected to a hydrostatic test and disinfection procedures as specified in Section 7-09 (Water Mains).

After installation each hydrant shall receive 2 field-coats of paint. The first coat shall be Formula B-1-57 iron oxide, and the second coat shall be:

For Public Fire Hydrants: Safety Yellow conforming to Sherwin Williams Industrial Enamel B54 Y 37, or approved equivalent.

For Private Fire Hydrants: Safety Red conforming to Sherwin Williams Industrial Enamel B54 R 38, or approved equivalent.

During the chlorination process for the newly laid pipe, all valves associated with each hydrant assembly shall be operated while the pipeline is filled with the chlorinating agent and under normal operating pressure.

Any hydrant not in service shall be identified by covering with a burlap or plastic bag properly secured.

7-14.3(4) Moving Existing Hydrants

(January 2018 City of Auburn GSP)

Supplement this section with the following:

Existing hydrants shall be moved where shown in the Plans. Moving existing hydrants shall include removal of all component parts from the water main to the hydrant.

The Contractor shall provide and install the following new components at the new hydrant location shown on the Plans:

- Special Class 52 Ductile Iron pipe;
- 6 inch tee or tapping tee and gate valve with box;
- Restraint system;
- Blocking.

7-14.5 Payment

(City Contracts, January 2018 City of Auburn GSP)

References to payment for "Hydrant Assembly" are revised to the following:

The unit contract price per each for "Hydrant Assembly" shall be full pay for all work to furnish and install fire hydrant assemblies, including all costs for valves, restrain systems, tees, tie rods, storz adapter, concrete blocks, gravel, painting, type 2BB pavement marker(s),

connecting to the water main, and all pipe required for the complete installation- of the hydrant assembly.

References to payment for “Resetting Existing Hydrant” are revised to the following:

The unit contract price per each for “Resetting Existing Hydrant” shall be full pay for all work to reset the existing hydrant, including restrain system, painting, type 2BB pavement marker(s), reconnecting to the main, and all pipe and other materials required.

References to payment for “Moving Existing Hydrant” are revised to the following:

The unit contract price per each for “Moving Existing Hydrant” shall be full pay for all work to move the existing hydrant, including new hydrant lateral tee, restraint system, painting, 2BB pavement marker(s), connecting to the main, and all pipe and other materials required.

References to payment for “Hydrant Extension” are revised to the following:

The unit contract price per each for “Extensions” shall be full pay for all work including materials, labor, and equipment required to extend the hydrant vertically.

7-15 Service Connections

7-15.2 Materials

(September 2021 City of Auburn GSP)

Replace the reference to Service pipe from the list of materials and replace with the following:

Service Pipe & Tail Piece	9-30.6(3)A (Copper Tubing), 9-30.6(3)B (Polyethylene Tubing)

All water service materials shall be low lead brass CDA89833 or CDA89520, and shall meet ANSI/AWWA C800 and NSF 61 Annex G maximum lead requirements.

7-15.3 Construction Requirements

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Water service connections shall be installed where shown on the drawings in accordance with these documents and the applicable Standard Details. Multiple service connections to the same main must be made with a 2 foot minimum separation at the main and be staggered horizontally, so that adjacent services are at differing elevations along the pipe. Meter box and water meters shall not be placed in locations which are subjected to vehicular traffic (including driveways, etc.) unless approved by the Engineer and a traffic bearing meter box is provided. Tail pieces (that portion of the service line between the meter and the property line) shall be furnished and installed and shall be of the same material and size as the service line. Connection of the tail piece to the service line from the building shall be made with compression couplings or capped as appropriate. Service pipes shall be installed without joints from the water main to the curb valve near or within the meter box. Tailpieces shall also be installed without joints from the water meter outlet to its termination (18 inches minimum beyond the meter but not beyond the right-of-way line). The existing ¾-inch water meter shall be reinstalled to the new meter setter once the new 1-inch service line,

meter setter, and tailpiece, have been installed and the new meter box has been adjusted to grade.

All new materials (service line, meter setter, tailpiece, and meter box) shall be used for water meter relocations. Materials shall match existing size unless otherwise shown on the Plans.

When removing existing meters, the Contractor shall protect all automated meter reading equipment including radios, receivers/transmitters, and other equipment. The removed meters/equipment will be stored in such a manner to prevent damage to the equipment. The Contractor will request and complete training from City staff on proper measures and techniques required to protect the equipment prior to removing any equipped meters.

7-15.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Water Service Connection ¾ In. Meter with 1 In. Diam. Service Line", Per Each

"Water Service Connection ___In. Diam.", Per Each

"Dual Water Service Connection Renewal ¾ In. Diam.", Per Each

"Water Service Connection Renewal ____ In. Diam.", Per Each

The unit contract price for each size of "Water Service Connection ¾ In. Meter with 1 In. Diam. Service Line " shall be per each, in place, and shall be full compensation for all labor, equipment, and materials necessary to furnish and install the new water service including tap and corporation stop, 1-inch service line from the main to the meter, 1-inch to ¾ inch Mueller adaptors, 1 inch curb valve, 1 inch meter yoke with angle check valve and angle valve, traffic bearing meter box and lid, tailpiece, shutoff valve assembly, reconnecting the existing service or capping the end as appropriate, and reconnecting the old meter to the new service line. The City will provide and set ¾ inch meters for new 1 inch diameter service connections.

The unit contract price for each size of "Water Service Connection, ____In. Diam." Shall be per each, in place, and shall be full compensation for all labor, equipment, and materials necessary to furnish and install the new water service including tap and corporation stop, service line from the main to the meter, adaptor, curb valve, meter yoke with angle check valve and angle valve, meter box, tailpiece, and reconnecting the existing service or capping the end as appropriate. The City will provide and set ¾ inch diam. Meters for new 1 inch diam. Service connections.

The unit contract price for each size of "Water Service Connection Renewal ___ In, Diam." Shall be per each, in place, and shall be full compensation for all labor, equipment and materials necessary to renew existing water services, including new service line, from the main to the meter, curb valve, meter yoke with angle check valve and angle valve, meter box, tailpiece, and reconnecting the existing service.

7-17 Sanitary Sewers

7-17.2 Materials

(October 2021 City of Auburn GSP)

Delete this section and replace it with the following:

Only the pipe materials listed below are approved for use on City sanitary sewer systems.

Materials shall be in accordance with following Sections:

Solid Wall Polyvinyl Chloride (PVC) Pipe, SDR-35	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)
Polyvinyl Chloride (PVC) Pipe, SDR-21	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)
Solid Wall Polyvinyl Chloride (PVC) Pipe, C900	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)
Ductile Iron, Special Class 50	9-05.13 (Ductile Iron Sewer Pipe)
High Density Polyethylene Pipe (HDPE)	9-05.23 (High Density Polyethylene Pipe (HDPE))

The laying length for PVC (SDR-35) shall not exceed 14 feet.

7-17.3 Construction Requirements

7-17.3(1) Protection of Existing Sewage Facilities

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Connections to the existing system shall be plugged during the entire period of sewer construction to prevent dirt, water, and debris from entering the existing system

7-17.3(2) Cleaning and Testing

7-17.3(2)A General

(August 2016 City of Auburn GSP)

Delete the first paragraph and replace with the following:

Sewers and appurtenances, where required in the Plans, shall be cleaned and tested after backfilling by the low pressure air method except if the Engineer approves hydrostatic testing of short sections of small diameter pipe.

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Before final acceptance, the Contractor shall have all sewer lines inspected by the use of a television camera per Section 7-17.3(2)H (Television Inspection). Manholes and

other structures shall be cleaned and tested per Section 7-07 (Cleaning Existing Drainage Structures).

Special sealants shall not be used to seal leaks and the use of any such materials will be cause for rejection of the sewer lines.

7-17.3(2)C Infiltration Test

(January 2017 City of Auburn GSP)

Revise the second sentence of the second paragraph to read:

"Maximum leakage (in gallons per hour)" = $0.16 \times \frac{\sqrt{H}}{\sqrt{6}} \times D \times \frac{L}{100}$

7-17.3(2)F Low Pressure Air Test for Sanitary Sewers Constructed of Non Air-Permeable Materials

(January 2017 City of Auburn GSP)

Supplement this section with the following:

If the test shows zero leakage after a five minute test time, the Engineer has the authority to accept and end the test immediately.

Cleaning and testing of pipes and structures shall be included in the unit contract prices for those items installed.

7-17.3(2)H Television Inspection

(May 2019 City of Auburn GSP)

Delete this section and replace it with the following:

The Contractor shall be responsible for having all sewer lines installed by the Contractor inspected by City approved private inspection services that includes the use of a television camera. An approved list of inspection services may be obtained from the Engineer.

After completion of the following, authorization from the City shall be required before the Contractor can perform the initial television camera work:

1. The acceptable placement of applicable pipe, ballast, bedding, and backfill material.

The acceptable completion of all applicable channels and grout

2. work.

The acceptable debris removal, cleaning, and flushing of all applicable pipes and struct

3. ures.

The television inspection requirements shall include the provisions of:

1. The television camera shall be a pan and tilt camera system specifically designed and constructed for sewer environments.

A dye solution to be introduced in sufficient quantity to travel from the structure that is the highest point of inspection to the downstream terminus of the inspection limits. Red or purple dye shall be used for PVC pipe and green dye for ductile iron and concrete

2. pipe.

A one-inch reference ball to be mounted to the camera in order to drag along the bottom of the pipe during the entire inspection proce

3. dure.

Linear measure references to be measured from the center of the beginning structure to the center of the next inline structure and include the direction of flow. The locations of lateral pipes and all distinctive pipe conditions shall be referenced to the centerline of the beginning structure. All structure references shall utilize the designated structure reference numbers shown on the P

4. lans.

The following television inspection information shall be provided to the y:

8. 1. A clear color DVD or USB Flash Drive which encompasses the limits of the inspection area and including all reference data as described herein. The recorded reference time and date for the start of each run shall also be indica.

8. 2. A written report shall be provided corresponding to the recorded inspection and including all reference data as described herein. The report shall consist of a written narrative of all distinctive pipe conditions including ponding areas in excess of ¼ inch.

7-17.4 Measurement

(City Contracts, January 2017 City of Auburn GSP)

Supplement this section with the following:

Television inspection work will be measured per linear foot.

7-17.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"PVC Sanitary Sewer Pipe, SDR-35, ___ In. Diam.", Per Linear Foot

"PVC Sanitary Sewer Pipe, SDR-21, ___ In. Diam.", Per Linear Foot

"Ductile Iron Pipe, Special Class 52 Sanitary Sewer Pipe, ___ In. Diam.", Per Linear Foot

"HDPE Sanitary Sewer Pipe, ____ In. Diam.", Per Linear Foot

"Sanitary Sewer Television Inspection", Per Linear Foot

The unit contract price per linear foot for "Sanitary Sewer Television Inspection" shall be full pay for all work to complete the Television Inspection including all associated cleaning and flushing.

(City Contracts, August 2018 City of Auburn GSP)

Revise references to payment for sanitary sewer pipe to the following:

The unit contract price per linear foot for sanitary sewer pipe of the kind and size specified shall be full pay for all work to complete the installation including the following:

- Furnishing and installing pipe, pipe fittings, and other pipe appurtenances.
- Adjusting inverts to manholes
- Testing of pipes
- Sawcutting (including additional sawcutting for pavement restoration)
- Trenching
- Structure Excavation Class B (including haul).
- Installing bedding and backfill materials within the trench
- Furnishing and installing temporary patches or steel plates over unfinished portions of trenches crossing traveled ways
- Disposal of surplus trench excavation
- General pipe installation work including plugs and connections
- Plugging existing pipes for abandonment
- Temporary plugs, bypass pumping, or both
- Normal Dewatering and disposal of groundwater

7-18 Side Sewers

7-18.3 Construction Requirements

7-18.3(1) General

(January 2017 City of Auburn GSP)

Supplement this section with the following:

All joints shall be approved rubber-gasket joints except the joint between the new and existing pipe that shall be made with approved flexible transition couplings. Side sewers shall be installed to a minimum slope of two percent or as shown on the Plans unless otherwise directed by the Engineer and shall be 6-inches diameter from the street sewer to the private property line.

Existing side sewers to be connected shall be trimmed to the limit of the right-of-way except where otherwise shown on the Plans and connected to the new sewer with PVC SDR-35 with a diameter to match the existing side sewer or 6 inches, whichever is greater.

(August 2016 City of Auburn GSP)

The third paragraph is replaced with the following:

No joint deflections shall be allowed on side sewers. No horizontal bends shall be allowed in the right-of-way. Vertical bends require Engineer approval.

7-18.3(3) Testing

(January 2017 City of Auburn GSP)

Supplement this section with the following:

During construction in areas with more than one side sewer per structure, the Contractor shall test each connected structure to verify which side sewer is used by that structure. The test shall involve flushing every toilet or running every sink or tub on each floor of each structure and directly observing which side sewer the effluent discharges from. Only these side sewers shall be connected. All others are to be abandoned in place per Section 7-08.3(4) (Plugging Existing Pipe).

The Contractor shall be responsible for verifying all City customers originally connected to the sanitary sewer conveyance line are connected to the new sanitary sewer conveyance line. Prior to project completion the Contractor shall document to the City that all City customers have had their services re-established.

All pipes for side sewer and sewer stubs (pipes not ending in a manhole) shall be adequately plugged or capped.

7-19 Sewer Cleanouts

7-19.3 Construction Requirements

(January 2018 City of Auburn GSP)

Delete this section and replace it with the following:

Sewer cleanouts shall be installed as indicated in the applicable Standard Details.

END OF DIVISION 7

DIVISION 8 Miscellaneous Construction

8-01 Erosion Control and Water Pollution Control

8-01.3 Construction Requirements

(February 2018 City of Auburn GSP)

Supplement this section with the following:

The Contractor shall comply with the requirements of the Construction Stormwater General Permit (CSWGP), when the Contract is covered by a CSWGP. When the Contract does not identify CSWGP coverage, then the requirements identified in this section, that would only be required in the event of permit coverage, are not applicable. All other requirements identified in this section are applicable regardless if the Contract has a CSWGP or not.

8-01.3(1) General

(November 2019 City of Auburn GSP)

The second to last paragraph is revised to read:

> When applicable, the Contractor shall be responsible for all Work required for compliance with the CSWGP.

8-01.3(1)A Submittals

(November 2019 City of Auburn GSP)

Supplement this section with the following:

The Contractor's TESC plan shall be submitted to the Engineer for approval per Section 9-38 (Submittal Approval) prior to beginning construction.

The TESC plan shall also cover dewatering and the Contractor's proposed method of treating and disposing of dewatering effluent and other impacts of caused by dewatering activities.

Modifications to the temporary erosion and sediment control (TESC) Plans included in the Contract Plans, shall meet all requirements of the City of Auburn Surface Water Management Manual (SWMM).

Prior to beginning any concrete or grinding work, the Contractor shall submit a plan, for the Engineer's review and approval, outlining the procedures to be used to prevent high pH stormwater or dewatering water from entering surface waters. The plan shall include how the pH of the water will be maintained between pH 6.5 and pH 8.5 prior to being discharged from the project or entering surface waters.

The Contractor shall allow at least 5-working days for the Engineer to review any original or revised TESC Plan. Failure to approve all or part of any such Plan shall not make the Contracting Agency liable to the Contractor for any Work delays.

8-01.3(1)C Water Management

8-01.3(1)C1 Disposal of Dewatering Water

(September 2019 City of Auburn GSP)

The first paragraph is revised to read:

When uncontaminated groundwater is encountered in an excavation on a project, when approved by the Engineer, it may be infiltrated within vegetated areas of the right of way not designated as Sensitive Areas or incorporated into an existing stormwater conveyance system at a rate that will not cause erosion or flooding in any receiving surface water.

(November 2019 City of Auburn GSP)

Add the following new section:

8-01.3(1)F SWPPP Preparation and General Permit Compliance

The Contractor shall amend, revise, or replace the City provided Draft Storm Water Pollution Prevention Plan, (Draft SWPPP), see Appendix to these Special Provisions, to address the Contractors specific means and methods of completing the work and to comply with both the Construction Stormwater General Permit (CSWGP) included as an Appendix to these Special Provisions, and the City's Surface Water Management Manual (SWMM). The resulting document is the Storm Water Pollution Prevention Plan (SWPPP).

The Contractor shall prepare and submit the SWPPP for City approval per Section 9-38 (Submittal Approval). Approval of the SWPPP document is required prior to the beginning of any ground disturbing activities. The Contractor shall allow a minimum of 5 working days for the Engineer's review of the SWPPP. Failure to approve all or part of any such plan shall not make the Contracting Agency liable to the Contractor for any work delays.

The Contractor shall use, implement, modify, and document the approved SWPPP in compliance with the CSWGP. This work shall include, but is not be limited to, the following:

- Preparing, revising, maintaining the SWPPP in compliance with the CSWGP;
- Designing and planning, sediment control/erosion control measures, (BMPs), needed to meet CSWGP requirements;
- Planning, performing and reporting of storm water monitoring;
- Preparing and maintaining documentation required by the CSWGP.

During construction, the Contractor shall modify the SWPPP to address specific site conditions. The SWPPP and Contractor's revisions shall consist of the Contractor's complete strategy to meet the requirements of the CSWGP. The Contactor shall include and modify as necessary the erosion control measures provided in the Contract Plans. The Contractor shall review and modify the SWPPP as necessary to be consistent with the actual work schedule, sequencing, and construction methods that will be used on the project. The SWPPP and revisions shall meet the requirements of the CSWGP. The Contractor shall provide and maintain on-site the standby equipment and materials to comply with the CSWGP.

The S130ncludeincluding any Contractor revisions, shall document all the erosion and sediment control Best Management Practices (BMPs) proposed, whether permanent or temporary. The plan shall document installation procedures, materials, scheduling, and maintenance procedures for each erosion and sediment control BMP.

In addition, the SWPPP shall outline the procedures to be used to prevent high pH stormwater or dewatering water from entering surface waters of the state. The plan shall include how the pH of the water will be maintained in compliance with the CSWGP prior to being discharged from the project or entering surface waters.

SWPPP Contents

The SWPPP shall include narrative(s) and site plan(s) that address the following as applicable to the Work:

- Clearing Limits
- Establishment of Construction Access
- Flow Rate Controls
- Sediment Controls
- Soil Stabilization
- Slope Protection
- Drain Inlet Protection
- Channels and Outlets Stabilization
- Pollutant Controls
- De-watering Control
- Maintenance of Best Management Practices
- Project Management
- Protection of Low Impact Development Best Management Practices

The SWPPP will indicate discharge monitoring locations that shall also be clearly marked in the field by the Contractor. The SWPPP will indicate the Contractor's process for controlling, monitoring, and reporting of turbidity and pH in discharges.

On-Site Documentation

The Contractor shall collect, prepare, compile, and maintain hardcopies of the following documents on-site at all times while work is underway and shall make them available in accordance with the CSWGP requirements:

1. Bound notebook #1 with a cover labeled "SWPPP Documents", with the following contents separated by labeled tabbed dividers:
    - Permit Coverage Letter
    - Construction Stormwater General Permit
    - Stormwater Pollution Prevention Plan
    - Erosion Control Plan
2. Bound notebook #2 with a cover labeled "SWPPP Site Log Book", with the following contents separated by tabbed dividers:
    3. Erosion inspection reports.
    4. SWPPP Modifications

5. Discharge Monitoring Reports (DMR)
6. Spill Reports

Stormwater Monitoring Requirements

The Contractor shall conduct monitoring of discharges of stormwater runoff for comparisons to benchmark values for turbidity and pH as described in the CSWGP. The Contractor shall provide weekly stormwater monitoring of the project stormwater discharge locations for turbidity and pH as required in the CSWGP. The Contractor shall establish specific project sampling locations for sampling and monitoring at each discharge location to determine background, outfall, and downstream water quality conditions and provide these locations on a m132ncludeincluded in the SWPPP for approval.

The Contractor shall establish procedures that adapt to unanticipated events such as severe storms, schedule adjustments, modified construction techniques, etc. to be included in the SWPPP. Contractor shall submit any modifications to the procedures to the Engineer for approval.

Contractor shall calibrate equipment according to manufacturers' recommendations and according to their specified schedule. If data appears suspect, the Contractor shall perform additional calibrations immediately.

The Contractor shall complete all online reporting as required by the CSWGP.

Turbidity and pH Exceedances

Following any exceedances of the turbidity or pH benchmarks, the Contractor shall provide the following at no additional cost to the Contracting agency:

1. The necessary SWPPP revisions and on-site measures/revisions including additional source control, BMP maintenance, and/or additional stormwater treatment BMPs that are necessary to prevent continued exceedance of turbidly and/or pH benchmarks.
2. The regulatory notification to the Dept of Ecology and to the Engineer of any monitoring results requiring regulatory notification.
3. The additional daily sampling and reporting measures described in the CSWGP to verify when project site runoff is in compliance.

At no cost to the City, the Contractor shall be responsible for paying any fines levied against the City for any failure by the Contractor to comply with the permit requirements as listed in these specifications and as indicated in the permit(s) included in the Appendix to these Special Provisions.

(January 2018 City of Auburn GSP)

Add the following new section:

8-01.3(1)G Temporary Water Pollution /Erosion Control Installation

This work consists of furnishing and installing all temporary water pollution and erosion control items as detailed in the Contract Plans. If additional measures as approved by the City are required beyond those shown in the Contract Plans, they will be paid for under the unit cost bid item(s) determined by the Engineer to be applicable, or, if the Engineer determines additional measures are not applicable to unit cost bid item(s), the measures will be paid under the Force Account bid item for "Erosion/Water Pollution Control".

8-01.3(2) Temporary Seeding and Mulching

8-01.3(2)B Temporary Seeding

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Seeding:

The following composition, proportion, and quality of grass seed shall be applied at the rate of 5 pounds per 1,000 square feet on all areas requiring roadside seeding (noted "hydroseed" on the Plans) within the project:

Kind and Variety of Seed in Mixture	Percent by Weight	Minimum Percent Pure Seed	Minimum Percent Germination
Colonial Bentgrass (Highland or Astoria)	10%	9.8%	85%
Red Fescue (Illahee, Rainier, or Pennlawn)	40%	39.20%	90%
English Perennial Rye	50%	29.40%	90%
Weed Seed (maximum %)		0.50%	
Inert and Other Crops (minimum %)		1.50%	
	TOTAL 100.00%		

Fertilizer:

The Contractor shall submit three samples of existing soil in the project area, and one of each specified type of topsoil to a soil laboratory for testing to determine fertilizer/amendment composition. Results shall be submitted to the Engineer and fertilizer and soil amendment formulation and application rates will be based on the laboratory recommendations. However, the minimum fertilizers requirements are as follows:

Total Nitrogen as N-3 1.5 pound per 1,000 square feet;

Available Phosphoric Acid as P2O5-1 2 pounds per 1,000 square feet;

Soluble Potash as K2O-2 20 pounds per 1,000 square feet;

1 pound of nitrogen applied per 1,000 square feet shall be derived from ureaform or ureaformaldehyde. The remainder may be derived from any source.

The fertilizer formulation and application rate shall be approved by the Engineer before use.

8-01.3(2)E Tackifiers

(January 2017 City of Auburn GSP)

Supplement this section with the following:

The moderate-term mulch soil binder for hydroseeding shall be a bonded fiber matrix with integral tackifier specifically manufactured for hydroseeding applications and erosion control. The moderate-term mulch shall be dyed an appropriate color to facilitate visual metering of application of the materials. The moderate-term mulch shall be 'ECO-AEGIS' as manufactured by Canfor, or approved alternate.

8-01.4 Measurement

8-01.4(1) Lump Sum Bid for Project (No Unit Items)

(City Contracts, November 2019 City of Auburn GSP)

This Section is deleted.

8-01.4(2) Item Bids

(November 2019 City of Auburn GSP)

The first paragraph is deleted.

(City Contracts, January 2018 City of Auburn GSP)

Supplement this section with the following:

"Sediment Trap" shall be measured per square yard of trap bottom surface area.

No specific unit of measurement shall apply to the lump sum contract price of CSWGP documentation compliance or TESC Plan.

8-01.4(3) Reinstating Unit Items with Lump Sum Erosion Control and Water Pollution Prevention

(City Contracts, November 2019 City of Auburn GSP)

This Section is deleted.

8-01.4(4) Items not included with Lump Sum Erosion Control and Water Pollution Prevention

(City Contracts, November 2019 City of Auburn GSP)

This Section is deleted.

8-01.5 Payment

8-01.5(1) Lump Sum Bid for Project (No Unit Items)

(City Contracts, November 2019 City of Auburn GSP)

This Section is deleted.

8-01.5(2) Item Bids

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

"TESC Plan", Per Lump Sum

"Sediment Trap", Per Square Yard

"High Visibility Fence", Per Linear Foot

"General Permit Documentation Compliance", Per Lump Sum

The lump sum price for "TESC Plan" shall be full payment for all costs to prepare, update, and modify/maintain the 'living' Temporary Erosion and Sediment Control Plan, and included Dewatering Plan elements, when needed, for the duration of the Contract.

Payment for "Sediment Traps" shall be full payment for all labor, tools, and materials to construct a sediment trap and maintain it for the duration of the Project.

The lump sum contract price for "General Permit Documentation Compliance" shall be full pay to maintain and update the SWPPP and file all electronic reports necessary to comply with the permit conditions with the Washington State Department of Ecology.

No additional payment will be made for any supplemental measures to control seepage, groundwater, or artesian head.

(City Contracts, November 2019, City of Auburn GSP)

References to payment for street cleaning is revised to the following:

Per Section 1-07.23(1)A (Dust and Mud Control and Street Cleaning), no additional payment will be made for Street Cleaning.

8-01.5(3) Reinstating Unit Items with Lump Sum Erosion Control and Water Pollution Prevention

(November 2019 City of Auburn GSP)

This Section is deleted.

8-01.5(4) Items not included with Lump Sum Erosion Control and Water Pollution Prevention

(November 2019 City of Auburn GSP)

This Section is deleted.

8-02 Roadside Restoration

8-02.1 Description

(January 2017, City of Auburn GSP)

Supplement this section with the following:

This work also involves any minor repair or replacement work to restore roadside features the Engineer discovers during construction.

8-02.3 Construction Requirements

8-02.3(1) Responsibility During Construction

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Landscape construction is anticipated to begin after all curbs, sidewalks, rockeries, utilities, and associated roadside work is completed.

The Contractor shall keep the premises clean, free of excess soils, plants, and other materials, including refuse and debris, resulting from his work throughout the planting operation. The Contractor shall maintain continuous pedestrian access and shall not stockpile materials or park equipment in any manner that may create hazards or obstacles to this access. At the end of each workday, and as each planting area is completed, it shall be neatly dressed and all surrounding walks and paved areas shall be cleaned to the satisfaction of the Engineer.

Cleaning by flushing into sewers will not be allowed. The Contractor shall remove surplus soils, materials, and debris from the construction site and shall leave the project in a clean condition at the conclusion of the work.

8-02.3(4) Topsoil

(February 2024, City of Auburn GSP)

Supplement this section with the following:

Topsoil shall be used to restore any landscape beds or planter areas disturbed by the Work.

Depths of topsoil placement shall be as shown in the plans. Where no depths are identified in the plans, the contractor shall furnish sufficient quantities of topsoil for placement in all seeding areas (4 inch depth topsoil) and planting areas (6 inch depth topsoil) and for tree and shrub planting soil requirements, plus a reserve quantity for restoring additional areas outside designated planting and seeding areas that are disturbed by the Contractor's activities.

8-02.3(4)A Topsoil Type A

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Topsoil Type A is to be used for all planting and seeding areas and shall be tested in an independent, certified soil testing lab to determine need for fertilizers, or amendments, or both, based on its intended use. The topsoil shall be modified according to the soil testing laboratory recommendations at no additional cost to the City.

8-02.3(4)C Topsoil Type C

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Native as used in this context shall mean naturally occurring material.

8-02.3(5) Roadside Seeding, Lawn and Planting Area Preparation

(February 2018, City of Auburn GSP)

Supplement this section with the following:

Upon approval of the subgrades by the engineer, a topsoil layer shall be placed with a minimum organic matter content of 10% dry weight in planting beds, and 5% organic matter content in lawn sod areas, and a pH from 6.0 to 8.0 or matching the pH of the adjacent undisturbed soil. The topsoil layer hall have a minimum depth of 8 inches, except where tree

roots limit the depth of incorporation of amendments needed to meet the criteria. The subsoils below the topsoil layer shall be cultivated to a depth of 4 inches with some incorporation of the upper material to avoid stratified layers, where feasible. Cultivation of the soil shall be done by a method approved by the Engineer. This operation should be done at right angles to the natural flow of water on slopes. Remove rocks, roots, clods, stumps and debris over 2 inches in diameter. Lightly compact soil and establish a smooth and uniform finished grade that protects against obstruction to surface drainage and ponding. For bark mulched shrub and groundcover beds, finish grade prior to placement of bark shall be 2 inches below top of adjacent finish grade.

(August 2016, City of Auburn GSP)

Add the following new section:

8-02.3(5)D Root Control Barrier

Root control material shall be CP-Series Root Barrier Panels as manufactured by Century Root Barrier, Universal Guide as manufactured by Deep Root, or Dual Purpose Panels as manufactured by Villa Root Barriers or approved alternate.

Install continuous section of root control material in all tree planting areas as shown on the Plans. Backfill with topsoil material being careful not to damage or displace root control material.

8-02.3(6) Mulch and Amendments

(January 2017, City of Auburn GSP)

Supplement this section with the following:

GroCo (GroCo Inc. tel. 206-622-5141), Tagro (City of Tacoma Tel. 253-502-2150), or Cedar Grove Compost shall be mixed with native topsoil to produce a 75/25 mix ratio (topsoil 75 percent and amendment 25 percent).

8-02.3(7) Layout of Planting, Lawn and Seeding Areas

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The Contractor is responsible for determining required quantities of plant material to complete the landscape plan as shown.

It is anticipated that some minor arranging of plant material will be necessary during the progress of work.

From the centerline of the first row of shrubs or ground covers to the edge of the planting bed shall be ½ the typical dimension shown on the Plans and details.

Plant trees a minimum of 3 feet from curbs and sidewalks when the space is available; otherwise they shall be centered in the available space. Trees in tree wells shall be centered within the tree grate and frame.

8-02.3(8) Planting

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Plant trees and shrubs in planting pits and install tree frames and grates as detailed on Plans.

Do not over excavate planting pit depth, however, over excavation of planting pit width is desirable.

Trees shall be handled by the rootball, not by the trunk. Burlap and wire shall remain intact until trees are set in their positions within each planting pit. Remove all wire, twine, and burlap from the top third of the rootball before backfilling. Plant trees and shrubs upright, rotating them to give the best placement to adjacent plants, topography, and structures. Hold plant rigidly in position until topsoil has been backfilled and tamped firmly around the ball or roots.

When the planting pit is backfilled halfway, place the specified quantity of fertilizer plant tablets and stakes, if necessary, as shown on the Plans. Evenly space the fertilizer tablets around the perimeter of and immediately adjacent to the root system. Carefully place, water, and compact planting topsoil filling all voids. Do not injure the root system.

When the planting pit is three-quarters (3/4) backfilled, fill with water and allow it to soak away. Fill pits with additional topsoil and continue backfilling as detailed on Plans. Ground bark shall be placed over all tree-planting saucers to a compact depth of 2 inches. Water trees immediately after planting.

The root systems of all bare root plant material shall be dipped in a slurry of silt and water immediately prior to planting.

8-02.3(9) Seeding, Fertilizing, and Mulching

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Trees, shrubs, and groundcover shall be fertilized as follows:

Formula 4-2-2 “Transplanter” as manufactured by Pacific Agro Co., with Hercules nitroform and W.R. Grace’s “Magamp” and trace elements. Apply at a rate of:

Trees	8 ounces
Shrubs	2 ounces
Groundcover	1 ounce

Agriform Tablets: Planting tablets, 21-ram size, as manufactured by Agriform International Chemicals, Inc., 20-10-5 analysis. Apply at a rate of:

Trees	4 tablets for every foot of rootball diameter
Shrubs	3 tablets
Groundcover	1 tablet

8-02.3(10) Lawn Installation

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Except in areas where the Plans specify hydro-seed, lawn seeding will not be permitted on this project. “Lawn Sod” per Section 9-14.7(4) (Sod) shall be laid smoothly in place in accordance with the typical section(s) in the Plans.

Prior to installing “Lawn Sod” all dry soil shall be moistened by sprinkling with water. On sloped areas, the sod shall be laid with the long dimension parallel to the toe or top of slope. The “Lawn Sod” shall be rolled and heavily watered by sprinkler after placement.

8-02.3(10)C Lawn Establishment

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The lawn establishment period may be extended or shortened by the Engineer based on the Engineer's opinion of whether or not the lawn has been established. Physical Completion and Final Acceptance will not be allowed until after the lawn establishment period has ended.

Lawn establishment requirements outside the City of Auburn right of way shall be subject to the applicable agreements, easements, and permit conditions for the property on which they are associated.

8-02.3(10)D Lawn Mowing

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Lawn mowing beyond the mowing required during the lawn establishment period shall only be required when indicated in the Plans. Lawn mowing will not be required beyond the Physical Completion and Final Acceptance of the project.

(August 2016, City of Auburn GSP)

Add the following new section:

8-02.3(10)E Fertilizer for Sodded Area

Prior to placing sod, a 10-2-10 fertilizer shall be rototilled into the top 3 inches of the soil at a rate of 4 pounds of available nitrogen per 1,000 square feet.

8-02.3(11) Mulch

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Ground bark shall be placed over all planting beds and over all tree-planting saucers to a compact depth of 2 inches. Ground bark shall be placed around existing trees and bushes disturbed by construction to a compact depth of 2 inches. Thoroughly water and hose down plants with a fine spray to wash the leaves of the plants immediately after bark application.

8-02.3(12) Completion of Initial Planting

(January 2017, City of Auburn GSP)

Delete this section and replace it with the following:

Upon completion of the initial planting and per the request of the Contractor the Engineer will make an inspection of all plant material and notify the Contractor, in writing, of any replacements or corrective action necessary to meet the Contract Document requirements. The Contractor shall replace all materials requested or missing and correct unsatisfactory conditions within 15 working days. The Engineer will provide the Contractor with written notification when the initial planting is accepted; at which time the plant establishment period shall begin.

Completion of initial planting includes the following:

1. Installation of root control barriers and watering systems for trees.
2. Installation of all required planting materials (trees, shrubs, and groundcovers).
3. Planting area cleanup.
4. Full operation of the irrigation system, complete bark mulch coverage, and all planting areas in a weed-free condition.
5. Approval of Plant Establishment Plan.

8-02.3(13) Plant Establishment

(August 2016, City of Auburn GSP)

Supplement this section with the following:

Plant establishment requirements outside the City of Auburn right of way shall be subject to the applicable agreements, easements, and permit conditions for the property on which they are associated.

The plant establishment period may be extended or shortened by the Engineer based on the Engineer's opinion of whether or not the plantings have been adequately established. Physical Completion and Final Acceptance will not be allowed until after the plant establishment period has begun. The Plant Establishment period may occur during the contract Guarantee Period specified in Section 1-05.10.

Plant establishment includes only those plants listed with "PSIPE _____" (Plant Selection Including Plant Establishment) in the Proposal.

(August 2016, City of Auburn GSP)

The second, third, and fourth paragraphs are replaced with the following:

The plant establishment period shall begin immediately upon written notification from the Engineer of the completion of the initial planting for the project. The Contractor shall maintain all plant materials for a period of 1-year after the Plant Establishment period has begun. During this period, the Contractor shall maintain a healthy growing condition for all plant materials and water, prune, spray, weed, and perform other necessary maintenance operations. Planting beds shall be kept free of all weeds, grass and other undesirable vegetation. Plants shall be inspected by the Contractor at least monthly from October 1st to April 30th and at least once a week from May 1st to September 30th and maintenance performed promptly. Dead or impaired plants shall be promptly replaced during the planting season specified in Section 8-02.3(8) and all soil ridges shall be removed from around the watering basins before the end of the maintenance period. At the determination of the Engineer, replacement plants may require an additional acceptance and establishment period.

After completion of the landscape establishment period, the Contractor shall request an inspection by the Engineer. The Contractor shall correct all conditions unsatisfactory to the Engineer within a 10-day period, weather permitting, immediately following the inspection.

8-02.3(14) Plant Replacement

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Completion of the Plant Establishment period will be certified, in writing, by the Engineer.

8-02.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Supplement this section with the following:

Measurement of "Root Control Barrier" will be by the linear foot completed in place.

Measurement of "Tree Grate and Frame" will be measured per each after installation completed and accepted.

No unit of measure shall apply to "Roadside Restoration".

(City Contracts, August 2016, City of Auburn GSP)

References to measurement of topsoil and mulch in this section are revised to the following:

Topsoil Types "_" will be measured by the square yard for the surface area of the landscape areas multiplied by the specified topsoil thickness for seeded and planting areas, converted to cubic yards.

Bark mulch will be measured by the cubic yard for the surface area of the landscape area multiplied by the specified bark thickness, converted to cubic yards.

8-02.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Topsoil Type __", Per Cubic Yard

"Root Control Barrier", Per Lineal Foot

"Seeding, Fertilizing, and Mulching", Per Square Yard

"Bark Mulch", Per Cubic Yard

"Tree Grate and Frame", Per Each

"Roadside Restoration", by force account as provided in Section 1-09.6.

(City Contracts, September 2016, City of Auburn GSP)

References to payment for topsoil is revised to the following:

The unit contract price per cubic yard for "Topsoil Type __" shall be full pay to furnish and install Topsoil including all costs associated with preparing the Topsoil for installation, for preparing the site prior to placement of the Topsoil including removal of all excess material and debris, and for all costs associated with supplying and using required soil amendments, and for furnishing all labor, tools, equipment, and materials necessary to complete the work as specified.

The unit Contract price per cubic yard for "Bark Mulch" shall be full pay for furnishing and spreading the mulch onto the existing soil.

(City Contracts, August 2018, City of Auburn GSP)

References to partial payment for plants that include plant establishment is deleted.

8-03 Irrigation Systems

8-03.1 Description

(January 2017, City of Auburn GSP)

Supplement this section with the following:

This work also consists of the replacement and/or repair of existing irrigation systems.

8-03.2 Materials

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Irrigation conduit shall be PVC pipe and be in accordance with Section 9-15.1(2) (Polyvinyl Chloride Pipe and Fittings).

8-03.3(4) Irrigation Water Service

(January 2017, City of Auburn GSP)

Delete this section and replace it with the following:

Water meter(s) will be installed at location(s) shown on the Plans in accordance with Section 7-15 (Service Connections).

8-03.3(5) Irrigation Electrical Service

(January 2017, City of Auburn GSP)

Delete this section and replace it with the following:

Electrical service and or wires will be installed at location(s) shown on the Plans in accordance with Section 8-20.3(10) (Services transformer, Intelligent Transportation System Cabinet).

8-03.3(6) Excavation

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Backfilling shall be done when pipe is not in an expanded condition due to heat or pressure. Cooling of the pipe can be accomplished by operating the system for a short time before backfilling, or by backfilling in the early part of the morning before the heat of the day.

8-03.3(7) Piping

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Due to the nature of PVC pipe and fittings, the Contractor shall exercise care in handling, loading, unloading and storing to avoid damage. The pipe and fittings shall be stored under cover and shall be transported in a vehicle with a bed long

enough to allow the length of pipe to lay flat, so as not to be subject to undue bending or concentrated external load at any point. Any pipe that has been dented or damaged shall be set aside until such damage has been cut out and the pipe is rejoined with a coupling.

8-03.3(8) Jointing

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Solvent welded joints shall be given at least 15 minutes set-up time before moving or handling. Pipe shall be partially center loaded to prevent arching and slipping. No water shall be permitted in pipe until a period of at least 10 hours has elapsed for solvent weld setting and curing.

The Contractor shall take great care to insure that the inside of the pipe is absolutely clean. Any pipe ends not being worked on shall be protected and not left open.

No PVC pipe may be threaded or connected to a threaded fitting without an adapter.

8-03.3(9)F Cross Connection Control Device Installation

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Backflow preventer assembly shall be installed at location(s) shown on the Plans.

8-03.3(9)G Electrical Wire Installation

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Splices shall be made with a dry-splice wire connector, PVC construction body and snap-lock plug with copper crimp sleeve, three flapped openings for wires and sealer packet such as Rainbird ST-03UL/PT-55 Snap-Tite, UL Wire Connectors and PT-55 Sealer System, Glendora, California or equivalent. Install per manufacturer's specifications.

8-03.3(10) Flushing and Testing

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Before pressure testing, soluble weld joints shall be given at least 24 hours curing time. Before backfilling and installation of automatic valve, all sprinkler lines with risers installed and capped shall be flushed and pressure-tested. The final test must be performed and approved under the direction and supervision of the Engineer. The location, inspection and testing provisions of these specifications shall be strictly adhered to. Any part of the sprinkler system backfilled before location, testing, or approved inspection by the Engineer, will be completely uncovered and exposed until approved for backfilling by the Engineer.

8-03.3(11) Backfill

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Trenches under roads or paved areas shall be backfilled and tamped with a mechanical tamper in successive 6 inch lifts. Paving shall be replaced to the satisfaction of the Engineer. Jacking under paved areas will be allowed with Engineer's approval.

Unless otherwise specified, trenches shall be deep enough to allow 18 inches cover over sprinkler lines and 24 inches cover over supply lines. All trenches must be straight and not have abrupt changes in grade. Bedding for irrigation lines shall be washed sand from a minimum of 3-inches below to 3-inches above all irrigation lines. Native material may be used as backfill for the remainder of the trench when not in paved areas. Rocks larger than 3-inches in diameter shall be removed from any native material used as backfill.

8-03.3(14) System Operation

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The Contractor shall perform sprinkler coverage tests to determine if coverage and operation of the system is complete and satisfactory before the sprinkler system will be accepted. If any part of the system is inadequate because of Contractor workmanship or material, repairs or replacement shall be made at Contractor expense and the test repeated until accepted by the Engineer.

(August 2016, City of Auburn GSP)

In the third paragraph, the last sentence is revised to read:

> Potable water shall not flow through the cross-connection control device to any downstream component until tested and approved for use by the City in accordance with Section 8-03.3(12) (Cross Connection Control Device Installation).

(City Contracts, August 2016, City of Auburn GSP)

Add the following new section:

8-03.4 Measurement

No measurement shall be made for "Automatic Irrigation System Complete".

Measurement for "Double Check Valve Assembly" shall be per each double check valve assembly completed.

8-03.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Delete this section and replace it with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Automatic Irrigation System Complete", Per Lump Sum

"Double Check Valve Assembly", Per Each

The lump sum contract price for "Automatic Irrigation System Complete" shall be full pay for the construction of the complete irrigation system, modifying existing systems, or

both, as shown in the Plans and herein specified, including excavation, backfilling, concrete foundations, piping, sprinkler heads, conduit, wiring, restoring facilities destroyed or damaged during construction, salvaging existing materials, and for making all required tests. All additional materials and labor, not shown in the Plans or called for herein and which are required to complete the irrigation system shall be included in the lump sum price. Payment for required irrigation water service connections will be paid separately as identified in Section 7-09.5 of these Special Provisions.

Payment for "Double Check Valve Assembly" shall be full pay for furnishing all material and equipment, installation, permitting, and testing, required for a double check valve assembly. Payment for the water service line, where applicable, shall be separate.

8-04 Curbs, Gutters and Spillways

8-04.3 Construction Requirements

8-04.3(1) Cement Concrete Curbs, Gutters, and Spillways

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Reinforcing shall be constructed at catch basins in accordance with the applicable Standard Detail(s).

When slip-form equipment is used to place the curb and gutter, the concrete mix design may be modified as follows: The Grade No. 2 coarse aggregate (1½ inch minus) may be replaced by Grade No. 5 coarse aggregate (1 inch minus) when required to accommodate the equipment.

(August 2016, City of Auburn GSP)

The fourth paragraph is replaced with the following:

Joints in the curb and gutter shall be spaced to match joints in the abutting driveways and sidewalks or cement concrete pavement. All expansion/through joints shall extend entirely through the curb and gutter section. Maximum joint spacing shall be as follows:

A. ¾ inch expansion/through joints at 20-foot maximum spacing, or 3/8-inch expansion/through joints at 10-foot maximum spacing;

B. 1/8 inch x 1 inch deep saw cut or scored joints per Standard Specification 8-04.3(1) (Cement Concrete Curbs, Gutters, and Spillways) at intervening 10-foot maximum spacing.

8-04.3(1)A Extruded Cement Concrete Curb

(January 2017, City of Auburn GSP)

Supplement this section with the following:

"Extruded Cement Concrete Curb" shall be type 6 as detailed in the applicable Standard Plan.

8-04.4 Measurement

(City Contracts, August 2016, City of Auburn GSP)

References to measurement of curb and gutter in this section shall be revised as follows:

Measurement for "Cement Concrete Traffic Curb and Gutter" will not include cement concrete curb and gutter which will be reinforced and poured integral with an Industrial or Commercial Driveway Apron slab.

8-04.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

Payment will be made in accordance with Section 1-04.1 (Intent of the Contract) for the following bid items:

"Bumper Curb", Per Each

The unit contract price per each for 'Bumper Curb' shall be full pay for all labor, materials, and equipment necessary to furnish and install each bumper curb.

(City Contracts, September 2020, City of Auburn GSP)

Supplement this section with the following:

"Cement Conc. Pedestrian Curb – Variable Height", per linear foot.

The unit contract price per each for "Cement Conc. Pedestrian Curb – Variable Height" shall be full payment for all costs to construct the varying height curb as shown in the Plans or as staked by the Engineer.

8-05 VACANT

This section, including title, is replaced with the following including subsections:

(August 2016, City of Auburn GSP)

This section, including title, is replaced with the following including subsections:

8-05 Dewatering System

8-05.1 General

(February 2023, City of Auburn GSP)

When dewatering trenches requires a dewatering system the Contractor shall design and provide a dewatering system using accepted and professional methods consistent with current industry practice to eliminate water entering the excavation under hydrostatic head from the bottom and/or sides. The Contractor shall design the system to prevent differential hydrostatic head that would result in floating out soil particles in a manner termed as a "quick" or "boiling" condition. The system shall not be dependent solely upon sumps or pumping water from within the excavation where differential head would result in a quick condition, which would continue to worsen the integrity of the excavation's stability.

Where the Engineer determines that the Contractor cannot sufficiently dewater the trench using the "Normal Trench Dewatering" described in Section 7-08.3(2)L (Dewatering

Trenches) of these Special Provisions, the Contractor shall provide a dewatering system of sufficient size and capacity to prevent ground and surface water flow into the excavation and to allow all work to be installed in a dry condition.

The Contractor shall control, by acceptable means, all water regardless of source and be fully responsible for disposal of the water.

The Contractor shall confine discharge piping and/or ditches to available easements or to additional easements obtained by Contractor and provide necessary permits and/or additional easements at no additional cost to the City.

The Contractor shall control groundwater in a manner that preserves strength of foundation soils, does not cause instability or raveling of excavation slopes, and does not result in damage to existing structures. Where necessary to these purposes, the Contractor shall lower water levels in advance of excavation, utilizing wells, well points, jet educators, or similar positive methods. The water level as measured by piezometers shall be maintained a minimum of 2 feet below prevailing excavation level.

The Contractor shall commence dewatering prior to any appearance of water in excavation and continue until work is complete to the extent that no damage results from hydrostatic pressure, flotation, or other causes.

Open pumping with sumps and ditches shall be allowed, provided it does not result in boils, loss of fines, softening of the ground, or instability of slopes.

The Contractor shall install wells and/or well points, if required, with suitable screens and filters, so that continuous pumping of fines does not occur, arrange discharge to facilitate collection of samples by the City. During normal pumping, and upon development of well(s), levels of fine sand or silt in the discharge water shall not exceed 5 ppm. The Contractor shall install sand tester on discharge of each pump during testing to verify that levels are not exceeded.

The Contractor shall control grading around excavations to prevent surface water from flowing into excavation areas.

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with the following:

No additional payment will be made for any supplemental measures to control seepage, groundwater, or artesian head.

8-05.1(1) Design

(August 2016, City of Auburn GSP)

Contractor shall designate and obtain the services of a qualified dewatering specialist to provide a dewatering plan as may be necessary to complete the work.

Contractor shall be responsible for the accuracy of the drawings, design data, and operational records required.

Contractor shall be solely responsible for the design, installation, operation, maintenance, and any failure of any component of the system.

8-05.1(1)A Dewatering Discharge

(January 2018, City of Auburn GSP)

Discharge Limits

1. Turbidity – less than 5 NTUs above background
2. Sand Content – less than 10 ppm
3. pH between 6.5 and 8.5
4. No visible sheen in the stormwater discharge or in the receiving water

Contractor shall conduct Daily Monitoring and provide records of:

PH

TSS (NTU)

Volume Discharged (gpd)

Water levels in monitoring wells

Sand content (first 5 days after startup)

Contractor shall conduct Weekly Monitoring and provide records of:

Sand Content

Sampling and Analysis

Preliminary testing of dewatering discharge will be conducted by the Contractor during the initial dewatering activities prior to discharging water to the City's stormwater system. Contractor shall use the preliminary water testing results to evaluate what treatment components, if any, will need to be added to the dewatering system. During initial dewatering activities, water will be pumped into a series of storage containers. Water will be sampled from the last tank in the series and analyzed for the constituents specified in the table above.

Contractor shall provide monitoring records to the City on a daily basis.

The total flow quantified by the flow totalizer and water levels in monitoring wells will be recorded on the daily contractor logs and at the time effluent water samples are collected. The total flow measurements will be included in the effluent sampling summary reports.

8-05.1(1)B Temporary Dewatering Plan

(May 2017, City of Auburn GSP)

The Contractor shall submit a Temporary Dewatering Plan to the Engineer for review per Section 9-38 (Submittal Approval). The Temporary Dewatering Plan shall be prepared by a Professional Engineer or Hydrogeologist who is licensed to practice in the State of Washington, and who has a minimum of five years of experience in the design of dewatering systems for similar projects.

The Temporary Dewatering Plan shall include:

- A narrative of the Contractor's proposed dewatering system methodology,
- Working drawings showing system layout and components including number and location of dewatering wells, wellpoints, and/or eductors with a well numbering system,
- Design calculations demonstrating system and equipment adequacy,
- Specifications of proposed materials and equipment, including pump curves,
- Pumps and sumps for removal of incidental seepage, perched groundwater, etc.

- Provision for the settlement and removal of sediments prior to discharge (e.g., settling tanks),
- Number and location of temporary monitoring wells to be installed (Note that one monitoring well is present on-site. However, this well will be impacted during construction activities and therefore cannot be used as one of the temporary monitoring wells used during dewatering efforts.),
- Dewatering schedule, including mobilization, installation, development, testing, water quality analysis, start-up, monitoring, operation, shutdown, decommissioning, clean-up, and removal,
- Describe how groundwater will be treated to meet the applicable discharge limits, and
- Proposed plans of operation.

Any changes to the proposed system shall be submitted to the Engineer for review prior to implementation.

In addition to the Temporary Dewatering Plan, the submittal shall include:

- A Contingency Plan for storm events or other conditions (including failure of the dewatering system) that could raise groundwater levels and overwhelm the capacity of the dewatering system pumps or discharge facilities. In the Contingency Plan, the Contractor should:
    - Make provision to suspend dewatering operations for anticipated events (e.g., storms) and unanticipated events that may occur prior to excavation work and that would require dewatering.
    - Provide methods to secure such items as the excavation, shoring, side slopes, equipment, dewatering system components, base of excavation, and any installed facilities from the adverse effects of elevated groundwater levels.
    - A Water Quality Sampling Plan

The Engineer's review of the Temporary Dewatering Plan shall not constitute approval nor relieve the Contractor from full responsibility for errors therein nor from the entire responsibility for complete and adequate groundwater level control and volume removal in the excavated areas; formation protection; and protection of existing and proposed structures to the extent specified herein. The Contractor shall be solely responsible for control of the groundwater levels and hydrostatic pressures to the depths herein specified and for avoiding settlement outside the excavation as herein specified. The Contractor shall bear sole responsibility for proper design, installation, operation, maintenance, and any failure of any component of the temporary dewatering system for the duration of the Contract.

8-05.2 Vacant

8-05.3 Construction Requirements

8-05.3(1) Damages

(August 2016, City of Auburn GSP)

Contractor shall be responsible for and shall repair without cost to the City, any damage to work in place, or other contractor's equipment, utilities, residences, highways, roads, railroads, private and municipal well systems, adjacent structures, natural resources,

habitat, existing wells, and the excavation, including, damage to the bottom due to heave and including but not limited to, removal and pumping out of the excavated area that may result from Contractor's negligence, inadequate or improper design and operation of the dewatering system, and any mechanical or electrical failure of the dewatering system.

The Contractor shall remove subgrade materials rendered unsuitable by excessive wetting and replace with approved backfill material at no additional cost to the Owner.

8-05.3(2) Settlement Monitoring Program

(January 2018, City of Auburn GSP)

Contractor shall develop and submit to the City a Settlement Monitoring Program for review and approval prior to beginning dewatering per Section 9-38 (Submittal Approval).

Contractor shall establish a settlement monitoring program and perform all survey and inspections necessary for monitoring existing site features. All surveys shall be performed under the direction of a licensed land surveyor. Vertical and horizontal measurements shall be accurate to 0.01 feet or smaller.

Contractor shall set survey monuments on permanent structures, the roadway, and utilities. The survey monuments may consist of PK nails with a washer with an identification number. Contractor shall record the identification number, elevation, and coordinate location prior to initiating dewatering, and submit the baseline information to the Engineer. The method of installing survey monuments, and the locations and number of survey monuments shall be as approved by the Engineer. The Engineer shall be notified a minimum of one day prior to setting survey monumentation. The initial survey to record the monuments baseline horizontal and vertical location shall be completed by conducting three separate level loops for each monument. Each loop shall be run so that they start and stop at a different location each time. The intent of running multiple level loops on each monument is to catch potential survey errors.

Contractor shall perform an initial survey prior to commencement of the Work, daily for the first 5 days after the dewatering system is started up, subsequently two days per week when the dewatering system is active, and one day per week for a month after the dewatering system is turned off. If pumping or dewatering of excavations are interrupted or cannot be adequately maintained, the survey monuments and targets shall be checked a minimum of once every 24 hours for as long as the conditions exist.

Contractor shall immediately notify the Engineer of any cumulative change in elevation or location of any monument or target in excess of 1/4 inch. If the cumulative change in elevation or location exceeds 1/2 inch, the Contractor shall immediately notify the Engineer and resolve the problem using methods defined in the Contingency Plan or other reasonable methods.

The Contractor shall maintain in a log the survey data taken for each monument or target. A copy shall be sent to the Engineer after each addition of data.

Contingency Plan

Contractor shall prepare a Contingency Plan to mitigate the effects of excessive settlement or movement of existing Site features. The Contingency Plan is not to restrict the Contractor from using the best construction methods available to meet the conditions but is required to demonstrate a reasonable preparedness to mitigate the effects of excessive movement or settlement. The following are minimum requirements for a Contingency Plan:

1. The Contingency Plan shall outline steps to be taken to protect structures, buildings, and utilities and to stop excessive movement or settlement identified by the settlement monitoring program.
2. Contractor shall have all material, manpower, equipment, and other items identified in the Contingency Plan available at all times while excavations are ongoing or excavated areas are open."

8-05.3(3) Maintaining Excavation in Dewatering Condition

(August 2016, City of Auburn GSP)

Dewatering shall be a continuous operation. Interruptions due to power outages or any other reason will not be permitted.

The Contractor shall continuously maintain excavation in a dry condition with positive dewatering methods during preparation of subgrade, installation of pipe, and construction of structures until the critical period of construction and/or backfill is completed to prevent damage of subgrade support, piping, structure, side slopes, or adjacent facilities from flotation or other hydrostatic pressure imbalance.

The Contractor shall provide standby equipment on site, installed, wired, and available for immediate operation if required to maintain dewatering on a continuous basis in the event any part of the system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, perform such work as may be required to restore damaged structures and foundation soils at no additional cost to City.

System maintenance shall include but not be limited to 24-hour supervision by personnel skilled in the operation, maintenance, and replacement of system components and any other work required to maintain excavation in dewatered condition.

8-05.3(4) System Removal

(August 2016, City of Auburn GSP)

The Contractor shall abandon and remove from the site, in accordance with WAC Chapter 173-160 and RCW Chapter 18.104, all groundwater control and monitoring system elements. The Contractor shall be, or employ the services of, a water well contractor licensed in the State of Washington to abandon all wells, and/or well points. The Contractor shall assume ownership and responsibility for the disposal of all removed groundwater control pumps, pipes, and other assorted system hardware.

The Contractor shall abandon and remove the groundwater control and monitoring systems in such a manner that groundwater does not flow or seep through groundwater control or monitoring system penetrations into any structure or facility. Wells decommissioned within roadways shall be capped beneath the roadway base course with at least 24-inches of class 3000 concrete. Beneath the concrete cap, the Contractor may utilize bentonite to fill the well per Department of Ecology requirements.

8-05.4 Measurement

(City Contracts, August 2016, City of Auburn GSP)

"Dewatering System" will be measured per linear foot along the construction centerline. Only sections approved for dewatering by the Engineer will be included in the

measurements. Pipe lengths installed using "Normal Dewatering Methods," or installed using the dewatering system without approval from the Engineer will not be included in the measurement for "Dewatering System."

"Normal Trench Dewatering" as described in Section 7-08.3(2)L (Dewatering Trenches) will not be measured for payment, but instead will be included in the per linear foot price of the utility being installed.

8-05.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Payment will be made for each of the following Bid items that are included in the Proposal:

"Dewatering System", Per Linear Foot

The unit bid price in the Proposal for "Dewatering System", per linear foot shall be full compensation for the costs of all labor, tools, equipment, and materials necessary or incidental to design, install, operate, maintain, and remove a complete dewatering system. This Bid item shall also include, but not be limited to, dewatering handling, preliminary testing prior to discharge, storage, permitting, daily monitoring, weekly monitoring, and disposal of clean groundwater and sediment. Providing, installing, operating, and maintaining settling tank(s), or other equipment necessary to meet the discharge requirements, shall be included in this lump sum cost and shall not be measured for separate payment.

The unit price shall also include all costs to continuously operate the dewatering system, all power costs and connections, permits, pumps, wells, pipes, fittings, and appurtenances.

All costs for design of dewatering systems and preparation and implementation of the Temporary Dewatering Plan (including the Contingency Plan, Water Quality Sampling Plan, and Settlement Monitoring Program, including Contingency Plan) shall be included in the dewatering lump sum cost and shall not be measured for separate payment.

Dewatering" shall only be paid for when a dedicated system using well points is used for dewatering. All "normal trench dewatering" work, as defined in Section 7-08.3(2)L, will be incidental to and included in the unit cost for the pipe, structure, etc. being installed.

Restoration of property damaged due to dewatering or settlement caused by the dewatering system shall be the Contractor's responsibility.

8-06 Cement Concrete Driveway Entrances

8-06.1 Description

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Driveway approaches shall be considered to be that portion of the private driveways, which require removal and replacement to transition between the new cement concrete driveway aprons and the existing private driveway. "Cement Concrete Driveway Approaches" shall be constructed and finished as specified for driveways, except they shall be 4-inch thick slabs and not reinforced.

8-06.2 Materials

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Materials shall meet the requirements of the following sections:

Wire Mesh (Welded Wire Fabric)	9-07.7
Concrete Curing Materials and Admixtures	9-23

8-06.3 Construction Requirements

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Concrete driveways shall be cured per methods described in Section 5-05.3(13) (Curing), with the following exceptions if the curing compound method is used:

- The Contractor shall use Type I clear curing compound per Section 9-23 (Concrete Curing Materials and Admixtures).
- The Contractor shall not use white pigmented curing compound.
- The curing agent shall be applied immediately after brushing and be maintained for a period of 5 calendar days.

The Contractor shall have readily available sufficient protective covering, such as waterproof paper or plastic membrane, to cover the pour of an entire day in event of rain or other unsuitable weather.

Additional requirements for curing in hot weather shall be as follows:

In periods of low humidity, drying winds, or high temperatures, a fog spray shall be applied to concrete after placement as soon as conditions warrant to prevent the formation of shrinkage cracks. The spray shall be continued until conditions permit the application of liquid curing membrane or other curing media.

Additional requirements for curing in cold weather shall be as outlined in Section 5-05.3(14) (Cold Weather Work).

8-06.4 Measurement

(City Contracts, February 2024, City of Auburn GSP)

Supplement this section with the following:

Measurement for “Cement Concrete Driveway Approach” will be by the square yard of finished surface, excluding area measured as driveway apron.

Measurement for “Residential Driveway Apron” will be by the square yard of finished surface, excluding the cement concrete curb and gutter area.

Measurement for “Industrial or Commercial Driveway Apron” will be by the square yard of finished surface including the cement concrete curb and gutter which will be reinforced and poured integral with the driveway apron slab.

8-06.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Residential Driveway Apron", Per Square Yard

"Industrial or Commercial Driveway Apron", Per Square Yard

"Cement Concrete Driveway Approach", Per Square Yard

The unit contract price per square yard for "Residential Driveway Apron" shall be full pay for all work to complete the installation including subgrade preparation, thickened edges, and wings.

The unit contract price per square yard for "Industrial or Commercial Driveway Apron" shall be full pay for all work to complete the installation including subgrade preparation and integrated cement concrete curb and gutter.

Payment for "Cement Concrete Driveway Approach" shall be full pay for all costs to construct the approach.

Payment for cement concrete curb and gutter will be in accordance with the provisions of Section 8-04 (Curbs, Gutters, and Spillways), except for locations where the curb and gutter is integral with the Industrial and Commercial Driveway Apron.

Payment for water will be in accordance with the provisions of Section 2-07 (Watering).

8-07 Precast Traffic Curb

8-07.2 Materials

(February 2024, City of Auburn GSP)

Supplement this section with the following:

Materials shall meet the requirements of the following sections:

Epoxy Adhesive for Curb	9-26.2
Glass Beads	9-34.4
Raised Pavement Markers	9-21.2
Adhesive for RPMs	9-02.1(8)
36" Delineators	9-17 and COA Std Detail T-32
Adhesive for Delineators	9-02.1(8)

8-07.3 Construction Requirements

8-07.3(16) Installing Curbs

(January 2017, City of Auburn GSP)

Delete the first paragraph and replace it with the following:

The curb shall be installed in accordance with the applicable City of Auburn Standard Detail.

The second sentence is revised to read:

Before the epoxy adhesive is applied, all dirt shall be cleaned from the pavement surface by washing.

The fourth paragraph is revised to read:

All joints between adjacent pieces of curb except joints for expansion and/or drainage shall be filled with epoxy.

8-07.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Delete this section and replace it with the following:

Precast curb shall be measured along the length of the precast curb system installed, from delineator to delineator, without deduction for gaps.

8-07.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

Payment will be made in accordance with Section 1-04.1 (Intent of the Contract) for the following bid items:

"Precast Curb with Delineators", Per Linear Foot

The unit contract price per linear foot for 'Precast Curb with Delineators' shall include all costs to furnish and construct the mountable curb system, including, raised pavement markers, epoxy, and delineators.

8-09 Raised Pavement Markers

8-09.3 Construction Requirements

8-09.3(2) Surface Preparation

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The Contractor shall pre-mark the layout of all channelization and receive approval from the Engineer before installing "Raised Pavement Markers" (RPM's). Pre-marks shall consist of painted spot markings or other approved methods. The Contractor shall request the Engineer's approval of the pre-mark for channelization at least 2 full working days prior to installation of the RPMs.

(August 2016, City of Auburn GSP)

Add the following new section:

8-09.3(8) Remove Raised Pavement Markings

All raised pavement markings shall be removed before placing a new asphalt concrete pavement overlay. Removal of markers shall be conducted in a manner that prevents damage to existing pavement. Damage to the existing pavement caused by Contractor's negligence shall be repaired by the Contractor at the Contractor's expense. Repairs shall be to the satisfaction of the Engineer.

8-09.4 Measurement

(City Contracts, April 2019, City of Auburn GSP)

Raised Pavement Markers will be measured by the unit for each marker furnished and installed.

8-09.5 Payment

(City Contracts, February 2020, City of Auburn GSP)

Supplement this section with the following:

Payment will be made in accordance with Section 1-04.1 (Intent of the Contract) for the following bid items:

"Remove Raised Pavement Markers", Per Each

"Raised Pavement Markers", Per Each

(City Contracts, September 2016, City of Auburn GSP)

References to payment for Raised Pavement Markers are revised to the following:

The unit contract price per each for "Raised Pavement Markers Type __" shall be full pay for furnishing and installing the markers in accordance with these specifications including all cost involved with traffic control except for reimbursement for labor for traffic control in accordance with Section 1-10 (Temporary Traffic Control).

The unit contract price per each for "Remove Raised Pavement Markers" shall be full pay to remove each pavement marker.

8-12 Chain Link and Wire Fence

8-12.2 Materials

(July 2023, City of Auburn GSP)

Supplement this section with the following:

Coated Chain Link Fence

Chain link fence fabric shall be hot-dip galvanized with a minimum of 0.8 ounce per square foot of surface area.

Fencing materials shall be coated with an ultraviolet-insensitive plastic or other inert material at least 2 mils in thickness. Any pretreatment or coating shall be applied in accordance with the manufacturer's written instructions. The Contractor shall provide the Engineer with the manufacturer's written specifications detailing the product and method of fabrication. All components of the fence shall be black.

8-12.4 Measurement

(City Contracts, July 2023, City of Auburn GSP)

Supplement this section with the following:

Coated chain link fence will be measured by the linear foot of completed fence along the ground line. No separate measurement will be made for coated chain link fence end, corner, or pull posts.

8-12.5 Payment

(City Contracts, July 2023, City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

Coated Chain Link Fence Type _____, per linear foot.

Payment for "Coated Chain Link Fence Type ___" shall include all costs to furnish and install end, corner, and pull posts as required to construct the fence. No separate measurement or payment will be made for the different types of posts.

8-13 Monument Cases

8-13.1 Description

(January 2017, City of Auburn GSP)

Supplement this section with the following:

This work consists of constructing, or adjusting, monuments, to proper grade, and the furnishing and placing of materials and other related work for monuments.

8-13.2 Materials

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Monument cases and covers shall be in accordance with the applicable City of Auburn Standard Details. Concrete used for setting the monuments shall be Class 3000. Bronze plug markers will be furnished by the City and provided to the Contractor.

8-13.3 Construction Requirements

(January 2018, City of Auburn GSP)

The second sentence of the second paragraph is revised to read:

After the monument or monument case has been in place for a minimum of 3 calendar days, the roadway surface shall be patched in a workman like manner with Class ½ inch asphalt concrete pavement.

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The bronze plug marker shall be inserted in the concrete mix to the required line and grade. The concrete base shall be placed on a well-compacted foundation. When Type B

monuments are installed, the monument case shall be placed in such a manner that will not disturb the bronze plug markers.

Where called for on the Plans, the Contractor shall adjust existing monuments to the grade as staked. The existing cast iron case and cover shall first be removed and thoroughly cleaned for reinstalling at the new grade.

(August 2016, City of Auburn GSP)

Add the following new section:

8-13.3(3) Reference Points

(August 2016, City of Auburn GSP)

The Engineer shall reference all monuments in advance of construction and shall reset the points and grades at the proper time.

It shall be the responsibility of the Contractor to furnish materials and install required castings in accordance with the Plans. The Contractor shall carefully protect all reference points to the monuments and shall give the Engineer reasonable notice of the schedule for monument work in order to avoid destruction of the points.

8-13.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Supplement this section with the following:

Monument adjustment shall be measured by each monument adjusted to final grade.

8-13.5 Payment

(City Contracts, December 2020, City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Monument Type A (Modified)", Per Each

"Monument Type B (Modified)", Per Each

"Adjust Existing Monument", Per Each

Payment for "Monument Type B (Modified)" shall be full pay for the materials, labor, survey work, recording, adjustments to finish grade (including asphalt concrete patches), and other costs to install each monument.

Payment for "Adjust Existing Monument" shall be full pay for the materials, labor, survey work, recording, asphalt concrete patches, and other costs to adjust each monument to final grade.

8-14 Cement Concrete Sidewalks

8-14.1 Description

(January 2017, City of Auburn GSP)

Delete this section and replace it with the following:

This work shall consist of construction of cement concrete sidewalks, including curb ramps with detectable warning strips.

8-14.3 Construction Requirements

8-14.3(1) Excavation

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Excavation for sidewalk and for curb ramps shall be in accordance with Section 2-03, (Roadway Excavation and Embankment).

Embankments shall be compacted by Method B as specified in Section 2-03.3(14)C (Compacting Earth Embankments). Approved tampers shall be used in areas inaccessible to normal compaction equipment.

The subgrade shall be graded to within 1 inch of established grade and the area between the sidewalk and the adjacent private property line shall be shaped to line, grade, and section shown on the Plans before the forms are set.

8-14.3(2) Forms

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Low areas in the subgrade shall be backfilled and compacted to the satisfaction of the Engineer. All high areas in the subgrade shall be cut down to meet the subgrade requirements.

8-14.3(3) Placing and Finishing Concrete

(February 2023, City of Auburn GSP)

The fourth paragraph is revised to read:

Curb Ramps shall be constructed in accordance with the Plans. If any slope exceeds a maximum slope specified on the Standard Plans or Contract Plans or if any dimension is less than a minimum dimension specified on the Standard Plans or Contract Plans, the Contractor shall replace the curb ramp or a portion of the curb ramp as necessary and approved by the Engineer to bring the curb ramp into compliance. This work will be at the Contractor's cost.

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Expansion and contraction (dummy) joints shall be located and constructed in accordance with the Standard Details.

Expansion joints shall be formed by first cutting a groove in the concrete with a tee bar of a depth equal to, but not greater than the joint filler material, and then working the pre-molded joint filler into the groove. Pre-molded joint filler used for expansion joints shall be normal to and flush with the surface of the sidewalk. All joints, expansion and dummy, shall be positioned in true alignment at right angles to the line of the sidewalk.

Where the sidewalk abuts a curb, or curb and gutter, the sidewalk shall be constructed with a thickened edge.

Joints and the sidewalk perimeter shall be edged with a 3/8 inch to 1/2 inch radius edger.

The surface of the sidewalks shall be brushed with a fiber hair brush of an approved type in a transverse direction except that at driveway and alley crossings it shall be brushed longitudinally.

(August 2016, City of Auburn GSP)

Add the following new section:

8-14.3(3)A Special Sidewalk

(August 2016, City of Auburn GSP)

(Downtown Sidewalk – 2x2 Scoring)

The “Special 2x2 Scored Cement Concrete Sidewalk” shall be concrete with 2 ft. x 2 ft. scoring pattern with a light broom finish.

(Downtown Street Corner Sidewalk - Brick)

The “Special Brick Sidewalk” at street corners as specified on the Plans shall be constructed of brick pavers in a rectangular pattern. The patterns shall extend from the back of curb to the building face or property line and minimum of 10 feet in either direction from the corner of the property lines. The brick pavers shall be Mutual Materials “Holland” 8cm, or approved equivalent and the color shall be per Plans.

8-14.3(4) Curing

(January 2017, City of Auburn GSP)

Delete this section and replace it with the following:

Concrete sidewalks shall be cured per methods described in Section 5-05.3(13) (Curing), with the following exceptions if the curing compound method is used:

- The Contractor shall use Type I clear curing compound per Section 9-23 (Concrete Curing Materials and Admixtures).
- The Contractor shall not use white pigmented curing compound.
- The curing agent shall be applied immediately after brushing and be maintained for a period of 5 calendar days.

The Contractor shall have readily available sufficient protective covering, such as waterproof paper or plastic membrane, to cover the pour of an entire day in event of rain or other unsuitable weather.

Additional requirements for curing in hot weather shall be as follows:

In periods of low humidity, drying winds, or high temperatures, a fog spray shall be applied to concrete after placement as soon as conditions warrant to

prevent the formation of shrinkage cracks. The spray shall be continued until conditions permit the application of liquid curing membrane or other curing media.

Additional requirements for curing in cold weather shall be as outlined in Section 5-05.3(14) (Cold Weather Work).

8-14.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Supplement this section with the following:

"Sidewalk Ramp Detectable Warning Retrofit," will be measured by the square foot of truncated dome material installed on the existing ramp.

8-14.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Special 2x2 Scored Cement Concrete Sidewalk", Per Square Yard

"Special Brick Sidewalk", Per Square Yard

"Sidewalk Ramp Detectable Warning Retrofit", Per Square Foot

The unit contract price per square yard for "Cement Concrete Sidewalk", "Special 2x2 Scored Cement Concrete Sidewalk", and "Special Brick Sidewalk" shall be full pay for all work to complete the installation including subgrade preparation and thickened edges where identified.

The unit contract price per square yard for "Sidewalk Ramp Detectable Warning Retrofit" shall be full pay for complete installation of the detectable warning patterns including all preparation of the existing sidewalk, labor, equipment and materials.

8-18 Mailbox Supports

8-18.2 Materials

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Anchor Bolts, Nuts, and Washers for the Neighborhood Delivery and Collection Box Unit shall be in accordance with Section 9-06.5 (Bolts) and Section 9-06.22 (Bolts, Washers, and Other Hardware).

8-18.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Supplement this section with the following:

Relocation of mailboxes shall be measured per each unit or cluster of mailboxes relocated.

8-18.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Relocate Type III Mailbox Support w/ boxes", Per Each

"Relocate Type IV N.D.C.B.U. (mailboxes)", Per Each

The unit contract price per each for relocating mailboxes shall be full payment to remove and re-install existing mailbox group, including all new materials necessary to install the support.

8-20 Illumination, Traffic Signal Systems, Intelligent Transportation Systems, and Electrical

8-20.1 Description

8-20.1(1) Regulations and Code

(April 2018, City of Auburn GSP)

The fourth paragraph is revised to read:

Safe-wiring labels required by Labor and Industries shall apply on this project.

8-20.1(3) Permitting and Inspections

(April 2018, City of Auburn GSP)

Supplement this section with the following:

The Contractor shall obtain electrical permit(s) from Washington State Department of Labor and Industries. Electrical Service inspection(s) will be performed by Labor and Industries. Obtaining the permit, requesting inspections, making corrections, and securing L&I approval is the responsibility of the Contractor.

8-20.2(1) Equipment List and Drawings

(January 2017, City of Auburn GSP)

Delete this section and replace it with the following:

Supplemental data for pole equipment, luminaries, splice kits, vehicle signal heads, pedestrian signal heads, pedestrian push button assemblies, video detectors, PTZ camera(s), junction boxes, conduit, conduit fittings, wiring, service/battery back-up cabinet,

controller cabinet (including controller and all other associated equipment in the cabinet), preemption detectors and discriminators, and all other electrical materials to be used on this project shall be submitted for approval before being incorporated into the work. Quantity, pole height, davit arm length, and mast arm length shall be indicated and consistent with the Plans.

The Contractor shall submit supplemental data and material shop drawings for all structural items. The shop drawings and structural calculations shall clearly identify the type of equipment to be used and shall be stamped by a registered professional engineer registered. Shop drawings shall conform to the contract Plans.

All material to be reviewed for the signal system shall be submitted in a single package.

The City of Auburn reserves the right to inspect the manufacturing process of all materials. Final inspection and acceptance of the installed materials will not be given until final installation and testing has been completed on the system. Approval to install materials and equipment must be obtained from the Engineer at the job site, before installation.

8-20.3 Construction Requirements

(December 2020, City of Auburn GSP)

Add the following new section:

8-20.3(1)D Order of Work

Except as specifically allowed in Section 8-20.3(1) (General), each element of existing signal, illumination, communication and ITS systems shall remain in operation until modified systems to replace such are operational and accepted by the Contracting Agency. This includes, but is not limited to temporary vehicle detection which shall be provided by the Contractor during construction to replace the function of existing vehicle detection systems prior to any project work that adversely impacts the function of existing detection systems. Temporary vehicle detection equipment shall be compatible with City signal cabinet and installation shall be coordinated with City traffic signal technicians. Contractor shall be responsible for ensuring temporary vehicle detection systems function properly at all times while in use.

All existing illumination and traffic signal display and detection system equipment shall remain operational until the corresponding new equipment is constructed, tested, operational and accepted by the Engineer. Temporary video detection equipment shall be fully operational and accepted by the Engineer as a substitute for the function of any existing induction loop or video detection prior to any construction activities that render such existing traffic detection ineffective. Temporary video detection systems shall be in accordance with Section 8-20.3(14)I (Video Detection System) of these specifications.

8-20.3(4) Foundations

(December 2021 City of Auburn GSP)

Supplement this section with the following:

Before placing the concrete, the Contractor shall block out around any other underground utilities that may lie in the excavated base to prevent foundation adherence to

the utility line. Concrete foundations shall be troweled, brushed, and edged. Exposed anchor bolts and conduits shall be promptly cleaned of any concrete after installation.

Where no sidewalk is planned or exists, the top of the foundation shall be a minimum of 12 inches above roadway centerline, unless otherwise noted on the Plans.

The joint between traffic signal cabinet and its foundation shall be sealed using a clear, waterproof, silicone caulk.

8-20.3(5) Conduit

8-20.3(5)A General

(April 2018, City of Auburn GSP)

Supplement this section with the following:

Unless specified on the Plans, metal conduit shall not be used.

Location wire placed for conduit containing, or that are to contain, fiber optic cable shall be 12 AWG.

Conduit shall be in accordance with all provisions of Section 9-29.1 (Conduit, Innerduct, and Outerduct).

Conduit runs installed entirely under sidewalk, driveways, and landscape areas may be Schedule 40 PVC unless otherwise noted on the Plans. The same type and schedule of conduit shall be used for the entire length of the run from outlet to outlet and from Schedule 80 PVC conduit crossing the roadway to the nearest junction box. Bends for conduits serving existing or future interconnect and fiber optic cables shall be no less than 4 feet in diameter. All conduit ends shall have bell end PVC bushings.

Stubouts shall be installed as shown on the Plans.

A pull tape shall be installed in all spare conduits for future conductors. The pull tape shall have printed sequential measurement markings at least every 3 feet. At least 2 feet of pull tape shall be doubled back into the conduit at each termination. Conduits without conductors (spare conduits) shall be plugged on both ends with mechanical plugs. Locate wire shall be installed in all empty or spare conduits, not in joint trench with conductors.

Loop stubouts that are installed before the final lift of pavement shall be surrounded with a 6 inch PVC sleeve. This sleeve shall be extended below the top of the stubout and be flush with finished grade. All loop conduit shall be appropriately capped and sealed with a molded plug cap. Molded plug cap installation shall comply with manufacturer's installation and recommendations. With the exception of connections to HDPE conduit, joints shall be connected with medium grade gray cement solvent applied per the manufacturer's recommendations. The loop wires shall pass through a hole in the cap. The end of the conduit will also be sealed with moldable duct sealing compound. Sifted sand will be used to cover all exposed loop wires before final filling with loop sealant.

All conduit shall display the Underwriter Laboratories certification (UL Listed).

8-20.3(6) Junction Boxes, Cable Vaults, and Pull Boxes

(April 2018, City of Auburn GSP)

Supplement this section with the following:

All lids shall open away from the traveled way. Prior to construction of finished grade, if cable vaults are installed or adjusted, pre-molded joint filler for expansion joints may be placed around the cable vaults. The joint filler shall be removed prior to adjustment to finished grade.

Junction boxes shall conform with all provisions of Section 9-29.2 (Junctions Boxes, Cable Vaults, and Pull Boxes). Junction Boxes shall be of the types indicated on the Plans. All Junction Boxes shall have slip-resistant surfaces, locking lids, and be equipped with Penta Head tamper resistant bolts as specified and detailed in the Plans.

6 inches of washed drain rock shall be placed inside the junction box and be spread evenly around all conduits.

All three-way service connections leading to luminaires, including street crossings and service cabinet junction boxes shall be made with a SEC Model 1791-DP or approved equivalent.

Box and vault lids shall be inscribed with a welded bead message with each letter being 4 inches tall and 3 inches wide as follows:

"LT" if used exclusively for lighting

"TS" if used exclusively for Traffic Signals

"TS" "LT" if jointly used for lighting and traffic signals

"COA COMM" if used for City of Auburn communications and/or for traffic signal interconnect.

The lids and frames shall be hot dipped galvanized after the welded bead legend is installed.

8-20.3(8) Wiring

(January 2017, City of Auburn GSP)

Supplement this section with the following:

All cable entering cabinets shall be neatly bundled and wrapped.

The Contractor shall pull out and dispose of wire for the existing illumination system that is no longer needed. All costs for removal and disposal of wire shall be included in the unit contract price for "Illumination System Complete".

8-20.3(9) Bonding, Grounding

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The Contractor shall provide junction boxes or other Engineer approved cover over all grounding rods.

All junction boxes containing conductors carrying 120 volts or higher will have the lid and frame bonded to the system ground. The connections to the lid and frame will be made with approved compression type ring terminals. The braid will be of sufficient length so that the lid may be easily removed and placed next to the junction box. It will be routed around all cables so that it does not pass thorough any cable loops. In the case of Type 8 junction boxes, both lids shall be bonded.

When loop lead-in wires or interconnect wire are the only wires in the junction box, bonding is not required.

8-20.3(10) Service, Transformer, and ITS Cabinets

(April 2018, City of Auburn GSP)

Delete this section and replace it with the following:

A three-wire electrical service shall be used at 120/240 volts. Electrical service cabinets shall be per Section 9-29.24 (Service Cabinets) and shall be installed where shown on the Plans.

Power service cabinets shall be labeled by the Contractor to meet PSE Construction meter requirements: The label shall indicate the "City of Auburn" identification, the specific use of the service, and the general site address (example: City of Auburn, Street Lighting – 123 E Main St). The label shall be a permanent engraved phenolic nameplate or die-cut adhesive label at least 1 inch high. PSE will not provide the power meter without this permanent label.

Where underground power service is not utilized, overhead electrical service shall be brought to the power service cabinet through a conduit riser with a weather head on the service pole. The service shall be split in the load center into a 120 VAC/240 VAC circuit for the traffic signal and street lighting systems.

The Contractor shall provide and install service wire and PVC conduit between the service cabinet and the point of power service location as shown in the Plans.

8-20.3(11) Testing

(August 2016, City of Auburn GSP)

The last paragraph is revised to read:

Unless otherwise approved by the Engineer, signal turn-on will only be allowed Monday through Thursday (except for holidays or the day before a holiday), between the hours of 9:00 a.m. and 2:00 p.m.

(April 2018, City of Auburn GSP)

Supplement this section with the following:

For traffic signal turn-on, City personnel will put the signal into operation. The Contractor shall be present during the turn-on with adequate equipment to repair any deficiencies of signal operation.

All newly installed signal and pedestrian heads and pedestrian pushbuttons shall be fully covered with black plastic or yellow nylon cloth that is firmly attached, until such time for the signal turn-on.

8-20.3(13) Illumination Systems

8-20.3(13)A Light Standards

(April 2018, City of Auburn GSP)

Supplement this section with the following:

The poles shall be plumb with no shims. The poles shall be plumbed on leveling nuts secured to the anchor bolts and locking nuts on top of the base flange. The side of the shaft opposite the load shall be plumbed using the leveling nuts.

The void between the foundation and the pole flange shall be no larger than 2 inches and shall be completely filled around the conduit(s) with dry pack mortar and neatly troweled. A ¼ inch weep hole shall be installed on the downward slope side of the pad.

The dry pack mortar consists of 1:2 cement to fine sand mixture with enough water to allow the mixture to stick together when molded into a ball by hand, but which will not exude water when pressed.

8-20.3(13)C Luminaires

(November 2020, City of Auburn GSP)

Supplement this section with the following:

All luminaires, shall be in accordance with all provisions of Section 9-29.10 (Luminaires) and shall be installed according to the manufacturer's recommendations and as specified herein. Contractor shall furnish man-lift truck for use in final inspection of luminaire system. Luminaires shall be leveled in 2 planes. One plane perpendicular to the curb (parallel to davit arm), the other plane parallel to the roadway surface.

The luminaire shall be bolted to the davit arm by means of cast-in inserts and this detail shall be coordinated with the standard manufacturer to ensure proper fit. The terminal board shall have lugs of a 240-volt 3-wire power source. Terminals shall be labeled line-neutral-line. The neutral terminal shall be grounded to the metal housing of the luminaire.

All luminaires shall be provided with markers for positive identification of light source and wattage per Section 9-29.10 (Luminaires) of the Standard Specifications.

(August 2016, City of Auburn GSP)

Add the following new section:

8-20.3(13)F Luminaire Fusing

Luminaire fusing and electrical connections at lighting standard bases shall be per Section 9-29.7 (Luminaire Fusing and Electrical Connections at Light Standard Bases, Cantilever Bases and Sign Bridge Bases) except that light standards shall be provided with 2 in-line fuse holders, per this section, with the fuses mounted inside the pole and readily accessible from the access hole, electrical splices shall be in the junction box near each pole in accordance with the applicable City of Auburn Standard Details.. All luminaries shall be fused in the pole base with a “Y” type quick disconnect fuse system.

8-20.3(14) Signal Systems

8-20.3(14)B Signal Heads

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Vehicular Signal Heads

All signal heads shall meet the requirements of Section 9-29.16(2) (Conventional Traffic Signal Heads). Lens sizes shall be as shown in Contract Plans, Signal Head Type Details.

Overhead mounted signals shall be adjusted in the field such that a person standing on the pavement can see the brightest image of all vehicle signal sections from a distance complying with current MUTCD standards. Signal heads shall be plumbed, and aiming shall be by reference to the RED signal section.

Masking of optically programmed signal heads shall take place just before "turn-on" and after all field adjustments have been made. After masking, no further head position adjustments shall be made without the approval of the Engineer. Any final adjustments required shall be made in the Engineer's presence.

Pedestrian Signal Heads

Pedestrian signals shall be in accordance with all provisions of Section 9-29.20 (Pedestrian Signals).

Pedestrian signal heads shall be mounted with the bottom of the signal housing 8 feet above the sidewalk or ground surface.

8-20.3(14)C Induction Loop Vehicle Detectors

(April 2018, City of Auburn GSP)

Supplement this section with the following:

Loops shall be wound clockwise and consist of 4 turns of loop conductor.

From the loops to the junction box, the loop wires shall be twisted two turns per foot and labeled at the junction box in accordance with the loop schematics included in the Plans. A 3/8-inch saw cut will be required for the twisted pair.

Loop wires shall be connected to the lead-in cable using compression sleeves and sealed with 2-inch wide rubber mastic tape. An extra 10 feet of both loop wires and lead-in cable shall be coiled neatly in the junction boxes for future work. Loops shall be round and saw cuts shall be 6-foot diameter and shall be constructed using equipment designed for cutting round loops. The equipment shall use a concave, diamond-segmented blade. The saw cuts shall be vertical and shall be a minimum of 0.25 inches wide. The saw cut depth shall be minimum of 2 ½ inches and maximum of 3 inches measured at any point along the perimeter. The bottom of the saw cut shall be smooth. No edges created by differences in saw cut depths will be allowed.

Unless shown otherwise shown on the Plans, the stop bar loops shall be spliced in series per lane, mid and advance loop wires shall be spliced in parallel per lane and system loops shall be spliced into individual home runs per lane.

8-20.3(14)E Signal Standards

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The poles shall be installed on leveling nuts secured to the anchor bolts and locking nuts on top of the base flange. The side of the shaft opposite the load shall be plumbed using the leveling nuts.

The void between the foundation and the pole flange shall be completely filled around the conduit(s) with dry pack mortar and neatly troweled. The distance between the foundation and the bottom of pole flange shall be less than 2 inches except for poles located within sloping portion of curb ramps where the distance may be up to 3 inches.

The dry pack mortar consists of 1:2 cement to fine sand mixture with enough water to allow the mixture to stick together when molded into a ball by hand but will not exude water when pressed.

The lower handhole cover shall be fastened with a tamperproof bolt.

(August 2016, City of Auburn GSP)

Add the following new section:

8-20.3(14)F Emergency Vehicle Pre-Emption

Detector

The Contractor shall provide and install 3M Company 700 Series preemption detectors at locations as shown in the Plans. The emergency preemption detectors shall be solid-state devices in weather resistant housing. The detectors shall be capable of detecting an optical signal generated by an Opticom brand emitter (3M Company). The detectors shall detect the optical signals from the emitter, amplify the signal, and transmit it to the phase selector. The detectors shall have a range control capable of being adjusted up to a maximum of 1/3 mile. Detectors shall be installed in compliance with manufacturer installation instructions and recommendations.

Phase Selector

The Contractor shall provide phase discriminator units as required to obtain the necessary number of channels for each leg of the intersection. The phase discriminator shall be a solid state, rack mounted device which shall provide power to the detectors. The phase selector shall receive the amplified signal from the detector, verify it as valid, and send an input to the controller. This input shall be for the duration of the detected signal plus 8 to 10 seconds additional time after the signal is lost. Four channels shall be provided.

The phase selector shall also include the following features:

1. High and low priority discrimination,
2. Settable signal intensity threshold for up to at least 2,500 feet,
3. Computer based user interface,
4. Front panel switches and indicators for testing, and
5. 20,000 priority/ vehicle class/ vehicle code ID combinations.

(August 2016, City of Auburn GSP)

Add the following new section:

8-20.3(14)G Interconnect Network

Traffic signal interconnect cable shall be installed as shown in the Plans and in accordance with all provisions of Section 9-29.3 (Fiber Optic Cable, Electrical Conductors, and Cable). All cable shall be installed in compliance with the manufacturer's installations and recommendations.

(December 2021, City of Auburn GSP)

Add the following new section:

8-20.3(14)H Pedestrian Push Buttons and Signs

Push buttons shall be in accordance with Section 9-29.19 (Pedestrian Push Buttons) and installed per the manufacturer's directions and recommendations.

Pedestrian push button assemblies shall be securely fastened to the signal standard or pedestrian pole using stainless steel fasteners. Signal standards shall be drilled and tapped for mounting push buttons. Push buttons shall be installed between 42-inches and 46-inches measured from the centerline of push buttons to the adjacent level landing. The push button must be reachable within 10 inches from the level landing. Braille is required on push button placards and the contractor is responsible to make sure they are placed in the correct locations.

(November 2020, City of Auburn GSP)

Add the following new section:

8-20.3(14)I Video Detection System

When video detection is shown in the Plans, the Contractor shall provide and install a fully functional Trafficon by Kar-Gor or Econolite Vision video detection camera system, as called out in the plans including all auxiliary equipment, cameras, housings, and mounts, and all required mounting hardware, cables, connectors, and wiring per Section 9-29.23 (Video Detection Cameras).

The Contractor shall allow two weeks to schedule a Kar-Gor or Econolite representative to assist with the system installation and turn on.

Final adjustment of the cameras shall be done by the Contractor in the presence and at the direction of the City of Auburn Traffic Signal Technician.

(April 2018, City of Auburn GSP)

Add the following new section including subsections:

8-20.3(14)J Closed Circuit Television (CCTV) Camera System

8-20.3(14)J.1 Description

(April 2018, City of Auburn GSP)

This work consists of providing a television surveillance camera system to include provision and installation of camera assemblies (camera, lens, and housing), pan and tilt drives, Ethernet switch, cables, patch cords and other equipment necessary to provide a complete and operable fiber optic-based closed circuit television (CCTV) system. The CCTV camera or camera's shall be delivered to the City of Auburn Maintenance and Operations building for setup and testing.

8-20.3(14)J.2 Materials

(April 2018, City of Auburn GSP)

CCTV system materials shall be per Section 9-29.27 (CCTV System). The CCTV camera shall be a Cohu RISE 4260. Unless otherwise indicated in the Plans or specified in the Special Provisions, all materials shall be new.

8-20.3(14)J.2(1) Mounting

(August 2016, City of Auburn GSP)

Mounting of camera on luminaire/signal poles shall utilize Cohu pole mounts and equipment and hardware shown in the Plans.

8-20.3(14)J.3 Construction Requirements

(April 2018, City of Auburn GSP)

For each new CCTV camera shown in the Plans, the Contractor shall furnish, install, and setup a CCTV camera system that includes the camera, mounting materials, cables, cable splices, Ethernet switch, and any additional equipment and hardware required for a complete and operational CCTV camera system, per Section 9-29.27 (CCTV SYSTEM).

8-20.3(14)J.3(1) General Cable Installation

(April 2018, City of Auburn GSP)

The Contractor shall submit to the Engineer the method that is intended to be used to install the various cables. Any cable runs which have damaged jackets or do not pass the appropriate test will be rejected and shall be replaced by the Contractor at no additional cost to the City of Auburn.

Shielded cables terminated at a cabinet shall have their shields grounded at the cabinet at one end and insulated at the other. Insulated spade type terminals shall be used when connecting wire to terminal blocks.

Cables at the camera end shall be soldered to the connectors provided with the equipment using established techniques.

The rear connection area shall be filled with silicone rubber compound. The cables to the camera shall be encased in a flexible sheath to form one cable between the camera and the local control cabinet.

All cables shall be supported so that there is no weight being transferred from the camera cable to the entry points through poles or extrusions. All holes through poles shall be sealed with outdoor rated watertight grips.

All cables shall be tagged with permanent markers of PVC identifying their use. Cables shall be tagged at both ends and at every junction box location.

8-20.3(14)J.3(2) Camera Cable

(August 2016, City of Auburn GSP)

Camera cables shall extend from the camera control receiver to the camera and pan/ tilt drive unit. These cables shall provide camera power, environmental housing heater power, pan/ tilt drive power and controls, camera lens controls, and additional wires for preset positioning of pan/ tilt and lens. The number and size of wires required in the camera cable is dependent upon the vendor selected for pan/tilt drives. The Contractor shall provide and install camera cables with the proper type and quantity of conductors to enable connection as recommended by the selected vendors and as required to provide for proper operation of the closed circuit television system.

Camera cables shall be as per the manufacturer's specifications and designed for long life operation under adverse weather conditions. Cable connectors at the camera housing and pan/tilt drive shall be waterproofed in accordance with vendor

recommendations. Camera cables shall be terminated on terminals in the camera control cabinet.

8-20.3(14)J.3(3) CCTV System Test

(April 2018, City of Auburn GSP)

The Contractor shall allow the City 2 weeks to setup and test the PTZ camera(s). If problems are found by the City during each testing phase, the Contractor shall repair, replace, or reconfigure each CCTV camera installation as necessary, at no additional cost to the Contracting Agency.

(August 2016, City of Auburn GSP)

Add the following new section including subsections:

8-20.3(14)K Wireless Broadband Communications System

8-20.3(14)K.1 Description

(August 2016, City of Auburn GSP)

The work specified in this section shall include the furnishing and installation of wireless interconnect communication system devices, cables, outdoor hardened Ethernet hub or switch, patch cords and associated components in accordance with the Plans and specifications.

The Contractor shall provide materials, equipment, labor and the expertise required for the construction of a traffic signal/ITS wireless broadband communication system to interconnect the proposed traffic signal and ITS equipment with the City of Auburn's existing ITS system infrastructure as shown in the Plans and in accordance with these Special Provisions. All equipment shall be installed in compliance with the manufacturer's installations and recommendations.

8-20.3(14)K.2 Wireless Broadband System Materials

(August 2016, City of Auburn GSP)

The Contractor shall provide all products and materials required for the installation and splicing of the specified communications cables and associated interface devices.

8-20.3(14)K.3 Testing, Mounting and Wiring

(November 2020, City of Auburn GSP)

Broadband radio/panel antenna units shall be mounted on signal mast-arms or signal poles as indicated in the Plans. All units shall be installed utilizing Pelco Products, Inc. Astro-Brac or approved equivalent mounts per the wireless equipment manufacturer's recommendations for outdoor pole-mounted applications. All mountings shall have stainless steel hardware and provide a weather-tight cable passage between the wireless unit and the pole.

All wireless AP, and Ethernet setup, configurations and testing shall be done in consultation with the City's IT department and the Engineer.

The Contractor shall drill a 1-inch-diameter hole in the pole, deburr and provide rubber grommet prior to pulling cables. Cables shall be routed through traffic signal system conduits and junction boxes as shown in the Plans and terminated in the local signal controller cabinet.

Sufficient cable, 10 feet where bending radius permits, shall be left in each cabinet to properly terminate the cables. No splicing of communication cables shall be allowed.

Ethernet cables shall be routed in the cabinet and be plugged into a RUGGEDCOM RS900 Ethernet switch

8-20.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Supplement this section with the following:

No unit of measure shall apply to the lump sum signal and lighting items specified in this section.

Vaults and junction boxes shall be measure per each unit installed.

Removal and resetting of the traffic signal items listed in the payment section shall be per each item removed and re-installed.

8-20.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Signal Interconnect System Complete", Per Lump Sum

"Video Detection System Complete", Per Lump Sum

"Splice Vault", Per Each

"Pull Box", Per Each

"Locking Junction Box", Per Each

"Adjust Existing Junction Box", Per Each

"Remove Signal Head", Per Each

"Remove Traffic Video Detection Camera", Per Each

"Remove and Reset Signal Head", Per Each

"Remove and Reset Video Detection Camera", Per Each

"Replace & Recycle Signal Head Modules", Per Each

"Replace Signal Controller Cabinet", Per Each

"Backplate Tape", Per Each

"Louvered Backplate", Per Each

"Traffic Video Detection Camera", Per Each

"Wide Angle Traffic Video Detection Camera", Per Each

"Signal Pole Terminal Cabinet", Per Each

"Signal Head with Mount", Per Each

"Signal Controller and Smart Monitor", Per Each

"Remove Street Light", Per Each

"Induction Loop Vehicle Detector", Per Each

The unit contract cost for "Remove Signal Head" and "Remove Traffic Video Detection Camera" shall include all work related to salvaging and removal of existing system components.

The Lump Sum Contract price for "Traffic Signal Revision Signage" shall be full pay for supplying, installing, maintaining and removing the sign and posts according to the Contract documents, including. Supplying and installing the warning placards on each of the signal heads identified in Detail A and Detail D of the Contract Plans.

The unit Contract prices for "Remove and Reset Signal Head" and "Remove and Reset Video Detection Camera" shall be full pay for Work associated with the removing, transporting, resetting, rewiring, repairing existing mounting location, and for supplying and installing all materials and any needed mounting fixtures and wiring.

The unit Contract price for "Replace & Recycle Signal Head Modules" shall be full pay for Work associated with removal and recycling of existing modules and supplying and installing LED modules.

The unit Contract price for "Replace Signal Controller Cabinet" shall be full pay for Work associated with removing existing cabinet and components from the foundation and salvaging, supplying and installing all necessary materials including cabinet, signal controller, MMU, other specified internal components, wiring, mounting hardware, and testing.

The unit Contract price for "Backplate Tape" shall be full pay for Work associated with supplying the materials and installing according to the Contract Plans.

The unit Contract price for "Louvered Backplate" shall be full pay for Work associated with supplying the materials and installing according to the Contract documents.

The unit Contract prices for "Traffic Video Detection Camera" and "Wide Angle Traffic Video Detection Camera" shall be full pay for Work associated with supplying and installing all necessary materials including cameras, wiring, mounting fixtures, surge suppressors, BNC two wire adapter, fuse blocks and video cards for a complete system. Note: only one video card is required per two traffic video cameras per intersection installed; the Wide Angle Traffic Video Detection camera uses one Trafficam "Edge" card.

The unit Contract price for "Signal Pole Terminal Cabinet" shall be full pay for Work associated with supplying and installing all materials and wiring according to the Contract documents.

The unit Contract price for "Signal Head with Mount" shall be full pay for Work associated with supplying materials (including louvered backplate with tape), wiring,

mounting, and installing according to the Contract documents; no adjustment will be made signal head type nor for mounting type.

The unit Contract price for "Traffic Signal Controller and Smart Monitor" shall be full pay for Work associated with supplying and installing the controller and smart monitor boards, including wiring, and testing according to the Contract Plans.

The unit contract cost for "Remove Street Light" shall include all work, materials, and labor to remove the street light and components, and for all costs related to salvaging, when identified.

The unit contract cost for "Induction Loop Vehicle Detector" shall include all Work associated with installing, splicing, and testing each loop.

8-21 Permanent Signing

8-21.3 Construction Requirements

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Signs shall be manufactured and installed in accordance with the current edition of the Washington State Sign Fabrication Manual of the Department of Transportation, and the Manual on Uniform Traffic Control Devices, and all provisions of Section 9-28 (Signing Materials and Fabrication). Code numbers on the Plans are in reference to the Washington State Sign Fabrication manual.

Signs located in sidewalks or paved areas only shall be installed with Sono tubes. Relocated signs shall be installed on new posts unless otherwise specified. Postholes shall allow placement of backfill around the post.

8-21.3(4) Sign Removal

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Costs for removing existing signs shall be included in the lump sum contract price for "Permanent Signing".

8-21.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Supplement this section with the following:

"Relocate Permanent Traffic Sign and Post" shall be measured per each unit of work completed and accepted.

"Remove Traffic Sign" and "Traffic Sign" will be measured by each sign removed or installed.

8-21.5 Payment

(City Contracts, February 2024, City of Auburn GSP)

Supplement this section with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Relocate Permanent Traffic Sign and Post", Per Each

"Remove Traffic Sign", Per Each

"Traffic Sign", Per Each

The unit Contract price for "Relocate Permanent Traffic Sign and Post" shall be full pay for Work associated with the removing, salvaging, repairing existing mounting location, and reinstalling the sign and post according to the Contract Plans and these Specifications.

The unit Contract price for "Remove Traffic Sign" shall be full pay for Work associated with the removing, salvaging, and repairing existing mounting location.

The unit Contract price for "Traffic Sign" shall be full pay for supplying and installing the sign and mounting hardware according to the Contract Plans and these Specifications.

8-22 Pavement Marking

8-22.1 Description

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The Contractor shall notify the Engineer of intention to receive approval of the channelization pre-mark at least 48 hours in advance.

8-23 Temporary Pavement Markings

8-23.1 Description

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Short Term Temporary Pavement Markings shall only be used when the temporary striping is anticipated to last less than 6 months. Phasing that will require temporary alignment longer than 6 months should install striping per Section 8-22 (Pavement Marking).

8-24 Rock and Gravity Block Wall and Gabion Cribbing

8-24.2 Materials

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Materials shall meet the requirements of the following sections of the Standard Specifications or as noted.

Spall Backfill for Walls	9-13.1

Perforated PVC Underdrain Pipe	9-05.2(6)

Rock used for rock wall shall be sound, hard, durable, ledge rock of a uniform color and obtained from a commercial quarry. Rock is to be free of seams, cracks, loose stratification or other defects tending to destroy its resistance to weather. The rock shall have a density of at least 145 pounds per cubic foot.

All two-man rocks (200-600 pounds) shall be a minimum of 12 inches in the least dimension. All three-man rocks (600-1,000 pounds) shall be a minimum of 18 inches in the least dimension.

8-24.3 Construction Requirements

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The rock wall shall be constructed one course at a time. Rock selection and placement shall be such that at least 80% of the exposed face of the wall is rock.

Each horizontal row of rocks shall be seated and bedded by placing the specified backfill behind the rock to provide a stable condition for the entire wall. Each rock shall be keyed into adjacent rocks by utilizing the natural irregular shapes of the rocks. Voids larger than 2 inches shall be filled by wedging smaller rock of the same quality into the voids until the maximum remaining void is 2 inches or less.

8-24.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Delete this section and replace it with the following:

"Rock Wall" will be measured by the length and height of finished wall surface including that portion of the "Rock Wall" toed into existing ground.

8-24.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Delete this section and replace it with the following:

Payment will be made for each of the following Bid items that are included in the Proposal:

"Rock Wall", Per Square Foot

The unit contract price for "Rock Wall" shall include all costs for excavation, backfill, underdrain pipe installation, and rock placement. Piping and connection to storm sewer system, if required, shall also be included in the unit price for "Rock Wall," unless otherwise specified.

(August 2016, City of Auburn GSP)

Supplement Division 8 with the following new section including subsections:

8-32 Fiber Optic Communications

8-32.1 Description

(November 2020, City of Auburn GSP)

The work specified in this section shall include the furnishing and installation of fiber optic cables, splices, splice enclosures, custom labels patch panels and associated components in accordance with the Contract Documents.

The Contractor shall provide materials, equipment, labor and the expertise required for the underground installation of fiber optic cables as components of the ITS network. Fiber optic communications materials shall be per Section 9-29.3 (Fiber Optic Cable, Electrical Conductors, and Cable).

8-32.2 Construction Requirements

8-32.2(1) Contractor Qualifications

(August 2016, City of Auburn GSP)

Installation and testing of fiber optic communications is a specialized trade that requires specific skills that can only be gained by experience. The City has determined that the successful completion of the fiber optic communications work specified in the Contract Documents require that the Contractor or its subcontractor, whichever shall be completing the fiber optic communications work, meet the following minimum qualification requirements: 5-years' experience installing fiber optic systems, including cable and splices, and fiber optic systems of similar type and size to those specified in the Contract Documents, ability to provide three (3), non-City of Auburn, public agency references that can provide verification of the Contractor's or subcontractor's experience and confirm that the Contractor or subcontractor successfully completed the installation and testing of fiber optic systems of similar type and size to those specified in the Contract Documents. The Contractor or its subcontractor will not be allowed to begin work on fiber optic communications until the City has verified that the Contractor or its subcontractor satisfies these qualifications requirements.

8-32.2(2) Quality Assurance

(August 2016, City of Auburn GSP)

All work described in this section shall meet or exceed the applicable provisions of the following documents:

1. ANSI/EIA/TIA-455, Standard Test Procedures for Fiber Optic Fibers, Cables, Transducers, Connecting and Terminating Devices, and Other Fiber Optic Components.
2. ANSI/TIA/EIA-526-7, Measurement of Optical Power loss of Installed Single-Mode Fiber Cable Plant.
3. ANSI/TIA/EIA-568-B, Commercial Building Telecommunications Cabling Standard
4. ANSI/TIA/EIA-569-A, Commercial Building Standard for Telecommunication Pathways and Spaces.
5. ANSI/TIA/EIA-598, Optical Fiber Cable Color Coding.
6. ANSI/TIA/EIA-607, Commercial Building Grounding and Bonding Requirements for Telecommunications.

7. ANSI/TIA/EIA-758, Customer-Owned Outside Plant Telecommunications Cabling Standard.
8. BICSI: BICSI Telecommunications Cabling Installation Manual (TCIM).
9. BICSI: BICSI Telecommunications Distribution Methods Manual.
10. BISCI: BICSI Customer-Owned Outside Plant Design Manual.

8-32.2(3) Fiber Optic Cable Installation

(August 2016, City of Auburn GSP)

Fiber optic cables shall be installed in continuous lengths without intermediate splices throughout the entire project, except at the location(s) specified in the Plans. The cable installation personnel shall be familiar with the cable manufacturer's recommended procedures including but not limited to the following:

1. Proper attachment to the cable strength elements for pulling during installation.
2. Cable tensile limitations and the tension monitoring procedure.
3. Cable bending radius limitations.

The Contractor shall comply with the cable manufacturer's specifications.

To accommodate long continuous installation lengths, bi-directional pulling of the fiber optic cable is approved and shall be implemented as follows:

From the midpoint, pull the fiber optic cable into the conduit from the shipping reel. When this portion of the pull is complete, the remainder of the cable must be removed from the reel to make the inside end available for pulling in the opposite direction. This is accomplished by hand pulling the cable from the reel and laying into large figure eight loops on the ground. The purpose of the figure eight pattern is to avoid cable tangling and kinking. The loops must be laid carefully one upon the other (to prevent subsequent tangling) and must be in a protected area. The inside reel end of the cable is then available for installation. In some cases, it may be necessary to set up the winch at an intermediate cable vault. The required length of cable is pulled to that point, and brought out of the cable vault and coiled into a figure eight. The figure eight is then turned over to gain access to the free cable end which can then be reinserted into the duct system for installation into the next section.

Installation shall involve the placement of the fiber optic cables in a specified innerduct or conduit as defined in the Plans. The Contractor shall ensure that innerducts are secured to prevent movement during the cable installation.

Prior to pulling fiber optic cables through existing conduits, the Contractor shall verify that the conduits are clear of any debris and that the conduits have enough room to accommodate the new fiber and any existing conductors (where present and not specified for removal). Where noted on the Plans, the Contractor shall remove the existing copper interconnect cable prior to installing the new fiber optic cable.

The pulling eye/sheath termination hardware on the fiber optic cables shall not be pulled over any sheaves.

When power equipment is used to install the fiber optic cables, it must be designed to be used with fiber optic cable. Low speeds shall be used, not to exceed 100 feet per minute. The equipment must show the rate of pull, tension and automatically shut down if any cable pulling parameters are exceeded. The tensile and bending limitation for fiber optic cables shall not be exceeded under any circumstances. The use of large diameter wheels,

pulling sheaves, and cable guides shall be used to maintain the appropriate bending radius. Tension monitoring shall be accomplished using commercial dynamometers or load-cell instruments.

8-32.2(4) Fiber Optic Cable Splicing

(August 2016, City of Auburn GSP)

This section describes minimum requirements for splicing and connecting of the specified fiber optic cables. Field splices for mainline to lateral cables and for end-to-end mainline cables shall be located as shown in the Plans. No additional splices shall be allowed without the approval of the Engineer

All fusion splicing equipment shall be in good working order, properly calibrated, and meet all industry standards and safety regulations. Cable preparation, closure installation, and splicing shall be accomplished in accordance with accepted and approved industry standards.

Upon completion of the splicing operation, all waste material shall be deposited in suitable containers, removed from the job-site, and disposed of in an environmentally acceptable manner.

The Contractor shall use the fusion method with local injection and detection for all fiber optic splicing.

The average splice loss of each fiber shall be 0.10 dB or less. The average splice loss is defined as the summation of the attenuation as measured in both directions through the fusion splice, divided in half.

No individual splice loss measured in a single direction shall exceed 0.15 dB.

The Contractor shall seal all cables where the cable jacket is removed. The cable shall be sealed per the cable manufacturer’s recommendation with an approved blocking material.

All below ground splices shall be contained in re-enterable waterproof splice enclosures.

All splices shall be contained in splice trays utilizing strain relief, such as heat shrink wraps, as recommended by the splice tray manufacturer.

Upon sealing the splice closure, the Contractor shall show that the closure maintains 100 psi of pressure for a 24-hour period.

At all fiber optic splice locations, the Contractor shall neatly coil and secure a slack loop of fiber optic cable in a manner that is consistent with optical fiber specifications, including minimum bend radius.

8-32.2(5) Fiber Optic Cable Labeling

(December 2020, City of Auburn GSP)

Permanent cable labels shall be used to identify fibers and patch cords at each termination point. The cable labels shall consist of white colored heat shrink wraps with identification showing the cable segment, and the far end of the cable. The cable shall be labeled with non-fading permanent ink. Fiber Optic Cable shall have custom City of Auburn labels in Vaults and at aerial attachment points.

8-32.2(6) Fiber Optic Cable Racking in Cable Vaults

(August 2016, City of Auburn GSP)

After the cables are installed and spliced, cables, and innerducts shall be racked with spare conduits and innerducts sealed. Since there is substantial risk of damage to optical fibers by careless handling of the cables, much care shall be exercised, especially with regard to observing the minimum bending limitations. Cables shall be racked in vertical figure eight loops, which shall permit pulling slack from the vault without introducing twist to the cable.

Lateral cables shall be placed behind the main cables when changing levels. Cables or innerducts shall be secured in racked position with outdoor rated cable ties.

City of Auburn identification/warning tags shall be securely attached to the cables or innerducts in at least two locations in each cable vault or pull box and once in every J-box passed through. The Identification Tag shall be a custom orange label saying **"COA Fiber Optic Cable, If Damaged Call 911"** and label origin and destination of the fiber identified.

All coiled cable shall be suitably protected to prevent damage to the cable and fibers. Racking shall include securing cables or innerducts to brackets (racking hardware) that extend from the side walls of the cable vault or pull box. The Contractor shall provide all required brackets and other racking hardware required for the fiber optic cable racking operations as specified. All racking hardware shall be stainless steel.

8-32.2(7) Fiber Optic Patch Panels

(August 2016, City of Auburn GSP)

A fiber optic patch panel shall be installed in every signal controller cabinet where a new fiber optic connection is shown in the Plans per Section 9-29.13 (Traffic Signal Controllers).

The patch panel shall be attached to Contractor supplied ¼-inch aluminum plate attached to the signal side rails with spring nuts.

8-32.2(8) Fiber Optic Splice Case

(August 2016, City of Auburn GSP)

Splice enclosures shall be supplied and installed where shown the Plans that specify installation of a new fiber optic connection in a Vault or Pull box per Section 9.29.3(1)A (Singlemode FiberOptic Cable) (SCF).

The SCF splice closures shall be available in canister (butt) and in-line styles to fit most applications. All end-caps feature two express ports for uncut feeder cables. QUICK-SEAL™ Mechanical Seal drop ports shall be utilized because they allow for rapid and easy installation during initial build or future expansions.

The Splice Closure Housing shall be non-metallic. It shall be resistant to solvents, stress cracking and creep. The housing materials shall also be compatible with chemicals and other materials to which they might be exposed in normal applications. The optical fiber closure shall be capable of accepting any optical fiber cable commonly used in interoffice, outside plant and building entrance facilities. As an option, the ability to double the cable capacity of an installed canister splice closure by use of a kit shall be available. Such a conversion shall not disturb existing cables or splices.

Encapsulation shall not be required to resist water penetration. The splice closure shall be re-enterable. The closure end-cap shall be capable of accepting additional cables without removal of the sheath retention or strength-member-clamping hardware on

previously installed cables or disturbing existing splices. The optical fiber splice closure shall provide a clamping mechanism to prevent pistoning of the central member or strength members and to prevent cable sheath slip or pullout. The splice closure shall have appropriate hardware and installation procedures to facilitate the bonding and grounding of metal components in the closure and the armored cable sheath. The cable bonding hardware shall be able to accommodate a copper conductor equivalent to or larger than 6 AWG.

8-32.3 Fiber Optic Cable Testing

(August 2016, City of Auburn GSP)

The Contractor shall provide certified documentation or test results that demonstrate that all fiber optic cables meet the specified optical and mechanical performance criteria before and after installation.

Upon completion of the fiber optic cable installation (and splicing) the Contractor shall perform testing specified herein. The Contractor shall provide the Engineer with a minimum of 7 calendar days prior notice of the start of testing. The installed optical fiber cable shall comply with the transmission requirements of this specification, the cable and hardware manufacturer's specifications, and prescribed industry standards and practices.

All backbone and horizontal cabling, which is terminated by the contractor, shall be tested to applicable EIA/TIA Standards.

Upon completion of the tests all fiber optic cable coils shall be secured with ends capped to prevent intrusion of dirt and water.

8-32.3(1) Insertion Loss Testing

(August 2016, City of Auburn GSP)

Insertion loss testing shall be used to measure end-to-end attenuation on each new fiber installed between a field device and the City control facility.

The insertion loss for each mated fiber optic connector pair shall be $\leq$ 0.75 dB Reflectance for single-mode single fiber UPC cable assemblies shall be $\leq$ -55 dB Mated connector pair loss testing shall be based on one unidirectional optical time domain reflectometer (OTDR) inspection in accordance with the OTDR operating manual for systems greater than 300 feet.

In addition to connector insertion loss for each mated pair, the contractor shall perform end-to-end insertion loss testing for each multimode fiber at 850 nm and 1300 nm from one direction for each terminated fiber span in accordance with EIA/TIA-526-14A (OFSTP 14) and single-mode fibers at 1310 nm and 1550 nm from one direction for each terminated fiber span in accordance with TIA/EIA-526-7 (OFSTP 7). For spans greater than 300 feet, each tested span must test to a value less than or equal to the value determined by calculating a link loss budget. For horizontal spans less than or equal to 300 feet, each tested span must be < 2.0 dB.

The Contractor shall inspect each terminated multimode fiber span for continuity and anomalies with an OTDR at 1300 nm from one direction in accordance with the OTDR operating manual for systems greater than 300 feet. The Contractor shall inspect each terminated single-mode fiber span for continuity and anomalies with an OTDR at 1550 nm from one direction in accordance with OTDR operating manual for systems greater than 300 feet.

Prior to commencing testing, the Contractor shall submit the manufacturer and model number of the test equipment along with certification that it has been calibrated within 6 months of the proposed test dates.

The following information shall be documented for each fiber test measurement:

- Wavelength
- Fiber type
- Cable, tube and fiber IDs
- Near end and far end test locations
- End-to-End Insertion Loss Data
- Individual Splice Loss Data
- Date, time, and operator

8-32.3(2) Optical Time Domain Reflectometer (Otdr) Testing

(August 2016, City of Auburn GSP)

A recording optical time domain reflectometer (OTDR) shall be utilized to test for end-to-end continuity and attenuation of each optical fiber. The OTDR shall be equipped with a 1,310 nm and 1,550 nm light source for single-mode optical fibers. The OTDR shall have an X-Y plotter to provide a hard copy record of each test measurement.

The OTDR shall be equipped with sufficient internal masking to allow the entire cable section to be tested. This may be achieved by using an optical fiber pigtail of sufficient length to display the required cable section, or by using an OTDR with sufficient normalization to display the required cable section. A hard copy X-Y plot shall be provided for all fiber optic attenuation tests.

Prior to commencing testing, the Contractor shall submit the manufacturer and model number of the OTDR test unit along with certification that it has been calibrated within 6 months of the proposed test dates.

Each new mainline and lateral fiber shall be tested in both directions at the 1310 and 1550 nanometer wavelengths. Existing mainline and lateral fibers that are spliced to or re-spliced as part of this contract shall also be tested in both directions and at both wavelengths. Splices to existing fibers shall also be measured and recorded.

The following information shall be documented for each fiber test measurement:

X-Y plot scaled for fiber length

Wavelength

Refraction index

Fiber type

Averaging time

Pulse width

Cable and fiber IDs

Near end and far end test locations

Date, time, and operator

Event table that includes: event ID, type, location, loss, and reflection.

8-32.3(3) Fiber Cable Testing Documentation

(August 2016, City of Auburn GSP)

The Contractor shall submit the fiber test results to the Engineer for approval per Section 9-38 (Submittal Approval). 1 licensed copy if the OTDR manufacturers software shall be provided to the City of Auburn at the time the fiber test results are provided, for viewing and printing the OTDR results. The Contractor shall take corrective actions on portions of the fiber installation determined to be out of compliance with these specifications.

The184ollowingg information shall be included in each test result submittal:

1. Contract number, contract name, contractor name and address.
2. Dates of cable manufacture, installation, and testing.
3. Manufacturer's test results of the cable as shipped.
4. Location of all splices.
5. OTDR test results.
6. End-to-End Insertion Loss Data.
7. Individual Splice Loss Data.
8. Connector Insertion Loss Data
9. "As Installed" Diagram

8-32.4 Measurement

(City Contracts, August 2016, City of Auburn GSP)

"Fiber Optic Cable – ____ Strand SMFO" will be measured by the lineal foot of cable installed and accepted, including slack storage.
"Fiber Optic Patch Panel" will be measured per each unit installed and accepted.
"Fiber Optic Splice Case" will be measured per each splice case installed and accepted.

8-32.5 Payment

(City Contracts, August 2016, City of Auburn GSP)

Payment will be made in accordance with Section 1-04.1, for each of the following bid items that are included in the proposal:

"Fiber Optic Cable – _____ Strand SMFO", Per Lineal Foot

"Fiber Optic Splice Case", Per Each

"Fiber Optic Patch Panel", Per Each

The unit bid item prices per each for splice cases and patch panels shall be full pay to furnish, install, and test the specified equipment.

The bid item prices for "Fiber Optic Cable – _____ Strand SMFO" shall include, but not be limited to, all costs for the following:

- Furnishing, installing and testing the fiber optic cable.
- Furnishing and installing racking hardware in existing and proposed pull boxes and vaults for fiber optic cable where the Plans specify slack storage.
- Pulling fiber through vaults and junction boxes
- Removing existing fiber messenger cable from aerial attachments and from conduits and junction boxes for the installation of fiber optic cable as indicated in the Plans.

- Protecting and preserving existing conductors as indicated in the Plans and as required to maintain the existing signal and ITS system functions,

(January 2018, City of Auburn GSP)

Supplement Division 8 with the following new section including subsections:

8-33 Bollards

8-33.1 Description

(January 2018, City of Auburn GSP)

This work consists of building, furnishing, and installing bollards where shown on the Plans and as detailed in the Standard Detail(s).

8-33.2 Materials

Materials shall meet the requirements of the following sections:

Timber and Lumber	Section 6-04 (Timber Structures) and 9-09 (Timber and Lumber)
Structural Steel and Related Material	Section 9-06 (Structural Steel and Related Materials)

8-33.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

"Removable Bollard" and "Fixed Bollard" shall be measured per each bollard installed and accepted.

8-33.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Payment will be made for each of the following Bid items that are included in the Proposal:

"Removable Bollard", Per Each

"Fixed Bollard", Per Each

The Unit contract price per each for "Removable Bollard" and "Fixed Bollard" shall be full pay for all labor, tools, equipment and materials required to furnish and install each bollard.

(August 2016, City of Auburn GSP)

Supplement Division 8 with the following new section including subsections:

8-34 Wood Fence and Gates

8-34.1 Description

(August 2016, City of Auburn GSP)

This work shall consist of installing new "Wood Fence" and "Wood Gate" where shown and as detailed on the Plans.

8-34.2 Construction Requirements

(August 2016, City of Auburn GSP)

All work shall be in accordance with the applicable portions of Section 6-04 (Timber Structures), 8-11 (Guardrail), 8-12 (Chain Link Fence and Wire Fence), 9-06 (Structural Steel and Related Materials), 9-09 (Timber and Lumber), and 9-16 (Fence and Guardrail) of the Standard Specifications and these Special Provisions.

All lumber shall be Douglas Fir Surfaced four side (S4S), Number 1 Structural per Western Lumber Grading Rules unless otherwise noted. All lumber shall be pressure treated with ChemoniteTM or approved equivalent per AWPB-LP22. Fencing boards shall be tight knot western red cedar, Number 2 or better.

Metal fabrications, fasteners and hardware shall be in accordance with Section 9-06.22 (Bolts, Washers, and Other Hardware) of Standard Specifications.

Nail fasteners shall be galvanized standard wire nails.

Concrete shall be Cement Concrete Class 3000 in accordance with Section of 6-02 (Concrete Structures) of the Standard Specifications.

8-34.4 Measurement

(City Contracts, August 2016, City of Auburn GSP)

"Wood Fence" shall be measured per linear foot of work completed and accepted.

"Wood Gate" shall be measured per each unit of work completed and accepted.

8-34.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Payment will be made for each of the following Bid items that are included in the Proposal:

"Wood Fence", Per Linear Foot

"Wood Gate", Per Each

The unit contract price shown in the proposal for "Wood Fence" shall be full pay for labor, tools, materials, and equipment necessary to perform the work, complete.

The unit contract price shown in the proposal for "Wood Gate" shall be full pay for labor, tools, materials, and equipment necessary to perform the work, complete.

END OF DIVISION 8

DIVISION 9 Materials

9-05 Drainage Structures and Culverts

9-05.7 Concrete Storm Sewer Pipe

9-05.7(1) Plain Concrete Storm Sewer Pipe

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Concrete storm drainpipe shall conform to ASTM C14 Class 3.

9-05.7(2) Reinforced Concrete Storm Sewer Pipe

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Reinforced concrete storm drainpipe shall conform to ASTM C76, Class IV.

9-05.12 Polyvinyl Chloride (PVC) Pipe

9-05.12(1) Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Pipe, And Solid Wall PVC Sanitary Sewer Pipe

(August 2016, City of Auburn GSP)

Revise the first sentence of the second paragraph to the following:

Solid wall PVC pipe shall meet the requirements of ASTM D3034 for the class or SDR of pipe specified.

9-05.13 Ductile Iron Sewer Pipe

(August 2016, City of Auburn GSP)

Delete the first sentence of the last paragraph and replace it with the following:

All fittings shall be ductile. All joints including fittings shall be push-on rubber gasket joints. Mechanical joints shall not be used.

9-14 Erosion Control and Roadside Planting

9-14.2 Topsoil

9-14.2(1) Topsoil Type A

(February 2024, City of Auburn GSP)

Supplement this section with the following:

The topsoil shall be a loamy sandy loam textural class as determined by the U.S. Department of Agriculture Classification System, free from materials toxic to plant growth, noxious weed seeds, rhizomes, roots, subsoil, and debris.

9-14.2(3) Topsoil Type C

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Small tree/brush stumps and roots shall be removed and topsoil shall contain no more than two percent (2%) aggregate by weight remaining on a ½ inch sieve.

9-14.5 Mulch and Amendments

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Specific topsoil amendment and fertilizer specification for the plant types specified on the Plans shall be as per a certified soils laboratory recommendations from, representative topsoil samples furnished by the Contractor to the approved Soils Laboratory.

9-14.5(3) Bark or Wood Chips

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The Contractor shall submit sample of the bark or wood chips for approval before delivery to the job site. Bark shall be free from weed seeds, sawdust and splinters, and shall not contain wood fiber or other compounds detrimental to plant life. Source shall be from freshwater mill.

9-14.6(1) Polyacrylamide (PAM)

(January 2017, City of Auburn GSP)

Supplement this section with the following:

PAM will only be used upon approval of the Engineer.

(January 2017, City of Auburn GSP)

Add the following new section:

9-14.7 Plant Materials

9-14.7(5) Tagging

All plant material except groundcover shall be legibly tagged. Tagging may be by species or variety with minimum of one tag per 10 trees or shrubs.

(January 2017, City of Auburn GSP)

Add the following new section:

9-14.7(6) Inspection

Samples may be submitted to the Engineer for approval as to size, grade, and overall specifications.

9-15 Irrigation System

9-15.1(2) Polyvinyl Chloride Pipe and Fittings

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The triple-swing joint assembly shall be constructed as detailed with Schedule 80 PVC nipples and "Marlex" street ells as manufactured by "LASCO Fluid Distribution Products" or approved equivalent.

9-15.3 Automatic Controllers

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Controller shall be Weathermatic Valcon SL Series Controller with Remote Control Technology "FLM" Series Connector installed at controller for remote control operation from the City of Auburn central control station.

The automatic controller electrical enclosure shall be a Metered Cold Rolled Steel Vandal Resistant enclosure #SB-24CR/120V with CSA controller subassembly. Enclosure shall be installed on a concrete base and shall be prime-coated and painted with baked enamel finish; dark green color as selected by the Engineer as manufactured by "V.I.T. Product, Inc." or approved equivalent.

9-15.5 Valve Boxes

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Install a gravel sump at the bottom of each valve box.

The automatic control boxes shall be Model No. 1320 valve box with locking cover, and extensions as required as manufactured by "Carson Industries, Inc." or approved equivalent.

9-15.6 Gate Valves

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The gate valve boxes shall be 5 and ¼ inch Roadway Valve Box #111129-03 with cast iron "Water" cover #111026 as manufactured by "Ametek" or approved equivalent.

9-15.7(2) Automatic Control Valves

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Automatic control valves shall be Weathermatic 8200CR brass valves capable of communicating with the controller. Size as noted on drawing.

9-15.8 Quick Coupling Equipment

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The quick coupler valves shall be Buckner QB5LRC10 quick coupling valves with RC25001 valve keys or approved equivalent. Quick coupler valves shall be installed at the point of connection at the end of the main line, and at each cluster of automatic control valves.

The quick coupling valve boxes shall be Model 910-12B 10 inch Round Valve Box with locking green top extensions as manufactured by "Carson Industries, Inc." or approved equivalent.

9-15.9 Drain Valves

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Drain valves shall be 1 inch diameter.

The drain valve box shall be 5 and ¼ inch Roadway Valve Box #111129-03 with cast iron "Water" cover #111026 as manufactured by "Amtek" or approved equivalent.

9-15.11 Cross Connection Control Devices

(September 2021, City of Auburn GSP)

Supplement this section with the following:

The Double check valve assembly shall be a Febco 850 or approved equivalent sized to match the irrigation meter size and be approved by the State of Washington Dept of Health.

The Double-Check Valve Backflow Assembly Vault for ¾ inch to 2 inch assemblies shall be a Carson molded box, or approved equivalent, and for assemblies larger than 2 inch a No. 25-TA Concrete Vault with Locking Metal Cover as manufactured by PIPE, Incorporated or approved equivalent.

9-15.17 Electrical Wire and Splices

(January 2018, City of Auburn GSP)

Supplement this section with the following:

Electrical wire shall be #14 UF wire. Utilize direct bury underground splice kits. Do not splice or connect wires outside of valve boxes. Coil 3 feet length of wire at each connection.

Provide 4 extra valve wires (yellow) routed from the controller through each valve box to the farthest valve.

9-15.18 Detectable Marking Tape

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Detectable marking tape shall be 3-inch wide detectable tape on main lines only.

9-29 Illumination, Signal, Electrical

9-29.1 Conduit, Innerduct, Outerduct

(April 2018, City of Auburn GSP)

Supplement this section with the following:

Traffic Signal, ITS, and Street light conduit shall be Schedule 80 PVC-ASTM D1785 and as shown on the Plans.

9-29.2 Junction Boxes, Cable Vaults, and Pull Boxes

(September 3, 2019, WSDOT GSP)

Supplement this section with the following:

Slip-Resistant Surfacing for Junction Boxes, Cable Vaults, and Pull Boxes

Where slip-resistant junction boxes, cable vaults, or pull boxes are required, each box or vault shall have slip-resistant surfacing material applied to the steel lid and frame of the box or vault. Where the exposed portion of the frame is ½ inch wide or less, slip-resistant surfacing material may be omitted from that portion of the frame.

Slip-resistant surfacing material shall be identified with a permanent marking on the underside of each box or vault lid where it is applied. The permanent marking shall be formed with a mild steel weld bead, with a line thickness of at least 1/8 inch. The marking shall include a two character identification code for the type of material used and the year of manufacture or application. The following materials are approved for application as slip-resistant material, and shall use the associated identification codes:

1. Harsco Industrial IKG, Mebac #1 - Steel: M1
2. W. S. Molnar Co., SlipNOT Grade 3 – Coarse: S3
3. Thermion, SafTrax TH604 Grade #1 – Coarse: T1

9-29.3 Fiber Optic Cable, Electrical Conductors, and Cable

(April 2018, City of Auburn GSP)

Supplement this section with the following:

Illumination

Wire conductors for underground feeder runs and for circuitry from the in-line fuse in the poles to the junction box shall be 600 volts (minimum rated at 75 degree C) # 8 AWG single conductor stranded-copper, U.S.E. insulated, in accordance with the Insulated Power Cable Engineer's Association Specifications. SPEC 2150.

Wire conductors inside the pole from the ballast to the in-line fuse, shall be 600 volt, pole and bracket cable, 2 conductor, stranded-copper No. 10, Type HMW grade or better. Conductor insulation shall consist of a 45-mil polyvinyl chloride with a 95-mil polyethylene jacket.

Single conductors for street lighting shall be stranded copper with insulation conforming to USE 600 volt minimum rated at 75 degree C and shall be color-coded in a consistent manner throughout the project.

A three-wire electrical service shall be used at 120/240 volts. The contractor shall have the service inspected by the Department of Labor and Industry and coordinated with the Power Company to have the service installed.

Overhead electrical service, when allowed, shall be brought to the load center through a conduit riser with a weather head on the service pole.

Traffic Signals

1. Loop Lead-In Cable shall be #14 AWG and Pedestrian Push Button cable shall be, #14 AWG, two conductor stranded copper, twisted approximately two turns per foot. The conductors shall be covered with a foil shield and protected with an outer jacket. The cable shall conform to IMSA Spec. No. 50-2.

2. Detector Loop Wire (sawcut) shall be No. 14 AWG class B stranded copper wire with cross-linked polyethylene type USE insulation and conform to IMSA Spec. 51-3.

3. The detector lead-in cable for Emergency Vehicle Preemption (EVP) shall be 3M OPTICOM Model 138 shielded detector cable or approved equivalent. No splicing will be allowed between the detector and the controller cabinet.

4. Signal Interconnect Cable shall be copper or fiber as shown in the Plans. For Copper the traffic signal interconnect system shall conform to REA Spec. PE-38 (self-supporting combination signal cable and messenger cable) or PE-39 for underground. The signal cable shall consist of 12 pair No. 19 AWG conductors. For fiber optic cable, the cable shall be single mode all dielectric gel free loose tube single mode fiber optic with a minimum of 48 count.

5. Traffic Video Detection Camera Cable shall be a parallel construction of one PVC-jacketed RG 59/U (Coaxial) and one PVC-jacketed five conductor (Power) 18 AWG cable under an oval black flame retardant polyvinyl chloride jacket meeting the requirements of the video detection system manufacturer's recommendations.

Video camera cable shall meet the following requirements, or approved equivalent meeting the requirements of the video detection system manufacturer's recommendations:

RG 59/U (Coaxial)

Conductor:	20 AWG solid bare copper 0.032″.
Dielectric:	0.054″ wall of gas injected foamed polyethelene to 0.140″ nom.
Braid:	36 AWG bare copper with 95% coverage. Pull in aluminum/polyester tape under braid.
Jacket:	0.035″ wall black 75 degrees C polyvinyl chloride to 0.232″ nom.

18 AWG Cable (Power)

Conductor:	5-18 AWG bare copper 0.048″.
Insulation:	0.012″ wall polyvinyl chloride per the color code to 0.072″ nom.
Cabling:	Five 18 AWG conductors cabled together in a 3¼″ left hand lay to a nom. diameter of 0.194″.
Jacket:	0.025″ wall black 75 degrees C polyvinyl chloride to 0.244″ nom.
Color Code:	White, Red, Black, Brown, Blue.
Rating:	Multi-conductor leg is rated at 600V.

9-29.3(1)A Singlemode Fiber Optic Cable

(January 2017, City of Auburn GSP)

Supplement this section with the following:

All fiber optic cable shall be ALTOS All-Dielectric Gel Free Cables by Corning, or approved equivalent, per the following schedule:

Fiber Count	Nominal Cable Weight (lb/1000ft)	Minimum Installed Bend Radius (in)
12	49	4.1
48	49	4.1
288	131	7.2

All optical fibers shall be identifiable by standard color codes as defined in ANSI/TIA/EIA-598.

Fiber optic cable shall be tested according to Section 8-31.3 (Fiber Optic Cable Testing).

Splice cases shall be Corning, Tyco or approved equivalent.

(September 2021, City of Auburn GSP)

Add the following new section:

9-29.6(1)A Lighting & Signal Standards & Davit Arms

Lighting Standards

Lighting standards shall be aluminum, davit-style units in accordance with Section 9-29.6 (Light and Signal Standard) of the Standard Specifications and these special provisions.

Mounting heights for light fixtures shall be as noted on the Plans.

Lighting standards shall have 2 through-bolts where the davit arm intersects the pole in accordance with the applicable City of Auburn Standard Details. All poles to be furnished shall maintain a minimum safety factor of 4.28 on yield strength of weight load and 2.33 for basic wind pressure. All materials shall be natural polished aluminum color.

A grounding nut or provision in the handhole frame for accommodating a threaded bolt for the purpose of attaching a grounding connector shall be provided on the inside of the shaft. After fabrication, the handhole shall have the mechanical strength of not less than the temper of the material utilized for the manufacturer of the pole.

All bolts (not including Anchor Bolts), nuts, screws, and washers, shall be stainless steel, unless designated otherwise.

VMS Support Structure

VMS Support structure shall meet the above stated criteria for traffic signal standards and the dimensions and details included in the plans.

The following loads shall be used for design of the VMS sign pole and mast arm structure: dead loads shall consist of the weight of the sign times a safety factor of two; wind loads shall be taken as 30 PSF for the sign and 24 PSF for the supporting structure and, (including the effect of gust and shape factors), on the greatest area of signs and structure in any elevation view; live load may be omitted.

Signal Standard

A signal standard shall consist of the following components: a round tapered steel vertical pole shaft, a round tapered horizontal mast arm, a davit style luminaire arm attachment, anchor bolts with nuts, washers and all associated hardware.

The pole shaft and signal mast arm shall not vary in roundness more than 1/16 inch in straight sections.

Longitudinal seam welds shall have full penetration for not less than 60% of their full length. Butt welds in the shafts shall have back-up rings and full penetration for 100% of the circumference. All welds shall be deburred.

Materials, construction and assembly techniques shall be as specified on the Standard Plans and as shown in the Plans. All materials shall be hot-dipped galvanized after fabrication in accordance with ASTM A-123.

Design shall be in accordance with the requirements of the 2011 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and the values on the Detail Sheet as shown in the Plans. Sizes on the Detail Sheet as shown in the Plans shall govern in differences between the Standard Plan and the Detail Sheet as shown in the Plans.

The following loads shall be used: dead loads shall consist of the weight of the signals and signs times a safety factor of two; wind loads shall be taken as 30 PSF for the signals and signs and 24 PSF for the supporting structure, (including the effect of gust and shape factors), on the greatest area of signals, signs and structure in any elevation view; live load may be omitted.

Complete calculations for structural design shall be submitted with the shop drawings for approval before fabrication or ordering material. These calculations shall include the stresses in the pole and cantilever arms, the attachment of the signals and signs to the structure, the connection between the cantilever arms and vertical pole, pole section at handhole, base plate, anchor bolts and foundations.

Pole Shaft

The round tapered pole shaft shall be made of one-ply, hot-rolled basic open-hearth steel. Structural steel having a minimum yield point of 33,000 psi or more shall be used for all structural parts and shall be galvanized after fabrication in accordance with ASTM A-123.

A flange plate shall be attached to the vertical pole shaft for the purpose of mounting the mast arm. The flange plate shall be supported by side plates tangent to the shaft and

gusset plates on top and bottom. A 3-inch wire way hole shall be provided (matching the wire way hole in the mast arm flange plate). Four holes for mounting the mast arm shall be drilled and tapped for high tensile bolts.

A 7" x 21" Internal Terminal Cabinet shall be constructed integral to the pole with a stainless steel hinged door and a best slam lock. It shall be no lower than 4 ft 6" from the ground.A 4-inch x 6½ inch reinforced hand hole frame and rain-tight cover with tamper resistant screws shall be provided. The frame shall be welded into the shaft 18 inch above the base plate on the opposite side of the mast arm attachment. A grounding nut or provision for accommodating a threaded bolt or stud shall be provided in the frame.

A second hand hole shall be provided and welded into the shaft directly opposite the mast arm mounting plate. A J-hook wire support shall be provided inside the pole shaft between the frame and mast arm mounting plate.

Vehicle Signal Mast Arm

The vehicle signal mast arm shall be sized as shown on the Plans.

End caps shall be supplied and be weather tight and all unused tenons or holes shall be plugged and sealed.

A mast arm flange plate matching the pole shaft flange plate shall be welded to the mast arm base segment. The flange plate shall have a hole cut in the center equal to the outside diameter of the mast arm base.

The flange plate shall be welded to the mast arm by two continuous arc welds, one on the outside and the other on the inside. The outside weld shall be on top face of the flange plate. The inside weld shall be in the gap between the bottom face of the mast arm and the inside face of the flange hole.

Four holes for high tensile bolts shall be drilled in the flange plate matching the four tapped holes in the pole shaft mast arm mounting flange plate.

For the purpose of mounting the traffic signal displays, 2 inch couplings shall be welded to the mast arm extension segment at the locations specified on the Detail Sheet as shown in the Plans. A ½ inch diameter hole shall be drilled in each coupling to allow for the thru-bolt.

Signal Pole Anchor Base

Four holes sized to receive the anchor bolts shall be drilled in the base. Slotted holes ¼ inch larger than the anchor bolt shall be permitted. Minimum bolt circle pattern shall be as specified in the Plans.

Four high-strength anchor bolts A307 shall be furnished with each pole. Each anchor bolt shall have an "L" bend at the bottom end or multiple anchor plates per the manufacturers recommendation, and shall have 7-inch minimum thread on top. Anchor bolt dimensions shall be per Detail Sheet as shown in the Plans or per Manufacturer's recommendations whichever is larger. All anchor bolts shall be furnished with 2 heavy hex nuts, two standard washers, bolt covers and provisions for mounting with stainless steel screws. Threaded ends of bolts, nuts and washers shall be hot dipped galvanized in accordance with ASTM A-123. The anchor bolts shall be capable of resisting at yield strength stress the bending moment of this shaft at its yield strength stress.

Luminaire Attachment

Unless otherwise indicated in the Plans all traffic signal poles shall be equipped with davit style luminaire arms as shown in the Plans. The davit style arm shall be secured to the top of the pole shaft using a cone reducer providing a flush, smooth transition. From the cone reducer the luminaire shaft shall be continuously tapered at the same rate as the pole shaft while incorporating a 5-foot, 9-inch radius bend at the end. A pipe tenon of the diameter and length specified for the luminaire shall be provided in the end of the davit arm. The tenon shall be two degrees above level. Luminaires shall be adjusted to be parallel to the roadway and shall follow the slope of the roadway on inclines/hills.

(August 2016, City of Auburn GSP)

Add the following new section:

9-29.6(1)B Wrapping

The aluminum pole shaft and bracket arm assembly shall be entirely wrapped with a heavy, water-resistant paper for protection during shipment. Any marks or stain resulting from wrapping materials shall be cause for rejection. Scratching, marking, denting, or other damage to poles and fittings at the point of delivery shall also be cause for rejection.

(April 2018, City of Auburn GSP)

Add the following new section:

9-29.6(2)A Anchor Bases

A one-piece anchor base of adequate strength, shape, and size shall be secured to the lower end of the shaft so that the base shall be capable of resisting the bending movement of the shaft at its yield-strength stress. The base shall be provided with 4 slotted or round holes to receive the anchor bolts. Bolt covers shall be provided with each pole. Base plates for Type II signal poles shall not exceed 18 ½ inches square.

9-29.6(4) Welding

(January 2017, City of Auburn GSP)

Supplement this section with the following:

All welds shall be deburred.

9-29.6(5) Foundation Hardware

(November 2020, City of Auburn GSP)

Supplement this section with the following:

Four high-strength steel anchor bolts shall be furnished with the poles. Threaded ends and all nuts and washers shall be hot-dipped galvanized. The anchor bolts shall be capable of resisting at yield-strength stress the bending movement of the shaft at its yield-strength stress.

9-29.7 Luminaire Fusing & Electrical Connections at Light Standard Bases, Cantilever Bases and Sign Bridge Bases

(April 2018, City of Auburn GSP)

Delete this section and replace it with the following:

Fuses shall be Bussmann Slow Blow or approved equivalent.

Fuse connector kits shall be SEC Model 1791-SF (2 each) or approved equivalent.

Connector kits to connect luminaires to the system in the junction box shall be SEC Model 1791-DP, or approved equivalent.

9-29.9 Ballast, Transformers

(January 2017, City of Auburn GSP)

Supplement this section with the following:

The luminaire shall contain an integral high-power factor-regulator ballast suitable for 240-volt operation with a 10% voltage variation. The ballast shall be prewired to the lamp socket and terminal board, requiring only connection of the power supply leads to the terminal board.

9-29.10 Luminaires

(November 2020, City of Auburn GSP)

Delete this section and replace it with the following:

The LED Street Light Shall meet the following specifications;

Housing

Luminaire housing shall be die cast aluminum with integral cooling fins universal four-bolt slip fitter for mounting to $1^1/_4$ " to 2" ($1^5/_8$" to $2^3/_8$" O.D.) diameter mast arm. Housing must be similar shape to traditional cobra head. Housing meets ANSI C136.31-2001 and CalTrans 611 vibration standards. Conductors from power supply to terminal block and LED board must be spliced with quick style electrical disconnects Photocontrol receptacle is standard for ANSI C136.41-2013, 7-pin, photocell by others. Fixture must be capable of using a 7-pin photocell with field adjustable drive current. Photocontrol shall be rotatable without tools. Housing shall have a leveling bubble for adjusting the head.

Light Emitting Diodes

Hi-flux/Hi-power white LEDs shall produce a minimum of 90% of initial intensity at 100,000 hours of life at 700mA, TM-21 Calculator required. LEDs shall be tested in accordance with IESNA LM-80 testing procedures. They shall have a mean correlated color temperature of 4000K (standard) ± 300K and a minimum CRI >70.

Optical Systems

Micro-lens optical systems shall produce IESNA Type 2, and 3 distributions. Fixture shall not use acrylic or plastic secondary exterior lens over the LEDs. Emitters shall be of single LED per die design. Luminaire shall be classified as "full-cutoff" and produce 0% total lumens above 90º with a BUG rating of U-0.

Electrical

The Driver shall be dimmable. The power supply shall have a minimum power factor of .90 and <20% Total Harmonic Distortion (THD). Power supply drive current shall be field adjustable without tools.

Finish

Housing shall receive a fade and abrasion resistant, epoxy polyester powder coat light gray finish standard.

Accessories

Optional flush mounted house side and cul-de-sac shield shall be available. The house side shield cuts off light at ½ mounting height behind the luminaire and the cul-de-sac shield cuts light off ½ mounting height behind and 1 ½ mounting height on either side of the pole. Both shields must be factory or field installable without the use of tools.

Listings/Ratings/Warranties

Luminaires shall be UL listed for use in wet locations in the United States and Canada. Optical systems shall maintain an IP66 rating. Ten-year limited warranty is required for all components. All units are listed by Design Lights Consortium (DLC).

Photometry

All luminaires shall be photometrically tested by certified independent testing laboratories in accordance with IESNA LM-79 testing procedures.

Warranty

All luminaires shall have a Ten-year manufacturer's product warranty to be free of defects in workmanship and/or material. This warranty includes all electrical and mechanical components including finish and gaskets. Failure of over 10% of the LEDs in the luminaire during the warranty period will constitute a luminaire "failure". Manufacturer will repair or replace any units found to be defective or that fail within this period.

9-29.11(2) Photoelectric Controls

(December 2020, City of Auburn GSP)

Supplement this section with the following:

The photoelectric control shall be Vantage Point Lighting Control Module manufactured by Sensus USA Inc.

9-29.12(1) Illumination Circuit Splices

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Approved copper splice "C" crimp connectors shall be used to connect bonding wires.

9-29.12(2) Traffic Signal Splice Material

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Loop lead-in wires shall be spliced at the junction box; with a waterproof splice leaving 10 feet each of loop wire and loop lead-in cable for future work. The connection shall be

made using compression sleeves sealed with black 50-mm wide, ethylene propylene rubber mastic tape.

(August 2016, City of Auburn GSP)

Add the following new section:

9-29.12(6) Sealants

Loop detector sealant specifically manufactured for loop wire shall be used to imbed the loop wire into the pavement and fill the sawcut to within 1/16 inch of the top of the pavement. Sealant shall completely cover the foam backer rod.

Loop Sealant shall be:

1. Crafco Loop Detector Sealant 271;
2. Max Cutter Seal No. 3;
3. 3M Black 5000; or
4. Engineer approved equivalent.

Installation shall conform to the manufacturer recommendations.

9-29.13(2) Traffic Signal Controller Assembly Testing

(January 2017, City of Auburn GSP)

Delete this section and replace it with the following:

The entire controller cabinet, complete with all auxiliary equipment, shall be delivered to the City of Auburn Maintenance & Operation facility, located at 1305 C Street SW, for testing in the Traffic Signal Shop. The period of testing shall be for a minimum of 2 weeks in duration and is intended to demonstrate the operation of all equipment. Any deficiencies or equipment failures discovered shall be corrected by the Contractor, at his expense.

In the event that it is not possible for the City and the Contractor to agree on the cause of a malfunction, the City's decision shall be binding.

The successful completion of the performance test will constitute acceptance of the equipment by the City.

9-29.13(3) Traffic Signal Controller

(January 2017, City of Auburn GSP)

Delete this section and replace it with the following:

General

The traffic signal controller shall be the Cobalt model by Econolite.

9-29.13(6) Emergency Preemption

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Emergency Preemption System equipment shall be compatible with the operational requirements of the existing Opticom brand (3M Company) emitters, detectors, and phase selectors owned by the City.

9-29.13(10) NEMA and Type 2070 Controllers and Cabinets

(December 2021, City of Auburn GSP)

Section 9-29.13(10) including title is replaced with the following:

9-29.13(10) Traffic Signal Controller Cabinet Unit

Controller cabinet furnished and installed by the Contractor shall be one of the following types, as specified in the Plans:

Western Systems Modified P-Plus Cabinet Requirements
Western Systems controller cabinets shall be NEMA TS-2 Type 1 P style cabinet per the City of Auburn approved Western Systems Part # 3012500000 with Alpha BBS. The cabinet shall be fully loaded with BIU's, MMU Smart Monitor, 16 detector cards, load switches, and a GTT 3M 764 Opticom.

Econolite P 44 Cabinet Requirements
Econolite controller cabinets shall be NEMA Type 2 TS-1 P style cabinet per City of Auburn approved Econolite part #166799B. The cabinet shall be fully loaded with BIU's, MMU SmartMonitor, 16 detector cards, load switches, and a GTT 3M 764 opticom.

The cabinet shall meet the following additional requirements:

- Wired and tested to the 2003 NEMA Traffic Controller Assemblies specification with NTCIP Requirements Version 02.06 (as amended herein).

- Equipped with all auxiliary equipment and plug-ins required to operate 8 vehicle phases, 4 pedestrian phases and 4 overlap phases (NEMA TS-2, Type 1).

- Designed for 16 channel operation where each load switch socket can be configured for a vehicle phase, pedestrian phase or overlap operation. These load switch sockets shall be configured in this manor without rewiring the back side of the load-bay. BIU load switch drivers 1-16 shall be wired to appropriate load switch sockets via a terminal block located on the front side of the load bay so as to allow checking voltage inputs to the load switch sockets without dropping the load bay.

- Wired for up to a minimum of (32) channels of detection, (4) channels of Opticom™ preemption.

- The complete cabinet assembly with electronics shall undergo complete input/output function testing by the manufacturer before being released to the City of Auburn.

- Field Terminal Labels
  Field terminals shall be labeled with City of Auburn numbering as well as manufacturers.

- Device Labeling

Every module or device shall have affixed thereto; permanent nametags or nameplates stating the component's function within the composite signal control system. Specifically each loop detector unit shall be labeled, so as to indicate the loop numbers connected to each channel. The front of the shelf where each item is to be placed shall have a similar label so those items can be replaced during maintenance in an expedient fashion.

- Schematics, Software and Manuals
  The controller cabinet shall have a waterproof envelope with a side access attached to the inside of the cabinet door. At the time of delivery, the envelope shall have one complete set of schematics and manuals for each assembly and subassembly located in the cabinet, and a complete wiring diagram for the cabinet and the controller assembly. In addition, a duplicate copy of the above shall be provided to the City of Auburn Traffic Engineering Section.

- Fiber Optic Patch Panels
  Where fiber optic connections are shown in the Plans, the fiber patch panel shall be a pre-terminated Corning 12 port Single-Panel Housing (SPH-01P) with a 12 ct pigtail and corning buffer tube fanout kit and Unicam SC connectors..

9-29.16 Vehicular Signal Heads, Displays, and Housing

(August 2016 City of Auburn GSP)

Replace the first sentence of the second paragraph with the following:

Backplates shall be constructed of 5-inch-wide, .050-inch-thick corrosion-resistant flat black finish, louvered aluminum, attached with stainless steel hardware.

9-29.16(2) Conventional Traffic Signal Heads

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Vehicle signal head housings shall be rigid mount type M.

9-29.16(2)A Optical Units

(April 2018 City of Auburn GSP)

Supplement this section with the following:

The LED's shall have a 15 year manufacturer's warranty. The LED shall be Dialight Light Emitting Diode (LED) with clear lenses. Part numbers for Dialight LEDs are as follows:

Size	Description	Part Number
12 inch	RED Ball	433-1270-003XL15
12 inch	AMBER Ball	433-3270-901XL15
12 inch	GREEN Ball	433-2270-001XL15
12 inch	RED Arrow	432-1374-001XOD15
12 inch	AMBER Arrow	431-3374-901XOD15
12 inch	GREEN Arrow	432-2374-001XOD15
12 inch	GREEN/AMBER Arrow	430-6370-001

12 inch	AMBER/AMBER Flashing Arrow)	430-6370-805

9-29.16(2)E Painting Signal Heads

(April 2018, City of Auburn GSP)
The first sentence of the first paragraph is revised to read:

Traffic signal heads shall be finished with two coats of dark green (SAE AMS Standard 595) oven baked powder coating comprised of resins and pigments.

9-29.18 Vehicle Detector

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Vehicle detectors shall be 2 channel rack mount style and compliant with NEMA TS1 and TS2 standards. They shall be capable of auto tuning and be able to withstand temperatures ranging from minus 40 degrees to plus 80 degrees C. They shall have a minimum of 15 sensitivity levels, 4 frequencies plus sequential scanning to avoid crosstalk, and have pulse and short and long presence modes. They shall have separate detect and fault LED's on the front face.

9-29.19 Pedestrian Push Buttons

(December 2021 City of Auburn GSP)

Replace the first paragraph with the following:

The Pedestrian Push Button Assembly shall be an Guardian APS manufactured by H.D. Campbell Company, 1486 NW 70th Street, Seattle, WA 98117 and shall be black in color with a white button.

Specifics of voice programming shall be provided as part of the submittal review and subject to the Engineer's approval prior to submittal acceptance.

APS push button stations shall include a control module that the Contractor shall install in corresponding pedestrian signal head and manufacturer-supplied multi-conductor interconnect cable that the Contractor shall install per the manufacturer's recommendations between the control module and push button station.

9-29.20 Pedestrian Signals

(January 2017 City of Auburn GSP)

Supplement this section with the following:

Pedestrian signals shall be a LED, filled hand/walking person countdown display.

The maximum overall dimensions of the signal shall be 19 inch wide by 18¾ inch high by 8¾ inch deep, including the egg crate Z type visor and hinges. The signal shall be furnished complete and ready to operate. In order to facilitate installation and maintenance, the signal shall be designed so that all components are readily accessible from the front by opening the door.

Each signal shall be provided with an egg crate visor constructed of polycarbonate material. The egg crate or "Z" crate type sun shield, if used, shall be held in place by the use

of stainless steel screws. The complete egg crate or "Z" crate assembly shall be 1½ inch deep.

The case shall be one-piece corrosion resistant aluminum alloy die-casting. Integrally cast hinge lug pairs, two at the top and two at the bottom of each case, shall be provided for operation of a swing door down. The unit shall be mounted with Type E mountings unless indicated otherwise on the attached Plans. All terminal compartments shall be either ferrous metal or bronze.

Pedestrian signal heads shall be Dialight ITE compliant Light Emitting Diode (LED) or approved equivalents.

(February 2023, City of Auburn GSP)

Add the following new section:

9-29.22 Rectangular Rapid Flashing Beacon (RRFB)

The contractor shall provide and install a hardwired 120 volt power Rectangular Rapid Flashing Beacon (RRFB) with hardwire communication between the multiple beacons. The beacons shall conform to the latest MUTCD.

The RRFB shall utilize two frontside LEDs that are approximately 5" by 2" and a minimum of 7" apart. They shall be double sided where shown in the plans. There shall be end mounted indicator flashers in the direction of the pedestrian crossing only. The system shall utilize the black Campbell AGPS pushbutton with modified 5" x 7" yellow R10-25 MUTCD signs.

The pole shall be a 4 1/2" OD Galvanized steel or aluminum pipe threaded at one end to fit a square pedestal 4 bolt aluminum frangible pole base. The top of the 4 ½" pole shall be capped with a waterproof factory cap. The four bolt concrete foundation shall be a minimum of 18" round by 3 feet deep and meet the manufacturers recommendations.

Equipment enclosures shall be mounted out of reach above or behind the pedestrian signage.

The RRFB units shall be Eltec or Carmanah.

(November 2020, City of Auburn GSP)

Add the following new section:

9-29.23 Video Detection Cameras

The Video Detection System shall be Econolite Vision or Trafficon by Kar-Gor and the presence detector boards shall be Trafficon VIP3D.2, which monitors only two cameras. Both systems shall include built in ethernet communication for our ITS system.

The cameras shall be located as indicated on the Plans. Cameras shall be mounted on signal mast arms as shown in the Plans utilizing Pelco Extended Tilt & Pan pole mount, for installation on the signal arm with cable mount and 72-inch tube or approved equivalent. The cable mount shall be suitable for the mast arm diameter at each camera installation location.

The camera housings and internal cameras shall be the latest approved models.

9-29.24 Service Cabinets

(November 2020 City of Auburn GSP)

Supplement this section with the following:

Service cabinet shall be a metered aluminum Skyline Electric Series 47700-A1-R1, with Underwriters Laboratory label on the panel boards as in accordance with the applicable City of Auburn Standard Details. The service cabinet shall comply with all requirements of Puget Sound Energy and Washington State Labor and Industries. It shall be the Contractor's responsibility to obtain these requirements and ensure that the cabinet complies with the requirements. The service cabinet shall be equipped with a stainless steel handle, a three-point locking system, and a Best six-tumbler mortise cabinet lock with dead bolt.

Two copper ground rods shall be installed per WSDOT and the NEC.

The cabinet shall contain the following branch breakers as applicable:

20 AMP	2 pole	Lighting Circuit A
20 AMP	2 pole	Lighting Circuit B
30 AMP	1 pole	Traffic Signal
100 AMP	2 pole	Main

(October 2016 City of Auburn GSP)

Supplement Division 9 with the following new section:

9-29.26 Traffic Signal Battery Backup System

All battery backup power units shall utilize the newest Alpha Inverter/Charger unit, complete with associated remote control display panel.

Batteries shall be connected utilizing approved quick-connect modular battery connectors. Battery cable sizing shall be appropriate for the type and quantity of batteries supplied.

Batteries shall be 12 Volts DC, 110 amp hour minimum, absorbed glass mat type, group 27. Batteries shall meet or exceed specification MIL B-8565J (Sec 4.6.22). There shall be 4 batteries supplied by the Contractor.

All battery backup power units shall possess an AC voltage bypass/disconnect switch or relay. The bypass/disconnect method shall couple the normal AC power source directly to the signal controller cabinet, while completely isolating the inverter/charger unit from the circuit.

(February 2023, City of Auburn GSP)

Supplement Division 9 with the following new section:

9-29.27 CCTV System

CCTV cameras shall be a Axis M5525-E 2 MP Mini PTZ Dome with a Axis Ethernet 15 Watt POE injector.

The ethernet switches shall be shelf mount Ruggedcom RS900G gigabit ethernet switches with SM fiber ports and necessary 120 volt power cords and ethernet cords and jumpers.

Camera mounting equipment shall be use a custom 1-1/2" threaded pipe Painted Signal black, T94A01D Pendant mounting kit and Pelco AstroBrac 90 degree pole mount and other equipment and hardware as shown in the plans and as required for a complete and operational CCTV camera system. The signal pole mount may have to be modified as shown in the plans.
(November 2020 City of Auburn GSP)

Supplement Division 9 with the following new section:

9-29.28 Variable Message Sign System

Major elements of the variable message sign (VMS) system shall consist of the variable message sign, sign structure, foundation and ground-mounted VMS field cabinet including the VMS controller, Alpha Battery Backup, compact batteries, fiber optic patch panel, ethernet switch, power supply, and associated equipment. Conduit, junction boxes and wiring/cabling to connect the sign, controller and various components of the system shall be per the manufacturer's requirements.

VMS Display and Housing

The sign display shall be supplied by one of the following vendors:

Daktronics, Inc.
331 32nd Ave.
P.O. Box 5128
Brookings, SD 57006-5128
Tel: (888) 325-8726
Email: transportation@daktronics.com

The sign display shall be a continuous matrix of amber LED pixels, with a minimum of 18 pixels high and 75 pixels wide with a pitch of 44 mm to 48 mm. Each pixel shall be made from a grouping of amber light emitting diodes and contain no moving parts. The matrix of pixels shall be capable of displaying a messages with 2 lines of 12-inch text, 12 characters long.. The sign display and other associated VMS components shall permit a test message using all pixels (1350 min.) simultaneously running at the maximum brightness and 100 percent duty.

The sign display shall provide front service for all LED display modules, electronics, power supplies, environmental control equipment, air filters, wiring, and other internal VMS components.

The nominal external dimensions of the sign shall not exceed 13.0 feet in width, 4.0 feet in height, and 1.5 feet in depth. The VMS back and side housing walls shall be vertical. Display modules shall be parallel to the front VMS wall, so that use of the LED viewing cone is optimized. The dead load of the housing and contents shall not exceed 600 lbs.

VMS housing exterior sheet material shall be 5052 aluminum alloy and shall have a minimum thickness of 0.125 inches. Exterior sheet seams shall be chemically bonded or continuously welded and waterproof. VMS housing structural frame members (I-beams, C-channels, Zee-extrusions, and bar stock) shall be aluminum alloy number 6061-T6.

VMS housings shall be constructed to present a clean, neat appearance, and the equipment located within shall be protected from rain, snow, dirt, and corrosion. Weep holes shall be fabricated in a manner which prevents the entrance of insects.

The front of the LED display matrix shall be completely covered with polycarbonate sheeting that is weather tight, ultraviolet (UV) light protected, non-glare, and which has a minimum

thickness of 0.11 inches. To achieve maximum display contrast and legibility, the outside of the polycarbonate sign face shall be fully covered with a mask, which is formed from aluminum sheeting. The mask shall have a minimum thickness of 0.09 inches and shall contain a circular opening for each pixel. The openings shall not hinder the 15° half-angle LED viewing angle (30° inclusive viewing cone). All exposed metal on the VMS front face, which is visible to viewing motorists, shall be coated with black Kynar 500 resin or an equivalent oven-fired fluoropolymer-based coating having a minimum outdoor service life of 20 years. This shall include the aluminum face mask, the aluminum border outside the LED display matrix, and all the mounting and assembly hardware.

All VMS equipment, components, modular assemblies and other non-structural elements of the sign shall be removable, transportable, and capable of being installed by a single technician utilizing a one-person aerial lift truck.

Ribbon cable shall be protected at all points of physical contact where it touches metallic frameworks. Either the ribbon cable or the frame, or both, shall be wrapped with a protective covering where the cable touches the framework, to prevent cable insulation rub-through from road induced vibration in the sign framework.

The interior VMS environment shall be monitored and controlled by the sign controller. Environmental control shall be designed to maintain the internal VMS temperature at or below +140°F when the outdoor ambient temperature is at or below +115°F. The VMS environmental control system shall consist of four primary subsystems as follows:

Internal Temperature Sensors and Cooling/Heating Systems

The VMS shall contain two internally-mounted temperature sensors which are equipped with external thermocouples and which the sign controller continuously monitors. This temperature information shall be used by the sign controller to determine when to activate and deactivate the environmental control systems described herein. Sensors shall be located on opposite ends of the upper 1/3 of the LED display matrix, and their external thermocouples shall be attached to and make contact with an LED pixel circuit board.

The thermocouple and LED board shall be easily detached, in the event that one of the units requires removal and replacement. Sensors shall be capable of measuring temperatures from -40°F to +185°F. The sign controller shall automatically shut down the LED display whenever one or both sensors indicate that LED board temperature has exceeded +140°F. The sign controller shall automatically restart the LED display whenever the suspect temperature falls below +130°F. Both shutdown and re-start temperature thresholds shall be user-programmable. Sensor temperatures and VMS shutdown/re-start events shall be reportable to the VMS Central Software.

LED Display Cooling System

The VMS shall contain a ventilation system to monitor and control internal cabinet temperature with user-programmable temperature thresholds. This system shall be comprised of fan-forced air to control ventilation in the cabinet. . The sign controller shall initially be programmed to activate the LED cooling fan system based on the manufacturer's recommendations for the application(s) on this project. Cooling fans shall be located so as not to hinder removal of LED display modules and driver boards.

Front Face Panel Defog/Defrost System - The VMS shall contain a defog/defrost system which circulates warm, fan-forced air across the inside of the polycarbonate front face whenever LED board temperature falls below a user-programmable threshold. The air

source shall consist of a fan or fans that provide uniform airflow across the polycarbonate face panel.

The sign controller shall initially be programmed to activate the defog/defrost system whenever LED board temperature falls below +40°F and shall deactivate the defog/defrost system whenever LED board temperature exceeds +105°F. A 100-watt heating element shall be mounted in front of each defog/defrost fan and shall serve to warm the air directed across the VMS face. Heating elements shall be on only when the defog/defrost fans are on.

VMS Mounting Hardware

A VMS, sign structure and foundation are included in the construction. The sign housing shall be provided with all necessary hardware including sign mounting beams, vertical and horizontal brackets, maintenance walkways, and all related hardware to install the VMS.

The VMS housing, structural framing, face covering, and mounting members shall be designed to withstand a wind velocity of 100 mph with a 30 percent gust factor and shall otherwise comply with the latest requirements of AASHTO's Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

VMS Sign Structure

The VMS sign structure shall be as specified for ***VMS Support Structure*** Special Provision 9-29.6(1)A.

Ground-mounted VMS Field Cabinet

The field cabinet shall be as specified in Section 9-29.13(10) and shall contain the VMS sign controller, Alpha Battery Backup, Compact batteries, ethernet switch and fiber optic patch panel for communication with the City of Auburn fiber optic ITS network.

VMS Sign Controller

Each VMS shall include an associated sign controller, which shall be installed in the field cabinet.

To support the VMS and VMS controller functions, they shall be provided with two serial communication ports.

One communication port shall be used to connect a laptop to the controller. The interface shall be wired as a 9-pin, EIA-232 DCE port. The port shall connect to a laptop computer using a straight-through 9-pin cable. One cable shall be supplied for each VMS installed in this contract.

The second communication port is for remote control of the sign from the central computer. The interface shall be wired as a 9-pin, EIA-232 DTE serial port. This port shall be connected to a communication interface (modem) specified elsewhere in this contract. A cable shall be supplied to connect the VMS communication port to the modem port (the modem port may be a non-standard pin-out and require a custom-made cable).

The sign controller hardware and software shall support all VMS communication, control, and diagnostic features as listed herein.

Memory

Sign controllers shall have both permanent and semi-permanent memory. Permanent memory shall be EE-PROM integrated circuits and shall contain the executable sign controller software. Semi-permanent memory shall be RAM integrated circuits with a battery backup that retains the data in memory for a minimum of one year following a power failure. Semi-permanent memory shall contain the library of messages, the message display schedule and programmable

operating parameters. Each message shall have the capability to be defined and stored as a three-page message.

Power Interruptions

Contents of the sign controller's memory shall be preserved by battery backup during AC power interruptions and the controller shall automatically resume operation once AC power is restored. Upon recovering from a power interruption, the sign controller shall display the message identified by the Power Recovery Message parameter. The sign controller shall report to the central computer that it has recovered from a power interruption.

Sign Controller Software

The sign controller shall cause the desired message to be displayed on the VMS. The sign shall display alphanumeric character fonts. The sign controller shall provide a default value for each NTCIP object supported.

Message Selection

The central computer or laptop computer shall cause the sign controller to implement a message selected from those stored in controller memory, or a new message entered via the communication port.

The sign controller shall incorporate CRC checks to verify MULTI strings. The sign shall not display a message unless the Message Activation Code CRC matches the Message CRC.

A message shall remain displayed on the sign until either a command to change the current message or a command to blank the display is received. A command to display a message shall not succeed if the activation priority is less than the run time priority of the message currently displayed.

Data Transmission Requirements

Each sign controller shall contain two communication ports. Each communication port shall be labeled ("Local" or "Central") and shall be set to 9600 baud at the factory. Each port shall operate independently at baud rates of 1200, 2400, 9600, and 19,200 bits per second. The user shall select the baud rate for each port via a DIP switch.

Communication

The sign controller hardware and software shall communicate with the central computer in a polled multi-drop operation. In the polled multi-drop operation, several sign controllers shall share the same communication channel, with each controller assigned a unique ID number. Controller ID numbers shall conform to the NTCIP requirements for address numbers. A sign controller shall only reply to messages labeled with its ID. In polled multi-drop mode, sign controllers never initiate communication, but merely transmit their responses to messages from the central computer.

A laptop computer connected to the sign controller's local communication port shall have the same control and diagnostic capabilities as the central computer. However, local laptop control capability shall be limited to the VMS which is directly connected to that sign controller.

NTCIP Requirements

The sign controller software shall comply with the National Transportation Communications for ITS Protocol (NTCIP) documents and all related errata sheets published before July 1, 1999 and as referenced herein.

The sign controller software shall support the following standards:

1. NTCIP 1101, *Simple Transportation Management Framework* (STMF), Conformance Level 1 (Simple Network Management Protocol (SNMP))
2. NTCIP 2001, *Class B Profile*. All serial ports on the device shall support communications according to these standards.
3. NTCIP 2101, *SP-PMPP/RS232* Point-to-Multi-Point Protocol (PMPP)
4. NTCIP 2201, *NTCIP TP-Null* Transport Profile Null (TP-NULL)

The sign controller software shall implement all mandatory objects of all mandatory conformance groups as defined in NTCIP 1201, *Global Object Definitions*, and NTCIP 1203, *Object Definitions for Dynamic Message Signs*. Software shall implement the following conformance groups:

NTCIP 1203, Object Definitions for DMS

1. VMS Sign Configuration
2. MULTI Configuration
3. Default Message Control
4. Pixel Service Control
5. MULTI Error Control
6. Sign Status
7. Status Error
8. Pixel Error Status
9. Lamp Error Status
10. Fan Error Status
11. Power Status
12. Temperature Status

The software shall implement the following optional objects:

NTCIP 1203, Object Definitions for DMS

1. dmsMessageBeacon
2. dmsMessagePixelService
3. dmsCommunicationsLossMessage
4. dmsPowerLossMessage
5. dmsTimeCommLoss
6. dmsMultiOtherErrorDescription
7. dmsStatDoorOpen
8. fanFailures
9. fanTestActivation
10. lineVolts
11. tempMaxSignHousing

Objects required by these specifications shall support all values within its standardized range. The standardized range is defined by a size, range, or

enumerated listing indicated in the object's SYNTAX field and/or through descriptive text in the object's description field. The following list indicates the modified object requirements for these objects.

Object Name	Object ID	Minimum Requirements
Number of Fonts	numFonts	9
Maximum Characters per Font	maxFontCharacters	255
Default Background Color	defaultBackgroundColor	0
Default Foreground Color	defaultForegroundColor	9
Default Justification Line	defaultJustificationLine	2, 3, and 4
Default Justification Page	defaultJustificationPage	2, 3, and 4
Number of Permanent Msgs.	DmsNumPermanentMsg.	2
Maximum No. Changeable Msg.	DmsMaxChangeableMsg.	8
Maximum Number Volatile Msg. *	dmsMaxVolatileMsg.	8
Control Mode	dmsControlMode	2, 4, and 5

***** Changeable messages in excess of the minimum requirement are considered to meet the specification for an equivalent number of Volatile messages.

The first permanent message shall be used to blank the sign display. The second permanent message shall be the diagnostic message.

Sign controller software shall implement the following tags (opening and closing where defined) of the Mark-Up Language for Transportation Information (MULTI) as defined in NTCIP 1203:

1. Flash
2. Font
3. Justification Line
4. Justification Page
5. Moving Text
6. New Line
7. New Page
8. Page Time

Documentation

Software shall be supplied with all documentation on 1.44Mb IBM-compatible diskette(s). ASCII versions of the following Management Information Base (MIB) files in Abstract Syntax Notation 1 (ASN.1) format shall be provided on CD-ROM:

1. The official MIB Module referenced by the device functionality.

2. A manufacturer-specific version of the official MIB Module with the non-standardized range indicated in the SYNTAX field. The filename shall match the official MIB Module, with the extension "spc".

3. A MIB Module of all manufacturer-specific objects supported by the device with accurate and meaningful DESCRIPTION fields and the supported ranges indicated in the SYNTAX field.

Control Software
This work shall consist of furnishing Variable Message Sign (VMS) control software. The control software shall be a 32-bit application, designed to operate on Microsoft® Windows NT™, 98™, or 2000™ operating system. The control software shall provide for command and control of the following functions:

VMS Control
Software shall retrieve, display, update and download/upload the following functional parameters to the local sign controller in response to user-initiated instructions. The sign controller shall not perform pixel service tests when VMS are displaying messages. Software shall perform the following operations in conjunction with its monitoring and logging functions:

Display a message
Blank the current message
Change message priority
Pixel service, lamp and fan tests
Set time and date in the sign controller
Retrieve sign controller ID, type, and manufacturer

Communications
Communications between the control software and sign controller shall be NTCIP compliant, as indicated in the Special Provision for Variable Message Sign System.

The control software shall verify all communications for errors. If a response from a sign controller contains a communication error, or if there is no response, the Control Software shall re-establish communications.

Data Collection
The control software shall retrieve errors detected, message number currently being displayed, and current message priority. Using different commands, the software shall retrieve message MULTI strings, a map of defective pixels, the time and date, the event schedule, and configuration parameters.

Message Library
The control software shall store messages and transfer messages to a sign for storage and/or display. When a user desires to send a message to a sign, the control software shall offer as choices only those messages compatible with the sign in question. The control software shall allow message names of up to 25 characters in length. If the selected name already exists, the software shall notify the user and give the option of replacing the existing message or selecting another name.

The control software shall display all character fonts supported by the Variable Message Sign System. Messages shall be displayed on the computer monitor in exactly the same format (font, text centering and justification) as on the Variable Message Sign.

Software Duplication Rights
The City of Auburn shall have the right to duplicate the Variable Message Sign Control Software as needed for use in controlling signs under its jurisdiction.

Documentation
The Contractor shall furnish 1 copy of the Control Software user manuals to the Engineer. In addition, 2 sets of the software, installation program, instructions and user manual shall be furnished on CD ROM or diskettes to the Engineer.

9-30 Water Distribution Materials

9-30.1 Pipe

9-30.1(1) Ductile Iron Pipe

(February 2018, City of Auburn GSP)

The third sentence of the first paragraph in the list is revised to read:

All other ductile iron pipe shall be Special Thickness Class 52.

9-30.2 Fittings

9-30.2(1) Ductile Iron Pipe

(September 2020, City of Auburn GSP)

Supplement this section with the following:

All pipe fittings, adapters and joints for ductile iron pipe shall be ductile iron designed to AWWA Specification (unless otherwise approved in writing by the Engineer) with sufficient tangent at the ends to allow for proper joint connections and shall be coated to give them protection equal to that of the pipe. Field fabricated fittings will not be permitted. Flexible couplings shall be of the style as required for specific application.

9-30.2(6) Restrained Joints

(September 2020, City of Auburn GSP)

Delete this section and replace it with the following:

Bolted restrained joint (R.J.) fittings shall be Megalug RomaGrip, Star, or approved alternate. All welding associated with the restraint system shall be performed in the pipe manufacturer's shop. No field welding will be permitted.

Mechanical joint restrain systems shall meet the following requirements:

Restrainers shall be manufactured of ductile iron and shall meet or exceed all the requirements of ANSI A21.11 (A WW A C 111) and ASTM A536. The restrainer system shall provide anchoring ductile iron pipe and fittings, valves and PVC pipe to mechanical joint pipe or fittings, or bell to spigot PVC pipe joints. The restrainer shall accommodate the full working pressure rating of the pipe plus surge allowance. In the assembly of the restrain device, the contractor shall tighten the bolts to the correct torque range as recommended by the restraint manufacturer. The restrainers shall be painted black for ductile iron pipe and painted red for PVC pipe applications. The restraining device shall not damage or lower the working pressure of the pipe installed. Restrainers shall be properly stored to minimize sand and

debris build-up. Specifically, the twist-off-screws and associated threads shall be clean (free of sand) prior to installation.

Restrainer specifically for ductile iron pipe may be restrained by utilizing a joint restraint gasket which includes a stainless steel locking segment vulcanized into the rubber gasket. The gasket shall be rated for operating pressures up to 250 psi based on the performance requirements of ANSI/ A WW A C 111/ A21.11.

9-30.3 Valves

9-30.3(1) Gate Valves (3-inches to 16-inches)

(July 2022, City of Auburn GSP)

Delete this section and replace it with the following:

Resilient wedge gate valves shall be used on all 12 inch and smaller water lines and shall be manufactured by Clow, American Flow Control, Waterous, M & H, Kennedy or Mueller with epoxy-coated valve interiors. The valves shall conform to ANSI/AWWA Specifications C509 or C515 with a 200-psi working pressure rating (minimum). They shall be iron bodied, bronze-mounted, non-rising stem and counterclockwise opening with a 2 inch square operating nut. All valves on the fire hydrant line(s) shall be 6-inch diameter mechanical joint by flange. All other valves shall be either mechanical joint by flange or Mechanical joint shackled to tees or crosses. Valve stems shall be provided with O-ring seals.

9-30.3(3) Butterfly Valves

(December 2020, City of Auburn)
Supplement this section with the following:

Butterfly valves shall conform to AWWA Specification C-504, Class 150 B shall have Mechanical joint ends and be rated at 150 psi or higher working pressure and shall be manufactured by Mueller, Clow, M&H, or Kennedy. Operator shall have standard AWWA 2 inch square nut.

9-30.3(4) Valve Boxes

(February 2018, City of Auburn GSP)

Supplement this section with the following:

Valve boxes shall be two-piece, adjustable, cast-iron (with additional extension pieces, if necessary), as manufactured by the Olympic Foundry Company, East Jordan Iron Works, or approved equivalent, with a minimum inside diameter of 5 inch. The word “WATER” shall be cast in relief on the top of all valve box covers. In addition, the letters “NC” shall be cast in place on valve box covers for those valves that are normally closed. Valve box covers shall have a deep skirt per City of Auburn Standard Detail W-18.

9-30.3(7) Combination Air Release/Air Vacuum

(September 2021, City of Auburn GSP)

The first sentence of the second paragraph is revised to read:

The body and cover shall be ductile iron.

9-30.3(8) Tapping Sleeve and Valve Assembly

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Tapping sleeves and valves shall conform to the following:

1. For wet taps on mains 12 inch diameter and larger or size-on-size, the tapping sleeve shall be the full M.J. type, cast-iron, twin seal as manufactured by Mueller, Tyler, Taylor, M & H, or epoxy-coated fabricated-steel, as manufactured by JCM, Rockwell or approved equivalent;

2. For wet taps on mains 10 inch diameter and smaller, or at least 2 inch diameter smaller than the main size, the tapping sleeve shall be the wraparound style, stainless steel or epoxy-coated fabricated-steel, or cast-iron M.J. as manufactured by Romac, Ford, M & H, Rockwell, Smith Blair, or approved equivalent.

9-30.5 Hydrants

(September 2020, City of Auburn GSP)

Supplement this section with the following:

Fire hydrants shall have two 2½-inch hose ports (National Standard Thread) and one 4½-inch pumper port (National Standard Thread) with caps and no chains, 1¼ inch pentagonal operating nut (counterclockwise) opening, O-ring-type stuffing box, automatic barrel drain, and 5¼ inch valve opening. Hydrants shall be equipped with a 5 inch Storz adapter with blind cap, or approved equivalent. Hydrants shall conform to the latest revision of AWWA Specification C502 for dry-barrel fire hydrants for ordinary water service. Hydrants shall be Mueller “Super Centurion 250” or M & H Style 129.

9-30.6 Water Service Connections (2 inches and Smaller)

9-30.6(3) Service Pipes

9-30.6(3)B Polyethylene Tubing

(October 2023, City of Auburn GSP)

Replace this section with the following:

Polyethylene tubing shall meet the requirements of AWWA C901. Tubing shall be high molecular mass with a 200 psi rating. Tubing used for 1 and 2 inch shall be SDR 9 (copper tube size) with stainless steel liners in all couplings and wrapped a #10 insulated copper tracer wire wrapped around pipe.

9-37 VACANT

(August 2016, City of Auburn GSP)
This section, including title, is replaced with the following including subsections:

9-37 Filter Fabric

9-37.1 Filter Fabric for Infiltration Systems

(September 2021, City of Auburn GSP)

Filter fabric for permanent infiltration systems shall be a non-woven, needle punched polypropylene geotextile fabric meeting the requirements of AASHTO M-288-06 for class 3 applications.

(February 2018, City of Auburn GSP)

Supplement Division 9 with the following new section including subsections:

9-38 Submittal Approval

9-38.1 Submittals

(February 2018, City of Auburn GSP)

This section applies to all items that are required to be submitted to the Engineer for review, approval, and acceptance, including, but not limited to:

- Non-Material Submittals (i.e haul routes, Traffic Control Plans (TCP's), requests for substitution, breakdown of lump sum items, schedules, road closure requests, material product samples, color palettes or swatches, warranty documentation, Operations and Maintenance (O&M) manuals, Spill Prevention, Control, and Countermeasure (SPCC) Plan, Stormwater Pollution Prevention (SWPP) Plan, schedule of submittals, etc.);
- Material Submittals (i.e. Request for Approval of Material (RAM) or Request for use of an item on the WSDOT Qualified Product List (QPL)); and
- Material Acceptance Documentation (i.e. Certification of Material Origin (CMO), Manufacturer's Certificate of Compliance (MCC), miscellaneous certificates of compliance, mill and test reports, Catalog Cuts, Shop Drawings, Visual Acceptance, Reduced Acceptance Criteria, Sampling and Testing, etc.).

9-38.1(1) Submittal Transmittal Procedures

(February 2023, City of Auburn GSP)

Except as specified otherwise in the Contract Documents, all submittals shall be made electronically. Each electronic email shall be limited to 10 MB's in size. All electronic submittals shall be clear, sharp high contrast electronic files provided in Microsoft Word 2016, Microsoft Excel 2016, PDF, or other Engineer approved formats.

In the event the Contractor cannot meet the 10 MB's size limit for a specific submittal, the Contractor may request to submit the individual submittal to the City as a hardcopy or other submittal approach subject to Engineer approval. Such requests shall be made in writing and include an explanation of why the Contractor is requesting to make a hardcopy submittal(s). It will be at the Engineer's sole discretion whether the request to submit hard copy submittals is approved and no additional compensation or time extension shall be granted in relation to the Engineer's decision. Hardcopy submittals shall be either mailed to the City of Auburn Public Works Department at 25 West Main St, Auburn, WA 98001 or dropped off at the City

of Auburn Customer Service Center located on the 2nd floor of the One East Main St, Auburn WA 98001 building.

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with the following:

Submittals shall be transmitted via e-mail to PWSubmittals@auburnwa.gov. The e-mail subject line of electronic submittals shall include the following: <<<Project Number>>>, <<<Project Name>>> - <<<Submittal Title>>>.

(Non-City Contracts, February 2023, City of Auburn GSP)

Supplement this section with the following:

All submittals shall be made electronically and shall be transmitted via e-mail to devsubmittals@auburnwa.gov. The e-mail subject line of electronic submittals shall include the following: <<<Permit/FAC Number>>>, <<<Project Name>>> - <<<Submittal Title>>>.

9-38.1(2) Request for Submittal Approval (RSA) Form Instructions

(February 2018, City of Auburn GSP)

All submittals shall accompany a City of Auburn "Request for Submittal Approval" (RSA) form as a cover letter.

The City provided RSA form is a writable Portable Document Format (PDF) form and shall remain writable until the City returns the signed reviewed submittal. Any submittals made without this form or without all of the required information on the form filled out by the Contractor shall be rejected without review. No additional compensation or time extension shall be granted for a Contractor not supplying this form as a cover letter for their submittals or for an improperly filled out form.

The RSA form shall be completed by the Contractor as follows:

1. For any item being submitted to the City for review and approval for the first time, check the "New Submittal" box. The City will assign the item a submittal number. For items that have been previously submitted and require a re-submittal, check the "Re-submittal of No. ___" box and fill in the submittal number that was assigned by the City to the original submittal. For submittals that are providing Material Acceptance Documentation for a submittal that has been previously made, the Contractor shall check the "Material Acceptance Documentation for Submittal No.___" box and fill in the submittal number that was assigned by the City for which the Contractor is supplying the acceptance documentation for.
2. Fill in the Contract Number (I.E. ## - ##) and Contract/Project Name;
3. Fill in the Project Identifying Number (I.E. CP####);
4. Fill in the Date the Submittal was transmitted to the City;
5. Provide the Contractor's name and, if applicable, the name of Subcontractor or supplier who prepared the submittal;
6. The Contractor is strongly encouraged to submit only one material or item per RSA form, however if more than one material or item is listed on the form then provide a

General Submittal Title that is applicable to the group. If only one material or item is submitted on the form then provide the same name described in bullet point number 8 for the General Submittal Title.

- Do not group non-like materials or items on the same form.
- Do not group multiple bid item numbers for the same material. In instances where a material is applicable to multiple bid item numbers, then list that material for as many times as there are bid item numbers (For instance, if Crushed Surfacing Top Course is the material being submitted on, and this material is applicable to bid item numbers 27 and 56, then this material shall be listed twice on the RSA form).

7. When applicable, provide the Bid Item number the submittal is referencing;
8. Provide a submittal description (be specific). For material submittals, provide the Type of Material, the Manufacturer's Product/Type, or the trade name of the product;
9. When applicable, provide the Name and the Location of the Fabricator or the Manufacturer's name or the Pit Number. This should be the actual manufacturer, not the supplier or distributor,
10. Provide the Contract Specification section number(s) or the page number the submittal material is referencing, or you can list the Plan Sheet number; and
11. For material submittals, indicate whether the submittal is requesting use of the WSDOT Qualified Product List (QPL) or if the submittal is a Request for Approval of Material (RAM) that is not in the QPL, by checking the appropriate box. For non-material submittals and for material acceptance documentation these boxes shall be left blank. If the Contractor elects to use a product listed in the QPL, the submittal documentation shall be prepared in accordance with the instructions in the WSDOT QPL program and shall be the most current list available at the time the product is proposed to be used. If the Contractor elects not to use the QPL or if the material is not listed in the QPL, then supporting documentation for the RAM shall be submitted for review and approval per Section 9-38.1(3) (Request for Approval of Material (RAM) Submittal Content).

9-38.1(3) Request For Approval Of Material (RAM) Submittal Content

(February 2018, City of Auburn GSP)

This Section covers content for Requests for Approval of Material (RAM). RAM submittals shall include the following, where applicable:

1. Each submittal shall include all of the items and materials required for a complete assembly, system or Specification Section.
2. Submittals shall contain all of the physical, technical and performance data required by the specifications or necessary to demonstrate conclusively that the items comply with the requirements of the Contract Documents.
3. Include information on characteristics of electrical or utility service required and verification that such requirements have been coordinated with service provided by the work and by other interconnected elements of the work.
4. Provide verification that the physical characteristics of items submitted, including size, configurations, clearances, mounting points, utility connection points and service access points, are suitable for the space provided and are

compatible with other interrelated items that are existing or have or will be submitted.

5. Label each Product Data submittal with the information required in this Section. Highlight or mark every page of all Product Data submittals to show the specific items being submitted and all options included or choices offered.

6. Label each Shop Drawing and Sample with the information required in this Section. Highlight or mark every page of every copy of all Product Data submittals to show the specific items being submitted and all options included or choices offered.

7. Additional requirements for submittals are contained in the Technical Specification sections.

8. Designation of work as Not in Contract (NIC) or "by others" shown on the Shop Drawings, shall mean that the work will be the responsibility of the Contractor rather than the subcontractor or supplier who has prepared the Shop Drawings.

A separate letter explaining deviations shall accompany any submittal(s) that contain deviations from the requirements of the Contract Documents. The Contractor's letter shall:

1. Cite the specific Contract requirement, including the Specification Section and paragraph number, for which approval of a deviation is sought.

2. Describe the proposed alternate material, item or construction and explain its advantages and/or disadvantages to the City.

3. State the reduction in Contract Price, if any, that is offered to the City.

9-38.1(4) Shop Drawings, Product Samples, and Operation and Maintenance Manuals

(November 2022, City of Auburn GSP)

This section covers Shop Drawings, Product Samples, Color Swatches, and Operation and Maintenance (O&M) Manuals that are required to be submitted in hard copy format for review and approval.

1. Shop Drawings: Submit 1 copy electronically for review. The Contractor is responsible for distributing the City returned submittals to its superintendent, subcontractors and suppliers.

2. Product Samples and Color Swatches/Palettes: Unless stated otherwise in each individual specification section referencing a product where a sample is requested, the Contractor shall submit 1 labeled product sample or 1 set of manufacturers' full range of colors and finishes as ordered by the Engineer and at no additional cost to the Contracting Agency. Product samples or manufacturer color swatches/palettes will not be returned to the Contractor.

3. O&M Manuals: For Draft O&M Manuals, Submit 1 copy electronically for review. The Contractor is responsible for making and distributing the required number of additional copies of the City returned submittals to its

superintendent, subcontractors and suppliers. Contractor shall submit 1 copy electronically and 1 hard copy of each final and approved O&M Manual.

9-38.1(5) Engineer's Submittal Review

(November 2019, City of Auburn GSP)

Submittals will be reviewed and approved by the Engineer per the following:

- For all Non-Material Submittals, the Engineer will mark the RSA form with one of the 'Submittal Approval Codes' listed under column 'A' on the form.
- For Material Submittals requesting the use of the QPL, the Engineer will mark the RSA form with the appropriate QPL approval code found on the QPL form. The QPL approval code is represented by a four digit number.
- For Material Submittals requesting a RAM, the Engineer will mark the RSA form with one of the 'Material Acceptance Codes' listed under column 'B' on the form. If a RAM is submitted for a material that is found on the QPL, the Engineer may mark the RAM with the appropriate QPL code for that material.
- For Material Acceptance Documentation, the Engineer will mark the RSA form with one of the 'Submittal Approval Codes' listed under column 'A' on the form.

The Provisions of Section 1-06 (Control of Material) shall also apply to this section.

The City will return an electronic signed copy of each reviewed submittal to the Contractor at the email address on record with the City. The Contractor is responsible for distributing the electronic copies or making the required number of hard copies of City returned submittals to its superintendent, subcontractors and suppliers.

9-38.1(6) Submittal Approval and Acceptance Codes

(February 2018, City of Auburn GSP)

This section covers the definitions of the 'Submittal Approval' codes and 'Material Acceptance' codes found on the RSA form.

Submittal Approval Codes will indicate:

1. "NET" (NO EXCEPTIONS TAKEN) – The submittal is approved subject to its compatibility with future submissions and additional partial submissions for portions of the work not covered in this submission. Does not constitute approval or deletion of specified or required items not shown in the partial submission.
2. "MCN" (MAKE CORRECTIONS NOTED (NO RESUBMISSION REQUIRED) – The submittals is approved subject to minor corrections that shall be made by the Contractor and subject to its compatibility with future submissions and additional partial submissions for portions of the work not covered in this submission. Does not constitute approval or deletion of specified or required items not shown in the partial submission. No resubmission is required.
3. "AR" (AMEND AND RESUBMIT) – The submittal is rejected because of major inconsistencies or errors which shall be resolved or corrected by the

Contractor prior to subsequent submittal. An amended resubmission is required.

4. "RR" (REJECTED – RESUBMIT) – The submittal does not conform to the Contract Plans and Specifications in major respect. A new submission is required.

5. "NR" (NOT REVIEWED) – The submitted information is not required on project and was not reviewed by the Engineer.

The 'Material Acceptance Code' will indicate the required documentation for the material to be accepted for use on the project:

Code 1. Acceptance based upon a "Satisfactory" Test Report for samples of materials to be incorporated into project for acceptance – Material is approved and requires certified testing for acceptance.

Code 2. Submit a Manufacturer's Certificate of Compliance (MCC) for "Acceptance" prior to use of material – Material is approved and requires a MCC for acceptance.

Code 3. Submit Catalog Cuts for acceptance prior to use of material – Material is approved and requires a catalog cut(s) prior to acceptance.

Code 4. Submit Shop Drawings for "Approval" prior to fabrication of material – Material requires approved shop drawing(s) for acceptance.

Code 5. Only "Approved for Shipment," "WSDOT Inspected," or "Fabrication Approval decal" material shall be used. *(Federal Projects Only)*- Fabricated material that requires a WSDOT inspected stamp or marking for acceptance.

Code 6. Submit a Certificate of Materials Origin (CMO). *(Federal Projects Only)*- Iron or steel material and requires a CMO for acceptance.

Code 7. N/A – This code is not used for material acceptance.

Code 8. Source Approved: - Material may be proprietary. Material requires a visual inspection upon arrival to the job site for acceptance.

Code 9. Approval Withheld: Submit samples for preliminary evaluation. – Material approval is withheld pending review of product samples or manufacturer's color palettes.

Code 10. Approval Withheld: (See City remarks on the Form)

Code 11. Miscellaneous Acceptance Criteria: - Material is approved and conditionally accepted as noted.

Code 12. LAG – Approved Catalog Cut Documented with: □ Mfg. Cert. of Comp. □ Visual Inspection - Material is approved with a Catalog Cut and requires either a Manufacturer's Certificate of Compliance or a Visual Inspection for acceptance.

When a material is marked as approved, it does not necessarily constitute acceptance of the material for incorporation into the work. All of the additional acceptance actions, as noted on the RSA form or on the QPL must be completed prior to the material being accepted for use.

Change orders or force account work requires the same material approval and acceptance as any other bid item.

9-38.2 Schedule of Submittals

(City Contracts, November 2022, City of Auburn GSP)

The Contractor shall submit a preliminary Schedule of Submittals. The Schedule of Submittals shall include the intended dates for which each submittal required by the Contract Documents will be made. The Schedule of Submittals must be accepted prior to payment. Identify the items that will be included in each submittal by listing the item or group of items and the specification section and paragraph number under which they are specified. Indicate whether the submittal is required for product review of proposed equivalents, Shop Drawings, Product Data or Samples or required for product information only. It is the Contractors responsibility to anticipate and provide all submittals required for the project.

The time required to evaluate and review requests for submittals is not the same for all submittals. The Contractor shall allow a minimum of 15 working days, unless otherwise noted, for the Engineer's review. The Contractor shall also allow adequate time for manufacturer delivery at the construction site without causing delay to the work. All submittals shall be in accordance with the approved Schedule of Submittals. Submittals shall be made early enough to allow for unforeseen delays such as:

1. Failure to obtain favorable review because of inadequate or incomplete submittal or because the item submitted does not meet the requirements of the Contract Documents.
2. Delays in manufacture.
3. Delays in delivery.

End Of Division 9

GENERAL SPECIAL PROVISIONS

February 2024

City of Auburn
Engineering Services
Public Works Department
25 West Main Street
Auburn, WA 98001-4998

Approved By:

Jacob Sweeting

2/16/2024

Jacob Sweeting, P.E.
Assistant Director of Engineering Services/City Engineer

Date

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PREFACE FOR THE
CITY OF AUBURN
GENERAL SPECIAL PROVISIONS

Per Auburn City Code (ACC) 12.04.020, all public work construction contracts of the City, including but not limited to streets and sidewalks, storm water and sanitary sewer systems, and water systems, and all work within City public right-of-way performed by the City and others shall conform to the Engineering Construction Standards (ECS). The ECS apply to City capital projects and to work performed by developers and others under construction permits (CON), grading permits (GRA), storm permits (STM), other utility permits, and public facility extensions (FAC). The City of Auburn has adopted the ECS to require the standardization of design and construction elements for consistency, to assure that public safety needs are met, and to comply with Local, State, and Federal regulations.

The General Special Provisions is a sub-part of the ECS and includes the following elements:

A) By reference, Division 1 of the Washington State Department of Transportation's (WSDOT) Standard Specifications (M41-10) for Road, Bridge and Municipal Construction, 2024 edition publication (Standard Specifications). The Standard Specifications are available at https://wsdot.wa.gov/engineering-standards/all-manuals-and-standards/manuals/standard-specifications-road-bridge-and-municipal-construction. Terms and conditions in the Standard Specifications that reference the following elements apply only to City Contracts and do not apply to CON, GRA, or FAC work: Bidding, Award, Claims, Payment, Measurement, Liquidated Damages, Compensation, Sales Tax, Requests to Sublet, and other terms and conditions that are specific a contractual obligations between the City and Contractor.

B) Special Provisions are adopted by the City that supplement, delete, replace, and revise the Standard Specifications. The Special Provisions include references that indicate the applicability of the special provision, the date it was last updated, and the source of the special provision contents:

("Applicability", "Month" "Year" "Specification Source")

Where "Applicability" indicates "City Contracts" the specification applies only to capital projects under contract with the City. Where applicability indicates "Non-City Contracts" the specification only applies to projects and work that is not a capital project under contract with the City. Where "Applicability" is omitted, the specification applies to all work.

C) Additional special provisions may be adopted on a project specific basis and provided separately with the specific project and/or permit that they apply to and are referred to as Project Specific Special Provisions.

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DIVISION 1 General Requirements

1-01 Definitions and Terms

1-01.1 General

(April 2006 City of Auburn GSP)
Add the following before the first paragraph:

Whenever the words “as directed”, “as required”, “as permitted”, or words of the like effect are used, it shall be understood that the direction, requirement or permission of the City of Auburn is intended. The words “sufficient”, “necessary”, “proper”, and the like shall mean sufficient, necessary or proper in the judgment of the City of Auburn. The words “approved”, “acceptable”, “satisfactory”, or other words of the like shall mean approved by, or acceptable to, the City of Auburn.

1-01.3 Definitions

(February 2024 City of Auburn GSP)
Supplement this section with the following:

All references in the Standard Specifications, Amendments, or WSDOT General Special Provisions, to the terms “State”, “Department of Transportation”, “Washington State Transportation Commission”, “Commission”, “Secretary of Transportation”, “Secretary”, “Headquarters”, and “State Treasurer” shall be revised to read “Contracting Agency”.

All references to the terms “State” or “state” shall be revised to read “Contracting Agency” unless the reference is to an administrative agency of the State of Washington, a State statute or regulation, or the context reasonably indicates otherwise.

All references to “State Materials Laboratory” shall be revised to read “Contracting Agency designated location”.

Business Day
A business day is any day from Monday through Friday except holidays as listed in Section 1-08.5.

City of Auburn
See Contracting Agency.

Contract Documents
See definition for “Contract”.

Current Edition
The latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the work is advertised for bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes.

Equal Products
The terms “or equal”, “approved equal”, “approved equivalent” “or equivalent”, etc., as used in the Contract Documents, shall mean a manufactured article, material, method, or work, which in the opinion of the Engineer, is equally desirable or suitable for the purposes intended in the Contract Documents, as compared with similar articles specifically mentioned therein.

Project

The term Project shall mean the Work governed by the Contract Documents.

Shop Drawings
Same as "Working Drawings" as defined in the Standard Specifications.

Standard Details
Same as "Standard Plans" as defined in the Standard Specifications.

Standard Plans
The manual of standard Plans adopted by the City of Auburn is the City of Auburn Standard Details, which includes City of Auburn Standard Details and certain WSDOT Standard Plans by reference.

Standard Specifications
The Standard Specifications for Road, Bridge and Municipal Construction, 2024 edition as issued by the Washington State Department of Transportation, hereinafter referred to as the "Standard Specifications".

Traffic
Both vehicular and non-vehicular traffic, such as pedestrians, bicyclists, wheelchairs, and equestrian traffic.

(City Contracts, January 2024 City of Auburn GSP)
Delete the heading **Completion Dates** and the three paragraphs that follow it, and replace them with the following:

Dates

Bid Opening Date
The date on which the Contracting Agency publicly opens and reads the Bids.

Award Date
The date of the City letter to the Contractor notifying the Contractor of the contract award.

Contract Execution Date
The date the Contracting Agency officially binds the Agency to the Contract.

Notice to Proceed Date
The date stated in the Notice to Proceed on which the Contract time begins.

Substantial Completion Date
The day the Engineer determines the Contracting Agency has full and unrestricted use and benefit of the facilities, both from the operational and safety standpoint, any remaining traffic disruptions will be rare and brief, and only minor incidental work, replacement of temporary substitute facilities, plant establishment periods, or correction or repair remains for the Physical Completion of the total Contract.

Physical Completion Date
The day all of the Work is physically completed on the project. All documentation required by the Contract and required by law does not necessarily need to be furnished by the Contractor by this date.

Final Acceptance Date
See Completion Date.

Completion Date
The day all the Work specified in the Contract is completed and all the obligations of the Contractor under the contract are fulfilled by the Contractor. All documentation

required by the Contract and required by law must be furnished by the Contractor before establishment of this date.

(City Contracts, February 2023 City of Auburn GSP)
Supplement this section with the following:

All references to "Final Contract Voucher Certification" shall be interpreted to mean the final payment form established by the Contracting Agency.

Additive
A supplemental unit of work or group of bid items, identified separately in the Bid Proposal, which may, at the discretion of the Contracting Agency, be awarded in addition to the base bid.

Alternate
One of two or more units of work or groups of bid items, identified separately in the Bid Proposal, from which the Contracting Agency may make a choice between different methods or materials of construction for performing the same work.

Bid Proposal Package
The documents to be submitted by the Contractor for bid consideration. The "Bid Proposal Package" includes those documents identified in the Bidder's Checklist, and may include, but not be limited to the following:

- Bidder's Checklist
- Proposal Form
- Contractor Certification Wage Law Compliance
- Responsible Bidder Information
- Proposed Equipment and Manpower Schedule
- Local Agency Subcontractor List
- Bid Bond

Contract Time
The period of time established by the terms and conditions of the Contract within which the Work must be physically completed.

Equitable Adjustment or Eq. Adj.
The term Equitable Adjustment or Eq. Adj. used in the Bid Proposal Form for Units shall mean that the City has included an estimated dollar amount for that bid item only to provide a common proposal for Bidders. All such dollar amounts are to become part of the Contractor's total bid.

Estimate
The term Estimate or Est. used in the Bid Proposal Form for Units shall mean that the City has included an estimated dollar amount for that bid item, only to provide a common proposal for Bidders. All such dollar amounts are to become part of the Contractor's total bid.

Incidental Work
The terms incidental to the project, incidental to the involved bid item(s), etc., as used in the Contract Documents shall mean that the Contractor is required to provide the specified work complete and the cost of such work shall be incidental and included in the unit contract prices as specified in Section 1-04.1 (Intent of the Contract). No additional payment will be made for this work.

Major Contract Bid Item

A major contract bid item is any bid item, unless specifically excluded in the special provisions, for which the contract price amounts to 10 percent or more of the total contract price as determined by the original proposed quantities and the unit contract prices at the time of award.

Notice of Award
The written notice from the Contracting Agency to the successful bidder signifying the Contracting Agency's acceptance of the Bid Proposal.

Notice to Proceed
The written notice from the Contracting Agency or Engineer to the Contractor authorizing and directing the Contractor to proceed with the Work and establishing the date on which the Contract time begins.

Supplemental Drawings and Instructions
Additional instructions by the Engineer at the request of the Contractor by means of drawings or documents necessary, in the opinion of the Engineer, for the proper execution of the work. Such drawings and instructions are consistent with the Contract Documents.

(Non-City Contracts, February 2023 City of Auburn GSP)
Supplement this Section with the following:

Contractor
Contractor shall refer to the applicant, permit(s) holder, and/or developer.

Contract Execution and Contract Execution Date
Contract Execution shall refer to the Notice to Proceed.

Contract Plans
The City approved plans and the Standard Details and/or Standard Plans referenced by them, which show location, character, and dimensions of the prescribed work including layouts, profiles, cross-sections, and other details.

Contract Time
The period of time established by the terms and conditions of the Contract between Notice to Proceed and Final Acceptance.

Current Edition
The latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date of the plan approval or permit issuance, as applicable, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes.

Dates

Completion Date
See Final Acceptance Date

Final Acceptance Date and Final Acceptance
For public facility extension (FAC) work, the Final Acceptance Date is the date on which the Developer has satisfied the terms of the FAC Agreement such that the City accepts the public portions of the FAC work for ownership and maintenance and the warranty period begins. For non-FAC work, the Final Acceptance Date refers to the date the City has verified the work performed by the Contractor is complete and all associated permit and other requirements have been satisfied.

Physical Completion and Physical Completion Date

Physical completion refers to the City's determination that the Contractor has completed all physical Work.

Engineer
The term Engineer shall be used to mean the City Engineer or any designee thereof and does not refer to the Developer's, Permit holder's, or Contractor's engineer.

Measurement
The term Measurement, when used in reference to measuring material for payment, is used in reference to City contract bid items and is not applicable to Non-City projects and work.

Notice to Proceed and Notice to Proceed Date
The written notice from the Contracting Agency or Engineer to the Contractor authorizing and directing the Contractor to proceed with the Work and establishing the date on which the Contract time begins, or, as applicable, the issuance of permit(s) by the City that authorizes the Contractor to proceed with the Work as may be conditioned by the permit(s).

Payment
The term Payment is used in reference to City Contract bid items and is not applicable to Non-City projects and work.

1-02 Bid Procedures and Conditions

1-02.1 Prequalification of Bidders

(City Contracts, January 24, 2011 APWA GSP)
Delete this section and replace it with the following:

1-02.1 Qualifications of Bidder

Before award of a public works contract, a bidder must meet at least the minimum qualifications of RCW 39.04.350(1) to be considered a responsible bidder and qualified to be awarded a public works project.

(City Contracts, April 2006 City of Auburn GSP)
Supplement this section with the following:

The bidder shall fill out and sign the "Responsible Bidder Information" and the "Proposed Equipment and Manpower Schedule" contained in the "Bid Proposal Package" of this document. These forms must be completed and submitted with the bid.

1-02.2 Plans and Specifications

(City Contracts, August 2020 City of Auburn)
Delete this section and replace it with the following:

Information as to where Bid Documents can be obtained or reviewed will be found in the Call for Bids (Advertisement for Bids) for the work.

1-02.4 Examination of Plans, Specifications and Site of Work

1-02.4(1) General

(City Contracts, January 19, 2022 APWA GSP Option A)
The first sentence of the ninth paragraph, beginning with "Any prospective Bidder desiring…", is revised to read:

Any prospective Bidder desiring an explanation or interpretation of the Bid Documents, must request the explanation or interpretation in writing soon enough to allow a written reply to reach all prospective Bidders before the submission of their Bids.

1-02.4(2) Subsurface Information

(City Contracts, August 2022 City of Auburn GSP)
The third and fourth sentences in the first paragraph are revised to read:

The Summary of Geotechnical Conditions and the boring logs, if and when included as an appendix to the Special Provisions, shall be considered as part of the Contract. The boring logs and associated data, if and when included as an appendix to the Special Provisions, shall be considered as part of the Contract.

(City Contracts, January 2017 City of Auburn GSP)
Supplement this section with the following:

Because of the varying soil composition and ground water levels encountered in various areas and at different seasons of the year, the City of Auburn makes no representation of such conditions as they may pertain to this project. The Contractor shall be responsible for any and all cribbing, sheet piling, de-watering, or other construction methods or procedures, which may be necessary to complete the project and additional compensation will not be allowed, unless otherwise specified in this document.

1-02.5 Proposal Forms

(City Contracts, July 31, 2017 APWA GSP)
Delete this section and replace it with the following:

The Proposal Form will identify the project and its location and describe the work. It will also list estimated quantities, units of measurement, the items of work, and the materials to be furnished at the unit bid prices. The bidder shall complete spaces on the proposal form that call for, but are not limited to, unit prices; extensions; summations; the total bid amount; signatures; date; and, where applicable, retail sales taxes and acknowledgment of addenda; the bidder's name, address, telephone number, and signature; the bidder's UDBE/DBE/M/WBE commitment, if applicable; a State of Washington Contractor's Registration Number; and a Business License Number, if applicable. Bids shall be completed by typing or shall be printed in ink by hand, preferably in black ink. The required certifications are included as part of the Proposal Form.

The Contracting Agency reserves the right to arrange the proposal forms with alternates and additives, if such be to the advantage of the Contracting Agency. The bidder shall bid on all alternates and additives set forth in the Proposal Form unless otherwise specified.

1-02.6 Preparation of Proposal

(City Contracts, January 4, 2024 APWA GSP 1-02.6, Option B)

Supplement the second paragraph with the following:

4. If a minimum bid amount has been established for any item, the unit or lump sum price must equal or exceed the minimum amount stated.
5. Any correction to a bid made by interlineation, alteration, or erasure, shall be initialed by the signer of the bid.

Delete the last two paragraphs, and replace them with the following:

The Bidder shall submit with their Bid a completed Contractor Certification Wage Law Compliance form, provided by the Contracting Agency. Failure to return this certification as part of the Bid Proposal package will make this Bid Nonresponsive and ineligible for Award. A Contractor Certification of Wage Law Compliance form is included in the Proposal Forms.

The Bidder shall make no stipulation on the Bid Form, nor qualify the bid in any manner.

A bid by a corporation shall be executed in the corporate name, by the president or a vice president (or other corporate officer accompanied by evidence of authority to sign).

A bid by a partnership shall be executed in the partnership name, and signed by a partner. A copy of the partnership agreement shall be submitted with the Bid Form if any DBE requirements are to be satisfied through such an agreement.

A bid by a joint venture shall be executed in the joint venture name and signed by a member of the joint venture. A copy of the joint venture agreement shall be submitted with the Bid Form if any DBE requirements are to be satisfied through such an agreement.

(City Contracts, June 2017 City of Auburn GSP)
Supplement this section with the following:

Any correction to a bid made by interlineation, alteration, or erasure, may also be initialed by an authorized representative of the bidder.

1-02.7 Bid Deposit

(City Contracts, May 2015 City of Auburn GSP)
This section is revised as follows:

The third and fourth sentences of the first paragraph are deleted.

The last paragraph is deleted and replaced with the following:

The failure to furnish a Bid deposit of a minimum of 5 percent with the Bid shall make the Bid nonresponsive and shall cause the Bid to be rejected by the Contracting Agency.

(City Contracts, March 8, 2013 APWA GSP)
Supplement this section with the following:

Bid bonds shall contain the following:

1. Contracting Agency-assigned number for the project;
2. Name of the project;

3. The Contracting Agency named as obligee;
4. The amount of the bid bond stated either as a dollar figure or as a percentage which represents five percent of the maximum bid amount that could be awarded;
5. Signature of the bidder's officer empowered to sign official statements. The signature of the person authorized to submit the bid should agree with the signature on the bond, and the title of the person must accompany the said signature;
6. The signature of the surety's officer empowered to sign the bond and the power of attorney.

If so stated in the Contract Provisions, bidder must use the bond form included in the Contract Provisions.

If so stated in the Contract Provisions, cash will not be accepted for a bid deposit.

1-02.9 Delivery of Proposal

(City Contracts, January 2023 City of Auburn GSP)
Delete this section and replace it with the following:

The City will not consider proposals it receives after the time fixed for opening bids as specified in Section 1-02.12 (Public Opening of Proposals).

Executed Bid Proposal Package documents shall be submitted in a sealed envelope provided by the Bidder, to the following address:

Office of the City Clerk
City of Auburn
25 West Main Street
Auburn, WA 98001-4998

The sealed Bid Proposal Package shall be plainly marked with the Bidder's firm name, return address and telephone number, and in the lower left-hand corner marked with "Sealed Bid for:" followed by the project number, project name, and bid opening date and time.

Proposals may also be sent by mail. Mailed proposals shall be sealed in a second envelope, also addressed and marked as stated above. If the mail option is chosen, it is the Contractor's sole responsibility to ensure that the City receives the Proposal prior to the specified Bid Opening date and time. Proposals received after the specified Bid Opening date and time will be deemed non-responsive and will not be opened or considered.

1-02.10 Withdrawing, Revising, or Supplementing Proposal

(City Contracts, July 23, 2015 APWA GSP)
Delete this section, and replace it with the following:

After submitting a physical Bid Proposal to the Contracting Agency, the Bidder may withdraw, revise, or supplement it if:

1. The Bidder submits a written request signed by an authorized person and physically delivers it to the place designated for receipt of Bid Proposals, and
2. The Contracting Agency receives the request before the time set for receipt of Bid Proposals, and
3. The revised or supplemented Bid Proposal (if any) is received by the Contracting Agency before the time set for receipt of Bid Proposals.

If the Bidder's request to withdraw, revise, or supplement its Bid Proposal is received before the time set for receipt of Bid Proposals, the Contracting Agency will return the unopened Proposal package to the Bidder. The Bidder must then submit the revised or supplemented package in its entirety. If the Bidder does not submit a revised or supplemented package, then its bid shall be considered withdrawn.

Late revised or supplemented Bid Proposals or late withdrawal requests will be date recorded by the Contracting Agency and returned unopened. Mailed, emailed, or faxed requests to withdraw, revise, or supplement a Bid Proposal are not acceptable.

1-02.12 Public Opening of Proposals

(City Contracts, January 2023 City of Auburn GSP)
Supplement the Section with the following:

Bid Proposal Packages will be opened and publicly read aloud by the City Clerk's Office in the Auburn City Hall located at 25 West Main Street, Auburn WA at the bid opening date and time specified in the Invitation for Bids.

City of Auburn bid openings will be held virtually and telephonically. Access to the Virtual Meeting and phone number to listen to the public bid opening is included in the Bid Proposal Package.

1-02.13 Irregular Proposals

(City Contracts, January 4, 2024 APWA GSP)

Delete this section and replace it with the following:

1. A Proposal will be considered irregular and will be rejected if:
   a. The Bidder is not prequalified when so required;
   b. The Bidder adds provisions reserving the right to reject or accept the Award, or enter into the Contract;
   c. A price per unit cannot be determined from the Bid Proposal;
   d. The Proposal form is not properly executed;
   e. The Bidder fails to submit or properly complete a subcontractor list (WSDOT Form 271-015), if applicable, as required in Section 1-02.6;
   f. The Bidder fails to submit or properly complete a Disadvantaged Business Enterprise Certification (WSDOT Form 272-056), if applicable, as required in Section 1-02.6;
   g. The Bidder fails to submit Written Confirmations (WSDOT Form 422-031) from each DBE firm listed on the Bidder's completed DBE Utilization Certification that they are in agreement with the bidder's DBE participation commitment, if applicable, as required in Section 1-02.6, or if the written confirmation that is submitted fails to meet the requirements of the Special Provisions;
   h. The Bidder fails to submit DBE Good Faith Effort documentation, if applicable, as required in Section 1-02.6, or if the documentation that is submitted fails to demonstrate that a Good Faith Effort to meet the Condition of Award in accordance with Section 1-07.11;
   i. The Bidder fails to submit a DBE Bid Item Breakdown (WSDOT Form 272-054), if applicable, as required in Section 1-02.6, or if the documentation that is submitted fails to meet the requirements of the Special Provisions;

j. The Bid Proposal does not constitute a definite and unqualified offer to meet the material terms of the Bid invitation.

2. A Proposal may be considered irregular and may be rejected if:
   a. The Proposal does not include a unit price for every Bid item;
   b. Any of the unit prices are excessively unbalanced (either above or below the amount of a reasonable Bid) to the potential detriment of the Contracting Agency;
   c. The authorized Proposal Form furnished by the Contracting Agency is not used or is altered;
   d. The completed Proposal form contains unauthorized additions, deletions, alternate Bids, or conditions;
   e. Receipt of Addenda is not acknowledged;
   f. A member of a joint venture or partnership and the joint venture or partnership submit Proposals for the same project (in such an instance, both Bids may be rejected); or
   g. If Proposal form entries are not made in ink.

1-02.14 Disqualification of Bidders

(City Contracts, May 17, 2018 APWA GSP, Option A)
Delete this section and replace it with the following:

A Bidder will be deemed not responsible if the Bidder does not meet the mandatory bidder responsibility criteria in RCW 39.04.350(1), as amended.

The Contracting Agency will verify that the Bidder meets the mandatory bidder responsibility criteria in RCW 39.04.350(1). To assess bidder responsibility, the Contracting Agency reserves the right to request documentation as needed from the Bidder and third parties concerning the Bidder's compliance with the mandatory bidder responsibility criteria.

If the Contracting Agency determines the Bidder does not meet the mandatory bidder responsibility criteria in RCW 39.04.350(1) and is therefore not a responsible Bidder, the Contracting Agency shall notify the Bidder in writing, with the reasons for its determination. If the Bidder disagrees with this determination, it may appeal the determination within two (2) business days of the Contracting Agency's determination by presenting its appeal and any additional information to the Contracting Agency. The Contracting Agency will consider the appeal and any additional information before issuing its final determination. If the final determination affirms that the Bidder is not responsible, the Contracting Agency will not execute a contract with any other Bidder until at least two business days after the Bidder determined to be not responsible has received the Contracting Agency's final determination.

(City Contracts, April 2014 City of Auburn GSP)
Supplement this section with the following:

The City of Auburn reserves the right to determine the lowest responsible bidder based on factors other than just price, including but not limited to the following:

1. Liability exposure;
2. References and past performance;
3. Judgments entered against the bidder within the last 5 years that shows a history of failing to meet the terms of the contract;
4. History of claims with other agencies on similar projects;

5. Inadequate or ambiguous specifications;
6. Specifications have been revised;
7. Lowest responsible bid deemed not the best price obtainable;
8. Bids not independently arrived or submitted in bad faith (i.e., price fixing);
9. A determination made that all the necessary requirements of the bid process have not been met;
10. Insufficient competition; and,
11. Other claims or other indications that cancellation or rejection of all bids is clearly in the best interest of the City.

For the purpose of this criterion, 'bidder' shall include the registered construction company submitting the bid, as well as the owner(s) of the company, and any other construction companies the owner(s) may currently or previously have owned.

1-02.15 Pre-Award Information

(City Contracts, December 30, 2022 APWA GSP)
Revise this section to read:

Before awarding any contract, the Contracting Agency may require one or more of these items or actions of the apparent lowest responsible bidder:

1. A complete statement of the origin, composition, and manufacture of any or all materials to be used,
2. Samples of these materials for quality and fitness tests,
3. A progress schedule (in a form the Contracting Agency requires) showing the order of and time required for the various phases of the work,
4. A breakdown of costs assigned to any bid item,
5. Attendance at a conference with the Engineer or representatives of the Engineer,
6. Obtain, and furnish a copy of, a business license to do business in the city or county where the work is located.
7. Any other information or action taken that is deemed necessary to ensure that the bidder is the lowest responsible bidder.

1-03 Award and Execution of Contract

1-03.1 Consideration of Bids

(City Contracts, January 23, 2006 APWA GSP)
Revise the first paragraph to read:

After opening and reading proposals, the Contracting Agency will check them for correctness of extensions of the prices per unit and the total price. If a discrepancy exists between the price per unit and the extended amount of any bid item, the price per unit will control. If a minimum bid amount has been established for any item and the bidder's unit or lump sum price is less than the minimum specified amount, the Contracting Agency will unilaterally revise the unit or lump sum price, to the minimum specified amount and recalculate the extension. The total of extensions, corrected where necessary, including sales taxes where applicable and such additives and/or alternates as selected by the Contracting Agency, will be used by the Contracting Agency for award purposes and to fix the Awarded Contract Price amount and the amount of the contract bond.

(City Contracts, September 2021 City of Auburn GSP)
Add the following new section:

1-03.1(2) Additive and Deductive Schedules

The City reserves the right to select any, all, or none of the additive and/or deductive bid schedules provided on the Proposal Form. The Contractor must complete each additive and/or deductive bid schedule to be considered a responsive bid. The Contract award will be made based on the lowest responsible and responsive total bid, including any selected additive and/or deductive bid schedules, as determined by the City.

1-03.3 Execution of Contract

(City Contracts, January 2024 City of Auburn GSP)
Revise this section to read:

Within 15 calendar days after the award date, the successful bidder shall return an insurance certification as required by Section 1-07.18, and a satisfactory bond as required by law and Section 1-03.4. Within 20 calendar days after the award date, the successful bidder shall return the signed Contracting Agency-prepared contract. Before execution of the contract by the Contracting Agency, the successful bidder shall provide any pre-award information the Contracting Agency may require under Section 1-02.15.

Until the Contracting Agency executes a contract, no proposal shall bind the Contracting Agency nor shall any work begin within the project limits or within Contracting Agency-furnished sites. The Contractor shall bear all risks for any work begun outside such areas and for any materials ordered before the contract is executed by the Contracting Agency.

If the bidder experiences circumstances beyond their control that prevents return of the contract documents within the calendar days after the award date stated above, the Contracting Agency may grant up to a maximum of 7 additional calendar days for return of the documents, provided the Contracting Agency deems the circumstances warrant it.

1-03.4 Contract Bond

(City Contracts, September 2019 City of Auburn GSP)
Delete the first paragraph and replace it with the following:

The successful bidder shall provide executed payment and performance bond(s) for the full contract amount. The bond shall be a combined payment and performance bond and shall:

1. Be on Contracting Agency-furnished form(s);
2. Be signed by an approved surety (or sureties) that:
   a. Is registered with the Washington State Insurance Commissioner, and
   b. Appears on the current Authorized Insurance List in the State of Washington published by the Office of the Insurance Commissioner,
3. Guarantee that the Contractor will perform and comply with all obligations, duties, and conditions under the Contract, including but not limited to the duty and obligation to indemnify, defend, and protect the Contracting Agency against all losses and claims related directly or indirectly from any failure:
   a. Of the Contractor (or any of the employees, subcontractors, or lower tier subcontractors of the Contractor) to faithfully perform and comply with all contract obligations, conditions, and duties, or
   b. Of the Contractor (or the subcontractors or lower tier subcontractors of the Contractor) to pay all laborers, mechanics, subcontractors, lower tier

subcontractors, material person, or any other person who provides supplies or provisions for carrying out the work;

4. Be conditioned upon the payment of taxes, increases, and penalties incurred on the project under titles 50, 51, and 82 RCW; and
5. Be accompanied by a power of attorney for the Surety's officer empowered to sign the bond; and
6. Be signed by an officer of the Contractor empowered to sign official statements (sole proprietor or partner). If the Contractor is a corporation, the bond must be signed by the president or vice president, unless accompanied by written proof of the authority of the individual signing the bond to bind the corporation (i.e., corporate resolution, power of attorney, or a letter to such effect signed by the president or vice president).

(City Contracts, January 2015 City of Auburn GSP)
Supplement this section with the following:

The "Contract Bond" shall remain in force for one year following the "Completion Date" of the Contract to insure Contract defects during the one-year guarantee period in compliance with Section 1-05.10 (Guarantees).

(City Contracts, May 17, 2018 APWA GSP)
Add the following new section:

1-03.4(1) Retainage in Lieu of Contract Bond

For contracts of $150,000 or less, the Contractor may, at the Contractor's option, authorize the Contracting Agency to retain 10% of the contract amount in lieu of furnishing a performance and/or payment bond. If the Contractor elects this option, the retainage shall be held for a period of thirty (30) days after the date of final acceptance, or until receipt of all necessary releases from the Departments of Revenue and of Labor and Industries and settlement of any liens filed under RCW 60.28, whichever is later. The Contractor must advise the Contracting Agency in writing of the Contractor's election to authorize retainage in lieu of a bond, at the time of execution of the Contract.

In choosing this option, the Contractor agrees that if the Contractor, its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the Contract, and shall faithfully perform all the provisions of such contract and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of the Contract that may hereafter be made, at the time and in the manner therein specified, and shall pay all laborers, mechanics, subcontractors, and material suppliers, and all persons who shall supply such person or persons, or subcontractors, with provisions and supplies for the carrying on of such work, on his or her part, and shall indemnify and save harmless the Contracting Agency, its officers and agents from any claim for such payment, then the funds retained in lieu of a performance bond shall be released at the time provided above; otherwise, the funds shall be retained until the Contractor fulfills the said obligations.

1-03.7 Judicial Review

(City Contracts, December 30, 2022 APWA GSP)
Revise this section to read:

All decisions made by the Contracting Agency regarding the Award and execution of the Contract or Bid rejection shall be conclusive subject to the scope of judicial review permitted under Washington Law. Such review, if any, shall be timely filed in the Superior Court of the county where the Contracting Agency headquarters is located, provided that where an action is asserted against a county, RCW 36.01.050 shall control venue and jurisdiction.

(City Contracts, August 2021 City of Auburn)
Add the following new section:

1-03.8 City Determination

The City reserves the right to determine the following:

1. Whether a proposal is irregular under the terms of Section 1-02.13, and
2. Whether a bidder is not responsible under Section 1-02.14.

1-04 Scope of the Work

1-04.2 Coordination of Contract Documents, Plans, Special Provisions, Specifications and Addenda

(Non-City Contracts, January 2023 City of Auburn GSP)
Revise the second paragraph to read:

Any inconsistency in the parts of the contract shall be resolved by following this order of precedence (e.g., 1 presiding over 2, 2 over 3, 3 over 4, and so forth):

1. Public Facility Extension Agreement (for public facility extension work)
2. City issued permit terms and conditions
3. Permit/FAC Plans
4. City of Auburn Engineering Construction Standards Part 1: Special Provisions
5. City of Auburn Engineering Construction Standards Part 2: Standard Details
6. Standard Specifications
7. WSDOT Standard Plans for Road, Bridge, and Municipal Construction

(City Contracts, January 2023 City of Auburn GSP)
Revise the second paragraph to read:

Any inconsistency in the parts of the contract shall be resolved by following this order of precedence (e.g., 1 presiding over 2, 2 over 3, 3 over 4, and so forth):

1. Addenda
2. Proposal Form
3. Project Specific Special Provisions
4. Contract Plans
5. City of Auburn Engineering Construction Standards Part 1: Special Provisions
6. City of Auburn Engineering Construction Standards Part 2: Standard Details
7. Standard Specifications
8. WSDOT Standard Plans for Road, Bridge, and Municipal Construction

(February 2023 City of Auburn GSP)
Supplement the section with the following:

The Contractor shall have the Contract Documents available at the job site during construction.

(January 2017 City of Auburn GSP)
Add the following new section:

1-04.3(1) Contractor-Discovered Discrepancies

The Contractor shall carefully study and compare all the components of the Contract Documents and other instructions, and check and verify all field measurements. The Contractor shall, prior to ordering material or performing work, report in writing to the Engineer any error, inconsistency, or omission in respect to design or mode of construction. If the Contractor, in the course of this study or in the accomplishment of the work, finds any discrepancy between the Plans and the physical condition of the locality as represented in the Plans, or any such errors or omissions in respect to the design or mode of construction in the Plans or in the layout as given by points and instructions, it shall be the Contractor's duty to inform the Engineer immediately in writing, and the Engineer will promptly do the same. Any work done after such discovery, until correction of the Plans or authorization of extra work is given, if the Engineer finds that extra work is involved, will be done at the Contractor's risk. If extra work is involved, the procedure shall be as provided in Section 1-04.4, Changes.

(Non-City Contracts, February 2023 City of Auburn GSP)
Delete Section 1-04.4 in its entirety and replace with the following:

1-04.4 Changes

Changes in Work shall be per Chapter 2 of the Engineering Design Standards.

1-04.4(1) Minor Changes

(City Contracts, May 30, 2019 APWA GSP)
Delete the first paragraph and replace it with the following:

Payments or credits for changes amounting to $25,000 or less may be made under the Bid item "Minor Change". At the discretion of the Contracting Agency, this procedure for Minor Changes may be used in lieu of the more formal procedure as outlined in Section 1-04.4, Changes. All "Minor Change" work will be within the scope of the Contract Work and will not change Contract Time.

(January 2017 City of Auburn GSP)
The first two sentences of the second paragraph are deleted.

1-04.5(1)A Disputes Review Board

(City Contracts, August 2021 City of Auburn GSP)
Delete this Section and its Subsections in their entirety.

1-04.6 Variation in Estimated Quantities

(City Contracts, December 30, 2022 APWA GSP, Option B)
Revise the first paragraph to read:

Payment to the Contractor will be made only for the actual quantities of Work performed and accepted in conformance with the Contract. When the accepted quantity of Work performed

under a unit item varies from the original Proposal quantity, payment will be at the unit Contract price for all Work unless the total accepted quantity of the Contract item, adjusted to exclude added or deleted amounts included in change orders accepted by both parties, increases or decreases by more than 25 percent from the original Proposal quantity, and if the total extended bid price for that item at time of award is equal to or greater than 10 percent of the total contract price at time of award. In that case, payment for contract work may be adjusted as described herein:

1-04.11 Final Cleanup

(February 2018 City of Auburn GSP)
The third sentence of the first paragraph is revised to read:

The City Right-of-Way, material sites, and all ground the Contractor occupied to do the Work shall be left neat and presentable.

(February 2018 City of Auburn GSP)
Supplement the section with the following:

Final cleanup shall also include cleaning out all newly installed storm drain pipe and structures and any ditches that may have been filled during the work, replacing damaged surfacing, and putting the site in a neat, orderly condition and, in respect to structures, cleaning all windows and leaving buildings broom clean.

1-05 Control of Work

1-05.1 Authority of the Engineer

1-05.1(1) Oral Orders

(August 2021 City of Auburn GSP)
Supplement this section with the following:

No oral agreement or conversation with any officer, agent, or employee of the City, either before or after execution of the Contract, shall affect or modify any of the terms or obligations contained in any of the documents comprising the Contract. Such oral agreement or conversation shall be considered as unofficial information and in no way binding upon the City, unless subsequently put in writing and signed by the City.

1-05.1(2) Request for Information (RFI)

(City Contracts, January 2023 City of Auburn GSP)
Supplement this section with the following:

Requests for Information (RFIs) shall be made electronically and shall be transmitted via email to PWSubmittals@auburnwa.gov. The email subject line of electronic RFIs shall include the following: Project Number, Project Name, and RFI Title. Each email shall be limited to 10 MB in size.

In the event the Contractor cannot meet the 10 MB size limit for a specific RFI, the Contractor may request to submit the individual RFI as a hardcopy. Hardcopy RFIs shall be either mailed to the City of Auburn Public Works Department at 25 West Main St, Auburn, WA 98001 or dropped off at the City of Auburn Customer Service Center located on the 2nd floor of the One East Main St, Auburn WA 98001 building.

All RFIs shall accompany the City of Auburn "CIP Construction Request for Information (RFI)" form as a cover letter with enough information provided for the Engineer to respond accordingly.

1-05.4 Conformity with and Deviations from Plans and Stakes

(September 2016 City of Auburn GSP)
Revise the second sentence of the second paragraph to read:

The allowable tolerance for the Contractor's work shall not exceed 0.02 feet from lines, grades, depths and cross-sections shown on the Plans unless otherwise specified in these contract documents.

(January 2023 City of Auburn GSP)
Delete the fourth through seventh paragraphs of this section.

(City Contracts, July 23, 2015 APWA GSP, Option 1)
Supplement this section with the following:

Roadway and Utility Surveys

The Engineer shall furnish to the Contractor one time only all principal lines, grades, and measurements the Engineer deems necessary for completion of the work. These shall generally consist of one initial set of:

1. Slope stakes for establishing grading;
2. Curb grade stakes;
3. Centerline finish grade stakes for pavement sections wider than 25 feet; and
4. Offset points to establish line and grade for underground utilities such as water, sewers, and storm drains.

On alley construction projects with minor grade changes, the Engineer shall provide only offset hubs on one side of the alley to establish the alignment and grade.

(City Contracts, April 2018 City of Auburn GSP)
Supplement this section with the following:

The Contractor shall establish all survey controls, both horizontal and vertical, as necessary to assure proper placement of all project elements based on the primary control points provided by the Engineer. Survey work shall be within the following tolerances:

Stationing	±0.01 foot
Alignment	±0.01 foot (between successive points)
Superstructure Elevations	±0.01 foot (from plan elevations)
Substructure Elevations	±0.05 foot (from plan elevations)

During the progress of the work, the Contractor shall make available to the Engineer all field books including survey information, footing elevations, cross sections and quantities.

The Contractor shall be fully responsible for the close coordination of field locations and measurements with appropriate dimensions of structural members being fabricated.

(City Contracts, September 2016 City of Auburn GSP)
The Contractor shall inform the Engineer at least 3 working days in advance where they intend to work, thus enabling the Engineer to set the engineering control point, lines, and

grades with a minimum of delay and interference. The Engineer may require additional advance notice dependent upon survey requirements and scheduling.

Delays caused by lack of stakes or as a result of the Contractor failing to be specific when requesting survey staking shall not be the basis for additional time or claims for additional compensation by the Contractor.

(City Contracts, July 23, 2015 APWA GSP, Option 2)
Supplement this section with the following:

Bridge and Structure Surveys

For all structural work such as bridges and retaining walls, the Contractor shall retain, as a part of Contractor's organization, an experienced team of surveyors.

The Contractor shall provide all surveys required to complete the structure, except the following primary survey control, which will be provided by the Engineer:

1. Centerline or offsets to centerline of the structure.
2. Stations of abutments and pier centerlines.
3. A sufficient number of bench marks for levels to enable the Contractor to set grades at reasonably short distances.
4. Monuments and control points as shown in the Plans.

The Contractor shall establish all secondary survey controls, both horizontal and vertical, as necessary to assure proper placement of all project elements based on the primary control points provided by the Engineer. Survey work shall be within the following tolerances:

Stationing	±0.01 foot
Alignment	±0.01 foot (between successive points)
Superstructure Elevations	±0.01 foot (from plan elevations)
Substructure Elevations	±0.05 foot (from plan elevations)

During the progress of the work, the Contractor shall make available to the Engineer all field books including survey information, footing elevations, cross sections and quantities.

The Contractor shall be fully responsible for the close coordination of field locations and measurements with appropriate dimensions of structural members being fabricated.

(Non-City Contracts, January 2023 City of Auburn GSP)
Supplement this section with the following:

Bridge and Structure Surveys

For all structural work such as bridges and retaining walls, the Contractor shall retain, as a part of Contractor's organization, an experienced team of surveyors.

The Contractor shall provide all surveys required to complete the structure, including the following primary survey control:

1. Centerline or offsets to centerline of the structure.
2. Stations of abutments and pier centerlines.
3. A sufficient number of bench marks for levels to enable the Contractor to set grades at reasonably short distances.
4. Monuments and control points as shown in the Plans.

The Contractor shall establish all secondary survey controls, both horizontal and vertical, as necessary to assure proper placement of all project elements based on the primary control points. Survey work shall be within the following tolerances:

Stationing	±0.01 foot
Alignment	±0.01 foot (between successive points)
Superstructure Elevations	±0.01 foot (from plan elevations)
Substructure Elevations	±0.05 foot (from plan elevations)

During the progress of the work, the Contractor shall make available to the Engineer all field books including survey information, footing elevations, cross sections and quantities.

The Contractor shall be fully responsible for the close coordination of field locations and measurements with appropriate dimensions of structural members being fabricated.

(Non-City Contracts, April 2018 City of Auburn GSP)
Supplement this section with the following:

The Contractor shall establish all survey controls, both horizontal and vertical, as necessary to assure proper placement of all project elements. Survey work shall be within the following tolerances:

Stationing	±0.01 foot
Alignment	±0.01 foot (between successive points)
Superstructure Elevations	±0.01 foot (from plan elevations)
Substructure Elevations	±0.05 foot (from plan elevations)

During the progress of the work, the Contractor shall make available to the Engineer all field books including survey information, footing elevations, cross sections and quantities.

The Contractor shall be fully responsible for the close coordination of field locations and measurements with appropriate dimensions of structural members being fabricated.

(February 2023 City of Auburn GSP)
Add the following new subsection to this section:

1-05.4(1) Monuments

The Contractor shall work to preserve the existing monumentation as provided in RCW 58.09.130 and WAC 332-120. The Contractor shall notify the Engineer immediately if it becomes apparent that a survey marker will be disturbed due to construction. The Contractor shall allow ample time for the Engineer and/or Contractor, as applicable, to acquire adequate information so that the monument may be replaced by the Contractor in its original position after construction.

(City Contracts, February 2023 City of Auburn GSP)
Add the following new subsection to this section:

1-05.4(2) Contracting Agency Provided Construction Staking

1-05.4(2)A General

As used in this Section 1-05.4, the words, “stake,” “mark,” “marker,” or “monument” will be deemed to include any kind of survey marking, whether or not set by the Contracting Agency.

1-05.4(2)B Control Stakes

The Engineer will supply construction stakes and marks establishing lines, slopes and grades in accordance with this Section of these Special Provisions. The Contractor shall assume full responsibility for detailed dimensions, elevations, and excavation slopes measured from these Engineer furnished stakes and marks.

A claim by the Contractor for extra compensation by reason of alterations or reconstruction work allegedly due to error in the Engineer's line and grade will not be allowed unless the original control points set by the Engineer still exist, or unless the Contractor can provide other satisfactory substantiating evidence to prove the error was caused by incorrect Engineer furnished survey data. Three consecutive points set on line or grade shall be the minimum points used to determine any variation from a straight line or grade. Any such variation shall, upon discovery, be reported to the Engineer.

The Contractor shall provide a work site clear of equipment, stockpiles and obstructions which has been prepared and maintained to permit construction staking to proceed in a safe and orderly manner. The Engineer will stake a finite amount of work in a single day in accordance with Section 1-05.4(1)C of these Special Provisions.

Stakes that constitute reference points for all construction work will be conspicuously marked with an appropriate color of flagging tape. It will be the responsibility of the Contractor to inform its employees and subcontractors of the importance and necessity to preserve the stakes.

1-05.4(2)C Survey Requests

It shall be the Contractor's responsibility to properly schedule survey work and coordinate staking requests with construction activities. The Engineer may be reasonably expected to stake any one of the following items, in the quantity shown, in a single day:

Roadway grading	+/-1500 lineal feet of centerline
Storm or sanitary sewer	Approximately 8-10 structures
Water main	+/-1500 lineal feet of pipe
Curb and gutter	+/-1300 lineal feet (one side only)
Base and top course	+/-1000 lineal feet of centerline
Slope staking	+/-800-1200 lineal feet (top and toe)
Illumination/signalization	Approximately 15-20 structures

Actual quantities may vary based on the complexity of the project, line of sight considerations, traffic interference, properly prepared work site, and other items that could affect production.

The Contractor shall be aware that length does not always translate directly into stationing. For example, a survey request for storm sewer pipe from Station 3+00 to 8+00 is 500 lineal feet in length. There may be 1000 lineal feet, or more, of storm sewer pipe, if the pipe is placed on both sides of the roadway and interconnected.

The Contractor shall provide staking requests at least three (3) working days before the Engineer needs to begin the staking operation. If the work site is obstructed so that survey work cannot be done, a new survey request shall be submitted by the Contractor so that the

survey work can be rescheduled once the site is properly prepared. An additional 3 working days may be required to complete the rescheduled work.

The Contractor shall work to preserve stakes and marks set by the Engineer. The Contracting Agency will deduct from payments due the Contractor all costs to replace such stakes, marks, carelessly or willfully damaged or destroyed by the Contractor's operation. A new survey request shall be submitted by the Contractor to replace the damaged or destroyed stakes. An additional 3 working days may be required to complete the request.

If the removal of a control stake or monument is required by the construction operations of the Contractor or its subcontractors, and advance notice of at least three (3) working days is given to the Engineer, the Engineer will reference, remove, and later replace the stakes at no cost to the Contractor.

The Contractor is not entitled to an extension of time, as provided for in Section 1-08.8 as a result of any replacement of control stakes.

1-05.4(2)D Staking Services

The Contractor shall determine appropriate construction stake offset distances to prevent damage to stakes by its construction equipment.

The Engineer shall furnish to the Contractor, one time only, all principal lines, grades and measurements the Engineer deems necessary for completion of the work. These shall generally consist of one initial set of:

1. Cut or fill stakes for establishing grade and embankments,
2. Curb or gutter grade stakes,
3. Centerline finish grade stakes for pavement sections wider than 25 feet as set forth in Section 1-05.5(5), subsection 2, and
4. Offset points to establish line and grade for underground utilities such as water, sewers, storm drains, illumination and signalization.

No intermediate stakes shall be provided between curb grade and centerline stakes.

The Contractor shall provide enough safe areas to permit the Engineer to set those points and elevations that are the responsibility of the Contracting Agency and to perform random checks of the surveying performed by the Contractor.

Roadway and Utility Surveys

The Engineer will furnish the following stakes and reference marks:

- Clearing Limits - One set of clearing limit stakes will be set at approximately 50-foot stations or as needed.
- Rough Grading - One set of rough grade stakes will be set along the construction centerline of streets at 50-foot stations as required. (If superelevations require intermediate stakes along vertical curves, the Engineer will provide staking at closer intervals.) One set of primary cut and fill stakes will be set for site work. One set of secondary final grade cut and fill stakes will be set where deemed applicable as determined by the Engineer.
- Storm Sewers - Two cut or fill stakes for each inlet, catch basin or manhole will be set at appropriate offsets to the center of the structure. After installation and backfill, inverts will be checked for correctness.
- Sanitary Sewers - Two cut or fill stakes for each manhole or cleanout location will be set at appropriate offsets to the center of the structure. After installation and backfill, inverts will be checked for correctness.

- Water Main - One set of line stakes will be furnished for water mains at 50-foot stations. Additionally, two reference stakes for each valve, hydrant, tee and angle point location will be set concurrently with these line stakes.
- Staking for Embankments - Catch points and one-line stake will be set in those cases where the vertical difference in elevation from the construction centerline to the toe or top of a cut or fill slope exceeds 3 feet. In all other areas, stakes shall be set at an appropriate offset to the street centerline to allow for the preservation of said offsets through the rough grading phase. In both cases the stakes shall be clearly marked with appropriate information necessary to complete the rough grading phase.
- Curb and Gutters - One set of curb and gutter stakes shall be set at an appropriate offset at 25-foot intervals, beginning and end points of curves and curb returns, wheelchair ramps, driveways, and sufficient mid-curve points to establish proper alignment.
- Base and Top Course – When deemed appropriate by the Engineer, one set of final construction centerline grade hubs will be set for each course, at not less than 50-foot stations. No intermediate stakes shall be provided unless superelevations require them. In those circumstances, one grade hub left and right of construction centerline at the transition stations will be set at an appropriate offset to centerline not less than 25-foot stations.
- Adjacent or Adjoining Wetlands - One set of stakes delineating adjacent wetland perimeters will be set at 25 to 50-foot stations as required.
- Illumination and Traffic Signals System - One set of stakes for luminaires and traffic signal pole foundations will be set as required. One set of stakes for vaults, junction boxes, and conduits will be set, only if curb and gutter is not in place at the time of the survey request. If curb and gutter is in place, staking for vaults, junction boxes, and conduits will be provided at an additional expense to the Contractor.

When deemed appropriate by the Engineer, cut sheets will be supplied for curb, storm, sanitary sewer and water lines. Cuts or fills may be marked on the surveyed points but should not be relied on as accurate until a completed cut sheet is supplied.

The Contractor is responsible for staking all other items deemed necessary to construct the project per the Plans and Specifications. All costs associated with Contractor staking shall be incidental to the Work and be included in the Contract unit prices.

1-05.7 Removal of Defective and Unauthorized Work

(January 2023, City of Auburn GSP)
Supplement this section with the following:

If the Contractor fails to remedy defective or unauthorized work within the time specified in a written notice from the Engineer, or fails to perform any part of the work required by the Contract Documents, the Engineer may correct and remedy such work as may be identified in the written notice, with Contracting Agency forces or by such other means as the Contracting Agency may deem necessary.

If the Contractor fails to comply with a written order to remedy what the Engineer determines to be an emergency situation, the Engineer may have the defective and unauthorized work corrected immediately, have the rejected work removed and replaced, or have work the Contractor refuses to perform completed by using Contracting Agency or other forces. An emergency situation is any situation when, in the opinion of the Engineer, a delay in its

remedy could be potentially unsafe, or might cause serious risk of loss or damage to the public.

Direct or indirect costs incurred by the Contracting Agency attributable to correcting and remedying defective or unauthorized work, or work the Contractor failed or refused to perform, shall be paid by the Contractor. Such direct costs shall include in particular, but without limitation, compensation for additional professional services required, and costs for repair and replacement of the Contractor's unauthorized work.

No adjustment in contract time will be allowed because of the delay in the performance of the work attributable to the exercise of the Contracting Agency's rights provided by this Section.

The rights exercised under the provisions of this Section shall not diminish the Contracting Agency's right to pursue any other avenue for additional remedy or damages with respect to the Contractor's failure to perform the work as required.

(City Contracts, January 2023 City of Auburn GSP)
Supplement this section with the following:

Payment will be deducted by the Engineer from monies due, or to become due, the Contractor for costs incurred by the Contracting Agency attributable to correcting and remedying defective or unauthorized work, the Contractor failed or refused to perform.

No adjustment in compensation will be allowed because of the delay in the performance of the work attributable to the exercise of the Contracting Agency's rights provided by this Section.

1-05.10 Guarantees

(September 2016 City of Auburn GSP)
Supplement this section with the following:

Unless otherwise indicated in the Contract, the work performed under these Contract Documents shall be guaranteed for a period of one year beyond the "Completion Date" thereof against defective materials, equipment, and workmanship and shall also include the landscape establishment required in the Contract per Section 8-02.3(13) (Plant Establishment). Upon receipt of notice from the City of failure of any part of the material, equipment or workmanship during the guarantee period, the affected part or parts shall be replaced with new materials or equipment by, and at the expense of, the Contractor. This guarantee shall be bonded in compliance with Section 1-03.4 (Contract Bond).

The Contractor shall be available approximately 60 calendar days prior to the expiration of the one-year guarantee period to tour the project, with the Engineer, in support of the Engineer's effort to establish a list of corrective work required under the one-year guarantee. Upon the receipt of written notice of such required corrective work, the Contractor shall pursue vigorously, diligently, and without unauthorized interruption of the City Facilities, the work necessary to correct the items listed.

1-05.11 Final Inspection

(Non-City Contracts, February 2023 City of Auburn GSP)
Replace this section with the following:

When the Contractor considers the work to be substantially complete, the Contractor shall request the Engineer to perform inspections and provide a punch list of any completed work requiring correction. The Contractor's request shall list the specific items of work that remain to be completed. After receiving the punch list and completing the corrections and outstanding work, the Contractor will request additional inspections as needed until the Engineer has determined that all Work is physically complete. This determination is one of the requirements associated with Final Acceptance.

In order for the Work to be considered physically complete, the Contractor must have completed all start-up and operational testing of systems such as machinery or other mechanical equipment; street lighting, electrical distribution or signal systems; irrigation systems; buildings; or other similar work, it may be desirable for the Engineer to have the Contractor operate and test the work for a period of time after final inspection but prior to the determining that the work is physically complete. Whenever items of work are listed in the Contract Provisions for operational testing, they shall be fully tested under operating conditions for the time period specified to ensure their acceptability. During and following the test period, the Contractor shall correct any items of workmanship, materials, or equipment which prove faulty, or that are not in first class operating condition. Equipment, electrical controls, meters, or other devices and equipment to be tested during this period shall be tested under the observation of the Engineer, so the Engineer may determine their suitability for the purpose for which they were installed. The Work is not considered physically complete until testing and corrections have been completed to the satisfaction of the Engineer.

(City Contracts, October 1, 2005 APWA GSP)
Delete the entire section and replace with the following, including subsections:

1-05.11 Final Inspections and Operational Testing

1-05.11(1) Substantial Completion Date

When the Contractor considers the work to be substantially complete, the Contractor shall so notify the Engineer and request the Engineer establish the Substantial Completion Date. The Contractor's request shall list the specific items of work that remain to be completed in order to reach physical completion. The Engineer will schedule an inspection of the work with the Contractor to determine the status of completion. The Engineer may also establish the Substantial Completion Date unilaterally.

If, after this inspection, the Engineer concurs with the Contractor that the work is substantially complete and ready for its intended use, the Engineer, by written notice to the Contractor, will set the Substantial Completion Date. If, after this inspection the Engineer does not consider the work substantially complete and ready for its intended use, the Engineer will, by written notice, so notify the Contractor giving the reasons therefore.

Upon receipt of written notice concurring in or denying substantial completion, whichever is applicable, the Contractor shall pursue vigorously, diligently and without unauthorized interruption, the work necessary to reach Substantial and Physical Completion. The Contractor shall provide the Engineer with a revised schedule indicating when the Contractor expects to reach substantial and physical completion of the work.

The above process shall be repeated until the Engineer establishes the Substantial Completion Date and the Contractor considers the work physically complete and ready for final inspection.

1-05.11(2) Final Inspection and Physical Completion Date

(City Contracts, October 1, 2005 APWA GSP)
When the Contractor considers the work physically complete and ready for final inspection, the Contractor by written notice, shall request the Engineer to schedule a final inspection. The Engineer will set a date for final inspection. The Engineer and the Contractor will then make a final inspection and the Engineer will notify the Contractor in writing of all particulars in which the final inspection reveals the work incomplete or unacceptable. The Contractor shall immediately take such corrective measures as are necessary to remedy the listed deficiencies. Corrective work shall be pursued vigorously, diligently, and without interruption until physical completion of the listed deficiencies. This process will continue until the Engineer is satisfied the listed deficiencies have been corrected.

If action to correct the listed deficiencies is not initiated within 7 days after receipt of the written notice listing the deficiencies, the Engineer may, upon written notice to the Contractor, take whatever steps are necessary to correct those deficiencies pursuant to Section 1-05.7. The Contractor will not be allowed an extension of contract time because of a delay in the performance of the work attributable to the exercise of the Engineer's right hereunder.

Upon correction of all deficiencies, the Engineer will notify the Contractor and the Contracting Agency, in writing, of the date upon which the work was considered physically complete. That date shall constitute the Physical Completion Date of the contract, but shall not imply acceptance of the work or that all the obligations of the Contractor under the contract have been fulfilled.

1-05.11(3) Operational Testing

(City Contracts, October 1, 2005 APWA GSP)
It is the intent of the Contracting Agency to have, at the Physical Completion Date, a complete and operable system. Therefore when the work involves the installation of machinery or other mechanical equipment; street lighting, electrical distribution or signal systems; irrigation systems; buildings; or other similar work, it may be desirable for the Engineer to have the Contractor operate and test the work for a period of time after final inspection but prior to the physical completion date. Whenever items of work are listed in the Contract Provisions for operational testing, they shall be fully tested under operating conditions for the time period specified to ensure their acceptability prior to the Physical Completion Date. During and following the test period, the Contractor shall correct any items of workmanship, materials, or equipment which prove faulty, or that are not in first class operating condition. Equipment, electrical controls, meters, or other devices and equipment to be tested during this period shall be tested under the observation of the Engineer, so the Engineer may determine their suitability for the purpose for which they were installed. The Physical Completion Date cannot be established until testing and corrections have been completed to the satisfaction of the Engineer.

The costs for power, gas, labor, material, supplies, and everything else needed to successfully complete operational testing, shall be included in the unit contract prices related to the system being tested, unless specifically set forth otherwise in the proposal.

Operational and test periods, when required by the Engineer, shall not affect a manufacturer's guaranties or warranties furnished under the terms of the contract.

1-05.12 Final Acceptance

(City Contracts, October 2021 City of Auburn GSP)
Revise the first paragraph to read:

The Contractor must perform all obligations under the Contract before a Completion Date and final acceptance can occur. Failure of the Contractor to perform all the obligations under the Contract shall not bar the Contracting Agency from unilaterally accepting the Contract as provided in Section 1-09.9. Progress estimates or payments shall not be construed as acceptance of any Work under the Contract.

1-05.13 Superintendents, Labor, and Equipment of Contractor

(City Contracts, September 2013 City of Auburn GSP)
Revise the seventh paragraph to read:

Whenever the Contracting Agency evaluates the Contractor's qualifications pursuant to Section 1-02.14, it will take these performance reports into account.

(August 2015 City of Auburn GSP)
Add the following new section:

1-05.14 Cooperation with Other Contractors

1-05.14(1) Cooperation with Others

Should the Engineer determine that a property owner, a utility company or the City has adequate reason to avoid access closure, sewer or water shutoff at the time scheduled, the Contractor shall reschedule their work to meet the new conditions.

(City Contracts, October 1, 2005 APWA GSP)
Add the following new section:

1-05.16 Water and Power

The Contractor shall make necessary arrangements and shall bear the costs for power and water necessary for the performance of the work, unless the contract includes power and water as a pay item, or unless provided for otherwise in these Special Provisions.

(Non-City Contracts, February 2023 City of Auburn GSP)
Add the following new section:

1-05.16 Water and Power

The Contractor shall make necessary arrangements, and shall bear the costs for power and water necessary for the performance of the work.

(January 2023 City of Auburn GSP)
Add the following new section:

1-05.17 Construction Record Drawings

The following requirements are intended to provide the project Contractor with the information necessary to furnish the City with satisfactory Construction Record Drawings:

1. The Contractor shall be responsible for tracking all relevant field changes to the approved construction drawings on a daily basis. These changes shall be clearly identified in red in a comprehensive manner on one set of full-size Plans to be known as the "Construction Record Drawings". The Construction

Record Drawings may be in electronic format (PDF); however, all requirements of this section shall be met.

2. The Construction Record Drawing set shall be used for this purpose alone, shall be kept separate from other Plan sheets, and shall be clearly marked as "Construction Record Drawings". The Construction Record Drawings, either hard copy version or electronic format, shall be accessible on site, and shall be available for review by the Contracting Agency at all times. The Contractor shall bring the hard copy Construction Record Drawings to each progress meeting or bring an accessible electronic version for review when such meetings are included in the Contract.

3. The quality of the Construction Record Drawings, in terms of accuracy, clarity, and completeness, shall be adequate to allow the Contracting Agency to modify the computer-aided drafting (CAD) Contract Drawings and electronic PDF drawings to produce a complete set of Construction As-builts for the Contracting Agency without further investigative effort by the Contracting Agency.

4. The Construction Record Drawings shall identify all existing or abandoned utilities that were encountered during construction that were not shown on the approved construction drawings.

5. The Construction Record Drawing markups shall document all changes in the Work, both concealed and visible. Items that must be shown on the markups include but are not limited to:

    - Actual dimensions, arrangement, and materials used when different than shown in the Plans.
    - Changes made by Change Order or Field Directive.
    - Changes made by the Contractor as approved by the Engineer.
    - Accurate locations of storm drainage, sanitary sewer, water mains and other water appurtenances, structures, conduits, light standards, vaults, width of roadways, sidewalks, landscaping areas, building footprints, channelization and pavement markings, etc. Include pipe invert elevations, top of castings (manholes, inlets, etc.).

The Construction Record Drawings shall identify all deviations from the approved construction drawings as follows:

Sanitary Sewer

Manholes:

- Type/size of structure
- Location to the nearest 1-foot horizontal
- Rim elevations to the nearest 0.1-foot vertical
- Invert elevations to the nearest 0.1-foot vertical
- Pipe sizes to the nearest 1-inch inside diameter

Pipes:

- Type of pipe
- Location to the nearest 1-foot horizontal
- Length between structures to the nearest 1 foot
- Slopes based on invert elevations
- Pipe sizes to the nearest 1-inch inside diameter

Side Sewers:

- Type of pipe
- Location from reference manhole to the nearest 1 foot horizontal and consistent with the TV report
- Location to the nearest 1-foot horizontal
- Length between structures to the nearest 1 foot
- Slopes based on the constructed invert elevations
- Invert elevations at right-of-way lines to the nearest 0.5-feet vertical

Storm Drainage

Manholes/Catch Basins:

- Type/size of structure
- Location to the nearest 1-foot horizontal
- Rim elevations to the nearest 0.1-foot vertical
- Invert elevations to the nearest 0.1-foot vertical
- Pipe sizes to the nearest 1-inch inside diameter

Pipes:

- Type of pipe
- Location to the nearest 1-foot horizontal
- Length between structures to the nearest 1-foot
- Slopes based on the constructed invert elevations
- Pipe sizes to the nearest 1-inch inside diameter

Water

Pipes:

- Type of pipe and joints
- Deflection of bends to the nearest 1 degree
- Location to the nearest 1-foot horizontal
- Location to the nearest 0.5-foot vertical between valves at 50-foot stations and intersection with other utilities
- Length between valves to the nearest 1 foot
- Pipe sizes to the nearest 1-inch inside diameter
- Valves, Hydrants, Blowoffs, Air Vacs, and PRV's:

- Type of facility
- Location to the nearest 1-foot horizontal

Water Meters and Services:

- Type of service material
- Location of service line to the nearest 1-foot horizontal
- Meter location to the nearest 1-foot horizontal
- Meter sizes to the nearest ¼-inch in diameter

Streets

Public Streets:

- Centerline elevations to the nearest 0.1-foot vertical at 100-foot stations
- Centerline slopes and vertical curve data based on the constructed centerline elevations
- Gutterline elevations to the nearest 0.1-foot vertical (if not a standard crown section)
- Gutterline slopes and vertical curve data based on the constructed gutterline elevations (if not a standard crown section)

Driveway and Sidewalk:

- Type of driveway (commercial or residential section)
- Centerline driveway location to the nearest 1-foot horizontal
- Driveway width to the nearest 1-foot horizontal
- Sidewalk width to the nearest 1-foot horizontal
- Curb ramp (steepest grade to the nearest 0.1% of the ramp, wings, and landing), (indication if curb ramp has associated Maximum Extents Feasible (MEF) documentation with date of MEF approval)

Channelization:

- Type of buttons, reflectors, and curbs
- General layout location to the nearest 1-foot horizontal

Signing:

- Type of signs
- Location of signs to the nearest 1-foot horizontal

Illumination:

- Location of luminaries, junction boxes and service cabinets to the nearest 1-foot horizontal
- Power meter number and address
- Fixture information (wattage, model number, AMI radio number)
- Davit arm length

Signalization:

- Location of signal poles, junction boxes, service cabinets, and controllers to the nearest 1-foot horizontal
- Power meter number and address

6. At the time the Contractor transmits the comprehensive redline Construction Record Drawings to the City, they shall certify that said drawings are in conformance to the above-referenced requirements and are an accurate depiction of built conditions;

7. The City shall receive and approve the Contractor's certified " Construction Record Drawings" as specified herein prior to achieving physical completion.

These Construction Record Drawings shall be kept current during the course of construction by the Contractor and be available for review upon request by the Engineer. The Contractor shall certify on the Construction Record Drawings that said drawings are an accurate depiction of built conditions, and in conformance with the requirements detailed above. The Contractor shall submit an electronic copy (PDF) of the final Construction Record Drawings to the Contracting Agency.

(City Contracts, January 2023 City of Auburn GSP)
Supplement this section with the following:

Contracting Agency acceptance of the Construction Record Drawings is one of the requirements for achieving Physical Completion.

Payment will be made for each of the following Bid items that are included in the Proposal:

"Construction Record Drawings (Minimum Bid $_____)", Lump Sum

Payment for this item will be made on a prorated monthly basis for work completed in accordance with this section up to 75% of the lump sum bid. The final 25% of the lump sum item will be paid upon submittal and approval of the completed Construction Record Drawings set prepared in conformance with these Special Provisions.

A minimum bid amount has been entered in the Bid Proposal for this item.

1-06 Control of Material

1-06.1 Approval of Materials Prior to Use

(City Contracts, October 2021 City of Auburn GSP)
Section 1-06.1 is supplemented with the following:

For each proposed material that is required to be submitted for approval using either the QPL or RAM process identified in Section 9-38.1(2) (Request for Submittal Approval (RSA) Form Instructions) the Contractor will be allowed to submit for approval two materials per material type at no cost. Additional materials may be submitted for approval and will be processed at a cost of $150.00 per material submitted by QPL submittal and $500.00 per material submitted by RAM. All costs for the processing additional materials will be deducted from

monies due or that may come due to the Contractor. Subject to a request by the Contractor and a determination by the Engineer the costs for processing may be waived.

1-06.1(2) Request for Approval of Material (RAM)

(February 2019 City of Auburn GSP)
The second sentence of the first paragraph is revised to read:

The RAM shall be prepared by the Contractor in accordance with the instructions identified in Section 9-38.1(2) (Request for Submittal Approval (RSA) Form Instructions) and be submitted to the Engineer for approval before the material is incorporated into the Work.

1-06.6 Recycled Materials

(City Contracts, January 4, 2016 APWA GSP)
Delete this section, including its subsections, and replace it with the following:

The Contractor shall make their best effort to utilize recycled materials in the construction of the project. Approval of such material use shall be as detailed elsewhere in the Standard Specifications.

Prior to Physical Completion the Contractor shall report the quantity of recycled materials that were utilized in the construction of the project for each of the items listed in Section 9-03.21. The report shall include hot mix asphalt, recycled concrete aggregate, recycled glass, steel furnace slag and other recycled materials (e.g. utilization of on-site material and aggregates from concrete returned to the supplier). The Contractor's report shall be provided on DOT form 350-075 Recycled Materials Reporting.

1-07 Legal Relations and Responsibilities to the Public

1-07.1 Laws to be Observed

(October 1, 2005 APWA GSP)
Supplement this section with the following:

In cases of conflict between different safety regulations, the more stringent regulation shall apply.

The Washington State Department of Labor and Industries shall be the sole and paramount administrative agency responsible for the administration of the provisions of the Washington Industrial Safety and Health Act of 1973 (WISHA).

The Contractor shall maintain at the project site office, or other well-known place at the project site, all articles necessary for providing first aid to the injured. The Contractor shall establish, publish, and make known to all employees, procedures for ensuring immediate removal to a hospital, or doctor's care, for persons, including employees, who may have been injured on the project site. Employees should not be permitted to work on the project site before the Contractor has established and made known procedures for removal of injured persons to a hospital or a doctor's care.

The Contractor shall have sole responsibility for the safety, efficiency, and adequacy of the Contractor's plant, appliances, and methods, and for any damage or injury resulting from their failure, or improper maintenance, use, or operation. The Contractor shall be solely and completely responsible for the conditions of the project site, including safety for all persons and property in the performance of the work. This requirement shall apply continuously, and not be limited to normal working hours. The required or implied duty of the Engineer to

conduct construction review of the Contractor's performance does not, and shall not, be intended to include review and adequacy of the Contractor's safety measures in, on, or near the project site.

1-07.2 State Taxes

(City Contracts, June 27, 2011 APWA GSP)
Delete this Section, including its sub-sections, in its entirety and replace it with the following:

1-07.2 State Taxes

The Washington State Department of Revenue has issued special rules on the State sales tax. Section 1-07.2(1) through 1-07.2(3) are meant to clarify those rules. The Contractor should contact the Washington State Department of Revenue for answers to questions in this area. The Contracting Agency will not adjust its payment if the Contractor bases a bid on a misunderstood tax liability.

The Contractor shall include all Contractor-paid taxes in the unit bid prices or other contract amounts. In some cases, however, state retail sales tax will not be included. Section 1-07.2(2) describes this exception.

The Contracting Agency will pay the retained percentage (or release the Contract Bond if a FHWA-funded Project) only if the Contractor has obtained from the Washington State Department of Revenue a certificate showing that all contract-related taxes have been paid (RCW 60.28.051). The Contracting Agency may deduct from its payments to the Contractor any amount the Contractor may owe the Washington State Department of Revenue, whether the amount owed relates to this contract or not. Any amount so deducted will be paid into the proper State fund.

1-07.2(1) State Sales Tax – Rule 171

WAC 458-20-171, and its related rules, apply to building, repairing, or improving streets, roads, etc., which are owned by a municipal corporation, or political subdivision of the state, or by the United States, and which are used primarily for foot or vehicular traffic. This includes storm or combined sewer systems within and included as a part of the street or road drainage system and power lines when such are part of the roadway lighting system. For work performed in such cases, the Contractor shall include Washington State Retail Sales Taxes in the various unit bid item prices, or other contract amounts, including those that the Contractor pays on the purchase of the materials, equipment, or supplies used or consumed in doing the work.

1-07.2(2) State Sales Tax – Rule 170

WAC 458-20-170, and its related rules, apply to the constructing and repairing of new or existing buildings, or other structures, upon real property. This includes, but is not limited to, the construction of streets, roads, highways, etc., owned by the state of Washington; water mains and their appurtenances; sanitary sewers and sewage disposal systems unless such sewers and disposal systems are within, and a part of, a street or road drainage system; telephone, telegraph, electrical power distribution lines, or other conduits or lines in or above streets or roads, unless such power lines become a part of a street or road lighting system; and installing or attaching of any article of tangible personal property in or to real property, whether or not such personal property becomes a part of the realty by virtue of installation.

For work performed in such cases, the Contractor shall collect from the Contracting Agency, retail sales tax on the full contract price. The Contracting Agency will automatically add this

sales tax to each payment to the Contractor. For this reason, the Contractor shall not include the retail sales tax in the unit bid item prices, or in any other contract amount subject to Rule 170, with the following exception.

Exception: The Contracting Agency will not add in sales tax for a payment the Contractor or a subcontractor makes on the purchase or rental of tools, machinery, equipment, or consumable supplies not integrated into the project. Such sales taxes shall be included in the unit bid item prices or in any other contract amount.

1-07.2(3) Services

The Contractor shall not collect retail sales tax from the Contracting Agency on any contract wholly for professional or other services (as defined in Washington State Department of Revenue Rules 138 and 244).

(January 2023 City of Auburn GSP)
Supplement this section with the following:

1-07.2(4) Location Code Number

The Location Code Number for projects located in King County is 1702, and for projects in Pierce County is 2724.

1-07.5 Environmental Regulations

(October 2021 City of Auburn GSP)
Add the following new subsection:

1-07.5(8) City of Auburn Requirements

The following list represents a portion of City of Auburn Code requirements dealing with the preservation of public natural resources that affect or are affected by the proposed work. Copies of applicable code are available in the City Clerk's office at City Hall, 25 West Main Street, Auburn, Washington 98001. The City recommends that bidders review such materials before submitting sealed proposals.

City of Auburn Code – Chapter 8.28: Defines general noise nuisances prohibited in the City of Auburn.

City of Auburn Code – Titles 14, 16, 17, 18: Reviews types of permits required for grading, landfills, mining, excavation, utility extension, building and all associated permits. Requirements of City Code and the most current edition of the Uniform Building Code adopted by the City apply in all cases. Permit applications are reviewed by the Planning Department, Building Division and/or Engineering Division.

City of Auburn Code – Chapter 18.62: Permitting required for all mine-related activities (including asphalt or concrete batching, rock crushing, and transportation to and from a mine). Permit applications are reviewed by the Planning Department.

1-07.6 Permits and Licenses

(June 2022 City of Auburn GSP)
The first sentence of the first paragraph is revised to read:

The Contractor shall become familiar with all permits and licenses obtained or to be obtained and shall be responsible for and ensure that all their requirements are met.

(City Contracts, January 2023 City of Auburn GSP)
Supplement this section with the following:

All required permits and licenses for this project shall be obtained and paid for by the Contractor. The cost associated with obtaining any permit(s) shall be included in the unit bid item prices.

(February 2023 City of Auburn GSP)
Supplement this section with the following:

Except as may be provided otherwise in the Contract, if the Contractor wishes to utilize private property for a construction staging yard, the Contractor may be required to obtain a Temporary Use Permit and other permits as may be applicable, for use of the property for those purposes.

1-07.11 Requirements for Nondiscrimination

1-07.11(2) Contractual Requirements

(December 2016 City of Auburn GSP)
Supplement this section with the following:

All contractors, subcontractors and vendors engaged in business with the City of Auburn shall comply with the following guidelines:

> All contractors, subcontractors and vendors who have 50 or more employees and have contracts with the City of Auburn totaling more than $50,000 annually shall comply with the provisions of Executive Order 11246, as amended, the implementing regulations of 41 CFR Chapter 60, and all other related federal and state laws.
>
> The City can provide language pertaining to its non-discrimination policy on purchase orders, contracts and other relevant information.

The City will not knowingly do business with any bidder, contractor, subcontractor, or vendor whose employment practices are discriminatory and not in compliance with applicable laws and regulations. The City reserves the right to determine the Contractor's, Subcontractor's, or Vendor's normal employment practices, and will take whatever action it considers appropriate should discriminatory employment practices be discovered.

1-07.13 Contractor's Responsibility for Work

1-07.13(2) Relief of Responsibility for Completed Work

(City Contracts, March 2018 City of Auburn GSP)
This section is deleted and replaced with the following:

Unless stated otherwise in the Contract, the Contractor shall bear the risk of loss or damage for all finished or partially finished work until Final Payment of the entire Contract. This includes all vandalism, theft, and acts of God or nature.

1-07.15 Temporary Water Pollution Prevention

(October 2021 City of Auburn GSP)
Supplement this section with the following:

The Contractor shall implement erosion and sediment control (ESC) measures as necessary to prevent erosion and to stop sediment-laden water from leaving the site and entering the storm drain system. Measures shall be in accordance with, and conform to, the City of Auburn Surface Water Management Manual and Section 8-01 (Erosion Control and Water Pollution Control) of the Contract Specifications.

1-07.16 Protection and Restoration of Property

(December 2016 City of Auburn GSP)
Supplement this section with the following:

The Contractor shall not trespass upon private property and shall be responsible for all injury or damage to persons or property, directly or indirectly, resulting from the Contractor's operations in completing this work. The Contractor shall comply with the laws and regulations of the City of Auburn, County, State, and Federal governments relating to the safety of persons and property and will be held responsible for, and required to make good, all injury and damage to persons or property caused by the Contractor's operations.

Sprinkler irrigation systems that encroach within the limits of improvements shall be modified as necessary to ensure operation "equal or better than" the original condition upon completion of the improvements. This work will include, but not be limited to, cutting and capping existing pipe, relocating existing risers and sprinkler heads, new pipe heads and connections, and testing of the system.

The Contractor shall give a minimum of 7 working days prior written notification to the owners of any ditches, landscaping, irrigation lines and appurtenances that interfere with the work. The Contractor shall be liable for any damage to irrigation facilities by the Contractor's operations and shall restore such damaged facilities to "equal or better than" original condition.

Asphalt concrete pavement or bituminous surfacing outside the project area that is disturbed by the work shall be restored to its original condition. Asphalt pavement restoration shall comply with the provisions of Section 5-02 (Bituminous Surface Treatment) and 5-04 (Hot Mix Asphalt) of the Contract Specifications.

Existing cement concrete curb, gutter and sidewalk structures disturbed by the Contractor's operations shall be replaced to match existing. Cement concrete shall be Class 3000 with entrained air in conformance with Section 6-02 (Concrete Structure) of the Contract Specifications.

Existing street shoulders disturbed by the Contractor's operation shall be resurfaced with 6 inches of compacted Gravel Borrow and 2 inches of compacted Crushed Surfacing Top Course sloped ½ inches per foot away from the paved street. Street shoulder restoration shall be in conformance with Section 4-04.3(11) (Shoulder Ballast) of the Contract Specifications.

All other surfaces, mailboxes, fences, signs, lawn irrigation systems, etc., disturbed by the project, shall be promptly replaced or relocated to original or better condition. Gravel driveways disturbed by the work shall be resurfaced with a compacted 2-inch layer of Crushed Surfacing Top Course. All ditches shall be reconstructed as indicated on the drawings.

The Contractor shall restore all disturbed landscaping in conformance with Section 8-02 (Roadside Restoration) of the Contract Specifications.

1-07.16(1) Private/Public Property

(December 2022 City of Auburn GSP)
Add the following new section:

1-07.16(1)D Protection and Restoration of Existing Markers and Monuments

All existing survey monuments and property corner markers shall be protected from movement by the Contractor. RCW 58.24.040(8) and WAC 332-120 and their rules shall apply to all existing survey markers and/or monuments that must be removed for construction purposes. When survey markers and/or monuments are disturbed, they are to be referenced by survey ties and then replaced by the Contractor. All existing property corner markers disturbed or removed by the Contractor's operations which, in the opinion of the Engineer, were not required to be removed for construction purposes shall be replaced, at the Contractor's own expense, by a Professional Land Surveyor registered in the State of Washington. This includes the City of Auburn benchmark system. Any damaged monuments must be reset to second order, first class specifications.

1-07.16(2) Vegetation Protection and Restoration

(August 2, 2010 WSDOT GSP)
Section 1-07.16(2) is supplemented with the following:

Vegetation and soil protection zones for trees shall extend out from the trunk to a distance of 1 foot radius for each inch of trunk diameter at breast height.

Vegetation and soil protection zones for shrubs shall extend out from the stems at ground level to twice the radius of the shrub.

Vegetation and soil protection zones for herbaceous vegetation shall extend to encompass the diameter of the plant as measured from the outer edge of the plant.

1-07.17 Utilities and Similar Facilities

(June 2018 City of Auburn GSP)
Supplement this section with the following.

For the purpose of determining vertical clearance requirements for overhead power and communication lines, all public and private streets within the City of Auburn shall be considered conventional highways and are subject to the requirements stated in WAC 468-34-290 unless otherwise determined by the City Engineer.

(February 2023 City of Auburn GSP)
Supplement this section with the following.

The Contractor is responsible for determining the exact location of existing underground utilities. The Contract Plans may show locations of various known existing above ground and underground amenities and obstructions. If shown, the location of known existing underground utilities are indicated based on available information and may not be exact.

A list of utilities and known contact persons will be available at the pre-construction conference for the Contractor's convenience.

The Contractor is responsible for any breakage of utilities or services resulting from their operations.

The Contractor is responsible for the complete repair (including materials) of any City-owned utility damaged by the work (including water services), whether or not shown on the Contract Plans. Copper water service lines, if damaged, must be replaced in kind by one continuous service line from the water main to the meter. Splicing will not be permitted. The Contractor shall repair any damage caused by broken water mains or services. The Contractor shall have sufficient materials and qualified personnel available to effect immediate repairs of water and sewer lines that may be damaged by the work.

The Contractor shall be responsible for securing private locate services where One-Number Locator Services do not cover (such as property outside the public right of way).

1-07.17(1) Utility Construction, Removal, or Relocation by the Contractor

(City Contracts, April 2017 City of Auburn GSP)
Supplement this section with the following:

The temporary removal, replacement, bracing or holding of any utility or structure, including power and telephone poles, required to accomplish the work, shall be included in the contract price(s) for the bid item(s) involved. Raising, lowering or horizontal relocation of existing water services not requiring additional material, where such relocation is required to accommodate other work, shall be included in the contract price(s) for the bid item(s) involved.

(February 2023 City of Auburn GSP)
Add the following new section:

1-07.17(1)A Disruptions to City Water Services

All water service shutdowns caused by construction activities shall be requested by the Contractor a minimum of 4 working days in advance of the proposed shutdown, shall be approved by the City a minimum of 2 working days before the shutdown, and shall be performed by City Water Utility staff. The Contractor shall schedule Work such that all water service disruptions are limited to 4 hours. The City does not guarantee a complete dry system following any water shutdown.

(City Contracts, February 2023 City of Auburn GSP)
Supplement this section with the following:

All costs for dewatering following a water shutdown shall be included in the unit bid prices of the work involved.

(November 2019 City of Auburn GSP)
Add the following new section:

1-07.17(1)B Utility Potholing

1-07.17(1)B(1)General

The Contractor shall physically locate, uncover, and document the location of underground utilities at the locations identified in the plans. The purpose of utility potholing is to allow sufficient time ahead of pipe laying operations to identify underground conflicts, allow ample time to make minor adjustments in pipe grade and/or alignment, and generally facilitate the Contractor's work schedule.

The Contractor shall submit a potholing plan/schedule to the Engineer for review and/or approval per Section 9-38 (Submittal Approval) prior to commencing potholing or pipe laying operations. The plan shall show the proposed location and clearly state the purpose for each proposed potholing location. The Engineer may add or delete potholing locations.

In no way shall the work described under Utility Potholing relieve the Contractor of any of the responsibilities described in Section 1-07.17 (Utilities and Similar Facilities) of the Standard Specifications and these Special Provisions.

(City Contracts, February 2017 City of Auburn GSP)
Add the following new section:

1-07.17(1)B(2)Measurement

(February 2023 City of Auburn GSP)
"Utility Potholing" will be measured per each pothole excavated that meets all of the following conditions:

1. The pothole was excavated at least 96 hours ahead of pipe laying or other contract work relevant to the pothole.
2. The pothole is shown on the pothole plan submittal approved by the Engineer.
3. The pothole data, including soil type, utility material and size, horizontal location within 1/2 foot, and vertical location within 1/10 foot, is provided in writing to the Engineer at least 72 hours ahead of pipe laying or other contract work relevant to the pothole.
4. Pothole is not within 10 feet of any other pothole. No adjustment shall be made for pothole depth or size. No measurement will be made for potholes that do not meet the above criteria.

(City Contracts, January 2017 City of Auburn GSP)
Add the following new section:

1-07.17(1)B(3)Payment

Payment will be made for each of the following Bid items that are included in the Proposal:

"Utility Potholing", Per Each

Payment for "Utility Potholing" will include all costs for locating, uncovering, and documenting the underground location of utilities, as well as all subsurface and surface restoration measures.

1-07.18 Public Liability and Property Damage Insurance

Delete this section in its entirety, and replace it with the following:

1-07.18 Insurance

(Non-City Contracts, February 2024City of Auburn GSP)
The Contractor will procure and maintain for the duration of this Agreement, insurance against claims for injuries to persons or damages to property which may arise from, or in connection with the performance of work by the Contractor, the Contractor's agents, representatives, employees, and subcontractors. The Contractor is responsible for the cost of insurance.

The Contractor's maintenance of insurance, its scope of coverage, and limits as required herein, will not be construed to limit the liability of the Contractor to the coverage provided by the insurance, or otherwise limit the City's recourse to any remedy available at law or in equity.

The Contractor's required insurance will be of the types and coverage as stated below:

A. Automobile Liability insurance covering all owned, non-owned, hired and leased vehicles. Coverage will be at least as broad as Insurance Services Office (ISO) form CA 00 01. Automobile Liability insurance will include a minimum combined single limit for bodily injury and property damage of $1,000,000 per accident.

B. Commercial General Liability insurance will be at least as broad as ISO occurrence form CG 00 01 and will cover liability arising from premises, operations, stop gap liability, independent contractors, products-completed operations, personal injury and advertising injury, and liability assumed under an insured contract. The Commercial General Liability insurance will be endorsed to provide a per project general aggregate limit, using ISO form CG 25 03 05 09 or an equivalent endorsement. There will be no exclusion for liability arising from explosion, collapse, or underground property damage. The City will be named as an additional insured under the Contractor's Commercial General Liability insurance policy with respect to the work performed for the City using ISO Additional Insured endorsement CG 20 10 10 01 and Additional Insured-Completed Operations endorsement CG 20 37 10 01, or substitute endorsements providing at least as broad coverage. The limits for the Commercial General Liability insurance policy will be no less than $1,000,000 each occurrence, $2,000,000 general aggregate, and a $2,000,000 products- completed operations aggregate limit.

C. Workers' Compensation coverage as required by the Industrial Insurance laws of the State of Washington.

D. Builders Risk insurance covering interests of the City, the Contractor, Subcontractors, and Sub-subcontractors in the work. Builders Risk insurance is only required for Work that includes public buildings or public structures with an estimated value of $1,000,000 or more, and as determined to be required by the City Engineer. Builders Risk insurance will be on a special perils policy form and will insure against the perils of fire and extended coverage and physical loss or damage including flood, earthquake, theft, vandalism, malicious mischief, and collapse. The Builders Risk insurance will include coverage for temporary buildings, debris removal, and damage to materials in transit or stored off-site. This Builders Risk insurance covering the work will have a deductible of $5,000 for each occurrence, which will be the responsibility of the Contractor. Higher deductibles for flood and earthquake perils may be accepted by the City based on a written request by the Contractor and written acceptance by the City. Any increased deductibles accepted by the City will remain the responsibility of the Contractor. The Builders Risk insurance will be maintained until the City has granted substantial completion of the project. Builder's Risk Insurance will be written in the amount of the completed value of the project with no coinsurance provisions.

The Contractor's Automobile Liability, Commercial General Liability, and Builders Risk (if required) insurance policies will be primary insurance as respect to the City. Any Insurance,

self-insurance, or self-insured pool coverage maintained by the City will be in excess of the Contractor's insurance.

The Contractor will assume full responsibility for all loss or damage from any cause whatsoever to any tools, Contractor's employee owned tools, machinery, equipment, or motor vehicles owned or rented by the Contractor or the Contractor's agents, suppliers, contractors, or subcontractors as well as to any temporary structures, scaffolding, and protective fences.

The Contractor and the City waive all rights against each other, any of their Subcontractors, Sub-subcontractors, agents, and employees, each of the other, for damages caused by fire or other perils to the extent covered by Builders Risk insurance or other property insurance obtained pursuant to the Insurance Requirements Section of this Contract or other property insurance applicable to the work.

Insurance is to be placed with insurers with a current A.M. Best rating of not less than A: VII.

Contractor will furnish the City with original certificates and a copy of the amendatory endorsements, including but not necessarily limited to the additional insured endorsements, evidencing the Automobile Liability and Commercial General Liability insurance before beginning work. Before any exposure to loss may occur, the Contractor will file with the City a copy of the Builders Risk insurance policy that includes all applicable conditions, exclusions, definitions, terms, and endorsements related to this project. The City may request that the Contractor furnish certified copies of all required insurance policies, including endorsements, required in this contract and evidence of all subcontractors' coverage.

The Contractor will cause each and every Subcontractor to provide insurance coverage that complies with all applicable requirements of the Contractor-provided insurance, except the Contractor will have sole responsibility for determining the limits of coverage required to be obtained by Subcontractors. The Contractor will ensure that the City is an additional insured on every Subcontractor's Commercial General liability insurance policy using an endorsement at least as broad as ISO Additional Insured endorsement CG 20 38 04 13.

The Contractor will provide the City and all Additional Insureds for this work with written notice of any policy cancellation within two business days of their receipt of that notice.

Should the Contractor fail to maintain the insurance as required the City may, after giving five business days' notice to the Contractor, take actions to protect the interests of the City, which may include, but are not limited to one or more of the following: order suspension of all construction activities, revoke permits issued to the Contractor and its contractors, pursue remedy through the Contractor's surety, and terminate the FAC Agreement associated with the work (if applicable).

1-07.18 Insurance

(City Contracts, January 4, 2024 APWA GSP)

1-07.18(1) General Requirements

A. The Contractor shall procure and maintain the insurance described in all subsections of section 1-07.18 of these Special Provisions, from insurers with a current A. M. Best rating of not less than A-: VII and licensed to do business in the State of Washington. The Contracting Agency reserves the right to approve or reject the insurance provided, based on the insurer's financial condition.

B. The Contractor shall keep this insurance in force without interruption from the commencement of the Contractor's Work through the term of the Contract and for thirty (30) days after the Physical Completion date, unless otherwise indicated below.

C. If any insurance policy is written on a claims-made form, its retroactive date, and that of all subsequent renewals, shall be no later than the effective date of this Contract. The policy shall state that coverage is claims made and state the retroactive date. Claims-made form coverage shall be maintained by the Contractor for a minimum of 36 months following the Completion Date or earlier termination of this Contract, and the Contractor shall annually provide the Contracting Agency with proof of renewal. If renewal of the claims made form of coverage becomes unavailable, or economically prohibitive, the Contractor shall purchase an extended reporting period ("tail") or execute another form of guarantee acceptable to the Contracting Agency to assure financial responsibility for liability for services performed.

D. The Contractor's Automobile Liability, Commercial General Liability and Excess or Umbrella Liability insurance policies shall be primary and non-contributory insurance as respects the Contracting Agency's insurance, self-insurance, or self-insured pool coverage. Any insurance, self-insurance, or self-insured pool coverage maintained by the Contracting Agency shall be excess of the Contractor's insurance and shall not contribute with it.

E. The Contractor shall provide the Contracting Agency and all additional insureds with written notice of any policy cancellation, within two business days of their receipt of such notice.

F. The Contractor shall not begin work under the Contract until the required insurance has been obtained and approved by the Contracting Agency

G. Failure on the part of the Contractor to maintain the insurance as required shall constitute a material breach of contract, upon which the Contracting Agency may, after giving five business days' notice to the Contractor to correct the breach, immediately terminate the Contract or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, with any sums so expended to be repaid to the Contracting Agency on demand, or at the sole discretion of the Contracting Agency, offset against funds due the Contractor from the Contracting Agency.

H. All costs for insurance shall be incidental to and included in the unit or lump sum prices of the Contract and no additional payment will be made.

I. Under no circumstances shall a wrap up policy be obtained, for either initiating or maintaining coverage, to satisfy insurance requirements for any policy required under this Section. A **"**wrap up policy**"** is defined as an insurance agreement or arrangement under which all the parties working on a specified or designated project are insured under one policy for liability arising out of that specified or designated project**.**

1-07.18(2) Additional Insured

All insurance policies, with the exception of Workers Compensation, and of Professional Liability and Builder's Risk (if required by this Contract) shall name the following listed entities as additional insured(s) using the forms or endorsements required herein:

- the Contracting Agency and its officers, elected officials, employees, agents, and volunteers

The above-listed entities shall be additional insured(s) for the full available limits of liability maintained by the Contractor, irrespective of whether such limits maintained by the Contractor are greater than those required by this Contract, and irrespective of whether the Certificate of Insurance provided by the Contractor pursuant to 1-07.18(4) describes limits lower than those maintained by the Contractor.

For Commercial General Liability insurance coverage, the required additional insured endorsements shall be at least as broad as ISO forms CG 20 10 10 01 for ongoing operations and CG 20 37 10 01 for completed operations.

1-07.18(3) Subcontractors

The Contractor shall cause each subcontractor of every tier to provide insurance coverage that complies with all applicable requirements of the Contractor-provided insurance as set forth herein, except the Contractor shall have sole responsibility for determining the limits of coverage required to be obtained by subcontractors.

The Contractor shall ensure that all subcontractors of every tier add all entities listed in 1-07.18(2) as additional insureds, and provide proof of such on the policies as required by that section as detailed in 1-07.18(2) using an endorsement as least as broad as ISO CG 20 10 10 01 for ongoing operations and CG 20 37 10 01 for completed operations.

Upon request by the Contracting Agency, the Contractor shall forward to the Contracting Agency evidence of insurance and copies of the additional insured endorsements of each subcontractor of every tier as required in 1-07.18(4) Verification of Coverage.

1-07.18(4) Verification of Coverage

The Contractor shall deliver to the Contracting Agency a Certificate(s) of Insurance and endorsements for each policy of insurance meeting the requirements set forth herein when the Contractor delivers the signed Contract for the work. Failure of Contracting Agency to demand such verification of coverage with these insurance requirements or failure of Contracting Agency to identify a deficiency from the insurance documentation provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

Verification of coverage shall include:

1. An ACORD certificate or a form determined by the Contracting Agency to be equivalent.
2. Copies of all endorsements naming Contracting Agency and all other entities listed in 1-07.18(2) as additional insured(s), showing the policy number. The Contractor may submit a copy of any blanket additional insured clause from its policies instead of a separate endorsement.
3. Any other amendatory endorsements to show the coverage required herein.
4. A notation of coverage enhancements on the Certificate of Insurance shall not satisfy these requirements – actual endorsements must be submitted.

Upon request by the Contracting Agency, the Contractor shall forward to the Contracting Agency a full and certified copy of the insurance policy(s). If Builders Risk insurance is

required on this Project, a full and certified copy of that policy is required when the Contractor delivers the signed Contract for the work.

1-07.18(5) Coverages and Limits

The insurance shall provide the minimum coverages and limits set forth below. Contractor's maintenance of insurance, its scope of coverage, and limits as required herein shall not be construed to limit the liability of the Contractor to the coverage provided by such insurance, or otherwise limit the Contracting Agency's recourse to any remedy available at law or in equity.

All deductibles and self-insured retentions must be disclosed and are subject to approval by the Contracting Agency. The cost of any claim payments falling within the deductible or self-insured retention shall be the responsibility of the Contractor. In the event an additional insured incurs a liability subject to any policy's deductibles or self-insured retention, said deductibles or self-insured retention shall be the responsibility of the Contractor.

1-07.18(5)A Commercial General Liability

Commercial General Liability insurance shall be written on coverage forms at least as broad as ISO occurrence form CG 00 01, including but not limited to liability arising from premises, operations, stop gap liability, independent contractors, products-completed operations, personal and advertising injury, and liability assumed under an insured contract. There shall be no exclusion for liability arising from explosion, collapse or underground property damage.

The Commercial General Liability insurance shall be endorsed to provide a per project general aggregate limit, using ISO form CG 25 03 05 09 or an equivalent endorsement.

Contractor shall maintain Commercial General Liability Insurance arising out of the Contractor's completed operations for at least three years following Substantial Completion of the Work.

Such policy must provide the following minimum limits:

$2,000,000	Each Occurrence
$3,000,000	General Aggregate
$3,000,000	Products & Completed Operations Aggregate
$2,000,000	Personal & Advertising Injury each offence
$2,000,000	Stop Gap / Employers' Liability each accident

1-07.18(5)B Automobile Liability

Automobile Liability shall cover owned, non-owned, hired, and leased vehicles; and shall be written on a coverage form at least as broad as ISO form CA 00 01. If the work involves the transport of pollutants, the automobile liability policy shall include MCS 90 and CA 99 48 endorsements.

Such policy must provide the following minimum limit:

$1,000,000	Combined single limit each accident

1-07.18(5)C Workers' Compensation

The Contractor shall comply with Workers' Compensation coverage as required by the Industrial Insurance laws of the State of Washington.

1-07.18(5)D Excess or Umbrella Liability

(January 4, 2016 APWA GSP)
The Contractor shall provide Excess or Umbrella Liability insurance with limits of not less than $1 million each occurrence and annual aggregate. This excess or umbrella liability coverage shall be excess over and as least as broad in coverage as the Contractor's Commercial General and Auto Liability insurance

All entities listed under 1-07.18(2) of these Special Provisions shall be named as additional insureds on the Contractor's Excess or Umbrella Liability insurance policy.

This requirement may be satisfied instead through the Contractor's primary Commercial General and Automobile Liability coverages, or any combination thereof that achieves the overall required limits of insurance.

1-07.18(5)E LHWCA Insurance

(January 4, 2016 APWA GSP)
If this Contract involves work on or adjacent to Navigable Waters of the United States, the Contractor shall procure and maintain insurance coverage in compliance with the statutory requirements of the U.S. Longshore and Harbor Workers' Compensation Act (LHWCA).

Such policy must provide the following minimum limits:

$1,000,000	Bodily Injury by Accident – each accident
$1,000,000	Bodily Injury by Disease – each employee
$1,000,000	Bodily Injury by Disease – policy limits

1-07.18(5)J Pollution Liability

(January 4, 2016 APWA GSP)
The Contractor shall provide a Contractors Pollution Liability policy, providing coverage for claims involving bodily injury, property damage (including loss of use of tangible property that has not been physically injured), cleanup costs, remediation, disposal or other handling of pollutants, including costs and expenses incurred in the investigation, defense, or settlement of claims, arising out of any one or more of the following:

1. Contractor's operations related to this project.
2. Remediation, abatement, repair, maintenance or other work with lead-based paint or materials containing asbestos.
3. Transportation of hazardous materials away from any site related to this project.

All entities listed under 1-07.18(2) of these Special Provisions shall be named by endorsement as additional insureds on the Contractors Pollution Liability insurance policy.

Such Pollution Liability policy shall provide the following minimum limits:

$1,000,000 each loss and $2,000,000 annual aggregate

1-07.23 Public Convenience and Safety

(January 2023 City of Auburn GSP)

Supplement this section with the following:

The use of any project area by vehicles or pedestrians before project acceptance is not to be construed as utilization by the City of Auburn.

1-07.23(1) Construction Under Traffic

(January 2020 City of Auburn GSP)
Supplement this section with the following:

All unattended excavations shall be barricaded at all times.

Failure to provide proper barricading and lighting will be cause for the City to call in a barricading company to install proper barricades and lights and charge the Contractor for all costs incurred.

At the end of each working day, the Contractor shall place temporary patches or steel plates over unfinished portions of trenches crossing traveled ways. Material for temporary patches shall be hot or cold mix asphalt concrete. The cost for temporary patches or steel plates shall be included in the appropriate unit bid prices for the work involved.

Traffic control devices that are in conflict with required construction traffic devices or construction work shall be covered, removed and temporarily stored, or temporarily relocated by the Contractor.

Flagging, signs, and all other traffic control devices shall be in accordance with Section 1-10.3 (Traffic Control Labor, Procedures, and Devices).

Signal downtime will not be allowed Monday thru Friday between the hours of 6:00 AM and 9:00 AM and between 3:00 PM and 6:00 PM.

(October 2021 City of Auburn GSP)
Supplement this section with the following:

Temporary 'Traffic Signal Revision' signs and signal placards installed per Section 1-10.3(3)N (Temporary Signage for Roadway Traffic Revisions) shall remain in place at each site for a minimum of 6 weeks once work at each individual site is complete and the new signal revisions are operational. Once all physical work is complete at each site and all traffic signals have been deemed operational by the Engineer, the Contract will be placed into suspension until such time when the temporary traffic revision signage and placards can be removed.

(February 2023 City of Auburn GSP)
Add the following new section:

1-07.23(1)A Dust and Mud Control and Street Cleaning

The Contractor is responsible for controlling dust and mud within the project limits. All streets outside the project limits used by the Contractor during the execution of this Contract shall be kept clean. The Contractor shall be prepared to use the proper equipment necessary to render the streets free of all mud, debris, and foreign materials. Any damage caused by dust or mud accumulation on the streets and in the storm sewer system shall be the sole responsibility of the Contractor.

The Contractor's cleaning actions must comply with the City of Auburn's Surface Water Management Manual (SWMM). A copy of the City's SWMM manual can be found on the City's website at auburnwa.gov under publications and forms.

The Contractor shall provide for a clean surface on all surfaced roadways upon completion of each day's activities. Equipment required for this operation shall be on the job site or available at all times. Failure to have this equipment on the job site or available may necessitate a shutdown of the project.

(City Contracts, February 2023 City of Auburn GSP)
Supplement this section with the following:

Payment for dust and mud control and street cleaning shall be included in the unit contract prices for the bid items for which the dust, mud control, and street cleaning work is associated with, and no additional compensation will be made, except for "Water" per M gal., if shown as a bid item in the Proposal.

No compensation shall be made to the Contractor to implement additional erosion control measures that are caused by dust and mud control activities.

(February 2023 City of Auburn GSP)
Add the following new section:

1-07.23(1)B Daily Cleanup and Maintenance Items

The Contractor shall clean all roadways, streets and appurtenances, including sidewalks which are open for public use, of all material or debris that has been dropped or otherwise deposited thereon, as a result of Contractor's on- and off-site operations, at the conclusion of each working day, and at such other times as deemed necessary by the Engineer to ensure the safety of the traveling public and to prevent inconvenience to the public and owners of private property adjacent to the project.

If the Engineer determines that roadways, streets, sidewalks, and appurtenances are not properly cleaned to prevent public inconvenience, or the condition of the excavation or disposal sites so warrant, the Contractor shall provide facilities to remove clay or other deposits from tires, between wheels, and outside of truck beds before trucks and other equipment will be allowed to travel over paved streets.

Upon written notice written notice from the Engineer, any violation of the above requirements will be sufficient grounds for the Engineer to order the roadways, streets and appurtenances cleaned or sprinkled by others at the Contractor's costs.

(City Contracts, February 2023 City of Auburn GSP)
Supplement this section with the following:

The City may deduct all costs of such cleaning or sprinkling from any money due, or to become due, to the Contractor.

1-07.23(2) Construction and Maintenance of Detours

(February 2023 City of Auburn GSP)
Supplement this section with the following:

The Contractor shall submit a written procedure to the Engineer for approval per Section 9-38 (Submittal Approval) for routing and maintenance of traffic.

Streets may be closed to through traffic, unless otherwise specified in Section 1-07.23(1)C (Closure Restrictions), with Engineer approval. The Contractor shall obtain written approval from the Engineer at least 15 working days prior to an anticipated street closure. Street closures shall be such that they provide for maximum public safety and public convenience.

They shall be opened to through traffic at such time as the work has been completed, or as the Engineer may direct.

Street closures and detours shall provide for the following:

1. Reasonable access to, and egress from, the properties adjacent to the project at all times.
2. At least one-way traffic on all existing roadways within the project limits during working hours and at the end of each working day provisions for the safe passage of two-way traffic during the non-working hours.
3. If the Contractor requires delays or limited term street closure beyond that provided for herein, the request shall be submitted, in writing, for the approval of the Engineer before the anticipated delay or closure. The delay or closure request shall state the reason, the locations, the time and date, and the duration of the required delay or closure.
4. The Contractor is required, at its own expense, to remove all excess materials, debris, or other obstruction caused by their operation, from the streets or alleys as the work progresses, whether within the project limits or along haul routes. The Contractor shall repair or replace any streets, sidewalks, roads, or culverts damaged by their operations, to the satisfaction of the Engineer and other concerned parties.
5. The Contractor must maintain convenient access for local traffic to driveways, houses, and buildings along the work route. Such access shall be maintained as near as possible to that which existed before construction began. The Contractor shall provide 10 working days advance notice to all property owners and tenants of street and alley closures or other restrictions, which may interfere with their access. When the abutting owners' access across right-of-way lines is to be eliminated and replaced under the Contract by another access, the existing access shall not be closed until the replacement access facility is available.

The Contractor shall be responsible for making detailed notifications of detours and closures as follows:

1. The Contractor shall provide at least 10 working days advance written notification to the local public transportation organization(s), transit service organizations, Auburn School District Transportation Department, Valley Regional Fire Authority Fire Marshal's Office, and Auburn Police Department before the beginning of operations, so that these agencies may reroute their emergency vehicles around the construction zone. If the Fire Authority or Police Department determine that rerouting is not possible, the Contractor shall allow reasonable access through the construction zone at all times.

2. The Contractor shall notify all affected owners and agencies of all closures, detours and traffic interruptions at least 10 working days in advance of such closure. Notification shall be in writing and must include the beginning and ending times and dates of traffic disruption(s), names of streets or locations of alleys to be affected, detour routes, etc. The Contractor shall give the Engineer written certification of all notifications before all traffic disruptions. On large projects requiring extended traffic disruption, the Contractor shall make additional notifications, as conditions require.

(City Contracts, February 2023 City of Auburn GSP)

Supplement this section with the following:

If the Contractor neglects to remove materials or obstructions and return streets, sidewalks, driveways, and roads in suitable condition for traffic within 1 working day after having received written notice from the Engineer, the work may be done by the City of Auburn and the cost thereof charged to the Contractor and deducted from money due, or to become due, to the Contractor.

(City Contracts, August 2021 City of Auburn GSP)
Add the following new section:

1-07.23(4) Payment

Payment for all Contract requirements specified in Section 1-07.23 (Public Convenience and Safety) and subsections thereof, shall be included in the appropriate unit bid prices for the Work involved, unless otherwise specified.

1-07.24 Rights of Way

(City Contracts, September 2016 City of Auburn GSP)
Delete this section and replace it with the following:

Street right-of-way lines, limits of easements, and limits of construction permits are indicated in the Plans. The Contractor's activities shall be confined within these limits, unless arrangements for use of private property are made.

Whenever easements or rights of entry have not been acquired prior to advertising, these areas are so noted on the Plans. The Contractor shall not proceed with any portion of the work in areas where right-of-way, easements or rights of entry have not been acquired until the Engineer certifies to the Contractor that the right of way or easement is available or that the right of entry has been received. If the Contractor is delayed due to acts of omission on the part of the City in obtaining easements, rights of entry or right of way, the Contractor will be entitled to an extension of time. The Contractor agrees that such delay shall not be a breach of contract.

Whenever any of the work is accomplished on or through property other than public right of way, the Contractor shall meet and fulfill all covenants and stipulations of any easement agreements obtained by the City from the owner of the private property. If easement agreements were obtained by the City as part of this project, they are included in the Appendix. Copies of the easement agreements not obtained prior to advertising will be made available to the Contractor once obtained by the City.

The Contractor shall give 48 hours' notice to each property owner prior to entry of each property. This includes entry onto easements and private property where private improvements must be adjusted.

The Contractor shall be responsible for providing, without expense or liability to the City, any additional land and access thereto that the Contractor may desire for temporary construction staging facilities, Contractor's convenience, storage or materials, or other Contractor needs. However, before using any private property, whether adjoining the work or not, the Contractor shall submit to the City a completed "Property Owner Permission for Construction" form. The "Property Owner Permission for Construction" form is available at the City of Auburn Public Works Department. If the Contractor utilizes private property for temporary construction facilities, storage of materials and equipment, employee parking or other Contractor needs, a "Temporary Use Permit" shall be secured from the City of Auburn in accordance with Section 18.46A.070 of the Auburn City Code. The Contractor must file a written release with

the City from all private property owners upon whose property the Contractor's operations has encroached before completion, unless such work was specified in the Contract.

(January 2023 City of Auburn GSP)
Add the following new section:

1-07.29 Haul Routes

Prior to moving any materials or equipment on public streets, the Contractor shall submit a haul route plan to the Engineer for approval per Section 9-38 (Submittal Approval). The plan must be submitted 10 working days prior to hauling. The Engineer must approve the haul route plan before hauling begins.

If the Contractor hauls materials or equipment without an approved haul route plan or not in accordance with an approved haul route, the Contractor may be assessed penalties per Section 1-08.9(1) (Penalties). The assessment of penalties is at the sole discretion of the Engineer.

1-08 Prosecution and Progress

(Non-City Contracts, February 2023 City of Auburn GSP)
Add the following new section:

1-08.0 Preliminary Matters

1-08.0(1) Preconstruction Conference

(Non-City Contracts, December 2019 City of Auburn GSP)
Prior to beginning construction work a preconstruction conference will be scheduled between the Contractor, the Engineer and such other interested parties as may be invited.

The purpose of the preconstruction conference will be:

1. To review the initial progress schedule;
2. To establish a working understanding among the various parties associated or affected by the work;
3. To establish and review procedures for notifications, approvals, submittals, etc.;
4. To establish normal working hours for the work;
5. To review safety standards and traffic control; and
6. To discuss such other related items as may be pertinent to the work.

The Contractor shall prepare and submit electronically 1 working day prior to the preconstruction conference, the following, per Section 9-38 (Submittal Approval):

1. Preliminary progress schedule.
2. SPCC Plan per Section 1-07.15(1) of the Contract Documents.

In addition, the Contractor shall prepare and submit electronically 1 working day prior to the preconstruction conference:

1. Emergency Call List; and
2. A Preliminary Schedule of Submittals

1-08.0(2) Hours of Work

(Non-City Contracts, February 2023 City of Auburn GSP)
Except in the case of emergency or unless otherwise approved by the Engineer, normal working hours shall be from between 7:00 a.m. and 6:00 p.m. Monday through Friday. If the Contractor desires different than the normal working hours stated above, the request

All working hours and days are also subject to local permit and ordinance conditions (such as noise ordinances).

If the Contractor wishes to deviate from the established working hours, the Contractor shall submit a written request to the Engineer for consideration. This request shall state what hours are being requested, and why. Requests shall be submitted for review no later than 5 working days prior to the day(s) the Contractor is requesting to change the hours.

If the requested working hour deviation is approved by the Engineer, it may be revoked at any time the City receives complaints from the public or adjoining property owners regarding the noise from the Contractor's operations.

(City Contracts, December 2021 City of Auburn GSP)
Add the following new section:

1-08.0 Preliminary Matters

1-08.0(1) Preconstruction Conference

Following notice of award of the contract by the City, a preconstruction conference will be scheduled between the Contractor, the Engineer, and such other interested parties as may be invited.

The purpose of the preconstruction conference will be:

1. To review the initial progress schedule;
2. To establish a working understanding among the various parties associated or affected by the work;
3. To establish and review procedures for progress payments, notifications, approvals, submittals, etc.;
4. To establish normal working hours for the work;
5. To review safety standards and traffic control; and
6. To discuss such other related items as may be pertinent to the work.

The Contractor shall prepare and submit electronically 1 working day prior to the preconstruction conference, the following, per Section 9-38 (Submittal Approval):

1. A breakdown of all lump sum payment items, except for the lump sum payment items for:
    - Traffic Control Supervisor; and
    - Mobilization; and
    - Record Drawings
2. Preliminary progress schedule.
3. SPCC Plan per Section 1-07.15(1) of the Contract Documents.

In addition, the Contractor shall prepare and submit electronically 1 working day prior to the preconstruction conference:

1. Requests to Sublet for all remaining subcontractors not included in the bid submittal which must be approved prior to payment;
2. Emergency Call List; and
3. Schedule of equipment and labor rates for force account payment, as outlined in Section 1-09.6 (Force Account).

(City Contracts, December 8, 2014 APWA GSP)
Add the following new section:

1-08.0(2) Hours of Work

Except in the case of emergency or unless otherwise approved by the Engineer, the normal working hours for the Contract shall be any consecutive 8-hour period between 7:00 a.m. and 6:00 p.m. Monday through Friday, exclusive of a lunch break. If the Contractor desires different than the normal working hours stated above, the request must be submitted in writing prior to the preconstruction conference, subject to the provisions below. The working hours for the Contract shall be established at or prior to the preconstruction conference.

All working hours and days are also subject to local permit and ordinance conditions (such as noise ordinances).

If the Contractor wishes to deviate from the established working hours, the Contractor shall submit a written request to the Engineer for consideration. This request shall state what hours are being requested, and why. Requests shall be submitted for review no later than 5 working days prior to the day(s) the Contractor is requesting to change the hours.

If the Contracting Agency approves such a deviation, such approval may be subject to certain other conditions, which will be detailed in writing. For example:

1. On non-Federal aid projects, requiring the Contractor to reimburse the Contracting Agency for the costs in excess of straight-time costs for Contracting Agency representatives who worked during such times. (The Engineer may require designated representatives to be present during the work. Representatives who may be deemed necessary by the Engineer include, but are not limited to: survey crews; personnel from the Contracting Agency's material testing lab; inspectors; and other Contracting Agency employees or third party consultants when, in the opinion of the Engineer, such work necessitates their presence.)
2. Considering the work performed on Saturdays, Sundays, and holidays as working days with regard to the contract time.
3. Considering multiple work shifts as multiple working days with respect to contract time even though the multiple shifts occur in a single 24-hour period.
4. If a 4-10 work schedule is requested and approved the non working day for the week will be charged as a working day.
5. If Davis Bacon wage rates apply to this Contract, all requirements must be met and recorded properly on certified payroll.

(City Contracts, February 2016 City of Auburn GSP)

Supplement this section with the following:

If the requested working hour deviation is approved by the Engineer, it may be revoked at any time the City receives complaints from the public or adjoining property owners regarding the noise from the Contractor's operations. The Contractor shall have no claim for damages or delays should such permission be revoked for any reason.

Reimbursements by the Contractor to the Contracting Agency for overtime work will be deducted from amounts due, or to become due, to the Contractor. The Contractor by these specifications does hereby authorize the Engineer to deduct such costs from the amount due or to become due to the Contractor.

1-08.1 Subcontracting

(City Contracts, December 2016 City of Auburn GSP)
Supplement this section with the following:

Until the City has received and approved the "Request to Sublet" form provided by the City and filled out by the Contractor for a specific Subcontractor, said Subcontractor shall not begin any work within the project limits or within the City furnished sites. The Contractor and Subcontractor shall bear all risks for any work begun outside such areas and for any materials ordered by said Subcontractor before the "Request to Sublet" specific to said Subcontractor is approved.

1-08.3 Progress Schedule

1-08.3(1) Progress Schedule Types

(City Contracts, December 2016 City of Auburn GSP)
Supplement this section with the following:

The City requires the use of a Type A Progress Schedule as detailed in Section 1-08.3(2)A (Type A Progress Schedules) for this project.

1-08.3(2) General Requirements

(City Contracts, May 2020 City of Auburn GSP)
Supplement this section with the following:

The Contractor shall submit electronically a Preliminary Progress Schedule (first 30 working days) to the Engineer no later than 1 working day prior to the date of the Pre-construction Conference. This preliminary schedule shall show work to be performed during the first 30 working days of the Contract. Acceptance of the Preliminary Progress Schedule shall be required prior to the execution of the Contract by the City.

The Engineer will periodically check actual progress of the work against the progress schedule. If the proposed construction schedule cannot be met, the Engineer will require the Contractor to submit a revised schedule to the Engineer for acceptance. The approved revisions will thereafter, in all respects, apply in lieu of the original schedule.

Failure of the Contractor to follow the progress schedule submitted and accepted, including revisions thereof, shall relieve the City of any and all responsibility for furnishing and making available all or any portion of the project site from time to time, and will relieve the City of any responsibility for delays to the Contractor in the performance of the work.

1-08.3(2)A Type A Progress Schedules

(City Contracts, March 2018 City of Auburn GSP)

Replace this section with the following:

The Contractor shall submit a Type A Progress Schedule in accordance with Section 9-38 (Submittal Approval) of the Contract Specifications. The Progress Schedule shall show the total working days and shall be submitted prior to the first working day of the Contract. The schedule may be a critical path method (CPM) schedule, bar chart, or other standard schedule format. Regardless of which format is used, the schedule shall identify the critical path. The Engineer will evaluate the Type A Progress Schedule and approve or return the schedule for corrections within 10 calendar days of receiving the submittal.

1-08.3(5) Payment

(City Contracts, October 2021 City of Auburn GSP)
Replace this section with the following:

The cost of preparing the progress schedule, maintaining and submitting any supplementary progress schedules, and providing weekly schedules shall be included in the unit contract bid item prices for other work.

(City Contracts, January 2023 City of Auburn GSP)
Add the following new section:

1-08.3(7) Progress Meeting

At a minimum, weekly progress meetings will be conducted with the Contractor and City personnel. Additional meetings may be required for coordination of Contractor work with other contractors, agencies, or interested parties.

The determination of time, place, and frequency of required progress meetings will be established at the Preconstruction Conference for this contract.

1-08.4 Prosecution of the Work

(Non-City Contracts, February 2023 City of Auburn GSP)
Delete the first paragraph and replace it with the following:

The Contractor shall not commence with the work until the Engineer has given the Notice to Proceed. The Contractor shall give the City at least three (3) working days advance notice before beginning each phase of the work (such as excavation, street paving, etc.). The Contractor shall diligently pursue the work to be completed within the existing public Right-of-way in the agreed upon timeframe. This timeframe shall be established by the submittal and acceptance of a construction schedule addressing all items of work and their completion

(City Contracts, June 2020 City of Auburn GSP)
Delete this section in its entirety, including heading, and replace it with the following:

1-08.4 Notice to Proceed and Prosecution of the Work

The Notice to Proceed Date shall be within 10 working days of the execution of the Contract by the City. The City will send a dated and signed official “Notice to Proceed” to the Contractor. The Contract time shall begin on the first working day following the “Notice to Proceed Date.”

The Contractor shall not commence with the Work until the City has executed the Contract and the Engineer has given the Notice to Proceed. The Contractor shall give the City at least 3 working days advance notice before beginning each phase of the Work (such as

excavation, street paving, etc.). The Contractor shall commence construction activities within 10 calendar days of the Notice to Proceed Date, unless otherwise approved in writing. The Contractor shall diligently pursue the work to the physical completion date within the time specified in the contract. Voluntary shutdown or slowing of operations by the Contractor shall not relieve the Contractor of the responsibility to complete the work within the time(s) specified in the contract.

1-08.5 Time for Completion

(City Contracts, September 2016 City of Auburn GSP)
Revise the last sentence of the first paragraph to read:

The days between December 25th and January 1st will classified as non-working days, provided that the Contractor actually suspends work on the Project.

(City Contracts, January 2023 City of Auburn GSP)
Revise the third and fourth paragraphs to read:

Contract time shall begin on the first working day following the Notice to Proceed Date.

Each working day shall be charged to the contract as it occurs, until the contract work is physically complete. If substantial completion has been granted and all the authorized working days have been used, charging of working days will cease. Each week the Engineer will provide the Contractor a statement that shows the number of working days: (1) charged to the contract the week before; (2) specified for the physical completion of the contract; and (3) remaining for the physical completion of the contract. The statement will also show the nonworking days and any partial or whole day the Engineer declares as unworkable. The statement will be identified as a Written Determination by the Engineer. If the Contractor does not agree with the Written Determination of working days, the Contractor shall pursue the protest procedures in accordance with Section 1-04.5. By failing to follow the procedures of Section 1-04.5, the Contractor shall be deemed as having accepted the statement as correct.

(City Contracts, March 2022 City of Auburn GSP)
Revise the sixth paragraph to read:

The Engineer will give the Contractor written notice of the completion date of the contract after all the Contractor's obligations under the contract have been performed by the Contractor. The following events must occur before the Completion Date can be established:

1. The physical work on the project must be complete; and
2. The Contractor must furnish all documentation required by the contract and required by law, to allow the Contracting Agency to process final acceptance of the contract.

The following documents must be received by the Project Engineer prior to the City issuing final payment:

a. Material Acceptance Certification Documents
b. Property owner releases per Section 1-07.24

The following documents must be received by the Project Engineer prior to establishing a completion date:

a. Certified Payrolls (per Section 1-07.9(5)).
b. Monthly Reports of Amounts Credited as DBE Participation, as required by the Contract Provisions.

c. Copies of the approved "Affidavit of Prevailing Wages Paid" for the Contractor and all Subcontractors

(City Contracts, January 2023 City of Auburn GSP)
Supplement this section with the following:

The entire project, including cleanup, shall be physically completed within the Contract working days, beginning on the day after the "Notice to Proceed" date. The City, for justified reasons, may extend the contract time in accordance with Section 1-08.8 (Extensions of Time).

Late delivery of materials may be considered a justified reason for a time extension or Procurement Suspension per Section 1-08.6 (Suspension of Work), if the Contractor can show written evidence of a prompt order date after award of the Contract, demonstrate determined effort to acquire prompt delivery in the specified time, and comply with other requirements as specified in the Contract Documents.

1-08.6 Suspension of Work

(City Contracts, November 2019 City of Auburn GSP)
Supplement this section with the following:

Contract time may be suspended for procurement of critical materials (Procurement Suspension). In order to receive a Contract suspension, the Contractor shall, submit to the Engineer evidence of purchase orders made for all materials deemed critical by the Contracting Agency for physical completion of the contract. The Contractor shall provide copies of purchase orders and supplier invoices for the critical materials. Such supplier invoices and/or purchase orders shall indicate the purchase order date and estimated delivery date for the critical materials. Contractor's requests for Contract suspensions must be made in writing and shall include a progress schedule(s) that reflects the anticipated suspension.

1-08.9 Liquidated Damages

(City Contracts, March 3, 2021 APWA GSP, Option B)
Revise the second and third paragraphs to read:

Accordingly, the Contractor agrees:

1. To pay (according to the following formula) liquidated damages for each working day beyond the number of working days established for Physical Completion, and
2. To authorize the Engineer to deduct these liquidated damages from any money due or coming due to the Contractor.

Liquidated Damages Formula

LD=0.15C/T

Where:

LD = liquidated damages per working day (rounded to the nearest dollar)

C = original Contract amount

T = original time for Physical Completion

When the Contract Work has progressed to Substantial Completion as defined in the Contract, the Engineer may determine the Contract Work is Substantially Complete. The Engineer will notify the Contractor in writing of the Substantial Completion Date. For overruns in Contract time occurring after the date so established, the formula for liquidated damages shown above will not apply. For overruns in Contract time occurring after the Substantial Completion Date, liquidated damages shall be assessed on the basis of direct engineering and related costs assignable to the project until the actual Physical Completion Date of all the Contract Work. The Contractor shall complete the remaining Work as promptly as possible. Upon request by the Project Engineer, the Contractor shall furnish a written schedule for completing the physical Work on the Contract.

(City Contracts, October 2021 City of Auburn GSP)
Add the following new section:

1-08.9(1) Penalties

If the Contractor implements traffic control without an approved traffic control plan or is not in compliance with an approved traffic control plan per Section 1-10 (Temporary Traffic Control), or if the Contractor hauls materials without an approved haul route or does not follow an approved haul route per Section 1-07.28 (Haul Routes), the Contractor will be assessed penalties equal to 10% of the calculated Liquidated Damages per Section 1-08.9 (Liquidated Damages) per incident or $1,500 per day, whichever is greater. A Traffic Control incident is defined as, per day, per location. A Haul Route incident is defined as one truckload of materials or equipment.

(Non-City Contracts, February 2023 City of Auburn GSP)
Add the following new section:

1-08.9(1) Penalties

If the Contractor implements traffic control without an approved traffic control plan or is not in compliance with an approved traffic control plan per Section 1-10 (Temporary Traffic Control), or if the Contractor hauls materials without an approved haul route or does not follow an approved haul route per Section 1-07.28 (Haul Routes), the City may, take actions to protect the interests of the City, which may include, but are not limited to one or more of the following: order suspension of all construction activities, revoke permits issued to the Contractor and its contractors, pursue remedy through the Contractor's surety, terminate the FAC Agreement associated with the work (if applicable), and assess penalties as defined in Auburn City Code Section 9.90.030, as applicable.

1-09 Measurement and Payment

1-09.1 Measurement of Quantities

(City Contracts, December 2016 City of Auburn GSP)
Supplement this section with the following:

The quantities shown in the Proposal and Contract forms are estimates only, being given only as a basis for bid comparisons. The basis of payment for each bid item will be the actual work performed and measured in accordance with the Contract.

Where items are specified to be paid for by the ton, the Contractor is responsible for providing a certified weight ticket to the Project Inspector for each truckload delivered. Pay quantities

will be prepared on the basis of these weight tickets, and tickets not received by the Inspector will not be honored for payment.

1-09.2 Weighing Equipment

1-09.2(1) General Requirements for Weighing Equipment

(City Contracts, September 2021 City of Auburn GSP)
Supplement this section with the following:

Electronic Truck Tickets shall be made electronically and shall be transmitted via e-mail as a PDF to PWTruckTickets@auburnwa.gov. The e-mail subject line of electronic Truck Ticket's shall include the following: Project Number, Project Name, Truck Ticket Number.

Emailed truck tickets shall be grouped and combined into one email by delivery date when possible.

In the event the Contractor cannot provide electronic truck tickets, the Contractor may request to submit them as a hardcopy. Hardcopy truck tickets shall be submitted within 2 working days of when the materials were delivered to the project site to receive payment.

1-09.2(5) Measurement

(City Contracts, December 30, 2022 APWA GSP)
Revise the first paragraph to read:

Scale Verification Checks – At the Engineer's discretion, the Engineer may perform verification checks on the accuracy of each batch, hopper, or platform scale used in weighing contract items of Work.

1-09.3 Scope of Payment

(City Contracts, September 2021 City of Auburn GSP)
Supplement this section with the following:

A separate delivery ticket for each truckload of bulk material (gravel, crushed rock, etc.) shall be furnished to the City. Truck tickets that are not submitted within 2 working days of when the materials were delivered to the project site shall not be accepted for payment.

There will be no separate payment for "haul" for any bid item or portion thereof in this Contract, unless specified otherwise. All bid items dealing directly with or implying movement of any material to or from the project area or in the project area itself are hereby understood to include full payment for all movement of material.

1-09.4 Equitable Adjustment

(City Contracts, April 2006 City of Auburn GSP)
The first paragraph, Item 2b is revised to read as follows:

b. 1-09.6 (Force Account)

1-09.6 Force Account

(City Contracts, December 30, 2022 APWA GSP)
Supplement this section with the following:

The Contracting Agency has estimated and included in the Proposal, dollar amounts for all items to be paid per force account, only to provide a common proposal for Bidders. All such dollar amounts are to become a part of Contractor's total bid. However, the Contracting

Agency does not warrant expressly or by implication, that the actual amount of work will correspond with those estimates. Payment will be made on the basis of the amount of work actually authorized by the Engineer.

(City Contracts, February 2017 City of Auburn GSP)
Supplement this section with the following:

All force account work shall be accounted for daily and entered by the Contractor onto the City of Auburn 'Daily Report of Force Account Worked' form (Force Account form). The City Inspector will sign the Force Account form in the field, however compensation for the work indicated is subject to Engineer approval. The signature on the form from the Inspector does not constitute Engineer approval. The contractor shall provide labor and equipment details for force account work to the City before work begins.

1-09.8 Payment for Material on Hand

(City Contracts, April 2017 City of Auburn GSP)
Supplement this section with the following:

Payment for materials on hand shall only be considered if, in the sole opinion of the engineer, the material is stored in a safe, secure, and controlled environment.

1-09.9 Payments

(City Contracts, March 2022 City of Auburn GSP)
Delete this section and replace it with the following:

The basis of payment will be the actual quantities of Work performed according to the contract and as specified for payment.

The Contractor shall submit a breakdown of the cost of lump sum bid items per Section 1-08.0(1) (Preconstruction Conference), to enable the Project Engineer to determine the Work performed on a monthly basis. A breakdown is not required for lump sum items that include a basis for incremental payments as part of the respective Specification. Absent a lump sum breakdown, the Project Engineer will make a determination based on information available. The Project Engineer's determination of the cost of work shall be final.

Progress payments for completed work and material on hand will be based upon progress estimates prepared by the Engineer. A progress estimate cutoff date will be established at the preconstruction conference.

The initial progress estimate will be made not later than 30 days after the Contractor commences the work, and successive progress estimates will be made every month thereafter until the Completion Date. Progress estimates made during progress of the work are tentative, and made only for the purpose of determining progress payment. The progress estimates are subject to change at any time prior to the calculation of the Final Payment.

The value of the progress estimate will be the sum of the following:

1. Unit Price Items in the Bid Form — the approximate quantity of acceptable units of work completed multiplied by the unit price.
2. Lump Sum Items in the Bid Form — based on the approved Contractor's lump sum breakdown for that item, or absent such a breakdown, based on the Engineer's determination.
3. Materials on Hand — 100 percent of invoiced cost of material delivered to Job site or other storage area approved by the Engineer.

4. Change Orders — entitlement for approved extra cost or completed extra work as determined by the Engineer.

Progress payments will be made in accordance with the progress estimate less:

1. Retainage per Section 1-09.9(1); on non FHWA-funded projects
2. The amount of Progress Payments previously made; and
3. Funds withheld by the Contracting Agency for disbursement in accordance with the Contract Documents.

Progress payments for work performed shall not be evidence of acceptable performance or an admission by the Contracting Agency that any work has been satisfactorily completed. The determination of payments under the contract will be final in accordance with Section 1-05.1.

Failure to perform any of the obligations under the Contract by the Contractor may be decreed by the Contracting Agency to be adequate reason for withholding any payments until compliance is achieved.

The Contractor shall sign electronically using the software provided by the Contracting Agency and return the Final Pay Estimate as indicated in this section.

Upon completion of all Work and after final inspection (Section 1-05.11), the amount due the Contractor under the Contract will be paid based upon the final estimate made by the Engineer and presentation of a Final Pay Estimate to be signed by the Contractor. The Contractor's signature on such Final Pay Estimate shall be deemed a release of all claims of the Contractor unless a Certified Claim is filed in accordance with the requirements of Section 1-09.11 and is expressly excepted from the Contractor’s certification on the Final Pay Estimate.

If the Contractor fails, refuses, or is unable to sign and return the Final Pay Estimate or any other documentation required before Contract Completion and final acceptance can occur, the Contracting Agency reserves the right to establish a Completion Date (for the purpose of meeting the requirements of RCW 60.28) and unilaterally accept the Contract. Unilateral Contract Completion and final acceptance will occur only after the Contractor has been provided the opportunity, by written request from the Engineer, to voluntarily submit such documents. If voluntary compliance is not achieved, formal notification of the impending unilateral establishment of a Completion Date and final acceptance will be provided by certified letter or email with delivery confirmation from the Contracting Agency to the Contractor, which will provide 30 calendar days for the Contractor to submit the signed Final Pay Estimate. The 30 calendar day period will begin on the date the certified letter or email with delivery confirmation is received by the Contractor, whichever occurs first. The date the Contracting Agency unilaterally signs the Final Pay Estimate shall then constitute the Completion Date and the final acceptance date (Section 1-05.12). The reservation by the Contracting Agency to unilaterally accept the Contract will apply to Contracts that are Physically Completed in accordance with Section 1-08.5, or for Contracts that are terminated in accordance with Section 1-08.10. Unilateral final acceptance of the Contract by the Contracting Agency does not in any way relieve the Contractor of their responsibility to comply with all Federal, State, tribal, or local laws, ordinances, and regulations that affect the Work under the Contract.

Payment to the Contractor of partial estimates, final estimates, and retained percentages shall be subject to controlling laws.

The Contractor shall submit to the City, no later than 3 working days after the 20th day of each month, all documentation for payment for work completed during the previous period. All monthly pay requests are subject to approval and verification by the Engineer. Typical payment periods are from the 21st day to the 20th day of each month.

Errors, omissions, revisions or corrections in the original submittal for payment may result in delayed payment. The Contractor is responsible for maintaining adequate records of bid item quantities for the work completed for each monthly pay period. These quantities will be subject to approval and verification by the Engineer.

All progress payments will be mailed to the address designated in writing by the Contractor at the preconstruction conference.

Final payment does not constitute Final Acceptance of the Contract Work.

1-09.9(1) Retainage

(City Contracts, January 2023 City of Auburn GSP)
Supplement this section with the following:

In addition to the amount RCW 60.28 requires to be withheld from the progress or retained percentage payments to the Contractor, the City of Auburn may, at its sole discretion, withhold amounts sufficient to pay any property damage claim of which the City may have knowledge and regardless of the informalities of notice of such claim, arising out of the performance of this Contract, provided that the total amounts withheld for such purposes shall not exceed 3% of the Contract price. The term “property damage claim” shall not include any claim for personal injuries or any claim by persons furnishing supplies or materials or performing labor for the Contractor. The amount withheld will not be paid to the claimant by the City but will be held until either the Contractor secures a written release from the claimant, obtains a court decision that such claim is without merit, or satisfies any judgment in favor of the claimant on such claim.

1-09.11 Disputes and Claims

1-09.11(2) Claims

(City Contracts, August 2021 City of Auburn GSP)
Revise the first paragraph to read:

If the Contractor claims that additional payment is due and the Contractor has pursued and exhausted all the means provided in Sections 1-04.5 and 1-04.5(1) to resolve a dispute, the Contractor may file a claim as provided in this section. The Contractor shall submit to the Engineer written notification of intent to file a Certified Claim within 14 calendar days from the issuance of the Engineer’s determination on merit of the protest pursuant to Section 1-04.5. The Contractor agrees to waive any claim for additional payment if the written notifications provided in Section 1-04.5 are not given, or if the Engineer is not afforded reasonable access by the Contractor to complete records of actual cost and additional time incurred as required by Section 1-04.5, or if a claim is not filed as provided in this section. The fact that the Contractor has provided a proper notification, provided a properly filed claim, or provided the Engineer access to records of actual cost, shall not in any way be construed as proving or substantiating the validity of the Certified Claim.

1-09.11(3) Time Limitation and Jurisdiction

(City Contracts, September 2021 City of Auburn GSP)
Delete this section and replace it with the following:

For the convenience of the parties to the Contract it is mutually agreed by the parties that any claims or causes of action which the Contractor has against the Contracting Agency arising from the Contract shall be brought within 30 calendar days from the date the of Contract Completion and final acceptance as indicated in Section 1-09.9; and it is further agreed that any such claims or causes of action shall be brought only in the Superior Court of King County unless otherwise agreed in writing by the parties. The parties understand and agree that the Contractor's failure to bring suit within the time period provided, shall be a complete bar to any such claims or causes of action. It is further mutually agreed by the parties that when any claims or causes of action which the Contractor asserts against the Contracting Agency arising from the Contract are filed with the Contracting Agency or initiated in court, the Contractor shall permit the Contracting Agency to have timely access to any records deemed necessary by the Contracting Agency to assist in evaluating the claims or action.

1-09.13 Claims Resolution

(City Contracts, August 2021 City of Auburn GSP)
Section 1-09.13 (Claims Resolution) is deleted.

1-10 Temporary Traffic Control

1-10.1 General

(City Contracts, February 2023 City of Auburn GSP)
Supplement this section with the following:

The Contractor is responsible for distributing City provided informational flyers to affected property owners. The flyers shall be hand-delivered to these properties before the start of construction and shall include the name of the project, funding source, general contractor, approximate date for start and completion of construction activities. The Contractor shall provide traffic control for City provided inspection, testing, and survey as requested by the Engineer.

(Non-City Contracts, February 2023 City of Auburn GSP)
Supplement this section with the following:

When specified on the Plans, issued as a permit condition, or otherwise directed by the City, the Contractor is responsible for distributing informational flyers to affected property owners. The flyers shall be hand-delivered to these properties before the start of construction and shall include the name of the project, general contractor contact information, approximate date for start and completion of construction activities. The Contractor shall provide traffic control for City provided inspection, testing, and survey as requested by the Engineer.

1-10.2 Traffic Control Management

1-10.2(2) Traffic Control Plans

(City Contracts, February 2023, City of Auburn GSP)
Supplement this section with the following:

When traffic control Plans and/or pedestrian accommodation Plans are included with the Contract Documents, they have been furnished as a guide to be used by the Contractor and serve as a "starting point" for the Contractor's development of the traffic control Plans and pedestrian accommodation Plans for the project.

(February 2023, City of Auburn GSP)
Supplement this section with the following:

The Contractor shall prepare Traffic Control Plans that conform to the established standards for plan development as shown in the MUTCD, 2009 Edition, Part VI, and the WSDOT Work Zone Traffic Control Guidelines, latest edition. A separate pedestrian traffic control plan shall be required from the Contractor if normal pedestrian travel is affected by the Contractors actions. The Contractor shall submit the Traffic Control Plan and/or Pedestrian Accommodation Plan to the Engineer for review and approval at least 5 working days in advance of the time the traffic control devices, including signs, are scheduled to be installed and utilized. Traffic Control Plans and Pedestrian Accommodation Plans shall be submitted per Section 9-38.1 (Submittals) and shall include the City's Traffic Control Plan Checklist with each submittal. The Engineer must approve the Traffic Control Plan before any onsite work begins on the project. Any modifications or deviations from the approved Traffic Control Plan will require review and approval by the Engineer. The Contractor's failure to obtain approval on Traffic Control Plans may result in penalties being assessed per Section 1-08.9(1) (Penalties).

Outside edges of the traveled way may be delineated with traffic safety drums or tubular markers providing that the requirements of Section 1-07.23(1) (Construction Under Traffic) are met. Barricades shall be in accordance with the applicable Standard Plans.

1-10.3 Traffic Control Labor, Procedures, and Devices

1-10.3(1) Traffic Control Labor

1-10.3(1)B Other Traffic Control Labor

(February 2023 City of Auburn GSP)
Supplement this section with the following:

When working within signalized intersections, the Contractor shall schedule and coordinate the use of City provided uniformed police officers to control traffic. Contractor is responsible for all coordination with the City of Auburn Police Department to secure a uniformed police officer as required. This coordination shall be done a minimum of 3 working days in advance of the day a uniformed police officer is necessary. When the City of Auburn Police Department is not able to secure a uniformed police officer, the Contractor shall provide uniformed officers from outside police agencies and shall contract for those services directly. Contractor shall notify the Engineer prior to the use of outside agency police services.

(City Contracts, February 2023 City of Auburn GSP)
Supplement this section with the following:

When included in the Proposal, the City will reimburse the Contractor for the cost of uniformed police officers services as indicated in Section 1-10.5 (Payment) of these Special Provisions. If not included in the Proposal, cost of uniformed police services shall be incidental to the Contract and no additional payment shall be made.

1-10.3(3) Traffic Control Devices

1-10.3(3)A Construction Signs

(City Contracts, December 2016 City of Auburn GSP)
Supplement this section with the following:

When included in the Proposal, the Contractor shall provide and install "Construction Site Sign(s)" in accordance with the contract documents 2 working days in advance of any on site construction activities. Installation of the signs shall be in accordance with Section 1-10.3(3) (Construction Signs) and the applicable City of Auburn Standard Detail.

(April 2018 City of Auburn GSP)
Add the following new section:

1-10.3(3)N Temporary Signage for Roadway Traffic Revisions

Temporary "Traffic Revision Ahead" (W20-901) signs with two warning flags shall be installed in advance of roadway projects that include traffic revisions. Temporary "New Signal Ahead" (W20-902) signs with two warning flags shall be installed in advance of the intersection on all approaches to the new signal. Temporary "Traffic Signal Revision" (W20-903) signs with two warning flags shall be installed in advance of each intersection approach with signal modifications. A 12-inch x 12-inch warning placard shall be affixed to the top of each signal head being modified. Warning signs shall be mounted on 4"x 4" wooden posts and placed per plan and MUTCD requirements. The Contractor shall remove all temporary signs and posts no earlier than 3 months and no later than 6 months following completion of the traffic revisions. Posthole voids shall be restored with native material.

1-10.4 Measurement

1-10.4(2) Item Bids with Lump Sum for Incidentals

(City Contracts, January 2023 City of Auburn GSP)
Revise the fifth and sixth paragraphs to read:

"Sequential Arrow Sign" will be measured by the day for each 24-hour day or partial day in use. Signs not specifically approved for use will not be measured for separate payment.

"Portable Changeable Message Sign" will be measured by the day for each 24-hour day or partial day in use. Signs not specifically approved for use will not be measured for separate payment.

1-10.5 Payment

1-10.5(2) Item Bids With Lump Sum for Incidentals

(City Contracts, January 2023 City of Auburn GSP)
Supplement this section with the following:

Payment will be made for each of the following Bid items when included in the Proposal:

"Flaggers (Min. Bid _____ per hour)", Per Hour

"Traffic Control Labor (Min. Bid _____ per hour)", Per Hour

"Other Temporary Traffic Control", Per Lump Sum

"Sequential Arrow Sign", Per Day

"Portable Changeable Message Sign", Per Day

"Outside Agency Uniformed Police Flagging Labor", Estimate

"Construction Site Sign(s)", Per Each

Payment for "Traffic Control Supervisor" will be made on a prorated monthly basis for work completed.

The unit contract price bid per hour for "Flaggers (Min. Bid _____ per hour)" when applied to the number of units measured for this item in accordance with Section 1-10.4(2), shall be full compensation for all costs incurred by the Contractor in performing the Work defined in Section 1-10.3(1)A. Should the Contractor determine that the cost for this work is greater than the minimum price shown, the Contractor may bid a higher price. Should the Contractor write in a unit price less than the minimum price shown, the minimum unit price shown shall govern and become part of the bid.

The lump sum contract price for "Other Temporary Traffic Control" shall be full compensation for all costs incurred by the Contractor in performing the Work defined in Section 1-10, and which costs are not compensated by one of the items listed in this section.

The unit contract price bid per day for "Sequential Arrow Sign" shall be full compensation for all costs incurred by the Contractor in performing the contract work described in Section 1-10.3(3)B (Sequential Arrow Signs) and for procuring all Sequential Arrow Signs required for the project and for transporting these signs to and from the project.

The unit contract price bid per day for "Portable Changeable Message Sign" shall be full compensation for all costs incurred by the Contractor in performing the contract work described in Section 1-10.3(3)C (Portable Changeable Message Sign) and for procuring all portable changeable message signs required for the project and for transporting these signs to and from the project.

The unit contract price for "Construction Site Sign(s)" shall be full payment for all equipment, labor and materials needed to furnish, install, maintain, relocate (if required), and remove and dispose of at Physical Completion.

City of Auburn Uniformed Police Officers necessary for the project will be provided at no cost to the Contractor by the City of Auburn. Payment for use of "Outside Agency Uniformed Police Flagging Labor" will be per Section 1-09.4 (Equitable Adjustment) of the Standard Specifications.

Costs for scheduling and coordinating all uniformed police officers by the Contractor shall be included in the lump sum contract price for Traffic Control Supervisor and no additional compensation will be made.

END OF DIVISION 1

Water Operations
Cross-Connection Control Program

Purpose:

This document establishes minimum standards for the City of Auburn Cross-Connection Control Program to protect the public water system, as defined in WAC 246-290-010, from contamination via cross-connections. It describes minimum Cross-Connection Control Program operating policies, provides guidelines for installation, testing and maintenance of approved backflow prevention assemblies, permitting process, inspection and survey requirements for existing and new water service connections.

The City's proactive and ongoing Cross-Connection Control Program is an effort to protect the health of its consumers by preventing contaminants and pollutants from entering the public water supply. Washington State Department of Health, Division of Drinking Water requires all public water systems to implement a Cross-Connection Control Program. Elements of the city's Cross-Connection Control Program must be documented and included in the Comprehensive Water System Plan. Washington Administrative Code WAC 246.290.490 mandates Cross-Connection Control Programs contain the following minimum elements:

- Element 1: The purveyor shall adopt a local ordinance, resolution, code, bylaw, or other written legal instrument that:
  (i) Establishes the purveyor's legal authority to implement a cross-connection control program;
  (ii) Describes the operating policies and technical provisions of the purveyor's cross connection control program; and
  (iii) Describes the corrective actions used to ensure that consumers comply with the purveyor's cross-connection control requirements.

  The City of Auburn has adopted ordinance 5851 amending Auburn City Code Chapter 13.12 entitled "Protection of Water Supply" which establishes the City's authority for implementing the Cross-Connection Control Program.

The Federal Safe Drinking Water Act of 1974 and the statutes of the State of Washington, Title 43 RCW, require purveyors to protect the public water supply from contamination.

Enforcement of this Cross-Connection Control Program in the area(s) served by the City of Auburn Water will be in accordance with:

- *Washington Administrative Code WAC 246-290-490, Cross-Connection Control, effective April 9, 1999;*
- *Auburn City Code, ACC1.20.010 Right of entry for Inspection*
- *Auburn City Code, ACC13.06.260 Service Premises Isolation*
- *Auburn City Code, ACC13.12 Protection of Water Supply;*
- *City of Auburn Water Division, Cross-Connection Control Program;*

and/or any subsequent revisions, together with any future manuals of standard practice pertaining to Cross-Connection Control approved by Washington State Department of Health, Division of Drinking Water.

Consumers and/or premises violating any provisions of this document and/or subsequent revisions shall be subject to enforcement action such as, but not limited to, discontinuance (TURN OFF) of water service to the premises and/or a maximum penalty of $250.00 each day.

- Element 2: The purveyor shall develop and implement procedures and schedules for evaluating new and existing service connections to assess the degree of hazard posed by the consumer's premises to the purveyor's distribution system and notifying the consumer within a reasonable time frame of the hazard evaluation results. At a minimum, the program shall meet the following:
  (i) For connections made on or after April 9, 1999, procedures shall ensure that an initial evaluation is conducted before water service is provided;
  (ii) For all other connections, procedures shall ensure that an initial evaluation is conducted in accordance with a schedule acceptable to the department; and
  (iii) For all service connections, once an initial evaluation has been conducted, procedures shall ensure that periodic reevaluations are conducted in accordance with a schedule acceptable to the department and whenever there is a change in the use of the premises.

  The City's Cross-Connection Control Program evaluation of new and existing connections is as follows: New connections must comply with the City's Construction Standards for water, Design Standards 7.01.2.1 Domestic Service, 7.01.2.2 Other Services (Irrigation), and 7.01.5.2 Fire Sprinkler Systems, Backflow Assembly Installation Standards (Technical Memo), and evaluated by the City's Cross-Connection Control Specialist during the permit and plan review process and before service is provided. Water service connection(s) to new consumers and/or premises shall be locked off until the City's Cross-Connection Control Specialist has conducted a risk assessment, and determine if the backflow

protection is commensurate with the degree of hazard. Existing connections are given a risk assessment by the City's Cross-Connection Specialist to determine if the backflow protection is commensurate with the degree of hazard. A preliminary assessment (site survey) is conducted of all industrial, commercial, multi-family, private water systems consumers and/or non-residential premises for the purpose of determining the need for premises isolation. The City has identified possible Table 13 (high hazard) facilities within its jurisdiction and has a prioritize list for surveying each site. Consumers and/or premises identified as Table 13 (high hazard) facility require premises isolation with an Approved Air Gap and/or Reduced Pressure Backflow Assembly. Consumers and/or premises identified as a (low hazard) facility require premises isolation with an Approved Double Check Valve Assembly if the City's Cross-Connection Control Specialist (CCS) deems necessary. The consumer and/or premises have the option to install an Approved Air Gap and/or Reduced Pressure Backflow Assembly to avoid future plumbing changes of the premises isolation assembly if the City's Cross-Connection Control Specialist (CCS) deems necessary.

After the initial risk assessment of new and existing connections is conducted, a re-evaluation of the service connection is conducted every threee (3) years for Table 13 facilities and every five (5) years for industrial, commercial, multi-family, private water systems and/or non-residential premises.

The cost/fees of installation, initial and annual testing, maintenance, and repair or replacement of the backflow assembly shall be the responsibility of the consumer as a condition of water service.

- Element 3: The purveyor shall develop and implement procedures and schedules for ensuring that:
  (i) Cross-connections are eliminated whenever possible;
  (ii) When cross-connections cannot be eliminated, they are controlled by installation of approved backflow preventers commensurate with the degree of hazard; and
  (iii) Approved backflow preventers are installed in accordance with the requirements of subsection (6) of this section.

  The City's Cross-Connection Control Program endeavors to eliminate all actual or potential physical Cross-Connections where possible, and not allow any actual or potential physical Cross-Connections unless protected by an approved air gap or backflow prevention assembly. Consumers and/or premises shall be responsible for following the provisions of the City's Cross-Connection Control Program to eliminate and/or install approved backflow protection on all Cross-Connections within their premises. The City's Cross-Connection program will inventory and track all backflow prevention assemblies on the consumers' premises used for the protection of the public water supply, but it is the consumer and/or premises responsibility to test, maintain, repair, or replace all backflow prevention assemblies within their premises.

- Element 4: The purveyor shall ensure that personnel, including at least one person certified as a CCS, are provided to develop and implement the cross-connection control program.

  The City's Cross-Connection Control Program employs State Certified personnel. The program currently staffs (2) two full time employees certified as Cross-Connection Control Specialist, Backflow Assembly Tester, and Water Distribution Manager.

- Element 5: The purveyor shall develop and implement procedures to ensure that approved backflow preventers relied upon to protect the public water system are inspected and/or tested (as applicable) under subsection (7) of this section.
  Subsection (7) Approved backflow preventer inspection and testing.
  (a) For backflow preventers that protect the public water system, the purveyor shall ensure that:
  (i) A CCS inspects backflow preventer installations to ensure that protection is provided commensurate with the assessed degree of hazard;
  (ii) Either a BAT or CCS inspects:
  (A) Air gaps installed in lieu of approved backflow prevention assemblies for compliance with the approved air gap definition; and
  (B) Backflow prevention assemblies for correct installation and approval status.
  (iii) A BAT tests approved backflow prevention assemblies for proper operation.
  (b) The purveyor shall ensure that inspections and/or tests of approved air gaps and approved backflow assemblies that protect the public water system are conducted:
  (i) When any of the following occur:
  (A) Upon installation, repair, reinstallation, or relocation of an assembly;
  (B) Upon installation or replumbing of an air gap;
  (C) After a backflow incident involving the assembly or air gap; and
  (ii) Annually thereafter, unless the purveyor requires more frequent testing for high hazard premises or for assemblies that repeatedly fail.
  (c) The purveyor shall ensure that inspections of AVBs installed on irrigation systems are conducted:
  (i) At the time of installation;
  (ii) After a backflow incident; and
  (iii) After repair, reinstallation, or relocation.
  (d) The purveyor shall ensure that approved backflow prevention assemblies are tested using procedures acceptable to the department, such as those specified in the most recently published edition of the USC Manual. When circumstances, such as, but not limited to, configuration or location of the assembly, preclude the use of USC test procedures, the purveyor may allow, on a case-by-case basis, the use of alternate (non-USC) test procedures acceptable to the department.
  (e) The purveyor shall ensure that results of backflow prevention assembly inspections and tests are documented and reported in a manner acceptable to the purveyor.

(f) The purveyor shall ensure that an approved backflow prevention assembly or AVB, whenever found to be improperly installed, defective, not commensurate with the degree of hazard, or failing a test (if applicable) is properly reinstalled, repaired, overhauled, or replaced.
(g) The purveyor shall ensure that an approved air gap, whenever found to be altered or improperly installed, is properly replumbed or, if commensurate with the degree of hazard, is replaced by an approved RPBA.

The City's Cross-Connection Control Program requires all backflow prevention assemblies installed within the consumers and/or premises be tested and/or inspected at time of installation, annually (yearly anniversary date), after a backflow incident, repair, reinstallation, or relocation. Consumers and/or premises are responsible for all cost/fee to test, maintain, repair, or replace backflow prevention assemblies within their premises. Consumers and/or premises are also responsible for submitting all test reports for backflow prevention assemblies within their premises to the City's Cross-Connection Control Program within 30 days of testing the backflow preventions assemblies. Test reports received over the 30 days grace period may be returned to the consumer and/or premises for re-testing of the backflow prevention assemblies. Person testing the backflow prevention assemblies shall be a State Certified Backflow Assembly Tester on the City's Approved List, and only test reports approved by City of Auburn shall be accepted. Test reports not approved for use by the City of Auburn shall be returned to the consumer and/or premises. Test report forms shall be complete, accurate, and legible.

Procedures for inspection and/or testing of backflow prevention assemblies for existing consumers and/or premises are as follows:

Annual Testing
The City mails notices to existing consumers and/or premises of the annual testing or re-testing of the backflow prevention assemblies within their premises. The First Notice is mailed 30 days prior to anniversary test due date. If test reports are not received by anniversary test due date then a Second Notice is mailed giving the consumer and/or premises 30 days to test the backflow prevention assemblies. A Third Notice is mailed if the test reports are not received from the consumer and/or premises by date given on second notice. The third notice gives the consumer and/or premises 7 days to test the backflow prevention assemblies. The final notification before enforcement action is a Door Hanger hand carried to the consumer(s) and/or premises. The door hanger gives the consumer and/or premises 48 hours to have the backflow prevention assemblies tested and certified to be functioning correctly. Enforcement action includes, but is not limited to, a $250.00 fine each day and/or discontinuance (TURN OFF) of water service.

Repair, Reinstallation, or Relocation Testing
The City mails notices to existing consumers and/or premises of the repair, reinstallation, or relocation for the testing of the backflow prevention assemblies within their premises. Failure notices for backflow assemblies used for high health hazards are as follows: The First Notification is mailed after receiving

written notice from the backflow assembly tester identifying the failed test, reinstallation or relocation of the backflow assembly. A valid test report showing the repairs made with passing results, and/or initial testing of the reinstalled or relocated backflow assembly must be received within 7 days of the written notice. If a valid test report is not received within the 7 days, then a Second Notification is mailed giving the consumer and/or premises 5 days to submit a valid test report showing the repairs made with passing results, and/or initial testing of the reinstalled or relocated backflow assembly. If a valid test report is not received within the 5 days, then a Third Notification is mailed giving the consumer and/or premises 3 days to submit a valid test report showing the repairs made with passing results, and/or initial testing of the reinstalled or relocated backflow assembly. The final notification before enforcement action is a Door Hanger hand carried to the consumer(s) and/or premises. The door hanger gives the consumer and/or premises 48 hours to have the backflow prevention assemblies tested and certified to be functioning correctly. Enforcement action includes, but is not limited to, a $250.00 fine each day and/or discontinuance (TURN OFF) of water service. Failure notices for backflow assemblies used for low health hazards are as follows: The First Notification is mailed after receiving written notice from the backflow assembly tester identifying the failed test, reinstallation or relocation of the backflow assembly. A valid test report showing the repairs made with passing results, and/or initial testing of the reinstalled or relocated backflow assembly must be received within 15 days of the written notice. If a valid test report is not received within the 15 days, then a Second Notification is mailed giving the consumer and/or premises 10 days to submit a valid test report showing the repairs made with passing results, and/or initial testing of the reinstalled or relocated backflow assembly. If a valid test report is not received within the 10 days, then a Third Notification is mailed giving the consumer and/or premises 5 days to submit a valid test report showing the repairs made with passing results, and/or initial testing of the reinstalled or relocated backflow assembly. The final notification before enforcement action is a Door Hanger hand carried to the consumer(s) and/or premises. The door hanger gives the consumer and/or premises 48 hours to have the backflow prevention assemblies tested and certified to be functioning correctly. Enforcement action includes, but is not limited to, a $250.00 fine each day and/or discontinuance (TURN OFF) of water service.

Procedures for inspection and/or testing of backflow prevention assemblies for new consumers and/or premises are as follows:

Initial Testing & Inspection of Backflow Prevention Assemblies
The consumer, contractor, and/or premises is required to comply with the City's Construction Standards, Design Standards, Backflow Assembly Installation Standards (Technical Memo), and evaluated by the City's Cross-Connection Control Specialist during the permit and plan review process and before service is provided. A Backflow Assembly Plumbing Permit (BFL) shall be issued for all backflow prevention assemblies installed within the City's water distribution system. The backflow prevention assemblies shall be tested by a State Certified Backflow Assembly Tester, approved to test within the City's water distribution system. The City's Cross-Connection Control Specialist shall inspect the

installation on the backflow prevention assemblies and collect all valid test reports certifying the backflow prevention assemblies are functioning correctly. The Backflow Assembly Plumbing Permit (BFL) is then finalized in CRW. The City's Cross-Connection Control Specialist may require corrections and/or additions during the inspection process. If so, corrections and/or additions shall be completed to the satisfaction of the City's Cross-Connection Control Specialist before occupancy of the facility.

City Owned Backflow Assemblies:
The Cross-Connection Control Program currently test and maintain 160 backflow prevention assemblies within City owned facilities. The City employs (4) four Certified Backflow Assembly Testers, (2) two in the Parks Department and (2) two in Water Operations. The backflow prevention assemblies are tested and inspected annually , or more often if needed (type B hydrant meter carts are tested before being sent out with the contractor).

February 2005 Hydrant Meter Permit Regulations:
Water quality, accountability, safety, infrastructure reliability and security were the catalyst for creation of the Hydrant Meter Permit Regulations for private party customer withdrawal of water from fire hydrants. (See regulations for requirements)

- Element 6: The purveyor shall develop and implement a backflow prevention assembly testing quality control assurance program, including, but not limited to, documentation of BAT certification and test kit calibration, test report contents, and time frames for submitting completed test reports.

- ***CERTIFIED BACKFLOW ASSEMBLY TESTER***
  1. *Backflow Assembly Tester MUST be currently certified to test in Washington State and approved by the City's Cross-Connection Control Program prior to testing any backflow assemblies within the City's Water Distribution System.*

  2. *Certified Backflow Assembly Tester MUST submit the following information before any Test Report Forms will be accepted:*
     - *Copy of the (Current Year) BAT Validation Card issued by Washington State Department of Health.*
     - *Copy of the Current Calibration Certificate for all testing equipment clearly stating whom the testing equipment belongs to and/or is used by.*
     - ***Original Certified Backflow Assembly Tester Agreement Form*** *completed, signed and dated for the (Current Year). No copies or faxes of this form will be accepted.*
       By signing the Tester Agreement, the BAT Tester understands and will abide with the City's Tester Program Requirements.
     - *Contact information including company name, address, and phone number(s)*
     - *Auburn Business Registration Number*

3. *Tester demonstrating gross negligence or suspected of being fraudulent will be investigated and reported to Washington State Department of Health Certification Office. Test Report Forms from Backflow Assembly Tester under investigation will NOT be accepted and returned to the owner of the assembly.*

4. *Failure to comply with any part of the City's Tester Program Requirements will result in the Backflow Assembly Test Report Form being rejected and returned to the owner of the assembly, and/or Backflow Assembly testing privileges discontinued within the City's Water Distribution System.*

5. *Auburn Municipal Code requires business operating within the City limits to obtain a business registration number from the permit center located at city hall.*

- ***BACKFLOW ASSEMBLY TESTING EQUIPMENT***
  1. *Backflow assembly testing equipment MUST meet all requirements set by Washington State Department of Health.*
  2. *A copy of the Current Calibration Certificate of all testing equipment clearly stating whom the testing equipment belongs to and/or is used by MUST be submitted.*
  3. *Backflow assembly testing equipment suspected of being damaged, malfunctioning and/or fraudulent will require re-calibration and/or repair. The new Calibration Certificate MUST be submitted to the City's Cross Connection Control Program before any Test Report Forms will be accepted.*

- ***BACKFLOW ASSEMBLY TESTING/INSPECTION***
  1. *Tester MUST use current Backflow Prevention Assemblies Field Test Procedures Approved for Use in Washington State. No other test procedures will be accepted.*
  2. *The City's Cross-Connection Control Program MUST be notified of Initial Testing for all New Backflow Assemblies. Tester shall provide the Backflow Assembly Plumbing Permit Number (example BFL07-0000) when notifying of Initial Testing. Backflow Assembly installed within the City's Water Distribution System requires a Backflow Assembly Plumbing Permit.*
  3. *Initial Inspection of Backflow Assembly will NOT be conducted without a valid Backflow Assembly Plumbing Permit and Test Report Form. Backflow Assembly Plumbing Permit will NOT be finalized without a valid Test Report Form and site inspection of assembly installation.*
  4. *The City's Cross-Connection Control Program MUST be notified within 24hrs, if a Reduced Pressure Backflow Assembly (RPBA), used for High Hazard Protection, FAILS an initial, annual and/or repeat test.*
  5. *Backflow assemblies MUST have all test ports plugged in areas subject to flooding.*

- ***BACKFLOW ASSEMBLY TEST REPORT FORMS***
  1. *Private Test Report Form MUST use the same format as the City's Test Report Form. Test Report Form NOT approved will be returned to the owner of the assembly.*
  2. *Backflow Assembly Test Report Form MUST be submitted to the City's Cross Connection Control Program within 30 days of completing the test. Test Report Form over 30 days will NOT be accepted and returned to the owner of the assembly.*
  3. *Backflow Assembly Test Report Form MUST be **Complete, Accurate and Legible.***
  4. *Test Report Form MUST have documentation of any repairs, cleaning or flushing of backflow assembly.*
  5. *Test Report Form will be returned to the owner of the Backflow Assembly if the tester fails to comply with any part of the City's Tester Program Requirements.*
  6. *Test Report Form suspected of being fraudulent will be investigated and reported to Washington State Department of Health Certification Office.*
  7. *Test Report Form received from any BAT tester under investigation will be rejected and returned to the owner of the backflow assembly.*

- ***APPROVED BACKFLOW ASSEMBLY TESTER***
  1. *The City's Cross-Connection Control Program MUST mail BAT Requirement Letter to previously registered tester no later than December 31st of each year. Tester not previously registered with the City's Cross Connection Control Program will receive a BAT Requirement Letter upon request.*
  2. *Tester will NOT be allowed to test backflow assembly within the City's Water Distribution System until all required information is received.*
  3. *Tester NOT registered with the City's Cross-Connection Control Program by the Washington State Department of Health renewal cut-off date, will NOT be allowed to test backflow assembly within the City's Water Distribution System until all required information is received.*
  4. *Tester NOT registered with the City's Cross-Connection Control Program by the Washington State Department of Health renewal cut-off date, will NOT be listed on the City's Approved Tester List given to customers upon request.*
  5. *Tester NOT registered with the City's Cross-Connection Control Program by the Washington State Department of Health renewal cut-off date, will NOT have Test Report Form accepted by the City's Cross-Connection Control Program and returned to the owner of backflow assembly.*
  6. *The City's Cross-Connection Control Program will only list the testers Name, Phone Number(s), and BAT Certification Number on the City's Approved Tester List given to customers upon request.*
  7. *The City's Cross-Connection Control Program will list testers in the order received. Testers will NOT be listed until all information requested is submitted. The City's Approved Tester List does not indicate any preference, is completely at our discretion and subject to space availability.*
  8. *The City's Approved Tester List is updated on the 1st of every month.*
  9. *The City's Approved Tester List is available as a hard copy or on h-drive under Cross-Connection in electronic form.*

10. *Tester may request approval to test within the City's Water Distribution System and NOT listed on the City's Approved Tester List.*

- ***BACKFLOW ASSEMBLY TESTER RECORDS & RECORD KEEPING***
  1. *Information from paperwork MUST be recorded in Tokay.*
  2. *All certification paperwork received from Tester for the (Current Year) MUST be stapled together and placed into a file folder marked with the company name the Tester is employed by.*
  3. *All paperwork MUST be stapled in the following order:*
     - *Original Tester Agreement Form for the (Current Year)*
     - *Copy of the DOH/BAT Validation Card for the (Current Year)*
     - *Copy of the Test Equipment Calibration for the (Current Year)*
  4. *All certification paperwork received from Tester MUST be kept for a minimum of two years.*
  5. *Paperwork such as questionable Test Report Form, Annual Tester Requirement Letter and/or Department of Health Complaint Form MUST be kept on file for as long as the Tester is Currently Registered in Washington State. (Verify annually on WETRC website)*
  6. *The following information MUST be recorded in Tokay:*
     - *Assigned Code for new and existing Testers*
     - *Tester Status (active/inactive)*
     - *Company Name, Address and Phone Number(s)*
     - *BAT Certification Number issued by the Department of Health*
     -
     - *Expiration date for BAT Validation*
     - *Test equipment serial number and calibration date*
     - *Tester Agreement and Customer List Status*
     - *Certification Status*
  7. *When all required paperwork is received and recorded, then the Tester name, certification number and phone number(s) is placed on the "City's Approved Tester List distributed to customers upon request".* ***(This is only for Tester requesting to be on the City's Approved Tester List)***
  8. *Tester NOT requesting to be on the City's Approved Tester List will only be track by Tokay.*

- ***BACKFLOW ASSEMBLY TESTER INVESTIGATION/COMPLAINT***
  1. *Cross Connection Specialist MUST notify Supervisor(s) for approval before starting investigation.*
  2. *Send a Certified Letter to the Tester informing them of the intended investigation. (This letter will require the Tester to Stop Testing Backflow Assemblies within the City's Water Distribution System until the investigation is complete and the Tester has been cleared by the City's Cross Connection Control Program in writing (No time frame will be set for investigation).*
  3. *Remove the Tester name, certification number and phone number(s) from the City's Approved Tester List and place status in Tokay as Inactive.*

4. *Review all Test Report Forms received from Tester for the (Current Year) to look for other discrepancies.*
5. *Compare previous history of Test Report Forms for each backflow assembly in question.*
6. *Conduct an on-site investigation and test of each backflow assembly in question.*
7. *Take pictures and documentation of each backflow assembly in question.*
8. *Review current Backflow Prevention Assemblies Field Test Procedures Approved for Use in Washington State to verify test procedures.*
9. *Review current Backflow Prevention Assemblies Approved for Installation in Washington State to verify status of backflow assembly.*
10. *Review findings of investigation with Supervisor(s) and acquire approval to discuss with Tester and Washington State Department of Health*
11. *Review finding of investigation with Tester.*
12. *Tester may submit a written rebuttal to the finding of the investigation after the review with the City's Cross Connection Control Program.*
13. *Review finding of investigation with Washington State Department of Health Certification office. (Fill out State Complaint Form) The State will conduct its own investigation and deliver its finding in writing.*
14. *Review the States finding with Supervisor(s) to determine status of Tester.*
    - *Tester Cleared – Send Certified Letter reinstating testing privileges within the City's Water Distribution System.*
    - *Tester Not Cleared – Send Certified Letter revoking testing privileges within the City's Water Distribution System for as long as the Tester is Currently Registered in Washington State.*
15. *All paperwork from the investigation MUST be kept on file for as long as the Tester is Currently Registered in Washington State*

Tester(s) not complying with any part of the aforementioned requirements shall be removed from the City's Approved Tester List. Test report forms shall be returned to the consumer and/or premises of the backflow prevention assemblies tested. The City reserves the right to deny a Backflow Assembly Tester from performing testing within the City's water distribution system. Tester(s) are responsible for obtaining all certifications needed to perform duties and responsibilities for testing and maintaining backflow prevention assemblies.

- Element 7: Develop and implement (when appropriate) procedures for responding to backflow incidents.
  The City's Cross-Connection Control Program has outlined a Backflow Incident Response Procedure to be followed if the City's water supply becomes contaminated or polluted due to a backflow incident.

BACKFLOW INCIDENT RESPONSE PLAN
(Supplement to the Emergency Plan)

General:

This backflow incident response plan is a supplement to the City's Response Emergency Plan. The City of Auburn Water Division is hereinafter referred to as the Purveyor.

- *Whenever the initial evaluation of a water quality complaint indicates that a backflow incident has occurred (potable water supply has been contaminated/polluted), may have occurred, or the reason for the complaint can not be explained as a "normal" aesthetic problem, a backflow incident investigation should be immediately initiated. Whenever a water main break or power outage (pumped systems) causes a widespread loss of water pressure (backsiphonage conditions) it is prudent to initiate a check of distribution water quality as a precursor to the need for a backflow incident investigation. It is wise to be conservative when dealing with public health matters.*

- *Within 24 hours of knowledge of any incident of possible contamination of the potable water supply, both in the distribution system and/or in the customer's plumbing system, the state and local county personnel should be notified (see list of emergency telephone numbers in the Public Works Emergency Response M. & O. Manual).*

- *A backflow incident investigation is often a team effort. The investigation should be made or (initially) led by a Certified Cross-Connection Control Specialist employed by the Purveyor. The investigation team should include local health and plumbing inspectors.*

General guidance on how to respond to a backflow incident may be obtained from the manual BACKFLOW INCIDENT INVESTIGATION PROCEDURES, First Edition, 1996, published by the Pacific Northwest Section, American Water Works Association, P. O. Box 19581, Portland, Oregon, 97280, telephone (877) 767-2992 (toll free).

Short-List of Tasks:
The following points are included for initial guidance for dealing with a backflow incident; the above referenced manual BACKFLOW INCIDENT INVESTIGATION PROCEDURES should be consulted as soon as possible, along with the completion of DOH form 331-457-F (see attached).

1. *As soon as possible, notify customers not to consume or use water. Start the notification with the customers nearest the assumed source of contamination (usually the customer(s) making the water quality complaint).*

   The customer should be informed about the reason for the backflow incident investigation, and the Purveyor's efforts to restore water quality as soon as possible. State that the customer will be informed when he may use water, the

need to boil water used for consumption until a satisfactory bacteriological test result is obtained from the lab, etc.

Where a customer cannot be contacted immediately, the Purveyor shall place a written notice on the front door handle, and a follow-up visit will be made to confirm that the customer received notice about the break and possible contamination of the water supply.

2. *Give consideration to the distribution system as a potential source of the contaminant (e.g., air valve inlet below ground).*

3. *Do not start flushing the distribution system until the source of contamination is identified. Flushing may aggravate the backflow situation and will likely remove the contaminant before a water sample can be collected to fully identify the contaminant.*

4. *Conduct a house-to-house survey to search for the source of contamination and the extent that the contaminant has spread through the distribution system. A check of water meters may show a return of water (meter running backward).*

5. *Isolate the portions of the system that are suspected of being contaminated by closing isolating valves; leave one valve open to ensure that positive water pressure is maintained throughout the isolated system.*

6. *Be sure to notify all affected customers in the isolated area, then the other customers in the system.*

7. *The public health and plumbing authorities should deal with all customers that may have consumed the contaminant, or had their plumbing systems contaminated.*

8. *Develop and implement a program for cleaning the contaminated distribution system.*

9. *For the customer where a cross-connection responsible for the system contamination is located, the Purveyor should discontinue water service until the Purveyor ordered corrective action is completed by the customer.*

Identification of the source and type of contaminant, and cleaning of a distribution system could take several days.

Most chemical or physical contaminants can be flushed from the water distribution system or customer's plumbing system with adequate flushing velocity. This may not be the case where scale and corrosion deposits (e.g., tuberculation on old cast iron mains) provides a restriction to obtaining adequate flushing velocity, or a chemical deposit or bacteriological slime (biofilm) on which the chemical contaminant may adhere.

To remove a chemical or physical contaminant, it may be necessary to provide a physical cleaning, using foam swabs (pigs), and/or to alter the form or the chemical contaminant, e.g., through oxidation using chlorination, or addition of detergents.

When adding any chemical (including chlorine) to remove a contaminant, it is essential that the chemistry of the contaminant is-fully understood. The wrong chemical reaction could make the contaminant more toxic, more difficult to remove, or both.

Where both a chemical and bacteriological contamination has occurred, disinfection should follow the removal of the chemical contaminant.

Where any bacteriological contamination is suspected, field disinfection should be done. To disinfect water mains using the "slug" or "continuous flow" method, a field unit should be used for chlorine injection, such as a chemical feed - metering or proportioning pump for sodium hypochlorite.

NOTE: Refer to the City's Backflow Incident Response Manual for additional information.

- Element 8: The purveyor shall include information on cross-connection control in the purveyor's existing program for educating consumers about water system operation. The public education program may include periodic bill inserts, public service announcements, pamphlet distribution, notification of new consumers and consumer confidence reports.

Public education is a key part of the City's Cross-Connection Control Program. Through public education, the City informs consumers of:

1. *The public health impacts of actual or potential Cross-Connection hazards.*
2. *The consumer's responsibility to protect the public water supply from contamination.*
3. *The City's requirement to comply with Washington State Department of Health regulations.*
4. *The City's policies on Cross-Connection Control.*

The following educational material is provided to the City's water consumers and available at City Hall, Maintenance & Operations, and by mail if requested.

- *Annual Consumer Confidence Report CCR*
- *City of Auburn internet home page, Water Quality*
- *Brochure – AWWA Caution Your Hose May Be Hazardous To Your Health*
- *Brochure – USC Working Together For Safe Water*
- *Brochure – AWWA Residential Fire Sprinkler Systems And Backflow Prevention*
- *Brochure – AWWA Lawn Irrigation Systems And Backflow Prevention*
- *Brochure – AWWA Help Protect Your Drinking Water From Contamination (Household Hazards)*
- *Brochure – AWWA Protect Your Water Heater From Thermal Expansion*
- *Brochure – AWWA Cross-Connections Can Create Health Hazards*

- *Comic Books – ABPA Buster Backflow, book 1 & 2*

The Cross-Connection Control Program annually participates at "Kids Day" where displays and information are presented to the City's water consumers.

- Element 9: The purveyor shall develop and maintain cross-connection control Records including, but not limited to, the following:
  (i) A master list of service connections and/or consumer's premises where the purveyor relies upon approved backflow preventers to protect the public water system from contamination, the assessed hazard level of each, and the required backflow preventer(s);
  (ii) Inventory information on backflow preventers that protect the public water system including:
  (A) Approved air gaps installed in lieu of approved assemblies including exact air gap location, assessed degree of hazard, installation date, history of inspections, inspection results, and person conducting inspections;
  (B) Approved backflow assemblies including exact assembly location, assembly description (type, manufacturer, model, size, and serial number), assessed degree of hazard, installation date, history of inspections, tests and repairs, test results, and person performing tests; and
  (C) Approved AVBs used for irrigation system applications including location, description (manufacturer, model, and size), installation date, history of inspection(s), and person performing inspection(s).
  (iii) Cross-connection program summary reports and backflow incident reports required under subsection (8) of this section.
  Subsection 8 – Recordkeeping and reporting
  (a) Purveyors shall keep cross-connection records for the following time frames:
    (ii) Records pertaining to the master list of service connections and/or consumer's premises required in subsection (3)(j)(i) of the section shall be kept as long as the premises pose a cross-connection hazard to the purveyor's distribution system;
    (iii) Records regarding inventory information required in subsection (3)(j)(ii) of this section shall be kept for five years or for the life of the approved backflow preventer whichever is shorter: and
    (iv) Records regarding backflow incidents and annual summary reports required in subsection (3) (j) (iii) of this section shall be kept for five years.
  (b) Purveyors may maintain cross-connection control records in original form or transfer data to tabular summaries.
  (c) Purveyor may maintain records or data in any media, such as paper, film, or electronic format.
  (d) The purveyor shall complete the cross-connection control program summary report annually. Report forms and guidance on completing the report are available from the department.

(e) The purveyor shall make all records and reports required in subsection (3) (j) of this section available to the department or its representative upon request.

The City's Cross-Connection Control Program currently uses electronic software to track all private, and city owned assemblies within Auburn Water's jurisdiction, including city owned assemblies fed by other water jurisdictions. Identifying level of hazard, location, installation date, inspection history, test and repair history, test results, and inspecting personnel on backflow prevention assemblies used for the protection of the City's water supply and/or backflow prevention assemblies used on fixtures in lieu of premises isolation.

Annual summary report:

WAC 246.290.490, part 8d – The purveyor shall complete the cross-connection control program summary report annually.

- *The annual summary report is reviewed and signed by the Water Operations Manager, and submitted to the Department of Health via mail, or secured web site.*
- *Copies of the annual summary report are available in the Cross-Connection Program Manual.*

Records & Reports:

Purveyors must develop and maintain records of their Cross-Connection Control program, as mandated by WAC 246.290.490. At a minimum, purveyors must maintain the following records:

- *Master list of service connections and/or premises where backflow prevention assemblies are installed to protection the public water system.*
- *Assessed hazard level of each backflow prevention assembly.*
- *Inventory information on approved air gaps, including location, degree of hazard, installation date, inspection history & results, and personnel conducting inspection.*
- *Backflow prevention assembly inventory information including location, assembly description, installation date & history, test & repair history, test results, and personnel conducting inspection.*
- *Program summary and backflow incident reports.*

- Element 10: Purveyors who distribute and/or have facilities that receive reclaimed water within their water service area shall meet any additional cross-connection control requirements imposed by the department in a permit issued under chapter 90.46 RCW.

No reclaimed water within the purveyor's water system.

General Program Requirements:

WAC246-290-490(1) (c): The purpose of the purveyor's cross-connection program shall be to protect the public water system, as defined in WAC 246-290-010, from contamination via cross-connections.

This is covered under Element 1 of the City's Cross Connection Control Program.

WAC 246-290-490(1) (d): The purveyor's responsibility for cross-connection control shall begin at the water supply source, include all the public water treatment, storage, and distribution facilities, and end at the point of delivery to the consumer's water system, which begins at the downstream end of the service connection or water meter located on the public right-of-way or utility-held easement.

The City's Cross Connection Control Program is not responsible for Cross Connection Control inside the consumer's building and/or property. The jurisdiction falls under the Local Administrative Authority as per the Uniform Plumbing Code for Cross Connection Control 603.0

WAC 246-290-490(1) (e): Under this section, purveyors are not responsible for eliminating or controlling cross-connections within the consumer's water system. Under chapter 19.27 RCW, the responsibility for cross-connection control within the consumer's water system, i.e., within the property lines of the consumer's premises, lies with the authority having jurisdiction.

The City's Cross Connection Control Program is responsible for eliminating and/or controlling Cross Connections from the consumer's water system to the public water system. Service connections from the water main shall have backflow protection that is commensurate with the degree of hazard as accessed by the City's Cross Connection Control Specialist. Examples of service connections include but are not limited to, domestic water, irrigation water and fire protection water.

WAC 246-290-490(2) (a) The purveyor shall develop and implement a cross-connection control program that meets the requirements of this section, but may establish a more stringent program through local ordinances, resolutions, codes, bylaws, or operating rules.

This is covered under Element 1 of the City's Cross Connection Control Program.

WAC 246-290-490(2) (b) Purveyors shall ensure the good engineering and public health protection practices are used in the development and implementation of cross-connection control programs. Department publications and the most recently published editions of references, such as, but not limited to, those listed

below, may be used as guidance for cross-connection program development and implementation:

(i) Manual of Cross-Connection Control published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California (USC Manual); or

(ii) Cross-Connection Control Manual, Accepted Procedure and Practice published by the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA Manual)

(iii) Guidance document: *Cross-Connection Control for Small Water Systems* published by the department.

The following reference guides and publications were used in the development of the City's Cross-Connection Control Program;

- *Washington Administrative Code WAC 246-290, Group A Public Water Systems, effective April 27, 2003*
- *Cross-Connection Control Manual Accepted Procedures ad Practice 6th Edition, December 1995*
- *Cross-Connection Control Manual Supplement 1st Edition, December 1995*
- *Cross-Connection Control for Small water Systems Guidance Document, September 2003*
- *Backflow Incident Investigation Procedures 1st Edition, December 1996*
- *Environmental Protection Agency Cross-Connection Control Manual, revised February 2003*
- *American Society of Sanitary Engineering, Performance Requirements for Outdoor Enclosures for Backflow Prevention Assemblies*
- *Backflow Prevention Assemblies Field Test Procedures Approved for use in Washington State, July 1998*
- *Uniform Plumbing Code 2000 Edition, September 1999*
- *Backflow Prevention Assemblies Approved for Installation in Washington State, published annually*
- *University of Southern California Manual of Cross-Connection Control 9th Edition, December 1993*
- *American Water Works Association Recommended Practice for Backflow Prevention and Cross-Connection Control M14 3rd Edition, 2004*
- *American water Works Association Distribution System Requirements for Fire Protection M31 3rd Edition, 1998*

WAC 246-290-490(2) (c) The purveyor may implement the cross-connection control program, or any portion thereof, directly or by means of a contract with another agency or party acceptable to the department.

The City's Water Division implements the Cross-Connection Control Program

WAC 246-290-490(2) (d) The purveyor shall coordinate with the authority having jurisdiction in all matters concerning cross-connection control. The purveyor shall document and describe the coordination, including delineation of responsibilities, in the written cross-connection control program required in (e) of this subsection.

- *The Local Administrative Authority shall enforce the Uniform Plumbing Code and Uniform Plumbing Code Standards for Cross-Connection Control, or subsequent revisions:*

    1. *603.0 Cross-Connection Control*
    2. *603.1 Approval of Devices or Assemblies*
    3. *603.2 Backflow Prevention Devices, Assemblies, and Methods*
    4. *603.3 General Requirements*
    5. *603.4 Specific Requirements*

    Amended 2000 UPC, effective July 1, 2002

The control of Cross-Connections requires cooperation between the water purveyor, local administrative authority, health officer and the consumer.

The City of Auburn Water Division shall make available to all Local Administrative agencies the information maintained in the purveyors Cross-Connection Control program files, which may include, but is not limited to:

1. *A master list of all premises that have been isolated from the purveyor water system in accordance with the purveyors' cross-connection control program.*

2. *Information concerning any internal cross-connections that come to the attention of the purveyor during risk assessment evaluations of premises.*

3. *Notification of any termination of water service for failure to comply with the requirements of WAC 246-290-490, Auburn City Code 13.12, and/or the City of Auburn Water Department Cross-Connection Control Program and/or any subsequent revisions.*

UPC 603.3.3 For devices and assemblies other than those regulated by the Washington Department of health in conjunction with the local water purveyor for the protection of the public water systems, the Administrative Authority shall ensure that the owner or responsible person shall have the backflow prevention assembly tested by a Washington State Department of Health certified backflow assembly tester:

- *At the time of installation, repair, or relocation; and*
- *At least on an annual schedule thereafter, unless more frequent testing is required by the Administrative Authority.*

WAC 246-290-490(2) (e) The purveyor shall include a written description of the cross-connection control program in the water system plan required under WAC

246-290-100 or the small water system management program required under WAC246-290-105. The cross-connection control program shall include the minimum program elements described in subsection (3) Minimum elements of a cross-connection control program

The city's cross connection control program is included in the Water system plan

WAC 246-290-490(2) (f) The purveyor shall ensure that cross-connection between the distribution system and a consumer's water system are eliminated or controlled by the installation of an approved backflow preventer commensurate with the degree of hazard. This can be accomplished by implementation of a cross-connection program that relies on:

(i) Premises isolation as defined in WAC 246-290-010; or

(ii) Premises isolation and in-premises protection as defined in WAC 246-290-010

The City's Cross Connection Control Program relies on premises isolation to protect the public water system. All domestic water service with the exception of single family residential shall be required to install a Reduced Pressure Backflow Assembly (RPBA). Fire protection systems and landscape irrigation system with chemical addition or injection shall be required to install a Reduced Pressure Backflow Assembly (RPBA). Backflow assembly type may be reduced to a lesser by submitting plumbing, irrigation and fire protection plans for the City's Cross Connection Specialist to review and conduct a hazard evaluation and risk assessment posed on the public water system. All changes shall be approved by the City's Cross Connection Specialist in writing.

WAC 246-290-490(2) (g) Purveyor with cross-connection control programs that rely both on premises isolation and in-premises protection:

(i) Shall comply with the premises isolation requirements specified in subsection (4) (b) of this section; and

(ii) May reduce premises isolation requirements and rely on in-premises protection for premises other than the type not addressed in subsection (4) (b) of this sections, if the conditions in (h) of this subsection are met:
(A) The in-premises backflow preventers provide a level of protection commensurate with the purveyor's assessed degree of hazard;
(B) Backflow preventers which provide the in-premises backflow protection meet the definition of approved backflow preventers as described in WAC 246-290-010;
(C) The approved backflow preventers are installed, inspected, tested (if applicable), maintained, and repaired in accordance with subsections (6) and (7) of this section;
(D) Records of the backflow preventers are maintained in accordance with subsections (3)(j) and (8) of this section; and
(E) The purveyor has reasonable access to the consumer's premises to conduct an initial hazard evaluation and periodic reevaluations to determine whether the in-premises protection is adequate to protect the purveyor's distribution system.

The City's Cross-Connection Control Program CAN NOT rely on in-premises protection to protect the distribution system for the following reasons:

- *Consumer can make plumbing changes at any time without notifying the city.*
- *Backflow preventers installed inside consumers buildings and/or premises are under the control of the Authority having Jurisdiction.*
- *Not enough staff to conduct initial inspections and re-inspections of consumer's premises.*

WAC 246-290-490(2) (h) The purveyor shall take appropriate corrective action as authorized by the legal instrument required by subsection (3)(b) of this section, when:
(i) A cross-connection exists that is not controlled commensurate to the degree of hazard assessed by the purveyor; or
(ii) A consumer fails to comply with the purveyor's requirements regarding the installation, inspection, testing, maintenance or repair of approved backflow preventers required by this chapter.

The City's Cross-Connection Control Program enforcement action includes, but is not limited to, a $250.00 fine each day and/or discontinuance (TURN OFF) of water service.

WAC 246-290-490(2) (i) The purveyor's corrective action may include, but is not limited to:
(i) Denying or discontinuing water service to a consumer's premises until the cross connection hazard is eliminated or controlled to the satisfaction of the purveyor;
(ii) Requiring the consumer to install an approved backflow preventer for premises isolation commensurate with the degree of hazard; or
(iii) The purveyor installing an approved backflow preventer for premises isolation commensurate with the degree of hazard.

The City's Cross-Connection Control Program enforcement action includes, but is not limited to, a $250.00 fine each day and/or discontinuance (TURN OFF) of water service.

WAC 246-290-490(2) (j) Except in the event of an emergency, purveyors shall notify the authority having jurisdiction prior to denying or discontinuing water service to a consumer's premises for one or more of the reasons listed in (h) of this subsection.

The City's Cross-Connection Control Program shall notify the Local Administrative Authority prior to denying and/or discontinuing water service except in the event of an emergency and/or backflow incident.

WAC 246-290-490(2) (k) The purveyor shall prohibit the intentional return of used water to the purveyor's distribution system. Used water includes, but is not

limited to, water used for heating,cooling, or other purposes within the consumer's water system.

The City's Cross Connection Control Program relies on premises isolation to protect the public water system. All domestic water service with the exception of single family residential shall be required to install a Reduced Pressure Backflow Assembly (RPBA). Fire protection systems and landscape irrigation system with chemical addition or injection shall be required to install a Reduced Pressure Backflow Assembly (RPBA). Backflow assembly type may be reduced to a lesser by submitting plumbing, irrigation and fire protection plans for the City's Cross Connection Specialist to review and conduct a hazard evaluation and risk assessment posed on the public water system. All changes shall be approved by the City's Cross Connection Specialist in writing.

WAC 246-290-490(3) (a) To be acceptable to the department, the purveyor's cross-connection control program shall include the minimum elements identified in the subsection.

The City's Cross Connection Control Program includes the Ten Elements as required by the WAC.

WAC 246-290-490(4) (a) The purveyor shall ensure that a Cross Connection Control Specialist:

(i) Assesses the degree of hazard posed by the consumer's water system upon the purveyor's distribution system; and

(ii) Determines the appropriate method of backflow protection for premises isolation in accordance with Table 8

Table 12
Appropriate Methods of Backflow Protection for Premises Isolation

Degree of Hazard	*Application Condition*	*Appropriate Approved Backflow Preventer*
High health cross-connection hazard	*Backsiphonage or backpressure backflow*	*AG, RPBA or RPDA*
Low health cross-connection hazard	*Backsiphonage or backpressure backflow*	*AG, RPBA, RPDA, DCVA or DCDA*

WAC246-290-490(4) (b) Premises isolation requirements.
(i) The purveyor shall ensure that an approved air gap, RPBA, or RPDA is installed for premises isolation for service connections to premises posing a high health cross-connection hazard including, but not limited to, those premises listed in Table 9, except those premises identified as severe in (b)(ii) of this subsection.
(ii) For service connections to premises posing a severe health cross-connection hazard including wastewater treatment plants, radioactive material processing plants, and nuclear reactors, the purveyor shall ensure that either an:
(A) Approved air gap is installed for premises isolation; or
(B) Approved RPBA or RPDA is installed for premises isolation in

combination with an in-plant approved air gap.
(iii) If the purveyor's CCS determines that no hazard exists for a connection serving premises of the type listed in Table 9, the purveyor may grant an exception to the facility

The city's cross connection control specialist will not grant exemptions to facility's recognized by the state as a table 13.

(iv) The purveyor shall document, on a case-by-case basis, the reasons for granting an exception under (b)(i) of this subsection and include the documentation in the cross-connection control program annual summary report required in subsection (8) of this section.

Table 13

High Health Cross-Connection Hazard Premises Requiring Premises Isolation by AG or RPBA/RPDA

- *Agricultural (farms and dairies)*
- *Beverage bottling plants*
- *Car washes*
- *Chemical plants*
- *Commercial laundries and dry cleaners*
- *Premises where both reclaimed water and potable water are provided*
- *Film processing facilities*
- *Food processing plants*
- *Hospitals, medical centers, nursing homes, veterinary, medical and dental clinics, and blood plasma centers;*
    1. *Hospitals (include psychiatric hospitals and alcohol and drug treatment centers)*
    2. *Same day surgery centers*
    3. *Out-patient clinics and offices*
    4. *Alternative health out-patient clinics and offices*
    5. *Psychiatric out-patient clinics and offices*
    6. *Chiropractors*
    7. *Hospice care centers*
    8. *Kidney dialysis centers*
    9. *Blood centers*
    10. *Dental clinics and offices*
    11. *Nursing homes*
    12. *Boarding homes*
    13. *Residential treatment centers*
    14. *Mortuaries*
    15. *Morgues and autopsy (not in hospitals)*
    16. *Veterinarian offices, clinics, and hospitals*
- *Premises with separate irrigation systems using the purveyor's water supply and with chemical addition*

- *Laboratories*
- *Metal plating industries*
- *Mortuaries*
- *Petroleum processing or storage plants*
- *Piers and docks*
- *Radioactive material processing plants or nuclear reactors**
- *Survey access denied or restricted*
- *Wastewater lift stations and pumping stations*
- *Wastewater treatment plants**
- *Premises with an unapproved auxiliary water supply interconnected with the potable water supply (private well, pond, tanks, etc.)*

WAC 246-290-490(4) (c) Backflow protection for single-family residences.

(i) For single-family residential service connections, the purveyor shall comply with the requirements of (b) of this subsection when applicable.

(ii) If the requirements of (b) of this subsection do not apply and the requirements specified in subsection (2)(g)(ii) of this section are met, the purveyor may rely on backflow protection provided at the point of hazard in accordance with WAC 51-56-0600 of the UPC for hazards such as, but not limited to:
(A) Irrigation systems;
(B) Swimming pools or spas;
(C) Ponds; and
(D) Boilers.
For example, the purveyor may accept an approved AVB on a residential irrigation system, if the AVB is properly installed under the UPC.

The City's Cross Connection Control Program is not responsible for Cross Connection Control inside the consumer's property. The jurisdiction falls under the Local Administrative Authority as per the Uniform Plumbing Code for Cross Connection Control 603.0

WAC 246-290-490(4) (d) Backflow protection for fire protection systems.
(i) Backflow protection is not required for residential flow-through or combination fire protection systems constructed of potable water piping and materials.
(ii) For service connections with fire protection systems other than flow-through or combination systems, the purveyor shall ensure that backflow protection consistent with WAC 51-56-0600 of the UPC is installed. The UPC requires minimum protection as follows:
(A) An RPBA or RPDA for fire protection systems with chemical addition or using unapproved auxiliary water supply; and
(B) A DCVA or DCDA for all other fire protection systems.
(iii) For connections made on or after April 9, 1999, the purveyor shall ensure that backflow protection is installed before water service is provided.
(iv) For existing fire protection systems:
(A) With chemical addition or using unapproved auxiliary supplies, the

purveyor shall ensure that backflow protection is installed within ninety days of the purveyor notifying the consumer of the high health cross connection hazard or in accordance with an alternate schedule acceptable
(B) Without chemical addition, without on-site storage, and using only the purveyor's water (i.e., no unapproved auxiliary supplies on or available to the premises), the purveyor shall ensure that backflow protection is installed in accordance with a schedule acceptable to the purveyor or at an earlier date if required by the code official administering the State Building Code as defined in chapter 51-04 WAC.
(C) When establishing backflow protection retrofitting schedules for fire protection systems that have the characteristics listed in (d)(iv)(B) of this subsection, the purveyor may consider factors such as, but not limited to, impacts of assembly installation on sprinkler performance, costs of *retrofitting, and difficulty of assembly installation.*

The City's Cross-Connection Control Program evaluation of new and existing fire protection system connections is as follows: New connections must comply with the City's Construction Standards for water, Design Standards 7.01.5.2 Fire Sprinkler Systems, Backflow Assembly Installation Standards (Technical Memo), along with any additional requirements by the Fire Authority and Authority having Jurisdiction and evaluated by the City's Cross-Connection Control Specialist during the permit and plan review process and before service is provided. Fire Sprinkler System service connection(s) to new consumers and/or premises shall have a risk assessment conducted by the City's Cross-Connection Control Specialist to determine if the backflow protection is commensurate with the degree of hazard, the backflow assembly is correctly installed and a valid test of the backflow assembly is conducted before the BFL permit is finaled.
Existing Fire Sprinkler System service connections are given a risk assessment by the City's Cross-Connection Specialist to determine if the backflow protection is commensurate with the degree of hazard. If the Fire Sprinkler System has the characteristics of WAC 246-290-490 (d) (iv) (a) – i.e. chemical addition or unapproved auxiliary supplies – the consumers and/or premises shall install backflow protection commensurate with the degree of hazard within (90) ninety days of the City notifying the consumes and/or premises or within an alternate schedule acceptable to the City's Cross-Connection Control Program. If the Fire Sprinkler System does not have chemical addition or unapproved auxiliary supplies, the consumer and/or premises shall install backflow protection commensurate with the degree of hazard within (90) ninety days of the City notifying the consumers and/or premises or within an alternate schedule acceptable to the City's Cross-Connection Control Program. Factors such as, but not limited to, impact of the backflow assembly installation on the fire sprinklers performance, costs of retrofitting, and difficulty of installation are consideration for an alternate schedule.

The cost/fees of installation, initial and annual testing, maintenance, and repair or replacement of the backflow assembly shall be the responsibility of the consumer as a condition of water service.

WAC 246-290-490(4) (e) Purveyors may require backflow preventers commensurate with the degree of hazard determines by the purveyor to be installed for premises isolation for connections serving premises that have characteristics such as, but not limited to, the following:

(i) Complex plumbing arrangements or plumbing potentially subject to frequent changes that make it impracticable to assess whether cross-connection hazards exist;
(ii) A repeated history of cross-connections being established or reestablished; or
(iii) Cross-connection hazard are unavoidable or not correctable, such as, but not limited to, tall buildings.

The City's Cross-Connection Control Program requires commensurate backflow protection for consumers and/or premises with the following defined characteristics:

- *Complex plumbing arrangements –*
- *Plumbing subject to frequent changes –*
- *Repeat history of cross-connections –*
- *Unavoidable cross-connection hazards –*
- *Non-correctable cross-connection hazards –*

WAC 246-290-490(5) (a) The purveyor shall ensure that all backflow prevention assemblies relied upon by the purveyor are models included on the current list of backflow prevention assemblies approved for use in Washington state.

The City's Cross-Connection Control Program verifies new backflow assemblies installed within the distribution system are on the current DOH Approved Assemblies List.

WAC 246-290-490(5) (b) The purveyor may rely on testable backflow prevention assemblies that are not currently approved by the department, if the assemblies:

(i) Were included on the department and/or USC list of approved backflow prevention assemblies at the time of installation;
(ii) Have been properly maintained;
(iii) Are commensurate with the purveyor's assessed degree of hazard; and
(iv) Have been inspected and tested at least annually and have successfully passed the annual test

The City's Cross-Connection Control Program archives DOH Approved Assemblies List for verification.

WAC 246-290-490(5) (c) The purveyor shall ensure that an unlisted backflow prevention assembly is replaced by an approved assembly commensurate with the degree of hazard, when the unlisted assembly:

(i) Does not meet the conditions specified in (b) (i) through (iv) of this subsection;
(ii) Is moved; or
(iii) Cannot be repaired using spare parts from the original manufacturer.

This is covered under Element 5 of the City's Cross Connection Control Program.

WAC 246.290.490(6) (a) The purveyor shall ensure that approved backflow preventers are installed in the orientation for which they are approved (if applicable).

The City's Cross-Connection Control Program requires all approved backflow assemblies to be installed in the orientation for which they are approved and provides installation standards for assembly size and type. Reduced Pressure Backflow Assemblies (RPBA) installed inside of a building shall be engineered by the plumbing contractor to meet the following: "The plumbing system needs to have adequate capacity to carry continuous discharge from relief valve of RPBA".

WAC 246.290.490(6) (b) The purveyor shall ensure that approved backflow preventers are installed in a manner that:

(i) Facilitates their proper operation, maintenance, inspection, and/or in-line testing (as applicable) using standard installation procedures acceptable to the department such as those in the USC Manual or PNWS-AWWA Manual;

(ii) Ensures that the assembly will not become submerged due to weather-related conditions such as flooding; and

(iii) Ensures compliance with all applicable safety regulations.

The City's Cross-Connection Control Program requires all approved backflow assemblies to be installed in the orientation for which they are approved and meets all the City's standards, USC Manual and PNWS-AWWA Manual. Backflow assemblies under the jurisdiction of the water purveyor shall not be installed in areas subject to flooding and shall meet all applicable safety regulations.

WAC 246.290.490(6) (c) The purveyor shall ensure that approved backflow assemblies for premises isolation are installed at a location adjacent to the meter or property line or an alternate location acceptable to the purveyor.
WAC 246.290.490(6) (d) When premises isolation assemblies are installed at an alternate location acceptable to the purveyor, the purveyor shall ensure that there are no connections between the point of delivery from the public water system and the approved backflow assembly, unless the installation of such a connection meets the purveyor's cross-connection control requirements and is specifically approved by the purveyor.

The City's Cross-Connection Control Program requires all approved backflow assemblies used for premises isolation be installed at a location adjacent to the meter or property line, however if the location is not feasible then the facilities property owner and/or representative shall submit a set of plans for approval by the City's Cross-Connection Control Specialist showing the new location of the backflow assembly and the piping from the meter.

WAC 246.290.490(6) (e) The purveyor shall ensure that approved backflow preventers are installed in accordance with the following time frames:

(i) For connections made on or after April 9, 1999, the following conditions shall be met before service is provided:
(A) The provisions of subsection (3)(d)(ii) of this section; and
(B) Satisfactory completion of the requirements of subsection (7) of this section.

(ii) For existing connections where the purveyor identifies a high health cross connection hazard, the provisions of (3)(d)(ii) of this section shall be met:
(A) Within ninety days of the purveyor notifying the consumer of the high health cross-connection hazard; or
(B) In accordance with an alternate schedule acceptable to the purveyor.

(iii) For existing connections where the purveyor identifies a low cross-connection hazard, the provisions of subsection (3)(d)(ii) of this section shall be met in accordance with a schedule acceptable to the purveyor.

This is covered under Element 2 of the City's Cross Connection Control Program.

WAC 246.290.490(6) (f) The purveyor shall ensure that bypass piping installed around any approved backflow preventer is equipped with an approved backflow preventer that:

(i) Affords at least the same level of protection as the approved backflow preventer that is being bypassed; and

(ii) Complies with all applicable requirements of this section.

The City's Cross-Connection Control Program requires all bypass piping and/or parallel connections to have the same level of protection as required by the City's Cross Connection Specialist.

WAC 246.290.490(8) (f) The purveyor shall notify the department, local administrative authority, and local health jurisdiction as soon as possible, but no later than the end of the next business day, when a backflow incident is known by the purveyor to have:

(i) Contaminated the public water system; or

(ii) Occurred within the premises of a consumer served by the purveyor.

This is covered under Element 7 of the City's Cross Connection Control Program.

WAC 246.290.490(8) (g) – The purveyor shall:

- Document details of backflow incidents on a form acceptable to the department such as the backflow incident report form included in the most recent edition of the PNWS-AWWA Manual: and
- Include all backflow incident report(s) in the annual cross0connection program summary report.

This is covered under Element 7 of the City's Cross Connection Control Program.

Definitions:

"Accessible" means reference to the installation of backflow preventers; accessible shall mean that such backflow preventers shall be placed so that they can be reached for testing and/or maintenance safely.

"Approval/approved" means authorized in writing by the health authority, department, purveyor, or other agency having jurisdiction.

"Approved air gap," means a physical separation between the free-flowing end of a potable water supply pipeline and the overflow rim of an open or non-pressurized receiving vessel.

To be an air gap approved by the department, the separation must be at least:

- Twice the diameter of the supply piping measured vertically from the overflow rim of the receiving vessel, and in no case be less than one inch, when unaffected by vertical surfaces (sidewalls); and:

- Three times the diameter of the supply piping, if the horizontal distance between the supply pipe and a vertical surface (sidewall) is less than or equal to three times the diameter of the supply pipe, or if the horizontal distance between the supply pipe and intersecting vertical surfaces (sidewalls) is less than or equal to four times the diameter of the supply pipe and in no case less than one and one-half inches.

"Approved atmospheric vacuum breaker" means an AVB of make, model, and size that is approved by the department. AVBs that appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research or that are listed or approved by other nationally recognized testing agencies (such as IAPMO, ANSI, or UL) acceptable to the local administrative authority are considered approved by the department.

"Approved backflow preventer" means an approved air gap, an approved backflow prevention assembly, or an approved AVB. The terms "approved backflow preventer," "approved air gap," or "approved backflow prevention assembly" refer only to those approved backflow preventers relied upon by the purveyor for the protection of the public water system. The requirements of WAC 246-290-490 do not apply to backflow preventers installed for other purposes.

"Approved backflow prevention assembly" means an RPBA, RPDA, DCVA, DCDA, PVBA, or SVBA of make, model, and size that is approved by the department. Assemblies that appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research or other entity acceptable to the department are considered approved by the department.

"As-built drawing" means the drawing created by an engineer from the collection of the original design plans, including changes made to the design or to the system that reflects the actual constructed condition of the water system.

"Assessment of risk" shall express the results of an evaluation (site survey) of a health, system, or plumbing hazard. The evaluation (site survey) required in making a determination of the type of backflow preventer needed to isolate a specific cross-connection (e.g., a plumbing fixture), or a group of cross-connections contained within a facility or complex of facilities (e.g. a shopping mall) is comprised of the following steps:

- Determine the degree of potential health hazard risk to the public water system. (In assessing the purveyor's risk of contamination of the public water system, if knowledge of the degree of hazard posed by a substance is not known, the purveyor must assume that it is high. Generally, almost all substance other than potable water is considered a health hazard of some degree).
- Determine the high or low probability that a cross-connection may occur.
    1. The probability increases that an existing cross-connection will go undetected as the complexity of a piping system increases.
    2. Piping changes will create new cross-connections, or change the operating conditions from backsiphonage to backpressure conditions.
    3. A backflow preventer could be by-passed or removed from service.
    4. A substance could be changed or increased in strength.
    5. A substance may deteriorate, and thus become a health hazard.
    6. A substance, when combined with the chemicals in the potable water supply, or when exposed to certain piping material, may react and form a compound that poses a health hazard, such as CO2 mixing with water to from carbolic acid that leaches copper from a service pipe.
    7. A substance, if it contains a bacteriological contaminant, could become a health hazard long after it enters the potable water supply, though bacteria re-growth.
- Determine the risk level acceptable to the purveyor, and
- Determine the reliability required of the backflow preventer.

"Auxiliary water supply" means any water supply on, or available to, a premise in addition to the purveyor's approved public potable water supply.

"Auxiliary water supply – approved" means an auxiliary water supply which has been investigated and approved by the health authority, meets water quality regulations, and is accepted by the water purveyor.

"Auxiliary water supply – unapproved" means an auxiliary water supply, which is not approved by the health authority and the water purveyor.

"Backflow" means the undesirable reversal of flow of water or other substances through a cross-connection into the public water system or consumer's potable water system.

"Backflow assembly tester" means a person holding a valid BAT certificate issued in accordance with chapter 246-292 WAC.

"Backflow prevention assembly" means the nomenclature "assembly" refers to a backflow preventer which are designed to be in-line tested and repaired, and to meet the head loss and flow requirements of the recognized approval authority. The "assembly" consists of the backflow prevention unit, two resilient seated shutoff valves, and test cock(s).

"Backflow prevention device" means the nomenclature "device" refers to a backflow preventer that is not designed for in-line testing.

"Backpressure" means a pressure (caused by a pump, elevated tank or piping, boiler, or other means) on the consumer's side of the service connection that is greater than the pressure provided by the public water system and which may cause backflow.

"Backsiphonage" means backflow due to a negative or reduced pressure within the purveyor's potable water supply.

"Combination fire protection system" means a fire sprinkler system that:

- Is supplied only by the purveyor's water.
- Does not have a fire department pumper connection; and
- Is constructed of approved potable water piping and materials that serve both the fire sprinkler system and the consumer's potable water system.

"Consumer" means any person receiving water from a public water system from either the meter, or the point where the service line connects with the distribution system if no meter is present. For purposes of cross-connection control, "consumer" means the owner or operator of a water system connected to a public water system through a service connection.

"Consumer's water system" as used in WAC 246-290-490, means any potable and/or industrial water system that begins at the public water system point of delivery; that is, at the immediate downstream side of the water meter, and is located on the consumer's premises. The consumer's water system includes all auxiliary sources of supply, storage, treatment, and distribution facilities, piping, plumbing, and fixtures under the control of the consumer.

"Contaminant" means a substance present in drinking water that may adversely affect the health of the consumer or the aesthetic qualities of the water.

"Cross-connection" means any actual or potential physical connection between a public water system or the consumer's water system and any source of non-potable liquid, solid, or gas that could contaminate the potable water supply by backflow.

"Cross-connection control program" means the administrative and technical procedures the purveyor implements to protect the public water system from contamination via cross-connections as required in WAC 246-290-490.

"Cross-connection control specialist" means a person holding a valid Washington State Cross-Connection Control Specialist certificate issued in accordance with Chapter 246-292 WAC.

"Cross-connection control summary report" means the annual report required by the department that describes the status of the purveyor's cross-connection control program.

"Check valve" the term "check valve" is a generic term used for a variety of valves that specifically allow flow in one direction only. The variety of such valves includes slanting disc checks, silent check, (wafer or globe), automatic control checks, rubber flapper checks, double disc swing checks, swing checks (internally or externally weighted), and a spring-loaded check. A check valve in an approved assembly must be an approved check valve (components of double check valve assemblies, reduced pressure backflow assemblies, pressure vacuum breakers, and spill resistant vacuum breaker) that is drip-tight in the normal direction of flow when the inlet pressure is at least one p.s.i.

"Confined space," means any space having a limited means of egress and not intended for continuous occupancy, which is subject to the accumulation of toxic or flammable contaminants or an oxygen deficient atmosphere.

"Containment" means to restrict or limit the flow of contaminated or polluted water to the meter or service connection where the public water enters the private (consumer's) water system. The two systems are separated by a backflow preventer commensurate with the degree of hazard.

"Contamination" means an impairment of the quality of the potable water, which creates an actual hazard to the public health through poisoning or through the spread of diseases by sewage, industrial fluids or waste. Also defined as severe or high hazard. The term "contamination" used in EPA and drinking water regulations "maximum contamination level" bestows a different meaning than that used in describing a cross-connection hazard.

"Department" means the Washington State Department of Health or health officer as identified in a joint plan of operation in accordance with WAC 246-290-030 (1).

"Design and construction standards" means department design guidance and other peer reviewed documents generally accepted by the engineering profession as containing fundamental criteria for design and construction of water facility projects. Design and construction standards are comprised of performance and sizing criteria and reference general construction materials and methods.

"Direct service connection," means a service hookup to a property that is contiguous to a water distribution main and where additional mains or extensions are not needed to provide service.

"Distribution system" means all piping components of a public water system that serve to convey water from transmission mains linked to source, storage and treatment facilities to the consumer excluding individual services.

"Dual distribution system" means a facility with two water systems, one potable and the other non-potable. The purpose of the non-potable water system is to reduce the cost of the potable water supply.

"Double check detector assembly" (DCDA) means an approved assembly consisting of two approved double check valve assemblies, set in parallel, equipped with a meter on the bypass line to detect small amounts of water leakage or use.

"Double check valve assembly" (DCVA) means an approved assembly consisting of two independently operating check valves, loaded to the closed position by springs or weights, and installed as a unit with, and between, two resilient seated shutoff valves and having suitable connections for testing.

"Emergency" means an unforeseen event that causes damage or disrupts normal operations and requires immediate action to protect public health and safety.

"Fire Flow" means the maximum rate and duration of water flow needed to suppress a fire under WAC246.293.640 or as required under local fire protection authority standards.

"Fire Suppression Storage" means the volume of stored water available during fire suppression activities to satisfy minimum pressure requirements per WAC 246.290.230.

"First Consumer" means the first service connection associated with any source (i.e., the point where water is first withdrawn for human consumption, excluding connections where water is delivered to another water system covered by these regulations).

"Flow-through fire protection system" means a fire sprinkler system that:

- Is supplied only by the purveyor's water;
- Does not have a fire department pumper connection;
- Is constructed of approved potable water piping and materials to which sprinkler heads are attached; and
- Terminates at a connection to a toilet or other plumbing fixture to prevent the water from becoming stagnant.

"Guideline" means a department document assisting the purveyor in meeting a rule requirement.

"Health officer" means the health officer of the city, county, city-county health department or district, or an authorized representative.

"High health cross-connection hazard" means a cross-connection, which could impair the quality of potable water and create an actual public health hazard through poisoning or spread of disease by sewage, industrial liquids or waste.

"High health hazard" means a physical or toxic hazard, which could be detrimental to ones, health.

"Human Consumption" means the use of water for drinking, bathing or showering, hand washing, food preparation, cooking, or oral hygiene.

"Internally-loaded check valve" means a check valve which is internally loaded, either by springs or weights, to the extent it will be drip tight with a 1 p.s.i. differential in the direction of flow.

"Industrial piping system" refers to that piping system that transmits, confines, or stores any fluids that are not approved potable water. Such a system would include all pipes, tanks, fixtures, equipment and other extensions of the non-potable water system.

"In-premises protection" means a method of protecting the health of consumers served by the consumer's potable water system, located within the property lines of the consumer's premises by the installation of an approved air gap or backflow prevention assembly at the point of hazard, which is generally a plumbing fixture.

"Local administrative authority" means the local official, board, department, or agency authorized to administer and enforce the provisions of the Uniform Plumbing Code as adopted under chapter 19.27 RCW.

"Low health cross-connection hazard" means a cross-connection that could cause an impairment of the quality of potable water to a degree that dose not create a hazard to the public health, but does adversely and unreasonably affect the aesthetic qualities of such potable waters for domestic use.

"Non-potable fluid" means any water, other liquid, gas, or other substance, which is not safe for human consumption, or is not a part of the public potable water supply as described by the health authority.

"Non-potable piping system" means a piping system, which is made of non-potable material. Such materials are to be considered non-potable if they can affect either the aesthetics or degradation of the healthfulness of the water. Examples of such pipe are black iron and certain plastics.

"Plumbing hazard" is a cross-connection in a consumer's potable water system.

"Potable water" means water, which is safe for human consumption, free from harmful or objectionable materials, as described by the health authority/department.

"Premises isolation" means a method of protecting a public water system by installation of approved air gap or approved backflow prevention assemblies at or near the service connection or alternative location acceptable to the purveyor (at the point where the water

purveyor no longer has legal jurisdiction and/or authority to control the water system) to isolate the consumer's water system from the purveyor's distribution system.

"Pressure vacuum breaker assembly" (PVBA) means an approved assembly consisting of a spring loaded check valve loaded to the closed position, an independently operating air inlet valve loaded to the open position and installed as a unit with and between two resilient seated shutoff valves and with suitable connections for testing. It is designed to protect against backsiphonage only.

"Private hydrant" means any hydrant, which is not owned, operated or maintained by the local water purveyor or his agent.

"Process water" means water that is directly connected to, or could come in contact with, an extreme high hazard situation, and must never be consumed by humans.

"Public health hazard" means a condition, device or practice which is conducive to the introduction of waterborne disease organisms, or harmful chemical, physical, or radioactive substance into a potable water system and which presents an unreasonable risk to health.

"Public water system" is defined and referenced under WAC 246-290-020.

"Purchased source," means water a purveyor purchases from a public water system not under the control of the purveyor for distribution to the purveyor's consumers.

"Purveyor" means an agency, subdivision of the state, municipal corporation, firm, company, mutual or cooperative association, institution, partnership, or person or other entity owning or operating a public water system. Purveyor also means the authorized agents of such entities.

"Reasonable risk" means the amount of risk acceptable to a prudent and reasonable water purveyor using reasonable diligence.

"Reclaimed water," means wastewater that has been treated for non-potable water use within the same facility or premise. Examples of use would be irrigation and industrial use.

"Reduced pressure backflow assembly" (RPBA) means an approved assembly consisting of two independently operating check valves, spring loaded to the closed position, separated by a spring loaded differential pressure relief valve loaded to the open position, and installed as a unit with and between two resilient seated shutoff valves and having four suitable test cocks for checking the water tightness of the check valves and the operation of the relief valve.

"Reduced pressure detector assembly" (RPDA) means an approved assembly consisting of two approved reduced pressure backflow assemblies, set in parallel, equipped with a meter on the bypass line to detect small amounts of water leakage or use. This unit must

be purchased as a complete assembly. The assembly may be allowed on fire line water services in place of an approved reduced pressure backflow assembly upon approval by the local water purveyor.

"Regional public water supplier" means a water system that provides drinking water to one, or more, other public water systems.

"Resident" means an individual living in a dwelling unit served by a public water system.

"Safe drinking water act" was legislation that was enacted by the United States Congress in 1974 to ensure that the public is provided with safe drinking water, thereby protecting the public welfare.

"Safe drinking water" means water which has sufficiently low concentrations of microbiological, inorganic chemical, organic chemical, radiological or physical substance so that individuals drinking such water at normal levels of consumption will not be exposed to disease organisms or other substances which may produce harmful physiological effects.

"Service connection" means a connection to a public water system designed to provide potable water to a single-family residence, or other residential or non-residential population.

"Toxicity" means the degree to which a substance is toxic that is poisonous, in relating to affecting the potability of the water supply.

"Unapproved auxiliary water supply" means a water supply (other than the purveyor's water supply) on or available to the consumer's premises that is either not approved for human consumption by the health agency having jurisdiction or is not otherwise acceptable to the purveyor.

"Unreasonable risk to health" means a risk to health, which is not necessary or acceptable to the water purveyor and/or consumer; a term used to distinguish what type of backflow prevention should be required.

"Uniform Plumbing Code" means the code adopted under RCW 19.27.031(4) and amended under chapter 51-46 WAC. This code establishes statewide minimum plumbing standards applicable within the property lines of the consumer's premises.

"USC FCCCHR" is the abbreviation for the University of Southern California Foundation for Cross Connection Control and Hydraulic Research. It is an agency, which test and approves backflow prevention assemblies by approved standards.

"Used water," means water which has left the control of the purveyor. In most cases, the potable water has moved past (downstream of) the water meter and/or the property line.

Application Form—CCC Program

Backflow Incident Report Form

331-457-F • June 2024

Note: Use this form to comply with WAC 246-290-490(8)(g).

Part 1: Public Water System (PWS) Information					
PWS ID		PWS Name		County	Choose an item.

Part 2: Backflow Incident Information					
A. Incident Identification					
Incident Date	Date	Incident Time	Enter Time	*Incident ID (ODW Use Only)*	Internal ID#

B. Information on Premises where Backflow Originated			
Name of Premises	Click or tap here to enter text.		
Premises Physical Address	Click or tap here to enter text.		
City	Enter Text	Zip Code	Click or tap here to enter text.
Premises Type	Non-Residential ☐	Residential ☐	
Premises category/description (Table 13 formerly Table 9 category,* if applicable)	Click or tap here to enter text.		
Most Recent Hazard Evaluation Prior To Incident *(mm/dd/yyyy)*	Click or tap here to enter text.	None ☐	
PWS's Assessed Hazard Level	Click or tap here to enter text.		
Premises Isolation Required by PWS? Yes ☐ No ☐	PWS Relies on In-Premises Protection? Yes ☐ No ☐		
Type of Backflow Preventer Required by PWS	Click or tap here to enter text.		
Other Hazard Evaluation Information	Click or tap here to enter text.		
**See WAC 246-290-490(4)(b)(i).*			

C. Backflow Discovery Method				
How was the backflow discovered? Check all that apply.	Direct observation Meter running backwards Water use decrease Disinfectant residual monitoring Water quality monitoring	☐ ☐ ☐ ☐ ☐	Water quality complaint Illness/injury complaint Result of Investigation Other (Describe)	☐ ☐ ☐ Click or tap here to enter text.
By whom was the incident reported to the PWS?	PWS Personnel Premises Owner/Occupant Other PWS Customer Backflow Assembly Tester	☐ ☐ ☐ ☐	Other (Please Specify)	Click or tap here to enter text.

D. Contaminant Information						
Contaminant Type (Check all that apply.)	Microbiological	☐	Chemical	☐	Physical	☐
Describe contaminant (for example, the organism name, chemical, etc.). Please attach lab analysis or MSDS, if available.	Click or tap here to enter text.					

E. Extent and Effects of Contamination		
Estimated extent of contamination	Contained within Premises Entered PWS Distribution System	☐ ☐
Estimated number of connections affected	Residential Non-residential	Click or tap here to enter text. Click or tap here to enter text.
Estimated population affected or at risk	Residential Non-residential	Click or tap here to enter text. Click or tap here to enter text.
Number of water quality complaints	Click or tap here to enter text.	

Describe water quality complaints	Click or tap here to enter text.
Number of illnesses reported	Click or tap here to enter text.
Describe Illnesses/irritation (specifics, if known)	Click or tap here to enter text.
Number of physical injuries (i.e., burns) or irritations (e.g., rashes) cases reported	Click or tap here to enter text.

Part 3: Public Water System (PWS) Information

A. Source of Contamination

Source of contaminant or fixture type (Check all that apply.)

Air conditioner/heat exchanger	☐	Industrial/commercial process water/fluid	☐
Auxiliary water supply	☐	Medical/dental fixture	☐
Beverage machine	☐	Reclaimed water system	☐
Boiler, hot water system	☐	Swimming pools, spa	☐
Chemical injector/aspirator	☐	Wastewater (sewage) system	☐
Fire protection system	☐	Other (specify)	Click or tap here to enter text.
Irrigation system (PWS supplied)	☐		

B. Distribution System Pressure Conditions in the Vicinity of the Backflow Incident

Backflow Type	Backsiphonage ☐	Backpressure ☐
Typical distribution system pressure in vicinity of incident (if range, enter lower end of range)	Click or tap here to enter text. psi	

Main/pressure status at time of incident (Check all that apply.)

Normal	☐	Source/plant outage	☐
Main break	☐	Scheduled water shutoff by PWS	☐
Firefighting	☐	Unscheduled/emergency shutoff	☐
Other high usage	☐	Unknown	☐
Power outage	☐	Other (specify)	Click or tap here to enter text.

Describe causes and circumstances leading to backflow incident.

Click or tap here to enter text.

C. Backflow Preventer Information/Installation/Approval Status at Site of Backflow

Complete the tables in C and D for the premises isolation preventer for either of the following situations:

- If a premises isolation backflow preventer is installed and the contaminant entered the PWS distribution system.
- If the premises isolation assembly is the only backflow preventer at the site.

In all other cases, complete tables in C and D for the in-premises backflow preventer installed at the fixture. If more than one backflow preventer was involved in the backflow incident, copy tables C and D and complete them for the additional preventer(s

If no backflow preventer was installed at the time the incident occurred, check this box ☐ and go directly to Part 4. Don't fill out the tables below (C and D).

Backflow Preventer Information	Type Installed	Click or tap here to enter text.
	Installed For	Click or tap here to enter text.
	Make	Click or tap here to enter text.
	Model	Click or tap here to enter text.
	Size	Click or tap here to enter text.
	Serial Number	Click or tap here to enter text.
	Date Installed	Click or tap to enter a date.

Installation Status. Check all that Apply.	Properly installed/plumbed	☐
	Improperly installed/plumbed	☐
	Improperly protected bypass present	☐
	If so, explain	Click or tap here to enter text.

Commensurate with assessed degree of hazard?	Yes ☐ No ☐	If not, explain. Click or tap here to enter text.
DOH/USC-approved at time of backflow incident?	Yes ☐ No ☐	If not, approved when installed? Yes ☐ No ☐

D. Backflow Preventer Inspection/Testing Information at Site of Backflow

Most recent inspection/test information prior to backflow incident. Attach test report(s), if available.	Not test report on record.	☐
	Date tested/inspected.	Click or tap to enter a date.
	Passed test/inspection *without* repairs.	☐
	Failed initial test/inspection, passed *after* repair.	☐
	Failed test/inspection, no repairs made.	☐
Inspection/test information after backflow incident [per WAC 246-290-490(7)(b)]. Attach test report.	Not tested/inspected.	☐
	Date tested/inspected.	Click or tap to enter a date.
	Passed test/inspection *without* repairs.	☐
	Failed initial test/inspection, passed *after* repair.	☐
	Failed test/inspection, no repairs made.	☐

Backflow Preventer failure information, if applicable. Check all that apply.	Fouled check	☐
	Debris	☐
	Weather-related damage	☐
	Damaged seat	☐
	Other	Click or tap here to enter text.

If preventer failed inspection/test, did failure allow backflow?	Yes ☐ No ☐	If yes, explain. Click or tap here to enter text.

Part 4: Corrective Action/Notification

Action *taken* by PWS to restore water quality. Check all that apply.	None	☐
	Flushed/cleaned mains	☐
	Flushed/cleaned plumbing	☐
	Disinfected mains	☐
	Disinfected plumbing	☐
	Other treatment (describe)	Click or tap here to enter text.
	Replaced mains	☐
	Replaced plumbing	☐
	Other	Click or tap here to enter text.

Action *ordered* by PWS to correct cross-connection. Check all that apply.	None	☐
	Eliminate cross-connection	☐
	Remove by-pass	☐
	Install new preventer For premises isolation For fixture protection	☐ ☐ ☐
	Change existing preventer Repair/replumb ..... Reinstall correctly ..... Replace with same type Upgrade type	☐ ☐ ☐ ☐ ☐
	Other	Click or tap here to enter text.

Action ordered accomplished?	Yes	☐	Date	Click or tap to enter a date.
	No	☐	Explain	Click or tap here to enter text.

Agency notifications per WAC 246-290-490(8)(f). Check all that apply.	DOH	☐
	Local Health Agency	☐
	Local Administrative Authority	☐
	Issued by end of next business day	Click or tap here to enter text.

Notifications of consumers in area of incident (check all that apply)	Population at risk	☐
	Public Notification (PN per DOH regs)	☐
	Boil Water Advisory	☐
	Other (describe)	Click or tap here to enter text.
Other enforcement/corrective actions (describe).	Click or tap here to enter text.	

Part 5: Cost of Backflow Incident *(Optional)*

Item	PWS Personnel Hours Expended	Cost to PWS ($)	Cost to Premises Owner ($)
Investigation	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Restoration of Water Quality	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Correction of Cross-Connection Situation	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Litigation and/or Settlement	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Other Not Included in Above	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.

Part 6: Further Information/Documentation

Additional information about this incident such as pictures, sketches, newspaper/journal articles, water quality analyses, epidemiological reports, etc. is helpful. Provide information in electronic or hard copy form.

Click or tap here to enter text.

Click or tap here to enter text.

Click or tap here to enter text.

Part 7: Form Completion Information	
Note: Form should be completed by a person currently certified as a Cross-Connection Control Specialist.	
I certify that the information provided in this Backflow Incident Report is complete and accurate to the best of my knowledge.	
CCC Program Manager Name	Click or tap here to enter text.
Title	Click or tap here to enter text.
CCS Certification Number	Click or tap here to enter text.
Signature	
Date	Click or tap to enter a date.
Phone	Click or tap here to enter text.
Email	Click or tap here to enter text.
I have reviewed this report and certify that the information is complete and accurate to the best of my knowledge.	
PWS Manager/Representative Name	Click or tap here to enter text.
Title	Click or tap here to enter text.
Operator Certification Number	Click or tap here to enter text.
Signature	
Date	Click or tap to enter a date.

Please send completed backflow incident form to:

Mail
Washington State Department of Health
Office of Drinking Water—CCC Program Manager
P O Box 47822
Olympia, WA 98504-7822

Email cccprogram@doh.wa.gov

Please send any form questions, comments, or suggestions to the address above or email cccprogram@doh.wa.gov.

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email doh.information@doh.wa.gov. If in need of translation services, call 1-800-525-0127.

AUBURN WATER UTILITY

WATER SHORTAGE CONTINGENCY PLAN (WSCP)

SUPPLEMENT TO THE AUBURN
COMPREHENSIVE WATER PLAN

May 2024

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A. Contact List
B. Enforcement Procedural Check List

AUBURN WATER UTILITY
WATER SHORTAGE CONTINGENCY PLAN

Introduction

This Water Shortage Contingency Plan (WSCP) describes the actions and procedures for implementing Auburn City Code (ACC) 13.14 during impending or actual water shortages or emergencies caused by drought conditions, city water utility damage or destruction, or any other cause threatening to disrupt or diminish the city's water supply below its ability to meet normal water demands.

Causes of Water Shortage

Water supply in Auburn is sourced from a series of wells and springs, rendering the city less susceptible to short-term droughts compared to other regions however, unforeseen circumstances may still arise that could lead to water scarcity and challenge the city's ability to meet demand. These challenges include:

- Drought conditions resulting from below-average fall/winter precipitation, which may gradually impact local aquifers; and
- Extended periods of unusually warm and dry weather during the summer months could exacerbate water supply issues, particularly if the peak demand period is prolonged beyond the norm; and
- Unexpected events such as infrastructure failures, natural disasters, vandalism, or contamination incidents could create water supply issues.

Objective

The WSCP objective is to guide the City of Auburn Public Works Department in implementing water use restrictions and/or conservation measures necessary in response to a current or threatened water supply disruption or diminution.

This plan addresses both progressive situations, such as those that are weather-related, and more drastic and immediate situations such as facility emergencies (e.g., a pipeline break) to maintain levels of service essential for public health and safety, minimize adverse impacts on economic activity, and protect our customer's lifestyle.

Phased Curtailment Plan

This WSCP provides five stages of response to water shortages. The first three stages of the WSCP are intended for response to seasonal or long-term supply shortages. The fourth stage will be used in response to a sudden loss of distribution capability, such as a pipeline break or well failure. The fifth stage is to be implemented in response to regional emergencies. The five stages include a variety of communications, internal operations, and supply and demand management strategies as appropriate, and are characterized as follows:

- **Stage I. Anticipated Water Shortage. Voluntary Curtailment** – If a shortage appears imminent, the Public Works Department will enact Stage 1 of the Phased Curtailment Plan and conduct outreach and messaging regarding the benefits and necessity of water curtailment.

- **Stage II. Serious Water Shortage. Restricting Certain Activities** – If the voluntary curtailment messaging of Stage 1 does not result in the reduction needed, the Public Works Department will enact Stage II, following the Mayor issuing a proclamation of water shortage per Auburn City Code 13.14.020, and conduct outreach and messaging restricting certain activities for both residential and commercial customers.

- **Stage III. Critical Water Shortage. Mandatory Restrictions** – If the required curtailment of certain activities of Stage II does not result in the reduction needed, the Public Works Department will enact Stage III and conduct outreach and messaging prohibiting certain activities for both residential and commercial customers. This stage would be accompanied by an enforcement plan, which could include fines for repeated violation.

- **Stage IV. Emergency Water Shortage.** – In the event that immediate curtailment is required to maintain supply for human consumption, medical uses, sanitation, and fire protection, the Public Works Department will enact Stage IV, and conduct outreach and messaging prohibiting all non-essential uses. This stage would be accompanied by an enforcement plan, which includes fines for violations.

- **Stage V. Regional Disaster. Water rationing** – In the event of a regional disaster or water shortage, the Public Works Department will enact Stage V, would require rationing water by Auburn's customers.

Stage I. Anticipated Water Shortage. Voluntary Curtailment.

Objectives

- To prepare the City, relevant agencies, and water users for potential water shortage, thereby allowing all parties adequate planning and coordination time.
- To undertake supply management actions that forestall or minimize the need later for more stringent demand or supply management actions.

Triggers

Declining source levels and/or increased demand impacting source capacity, and no indication of trend reversal in the immediate future.

Stage I Actions

Coordinate monitoring and tracking of supply and demand conditions. Monitoring and tracking activities will be increased during this phase beyond normal intervals that would otherwise occur during typical work activities.

Public Messaging

The following is a typical public message response used during Stage I activities:

"The potential exists for lower-than-normal water supply if the water use trends the City is observing continue. At this time, the City is asking all customers to consider reducing your water use, where feasible. As water supply conditions are better understood, additional information and any potential request for action will be provided. Suggested activities for reducing water use are included below. If we all work together we can reduce the potential for the City needing to enact more significant enforcement steps to assure we have the available water supply for all our customers."

Suggested Water Use Reduction Activities

The following are some possible approaches to water reductions:

- Do not water outdoor plants and landscaping between 11:00 AM and 7:00 PM.
- Install Drip lines for watering plants and trees.
- During the Spring, water no more than 3 days per week, if needed.
- During the Summer, water no more than 6 days per week.
- Do not water on Sunday.
- Turn off irrigation on rainy days.
- Install water smart landscaping.
- Install Water Smart toilets, shower heads, and faucets.

Bill inserts, social media posts as well as website updates, indicating declining source levels and/or increased demand impacting sources, will be considered during Stage 1 messaging.

Stage II. Serious Water Shortage. Restricting Certain Activities.

Objectives

- To maintain or reduce demand to meet target consumption levels by customers through voluntary actions.
- To prevent or minimize the need for later prohibiting activities.
- To minimize the disruption to customers' lives and businesses while meeting target consumption goals.
- To maintain the highest water quality standards throughout the shortage.

Triggers

Public Works Director determines:

1. Decreasing static or pumping levels at city sources.
2. Source water levels are significantly below historical "normals" for the current time of year, and historic use patterns indicate that expected demands may not be met if this trend continues or worsens.

Stage II Actions

Staff will frequently monitor demand and supply and re-evaluate the situation based on current and projected water supply conditions, taking into considerations the time of year, and determine the appropriate actions and strategies. Staff will determine target consumption goals to be achieved, which may be revised as necessary.

Public Messaging

The Mayor issues a proclamation of water shortage per Auburn City Code 13.14.020.

The following is a typical public message response used during Stage II activities:

Due to … we are experiencing lower-than-normal water supply, creating a citywide water shortage. We are relying on the support and cooperation of all water users to stretch the available water supply to ensure that everyone has water to meet their required and basic needs. At this time, your demand needs to be reduced by ___%. To meet that reduction, the City is limiting certain activities, which is included in the list below. If everyone cooperates, we may avoid imposing more stringent restrictions.

Required Water Use Reduction Activities

The following are required actions to reduce water use:

- Do not water outdoor plants and landscaping between 11:00 AM and 7:00 PM.
- During the Spring, water no more than 2 days per week, if needed.
- During the Summer, water no more than 6 days per week.
- Do not water on Sunday.
- Turn off irrigation on rainy days.

Social media posts as well as website updates and notices with monthly billings will be used during Stage 2 messaging. More detailed information on messaging identified in Communications Actions section below.

Communication Actions

- Staff communicates the nature and scope of measures and strategy to the Mayor/Council and wholesale customers.
- Evaluate whether targeted consumption levels and supply conditions warrant a rate surcharge to reinforce voluntary actions and/or to recover revenue losses.
- Prepare appropriate legislation regarding emergency surcharges, if required.
- Initiate major public information, media and advertising campaign:
    - Promote consumption goals for typical households, and a percentage reduction goal for commercial customers.
    - Develop and implement a marketing plan, potentially including paid advertising, to 1) keep customers informed about supply and demand conditions, 2) reinforce desired customer actions; recommend customer actions to reduce demand, and 3) depending on conditions, remind customers that if goals are not achieved, restrictions may be necessary.
    - Identify what potential next steps will be used to reduce demand including timing, what type of restrictions and/or surcharges will be imposed.
    - Include water quality information in public information so that if flushing is necessary, the public understands that it is essential for water quality maintenance.
- Publicize water supply conditions on the City web page, update regularly. Ensure the information provided covers the needs of all key interests: the public, news media and purveyors.
- Contact largest customers (including wholesale customers) (refer to Attachment A) to request percentage reduction and conservation messaging be the same as the City. Contact other public agencies to inform them of conditions and request their cooperation.
- Provide direct messaging to City employees on requirements and restrictions for City water usage at City Facilities.
- Contact nurseries and landscape contractors to inform them of conditions and request their cooperation.
- Establish regular communication mechanism to keep City employees, especially utility account representatives, up to date on goals, conditions, and actions.
- Initiate remaining planning and preparation for Stage III.

Auburn Internal Operating Actions

- Continue appropriate actions from Stage I.
- Intensify data collection actions and monitoring of weather forecasts.
- Intensify supply side management techniques to optimize existing sources.
- Assess current water main flushing and reservoir cleaning activities to determine whether they should be accelerated for completion prior to the peak season or postponed to conserve supply.
- Assess water quality in reservoirs and distribution system to target for correction areas that may be predicted to experience severe degradation with reduced consumption.
- Increase water quality monitoring actions.
- Communicate flushing and reservoir cleaning policy to wholesale customers.
- Review current wholesale customer agreements regarding curtailment actions.
- Implement staffing reassignments as needed, and plan staging changes, which may be needed for the Stage III, including staff to enforce mandatory restrictions.

Supply and Demand Management Actions

- Restrict hydrant meter assembly permits to essential purposes.
- Activate any existing interties unless they are also under curtailment of use to increase supply availability.
- Request that Fire Department limit training exercises that use water.
- Request that City departments eliminate washing fleet vehicles unless recycling car washes are used.
- Request that City of Auburn spray parks reduce or eliminate hours of operation.
- Request that hosing sidewalks, driveways, parking lots, etc. be limited to situations that require it for public health and safety.
- Have Auburn field personnel “tag” observed obvious water waste such as hoses without shutoff nozzles, irrigation overspray, etc. with notice that informs customer about the supply conditions and need to reduce consumption.
- Evaluate ability to accelerate or enhance or expand long-term curtailment programs; implement as appropriate.
- Request that wholesale customers who have alternative sources use them.

Stage III. Critical Water Shortage. Mandatory Restrictions.

Objectives

- To achieve targeted consumption reduction goals by restricting defined water uses.
- To ensure that adequate water supply will be available during the duration of the situation to protect public health and safety.
- To minimize the disruption to customers' lives and businesses while meeting target consumption goals.
- To maintain the highest water quality standards throughout the shortage.
- To promote equity among customers by establishing clear restrictions that affect all customers.

Triggers

The Public Works Director determines that progression to this stage is required due to the goals established in Stage II have not been met and additional action is needed.

Stage III Actions

If not already implemented, activate interties and any other alternative sources of supply that are also not curtailed.

Public Message

The following is a typical public message response used during stage III activities:

"Due to … we are experiencing a serious water shortage. The previous water use reduction messaging did not provide the results to achieve the water savings necessary, it is now necessary to impose mandatory restrictions to reduce the demand on our water supply. We are continuing to rely on the support and cooperation of the public to comply with these restrictions but need the certainty and predictability of restricting certain water uses in order to ensure that throughout the duration of this shortage an adequate supply of water is maintained for public health and safety.

Mandatory Activities

The following actions are mandatory activities required actions to reduce water use:

- Do not water outdoor plants and landscaping between 11:00 AM and 7:00 PM.
- During the Spring, water no more than 2 days per week, if needed.
- During the Summer, water no more than 6 days per week.
- Do not water on Sunday.
- Irrigation must be turned off on rainy days.
- Do not leave hoses untended hoses without shut-off nozzles, including obvious leaks and water running to waste such as gutter flooding and sprinklers/irrigation whose spray pattern unnecessarily and significantly hits impervious areas.
- Do not water landscape strips with grass only.
- Car washing must be conducted at commercial car wash facilities that recycle water.
- Filling or refilling of pools is prohibited.

- Filling or refilling of ponds or ornamental lakes is prohibited, unless they provide for aquatic life.

Communication Actions

- The Public Works Director recommends moving to Stage III and other appropriate actions.
- Mayor and Council briefing.
- The Council adopts legislation on emergency surcharges, if needed.
- The public is informed about the nature and scope of the mandatory restrictions through a press conference, code red, social media, paid advertising and other means, including direct mail. The enforcement mechanisms, rate surcharges, target consumption goals, projections for how long restrictions will be in place and the reasons for imposing restrictions will also be identified, as will the possible consequences if goals are not met.
- Any exemptions from restrictions will be clearly identified.
- In communicating mandatory restrictions to the public, a clear distinction will be made between lawn/turf watering and watering gardens and ornamental plantings. The type and amount of watering allowed will be clearly defined.
- A "Customer Hotline" will be set up to report violations of restrictions.
- Customers with private wells that are conducting activities prohibited by the city during this stage, will be urged to install signs to let the public know that private well water is being used.
- Communication actions from Stages I and II will be continued and expanded upon as needed.

Auburn Internal Operating Actions

- Continue appropriate actions from Stages I and II.
- Evaluate options for using seasonal sources of supply.
- Finalize and implement procedures for exemptions from restrictions and/or emergency surcharges.
- Finalize and implement enforcement procedures for restrictions including highly visible "Water Watchers." (See Attachment B)
- Increase water quality monitoring actions at storage reservoirs.

Supply and Demand Management Actions

The Public Works Director will consider current supply and demand conditions before recommending mandatory restrictions. The specific restrictions imposed during Stage III would be determined based on the season of the year, targeted demand levels, and other considerations previously mentioned. Variations of the specific restrictions may be applied based on water supply conditions.

Other Restrictions

- Prohibit use of any ornamental fountain using drinking water for operation or make-up (turn off City Hall Fountain).
- Close City of Auburn spray park(s).
- Rescind hydrant permits.
- Prohibit washing of sidewalks, streets, decks or driveways except as necessary for public health and safety.
- Limit washing of buildings to situations that require it as part of scheduled building rehabilitation project (e.g., painting or staining).

Exemptions from Water Use Restrictions

Lawn watering ban exemption- The City may exempt newly installed lawns from a watering ban. Those wishing to request this exemption would need to contact the Public Works Director in writing and request a variance. The Public Works Director would consider the size of lawn and type of watering system to determine is an exemption is granted and if so to quantify the amount of water to be used under the exemption. Public Works staff will spot check for compliance.

The procedures relating to the exemption and the requirements of the exemption would be clearly outlined at the time of the ban. The following procedures are subject to change:

- Each person requesting a variance would be mailed a packet stating the requirements.
- Once the requirements are met, an authorization packet would be mailed to the customer including a sign to be posted indicating that utility requirements are being complied with.
- New lawns must be properly installed, meaning that two inches of organic soil amendment, such as composted yard waste, is cultivated into the top six inches of existing soil, at a minimum.
- New lawns must be watered according to guidelines to be provided in the packet mentioned above.
- For purposes of this exemption, “new lawn” refers to a lawn newly installed during the current year only. Over seeded or otherwise renovated lawns would not be exempt.
- If the shortage continues to worsen, this exemption would be revoked. It would also be revoked on a case-by-case basis if the rules stated above are not followed, or in the case of a water system emergency.

Monitoring and enforcement are at the discretion of the utility. The existence of an exemption to a watering ban would be announced early in the response process, for example, when the Stage II is invoked.

Other Exemptions –
For purposes of dust control, water may be applied to construction areas or other areas needing to comply with air quality requirements. Ball fields and playfields may be watered at the minimum rate necessary for dust control and safety purposes. The city will exempt customers with special medical needs such as home dialysis from any emergency surcharge provided individual customers notify the utility of such a need.

Stage IV. Emergency Water Shortage.

Objectives

- To maximize consumption reduction by restricting defined water uses.
- To ensure that adequate water supply will be available during the duration of the emergency to protect public health and safety.
- To minimize the disruption to customer's lives and businesses while meeting target consumption goals.
- To maintain the highest water quality standards throughout the shortage.
- To promote equity among customers by establishing clear restrictions that affect all customers.

Triggers

The Public Works Director enacts implementation of this stage in the event of a sudden disruption within the City's water system, or to a source of supply, which prevents the City from providing the usual level of service to our customers.

Stage IV Actions

If not already implemented, activate interties and any other alternative sources of supply that are available.

Public Message

The following is a typical public message response used during stage IV activities:

"Due to failure (break) in the water supply system (or source), it is necessary to impose mandatory restrictions to reduce water use. We are requesting the support and cooperation of our customers (within this defined geographic area) to immediately reduce their use of water to ensure that, throughout the duration of this emergency, an adequate supply of water is maintained for public health and safety."

Communication Actions

- The Public Works Director enacts Stage IV and other appropriate actions.
- Mayor and Council Briefing, when practical.
- The public is informed about the nature and scope of the emergency and mandatory restrictions through a press conference, door hangers, code red, social media, paid advertising and other means, including direct mail.
- Any exemptions from restrictions will be clearly identified.

Auburn Internal Operating Actions

- Assess options for supplying emergency water to affected customers. And if appropriate develop implementation plan and execute.
- Monitor water quality as required.

Supply and Demand Management Actions

The City will consider current supply and demand conditions before recommending restrictions. The specific restrictions imposed during Stage IV would be determined based on water supply conditions and the expected duration of the emergency.

Other Restrictions

- Prohibit hydrant permit withdrawals from within the affected water service area.
- Consider appropriate water use restrictions from Stage III depending on the type of shortage the City is experiencing.

Exemptions from Water Use Restrictions

The Public Works Director will exempt customers with special medical needs, such as home dialysis from any emergency surcharge, provided individual customers notify the utility of such a need.

Stage V. Regional Disaster

Introduction

Although many of the demand reduction measures employed would be like those used during a progressive, weather-related shortage, short term emergencies are unique because of a lack of preparation time and the urgency of immediate, large-scale demand reductions. Each emergency scenario is different, but most of them require major curtailment actions by customers.

Unlike drought, some emergencies would be localized, requiring demand reduction for only a limited geographic area.

There are several criteria by which to decide which demand management measures are appropriate to initially reduce demand during an emergency:

- Timing: can the measure(s) or action(s) deliver the necessary water savings in the necessary timeframe, i.e., are immediate savings needed or can the system support a gradual reduction in demand.
- Magnitude of savings: will the measure produce enough savings to make a meaningful difference i.e., reduce demand to the level the impaired water system can handle.
- Season: does the action make any impact at the time of year that the emergency occurs, i.e., banning lawn watering will have little impact in November.
- Costs: How severe are the cost implications of the measure to the customer, including local business and industry.

Supply and Demand Management During Emergencies

No single strategy can be created which will meet the needs of the department for all emergency scenarios. The criteria listed above create a framework for decision making. Emergencies initially require quick and immediate response. Once an assessment is made as to how long it will take to restore the system, the immediate response strategy may change if it appears that the repair process will be lengthy. The strategy for most emergencies can be narrowed to measures having the most immediate impact on water supply and consumption. All needed and available back up supplies would be activated during an emergency: interties, well-fields, off-loading wholesale customers who have other sources, etc.

Attachment A

Auburn Water Shortage Contingency Plan

CONTACT LIST

A working list of contacts for easy reference in case of a drought or emergency should be developed and regularly updated by the Water Utility Engineer in consultation with others in the Department. In addition to the communication elements contained in the WSCP, the following will be contacted directly in the event of a drought or emergency to inform them and ask for their support and cooperation in reducing demand.

Customers
List of large irrigators, including those using alternate sources.
List of large commercial and industrial customers.

City of Auburn Contacts
Department Directors

Other public agencies with high visibility water use

Business Groups

Attachment B

Auburn Water Shortage Contingency Plan

Enforcement Procedural Check List

MANDATORY RESTRICTIONS

- ✓ Determine number of warnings before surcharges applied
- ✓ Self-duplicating "Notice of Violation" forms printed; one to record violation with billing
- ✓ Staff with customer service and communication experience or training assigned to "Water Watch"
- ✓ Establish procedure for "Water Watchers" to record warnings and penalties on customer accounts
- ✓ Establish "hotline" for customers to report violations
- ✓ Vehicles for "Water Watch" made available; vehicles that are signed as "Water Watchers" will increase visibility and effectiveness of enforcement
- ✓ High priority routes established, e.g. areas with large lawns
- ✓ All field and customer service staff provided "fact sheets", Question and Answer sheets; briefed on restrictions, enforcement procedures; field staff trained on tagging obvious violations

CONCEPTUAL MITIGATION PLAN

Water Right Application No. G1-28404

Prepared for: The City of Auburn

Project No. 210355-A-02 • October 14, 2021

Aspect CONSULTING

earth + water

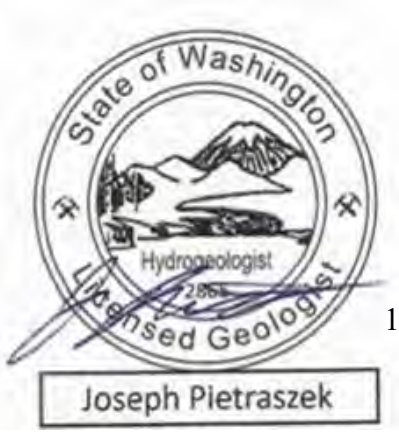
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Project No. 210355-A-02 • October 14, 2021

Aspect Consulting, LLC



10/14/2021

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Executive Summary

The key points of the City of Auburn's Conceptual Mitigation Plan (CMP) for Water Right Application G1-28404 are provided below. Please refer to the main report for additional details.

- The Washington State Department of Ecology (Ecology) issued a Preliminary Permit in May 2021 to the City of Auburn (City) for Application G1-28404 (filed in January 2006), that requires the City to evaluate and identify options for mitigation due to the potential for impairment of surface waters that are subject to instream flow regulations.
- Application G1-28404 requests 13,443 acre-feet per year (afy) and 12,500 gallons per minute (Qi) from two existing supply wells (Well 6 and 7) and one potential new well (Well 8). Wells 6 and 7 are authorized as additional points of withdrawal under four of the City's existing water rights. The location of future Well 8 has not been determined but it is assumed Well 8 will be located near Wells 6 and 7, potentially in the Fulmer Wellfield area, with similar completion details.
- Wells 6 and 7 are completed in the lower alluvial aquifer in the Auburn Valley (also known as the Qvrd or Production Aquifer), which is known to be a highly productive aquifer capable of well yields in excess of 5,000 gallons per minute (gpm). A low permeability confining layer may provide some degree of hydraulic separation from shallow groundwater and surface water but, in general, the withdrawals from Wells 6 and 7 appear to be hydraulically connected to the Green River, and potentially the White River and Mill Creek.
- Washington Administrative Code (WAC) Chapter 173-509 established minimum instream flows in the Green River and closed tributaries to the Green River to further appropriations. The White River is closed to new appropriations under WAC Chapter 173-510. Water use under G1-28404 will likely require mitigation to offset potential impacts to the Green River when instream flows are not met. Potential impacts to the White River may also require mitigation.
- The City has various potential strategies for mitigation and water use under G1-28404 that include timing the withdrawals to occur during periods when instream flows are met. Mitigation would be used to offset lag time effects on the Green River after pumping stops (and to fully mitigate potential impacts to the White River and tributaries). Mitigation sources include:
    - Using existing City wells (and associated water rights) located in the White River drainage to augment flows in the Green River (and potentially tributaries including Mill Creek), or mitigation water from the 2010 Lake Tapps Area Water Resources Agreement with Cascade Water Alliance (CWA).

  - Offsetting streamflow impacts by changing the operation of certain wells to reduce impacts.
  - Purchasing water from Tacoma Public Utilities from Howard Hansen Reservoir to maintain streamflows in the Green River.
  - Purchasing water from CWA to maintain streamflows in the White River (for potential White River mitigation).
  - Using the City's existing water rights from West Hill Springs (for potential Mill Creek mitigation).1
  - Using infiltration basins, fed by either City water sources or reclaimed water, to provide delayed discharge to surface water.
- The potential impacts to streamflows and potential mitigation requirements under the projected use of G1-28404 will be evaluated in the Phase 2 (Testing and Analysis) portion of the Preliminary Permit.

[1] We note that under RCW 90.03.550(1), a water right for municipal water supply purposes may be utilized to benefit fish and wildlife, water quality, or other instream resources or related habitat values – i.e., for mitigation purposes – without changing the purpose of use. The City would request technical assistance from Ecology's Northwest Regional Office regarding an appropriate mechanism for documenting such mitigation.

1 Introduction

The City of Auburn (City) filed water right permit application G1-28404 in January 2006. The application requested 13,443 acre-feet per year (Qa; afy) and 12,500 gallons per minute (Qi; gpm) from two existing supply wells (Wells 6 and 7) and one future well to be developed (Well 8) in the Auburn/Duwamish Valley. In May 2021, the Washington State Department of Ecology (Ecology) issued a Preliminary Permit for Application G1-28404 that required the development of a mitigation and compliance plan before the water right could be authorized. This memorandum is intended to fulfill the reporting requirements for the Conceptual Mitigation Plan (CMP), Phase 1 of the work required under the Preliminary Permit.

Aspect Consulting, LLC (Aspect) developed this CMP to describe the features and processes relevant to the project, determine if the proposed use will impact Instream Flows (ISFs) or senior water users in the basin, and identify conceptual mitigation sources to offset potential impacts. Wells 6 and 7 are located in the Green-Duwamish Basin, which is part of Water Resources Inventory Area (WRIA) 9. Surface water in the Green-Duwamish Basin is subject to ISF regulations (WAC 173-509-030). Mitigation is required for new groundwater appropriations if the proposed use could impair streamflows in the Green River. Mitigation may also be required to offset impacts to the White River and one or more tributaries to the Green River. This evaluation assesses the potential impact to the surface water sources and the need for mitigation, identifies potential mitigation sources, and provides estimates of potential mitigation quantities.

This report is organized as follows:

- The Project background and an overview of the City's water system and water demand is described in Section 2.
- The Project setting and geologic and hydrogeologic conditions at the proposed points of withdrawal are presented in Section 3.
- The regulatory setting, including applicable ISF regulations and senior water rights, are presented in Section 4.
- The Conceptual Mitigation Plan that includes estimates of mitigation quantities and potential mitigation sources is presented in Section 5.
- Project next steps are summarized in Section 6.

2 Project Background

This section summarizes the City's existing water supply infrastructure and water rights portfolio, the Retail Water Service Area (RWSA), and the current and projected water use in the RWSA.

2.1 Summary of City's Water System

The City uses a combination of production wells and springs for its municipal water supply. The City's existing water right portfolio includes claims, permits and certificates that total an annual maximum quantity (Qa) of approximately 21,000 acre-feet per year (afy) and a maximum instantaneous quantity (Qi) of approximately 19,000 gallons per minute (gpm; Table 1). The City also has the opportunity to purchase water from Tacoma's wholesale water supply. The City's current and recent water usage from the various sources is presented in Section 2.3.

In 1995 Ecology issued a Change Authorization, which authorized two additional points of withdrawal to four of the City's primary water rights, in order to provide redundancy to the City's water system in the event of well or equipment failure (see Table 1). This authorization allowed for the construction of Wells 6 and 7. In 2009 Ecology issued a Superseding Certificate for G1-00277C to include Wells 6 and 7, and authorize an additional non-additive quantity of 2,480 afy to this water right.

Ecology noted that Wells 6 and 7 are completed in the same body of groundwater as Wells 1 through 4, even though the various wells are located in different drainages. Wells 1, 3, and 4 are located in the White River Drainage. Wells 2, 6 and 7 are located in the Green River drainage. The Green River is part of WRIA 9 and the White River is part of WRIA 10 (White River/Puyallup River). As detailed in Section 3.3, a portion of the alluvial groundwater in the White River drainage discharges into the Green River.

Table 1. Summary of Auburn's Existing Water Rights

Water Right Number	Sources	Annual Quantity, Additive (Acre-Feet)	Instantaneous Maximum Quantity (gpm)	Non-Additive Quantity (Acre-Feet)	WRIA/Drainage Basin Location
857	Coal Creek Springs	9,410	6,730		10 (White River)
S1-049354CL	West Hill Springs	1,010	625		9 (Green River)
3560-A	Well 1, 6, & 7	1,120	2,200		Well 1: 10 (White River) Wells 6/7: 9 (Green River)
G1-00277C[1]	Well 2, 6, & 7	1,360	2,400	2,480	9 (Green River)
G1-23629C	Well 3A & 3B, 6, & 7	3,600	2,800		Well 3: 10 (White River) Wells 6/7: 9 (Green River)
G1-20391C	Well 4, 6, & 7	3,600	2,800		Well 4: 10 (White River) Wells 6/7: 9 (Green River)
G1-23633C	Well 5, 5A, 5B, and 5C	720	1,000		10 (White River)
G1-25518C	Well 5A	0	167	187	10 (White River)
G1-22769C	Algona Well 1	175	500		10 (White River)
G1-25173C	Braunwood Well	6.5	20		10 (White River)
Total		**21,002**	**19,242**		

Notes:
1. An additional 2,480 afy is available under this authorization for non-additive withdrawals, which allows the City to pump water from other rights.

2.2 Proposed Points of Withdrawal and Place of Use

Application G1-28404 lists three proposed points of withdrawal that includes two existing City production wells (Wells 6 and 7) and a future well (Well 8). Wells 6 and 7 are located northeast of downtown Auburn, in the Green River valley in WRIA 9 (Figure 1). Well 6 is situated adjacent (within approximately 30 feet) of City Well 2 in Frank Fulmer Park. Well 7 is approximately 0.3 miles west-southwest of the Fulmer Park in the City's Veterans Memorial Park. Collectively, Wells 2, 6, and 7 are referred to as the

Fulmer Wellfield, and all are completed in unconsolidated glacial and alluvial sediments that are part of the Green River Valley. Additional details on Wells 6 and 7 are provided in Section 3.3.2.

The proposed location for future Well 8 was not specified in the application. For the purposes of this CMP and to facilitate its long-term water supply planning, the City assumes that Well 8 will be located in the same general vicinity of Wells 6 and 7 (i.e., Green River Valley and WRIA 9) and will be completed in the same groundwater source. The City has identified a potential location in the Fulmer wellfield (i.e., near Wells 6 and 2) for Well 8 but the precise location has not been determined or finalized.

The assumed location of Well 8 enables the development of a common mitigation strategy for all three proposed points of withdrawal. The CMP and eventual final mitigation plan may require modifications and/or additional evaluations if the final location and well completion for Well 8 differs significantly from Wells 6 and 7.

The proposed place of use for G1-28404 includes all of the City's Retail Water Service Area, as shown on Figure 1. Aspect completed a site visit on August 19, 2021, to visit the proposed points of withdrawal and place of use. All applicable site features were observed. A meeting with City personnel, including Lisa Tobin (Utilities Engineering Manager), Susan Fenhaus (Water Utility Engineer), and Josh Flanders (Water Distribution Supervisor) was conducted to discuss and detail all processes associated with the planned water use.

2.3 Current Water Use

As of 2018, the City's municipal water supply served approximately 24,000 connections for a population of approximately61,000. The City's total annual water use over the five most recent complete years on record (2016 through 2020) has ranged from approximately 7,000 to 7,800 afy (Figure 2). The average annual use from 2016 through 2020 translates to an average daily use of 6.6 million gallons per day (MGD). Over this same time period (2016-2020), the maximum daily use ranged from 11.3 to 14.5 MGD or 7,900 to 10,100 gpm (daily average)

Figure 2 shows the annual totals and maximum daily use from each of the City's existing water sources. The total production from Well 6 between 2018 and 2020 (Well 6 was not used in 2016 and 2017 while it was being rehabilitated and new pump controls installed) ranged from 1,100 and 1,400 afy and the annual maximum daily use ranged from 5.1 to 5.8 MGD (3,600 to 7,200 gpm). Well 7 was not used between 2016 and 2020 due to high levels of manganese (treatment facilities will be required before use).

The average annual quantities withdrawn from the City's other water sources between 2016 and 2020 include:

- Coal Creek Springs: 4,200 afy
- West Hill Springs: 460 afy
- Well 1: 540 afy
- Well 2: 820 afy (from 2018 through 2020; Well 2 was not used in 2016 and 2017)

- Well 3: Not used between 2016 and 2020 due to high levels of manganese (treatment facilities will be required before use)
- Well 4: 710 afy
- Braunwood Well: 5 afy

As noted in Section 2.1, withdrawals from Wells 6 and 7 are authorized under the City's existing water rights for Wells 1 through 4. The annual combined use from Wells 1 through 4 and Well 6 ranged from 1,900 to 3,000 afy between 2016 and 2020, or approximately 20 to 31 percent of the combined annual quantity (9,680 afy) that is currently authorized.

2.4 Future Demand

The City's 2015 Water System Plan (WSP) projected an average daily demand of up to approximately 12 MGD (13,000 afy) and a maximum daily demand of 19 MGD (13,000 gpm) by 2030 (Carollo, 2015). Recent updates to the WSP indicate that the City's annual water demand between 2014 and 2020 has been less than the projected demand in the City's 2015 WSP. This is attributed to the City's conservation program, low distribution system leakage, and Lake Meridian Water District having secured an alternate wholesale source instead of utilizing wholesale water from Auburn (City of Auburn, 2021).

The City expects to remain below the demand projected in the 2015 WSP through 2025. The City's future demand beyond 2025 is somewhat uncertain for various reasons, including an agreement to provide water to the Muckleshoot Indian Tribe, which could potentially involve substantial quantities. The City is currently re-evaluating its growth projections as part of its 2024 Comprehensive Plan update to meet the state's Growth Management Act requirements. This evaluation is expected to be completed by mid-2022. Updated demand projections will be incorporated into Phase 2 (Testing and Analysis Plan) of the Preliminary Permit.

2.5 Projected Water Use Under G1-28404

The City is pursuing the application for G1-28404 to provide additional supply for future demand and operational flexibility for its existing water rights. If authorized, the City could maximize the capacities at Wells 1, 2, and 4 and pump the surplus of the currently authorized quantities from Wells 6 and 7. Based on the pumping capacities of the existing wells, the following hypothetical scenario is:

- Well 1
  - Use entire quantity of 3560-A (1,120 afy Qa; 2,200 gpm Qi)
- Well 2
  - Current capacity is 1600 gpm
  - G1-00277C authorizes 2400 gpm (Qi)
  - Remaining 800 gpm (Qi) pumped from Well 6
- Well 3
  - No current pumping capacity from Well 3A/3B

    - G1-23629C authorizes 2800 gpm (Qi) – see below for strategy to use this water right
- Well 4
    - Use entire quantity of G1-20391C (3,600 afy Qa; 2,800 gpm Qi)

Based on these projections, pumping from Wells 6, 7, and future Well 8 could be used as follows:

- Well 6
    - Current capacity is 2400 gpm
    - Hypothetical future operations: 2,400 gpm
        - 800 gpm from G1-00277C (Well 2) and 1600 gpm from G1-23629C (Well 3)
- Well 7
    - Past observed capacity: 4,000 gpm
    - Hypothetical future operations: 4000 gpm
        - 1200 gpm from G1-23629C (Well 3)
        - 2800 gpm from new water right (G1-28404)
- Future Well 8
    - Authorized withdrawals under G1-28404

The future use from Wells 1 through 4 could be increased, particularly once the manganese treatment facilities are constructed for Wells 3A/3B. This could increase the City's use of G1-28404. As noted in Section 2.4, the City is currently re-evaluating their projected future demand. The proposed withdrawals from Wells 6, 7, and 8 will be refined in Phase 2 of the Preliminary Permit.

3 Site Description

3.1 Project Setting

The City is centrally located between Seattle and Tacoma in both King County and Pierce County, Washington and encompasses approximately 30 square miles. The City's RWSA generally follows or is located within the City's administrative City Limits (Figure 1). Several other public and private water systems provide water service within the City Limits.

The topographic setting was largely formed by glacial processes (Section 3.2) and generally consists of an alluvial valley surrounded by uplifted plateaus. There are two major river systems that flow through the lower valley. The Green River flows north

through the eastern part of the City and flows north to Puget Sound[2]. Mill Creek is a tributary of the Green River that flows northerly through the western portion of the City and flows into the Green River north of the City Limits.

The White River flows westerly through the southern part of the City before turning south to join the Puyallup River. The White River historically flowed into the Green River until a flood event in 1906 formed a large debris jam that diverted the course of the White River south into the Puyallup River. The historic course of the White River likely remains an influence on the regional hydrogeologic system, as alluvial groundwater in portions of the White River valley flows north into the Green River system (Section 3.3).

Ground elevations in the valley areas range between 50 to 100 feet. The terrain rises sharply to elevations of 400 to 500 feet on either side of the valley as well as in the southern portion of the City, south of the White River and between the White and Green Rivers. The topographic features influence the City's water distribution system and resulted in the division of the RWSA into four major service areas (Carollo, 2015).

3.2 Regional Geology

The City completed an extensive study of the geology and hydrogeology within the City's RWSA. The study results are documented in several volumes: 1996 Preliminary Hydrogeologic Characterization, Summary of 1997 Hydrogeologic Investigations, the 1997-1998 Test Well Drilling and Installation Program, and the 1999 Hydrogeologic Characterization Report. This Section and Section 3.2 use the key findings of these investigations (PGG, 1999) and a regional USGS study of the Puyallup and Green River drainages (USGS, 2015) to summarize the geologic and hydrogeologic conditions in the Project vicinity. The surficial geology of the project area is shown on Figure 3 and geologic cross-sections of the area developed by PGG (1999) are provided on Figures 4a and 4b.

The geologic setting is dominated by thick sequences of unconsolidated glacial and more recent alluvial sediments. The geologic sequences are differentiated between the upland areas and the Green and White River valleys, as detailed below.

The stratigraphy of the upland areas includes sequences of recessional and advance outwash sand and gravel, glacial till (compacted and poorly sorted mix of clay, silt, sand, and gravel), and fine-grained ice-contact material. More localized sequences of lacustrine, bog, and marsh deposits containing clay, silt, peat, and lenses of sand and gravel that were deposited during inter-glacial periods are also present in the upland areas. Bedrock in the upland areas is present at depths of several hundred feet or more.

The Green and White River valleys were largely excavated by subglacial meltwater. The valleys began to fill with sediment as glaciation ended and have continued to fill during the more recent Holocene period. Sediment thicknesses in the valleys exceed 1,000 feet in places. The deposition occurred through marine, lacustrine, fluvial, and deltaic processes resulting in a mix of fine and coarse-grained sediments. Volcanic mudflow deposits from Mount Rainier are also present, most notably the Osceola Mudflow

[2] The lower-most 12 miles of the Green River, within Seattle's city limits, is called the Duwamish River, also known as the Duwamish waterway.

deposit, which are present at depths of approximately 30 feet bgs in the vicinity of Wells 6 and 7 and may act as groundwater flow barriers (i.e., aquitards) in some areas (Section 3.3).

The primary geologic units in the vicinity of Wells 6 and 7 are recent and Quaternary age alluvial deposits (Qa); the Osceola Mudflow deposit (Qom), and Vashon-age recessional deltaic deposits (Qvrd).

3.3 Hydrogeologic Setting

Groundwater is present in both the upland and valley areas. There are multiple hydrogeologic units (aquifers) in the upland areas, including recessional and advance outwash deposits and older glacial deposits that underlie the outwash deposits. Multiple confining layers are present in portions of the upland areas. Groundwater in the outwash deposits in the upland areas generally discharge to the valley aquifers. Groundwater elevations and flow paths in the deeper aquifers vary but generally flows toward or in the same direction as the valley aquifer (USGS, 2015).

The hydrogeologic conditions of the valley aquifers are relevant to this CMP as Wells 6 and 7 are completed in the valley aquifers. We assume that potential future Well 8 will also be completed in the valley aquifer (Section 2.2). There are two primary alluvial aquifers in the Green River Valley: upper and lower with a confining layer separating the two in most portions of the valley. Wells 6 and 7 are completed in the lower alluvial aquifer (termed the Qvrd or production aquifer by PGG and the AL2 aquifer by the USGS). The PGG and USGS studies provide similar descriptions although the terminology differs.

The surficial hydrogeologic units developed by the USGS (2015) are provided on Figure 5 and two of the hydrogeologic cross-sections developed by the USGS (2015) that are applicable to the Well 6 and 7 vicinity are provided on Figure 6. The hydrogeologic units in the vicinity of Wells 6 and 7 are detailed below.

- **Upper Alluvial Aquifer**: A shallow unconfined aquifer is present in recent alluvial deposits termed the Qal aquifer by PGG and the AL1 aquifer by the USGS. This unit is generally less than 100 feet thick and groundwater is present as shallow as 10 to 15 feet bgs.
- **Confining Unit**: The Qal is underlain by a confining layer that is present throughout most of the Green River valley in the vicinity of Auburn. The confining layer is not present in the White River Valley. The USGS attributes the confining layer (termed the MFL confining layer) to the Osceola mudflow deposits while PGG states that the confining layer (termed Qal/Qud/Qom aquitard system) is a combination of mudflow and finer-grained glacial and alluvial deposits.

  The confining layer is approximately 10 feet thick in the vicinity of Wells 6 and 7 (PGG). In portions of the valley where the confining layer is not present, the upper and lower aquifers essentially form a single aquifer although the permeability varies laterally and vertically.

- **Lower Alluvial Aquifer/Production Aquifer**: Wells 6 and 7, along with the other City production wells, are completed in the lower alluvial aquifer, which is the Qvrd unit, also termed the production aquifer in PGG's studies, and termed the AL2 aquifer in the USGS report. The lithologic character of this unit is quite heterogeneous and varies greatly with depth. The thickness of the unit exceeds 250 ft within the Auburn Valley (Figures 4 and 6).

  Groundwater in this aquifer generally is confined; however, unconfined conditions may occur in areas where the overlying MFL confining unit is locally thin or absent. The lower alluvial aquifer is highly productive with transmissivities ranging from approximately 50,000 to more than 2,000,000 gallons per day per foot (gpd/ft). The USGS estimated the average hydraulic conductivity of this unit to be approximately 300 feet per day (USGS, 2015).

3.3.1 Groundwater Recharge and Discharge

Groundwater discharge from the upland aquifers is the primary source of recharge to the lower alluvial aquifer. The upland aquifers are primarily recharged by precipitation and leakage from Lake Tapps. Alluvial groundwater from the White River also discharges into the Green River alluvial aquifer (Section 3.3.2), and effectively serves as an additional source of recharge.

Groundwater in the vicinity of Wells 6 and 7 discharges into Puget Sound via the Green River and Duwamish River valley. Groundwater may also discharge into the Green River in gaining portions of the Green River.

3.3.2 Groundwater Elevations and Flow Directions

Groundwater elevations in the lower alluvial aquifer occur at elevations between approximately 60 and 70 feet above sea level (asl) in the vicinity of Wells 6 and 7. Groundwater in both the upper and lower valley aquifers flows northerly and generally parallel to the path of the Green River. Groundwater from the upland aquifers generally flows toward the valley aquifers and groundwater generally moves upward in the valley alluvial aquifers. PGG estimated horizontal groundwater flow velocities of approximately 1 to 4 feet per day in the lower alluvial aquifer. A generalized groundwater contour map taken from PGG (1999) is shown on Figure 7.

Water level data and previous studies indicate there is a groundwater divide in the alluvial aquifer where the White River enters the Valley. Alluvial groundwater flow in the White River where it enters the valley (southeast and upgradient of Wells 6 and 7) does not match the current path of the White River but instead flows north into the Green River. Groundwater in this vicinity appears to follow the historic course of the White River, which flowed into the Green River until the early 1900s (Section 3.1). The approximate location of the groundwater divide for the Qa aquifer is shown on Figure 7. Groundwater north of the divide flows into the Green River system while groundwater south of the divide flows south into the White River system. A similar groundwater divide exists in the lower alluvial aquifer (Qvrd aquifer) and may be slightly south of the Qa aquifer groundwater divide (PGG, 1999).

Based on this information, it appears that the City's water sources may capture water that would otherwise discharge into both the Green River and White River drainages as shown on Figure 7 and detailed below:

- City water sources in Green River System:
  - Well 2 is located in the Green River and it is widely understood that groundwater in this vicinity (including the vicinity of Wells 6 and 7) flows north and eventually discharges into Puget Sound or the Duwamish waterway.
  - West Hill Springs discharges into Mill Creek, which flows into the Green River.
  - Wells 1 and 4 are located in the White River watershed but groundwater in the vicinity of these wells discharges into the Green River.
- City water sources in the White River system:
  - Wells 5A/5B/5C are located south of the groundwater divide; groundwater in this vicinity discharges into the White River system.
  - The Algona Well is located south of the groundwater divide.
  - Coal Creek Springs drains into the White River; as noted below, a portion of the flow in the White River below Coal Creek Springs may infiltrate into the alluvial groundwater system and flow into the Green River.
- City water sources with uncertain discharge locations:
  - Wells 3A/3B are located in the White River drainage and very close to the Qa aquifer groundwater divide (Figure 7). Because the precise location of the groundwater divide in the lower alluvial aquifer (Qvrd aquifer) is uncertain, groundwater in the vicinity of Wells 3A/3B may flow into either the Green River or White River systems.[3]
  - A portion of the discharge from Coal Creek Springs (i.e., spring water that does not discharge into the White River or that infiltrates from the White River to groundwater) may also flow into the Green River.

The location of the groundwater divide has two significant implications for the CMP. First, a portion of the groundwater in the vicinity of Wells 6 and 7 may originate in the White River drainage. Second, the groundwater captured by Wells 6 and 7 may discharge entirely to the Green River even if the radius of influence from pumping extends into the White River surface water (topographic) drainage. The radius of influence of the two wells has not been fully established.

3.3.3 Hydraulic Connection between the Lower Alluvial Aquifer and Surface Water

Wells 6 and 7 are completed in the lower alluvial aquifer and a low-permeability confining layer separates the upper and lower alluvial aquifers (Section 3.2). The

[3] It is possible that the groundwater divide may shift slightly in response to seasonal water level fluctuations, meaning groundwater in the vicinity of Wells 3A/3B may discharge into both the Green River and White River systems depending on the time of year.

confining layer creates some degree of hydraulic separation between the lower alluvial aquifer and the Green River. The upper alluvial aquifer is believed to be directly connected to the Green River. The confining layer is not present throughout the Green River valley. In areas where the confining layer is not present, the lower alluvial aquifer is hydraulically connected to the shallow aquifer and the Green River, although lower permeability zones that are present in the alluvial deposits can limit the degree of connectivity.

Pump testing of Well 6 in 2016 produced a drawdown response in a monitoring well completed in the shallow aquifer (TW-6S) that is approximately 1,800 feet northeast of Well 6, indicating some degree of hydraulic connection through the confining layer. The response at TW-6S, however, was delayed and muted when compared to the adjacent monitoring well completed in the lower alluvial aquifer (TW-6D).

3.4 Project Well Details

Wells 6 and 7 are completed in unconsolidated glacial and alluvial sediments that are part of the Green River lower alluvial aquifer. Well completion details are provided in Table 2.

Well 6 was drilled in 1998, completed to a depth of 390 feet below ground surface (bgs) and screened from 320 feet to 380 feet bgs with a 20-inch diameter, 80-slot (0.08-inch openings) stainless steel well screen.

Well 7 was drilled in 1997, completed to a depth of 303 feet bgs and screened from 235 feet to 295 feet bgs with a 10-inch diameter, 100-slot (0.1-inch openings) stainless steel well screen.

Well logs for both wells are included in Appendix A. Both wells are highly productive.

Table 2. Project Well Completion Details

Attribute	Well 6	Well 7
Ground Elevation (elevation, ft)	74	80*
Depth, ft bgs (elevation, ft)	390 (-226)	300 (-220)
Screen Interval ft bgs (elevation, ft)	320 to 380 (-246 to -206)	235 to 295 (-155 to -215)
Approximate Static Water Level ft bgs (elevation, ft)	14 (60)	12 (68)
Approximate Capacity (gpm)	2,400 (current capacity)	4,000 (past observed capacity)

Note:
*Well 7 surface elevation is approximate.

Golder Associates produced a technical memo on Well 6 and 7 in 2013 describing the rehabilitation progress for the two production wells (Golder, 2016). Since it was drilled in 1999, the capacity of Well 6 had decreased by about 75 to 79 percent. It was restored to

production capacity of 2,400 gpm following rehabilitation in 2017. Well 7 had showed a specific capacity decrease of about 6 to 7 percent compared to when it was drilled in 1997.

Well 7 is currently not in use due to high levels of manganese. The City plans to install a manganese treatment system for Well 7, which would allow for the ongoing use of Well 7. A phased implementation of the treatment system is proposed. The initial phase is planned for the medium-term planning horizon and will treat half of the well's capacity, and phase 2 in the long-term planning horizon will treat the entire well capacity (Carollo, 2015).

4 Regulatory Setting

4.1 Instream Flow Regulations

4.1.1 Overview of WAC Chapter 173-509

New appropriations in the Green-Duwamish Basin are subject to instream flow regulations (WAC Chapter 173-509) that were adopted in 1980 and are senior to the City's water right application (G1-28404). The Green River instream flow regulations (WAC 173-509-030) are based on the measured streamflows at two U.S. Geological Survey (USGS) gauging stations on the Green River: the Green River near Palmer (12.1067.00) and the Green River near Auburn (12.1130.00). The Palmer gauge is approximately 20 miles upstream of Auburn and the Auburn gauge is located approximately ½ mile east of Wells 6 and 7 just upstream of the 8th Street NE bridge.

Per WAC 173-509-030(1), the Auburn gauge will be used to condition future water right appropriations downstream from the Palmer gauge. Therefore, the withdrawals from Wells 6 and 7 associated with G1-28404 will be subject to the instream flow regulations as measured at the Auburn gauge. In addition to establishing instream flows, WAC Chapter 173-509 incorporated the 1953 administrative closure of all tributaries to the Green River.

WAC Chapter 173-509 effectively requires mitigation (offsets) for any potential impacts to the Green River when instream flows are not met. Further, under the *Postema* decision, potential impacts to closed tributary streams may affect the availability of water for a new groundwater appropriation. WAC 173-509-050 provides: "Future groundwater withdrawal permits will not be affected by this chapter unless such withdrawal would clearly have an adverse impact upon the surface water system contrary to the intent and objectives of [WAC Chapter 173-509]."

With respect to Green River mitigation, relevant considerations include predicting precisely when streamflows will drop below the ISFs, and the lag time associated with impacts to instream flows from groundwater withdrawals.

4.1.2 Summary of Instream Flow Statistics

A review of historical streamflow data indicates that on average streamflows are below the ISFs at the Auburn gauge approximately 20 percent of the time (Table 3). Streamflows are generally more often below the minimum ISFs during the summer months, falling below the minimum ISFs 35 percent to 61 percent of the time between June and September. The flows are frequently above the minimum ISFs during the spring and winter months but can drop to below ISFs at any time of the year. For example, in April, streamflow falls below the minimum ISFs approximately 3 percent of the time.

ISFs are not met more frequently during dry years and less frequently during wet years. For example, in Water Year 1992 (dry year) instream flows were not met on 54 percent of the days (196 days), while in Water Year 2014 (wet year) instream flows were not met on only 2 percent of the days (7 days). Figure 8 shows that streamflows at the Green River gauge near Auburn have been below ISFs in only 8 years (20%) of the 40-year

period of record (Water year 1981 through Water Year 2020) between the months of February to April.

Table 3. Average Percent of Days Below Minimum Instream Flows (1981-2020)

Month	Green River Near Auburn, WA (USGS 1214900)	Green River at Purification Plan Near Palmer, WA (USGS 12106700)
January	5%	2%
February	5%	3%
March	5%	6%
April	3%	3%
May	8%	5%
June	35%	26%
July	44%	45%
August	61%	56%
September	43%	31%
October	23%	25%
November	16%	11%
December	10%	4%
Average	20%	18%

Notes:

1. Minimum instream flows from WAC 173-509-030; withdrawals from G1-28404 will be subject to instream flows at the Auburn gauge.

2. The period of record is for Water Year 1981 (October 1990) through Water Year 2020 (September 2020), which represents the full (complete year) period of record since the Green-Duwamish Basin instream flow regulations became effective.

The historical data show that there have been long consecutive periods when streamflows have remained above instream levels. For example, streamflows at the Auburn gauge remained above instream flows from October 14, 2009, to August 11, 2011, a period of 680 consecutive days. The difficulty, however, is predicting when interruptions will occur, particularly during the summer and early fall when streamflows are low and relatively close to instream flow levels.

Interruptions are more predictable during the winter months. The data show that interruptions will not occur for relatively long periods of time after high flow events in the winter months because streamflows recede relatively slowly in the Green River in the winter. For example, when streamflows exceed 4,000 cfs between January and April, the historic data show that streamflows will remain above instream flow levels for at least 25

days. Table 3 shows the minimum, average, and maximum number of days before an interruption occurred in the Green River at various high flow levels. The predictability of interruptions not occurring during these periods may provide some operational flexibility in the pumping of Wells 6 and 7, depending on the rate of streamflow depletion after pumping stops.

Table 4. Consecutive Days without Interruptions during Winter Months (January through April)

Range of Green River Streamflow (Auburn Gauge), January to April	Minimum Number of Days before interruption	Average Number of Days before interruption	Maximum Number of Days before interruption
0 - 999	0	66	601
1,000 – 1,999	2	116	600
2.000 – 2,999	5	133	595
3.000 – 3,999	13	167	597
4,000 – 4,999	25	162	596
5,000 – 5,999	25	170	525
6,000 – 6,999	26	141	528
7,000 – 7,999	27	158	527
8,000 – 8,999	28	168	503
9,000 – 9,999	97	154	502
10,000 +	98	156	219

Note:
The period of record is for Water Year 1981 (October 1990) through Water Year 2020 (September 2020), which represents the full (complete year) period of record since the Green-Duwamish Basin instream flow regulations became effective.

4.2 Existing Water Rights in Project Vicinity

Existing senior water rights in the vicinity of Wells 6 and 7 are shown on Figure 9. The following senior water rights within an approximately 1-mile radius of the Project were identified in Ecology's database:

- Surface water rights include 22 certificated rights and 1 water right claim, as well as 1 permit that is not a certificated right.
- Groundwater rights records include 14 certificated rights and 6 water right claims, as well as 6 permits that are not certificated rights.

The instream flow regulations and required mitigation elements associated with G1-28404 effectively eliminates the potential for impairment to senior surface water rights. The closest existing groundwater right is located approximately one-half mile northeast

from Well 6 and 3/4 mile northeast from Well 7. Impairment to existing senior groundwater rights associated with G1-28404 is unlikely considering the productivity of the aquifer and minimal radial drawdown response measured during previous aquifer testing in the lower alluvial aquifer (Golder, 2016).

A specific requirement in Phase 2 of the Preliminary Permit (Testing and Analysis) is to conduct a pumping test on the Supply Well and a more thorough assessment of potential impairment to senior rights will be included in that analysis.

4.3 Competing Applications in Project Vicinity

Geomatrix (2006) reviewed water right applications with priority dates senior to G1-28404 in the project vicinity in 2006. That review identified 14 senior applications in WRIA 9 (Green-Duwamish) that were determined to involve withdrawal from the same water source as G1-28404. The applications were filed from five different applicants: King County Water District 111, Lakehaven Utility District, City of Kent, City of Seatac, and Mariani Water Systems. Ecology has rejected all fourteen applications since 2006 and none are currently active. Several new applications have been filed in WRIA 9 since 2006 that remain active but those applications are junior to G1-28404 and cannot impair any potential use associated with G1-28404.

Geomatrix (2006) also identified four senior applications in the White River basin that could potentially involve withdrawal from the same water source as G1-28404. Since 2006, Ecology has processed three of the four applications as part of the Lake Tapps project and only one application remains active:

- **Henry Flatt (G2-30254)**. Application for domestic and irrigation use with a May 13, 2005 priority date. The application requests 150 gpm of groundwater to irrigate 2.5 acres. The place of use is southwest (upgradient) of Lake Tapps (T20N, R5E, S36) and approximately 8 miles from Wells 6 and 7. Ecology's WRATS database lists the application as active. No other documentation beyond the application form is available. The potential withdrawal under G1-28404 is unlikely to impair use associated with this application.

4.4 Preliminary Mitigation Sources

The proposed withdrawals from Wells 6 and 7, and/or a new well location will require mitigation of impacts to the Green River, and potentially the White River and/or other tributaries including Mill Creek. Conceptual mitigation sources to address potential impacts to streamflows in the Green River, White River and Mill Creek are provided in the following sub-sections. Additionally, general mitigation measures are provided that could be used to provide additional mitigation if warranted after Phase 2 testing and analysis.

4.4.1 Potential Sources for Green River Mitigation

Managed Use of Existing Authorizations: This option would involve the managed use of the City's existing water rights portfolio to minimize authorized withdrawals under G1-28404 during periods when Green River streamflows are below or near the ISFs. This option requires additional analysis of the timing and location of streamflow impacts associated with the pumping of Wells 6 and 7. If the timing, and specifically the stream

depletion lag times after pumping stops can be sufficiently characterized, the City could cease withdrawing under G1-28404 at predefined streamflow levels and then provide mitigation (using the potential options listed below) to offset small impacts associated with stream depletion lag times that may persist for longer durations after pumping stops.

The City could utilize its other existing points of withdrawal when ISFs are not met, including the preferential use of withdrawals from its sources in the White River drainage (Algona Well, Coal Creek Springs, and potentially Well 3A/3B).

The specific operational elements are to be determined and would utilize estimates of groundwater travel times, stream depletion lag times, and the City's water demand projections. This analysis would be developed and performed as part of Phase 2 (Testing and Analysis) of the Preliminary Permit.

Non-Use of Existing Municipal Water Right Authorizations: This option would entail cessation of authorized withdrawals under the City's various senior water rights to offset impacts to instream flows. Conceptually, this measure would be combined with the City withdrawing water under G1-28404 only during periods when instream flows are met; any impacts to the Green River would be offset by a commensurate level of non-use of other senior water rights.

Diversions from White River Sources: This option is the most conventional form of mitigation: diversion of water from a separate watershed to augment streamflows in a different watershed. Potential scenarios include diversion of both surface and/or groundwater. Surface water from the Cascade Water Alliance as discussed in Section 4.3.2 could be pumped into the Green River and/or into infiltration basins to facilitate delayed recharge to the Green River. The use of infiltration basins is described in Section 5.1.4.

Use of Water from Howard Hansen Dam: This option entails purchasing water from Tacoma Public Utilities (Tacoma) that is stored in Howard Hansen Dam. The City would purchase water from Tacoma under its existing agreement with Tacoma for purchasing water from Pipeline 5. Instead of the City withdrawing the chlorinated and fluoridated water from Pipeline 5 and discharging it after de-chlorination into the Green River, Tacoma would release the purchased water from Howard Hansen Dam into the Green River to mitigate potential impacts.

4.4.2 Potential Sources for White River Mitigation

2010 Water Resources Agreement with Cascade Water Alliance (CWA). The Cities of Auburn, Bonney Lake, Buckley, and Sumner entered into the 2010 Lake Tapps Area Water Resources Agreement with CWA (February 5, 2010), in consideration of CWA's purchase of Lake Tapps for water supply from Puget Sound Energy. This Agreement is intended to offset the impact of CWA's future water supply withdrawals from Lake Tapps on the water resources of the four cities. The Agreement provides for CWA to set aside Regional Reserved Water for use by the four cities to mitigate loss of water supply, in the amounts of 7 cfs for average daily demand and 10 cfs for peak demand. Auburn's share of the Regional Reserved Water is 1.3 million gallons per day (mgd) average daily demand and 2.5 mgd peak demand (3.88 cfs). Auburn would use this mitigation water by

keeping the water in the White River rather than diverting it, by having CWA release water into the White River from the Lake Tapps tailrace.

Use of the Algona Well. The municipal water right associated with the City's Algona Well (G1-22769C) could be allocated to preserve groundwater resources or support instream flows on an annual and continuous basis. The water right for the Algona Well authorizes instantaneous withdrawals up to 500 gpm (1.1 cfs) and an annual quantity of 75 afy.

4.4.3 Potential Sources for Mill Creek Mitigation

Use of West Hill Springs. The municipal water right associated with the West Hill Springs (S1-049354CL) could be allocated to support instream flows on an annual and continuous basis. The water right for West Hill Springs authorizes instantaneous withdrawals up to 625 gpm (1.4 cfs) and an annual quantity of 1,010 afy. West Hill Springs discharges into Mill Creek to the northwest of Wells 6 and 7 at River Mile 4.25 on Mill Creek.

Direct discharge of City Water. This option would entail discharge of City water directly into Mill Creek. The water that is discharged could be sourced from any of the City's authorized sources that do not adversely impact Mill Creek (i.e., anywhere except Wells 2, 6, and 7). The City has identified a potential point of discharge downstream of West Hill Springs at approximately River Mile 6.2.

4.4.4 Additional Mitigation Options

Additional mitigation options could be utilized to offset potential impacts at various locations and drainages. The conceptual element is to utilize infiltration basins that are hydraulically connected to surface water such that water will infiltrate to the shallow groundwater system and eventually discharge to surface water. The lag time response to the surface water is a function of the location of the infiltration basins relative to the target surface water location and the shallow groundwater travel times. The infiltration basins could be operated on a continuous or near-continuous basis to provide a relatively constant surface water benefit during periods of use from G1-28404. The source water introduced into the infiltrations could be obtained from multiple sources but would be operated in a similar conceptual manner, as detailed below.

Infiltration of Reclaimed Water: The use of infiltration basins to benefit streamflows is a potential reuse opportunity for wastewater or reclaimed water. Wastewater from the City is currently sent to the King County Wastewater Treatment Division's regional sewer system.

Managed Aquifer Recharge: Water could be diverted from other drainages into infiltration basins. Alternatively, water could be captured from the same drainage as the target surface water body during seasonally wet periods when ISFs are met, and then allowed to infiltrate slowly to provide streamflow benefits during periods when ISFs are potentially not met. This type of system is conventionally known as managed aquifer recharge.

4.5 Preliminary Mitigation Estimates

The City's water right application (G1-28404) requests 13,443 acre-feet per year (Qa; afy) and 12,500 gallons per minute (Qi; gpm). However, based on their current water rights and future demand projections (Section 2.2 and 2.3), the full quantity will likely not be needed to meet the projected future water demand. As noted in Section 2.4, the City is currently re-evaluating its demand projections. The mitigation requirements will be a function of the updated demand projections and the projected use from G1-28404 to meet the projected demand.

Quantification of the projected use under G1-28404 and the potential impacts to streamflows from that use will be evaluated in Phase 2 (Testing and Analysis). The City plans to utilize a detailed regional groundwater flow model being developed by the USGS to predict the potential impacts to surface water and associated lag times. The USGS has been developing the model for a number of years and it is currently in its final phase of testing and validation. Per recent communication with USGS staff, we anticipate the model will be ready for use by early- to mid-2022.

Mitigation offsets would be quantified based on the amounts necessary to address impacts of pumping under G1-28404 to surface water bodies that are subject to ISFs and closures in WAC Chapter 173-509. Because groundwater withdrawn from Wells 6 and 7 is hydraulically connected to surface water, a 1:1 offset would be needed unless the authorized pumping under G1-28404 can be managed such that the pumping will occur during periods when ISFs are met. Under this managed pumping scenario, mitigation offsets would be identified to address the delayed impacts to surface water after pumping stops.

The City anticipates utilizing the various mitigation strategies presented in Section 5.1 to develop a mitigation program meeting the requirements of RCW 90.03.290 and WAC Chapter 173-509.

5 Project Next Steps

We understand that Ecology has a 60-day period upon submittal of this CMP to review and provide comments. The City will address comments, as needed, based on the nature and extent of the comments. The City may request a meeting with Ecology to discuss the CMP and the potential scope of work for Phase 2 following Ecology's review and comment period for this report.

Per the Preliminary Permit, the Testing and Analysis Plan (Phase 2) is due to Ecology on October 15, 2022, and the Final Mitigation and Compliance Plan (Phase 3) is due October 15, 2023. The City plans to utilize a USGS groundwater flow model as part of Phase 2 (Section 5.2). The model is expected to be ready for use by early- to mid-2022. The City may request a reasonable extension to the remaining Preliminary Permit schedule to facilitate the use of the USGS model.

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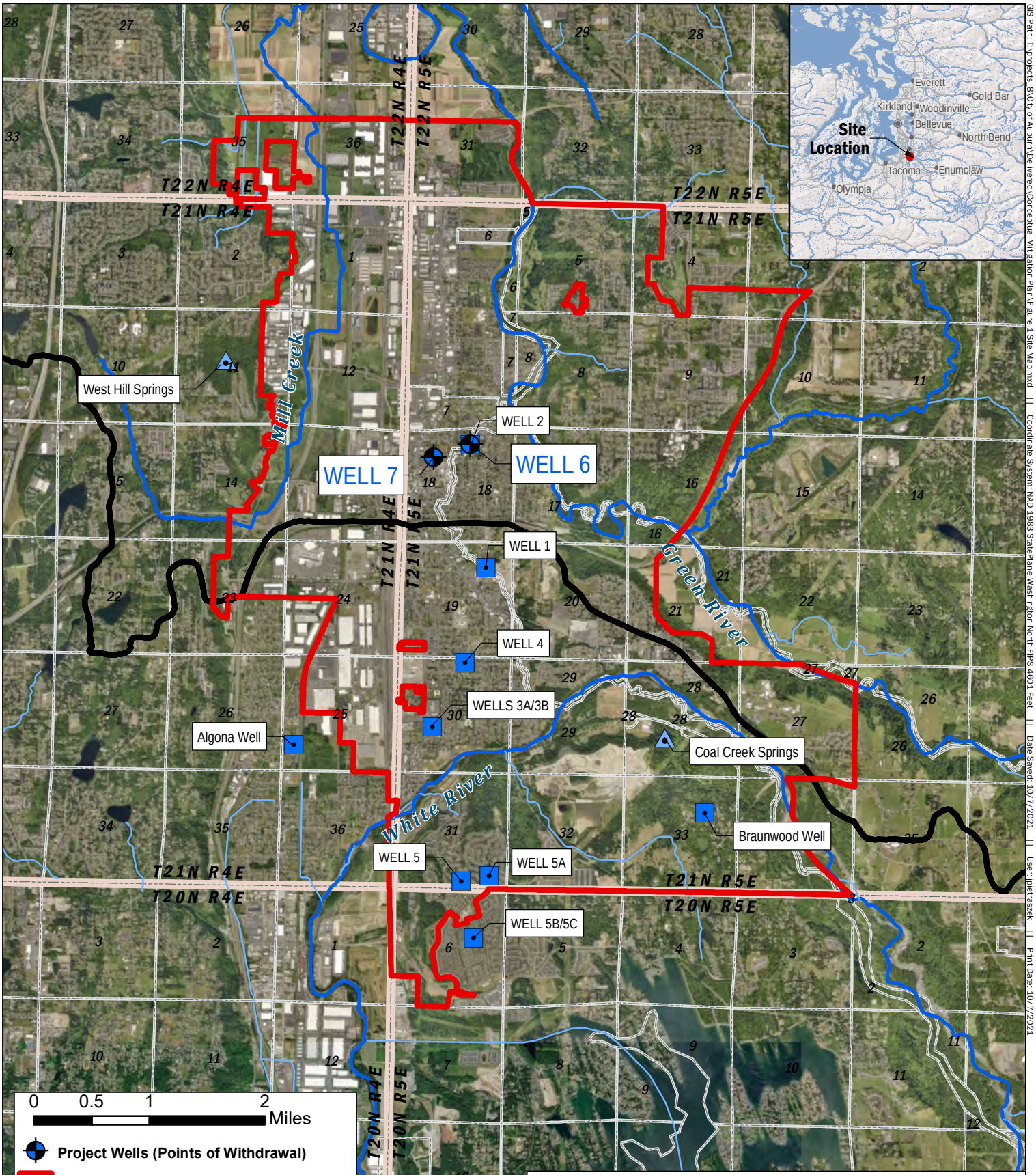
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Limitations

Work for this project was performed for the City of Auburn (Client), and this report was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

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FIGURES



Site Map

Conceptual Mitigation Plan
City of Auburn
Auburn, Washington

Aspect CONSULTING	OCT-2021	BY: JHP	FIGURE NO. 1
	PROJECT NO. 210355	REVISED BY: ---	

Basemap Layer Credits || Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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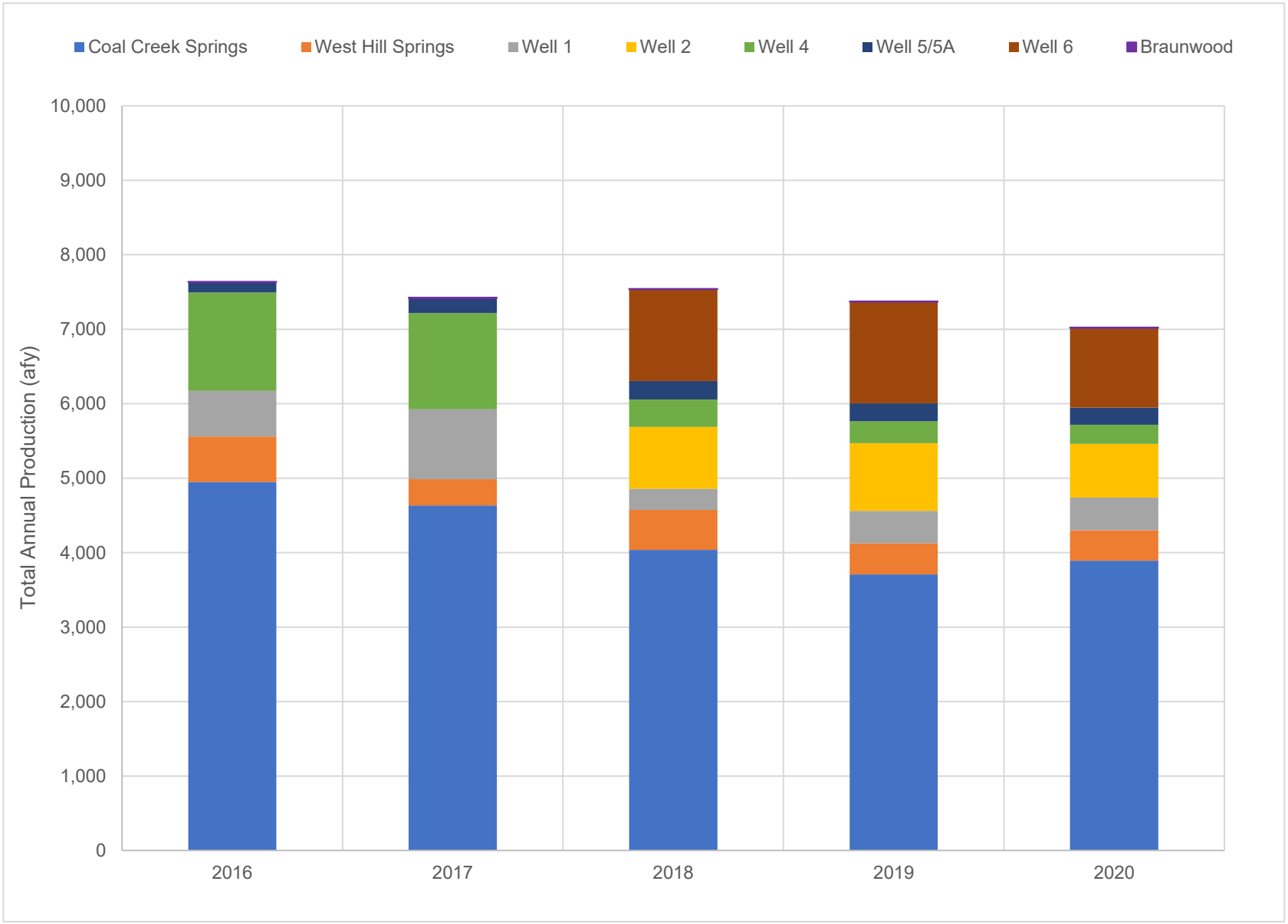
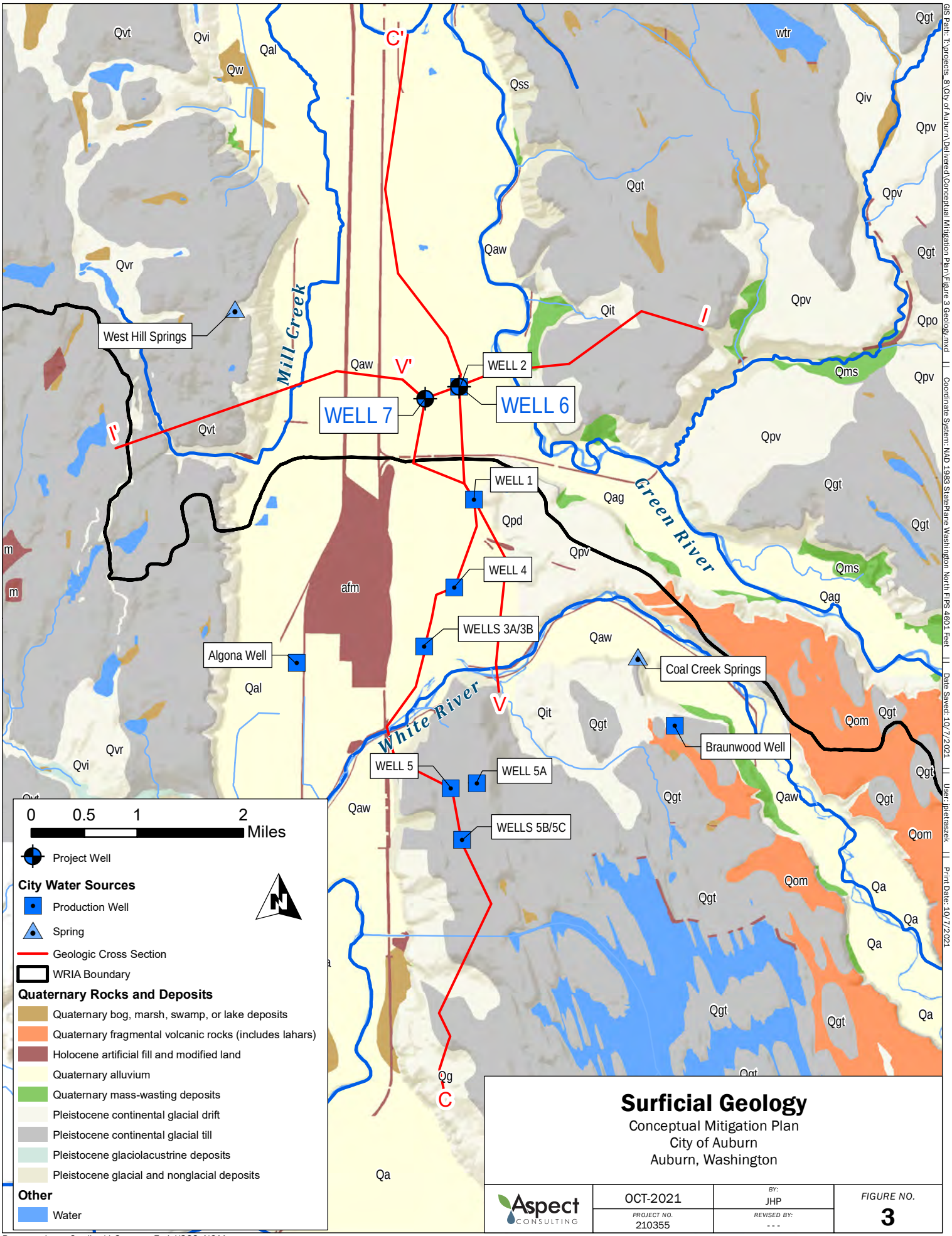


Figure 2
Annual Water Use (2016-2020)
Conceptual Mitigation Plan
City of Auburn, Auburn, WA

Aspect Consulting
10/7/2021
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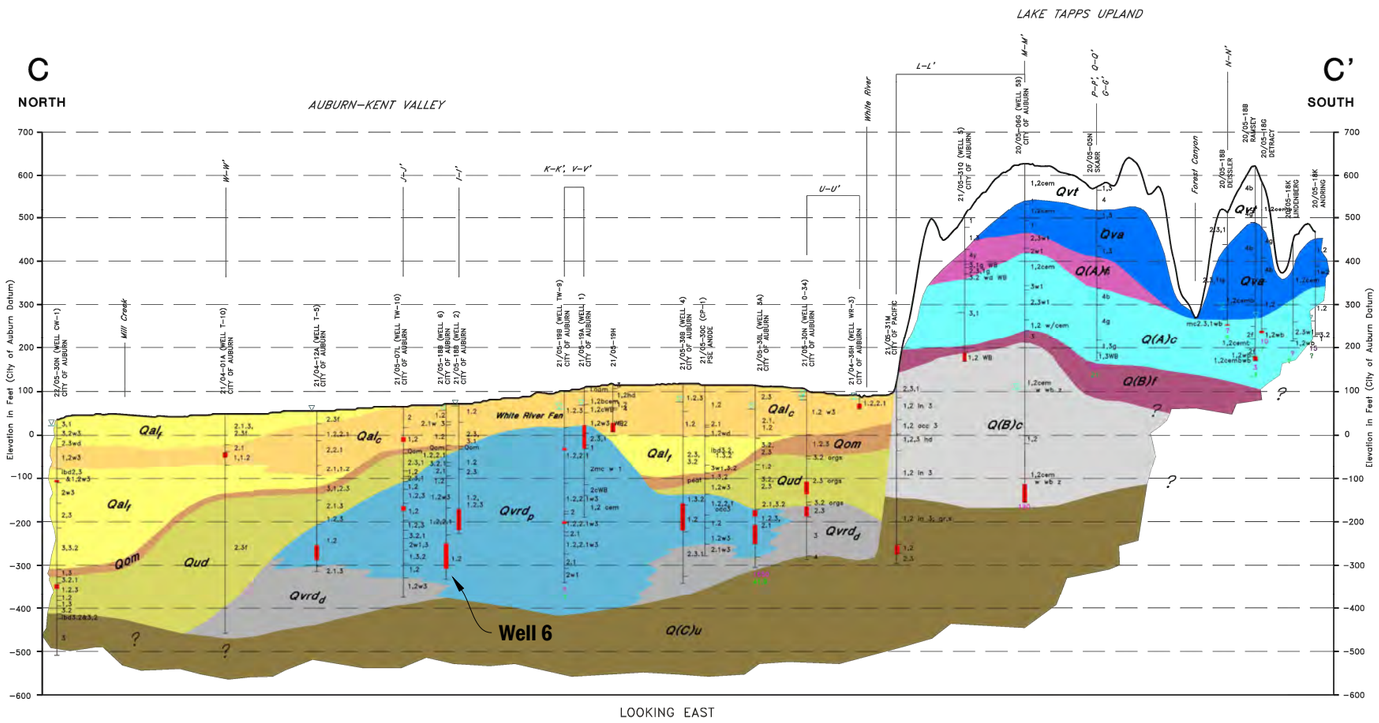
Surficial Geology

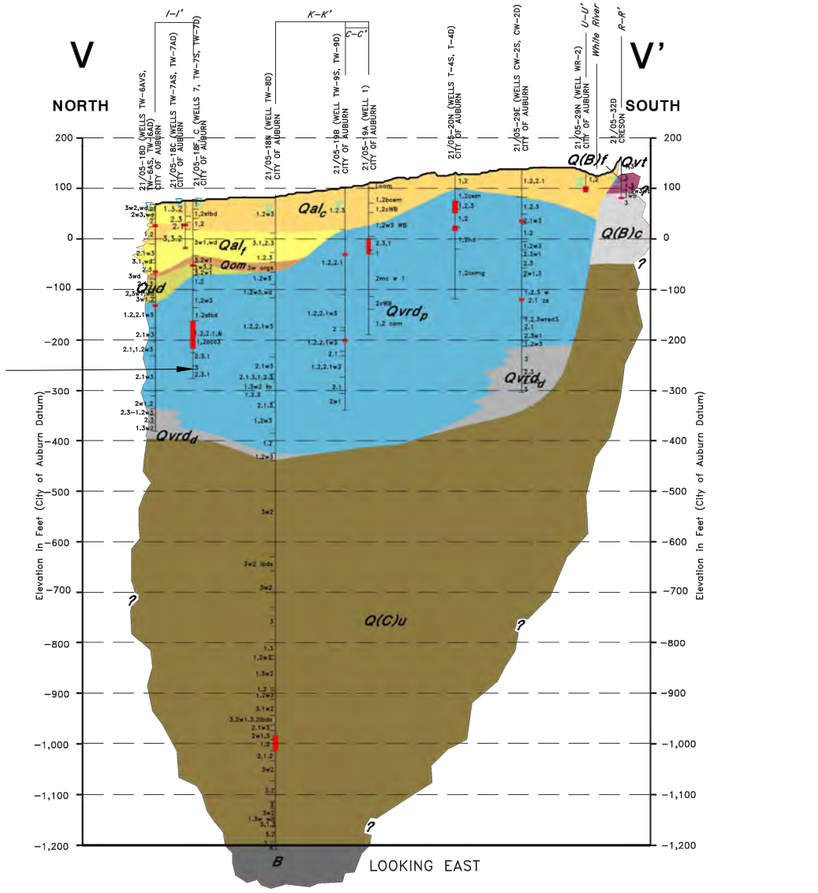
Conceptual Mitigation Plan
City of Auburn
Auburn, Washington

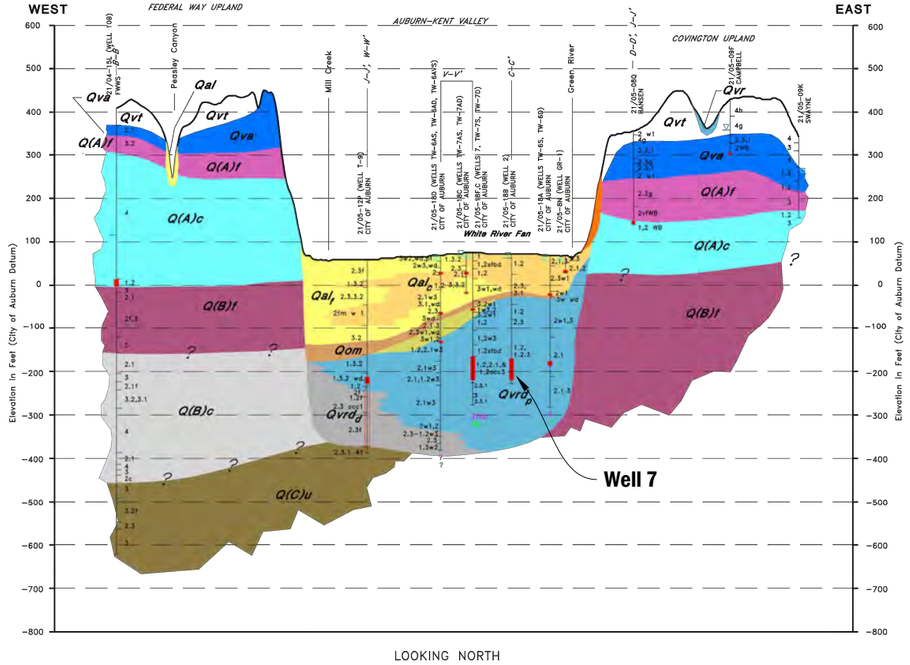
Aspect Consulting	OCT-2021	BY: JHP	FIGURE NO. 3
	PROJECT NO. 210355	REVISED BY: ---	

Basemap Layer Credits || Sources: Esri, USGS, NOAA

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Source: All images from PGG, 1999.

KEY TO LITHOLOGIC UNITS ON HYDROGEOLOGIC CROSS SECTIONS

- Qal_f — Modern alluvium, fine-grained facies: Fine sand, silt, and clay deposited by the Green and White Rivers and their tributaries
- Qal_c — Modern alluvium, coarse-grained facies: Sand and gravel deposited by the Green and White Rivers and their tributaries; includes the Green and White River Fans
- Qom — Osceola Mudflow: Poorly-sorted sand, gravel, silt and/or clay with boulders and organic debris
- Qud — Ancient undifferentiated deltas: Mostly fine sand, silt, and clays of the Ancient Auburn and Ancient Green River Deltas; contains shells
- Qm — Mass wasting deposits: Landslide debris and colluvium
- Qvrd_d — Vashon recessional outwash distal delta deposits: Fine sand, silt, and clay deposited in the distal reaches of the Vashon recessional delta
- Qvrd_p — Vashon recessional outwash proximal delta deposits: Coarse sand and gravel deposited in the proximal reaches of the Vashon recessional delta
- Qvr — Vashon recessional outwash: Sand and gravel deposited by the ancient Wilderness River
- Qvt — Vashon till: Poorly-sorted, unstratified, hard, silt, sand, gravel, and boulders deposited under the bottom of the Vashon glacier
- Qva — Vashon advance outwash: Sand and gravel deposited by glacial outwash streams
- Q(A)f — Upper fine-grained unit: Mostly clay, silt, and fine sand of interglacial origin, but may include some till and unsorted glacial drift
- Q(A)c — Upper coarse-grained unit: Sand and gravel with interbedded till sheets and clay lenses; probable glacial drift sequence
- Q(B)f — Lower fine-grained unit: Mostly clay with silt and fine sand; interglacial in origin
- Q(B)c — Lower coarse-grained unit: Probable glacial drift sequence
- Q(C)u — Undifferentiated and unconsolidated deposits: Unconsolidated sediments of interglacial and glacial origin
- # — Bedrock: Cemented sandstone, shale, and some volcanic and intrusive igneous rocks

KEY TO LITHOLOGIC DESCRIPTIONS ON HYDROGEOLOGIC CROSS SECTIONS

1 = GRAVEL
2 = SAND
3 = SILT/CLAY
4 = TILL
"," = and
"." = modifier

b = brown
g = gray
y = yellow
or = orange
w = with

v = very
f = fine
m = medium
c = coarse

loos = loose
hd = hard
cem = cemented
heav = heaving

wd = wood
pt = peat
sh = shale, shells
orgs = organics

wb, WB = water bearing
z = zones
lbd = interbedded
ss = sandstone
occ = occasional

EXAMPLES:

1,2cemb = Brown cemented SAND and GRAVEL
2mcb w 1 = Brown, medium to coarse SAND with GRAVEL
2.3f occ wd = Silty fine SAND with occasional wood
lbd 1,2 WB = Interbedded water-bearing SAND and GRAVEL

KEY TO WELL LOGS

- 7E01 — Well identifier
- Water level at time of drilling
- Geologic contacts
- Screened interval
- # — Pumping rate (gpm)
- # — Specific capacity (gpm/ft)

Horizontal Scale: 1" = 7000'
Vertical Scale: 1" = 350'
Vertical Exaggeration 20x

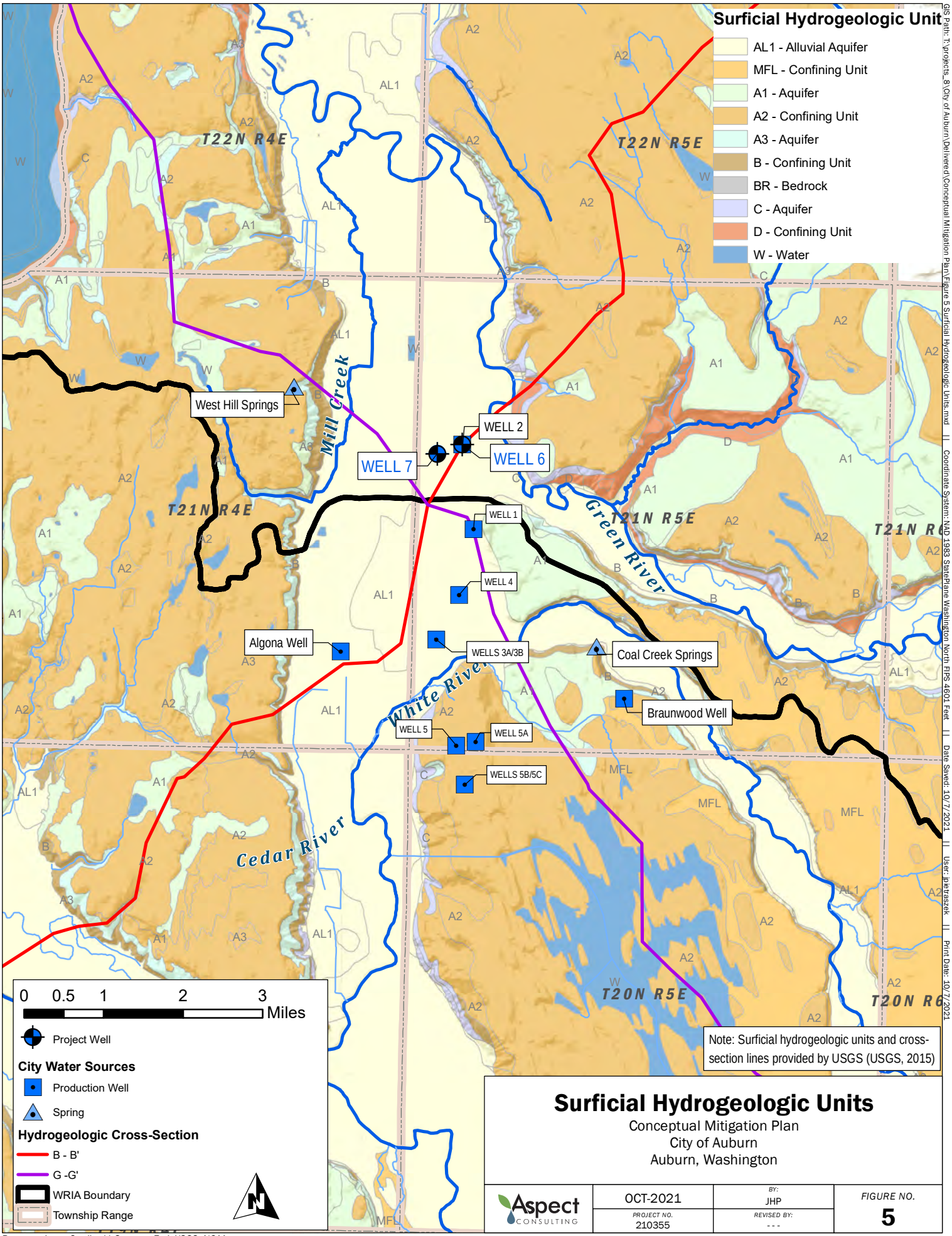
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Geologic Cross-Sections (from PGG, 1999)

Conceptual Mitigation Plan
City of Auburn
Auburn, Washington

Aspect CONSULTING	Oct-2021	BY: JP/SCC	FIGURE NO. 4
	PROJECT NO. 210355	REVISED BY: -	

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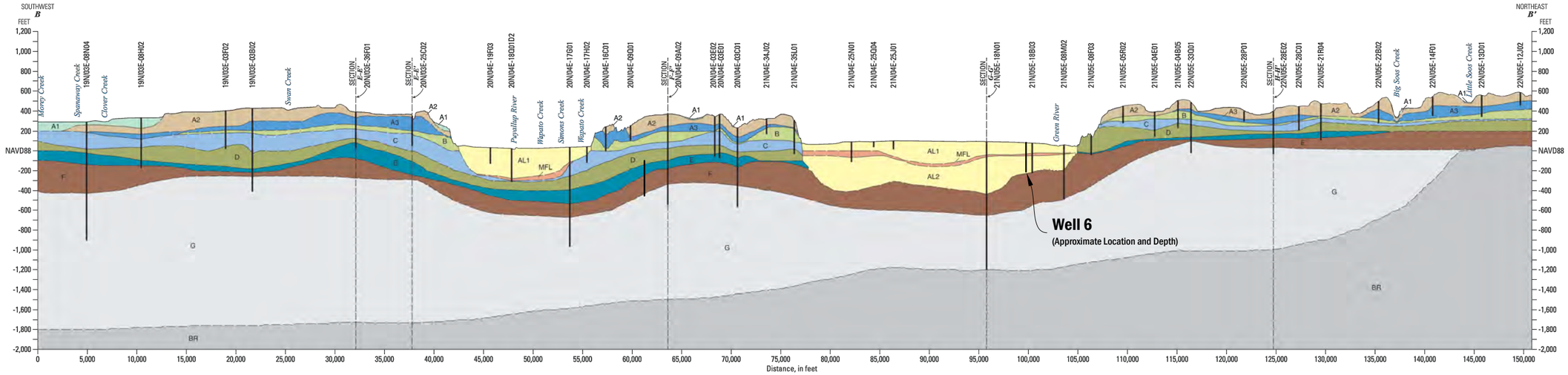
Surficial Hydrogeologic Units

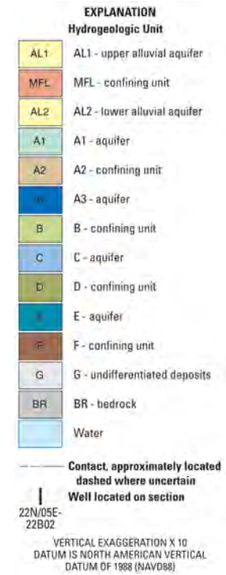
Conceptual Mitigation Plan
City of Auburn
Auburn, Washington

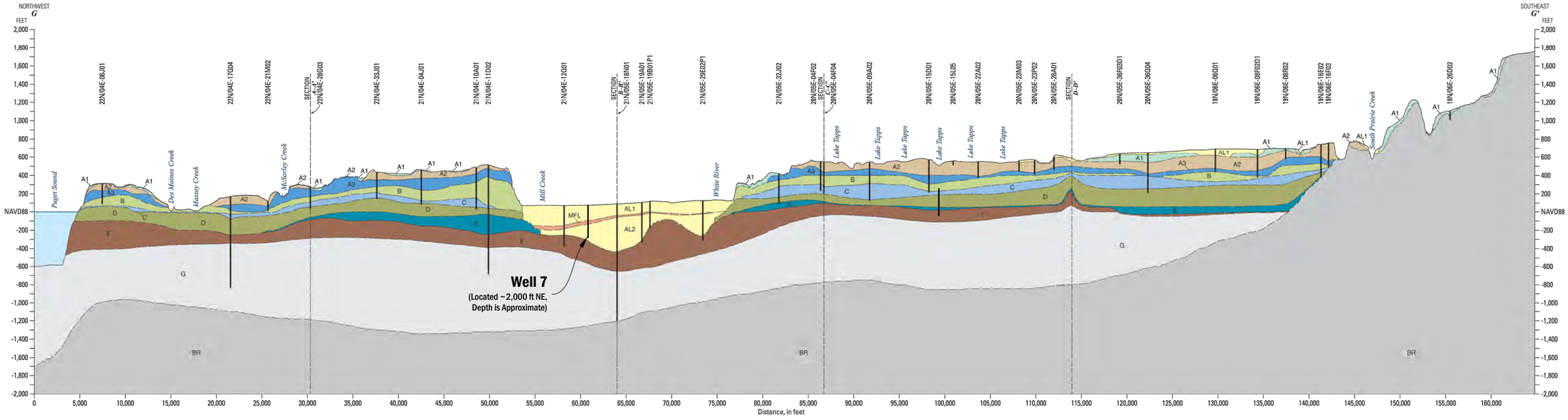
Aspect Consulting	OCT-2021	BY: JHP	FIGURE NO. 5
	PROJECT NO. 210355	REVISED BY: ---	

Basemap Layer Credits || Sources: Esri, USGS, NOAA

GIS Path: T:\projects_8\City of Auburn\Delivered\Conceptual Mitigation Plan\Figure 5 Surficial Hydrogeologic Units.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 10/7/2021 || User: jpetraszek || Print Date: 10/7/2021







Source: All images from USGS, 2015.

Horizontal Scale: 1" = 8000'
Vertical Scale: 1" = 800'
Vertical Exaggeration 10x

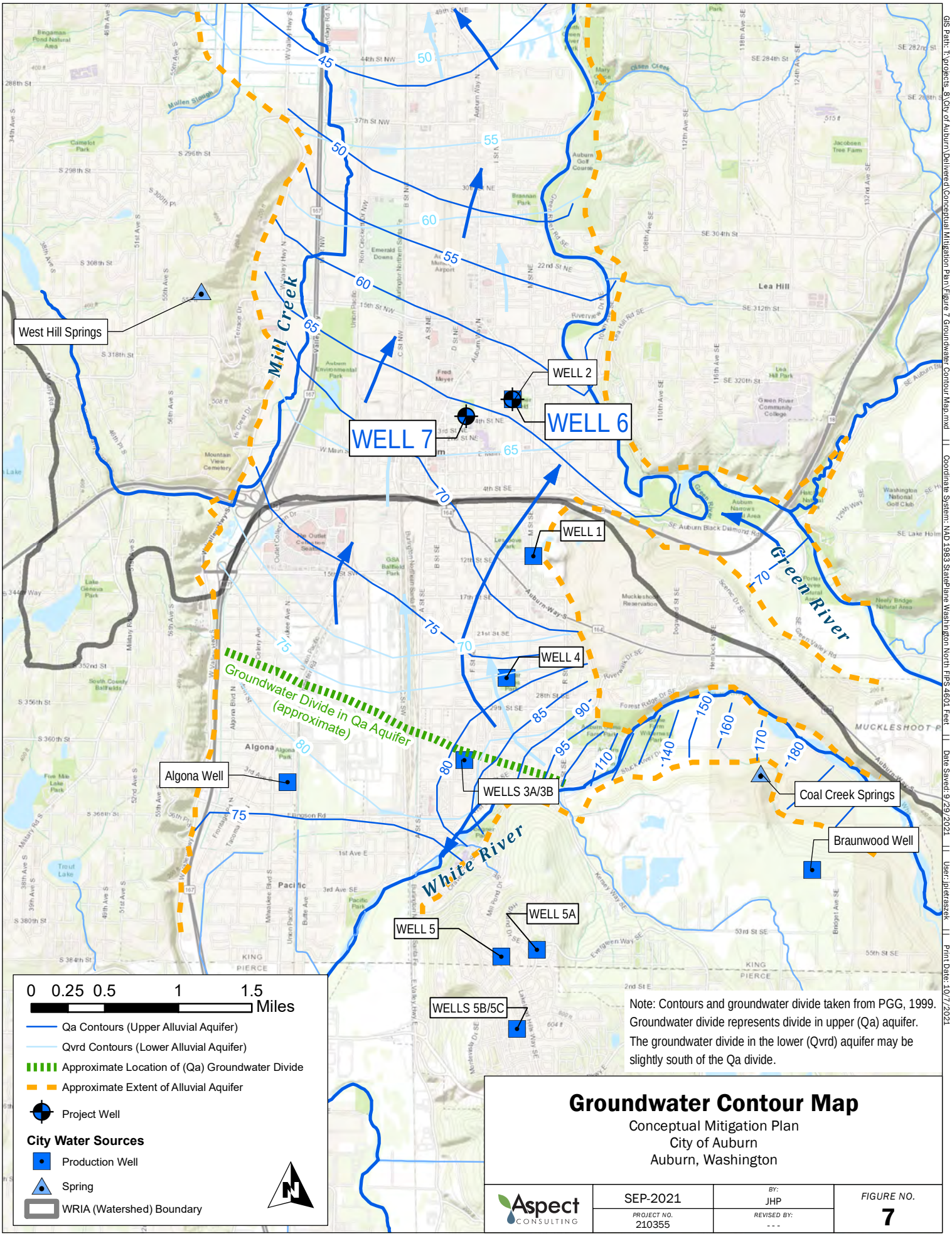
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Hydrogeologic Cross-Sections (from USGS, 2015)

Conceptual Mitigation Plan
City of Auburn
Auburn, Washington

Aspect Consulting	Oct-2021	BY: JP/SCC	FIGURE NO. 6
	PROJECT NO. 210355	REVISED BY: -	

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Groundwater Contour Map

Conceptual Mitigation Plan
City of Auburn
Auburn, Washington

Aspect Consulting	SEP-2021	BY: JHP	FIGURE NO. 7
	PROJECT NO. 210355	REVISED BY: ---	

GIS Path: T:\projects_8\City of Auburn\Delivered\Conceptual Mitigation Plan\Figure 7 Groundwater Contour Map.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 9/29/2021 || User: jpietraszek || Print Date: 10/7/2021

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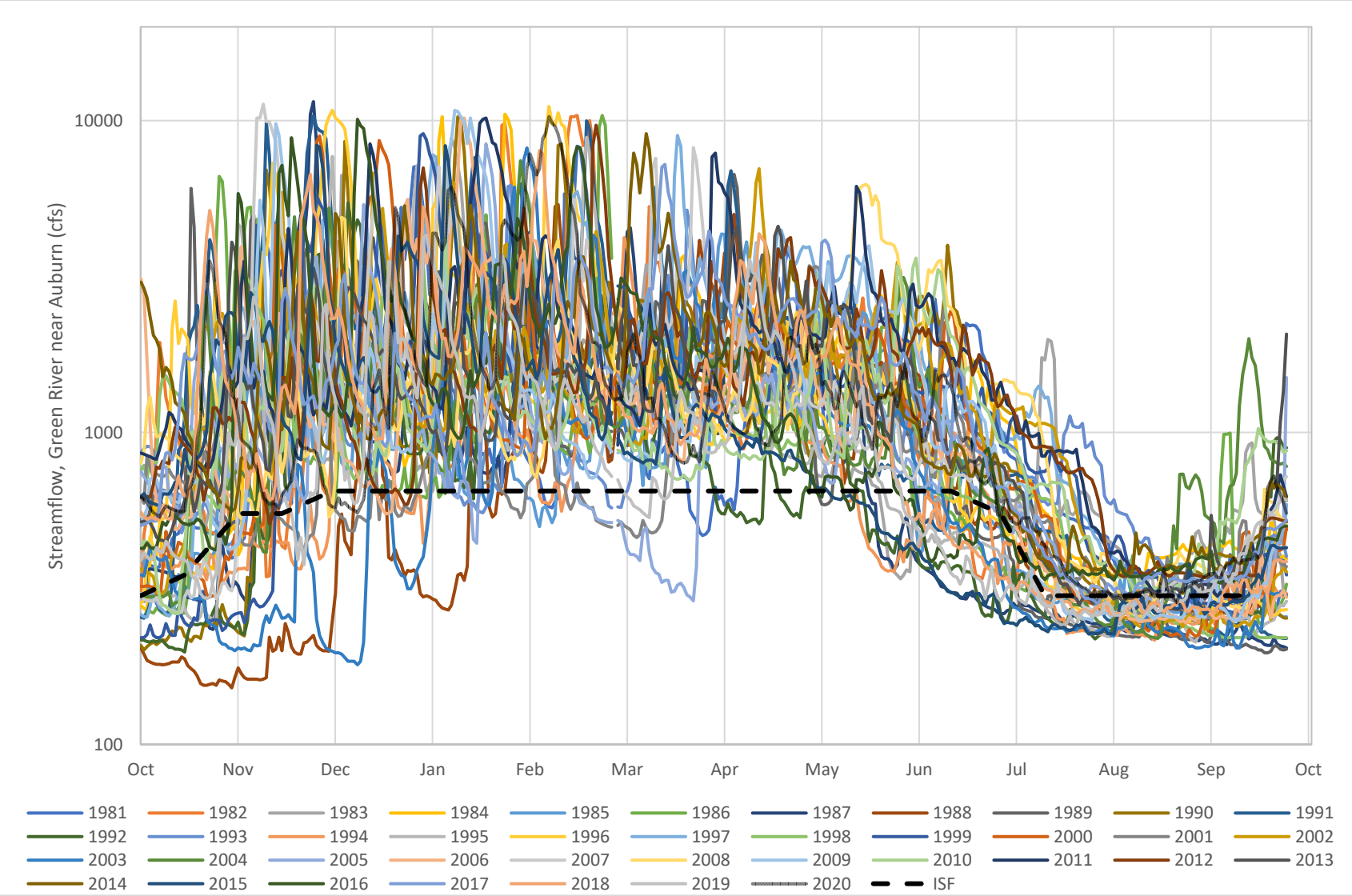
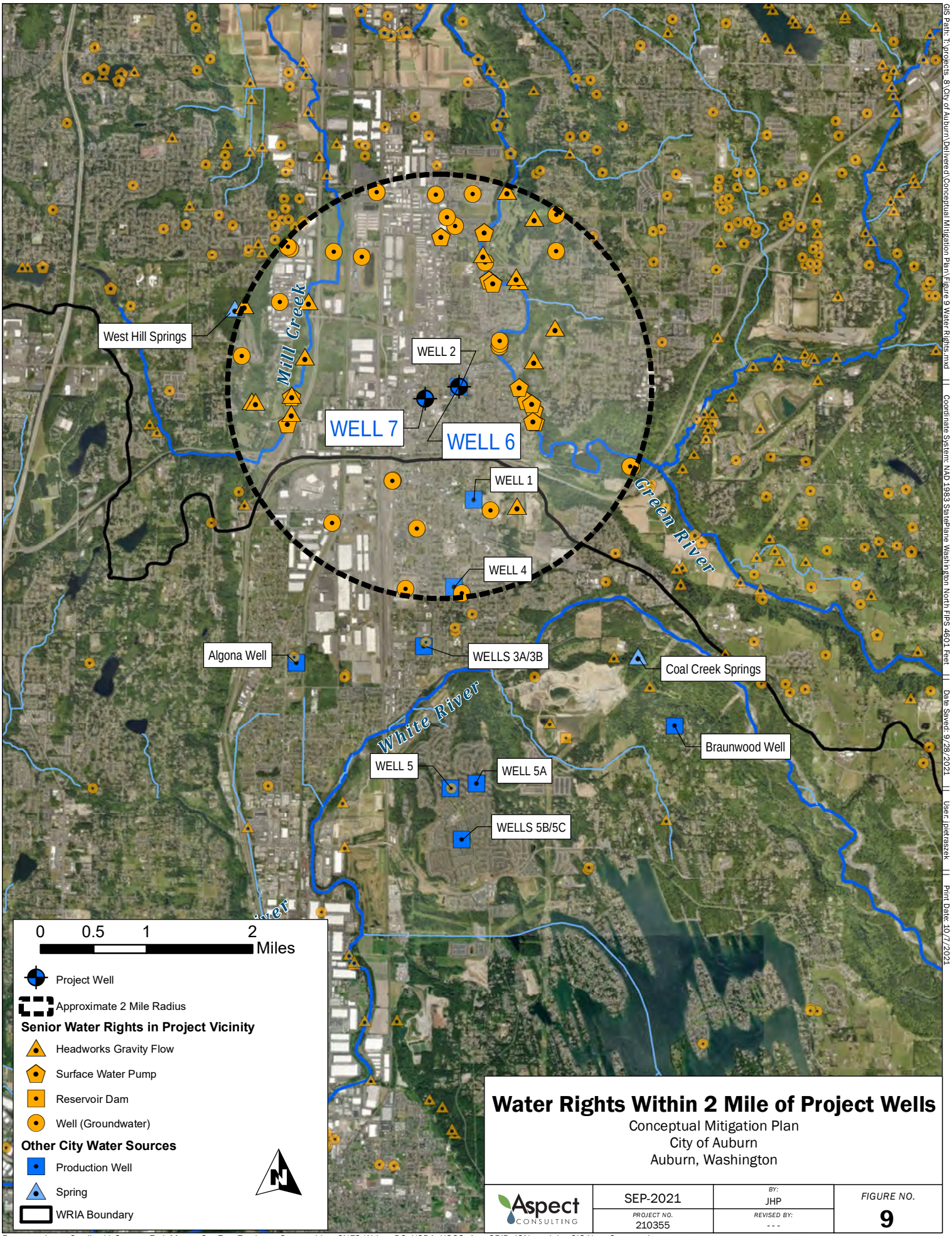


Figure 8
Comparison of Streamflows at the Green River near Auburn to WAC 173-509 ISFs

Conceptual Mitigation Plan
City of Auburn, Auburn WA

Aspect Consulting
9/28/2021
S:\City of Auburn\Data\Auburn ISF Analysis



Water Rights Within 2 Mile of Project Wells

Conceptual Mitigation Plan
City of Auburn
Auburn, Washington

Aspect Consulting	SEP-2021	BY: JHP	FIGURE NO. 9
	PROJECT NO. 210355	REVISED BY: ---	

Basemap Layer Credits || Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
EagleView Technologies, Inc.

GIS Path: T:\projects_8\City of Auburn\Delivered\Conceptual Mitigation Plan\Figure 9 Water Rights.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 9/28/2021 || User: jpietraszek || Print Date: 10/7/2021

APPENDIX A

Well Logs

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Start Card No. W074235
UNIQUE WELL I.D. # ABB 106
Water Right Permit No. 21-5E-18B

(1) OWNER: Name City of Auburn Address

(2) LOCATION OF WELL: County King NW 1/4 NE 1/4 Sec 18 T 21 N, R 5 E WM.

(2a) STREET ADDRESS OF WELL (or nearest address) 8th st NE + K st NE

(3) PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☒ ☐ Irrigation ☐ Test Well ☐ Other ☐ ☐ DeWater

(4) TYPE OF WORK: Owner's number of well (if more than one) Well #6
Abandoned ☐ New well ☒ Method: Dug ☐ Bored ☐ Deepened ☐ Cable ☒ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 24" inches. Drilled 400 feet. Depth of completed well 390 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 24" Diam. from +2 ft. to 322 ft.
Welded ☒ " Diam. from ft. to ft.
Liner installed ☐ " Diam. from ft. to ft.
Threaded ☐

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type 304 Stainless Model No.
Diam. 20 Slot size 80 from 320 ft. to 380 ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☒ No ☐ Size of gravel 4X6
Gravel placed from 390 ft. to 300 ft.

Surface seal: Yes ☒ No ☐ To what depth? 111' ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level Approx 14' ft. below top of well Date
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? Driller
Yield: 2500 gal./min. with 201 ft. drawdown after 72 hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Airtest gal./min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Sand + gravel - Cobbles	0	96
Silt bound sand + gravel	96	100
Silty clay	100	104
Brown + gray sand + gravel some silty layers	104	400

RECEIVED
JAN 20 1999
DEPT OF ECOLOGY

Work Started 1-23-98 19. Completed 9-98 19

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Holt Drilling Inc (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 1062 Todd Rd E
(Signed) (WELL DRILLER) License No. 1099
Contractor's Registration No. HOLTDI 1360G Date 1-14-99 19

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

ECY 050-1-20 (9/93)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

49802 MAY 14 1997 ENTERED

WATER WELL REPORT

STATE OF WASHINGTON

DEPT. OF ECOLOGY

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

PAGE ONE

Start Card No. W068301
UNIQUE WELL I.D. # ABE845
Water Right Permit No. 21-5-18C

(1) OWNER: Name City of Auburn Address 25 W. Main - Auburn, WA 98001

(2) LOCATION OF WELL: County King NE 1/4 NW 1/4 Sec 18 T 21N N, R 5E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) Corner 4th St NE and "E" St NE - in City Park - Auburn

(3) PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☒ ☐ Irrigation ☐ Test Well ☐ Other ☐ ☐ DeWater

(4) TYPE OF WORK: Owner's number of well (if more than one) Well #7
Abandoned ☐ New well ☒ Method Dug ☐ Bored ☐ Deepened ☐ Cable ☒ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 24 inches
Drilled 305 feet Depth of completed well 303 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 24" Diam. from 0 ft. to 305 ft
Welded ☒ Liner installed ☐ Threaded ☐
" Diam from ft. to ft.
" Diam from ft. to ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name JOHNSON
Type STAINLESS Model No. 304
Diam 18" Slot size 100 from 275 ft. to 295 ft.
Diam Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☐ Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 167 ft.
Material used in seal Bentonite Grout
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 11.5 ft below top of well Date 3-18-97
Artesian pressure lbs per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? PACIFIC GROUND WATER, INC. AND DRILLER
Yield: 3760 gal /min. with 157.5 ft. drawdown after 72 hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
0	157.5	360	0.8	3165	0.3
60	1.4	1265	0.5	4434	0.2
120	1.2	1800	0.4		

Date of test 3/12/97 - 3/18/97
Bailer test gal /min with ft drawdown after hrs.
Airtest gal./min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
BROWN SAND + GRAVEL W/ SOME WATER	0	10
TIGHT BROWN SAND + GRAVEL	10	19
SILTY BROWN SAND + GRAVEL W/ LITTLE WATER	19	26
BROWN SILTY SAND + GRAVEL	26	40
SAND & LARGE GRAVEL	40	48 1/2
TIGHT SAND, LARGE GRAVEL	48 1/2	56
GRAY SILTY SAND W/ SOME GRAVEL & LITTLE WATER	56	80
GRAY SILTY SAND W/ GRAVEL & WOOD - LITTLE WATER	80	100
GRAY SILTY SAND W/ WOOD & SOME GRAVEL	100	113
GRAY SILTY SAND W/ LARGE GRAVEL & LITTLE WATER	113	120 1/2
LARGE GRAVEL & SAND	120 1/2	126
GRAY, TIGHT LARGE GRAVEL & SAND	126	139
SILT + GRAVEL	139	141
GRAY SILTY SAND W/ GRAVEL	141	146
TIGHT SILTY SAND + GRAVEL	146	164
GRAY SAND W/ GRAVEL + SILT	164	167
GRAY SILTY SAND W/ LARGE GRAVEL	167	172
BROWN SAND & GRAVEL [redacted]	172	181
BROWN SAND, LARGE GRAVEL	181	185
CLAY + GRAVEL	185	186 1/2
W.B. CLAY BOUND SAND & GRAVEL	186 1/2	198
BROWN CLAY, SILTY SAND + GRAVEL - W.B.	198	216
SILTY GRAVEL	216	217
continued		

Work Started 9-30-96 Completed 4-2 19 97

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME CHARON DRILLING, INC. (PERSON, FIRM OR CORPORATION) (TYPE OR PRINT)
Address 12719 E. 224 ST - GRAHAM, WA 98338
(Signed) Dave Charon (WELL DRILLER) License No. 1190
Contractor's Registration No CHARODI133NF Date 5-6 19 97

(USE ADDITIONAL SHEETS IF NECESSARY)

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ECY 050-1 20 (9/93) * * 1

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

MAY 14 1997

ENTERED

File Original and First Copy with Department of Ecology — DEPT OF ECOLOGY
Second Copy — Owner's Copy
Third Copy — Driller's Copy — PAGE TWO

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W068301
UNIQUE WELL I.D. # ABE 845
Water Right Permit No. 21-5-18C

(1) OWNER: Name City of Auburn Address 25 W. Main - Auburn, WA 98001

(2) LOCATION OF WELL: County King NE 1/4 NW 1/4 Sec 18 T 21N N, R 5E WM.

(2a) STREET ADDRESS OF WELL (or nearest address) Corner of 4th St NE & "E" St NE - in City Park - Auburn

(3) PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☐ ☐ Irrigation ☐ Test Well ☐ Other ☐ ☐ DeWater

(4) TYPE OF WORK: Owner's number of well (if more than one) _____
Abandoned ☐ New well ☐ Method Dug ☐ Bored ☐ Deepened ☐ Cable ☐ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well _____ inches. Drilled _____ feet. Depth of completed well _____ ft.

(6) CONSTRUCTION DETAILS:
Casing installed: _____" Diam. from _____ ft. to _____ ft.
Welded ☐ _____" Diam. from _____ ft. to _____ ft.
Liner installed ☐ _____" Diam. from _____ ft. to _____ ft.
Threaded ☐

Perforations: Yes ☐ No ☐
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes ☐ No ☐
Manufacturer's Name _____
Type _____ Model No. _____
Diam. ____ Slot size _____ from _____ ft. to _____ ft.
Diam. ____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☐ No ☐ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☐ No ☐ To what depth? _____ ft.
Material used in seal _____
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name _____
Type _____ H.P. _____

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level _____ ft. below top of well Date _____
Artesian pressure _____ lbs per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom? _____
Yield. _____ gal./min. with _____ ft. drawdown after _____ hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
SILTY SAND W/LARGE GRAVEL	217	225
LARGE COBBLES & SAND (BROWN)	225	229
BROWN SILTY SAND & GRAVEL	229	231
BROWN SILTY SAND & GRAVEL W.B.	231	240
BROWN SAND & GRAVEL	240	245
BROWN SAND & GRAVEL -WB	245	264
BROWN SILTY SAND & GRAVEL	264	274
BROWN SAND & GRAVEL WB	274	294
BROWN/GRAY SILTY SAND W/LARGE GRAVEL -WB	294	303

Work Started 9-30-96 19. Completed 4-2-97 19

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Charon Drilling, LLC (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 12719 E. 224th St - Graham, WA 98338
(Signed) Dave Charon (WELL DRILLER) License No. 1190
Contractor's Registration No. CHARDDI133NE Date 5-6 19 97

(USE ADDITIONAL SHEETS IF NECESSARY)

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ECY 050-1-20 (9/93)

ROBINSON
NOBLE

CITY OF AUBURN
WELLHEAD PROTECTION PLAN
HAZARD INVENTORY UPDATE

NOVEMBER 2014

by



Kari A. Thomas
Project Geologist

Burt G. Clothier, LHG, RG, CPG
Principal Hydrogeologist

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City of Auburn
Wellhead Protection Plan Update
November 2014

Introduction

Under the Washington Administrative Code (WAC), public water systems have primary responsibility for developing and implementing local wellhead protection programs. Due to the limited jurisdictional and regulatory authority afforded most purveyors, it is essential they work with other local, state, and federal agencies possessing the appropriate authority. The Washington State Department of Health (Health) oversees the wellhead protection program.

The City of Auburn (City) developed a Wellhead Protection Plan to identify and protect the groundwater resources which supply the Well 1, 2, 3A, 3B, 4, 5, 5A, 5B, 6, and 7 wellfields; West Hill Springs; and Coal Creek Springs. The initial plan was created in 2000 by Pacific Groundwater Group (PGG). Robinson Noble provided a plan update in 2008 (Robinson, Noble & Saltbush, 2008). This report largely replaces that work. The study area, physiographic setting, and wellhead protection zones were defined in several works by PGG (1996, 1999 and 2000). Those reports remain valid for use in this project.

The plan meets the requirements of the Federal Safe Drinking Water Act and conforms to the wellhead protection measures directed by Washington State Department of Health. The study is divided into three primary areas of interest: 1) Wellhead Protection Area Delineation, 2) Existing and Potential Contamination Hazard Identification, and 3) Protection Strategies and Implementation Tasks.

The City is located in the Green River Valley between the City of Kent and the southern boundary of King County. Figure 1 shows the location of the City's wells and the approximate study area. The majority of the City is located in the valley, separated from the City of Kent to the north by the Green River. To the west is the Federal Way upland; to the east are the outlets of the upper Green and White River valleys. The City of Pacific resides to the south of the City along with the neighboring Lake Tapps upland. Ten production wells and two spring collection facilities are currently used to supply the City's needs. At the present time and into the near future, the use of groundwater constitutes the City's primary and most economical source of water.

Wellhead Protection Area Definition

A wellhead protection area (WHPA) defines the area surrounding a public water supply well where the well may be at risk from contaminants. It is based upon capture zones, which describe the area of the well's source aquifer (and all overlying material) that can contribute water to the well in a given period of time. Capture zones are typically defined for time-of-travel periods of one-half, one, five, and ten years. These four zones are defined by regulation as a management tool; actual contaminants reaching the source aquifer may move faster or slower than the calculated times-of-travel.

Typically, a "zone of contribution" is determined for the study area. The zone of contribution is the aquifer area which contributes groundwater to the wellfields independent of travel time. However, a zone of contribution was not determined in previous models. Therefore, for this

WHPA, we have defined a fifth zone which we label as the area of investigation. The area of investigation includes areas where potential surface water and stormwater runoff and surface water bodies may contribute to the groundwater in the WHPAs. However, the area of investigation we have delineated is likely much smaller than the actual zone of contribution would be. Based upon the existing WHPA zones and the generalized water flow directions of the shallow aquifer system, we delineated an area of investigation, which covers approximately 42 square miles, inside the zone of contribution. Stormwater runoff is considered in our area of investigation because it runs over the surface of the ground, picking up and dissolving potential contaminants, and may eventually discharge these contaminants to groundwater via infiltration through ditches or ponds designed to percolate water or from surface-water bodies which receive the runoff.

Travel-time boundaries can be determined by either technical or non-technical methods, although technical methods are preferred so that the Wellhead Protection Plan (WHPP) better protects the actual capture zones of protected wells. In general, there are four delineation methods available. They are, from generally least to generally most accurate: the calculated fixed-radius method, analytical modeling, hydrogeologic mapping, and numerical modeling. The particular method employed (and the accuracy of that method) depends largely on the availability of hydrogeologic data. Numerical modeling, for example, can be highly accurate but also typically requires a relatively large amount of data. For areas with typical data availability, time-travel boundaries are often delineated using a combination of analytical modeling and hydrogeologic mapping, which provides a reasonably technical level of delineation.

Pacific Groundwater Group initially delineated the City's wellhead protection areas in 1997 by using a two-dimensional analytical model. Later, in 2000, PGG re-delineated capture zones for the City utilizing MODPATH Version 2, a three-dimensional particle-tracking program that utilizes steady-state head distribution created by a numerical model to calculate time-related capture zones. Numerical models are typically highly detailed, three-dimensional representations of water flow through identified hydrogeologic layers and are considered the most accurate approach for delineating wellhead protection areas by the Washington State Department of Health.

In 2008, Robinson, Noble, & Saltbush, Inc. used the modeled capture zones from 2000 to perform a hazard assessment within the wellhead protection area. The wellhead protection area includes ten wellfields and two springs that are related by overlapping geographical areas and represent three aquifer systems. We then provided the City with implementation tasks and strategies to help effectively implement the WHP plan. This current report is intended to provide a single effort that will suffice to update WHPAs for all ten wellfields and both springs, and the WHPAs have been mapped together for this updated wellhead protection plan.

The US Geological Survey is currently completing groundwater flow modeling of the Puyallup River Watershed, and the model area will cover the WHPP study area. The resulting numerical computer model will likely refine aquifer characteristics, groundwater flow patterns, and the location of aquitard-deposits. During the next update of the WHP plan, we recommend using the USGS model to re-define the WHPAs as the new model will represent an expansion of and improvement over the older PGG work.

Of particular interest to the WHPAs is the Osceola Mudflow (Qom), which originated on Mt. Rainier approximately 5,700 years ago, and consists of poorly sorted clay, silt, sand, gravel, boulders, and wood debris. It functions as an important aquitard in the valley. However, a 1999 hydrogeologic characterization report by PGG states that the mudflow does not occur beneath the confluence of the White River and Auburn-Kent valleys or near Auburn's Production Well 1, Wells T-4S/D, CW-2S/D, WR-2, and TW-9S/D. The USGS reports the thickness of the mudflow

ranges from approximately 0 to 60 feet in the study area (Dragovich and others, 1994). In the area defined by PGG where the mudflow is missing, it was likely not deposited or removed by erosional processes. The area where Osceola Mudflow aquitard is not present in the study area is shown on Figure 1.

Existing and Potential Contamination Hazard Identification

The inventory of potential contamination sources within the WHPA was performed according to the Washington State Department of Health 1993 publication "Inventory of Potential Contaminant Sources in Washington's Wellhead Protection Areas." As part of this inventory, a search of contamination-related databases was made by EDR Inc., an environmental database research company. They reviewed 27 federal and state databases for any known or potential contaminant sites within a 5-mile radius of the center of the City's service area. The sites in this radial search were narrowed further by Robinson Noble based on the sites' locations in relation to WHPAs.

We also performed an evaluation of various land-use categories in the study area and ranked them according to the likely activities occurring within those zones. Each land use zone was included as a specific entry (representing all of the area covered by that zone) in the contamination source inventory. The land-use zones, in order of relative risk, include: 1) rural areas, 2) commercial sites, 3) industrial, 4) mixed-use areas, 5) medium-density urban residential, 6) high-density urban residential, 7) mining and transportation corridors, 8) pipeline corridors, 9) and low-density urban residential. The ranking and types of potential risks for each zone are discussed below.

The results of the contamination source inventory include a list of potential and known environmental hazards in proximity to the City's water system. From this process, 513 sites or categories of land-use activities were identified as known or potential hazards to the City's groundwater sources. These sites and land-use activities were prioritized and ranked such that the wellhead protection implementation process can address each site or land use in a systematic manner. Each site was ranked according to three factors: proximity of potential hazard to the WHPA, type of contamination, and distance from the groundwater source to the potential hazard.

Protection Strategies and Implementation Tasks

The completion of wellhead protection planning provides no safeguards unless effective management strategies are implemented to prevent potential contamination of groundwater sources. With the hazards identified, the Wellhead Protection Plan provides for six strategies and 12 specific tasks for the City to undertake to complete the process. Also included is a detailed review of the State spill-response plan and a contingency plan to address the possible loss of one or more water sources. The plan is based a great deal upon monitoring of the existing system, active data collection and management by the City, and cooperation with those state and local agencies which regulate potential contaminants.

Contaminant Source Inventory Methodology

A summary of potential contaminant sources presented in the Health 1993 guidance is reproduced in Table 1. These sources were considered when performing the contaminant inventory for the City.

Table 1: Potential Contaminant Source Listed by Type

Category I

Sources Designed to Discharge Substances

Subsurface Percolation (e.g. septic systems and cesspools)
Injection Wells
- Hazardous waste
- Non-hazardous waste (e.g. brine disposal and drainage)
- Non-waste (e.g. enhanced recovery, artificial recharge solution mining, and *in-situ* mining)

Land Application
- Wastewater (e.g. spray irrigation)
- Wastewater by-products (e.g. sludge)
- Hazardous waste
- Non-hazardous waste

Category II

Sources Designed to Store, Treat, and/or Dispose of Substances; Discharge through Unplanned Release

Landfills
- Industrial hazardous waste
- Industrial non-hazardous waste
- Municipal sanitary

Open Dumps, Including Illegal Dumping (Waste)
Residential (or Local) Disposal (Waste)
Surface Impoundments
- Hazardous waste
- Non-hazardous waste

Waste Tailings
Waste Piles
- Hazardous waste
- Non-hazardous waste

Materials Stockpiles (Non-waste)
Graveyards or Animal Burial
Above-ground Storage Tanks
- Hazardous waste
- Non-hazardous waste
- Non-waste

Underground Storage Tanks
- Hazardous waste
- Non-hazardous waste
- Non-waste

Containers
- Hazardous waste
- Non-hazardous waste
- Non-waste

Open Burning Sites
Detonation Sites

Category III

Sources Designed to Retain Substances during Transport or Transmission

Pipelines
- Hazardous waste
- Non-hazardous waste
- Non-waste

Materials Transport and Transfer Operations
- Hazardous waste
- Non-hazardous waste
- Non-waste

Category IV

Sources Discharging Substances as a Consequence of Other Planned Activities

Irrigation Practices (e.g. return flow)
Pesticide Applications
Fertilizer Applications
Animal Feeding Operations
De-icing Salt Applications
Urban Runoff
Percolation of Atmospheric Pollutants
Mining and Mine Drainage
- Surface mine-related
- Underground mine-related

Category V

Sources Providing Conduit or Inducing Discharge through Altered Flow Patterns

Production Wells
- Oil (and gas) wells
- Geothermal and heat recovery wells
- Water supply wells

Other Wells (non-waste)
- Monitoring wells
- Exploration wells

Construction Excavation

Category VI

Naturally Occurring Sources whose Discharge is Created and/or Exacerbated by Human Activity

Ground Water - Surface Water Interactions
Natural Leaching
Saltwater Intrusion/Brackish Water
- Upconing (or intrusion of other poor-quality natural water)

Radioactive Disposal Sites

The initial part of the contaminant inventory was a search of contaminant-related databases completed by EDR, Inc. EDR is a third-party environmental database research company that

reviews federal and state environmental databases for known or potential contaminated sites within a designated area. Table 2 lists the primary federal and state databases (in alphabetical order according to the database abbreviations used by EDR) reviewed by EDR in order to locate sites of known or potential soil and groundwater contamination.

Table 2: Federal and State Databases

- Washington Emissions Data System (AIRS)
- Ecology Facility/Site Identification System (ALLSITES)
- Clandestine Drug Lab (CDL, Hist CDL, and US CDL)
- Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)
- CERCLIS No Further Remedial Action Planned (CERL NFRAP)
- Confirmed and Suspected Contaminate Sites (CSCSL)
- Confirmed and Suspected Contaminants Sites List No Further Action (CSCSL NFA)
- Department of Transportation, Office of Pipeline Safety (DOT OPS)
- Department of Defense sites (DOD)
- Drycleaners and Inactive Drycleaners (DRYCLEANERS and INACTIVE DRYCLEANERS)
- Emergency Response Notification Systems (ERNS)
- Financial Assurance Information listing (FINANCIAL ASSURANCE)
- Facility Index System (FINDS)
- FIFRA/TSCA Tracking System (FTTS and Hist FTTS)
- Formerly-used DOD sites (FUDS)
- Hazardous Waste Information System – CA Dept. of Toxic Substances (HAZNET)
- Hazardous Materials Information Reporting System (HMIRS)
- Hazardous Site List (HSL)
- Integrated Compliance Information System (ICIS)
- Independent Clean-up Report (ICR)
- Indian Leaking Underground Storage Tank (Indian LUST)
- Indian Underground Storage Tank (Indian UST)
- Institutional and Engineering Controls (INST CONTROL, US ENG CONTROLS, and US INST CONTROL)
- Leaking Underground Storage Tank (LUST)
- Hazardous waste manifest data (MANIFEST)
- Mines master index file (MINES)
- National Pollutant Discharge Elimination System permits (NDPES)
- National Priority List (NPL)
- PCB Activity Database System (PADS)
- RCRA Conditionally Exempt Small Quantity Generator (RCRA CESQG)
- RCRA Large Quantity Generator (RCRA LQG)
- RCRA non-Generator (RCRA NonGen)
- RCRA Small Quantity Generator (RCRA SQG)
- Records of Decision (ROD)
- Reported spills (SPILLS)
- Solid Waste Facilities Database (SWF/LF)
- Recycling Facility List (SWRCY)
- Solid Waste Tire Facilities (SWTIRE)
- Toxic Chemical Release Inventory (TRIS)
- US Aerometric Information Retrieval System (AIRS)
- Underground Injection Controls (UIC)
- Brownfields Grant Sites (US Brownfields)
- Underground Storage Tank (UST)
- US Mines Master Index File (MINES)
- Voluntary Cleanup Program (VCP)

EDR also searches additional non-federal and state databases, including some that are proprietary. The full list of databases researched is included in the EDR report, an electronic copy of which is included as Appendix A on the attached CD.

When EDR identifies a site during the database search, it lists the site with a unique site identification data key. However, since many sites are included on multiple databases and may have

different identifying information on the separate databases, some individual sites end up with more than one listing and identification key. In cases where there are several apparent sites in close proximity or at the same location, EDR attempts to group such listings in "clusters" having related data keys that allow for easy identification of all the listings for that general location.

We have condensed the initial listings from EDR into a final list of sites, attempting to combine all related listings for each site into a single entry on the potential hazard list. For those sites with multiple EDR listings, one of the unique data keys for each listing is retained as the combined site ID on the final hazard list (Table 10 in Appendix B). This should allow for identification of associated listings in the EDR report. Figures 3 through 7 show the locations of each site with their final ranking as an identifier.

Field Survey

A field verification or "windshield survey" was performed by City staff based on guidance provided by Robinson Noble. The purpose of the windshield survey was to verify that listed sites are appropriately located and to identify and describe any additional sites of concern that were not included from the database search. The sites provided by the EDR report were organized and plotted onto maps by their respective database listings. A windshield survey checklist was also designed based on the Health publication, "Wellhead Protection Program Guidance Document – Sample Inventory Form." Once the survey checklist, EDR database list, and map of database sites were produced, they were given to the City to allow field staff to confirm the presence/condition of the sites. City employees performed this task because they are familiar with the businesses and land uses within the service area and because field staff are routinely deployed in the field on other tasks. The findings of the field survey were incorporated into the potential hazards listing and ranking discussed below.

New sites beyond the EDR listings were not identified through the field survey, though the field verification process identified the current uses of each property visited. This allowed us to cross-check the database listings and then add current uses or business names that EDR did not identify.

Methodology for Establishing Risk Priority

The methodology for prioritizing risks in the WHPA was partially based on the EPA guidance document entitled "Managing Ground Water Contamination Sources in Wellhead Protection Areas: a Priority Setting Approach" (EPA, 1991). The ranking effort was also based on the level of confidence in data and information that is currently available for known and potential contamination sites.

Each site was ranked according to three decision levels. The decision levels are listed below in Table 3 (Level I represents the highest hazard risk criteria; Level III is the lowest).

Table 3: Overall Risk Prioritization

Decision Level	Available Data and Information
I	Proximity of potential hazard to the WHPA
II	Type of contamination
III	Straight-line distance from the wells to the potential hazard

Each known or potential hazard was first scored and then ranked using decision level one. Sites with equal level one rankings were then further scored and ranked using decision level two. If sites were still equal in priority, they were further sub-prioritized under decision level three. Once sites were all differentiated in priority (i.e., no ties in scoring), no further ranking was nec-

essary. For this project, ranking beyond decision level III was unnecessary. The criteria for scoring sites within each level are discussed below.

Decision Level I – Proximity to WHPA

For the first decision level, the sub-prioritization of contaminated sites was based on their location in the WHPA zones; the shorter the travel time, the higher the priority. Scores for each site and hazard category are summarized in Table 4.

Table 4: Proximity to Source

Sub-Priority Score	Proximity to Source
1	½-year time-of-travel to the source (Zone 1)
2	1-year time-of-travel to the source (Zone 2)
3	5-year time-of-travel to the source (Zone 3)
4	10-year time-of-travel to the source (Zone 4)
5	Area of investigation outside Zone 4 (Zone 5)

Decision Level II – Type of Contamination

For the second decision level, the sites were ranked as either known or potential sites of contamination. Known contamination sites were defined as those with known releases of contaminants according to the environmental database survey results. Sites of potential contamination are areas or locations that are used in ways that could pose a risk to the groundwater. This category's scoring is summarized in Table 5.

Table 5: Type of Contamination

Sub-Priority Score	Known or Suspected Contamination	Type of Site	Assumptions
1	Known	CSCSL, HSL, ICR, RGA HWS, RGA LUST, Indian LUST, SPILLS, SPILLS 90, US BROWNFIELDS	As a worst case scenario, contamination is assumed to be comprised of the most toxic chemical identified for the site based on information contained in the Ecology and EPA databases.
2	Known or Suspected	Inactive Drycleaners, Drycleaners, RGA LF, SWF/LF, US Hist Cleaners [1],	Contamination is known or suspected to exist at the site, but may be partially controlled.
3	Known	VCP sites; CDL, historic CDL	Voluntary cleanup sites (VCP) are sites where contamination has occurred, but the contamination has been at least partially controlled or cleaned up. Clandestine drug labs (CDL) can cause toxic fumes, spills, explosions, fires, and can create large amounts of toxic waste.
4	Potential	Financial Assurance; Indian UST, UST; , rural zoned areas; pipeline corridors	It is assumed that petroleum products are stored in USTs, but contamination is not imminent. Rural areas use septic systems. Nitrates and bacterial contamination from septic systems are assumed to be health risks, along with potential chemical hazards, but it is not known what the likelihood is for systems to contaminate the wells.
5	Potential	ERNS, Haznet, Hist Auto, Manifest, RCRA-CESQG, RCRA-NonGen, RCRA-NLR, TRIS; commercial or industrial zoned areas	Hazardous chemicals may be stored on RCRA sites, but contamination has not necessarily occurred. Commercial/industrial uses at this level assume that they are served by sewer systems.
6	Potential	FINDS, US MINES, mining land uses and transportation corridors	This category also includes highways and railroad tracks where accidental spills can occur (with the risk based on the possibility of hazardous material spill; for example, gasoline).

Sub-Priority Score	Known or Suspected Contamination	Type of Site	Assumptions
7	Potential	ALLSITES, urban residential zoned areas	Urban residential uses within areas served by sewer systems are generally lower risk than those served by septic systems.
8	Potential	FTTS, HIST FTTS, open space/recreational/forest zoned areas	Non-residential insecticide, fungicide, and rodenticide uses. Herbicide and pesticide use along transportation corridors, power lines, and in open spaces/recreational uses,
9	Potential	CERC NFRAP, NPDES	This category includes the potential release of lead, petroleum products, and/or solvents via a stormwater system.
10	Potential	CSCSL NFA	Sites achieving a NFA ranking are presumed to have been cleaned up sufficiently to no longer pose a threat. Therefore, this ranking will take precedence over other categories listed for the same site.

[1] Existing and historic drycleaners, landfills (LF), and solid waste facilities (SWF) all have, or had, contaminants present, but the contaminants were not necessarily released to the environment. However, particularly for older sites, the chances of release due to use practices and facility designs is particularly high for these sites. Therefore, contamination is suspected. Additionally, the types of contamination typically found at these sites are particularly mobile in groundwater. These factors combine to rank these sites high although contamination is not known for certain.

Decision Level III – Distance from Wells

For potentially hazardous sites with similar characteristics for prioritization decision levels I and II, the direct distance from the site to the well was used to further rank the sites. In some cases, the nearest wellfield to a hazard site is not a reasonable path (i.e., groundwater moving up gradient). Therefore, we determined the most direct distance based on pathways that are reasonably achievable. Those sites closest to the wells or springs were given a higher priority.

As noted above, a portion of the valley was defined by PGG as lacking deposits of the Osceola mudflow. If correct, the absence of this aquitard will allow for water and/or contaminants to travel vertically through the substrate and into the aquifer faster than it would otherwise.[1] This translates into a shorter travel time to the wellfield. Travel-time calculations were performed based on porosity of the material, averaged thickness of the mudflow deposits, hydraulic conductivity, and difference groundwater elevation above and below the unit. Using average values, we determined that water and/or contaminants could travel vertically through the mudflow unit in an estimated 135 days. Therefore, where the mudflow unit is not present, flow toward the well can be assumed to be 135 days faster. Over a similar period, water and/or contaminants already in the source aquifer would travel approximately 520 feet horizontally toward the wellfield. To account for this quicker time of travel, we subtracted 520 feet from the calculated straight-line distance measured between the nearest source well and the site in question for areas where the mudflow deposit is not present. Where a site had a distance that is less than 520 feet from a source well, we assumed a minimum travel time of one month or 245 feet and used this value for the distance.

Land Use

Land use zones are added to the hazard ranking process in order to include the more general, non-point-source activities that each zone represents. Since the land use activities vary with the zoning, it is reasonable to use the zone classifications as a proxy for trying to identify individual activities within a zone. So rather than call out each commercial business as a possible handler of hazardous materials (a paint store for example), the commercial zone can be given a suitable

[1] The USGS Puyallup River Watershed model will likely refine the areas where mudflow deposits are present. The assumptions used here should be revisited during the next WHPP update using the USGS model as a guide to better define the vertical relationships, flow directions, and times of travel.

ranking level and the nearest instance of that zone to a source well is ranked in the hazard inventory process.

Land use and zoning within the study area include (in general order of prevalence) medium density urban residential industrial, mixed use, commercial, rural area (large lots, 2.5 acres or larger), low density urban residential, mining, and high density urban residential. These land-use categories are discussed below in relation to the potential hazards they represent. Figure 8 shows the locations of zoning categories within the Auburn City limits.

Residential Land Uses

Residential zoning generally falls into four categories across the study area: rural; low density, medium density, and high density urban residential. Table 6 lists the residential land categories.

Table 6: Residential-use Designations

Land Use/Zoning	Description	Hazard Ranking
Rural (2.5, 5, and 10 acre)	Large lot residential (includes non-residential rural uses such as churches and some schools) 1 dwelling unit per 4 acres	7
Urban residential, low	Small lot single- and multi-family residential mixed. Low – 1- 3 dwelling units per acre	274
Urban residential, medium	medium – 4 - 10 dwelling units per acre	18
Urban residential, high	High – 11 or more dwelling units per acre	19

Three rural-zoning categories are present representing allowed minimum lot sizes of 2.5, 5, and 10 acres. As each of these variations on rural zoning present essentially the same basic risk to the City's sources; they are combined into a single category for this ranking process. Contaminant sources related to rural land use include chemical fertilizer, herbicide, and pesticide application; petroleum hydrocarbons; household chemicals; and household sewage. Petroleum hydrocarbons from home heating-oil tanks and farm equipment fuel tanks, as both aboveground and underground storage tanks (USTs), are a potential threat with this land use.

The risk is higher from rural zones for two reasons. First, rural zones in general, because of the potential for agricultural uses, have a larger potential for high, more concentrated use of fertilizers, pesticides, and herbicides. Second, because rural zones are not sewered, risk is elevated due to the use of septic systems, which have the potential to deposit contaminants directly into the subsurface. So, while urban area densities are greater than rural zones, the potential pathways for contamination are often better controlled (sewers, stormwater handling systems, more impervious cover, etc.). However, it is worth remembering that typically risk from septic systems is dominated by the gradual loading of contaminants (i.e., nitrates) from many systems together over a large area rather than inputs of a hazardous material to a specific septic system. In general, single-source contamination is not only uncommon but also rarely travels significant distances beyond the septic drain field because most household chemicals are not highly mobile nor are used in significant enough volumes to cause extended contamination.

Commercial Land Uses

Commercial land use makes up approximately 2,353 acres of the study area and is ranked as the seventh highest risk to the WHPA because of its proximity and subsurface pathways for contamination.

The most likely potential contaminants related to commercial land uses are, but are not limited to, petroleum hydrocarbons and metals. These potential contaminants are generally due to the presence of fuel in USTs, parking lots, and listings of businesses potentially as RCRA small-quantity generators of hazardous materials.

Industrial Land Uses

Like commercial zones, industrial areas can host a range of activities with potential to cause contamination. The most likely contaminants related to industrial uses are petroleum hydrocarbons and metals. Contaminants are generally due to the potential for large spills, presence of aboveground and underground storage tanks, parking lots, and potentially small or large quantity generators of hazardous materials.

Mining & Transportation

Major transportation routes are included as potential hazards due to the transport of potential contaminants by road or rail and the potential use of herbicides and pesticides along the routes. Two Burlington Northern Santa Fe (BNSF) and one Union Pacific railroad corridors extend through WHPA and study area. Heavily trafficked roads determined to be significant transportation corridors through the WHPA and study area include Highway 18, A Street East, and Auburn Way.

The main consideration for transportation corridors is for large spills, typically involving petroleum hydrocarbons or hazardous materials. Smaller streets and roads are not listed separately in the potential hazards list because there is less chance for large spills and small spills (i.e., leaks, over application of de-icing salt, etc.) that might occur only on non-highways are less of a concern. Hazards related to smaller streets and roads are included within the other land-use categories (specifically the rural and urban planning development categories).

Multiple sand and gravel mining operations are located in the study area. Openwork mining allows a direct route for potential contaminants to enter the groundwater system. While it is assumed that the mines operate under best-management practices and conform to all appropriate state regulations, the lack of vegetated cover and continued disturbance of mining pits when in operation makes mines potential sites for contamination. Contaminants of particular concern associated with mining are petroleum based fuels and hydraulic fluid.

Mixed Uses

The final category of land-use categories is mixed use. This category includes a mixture of residential, commercial, and public land uses. Public land use includes hospitals, public swimming pools and athletic facilities, libraries, parks, etc. Potential contaminants include the use of herbicides and pesticides, as well as other chemicals for public swimming pools and hospitals, etc.

Pipeline Corridors

The Olympic Pipeline, owned by BP, is located in the study area and is within the West Hill Springs WHPA 5- and 10-year zones. The pipeline transports gasoline, diesel, and jet fuel from refineries at Cherry Point and Anacortes, Washington to as far south as Portland, Oregon. Hazards associated with the pipeline corridor include potential for leaking and spills of petroleum products from the pipeline, as well as the potential use of herbicides and pesticides along the routes.

Table 7, below, shows the relative ranking for the non-residential land use categories.

Table 7: Other Land-use Zoning Designations

Land Use/Zoning	Description	Hazard Ranking
Mixed Use	Mix of residential, public properties including swimming pools and athletic facilities, libraries, and parks, hospitals, and some commercial uses.	10
Mining &Transportation Corridors	Highway 18, Auburn Way, and A Street. Active and abandoned sand and gravel mines.	54
Industrial	Safeway Distribution Center, Oldcastle Precast Concrete Manufacturing, Northwest Aviation Service Group, and many others	16
Commercial	neighborhood business, shopping malls, and strip malls, etc.	11
Pipeline Corridors	BP's Olympic petroleum pipeline	125

Identified Contaminant Sources

In the federal and state databases reviewed by EDR, 992 sites are identified within the WHPP study area. These sites are scattered among all four of the WHPA zones and the area of investigation, as well as outside the WHPAs. However, based on the locations, types of listings, the field verification effort, and review of additional on-line database information where available, we reduced the final list of sites to be ranked to 504. Adding in the nine land-use categories discussed above brings the total number of ranked hazards to 513. The five highest ranked sites are shown below in Table 8. The City should do additional due diligence on the highest ranked sites to evaluate to risk to the WHPAs. The hazard sites are mapped on Figures 2 through Figure 7 and shown in Table 10, attached as Appendix B.

Table 8: EDR Identified Contaminant and Potential Sources

Hazard Ranking	EDR ID Numbers	EDR Site Name	Address	Database
1	CU 950, CU 949, CU 953, CU 952, CU 951	The Church of Jesus Christ of Latter Day Saints	331 4th St. NE	ICS, RGA HWS, FINDS, ALLSITES, CSCL
2	DP1003	No Name Provided	634 M Street NE	SPILLS
3	DP 975	No Name Provided	1207 6th St NE	SPILLS
4	CW 849	No Name Provided (residence-duplex)	1208 4th St NE	EDR US Historic Cleaners
5	DN 962, DN 969, DN 968	B and G One Hour Cleaners	420 N Auburn Way	ALLSITES, Inactive Cleaners, RCRA NLR, FINDS, Historic Cleaners

Potential Groundwater Concerns

For wellhead protection planning, it is important to understand the potential sources and types of contamination that threaten the City's WHPAs. It is also important to understand the potential pathways for contaminant migration since these contaminant pathways can increase the vulnerability of an aquifer by decreasing travel time from a source to a wellhead or spring. The following section briefly summarizes the main mechanisms for transport of contaminants to the subsurface.

Discharge onto the Ground Surface

Direct discharge to the ground surface occurs when products or waste materials are spilled onto the ground. With the help of rainfall infiltration, the materials percolate into the subsurface, and if a sufficient volume of material is released, they eventually reach the water table and migrate down gradient within the shallow aquifer. In large enough quantities, spills can impact deeper aquifers where water supply wells are completed.

Direct Discharge to the Subsurface

Discharge to the subsurface occurs from septic systems and dry wells (UICs). Discharge into the subsurface is a more direct mechanism for transport because contaminants are discharged closer to the water table and because subsurface discharge bypasses the upper layers of soil, which have the ability to absorb and disperse many types of contaminants.

Abandoned Wells

Old, improperly constructed or improperly abandoned wells[2] can act as direct conduits for contaminant transport to an aquifer. In such wells, transport can occur between the ground surface and aquifer zones because of a lack of a well seal or an inadequately constructed seal.

Stormwater Runoff

Rainfall onto the ground either induces infiltration into the subsurface or becomes runoff. The quality of the water which infiltrates or runs off is dependent on the type of land use and the potential presence of contaminants which may be located on the ground surface. Stormwater infiltration issues are similar to those of discharge to the ground surface. Stormwater runoff is considered differently because it runs over the surface of the ground, picking up and dissolving potential contaminants, and may eventually discharge these contaminants to groundwater via infiltration through ditches or ponds designed to percolate water or from surface-water bodies which receive the runoff.

The potential concerns due to water infiltration or runoff are diverse and reflect the land-use activities in the area of interest. Paved roadways, parking areas, and residential developments can contribute heavy metals and petroleum hydrocarbons which originate primarily from vehicle-related emissions. Industrial and commercial operations commonly process and release a variety of organic pollutants (e.g., solvents, paints, and dry cleaning solutions) as well as petroleum products.

Management Strategies

This WHP program is designed to be an on-going management activity to meet the City's future planning needs and to adapt to changes in the City's use of the aquifer system. As such, the management strategies and practices outlined within this study provide a general direction but will periodically need to be refined to fit specific conditions. Additional adaptations may be needed to address future activities and regulations or changes in current regulations that may affect the WHPAs. The following sections detail proposed strategies to protect the integrity of the City's water sources.

Land Management Activities

The City should encourage owners or agencies responsible for large land parcels and developments to use and monitor best management practices (BMP) for control, reduction, and restriction of potential contaminants into the WHPAs.

[2] Washington State has standards for construction and abandonment of wells, WAC 173-160.

WHP Land-use Strategies

The City of Auburn has no authority to directly control land use for those areas of the WHPAs that are outside the city limits. Therefore, the City must develop a cooperative relationship with those state and local agencies that administer land use programs. At the present time, the best strategy for the City is to seek special designations for the WHPAs from pertinent agencies. The City should evaluate and seek the different designations that may be most beneficial.

Possible Special Protection Area Designations

- A Special Protection Area designation under the state groundwater quality standards (WAC-173-200)
- A Special Use Area by the Department of Agriculture
- An Environmentally Sensitive Area under various County-level programs

WHP Regulatory Strategies

This WHPP is designed to use the existing statutory rules and regulations to protect groundwater quality. The City, in coordination with state and local agencies having statutory authority in the area, could monitor regulated activities within the WHPA. The following regulatory strategies are recommended.

Well Drilling Inspections inside the WHPA

The City should support continuation of the delegation by the Department of Ecology (Ecology) of well construction inspection authority to the King and Pierce County Health Departments. Regardless of the responsible agency, the City should encourage more frequent well construction inspection than currently occurs.

Washington State Environmental Policy Act/Hydrogeologic Evaluations

The City should request that the King County Department of Development and Environmental Services (DDES) and the Pierce County Planning and Land Services (PALS) to require hydrogeologic evaluations that specifically address impacts to groundwater quality and quantity parameters for any development within the WHPAs which requires SEPA action or seeks a Determination of Non-Significance (DNS) designation. Additionally, the City should enter into a Memorandum of Understanding (MOU) with DDES and PALS seeking City comment on the effects such developments will have on the groundwater system. Designation of the area as a Special Protection Area will be the first step toward gaining such an agreement.

Septic Tanks

The City should request King County and Pierce County to require as-builts drafted by septic design professionals be recorded with property deeds for new septic systems. Additionally, the City should support the implementation of laws and regulations requiring proper inspection and maintenance of septic systems. The City currently has an active sewer system throughout the majority of the City; however, septic systems still exist in many areas. In areas that are sewered, septic tanks are not allowed for new construction as everything must be connected to the sewer.

Planning Strategies

A substantial degree of future protection for the WHPAs will be achieved through present-day planning and coordination. In order to accomplish the required level of future protection, the following strategies are recommended.

Sewers

The City, in coordination with the managers of neighboring local sewer systems, should develop emergency plans to be implemented in the advent of sewage leaks or spills. The City could encourage the County to require all industrial and commercial facilities within the WHPAs to connect to sanitary sewers if such services are reasonably available.

Stormwater Management

The City should conduct or promote research on the impact of stormwater discharge on water quantity and quality. Additionally, the City, in coordination with the responsible agencies, should evaluate the adequacy of stormwater facilities including proper routing, retention, and detention. In the upland areas, a balance should be found that allows optimum recharge of stormwater to groundwater systems while adequately protecting the water quality of the aquifers. Generally in the valley areas, aquifer recharge of stormwater is less of a concern and stormwater management should focus more solely on water quality protection.

Petroleum Pipelines

The City should document the location and use of petroleum pipelines and establish emergency response plans for pipeline failure. These efforts should be coordinated with the pipeline companies and the federal, state, and county agencies responsible for emergency, petroleum-product spill response.

Hazardous Material Transport

The City should investigate the feasibility of re-routing the transport of hazardous materials away from the half-year and one-year WHPA zones and the area where the Osceola mudflow aquitard is not present. However, it may be necessary for this option to exclude Highway 18 and SR 164 (Auburn Way South) since they represent major regional transportation routes. While Highway 18 does not travel directly through the 6-month or 1-year zones, it does pass through Zone 1A, an area with no confining layer above the main aquifer utilized by the City. A stronger emphasis on emergency response for this area could be an alternative to the rerouting of hazardous material transportation.

Spill Response

The City has established formal communication protocols with first-response emergency units of the Valley Regional Fire Authority. Notification of the location of the WHPAs should also be given to emergency response organizations outside of the City boundaries as appropriate. The City also has an Emergency Response procedure (600-02) to help it respond to minor spill events within City limits. However, creation of a formal Spill Response Plan that brings together City and first-responder agencies under the incident command system is recommended. Such a plan describes the proper response procedures to a major spill event that might threaten City water supplies and can prove valuable in cases where a first responder's perspective differs from the City's desire for protection of water resources by pre-establishing command and control roles and identifying proper contacts to ensure good decision making in the field.

Data Management Strategies

One of the principal goals of the WHPP is the development of a data collection network and analysis plan capable of providing the City with advance warning of contamination to the City's water supply. The following data management strategies seek to establish and maintain scientific data upon which future WHPP actions can be based.

Groundwater Monitoring Plan

The City should actively participate in the collection and analysis of regional and local groundwater information. The development of a proper groundwater-monitoring plan will be crucial to the City's capability to protect their water sources. This can be accomplished in cooperation with Health, the Regional Water Associations of South King County, Seattle-King County Health Department, the Department of Natural Resources (DNR), Ecology, and other entities seeking to monitor the groundwater resources of the region.

Abandoned Well Inventory

The City should locate and inventory decommissioned, abandoned, and unused wells. Owners of these wells could be notified of the potential liability such wells cause and be educated on the benefits of well decommissioning.

Herbicide and Pesticide Survey

The City should inventory and monitor major herbicide and pesticide use within the WHPAs. This inventory may be used to guide future groundwater monitoring and WHP-related education programs. In addition, the City could encourage county, state, and private land managers to use vegetation-management practices that protect groundwater quality.

Underground Storage Tanks Inventory

The City should inventory and locate underground storage tanks. Besides those presently identified by the current hazard inventory, this inventory should include new tanks placed after the hazard inventory was finished, residential home heating-oil USTs, and other tanks that have not been previously identified.

Drywell Monitoring

The City should encourage stormwater management agencies to develop an evaluation and monitoring plan for drywells within the WHPAs.

Education Strategies

Education of the public and industrial/commercial occupants of the WHPAs concerning groundwater protection is a critical portion of the WHPP. Through proper education, the degree and potential for future contamination can be greatly reduced; therefore, the following recommendations are made.

- If not already begun, the City should begin groundwater educational programs to educate WHPA residents, particularly on groundwater quality issues. The WHPAs could be targeted for distribution of literature regarding septic tank maintenance; fuel-oil storage tank maintenance and abandonment; residential use of herbicides and pesticides; and hazardous material use, disposal, and storage
- In addition to City-run programs, the City should participate in and support small-quantity waste disposal programs and actively work with state and local government in developing and creating public education programs concerning groundwater.

Wellhead Protection Implementation Tasks

In order to accomplish the protection of the WHPA, we recommend that the City adopt the WHP Implementation Tasks listed below. Twenty-six tasks were initially proposed during the 2008 WHPP update (Robinson, Noble, & Saltbush 2008). Two tasks have been completed, four have been removed as redundant, and eight tasks are currently being completed by the City as shown in the Table 9 below.

Table 9: 2008 Implementation Tasks Currently in Progress

2008 Task Number	Task goal
3	Notify county health and planning departments
11	Participate in a regional groundwater data development and management program
13	Ensure SEPA evaluations include WHP considerations
14	Document the type and amount of herbicide and pesticide application
17	Promote and coordinate public education programs on WHP concerns
20	Encourage development and use of best management practices in developments covering groundwater protection
22	Encourage thorough analysis of groundwater impacts for siting, operation, and reclamation of gravel quarries and mines
26	Work with responsible parties to assess adequacy of stormwater systems

The remaining tasks are listed in their recommended priority of implementation. Task numbers from the 2008 update have been retained. The City may institute all or a portion of these tasks, depending upon available funding, time, or other concerns.

Task 2

The City should establish formal communication with first responders and educate them about the needs for wellhead protection. As an example, Tacoma-Pierce County Health Department collected the WHPAs defined by each Group A water purveyor in Pierce County and created a GIS-based map. This map layer was then shared with all Pierce County fire departments to help inform their responses to fires or hazardous material spills in proximity to vulnerable water supplies.

Task 4

Consideration should be given to seeking designation of the WHPAs as a special protection area. As mentioned previously, there are numerous special designations the City may wish to seek in order to protect the WHPAs. The City should evaluate the protection offered by these designations and seek those most appropriate for the WHPAs.

Task 5

The City should create awareness of the wellhead protection area by posting metal "WATER SUPPLY PROTECTION AREA" signs along major arterial roads at the borders of the WHPAs.

Task 7

Increasing public awareness of homeowners who are connected to the City's water system through notification letters to customers within the WHPAs should be accomplished by the City. This notification letter should be given to homeowners either at the time of service hook up or as part of property escrow.

The City should deliver a copy of the WHPP to the King County and Pierce County library systems. This will allow interested residents to learn more about the wellhead protection program of the water system.

In addition, the City should inform local residents of the WHPA through a press release sent to Auburn Reporter, Tacoma News Tribune, and the Seattle Times for publication in the local or "Your Town" sections of each paper.

Task 8

The City should coordinate with King and Pierce Counties to require engineering as-builts of new septic systems be recorded with property deeds. These as-builts should be drawn and

submitted by septic-tank designers who are registered professional designers licensed by Washington State. The City should support the implementation of state laws and regulations regarding septic system inspection and maintenance programs and promote and coordinate public education programs concerning proper septic tank maintenance and proper hazardous waste disposal.

Task 9 and Task 24 (combined)

City public works staff should review routine leak detection procedures for sewer lines, request the use of "leak-proof" piping for new sewer construction, and replace older lines. There are currently multiple sewer force mains located throughout the City. The City currently has contingency plans in place for pump and line failure; however, the City should develop an emergency response procedure for sewer force main breaks within the half-year and 1-year WHPA zones. The City could seek to have appropriate agencies require sewer hook-up for all industrial-commercial facilities within the WHPAs if sewer service is reasonably available.

Task 12

The City could encourage King and Pierce Counties to maintain their delegated authority of well-drilling inspection and should coordinate with this program to gain advance notice of drilling in or near the City's WHPAs. The contacts for the appropriate programs are Tacoma-Pierce County Health Department's Drinking Water and Wells program at 253-798-6470 and Public Health – Seattle & King County Department's Drinking Water program at 206-296-4932. For information on the delegated authority, contact the Department of Ecology's Well Construction and Licensing program at 360-407-6650 (see also: http://www.ecy.wa.gov/programs/wr/wells/wellhome.html).

Task 15 and 16 (combined)

The City should annually review the CSCSL, LUST, and other significant environmental database listings within the WHPAs. Also, the City could monitor Ecology's progress in the cleanup of contaminated sites within the WHPAs and encourage Ecology and county inspection of RCRA hazardous waste generator facilities.

Additionally, review of annual Superfund Amendments and Re-authorization Act (SARA) Title III reports, in order to document and inventory the chemicals used in the WHPAs, is recommended. This review could be used to guide groundwater monitoring and WHP-related education programs.

Task 18

The City should develop data on the number and size of exempt underground tanks within the half-year and one-year WHPA zones. Also, the City should promote and coordinate public education programs concerning underground tank hazards, leak detection methods, and proper removal and closure procedures. These programs should target owners of exempt underground tanks. Such owners should be encouraged to contact the Pollution Liability insurance Agency (PLIA) to receive no-cost coverage of up to $60,000 at http://www.plia.wa.gov/.

Task 19

The City could seek to have Ecology prioritize the investigation of contaminated and potentially-contaminated sites within the WHPAs. This could assure that those areas with existing contamination and any subsequent contamination events within the WHPAs are given highest priority in relation to the amount and type of contamination in clean-up activities and budgets.

Task 23

An inventory of abandoned or unused wells in the six-month, one-, and five- year zones should be made. The owners of these wells should be informed about proper well decommissioning procedures.

Task 25

The City should investigate the need and feasibility for re-routing transport of hazardous materials through the WHPAs. Also, the City should create a formal Spill Response Plan to describe the City's responsibilities and responses to a major spill event under the State's Incident Command System.

References

Dragovich, J.D., Pringle, P.T., and Walsh, T.J., 1994, Extent and geometry of the mid-Holocene Osceola Mudflow in the Puget Lowland – implications for Holocene sedimentation and paleogeography, Washington Geology, v. 22, no 3., p. 3 – 26

Pacific Groundwater Group, 1996, Preliminary hydrogeologic characterization: City of Auburn, prepared for the City of Auburn Department of Public Works Engineering Section, 25 p.

Pacific Groundwater Group, 1999, Hydrogeologic characterization: City of Auburn, prepared for the City of Auburn Department of Public Works Water Utility Engineering, 96 p., 21 appendices

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Robinson Noble & Saltbush, Inc., 2008, Draft wellhead protection update: City of Auburn, 16 p., 3 appendices

Washington State Department of Health, 1995, Wellhead protection program guidance document, publication 331-018, 78 p.

Washington State Department of Health, 1993, Inventory for potential contaminant sources within Washington's Wellhead Protection Areas, 33 p.

U.S. Environmental Protection Agency, Office of Water, 1991, managing ground water contamination sources in wellhead areas a priority setting approach, Washington D.C. EPA 570/9-91-023, 252 p.

The statements, conclusions, and recommendations provided in this report are to be exclusively used within the context of this document. They are based upon generally accepted hydrogeologic practices and are the result of analysis by Robinson Noble staff. This report, and any attachments to it, is for the exclusive use of the City of Auburn. Unless specifically stated in the document, no warranty, expressed or implied, is made.

FIGURES

WEST HILL SPRINGS

WELL 6

WELL 7

WELL 2

WELL 1

WELL 4

WELL 3A

WELL 3B

COAL CREEK SPRINGS

WELL 5A

WELL 5

WELL 5B

0’ 4200’

Legend

- Springs
- Well
- Area of Investigation
- 6 Month WHPA
- 1 Year WHPA
- 5 Year WHPA
- 10 Year WHPA
- Area where Osceola mudflow (Qom) aquitard is not present
- Water Service Boundary
- Auburn City Limits
- Active Railroad

ROBINSON NOBLE

Note: Image from ESRI ArcGIS

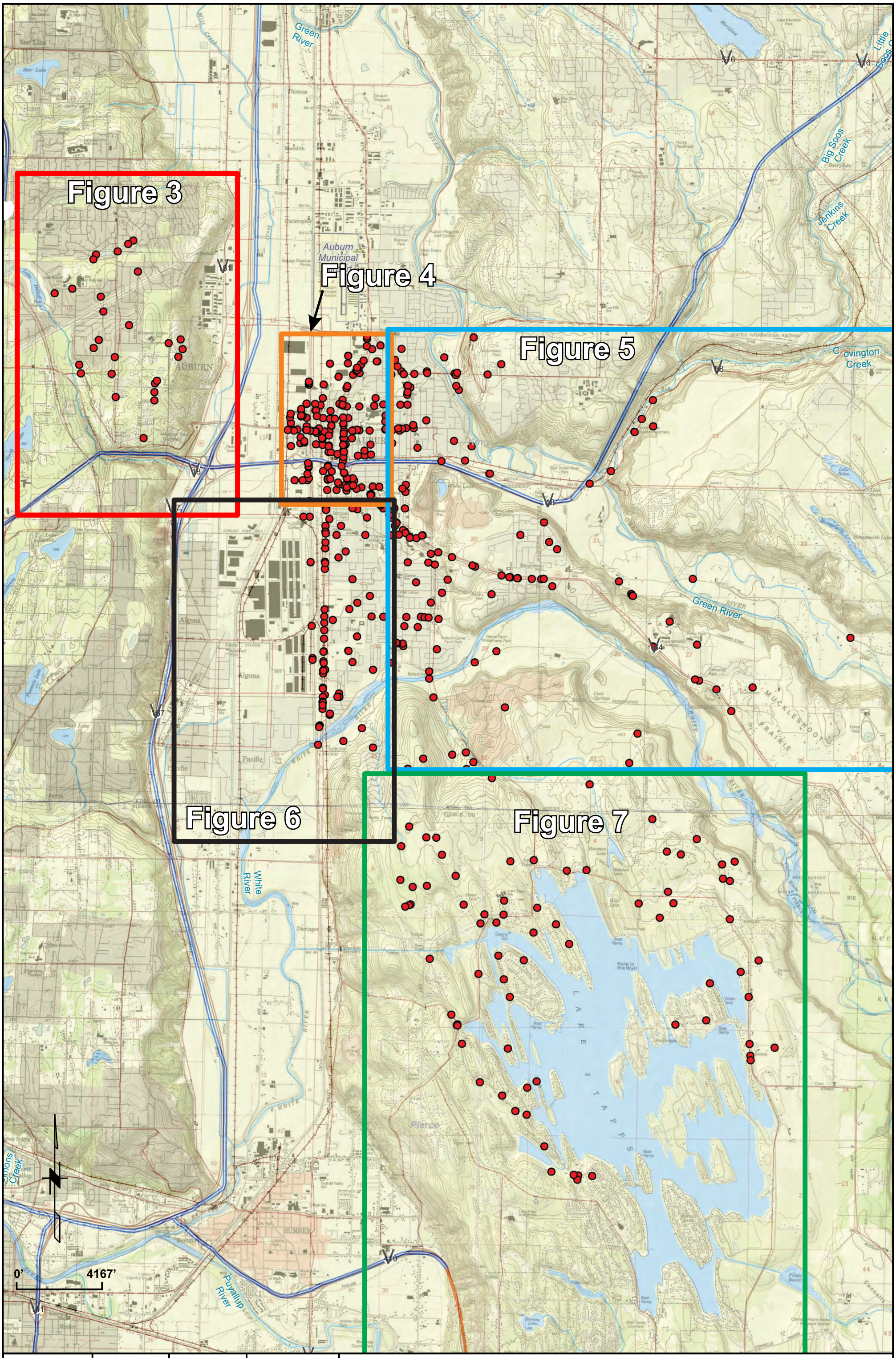
PM: BGC
November 2014
1051-005B

King County
T 21 N/R 04 E
Scale 1” = 4200’

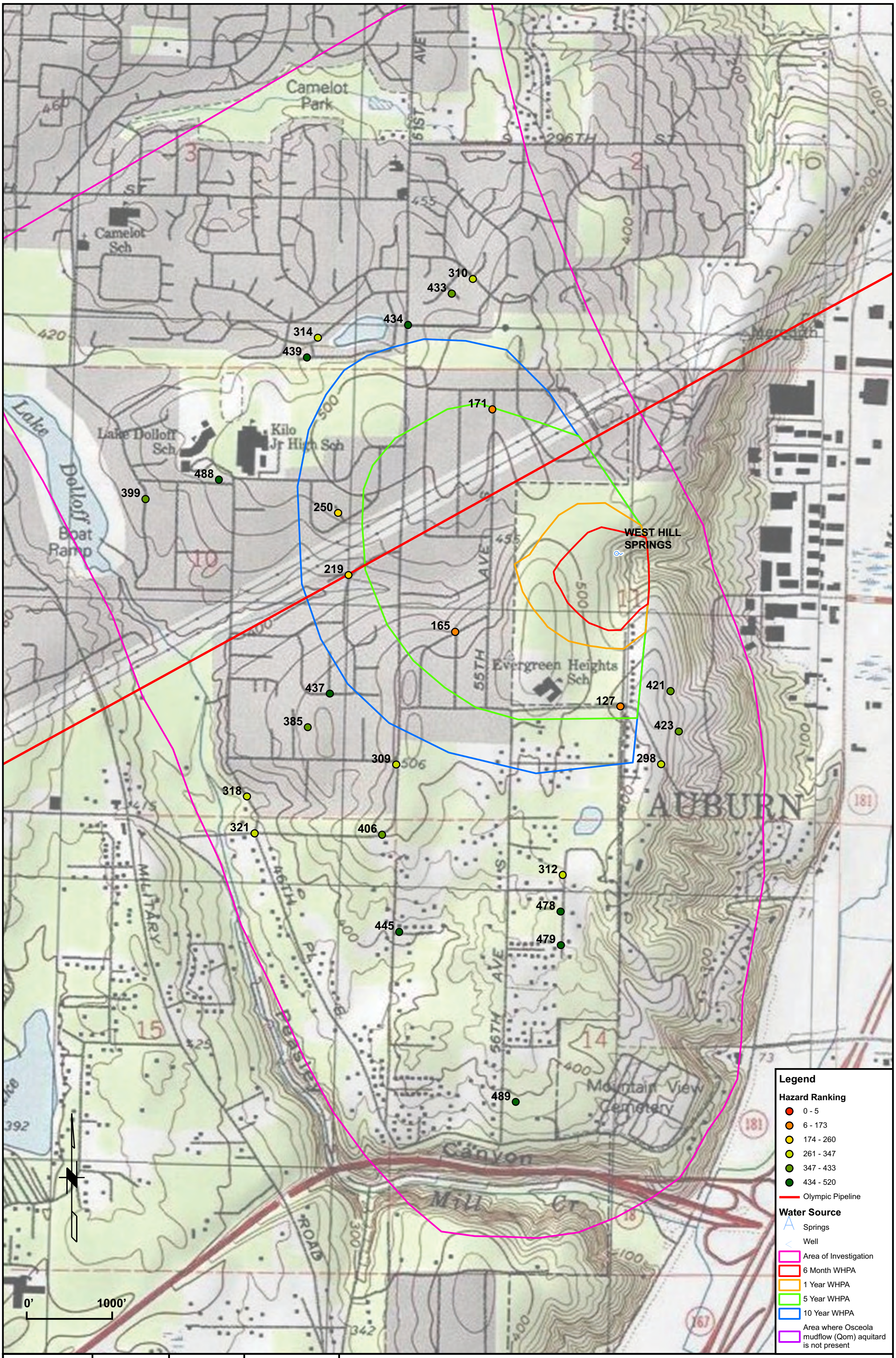
Figure 1

Wellhead Protection Location Map

City of Auburn: Water Comprehensive Plan Update



ROBINSON NOBLE	Note: Image from ESRI ArcGIS	PM: BGC November 2014 1051-005B	King County T 21 N/R 04 E Scale 1" = 4167'	Figure 2 Hazard Site Location Map City of Auburn: Water Comprehensive Plan Update



ROBINSON NOBLE	Note: Image from ESRI ArcGIS	PM: BGC November 2014 1051-005B	King County T 21 N/R 04 E Scale 1” = 1000’	Figure 3 Hazard Site Location Map City of Auburn: Water Comprehensive Plan Update

Legend

Hazard Ranking

- 0 - 5
- 6 - 173
- 174 - 260
- 261 - 347
- 347 - 433
- 434 - 520

Water Source

- Springs
- Well
- Area of Investigation
- 6 Month WHPA
- 1 Year WHPA
- 5 Year WHPA
- 10 Year WHPA
- Area where Osceola mudflow (Qom) aquitard is not present

WELL 7

WELL 6

Cem

Park

Hosp

Washington Sch

AUBURN

BM 74

BM 87

BM 90

BM 96

PO

0’ 500’

ROBINSON NOBLE	Note: Image from ESRI ArcGIS	PM: BGC November 2014 1051-005B	King County T 21 N/R 04 E Scale 1” = 500’

Figure 4

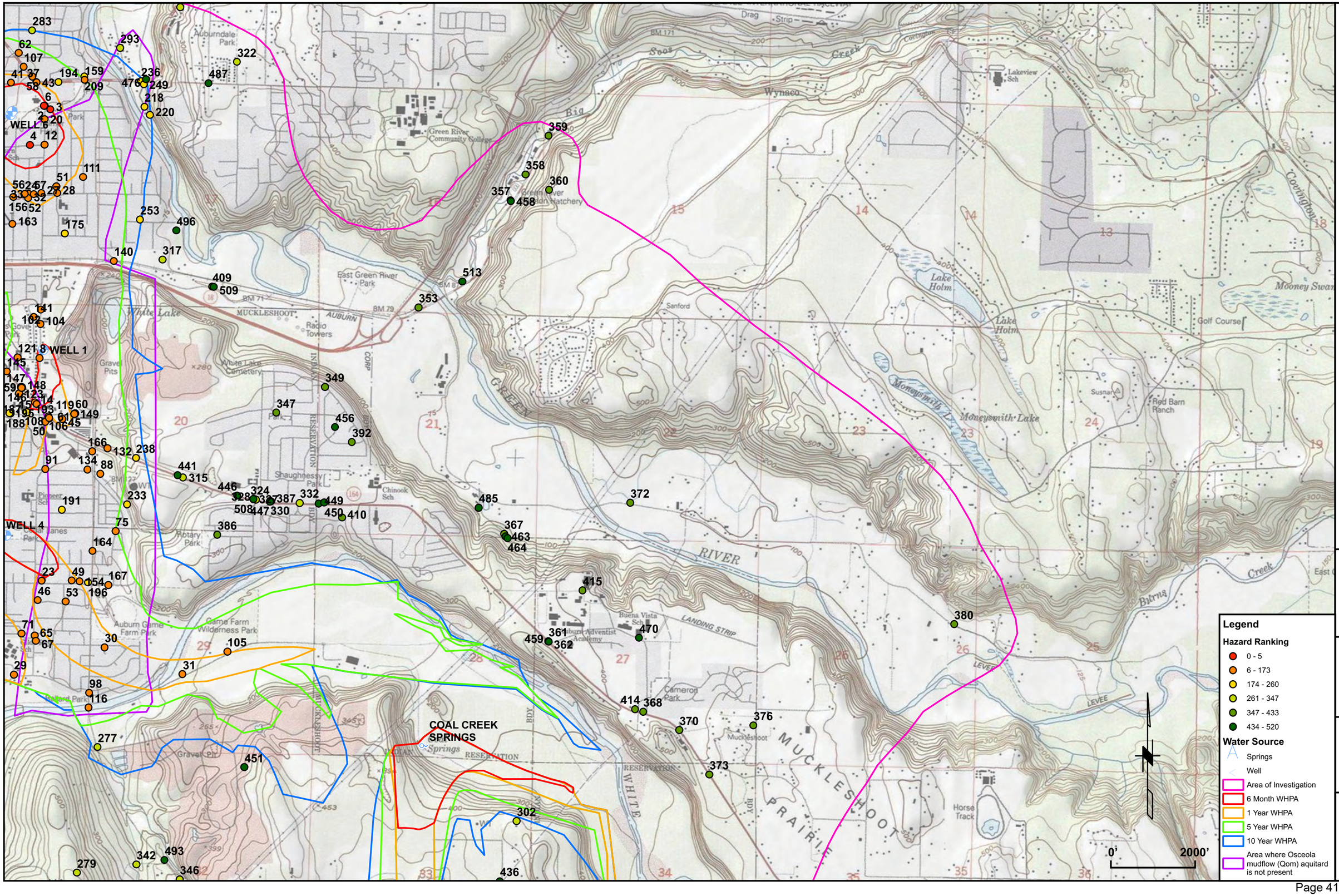
Hazard Site Location Map

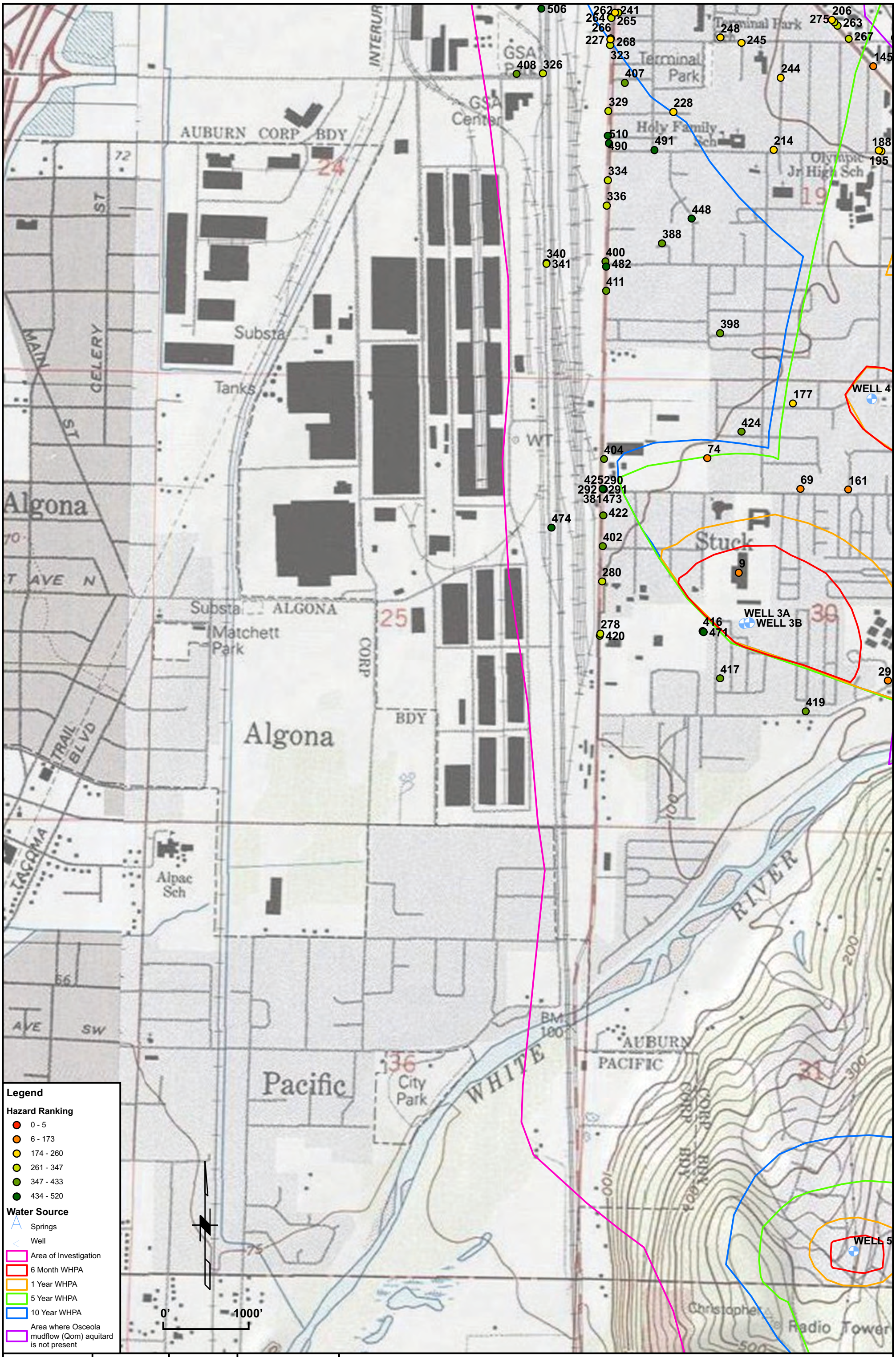
City of Auburn: Water Comprehensive Plan Update

Figure 5

Hazard Site Location Map

City of Auburn: Water Comprehensive Plan Update



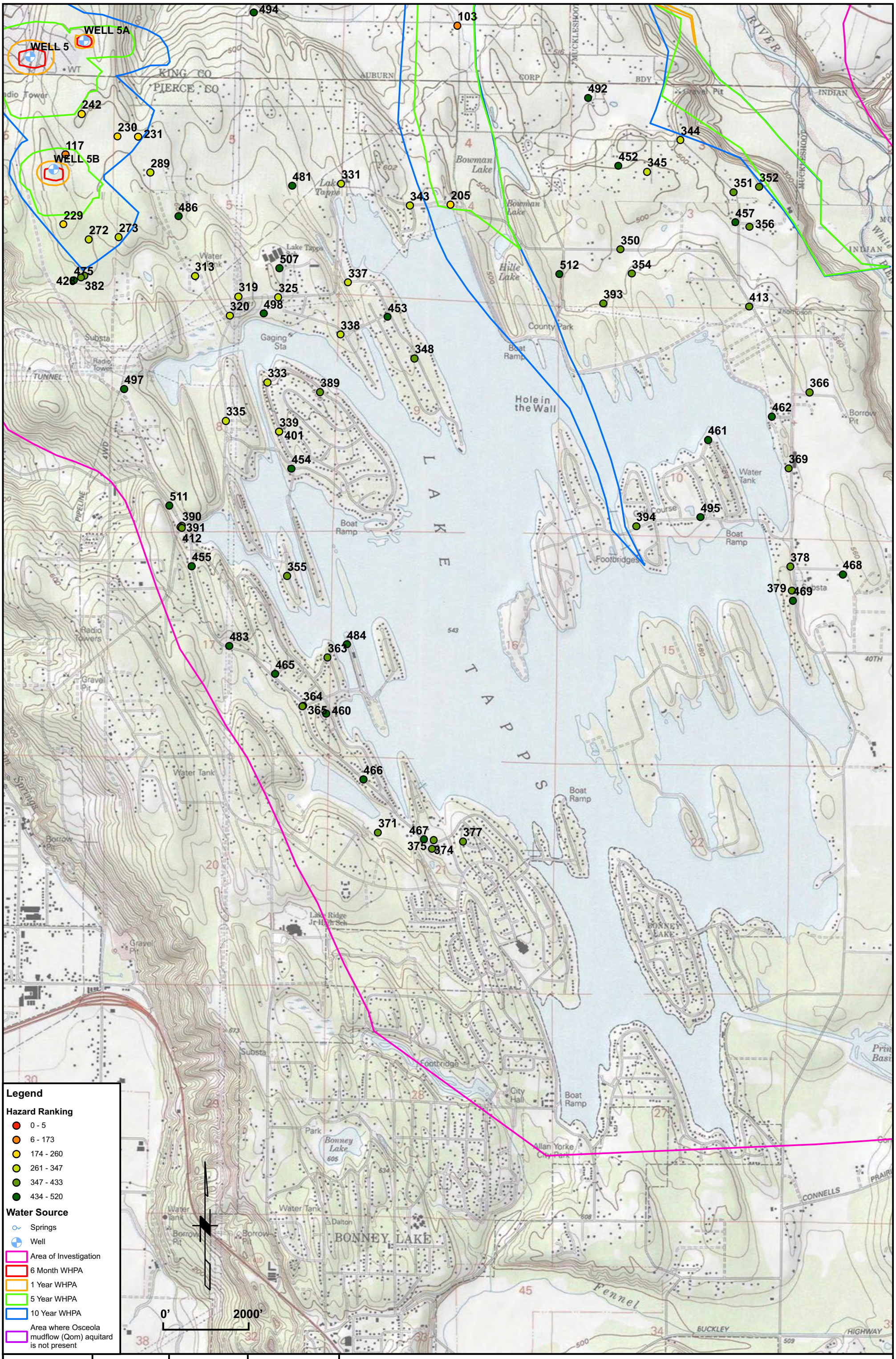


ROBINSON NOBLE	Note: Image from ESRI ArcGIS	PM: BGC October 2014 1051-005B	King County T 21 N/R 04 E Scale 1” = 1000’

Figure 6

Hazard Site Location Map

City of Auburn: Water Comprehensive Plan Update



ROBINSON NOBLE	Note: Image from ESRI ArcGIS	PM: BGC November 2014 1051-005B	King County T 21 N/R 04 E Scale 1” = 2000’	Figure 7 Hazard Site Location Map City of Auburn: Water Comprehensive Plan Update

WEST HILL SPRINGS

WELL 6

WELL 7

WELL 2

WELL 1

WELL 4

WELL 3A

WELL 3B

COAL CREEK SPRINGS

WELL 5

WELL 5A

WELL 5B

0’ 4200’

Legend

Water Service Boundary

Auburn City Limits

Water Source

	Hazard Ranking
Springs	
Well	
Olympic Pipeline	125

Zoning

Industrial	16
Commercial	11
Mixed Use	10
Residential Low (1 DU/ACRE)	274
Residential Medium (4-10 DU/ACRE)	18
Residential High (11+ DU/ACRE)	19
Rural (1 DU/4 ACRES)	7
Mining	54

ROBINSON NOBLE

Note: Image from ESRI ArcGIS

PM: BGC
November 2014
1051-005B

King County
T 21 N/R 04 E
Scale 1” = 4200’

Figure 8
Zoning Map

City of Auburn: Water Comprehensive Plan Update

ID	Water Source	Time of Travel Boundary	Contaminant Source Name	Street	City	State	ZIP	FSID	Data Source Description	Status	Notes
~~1~~	~~Wells 2 and 6~~	~~6 month~~	~~ALCAL SPECIALTY CONTRACTING WAREHOUSE~~	~~111 3RD ST NE~~	~~AUBURN~~	~~WA~~	~~98002~~	~~69581~~	~~Emergency/Haz Chem Rpt TIER2~~	Eliminated based on 2024 City Survey	Invalid address
~~2~~	~~Wells 2 and 6~~	~~6 month~~	~~Big Wheel Auto Parts 2~~	~~9461 DELRIDGE WAY SW~~	~~SEATTLE~~	~~WA~~	~~98106~~	~~86177265~~	~~Hazardous Waste Generator~~	Eliminated based on 2024 City Survey	Unable to find business in Auburn
~~3~~	~~Wells 3A and 3B~~	~~6 month~~	~~Auburn Barrel Fire~~	~~1800 BLOCK OF 29TH SE~~	~~AUBURN~~	~~WA~~	~~98001~~	~~59751336~~	~~Hazardous Waste Generator~~	Eliminated based on 2024 City Survey	Water source is not in service
4	Wells 3A and 3B	6 month	ROHR INC	3130 D ST SE	AUBURN	WA	98002-8034	61969547	Hazardous Waste Generator Emergency/Haz Chem Rpt TIER2 Toxics Release Inventory Hazardous Waste Planner Underground Storage Tank		Water source is not in service
5	Well 7	6 month	KING CNTY PARKS AUBURN POOL	516 4TH ST NE	AUBURN	WA	98002-5020	56127898	Emergency/Haz Chem Rpt TIER2		Water source is not in service
6	Well 7	6 month	CHURCH OF JESUS CHRIST LDS	331 4TH ST NE	AUBURN	WA	98002	2439	Independent Cleanup		Water source is not in service
~~7~~	~~Well 7~~	~~6 month~~	~~B & G Cleaners~~	~~420 AUBURN WAY N~~	~~AUBURN~~	~~WA~~	~~98002~~	~~44716426~~	~~Hazardous Waste Generator~~	Eliminated based on 2024 City Survey	Water source is not in service. **Now Mattress City**
~~8~~	~~Well 7~~	~~6 month~~	~~Goodyear Gemini Auto Service~~	~~423 AUBURN AVE~~	~~AUBURN~~	~~WA~~	~~98002~~	~~7639544~~	~~Hazardous Waste Generator~~ ~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	Water source is not in service. **Now, U Haul Neighborhood Dealer**
9	Wells 3A and 3B	1 year	PSE Christopher Substation	1002 37TH ST SE	AUBURN	WA	98002	22920	Emergency/Haz Chem Rpt TIER2		Water source is not in service
10	Wells 3A and 3B	1 year	Gildo Ray School Improvements	1005 37TH ST SE	AUBURN	WA	98002	11586	Independent Cleanup		Water source is not in service
11	Well 1	1 year	Walgreens 7480	1701 Auburn Way S	Auburn	WA	98002-6348	99999855	Hazardous Waste Generator		
12	Fulmer Wellfield	1 year	EAST MAIN SHORT STOP	520 MAIN ST E	AUBURN	WA	98002	76772635	Underground Storage Tank Emergency/Haz Chem Rpt TIER2		
~~13~~	~~Fulmer Wellfield~~	~~1 year~~	~~AUBURN TIRE CENTER~~	~~402 E MAIN ST~~	~~AUBURN~~	~~WA~~	~~98002~~	~~16219646~~	~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	Office building with Zolas Café
~~14~~	~~Fulmer Wellfield~~	~~1 year~~	~~Holiday Cleaners~~	~~430 E MAIN ST~~	~~AUBURN~~	~~WA~~	~~98002~~	~~52815618~~	~~Hazardous Waste Generator~~ ~~Voluntary Cleanup Sites~~	Eliminated based on 2024 City Survey	Closed per Yelp. Listed as VERSOLENKO CLEANERS on King County. 3708 S 304TH ST AUBURN WA 98001
15	Fulmer Wellfield	1 year	Auburn City Imports	1148 E MAIN ST	AUBURN	WA	98002-5867	19777843	Underground Storage Tank Hazardous Waste Generator LUST Facility Haz Waste Management Activity		
16	Fulmer Wellfield	1 year	Arco 6120	1204 E MAIN ST	AUBURN	WA	98002	6214861	LUST Facility Hazardous Waste Generator Emergency/Haz Chem Rpt TIER2 Voluntary Cleanup Sites Underground Storage Tank		Now a Shell gas station. Resent letter on 7/11/24
17	Fulmer Wellfield	1 year	Gosney Motor Parts Inc	220 AUBURN WAY N	AUBURN	WA	98002	91199132	Hazardous Waste Generator Hazardous Waste Planner Haz Waste Management Activity		
18	Fulmer Wellfield	1 year	Auburn School Dist 408 Auburn HS	711 E MAIN ST	AUBURN	WA	98002	75264151	Hazardous Waste Generator Underground Storage Tank Haz Waste Management Activity Independent Cleanup		
19	Fulmer Wellfield	1 year	7 ELEVEN FOOD STORE 230320249	1302 8TH NE	AUBURN	WA	98002	52518173	Underground Storage Tank Emergency/Haz Chem Rpt TIER2 Voluntary Cleanup Sites		
20	Fulmer Wellfield	1 year	GREEN RIVER AUTOMOTIVE	810 HARVEY RD NE	AUBURN	WA	98002	75212439	Underground Storage Tank		
21	Coal Creek Springs	5 year	LAKE TAPPS GROCERY	18929 9TH AVE	SUMNER	WA	98390-6407	83174321	Underground Storage Tank Voluntary Cleanup Sites LUST Facility		
~~22~~	~~Valley Wellfield~~	~~5 year~~	~~WA PARKS Puget Sound Region HQ~~	~~1602 29TH ST SE~~	~~AUBURN~~	~~WA~~	~~98002~~	~~47562299~~	~~Hazardous Waste Generator~~ ~~LUST Facility~~ ~~Underground Storage Tank~~ ~~Haz Waste Management Activity~~	Eliminated based on 2024 City Survey	Invalid address
23	Valley Wellfield	5 year	Pioneer Elementary School Auburn	2301 M St SE	Auburn	WA	98002	81432	Hazardous Waste Generator		
~~24~~	~~Valley Wellfield~~	~~5 year~~	~~Coal Creek Pump Station~~	~~2108 Howard RD~~	~~Auburn~~	~~WA~~	~~98001~~	~~6689~~	~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	
25	Valley Wellfield	5 year	7 ELEVEN STORE 230314481L	1539 SE 21ST ST	AUBURN	WA	98002-0000	6556758	Underground Storage Tank Emergency/Haz Chem Rpt TIER2		
~~26~~	~~Valley Wellfield~~	~~5 year~~	~~Canham Property~~	~~1225 21ST ST SE~~	~~AUBURN~~	~~WA~~	~~98002~~	~~7503879~~	~~State Cleanup Site~~	Eliminated based on 2024 City Survey	Remove from list. SFR property. Canham no longer property owner
~~27~~	~~Valley Wellfield~~	~~5 year~~	~~Mikes Honda Parts Inc~~	~~2015 R ST SE~~	~~AUBURN~~	~~WA~~	~~98002~~	~~8592585~~	~~Hazardous Waste Generator~~	Eliminated based on 2024 City Survey	Invalid address
28	Valley Wellfield	5 year	Valley Regional Fire Authority	1951 R St SE	AUBURN	WA	98002	7425	Independent Cleanup		
~~29~~	~~Valley Wellfield~~	~~5 year~~	~~AUBURN SHOPPING CENTER~~	~~1815 Howard Rd~~	~~Auburn~~	~~WA~~	~~98002~~	~~2421044~~	~~Voluntary Cleanup Sites~~	Eliminated based on 2024 City Survey	Invalid address
30	Valley Wellfield	5 year	BP Service Station 11065	1111 17TH ST SE	AUBURN	WA	98002	98619798	Emergency/Haz Chem Rpt TIER2 LUST Facility Hazardous Waste Generator Voluntary Cleanup Sites Underground Storage Tank Haz Waste Management Activity		
31	Valley Wellfield	5 year	Rite Aid 5172	1509 AUBURN WAY S	AUBURN	WA	98002	6438351	Hazardous Waste Generator		
32	Valley Wellfield	5 year	ROGERS FURNITURE	1407 AUBURN WAY S	AUBURN	WA	98002	22372684	Underground Storage Tank		Now, Habitat for Humanity Thirft store - Resent letter on 7/12/24

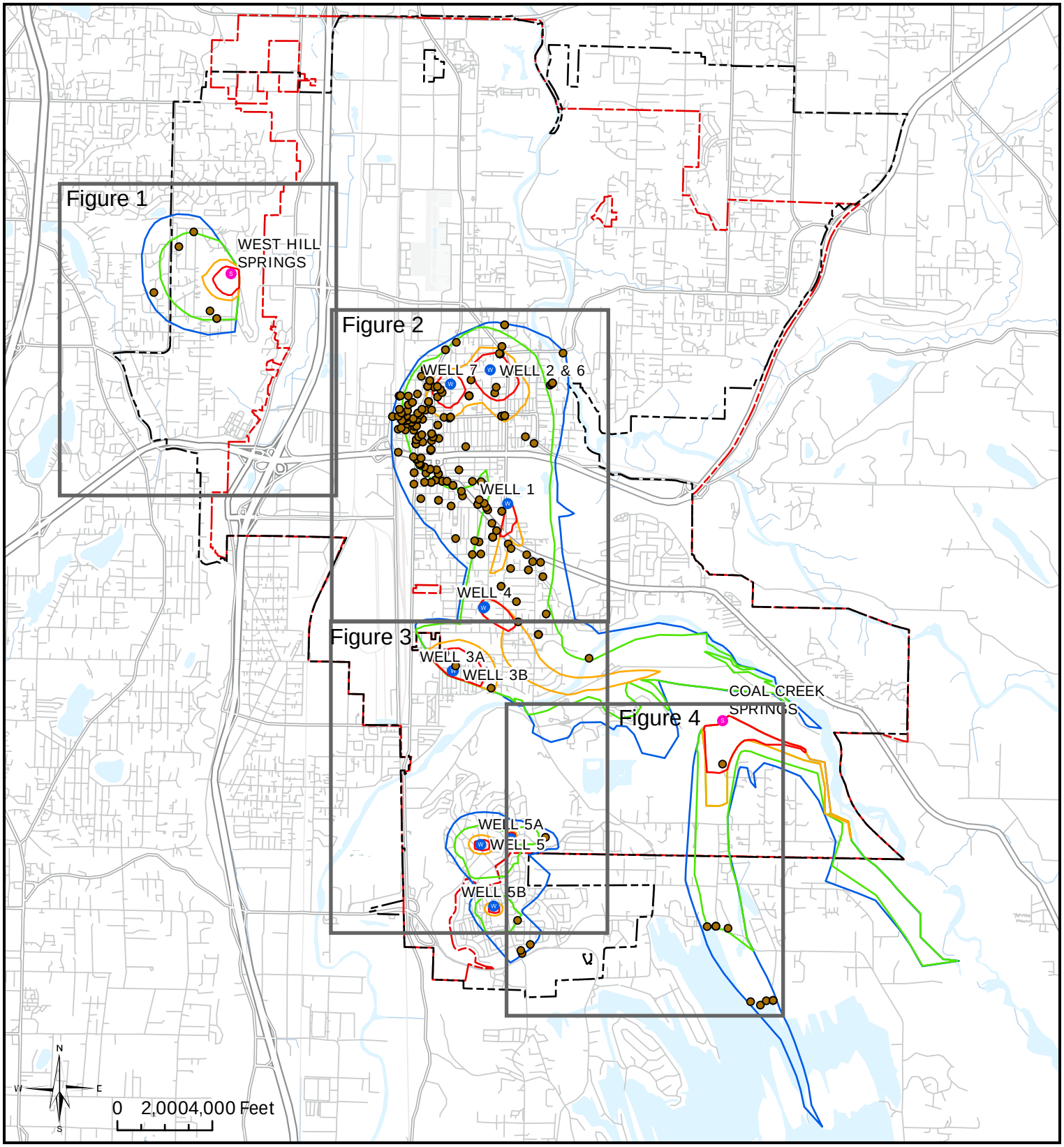
33	Valley Wellfield	5 year	PCL Construction Services Inc	1201 M ST SE UNIT A	AUBURN	WA	98002	77145631	Hazardous Waste Generator		Now, Miles Gravel CO Muckleshoot Indian Tribe 39015 172ND AVE SE
34	Valley Wellfield	5 year	Auburn Muffler & Brake Inc	1301 AUBURN WAY S	AUBURN	WA	98002-6743	4396551	Hazardous Waste Generator		
35	Valley Wellfield	5 year	AUBURN VALLEY YMCA	1005 12TH ST SE	AUBURN	WA	98002-6259	75864862	Underground Storage Tank		
36	Valley Wellfield	5 year	GREEN RIVER HOMES	1103 9TH ST SE	AUBURN	WA	98002-6230	15827666	Underground Storage Tank		
~~37~~	~~Valley Wellfield~~	~~5 year~~	~~U Haul Co of Auburn~~	~~917 AUBURN WAY S~~	~~AUBURN~~	~~WA~~	~~98002-6031~~	~~41255524~~	~~Underground Storage Tank~~ ~~Hazardous Waste Generator~~ ~~Underground Injection Control~~	Eliminated based on 2024 City Survey	Temporarily Closed per google. Vacant commercial building per King County.
38	Valley Wellfield	5 year	7 ELEVEN STORE 230325087J	813 AUBURN WAY S	AUBURN	WA	98002-0000	56122859	Underground Storage Tank Emergency/Haz Chem Rpt TIER2		Location is now La Favorita Mexican Store. Resent on 7/12/24
39	Valley Wellfield	5 year	BROWN BEAR CAR WASH 5473	814 AUBURN WAY S	AUBURN	WA	98002	1289197	Underground Storage Tank LUST Facility Voluntary Cleanup Sites		
40	Valley Wellfield	5 year	Cenex Harvest States Auburn	238 8TH ST SE	AUBURN	WA	98002	2487	Underground Storage Tank Emergency/Haz Chem Rpt TIER2 Hazardous Waste Generator LUST Facility State Cleanup Site Enforcement Final		
~~41~~	~~Valley Wellfield~~	~~5 year~~	~~AUBURN ABANDONED FIRE Sta~~	~~700 AUBURN WAY S~~	~~AUBURN~~	~~WA~~	~~98002~~	~~2240~~	~~LUST Facility~~ ~~Underground Storage Tank~~ ~~Independent Cleanup~~	Eliminated based on 2024 City Survey	Invalid address
~~42~~	~~Valley Wellfield~~	~~5 year~~	~~AUBURN CITY MAINTENANCE FACILITY~~	~~AUBURN WAY S & SR 18 OFF RAMP~~	~~AUBURN~~	~~WA~~	~~98002~~	~~91188982~~	~~State Cleanup Site~~	Eliminated based on 2024 City Survey	
43	Valley Wellfield	5 year	ConocoPhillips Site 2705928	601 AUBURN WAY S	AUBURN	WA	98002	12222643	Underground Storage Tank LUST Facility Haz Waste Management Activity Voluntary Cleanup Sites		
~~44~~	~~Valley Wellfield~~	~~5 year~~	~~U SAVE OIL CO AUBURN~~	~~615 AUBURN WAY S~~	~~AUBURN~~	~~WA~~	~~98002-6031~~	~~62451633~~	~~Emergency/Haz Chem Rpt TIER2~~	Eliminated based on 2024 City Survey	Invalid address
~~45~~	~~Valley Wellfield~~	~~5 year~~	~~BNSF Railway Company Auburn1~~	~~6TH & A ST SW~~	~~AUBURN~~	~~WA~~	~~98002~~	~~36586859~~	~~Hazardous Waste Generator~~ ~~Hazardous Waste Planner~~ ~~Haz Waste Management Activity~~	Eliminated based on 2024 City Survey	
46	Valley Wellfield	5 year	QUICK STUFF 7758	524 A ST SE	AUBURN	WA	98002	3875407	Underground Storage Tank Hazardous Waste Generator Haz Waste Management Activity		
~~47~~	~~Valley Wellfield~~	~~5 year~~	~~Electrofinishing Co~~	~~510 A ST SE~~	~~AUBURN~~	~~WA~~	~~98002~~	~~2247~~	~~Hazardous Waste Generator~~ ~~State Cleanup Site~~	Eliminated based on 2024 City Survey	No longer at this address. Located in Kent per google. Now, POTTERY MFG 13306 SE 30TH ST BELLEVUE WA 98005
~~48~~	~~Valley Wellfield~~	~~5 year~~	~~ARD LLC~~	~~512 A ST SE~~	~~AUBURN~~	~~WA~~	~~98002~~	~~192519~~	~~Hazardous Waste Generator~~	Eliminated based on 2024 City Survey	Invalid address
~~49~~	~~Valley Wellfield~~	~~5 year~~	~~Auburn Auto Wrecking~~	~~512 A ST SE~~	~~AUBURN~~	~~WA~~	~~98002~~	~~3539302~~	~~Voluntary Cleanup Sites~~ ~~State Cleanup Site~~	Eliminated based on 2024 City Survey	Invalid address
~~50~~	~~Valley Wellfield~~	~~5 year~~	~~Puget Sound Recycling~~	~~523 A ST SE~~	~~AUBURN~~	~~WA~~	~~98002~~	~~111375~~	~~Haz Waste Management Activity~~ ~~State Cleanup Site~~	Eliminated based on 2024 City Survey	Address brings up 119 A ST SE 98002 on King County owned by BNSF PO BOX 961089 FORT WORTH TX 76161
~~51~~	~~Valley Wellfield~~	~~5 year~~	~~BURLINGTON NORTHERN RAILROAD UST 10211~~	~~15TH & A ST SECTION HOUSE~~	~~AUBURN~~	~~WA~~	~~98002~~	~~82446475~~	~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	
~~52~~	~~Valley Wellfield~~	~~5 year~~	~~PSE Mineral Oil Spill Auburn Way S~~	~~409 AUBURN WAY S~~	~~AUBURN~~	~~WA~~	~~98002~~	~~31784~~	~~State Cleanup Site~~	Eliminated based on 2024 City Survey	Invalid address
53	Valley Wellfield	5 year	Unocal SS No 5377	407 AUBURN WAY S	AUBURN	WA	98002	33431837	Emergency/Haz Chem Rpt TIER2 Hazardous Waste Generator LUST Facility Underground Storage Tank Independent Remedial Actn Prg		
54	Valley Wellfield	5 year	SHELL STATION ALS SHELL	305 A ST SE	AUBURN	WA	98002	83888595	Emergency/Haz Chem Rpt TIER2 Underground Storage Tank Voluntary Cleanup Sites LUST Facility		
55	Valley Wellfield	5 year	ART FETTER LOGGING CO INC	525 R ST SE	AUBURN	WA	98002-5873	15264683	Underground Storage Tank		Listed as Gravel pit - MUCKLESHOOT INDIAN TRIBE 39015 172ND AVE SE AUBURN WA 98092
~~56~~	~~Valley Wellfield~~	~~5 year~~	~~Auburn Sunshine Ctr Cleaners~~	~~120 CROSS ST SE~~	~~AUBURN~~	~~WA~~	~~98002~~	~~75549945~~	~~Hazardous Waste Generator~~	Eliminated based on 2024 City Survey	Could not find business. Addess is for Fit City juice bar.
57	Valley Wellfield	5 year	Q LUBE 1540	307 AUBURN WAY S	AUBURN	WA	98002	21867559	Underground Storage Tank		
58	Valley Wellfield	5 year	A Street Automotive	225 A ST SE	AUBURN	WA	98002	1195126	LUST Facility Underground Storage Tank Hazardous Waste Generator		
59	Valley Wellfield	5 year	Frontier Cleaners	126 AUBURN WAY S	AUBURN	WA	98002	36568747	Hazardous Waste Generator		
~~60~~	~~Valley Wellfield~~	~~5 year~~	~~1342 SE 3rd St Auburn~~	~~1342 SE 3RD ST 3~~	~~AUBURN~~	~~WA~~	~~98002~~	~~89653585~~	~~Hazardous Waste Generator~~	Eliminated based on 2024 City Survey	Apartment building

61	Valley Wellfield	5 year	Shell Station 120849	201 AUBURN WAY S	AUBURN	WA	98002	53454594	Hazardous Waste Generator Emergency/Haz Chem Rpt TIER2 LUST Facility Hazardous Waste Planner Underground Storage Tank Haz Waste Management Activity		
~~62~~	~~Valley Wellfield~~	~~5 year~~	~~Chevron USA A St Auburn~~	~~206 A ST~~	~~AUBURN~~	~~WA~~	~~98002~~	~~61289713~~	~~Hazardous Waste Generator~~ ~~LUST Facility~~ ~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	Incomplete address. 206 A St SE is a WaFD bank
63	Valley Wellfield	5 year	Schucks Auto Supply 4204	222 A ST SE	AUBURN	WA	98002-5429	32854268	Hazardous Waste Generator Haz Waste Management Activity		
~~64~~	~~Valley Wellfield~~	~~5 year~~	~~Texaco Station 632320508~~	~~202 AUBURN WAY S~~	~~AUBURN~~	~~WA~~	~~98002~~	~~22669936~~	~~Emergency/Haz Chem Rpt TIER2~~ ~~Hazardous Waste Generator~~ ~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	Now, Timberland Bank
~~65~~	~~Valley Wellfield~~	~~5 year~~	~~Dales Autobody~~	~~111 S DIVISION ST~~	~~AUBURN~~	~~WA~~	~~98001~~	~~86639153~~	~~Hazardous Waste Generator~~	Eliminated based on 2024 City Survey	No longer exists. Location is now the Verge apartments.
~~66~~	~~Valley Wellfield~~	~~5 year~~	~~PACIFIC FIRST FACILITY~~	~~55 A ST SE~~	~~AUBURN~~	~~WA~~	~~98002~~	~~51983738~~	~~LUST Facility~~ ~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	Now a retail building
67	Valley Wellfield	5 year	SAFEWAY FUEL CTR 531	101 AUBURN WAY S	AUBURN	WA	98002	9403664	Underground Storage Tank Hazardous Waste Generator		
68	Valley Wellfield	5 year	Legacy Plaza Senior Living	21 S DIVISION ST	AUBURN	WA	98001	60822	Independent Cleanup		
~~69~~	~~Valley Wellfield~~	~~5 year~~	~~AUBURN PROMENADE PROJECT~~	~~12 & 16 DIVISION ST S in R-O-W~~	~~AUBURN~~	~~WA~~	~~98001~~	~~11202~~	~~Underground Storage Tank~~ ~~LUST Facility~~ ~~State Cleanup Site~~ ~~Voluntary Cleanup Sites~~	Eliminated based on 2024 City Survey	
70	Valley Wellfield	5 year	Auburn City Main & Division	2 W Main St	Auburn	WA	98002	21171	Independent Cleanup		
71	Valley Wellfield	5 year	CAVANAUGH ACE HARDWARE	26 E MAIN ST	AUBURN	WA	98002-4903	42357767	Underground Storage Tank		
72	Valley Wellfield	5 year	WEST MAIN SHORT STOP	210 MAIN ST W	AUBURN	WA	98002	28758183	Emergency/Haz Chem Rpt TIER2 Underground Storage Tank		
73	Valley Wellfield	5 year	Venture Construction Inc	4005 W VALLEY HWY	AUBURN	WA	98071-0878	88323277	Underground Storage Tank		
~~74~~	~~Valley Wellfield~~	~~5 year~~	~~W Main St Auburn~~	~~1500 BLOCK OF W MAIN ST~~	~~AUBURN~~	~~WA~~	~~98002~~	~~27197361~~	~~Hazardous Waste Generator~~	Eliminated based on 2024 City Survey	
~~75~~	~~Valley Wellfield~~	~~5 year~~	~~Lincoln Apartments~~	~~124 W MAIN ST~~	~~AUBURN~~	~~WA~~	~~98001~~	~~99826415~~	~~Hazardous Waste Generator~~	Eliminated based on 2024 City Survey	Now, Harold's Plumbing.
76	Valley Wellfield	5 year	AUBURN CITY PARKS	25 W MAIN ST	AUBURN	WA	98001	51845861	Underground Storage Tank		
77	Valley Wellfield	5 year	AUBURN CITY OF	25 W MAIN ST	AUBURN	WA	98001	9576	Municipal SW Phase II Western WA GP AP Aquatic Mosquito Control GP		
78	Valley Wellfield	5 year	FRED MEYER FUEL	801 AUBURN WAY	AUBURN	WA	98002	7318689	Underground Storage Tank		
79	Valley Wellfield	5 year	AUBURN PROFESSIONAL PLAZA LLC	15 AUBURN AVE NE	AUBURN	WA	98002	99996979	Underground Storage Tank LUST Facility		
~~80~~	~~Valley Wellfield~~	~~5 year~~	~~SOUTHWIRE CO SEATTLE FASST SERVICE CENTER~~	~~3703 1ST NW~~	~~AUBURN~~	~~WA~~	~~98001~~	~~69124~~	~~Emergency/Haz Chem Rpt TIER2~~	Eliminated based on 2024 City Survey	Invalid address
~~81~~	~~Valley Wellfield~~	~~5 year~~	~~Bills Repair 132nd~~	~~107 S DIVISION~~	~~AUBURN~~	~~WA~~	~~98001~~	~~4257198~~	~~Hazardous Waste Generator~~	Eliminated based on 2024 City Survey	Address not found. Located at 34020 186th St SE Auburn, WA 98092
82	Valley Wellfield	5 year	Vics Radiator Auburn	102 AUBURN WAY N	AUBURN	WA	98002	84278339	Hazardous Waste Generator		Now Auburn Drivetrain. Resent letter 7/12/24
~~83~~	~~Valley Wellfield~~	~~5 year~~	~~PHILLIPS 66 COMPANY SS070816~~	~~124 AUBURN WAY~~	~~AUBURN~~	~~WA~~	~~98002~~	~~94247487~~	~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	No Phillips 66 in Auburn. Location is now Auburn Licensing Agency
84	Valley Wellfield	5 year	LYLE & LOUISE SCHNEIDER		AUBURN	WA	98002-9999	61524452	Underground Storage Tank	Eliminated based on 2024 City Survey	
85	Valley Wellfield	5 year	QWEST COMMUNICATIONS W00015	10 2ND ST SE	AUBURN	WA	98002	63931956	Hazardous Waste Generator Emergency/Haz Chem Rpt TIER2 Underground Storage Tank		
86	Valley Wellfield	5 year	Multicare Auburn Medical center	210 N Division St	Auburn	WA	98001	100000156	Non Enforcement Final		
~~87~~	~~Valley Wellfield~~	~~5 year~~	~~Tyson Heating Oil Tank~~	~~229 N DIVISION ST~~	~~AUBURN~~	~~WA~~	~~98001~~	~~64569~~	~~State Cleanup Site~~	Eliminated based on 2024 City Survey	Invalid address
88	Valley Wellfield	5 year	JACKPOT FOOD MART 309	415 AUBURN WAY N	AUBURN	WA	98002	42261182	Underground Storage Tank Emergency/Haz Chem Rpt TIER2 LUST Facility Voluntary Cleanup Sites Underground Injection Control		
89	Valley Wellfield	5 year	Scarff Ford Isuzu	501 AUBURN WAY N	AUBURN	WA	98002	13578522	Hazardous Waste Generator Underground Storage Tank		
~~90~~	~~Valley Wellfield~~	~~5 year~~	~~Mil Lor Co Inc~~	~~3210 B ST NE~~	~~AUBURN~~	~~WA~~	~~98002~~	~~5567739~~	~~Hazardous Waste Generator~~	Eliminated based on 2024 City Survey	Warehouse owned by The Feroy Family Trust 4014 110TH AV E
91	Valley Wellfield	5 year	Mohawk Northern Plastics Inc	701 A ST NE	AUBURN	WA	98002-4026	1696293	Hazardous Waste Generator Hazardous Waste Planner Industrial SW GP Toxics Release Inventory SEA Project Site		
92	Valley Wellfield	5 year	Auburn Foreign Car Inc	725 AUBURN WAY N	AUBURN	WA	98002	57583297	Hazardous Waste Generator		
93	Valley Wellfield	5 year	Car Wash Enterprises CWE	814 AUBURN WAY S	AUBURN	WA	98002	22489285	Emergency/Haz Chem Rpt TIER2 Hazardous Waste Generator		
94	Valley Wellfield	5 year	Auburn One Hour Cleaners	911 HARVEY RD	AUBURN	WA	98002	24681824	Hazardous Waste Generator Revised Site Visit Program		

95	Valley Wellfield	5 year	FRED MEYER AUBURN	801 AUBURN WAY N	AUBURN	WA	98002	20474	Independent Remedial Actn Prg		
96	West Hill Springs	5 year	AT&T Wireless Auburn 2	5800 S 316TH ST	AUBURN	WA	98001-3843	47615657	Underground Storage Tank Emergency/Haz Chem Rpt TIER2		
97	West Hill Springs	5 year	Mentzer Property	30610 52ND AVE S	AUBURN	WA	98001	3561	State Cleanup Site		
~~98~~	~~Coal Creek Springs~~	~~10 year~~	~~Tapps Lake Dike No 4~~	~~-~~	~~BONNEY L~~	~~WA~~	~~98390~~	~~98134177~~	~~Dam Site~~	Eliminated based on 2024 City Survey	
~~99~~	~~Coal Creek Springs~~	~~10 year~~	~~Tapps Lake Dike No 5~~	~~-~~	~~BONNEY L~~	~~WA~~	~~98390~~	~~13594965~~	~~Dam Site~~	Eliminated based on 2024 City Survey	
~~100~~	~~Coal Creek Springs~~	~~10 year~~	~~LAKE TAPPS COUNTY PARK~~	~~1715 198TH AVE E~~	~~SUMNER~~	~~WA~~	~~98390~~	~~7873982~~	~~Underground Storage Tank~~ ~~LUST Facility~~ ~~Voluntary Cleanup Sites~~	Eliminated based on 2024 City Survey	
~~101~~	~~Coal Creek Springs~~	~~10 year~~	~~Tapps Lake Dike No 3~~	~~-~~	~~BONNEY L~~	~~WA~~	~~98390~~	~~76644586~~	~~Dam Site~~	Eliminated based on 2024 City Survey	
102	Valley Wellfield	10 year	US EPA Hartung Property Auburn Resident	424 12TH ST SE	AUBURN	WA	98002	64661969	Hazardous Waste Generator		
103	Valley Wellfield	10 year	Auburn Valley Chevron	1156 AUBURN WAY S	AUBURN	WA	98002	5722273	Emergency/Haz Chem Rpt TIER2 Hazardous Waste Generator LUST Facility Underground Storage Tank Voluntary Cleanup Sites Enforcement Final		
104	Valley Wellfield	10 year	Terminal Park Elementary School	1101 D St SE	Auburn	WA	98002-6097	99997357	Hazardous Waste Generator		
~~105~~	~~Valley Wellfield~~	~~10 year~~	~~TERN BOAT PROPERTY~~	~~106 11TH ST SE~~	~~AUBURN~~	~~WA~~	~~98002~~	~~5576416~~	~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	Location closed. Retail building per King County.
106	Valley Wellfield	10 year	Steves Quality Auto Refinishin	114 11TH ST SE	AUBURN	WA	98002	51893897	Hazardous Waste Generator		
~~107~~	~~Valley Wellfield~~	~~10 year~~	~~RENTAL MARTS UST 4275~~	~~1018 AUBURN WAY S~~	~~AUBURN~~	~~WA~~	~~98002-6132~~	~~85372715~~	~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	Now a parking lot.
~~108~~	~~Valley Wellfield~~	~~10 year~~	~~BURLINGTON NORTHERN RR AUBURN~~	~~A ST SE & SE 9TH ST~~	~~AUBURN~~	~~WA~~	~~98002~~	~~2573~~	~~State Cleanup Site~~	Eliminated based on 2024 City Survey	
~~109~~	~~Valley Wellfield~~	~~10 year~~	~~Pep Boys 1471 Auburn~~	~~220 8th St SE~~	~~Auburn~~	~~WA~~	~~98002~~	~~7374~~	~~Hazardous Waste Generator~~ ~~Haz Waste Management Activity~~	Eliminated based on 2024 City Survey	Location closed
110	Valley Wellfield	10 year	Laramore Enterprises Corp Auburn	124 7th St SE	Auburn	WA	98002	26509	Hazardous Waste Generator Hazardous Waste Planner		
~~111~~	~~Valley Wellfield~~	~~10 year~~	~~AUBURN PRINT33 LS051 3RDSUB MP 21.5~~	~~A ST SE & SE 7TH ST~~	~~AUBURN~~	~~WA~~	~~98001~~	~~53142972~~	~~LUST Facility~~ ~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	
112	Valley Wellfield	10 year	Associated Sign Graphics	535 C ST SW	AUBURN	WA	98001-5907	97852292	Hazardous Waste Generator		
113	Valley Wellfield	10 year	Bartkowski Property	110 2nd St SW	Auburn	WA	98002	99997176	Underground Storage Tank		Owned by Sound Transit 401 S JACKSON ST SEATTLE WA 98104
~~114~~	~~Valley Wellfield~~	~~10 year~~	~~AUBURN PRINT466 LS51 3RDSUB MP 22~~	~~7TH 15TH & A ST~~	~~AUBURN~~	~~WA~~	~~98001~~	~~75229551~~	~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	
~~115~~	~~Valley Wellfield~~	~~10 year~~	~~Wickham & Sons~~	~~23 A ST SW~~	~~AUBURN~~	~~WA~~	~~98001~~	~~2728393~~	~~Hazardous Waste Generator~~ ~~Hazardous Waste Planner~~ ~~LUST Facility~~ ~~Underground Storage Tank~~ ~~Voluntary Cleanup Sites~~	Eliminated based on 2024 City Survey	Invalid address
116	Valley Wellfield	10 year	Auburn Collision Center	233 W MAIN	AUBURN	WA	98001	31398434	Hazardous Waste Generator LUST Facility Underground Storage Tank		
~~117~~	~~Valley Wellfield~~	~~10 year~~	~~V DUB CENTRAL~~	~~123 W MAIN ST~~	~~AUBURN~~	~~WA~~	~~98001~~	~~56777688~~	~~Hazardous Waste Generator~~ ~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	Now, Main Street Garage. C/O MICHAEL JOHN KLEIN CPA 5737 KANAN RD #627
118	Valley Wellfield	10 year	UNOCAL BULK PLANT 0028	112 3RD ST NW	AUBURN	WA	98001	2448	LUST Facility Hazardous Waste Generator Underground Storage Tank Independent Cleanup		
119	Valley Wellfield	10 year	DON SMALL & SONS DIST CO AUBURN	112 3RD ST NW	AUBURN	WA	98001	59342541	Emergency/Haz Chem Rpt TIER2 Industrial SW GP		
~~120~~	~~Valley Wellfield~~	~~10 year~~	~~CORLISS REDI MIX INC~~	~~29910 ENUMCLAW CHINOOK PASS HWY~~	~~ENUMCLA~~	~~WA~~	~~98022~~	~~84521135~~	~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	16805 64th St E Sumner Wa, 98390 address per google.
121	Valley Wellfield	10 year	DASCOMP INC	19 CLAY ST NW	AUBURN	WA	98002	46324771	Underground Storage Tank		Mailing Address P O BOX 988 AUBURN, WA 98071-0988 Resent letter on
~~122~~	~~Valley Wellfield~~	~~10 year~~	~~WR GRACE & CO CONST PROD DIV~~	~~110 SW ST~~	~~AUBURN~~	~~WA~~	~~98002~~	~~5614998~~	~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	No an actual address
123	Valley Wellfield	10 year	FRITO LAY SALES DIST CENTER UST 10545	302 WESTERN ST NW	AUBURN	WA	98002	83727478	Underground Storage Tank Emergency/Haz Chem Rpt TIER2		
~~124~~	~~Valley Wellfield~~	~~10 year~~	~~LEA HILL PUMP STATION~~	~~10406 LEA HILL RD~~	~~AUBURN~~	~~WA~~	~~98001~~	~~53452247~~	~~Underground Storage Tank~~	Eliminated based on 2024 City Survey	
125	Valley Wellfield	10 year	MILES SAND & GRAVEL COMPANY INC AUBURN	1201 M ST SE	AUBURN	WA	98002-6707	87547247	Underground Storage Tank Sand and Gravel GP		Duplicate on list. Resent letter on 7/11/24. Miles Gravel Muckleshoot Indian Tribe 39015 172ND AVE SE Auburn, WA 98092
126	West Hill Springs	10 year	Federal Way Water Dist 305th S	5600 BLK S 305TH ST	AUBURN	WA	98001	33656732	Hazardous Waste Generator		

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2024 Updated Wellhead Protection Area CSI Maps



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Project No. 22-3425

Legend

- 6 Month WHPA
- 1 Year WHPA
- 5 Year WHPA
- 10 Year WHPA
- Hazard Site
- Spring
- Well
- Auburn City Limits
- Retail Water Service Area

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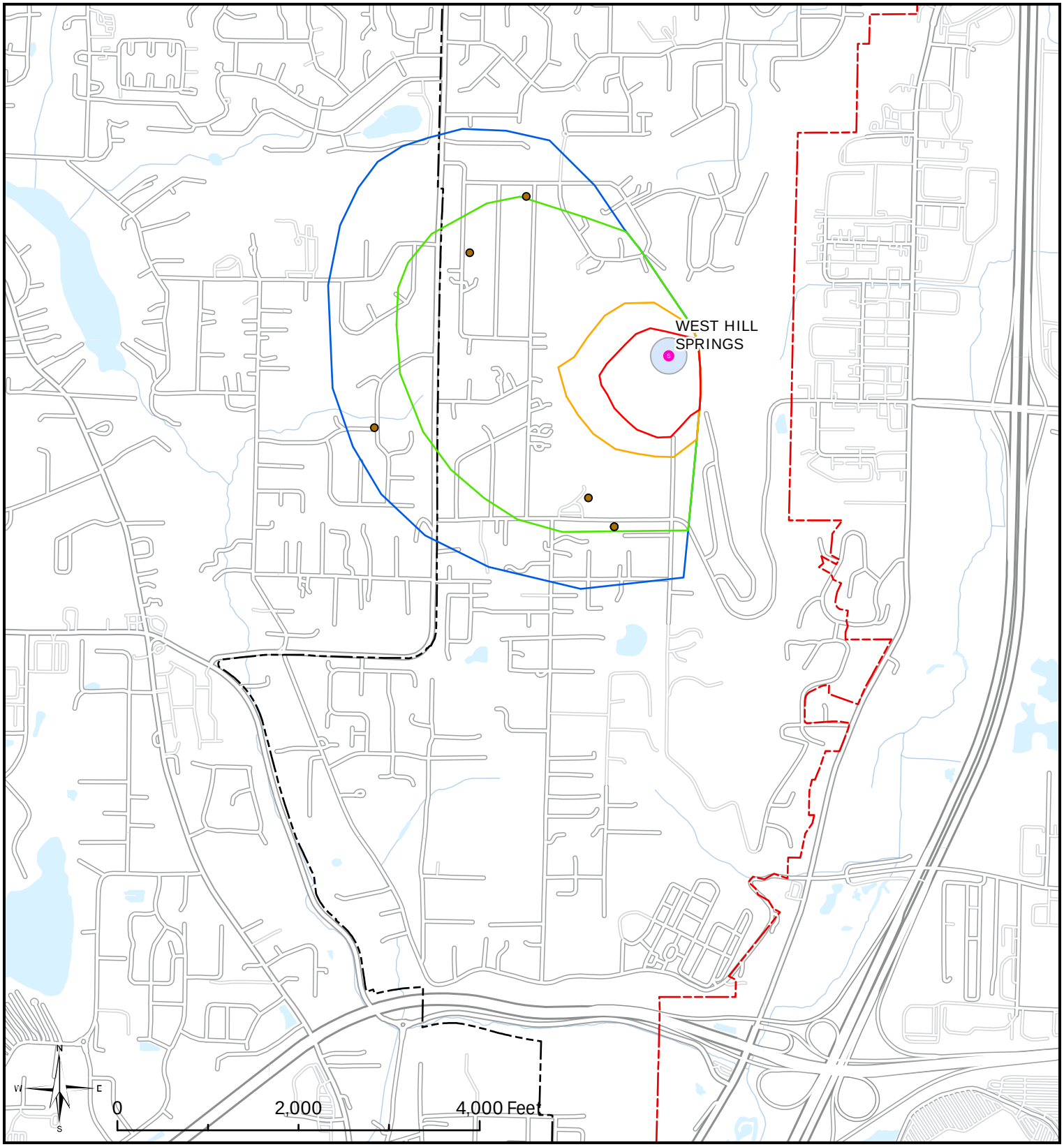
Wellhead Protection Area Hazard Sites - Overview Map

May 2024

Data Sources:List all data sources, e.g. Public Utility, Sept 2020; Metropolis City, April 2018. Service Layer Credits: World Terrain Base: King County, WA State Parks GIS, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS

Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet

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Project No. 22-3425

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- 10 Year WHPA
- Hazard Site
- Spring
- Sanitary Control Area
- Auburn City Limits
- Retail Water Service Area

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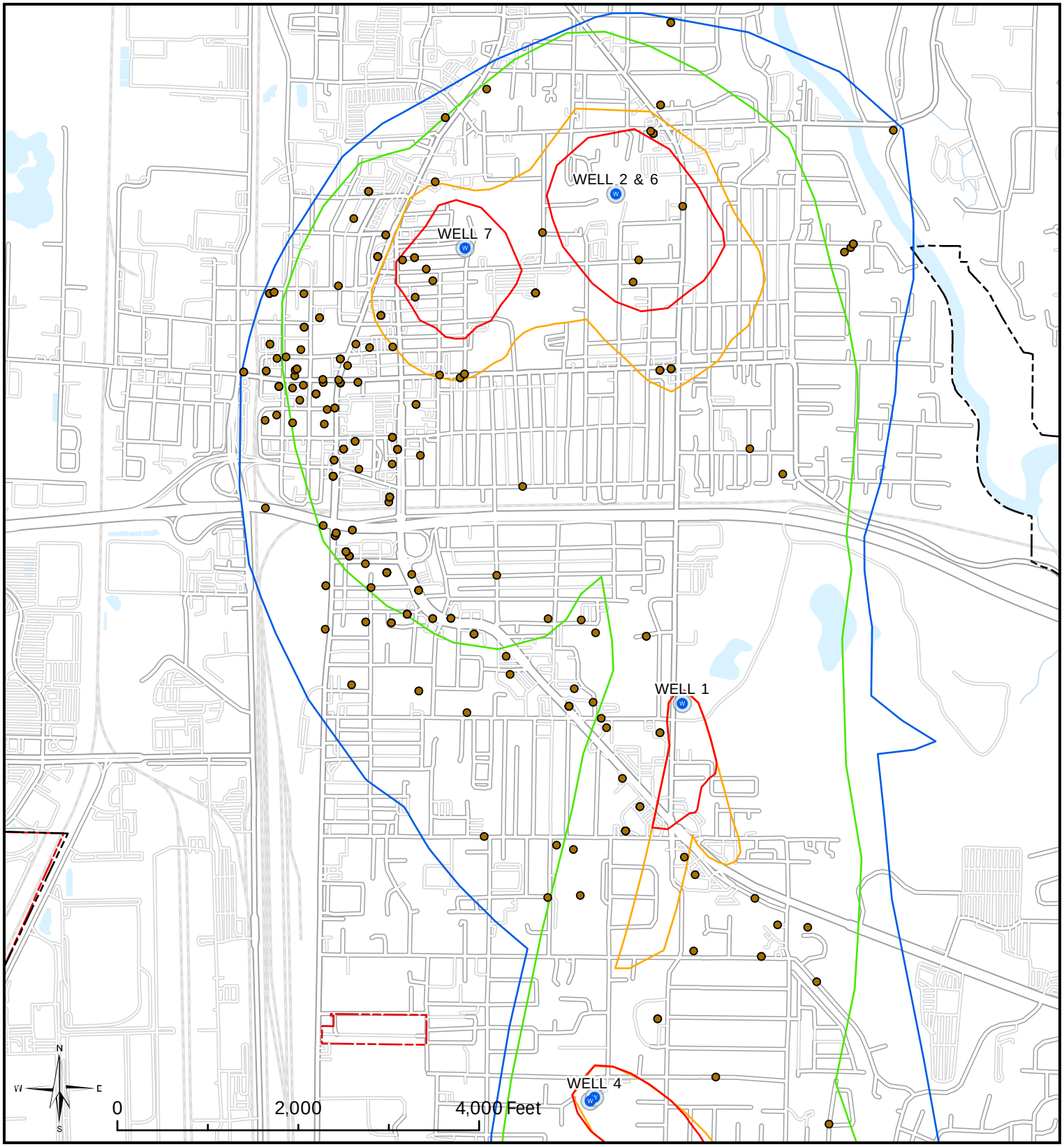
Wellhead Protection Area Hazard Sites - Figure 1

May 2024

Data Sources:List all data sources, e.g. Public Utility, Sept 2020; Metropolis City, April 2018. Service Layer Credits: World Terrain Base: Esri Community Maps Contributors, King County, WA State Parks GIS, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS

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Project No. 22-3425

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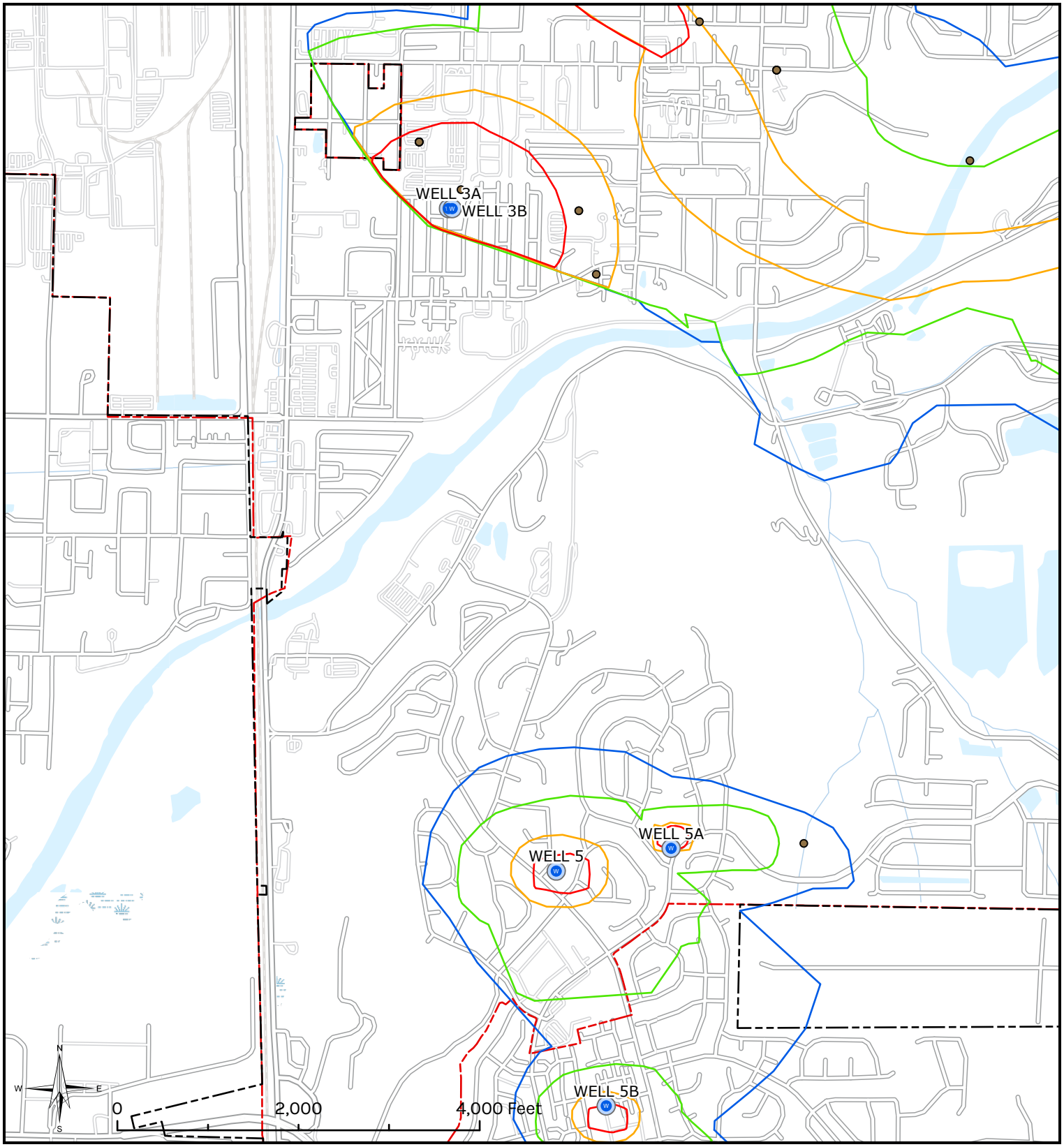
Wellhead Protection Area Hazard Sites - Figure 2

May 2024

Data Sources:List all data sources, e.g. Public Utility, Sept 2020; Metropolis City, April 2018. Service Layer Credits: World Terrain Base: Esri Community Maps Contributors, King County, WA State Parks GIS, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS

Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet

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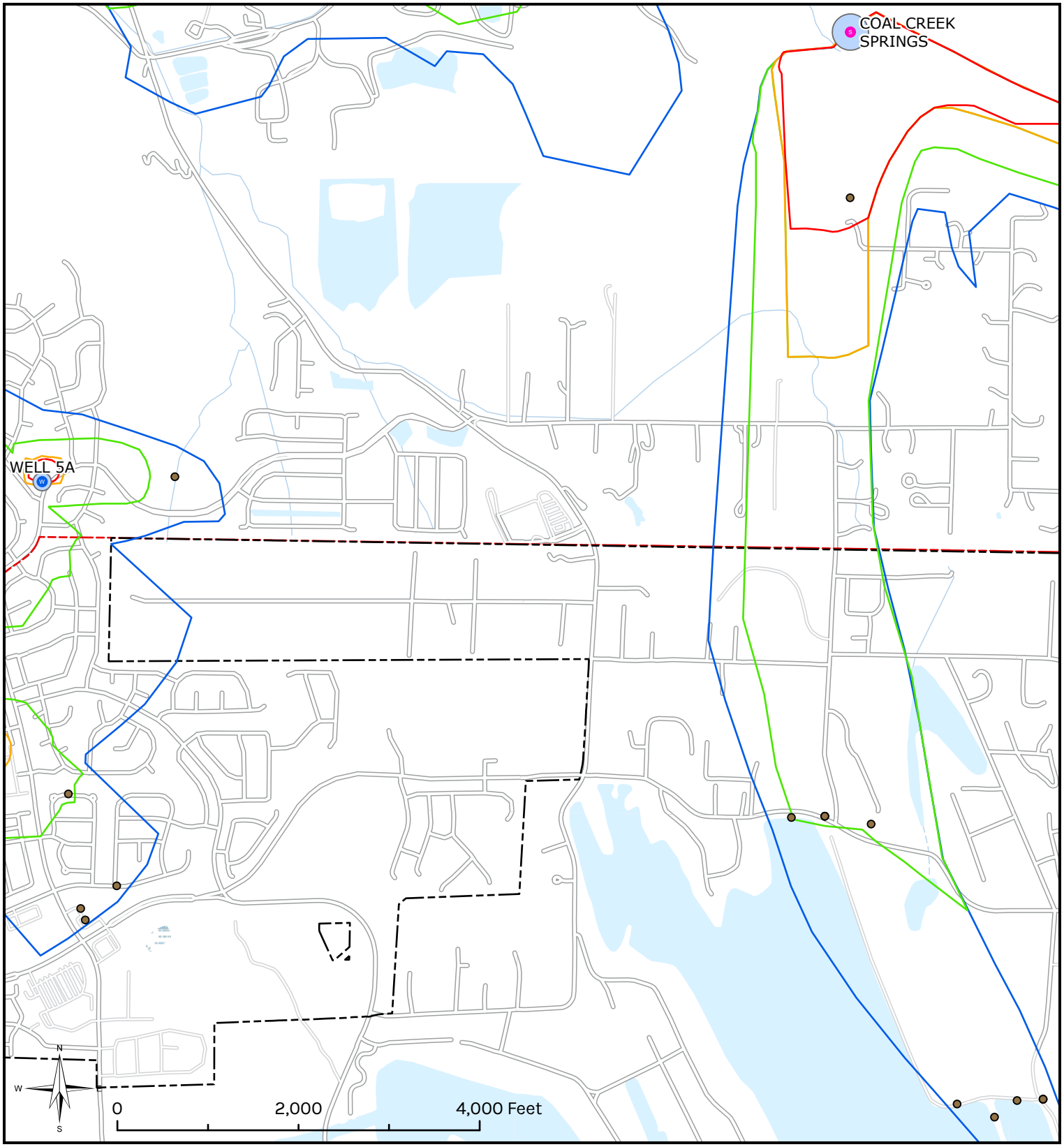
Wellhead Protection Area Hazard Sites - Figure 3

April 2024

Data Sources:List all data sources, e.g. Public Utility, Sept 2020; Metropolis City, April 2018. Service Layer Credits: World Terrain Base: Esri Community Maps Contributors, King County, WA State Parks GIS, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS

Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet

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- 1 Year WHPA
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Wellhead Protection Area Hazard Sites - Figure 4

Project No. 22-3425

Data Sources:List all data sources, e.g. Public Utility, Sept 2020; Metropolis City, April 2018. Service Layer Credits: World Terrain Base: Esri Community Maps Contributors, King County, WA State Parks GIS, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS

Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Disclaimer: Consor and The City of Auburn make no representations, express or implied, as to the accuracy, completeness and timeliness of the information displayed. This map is not suitable for legal, engineering, or surveying purposes. Notification of any errors is appreciated.

April 2024

consor

2024 Notification Letter Templates

MM/DD/2024

LETTER OF NOTIFICATION – SITE WITHIN AN AUBURN WELLHEAD PROTECTION AREA

To whom it may concern,

The City of Auburn (City) relies on groundwater for our drinking water source, and a Wellhead Protection Plan (Plan) has been developed to help maintain drinking water quality for City residents. The Plan is based on the Washington Department of Health (DOH) Washington Administrative Code (WAC) 246-290-135(3) regulations. As part of that Plan, maps were prepared that show the Wellhead Protection Areas (WHPA), which are the areas around each well where chemical spills or other sources of contamination may contaminate the water source.

The City has approximately 15,000 service connections and serves approximately 64,000 residents. There are several sources within our system that were rated as highly susceptible to contamination by DOH. This means that surface spills could potentially infiltrate into the aquifer, placing our water sources at risk.

The City of Auburn's WHPAs are shown on the enclosed maps. Our records indicate that your property is located within the City's WHPAs and that activities on the property may include the generation, use, or storage of chemicals or hazardous substances. This notice is a reminder that your business, or the business on your property, can help protect our drinking water by preventing the release of chemicals and hazardous substances onto the ground, to stormwater systems, and to septic systems. Prevention methods include the following:

- Providing proper storage of chemicals on site, and regular inspection of storage areas and containers, to ensure that containers or tanks are not leaking.
- Verifying that the site has up-to-date spill plans and training for staff so that on-site staff know what to do if a spill does occur.

As the potential exists that a contaminant spill on your facility property may adversely impact the City's drinking water supply, please notify the City immediately in the event of a contaminant spill at 253-931-3048 on weekdays between 6:00AM and 3:30PM or call 911 if outside these timeframes. All spills in King County should be reported to the Department of Ecology by dialing 206-594-0000.

Thank you for assisting us in protecting our water supply. If you have any questions, please contact me at 256-931-3086 or via email at rvondrak@auburnwa.gov.

Sincerely,

Ryan L. Vondrak, P.E.

Utilities Engineering Manager

City of Auburn

MM/DD/2024

LETTER OF NOTIFICATION – AUBURN CONTAMINANT SOURCE INVENTORY UPDATE

To [Agency/Local Government],

The City of Auburn (City) relies on groundwater for our drinking water source, and a Wellhead Protection Plan (Plan) has been developed to help maintain drinking water quality for City residents. The Plan is based on the Washington Department of Health (DOH) Washington Administrative Code (WAC) 246-290-135(3) regulations. As part of that Plan, maps were prepared that show the Wellhead Protection Areas (WHPA), which are the areas around each well where chemical spills or other sources of contamination may contaminate the water source. Per DOH, the City must coordinate with agencies responsible for incident/spill response procedures.

The City has approximately 15,000 service connections and serves approximately 64,000 residents. There are several sources within our system that were rated as highly susceptible to contamination by DOH. The enclosed maps show the 6-month, 1-year, 5-year, and 10-year time-of-travel boundaries for our WHPAs. We're also sending you a list of facilities or activities of concern.

The findings of the Plan indicate that, due to geologic setting, there is only limited protection for the City's aquifer from low-permeability materials at the ground surface. Therefore, surface spills could quickly infiltrate into the groundwater, placing our water sources at risk. Regardless of the apparent surface material conditions, care should still be exercised because the geologic conditions can vary substantially over short distances.

The City asks that you consider the protection of our sources when responding to chemical spills or other sources of contamination. If you are responding to a chemical spill or other hazard that is located within the WHPA, and there may be a risk of contamination of City sources, please take a moment and include us in your spill response plan by contacting the City at 256-931-3048, on weekdays between 6:00AM and 3:30PM, or call 911 if outside these timeframes.

Thank you for your support in protecting the City's drinking water supply. If you have any questions, please contact me at 253-931-3086 or via email at rvondrak@auburnwa.gov.

Sincerely,

Ryan L. Vondrak, P.E.

Utilities Engineering Manager

City of Auburn

consor

2024 Water Source Loss Mitigation Plan

SOP 5.2.1
Water Source Loss Mitigation Plan

Potential threats applicable for all sources: Contamination, Earthquake, and Physical Assault.

Coal Creek Springs – Capacity 3,500 gpm
Additional potential threats: Flood, Landslide, Wildfire, Volcano/Lahar
If no water is available from Coal Creek Springs, Well No. 4 and Well No.1 will continue to supply water to Reservoir 1. Operators may have to lower the operating position of the 16 inch pressure reducing valve (PRV) at Howard Road Treatment Facility to maintain adequate water supply in Reservoir 1. More reliance will be placed on Well No. 4, Well No. 1, Well No. 2 and Well No. 6. Perhaps not critical to normal operation, getting this facility back online is of high priority.

Notify Parks Department that Game Farm Wilderness will not have water until this source is returned to operation.

16 Inch PRV at Howard Road Treatment Facility
Should auto-control of the 16 inch PRV be lost, this valve may be opened or closed locally by the control panel located in the vault. If the PRV is completely out of service, Valley Service Area pressure can still be controlled by use of a stand-by 8 inch PRV located adjacent to the 16 inch valve. The 8 inch valve is a strictly manual valve. Control is adjusted by manipulation of the pilot control valve (CRD).

A supplemental PRV to the 8 inch PRV is located at 25th & K Street SE. This is a 12 inch PRV and is manually adjusted by manipulation of the pilot control valve (CRD).

25th St SE and K St SE PRV
If the water produced by Well No. 4 is not needed or cannot reach Reservoir 1, the water can be sent directly into the Valley Service Area by changing valving and making use of this PRV.

- Valve off Well No. 4 discharges to Reservoir 1 (valve # 2151), open valve 2152 to valley zone.
- Turn on Well No. 4.
- Set operation setpoint for Reservoir 1 level to unobtainable level to keep Well No. 4 running in Auto. If Reservoir 1 level signal is not available, Well No. 4 will need to be run in “Manual Mode” locally.
- If Well No. 4 flow is not needed, force it to shut down by changing Res 1 level setpoint.

Well No. 1 – Capacity 2,100 gpm
Additional potential threats: Flood, Volcano/Lahar
Loss of Well No. 1 is not critical for maintaining domestic use and fire protection, however it would be important to restore it as soon as possible. Should this station be out of service, Wells 4, 2, and 6, as well as Coal Creek Springs will continue to provide water to the valley. Operators may have to lower the operating position of the 16 inch PRV at Howard Road Treatment Facility to maintain adequate water supply in Reservoir 1.

Well No. 4 – Capacity 2,600 gpm
Additional potential threats: Flood, Volcano/Lahar
Water from Well No. 4 is not critical for maintaining domestic use and fire protection. If no water is available from Well No. 4, water from Coal Creek Springs and Well No. 1 will continue to supply the Valley Service Area. Operators may have to lower the operating position of the 16 inch PRV at Howard Road Treatment Facility to maintain adequate water supply in Reservoir 1. Significantly more reliance will be placed on Coal Creek Springs, Wells 1, 2, and 6.

The operation of Well No. 4 is normally controlled by the water level in Reservoir 1. However, there is the option of controlling Well No. 4 by Reservoir 2 through the SCADA telemetry page for Well No. 4. On/off levels for the well will have to be changed to that of Well No. 2 and No. 6.

Well No. 2 and Well No. 6 – Capacity 1,115 gpm and 1,200 gpm
Additional potential threats: Flood
Water from this facility is critical for maintaining domestic use and fire protection. If no water is available from one of these two wells (if one well is out of service), changes to the normal operation of the water system will be required. The 16 inch PRV at Howard Road Treatment Facility may need to be opened moderately to maintain sufficient water supply in Reservoir 2. More reliance will need to be placed on the operation of Well No. 1 and No. 4, as well as Coal Creek Springs. The B Street Tacoma intertie may need to be opened as well.

However, because these two wells are so close to each other, and because they share power and telemetry, loss of both wells should be considered. If no water is available from either well, a greater reliance will be placed on all sources, especially Well No. 1 and No. 4, as well as Coal Creek Springs. The B Street Tacoma intertie may need to be opened as well. The 16 inch PRV at Howard Road Treatment Facility will have to be opened to maintain sufficient water supply in Reservoir 2.

Well No. 5 – Capacity 760 gpm
Water from Well No. 5 is not critical for maintaining domestic use and fire protection. If no water is available from Well No. 5, water will continue to be supplied by Well No. 5A. Water will also continue to be supplied by Terrace View Booster Pump Station (PS). Water may have to be procured from Bonney Lake Water Utility to meet demand via the emergency intertie. As a last option, water may be supplied by means of the portable pump.

Well No. 5A – Capacity 180 gpm
If no water is available from Well No. 5A, water will be supplied by Well No. 5 and Terrace View Booster PS. During peak demand summer months, it may be necessary to procure water from Bonney Lake Water Utility through the emergency intertie to supplement water from Well No. 5. Perhaps not critical to normal operation, getting this facility back online is of high priority.

West Hill Springs – Capacity 600 gpm
Additional potential threats: Landslide
Water from West Hill Springs is not critical for maintaining domestic use and fire protection. If no water is available from West Hill Springs, no modifications to the operation of the water system will be needed. Water will continue to be supplied from other sources.

Well No. 3A and Well No. 3B - Capacity 0 gpm
Additional potential threats: Flood
Wells No. 3A and No. 3B are not in service due to high manganese and iron levels and have no impact on water supply. However, it should be noted that both wells are operational and can be utilized, if necessary, during emergency scenarios. Wells No. 3A and No. 3B each have a capacity of 1,650 gpm (3,300 gpm total). These wells do not have chlorine or operational chlorine equipment on site, and complaints regarding color and staining may be received should the wells be put into operation.

Well No. 5B – Capacity 0 gpm
Well No. 5B is not in service and has no impact on water supply.

Well No. 7 – Capacity 0 gpm
Additional potential threats: Flood
Well No. 7 is not in service and has no impact on water supply.

City of Auburn
Ground Water Contamination
Susceptibility Assessment Survey
May 1994

Information compiled by, The City of Auburn:

Mark Silberling - Water Division
Nass Diallo - Utilities Planning Engineer
William B. Scheder - Water Division Supervisor
Chris Thorn - Water Quality Compliance

Graphic by:

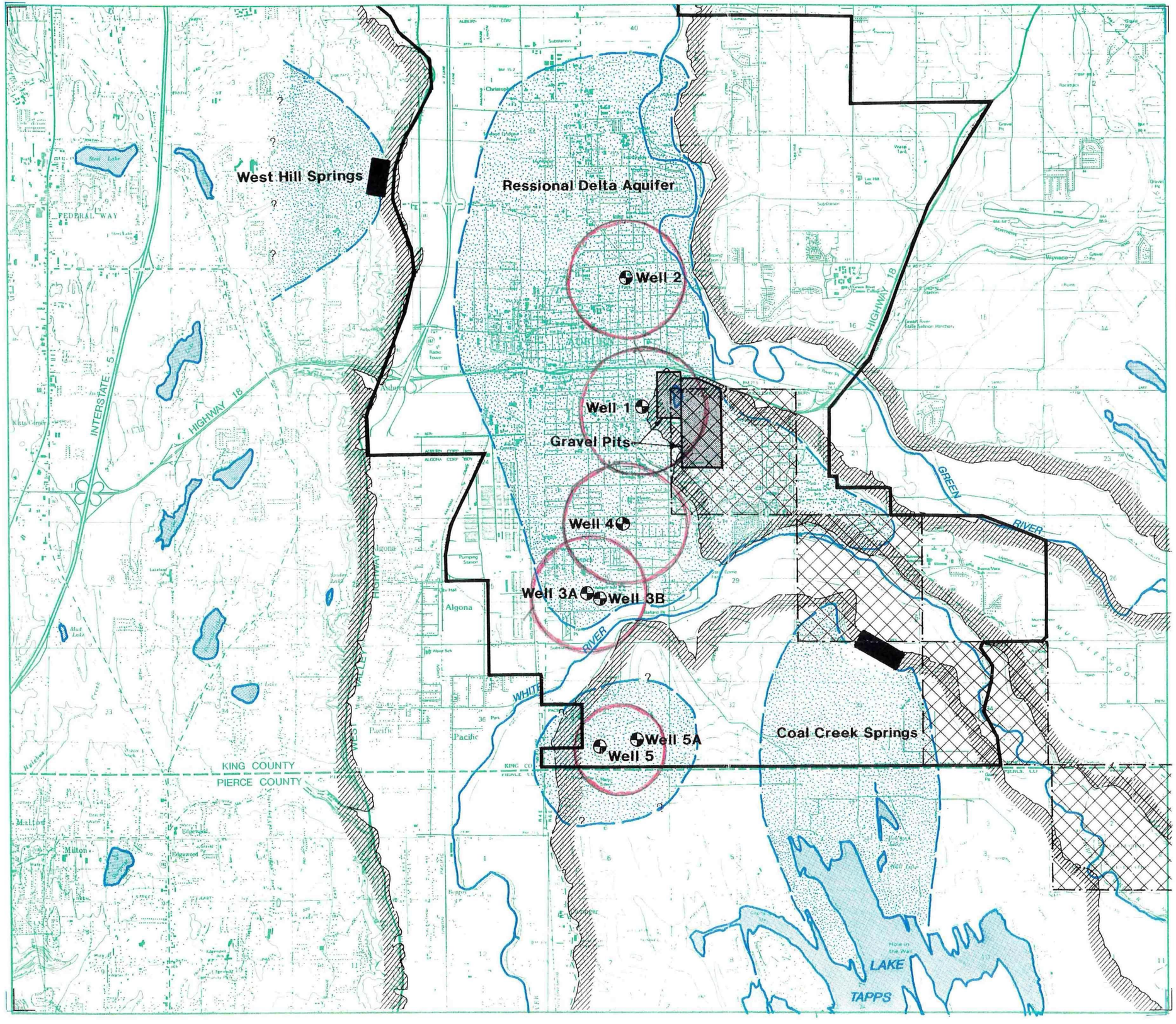
J.R. Smith - Utilities Technician

System I.D.: 03350V

Contact Individual: William B. Scheder (206-931-3066)

City of Auburn Wellhead Protection Program

Study Area with Water Supply Aquifers



Water Supply Aquifer Area

City of Auburn Service Area

Muckleshoot Indian Reservation

Margin of Upland Areas

Gravel Pit

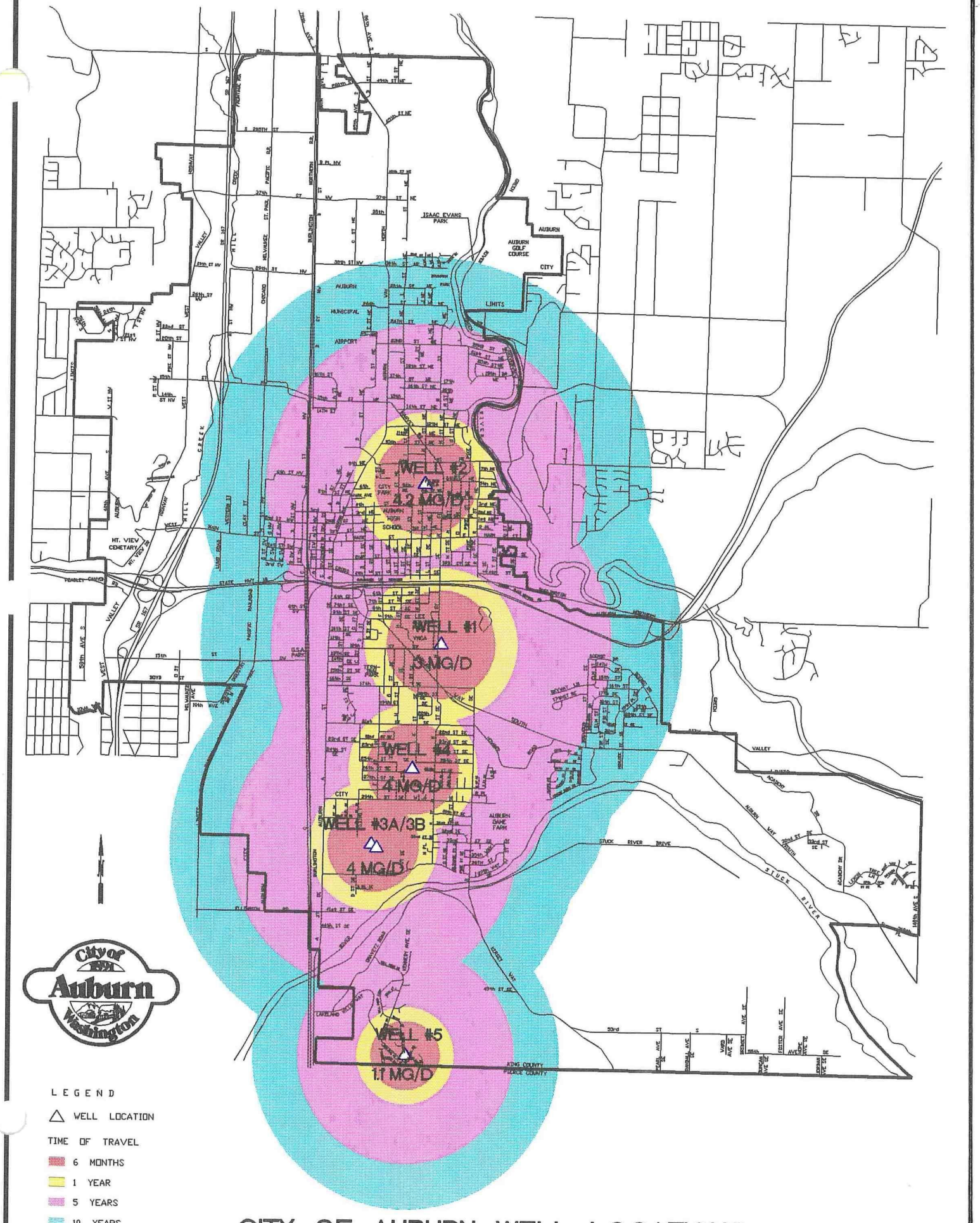
6 Month Time and Travel

N

0 400 800

Scale in Feet

Figure 1



CITY OF AUBURN WELL LOCATIONS

APRIL 1994

POTENTIAL CONTAMINATION SOURCES WITHIN 5 YEAR T.O.T.

WEST HILL SPRINGS

SCHOOL WITH PLAYING FIELDS
LAKE
RESIDENTIAL WITH SEPTIC SYSTEMS

COAL CREEK SPRINGS

LAKES
RESIDENTIAL WITH SEPTIC SYSTEMS

WELL 1

SERVICE STATIONS
SCHOOLS WITH PLAYING FIELDS
PUBLIC POOLS
CITY PARKS
RAILROAD AND RAILROAD SWITCHING YARD
GRAVEL QUARRY
PLASTICS MANUFACTURING
PUBLIC STORAGE FACILITIES
UNDERGROUND STORAGE TANKS
SEVERAL SMALL BUSINESSES CONTAINING SMALL AMOUNTS OF HAZARDOUS MATERIALS

WELL 2

SERVICE STATIONS
AIRPORT WITH UNDERGROUND STORAGE TANKS
RAILROAD
SCHOOLS WITH PLAYING FIELDS
PUBLIC POOL
CITY PARKS
STATE HIGHWAY
PLASTICS MANUFACTURING
NUMEROUS WAREHOUSES/DISTRIBUTION FACILITIES
SEVERAL SMALL BUSINESSES CONTAINING SMALL AMOUNTS OF HAZARDOUS MATERIALS

WELL 3A/3B

CITY PARKS
SCHOOLS WITH PLAYING FIELDS
RAILROAD AND RAILROAD SWITCHING YARD
SERVICE STATIONS
AUTO WRECKING YARDS
PLASTICS MANUFACTURING
SEVERAL SMALL BUSINESSES CONTAINING SMALL AMOUNTS OF HAZARDOUS MATERIALS

WELL 4

CITY PARKS
SCHOOLS WITH PLAYING FIELDS
RAILROAD AND RAILROAD SWITCHING YARD
SERVICE STATIONS
AUTO WRECKING YARDS
PLASTICS MANUFACTURING
GRAVEL QUARRY
PUBLIC POOL
PUBLIC STORAGE FACILITIES
SEVERAL SMALL BUSINESSES CONTAINING SMALL AMOUNTS OF HAZARDOUS MATERIALS

WELL 5\5A

CITY PARKS
SCHOOLS WITH PLAYING FIELDS

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.1

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : CITY OF AUBURN

Water system name : AUBURN WATER DIVISION

County: KING

Water system number: 03350V Source number: S01

Well depth: _____ (ft.) (*From WFI form*)

Source name: SPRING #1 COAL CREEK

WA well identification tag number: ___ ___ ___-___ ___ ___

X well not tagged

Number of connections: 13,000 Population served: 40,000

Township: 21N Range: 05E

Section: 28 1/4 1/4 Section: SE/SW

Latitude/longitude (if available): N 47 16' 19.95 / W 127 10' 22.55

How was lat./long. determined?

_____ global positioning device X survey _____ topographic map
____other: _____

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: ___ / ___ / 1925 month/day/year

last reconstruction: ___ / ___ / 1965 month/day/year

_____ information unavailable

2) Well driller: SPRING

___ well driller unknown

3) Type of well:

___Drilled: ___ rotary ___ bored ___ cable (percussion) __ Dug

___ Other: X spring(s) ___ lateral collector (Ranney)

___ driven ___ jetted ___ other: _____

Additional comments: CONSTRUCTED UNDERGROUND COLLECTION SYSTEM IN CONTROLED WATERSHED AREA.

4) Well report available? ___ YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 4,500 (gallons/min)

Source of information: WF1/LOGS/ MONTHLY REPORTS

If not documented, how was pumping rate determined? _____

__ Pumping rate unknown

6) Is this source treated? YES

If so, what type of treatment:

X disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

BACTERIAL

7) If source is chlorinated, is a chlorine residual maintained: X YES ___ NO

Residual level: 0.8 MG/L (*At the point closest to the source.*)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

X < 20 ft ___ 20-50 ft ___ 50-100 ft ___ 100-200 ft ___ >200 ft

___ information unavailable (*'<' means less than; '>' means greater than*)

2) Depth to ground water (static water level):

X < 20 ft ___ 20-50 ft ___ 50-100 ft ___ >100 ft

___ flowing well/spring (artesian)

How was water level determined?

___ well log X other: DIRECT MEASUREMENT ON UNDERGROUND COLLECTION SYSTEM

___ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

12 psi (pounds per square inch)
or
_____ feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: X YES ___ NO UNDERGROUND CATCHMENT NETWORK OF PIPING

5) Wellhead elevation (height above mean sea level): 100 (ft)

How was elevation determined? X topographic map ___ Drilling/Well Log ___ altimeter

___ other: _____

___ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.) NA

___ evidence of a confining layer in well log

___ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the top of the open interval? ___ YES ___ NO

___ information unavailable

7) Sanitary setback:

___ < 100 ft* ___ 100–120 ft ___ 120–200 ft X > 200 ft
* if less than 100 ft describe the site conditions:

8) Wellhead construction:

___ wellhead enclosed in a wellhouse

X controlled access (describe): FENCED; CONTROLLED ACCESS FULL SECTION OF LAND WITH MULTIPLY LOCKED ACCESS GATES AND UNDERGROUND INTAKE OF SPRING.

___ other uses for wellhouse (describe): _____

___ no wellhead control

9) Surface seal: NA

___ 18 ft

___ < 18 ft (no Department of Ecology approval) ('< ' *means less than*)

___ < 18 ft (Approved by Ecology, include documentation) ('< ' *means less than*)

___ > 18 ft ('> ' *means greater than*)

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10–25 in/yr X > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 75,140,000 (gallons) 1993

How was this determined?

X meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : SEE ATTACHED (ft)

1 year ground water travel time : CRITICAL WELL DEVELOPMENT AREA MAP (ft)

5 year ground water travel time: _____(ft)

10 year ground water travel time: _____(ft)

Information available on length of screened/open interval?

__ YES __ NO

Length of screened/open interval: _____(ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES ___ NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application				
stormwater injection wells				
other injection wells				
abandoned ground water well				
landfills, dumps, disposal areas				
known hazardous materials clean-up site				
water system(s) with known quality problems				
population density > 1 house/acre		X	X	
residences commonly have septic tanks			X	
Wastewater treatment lagoons				
sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

NONE

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES	NO
Results greater than MCL	___	x
< 2 mg/liter nitrate	x	___
2-5 mg/liter nitrate	___	x
> 5 mg/liter nitrate	___	x

___ Nitrate sampling records unavailable

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES	NO
Results greater than MCL or SAL	___	x
VOCs detected at least once	___	x
VOCs never detected	x	___

___ VOC sampling records unavailable

C. EDB/DBCP:	YES	NO
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)		
EDB/DBCP detected below MCL at least once	___	___
EDB/DBCP detected above MCL at least once	___	___
EDB/DBCP never detected	___	___

___ EDB/DBCP tests required but not yet completed

x EDB/DBCP tests not required

D. Other SOCs (Pesticides):	YES	NO
Other SOCs detected	___	___
(pesticides and other synthetic organic chemicals)		

___ Other SOC tests performed but none detected
(list test methods in comments

x Other SOC tests not performed

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination:

	YES	NO
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	____	x
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	____	x

___ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

x YES ___ NO

Describe with references to map produced in Part IV:

_____

_____

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

___ YES x NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

x YES ___ NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

X YES ___ NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	___	X

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

WATER APPEARS TO BE FLOWING FROM THE UPLANDS AREA TO THE SOUTH AND EAST OF THE SPRING SITE. HYDROLOGIC STUDIES BY HART CROUSER IN 1980 SUGGEST THAT THE SPRINGS MAY ORIGINATE IN THE MT. RAINIER OR ENUMCLAW AREA.

Suggestions and Comments

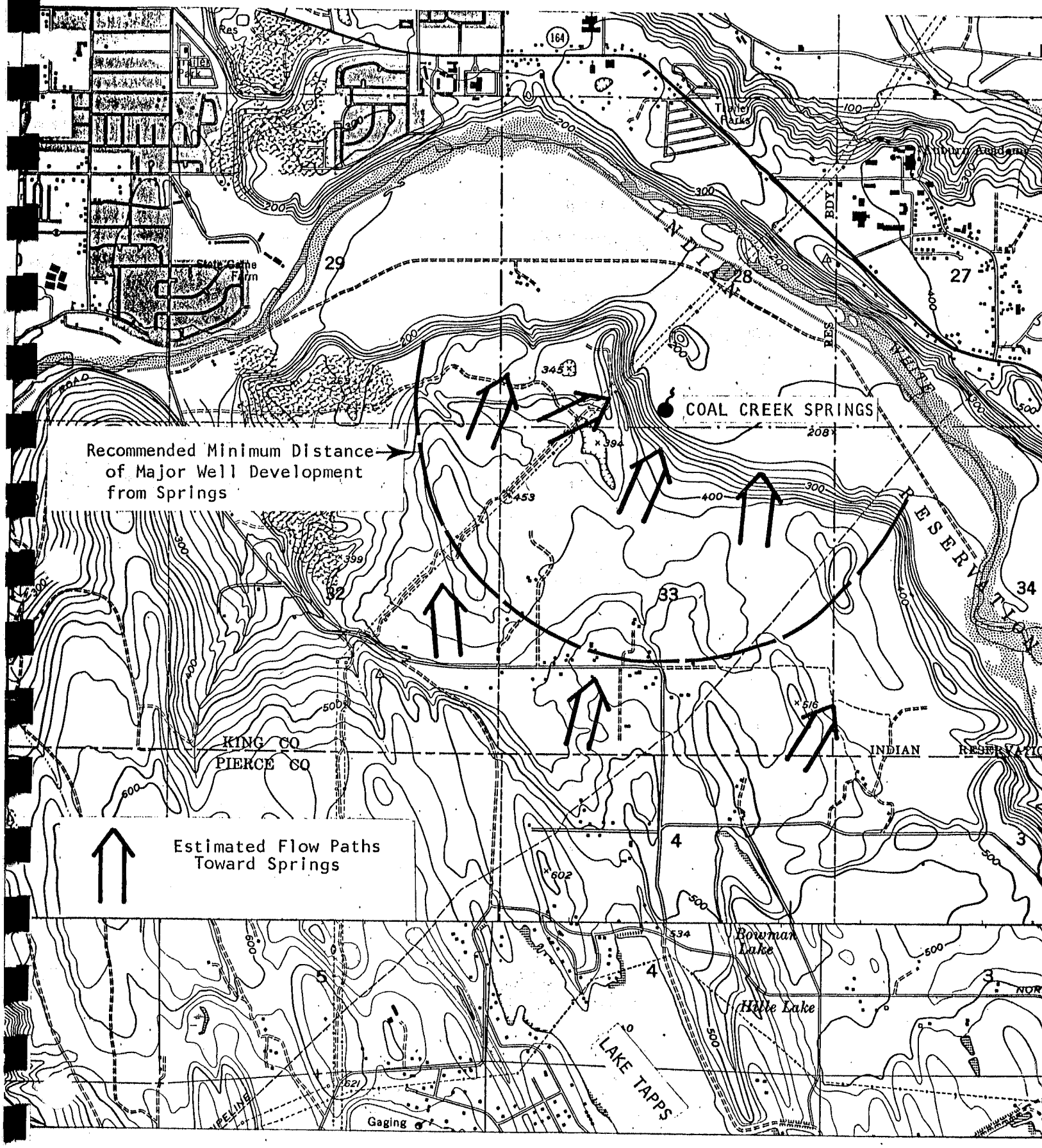
Did you attend one of the susceptibility workshops? ___ YES X NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES X NO

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.

CRITICAL WELL DEVELOPMENT AREA



J-888 February 1980
HART-CROWSER & associates inc.
Figure 5

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.1

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : CITY OF AUBURN

Water system name : AUBURN WATER DIVISION

County: KING

Water system number: 03350V Source number: So2

Well depth: _____ (ft.) (*From WFI form*)

Source name: SPRING #2 WEST HILL

WA well identification tag number: ___ ___ ___-___ ___ ___

X well not tagged

Number of connections: 13,000 Population served: 40,000

Township: 21N Range: 056

Section: 11 1/4 1/4 Section: SW/NE

Latitude/longitude (if available): N 47 19' 25.46" / W 122 15' 31.86"

How was lat./long. determined?

_____ global positioning device X survey _____ topographic map
____other: _____

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: ___ / ___ / 1920's month/day/year

last reconstruction: ___ / ___ /___ month/day/year

_____ information unavailable

2) Well driller: NA

___ well driller unknown

3) Type of well:

___Drilled: ___ rotary ___ bored ___ cable (percussion) __ Dug

___ Other: _X_ spring(s) ___ lateral collector (Ranney)

___ driven ___ jetted ___ other: _____

Additional comments: _____

4) Well report available? ___ YES (attach copy to form) _X_ NO NA

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 486 FREE FLOWING (gallons/min)

Source of information: METERED SOURCE/ SOURCE DAILY LOGS

If not documented, how was pumping rate determined? _____

__ Pumping rate unknown

6) Is this source treated? YES

If so, what type of treatment:

_X_ disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

BACTERIAL

7) If source is chlorinated, is a chlorine residual maintained: _X_ YES ___ NO

Residual level: 0.8 MG/L (*At the point closest to the source.*)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

X < 20 ft ___ 20–50 ft ___ 50–100 ft ___ 100–200 ft ___ > 200 ft

___ information unavailable (*'< ' means less than; '> ' means greater than*)

2) Depth to ground water (static water level):

___ < 20 ft ___ 20–50 ft ___ 50–100 ft ___ > 100 ft

X flowing well/spring (artesian)

How was water level determined?

___ well log X other: DIRECT OBSERVATION

___ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure: NOT KNOWN

_____ psi (pounds per square inch)
or
_____ feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: X YES ___ NO UNDERGROUND CATCHMENT PIPING

5) Wellhead elevation (height above mean sea level): 305 (ft)

How was elevation determined? X topographic map ___ Drilling/Well Log ___ altimeter

___ other: _____

___ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

___ evidence of a confining layer in well log

___ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the top of the open interval? ___ YES ___ NO

X information unavailable

7) Sanitary setback:

___ < 100 ft* ___ 100–120 ft ___ 120–200 ft _X_ > 200 ft
* if less than 100 ft describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

___ wellhead enclosed in a wellhouse

_X_ controlled access (describe): FENCED LOCKED ACCESS GATES

_____

___ other uses for wellhouse (describe): _____

_____

___ no wellhead control

9) Surface seal: NA

___ 18 ft

___ < 18 ft (no Department of Ecology approval) ('< ' *means less than*)

___ < 18 ft (Approved by Ecology, include documentation) ('< ' *means less than*)

___ > 18 ft ('> ' *means greater than*)

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10–25 in/yr _X_ > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 1,052,019,000 (gallons) 1993

How was this determined?

X meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : _____(ft)

1 year ground water travel time : _____(ft)

5 year ground water travel time: _____(ft)

10 year ground water travel time: _____(ft)

Information available on length of screened/open interval?

__ YES __ NO

Length of screened/open interval: _____(ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application		X		
stormwater injection wells				
other injection wells				X
abandoned ground water well				X
landfills, dumps, disposal areas				X
known hazardous materials clean-up site				
water system(s) with known quality problems				
population density > 1 house/acre		X	X	
residences commonly have septic tanks				
Wastewater treatment lagoons				
sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

NONE KNOWN OF

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES	NO
Results greater than MCL	___	x
< 2 mg/liter nitrate	___	x
2-5 mg/liter nitrate	x	___
> 5 mg/liter nitrate	___	x
___ Nitrate sampling records unavailable		

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES	NO
Results greater than MCL or SAL	___	x
VOCs detected at least once	___	x
VOCs never detected	x	___
___ VOC sampling records unavailable		

C. EDB/DBCP:	YES	NO
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)		
EDB/DBCP detected below MCL at least once	___	___
EDB/DBCP detected above MCL at least once	___	___
EDB/DBCP never detected	___	___
___ EDB/DBCP tests required but not yet completed		
x EDB/DBCP tests not required		

D. Other SOCs (Pesticides):	YES	NO
Other SOCs detected	___	___
(pesticides and other synthetic organic chemicals)		
___ Other SOC tests performed but none detected		
(list test methods in comments		
x Other SOC tests not performed		

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination:

	YES	NO
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	X	
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.		X

___ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

X YES ___ NO

Describe with references to map produced in Part IV:

SPRING ORIGINATES FROM SIDE OF HILL ON WEST SIDE OF AUBURN

APP. 200 ft. HIGHER THAN VALLEY ZONE IT IS FLOWING INTO.

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

___ YES X NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

X YES ___ NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES ___ NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	___	___	X
5–10 year travel time	___	___	X

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

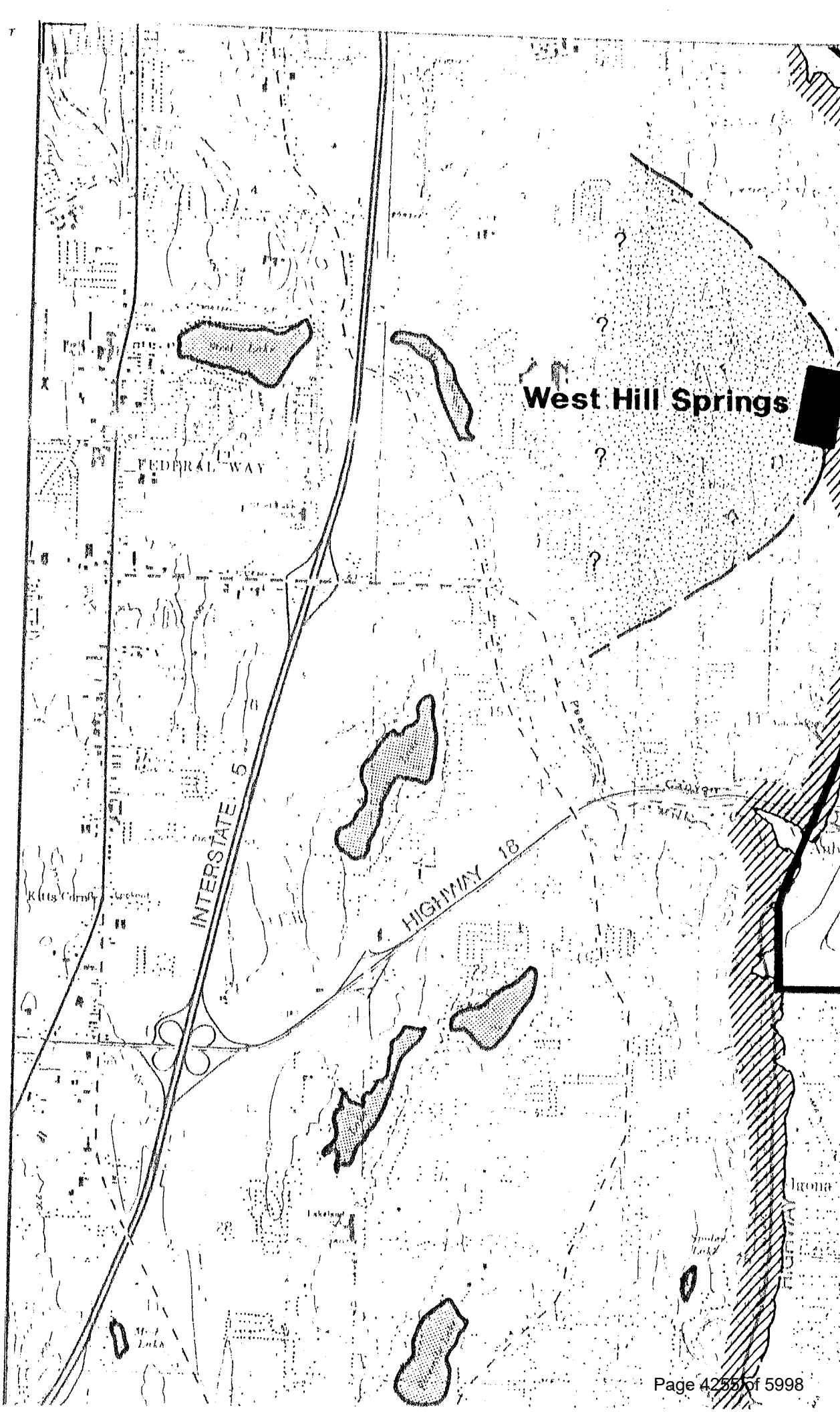
Suggestions and Comments

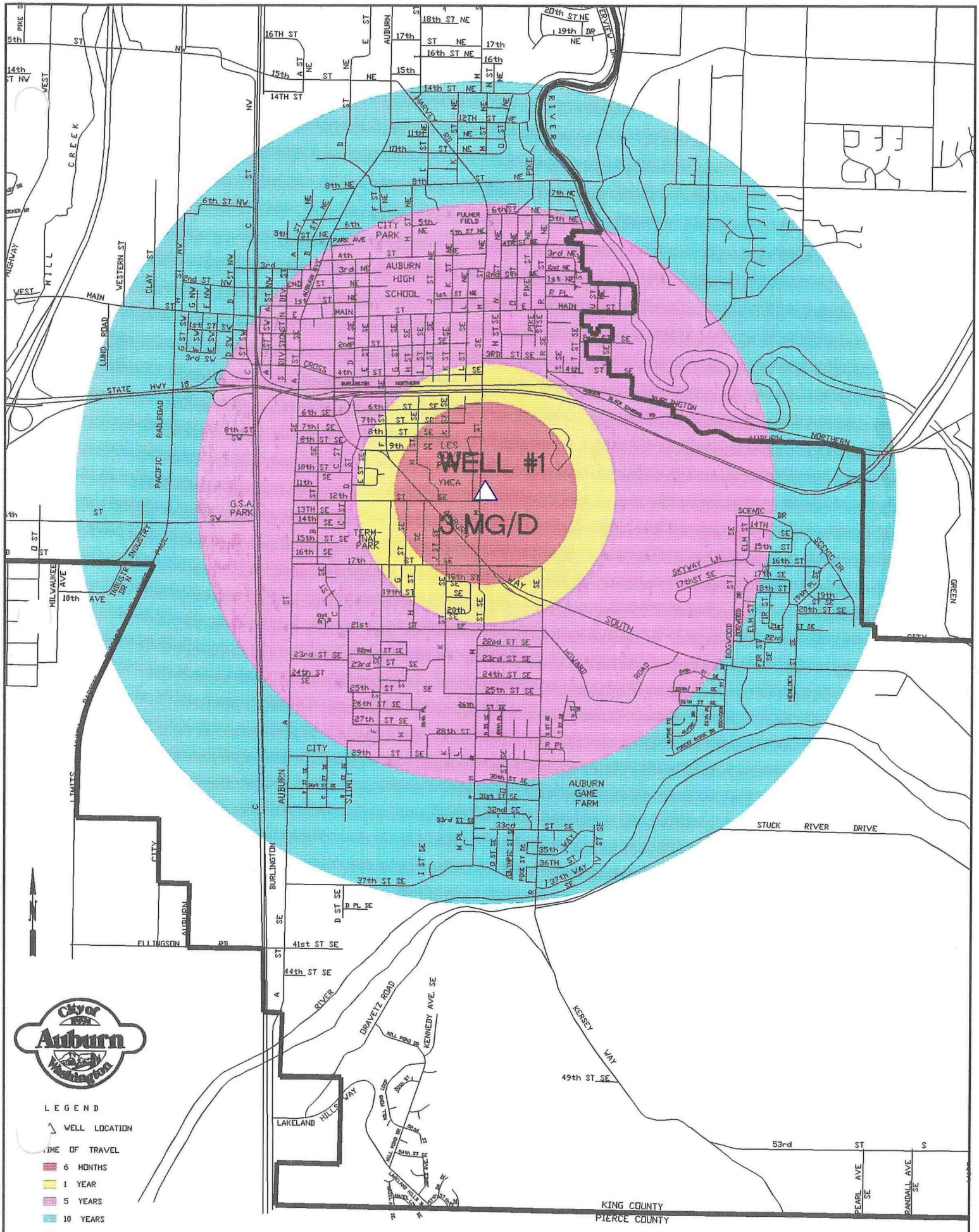
Did you attend one of the susceptibility workshops? ___ YES X NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES X NO

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.


West Hill Springs
FEDERAL WAY
INTERSTATE 5
HIGHWAY 18


WELL #1
3 MG/D
CITY OF AUBURN WELL # 1
APRIL 1994
LEGEND
WELL LOCATION
TIME OF TRAVEL
6 MONTHS
1 YEAR
5 YEARS
10 YEARS
City of Auburn Washington
AUBURN HIGH SCHOOL
CITY PARK
FULMER FIELD
LES
YMCA
G.S.A. PARK
TERMINAL PARK
AUBURN GAME FARM
MAIN
WEST MAIN
STUCK RIVER DRIVE
KERSEY WAY
49th ST SE
KENNEDY AVE SE
DRAVETZ ROAD
LAKELAND HILLS WAY
KING COUNTY
PIERCE COUNTY
BURLINGTON NORTHERN
PACIFIC RAILROAD
STATE HWY 18
HOWARD ROAD
SOUTH
SCENIC DR
SKYWAY LN
17th ST SE
PEARL AVE SE
RANDALL AVE SE
53rd ST S
41st ST SE
44th ST SE
37th ST SE
28th ST SE
24th ST SE
22nd ST SE
23rd ST SE
20th ST NE
18th ST NE
16th ST NE
14th ST NE
12th ST NE
10th ST NE
8th NE
6th ST NE
5th NE
3rd NE
2nd NE
1st NE
R PL
6th ST SE
7th ST SE
8th ST SE
9th ST SE
10th ST SE
11th ST SE
12th ST SE
13th SE
14th SE
15th ST SE
16th SE
17th SE
19th ST SE
21st ST SE
25th ST SE
26th ST SE
27th ST SE
29th ST SE
30th ST SE
31st ST SE
32nd SE
33rd ST SE
35th WAY
36TH ST
37th WAY SE
D PL SE
6th ST NW
5th ST NW
3rd NW
2nd ST NW
1st ST NW
3rd SW
1st ST SW
9th ST SW
10th AVE
MILWAUKEE AVE
INDUSTRY DR NW
INDUSTRY PARK
LAKELAND HILLS WAY
CITY LIMITS
AUBURN
BURLINGTON
RIVER
HARVEY RD
MILL CREEK
WESTERN ST
CLAY ST
LUND ROAD
CROSS
DOGWOOD
ELM ST
FIR ST
HEMLOCK
ALPINE ST
PINE ST
OLYMPIC ST
SUNSET
GREEN

Ground Water Contamination Susceptibility Assessment Survey Form

Version 2.1

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : CITY OF AUBURN

Water system name : AUBURN WATER DIVISION

County: KING

Water system number: 03350V Source number: S03

Well depth: 134 (ft.) (*From WFI form*)

Source name: WELL # 1

WA well identification tag number: ___ ___ ___-___ ___ ___

X well not tagged

Number of connections: 13,000 Population served: 40,000

Township: 21N Range: 05E

Section: 19 1/4 1/4 Section: NE/NE

Latitude/longitude (if available): N 47 17' 52.72 / W 122 12' 42.16"

How was lat./long. determined?

___ global positioning device X survey ___ topographic map
___ other: ___

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: ___ / ___ / 1925 month/day/year

last reconstruction: ___ / ___ / 1965 month/day/year

___ information unavailable

2) Well driller: _____

_____

_____

__X__ well driller unknown

3) Type of well:

__X__ Drilled: ___ rotary ___ bored ___ cable (percussion) ___ Dug

___ Other: ___ spring(s) ___ lateral collector (Ranney)

___ driven ___ jetted ___ other: _____

Additional comments: _____

_____

4) Well report available? __X__ YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 2100 (gallons/min)

Source of information: WF1/DAILY RECORDS/ DATA ACQUISATION SYSTEM

If not documented, how was pumping rate determined? _____

_____

___ Pumping rate unknown

6) Is this source treated? NO

If so, what type of treatment:

___ disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

_____

_____

7) If source is chlorinated, is a chlorine residual maintained: ___ YES ___ NO

Residual level: _____ (*At the point closest to the source.*)

PART III: Hydrogeologic Information

) Depth to top of open interval: [check one]

___ < 20 ft ___ 20-50 ft ___ 50-100 ft X 100-200 ft ___ >200 ft

___ information unavailable (*'<' means less than; '>' means greater than*)

2) Depth to ground water (static water level):

___ < 20 ft X 20-50 ft ___ 50-100 ft ___ >100 ft

___ flowing well/spring (artesian)

How was water level determined?

X well log X other: LEVEL SOUNDING ON ROUTINE BASIS

___ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_____ psi (pounds per square inch)
or
_____ feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ___ YES ___ NO NA

5) Wellhead elevation (height above mean sea level): 70 (ft)

How was elevation determined? ___ topographic map X Drilling/Well Log ___ altimeter

___ other: _____

___ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

X evidence of a confining layer in well log

___ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the top of the open interval? X YES ___ NO

___ information unavailable

7) Sanitary setback:

___ < 100 ft* _X_ 100-120 ft ___ 120-200 ft ___ > 200 ft
* if less than 100 ft describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

_X_ wellhead enclosed in a wellhouse

_X_ controlled access (describe): FENCED

_____

___ other uses for wellhouse (describe): NONE

_____

___ no wellhead control

9) Surface seal:

___ 18 ft

___ < 18 ft (no Department of Ecology approval) ('< ' *means less than*)

___ < 18 ft (Approved by Ecology, include documentation) ('< ' *means less than*)

_X_ > 18 ft ('> ' *means greater than*)

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10-25 in/yr _X_ > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 663,989,000 (gallons)

How was this determined?

X meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 1887 (ft)

1 year ground water travel time : 2668 (ft)

5 year ground water travel time: 5967 (ft)

10 year ground water travel time: 8438 (ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/open interval: 30 (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? X YES ___ NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

Comments: _____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application RESIDENTIAL	X	X	X	
stormwater injection wells				
other injection wells				
abandoned ground water well			X	
landfills, dumps, disposal areas				
known hazardous materials clean-up site				
water system(s) with known quality problems				
population density > 1 house/acre	X	X	X	
residences commonly have septic tanks				
Wastewater treatment lagoons				
sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

DRYCLEANERS

SERVICE STATIONS - LOW POTENTIAL FOR CONTAMINATION

AUTO REPAIRS

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)

Results greater than MCL	YES	NO
< 2 mg/liter nitrate	___	X
2-5 mg/liter nitrate	X	___
> 5 mg/liter nitrate	___	X
___ Nitrate sampling records unavailable	___	X

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)

Results greater than MCL or SAL	YES	NO
VOCs detected at least once	___	X
VOCs never detected	___	X
___ VOC sampling records unavailable	X	___

C. EDB/DBCP:

(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)	YES	NO
EDB/DBCP detected below MCL at least once	___	___
EDB/DBCP detected above MCL at least once	___	___
EDB/DBCP never detected	___	___

___ EDB/DBCP tests required but not yet completed

X EDB/DBCP tests not required

D. Other SOCs (Pesticides):

Other SOCs detected (pesticides and other synthetic organic chemicals)	YES	NO
	___	X

___ Other SOC tests performed but none detected
(list test methods in comments

X Other SOC tests not performed

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

E. Bacterial contamination:

	YES	NO
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	___	X
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	___	X

___ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

X YES ___ NO

Describe with references to map produced in Part IV:

HIGHER ELEVATION TO WEST & EAST OF VALLEY - FLOW SOUTH TO NORTH IN VALLEY.

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

___ YES X NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

X YES ___ NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES X NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	X	___	___
5–10 year travel time	X	___	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	X	___	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

AQIFER APPEARS TO FLOW SOUTH TO NORTH ACCORDING TO A GROUND WATER SUPPLY STUDY BY POOL ENG. INC. IN SEPTEMBER OF 1982. HYDROLOGY DONE BY HART CROUSER FOR REPORT.

Suggestions and Comments

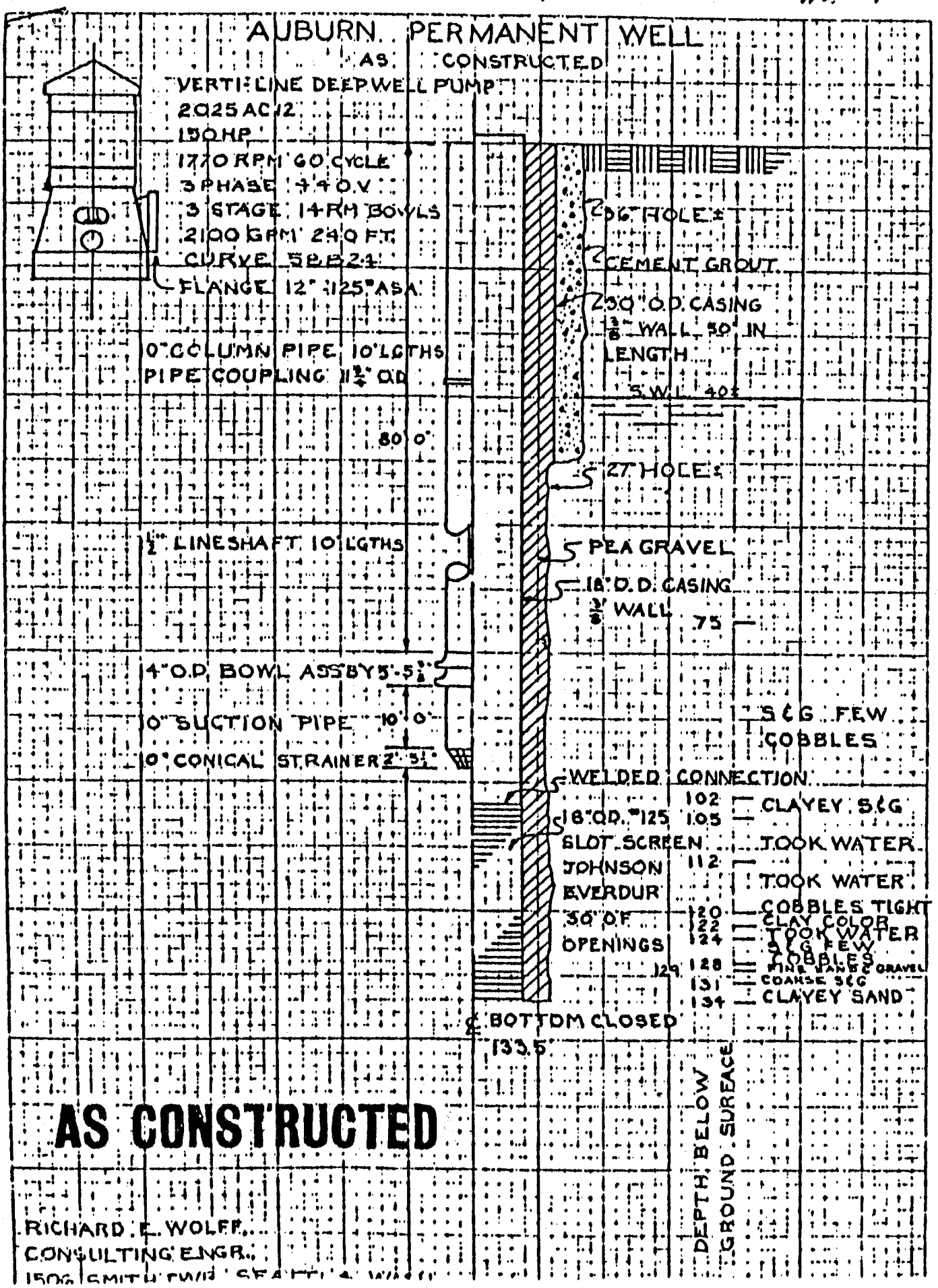
Did you attend one of the susceptibility workshops? ___ YES __X__ NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES __X__ NO

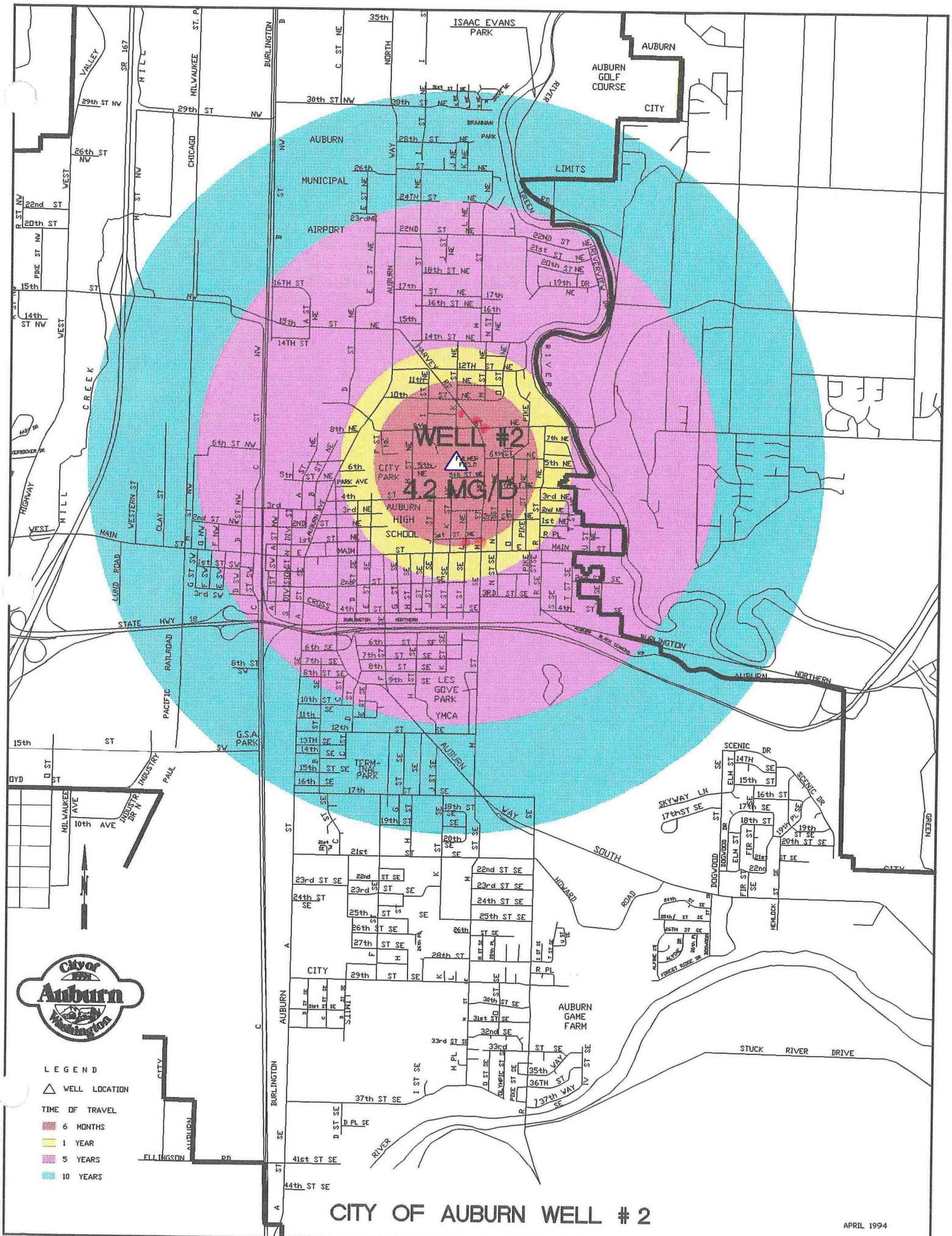
This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.

'M' ST. WELL. WELL #1



AS CONSTRUCTED

RICHARD E. WOLFF
CONSULTING ENGR.
1506 SMITH TWR SEATTLE WASH


WELL #2
4.2 MG/D
ISAAC EVANS PARK
AUBURN GOLF COURSE
AUBURN MUNICIPAL AIRPORT
AUBURN HIGH SCHOOL
CITY PARK
LES GOVE PARK
YMCA
TERMINAL PARK
G.S.A. PARK
AUBURN GAME FARM
BRANNAN PARK
CITY LIMITS
STUCK RIVER DRIVE
SOUTH HOWARD ROAD
AUBURN NORTHERN
BURLINGTON NORTHERN
PACIFIC RAILROAD
STATE HWY 18
SR 167
LEGEND
WELL LOCATION
TIME OF TRAVEL
6 MONTHS
1 YEAR
5 YEARS
10 YEARS
CITY OF AUBURN WELL # 2
APRIL 1994

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.1

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : CITY OF AUBURN

Water system name : AUBURN WATER DIVISION

County: KING

Water system number: 03350V Source number: S04

Well depth: 290 (ft.) (*From WFI form*)

Source name: WELL #2

WA well identification tag number: ___ ___ ___ - ___ ___ ___

X well not tagged

Number of connections: 13,000 Population served: 40,000

Township: 21N Range: 05F

Section: 18 1/4 1/4 Section: NW/NE

Latitude/longitude (if available): N 47 18' 47.64" / W 122 12' 52.29"

How was lat./long. determined?

_____ global positioning device X survey _____ topographic map
____other: _____

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 11 / 21 / 68 month/day/year

last reconstruction: ___ / ___ / ___ month/day/year

_____ information unavailable

2) Well driller: R.E. DeREMER

RICHARDSON WELL DRILLING CO.

___ well driller unknown

3) Type of well:

X Drilled: ___ rotary ___ bored X cable (percussion) ___ Dug

___ Other: ___ spring(s) ___ lateral collector (Ranney)

___ driven ___ jetted ___ other: _____

Additional comments: _____

4) Well report available? X YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 3000 (gallons/min)

Source of information: WF1/ DAILY LOGS/DATA/ ACQUISATION SYSTEM

If not documented, how was pumping rate determined? _____

___ Pumping rate unknown

6) Is this source treated? NO

If so, what type of treatment:

___ disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is chlorinated, is a chlorine residual maintained: ___ YES ___ NO NA

Residual level: _____ (*At the point closest to the source.*)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ < 20 ft ___ 20-50 ft ___ 50-100 ft ___ 100-200 ft X > 200 ft

___ information unavailable (*'< ' means less than; '> ' means greater than*)

2) Depth to ground water (static water level):

X < 20 ft ___ 20-50 ft ___ 50-100 ft ___ > 100 ft

___ flowing well/spring (artesian)

How was water level determined?

X well log X other: WELL PROB SOUNDING ON REGULAR BASIS

___ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

NA psi (pounds per square inch)
or
_____ feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ___ YES ___ NO

5) Wellhead elevation (height above mean sea level): 64 (ft)

How was elevation determined? ___ topographic map X Drilling/Well Log ___ altimeter

___ other: _____

___ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

X evidence of a confining layer in well log

___ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the top of the open interval? X YES ___ NO

___ information unavailable

7) Sanitary setback:

___ < 100 ft* X 100-120 ft ___ 120-200 ft ___ > 200 ft
* if less than 100 ft describe the site conditions:

8) Wellhead construction:

X wellhead enclosed in a wellhouse

X controlled access (describe): FENCED

___ other uses for wellhouse (describe): _____

___ no wellhead control

9) Surface seal:

___ 18 ft

___ < 18 ft (no Department of Ecology approval) ('< ' *means less than*)

___ < 18 ft (Approved by Ecology, include documentation) ('< ' *means less than*)

X > 18 ft ('> ' *means greater than*)

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10-25 in/yr X > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 259,913,000 (gallons) 1993

How was this determined?

X meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 1765 (ft)

1 year ground water travel time : 2496 (ft)

5 year ground water travel time: 5580 (ft)

10 year ground water travel time: 7892 (ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/open interval: 49 (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

Comments: _____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application RESIDENTIAL	x	X	X	
stormwater injection wells				
other injection wells				
abandoned ground water well				
landfills, dumps, disposal areas				
known hazardous materials clean-up site				
water system(s) with known quality problems				
population density > 1 house/acre	X	X	X	
residences commonly have septic tanks				
Wastewater treatment lagoons				
sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

AUTO REPAIR

DRY CLEANERS - LOW POTENTIAL

SERVICE STATIONS

PLASTICS MANUFACTURE

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)

Results greater than MCL	YES	NO
< 2 mg/liter nitrate	___	X
2-5 mg/liter nitrate	X	___
> 5 mg/liter nitrate	___	X
___ Nitrate sampling records unavailable	___	X

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)

Results greater than MCL or SAL	YES	NO
VOCs detected at least once	___	X
VOCs never detected	X	___
___ VOC sampling records unavailable	___	___

C. EDB/DBCP:

(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)

	YES	NO
EDB/DBCP detected below MCL at least once	___	___
EDB/DBCP detected above MCL at least once	___	___
EDB/DBCP never detected	___	___

___ EDB/DBCP tests required but not yet completed

X EDB/DBCP tests not required

D. Other SOCs (Pesticides):

	YES	NO
Other SOCs detected (pesticides and other synthetic organic chemicals)	___	___

___ Other SOC tests performed but none detected
(list test methods in comments

X Other SOC tests not performed

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

E. Bacterial contamination:

	YES	NO
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	___	X
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	___	X

___ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

X YES ___ NO

Describe with references to map produced in Part IV:

HIGHER ELEVATION WEST & EAST OF VALLEY FLOW SOUTH TO NORTH UP VALLEY.

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

___ YES X NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

X YES ___ NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES X NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	X	___	___
5–10 year travel time	X	___	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

AQUIFER FLOW APPEARS TO BE FROM SOUTH TO NORTH ACCORDING TO A GROUND WATER SUPPLY STUDY BY POOL ENGINEERING, INC. IN SEPTEMBER, 1982. HYDROLOGY DONE BY HART CROUSER FOR REPORT.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES X NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES X NO

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.

Original and First Copy with
Division of Water Resources
Copy — Owner's Copy
Copy — Driller's Copy

WATER WELL REPORT well #2

STATE OF WASHINGTON

Application No. 9229
Permit No. 8732

(1) OWNER: Name City of Auburn Address 20 "A" St. N.W. Auburn, Wash. 98002

(2) LOCATION OF WELL: County King NW. ¼ NE. ¼ Sec. 18 T. 21 N., R. 5 W.M.
Bearing and distance from section or subdivision corner 610' east, 685' south from N¼ corner Sect. 18

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) 2
New well ☒ Method: Dug ☐ Bored ☒
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 24 inches.
Drilled 293 ft. Depth of completed well 293 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 24" Diam. from 0 ft. to ft.
Threaded ☐ 30" Diam. from 0 ft. to 90 ft.
Welded ☒ " Diam. from ft. to ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type Stainless Model No.
Diam. 24 Slot size 80 from 242 ft. to 282 ft.
Diam. 24 Slot size 40 from 282 ft. to 291 ft.
24 Blank 239 242

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 90 ft.
Material used to seal 30" csg. / casing
Did any strata contain unusable water? Yes ☒ No ☐
Type of water? high iron Depth of strata to 85'
Method of sealing strata off 30" casing driven into imp. strata

(7) PUMP: Manufacturer's Name None installed
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level USGS 64 ft.
Static level 7' 6" ft. below top of well Date 11-20-68
Artesian pressure lbs. per square inch Date
Artesian water controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? driller
Yield: 2000 gal./min. with 60' ft. drawdown after 24 hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
30	9'-0"				
3-00	8'-6"				
10-00	7'-6"				

Date of test 11-20, 11-21-'68
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
sand & gravel	0	20'
sand & gravel - hard streaks	20	37'
fine & coarse sand & grv.	37	52'
" " " & " - brown clay, hard streaks	52	71'
fine to med. sand w/yel. clay	71	78'
coarse grv. sand layers	78	84'
cemented sand & gravel	84	98'
blue & gray clay-large grv.-silty sand	98	105'
large grv. sand & blue clay	105	117
hard packed yellow & brown snd. & grv.	117	138
loose snd. & grv., brown	138	146
cemented snd. & grv. brwn silt	146	150
med. brown peat, sand, silt	150	160
gray, coarse sand, some grv. silty	160	166
hard packed sand & gravel	166	178
cemented sand & gravel	178	196
fine & coarse sand & gravel	196	198
yellow clay, snd & grv, hard	198	210
varigated clay, snd. & grv.	210	213
hard packed sand & gravel	213	225
cemented sand & gravel in-layers, med. & coarse sand	225	238
varigated clay, sand & coarse gravel, hard	238	264
hard packed sand & gravel-cemented slightly	264	270
Yellow clay, sand & gravel-hard streaks	270	279
fine & coarse snd., med to coas. grv. cemented layers	279	290
varigated clay, fine & coas. sand & gravel	290	291
hard packed snd. & grv.	291	293

Work started 11-21-68 Completed 11-21-68

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Richardson Well Drilling Co.
(Person, firm, or corporation) (Type or print)
Address 219 S. 115th St. Tacoma, Wa.

[Signed] [illegible]
(Well Driller)
License No. 223-02-6500 Date 1-13-1969

State of Washington Department of Public Health Laboratories
1610 NE 150th Street, Seattle, Washington 98155 (206) 361-2898

VOLATILE ORGANIC CHEMICAL REPORT

Results of Analysis by EPA Method 524.2
Measurement of Purgeable Organic Compounds in Water by Capillary Column
Gas Chromatography/Mass Spectrometry

Send Report To:
City of Auburn
1305 C Street SW
Auburn, WA 98001-5910

Bill To: Auburn Water
1305 C street SW
Auburn, WA 98001-5910

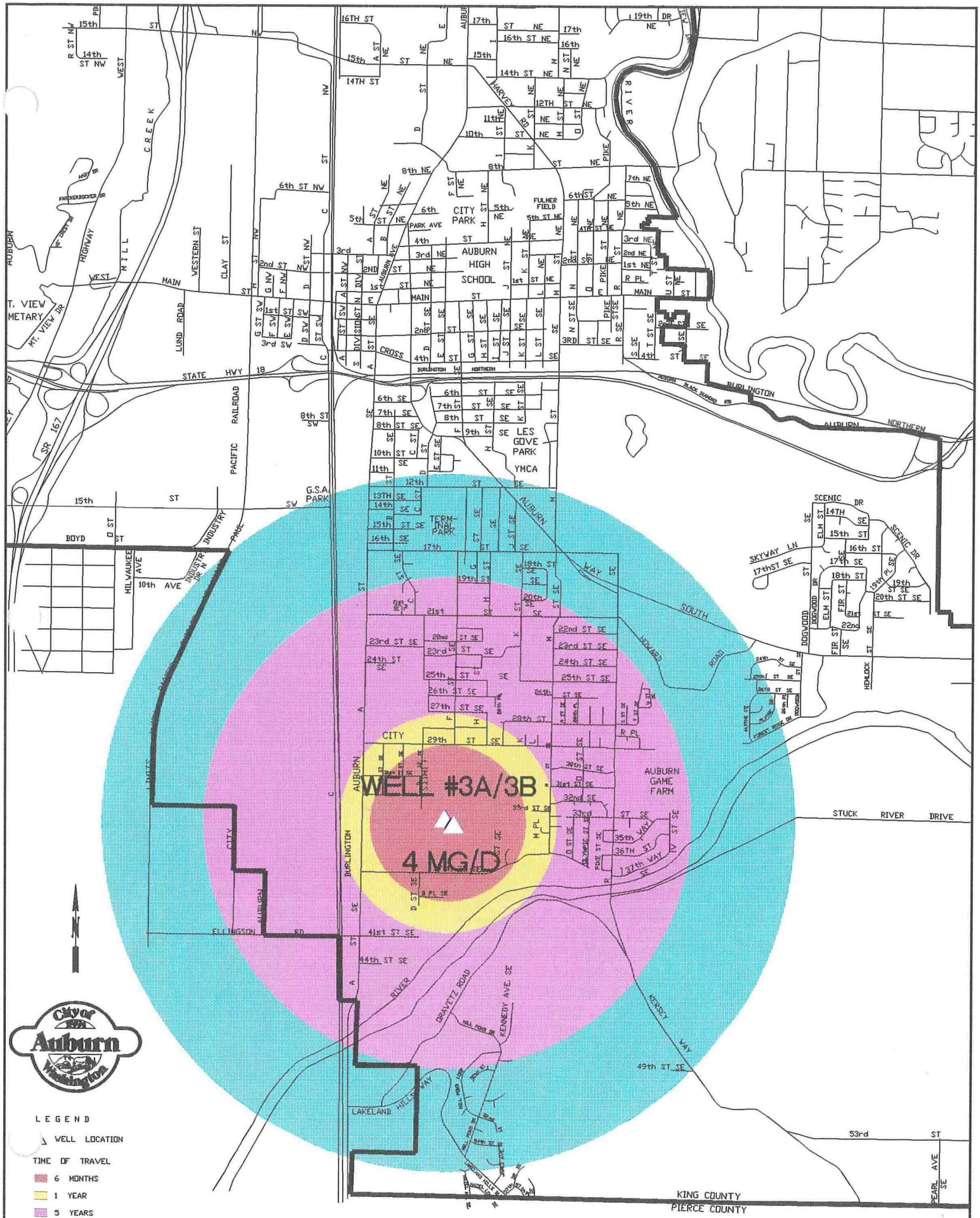
#225 SD

COUNTY : King
SYSTEM NAME : City of Auburn
SYSTEM ID NO. : 03350V
DATE COLLECTED : 03/08/94
DATE ANALYZED : 03/10/94
SOURCE NUMBER : S04
SOURCE TYPE : Well #2

LABORATORY NO. : 5408721
DATA FILE : >3C10K
ANALYST : Harold
DATE OF REPORT : 3-23-94
SUPERVISOR'S INITIALS : [illegible]

EPA CODE	NAME OF COMPOUND	MCL* µg/L	AMOUNT µg/L	EPA CODE	NAME OF COMPOUND	AMOUNT µg/L
	REGULATED COMPOUNDS				UNREGULATED COMPOUNDS	
2976	VINYL CHLORIDE	2	ND	2210	CHLOROMETHANE	ND
2977	1,1-DICHLOROETHYLENE	7	ND	2214	BROMOMETHANE	ND
2981	1,1,1-TRICHLOROETHANE	200	ND	2216	CHLOROETHANE	ND
2982	CARBON TETRACHLORIDE	5	ND	2978	1,1-DICHLOROETHANE	ND
2990	BENZENE	5	ND	2416	2,2-DICHLOROPROPANE	ND
2980	1,2-DICHLOROETHANE	5	ND	2410	1,1-DICHLOROPROPENE	ND
2984	TRICHLOROETHYLENE	5	2.0	2408	DIBROMOMETHANE	ND
2969	P-DICHLOROBENZENE	75	ND	2412	1,3-DICHLOROPROPANE	ND
2979	T-1,2-DICHLOROETHYLENE	100	ND	2986	1,1,1,2-TETRACHLOROETHANE	ND
2380	CIS-1,2-DICHLOROETHYLENE	70	0.9	2993	BROMOBENZENE	ND
2983	1,2-DICHLOROPROPANE	5	ND	2414	1,2,3-TRICHLOROPROPANE	ND
2991	TOLUENE	1000	ND	2988	1,1,2,2-TETRACHLOROETHANE	ND
2987	TETRACHLOROETHYLENE	5	2.5	2965	O-CHLOROTOLUENE	ND
2989	CHLOROBENZENE	100	ND	2966	P-CHLOROTOLUENE	ND
2992	ETHYL BENZENE	700	ND	2967	M-DICHLOROBENZENE	ND
2995	M/P-XYLENE (total xylene MCL=10000)		ND	2212	DICHLORODIFLUOROMETHANE	ND
2997	O-XYLENE (total xylene MCL=10000)		ND	2218	TRICHLOROFLUOROMETHANE	ND
2996	STYRENE	100	ND	2430	BROMOCHLOROMETHANE	ND
2968	O-DICHLOROBENZENE	600	ND	2994	ISOPROPYLBENZENE	ND
2964	METHYLENE CHLORIDE	5	ND	2998	N-PROPYLBENZENE	ND
2985	1,1,2-TRICHLOROETHANE	5	ND	2424	1,3,5-TRIMETHYLBENZENE	ND
2378	1,2,4-TRICHLOROBENZENE	70	ND	2426	TERT-BUTYLBENZENE	ND
	TRIHALOMETHANES (THM)			2428	SEC-BUTYLBENZENE	ND
2941	CHLOROFORM		ND	2030	P-ISOPROPYLTOLUENE	ND
2943	BROMODICHLOROMETHANE		ND	2422	N-BUTYLBENZENE	ND
[illegible]944	CHLORODIBROMOMETHANE		ND	2418	1,2,4-TRIMETHYLBENZENE	ND
[illegible]42	BROMOFORM		ND	2248	NAPHTHALENE	ND
				2246	HEXACHLOROBUTADIENE	ND
				2420	1,2,3-TRICHLOROBENZENE	ND
				2228	CIS-1,3-DICHLOROPROPENE	ND
				2224	TRANS-1,3-DICHLOROPROPENE	ND

*MCL : Maximum Contaminant level
NOTE : ND indicates that the true concentration is less than the method detection limit of 0.5 µg/L.


WELL #3A/3B
4 MG/D
LEGEND
WELL LOCATION
TIME OF TRAVEL
6 MONTHS
1 YEAR
5 YEARS
10 YEARS
City of Auburn Washington
CITY OF AUBURN WELL # 3A/3B
APRIL 1994

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.1

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : CITY OF AUBURN

Water system name : AUBURN WATER DIVISION

County: KING

Water system number: 03350V Source number: S05

Well depth: 310 (ft.) (*From WFI form*)

Source name: WELL 3A

WA well identification tag number: ___ ___ ___ - ___ ___ ___

X well not tagged

Number of connections: 13,000 Population served: 40,000

Township: 21N Range: 05E

Section: 30 1/4 1/4 Section: NE/SW

Latitude/longitude (if available): N 47 16' 42.71" / 122 13' 13.54"

How was lat./long. determined?

___ global positioning device X survey ___ topographic map
___other: ___

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: ___ / ___ / 83 month/day/year

last reconstruction: ___ / ___ / ___ month/day/year

___ information unavailable

2) Well driller: RICHARDSON DRILLING

___ well driller unknown

3) Type of well:

X Drilled: ___ rotary ___ bored X cable (percussion) ___ Dug

___ Other: ___ spring(s) ___ lateral collector (Ranney)

___ driven ___ jetted ___ other: _____

Additional comments: _____

4) Well report available? X YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 1600 (gallons/min)

Source of information: WF1/DAILY LOGS/ DATA SYSTEM

If not documented, how was pumping rate determined? _____

___ Pumping rate unknown

6) Is this source treated? YES

If so, what type of treatment:

X disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is chlorinated, is a chlorine residual maintained: X YES ___ NO

Residual level: 0.8 (*At the point closest to the source.*)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ < 20 ft ___ 20-50 ft ___ 50-100 ft ___ 100-200 ft _X_ > 200 ft

___ information unavailable (*'< ' means less than; '> ' means greater than*)

2) Depth to ground water (static water level):

___ < 20 ft _X_ 20-50 ft ___ 50-100 ft ___ > 100 ft

___ flowing well/spring (artesian)

How was water level determined?

_X_ well log ___ other: _____

___ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_____ psi (pounds per square inch)
or
_____ feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ___ YES ___ NO

5) Wellhead elevation (height above mean sea level): 112 (ft)

How was elevation determined? ___ topographic map _X_ Drilling/Well Log ___ altimeter

___ other: _____

___ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_X_ evidence of a confining layer in well log

___ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the top of the open interval? _X_ YES ___ NO

___ information unavailable

7) Sanitary setback:

___ < 100 ft* ___ 100–120 ft _x_ 120–200 ft ___ > 200 ft
* if less than 100 ft describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

_x_ wellhead enclosed in a wellhouse

_x_ controlled access (describe): FENCED

_____

___ other uses for wellhouse (describe): _____

_____

___ no wellhead control

9) Surface seal:

___ 18 ft

___ < 18 ft (no Department of Ecology approval) ('< ' *means less than*)

___ < 18 ft (Approved by Ecology, include documentation) ('< ' *means less than*)

_x_ > 18 ft ('> ' *means greater than*)

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10–25 in/yr _x_ > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 0 (gallons) 1993

How was this determined?

X meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 1595 (ft)

1 year ground water travel time : 2255 (ft)

5 year ground water travel time: 5043 (ft)

10 year ground water travel time: 7132 (ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/open interval: 60 (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

		6 month	1 year	5 year	unknown
likely pesticide application	RESIDENTIAL	X	X	X	
stormwater injection wells					
other injection wells					
abandoned ground water well					
landfills, dumps, disposal areas					
known hazardous materials clean-up site					
water system(s) with known quality problems					
population density > 1 house/acre		X	X	X	
residences commonly have septic tanks					
Wastewater treatment lagoons					
sites used for land application of waste					

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

DRY CLEANERS

AUTO REPAIR — LOW POTENTIAL

SERVICE STATION

PLASTICS MANUFACTURE

SALVAGE & RECYCLING

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES	NO
Results greater than MCL	___	X
< 2 mg/liter nitrate	X	___
2-5 mg/liter nitrate	___	X
> 5 mg/liter nitrate	___	X
___ Nitrate sampling records unavailable		

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES	NO
Results greater than MCL or SAL	___	X
VOCs detected at least once	___	X
VOCs never detected	X	___
___ VOC sampling records unavailable		

C. EDB/DBCP:	YES	NO
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)		
EDB/DBCP detected below MCL at least once	___	___
EDB/DBCP detected above MCL at least once	___	___
EDB/DBCP never detected	___	___
___ EDB/DBCP tests required but not yet completed		
X EDB/DBCP tests not required		

D. Other SOCs (Pesticides):	YES	NO
Other SOCs detected	___	___
(pesticides and other synthetic organic chemicals)		
___ Other SOC tests performed but none detected		
(list test methods in comments		
X Other SOC tests not performed		

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: NA

E. Bacterial contamination:

	YES	NO
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	___	X
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	___	X

___ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

X YES ___ NO

Describe with references to map produced in Part IV:

HIGHER TERRAIN TO EAST & WEST OF VALLEY FLOW IS SOUTH TO NORTH.

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

___ YES X NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

X YES ___ NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES ___ NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	X	___	___
5–10 year travel time	X	___	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

AQUIFER FLOW IS FROM SOUTH TO NORTH ACCORDING TO A GROUND WATER STUDY DONE BY POOL ENGINEERING IN SEPTEMBER 1982 . HART CROUSER DID THE HYDROLOGY WORK FOR THIS STUDY.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES ___ NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES ___ NO

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.

The Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No. 21-5-30L

Permit No. G1-23629P

(1) OWNER: Name City of Auburn Address 25 West Main, Abubrn WA 98002

(2) LOCATION OF WELL: County King NE ¼ SW ¼ Sec. 30 T. 21 N., R. 5 W.M.

Bearing and distance from section or subdivision corner 762' West & 267' south of center section 30

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) #3A
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 16 inches.
Drilled 394.5 ft. Depth of completed well 365 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 16" Diam. from +2.5 ft. to 255 ft.
Threaded ☐ 12" Diam. from 255 ft. to 365 ft.
Welded ☒ ____" Diam. from ____ ft. to ____ ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations ____ in. by ____ in.
____ perforations from ____ ft. to ____ ft.
____ perforations from ____ ft. to ____ ft.
____ perforations from ____ ft. to ____ ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type Stainless steel PVC Model No. 304
Diam. 12" Slot size 80 from 285 ft. to 295 ft.
Diam. 12" Slot size 100 from 320 ft. to 360 ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ____ ft. to ____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal cement grout
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name Test Pump
Type: Turbon H.P. 320

(8) WATER LEVELS: Land-surface elevation above mean sea level 112 ft.
Static level 39.1 ft. below top of well Date 11-29-82
Artesian pressure ____ lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water lowered below static level Hart
Was a pump test made? Yes ☒ No ☐ If yes, by whom? Crowser
Yield: 1650 gal./min. with 35.87 ft. drawdown after 10 min.
" 1650 " 41.94 " 100 "
" 1650 " 49.82 " 1000 "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
0 min	52.11'	4 min	51.42'	14min	49.86'
172 min	43.32'				

Date of test 11-30-82
Bailer test ____ gal./min. with ____ ft. drawdown after ____ hrs.
Artesian flow ____ g.p.m. Date
Temperature of water ____ Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG:

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
Topsoil	0	11
Clay bound sand & gravel with cobbles	11	49
Tight brown sand, gravel little water	49	56
Sand - gravel (water)	56	91
Large gravel, fine sand	91	109
Grey silty - sandy clay	109	165
Sand - gravel, some wood little water	165	175
Green sandy - silty clay	175	182
Water bearing greenish brown clay bound sand &gravel some wood	182	188
sandy clay	188	200
Clay, pet, wood, sand & graveel	200	222
Sand & gravel, some wood	222	236
Sandy clay, small layer sand & gravel water bearing	236	251
Brown sand & gravel	251	278
Clay bound sand &greavel	278	279
Gravel, wood. layer of silty clay	279	307
Loose gravel with wood	307	309
Brown sand & gravel little layers of silt & wood	309	391
Clay bound sand & gravel	391	394

Work started 9-25, 19 82 Completed 12-1-, 1982

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Armstrong Drilling, Inc.
(Person, firm, or corporation) (Type or print)

Address 10715 - 66th Ave. E.

[Signed] John E. Armstrong (Well Driller)

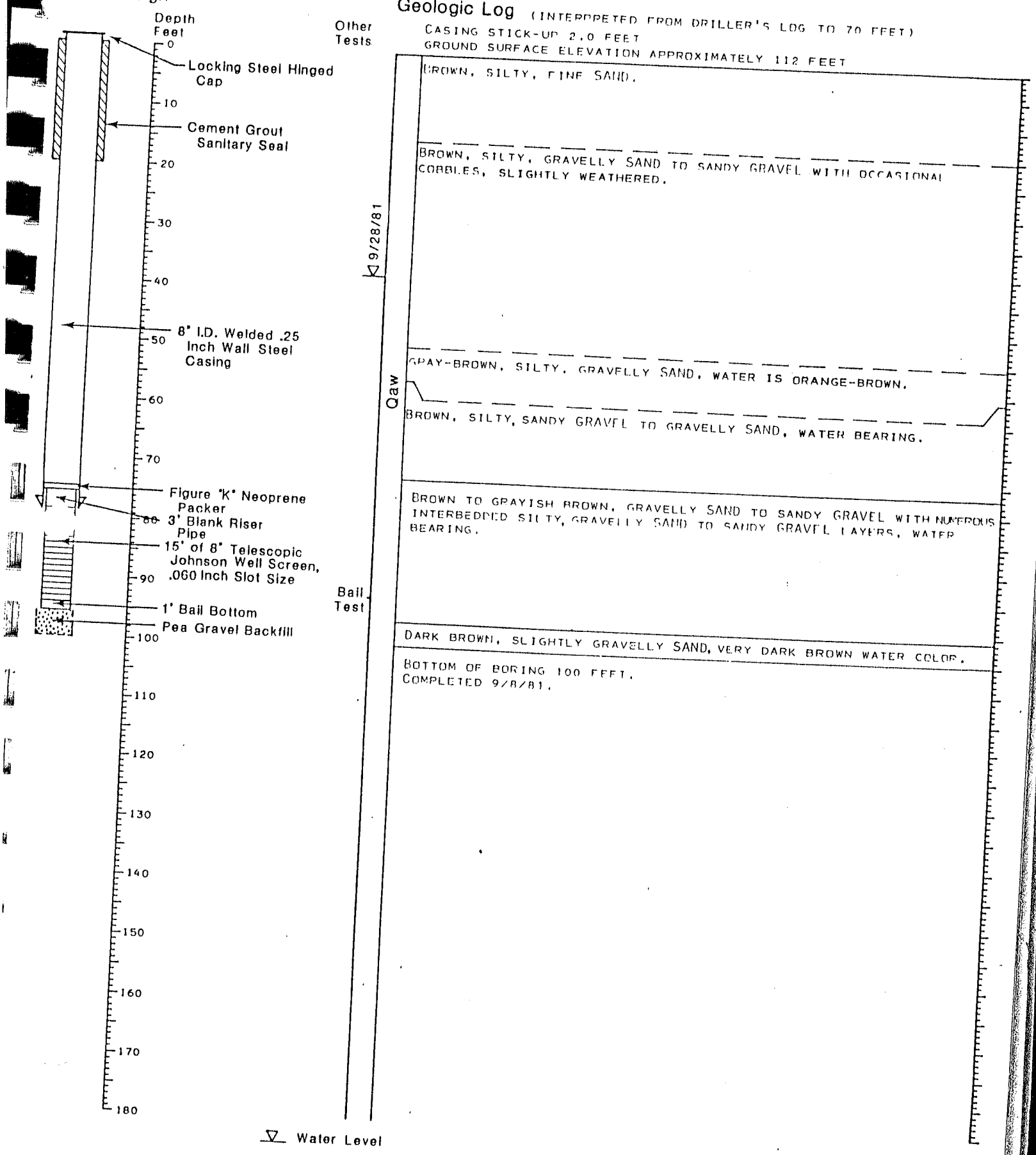
License No. 0012 Date 12-22, 1982

Note: This is first of two wells planned for construction at this location.

(USE ADDITIONAL SHEETS IF NECESSARY)

S. F. No. 7336—OS—(Rev. 4-71).

Well Boring and Construction Information T-3B Test Site #3



J-1004 November 1981
HART-CROWSER & associates
Figure A-1

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.1

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : CITY OF AUBURN

Water system name : AUBURN WATER DIVISION

County: KING

Water system number: 03350V Source number: S02

Well depth: 310 (ft.) (*From WFI form*)

Source name: WELL 3 B

WA well identification tag number:___ ___ ___-___ ___ ___

___X___ well not tagged

Number of connections: 13,000 Population served: 40,000

Township: 21N Range: 055

Section: 30 1/4 1/4 Section: NE/ SW

Latitude/longitude (if available): N 47 16' 42.71" / W 122 13' 13.54"

How was lat./long. determined?

_____ global positioning device ___X___ survey _____ topographic map
____other: _____

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: ___ / ___ /83 month/day/year

last reconstruction: ___ / ___ /___ month/day/year

_____ information unavailable

2) Well driller: RICHARDSON WELL DRILLING

___ well driller unknown

3) Type of well:

X Drilled: ___ rotary ___ bored X cable (percussion) ___ Dug

___ Other: ___ spring(s) ___ lateral collector (Ranney)

___ driven ___ jetted ___ other: _____

Additional comments: _____

4) Well report available? ___ YES (attach copy to form) ___ NO SEE WELL LOG 3A DRILLED 50FT APART

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 1500 (gallons/min)

Source of information: WF1/ DAILY LOGS/DATA ACQUISITION SYSTEM

If not documented, how was pumping rate determined? _____

___ Pumping rate unknown

6) Is this source treated? YES

If so, what type of treatment:

X disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is chlorinated, is a chlorine residual maintained: X YES ___ NO

Residual level: 0.8 *(At the point closest to the source.)*

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ < 20 ft ___ 20–50 ft ___ 50–100 ft ___ 100–200 ft _X_ >200 ft

___ information unavailable (*'< ' means less than; '> ' means greater than*)

2) Depth to ground water (static water level):

___ < 20 ft _X_ 20–50 ft ___ 50–100 ft ___ >100 ft

___ flowing well/spring (artesian)

How was water level determined?

_X_ well log ___ other: _____

___ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_____ psi (pounds per square inch)
or
_____ feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ___ YES ___ NO

5) Wellhead elevation (height above mean sea level): _112_ (ft)

How was elevation determined? _X_ topographic map _X_ Drilling/Well Log ___ altimeter

___ other: _____

___ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_X_ evidence of a confining layer in well log

___ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the top of the open interval? _X_ YES ___ NO

___ information unavailable

7) Sanitary setback:

___ < 100 ft* ___ 100–120 ft _x_ 120–200 ft ___ > 200 ft
* if less than 100 ft describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

_x_ wellhead enclosed in a wellhouse

_x_ controlled access (describe): _____

_____

___ other uses for wellhouse (describe): _____

_____

___ no wellhead control

9) Surface seal:

___ 18 ft

___ < 18 ft (no Department of Ecology approval) (*'<' means less than*)

___ < 18 ft (Approved by Ecology, include documentation) (*'<' means less than*)

_x_ > 18 ft (*'>' means greater than*)

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10–25 in/yr _x_ > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 866,000 (gallons) 1993

How was this determined?

X meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 1595 (ft)

1 year ground water travel time : 2255 (ft)

5 year ground water travel time: 5043 (ft)

10 year ground water travel time: 7132 (ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/open interval: _____(ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application RESIDENTIAL	X	X	X	
stormwater injection wells				
other injection wells				
abandoned ground water well				
landfills, dumps, disposal areas				
known hazardous materials clean-up site				
water system(s) with known quality problems				
population density > 1 house/acre	X	X	X	
residences commonly have septic tanks				
Wastewater treatment lagoons				
sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

DRY CLEANERS

AUTO REPAIR

SERVICE STATION LOW POTENTIAL

PLASTICS MANUFACTURE

HOSE MAT

SALVAGE & RECYCLING

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES	NO
Results greater than MCL	___	X
< 2 mg/liter nitrate	X	___
2-5 mg/liter nitrate	___	X
> 5 mg/liter nitrate	___	X
___ Nitrate sampling records unavailable		

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES	NO
Results greater than MCL or SAL	___	X
VOCs detected at least once	___	X
VOCs never detected	X	___
___ VOC sampling records unavailable		

C. EDB/DBCP:	YES	NO
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)		
EDB/DBCP detected below MCL at least once	___	___
EDB/DBCP detected above MCL at least once	___	___
EDB/DBCP never detected	___	___
___ EDB/DBCP tests required but not yet completed		
X EDB/DBCP tests not required		

D. Other SOCs (Pesticides):	YES	NO
Other SOCs detected	___	___
(pesticides and other synthetic organic chemicals)		
___ Other SOC tests performed but none detected (list test methods in comments		
X Other SOC tests not performed		

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination:

	YES	NO
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	___	X
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	___	X

___ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

X YES ___ NO

Describe with references to map produced in Part IV:

HIGHER TERRAIN TO EAST & WEST OF VALLEY FLOW IS SOUTH TO NORTH UP VALLEY.

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

___ YES X NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

X YES ___ NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES ___ NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	X	___	___
5–10 year travel time	X	___	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

AQUIFER FLOW IS FROM SOUTH TO NORTH ACCORDING TO A GROUND WATER STUDY BY POOL ENGINEERING, INC. IN SEPTEMBER 1982. HART CROUSER DID THE HYDROLOGICAL STUDY FOR THIS REPORT.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES __x__ NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES __x__ NO

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.

d First Copy with Ecology
Owner's Copy
Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON well 3A

Application No G1-23629

Permit No G1-23628P

OWNER: Name City of Auburn Address 25 West Main, Abubrn WA 98002

LOCATION OF WELL: County King NE ¼ SW ¼ Sec 30 T. 21 N., R. 5 W.M.

ng and distance from section or subdivision corner 762' West & 267' south of center section 30

PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

TYPE OF WORK: Owner's number of well (If more than one) #3A
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

DIMENSIONS: Diameter of well 16 inches.
Drilled 394.5 ft. Depth of completed well 365 ft.

CONSTRUCTION DETAILS:

Casing installed: 16" Diam. from +2.5 ft. to 255 ft.
Threaded ☐ 12" Diam. from 255 ft. to 365 ft.
Welded ☒ ____" Diam. from ____ ft. to ____ ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations ____ in. by ____ in.
____ perforations from ____ ft. to ____ ft.
____ perforations from ____ ft. to ____ ft.
____ perforations from ____ ft. to ____ ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type Stainless steel Pipe Size Model No. 304
Diam. 12" Slot size 80 from 285 ft. to 295 ft.
Diam. 12" Slot size 100 from 320 ft. to 360 ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ____ ft. to ____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal cement grout
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

PUMP: Manufacturer's Name Test Pump
Type: Turbon H.P. 320

WATER LEVELS: Land-surface elevation above mean sea level 112 ft.
level 39.1 ft. below top of well Date 11-29-82
ian pressure ____ lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

WELL TESTS: Drawdown is amount water lowered below static level
a pump test made? Yes ☒ No ☐ If yes, by whom? Crowser
d: 1650 gal./min. with 35.87 ft. drawdown after 10 min
1650 " 41.94 " 100 "
1650 " 49.82 " 1000 "

very data (time taken as zero when pump turned off) (water level meas d from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
in	52.11'	4 min	51.42'	14min	49.86'
nin	43.32'				

Date of test 11-30-82
er test ____ gal./min. with ____ ft. drawdown after ____ hrs.
sian flow ____ g.p.m. Date
perature of water ____ Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Topsoil	0	11
Clay bound sand & gravel with cobbles	11	49
Tight brown sand, gravel little water	49	56
Sand - gravel (water)	56	91
Large gravel, fine sand	91	109
Grey silty - sandy clay	109	165
Sand - gravel, some wood little water	165	175
Green sandy - silty clay	175	182
Water bearing greenish brown clay boundsand &gravel some wood	182	188
sandy clay	188	200
Clay, pet, wood, sand & graveel	200	222
Sand & gravel, some wood	222	236
Sandy clay, small layer sand & gravel water bearing	236	251
Brown sand & gravel	251	278
Clay bound sand &greavel	278	279
Gravel, wood, layer of silty clay	279	307
Loose gravel with wood	307	309
Brown sand & gravel little layers of silt & wood	309	391
Clay bound sand & gravel	391	394

Work started 9-25, 19 82 Completed 12-1-, 1982

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Armstrong Drilling, Inc.
(Person, firm, or corporation) (Type or print)

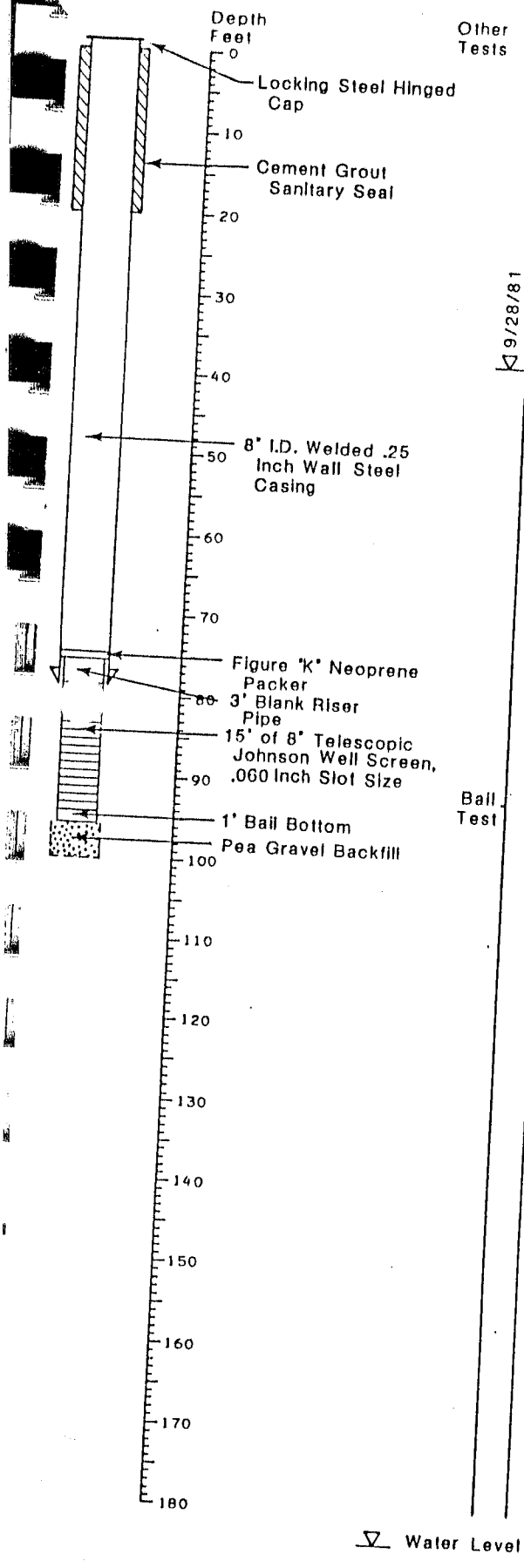
Address 10715 - 66th Ave. E.

[Signed] John E. Armstrong (Well Driller)

License No. 0012 Date 12-22, 1982

Well Boring and Construction Information T-3B Test Site #3

Well Design



Geologic Log (INTERPRETED FROM DRILLER'S LOG TO 70 FEET)

CASING STICK-UP 2.0 FEET
GROUND SURFACE ELEVATION APPROXIMATELY 112 FEET

Qaw

BROWN, SILTY, FINE SAND.

BROWN, SILTY, GRAVELLY SAND TO SANDY GRAVEL WITH OCCASIONAL COBBLES, SLIGHTLY WEATHERED.

GRAY-BROWN, SILTY, GRAVELLY SAND, WATER IS ORANGE-BROWN.

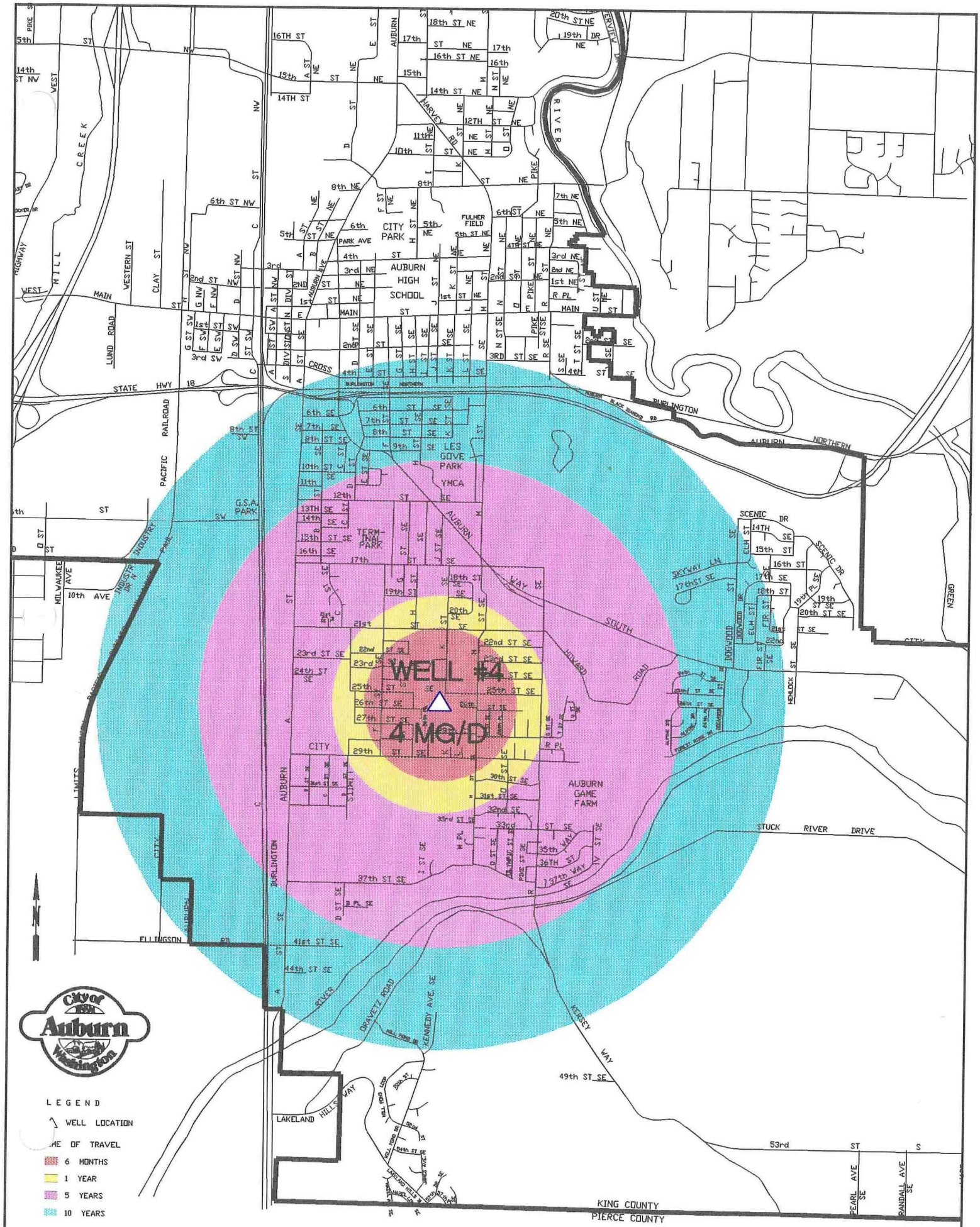
BROWN, SILTY, SANDY GRAVEL TO GRAVELLY SAND, WATER BEARING.

BROWN TO GRAYISH BROWN, GRAVELLY SAND TO SANDY GRAVEL WITH NUMEROUS INTERBEDDED SILTY, GRAVELLY SAND TO SANDY GRAVEL LAYERS, WATER BEARING.

DARK BROWN, SLIGHTLY GRAVELLY SAND, VERY DARK BROWN WATER COLOR.

BOTTOM OF BORING 100 FEET.
COMPLETED 9/8/81.

J-1004 November 1981
HART-CROWSER & associates inc.
Figure A-1


WELL #4
4 MG/D
LEGEND
WELL LOCATION
ME OF TRAVEL
6 MONTHS
1 YEAR
5 YEARS
10 YEARS
City of Auburn Washington
CITY OF AUBURN WELL # 4
APRIL 1994

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.1

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : CITY OF AUBURN

Water system name : AUBURN WATER DIVISION

County: KING

Water system number: 03359V Source number: S07

Well depth: 320 (ft.) (*From WFI form*)

Source name: WELL #4

WA well identification tag number: ___ ___ ___-___ ___ ___

X well not tagged

Number of connections: 13,000 Population served: 40,000

Township: 21N Range: 05E

Section: 30 1/4 1/4 Section: NW/NE

Latitude/longitude (if available): N 47 17' 9.84" / W 122 12' 54.80"

How was lat./long. determined?

_____ global positioning device X survey _____ topographic map
____other: _____

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 12 / ___ /83 month/day/year

last reconstruction: 04 / ___ /84 month/day/year

_____ information unavailable

2) Well driller: RICHARDSON WELL DRILLING

___ well driller unknown

3) Type of well:

X Drilled: ___ rotary ___ bored X cable (percussion) ___ Dug

___ Other: ___ spring(s) ___ lateral collector (Ranney)

___ driven ___ jetted ___ other: _____

Additional comments: _____

4) Well report available? X YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 3000 (gallons/min)

Source of information: WF1/DAILY LOGS/DATA SYSTEM

If not documented, how was pumping rate determined? _____

___ Pumping rate unknown

6) Is this source treated? NO

If so, what type of treatment:

___ disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is chlorinated, is a chlorine residual maintained: ___ YES ___ NO NA

Residual level: _____ (*At the point closest to the source.*)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ < 20 ft ___ 20-50 ft ___ 50-100 ft ___ 100-200 ft _X_ >200 ft

___ information unavailable (*'< ' means less than; '> ' means greater than*)

2) Depth to ground water (static water level):

___ < 20 ft _X_ 20-50 ft ___ 50-100 ft ___ >100 ft

___ flowing well/spring (artesian)

How was water level determined?

_X_ well log ___ other: _____

__ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure: NA

_____ psi (pounds per square inch)
or
_____ feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ___ YES ___ NO NA

5) Wellhead elevation (height above mean sea level): 119 (ft)

How was elevation determined? ___ topographic map _X_ Drilling/Well Log ___ altimeter

___ other: _____

___ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_X_ evidence of a confining layer in well log

___ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the top of the open interval? _X_ YES ___ NO

___ information unavailable

7) Sanitary setback:

___ < 100 ft* ___ 100–120 ft X 120–200 ft ___ > 200 ft
* if less than 100 ft describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

X wellhead enclosed in a wellhouse

X controlled access (describe): FENCED

_____

___ other uses for wellhouse (describe): NONE

_____

___ no wellhead control

9) Surface seal:

___ 18 ft

___ < 18 ft (no Department of Ecology approval) ('< ' *means less than*)

___ < 18 ft (Approved by Ecology, include documentation) ('< ' *means less than*)

X > 18 ft ('> ' *means greater than*)

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10–25 in/yr X > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 322,171,000 (gallons)

How was this determined?

X meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 1595 (ft)

1 year ground water travel time : 2250 (ft)

5 year ground water travel time: 5043 (ft)

10 year ground water travel time: 7132 (ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/open interval: _____(ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application RESIDENTIAL	X	X	X	
stormwater injection wells				
other injection wells				
abandoned ground water well			X	
landfills, dumps, disposal areas				
known hazardous materials clean-up site				
water system(s) with known quality problems				
population density > 1 house/acre	X	X	X	
residences commonly have septic tanks				
Wastewater treatment lagoons				
sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

DRY CLEANERS

SEVERAL HAZ MAT LOW POTENTIAL

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES	NO
Results greater than MCL	___	x
< 2 mg/liter nitrate	x	___
2-5 mg/liter nitrate	___	x
> 5 mg/liter nitrate	___	x
___ Nitrate sampling records unavailable		

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES	NO
Results greater than MCL or SAL	___	x
VOCs detected at least once	___	x
VOCs never detected	x	___
___ VOC sampling records unavailable		

C. EDB/DBCP:	YES	NO
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)		
EDB/DBCP detected below MCL at least once	___	___
EDB/DBCP detected above MCL at least once	___	___
EDB/DBCP never detected	___	___
___ EDB/DBCP tests required but not yet completed		
x EDB/DBCP tests not required		

D. Other SOCs (Pesticides):	YES	NO
Other SOCs detected	___	___
(pesticides and other synthetic organic chemicals)		
___ Other SOC tests performed but none detected		
(list test methods in comments		
x Other SOC tests not performed		

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination:

	YES	NO
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	___	X
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	___	X

___ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

_X_ YES ___ NO

Describe with references to map produced in Part IV:

HIGHER ELEVATION WEST & EAST OF VALLEY HYDROLIC STUDY INDICATES FLOW SOUTH TO NORTH UP VALLEY OF GROUNDWATER.

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

___ YES _X_ NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

_X_ YES ___ NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES _X_ NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	X	___	___
5–10 year travel time	X	___	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown	
< 1 year travel time	X	___	___	AT SITE
1–5 year travel time	___	X	___	
5–10 year travel time	___	X	___	

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

AQUIFER FLOW IS FROM SOUTH TO NORTH ACCORDING TO A GROUND WATER STUDY DONE BY POOL ENGINEERING, INC. IN SEPTEMBER 1982. HART CROUSER DID THE HYDROLOGY WORK FOR THIS STUDY.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES _x_ NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES _x_ NO

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.

Well 4

Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON Well #4

Application No. G1-23629

Permit No. G1-23628P

(1) OWNER: Name City of Auburn Address 25 West Main, Abubrn WA 98002

(2) LOCATION OF WELL: County King NE ¼ SW ¼ Sec. 30 T. 21 N., R. 5 W.

Bearing and distance from section or subdivision corner 762' West & 267' south of center section 30

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) #4

New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 16 inches.
Drilled 394.5 ft. Depth of completed well 365 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 16" Diam. from +2.5 ft. to 255 ft.
Threaded ☐ 12" Diam. from 255 ft. to 365 ft.
Welded ☒ ____" Diam. from ____ ft. to ____ ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations ____ in. by ____ in.
____ perforations from ____ ft. to ____ ft.
____ perforations from ____ ft. to ____ ft.
____ perforations from ____ ft. to ____ ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type Stainless steel Pipe Size Model No. 304
Diam. 12" Slot size 80 from 285 ft. to 295 ft.
Diam. 12" Slot size 100 from 320 ft. to 360 ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ____ ft. to ____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal cement grout
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name Test Pump
Type: Turbon H.P. 320

(8) WATER LEVELS: Land-surface elevation above mean sea level 112 ft.
Static level 39.1 ft. below top of well Date 11-29-82
Artesian pressure ____ lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? Crowser
Yield: 1650 gal./min. with 35.87 ft. drawdown after 10 Hrs.
" 1650 " 41.94 " 100 "
" 1650 " 49.82 " 1000 "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
1 min	52.11'	4 min	51.42'	14min	49.86'
2 min	43.32'				

Date of test 11-30-82
Bailer test ____ gal./min. with ____ ft. drawdown after ____ hrs.
Artesian flow ____ g.p.m. Date
Temperature of water ____ Was a chemical analysis made? Yes ☒ No ☐

Note: This is first of two wells planned for

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation

MATERIAL	FROM	TO
Topsoil	0	11
Clay bound sand & gravel with cobbles	11	49
Tight brown sand, gravel little water	49	56
Sand - gravel (water)	56	91
Large gravel, fine sand	91	109
Grey silty - sandy clay	109	165
Sand - gravel, some wood little water	165	175
Green sandy - silty clay	175	182
Water bearing greenish brown clay bound sand & gravel some wood	182	188
sandy clay	188	200
Clay, pet, wood, sand & gravel	200	22
Sand & gravel, some wood	222	236
Sandy clay, small layer sand & gravel water bearing	236	251
Brown sand & gravel	251	278
Clay bound sand & gravel	278	279
Gravel, wood, layer of silty clay	279	307
Loose gravel with wood	307	309
Brown sand & gravel little layers of silt & wood	309	391
Clay bound sand & gravel	391	394

Work started 9-25, 19 82 Completed 12-1-, 19 82

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Armstrong Drilling Inc.
(Person, firm, or corporation) (Type or print)

Address 10715 - 66th Ave. E.

[Signed] John E. Armstrong (Well Driller)

License No. 0012 Date 12-22, 1982

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.1

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : CITY OF AUBURN

Water system name : AUBURN WATER DIVISION

County: KING

Water system number: 03350V Source number: S06

Well depth: 325 (ft.) (*From WFI form*)

Source name: WELL #5

WA well identification tag number: ___ ___ ___-___ ___ ___

X well not tagged

Number of connections: 13,000 Population served: 40,000

Township: 21N Range: 05E

Section: 31 1/4 1/4 Section: SW/SE

Latitude/longitude (if available): N 47 15' 30.81" / W 122 12' 54.44"

How was lat./long. determined?

_____ global positioning device X survey _____ topographic map
____other: _____

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 04 / 19 / 90 month/day/year

last reconstruction: ___ / ___ /___ month/day/year

_____ information unavailable

2) Well driller: RICHARDSONS DRILLING

___ well driller unknown

3) Type of well:

X Drilled: X rotary ___ bored ___ cable (percussion) ___ Dug

___ Other: ___ spring(s) ___ lateral collector (Ranney)

___ driven ___ jetted ___ other: _____

Additional comments: _____

4) Well report available? X YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 1000 (gallons/min)

Source of information: WF1/DAILY LOGS/MONTHLY REPORTS

If not documented, how was pumping rate determined? _____

___ Pumping rate unknown

6) Is this source treated? NO

If so, what type of treatment:

___ disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is chlorinated, is a chlorine residual maintained: ___ YES ___ NO NA

Residual level: _____ (*At the point closest to the source.*)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ < 20 ft ___ 20–50 ft ___ 50–100 ft ___ 100–200 ft _X_ >200 ft

___ information unavailable (*'< ' means less than; '> ' means greater than*)

2) Depth to ground water (static water level):

___ < 20 ft ___ 20–50 ft ___ 50–100 ft _X_ > 100 ft

___ flowing well/spring (artesian)

How was water level determined?

_X_ well log ___ other: _____

___ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_____ psi (pounds per square inch)
or
_____ feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ___ YES ___ NO

5) Wellhead elevation (height above mean sea level): 495.5 (ft)

How was elevation determined? _X_ topographic map ___ Drilling/Well Log ___ altimeter

___ other: _____

___ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_X_ evidence of a confining layer in well log

___ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the top of the open interval? _X_ YES ___ NO

___ information unavailable

7) Sanitary setback:

___ < 100 ft* _x_ 100–120 ft ___ 120–200 ft ___ > 200 ft
* if less than 100 ft describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

_x_ wellhead enclosed in a wellhouse

_x_ controlled access (describe): FENCED

_____

___ other uses for wellhouse (describe): _____

_____

___ no wellhead control

9) Surface seal:

___ 18 ft

___ < 18 ft (no Department of Ecology approval) ('< ' *means less than*)

___ < 18 ft (Approved by Ecology, include documentation) ('< ' *means less than*)

_x_ > 18 ft ('> ' *means greater than*)

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10-25 in/yr _x_ > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 31,934,000 (gallons)

How was this determined?

X meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 1200 (ft)

1 year ground water travel time : 1698 (ft)

5 year ground water travel time: 3796 (ft)

10 year ground water travel time: 5368 (ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/open interval: 30 (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application RESIDENTIAL	x	x	x	
stormwater injection wells				
other injection wells				
abandoned ground water well				
landfills, dumps, disposal areas				
known hazardous materials clean-up site				
water system(s) with known quality problems				
population density > 1 house/acre	x	x	x	
residences commonly have septic tanks				
Wastewater treatment lagoons				
sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

NONE

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES	NO
Results greater than MCL	___	x
< 2 mg/liter nitrate	x	___
2-5 mg/liter nitrate	___	x
> 5 mg/liter nitrate	___	x
___ Nitrate sampling records unavailable		

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES	NO
Results greater than MCL or SAL	___	x
VOCs detected at least once	___	x
VOCs never detected	x	___
___ VOC sampling records unavailable		

C. EDB/DBCP:	YES	NO
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)		
EDB/DBCP detected below MCL at least once	___	___
EDB/DBCP detected above MCL at least once	___	___
EDB/DBCP never detected	___	___

___ EDB/DBCP tests required but not yet completed

x EDB/DBCP tests not required

D. Other SOCs (Pesticides):	YES	NO
Other SOCs detected (pesticides and other synthetic organic chemicals)	___	___

___ Other SOC tests performed but none detected
(list test methods in comments

x Other SOC tests not performed

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination:

	YES	NO
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	____	X
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	____	X

___ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

X YES ___ NO

Describe with references to map produced in Part IV:

WELL LOCATED ON THE TOP PORTION OF A STEP HILLSIDE

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

___ YES X NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

X YES ___ NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES x NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	x	___
6 month–1 year travel time	___	x	___
1–5 year travel time	x	___	___
5–10 year travel time	x	___	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	x	___
1–5 year travel time	___	x	___
5–10 year travel time	___	x	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES X NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES X NO

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.

Well 5

MAY 15 1990

RICHARDSON WELL DRILLING CO.

DAILY DRILLING REPORT

Sec..... Twp..... Rge..... Date 11-2 thru 19-79

Contract GRABTREE Driller MEHR

Address.....

Total depth last report.....Well No.....Size hole 12 "..Test hole.....

List Below
FORMATION PENETRATED TODAY

0-4 Fill

4-2 6 Gravel & Bolders

26-76 Gravel, Clay & Bolders

76-110 Yellow Hardpan & Bolders

110-118 Gray Clay, Gravel & Seepage

118-133 Gray Sandy Clay & Gravel

133-145 Alittle Water, Gray Clay, Wood & Sand

145-187 Yellow Clay & Gravel

187-196 Gray Clay, Gravel & Bolders

196-213 Alittle Wa ter, Clay & Gravel

213-297 Yellow Clay, Gravel & Bolders

297-315 Gravel, Clay & Bolders

315-320 Water, Gravel & Clay

320-335 Water, Corse Sand & Corse Gravel

Total depth at end of day 335!

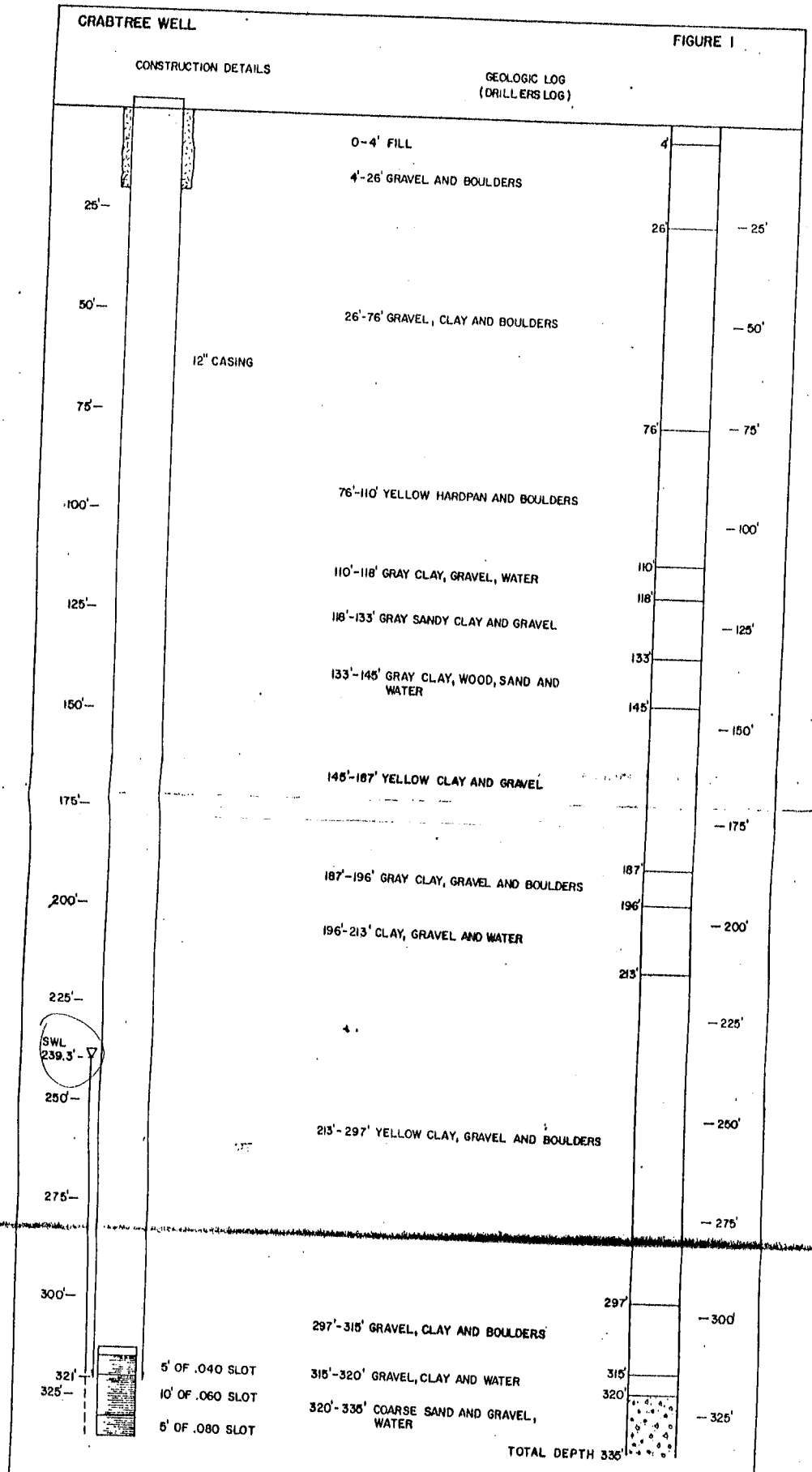
Remarks: Reduced to 10" casing at 321!. Drilled from 321! to 335! w w ith 10" casing. Set 20! of screen, 5! of 40 slot, 10! of 60 slot and 5! of 80 slot. Overall length of screen 22!. Exposed 15! of screen from 335! to 320!. Total 12" casing 321!2". Total 10" 320!7". Static at 250!. Air pumped 80-120 GPM. Total hour work-10.

This Report Must Be Made Out IN FULL Each Day

Wells

CRABTREE WELL

FIGURE 1



ROBINSON AND NOBLE INC. GROUND WATER GEOLOGISTS TACOMA, WASHINGTON	FOR: CRABTREE WELL	LOGGED BY: DAVID W. ABBOTT
JOB NO. E 80-5 DATE FEB 8, 1980	DRILLED AND DESIGNED BY: RICHARDSON WELL DRILLING INC., TACOMA, WASHINGTON NOVEMBER, 1979	DRAWN BY: DOYAL FOSTER
		T20N-R5E SEC. 6

CITY OF AUBURN WELL #5A

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.1

IMPORTANT! **Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.**

PART I: System Information

Well owner/manager : City of Auburn

Water system name : Auburn Water Division

County: King

Water system number: 03350V Source number: _____

Well depth: 570 (ft.) (*From WFI form*)

Source name: Well 5A

WA well identification tag number: ___ ___ ___ ___ ___ ___ ___

X well not tagged

Number of connections: 13,000 Population served: 40,000

Township: 21N Range: 05E

Section: 34 1/4 1/4 Section: SE/SE

Latitude/longitude (if available): N 47 15' 35.07" / W 122 12' 36.76"

How was lat./long. determined?

_____ global positioning device X survey _____ topographic map
_____other: _____

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 3 / 1 /90 month/day/year

last reconstruction: ___ / ___ /___month/day/year

_____ information unavailable

2) Well driller: OELKE Drilling Inc./ Burt Well Drilling

___ well driller unknown

3) Type of well:

___Drilled: _X_ rotary ___ bored ___ cable (percussion) ___ Dug

___ Other: ___ spring(s) ___ lateral collector (Ranney)

___ driven ___ jetted ___ other: _____

Additional comments: _____

4) Well report available? _X_ YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 250 (gallons/min)

Source of information: Daily logs/Monthly reports

If not documented, how was pumping rate determined? _____

___ Pumping rate unknown

6) Is this source treated? No

If so, what type of treatment:

___ disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is chlorinated, is a chlorine residual maintained: ___ YES ___ NO

Residual level: _____ *(At the point closest to the source.)*

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ < 20 ft ___ 20–50 ft ___ 50–100 ft ___ 100–200 ft _X_ > 200 ft

___ information unavailable ('< ' *means less than;* '> ' *means greater than*)

2) Depth to ground water (static water level):

___ < 20 ft ___ 20–50 ft ___ 50–100 ft _X_ > 100 ft

___ flowing well/spring (artesian)

How was water level determined?

_X_ well log ___ other: _____

___ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_____ psi (pounds per square inch)
or
_____ feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ___ YES ___ NO

5) Wellhead elevation (height above mean sea level): 570 (ft)

How was elevation determined? _X_ topographic map ___ Drilling/Well Log ___ altimeter

___ other: _____

___ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_X_ evidence of a confining layer in well log

___ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the top of the open interval? _X_ YES ___ NO

___ information unavailable

7) Sanitary setback:

___ < 100 ft* _X_ 100–120 ft ___ 120–200 ft ___ > 200 ft
* if less than 100 ft describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

_X_ wellhead enclosed in a wellhouse

_X_ controlled access (describe): Fenced

_____

___ other uses for wellhouse (describe): _____

_____

___ no wellhead control

9) Surface seal:

___ 18 ft

___ < 18 ft (no Department of Ecology approval) ('< ' *means less than*)

___ < 18 ft (Approved by Ecology, include documentation) ('< ' *means less than*)

_X_ > 18 ft ('> ' *means greater than*)

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10–25 in/yr _X_ > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: _____ (gallons) New Well
Y.T.D.: 7,942,000
Est. annual: 30 MG

How was this determined?

_X_ meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 460 (ft)

1 year ground water travel time : 651 (ft)

5 year ground water travel time: 1456 (ft)

10 year ground water travel time: 2059 (ft)

Information available on length of screened/open interval?

_X_ YES ___ NO

Length of screened/open interval: 60 (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? ___ YES _X_ NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES _X_ NO (mark and identify on map).

Comments: _____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application residential	X	X	X	
stormwater injection wells				
other injection wells				
abandoned ground water well				
landfills, dumps, disposal areas				
known hazardous materials clean-up site				
water system(s) with known quality problems				
population density > 1 house/acre	X	X	X	
residences commonly have septic tanks				
Wastewater treatment lagoons				
sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

None

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES	NO
Results greater than MCL		X
< 2 mg/liter nitrate	X	
2-5 mg/liter nitrate		X
> 5 mg/liter nitrate		X
___ Nitrate sampling records unavailable		

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES	NO
Results greater than MCL or SAL		X
VOCs detected at least once		X
VOCs never detected	X	
___ VOC sampling records unavailable		

C. EDB/DBCP:	YES	NO
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)		
EDB/DBCP detected below MCL at least once		
EDB/DBCP detected above MCL at least once		
EDB/DBCP never detected		
___ EDB/DBCP tests required but not yet completed		
X EDB/DBCP tests not required		

D. Other SOCs (Pesticides):	YES	NO
Other SOCs detected		
(pesticides and other synthetic organic chemicals)		
___ Other SOC tests performed but none detected		
(list test methods in comments		
X Other SOC tests not performed		

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination:

	YES	NO
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	___	X
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	___	X

___ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

X YES ___ NO

Describe with references to map produced in Part IV:

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

___ YES X NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

X YES ___ NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES _X_ NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	X	___	___
5–10 year travel time	X	___	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES _X_ NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES _X_ NO

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.

Start Card #

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

~~Application No.~~ [redacted]
~~Permit No.~~

OWNER: Name P. Hendley & Assoc.'s Address 521 S. Wash. St. Kent, Wa. 98032

(2) LOCATION OF WELL: County King NW¼ SE¼ SE¼ Sec. 31 T. 21 N., R. 5E W.M.

Bearing and distance from section or subdivision corner Lakeland Hills Well No. 2

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one)....
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 12 inches.
Drilled 434 ft. Depth of completed well 434 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 12" Diam. from 0 ft. to 434 ft.
Threaded ☐ ." Diam. from ft. to ft.
Welded ☐ ." Diam. from ft. to ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☐ No ☒
Manufacturer's Name
Type Model No
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 22 ft.
Material used in seal ~~Bentonite~~ Cement
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level.... ft.
Static level ft. below top of well Date
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
Brown Soil & Gravel	0	3
Grey Till	3	22
Grey Cemented Sand & Gravel	22	123
Grey Till	123	206
Dark Brn. Peat, Clay & wood	206	212
Brown Till	212	236
" " Trace of Water	236	236
Gray Till - Little Water	236	253
" " " "	253	262
Gray clay & gravel, Some Peat	262	279
Brown Silty Sand, Some gravel	279	295
Grayish Brown Till	295	312
Gray Till	312	321
Gray Till, little water	321	334
Gray gravel, clay binder	334	345
Gray Till	345	379
Brn. Cemented Sand & Gravel	379	426
Water, Sand & gravel	425	426
Brn. Cemented Sand & Gravel Till	426	434

RECEIVED
JAN 2 8 1990
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

* Hole deepened to be by Rotary Mud

Work started 10-5, 19 89 Completed 12-12, 19 89

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Burt Well Drilling, Inc. (Person, firm, or corporation) (Type or print)

Address 19782 N.E. Lincoln Rd. Poulsbo, Wa. 98370

[Signed] George D. Burt (Well Driller)

License No. 0048 Date Dec., 19 89

(USE ADDITIONAL SHEETS IF NECESSARY)

WELL 2 R

21/5/31R

WATER WELL REPORT
STATE OF WASHINGTON

Start Card No. [redacted]
Water Right Permit No.

(1) OWNER: Name HENDLEY P., & ASSOCIATES Address 521 SO. WASHINGTON AVE. KENT, WA 98032-

(2) LOCATION OF WELL: County KING - SE 1/4 SE 1/4 Sec 31 T 21 N., R 05E WM
(2a) STREET ADDRESS OF WELL (or nearest address) LAKELAND HILLS WELL #2

(3) PROPOSED USE: MUNICIPAL

(4) TYPE OF WORK: Owner's Number of well (If more than one) 1
DEEPENED Method: ROTARY

(5) DIMENSIONS: Diameter of well 10 inches
Drilled 138 ft. Depth of completed well 570 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 10 " Dia. from 432 ft. to 570 ft.
WELDED " Dia. from ft. to ft.
" Dia. from ft. to ft.

Perforations: YES
Type of perforator used AIR OPERATED
SIZE of perforations 1/8 in. by 1 in.
1440 perforations from 510 ft. to 570 ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: NO
Manufacturer's Name
Type Model No.
Diam. slot size from ft. to ft.
Diam. slot size from ft. to ft.

Gravel packed: NO Size of gravel
Gravel placed from ft. to ft.

Surface seal: NO To what depth? ft.
Material used in seal
Did any strata contain unusable water? NO
Type of water? Depth of strata ft.
Method of sealing strata off N/A

(7) PUMP: Manufacturer's Name N/A
Type N/A H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ... ft.
Static level ft. below top of well Date 04/19/90
Artesian Pressure lbs. per square inch Date
Artesian water controlled by N/A

(9) WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? NO If yes, by whom?
Yield: gal./min with ft. drawdown after hrs.

Recovery data
Time Water Level Time Water Level Time Water Level

Date of test / /
Bailer test gal/min. ft. drawdown after hrs.
Air test 100+ gal/min. w/ stem set at 570 ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? NO

(10) WELL LOG

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change in formation.

MATERIAL	FROM	TO
SILTY GRAVEL COARSE SAND	432	440
COARSE SAND GRAVEL	440	470
LARGE WATER BEARING GRAVEL	470	520
FRACTURED ROCK	520	555
FRACTURED ROCK	520	540
GRAVEL	540	560
HARD ROCK	560	570

RECEIVED
JAN 25 1993
DEPT. OF ECOLOGY

Work started 03/01/90 Completed 04/19/90

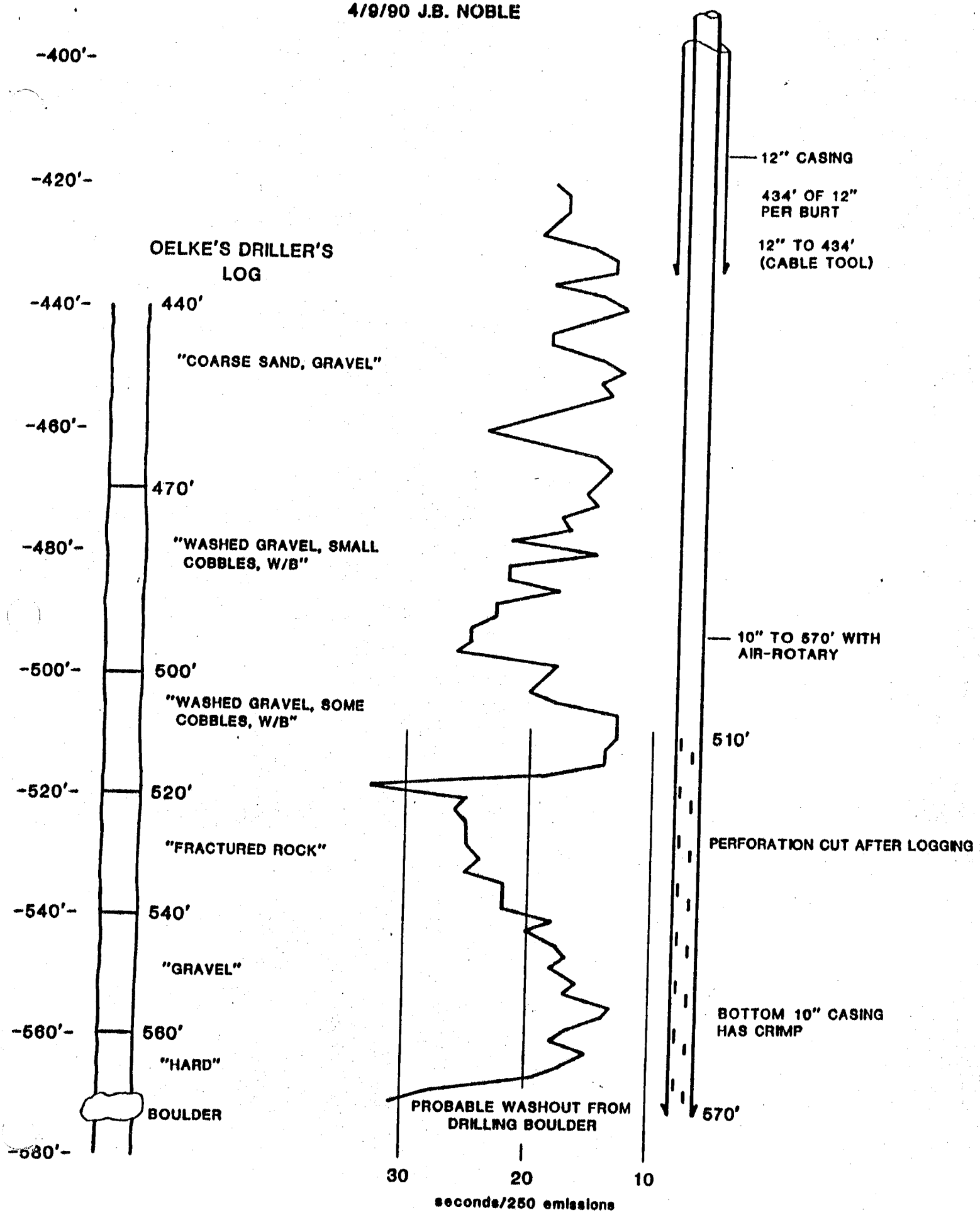
WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

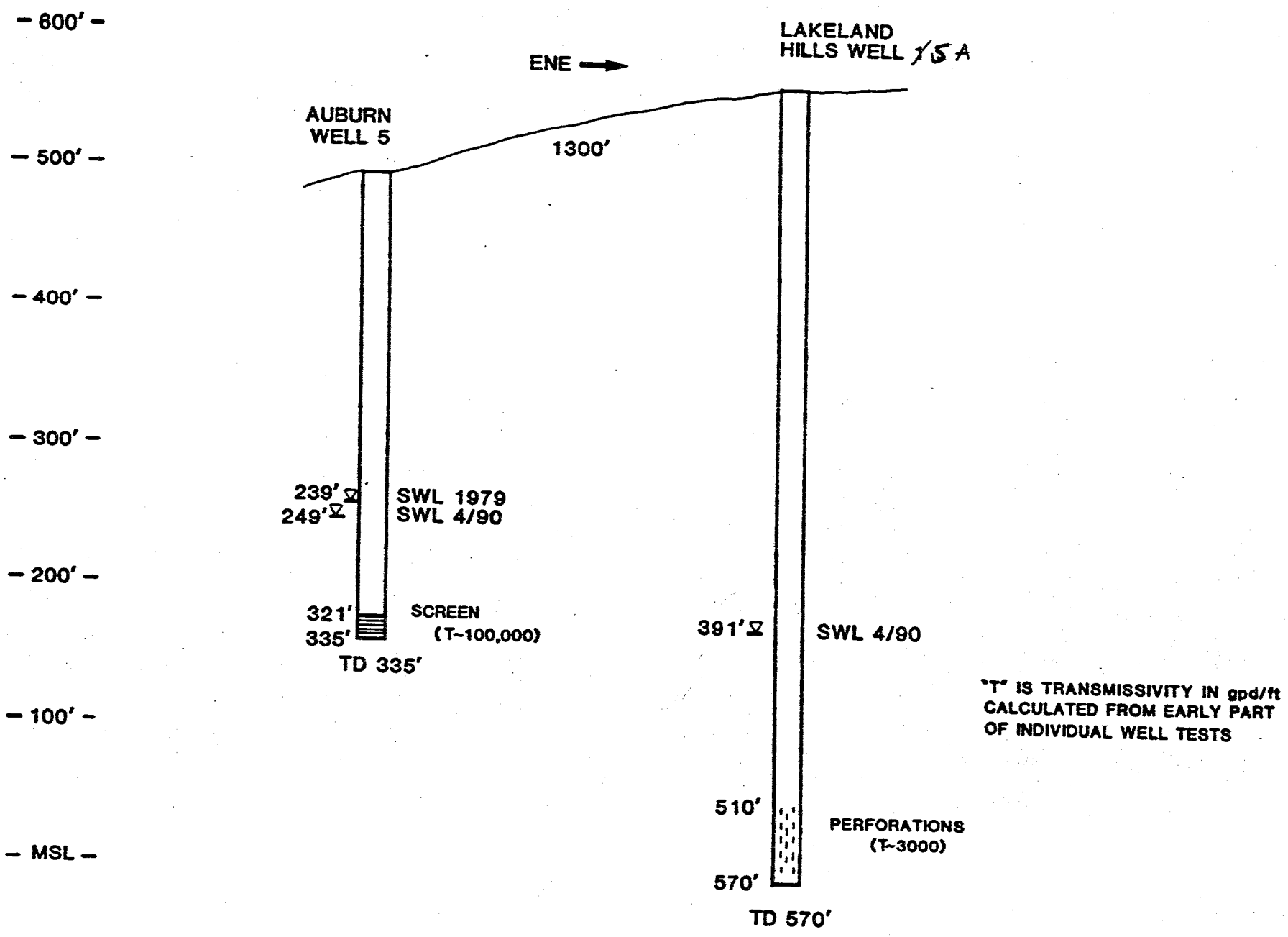
NAME OELKE DRILLING, INC.
(Person, firm, or corporation) (Type or print)

ADDRESS 4312 166 AV E SUMNER, WA

[SIGNED] [signature] License No. 0379

Contractor's Registration No. OELKEDI 136QC Date 01/18/93


-400'-
-420'-
OELKE'S DRILLER'S LOG
-440'-
440'
"COARSE SAND, GRAVEL"
-460'-
470'
-480'-
"WASHED GRAVEL, SMALL COBBLES, W/B"
-500'-
500'
"WASHED GRAVEL, SOME COBBLES, W/B"
-520'-
520'
"FRACTURED ROCK"
-540'-
540'
"GRAVEL"
-560'-
560'
"HARD"
BOULDER
-580'-
12" CASING
434' OF 12" PER BURT
12" TO 434' (CABLE TOOL)
10" TO 570' WITH AIR-ROTARY
510'
PERFORATION CUT AFTER LOGGING
BOTTOM 10" CASING HAS CRIMP
570'
PROBABLE WASHOUT FROM DRILLING BOULDER
30
20
10
seconds/250 emissions



SCHEMATIC RELATION OF WELLS

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.2

IMPORTANT! Please complete one form for each water source (Well, Wellfield, Spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/Manager: City of Auburn / Ken Haines

Water system name: City of Auburn

County: King

Water system number: 03350V Source number: Well No. 6

Well depth: 298 (ft.) (From WFI form)

Source name: Well No. 6

WA well identification tag number: AEJ-473 well not tagged

Number of connections: see Auburn Comp Plan

Population served: see Auburn Comp Plan

Township: 21 North Range: 5 East

Section: 18 ¼ ¼ Section: NW¼ NE¼

Latitude/longitude (if available): 117373.63 (n), 1657227.67 (e) state plane coordinates

How was lat/long determined?

____global positioning device __x__survey _____ topographic map
____other:

PART II Well Construction and Source Information

1) Date well originally constructed: 2-19-99 month/day/year

last reconstruction: _____ month/day/year

_____ information unavailable

2) Well driller: Holt Drilling

_____well driller unknown

3) Type of well:

Drilled: __rotary _____bored __x_cable (percussion) _____dug

Other: ___springs_____lateral collector (Ranney)

___driven _____jetted _____other:

Additional comments:

4) Well report available? X YES (attach copy to form) NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as-built" sheets, engineering reports, well construction logs.

5) Average pumping rate: 3500 (gallons/minute)

Source of information: Pumping test. This is a new well and at the time of completion of this Form, the well had not been put into regular service.
If not documented, how was pumping rate determined? Orifice Method

6) Is this source treated? Will be. Future plans include treatment

If so, what type of treatment:

_x_ disinfection __filtration __carbon filter _x_air stripper__other

Purpose of treatment (describe materials to be removed or controlled by treatment):
Primary purpose is to degas CO_2 and raise pH to above 7.5 to help meet lead and copper rule.

7) If the source is chlorinated, is a chlorine residual maintained: X YES__NO
When brought on line, the water will be chlorinated.
Residual level: Will be at least 0.5 mg/L (At point closest to source.)

PART III Hydrogeologic Information

1) Depth to top of open interval: [check one]

___<20 ft __20 –50 ft __50 –100 ft ___100 – 200 ft _x_ >200 ft

___information unavailable ('<' means less than; '>' means greater than

2) Depth of ground water (static water level):

__<20 ft __20 –50 ft __50 –100 ft ___>100 ft

___flowing well/spring (artesian)

How was the water level determined?

___well log _x_other: Electric well sounder

___depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure?

_____ psi (pounds per square inch)
or
_____feet above wellhead

4) If the source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associate with this source? _YES __NO

5) Wellhead elevation (height above mean sea level): 70.24 (ft)

How was the elevation determined? __Topographic map__drilling/well log
____altimeter _x_other: survey
____information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log, or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_x_ Evidence of a confining layer in well log

____ No evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the **bottom** of the **lowest confining layer**? _x_YES __NO
_____Information unavailable

7) Sanitary setback

_x_ <100 ft ___100 – 120 ft ___120 – 200 ft ___> 200 ft

*if less than 100 ft describe the site conditions Well is located approximately 50 feet north of the City's property line. The adjacent property to the south is a large grass field. Setback waiver letter from WDOH 11/6/98 from Bob James (WDOH) to Les Brattain (Auburn).

8) Wellhead construction:

_x_ Wellhead enclosed in wellhouse

_x_ Controlled access (describe): Wellhouse is planned and in design. It will include locked entrance and will be electronically monitored with intrusion alarm.

_x_ Other uses for wellhouse (describe): New wellhouse is planned to house both Well 6 and Well 2.

___ no wellhead control

9) Surface seal:

___ 18 ft
___ <18 ft (no Department of Ecology approval)
___ <18 ft (Approved by Department of Ecology, include documentation)
_x_ > 18 ft - *Surface seal placed 100 feet below ground surface*
___ depth of seal unknown
___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10 – 25 in/yr _x_ >25 in/yr

PART IV Mapping Your Ground Water Resource

1) Annual volume of water pumped: Well 6 will be used supplementally to existing City wells and water rights. Projected maximum volume for Well 6 is 1,277,500,000 gallons (pumping at an average rate of 3.5 MGD, 365 days per year. Actual rate likely to be less.
How was this determined? Supplemental water right (QA) of 3.5 MGD

__Meter
__estimated: pumping rate (_____)
pump capacity (_____)
__ other:

2) "Calculated Fixed Radius" estimate of ground water movement:
(see instruction packet) The City is currently completing a comprehensive numerical model of the aquifer system tapped by Well 6. A capture zone analysis specific to Well 6 awaits completion of that model. For the interim, a previous analytical element model and hydrogeologic mapping applied to a capture zone analysis of the nearby Well 2 is used to answer the questions below. This is appropriate because of the close proximity of Wells 2 and 6 and the fact that Well 6 will be supplemental to existing City wells including Well 2. The two wells tap the same portion of the aquifer.

Information available on length of screened/open interval?

_x_ YES ___NO

Length of screened/open interval: __45__(ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? __YES _x_NO (mark and identify on map).

4) Is there a stormwater and or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? _YES _x_NO (mark and identify on map).

Comments: None

PART V Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a ~~circular~~ capture zone area around your water source having a radius up to and including the five year ground water travel time. Answers to this question are based on the capture zone analysis completed for the adjacent Well 2.

	6 month	1 year	5 year	unknown
likely pesticide application				x
stormwater injection wells				
other injection wells				
abandoned ground water well	x			
landfills, dumps, disposal areas				
known hazardous materials clean-up site				
water systems(s) with known quality problems				
population density > 1 house/acre	x			
residences commonly have septic tanks				
Wastewater treatment lagoons				
Sites used for land application of waste				

Mark and identify on map any of the risks listed above, which are located within the 6 month time of travel boundary? (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

A test well drilled in preparation for Well 2 construction exists approximately 20 feet from Well 6. This well has been abandoned but no records exist regarding the method of abandonment.

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

Twelve potential contaminant sources are mapped within the 10-year capture zone of Well 2 (herein substituting for Well 6). These sites were located using a regulatory database search by Vista Information Solutions, Inc. These potential sources include mostly underground storage tanks.

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

	YES
A. **Nitrate:** (Nitrate MCL = 10 mg/l)	
Results greater than MCL	
< 2 mg/liter nitrate	X
2-5 mg/liter nitrate	
> 5 mg/liter nitrate	
Nitrate sampling records unavailable	
B. **VOCs:** (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES
Results greater than MCL or SAL	
VOCs detected at least once	X
VOCs never detected	
VOCs sampling records unavailable	
C. **EDB/DBCP:**	YES
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)	
EDB/DBCP detected below MCL at least once	
EDB/DBCP detected above MCL at least once	
EDB/DBCP never detected	
EDB/DBCP test required but not yet completed	
EDB/DBCP tests not required	X
D. Other SOCs (pesticides):	YES
Other SOCs detected	
(pesticides and other synthetic organic chemicals)	
Other SOC tests performed but none detected	X
(list test methods in comments)	
Other SOC test not performed	

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:

No SOC's were detected under the following EPA test methods: 515.1; 525.2; and 531.1

E. Bacterial contamination: YES

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records.)

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.

Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

The City is undertaking a comprehensive numerical model that will be used to map capture zone for Well 6.

1) Is there evidence of obvious hydrology boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

__X__ YES _____NO

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

YES __X__NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

__X__YES _____NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

__x__ YES _____NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs? Yes, a total of 5 municipal water supply wells tap the same aquifer within the Auburn City limits.

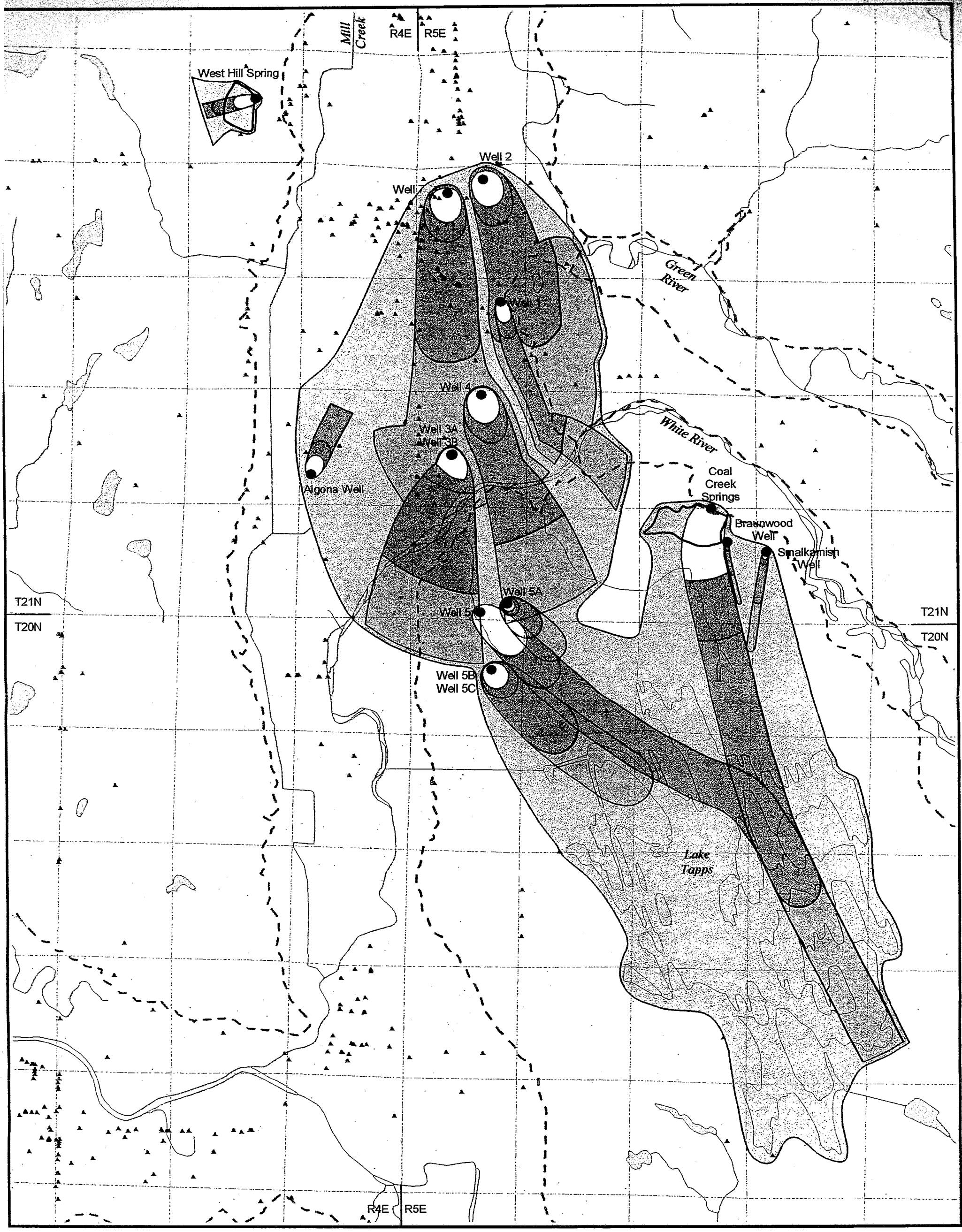
a) Presence of ground water extraction wells removing more than approximately 500 gal/min within…

	YES	NO	UNKNOWN
< 6 month travel time	x		
6 month – 1 year travel time			
1 – 5 year travel time	x		
5 –10 year travel time	x		

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within…

	YES	NO	UNKNOWN
< 1 year travel time			
1 – 5 year travel time			
5 – 10 year travel time		x	

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV. Groundwater flow mapping indicates northerly flow of groundwater so the capture zone extends in a generally southerly direction from the well.



- Water Supply Source
- Potential Contamination Sites

Well Capture Zones

- 0.5 - Year
- 1 - Year
- 5 - Year
- 10 - Year
- Water Resource Protection Area

- Approximate Watershed Control Area

- Rivers and Lakes
- Topographic Boundary - Valley Walls
- Sections

0.5 0 0.5 Miles

10/12/97

FIGURE 1
PHASE 2C PRELIMINARY WATER RESOURCE PROTECTION AREAS FOR CITY OF AUBURN SUPPLY SOURCES

AUBURN WATER RESOURCE PROTECTION

Pacific Groundwater Group

8.0 Department of Health Wellhead Protection Information

The Washington State Department of Health (WDOH) requires information on susceptibility and capture zones for new supply wells. This information is presented below.

8.1 Well 5B Susceptibility

Based on geologic and well-construction factors, the susceptibility of Well 5B to contamination from potential surface sources is considered low. WDOH considers a number of factors to assess susceptibility:

- Depth to top of the screened interval
- Depth to water
- Occurrence and thickness of confining layers
- Surface seal
- Sanitary setback
- Well capture zone
- Proximity to potential sources of contamination

This information is typically requested by WDOH in the Susceptibility Checklist portion of its Wellhead Protection Program Guidance Document. This checklist (Version 2.2 from April 1995) has been completed for Well 5B and is included in **Appendix C**.

8.2 Capture Zone

Time-of-travel capture zones were calculated for Well 5B as part of the City's Resource Protection Program. These were generated using a two-dimensional analytical model. The results of the analysis were included in a document submitted to WDOH (PGG, 1997). New and more accurate capture zones for all City of Auburn wells are currently being recalculated using a three-dimensional, numerical groundwater flow model. Well 5B will be included in the updated analysis and a new report will be submitted to WDOH. A copy of the capture zone figure from the 1997 report is included in **Appendix C.**

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.2

IMPORTANT! Please complete one form for each water source (Well, Wellfield, Spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/Manager: City of Auburn / Ken Haines

Water system name: City of Auburn

County: King

Water system number: 03350V Source number: Well No. 7

Well depth: 300.5 (ft.) (From WFI form)

Source name: Well No. 7

WA well identification tag number: ABE-845

_____well not tagged

Number of connections: see Auburn Comp Plan. Population served: see Auburn Comp Plan.

Township: 21 North Range: 5 East

Section: 18 ¼ ¼ Section: NW¼ NW¼

Latitude/longitude (if available): 116,799 (n), 1,655,553 (e) state plane coordinates

How was lat/long determined?
____global positioning device __x__survey _____ topographic map
____other:

PART II Well Construction and Source Information

1) Date well originally constructed: 2-10-97 month/day/year

last reconstruction: _____ month/day/year

_____ information unavailable

2) Well driller: Charon Drilling

_____well driller unknown

3) Type of well:

Drilled: __rotary _____bored __x_cable (percussion) _____dug

Other: __springs_____lateral collector (Ranney)

__driven _____jetted _____other:

Additional comments: None

4) Well report available? x YES (attach copy to form) __NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as-built" sheets, engineering reports, well construction logs.

5) Average pumping rate: 3,500 (gallons/minute)

Source of information: Pumping test. This is a new well with a variable speed pump with a maximum pumping rate of 3,500 gpm. It is supplemental to existing Auburn wells and water rights. As such, its use and average pumping rate will be 3,500 or less (usually less.)
If not documented, how was pumping rate determined? Orifice Method

6) Is this source treated? Yes, future plans include treatment

If so, what type of treatment:

__x__ disinfection __filtration __carbon filter __x__air stripper__other

Purpose of treatment (describe materials to be removed or controlled by treatment):
Primary purpose is to degas CO_2 and raise pH to above 7.5 to help meet lead and copper rule.

7) If the source is chlorinated, is a chlorine residual maintained: x YES___NO
When brought on line, the water will be chlorinated.
Residual level: Will be at least 0.5 mg/L (At point closest to source.)

PART III Hydrogeologic Information

1) Depth to top of open interval: [check one]

___<20 ft __20 –50 ft __50 –100 ft ___100 – 200 ft _x_ >200 ft

___information unavailable ('<' means less than; '>' means greater than

2) Depth of ground water (static water level):

_x_ <20 ft __20 –50 ft __50 –100 ft ___>100 ft

___flowing well/spring (artesian)

How was the water level determined?

____well log _x_other: Electric well sounder

___depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure?

_____ psi (pounds per square inch)
or
_____feet above wellhead

4) If the source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associate with this source? _YES __NO

5) Wellhead elevation (height above mean sea level): 73 (ft)

How was the elevation determined? __Topographic map___drilling/well log
____altimeter _x_other: survey
____information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log, or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_x_ Evidence of a confining layer in well log

____ No evidence of a confining layer in well log

If If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the **bottom** of the **lowest confining layer**? _x_YES __NO
_____Information unavailable

7) Sanitary setback

_x_ <100 ft ___100 – 120 ft ___120 – 200 ft ___> 200 ft

*if less than 100 ft describe the site conditions Well is located approximately 50 feet north of a City sanitary sewer. A setback waiver was given to the City in a letter from WDOH addressed to Nass Diallo.

8) Wellhead construction:

_x_ Wellhead enclosed in wellhouse

_x_ Controlled access (describe): Wellhouse is planned and in design. It will include locked entrance and will be electronically monitored with intrusion alarm.

___ Other uses for wellhouse (describe):

___ no wellhead control

9) Surface seal:

___18 ft
___<18 ft (no Department of Ecology approval)
___<18 ft (Approved by Department of Ecology, include documentation)
_x_ > 18 ft - *Surface seal placed 162 feet below ground surface*
___depth of seal unknown
___ no surface seal

10) Annual rainfall (inches per year):

___< 10 in/yr____10 – 25 in/yr _x_ >25 in/yr

PART IV Mapping Your Ground Water Resource

1) Annual volume of water pumped: Projected plans are to use Well 7 as a backup well for an interlocal agreement (IA2) that also includes Wells 2 and 6. Well 7 will be pumped at variable rates to meet peaking demands above an average of 8.5 MGD for the Agreement. Because there is no history of pumpage according to the Agreement, no estimate of annual flows from Well 7 can be made at this time.

___Meter

___estimated: pumping rate (_____)
pump capacity (_____)

___ other:

2) "Calculated Fixed Radius" estimate of ground water movement:
(see instruction packet) An analytical element model and hydrogeologic mapping were used to complete a preliminary capture zone analysis for Well 7. The results of this model/mapping were used to answer the questions below. The map was included in a WHP submittal prepared by Pacific Groundwater Group for the City of Auburn and addressed to Chris Thorn. Mr. Thorn forwarded the submittal to WDOH.

Information available on length of screened/open interval?

_x_ YES ___NO

Length of screened/open interval: __61__(ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? YES __x__NO (mark and identify on map)

4) Is there a stormwater and or wastewater facility, treatment lagoon. Of holding pond located within the 6 month time of travel boundary? YES __x__NO (mark and identify on map)

Comments: None

PART V Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a capture zone ~~circular~~ area around your water source having a radius up to and including the five-year ground water travel time. Answers to this question are based on the capture zone analysis completed for Well 7.

	6 month	1 year	5 year	unknown
likely pesticide application				x
stormwater injection wells				
other injection wells				
abandoned ground water well				
landfills, dumps, disposal areas				
known hazardous materials clean-up site	x			
water systems(s) with known quality problems				
population density > 1 house/acre	x			
residences commonly have septic tanks				
Wastewater treatment lagoons				
Sites used for land application of waste				

Mark and identify on map any of the risks listed above, which are located within the 6 month time of travel boundary? (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

The CENEX fuel spill site is located south of SR-18 and just west of Auburn Way.

If other recorded or potential sources of ground water contamination exist within the ten-year time of travel circular zone around your water supply, please describe:

Thirty-seven potential contaminant sources are mapped within the 10-year capture zone of Well 7. These sources were located using a regulatory database search by Vista Information Solutions, Inc. The potential sources include mostly underground storage tanks.

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

	YES
A. **Nitrate:** (Nitrate MCL = 10 mg/l)	
Results greater than MCL	
< 2 mg/liter nitrate	X
2-5 mg/liter nitrate	
> 5 mg/liter nitrate	
Nitrate sampling records unavailable	
B. **VOCs:** (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES
Results greater than MCL or SAL	
VOCs detected at least once	
VOCs never detected	X
VOCs sampling records unavailable	
C. **EDB/DBCP:**	YES
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)	
EDB/DBCP detected below MCL at least once	
EDB/DBCP detected above MCL at least once	
EDB/DBCP never detected	
EDB/DBCP test required but not yet completed	
EDB/DBCP tests not required	X
D. Other SOCs (pesticides):	YES
Other SOCs detected	
(pesticides and other synthetic organic chemicals)	
Other SOC tests performed but none detected	X
(list test methods in comments)	
Other SOC test not performed	

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:
No SOC's were detected under the following EPA test methods: 515.1; 525.2; and 531.1

E. Bacterial contamination: YES

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records.)

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.

Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

The City is undertaking a comprehensive numerical model that will be used to refine the capture zone for Well 7.

1) Is there evidence of obvious hydrology boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

_X_ YES _____ NO

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

_____ YES _X_ NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

_X_ YES _____ NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

_X_ YES ___NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs? Yes, a total of 5 municipal water supply wells are part of the Auburn well field. Each well taps the same aquifer.

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within…

	YES	NO	UNKNOWN
< 6 month travel time			
6 month – 1 year travel time			
1 – 5 year travel time			
5 –10 year travel time	x		

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within…

	YES	NO	UNKNOWN
< 1 year travel time			
1 – 5 year travel time			
5 – 10 year travel time	x		

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

Groundwater flow mapping indicates northerly flow of groundwater so the capture zone extends in a generally southerly direction from the well.

Asset Natural Hazard Susceptibility Table	
Facility Name	Natural Hazard
Distribution System	Earthquake, Flood
Reservoirs	
Reservoir 1	Earthquake
Reservoir 2	Earthquake
Reservoir 4A	Earthquake
Reservoir 4B	Earthquake
Reservoir 5	Earthquake
Reservoir 6	Earthquake
Reservoir 8A	Earthquake
Reservoir 8B	Earthquake
Pump Stations	
Intertie Pump Station (Wholesale)	Earthquake
Lea Hill Booster Pump Station (BPS)	Earthquake
Lea Hill Pump Station	Earthquake, Flood
Green River Pump Station	Earthquake, Flood
Game Farm Park Pump Station	Earthquake
Lakeland Hills BPS	Earthquake
Terrace View BPS	Earthquake
Fulmer Field Treatment Facility (pumps)	Earthquake
Howard Road Treatment Facility (pumps)	Earthquake
Academy Pump Station 3	Earthquake
Academy East BPS	Earthquake
Treatment Facilities	
Coal Creek Springs	Earthquake
West Hill Springs	Earthquake
Fulmer Field Treatment Facility	Earthquake
Howard Road Treatment Facility	Earthquake
Terrace View BPS	Earthquake
Well 1	Earthquake
Well 4	Earthquake
Well 5A	Earthquake
Sources	
Well 1	Earthquake, Flood, Volcano/Lahar
Well 2	Earthquake, Flood
Well 3A	Earthquake, Flood
Well 3B	Earthquake, Flood
Well 4	Earthquake, Flood, Volcano/Lahar
Well 5	Earthquake
Well 5A	Earthquake
Well 5B	Earthquake
Well 6	Earthquake, Flood
Well 7	Earthquake, Flood
Coal Creek Springs	Earthquake, Wildfire, Flood, Ice Storm, Landslide, Volcano/Lahar
West Hill Springs	Earthquake, Wildfire, Ice Storm, Landslide

* Natural hazards and risks are taken from the City's 2020 Vulnerability Assessments and the City's 2020 Risk and Resiliency Assessment (RRA).

Worksheet 4-1—ERU Capacity Summary

6/1/2021

Specific Single-Family Residential Connection Criteria (*Measured or estimated demands.*)

Average Day Demand (ADD): 182 gpd/ERU.

Maximum Day Demand (MDD) 322 gpd/ERU.

Water System Connections Correlated to ERUs			
Service Classification	**Total MDD for the classification, gpd**	**Total # Connections in the classification**	**ERUs**
Residential			
Single-family	3,911,748	12,153	12,153
Multifamily	2,999,923	1,131	9,320
Nonresidential			
Industrial	1,020,374	1	3,170
Commercial	2,564,334	1,342	7,967
Governmental	23,903	35	74
Agricultural	(Irrigation) 1,081,022	648	3,359
Recreational	(Schools) 222,136	59	690
Other (specify)	(Wholesale) 692,157	5	2,150
DSL	616,203	N/A	1,914
Other (identify)	(Non-Billed) 26,831	N/A	83
Total existing ERUs (Residential + Nonresidential + DSL + Other) =40,881			

Service Capacity as ERUs and Gallons Per Day		
Water System Component (Facility)	**ERU Capacity for EachComponent**	**GPD Capacity for EachComponent**
Source(s)	63,904	20,569,200
Treatment	74,333	23,926,000
Equalizing Storage	-	-
Standby Storage	44,125	10,590,000
Transmission	-	-
Water Rights (Qa and Qi)	71,744 for Qi 102,938 for Qa	23,092,800 for Qi 18,749,377 for Qa
Other (specify)	-	-
Water System Service Capacity (ERUs) = 44,125 *(Based on the limiting water system component shown above.)*		

***Note: F**or the purposes of capacity analyses and water system plans, this form needs to be accompanied by the calculations that were used to come up with the ERU capacity figures.*

Notes

- *Capacity determinations are only for existing facilities that are operational for the water system.*
- *Not shown above are distribution system limitations (Section 4.5.4) on ERUs because these are location-specific within the distribution system. These limits are not expected to limit the ERU capacity of the entire water system.*

Attachment A: Documenting Capacity Evaluation (Example)

This example shows how to document the results of a water system's service capacity evaluation. See Section 3.12 for examples that show how to derive these values.

Average Day Demand ERUADD 425 gpd/ERU
Maximum Day Demand ERUMDD 725 gpd/ERU

Water System Connections Correlated to ERUs			
Service Classification	**Total for the classification, gpd**	**Total # Connections in the classification**	**ERUs**
Residential			
Single-family	101,000 (MDD)	139	139
Multifamily	5,000 (MDD)	10	7
Nonresidential			
Industrial	150,000 (MDD)		207
Commercial	20,000 (MDD)	3	28
Governmental	10,000 (MDD)	1	14
Agricultural	N/A	N/A	
Recreational	5,000 (MDD)	2	7
Other (specify)	N/A		
DSL	35,000 gpd	N/A	48
Totals	326,000 gpd	156 connections	450 ERUs

Service Capacity as ERUs and Gallons Per Day		
Water System Component (Facility)	**ERU Capacity for Each Component**	**Gallons/GPD Capacity for Each Component**
Source(s)	496	360,000 gpd
Treatment	No treatment provided	No treatment provided
Equalizing Storage	501	53,000 gallons
Standby Storage	600 Local standard = 300 gal/ERU	180,000 gallons
Transmission	>600	Determined ample
Water Rights (Qa and Qi)	705 for Qa 496 for Qi	330 ac-ft. per year (0.3 MGD) 250 gpm (0.36 MGD)
Water System Service Capacity (ERUs) = 496 *(Based on the limiting water system component shown above.)*		

In this example, the water system demonstrates an excess capacity of 46 ERUs (496 - 450 = 46). We assume each future connection will use water consistent with an ERU. The example assumes that the addition of new connections will not result in an increase in the system's current DSL (i.e., build-out rather than expansion of the distribution system).

consor

City of Auburn Water System Plan
Capital Improvement Projects Schedule

								2024	10-year										20-year									
Type	**Start Year**	**End Year**	**Duration**	**Name**	**CIP or CFP ID**	**Capacity/Non-capacity**	**Total Project Cost**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**
Active Projects (In Design or Construction)																												
Distribution	2024	2024	1	104th Park Development (104th to 102nd Water Main Loop)	CP1619	Non-CAP	$ 350,000	$ 350,000																				
Distribution	2024	2024	1	104th Avenue SE PRV Replacement	CP2301	Non-CAP	$ 390,475	$ 390,475																				
Distribution	2024	2025	2	C St SW Preservation	CP2123	Non-CAP	$ 1,802,075	$ 901,038	$ 901,038																			
Distribution	2024	2024	1	Coal Creek Springs Transmission Main Replacement	CP1603	Non-CAP	$ 4,450,422	$ 4,450,422																				
Distribution	2024	2024	1	D St SE and 23rd Street SE Storm Improvements	CP2125	Non-CAP	$ 2,285,677	$ 2,285,677																				
Supply	2024	2024	1	Well 4 Facility Improvements	CP2021	Non-CAP	$ 884,822	$ 884,822																				
Supply	2024	2025	2	Well 4 Electrical Improvements	CP2403	Non-CAP	$ 1,050,000	$ 200,000	$ 850,000																			
Distribution	2024	2025	2	112th Pl SE Water Main Replacement	CP2410	Non-CAP	$ 2,100,000	$ 255,000	$ 1,845,000																			
Distribution	2025	2025	1	Auburn Way South - Hemlock St SE to Poplar St SE	CP1622	Non-CAP	$ 2,398,000		$ 2,398,000																			
Distribution	2024	2024	1	Garden Avenue Realignment	CP2022	Non-CAP	$ 699,797	$ 699,797																				
Distribution	2024	2026	3	M Street NE Widening	CP2210	Non-CAP	$ 357,000	$ 37,000		$ 320,000																		
Distribution	2025	2026	2	R Street SE Widening	CP2116	Non-CAP	$ 1,762,488		$ 100,000	$ 1,662,488																		
Distribution	2024	2025	2	R St SE and 21st St SE Roundabout	CP2308	Non-CAP	$ 544,897	$ 61,897	$ 483,000																			
Distribution	2024	2024	1	R St SE Preservation - 33rd St SE to 37th St SE	CP2315	Non-CAP	$ 301,850	$ 301,850																				
Distribution	2024	2027	4	Lea Hill Road/104th Ave SE Roundabout	CP2319	Non-CAP	$ 850,000	$ 100,000		$ 150,000	$ 600,000																	
Supply	2024	2024	1	Fulmer Treatment Facility VFD Replacements	CP2405	Non-CAP	$ 175,000	$ 175,000																				
Storage	2024	2024	1	Reservoirs 4 and 8 Seismic Rehabilitation	CP2219	Non-CAP	$ 1,433,871	$ 1,433,871																				
Distribution	2024	2025	2	12th St SE and Auburn Way South Water R&R	CP2404	Non-CAP	$ 636,000	$ 318,000	$ 318,000																			
Distribution	2024	2025	2	2025 Local Street Preservation	CP2412	Non-CAP	$ 725,000	$ 65,000	$ 660,000																			
Distribution	2024	2026	3	2026 Local Street Preservation		Non-CAP	$ 1,073,000	$ 50,000	$ 150,000	$ 873,000																		
Supply	2024	2024	1	Coal Creek Springs Flowmeter Replacement	CP2329	Non-CAP	$ 375,017	$ 375,017																				
General	2024	2024	1	Comprehensive Water System Plan Update - 2024	CP2134	Non-CAP	$ 250,000	$ 250,000																				
Supply	2024	2024	1	Coal Creek Springs Rehabilitation - Phase 1	CP2209	Non-CAP	$ 75,614	$ 75,614																				
Storage	2024	2025	2	Reservoir 2 Valves	CP2413	Non-CAP	$ 2,268,750	$ 68,750	$ 2,200,000																			
Supply	2024	2024	1	Algona Well 1 Study - Phase 1		Non-CAP	$ 50,000	$ 50,000																				
Storage	2024	2024	1	Valley Service Area Reservoir No. 3 Siting Analysis		Non-CAP	$ 50,000	$ 50,000																				
Pump Station	2024	2024	1	Braunwood Pump Station Assessment		Non-CAP	$ 40,000	$ 40,000																				
Supply																												
Supply	2024	2029	6	Cascade Water Alliance Water Purchase	S-01	CAP	$ 5,608,860	$ 934,810	$ 934,810	$ 934,810	$ 934,810	$ 934,810																
Supply	2024	2044	21	Water Resources Protection Program	S-02	Non-CAP	$ 1,287,700	$ 87,700	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000
Supply	2025	2044	7	Rehabilitate & Clean Wells 2 and 6 (3-year Cycle)	S-03	Non-CAP	$ 1,750,000		$ 250,000			$ 250,000			$ 250,000			$ 250,000			$ 250,000			$ 250,000				
Supply	2026	2027	2	Well Inspection and Redevelopment Program	S-04	Non-CAP	$ 420,000			$ 210,000	$ 210,000																	
Supply	2026	2027	2	On-Site Chlorine Generation Systems (OSEC) at Wells 1 and 4	S-05	Non-CAP	$ 275,000			$ 100,000	$ 175,000																	
Supply	2026	2027	2	Fulmer CCTF Replace On-Site Chlorine Generation System (OSEC)	S-06	Non-CAP	$ 500,000			$ 150,000	$ 350,000																	
Supply	2026	2028	3	Well 5/5A Upgrades	S-07	CAP	$ 2,715,000			$ 950,000	$ 265,000	$ 1,500,000																
Supply	2027	2030	4	Coal Creek Springs Rehabilitation - Phase 2	S-08	CAP	$ 5,337,000				$ 500,000	$ 1,000,000	$ 2,000,000	$ 1,837,000													
Supply	2030	2031	2	Coal Creek Springs Chlorination Building Replacement	S-09	Non-CAP	$ 2,081,000							$ 520,250	$ 1,560,750													
Supply	2030	2032	3	Well 7 Treatment Phase 1	S-10	CAP	$ 10,097,000							$ 1,500,000	$ 2,597,000	$ 6,000,000												
Supply	2030	2031	2	Well 2 Replacement	S-11	CAP	$ 1,960,000							$ 400,000	$ 1,560,000													
Supply	2032	2033	2	Howard Road CCTF Expansion	S-12	CAP	$ 1,450,000									$ 450,000	$ 1,000,000											
Supply	2032	2033	2	Well 7 Back-Up Power	S-13	CAP	$ 2,075,000									$ 414,961	$ 1,660,039											
Supply	2033	2035	3	Well 7 Treatment Phase 2	S-14	CAP	$ 8,054,000										$ 1,654,000	$ 3,800,000	$ 2,600,000									
Supply	2036	2038	3	Wells 3A/3B Treatment	S-15	CAP	$ 13,945,000													$ 2,789,000	$ 4,978,000	$ 6,178,000						
Supply	2039	2039	1	Algona Well 1 Study - Phase 2	S-16	Non-CAP	$ 250,000																$ 250,000					
Storage																												
Storage	2024	2044	21	Reservoir Repair and Replacements	R-01	Non-CAP	$ 1,392,000	$ 192,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000
Storage	2025	2044	20	Reservoir Painting (10-year Cycle)	R-02	Non-CAP	$ 3,500,000		$ 250,000	$ 1,500,000									$ 250,000	$ 1,500,000								
Storage	2027	2027	1	Academy PRV Project	R-03	CAP	$ 470,000				$ 470,000																	
Storage	2027	2027	1	Reservoir Capital Improvements	R-04	Non-CAP	$ 470,000				$ 470,000																	
Storage	2039	2040	2	Braunwood Reservoir Improvements	R-05	Non-CAP	$ 250,000																$ 70,000	$ 180,000				
Storage	2041	2044	4	Valley Service Area Reservoir No. 3	R-06	CAP	$ 11,745,000																			$ 250,000	$ 1,250,000	$ 3,000,000	$ 7,245,000
Pump Stations																												
Pump Station	2024	2026	3	Intertie Pump Station/Lea Hill BPS Improvements	PS-01	CAP	$ 2,325,000	$ 75,000	$ 250,000	$ 2,000,000																		
Pump Station	2027	2029	3	Lea Hill Pump Station Replacement	PS-02	Non-CAP	$ 6,365,000				$ 765,000	$ 3,000,000	$ 2,600,000															
Pump Station	2034	2035	2	Braunwood Pump Station Mechanical Upgrades	PS-03	Non-CAP	$ 250,000											$ 70,000	$ 180,000									
Pump Station	2034	2035	2	Game Farm Park Pump Station Mechanical Upgrades	PS-04	Non-CAP	$ 250,000											$ 70,000	$ 180,000									
Distribution																												
Distribution	2025	2044	20	Annual Distribution System Improvements Program	D-01	CAP			$ 400,000	$ 2,500,000	$ 2,500,000	$ 2,500,000	$ 2,500,000	$ 2,500,000	$ 2,500,000	$ 2,500,000	$ 2,500,000	$ 3,572,636	$ 3,572,636	$ 3,572,636	$ 3,572,636	$ 3,572,636	$ 3,572,636	$ 3,572,636	$ 3,572,636	$ 3,572,636	$ 3,572,636	$ 3,572,636
Distribution	2025	2044	20	Street Utility Improvements	D-02	Non-CAP	$ 24,618,000		$ 601,000	$ 617,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000
Distribution	2025	2044	20	Water Repair & Replacements	D-03	Non-CAP	$ 11,950,000		$ 150,000	$ 450,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 650,000	$ 650,000	$ 650,000	$ 650,000	$ 650,000	$ 650,000	$ 650,000	$ 650,000	$ 650,000	$ 650,000	$ 650,000
Distribution	2024	2044	21	Water Trench Patches Program	D-04	Non-CAP	$ 3,360,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000
Distribution	2024	2027	4	West Hill Springs Transmission Main Replacement	D-05	Non-CAP	$ 1,401,000	$ 50,000		$ 200,000	$ 1,151,000																	
Distribution	2027	2027	1	Lea Hill 648 Zoning Adjustment	D-06	CAP	$ 104,000				$ 104,000																	
General																												
General	2033	2034	2	Water System Plan Update - 2034	G-01	Non-CAP	$ 750,000										$ 375,000	$ 375,000										
General	2043	2044	2	Water System Plan Update - 2044	G-01	Non-CAP	$ 750,000																				$ 375,000	$ 375,000
						Total Project Cost (March 2024 USD)	$ 155,135,315	$ 15,368,740	$ 13,020,848	$ 12,897,298	$ 10,674,810	$ 11,364,810	$ 10,214,810	$ 8,937,250	$ 10,647,750	$ 11,544,961	$ 9,369,039	$ 10,367,636	$ 9,012,636	$ 10,091,636	$ 11,030,636	$ 11,980,636	$ 6,122,636	$ 6,232,636	$ 6,052,636	$ 7,052,636	$ 9,427,636	$ 13,422,636
Annual Inflation/Escalation Value								8%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	
Multiplier								1.08	1.13	1.19	1.25	1.31	1.38	1.45	1.52	1.60	1.68	1.76	1.85	1.94	2.04	2.14	2.25	2.36	2.48	2.60	2.73	2.87
						Cost in Future USD with Inflation/Escalation	$ 378,352,008	$ 15,488,700	$ 13,438,366	$ 15,356,813	$ 13,346,021	$ 14,919,117	$ 14,079,931	$ 12,934,911	$ 16,181,050	$ 18,421,739	$ 15,697,211	$ 18,238,810	$ 16,647,840	$ 19,572,979	$ 22,463,903	$ 25,618,508	$ 13,746,803	$ 14,693,469	$ 14,982,574	$ 18,330,851	$ 25,729,021	$ 38,463,390
						NOTE: Active project costs in 2024 and 2025 are not inflated and escalated																						
						Grant Funding, 2024 USD		$ 2,717,531																				
						City Water Funding, 2024 USD		$ 12,651,209	$ 13,020,848	$ 12,897,298	$ 10,674,810	$ 11,364,810	$ 10,214,810	$ 8,937,250	$ 10,647,750	$ 11,544,961	$ 9,369,039	$ 10,367,636	$ 9,012,636	$ 10,091,636	$ 11,030,636	$ 11,980,636	$ 6,122,636	$ 6,232,636	$ 6,052,636	$ 7,052,636	$ 9,427,636	$ 13,422,636

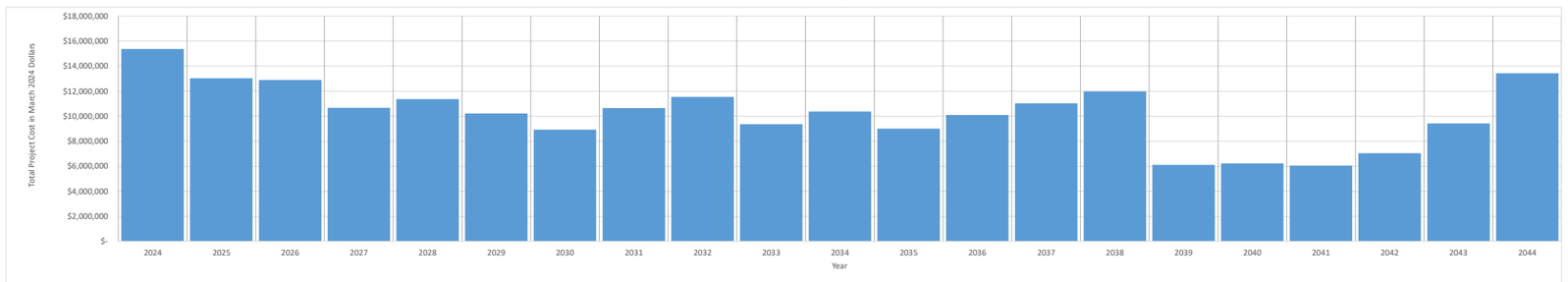
*Project cost for developer funded projects is provided to show an estimated valuation of assets only. The City is not expected to fund the project, therefore, Developer funded projects are not included in the CIP.

Consor's construction cost ("estimate") is in dollars valued as of the date of this estimate. This estimate is an opinion of probable cost based on information available at the time of its development in March 2024. Final costs will depend on

• Actual field conditions • Actual material and labor costs • Market conditions for construction • Regulatory factors • Final project scope
• Method of implementation • Schedule (time to completion, time of commencement, speed of execution, and • Other variables

This estimate is based on our perception, which is based on experience and research, yet nevertheless, an assessment, of current conditions at the project location. This estimate reflects our professional opinion of current costs and is subject to change as the project design evolves. Consor has no control over, nor can it forecast variences in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work, or of determining prices, of the impact of competitive bidding or market conditions, practices, or bidding strategies. Consor neither warrants nor guarentees that proposals, bids, or actual construction costs will reflect the costs presented, which are for illustrative purposes only.

Category	2024	10-Year Period Cost Summary	20-Year Period Cost Summary
Supply	$1,634,839	$38,638,000	$18,150,000
Storage	$242,000	$3,290,000	$14,345,000
Pump Stations	$115,000	$8,755,000	$360,000
Distribution	$210,000	$44,096,000	$56,860,000
General		$750,000	$750,000
Total	$2,201,839	$95,529,000	$90,465,000



consor

City of Auburn Water System Plan

Distribution System Capacity Projects - Detailed Cost Breakdown

Annual Distribution System Improvements Program (Projects required to eliminate MDD+FF deficiencies)

CIP ID	Service Area	Summary of Failure	Overall Rank	Location Detail	Classification	Length (LF)	New Size (inch)	Unit Cost	Cost	Total Cost	Contingency	Sales Tax	Subtotal	Engineering and Permitting	City Management/Survey/Legal/Admin	CM/Inspection	Rounded Project Total	Low End	High End
											30%	10.20%		15%	15%	15%		-50%	75%
P-FF-VLY-8	Valley	Existing Scenario - Hydrants less than 500 gpm	1	See CIP Map in Chapter 3.	Pipe Replacement	3,200	16	$630	$2,016,000	$2,016,000	$604,800	$267,322	$2,888,122	$433,300	$433,300	$433,300	$4,189,000	$2,094,500	$7,330,750
P-FF-LH-3	Lea Hill	Existing Scenario - Hydrants less than 1,000 gpm	2	See CIP Map in Chapter 3.	Pipe Replacement	690	12	$520	$358,800	$358,800	$107,700	$47,583	$514,083	$77,200	$77,200	$77,200	$746,000	$373,000	$1,305,500
P-FF-LH-7	Lea Hill	Existing Scenario - Hydrants less than 1,000 gpm. Move hydrant connection to higher zone.	3	See CIP Map in Chapter 3.	Pipe Replacement	180	8	$490	$88,200	$88,200	$26,500	$11,699	$126,399	$19,000	$19,000	$19,000	$184,000	$92,000	$322,000
P-FF-LH-5	Lea Hill	Existing Scenario - Hydrants less than 1,000 gpm	4	See CIP Map in Chapter 3.	Pipe Replacement	1,080	12	$520	$561,600	$1,298,700	$389,700	$172,217	$1,860,617	$279,100	$279,100	$279,100	$2,698,000	$1,349,000	$4,721,500
					Pipe Replacement	1,170	16	$630	$737,100										
P-FF-VLY-15	Valley	Existing Scenario - Hydrants less than 1,000 gpm	5	See CIP Map in Chapter 3.	Pipe Replacement	1,320	12	$520	$686,400	$686,400	$206,000	$91,025	$983,425	$147,600	$147,600	$147,600	$1,427,000	$713,500	$2,497,250
P-FF-VLY-6	Valley	Existing Scenario - Hydrants less than 1,000 gpm	6	See CIP Map in Chapter 3.	Pipe Replacement	3,590	8	$490	$1,759,100	$1,759,100	$527,800	$233,264	$2,520,164	$378,100	$378,100	$378,100	$3,655,000	$1,827,500	$6,396,250
P-FF-VLY-7	Valley	Existing Scenario - multiple hydrants less than 1500 gpm plus	7	See CIP Map in Chapter 3.	Pipe Replacement	7,940	8	$490	$3,890,600	$6,168,200	$1,850,500	$817,907	$8,836,607	$1,325,500	$1,325,500	$1,325,500	$12,814,000	$6,407,000	$22,424,500
					Pipe Replacement	4,380	12	$520	$2,277,600										
P-FF-VLY-13	Valley	Existing Scenario - Hydrants less than 1,000 gpm	8	See CIP Map in Chapter 3.	Pipe Replacement	1,290	12	$520	$670,800	$670,800	$201,300	$88,954	$961,054	$144,200	$144,200	$144,200	$1,394,000	$697,000	$2,439,500
P-FF-VLY-12	Valley	Existing Scenario - Hydrants less than 1,000 gpm	9	See CIP Map in Chapter 3.	Pipe Replacement	1,440	8	$490	$705,600	$991,600	$297,500	$131,488	$1,420,588	$213,100	$213,100	$213,100	$2,060,000	$1,030,000	$3,605,000
					Pipe Replacement	550	12	$520	$286,000										
P-FF-LH-1	Lea Hill	Existing Scenario - Hydrants less than 1,500 gpm	10	See CIP Map in Chapter 3.	Pipe Replacement	4540	8	$490	$2,224,600	$2,224,600	$667,400	$294,984	$3,186,984	$478,100	$478,100	$478,100	$4,622,000	$2,311,000	$8,088,500
P-FF-LH-2	Lea Hill	Existing Scenario - Hydrants less than 1,500 gpm	11	See CIP Map in Chapter 3.	Pipe Replacement	1300	8	$490	$637,000	$637,000	$191,100	$84,466	$912,566	$136,900	$136,900	$136,900	$1,324,000	$662,000	$2,317,000
P-FF-LH-6	Lea Hill	Existing Scenario - Hydrants less than 1,500 gpm	12	See CIP Map in Chapter 3.	Pipe Replacement	2,470	12	$520	$1,284,400	$1,284,400	$385,400	$170,320	$1,840,120	$276,100	$276,100	$276,100	$2,669,000	$1,334,500	$4,670,750
P-FF-ACA-2	Academy	Existing Scenario - Hydrants less than 1,500 gpm after Oak Vista is installed	13	See CIP Map in Chapter 3.	Pipe Replacement	590	8	$490	$289,100	$289,100	$86,800	$38,342	$414,242	$62,200	$62,200	$62,200	$601,000	$300,500	$1,051,750
P-FF-ACA-1	Academy	Existing Scenario - Hydrants less than 1,500 gpm after Oak Vista is installed	14	See CIP Map in Chapter 3.	Pipe Replacement	500	12	$520	$260,000	$260,000	$78,000	$34,476	$372,476	$55,900	$55,900	$55,900	$541,000	$270,500	$946,750
P-FF-LH-4	Lea Hill	Existing Scenario - Hydrants less than 1,500 gpm	15	See CIP Map in Chapter 3.	Pipe Replacement	340	8	$490	$166,600	$166,600	$50,000	$22,093	$238,693	$35,900	$35,900	$35,900	$347,000	$173,500	$607,250
P-FF-VLY-9	Valley	Existing Scenario - multiple hydrants less than 1,500 gpm plus Cast Iron unknow age, and replacement of 4-inch and 6-inch	16	See CIP Map in Chapter 3.	Pipe Replacement	190	8	$490	$93,100	$3,090,900	$927,300	$409,856	$4,428,056	$664,300	$664,300	$664,300	$6,421,000	$3,210,500	$11,236,750
					Pipe Replacement	5,765	12	$520	$2,997,800										
P-FF-VLY-14	Valley	Existing Scenario - Hydrants less than 2,500 gpm	17	See CIP Map in Chapter 3.	Pipe Replacement	510	12	$520	$265,200	$265,200	$79,600	$35,170	$379,970	$57,000	$57,000	$57,000	$551,000	$275,500	$964,250
P-FF-VLY-2	Valley	Existing Scenario - Hydrants less than 2,500 gpm	18	See CIP Map in Chapter 3.	Pipe Replacement	910	12	$520	$473,200	$473,200	$142,000	$62,750	$677,950	$101,700	$101,700	$101,700	$984,000	$492,000	$1,722,000
P-FF-VLY-17	Valley	Existing Scenario - Hydrants less than 2,500 gpm	19	See CIP Map in Chapter 3.	Pipe Replacement	170	8	$490	$83,300	$743,700	$223,200	$98,624	$1,065,524	$159,900	$159,900	$159,900	$1,546,000	$773,000	$2,705,500
					Pipe Replacement	1,270	12	$520	$660,400										
P-FF-VLY-4	Valley	Existing Scenario - Hydrants less than 2,500 gpm	20	See CIP Map in Chapter 3.	Pipe Replacement	2,610	12	$520	$1,357,200	$1,357,200	$407,200	$179,969	$1,944,369	$291,700	$291,700	$291,700	$2,820,000	$1,410,000	$4,935,000
P-FF-VLY-10	Valley	Existing Scenario - 4-inch Cast Iron near 1,500 gpm dead end	21	See CIP Map in Chapter 3.	Pipe Replacement	320	12	$520	$166,400	$166,400	$50,000	$22,073	$238,473	$35,800	$35,800	$35,800	$346,000	$173,000	$605,500
P-FF-VLY-3	Valley	Existing Scenario - Hydrant less than 1,500 gpm available. Complete P-FF-VLY-8 for initial improvement.	22	See CIP Map in Chapter 3.	Pipe Replacement	1,010	12	$520	$525,200	$941,000	$282,300	$124,777	$1,348,077	$202,300	$202,300	$202,300	$1,955,000	$977,500	$3,421,250
					Pipe Replacement	660	16	$630	$415,800										
P-FF-VLY-1	Valley	Existing Scenario - Hydrants less than 2,500 gpm	23	See CIP Map in Chapter 3.	Pipe Replacement	960	12	$520	$499,200	$499,200	$149,800	$66,198	$715,198	$107,300	$107,300	$107,300	$1,038,000	$519,000	$1,816,500
P-FF-VLY-11	Valley	Existing Scenario - 6-inch Cast Iron near <2,500 gpm	24	See CIP Map in Chapter 3.	Pipe Replacement	1,630	12	$520	$847,600	$847,600	$254,300	$112,394	$1,214,294	$182,200	$182,200	$182,200	$1,761,000	$880,500	$3,081,750
P-FF-VLY-16	Valley	Existing Scenario - Hydrants less than 2,500 gpm	25	See CIP Map in Chapter 3.	Pipe Replacement	390	12	$520	$202,800	$202,800	$60,900	$26,897	$290,597	$43,600	$43,600	$43,600	$422,000	$211,000	$738,500
P-FF-VLY-5	Valley	Existing Scenario - Hydrants less than 2,500 gpm	26	See CIP Map in Chapter 3.	Pipe Replacement	750	12	$520	$390,000	$390,000	$117,000	$51,714	$558,714	$83,900	$83,900	$83,900	$811,000	$405,500	$1,419,250
P-FF-ACA-3	Academy	20-year scenario - Hydrants less than 2,500 gpm	27	See CIP Map in Chapter 3.	Pipe Replacement	380	12	$520	$197,600	$197,600	$59,300	$26,204	$283,104	$42,500	$42,500	$42,500	$411,000	$205,500	$719,250
P-FF-ACA-4	Academy	20-year scenario - Hydrants less than 2,500 gpm	28	See CIP Map in Chapter 3.	Pipe Replacement	1040	16	$630	$655,200	$655,200	$196,600	$86,884	$938,684	$140,900	$140,900	$140,900	$1,362,000	$681,000	$2,383,500
					Total	**55,135**											**$59,699,000**		

CITY OF AUBURN WASHINGTON



2024 Comprehensive Sewer Plan

FINAL / November 2024

carollo

2024 Comprehensive Sewer Plan

FINAL / November 2024

Digitally signed by Edward A. Wicklein
Contact Info: Carollo Engineers, Inc.
Date: 2024.11.20 15:02:07-08'00'



1200 FIFTH AVENUE, SUITE 900 ▪ SEATTLE, WASHINGTON 98101 ▪ P 206-684-6532

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Abbreviations

ACC	Auburn City Code
ADWF	average dry weather flow
APWA	American Public Works Association
BWF	base wastewater flow
CCF	per hundred cubic feet
CCTV	closed-circuit television
CFP	Capital Facilities Program
CIG	Climate Impacts Group
CIP	capital improvement program
City	City of Auburn, Washington
CMMS	computerized maintenance management system
CP	concrete pipe
CSWD	Criteria for Sewage Works Design
D	diameter
d/D	depth/diameter
DOC	Department Operations Center
DOH	Washington State Department of Health
DWF	dry weather flow
Ecology	Washington State Department of Ecology
Engineering	Engineering Services Division
FOG	fats, oils, and greases
FSE	food service establishment
FTE	full-time equivalent
G.O.	general obligation
GIS	geographic information system
gpad	gallons per acre per day
gpm	gallons per minute.
GWI	groundwater infiltration
H&H	hydrologic and hydraulic
HGL	hydraulic grade line
I/I	inflow and infiltration
LID	Local Improvement District
LOS	Level of Service
LWSD	Lakehaven Water and Sewer District
M	million
M&O	Maintenance and Operation
MBR	membrane bioreactor

mgd	million gallons per day
MH	manhole
MIT	Muckleshoot Indian Tribe
MWPAAC	Metropolitan Water Pollution Abatement Advisory Committee
NASSCO	National Association of Sewer Service Companies
NE	northeast
NW	northwest
PAA	potential annexation area
PACP	Pipeline Assessment and Certification Program
Plan	Comprehensive Sewer Plan Update
PW	Public Works
PWTF	Public Works Trust Fund
PWWF	peak wet weather flow
R&R	repair and replacement
RCE	Residential Customer Equivalents
RCW	Revised Code of Washington
RDI	rainfall derived infiltration
RUL	remaining useful life
RWSP	Regional Wastewater Services Plan
SCADA	supervisory control and data acquisition
SCWSD	Soos Creek Water and Sewer District
SDC	system development charges
SE	southeast
SOS	Save Our Streets
SSO	sanitary sewer overflow
SSSA	Sanitary Sewer Service Area
SW	southwest
TAZ	traffic area zone
TM	technical memorandum
ULID	Utility Local Improvement District
Utility	Sanitary Sewer Utility
VCP	vitrified clay pipe
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation
WWF	wet weather flow

EXECUTIVE SUMMARY

ES.1 Introduction

This *Comprehensive Sewer Plan* (Plan) for the City of Auburn, Washington (City) is an update to the previous Plan, adopted in 2016. This Plan should be considered a General Sewer Plan under the authority of Washington Administrative Code (WAC) Section 173-240-050. This Plan reflects changes in existing and projected land use and population levels, extensions to the public sewer collection system, and completion of sewer capital projects since the completion of the previous Plan.

Additionally, since the adoption of the previous Plan, both the City and King County have performed extensive flow monitoring of the City's collection system that, along with updated asset data, provides valuable information for updating the hydrologic and hydraulic (H&H) model used for system capacity assessment.

This Plan includes estimated periods that are intended to be used as a framework for future workload planning and funding decisions, and within which future actions and decisions are anticipated to occur. The purpose of the Plan is to guide the City with respect to future activities and improvements for the Sanitary Sewer Utility (Utility). To fulfill this stated purpose, the following objectives were achieved:

- Evaluation and updates to sewer policies to better reflect and integrate with overall City Comprehensive Plan policies.
- Plan for updating the comprehensive sanitary sewer system inventory, based on the City's geographic information system (GIS), that incorporates currently available infrastructure data into a digital database that can be directly linked with the hydraulic model used for analyzing the system.
- Hydraulic modeling analysis to evaluate existing system capacity.
- Future population and development projections were used to evaluate future sewer capacity needs.
- The Plan for sewer service extensions was refined, including where extensions will occur and how the City will serve these areas.
- Documentation of the City's existing Maintenance and Operation (M&O) program, and evaluation of existing Utility staffing and standard procedures.
- Completed a financial analysis of the Utility, including a projection of cost to provide sewer service and development of a funding strategy for identified goals.
- Developed a capital improvement program (CIP) by sustainably meeting required customer service needs, effectively managing risks, and minimizing the City's costs of sewer asset ownership.
- Prioritization of capital improvement projects to accommodate both 6- and 20-year funding frameworks.

ES.2 System Goals for Long Term

This Plan presents policies and standards related to system development, maintenance, funding, and general guidelines for Sanitary Sewer Utility operation. These policies define limits and outline how the wastewater collection system should be operated and maintained and are grouped within the following goal statements:

- **Goal 1:** Plan for sewer extensions and capacity upgrades to reflect the planning and growth projections included in the City's Comprehensive Plan, such that the public sewer system, when constructed, will have adequate capacity to support all future planned development.
- **Goal 2:** Plan for future service to all properties in the City within urban density areas.
- **Goal 3:** Manage the extension of the public sewer system to minimize future costs to operate and maintain.
- **Goal 4:** Design, operate, and maintain the public sewer system in a manner that increases reliability and efficiency, and demonstrates environmental stewardship.
- **Goal 5:** Apply asset best management principles to the City's sewer infrastructure.
- **Goal 6:** Manage the sewer utility funds and resources in a professional manner in compliance with applicable laws, regulations, and City financial policies, which requires ongoing monitoring of revenues and expenses in order to make prudent business decisions and report to City officials, as needed, regarding the status of utility operations.

ES.3 Sewer Utility Evaluation

The City customer base continues to increase through system growth by development, redevelopment, and connection of on-site system properties to the system. With the additional customers served, some of the City's sewer infrastructure may reach its conveyance capacity. In addition, the installed sewer infrastructure continues to age:

- Hydraulic Modeling: The City hydraulic model was updated to reflect currently installed infrastructure. Current sanitary loading was developed from flow monitor data collected through recent temporary monitor programs, as well as long term sites. A total of 22 sites were used for modeling to develop land used based flow factors, and dry and wet weather model calibration.
- System Evaluation: The flow factors were used to develop a future flow projection based on a combination of general population projects, anticipated land use changes to address City and State requirements. The hydraulic model was used for evaluating current and figure capacity needs. In addition, installed infrastructure age was evaluated relative to anticipated useful life expectancy.
- Maintenance and operation: The current organization and common procedures associated with the ongoing maintenance and operation of the City sewer utility system are reviewed. The primary purpose being to establish a baseline understanding of the proactive and responsive maintenance procedures performed by City staff. This baseline understanding is used herein to evaluate Sewer Utility (Utility) staffing, data collection and computerized record-keeping needs, and other Utility requirements to continue to meet the Utility's goals.

ES.4 Capital Improvement and Financial Plan

This Plan includes time frames, which represent the intended framework for future funding decisions and within which future actions and decisions are intended to occur. However, these time frames are estimates, and depending on factors involved in the processing of applications and project work, and availability of funding, the timing may change. The framework does not represent actual commitments by the City. Project identification is an ongoing effort requiring periodic evaluation.

The CIP list was developed based on incorporating the City's Capital Facilities Plan (CFP), identification of equipment limitations within the M&O group, and identification of areas of improvement. The CIP focuses on addressing known problems in a manner identifying cost-effective solutions that incorporate the risks associated with substandard facilities and the uncertainty inherent in engineering calculations/model simulations. The CIP places emphasis on projects identified for implementation between 2025 and 2030, which constitutes the 6-year planning period for utility capital funding requirements and staffing needs. This period provides a realistic outer limit for accurately forecasting the annual cycle of utility projects and priorities. This Plan also includes a 20-year CIP that examines long-term capital requirements, such as the replacement of infrastructure as it exceeds its useful life. All projects in the CIP are consistent with the LOS.

For implementing the CIP and sustaining long term operation of the Utility, a financial program is outlined that allows the City sewer utility to remain financially viable during the planning period. This financial viability analysis considers the historical financial condition, current and identified future financial and policy obligations, M&O needs, and the financial impacts of the capital projects identified in this Plan. Furthermore, this chapter provides a review of the sewer utility's current rate structure with respect to rate adequacy and customer affordability. The results of this analysis indicate that at existing rate levels the utility will be deficient beginning in 2028. To keep pace with expenses, the City has adopted a 7.50 percent rate increase in 2025. An annual rate increase is recommended for several years, as well as a regular review and update the key underlying assumptions that compose the multi-year financial plan to ensure that adequate revenues are collected to meet the City's total financial obligations.

ES.5 System Administration Plan

In addition to the projects listed in the CIP, this Plan includes other tasks and activities that should be priorities during this planning period. These include:

- Renewal of the franchise agreement with King County which expires in 2027, and beginning negotiation of an extension to the Sewage Disposal Agreement which expires in 2036.
- The continued implementation of asset management principles including:
  - Completing the inventory of sewer assets
  - Verifying and updating asset data/information as part of normal maintenance activities.
  - Integrating condition assessment information into the City's CMMS as a tool for prioritizing rehabilitation and replacement decisions
  - For assets with poor condition scores, determining the consequences of failure to help assess asset criticality.
  - Use condition assessment studies included in the CIP to make long-term maintenance, upgrade, rehabilitation, and replacement decisions for key assets.

- Proactively discouraging the discharge of substances detrimental to the sanitary sewer and wastewater treatment system by:
  - » Enforcing the requirements to manage fats, oils, and grease (FOG) by restaurants and other businesses likely to discharge FOG into the sewer system.
  - » Educating residents about the negative effects of discharging FOG on both private and public portions of the sanitary sewer system.
  - » Educating residents about the negative effects of discharging cleaning wipes, pharmaceuticals, and other prohibited discharges to the sewer system, and promoting alternative disposal methods.

CHAPTER 1 INTRODUCTION AND BACKGROUND

This *Comprehensive Sewer Plan* (Plan) for the City of Auburn, Washington (City) is an update to the previous Plan, adopted in 2016. This Plan should be considered a General Sewer Plan under the authority of Washington Administrative Code (WAC) Section 173-240-050, and within this document, Comprehensive Sewer Plan and General Sewer Plan should be considered synonymous. This Plan reflects changes in existing and projected land use and population levels, extensions to the public sewer collection system, and completion of sewer capital projects since the completion of the previous Plan.

Additionally, since the adoption of the previous Plan, both the City and King County have performed extensive flow monitoring of the City's collection system that, along with updated asset data, provides valuable information for updating the hydrologic and hydraulic (H&H) model used for system capacity assessment.

This Plan includes estimated periods that are intended to be used as a framework for future workload planning and funding decisions, and within which future actions and decisions are anticipated to occur. These time lines are estimates and depending on factors including staff availability, available resources, coordination with other City departments, and overall development activity, the actual timing of actions described by this Plan may differ. The timing estimates for activities included in this Plan do not represent actual commitments by the City.

This Plan meets the requirements of the Washington State Department of Ecology (Ecology) as set forth in WAC Section 173-240-050. The Plan was submitted to Ecology; the Washington State Department of Health (DOH); King and Pierce counties; the cities of Algona, Bonney Lake, Kent, and Pacific; Lakehaven Water and Sewer District (LWSD); Soos Creek Water and Sewer District (SCWSD); and the Muckleshoot Indian Tribe (MIT).

1.1 Purpose and Objectives

The purpose of the Plan is to guide the City with respect to future activities and improvements for the Sanitary Sewer Utility (Utility). To fulfill this stated purpose, the following objectives were achieved:

- Evaluation and updates to sewer policies to better reflect and integrate with overall City Comprehensive Plan policies.
- Plan for updating the comprehensive sanitary sewer system inventory, based on the City's geographic information system (GIS), that incorporates currently available infrastructure data into a digital database that can be directly linked with the hydraulic model used for analyzing the system.
- Hydraulic modeling analysis to evaluate existing system capacity.
- Future population and development projections were used to evaluate future sewer capacity needs.
- The Plan for sewer service extensions was refined, including where extensions will occur and how the City will serve these areas.
- Documentation of the City's existing Maintenance and Operation (M&O) program, and evaluation of existing Utility staffing and standard procedures.
- Completed a financial analysis of the Utility, including a projection of cost to provide sewer service and development of a funding strategy for identified goals.

- Developed a capital improvement program (CIP) by sustainably meeting required customer service needs, effectively managing risks, and minimizing the City's costs of sewer asset ownership.
- Prioritization of capital improvement projects to accommodate both 6- and 20-year funding frameworks.

1.2 Document Organization

This Plan is organized to focus on the actions that the Utility will take while implementing Plan recommendations. Supporting documentation and background information is included in appendices where appropriate. The Plan is organized into the following chapters:

- **Chapter 1 - Introduction and Background:** Explains the need for updating previous sewer planning documentation and outlines specific objectives of the Comprehensive Sewer Plan Update and provides background information regarding the Utility and Sanitary Sewer Service Area (SSSA).
- **Chapter 2 - Wastewater System Goals and Policies:** Specifies the utility's goals and policies used to develop capital improvements and future M&O activities.
- **Chapter 3 - Planning Considerations**: Describes the factors used to project the future capacity needs of the system.
- **Chapter 4 - Description of Existing System:** Describes the existing conditions of the City's sanitary sewer system.
- **Chapter 5 - Wastewater System Analysis:** Presents methodologies used to evaluate system capacity and future sewer extensions.
- **Chapter 6 - Maintenance and Operations:** Provides an overview of the organization and common procedures associated with the ongoing M&O program and evaluates existing Utility staffing needs based on established Level of Service (LOS) goals.
- **Chapter 7 - Capital Improvement Plan:** Describes recommended capital improvement projects including cost estimates.
- **Chapter 8 - Finance:** Develops a funding plan that optimizes use of rates, systems development charges, and other service fees based on projected Utility spending requirements and a review of funding sources and City financial policies.
- **Appendix A - Inter-local Agreements and Outside Agency Correspondence:** Provides copies of inter-local agreements related to sanitary sewer conveyance and disposal.
- **Appendix B - Agency Comment Letters and Responses:** Provides copies of key agency review, resolution of comments, and final approval.
- **Appendix C - Approval:** Provides a copy of final council adoption ordinance.
- **Appendix D - Hydraulic Model Update, Calibration, and Capacity Analysis:** Provides a detailed review of the hydraulic modeling completed for near- and long-term land use modeling scenarios to identify areas of capacity concern.
- **Appendix E - Pump Station Information:** Provides detailed information related to the pump stations (pump sizes, wet well size, etc.).
- **Appendix F - SEPA Compliance:** Provides a letter documenting the "Determination of Non-Significance."
- **Appendix G –** Reclaimed Water Checklist: A copy of the King County reclaimed water checklist from the 2024 Water System Plan.

1.3 Background

This section includes background information related to the development of the City's current wastewater collection and conveyance system. A description of the City SSSA is also included, along with information on adjacent sewer utilities, which will facilitate an understanding of existing and potential collaboration opportunities with other purveyors to enhance system reliability and/or reduce costs. Changes to land use planning efforts affecting the City SSSA are also discussed.

The City of Auburn vicinity within the greater region is shown in Figure 1.1.

1.3.1 Previous Auburn Comprehensive Sewer Plans

The current wastewater planning effort supersedes previous plans prepared in 1968, 1982, 2001, 2009, and 2016. This Plan builds upon concepts established in the five previous plans modifying, or updating goals, policies, and analyses to account for present conditions.

1.3.2 City Comprehensive Plan

The City most recently revised its City Comprehensive Plan in June 2015. The City Comprehensive Plan incorporates the Comprehensive Sewer Plan by reference. The City is in the process of updating the City Plan for adoption in 2024.

1.3.3 Sanitary Sewer Service Area

The City SSSA has not changed significantly since the 2016 *Comprehensive Sewer Plan*. Service has been extended to a small area of unincorporated King County located west of Algona. The current SSSA is shown on Figure 1.2.

As of September 2023, the City serves 13,417 single-family residential customers within its SSSA. Additionally, commercial customers (including non-single-family customers) equate to 19,980 Residential Customer Equivalents (RCE) based on total water consumption records for commercial connections. The City tracks total RCEs and reports to the County quarterly.

The City coordinates service at the boundary of its SSSA with nearby sewer utilities. When the City's SSSA extends beyond current corporate limits, the City requires a franchise to own, maintain, and manage the wastewater facilities within King and Pierce counties' rights-of-way. This coordination with other utilities and King and Pierce counties is discussed in Section 1.4.

1.3.4 Existing Land Use Plans

Various land use plans govern development with the City SSSA; these plans are described in the following sections.

1.3.4.1 King County Comprehensive Plan

Urban unincorporated areas of the City's SSSA within King County are subject to the King County *Comprehensive Plan*, as most recently updated and adopted in December 2022. This section highlights portions of the King County document affecting policy direction for functional plans, such as this City of Auburn *Comprehensive Sewer Plan*.

In the 2022 King County *Comprehensive Plan*, policy F-255 states:

In the Urban Growth Area, all new development shall be served by public sewers unless:

a. *Application of this policy to a proposal for a single-family residence on an individual lot would deny all reasonable use of the property; or*
b. *Sewer service is not available for a proposed short subdivision of urban property in a timely or reasonable manner as determined by the Utility Technical Review Committee. [1]These on-site systems shall be managed by one of the following entities, in order of preference:*
    i. *The sewer utility whose service area encompasses the proposed short subdivision; or*
    ii. *The provider most likely to serve the area; or;*
    iii. *An Onsite Sewage System Maintainer certified by Public Health - Seattle & King County.*

The onsite system shall meet all state and county approval requirements. The approved short subdivision shall indicate how additional lots to satisfy the minimum density requirement of the zoning will be located on the subject property in case sewers become available in the future. There shall be no further subdivision of lots created under this policy unless served by public sewers.

In conjunction with policy F-255, policy F-256 states:

> *In the Urban Growth Area, King County and sewer utilities should jointly prioritize the replacement of on-site systems that serve existing development with public sewers, based on the risk of potential failure. King County and sewer utilities should analyze public funding options for such conversion and should prepare conversion plans that will enable quick and cost-effective local response to health and pollution problems that may occur when many on-site systems fail in an area.*

Chapter 5 discusses potential sewer extensions within currently unsewered areas. The City's SSSA currently includes three areas of unincorporated King County, as shown on Figure 1.2.

1.3.4.2 Pierce County Comprehensive Plan

Urban unincorporated areas of the City's SSSA within Pierce County are subject to the *Pierce County Comprehensive Plan*, as most recently updated and adopted in July, 2023. Several goals and policies included in the Pierce County document affect policy direction for functional plans, this City of Auburn *Comprehensive Sewer Plan Update* such as:

- GOAL U-2 - Provide urban level facilities and services only within the designated Urban Growth Areas prior to or concurrent with development.
    - U-2.1 - Encourage the provision of urban level services from cities or appropriate regional service providers.
    - U-2.3 - Preserve the rural way of life by not providing urban LOS' within rural areas.
- GOAL U-15 - Provide sanitary sewers within the urban area.
    - U-15.6 - Recognize on-site septic systems within the Urban Growth Area are considered interim facilities.

Chapter 5 discusses potential sewer extensions within currently unsewered areas. The City's SSSA currently includes one area of unincorporated Pierce County, as shown on Figure 1.2.

[1] The Utility Technical Review Committee (UTRC) is a King County Committee that reviews sewer and water plans and makes recommendations to the Council/Executive.

1.3.5 Wastewater Treatment

The City is a component agency of the King County Wastewater Treatment Division. As such, its Sewer Utility operates a collection system that discharges collected wastewater to King County facilities for conveyance to King County's South Plant for treatment, outside of the service area to the North. The South Plant operates under a permit from the Department of Ecology, and the County is required to continually upgrade its treatment processes to ensure its effluent and other treatment byproducts meet the most current environmental standards.

The City's agreements with King County can be found in Appendix A, and are active until 2036. It is expected that negotiations for extending that agreement will occur during this planning period. Under the current agreement, the City is obligated to deliver all of the sewage and industrial wastes collected or received by the City, and Metro (King County) shall accept the sewage and industrial wastes delivered for treatment. There is currently no limit on the quantity of wastewater delivered by the City to Metro (King County).

1.3.5.1 King County Regional Wastewater Services Plan

In 2007, King County adopted a revised *Regional Wastewater Services Plan* (RWSP), which outlined proposed wastewater conveyance improvements. Improvements that impact the City collection and conveyance system included the following:

- Stuck River Trunk: New gravity pipe constructed to convey flow away from the M Street Trunk to the Lakeland Hills Trunk Line and eventually the Auburn West Interceptor.
- Pacific Pump Station discharge: New pipe to convey flow north from the Pacific Pump Station to the Auburn West Interceptor.
- Auburn West Interceptor Parallel: New gravity pipe to replace or parallel an existing portion of the Auburn West Interceptor between 15th Street SW and West Main Street.

The Stuck River Trunk was completed in 2013. The Pacific Pump Station discharge and Auburn West Interceptor Parallel were completed in 2018.

Based on the completion of most of the projects included in the RWSP, King County issued its final report on the RWSP in 2017.

The County has continued to identify projects for its Conveyance System Improvements Program based on decennial flow monitoring data and updated land use and population projections. Those projects include the replacement of the Lakeland Hills Pump Station located along the White River within Roegner Park, which is planned for the year 2031.

In 2019, the County began the planning process for what is to be called the Clean Water Plan. Activities included evaluation of existing assets, analysis of evolving environmental regulations, decennial flow monitoring, future land use projection, and gathering stakeholder input. This planning effort is currently paused pending clarity on future regulations but is expected to resume once that clarity is achieved.

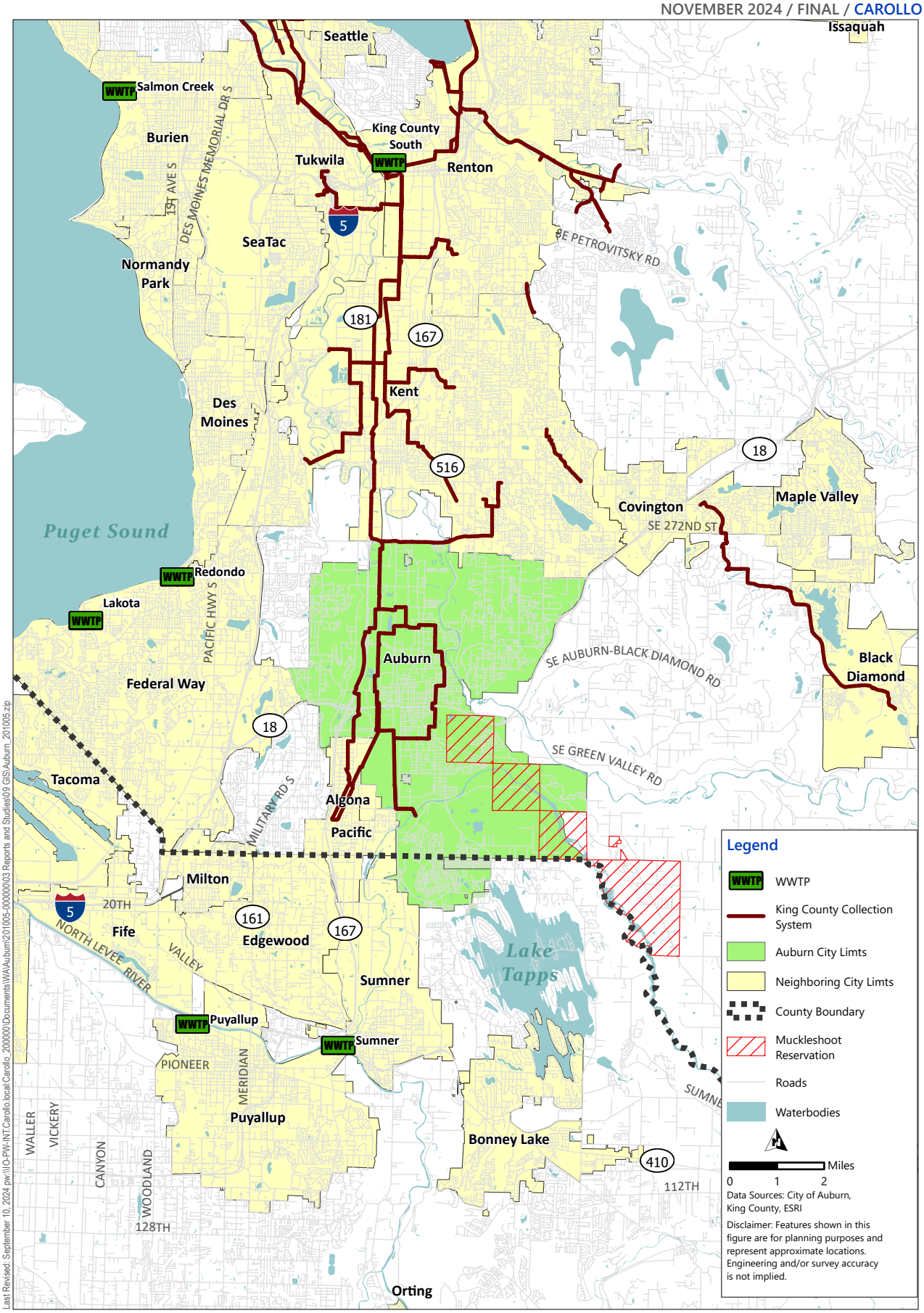


Figure 1.1 Vicinity Map
CITY OF AUBURN
2024 COMPREHENSIVE SEWER PLAN

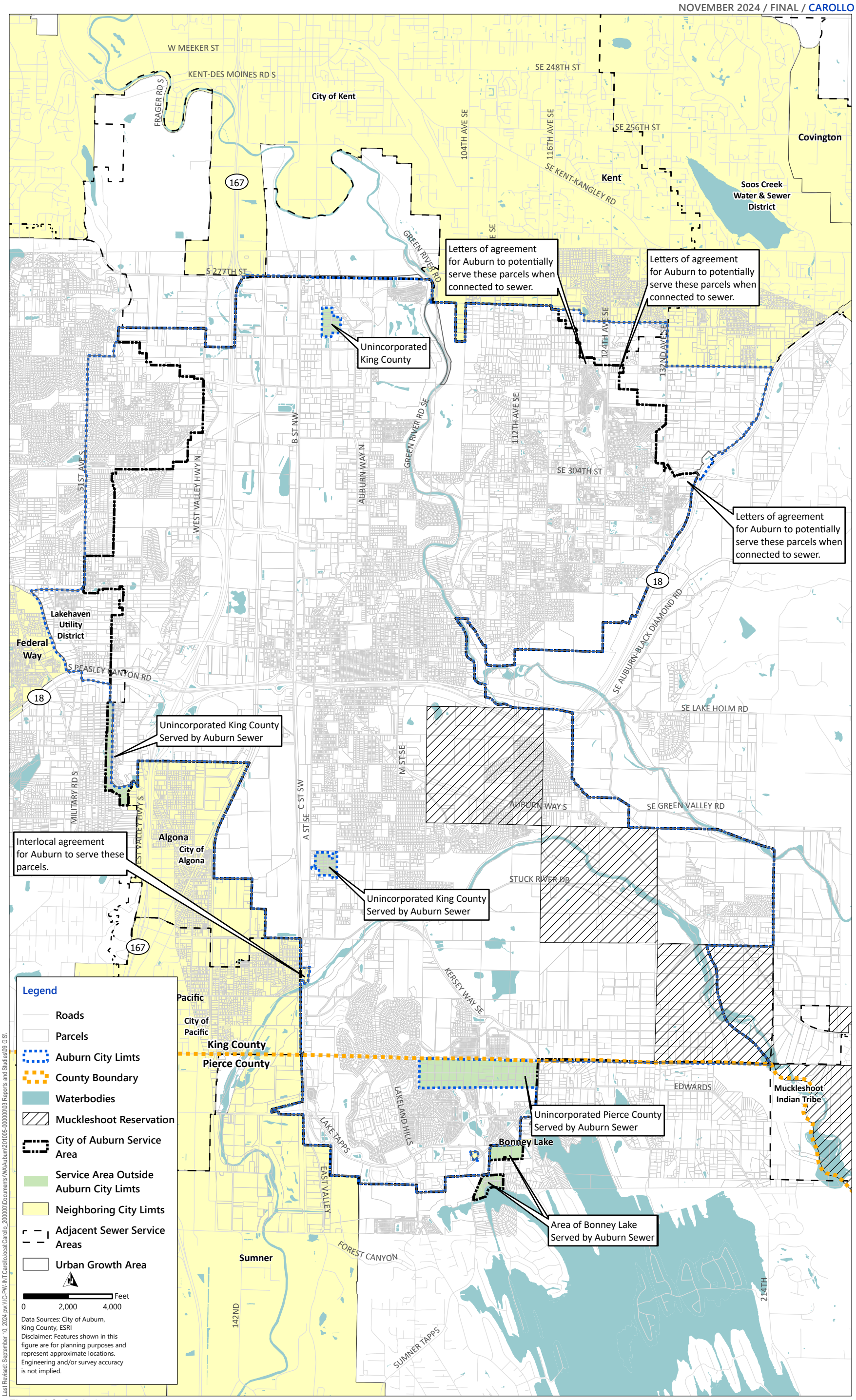


Figure 1.2 Study Area
CITY OF AUBURN
2024 COMPREHENSIVE SEWER PLAN

1.3.6 City of Auburn Water Resources Protection Report

As identified in the City's 2016 *Sewer Plan*, coordination with the Water Utility will be necessary in the future, as many of the City's unsewered areas lie within the Water Resource Protection Areas identified in the *Water Resources Protection Report* completed in 2000. In particular, planning for future wastewater infrastructure could include the importance of removing potential contamination (i.e., onsite sewer systems) from those areas, based on coordination with the Water Utility. Auburn City Code 16.10 (Critical Areas) now refers to the areas as "Aquifer Recharge Areas" and regulates activities within them.

1.3.7 City of Auburn Water Conservation

The City of Auburn's Sanitary Sewer Service Area largely overlaps with its Water Service Area, therefore, water conservation efforts undertaken by the City's Water Utility will, by far, be the most likely to affect sewage flows handled by the City's sewage collection system. The Water Utilities program is described in Section 4.3 of the 2024 Water System Plan. The primary effect of such measures on the sewer system would be to reduce the overall wastewater flow, while potentially increasing wastewater strength. Since the City's sewer hydraulic model calibration was based on actual measured flows, the effects of existing conservation measures have been accounted for. Further increased effectiveness of water conservation efforts could result in capacity improvement projects being eliminated or delayed if anticipated flow increases are not realized.

1.4 Neighboring Sewer Utilities

The communities surrounding the City administer their own wastewater conveyance and collection systems. The following sections describe these systems and discuss interlocal agreements between the City and these communities that establish SSSA boundaries and other conditions of service. Neighboring sewer utilities that serve a portion of Auburn are identified in Figure 1.2.

1.4.1 Soos Creek Water and Sewer District and City of Kent

In the northeast corner of the city, within the Lea Hill sewer basin (as shown on Figure 1.2), there are small areas served by the Soos Creek Water and Sewer District (SCWSD) and the City of Kent. In 2001, prior to annexation of the Lea Hill area by the City, the City executed interlocal agreements with SCWSD and the City of Kent, establishing sanitary sewer service area boundaries in the basin. The agreements enable SCWSD and the City of Kent to provide the most efficient method of sanitary sewer service to this portion of the City while ensuring adherence to the City's development standards. Copies of these agreements are included in Appendix A.

As development in Lea Hill occurs, the City will continue to work with both agencies to refine our respective planning areas as needed.

1.4.2 City of Pacific

An interlocal agreement establishing sanitary sewer service area boundaries between the City and the City of Pacific was executed in 2008. This agreement allows Auburn to provide sanitary sewer service to property located on the eastern portion of Pacific's municipal boundary, which lies in the vicinity of

Auburn's wastewater infrastructure. The agreement recognizes that Auburn has sufficient wastewater conveyance capacity to support the SSSA with maximum efficiency in the use of existing and future facilities, together with orderly and efficient sanitary sewer planning. The cities of Auburn and Pacific are considering allowing the area described in the agreement to be annexed by Auburn. A copy of this agreement is included in Appendix A.

1.4.3 Muckleshoot Indian Tribe Reservation

The MIT reservation is located within and to the southeast of Auburn city limits, as shown in Figures 1.1 and 1.2. In 1997, the MIT, Indian Health Service, and City of Auburn entered into an agreement for the City to provide wastewater service to the MIT property located outside city limits, outside the potential annexation area (PAA), and outside the Urban Growth Area. An additional agreement, signed in 2004, superseded the 1997 agreement, and outlined cost sharing in the replacement and maintenance to the conveyance system from the south end of the City on Auburn Way South to the connection to King County's M Street Trunk. Two outcomes of that agreement were that (1) the MIT become a component agency of the King County Wastewater Treatment Division, which officially occurred in July 2004; and (2) the MIT would own a portion of the capacity within the Auburn Way South sewer line for the conveyance of sewage from a portion of MIT properties located outside the City's service area to King County.

In 2013, Resolution 4902 established a master agreement/provision for City utility services on MIT lands. Lands owned by the MIT within the City SSSA are billed as ordinary ratepayers. Development of lands within the MIT reservation must be in accordance with the master agreement. MIT-related agreements are included in Appendix A.

1.4.4 Lakehaven Water and Sewer District

In 2004, an interlocal agreement was established between LWSD (then known as Lakehaven Utility District) and the City delineating a mutual sewer service area boundary within a portion of the West Hill Service Area within the City.

Amendments to this agreement were made in 2005, and 2018, transferring sewer service from LWSD to the City for portions of the area known as Jovita Heights-West Hill. Copies of both LWSD agreements are included in Appendix A.

1.4.5 City of Algona

The City of Algona borders the City of Auburn to the southwest. In 2003, the cities of Algona and Auburn executed an interlocal agreement establishing sanitary sewer service area boundaries. The agreement allows Algona to provide sewer service to a small area in southwest Auburn, within the city limits and adjacent to Algona. Sewer service by Algona provides efficiency in the use of existing and future facilities. An additional agreement between Auburn and Algona was executed in 2020 to clarify the connection locations and billing responsibilities for several parcels located along the service area boundary. Copies of both Algona agreements are included in Appendix A.

1.4.6 City of Bonney Lake

An addendum to a 1998 interlocal agreement establishing sanitary sewer service area boundaries between the cities of Bonney Lake and Auburn to roughly coincide with Auburn's PAA boundaries was executed in February 2005. The addendum added a single parcel to the City SSSA because the parcel was partially located in both Auburn's and Bonney Lake's service areas as a result of the previous agreement.

In April 2005, an interlocal agreement was established for Auburn to provide sanitary sewer service to a parcel within Bonney Lake's SSSA (and designated within Pierce County's Urban Growth Area). The maximum efficiency in the use of existing and future facilities is achieved by having Auburn provide sewer service to this area within Bonney Lake. A subsequent agreement, executed in August 2005, allows for Bonney Lake to serve the parcel in question once a sewer franchise with Pierce County has been secured for the area of Pierce County in which this parcel is located. Copies of both Bonney Lake agreements are included in Appendix A.

1.4.7 King County

In 2002, the City of Auburn was granted a sanitary sewer franchise from King County to operate, maintain, repair, and construct sewer mains, service lines, and appurtenances in, over, along, and under County roads and rights-of-way in areas that, at that time, were located within unincorporated areas of King County. The legal descriptions of the areas covered by that agreement were updated through an amendment approved in January 2013. Copies of the agreement and amendment (Resolution 5027) are included in Appendix A. That franchise agreement will expire in 2027, so a renewal of the agreement should be sought during this planning period.

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Abbreviations

APWA	American Public Works Association
CCTV	closed-circuit television
CMMS	computerized maintenance management system
CSWD	Criteria for Sewage Works Design
FOG	fats, oils, and greases
I/I	inflow and infiltration
NASSCO	National Association of Sewer Service Companies
PACP	Pipeline Assessment and Certification Program
R&R	repair and replacement
SCADA	supervisory control and data acquisition
SDC	system development charges
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation

CHAPTER 2 WASTEWATER SYSTEM GOALS AND POLICIES

This chapter presents policies and standards that guide the operation and development of the City's wastewater collection and conveyance system.

2.1 City Comprehensive Plan Consistency

The City Comprehensive Plan serves as the City's blueprint for managing growth, encompassing policies aimed at protecting critical areas and preserving natural resource lands. This plan also designates urban growth areas, outlines the preparation of comprehensive utility plans, and an implementation approach through capital investments, and development regulations. The City Comprehensive Plan provides a framework of policies for development, expansion, and maintenance of the Utility reflected in this Plan.

2.2 Business Practices/Asset Management

The City desires to employ recognized best business practices that result in an efficient and cost-effective operation of the Sanitary Sewer Utility. The City shall identify the key business functions within the Sanitary Sewer Utility (e.g., billing, permitting, asset management, and planning) and develop supporting best business practices for each.

The City understands that defining and implementing best business practices is a long-term effort and will require a stepwise approach. Given that the Utility is largely composed of physical assets that have the greatest value and deserve the greatest commitment to operate and maintain, the City shall continue to prioritize asset management.

Asset management is a systematic approach to keep assets in good working order to minimize future maintenance and replacement costs, and especially to avoid costly deferred maintenance. The best practices for asset management involve systematically basing choices on an understanding of asset condition and performance, risks, and costs in the long term. Asset management best practices include:

- Having extensive knowledge about assets and their costs for maintenance and replacement (i.e., detailed inventories).
- Maintaining Levels of Service.
- Taking a life-cycle approach to asset management planning.
- Implementing the planned solutions to provide a reliable, cost-effective service.

Since the adoption of the 2016 Comprehensive Sewer Plan, the Utility has compiled an inventory of assets and their conditions for approximate 70 percent of its current assets. The Utility shall continue implementing the above best practices during the next planning period.

2.3 Sewer Comprehensive Plan Policies, Standards, and Guidelines

This Plan presents policies and standards related to system development, maintenance, funding, and general guidelines for Sanitary Sewer Utility operation. These policies define limits and outline how the wastewater collection system should be operated and maintained and are grouped within goal statements that are headlined under the following categories:

- Service Area.
- System Planning.
- Operations and Maintenance.
- Environmental Stewardship.
- System Performance and Reliability.
- Fiscal Responsibility.

2.3.1 Service Area

Goal 1: Plan for sewer extensions and capacity upgrades to reflect the planning and growth projections included in the City's Comprehensive Plan, such that the public sewer system, when constructed, will have adequate capacity to support all future planned development.

- Policy 1.1 - Incorporate the Comprehensive Sewer Plan as an Element of the City's Comprehensive Plan.
- Policy 1.2 - Sewer Service provided by outside purveyors within City limits are required to obtain a franchise with the City and are required to conform to all federal, state, and local laws and regulations. (ACC 20.02.040 and 20.04).
- Policy 1.3 - Future land use patterns for the SSSA will correspond to existing uses or current designations or as otherwise identified in the City's Comprehensive Plan.
- Policy 1.4 - Require that, if a sewer system extension is needed to serve new development, that it is built prior to or simultaneously with such development, according to the size and configuration identified by the Comprehensive Sewer Plan and the City's Comprehensive Plan, as necessary to serve all planned development. (ACC 13.20.270).
- Policy 1.5 - Require the owner of a property connecting to the public sewer system be responsible for the cost of the sewer line across the frontage of, and within their property (ACC 13.20.270), and for a proportionate share of the costs of pump stations, trunk lines, and other facilities specifically designed to enable service to a larger basin. As such:
  - Property owners connecting to existing sewer facilities may be required to reimburse the installer of those facilities, if the facilities satisfy the responsibility described above. (ACC 3.25).
  - Developers, or the City if it funds the construction, may be eligible to be reimbursed, by property owners connecting to the public sewer system, for the cost of installing those facilities that benefit multiple properties. (ACC 3.25).
  - Required improvements may be deferred for reasons of efficiency, but the property owner will, in the future, be obligated to pay a proportionate share of the construction of that required improvement.

2.3.2 System Planning

Goal 2: Plan for future service to all properties in the City within urban density areas.

- Policy 2.1 - System planning will include a provision for future sewer service to all unsewered properties within the SSSA.
- Policy 2.2 - Identify, through interlocal agreements, a sanitary sewer provider for those properties located within the City, but outside the City's SSSA.
- Policy 2.3 - Consider, but not encourage, providing sanitary sewer service to properties outside the SSSA. Property owners outside the SSSA bear the burden of pursuing adjacent sewer providers for service prior to seeking service from Auburn. Considerations for service include:
  - An analysis of the capacity of existing City of Auburn facilities.
  - Required upgrades to City of Auburn facilities.
  - Operational costs added to the Utility.
  - Potential revenue from the added service area.
  - Concurrence of the existing sanitary sewer service area provider.
  - The temporary or permanent nature of the service.
  - The need to permanently adjust the service area boundary and have it approved by the Boundary Review Board.
  - Potential impacts to public health.
- Policy 2.4 - Consider allowing properties within the SSSA to receive service from an adjacent sewer agency. Considerations for service by an adjacent agency include:
  - Future City of Auburn sewer service plans and the anticipated short and long-term timing of such an extension.
  - The effect of long-term capital costs on other future City of Auburn Customers.
  - The willingness/ability of the adjacent agency to provide service.
  - The temporary or permanent nature of the service change.
  - The need to permanently adjust the service area boundary and have it approved by the Boundary Review Board.
  - The potential impact on public health.
- Policy 2.5 - The Sanitary Sewer Utility does not intend and will not plan to extend sanitary sewer service to or through King or Pierce County rural zoned property. Exceptions will only be considered for reasons of health, safety, or service to a school in accordance with King or Pierce County policies and with the approval of King or Pierce County as appropriate.
- Policy 2.6 - Allow development where public sewer service is not readily available to be served by individual onsite (septic) systems, if the individual lots are suitable for onsite systems, per the requirements and approval of King County or Pierce County Department of Health, and the City's or Counties' development codes as appropriate. The allowance of the use of onsite systems will consider City water resource protection efforts and possible impacts to city drinking water sources. (ACC 13.20.060, 13.20.080, and 13.20.090).

- Policy 2.7 - Require a connection to public sewer if an existing onsite (septic) system fails and a permit to repair that system cannot be issued by the County Health Department that has jurisdiction. (ACC13.20.060 and 13.20.070).
- Policy 2.8 - Maintain an asset database to be used in prioritizing asset maintenance and repair and replacement activities. The database includes asset age and material information, and will be validated and updated through inspections, records review, and other available information.

2.3.3 Operations and Maintenance

Goal 3: Manage the extension of the public sewer system to minimize future costs to operate and maintain.

- Policy 3.1 - Set standards for the design and construction of the sanitary sewer infrastructure primarily based on the technical criteria found in the most recent versions of the Ecology publication Criteria for Sewage Works Design (CSWD) and Washington State Department of Transportation (WSDOT)/ American Public Works Association (APWA) Standard Specifications. (ACC 13.20.270).
- Policy 3.2 - Maintain specific criteria for the design and repair of public and private sewer systems, through the City of Auburn Engineering Design and Construction Standards. (ACC13.20.270 and 13.20.300).
- Policy 3.3 - Require the transport of sewage by gravity whenever feasible in order to increase reliability, sustainability, and long-term cost effectiveness.
- Policy 3.4 - Allow pumped systems when it is not feasible to install a total gravity system. Feasibility criteria include the relative elevations of the property to be served and existing sewer infrastructure and physical conditions, such as the existence and nature of critical areas, which may impact the constructability and maintainability of proposed gravity sewer extensions.
- Policy 3.5 - Allow non-gravity services (e.g., grinder pumps, low-pressure force mains, or other on-site pumping facilities) in extenuating circumstances when service by gravity is infeasible, provided that the cost of installation, operation, and maintenance of a non-gravity system shall be borne by the property owner, community association, developer, etc. The City will evaluate applications for non-gravity services consistent with ACC 13.20.200. The City will not install, own, or maintain (outside of emergencies) any part of a private non-gravity system. (ACC 13.20.500 and 13.20.510).
- Policy 3.6 - Give preference to the construction of fewer large public pump stations over a greater number of smaller public pump stations.
- Policy 3.7 - Allow private sewer conveyance systems, consistent with Washington Administrative Code (WAC) 173-240-104(3)(b), within the SSSA as long as they are designed and operated per City standards and are not part of sewer extensions to other parcels. Multiple connections per parcel are allowed. (ACC13.20.500).

2.3.4 Environmental Stewardship

Goal 4: Design, operate, and maintain the public sewer system in a manner that increases reliability and efficiency, and demonstrates environmental stewardship.

- Policy 4.1 - Comply with all federal, state, and local regulations in operation and maintenance of the City's wastewater collection and conveyance infrastructure.

- Policy 4.2 - Prevent storm drainage from entering the sanitary sewer system and pursue inflow and infiltration (I/I) reduction for the purposes of eliminating or reducing required capacity upgrades and reducing maintenance costs (to include reducing wear and tear on pump stations) when determined to be cost-effective. (ACC13.20.130).
- Policy 4.3 - In order to protect public health and the environment, require a property owner to promptly repair any private sewer system failure. If the property owner fails to do so, the City will take such action, as it deems necessary, to prevent or rectify an overflow, including but not limited to temporarily suspending occupancy of the premises or repairing the system at the property owner's expense. (ACC 13.20.500 and 13.20.510).
- Policy 4.4 - Support the use of reclaimed water technologies where economically feasible. City staff will evaluate opportunities for reclaimed water use and support initiatives where the benefits outweigh costs.
- Policy 4.5 - Size the sewer collection system for peak wet weather flow rates that include I/I flows. Gravity sewers will be sized to convey the once-per-20-year peak hour flow without surcharging.
- Policy 4.6 - Size pump stations and force mains for peak wet weather flow rates that include I/I flows. Pump stations will be sized to convey the once per 5-year flow with one pump out of service and convey the once per 20-year flow with all pumps in service.
- Policy 4.7 - Maintain, operate, and repair public sewers and portions of private side sewers located within public rights-of-way, except when damage is caused by discharges from private property or trees located on private property. (ACC13.20.120 and 13.20.182).
- Policy 4.8 - Review complaints/citizen reports and claims made against the City for damages caused by sanitary sewers to identify and make improvements as required.
- Policy 4.9 - Communicate proactively with the community and stakeholders regarding wastewater service improvements.
- Policy 4.10 - Investigate all customer service calls within 24 hours and record results in the computerized maintenance management system (CMMS).
- Policy 4.11 - In cooperation with King County, seek to eliminate prohibited discharges to the public sanitary sewer system. (ACC 13.20.140, 13.20.156, 13.20.158, and 13.20.160).
- Policy 4.12 - Require that businesses which may introduce fats, oils, and greases (FOG) into the waste stream have a grease interceptor installed and maintained to minimize FOG discharge to the public sewer system. (ACC 13.22.020).

2.3.5 System Performance and Reliability

Goal 5: Apply asset best management principles to the City's sewer infrastructure.

- Policy 5.1 - Develop and implement system improvements, infrastructure renewal (repair, rehabilitation, or replacement), and M&O programs for the wastewater system according to asset management principles that address the triple bottom line (economic, social, and environmental benefits and costs), minimize asset life-cycle costs, and incorporate risk management into decision making.
- Policy 5.2 - Monitor the frequency and causes of any service disruptions and develop programmatic methods for reducing the number of disruptions.

- Policy 5.3 - Perform condition assessments of critical assets, developing and implementing a condition assessment schedule for all critical assets.
- Policy 5.4 - Assign industry standard design lives for sewage assets. The actual physical assessment will be compared to the theoretical design life to determine the optimal economic life. Seek to repair or replace system assets before they exceed their economic life. The number of high-criticality assets beyond their economic life will be minimized.
- Policy 5.5 - Conduct maintenance activities at a level that is consistent with optimizing system reliability, asset economic life, and system performance.
- Policy 5.6 - Maintain a level of reliability for pump stations provided by redundancy of critical mechanical and electrical components. Provide backup power generators or dual power feeds and provide a minimum of two pumps at each pump station.
- Policy 5.7 - Implement the use of the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) for inspection of all pipelines.
- Policy 5.8 - Create, update on a routine basis, and use an emergency response plan for critical facilities.
- Policy 5.9 - When necessary, work on private property on private assets when the private asset is negatively impacting the public system. If the condition requiring such work is the responsibility of the owner, the City shall seek to recover the costs for the work. (ACC 13.20.510).
- Policy 5.10 - Replace or repair private side sewers as part of a City initiated project to reduce I/I of extraneous water into the sanitary sewer system where shown to be cost-effective versus capacity improvements. (ACC13.20.130).
- Policy 5.11 - Monitor the frequency, location, and details of all odor-related complaints. At a minimum, respond, research the cause of, and propose control methods once three complaints per month at a site are documented.
- Policy 5.12 - Take adequate measures to ensure system security. At a minimum, maintain security at pump stations by using the SCADA system (motion detection, intrusion alarms) to alert City personnel when unauthorized access is occurring.
- Policy 5.13 - Take appropriate measures to ensure the redundancy and security of data related to the sewer system, including, but not limited to the supervisory control and data acquisition (SCADA), CMMS, GIS, and closed-circuit television (CCTV) systems as well as permitting and other development records.
- Policy 5.14 - Encourage employee participation in workshops, seminars, and other education programs to improve job skills. The City may pay fees and employees' time for the required certification testing, as well as required annual renewal fees if such certification is a job requirement.

2.3.6 Fiscal Responsibility

Goal 6: Manage the sewer utility funds and resources in a professional manner in compliance with applicable laws, regulations, and City financial policies, which requires ongoing monitoring of revenues and expenses in order to make prudent business decisions and report to City officials, as needed, regarding the status of utility operations.

- Policy 6.1 - Implement an adequate system of internal financial controls and adopt a biennial budget.
- Policy 6.2 - Remain a self-supported enterprise fund; however, grants and other alternative financing may be sought and used.
- Policy 6.3 - Assess appropriate rates and system development charges (SDC) to fund the ongoing maintenance, operation, and capital expenditures of the Utility, in accordance with the Comprehensive Sewer Plan. Periodic cost of service studies shall be completed to reassess the monthly service and SDCs.
- Policy 6.4 - Maintain adequate reserves for operation and maintenance, capital improvement, and Sewer revenue bond obligations in order to ensure that the Utility can provide continuous, reliable service and meet its financial obligations under reasonably anticipated circumstances.
- Policy 6.5 - Establish Sewer rates at a level sufficient to pay expenses and maintain adequate reserves.
- Policy 6.6 - Structure Sewer rates to allocate costs fairly and equitably among different customer classes.
- Policy 6.7 - Charge uniform Sewer rates for all Utility customers of the same class throughout the SSSA.
- Policy 6.8 - Consider providing rate assistance programs for qualified specific low-income seniors or totally or permanently disabled citizens.
- Policy 6.9 - Establish fees and charges to recover utility costs related to development.
- Policy 6.10 - Require new customers to substantially pay for the costs of improvements designed to accommodate growth, while the costs to operate, maintain, repair, replace, and improve the existing system capacity are paid by all sewer system customers.
- Policy 6.11 - Sustain funding for the CIP at a level sufficient to maintain system integrity.
- Policy 6.12 - Reinvest in Utility capital assets in order to ensure that the integrity of the existing Utility plant and equipment is maintained. This reinvestment is generally referred to as repair and replacement (R&R).
- Policy 6.13 - In addition to projects designed to maintain and replace existing facilities, seek to invest annually in system improvements designed specifically to upgrade the system in order to meet State regulations and the City's standards and criteria. These improvements may include upgrades to the sanitary sewer SCADA and data management systems, and upgrades to increase safety for both City personnel and the public, bring noncompliant infrastructure into compliance, and reduce environmental impacts.

- Policy 6.14 - Consider replacing or upsizing sewer facilities in the right-of-way whenever a street is to be substantially reconstructed or other significant utility work is to be completed, especially when sewer improvements are specifically identified in the Comprehensive Sewer Plan. In addition, consider street and other utility improvement needs when replacing or upsizing sewer facilities.
- Policy 6.15 - Consider installing public sewer extensions by the formation of Local Improvement Districts whenever a street is to be substantially reconstructed or a new street built where public sewer does not currently exist.
- Policy 6.16 - Consider investing in sewer extensions and the construction of pump stations based on the following considerations:
  - Cost of the infrastructure.
  - Size of the service area as measured by potential customers or customer equivalents.
  - Potential coordination with other City Capital projects that will decrease the overall cost of the proposed extension.
  - The ability to recoup costs from future customers whose connection was facilitated by the investment.

CHAPTER 3 PLANNING CONSIDERATIONS

This chapter includes information related to the projected future development of the City and the resulting needs for capacity improvements to the wastewater collection and conveyance system. Recent needs for changes to land use planning efforts affecting the City SSSA are also discussed.

3.1 Planning Area

The Comprehensive Sewer Plan Study Area is shown in Figure 1.2. It generally encompasses the area within the incorporated city limits of Auburn with the following exceptions (Shown on Figure 1.2):

- Some areas on the West Hill are within the City but are served by the LWSD.
- Some areas of Lea Hill are within the City but are served by the SCWSD or the City of Kent.
- The City currently conveys flows from areas within Bonney Lake's service area that are adjacent to the southernmost boundary of Auburn's service area and for which Bonney Lake does not yet have adequate infrastructure.
- The City currently serves a small area of the City of Pacific just north of the White River.
- The City currently serves an area of Unincorporated King County just west of the city limits.
- There are several areas within the City which are islands of unincorporated King or Pierce County. These areas are within the City's urban growth area and sewer service area.

3.2 Basis of Planning

An evaluation was made of the existing system conditions and for the projected flow conditions in 2044.

Hydraulic modeling for the existing flow conditions was developed using measured rainfall, flow data collected from October 2020 to May 2022 and the physical characteristics of the existing collection and conveyance system.

Future flow conditions were projected using estimated growth developed during the current preparation of the City's Comprehensive Plan. Housing Unit and Employment growth projections/goals were distributed to areas of expected growth throughout the City based on the availability, or anticipated availability of necessary infrastructure such as transportation and utilities, as well as the concentration of developable land. The anticipated additional flow from that growth was then incorporated into the hydraulic model to identify areas where increased capacity will be required as that growth occurs.

3.3 Land Use

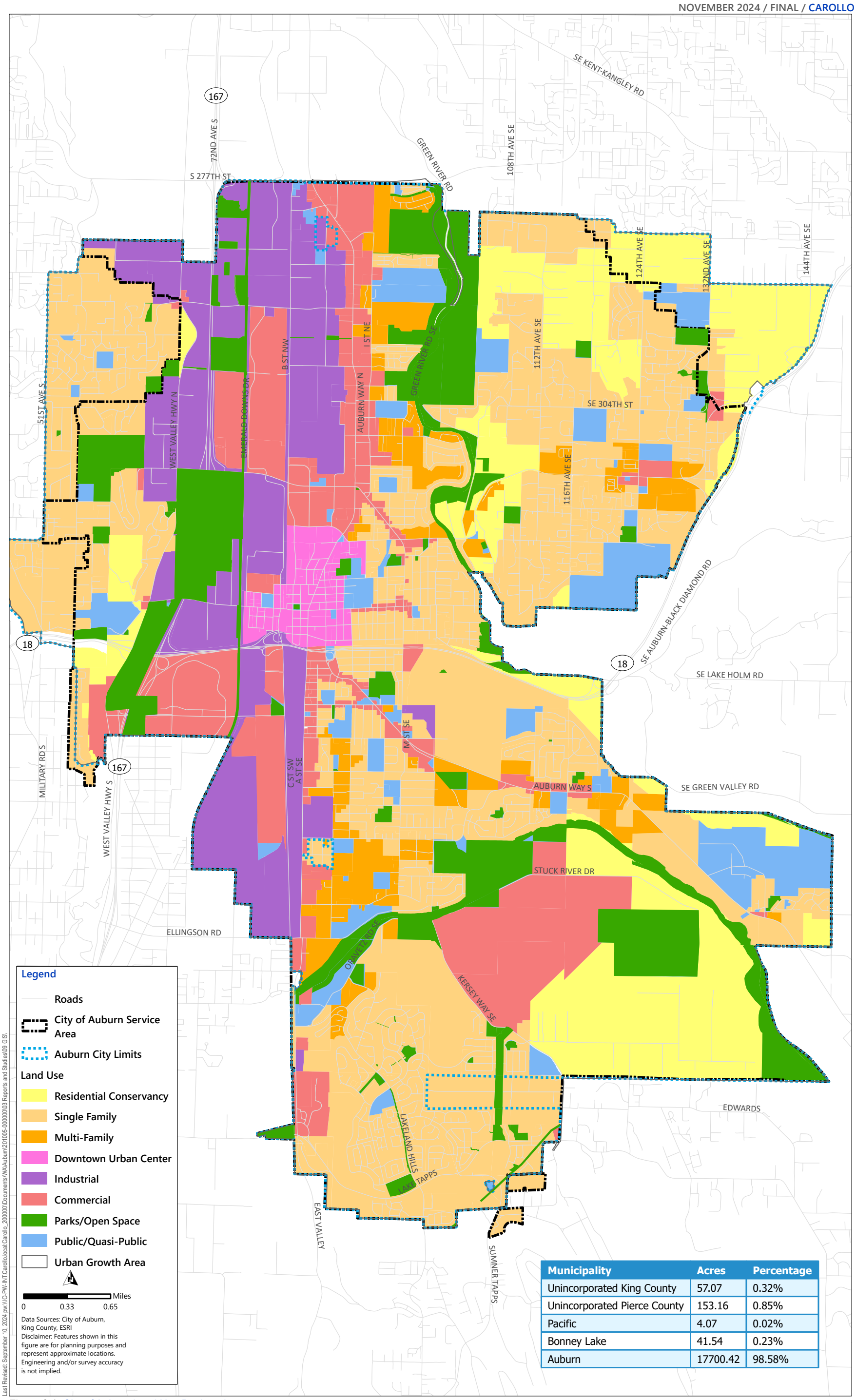
Land use designations are used to encourage growth in areas where the City's infrastructure, including the sanitary sewer system, is or will be adequate to serve that additional growth. The City currently uses 13 land use designations within four general categories.

Table 3.1 Land Use Categories

General Categories	Designations
Residential	▪ Residential Conservancy ▪ Single Family Residential ▪ Moderate Density Residential ▪ Multiple Family
Commercial	▪ Downtown Urban Center ▪ Neighborhood Commercial ▪ Light Commercial ▪ Heavy Commercial ▪ Mixed Use
Industrial	▪ Light Industrial ▪ Heavy Industrial
Public and Institutional	▪ Open Space ▪ Public/Quasi Public

These designations, along with their accompanying zoning, aim to achieve the growth patterns included in the projections. Any changes to land-use designations during the current planning cycle are expected to support the projected growth, and therefore, expected to maintain the projected wastewater flows.

The current land use designations for the City are shown in Figure 3.1



Municipality	Acres	Percentage
Unincorporated King County	57.07	0.32%
Unincorporated Pierce County	153.16	0.85%
Pacific	4.07	0.02%
Bonney Lake	41.54	0.23%
Auburn	17700.42	98.58%

Figure 3.1 City of Auburn Land Use Designations

3.3.1 Description of Land Use Designations

Below is a description of the characteristics and goals of each of the land use designations. Each of the categories and designations are accompanied by specific policies and associated zoning designed to achieve the described character.

3.3.1.1 Residential

- Residential Conservancy - This designation should consist primarily of low-density residential uses (one dwelling unit per four acres is allowed) and accessory agricultural uses in areas featuring environmental constraints or requiring special protection such as the Coal Creek Springs watershed area, low-lying areas along the Green River, and areas that are isolated from urban services. This designation will serve to both protect environmental features and to hold areas for higher density development until public facilities become available.
- Single Family Residential - This designation is the predominant land-use category in the City. Maintaining and creating a diverse arrangement of interconnected subdivisions, neighborhoods, and communities that have a mix of densities and housing types; linkages with other residential areas and commercial hubs through nonmotorized modes, such as pedestrian and bicycling, and vehicular modes will be encouraged.
- Moderate Density Residential - These designated areas are planned to accommodate a variety of residential dwelling types. Varying densities may be permitted to provide a transition between single-family residential and other more intensive uses or activities (such as arterial streets) based on adjacent density, intensity, and/or character. Appropriate densities in these areas generally range from 7 to 20 dwelling units per acre. Dwelling types generally range from single-family dwelling to multiple-family dwellings, with larger structures allowed (within the density range) where offsetting community benefits can be identified.
- Multiple Family - This category shall be applied to those areas that are either now developed or are reserved for multiple family dwellings. Densities may range from 20 to 24 units per acre. These communities are served by transit, have nonmotorized connections to surrounding amenities and services, or have access to on-site amenities.

3.3.1.2 Commercial

- Downtown Urban Center - This category should be applied exclusively to downtown Auburn. The area should be developed in consistently with and conducive to pedestrian-oriented activities. The ambiance of the downtown area should encourage leisure shopping, provide services to local residents and area employees, and provide amenities that attract regional visitors and shoppers.
- Neighborhood Commercial - Low-intensity, small-scale commercial services that meet the daily needs of and complement the quality of the residential neighborhoods they serve. Commercial uses need to be carefully located, (if located within single-family residential neighborhoods), or should be buffered from single-family residential areas. These areas are characterized by lower traffic, fewer operating hours, smaller-scale buildings, and less signage than light commercial areas.

- Light Commercial - This category represents the prime commercial designation for small- to moderate-scale commercial activities. These commercial areas should be developed in a manner consistent with and attractive to pedestrian-oriented activities. Such areas should encourage walkability, leisure shopping, engaging public space, and should provide other amenities conducive to attracting shoppers.
- Heavy Commercial - This category is intended to accommodate uses that would also facilitate a wide range of heavier commercial uses involving extensive storage or vehicular movement.

3.3.1.3 Industrial

- Light Industrial - This category is intended to accommodate a wide range of industrial and commercial uses. This designation is intended to provide an attractive location for manufacturing, processing and assembling land use activities that contribute to quality surroundings. A wide variety of appropriate commercial uses in this designation benefit from the location, access, physical configuration, and building types of these properties. It is distinguished from heavier industrial uses by means of performance criteria. All significant activities shall take place inside buildings, and the processing or storage of hazardous materials shall be strictly controlled and permitted only as an incidental part of another use.
- Heavy Industrial - This designation allows the full range of industrial uses, as well as certain heavy commercial uses that serve the needs of workers in light industries are also appropriate.

3.3.1.4 Public and Institutional

- Open Space - This category shall be applied to areas that are owned by a public entity and maintained in a largely undeveloped state. It includes parks, watersheds, shoreline areas, significant wildlife habitats, storm drainage ponds, utility corridors with public access, and areas with significant development restrictions.
- Public/Quasi Public - This category covers those areas that are reserved for public or quasi-public uses. It is intended to include those areas of a significant size, and not those smaller public uses that are consistent with and may be included in another designation. These public uses include public schools, developed parks, and uses of quasi-public character such as large churches and private schools. Public uses of an industrial character are included in the industrial designation, and small-scale religious institutions of a residential character are included in the residential designation. Streets, utilities, and other separate uses are not intended to be mapped separately as Public/Quasi-Public.

3.4 Sewer System Flow Components

The City has separate sewer and stormwater collection systems, where only wastewater is conveyed in the sanitary sewer system. However, some groundwater and stormwater inevitably enter the sanitary sewer through defects in pipes and manholes (MH) and illicit storm drain connections. Therefore, sewer flows may vary substantially between dry and wet weather.

The different flow components are described in the section below.

3.4.1 Dry Weather Flow Components

There are two components of dry weather flow:

- Base wastewater flow (BWF).
- Dry weather groundwater infiltration (GWI).

3.4.1.1 Base Wastewater Flow

The BWF is the sanitary flow generated by routine water usage of the City's residential, commercial, and mixed-use customers. The collection system's primary function is conveying this flow. The flow has a diurnal pattern that varies by customer. Typically, a residential diurnal pattern has two peaks with the more pronounced peak following the wake-up hours of the day, and a less pronounced peak occurring in the evening. Commercial and mixed-use patterns, though they vary depending on the type of use, typically have more consistent higher flow patterns during business hours, and lower flows at night. Furthermore, a weekend diurnal flow pattern may vary from the diurnal flow experienced during a typical weekday.

3.4.1.2 Groundwater Infiltration

Dry weather GWI enters the sewer system through defects such as cracks, misaligned joints, MH defects, and broken pipelines. Dry weather GWI only occurs when the relative depth of the groundwater table is higher than the depth of the pipeline and where there is a defect; therefore, it varies throughout the system. Dry weather GWI (or base infiltration) cannot easily be separated from BWF by flow measurement techniques. Therefore, dry weather GWI is typically grouped with BWF.

3.4.1.3 Average Dry Weather Flow

Average dry weather flow (ADWF) is the average flow that occurs on a daily basis during the dry weather season and is representative of routine wastewater discharges into the collection system from customers as well as baseline groundwater infiltration.

3.4.2 Wet Weather Flow Components

Wet weather flow (WWF) includes two components:

- Inflow and Infiltration (I/I).
- Wet weather GWI.

3.4.2.1 Inflow and Infiltration

The stormwater I/I response in the sewer system to rainfall is seen immediately (inflow) or within hours after the storm (infiltration).

Inflow is stormwater that enters the sewer system via a direct connection to the system, such as roof drain and downspout connections, leaky MH covers, and illicit storm drain cross-connections. Infiltration is stormwater that enters the sewer system by percolating through the soil and then through defects in pipelines, MHs, and joints. An adverse effect of I/I entering the sewer system is an increase both the flow

volume and peak flows so that the sewer system could be operating at or above its capacity. If too much I/I enters the sewer system, sanitary sewer overflows (SSO) could occur.

3.4.2.2 Wet Weather Groundwater Infiltration

Wet weather GWI is not specific to a single rainfall event, but rather to the effects on the sewer system over the entire wet weather season. The depth of the groundwater table rising above the pipe invert elevation causes GWI. Sewer pipes within close proximity to a body of water can be greatly influenced by groundwater effects.

Wet weather GWI is associated with extraneous water entering the sewer system through defects in pipes and MHs while the ground is saturated during the wet weather season. Wet weather GWI may occur throughout the year, although rates are typically higher in the late winter and early spring in the Pacific Northwest.

3.4.2.3 Peak Wet Weather Flow

Peak wet weather flow (PWWF) is the highest observed hourly flow that occurs following the selected design storm event. PWWF in a sewer system can be more than ten times the base flow, causing utilities to construct high-capacity infrastructure to convey and treat these flows. For Auburn most of the basins have a peak factor below 5 for the 20-year design storm, with one small basin over 10 as noted in Chapter 5.

3.5 Average Dry Weather Flow

Developing an accurate estimate of the future quantity of wastewater generated at build-out of the collection system is an important step in maintaining and sizing sewer system facilities, for both existing conditions and future scenarios.

Base flow can be estimated for a wastewater system by comparing dry weather flow and wet weather flow at the various flow monitoring locations. To estimate ADWF for more specific areas, such as individual wastewater basins, dry weather flows are typically estimated based on the area contributing to flows and flow coefficients developed for each land use type. This method is developed based on the assumption that areas with similar land uses, such as low-density residential parcels, produce equivalent quantities of wastewater flow. System-wide flows can be compared to measured flows at flow monitor locations. This method of estimating base flows is an industry standard for planning and provides sufficiently accurate data for planning purposes.

3.5.1 Average Dry Weather Flow Development

Existing ADWFs for each basin were estimated using data from the Flow Monitoring Program for each of the flow monitoring basins. ADWF was developed using the driest days from the flow monitoring period based on the following set of minimum criteria:

- Less than 0.1 inch of rain the previous day.
- Less than 0.4 inch of rain in the previous three days.
- Less than 1.0 inch of rain in the previous five days.

- Selected days must exhibit average-day flows within 85 percent to 115 percent of the average-day flows of remaining dry days.
- In addition, those dry days that exhibited unusual flow patterns were not used to generate net dry day flow values for a basin.

Characteristic dry weather 24-hour diurnal flow patterns for each site were developed based on the hourly data. The hourly flow data were also used to calibrate the hydraulic model for the observed dry weather flows during the flow monitoring period. Hourly patterns for weekday and weekend flows vary and were separated to better understand dry weather flow. Additional information on this process is outlined in Appendix D.

3.6 Wet Weather Flow

PWWF in a wastewater collection system are caused by rainfall dependent I/I. Peak hour flows can result in flows more than ten times the base flow, causing utilities to construct high-capacity infrastructure to convey and treat these extraneous flows.

Existing and projected PWWFs are predicted using the hydraulic model and design storm used for this Plan. This analysis uses a 20-year recurrence interval design storm, illustrated in Chapter 5 - Wastewater System Analysis. This storm was identified in the 2012 King County I/I Study and corresponds to the recurrence interval within historical King County rainfall. To represent typical Pacific Northwest winter rainfall conditions, antecedent rainfall was added from historical data. Additionally, climate change risk was evaluated by modifying the design storm to represent possible changes to local rainfall based on the latest available research. Further details on the development of the design storm and climate evaluation can be found in Chapter 5 - Wastewater System Analysis.

CHAPTER 4 DESCRIPTION OF EXISTING SYSTEM

This chapter describes the existing wastewater collection and conveyance system and SSSA. The City provides wastewater collection services to city residences and businesses through multiple facilities including gravity sewers, pump stations, and force mains. The wastewater flow is conveyed to the King County Regional Wastewater System for treatment and disposal. The City's system consists of 17 sewer pump stations, approximately 5,500 MHs, and approximately 210 miles of sewers and force mains. The City's system is intended to collect and convey only sanitary flow, but the flow also includes rainfall-derived I/I. There are no known SSO in the system.

4.1 Overview

For purposes of discussion, the City's wastewater collection system is divided geographically into five major sewer basins. The descriptions of the five major sewer basins (Valley, West Hill, Lea Hill, Auburn Way South, and South Hill) are presented below and shown on Figure 4.1.

4.1.1 Valley Sewer Basin

The Valley Sewer Basin is located on the valley floor and contains the oldest portions of the City's sewer collection system. Four primary King County trunk sewer lines (Stuck River Trunk Sewer, M Street Trunk Sewer, Auburn Interceptor Sewer, and Auburn West Interceptor Sewer) convey flow from south to north along this sewer basin, providing the backbone for service to the City. The Valley Sewer Basin receives flows from the other four sewer basins and conveys these flows to the King County sewer trunk lines. The topography of the valley is very flat with a minor incline, sloping down from the south end of Auburn (elevation 109 feet) to the north end of Auburn (elevation 53 feet). Seven pump stations are located within the Valley Sewer Basin to serve areas which are unable to reach the King County trunk lines by gravity. The City provides service to two small areas of unincorporated King County, located within the sewer basin. The Valley Sewer Basin is bounded by the Lea Hill and Auburn Way South sewer basins to the east, the South Hill Sewer Basin and the Cities of Algona and Pacific to the south, the West Hill Sewer Basin to the west, and the city of Kent to the north.

4.1.2 West Hill Sewer Basin

The West Hill Sewer Basin includes areas located on the West Hill above the valley floor as well as areas of the valley adjacent to the hill. Flows from the West Hill Basin are conveyed to two King County trunk lines—the Auburn West Valley Interceptor and the Auburn Interceptor. Two pump stations serve portions of this basin. The Peasley Ridge Pump Station serves a small area on the westernmost edge of the basin. The Hudson Pump Station serves a flat area on the valley floor in the north end of the basin. The West Hill Sewer Basin is bounded by the Valley Sewer Basin to the east, city of Algona to the south, LWSD to the west, and City of Kent to the north.

The western boundary of the West Hill Sewer Basin, which is also the western boundary of the service area, was established by interlocal agreements with LWSD in 2004, 2005, and 2018 (see Appendix A).

4.1.3 Lea Hill Sewer Basin

The Lea Hill Sewer Basin is the portion of the city located to the east of the Green River. Sewer flows exit this basin into the Valley Sewer Basin by river crossings at the 8th Street Bridge or the Green River Siphon (see Section 4.2.4). Four pump stations serve the Lea Hill Sewer basin. The Rainier Ridge, Verdana, and Promenade Pump Stations are located on the east portion of the Lea Hill Sewer basin and convey sewage to high points on the hill where it can flow via gravity to the river crossings. The Riverside Pump Station serves low areas just east of the Green River and lifts sewage to the gravity sewer main that conveys flows across the 8th Street Bridge. There is a significant unsewered area in the north portion of the Lea Hill Sewer Basin. The area is substantially developed with single-family homes on lots between ¼-acre and 1 acre that use existing on-site septic systems. The northeast area of the sewer basin is served by SCWSD and the City of Kent (see Figure 4.1).

The basin is bounded on the south and west by the Green River. The north and east boundaries of the Lea Hill Sewer Basin were established by a 2001 interlocal agreement with the City of Kent and by a 2006 interlocal agreement with the SCWSD (see Appendix A).

4.1.4 Auburn Way South Sewer Basin

The Auburn Way South Sewer Basin is located east of the Valley Sewer Basin along Auburn Way South on the Enumclaw Plateau. It is geographically bounded by State Route 18 to the north and the White River to the south. The southeast portion of the Auburn Way South Sewer Basin borders the MIT reservation sewer service area. The City and the Muckleshoot Utility District jointly own a major trunk line that discharges to King County's Stuck River Trunk Line and/or the M Street Trunk Line at the northwest edge of the sewer basin.

4.1.5 South Hill Sewer Basin

The South Hill Sewer Basin is bounded by the White River to the north and east, City of Pacific to the west, and City of Sumner and Pierce County to the south. Portions of the Pierce County area lie with the City of Bonney Lake's Sewer Service Area. The western half of the South Hill Sewer Basin has been developed as a residential area. The eastern half (east of Kersey Way) of the sewer basin is currently developed as a low-density residential area and is unsewered. There is a large 300–400-acre gravel pit that is intended to be developed as a residential area within the next several years. Its development will require the installation of a sewer pump station to convey the flow from at least a portion of that project. Three pump stations (Area 19, Terrace View, and North Tapps) serve the southern extent of the sewer basin. All of the flow from the South Hill Sewer Basin is conveyed to King County's Lakeland Hills Pump Station, then pumped to King County's Lakeland Hills Trunk sewer located in the Valley Sewer Basin.

4.2 Sanitary Sewer Facilities

The following sections provide information regarding the City's wastewater facilities. Locations of the pumping facilities, river crossings, King County trunk lines, and other key system elements are shown in Figure 4.2. Ownership of interceptor and collection system pipelines is indicated by line color. Figure 4.2 also shows the City's potable water pumps, wells, and reservoirs. The City draws its potable water from deep aquifer wells located throughout its geographical boundaries. While no sewage treatment facilities are located within the City, portions of the conveyance system are located in the vicinity of some of those wells. Most of the sewer lines are located more than 100 feet from the wellheads as stipulated for new sewer works by Ecology's CSWD (G2-1.5.3), two well sites are close to 100 feet from existing sanitary sewers in the central part of the system. As part of the sewer inspection activities outlined the Chapter 7 CIP, the distance between wellheads and sewers will be definitively measured at these sites. If sanitary sewers are within 100 feet from the wellheads, based on condition and other projects in the vicinity, the sewer distance can be addressed as part of the Sanitary Sewer Repair and Replacement/System Improvements project summarized in Chapter 7, following the outlined priority methodology.

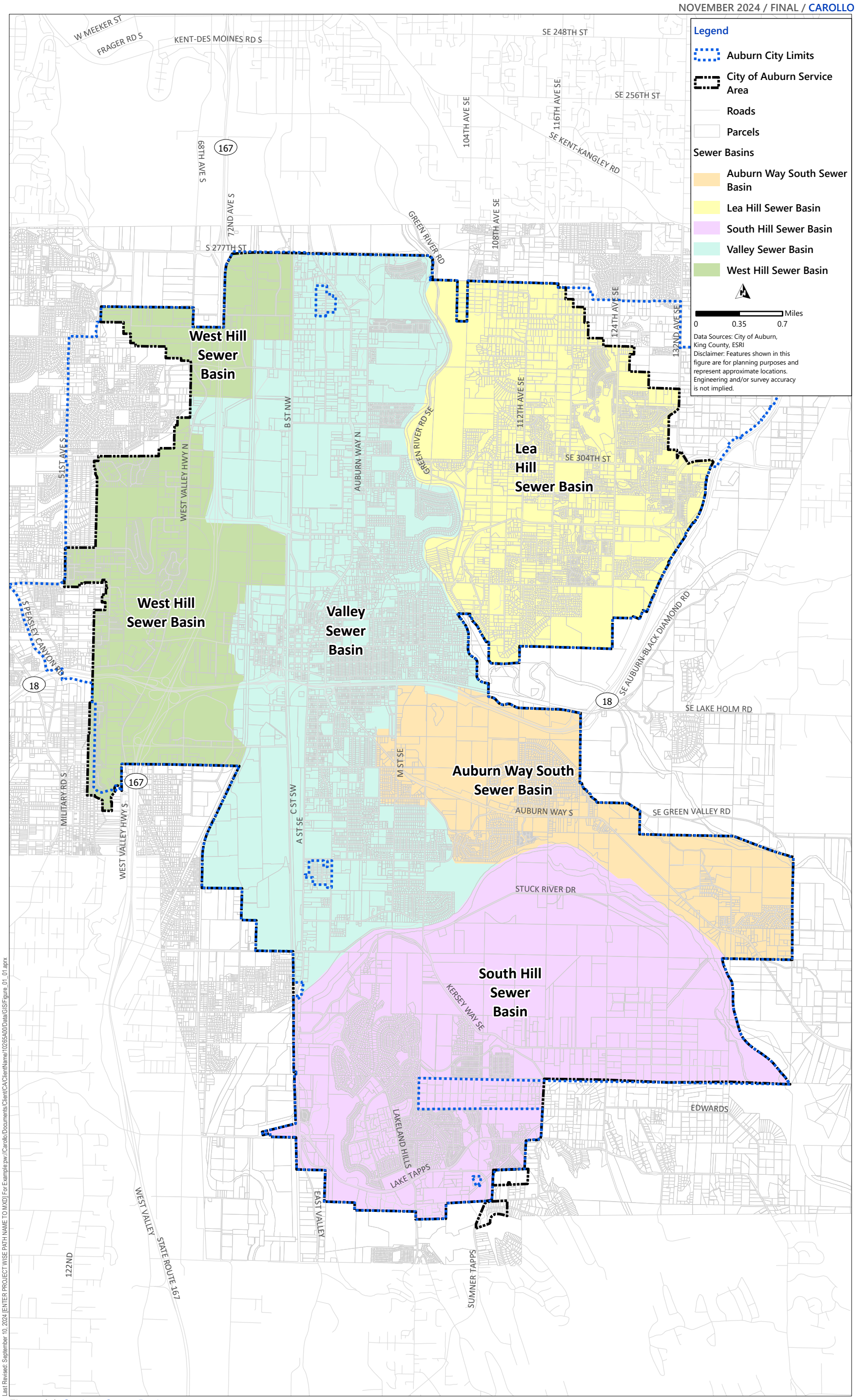


Figure 4.1 Sanitary Sewer Basins
CITY OF AUBURN
2024 COMPREHENSIVE SEWER PLAN

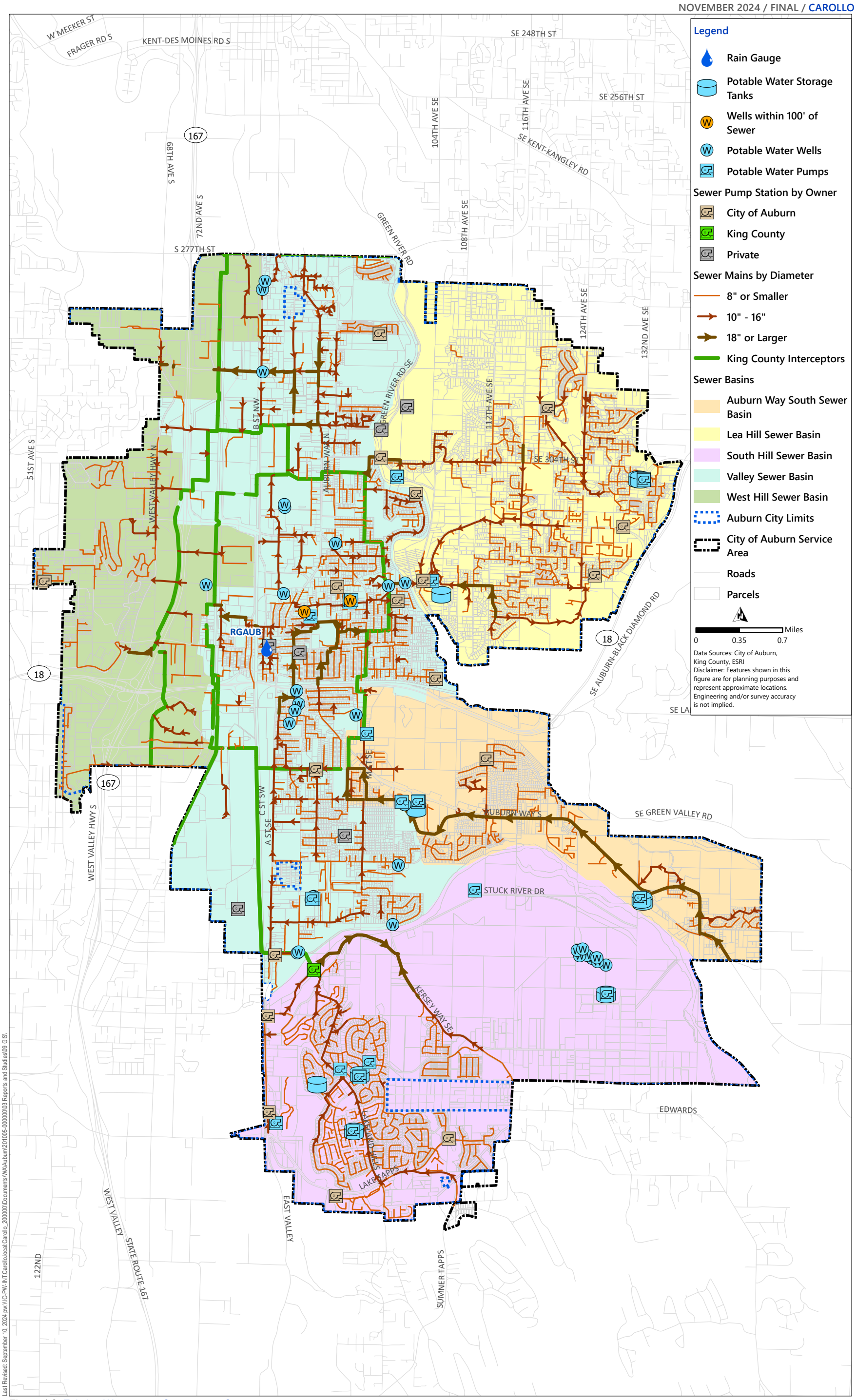


Figure 4.2 Existing Wastewater Conveyance System
CITY OF AUBURN
2024 COMPREHENSIVE SEWER PLAN

4.2.1 Critical Infrastructure

For planning purposes, the City considers all sewer pump stations, force mains, river crossings, and areas downstream of these facilities to be critical infrastructure. The critical infrastructure designation also applies to major trunk lines (pipes greater than or equal to 12 inches in diameter). Also, all gravity sewer lines serving the hospital, city hall, City maintenance facility, Justice Center, and fire stations are considered critical. These critical assets are shown in Figure 4.3.

4.2.2 Pump Stations

Since preparation of the *2016 Comprehensive Sewer Plan*, the City has added two new sewer pump stations associated with new developments, the Hudson, and Promenade Pump Stations.

The City currently has 17 pump stations within its SSSA. The pump stations are listed in Table 4.1 along with their location and year of construction or most recent replacement. More detailed information regarding the pump stations is provided in Appendix E.

Table 4.1 City of Auburn Sewer Pump Station Inventory

Pump Station	Year Constructed/ Replaced	Cross Streets	Approximate Address
South Hill Sewer Basin			
Area 19	2006	Lake Tapps Pkwy. E and west of 72nd St. SE	800 71st Street SE
North Tapps	2007	Lake Tapps Pkwy. SE and west of 176th Ave. E	2610 Lake Tapps Pkwy. SE
Terrace View	2007	East Valley Hwy. E and north of Terrace View Dr. SE	6005 East Valley Highway
Valley Sewer Basin			
Auburn 40	2010	42nd St NE and O Pl. NE	4159 O Pl. NE
Ellingson	2011	41st St. SE, East of A St. SE	40 41st St. SE
F Street	1980	F St. SE and 17th St. SE	1700 F St. SE
Hudson	2020	S 287th St and West Valley Hwy	6408 S 287th St.
R Street	1977	R St. NE and 6th St. NE	600 R St. NE
Valley Meadows	1992	4th St. SE and V St. SE	2022 4th St. SE
8th Street	1974	J St. NE and 8th St. NE	900 8th St. NE
22nd Street	1967	22nd St. SE and Riverview Dr.	1950 22nd St. NE
Auburn Way South Sewer Basin			
Dogwood	2010	Dogwood St. SE and 15th St. SE	1423 Dogwood St. SE
West Hill Sewer Basin			
Peasley Ridge	2001	S. 320th St. and 53rd Ave. S	5225 S 320th St.
Lea Hill Sewer Basin			
Promenade	2018	SE 312th St and 132nd Way SE	12900 SE 312th St.
Rainier Ridge	1980	125th Pl. SE and south of SE 318th Way	31809 125th Pl. SE
Riverside	1981	8th St. NE and 104th Ave. SE	31902 104th Ave. SE
Verdana	2011	118th Ave SE and SE 296th Pl.	11807 SE 296th Place (Kent)

4.2.3 Gravity and Force Main Collection System

The City sewer collection system includes approximately 205 miles of gravity and 5 miles of force main pipe. The collection system is primarily composed of polyvinyl chloride pipe with an 8-inch diameter. Older areas of the collection system consist of concrete or clay pipe, which the City has been replacing with other material when repairs are required or anticipated. The City is continually updating its digital geographic and record-keeping systems to include pipeline information such as material, diameter, installation date, and TV reports. Figure 4.4 provides a visual representation (by overall system percentage) of pipeline characteristics, including unknown and/or unrecorded data. The largest current data gap is the installation date of collection system facilities. The recently formed Public Works GIS group has begun a more detailed inventory and data collection effort that is compiling data from a variety of sources to increase the reliability and usefulness of the system data. As part of the City's asset management efforts, City maintenance staff will verify collection system information during routine inspections.

Additional conveyance facilities, primarily owned by King County, are also located within the Auburn SSSA. King County conveyance facilities are discussed in Section 4.3.

4.2.4 Side Sewer Laterals

Generally, each building has a separate side sewer lateral connecting the building sewer to the public main. The Utility is responsible for the maintenance and repair of the portion of side sewer laterals within the right-of-way.

4.2.5 River Crossings

The City of Auburn collection system contains two crossings of the Green River. The crossings are located at the 8th Street NE bridge and near 26th Street NE, both are shown in Figure 4.2. Detailed descriptions of each river crossing are provided below.

4.2.5.1 Green River Crossing (via 8th Street NE)

The Green River crossing was constructed in 1965. The crossing consisted of a cast-iron pipe mounted on the 8th Street NE bridge. When the bridge was replaced in 1971, that pipe was replaced with a combination of ductile iron pipe and "reinforced plastic mortar pipe cast in concrete." Because the midpoint of the bridge is at a higher elevation than the bank on either side, the pipe does not have a positive downhill slope across the bridge and must rely on upstream pressure developed in the line as it comes down Lea Hill to force the flow across the bridge. The pipe continuing up Lea Hill is approximately 900 linear feet and is constructed of 14-inch-diameter cast-iron pressure pipe. At the bottom of the hill, just upstream of the bridge, a valve chamber once housed a mechanically operated control valve. The valve was originally designed to remain closed until pressure, as caused by the upstream pipe filling, opened the valve, and released the flow across the bridge. Due to significant development on the east side of the river, flow within this sewer segment became sufficiently high to maintain continuous scouring flow along the flatter portion of the pipeline, so the valve has been removed.

4.2.5.2 Green River Crossing (via Inverted Siphon at 26th Street NE)

The inverted siphon across the Green River near 26th Street NE was constructed in 1986 and includes parallel 8- and 12-inch-diameter siphon pipelines. The 8-inch-diameter siphon is typically in use. When increased flows occur, wastewater will be redirected to the 12-inch-diameter siphon. If needed, both siphons are capable of operating together. The siphon facility includes a flushing manhole, located in Isaac Evans Park.

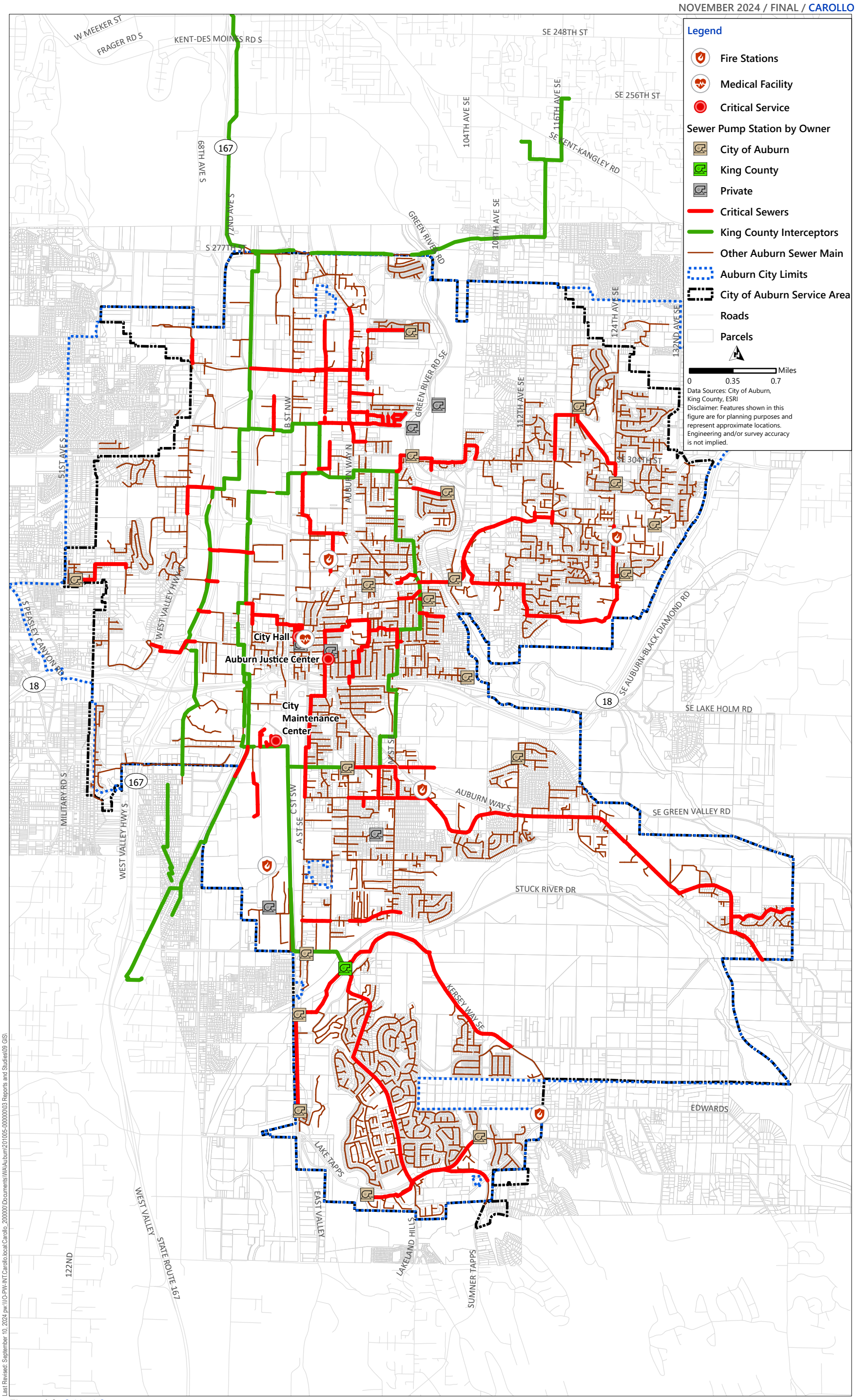


Figure 4.3 Critical Sewers
CITY OF AUBURN
2024 COMPREHENSIVE SEWER PLAN

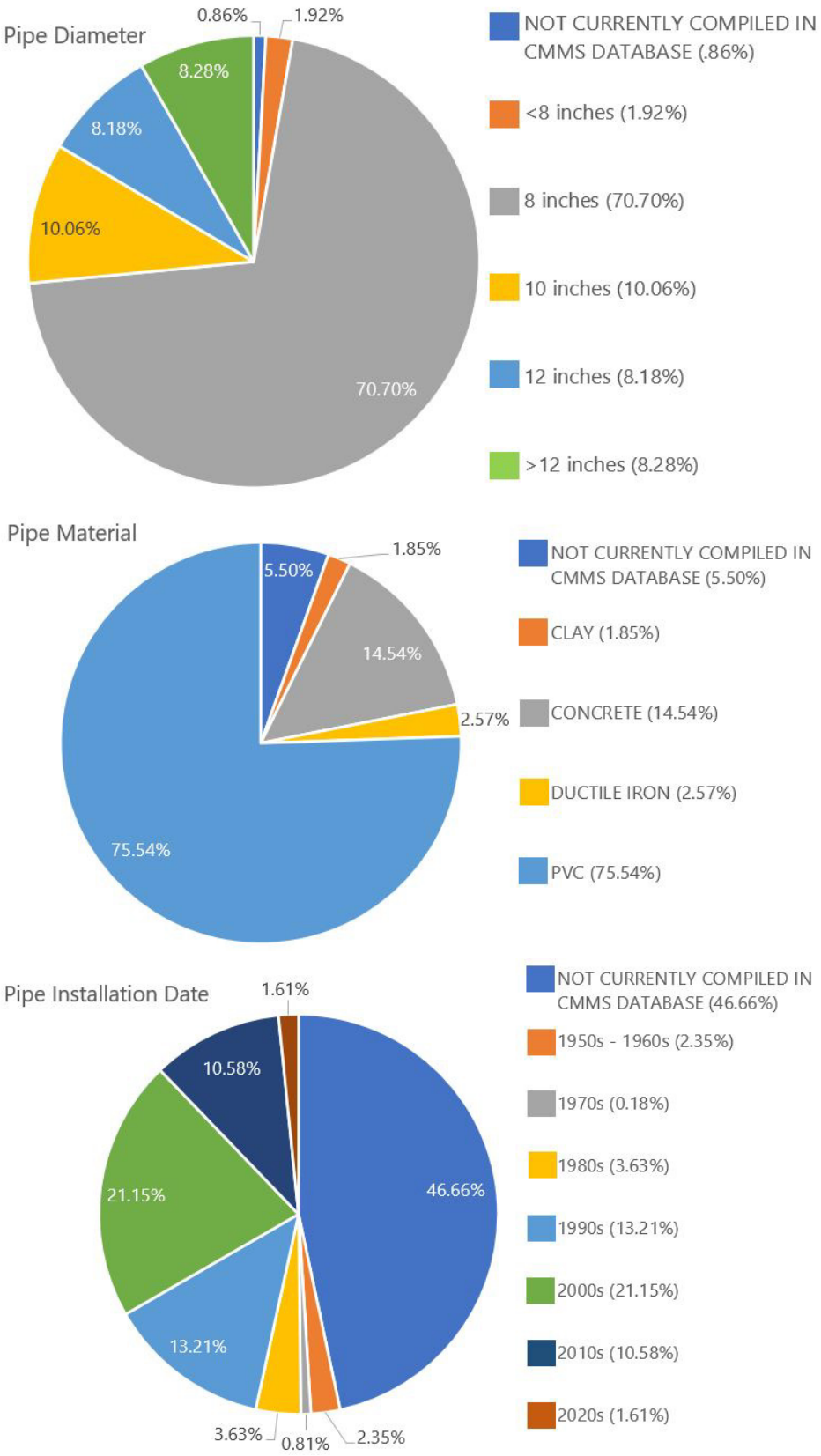


Figure 4.4 City of Auburn Collection System Summary Statistics

4.3 King County Conveyance

The King County wastewater conveyance facilities serving the City include the Auburn Interceptor, Auburn West Valley Interceptor, Auburn West Interceptor, M Street Trunk sewer, the newly constructed Stuck River Trunk sewer, the Lakeland Hills Trunk sewer, and the Lakeland Hills Pump Station. As shown in Figure 4.2, the King County facilities convey wastewater from the south to the north, collecting flow from the Auburn SSSA. The Auburn West Valley Interceptor begins in Algona and flows through the West Hills sewer basin. The Lakeland Hills Trunk sewer and Auburn West Interceptor carry flow from the Lakeland Hills Pump Station north. The M Street Trunk sewer lies mainly on the eastern side of the Valley basin. The Stuck River Trunk sewer extends from the south end of the M Street Trunk sewer in a westerly direction, where it intersects the Lakeland Hills Trunk sewer. All flows are conveyed to the King County South Treatment Plant in Renton, Washington.

King County has initiated a project to replace the Lakeland Hills Pump Station by 2031. The replacement station will serve the same basin as the existing station but will include elements to increase its reliability and maintainability. The capacity of the station will be designed to reflect future growth within its basin.

4.4 Infiltration and Inflow

As part of the analysis of the 2016 Plan, the City used King County Decennial Flow Monitoring (from 2009-2011) and sewer pump station data to identify areas within the service area that may be experiencing high levels of I/I. During this planning period, City staff hired a contractor to install temporary flow meters at specific locations within the potential high I/I areas to locate specific areas of high I/I more precisely. This monitoring corresponded with King County's most recent decennial flow monitoring effort (2020-2022), so that the data from both projects could be shared. The results and conclusions from this effort are included in Chapter 5.

King County, along with the Metropolitan Water Pollution Abatement Advisory Committee (MWPAAC), which is made up of component agencies (Cities and Districts who operate sewer collection systems convey the wastewater to King County for treatment), have worked together since 2000 to measure I/I and have piloted several programs to identify and reduce I/I. Actions included flow monitoring, smoke testing, CCTV inspection, and construction projects designed to reduce I/I to the extent that the required capacity of conveyance and storage facilities could be reduced. While the pilot projects were somewhat successful in reducing I/I, it was not clear that costs of the projects were less than the costs of expanding downstream capacity to convey such flows.

From 2017 until now, King County and MWPAAC have explored concepts to reduce I/I programmatically, focusing on private side sewers and the reduction of I/I over the long term. These efforts included developing or enhancing standards for side sewer construction, encouraging proactive maintenance for side sewers, and identifying and mitigating sources on private property. The strategy with the most potential impact is a proposal to require inspection and repair of side sewers at the point-of-sale of a property. Since this proposal will likely require legislative action and input from a large field of stakeholders, pursuit of that strategy may be included in the upcoming Clean Water Plan planning effort.

4.5 Odor Control and Corrosion

Sewer Policy 5.11 commits the City to monitor frequent odor complaints and to act when three per month are documented. City staff investigate all odor complaints to determine their source, persistence, and potential source if it can be identified. Strategies for mitigating odor include sealing sewer manhole lids, adding bioxide to pump station wet wells to minimize the generation of hydrogen sulfide gas, and filtering wet well ventilation at pump stations. These strategies have been effective, and the City currently has no sites where persistent odor has been detected or reported.

City staff assess corrosion in the system as part of manhole inspections, CCTV inspections of sewer mains, and pump station wet well maintenance activities. The City has not identified any persistent widespread problems with corrosion, but as specific incidents of corrosion are identified those observations are recorded in the City's CMMS. Strategies for managing corrosion include replacing or lining (using Cured-in-Place Pipe) sewer mains, replacing corroded manhole rings and covers, and coating concrete pump station wet wells.

4.6 Industrial Waste Discharges

As part of its conveyance service, the City accepts industrial waste from permitted industrial waste dischargers. King County staff manage the industrial waste program, including permitting, inspection, record-keeping, and enforcement. While that responsibility lies mainly with County staff, City staff help to proactively identify potential dischargers as part of the business license review process. Table 4.2 below identifies the current industrial waste dischargers within the City SSSA. For updated Industrial Waste Discharge Permit information, contact King County's Industrial Waste Program by phone (206.477.5300) or E-mail (Info.KCIW@kingcounty.gov).

Table 4.2 City of Auburn Industrial Waste Discharge Permits

Company name	Business type	Address	Permit type	Permitted Discharge (gpd)
ABAF - Imaginetics	Metal Finishing - Cfr 433	3410 A Street SE	Permit	21.000
Accurate Industries	Metal Finishing - Cfr 433	233 D Street NW	Zero Discharge (Categorical)	0
Aero Controls Inc. - 20th Street	Metal Finishing - Cfr 433	1610 20Th Street NW	Minor Discharge Authorization	100
American Powder Coating	Metal Fabrication	3802 B Street NW	Letter Of Authorization	250
Auburn Dairy Products Inc.	Food Processing-Dairy	702 W. Main Street	Permit	50.000
Auburn, City of - Decant Facility	Decant Station	1305 C Street SW	Major Discharge Authorization	2.000
Boeing Commercial Airplane - Auburn	Metal Finishing - Cfr 433	700 15Th Street SW	Permit	1.209.000
Costco Optical Lab No. 190 - Auburn	Manufacturing-Misc	1802 M Street NW	Major Discharge Authorization	24.500
Formula Corp. - Auburn	Soap And Detergent Mfg - Cfr 417	4432 C Street NE	Permit	16.000

Company name	Business type	Address	Permit type	Permitted Discharge (gpd)
Hexacomb Corp.	General Type	2820 B Street NW, Suite 111	Letter Of Authorization	705
Hospital Central Services Association Inc.	Laundry - Linen	1600 M Street W	Major Discharge Authorization	50,000
MechPro Inc.	Metal Finishing - Cfr 433	1320 26Th Street NW #4	Zero Discharge (Categorical)	0
Oldcastle Infrastructure	Cement/Readymix	2808 A Street SE	Major Discharge Authorization	7.000
Ply Gem Pacific Windows Corp.	Manufacturing-Misc	5001 D Street NW	Minor Discharge Authorization	19.000
Plymouth Poultry Vanguard	Food Processing	3416 B St NW	Letter Of Authorization	1.000
Safeway Inc. - Auburn Distribution Center	Vehicle Washing	3520 Pacific Avenue S.	Letter Of Authorization	1,750
Skills Inc. - Auburn Facility	Metal Finishing - Cfr 433	715 30Th Street NE	Permit	16,300
Thermaline Inc.	Metal Finishing - Cfr 433	1531 14Th St NW	Zero Discharge (Categorical)	0
Thyssenkrupp Aerospace, dba TMX Aerospace	General Type	5002 D Street NW, Suite 104	Major Discharge Authorization	10,000
Waste Management Inc. - South Sound	Container Washing	701 2Nd Street NW	Major Discharge Authorization	5,000
WCR Inc.	Metal Finishing - Cfr 433	3126 C Street Ne	Permit	21,000
Fleet Clean	Pressure Washing	104 49th Street NW	Major Discharge Authorization	1,000
New Type	Laboratory Wastewater	3205 C Street NE	Letter of Authorization	100
Auburn Mechanical	Manufacturing	22 42nd Street NW		19,000

King County Industrial Waste staff have indicated that the overall volume of industrial waste flows has generally been consistent and primarily concentrated during working hours during weekdays. While the City does not limit or prescribe the number or types of industrial businesses in the City, it is assumed that collectively, the amount and quality of future industrial wastewater flows from those businesses will be similar to existing flows.

City Engineering staff manage commercial restaurant dischargers in accordance with ACC Chapter 13.22. Maintenance activities related to commercial pretreatment facilities, specifically the City's FOG Reduction Program, are discussed in Chapter 6, Section 6.3.

4.7 Water Reclamation and Reuse

Reclaimed water is wastewater that has been treated to a level at which it can be used safely and effectively for beneficial, non-drinking water purposes. The City does not currently use reclaimed water because there are no nearby sources or transmission pipelines for reclaimed water. While immediate opportunities are not available, the City is in favor of the concept of water reuse, and as technology, economics, and/or the development of infrastructure makes such use feasible, the City would encourage its use. The City participates in the King County reclaimed water program, which completed a Reclaimed Water Comprehensive Plan in 2012, and includes a completed King County Water Reclamation Evaluation Checklist, a copy of which is included as Appendix G, as part of the Water System Plan (WSP).

This section summarizes the regulatory framework surrounding the generation and use of reclaimed water, potential reclaimed water sources and users, and City planning for near-term reclaimed water use within the City SSSA.

4.7.1 Regulatory Framework

The state has identified reclaimed water as an important water resource management strategy that offers benefits related to potable water supply, wastewater management, and environmental enhancement. State law supports the beneficial reuse of reclaimed water for consumptive applications (such as irrigation, commercial and industrial process use, etc.) and non-consumptive purposes (including groundwater recharge via surface percolation or direct injection, wetland enhancement, and stream flow augmentation).

DOH and Ecology have developed standards that guide the planning and development of reclaimed water projects and systems. These standards, summarized in the jointly published *Water Reclamation and Reuse Standards* (September 1997), describe the allowable beneficial uses of reclaimed water and the required levels of treatment appropriate for each use. The Standards establish four classes of reclaimed water; A, B, C, and D. Class A reclaimed water represents the highest level of treatment, referring to water that is oxidized, coagulated, filtered, and disinfected to certain standards. Of all levels of reclaimed water, Class A is acceptable for the widest range of uses. Additional clarification and guidance related to the design of reclaimed water facilities are provided in Ecology's Criteria for Sewage Works Design (Ecology, 2008).

Ecology prepared draft reclaimed water regulations (WAC 173-219) to further define and provide guidance for reclaimed water facilities and uses. The rule-making process began with legislation in 2006 that amended the Reclaimed Water Use Act, Revised Code of Washington (RCW) Chapter 90.46, and directed Ecology to coordinate with DOH, form a stakeholder Rule Advisory Committee, and adopt a comprehensive rule for reclaimed water use by December 2010. The overall goal was to develop a Reclaimed Water Program through rules, guidance, and statutes that runs smoothly and consistently while protecting public health and the environment. Several drafts of the proposed rule were made available for review by stakeholders, and significant comments were submitted, but the rule-making process was suspended by executive order before it could be completed. Ecology reactivated the rulemaking process in June 2014. The revised reclaimed water rule was incorporated into WAC 173-219 in 2018.

4.7.2 Potential Reclaimed Water Sources

This section identifies potential sources of reclaimed water in the vicinity of the City SSSA.

Receiving water from any of the existing treatment plants would involve the construction of long (7-15 mile) pipelines since none of them are located in or immediately adjacent to Auburn. Also, since reclaimed water cannot be mixed with potable water, all of the options listed below would also require the installation of a separate reclaimed water distribution system to convey that water directly to potential users.

4.7.2.1 King County

City of Auburn wastewater is treated at King County's South Treatment Plant, located in Renton, approximately 13 miles north of Auburn. Although South Plant does generate reclaimed water for onsite uses, nearby irrigation, and habitat restoration, there are no existing or planned transmission lines south to the City of Auburn. The status of current King County reclaimed water comprehensive planning is discussed in Section 4.6.3.

4.7.2.2 City of Sumner

The City of Sumner wastewater treatment plant is located approximately 8 miles south of the city of Auburn. Sumner does not currently produce reclaimed water for offsite uses, but the City will continue to monitor Sumner's plans for reclaimed water use to determine if transmission of reclaimed water from Sumner to the City is feasible and cost-effective for potential users within the City SSSA.

4.7.2.3 Lakehaven Water and Sewer District

LWSD owns and operates two wastewater treatment plants, the Lakota and Redondo facilities, located approximately seven miles to the west and northwest of the City. LWSD does not currently produce reclaimed water but has evaluated the feasibility of producing reclaimed water for landscape irrigation and groundwater recharge. Because the Redondo facility site is limited with respect to expansion area, reclaimed water improvements, if implemented, would likely occur at the Lakota facility. The City will continue to monitor LWSD planning efforts with respect to reclaimed water production and reuse.

4.7.2.4 City of Auburn

Although the City does not operate a centralized wastewater treatment plant, a smaller, satellite reclaimed water production facility could feasibly be installed at one of the City's pump stations. A satellite facility could be used to capture wastewater flows from a specific basin, and then generate reclaimed water for uses nearby. While a range of treatment approaches may be employed at a satellite facility, many utilities are implementing membrane bioreactor (MBR) technology in these types of applications, because of the small footprint required relative to other, more conventional forms of wastewater treatment. Solids generated at the satellite facility would be returned to the collection system and conveyed to King County's South Treatment Plant. While currently, the capital investment for such a facility is prohibitive as technology and cost effectiveness improves, such a facility would be considered.

4.7.3 Potential Reclaimed Water Users

Starting in 2009, King County began development of a Reclaimed Water Comprehensive Plan to evaluate expansion of its existing reclaimed water program over a 30-year period. The City of Auburn supported the County's planning process by providing non-potable water use data by specific parcel. City staff and elected officials also participated in reclaimed water workshops held at key points in the County planning process. Although the Reclaimed Water Comprehensive Plan was not completed, some of the concepts evaluated during that process will inform the development of a plan for reclaimed water as part of King County's Clean Water Plan. The most likely reclaimed water customers would be in the irrigation class, as noted in the WSP.

4.7.4 Reclaimed Water Summary

The City of Auburn is not planning any specific capital improvements related to producing and/or conveying reclaimed water for the following reasons:

- King County and other nearby treatment plant sources of reclaimed water are unlikely to be developed for use within the City SSSA in the near term.
- The City currently has adequate water supply in the near term and the need for offsetting potable water demands is low at this time.
- The capital costs related to design, construction, and permitting of a reclaimed water production facility are large relative to the benefit at this time.

The City acknowledges the value that a reclaimed water program might offer in the future, especially if a nearby reclaimed water source with associated conveyance piping is extended to the City's SSSA. The City will continue to monitor reclaimed water planning by nearby purveyors, the adequacy of the City's water rights to meet current and future potable water demand, and the industrial user base, or other significant user to evaluate whether reclaimed water is a feasible and economically viable alternative. City staff will also continue to participate in King County's Clean Water Plan to promote the City's interests in County policies, criteria, and implementation strategies.

CHAPTER 5 WASTEWATER SYSTEM ANALYSIS

5.1 Introduction

The City customer base continues to increase through system growth by development, redevelopment, and connection of on-site system properties that were not previously connected to the system. With the additional customers served, some of the City's sewer infrastructure may reach its conveyance capacity. This chapter presents an evaluation of the available capacity of the existing system to convey current and future projected sewer flows and develops appropriate CIP to address any deficiencies. Using the City's updated and re-calibrated collection system hydraulic model, major pipes and lift stations in the collection system were evaluated using the established capacity criteria. The modeled collection system consists primarily of large gravity sewers which represents a skeletonized version that includes all key components of the system. The modeling focused on the key conveyance infrastructure, neglecting smaller collector pipes which generally have adequate capacity to convey the flow. This approach reduces the modeling computational effort, while providing necessary conveyance information. Additional details on the hydraulic model update and calibration can be found in Technical Memorandum (TM) 1 - Model Calibration Report (Appendix D).

The collection system was evaluated for two planning scenarios:

- Existing - Based on 2020-2021 flow monitor data.
- Future year 2044 - Based on traffic area zone (TAZ) projected population and employment developed from Puget Sound Regional Council projections by Leland Consulting Group.[1][2]

This chapter presents potential deficiencies under both existing and future conditions and includes an I/I analysis.

5.2 Design and Performance Criteria

Defining performance criteria and key conveyance events is a critical step in the master planning process because it sets evaluation metrics for the collection system infrastructure's ability to meet service goals set by the City. It is important to differentiate performance criteria from design criteria when judging the performance of collection system infrastructure:

- Design criteria establish the standards for designing and constructing new sewers and lift stations.
- Performance criteria establish the standards that are used to analyze adequacy of existing facilities and to trigger infrastructure improvements meeting design criteria.

The collection system's function is to convey sanitary flows from residential and commercial customers to King County's trunk system that takes flows to the King County South Treatment Plant. However, additional wet weather flow from rain and groundwater sources may enter the system that also need to

[1] Auburn Comprehensive Plan: Industry Composition, Location, and Work from Home Memo | Draft, 10/6/2023, Leland Consulting Group.
[2] Auburn Comprehensive Plan: TAZ Allocations under No Action and Preferred Land Use Scenarios | Draft, 10/6/2023, Leland Consulting Group.

be conveyed. Wet weather flows vary with storm size, intensity, and timing. For planning purposes, a design storm is simulated in the hydraulic model, which is used as the evaluation point for the modeled infrastructure. The following sections describe the City's established design criteria and performance criteria used in this analysis.

5.2.1 Design Storm

Design storms are simulated rainfall events used to analyze the performance of a collection system under peak flows and have a specific recurrence interval and rainfall duration. The National Oceanic and Atmospheric Administration publishes isopluvial (rainfall contour) maps that can be used to approximate the total rainfall depth for a range of design storms. Additionally, an appropriate hydrograph for the storm is required to distribute the rain through the design period. Finally antecedent conditions should be considered, as Pacific Northwest storms tend to span multiple days which can lead to saturated ground conditions increasing runoff. The best approach to address hydrograph and antecedent conditions is to base analysis on a historical precedent. The City has selected a weather event from 1996 with a recurrence interval of 20 years for the design storm based on an analysis done for the 2016 Comprehensive Sewer Plan. At that time, a long-term simulation was done with rainfall data from January 1, 1949 through December 31,2012 to identify 20-year peak flow frequency. The third largest event appeared to have a 25-year recurrence and fourth largest appeared to have an 18-year recurrence, with both events producing similar peak RDII flows of 27.19 mgd and 27.03 mgd, respectively. Therefore, the third largest event that occurred on February 5, 1996 was selected to represent the 20-year design storm.

Figure 5.1 shows the historical design storm used for the capacity analysis. A period of rain events occurred over five days. The storm peak lasts 24 hours at the end of the event, with a peak rainfall intensity of 0.29 inches per hour and a 24-hour volume of 2.39 inches.

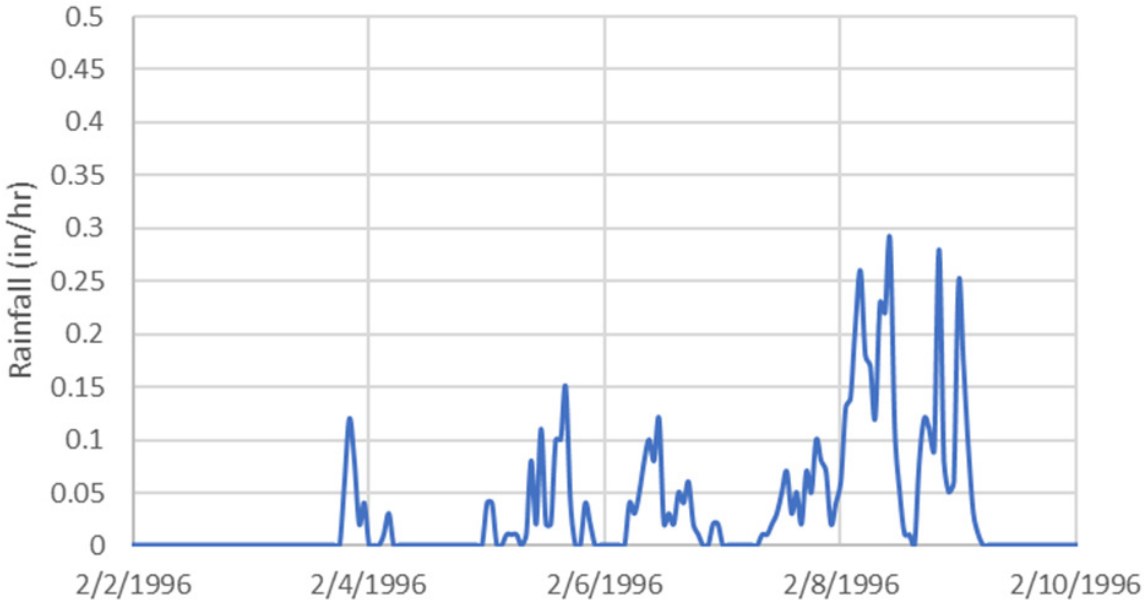


Figure 5.1 20 Year Design Storm

5.2.2 Climate Risk

As described in the previous section, the performance criteria for this master planning effort are evaluated using historical events and by performing statistical analysis to determine the likelihood of recurrence. This is standard practice but does not incorporate expected local and regional climate changes in the future. Over the coming decades, it is expected that the Pacific Northwest will see extreme precipitation events with increasing frequency.

To help plan for this future, this master planning effort evaluated regionally-downscaled climate model results from the University of Washington Climate Impacts Group (CIG). CIG has statistically downscaled an ensemble of global climate models to a 12-km grid and provides expected increases in 1-hour and 24-hour precipitation for various recurrence intervals. These values were used to determine the expected percent change for the 20-year design storm characteristics (peak rainfall intensity of 0.29 inches per hour and a 24-hour volume of 2.39 inches) for the future year being evaluated (2044) as well as the end of the century. Since CIG averages model results over a 30-year period, 2044 is represented by the 2030 - 2059 model ensemble results and the end of the century is represented by 2070 - 2099. Table 5.1 and 5.2 show the ensemble average, maximum and minimum results for both time periods.

Table 5.1 Summary of Potential Future Characteristics for the Design Storm, 2030 - 2059

Parameter	Ensemble Average	Ensemble Maximum	Ensemble Minimum
Peak Intensity (inches per hour)	0.36 (+24%)	0.46 (+58%)	0.26 (-10%)
24-hr Volume (inches)	3.85 (+17%)	5.07 (+54%)	2.89 (-12%)

Table 5.2 Summary of Potential Future Characteristics for the Design Storm, 2079 - 2099

Parameter	Ensemble Average	Ensemble Maximum	Ensemble Minimum
Peak Intensity (inches per hour)	0.42 (+45%)	0.59 (+103%)	0.30 (+2%)
24-hr Volume (inches)	4.24 (+29%)	5.76 (+75%)	3.39 (3%)

These results were used in the existing models to analyze the adequacy of existing facilities and can be used to set future design criteria. Climate change modeling will continue to advance, with new techniques and improved computer processing allowing for more robust projections in the future. In 2021, the Intergovernmental Panel on Climate Change released the most recent major update to the global Coupled Model Intercomparison Project. CIG is currently working to downscale results from those models and compare them to the previous generation used in this study. Following CIG's work, it is recommended that the City review those results to determine if further changes to future design criteria are required.

5.2.3 Conveyance System

It is common practice to use a diameter-based flow depth criteria for pipes both when evaluating exiting sewers and designing new sewers. The depth/diameter (d/D) ratio is defined as the depth (d) of flow in a pipe divided by the pipe's diameter (D). For the conveyance system, the design criteria and performance criteria are outlined below and shown in Figure 5.2:

- Performance Criteria: During PWWF for the design storm, water levels should not surcharge pipes (maximum d/D of 1.0). Pipes that surcharged and exceeded a d/D of 1 and were less than 6 feet from the ground surface in manholes were considered deficient. In Figure 5.2, the hydraulic grade line (HGL) is surcharged and therefore would be considered deficient.

- Design Criteria: Sewers shall be designed to not surcharge or flow at a maximum d/D of 1.0 at peak flow rates for both existing and build-out conditions.

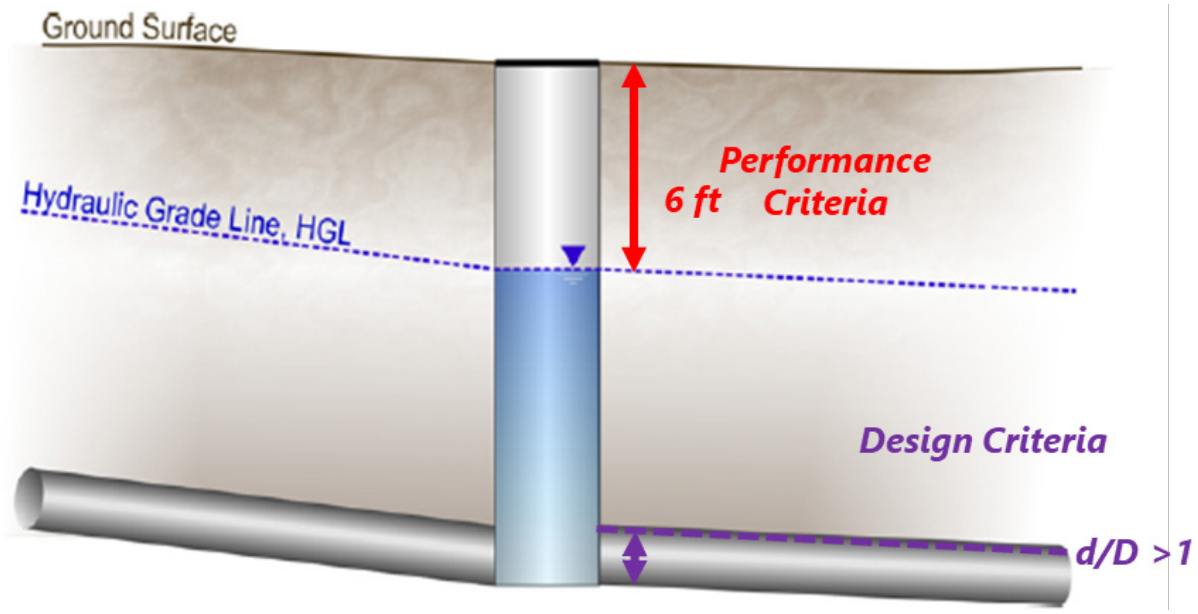


Figure 5.2 Design and Performance HGL Criteria

5.2.4 Lift Stations and Force Mains

Any new lift station recommendations will need to follow Washington State Department of Ecology's Criteria for Sewage Works Design (Orange Book) recommendations for lift stations and force main construction to meet Ecology requirements. Ecology's requirements are outlined below:

- The firm capacity of a pumping station shall be equal to or greater than the peak hourly design flow. Because mechanical and electrical equipment is typically designed for a 20-year life, it is recommended that the peak design flow be based on a 20-year forecast or greater.
- The number of pumps selected shall allow the station to provide the peak design flow with the largest pump out of service.
- The station shall be designed to remain fully operational during the 100-year event.
- Pumps should be designed for pumping sewage and capable of passing solids at least 3 inches in diameter. Pump suction and discharge should be 4 inches or greater.

The City's performance criteria requirements for existing lift stations include firm capacity (i.e., capacity with largest pump out of service) and force main velocities. According to Washington's Orange Book, firm lift capacity shall be provided to manage the design storm peak hour flow, also known as the PWWF, from the lift station's tributary area with the largest pump out of service. Therefore, the City's lift stations should have sufficient firm capacity to pump the PWWF during the design storm.

The evaluation of existing force mains is based on recommendations in the Orange Book for a maximum pipe velocity of 8 feet per second or less during the PWWF for the design storm. The design of new force mains should keep the minimum velocity above 2 feet per second to minimize solids settling.

5.3 Future Conditions Flow Projection

The 2044 scenario flow projection was based on the existing condition flows developed in Appendix D, TM 1 - Model Calibration Report Section 1.6.

5.3.1 Future Conditions Average Dry Weather Flow Development

TAZ blocks provided estimates of existing (2021) and future (2044) units of employment, single family, multi family, housing units, and population. These TAZ blocks were spatially joined to the modeled catchment layer to determine the units in the City's collection system. Figure 5.3 outlines the TAZ blocks within the City's service area.

Table 5.3 outlines the TAZ unit type for 2021 and 2044. The unit type increase was used to calculate a scaling factor, or the unit of increase between the 2021 and 2044 units. The scaling factor was used to project the future ADWF for every catchment in the collection system. The project sanitary flow summary by TAZ type are shown in Table 5.3.

Table 5.3 Flow Projections Summary

TAZ Type	2021 Total Units	2044 Total Units	Scaling Factor	2021 Sanitary Flow (mgd)	2044 Sanitary Flow (mgd)
Single Family	14,841	21,631	1.46	3.03	4.50
Multi-Family	16,985	20,578	1.21	0.90	1.16
Employment	47,738	65,674	1.38	4.49	6.25
Housing Unit	31,457	42,219	-	-	-
Population	86,149	114,056	-	-	-
Total	-	-	-	8.45	11.92

Notes:
mgd - million gallons per day.

5.3.2 Future Conditions Wet Weather Flow Assumptions

Figure 5.4 identifies the portion of the collection system that is currently developed with available sewer in yellow, the portion that likely will not be developed is in red, and the orange section identifies areas that can be developed or are not currently connected to a sewer. The areas shown that likely cannot be developed are due to steep slopes greater than 40 percent grade or large wetlands occupying a large portion of the area. There are likely smaller areas within the system that similarly cannot be developed, but are not easily captured in the larger planning effort. It was assumed that all developable parcels would be developed and connected for the 2044 scenario in the model including those with on-site systems, contributing a WWF I/I component from the contributing area. It was assumed that the I/I of future sewered areas would be 1,500 gallons per acre per day (gpad) during the design storm. This I/I rate is slightly higher than the King County target value of 1,100 gpad, providing a level of conservatism in projecting future peak flows, and closer to the actual level of I/I into the system. The hydrologic model components Model A and rainfall derived infiltration (RDI) were set at 0.65 percent and 2.58 percent respectively, to represent such an I/I rate. Figure 5.5 below shows a detailed map of the City's existing and future sewer system, including future pump stations and mains.

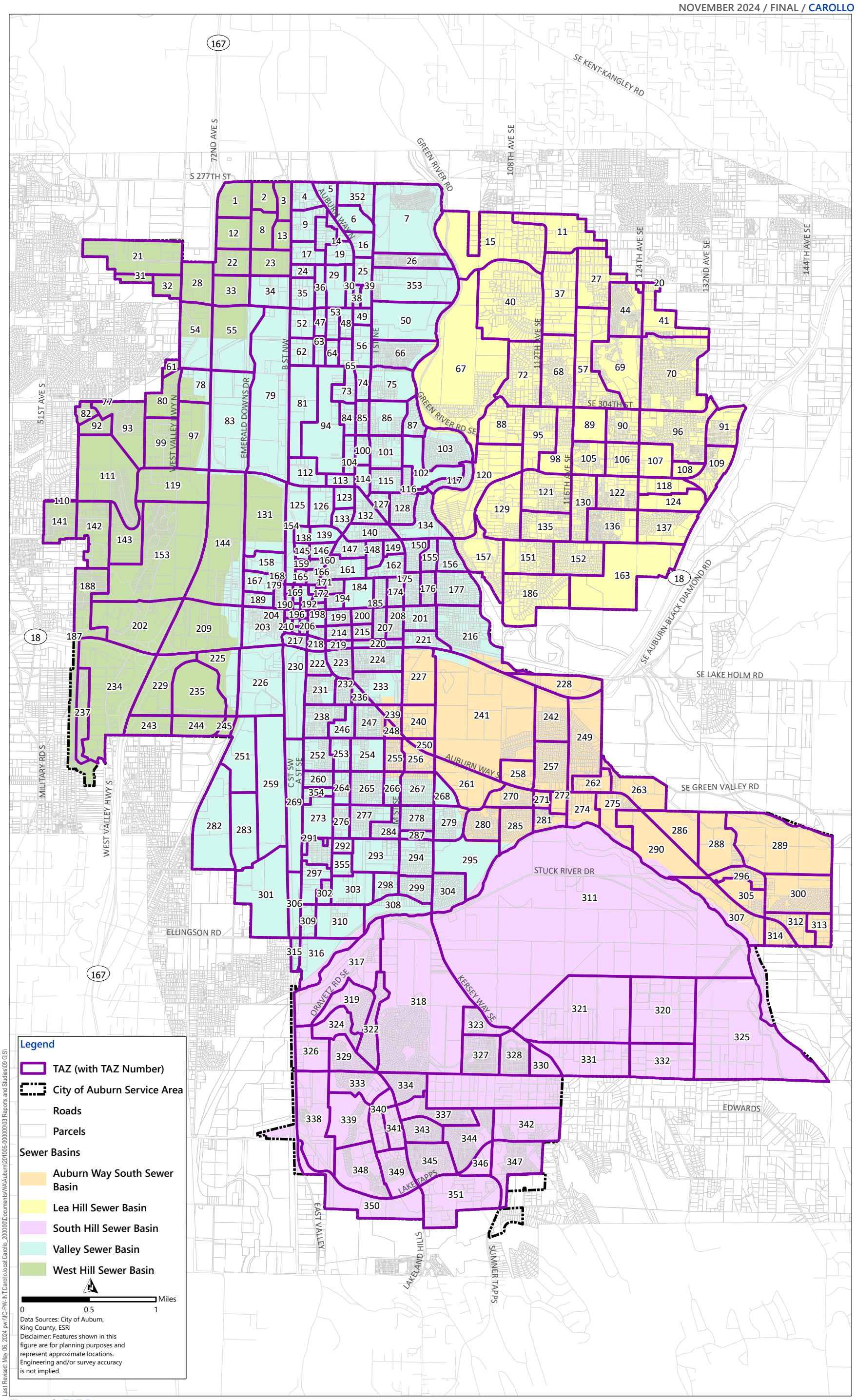


Figure 5.3 TAZ Data
CITY OF AUBURN
2024 COMPREHENSIVE SEWER PLAN

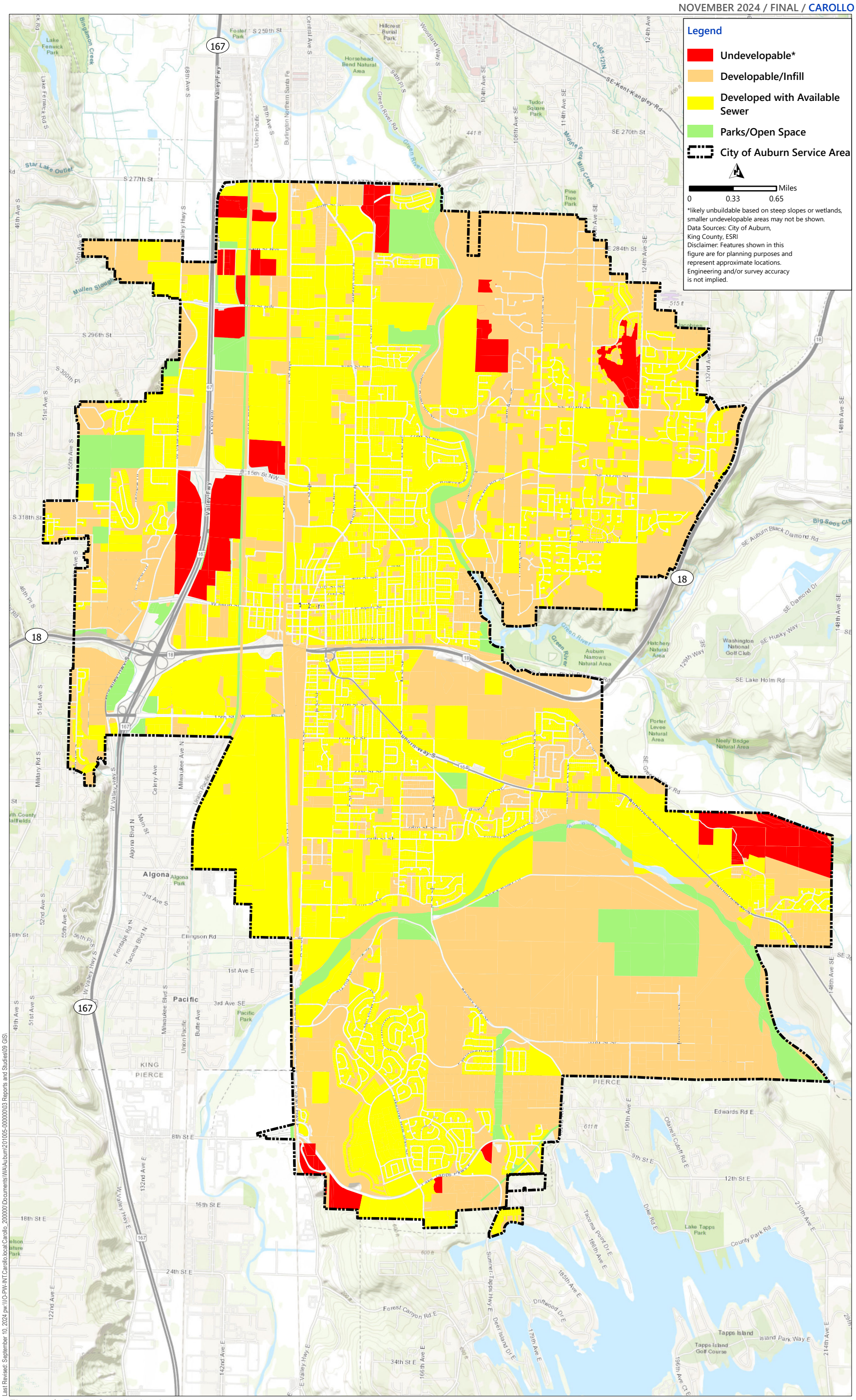


Figure 5.4 Future Contributing Areas

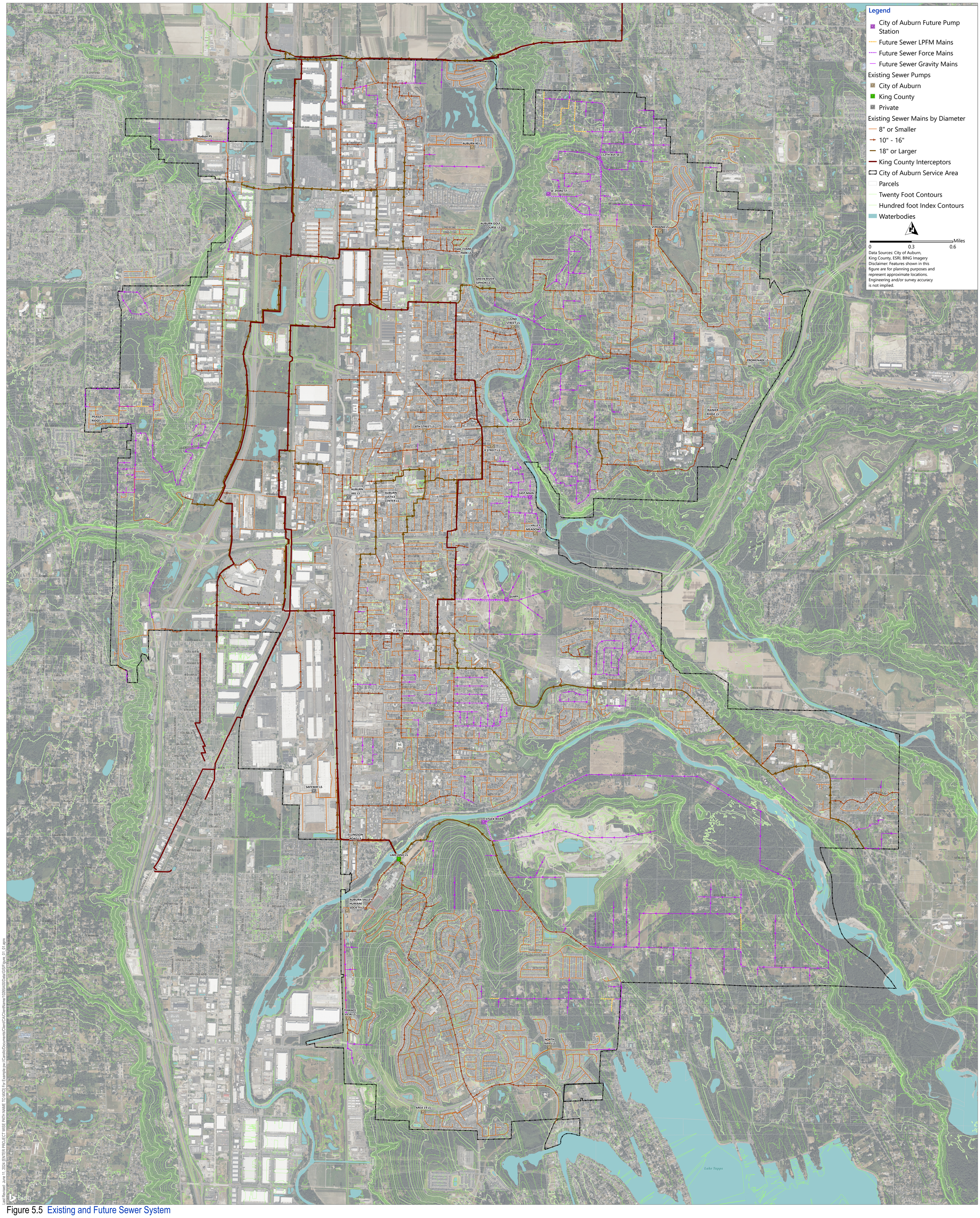


Figure 5.5 Existing and Future Sewer System
CITY OF AUBURN
2024 COMPREHENSIVE SEWER PLAN

Last Revised: June 11, 2024 [ENTER PROJECT WISE PATH NAME TO MXD] For Example:pw://CarolloDocuments/Client/CA\ClientName\102654A00\Detail\GIS\Figure_01_01.aprx

5.4 Gravity Collection System Deficiencies

A capacity analysis of the modeled collection system was performed using the City's calibrated hydraulic model, the design storm, and referring to the above outlined evaluation criteria in Section 5.2. The capacity analysis entailed identifying areas in the sewer system where the performance criteria or the capacity of lift stations was exceeded.

5.4.1 Key Causes of Deficiencies

The calibrated hydraulic model was run with the design storm to determine areas that may be triggering potential capacity deficiencies based on the system performance criteria. The key causes triggering deficiencies in the City's collection system included:

- Adverse slopes and misaligned inverts.
- Pipe restrictions (a single or few smaller diameter pipes between larger diameter pipes).
- Pipe diameter too small or at too flat a slope to convey the PWWF.

5.4.2 Existing System Potential Deficiencies

For the existing planning scenario, the current PWWF was routed through the hydraulic model. The peak HGL in manholes and gravity pipelines were compared to the established performance criteria. In general, the modeled collection system has sufficient capacity to convey existing flows during the design storm. The existing deficiencies are relatively minor; their locations are shown on Figure 5.6 in red and yellow. Figure 5.7 also identifies shallow manholes (manholes with a depth less than 6 feet). A total of 7,428 feet of pipe is surcharged, 1 manhole (MH) may flood, and 47 MHs are within 6 feet of the rim during the design storm.

5.4.3 2044 Potential System Deficiencies

For the 2044 planning scenario, additional contributing areas, and additional dry weather flow (DWF) were added to the model based on the projected growth identified in Section 5.3. In general, system HGL increases with additional flows. A total of 16,842 feet of piping may surcharge during PWWF, 3 MH are potentially flooding and 64 MHs are within 6 feet of the rim. The 2044 deficiencies are identified in red and yellow on Figure 5.7. The 2044 deficiencies with the climate change design storm are shown in red and yellow on Figure 5.8. The climate change design storm leads to 29,538 feet of surcharging pipe, 6 MH potentially flooding and 76 MHs within 6 feet of the rim.

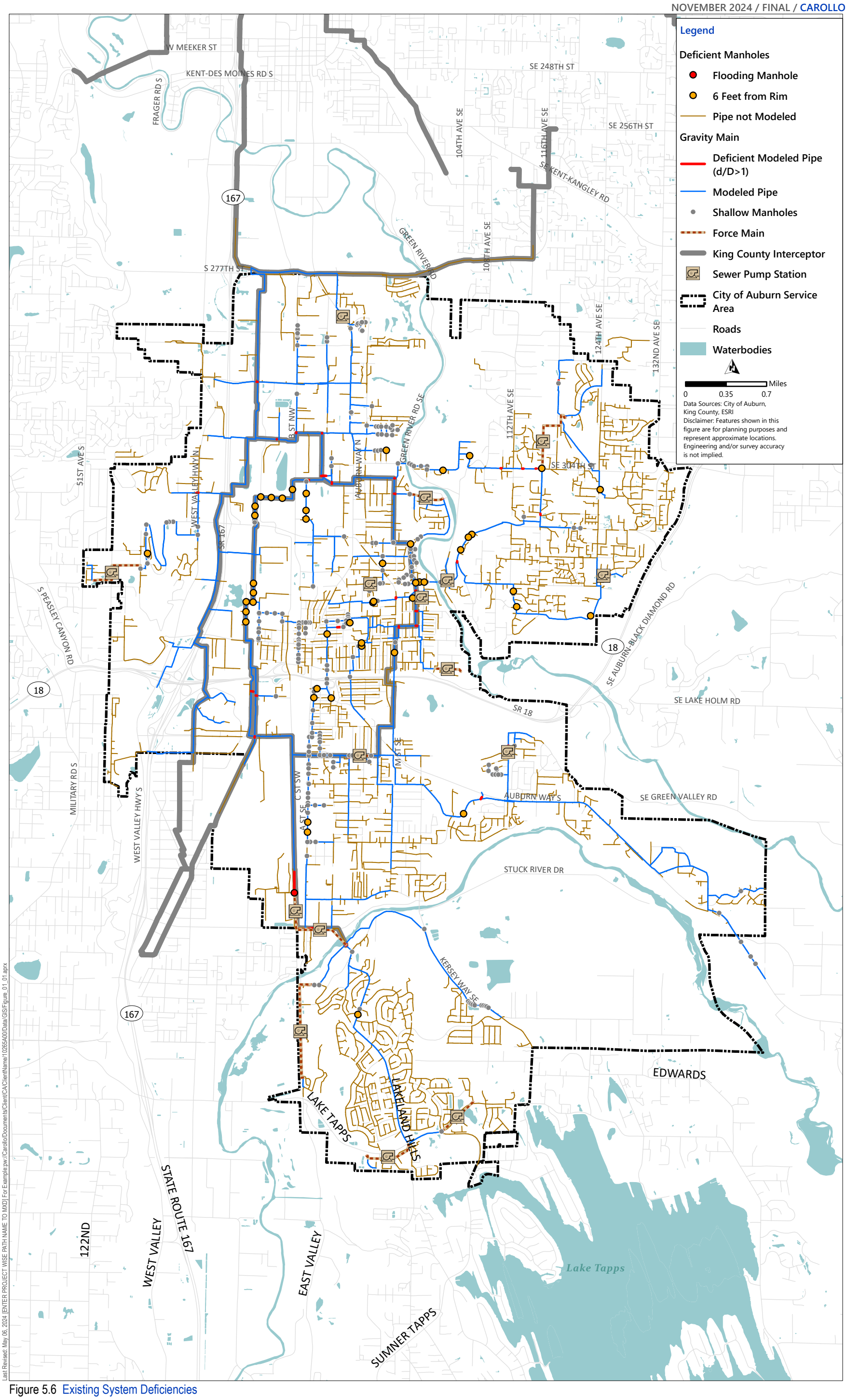


Figure 5.6 Existing System Deficiencies
CITY OF AUBURN
2024 COMPREHENSIVE SEWER PLAN

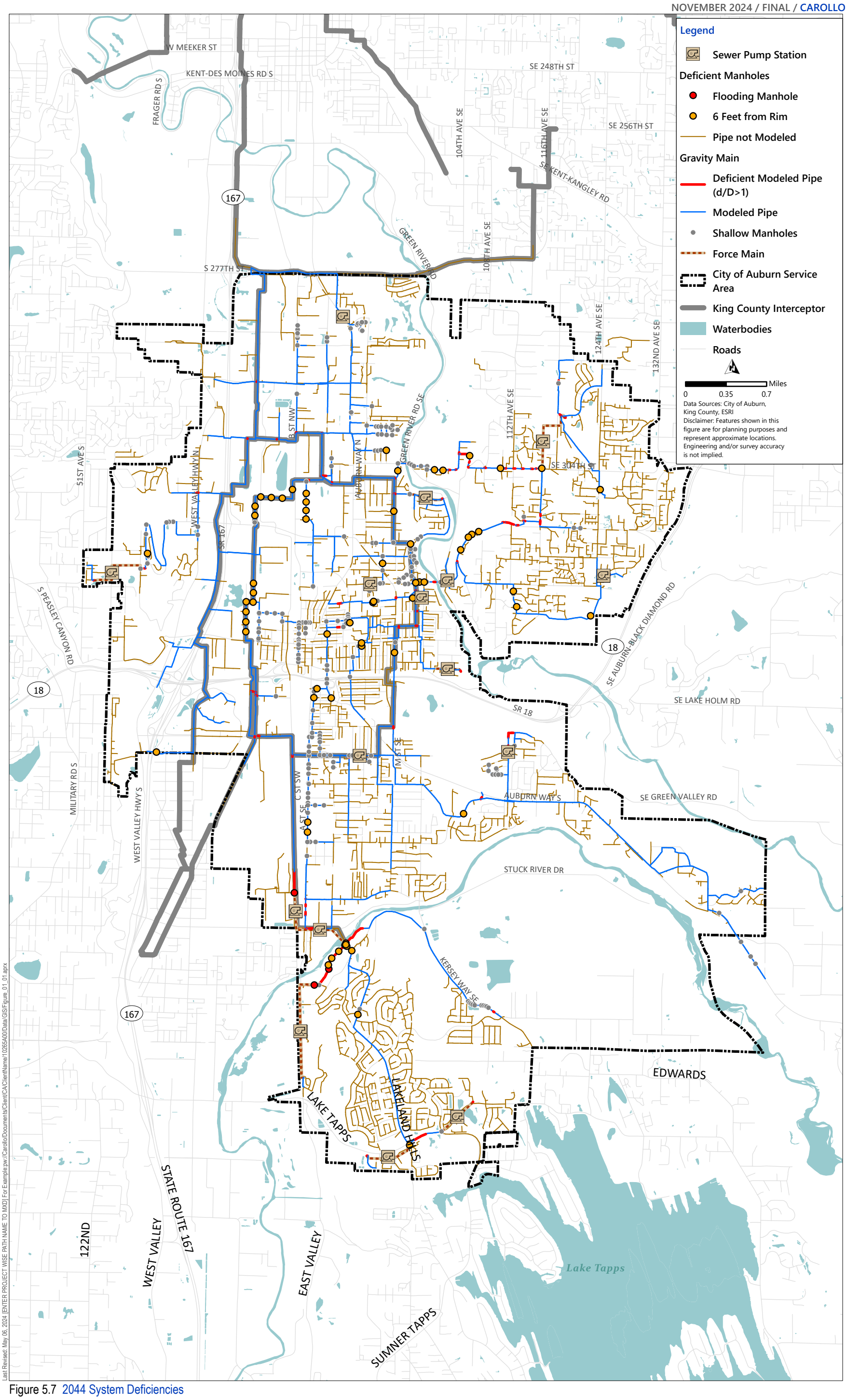


Figure 5.7 2044 System Deficiencies
CITY OF AUBURN
2024 COMPREHENSIVE SEWER PLAN

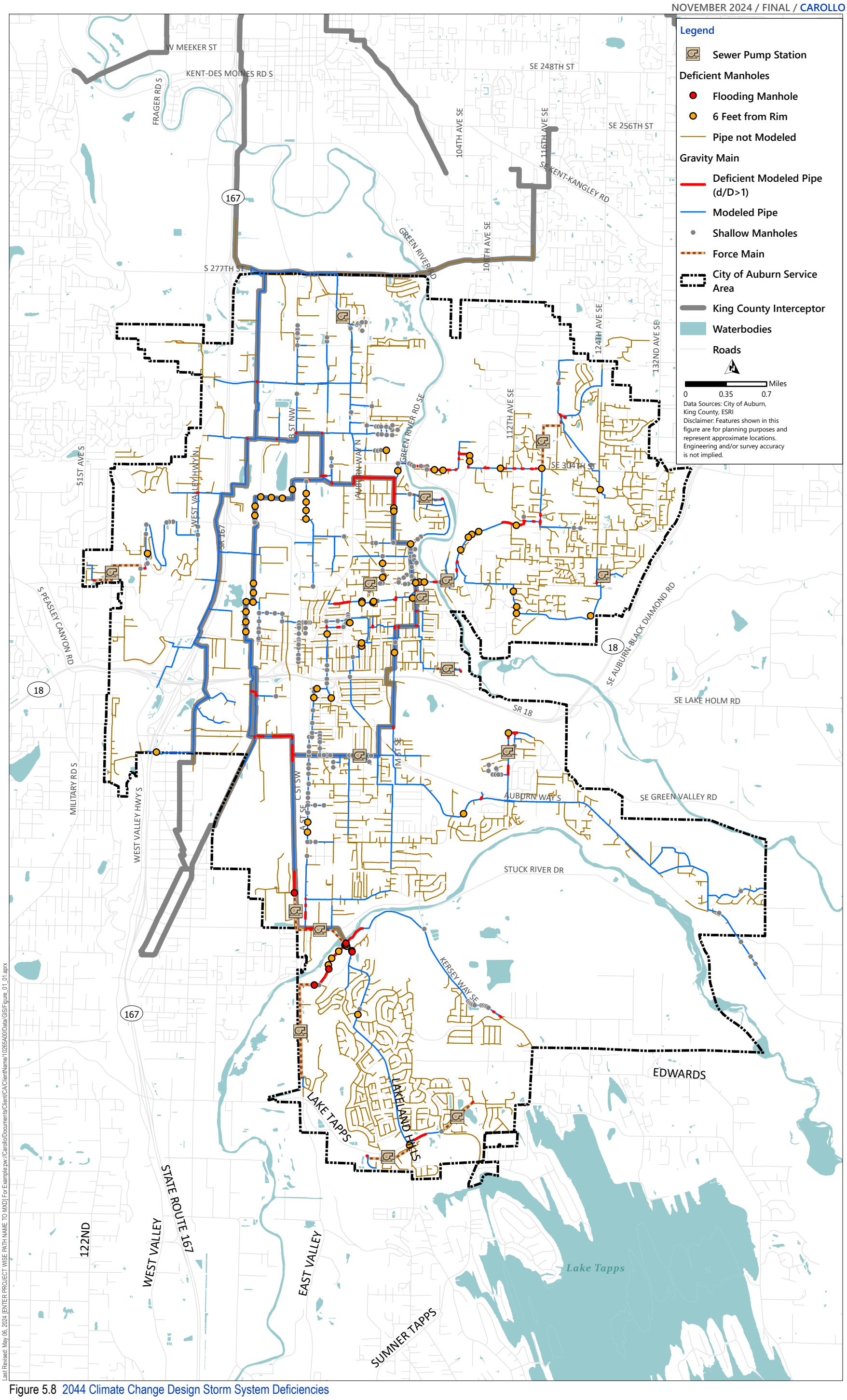


Figure 5.8 2044 Climate Change Design Storm System Deficiencies

5.5 Lift Station and Force Main Evaluation

Ensuring lift stations have adequate capacity to convey PWWFs is important for preventing sewage overflows at or near lift stations. In accordance with the established performance criteria, the City's existing modeled lift stations were evaluated to determine if each one has the available capacity to convey existing and future PWWFs with the largest pump out of service (i.e., its firm capacity). If a lift station has inadequate capacity to pump the PWWFs, the water level in the wet well may rise to the overflow point, spilling sewage.

The City's hydraulic model includes 14 of the 17 City owned lift stations located in the collection system. The estimated current and future PWWFs were compared to the 14 lift stations' firm capacities. Lift stations with an influent PWWF above the existing firm capacity were flagged as deficient. Table 5.4 summarizes the results of the lift station evaluation. Rainier Ridge and Dogwood are shown as deficient under 2044 PWWFs.

Table 5.4 Lift Station Analysis

Lift Station	Number of Pumps	Total Capacity(1) (gpm)	Firm Capacity(1) (gpm)	Existing PWWF (gpm)	2044 PWWF (gpm)
Area 19	2	650	325	120	124
Terrace View	2	1,350	675	114	282
Ellingson Road	2	3,054	1,527	1,355	1,456
Auburn 40	2	880	440	---(2)	---(2)
F Street	2	800	400	265	370
Riverside	2	800	400	126	198
R Street	2	200	100	50	58
Peasley Ridge	2	550	275	47	115
Rainier Ridge	2	400	200	184	**366**
Valley Meadows	2	250	125	20	66
22nd Street	2	1,100	550	90	109
8th Street	2	300	150	94	106
North Tapps	2	1020	510	24	28
Verdana	3	3,000	2,000	975	1,219
Dogwood	2	600	300	239	**395**
Hudson	2	1,200	600	---(2)	---(2)
Promenade	2	348	174	---(2)	---(2)

Notes:
(1) The total and firm capacity of the station is based on the pump design point, assuming the pumps will be able to steadily deliver the flow.
(2) The model is skeletonized, including only larger diameter piping and key connections, these pumps our outside of the modeled portion of the system.
gpm - gallons per minute.

5.6 Inflow and Infiltration Evaluation

I/I occurs in all sanitary sewer systems. Infiltration is defined as water entering the sanitary sewer system through pipes, joint connections, manhole covers, and walls. Inflow is defined as water discharged to the sanitary sewer system through connections to roof drains, yard drains, foundation drains, and cross connections with storm sewers and combined sewers. The combination of I/I may be a major portion of the total wastewater flow which is carried by the sanitary sewer system.

The *City of Auburn 2016 Comprehensive Sewer Plan, Brown and Caldwell* (2016 CSP) provided recommendations to improve the City's collection system. The *Auburn Washington Rainfall Derived Infiltration and Inflow Report 2022, ADS* (2022 RDII Report) provided an initial look at the I/I across the City. The results of both the analyses are summarized below:

- Current levels of I/I were not causing capacity-related issues (2016 CSP).
- Recommended the City to do an initial I/I investigation to support an eventual I/I management program (2016 CSP).
- Sewer extension projects are recommended to serve every parcel within the City limits.
- Two of the larger basins, Y-1 and Y-3 exhibited slightly higher than the moderate threshold level of 10 gallons/linear feet/inch rainfall as RDII (2022 RDII Report). Converting to area based RDII shows that Y-1 is estimated at 2,700 gpad and Y-3 at 4,100 gpad.
- The upper most part of basin A9 (sub basin A9e) is responsible for the large majority of RDII measured from this A9 area. In the basin A8 area, only sub basin A8b stood out as having potentially elevated RDII. Only the southern part of basin A7 (A7e and A7g) area stood out as having potentially elevated RDII (2022 RDII Report). These four basins had greater than 25 gallons/linear feet/inch rainfall, or all greater than 12,000 gpad.

The City's hydraulic model can be used to estimate peak flows for the different flow monitoring basins and areas included in the model during the design storm. The following parameters were calculated to better understand I/I severity in the collection system:

- **Peaking Factor:** Peaking factors are the ratio between peak flow and base sanitary flow and are commonly used for wastewater infrastructure design. These factors are derived by dividing the peak flow by the base sanitary flow for each basin. Due to the prolonged rainy season, wastewater agencies in the Pacific Northwest typically experience peaking factors from 2 to 10, and in some cases more than 10.
  - » Systems with a Peaking Factor of 3 or less are often considered as performing well. High Peaking Factors above 5 are typically signs of direct inflow to the collection system.
- **Peak I/I Rate:** The Peak I/I rate is the peak flow rate of all non-sanitary flows. Peak I/I rates are calculated by subtracting the base sanitary flow from the peak flow for each basin. Peak I/I rates are largely dependent on local hydrology, the condition of the collection system, and drainage connections, with the rate expressed in terms of gpad. The Peak I/I rate is calculated by dividing the Peak I/I flow by the total contributing area of land in acres in each basin. Peak I/I Rates can range from 1,000 gpad to over 20,000 gpad in areas in the Pacific Northwest. High peak I/I rates are usually signs of infiltration.

Table 5.5 summarizes the peaking factor and I/I rate for each flow monitoring basin during the design storm. Figure 5.9 outlines the Peak I/I rate by flow monitoring basin. King County has a target I/I rate of 1,100 gpad during the design storm. Although some basins exceed the County target, the City average I/I rate is 1,446 gpad during the design storm.

Table 5.5 I/I Summary by Flow Monitoring Basin for the Design Storm

Flow Monitoring Basin	Gross ADWF (mgd)	Gross PWWF (mgd)	Net ADWF (mgd)	Net PWWF (mgd)	Contributing Area (acres)	I/I Rate (gpad)	Peaking Factor
A1	0.33	0.78	0.10	0.24	244	627	2.4
A1c	0.23	0.54	0.15	0.32	151	1,180	2.2
A1d	0.08	0.21	0.08	0.21	52	2,417	2.5
A3	0.14	0.21	0.14	0.21	83	802	1.5
A4	0.25	0.40	0.25	0.40	113	1,273	1.6
A6	0.09	0.47	0.09	0.47	98	3,847	5.1
A7	0.14	1.28	0.14	1.28	109	10,409	8.8
A9	0.06	0.43	0.06	0.43	53	7,000	7.4
A10	0.29	1.15	0.05	0.66	115	5,366	14.4
A11(1)	0.07	0.43	0.01	0.00	17	-	-
A12	0.02	0.08	0.02	0.08	21	3,063	4.6
A13	0.04	0.11	0.04	0.11	63	1,048	2.5
A14	0.18	0.43	0.12	0.28	102	1,580	2.3
A15	0.06	0.15	0.06	0.15	72	1,300	2.7
A16	0.24	0.48	0.24	0.48	285	855	2.0
Y-1	0.40	1.01	0.40	1.01	94	6,454	2.5
Y-2	1.03	4.06	1.03	4.06	872	3,471	3.9
Y-3	0.66	3.63	0.66	3.63	541	5,494	5.5
Y-4	0.14	0.29	0.14	0.29	179	840	2.0
WINT003	3.26	8.11	2.32	2.91	1,871	314	1.3
MSTTR02(1)	2.73	7.99	0.62	0.25	482	-	-
AUBRN53	7.81	20.03	1.34	2.95	1,212	1,322	2.2
Average						1,446	

Notes:
(1) PWWF constrictions upstream limit net PWWF calculation, making it difficult to determine accurate I/I values in these basins.

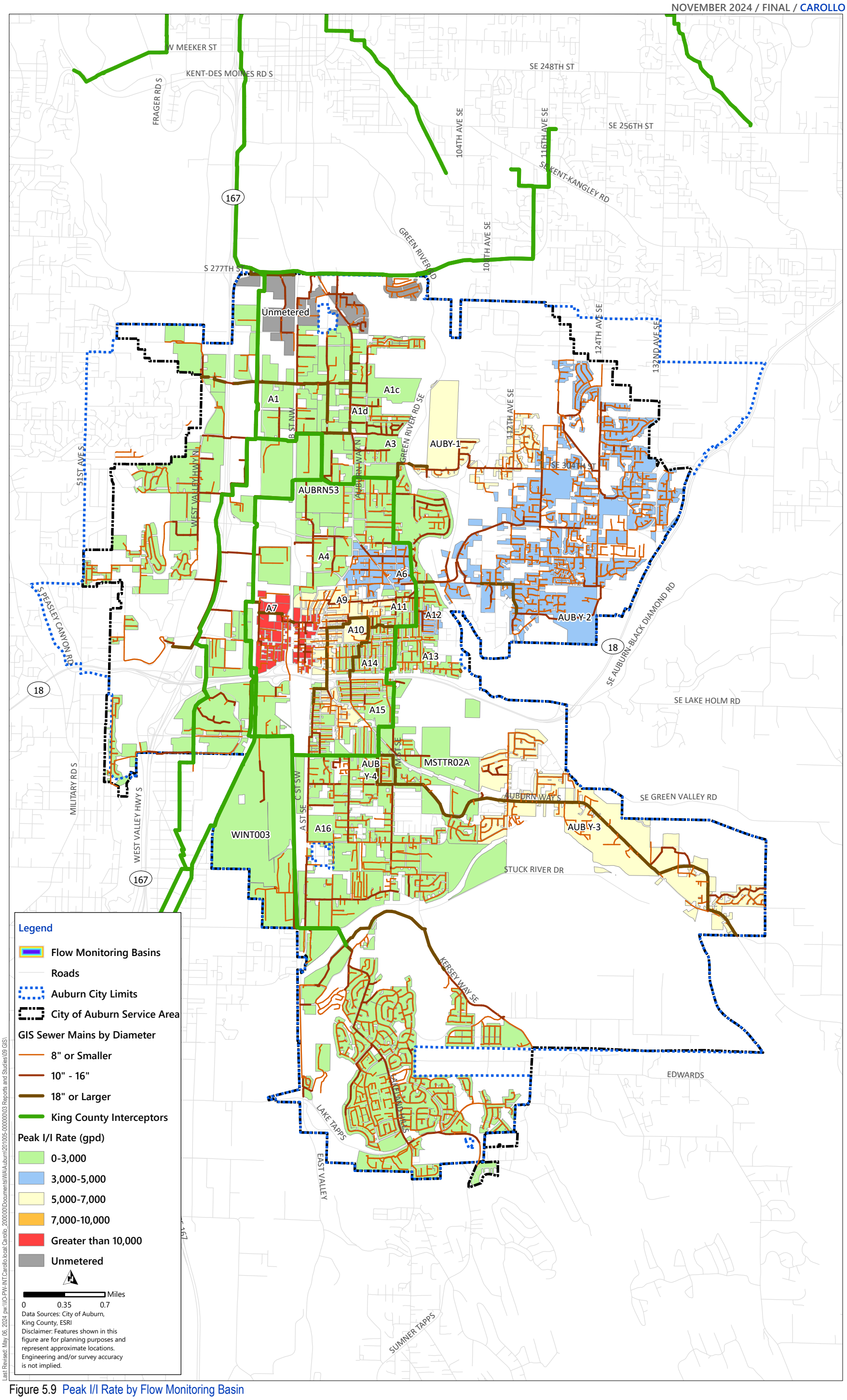


Figure 5.9 Peak I/I Rate by Flow Monitoring Basin

5.7 Remaining Useful Life

One key criteria used for assessing vulnerability and long-term rehabilitation and replacement needs is a remaining useful life (RUL) estimate. This estimate represents how many years a pipe with a certain material has before the likelihood of failure significantly increases.

Pipe age and material type are used to determine the RUL of the collection system pipelines. GIS data and field research were used to determine the type of material and year or decade that pipe segments were installed and identify data gaps. The City is in the process of updating its asset inventory, so the data to conduct a comprehensive analysis of RUL across the system is not complete. Upon substantial completion of the inventory work, the City should analyze the complete set of data to project rehabilitation and replacement needs.

Pipe manufacturers establish a theoretical useful life based on pipe material; however, the actual useful life is also influenced by local soil conditions, aggressive wastewater materials, methods of installation, etc. The original useful life for pipe of known material varies from 75 years for concrete pipe (CP) to 100 years for vitrified clay pipe (VCP). Since the age and material data for some of the pipelines were unavailable, it is assumed that the original useful life for all pipes of unknown age and materials is 75 years. Table 5.6 presents the estimated useful life of pipes of various materials.

Table 5.6 Useful Life of Pipes

Pipe Material	Original Useful Life (years)
Polyvinyl Chloride	100
Unknown	75
Concrete	75
Vitrified Clay	100
Ductile Iron	75
High Density Polyethylene	90
Clay	75
Cured in Place Liner	75

Table 5.7 summarizes the City's gravity sewer system available information by material type and known age into short (less than 10 years), medium (10-20 years), and long-term (greater than 20 years) for replacement needs, as well as unknown where age or material type is not current in the GIS. The cells are color-coded to show the three categories of RUL and unknown; orange is the unknown, red indicates pipe that is expected to reach the end of useful life in the next 10 years or has reached its useful life, yellow represents pipe with a RUL of between 10 and 20 years, and green represents pipe that has a RUL of over 20 years. In total, approximately one percent of the existing collection pipes with a known installation year are expected to reach the end of their useful lives by the year 2034. The table shows that the City GIS database is currently missing information of material type and/or approximate installation year for a large portion of the system.

Table 5.7 Remaining Useful Life

Feet of Pipeline					
Pipe Material	Less than 10 Years	10-20 Years	Greater than 20 Years	Unknown Install Date	Total
Unknown	1,541	2,153	10,855	55,723	70,272
Clay			199	13,226	13,425
Concrete		14,998	8,219	119,443	142,660
Cured in Place Liner			3,408		3,408
Ductile Iron			14,860	9,616	24,475
High Density Polyethylene			18,759	4,555	23,315
Polyvinyl Chloride			443,899	381,190	825,089
Vitrified Clay			3,280(1)	3,280	3,280
Total	1,541	17,150	500,199	587,033	1,105,923

Notes:
(1) Likely greater than 20 years as material use was stopped more than 20 years ago.

As noted earlier, prior to developing any detailed formal replacement and rehabilitation programs based on this information, a thorough assessment of the collection system asset management should be completed to update the age and material information in the GIS system where missing. Material and age of pipelines is critical to understanding when pipeline replacement may be needed. The material type and age will provide a picture of when the asset may need updating. The asset inventory effort should determine the following attributes for all City owned facilities:

- Material.
- Age of installation, or estimate based on material.

As the majority of the system has more than 20-years or unknown remaining useful life, the City should focus on identifying the unknown information prior to the next plan update. Based on a complete picture of material and age, long term costing can then be developed to create an effect renewal and replacement program, thereby ensuring the long term reliability of this key City asset.

While the RUL analysis provides a guide to when pipes may need replacing, short term decisions that prioritize which pipes to rehabilitate or replace must take other factors into account, including:

- Pipe Condition Scores - Based on CCTV inspections and standard scoring criteria.
- Pipe Criticality - The consequences of a pipe failure both for customers affected and environmental concerns.
- Efficiency - Considering replacement or rehabilitation of pipes in conjunction with other City projects save funds.

5.8 Recommendations

5.8.1 Asset Inventory, System Inspections, and Remaining Useful Life

An asset inventory effort is underway that will update the asset database with information available from as-built drawings and inspection records. An inspection program of laterals in City right-of-way (ROW) is being planned by the City to better understand current conditions. This inspection program would provide several key benefits for the City, including better information on pipe material, condition, and age. This program would allow for filling in GIS data gaps on pipe materials to enhance asset management capabilities. When updating GIS records with material, the installation date could also be added to the records to further improve understanding of a pipeline's potential remaining useful life. The inspection program would also provide significant insights on potential sources of I/I within the limited areas having elevated WWFs.

5.8.2 Capacity Evaluation Recommendations

Figure 5.10 outlines the key conveyance deficiencies in the system, where a pipe is both surcharged and 6 feet from the rim. The figure identifies which scenario the deficiency is a part of with existing surcharged pipes shown in red, the 2044 surcharged pipes in green, and the 2044 with climate change pipes in purple. The figure also shows the peak I/I rate to help identify if I/I is a significant contributing factor. I/I investigation is recommended to address capacity deficiencies in basins with an I/I rate above 5,000 gpad. Ideally, the lateral inspection program would start with a high I/I basin.

Table 5.8 outlines six different deficiency areas. These areas are classified by timing, recommendation, and extent of surcharging and deficient manholes. These areas are included withing the CIPs in Chapter 7 with some additional discussion, however not all of them have a specific CIP number associated with them. Area 1 has high I/I and is recommended for continued monitoring with a specific CIP Project 9. Area 4 is a large project with a specific CIP. Areas 2, 3 5 and 6 are all shorter lengths of piping and included within a programmatic CIP.

5.8.3 Future Population Growth

Although this Plan anticipates population and employment growth projected during the development of the City Comprehensive Plan, recent legislation (e.g. HB1110 passed in 2023 and upcoming HB1245) may permit or promote growth in a manner not anticipated by this Plan. As growth occurs, the utility may need to reevaluate pump station or other conveyance systems to ensure adequate capacity exists.

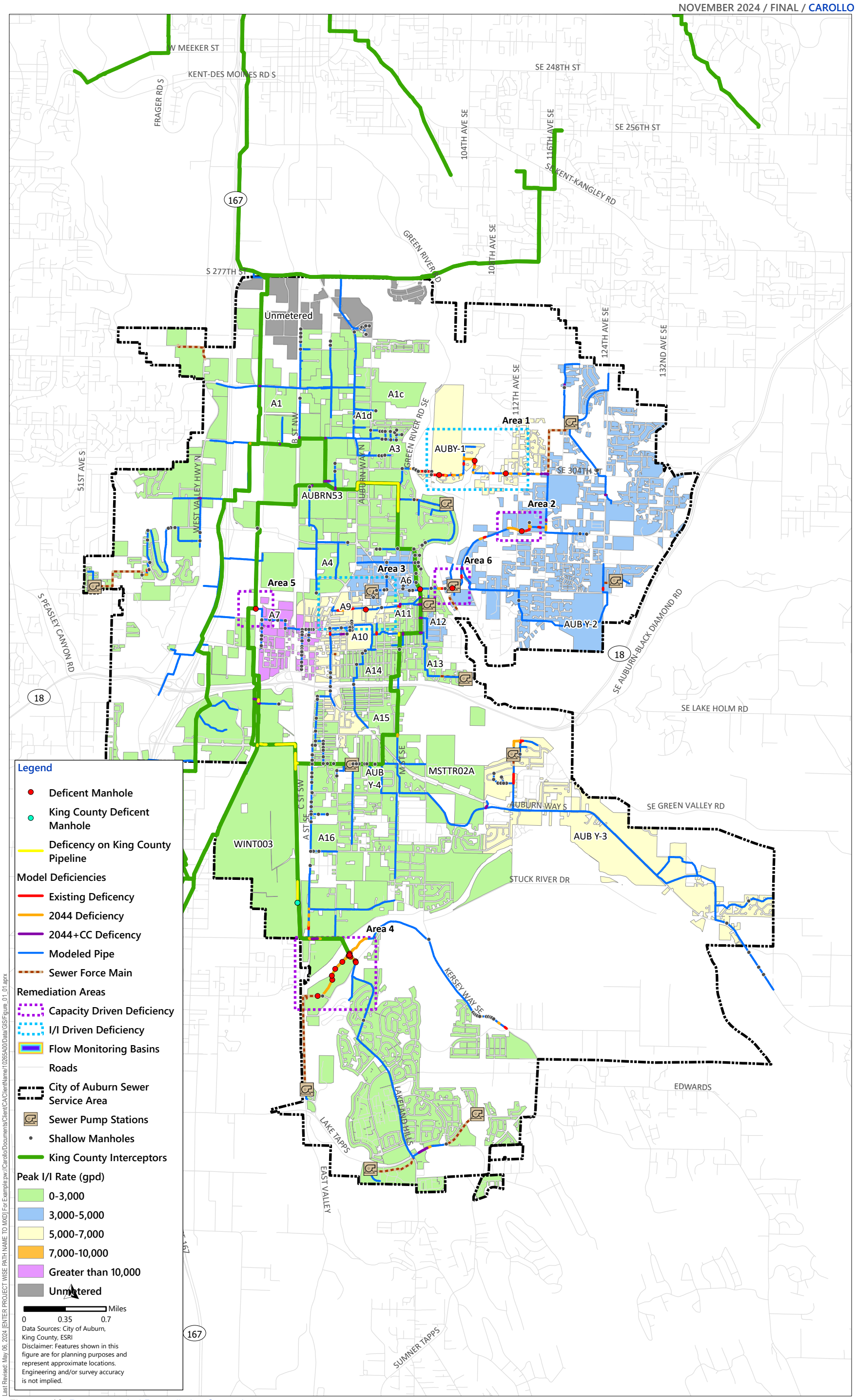


Figure 5.10 Recommended Remediation Strategies

Table 5.8 Capacity Deficiencies

Area Number	Location	Timing	Pipe Diameter	Approximate Depth (feet)	Number of Manholes Impacted	Linear Feet of Surcharged Pipe (feet)	Flow Monitoring Basin I/I Rate (gpad)	Recommendation
Area 1	Along SE 304th Street and 304th Place, between 116th Avenue SE and the Green River crossing	2044	10-inch to 18-inch	9	3	2,666	6,454	Additional I/I Monitoring
Area 2	From Lea Hill Road SE to SE 311 Street	2044	12-inch	10	1	1,243	3,471	Capacity Driven – Recommend Upsizing
Area 3	6th Street NE to H Street NE, through Veterans Memorial Park	2044	10-inch	7	1	836	7,000	I/I Remediation
Area 4	Oravetz Place SE to the Lakeland Hills force main, through Roegner Park	Existing	8-inch to 24-inch	12	11	4,158	314	Capacity Driven – Recommend Upsizing
Area 5	Just south of 6th Street NW near the Interurban Trail	Existing	18-inch	6	1	72	314	Capacity Driven – Recommend Upsizing
Area 6	SE 320th Street and 102nd Avenue SE	Existing	12-inch to 14-inch	10	1	602	3,471	Capacity Driven – Recommend Upsizing

Notes:
NE - northeast; NW - northwest; SE - southeast; SW - southwest.

5.8.4 Inflow and Infiltration Evaluation Recommendations

5.8.4.1 Recommended Strategies for Additional Monitoring or Investigation

The City has few high I/I basins and minimal I/I driven capacity deficiencies. Figure 5.8 outlined the location of three areas that are in high I/I rate basins. Based on previous I/I analyses, and capacity deficiencies identified in the model, the following I/I basins are to be prioritized:

- A10.
- A9.
- A8.
- A7.
- AUB Y-1.
- AUB Y-3.

ADS flow monitoring performed additional micro monitoring for basins A9, A8, and A7 and identified sub-areas of focus, discussed in the next section. Basins AUB Y-1 and AUB Y-3 both have elevated I/I rates that cause some risk of deficiency. It is recommended that additional monitoring at and upstream of meter AUB Y-1 and AUB Y-3 be done and continued periodical monitoring of flows in the high I/I basis to understand if conditions are stable or degrading.

5.8.4.2 Recommended Remediation Strategies

Reduction of I/I in wastewater systems can be a difficult and costly task to undertake. Identifying specific sources, developing metrics for tracking the effectiveness of reduction techniques, and balancing the cost against capacity projects are all major challenges.

Common techniques for reducing I/I include the following:

- Direct Disconnects: This includes disconnecting roof downspouts, yard drains, foundation drains, stormwater catch basins, and/or any connection to the wastewater system causing inflow. Disconnection of these items may require additional provisions for stormwater drainage.
- Repair and replacement of Pipes: This includes replacing or repairing public wastewater pipes, typically due to poor condition, root intrusion, and disconnected joints. Options for pipe replacement include open-cut trench construction or using trenchless technologies, such as pipe bursting or cured in-place pipe. These options need to be assessed for local conditions, such as pipe condition, adjacent utilities, and soil type.
- Repair and replacement of Manholes: Several options exist for sealing manholes and preventing infiltration through faulty joints and cracks. Alternatives include grouting, coating, installing a liner, and/or applying an external sealant.

- Repair and replacement of Laterals and Side Sewers: This includes replacing or repairing laterals and side sewers due to poor condition and the presence of infiltration. Faulty side sewers and laterals are known to be large contributors of I/I. Identifying and repairing multiple faulty laterals and side sewers on private property can be more difficult and expensive than repairing a public wastewater pipe, and replacing or repairing side sewers on private property is the responsibility of property owners. Methods for repairing or replacing laterals and side sewers are similar to those described for public pipes. Trenchless technologies, which are less obtrusive than open-cut trenches are effective for replacing laterals and side sewers while minimizing impacts to landscaping and driveways. The City can repair or replace portions of side sewers within rights-of-way, and should support efforts to encourage property owners to replace portions on private property.

At this point, the City is experiencing relatively low I/I driven issues in concentrated areas. Area 6 is likely deficient due to elevated I/I in the A9e subbasin. It is recommended that the I/I remediation strategies outlined above be investigated further for I/I reduction in subbasin A9e. The lateral inspection program should start with this basin.

CHAPTER 6 MAINTENANCE AND OPERATIONS

This chapter provides an overview of the organization and common procedures associated with the ongoing maintenance and operation of the City sewer utility system, the primary purpose being to establish a baseline understanding of the proactive and responsive maintenance procedures performed by City staff. This baseline understanding is used herein to evaluate Sewer Utility (Utility) staffing, data collection and computerized record-keeping needs, and other Utility requirements to continue to meet the Utility's goals.

The City sewer system, detailed in Chapter 4, consists of approximately 210 miles of collection system piping, approximately 5,500 manholes, 17 sewer utility pump stations, and 3 siphons and serves more than 16,000 Utility customers. Utility staff also maintain 7 stormwater pump stations and 5 sewer pump stations serving individual facilities owned by other City departments.

6.1 Utility Responsibility and Authority

This section provides an overview of the Utility organization and basic information related to Utility staffing, training, and education.

6.1.1 Organizational Structure

The Utility is operated as a utility enterprise under the direction of the Public Works (PW) Department Director. PW is responsible for planning, design, construction, operation, maintenance, quality control, and management of the sewer system. The City has a mayor-council form of government; therefore, the PW Director reports to the Mayor. The Mayor provides direct administration and management of the utility. The City Council provide direction on policies and budget.

The Engineering Services Division (Engineering) within PW is the lead group for comprehensive sewer system planning, development of a CIP, and the design, construction, and inspection of projects related to the sewer system. The Utilities Engineering Manager oversees Utilities Engineering, including the Sewer Utility Engineer, and reports directly to the PW Director.

The M&O Services Division within PW is the lead group for the maintenance, inspection, and operation, of the physical assets of the Sewer Utility. The Storm/Sewer Manager oversees the Utility's 10 employees including the Sewer Field Supervisor and is responsible for the day-to-day maintenance and operation of the system. The Storm/Sewer Manager reports to the M&O Services General Manager, who, in turn, reports to the PW Director.

The location of the Utility within the overall PW organizational structure is shown in Figure 6.1.

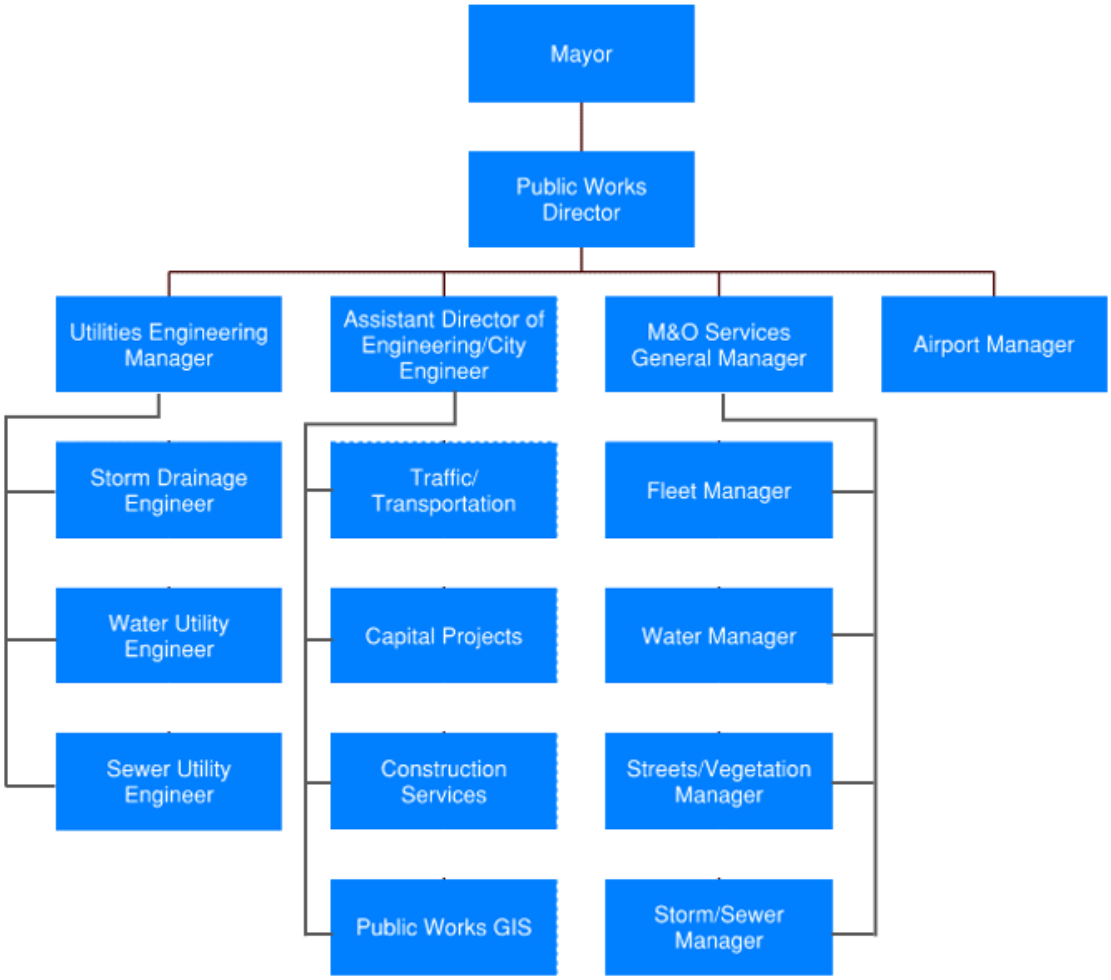


Figure 6.1 City of Auburn Public Works Department Organizational Chart

6.1.2 Staffing Level

The Utility currently employs 10 full-time M&O field staff plus a Storm/Sewer Manager and a Sewer Field Supervisor, who perform administrative duties. This chapter does not include an evaluation of Utility management, including regulatory compliance, planning, and coordination with other City departments. The position titles and primary functions of the full-time M&O field staff working within the Sewer Division are shown in Table 6.1.

Table 6.1 Sewer Utility M&O Field Personnel

Position	Primary Function(s)
Sewer/Storm Manager	Utility administrative duties.
Sewer Field Supervisor	Supervision of field staff.
Sewer Specialist	Two full-time staff dedicated to pump station inspection and maintenance.
Lead Maintenance Worker II	One full-time staff dedicated to operating the CCTV Inspection Program.
Maintenance Worker II	Five full-time staff dedicated to field inspection and maintenance.
Maintenance Worker I	Two full-time staff dedicated to field inspection and maintenance.

6.1.3 Level of Service

The Utility operates in accordance with the policies outlined in Chapter 2, and internally adopted goals integral to policy implementation. These goals are generally based on the current staffing level and tasks deemed most critical to the City and its residents.

6.1.4 Operator Training and Education

The City recognizes the value of having a knowledgeable and well-trained staff operating the Utility and encourages employees to obtain the highest level of training available. At this time, the State of Washington does not require certification for sewer maintenance operators. Seminars, conferences (specifically the annual Washington Wastewater Collection Personnel Association conference), and college coursework have become tools to advance knowledge for maintenance staff with subjects covered including safety, pumps, generators, forklift training, confined space, first aid, CPR, and electric and electronic fundamentals.

Many M&O staff serve in a specialized capacity. This can promote expertise, but also has the potential to limit the ability of the Utility to absorb absences due to vacation, sickness, retirement, and termination. To mitigate this limitation, the City has broadened the scope of the Utility's education system by cross-training staff, primarily staff that will serve in an on-call capacity and will be required to respond to off-duty emergencies.

6.2 Routine Operations

Routine M&O activities for the Utility can be divided into functional groups by facility type, as described in the following sections.

6.2.1 Pump Station Maintenance

Utility staff are responsible for maintenance of 29 pump stations, including 17 sewer utility stations (see Chapter 4), 7 stormwater utility stations, and 5 pump stations serving facilities owned by other City departments, at the Auburn Golf Course, Auburn City Hall, Auburn Justice Center, Isaac Evans Park, and Auburn Valley Humane Society. M&O activities include scheduled weekly and monthly equipment and grounds maintenance as well as emergency generator testing and maintenance. Pump station maintenance is a full-time commitment for two Utility staff teams which each include a maintenance worker and a sewer specialist.

6.2.1.1 Weekly Activities

Weekly pump station inspections are intended as a quick check to ensure proper operation and performance, and to identify potential non-emergency concerns to be addressed during scheduled monthly maintenance. Equipment maintenance schedules are based on manufacturers' recommendations. Depending on the site and time of year, ground maintenance may also be performed weekly or monthly as conditions dictate.

Weekly pump station maintenance activities include the following tasks:

- Perform a general visual inspection of grounds and pump station structure or vault.
- Check equipment for abnormal vibrations.
- Check lubrication of all pumping equipment.
- Check and clean, as needed, seal filters.
- Check ultrasonic level sensor.
- Check pump run times.
- Bleed lines of moisture.
- Inspect/exercise control valves.
- Check wet well for debris.
- Manually run the pump and observe wet well level.
- Security fencing inspection.

Weekly inspection activities are intended to be completed in less than one hour for each pump station.

6.2.1.2 Monthly Activities

Monthly pump station maintenance activities incorporate weekly activities while allowing more time for detailed maintenance and to address any previously identified concerns. Monthly maintenance can be particularly important for older pump stations, where equipment and facilities require more attention.

Monthly pump station maintenance activities include the following tasks:

- Inspect and test engine-generators (see below).
- Inspect pump station mechanical bypass pumping.
- Flush sump pit and manually run sump pump.
- Clean pump station interior and, at a minimum, wipe down control panels and pumps, and wash down/disinfect floor.
- Inspect fall restraint system.
- Spot-check control system and telemetry alarms.
- Inspect cathodic protection.
- Conduct building safety inspection.
- Test automatic transfer switch operation.
- Clean seal filters and vacuum probes.
- Clean check valves.
- Inspect the bioxide system.
- Inspect odor control systems.
- Inspect ventilation systems.
- Inspect chain hoist and crane systems.
- Inspect ladders and stairs.

- Check dehumidifier.
- Inspect electrical panels and variable frequency drive pumps.
- Inspect remote terminal units that connect pump stations to the Supervisory Control and Data Acquisition (SCADA) system.

The duration of monthly inspection activities varies widely depending upon the age/condition of the pump station and observations made during previous weekly inspections. On average, monthly inspections are assumed to be completed within four hours at each pump station.

6.2.1.3 Yearly Activities

Yearly maintenance includes actions that take significantly more time than routine activities and often require coordination/scheduling with additional City staff and/or outside vendors.

Yearly pump station maintenance activities include, but are not limited to, the following tasks:

- Mag meter calibrations.
- Chain hoist and crane load testing.
- Impellers an expeller inspection.
- Volute and motor inspection.

6.2.1.4 Generator Testing and Maintenance

City Utility staff perform limited maintenance on emergency generators serving sewer and stormwater pump stations, primarily to verify the generator's ability to perform in an emergency. Emergency generators are exercised, and fuel levels are evaluated during monthly maintenance activities. Private contracting services are used for detailed generator maintenance. It is recommended that detailed generator maintenance be performed annually, including filter changes and load bank testing.

Permanent generators are located at all 17 Utility-owned sewer pump stations. Four of the stormwater pump stations are equipped with permanent engine-generators. During a power outage, pump stations at City Hall and the Justice Center are run via generators that serve the building. Those two generators are maintained by the Administration Department, Facilities Division. In the event of a generator failure, pump stations can be operated using portable generators owned and maintained by the PW Department.

6.2.1.5 Wet Well Cleaning and Inspection

Wet well cleaning is performed by Utility staff as needed, but on average is necessary twice annually. Some pump stations in service areas with a noted high amount of fat, oils, and grease (FOG) accumulation require cleaning at a higher frequency (see Section 6.3).

During cleaning, wet wells are drained and the inside is cleaned with high-pressure water. Accumulated FOG and sludge/sediments are suctioned from the wet well using the City's vactor truck and transported to a disposal facility. During cleaning, Utility staff inspect all floats, sensors, and other hardware while the wet well is drained, and they also visually inspect the wet well structure for damage.

6.2.2 Collection System Maintenance

Utility staff are responsible for maintenance of approximately 210 miles of collection system piping and approximately 5,500 manholes. M&O activities include pipe cleaning/jetting, closed-circuit television (CCTV) inspection, and manhole inspection and maintenance.

6.2.2.1 Manhole Maintenance

Manhole maintenance includes initial inspection and potential follow-up cleaning and/or repair. Inspection is usually performed in conjunction with CCTV and jetting operations. The inspection includes the following:

- Visual confirmation of proper flow conveyance.
- Assessment of solids buildup in the manhole.
- Evaluation of structural damage or wear and the integrity/condition of manhole covers and ladder rungs.
- Confirmation and/or population of data stored in the computerized maintenance management system (CMMS).

Follow-up cleaning and maintenance work orders are generated based upon the results of initial inspection recorded in the CMMS, and typically require a two-person crew. Based upon recent maintenance history, it is estimated that approximately one in 10 manhole inspections leads to further cleaning. The City estimates that a total of 50 manholes per year require some repair.

6.2.2.2 Sewer Pipeline Cleaning and CCTV Inspection

Cleaning and inspection of the sewer system is performed using City-owned vactor/jet truck and CCTV equipment. Cleaning and CCTV inspection are typically performed in tandem from manhole to manhole by a two- or three-person crew for each task.

Jetting of sewer pipelines and subsequent vactor truck removal is the principal means of removing debris, sludge, FOG, and obstructions from the sewer system. A hose with a special end fitting is inserted into a pipe and high-pressure water (up to 2,500 pounds per square inch) is sent through the hose. The high-pressure water exits the small hole at the tip of the nozzle, breaking down and/or scouring obstructions. Debris is then removed via suction by the vactor truck equipment at each manhole.

Following cleaning, CCTV inspection is performed to identify structural defects and potential pipeline leaks. Routine CCTV inspection of the sewer system is an essential component of the M&O program as it can identify trouble spots before larger failures occur and can provide the City with accurate information about the condition of the sewer collection system. Between 2007 and 2019, inspection reports and digital video captured by the CCTV crews have been stored within the City's computer network using PIPELOGIX software). Since 2020, inspection data has been stored electronically using WinCan software. The PW GIS Group is in the process of inventorying sewer assets and updating data attributes. As part of that effort, Engineering staff is developing a procedure to export condition assessment data from WinCan to the CMMS. The intent of this data sharing is to be able to provide a more accurate planning tool based upon the known condition of wastewater system assets.

The City's goal is to clean and inspect all sewer collection pipes, using the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP), within the system on a seven-year cycle. On average, a three-person crew can clean approximately 3,000 feet of pipe per day or inspect approximately 1,500 feet of pipe per day.

Some of the City's larger, high-flow pipes are challenging for staff to inspect using the current set of equipment. In 2019-2020, the City hired a contractor to perform CCTV inspections on all 18-inch diameter sewer pipes and larger. While no major deficiencies were found, some degradation of older concrete pipe was observed. Staff intends to repeat some of those large diameter pipe inspections during this planning cycle to assess whether additional degradation has occurred and to help project and plan for future repair and replacement needs.

6.2.3 Field Operations

In addition to the M&O activities discussed in Sections 6.2.1 and 6.2.2, the Utility typically maintains a two-person field crew that performs a variety of other ongoing Utility functions. The Utility is also available to assist other PW divisions such as Water, Stormwater, or Transportation during manpower shortages or emergencies. Sewer staff perform liaison functions with Engineering and construction inspections for new projects, repairs, or modification of existing lines.

Currently, services for Utility locates are performed by two designated locators who are under the supervision of the Water Division Manager.

Examples of field operations activities include:

- **Repair:** Sewer staff perform repair of minor pipe breaks/leaks and other system infrastructure.
- **Engineering:** Sewer staff often provide facility inspection services for Engineering projects and support Engineering through visual observation in the field.
- **Vehicle and Equipment Maintenance**: The Utility maintains an extensive inventory of equipment available to respond to problems or emergencies. The fleet is currently equipped with seven trucks, one CCTV van, one sewer vactor/jet truck, and one emergency bypass pump. Each component of this fleet is equipped with valve operators and traffic control equipment.
- **Supply Inventory:** The Utility maintains an inventory of supplies and parts that are available for use in responding to emergency situations as well as normal Utility operations. Supplies and parts are tracked in an inventory control system that allows easy identification of available materials.

It is difficult to quantify the field tasks performed by Utility staff in terms of equivalent staff. Many of these tasks are performed outside of a regular maintenance schedule. The evaluation of existing staffing requirements in Section 6.6 assumes that a two-person field operations crew is maintained for a majority (0.75) of working days, or 1.5 full-time equivalent (FTE).

6.3 Fats, Oils, and Grease Reduction Program

FOG causes many operational challenges in the collection and treatment systems when not properly disposed of at the source. When FOG enters a sewer, it cools, solidifies, and can stick to the interior of pipes. FOG buildup increases over time, reducing the capacity of pipe to convey wastewater, potentially causing backups in the sewer system and operational concerns within pump stations. As of 2024,

Engineering employs two staff members who, among other duties, implement and oversee the City's FOG Reduction Program. The program focuses on regulation of food service establishments (FSE) and FOG generating food processing businesses, as well as public education to minimize the amount of FOG entering the City sewer system. (Note: Each staff member designates 25 percent of their time to the FOG program. Prior to 2024, only one position was available for this effort).

The City currently monitors approximately 174 FSEs within the service area, most of which are required to use grease trap/interceptor pretreatment facilities before discharging to the sewer collection system. FSEs are identified through the business licensing process, during which all FSEs are required to submit a FOG Control Plan per Auburn City Code (ACC) Chapter 13.22. ACC also codifies requirements for installation of pretreatment facilities (typically grease traps and interceptors), cleaning and maintenance, water quality testing, and record-keeping. City policy is to work with FSEs on a cooperative basis through outreach activities; however, refusal to comply with City requirements can result in code enforcement action.

Because of limited staffing for the program, inspection and education efforts have focused primarily on managing requirements for businesses to have a FOG Control Plan and reacting to areas with observed FOG issues. In 2024, an additional staff person was hired to enable a more regular, proactive inspection schedule and more consistent monitoring of grease interceptor cleaning. Regular FOG inspections will also be combined with stormwater source control inspections to use staff resources more efficiently.

Because areas with observed FOG issues are not all downstream from FSEs, staff will continue to monitor those areas and reach out to residents of both single-family and multi-family housing.

In addition to efforts to reduce the amount of FOG in the system, education and outreach efforts include:

1. Discouraging the flushing of cleaning wipes that may be labeled "flushable," but that do not disperse in water. These items can clog sewer lines and get caught in pumps, increasing maintenance efforts within both the City collection and conveyance system, and King County's treatment system.
2. Discouraging the disposal into the sewer system of pharmaceuticals, microplastics, and other prohibited discharges by educating the public on the harmful effects of those substances in the wastewater stream and by promoting alternative disposal methods.
3. Working with the King County Wastewater Treatment Division, Industrial Waste Program, to identify manufacturing and other businesses that discharge substances that may be detrimental to the wastewater treatment process.

6.4 Non-Routine and Emergency Operations

This section discusses unscheduled activities performed by Utility staff and provides a response plan for emergency conditions. The intent of the routine inspection and maintenance activities discussed in Sections 6.2 and 6.3 is to minimize, through proactive management of the sewer facilities, the potential for conditions that could lead to emergencies.

6.4.1 Customer Service Requests

Customer service requests, such as a localized sewer backup complaint, trigger creation of a task to inspect the affected area or sewer facility and identify potential solutions. In some cases, relatively simple solutions can alleviate the issue. However, other cases require coordination with Engineering or

other City departments. On average, Utility staff respond to approximately 50 customer service/complaint-related tasks per year. The effort required to resolve complaints varies considerably.

Good record-keeping can help with complaint resolution by ensuring that all relevant data are gathered and by serving as a reminder to resolve the complaint and notify the complainant. When a complaint is received, the following information should be recorded to the greatest extent possible:

- Name and contact information of the person making the complaint.
- Brief description of the nature of the complaint.
- If sewer overflow, include estimate of volume and duration of overflow.
- Time and date the complaint was received.
- M&O staff assigned to respond.

If any sewage is spilled to the environment or backs up into a building due to problems with the City sewer system, staff will immediately report the spill to the Department of Ecology's ERTS System.

Following the initial response, the complaint record is updated to include the results of inspections and corrective actions taken, if any. If the complaint cannot be resolved internally within the Utility, the complaint record is forwarded to Engineering for further investigation. Notification of any system investigation and/or action is provided to the customer making the complaint.

6.4.2 Emergency Response Program

For specifically sewer related emergencies, the Utility has implemented a standby program whereby one on-call employee is designated to be the first to receive after-hours emergency calls. Most sewer system problems that occur outside normal working hours are reported through the City's 911 emergency response system. An emergency call-out list is provided to the emergency operator in order to contact Utility staff in case of an emergency. Pump station SCADA alarms are also forwarded to the on-call employee. The primary responder to those after-hours calls is the on-call employee. Utility staff have been trained to respond to system emergencies and staff maintains a "Wastewater Standby Manual" with pertinent information helpful in resolving spills, blockages, and other emergencies. The contacted staff assesses the situation, contacts additional staff as necessary, and then responds in accordance with established emergency response procedures.

For citywide emergencies such as severe weather events, flooding, landslides, power outages, or other events with widespread impact across the PW Director or designee will activate the Department Operations Center (DOC) which operates at the M&O facility. By direction of the DOC Operations Chief, Sewer Utility staff will be used for any PW operations and will not necessarily be limited to sewer operations. To help manage staff and operations during such incidents, the PW Department has implemented several standard operating procedures that outline employee responsibilities for availability, work response, etc.

For longer lasting or regional emergencies, City resources, including staff will be managed in accordance with the City's Comprehensive Emergency Management Plan dated October 21, 2019. The primary objectives of the Comprehensive Emergency Management Plan are to ensure public safety, restore essential services as quickly as possible, and provide assistance to other areas as required. That plan outlines responsibilities of City departments related to the mitigation of the emergency situation within

the City, and coordination and support of or from other organizations such as King County, Pierce County, the State of Washington, and neighboring cities.

6.5 Communications, Data Collection, and Record-Keeping

This section describes the electronic communication, data collection, and record-keeping systems used by Utility staff.

6.5.1 Telemetry and Pump Station Controls

The Utility uses a SCADA system to monitor and operate, as necessary, the sewer and storm pump stations from a centralized location. SCADA information from all sewer, storm, and water facilities is routed via radio signals to the M&O control center located at 1305 C Street SW. The control center monitors wet well levels at all of the sewer pump stations together with pump run times and cycles.

Logic programming automates the sewer pump station operation via ultrasonic level detectors with backup high float switches. The control center is configured to sound an alarm in the M&O building if a recognized anomaly is detected. The alarm system is contacts Utility staff to investigate the anomaly in the event that the problem occurs during non-working hours. All alarm and pump information is recorded within the computer that functions as the control center.

6.5.2 Data Collection and Record-Keeping

Data collection and record-keeping functions for the Utility are performed using a Web-based CMMS software package provided by Cartegraph Inc. The CMMS integrates GIS data with Utility records, providing managers with overview information about system and operational performance, and field crews with information related to the condition and failure history of specific wastewater facilities. The City currently uses the CMMS to plan field staff activities (tasks), record results of both routine and non-routine maintenance, and compare actual maintenance efforts to City goals. The City is also using the CMMS as an asset management tool, through which the City optimizes staffing and capital resource planning.

In recent years, the City has made considerable progress in adding asset information to the CMMS, specifically GIS data, physical information related to size and material, and installation date. However, significant inventory work, which is underway, is still required to fully utilize the asset management function of the CMMS, and the addition of information related to risk, asset criticality, and condition is also necessary. To assist the City's transition to an asset management program, the attributes listed below should be used within the CMMS to define each of the City sewer assets (manhole, pipe segment, pump, etc.).

6.5.2.1 Asset-Specific Attributes

The following asset-specific attributes are related to the asset and, besides replacement cost, remain relatively unchanged over time:

- **Asset ID:** The unique asset number that is used by all business systems to identify an asset.
- **Location:** Where the asset is located (GIS).
- **In-service date:** The date the asset was placed into service.

- **Replacement cost:** The cost to replace the asset and the year that the cost data were calculated.
- **Useful life:** The average life expectancy of the asset.
- **Asset criticality:** A value assigned to each asset that indicates how essential it is to maintain service. Typically, it is defined as a combined score based on the consequence of failure and the likelihood of failure, as defined below:
  - **Consequence of failure:** The social and economic cost if the asset fails.
  - **Likelihood of failure (condition):** The estimated time until the asset fails, usually based on condition.
- **Asset class:** A group of assets that share the same characteristics (e.g., manholes, pipe segments). Asset class is used to estimate replacement costs and useful life of groups of assets.
- **Nameplate information and asset specifications:** Important information that is used to uniquely describe an asset such as the manufacturer name, type of asset, serial number, size, material, etc. This information is used for asset identification, replacement, and repair.

6.5.2.2 Maintenance and Operation Attributes

The following M&O attributes are captured as part of the operations, maintenance, and repair history associated with each asset.

- **Asset ID:** Most work orders should be associated with one or more assets. The asset ID is used to uniquely associate work with individual assets.
- **Issue, cause, action:** These codes are used to classify historical M&O activities associated with corrective actions or unplanned maintenance.
  - **Issue:** What is the problem observed in the field?
  - **Cause:** What is the underlying cause of the problem?
  - **Action:** What was done to address the cause?
- **Target start/stop date and actual dates:** Recording the estimated and actual start and stop dates for a work order can help in determining efficiency, planning workloads, and assessing repair costs.
- **Task costs:** Task order costs include labor, parts, materials, and equipment, and should be accurately recorded for each work order.
- **Task type:** Task order types are used to group and compare different types of work activities. Typical work order types include:
  - **Capital improvement:** Work associated with a capital improvement project.
  - **Corrective maintenance:** Work associated with an unplanned repair.
  - **Preventive maintenance:** Work associated with a planned preventive maintenance activity.
  - **Predictive maintenance:** Work associated with predictive measures (usually for critical assets).
- **Warranty information:** Helps to determine assets that are under warranty and the warranty maintenance requirements.

6.6 Existing Staffing Requirements

Existing staffing requirements for M&O activities as discussed in this chapter were compiled and evaluated to determine staffing requirements needed to efficiently operate, maintain, repair, and collect and report the information necessary to properly operate the sewer system. Table 6.2 evaluates the estimated time to conduct sewer system M&O tasks in the manner currently performed. Calculated days for each M&O activity are for a single person performed over an eight-hour "day." Therefore, an activity that is performed quarterly and that requires four hours and two M&O staff to complete would result in an annual requirement of four days.

Table 6.2 Sewer System Maintenance and Operation Task Summary

Work Activity	FTE Days Required Annually	Assumptions/City Goal
Collection System Maintenance		
Manhole inspection	35	Inspect once every 5 years, total of 5,500 manholes. Perform 32 inspections per day with one-person crew.
Manhole cleaning	28	One cleaning is required for every 20 inspections. Two-person crew, 2 hours each.
Manhole repair	40	40 repairs per year. Two-person crew, 4 hours each.
Pipeline cleaning	238	City goal is 220,000 feet per year (entire system in 7 years). A three-person crew cleans approximately 3,000 feet of pipe per day.
CCTV inspection	370	City goal is 220,000 feet per year (entire system in 7 years). A two-person crew inspects approximately 1,200 feet of pipe per day.
Pump Station Maintenance		
Weekly routine maintenance	377	29 pump stations weekly (52 per year). Two-person crew, 1 hour each.
Monthly routine maintenance	174	29 pump stations monthly (12 per year). Two-person crew, 2 hours each.
Wet well cleaning	29	29 pump stations, 2 per year. Two-person crew, 2 hours each.
Other Sewer M&O Activities		
Field operations	375	Two-person field crew for 0.75 of working days (1.5 FTE).
Customer service requests/complaints	50	50 requests per year. Two-person crew, 4 hours each.
Data entry	130	20 hours per week total.
Subtotal	1,846	
Total	2,172	Assumes 15% unquantified work
Total number of working days available at current staffing level	2,140	Based on 5-year average
Current FTEs	10	2,045 days required divided by 200 days per FTE year.
Number of FTEs required	10.1	

Table 6.2 shows that the Utility is appropriately staffed with respect to meeting current City goals for M&O activities. The analysis confirms the qualitative assessment of staffing adequacy provided by City Maintenance staff. The City has consistently approached assessment and maintenance goals, but has little room for deviation from normal procedure due to equipment failure, employee turnover, sickness, additional training, etc. To mitigate shortfalls, areas of the collection system have received higher priority due to frequent need for maintenance (older pipe in poor condition), relatively flat slopes, or high concentrations of FOG. As the system grows and ages, there will likely be a need for additional staff to perform more frequent cleaning and CCTV inspection of the entire system and to account for sewer system expansion with overall city growth.

6.7 Potential Improvement Opportunities and Capital Needs

Based upon discussions with City staff and analysis of M&O activities discussed in this chapter, the following improvement opportunities are available to the Utility. These opportunities are based on improving existing services and improving work productivity:

- Continue to integrate asset management with existing Utility management software (CMMS and GIS):
  - » Continue to add GIS attributes to known Utility assets.
  - » Perform and document condition assessments. Use defined criteria (such as leaks/cracks observed, cleanliness, and other specific measures) and provide staff training to ensure assessment consistency. Use NASSCO PACP-certified inspection programs to integrate inspection results with CMMS.
  - » Use the results of condition assessments to move toward risk-based maintenance to best utilize staff resources. For example, consistently high assessment scores would result in a lower risk or need for maintenance/inspection, allowing M&O staff to be diverted to more essential activities.
  - » Use the compiled results of condition-based assessments to more systematically program repair, rehabilitation and replacement of aging sewer pipes.
- Complete CCTV inspection of inverted siphons that cross the Green River. The City does not have the equipment to inspect these facilities; therefore, contract services will be required.
- Hire a contractor to perform follow-up inspections of the City's large diameter pipes (with a greater than 18-inch diameter) to assess degradation since the previous inspections in 2020.
- Initiate a program to inspect and correct deficiencies in portions of side sewers that are the City's responsibility, meaning the portions located within City rights-of-way. Such a program could include adding additional "side launch" inspection capabilities to the City's current CCTV equipment, hiring a contractor to conduct inspections, or some combination of the two. The compiled results of those inspections would be used to initiate repairs, whether they be done by current staff, or by one of various methods of delivering a capital project.
- Utilize new engineering staff to oversee the cleaning programs more proactively for grease traps and interceptors by food service establishments, and more frequently educate the public about the harmful effects of discharging FOG and other prohibited substances to the public sewer system.

CHAPTER 7 CAPITAL IMPROVEMENT PLAN

This chapter discusses recommended capital projects for the City's sewer system service area (SSSA). The capital projects necessary to meet and maintain the City's level of service (LOS), as described by the goals and policies in Chapter 2 of this Plan, through the 20-year planning period (2025–2044) are presented as a Capital Improvement Plan (CIP).

This Plan includes time frames, which represent the intended framework for future funding decisions and within which future actions and decisions are intended to occur. However, these time frames are estimates, and depending on factors involved in the processing of applications and project work, and availability of funding, the timing may change. The framework does not represent actual commitments by the City. Project identification is an ongoing effort requiring periodic evaluation. This CIP list was developed based on incorporating the City's Capital Facilities Plan (CFP), identification of equipment limitations within the M&O group, and identification of areas of improvement.

7.1 Capital Improvement Plan

The CIP focuses on addressing known problems in a manner identifying cost-effective solutions that incorporate the risks associated with substandard facilities and the uncertainty inherent in engineering calculations/model simulations. A flow chart depicting the process of CIP development is shown in Figure 7.1.

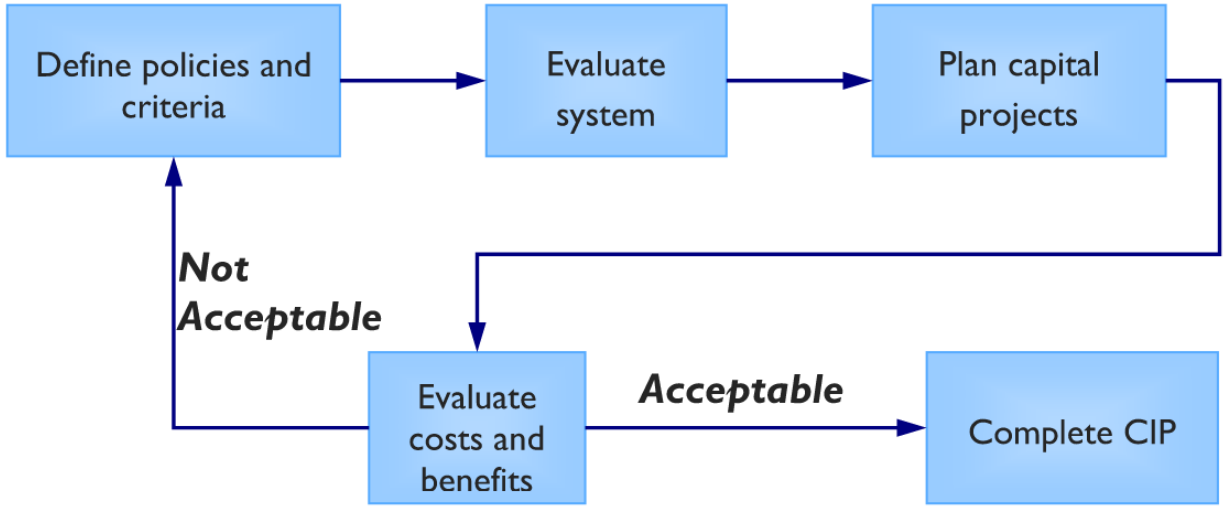


Figure 7.1 CIP Development Flow Chart

The CIP places emphasis on projects identified for implementation between 2025 and 2030, which constitutes the 6-year planning period for utility capital funding requirements and staffing needs. This period provides a realistic outer limit for accurately forecasting the annual cycle of utility projects and priorities. This Plan also includes a 20-year CIP that examines long-term capital requirements, such as the replacement of infrastructure as it exceeds its useful life. All projects in the CIP are consistent with the LOS.

7.1.1 Project Priority

All projects in the CIP have been prioritized for implementation. Priority was assigned as one of three designations. Projects in the top tier, or highest priority, are designated Priority 1; projects in the middle tier are designated Priority 2; and projects with the lowest priority relative to the other projects are considered Priority 3. The priority levels are based on how the proposed project impacts LOS. The project descriptions below include the designated priority.

7.1.2 Project Cost

Estimated costs for each project are included in the CIP descriptions below. The costs are planning-level estimates. Actual costs will depend on various factors at the time of design and construction including labor and material costs. Estimated costs include an allowance for engineering, legal, and administration fees, construction contingencies, contractor overhead, and general conditions. Permitting and land, easement, and/or right-of-way acquisitions are not included in the cost estimate. The costs estimates are in 2024 dollars. CIP Projects 1 and 2 are part of the City's Capital Facilities Plan, where the City developed the costs for these projects.

7.1.3 Project Summary

The CIP projects mainly consist of ongoing and programmatic capital improvements. Ongoing projects include projects identified through previous studies. The City has previously allocated funding to each of these projects, which are currently in various stages of execution. These projects must continue to receive funding under the CIP until completion and have been included in this document to provide a complete picture of the program. Programmatic projects are included in the CIP to provide funding for maintaining and/or improving the LOS. These projects do not address a problem at a specific location but allocate budget for addressing LOS goals citywide. As discussed in Chapter 5, the system hydraulic analysis outlined six areas with future capacity deficiencies. Capacity-related capital projects have been included in the six-year or 20-year planning period, specifically Projects 1 and 4, which are described below in Section 7.2.2. The next Plan update, scheduled for 2032 and repeating every 10 years, has been included as a cost in Table 7.1.

7.2 Capital Improvement Projects

7.2.1 Summary Table

Table 7.1 presents Annual Project Cost Summary for 6-Year and 20-Year CIP.

Table 7.1 Annual Project Cost Summary for 6-Year and 20-Year CIP

Project Number	Project Name	Priority	2025	2026	2027	2028	2029	2030	2025-2030	2031-44	20-Year Project Cost	CIP Allocation (Growth/ Expansion)	CIP Allocation (Repair/ Replacement)
1	Sanitary Sewer Repair and Replacement/System Improvements (Includes Areas 2, 3, 5 and 6 identified in Figure 5.10)	1	$350,000	$1,800,000	$350,000	$1,800,000	$350,000	$1,800,000	$6,450,000	$15,050,000	$21,500,000	5%	95%
2	Street Utility Improvements	1	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000	$1,800,000	$4,200,000	$6,000,000		100%
3	Side Sewer Inspections	1	$370,000	$370,000	$370,000	$370,000	$370,000	$370,000	$2,220,000	$1,480,000	$3,700,000		100%
4	Sewer Pump Station Replacement/Improvement	2	$0	$0	$400,000	$800,000	$1,000,000	$2,000,000	$4,200,000	$10,950,000	$15,150,000	25%	75%
5	Siphon Assessment and Cleaning	1	$0	$0	$580,000	$0	$0	$0	$580,000	$580,000	$1,160,000		100%
6	Pump Station Condition Assessment	1	$0	$105,000	$0	$0	$0	$0	$105,000	$105,000	$210,000		100%
7	Manhole Ring and Cover Replacement	2	$90,000	$90,000	$90,000	$90,000	$90,000	$90,000	$540,000	$1,260,000	$1,800,000		100%
8	Cleaning and Inspection of Large-Diameter Pipe (21-inches and larger)	2	$0	$0	$0	$950,000	$0	$0	$950,000	$1,900,000	$2,850,000		100%
9	Inflow and Infiltration Monitoring (Area 1, Figure 5.10)	3	$0	$0	$0	$0	$0	$530,000	$530,000	$1,590,000	$2,120,000		100%
10	Roegner Park Sewer Capacity Improvements (Area 4, Figure 5.10)	1	$0	$0	$120,000	$0	$0	$1,080,000	$1,200,000	$0	$1,200,000	60%	40%
11	Rainier Ridge Pump Station Replacement	1	$4,000,000	$0	$0	$0	$0	$0	$4,000,000	$0	$4,000,000	50%	50%
12	1st and R Sewer Replacement	2	$400,000	$0	$0	$0	$0	$0	$400,000	$0	$400,000		100%
13	Plan Update	1	$0	$0	$0	$0	$0	$0	$0	$800,000	$800,000		100%
	Total Cost of Priority 1 Projects		**$5,020,000**	**$2,575,000**	**$1,720,000**	**$2,470,000**	**$1,020,000**	**$3,550,000**	**$16,355,000**	**$20,735,000**	**$37,090,000**		
	Total Cost of Priority 2 Projects		**$490,000**	**$90,000**	**$ 490,000**	**$1,840,000**	**$1,090,000**	**$2,090,000**	**$6,090,000**	**$14,110,000**	**$20,200,000**		
	Total Cost of Priority 3 Projects		**$0**	**$0**	**$0**	**$0**	**$0**	**$530,000**	**$530,000**	**$1,590,000**	**$2,120,000**		
	Total CIP Cost		**$5,510,000**	**$2,665,000**	**$2,210,000**	**$4,310,000**	**$2,110,000**	**$6,170,00**	**$22,975,000**	**$36,435,000**	**$59,410,000**		

7.2.2 Project Descriptions

Table 7.2 Project Descriptions

Project Number	1
Project Name	**Sanitary Sewer Repair and Replacement/System Improvements (Includes Areas 2, 3, 5 and 6 identified in Figure 5.10)**
Location	Throughout the SSSA
Priority	1
Schedule	Ongoing, alternating a large project every other year
Problem Summary	As infrastructure ages, failures begin to appear, causing LOS issues
Description	This project is R&R of existing sewer lines, manholes, public side sewers, and other facilities. These assets will be identified through modeled capacity evaluation, areas identified with elevated inflow and infiltration, CCTV inspection and routine cleaning and monitoring. This particular program includes proposed projects that do not have an approved Project Management Plan, or are not associated primarily with the Save Our Streets (SOS) or other transportation improvements. Anticipated projects include biannual, standalone, R&R projects for sewer lines that are broken, misaligned, "bellied," or otherwise require an inordinate amount of maintenance effort or present a risk of backup or trench failure, and facilities that generate consistent odor complaints. Improvements identified through this program may be completed as components of larger projects to gain efficiency in project costs. Additionally, system improvements that enhance the ability to maintain service are included here. It is anticipated, as data such as pipe age, pipe material, condition rating (based on CCTV inspection), and consequence of failure are consolidated in Cartegraph, that planning for the R&R program will be based on a systematic analysis of that data. This project is planned to occur during both the 6- and 20-year CIPs.
Recommended Predesign Refinements	As sewer mains are prioritized for replacement based on age, criticality and condition assessments, continual coordination with other utility and street improvements should be made to increase efficiency.
Cost Estimate	Costs developed by the City and carried over from the Capital Facilities Plan: ▪ 2025 - $350,000 ▪ 2026 - $1,800,000 ▪ 2027 - $350,000 ▪ 2028 - $1,800,000 ▪ 2029 - $350,000 ▪ 2030 - $1,800,000 ▪ 2031–44 - $15,050,000
20 Year Project Cost	$21,500,000

Project Number	2
Project Name	**Street Utility Improvements**
Location	Throughout the SSSA
Priority	1
Schedule	Ongoing
Problem Summary	As infrastructure ages, failures begin to appear, causing LOS issues.
Description	This project is R&R of existing sewer lines, manholes, and public side sewers located within the project limits of City arterial transportation projects and within the SOS program. Coordinating sanitary sewer utility projects with local street and arterial transportation projects can lower the unit cost of pipe replacement by eliminating the pavement restoration component of the sewer project's costs. This project is planned to occur during both the 6- and 20-year CIPs.
Recommended Predesign Refinements	Refine list as additional information becomes available.
Cost Estimate	Costs developed by the City and carried over from the Capital Facilities Plan: ▪ 2025 - $300,000 ▪ 2026 - $300,000 ▪ 2027 - $300,000 ▪ 2028 - $300,000 ▪ 2029 - $300,000 ▪ 2030 - $300,000 ▪ 2031–44 - $4,200,000
20 Year Project Cost	$6,000,000

Project Number	3
Project Name	**Side Sewer Inspections**
Location	Throughout the SSSA
Priority	1
Schedule	2025-2034
Problem Summary	The most common cause for sewer backups in the City in recent years has been the failure of side sewers. Throughout the City the condition of lateral sewers on City property is generally unknown.
Description	Use the services of a contractor to systematically inspect, via CCTV, lateral sewers within City rights-of-way and identify needed repairs. Anticipate conducting approximately 1,600 inspections per year, for 10 years to capture information on 100% of these facilities. Initial inspections will concentrate on areas known to primarily have concrete or clay side sewers.
Recommended Predesign Refinements	Review existing CCTV and GIS information to identify gaps in material type and age that should also be collected during the program.
Cost Estimate	$370,000 per year for 10 years
10 Year Project Cost	$3,700,000

Project Number	4
Project Name	**Sewer Pump Station Replacement/Improvements**
Location	Throughout the SSSA
Priority	1
Schedule	2025-30
Problem Summary	The 2016 Pump Station Condition Assessment identified Rainier Ridge and 22nd Street pump stations as the highest priority stations, followed by R Street and 8th Street pump stations for needing to be renovated, replaced, and/or relocated based on condition, safety concerns, and to accommodate growth. The Rainer Ridge pump station project is ongoing and expected to be mostly complete under the prior CIP. This CIP provides for a programmatic program to renovate or replace the next pump stations on a bi-annual basis following completion of Rainer Ridge. The preliminary anticipated order for modification/replacement is: 1. 22nd Street Pump Station. 2. Riverside Pump Station. 3. Dogwood Pump Station Capacity Improvements. 4. R Street Pump Station. 5. 8th Street Pump Station. It is anticipated that additional stations will require significant improvements and/or replacement within the 6 – 20 year planning horizon as well. The estimated cost for 22nd Street is distributed between 2027 and 2030. The estimated costs for the next identified pump stations are used as a placeholder for project value and distributed from 2031 to 2044. Following the results of the systematic pump station evaluation study updated scheduled for 2026 (CIP project 6, Pump Station Inspections), the sequence or identification of pump stations requiring R&R, and detailed scope of improvements for each of these stations will be developed.
Description	This project will renovate or replace one pump station within the 6-year CIP and allocates money for R&R of unknown pump stations in the 6- to 20-year CIP.
Recommended Predesign Refinements	The costs below for all pump stations do not include provisions for new gravity or force main piping. The costs also assume that the existing generators on site will be reused and that no additional land or site improvements are required.

Project Number	4	
Project Name	**Sewer Pump Station Replacement/Improvements**	
Cost Estimate	1. **22th Street Pump Station (2027-2030)**	
	Based on 2016 Condition Assessment	$4,200,000
	Subtotal	**$4,200,000**
	2. **Riverside Pump Station (2031-2033)**	
	Package pump station	$2,724,000
	Project contingency (50% of all above costs)	$1,362,000
	Washington State and King County taxes (10.2% of construction costs)	$417,000
	Subtotal construction costs	**$4,503,000**
	Administration, engineering design, and permitting (30% of costs)	$1,347,000
	Subtotal	**$5,850,000**
	3. **Dogwood Pump Station (2034-2035)**	
	Package pump station	$256,000
	Project contingency (50% of all above costs)	$128,000
	Washington State and King County taxes (10.2% of construction costs)	$39,000
	Subtotal construction costs	**$423,000**
	Administration, engineering design, and permitting (30% of costs)	$127,000
	Subtotal	**$550,000**
	4. **R Street Pump Station (2037-2039)**	
	Package pump station	$605,000
	Project contingency (50% of all above costs)	$302,500
	Washington State and King County taxes (10.2% of construction costs)	$93,000
	Subtotal construction costs	**$1,000,500**
	Administration, engineering design, and permitting (30% of costs)	$299,500
	Subtotal	**$1,300,000**
	5. **8th Street Pump Station (2041-2043)**	
	Package pump station	$1,513,000
	Project contingency (50% of all above costs)	$756,500
	Washington State and King County taxes (10.2% of construction costs)	$231,000
	Subtotal construction costs	**$2,500,500**
	Administration, engineering design, and permitting (30% of costs)	$749,500
	Subtotal	**$3,250,000**
20 Year Project Cost	$15,150,000	

Project Number	5	
Project Name	**Siphon Assessment and Cleaning**	
Location	Green River crossing near 26th Street NE; Green River crossing over 8th Street NE Bridge	
Priority	1	
Schedule	2027, repeated in 10 years, 2037 or as inspection results warrant	
Problem Summary	Currently, the City does not have the required equipment to complete inspections of the three siphons located within its collection system, and little is known about their condition.	
Description	This project would inspect each siphon to determine and or update its condition and help set future inspection/cleaning protocols. The siphons would be inspected prior to cleaning to determine what their in-situ condition is, then if required the lines would be cleaned and re-inspected. Based on the debris level and condition of the pipes, future activities can be planned. Repeat in 10 years. For cost efficiencies, it is assumed that all three sites would be completed under one contract. This project is planned to occur during both the 6- and 20-year CIPs.	
Recommended predesign refinements	Determine flow rates required for bypass pumping/trucking. Verify the assumption that the Green River crossing at 26th Street NE can be diverted to each barrel without the need for additional bypass pumping.	
Cost Estimate	**Green River crossing via Inverted Siphon at 26th Street NE: 488 feet of 8-inch and 12-inch HDPE**	
	Initial CCTV	$6,600
	Cleaning	$15,600
	Post-cleaning CCTV	$6,600
	Subtotal	**$28,800**
	Green River Crossing via 8th Street NE Bridge: 1,191 feet of 14-inch CIP	
	Traffic control	$117,000
	Bypass pumping	$124,000
	Initial CCTV	$8,000
	Cleaning	$23,000
	Post-cleaning CCTV	$8,000
	Subtotal	**$280,000**
	Subtotal line-item costs	**$308,800**
	Project contingency (30% of all above costs)	$92,600
	Washington State and King County taxes (10.2% of construction costs)	$40,900
	Subtotal construction costs	$**442,300**
	Administration, engineering design, and permitting (30% of costs)	$132,700
20 Year Project Cost	$1,160,000	

Project Number	6	
Project Name	**Pump Station Condition Assessment**	
Location	Throughout the SSSA	
Priority	1	
Schedule	2026 and 2036	
Problem Summary	The City last completed a pump station condition assessment in 2016. Since that time, improvements/ upgrades to the stations have been made, and the pump stations have continued to age. To adequately plan for future pump station investments, re-inspection is required.	
Description	The assessment will evaluate the apparent physical condition of existing stations and equipment. The purpose of the assessment is to predict future serviceability and anticipated longevity for development of future CIPs. Pump stations must meet the adopted system performance and reliability goals, and current code conditions, which may differ from those that existed when the stations were originally built. The assessment would identify requirements necessary to meet the City's goals, requirements necessary for the health and safety of staff and the public, and suggestions that might increase reliability or reduce cost of operations or maintenance. Similar to the 2016 assessment, equipment checklists will be prepared for mechanical/hydraulic and electrical/control systems, site visits to all stations will be made, as-built information and M&O manuals will be reviewed, and M&O personnel will be asked about known issues at each location. Station operation will be observed, but no detailed physical testing of equipment, wiring, controls, or structures will be included. The results of this assessment will compared to the previous inspection to identify observable degradation of especially the older stations. To continue to stay up to date on pump station needs, it is recommended to repeat the inspection within the 20-year CIP.	
Recommended Predesign Refinements	None	
Cost Estimate	Engineering services for condition assessment	$70,200
	Subtotal line-item costs	**$70,200**
	Project contingency (30% of all above costs)	$21,100
	Subtotal inspection costs	**$91,300**
	Administration (15% of costs)	$13,700
20 Year Project Cost	$210,000	

Project Number	7	
Project Name	**Manhole Ring and Cover Replacement**	
Location	Throughout the SSSA	
Priority	2	
Schedule	Ongoing	
Problem Summary	Frame and covers on sewer manholes are continually subject to impact from vehicles. While other portions of the of the manhole structures generally remain in adequate condition, the frames and covers often to be replaced.	
Description	This project would establish an ongoing CIP to provide funds for continued replacement of frames and covers. These replacements may occur as part of other City capital projects or as a stand-alone ring and cover replacement project. The cost for this effort is based on historical, all-inclusive spending from previous City of Auburn work. This project is planned to occur during both the 6- and 20-year CIPs.	
Recommended Predesign Refinements	None.	
Cost Estimate for year 2025	Frame and cover replacement annual	$90,000
	Subtotal line-item costs	**$90,000**
	Project contingency (0% of all above costs)	$0
	Washington State and King County taxes (10.2% of construction costs)	Included
	Subtotal construction costs	**$90,000**
	Administration, engineering design, and permitting (0% of costs)	$0
20 Year Project Cost	$1,800,000	

Project Number	8	
Project Name	**Cleaning and Inspection of Large-Diameter Pipe**	
Location	Throughout the SSSA	
Priority	2	
Schedule	2028, positioned in an off year of CIP 1, repeated in 10 years, 2037 or as initial inspection warrants.	
Problem Summary	M&O staff are not currently equipped to efficiently clean and inspect pipe larger than 18 inches in diameter and meet other goals for cleaning and inspection.	
Description	This project would clean and internally inspect approximately half of the pipe owned by the City that is 21 inches and larger in diameter per effort. This is approximately 39,000 feet, ranging in diameter from 21 inches up to 36 inches. This project is planned to occur during both the 6- and 20-year CIPs.	
Recommended Predesign Refinements	Review existing CCTV inspection information to see if any of the large-diameter pipe has been inspected and determine if it needs cleaning.	
Cost Estimate	Cleaning	$318,000
	CCTV	$106,000
	Disposal	$6,000
	Traffic control	$12,000
	Subtotal line-item costs	**$442,000**
	Project contingency (50% of all above costs)	$221,000
	Washington State & King County taxes (10.2% of construction costs)	$67,600
	Subtotal construction costs	**$730,600**
	Administration, engineering design, and permitting (30% of costs)	$219,000
20 Year Project Cost	$2,850,000	

Project Number	9	
Project Name	**Long Term Inflow and Infiltration Monitoring**	
Location	Throughout the SSSA	
Priority	3	
Schedule	Collect additional data during plan updates to monitor system conditions	
Problem Summary	Based on previous flow monitoring, I/I does not appear to be causing any large scale capacity issues within the city system, and limited areas of elevated I/I have been identified. As part of future plan updates, the I/I should be evaluated and compared with past results to understand if conditions are stable or changed. Excessive localized I/I can also be an indicator of poor sewer main and side sewer condition, and could help prioritize ongoing sewer cleaning and replacement programs.	
Description	This project would monitor flow at key points in the collection system during plan updates. This data will then be used in for Comprehensive Sewer Plan for modeling purposes and I/I assessment. Effort should be made to coordinate flow monitoring with the King County's Decennial Flow Monitoring.	
Recommended Predesign Refinements	Analyze prior flow metering data and hydraulic model results to develop a flow monitoring plan.	
Cost Estimate	Flow monitoring (four flow meters and two rain gauges for 6 months per year)	$284,500
	Subtotal line-item costs	**$284,500**
	Project contingency (30% of all above costs)	$85,400
	Washington State & King County taxes (10.2% of construction costs	$37,700
	Subtotal construction costs	**$407,600**
	Administration, engineering design, and permitting (30% of costs)	$122,300
20 Year Project Cost	$2,120,000	

Project Number	10
Project Name	**Roegner Park Sewer Capacity Improvements (Area 4, Figure 5.10)**
Location	Roegner Park between Oravetz Place to just north of the Lakeland Hills Pump Station.
Priority	1
Schedule	Anticipated design to begin in 2027, with construction anticipated 2030. As King County proceeds with plans to replace the Lakeland Hills Pump Station, staff will determine the optimal time to replace the lines depending on the siting and construction schedule of the County project.
Problem Summary	Hydraulic modelling indicated that the sewer mains just upstream of the Lakeland Hills Pump Station will be surcharged during the design storm event by the year 2044.
Description	This project will replace the potentially surcharging sewer mains will larger pipes or pipes with a modified slope to increase their capacity. The Lakeland Hill Pump Station is being replaced by King County and that project is expected to be complete in 2031. The City will work with County staff during the design phase of each project to identify the most efficient time to construct both projects.
Recommended Predesign Refinements	Coordinate final location and discharge elevations for the pump station wet well prior to design. Some of the surcharged pipes lie within an easement across Auburn School District Athletic Fields. Construction should be scheduled to be least impactful to their operations.
Cost Estimate	2027 - $120,000 2030 - $1,080,000
6 Year Project Cost	$1,200,000
Project Number	**11**
Project Name	**Rainier Ridge Pump Station Replacement**
Location	126th Avenue SE within the Rainier Ridge Development
Priority	1
Schedule	Design will be complete and preliminary construction will begin in 2024. The remainder of the construction will be completed in 2025.
Problem Summary	The existing station is currently under capacity and has little room to expand, and the force main has needed repair several times over the past 20 years.
Description	The project is replacing the existing Rainier Ridge Pump Station located by the edge of a cul-de-sac with a new station located on a City owned parcel that includes a storm pond. The project involves installing gravity lines to accommodate the station relocation and a new force main to be located within an easement on the Green River College property.
Recommended Predesign Refinements	Project is underway
Cost Estimate	2025 - $4,000,000
Current Planning Period Project Cost	$4,000,000

Project Number	12
Project Name	**1st and R Sewer Replacement**
Location	Between 1st Street NE and 2nd Street NE, east of 'R' Street NW.
Priority	2
Schedule	Design work will begin 2024. Construction is anticipated to be completed in 2025.
Problem Summary	There is an existing clay pipe that has significant sags which allow sediment and debris to collect and has caused periodic backups in homes served by the line.
Description	The project will replace the line with a new PVC pipe and reconnect all side sewers. The project requires significant coordination between the City and residents, as the sewer main lies along abutting back property lines of the homes served by the line. The City does not have explicit easements for the sewer main.
Recommended Predesign Refinements	During design, contact will be made with each property owner to discuss rights-of-entry, permanent easements, etc.
Cost Estimate	2025 - $400,000
6 Year Project Cost	$400,000
Project Number	**13**
Project Name	**Plan Update**
Location	Throughout the SSSA
Priority	1
Schedule	Every 10 years
Problem Summary	The City maintains a current Comprehensive Sewer Plan to meet Washington Administrative Code (WAC) Section 173-240-050.
Description	The plan update is a combination of City and Consultant work. The update typically includes review of the existing system and practices, hydraulic modeling, evaluation of system capacity, development of a 6 and 20 year capital improvement program, planning for enhancement of the utility's maintenance and operations, and final plan preparation and assembly
Recommended Predesign Refinements	N/A
Cost Estimate	$400,000
20 Year Project Cost	$800,000

CHAPTER 8 FINANCIAL PLAN

8.1 Introduction

This chapter was prepared by FCS GROUP to provide a financial program that allows the City sewer utility to remain financially viable during the planning period. This financial viability analysis considers the historical financial condition, current and identified future financial and policy obligations, M&O needs, and the financial impacts of the capital projects identified in this Plan. Furthermore, this chapter provides a review of the sewer utility's current rate structure with respect to rate adequacy and customer affordability.

8.2 Past Financial Performance

This section includes a historical summary of financial performance as reported by the City, including fund resources and uses arising from cash transactions.

8.2.1 Comparative Financial Statements

The City legally owns and operates a sewer utility. Table 8.1 shows a summary of sewer fund resources and uses arising from cash transactions for the previous six years (2017 through 2022). 2023 financial statements were not available at the time the chapter was developed. Table 8.2 shows a summary of assets and liabilities, with the difference between the two reported as "net position". Increases and decreases in net position are useful indicators of the financial position of the City's utility. Noteworthy findings and trends for the historical performance and condition of the City's sewer utility are then discussed.

Table 8.1 Summary of Historical Fund Resources and Uses Arising from Cash Transactions

	2017	2018	2019	2020	2021	2022
Operating Revenues						
Charges for Service	$26,369,496	$26,582,233	$26,559,461	$25,357,477	$27,402,561	$28,925,941
Other Operating Revenue	$-	$-	$-	$-	$-	$-
Total Operating Revenues	**$26,369,496**	**$26,582,233**	**$26,559,461**	**$25,357,477**	**$27,402,561**	**$28,925,941**
Operating Expenses						
Maintenance and Operations	$19,055,093	$19,117,920	$19,553,676	$19,125,939	$19,244,065	$20,656,344
Administration	$4,464,901	$4,509,602	$4,519,668	$4,556,451	$5,455,736	$4,115,950
Depreciation and Amortization	$2,199,711	$2,234,136	$2,275,905	$2,337,347	$2,382,652	$2,478,902
Other Operating Expenses	$6,648	$103,267	$-	$-	$-	$-
Total Operating Expenses	**$25,726,353**	**$25,964,925**	**$26,349,249**	**$26,019,737**	**$27,082,453**	**$27,251,196**
Operating Income (Loss)	$643,143	$617,308	$210,212	$(662,260)	$320,108	$1,674,745
Non-Operating Revenues (Expenses)						
Interest Revenue	$164,566	$350,596	$451,889	$120,844	$21,240	$335,524
Other Non-Operating Revenue	$73,739	$71,039	$279,452	$36,167	$765	$21,860
Gain (Loss) on Scale of Capital Assets	$-	$-	$-	$-	$-	$-
Interest Expense	($258,270)	(244,962)	($231,100)	($38,434)	($72,545)	($58,844)
Other Non-Operating Expense	$-	$-	$-	($31,102)	$-	($240,442)
Total Non-Operating Revenues (Expenses)	**$(19,965)**	**$176,673**	**$500,241**	**$87,475**	**($50,540)**	**$58,098**
Income (Loss) Before Contributions and Transfers	$623,178	$793,981	$710,453	($574,785)	$269,568	$1,732,843
Capital Contributions	$873,779	$2,299,751	$2,417,611	$2,801,816	$2,653,740	$666,761
Transfers In	$800,000	$-	$-	$-	$-	$-
Transfers Out	($962,905)	($95,244)	($64,119)	($63,399)	($91,086)	($59,555)
Change in Net Position	$1,334,052	$2,998,488	$3,063,945	$2,163,632	$2,832,222	$2,340,049
Net Position, January 1	**$84,591,243**	**$85,925,295**	**$88,923,783**	**$91,987,728**	**$94,151,360**	**$96,983,582**
Net Position, December 31	**$85,925,295**	**$88,923,783**	**$91,987,728**	**$94,151,360**	**$96,983,582**	**$99,323,631**
M&O Coverage Ratio	102.5%	102.4%	100.8%	97.5%	101.2%	106.1%
Net Operating Income as a % of Operating Revenue	2.4%	2.3%	0.8%	-2.6%	1.2%	5.8%
Debt Service Coverage Ratio	5.41	5.40	4.70	5.59	6.94	10.68

8.2.1.1 Findings and Trends

- The City's sewer charges for services increased from $26.4 million (M) in 2017 to $28.9M in 2022. The average annual increase was approximately 1.9 percent per year, with a total increase of 9.7 percent from 2017 to 2022. Charges for service increased each year, except for 2020 where revenues fell by 4.5 percent. Operating expenditures increased by $1.5M across the six years with an average annual increase of 1.2 percent. Similar to revenues, expenditures dropped in 2020, but to a lesser extent, decreasing by 1.3 percent. With growth in total operating revenues slightly outpacing growth in operating expenses, operating income has been positive in five of the last six years, with 2020 being the exception, where the utility posted an operating loss of $662,000. As many will note, 2020 was not a typical year and likely affected by the global pandemic restrictions in place at the time.
- The M&O coverage ratio (total operating revenues divided by total operating expenses) was 102.5 percent in 2017. With relatively stable revenues and expenses, this metric has maintained its stability, ending 2022 at 106.1 percent. A ratio of 100.0 percent or greater shows that operating revenue will successfully cover operating expenses, and the utility has remained above this ratio for five of the last six years. Again, 2020 was the exception when the ratio decreased to 97.5 percent.
- Net operating income as a percentage of operating revenue was 2.4 percent in 2017, decreasing to negative 2.6 percent in 2020, before recovering back to 5.8 percent by 2022. Similar to the M&O coverage ratio, these trends show how successfully operating revenue actually covered operating expenses, with higher positive numbers being the best and negative numbers showing a need for improvement. In addition, these trends demonstrate the ability of the utility to invest in capital, whether through direct cash transfers or the issuance and servicing of debt.
- The debt service coverage ratio measures the amount of cash flow available to meet principal and interest payments. Typically, revenue bond debt service coverage requires a minimum factor of 1.25 during the life of the loans. This ratio is calculated by dividing cash or net operating income (operating revenues less operating expenses) by annual revenue bond debt service. The debt service coverage ratio for all outstanding revenue bond debt ended 2017 at 5.4, decreasing to 4.7 in 2020, when revenues decreased, before rebounding to 10.7 by 2022. The fact that this ratio has sustained levels higher than the minimum target of 1.25 indicates a stable capacity for new debt and will likely result in favorable terms when entering the bond market.

Table 8.2 Summary of Historical Comparative Statements of Net Position

	2017	2018	2019	2020	2021	2022
Current Assets						
Cash and Cash Equivalents	$16,427,725	$15,768,440	$13,572,363	$16,258,323	$20,799,254	$22,972,741
Investments	$-	$2,004,660	$6,578,855	$4,521,754	$-	$-
Restricted Cash:						
Bond Payments	$535,820	$535,243	$534,067	$451,161	$438,395	$438,395
Customer Deposits	$79,473	$95,300	$77,353	$61,526	$61,527	$61,527
Other (Reserve for Bonds and Rate Stabilization)	$516,173	$516,173	$516,075	$295,639	$295,639	$294,444
Customer Accounts	$2,745,457	$3,516,161	$3,971,951	$4,063,452	$4,146,223	$4,504,623
Other Receivables	$-	$19,200	$19,200	$19,200	$-	$-
Due From Other Governmental Units	$-	$-	$-	$-	$-	$-
Inventories	$9,103	$8,316	$9,220	$13,117	$13,059	$12,867
Total Current Assets	$20,313,751	$22,463,493	$25,279,084	$25,684,172	$25,754,097	$28,284,597
Noncurrent Assets						
Long-Term Contracts, Leases and Notes	$645,900	$623,400	$623,400	$623,400	$600,900	$578,400
Net Pension Asset	$-	$-	$-	$-	$1,360,112	$533,150
Capital Assets Not Being Depreciated:						
Land	$1,695,023	$1,695,023	$1,695,023	$1,695,023	$1,695,023	$1,695,023
Intangible - Water Rights	$-	$-	$-	$-	$-	$-
Construction In Progress	$1,121,482	$1,270,093	$243,140	$1,053,882	$865,150	$883,132
Capital Assets:						
Buildings and Equipment	$1,255,947	$1,274,801	$1,304,180	$1,304,180	$1,304,180	$1,304,180
Improvements Other Than Buildings	$101,366,336	$103,581,870	$106,432,969	$109,169,429	$113,189,587	$114,548,300
Right of Use (Leases)	$-	$-	$-	$-	$-	$-
Less Accumulated Depreciation	($31,609,927)	($33,844,064)	($36,119,969)	($38,457,317)	($40,839,968)	($43,318,870)
Total Noncurrent Assets Net of Accumulated Depreciation	**$74,474,761**	**$74,601,123**	**$74,178,743**	**$75,388,597**	**$78,174,984**	**$76,223,315**
Total Assets	**$94,788,512**	**$97,064,616**	**$99,457,827**	**$101,072,769**	**$103,929,081**	**$104,507,912**
Deferred Outflows of Resources						
Deferred Outflow from Bond Refunding	$-	$-	$-	$34,939	$34,939	$34,939
Deferred Outflow related to Pensions	$200,138	$174,689	$187,172	$208,339	$193,419	$535,880
Total Deferred Outflows of Resources	**$200,138**	**$174,689**	**$187,172**	**$243,278**	**$228,358**	**$570,819**
Current Liabilities						
Current Payables	$393,163	$409,231	$515,602	$895,896	$612,294	$516,801
Claims Payable	$-	$-	$-	$-	$-	$-
Loans Payable - Current	$288,262	$288,262	$288,262	$288,262	$288,262	$288,262
Employee Leave Benefits - Current	$103,747	$105,009	$94,806	$105,009	$153,048	$151,157
Leases Payable - Current	$-	$-	$-	$-	$-	$-
Revenue Bonds Payable - Current	$262,685	$274,960	$287,235	$233,225	$244,273	$255,320
Payable From Restricted Assets:						
Accrued Interest	$279,081	$265,509	$251,338	$160,194	$146,794	$132,796
Deposits	$79,473	$95,300	$77,353	$61,526	$61,527	$61,527
Other Liabilities Payable	$172	$-	$-	$-	$-	$-
Total Current Liabilities	**$1,406,583**	**$1,438,271**	**$1,514,596**	**$1,744,112**	**$1,506,198**	**$1,405,863**
Noncurrent Liabilities						
Employee Leave Benefits	$31,332	$37,988	$25,197	$37,988	$66,243	$57,986
Loans Payable	$2,090,408	$1,802,146	$1,513,884	$1,225,622	$937,360	$649,098
Leases Payable	$-	$-	$-	$-	$-	$-
Revenue Bonds Payable	$4,206,276	$3,924,924	$3,631,296	$3,341,264	$3,030,092	$2,707,872
Net Pension Liability	$1,130,142	$771,584	$599,334	$588,136	$167,400	$328,393
Total Noncurrent Liabilities	**$7,458,158**	**$6,536,642**	**$5,769,711**	**$5,193,010**	**$4,201,095**	**$3,743,349**
Total Liabilities	**$8,864,741**	**$7,974,913**	**$7,284,307**	**$6,937,122**	**$5,707,293**	**$5,149,212**
Deferred Inflows Of Resources						
Deferred Inflow Related to Leases	$-	$-	$-	$-	$-	$-
Deferred Inflow Related to Pensions	$198,614	$340,609	$372,964	$227,565	$1,466,564	$605,888
Total Deferred Inflows of Resources	$198,614	$340,609	$372,964	$227,565	$1,466,564	$605,888
Net Position						
Net Investment in Capital Assets	$67,517,050	$68,222,674	$68,368,733	$70,127,985	$72,152,380	$71,568,397
Restricted For:						
Debt Service	237,092	250,664	264,737	196,971	148,845	242,859
Rate Stabilization	$-	$-	$-	$-	$-	$-
Pension Asset	$-	$-	$-	$-	$-	533,150
Unrestricted	18,171,153	20,450,445	23,354,258	23,826,404	24,682,357	26,979,225
Total Net Position	**85,925,295**	**88,923,783**	**91,987,728**	**94,151,360**	**96,983,582**	**99,323,631**
Current Ratio	14.4	15.6	16.7	14.7	17.1	20.1
Debt to Net Position Ratio	0.08	0.07	0.06	0.06	0.05	0.04
Debt to Noncurrent Capital Assets Ratio	0.10	0.09	0.08	0.07	0.06	0.05

8.2.1.2 Findings and Trends

- The Current Ratio is calculated by dividing unrestricted current assets by current liabilities and measures an entity's ability to pay short-term obligations. This ratio ranges from a low of 14.4 in 2017, ending at a high of 20.1 in 2022. Anything above 2.0 for this liquidity ratio is good.
- The Debt to Net Position Ratio compares total debt to total net position, which is the difference between current assets and liabilities. This ratio begins at 0.08 or 8 percent debt in 2017 and decreases to 0.04 by 2022. For utilities, a ratio of 40 to 60 percent helps to moderate rate impacts by spreading costs over a longer period of time. Based on these results, the City may consider utilizing debt service for future capital investments, especially if it benefits system expansion.
- The Debt to Noncurrent Capital Asset Ratio compares total debt to noncurrent capital assets, which are also known as property, plant, and equipment. This ratio begins at 0.10 or 10 percent debt to 90 percent noncurrent assets in 2017. Noncurrent capital assets increase by $1.7M throughout the six-year history while debt decreases $2.9M, and the ratio decreases to 5 percent by 2022. Similar to the debt to net position ratio, these results indicate the utility has ample borrowing capacity and may consider utilizing debt service for future capital investments, especially if it benefits system expansion. A ratio of 40 percent debt to 60 percent equity or below is a general industry target

8.3 Financial Plan

The sewer utility is responsible for generating sufficient revenue to meet all of its costs. The primary source of funding is derived from ongoing monthly service charges, with additional revenue coming from late penalties and interest earnings. The City controls the level of user charges and, with City Council approval, can adjust user charges as needed to meet financial objectives.

The financial plan can only confirm financial feasibility if it considers the total system costs of providing sewer services, both operating and capital. To meet these objectives, the following elements have been completed.

1. **Capital Funding Plan** - Identifies the total CIP obligations of the planning period. The plan defines a strategy for funding the CIP, including an analysis of available resources from rate revenues, existing reserves, connection charge revenues, debt financing, and any special resources that may be readily available (e.g., grants, developer contributions, etc.). The capital funding plan impacts the financial plan through the use of debt financing (resulting in annual debt service) and the assumed rate revenue made available for capital funding.
2. **Financial Forecast** - Identifies future annual non-capital costs associated with the operation, maintenance, and administration of the sewer system. Included in the financial plan is a reserve analysis that forecasts cash flow and fund balance activity, along with testing for satisfaction of actual or recommended minimum fund balance policies. The financial plan ultimately evaluates the sufficiency of utility revenues in meeting all obligations, including cash uses such as operating expenses, debt service, capital outlays, and reserve contributions, as well as any coverage requirements associated with long-term debt. The plan also identifies the future adjustments required to fully fund all utility obligations in the planning period.

8.3.1 Capital Funding Plan

To properly evaluate future capital funding needs, capital costs were escalated by 3.00 percent annually to the year of planned spending. The CIP developed for this Plan identifies $45.7M in escalated project costs over the 10-year planning horizon from 2024-2033. The 20-year period, through 2043, includes $81.3M in total escalated project costs.

A summary of the 10-year and 20-year CIPs are shown in Table 8.3. As shown, each year has varied capital cost obligations depending on construction schedules and infrastructure planning needs.

Table 8.3 10-Year and 20-Year CIPs

Year	Unescalated $	Escalated $
2024	$6,725,000	$6,725,000
2025	$5,510,000	$5,675,300
2026	$2,665,000	$2,827,299
2027	$2,210,000	$2,414,927
2028	$4,310,000	$4,850,943
2029	$2,110,000	$2,446,068
2030	$6,170,000	$7,367,303
2031	$1,720,000	$2,115,383
2032	$3,490,000	$4,421,028
2033	$5,240,000	$6,837,011
10-Year Total	**$40,150,000**	**$45,680,261**
2034 - 2043	$22,845,000	$35,581,679
20-Year Total	**$62,995,000**	**$81,261,940**

Table 8.4 provides more detail for the 10-year CIP.

Table 8.4 10-Year CIP (Escalated $)

Project	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Sanitary Sewer Repair and Replacement/System Improvements	$300,000	$360,500	$1,909,620	$382,454	$2,025,916	$405,746	$2,149,294	$430,456	$2,280,186	$456,671
Street Utility Improvements	$347,000	$309,000	$318,270	$327,818	$337,653	$347,782	$358,216	$368,962	$380,031	$391,432
Side Sewer Inspections	$-	$381,100	$392,533	$404,309	$416,438	$428,931	$441,799	$-	$-	$-
Sewer Pump Station Replacement/Improvement	$-	$-	$-	$437,091	$900,407	$1,159,274	$2,388,105	$553,443	$1,140,093	$5,871,479
Siphon Assessment and Cleaning	$-	$-	$-	$633,782	$-	$-	$-	$-	$-	$-
Pump Station Condition Assessment	$-	$-	$111,395	$-	$-	$-	$-	$-	$-	$-
Manhole Ring and Cover Replacement	$86,000	$92,700	$95,481	$98,345	$101,296	$104,335	$107,465	$110,689	$114,009	$117,430
Cleaning and Inspection of Large-Diameter Pipe (21-inches and larger)	$-	$-	$-	$-	$1,069,233	$-	$-	$-	$-	$-
Inflow and Infiltration Monitoring	$-	$-	$-	$-	$-	$-	$632,848	$651,833	$-	$-
Roegner Park Sewer Capacity Improvements	$-	$-	$-	$131,127	$-	$-	$1,289,576	$-	$-	$-
Rainier Ridge Pump Station Replacement	$4,400,000	$4,120,000	$-	$-	$-	$-	$-	$-	$-	$-
1st and R Sewer Replacement	$-	$412,000	$-	$-	$-	$-	$-	$-	$-	$-
Plan Update	$300,000	$-	$-	$-	$-	$-	$-	$-	$506,708	$-
Garden Avenue Realignment	$200,000	$-	$-	$-	$-	$-	$-	$-	$-	$-
Jornada Park Access Imp	$100,000	$-	$-	$-	$-	$-	$-	$-	$-	$-
M Street Widening	$232,000	$-	$-	$-	$-	$-	$-	$-	$-	$-
Regional Growth Center Access Improvements	$160,000	$-	$-	$-	$-	$-	$-	$-	$-	$-
2024 Sewer Repair and Replacement	$600,000	$-	$-	$-	$-	$-	$-	$-	$-	$-
Total	$6,725,000	$5,675,300	$2,827,299	$2,414,927	$4,850,943	$2,446,068	$7,367,303	$2,115,383	$4,421,028	$6,837,011

8.4 Available Funding Assistance and Financing Resources

Feasible long-term capital funding strategies must be defined to ensure that adequate resources are available to fund the CIP identified in this Plan. In addition to the City's resources, such as accumulated cash reserves, capital revenues, and rate revenues designated for capital purposes, capital needs can be met from outside sources, such as grants, low-interest loans, and bond financing. The following is a summary of the City's internal and external resources.

8.4.1 City Resources

Resources appropriate for funding capital needs include accumulated cash in the capital fund, rate revenues designated for capital spending purposes, developer contributions, and capital-related charges such as system development charges. The first two resources will be discussed in the **Fiscal Policies** section of the **Financial Forecast**. Capital-related charges are discussed below.

8.4.1.1 System Development Charges

A connection charge such as the City's system development charge (SDC) refers to a one-time charge imposed on new customers as a condition of connecting to the sewer system. The purpose of the SDC is two-fold: 1) to promote equity between new and existing customers; and 2) to provide a source of revenue to fund capital projects. Revenue can only be used to fund utility capital projects or to pay debt service incurred to finance those projects. In the absence of a connection charge, growth-related capital costs would be borne in large part by existing customers. In 2024, the City charged all new customers an SDC of $3,544 per residential customer equivalent.

8.4.1.2 Local Facilities Charges

While a connection charge is the manner in which new customers pay their share of system investment costs, local facilities charge funding is used to pay the costs of local facilities that connect each property to the system's infrastructure. Local facilities funding is often overlooked in rate forecasting because it is funded upfront by either connecting customers and developers, or through an assessment to properties, but never from rates.

A number of mechanisms can be considered toward funding local facilities. One of the following scenarios typically occurs: (a) the utility charges a connection fee based on the cost of the local facilities (under the same authority as the facilities assessment fee); (b) a developer funds an extension of the system to its development and turns those facilities over to the utility (contributed capital); or (c) a local assessment is set up called a Utility Local Improvement District (ULID/LID) or a Local Utility District, which collects tax revenue from benefited properties.

A local facilities charge is a variation of the connection charge. It is a city-imposed charge to recover the cost related to service extension to local properties. Often called a front-footage charge and imposed on the basis of footage of the main "fronting" a particular property, it is usually implemented as a reimbursement mechanism to a city for the cost of a local facility that directly serves a property. It is a form of a connection charge and thus can accumulate up to 10 years of interest. It typically applies in instances when no developer-installed facilities are needed through developer extension due to the prior existence of available mains already serving the developing property.

The developer extension is a requirement that a developer install on-site and sometimes off-site improvements as a condition of extending service. These are in addition to the connection charge required and must be built to City standards. Part of the agreement between the City and the developer planning to extend service might include a latecomer agreement, resulting in a latecomer charge to new connections for the developer extension.

Latecomer charges are a variation of developer extensions, whereby new customers connecting to a developer-installed improvement make a payment to the City based on their share of the developer's cost. The City passes this charge on to the developer who installed the facilities. As part of the developer extension process, this defines the allocation of costs and records latecomer obligations on the title of affected properties. No interest is allowed, and the reimbursement agreement cannot exceed 20 years in duration.

ULID/LID is another mechanism for funding infrastructure that assesses benefited properties based on the special benefit received by the construction of specific facilities. Most often used for local facilities, some ULIDs also recover related general facilities costs. Substantial legal and procedural requirements can make this a relatively expensive process, and there are mechanisms by which a ULID can be rejected.

8.4.2 Outside Resources

This section outlines various grant, loan, and bond opportunities available to the City through federal and state agencies to fund the CIP identified in the Plan.

8.4.2.1 Grants and Low-Cost Loans

Historically, federal and state grant programs were available to local utilities for capital funding assistance. However, these assistance programs have been mostly eliminated, substantially reduced in scope and amount, or replaced by loan programs. Remaining grant programs are generally lightly funded and heavily subscribed. Nonetheless, the benefit of low-interest loans makes the effort of applying worthwhile.

8.4.2.2 Bond Financing

General Obligation Bonds - General obligation (G.O.) bonds are bonds secured by the full faith and credit of the issuing agency, committing all available tax and revenue resources to debt repayment. With this high level of commitment, G.O. bonds have relatively low interest rates and few financial restrictions. However, the authority to issue G.O. bonds is restricted in terms of the amount and use of the funds, as defined by the Washington constitution and statute. Specifically, the amount of debt that can be issued is linked to assessed valuation.

Revised Code of Washington 39.36.020 states:

> *(2)(a)(ii) Counties, cities, and towns are limited to an indebtedness amount not exceeding one and one-half percent of the value of the taxable property in such counties, cities, or towns without the assent of three-fifths of the voters therein voting at an election held for that purpose.*
>
> *(b) In cases requiring such assent counties, cities, towns, and public hospital districts are limited to a total indebtedness of two and one-half percent of the value of the taxable property therein.*

While bonding capacity can limit the availability of G.O. bonds for utility purposes, these can sometimes play a valuable role in project financing. A utility rate savings may be realized through two avenues: the lower interest rate and related bond costs, and the extension of repayment obligation to all tax-paying properties (not just developed properties) through the authorization of an ad valorem property tax levy.

Revenue Bonds – Revenue bonds are commonly used to fund utility capital improvements. The debt is secured by the revenues of the issuing utility. With this limited commitment, revenue bonds typically bear higher interest rates than G.O. bonds and require security conditions related to the maintenance of dedicated reserves (a bond reserve) and financial performance (added bond debt service coverage). The City agrees to satisfy these requirements by resolution as a condition of bond sale.

Revenue bonds can be issued in Washington without a public vote. There is no bonding limit, except perhaps the practical limit of the utility's ability to generate sufficient revenue to repay the debt and provide coverage. In some cases, poor credit might make issuing revenue bonds problematic.

8.4.3 Capital Financing Strategy

An ideal capital financing strategy would include the use of grants and low-cost loans when debt issuance is required. However, these resources are very limited and competitive in nature and do not provide a reliable source of funding for planning purposes. It is recommended that the City pursue these funding avenues but assume revenue bond financing to meet the needs which can't be met by available cash resources. The capital financing strategy developed to fund the CIP identified in this Plan assumes the following funding resources:

- Accumulated cash reserves,
- Transfers of excess cash (over minimum balance targets) from the Operating Fund,
- System development charge revenue, and
- Interest earned on Capital Fund balances.

The cash resources described above are anticipated to fund 100.0 percent of the 10-year CIP and 20-year CIP. No new debt is anticipated in the next 10-year or 20-year planning periods. Table 8.5 presents the 10-year and 20-year capital financing strategy.

Table 8.5 10-Year and 20-Year Capital Financing Strategy

Year	Capital Expenditures	System Development Charge Revenue	Cash/Reserve Funding	Total Financial Resources
2024	$6,725,000	$325,000	$6,400,000	$6,725,000
2025	$5,675,300	$468,144	$5,207,156	$5,675,300
2026	$2,827,299	$484,117	$2,343,181	$2,827,299
2027	$2,414,927	$500,635	$1,914,291	$2,414,927
2028	$4,850,943	$517,717	$4,333,226	$4,850,943
2029	$2,446,068	$535,382	$1,910,687	$2,446,068
2030	$7,367,303	$553,649	$6,813,654	$7,367,303
2031	$2,115,383	$572,539	$1,542,844	$2,115,383
2032	$4,421,028	$592,074	$3,828,953	$4,421,028
2033	$6,837,011	$612,276	$6,224,736	$6,837,011
Subtotal	**$45,680,261**	**$5,161,534**	**$40,518,727**	**$45,680,261**
2034-2043	$35,581,679	$7,397,790	$28,183,889	$35,581,679
Total	**$81,261,940**	**$12,559,324**	**$68,702,617**	**$81,261,940**

8.5 Financial Forecast

The financial forecast, or revenue requirement analysis, forecasts the amount of annual revenue that needs to be generated by user rates. The analysis incorporates operating revenues, M&O expenses, debt service payments, rate-funded capital needs, and any other identified revenues or expenses related to operations. The objective of the financial forecast is to evaluate the sufficiency of the current level of rates. In addition to annual operating costs, the revenue needs also include debt covenant requirements and specific fiscal policies and financial goals of the City.

For this analysis, two revenue sufficiency tests have been developed to reflect the financial goals and constraints of the City: cash needs must be met; and debt coverage requirements must be realized. In order to operate successfully with respect to these goals, both tests of revenue sufficiency must be met.

Cash Test - The cash flow test identifies all known cash requirements for the City in each year of the planning period. Typically, these include M&O expenses, debt service payments, rate-funded system reinvestment funding or directly funded capital outlays, and any additions to specified reserve balances. The total annual cash needs of the City are then compared to projected cash revenues using the current rate structure. Any projected revenue shortfalls are identified, and the rate increases necessary to make up the shortfalls are established.

Coverage Test - The coverage test is based on a commitment made by the City when issuing revenue bonds and some other forms of long-term debt. For the purposes of this analysis, revenue bond debt is assumed for any needed debt issuance. As a security condition of issuance, the City would be required per covenant to agree that the revenue bond debt would have a higher priority for payment (a senior lien) compared to most other expenditures; the only outlays with a higher lien are M&O expenses. Debt service coverage is expressed as a multiplier of the annual revenue bond debt service payment. For example, a 1.00 coverage factor would imply that no additional cushion is required. A 1.25 coverage factor means revenue must be sufficient to pay M&O expenses, annual revenue bond debt service payments, and an additional 25.0 percent of annual revenue bond debt service payments. The excess cash flow derived from the added coverage, if any, can be used for any purpose, including funding capital projects. Targeting a higher coverage factor can help the City achieve a better credit rating and provide lower interest rates for future debt issues.

In determining the annual revenue requirement, both the cash and coverage sufficiency tests must be met, and the test with the greatest deficiency drives the level of needed rate increase in any given year.

8.5.1 Current Financial Structure

The City maintains a fund structure and implements financial policies that target management of a financially viable and fiscally responsible sewer system.

8.5.1.1 Fiscal Policies

A summary of the key financial policies employed by the City, as well as those recommended and incorporated in the financial program, are discussed below.

Operating Fund - Operating reserves are designed to provide a liquidity cushion to ensure that adequate cash working capital will be maintained to deal with significant cash balance fluctuations, such as seasonal fluctuations in billings and receipts, unanticipated cash expenses, or lower than expected revenue

collections. Like other types of reserves, operating reserves also serve another purpose: they help smooth rate increases over time. Target funding levels for an operating reserve are generally expressed as a certain number of days of M&O expenses, with the minimum requirement varying with the expected revenue volatility. Industry practice for utility operating reserves ranges from 30 days (8.0 percent) to 120 days (33.0 percent) of M&O expenses, with the lower end more appropriate for utilities with stable revenue streams and the higher end more appropriate for utilities with significant seasonal or consumption-based fluctuations.

This financial plan targets a minimum balance in the sewer utility Operating Fund equal to 60 days of M&O expenses.

Capital Fund - A utility capital contingency reserve is an amount of cash set aside in case of an emergency should a piece of equipment or a portion of the utility's infrastructure fail unexpectedly. The reserve also could be used for other unanticipated capital needs, including capital project cost overruns. Industry practices range from maintaining a balance equal to 1.0 to 2.0 percent of fixed assets, an amount equal to a 5-year rolling average of CIP costs, or an amount determined sufficient to fund equipment failure (other than catastrophic failure). The final target level should balance industry practices with the risk level of the City.

This financial plan targets a minimum balance in the sewer utility capital fund equal to 1.0 percent of fixed assets.

Metro Sub Fund - The City's sewer utility collects rate revenue for treatment expenses provided by King County's Sewer Treatment Division. Rates are collected to offset regional treatment expenses and are treated as a pass-through for forecasting purposes. Similar to the operating and capital reserves, the metro sub-fund reserve is meant to provide a liquidity cushion as well as provide for unexpected contingencies.

The current metro sub-fund reserve target is set at $625,000, or approximately 3.0 percent of total operating expenses.

System Reinvestment - System reinvestment funding promotes system integrity through ongoing repair and replacement of system infrastructure. Ideally, a detailed asset management plan would guide the level of rate funded system reinvestment, however, in absence of this level of effort, annual depreciation expense is commonly used as a measure of the decline in asset value associated with routine use of the system. Particularly for utilities that do not already have an explicit system reinvestment policy in place, implementing a funding level based on full depreciation expense could significantly impact rates. An alternative benchmark is annual depreciation expense net of debt principal payments on outstanding debt. This approach recognizes that customers are still paying for certain assets through the debt component of their rate and intends to avoid simultaneously charging customers for an asset and its future replacement. The specific benchmark used to set system reinvestment funding targets is a matter of policy that must balance various objectives, including managing rate impacts, keeping long-term costs down, and promoting "generational equity" (i.e., not excessively burdening current customers with paying for facilities that will serve a larger group of customers in the future).

The City is currently phasing in system reinvestment funding, aiming to reach 75.0 percent of annual depreciation levels by 2029. With this phase-in strategy in place, the City is forecast to fund an average of $1.7M in capital costs annually through rate revenues within the 10-year forecast period.

Debt Management - It is prudent to consider policies related to debt management as part of a broader utility financial policy structure. Debt management policies should be evaluated and formalized, including the level of acceptable outstanding debt, debt repayment, bond coverage, and total debt coverage targets. The City has one outstanding sewer revenue bond, as well as two Public Works Trust Fund loans, which will both be repaid between 2024-2026. This forecast meets or exceeds the required revenue bond debt service coverage of 1.25.

8.5.1.2 Financial Forecast

The financial forecast is primarily based upon the City's budget through 2024 and takes into consideration other key factors and assumptions needed to develop a complete portrait of the City's annual sewer utility financial obligations. The following is a list of the key revenue and expense factors and assumptions used to develop the financial forecast.

- **Growth** - Rate revenue escalation is based on a 0.40 percent growth rate developed based on actual historical trends at the City. While the Plan assumes an annual growth rate of 1.33 percent for units and 1.51 percent for flow, the City preferred a more conservative growth rate for the financial planning purpose.
- **Revenue** - The City has two general revenue sources: 1) sewer service charges (rate revenue); and 2) miscellaneous (non-rate) revenue. In the event of a forecasted annual shortfall, rate revenue can be increased to meet the annual revenue requirement. For the purpose of this financial forecast, rate revenues are forecasted to increase with customer growth. Non-rate revenues are held constant throughout the forecast period, with the exception of interest earnings which are calculated based on projected balances and assumed investment rates.
  - **King County Metro Service Charges** - The City collects rate revenue for treatment expenses provided by King County's Sewer Treatment Division. Rates are collected to offset regional treatment expenses and are treated as a pass-through for forecasting purposes.
- **System Development Charge Revenue** - The existing system development charges are applied to the projected new connections to forecast revenue. Based on the growth assumptions described above, the connection charge will generate an average of $516,000 annually from 2024-2033. This equates to an average of 126 new connections per year. Connection charge revenue is directed towards annual capital needs.
- **Expenses** - M&O expense projections are based on the City's budget through 2024 with general cost inflation increases of 3.0 percent, labor cost inflation of 5.0 percent for 2025 and 2026, decreasing to 3.0 percent thereafter and benefit cost inflation increases of 12.50 percent for 2025 and 2026, decreasing to 5.5 percent per year thereafter. Budget figures were used for taxes through 2024. Future taxes are calculated based on forecasted revenues and prevailing tax rates.
  - **King County Metro Service Charges** - Rates are expected to increase by approximately 5.75 percent in 2025, followed by 7.00 percent annually from 2026-2028, increasing to 8.25 percent annually from 2029-2031 and finally 9.26 percent annually from 2032-2034 (Based on the recent King County Sewer Treatment Division Financial Plan).
  - **Facilities G.O. Bond** - In order to construct a new facility for the City, the sewer utility will fund part of a General Obligation Bond totaling $38M. Beginning in 2025, the sewer utility's proportionate share of the bond is forecasted at $333,000 annually for the remainder of the twenty-year forecast.

- **Existing Debt** - The sewer utility has three outstanding debt issues: one revenue bond, and two Public Works Trust Fund (PWTF) loans. The 2020 refunding revenue bond has annual payments averaging $375,000 that end after 2030 when the loan is repaid. The PWTF loans combined annual payment is $292,000 in 2024 before the first PWTF loan is repaid, dropping the annual payment to $182,000 for 2025 and 2026, when the second PWTF loan is repaid. The total annual existing debt service obligations begin 2024 at $669,000, decreasing to $376,000 with the repayment of the PWTF loans and will be completely repaid by 2030.
- **Future Debt** - No new debt is anticipated in the 10-year and 20-year forecast periods.
- **Transfers to Capital** - Operating fund balance above the minimum requirement is assumed to be available to fund capital projects and projected to be transferred to the Capital Fund each year, if needed. In total, the utility is forecast to fund $23.5M in capital projects from excess operating fund cash.

Although the financial plan is completed through 2043, the rate strategy focuses on the shorter-term planning period of 2024 through 2033. It is recommended that the City revisit the proposed rates every two to three years to ensure that the rate projections developed remain adequate. Any significant changes should be incorporated into the financial plan and future rates should be adjusted as needed.

Table 8.6, following, summarizes the annual revenue requirements based on the forecast of revenues, expenditures, fund balances, and fiscal policies.

The financial forecast indicates that at existing rate levels the utility will become deficient in 2028 as growth in expenses outpaces growth in revenues and the utility phases in rate funded system reinvestment levels towards their fiscal policy goal of full annual depreciation funding.

8.5.1.3 City Funds and Reserves

Table 8.7 shows a summary of the projected Operating Fund and Capital Fund ending balances through 2033 based on the rate forecasts presented above. The Operating Fund is maintained at a minimum of 60 days of M&O expenses, and the Capital Fund balance continues to meet or exceed the minimum target of 1.00 percent of fixed assets in every year of the forecast.

Table 8.6 10-Year Financial Forecast

Revenue Requirement	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Revenues										
Rate Revenues Under Existing Rates	$10,794,348	$10,837,525	$10,880,876	$10,924,399	$10,968,097	$11,011,969	$11,056,017	$11,100,241	$11,144,642	$11,189,220
King County Metro Charge	$22,023,000	$23,289,792	$24,920,237	26,666,572	28,536,789	30,894,541	33,444,109	36,205,476	39,558,279	43,218,789
Non-Rate Revenues	$136,700	$139,751	$123,600	106,765	106,847	106,947	107,062	106,636	107,338	107,501
Total Revenues	$32,954,048	$34,267,068	$35,924,713	$37,697,736	$39,611,733	$42,013,457	$44,607,188	$47,412,353	$50,810,259	$54,515,510
Expenses										
Cash Operating Expenses	$8,270,883	$8,529,150	$8,893,962	$9,137,639	$9,392,749	$9,657,439	$9,932,109	$10,217,105	$10,513,087	$10,820,294
King County Metro Charge	$22,023,000	$23,289,792	$24,920,237	26,666,572	28,536,789	30,894,541	33,444,109	36,205,476	39,558,279	43,218,789
Existing Debt Service	$668,964	$558,512	$557,058	375,738	375,001	373,528	373,774	$-	$-	$-
New Debt Service	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Rate Funded System Reinvestment	$198,877	$414,781	$761,873	$1,435,024	$1,780,240	$2,261,992	$2,372,501	$2,404,232	$2,470,547	$2,573,102
Total Expenses	**$31,161,724**	**$32,792,235**	**$35,133,130**	**$37,614,973**	**$40,084,780**	**$43,187,499**	**$46,122,493**	**$48,826,813**	**$52,541,914**	**$56,612,186**
Total Surplus (Deficiency)	**$1,792,324**	**$1,474,834**	**$791,583**	**$82,763**	**($473,047)**	**($1,174,043)**	**($1,515,305)**	**($1,414,459)**	**($1,731,655)**	**($2,096,675)**
Annual Rate Adjustment		**7.50%**	**2.25%**	**2.25%**	**2.25%**	**2.25%**	**2.25%**	**.25%**	**2.25%**	**2.25%**
Cumulative Annual Rate Adjustment		**7.50%**	**9.92%**	**12.39%**	**14.92%**	**17.51%**	**20.15%**	**2.85%**	**25.62%**	**28.44%**
Rate Revenues After Rate Increase	$10,794,348	$11,650,340	$11,960,122	$12,278,142	$12,604,618	$12,939,775	$13,283,843	$13,637,061	$13,999,670	$14,371,921
Additional Taxes from Rate Increase	-	$119,726	$158,971	$199,404	$241,056	$283,962	$328,155	$373,669	$420,540	$468,806
Net Cash Flow After Rate Increase	**$1,792,324**	**$2,167,922**	**$1,711,859**	**$1,237,102**	**$922,417**	**$469,801**	**$384,367**	**$749,174**	**$702,834**	**$617,220**
Coverage After Rate Increases	10.63	13.46	12.55	12.15	12.29	12.39	12.50	n/a	n/a	n/a

Table 8.7 Ending Cash Balance Summary

Ending Fund Balances	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Operating Fund	$1,378,480	$1,421,525	$1,482,327	$1,522,940	$1,565,458	$1,609,573	$1,655,351	$1,702,863	$1,752,181	$1,803,382
Capital Fund	$20,036,228	$17,969,817	$18,398,962	$19,300,174	$17,820,089	$18,775,281	$14,860,470	$16,572,125	$16,032,955	$13,107,670
Total	**$21,414,708**	**$19,391,342**	**$19,881,289**	**$20,823,114**	**$19,385,547**	**$20,384,854**	**$16,515,821**	**$18,274,988**	**$17,785,136**	**$14,911,052**

8.6 Current and Projected Rates

8.6.1 Current Rates

The existing sewer rates consist of a monthly fixed rate for the single family class. The non single family class pays a monthly fixed rate plus a volume rate per hundred cubic feet (CCF) of flow over the monthly usage allowance of 7.5 CCF per unit. In addition to the monthly rates charged by the City, separate rates are applied to each account for treatment expenses provided by King County. Rates for treatment expenses are set by the King County Sewer Division and are treated as a path-through. The exhibits below summarize the existing and proposed City of Auburn rates, as well as the existing and proposed King County Sewer Division rates. Total bills for customers will include both a City of Auburn and a King County Treatment component.

Table 8.8 shows the existing City of Auburn and King County Sewer Division rate schedule.

Table 8.8 Existing Schedule of Rates

Description	2024 Existing
Monthly Fixed Charges	
Single Family	$30.04
Non Single Family	$32.95
King County Treatment	$55.11
Volume Charge per CCF (Over 7.5 CCF/unit)	
Non Single Family	$3.34
Non Single Family - King County	$7.35

8.6.2 Projected Rates

The financial forecast discussed above indicates the need for annual rate adjustments in order to satisfy all forecasted financial obligations. The City has adopted a 7.50 percent rate increase for 2025, with annual 2.25 percent increases forecasted from 2026 through 2033. Table 8.9 shows the projected rates with increases applied uniformly to the sewer fixed and flow components of all classes, where applicable.

Table 8.9 Proposed Schedule of Rates

Description	Existing	Proposed								
		2025	2026	2027	2028	2029	2030	2031	2032	2033
Monthly Fixed Charges										
Single Family	$30.04	$32.29	$33.02	$33.76	$34.52	$35.30	$36.09	$36.90	$37.73	$38.58
Non Single Family	$32.95	$35.42	$36.22	$37.03	$37.86	$38.71	$39.58	$40.47	$41.38	$42.31
King County Treatment	$55.11	$58.28	$62.36	$66.73	$71.41	$77.31	$83.69	$90.60	$98.99	$108.15
Volume Charge per CCF (over 7.5 CCF/unit)										
Non Single Family	$3.34	$3.59	$3.67	$3.75	$3.83	$3.92	$4.01	$4.10	$4.19	$4.28
Non Single Family - King County	$7.35	$7.77	$8.32	$8.90	$9.52	$10.31	$11.16	$12.08	$13.20	$14.42

8.7 Affordability

A common affordability metric used by the Environmental Protection Agency to measure the relative financial impact sewer rates have on a community as a whole considers whether rates exceed 2.50 percent of a community's median household income. The average median household income for the City was $87,406 between 2018 and 2022, expressed in 2022 dollars, according to the U.S. Census Bureau. The 2022 value is escalated based on the actual rate of inflation in 2023 of 4.31 percent and the 3.00 percent inflation rate used in the financial forecast to project the median household income in future years. Table 8.10 presents the City's monthly sewer bill, inclusive of the King County Sewer Division's component, projected to 2033 and tested against the 2.50 percent monthly affordability threshold.

Table 8.10 Community Affordability Test

Year	Inflation	Median HH Income	2.5% Monthly Threshold	Projected Monthly Bill	% of Median HH Income
2022	-	$87,406	$-	$-	-
2023	4.31%	$91,173	$-	$-	-
2024	3.00%	$93,908	$195.64	$85.15	1.09%
2025	3.00%	$96,726	$201.51	$90.57	1.12%
2026	3.00%	$99,627	$207.56	$95.38	1.15%
2027	3.00%	$102,616	$213.78	$100.49	1.18%
2028	3.00%	$105,695	$220.20	$105.93	1.20%
2029	3.00%	$108,866	$226.80	$112.61	1.24%
2030	3.00%	$112,132	$233.61	$119.78	1.28%
2031	3.00%	$115,495	$240.62	$127.50	1.32%
2032	3.00%	$118,960	$247.83	$136.72	1.38%
2033	3.00%	$122,529	$255.27	$146.73	1.44%

Applying the 2.50 percent monthly affordability test, the City's rates are forecasted to remain within the indicated affordability range through 2033.

8.8 Conclusion

The results of this analysis indicate that at existing rate levels the utility will be deficient beginning in 2028. To keep pace with expenses and continue to uphase in rate funded system reinvestment towards depreciation levels, the City has adopted a 7.50 percent rate increase in 2025. Forecasting into the future a 2.25 percent annual rate increase will be required from 2026 through 2033. It is recommended that the City regularly review and update the key underlying assumptions that compose the multi-year financial plan to ensure that adequate revenues are collected to meet the City's total financial obligations.

APPENDIX A

INTER-LOCAL AGREEMENTS AND OUTSIDE AGENCY CORRESPONDENCE

A1: KING COUNTY

- Sewage Disposal Service with Metro (Ordinance 2774, and Resolutions 1727 and 2090)
- Franchise Agreement No. 14458

A2: SOOS CREEK WATER AND SEWER DISTRICT

- Service Area Boundaries (Resolution 3321)

A3: CITY OF KENT

- Sewer Service Boundaries (Resolution 3322)

A4: CITY OF PACIFIC

- Sewer Service Boundaries (Resolutions 4335 and 730)

A5: MUCKLESHOOT INDIAN TRIBE

- Sewer Service Boundaries (Resolution 4902)
- Wastewater Conveyance Cost Sharing (Resolution 3660)
- Temporary Sewage Lift Station Operation (Resolution 3502)

A6: LAKEHAVEN UTILITY DISTRICT

- Sewer Service Boundaries (Resolutions 3651, 3824, and 2005-1038)
- Sewer District's Sanitary Sewer Service Area (Resolution 5353)

A7: CITY OF ANGOLA

- Sewer Service Boundaries (Resolution 3589)
- Water And Sewer Utility Service, Billing, And Collection (Resolution 5505)

A8: CITY OF BONNEY LAKE

- Sewer Service Boundaries (Resolutions 3760 and 3796)
- Right of Way Use Permits (Resolutions 3873 and 1471)

APPENDIX A1

KING COUNTY

- Sewage Disposal Service with Metro (Ordinance 2774, and Resolutions 1727 and 2090)
- Franchise Agreement No. 14458

CITY OF AUBURN, WASHINGTON

ORDINANCE NO. 2774

AN ORDINANCE authorizing the Mayor and City Clerk to sign an agreement for sewage disposal between the City of Auburn and the Municipality of Metropolitan Seattle.

WHEREAS, the City of Auburn and the Municipality of Metropolitan Seattle (Metro) have engaged in extensive negotiations relating to the provision by Metro of sewage disposal service to the City; and

WHEREAS, the City Council now believes that the negotiators for the City and Metro have agreed to and have submitted to the City Council an agreement which serves the best interest of the City; NOW, THEREFORE,

THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, DO ORDAIN, as follows:

Section 1. The Mayor and City Clerk of the City are hereby authorized to execute on behalf of the City the agreement for sewage disposal between the City and the Municipality of Metropolitan Seattle, and to cause that agreement to be transmitted to the Municipality of Metropolitan Seattle.

PASSED at a regular open public meeting of the Auburn City Council, Auburn, Washington, this 5th day of November, 1973.

Stanley P Kinsey
Mayor

ATTEST:

Lorna L Byerley
City Clerk

APPROVED AS TO FORM:

City Attorney

PUBLISHED: 3-1-74

Executed in 6 counterparts of which this is counterpart No. 6

MUNICIPALITY OF METROPOLITAN SEATTLE

CITY OF AUBURN

AGREEMENT FOR SEWAGE DISPOSAL

THIS AGREEMENT is made as of this 1st day of March, 1974, between the CITY OF AUBURN, a municipal corporation of the State of Washington (hereinafter referred to as the "City"), and the MUNICIPALITY OF METROPOLITAN SEATTLE, a municipal corporation of the State of Washington (hereinafter referred to as "Metro").

W I T N E S S E T H:

WHEREAS, the public health, welfare and safety of the residents of the City and the residents of the metropolitan area require the elimination of potential sources of water pollution and the preservation of the fresh and salt water resources of the area; and

WHEREAS, the State of Washington Department of Ecology has adopted water quality standards and a plan of implementation thereof which requires that certain major sewage disposal works be constructed and operated and that the cities and special districts within the metropolitan area dispose of their sewage in accordance with a comprehensive plan for the metropolitan area; and

WHEREAS, Metro is engaged in developing and operating a metropolitan sewage disposal system and the City is engaged in developing and operating a sewage collection system; and

WHEREAS, to provide for the disposal by Metro of sewage collected by the City, it is necessary that a contract be now entered into establishing the rights and duties of the parties;

NOW, THEREFORE, in consideration of the mutual covenants contained herein, IT IS HEREBY AGREED AS FOLLOWS:

Section 1. Definition of Terms. The following words and phrases used in this contract shall have the meanings hereinafter set forth in this section:

a) The words "Comprehensive Plan" shall mean the Comprehensive Sewage Disposal Plan adopted in Resolution No. 23 of the Municipality of Metropolitan Seattle and all amendments thereof heretofore or hereafter adopted.

b) The words "Metropolitan Sewerage System" shall mean all of the facilities to be constructed, acquired or used by Metro as a part of the Comprehensive Plan. The Metropolitan Sewerage System shall generally include sewage disposal facilities with capacity to receive sewage from natural drainage areas of approximately one thousand acres or more. The Metropolitan Sewerage System shall thus include trunk or interceptor sewer facilities extending to a point within each tributary and natural drainage area where not more than one thousand acres remain to be served beyond the upper terminus of such trunk or interceptor sewer.

c) The words "Local Sewerage Facilities" shall mean all facilities owned or operated by a Participant for the local collection of sewage to be delivered to the Metropolitan Sewerage System and all side sewers and connection fittings connected directly to such System which serve customers of the Participant.

d) The words "Metropolitan Area" shall mean the area contained within the boundaries of the

Municipality of Metropolitan Seattle as now or hereafter constituted.

e) The word "Participant" shall mean each city, town, county, sewer district, municipal corporation, person, firm or private corporation which shall dispose of any portion of its sanitary sewage into the Metropolitan Sewerage System and shall have entered into a contract with Metro providing for such disposal.

f) The words "Residential Customer" shall mean a single family residence billed by a Participant for sewerage charges.

Section 2. Delivery and Acceptance of Sewage. On the first day of the month next following the execution of this contract or the acceptance by Metro of a federal grant by the United States Environmental Protection Agency for construction of the "Auburn Interceptor" as hereinafter defined, whichever is the later, the City shall deliver to the Metropolitan Sewerage System all of the sewage and industrial wastes collected or received by the City, and Metro shall accept the sewage and industrial wastes delivered for treatment subject to such reasonable rules and regulations as may be adopted from time to time by the Metropolitan Council. Metro shall not directly accept sewage or wastes from any person, firm or corporation which is located within the boundaries of or is delivering its sewage into the Local Sewerage Facilities of the City without the written consent of the City. The City shall not deliver sewage to any other agency for disposal without the written consent of Metro.

The treatment and disposal by Metro of the sewage and industrial waste delivered by the City to Metro shall comply with all applicable federal and state standards and requirements.

Section 3. Construction of Metro Facilities. Metro shall construct, acquire or otherwise secure the right to use all facilities within King County required for the disposal of sewage delivered to Metro pursuant to this Agreement and shall perform all services required for the maintenance, operation, repair, replacement or improvement of the Metropolitan Sewerage System, including any additions and betterments thereto. Except as otherwise provided in Sections 9 and 10 of this Agreement, Metro shall in its sole discretion determine the nature, location and the time of construction of facilities of the Metropolitan Sewerage System.

Section 4. Connection of Local Sewerage Facilities to Permanent Facilities of the Metropolitan Sewerage System. Local Sewerage Facilities of the City shall be connected to the Metropolitan Sewerage System at such time as any of the permanent facilities of such Metropolitan Sewerage System shall be available to receive sewage collected by such local facilities. The initial connection of all such local facilities existing at the time of this Agreement shall be accomplished at the expense of Metro. Subsequent connections shall be accomplished at the expense of the City in accordance with the rules and regulations of Metro and at such point or points of connection as shall be determined by Metro, except that the City shall have the right to connect any of its local facilities into any manhole of the Metropolitan Sewerage System, and such right may be exercised whether or not the same has been approved by any agency other than the parties. The City shall secure and pay for the right to use all Local Sewerage Facilities of another Participant which may be required to deliver the City's sewage to the Metropolitan Sewerage System.

Section 5. Payment for Sewage Disposal. For the disposal of sewage hereafter collected by the City and delivered to Metro the City shall pay to Metro, on or before the last day of each month during the term of this Agreement, commencing on the first day of the month next following the date of execution of this contract or the acceptance by Metro of a federal grant by the United States Environmental Protection Agency for the construction of the "Auburn Interceptor," as hereinafter defined, whichever is the later, a sewage disposal charge determined as provided in this Section 5.

1. For the quarterly periods ending March 31, June 30, September 30 and December 31 of each year, every Participant shall submit a written report to Metro setting forth (a) the number of Residential Customers billed by such Participant for local sewerage charges as of the last day of the quarter, (b) the total number of all customers billed by such Participant as of such day and (c) the total water consumption during such quarter for all customers billed by such Participant other than Residential Customers. The quarterly water consumption report of the City shall be taken from water meter records and may be adjusted to exclude water which, under the rules and regulations of Metro, needs not and in fact does not enter the sanitary facilities of a customer. Where actual sewage flow from an individual customer is metered, the metered sewage flow shall be reported in lieu of adjusted water consumption. The total quarterly water consumption report in cubic feet shall be divided by 2,700 to determine the number of Residential Customer equivalents represented by each Participant's customers other than single family residences. Metro shall maintain a permanent record of the quarterly customer reports from each Participant.

The City's first quarterly report shall cover the period from the date when sewage is first delivered to Metro to the end of the quarter in which such delivery occurs and shall be submitted within thirty days thereafter. Succeeding reports

shall be made for each quarterly period thereafter and shall be submitted within thirty (30) days following the end of the quarter.

2. a) To form a basis for determining the monthly sewage disposal charge to be paid by each Participant during any particular quarterly period, Metro shall ascertain the number of Residential Customers and Residential Customer equivalents of each Participant. This determination shall be made by taking the sum of the actual number of Residential Customers reported as of the last day of the next to the last preceding quarter and the average number of Residential Customer equivalents per quarter reported for the four quarters ending with said next to the last preceding quarter, adjusted for each Participant to eliminate any Residential Customers or Residential Customer equivalents whose sewage is delivered to a governmental agency other than Metro or other than a Participant for disposal outside of the Metropolitan Area. The number thus determined is hereinafter called the "basic reported number".

b) For the initial period until the City shall have submitted six consecutive quarterly reports, the basic reported number of Residential Customers and Residential Customer equivalents of the City shall be determined as provided in this subparagraph (b). On or before the tenth day of each month beginning with the month prior to the month in which sewage from the City is first delivered to Metro, the City shall submit a written statement of the number of Residential Customers and Residential Customer equivalents estimated to be billed by the City during the next succeeding month. For the purpose of

determining the basic reported number of Residential Customers or Residential Customer equivalents of the City for such next succeeding month, Metro may at its discretion adopt either such estimate or the actual number of Residential Customers and Residential Customer equivalents reported by the City as of the last day of the next to the last preceding reported quarter. After the City shall have furnished six consecutive quarterly reports, the basic reported number of Residential Customers and Residential Customer equivalents of the City shall be determined as provided in the immediately preceding subparagraph (a).

c) If the City shall fail to submit the required monthly and/or quarterly reports when due, Metro may make its own estimate of the number of Residential Customers and Residential Customer equivalents of the City and such estimate shall constitute the basic reported number for the purpose of determining sewage disposal charges.

d) The basic reported number of Residential Customers and Residential Customer equivalents of the City shall be further adjusted by adding thereto twenty-five percent (25%) of the number of Residential Customers or Residential Customer equivalents of the City located outside the boundaries of Metro. The sum thus determined is hereinafter called the "adjusted reported number". If all of the area located within the City or any area located outside the City and served into its Local Sewerage Facilities shall be annexed to Metro at any time after the date of this agreement or if the twenty-five percent additive adjustment shall have been paid by the City for a period of ten years, said additive adjustment shall be eliminated effective as of the first day of the month following such annexation as to the number of

Residential Customers or Residential Customer equivalents located within such annexed area and in any event shall be eliminated entirely upon the tenth anniversary of the date when sewage disposal charges shall have first been paid to Metro by the City. If the additive adjustment described above shall not be applied to the Residential Customers or Residential Customer equivalents of any other Participant located outside of the present boundaries of Metro under any future agreement between Metro and such Participant or shall be applied in a lesser amount, then the additive adjustment described in this paragraph (d) shall be correspondingly reduced or deleted. The adjusted reported number of Residential Customers and Residential Customer equivalents of the City shall be the number of Residential Customers and Residential Customer equivalents reported by the City for the purpose of determining sewage disposal charges pursuant to Paragraph 3 of this section.

3. The monthly sewage disposal charge payable to Metro shall be determined as follows:

a) Prior to July 1st of each year, Metro shall determine its total monetary requirements for the disposal of sewage during the next succeeding calendar year. Such requirements shall include the cost of administration, operation, maintenance, repair and replacement of the Metropolitan Sewerage System, establishment and maintenance of necessary working capital and reserves, the requirements of any resolution providing for the issuance of revenue bonds of Metro to finance the acquisition, construction or use of sewerage facilities, plus not to exceed 1% of the foregoing requirements for general administrative overhead costs.

b) To determine the monthly rate per Residential Customer or Residential Customer equivalent to be used during

the next succeeding calendar year, the total monetary requirements for disposal of sewage as determined in subparagraph 3(a) of this section shall be divided by twelve and the resulting quotient shall be divided by the total number of Residential Customers and Residential Customer equivalents of all Participants for the October-December quarter preceding said July 1st.

c) The monthly sewage disposal charges paid by each Participant to Metro shall be obtained by multiplying the monthly rate by the number of Residential Customers and Residential Customer equivalents of the Participant. An additional charge may be made for sewage or wastes of unusual quality or composition requiring special treatment, or Metro may require pretreatment of such sewage or wastes. An additional charge may be made for quantities of storm or ground waters entering those Local Sewerage Facilities which are constructed after January 1, 1961, in excess of the minimum standard established by the general rules and regulations of Metro, except that any such additional charges shall be offset by any expenditures made by the City on the planning and development of facilities for the correction of inflow and infiltration into the existing sewerage system of the City. If the City shall expend more than $50,000.00 in any one year on such planning and development from any source other than categorical grants, the amount expended over $50,000.00 in that year may be credited once to any future years in which the actual expenditure was less than $50,000.00 so as to avoid the collection in those years of the additional charge provided in the immediately preceding sentence.

4. A statement of the amount of the monthly sewage disposal charge shall be submitted by Metro to each Participant on or before the first day of each month and payment of such charge shall be due on the last day of such month. If any charge or portion thereof due to Metro shall remain unpaid for fifteen days following its due date, the Participant shall be charged with and pay to Metro interest on the amount unpaid from its due date until paid at the rate of 6% per annum, and Metro may, upon the failure of any Participant to pay such amount, enforce payment by any remedy available at law or equity.

5. The City irrevocably obligates and binds itself to pay its sewage disposal charge out of the gross revenues from sewage collected or received by the City. City further binds itself to establish, maintain and collect charges for sewer service which will at all times be sufficient to pay all costs of maintenance and operation of the sewer system of the City, including the sewage disposal charge payable to Metro hereunder and sufficient to pay the principal of and interest on any revenue bonds of the City which shall constitute a charge upon such gross revenues. It is recognized by Metro and the City that the sewage disposal charge paid by the City to Metro shall constitute an expense of maintenance and operation of the sewer system of the City. The City shall provide in the issuance of future sewer revenue bonds of the City that expenses of maintenance and operation of the sewer system of the City shall be paid before payment of principal and interest of such bonds. The City shall have the right to fix its own schedule of rates and charges for sewer service provided that same shall produce revenue sufficient to meet the covenants contained in this Agreement.

Section 6. Responsibility of City. The City shall be responsible for the delivery to the Metropolitan Sewerage System of sewage collected by the City, for the construction, maintenance, and operation of Local Sewerage Facilities, for the prompt connection of all premises served by such facilities, and for the payment of all costs incident to the collection of such sewage and its delivery to the Metropolitan Sewerage System.

Section 7. Records. Permanent books and records shall be kept by Metro and the City of the respective rates established, the volumes of sewage delivered and discharged into the Metropolitan Sewerage System wherever such volumes are measured and the number of Residential Customers and Residential Customer equivalents reported. In addition, Metro shall keep complete books of account showing all costs incurred in connection with the Metropolitan Sewerage System, and the City shall

keep complete records showing the amount billed to each of its customers for sewer service and the basis used for such billing including sewage flow and water consumption for each customer where applicable. The records required by this paragraph shall be available for examination by either party at any reasonable time.

Section 8. Development of Metropolitan Sewerage System It is contemplated that the Metropolitan Sewerage System will be developed in stages and, except as provided in Section 9 hereof, the nature of all facilities of the Metropolitan Sewerage System to be constructed, acquired or used and the time of such construction, acquisition or use shall be determined in the sole discretion of Metro, it being contemplated that Metro shall ultimately provide sewage disposal for the entire Metropolitan Area and such adjacent areas as may feasibly be served into the Metropolitan Sewerage System.

Section 9. Construction of Certain Metropolitan Trunk Sewers by Metro. Metro agrees that it will design, construct and inspect facilities of the Metropolitan Sewerage System generally described on Exhibit "A" attached hereto (the "Auburn Interceptor") upon the execution of this contract and the acceptance by Metro of a federal grant by the United States Environmental Protection Agency for construction of said Auburn Interceptor. The facilities shall be connected and ready for service within twenty-four calendar months next after the execution of this contract and the acceptance by Metro of a federal grant by the United States Environmental Protection Agency for the construction of the Auburn Interceptor. The date of connection may be extended by the time consumed by acts of God, strikes, material shortages or other delays beyond the control of Metro or its contractors. In the event of a dispute

over the existence of any of the delays permitting such date to be extended or over the amount of time of such extension, either party may submit such dispute to the Superior Court of King County for arbitration. If such facilities are not completed by such date or extension thereof, the amount of Metro charges paid by the City from such date to the actual date of completion thereof may be used by the City as a credit in determining the feasibility of construction of future Metropolitan Sewerage System facilities which the City may request Metro to build. Such credit shall be applied directly against that portion of the cost of such future facilities which is borne by Metro, other than by grants, and the test of feasibility used by Metro shall be one which is then generally applied by Metro to all extensions of the Metropolitan Sewerage System.

In addition, Metro shall place in every construction contract relating to the Interceptor sewers described in Exhibit "A" a provision for the payment of each such contractor of liquidated damages to the City of $300.00 per day for each day such construction has not been completed after such date or extension thereof, and such liquidated damage provision shall provide for the enforcement thereof by the City. Metro shall not approve any such time extension without prior approval of the City, which shall not be unreasonably withheld.

Metro shall construct that portion of the West Valley Interceptor from 11th Avenue North (in Algona) to Main Street (in Auburn) within a reasonable time after the Auburn Interceptor shall have been completed and the City shall have requested such construction, and the City shall provide a pump station and force main connection from the West Valley Highway along Main Street to

the existing Boeing Trunk sewer. Metro shall approve the design of and shall operate and maintain the pump station. At such time as the pump station is no longer required by Metro, the possession of such facility and responsibility for operation and maintenance therefor shall revert to the City.

At such time as the City shall request Metro to construct additional Metropolitan Sewerage System facilities within King County and within the drainage area of the City's Local Sewerage Facilities and such construction is feasible under the test of feasibility then generally applied by Metro to all extensions of the Metropolitan Sewerage System, Metro shall construct such additional facilities within a reasonable time after such request.

The City shall grant to Metro without cost a fifteen-foot permanent easement and an adequate construction easement on City property for the construction of a portion of the Auburn Interceptor. The location of such easement shall commence at the influent structure of the existing City Sewage Lagoon, thence northerly and generally parallel to the existing City Sewage Lagoon to 30th Street Northeast, the exact location to be agreed upon by Metro and the City.

Section 10. Use by Metro of City Sewerage Facilities. Certain existing sewerage facilities of the City can serve as "temporary" Metropolitan Sewerage System facilities and certain existing sewerage facilities can serve as "permanent" Metropolitan Sewerage System facilities. Effective on the date sewage disposal charges shall first be chargeable hereunder, or such earlier date as may be mutually agreed upon (hereinafter called "takeover date"), Metro shall have the right to use and the duty to maintain, operate, repair and replace the facilities owned by the City which are described on Exhibit "B" attached hereto and by this reference made a part hereof. The City shall have the right to jointly use the interceptor sewers described on Exhibit "B" as

City trunk sewers for the delivery of any sewage collected by the City, but the making of any additional lateral and side sewer connections shall be subject to approval by Metro of the manner such connections are to be made, based on adopted Metro standards.

If sewage disposal charges are chargeable to the City and if the City shall construct an additional freeway crossing with the approval by Metro of the design and location of such facility or crossing, the City shall be reimbursed for the City's actual cost thereof (less any grants received) in addition to the amount of reimbursement set forth below. The freeway reimbursement shall be made in cash within thirty-five (35) days following completion and billing by the City, but no sooner than the takeover date. The City shall continue to own the facilities described in this Section 10 and shall continue to pay the principal of and interest on any bonds issued to pay in whole or in part the cost of acquisition and construction of such facilities, provided that facilities which are designated as "permanent" shall be conveyed by the City to Metro by quit claim deed upon payment of all presently outstanding revenue bonds or general obligation bonds of the City secured by or issued to acquire or construct said facilities.

The right of Metro to use any of the facilities which are designated as "temporary" shall expire at such time as Metro shall no longer require the use of such portion. Upon thirty (30) days' notice by Metro to the City, such temporary facilities shall be returned to the City and Metro's obligation to maintain, operate, repair and replace these temporary facilities shall cease. It is contemplated by this Agreement that the City shall, at the earliest practicable date and at its expense, separate the storm and sanitary sewage in areas of the City where storm and sanitary sewage are now combined. The right of Metro to use the

City Sewage Treatment Lagoon after interception shall terminate when the City shall have applied after the date of this contract at least $207,000 of City funds, from any source other than categorical grants, to the construction of storm sewer separation facilities. Metro shall have the right to salvage any equipment which it has installed or purchased from the City in the "temporary" facilities after the period of Metro's use, otherwise such facilities shall be returned to the City in "as then is" condition upon expiration of use by Metro.

For the privilege of using the facilities described in Exhibit "B" Metro shall pay to the City the total amount of $713,713 (hereinafter called "amount of reimbursement"). Said amount of reimbursement shall be subject to reduction and reimbursement to Metro for any grant hereafter received by the City applicable to such facilities. Metro shall also reimburse the City for the package lift station located at 41st and A Street S.E. as shown on Exhibit "B" within thirty (30) days after the City transfers title to the lift station facility and underlying property to Metro. The Metro reimubrsement shall include the actual cost of acquisition of the property plus the current depreciated value of the lift station facility which is agreed to be $37,445.00..

Metro further agrees that prior to advertisement for bids for the construction of the facilities generally described on Exhibit "A" attached hereto, or any future construction of Metropolitan Sewerage System facilities to which Local Sewerage Facilities of the City could directly connect, it will submit plans and specifications for those facilities to the City for its review and upon timely notice to the City may indicate to Metro where manhole stub connections should be installed and Metro shall thereafter install same, in anticipation of further future connections by the City at those points. The installation of such stubs will be at no cost or expense to the City. The City shall have the right to connect any Local Sewerage Facilities to those stubs. The City shall also have a right to approve the location of Metropolitan Sewerage System facilities on City-owned property or right of ways, which approval shall not be unreasonably withheld.

The City shall give written notice to Metro prior to the takeover date, setting forth the manner in which the amount of reimbursement shall be paid. The City may elect to receive all or any portion of said amount in cash within thirty (30) days following the date when sewage disposal charges shall first be chargeable hereunder (hereinafter called "cash payment date") and may elect to receive any portion which is not paid on said cash payment date together with interest thereon at the rate of 4% per annum from said date, in the form of a credit against the City's monthly sewage disposal charge in equal monthly amounts sufficient to amortize such unpaid amount of reimbursement and interest thereon prior to July 1, 1980. The City may at any time after the cash payment date elect to receive any unpaid portion of the amount of reimbursement in cash with interest at the rate of 4% per annum to date of final payment by giving written notice to Metro at least one year prior to the date such final payment is to be made.

Section 11. Joint Use of Auburn Interceptor. The City and Metro agree that the Auburn Interceptor (hereinafter called "the Interceptor") shall serve as both a Metropolitan and a Local Sewerage Facility wherever the City has authority to provide local service. The City shall have the right to make direct local connections to said Interceptor for which the City shall pay to Metro, before making said connection, the sum of $8.00 per front foot of each parcel of property served on each side of the Interceptor or a total of $16.00 per front foot of each parcel of property served if local service is given on both sides of the Interceptor. Said amount represents the estimated cost of constructing an eight-inch (8") local sewer on the same alignment as the Interceptor throughout that portion where local connections are allowed. Upon payment of said amount, the City shall own an eight-inch (8") equivalent share of the Interceptor where local service is given on both sides of the Interceptor, and one-half thereof where service is given on only one side. Local connection to the Interceptor may be made by the City in such a manner as

shall be approved by Metro. The City shall hold Metro harmless from any loss, cost, charge, liability or expense resulting from or arising out of damage to the Interceptor or to the persons or property of others caused by the making of such connections or the City's failure to observe any covenant of this Agreement relating to such connections.

Section 12. Construction and Maintenance of Local Sewerage Facilities. The City shall either construct, operate and maintain at its expense or cause others to construct, operate and maintain at their expense in a proper fashion, any Local Sewerage Facilities other than joint use facilities connected to the Interceptor up to and including the tee connection. Metro shall have no responsibility for either construction, operation or maintenance of such Local Sewerage Facilities.

Section 13. Infiltration and Inflow in Auburn System. The City shall prepare and deliver to Metro on or before April 15, 1974, an inflow and infiltration analysis and survey of the existing Auburn Sewer System which shall comply with applicable regulations of the United States Environmental Protection Agency. Metro shall include in the Auburn Interceptor grant application the grant eligible portions of the cost of such evaluation studies and the grant eligible portions of the cost of any improvements or corrections to Auburn Sewer System facilities which are tributary to such Interceptor, which are recommended by the evaluation studies and which comply with applicable United States Environmental Protection Agency regulations.

Metro shall reimburse the City for the eligible portions of the evaluation studies and improvements or corrections as grant funds are received by Metro for such purposes.

Section 14. Insurance and Liability for Damages. The City and Metro shall respectively secure and maintain with responsible insurers all such insurance as is customarily maintained with respect to sewage systems of like character against loss of or damage to the

sewerage facilities of the City and Metro respectively and against public and other liability to the extent that such insurance can be secured and maintained at reasonable cost. Any loss or damage occurring as a result of the operation by Metro of the Metropolitan Sewerage System, the temporary facilities described in Exhibit "B" and the joint use sewers referred to in Section 10, shall be the sole liability of Metro and any loss or damage occurring as a result of the operation by the City of the Local Sewerage Facilities shall be the sole liability of the City.

Section 15. Assignment. The City shall not have the right to assign this Agreement or any of its rights and obligations hereunder either by operation of law or by voluntary agreement without the written consent of Metro, acting reasonably, and neither party may terminate its obligations hereunder by dissolution or otherwise without first securing the written consent of the other party, acting reasonably, and this Agreement shall be binding upon and inure to the benefit of the respective successors and assigns of the parties hereto. In the event that the City should be dissolved or should no longer be authorized to operate sewer facilities, the Local Sewerage Facilities owned and operated by the City shall be assigned and transferred to Metro or such other public agency authorized by law to operate sewer facilities which agrees to carry out the terms of this Agreement, subject to any outstanding debts of the City which have been incurred for the specific purpose of constructing or acquiring such facilities and subject to the acceptance by Metro or that other agency of the obligation to continue to provide sewer service to the residents served by such local facilities upon payment by such residents of sewage disposal charges determined as herein provided and the reasonable costs of local sewer service.

Section 16. Effective Date and Term of Contract. This Agreement shall be in full force and effect and binding upon the

parties hereto upon the execution of the Agreement and shall continue in full force and effect until July 1, 2016.

Section 17. Termination of Auburn-Algona Pacific Agreement. Upon execution of this Agreement and the execution of sewage disposal agreements between Metro and the Cities of Algona and Pacific, that certain sewage disposal contract dated August 18, 1970 between the Cities of Auburn, Algona and Pacific shall be terminated by the City. This same paragraph shall be included in any subsequent contract for sewage disposal entered into between Metro and the Cities of Algona and Pacific.

Section 18. Notice. Whenever by this Agreement notice is required to be given, the same shall be given by registered mail addressed to the respective parties at the following addresses:

Municipality of Metropolitan Seattle
410 West Harrison Street
Seattle, Washington 98119

City of Auburn
20 "A" Street Northwest
Auburn, Washington 98002

unless a different address shall be hereafter designated in writing by either of the parties. The date of giving such notice shall be deemed to be the date of mailing thereof. Billings for and payments of sewage disposal costs may be made by regular mail.

Section 19. Execution of Documents. This Agreement shall be executed in six counterparts, any of which shall be regarded for all purposes as one original. Each party agrees that it will execute any and all deeds, instruments, documents and resolutions or ordinances necessary to give effect to the terms of this Agreement.

Section 20. Waiver. No waiver by either party of any term or condition of this Agreement shall be deemed or construed as a waiver of any other term or condition, nor shall a waiver of any breach be deemed to constitute a waiver of any subsequent breach whether of the same or a different provision of this Agreement.

Section 21. Remedies. In addition to the remedies provided by law, this Agreement shall be specifically enforceable by either party.

Section 22. Entirety. This Agreement merges and supersedes all prior negotiations, representations and agreements between the parties hereto relating to the subject matter hereof and constitutes the entire contract between the parties.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

CITY OF AUBURN, WASHINGTON

Stanley P. Kersey, Mayor

ATTEST:

Earla L. Byerley, City Clerk

MUNICIPALITY OF METROPOLITAN SEATTLE

By C. Carey Denworth
Chairman of the Council

ATTEST:

B. J. Carol
Clerk of the Council

STATE OF WASHINGTON)
) ss
COUNTY OF KING)

On this 1st day of March, 1978, before me personally appeared STANLEY P. KERSEY and EARLA L. BYERLEY, to me known to be the Mayor and City Clerk, respectively, of the City of Auburn, a municipal corporation, and acknowledged the within and foregoing instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute said instrument and that the seal affixed is the corporate seal of said corporation.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.

Marian Osborn
NOTARY PUBLIC in and for the State of Washington, residing at Enumclaw

STATE OF WASHINGTON)
) ss
COUNTY OF KING)

On this 1ST day of MARCH, 1978, before me personally appeared C. CAREY DONWORTH and B. J. CAROL, to me known to be the Chairman of the Council and Clerk of the Council, respectively, of the Municipality of Metropolitan Seattle, a municipal corporation, and acknowledged the within and foregoing instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute said instrument and that the seal affixed is the corporate seal of said corporation.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.

Jack A Hakala
NOTARY PUBLIC in and for the State of Washington, residing at SEATTLE

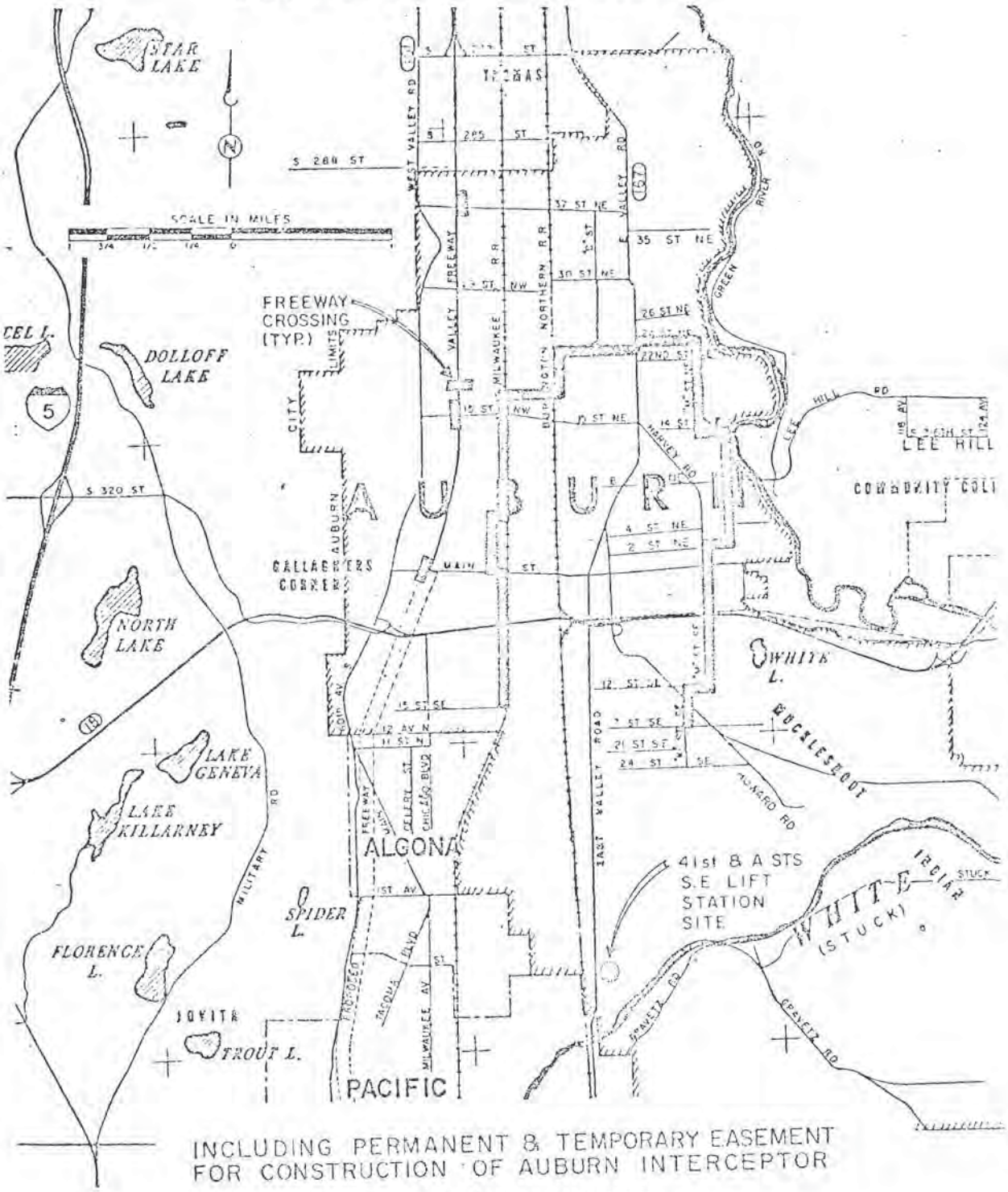
EXHIBIT "A"

The Auburn Interceptor is a permanent Metropolitan Sewerage System facility that will provide interceptor service for that portion of the Green River Valley that includes Auburn's sewer service area south and west of the Green River, the towns of Algona and Pacific, and the West Hill, South Kent and Thomas sewer service areas. The interceptor commences at the influent structure of the existing Auburn sewage lagoon, thence northerly and westerly in easement and public right-of-way through the City of Kent to a connection with the existing Metro-Kent Cross Valley Interceptor.

EXHIBIT "B"

PERMANENT FACILITIES

INTERCEPTOR SEWERS AND LIFT STATION SITE * DESCRIBED ON THE MAP BELOW


STAR LAKE
SCALE IN MILES
S 288 ST
WEST VALLEY RD
TACOMA
S 277 ST
S 272 ST
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RESOLUTION NO. 1727

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK OF THE CITY OF AUBURN, TO EXECUTE AN EXTENSION OF AGREEMENT FOR SEWAGE DISPOSAL BETWEEN THE CITY OF AUBURN AND THE MUNICIPALITY OF METROPOLITAN SEATTLE (METRO), ORIGINAL AGREEMENT AUTHORIZED BY CITY OF AUBURN ORDINANCE NO. 2774 DATED NOVEMBER 5, 1973.

THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

THE Mayor and City Clerk of the City of Auburn, Washington, are hereby authorized to execute an Extension of Agreement for Sewage Disposal between the City of Auburn and the Municipality of Metropolitan Seattle (METRO). (The original Agreement was authorized by City of Auburn Ordinance No. 2774, dated November 5, 1973.) A copy of said Extension of Agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directions of this legislation.

DATED and SIGNED this 2nd day of February, 1987.

CITY OF AUBURN

MAYOR

ATTEST:

City Clerk

RESOLUTION NO. 1727 EXHIBIT "A"

CITY OF AUBURN

MUNICIPALITY OF METROPOLITAN SEATTLE

EXTENSION OF AGREEMENT FOR SEWAGE DISPOSAL

WHEREAS, the City of Auburn, (the "City") and the Municipality of Metropolitan Seattle (the "Municipality") are parties to a certain Agreement for Sewage Disposal (the Agreement") dated March 1, 1974, pursuant to which the City delivers to the Municipality for treatment and disposal all the sewage and industrial wastes it collects from its service area; and

WHEREAS, the Agreement expires by its terms on July 1, 2016; and

WHEREAS, it is in the best interests of the City and the Municipality that the expiration date of the Agreement be extended in order to allow the Municipality to sell and issue its sewer revenue bonds with maturities extending beyond 2016;

NOW, THEREFORE, in considreation of the mutual covenants contained herein and in the Agreement, it is hereby agreed as follows:

The Agreement for Sewage Disposal between the City of Auburn and the Municipality of Metropolitan Seattle dated March 1, 1974, is hereby extended for a period of twenty years and shall continue in full force and effect until July 1, 2036.

IT IS FURTHER AGREED that all other provisions of said Agreement shall remain unchanged, and the Agreement dated March 1, 1974, as extended herein shall constitute the entire Agreement for Sewage Disposal between the parties.

DATED this ~~9th~~ 19th day of ~~February~~ March, 1987.

CITY OF AUBURN

MAYOR

ATTEST:

Robin Wohlhueter, City Clerk

MUNICIPALITY OF METROPOLITAN SEATTLE

By: Gary Zimmerman
Chairman of the Council

ATTEST:

Bonnie Mattson, Clerk of the Council

RESOLUTION NO. 2090

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN INTERAGENCY AGREEMENT BETWEEN THE CITY OF AUBURN AND METRO TO PROVIDE AN AMENDMENT TO THE SEWAGE DISPOSAL AGREEMENT.

THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute an Interagency Agreement between the City of Auburn and METRO to provide an amendment to the sewage disposal agreement in order to implement the recommendations of the Rate Structure Advisory Committee adopted by the Metro Council July 6, 1989. A copy of said Agreement is attached hereto and denominated Exhibit "A".

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

DATED and SIGNED this 4th day of June, 1990.

CITY OF AUBURN

MAYOR

ATTEST:

Robin Wohlhueter, City Clerk

APPROVED AS TO FORM:

Marguerite Schellentrager,
City Attorney

RECEIVED
JUN 21 1990
CITY OF AUBURN
CITY CLERKS OFFICE

CITY OF AUBURN

MUNICIPALITY OF METROPOLITAN SEATTLE

AMENDMENT TO AGREEMENT
FOR SEWAGE DISPOSAL

THIS AMENDMENT made as of the 4th day of June, 1990 between the City of Auburn, a municipal corporation of the State of Washington (hereinafter referred to as the "City") and the Municipality of Metropolitan Seattle, a metropolitan municipal corporation of the State of Washington (hereinafter referred to as "Metro");

WITNESSETH:

WHEREAS, the parties have entered into a long term Agreement for Sewage Disposal dated March 1, 1974 (hereinafter referred to as the "Basic Agreement"); and

WHEREAS, an advisory committee composed of elected and appointed officials in the metropolitan area was appointed by the Metropolitan Council to examine the structure of Metro's charges to its participants; and

WHEREAS, said advisory committee, following extensive research, study and deliberations, has recommended certain changes in the structure of Metro's charges to its participants and implementation of said changes requires amendment of the Basic Agreement; and

WHEREAS, the parties have determined that the recommendations are in the best public interest and therefore desire to amend said Basic Agreement to implement said recommendations;

NOW, THEREFORE, it is hereby agreed as follows:

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Pro 2091

Section 1. Amendment of Section 5 of the Basic Agreement. Section 5 of the Basic Agreement is hereby amended to read as follows:

"Section 5. Payment for Sewage Disposal. For the disposal of sewage hereafter collected by the City and delivered to Metro the City shall pay to Metro on or before the last day of each month during the term of this Agreement, a sewage disposal charge determined as provided in this Section 5.

1. For the quarterly periods ending March 31, June 30, September 30 and December 31 of each year every Participant shall submit a written report to Metro setting forth:

(a) the number of Residential Customers billed by such Participant for local sewerage charges as of the last day of the quarter,

(b) the total number of all customers billed for local sewerage charges by such Participant as of such day, and

(c) the total water consumption during such quarter for all customers billed for local sewerage charges by such Participant other than Residential Customers.

The quarterly water consumption report shall be taken from water meter records and may be adjusted to exclude water which does not enter the sanitary facilities of the customer. Where actual sewage flow from an individual customer is metered, the metered sewage flows shall be reported in lieu of adjusted water consumption. The total quarterly water consumption report in cubic feet shall be divided by 2,250 to determine the number of Residential Customer equivalents represented by each Participant's customers other than single family residences. Metro shall maintain a permanent record of the quarterly customer reports from each Participant.

Pln. Dept.

The City's first quarterly report shall cover the first quarterly period following the date when sewage is first delivered to Metro and shall be submitted within thirty days following the end of the quarter. Succeeding reports shall be made for each quarterly period thereafter and shall be submitted within thirty (30) days following the end of the quarter.

2. (a) To form a basis for determining the monthly sewage disposal charge to be paid by each Participant during any particular quarterly period, Metro shall ascertain the number of Residential Customers and Residential Customer equivalents of each Participant. This determination shall be made by taking the sum of the actual number of Residential customers reported as of the last day of the next to the last preceding quarter and the average number of Residential Customer Equivalents per quarter reported for the four quarters ending with said next to the last preceding quarter, adjusted for each Participant to eliminate any Residential Customers or Residential Customer equivalents whose sewage is delivered to a governmental agency other than Metro or other than a Participant for disposal outside of the Metropolitan Area.

(b) For the initial period until the City shall have submitted six consecutive quarterly reports, the reported number of Residential Customers and Residential Customer equivalents of the City shall be determined as provided in this subparagraph (b). On or before the tenth day of each month beginning with the month prior to the month in which sewage from the City is first delivered to Metro, the City shall submit a written statement of the number of Residential Customers and Residential Customer equivalents estimated to be billed by the City during the next succeeding month. For the purpose of determining the basic reported number of Residential Customers and

Pos 2091

Residential Customer equivalents of the City for such next succeeding month, Metro may at its discretion adopt either such estimate or the actual number of Residential Customers and Residential Customer equivalents reported by the City as of the last day of the next to the last preceding reported quarter. After the City shall have furnished six consecutive quarterly reports the reported number of Residential Customers and Residential Customer equivalents of the City shall be determined as provided in the immediately preceding subparagraph (a).

(c) If the City shall fail to submit the required monthly and/or quarterly reports when due, Metro may make its own estimate of the number of Residential Customers and Residential Customer equivalents of the City and such estimate shall constitute the reported number for the purpose of determining sewage disposal charges.

3. The monthly sewage disposal charge payable to Metro shall be determined as follows:

(a) Prior to July 1st of each year Metro shall determine its total monetary requirements for the disposal of sewage during the next succeeding calendar year. Such requirements shall include the cost of administration, operation, maintenance, repair and replacement of the Metropolitan Sewerage System, establishment and maintenance of necessary working capital and reserves, the requirements of any resolution providing for the issuance of revenue bonds of Metro to finance the acquisition, construction or use of sewerage facilities, plus not to exceed 1% of the foregoing requirements for general administrative overhead costs.

(b) To determine the monthly rate per Residential Customer or Residential Customer equivalent to be used during said next succeeding calendar year, the total monetary requirements for disposal of sewage as determined

in subparagraph 3(a) of this section shall be divided by twelve and the resulting quotient shall be divided by the total number of Residential Customers and Residential Customer equivalents of all Participants for the October-December quarter preceding said July 1st; provided, however, that the monthly rate shall not be less than Two Dollars ($2.00) per month per Residential Customer or Residential Customer equivalent at any time during the period ending July 31, 1972.

(c) The monthly sewage disposal charge paid by each Participant to Metro shall be obtained by multiplying the monthly rate by the number of Residential Customers and Residential Customer equivalents of the Participant. An additional charge may be made for sewage or wastes of unusual quality or composition requiring special treatment, or Metro may require pretreatment of such sewage or wastes. An additional charge may be made for quantities of storm or ground waters entering those Local Sewerage Facilities which are constructed after January 1, 1961 in excess of the minimum standard established by the general rules and regulations of Metro.

4. The parties acknowledge that, by resolution of the Metropolitan Council, Metro may impose a charge or charges directly on the future customers of a Participant for purposes of paying for capacity in Metropolitan Sewage Facilities and that such charges shall not constitute a breach of this agreement or any part thereof. The proceeds of said charge or charges, if imposed, shall be used only for capital expenditures or defeasance of outstanding revenue bonds prior to maturity.

In the event such a charge or charges are imposed, the City shall, at Metro's request, provide such information regarding new residential customers and residential customer

P11/2097

equivalents as may be reasonable and appropriate for purposes of implementing such a charge or charges.

5. A statement of the amount of the monthly sewage disposal charge shall be submitted by Metro to each Participant on or before the first day of each month and payment of such charge shall be due on the last day of such month. If any charge or portion thereof due to Metro shall remain unpaid for fifteen days following its due date, the Participant shall be charged with and pay to Metro interest on the amount unpaid from its due date until paid at the rate of 6% per annum, and Metro may, upon failure to pay such amount, enforce payment by any remedy available at law or equity.

6. The City irrevocably obligates and binds itself to pay its sewage disposal charge out of the gross revenues of the sewer system of the City. The City further binds itself to establish, maintain and collect charges for sewer service which will at all times be sufficient to pay all costs of maintenance and operation of the sewer system of the City, including the sewage disposal charge payable to Metro hereunder and sufficient to pay the principal of and interest on any revenue bonds of the City which shall constitute a charge upon such gross revenues. It is recognized by Metro and the City that the sewage disposal charge paid by the City to Metro shall constitute an expense of the maintenance and operation of the sewer system of the City. The City shall provide in the issuance of future sewer revenue bonds of the City that expenses of maintenance and operations of the sewer system of the City shall be paid before payment of principal and interest of such bonds. The City shall have the right to fix its own schedule of rates and charges for sewer service provided that same shall produce revenue sufficient to meet the covenants contained in this Agreement.

Pen 2197

Section 2. Effective Date of Amendment. This amendment shall take effect at the beginning of the first quarter following the date first written above with quarters beginning January 1, April 1, July 1, and October 1.

Section 3. Basic Agreement Unchanged. Except as otherwise provided in this amendment, all provisions of the basic agreement shall remain in full force and effect as written therein.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first written above.

CITY OF AUBURN

Mayor

ATTEST:

ROBIN WOHLHUETER, CITY CLERK

APPROVED AS TO FORM:

MARGUERITE SCHELLENTRAGER, CITY ATTORNEY

MUNICIPALITY OF METROPOLITAN SEATTLE

Gary Zimmerman
Chair of the Council

ATTEST:

Res 2090

Section 2. Effective Date of Amendment. This amendment shall take effect at the beginning of the first quarter following the date first written above with quarters beginning January 1, April 1, July 1, and October 1.

Section 3. Basic Agreement Unchanged. Except as otherwise provided in this amendment, all provisions of the basic agreement shall remain in full force and effect as written therein.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first written above.

CITY OF AUBURN

Mayor

ATTEST:

ROBIN WOHLHUETER, CITY CLERK

APPROVED AS TO FORM:

MARGUERITE SCHELLENTRAGER, CITY ATTORNEY

MUNICIPALITY OF METROPOLITAN SEATTLE

~~Gary Zimmerman~~
Chair of the Council

ATTEST:

Res 2090

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St
Auburn, WA 98001

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KING COUNTY, WA

2002 100 1031676

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein)

24/42

1 Franchise Agreement

PNWT

Reference Number(s) of Documents assigned or released:

W4072-12

☐ Additional reference #'s on page ___ of document

Grantor(s) (Last name first, then first name and initials)

1 King County

Grantee: (Last name first)

1 Auburn, City of

Said document(s) were filed for record by Pacific Northwest Title as accommodation only. It has not been examined as to proper execution or as to its affect upon title

Legal Description (abbreviated i.e. lot, block, plat or section, township, range)

See Exhibit A

☒ Additional legal is on page 3 of the document

Assessor's Property Tax Parcel/Account Number:

King County Franchise No 14458

☐ Assessor Tax # not yet assigned

Unofficial Document

Unofficial Document

14458
July 23, 2002

Franchise No. 14458

In the matter of the application for a franchise to operate, maintain, repair, and construct and sewer mains, service lines, and appurtenances in, over, along, and under County roads and rights-of-way in King County, Washington

---

The application of the City of Auburn for a franchise to operate, maintain, repair and construct sewer mains, service lines, and appurtenances in, over, along, and under County roads and rights-of-way located within the area described in attached Exhibit "A" has been heard on this 26th day of August, 2002 All of the property described in Exhibit "A" lies outside the limits of any incorporated Town or City.

Legal notice of the franchise application and of the hearing has been given as is required by law.

The King County Council, having considered the interests proposed and advanced, and finding that the granting of this franchise is in the public interest, ORDERS that a franchise be granted to the City of Auburn, the Grantee, subject to the conditions set forth in Exhibit "B" attached hereto, this franchise and Ordinance No 14458. This franchise grants the right, privilege, authority and franchise to operate, maintain, repair and construct mains and service lines and appurtenances as a part of its distribution system in, over, along, and under County roads and rights-of-way located within the area described in Exhibit "A"

2002 100 1031676

Res 3511

This franchise is granted subject to all of the terms and conditions contained herein, within Ordinance No 14458 and Exhibit "B", and shall expire in twenty-five years on 9/14, 2027.

Dated this 4 day of September, 20___.

KING COUNTY, WASHINGTON

BY _____

TITLE King County Executive

2002 100 1031676

The undersigned accepts all the rights, privileges, and duties of this franchise subject to all terms, conditions, stipulations, and obligations contained herein, within Ordinance 14458 and Exhibit "B"

CITY OF AUBURN
GRANTEE

BY _____

TITLE Mayor

Dated this 16th day of September, 2002

Unofficial Document

EXHIBIT " A"

Area A

BEGINNING AT THE INTERSECTION OF THE EAST-WEST CENTERLINE OF SECTION 16, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M WITH THE SOUTHEASTERLY MARGIN OF THE RIGHT OF WAY FOR PRIMARY STATE HIGHWAY NUMBER 2, AKA STATE HIGHWAY 18,
THENCE NORTHEASTERLY ALONG SAID SOUTHEASTERLY MARGIN OF SAID RIGHT OF WAY FOR STATE HIGHWAY NUMBER 2 TO THE SOUTH LINE OF SECTION 34, TOWNSHIP 22 NORTH, RANGE 5 EAST, W.M ,
THENCE WESTERLY ALONG THE SOUTH LINE OF SAID SECTION 34 AND ALONG THE SOUTHERLY LIMITS OF THE CITY OF KENT TO THE SOUTHWEST CORNER OF SAID SECTION 34,
THENCE CONTINUING NORTHERLY AND WESTERLY ALONG THE WEST LINE OF SAID SECTION 34 AND THE SOUTHERLY LIMITS OF THE CITY OF KENT THROUGH SECTIONS 33 AND 32, TOWNSHIP 22 NORTH, RANGE 5 EAST, W.M. TO THE NORTHEAST CORNER OF THAT PORTION OF LAND ANNEXED BY THE CITY OF KENT BY CITY OF KENT ORDINANCE NUMBER 3171,
THENCE SOUTHERLY ALONG THE EAST BOUNDARY OF SAID KENT CITY LIMITS ESTABLISHED BY CITY OF KENT ORDINANCE NUMBER 3171 TO THE SOUTHEAST CORNER THEREOF, AND AN ANGLE POINT IN THE EASTERLY BOUNDARY OF THE CITY OF AUBURN CITY LIMITS AS ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE 4710,
THENCE SOUTHERLY ALONG THE EASTERLY CITY LIMITS OF THE CITY OF AUBURN ANNEXED TO THE CITY OF AUBURN BY ORDINANCES 4710, 3266, AND 5370 TO THE EASTERLY EDGE OF THE GREEN RIVER,
THENCE SOUTHERLY ALONG THE EASTERLY EDGE OF THE GREEN RIVER TO THE NORTHERLY LINE OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 5346,
THENCE NORTHEASTERLY, EASTERLY AND SOUTHERLY ALONG THE EASTERLY CITY LIMITS OF THE CITY OF AUBURN ANNEXED TO THE CITY OF AUBURN BY ORDINANCES 5346, 5088, AND 5346 TO THE EAST-WEST CENTERLINE OF SECTION 17, TOWNSHIP 21 NORTH, RANGE 5 EAST, W.M.;
THENCE EASTERLY ALONG SAID EAST-WEST CENTERLINE OF SAID SECTION 17 AND ALONG THE EAST-WEST CENTERLINE OF SECTION 16, TOWNSHIP 21 NORTH, RANGE 5 EAST, W M. TO THE POINT OF BEGINNING

SITUATE IN KING COUNTY, WASHINGTON

2002 100 1001676

Unofficial Document

Area B

BEGINNING AT THE NORTHWEST CORNER OF THE SOUTH HALF OF SECTION 35, TOWNSHIP 22, RANGE 4, SOUTH ALONG THE WEST LINE OF SAID SECTION TO A POINT WHERE IT INTERSECTS WITH NORTH LINE OF SECTION 2, TOWNSHIP 21, RANGE 4 EAST, THENCE SOUTH ALONG SAID LINE TO ITS INTERSECTION WITH NORTHWEST CORNER OF SECTION 11, TOWNSHIP 21, RANGE 4, THENCE SOUTH ALONG SAID LINE TO ITS INTERSECTION WITH THE NORTHEAST CORNER OF SECTION 15, TOWNSHIP 21, RANGE 4 EAST, THENCE WEST ALONG THE NORTH LINE OF SECTION 15, TOWNSHIP 21, RANGE 4, TO THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 15, THENCE SOUTH ALONG THE WEST LINE OF SAID SECTION 15, TO SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF SAID SECTION 15, THENCE EAST ALONG THE SOUTH LINE OF SAID SECTION 15 TO ITS INTERSECTION WITH THE NORTHWEST CORNER OF SECTION 23, TOWNSHIP 21, RANGE 4, THENCE SOUTH ALONG THE WEST LINE OF SAID SECTION 23, TO SOUTHWEST CORNER OF NORTHWEST QUARTER OF SAID SECTION 23, THENCE EAST ALONG THE SOUTH LINE OF THE NORTHWEST QUARTER OF ITS INTERSECTION WITH THE WEST LINE OF THE CORPORATE BOUNDARY OF THE CITY OF AUBURN LOCATED IN SAID SECTION 23, THENCE CONTINUING ALONG SAID CORPORATE BOUNDARY LOCATED IN SECTION 14, 11, 2 , 35, 22, 5, TO ITS NORTH LINE OF THE SOUTH HALF
OF SECTION 36, TOWNSHIP 22, RANGE 5 EAST, THENCE WEST ALONG SAID NORTH LINE TO ITS INTERSECTION WITH THE NORTHWEST CORNER OF THE SOUTH HALF OF SECTION 35, TOWNSHIP 22, RANGE 4 EAST, ALSO KNOWN AS THE TRUE POINT OF BEGINNING.

2002 100 1031676

Area C

THAT PORTION OF WHITE RIVER VALLEY HOME TRACTS SECOND ADDITION LOCATED IN THE WEST HALF OF SOUTHWEST QUARTER OF SECTION 31 TOWNSHIP 22 NORTH, RANGE 5 EAST, W M , DESCRIBED AS FOLLOWS

BEGINNING AT THE SOUTHEAST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 3823, THENCE NORTHERLY ALONG THE EAST BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 3823 TO THE SOUTHEAST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 4347, THENCE NORTHERLY ALONG THE EAST BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 4347 TO AN ANGLE POINT IN THE SOUTHERLY BOUNDARY OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 4780 AND AMENDED BY CITY OF AUBURN ORDINANCE NUMBER 4843, THENCE NORTHERLY, EASTERLY AND NORTHERLY ALONG THE BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 4843 TO THE SOUTHWESTERLY MARGIN OF

AUBURN WAY NORTH AND THE WESTERLY BOUNDARY OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2511, THENCE SOUTHEASTERLY ALONG THE WESTERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 2511 TO THE NORTHEAST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 3621, THENCE WESTERLY ALONG THE NORTHERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 3621 TO THE NORTHWEST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 3621, THENCE SOUTHERLY AND EASTERLY ALONG THE BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 3621 TO THE WESTERLY LINE OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 2511; THENCE SOUTHERLY ALONG THE WESTERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 2511 TO THE NORTHEAST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 5412, THENCE WEST ALONG THE NORTHERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 5412 TO THE NORTHWEST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 5412; THENCE SOUTHERLY ALONG THE WESTERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 5412 TO THE BOUNDARY OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE 2511; THENCE WEST ALONG SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 2511 TO THE POINT OF BEGINNING

SITUATE IN KING COUNTY, WASHINGTON

2002 100 1031676

Area D

A PORTION OF THE SOUTHEAST QUARTER OF SECTION 31, AND THE SOUTHWEST QUARTER OF SECTION 32, ALL IN TOWNSHIP 22 NORTH, RANGE 5 EAST, W M , DESCRIBED AS FOLLOWS

BEGINNING AT THE NORTHWEST CORNER OF THAT PORTION OF LAND ANNEXED BY THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 4710,
THENCE SOUTHERLY ALONG THE WESTERLY BOUNDARY OF SAID AUBURN CITY LIMITS ESTABLISHED BY CITY OF AUBURN ORDINANCE NUMBER 4710 TO THE EASTERLY EDGE OF THE GREEN RIVER,
THENCE NORTHERLY ALONG SAID EASTERLY EDGE OF THE GREEN RIVER TO THE SOUTHERLY LINE OF THE CITY OF KENT CITY LIMITS,
THENCE EASTERLY ALONG SAID SOUTHERLY LINE OF THE CITY OF KENT CITY LIMITS TO THE POINT OF BEGINNING

SITUATE IN KING COUNTY, WASHINGTON

Agreement

Area E

THAT PORTION OF THE NORTHWEST QUARTER OF SECTION 17, TOWNSHIP 21 NORTH, RANGE 5 EAST, W M DESCRIBED AS FOLLOWS·

BEGINNING AT A POINT ON WESTERLY MARGIN OF THE GREEN RIVER AT THE INTERSECTION OF THE NORTHERLY BOUNDARY OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE 1543, THENCE WESTERLY AND NORTHERLY ALONG SAID NORTHERLY BOUNDARY THEREOF, TO A POINT ON THE WEST BOUNDARY OF THE EAST HALF OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 17; THENCE NORTHERLY ALONG SAID WEST BOUNDARY OF THE EAST HALF OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 17, A DISTANCE OF 320 FEET MORE OR LESS TO THE SOUTHERLY BOUNDARY OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE 4317, THENCE EASTERLY AND NORTHERLY ALONG THE EASTERLY BOUNDARY THEREOF TO THE WESTERLY MARGIN OF SAID GREEN RIVER, THENCE SOUTHEASTERLY ALONG SAID WESTERLY MARGIN OF THE GREEN RIVER TO THE POINT OF BEGINNING

SITUATE IN KING COUNTY, WASHINGTON

2002 100 1031676

Area F

THAT PORTION OF THE SOUTHWEST QUARTER OF SECTION 17, TOWNSHIP 21 NORTH, RANGE 5 EAST, W M , KING COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS

BEGINNING AT THE NORTHWEST CORNER OF SAID SOUTHWEST QUARTER OF SECTION 17, THENCE SOUTHERLY ALONG THE WEST BOUNDARY OF SAID SOUTHWEST QUARTER OF SECTION 17 A DISTANCE OF 33.01 FEET TO THE SOUTH MARGIN OF EAST MAIN STREET (SE 328TH ST.) EXTENDED TO THE WEST AND THE TRUE POINT OF BEGINNING, THENCE CONTINUING SOUTHERLY ALONG SAID WEST BOUNDARY OF THE SOUTHWEST QUARTER OF SECTION 17 TO THE NORTHWEST CORNER OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 1991, THENCE EASTERLY TO THE NORTHEAST CORNER OF SAID AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 1991, THENCE SOUTHERLY ALONG THE EAST BOUNDARY OF SAID AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 1991 TO THE NORTHERNMOST BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 2085, THENCE EASTERLY ALONG SAID NORTHERNMOST BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 2085 AND CONTINUING EASTERLY ALONG THE NORTHERNMOST BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 2229 TO THE WESTERNMOST BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 3525, THENCE NORTHERLY ALONG SAID WESTERNMOST BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 3525 TO THE NORTH BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 3525, THENCE EASTERLY ALONG SAID NORTH BOUNDARY OF

AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 3525 TO THE EAST BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 3525, THENCE SOUTHERLY ALONG THE EAST BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 3525 TO THE NORTH MARGIN OF SECOND STREET SE (SE 330TH ST) AND THE NORTH BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 5350, THENCE EASTERLY ALONG SAID NORTH MARGIN OF SECOND STREET SE AND SAID NORTH BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 5350 TO THE SOUTHWEST CORNER OF LOT 1, BLOCK 2 OF THE PLAT OF EAST AUBURN GARDEN TRACTS AS RECORDED IN VOLUME 18 OF PLATS, PAGE 98, RECORDS OF KING COUNTY, WASHINGTON, THENCE SOUTHERLY ALONG THE WEST BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 5350 TO THE NORTH BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 4605, THENCE EASTERLY ALONG THE NORTH BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 4605 TO THE WEST BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 5505, THENCE NORTHERLY AND EASTERLY ALONG THE BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 5505 TO THE WEST MARGIN OF THE GREEN RIVER, THENCE NORTHWESTERLY ALONG SAID WEST MARGIN OF THE GREEN RIVER TO THE SOUTH BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 5084, THENCE WESTERLY ALONG SAID SOUTH BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 5084 TO THE SOUTHWEST CORNER THEREOF, THENCE NORTHERLY ALONG THE WEST BOUNDARY OF AUBURN ANNEXATION DESCRIBED IN CITY OF AUBURN ANNEXATION ORDINANCE 5084,TO THE SOUTH MARGIN OF EAST MAIN STREET (SE 328TH ST), THENCE WESTERLY ALONG SAID SOUTH MARGIN OF EAST MAIN STREET TO THE TRUE POINT OF BEGINNING.

SITUATE IN KING COUNTY, WASHINGTON

2002 100 1016 76

Area G

THAT PORTION SOUTH AUBURN GARDEN TRACTS LOCATED IN GOVERNMENT LOT 2 IN THE NORTHWEST QUARTER OF SECTION 30 TOWNSHIP 21 NORTH, RANGE 5 EAST, W M., DESCRIBED AS FOLLOWS

BEGINNING AT THE SOUTHEAST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 3726; THENCE NORTHERLY ALONG THE EAST BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 3726 TO THE SOUTHEAST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE 4138, THENCE NORTHERLY ALONG THE EAST BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 4138 TO THE SOUTHEAST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 4665; THENCE NORTHERLY ALONG THE EAST BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 4665 TO THE SOUTHERLY BOUNDARY THAT PORTION OF LAND ANNEXED TO THE CITY OF

AUBURN BY CITY OF AUBURN ORDINANCE 1279, THENCE EAST ALONG THE SOUTHERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE 1279 TO THE NORTHWEST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE 3244, THENCE SOUTH ALONG THE WESTERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE 3244 TO THE SOUTHWEST CORNER OF SAID PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE 3244, THENCE EAST ALONG THE SOUTHERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 3244 TO THE SOUTHEAST CORNER OF SAID PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE 3244; THENCE NORTH ALONG THE EASTERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 3244 TO THE SOUTHERLY BOUNDARY OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE 1279; THENCE EAST ALONG THE SOUTHERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 1279 TO THE NORTHWEST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 1225, THENCE SOUTH ALONG THE WESTERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 1225 TO THE NORTHERLY BOUNDARY OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE 3839, THENCE WESTERLY, NORTHERLY AND WESTERLY ALONG THE NORTHERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 3839 TO THE NORTHEAST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 4449, THENCE WEST ALONG THE NORTHERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 4449 TO THE SOUTHEAST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 4518, THENCE NORTH ALONG THE EASTERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 4518 TO THE NORTHEAST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE 4518, THENCE WEST ALONG THE NORTHERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 4518 TO THE EAST MARGIN OF "A" STREET SE AND THE EAST BOUNDARY OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ANNEXATION 1171, THENCE NORTH ALONG THE EASTERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 1171 TO THE SOUTHWEST CORNER OF THAT PORTION OF LAND ANNEXED TO THE CITY OF AUBURN BY CITY OF AUBURN ORDINANCE NUMBER 3726; THENCE EAST ALONG THE SOUTHERLY BOUNDARY OF SAID CITY LIMITS AS ESTABLISHED BY ORDINANCE NUMBER 3726 TO THE POINT OF BEGINNING

SITUATE IN KING COUNTY, WASHINGTON

2002 100 1091675

Consent

EXHIBIT "B"

TERMS AND CONDITIONS APPLICABLE TO UTILITIES FRANCHISES GRANTED BY KING COUNTY

THIS FRANCHISE is subject to the following terms and conditions:

1 DEFINITIONS

References to any County official or office also refers to any office that succeeds to any or all of the responsibilities of the named office or official. References to laws or "applicable laws" include federal, state, and local laws and regulations adopted pursuant to those laws; unless otherwise stated, references to laws include laws now in effect, as the same may be amended from time to time during the operation of this franchise. In addition, the following definitions shall apply:

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Cable Services The term "Cable Services" is used as defined in 47 United States Code 522 (5), as amended

Cable System The term "Cable System" is used as defined in 47 United States Code 522 (6), and King County Code 6.a 010 (J) as amended

County Road Rights-of-Way. The term "County Road Rights-of-Way" includes any road, street, avenue, or alley located within the area described in the attached Exhibit "A", it does not include recreational or nature trails except where the trails intersect or are within roads, streets, avenues or alleys

Director. The term "Director" refers to the chief executive of the King County Department of Transportation.

Grantee. The term "Grantee" refers to the City of Auburn, its successors and those assignees approved pursuant to paragraph 16 herein

Utility. The term "utility" refers either to the Grantee or, depending on the context, to any other person, firm, or corporation, public or private, which may hold a franchise to maintain and operate similar facilities in, under, over, across, and along any of the County property described in Exhibit "A"

Council. The term "Council" refers to the King County Council, acting in its official capacity.

Other Governing Body The term "Other Governing Body" refers to any public official or other public board or body as may have the power and jurisdiction to permit or regulate the installation and maintenance of utilities and other facilities in, under, over, across, and along any of the county property described in Exhibit "A"

2 ACCEPTANCE BY GRANTEES OF TERMS AND CONDITIONS

The full acceptance of this franchise and all of its terms and conditions shall be filed with the Clerk of the Council within thirty (30) days from _____, 20____, by the Grantee. Full acceptance of this franchise is a condition precedent to its taking effect, and unless this franchise is accepted within the time specified, this grant will be null and void and have no force or effect.

3 NON-EXCLUSIVE FRANCHISE

This franchise is not exclusive. It does not prohibit King County from granting franchises for other public or private utilities, in, under, over, across, and along any County property, including County road rights-of-way.

This franchise does not prevent or prohibit King County from constructing, altering, maintaining or using any County road rights-of-way covered by this franchise. King County retains full power to make all changes, relocations, repair, maintenance, etc as it may deem fit.

4. JURISDICTION

This franchise is intended to convey limited rights and interest only as to those roads and rights-of-way in which King County has an actual interest It is not a warranty of title or of interest in County road rights-of-way.

Whenever any of the County road rights-of-way as designated in this franchise, by reason of the subsequent incorporation of any Town or City or extension of the limits of any Town or City, shall later fall within the City or Town limits, this franchise shall continue in force and effect until such time as the incorporation and/or annexation is complete according to applicable State law, after which time the County will no longer have any responsibility for maintenance of any County roads, rights-of-way or other County property within the area of annexation/incorporation.

None of the rights granted to the Grantee shall affect the jurisdiction of King County over County road rights-of-way or the County's power to perform work upon its roadways, rights-of-way or appurtenant drainage facilities including by constructing, altering, renewing, paving, widening, grading, blasting or excavating

All of the rights herein granted shall be subject to and governed by this franchise; provided, however, that nothing in this franchise may be construed in any way as limiting King County's rights to adopt ordinances which are necessary to protect the health, safety and welfare of the general public

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5. REGULATION OF USE AND CONTROL

This franchise does not deprive King County of any powers, rights, or privileges it now has or may later acquire in the future to regulate the use of and to control the County road rights-of-way covered by this franchise

This franchise authorizes the use of County rights-of-way solely for the delivery by the Grantee of sewer service to it customers. Additional uses of County rights-of-way by the Grantee, including for cable communication services, shall first require a separate franchise from King County, which conforms to the requirements of K.C.C 6.27 as amended, or K C C. 6.27A as amended, and other applicable law.

Any use of the Grantee's equipment of facilities in County rights-of-way by others, including for telecommunication or cable communication services, is prohibited unless separately authorized and approved in writing by King County The Grantee agrees that prior to authorizing any person to use the Grantee's equipment or facilities located in County rights-of-way, the Grantee will require the user to provide the Grantee with an affidavit that it has obtained the necessary franchise or other approval from the County to operate and provide the proposed service in County rights-of-way. At least thirty (30) days prior to executing any agreement with a potential user for the use of the Grantee's equipment or facilities, the Grantee shall fax the affidavit to the King County Office of Cable Communication at 206-296-0842.

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6 EMINENT DOMAIN

This franchise and the limited rights and interests for the operation, maintenance, repair, and construction of Grantee's transmission and service lines and appurtenances are subject to the exercise of eminent domain In the event of an exercise of eminent domain by King County, the value to be attributed to all the rights and interests granted under this franchise shall not exceed the actual amount the Grantee paid to King County in obtaining this franchise.

7 ENFORCEMENT

Failure of King County, on one or more occasions to exercise a right or to require compliance or performance under this franchise or any applicable law, shall not be deemed to constitute a waiver of such right or a waiver of compliance or performance, unless such right has been specifically waived in writing Failure of King County to enforce or exercise its rights under any provision of this franchise or applicable law does not constitute a waiver of its rights to enforce or exercise a right in any other provision of this franchise or applicable law.

8 INDEMNITY AND HOLD HARMLESS

The Grantee agrees to indemnify and hold harmless King County as provided herein to the maximum extent possible under law Accordingly, the Grantee agrees for itself, its successors, and assigns to defend, indemnify and hold harmless King County, its appointed and elected officials, and employees from and against liability for all claims, demands, suits, and judgments, including

costs of defense thereof, for injury to persons, death, or property damage which is caused by, arises out of, or is incidental to Grantee's exercise of rights and privileges granted by this franchise The Grantee's obligations under this section shall include:

(a) Indemnification for such claims whether or not they arise from the sole negligence of the Grantee, the concurrent negligence of both parties, or the negligence of one or more third parties.

(b) The duty to promptly accept tender of defense and provide defense to the County at the Grantee's own expense

(c) Indemnification of claims made by the Grantee's own employees or agents.

(d) Waiver of the Grantee's immunity under the industrial insurance provisions of Title 51 RCW, which waiver has been mutually negotiated by the parties.

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In the event it is necessary for the County to incur attorney's fees, legal expenses, or other costs to enforce the provisions of this section, all such fees, expenses and costs shall be recoverable from the Grantee.

In the event it is determined that RCW 4 24.115 applies to this franchise agreement, the Grantee agrees to defend, hold harmless and indemnify King County to the maximum extent permitted thereunder, and specifically for its negligence concurrent with that of King County to the full extent of Grantee's negligence Grantee agrees to defend, indemnify and hold harmless the County for claims by Grantee's employees and agrees to waiver of its immunity under Title 51 RCW, which waiver has been mutually negotiated by the parties.

King County shall give the Grantee timely written notice of the making of any claim or of the commencement of any such action, suit, or other proceeding covered by the indemnity in this section. In the event any such claim arises, the County or any other indemnified party shall tender the defense thereof to the Grantee and the Grantee shall have the duty to defend, settle, or compromise any claims arising hereunder and the County shall cooperate fully therein

Notwithstanding the above, the County shall have no obligation to tender a defense as a condition of the indemnity where there is a material conflict between the interests of the Grantee and King County.

9 VACATION

If at any time King County vacates any County road rights-of-way covered by this franchise, King County will not be held liable for any damages or loss to the Grantee by reason of such vacation King County may, after giving thirty (30) days written notice to the Grantee, terminate this franchise with respect to any County road rights-of-way vacated

10. REPAIR, REMOVAL OR RELOCATION

The Grantee hereby covenants, at its own expense, to repair, remove, or relocate existing facilities including all appurtenant facilities and service lines connecting its system to users, within King County road rights-of-way if such repair, removal, or relocation is required by King County for any County road purpose Such repair, removal, or relocation shall not be unreasonably required

The grantee shall, at no expense to the County, adjust, remove or relocate existing facilities within County road rights-of-way, including all appurtenant facilities and service lines connecting its system to users, if the County determines such adjustment, removal or relocation is reasonably necessary to allow for an improvement or alteration planned by the County in such road right-of-way The County shall give the Grantee written notice of such requirement as soon as practicable, at the beginning of the pre-design stage for projects that are part of the County's capital improvement program, including such available information as is reasonably necessary for the Grantee to plan for such adjustment, removal or relocation

For projects that are a part of the County's capital improvement program, in addition to any other notice given to the Grantee, the County shall provide a vertical and horizontal profile of the roadway and drainage facilities within it, both existing and as proposed by the County, and the proposed construction schedule; notwithstanding any permit conditions that may later be applied to the County project, this initial design information shall be given at least 180 days before construction is scheduled to begin, except in cases of urgent construction or emergencies The Grantee shall respond to this notice, and to any later notices of revised designs based on permit conditions, within no more than thirty (30) days by providing to the County the best available information as to the location of all of the Grantee's facilities, including all appurtenant facilities and service lines connecting its system to users and all facilities that it has abandoned, within the area proposed for the public works project

The County shall offer the Grantee the opportunity to participate in the preparation of bid documents for the selection of a contractor to perform the public works project as well as all required adjustments, removals or relocations of the Grantee's facilities Such bid documents shall provide for an appropriate cost allocation between the parties The County shall have sole authority to choose the contractor to perform such work The Grantee and the County may negotiate an agreement for the Grantee to pay the County for its allocation of costs, but neither party shall be bound to enter into such an agreement Under such an agreement, in addition to the Grantee's allocation of contractor costs, the Grantee shall reimburse the County for cost, such as for inspections or soils testing, related to the Grantee's work and reasonably incurred by the County in the administration of such joint construction contracts Such costs shall be calculated as the direct salary cost of the time of County professional and technical personnel spent productively engaged in such work, plus overhead costs at the standard rate charged by the County on other similar projects, including joint projects with other County agencies

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11. REQUIREMENT OF CONSTRUCTION PERMITS

The Grantee, its successors or assigns, has the right, privilege, and authority to enter the County road rights-of-way for the purpose of operating, maintaining, repairing or construction its transmission and service lines and appurtenances on the condition that it obtains permits approved by the Director and Property Services Division and, when applicable, by the Department of Development and Environmental Services. Applications for work permits shall be presented to the Property Services Division, which may require copies of plans, blueprints, cross-sections, or further detailing of work to be done In the event of an emergency, the Grantee may immediately commence the necessary work and shall apply the next business day for the work permit Any work done, whether by Grantee, its contractors, or third parties will include necessary paving, patching, grading and any other reasonably necessary repair or restoration to the County road rights-of-way. All work shall be done to the satisfaction of the Director.

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All equipment, lines and appurtenances which are used in the operation, maintenance, repair or construction of the Grantee's service and which are located within the County road rights-of-way shall be considered to be part of the Grantee's system and shall be the responsibility of the Grantee. All permits for the operation, maintenance, repair or construction of said system shall be applied for and given in the name of the Grantee, who will be responsible for all work done under the permit The Grantee remains responsible whether the work is done by the Grantee, its contractors, or by third parties

The Grantee shall post a bond to King County in the amount necessary for road restoration. The amount of the bond shall be set by the Department of Transportation, Roads Services Division and shall be filed with the Property Services Division before the issuance of any permit.

The Grantee shall, at no expense to the County, assume the following obligations with respect to the facilities connected to its system that are within County road rights-of-way and which it does not own, including appurtenant facilities and service lines connecting its system to users

(a) The Grantee shall apply for, upon request and on behalf of the owner of the facilities, a County right-of-way construction permit for any repairs required for such facilities; provided such owner agrees to reimburse the Grantee for all costs incurred by the Grantee and any other reasonable conditions the Grantee requires as a precondition to applying for the permit All work to be performed in the County right-of-way shall comply with all conditions of the County permit and all applicable County requirements. The Grantee may at its option perform any part of the repair with its own forces or require the owner to employ a contractor for that purpose, provided such contractor is approved by the County;

(b) In the event that the County determines emergency repair of such facilities is necessary to halt or prevent significant damage to County road rights-of-way or significant threats to the health, safety and welfare of parties other than the owner or the occupants of the building served by such facilities, the Grantee shall take prompt

remedial action to correct the emergency to the County's approval, which the County shall not unreasonably withhold,

(c) When the County or its contractor provides notice to the Grantee, pursuant to RCW 19.122, of its intent to excavate within County road rights-of-way, the Grantee shall provide to the County or its contractor the best information available from the Grantee's records or, where reasonable, from the use of locating equipment as to the location of such facilities, including surface markings where these would reasonably be of use in the excavation. If the Grantee fails to make good faith efforts to provide the above information within the deadlines provided by RCW 19 122, the Grantee shall hold the County harmless for all reasonable costs that result from damage to such facilities if such damage occurs as a result of the failure to provide such information. Nothing in this subsection is intended or shall be construed to create any rights in any third party or to form the basis for any obligation or liability on the part of the County or the Grantee toward any third party, nor is anything in this subsection intended to be construed to alter the rights and responsibilities of the parties under RCW 19.122, as amended

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12. RESTORATION OF COUNTY ROAD RIGHTS-OF-WAY

After work on, under or adjacent to County road rights-of-way, the Grantee is responsible for and will leave all County road rights-of-way in as good a condition as they were in before any work was done. In the event that the Grantee, its contractors, or third parties working under permit should fail to restore County road rights-of-way to the satisfaction of the Director, King County may make such repairs or restorations as are necessary to return the County road rights-of-way to its pre-work condition. Upon presentation of an itemized bill for repairs or restorations, including the costs of labor and equipment, the Grantee will pay the bill within thirty (30) days If suit is brought upon the Grantee's failure to pay for repair and restoration, and if judgment in such a suit is entered in favor of King County, then the Grantee shall pay all of the actual costs, including interest from the date the bill was presented, disbursements, and attorney's fees and litigation related costs incurred.

13 PERFORMANCE OF WORK

The Grantee covenants that in consideration for the rights and privileges granted by this franchise, all work performed by the Grantee on County road rights-of-way shall conform to all County requirements including, but not limited to, the requirements of the current edition of the County Road Standards in force when the work is performed and all traffic control shall also conform to the current edition of the Manual of Uniform Traffic Control Devices in force when the work is performed.

14 BLASTING REQUIREMENTS

The right to operate, maintain, repair and construct Grantee's distribution and service lines and appurtenances granted by this franchise does not preclude King County, its agents or contractors

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from blasting, grading, or doing other road work to the Grantee's lines and appurtenances Except in the case of an emergency, the Grantee will be given ten (10) business days written notice of any blasting so that the Grantee may protect its lines and appurtenances If the Grantee notifies the County within ten (10) business days that the facilities will have to be relocated to protect them from blasting, the County will defer the blasting for up to ninety (90) days from the date of the original notice. In no event will the Grantee be given less than two (2) business days written notice of any blasting Notification of any excavation shall be provided through the One-Call System as provided by RCW 19.122, as hereinafter amended.

15 SURVEY MARKERS AND MONUMENTS

It shall be the responsibility of the Grantee performing any construction work in the County road rights-of-way to restore any survey markers or monuments disturbed by such construction in accordance with RCW 58.09.130, and as hereinafter amended

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16. ASSIGNMENT

The Grantee shall not have the right to assign this franchise without the consent of the Metropolitan King County Council given by Ordinance No assignment shall be effective unless an acceptance by the assignee of all rights, conditions, terms, provisions, and responsibilities contained within the franchise, as well as surety bonds, which the Council deems necessary to be posted, are received. Council approval of the assignment may be made subject to the assignee's acceptance of new or modified terms of the franchise

17. EXPIRATION AND RENEWAL

To the extent described in Exhibit "A", all rights granted by this franchise to County road rights-of-way outside incorporated Towns and Cities apply to all existing County road rights-of-Way improved and unimproved and to all County road rights-of-way acquired by King County during the term of this franchise

If the Grantee has initiated a renewal of this franchise before it expires, the County may, at its sole discretion, extend the term of the franchise on a month to month basis for up to one year. Should the County elect to extend the franchise, written notice shall be provided to the Grantee before the franchise expiration date

If the Grantee has not applied for a renewal of this franchise before it expires, King County has the right to remove or relocate any lines and appurtenances of the Grantee as is reasonably necessary for the public's health, welfare, safety, or convenience including, but not limited to, the safe operation of County roads, franchise holders, or for the construction, renewing, altering, or improving of any County road right-of-way, or for the installation of lines and/or facilities of other franchise holders Grantee shall be liable for the costs incurred in any removal or relocation of its lines and appurtenances under this section Costs include the expense of labor and equipment

Upon expiration of this franchise, the Grantee shall continue to be responsible for the operation and maintenance of existing facilities in the County road rights-of-way until removed, assigned to another franchised utility or abandoned; however, the Grantee shall not have the right to provide additional services or construct new facilities. King County will issue permits required for the repair and maintenance of the existing facilities in accordance with K.C.C. 14.44 055 as amended and Section 11 of this franchise. This section and sections 8, 10-13 and 15 of this franchise shall continue in force until such time as the lines are removed from County road rights-of-way, assigned to another franchised utility, or abandoned in place with the approval of the Manager of the Department of Transportation, Road Services Division.

18. RESERVATION OF RIGHTS

King County specifically reserves for itself the right to impose a utility tax on the Grantee if State of Washington grants such taxing authority and the local option is exercised by the King County Council

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King County also specifically reserves the right to exercise authority it has or may acquire in the future to secure and receive fair market compensation for the use of its property, pursuant to an ordinance. If King County elects to exercise such authority, the fair market compensation requirement for Grantee shall be imposed by ordinance not less than one hundred eighty (180) days after written notice ("Compensation Notice") is delivered to the Grantee, said Compensation Notice identifying with specificity the definition, terms and/or formula to be used in determining such fair market compensation. Acceptance of King County's definition terms and/or formula identified in the Compensation Notice will occur if the Grantee accepts in writing within thirty (30) days of receipt of the Compensation Notice, or, if Grantee takes no action in writing within thirty (30) days of receipt of the Compensation Notice, in which case the applicable ordinance that the King County Council passes will be determinative

Nothing in this section shall be construed as an agreement by the Grantee of King County's right to exercise authority it has or may acquire in the future to secure and receive fair market compensation for the use of property. Nothing in this section shall be construed to prohibit the Grantee from challenging, in King County Superior Court or a court of competent jurisdiction, the legality of such right

Grantee's rejection of the definition, terms, and/or formula identified in the Compensation Notice will only occur if such rejection is in written form, identifying with specificity the grounds for such rejection, and delivered to King County within thirty (30) days after receipt of the Compensation Notice, in which case the below identified arbitration terms will apply.

(a) The Grantee and King County will select one arbitrator each, and the two selected arbitrators will select a third arbitrator. If the two arbitrators have not selected a third arbitrator within thirty (30) days after the selection of the last selection of the two, either the Grantee or King County may apply to the presiding judge of the King County Superior Court for the appointment of a third arbitrator. The three

arbitrators will determine the method for determining the fair market compensation for the County property used by the Grantee The arbitration procedure employed shall be consistent with the rules and procedures of the American Arbitration Association The decision of a majority of the arbitrators will bind both the Grantee and King County. At the conclusion of the arbitration, the arbitrators will submit written reports to the Grantee and King County, which shall contain all pertinent evidence that, led to their conclusion together with an explanation of their reasoning for such conclusion.

(b) The fees of the arbitrators selected by each party shall be paid by that party and the fees of the third arbitrator shall be paid one-half by the County and the Grantee. The County and the Grantee shall share the other costs of the proceeding equally

(c) In event that the question of fair market compensation is not resolved prior to the effective date specified by the ordinance authorizing said compensation, the arbitration decision will be applied retroactively to the effective date in the ordinance The Grantee will pay the retroactive sum plus interest in the amount of twelve percent (12%) per annum

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Nothing in this franchise may be construed to limit the exercise of authority now or later possessed by the County or any other governing body having competent jurisdiction to fix just, reasonable and compensatory rates or other requirements for services under this franchise. Nothing in this section shall be construed to prohibit the Grantee from challenging, in King County Superior Court or a court of competent jurisdiction, the authority of the County or any other governing body to fix rates or other requirements for services.

19. COMPLIANCE WITH LAWS

Grantee shall conform to all applicable federal, state and local laws and regulations including, but not limited to, the State Environmental Policy Act and King County environmental standards and ordinances.

20 NON-DISCRIMINATION CLAUSE

In all hiring or employment made possible or resulting from this franchise agreement, there shall be no discrimination against any employee or applicant for employment because of sex, sexual orientation, age, race, color, creed, national origin, marital status or the presence of any sensory, mental, or physical handicap, unless based upon a bona fide occupational qualification, and this requirement shall apply to but not be limited to the following: employment, advertising, lay-off or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship

No person shall be denied, or subjected to discrimination in receipt of the benefit of any services or activities made possible by or resulting from this agreement on the grounds of sex, sexual

orientation, race, color, creed, national origin, age except minimum age and retirement provisions, marital status, or the presence of any sensory, mental or physical handicap

Any violation of this provision shall be considered a violation of a material provision of this agreement and shall be grounds for cancellation, termination or suspension in whole or in part, of the agreement by the County and may result in ineligibility for further County agreements.

The Grantee shall make the best efforts to make opportunities for employment and/or contracting services available to women and minority persons The Grantee recognizes that King County has a policy of promoting affirmative action, equal opportunity and has resources available to assist Grantee in these efforts.

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21. PENALTY FOR VIOLATION OF CONDITIONS

If the Grantee shall violate or fail to comply with any of the material terms, conditions, or responsibilities of this franchise through neglect or failure to obey or comply with any notice given the Grantee under the provisions of this franchise or if the Grantee abandons its franchise, the Council may revoke this franchise King County shall give written notice of its intent to revoke this franchise. A public hearing shall be scheduled within forty-five (45) days following the notification. The decision to revoke this franchise will become effective ninety (90) days following the public hearing if the County, by ordinance, finds·

A That the Grantee has not substantially cured the violation or failure to comply which was the basis of the notice; or

B. that the violation or failure to comply which was the basis of the notice is incapable of cure, or

C that the Grantee has repeatedly violated or failed to comply with any of the material terms, conditions, or responsibilities of the franchise, even though the individual violations have been cured, and

D. that the revocation of the franchise is in the public interest.

During the forty-five (45) days following the notification, the Grantee shall have the opportunity to remedy the failure to comply

22 RIGHT OF APPEAL

Decisions, requirements, or approvals of the Director are binding on the parties to this document Appeals from the Director's determinations will be made by filing a complaint with the King County Superior Court

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23 SEVERANCE

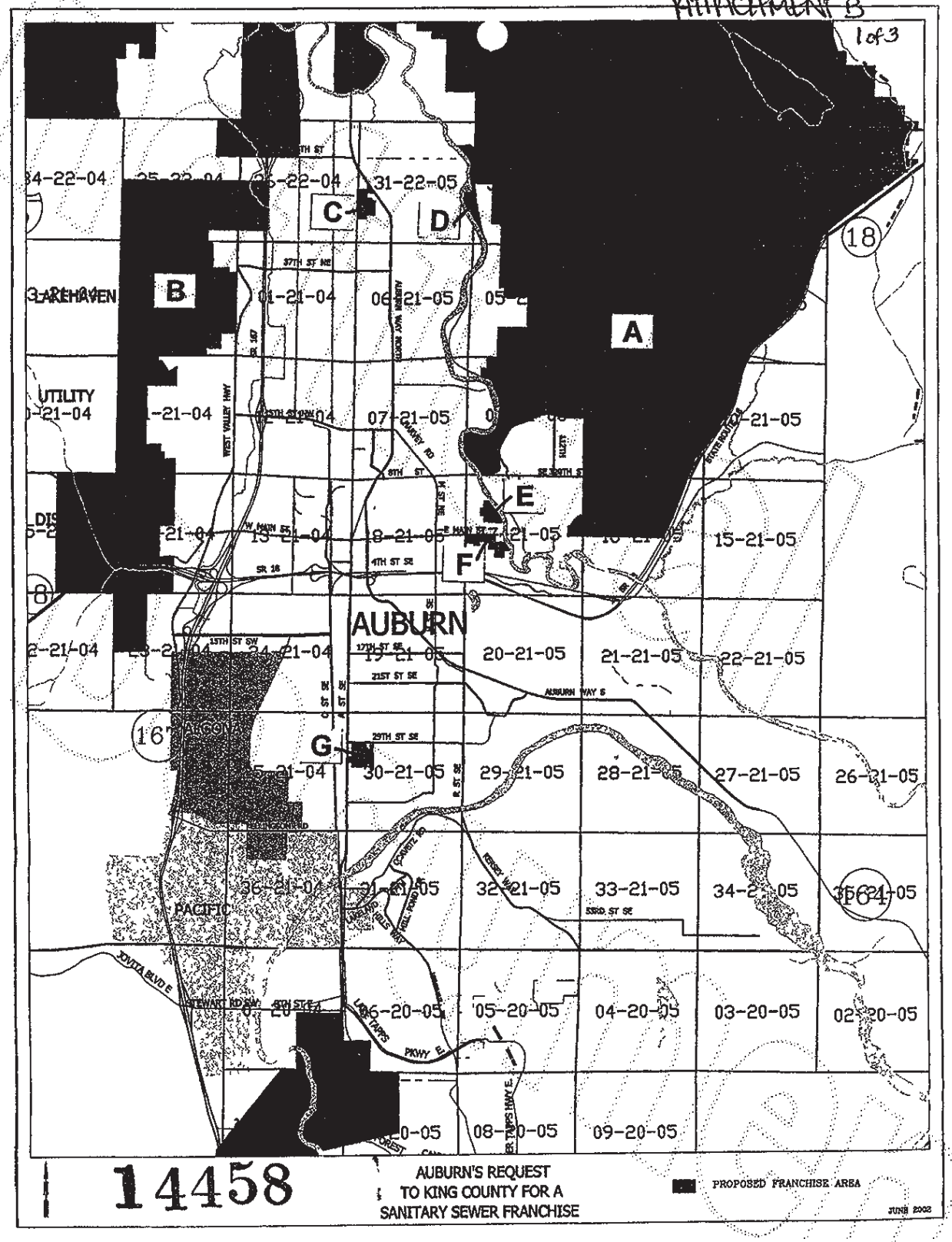
This franchise gives effect to purposes and uses, which are consistent with economical and efficient services rendered in the public interest. If any provision of this franchise, or its application is determined to be invalid by a court of law, then the remaining provisions of this franchise shall continue and remain valid unless the dominant purpose of the franchise would be prevented or the public interest is no longer served

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ATTACHMENT B
1 of 3

2002 100 1001676



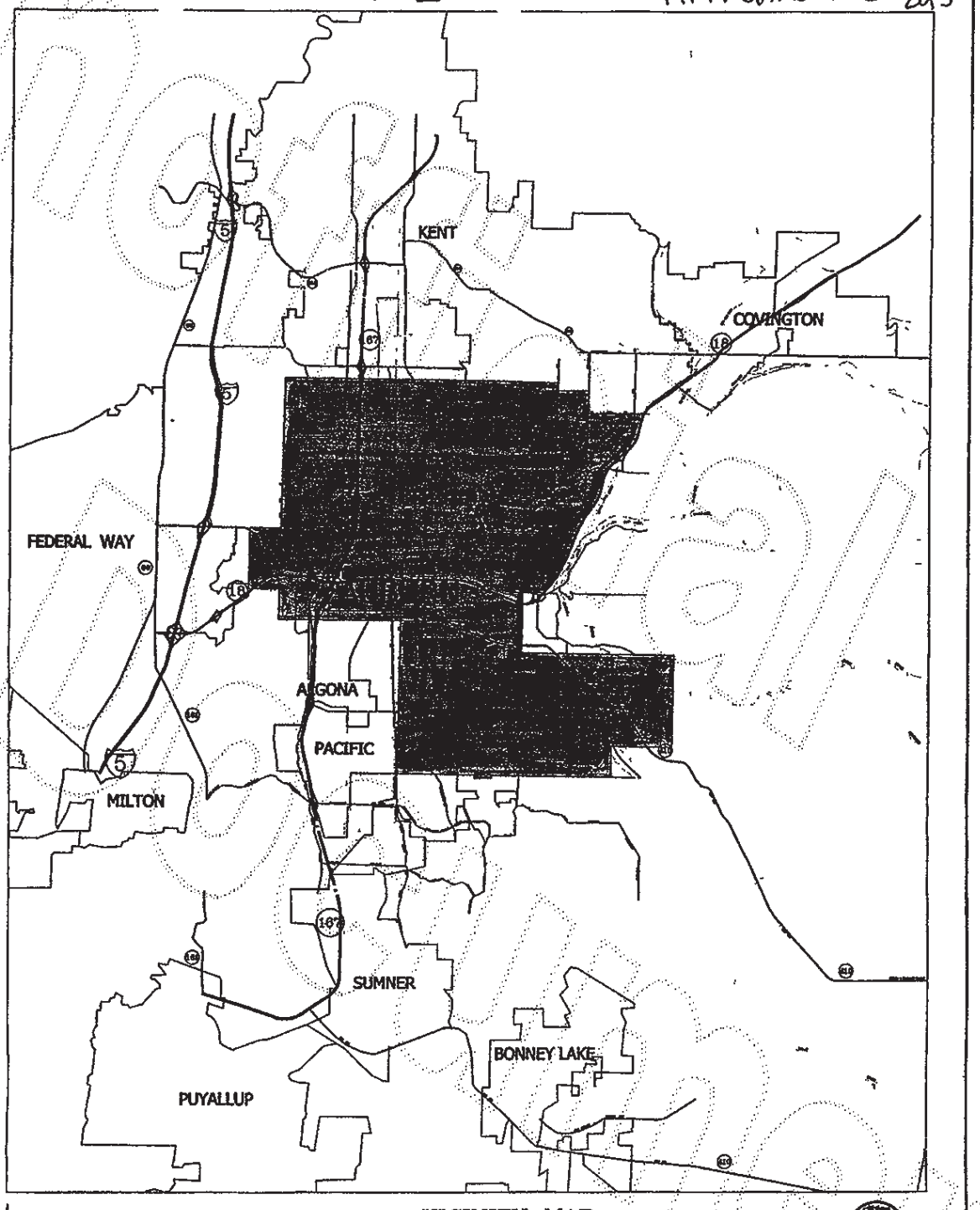
14458

AUBURN'S REQUEST
TO KING COUNTY FOR A
SANITARY SEWER FRANCHISE

14458

ATTACHMENT B 2 of 3

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VICINITY MAP

SCALE 1" = 2 MILES

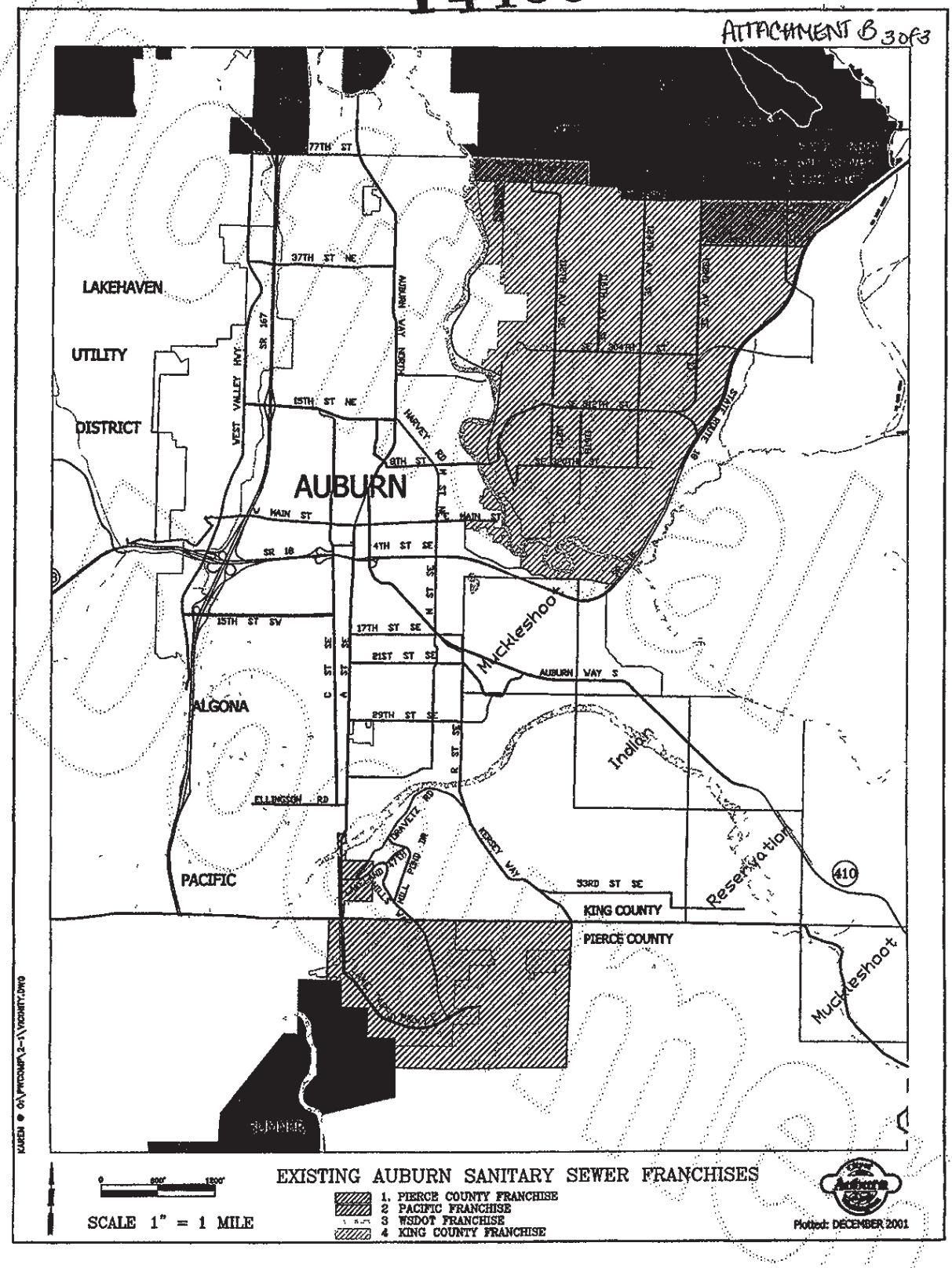
Plotted: DECEMBER 2001

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14458

ATTACHMENT B 3 of 3

2002 100 1001676



APPENDIX A2

SOOS CREEK WATER AND SEWER DISTRICT

- Service Area Boundaries (Resolution 3321)

RESOLUTION NO. 3321

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN INTERLOCAL AGREEMENT ESTABLISHING SANITARY SEWER SERVICE BOUNDARIES BETWEEN THE CITY OF AUBURN AND THE SOOS CREEK WATER AND SEWER DISTRICT.

WHEREAS, pursuant to RCW 35A.11.040, Auburn has the legal authority to exercise its powers and perform any of its functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn has the legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, pursuant to RCW 35A.21.150 Auburn has the legal authority to maintain a sewerage system; and

WHEREAS, pursuant to RCW 57.08.044, Soos Creek Water and Sewer District has the legal authority to provide sewer service to property owners in areas outside existing district boundaries; and

WHEREAS, pursuant to RCW 57.08.044, Soos Creek Water and Sewer District has the legal authority to enter into contracts with any municipal corporation for the purpose of providing sewer service to those property owners outside the existing district boundaries.

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute an Interlocal Agreement establishing sanitary sewer service boundaries between the City of Auburn and Soos Creek Water and Sewer District District. A copy of said Agreement is attached hereto, denominated as Exhibit "1" and made a part hereof as though set forth in full herein.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

DATED this 20th day of February, 2001.

CITY OF AUBURN

Charles A. Booth

CHARLES A. BOOTH
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds,
City Attorney



Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):
10/17 PNWT W-8384-12

INTERLOCAL AGREEMENT BETWEEN CITY OF AUBURN AND THE SOOS CREEK WATER & SEWER DISTRICT FOR THE ESTABLISHMENT OF SANITARY SEWER SERVICE BOUNDARIES

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)

CITY OF AUBURN & SOOS CREEK WATER & SEWER DISTRICT

Grantee/Assignee/Beneficiary: (Last name first)

CITY OF AUBURN & SOOS CREEK WATER & SEWER DISTRICT

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page ____ of document.

Assessor's Property Tax Parcel/Account Number

PER RCW 39.34

☐ Assessor Tax # not yet assigned

Said document(s) were filed for record by Pacific Northwest Title as accommodation only. It has not been examined as to proper execution or as to its effect upon title.

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SOOS CREEK WATER AND SEWER DISTRICT and CITY OF AUBURN INTERLOCAL AGREEMENT FOR THE ESTABLISHMENT OF SANITARY SEWER SERVICE BOUNDARIES

THIS AGREEMENT, made and entered into this 21st day of March, 2001, by and between the **SOOS CREEK WATER AND SEWER DISTRICT**, a Washington municipal corporation (hereinafter referred to as "Soos Creek"), and the **CITY OF AUBURN**, a Washington municipal corporation, (hereinafter referred to as "Auburn"), both being duly organized and existing under and by virtue of the laws of the State of Washington,

WITNESSETH:

WHEREAS, pursuant to RCW 35A.11.040, Auburn has the legal authority to exercise its powers and perform any of its functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn has the legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, pursuant to RCW 35A.21.150 Auburn has the legal authority to maintain a sewerage system; and

WHEREAS, pursuant to RCW 57.08.044, Soos Creek has the legal authority to provide sewer service to property owners in areas outside existing district boundaries; and

WHEREAS, pursuant to RCW 57.08.044, Soos Creek has the legal authority to enter into contracts with any municipal corporation for the purpose of providing sewer service to those property owners outside the existing district boundaries, and

WHEREAS, the parties recognize the responsibility of public sanitary sewer utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, Auburn desires new development within it's Potential Annexation Area to complete a Pre-annexation agreement with Auburn prior to receiving a certificate of sanitary sewer availability; and

WHEREAS, portions of the Soos Creek sanitary sewer system have been sized and are situated so as to be capable of affording sewer service to a portion of Auburn's Potential Annexation Area; and

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WHEREAS, Auburn has evaluated and determined it is not cost feasible to provide sewer service to those properties located within Auburn's Potential Annexation Area adjacent to Soos Creek's sanitary sewer infrastructure; and

WHEREAS, the parties desire to allow Soos Creek to construct, reconstruct, repair and maintain sewer facilities as necessary, and to authorize connections for service to noted areas, or portions thereof; and

WHEREAS, Soos Creek's sewer service to these areas will provide for maximum efficient use of existing and future facilities together with orderly and efficient sanitary sewer planning.

NOW, THEREFORE:

IT IS HEREBY AGREED by and between the parties hereto as follows:

1. **Sewer Service Area.** The parties have agreed to a permanent sewer service area boundary between them. The boundary is graphically depicted on the map attached hereto as Exhibit "A", which is by this reference incorporated herein. Both parties further agree that Soos Creek in providing sewer service to the area shown on Exhibit "A", as "Area To Be Served By Soos Creek", shall be furnishing sewer service to properties within Auburn's Potential Annexation Area. Soos Creek shall provide service in accordance with and subject to the terms and conditions of this Agreement.

2. **Service Area Responsibility.** Auburn shall have responsibility to provide sanitary sewer service to the area(s) on Auburn's side of the respective service area boundaries as delineated by this agreement, whether or not annexed to Auburn, and subject to such reasonable conditions and terms of service as Auburn deems appropriate. Soos Creek shall have responsibility to provide sanitary sewer service to the area(s) on Soos Creek's side of the respective service area boundaries as delineated by this agreement, whether or not annexed to Auburn, and subject to such reasonable conditions and terms of service as Soos Creek deems appropriate. Auburn hereby gives consent to Soos Creek for such service within Soos Creek's corporate boundaries as they presently exist, or as they may be modified in the future by annexation. Soos Creek shall be responsible for obtaining all necessary governmental franchises, approvals, easements and permits for the installation of said sewerage system within their delineated boundary.

3. **Sewer Availability Certificates.** Both parties acknowledge that Auburn may exercise planning jurisdiction over territory to which it will not provide sanitary sewer service in accordance with this agreement. Auburn hereby agrees that its planning shall be for sanitary sewer service to be provided by Soos Creek in those areas shown in Exhibit "A" as Soos Creek's service area; provided, however, that commencing on March 1, 2001, Soos Creek sewer availability certificates for all

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service areas to be served by Soos Creek within Auburn and/or Auburn's Potential Annexation Area (PAA) in accordance herewith, shall be issued to applicants for sewer service only through Auburn.

4. Soos Creek Comprehensive Sewer Planning Area. The terms of this agreement will be included as an element of Soos Creek's Comprehensive Sewerage Plan. Soos Creek will submit to Auburn all Comprehensive Sewerage Plans thereto involving area and/or system improvements within Auburn's planning area. The Comprehensive Sewerage Plans and amendments shall be in compliance with Auburn's Standards for sanitary sewer service within Auburn and/or Auburn's PAA, except where preexisting facilities may differ from Auburn's standards. As facilities are replaced or as new facilities are planned and constructed within Auburn and/or Auburn's PAA, they shall conform to Auburn's service and facility standards for sanitary sewer service then in effect.

5. Auburn Comprehensive Plan. The terms of this agreement will be included as an element of the sewerage portion of Auburn's Comprehensive Plan, and Soos Creek's Comprehensive Plan.

6. Future Annexations. Each of the parties agree that Soos Creek shall provide sanitary sewer service to the areas shown in Exhibit "A" without regard to the present corporate limits of the parties, and without regard to future corporate limits as they may be amended by annexation to either party.

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7. Reliance. Each party hereto acknowledges that the terms hereof will be relied upon by the other in its comprehensive planning to meet the needs of the service area designated herein.

8. Liability. Neither party to this agreement shall be liable for any failure or interruption of service in the service area of the other party, as designated herein, except as may be specifically caused by the other party.

9. Government Approvals. The parties will give notice of the adoption of this Agreement to Metropolitan/King County, to the Department of Ecology, to the Department of Health, and to any other agency with jurisdiction or mission relevant to the terms hereof, and shall cooperate and assist in all reasonable manner in procuring any necessary approvals hereof by those agencies.

10. Boundary Review Board. In the event that implementation of the terms hereof results in permanent sewer service to areas that will be outside the respective service boundaries of Soos Creek or Auburn, the parties will at the time of such service jointly seek approval of the King County Boundary Review Board in accordance with R.C.W. 36.93.090.

11. Service Amendments. Any changes to the service areas described herein shall be by mutual agreement. Each party may give permission to the other on a case-by-case basis to provide service by one party into the other party's adjacent or nearby service area based upon considerations of economic efficiency for providing the service with mutual consent of Auburn's Director of Public Works and Soos Creek's District Manager.

12. Alteration, Amendment, Modification, or Termination. Soos Creek and Auburn hereby reserve the right to alter, amend modify or terminate the terms and conditions of this Agreement upon consent of both Parties given in writing.

13. Indemnification and Hold Harmless. Each Party hereto agrees to protect, defend, and indemnify the other Party, its officers, officials, employees and agents from any and all cost, claims judgements and/or awards of damages, arising out of or in any way resulting from the Party's default, failure of performance, or negligent conduct associated with this agreement, by the Party, its employees, subcontractors or agents. Each Party agrees that its obligations under this provision extend to any claim, demand, and/or cause of action brought by or on behalf of any of its employees, or agents. The foregoing indemnity is specifically and expressly intended to constitute a waiver of each Party's immunity under Washington's Industrial Insurance Act, RCW Title 51, as respects the other Party only, and only to the extent necessary to provide each Party with a full and complete indemnity of claims made by the other Party's employees. The Parties acknowledge that these provisions were specifically negotiated and agreed upon by them.

In the event either Party incurs any costs including attorney fees to enforce the provisions of this article and prevails in such enforcement action, all such costs and fees shall be recoverable from the losing Party.

The provisions of this section shall survive the expiration or earlier termination of this agreement with regard to any event that occurred prior to or on the date of such expiration or earlier termination.

14. Dispute Resolution. In the event that any dispute arises between the Parties, either Party may request in writing that the issue in dispute be resolved by Mediation and, if necessary, binding Arbitration. In the event the matter cannot be resolved by the mediation process then it shall go promptly to binding Arbitration with no right of appeal. Arbitration shall be by the American Arbitration Association, or by such other entity as the Parties agree.

15. Sanctity of Agreement. This agreement constitutes the entire agreement of the parties regarding the subject matter hereof, and there are no other representations or oral agreements other than those listed herein, which vary the

2001 040 0001622

terms of this agreement. Future agreements may occur between the parties to transfer additional or future service areas by mutual agreement.

16. Obligation Intact. Nothing herein shall be construed to alter the rights, responsibilities, liabilities, or obligations of either Soos Creek or Auburn regarding provision of sewer service, except as specifically set forth herein.

SOOS CREEK WATER AND SEWER DISTRICT

Approved by Resolution No. 2141-S of the Soos Creek Water and Sewer District, Washington, at its regular meeting held on the 21st day of March, 2001.

By:

~~Ron Speer~~, President of Board
Karen L. Webster

Attest:

Secretary of Board
Philip W. Sullivan

Approved as to form:

Soos Creek Attorney
Michael R. Harris

2001 040 6001622

CITY OF AUBURN
Approved by Resolution No. 3321 of the City of Auburn, Washington, at its regular meeting held on the 20th day of February, 2001.

By:

Charles A. Booth, Mayor

Attest:

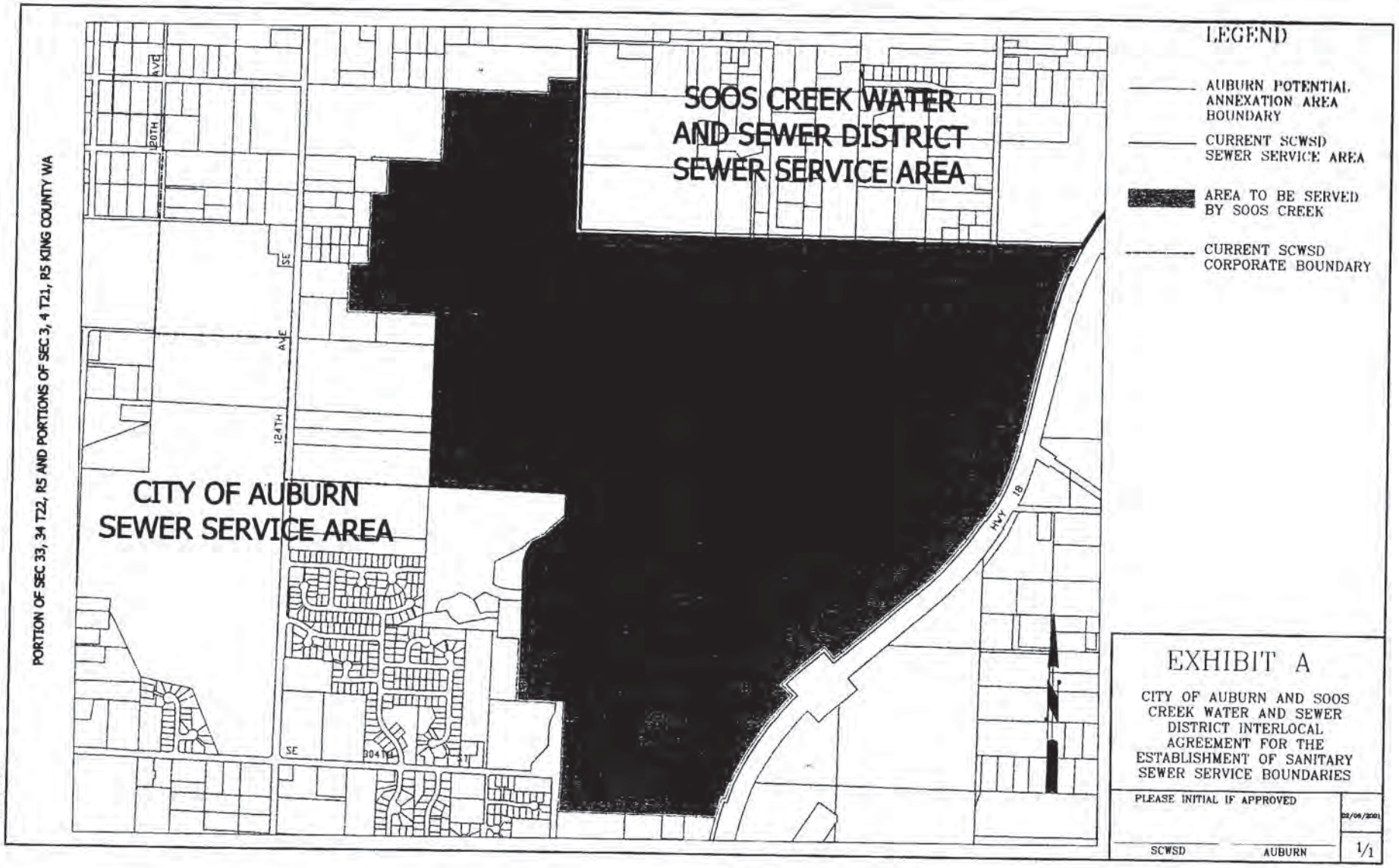
Danielle Daskam, City Clerk

THE CITY OF AUBURN CORPORATE SEAL

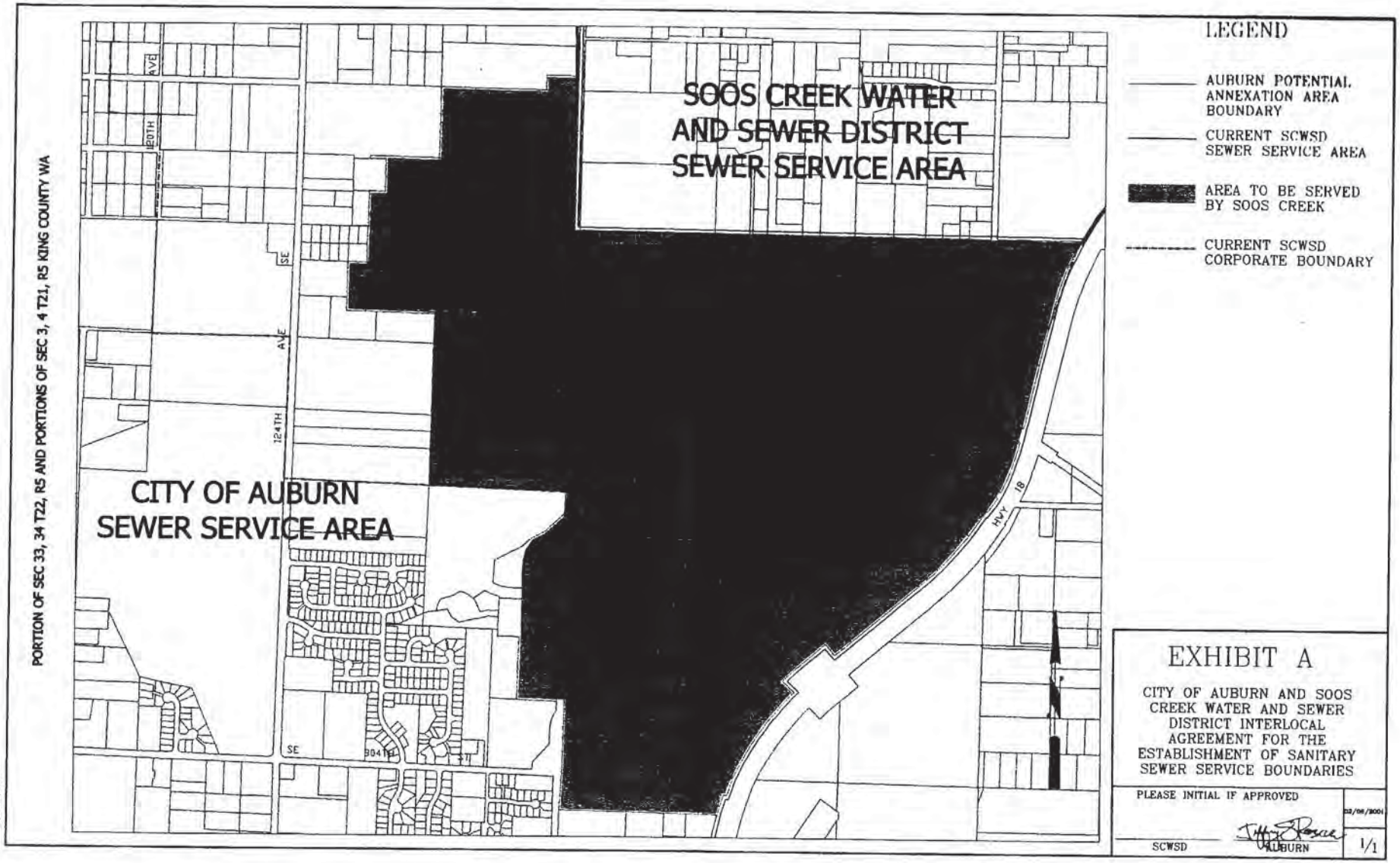
Approved as to form:

Michael Reynolds, City Attorney

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JUNE 2000

LEGEND

- SCWSD CORPORATE BOUNDARY
- SCWSD SEWER PLANNING AREA BOUNDARY
- CITY OF KENT CORPORATE BOUNDARY
- CITY OF AUBURN SEWER SERVICE AREA BOUNDARY
- SEWER SERVICE DIVISION LINE

EXHIBIT "A"

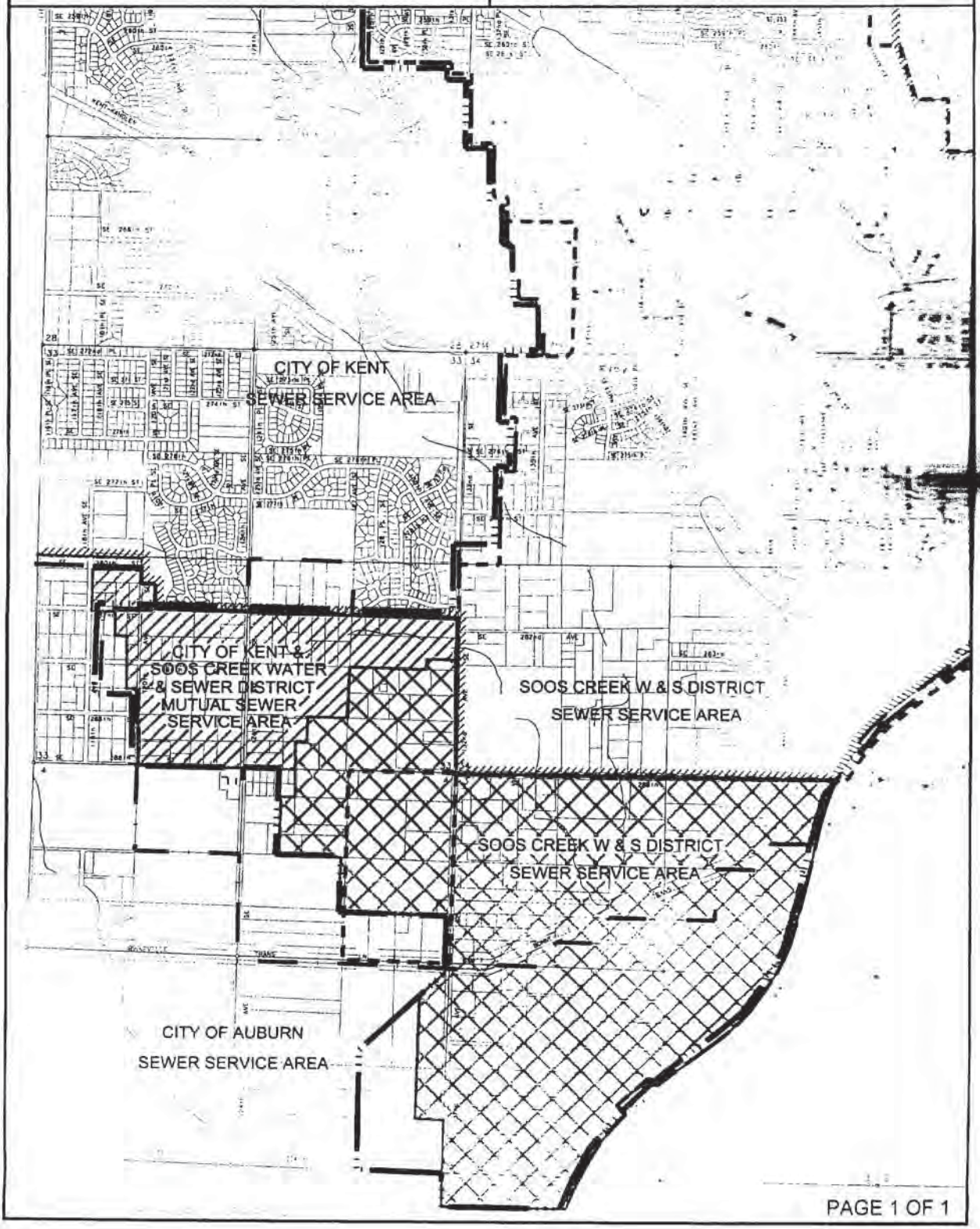
CITY OF AUBURN / SOOS CREEK WATER & SEWER DISTRICT INTERLOCAL AGREEMENT

PROPOSED SEWER SERVICE PLANNING AREAS

APPROVAL

SOOS CREEK W & S DISTRICT

CITY OF AUBURN



PAGE 1 OF 1

2001 040 6001622

APPENDIX A3

CITY OF KENT

- Sewer Service Boundaries (Resolution 3322)

RESOLUTION NO. 3322

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN INTERLOCAL AGREEMENT ESTABLISHING SANITARY SEWER SERVICE BOUNDARIES BETWEEN THE CITY OF AUBURN AND THE CITY OF KENT.

WHEREAS, pursuant to RCW 35A.11.040 Auburn and Kent have the legal authority to exercise their powers and perform any of their functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Kent have the legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, pursuant to RCW 35A.21.150 Auburn and Kent have the legal authority to maintain a sewerage system.

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute an Interlocal Agreement establishing sanitary sewer service boundaries between the City of Auburn and the City of Kent. A copy of said Agreement is attached hereto, denominated as Exhibit "1" and made a part hereof as though set forth in full herein.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

DATED this 20th day of February, 2001.

CITY OF AUBURN

Charles A. Booth

CHARLES A. BOOTH
MAYOR

ATTEST:

Danielle E. Daskam

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Michael J. Reynolds,
City Attorney



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PACIFIC NW TIT AG 14.00
PAGE 001 OF 007
04/06/2001 15:37
KING COUNTY, WA

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

2001 040 6001623

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):
7/14 PNWT W-8385-12

INTERLOCAL AGREEMENT BETWEEN CITY OF AUBURN AND THE CITY OF KENT FOR THE ESTABLISHMENT OF SANITARY SEWER SERVICE BOUDNARIES

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)

CITY OF AUBURN & CITY OF KENT

Grantee/Assignee/Beneficiary: (Last name first)

CITY OF AUBURN & CITY OF KENT

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page ____ of document.

Assessor's Property Tax Parcel/Account Number

PER RCW 39.34

☐ Assessor Tax # not yet assigned

Said document(s) were filed for record by Pacific Northwest Title as accommodation only. It has not been examined as to proper execution or as to its effect upon title.

CITY OF KENT and CITY OF AUBURN INTERLOCAL AGREEMENT FOR THE ESTABLISHMENT OF SANITARY SEWER SERVICE BOUNDARIES

THIS AGREEMENT, made and entered into this 5th day of March, 2001, by and between the **CITY OF KENT**, a Washington municipal corporation (hereinafter referred to as "Kent"), and the **CITY OF AUBURN**, a Washington municipal corporation, (hereinafter referred to as "Auburn"), both being duly organized and existing under and by virtue of the laws of the State of Washington,

WITNESSETH:

WHEREAS, pursuant to RCW 35A.11.040 Auburn and Kent have the legal authority to exercise their powers and perform any of their functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Kent have the legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, pursuant to RCW 35A.21.150 Auburn and Kent have the legal authority to maintain a sewerage system; and

WHEREAS, the parties recognize the responsibility of public sanitary sewer utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, Auburn desires new developments within it's Potential Annexation Area to complete a Pre-annexation agreement with Auburn prior to receiving a certificate of sanitary sewer availability; and

WHEREAS, portions of the Kent sanitary sewer system have been sized and are situated so as to be capable of affording sewer service to a portion of Auburn's Potential Annexation Area; and

WHEREAS, Auburn has evaluated and determined it is not cost feasible to provide direct sewer service to Auburn's Potential Annexation Area property existing adjacent to Kent's sanitary sewer infrastructure; and

2001 040 0001623

WHEREAS, the parties desire to allow Kent to construct, reconstruct, repair and maintain sewer facilities as necessary, and to authorize connections to Kent's sewer system for service to noted areas, or portions thereof; and

WHEREAS, Kent's sewer service to these areas will provide for maximum efficient use of existing and future facilities together with orderly and efficient sanitary sewer planning.

NOW, THEREFORE:

IT IS HEREBY AGREED by and between the parties hereto as follows:

1. Sewer Service Area. The parties have agreed to a sewer service area boundary between them. The boundary is graphically depicted on the map attached hereto as Exhibit "A", which is by this reference incorporated herein. Both parties further agree that Kent in providing sewer service to the area shown on Exhibit "A", as Area To Be Served By Kent, shall be furnishing sewer service to properties within Auburn's Potential Annexation Area. Kent shall provide service in accordance with and subject to the terms and conditions of this Agreement.

2. Management, Regulation and Control of Sewer System. Kent shall have the sole responsibility and authority to construct, maintain, manage, conduct and operate its sewerage system as installed within the area described in Exhibit "A", together with any additions, extensions and betterments thereto. Kent shall also be responsible for obtaining all necessary governmental franchises, approvals, easements and permits for the installation of said sewerage system as described above.

2001 040 6001623

3. Service Rates and Connection Charges.

a) **Permit Required.** No connection shall be made to Kent's sanitary sewer system unless the property owner first pays the associated fees and submits the proper information to obtain a Kent sanitary sewer connection permit. The connection shall be subject to inspection and approval for compliance with Kent's Sanitary Sewer Standards as adopted at the time the connection is made.

b) **Rates.** The rates charged to the sanitary sewer customer by Kent within the area described in Exhibit "A" shall be fixed, altered, regulated and controlled by Kent pursuant to all applicable laws or regulations promulgated on the subject of rates and charges for sewer service. No surcharge shall be charged to the customers served under this agreement on the sole basis that those customers are within Auburn's Potential Annexation Area.

4. Planning Areas. Kent hereby acknowledges the region to be within Auburn's Potential Annexation Area. Both parties acknowledge that Auburn desires a Pre-annexation Agreement from property seeking a sewer certificate of availability within Auburn's Potential Annexation Area.

5. Sewer Availability Certificates. Commencing on March 1, 2001, Kent shall issue sewer availability certificates for property within the area described in Exhibit "A". Kent agrees not to issue the availability certificate or any side sewer permit in the case of an existing development until Kent receives a copy of the City of Auburn Pre-Annexation Agreement in a form accepted and approved by the City of Auburn.

6. Future Annexations. Each of the parties agree that Kent shall provide sanitary sewer service to the areas shown in Exhibit "A" without regard to the present corporate limits of the parties, and without regard to future corporate limits as they may be amended by annexation to either party.

7. Kent Comprehensive Sewer Planning. The terms of this Agreement will be included as an element of Kent's Comprehensive Sewerage Plan. Kent will submit to Auburn all Comprehensive Sewerage Plans and amendments thereto involving area and/or system improvements within Auburn's planning area.

8. Auburn Comprehensive Planning. The terms of this Agreement will be included as an element of the sewerage portion of Auburn's Comprehensive Plan.

2001 040 6001623

9. Reliance. Each party hereto acknowledges that the terms hereof will be relied upon by the other in its comprehensive planning to meet the needs of the service area designated herein.

10. Liability. Neither party to this agreement shall be liable to the other party for any failure or interruption of service in the service area of the other party.

11. Government Approvals. The parties will give notice of the adoption of this Agreement to Metropolitan/King County, to the Department of Ecology, to the Department of Health, and to any other agency with jurisdiction or mission relevant to the terms hereof, and shall cooperate and assist in all reasonable manner in procuring any necessary approvals hereof by those agencies.

12. Boundary Review Board. In the event that implementation of the terms hereof results in permanent sewer service to areas that will be outside the respective service boundaries of Kent or Auburn, the parties will at the time of such service jointly seek approval of the King County Boundary Review Board in accordance with R.C.W. 36.93.090.

13. Service Amendments. Any changes to the service areas described herein shall be by mutual agreement. Each party may give permission to the other on a

case-by-case basis to provide service by one party into the other party's adjacent or nearby service area based upon considerations of economic efficiency for providing the service with mutual consent of the Director of Public Works from both jurisdictions.

14. Alteration, Amendment or Modification. Kent and Auburn hereby reserve the right to alter, amend or modify the terms and conditions of this Agreement upon written agreement of both parties to such alteration, amendment or modification.

15. Sanctity of Agreement. This agreement constitutes the entire agreement of the parties regarding the subject matter hereof, and there are no other representations or oral agreements other than those listed herein, which vary the terms of this agreement. Future agreements may occur between the parties to transfer additional or future service areas by mutual agreement.

16. Obligation Intact. Nothing herein shall be construed to alter the rights, responsibilities, liabilities, or obligations of either Kent or Auburn regarding provision of sewer service, except as specifically set forth herein.

2001 040 0001623

CITY OF KENT
Approved by ~~Resolution No~~. MOTION of the City of Kent, Washington, at its regular meeting held on the 6TH day of FEBRUARY, 2001.

By:

Mayor

Attest:

Brenda Jacober
City Clerk, City of Kent

Approved as to form:

Kent City Attorney, DEPUTY

CITY OF AUBURN

Approved by Resolution No. 3322, of the City of Auburn, Washington, at its regular meeting held on the 20th day of February, 2001.

By: Attest:

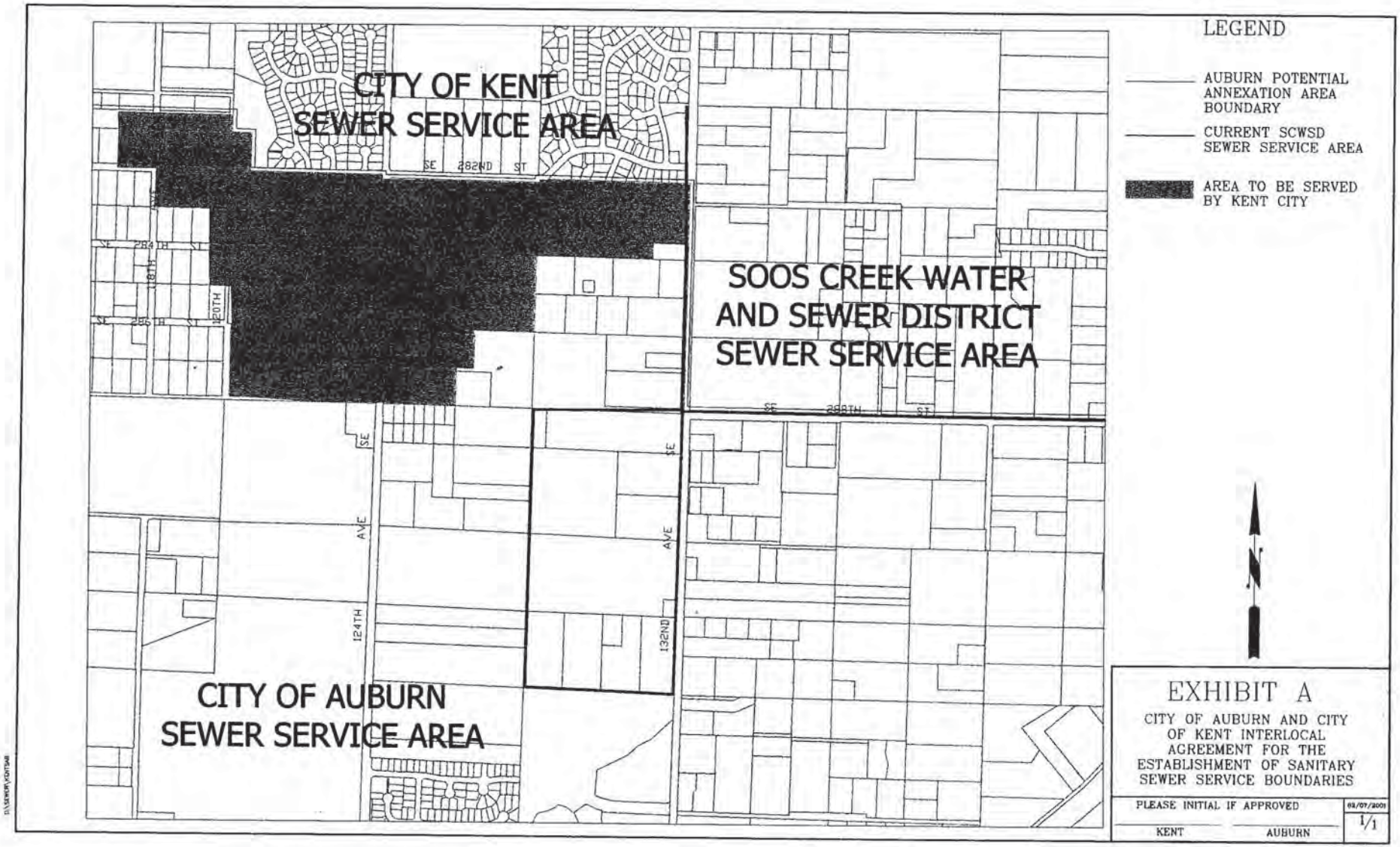
Charles A. Booth
Charles A. Booth, Mayor

Danielle Daskam
Danielle Daskam, City Clerk

Approved as to form:

Auburn City Attorney

2001 040 6001623



200104060016 23

APPENDIX A4

CITY OF PACIFIC

- Sewer Service Boundaries (Resolutions 4335 and 730)

RESOLUTION NO. 4335

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN INTERLOCAL AGREEMENT ESTABLISHING SANITARY SEWER SERVICE BOUNDARIES BETWEEN THE CITY OF AUBURN AND THE CITY OF PACIFIC

WHEREAS, pursuant to RCW 35A.11.040 and RCW 35A.21.150 the City of Auburn ("Auburn") and the City of Pacific ("Pacific") have the authority to exercise a wide variety of municipal powers, including providing sewer service; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Pacific have the legal authority to cooperate with other localities on the basis of mutual advantage and provision of municipal services; and

WHEREAS, the parties recognize the responsibility of public sanitary sewer utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, portions of the Auburn sanitary sewer system have been sized and are situated so as to be capable of affording public sanitary sewer service to a portion of Pacific; and

WHEREAS, Pacific has evaluated and determined it is in Pacific's best interest to allow Auburn to provide sanitary sewer service to property within

Pacific's municipal boundary that lies in the vicinity of Auburn's sanitary sewer infrastructure; and

WHEREAS, Auburn has sufficient wastewater conveyance capacity within their sanitary sewer facilities to support these adjustments to the existing sanitary sewer service areas; and

WHEREAS, Auburn's delivery of sanitary sewer service to these areas will provide the maximum efficiency in the use of existing and future facilities, together with orderly and efficient sanitary sewer planning.

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

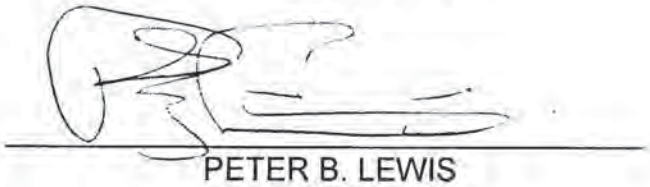
Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute an Interlocal Agreement establishing sanitary sewer service boundaries between the City of Auburn and the City of Pacific, which agreement shall be in substantial conformity with the Agreement a copy of which is attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. This resolution shall be in full force and effect upon passage and signatures hereon.

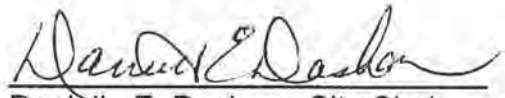
DATED this 5th day of May, 2008.

CITY OF AUBURN



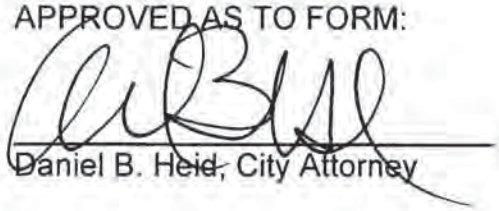
PETER B. LEWIS
MAYOR

ATTEST:



Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:



Daniel B. Heid, City Attorney

INTERLOCAL AGREEMENT
between
CITY OF PACIFIC and CITY OF AUBURN
for the
THE ESTABLISHMENT OF SANITARY SEWER SERVICE BOUNDARIES

THIS AGREEMENT, made and entered into by and between the **CITY OF PACIFIC**, a Washington municipal corporation (hereinafter referred to as "Pacific"), and the **CITY OF AUBURN**, a Washington municipal corporation, (hereinafter referred to as "Auburn"), both being duly organized and existing under and by virtue of the laws of the State of Washington,

WITNESSETH:

WHEREAS, pursuant to RCW 35A.11.040 Auburn and Pacific have the legal authority to exercise their powers and perform any of their functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Pacific have the legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, pursuant to RCW 35A.21.150 Auburn and Pacific have the legal authority to maintain a sewerage system; and

WHEREAS, the parties recognize the responsibility of public sanitary sewer utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, portions of the Auburn sanitary sewer system have been sized and are situated so as to be capable of affording public sanitary sewer service to a portion of Pacific; and

WHEREAS, Pacific has evaluated and determined it is in Pacific's best interest to allow Auburn to provide sanitary sewer service to property within Pacific's municipal boundary that lies in the vicinity of Auburn's sanitary sewer infrastructure; and

WHEREAS, Auburn has sufficient wastewater conveyance capacity within their sanitary sewer facilities to support these adjustments to the existing sanitary sewer service areas; and

WHEREAS, the parties desire to allow Auburn to construct, reconstruct, repair and maintain sewer facilities, and to authorize connections to Pacific's sewer system for service to the areas noted in Attachment "A"; and

WHEREAS, Auburn's delivery of sanitary sewer service to these areas will provide the maximum efficiency in the use of existing and future facilities, together with orderly and efficient sanitary sewer planning.

NOW, THEREFORE:

IT IS HEREBY AGREED by and between the parties hereto as follows:

1. **Sewer Service Area.** The parties have agreed that Auburn will provide sanitary sewer service to a portion of Pacific as graphically depicted on the map attached hereto as Attachment "A", which is by this reference incorporated herein. Both parties further agree that Auburn, in providing sewer service to the area as shown on Attachment "A", shall be furnishing sewer service to properties within Pacific's water service area and Pacific's municipal jurisdiction in accordance with and subject to the terms and conditions of this Agreement.

2. **Management, Regulation and Control of Sewer System.** Auburn shall have the sole responsibility and authority to construct, maintain, manage and operate its sewerage system as installed within the areas described in Attachment "A", together with any additions, extensions and betterments thereto. Auburn shall also be responsible for obtaining all necessary governmental franchises, approvals, easements and permits for the installation, maintenance, and operation of said sewerage systems as described above.

3. **Rates, Charges, Permits, and Billing Responsibilities.** Through this Agreement Auburn will be responsible to own, operate, and maintain the sanitary sewer system including private side sewers within the public right of way. Auburn shall issue certificates of sewer availability when requested by the property owners.

No connection or modification shall be made to Auburn's sanitary sewer system and or private side sewer services connected to Auburn's sewer system unless the property owner first pays the associated fees and submits the proper information to obtain an Auburn sanitary sewer permit. Sanitary sewer permits shall be subject to inspection and approval for compliance with Auburn's Sanitary Sewer Standards as adopted at the time the connection is made.

The rates charged to Auburn's sanitary sewer customers shall be fixed, altered, regulated and controlled by Auburn pursuant to all applicable laws or regulations promulgated on the subject of rates and charges for sewer service. No surcharge shall be charged to the customers served under this agreement on the sole basis that those customers are outside of Auburn's city limits.

To establish a quantitative usage, Pacific shall provide to Auburn the quantity of potable water used by those properties connected to Auburn's sanitary sewer system. Pacific shall provide water usage information every other month to Auburn and Auburn shall send a bill every other month for sewer service. Pacific shall give Auburn the right to read water meters described in Attachment "A" manually if desired by Auburn. Auburn shall also have the ability to annually request water usage data from Pacific for said properties.

4. Boundary Review Board. Pacific and Auburn will, at the time of service through this agreement provide a copy of to the King County Boundary Review Board in accordance with R.C.W. 36.93.090.

5. Comprehensive Sewer Planning. The terms of this Agreement will be included as an element of Auburn and Pacific's Comprehensive Sewerage Plans.

6. Reliance. Each party hereto acknowledges that the other will rely upon the terms of this agreement in its comprehensive planning to meet the needs of the service area designated herein.

7. Indemnification. Pacific agrees to indemnify and hold Auburn and its agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, loses, damages or costs, of whatsoever kind or nature, brought against Auburn arising out of, in connection with, or incident to the execution of this agreement and/or Pacific's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of Auburn, its agents, employees, and/or officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of Pacific; and provided further, that nothing herein shall require Pacific to hold harmless or defend Auburn, its agents, employees, and/or officers, from any claims arising from the sole negligence of Auburn, its agents, employees, and/or officers. No liability shall attach to Auburn by reason of entering this agreement except as expressly provided herein.

Auburn agrees to indemnify and hold Pacific and its agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, loses, damages or costs, of whatsoever king or nature, brought against Pacific arising out of, in connection with, or incident to the execution of this agreement and/or Auburn's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of Pacific, its agents, employees, and/or officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of Auburn; and provided further, that nothing herein shall require Auburn to hold harmless or defend Pacific, its agents, employees, and/or officers, from any claims arising from the sole negligence of

Pacific, its agents, employees, and/or officers. No liability shall attach to Pacific by reason of entering this agreement except as expressly provided herein.

8. Assignment. The parties shall not assign this agreement or any interest, obligation or duty therein without the express written consent of the other party.

9. Attorney's Fees. If either party shall be required to bring any action to enforce any provision of this Agreement, or shall be required to defend any action brought by the other party with respect to this Agreement, and in the further event that one party shall substantially prevail in such action, the losing party shall, in addition to all other payments required therein, pay all of the prevailing party's reasonable costs in connection with such action, including such sums as the court or courts may adjudge reasonable as attorney's fees in trial court and in appellate courts.

10. Government Approvals. The parties will give notice of the adoption of this Agreement to King County's Department of Natural Resources – Wastewater Treatment Division, to the Department of Health, and to any other agency with jurisdiction or mission relevant to the terms hereof, and shall cooperate and assist in all reasonable manner in procuring any necessary approvals hereof by those agencies.

11. Service Amendments. Any changes to the service areas described herein shall be by mutual agreement. Each party may give permission to the other on a case-by-case basis to provide service by one party into the other party's adjacent or nearby service area based upon considerations of economic efficiency for providing the service with mutual consent of Auburn's Director of Public Works and Pacific's Director of Public Works.

12. Notices. All notices between the two agencies hereunder may be delivered or mailed. If mailed, they shall be sent to the following respective addresses:

City of Pacific
Director of Public Works
PO Box 250
100 3rd Avenue SE
Pacific, WA 98047
253-833-2741

City of Auburn
Director of Public Works
25 west Main Street
Auburn, WA 98001
253-931-3010

or to such other representative as either party may hereafter from time to time designate in writing. All notices and payments mailed by regular post (including first class) shall be deemed to have been given on the second business day following the date of mailing, if properly mailed and addressed. Notices and payments sent by certified or registered mail shall be deemed to have been given on the day next

following the date of mailing, if properly mailed and addressed. For all types of mail, the postmark affixed by the United States Postal Service shall be conclusive evidence of the date of mailing.

13. Alteration, Amendment or Modification. Pacific and Auburn hereby reserve the right to alter, amend or modify the terms and conditions of this Agreement upon written agreement of both parties to such alteration, amendment or modification. Such written consent(s) shall be filed with this agreement for future reference.

14. Sanctity of Agreement. This agreement constitutes the entire agreement of the parties regarding the subject matter hereof, and there are no other representations or oral agreements other than those listed herein, which vary the terms of this agreement. Future agreements may occur between the parties to transfer additional or future service areas by mutual agreement.

15. Obligation Intact. Nothing herein shall be construed to alter the rights, responsibilities, liabilities, or obligations of either Pacific or Auburn regarding provision of sewer service, except as specifically set forth herein.

16. Miscellaneous.

A. The captions in this agreement are for convenience only and do not in any way limit or amplify the provisions of this agreement.

B. This agreement is established in perpetuity. Modifications can be established upon written agreement between both parties.

C. The purpose of this agreement is to clarify Pacific and Auburn's sanitary sewer responsibilities for providing service and maintaining public sewer facilities.

D. If any term, provision, condition or portion of this Agreement is held to be invalid, or unenforceable by a final decision of any court having jurisdiction on the matter, the remaining of this Agreement or the application of such term or provision to persons or circumstances other then those as to which it is held invalid or unenforceable shall not be affected thereby and shall continue in full force and effect, unless such court determines that invalidity or unenforceability materially interferes with or defeats the purposes hereof, at which time Auburn or Pacific shall have the right to terminate the Agreement.

E. No modifications or amendments of this agreement shall be valid or effective unless evidenced by an agreement in writing signed by both parties.

IN WITNESS WHEREOF the parties hereto have executed this agreement as of the day and year first above written.

CITY OF PACIFIC
Approved by Resolution No. 730 of the City of Pacific, Washington, at its regular meeting held on the 12th day of May, 2008.

By:

RICHARD HILDRETH,
Mayor, City of Pacific

Attest:

SANDY PAUL-LYLE,
City Clerk, City of Pacific

Approved as to form:

ALBERT A ABUAN,
City Attorney, City of Pacific

CITY OF AUBURN
Approved by Resolution No. 4335, of the City of Auburn, Washington, at its regular meeting held on the 5th day of May, 2008.

By:

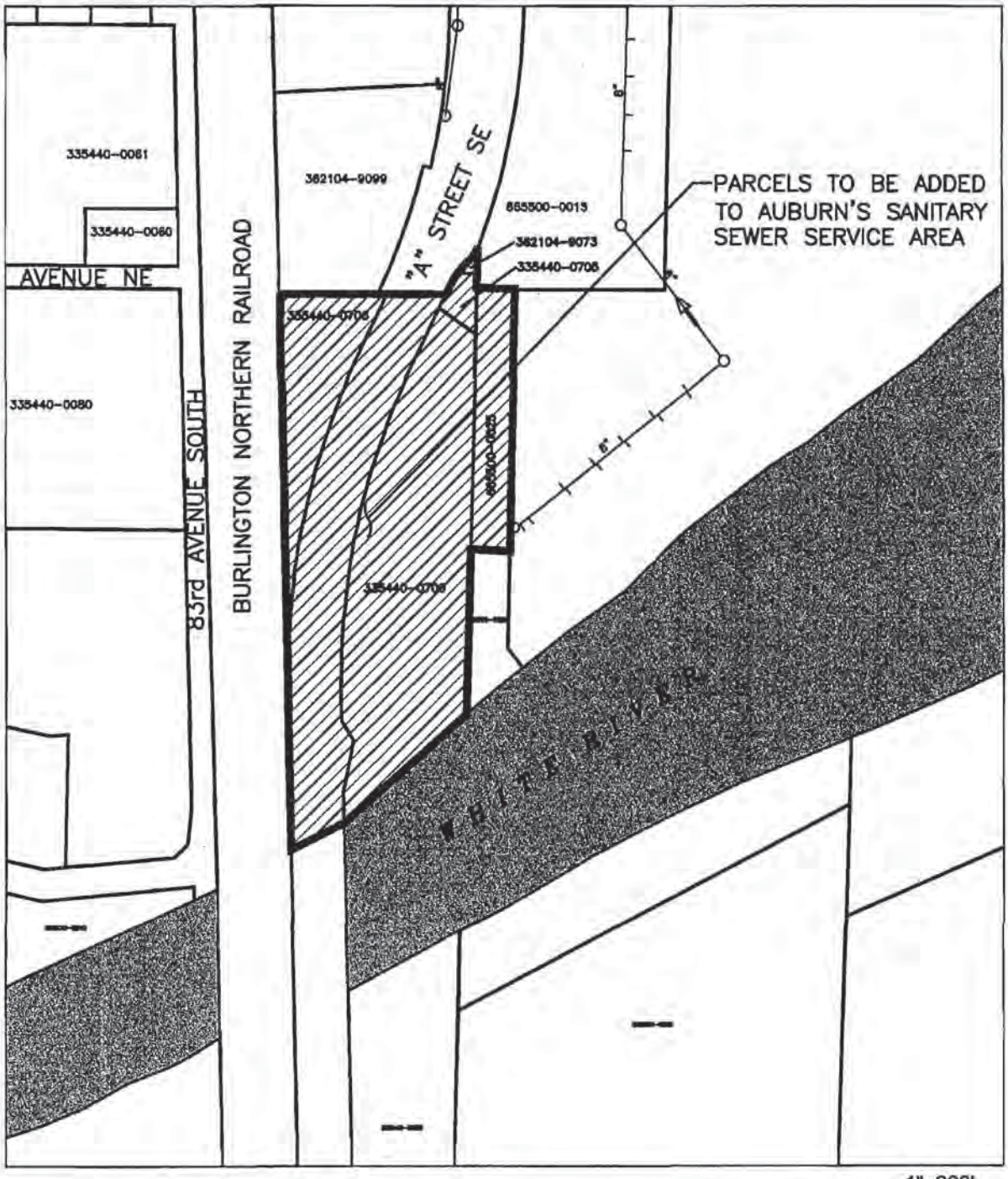
PETER B. LEWIS,
Mayor, City of Auburn

Attest:

DANIELLE DASKAM,
City Clerk, City of Auburn

Approved as to form:

DANIEL B. HEID,
City Attorney, City of Auburn



1"=200'

CITY OF AUBURN WASHINGTON

ATTACHMENT A

PACIFIC - AUBURN
SANITARY SEWER SERVICE AGREEMENT

Exhibit A
Resolution No. 4335
Page 7 of 7

CITY OF PACIFIC
WASHINGTON

COPY

RESOLUTION NO. 730

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PACIFIC, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN INTERLOCAL AGREEMENT ESTABLISHING SANITARY SEWER SERVICE BOUNDARIES BETWEEN THE CITY OF PACIFIC AND THE CITY OF AUBURN

WHEREAS, pursuant to RCW 35A.11.040 Pacific and Auburn have the legal authority to exercise their powers and perform any of their functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Pacific have the legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, pursuant to RCW 35A.21.150 Auburn and Pacific have the legal authority to maintain a sewerage system.

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF PACIFIC, WASHINGTON, AS FOLLOWS:

Section 1. The Mayor and City Clerk of the City of Pacific are herewith authorized to execute an Interlocal Agreement establishing sanitary sewer service boundaries between the City of Pacific and the City of Auburn. A copy of said Agreement is attached hereto, as Exhibit "1" and made a part hereof as though set forth in full herein.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

PASSED BY THE PACIFIC CITY COUNCIL AT A REGULAR MEETING THEREOF ON THE 12TH DAY OF MAY, 2008.

CITY OF PACIFIC

Mayor Richard Hildreth

ATTEST/AUTHENTICATED:

Sandy Paul CMC

Sandy Paul - Lyle, City Clerk

Approved as to form:

Albert Abuan, City Attorney

Filed with the City Clerk: May 1, 2008
Passed by the City Council: May 12, 2008
Resolution No. 730
Effective: May 12, 2008

APPENDIX A5

MUCKLESHOOT INDIAN TRIBE

- Sewer Service Boundaries (Resolution 4902)
- Wastewater Conveyance Cost Sharing (Resolution 3660)
- Temporary Sewage Lift Station Operation (Resolution 3502)

RESOLUTION NO. 4902

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO ENTER INTO A MASTER AGREEMENT/PROVISIONS FOR MUNICIPAL UTILITY SERVICES ON TRUST LANDS, REPLACING AND SUPERSEDING THE AGREEMENT PREVIOUSLY APPROVED AND AUTHORIZED BY RESOLUTION NO 4883

WHEREAS, the City of Auburn has been approached by representatives of the Muckleshoot Indian Tribe with a request for an agreement whereby the City would provide municipal utilities to the Tribe for property being developed by the Tribe, and

WHEREAS, representatives of the City and the Tribe have negotiated an agreement that accommodates that request and that addresses the relationship of the City and the Tribe in connection with the provision of such utilities, the terms of which are beneficial to both parties, and

WHEREAS, in connection herewith, the Auburn City Council heretofore approved and authorized an agreement for municipal utility services on Tribal or Indian Trust lands through Resolution No 4883, and

WHEREAS, following the passage of said Resolution No 4883, representatives of the City of Auburn and the Muckleshoot Indian Tribe discussed some changes to the agreement authorized by resolution No 4883, which changes are acceptable to both the City and the Muckleshoot Indian Tribe

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows

Section 1. That the Mayor and City Clerk, or designees, are hereby authorized to execute the Master Agreement/Provisions for Municipal Utility Services on Trust

Lands in substantial conformity with the Agreement marked as Exhibit A attached hereto and incorporated herein by this reference, replacing the Agreement approved and authorized by Resolution No 4883

Section 2 That the Mayor is authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon

Dated and Signed this 22nd day of January, 2013

CITY OF AUBURN

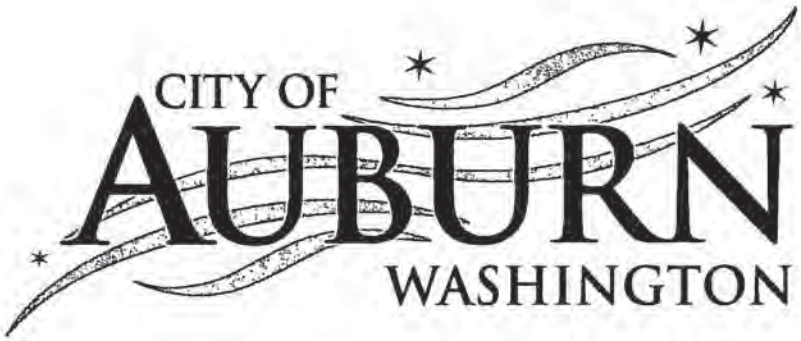
PETER B LEWIS, MAYOR

ATTEST

Danielle E Daskam, City Clerk

APPROVED AS TO FORM

Daniel B Heid, City Attorney



MASTER AGREEMENT/PROVISIONS FOR MUNICIPAL UTILITY SERVICES ON TRUST LANDS

City of Auburn
Engineering Division
Development Section
Public Works Department

25 West Main St.
Auburn, WA 98001-4998
(253) 931-3010
FAX (253) 931-3053

MASTER AGREEMENT FOR MUNICIPAL UTILITY SERVICES ON TRUST LANDS

The **CITY OF AUBURN** ("City"), and the **MUCKLESHOOT INDIAN TRIBE** ("Tribe" - also hereafter referred to in this agreement as "Developer") enter into this Municipal Utilities Service Agreement ("Agreement"), and make the following expressed mutual promises and covenants regarding the Developer's proposed Public Facility Extension ("Extension(s)")

The City agrees to accept the Extension(s) for operation and maintenance if the Developer, at the Developer's expense, designs, constructs, conveys and transfers said Extension(s) to the City pursuant to the terms and conditions of this Agreement. This Agreement is valid and binding for the Developer's Extension(s) serving Indian owned lands within the Muckleshoot Indian Reservation and the City of Auburn's municipal water and sewer service area.

I. DEFINITIONS

For the purposes of this agreement the terms in this Section shall have the following meanings

- **Public Facilities.** City sanitary sewer facilities (sewer mains, manholes, and appurtenances) and water facilities (water mains, service lines between mains and water meters, meter services including setter, meter and box, fire hydrants, and appurtenances)
- **Utility Right-of-Way Easement.** A nonexclusive perpetual right-of-way easement on the Property granting the City the right to operate, maintain, repair, replace, improve, remove, enlarge Public Facilities and the right to access the Property for providing Solid Waste services.
- **Indian Property.** For the purposes hereof, Indian Property refers to residential properties owned by the Tribe or held in Trust by the Bureau of Indian Affairs (BIA) for the benefit of the Tribe or individual Indians.
- **Utility Services.** City water, sanitary sewer, storm drainage, and solid waste services, pursuant to Chapters 13 06, 13.20, 13 48 and 8 08, respectively, of the Auburn City Code (ACC)

II. CITY RESPONSIBILITIES

Pursuant to the terms and conditions of this agreement the City agrees to·

A. Provide municipal Utility Services to the Property in conformance with City regulations governing Utility Services.

B Comply with the Utility Right-of-way provisions herein.

III. TRIBE RESPONSIBILITIES

Pursuant to the terms and conditions of this agreement the Tribe shall be responsible for the following:

A. Complying with the Utility Right-of-way provisions herein.

B Extending Public Facilities in compliance with terms herein.

IV. INDIAN PROPERTY RESIDENT RESPONSIBILITIES

Those people who reside on the residential properties of the Tribe and who receive utility services from the City pursuant to this Agreement shall comply with and be subject to, the ACC provisions and requirements for the construction, operation, maintenance, and payment for the above described Utility Services, and their receipt of and eligibility for City Utilities shall be conditioned on and subject to the following:

A. City Utility Customers who are residents of Indian Property shall, in advance of the City initiating new City Utility Services or re-initiating previously established City Utility Service that has been cancelled or suspended for nonpayment, deposit with the City the amounts of Utility Service Deposits required for City Utilities. The deposit for residents of Indian Property may be made in the form of cash, cash equivalent, or a bond or guarantee for the deposit amount in a form acceptable to the City, whereby the Tribe is guaranteeing the deposit amount._Residents of Indian property who cannot pay the deposit amount, or provide the City with a bond or guarantee of the deposit amount by the Tribe in a form acceptable to the City, may request that the City grant a full or partial waiver(s) to the Utility Customer from the deposit requirement because of special humanitarian or health circumstances. The City shall have the sole discretion to grant such waivers, and determine if they shall be full or partial waivers. If the waiver is granted by the City, no deposit or only a reduced deposit shall be required.

B City Utility Customers who are residents of Indian Property shall agree to pay, and shall execute documents evidencing such agreement to pay, the utility bills in accordance with the requirements of Chapter 8 08 [Solid Waste Utility], Chapter 13 06 [Water Utility], Chapter 13.20 [Sewer Utility] and Chapter 13.48 [Storm Drainage Utility] of the Auburn City Code (ACC).[1]

V. EXTENSION FEES

City of Auburn Ordinance No 5819 amended ACC13 40 050, Utility Extension Fees, so that fees for private streets or private drainage associated with Planned Unit Developments or Gated

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[1] The form of the Agreement for Payment of Utilities shall be in a form devised by the City, such as the sample set forth herein as Exhibit "F" APPLICATION FOR UTILITY SERVICE & DEPOSIT AGREEMENT, Provided that the City reserves the right to modify or amend the Agreement as it deems advisable, to accomplish the purposes intended.

Communities can be included in the Facility Extension Fees. The Developer agrees to pay applicable City Utility Extension Fees as calculated by the City in accordance with applicable City Codes, generally as indicated herein below in Exhibit D hereto

The Developer shall also pay reasonable additional fees to the City in the event the City needs to obtain consulting support services to assist the City when the scope of the Extension is beyond the City's normal area of expertise or the City's ability to review within a reasonable time.

Furthermore, the Developer is responsible to pay fees associated with the Valley Regional Fire Authority's (VRFA) review of plans as requested by the City The City will allocate these fees, as established by the Auburn Fee Schedule; at the time the 40% Extension Fee is submitted. If extended review is required additional fees will be collected prior to Construction.

VI. CONSTRUCTION DRAWINGS

The Developer shall submit construction drawings ("plans") and supporting technical documents designed and developed by a professional engineer registered in the State of Washington to the City for review and approval at the time of application.

The plans and supporting materials shall comply with the City of Auburn's Design Standards and Construction Standards for water, sanitary sewer, and storm water drainage utilities. For all work conducted in City streets and rights-of-ways, and for work to be conducted in the portion of any tribal or private road or right of way immediately abutting City streets or rights-of-way, the plans shall also be in compliance with City design and construction standards for City streets and rights-of-way.

If design or construction activities on the extension(s) become inactive on the Developer's part for a period of six months, the City may require the plans be revised to conform to existing field conditions, or to meet current City design standards and regulations. The City may also require the execution of a new Agreement, in which case, this Agreement shall become null and void.

After all plan reviews have been completed and corrections made, and if all other requirements have been met, the City will request that the Developer/Engineer submit a full set of plans on mylar for City approval and signature. The Developer/Engineer shall also submit AutoCAD electronic files with the mylar. The signed mylar shall then be used to make all plan copies for use during the construction process.

VII. UTILITY RIGHTS-OF-WAY EASEMENT

At the Developer's expense, a nonexclusive perpetual right-of-way easement on the Property shall be granted to the City giving the City the right to operate, maintain, repair, replace, improve, remove, enlarge Public Facilities and the right to access the Property for providing Solid Waste services. The Utility Right-of-way or Easement shall be in a form acceptable to the

City Recording of the Utility Right of Way or Easement shall take place upon acceptance by the City of affected Public Utilities.

VIII. PAYBACK AGREEMENT

The City may enter into a Payback Agreement, if applicable, with the Developer pursuant to the requirements of RCW 35 91, RCW 35 72, and ACC 12.70 and 13 40.060. The Developer must submit a complete application to the City no later than 90 calendar days of the acceptance of the facility improvements. The City shall not consider an application for a payback agreement that is submitted later than 90 days after acceptance of the facility improvements. If the City has agreed to a warranty acceptance as provided for in Section XIII of this Agreement, the Developer must file an application for a payback agreement no later than 90 days after the warranty acceptance date for those improvements accepted under the warranty application, and no later than 90 days after final acceptance for the remaining improvements. After a complete application has been accepted the City will then work with the Developer to determine the appropriate cost allocation method and evaluate the eligibility of the submitted costs. A standard form of the agreement and an application handout outlining the payback process are available upon request.

IX. INSURANCE

Throughout the period of performance of this Agreement for all construction related activities, the Developer or Contractor shall carry and maintain commercial general liability insurance with limits of not less than one million dollars ($1,000,000 00) per occurrence for bodily injury, including death, and one million dollars ($1,000,000.00) per occurrence for property damage or, alternatively, one million dollars ($1,000,000.00) per occurrence combined single limit for bodily injury and property damage combined, and two million dollars ($2,000,000.00) general aggregate.

This insurance shall be in a form and with an insurer acceptable to the City, and shall contain coverage for all premises and operation, broad form property damage, contractual liability (including without limitation that specifically mentioned in the Agreement, and products and contemplated operations insurance.

This insurance shall provide coverage for explosion, collapse, underground excavation, and lateral support.

Any policy or policies that provide the insurance required in this Agreement shall name the City as an additional insured on a separate endorsement, to the extent of the contractual obligations set forth here. If the Contractor, as the Agent of the Developer, provides the required insurance, then such insurance shall name both the Developer and the City as additional insured.

Before the beginning of the period of performance under this Agreement, the Developer shall provide for City review and approval, a certificate of insurance reflecting full compliance with

the requirements set forth in this Agreement. The certificate shall be kept current and in compliance throughout the period of performance until final acceptance by the City (and for two years thereafter for products and contemplated operations liability), and shall provide for 30 days advance written notice to the City if cancellation or material change adversely affect the interests of the City

Throughout the period of performance of the Agreement, the Developer shall cover or maintain insurance in compliance with the applicable worker's compensation laws, with respect to all of its respective employees working on or about the facility site, regardless of whether such coverage or insurance is mandatory or merely elective under the law

For the purposes hereof, the period of performance of this Agreement includes and refers to the time during which any party hereto is obligated to perform tasks required herein.

X. INDEMNIFICATION

The Developer shall defend, indemnify and hold the City, its elected and appointed officials, employees, and agents harmless from any actions, causes of action, liabilities, claims, suits, judgments, liens, awards, demands, and damages of any kind including, property damage, personal injury, or death (including any claims brought by employees of the Contractor or any subcontractor) arising out of or in connection with the performance of this Agreement, to the extent that such claims arise out of the negligent act or omission or willful misconduct of the Developer, Contractor, any subcontractor, or their employees arising out of, or in any way related to, their performance of the Agreement, including without limitation the provision of services, personnel, facilities, equipment, support, supervision or review. The City shall be indemnified and held harmless for all expenses, costs of litigation, and reasonable attorney's fees, expert witness fees, and costs of services of engineering and other personnel related to any such action, or incident to establishing the right to indemnification, to the extent such claims arise from any negligent act or omission or willful misconduct of the Developer, Contractor, any subcontractor, or their employees arising out of, or in any way related to, their performance of the Agreement, including without limitation the provision of services, personnel, facilities, equipment, support, supervision, or reviews. The City's obligations herein are subject to judicial, legislative, and regulatory restrictions beyond the City's control (Including, but not limited to the Endangered Species Act) The applicant releases the City from any and all direct or indirect liability or damages related to actions beyond the City's control.

In the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Developer and the City, its officers, officials, employees, and volunteers, the Developer's liability hereunder shall be only to the extent of the Developer's negligence. The Developer expressly waives any immunity under industrial insurance, whether arising from RCW Title 51 entitled "Industrial Insurance" or any other statute or source as provided in Article IX solely for the benefit of the City and solely to the extent of the indemnity set forth in this Agreement. This waiver has been mutually agreed by

the Parties. The provisions of this section shall survive the expiration or termination of this Agreement.

The Developer shall, at the City's request, furnish comprehensive evidence that all obligations of the nature designated in this agreement have been paid, discharged, or waived.

XI. CONSTRUCTION

All of the following applicable conditions shall be satisfied before a notice to start construction will be issued to the Contractor·

A. Approved Plans have been copied and distributed to all applicable parties and the signed original mylars returned to the City (see Article VI herein)

B Attend a Pre-construction Meeting between the City and the Developer's contractor

C Provide a Performance Bond or Assignment of Funds to the City in an amount and fashion that would adequately cover any work needed in any City right-of-way or on City utility lines.

D Provide Certificate of Insurance to the City naming the City (and Developer if Contractor supplies insurance) as an additional insured (see Article IX herein)

E. Non-Indian Contractors Possess an Active Contractor's Labor & Industry license; and Indian Contractors Possess an Active Contractor's Labor & Industry license if they are going to do any work in or on the City's right-of-way or City utility lines.

F Provide an Emergency Call List for Contractor and Subcontractors.

G Obtain a Business License with the City for all non-Indian contractors and subcontractors when working within the City limits, and for all contractors and subcontractors who will do any work in or on the City's right-of-way or City utility lines.

H. Obtain Authorized Construction Period for construction work to be completed within the existing public right-of-way (see additional information in Article VII herein), if applicable.

I. For work outside of Auburn's City limits, adequate County permits/approvals must be in place. The City will apply for the right-of-way permit(s) once plans are approved.

J If sewer extension, King County Waste Water Treatment Division approval is needed. The City will submit for approval, once plans are approved.

K. Provide Proof of Contract for Private Utility Relocates. The Developer acknowledges the obligation to enter into a separate contract, at the Developer's

expense, to relocate private utility facilities as necessary to comply with City Standards where applicable.

The City shall provide part-time inspection of the public and private Extension, to assist in determining that the work and materials meet the City's design standards and construction standards. The City shall also assist the Developer in complying with the present City rules, regulations, and resolutions and the terms of this Agreement. This assistance does not relieve the Developer of responsibility for complying with the plans, specifications, or terms of this Agreement, or any rules and regulations imposed by the City, County, or other agencies.

All construction performed by the Developer shall be in compliance with City design and construction standards for water, sanitary sewer and storm drainage utilities. For all work conducted in City streets and rights-of-ways, and for work to conducted in the portion of any tribal or private road or right of way immediately abutting City streets or rights-of-way, the work shall also be in compliance with City design and construction standards for City streets and rights-of-way

The Developer shall be responsible for acquiring the City's Construction Standards and having a copy on-site during construction.

The Developer agrees to comply with all Federal, State, County, and City regulations applicable to the Developer while construction is in progress in public rights-of-way

For public extensions that include construction within the existing public right-of-way or work on City utility lines, the City shall determine a reasonable time frame in which the Developer will complete all work within the existing right-of-way, including final clean up This time frame shall be the Authorized Construction Period for such work, and it shall be designated in calendar days and will be determined at the pre-construction conference. The Authorized Construction Period shall start when work first begins on this phase of the project or on a date specific set to minimize any public inconvenience. If the required work is not completed within the allotted time, the City will suspend all public and private Extension-related work other than those activities necessary to complete the required right of way improvements. If the restoration of the existing public right-of-way is not completed within the time period defined above, the Developer agrees that the City may hire an independent contractor to complete the necessary work and bill the Developer for the actual costs.

The City has the authority to decide all questions regarding the quality and acceptability of the materials furnished and of the work performed for the construction of the improvements. The City shall also have the authority to suspend construction work, in whole or part, for the failure of the Developer/Contractor to carry out the work in conformance with City development regulations, City construction standards, and approved plans.

The Developer's contractor shall make a written request to the City a minimum of 72 hours in advance when work is to be performed on Saturdays, Sundays, Holidays, or other than normal working hours. Written permission from the City shall be required before the contractor is allowed to work during any such requested hours. Approval of the contractor's request shall be dependent on the City's ability to provide adequate construction project monitoring during the requested time.

XII. ACCEPTANCE OF EXTENSION FOR OPERATION AND OWNERSHIP

The City agrees to accept the Extension for operation and ownership upon approval of the completion of all the facilities and the full compliance of the terms and conditions of this Agreement, including the following requirements

A. Approved Maintenance Guarantee (see Section XIII herein)

B. Executed Bill of Sale (see Section XIV herein)

C Certified and Approved Record Construction Drawings on Mylar & a copy of the Electronic CAD Drawing File(s) (see Section XV herein).

D. Executed Public Utility Right of Way or Easement (see Section XVII herein and Exhibit A).

E. Approved Developer Contribution Document provided for all facilities involving work in City right-of-way or on City utility lines (see Section XIV herein)

F Final Storm Water Site Plan (Report) and Cover Letter. This letter shall address any changes between the project's original storm water site plan (report) and the final construction of detention/retention and water quality facilities (see Section XVI herein).

Upon approval and acceptance, the City shall send a letter to the Developer accepting the system for ownership and operation.

If a Payback Agreement is applicable, the Developer will be required to provide the City with cost data within 90 calendar days of project acceptance. The City will provide sample cost data documentation for information.

The City shall release the Performance Guarantee, if applicable, to the Developer within 30 days of the letter of acceptance.

XIII. MAINTENANCE GUARANTEE

Before the City accepts the public portion of the Extension for operation and ownership, the Developer shall provide a one-year Maintenance Guarantee in the amount of two thousand dollars ($2,000.00) or ten percent (10%) of the City's estimated replacement costs of the

improvements, whichever is greater For some facilities, the City may require the Developer to provide a Maintenance Guarantee beyond the one-year period. If the City elects to so require, the City shall notify the Developer before the start of construction.

Two forms of Maintenance Guarantees are acceptable: 1) a Maintenance Bond or 2) an Assignment of Funds. Any request to use other forms of Maintenance Guarantee will be determined on a case by case basis by the City Engineer

The Developer may designate an Agent, such as a contractor or engineer, to provide the required Maintenance Guarantee to the City In such event, the Developer shall remain responsible for the contractual obligations set forth in this agreement. If the Agent defaults on the Maintenance Bond, this authorization for designation of an Agent does not preclude the City proceeding to foreclosure or demanding forfeiture of the bond against the Developer

The Developer shall bear the expense of the bond. If at any time a surety on any such bond is declared bankrupt, loses its right to do business in the State of Washington, or is removed from the list of Surety companies acceptable on Federal bonds, the Developer shall substitute an acceptable bond or bonds in such form and sum and signed by such other surety or sureties as may be satisfactory to the City. The Developer shall pay all premiums on these bonds.

The Assignment of Funds will be in a required amount held in a Financial Institution acceptable by the City and secured under the use of the City of Auburn Standard Assignment of Funds form. During this maintenance guarantee period, the Developer shall warrant that the materials and equipment furnished by the Developer for the Extension are in normal working order and condition except where abused or neglected by the City The Developer shall guarantee that it will repair or replace at its own expense any work or material that proves to be defective during such warranty period.

Two months prior to the end of the maintenance guarantee period (usually one year), the Developer will be required to have all public sanitary sewer and storm lines cleaned and then inspected with a remote television unit by an approved firm, **at Developer's expense**. The video will then be compared to the tape made prior to acceptance to ensure that no substantial change has occurred. The City shall then re-inspect the Extension for warranty compliance. If this re-inspection determines that the Extension functions as intended at the time of acceptance, the City shall release the Maintenance Bond. If the re-inspection determines that the Extension is not functioning as intended at the time of acceptance, the Developer shall replace or repair said Extension and the City, at its option, may extend the maintenance period for such replacement or repair for another one year. After an acceptable maintenance inspection, the City will release the Maintenance Bond and accept the facility for maintenance.

XIV. BILL OF SALE

Before the City accepts the public portion of the Extension for operation and ownership, the Developer agrees to execute an approved Bill of Sale (the City will prepare this document, once information is received, for Developer's signature) for the improvements that are to be dedicated to the City The Bill of Sale will provide for the transfer of title of the public portion of the Extension from the Developer to the City and will further include the following items.

A. The Developer is the lawful Owner of the public portion of the Extension and it is free from all encumbrances.

B The Developer has paid all bills for all labor and material used during construction of the Extension or has obtained lien wavers from all persons who have not been paid for their labor or material.

C. The Developer has the right to transfer the public portion of the Extension to the City for the consideration of incorporation into the City system.

D The Developer will warrant the public portion of the Extension and defend the same against lawful claims and demands of all persons for one year from the date the Bill of Sale is accepted by the City

XV. RECORD CONSTRUCTION DOCUMENTS

Before the City accepts the public portion of the Extension for operation and ownership, the Developer agrees to provide the City with certified record construction drawings and related electronic file information.

The Certified Record Construction Drawing comes in a **two-step process** as follows

Step 1: The certified paper (red-line) record drawings for all facilities shall be submitted for review and approval using the Engineer of Record as the point of contact. These drawings must accurately reflect all field design revisions made to the Extension during the construction process. The changes shall be in conformance with the City's record construction drawing requirements, available upon request from the City. The revisions shall be noted on the approved paper plan set.

Step 2: Once the City approves the certified paper (red-line) record drawings, then all required record drawing information shall be clearly shown on the original approved mylars. The electronic record drawing file shall also be provided at this time.

XVI. FINAL STORM WATER SITE PLAN (REPORT)

A certified and final storm (drainage) water site plan (report) and cover letter will also be required. Document the as-constructed changes to the storm improvements, not included in the original approved report. Record construction document requirements are available upon request from the Public Works Department.

It is provided, however, that insofar as the Developer provides Low Impact Development, as defined in the ACC, the Developer shall be entitled to the fee structure and adjustments included therewith.

The City and Tribe further agree that should the Tribe in the future desire to provide comparable municipal solid waste service to Indian property within Auburn's utility service area, the Tribe and the City will engage in good faith discussions on the discontinuance of City solid waste service to persons on Indian property eligible to receive tribal solid waste service.

XVII. PUBLIC UTILITY RIGHTS OF WAY OR EASEMENTS

The plan approval process may require providing utility rights of way or easements(s) for the facility extension. The Developer shall provide a legal description and an exhibit of the affected property, an updated title report, plat certificate (current to within 30 days), or other documentation acceptable to the City demonstrating its authority to convey a utility right of way or easement, and documentation of signatory authority (whether representative, individual, partnership or corporation) All legal descriptions must be signed and stamped by a professional Land Surveyor The City and Tribe will then draft the required legal documents and return them to the Developer for signatures and approval by the Bureau of Indian Affairs. The signed documents shall then be returned to the City where, concurrent with City acceptance of the utility improvements the documents will be sent to the Bureau of Indian Affairs and King County for recording. If during construction, changes are made that affect the right-of-way dedication and/or easement(s), corrections will be made and the documents will be re-recorded.

NOTE.

- King County or Pierce County Recorder's offices require a specific format on submittals. All attachments submitted shall be provided electronically in the following formats; Legal Descriptions in MS Word, and Exhibits in AutoCAD PDF is also acceptable provided the county specific format is followed. All attachments shall be formatted to 8 ½ x 11-inch and 8 ½ x 14-inch paper size and have a minimum margin of 1-inch top, bottom and sides. Use of 8 ½ x 14-inch paper size shall be limited to exhibit attachments.
- Any writing or markings, including the notary stamp, which intrudes into the document's margin area, may be cause for the document to be returned. Original documents used for recording **shall not** be stapled.

XVIII. SERVICE CONNECTIONS

There will be no water meter installation or usage of the public portion of the Extension before the City accepts the Extension for operation and ownership or the Developer has entered into the Warranty Acceptance of Partial Extension (Alternative Process), as described above.

The Developer shall notify the City in writing of any intent to make service connections to the public portion of the Extension or any existing City system. No connections to, nor utilization of, the public portion of the Extension or any existing City system shall be made without the express written consent of the City Note that certain other utility permit fees and system development charges may be required prior to service connection. In addition, the City shall supervise all service connections.

Connections to and utilization of the public portion of the Extension shall not relieve the Developer of the obligation to correct defects in labor or materials as provided in the Maintenance Bond section of this Agreement. All City-authorized connections shall be subject to the control, use, and operation of the City, which shall be subject to all regulations and conditions of service.

XIV. DEVELOPER CONTRIBUTION DOCUMENTATION

As per ACC 13 40 040, a written statement as to the actual cost of the public utility and street extension(s) shall be provided at the time the public utility extension(s) is turned over to the City This is to be turned in on the Developer Contribution Document at the time the Bill of Sale and/or Record Drawings are turned in.

XX. STATE LAW REQUIREMENTS

Nothing herein shall be construed as to limit the City of Auburn's ability to take such actions as it deems necessary to comply with the requirements of Washington state law in implementing this Agreement, provided that, nothing herein shall be deemed as granting or expanding the jurisdiction of the City of Auburn to regulate the use of Indian lands or Indian activity within the Muckleshoot Indian Reservation, or the City of Auburn's authority to tax Indian lands or activities.

XXI. AGREEMENT ALTERATIONS OR AMENDMENTS

No amendment, modification or waiver of any condition, provision or term of this Agreement shall be valid or of any effect unless made in writing, signed by the party or parties to be bound, or such party's or parties' duly authorized representative(s) and specifying with particularity the nature and extent of such amendment, modification or waiver Any waiver by any party of any default of the other party shall not effect or impair any right arising from any subsequent default.

Nothing herein shall limit the remedies or rights of the parties under this Agreement.

XXII. ASSIGNMENT BINDING ON SUCCESSORS AND ASSIGNS

Neither party to this Agreement shall assign any right or obligation hereunder in whole or in part, without the prior written consent of the other party hereto No assignment or transfer of any interest under this Agreement shall be deemed to release the assignor from any liability or obligation under this Agreement, or to cause any such liability or obligation to be reduced to a secondary liability or obligation.

This Agreement shall be binding upon, and the benefits and obligations provided for herein shall inure to and bind, the parties hereto and their respective successors and assigns, provided that this section shall not be deemed to permit any transfer or assignment otherwise prohibited by this Agreement. This Agreement is for the exclusive benefit of the parties hereto and it does not create a contractual relationship with or exist for the benefit of any third party, including contractors, sub-contractors and their sureties, except as provided in Article XXIII.

The tenants and occupants of the residences to be served by the Grantee's utilities shall execute an agreement agreeing to be bound by the terms hereof, including the provisions of Article XXV, Governing Law, and agreeing to comply with the utility payment obligations in accordance with City of Auburn City Codes.

XXIII. NO THIRD PARTY BENEFICIARIES

This Agreement is solely for the benefit of the Parties and the owners and occupants of residences served by City utilities who have executed an agreement to be bound by the terms of this Agreement. No third party other than an owner or occupant of a residence who has executed an agreement to be bound by this Agreement shall be entitled to claim or enforce any rights here under.

XXIV. WAIVER

A failure by either party to exercise its rights under this Agreement shall not preclude that party from subsequent exercise of such rights and shall not constitute a waiver of any other rights under this Agreement unless stated to be such in writing signed by an authorized representative of the party and attached to the original Agreement.

XXV. GOVERNING LAW

This Agreement and the rights of the parties hereunder , including actions to enforce the terms of this Agreement and actions to collect monies due as utility payments including utility deposits provided in connection herewith, shall be governed by the interpreted in accordance with applicable provisions of the Auburn City Code and the laws of the State of Washington and venue for any action hereunder shall be in the courts of King County State of Washington in which the project is located, provided, however, that it is agreed and understood that any applicable statute of limitation shall commence no later than the final acceptance date of the Extension or, if the City declines to accept the extension, the date of the letter from the City declining to accept the Extension.

The Developer (Muckleshoot Indian Tribe) does hereby expressly waive its right to sovereign immunity and its right to assert sovereign immunity defense in the courts of the State of Washington for the limited purpose of any legal claim or complaint for the interpretation and/or and/or enforcement of this Agreement, and/or for any complaints or counterclaims for monetary damages or equitable relief for any breach of this Agreement, and/or for the enforcement of any

final judgment by any court of the State of Washington regarding such matters. This limited waiver of immunity is solely for the benefit of the City of Auburn for the purposes stated herein, and the Tribe does not waive its sovereign immunity as to any party other than the City.

XXVI. SEVERABILITY AND SURVIVABILITY

If any provisions of this Agreement or any provision of any document incorporated by reference shall be held invalid, such invalidity shall not affect the other provisions of this agreement which can be given effect without the invalid provision, if such remainder conforms to the requirements of applicable law and the fundamental purpose of this Agreement. To this end, the provisions of this Agreement are declared to be severable.

In addition to the length of time elements of this agreement remain in force and effect, some provisions hereof shall remain in full force and effect indefinitely, for as long as utility services are provided by the City to the property owned by or under the influence or control of the Developer, including, but not limited to the obligations to pay City Utility Fees and Indemnify the City per Article X.

XXVII. ATTORNEY FEES

In the event of litigation or other legal action to enforce any rights, responsibilities or obligations under this Agreement, the prevailing parties shall be entitled to receive its reasonable costs and attorney's fees.

XXVIII. CAPTIONS, HEADINGS AND TITLES

All captions, headings or titles in the paragraphs or sections of this Agreement are inserted for convenience of reference only and shall not constitute a part of this Agreement or act as a limitation of the scope of the particular paragraph or sections to which they apply As used herein, where appropriate, the singular shall include the plural and vice versa and masculine, feminine and neuter expressions shall be interchangeable. Interpretation or construction of this Agreement shall not be affected by any determination as to who is the drafter of this Agreement, this Agreement having been drafted by mutual agreement of the parties.

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XXIV. ENTIRE AGREEMENT

This Agreement with Exhibits A through D contains the entire understanding of the parties hereto in respect to the transactions contemplated hereby and supersedes all prior agreements and understandings between the parties with respect to such subject matter.

DATED this 8th day of March, 2012.

CITY OF AUBURN

Peter B. Lewis, Mayor

STATE OF WASHINGTON)
)ss
COUNTY OF KING)

I certify that I know or have satisfactory evidence that ~~Dennis Selle,~~ Peter B Lewis to me known as the ~~City Engineer~~ Mayor representing the City of Auburn's ~~Department of Public Works~~, who acknowledged that he signed this instrument and acknowledged it to be his free and voluntary act for the uses and purposes mentioned in this instrument.

Dated March 3, 2013

Shawn Campbell

Shawn Campbell
Notary Public in and for the State of Washington
residing at Auburn WA
My appointment expires Apr. 9, 2016

SHAWN K. CAMPBELL NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES 4-09-16

SIGNATORY - INDIVIDUALS

DATED this _____ day of _____, 20____

_____

_____

STATE OF WASHINGTON)
)ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that _____ and _____ is/are the person(s) who appeared before me, and said **individuals(s)** acknowledged that he/she/they signed this instrument and acknowledged it to be his/her/their free and voluntary act for the uses and purposes mentioned in this instrument.

Dated _____

_____

_____
Notary Public in and for the State of Washington
residing at _____
My appointment expires _____

SIGNATORY - PARTNER

DATED this _____ day of _____, 20____.

_____

_____

STATE OF WASHINGTON)
)ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that _____ and _____ is/are the person(s) who appeared before me, and said **partner(s)** acknowledged that he/she/they signed this instrument and acknowledged it to be his/her/their free and voluntary act for the uses and purposes mentioned in this instrument.

Dated _____

_____

_____
Notary Public in and for the State of Washington
residing at _____
My appointment expires _____

SIGNATORY - TRIBAL

DATED this 1st day of March, 2013

Virginia Cross
Chairperson

STATE OF WASHINGTON)
)ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that Virginia Cross is the person who appeared before me, and said person acknowledged that he/she signed this instrument, on oath stated that he/she was authorized to execute the instrument and acknowledged it as the Chairperson of the Muckleshoot Indian Tribe, a federally recognized Indian tribe, to be the free and voluntary act of such party for the uses and purposes mentioned in this instrument.

Dated 3/1/2013

Bobbie Jo Norton
Notary Public in and for the State of Washington
residing at Auburn, WA
My appointment expires 7/25/2015

BOBBIE JO NORTON NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES 07-27-15

SIGNATORY – TAX EXEMPT AGENCY

DATED this _____ day of _____, 20___

_____
Representative

STATE OF WASHINGTON)
)ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he/she signed this instrument, on oath stated that he/she was authorized to execute the instrument and acknowledged it as the Representative _____ of _____ _____, a **Tax Exempt Agency**, to be the free and voluntary act of such party for the uses and purposes mentioned in this instrument.

Dated _____

_____

_____
Notary Public in and for the State of Washington
residing at _____
My appointment expires _____

SIGNATORY - LLC

DATED this _____ day of _____, 20____

_____
Authorized Signature

_____
Authorized Signature

STATE OF _____)
)ss.
COUNTY OF _____)

I certify I have know or have satisfactory evidence that _____
_____
_____ is/are the person(s) who appeared before me, and said person(s) acknowledged that he/she/they signed this instrument on oath stated that he/she/they was/were authorized to execute the instrument and acknowledge as the _____ of the _____, a limited liability company, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated _____

_____

_____
Notary Public in and for the State of Washington
residing at _____
My appointment expires_____

EXHIBIT A

GRANT UTILITY SERVICES EASEMENT FOR RIGHT OF WAY ON TRUST LANDS

REFERENCE #·
GRANTOR. **THE MUCKLESHOOT INDIAN TRIBE**
GRANTEE **CITY OF AUBURN**
SHORT LEGAL. NE ¼ SE ¼ SEC 20, TWN 21N, R5E
ASSESSOR'S PROPERTY TAX PARCEL. 202105-9001
TRUST ALLOTMENT #· 109-2

For and in consideration of the CITY OF AUBURN'S Agreement to provide municipal water sanitary sewer, storm drainage and solid waste services to lots adjacent to this Right of Way, One Dollar ($1 00) and other valuable consideration in hand paid, **THE MUCKLESHOOT INDIAN TRIBE** ("Grantor" herein), hereby apportions, conveys and warrants to **THE CITY OF AUBURN,** a Washington Municipality ("Grantee" herein), for the purposes hereinafter set forth, a nonexclusive perpetual municipal utilities right-of-way easement over, under, along, across and through the following described real property (the "Property" herein) in King County, Washington.

SEE EXHIBIT "B" ATTACHED HERETO AND BY THIS REFERENCE MADE A PART HEREOF.

Except as may be otherwise set forth herein Grantee's rights shall be exercised upon that portion of the Property (the "Right-of-Way" herein) described as follows.

SEE EXHIBIT "C" ATTACHED HERETO AND BY THIS REFERENCE MADE A PART HEREOF.

Grantor also conveys to Grantee all of its right, title, and interest in the water service lines, meters, valves, and other portions of the water distribution system located within the Right of Way.

1. **PURPOSE.** In order for the City of Auburn to provide municipal utilities to properties that are held in Federal Trust status, the parties to this agreement hereby set forth the terms and conditions that are required for such services to be provided. Grantee shall have the right to operate, maintain, repair, replace, improve, remove, enlarge one or more water distribution or sanitary sewer utility facilities to include but are not limited to underground pipes,

lines, vaults, manholes, meters and valves within the easement defined in Exhibit D for the purposes of serving the properties described in this agreement.

The Utilities shall be designed and constructed in conformance with the City of Auburn Design and Construction Standards to secure the payment of all City utility fees & charges for existing and new developments on Federal trust lands within the city, the city will establish a security account that will be applicable to all new utility accounts effective with the date of approval of this agreement.

2. SPECIFIC PROVISIONS. The parties agree to the following terms

GRANTOR AGREES

A. The Grantor agrees to construct all Utilities and upon acceptance by the City, grant ownership to the Grantee.

B. The Grantor agrees all Utilities shall be designed and constructed in accordance to City of Auburn Design and Construction Standards.

C The Grantor agrees to obtain all permits and approvals from the Grantee for the extension of the Utilities including water connection permits, sanitary sewer connection permits and the execution and compliance with the Public Facility Extension Agreement.

D. Conservation. Grantor will be responsible for any and all soil and resource conservation and protection measures, including weed control, on the land covered by the Right-of-Way

GRANTEE AGREES:

A No Compensation; Damages. Grantee owes no compensation to Grantor or any third parties for the rights herein granted.

B Indemnification. Grantee agrees to indemnify the Grantor, against any liability, personal injury and property damage to the extent caused by the negligent acts or omissions of Grantee in the re-construction, maintenance, occupancy or use of the Right-of-Way by Grantee, its employees, contractors and their employees, or subcontractors and their employees. Provided, however, that nothing herein shall require Grantee to indemnify, defend, and hold the Grantor, harmless for any such liability attributable to the negligence of the Grantor

C. Restoration. Grantee agrees to restore the easement area as nearly as reasonably possible to their original condition upon the completion of construction or maintenance activities to the extent compatible with the purpose for which the

Right-of-Way was granted, however, Grantee has no obligation for preservation or repair beyond the area directly impacted by said activities

D Revocation/Abandonment/Termination. Grantee agrees that upon termination of the Right-of-Way by mutual consent Grantee shall, be responsible for abandoning the utility services in place.

3. USE. Grantor reserves the right to use the Right-of-Way for any purpose not inconsistent with the rights herein granted and Grantee agrees not to interfere with the use of the lands by or under the authority of the landowners for any purpose not inconsistent with the primary purpose for which the Right-of-Way is granted, provided, however, Grantor shall not construct or maintain any buildings, structures or other objects on the Right-of-Way. Grantor's use of the Right-of-Way may include, but is not limited to, use for an existing or future Tribal or Bureau of Indian Affairs roadway and for the installation, operation and transmission of utility services by third parties, including Tribal utilities once by mutual consent the parties agree to terminate City utility services.

4. ACCESS. Grantee shall have the right of access to the Right-of-Way over and across the Easement Property to enable Grantee to exercise its rights hereunder, provided that Grantee shall reasonably compensate Grantor for any damage to the property caused by the Grantee in exercise of such right of access. To the extent reasonably practicable, Grantee shall use Grantor's right of way for such access, and shall utilize portions of the Property outside Grantor's right of way only when and to the extent additional access is reasonably necessary or in the event of an emergency

5. CUTTING OF TREES. Grantee shall have the right to cut or trim any and all brush or trees or other vegetation standing or growing upon the Right-of-Way pursuant to section 2(e) above. However, any trees upon property outside of this Right-of-Way which, in falling, could in Grantee's reasonable judgment, be a hazard to Grantee's facilities may not be cut absent permission of the property owner, except in the case of any overhead facilities, if any, Grantee reasonably believes an emergency exists that requires the cutting of such trees.

6. SUCCESSORS AND ASSIGNS. Grantee shall have the right to assign, apportion or otherwise transfer any or all of its rights, benefits, privileges and interests arising in and under this easement. Without limiting the generality of the foregoing, the rights and obligations of the parties shall inure to the benefit of and be binding upon their respective successors and assigns.

7. TERMINATION AND ABANDONMENT. This Right of Way may be terminated or abandoned as follows:

A. The rights herein granted shall continue until such time as Grantee ceases to use the Right-of-Way for a period of two (2) successive years, in which event this agreement shall terminate and all rights hereunder, and any improvements remaining in the Right-of-Way shall revert to or otherwise become the property of Grantor

B The Right of Way may be terminated by mutual consent in a written agreement.

8. GRANTOR'S LIMITED WAIVER OF SOVEREIGN IMMUNITY. Grantor voluntarily grants Grantee a waiver of its sovereign immunity and its right to assert a sovereign immunity defense in the Courts of Washington for for the limited purpose of any legal claim or complaint for the interpretation and/or enforcement of this agreement, and/or for any complaints or counterclaims for monetary damages or equitable relief for any breach of this agreement, and/or for the enforcement of any final judgment entered by any court of the State of Washington regarding such matters. Grantor consents to jurisdiction of the courts of the State of Washington as having exclusive jurisdiction to hear, resolve and enter final judgment on any legal dispute by and between the parties to this agreement and/or their affected officers, officials, and employees concerning the interpretation of this agreement, enforcement of any of its provisions, and any complaints or counterclaims for monetary damages and/or equitable relief for any alleged or actual breach of any provision of this agreement and/or for the enforcement of any final judgment entered by any court of the State of Washington regarding such matters. The limited waiver of sovereign immunity set out in this paragraph is solely for the benefit of Grantee. This agreement is not intended to and shall not be interpreted or construed to create any rights, benefits or interests in any person or entity other than the parties hereto

DATED this _____ day of _____, 2012.

GRANTOR.
The Muckleshoot Indian Tribe

By: _____

Title: _____

STATE OF WASHINGTON)
) ss.
COUNTY OF _____)

On this _____ day of _____, 2012, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____, to me known to be the person who signed as _____ of THE MUCKLESHOOT INDIAN TRIBE that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said TRIBE for the uses and purposes therein mentioned, and on oath stated that _____ was authorized to execute said instrument on behalf of THE MUCKLESHOOT INDIAN TRIBE.

IN WITNESS WHEREOF I have hereunto set my hand and official seal the day and year first above written.

_____
(Signature of Notary)

_____
(Print or stamp name of Notary)
***NOTARY PUBLIC** in and for the State of Washington,*
residing at _____
My Commission expires _____

Notary seal, text and all notations must be inside 1" margins

APPROVAL.
United States Department of the Interior
Bureau of Indian Affairs

Approved pursuant to 209 DM 8, 230 DM 1, 3 IAM 4, 4a.

BY: _____

TITLE: _____

EXHIBIT B

LEGAL DESCRIPTION OF THE PROPERTY

EXHIBIT ATTACHED AND ADDED AS THE NEXT PAGE

EXHIBIT C

SURVEYOR'S EASEMENT AND LEGAL DESCRIPTION

EXHIBIT ATTACHED AND ADDED AS THE NEXT PAGE

EXHIBIT D

PUBLIC FACILITIES EXTENSION FEES

The Public Facilities Extension Fees shall be generally calculated as follows:[2]
The extension fee shall be the greater of the sum of the categories (a+b+c+d) as shown below, for a total of $_____ (the amount of the extension fee shall be as calculated per the formulas below) This fee pays for the detailed plan review, field inspections and other City Administrative costs accrued during this project. The fee is based on the preliminary plan information provided by the Developer. The parties agree that the City may require an adjusted fee in addition to the fee calculated in this section based on the final improvement quantities at the time of approval of the construction drawings if the improvement quantities have changed from those indicated above.

The Developer shall pay forty percent (**40%**) of this extension fee $_____ (the amount of the extension fee shall be as calculated per the formulas below) before the City will begin detailed plan review

a) For water, sewer, & storm facilities the extension fee is based on the combined linear footage of all utilities and is determined by:

   The first 0 LF to 1000 LF will be charged at $5.50 per LF plus,

   The next 1001 LF to 2500 LF will be charged at $2.80 per LF plus,

   Any additional over 2500 LF will be charged at $1 65 per LF

b) For street facilities the extension fee is determined by:

   The first 0 LF to 500 LF will be charged at $6 90 per LF plus,

   The next 501 LF to 1000 LF will be charged at $4 10 per LF plus,

   Any additional over 1000 LF will be charged at $1 10 per LF

[2] It is provided, however, that in the event of any inconsistency or discrepancy between the above provisions and provisions of the Coty Code, the City Code shall control.

c) For non-linear extension such as pump stations and traffic signals the extension fee will be determined by the City Engineer based on an estimate of the City's labor cost associated with the plan review, inspection, and administration of the application.

d) For that portion of the water and sewer facility located outside City limits, but within existing County (King or Pierce) right-of-way, an additional fee is determined by:

$444 00 plus $5 00 per LF of the combined water and sewer extension located in existing County (King or Pierce) right-of-way

The remaining sixty percent **(60%)** of the extension fee $_____ (the amount of the extension fee shall be as calculated per the formulas above) and any fee adjustment, shall be paid upon approval of the construction drawings and prior to the start of construction.

EXHIBIT E

PERFORMANCE GUARANTEE

Before construction starts, the Developer will be required to furnish an approved Performance Guarantee based on one hundred twenty-five percent (125%) of the City-estimated installation costs for the public improvements constructed within the existing **City** right-of-way, easements, or when the City Engineer deems it to be in the City's best interest to secure a Performance Guarantee.

Two forms of Performance Guarantees are acceptable· 1) a Performance Bond or 2) an Assignment of Funds. Any request to use other forms of Performance Guarantee will be determined on a case by case basis by the City Engineer

The Developer may designate an Agent such as a contractor or engineer to provide the required Performance Guarantee to the City. In such event, the Developer shall remain responsible for the contractual obligations set forth in this Agreement:

The Performance Bond in a penal sum equal to a minimum of the amount described above shall be conditioned upon the performance by the Developer of all undertakings, covenants, terms, and conditions of the Agreement relating to the Extension. The Developer or Agent shall execute such bond and a corporate bonding company licensed to transact such business in the State of Washington, and who are named on a current list of surety companies acceptable as published by the Insurance Commissioner's office, shall act as surety.

The Developer shall bear the expense of the bond. If at any time a surety on any such bond is declared bankrupt, loses its right to do business in the State of Washington, or is removed from the list of approved surety companies, the Developer shall substitute an acceptable bond or bonds in the form and sum and signed by another surety or sureties as may be satisfactory to the City. The Developer shall pay the premiums on such bonds.

The Assignment of Funds will be in a required amount held in a Financial Institution acceptable by the City and secured under the use of the City of Auburn Standard Assignment of Funds form.

EXHIBIT F
CITY OF AUBURN
25 W MAIN STREET
AUBURN, WA 98001

APPLICATION FOR UTILITY SERVICE & DEPOSIT AGREEMENT

Service Address _____ Phone _____ Own _____ Rent _____

Name of Landlord _____ Mailing Address _____

Applicant One

Name _____ Phone _____ Date of Birth _____

Current Employer _____ Employer Phone _____

Employer Address _ _____

Applicant Two

Name _____ Phone _____ Date of Birth _____

Current Employer _____ Employer Phone _____

Employer Address _____

In case emergency services are required, and we are unable to locate you, please list a friend or relative whom we could contact:

Name _____ Phone _____ Address _____

I/we agree to pay all required utility deposits and to pay service fees for utilities provided to me by the City of Auburn, including water, sanitary sewer, storm drainage, and solid waste services, pursuant to Chapters 13.06, 13.20, 13 48 and 8 08, respectively, of the Auburn City Code (ACC). I/we further agree to comply with the requirements of said chapters of the ACC If I/we fail to pay bills on a timely basis, I/we understand that utility service may be discontinued. Should I/we leave the City of Auburn service area with an outstanding utility balance due, or should my service be disconnected/discontinued for non-payment, my deposit will be applied to said outstanding account, and the balance (if any) forwarded to me/us. In case of disconnection for non-payment, I/we understand that full payment of any outstanding balance up to and including the date of disconnection, and service charge(s) will be required in order to have utilities reconnected at the location or for me/us to get utility service at a new location in the service area. I/we understand that in the event that I/we are renting, our landlord may request information or be notified of the status of my/our account. I/we further agree that in the event that any action is taken to collect payments due for utility services or for enforcement of any other requirement or obligations of the City utility services, or my/our rights thereto, venue for such action shall be in the courts of King County, Washington.

Date _____ Signed _____

Date _____ Signed _____

FOR OFFICE USE

Application taken by _____ *Deposit Amount $*_____ *Date Deposit Received* _____

Customer Moved, Applied on Final Bill _____ *Date* _____ *Check #*_____

Customer Move, Refunded Full Deposit _____ *Date* _____ *Check #*_____

RESOLUTION NO. 3660

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE AN INTERLOCAL AGREEMENT WITH THE MUCKLESHOOT INDIAN TRIBE FOR THE COST SHARING IN THE REPLACEMENT AND MAINTENANCE OF A NEW WASTEWATER CONVEYANCE FACILITY CONVEYING WASTEWATER FROM MUCKLESHOOT INDIAN TRIBE PARCELS LOCATED OUTSIDE CITY LIMITS TO KING COUNTY CONVEYANCE AND TREATMENT FACILITIES

WHEREAS, both the City and the MIT are agencies qualified to engage in furnishing sanitary sewer service within their approved service areas; and

WHEREAS, the King County Department of Natural Resources, Water Pollution Control Division is engaged in developing and operating a regional sewage disposal system and the City and the MIT are engaged in developing and operating a sewage collection system; and

WHEREAS, the City and MIT intend to replace the Auburn Way South Sanitary Sewer Conveyance System (hereinafter AWSCS); and

WHEREAS, the replaced AWSCS is the subject of this Agreement, and is intended to be consistent with applicable law and comprehensive planning for sewage disposal; and

WHEREAS, the MIT desires to provide sewer service only to customers within the MIT's approved sewer service area; and

WHEREAS, Auburn's existing wastewater conveyance facility surcharges and requires improvements to allow for additional flow capacity and avoiding potential overflow of sewage and the damages associated with said overflows; and

WHEREAS, the MIT desires ownership of a portion of the capacity within a sanitary sewer conveyance facility extending from that portion of the MIT service area, outside of the City's service area, into King County's wastewater conveyance system; and

WHEREAS, this agreement shall supercede the existing Auburn – MIT sanitary sewer Agreement, executed in accordance with City Ordinance No. 4967; and

WHEREAS, to provide wastewater conveyance and ownership responsibilities of the public sanitary sewer facilities that extend from the boundary of the City's service area along Auburn Way South to King County's conveyance facilities at the corner of 17th Street SE and K Street SE, it is necessary that this agreement be entered into between the City and the MIT, establishing the rights and duties of the parties; and

WHEREAS, the Muckleshoot Indian Tribe, and the City of Auburn are authorized to enter into this Agreement under the authority of their respective enabling legislation and under the authority of Chapter 39.34 RCW, the Interlocal Cooperation Act; and

WHEREAS, the MIT received approval from the Bureau of Indian Affairs, hereinafter referred to as "BIA", for this agreement, pursuant to Title 25, Section 81, of the U.S. Code, or the BIA has determined and so informed the MIT that approval of this Agreement is not required under 25 USC 81.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor is hereby authorized to execute an interlocal agreement with the Muckleshoot Indian Tribe, in substantial conformity with the

agreement attached hereto, marked as Exhibit 1and incorporated herein by this reference.

Section 2. That the Mayor is authorized to implement such other administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this resolution shall take effect and be in full force upon passage and signatures hereon.

DATED and signed this 1st day of March 2004.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney



Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Interlocal Agreement (RES 3660)

41/59 PNWT
W9276-12

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
1. Muckleshoot Indian Tribe

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number
N/A

☐ Assessor Tax # not yet assigned

EXHIBIT 1

AUBURN - MUCKLESHOOT INDIAN TRIBE SANITARY SEWAGE AGREEMENT

(Auburn Way South Sanitary Sewer Conveyance System)

For the construction, ownership, and maintenance of the sanitary sewer conveyance facility that provides service to Muckleshoot tribal property located outside of Auburn's municipal limits to King County's wastewater conveyance and treatment facilities.

This Agreement is entered into in King County, Washington, between the City of Auburn, a municipal corporation under the laws of the State of Washington, hereinafter referred to as the "City" and the Muckleshoot Indian Tribe, a federally recognized Indian Tribe located on the Muckleshoot Indian Reservation, hereinafter referred to as the "MIT"

WHEREAS, both the City and the MIT are agencies qualified to engage in furnishing sanitary sewer service within their approved service areas; and

WHEREAS, the public health, welfare and safety of the residents of the City, the MIT and the residents of their service areas require the elimination of potential sources of water pollution and the preservation of the fresh water resources of the area; and

WHEREAS, the King County Department of Natural Resources, Water Pollution Control Division, hereinafter referred to as "King County", is engaged in developing and operating a regional sewage disposal system and the City and the MIT are engaged in developing and operating a sewage collection system; and

WHEREAS, consistent with the standards prescribed by the State of Washington, Department of Ecology, hereinafter referred to as "DOE", for the collection and disposal of sewage effluent within the State, the City and the MIT are improving a sanitary sewage conveyance system that conveys wastewater from the MIT and the City service areas to King County's facilities; and

WHEREAS, the City and MIT intend to replace the Auburn Way South Sanitary Sewer Conveyance System (hereinafter AWSCS); and

WHEREAS, the replaced AWSCS is the subject of this Agreement, and is intended to be consistent with applicable law and comprehensive planning for sewage disposal; and

WHEREAS, the MIT desires to provide sewer service only to customers within the MIT's approved sewer service area; and

WHEREAS, Auburn's existing wastewater conveyance facility surcharges and requires improvements to allow for additional flow capacity and avoiding potential overflow of sewage and the damages associated with said overflows; and

WHEREAS, the MIT desires ownership of a portion of the capacity within a sanitary sewer conveyance facility extending from that portion of the MIT service area, outside of the City's service area, into King County's wastewater conveyance system; and

WHEREAS, to provide for the conveyance and disposal of sewage conveyed to King County from properties located within City's service area and from that portion of the MIT service area located outside of the City's service area, the two parties are entering into contracts with King County; and

WHEREAS, this agreement shall supercede the existing Auburn – MIT sanitary sewer Agreement, hereinafter referred to as the "1997 Auburn MIT Agreement" executed in accordance with City Ordinance No. 4967; and

WHEREAS, the City and MIT are entering into this Agreement, on a government to government basis, with the intention of cooperatively and equitably designing, and constructing the AWSCS and thereafter assuring that its operation meets the needs of the parties, as more fully set out in this Agreement; and,

WHEREAS, to provide wastewater conveyance and ownership responsibilities of the public sanitary sewer facilities that extend from the boundary of the City's service area along Auburn Way South to King County's conveyance facilities at the corner of 17th Street SE and K Street SE (the King County M Street Trunk Line), it is necessary that this agreement be entered into between the City and the MIT, establishing the rights and duties of the parties; and

WHEREAS, the MIT has determined and so informed the City that approval of this Agreement is not required by the Bureau of Indian Affairs under Title 25, Section 81, of the U.S. Code.

NOW, THEREFORE, in consideration of the mutual covenants contained herein and in order to provide a connection between the City's, the MIT's and King County's wastewater conveyance facilities, IT IS HEREBY AGREED AS FOLLOWS:

I. SEWAGE FLOW CAPACITY

1.1 MIT's comprehensive planning has determined that the portion of MIT service area located outside of Auburn's municipal city limits (south of the south section line to Section 27, Township 21, Range 5) will require a maximum peak capacity of 7.85 CFS within the AWSCS.

1.2 The City's comprehensive planning has determined that the City's maximum peak capacities within the AWSCS are as set out in Exhibit "A". The AWSCS shall be sized to convey the MIT's and the City's combined maximum peak capacities consistent with this Agreement. A table listing the capacity requirements for the AWSCS is provided in Exhibit "A", a copy of which is attached hereto and is incorporated herein by this reference.

2. MIT/CITY RELATIONSHIP FOR WASTEWATER CAPACITY AND NATURE OF PARTICIPATION

2.1 Ownership and Participation: The MIT and the City shall each own a portion of the capacity of the AWSCS as shown in Exhibit "A". MIT affirms that the City shall have the administrative role for the implementation of the AWSCS and the City affirms that MIT may, in its discretion, maintain active participation in the implementation consistent with the terms of this Agreement and the equity provided by the MIT to the AWSCS project.

2.1.1 Nature of capacity ownership: The respective capacity ownership interests of the MIT and City in the AWSCS shall be determined by the maximum capacity contribution that each makes to the AWSCS, as noted in Exhibit "A". The MIT and City have agreed on wastewater conveyance capacity maximums at specific locations along the sections of AWSCS. Those maximum capacity estimates are set out in Exhibit "A". Until changed by mutual agreement of the parties the capacities set out in Exhibit "A" shall govern the capacity ownership under this Agreement. The parties will share equally in the project costs.

2.1.2 Additional Capacity: Should either party desire to increase its respective capacity in the AWSCS beyond the maximum capacities set out in Exhibit A, the party seeking the additional capacity shall be responsible for the costs associated with the facilities necessary to provide the additional capacity. Either party may rent, assign or convey to the other a portion of the capacity that a party has as set out in Exhibit A if a party has no need for the capacity. Any conveyance of capacity may be for an agreed period or may be a permanent transfer. If a party does convey a portion of its capacity to the other party the parties shall agree on fair compensation for the transferred capacity. In the absence of an agreement between the parties, no party may take any

action that would use, or appropriate to itself any of the unused capacity that the other party may have in the AWSCS; nor take any action that would limit, reduce or interfere with the ability or right of the other party to fully use the full capacity that the party owns under this Agreement. The right held by both parties to this Agreement to use its full ownership interests in the AWSCS shall not be subject to modification under Section 10.

2.1.3 Total Capacity: The City's maximum capacity and the MIT's maximum capacity shall be equal to 100% of the AWSCS capacity. Any remaining excess capacity within the AWSCS due to pipe sizing shall be owned by the parties based upon their respective percentage contributions determined from the maximum capacities as set out in Exhibit "A".

2.1.4 City and MIT Representation: The City and MIT will each designate a representative who may be assisted by other employees and/or project advisors, to assure that each may fully participate as provided under this Agreement. The representatives and advisors will work to minimize areas of dispute, and to resolve all implementation issues as they arise and, as far as possible, minimize the need for recourse to dispute resolution provisions of this Agreement.

2.2 Project Costs and Responsibilities: For purposes of this Agreement, the MIT and City have agreed upon a plan as outlined in Exhibit "A", for the upgrade of the AWSCS to meet the needs of both the City and MIT. Only costs directly attributable to the AWSCS shall be considered as Project Costs. Activities, responsibilities, and costs not directly attributable to the AWSCS are not to be considered Project Costs and shall not be included in the allocation of costs under this Agreement.

2.2.1 Allocation of Costs: The parties have agreed to share equally (50%-50%) in the costs required to upgrade the AWSCS. The capacity each party will have in the upgraded system is as noted in Exhibit "A". "Project Costs" subject to allocation include the following: design engineering, construction, permitting, inspection, contract administration services, and other cost items agreed to by the parties. Each party will be responsible for payment of its share of the actual agreed costs. An estimate of the agreed costs for each segment is set out in Exhibit "A". The following costs incurred by the City prior to the execution of this Agreement shall be included in the allocated costs between the parties, subject to the cost allocation formula set out in this section:

Consoer Townsend Envirodyne Engineers, Inc. for Section B design plans and a preliminary design for the entire AWSCS, $276,585.16.

Pentec Environmental, Inc. for a wetland assessment for Section B's proposed alignment, $3,499.75.

2.2.2 Invoicing and Fund Distribution: The City shall provide to the MIT an invoice for the design, construction and project management and inspection work of the AWSCS done pursuant to Section 2.3 of this Agreement. The MIT shall provide for a fund transfer of the MIT's share of the invoice amount to a financial institution of the City's choice within 5 calendar days of the date that the MIT receives the invoice. To the extent that the MIT disputes the amount of the invoice, or whether the contract or the work performed is in conformity with this Agreement and the approved contract documents, that dispute shall be resolved under Section 10 of this Agreement. Interest of 5% shall be added to any invoice that is 30 days past due and found to be properly owed.

2.2.3 Alternative Invoicing and Fund Distribution: At the option of the City, it may elect to receive the MIT share of the design, construction, project management work and inspection of the AWSCS done pursuant to Section 2.3 and this section, but not under Section 2.2.2. The City shall make its election in writing to the MIT at the same time that the design or construction contracts to design or build each segment of the AWSCS is executed by the City. Once the City makes election it may not change its decision during the design or construction of the segment awarded without the consent of the MIT.

(a) Prior to letting of the consultant contract or the request for bids and upon notification by the City that the City has committed funds to meet its payment obligations under this Agreement, the MIT shall deposit their share of the estimated project costs into a bank account that Auburn can draw from to pay for work related to the AWSCS segment being constructed or the consultant contract. The parties agree that costs incurred in design and construction of the AWSCS will be paid equally by the City and MIT as the costs are incurred, except as otherwise set out in this Agreement. Once funds are deposited into this account they will be unavailable for MIT until project completion or if the project is terminated early, upon termination. The account will earn interest for the MIT. Payment from this account does not guarantee MIT approval or waive the MIT's right to protest any expenditure by the City.

(b) MIT approved contract changes may require additional funds be deposited into this account to ensure sufficient funding to support MIT's portion of said change. Account adjustments shall occur within 10 calendar days of MIT approval for said change.

(c) To the extent that the MIT has provided construction funds that remain unexpended at the end of the construction of a segment of

the AWSCS, any remaining funds shall be carried forward and shall be used to fund a portion of the MIT's share of a subsequent section. When the entire AWSCS is completed or upon termination if terminated early with funds remaining in the MIT's account, those funds, with accrued interest, shall be refunded to the MIT. The City shall provide periodic reports, no less frequently than quarterly on the expenditure of funds for the project, as noted in Section 2.2.4 and at the completion or termination of each segment a final accounting of the funds expended will be provided.

(d) To the extent that the parties to this Agreement have a dispute with respect to invoices, the reasonableness of costs associated with a segment or other matters related as a party's duty to fund, that dispute shall be resolved under the procedures set out in Section 10 of this Agreement.

2.2.4 Final Accounting: The City shall provide periodic reports, no less frequently than quarterly on the expenditure of funds for the project, as noted in Sections 2.2.1 and 2.2.2. At the completion or termination of each segment the City will provide a final accounting of the funds expended.

2.3 Design and Construction Contract Development: The City shall be the contracting agent responsible for managing contracts with design and construction professionals consistent with the terms of this agreement and applicable laws. Direction to the consultant and contractor shall be through the City, which is the contracting party.

2.3.1 Reviews: The MIT shall have the opportunity to participate in the review and approval of: (1) the selection of any consultants, contractors, consistent with any bid documents and bid procedures, and the development of their corresponding contracts for work to be paid by allocated funds under this Agreement; and (2) design documents (including any intermediate designs that require approval) bid documents, construction plans, budgets, sequencing changes, schedules, project specifications, and similar documents. MIT review(s) and approval(s) shall take place prior to the time that such document(s) are considered final by the City and prior to the time that such documents are submitted by the City to the contracting party for signature. The parties shall work cooperatively to assure that all relevant comments are considered in the contract development process. MIT shall provide its approval, disapproval, comments, or notice of its intention to waive its rights to approve within 15 calendar days of the date that the documents are submitted for MIT review and approval. Failure to respond in the time set out in this section shall constitute approval of the document. Once MIT approval is granted, no further changes to the contract shall be allowed without further concurrence between both parties.

2.3.2 Correspondence and Meetings: The MIT shall receive pertinent copies of project correspondence and may, at its option, audit the City's project file and participate in any matter relating to the project including work schedules, project meetings, project reports, change orders, claims, pay estimates, billings, project close out, provision for continuation of services, and related matters. The City shall inform the MIT of all progress and design meetings with the consultant/contractor and MIT may, at its option, attend these meetings. The MIT may contest any billing as not being consistent with applicable contract documents or the terms of this Agreement and take any actions necessary to protect its interests if claims are filed. Progress meetings will be established regularly but no less frequently than monthly to confer on the construction project and any other aspect of the AWSCS project. To the extent that the MIT believes that the City is not complying with the terms of any construction contract or the terms of this Agreement and the dispute is not resolved, either party may seek to resolve the dispute under Section 10 of this Agreement.

2.3.3 Scheduling: The proposed construction sequencing for improvements to the AWSCS is as identified in Exhibit A. Approval of this Agreement confirms the parties' agreement with the sequencing and grants the City authority to begin processing bills for funds expended on the design of the AWSCS consistent with the provisions set out in Section 2 of this Agreement.

To the extent the parties are unable to reach agreement or any party believes the other is acting inconsistent with the terms of this section, the dispute shall be resolved under Section 10 of this Agreement.

2.4 Actual Construction: The City shall be responsible for the actual construction of the AWSCS, paying all construction related costs consistent with the construction/bid documents and assuring that construction of each segment is completed pursuant to the contract terms and consistent with the terms of this Agreement and Exhibit "A". The City shall be responsible for preparing record drawings and providing one full and complete copy to the MIT within 90 calendar days of final project acceptance by the City. The City shall follow normal contracting rules, procedures, and standards as commonly accepted by the public works industry, except as might be modified by this Agreement.

2.4.1 Project Monitoring: The City shall be responsible for monitoring construction, and shall assure that all contractors, subcontractors and material men are paid and any liens are discharged as required in the respective contracts, or by operation of law. MIT shall not be liable for any cost, expense or liability associated with the failure to pay any contractor, subcontractor or material man.

The MIT shall have access to the project site at all times that construction operations are underway for the purpose of monitoring the project progress and ensuring compliance with contract documents and the terms of this Agreement. The MIT shall follow appropriate safety requirements for construction zones and shall report any concerns to the City Project Manager or Project Inspector consistent with Section 2.3.

2.4.2 The City shall indemnify MIT against any loss, cost or expense arising out of any action brought against MIT seeking payment for work done on the AWSCS based on a contract that is not approved by MIT.

2.5 Contract Changes: The City may, without MIT prior concurrence, approve changes for consultant and construction contracts up to 5% of original contract costs. The 5% of an approved construction contract may be set out in any one segment as either,

(a) minor changes (individual changes under $5,000 each),
(b) line item quantity changes (changes to a line item quantity on the bid form), or as
(c) a change order (if the individual change exceeds $5,000).

Changes in bid quantities, minor changes, or change orders shall all be brought to the MIT's attention no later than the next scheduled progress meeting between the City and MIT. A description of the change along with an explanation for the change shall be supplied to the MIT for its concurrence. If MIT determines that the change was not proper it may refuse to pay that portion of the cost of the change that would otherwise be allocated to the MIT. If the parties do not agree on this issue then the issue or disagreement shall be resolved under the procedures set out in Section 10.

Contract changes exceeding 5% of the total contract estimate shall require City and MIT approval prior to implementation. All changes that require City council approval shall also require MIT approval without regard to the amount. City and MIT shall provide their approval, disapproval, comments, or notice of its intention to waive its rights to approve within 15 calendar days of the date that the change is submitted in writing to each of the agencies. Failure to respond in the time set out in this section shall constitute approval of the document.

2.6 Final Inspection: Every contract let to construct, modify, or repair the AWSCS shall provide for a final inspection of the work done prior to any final payment under the contract or the release of any funds held back. The City shall take the lead in providing a final inspection. The MIT shall be informed of any final inspection or testing events at the time of scheduling, or 5 calendar days prior to any scheduled inspection, whichever is the shorter. The MIT may provide input and options, on the methods and means to be used to

inspect the completion of each segment; the entire AWSCS; and during the life of this Agreement, any repairs or modifications done to the AWSCS. The MIT, in its discretion, may participate in or monitor the final inspection. If the parties cannot agree on the methods and means of any final inspection the dispute shall be resolved under the procedures set out in Section 10 of this Agreement.

3. OPERATIONS AND MAINTENANCE

3.1 Operation and Maintenance Duty: The City shall be responsible for undertaking all the routine operation and maintenance associated with the AWSCS. Routine operations and maintenance shall consist of inspection and cleaning of the trunk line together with the activities set out in Exhibit "B. The MIT's duty to contribute to operations and maintenance shall commence when the MIT and King County execute the Agreement set out in Section 4.

3.2 MIT Contribution: MIT's maximum obligation to contribute towards the operations and maintenance set out in Section 3.1 shall be $600.00 (six hundred dollars) per year. This fee shall be payable within the month of January of each year. The MIT shall have no other financial obligation to fund operation and maintenance set out in Section 3.1.The MIT shall begin making this contribution upon the establishment of the MIT as a King County Component Agency for the conveyance and treatment of wastewater flows to King County. This fee shall be reviewed after 15 years from the date of this Agreement. If an increase in the annual fee is determined justifiable then the City and the MIT shall negotiate the new fee.

3.2.1 In order to measure MIT wastewater volume and contribution, MIT shall install and maintain a flow meter to be located at the southern terminus of the AWSCS. The meter shall have a totalizer that records the volume of wastewater conveyed to the AWSCS. This meter shall be used in quantifying MIT wastewater flow into King County's system.

3.2.2 If requested by MIT, the City will install, at the City's expense and at a location designated by the MIT, a temporary flow monitor to sufficiently capture the cumulative City and MIT flows in the conveyance piping. The meter will be installed at a frequency not to exceed once every 20 months. The City shall have three months to establish the meter upon receipt of written request by the MIT. All information concerning the flows from said meter shall be provided to the MIT. Any information provided from King County to City concerning the flows from the AWSCS shall be forwarded to MIT for their records within 15 calendar days of receipt.

3.3 Extraordinary Repair: Should the AWSCS require additional repair or maintenance or upgrade over and above the routine maintenance

described in part 3.1, in order to meet the requirements of the MIT and City, and where the need for maintenance is not caused by the negligence of either party, the City and MIT shall meet together to agree on the nature and cost of the repair or upgrade. Upon reaching agreement on the nature and costs of the repair, each party shall contribute to the repair and/or upgrade in the same percentage as each contributed to the construction of the AWSCS. The City may complete repairs without concurrence from MIT where the failure to immediately complete the repairs would create a public health hazard caused by the release of wastewater outside of the sewer system. When the City acts without the concurrence of MIT, the City shall document the reasons for such repair and costs. MIT may contest the need for the emergency repair and or the amount expended. If the parties are unable to reach agreement on the nature of Extraordinary Repairs, the costs associated with such repairs, or any dispute than resolution will be sought under Section 10 of this Agreement.

3.4 Coordination of Operation and Maintenance: The parties shall each name one representative to coordinate operation and maintenance matters and to serve as a medium of communication on such matters. The representatives shall meet at least monthly to examine and agree on maintenance schedules, cost items and similar matters relating to the operation and maintenance of the AWSCS. Neither representative shall have the power to bind or commit a party to costs that exceed the operation and maintenance fund established in the Agreement. Disputes shall be resolved under the procedures set out in Section 10.

3.5 Effective Date: The duty of the MIT to contribute to Extraordinary Repairs under Section 3.3 shall apply only to those segments of the AWSCS that are replaced under this Agreement and only when the replacement is complete. The MIT shall not be responsible for the cost of ordinary repairs and maintenance under Section 3.1 on Segments of the AWSCS that have not been replaced under this Agreement where the cost of ordinary maintenance and repair is related to the age of the AWSCS extant as of the date of this Agreement.

4. SEPARATE AGREEMENT BETWEEN KING COUNTY AND TRIBE.

4.1 The MIT shall execute a separate interlocal agreement with King County for King County's conveyance and treatment of the MIT's wastewater.

4.2 The MIT shall be governed by the existing conditions of the 1997 Auburn MIT Agreement for wastewater conveyance established with the City as noted in Exhibit "C", a copy of which is attached hereto and is incorporated herein by this reference, until an agreement is established between the MIT and King County for the conveyance and treatment of

wastewater. Upon the establishment of said agreement with King County the MIT shall begin paying Operation and Maintenance fees as set out in Section 3.2 of this Agreement.

4.3 Upon the establishment of said agreement with King County the City shall provide the MIT with a final monthly sewer bill based upon all the facilities that have connected to the sanitary sewer pipe that drains into Auburn. The MIT shall supply documentation detailing all of the MIT connections to the wastewater conveyance facility.

4.4 Upon the execution of this Agreement, Section 5.1 of the 1997 Agreement shall not apply, and the MIT may continue to move wastewater through the existing and when completed new AWSCS without regard to the number of MIT hook-ups or the source of the wastewater so long as the wastewater meets the standards set out in the 1997 agreement and capacity within the AWSCS is not exceeded. Prior to the completion of the AWSCS, if capacity within the existing AWSCS is exceeded then the MIT shall be required to delay their peak flows until off-peak hours or until the problem lines are repaired. For the purpose of this Section 4.4 off-peak hours shall be defined as weekends and anytime except 6:30 AM to 6:30 PM.

4.5 The parties agree that upon establishment of the MIT as a King County wastewater agency, the MIT will no longer be subject to any City fees including but not limited to monthly service fees and new connection system development charges, unless otherwise noted in this Agreement. All fees associated with conveyance, treatment, and disposal of wastewater shall be billed from King County directly to the MIT except the maintenance and operational costs outlined in Section 3.2 above.

4.5.1 The King County capacity charge shall continue to be billed directly to the MIT from King County for new connections to the sanitary sewer system.

5. WASTEWATER COLLECTION LIMITATIONS

5.1 The MIT agrees to limit its local sanitary sewer service area for sewer connections to Indian lands located on or near the MIT Reservation located outside of the City's service area as defined as of the effective date of this Agreement. This region is consistent with the area used to define the peak flows noted in Exhibit "A".

5.2 The capacity required by the City for the AWSCS shall provide service to those properties within the City's approved service area based upon existing zoning, future growth projections, and topographical features.

5.2.1 Nothing in this Agreement is intended to apply City zoning to MIT owned lands within the City.

5.3 The MIT and City may agree in the future to add MIT land located within the City's service area to the MIT's service area. If the MIT and the City so agree, the respective Operation and Maintenance obligation of the parties set out in Section 3 shall be adjusted.

6. WASTEWATER OPERATIONAL LIMITATION

6.1 The MIT and City agree to maintain soluble hydrogen sulfide levels in the City's and MIT's wastewater below 0.5 ppm over a six-hour average. Each will provide chemical addition to its wastewater infrastructure if sulfide is determined to be creating a corrosive environment. In addition, the parties shall require pretreatment of industrial wastes to King County standards and shall require grease traps to be installed and maintained by all restaurants.

6.2 The MIT and City shall enforce all sewage collection and transmission system wastewater quality standards required by King County Department of Natural Resources and Parks, Wastewater Treatment Division and/or the EPA, as applicable, for all wastewater discharged into the AWSCS. To the extent that the City imposes additional limits on sewage that may be accepted into the City's sanitary sewer system, those additional limitations shall apply to the MIT so long as they (a) address the quality of effluent accepted into the system; and (b) apply to all customers served by the City either directly or by contract. Provided, that prior to the imposition of any limit, the City shall confer with the MIT and provide assurances to the MIT that any change will not affect or otherwise limit existing MIT services. Provided further, the City may not impose any additional limit that would affect the right of the MIT to fully utilize its capacity ownership rights in the AWSCS, or that would be inconsistent with the express provisions and limits set out in this Agreement. The MIT shall deliver to the AWSCS only such sewage collected or received by the MIT as is in conformity with the rules and standards set out in this section. The MIT shall not accept sewage or wastes from any person, firm, corporation, or other entity that is located outside of its service area boundaries, without written consent of the City. Should the MIT or the City at any time suspect that the wastewater is not meeting these standards, the party suspected of being in violation shall make every effort to locate and eliminate the source of contamination.

6.3 Damage to the AWSCS resulting from wastewater from either the MIT or City collection systems that does not meet the standards of Section 6.1 and 6.2, shall be addressed as follows: Where the MIT is the offending party, it will reimburse the City for any and all such damages; where the City is the offending party it shall be responsible for repairing any damage at its sole

cost and expense. In addition, either party that believes that the other party is delivering wastewater to the AWSCS that does not meet the standards set out in this section may seek injunctive relief under Section 10.3 against the offending party to enjoin the violation without first complying with the requirements of Sections 10.1 and 10.2.

6.4 MIT specifically agrees that should the City believe that the MIT is delivering wastewater that does not meet the standards set out in this Agreement and the City does not take action permitted under Section 6.3, the failure to take such action shall not be deemed a waiver of any of the City's rights under this Agreement and the MIT will not assert the doctrine of wavier, estoppel, or laches against the City in any subsequent action relating to the delivery of wastewater that does not meet the standards under this Agreement.

7. RESPONSIBILITY FOR DAMAGES

7.1 The City and the MIT shall each be responsible for any damage that is caused to the AWSCS (not including routine maintenance and repair) by their respective negligent acts or the acts of their customers. In such case the cost of repair shall be born by the negligent party.

7.2 The City shall perform repairs to the AWSCS as noted in Section 3.3. Where the repair was necessitated by the negligent actions of the MIT as described in Section 7.1 above, the reasonable cost for such repairs will be billed to the MIT, and shall bear interest, at the then existing ninety (90) day Treasury Bill rate, after thirty days from the date of billing. Where the repairs to the AWSCS are caused by the City, the City shall complete the repairs, at its sole expense, in a reasonable time so as not to interfere with the continued operation of the AWSCS. Where the damage is caused by both the MIT and City, each shall be equally (50%-50%) responsible for its share of the damage repair costs. Questions as to whether particular damage is the result of the negligence of either or both parties and the needed repairs to fix the damage shall be resolved under Section 10.

8. CAPACITY RIGHTS

Payment of invoices associated with the design, construction, inspection and project management of AWSCS's sewer improvements entitles the MIT to ownership of capacity within the AWSCS as outlined within Exhibit "A".

9. TERMINATION OF AGREEMENT

It is the intention of the parties that this Agreement shall not terminate during its term. If a party believes that the other party is in violation of this Agreement, that party may seek redress under Section 10. Provided, that the

parties thereto may agree in writing to terminate this Agreement on whatever terms and conditions they determine to be acceptable. Provided further, that neither party may force the other party to terminate this Agreement, nor shall the failure to agree to terminate this Agreement be subject to the procedure setout in Section 10.

10. DISPUTE RESOLUTION AND LIMITED WAIVER OF SOVEREIGN IMMUNITY

10.1 **Dispute Resolution - Mediation.** In the event the MIT and the City are engaged in a dispute, which relates to or arises under this Agreement, and they are unable to resolve said dispute within 30 calendar days, either party may request mediation.

10.1.1 The party requesting Mediation shall notify the other party in writing of its request to mediate a dispute identified in Section 10.1. If the parties agree to enter into mediation within 20 calendar days from such request the matter shall be deemed stayed and the arbitration clause contained herein shall not be put into effect. Mediation shall continue for no more than 90 calendar days at which point the mediation shall be deemed failed unless the parties have reached an agreement and have had such agreement approved by the governing bodies of each respective party and, if applicable, the Bureau of Indian Affairs. The parties may agree to continue mediation for a longer period. If such agreement is not approved by the governing bodies of each respective party or is not enforceable in the United States District Court for the Western District of Washington, the mediation shall be deemed failed and the unresolved issue shall be submitted to binding arbitration as set forth herein.

10.2 **Failure to mediate:** In the event that the parties do not reach an agreement to mediate within 20 calendar days of receipt of the notice requesting mediation by the non-requesting party, the matter shall be submitted to binding arbitration as set forth herein.

10.3 **Arbitration:** Any controversy or claim that relates to or arises under this Agreement or the breach thereof, shall be settled by arbitration administered by the American Arbitration Association in accordance with its applicable rules. Judgment on the decision rendered by the arbitrator may be entered into the United States District Court for the Western District of Washington. The arbitrator shall not have authority to enter an order terminating this Agreement.

10.4 **Attorney fees and costs:** Each party shall bear its own costs of mediation and arbitration.

10.5 **Limited Waiver of Sovereign Immunity and Consent to Jurisdiction of Federal Court.** The MIT hereby waives its sovereign immunity and consents to the jurisdiction of the United States District Court for the Western District of Washington concerning disputes regarding the interpretation of this Agreement and the enforcement of any rights, obligations or liabilities, in law or in equity, pertaining to hold harmless provisions of this Agreement. Such waiver of Sovereign Immunity and Consent to jurisdiction shall apply to no other court. This Limited Waiver of Sovereign Immunity and Consent to Jurisdiction has been specifically negotiated by the parties and the decision of the City to enter into this Agreement was made in part based on this limited waiver of sovereign immunity.

10.6 **Disclaimer of MIT Tribal Court Jurisdiction.** The MIT agrees that the MIT Tribal Court has no jurisdiction over the force, effect, and interpretation of this Agreement, nor the resolution of disputes that pertain to its implementation. The MIT further agrees that it has no authority to submit the City to the jurisdiction of the MIT Tribal Court with regard to any sewer-related matters or disputes that may arise between the parties under this Agreement.

11. PERFORMANCE, AMENDMENT, AND INTERPRETATION

Each party agrees that it will execute any and all instruments, documents and resolutions or ordinances necessary to give effect to the terms of this Agreement.

This Agreement may be modified only if such modifications are written and approved by written resolutions adopted jointly by the Auburn City Council, the MIT Tribal Council, and the BIA, if required.

The parties shall comply with all applicable rules and regulations pertaining to them in connection with the matters covered herein.

This document has been mutually negotiated between the parties. No adverse inference or ambiguity shall be construed against the party preparing this document for signature. No waiver by either party of any term or condition of this Agreement shall be deemed or construed to be a waiver of any other term or condition, nor shall a waiver of any breach be deemed to constitute a waiver of any subsequent breach, whether of the same or a different portion of this Agreement.

12. TERM OF AGREEMENT

The initial Term of this Agreement shall continue until the AWSCS constructed under this Agreement is replaced in its entirety or 50 years whichever is the longer. If the parties jointly agree to replace the AWSCS the

parties shall negotiate the terms and conditions of a new agreement that provides for both MIT and City ownership and use of capacity in the new sewer line. If the parties can not reach an agreement on the terms of a new agreement with respect to the new AWSCS, then the MIT may continue to have the right to use the AWSCS in the same manner and under the same conditions as set out in this Agreement until the existing AWSCS is fully replaced or until the 50 year term referred to above ends, whichever is longer.

13. INDEMNIFICATION

The MIT agrees to indemnify and hold the City and its agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, losses, damages or costs, of whatsoever kind or nature, brought against the City arising out of, in connection with, or incident to the execution of this Agreement and/or the Tribe's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of the City, its agents, employees, and/or officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of the Tribe; and provided further, that nothing herein shall require the Tribe to hold harmless or defend the City, its agents, employees, and/or officers, from any claims arising from the sole negligence of the City, its agents, employees, and/or officers. No liability shall attach to the City by reason of entering this Agreement except as expressly provided herein.

The City agrees to indemnify and hold the MIT and its agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, losses, damages or costs, of whatsoever kind or nature, brought against the MIT arising out of, in connection with, or incident to the execution of this Agreement and/or the City's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of the MIT, its agents, employees, and/or officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of the City; and provided further, that nothing herein shall require the City to hold harmless or defend the MIT, its agents, employees, and/or officers, from any claims arising from the sole negligence of the MIT, its agents, employees, and/or officers. No liability shall attach to the MIT by reason of entering this Agreement except as expressly provided herein.

Each party shall maintain in full force and effect throughout the term of this Agreement a policy of comprehensive general liability insurance, or demonstrate that the party is self-insured, with minimum coverage of one

million dollars per occurrence / two million dollars aggregate for personal injury, including death, and property damage. The parties may agree to increase the coverage limits set out in this section or if no agreement on different limits can be reached, any party can submit the issue for resolution under Section 10. If insurance is provided the insured party shall include the other party as an additional named insured. If a party relies on self-insurance, the other party shall be named as a third party beneficiary with enforcement rights to seek indemnification.

The City and MIT agree to hold each other harmless from third-party claims arising from the use of wastewater conveyance facilities within the respective jurisdictions and service areas.

14. ASSIGNMENT

The parties shall not assign this Agreement or any interest, obligation or duty therein without the express written consent of the other party.

15. ATTORNEY'S FEES

If either party shall be required to bring any action to enforce any provision of this Agreement, or shall be required to defend any action brought by the other party with respect to this Agreement, and in the further event that one party shall substantially prevail in such action, the losing party shall, in addition to all other payments required therein, pay all of the prevailing party's reasonable costs in connection with such action, including such sums as the court or courts may adjudge reasonable as attorney's fees in trial court and in appellate courts.

16. NOTICES

All notices between the two agencies hereunder may be delivered or mailed. If mailed, they shall be sent to the following respective addresses:

City of Auburn
Public Works Director
25 West Main Street
Auburn, WA 98001
(253)-931-3010

Muckleshoot Indian Tribe
Assistant Tribal Operations Manager
Community Development
39015 172nd Ave. S.E.
Auburn, WA 98092
253-876-3104

or to such other representative addresses as either party may hereafter from time to time designate in writing. All notices and payments mailed by first class mail, postage prepaid shall be deemed to have been given on the second business day following the date of mailing, if properly mailed and addressed.

Notices and payments sent by certified or registered mail shall be deemed to have been given on the day next following the date of mailing, if properly mailed and addressed. For all types of mail, the postmark affixed by the United States Postal Service shall be conclusive evidence of the date of mailing.

17. NONDISCRIMINATION

Each of the parties, for itself, its heirs, personal representatives, successors in interest, and assigns, as part of the consideration hereof, does hereby covenant and agree that it will comply with statutes, executive orders and such rules as are promulgated there under that are applicable to a party to assure that no person shall on the grounds of race, creed, color, national origin, sex, age, or the presence of any sensory, mental or physical handicap be discriminated against or receive discriminatory treatment by reason thereof.

18. INTEGRATION.

This Agreement constitutes the entire agreement of the parties regarding the subject matter hereof, and there are no other representations or oral agreements other than those listed herein, which vary the terms of this Agreement. Future agreements may occur between the parties to transfer additional or future service areas by mutual agreement.

19. OBLIGATION INTACT.

Nothing herein shall be construed to alter the rights, responsibilities, liabilities, or obligations of either the MIT or the City regarding provision of sewer service, except as specifically set forth herein.

20. OBLIGATION TO COMPLETE PROJECT.

The Parties expect that the AWSCS shall be constructed in substantially the same form as described in Exhibit A. The parties expect that, absent an unforeseen intervening event that is outside the control of the parties, that could not be avoided by the use of due care, that all segments of the AWSCS will be completed within six years of the effective date of this Agreement, unless otherwise agreed upon by the parties. Should either party fail to take any action required under this Agreement such that the AWSCS is delayed or its construction stopped, the other party may seek injunctive relief under Section 10 to compel the other party to undertake any required action under this Agreement to complete the AWCSC. Provided, that if the City is the non-complying party, the MIT may continue to transport effluent through the existing Auburn Way South sewer line to accommodate at least a peak flow of 1.34cfs without any limitation on the source of such effluent so long as it comes from the MIT service area and meets effluent standards set out in this Agreement until the AWSCS is completed. Provided further, unless a court holds otherwise, should the City be held to be legally incapable of completing the AWSCS the MIT may transport effluent through the existing Auburn Way South

sewer line to accommodate at least a peak flow of 1.34cfs without any limitation on the source of such effluent so long as it comes from the MIT service area and meets effluent standards set out in this Agreement. Provided further, to the extent that the MIT has paid any money to the City as required under this Agreement and the City has become legally incapable of completing the AWSCS, the City shall return to the MIT any funds paid by the MIT, including accrued interest, without regard to whether the funds have been expended by the City, unless some other agreement between the MIT and the City can be established.

IN WITNESS TO THE TERMS OF THIS AGREEMENT, the parties hereto have subscribed their names:

MUCKLESHOOT INDIAN TRIBE

3-19-04

John Daniels Jr. Date
Chairperson, Muckleshoot Tribal Council

CITY OF AUBURN

3/26/04

Peter B. Lewis, Date
Mayor, City of Auburn

ATTEST:

Danielle Daskam,
City Clerk, City of Auburn

APPROVED AS TO FORM:

Daniel B. Heid
City Attorney, City of Auburn

Exhibit A
Auburn - Muckleshoot Indian Tribe Sanitary Sewage Agreement
Auburn Way South Conveyance System (AWSCS)

Section	Begin SSMH	End SSMH	Length of Pipe (ft)	Peak Flows (cfs)			Pipe Size (in)	Flow Allocation (%)		Estimated Construction Cost ($)
				MIT	Auburn	Total Accum.		MIT	Auburn	
	1216-20	1216-18	680	7.85	1.10	8.95	21			
A	1216-18	1216-13	1,090	7.85	1.10	8.95	21	86.6%	13.4%	$ 693,700
	1216-13	1216-63	410	7.85	1.75	9.60	21			
	1216-63	1115-13	1,330	7.85	2.24	10.09	24			
	1115-13	1115-11	640	7.85	2.85	10.70	24			
B	1115-11	1115-28	2,080	7.85	3.98	11.83	24	69.2%	30.8%	$ 2,481,800
	1115-28	1114-07	1,780	7.85	3.98	11.83	24			
	1114-07	1114-04	1,000	7.85	3.98	11.83	24			
	1114-04	1013-15	2,490	7.85	6.63	14.48	24			
C	1013-15	1012-36A	1,310	7.85	7.02	14.87	24	53.6%	46.4%	$ 1,500,800
	1012-36A	1012-35	330	7.85	7.02	14.87	24			
	1012-35	1012-33	350	7.85	7.43	15.28	24			
D	1012-33	1012-17	630	7.85	10.67	18.52	24	43.3%	56.7%	$ 1,217,000
	1012-17	1011-07	2,370	7.85	10.67	18.52	24			
	1011-07	1010-44	2,610	7.85	11.4	19.25	24			
E	1010-44	1010-31	1,400	7.85	13.69	21.54	27	38.3%	61.7%	$ 2,612,000
	1010-31	910-29	2,010	7.85	13.69	21.54	36			
Total			22,510	7.85	13.69	21.54				$ 8,505,300

Priority Schedule:

Priority 1	MH 1216-13 to MH 1114-04
Priority 2	MH 1114-04 to MH 1010-44
Priority 3	MH 1010-44 to MH 910-29
Priority 4	MH 1216-20 to MH 1216-13

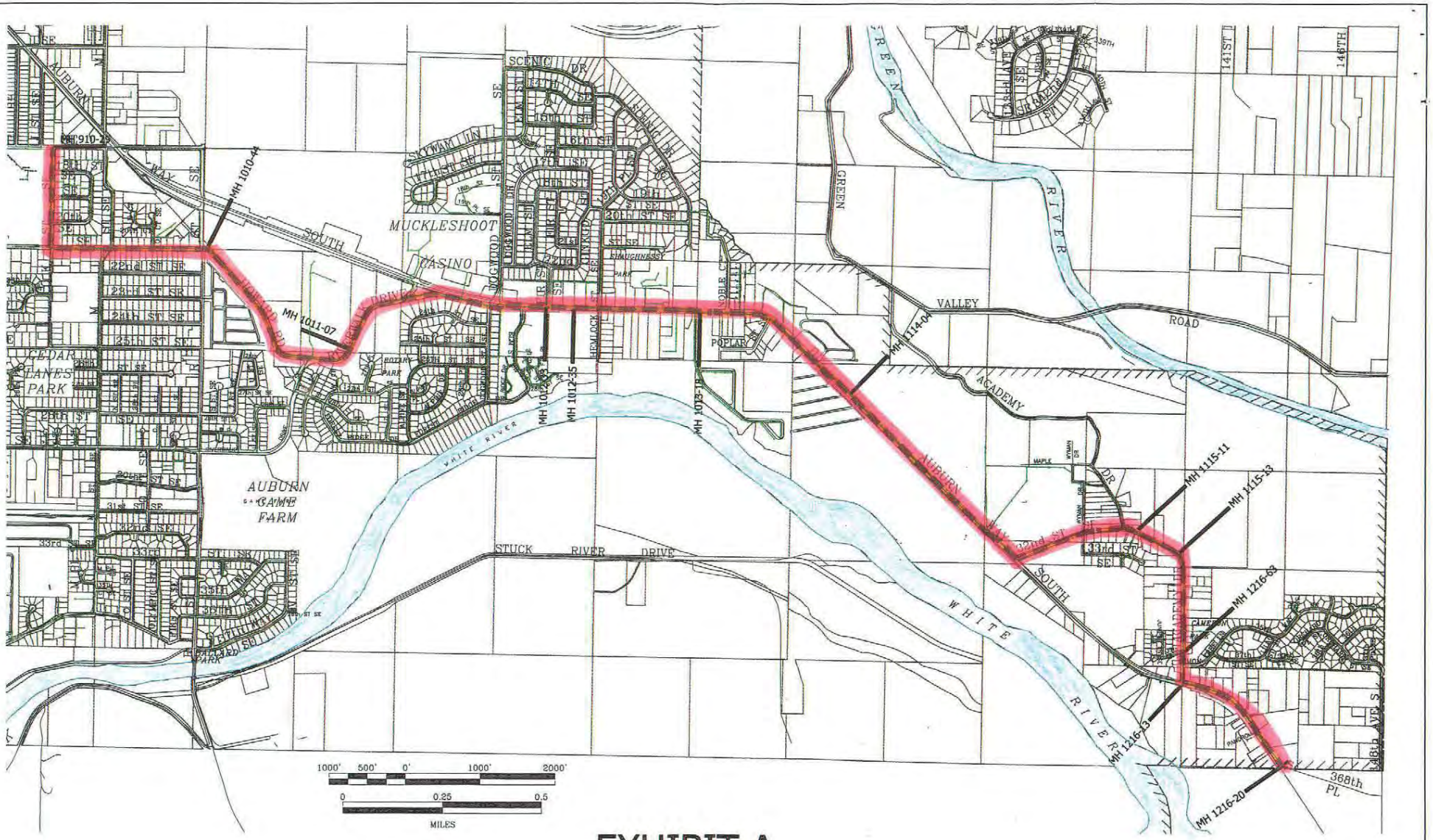


EXHIBIT A

AUBURN MUCKLESHOOT INDIAN TRIBE SANITARY SEWAGE AGREEMENT

AUBURN WAY SOUTH CONVEYANCE SYSTEM

Existing Sanitary Sewer
Proposed Replacement
Auburn City Limits

Plotted: December 2003

Exhibit 1 Exhibit A
Resolution No. 3660
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Exhibit B
Auburn-Muckleshoot Indian Tribe Sanitary Sewage Agreement

Auburn Way South Conveyance System (AWSCS) Operation and Maintenance Activities

Line Locates
Locate sewer lines for construction activities that take place near existing sewer pipes.

High Velocity Jetting
Use high-pressure water discharged from a nozzle to scrub the internal surfaces of the AWSCS.

Vacuum Cleaning
Vacuum clean the AWSCS to collect solids, fats, oils and possibly grease that may have accumulated. This will typically be done in conjunction with high pressure cleaning.

Rat Baiting
Place rat poison in manholes to eliminate existing or potential problems.

Visual Inspection of AWSCS
Pull manhole lids to visually observe the flow and assess whether capacity problems are being experienced. This will be done most frequently during storm events.

Smoke Testing
Smoke test AWSCS to determine if any cracks or broken pipe exist.

TV Inspection
Inspect AWSCS for breaks, bellies or other pipeline problems.

Manhole Maintenance
Re-grout AWSCS manhole collars that may have shifted and cracked allowing ground water to enter the manhole. Add a riser ring if needed due to manhole settlement.

Repairs and Replacement
Repairs and replacement to the AWSCS shall be made consistent with the terms of the Agreement.

Exhibit C

SANITARY SEWAGE CONNECTION AGREEMENT

between the

CITY OF AUBURN

and the

MUCKLESHOOT INDIAN TRIBE

of the

MUCKLESHOOT INDIAN RESERVATION
KING COUNTY, WASHINGTON, USA

This Agreement is entered into on this ___ day of _____, 1997, in King County, Washington, between the City of Auburn, a municipal corporation under the laws of the State of Washington, hereinafter referred to as the "City," and the Muckleshoot Indian Tribe, a federally recognized Indian Tribe located on the Muckleshoot Indian Reservation, hereinafter referred to as the "MIT" and "MIT Reservation" respectively.

WHEREAS, in order to meet the standards prescribed by the State of Washington, Department of Ecology, for the collection and disposal of sewage effluent within the State, the City constructed a sanitary sewage collection system including transmission facilities to the King County Department of Natural Resources, Water Pollution Control Division, hereinafter referred to as "Metro", wastewater treatment plant; and

WHEREAS, the MIT has identified the need for community sewage collection and disposal facilities to resolve current sanitation needs of the MIT Reservation not currently served by a sanitary sewage collection system; and

WHEREAS, the Indian Health Service, hereinafter referred to as "IHS," the Environmental Protection Agency, hereinafter referred to as "EPA," the MIT and the City concur in the need for a sewage collection, treatment and disposal system to protect the health of MIT members and to safeguard the environment in and around the MIT Reservation; and

WHEREAS, the IHS, the EPA, the MIT and the City have entered into a separate Memorandum of Agreement to provide for the construction of a sewage collection and transmission system on the MIT Reservation and for connection of this sewage system to the City's sewage system utilizing funding from the Indian Set-Aside Program of the Clean Water Act - 1987 amendments, through the EPA and funding from the IHS through Sanitation Facilities Construction Program, Public Law 86-121, under Project PO-94-690; and

WHEREAS, this Agreement is required by EPA and IHS for the MIT to obtain the funding to resolve its current residential sanitation needs; and

WHEREAS, the consideration the City will receive from this Agreement is enhancement of public health by connecting current septic systems to a new sewer system; and

WHEREAS, furtherance of public health and safety of area inhabitants requires that all sewage collected by the MIT and discharged into the City's system of sanitary sewers be both non-harmful and non-toxic to both the City's system of sanitary sewers and area residents, as well as in conformity with reasonable rules and regulations; and

WHEREAS, the Auburn City Council has by Resolution No. 2800 and 2671, a copy of which is attached hereto and is incorporated herein by this reference, expressly reviewed and reaffirms the policy set forth in Resolution No. 2671 authorizing the execution of the September 6, 1995, Memorandum of Agreement Among the IHS, the EPA, the City, and the MIT of the MIT Reservation, also identified as Public Law 86-121, Project PO-94-690 ("Four Party Agreement" herein), and thereby authorized its Mayor to execute this Agreement which authorizes sanitary sewage connections for residential, single family housing units and specific existing non-residential facilities;

WHEREAS, all parties agree that this Agreement is solely for the purpose of protecting public health and contemplates only the connection of the 40 existing homes in the Skopabsh Village, up to 230 units of residential housing, and those other facilities set forth in the City's Resolution No. 2671, page two, which are defined as "Tribal administration, Tribal school, library, senior center, Tribal store, churches";

WHEREAS, the MIT Tribal Council has by Resolution No. 97-188, a copy of which is attached hereto and is incorporated herein by this reference, expressly reviewed and approved this Agreement and secured Bureau of Indian Affairs, hereinafter referred to as "BIA", approval pursuant to Title 25, Section 81, of the U.S. Code; and

WHEREAS, the dispute resolution provisions of this Agreement shall apply to all issues arising between the parties which relate to sewer and sewer related services; and

NOW, THEREFORE, in order to provide for connection and continued use of the MIT's sewage collection and transmission system to the City's sewage system, the parties mutually agree:

I. CONNECTION AUTHORIZED

1.1 MIT is authorized to connect to City sewer line to service only 40 existing homes in Skopabsh Village, MIT residential units in existence at the time of City Resolution No. 2671 passage (estimated to be approximately 130 units), up to a maximum of 100 additional units of single family housing, and MIT governmental or community facilities such as administration, school, library, senior center, store, and churches.

II. CITY'S SYSTEM DEVELOPMENT CHARGE

2.1 **Determination of System Development Charge.** That the MIT agrees to provide the City with a listing of all connections to the MIT's sewage system and agrees to pay the City a one-time System Development Charge, hereinafter referred to as SDC, for each connection to the MIT's sewage system. This listing will be updated by the MIT as needed on a monthly basis as an attachment to the monthly utility fee paid to the City. The SDC for each connection shall be as calculated utilizing Metro forms 1057, 1058, and 0461, latest revisions, copies of which are attached hereto, for Residential Customer Equivalents, hereinafter referred to as "RCE's". The MIT has already pre-paid the SDC's for 230 RCE units with IHS funds in April, 1996. The current charge for a single family residential and every other RCE connection is $840.

2.2 This SDC rate is subject to change as described in Article XIV. of this Agreement.

2.3 The City agrees to waive the SDC for the 40 existing MIT homes in the Skopabsh Village housing area due to these homes being connected to the City sewage system since 1977.

III. CITY'S USER FEE

3.1 Because the MIT has responsibility for ownership, operation and maintenance of the MIT's sewage collection and transmission system, the parties agree that the MIT will provide the City with a monthly user fee equivalent to fifty percent (50%) of the user fee charged to City customers.

3.2 The MIT will provide the City with 50% of the City monthly user fee as charged to the City customers. For other than single family residential connection, this will include an additional volume amount per month. The volume amount shall be calculated as follows:

V = monthly volume from water service meter, in cubic feet
R = current applicable rate, in dollars

$$\text{Volume amount billing} = \frac{[V - 750] * R * (0.5)}{(100) * (7.5)}$$

3.3 Each connection other than single family residential shall have a water service meter installed prior to sanitary sewer connection. Each single family residential connection shall have a water service meter installed prior to 1 September 1997, or prior to sanitary sewer connection thereafter.

3.4 This rate and the applicable percentage to ownership, operation, and maintenance is subject to change as described in Article XIV. of this Agreement.

IV. METRO'S USER FEE

4.1 The MIT will provide the City with the Metro monthly user fee as charged to the City customers. For other than single family residential connection, this will include an additional volume amount per month. The volume amount shall be calculated as follows:

V = monthly volume from water service meter, in cubic feet
R = current applicable rate, in dollars

$$\text{Volume amount billing} = \frac{[V - 750] * (R)}{(100) * (7.5)}$$

4.2 Each connection other than single family residential shall have a water service meter installed prior to sanitary sewer connection.

4.3 This rate is subject to change as described in Article XIV. of this Agreement.

V. QUALITY OF SEWAGE

5.1 The MIT agrees to connect only the 40 homes in the Skopabsh Village, up to 230 units of residential housing, and those other facilities set forth in the City's Resolution No. 2671, page two, which are defined as "Tribal administration, Tribal school, library, senior center, Tribal store, churches ..." that discharge domestic type sewage into the City's sewage system. The MIT will not permit industrial waste producing developments to connect to their community sewage system. For

purposes of this Agreement domestic type sewage shall be defined as that type of sewage which is contributed by a residential user.

5.2 The MIT agrees to enforce all sewage collection and transmission system effluent quality standards as required by the City, Metro and/or the EPA for all effluent discharged into the City's sewage system. The MIT shall deliver to the City sanitary sewer system only such sewage collected or received by the MIT as is in conformity with and subject to such reasonable rules and regulations as currently exist or as may be adopted from time to time by the City, Metro, or the EPA. The MIT shall not accept sewage or wastes from any person, firm, corporation, or other entity which is located within or without it boundaries, or is otherwise delivering its sewage into the MIT's sanitary sewer system, without written consent of the City. Should the MIT or the City at any time suspect that the effluent from the MIT collection system is not meeting these standards, the MIT shall make every effort to locate and eliminate the source of contamination.

5.3 Should damages to the City system result from effluent from the MIT's collection system that does not meet the standards of Section 5.2, the MIT will reimburse the City for any such damages.

5.4 The MIT's transmission of effluent to the City which does not meet the effluent quality standards as required by the City, Metro, and/or the EPA shall constitute a material breach of this Agreement by the MIT entitling the City to immediately terminate this Agreement for cause. Without terminating this Agreement, the City may in its sole discretion and upon provision of notice to the MIT refuse to accept any effluent it believes is not meeting the effluent quality standards as required by the City, Metro, and/or the EPA and continue to accept effluent which does meet applicable standards. In such event, the MIT specifically agrees that the City shall not be deemed to have waived any of its rights under this Agreement and the MIT will not assert doctrines of waiver, estoppel, and laches against the City in any subsequent action pertaining to this Agreement and the rejection and acceptance of conforming and non-conforming effluents.

VI. ~~SEWER COMMISS~~SYSTEMS COORDINATION

6.1 In the interest of continuing to promote better communication and cooperation between the MIT and the City, both parties agree to send a representative to participate in all regular and special meetings of the MIT's Utility District and the City's Public Works Committee. Both parties shall notify the other party in writing of all such meetings.

6.2 The MIT and the City agree to provide technical and operational assistance to the other party upon request and as resources of manpower or equipment or plant may be available on a cost reimbursable basis. If one party assists the other, the party assisted agrees to honor payment of billings for labor and equipment rental. Both parties will make available established hourly rates for purposes of encouraging this program.

VII. SEWAGE FLOW MEASUREMENT

7.1 The quantity of sewage entering the City's collection system shall be measured by a flow meter located in the City's regulation station. The proper calibration of this flow meter will be the responsibility of the City. The MIT shall keep monthly records of the sewage pumps running time hour meters and of the average pumping rate for each pump for comparison and confirmation of the flow meter calibration on an annual cycle. In the event that the flow meter appears to have malfunctioned, the hour meter readings and the corresponding flow rates shall be used to determine the amount of sewage that has been pumped to the City's sewage system until the flow meter repairs are completed. The MIT will report the total sewage flow as measured utilizing the pump running time hour meters estimated method to the City monthly, as an attachment to the monthly user fee payment.

VIII. TRIBAL OR CITY OWNERSHIP AND MAINTENANCE

8.1 The MIT shall own, operate and maintain all gravity collection lines, sewage lift stations and force main piping located upstream of the City's regulation station and generally within the southeastern portion of the MIT Reservation in Sections 1, 2 and 12 of Township 20 North, Range 5 East, W.M., but, also including the gravity and force main piping located outside of the MIT Reservation boundaries in Section 35 of Township 21 North, Range 5 East, W.M., upstream from the City's regulation station.

8.2 The gravity and force main line located downstream from the City's regulation station to the connection manhole at the corner of Auburn-Enumclaw Highway and 368th Street shall be conveyed to and be owned, operated and maintained by the City provided however that MIT residential connections will be permitted, but no non-MIT connections will be authorized without MIT written approval.

8.3 The MIT operations staff shall operate their facilities in conformance with the Plan of Operation developed with the assistance of the IHS during the design and construction of the facilities.

8.4 In order to maintain compatibility of design/construction operating systems, the MIT agrees to construct and maintain all property referred to herein in accordance with standards and specifications provided by the City.

IX. INTERRUPTION OF SERVICE

9.1 It is understood that the City will periodically need to restrict or shut off sewage flow into their collection system in order to perform repair or maintenance on downstream facilities. For scheduled maintenance or repair activities the City shall notify the MIT, in writing, at least five working days in advance. Such notice shall indicate the work that is to be performed, the anticipated duration of this work, what restrictions or changes to the Plan of Operation will be necessary and a contact person for coordinating all activities with the MIT's operations staff.

9.2 It is also understood that emergency situations may arise that could threaten public health and/or the continued operation of the City's sewage collection system and the City may be unable to notify the MIT in the manner prescribed above (in Section 9.1). In such a situation the City shall use best efforts to contact the MIT's Utility staff (operator or Council officers) and request assistance in regulating the discharge of effluent from the MIT's sewage system.

9.3 The MIT, by reason of this Agreement, shall grant the City an access easement to pump station #2 sufficient to permit the City to regulate the sewage flow and to permit emergency repair work on the City's sewage system. A copy of the Easement form is attached hereto as Exhibit A and is incorporated herein by reference as though fully set forth.

9.4 The MIT agrees to assume liability, if any, for sewage back-ups, if any, within the MIT's sewage system that are caused by capacity shortfalls and flow control spill incidents within the MIT's sewage system, and will hold the City harmless from any such claims, all as more particularly described in Article X. of this Agreement.

9.5 The MIT shall procure and maintain in full force and effect throughout the term of this Agreement a policy of comprehensive general liability insurance with minimum coverage of one million dollars per occurrence/two million dollars aggregate for personal injury including death, and property damage. As a condition of providing service, the City reserves the right, in its sole discretion, to demand increased minimum coverage limits at five (5) year intervals from the date of signing hereof. In the event the MIT does not provide proof of insurance issued by a company approved by the City, with increased limits, within thirty (30) days of such request the City shall be authorized to procure such a policy on its own behalf and deduct such policy premiums from the reserve account established pursuant to this Agreement. Such policy shall name the City as an additional named insured and shall include a provision in such policy prohibiting cancellation or reduction in coverage except upon at least thirty (30) written days notice to the City. Cancellation or reduction of the required insurance shall constitute a material breach of this Agreement and, at the City's sole option, may constitute grounds for the City to immediately terminate this Agreement. Further, the MIT agrees to execute all documents and do all things necessary to allow the City, as additional named insured, to recover directly from the insurance carrier in the event of loss, without having to first commence dispute resolution proceedings or bring suit against the MIT.

X. SEWAGE FLOW CAPACITY

Release Monitoring, Metering and Regulation:

10.1 **Conceptual Premises.** The MIT and the City agree to the following conceptual premises with regard to operation and maintenance of the sewer system pursuant to this Agreement:

A. Prior to City approval of sanitary sewer connection, the City shall approve construction documents as per the Four Party Agreement and the following plans, specifications, and conditions will be met:

1. The MIT agrees to construct and dedicate in fee title all infrastructure concerning the system, except for the regulation station vault to be designed and constructed by the City, from the upstream side of the vault, northwesterly to the City's receiving manhole near the City limits. (Exhibit B: general map illustration)

2. The City will design and construct the regulation station, downstream monitoring gauges, telemetry and control cabinet. The City will seek to coordinate this design with the MIT's consultant (IHS) to assure compatibility with the connection and regulation telemetry of the MIT's #2 pump station.

3. The MIT and City agree to cost share the City's design and construction effort referenced in Section 10.1.A.2. on a 50/50 percentage basis according to and for the mutual benefits accruing to both parties. The MIT agrees to pay its share of the City's improvements prior to construction contract award. No connection shall be allowed until such time as all payments are received by the City.

4. The MIT and City agree to share the monthly communication and any associated maintenance and repair bills as necessary to operate and maintain the telemetry system so long as the MIT's sanitary sewer system is connected to the City's sanitary sewer system. These costs will be included on each monthly sewer bill presented to the MIT. The City will be responsible for maintaining the telemetry system up to and including the telemetry intertie box located at the pump station #2. The MIT hereby grants the City and its system maintenance agents right of entry to all locations served by the City's telemetry system.

10.2 **Regulatory Concept:** Generally the system components consist of:

1. Downstream monitoring gauges will be installed at two manholes in the City's system for purposes of measuring, recording and telemetering "real time" control signals to the MIT's pump station that regulates releases to the City's system.

2. A regulatory vault consisting of and containing a manual gate valve, a motor operated ball valve, flow meter, and telemetry devices shall be installed at a location along the force main downstream of Pump Station #2.

3. In Pump Station #2 the design shall provide an additional wet well surcharge minimum capacity volume of 1,400 cubic feet to accommodate pump regulation. Pumping capacity at Pump Station #2 may be overridden by City telemetry. Override telemetry will control operation of both high volume and low volume pumps, as the IHS has installed no variable flow pumps. As such, the only operations available are fixed high volume, fixed low volume, and all off - no volume.

4. The regulation of the pump station shall be responsive to the downstream monitoring gauge signals and the flow control valve in the regulation vault to assure the performance objectives outlined herein are met, and maximum flows are therefor not exceeded.

5. The telemetry system shall be capable of recording the actual flow data in digital format on a continuous basis and down-loading to a computer system in both the MIT office and the City utility office via modem. The computer software will be capable of showing the real-time flow data at all monitored points (Pump Station #2, Regulatory vault, and monitoring gauges).

6. As the City and MIT decide to modify this Agreement to accommodate adjustments of release rates allowable, the telemetry system shall be capable of receiving programmable updates.

7. Prior to issuance of the connection approval the MIT and its contractor will perform commissioning tests to demonstrate to the City's satisfaction that the system accomplishes the following performance objectives:

a. The pump station responds to regulate the flow releases to the City's system in such a manner that when the City's pipe being monitored is equal to or greater than 80% full as measured by

flow depth within the pipe, the pumping rate is curtailed, and if necessary, reduced to zero.

b. As the City's pipe being monitored drops to a 75% of full condition, the system will query the status of wet well levels and pump down times to assess when pumps are re-energized to commence pumping. The system will periodically continue to query system status at such time as pumping decisions are required.

c. The pump station can be calibrated to deliver flows as dictated by the City's downstream capacity available, and within the limits of flow control as provided by IHS construction to date.

d. At a monitored one-foot surcharge within a gauging manhole, the regulation station will automatically shut off influent flow from the MIT's Pump Station #2, and influent flow shall remain off until the surcharge has disappeared. This will be the only condition mandating zero flow from the MIT's Pump Station #2 except for emergency conditions.

10.3 **Maximum Flow to Be Accepted By City.** The maximum allowable sewage flow rate from the MIT's sewage system to the City's sewage system shall not exceed the capacity available within the City's system at any time as determined by City monitoring gauges. Such flow can be released at any time capacity is available within the City's system.

10.4 **Funding of Future Improvements By MIT A Condition Precedent to Continuing Flow to the City System.**

a. The MIT acknowledges that its share of funding the design and construction of any future capacity expansion effort of the City system is an express condition precedent to the City proceeding with expansion of its system. Payment of this funding share by the MIT is necessitated by the fact that acceptance of MIT flow by the City will consume previously existing capacity, makes such capacity unavailable to the City, and requires subsequent improvements to the City system in order for the City to have and maintain the capacity necessary for the City's own needs and uses. Such funding amounts may be credited against future MIT SDC amounts, if any.

b. The prorata share of City system expansion projects between the MIT and the City shall be determined based on benefit received.

XI. COLLECTION OF FEES, TERMINATION OF SERVICE, AND BREACH OF AGREEMENT

11.1 Collection of Development Charges, User, and Connection Fees.

A. Payment as Condition Precedent. The Agreement is between the MIT and the City and no third parties, even though third parties may be indirectly benefited. As a condition precedent to connection and continued service, the MIT shall pay all necessary development charges and user fees. Additionally the MIT shall apply for any necessary City approvals on behalf of members or property owners within MIT jurisdiction who desire to be connected to the sewer system. The City's issuance of a permit shall be directly conditioned upon completion of those items specified in any particular permit as well as the MIT's payment of the permit fees. The MIT and the City expressly agree that the City shall not be responsible for collecting of SDC's, user charges, permitting fees, or any other moneys of any kind from any other individual or entity.

B. Establishment of Reserve Account for Future System Expansion and Related Costs. The City and MIT shall, upon execution of this Agreement, establish a supplemental reserve account in the amount of Five Hundred Thousand Dollars ($500,000.00) to provide for future funding of anticipated system expansion necessitated on account of increased flows resulting from this Agreement, non-budgeted uses of funds necessitated by natural disasters and other public health reasons, payment of insurance premiums, and any other unpaid charges or fees pertaining to the use of the system or permits pertaining thereto. The City and the MIT shall each contribute Two Hundred Fifty Thousand Dollars ($250,000.00) and the fund shall be maintained at this level with each party replacing the funds which are withdrawn on account of its respective obligations. The fund shall be established in a Restricted Use account of the Sanitary Sewer Fund as designated by the City. The interest accruing thereon, if any, shall be apportioned between the parties in relation to their respective contributions and any such interest and principal remaining at the termination of this Agreement shall be returned to the remitter of such funds upon such termination and settlement of all claims and disputes pertaining to this Agreement. The City shall, upon consultation

with the MIT, be authorized to immediately draw upon and use the funds in the reserve account for the uses and purposes herein mentioned. The City shall account to the MIT for all such funds used. Nothing contained herein shall derogate from the need of the MIT to pay in advance as a condition precedent for the City's performance under other provisions of this Agreement.

11.2 **MIT's Right to Terminate Agreement.** The MIT shall have the right to terminate the discharge of sewage from their sewage system to the City's at any time for any reason, or no reason whatsoever, by providing the City with a minimum of five (5) years' written notice prior to termination of such discharge. The City agrees to terminate this Agreement with the MIT at the date noted upon said written notice. Monetary and other obligations owed by the MIT to the City on the date of termination shall survive.

11.3 **City's Right to Terminate Agreement.** The City shall have the right to terminate this Agreement at any time for any reason, or no reason whatsoever, by providing the MIT with a minimum of five (5) years' written notice prior to termination. The City shall also have the right to immediately terminate this Agreement for any reason constituting a material breach. In addition to those breaches defined by law, the City and the MIT expressly agree that a material breach justifying the City to immediately terminate service shall include, but not be limited to, the non-payment of SDC's or user fees, failure of the MIT to provide proof of insurance required herein, exceeding the number of type of sewer connections allowed under this Agreement, discharge of non-domestic sewage into the system, and/or failure of MIT to honor easements, and/or failure to fund the reserve account specified herein.

11.4 **Right to Rely upon Notice of Termination.** As between the City and the MIT, in the event that one party, hereinafter referred to as the "Transmitting Party," sends the other party a notice to terminate this Agreement, the party receiving such notice, hereinafter referred to as the "Receiving Party," shall have a right to rely upon such notice. Absent prior written agreement to the contrary, the Transmitting Party shall not be allowed to revoke its notice of intent to terminate this Agreement or to otherwise keep this Agreement in full force and effect beyond the termination date specified in the notice. This provision shall be effective regardless of whether or not the Transmitting Party actually changes its position, or the Receiving Party otherwise relies in any material manner upon the Transmitting Party's notice of termination.

XII. DISPUTE RESOLUTION AND LIMITED WAIVER OF SOVEREIGN IMMUNITY

12.1 **Dispute Resolution - Mediation.** In the event the MIT and the City are engaged in a dispute which relates to this Agreement or any other issue arising relating to sanitary sewer, and they are unable to resolve said dispute within ninety (90) days, either party may request mediation of any dispute, in any manner agreed upon by the parties.

a. Mediation shall be commenced by the party requesting it notifying the other party in writing of its request to mediate a dispute arising between the parties which relate to sanitary sewer and sewer related services. If the parties agree to enter into mediation within 20 days from such request the matter shall be deemed stayed and the arbitration clause continued herein shall not be put into effect. Mediation shall continue for no more than one hundred twenty (120) days at which point the mediation shall be deemed failed unless the parties have reached an agreement and have had such agreement approved by the governing bodies of each respective party and, if applicable, the Bureau of Indian Affairs. If such agreement is not approved by the governing bodies of each respective party or is not enforceable in the United States District Court for the Western District of Washington, the mediation shall be deemed failed and the unresolved issue shall be submitted to binding arbitration as set forth herein.

b. In the event the parties do not reach an agreement to mediate within twenty (20) days of receipt of the notice requesting mediation by the non-requesting party, the matter shall be submitted to binding arbitration as set forth herein.

c. Each party shall bear its own costs of mediation.

12.2 **Arbitration.** Any controversy or claim arising out of or relating to this Agreement, or the breach thereof, shall be settled by arbitration administered by the American Arbitration Association in accordance with its applicable rules. Judgment on the decision rendered by the arbitrator may be entered into the United States District Court for the Western District of Washington. Each party shall bear its own costs of arbitration.

12.3 **Limited Waiver of Sovereign Immunity and Consent to Jurisdiction of Federal Court.** The MIT hereby waives its sovereign immunity and consents to the jurisdiction of the United States District Court for the Western District of Washington concerning disputes regarding the interpretation of this Agreement and the enforcement of any rights hereunder, including collection of any SDC's, User Fees, or other obligations or liabilities, in law or in equity, pertaining to hold harmless provisions of this Agreement. Such waiver of Sovereign Immunity and Consent to jurisdiction shall apply to no other court. This Limited Waiver of Sovereign Immunity and Consent to Jurisdiction has been specifically negotiated by the parties and decision of the City to extend sanitary sewer service to the MIT and a portion of the MIT's payments hereunder are expressly made the consideration for this Limited Waiver and Consent to Jurisdiction.

12.4 **Disclaimer of MIT Tribal Court Jurisdiction.** The MIT agrees that the MIT Tribal Court has no jurisdiction over the force, effect, and interpretation of this Agreement, nor the resolution of disputes which pertain to its implementation. The MIT further agrees that it has no authority to submit the City to the jurisdiction of the MIT Tribal Court with regard to any sewer-related matters or disputes which may arise between the parties.

XIII. FEE AND CHARGES PAYMENTS

13.1 The City shall bill the MIT on a monthly basis for any fees or charges as determined in Articles II, III, and IV of this Agreement. The MIT shall have thirty (30) days to provide payment of the amount to the City from the date of bill issuance.

13.2 In the event that any payments for a sewer bill due under this Agreement shall remain unpaid in excess of the thirty (30) days from the date of issuance, then the bill shall be delinquent. In the event that a bill becomes delinquent, the City shall give the MIT fifteen (15) days' notice of its intent to enforce collection of said bill. A bill which has been properly addressed and deposited in the United States Postal Service shall be deemed to be presented to the MIT for payment.

13.3 If the MIT believes that the City's bill for fees or charges is in error, the MIT shall notify the City of the error no later than fifteen (15) days following the date of bill issuance, accompanied by any supporting documents. Within ten (10) days thereafter, the City and MIT shall meet to attempt to resolve the dispute. If the dispute cannot be resolved

informally, then the parties shall proceed pursuant to Article XII (Dispute Resolution). In any event, the MIT shall pay any uncontested portion of the bill within thirty (30) days after date of issuance. The MIT shall also continue to pay uncontested subsequent monthly bills as provided in this Section.

13.4 If the bill remains unpaid fifteen (15) days following the City's notice of intent to enforce collection, then the City may at its discretion discontinue service to the MIT; provided that the MIT has not provided notice to the City pursuant to Paragraph 12.1. If the MIT has given such notice, the City shall have the authority to discontinue service for failure to pay only in the event that the MIT has not paid the uncontested portion of the bill.

13.5 If the billing dispute is resolved in favor of the City pursuant to Article XII (Dispute Resolution), and the bill remains unpaid for five working days thereafter, the City may at its discretion discontinue service to the MIT unless otherwise specified within the dispute resolution.

XIV. CHANGES TO RATES AND CHARGES

The City's and/or Metro's user fee rate structure and charges for the MIT shall be changed only at such times as the City and/or Metro adjusts its rates and charges through established procedures for all other users.

XV. HOLD HARMLESS AND INDEMNIFICATION

The MIT agrees to indemnify and hold harmless City, and its agents and employees, from and against all claims, damages, losses, and expenses, including reasonable attorneys' fees, which originate from events which occur on MIT owned or controlled land or facilities including, but not being limited to, sanitary sewer backups, floods, spillage, property damage, personal injury, and other types of sewage contamination, except that this indemnification shall not apply to the sole negligent or intentional acts of the City and its agents and employees.

XVI. PERFORMANCE OF AGREEMENT

Each party agrees that it will execute any and all instruments, documents and resolutions or ordinances necessary to give effect to the terms of this Agreement. Furthermore, the City shall have access at reasonable times and on reasonable notice to inspect the MIT's sanitary sewer system and related

facilities for the purpose of verification of the number of hook ups, type of discharge, and operation levels which constitute the basis of the MIT's obligations to the City on account of fees and charges.

XVI. AMENDMENT OF THIS AGREEMENT

This Agreement may be modified only if such modifications are written and are approved by written resolutions adopted jointly by the Auburn City Council, the MIT Tribal Council, and the BIA.

XVII. CONSTRUCTION AND INTERPRETATION.

This document has been mutually negotiated between the parties. No adverse inference or ambiguity shall be construed against the party preparing this document for signature. No waiver by either party of any term or condition of this Agreement shall be deemed or construed to be a waiver of any other term or condition, nor shall a waiver of any breach be deemed to constitute a waiver of any subsequent breach, whether of the same or a different portion of this Agreement.

XVIII. TERM OF AGREEMENT.

The initial Term of this Agreement shall be fifty (50) years from the date that the parties executed this Agreement unless terminated earlier pursuant to Section XI of this Agreement. This Agreement shall be automatically renewed for an additional term of fifty (50) years (without any action required by either party), provided that either party may decline to renew the Agreement by notifying the other party by written notice at least five (5) years prior to the end of the initial Term of this Agreement.

IN WITNESS TO THE TERMS OF THIS AGREEMENT, the parties hereto have subscribed their names:

MUCKLESHOOT INDIAN TRIBE

John Daniels Jr.

~~Virginia Cross~~, Chairperson,
Muckleshoot Tribal Council
Date: 5-6-97

Consented to, Agreed and Approved as to Form:

United States Department of Interior

Bureau of Indian Affairs
Accommodation Approval

BY: Jill A. Black MAY 20 1997

Its: Superintendent, Puget Sound Agency Date: _____

Approved as to Form:

N/A
Tribal Attorney

CITY OF AUBURN

BY: Charles A. Booth
CHARLES A. BOOTH,
MAYOR

ATTEST:

Robin Wohlhueter
Robin Wohlhueter,
City Clerk

APPROVED AS TO FORM:

Michael Reynolds
Mike J. Reynolds,
City Attorney

RESOLUTION NO. 3502

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN INTERLOCAL AGREEMENT BETWEEN THE CITY OF AUBURN AND THE MUCKLESHOOT INDIAN TRIBE FOR THE OPERATION OF A TEMPORARY SEWAGE LIFT STATION.

WHEREAS, the Muckleshoot Indian Tribe (Tribe), and the City of Auburn (Auburn) are authorized to enter into this Agreement under the authority of their respective enabling legislation and under the authority of Chapter 39.34 RCW, the Interlocal Cooperation Act; and

WHEREAS, the parties desire clarification on the ownership, the maintenance, and the operational responsibilities for a lift station serving the Swan Flats development; and

WHEREAS, it is in the public interest for the parties herein to enter into a sanitary sewer agreement for the operation of a sanitary sewer lift station to facilitate service from the Swan Flats plat.

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. Pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and the Tribe have legal authority to cooperate with other localities on the basis of mutual advantage and provision of services.

Section 2. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute the Interlocal Agreement between Auburn and the Tribe with minor administrative changes if required. A copy of said Agreement is attached hereto, denominated as Exhibit "A" and made a part hereof as though set forth in full herein.

Section 3. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 4. This resolution shall be in full force and effect upon passage and signatures hereon.

DATED this 5th day of August, 2002.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Held,
City Attorney



20030714002726
PACIFIC NW TIT IAG 26.00
PAGE 001 OF 008
07/14/2003 15:21
KING COUNTY, WA

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Interlocal Agreement (RES 3502) Sanitary Sewer – Swan Flats

3/26 PNLT
W6179-12

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
1. Muckleshoot Indian Tribe

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number

N/A

☐ Assessor Tax # not yet assigned

EXHIBIT "A"

Interlocal Agreement between the Muckleshoot Indian Tribe and the City of Auburn

(Sanitary Sewer Service for Swan Flats)

THIS INTERLOCAL AGREEMENT made and entered into, pursuant to the interlocal Cooperation Act, chapter 39.34 of Revised Code of Washington, on the 5th day of, August, 2002, by and between the CITY OF AUBURN, a municipal corporation of the State of Washington (hereinafter referred to as "Auburn"), and the MUCKLESHOOT INDIAN TRIBE, a federally recognized Indian Tribe located upon the Muckleshoot Indian Reservation (hereinafter referred to as "Tribe").

WITNESSETH:

WHEREAS, the Tribe has purchased the single-family housing plat known as Swan Flats for the construction of single-family homes; and

WHEREAS, a temporary, private sewage lift station is established to facilitate the conveyance of the Swan Flats' wastewater into Auburn's public sanitary sewer system; and

WHEREAS, the lift station required by the Swan Flats plat for sanitary sewer services shall be owned, maintained, and operated by the Tribe; and

WHEREAS, once improvements have been made to the public sanitary sewer system located along Academy Drive to facilitate gravity wastewater flow from Swan Flats to the improved sewer line then Auburn shall bypass the private lift station and establish the piping required to connect Swan Flats plat with Auburn's sewer system without the use of pumps; and

WHEREAS, the property owners' responsibility to own, operate, and maintain the sanitary sewer lift station servicing the Swan Flats plat was imposed upon the plat and is not being imposed upon the Tribe as a special condition; and

WHEREAS, the Tribe and Auburn are willing to enter into this agreement which clarifies the maintenance responsibilities for the existing lift station servicing the Swan Flats plat; and

WHEREAS, the Tribe has purchased a majority of the properties within the Swan Flats plat and desires to be the responsible party for the operation and maintenance of the private sanitary sewer lift station in lieu of a homeowners association.

NOW, THEREFORE in consideration of their mutual covenants, conditions, and promises, THE PARTIES HERETO DO HEREBY AGREE as follows:

1. CONDITIONS

A. Auburn shall install sanitary sewer pipe to bypass the Swan Flats lift station concurrent with any sanitary sewer improvements done to the existing public sewer line along Academy Drive that would facilitate gravity sewer service from Swan Flats.

B. The Tribe shall own, operate, and maintain the lift station established upon Lot 1 of the Swan Flats plat until the gravity facilities are constructed and the pump station is no longer required for service.

C. The Muckleshoot Indian Tribe shall post an all weather sign with a minimum letter height of one inch that details the appropriate person and/or agency and phone number of who to contact if the sewer lift station requires service. The current contact information established by the Muckleshoot Indian Tribe for the servicing of the lift station is as follows:

DEWEY MILLER
Muckleshoot Indian Tribe
Public Works
360-802-4727

After hour phone numbers and emergency contacts shall be mentioned on the sign and supplied to Auburn 20 days prior to the effective date of this Agreement.

D. If Tribal response is delayed and the City is contacted, and a health hazard is created due to the failure of the lift station then the City may respond to contain and possibly correct the health situation until Tribal response is on-site. The Tribe agrees to reimburse the City for reasonable expenses for time and materials related to any such response.

E. No connections shall be made to Auburn's public sewer system without first obtaining the appropriate permits from the City as established within Auburn City Code 13.20.

F. Upon installation of the sanitary sewer bypass of the Swan Flats lift station by the City, the Tribe shall cap the existing eight-inch PVC sewer pipe, conveying wastewater from the City's sewer system to the lift station, at the property line to lot one. The tribe may request that the City do this work at the time of the diversion at no cost to the Tribe. After connection to the City gravity sewer system the Tribe may dispose of or retain the lift station as it deems appropriate.

2. INSURANCE

The Tribe shall maintain, at a minimum, a two million liability insurance policy as of the effective date of this agreement; the Tribe shall continue such insurance coverage during the term of this agreement unless otherwise agreed upon by the parties.

3. INDEMNIFICATION

A. The Tribe agrees to indemnify and hold the City and its agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, loses, damages or costs, of whatsoever kind or nature, brought against the City arising out of, in connection with, or incident to the execution of this agreement and/or the Tribe's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of the City, its agents, employees, and/or officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of the Tribe; and provided further, that nothing herein shall require the Tribe to hold harmless or defend the City, its agents, employees, and/or officers, from any claims arising from the sole negligence of the City, its agents, employees, and/or officers. No liability shall attach to the City by reason of entering this agreement except as expressly provided herein.

B. The City agrees to indemnify and hold the Tribe and its agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, loses, damages or costs, of whatsoever king or nature, brought against the Tribe arising out of, in connection with, or incident to the execution of this agreement and/or the City's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of the Tribe, its agents, employees, and/or officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of the City; and provided further, that nothing herein shall require the City to hold harmless or defend the Tribe, its agents, employees, and/or officers, from any claims arising from the sole negligence of the Tribe, its agents, employees, and/or officers. No liability shall attach to the Tribe by reason of entering this agreement except as expressly provided herein.

4. COMPLIANCE WITH REGULATIONS AND LAWS

The parties shall comply with all applicable rules and regulations pertaining to them in connection with the matters covered herein.

5. DISPUTE RESOLUTION AND LIMITED WAVIER OF SOVEREIGN IMMUNITY

A. In the event the Tribe and the City are engaged in a dispute, which relates to this Agreement, and they are unable to resolve said dispute within ninety (90)

days, either party may request mediation of any dispute in any manner agreed upon by the parties.

a. Mediation shall be commenced by the party requesting it by notifying the other party in writing of its request to mediate a dispute arising between the parties which relate to sanitary sewer and sewer related services to Swan Flats. If the parties agree to enter into mediation within twenty (20) days from such request the matter shall be deemed stayed and the arbitration clause continued herein shall not be put into effect. Mediation shall continue for no more than one hundred and twenty (120) days at which point the mediation shall be deemed failed unless the parties have reached an agreement and have had such agreement approved by the governing bodies. If such agreement is not approved by the governing bodies of each respective party or is not enforceable in the United States District Court for the Western District of Washington, the Mediation shall be deemed failed and the unresolved issue shall be submitted to binding arbitration as set forth herein.

b. In the event the parties do not reach an agreement to mediate within twenty (20) days of receipt of the notice requesting mediation by the non-requesting party, the matter shall be submitted to binding arbitration as set forth herein.

c. Each party shall bear its own cost of mediation.

B. Any controversy or claim arising out of or relating to this agreement, or the breach thereof, shall be settled by arbitration administered by the American Arbitration Association in accordance with its applicable rules. Judgment on the decision rendered by the arbitrator may be entered into the United States District Court for the Western District of Washington. Each party shall bear its own costs of arbitration.

C. The Tribe hereby waives its sovereign immunity and consents to the jurisdiction of the United States District Court for the Western District of Washington concerning disputed regarding the interpretation of this Agreement and the enforcement of any rights hereunder, including other obligations or liabilities, in law or in equity, pertaining to immunity provisions of this Agreement. Such waiver of Sovereign Immunity and Consent to jurisdiction shall apply to no other court.

D. The Tribe agrees that the Muckleshoot Indian Tribal Court has no jurisdiction over the force, effect, and interpretation of this Agreement, nor the resolution of disputes that pertain to its implementation. The Tribe further agrees that it has no authority to submit the City to the jurisdiction of the Muckleshoot Indian Tribal Court with regards to any sewer-related matters or disputes which may arise between the parties.

6. ASSIGNMENT

The parties shall not assign this agreement or any interest, obligation or duty therein without the express written consent of the other party.

7. ATTORNEY'S FEES

If either party shall be required to bring any action to enforce any provision of this Agreement, or shall be required to defend any action brought by the other party with respect to this Agreement, and in the further event that one party shall substantially prevail in such action, the losing party shall, in addition to all other payments required therein, pay all of the prevailing party's reasonable costs in connection with such action, including such sums as the court or courts may adjudge reasonable as attorney's fees in trial court and in appellate courts.

8. NOTICES

All notices between the two agencies hereunder may be delivered or mailed. If mailed, they shall be sent to the following respective addresses:

The Muckleshoot Indian Tribe
Thomas Reber
Muckleshoot Indian Tribe
Assistant Tribal Operations Manager
Community Development
40320 Auburn Enumclaw Road
Auburn, WA 98092
Phone # 360.802.1922
Fax # 360.802.4727

The City of Auburn
Jeff Roscoe
Sanitary Sewer Engineer
Auburn Public Works
Department
25 West Main Street
Auburn WA 98001-4998
Phone # 253.931.4008
FAX # 253.931.3053

or to such other representative addresses as either party may hereafter from time to time designate in writing. All notices and payments mailed by regular post (including first class) shall be deemed to have been given on the second business day following the date of mailing, if properly mailed and addressed. Notices and payments sent by certified or registered mail shall be deemed to have been given on the day next following the date of mailing, if properly mailed and addressed. For all types of mail, the postmark affixed by the United States Postal Service shall be conclusive evidence of the date of mailing.

9. NONDISCRIMINATION

Each of the parties, for itself, its heirs, personal representatives, successors in interest, and assigns, as part of the consideration hereof, does hereby covenant and agree that it will comply with applicable statutes, executive orders and such rules as are promulgated to assure that no person shall on the grounds of race, creed, color, national origin, sex, age, or the presence of any sensory, mental or physical handicap be discriminated against or receive discriminatory treatment by reason thereof.

10. INTEGRATION.

This agreement constitutes the entire agreement of the parties regarding the subject matter hereof, and there are no other representations or oral agreements

other than those listed herein, which vary the terms of this agreement. Future agreements may occur between the parties to transfer additional or future service areas by mutual agreement.

11. OBLIGATION INTACT.

Nothing herein shall be construed to alter the rights, responsibilities, liabilities, or obligations of either the Tribe or the City regarding provision of sewer service, except as specifically set forth herein.

12. MISCELLANEOUS

A. The captions in this agreement are for convenience only and do not in any way limit or amplify the provisions of this agreement.

B. The duration of this agreement shall be until the sanitary sewer improvements are established that will allow the City to extend a gravity sewer main to bypass the private lift station or for the period of time it reasonably takes for the performance of parties as completed herein.

C. The purpose of this agreement is to clarify the Tribe's role for the maintenance and operation of the private lift station together with the City's role in the establishment of a gravity sewer system to serve Swan Flats.

D. The performances of the duties of the parties provided hereby shall be done in accordance with standard operating procedures and customary practices of the parties.

E. No provision of this agreement shall relieve either party of its public agency obligations and/or responsibilities imposed by law.

F. If any term, provision, condition or portion of this Agreement is held to be invalid, or unenforceable by a final decision of any court having jurisdiction on the matter, the remaining of this Agreement or the application of such term or provision to persons or circumstances other then those as to which it is held invalid or unenforceable shall not be affected thereby and shall continue in full force and effect.

G. No modifications or amendments of this agreement shall be valid or effective unless evidenced in writing and signed by both parties.

IN WITNESS WHEREOF the parties hereto have executed this agreement as of the day and year first above written.

MUCKLESHOOT INDIAN TRIBE

PASSED by Resolution No. **02-235** of the Muckleshoot Indian Tribe, at its special meeting held on the 2nd day of August, 2002.

By:

11/6/02

JOHN DANIELS, JR., CHAIR — Date

CITY OF AUBURN

PASSED by Resolution No. **3502** of the City of Auburn, Washington, at its regular meeting held on the 5th day of August, 2002.

By:

11/2/02

PETER B. LEWIS, MAYOR — Date

Attest:

Danielle Daskam, City Clerk

Approved as to form:

Daniel B. Heid, City Attorney

APPENDIX A6

LAKEHAVEN UTILITY DISTRICT

- Sewer Service Boundaries (Resolutions 3651, 3824, and 2005-1038)
- Sewer District's Sanitary Sewer Service Area (Resolution 5353)

RESOLUTION NO. 3651

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE AN INTERLOCAL AGREEMENT ESTABLISHING SANITARY SEWER SERVICE BOUNDARIES BETWEEN THE LAKEHAVEN UTILITY DISTRICT AND THE CITY OF AUBURN

WHEREAS, pursuant to RCW 35.A.11.040, Auburn has the legal authority to exercise its powers and perform any of its functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn has the legal authority to cooperate with other localities and utilities on the basis of mutual advantage and the efficient provision of municipal services; and

WHEREAS, pursuant to RCW 35A.21.150, Auburn has the legal authority to maintain a sewerage system; and

WHEREAS, pursuant to RCW 57.08.044, Lakehaven has the legal authority, whether by contract or otherwise, to provide sewer service to property owners in areas outside existing district boundaries; and

WHEREAS, the parties recognize the responsibility of public sanitary sewer utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, Lakehaven's 1999 Draft Comprehensive Wastewater System Plan notes a region within Auburn's Potential Annexation Area (hereinafter referred to as "Auburn's PAA") to which Lakehaven intends to provide sanitary sewer service; and

WHEREAS, Lakehaven is currently providing sanitary sewer service within Auburn's PAA; and

WHEREAS, portions of the Lakehaven sanitary sewer system have been sized and are situated so as to be capable of affording sewer service to a portion of Auburn's PAA; and

WHEREAS, Auburn has evaluated sewer service issues and determined that it is not cost feasible to provide direct sewer service within its PAA adjacent to Lakehaven's sanitary sewer infrastructure; and

WHEREAS, Lakehaven's delivery of sewer service to these areas will provide the maximum efficiency in the use of existing and future facilities and sanitary sewer planning;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor is hereby authorized to execute an Interlocal Agreement Establishing Sanitary Sewer Service Boundaries between the Lakehaven Utility District and the City of Auburn in substantial conformity with

the agreement attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. This resolution shall be in full force and effect upon passage and signatures hereon.

DATED this 20th day of January, 2004.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney



20041129000249
PACIFIC NW TIT AG 31.00
PAGE001 OF 013
11/29/2004 10:09
KING COUNTY, WA

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Interlocal Agreement (RES 3651)

13/31 PMNT
W9278-12

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
1. Lakehaven Utility District

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number
N/A

☐ Assessor Tax # not yet assigned

EXHIBIT "A"

LAKEHAVEN UTILITY DISTRICT and CITY OF AUBURN INTERLOCAL AGREEMENT ESTABLISHING SANITARY SEWER SERVICE BOUNDARIES

THIS AGREEMENT, made and entered into this 2nd day of February, 2004, by and between **LAKEHAVEN UTILITY DISTRICT**, a Washington municipal corporation (hereinafter referred to as "Lakehaven"), and the **CITY OF AUBURN**, a Washington municipal corporation, (hereinafter referred to as "Auburn"), both being duly organized and existing under and by virtue of the laws of the State of Washington,

WITNESSETH:

WHEREAS, pursuant to RCW 35.A.11.040, Auburn has the legal authority to exercise its powers and perform any of its functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn has the legal authority to cooperate with other localities and utilities on the basis of mutual advantage and the efficient provision of municipal services; and

WHEREAS, pursuant to RCW 35A.21.150, Auburn has the legal authority to maintain a sewerage system; and

WHEREAS, pursuant to RCW 57.08.005(5) and 57.08.044, Lakehaven, as a special purpose water/sewer district, has the legal authority, whether by contract or otherwise, to provide sewer service to property owners in areas outside existing district boundaries; and

WHEREAS, the parties recognize the responsibility of public sanitary sewer utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, Lakehaven's adopted and approved 1999 Comprehensive Wastewater System Plan and its Amendment No. 1 notes a region within Auburn's Potential Annexation Area (hereinafter referred to as "Auburn's PAA") to which Lakehaven intends to provide sanitary sewer service; and

WHEREAS, Lakehaven is currently providing sanitary sewer service within Auburn's PAA; and

WHEREAS, portions of the Lakehaven sanitary sewer system have been sized and are situated so as to be capable of affording sewer service to a portion of Auburn's PAA; and

WHEREAS, Auburn has evaluated sewer service issues and determined that it is not cost feasible to provide direct sewer service within its PAA adjacent to Lakehaven's sanitary sewer infrastructure; and

WHEREAS, Lakehaven's delivery of sewer service to these areas will provide the maximum efficiency in the use of existing and future facilities and sanitary sewer planning;

NOW, THEREFORE:

IT IS HEREBY AGREED by and between the parties hereto as follows:

1. **Sewer Service Area.** The parties have agreed to a mutual sewer service planning boundary as depicted on the maps attached hereto as Attachment 1 and legally described in Attachment 2, which are by this reference incorporated herein. Both parties further agree that, through this designation of the service boundary, Lakehaven shall provide sanitary sewer service to properties mutually within its sanitary sewer service area and Auburn's PAA, also depicted on Attachment 1, in accordance with and subject to the terms and conditions of this Agreement.

2. **Management, Regulation and Control of Sewer System.** Lakehaven shall have the sole responsibility and authority to construct, maintain, manage, conduct and operate its sewerage system within the area mutually designated as Lakehaven's sanitary sewer service area and Auburn's PAA as depicted in Attachment 1, together with any additions, extensions and betterments thereto. Lakehaven shall also be responsible for obtaining all necessary governmental franchises, approvals, easements and permits for the installation of the sewerage system and improvements to be located therein.

3. **Service Rates and Connection Charges.**

   a) **Permit Required.** No connection shall be made to Lakehaven's sanitary sewer system unless the property owner first pays the associated fees and submits the proper information to obtain a Lakehaven sanitary sewer connection permit, and otherwise meets the requirements for service as provided in duly adopted Resolutions of Lakehaven. The connection shall be subject to inspection for compliance with Lakehaven's standards as adopted at the time the connection is made.

b) **Rates.** The rates charged to the sanitary sewer customer by Lakehaven mutually within Lakehaven's sanitary sewer service area and Auburn's PAA, as depicted on Attachment 1, shall be fixed, altered, regulated and otherwise controlled by Lakehaven pursuant to the limitation on such authority as set forth in Chapter 57 RCW, or other applicable laws.

4. **Sewer Availability Certificates.** Lakehaven shall continue to issue sewer availability certificates for property located both within its sanitary sewer service area and Auburn's PAA, as depicted in Attachment 1.

5. **Future Annexations.** Each of the parties agree that Lakehaven shall provide sanitary sewer service to the area depicted in Attachment 1 without regard to the present corporate boundaries of the parties and without regard to future corporate boundaries as they may be periodically altered through annexation.

6. **Lakehaven Comprehensive Sewer Planning.** The terms of this Agreement will be included as an amendment to Lakehaven's Comprehensive Wastewater System Plan. Lakehaven will submit to Auburn all Comprehensive Wastewater System Plans and amendments thereto involving areas and/or system improvements within Auburn's PAA.

7. **Auburn Comprehensive Sewer Planning.** The terms of this Agreement will be included as an amendment to Auburn's Comprehensive Sewerage Plan. Auburn will submit to Lakehaven all Comprehensive Sewerage System Plans and amendments thereto involving area and/or system improvements within Auburn's PAA.

8. **Reliance.** Each party hereto acknowledges that the terms hereof will be relied upon by the other in its comprehensive planning to meet the needs of the service area designated herein.

9. **Liability.** The parties agree that this Agreement shall not be a source of liability for either party for any failure or interruption of service in the service area of the other party, as designated herein.

10. **Government Approvals.** Auburn will give notice of the adoption of this Agreement to Metropolitan/King County, to the Department of Ecology, to the Department of Health, and to any other agency with jurisdiction over, or other interest in, the terms hereof, and the parties shall cooperate and assist each other in all reasonable manner in procuring any necessary approvals hereof by those agencies.

11. **Boundary Review Board.** In the event that implementation of the terms hereof results in permanent sewer service to areas that will be outside the respective service boundaries of Lakehaven or Auburn, the parties will, at the time of such service, jointly seek King County Boundary Review Board approval of such service in accordance with RCW 36.93.090.

12. Service Amendments. Any changes to the service areas described herein shall be by mutual written agreement. Each party, through Auburn's Director of Public Works and Lakehaven's General Manager respectively, may give written permission to the other, on a case-by-case basis, to provide service to the other party's adjacent or nearby sewer service area based upon considerations of economic efficiency. Such written permission(s) shall be filed with this agreement for future reference.

13. Alteration, Amendment or Modification. Any alterations, amendments or modifications to this agreement shall be by mutual consent of the parties.

14. Indemnification and Hold Harmless. Each Party hereto agrees to protect, defend, and indemnify the other Party, its officers, officials, employees and agents from any and all cost, claims judgements and/or awards of damages, arising out of or in any way resulting from the Party's default, failure of performance, or negligent conduct associated with this agreement, by the Party, its employees, subcontractors or agents. Each Party agrees that its obligations under this provision extend to any claim, demand, and/or cause of action brought by or on behalf of any of its employees, or agents. The foregoing indemnity is specifically and expressly intended to constitute a waiver of each Party's immunity under Washington's Industrial Insurance Act, RCW Title 51, as respects the other Party only, and only to the extent necessary to provide each Party with a full and complete indemnity of claims made by the other Party's employees. The Parties acknowledge that these provisions were specifically negotiated and agreed upon by them.

15. Miscellaneous. Auburn and Lakehaven agree that an area in the vicinity of 51st Avenue South and South 320th Street and depicted in Attachment 3 is currently being served by Auburn via temporary pump station and may in the future be more efficiently served by a gravity conveyance system discharging to Lakehaven's facilities. This section does not obligate Lakehaven to accept any sanitary sewer facilities in said area. This section is intended only to make Lakehaven aware of Auburn's desire to eventually adjust the sanitary sewer service boundaries to allow Lakehaven to provide sanitary sewer service to said area, and for Lakehaven to plan for this action. Auburn and Lakehaven will abide by Section 12 of this Agreement when adjusting sanitary sewer service boundaries.

16. Integration. This agreement constitutes the entire agreement of the parties regarding the subject matter hereof, and there are no other representations or oral agreements other than those listed herein, which vary the terms of this agreement. Future agreements may occur between the parties to transfer additional or future service areas by mutual agreement.

17. Obligation Intact. Nothing herein shall be construed to alter the rights, responsibilities, liabilities, or obligations of either Lakehaven or Auburn regarding provision of sewer service, except as specifically set forth herein.

LAKEHAVEN UTILITY DISTRICT

Approved by Resolution No. 2004-1006 of the Lakehaven Utility District, Federal Way, Washington, at its regular meeting held on the 8th day of January, 2004.

By:

Donald T. Perry, General Manager
Lakehaven Utility District

Approved as to form:

Steven H. Pritchett, General Counsel
Lakehaven Utility District

CITY OF AUBURN

Approved by Resolution No. **3651** of the City of Auburn, Washington, at its regular meeting held on the 20th day of January, 2004.

By:

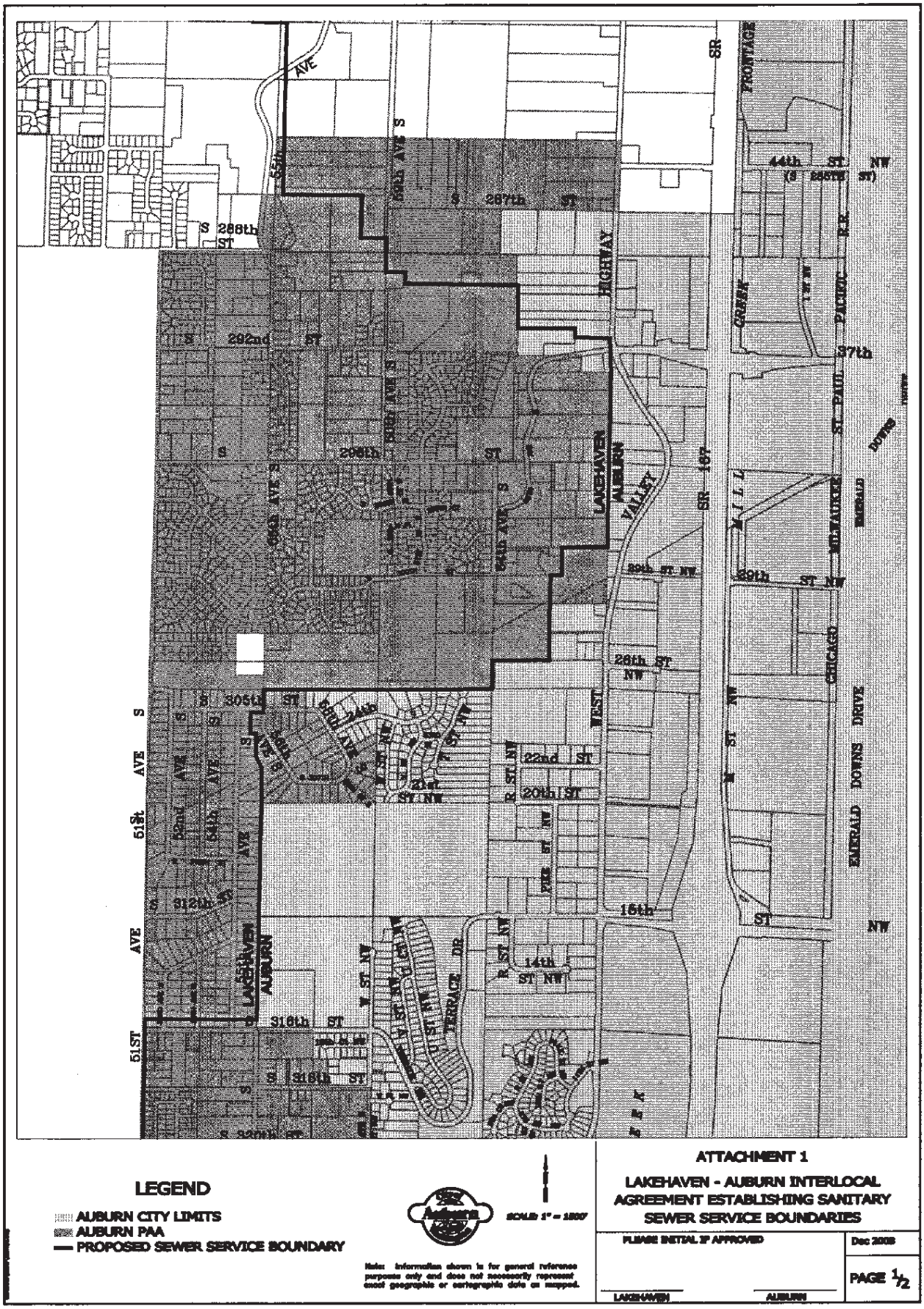
Peter B. Lewis, Mayor
City of Auburn

Attest:

Danielle Daskam, City Clerk

Approved as to form:

Daniel B. Heid, City Attorney



LEGEND

- AUBURN CITY LIMITS
- AUBURN PAA
- PROPOSED SEWER SERVICE BOUNDARY

SCALE 1" = 1800'

Note: Information shown is for general reference purposes only and does not necessarily represent exact geographic or cartographic data as mapped.

ATTACHMENT 1

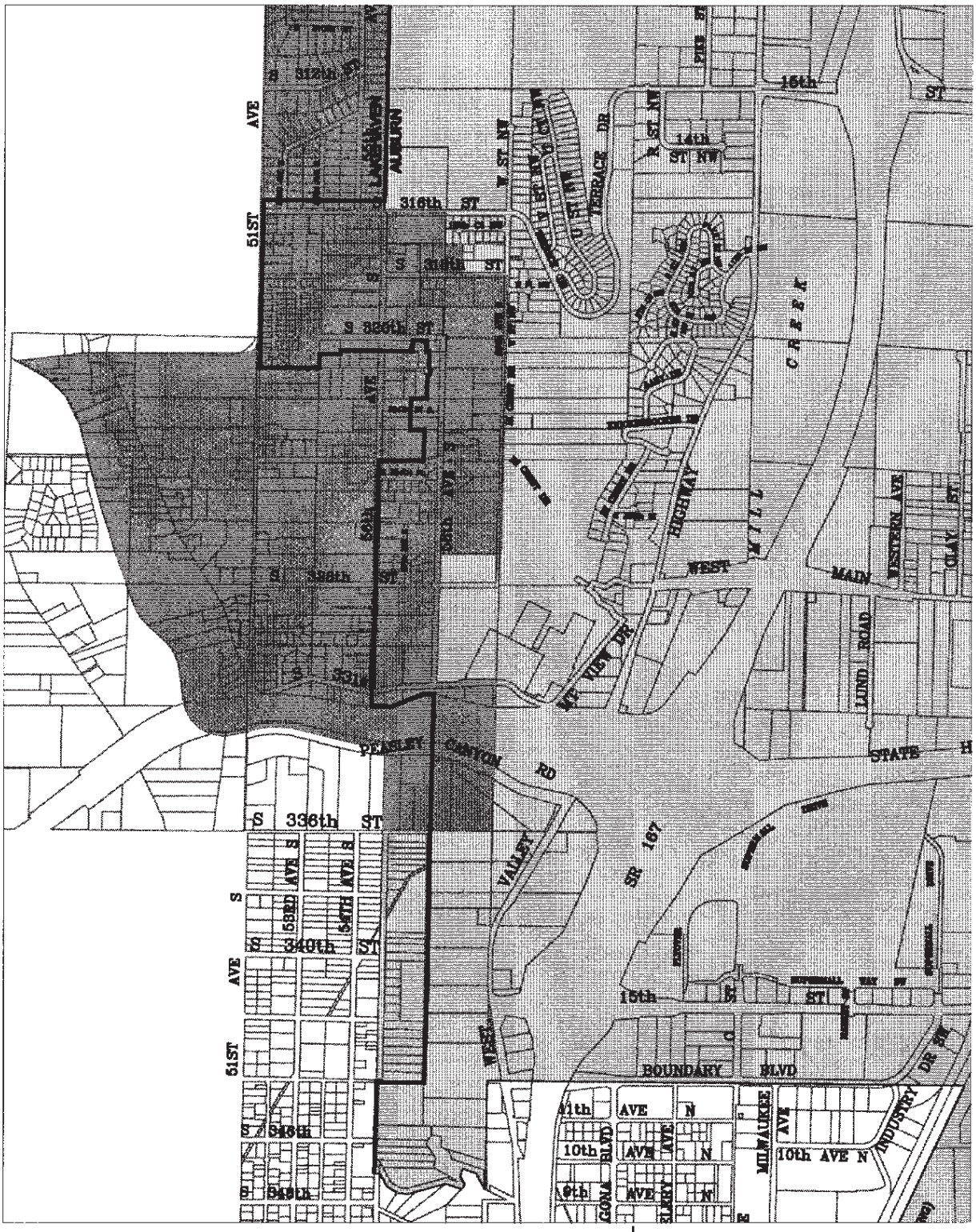
LAKEHAVEN - AUBURN INTERLOCAL AGREEMENT ESTABLISHING SANITARY SEWER SERVICE BOUNDARIES

PLEASE INITIAL IF APPROVED

Dec 2008

LAKEHAVEN _____ AUBURN _____

PAGE 1/2



LEGEND

- AUBURN CITY LIMITS
- AUBURN PAA
- PROPOSED SEWER SERVICE BOUNDARY

SCALE 1" = 1500'

Note: Information shown is for general reference purposes only and does not necessarily represent exact geographic or cartographic data as mapped.

ATTACHMENT 1

LAKEHAVEN - AUBURN INTERLOCAL AGREEMENT ESTABLISHING SANITARY SEWER SERVICE BOUNDARIES

PLEASE INITIAL IF APPROVED

LAKEHAVEN _____ AUBURN _____

Dec 2008

PAGE 2/2

Attachment 2

LAKEHAVEN UTILITY DISTRICT and CITY OF AUBURN INTERLOCAL AGREEMENT ESTABLISHING SANITARY SEWER SERVICE BOUNDARIES

BOUNDARY DESCRIPTION

BEGINNING at a point 170 feet east of the Northwest corner of the Southeast quarter of the Southwest quarter of Section 35, Township 22 North, Range 4 East, W.M., in King County, Washington;

THENCE south 662.54 feet, more or less, to the North line of the South half of said subdivision;

THENCE easterly along said North line to a point 300 feet west of the East line of said subdivision;

THENCE south to a point 170 feet north of the South line of said subdivision;

THENCE east 300 feet, more or less, to the East line of said subdivision;

THENCE southerly along said East line to the South line of said Section 35;

THENCE continuing southerly along the West line of the Northeast quarter of Section 2, Township 21 North, Range 4 East, W.M., in King County, Washington, a distance of 221.12 feet;

THENCE easterly, parallel with the North line of said subdivision, 220.20 feet;

THENCE southerly, parallel with the West line of said subdivision, 130 feet;

THENCE easterly, parallel with the North line of said subdivision, 1,304.44 feet;

THENCE southerly, parallel with the West line of said subdivision, 494 feet;

THENCE easterly, parallel with the North line of said subdivision, 680.8 feet;

THENCE southerly, parallel with the West line of said subdivision, 100 feet;

THENCE easterly, parallel with the North line of said subdivision, 428 feet, more or less, to the East line of said subdivision;

THENCE southerly, along said East line to the Northeast corner of the South half of the South half of the Northeast quarter of the Southeast quarter of said Section 2;

THENCE westerly, along the North line of said subdivision, 518.77 feet;

THENCE southerly, parallel with the East line of said subdivision, 328.01 feet;

THENCE westerly, along the South line of said subdivision, 130.02 feet, more or less to the Northeast corner of the West half of the Southeast quarter of the Southeast quarter of said Section 2;

THENCE southerly, along the East line of said subdivision, 964.41 feet;

THENCE westerly, parallel with the North line of said subdivision, 650 feet, more or less, to the East line of the Southwest quarter of the Southeast quarter of said Section 2;

THENCE southerly, along said East line, 328.77 feet, more or less, to the South line of said subdivision;

THENCE westerly, along said South line, to the centerline of 56th Avenue South;

THENCE southerly, along said centerline of 56th Avenue South, to the centerline of South 305th Street in Section 11, Township 21 North, Range 4 East, W.M., in King County, Washington;

THENCE westerly, along said centerline of South 305th Street, to a point of intersection with the northerly projection of the West line of Lot 2, Block 5, Auburn Heights Park Division No. 2, according to the plat thereof recorded in Volume 49, Page 99, records of King County, Washington;

THENCE southerly, 320 feet, more or less, parallel with said West line of Lot 2, to the South line of Lot 4, Block 5, of said plat;

THENCE easterly, along said South line of Lot 4, to the Northwest corner of Lot 5, Block 5 of said plat;

THENCE southerly and southeasterly, along the West lines of Lots 5 and 9, of said plat, to the Northeast corner of Block 7, Auburn Heights Park Division No. 1, according to the plat thereof recorded in Volume 49 of Plats, Page 56, records of King County, Washington;

THENCE southerly, along the East line of Block 7 of said plat, to the Southeast corner of Lot 2, Block 7, of said plat;

THENCE westerly, parallel with the South line of said plat, along the north lines of Lot 19 and Lot 1, Block 6, Lot 15 and Lot 1, Block 5, and Lot 26, Block 4, of said plat, to the centerline of 51st Avenue South;

THENCE southerly, along said centerline of 51st Avenue South, to the Southwest corner of said Section 11;

THENCE continue southerly, along the West line of Section 14, Township 21 North, Range 4 East, W.M., in King County, Washington, 329.57 feet;

THENCE east 30 feet to the Southwest corner of Lot 15, Peasley Ridge, according to the plat thereof recorded in Volume 201, Pages 66-71, records of King County, Washington;

THENCE continue easterly, along the South line of said plat, to the Southeast corner of Tract D Peasley Ridge;

THENCE northerly, along the East line of said Tract D, 150 feet, more or less, to the Northwest corner of Lot 2, King County Short Plat No. 1080026R, as recorded under Recording No. 8106080708, records of King County, Washington;

THENCE easterly, along the North line of said Lot 2, to the West line of Lot 1, King County Short Plat No. 1080027, as recorded under Recording No. 8106080709, records of King County, Washington;

THENCE northerly, along the West line of said Lot 1, to the Northwest corner thereof;

THENCE easterly, along the North lines of Lots 1, 2 and 4, of said short plat, to the Northeast corner of said Lot 4;

THENCE East 60 feet to the West line of Lot 19, West Auburn Five-Acre Tracts, according to the plat thereof recorded in Volume 15, Page 12, records of King County, Washington;

THENCE southerly, along the West line of said Lot 19, 9.43 feet;

THENCE easterly, parallel with the North line of said Lot 19, 294.8 feet;

THENCE northerly, parallel with the West line of said Lot 19, 119.43 feet, more or less, to the South margin of South 320th Street;

THENCE easterly, along said south margin of South 320th Street, 150 feet;

THENCE southerly, parallel with the West line of said Lot 19, 119.43 feet;

THENCE easterly, parallel with the North line of said Lot 19, 9.59 feet;

THENCE southerly, parallel with the West line of said Lot 19, 5 feet;

THENCE easterly, parallel with the North line of said Lot 19, 13.53 feet;

THENCE southerly, parallel with the West line of said Lot 19, 178.866 feet, more or less, to the most Northwesterly corner of Lot 4, King County Short Plat No. 278048, as recorded under Recording No. 8004030782, records of King County, Washington;

THENCE southerly, along the West line of said Lot 4, to the Southwest corner thereof and the North line of Lot 2, King County Short Plat No. 1077053, as recorded under Recording No. 7808100856;

THENCE westerly, along the North line of said Lot 2, to the Northwest corner thereof;

THENCE southerly, along the West lines of Lot 2 and Lot 4 of said short plat, to the North line of Lot 30, West Auburn Five-Acre Tracts, according to the plat thereof recorded in Volume 15, Page 12, records of King County, Washington;

THENCE easterly, along the North line of said Lot 30, 147.35 feet;

THENCE southerly, parallel with the East line of said Lot 30, to the centerline of South 324th Street;

THENCE westerly, along said centerline of South 324th Street, to the centerline of 56th Avenue South;

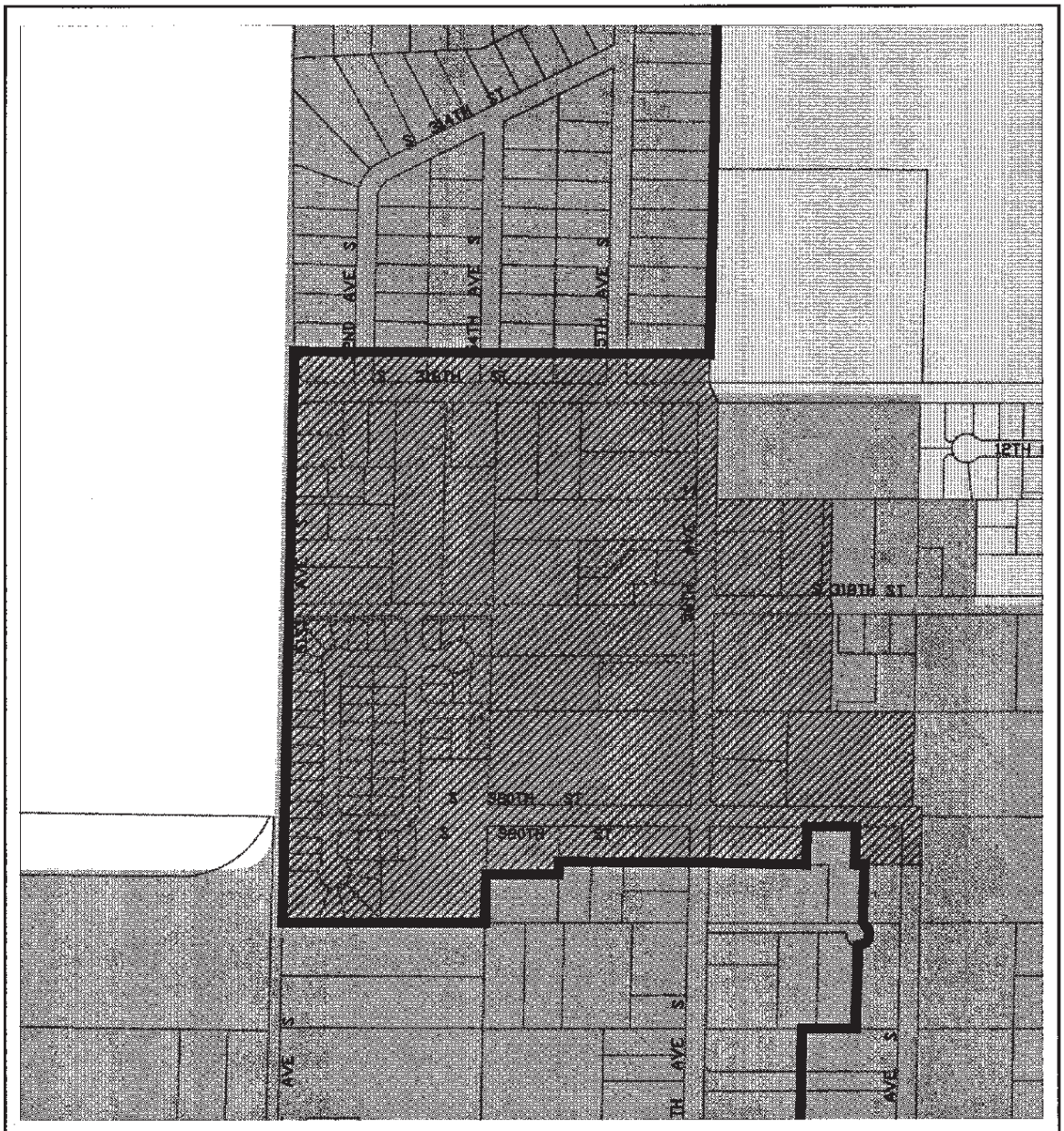
THENCE southerly, along said centerline of 56th Avenue South, to the North margin of State Highway No. 18;

THENCE easterly, along said North margin of State Highway No. 18, to the southerly projection of the centerline of 58th Avenue South;

THENCE southerly, along said centerline of 58th Avenue South, to the centerline of South 344th Street;

THENCE westerly, along said centerline of South 344th Street, to the centerline of 56th Avenue South;

THENCE southerly, along said centerline of 56th Avenue South, to the easterly projection of the South line of Lot 24, Block 27, Jovita Heights, according to the plat thereof recorded in Volume 20 of Plats, Page 12, records of King County, Washington, and the terminus of this boundary description.



LEGEND

- AUBURN SERVICE AREA THAT MAY BE SERVED BY LAKEHAVEN
- PAA
- AUBURN CITY LIMITS

D:\SEWER\LOCEXD.DWG

Attachment 3

Lakehaven - Auburn Interlocal Agreement Establishing Sanitary Sewer Service Boundaries

Dec 2003

PAGE 1 /1

RESOLUTION NO. 3824

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE AN INTERLOCAL AGREEMENT WITH THE LAKEHAVEN UTILITY DISTRICT FOR THE PURPOSE OF PROVIDING SANITARY SEWER SERVICE FROM AUBURN TO PROPERTY LOCATED WITHIN THE LAKEHAVEN UTILITY DISTRICT'S SANITARY SEWER SERVICE AREA

WHEREAS, pursuant to RCW 35A.11.040 Auburn has the legal authority to exercise its powers and perform any of its functions as set forth in RCW 39.34; and

WHEREAS, in January 2004 the Commissioners of the Lakehaven Utility District adopted Resolution No. 2004-1006 authorizing the General Manager to execute an interlocal agreement with Auburn, which agreement was subsequently signed by the City of Auburn as authorized under Auburn Resolution No. 3651; and

WHEREAS, the parties recognize the responsibility of public sanitary sewer utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, a single family residential development (hereinafter referred to as "Jovita Heights-West Hill") has been proposed that lies within the distinct Sanitary Sewer Service Areas of both Auburn and Lakehaven as established and described in the Original Agreement; and

WHEREAS, portions of the Auburn sanitary sewer system have been sized with sufficient wastewater conveyance capacity and are situated so as to be capable of affording sewer service to those portions of Jovita Heights-West Hill that lie within both the Auburn Sanitary Sewer Service Area and the Lakehaven Sanitary Sewer Service Area; and

WHEREAS, portions of the Lakehaven sanitary sewer system have been sized with sufficient wastewater conveyance capacity and are situated so as to be capable of affording sewer service to those portions of Jovita Heights-West Hill that lie within both the Lakehaven Sanitary Sewer Service Area and the Auburn Sanitary Sewer Service Area; and

WHEREAS, the developer of Jovita Heights - West Hill has requested that Auburn provide sanitary sewer service to the entire development to afford maximum efficiency in its use of existing and future facilities; and

WHEREAS, Auburn has evaluated sanitary sewer service issues relative to the developer's request and determined that it is feasible for Auburn to provide sanitary sewer service to the entire development.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor is hereby authorized to execute an Interlocal Agreement with the Lakehaven Utility District in substantial conformity with the

agreement attached hereto, marked as Exhibit "1" and incorporated herein by this reference

Section 2. That the Mayor is authorized to implement such other administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 22nd day of February, 2005.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

EXHIBIT 1

AMENDMENT NO. 1
TO THE LAKEHAVEN UTILITY DISTRICT AND CITY OF AUBURN INTERLOCAL AGREEMENT ESTABLISHING SANITARY SEWER SERVICE BOUNDARIES

THIS AGREEMENT, made and entered into this 22nd day of February, 2005, by and between **LAKEHAVEN UTILITY DISTRICT**, a Washington municipal corporation (hereinafter referred to as "Lakehaven"), and the **CITY OF AUBURN**, a Washington municipal corporation, (hereinafter referred to as "Auburn"), both being duly organized and existing under and by virtue of the laws of the State of Washington, as an amendment to the Interlocal Agreement dated February 2, 2004, between the parties and executed on the 8th day of January, 2004, and the 20th day of January, 2004, respectively (hereinafter referred to as "Original Agreement").

WITNESSETH:

WHEREAS, in January 2004 the Commissioners of the Lakehaven Utility District adopted Resolution No. 2004-1006 authorizing the General Manager to execute an interlocal agreement with Auburn, which agreement was subsequently signed by the City of Auburn as authorized under Auburn Resolution No. 3651; and

WHEREAS, the parties recognize the responsibility of public sanitary sewer utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, a single family residential development (hereinafter referred to as "Jovita Heights-West Hill") has been proposed that lies within the distinct Sanitary Sewer Service Areas of both Auburn and Lakehaven as established and described in the Original Agreement; and

WHEREAS, portions of the Auburn sanitary sewer system have been sized with sufficient wastewater conveyance capacity and are situated so as to be capable of affording sewer service to those portions of Jovita Heights-West Hill that lie within both the Auburn Sanitary Sewer Service Area and the Lakehaven Sanitary Sewer Service Area; and

WHEREAS, portions of the Lakehaven sanitary sewer system have been sized with sufficient wastewater conveyance capacity and are situated so as to be capable of affording sewer service to those portions of Jovita Heights-West Hill that lie within both the Lakehaven Sanitary Sewer Service Area and the Auburn Sanitary Sewer Service Area; and

WHEREAS, the developer of Jovita Heights-West Hill has requested that Auburn provide sanitary sewer service to the entire development to afford maximum efficiency in its use of existing and future facilities; and

WHEREAS, Auburn has evaluated sanitary sewer service issues relative to the developer's request and determined that it is feasible for Auburn to provide sanitary sewer service to the entire development; and

WHEREAS, Lakehaven has evaluated the request and determined that, conditioned on mitigation of the impacts incident thereto, Lakehaven can transfer to Auburn that portion of its Sanitary Sewer Service Area that lies within Jovita Heights-West Hill so that Auburn can provide sanitary sewer service to the entire development.

NOW, THEREFORE in consideration of their mutual covenants, conditions, and promises, **IT IS HEREBY AGREED** by and between the parties hereto as follows:

ITEM ONE REVISION TO ATTACHMENT 1 OF THE ORIGINAL AGREEMENT, Page 2 of 2:

Attachment 1 of the Original Agreement is a graphical representation of the sanitary sewer service area boundary between Auburn and Lakehaven as established in the Original Agreement. Page Two of Attachment 1, as such Attachment 1 is attached hereto and by this reference incorporated herein, revises the sanitary sewer service area shown in the Original Agreement to reflect the transfer to Auburn of certain sanitary sewer service areas originally granted to Lakehaven; more specifically, those parcels located within the City of Auburn, east of 56th Avenue South between South 336th Street and South 344th Street, together with those parcels located outside the City of Auburn, east of 55th Avenue South between South 340th Street and South 348th Street.

ITEM TWO REVISION TO ATTACHMENT 2 OF THE ORIGINAL AGREEMENT:

The legal description for the sanitary sewer service area boundary is revised to reflect the service area modification described in Item One of this Amendment. Attachment 2 is attached hereto as the legal description of the revised sanitary sewer service area boundary and by this reference is incorporated herein.

ITEM THREE REVISION TO SECTION 1: Sewer Service Area.

Section One of the Original Agreement, entitled "Sewer Service Area," is hereby amended to hereinafter read as follows:

The parties have agreed to a mutual sewer service planning boundary as depicted on the maps attached hereto as Attachment 1 and as legally described in Attachment 2, which are by this reference each incorporated herein. Both parties further agree that, through this designation of the sanitary sewer service boundary, Lakehaven shall provide sanitary sewer service to properties mutually within its revised sanitary sewer service area and Auburn's PAA, also depicted on Attachment 1, while Auburn shall provide sanitary sewer service to properties located within its revised sanitary sewer service area, including portions of Lakehaven's corporate boundary, in accordance with and subject to the terms and conditions of this Agreement.

ITEM FOUR REMAINING TERMS UNCHANGED:

That all other provisions of the Original Agreement not herein amended shall remain in full force and effect.

IN WITNESS WHEREOF the parties hereto have executed this agreement as of the day and year first below written.

LAKEHAVEN UTILITY DISTRICT

Approved by Resolution No. 2005-1038 of the Lakehaven Utility District, Federal Way, Washington, at its regular meeting held on the 10th day of March, 2005.

By:

DONALD T. PERRY, GENERAL MANAGER
Lakehaven Utility District

Approved as to form:

STEVEN H. PRITCHETT, GENERAL COUNSEL
Lakehaven Utility District

CITY OF AUBURN

Approved by Resolution No. 3824 of the City of Auburn, Washington, at its regular meeting held on the 22nd day of February, 2005.

By: _____

PETER B. LEWIS,
Mayor, City of Auburn

Attest:

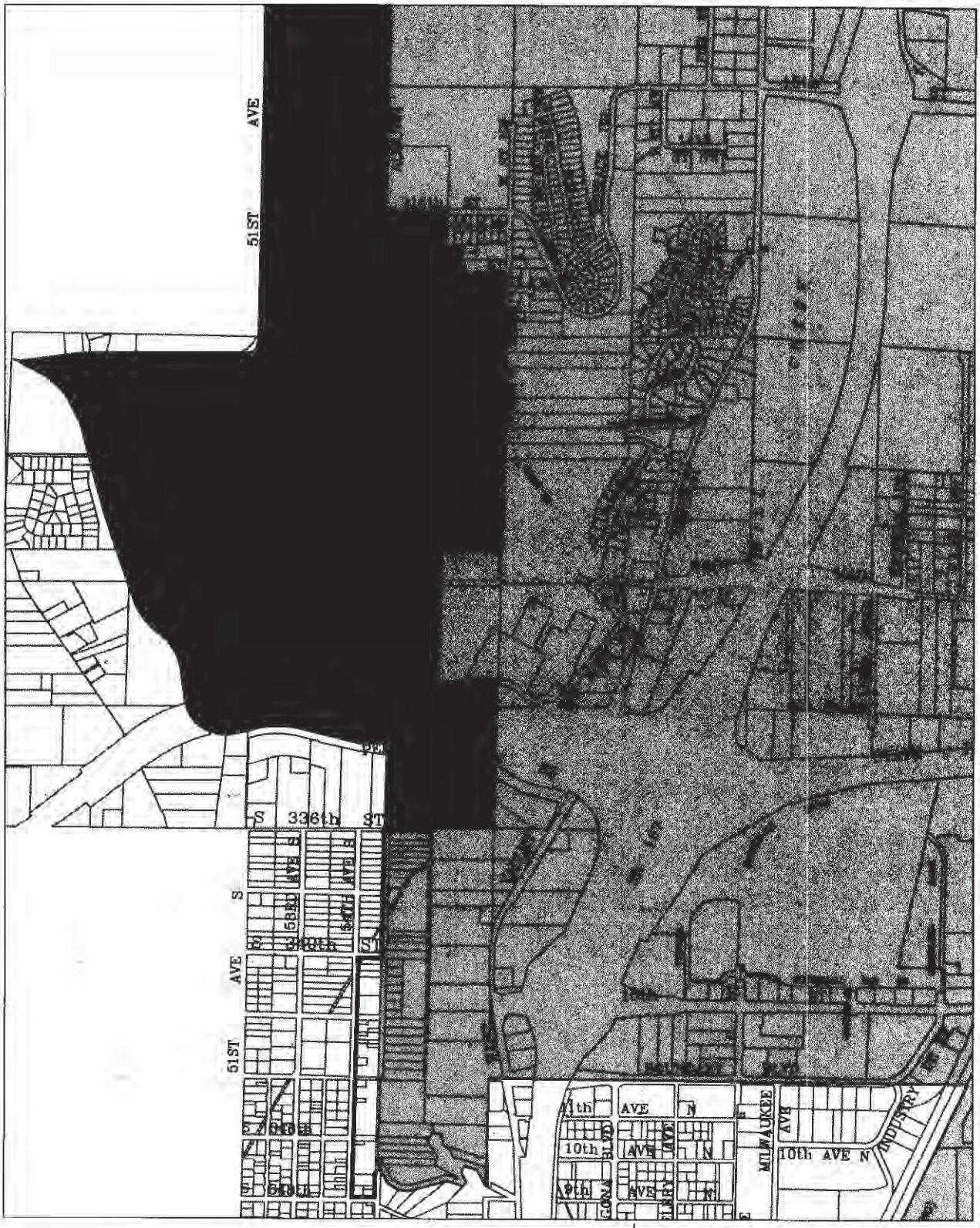
_____

DANIELLE DASKAM,
City Clerk, City of Auburn

Approved as to form:

_____

DANIEL B. HEID,
City Attorney, City of Auburn



LEGEND

- AUBURN CITY LIMITS
- AUBURN PAA
- PROPOSED SEWER SERVICE BOUNDARY

SCALE: 1" = 1500'

Note: Information shown is for general reference purposes only and does not necessarily represent exact geographic or cartographic data as mapped.

(REVISED) ATTACHMENT 1

LAKEHAVEN - AUBURN INTERLOCAL AGREEMENT ESTABLISHING SANITARY SEWER SERVICE BOUNDARIES

PLEASE INITIAL IF APPROVED

Jan 2005

LAKEHAVEN

AUBURN

PAGE 2/2

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Attachment 2
(REVISED)

LAKEHAVEN UTILITY DISTRICT and CITY OF AUBURN INTERLOCAL AGREEMENT ESTABLISHING SANITARY SEWER SERVICE BOUNDARIES

BOUNDARY DESCRIPTION

BEGINNING at a point 170 feet east of the Northwest corner of the Southeast quarter of the Southwest quarter of Section 35, Township 22 North, Range 4 East, W.M., in King County, Washington;

THENCE south 662.54 feet, more or less, to the North line of the South half of said subdivision;

THENCE easterly along said North line to a point 300 feet west of the East line of said subdivision;

THENCE south to a point 170 feet north of the South line of said subdivision;

THENCE east 300 feet, more or less, to the East line of said subdivision;

THENCE southerly along said East line to the South line of said Section 35;

THENCE continuing southerly along the West line of the Northeast quarter of Section 2, Township 21 North, Range 4 East, W.M., in King County, Washington, a distance of 221.12 feet;

THENCE easterly, parallel with the North line of said subdivision, 220.20 feet;

THENCE southerly, parallel with the West line of said subdivision, 130 feet;

THENCE easterly, parallel with the North line of said subdivision, 1,304.44 feet;

THENCE southerly, parallel with the West line of said subdivision, 494 feet;

THENCE easterly, parallel with the North line of said subdivision, 680.8 feet;

THENCE southerly, parallel with the West line of said subdivision, 100 feet;

THENCE easterly, parallel with the North line of said subdivision, 428 feet, more or less, to the East line of said subdivision;

THENCE southerly, along said East line to the Northeast corner of the South half of the South half of the Northeast quarter of the Southeast quarter of said Section 2;

THENCE westerly, along the North line of said subdivision, 518.77 feet;

THENCE southerly, parallel with the East line of said subdivision, 328.01 feet;

THENCE westerly, along the South line of said subdivision, 130.02 feet, more or less to the Northeast corner of the West half of the Southeast quarter of the Southeast quarter of said Section 2;

THENCE southerly, along the East line of said subdivision, 964.41 feet;

THENCE westerly, parallel with the North line of said subdivision, 650 feet, more or less, to the East line of the Southwest quarter of the Southeast quarter of said Section 2;

THENCE southerly, along said East line, 328.77 feet, more or less, to the South line of said subdivision;

THENCE westerly, along said South line, to the centerline of 56th Avenue South;

THENCE southerly, along said centerline of 56th Avenue South, to the centerline of South 305th Street in Section 11, Township 21 North, Range 4 East, W.M., in King County, Washington;

THENCE westerly, along said centerline of South 305th Street, to a point of intersection with the northerly projection of the West line of Lot 2, Block 5, Auburn Heights Park Division No. 2, according to the plat thereof recorded in Volume 49, Page 99, records of King County, Washington;

THENCE southerly, 320 feet, more or less, parallel with said West line of Lot 2, to the South line of Lot 4, Block 5, of said plat;

THENCE easterly, along said South line of Lot 4, to the Northwest corner of Lot 5, Block 5 of said plat;

THENCE southerly and southeasterly, along the West lines of Lots 5 and 9, of said plat, to the Northeast corner of Block 7, Auburn Heights Park Division No. 1, according to the plat thereof recorded in Volume 49 of Plats, Page 56, records of King County, Washington;

THENCE southerly, along the East line of Block 7 of said plat, to the Southeast corner of Lot 2, Block 7, of said plat;

THENCE westerly, parallel with the South line of said plat, along the north lines of Lot 19 and Lot 1, Block 6, Lot 15 and Lot 1, Block 5, and Lot 26, Block 4, of said plat, to the centerline of 51st Avenue South;

THENCE southerly, along said centerline of 51st Avenue South, to the Southwest corner of said Section 11;

THENCE continue southerly, along the West line of Section 14, Township 21 North, Range 4 East, W.M., in King County, Washington, 329.57 feet;

THENCE east 30 feet to the Southwest corner of Lot 15, Peasley Ridge, according to the plat thereof recorded in Volume 201, Pages 66-71, records of King County, Washington;

THENCE continue easterly, along the South line of said plat, to the Southeast corner of Tract D Peasley Ridge;

THENCE northerly, along the East line of said Tract D, 150 feet, more or less, to the Northwest corner of Lot 2, King County Short Plat No. 1080026R, as recorded under Recording No. 8106080708, records of King County, Washington;

THENCE easterly, along the North line of said Lot 2, to the West line of Lot 1, King County Short Plat No. 1080027, as recorded under Recording No. 8106080709, records of King County, Washington;

THENCE northerly, along the West line of said Lot 1, to the Northwest corner thereof;

THENCE easterly, along the North lines of Lots 1, 2 and 4, of said short plat, to the Northeast corner of said Lot 4;

THENCE East 60 feet to the West line of Lot 19, West Auburn Five-Acre Tracts, according to the plat thereof recorded in Volume 15, Page 12, records of King County, Washington;

THENCE southerly, along the West line of said Lot 19, 9.43 feet;

THENCE easterly, parallel with the North line of said Lot 19, 294.8 feet;

THENCE northerly, parallel with the West line of said Lot 19, 119.43 feet, more or less, to the South margin of South 320th Street;

THENCE easterly, along said south margin of South 320th Street, 150 feet;

THENCE southerly, parallel with the West line of said Lot 19, 119.43 feet;

THENCE easterly, parallel with the North line of said Lot 19, 9.59 feet;

THENCE southerly, parallel with the West line of said Lot 19, 5 feet;

THENCE easterly, parallel with the North line of said Lot 19, 13.53 feet;

THENCE southerly, parallel with the West line of said Lot 19, 178.866 feet, more or less, to the most Northwesterly corner of Lot 4, King County Short Plat No. 278048, as recorded under Recording No. 8004030782, records of King County, Washington;

THENCE southerly, along the West line of said Lot 4, to the Southwest corner thereof and the North line of Lot 2, King County Short Plat No. 1077053, as recorded under Recording No. 7808100856;

THENCE westerly, along the North line of said Lot 2, to the Northwest corner thereof;

THENCE southerly, along the West lines of Lot 2 and Lot 4 of said short plat, to the North line of Lot 30, West Auburn Five-Acre Tracts, according to the plat thereof recorded in Volume 15, Page 12, records of King County, Washington;

THENCE easterly, along the North line of said Lot 30, 147.35 feet;

THENCE southerly, parallel with the East line of said Lot 30, to the centerline of South 324th Street;

THENCE westerly, along said centerline of South 324th Street, to the centerline of 56th Avenue South;

THENCE southerly, along said centerline of 56th Avenue South, to the North margin of State Highway No. 18;

THENCE easterly, along said North margin of State Highway No. 18, to the southerly projection of the centerline of 58th Avenue South;

THENCE southerly, along said centerline of 58th Avenue South, to the North margin of South 336th Street;

THENCE westerly, along said North margin of South 336th Street to the West margin of 56th Avenue South;

THENCE southerly, along said West margin of 56th Avenue South to the North margin of South 340th Street;

THENCE westerly, along said North margin of South 340th Street to the West margin of 55th Avenue South;

THENCE southerly, along said West margin of 55th Avenue South to the South margin of South 348th Street;

THENCE easterly, along said South margin of South 348th Street to the East margin of 56th Avenue South;

THENCE northerly, along said East margin of 56th Avenue South, to the easterly projection of the South line of Lot 24, Block 27, Jovita Heights, according to the plat thereof recorded in Volume 20 of Plats, Page 12, records of King County, Washington, and the terminus of this boundary description.

LAKEHAVEN UTILITY DISTRICT
King County, Washington

Resolution No. 2005-1038

A RESOLUTION of the Board of Commissioners of the Lakehaven Utility District, King County, Washington, approving an amendment to the sanitary sewer service boundary with the City of Auburn, authorizing the General Manager to execute an agreement reflecting such amendment on behalf of the District and amending District Resolution No. 2004-1006.

WHEREAS, the District is authorized under state law to provide water and sanitary sewer service pursuant to adopted comprehensive plans, and

WHEREAS, under authority of existing regulatory requirements, the District and the City of Auburn have determined to establish, by interlocal agreement, service area boundaries between their respective water and sewer systems, and

WHEREAS, since the adoption of the sewer service area boundary, Auburn and the District have concluded that certain territory within the area designated for sewer service by the District would be better served by Auburn, and

WHEREAS, Auburn and the District have discussed terms for an agreement which would transfer the service jurisdiction for such area to Auburn, and

WHEREAS, the Board believing the transfer of service jurisdiction to be in the best interests of the District

NOW, THEREFORE, **BE IT RESOLVED** as follows:

1. The District hereby approves an amendment to the "Interlocal Agreement Establishing Sanitary Sewer Service Boundaries" with the City of Auburn to provide that the area referenced in Exhibit "A" shall hereinafter be included within the service area jurisdiction of the City of Auburn.
2. The General Manager is hereby directed to execute an agreement with Auburn to provide for such transfer.
3. Resolution No. 2004-1006 is hereby amended in part to reflect the transfer of service jurisdiction herein.
4. This Resolution shall be effective on the date of adoption below.

ADOPTED by the Board of Commissioners of Lakehaven Utility District, King County, Washington, at an open public meeting this 10th day of March, 2005.

ATTEST:

President and Commissioner	Yea	Nay	Abstain
Vice President and Commissioner	Yea	Nay	Abstain
Secretary and Commissioner	Yea	Nay	Abstain
Commissioner	Yea	Nay	Abstain
Commissioner	Yea	Nay	Abstain

Approved as to form:

General Counsel

RESOLUTION NO. 5353

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE AN AMENDMENT TO THE INTERLOCAL AGREEMENT WITH THE LAKEHAVEN WATER AND SEWER DISTRICT FOR THE PURPOSE OF MODIFYING THE SEWER DISTRICT'S SANITARY SEWER SERVICE AREA

WHEREAS, pursuant to RCW 35.A.11.040, Auburn has the legal authority to exercise its powers and perform any of its functions as set forth in RCW 39.34; and

WHEREAS, in January 2004 the Commissioners of the Lakehaven Utility District adopted Resolution No. 2004-1006 authorizing the General Manager to execute an interlocal agreement with Auburn, which agreement was subsequently signed by the City of Auburn as authorized under Auburn Resolution No. 3651; and

WHEREAS, in March 2005 the Commissioners of the Lakehaven Utility District adopted Resolution No. 2005-1038 authorizing the General Manager to execute an amendment to the interlocal agreement with Auburn, which amendment subsequently signed by the City of Auburn as authorized under Auburn Resolution No. 3824; and

WHEREAS, the parties recognize the responsibility of public sanitary sewer utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, portions of the Auburn sanitary sewer system have been sized with sufficient wastewater conveyance capacity and are situated so as to be capable of affording sewer service to a number of properties that lie within the Lakehaven Sanitary Sewer Service Area and adjacent to Auburn's Sanitary Sewer Service Area; and

WHEREAS, Auburn has evaluated sanitary sewer service issues relative to the adjacent properties and determined that it is feasible for Auburn to provide sanitary sewer service to those properties; and

WHEREAS, Lakehaven has evaluated the request and determined that Lakehaven can transfer to Auburn that portion of its Sanitary Sewer Service Area adjacent to the City of Auburn's infrastructure so that Auburn can provide sanitary sewer service to those properties.

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, RESOLVES as follows:

Section 1. The Mayor is hereby authorized to execute an amendment to the Interlocal Agreement with Lakehaven Utility District, in substantial conformity with the agreement attached hereto, marked as Exhibit A and incorporated herein by this reference.

Section 2. The Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directions of this legislation.

Section 3. This Resolution shall take effect and be in force upon passage and signatures thereon.

DATED and SIGNED on this 19th day of March, 2018.

CITY OF AUBURN

NANCY BACKUS, MAYOR

ATTEST:

Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

EXHIBIT A TO RESOLUTION 5353

AMENDMENT NO. 2
TO THE LAKEHAVEN WATER AND SEWER DISTRICT AND CITY OF AUBURN
INTERLOCAL AGREEMENT ESTABLISHING
SANITARY SEWER SERVICE BOUNDARIES

AMENDMENT NO. 2
TO THE LAKEHAVEN WATER AND SEWER DISTRICT AND CITY OF AUBURN
INTERLOCAL AGREEMENT ESTABLISHING
SANITARY SEWER SERVICE BOUNDARIES

THIS AGREEMENT, made and entered into this 12th day of April 2018, by and between LAKEHAVEN WATER AND SEWER DISTRICT, a Washington municipal corporation (hereinafter referred to as "Lakehaven"), and the CITY OF AUBURN, a Washington municipal corporation, (hereinafter referred to as "Auburn"), both being duly organized and existing under and by virtue of the laws of the State of Washington, as an amendment to the Interlocal Agreement dated February 2, 2004, between the parties and executed on the 8th day of January, 2004, and the 20th day of January, 2004, respectively (hereinafter referred to as "Original Agreement") as amended by Amendment No. 1 to that agreement, dated February 22, 2005, between the parties and executed on the 10th day of March, and the 22nd day of February, 2005, respectively.

WITNESSETH:

WHEREAS, in January 2004 the Commissioners of the Lakehaven Water and Sewer District adopted Resolution No. 2004-1006 authorizing the General Manager to execute an interlocal agreement with Auburn, which agreement was subsequently signed by the City of Auburn as authorized under Auburn Resolution No. 3651; and

WHEREAS, in March 2005 the Commissioners of the Lakehaven Water and Sewer District adopted Resolution No. 2005-1038 authorizing the General Manager to execute an amendment to the interlocal agreement with Auburn, which amendment subsequently signed by the City of Auburn as authorized under Auburn Resolution No. 3824; and

WHEREAS, the parties recognize the responsibility of public sanitary sewer utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, portions of the Auburn sanitary sewer system have been sized with sufficient wastewater conveyance capacity and are situated so as to be capable of affording sewer service to a number of properties that lie within the Lakehaven Sanitary Sewer Service Area and adjacent to Auburn's Sanitary Sewer Service Area; and

WHEREAS, Auburn has evaluated sanitary sewer service issues relative to the adjacent properties and determined that it is feasible for Auburn to provide sanitary sewer service to those properties; and

WHEREAS, Lakehaven has evaluated the request and determined that Lakehaven can transfer to Auburn that portion of its Sanitary Sewer Service Area adjacent to the City of Auburn's infrastructure so that Auburn can provide sanitary sewer service to those properties.

NOW, THEREFORE in consideration of their mutual covenants, conditions, and promises, IT IS HEREBY AGREED by and between the parties hereto as follows:

ITEM ONE REVISION TO SERVICE AREA BOUNDARY

The parties have agreed to modify the mutual sewer service planning boundary as established in the Original Agreement and modified by Amendment No. 1. The properties depicted in Exhibit A and described in Exhibit B are hereby designated to be within the City of Auburn's sanitary sewer service area and no longer within the Lakehaven Water and Sewer District's sanitary sewer service area.

ITEM TWO REMAINING TERMS UNCHANGED:

That all other provisions of the Original Agreement as modified by Amendment No. 1 not herein amended shall remain in full force and effect.

IN WITNESS WHEREOF the parties hereto have executed this agreement as of the day and year first below written.

LAKEHAVEN WATER AND SEWER DISTRICT

Approved by Resolution No. 2018-1306 of the Lakehaven Water and Sewer District, Federal Way, Washington, at its regular meeting held on the 12th day of April, 2018.

By:

Approved as to Form:

CITY OF AUBURN
Approved by Resolution No. 5353 of the City of Auburn, Washington, at its regular meeting held on the 19th day of March, 2018.

By:

Nancy Backus
Nancy Backus, Mayor

Attest:

City Clerk

Approved as to form:

City Attorney

EXHIBIT 'A'

Legal Description for Lakehaven to Auburn Sewer Service Transfer Area

A portion of the southeast quarter of the southwest quarter of Section 14 and the northeast quarter of the northwest quarter of section 23, all in Township 21 North, Range 4 East, W.M., City of Auburn, King County, Washington, said portion described as follows:

Commencing at an angle point in the westerly boundary of the Interlocal Agreement described in City of Auburn Resolution 3824 dated February 22, 2005, said angle point being at the intersection of the north margin of State Highway No. 18 and the southerly projection of the centerline of 58th Avenue South;

Thence southerly along said westerly boundary and said southerly projection of 58th Avenue South to the south margin of the lands conveyed to the City of Auburn from the State of Washington in deed recorded under King County Recording No. 8709221482 and the point of beginning for this boundary description;

Thence continuing southerly along said westerly boundary and said southerly projection of 58th Avenue South to the north margin of South 336th Street;

Thence westerly along said westerly boundary and the north margin of South 336th Street to the west margin of 56th Avenue South;

Thence southerly along said westerly boundary and the west margin of 56th Avenue South to the north margin of South 340th Street;

Thence westerly along said westerly boundary and said north margin of South 340th Street to the east margin of 55th Avenue South;

Thence leaving said westerly boundary of City of Auburn Resolution 3824, northerly along said east margin of 55th Avenue South to the south margin of South 336th Street;

Thence easterly along said south margin of South 336th Street to the southerly projection of the west line of the southeast quarter of the southwest quarter of said Section 14;

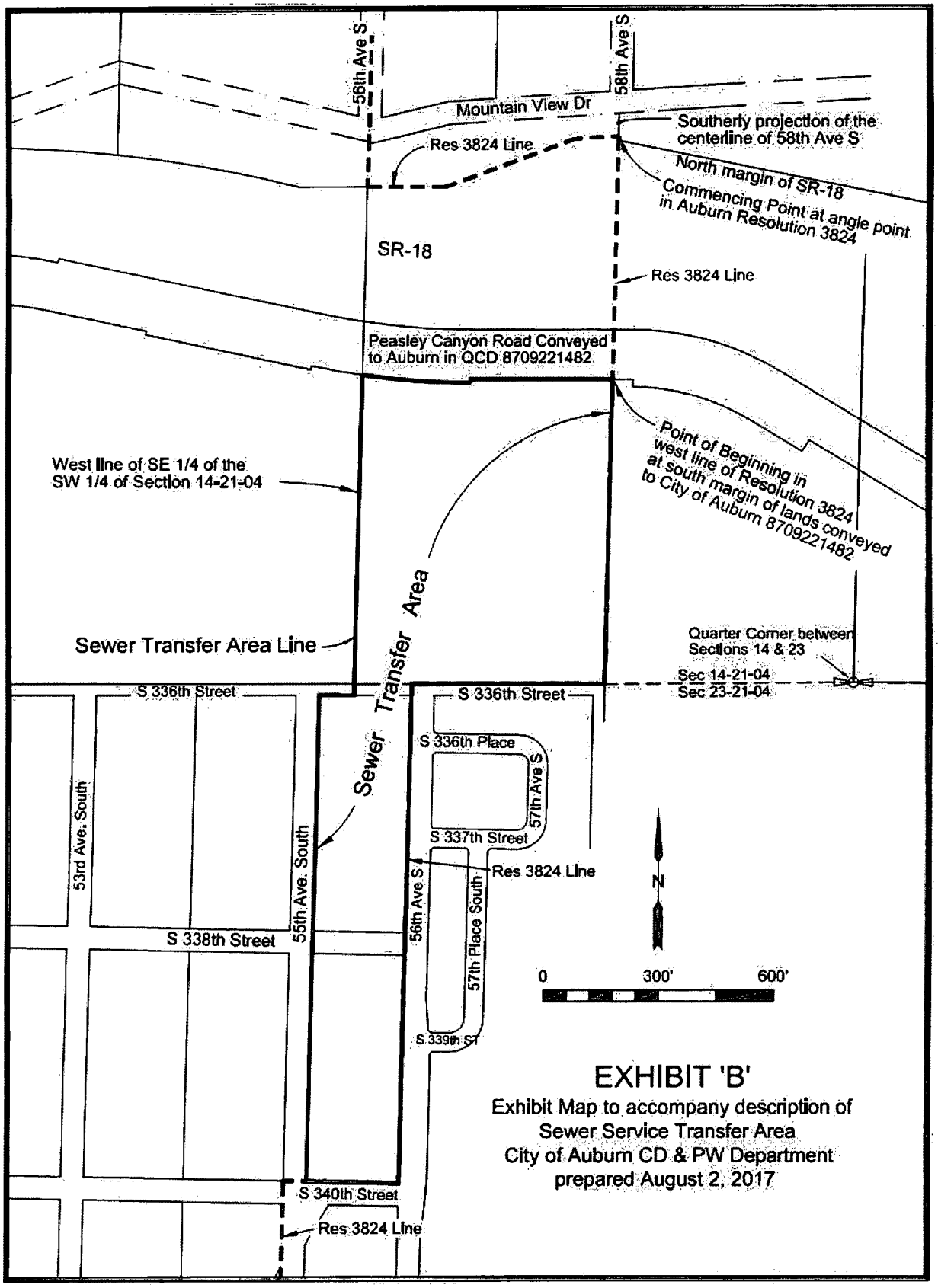
Thence northerly along said west line to said south margin of the lands conveyed to the City of Auburn in deed recorded under King County Recording No. 8709221482;

Thence easterly along said south margin to the point of beginning.

9/11/2017



O:\SURVEY\PROJECTS\ADM431-Sewer\2017 Sewer Franchise Legal - Jovita Hts area\Legal Description Lakehaven to Auburn Sewer Transfer Area.doc 9/11/2017


56th Ave S
58th Ave S
Mountain View Dr
Res 3824 Line
Southerly projection of the centerline of 58th Ave S
North margin of SR-18
Commencing Point at angle point in Auburn Resolution 3824
SR-18
Res 3824 Line
Peasley Canyon Road Conveyed to Auburn in QCD 8709221482
Point of Beginning in west line of Resolution 3824 at south margin of lands conveyed to City of Auburn 8709221482
West line of SE 1/4 of the SW 1/4 of Section 14-21-04
Sewer Transfer Area
Sewer Transfer Area Line
Quarter Corner between Sections 14 & 23
Sec 14-21-04
Sec 23-21-04
S 336th Street
S 336th Street
S 336th Place
57th Ave S
S 337th Street
Res 3824 Line
53rd Ave. South
55th Ave. South
56th Ave S
57th Place South
S 338th Street
S 339th St
N
0
300'
600'
S 340th Street
Res 3824 Line
EXHIBIT 'B'
Exhibit Map to accompany description of
Sewer Service Transfer Area
City of Auburn CD & PW Department
prepared August 2, 2017

LAKEHAVEN WATER AND SEWER DISTRICT
King County, Washington

Resolution No. 2018-1306

A RESOLUTION of the Board of Commissioners of the Lakehaven Water and Sewer District, King County, Washington, approving Amendment No. 2 to the sanitary sewer service boundary with the City of Auburn, authorizing the General Manager to execute an agreement reflecting such amendment on behalf of the District and amending District Resolution No. 2004-1006.

WHEREAS, the District is authorized under state law to provide water and sanitary sewer service pursuant to adopted comprehensive plans, and

WHEREAS, under authority of existing regulatory requirements, the District and the City of Auburn have determined to establish, by interlocal agreement, service area boundaries between their respective water and sewer systems, and

WHEREAS, since the adoption of the sewer service area boundary, Auburn and the District have concluded that certain territory within the area designated for sewer service by the District would be better served by Auburn, and

WHEREAS, the parties have previously executed Amendment No. 1 to the interlocal agreement to transfer service jurisdiction of an area to Auburn, and

WHEREAS, Auburn and the District have discussed terms for a second amendment which would transfer the service jurisdiction for an additional area to Auburn, and

WHEREAS, the Board believing the transfer of service jurisdiction to be in the best interests of the District

NOW, THEREFORE, BE IT RESOLVED as follows:

1. The District hereby approves an Amendment No. 2 to the "Interlocal Agreement Establishing Sanitary Sewer Service Boundaries" with the City of Auburn to provide that the area referenced in Exhibit "A" shall hereinafter be included within the service area jurisdiction of the City of Auburn.

2. The General Manager is hereby directed to execute an agreement with Auburn to provide for such transfer.

3. Resolution No. 2004-1006 is hereby amended in part to reflect the transfer of service jurisdiction herein.

4. This Resolution shall be effective on the date of adoption below.

ADOPTED by the Board of Commissioners of Lakehaven Water and Sewer District, King County, Washington, at an open public meeting this 12th day of April, 2018.

ATTEST:

President and Commissioner	Yea	Nay	Abstain
Vice President and Commissioner	Yea	Nay	Abstain
Secretary and Commissioner	Yea	Nay	Abstain
Commissioner	Yea	Nay	Abstain
Commissioner	Yea	Nay	Abstain

Approved as to form:

General Counsel

Lakehaven
WATER & SEWER DISTRICT

31627 1st Avenue South • P.O. Box 4249 • Federal Way, WA 98063-4249
253-941-1516 Federal Way • 253-927-2922 Tacoma • www.lakehaven.org

RECEIVED
APR 19 2018
City of Auburn
CDPW - Engineering Services

April 17, 2018

Robert Elwell, P.E.
City of Auburn
25 West Main Street
Auburn, Washington 98001-4998

RE: AUBURN-LAKEHAVEN SEWER INTERLOCAL AGREEMENT AMENDMENT (NO. 2)
Revised Sewer Service Area Boundary

Mr. Elwell:

Enclosed is an original signed copy of Lakehaven Resolution 2018-1306, adopted by Lakehaven's Board of Commissioners on 4/12/18, along with an original of the referenced ILA Amendment signed by the Board President & Lakehaven's General Counsel; amending the sewer service area boundary in the vicinity of southeast Peasley Canyon. At this time, Lakehaven will consider the service area boundary amended accordingly. Thanks for your assistance in this matter.

Let me know if there's any questions or if additional information is needed.

Sincerely,

Brian Asbury
Development Engineering Supervisor

Enclosures

APPENDIX A7

CITY OF ANGOLA

- Sewer Service Boundaries (Resolution 3589)
- Water And Sewer Utility Service, Billing, And Collection (Resolution 5505)

RESOLUTION NO. 3589

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN INTERLOCAL AGREEMENT ESTABLISHING SANITARY SEWER SERVICE BOUNDARIES BETWEEN THE CITY OF AUBURN AND THE CITY OF ALGONA

WHEREAS, pursuant to RCW 35A.11.040 Auburn and Algona have the legal authority to exercise their powers and perform any of their functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Algona have the legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, pursuant to RCW 35A.21.150 Auburn and Algona have the legal authority to maintain a sewerage system.

NOW, THEREFORE, THE COUNCIL OF THE CITY OF AUBURN, WASHINGTON, IN A REGULAR MEETING DULY ASSEMBLED, HEREWITH RESOLVES THAT:

Section 1. The Mayor and City Clerk of the City of Auburn are herewith authorized to execute an Interlocal Agreement establishing sanitary sewer service boundaries between the City of Auburn and the City of Algona in the

form substantially as the agreement attached hereto, marked as Exhibit "1" and incorporated herein by this reference.

Section 2. That the Mayor is hereby authorized to implement such administrative procedures as may be necessary to carry out the directions of this legislation.

Section 3. That this resolution shall be in full force and effect upon passage and signatures hereon.

DATED this 21st day of April, 2003.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam, City Clerk

APPROVED AS TO FORM:

Daniel B. Heid, City Attorney

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Interlocal Agreement (RES 3589) Sanitary Sewer Boundaries

8/26 PIVOT
L-6179

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
1. Algona, City of

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number

N/A

☐ Assessor Tax # not yet assigned

EXHIBIT 1

INTERLOCAL AGREEMENT
between
CITY OF ALGONA and CITY OF AUBURN
for the
THE ESTABLISHMENT OF SANITARY SEWER SERVICE BOUNDARIES

THIS AGREEMENT, made and entered into this 21st day of April, 2003, by and between the **CITY OF ALGONA**, a Washington municipal corporation (hereinafter referred to as "Algona"), and the **CITY OF AUBURN**, a Washington municipal corporation, (hereinafter referred to as "Auburn"), both being duly organized and existing under and by virtue of the laws of the State of Washington,

WITNESSETH:

WHEREAS, pursuant to RCW 35A.11.040 Auburn and Algona have the legal authority to exercise their powers and perform any of their functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Auburn and Algona have the legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, pursuant to RCW 35A.21.150 Auburn and Algona have the legal authority to maintain a sewerage system; and

WHEREAS, the parties recognize the responsibility of public sanitary sewer utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, portions of the Algona sanitary sewer system have been sized and are situated so as to be capable of affording sewer service to a portion of the Auburn Sanitary Sewer Service Area; and

WHEREAS, Auburn has evaluated and determined it is in Auburn's best interest to allow Algona to provide sewer service to property within Auburn's municipal boundary that lies adjacent to Algona's sanitary sewer infrastructure; and

WHEREAS, Algona has sufficient capacity within their sanitary sewer facilities to support these adjustments to the existing sewer service areas; and

WHEREAS, the parties desire to allow Algona to construct, reconstruct, repair and maintain sewer facilities, and to authorize connections to Algona's sewer system for service to the areas noted in Exhibit A; and

WHEREAS, Algona's delivery of sewer service to these areas will provide the maximum efficiency in the use of existing and future facilities, together with orderly and efficient sanitary sewer planning.

NOW, THEREFORE:

IT IS HEREBY AGREED by and between the parties hereto as follows:

1. **Sewer Service Area.** The parties have agreed to adjust their sewer service area boundary between them. The area to be adjusted is graphically depicted on the map attached hereto as Exhibit "A", which is by this reference incorporated herein. Exhibit "A" represents an increase in Algona's sewer service area and a decrease in Auburn's current sewer service area. Both parties further agree that Algona, in providing sewer service to the additional areas as shown on Exhibit "A", shall be furnishing sewer service to properties within Auburn's water service area and Auburn's municipal jurisdiction in accordance with and subject to the terms and conditions of this Agreement.

2. **Management, Regulation and Control of Sewer System.** Algona shall have the sole responsibility and authority to construct, maintain, manage, conduct and operate its sewerage system as installed within the areas described in Exhibit "A", together with any additions, extensions and betterments thereto. Algona shall also be responsible for obtaining all necessary governmental franchises, approvals, easements and permits for the installation, maintenance, and operation of said sewerage systems as described above.

3. **Rates, Charges, Permits, and Billing Responsibilities.** Through this Agreement Auburn is turning over the responsibility to own, operate, and maintain the sanitary sewer system including private side sewers within the public right of way to Algona. Algona shall be the responsible agency to issue sewer certificates of availability for any development located within the area described by Exhibit "A".

No connection or modification shall be made to Algona's sanitary sewer system and or private side sewer services connected to Algona's sewer system unless the property owner first pays the associated fees and submits the proper information to obtain an Algona sanitary sewer permit. Sanitary sewer permits shall be subject to inspection and approval for compliance with Algona's Sanitary Sewer Standards as adopted at the time the connection is made.

The rates charged to Algona's sanitary sewer customers shall be fixed, altered, regulated and controlled by Algona pursuant to all applicable laws or regulations

promulgated on the subject of rates and charges for sewer service. No surcharge shall be charged to the customers served under this agreement on the sole basis that those customers are outside of Algona's city limits.

To establish a quantitative usage, Algona shall manually read Auburn's water meters servicing those properties described in Exhibit "A". Algona shall also have the ability to annually request water usage data from Auburn for said properties.

4. Boundary Review Board. In the event that implementation of the terms hereof results in permanent sewer service to areas that will be outside the respective service boundaries of Algona or Auburn, the parties will at the time of such service jointly seek approval of the King County Boundary Review Board in accordance with R.C.W. 36.93.090.

5. Comprehensive Sewer Planning. The terms of this Agreement will be included as an element of Auburn and Algona's Comprehensive Sewerage Plans.

6. Reliance. Each party hereto acknowledges that the other will rely upon the terms of this agreement in its comprehensive planning to meet the needs of the service area designated herein.

7. Indemnification. Algona agrees to indemnify and hold Auburn and its agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, loses, damages or costs, of whatsoever kind or nature, brought against Auburn arising out of, in connection with, or incident to the execution of this agreement and/or Algona's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of Auburn, its agents, employees, and/or officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of Algona; and provided further, that nothing herein shall require Algona to hold harmless or defend Auburn, its agents, employees, and/or officers, from any claims arising from the sole negligence of Auburn, its agents, employees, and/or officers. No liability shall attach to Auburn by reason of entering this agreement except as expressly provided herein.

Auburn agrees to indemnify and hold Algona and its agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, loses, damages or costs, of whatsoever king or nature, brought against Algona arising out of, in connection with, or incident to the execution of this agreement and/or Auburn's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of Algona, its agents, employees, and/or officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of Auburn; and provided further, that nothing

herein shall require Auburn to hold harmless or defend Algona, its agents, employees, and/or officers, from any claims arising from the sole negligence of Algona, its agents, employees, and/or officers. No liability shall attach to Algona by reason of entering this agreement except as expressly provided herein.

8. Assignment. The parties shall not assign this agreement or any interest, obligation or duty therein without the express written consent of the other party.

9. Attorney's Fees. If either party shall be required to bring any action to enforce any provision of this Agreement, or shall be required to defend any action brought by the other party with respect to this Agreement, and in the further event that one party shall substantially prevail in such action, the losing party shall, in addition to all other payments required therein, pay all of the prevailing party's reasonable costs in connection with such action, including such sums as the court or courts may adjudge reasonable as attorney's fees in trial court and in appellate courts.

10. Government Approvals. The parties will give notice of the adoption of this Agreement to King County's Department of Natural Resources – Wastewater Treatment Division, to the Department of Health, and to any other agency with jurisdiction or mission relevant to the terms hereof, and shall cooperate and assist in all reasonable manner in procuring any necessary approvals hereof by those agencies.

11. Service Amendments. Any changes to the service areas described herein shall be by mutual agreement. Each party may give permission to the other on a case-by-case basis to provide service by one party into the other party's adjacent or nearby service area based upon considerations of economic efficiency for providing the service with mutual consent of Auburn's Director of Public Works and Algona's Director of Public Works.

12. Notices. All notices between the two agencies hereunder may be delivered or mailed. If mailed, they shall be sent to the following respective addresses:

City of Algona
Director of Public Works
402 Wards Street
Algona, WA 98001
253-833-2741

City of Auburn
Director of Public Works
25 west Main Street
Auburn, WA 98001
253-931-3010

or to such other representative as either party may hereafter from time to time designate in writing. All notices and payments mailed by regular post (including first class) shall be deemed to have been given on the second business day following the date of mailing, if properly mailed and addressed. Notices and payments sent by

certified or registered mail shall be deemed to have been given on the day next following the date of mailing, if properly mailed and addressed. For all types of mail, the postmark affixed by the United States Postal Service shall be conclusive evidence of the date of mailing.

13. Alteration, Amendment or Modification. Algona and Auburn hereby reserve the right to alter, amend or modify the terms and conditions of this Agreement upon written agreement of both parties to such alteration, amendment or modification. Such written consent(s) shall be filed with this agreement for future reference.

14. Sanctity of Agreement. This agreement constitutes the entire agreement of the parties regarding the subject matter hereof, and there are no other representations or oral agreements other than those listed herein, which vary the terms of this agreement. Future agreements may occur between the parties to transfer additional or future service areas by mutual agreement.

15. Obligation Intact. Nothing herein shall be construed to alter the rights, responsibilities, liabilities, or obligations of either Algona or Auburn regarding provision of sewer service, except as specifically set forth herein.

16. Miscellaneous.

A. The captions in this agreement are for convenience only and do not in any way limit or amplify the provisions of this agreement.

B. This agreement is established in perpetuity. Modifications can be established upon written agreement between both parties.

C. The purpose of this agreement is to clarify Algona's and Auburn's sanitary sewer responsibilities for providing service and maintaining public sewer facilities.

D. If any term, provision, condition or portion of this Agreement is held to be invalid, or unenforceable by a final decision of any court having jurisdiction on the matter, the remaining of this Agreement or the application of such term or provision to persons or circumstances other then those as to which it is held invalid or unenforceable shall not be affected thereby and shall continue in full force and effect, unless such court determines that invalidity or unenforceability materially interferes with or defeats the purposes hereof, at which time Auburn or Algona shall have the right to terminate the Agreement.

E. No modifications or amendments of this agreement shall be valid or effective unless evidenced by an agreement in writing signed by both parties.

IN WITNESS WHEREOF the parties hereto have executed this agreement as of the day and year first above written.

CITY OF ALGONA
Approved by Resolution No. 70303 of the City of Algona, Washington, at its regular meeting held on the 1st day of April, 2003.

By:

GLENN WILSON,
Mayor, City of Algona

Attest:

DANIELLE STAFFORD,
City Clerk, City of Algona

Approved as to form:

GEORGE KELLEY,
City Attorney, City of Algona

CITY OF AUBURN
Approved by Resolution No. 3589, of the City of Auburn, Washington, at its regular meeting held on the 21st day of April, 2003.

By:

PETER B. LEWIS,
Mayor, City of Auburn

Attest:

DANIELLE DASKAM,
City Clerk, City of Auburn

Approved as to form:

DANIEL B. HEID,
City Attorney, City of Auburn

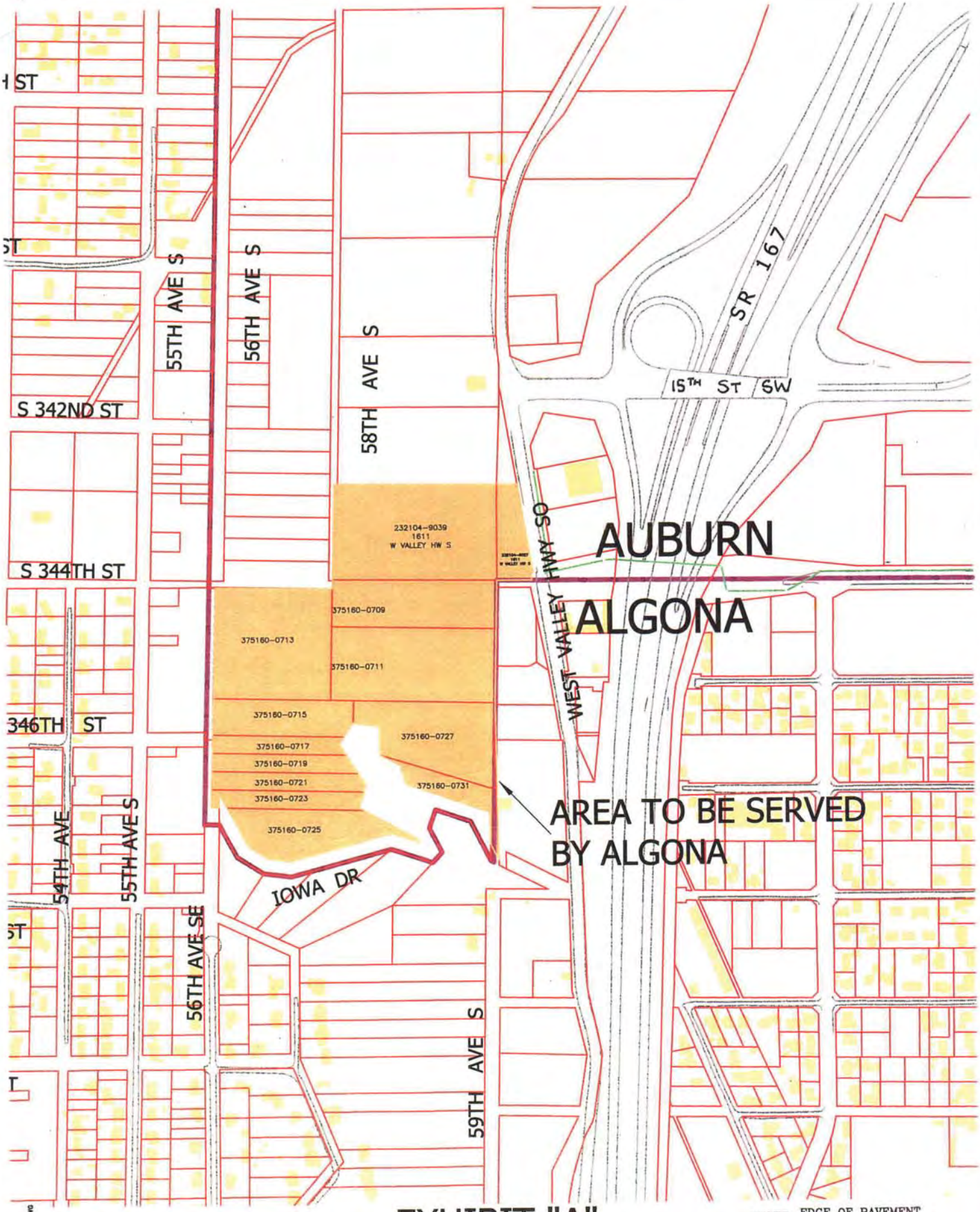


EXHIBIT "A"

Auburn's Sewer Service Area to be Transferred to Algona

EDGE OF PAVEMENT
SEWER
PARCEL/ROW LINE
CITY LIMITS

Exhibit 1
Resolution 3589
Page 7 of 7

PAGE 1 of 1

O:\SEWER\SBFRAN.DWG

RESOLUTION NO. 5505

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE AN INTERLOCAL AGREEMENT CONCERNING WATER AND SEWER UTILITY SERVICE, BILLING, AND COLLECTION

WHEREAS, both Algona and Auburn (each a "Party" and collectively "the Parties") are "public agencies" as defined by Chapter 39.34 RCW, and are authorized by that statute to cooperate on a basis of mutual advantage in order to provide for services and facilities;

WHEREAS, Algona owns and operates a water utility ("Algona Water System") and a sanitary sewer utility ("Algona Sewer System"), which collectively provide water and sewer service to customers located within Algona's utility service area(s);

WHEREAS, Auburn owns and operates a water utility ("Auburn Water System") and a sanitary sewer utility ("Auburn Sewer System"), which collectively provide water and sewer service to customers located within Auburn's utility service area(s);

WHEREAS, there are three parcels located within the City limits of Auburn at 1611 West Valley Highway S (APN 2321049039), 1743 West Valley Highway S (APN 3751600709) and 1929 West Valley Highway S (APN 3751600711) (collectively, "West Valley Parcels") that are connected to and served by the Auburn Water System, but are also connected to and served by the Algona Sewer System;

WHEREAS, there are four parcels located within the City limits of Algona at 502 Boundary Boulevard (APN 0301510060), 512 Boundary Boulevard (APN 0301510120), 1196 Industry Drive N (APN 0301510190) and a vacant parcel located between 502 and 512 Boundary Boulevard (APN 0301510100) (collectively, "Boundary Boulevard Parcels")

that are connected to and served by the Algona Water Utility, but are also connected to and served by the Auburn Sewer System;

WHEREAS, the dissociation between the water and sewer service connections for the West Valley Parcels and Boundary Boulevard Parcels is longstanding and of uncertain origin;

WHEREAS, to the best of the Parties' mutual belief and understanding, said dissociation may have resulted from various factors, including without limitation the timing of annexation, development and/or utility connection of the underlying properties;

WHEREAS, the water and sewer utility usage of the West Valley Parcels has historically been roughly equivalent to the water and sewer utility usage of the Boundary Boulevard Parcels;

WHEREAS, each Party's billing and collection for sanitary sewer service usage is based primarily upon water usage, such that each Party may approximately measure, bill and collect for a customer's sewer utility service by measuring the volume of water service provided to that customer;

WHEREAS, the significant expense of connecting the West Valley Parcels to the Auburn Sewer System, and of connecting the Boundary Boulevard Parcels to the Algona Sewer System, would be greatly disproportionate to the practical benefits resulting from such connection, which would be nominal;

WHEREAS, the Parties are currently evaluating permanent options to address the issue of water and sewer utility service for the West Valley Parcels and Boundary Boulevard Parcels and will continue to engage in discussions regarding the same as the

lines require repair or replacement or as development in the respective area(s) occurs; and

WHEREAS, as an interim approach, the Parties mutually desire to simplify the billing relationships and to contractually define their respective rights, obligations costs and liabilities regarding the provision of water and sewer utility service to the West Valley Parcels and the Boundary Boulevard Parcels while a permanent solution is identified and implemented.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, RESOLVES as follows:

Section 1. The Mayor is authorized to execute an interlocal agreement with the City of Algona, in substantial conformity with the agreement attached as Exhibit A.,

Section 2. The Mayor is authorized to implement those administrative procedures necessary to carry out the directives of this legislation.

Section 3. This Resolution will take effect and be in full force on passage and signatures.

Dated and Signed this 6th day of April, 2020.

CITY OF AUBURN

Nancy Backus
NANCY BACKUS, MAYOR

ATTEST:

Shawn Campbell
Shawn Campbell, MMC, City Clerk

APPROVED AS TO FORM:

Kendra Comeau
Kendra Comeau, City Attorney

EXHIBIT A TO RESOLUTION 5505

INTERLOCAL COOPERATION AGREEMENT CONCERNING WATER AND SEWER UTILITY SERVICE, BILLING AND COLLECTION

INTERLOCAL COOPERATION AGREEMENT

Water and Sewer Utility Service, Billing and Collection

THIS INTERLOCAL COOPERATION AGREEMENT ("Agreement") is entered into as of April 9, 2020 ("Effective Date") by and between the City of Algona, Washington ("Algona") and the City of Auburn, Washington ("Auburn"), both municipal corporations organized under the laws of the State of Washington, pursuant to the Interlocal Cooperation Act, Chapter 39.34 RCW.

Recitals

A. Both Algona and Auburn (each a "Party" and collectively "the Parties") are "public agencies" as defined by Chapter 39.34 RCW, and are authorized by that statute to cooperate on a basis of mutual advantage in order to provide for services and facilities.

B. Algona owns and operates a water utility ("Algona Water System") and a sanitary sewer utility ("Algona Sewer System"), which collectively provide water and sewer service to customers located within Algona's utility service area(s).

C. Auburn owns and operates a water utility ("Auburn Water System") and a sanitary sewer utility ("Auburn Sewer System"), which collectively provide water and sewer service to customers located within Auburn's utility service area(s).

D. There are three parcels located within the City limits of Auburn at 1611 West Valley Highway S (APN 2321049039), 1743 West Valley Highway S (APN 3751600709) and 1929 West Valley Highway S (APN 3751600711) (collectively, "West Valley Parcels") that are connected to and served by the Auburn Water System, but are also connected to and served by the Algona Sewer System.

E. There are four parcels located within the City limits of Algona at 502 Boundary Boulevard (APN 0301510060), 512 Boundary Boulevard (APN 0301510120), 1196 Industry Drive N (APN 0301510190) and a vacant parcel located between 502 and 512 Boundary Boulevard (APN 0301510100) (collectively, "Boundary Boulevard Parcels") that are connected to and served by the Algona Water Utility, but are also connected to and served by the Auburn Sewer System.

F. The dissociation between the water and sewer service connections for the West Valley Parcels and Boundary Boulevard Parcels is longstanding and of uncertain origin. To the best of the Parties' mutual belief and understanding, said dissociation may have resulted from various factors, including without limitation the timing of annexation, development and/or utility connection of the underlying properties.

G. The water and sewer utility usage of the West Valley Parcels has historically been roughly equivalent to the water and sewer utility usage of the Boundary Boulevard Parcels.

H. Each Party's billing and collection for sanitary sewer service usage is based primarily upon water usage, such that each Party may approximately measure, bill and collect for a customer's sewer utility service by measuring the volume of water service provided to that customer.

I. The significant expense of connecting the West Valley Parcels to the Auburn Sewer System, and of connecting the Boundary Boulevard Parcels to the Algona Sewer System, would be greatly disproportionate to the practical benefits resulting from such connection, which would be nominal.

J. The Parties are currently evaluating permanent options to address the issue of water and sewer utility service for the West Valley Parcels and Boundary Boulevard Parcels and will continue to engage in discussions regarding the same as the lines require repair or replacement or as development in the respective area(s) occurs.

K. As an interim approach, the Parties mutually desire to simplify the billing relationships and to contractually define their respective rights, obligations costs and liabilities regarding the provision of water and sewer utility service to the West Valley Parcels and the Boundary Boulevard Parcels while a permanent solution is identified and implemented.

NOW, THEREFORE, in consideration of the mutual benefits set forth herein, and other good and sufficient consideration the receipt and sufficiency of which are mutually acknowledged, including without limitation the public interest, the Parties hereby agree as follows:

Terms

Section 1. Authority and Purpose. This Agreement is executed pursuant to Chapter 39.34 RCW as a cooperative endeavor of the Parties. The purpose of this Agreement is to establish a contractual relationship governing the provision of water and sewer utility service for the West Valley Parcels and the Boundary Boulevard Parcels, and to set forth the Parties' respective rights, obligations, costs and liabilities regarding this undertaking. This Agreement shall be reasonably construed in furtherance of said purpose.

Section 2. West Valley Parcels—Connection, Service, Billing and Collection.

2.1 Connection and Service. The West Valley Parcels shall remain connected to and served by the Auburn Water System and the Algona Sewer System.

2.2 Billing and Collection. Auburn shall be exclusively responsible for billing and collecting utility payments from the West Valley Parcels for both water and sewer utility service pursuant to Auburn's adopted utility rate schedule(s). Auburn shall maintain accurate records of water and sewer usage, billing and payments with respect to the West Valley Parcels, but shall not be required to remit any such payments to Algona except as expressly set forth in this Agreement.

Section 3. Boundary Boulevard Parcels—Connection, Service, Billing and Collection.

3.1 Connection and Service. The Boundary Boulevard Parcels shall remain connected to and served by the Algona Water System and the Auburn Sewer System.

3.2 Billing and Collection. Algona shall be exclusively responsible for billing and collecting utility payments from the Boundary Boulevard Parcels for both water and sewer utility service pursuant to Algona's adopted utility rate schedule(s). Algona shall maintain accurate records of water and sewer usage, billing and payments with respect to the Boundary Boulevard Parcels, but shall not be required to remit any such payments to Auburn except as expressly set forth in this Agreement.

Section 4. Inspection Rights; Annual Review.

4.1 Inspection Rights. Each Party shall, upon written request, promptly provide the other Party with access to and copies of its utility billing records for the West Valley Parcels and the Boundary Boulevard Parcels.

4.2 Annual Review. Upon the request of Algona, Auburn shall provide to Algona a written summary of the water and sewer utility billing and collection records of the West Valley Parcels for the preceding year. Upon the request of Auburn, Algona shall provide a written summary of the water and sewer utility billing and collection records of the Boundary Boulevard Parcels for the preceding year. Upon receipt of the above-referenced written summaries, the Parties shall confer as deemed mutually appropriate to determine whether to continue, terminate or amend this Agreement.

Section 5. Ownership, Regulation Operation, Maintenance and Repairs. Except as otherwise expressly provided herein, nothing in this Agreement shall be construed as altering or otherwise modifying the Parties' respective rights, duties, obligations and liabilities concerning their respective water and sewer utility systems. Without limitation of the foregoing: Auburn shall own and remain exclusively responsible for all regulation, operation, maintenance and repairs of the Auburn Water System and the Auburn Sewer System, and (ii) Algona shall own and remain exclusively responsible for all regulation, operation, maintenance and repairs of the Algona Water System and the Algona Sewer System.

Section 6. Meter Removal. Algona may in its sole discretion remove or otherwise decommission Algona's utility service meters for any or all of the West Valley Parcels. Algona agrees to provide at least five business days' notice to Auburn of any meter removal or decommissioning.

Section 7. Term. This Agreement shall be in force as of the Effective Date written above following mutual execution by the Parties, and shall remain in effect for ten (10) years thereafter ("Term"), unless terminated earlier in accordance with Section 8. The Parties may at their option extend the Term for one or more mutually agreed upon periods through a writing signed by both Parties.

Section 8. Termination. Either Party may terminate this Agreement with or without cause by providing the other Party with one hundred and eighty (180) days written notice of its intent to terminate.

Section 9. Administration; No Separate Entity Created. The Algona Public Works Director and the Auburn Public Works Director shall serve as joint administrators of this Agreement. No separate legal entity is formed hereby.

Section 10. Property Acquisition, Retention and Disposition. No joint acquisition of real or personal property is contemplated by this Agreement. Except as provided in this section, any other real or personal property acquired by a Party shall remain within the sole and exclusive ownership and control of that Party following the termination or expiration of this Agreement.

Section 11. Indemnification. Each Party shall defend, indemnify and hold the other Party, its officers, officials, employees and volunteers harmless from and against any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or resulting from the acts, errors or omissions of the first Party in its performance of this Agreement. Without prejudice to the foregoing, it is expressly understood that each Party's obligations under this section shall include exclusive responsibility for any claims, injuries, damages, losses or suits arising out of or otherwise relating to the content and validity of that Party's codes, ordinances and regulations, and that the other Party, its officers, officials, employees and volunteers shall have no liability or responsibility whatsoever therefore.

It is further specially and expressly understood that the indemnification provided herein constitutes each Party's waiver of immunity under industrial insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the Parties.

The provisions of this section shall survive the expiration or termination of this Agreement.

Section 12. Governing Law and Venue; Attorneys' Fees. This Agreement shall be governed by the laws of the State of Washington. The venue for any action arising out of this Agreement shall be the Superior Court for King County, Washington. The substantially prevailing Party in any such action shall be entitled to an award of its reasonable attorneys' fees.

Section 13. No Employment Relationship Created. The Parties agree that nothing in this Agreement shall be construed as creating an employment relationship between Algona and any employee, agent, representative or contractor of Auburn, or between Auburn and any employee, agent, representative or contractor of Algona.

Section 14. Notices. Notices to Algona shall be sent to the following address:

City of Algona
Attn: Public Works Director
200 Washington Blvd.
Algona, WA 98001

Notices to Auburn shall be sent to the following address:

City of Auburn
Attn: Public Works Director
25 W. Main Street
Auburn, WA 98001

Section 15. Duty to File or Post Agreement. Prior to this Agreement's entry into force, Auburn shall, pursuant to RCW 39.34.040, (1) file this Agreement with the King County Auditor's Office, or (2) list this Agreement by subject on Auburn's internet web site.

Section 16. Integration. This document, together with any exhibits thereto, constitutes the entire embodiment of the contract between the Parties, and, unless modified in writing by an amendment signed by the Parties hereto, shall be implemented exclusively as described above. All oral agreements and understandings between the Parties related to the subject matter hereof shall be deemed superseded by this Agreement and shall hereinafter be null and void.

Section 17. No Third-Party Beneficiary Created. This Agreement is executed for the sole and exclusive benefit of the signatory Parties. Nothing in this Agreement, whether expressed or implied, is intended to confer any right, remedy or other entitlement upon any person other than the Parties hereto, nor is anything in this Agreement intended to relieve or discharge the obligation or liability of any third party, nor shall any provision herein give any third party any right of action against any party hereto.

Section 18. Signatory Warranty. Each signatory hereto warrants and represents that he/she has been authorized to execute this Agreement by appropriate action of the legislative body of his/her respective city.

Section 19. Execution in Counterparts. This Agreement may be executed in separate counterparts.

Section 20. Regulatory Authority Reserved. Nothing herein shall be construed as waiving, limiting or otherwise abridging in any manner regulatory authority of either party, which Algona and Auburn each hereby expressly reserve in full.

EXECUTED this 9th day of April, 2020.

CITY OF ALGONA

Dave Hill, Mayor

ATTEST/AUTHENTICATED

Jennifer Garnica, City Clerk

APPROVED AS TO FORM

Algona City Attorney

CITY OF AUBURN

Nancy Backus, Mayor

ATTEST/AUTHENTICATED

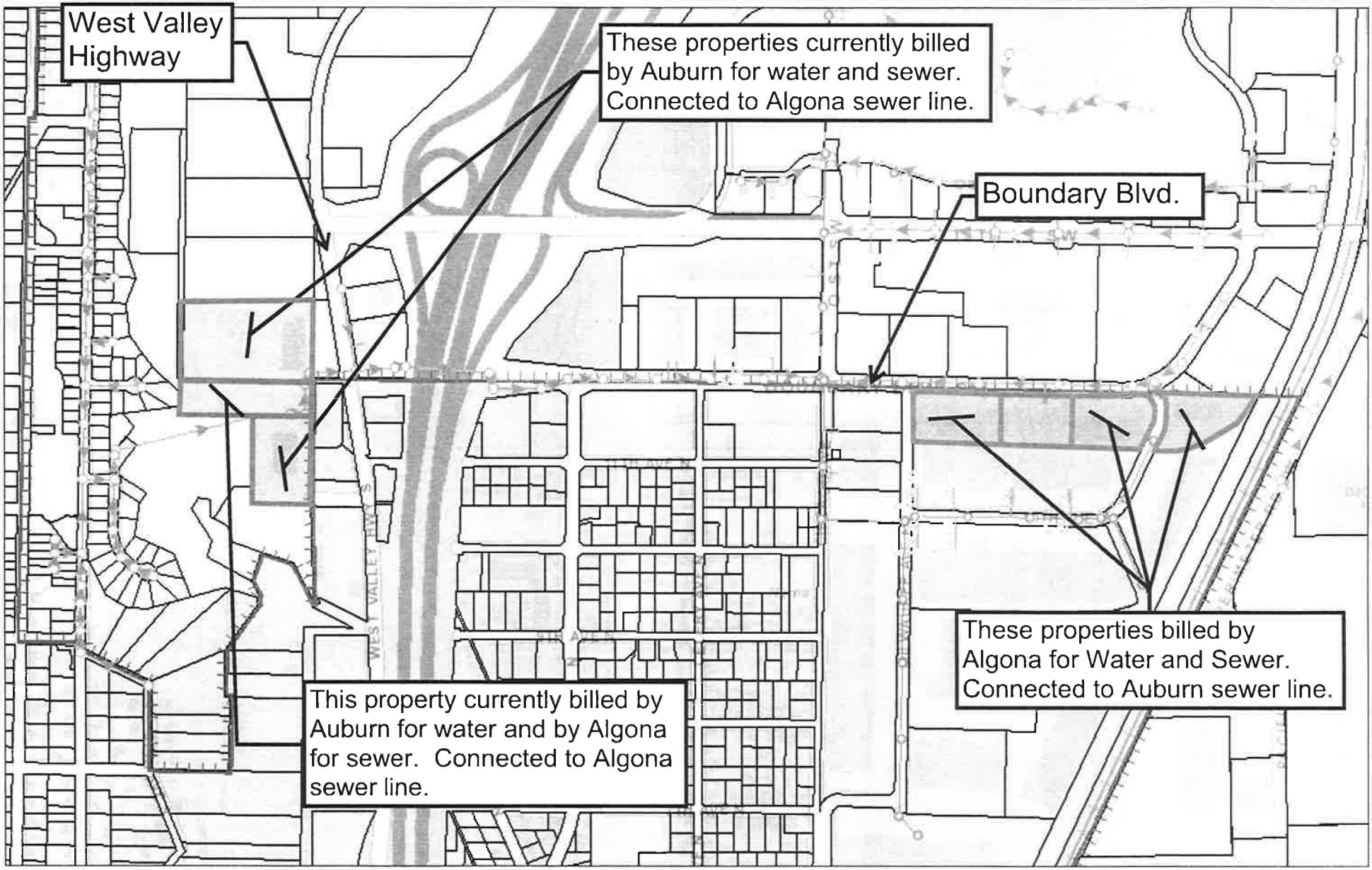
Shawn Campbell, City Clerk

APPROVED AS TO FORM

Auburn City Attorney

Auburn - Algona Utility Agreement

Printed Date: 3/19/2020
Map Created by City of Auburn eGIS
Imagery Date: May 2015



1,333.3 0 666.7 1,333.3 Feet

NAD_1983_StatePlane_Washington_North_FIPS_4601_Feet

1in = 667 ft 1: 8,000

Information shown is for general reference purposes only and does not necessarily represent exact geographic or cartographic data as mapped. The City of Auburn makes no warranty as to its accuracy.

APPENDIX A8

CITY OF BONNEY LAKE

- Sewer Service Boundaries (Resolutions 3760 and 3796)
- Right of Way Use Permits (Resolutions 3873 and 1471)

PNWF W2305-12

1

200508220499 8 PGS
08-22-2005 10:30am $0.00
PIERCE COUNTY, WASHINGTON

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Interlocal Agreement (RES 3760)

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
1. Bonney Lake, City of

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number
N/A

☐ Assessor Tax # not yet assigned

#39

RESOLUTION NO. 3760

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR AND CITY CLERK TO EXECUTE AN ADDENDUM TO AN INTERLOCAL AGREEMENT BETWEEN THE CITY OF AUBURN AND THE CITY OF BONNEY LAKE FOR THE ESTABLISHMENT OF SANITARY SEWER SERVICE BOUNDARIES

WHEREAS, in March of 1998 the City Council of the City of Auburn adopted Resolution No. 2925 authorizing the Mayor and City Clerk to execute a settlement agreement that was subsequently signed by the City of Auburn and the City of Bonney Lake; and

WHEREAS, among other items, that settlement agreement set forth a water service area boundary between the City of Auburn and the City of Bonney Lake; and

WHEREAS, subsequent to approval of the settlement agreement the Potential Annexation Areas (PAA) for the City of Auburn and City of Bonney Lake were amended to coincide with the water service area boundary; and

WHEREAS, since the time of the agreement it has been found that a parcel was divided by the water service area boundary set forth in said settlement agreement, and by the subsequent PAA boundary established based on the water service area boundary, and said parcel lies partially within and partially outside of the Auburn PAA; and

WHEREAS, part of the Lake Tapps Parkway East extension's right-of-way also lies partially within and partially outside of the Auburn water service area boundary established by the settlement agreement, and partially within and partially outside the subsequent PAA boundary established based on the water service area boundary; and

WHEREAS, sound growth management and transportation planning principles are best served by including entire parcels and entire street right-of-ways entirely within a PAA.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor and City Clerk are hereby authorized to execute Addendum No. 1 to the Settlement Agreement between the City of Auburn and the City of Bonney Lake in substantial conformity with the Addendum attached hereto, marked as Exhibit "A" and incorporated herein by this reference.

Section 2. That the Mayor is authorized to implement such other administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 7th day of February, 2005.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

ADDENDUM NO. 1

ADDENDUM TO SETTLEMENT AGREEMENT BETWEEN THE CITY OF BONNEY LAKE AND THE CITY OF AUBURN RELATING TO WATER SERVICE AREA BOUNDARY

THIS ADDENDUM is made and entered into this 14th day of February, 2005, by and between the **CITY OF BONNEY LAKE**, a municipal corporation of the State of Washington (hereinafter referred to as "Bonney Lake") and the **CITY OF AUBURN**, a municipal corporation of the State of Washington (hereinafter referred to as the "Auburn"), as an addendum to the Settlement Agreement between the parties executed on the 5th day of March, 1998.

W I T N E S S E T H:

WHEREAS, in March 1998 the City Council of the City of Auburn passed Resolution No. 2925 authorizing the Mayor and City Clerk to execute a settlement agreement that was subsequently signed by the City of Auburn and the City of Bonney Lake; and

WHEREAS, among other items, the settlement agreement set forth a water service area boundary between the City of Auburn and the City of Bonney Lake; and

WHEREAS, Exhibit B to the settlement agreement implied that Auburn's Urban Growth Area (UGA) was established to conform with the water service area boundary set forth in the settlement agreement; and

WHEREAS, subsequent to approval of the settlement agreement the Potential Annexation Area (PAA) for the City of Auburn was amended to coincide with the water service area boundary; and

WHEREAS, Exhibit B to the settlement agreement stated that the UGA and water service area boundary was established to follow property lines; and

WHEREAS, since the time of the agreement it has been found that a parcel was divided by the water service area boundary set forth in said settlement agreement, and by the subsequent PAA boundary established based on the water service area boundary, and said parcel lies partially within and partially outside of the Auburn PAA; and

WHEREAS, part of the Lake Tapps Parkway East extension's right-of-way also lies partially within and partially outside of the Auburn water service area boundary established by the settlement agreement, and partially within and partially outside the subsequent PAA boundary established based on the water service area boundary; and

WHEREAS, sound growth management and planning principles are best served by including entire parcels within a PAA.

NOW THEREFORE in consideration of their mutual covenants, conditions and promises, the PARTIES DO HEREBY AGREE as follows:

ITEM ONE: ADDITION OF PROPERTY
The Settlement Agreement is revised to include a portion of Pierce County parcel # 052005-4046, a portion of the Lake Tapps Parkway as it extends from the west boundary of 182nd Ave East west to Auburn's existing Urban Growth Area, and a portion of the natural gas pipe line parcel as noted in the attached Exhibit C. Exhibit C, attached hereto and incorporated by reference as if fully set forth herein, shall provide both a graphical representation and a legal description for the parcels that are to be included in Auburn's UGA for urban services and incorporated into the area that Bonney Lake shall be the water purveyor for within Auburn's UGA as defined in the original settlement agreement between Auburn and Bonney Lake.

ITEM TWO: REMAINING TERMS UNCHANGED:
That all other provisions of the Settlement Agreement between the parties executed on the 5th day of March, 1998, shall remain unchanged, and in full force and effect.

IN WITNESS WHEREOF the parties hereto have executed this Agreement as of the day and year first above written.

CITY OF BONNEY LAKE

ROBERT YOUNG, Mayor

Attest:

Harwood Edvalson, City Clerk

Approved as to form:

James Dionne, City Attorney

CITY OF AUBURN

PETER B. LEWIS, Mayor

Attest:

Danielle E. Daskam. City Clerk

Approved as to form:

Daniel B. Heid, City Attorney

EXHIBIT C

ADDENDUM 1
AUBURN BONNEY LAKE SETTLEMENT AGREEMENT

LEGAL DESCRIPTION OF AREA

THAT PORTION OF SECTION 5, TOWNSHIP 20 NORTH, RANGE 5 EAST, W.M. IN PIERCE COUNTY WASHINGTON, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF THE WEST HALF OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 5;

THENCE WESTERLY ALONG THE SOUTH LINE OF THE NORTH HALF OF THE SOUTHEAST QUARTER OF SAID SECTION 5 A DISTANCE OF 1360 FEET, MORE OR LESS, TO THE NORTHWESTERLY LINE OF THE LANDS CONVEYED TO EL PASO NATURAL GAS COMPANY BY DEED RECORDED UNDER PIERCE COUNTY AUDITOR'S NUMBER 2410280;

THENCE NORTHEASTERLY ALONG SAID NORTHWESTERLY LINE A DISTANCE OF 1880 FEET, MORE OR LESS, TO THE NORTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 5;

THENCE EASTERLY ALONG THE NORTH LINE OF SAID SOUTHEAST QUARTER A DISTANCE OF 700 FEET, MORE OR LESS, TO THE WEST LINE OF THE LANDS GRANTED TO PIERCE COUNTY FOR 182ND AVENUE EAST DESCRIBED IN DEED RECORDED UNDER PIERCE COUNTY AUDITOR'S NUMBER 2257762;

THENCE SOUTHERLY ALONG THE WEST LINE OF 182ND AVENUE EAST AS DESCRIBED IN SAID INSTRUMENT A DISTANCE OF 40 FEET, MORE OR LESS, TO THE SOUTH LINE OF THE LANDS CONVEYED TO PIERCE COUNTY IN DEED RECORDED UNDER AUDITORS FILE NUMBER 9902110924;

THENCE WESTERLY ALONG LAST SAID SOUTH LINE AND ALONG THE SOUTH LINE OF THE LANDS CONVEYED TO PIERCE COUNTY IN DEED RECORDED UNDER AUDITORS FILE NUMBER 200405180889 AND DEPICTED IN MAP ON FILE IN THE OFFICE OF THE DIRECTOR OF PIERCE COUNTY PUBLIC WORKS AND UTILITIES IN TACOMA, WASHINGTON, ENTITLED "LAKE TAPPS PARKWAY EAST – RIGHT OF WAY PLAN - CRP 5486" AND BEARING APPROVAL DATE OF NOVEMBER 17, 2003, A DISTANCE OF 600 FEET, MORE OR LESS, TO THE EAST LINE OF THE WEST HALF OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 5;

THENCE SOUTHERLY ALONG THE EAST LINE OF SAID WEST HALF OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 5 A DISTANCE OF 1220 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

H:\StaffFiles\WQ\Utility - Sewer\a\Bonney Lake\Addendum Settlement Legal Description.DOC

EXHIBIT C

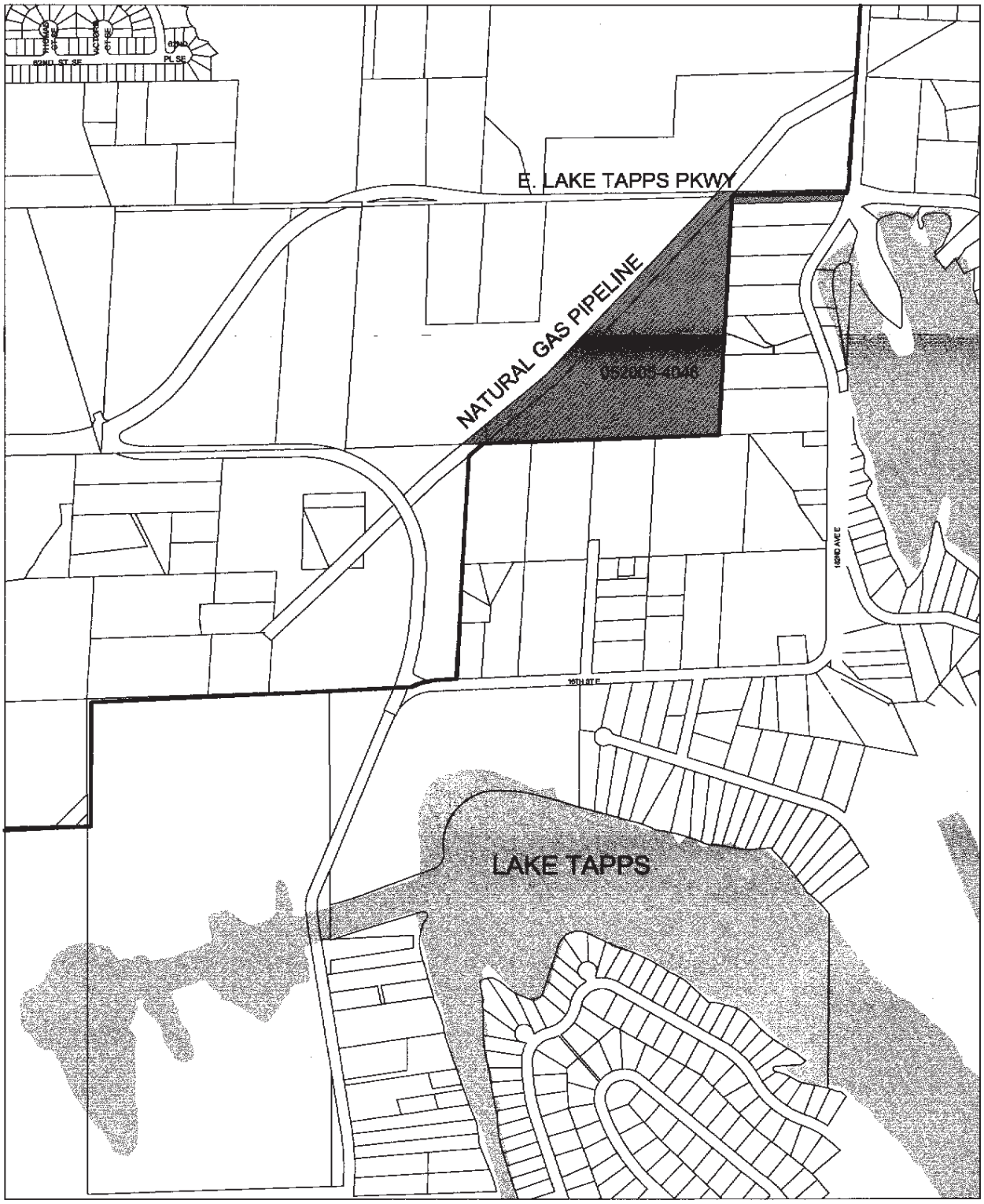


EXHIBIT A
RESOLUTION NO. 3760
PAGE 4 OF 4

EXHIBIT C
ADDENDUM NO. 1 TO THE MARCH 98
AUBURN - BONNEY LAKE
SETTLEMENT AGREEMENT
PAGE 2 OF 2

PNW W2371-13

2

200511100193 14 PGS
11-10-2005 10:49am $0.00
PIERCE COUNTY, WASHINGTON

Return Address:
Auburn City Clerk
City of Auburn
25 West Main St.
Auburn, WA 98001

RECORDER'S COVER SHEET

Document Title(s) (or transactions contained therein):

Interlocal Agreement (Resolution No. 3796)

Reference Number(s) of Documents assigned or released:
☐Additional reference #'s on page _____ of document

Grantor(s)/Borrower(s) (Last name first, then first name and initials)
Auburn, City of

Grantee/Assignee/Beneficiary: (Last name first)
1. Bonney Lake, City of

Legal Description (abbreviated: i.e. lot, block, plat or section, township, range)

PER RCW 39.34

☐ Additional legal is on page of document.

Assessor's Property Tax Parcel/Account Number
N/A

☐ Assessor Tax # not yet assigned

Said document(s) were filed for record by Pacific Northwest Title as accommodation only. It has not been examined as to proper execution or as to its effect upon title.

RESOLUTION NO. 3796

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE AN INTERLOCAL AGREEMENT WITH THE CITY OF BONNEY LAKE TO PROVIDE SANITARY SEWER SERVICE FROM AUBURN TO PROPERTY LOCATED WITHIN BONNEY LAKE'S SANITARY SEWER SERVICE AREA

WHEREAS, pursuant to RCW 35A.11.040 Bonney Lake and Auburn have the legal authority to exercise their powers and perform any of their functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Bonney Lake and Auburn have the legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, pursuant to RCW 35A.21.150 Bonney Lake and Auburn have the legal authority to maintain a sewerage system; and

WHEREAS, the parties recognize the responsibility of public sanitary sewer utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, portions of the Auburn sanitary sewer system are sized and are situated so as to be capable of affording sewer service to a portion of the Bonney Lake Sanitary Sewer Service Area; and

WHEREAS, Bonney Lake has evaluated and determined it is in Bonney Lake's best interest to establish this Agreement allowing Auburn to provide sewer service to property within Bonney Lake's sanitary sewer service area that lies in the vicinity of Auburn's sanitary sewer infrastructure; and

WHEREAS, Auburn's delivery of sewer service to these areas will provide the maximum efficiency in the use of existing and future facilities, together with orderly and efficient sanitary sewer planning.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor is hereby authorized to execute an Interlocal Agreement with the City of Bonney Lake in substantial conformity with the agreement attached hereto, marked as Exhibit "1" and incorporated herein by this reference.

Section 2. That the Mayor is authorized to implement such other administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force upon passage and signatures hereon.

Dated and Signed this 4th day of April, 2005.

CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:

Daniel B. Heid,
City Attorney

EXHIBIT 1

INTERLOCAL AGREEMENT
between
CITY OF AUBURN and CITY OF BONNEY LAKE
for the
THE ESTABLISHMENT OF SANITARY SEWER SERVICE BOUNDARIES

(Fairweather Cove)

Recording # 200511100193

THIS AGREEMENT, made and entered into by and between the **CITY OF AUBURN**, a Washington municipal corporation (hereinafter referred to as "Auburn"), and the **CITY OF BONNEY LAKE**, a Washington municipal corporation, (hereinafter referred to as "Bonney Lake"), both being duly organized and existing under and by virtue of the laws of the State of Washington,

WITNESSETH:

WHEREAS, pursuant to RCW 35A.11.040 Bonney Lake and Auburn have the legal authority to exercise their powers and perform any of their functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Bonney Lake and Auburn have the legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, pursuant to RCW 35A.21.150 Bonney Lake and Auburn have the legal authority to maintain a sewerage system; and

WHEREAS, the parties recognize the responsibility of public sanitary sewer utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, portions of the Auburn sanitary sewer system have been sized and are situated so as to be capable of affording sewer service to a portion of the Bonney Lake Sanitary Sewer Service Area; and

WHEREAS, Bonney Lake has evaluated and determined it is in Bonney Lake's best interest to establish this Agreement allowing property located within Bonney Lake's sewer service area and designated within Pierce County's Urban Growth Area (CUGA), to connect into Auburn's public sanitary sewer facilities; and

WHEREAS, Auburn recognizes the negative impacts septic tanks can have on water quality and the quality of life within and around Lake Tapps; and

WHEREAS, Auburn has sufficient wastewater conveyance capacity within their sanitary sewer facilities to support these adjustments to the existing sewer service areas; and

WHEREAS, Auburn's delivery of sewer service to these areas will provide the maximum efficiency in the use of existing and future facilities, together with orderly and efficient sanitary sewer planning.

NOW, THEREFORE:

IT IS HEREBY AGREED by and between the parties hereto as follows:

1. Sewer Service Area. The parties have agreed that Auburn will provide sanitary sewer service to Bonney Lake for a portion of Bonney Lake's sanitary sewer service area as graphically depicted on the map and legally described as Attachment "A", attached hereto, which is by this reference incorporated herein. Attachment "A" represents Bonney Lake's sewer service area that Bonney Lake has negotiated with Auburn for wastewater conveyance and treatment via Auburn and King County facilities. The actual sewer service provider to the area depicted within Attachment "A" shall remain Bonney Lake. Both parties further agree that Auburn and Bonney Lake shall be subject to the terms and conditions of this Agreement.

2. Management, Regulation and Control of Sewer System. Auburn shall have the sole responsibility and authority to construct, maintain, manage, conduct and operate its sewerage system as installed within Auburn's sanitary sewer service area. Auburn shall be responsible for obtaining and maintaining a franchise from Pierce County for Auburn facilities located in Pierce County right of way.

Bonney Lake shall have the sole responsibility and authority for those facilities that extend outside of the public right of way within the region depicted within Attachment "A". Bonney Lake shall be responsible for obtaining and maintaining a franchise from Pierce County for Bonney Lake facilities located in Pierce County right of way. Bonney Lake shall be responsible for the issuance of side sewer permits and the inspection of facilities located upon private property. Certificates of sewer availability shall be issued from Auburn to Bonney Lake. Bonney Lake shall be responsible for ensuring the conditions of these certificates are met.

3. Rates, Charges, Permits, and Billing Responsibilities. Auburn rates and connection charges (system development charges) shall be billed from Auburn to Bonney Lake in accordance with existing Auburn City Code at the time of service. Bonney Lake shall provide Auburn with the appropriate information so that accurate billings can be established. Auburn and King County shall have the authority to visit sites, upon threat of termination of service, to verify information provided by the property owner and/or Bonney Lake is accurate. King County's capacity charge shall be billed to the property seeking service directly from King County. Bonney Lake may elect to pay the King County capacity charge directly to King County and collect

the costs with the price of the Bonney Lake permit. Auburn shall issue permits to Bonney Lake prior to Bonney Lake's issuing of permits to the property owners. Neither Auburn nor this agreement governs Bonney Lake's rates and fees to be charged to the property owner for the appropriate Bonney Lake side sewer permit.

For Commercial establishments, no additional connections or modification to existing facilities shall be made that would alter the number of plumbing fixtures in the facilities that convey wastewater to Auburn, unless the property owner first pays the associated fees and submits the proper information to obtain a Bonney Lake sanitary sewer permit. Bonney Lake shall in turn seek an Auburn side sewer permit.

Sanitary sewer permits shall be subject to inspection and approval by Bonney Lake. Bonney Lake shall ensure that compliance with Auburn's Sanitary Sewer Standards, as adopted at the time the connection, is made. With this agreement Bonney Lake is providing Auburn with the right to manually read Bonney Lake's water meters for the properties described in Attachment "A"; however, if requested by Auburn, Bonney Lake shall provide water usage information.

The rates and fees charged to Auburn's sanitary sewer customers shall be fixed, altered, regulated and controlled by Auburn pursuant to all applicable laws and regulations promulgated on the subject of rates and charges for sewer service. No surcharge shall be charged to the customers served under this agreement on the sole basis that those customers are outside of Auburn's city limits.

Auburn shall send bills for sanitary sewer service from said property to Bonney Lake's Finance department once every two months.

4. Boundary Review Board. In the event that implementation of the terms hereof results in permanent sewer service to areas that will be outside the respective service boundaries of Auburn or Bonney Lake, the parties will at the time of such service jointly seek approval of the Pierce County Boundary Review Board in accordance with R.C.W. 36.93.090.

5. Comprehensive Sewer Planning. The terms of this Agreement will be included as an element of Bonney Lake and Auburn's Comprehensive Sewerage Plans.

6. Reliance. Each party hereto acknowledges that the other will rely upon the terms of this agreement in its comprehensive planning to meet the needs of the service area designated herein.

7. Indemnification. Auburn agrees to indemnify and hold Bonney Lake and its agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, loses, damages or costs, of whatsoever kind or nature, brought against Bonney Lake arising out of, in connection with, or incident to the execution of this

agreement and/or Auburn's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of Bonney Lake, its agents, employees, and/or officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of Auburn; and provided further, that nothing herein shall require Auburn to hold harmless or defend Bonney Lake, its agents, employees, and/or officers, from any claims arising from the sole negligence of Bonney Lake, its agents, employees, and/or officers. No liability shall attach to Bonney Lake by reason of entering this agreement except as expressly provided herein.

Bonney Lake agrees to indemnify and hold Auburn and its agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, loses, damages or costs, of whatsoever kind or nature, brought against Auburn arising out of, in connection with, or incident to the execution of this agreement and/or Bonney Lake's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of Auburn, its agents, employees, and/or officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of Bonney Lake; and provided further, that nothing herein shall require Bonney Lake to hold harmless or defend Auburn, its agents, employees, and/or officers, from any claims arising from the sole negligence of Auburn, its agents, employees, and/or officers. No liability shall attach to Auburn by reason of entering this agreement except as expressly provided herein.

8. Assignment. The parties shall not assign this agreement or any interest, obligation or duty therein without the express written consent of the other party.

9. Attorney's Fees. If either party shall be required to bring any action to enforce any provision of this Agreement, or shall be required to defend any action brought by the other party with respect to this Agreement, and in the further event that one party shall substantially prevail in such action, the losing party shall, in addition to all other payments required therein, pay all of the prevailing party's reasonable costs in connection with such action, including such sums as the court or courts may adjudge reasonable as attorney's fees in trial court and in appellate courts.

10. Government Approvals. The parties will give notice of the adoption of this Agreement to King County's Department of Natural Resources – Wastewater Treatment Division, to the Pierce County Department of Health, and to any other agency with jurisdiction or mission relevant to the terms hereof, and shall cooperate and assist in all reasonable manner in procuring any necessary approvals hereof by those agencies.

11. Service Amendments. Any changes to the service areas described herein shall be by mutual agreement. Each party may give permission to the other on a case-by-case basis to provide service by one party into the other party's adjacent or nearby service area based upon considerations of economic efficiency for providing the service with mutual consent of Bonney Lake's Director of Public Works and Auburn's Director of Public Works.

12. Notices. All notices between the two agencies hereunder may be delivered or mailed. If mailed, they shall be sent to the following respective addresses:

City of Auburn
Director of Public Works
25 West Main Street
Auburn, WA 98001

253-931-3010

City of Bonney Lake
Director of Public Works
PO Box 7380
19306 Bonney Lake Blvd
Bonney Lake, WA 98390
253-862-8602

or to such other representative as either party may hereafter from time to time designate in writing. All notices and payments mailed by regular post (including first class) shall be deemed to have been given on the second business day following the date of mailing, if properly mailed and addressed. Notices and payments sent by certified or registered mail shall be deemed to have been given on the day next following the date of mailing, if properly mailed and addressed. For all types of mail, the postmark affixed by the United States Postal Service shall be conclusive evidence of the date of mailing.

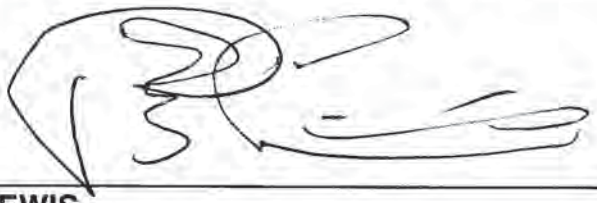
13. Alteration, Amendment or Modification. Auburn and Bonney Lake hereby reserve the right to alter, amend or modify the terms and conditions of this Agreement upon written agreement of both parties to such alteration, amendment or modification. Such written consent(s) shall be filed with this agreement for future reference.

14. Sanctity of Agreement. This agreement constitutes the entire agreement of the parties regarding the subject matter hereof, and there are no other representations or oral agreements other than those listed herein, which vary the terms of this agreement. Future agreements may occur between the parties to transfer additional or future service areas by mutual agreement.

15. Obligation Intact. Nothing herein shall be construed to alter the rights, responsibilities, liabilities, or obligations of either Auburn or Bonney Lake regarding provision of sewer service, except as specifically set forth herein.

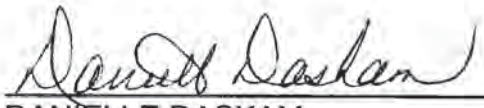
CITY OF AUBURN

Approved by Resolution No. **3796**, of the City of Auburn, Washington, at its regular meeting held on the 4th day of April, 2005.

By: 

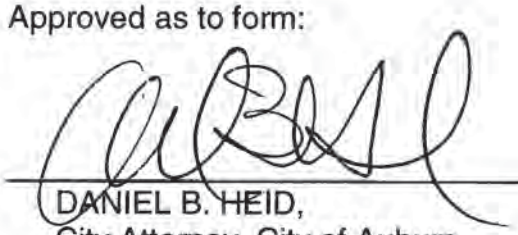
PETER B. LEWIS,
Mayor, City of Auburn

Attest:



DANIELLE DASKAM,
City Clerk, City of Auburn

Approved as to form:



DANIEL B. HEID,
City Attorney, City of Auburn

ATTACHMENT "A"

Legal Description

THAT PORTION OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER AND THAT PORTION OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 8, TOWNSHIP 20 NORTH, RANGE 5 EAST, LYING EASTERLY OF SUMNER TAPPS HIGHWAY, SOUTHERLY OF NORTH TAPPS ROAD (16^{TH} STREET EAST (FOREST CANYON ROAD)); EASTERLY OF THE PLAT OF LAKE TAPPS TACOMA POINT ADDITION, ACCORDING TO PLAT RECORDED IN BOOK 17 OF PLATS AT PAGES 1 TO 8, INCLUSIVE, AND NORTHERLY OF THE INTAKE CANAL TO LAKE TAPPS, IN PIERCE COUNTY, WASHINGTON. EXCEPT THAT PORTION LYING WITHIN LAKE TAPPS.

AREA DESCRIBED IS APPROXIMATELY $\pm$ 16.7 ACRES.
PARCEL NUMBER 0520081001

SE QUARTER OF SECTION 8, TOWNSHIP 20 N, RANGE 5 E

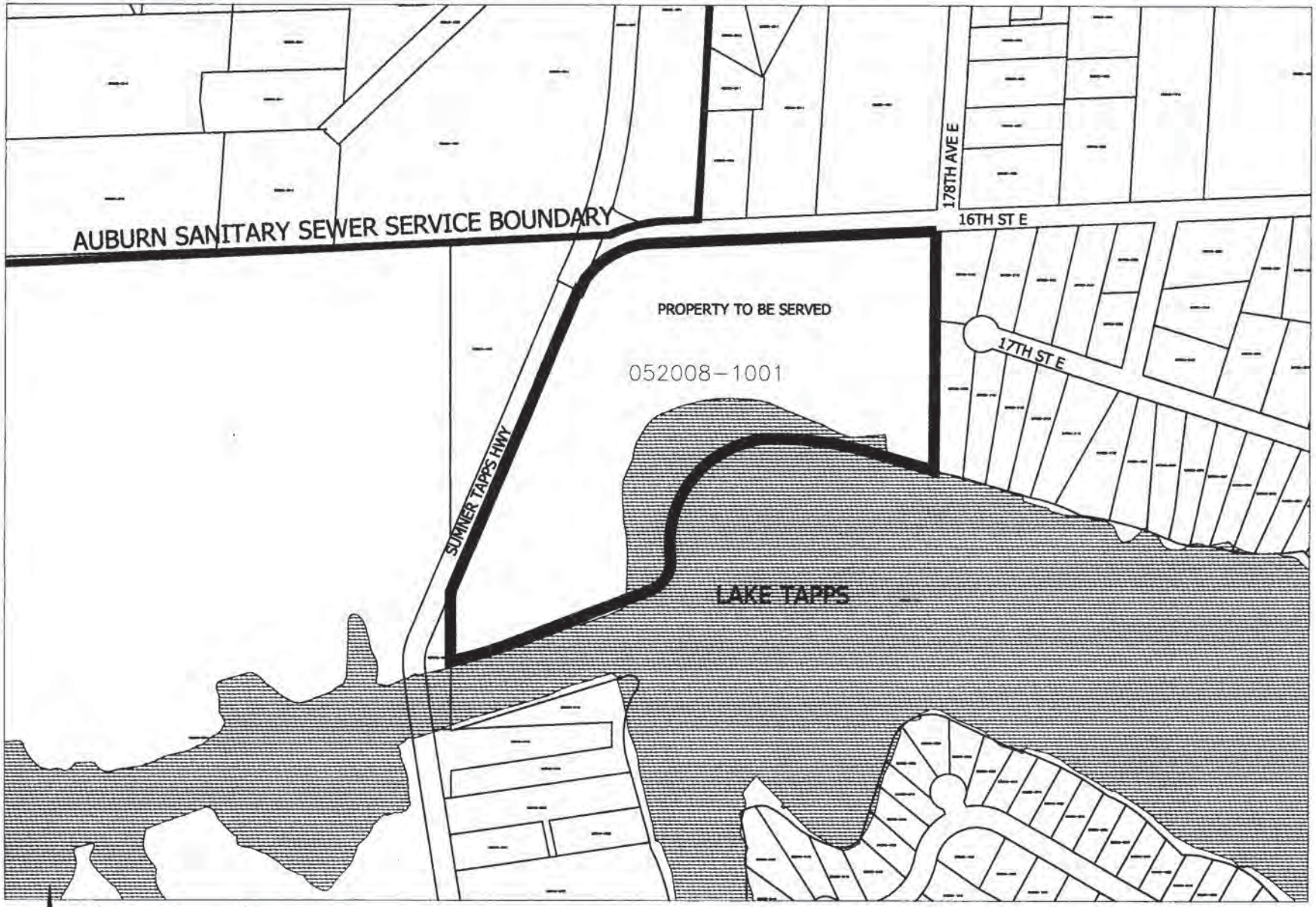


EXHIBIT A
BONNEY LAKE - AUBURN
SANITARY SEWER SERVICE AGREEMENT
FAIRWEATHER COVE

PLOTTED: MARCH 2005

ATTACHMENT "A"
Page 2 of 2

Exhibit 1
Resolution No. 3796
Page 9 of 9

Pierce County Recording
200511100194

RESOLUTION NO. 3873

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE AN INTERLOCAL AGREEMENT WITH THE CITY OF BONNEY LAKE FOR THE ESTABLISHMENT OF A RIGHT OF WAY USE PERMIT WITH PIERCE COUNTY

WHEREAS, both Auburn and Bonney Lake are agencies qualified to engage in furnishing sanitary sewer service within their approved service areas; and

WHEREAS, the residential development of "Fairweather Cove" is located within an unincorporated area of Pierce County designated to be serviced with sanitary sewer service from Bonney Lake at approximately 16th Street East and Sumner Tapps Highway,

WHEREAS, Bonney Lake lacks a franchise to operate, maintain, repair, and construct sewer mains and service lines, and appurtenances in, over, along, and under County roads and rights-of-way within the area of Pierce County, Washington in which Fairweather Cove is located; and

WHEREAS, Bonney Lake is in the process of completing an update to its Comprehensive Sewer Plan and intends to thereafter apply for, and receive, a franchise with Pierce County to enable it to provide sewer service to that area of Pierce County in which Fairweather Cove is located; and

WHEREAS, Auburn maintains a franchise agreement with Pierce County, dated July 8, 1996, and expiring on July 8, 2021, covering the area of Pierce County in which Fairweather Cove is located; and

WHEREAS, while service through Auburn's sewer system is available, sewer service to Fairweather Cove is more feasible through Bonney Lake's sewer system; and

WHEREAS, Bonney Lake received a request for sewer service to Fairweather Cove from Harbour Homes, the owner thereof, hereinafter referred to as "Developer", in August 2001; and

WHEREAS, Bonney Lake and Auburn are pursuing a separate agreement between them that would allow for Bonney Lake to convey wastewater from a portion of Bonney Lake's service area into Auburn's wastewater conveyance system for treatment and disposal in an effort to provide for the most efficient sewer service to future customers at a reasonable cost; and

WHEREAS, both Bonney Lake and Auburn agree that Fairweather Cove is best served by Bonney Lake under an interlocal agreement with Auburn; and

WHEREAS, Bonney Lake entered into a Developer Public Facility Extension Agreement ("Extension Agreement"), with the Developer under which the Developer is required to construct necessary public improvements to serve Fairweather Cove; and

WHEREAS, Auburn is willing to accept interim ownership and to assume interim responsibility for operation and maintenance of the Developer's public sewer improvements, subject to the terms, limitations, and conditions of this Agreement; and

WHEREAS, Bonney Lake is willing to accept transfer of ownership and responsibility for operation and maintenance of the Developer's public

sewer improvements upon obtaining a sanitary sewer franchise from Pierce County to serve the area in which Fairweather Cove is located.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, HEREBY RESOLVES as follows:

Section 1. The Mayor is hereby authorized to execute an interlocal agreement with the City of Bonney Lake, in substantial conformity with the agreement attached hereto, marked as Exhibit 1 and incorporated herein by this reference.

Section 2. That the Mayor is authorized to implement such other administrative procedures as may be necessary to carry out the directives of this legislation.

Section 3. That this resolution shall take effect and be in full force upon passage and signatures hereon.

DATED and signed this 18th day of July, 2005.

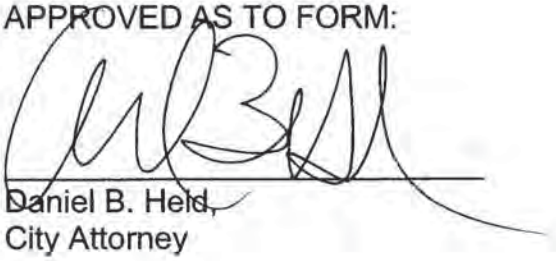
CITY OF AUBURN

PETER B. LEWIS
MAYOR

ATTEST:

Danielle E. Daskam,
City Clerk

APPROVED AS TO FORM:



Daniel B. Held,
City Attorney

EXHIBIT 1

AUBURN – BONNEY LAKE INTERLOCAL AGREEMENT For Pierce County Right of Way Permit

(Fairweather Cove)

This Agreement entered into by and between the City of Bonney Lake, a municipal corporation of the State of Washington (hereinafter "Bonney Lake"), and the City of Auburn, a municipal corporation of the State of Washington (hereinafter "Auburn").

WHEREAS, both Auburn and Bonney Lake are agencies qualified to engage in furnishing sanitary sewer service within their approved service areas; and

WHEREAS, the residential development of "Fairweather Cove" is located within an unincorporated area of Pierce County designated to be serviced with sanitary sewer service from Bonney Lake at approximately 16th Street East and Sumner Tapps Hwy.,

WHEREAS, Bonney Lake lacks a franchise to operate, maintain, repair, and construct sewer mains and service lines, and appurtenances in, over, along, and under County roads and rights-of-way within the area of Pierce County, Washington in which Fairweather Cove is located; and

WHEREAS, Bonney Lake is in the process of completing an update to its Comprehensive Sewer Plan and intends to thereafter apply for, and receive, a franchise with Pierce County to enable it to provide sewer service to that area of Pierce County in which Fairweather Cove is located; and

WHEREAS, Auburn maintains a franchise agreement with Pierce County, dated July 8, 1996, and expiring on July 8, 2021, covering the area of Pierce County in which Fairweather Cove is located; and

WHEREAS, while service through Auburn's sewer system is available, sewer service to Fairweather Cove is more feasible through Bonney Lake's sewer system; and

WHEREAS, Bonney Lake received a request for sewer service to Fairweather Cove from Harbour Homes, the owner thereof, hereinafter referred to as "Developer", in August 2001; and

WHEREAS, Bonney Lake and Auburn are pursuing a separate agreement between them that would allow for Bonney Lake to convey wastewater from a portion of Bonney Lake's service area into Auburn's wastewater conveyance system for treatment and disposal in an effort to provide for the most efficient sewer service to future customers at a reasonable cost; and

WHEREAS, both Bonney Lake and Auburn agree that Fairweather Cove is best served by Bonney Lake under an interlocal agreement with Auburn; and

WHEREAS, Bonney Lake entered into a Developer Public Facility Extension Agreement ("Extension Agreement"), with the Developer under which the Developer is required to construct necessary public improvements to serve Fairweather Cove; and

WHEREAS, Auburn is willing to accept interim ownership and to assume interim responsibility for operation and maintenance of the Developer's public sewer improvements, subject to the terms, limitations, and conditions of this Agreement; and

WHEREAS, Bonney Lake, shall accept transfer of ownership and responsibility for operation and maintenance of the Developer's public sewer improvements upon obtaining a sanitary sewer franchise from Pierce County to serve the area in which Fairweather Cove is located.

NOW, THEREFORE BE IT AGREED AS FOLLOWS:

1. Consistent with the terms of this Agreement and Auburn's sewer franchise agreement with Pierce County, Auburn shall own, operate, and maintain, for the period of time described herein, public sewer improvements for Fairweather Cove, constructed pursuant to the Extension Agreement between Bonney Lake and Developer, to the point of connection of said improvements with Auburn's existing gravity sewer located along the Sumner Lake Tapps Hwy. Auburn shall receive wastewater from Fairweather Cove through these improvements, and shall provide sewer service from this point through Auburn's conveyance system to King County's conveyance system for ultimate disposal at the King County sewer treatment plant located in Renton, Washington.

2. Bonney Lake shall administer all aspects of the Extension Agreement, including the construction of the sewer improvements required to serve Fairweather Cove to Bonney Lake standards. Auburn shall have the right to inspect and approve plans for and construction of the public sewer improvements required to serve Fairweather Cove as necessary to comply with Auburn's sewer franchise with Pierce County. Upon request from Bonney Lake, Auburn shall

apply for the R-O-W permit required from Pierce County for construction of the Developer's public sewer improvements in Pierce County right-of-way.

3. Auburn and Bonney Lake shall work in good faith to review all project plans, and to inspect all project construction, in a timely manner, and, where and when appropriate, to modify Bonney Lake's standards to facilitate compliance with the terms and conditions of Auburn's sewer franchise with Pierce County. Bonney Lake agrees that it shall be responsible to comply with any requirements that may be generated if this Agreement is submitted to the Pierce County Boundary Review Board for approval.

4. Upon Developer's completion of construction of sewer improvements and satisfaction of all terms and conditions of the Extension Agreement Bonney Lake shall transfer temporary ownership to Auburn, for all public sewer improvements in Pierce County required to serve Fairweather Cove.

5. Following satisfactory completion of the sewer improvements, property owners within Fairweather Cove may apply for connection to the sewer system as single-family residential customers of the Bonney Lake Sewer Utility. Connection charges, monthly rates and other charges shall be collected as defined by the Auburn - Bonney Lake Interlocal Agreement for the Establishment of Sanitary Sewer Service Boundaries attached hereto and incorporated herein by this reference as Attachment B (Auburn Resolution No. 3796).

6. In consideration of the receipt of the charges referenced in paragraph 5 above, Bonney Lake agrees to provide the operation, repair and maintenance, both ordinary and extraordinary, of the Auburn-owned public sewer improvements for Fairweather Cove, as referenced in paragraph 4 of this Agreement. If any such operation and maintenance triggers any of the provisions of Auburn's sewer franchise with Pierce County, Bonney Lake shall promptly notify Auburn. Bonney Lake shall abide by any such provisions at the sole discretion of Auburn and at the sole cost of Bonney Lake.

7. Upon Bonney Lake's written notice to Auburn that it has secured a sewer franchise with Pierce County for the area of Pierce County in which the Fairweather Cove development is located, a copy of which franchise shall be provided with the written notice to Auburn, Auburn shall, by bill of sale, immediately thereafter transfer ownership of the facilities temporarily owned by Auburn pursuant to this Agreement, to Bonney Lake.

8. Bonney Lake agrees to reimburse Auburn for all expenses incurred by Auburn, including the cost of time spent by Auburn employees calculated at labor rates used to establish Auburn's fees and charges, in connection with this Agreement and the provision of service to Bonney Lake's customers pursuant to the provisions herein. Auburn agrees to submit to Bonney Lake, no less than

annually, a statement of charges due and Bonney Lake shall pay the same within 45 days of the billing date. The parties agree to work cooperatively to resolve any dispute that may arise with respect to any such billing.

9. This Agreement may be terminated or modified, but only as agreed to in writing by both the parties.

10. Bonney Lake and Auburn agree to indemnify, defend and hold each other harmless from and against any loss, cost, damage, or expense of any kind arising out of injury to person or damage to property in any manner caused by the parties' own negligent conduct in the performance of this interlocal agreement.

11. This Agreement constitutes the only agreement between the parties concerning sewer service to the Fairweather Cove Development and nothing herein shall be construed to alter the rights, responsibilities, liabilities, or obligations of either Bonney Lake or Auburn regarding the provision of sewer service within their respective service areas except as specifically set forth herein.

CITY OF AUBURN

Approved by Resolution No. 3873 of the City of Auburn, Washington, at its regular meeting held on the 18th day of July, 2005.

By: _____

Peter B. Lewis, Mayor
City of Auburn

Attest:

_____

Danielle Daskam, City Clerk

Approved as to form:

_____

Daniel B. Heid, City Attorney

CITY OF BONNEY LAKE
Approved by Resolution No. 1471 of the City of Bonney Lake, Washington, at its regular meeting held on the 9th day of August 2005.

By: _____

Bob Young, Mayor
City of Bonney Lake

Attest:

_____

Woody Edvalson, City Clerk

Approved as to form:

_____

James Dionne, City Attorney

ATTACHMENT "B"

INTERLOCAL AGREEMENT
between
CITY OF AUBURN and CITY OF BONNEY LAKE
for the
THE ESTABLISHMENT OF SANITARY SEWER SERVICE BOUNDARIES

(Fairweather Cove)

THIS AGREEMENT, made and entered into by and between the **CITY OF AUBURN**, a Washington municipal corporation (hereinafter referred to as "Auburn"), and the **CITY OF BONNEY LAKE**, a Washington municipal corporation, (hereinafter referred to as "Bonney Lake"), both being duly organized and existing under and by virtue of the laws of the State of Washington,

WITNESSETH:

WHEREAS, pursuant to RCW 35A.11.040 Bonney Lake and Auburn have the legal authority to exercise their powers and perform any of their functions as set forth in RCW 39.34; and

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, Bonney Lake and Auburn have the legal authority to cooperate with other localities on the basis of mutual advantage and provision of services; and

WHEREAS, pursuant to RCW 35A.21.150 Bonney Lake and Auburn have the legal authority to maintain a sewerage system; and

WHEREAS, the parties recognize the responsibility of public sanitary sewer utilities to provide efficient and reliable service to their customers at reasonable cost; and

WHEREAS, portions of the Auburn sanitary sewer system have been sized and are situated so as to be capable of affording sewer service to a portion of the Bonney Lake Sanitary Sewer Service Area; and

WHEREAS, Bonney Lake has evaluated and determined it is in Bonney Lake's best interest to establish this Agreement allowing property located within Bonney Lake's sewer service area and designated within Pierce County's Urban Growth Area (CUGA), to connect into Auburn's public sanitary sewer facilities; and

WHEREAS, Auburn recognizes the negative impacts septic tanks can have on water quality and the quality of life within and around Lake Tapps; and

ATTACHMENT "B"

WHEREAS, Auburn has sufficient wastewater conveyance capacity within their sanitary sewer facilities to support these adjustments to the existing sewer service areas; and

WHEREAS, Auburn's delivery of sewer service to these areas will provide the maximum efficiency in the use of existing and future facilities, together with orderly and efficient sanitary sewer planning.

NOW, THEREFORE:

IT IS HEREBY AGREED by and between the parties hereto as follows:

1. **Sewer Service Area.** The parties have agreed that Auburn will provide sanitary sewer service to Bonney Lake for a portion of Bonney Lake's sanitary sewer service area as graphically depicted on the map and legally described as Attachment "A", attached hereto, which is by this reference incorporated herein. Attachment "A" represents Bonney Lake's sewer service area that Bonney Lake has negotiated with Auburn for wastewater conveyance and treatment via Auburn and King County facilities. The actual sewer service provider to the area depicted within Attachment "A" shall remain Bonney Lake. Both parties further agree that Auburn and Bonney Lake shall be subject to the terms and conditions of this Agreement.

2. **Management, Regulation and Control of Sewer System.** Auburn shall have the sole responsibility and authority to construct, maintain, manage, conduct and operate its sewerage system as installed within Auburn's sanitary sewer service area. Auburn shall be responsible for obtaining and maintaining a franchise from Pierce County for Auburn facilities located in Pierce County right of way.

Bonney Lake shall have the sole responsibility and authority for those facilities that extend outside of the public right of way within the region depicted within Attachment "A". Bonney Lake shall be responsible for obtaining and maintaining a franchise from Pierce County for Bonney Lake facilities located in Pierce County right of way. Bonney Lake shall be responsible for the issuance of side sewer permits and the inspection of facilities located upon private property. Certificates of sewer availability shall be issued from Auburn to Bonney Lake. Bonney Lake shall be responsible for ensuring the conditions of these certificates are met.

3. **Rates, Charges, Permits, and Billing Responsibilities.** Auburn rates and connection charges (system development charges) shall be billed from Auburn to Bonney Lake in accordance with existing Auburn City Code at the time of service. Bonney Lake shall provide Auburn with the appropriate information so that accurate billings can be established. Auburn and King County shall have the authority to visit sites, upon threat of termination of service, to verify information provided by the

ATTACHMENT "B"

property owner and/or Bonney Lake is accurate. King County's capacity charge shall be billed to the property seeking service directly from King County. Bonney Lake may elect to pay the King County capacity charge directly to King County and collect the costs with the price of the Bonney Lake permit. Auburn shall issue permits to Bonney Lake prior to Bonney Lake's issuing of permits to the property owners. Neither Auburn nor this agreement governs Bonney Lake's rates and fees to be charged to the property owner for the appropriate Bonney Lake side sewer permit.

For Commercial establishments, no additional connections or modification to existing facilities shall be made that would alter the number of plumbing fixtures in the facilities that convey wastewater to Auburn, unless the property owner first pays the associated fees and submits the proper information to obtain a Bonney Lake sanitary sewer permit. Bonney Lake shall in turn seek an Auburn side sewer permit.

Sanitary sewer permits shall be subject to inspection and approval by Bonney Lake. Bonney Lake shall ensure that compliance with Auburn's Sanitary Sewer Standards, as adopted at the time the connection, is made. With this agreement Bonney Lake is providing Auburn with the right to manually read Bonney Lake's water meters for the properties described in Attachment "A"; however, if requested by Auburn, Bonney Lake shall provide water usage information.

The rates and fees charged to Auburn's sanitary sewer customers shall be fixed, altered, regulated and controlled by Auburn pursuant to all applicable laws and regulations promulgated on the subject of rates and charges for sewer service. No surcharge shall be charged to the customers served under this agreement on the sole basis that those customers are outside of Auburn's city limits.

Auburn shall send bills for sanitary sewer service from said property to Bonney Lake's Finance department once every two months.

4. Boundary Review Board. In the event that implementation of the terms hereof results in permanent sewer service to areas that will be outside the respective service boundaries of Auburn or Bonney Lake, the parties will at the time of such service jointly seek approval of the Pierce County Boundary Review Board in accordance with R.C.W. 36.93.090.

5. Comprehensive Sewer Planning. The terms of this Agreement will be included as an element of Bonney Lake and Auburn's Comprehensive Sewerage Plans.

6. Reliance. Each party hereto acknowledges that the other will rely upon the terms of this agreement in its comprehensive planning to meet the needs of the service area designated herein.

ATTACHMENT "B"

7. **Indemnification**. Auburn agrees to indemnify and hold Bonney Lake and its agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, loses, damages or costs, of whatsoever kind or nature, brought against Bonney Lake arising out of, in connection with, or incident to the execution of this agreement and/or Auburn's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of Bonney Lake, its agents, employees, and/or officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of Auburn; and provided further, that nothing herein shall require Auburn to hold harmless or defend Bonney Lake, its agents, employees, and/or officers, from any claims arising from the sole negligence of Bonney Lake, its agents, employees, and/or officers. No liability shall attach to Bonney Lake by reason of entering this agreement except as expressly provided herein.

Bonney Lake agrees to indemnify and hold Auburn and its agents, employees, and/or officers, harmless from and shall process and defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, loses, damages or costs, of whatsoever kind or nature, brought against Auburn arising out of, in connection with, or incident to the execution of this agreement and/or Bonney Lake's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of Auburn, its agents, employees, and/or officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of Bonney Lake; and provided further, that nothing herein shall require Bonney Lake to hold harmless or defend Auburn, its agents, employees, and/or officers, from any claims arising from the sole negligence of Auburn, its agents, employees, and/or officers. No liability shall attach to Auburn by reason of entering this agreement except as expressly provided herein.

8. **Assignment.** The parties shall not assign this agreement or any interest, obligation or duty therein without the express written consent of the other party.

9. **Attorney's Fees.** If either party shall be required to bring any action to enforce any provision of this Agreement, or shall be required to defend any action brought by the other party with respect to this Agreement, and in the further event that one party shall substantially prevail in such action, the losing party shall, in addition to all other payments required therein, pay all of the prevailing party's reasonable costs in connection with such action, including such sums as the court or courts may adjudge reasonable as attorney's fees in trial court and in appellate courts.

ATTACHMENT "B"

10. Government Approvals. The parties will give notice of the adoption of this Agreement to King County's Department of Natural Resources – Wastewater Treatment Division, to the Pierce County Department of Health, and to any other agency with jurisdiction or mission relevant to the terms hereof, and shall cooperate and assist in all reasonable manner in procuring any necessary approvals hereof by those agencies.

11. Service Amendments. Any changes to the service areas described herein shall be by mutual agreement. Each party may give permission to the other on a case-by-case basis to provide service by one party into the other party's adjacent or nearby service area based upon considerations of economic efficiency for providing the service with mutual consent of Bonney Lake's Director of Public Works and Auburn's Director of Public Works.

12. Notices. All notices between the two agencies hereunder may be delivered or mailed. If mailed, they shall be sent to the following respective addresses:

City of Auburn
Director of Public Works
25 West Main Street
Auburn, WA 98001

253-931-3010

City of Bonney Lake
Director of Public Works
PO Box 7380
19306 Bonney Lake Blvd
Bonney Lake, WA 98390
253-862-8602

or to such other representative as either party may hereafter from time to time designate in writing. All notices and payments mailed by regular post (including first class) shall be deemed to have been given on the second business day following the date of mailing, if properly mailed and addressed. Notices and payments sent by certified or registered mail shall be deemed to have been given on the day next following the date of mailing, if properly mailed and addressed. For all types of mail, the postmark affixed by the United States Postal Service shall be conclusive evidence of the date of mailing.

13. Alteration, Amendment or Modification. Auburn and Bonney Lake hereby reserve the right to alter, amend or modify the terms and conditions of this Agreement upon written agreement of both parties to such alteration, amendment or modification. Such written consent(s) shall be filed with this agreement for future reference.

14. Sanctity of Agreement. This agreement constitutes the entire agreement of the parties regarding the subject matter hereof, and there are no other representations or oral agreements other than those listed herein, which vary the

terms of this agreement. Future agreements may occur between the parties to transfer additional or future service areas by mutual agreement.

15. Obligation Intact. Nothing herein shall be construed to alter the rights, responsibilities, liabilities, or obligations of either Auburn or Bonney Lake regarding provision of sewer service, except as specifically set forth herein.

16. Miscellaneous.

A. The captions in this agreement are for convenience only and do not in any way limit or amplify the provisions of this agreement.

B. This agreement is established in perpetuity. Modifications can be established upon written agreement between both parties.

C. The purpose of this agreement is to clarify Auburn's and Bonney Lake's sanitary sewer responsibilities for providing service and maintaining public sewer facilities.

D. If any term, provision, condition or portion of this Agreement is held to be invalid, or unenforceable by a final decision of any court having jurisdiction on the matter, the remaining of this Agreement or the application of such term or provision to persons or circumstances other then those as to which it is held invalid or unenforceable shall not be affected thereby and shall continue in full force and effect, unless such court determines that invalidity or unenforceability materially interferes with or defeats the purposes hereof, at which time Bonney Lake or Auburn shall have the right to terminate the Agreement.

E. No modifications or amendments of this agreement shall be valid or effective unless evidenced by an agreement in writing signed by both parties.

IN WITNESS WHEREOF the parties hereto have executed this agreement as of the day and year first above written.

ATTACHMENT "B"

CITY OF BONNEY LAKE
Approved by Resolution No. _____ of the City of Bonney Lake, Washington, at its regular meeting held on the _____ day of _____, 2005.

By:

_____
ROBERT YOUNG,
Mayor, City of Bonney Lake

Attest:

_____
HARWOOD T. EDVALSON
City Clerk, City of Bonney Lake

Approved as to form:

_____
JAMES DIONNE,
City Attorney, City of Bonney Lake

CITY OF AUBURN
Approved by Resolution No. **3796**, of the City of Auburn, Washington, at its regular meeting held on the _____ day of _____, 2005.

By:

_____
PETER B. LEWIS,
Mayor, City of Auburn

Attest:

_____
DANIELLE DASKAM,
City Clerk, City of Auburn

Approved as to form:

_____
DANIEL B. HEID,
City Attorney, City of Auburn

ATTACHMENT "B"

ATTACHMENT "A"

Legal Description

THAT PORTION OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER AND THAT PORTION OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 8, TOWNSHIP 20 NORTH, RANGE 5 EAST, LYING EASTERLY OF SUMNER TAPPS HIGHWAY, SOUTHERLY OF NORTH TAPPS ROAD (16^{TH} STREET EAST (FOREST CANYON ROAD)); EASTERLY OF THE PLAT OF LAKE TAPPS TACOMA POINT ADDITION, ACCORDING TO PLAT RECORDED IN BOOK 17 OF PLATS AT PAGES 1 TO 8, INCLUSIVE, AND NORTHERLY OF THE INTAKE CANAL TO LAKE TAPPS, IN PIERCE COUNTY, WASHINGTON. EXCEPT THAT PORTION LYING WITHIN LAKE TAPPS.

AREA DESCRIBED IS APPROXIMATELY $\pm$ 16.7 ACRES.
PARCEL NUMBER 0520081001

SE QUARTER OF SECTION 8, TOWNSHIP 20 N, RANGE 5 E

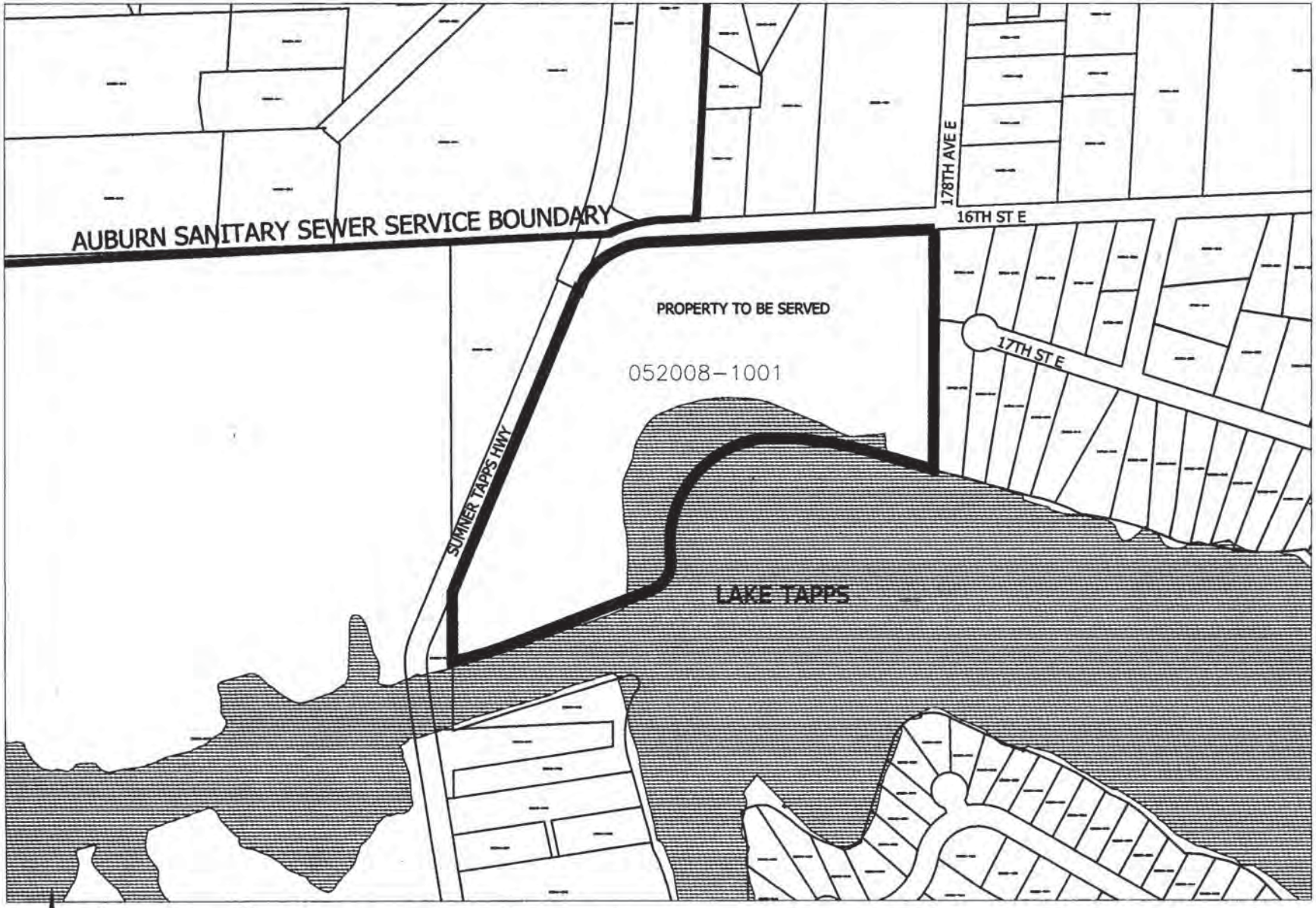


EXHIBIT A
BONNEY LAKE - AUBURN
SANITARY SEWER SERVICE AGREEMENT
FAIRWEATHER COVE

PLOTTED: MARCH 2005

ATTACHMENT "A"
Page 2 of 2

RESOLUTION NO. 1471

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BONNEY LAKE, PIERCE COUNTY, WASHINGTON, AUTHORIZING AN INTERLOCAL AGREEMENT BETWEEN CITY OF AUBURN AND CITY OF BONNEY LAKE PIERCE COUNTY RIGHT OF WAY PERMIT FOR SEWER SERVICE TO FAIRWEATHER COVE.

The City Council of the City of Bonney Lake, Washington, does hereby resolve that the Mayor is authorized to sign the contract attached hereto and incorporated herein by this reference.

PASSED by the City Council this 9th day of August 2005.

Robert Young, Mayor

ATTEST:

Harwood T. Edvalson, City Clerk

APPROVED AS TO FORM:

James Dionne, City Attorney

APPENDIX B

AGENCY COMMENT LETTERS AND RESPONSES

Robert Elwell

From: Cardwell, Daniel <dcardwell@kingcounty.gov>
Sent: Thursday, July 18, 2024 12:05 PM
To: Robert Elwell
Cc: Wilson, Sean (ECY)
Subject: City of Auburn - 2024 Comprehensive Sewer System Plan Re: King County UTRC Comment Ltr
Attachments: Final King County UTRC Comment Ltr_20240718.pdf

CAUTION: The following message originated from outside the City of Auburn. Be careful opening links and attachments

Good aftrnoon Robert,
The King County UTRC met on July 17 to review the draft 2024 Comprehensive Sewer System Plan for the City of Auburn. I have attached the comment letter approved by the UTRC. Please note that the letter includes a comment that was not in my draft list that we reviewed. The additional comment asks for the urban growth area boundary been shown on two of the figures.

Please let me know if you have any questions.

I look forward to receiving the final plan.

Regards,
Dan

Dan Cardwell
Principal Planner | Utilities Technical Review Committee | School Technical Review Committee
King County Dept. of Local Services
dcardwell@kingcounty.gov

King County
Utilities Technical Review Committee
Department of Local Services
201 S Jackson Street
KSC-LS-0815
Seattle, WA 98104
www.kingcounty.gov

City of Auburn, 2024 Comprehensive Sewer Plan (DRAFT), June 2024

The City of Auburn ("City") submitted a draft 2024 Comprehensive Sewer Plan ("Plan") for review by the King County Utilities Technical Review Committee (UTRC) on June 17, 2024.

Staff has reviewed the Plan for local statutory requirements and impacts on service to residents in the unincorporated county.

On July 17, 2024, the UTRC held a meeting to review the Plan and provide comments to the applicant. The UTRC has the following comments, and requested changes and clarifications:

General Comments

1) Prior to the UTRC acting on a recommendation, a signed checklist and the issued threshold determination must be provided.
2) The City Council must adopt the Plan prior to sending it to King County County for final review and approval.
3) King County Code (13.24.010 H. Water and sewer system comprehensive plans) requires wastewater system plans to identify and describe areas of concern with respect to corrosion and odor control and steps being taken to reduce their occurrence. It does not appear that the Plan addresses odor or corrosion. Please include additional text in the plan document to address odor and corrosion concerns and steps the City plans to take.
4) King County Code (13.24.010 H. Water and sewer system comprehensive plans) requires wastewater system plans to compare amounts of inflow and infiltration (I/I) to the system with King County's 1,100 gallons-per-acre-per-day-standard, and steps being taken to reduce the inflow and infiltration. While the Plan does identify existing and projected I/I and indicates annual projects will be constructed to address needs, the Plan does not compare these with the County's standard. Please include text in the Plan that provides this comparison.
5) The Plan recognizes some existing development within the City's sanitary sewer service area is served by on-site septic systems. How many existing on-site septic systems currently exist within the City's sewer service area? If all these on-site septic systems connected to the City's sewer system, would the system require significant improvements to accommodate the additional wastewater flow?
6) Various figures. The City's Sewer Service Area (SSA) is masked by the City's municipal boundaries on various figures/maps. Can this boundary be shown differently to allow the SSA boundary to be seen more clearly? On various maps there appears to be a fourth area shown as unincorporated King County within the City's SSA which may be an error. This area

includes Parcel Nos. 1721059045, 1721059248, 1721059249, 1721059250. These parcels are owned by the City and shown as within the City's municipal boundaries on King County i-Map.

7) The Plan references and the appendix includes 7 interlocal agreements with neighboring wastewater purveyors agreeing to changes to sewer service areas. It would be beneficial if the Plan included a figure that illustrated these sewer service boundary changes.

Specific Comments/Questions

8) Page 1-7, Figure 1.2 Study Area, and page 3-3, Figure 3.1 City of Auburn Land Use Designations. Please add symbology that identifies the boundary of the urban growth area.

9) Page 2-3, Section 2.3.2 System Planning. Policy 2.5 states, "The Sanitary Sewer Utility does not intend and will not Plan to extend sanitary sewer service to or through King or Pierce County rural zoned property. Exceptions will only be considered for reasons of health, safety, or service to a school in accordance with King or Pierce County policies." Please recognize that the City of Auburn does not have the authority to connect rural zoned to its sewer system without the approval of King County. Please clarify this in the Plan.

10) Page 2-3, Section 2.3.2 System Planning. Policy 2.6 states, "Allow development where sewer is not readily available to be served by individual onsite (septic) systems, if the individual lots are suitable for onsite systems, per the requirements and approval of King County..." For unincorporated urban King County areas within the City's sewer service area, King County Code 13.24.136 only allows on-site septic systems to be permitted for single detached residences, and short sub-divisions on an interim basis it if meets specific criteria. All other development is required to be connected. Please provide clarification for unincorporated King County areas in the Plan.

11) Page 2-3, Section 2.3.2 System Planning. It does not appear that the City has any policy that would encourage or require existing development utilizing an on-site septic system to connect to the City's sewer system. Please provide or clarify the City's policy for existing development connecting to the City's sewer system. Does the City have a proactive strategy to connect existing development to its sewer system? On page 1-4 under the King County Policy reference, text points to Chapter 5 which discusses projects that would serve currently unserved areas; however, it does not appear that there is a strategy to encourage existing development to connect to the new segments of the sewer system. Please clarify in the Plan.

12) Page 3-2, Section 3.3 Land Use. The text describes and Figure 3.1 illustrates the location of designated land uses within the City of Auburn. This section does not include any land use information addressing areas outside of the City's municipal boundary, and within its sewer service area. Please include. It would also be informational to include the total area within the City's service area and percent within unincorporated King County and other neighboring municipalities.

13) Page 4-2, Section 4.1.3 Lea Hill Sewer Basin. The text states that there is a significant unsewered area in the north portion of this sewer basin. Is this area unsewered because it is primarily undeveloped, or is there development that is currently serviced by on-site septic systems? Please clarify in the Plan.

14) Page 4-2, Section 4.1.5 South Hill Sewer Basin. The text states, "The eastern half...of the sewer basin is currently developed as a low-density rural area and is unsewered." The reference to this area as being a rural area is misleading as it is within the designated urban growth area. It would be more appropriate to refer to the area as being a low-density residential area. Please clarify in the Plan.

15) Page 4-13 Section 4.6 Water Reclamation and Reuse. The text mentions the King County Water Reclamation Evaluation Checklist was completed as part of the City's water system plan. Please provide this checklist as an appendix to this Plan. While the Plan identifies potential reclaimed water sources and notes the City will need to determine if it would be feasible source, it would be beneficial if the Plan discussed the type of capital projects that would need to be constructed to obtain reclaimed water from these sources.

16) Page 5-5, Section 5.3.2 Future Conditions Wet Weather Flow Assumptions. The text states, "Figure 5.4 identifies the portion of the collection system that is currently developed with available sewer in yellow,..."; however, the legend for this figure indicates that yellow represents "Developed with Sewer." These two phrases are not same. Please correct as appropriate.

17) Page 5-5, Section 5.3.2 Future conditions Wet Weather Flow Assumptions. The text states that, "It was assumed that all developable parcels would be developed and connected for the 2044 scenario..." Does this assumption include the connection of existing development that is currently served by on-site septic systems? If yes, how many additional connections would be attributed to these types of properties?

18) Page 5-5, Section 5.3.2 Future conditions Wet Weather Flow Assumptions. The text states that, "It was assumed that the I/I of future sewered areas would be 1,500 gallons per acre per day..." What is the basis for this assumption?

19) Page 5-7, Figure 5.4, Future Contributing Areas. The legend for this figure is misleading. Many of the areas identified as "Developable" are already developed utilizing on-site septic systems. Would it be more appropriate to identify these areas as "Developable/Infill"? It would be beneficial to identify the number and location of existing on-site septic systems.

20) Page 5-10, Figure 5.6 Existing System Deficiencies, Page 5-11, Figure 5.7 2044 System Deficiencies, and Page 5-12 2044 Climate Change Design System Deficiencies. The legend on each of these figures shows that only the City's critical sewer system infrastructure was included in the system's model and analysis. Why wasn't the entire system modeled? Please include text in the Plan that describes the extent of the system that was modeled and limitations of the analysis relevant to the entire sewer system.

The King County UTRC thanks you for the opportunity to review and comment. Please contact me at (206)263-3733 or dcardwell@kingcounty.gov if you have any questions.

Dan Cardwell 7/18/24

Dan Cardwell, Chair of the King County Utility Technical Review Committee Date

Robert Elwell

From: Wilson, Sean (ECY) <sewi461@ECY.WA.GOV>
Sent: Friday, August 9, 2024 1:59 PM
To: Robert Elwell
Cc: Cardwell, Daniel
Subject: RE: City of Auburn Sewer Plan
Attachments: 2024 Auburn GSP Comments.xlsx

Bob,

Please find Ecology's comments on the draft Auburn GSP attached. If you have any questions or would like to discuss your planned responses/edits, feel free to give me a call or send me a meeting invite.

Kind regards,

Sean Wilson, P.E.
P: 425.577.4864

From: Robert Elwell <relwell@auburnwa.gov>
Sent: Monday, June 17, 2024 9:00 AM
To: Wilson, Sean (ECY) <sewi461@ECY.WA.GOV>
Subject: City of Auburn Sewer Plan

External Email

I'm using Mimecast to share large files with you. Please see the attached instructions.

Sean,

As we discussed a couple of weeks ago, Auburn is ready to submit our draft Sewer Plan for your review. This is the first time I've used our "Mimecast Large File Send," method of delivering a large file, so please let me know if you encounter any difficulties downloading it. We will be going through our SEPA process simultaneous with your review, so that documentation is not included yet. We are also submitting to the King County UTRC for their review.

Thank you and please let me know if you have any questions.

Bob Elwell
City of Auburn
Sewer Utility Engineer
25 West Main Street, Auburn WA 98001
253-931-4008

General Sewer Plan - Ecology Comment Sheet for City of Auburn

GSP Revision Date: June 1, 2024
GSP Contact: Robert Elwell

Reviewed By: Sean Wilson, P.E.
Review Date: 8/8/2024

Comment No.	Page #	Section	Comment	Ecology Reviewer	GSP Response	GSP Responder	Ecology Acceptance Comments
1	N/A	General	Per RCW 90.48.495 Water conservation measures to be considered in general sewer plans. "The Department of Ecology shall require sewer plans to include a discussion of water conservation measures considered or underway that would reduce flows to the sewerage system and an analysis of their anticipated impact on public sewer service and treatment capacity." The GSP does not discuss water conservation. If the District has a water conservation program in a related Water System Plan, it merits mentioning in the GSP to help satisfy this requirement.	Wilson			
2	2	General	Please ensure that the final version includes a P.E. stamp and signature.	Wilson			
3	15	1.20	Although Chapter 1.2 references an Appendix D with a SEPA Determination of Non-Significance, that appendix does not appear to be included in the document. A completed SEPA checklist and DNS or EIA is required for Ecology approval.	Wilson			
4	18	1.3.5	Thank you for including the interlocal agreements with King County and other local sewer districts. In this section, please identify the capacity available to the District at the King County facilities for treatment and identify whether any agreements contain capacity constraints that may limit or otherwise constrain the District's ability to provide sewer service. If they exist, please summarize any relevant conditions for King County's acceptance of sewage flows (e.g. flow limits, I/I peaking factor limits, etc.). If no such conditions for acceptance exist in the agreements, please include a statement to that effect.	Wilson			
5	19	1.3.5	Per WAC 173-240-050(3)(f), please include all wastewater treatment facilities within 20 miles. This can be done on Figure 1.1 or any where else that you believe is appropriate.	Wilson			
6	20	Figure 1.2	In accordance with 173-240-050(3)(c), please provide a narrative description or figure showing the expected extent of the district's service area. It is implied that there is expected change but should be stated or shown explicitly.	Wilson			
7	20	Figure 1.2 and Section 1.4	There appears to be at least 5 parcels in the northeast portion of the District's service area which are also included in the adjacent City of Kent service area. It does not seem possible to have service provided by both entities. Please further explanation withing Section or revise the map to accurately reflect service areas.	Wilson			
8	27	2.3.3	WAC 173-240-104 extends to grinder pumps that serve a single residence. Policy 3.5 states that "the City will not install, own, or maintain (outside of emergencies) any part of a private non-gravity system". Please explain what policies, ordnances, or agreements the District has in place to ensure that these non-gravity systems are properly designed and that the District has access rights in the case of emergency to protect public health and water quality?	Wilson			

Comment No.	Page #	Section	Comment	Ecology Reviewer	GSP Response	GSP Responder	Ecology Acceptance Comments
9	27	2.3.3	Policy 3.7 appears to be in conflict with WAC 172-240-104. Please clarify how the District ensures that private systems are property designed and maintained. Are designs reviewed? Are private systems inspected by the District at some frequency? Does the District have rights to access and work on private systems in an emergency? Policy 5.9 appears to commit the District to providing emergency service but does not describe how access rights are granted in emergency cases.	Wilson			
10	41	4.20	Explain what is being done to protect the two wellheads that are within 100ft of an existing sewer line. Is there a plan to relocate those lines either proactively or during the next rehab of those lines?	Wilson			
11	50	4.50	Per WAC 173-240-050(3)(i), please include the quantity and periods of wastewater production for the industrial users presented in Table 4.2. Additionally, please provide additional information about expected future flows from industrial user expansion or including industries.	Wilson			
12	64-65	Figures 5.7 and 8	It is hard to tell from these two figures if the future/planned sewer lines were included in the forward looking models. Can you confirm that the expanded basins (at minimum their flow) was included within these model runs? If they were included, it would be helpful to include the fully built out lines on these two figures to make it clear that future expansion was included.	Wilson			
13	66	5.50	Although not highlighted in red in Table 5-4, the F Street and Ellingson Road lift stations appears to be quite close to its capacity in the 2044 scenario. Why was additional monitoring or planned expansion of these LS not included in the CIP?	Wilson			
14	75	5.8.4.1	Basin A10 also appears to have quite high I/I flow rates and peaking factor. Please explain why additional monitoring is not suggested for this basin.	Wilson			
15	85	6.40	The District is required to immediately report to Ecology all spills to the environment and back-ups of sewage into buildings. Please revise this section to include more information regarding reporting of spills/back-ups to Ecology's ERTS system.	Wilson			
16	93	7.2.2	It is difficult to determine if all areas of deficiency identified in Figure 5.6-8 have associated projects in the CIP. It is suggested that deficiencies identified are given unique IDs and that the deficiency IDs associated with each project in 7.2.2 are added to the project descriptions of 7.2.2. Another method, figure or table could also be used to help with this comparison but additional clarity is needed.	Wilson			

City of Auburn-Comprehensive Sewer Plan				25-Sep-24
Comment Responses				
DOE Comments				
Comment No.	Page #	Section	Comment	Response
1	N/A	General	Per RCW 90.48.495 Water conservation measures to be considered in general sewer plans. "The Department of Ecology shall require sewer plans to include a discussion of water conservation measures considered or underway that would reduce flows to the sewerage system and an analysis of their anticipated impact on public sewer service and treatment capacity." The GSP does not discuss water conservation. If the District has a water conservation program in a related Water System Plan, it merits mentioning in the GSP to help satisfy this requirement.	We added a section (Section 1.3.7) to Chapter 1 which reads: The City of Auburn's Sanitary Sewer Service Area largely overlaps with its Water Service Area, therefore, water conservation efforts undertaken by the City's Water Utility will, by far, be the most likely to affect sewage flows handled by the City's sewage collection system. The Water Utilities program is described in Section 4.3 of the 2024 Water System Plan. The primary effect of such measures on the sewer system would be to reduce the overall wastewater flow, while potentially increasing wastewater strength. Since the City's sewer hydraulic model calibration was based on actual measured flows, the effects of existing conservation measures have been accounted for. Further increased effectiveness of water conservation efforts could result in capacity improvement projects being eliminated or delayed if anticipated flow increases are not realized.
2	2	General	Please ensure that the final version includes a P.E. stamp and signature.	Our consultant, Edward Wicklein of Carollo Engineers, will stamp the plan on a stamp page that has been added as the 2nd page of document.
3	15	1.2	Although Chapter 1.2 references an Appendix D with a SEPA Determination of Non-Significance, that appendix does not appear to be included in the document. A completed SEPA checklist and DNS or EIA is required for Ecology approval.	The Checklist and DNS were added as Appendix D
4	18	1.3.5	Thank you for including the interlocal agreements with King County and other local sewer districts. In this section, please identify the capacity available to the District at the King County facilities for treatment and identify whether any agreements contain capacity constraints that may limit or otherwise constrain the District's ability to provide sewer service. If they exist, please summarize any relevant conditions for King County's acceptance of sewage flows (e.g. flow limits, I/I peaking factor limits, etc.). If no such conditions for acceptance exist in the agreements, please include a statement to that effect.	Added to Section 1.3.5 "Under the current agreement, the City is obligated to deliver all of the sewage and industrial wastes collected or received by the City, and Metro (King County) shall accept the sewage and industrial wastes delivered for treatment. There is currently no limit on the quantity of wastewater delivered by the City to Metro (King County)."
5	19	1.3.5	Per WAC 173-240-050(3)(f), please include all wastewater treatment facilities within 20 miles. This can be done on Figure 1.1 or any where else that you believe is appropriate.	Figure 1.1 has been updated to include the other Treatment Facilities.

City of Auburn-Comprehensive Sewer Plan

25-Sep-24

Comment Responses

DOE Comments

Comment No.	Page #	Section	Comment	Response
6	20	Figure 1.2	In accordance with 173-240-050(3)(c), please provide a narrative description or figure showing the expected extent of the district's service area. It is implied that there is expected change but should be stated or shown explicitly. Response to a request for clarification: I believe what I was referring to the last paragraph of 1.4.1 and the discussion of annexation in 1.4.2. The shaded colors for "Service Area Outside of City Limits" on Figure 1.2 is helpful but there does not appear to be any of those in areas in eastern Algona. If the boundaries of the City of Auburn service area are not expected to change, I suggest refining the labels in the legend of Figure 1.2 to make this clearer or including language in the 1.4 intro to state it more clearly. It might also be helpful to have a different shade for areas inside of Auburn's city limits that are served by adjacent sewer services (but this is not critical).	When the intelocal agreements between Auburn and neighboring agencies established the service area boundaries, those boundaries were primarily based on terrain and minimizing future required pumping, and those boundaries often traversed unsewered areas that were, at the time, part of unincorporated King County. As future extension of public sewer to those areas occurs, it may make sense for one agency to provide service to an area that was originally designated for the other, but it won't be clear until it actually happens. The interlocal agreements between our agencies include provisions for the respective Public Works Directors or General Managers to agree that the other agency may serve parcels that are in the their designated service areas for reasons of efficiency, etc. We have added labels to the map to reflect the locations of letters of agreement, where Auburn may serve several parcels, although, to this point, those developments or connections have not yet been made. When those systems are established and if it makes sense for them to be permanent, the two agencies will apply to the Boundary Review Board to permanently change the boundary. Our original map was potentially misleading as it showed some of these boiundaries as already being changed. We've removed those speculated boundaries and have simply pointed to areas where they may change in the future. We hesitate to draw specific speculative boundaries at this point, as any adjustments would be small and very dependent on the timing of large developments, land use changes, etc. Regarding Algona, there are two agreement between us. The first one was to allow some businesses within Auburn along West Valley Highway to connect to Algona's system. Subsequent development and sewer extensions made it feasible for those developments connected to Algona to, at some point int he future, disconnect from them and connect to Auburn. Also, some subdivision and boundary adjustments in those areas rendered the service responsibilities a bit muddled. Finally, there are several parcels along the northern border of Algona that are currently connected to Auburn's sewer main in Boundary Blvd. Those connections had occurred years earlier. The 2020 agreement between the cities, was our resolution of this unclarity, and established Algona as the service provider for the parcels within the city limits of Algona, and the same for the parcels in Auburn. The result of this agreement is that the city boundaries between Algona and Auburn also serves as the service area boundary.
7	20	Figure 1.2 and Section 1.4	There appears to be at least 5 parcels in the northeast portion of the District's service area which are also included in the adjacent City of Kent service area. It does not seem possible to have service provided by both entities. Please further explanation withing Section or revise the map to accurately reflect service areas.	The interlocal agreements between our agencies include provisions for the respective Public Works Directors or General Managers to agree that the other agency may serve parcels that are in the other's designated service areas for reasons of efficiency, etc. Since these particular adjustments are speculative and have not yet resulted in service to those parcels, we have adjusted the service area boundary to reflect the existing one. We have added labels to the map to reflect the locations of letters of agreement, but have not included definitive boundaries. If and when those systems are established and if it makes sense for them to be permanent, the two agencies will apply to the Boundary Review Board to permanently change the boundary.

DOE Comments

Comment No.	Page #	Section	Comment	Response
8	27	2.3.3	WAC 173-240-104 extends to grinder pumps that serve a single residence. Policy 3.5 states that "the City will not install, own, or maintain (outside of emergencies) any part of a private non-gravity system". Please explain what policies, ordnances, or agreements the District has in place to ensure that these non-gravity systems are properly designed and that the District has access rights in the case of emergency to protect public health and water quality?	All connections to the sewer system require a sewer permit, and in the case of the use of a grinder pump, that permit is designated with the subtype, "grinder pump." Consistent with Policy 3.3 and 3.5 and Auburn City Code 13.20.200, that permit application is reviewed by public works staff to verify that gravity is infeasible and to request design information including pump system specifications, alarm locations (audio and visual), and pressure line location. For your reference, I have included several city code sections related to this practice: Auburn City Code (ACC) 13.20.200 **Permits-Application-Inspection-Fee** An application for any side sewer permit shall be made with the city, which the applicant shall supplement with plans, specifications or other information as deemed necessary by the city. The sewer permit fee shall be imposed based on the fee schedule that is in effect at the time the submitted utility permit application is determined to be complete and shall be payable prior to issuance of the permit. Any work undertaken within a public right-of-way is subject to Chapter 12.66 ACC for work within the city or subject to other applicable permit requirements as specified by the city or county with jurisdiction where the work is being performed. Also, The City has the ability to enter the property for inspections (13.20.500) and to complete repairs (13.20.510) 13.20.500 **Access for inspections.** The city shall have access, subject to the provisions of Chapter 1.20 ACC, to all buildings and premises served by the sewer system for the purpose of inspecting pipes and fixtures. Inspection shall include verification of the manner in which domestic water is being used, and the satisfactory compliance with the provisions of this chapter. 13.20.510 **Inadequate systems – Action to effect compliance.** When any side sewer or private sewage system is constructed, connected or repaired and does not comply with the provision of this chapter, and is a menace to health or is liable to cause damage to public or private property, the city shall give notice thereof to the owner, agent or occupant of the property in which such condition exists. Should the owner, agent or occupant fail to remedy the condition within the time specified in the notice, the city may perform such work as may be necessary to comply with this chapter. The cost of such work shall be collected from the person responsible for the condition or the amount thereof shall become a lien upon the property and shall be collected in the manner provided by
9	27	2.3.3	Policy 3.7 appears to be in conflict with WAC 173-240-104. Please clarify how the District ensures that private systems are property designed and maintained. Are designs reviewed? Are private systems inspected by the District at some frequency? Does the District have rights to access and work on private systems in an emergency? Policy 5.9 appears to commit the District to providing emergency service but does not describe how access rights are granted in emergency cases.	Auburn City Code (13.20.010.W) defines a private sewer as, "sewage conveyance facilities which are owned, operated, maintained and controlled by the property owner served by that system." and it does not include any treatment systems. They are essentially larger versions of side sewer that serve one customer, and their design is reviewed and construction inspected as part of a civil permit (grading, etc.) or the sewer connections permit. Any change to any system requires an additional permit and additional review. Similar to Item 8 (above) City Code (13.20.500, 13.20.510) provides for inspection and repair on private systems. For clarity, we modified Policy 3.7 to read: Allow private sewer conveyance systems, consistent with Washington Administrative Code (WAC) 173-240-104(3)(b), within the SSSA as long as they are designed and operated per City standards and are not part of sewer extensions to

City of Auburn-Comprehensive Sewer Plan				25-Sep-24
Comment Responses				
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Comment No.	Page #	Section	Comment	Response
10	41	4.2	Explain what is being done to protect the two wellheads that are within 100ft of an existing sewer line. Is there a plan to relocate those lines either proactively or during the next rehab of those lines?	Our consultant performed a more precise analysis of the distances, and found that they are very close to the 100 foot limit. We added a statement indicating that as repair or replacement of those lines occurs, we will establish a more definitive distance and address the location as part of that project. We Modified/Added to 4.2 as follows: "Most of the sewer lines are located more than 100 feet from the wellheads as stipulated for new sewer works by Ecology's CSWD (G2-1.5.3), two well sites are close to 100 feet from existing sanitary sewers in the central part of the system. As part of the sewer inspection activities outlined the Chapter 7 CIP, the distance between wellheads and sewers will be definitively measured at these sites. If sanitary sewers are within 100 feet from the wellheads, based on condition and other projects in the vicinity, the sewer distance can be addressed as part of the Sanitary Sewer Repair and Replacement/System Improvements project summarized in Chapter 7, following the outlined priority methodology.
11	50	4.5	Per WAC 173-240-050(3)(i), please include the quantity and periods of wastewater production for the industrial users presented in Table 4.2. Additionally, please provide additional information about expected future flows from industrial user expansion or including industries.	The permitted daily discharge quantities for each of the industrial users have been added to Table 4.2, and those are the quantities anticipated by the King County Industrial Waste Group. The following text was added following that table: King County Industrial Waste staff have indicated that the overall volume of industrial waste flows has generally been consistent and primarily concentrated during working hours during weekdays. While the City does not limit or prescribe the number or types of industrial businesses in the City, it is assumed that collectively, the amount and quality of future industrial wastewater flows from those businesses will be similar to existing flows.
12	64-65	Figures 5.7 and 8	It is hard to tell from these two figures if the future/planned sewer lines were included in the forward looking models. Can you confirm that the expanded basins (at minimum their flow) was included within these model runs? If they were included, it would be helpful to include the fully built out lines on these two figures to make it clear that future expansion was included.	The future planned sewer lines are not included in these figures, and the future anticipated flows were added to the nearest catchments. They are used to show capacity deficiencies within the existing system that include future flows.
13	66	5.5	Although not highlighted in red in Table 5-4, the F Street and Ellingson Road lift stations appears to be quite close to its capacity in the 2044 scenario. Why was additional monitoring or planned expansion of these LS not included in the CIP?	As currently modelled, the stations will have adequate capacity during this planning period. Two pump station condition assessments are projected to be completed during the 20-year planning period as well as two sewer plans (and hydraulic model) updates. If the projected flow increase is exceeded, specific improvements to those stations will be reprioritized as part of those evaluations.
14	75	5.8.4.1	Basin A10 also appears to have quite high I/I flow rates and peaking factor. Please explain why additional monitoring is not suggested for this basin.	Basin A10 is added to the list for future evaluation
15	85	6.4	The District is required to immediately report to Ecology all spills to the environment and back-ups of sewage into buildings. Please revise this section to include more information regarding reporting of spills/back-ups to Ecology's ERTS system.	Add: to 6.4.1 after bullet points: If any sewage is spilled to the environment or backs up into a building due to problems with the City sewer system staff will immediately report the spill to the Department of Ecology's ERTS System.

City of Auburn-Comprehensive Sewer Plan

25-Sep-24

Comment Responses

DOE Comments				
Comment No.	Page #	Section	Comment	Response
16	93	7.2.2	It is difficult to determine if all areas of deficiency identified in Figure 5.6-8 have associated projects in the CIP. It is suggested that deficiencies identified are given unique IDs and that the deficiency IDs associated with each project in 7.2.2 are added to the project descriptions of 7.2.2. Another method, figure or table could also be used to help with this comparison but additional clarity is needed.	Text in chapter 5 and 7 has been updated to better link deficiency's with CIP's The following text was added to Section 5.8.2: These areas are included withing the CIPs in Chapter 7 with some additional discussion, however not all of them have a specific CIP number associated with them. Area 1 has high I/I and is recommended for continued monitoring with a specific CIP Project 9. Area 4 is a large project with a specific CIP. Areas 2, 3 5 and 6 are all shorter lengths of piping and included within a programmatic CIP. In Tables 7.1 and 7.2, it is shown that the areas where future capacity is an issue are to be included as part of the the programmatic repair and replacement projects generated every two years +/-.
17	64-65	Figures 5.7 and 8	It is hard to tell from these two figures if the future/planned sewer lines were included in the forward looking models. Can you confirm that the expanded basins (at minimum their flow) was included within these model runs? If they were included, it would be helpful to include the fully built out lines on these two figures to make it clear that future expansion was included.	Flows from future projected increases in population/employment were included and added to the existing system at their most likely point of connection. The future planned sewer lines are not included in these figures, which were used to show capacity deficiencies within the existing system including those future flows.

UTRC Comments				
Comment No.	Page #	Section	Comment	Response
1			Prior to the UTRC acting on a recommendation, a signed checklist and the issued threshold determination must be provided.	The Checklist and DNS were added as Appendix D
2			The City Council must adopt the Plan prior to sending it to King County for final review and approval	The adoption is planned for December 2024
3			King County Code (13.24.010 H. Water and sewer system comprehensive plans) requires wastewater system plans to identify and describe areas of concern with respect to corrosion and odor control and steps being taken to reduce their occurrence. It does not appear that the Plan addresses odor or corrosion. Please include additional text in the plan document to address odor and corrosion concerns and steps the City plans to take.	A specific section related to odor control and erosion was added to Chapter 4 (4.5, which renumbered the next two sections) **4.5 Odor Control and Corrosion** Sewer Policy 5.11 commits the City to monitor frequent odor complaints and to act when three per month are documented. City staff investigate all odor complaints to determine their source, persistence, and potential source if it can be identified. Strategies for mitigating odor include sealing sewer manhole lids, adding bioxide to pump station wet wells to minimize the generation of hydrogen sulfide gas, and filtering wet well ventilation at pump stations. These strategies have been effective, and the City currently has no sites where persistent odor has been detected or reported. City staff assess corrosion in the system as part of manhole inspections, CCTV inspections of sewer mains, and pump station wet well maintenance activities. The City has not identified any persistent widespread problems with corrosion, but as specific incidents of corrosion are identified those observations are recorded in the City's CMMS. Strategies for managing corrosion include replacing or lining (using Cured-in-Place Pipe) sewer mains, replacing corroded manhole rings and covers, and coating concrete pump station wet wells.
4			King County Code (13.24.010 H. Water and sewer system comprehensive plans) requires wastewater system plans to compare amounts of inflow and infiltration (I/I) to the system with King County's 1,100 gallons-per-acre-per-day-standard, and steps being taken to reduce the inflow and infiltration. While the Plan does identify existing and projected I/I and indicates annual projects will be constructed to address needs, the Plan does not compare these with the County's standard. Please include text in the Plan that provides this comparison.	Added to section 5.3.2: "This I/I rate is slightly higher than the King County target value of 1,100 gpad, providing a level of conservatism in projecting future peak flows." Also added discussion in section 5.6 before Table 5.5: " King County has a target I/I rate of 1,100 gpad during the design storm. Although some basins exceed the County target, the City average I/I rate is 1,446 gpad during the design storm. "

City of Auburn-Comprehensive Sewer Plan

25-Sep-24

Comment Responses

DOE Comments

Comment No.	Page #	Section	Comment	Response
5			The Plan recognizes some existing development within the City's sanitary sewer service area is served by on-site septic systems. How many existing on-site septic systems currently exist within the City's sewer service area? If all these on-site septic systems connected to the City's sewer system, would the system require significant improvements to accommodate the additional wastewater flow?	The future scenarios assumed the septic had been connected. The system with proposed improvements can convey the flow
6			Various figures. The City's Sewer Service Area (SSA) is masked by the City's municipal boundaries on various figures/maps. Can this boundary be shown differently to allow the SSA boundary to be seen more clearly? On various maps there appears to be a fourth area shown as unincorporated King County within the City's SSA which may be an error. This area includes Parcel Nos. 1721059045, 1721059248, 1721059249, 1721059250. These parcels are owned by the City and shown as within the City's municipal boundaries on King County i-Map.	The maps have been corrected to reflect those parcels being part of the City.
7			The Plan references and the appendix includes 7 interlocal agreements with neighboring wastewater purveyors agreeing to changes to sewer service areas. It would be beneficial if the Plan included a figure that illustrated these sewer service boundary changes.	Figure 1.2 reflects the cumulative effect of those interlocal agreements.
8			Page 1-7, Figure 1.2 Study Area, and page 3-3, Figure 3.1 City of Auburn Land Use Designations. Please add symbology that identifies the boundary of the urban growth area.	The figures have been updated, however the UGA essentially matches our City Limits, except for pockets of unincorporated KC and one pocket of Pierce County .
9			Page 2-3, Section 2.3.2 System Planning. Policy 2.5 states, "The Sanitary Sewer Utility does not intend and will not Plan to extend sanitary sewer service to or through King or Pierce County rural zoned property. Exceptions will only be considered for reasons of health, safety, or service to a school in accordance with King or Pierce County policies." Please recognize that the City of Auburn does not have the authority to connect rural zoned to its sewer system without the approval of King County. Please clarify this in the Plan.	We added the following clarifying statement to the end of Policy 2.5: " ...and with the approval of King or Pierce County."
10			Page 2-3, Section 2.3.2 System Planning. Policy 2.6 states, "Allow development where sewer is not readily available to be served by individual onsite (septic) systems, if the individual lots are suitable for onsite systems, per the requirements and approval of King County..." For unincorporated urban King County areas within the City's sewer service area, King County Code 13.24.136 only allows on-site septic systems to be permitted for single detached residences, and short sub-divisions on an interim basis it if meets specific criteria. All other development is required to be connected. Please provide clarification for unincorporated King County areas in the Plan.	We added the following clarifying words (in red) to Policy 2.6: "...per the requirements and approval of King County or Pierce County Department of Health, and the City's or Counties' development codes. The ..."
11			Page 2-3, Section 2.3.2 System Planning. It does not appear that the City has any policy that would encourage or require existing development utilizing an on-site septic system to connect to the City's sewer system. Please provide or clarify the City's policy for existing development connecting to the City's sewer system. Does the City have a proactive strategy to connect existing development to its sewer system? On page 1-4 under the King County Policy reference, text points to Chapter 5 which discusses projects that would serve currently unserved areas; however, it does not appear that there is a strategy to encourage existing development to connect to the new segments of the sewer system. Please clarify in the Plan.	The reference on page 1-4 referred to our conceptual planning as to how those areas could be served by sewer extensions but do not represent specific capital projects. The Utility/City has not committed to spending funds from existing customers for specific capital projects to extend public sewer to unsewered areas. Policies 6.15 and 6.16 do allow staff some flexibility to construct extensions, pump stations, etc. in some situations. Also, Policy 6.2 provides for the use of alternate funding for infrastructure.

City of Auburn-Comprehensive Sewer Plan

25-Sep-24

Comment Responses

DOE Comments

Comment No.	Page #	Section	Comment	Response
12			Page 3-2, Section 3.3 Land Use. The text describes and Figure 3.1 illustrates the location of designated land uses within the City of Auburn. This section does not include any land use information addressing areas outside of the City's municipal boundary, and within its sewer service area. Please include. It would also be informational to include the total area within the City's service area and percent within unincorporated King County and other neighboring municipalities.	Figure has been updated to include all land within the service boundary and a table showing relative areas of different jurisdictions within the service area.
13			Page 4-2, Section 4.1.3 Lea Hill Sewer Basin. The text states that there is a significant unsewered area in the north portion of this sewer basin. Is this area unsewered because it is primarily undeveloped, or is there development that is currently serviced by on-site septic systems? Please clarify in the Plan.	We added the following text (in red) to that section "...Lea Hill Sewer Basin. The area is substantially developed with single family homes on lots between 1/4 acre and 1 acre that use existing on-site septic systems. The northeast..."
14			Page 4-2, Section 4.1.5 South Hill Sewer Basin. The text states, "The eastern half...of the sewer basin is currently developed as a low-density rural area and is unsewered." The reference to this area as being a rural area is misleading as it is within the designated urban growth area. It would be more appropriate to refer to the area as being a low-density residential area. Please clarify in the Plan.	We changed the word "rural" to "residential"
15			Page 4-13 Section 4.6 Water Reclamation and Reuse. The text mentions the King County Water Reclamation Evaluation Checklist was completed as part of the City's water system plan. Please provide this checklist as an appendix to this Plan. While the Plan identifies potential reclaimed water sources and notes the City will need to determine if it would be feasible source, it would be beneficial if the Plan discussed the type of capital projects that would need to be constructed to obtain reclaimed water from these sources.	The checklist has been added as Appendix E. Noted just under 4.7 (formerly 4.6) just after Checklist ", a copy of which is included as Appendix E, " Added under 4.7.2 (formerly 4.6.2): Receiving water from any of the existing treatment plants would involve the construction of long (7-15 mile) pipelines since none of them are located in or immediately adjacent to Auburn. Also, since reclaimed water cannot be mixed with potable water, all of the options listed below would also require the installation of a separate reclaimed water distribution system to convey that water directly to potential users.
16			Page 5-5, Section 5.3.2 Future Conditions Wet Weather Flow Assumptions. The text states, "Figure 5.4 identifies the portion of the collection system that is currently developed with available sewer in yellow,..."; however, the legend for this figure indicates that yellow represents "Developed with Sewer." These two phrases are not same. Please correct as appropriate.	The figure has been updated.
17			Page 5-5, Section 5.3.2 Future conditions Wet Weather Flow Assumptions. The text states that, "It was assumed that all developable parcels would be developed and connected for the 2044 scenario..." Does this assumption include the connection of existing development that is currently served by on-site septic systems? If yes, how many additional connections would be attributed to these types of properties?	Yes they were accounted for. Specific connections were not tabulated, it was assumed that there may be some redevelopement in this process, so the land use flow factors where combined with the contributing area being connected to generate the flow
18			Page 5-5, Section 5.3.2 Future conditions Wet Weather Flow Assumptions. The text states that, "It was assumed that the I/I of future sewered areas would be 1,500 gallons per acre per day..." What is the basis for this assumption?	This I/I rate is slightly higher than the King County target value of 1,100 gpad, providing a level of conservatism in projecting future peak flows, and closer to the actual level of I/I into the system. - Text has been added to this section.
19			Page 5-7, Figure 5.4, Future Contributing Areas. The legend for this figure is misleading. Many of the areas identified as "Developable" are already developed utilizing on-site septic systems. Would it be more appropriate to identify these areas as "Developable/Infill"? It would be beneficial to identify the number and location of existing on-site septic systems.	The figure has been updated
20			Page 5-10, Figure 5.6 Existing System Deficiencies, Page 5-11, Figure 5.7 2044 System Deficiencies, and Page 5-12 2044 Climate Change Design System Deficiencies. The legend on each of these figures shows that only the City's critical sewer system infrastructure was included in the system's model and analysis. Why wasn't the entire system modeled? Please include text in the Plan that describes the extent of the system that was modeled and limitations of the analysis relevant to the entire sewer system.	The modeling focused on the key conveyance infrastructure, neglecting smaller collector pipes which generally have adequate capacity to convey the flow. This approach reduces the modeling computational effort, while providing necessary conveyance information.

Robert Elwell

From: Cardwell, Daniel <dcardwell@kingcounty.gov>
Sent: Monday, November 4, 2024 3:59 PM
To: Robert Elwell
Subject: RE: City of Auburn Sewer Plan

CAUTION: **The following message originated from outside the City of Auburn. Be careful opening links and attachments**

Bob,
Thank you for reaching back out. I really appreciate your communication in this process.

Regards,
Dan

Dan Cardwell
Principal Planner | Utilities Technical Review Committee | School Technical Review Committee
King County Dept. of Local Services
dcardwell@kingcounty.gov

From: Robert Elwell <relwell@auburnwa.gov>
Sent: Monday, November 4, 2024 3:56 PM
To: Cardwell, Daniel <dcardwell@kingcounty.gov>
Subject: RE: City of Auburn Sewer Plan

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Dan,

I went back and found the voicemail that I somehow had missed. I'm sure it was my error that marked it "already listened to." I see your point in adding "as appropriate" to the end of Policy 2.5 and after the word "codes" in Policy 2.6. As you said, it's not likely the current wording would ever cause a problem, but it adds small amount of precision. We will plan on making that change in the plan we send to our Council and subsequently to you.

Thanks again for the prompt response to the resubmittal and sorry for missing it.

Bob Elwell
City of Auburn
Sewer Utility Engineer
25 West Main Street, Auburn WA 98001
253-931-4008

From: Cardwell, Daniel <dcardwell@kingcounty.gov>
Sent: Monday, November 4, 2024 3:09 PM
To: Robert Elwell <relwell@auburnwa.gov>
Subject: RE: City of Auburn Sewer Plan

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Hello Bob,
I had left you a voice mail a week or so from receiving the updated plan. I thought I had followed it up with an email…but as I look back it doesn't look like I did. I had a few minor items for clarity purposes; however, they are not substantial enough to delay a positive recommendation from the UTRC.

Dan

Dan Cardwell
Principal Planner | Utilities Technical Review Committee | School Technical Review Committee
King County Dept. of Local Services
dcardwell@kingcounty.gov

From: Robert Elwell <relwell@auburnwa.gov>
Sent: Monday, November 4, 2024 2:37 PM
To: Cardwell, Daniel <dcardwell@kingcounty.gov>
Subject: City of Auburn Sewer Plan

[EXTERNAL Email Notice!] External communication is important to us. Be cautious of phishing attempts. Do not click or open suspicious links or attachments.

Hello Dan,

Our Sewer Plan, along with our overall City Comprehensive Plan (and Water and Storm as well) are scheduled to be adopted by our City Council on December 16, after which we would submit a final copy to you for UTRC, and eventually King County Council, approval. Based on our resubmitted plan and responses to your review comments, do you have any concerns that you think we have not yet addressed? Ideally we would like to resolve any outstanding issues prior to Council adoption to avoid having to amend it later.

Thanks again for your prompt first review and associated discussion.

Bob Elwell
City of Auburn
Sewer Utility Engineer
25 West Main Street, Auburn WA 98001
253-931-4008

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communication and are not the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication, other than delivery to the intended recipient is strictly prohibited. If you have received this communication in error, please immediately notify the sender by reply e-mail. Thank you.
The information contained in this electronic communication is personal, privileged and/or confidential information intended only for the use of the individual(s) or entity(ies) to which it has been addressed. If you read this communication and are not the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication, other than delivery to the intended recipient is strictly prohibited. If you have received this communication in error, please immediately notify the sender by reply e-mail. Thank you.

Robert Elwell

From: Wilson, Sean (ECY) <sewi461@ECY.WA.GOV>
Sent: Tuesday, November 5, 2024 10:50 AM
To: Robert Elwell
Subject: RE: City of Auburn Sewer Plan

CAUTION: **The following message originated from outside the City of Auburn. Be careful opening links and attachments**

Hi Robert,

Thank you for your patience. Your revised draft came in the day before I was out for a couple of weeks on holiday. So this review took me a bit longer than I hoped. The edits and responses look good to me so we should be ready to approve it once you have Council adoption, signature on the PE stamp, and remove the "Draft" labels.

Let me know if you have any questions for me.
Kind regards,

Sean Wilson, P.E.
P: 425.577.4864

From: Robert Elwell <relwell@auburnwa.gov>
Sent: Monday, November 4, 2024 2:37 PM
To: Wilson, Sean (ECY) <sewi461@ECY.WA.GOV>
Subject: City of Auburn Sewer Plan

External Email

Hello Sean,

Our Sewer Plan, along with our overall City Comprehensive Plan (and Water and Storm as well) are scheduled to be adopted by our City Council on December 16, after which we would submit a final copy to you for approval (ideally). Based on our resubmitted plan and responses to your review comments, do you have any concerns that you think we have not yet addressed? Ideally we would like to resolve any outstanding issues prior to Council adoption to avoid having to amend it later.

Thanks again for your prompt first review and answers to other questions along the way.

Bob Elwell
City of Auburn
Sewer Utility Engineer
25 West Main Street, Auburn WA 98001
253-931-4008

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APPENDIX C

APPROVALS

~ To be included in a future submittal. ~

APPENDIX D

HYDRAULIC MODEL UPDATE, CALIBRATION, AND CAPACITY ANALYSIS

2024 Comprehensive Sewer Plan



TECHNICAL MEMORANDUM 1

Model Calibration Report

FINAL / May 2024

2024 Comprehensive Sewer Plan

TECHNICAL MEMORANDUM 1

Model Calibration Report

FINAL / May 2024



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Abbreviations

ADWF	average dry weather flow
BWF	base wastewater flow
City	City of Auburn
CIWEM	Chartered Institution of Water and Environmental Management
du/acre	dwelling units per acre
DWF	dry weather flow
FRC	fast response curve
GIS	geographic information system
gpda	gallons per day per acre
GWI	groundwater infiltration
HGL	hydraulic grade line
I/I	inflow and infiltration
mgd	million gallons per day
RDI	rainfall derived infiltration
RDII	rainfall derived infiltration and inflow
SRC	slow response curve
SSO	sanitary sewer overflow
UDG	Urban Drainage Group
WWF	wet weather flow

TM 1 MODEL CALIBRATION REPORT

1.1 Introduction

Sanitary Sewer collection system models are valuable tools used to assess the performance of collection systems during dry and wet weather conditions, and to plan for future improvements. These models provide a means to simulate the impact of different sized storms on the collection system and determine where system deficiencies are likely to occur. In addition, a well-calibrated model provides an easy way to test alternative improvement scenarios. This Technical Memorandum summarizes the City of Auburn's (City) sewer collection system hydraulic model update and calibration for use in the City's sewer system conveyance planning.

1.2 Existing Service Area

The City's service area is shown in Figure 1.1. The service area contains approximately 17,968 acres. The current service area includes most of the City limits, parts of City of Kent, some unincorporated areas of both King and Pierce County's, and part of the Muckleshoot Indian Reservation.

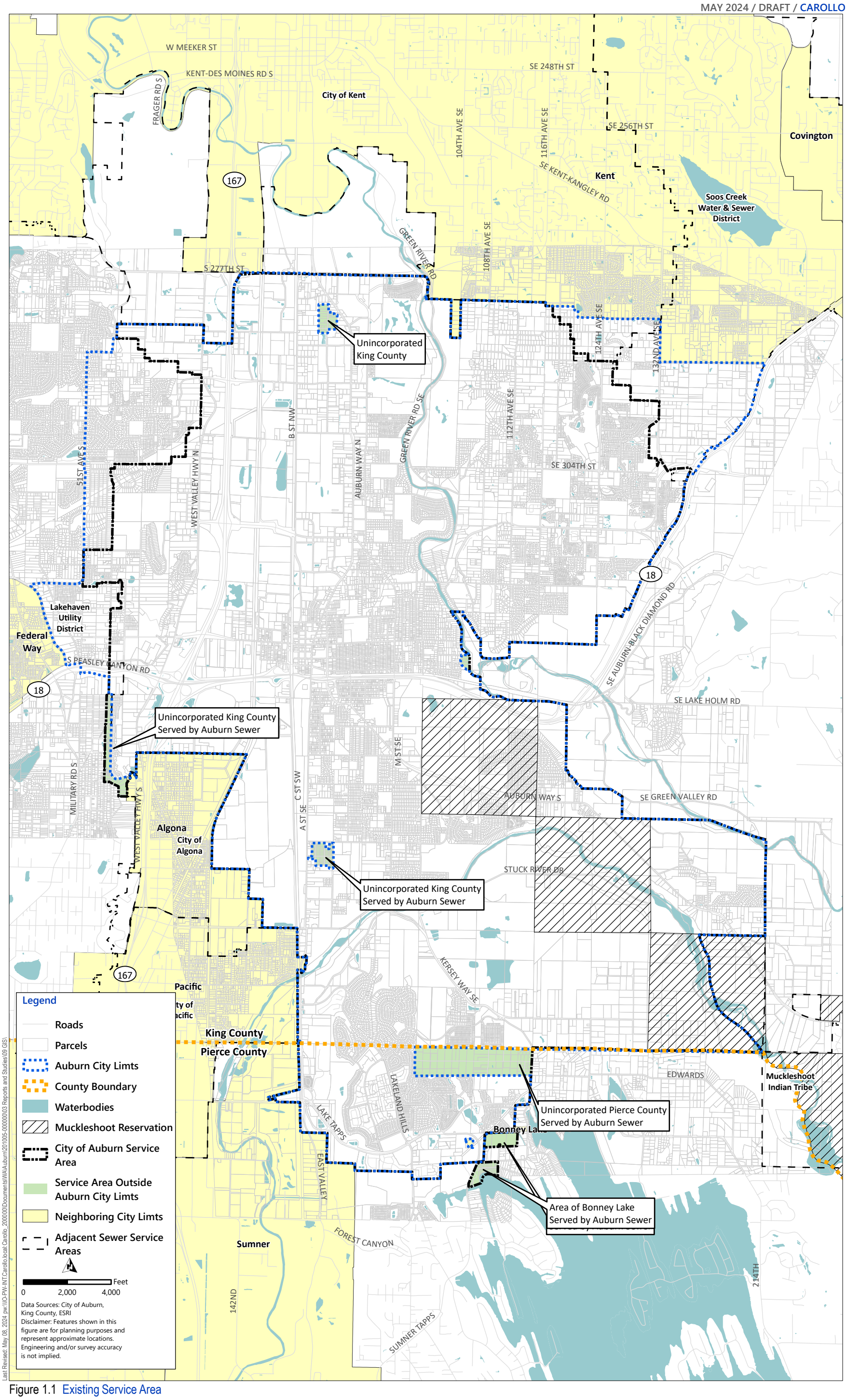


Figure 1.1 Existing Service Area

1.3 Sewer Collection Flows

Sewer collections systems are intended to convey sanitary flows, but frequently have additional flows from other sources. The different flow components are described in the section below and illustrated in Figure 1.2.

1.3.1 Dry Weather Flow Components

Average dry weather flow (ADWF) is the flow that is always entering the collection system on a daily basis. There are two primary components of ADWF, base wastewater flow (BWF) that is the sanitary flow the system is intended to convey, and dry weather ground water infiltration. ADWF was estimated from an average of dry weather flow (DWF) data at each flow meter from 2020 to 2022. Section 1.4 describes the flow monitoring efforts performed by ADS Environmental Services (ADS), which went into determining the ADWFs. The ADWF serves as the baseline flow in the hydraulic model.

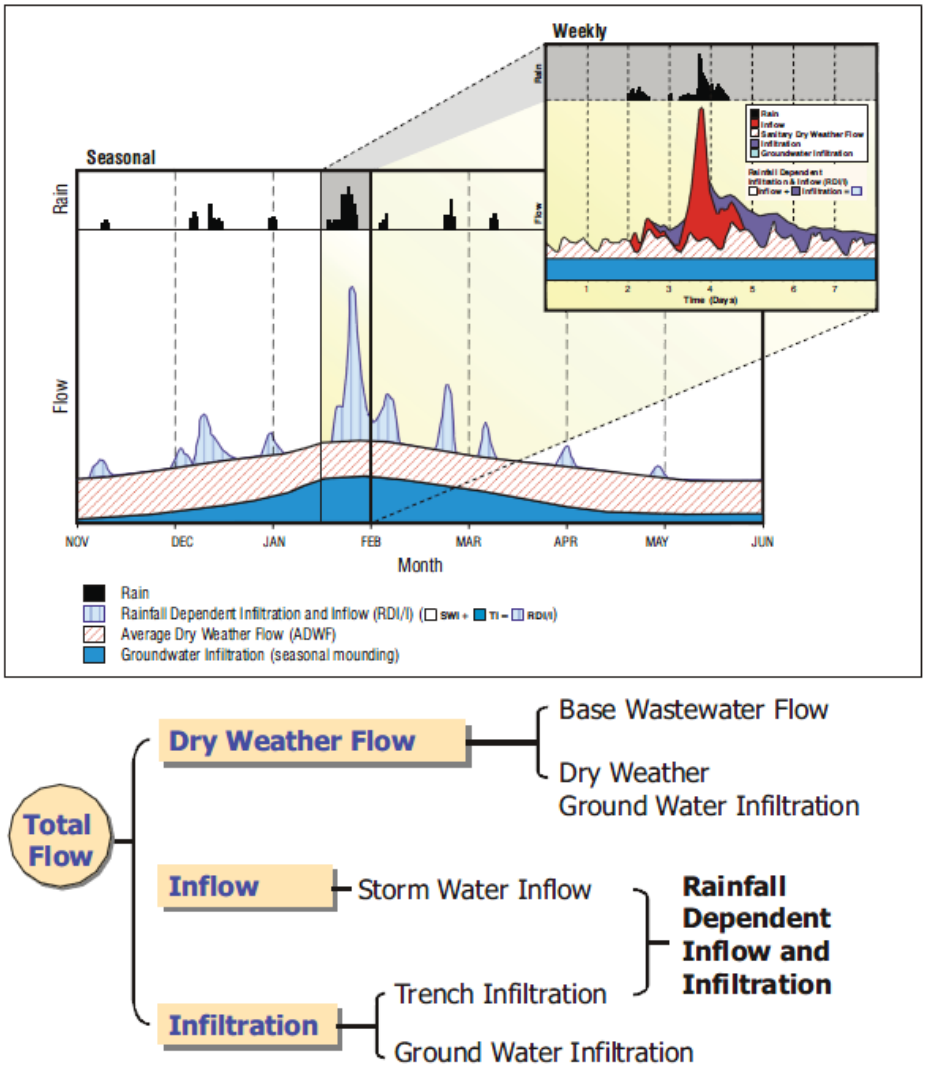


Figure 1.2 Typical Wastewater Flow Components

Note: This figure is not based on flow data specific to the City.

1.3.1.1 Base Wastewater Flow

The BWF is the sanitary flow generated by routine water usage of the collection system service area residential, commercial, and industrial customers. Conveying this flow is the primary function of the collection system. The flow has a diurnal (24-hour) pattern that varies by individual customer's water use patterns. Typically, a residential diurnal pattern has two peaks with the more pronounced peak following the wake-up hours of the day, and a less pronounced peak occurring in the evening. Commercial and industrial patterns, though they vary depending on the type of use, typically have more consistent higher flow patterns during business hours, and lower flows at night. Furthermore, the diurnal flow pattern of a weekend may vary from the diurnal flow experienced during a weekday. Diurnal patterns are applied to ADWFs, and cumulatively make up the flows through the wastewater collection system. The diurnal patterns utilized for the City's collection system basins are developed in Section 1.4.2.1.

1.3.1.2 Dry Weather Groundwater Infiltration

Dry weather groundwater infiltration (GWI) will enter the sewer system when the relative depth of the groundwater table is higher than the depth of the pipeline and the sanitary sewer pipe, allowing infiltration through defects such as cracks, misaligned joints, and broken pipelines. Dry weather GWI (or base infiltration) cannot easily be separated from BWF by flow measurement techniques. Therefore, dry weather GWI is typically grouped with BWF.

1.3.2 Wet Weather Flow Components

Wet weather flow (WWF) includes two components:

- Inflow and infiltration (I/I): The stormwater I/I response in the sewer system to rainfall is seen immediately (inflow) or within hours after the storm (infiltration).
- GWI: Wet weather GWI is not specific to a single rainfall event, but instead from effects of saturated soils on the sewer system over the entire wet weather season. The depth of groundwater rising above the pipe invert elevation causes GWI. Sewer pipes within close proximity to a body of water can also be greatly influenced by groundwater effects.

1.3.2.1 Inflow and Infiltration

I/I are rainfall derived flows in the collection system from specific storm events. Inflow is stormwater that enters the sewer system via a direct connection to the system, such as roof drain and downspout connections, leaky manhole covers, and inappropriate storm drain connections. Infiltration is stormwater that enters the sewer system by percolating through the soil and entering through foundation drains and sumps inappropriately connected to the system, defects in pipelines, manholes, and joints. Some common sources of I/I are shown in Figure 1.3. The adverse effects of I/I entering the sewer system is increases in both flow volume and peak flows such that the sewer system may operate at or above its capacity, as illustrated in Figure 1.4. If too much I/I enter the sewer system, sanitary sewer overflows (SSO) could occur.

1.3.2.2 Groundwater Infiltration

GWI, one of the components of I/I, is associated with extraneous water entering the sewer system through defects in pipes and manholes while the ground is saturated during the wet weather season. GWI is related to the condition of the sewer pipes, manholes, and groundwater levels. GWI may occur throughout the year, although rates are typically higher in the late winter and early spring in the Pacific Northwest.

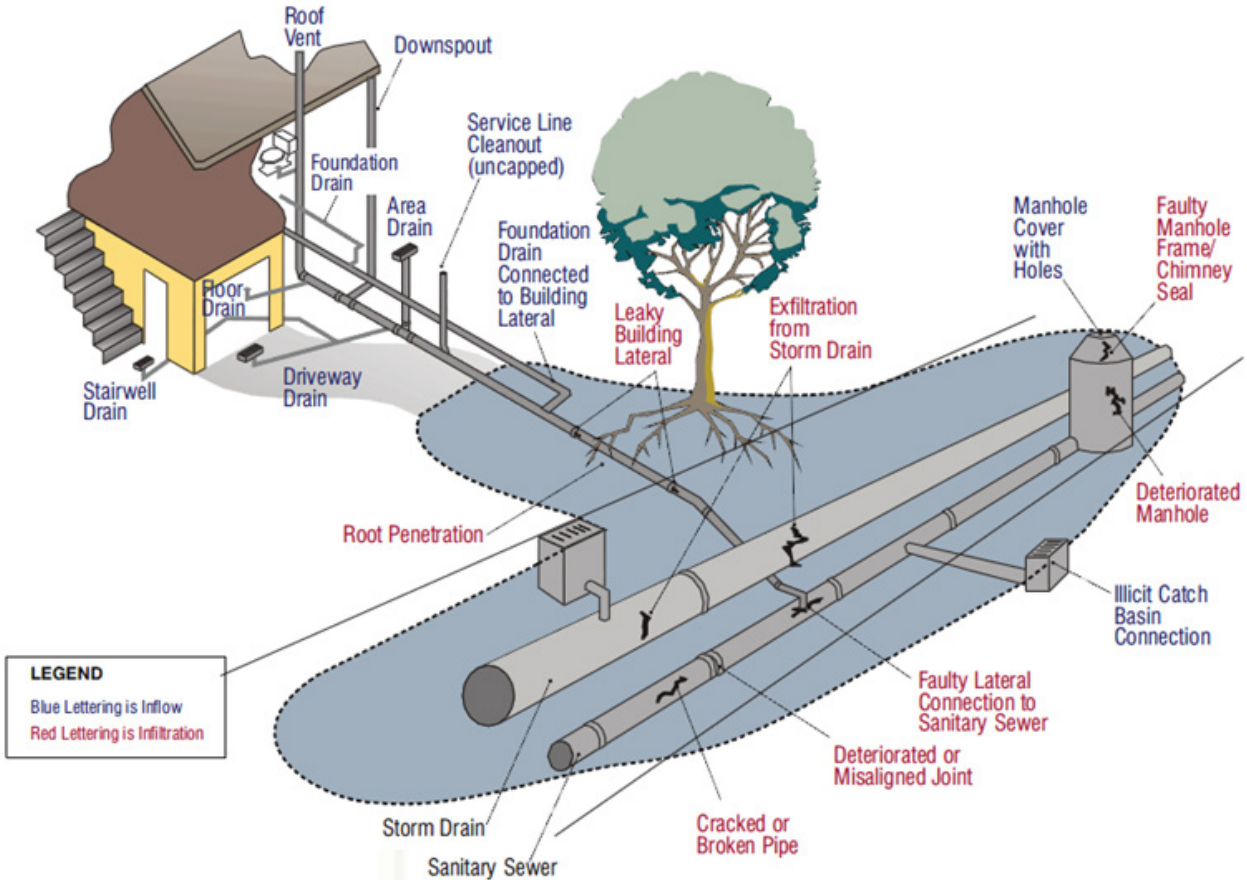


Figure 1.3 Typical Sources of I/I

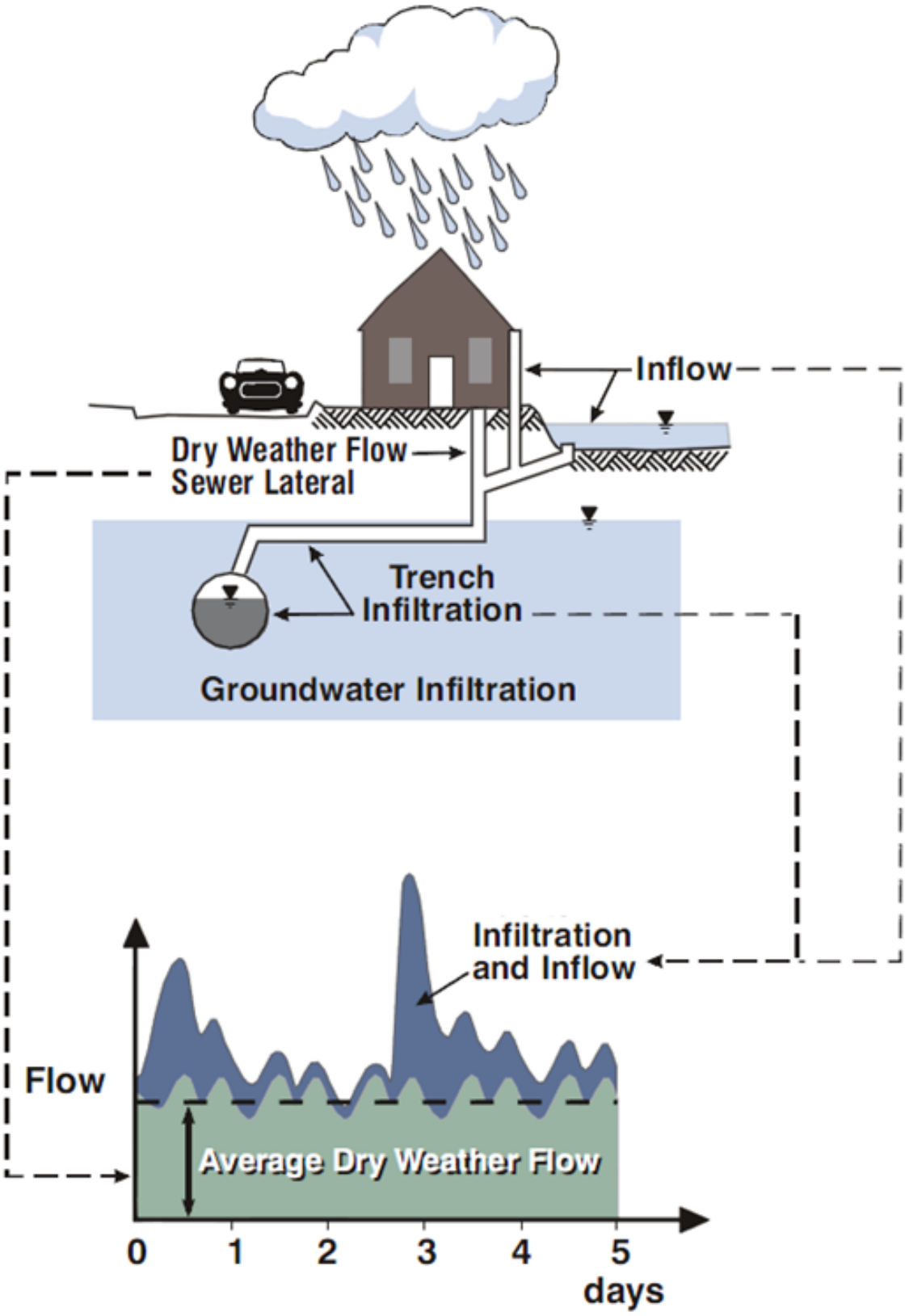


Figure 1.4 Typical Effects of I/I

1.4 Flow Monitoring Program

Prior to the Comprehensive Sewer Planning effort, the City contracted with ADS to conduct a temporary flow monitoring program within the City's sanitary sewer collection system. The City also obtained flow data from meters within the City that are part of King County's larger flow monitoring program. The purposes of the flow monitoring program were to collect data for correlating actual collection system flows to the hydraulic model predicted flows, evaluate the system's capacity, and estimate basin I/I. The flow monitoring data was collected for a period of two years of wet season, monitoring from 2020 to 2022. The "Auburn WA 2020-21 Draft I&I Report v1" prepared by ADS summarizes the flow monitoring program and was submitted to the City as a stand-alone report. The report can be found in Attachment 1A.

1.4.1 Program Description

1.4.1.1 Flow Monitoring Sites and Tributary Areas

A total of 40 sewer basins were monitored during the flow monitoring period from 2020 to 2022 within the service area, and seven King County meters recorded data within the City. A total of 20 of the meters and all seven of the King County meters recorded data over the first wet season from October 2, 2020 to April 15, 2021. Four meters recorded data from 2020 to 2022. The remaining 16 meters were sub-basin monitoring over the 2021-2022 wet weather season.

The remainder of this report will focus on the 22 flow monitoring locations that encompass larger tributary areas and have accurate data for the first wet season period. These meters were selected for calibration and offer the best distribution of data across the collection system and encompass the City's critical sewered areas. These 22-meter locations are identified in Figure 1.5. Table 1.1 lists the flow monitoring locations that were selected for calibration and the diameters for the associated sewers. Figure 1.6 provides a schematic illustrating all 47 flow monitoring locations relationship to help understand how the basins connect and the time data was recorded at each meter site. Figure 1.7 provides the same schematic showing the meters that were selected for model calibration.

Meter data quality was reviewed at all sites and deemed acceptable to use for model calibration. The quality of meter data and other trends in the flow can be determined from scattergraphs, which plot the depth versus velocity as compared to the manning's curve for the pipe segment. Scattergraphs for each site can be found in the Flow Meter Quality Review, Attachment 1B.

Table 1.1 Flow Monitoring Locations

Meter ID	Upstream Pipe ID	Manhole ID	Upstream Pipe Diameter (inch)
A1	308-19	308-20	21
A1c	309-08	309-06	18
A1d	309-11	309-10	18
A3	409-55	409-34	18
A4	508-28	508-17	12
A6	610-30	610-31	12
A7	708-07	707-03	18
A9	710-32	710-31	10
A10	710-152	710-151	24
A11	710-19	710-142	12
A12	710-43	710-42	12
A13	710-130	710-85	8
A14	710-148	710-149	18
A15	809-30	809-30	21
A16	809-44A	809-56	18
Y-1	410-76	410-16	18
Y-2	611-53	611-02	14
Y-3	1012-55	1012-55	24
Y-4	1010-02	1010-02	18
WINT003	508-01	508-02	42
MSTTR02	509-16	509-16	36
AUBRN53	207-02	207-01	72

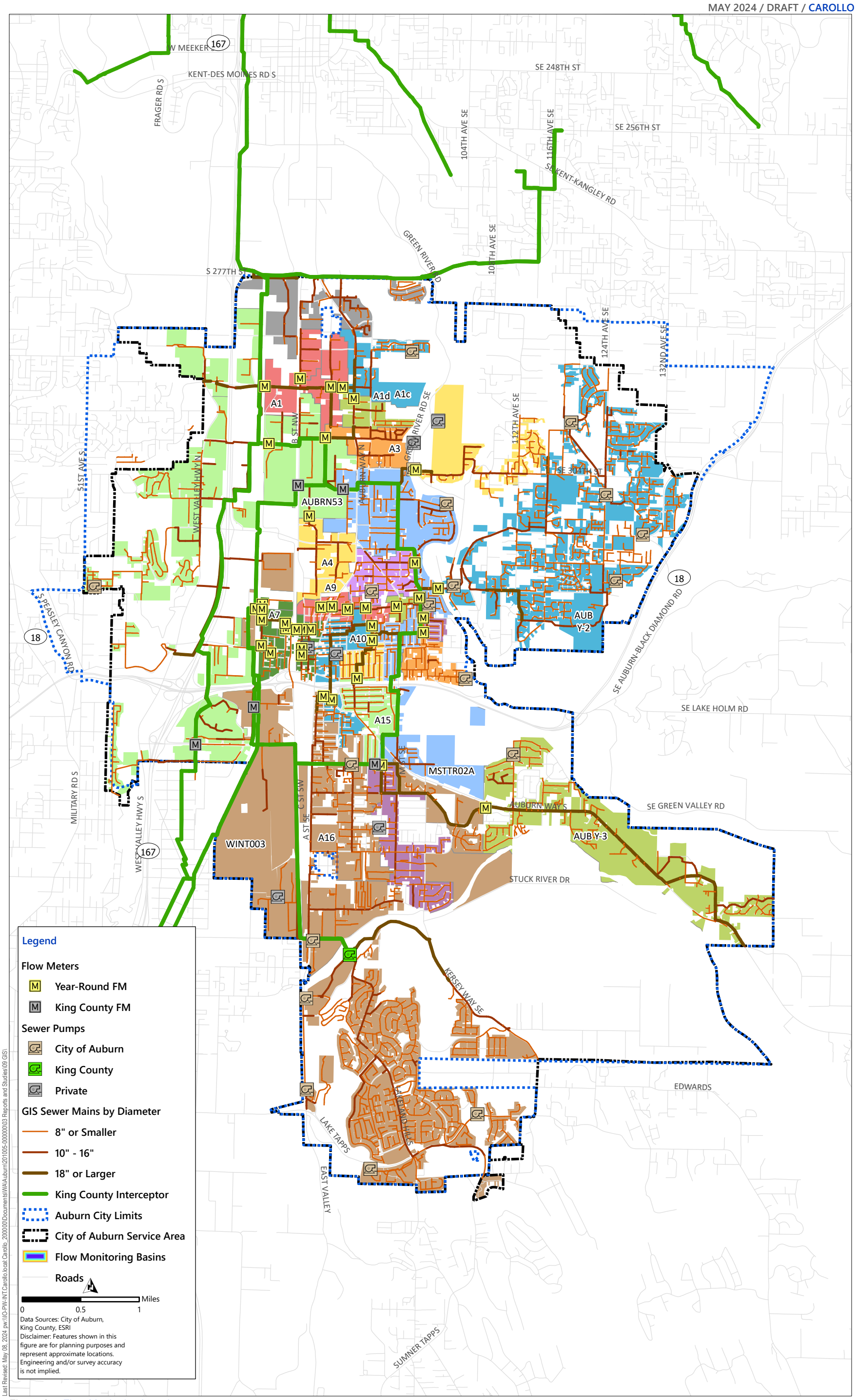


Figure 1.5 Flow Monitoring Locations

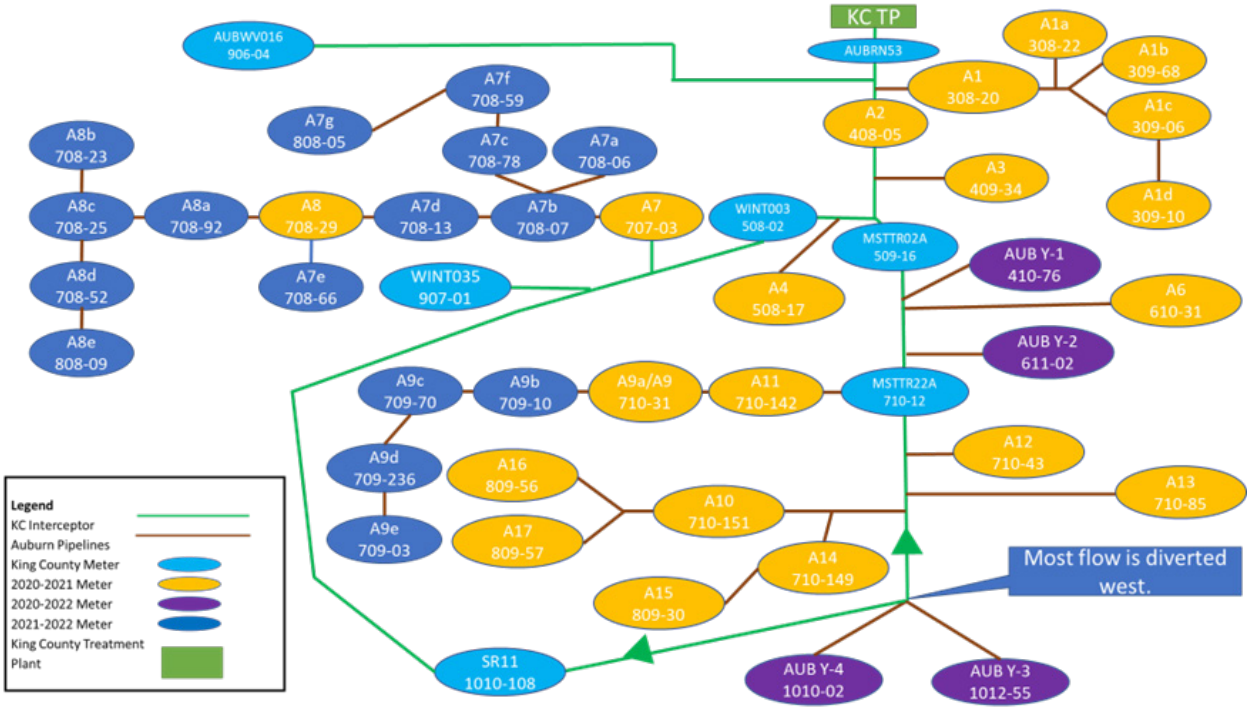


Figure 1.6 Flow Monitoring Schematic



Figure 1.7 Flow Monitoring Schematic of Meters Chosen for Calibration

1.4.1.2 Flow Meter Description

The flow meters used were area velocity meters. The velocity meter measured water with a Doppler signal and the depth measured with either a submerged pressure sensor or level transducer. Level was converted to area based on the pipe diameter. ADS selected the optimal type of flow meter to use on a site-to-site basis based on the hydraulic characteristics at each site, as well as other factors.

ADS conducted an analysis of the data retrieved from each flow meter and made adjustments as needed for calibration based on the field measurements. The flow at each meter was then calculated at 15-minute intervals based on the continuity equation:

$$Q = V \times A$$

Where:

- Q = Pipeline flow rate, cubic feet per second.
- V = Average velocity, feet per second.
- A = Cross sectional flow area, square feet.

1.4.1.3 Rain Gauges

One rain gauge was installed by ADS to record rainfall that occurred throughout the flow monitoring program and six existing king county rain gauges were used. The location of the rain gauge is shown in Figure 1.5.

1.4.2 Flow Monitoring Results

The flow monitoring program data were evaluated by components including DWF, rainfall, and WWF. Data collected from flow meter AUB A-1 is presented throughout this Technical Memorandum as an example of the type of data and the results from the flow monitoring program. Results for all other meters are included in Attachment 1B.

1.4.2.1 DWF Data

Base flow can be estimated for a wastewater collection system by comparing DWF and WWF at the flow monitoring locations. To estimate ADWF for more specific areas, such as individual wastewater basins, DWF's are typically estimated based on the area contributing to flows and flow coefficients developed for each land use type. This method is based on the assumption that areas with similar land uses, such as low-density residential parcels, produce equivalent quantities of wastewater flow on a per area basis. System-wide flows can be compared to known flows at flow monitors to verify accuracy. This method of estimating base flows is an industry standard for planning and provides sufficiently accurate data for planning purposes.

Existing ADWFs for each basin were estimated using data from the flow monitoring program for each of the flow monitoring basins. ADWF was developed using the driest days from the flow monitoring period based on the following set of minimum criteria:

- Less than 0.1 inch of rain in the previous 24 hours.
- In addition, those dry days that exhibited unusual flow patterns were not used to generate net dry day flow values for a basin.

Characteristic dry weather 24-hour diurnal flow patterns for each site were developed from hourly data. The hourly flow data were also used to calibrate the hydraulic model for the observed DWF's during the flow monitoring period. Hourly patterns for weekday and weekend flows vary and were separated to better define DWF. An example of the ADWF from Flow Meter AUB A-1, are shown in Figure 1.8. Both gross and net ADWF are developed for each meter data set. Gross ADWF corresponds to the total measured flow at the meter and includes all upstream areas while net basin flows are those associated only with the basin as monitored by its meter of the same name, and therefore excludes all flow from upstream meters (if any). A summary of the DWFs is outlined in Table 1.2.

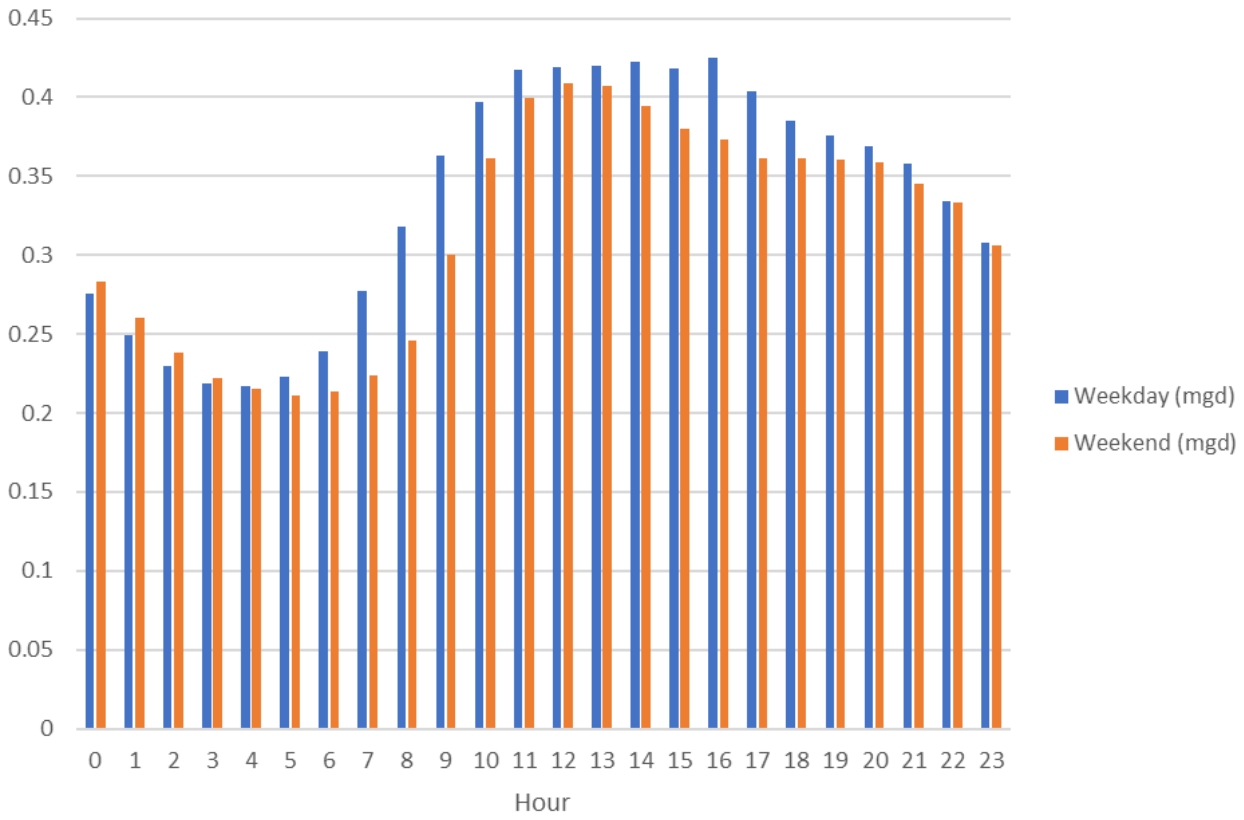


Figure 1.8 Typical Weekday vs Weekend DWF (Meter AUB A-1)

Table 1.2 ADWF Development Summary

Meter ID	Weekday Gross ADWF (mgd)	Weekend Gross ADWF (mgd)	Weekday/Weekend Ratio	Gross ADWF (mgd)	Net ADWF (mgd)
A1	0.336	0.316	1.065	0.330	0.042
A1c	0.229	0.236	0.970	0.231	0.146
A1d	0.085	0.085	1.000	0.085	0.085
A3	0.280	0.284	0.988	0.281	0.281
A4	0.255	0.253	1.010	0.255	0.255
A6	0.091	0.094	0.966	0.092	0.092
A7	0.158	0.112	1.412	0.145	0.003
A9	0.057	0.057	0.998	0.057	0.057
A10	0.286	0.286	1.000	0.286	0.006
A11	0.065	0.066	0.991	0.066	0.008
A12	0.018	0.020	0.872	0.018	0.018
A13	0.044	0.045	0.977	0.044	0.044
A14	0.177	0.181	0.983	0.178	0.122
A15	0.056	0.059	0.953	0.057	0.057
A16	0.239	0.242	0.987	0.240	0.240
Y-1	0.396	0.415	0.954	0.401	0.401
Y-2	1.023	1.060	0.965	1.033	1.033
Y-3	0.658	0.657	1.002	0.657	0.657
Y-4	0.141	0.148	0.955	0.143	0.143
WINT003	3.271	3.258	1.004	3.267	2.321
MSTTR02	0.336	0.316	1.065	0.330	0.661
AUBRN53	7.817	7.800	1.002	7.812	0.949

Abbreviations: mgd - million gallons per day.

1.4.2.2 Rainfall Data

An important part of the flow monitoring program is the collection and analysis of rainfall data. Four significant rainfall events occurred during the course of the flow monitoring period, as well as a few other relatively minor events. The storms recorded during the flow monitoring program generated an I/I response in the collection system and were appropriate for I/I analysis and model calibration purposes. The hourly flow measured at seven different rain gauges recording rainfall over the course of the flow monitoring program are illustrated in Figure 1.9. Figure 1.10 illustrates the total accumulation of rainfall over the course of the flow monitoring period for the gauges including the ADS tipping bucket type rain gauge (RG41Y). Table 1.3 summarizes the four largest events over the total rainfall period, recorded at the RGAUB rain gauge. The RGAUB rain gauge best represented the rainfall distribution between the gauges and was used in the model for WWF calibration.

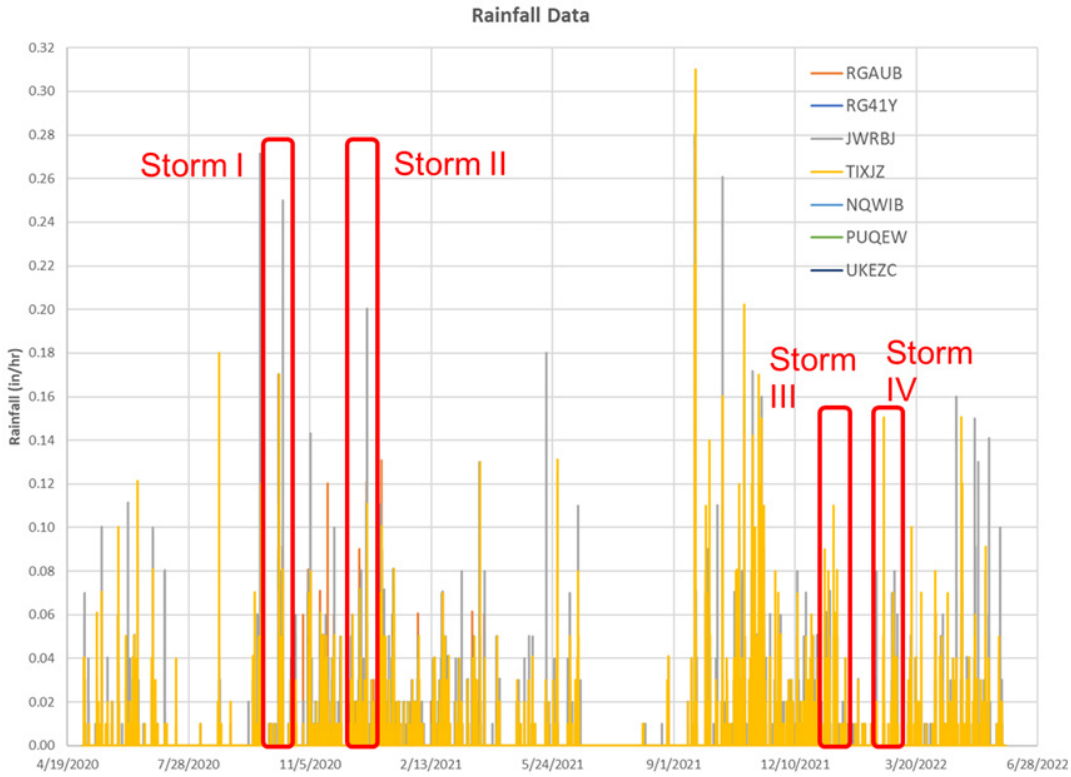


Figure 1.9 Rainfall Intensity

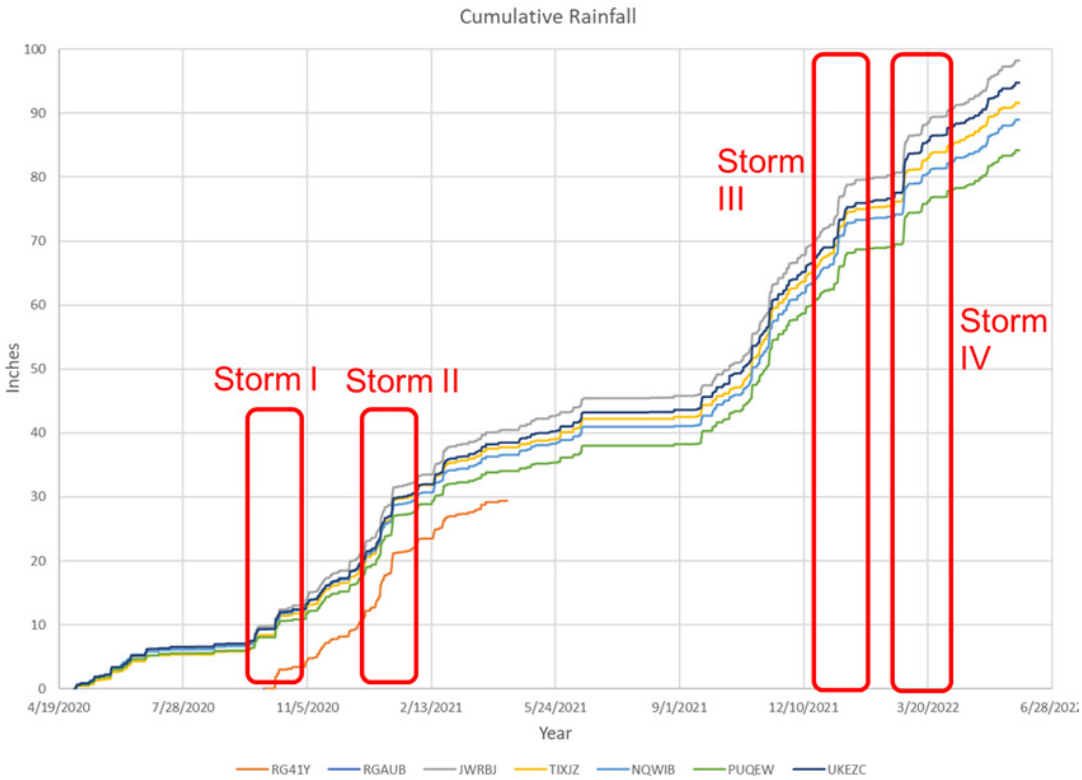


Figure 1.10 Cumulative Rainfall

Table 1.3 Largest Storm Events

Storm Event	Start Date	End Date	Total Event Rainfall (inch)	Max 24-hour Volume (inch)	Peak Intensity (inch/hour)
Storm I	October 6, 2020	October 13, 2020	1.98	1.52	0.17
Storm II	December 30, 2020	January 6, 2021	4.06	1.66	0.13
Storm III	January 8, 2021	January 15, 2021	3.20	2.08	0.06
Storm IV	February 18, 2021	February 25, 2021	1.67	1.31	0.07

1.5 Zoning and Land Use Data

Land use designations and regulations provide important information in evaluating existing sewer system capacity. Land use determines the area available for various types of development including both single-family and multi-family residential development, as well as commercial and industrial uses that provide the economic base necessary to support residential development.

Land use information is an integral component in estimating the amount of wastewater generated within any City. The type of land use in an area will affect the volume of wastewater generated. Additionally, the service area is typically comprised of both sewered and unsewered areas: sewered areas contribute flow to the collection system, while unsewered areas are vacant, undeveloped land, or development such as parks or parking facilities without a wastewater connection and do not currently contribute flow to the collection system.

Future land use designations can be different from the existing zoning designations. A relationship between existing and future designations was developed, based on the Comprehensive Land Use Plan. This relationship was expanded based on the City's geographic information system (GIS) Table 1.4 summarizes the correlation between zoning and land use and was used to develop wastewater flow coefficients.

Table 1.4 Existing Zoning and Future Land Use Correlation

Land Use Designation	Zoning
Residential Conservancy	Residential Conservancy
Single Family	Residential 20, 16, 7, 5, 1 du/Acre, Planned Unit Development District, Lea Hill Overlay
Moderate Density Residential	Residential 10 du/acre
Heavy Commercial	Heavy Commercial District, Mixed Use Commercial
Light Industrial	Light Industrial District, Central Business District
Light Commercial	Light Commercial District, Neighborhood Shopping District
Heavy Industrial	Heavy Industrial District
Multi-Family	Residential Manufactured/Mobile Home Community
Institutional	Institutional Use District, Public Use District, Airport Landing Field District
Downtown Urban Center	Downtown Urban Center
Neighborhood Commercial	Residential Office District, Residential Office District-Hospital
Open Space	Open Space
Parks	Parks

Abbreviations: du/acre – dwelling units

1.5.1 Zoning and Existing Served and Connected Area

The current zoning within the existing service area is shown in Figure 1.11. Right-of-Ways, unbuildable land, open space and parks were removed from this analysis, as these areas are assumed to contribute no sanitary flows to the collection system. Table 1.5 provides a summary of the zoning categories and acreages for the existing service area and connected area from each category.

Table 1.5 Existing Zoning Summary

Zoning	Area (acres)	Percent of Total Area
Airport Landing Field District	110	0.6%
Central Business District	28	0.2%
Downtown Urban Center	91	0.5%
Heavy Commercial District	1,183	6.6%
Heavy Industrial District	776	4.3%
Institutional Use District	1,041	5.8%
Lakeland Hills South Special Plan Area – Planned Unit Development	667	3.7%
Light Commercial District	242	1.3%
Light Industrial District	1,272	7.1%
Mixed Use Commercial	67	0.4%
Neighborhood Shopping District	9	0.0%
Open Space/Parks	1,125	6.3%
Planned Unit Development District	136	0.8%
Public Use District	531	3.0%
Residential 1 du/acre	751	4.2%
Residential 10 du/acre	205	1.1%
Residential 16 du/acre	38	0.2%
Residential 20 du/acre	511	2.8%
Residential 5 du/acre	2,758	15.3%
Residential 7 du/acre	1,617	9.0%
Residential Conservancy	1,245	6.9%
Residential Manufactured/Mobile Home Community	443	2.5%
Residential Office District	75	0.4%
Residential Office District-Hospital	1	0.0%
Terrace View District	50	0.3%
Unclassified Use District	379	2.1%
Unknown(1)	501	2.8%
Right-of-Way	2,116	11.8%
Total	**17,968**	**100.0%**

Notes:
(1) Land Use is based on City's GIS, areas within the service boundary, but outside City limits including the area in Kent, Bonney Lake and unincorporated King and Pierce County are listed as Unknown.

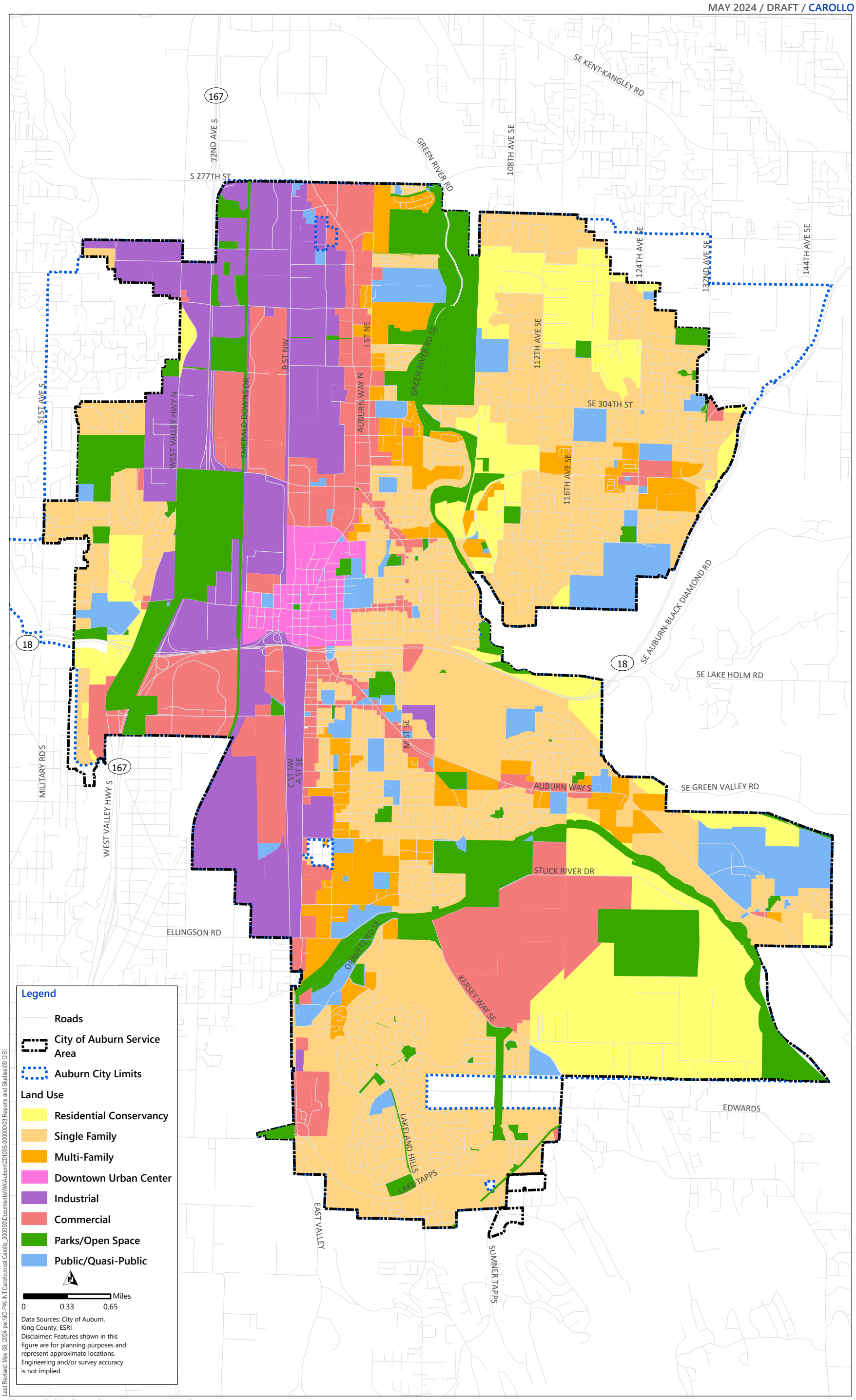


Figure 1.11 City of Auburn Land Use Designations

1.5.2 Future Land Use

Table 1.6 provides land use summary for the existing service area. Open space, parks, unbuildable land, Streets, and Right-of-Way are removed from this analysis and are assumed to contribute zero sanitary sewer flow in the future. The future land use within the existing service area is shown in Figure 1.12. The Land Use elements of the Comprehensive Plan can be found in Attachment 1C.

Table 1.6 Future Land Use Summary

Land Use Designation	Area (acres)	Percent of Total Area
Downtown Urban Center	213	1.2%
Heavy Commercial	1,529	8.5%
Heavy Industrial	753	4.2%
Institutional	2,167	12.1%
Light Commercial	335	1.9%
Light Industrial	1,325	7.4%
Moderate Density Residential	449	2.5%
Multi-family	1,096	6.1%
Neighborhood Commercial	82	0.5%
Neighborhood Commercial Overlay	53	0.3%
Open Space/Parks	1,438	8.0%
Residential Conservancy	1,297	7.2%
Single Family	6,977	38.8%
Unknown(1)	254	1.4%
Total	**17,968**	**100.0%**

Notes:
(1) Land Use was provided from City's GIS. Note it does not cover the entire wastewater service area. The unknown portion is unincorporated areas including the area in Kent, Bonney Lake Areas and unincorporated King County Area.

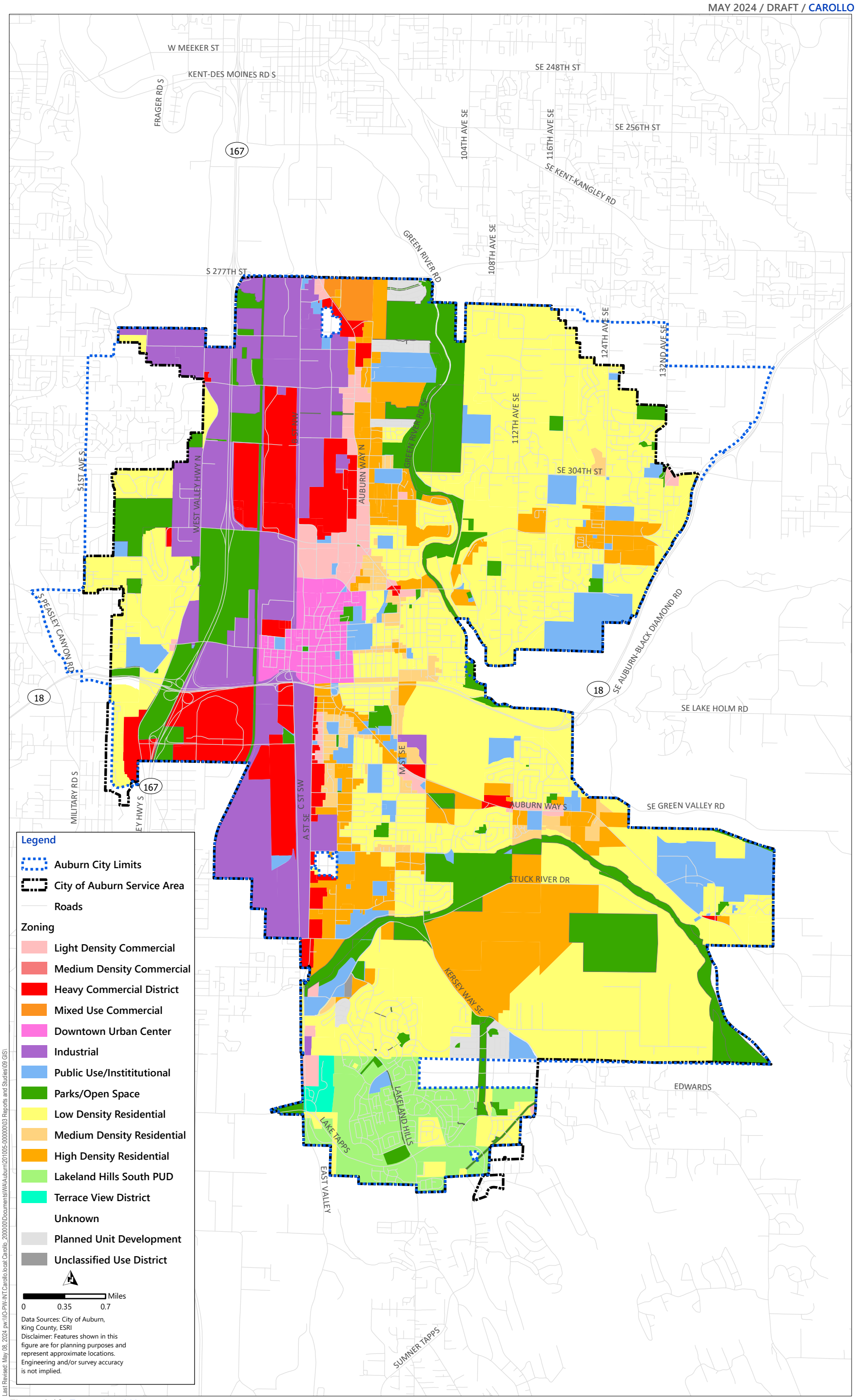


Figure 1.12 Future Land Use
CITY OF AUBURN
2024 COMPREHENSIVE SEWER PLAN

1.6 Wastewater Flow Factors

In order to develop wastewater flow projections and allocate future flows to the collection system, relationships between land use and wastewater generation were developed. These relationships, called wastewater flow factors are established based on the average wastewater flow generated for each existing land use type. The land use flow factors were established to project the estimated ADWF through future development of the City's wastewater collection system and project future flows within the existing service area boundary.

Average wastewater flow coefficients are volume rates, usually expressed in gallons per day per acre (gpda), applied to either gross or net acres to calculate average day flow generated from a particular land use type. A flow coefficient was developed for each of the land use classifications that were discussed previously. The flow coefficient provides a means to transform a land use category from acreage into wastewater flow. The resulting flow is then inputted into the appropriate sewer area in the sewer system model. Wastewater flow coefficients for residential areas typically range between 500 to 3,000 gpda, and commercial and industrial areas might range from 1,000 to 4,000 gpda, with typical values averaging approximately 1,500 gpda. Land uses designated as open space and parks are assumed to generate negligible amounts of sewage flow, and as a result have a flow coefficient of zero.

Figure 1.13 outlines the portion of the system that is currently considered sewered and contributing flows to the collection system. This acreage is assigned to each catchment in the system and used for rainfall runoff routing.

Flow monitoring basins were developed to define the upstream tributary area for each meter selected for calibration, using only connected and developed parcels. Flow factors are applied across these flow monitoring basins to allocate ADWF. Figure 1.14 outlines the flow monitoring basins used for this process.

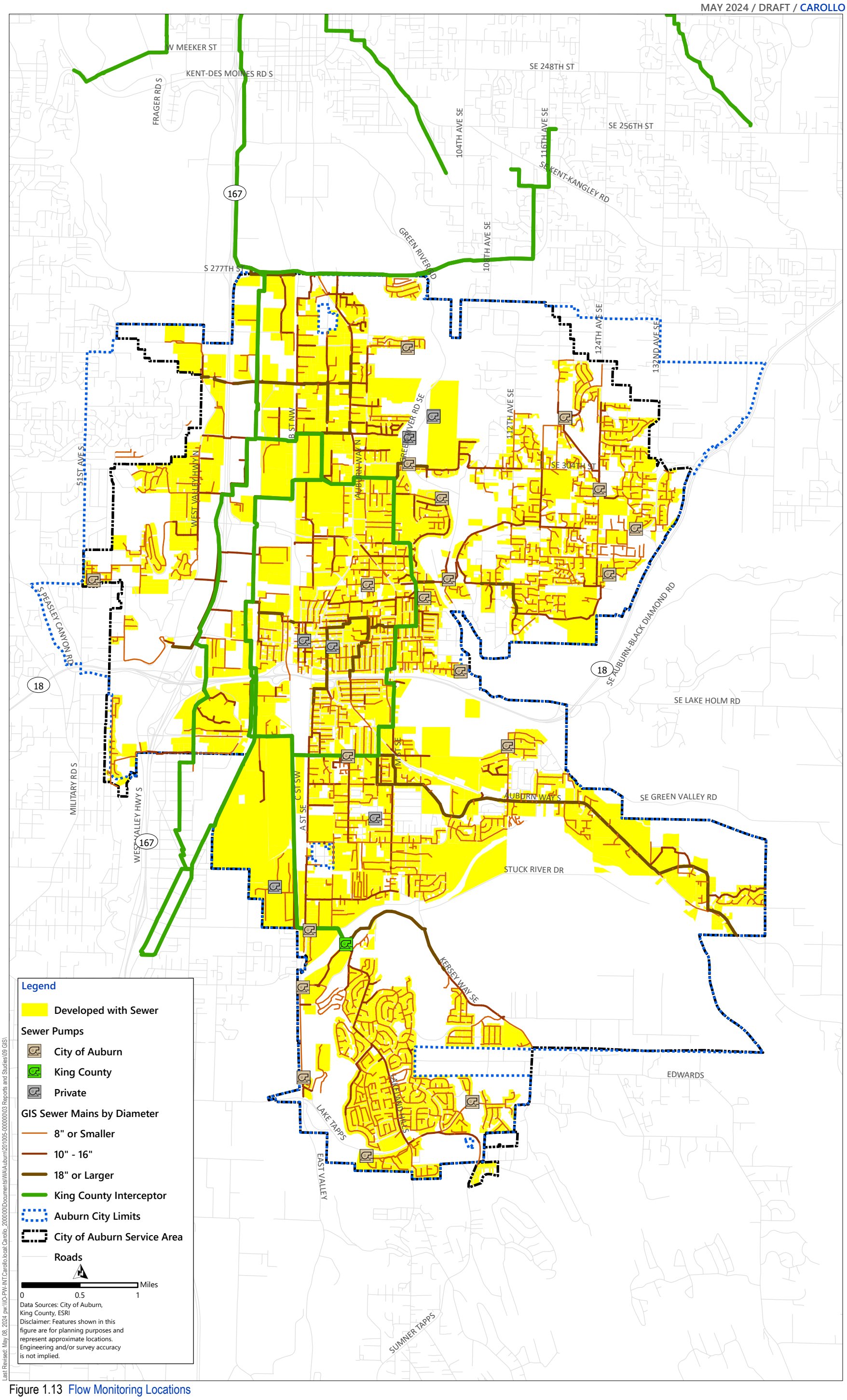


Figure 1.13 Flow Monitoring Locations
CITY OF AUBURN
2024 COMPREHENSIVE SEWER PLAN

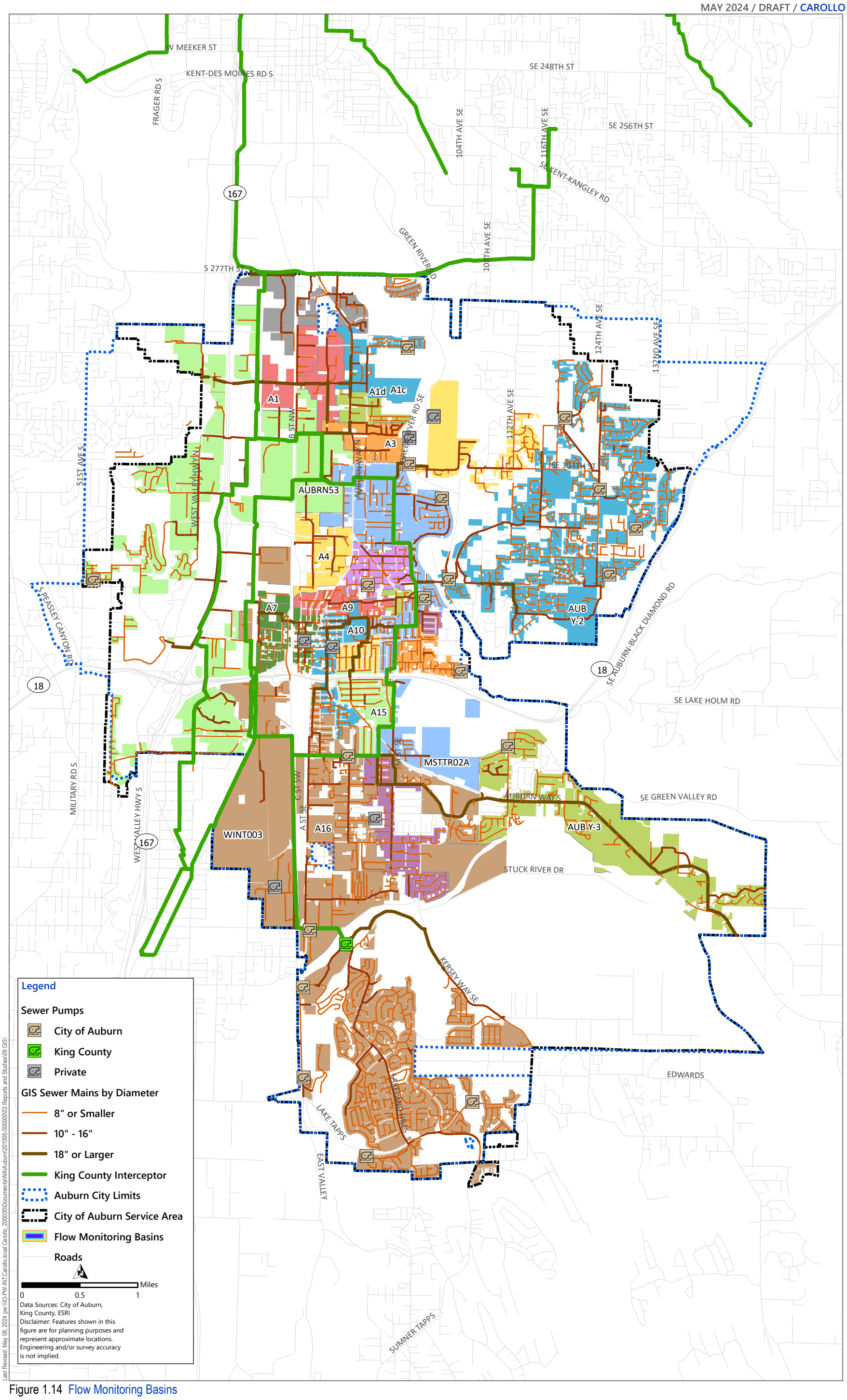


Figure 1.14 Flow Monitoring Basins
CITY OF AUBURN
2024 COMPREHENSIVE SEWER PLAN

1.6.1 Flow Factor Development

The coefficients are developed using the following procedure:

- Average flows for each flow metering tributary area were extracted from the flow-monitoring data (see Section 1.4).
- The acres for each land use type contained in each flow-monitoring tributary area were calculated using GIS data.
- Preliminary coefficients for each land use type were assumed based on typical values, which can be estimated from the approximate number of dwelling units per acre, the assumed per capita wastewater generation rates, and/or the typical number of people per dwelling unit for each land use type.
- The coefficients for each flow metering tributary area are adjusted up or down (balanced) within a reasonable range (based on engineering judgment) until the calculated average flows from each tributary matched flow monitoring period measurements. If the flow coefficients produced average flows that were significantly different from the field measured flows, further investigation was conducted to verify that the tributary basins were delineated correctly and if the collection system configuration was correct.
- Once the coefficients for the 22 flow meter tributary areas are balanced, the weighted average of the coefficients for each land use type is calculated based on the acreage contribution from each metering tributary area.
- The flow coefficients were then adjusted to balance the calculated flows for the overall developed sewer service area, where flow-monitoring data was available.

The weighted wastewater flow coefficients and land use areas that represent existing ADWF are summarized in Table 1.7. The land use coefficients generate an ADWF to the modeled collection system of 7.77 mgd, a -0.5 percent difference from the measured ADWF of 7.81 mgd.

Wastewater flow factors were compared to the Comprehensive Plan, Attachment 1C, to confirm they correspond to the densities and allowable dwelling unit per acre for each land use type. This was done at a flow monitoring basin level such that the flow factors matched the relative densities, however when averaged out across the system some flow factors are smaller or larger than the expected density based on the flow monitoring basin the majority of the land use acreage is within. The detailed flow factors at a flow monitoring basin level are shown in Attachment 1D.

Table 1.7 Flow Factor Development Summary

Land Use Type	Developed Area (acres)	Wastewater Flow Factor (gpda)	Existing ADWF (mgd)
Single Family	2,778	920	2.56
Moderate Density Residential	147	950	0.14
Residential Conservancy	11	800	0.01
Open Space	1	0	0.00
Neighborhood Commercial	64	1,020	0.07
Multi-Family	335	2,440	0.82
Light Industrial	721	530	0.38
Light Commercial	165	640	0.11
Institutional	953	1,230	1.17
Heavy Commercial	861	1,920	1.65
Heavy Industrial	414	1,890	0.78
Downtown Urban Center	58	1,500	0.09
Undeveloped Acreage	3,928		
Total	17,968		
		Total Estimated ADWF	**7.77**
		Measured ADWF	**7.81**
		Percent Difference	**-0.5%**

1.7 Hydraulic Model Overview

A wastewater collection system model is a simplified representation of the real sewer system. Wastewater system models can assess the conveyance capacity of the collection system. The model can be used to size new infrastructure. In addition, sewer system models can perform "what if" scenarios to assess the impacts of future developments and land use changes. The City's collection system hydraulic model was updated and expanded using a multi-step process utilizing data from a variety of sources. This section summarizes the hydraulic model development process, including a description of the modeled collection system, the hydraulic model elements, and the model creation process.

1.7.1 Selected Hydraulic Modeling Software

The City's previous collection system hydraulic model was developed using the Mike Urban hydraulic modeling software package, developed by DHI. This project converted the model from Mike Urban to Mike+, the current DHI collection system product. The hydraulic modeling engine for the Mike+ software package is now 1D, it was previously MOUSE. The model was updated to use the 1D engine, which is widely used throughout the world for planning, analysis, and design related to stormwater runoff, combined sewers, sanitary sewers, and other free surface drainage systems such as streams and rivers.

The latest version (2022) of Mike+ was used for the hydraulic model update. More information about the modeling software can be found in the Mike+ Collection Systems Guide[1].

1.7.2 Modeled Collection System and Skeletonization

The City provided Carollo Engineers, Inc. with an initial skeletonized model. Skeletonization is the process of identifying the key system conveyance components to include in the model. Smaller pipelines not considered essential for the intended analysis purpose are removed from the modeled set. The purpose of skeletonizing a system is to develop a model that accurately simulates the hydraulics of a collection system, while at the same time reducing the complexity as well as computational run times and to simplify data management.

It is common practice in sewer system master planning to exclude small diameter sewers when developing a hydraulic computer model. Key sewers are included in the City's hydraulic model where needed for connectivity, or where it was determined that the pipes in question were considered as primary collectors. The collection system remains skeletonized for this project, with no increase in modeled system coverage. Pipes were updated to reflect projects and changes that occurred since the last plan.

1.7.3 Elements of a Hydraulic Model

The following provides a brief overview of the various elements of the hydraulic model and the required input parameters associated with each:

- **Nodes (Manhole):** Sewer manholes, cleanouts, and other locations where pipes begin, pipe sizes change, or pipelines intersect are represented by junctions in the hydraulic model. Required inputs for junctions include rim elevation, invert elevation, diameter, and surcharge depth (used to represent pressurized systems). Nodes are also used to represent locations where flows are split or divided between two or more downstream links.
- **Pipes:** Gravity sewers and force mains are represented as pipes in the hydraulic model. Input parameters for pipes include length, friction factor (e.g., Manning's n for gravity mains, Hazen Williams C for force mains), invert elevations, diameter, shape, and whether or not the pipe is a force main.
- **Nodes (Basin):** For collection system modeling, basins are typically used to represent pump station wet wells (although other storage basins, etc., can be modeled as basin). Input parameters for basins include invert elevation, wet well depth, and wet well cross section or a depth-area relationship.
- **Pumps:** Pumps are included in the hydraulic model as links. Input parameters for pumps include pump curves and operational controls.
- **Nodes (Outfalls):** Outfalls represent areas where flow can leave the system. For sewer system modeling, an outfall typically represents an overflow point or the connection to the wastewater treatment plant.
- **Boundary Conditions (Rainfall):** Rain gauges are locations where rainfall is input to the hydraulic model for simulation of WWF. The rain can be historical, projected, or theoretical hourly rainfall events.

[1] Mike+ Collection System User Guide, DHI 2022.

- **Catchments:** Catchments represent areas of land whose topography and drainage characteristics direct flow to a single discharge point into the sewer system. Catchments can be used to define sanitary flows or to route a portion of the rainfall runoff into the system. Inflow conditions for the catchments are defined model inputs. Figure 1.15 outlines all the modeled catchments in the collection system model.
- **Inflows:** There are two primary flow sources that enter into the collection system, which are input through individual junctions (and storage nodes) in the model:
  - *Dry Weather. Dry weather inflows simulate base sanitary wastewater flows and represent the average flow. The DWF can be multiplied by up to four patterns that vary the flow by month, day, hour, and day of the week (e.g., weekday or weekend). The dry weather diurnal patterns are adjusted during the dry weather calibration process to match the known typical daily flow fluctuations. Two diurnal patterns were developed for each basin, respectively representing weekday and weekend days (see Section 1.4.2.1).*
  - *Rainfall derived infiltration and inflow (RDII). RDII are flows into the collection system originating from rainfall. Several models are available in Mike Urban to capture these effects. The models have a number of parameters that are adjusted during the wet weather calibration process to model the flows into the collection during different storm events.*

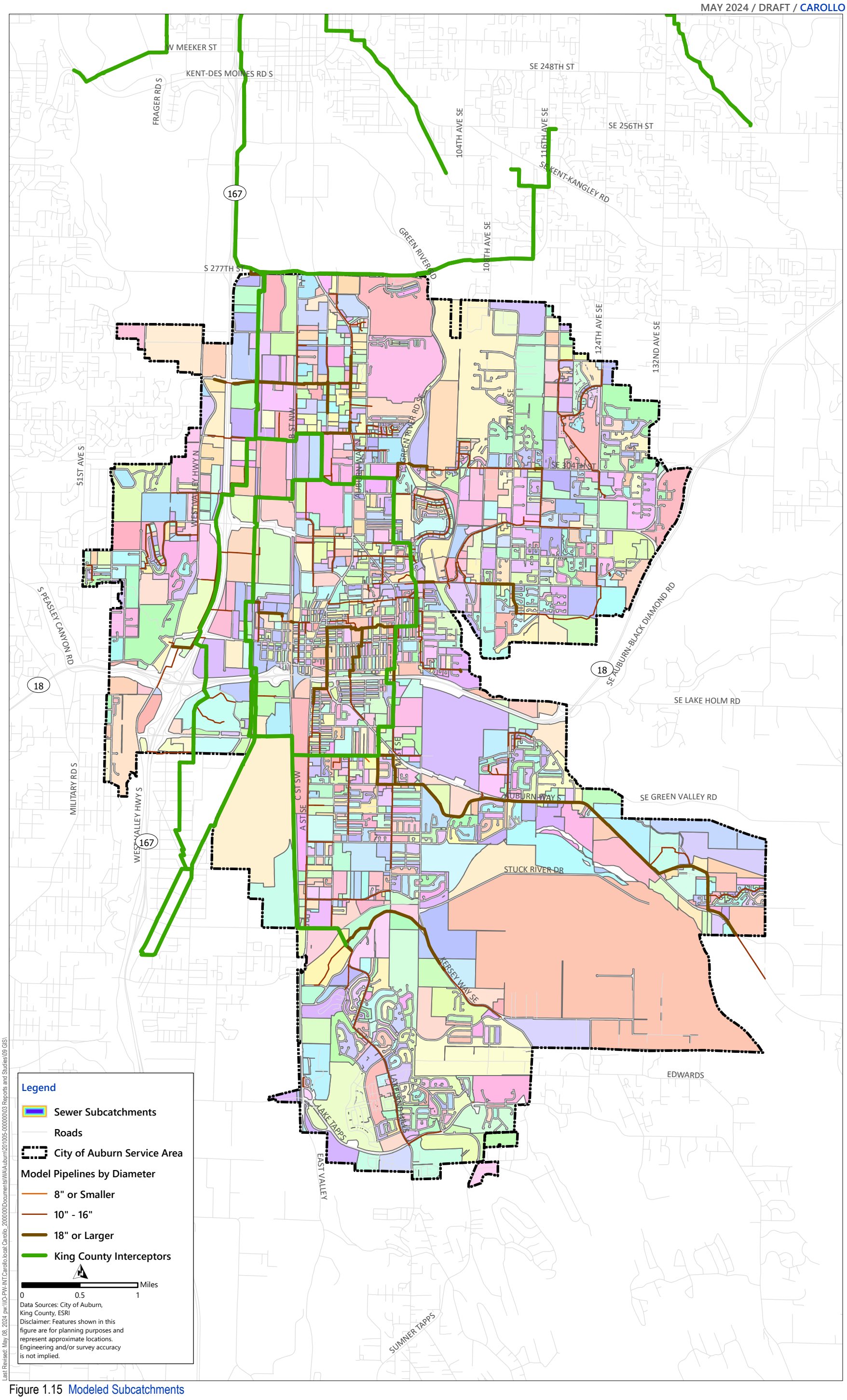


Figure 1.15 Modeled Subcatchments
CITY OF AUBURN
2024 COMPREHENSIVE SEWER PLAN

1.8 Hydraulic Model Calibration

Hydraulic model calibration is a crucial component of the hydraulic modeling effort. Calibrating the model to match data collected during the flow monitoring program ensures the most accurate results possible. The calibration process consists of calibrating to both dry and wet weather conditions.

For this project, both dry and wet weather calibration were conducted at the 22 metering sites presented and discussed in Section 1.4:

- DWF calibration ensures an accurate depiction of ADWF generated within the existing service area, and diurnal fluctuations.
- WWF calibration consists of calibrating the hydraulic model to a specific storm event or events to accurately simulate the peak flow and volume of I/I into the sewer system. The amount of I/I is essentially the difference between the WWF and DWF components.

1.8.1 Calibration Standards

The hydraulic model was calibrated in accordance with international modeling recommendations. The Urban Drainage Group (UDG), formerly known as Wastewater Planning Users Group, a section of the Chartered Institution of Water and Environmental Management (CIWEM), has established generally agreed upon principles for model verification. The dry weather and wet weather calibration focused on meeting the recommendations on model verification contained in the "Code of Practice for the Hydraulic Modeling of Urban Drainage Systems," published by the CIWEM UDG[2], as summarized below.

1.8.1.1 Dry Weather Calibration Standards

Dry weather calibration should be carried out for two dry weather days and the modeled flows and depths should be compared to the field-measured flows and depths. Both the modeled and field-measured flow hydrographs should closely follow each other in both shape and magnitude. In addition to the shape, the flow hydrographs should also meet the following criteria as a general guide:

- The timing of flow peaks and troughs should be within 1 hour.
- The peak flow rate should be within the range of ±10 percent.
- The volume of flow (or the average rate of flow) should be within the range of ±10 percent. If applicable, care should be taken to exclude periods of missing or inaccurate data.
- The unsurcharged depth should be within ±10 percent or ±4 inches, whichever is greater.

[2] UDG, Code of Practice for the Hydraulic Modelling of Urban Drainage Systems, 1st Edition CIWEM 2017 www.ciwem.org.

1.8.1.2 Wet Weather Calibration Standards

For each meter, three separate storms should be simulated with the model. For at least two storms out of the three events from the flow monitoring period, the model-simulated flows and depths should match the field-measured flows and depths within the accepted criteria. The modeled and field flow hydrographs for the calibration storms should closely follow each other in both shape and magnitude, until the flow has substantially returned to DWF rates.

In addition to the shape, the flow hydrographs should also meet the following criteria as a general guide:

- The timing of the peaks and troughs should be similar with regard to the duration of the events.
- The peak flow rates at significant peaks should be in the range of +25 percent to -15 percent and should be generally similar throughout.
- Modeled volume of flow should be within +20 percent to -10 percent of measured volume of flow.
- The depth of surcharge should be in the range of +20-inches to -4-inches.
- The difference between maximum unsurcharged depth should be within the range of ± 4-inches.

The UDG recommends that for wet weather calibration, the use of a single calibration period incorporating a number of rainfall events should be considered whenever possible. In other words, if the flow monitoring program captured several back to back storms, it may be preferable to use the back to back storms events as the calibration storms, as opposed to calibrating to two separate storms that have occurred weeks or months apart. Model calibration simulations should be run for a duration long enough that the RDII response is no longer apparent in the measured data.

1.8.2 DWF Calibration

1.8.2.1 Dry Weather Calibration Process

The DWF calibration process consists of several steps, as outlined below:

- The first step in the calibration process was to divide the City into flowmeter tributary areas. GIS analysis was used to create 22 tributary areas, one for each flowmeter from the flow monitoring program that was selected to be used for calibration. A map showing the locations of each flow monitoring site and their associated tributary area was provided in Section 1.4 and Section 1.6, along with a schematic of the flow meters.
- The next step was to define the flow volumes within each area, which was accomplished by applying the flow factors outlined in Table 1.7 to the catchments proportionally based on the distribution of land use types withing the catchment.

- The last step is to create diurnal patterns to match the temporal distribution of flow. A diurnal curve is a pattern of hourly multipliers that are applied to the base flow to simulate the variation in flow that occurs throughout the day. Two diurnal curves were developed for each flow monitoring tributary area, one representing weekday flow and one representing weekend flow. The diurnal patterns were initially developed based on the flow monitoring data and adjusted as part of the calibration process until the model-simulated flows closely matched the field-measured flows. Figure 1.16 shows the calibrated weekday and weekend diurnal patterns for the area tributary to Meter AUB A1. Similar diurnal curves were developed for each of the meters and its tributary area. These additional curves are available in Attachment 1E.

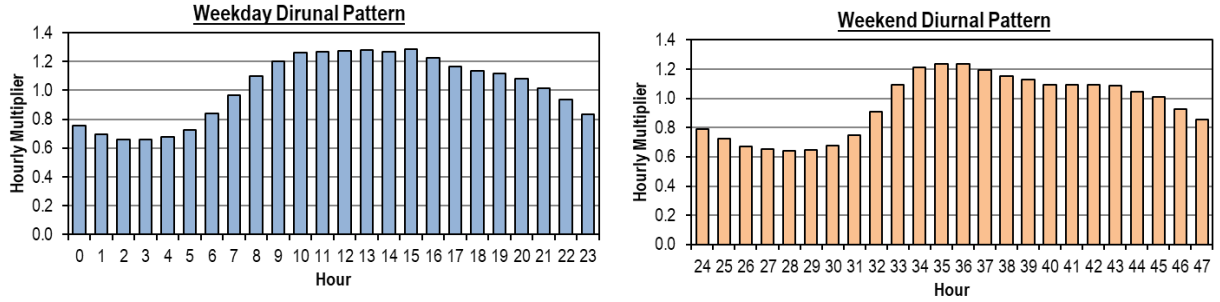


Figure 1.16 Example Diurnal Pattern

1.8.2.2 Dry Weather Calibration Discussion

Table 1.8 provides a summary of the DWF calibration using the average and daily peak flow results for both weekday and weekend conditions. As shown on Table 1.8, the model-simulated average for all sites are within 10 percent. The peak flows for both weekday and weekend DWF were all within 10 percent, except for meters A3, A7, Y-2, and MSTTR02A. Those four meters showed variability between weekday and weekend volume, but still match for the average day DWF.

Attachment 1E contains a detailed DWF calibration summary sheet for each of the 22 metering sites. Each calibration sheet provides plots that compare the model-simulated and field-measured flow data for both weekday and weekend conditions. An example of the dry weather calibration for Meter AUB A1 is shown on Figure 1.17.

There is good overall correlation of the field-measured data to the model output results. A total of 18 of 22 meters meet criteria for both level and velocity, indicating a well calibrated model for DWFs. Manning's n values were adjusted by flow monitoring basin so that modeled levels would better match the measured data. However, even after these changes some levels could not be matched. The Mike 1D engine simulates flow well under these conditions, but level and velocity are less accurate with the Saint-Venant equations meant for free flow conditions.

To account for this, the modeled manhole head losses were adjusted for steep pipes throughout the collection system. For pipes with slopes greater than 0.01 or 1 percent, the head loss was defined as weighted inlet energy with a smaller effective area instead of the default Mouse Classic Engelund. This change ignores inlet expansion losses and assumes the energy level in the manhole equals the inlet pipe. Thus, the manhole level is reduced to better match the field measured data for steep slopes. These

changes moved the levels closer to being in criteria, but the level changes were not significant enough that all these sites could not be moved into calibration criteria.

All 4 meters outside of criteria had higher modeled levels than measured level. Meter A6, A7, Y-2, are all meters located on steep pipe slopes where a hydraulic jump is occurring. These sites are also at points where the pipe size is transitioning. The monitoring at Site A6 was done at a manhole that transitions from a 12-inch to a 30-inch, site A7 was done at a manhole that transitions from an 18-inch to a 36-inch, and Y-2 is where 14-inch transitions to a 24-inch. The modeled levels are exported at the downstream end of the pipe in the monitoring manhole where the hydraulic grade line (HGL) is governed by larger diameter downstream pipe, leading to higher levels than measured. These three sites remained out of criteria for WWF as well.

Site AUBRN53 was also slightly out of criteria but moved into criteria during WWF's so this was deemed less of a concern.

Table 1.8 DWF Calibration Results

Flow Meter ID	Weekday Average Flow Percent Error	Weekday Peak Flow Percent Error	Weekday Max Level Difference (inches)	Weekend Average Flow Percent Error	Weekend Peak Flow Percent Error	Weekday Max Level Difference (inches)	ADWF Percent Error
A1	-3.3%	-4.1%	1.62	2.9%	8.2%	1.55	-1.6%
A1c	4.5%	1.4%	2.50	1.6%	-2.1%	2.69	3.7%
A1d	-5.4%	-5.7%	0.93	-4.7%	-5.2%	0.93	-5.2%
A3	-4.9%	-7.5%	1.56	34.3%	30.9%	1.22	3.7%
A4	-5.4%	-5.6%	0.26	-4.3%	-4.5%	0.29	-5.1%
A6	-3.8%	3.9%	6.67	-7.9%	-0.5%	6.68	-5.0%
A7	-8.7%	-9.6%	11.39	29.0%	28.3%	11.99	-0.4%
A9	-1.8%	-3.2%	0.61	-1.9%	-4.8%	0.71	-1.8%
A10	-1.9%	-9.5%	1.44	-2.0%	-9.7%	1.75	-1.9%
A11	5.9%	4.7%	0.65	4.9%	0.7%	0.78	5.6%
A12	7.2%	2.8%	0.61	-5.7%	-7.6%	0.60	3.2%
A13	-1.1%	-4.0%	0.37	-0.1%	-1.5%	0.30	-0.8%
A14	-6.0%	-3.1%	1.59	-7.4%	-2.0%	1.66	-6.4%
A15	2.0%	1.6%	0.97	-2.4%	-3.1%	1.08	0.7%
A16	-2.0%	-2.7%	1.43	-3.2%	-4.6%	1.45	-2.4%
Y-1	1.6%	0.8%	0.94	-3.0%	-4.0%	1.08	0.2%
Y-2	1.9%	14.1%	5.30	0.1%	15.9%	5.68	1.4%
Y-3	-2.1%	-2.5%	2.83	-1.6%	-4.1%	2.83	-2.0%
Y-4	8.2%	2.7%	3.99	11.1%	1.1%	3.77	9.0%
WINT003	3.6%	-5.3%	3.87	2.9%	-5.1%	3.74	3.4%
MSTTR02A	11.0%	7.5%	2.28	6.3%	6.4%	2.28	9.6%
AUBRN53	6.1%	4.4%	4.29	6.0%	2.9%	4.71	6.0%

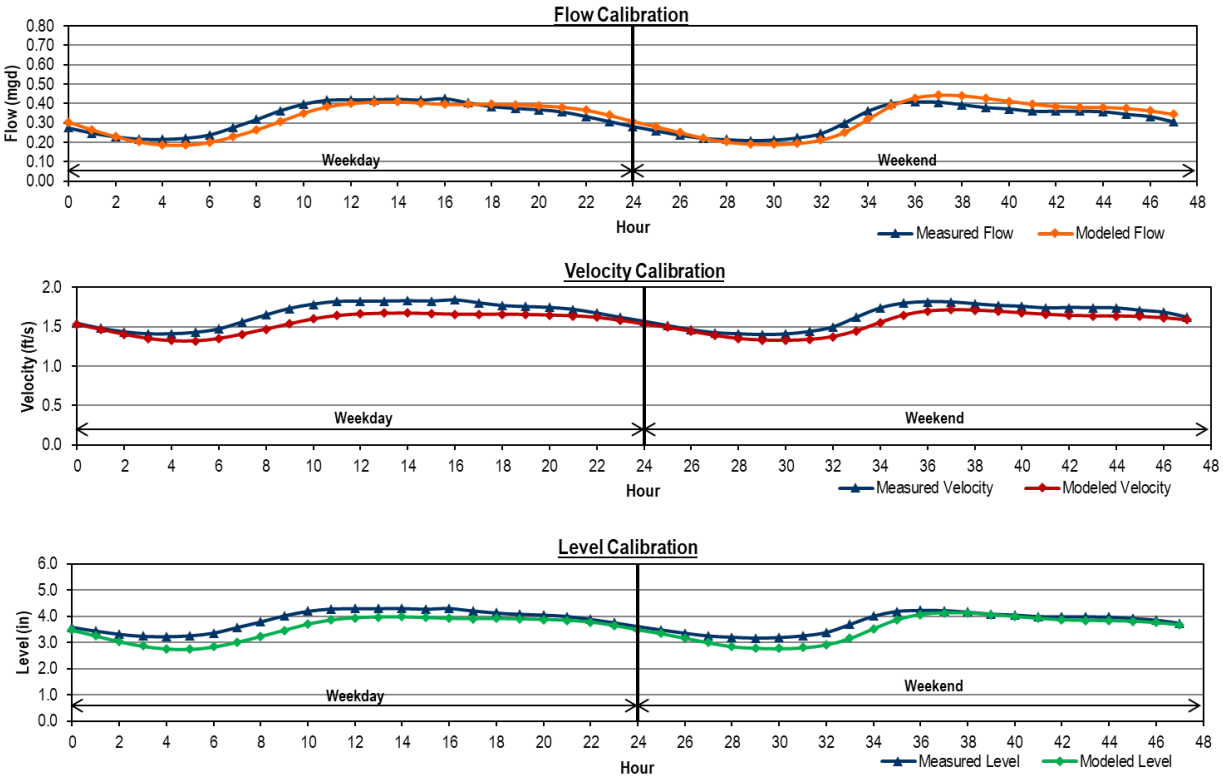


Figure 1.17 Example DWF Calibration (Meter AUB A1)

1.8.3 Wet Weather Flow Calibration

1.8.3.1 Wet Weather Flow Calibration Process

The WWF calibration enables the hydraulic model to accurately simulate RDII entering the collection system during storms. The WWF calibration process consists of running model simulations of historic rainfall events based on data collected as part of a system flow monitoring program. The goal of any WWF monitoring program is to capture and characterize a system's response to a significant rainfall event, preferably during wet antecedent moisture conditions. As outlined below, the WWF calibration process consists of several elements:

- **Identify calibration rainfall events.** The selection of a particular calibration storm or group of storms is based on a review of the flow and rainfall data. There is a good range of different event types available for the different meters. Major rainfall events that were used as calibration rainfall events were identified as part of Section 1.4.2.2. Table 1.3 summarizes the four storms picked for calibration for each of the 2 sites. The use of a single calibration period incorporating a number of rainfall events was considered whenever possible. All meters except for WINT003, MSTR002A, and AUBRN53 used the first three storms, those three used the 4th event due to meter availability. Figure 1.9 illustrated the storms used in the model calibration process.

- **Define RDII tributary areas.** For the WWF calibration, RDII flows are added on top of the DWF. The model calculates two types of response: a slow response corresponding mainly to infiltration, or slow response curve (SRC), and a fast response corresponding mainly to direct inflow, or fast response curve (FRC). Imperviousness is the fraction of the catchment area that is impervious and connected to the collections system, generating the FRC runoff, and rainfall derived infiltration (RDI) Area, which is the fraction of the total catchment area that contributes to the SRC. The imperviousness and RDI runoff component are two major model-specific data in the model calculation of WWFs, and each have a number of subparameter components that are adjusted to tune to response timing. These area values were initially set based on engineering judgment, as well as the previously used values, and then adjusted until the model-simulated wet weather flow volume roughly matched the field-measured flows.
- **Create I/I parameter database and modify to match field-measured flows.** The main step in the WWF calibration process involves adjusting both Model A and RDI parameters for each flow monitoring tributary area. Figure 1.18 provides a schematic of the RDI model used. Attachment 1F summarizes all calibrated parameters by flow monitoring site, for current conditions. As with the dry weather calibration, the wet weather calibration process compared the meter data with the model output. Comparisons were made for average and peak flows as well as the temporal distribution of flow until flows returned to their baseline levels. According to the CIWEM UDG, a hydraulic model is generally considered calibrated to WWF conditions if the modeled peak flows are within +25 percent to -15 percent of the field-measured data, and if the average modeled volumes are within +20 percent to -10 percent of the field-measured data. Calibration was performed for the depth of flow as well, this is considered calibrated when peak depths are with ± 4-inches when unsurcharged, and +20-inches to -4 inches when surcharged.
- **Adjust model variables to match field-measured velocity and flow depths.** Once the model-simulated flows matched the field-measured flows within the acceptable limits, the model-simulated velocity and flow depth were compared to the field-measured velocity and flow depth. Adjustments were made to various model parameters until the modeled and measured velocity and depth closely matched one another. The primary varied parameters for this process are node head losses and pipeline roughness (Manning's n), although other parameters can also be adjusted as calibration results are generated. Sediment buildup and movement in the pipe will also influence the level and depth, but these are very difficult to quantify and can change frequently, therefore they are not included in the calibration.

  Manning's roughness coefficients, or n values, have industry accepted ranges based on a number of variables. Roughness coefficients increase over time depending on the construction methods, installation quality, system maintenance, and other environmental factors. There can be certain factors within the City's collection system that can result in roughness coefficients that differ from the typical range. These could include joint misalignment, cracks, and debris (e.g., root intrusion, etc.) that lead to increased turbulence in a pipe and an increase in the apparent Manning's n factor.

  If the model is unable to reasonably match the field-measured flow depth and velocity within the acceptable range of Manning's roughness coefficients, further investigation should be conducted to help determine the cause of the discrepancy. Some issues that could cause such a discrepancy can include errors in the slope or diameter of a pipeline, downstream blockages, pipeline sags, and, in some cases, influences from downstream pump station operations.

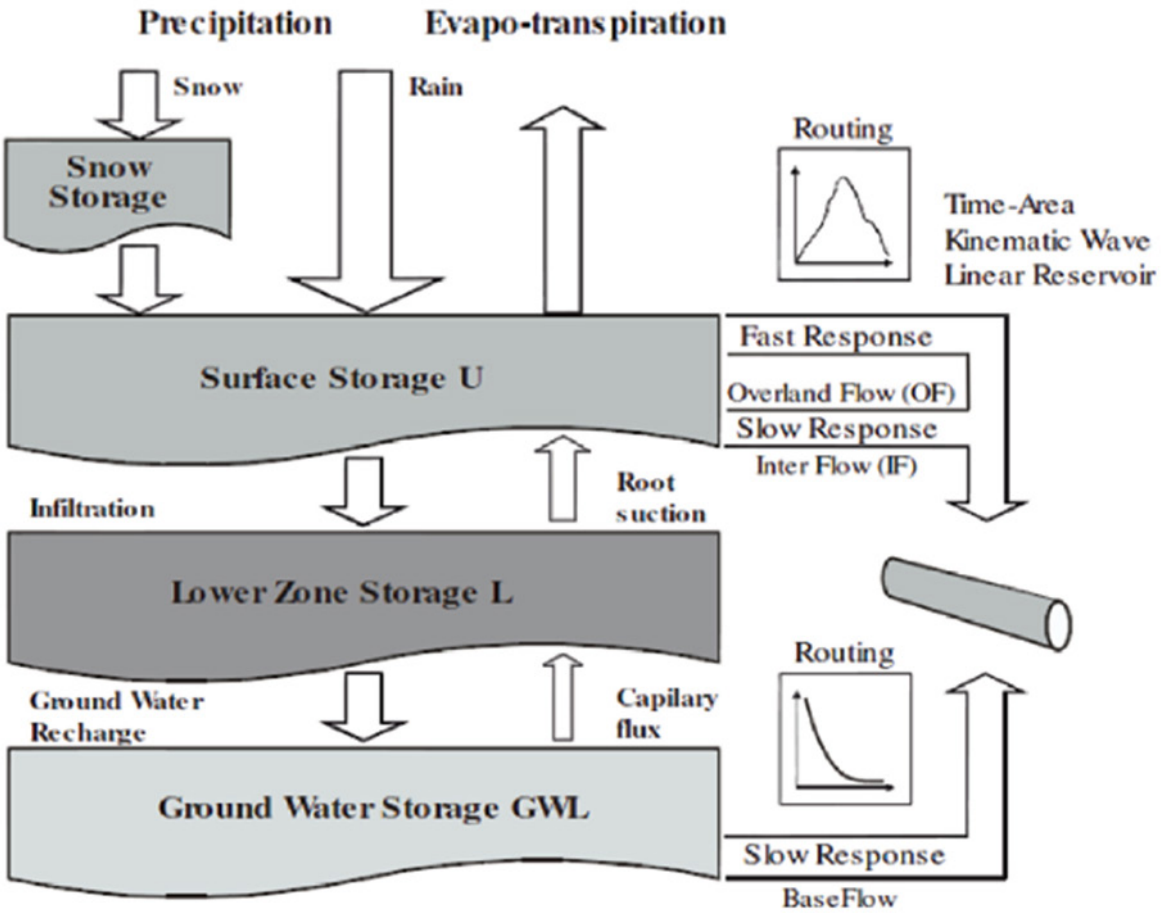


Figure 1.18 RDI Model Schematic

1.8.3.2 Wet Weather Calibration Results

Attachment 1G contains a detailed WWF calibration summary sheet for each of the 22-meter sites. The modeled outputs at each flow meter were compared to the data from three storms recorded during the flow monitoring period for calibration. Each calibration sheet provides plots that compare the model-simulated and field-measured flow, velocity, and level data for the calibration storms. An example of the wet weather calibration for Meter AUB 1A is shown on Figure 1.19.

Table 1.9 provides a summary of the WWF calibration using the total volume and peak flow results. Of the 22 meters, 21 had two or more storm event responses within calibration standards for volume and peak flows. Meter A12 was the only site outside of criteria for volume, peak still matched, and this was due to abnormal DWF data during the WWF calibration period. As shown on Table 1.9, the model-simulated average and peak flows at all other meter sites were within the acceptable tolerances for the calibration storms, and therefore the model was considered calibrated and ready to use for capacity analysis purposes.

As discussed in Section 1.8.1, it is critical that the hydraulic model is not only calibration to volume and peak flow, but also level data. This will ensure accuracy and trust in modeled results when evaluating capacity deficiencies; which are based on a HGL criteria in the collection system.

Modeled data at almost all meters closely matched the recorded level information, of the 22 meters with level data, 18 met the level calibration standard. Meters A6, A7, and Y-2 did not meet the level criteria during DWF either and are discussed in Section 1.8.2. Meter Y-1 fell out of level criteria for WWF. The measured data indicated backwatering and surcharging effects during the latter two storm events, and this surcharging was not replicated in the model. This meter is located right upstream of the Green River Siphon, indicating potential sediment buildup constricting flows in the field, and not replicated in the model.

1.8.3.3 Hydraulic Model Calibration Summary

Calibration of the City's hydraulic model was a multi-step process that involved comparing model-simulated flow to the actual field-measured data for both dry and wet weather conditions. The model met all flow CIWEM standards for ADWF and most standards for level. Results showed the model met CIWEM standards for calculation of flows during peak wet weather flow. The CIWEM level standards were met at 18 of the 22 sites used for model calibration. For the meters outside of level criteria, 3 of the 4 meters were over predicting levels, offering a conservative approach for system analysis. These calibration results provide a high level of confidence in the model's accuracy such that the model can be considered calibrated and ready to use for subsequent capacity analysis.

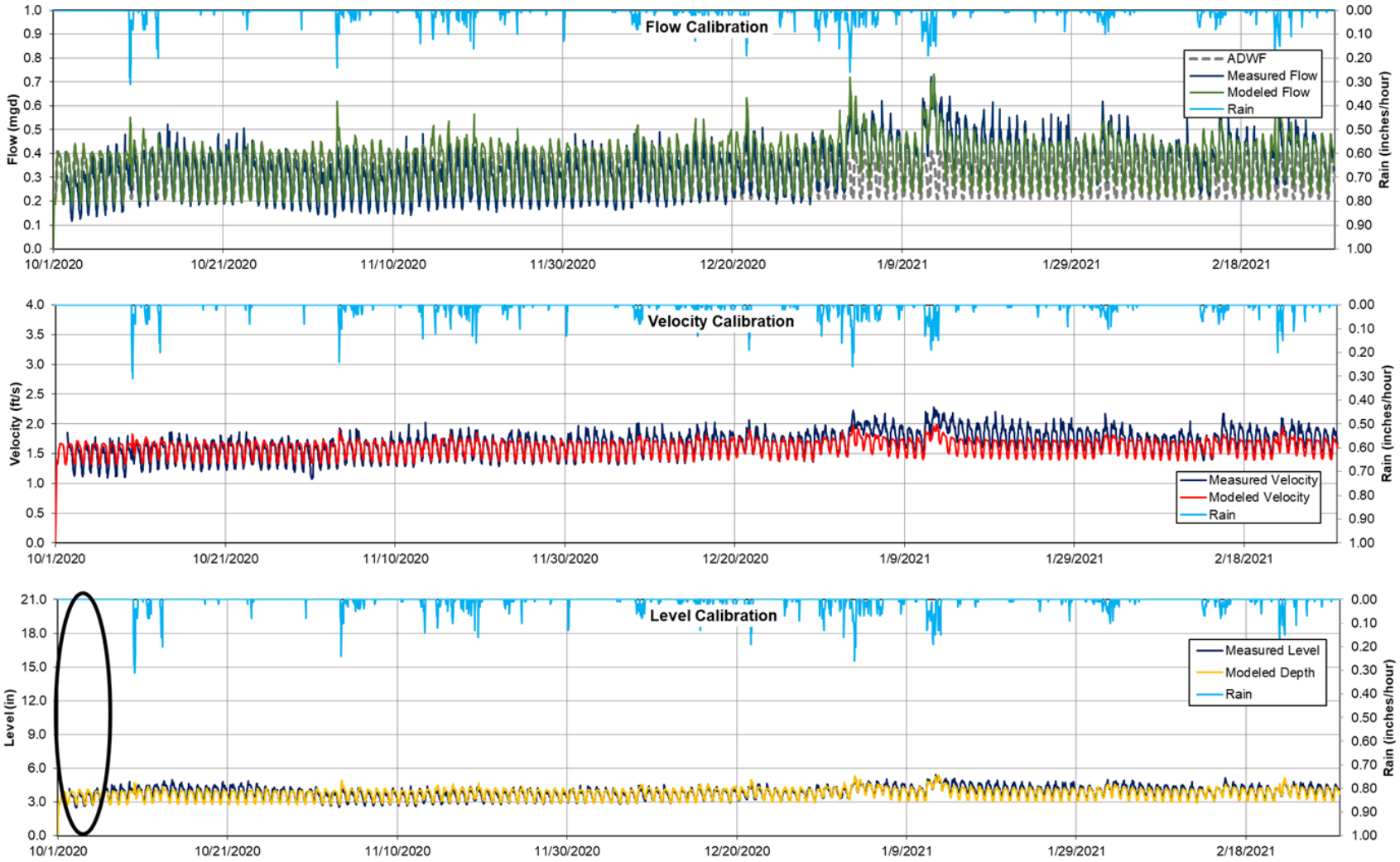


Figure 1.19 Example WWF Calibration

Table 1.9 WWF Calibration Results

Flow Meter ID	Storm 1 Total Volume Percent Err	Storm 1 Peak Flow Percent Error	Storm 1 Max Level Difference (inches)	Storm 2 Total Volume Percent Error	Storm 2 Peak Flow Percent Error	Storm 2 Max Level Difference (inches)	Storm 3 Total Volume Percent Error	Storm 3 Peak Flow Percent Error	Storm 3 Max Level Difference (inches)
A1	-7.0%	2.2%	1.2	-4.5%	-4.4%	0.9	-13.6%	-10.0%	1.1
A1c	-4.2%	0.8%	2.2	-2.8%	-24.6%	2.7	-7.5%	-10.7%	2.1
A1d	26.4%	7.3%	-0.8	-7.4%	-10.4%	-0.9	-0.8%	9.8%	-1.2
A3	-12.2%	2.9%	0.0	-2.5%	-11.5%	0.1	-6.5%	-5.7%	0.0
A4	1.2%	-3.7%	0.3	-9.0%	-10.6%	0.6	-9.2%	-20.8%	1.2
A6	8.3%	0.3%	-8.5	25.4%	5.0%	-8.4	-1.1%	3.1%	-8.0
A7	10.8%	-10.1%	-16.6	9.2%	-14.9%	-14.7	8.9%	-13.7%	-14.0
A9	-5.3%	-6.9%	-1.7	0.3%	-13.9%	0.7	2.7%	-11.6%	0.7
A10	10.8%	-9.4%	1.9	10.0%	-22.0%	2.2	-0.3%	-10.3%	1.7
A11	2.2%	1.8%	-1.8	7.3%	-2.1%	-0.5	9.3%	-4.2%	-0.2
A12	23.3%	-4.2%	0.7	-22.1%	-46.7%	-0.1	20.3%	-20.7%	0.0
A13	-34.8%	-43.7%	-0.6	15.5%	-7.2%	-0.6	15.3%	3.9%	-0.4
A14	-1.7%	-22.0%	1.3	-2.8%	-0.3%	1.5	-8.4%	-14.7%	1.1
A15	-12.7%	-15.7%	1.5	-2.4%	-13.3%	1.2	-6.9%	-6.0%	1.2
A16	-5.7%	-4.4%	-1.6	-1.5%	-23.4%	-1.4	-1.6%	-14.2%	-1.5
Y-1	-3.2%	-5.1%	-1.0	-11.6%	8.2%	11.2	-9.4%	2.6%	15.1
Y-2	18.8%	29.2%	-7.0	-5.1%	-13.8%	-5.9	-6.4%	15.7%	-7.6
Y-3	29.9%	96.9%	-1.0	-8.1%	-4.2%	0.5	-7.7%	14.7%	-0.1
Y-4	2.5%	-4.9%	-0.9	3.8%	-2.9%	0.0	2.0%	-10.2%	1.0
WINT003	4.4%	11.9%	-4.2	7.7%	14.7%	-5.1	10.9%	-4.1%	-3.9
MSTTR02A	-8.9%	11.4%	0.6	0.1%	14.2%	0.9	-11.0%	4.8%	2.2
AUBRN53	-8.8%	0.9%	-3.0	-7.2%	-11.5%	-3.3	-11.9%	-18.8%	-1.2

ATTACHMENT 1A

AUBURN WA 2020-21 DRAFT I/I REPORT V1

RDII Analysis
Auburn, Washington

Draft - 8 June 2021

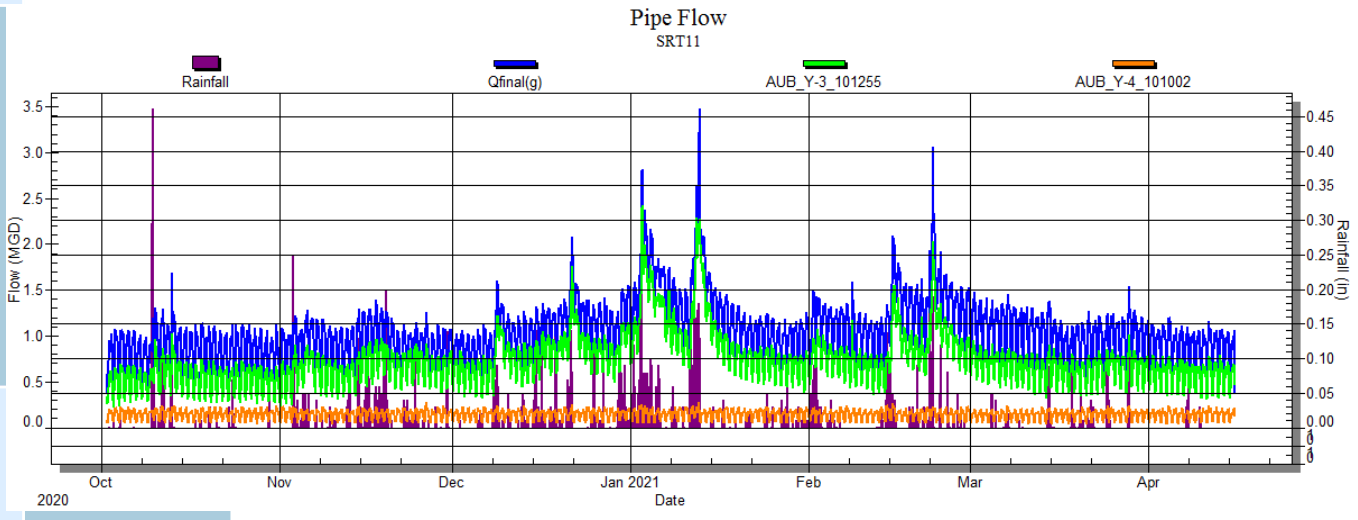


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1.0 – Overview

ADS Environmental Services (ADS) was retained by the City of Auburn to conduct a Rainfall Dependent Infiltration Inflow (RDII) analysis of its sanitary sewer system. The scope of the study was to characterize dry weather and wet weather flow conditions at twenty-four (24) temporary flow metering locations and six (6) King County permanent flow meters. One temporary rain gauge and two King County rain gauges were used for rain data.

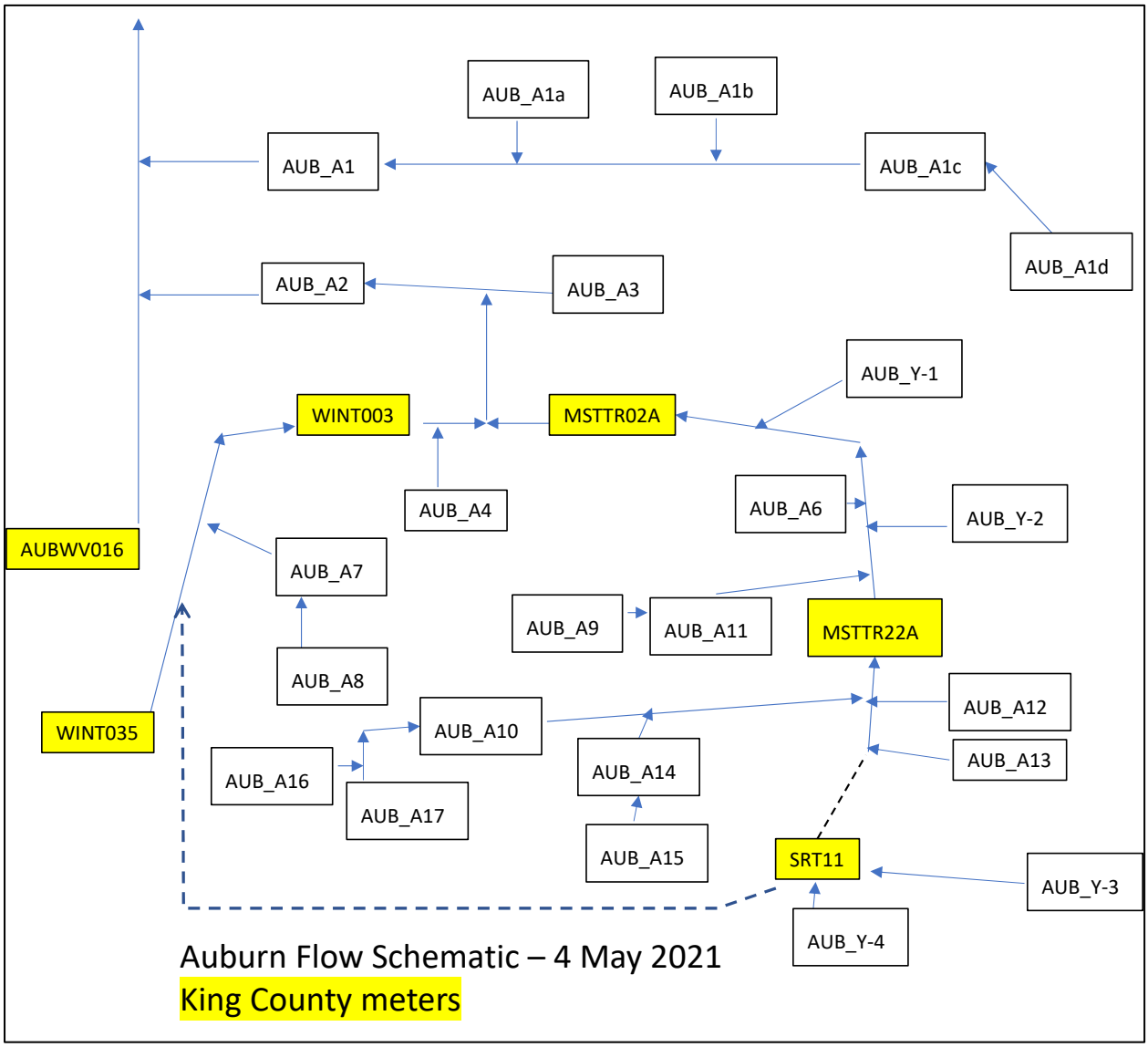
The metering period was from 2 October 2020 through 15 April 2021. This metering period is characterized as a generally dry October following by a rainy winter. A total of 13 storms were analyzed. Two storms on 2 January and 11 January exceeded 3 inches of rainfall, but only one sewer surcharged (Y-1) and the rest of the sewers barely reached half full. It appears that snow melt affected the 14 February storm. Section 2.3 discusses the rainfall in more detail.

When the two sets of flow data were first integrated, there was large flow imbalance between the most downstream Auburn meter (A2) and the four upstream meters, two of which were King County meters. ADS discovered nearly a half-inch difference in the pipe size and King County found a depth sensor offset of over one inch at meter MSTTR02A. After both corrections were made, a small positive balance exists, but it is suspected that the King County meter WINT003 is still reading a bit high.

RDII volumes are normalized two ways in this report; Capture Coefficient (Percent rainfall entering sewers) and Gallons per LF of sewer per inch of rainfall. In a third method basins are ranked by RDII volume expected from a 2.4 -inch storm applied to the Q vs. i relationship generated at each sewershed. Historic King County DDF (Depth Duration Frequency) data indicate that a 5-year, 24-hour storm is 2.4 inches.

Figure 1 is a schematic layout of the metering network including the six King County meters. A diversion exists at SRT11 that conveys all flows to the west and it is believed that all the flow occurring during this metering period followed that path.

FIGURE 1. Meter Schematic for Seventeen Meters.



2.0 – Steps of a Wet Weather RDII Analysis

The following sections address the steps followed to conduct the dry-day and the RDII analyses. These steps include determining the basin size and performing a quality check on the wastewater produced by each basin. Rainfall data are examined and RDII is calculated.

2.1 - Basin Size

The size of each basin in Acres and length (LF) of public sewer was determined using the City's GIS information and the sizes are listed in Table 1. Appendix A is a map showing the basin boundaries used to determine basin sizes. There are two reasons to keep track of basin size. The first use is to 'normalize' the flow measurements by basin size to produce an apples-to-apples comparison of RDII severity. Secondly, the basin size has value in interpreting RDII severity. Large basins will exhibit RDII severity close to the system wide average and small basins will exhibit RDII severity much higher and much lower than the system average. If there are upstream meters, the basin size is the area between the meters, also called the Net basin size.

GIS information was not complete for the King County basins of AUBWV016 and WINT035 and those basin sizes are estimates.

Table 1 Basin Sizes in Linear Feet and Acres

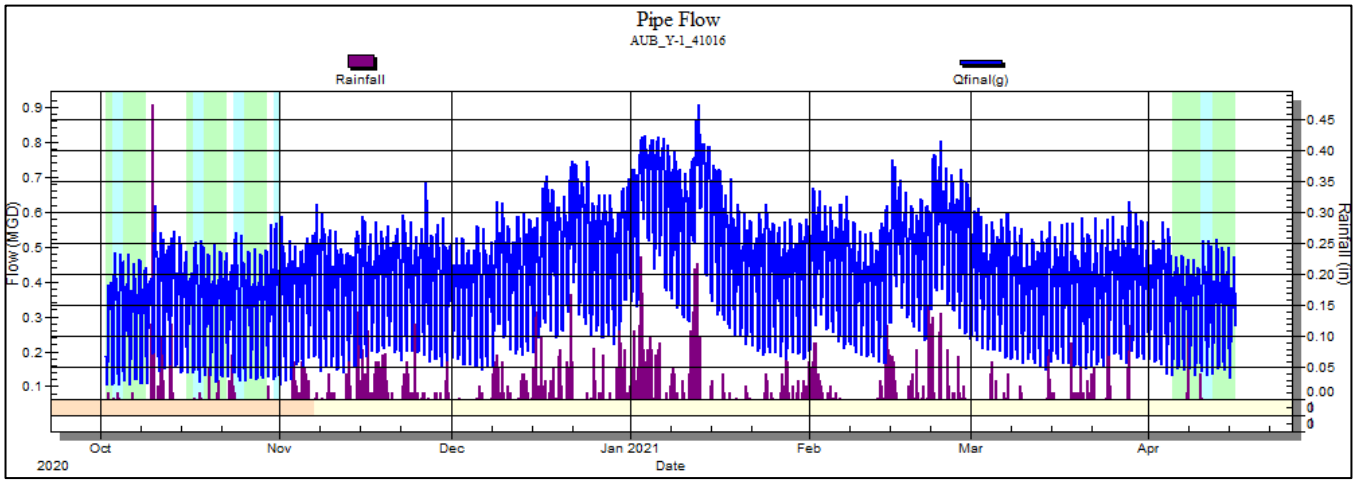
Basin	Area lac)	Length (LF)
AUB_A1_30820	107	6,711
AUB_A10_710151	87	14,315
AUB_A11_710142	28	3,924
AUB_A12_71043	27	5,241
AUB_A13_71085	85	14,999
AUB_A14_710149	84	14,306
AUB_A15_80930	108	19,043
AUB_A16_80956	365	53,970
AUB_A17_80957	68	7,168
AUB_A1a_30822	50	5,248
AUB_A1b_30968	63	4,217
AUB_A1c_30906	174	17,330
AUB_A1d_30910	70	9,130
AUB_A2_40805K	247	22,232
AUB_A3_40834	110	14,345
AUB_A4_50817	152	13,085
AUB_A6_61009K	114	18,987
AUB_A7_70807	94	12,359
AUB_A8_70829	60	11,910
AUB_A9_71031	95	10,851
AUB_Y-1_41016	270	26,267
AUB_Y-2_61102	1,925	205,886
AUB_Y-3_101255	631	84,525
AUB_Y-4_101002	312	33,677
AUBWV016	539	69,999
MSTTR02A	401	51,714
MSTTR22A	223	38,240
SRT11	218	16,918
WINT003	145	22,140
WINT035	1,846	239,999

2.2 – Average Dry Day Flow (ADDF)

A first step in conducting an RDII analysis is to determine Average Dry Day Flow (ADDF) at each metering location and this information is used in two ways. The first is that the ADDF is subtracted from the flow measured during a storm and the difference is RDII. The second is that the shape of the ADDF hydrograph is used to estimate what portion of the ADDF is wastewater production (WWP) and what portion is base infiltration (BI).

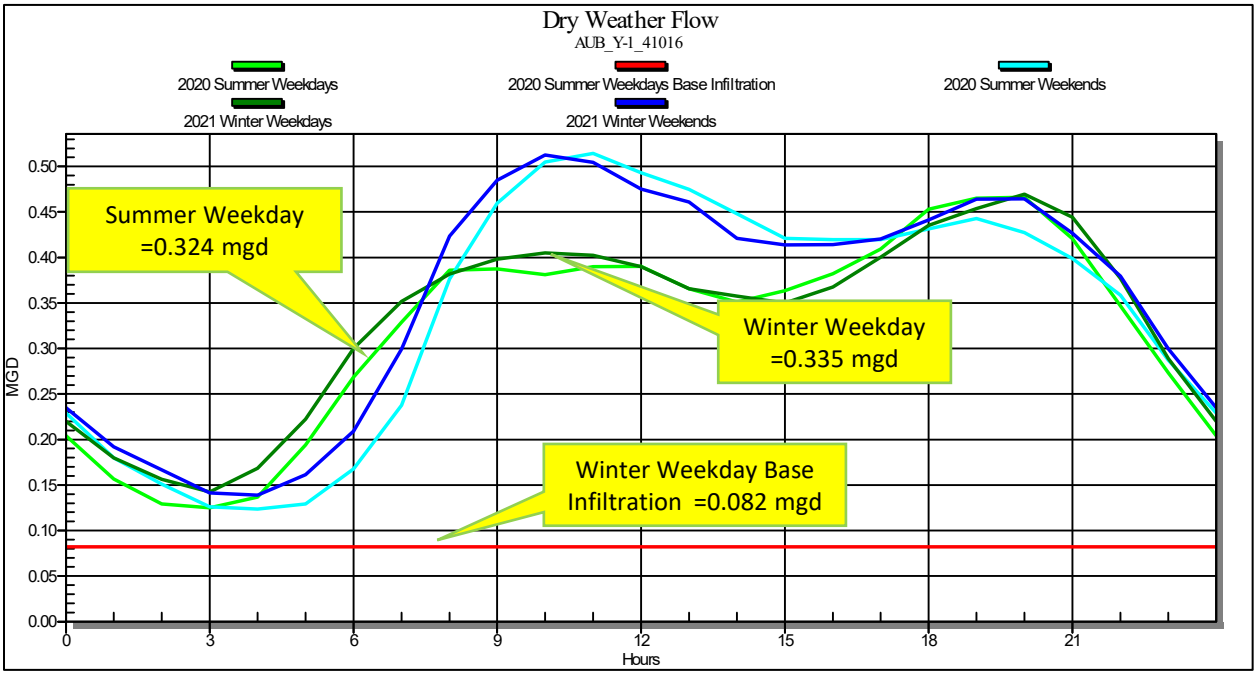
Early in the analysis of RDII data it was observed that there were two distinctly different rain-to-RDII relationships; a Summer season ending 6 November and Winter which is the rest of the metering period. This distinction is common and is a function of vegetation; either actively growing or dormant. Figure 2 shows the hydrograph for the AUB_Y-1 meters with selected dry days shown by the vertical shaded green (weekday) and blue (weekend) bars. Summer days are in October and winter days are in April.

Figure 2 Selected Dry Days are shaded in green (weekday) and blue (weekend).



For each meter the ADDF is decomposed into the two components of wastewater production (WWP) and base infiltration (BI) as shown in Figure 3. In this case the summer weekday value is 0.324 mgd (324,000 gallons per day) and winter weekday is 0.335 mgd. The estimated base infiltration (BI) is based on the shape of the weekday ADDF hydrograph and is shown as the red horizontal line at 0.082 mgd. The percent of base infiltration at this site is 0.082 mgd/0.324 mgd or 25% base infiltration.

Figure 3 Average Dry Day Diurnal Curves for Weekdays and Weekends



Calculating Base Infiltration

Base Infiltration (BI) is a component of I/I that is related to ground water and that could include leaking water lines, leaking plumbing fixtures and springs. It may be a seasonal phenomenon as rainfall affects ground water levels, but generally remains relatively steady over weeks and months. The most rigorous method for determining the quantity of base infiltration originating in a basin is to determine the quantity of potable water flowing into each building within the basin and subtract it from the measured sewer flow coming out of the basin. This is an expensive and sometimes difficult exercise and usually is not done for a short-term flow metering study.

For this analysis an empirical method for estimating base infiltration was used. The method is borrowed from the potable water industry, which has estimated that the rate of residential water usage during the overnight hours is approximately 12% of the daily average use. This empirical method provides an estimate of the average wastewater production (WWP) in a Basin based on the average flow ($Q_{avg\text{-}D}$) and minimum flow ($Q_{min\text{-}D}$) of the average dry day hydrograph.

Subtracting WWP from $Q_{avg\text{-}D}$ provides an estimate of base infiltration (BI). The equations to estimate WWP and BI are listed in Equations BI 1 and BI 2.

Equation BI 1

$$WWP = \frac{(Q_{avg-D} - \mathrm{Q_{min-D}})}{X}$$

Where; X = .88 (from potable water use records)

Equation BI 2

$$Q_{BI} = Q_{avg-D} - WWP$$

In concept, this method generates an estimate of WWP based on the difference between average flow and minimum flow. As base infiltration varies over the year the difference between average and minimum flow (and WWP) is expected to remain constant. This method of estimating is reliable for residential neighborhoods with sewer basin sizes on the order of 20,000 LF.

A refinement to this empirical method, the Stevens/Schutzbach equation, uses a curve fitting technique to increase the reliability of the BI estimation at meters with higher flows. As sewer sheds become larger with longer travel times, the normal dry day hydrograph flattens, which in turn affect the minimum to average relationships. Equation BI 3 is the Stevens/Schutzbach equation that was used to estimate base infiltration in all Basins. $Q_{avg\text{-}D}$ is the average flow and MDF is the minimum flow of the dry day hydrograph.

Equation BI 3

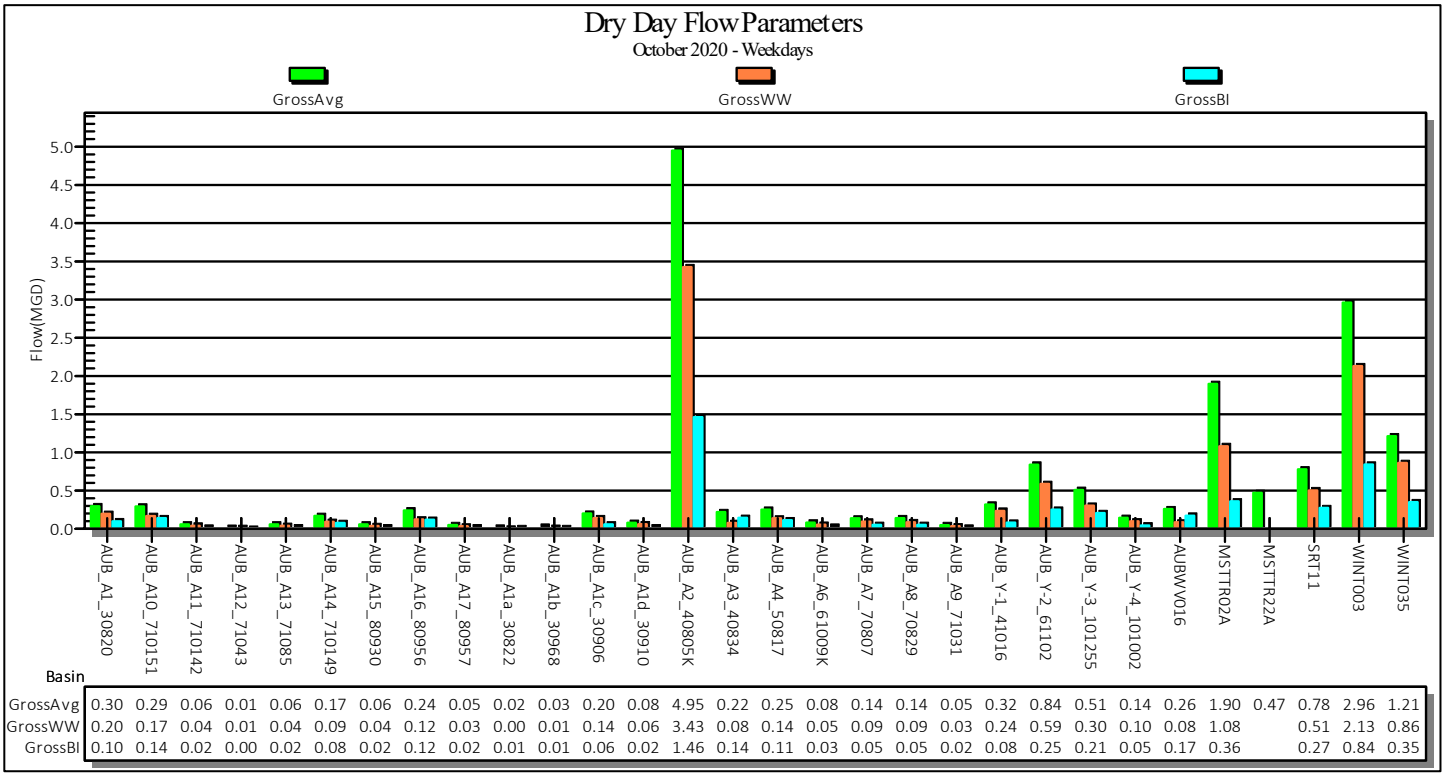
Stevens/Schutzbach Equation

$$\mathrm{Q_{BI}} = \frac{0.4 * \mathrm{Q_{min-D}}}{1 - 0.60(\frac{\mathrm{Q_{min-D}}}{\mathrm{Q_{avg-D}}})^{\mathrm{Q_{avg-D}}^{0.70}}}$$

Equation BI 3 is also dependent on average and minimum flows that occur in traditional residential flow patterns. Reliability decreases in non-residential basins and in basins where the flow meter measures flow from cycling pump stations. Although there are several limitations, this method is considered the best for estimating BI in residential areas using only flow data. In commercial or industrial areas this method can produce unreliable results.

Figure 4 is a graph of the gross average dry day flow (ADDF), the wastewater production and base infiltration at each meter. The term, "gross," refers to the meter measurement prior to any upstream meter subtraction.

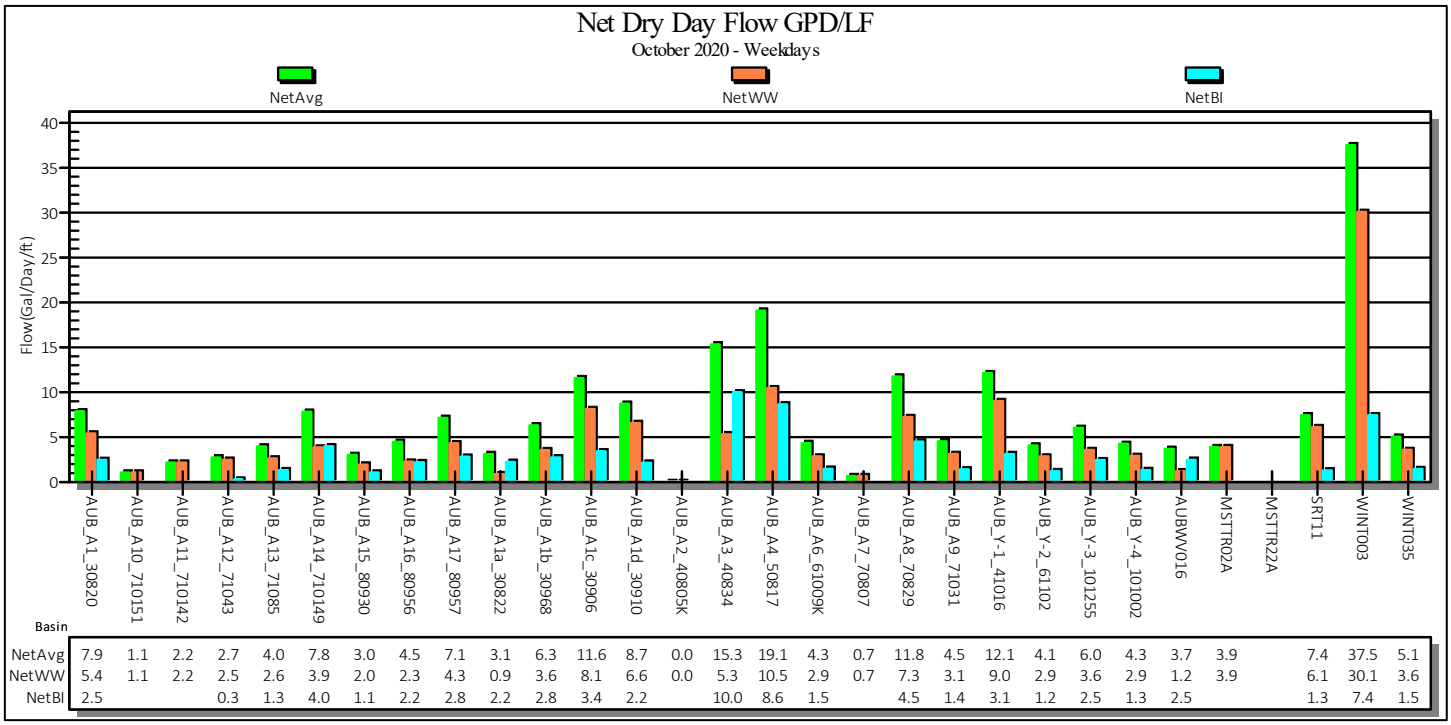
Figure 4 ADDF Wastewater Production and Base Infiltration



Basin																														
GrossAvg	0.30	0.29	0.06	0.01	0.06	0.17	0.06	0.24	0.05	0.02	0.03	0.20	0.08	4.95	0.22	0.25	0.08	0.14	0.14	0.05	0.32	0.84	0.51	0.14	0.26	1.90	0.47	0.78	2.96	1.21
GrossWW	0.20	0.17	0.04	0.01	0.04	0.09	0.04	0.12	0.03	0.00	0.01	0.14	0.06	3.43	0.08	0.14	0.05	0.09	0.09	0.03	0.24	0.59	0.30	0.10	0.08	1.08		0.51	2.13	0.86
GrossBI	0.10	0.14	0.02	0.00	0.02	0.08	0.02	0.12	0.02	0.01	0.01	0.06	0.02	1.46	0.14	0.11	0.03	0.05	0.05	0.02	0.08	0.25	0.21	0.05	0.17	0.36		0.27	0.84	0.35

The Net ADDF, Net WWP, and Net BI are normalized by the length of sewer in each basin to obtain an apples-to-apples comparison expressed in GPD/LF of public sewer as shown in Figure 5. The WWP values are a function of land use with WWP in medium-density residential sewer sheds typically being in the range of 2 - 5 gpd/LF. Low density residential areas can produce less than 2 gpd/LF and high density residential (apartments) and business districts can be 5 to 10 gpd/LF range. Basins that have wastewater productions that appear to be outliers are AUB_A2 (imbalance), MSTTR22A and WINT035.

Figure 5 Net ADDF, Wastewater Production and Base Infiltration values in GPD/LF.



2.3 - Rainfall Analysis

This rainfall analysis looks at the total rainfall recorded by each rain gauge for each storm and looks at the maximum return frequency for each rain gauge and each storm. There were thirteen storms that were analyzed. Selecting a storm in King County during the winter is subjective because of the frequent but small amounts of rainfall. Selecting a storm is a balance between seeing a significant flow response to rain followed by a return to normal before the following rain. Table 2 lists the measured rainfall for each of the three rain gauges and thirteen storms. The right side of this table displays the maximum return frequency corresponding duration for each storm. Yellow shaded storms exceeded a one-year return frequency.

Table 2 Rainfall totals and Maximum Return Frequency

	Rainfall (In.)				Maximum Return Frequency		
Storm	AUB_RG	RG41Y	RGAUB		AUB_RG	RG41Y	RGAUB
10/9/2020	1.69	1.84	1.53		16.9-yr;6-hr;1.3-in	12.5-yr;6-hr;1.2-in	10.6-yr;6-hr;1.2-in
10/13/2020	0.6	0.6	0.59		1.1-yr;30-min;0.2-in	8.8-mo;30-min;0.1-in	10.7-mo;30-min;0.2-in
11/3/2020	0.89	0.86	0.83		11.1-mo;1-hr;0.3-in	9.9-mo;1-hr;0.2-in	10.7-mo;1-hr;0.3-in
11/14/2020	1.08	1.08	0.99		6.7-mo;3-hr;0.3-in	6.5-mo;3-hr;0.3-in	5.9-mo;3-hr;0.3-in
12/8/2020	1.03	0.93	0.99		7.2-mo;24-hr;1.0-in	5.9-mo;24-hr;0.8-in	7.0-mo;24-hr;1.0-in
12/15/2020	1.05	0.97	0.9		7.4-mo;15-min;0.1-in	7.6-mo;30-min;0.1-in	8.3-mo;15-min;0.1-in
12/20/2020	1.1	1.15	1.1		11.4-mo;30-min;0.2-in	10.7-mo;30-min;0.2-in	11.4-mo;30-min;0.2-in
1/2/2021	3.54	3.33	2.94		8.7-yr;6-hr;1.2-in	6.5-yr;12-hr;1.6-in	4.0-yr;6-hr;1.0-in
1/11/2021	3.35	3.23	3.09		3.9-yr;24-hr;2.2-in	3.5-yr;24-hr;2.1-in	3.4-yr;24-hr;2.1-in
1/31/2021	1.22	1.2	1.09		6.0-mo;24-hr;0.8-in	5.7-mo;24-hr;0.8-in	5.7-mo;24-hr;0.8-in
2/14/2021	1.56	1.37	0.82		8.6-mo;24-hr;1.2-in	7.7-mo;24-hr;1.1-in	4.5-mo;24-hr;0.6-in
2/21/2021	1.83	1.62	1.63		10.5-mo;18-hr;1.4-in	7.8-mo;18-hr;1.0-in	9.9-mo;18-hr;1.3-in
3/24/2021	0.6	0.69	0.56		6.3-mo;30-min;0.1-in	1.0-yr;15-min;0.1-in	5.1-mo;6-hr;0.4-in

2.4 - RDII Volumes

The rainfall dependent infiltration and inflow (RDII) is determined on both a gross and net flow basis. Figure 6 shows the process for the storm of 2 January 2021 at meter AUB_A8. The blue hydrograph is the gross flow measured by the meter and the gold hydrograph is the gross RDII calculated at the meter. If there is an upstream meter, net RDII is calculated by subtracting two gross RDII hydrographs.

A key observation here is how reflective the RDII hydrograph is to the rainfall. The fact that flow increases are timed almost exactly with the rainfall suggest the RDII sources are likely traditional inflow sources. The hydrographs for the 8 largest storms for all meters are included in Appendix B.

Figure 6 Storm hydrograph showing calculated RDII

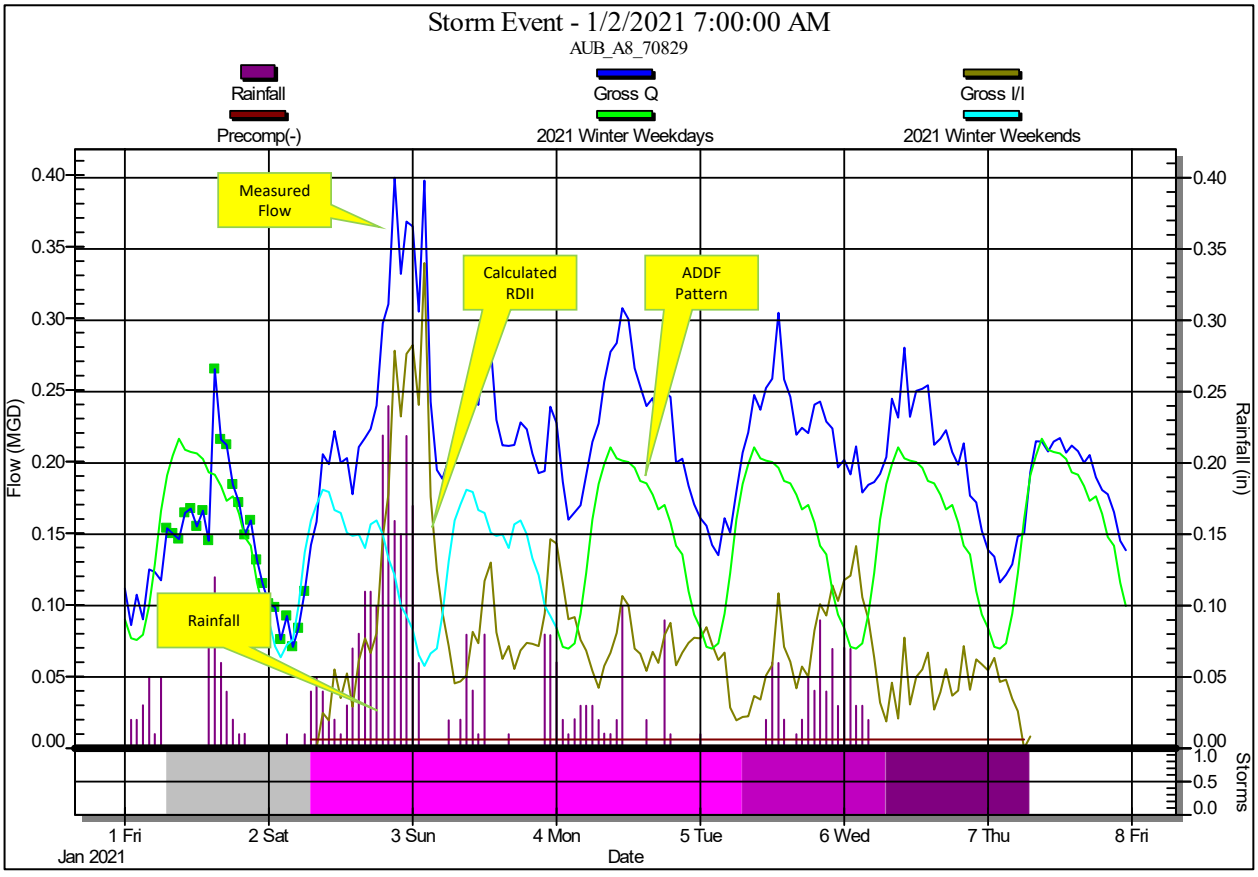


Figure 7 shows the RDII volumes in million gallons from the 6 largest storms. These values are total RDII volume measured during the storm and recovery period.

Figure 7 Gross RDII volume for each meter for the 6 largest storms.

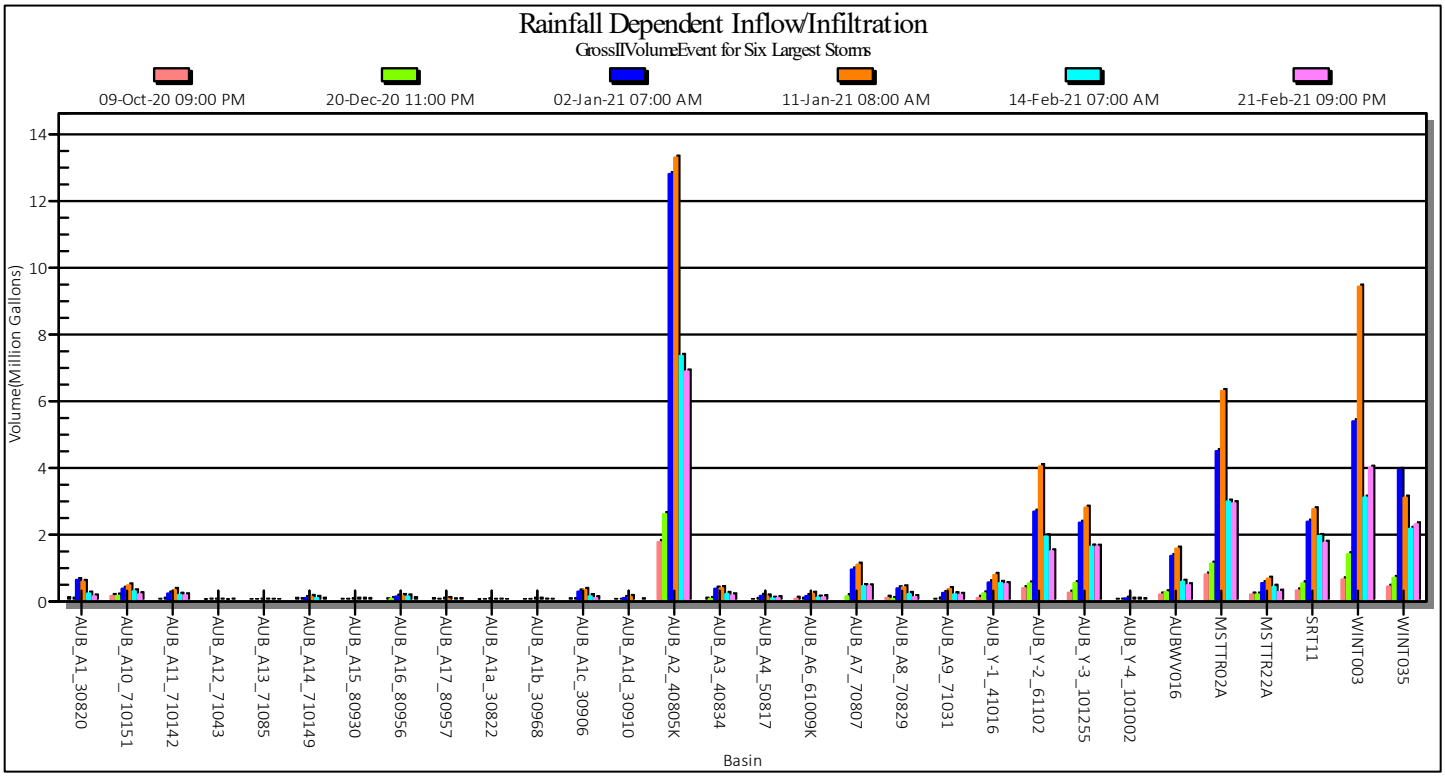
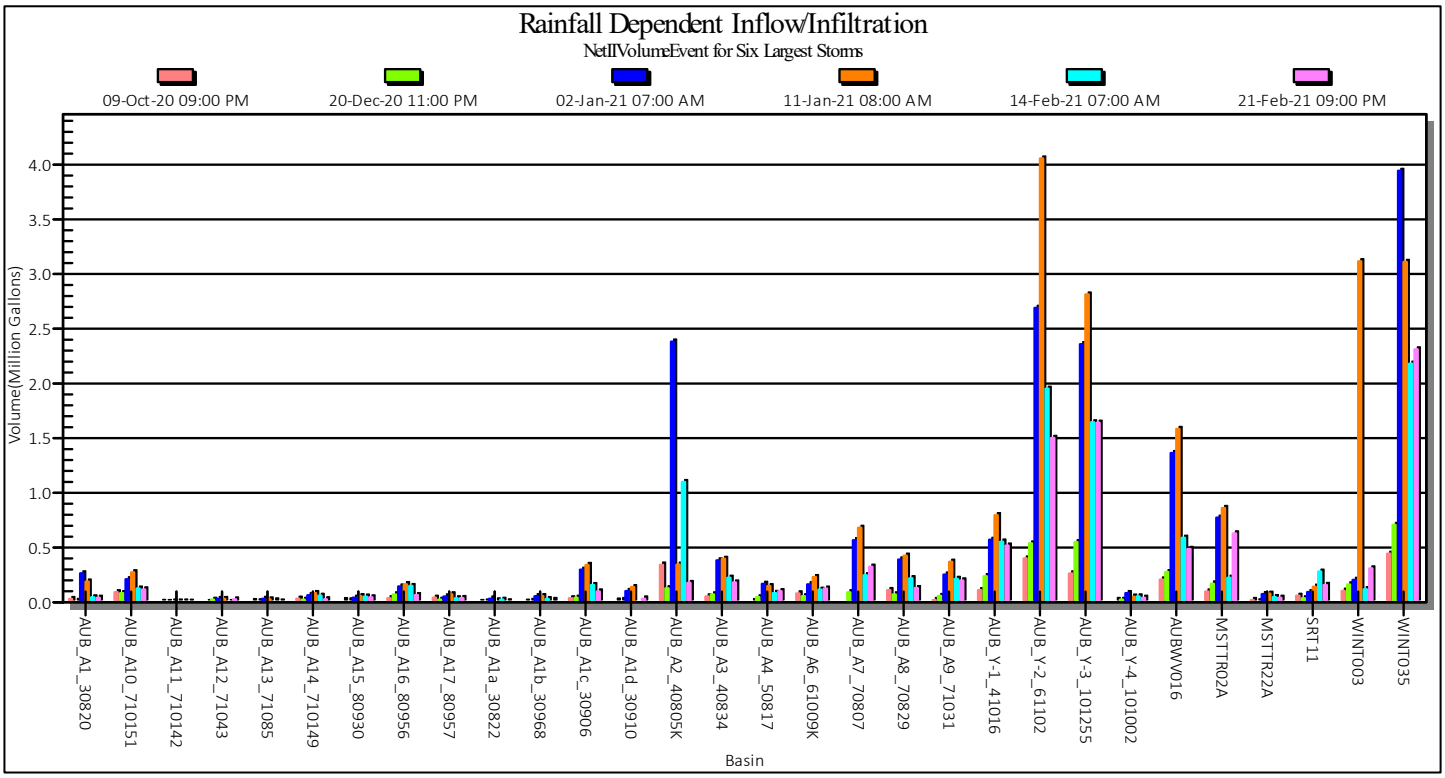


Figure 8 shows the Net Volume of RDII from the 6 largest storms. Net RDII is the volume generated within each sewer shed. Upstream RDII is subtracted from the downstream RDII.

Figure 8 Net RDII volumes from the 6 largest storms.



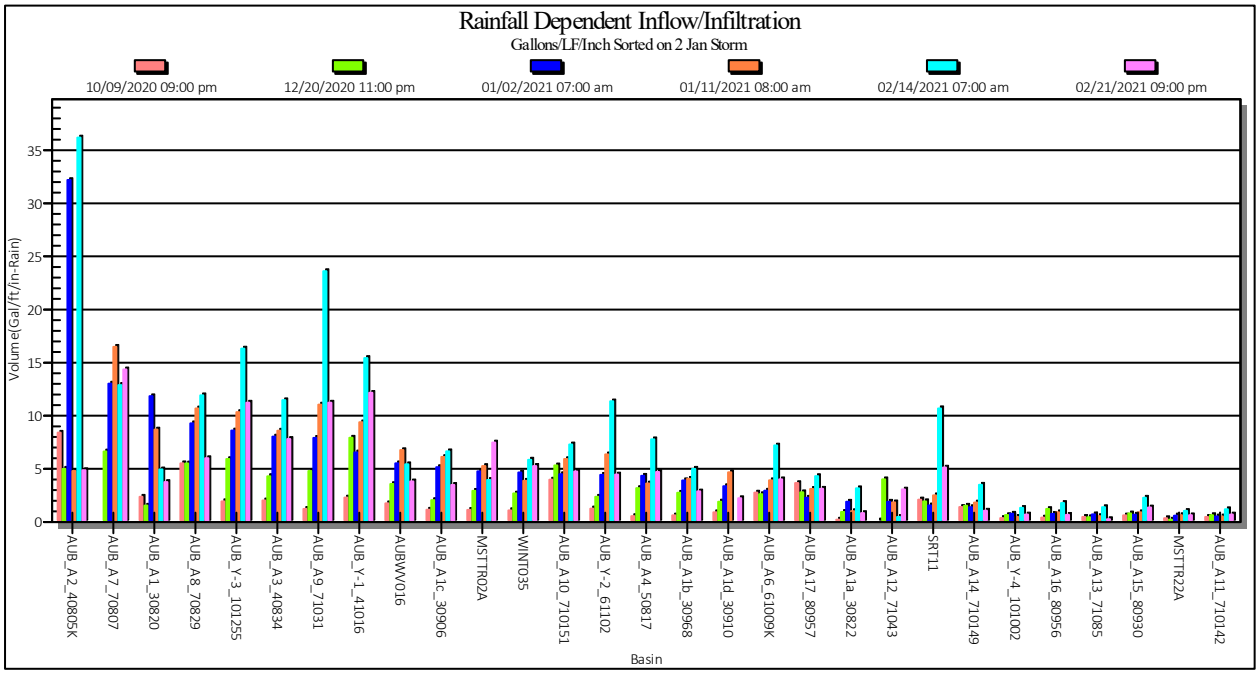
2.5 - RDII Severity

RDII volumes in Sections 2.4 are 'normalized' by dividing the RDII values by both the basin size and inches of rainfall to get an apples-to-apples comparison of RDII severity. The most reliable normalization is by length of sewer (Gallons/LF/Inch of rainfall) in a sewershed and the second method is by acreage (Capture Coefficient or Percent Rainfall entering sewer). Normalizing by LF is more reliable because it better reflects the possible connections on the 'sewer frontage' and does not include non-sewered areas such as parks, school athletic fields, cemeteries etc. Capture coefficient values tend to be biased low because of the unsewered areas.

There is not a published set of standards for RDII severity expressed by either method because the measured value is affected by the antecedent moisture condition of the soil. These threshold levels will be higher in the winter when vegetation is dormant or after a series of rainfall with saturated soil conditions. The threshold values with be lower in the summer and fall when vegetation is actively taking up moisture and after a long dry period with low soil moisture. This study was conducted in both low antecedent moisture conditions in October and November and higher moisture condition later in the metering period.

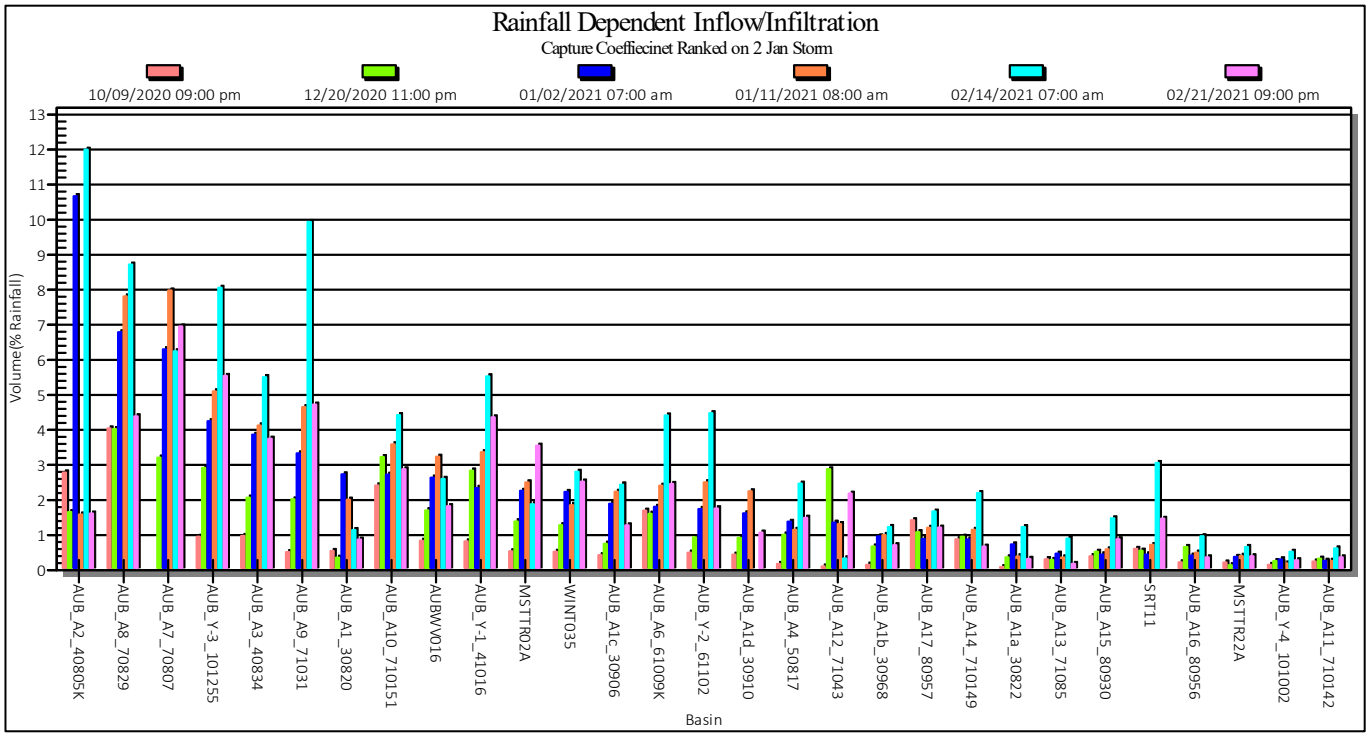
Figure 9 shows RDII normalized by sewer length (Gal/LF/inch) and sorted on the 2 January storm. For severity normalized by length, a general rule of thumb is that sewersheds in the winter/spring with values less than ~10 to 12 Gal/LF/Inch do not have excessive RDII, values up to 20 Gal/LF/Inch are marginal and values over 20 Gal/LF/Inch are considered excessive. In low moisture conditions values greater than 10 Gal/LF/inch may be considered to fall within the 'marginal' range. The AUB_A2 basin should be discounted because of the balancing problem and the 2 Feb storm should be discounted because of the snow melt.

Figure 9 RDII Severity in Gallons/LF/Inch



Although there are no fixed standards for the Capture Coefficient, it is generally considered that values of less than 5% do not have excessive RDII, between 5% and 7% are marginal and values greater than 7% to 10% are severe. These threshold values can be lower in low moisture conditions. Figure 10 shows the Capture Coefficient (percent rainfall entering sewer) for the six largest storms sorted on the 2 January storm. The Capture Coefficient tends to be biased low because it includes non-sewered areas such as parks and athletic fields.

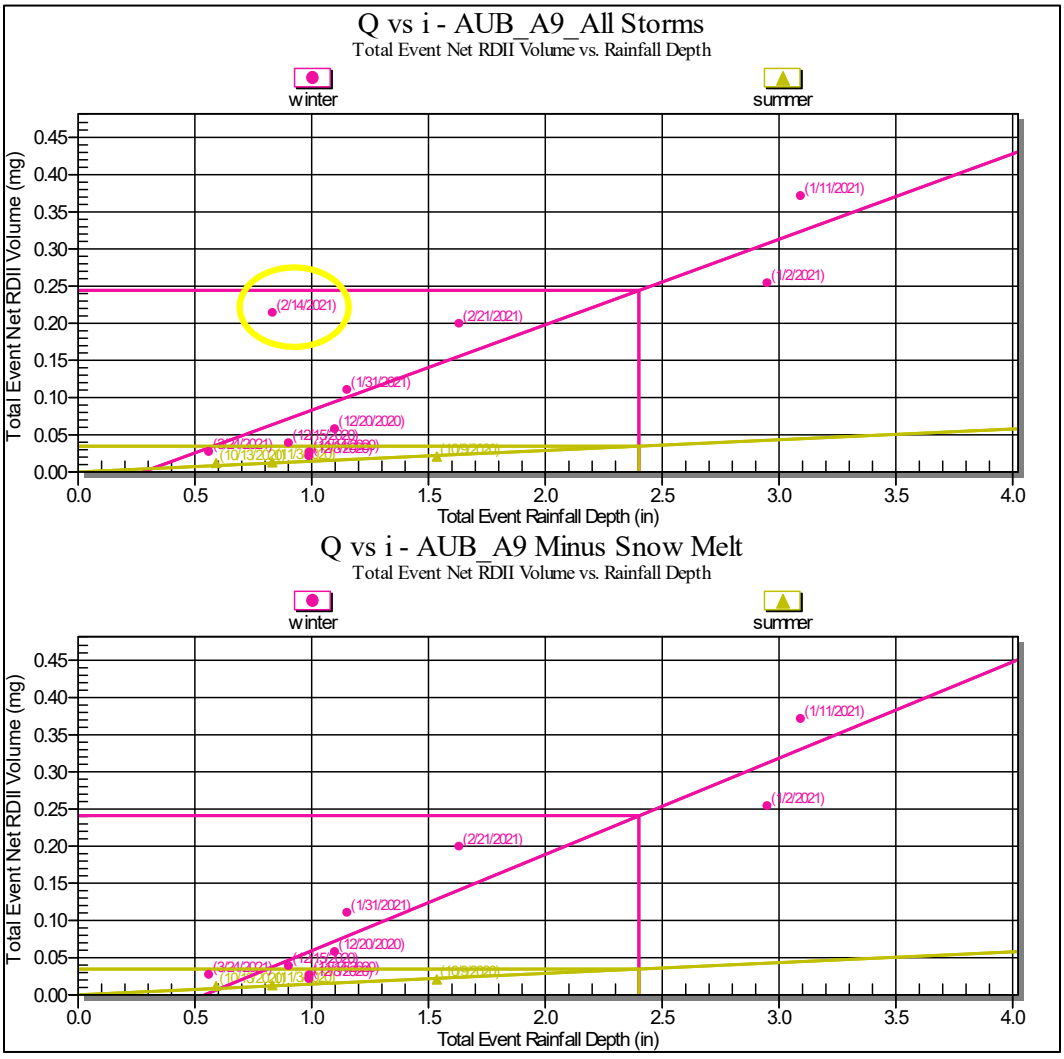
Figure 10 RDII as Capture Coefficient



2.6 - Projected RDII Volumes

A third method is to apply a design storm to the Q vs i plots for each basin. Figure 11 displays the Q vs. i plots of RDII volume vs. rainfall for AUB_A9 for each storm separated into seasons. Each data point on this plot is composed of the RDII volume measured during each storm and the rainfall that fell during the storm. In the top plot a 2.4-inch (5-yr., 24-Hr) storm is applied to the regression line resulting in a predicted RDII volume of just over 0.24 MG. Because the snow melt storm of 14 Feb should not be included here, it was removed to generate the bottom plot. The results did not change much, and the projected RDII volume is 0.24 MG. Appendix C includes this plot minus the 14 Feb snow melt storm for each basin.

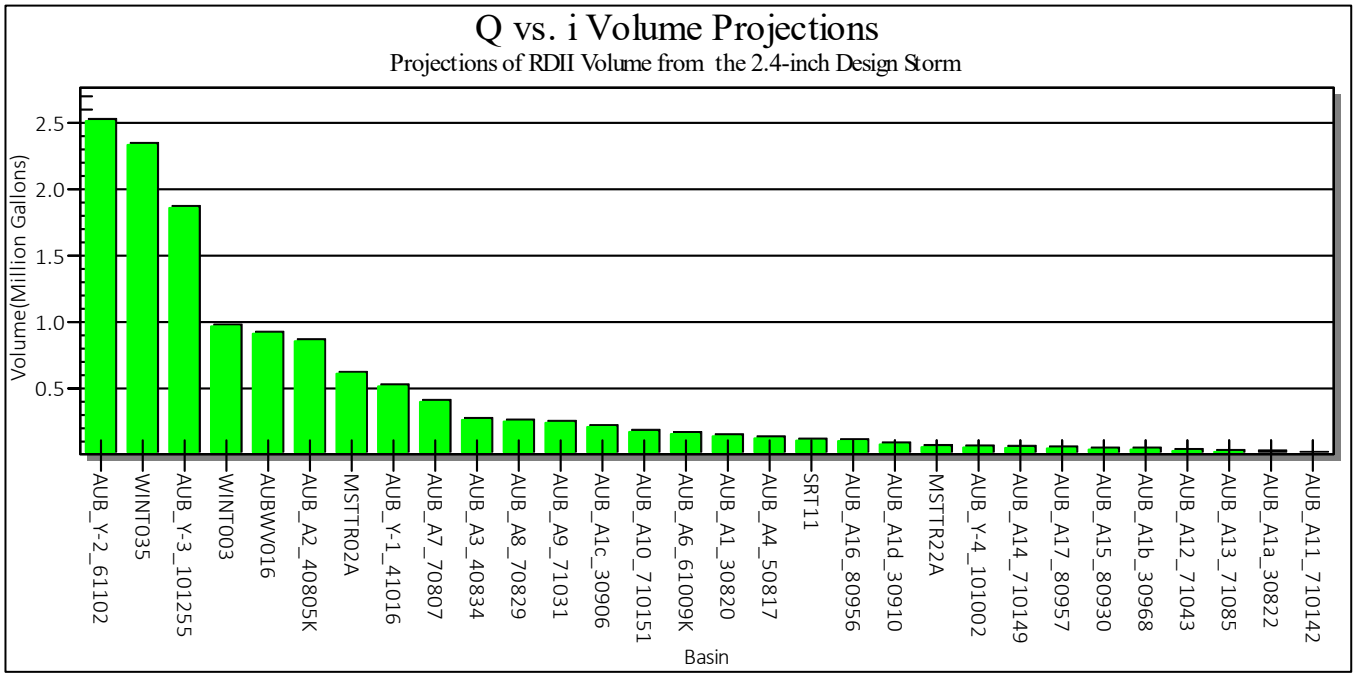
Figure 11 Q vs. i Plots of RDII Volume vs. Rainfall, with and without the snowmelt of 14 Feb 2021.



a) Which sewersheds generate the most RDII volumes?

Figure 12 shows the projected net volumes from each of the sewersheds based on the Q vs i projections. It is not surprising the larger sewersheds produce the greatest volume of RDII. The values from WINT003 and AUB_A2 are treated with less confidence because of the flow balance issues described earlier. Also, WINT035 and AUBWV016 and not considered part of the Auburn system and are included here just for completeness of the data set.

Figure 12 Plot of Net Projected RDII volumes from each sewershed.



b) Sewersheds ranked on projected RDII - in Gal/LF/Inch

The projected RDII volumes from a 2.4-inch design storm are converted to Gallons/LF/Inch in the last column on Table 3 and are ranked. The R^2 column is the correlation coefficient and values less than 0.7 are less reliable and the user should be cautious about using the projected values. Poor correlations can be due to non-uniform rainfall or some data issue. For example, the flow from AUB_A11 was shallow and erratic and the RDII was low.

There is not a definitive way to determine when RDII is 'too much', but a rule of thumb is that values greater that 10 gal/LF/Inch or so are probably in the range that deserves attention. But Keep in mind that larger basins appear to have lower severity than many smaller basins. Basins Y-2 and Y-3 are two largest sewersheds in the Auburn system and generated the most RDII of all the Auburn sewersheds but fall below the rule of thumb for severity.

Table 3 Projected RDII Volume in Millions of Gallons from a 2.4-inch storm.

Net Volume Projected from a 2.4-inch storm applied to Winter Season Q vs I Plot							
Meter	# Storms	R^2	X Intercept	Slope	MG	Gal/LF	Gal/LF/Inch
WINT003	9	0.36	0.6	0.54	0.97	43.7	18.2
AUB_A2_40805K	9	0.53	0.83	0.54	0.86	38.5	16.0
AUB_A7_70807	9	0.95	0.6	0.22	0.4	32.3	13.4
AUB_A9_71031	9	0.9	0.54	0.13	0.24	22.2	9.3
AUB_Y-3_101255	9	0.94	0.42	0.94	1.86	22.0	9.2
AUB_A8_70829	9	0.97	0.63	0.14	0.25	21.0	8.8
AUB_A1_30820	9	0.93	0.84	0.09	0.14	20.9	8.7
AUB_Y-1_41016	9	0.84	0.02	0.22	0.52	19.6	8.2
AUB_A3_40834	9	0.99	0.64	0.15	0.26	18.3	7.6
AUBWV016	9	0.96	0.59	0.5	0.91	13.0	5.4
AUB_Y-2_61102	9	0.93	0.58	1.38	2.51	12.2	5.1
AUB_A10_710151	9	0.94	0.27	0.08	0.17	12.1	5.0
AUB_A1c_30906	9	0.97	0.65	0.12	0.21	12.0	5.0
MSTTR02A	9	0.89	0.5	0.32	0.61	11.8	4.9
WINT035	9	0.94	0.51	1.24	2.33	9.7	4.1
AUB_A4_50817	9	0.87	0.2	0.06	0.12	9.6	4.0
AUB_A1b_30968	9	0.92	0.08	0.02	0.04	9.3	3.9
AUB_A1d_30910	9	0.94	0.63	0.04	0.08	8.6	3.6
AUB_A6_61009K	9	0.94	0.29	0.07	0.16	8.3	3.4
AUB_A17_80957	9	0.88	0	0.02	0.05	6.7	2.8
SRT11	9	0.32	0	0.04	0.11	6.3	2.6
AUB_A12_71043	9	0.31	0	0.01	0.03	5.6	2.3
AUB_A14_710149	9	0.85	0.02	0.02	0.05	3.7	1.5
AUB_A1a_30822	8	0.59	0	0.01	0.02	3.5	1.5
AUB_A15_80930	9	0.8	0	0.02	0.04	2.1	0.9
AUB_A11_710142	9	0.02	0	0	0.01	2.0	0.8
AUB_A16_80956	9	0.92	0.2	0.05	0.1	1.9	0.8
AUB_Y-4_101002	9	0.62	0	0.02	0.06	1.7	0.7
MSTTR22A	9	0.81	0	0.02	0.06	1.5	0.6
AUB_A13_71085	9	0.71	0.13	0.01	0.02	1.5	0.6

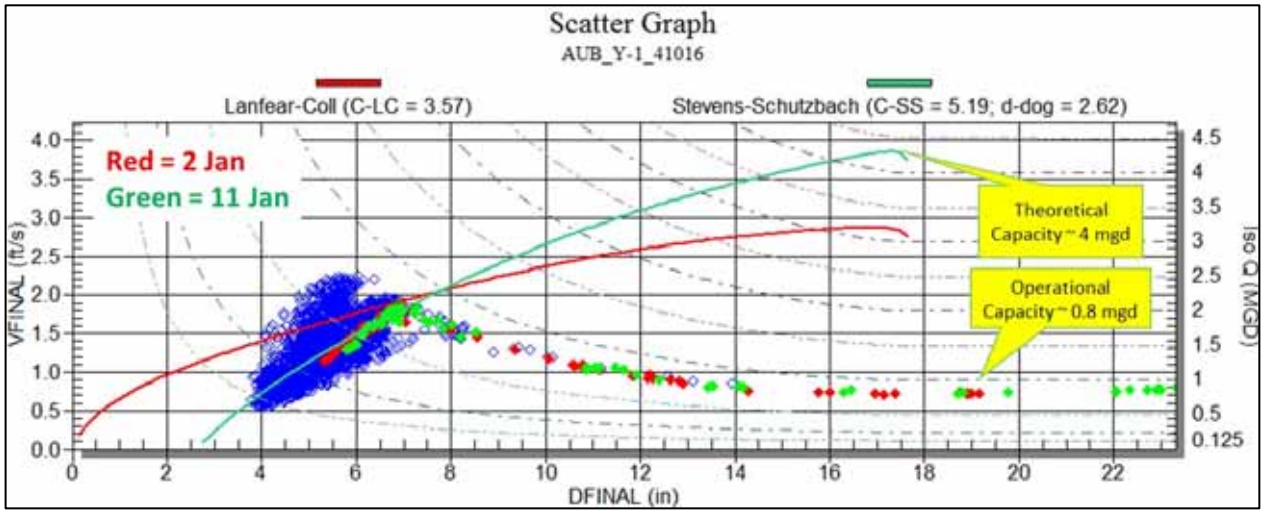
3.0 – Operational Capacities

Operational capacity is the actual flow that a pipe can carry as opposed to the theoretical capacity based on pipe slope and roughness of the pipe section in which the meter is installed. The technique for this analysis is to plot a depth-velocity scattergraph of the meter data upon which are also plotted a pipe curve (Lanfear-Coll [Manning] or Stevens-Schutzbach) and Iso-Q lines. The technique requires that the pipe fill to around 80% full so that hydraulic behavior can be observed. As it turns out only one pipe reached more than 60% full and that was AUB_Y-1 at the Green River siphon and it surcharged to 24 inches. Figure 13 is a scattergraph of meter AUB_Y-1 it shows a Theoretical Capacity of approximately 4 mgd and the Operational Capacity of 0.8 mgd circled in red. It surcharged during the 2 Jan and 11 Jan storms.

In this case both the Lanfear-Coll and the Stevens-Schutzbach curves are plotted. What is observed here is that the theoretical capacity, as established by the Stevens-Schutzbach curve is around 4 mgd in this 17.5-inch pipe. However, the actual data show that the sewer enters backwater at around 7 inches of depth and carries around 0.8 mgd throughout the surcharge to around 24 inches. There is a distinction in hydraulic conditions based on how data behave relative to the Iso-Q lines. Data will adhere to an Iso-Q line if there is a 'Hard restriction' downstream such as an under-sized pipe or a siphon.

GIS data indicated there is a double barrel siphon downstream of this meter with 8-inch and 12-inch barrels. However, the scattergraph pattern reveals that only one barrel is active. Scattergraphs for all sites are included in Appendix B.

Figure 13 Scattergraph reveals both Theoretical and Operation Capacity of the sewer.

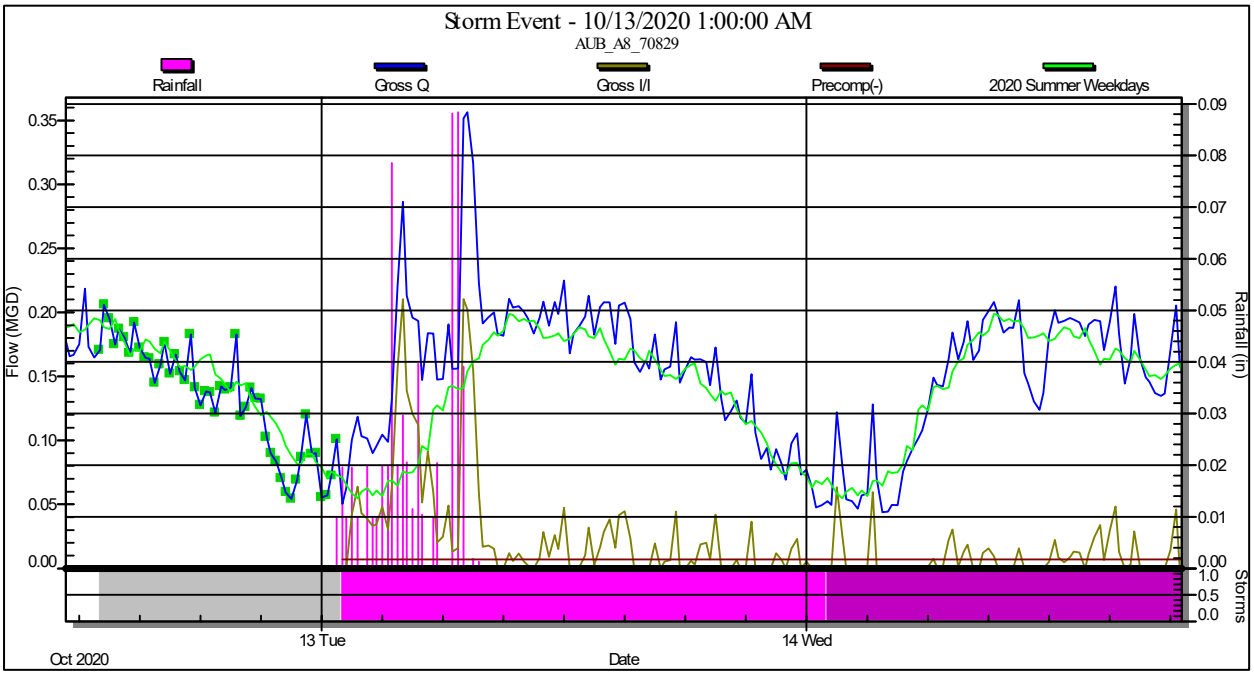


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4.0 – Subjective Views of Hydrographs

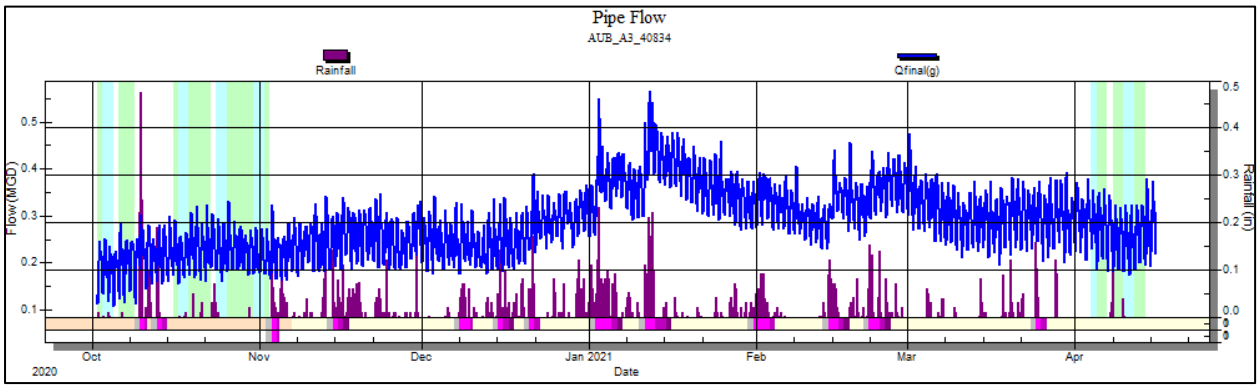
In addition to the numerical analysis in this report we have plotted storm hydrographs for the eight largest storms at each meter in Appendix B. It is noticeable that there appear to be minor sources of Inflow during high intensity storms of October as shown in Figure 14. The gold RDII hydrograph follows the rainfall hyetograph very closely indicating that the RDII is the direct result of rainfall, a classic inflow source such as a roof drain. This hydrograph is in 15-minute time steps, but the observations can easily be made in the 60-minute plots in Appendix B.

Figure 14 Hydrographs in 15-minute time steps showing what appears to be source(s) of Inflow.



On the other hand, the hydrograph from AUB_A2 in Figure 15 reveals a sewershed that does not include many ‘spikes’ from sources of Inflow, but does reflect dramatic influence of base infiltration as the soil moisture increases and declines slowly over the wet season.

Figure 15 Sewershed AUB_A3 experiences RDII more similar to infiltration rather than inflow.



5.0 – Conclusions

1. By design this metering period captured the traditional dry weather period in October and the wet season beginning in November. Five storms recorded a return frequency of at least one year in at least one rain gauge. Two January storms exceeded 3 inches of rainfall.
2. The sewer system handled these storms readily with only one sewer surcharging and that was due to the restricted flow at a downstream siphon. The Green River siphon at AUB_Y1 is shown to have an 8-inch barrel and a 12-inch barrel, but the scattergraph indicates that only one barrel was functioning.
3. The wide range of basin sizes between the larger 'Y' basins and the smaller 'A' basins is what would have been expected. The 'Y' basin generated the most RDII, but RDII severity of the smaller basins was both higher and lower than the 'Y' basin. The intuitive observation about severity should be avoided; "The large basins don't look so bad".
4. Many of the 'A' basins performed well with small RDII contributions, but some 'A' basins experience minor sources of Inflow.
5. The RDII severity calculations are low compared to what is often experienced in other collection systems.

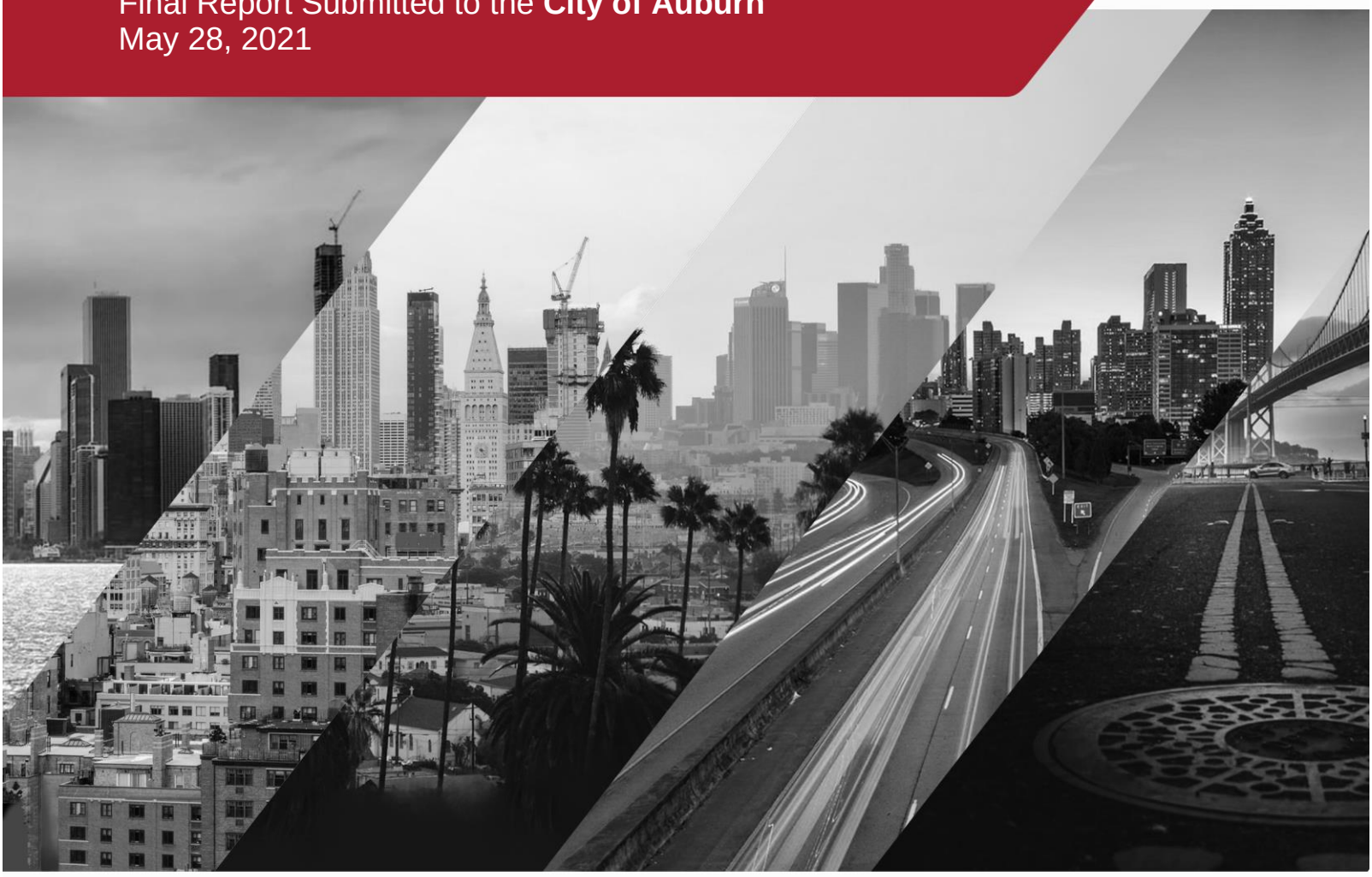
Appendix A – Sewershed Map

Appendix B - Sliicer Graphics

Appendix C – Q vs i Plots

City of Auburn

Final Report Submitted to the **City of Auburn**
May 28, 2021



ADS ENVIRONMENTAL SERVICES

4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
www.adsenv.com

May 28, 2021

Bob Elwell
City of Auburn Sewer Utility Engineer
25 West Main Street
Auburn, WA 98001

SUBJECT: Auburn Temporary Flow Monitoring Report

Dear Bob,

ADS is pleased to submit this temporary flow monitoring report for the city of Auburn. The metering was conducted at twenty-four (24) locations. The study was conducted during the period of Tuesday, September 22, 2020 to Wednesday, April 14, 2021.

The report contains depth, velocity, and quantity hydrographs based on an hourly average as well as daily long tables for the metering period. All data can easily be exported from the PRISM data hosting website.

In addition, we would be happy to further explain any details about the report that may seem unclear. Should you have any questions or comments, you may contact the Project Manager, Shawn Hoglan at 206-571-0130.

It has been our pleasure to be of service to you in the performance of this project. Thank you for choosing ADS products and services to meet your flow monitoring needs.

Sincerely,
ADS ENVIRONMENTAL SERVICES

Tony Locke
Data Analyst III, ADS LLC Huntsville, AL

The City of Auburn
Temporary Flow Monitoring Project

Prepared For:

Bob Elwell
City of Auburn Sewer Utility Engineer
25 West Main Street
Auburn, WA 98001

Prepared By:

ADS, LLC
4455 S. 134th Place
Tukwila, WA 98168

AUB_A1_30820

Site Commentary

SITE INFORMATION

Pipe	Elliptical (21 in H x 21 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	3.87	1.68	0.337
Minimum	2.53	1.08	0.121
Maximum	5.41	2.25	0.713
Min Time	10/03/2020 3:00:00 AM	10/31/2020 5:00:00 AM	10/03/2020 5:00:00 AM
Max Time	01/12/2021 10:00:00 AM	01/12/2021 10:00:00 AM	01/12/2021 10:00:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

Percent Uptime	
DFINAL (in)	94.934
VFINAL (ft/s)	94.934
QFINAL (MGD - Total MG)	94.934

Hydrograph Report

AUB_A1_30820

Flow Monitor

AUB_A1_30820

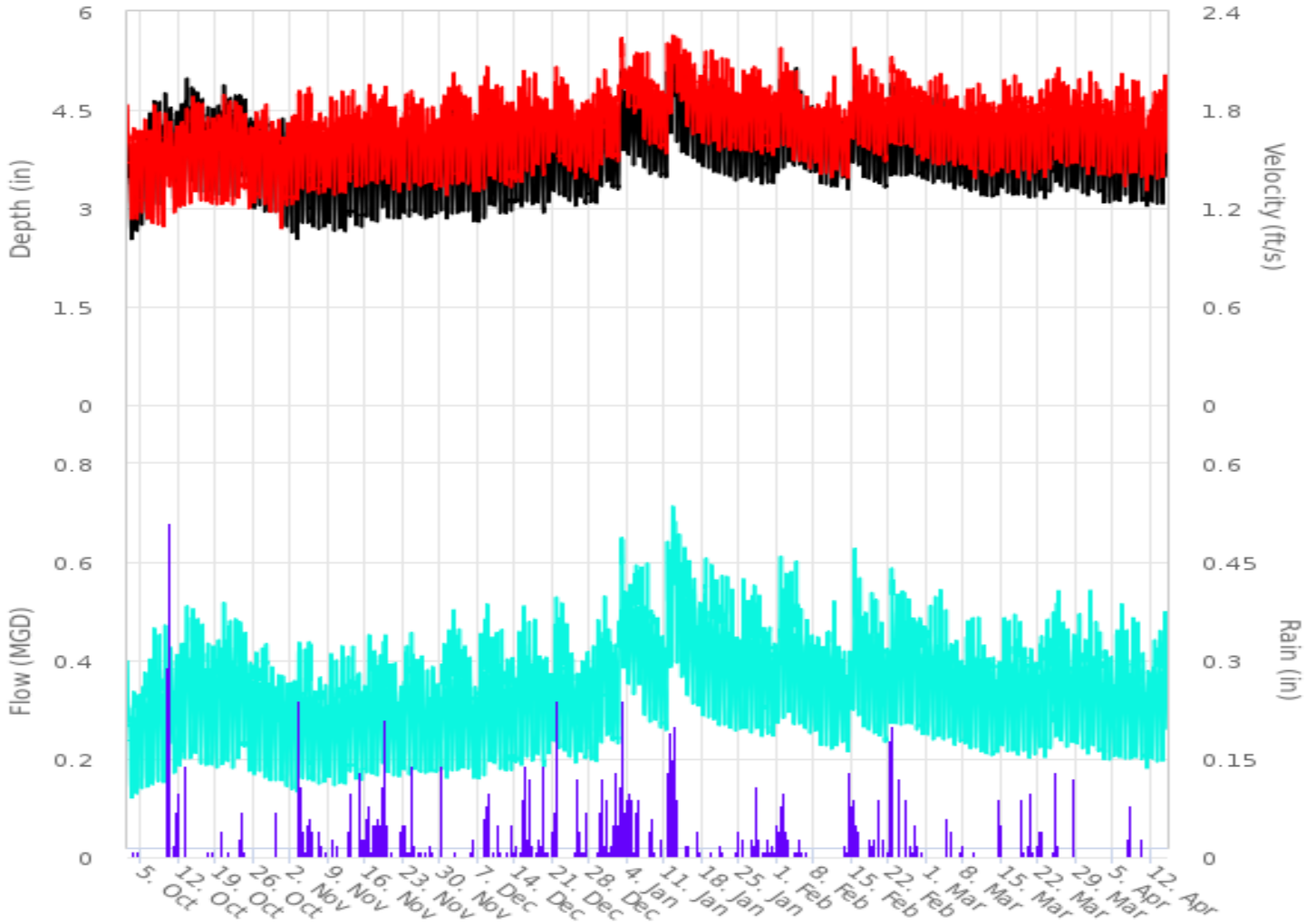
Pipe Height
21.00
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL



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Scattergraph Report

AUB_A1_30820

Flow Monitor

AUB_A1_30820

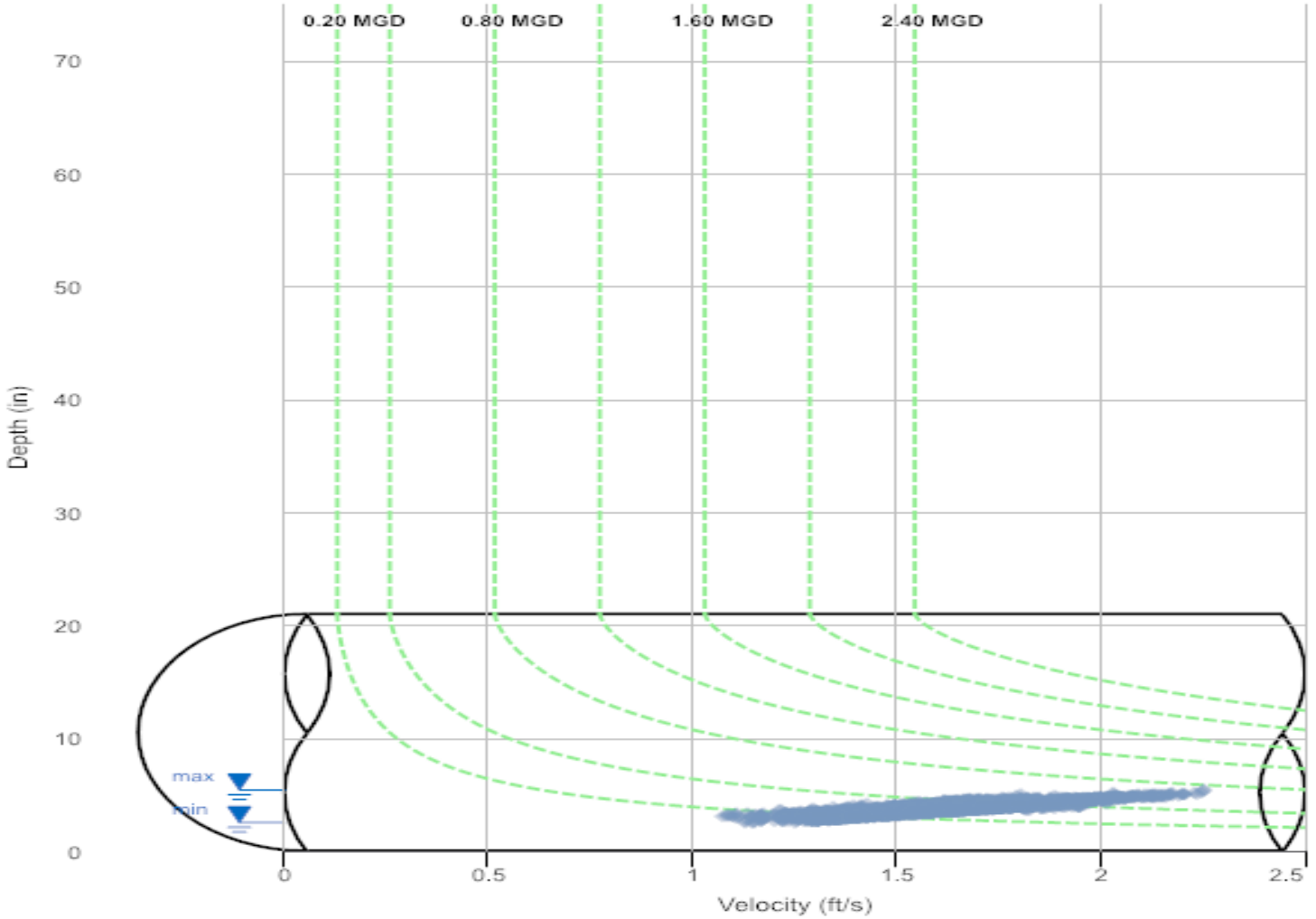
Pipe Height
21.00
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A1_30820Pipe: Elliptical (21 in H x 21 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	04:25	3.27	16:05	4.54	3.80	04:30	1.47	10:50	2.02	1.70	04:30	0.228	16:05	0.486	0.330	0.330	0.51
01/02/2021	04:35	3.24	21:25	5.25	4.12	04:35	1.45	21:45	2.31	1.81	04:35	0.220	21:35	0.698	0.403	0.403	1.69
01/03/2021	05:05	3.77	01:05	5.17	4.43	05:10	1.80	00:30	2.25	2.00	05:10	0.347	00:25	0.663	0.480	0.480	0.65
01/04/2021	03:50	3.64	12:35	5.03	4.38	03:55	1.74	12:35	2.17	1.96	04:10	0.322	12:35	0.622	0.464	0.464	0.48
01/05/2021	03:35	3.54	14:35	5.03	4.30	02:15	1.67	14:35	2.22	1.95	03:55	0.310	14:35	0.635	0.450	0.450	0.52
01/06/2021	05:30	3.65	15:50	5.17	4.31	04:10	1.74	16:05	2.27	1.92	06:20	0.326	15:50	0.667	0.444	0.444	0.22
01/07/2021	04:30	3.54	16:25	5.01	4.22	04:05	1.58	16:20	2.24	1.83	04:25	0.277	16:25	0.634	0.414	0.414	-
01/08/2021	04:35	3.46	12:50	4.68	4.16	03:30	1.54	15:55	2.05	1.81	04:45	0.259	14:05	0.521	0.400	0.400	0.22
01/09/2021	04:25	3.52	14:55	4.62	4.06	03:30	1.52	14:20	2.02	1.78	03:30	0.264	14:30	0.508	0.379	0.379	-
01/10/2021	04:30	3.43	12:20	4.42	3.96	02:55	1.42	12:25	1.97	1.75	02:55	0.238	12:25	0.469	0.360	0.360	0.07
01/11/2021	04:00	3.40	11:35	5.14	4.29	04:00	1.47	11:40	2.30	1.87	04:00	0.241	11:40	0.677	0.437	0.437	1.06
01/12/2021	00:30	4.09	09:55	5.56	4.83	00:30	1.70	10:35	2.33	2.09	00:30	0.362	09:55	0.750	0.570	0.570	2.10
01/13/2021	06:05	3.82	15:50	5.28	4.62	22:35	1.78	11:15	2.33	2.04	05:05	0.367	15:50	0.700	0.520	0.520	0.09
01/14/2021	04:40	3.65	16:00	5.47	4.49	01:35	1.75	16:05	2.24	1.98	04:45	0.334	16:00	0.708	0.485	0.485	0.01
01/15/2021	02:40	3.67	12:15	5.04	4.43	04:35	1.65	12:05	2.27	1.91	04:50	0.309	12:15	0.649	0.461	0.461	0.09
01/16/2021	04:20	3.71	12:15	4.87	4.33	05:05	1.61	12:45	2.14	1.86	04:20	0.302	12:45	0.583	0.434	0.434	-
01/17/2021	05:30	3.63	11:40	4.78	4.25	07:15	1.62	18:00	2.08	1.84	06:30	0.296	11:45	0.544	0.417	0.417	0.10
01/18/2021	03:45	3.54	16:15	5.03	4.31	02:45	1.56	15:55	2.19	1.86	03:50	0.274	16:40	0.619	0.433	0.433	-
01/19/2021	03:50	3.51	16:35	4.99	4.24	03:35	1.55	16:30	2.27	1.85	03:50	0.264	16:35	0.641	0.420	0.420	0.01
01/20/2021	03:15	3.47	12:55	4.97	4.18	04:05	1.55	12:45	2.26	1.83	03:10	0.266	12:45	0.630	0.407	0.407	-
01/21/2021	03:05	3.48	16:10	4.97	4.18	05:00	1.49	16:15	2.18	1.81	05:00	0.255	16:10	0.609	0.404	0.404	0.11
01/22/2021	04:45	3.46	14:05	4.95	4.14	03:05	1.50	13:55	2.20	1.82	03:05	0.255	14:05	0.607	0.400	0.400	-
01/23/2021	06:10	3.43	13:00	4.91	4.06	06:10	1.51	13:05	2.17	1.79	06:10	0.249	13:05	0.599	0.383	0.383	-
01/24/2021	05:25	3.35	11:35	4.46	4.00	04:05	1.50	15:15	2.02	1.77	05:20	0.245	10:35	0.471	0.370	0.370	0.16
01/25/2021	04:10	3.39	16:15	5.02	4.15	05:10	1.51	16:05	2.14	1.76	04:10	0.249	16:15	0.609	0.387	0.387	0.04
01/26/2021	03:30	3.42	13:40	4.93	4.10	03:20	1.52	13:40	2.16	1.79	03:35	0.251	13:40	0.600	0.387	0.387	-
01/27/2021	04:05	3.33	09:50	4.86	4.08	02:50	1.46	09:50	2.16	1.80	02:50	0.236	09:50	0.589	0.389	0.389	0.14
01/28/2021	02:25	3.41	15:40	4.96	4.12	04:35	1.52	15:45	2.14	1.82	03:15	0.251	15:35	0.592	0.398	0.398	0.24
01/29/2021	05:55	3.32	11:40	4.54	3.99	03:35	1.48	11:25	1.97	1.78	03:35	0.236	11:40	0.484	0.372	0.372	0.03
01/30/2021	04:40	3.33	13:55	4.51	3.93	06:40	1.50	13:10	2.01	1.77	06:40	0.238	13:10	0.489	0.361	0.361	0.07
01/31/2021	05:15	3.33	11:10	4.33	3.89	05:20	1.47	13:00	1.95	1.75	05:15	0.235	11:10	0.449	0.351	0.351	0.12
02/01/2021	01:55	3.46	15:45	5.11	4.18	01:55	1.51	16:20	2.22	1.81	01:55	0.253	15:45	0.646	0.405	0.405	0.82
02/02/2021	03:45	3.52	15:55	5.02	4.33	03:50	1.55	15:55	2.16	1.83	03:50	0.267	15:55	0.615	0.430	0.430	0.31
02/03/2021	04:00	3.65	14:20	5.16	4.29	03:30	1.53	14:20	2.11	1.77	04:00	0.280	14:20	0.625	0.408	0.408	0.06
02/04/2021	02:50	3.58	14:05	5.42	4.26	02:50	1.46	14:05	2.21	1.71	04:05	0.256	14:05	0.701	0.393	0.393	0.07
02/05/2021	04:10	3.58	11:25	4.87	4.19	02:50	1.45	11:20	2.00	1.69	04:05	0.258	11:20	0.544	0.376	0.376	0.01
02/06/2021	05:15	3.56	13:10	4.79	4.11	02:55	1.45	13:10	1.98	1.68	02:55	0.254	13:10	0.527	0.364	0.364	0.01
02/07/2021	06:05	3.43	10:35	4.63	4.05	04:35	1.41	10:30	1.88	1.66	06:00	0.239	10:35	0.477	0.353	0.353	-
02/08/2021	04:20	3.48	13:55	4.60	4.11	04:00	1.44	13:10	1.92	1.69	04:20	0.244	13:50	0.474	0.366	0.366	-
02/09/2021	04:55	3.32	13:00	4.53	4.04	03:20	1.36	09:50	1.86	1.68	03:20	0.216	13:00	0.456	0.356	0.356	-
02/10/2021	04:30	3.32	11:25	4.67	4.01	04:25	1.26	14:55	2.00	1.70	04:25	0.199	09:05	0.501	0.358	0.358	-
02/11/2021	04:45	3.30	14:50	4.86	4.00	03:15	1.36	14:40	2.10	1.70	03:15	0.216	14:40	0.568	0.356	0.356	-
02/12/2021	04:55	3.28	13:25	4.45	3.93	02:15	1.40	13:20	1.90	1.64	05:00	0.216	13:20	0.452	0.335	0.335	-
02/13/2021	06:05	3.37	13:40	4.40	3.84	04:50	1.34	13:45	1.89	1.61	05:00	0.217	13:40	0.445	0.317	0.317	0.08
02/14/2021	05:40	3.20	12:05	4.32	3.87	05:25	1.34	11:50	1.88	1.66	05:30	0.205	11:50	0.431	0.334	0.334	0.71
02/15/2021	05:20	3.63	12:35	5.18	4.33	02:55	1.58	14:05	2.22	1.86	03:00	0.286	12:40	0.657	0.437	0.437	0.78
02/16/2021	04:00	3.60	11:15	4.94	4.21	04:05	1.55	11:25	2.15	1.82	04:05	0.275	11:25	0.594	0.407	0.407	0.07
02/17/2021	03:00	3.42	11:55	4.63	4.08	04:10	1.53	10:30	2.07	1.81	04:20	0.253	11:50	0.520	0.389	0.389	-
02/18/2021	04:45	3.40	16:00	4.85	4.05	03:00	1.52	16:00	2.17	1.78	04:45	0.249	16:00	0.588	0.378	0.378	0.09
02/19/2021	05:15	3.31	12:30	5.08	4.04	04:10	1.48	12:30	2.21	1.76	04:10	0.238	12:30	0.642	0.373	0.373	0.17
02/20/2021	03:40	3.31	12:25	4.55	3.92	05:05	1.48	12:15	2.04	1.72	03:40	0.234	12:20	0.498	0.350	0.350	0.07
02/21/2021	06:05	3.24	12:20	4.31	3.87	04:20	1.45	18:05	1.93	1.72	06:05	0.222	12:20	0.441	0.344	0.344	0.42
02/22/2021	04:00	3.45	10:20	5.00	4.19	02:55	1.56	10:25	2.20	1.84	02:55	0.262	10:25	0.624	0.412	0.412	0.98
02/23/2021	02:45	3.46	15:05	5.12	4.16	04:00	1.55	15:00	2.27	1.82	05:05	0.260	15:00	0.666	0.402	0.402	0.27
02/24/2021	04:10	3.44	16:25	4.92	4.16	02:45	1.55	16:20	2.10	1.80	04:05	0.259	16:20	0.577	0.400	0.400	-
02/25/2021	03:35	3.44	14:45	4.90	4.19	03:40	1.53	14:50	2.06	1.80	03:40	0.256	14:45	0.564	0.402	0.402	0.18
02/26/2021	02:25	3.49	11:15	4.67	4.14	04:00	1.53	14:55	1.98	1.79	04:00	0.259	11:20	0.499	0.393	0.393	0.10
02/27/2021	04:55	3.47	15:25	4.85	4.04	07:10	1.48	15:20	2.05	1.73	06:15	0.251	15:25	0.557	0.367	0.367	0.02
02/28/2021	06:10	3.35	13:15	4.73	4.00	05:40	1.41	13:15	2.02	1.72	05:40	0.235	13:15	0.528	0.360	0.360	0.02
03/01/2021	04:00	3.33	15:45	4.85	4.08	03:45	1.46	15:40	2.04	1.74	04:00	0.233	15:45	0.551	0.374	0.374	-
03/02/2021	04:20	3.32	14:10	4.89	4.03	03:45	1.42	14:20	2.07	1.71	04:30	0.227	14:15	0.564	0.362	0.362	-
03/03/2021	04:40	3.36	13:05	4.93	4.04	03:25	1.39	13:00	2.10	1.72	04:40	0.229	13:00	0.582	0.365	0.365	-
03/04/2021	04:40	3.34	14:40	4.85	4.00	02:55	1.42	14:30	2.04	1.71	03:55	0.227	14:35	0.551	0.358	0.358	0.20
03/05/2021	02:50	3.34	13:15	4.45	3.93	04:10	1.44	13:40	1.92	1.70	02:50	0.231	13:15	0.455	0.347	0.347	0.05
03/06/2021	05:45	3.27	11:05	4.40	3.86	05:50	1.43	11:05	1.92	1.69	05:50	0.220	11:05	0.455	0.336	0.336	-
03/07/2021	05:00	3.21	12:45	4.27	3.82	06:10	1.43	12:40	1.87	1.67	04:55	0.217	12:45	0.423	0.326	0.326	0.04
03/08/2021	04:15	3.19	16:00	4.79	3.96	03:10	1.41	16:05	2.05	1.70	04:15	0.212	16:05	0.540	0.351	0.351	-
03/09/2021	04:25	3.15	14:55	4.70	3.96	05:20	1.40	16:10	1.99	1.68	03:10	0.208	14:45	0.511	0.346	0.346	0.01
03/10/2021	03:30	3.18	15:40	4.76	3.92	02:45	1.34	15:25	2.07	1.68	03:30	0.209	15:40	0.541	0.343	0.343	-
03/11/2021	03:20	3.15	15:40	4.52	3.81	03:00	1.38	15:40	2.00	1.70	05:30	0.204	15:40	0.491	0.332	0.332	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	03:10	3.14	12:35	4.24	3.77	01:40	1.37	12:25	1.90	1.67	02:55	0.204	12:25	0.420	0.320	0.320	-
03/13/2021	05:10	3.10	11:20	4.27	3.72	03:20	1.36	11:15	1.90	1.65	05:05	0.197	11:15	0.430	0.312	0.312	-
03/14/2021	04:50	3.14	15:40	4.26	3.75	04:10	1.39	13:10	1.89	1.66	04:50	0.205	15:35	0.421	0.316	0.316	0.30
03/15/2021	03:25	3.25	12:40	4.74	3.90	01:50	1.40	13:00	2.06	1.71	03:25	0.217	12:35	0.532	0.346	0.346	-
03/16/2021	04:20	3.14	09:50	4.63	3.81	03:05	1.38	10:20	2.05	1.70	03:05	0.203	10:20	0.517	0.332	0.332	-
03/17/2021	02:45	3.14	09:30	4.65	3.85	03:45	1.37	09:30	2.05	1.72	03:45	0.202	09:30	0.524	0.342	0.342	-
03/18/2021	03:00	3.14	10:45	4.68	3.87	04:20	1.33	10:40	2.04	1.70	02:45	0.201	10:45	0.528	0.340	0.340	0.11
03/19/2021	03:30	3.15	10:20	4.33	3.81	03:45	1.39	10:25	1.92	1.69	03:45	0.205	10:25	0.440	0.329	0.329	0.03
03/20/2021	04:50	3.15	11:45	4.35	3.78	04:55	1.35	11:45	1.93	1.66	04:55	0.198	11:45	0.449	0.321	0.321	0.17
03/21/2021	05:25	3.15	11:20	4.18	3.73	03:40	1.38	11:20	1.88	1.65	03:40	0.205	11:20	0.414	0.312	0.312	0.07
03/22/2021	02:50	3.17	11:20	4.41	3.87	02:50	1.37	07:40	1.99	1.71	02:50	0.203	10:50	0.467	0.341	0.341	0.11
03/23/2021	02:20	3.11	15:25	4.57	3.88	02:10	1.36	15:30	2.03	1.71	02:10	0.198	15:30	0.506	0.344	0.344	-
03/24/2021	03:55	3.17	15:15	4.76	3.89	01:25	1.38	15:10	2.07	1.72	03:55	0.204	15:10	0.546	0.347	0.347	0.34
03/25/2021	04:05	3.35	15:35	4.89	3.99	04:05	1.45	15:35	2.12	1.77	04:05	0.232	15:35	0.583	0.370	0.370	0.27
03/26/2021	02:40	3.28	13:55	4.71	3.95	04:00	1.43	13:55	2.08	1.76	02:40	0.227	13:55	0.543	0.361	0.361	-
03/27/2021	04:40	3.20	10:20	4.45	3.84	03:25	1.41	10:10	1.97	1.72	03:25	0.214	10:20	0.472	0.340	0.340	-
03/28/2021	05:10	3.21	13:40	4.46	3.87	03:40	1.43	13:30	1.98	1.72	05:05	0.216	13:30	0.474	0.345	0.345	0.37
03/29/2021	02:40	3.23	14:45	4.73	3.93	03:45	1.45	14:45	2.09	1.75	02:40	0.223	14:45	0.548	0.358	0.358	-
03/30/2021	03:30	3.18	15:00	4.46	3.84	03:25	1.42	15:00	1.93	1.71	03:25	0.212	15:00	0.467	0.338	0.338	-
03/31/2021	03:40	3.14	14:15	4.90	3.90	03:25	1.38	14:15	2.09	1.71	03:40	0.204	14:15	0.575	0.346	0.346	-
04/01/2021	04:15	3.20	15:40	4.65	3.87	03:05	1.42	15:30	2.08	1.71	03:05	0.215	15:30	0.527	0.342	0.342	-
04/02/2021	03:55	3.21	10:20	4.47	3.83	02:40	1.36	10:25	1.98	1.69	02:40	0.206	12:15	0.478	0.332	0.332	-
04/03/2021	02:35	3.00	11:30	4.30	3.69	02:35	1.37	11:45	1.89	1.66	02:35	0.187	11:30	0.428	0.310	0.310	-
04/04/2021	02:50	3.05	12:25	4.28	3.63	04:25	1.37	12:25	1.91	1.64	03:50	0.194	12:25	0.433	0.298	0.298	-
04/05/2021	03:55	3.02	15:30	4.54	3.78	02:25	1.37	15:25	2.02	1.70	02:25	0.193	15:25	0.498	0.330	0.330	-
04/06/2021	02:55	3.05	10:55	4.66	3.84	02:40	1.38	11:35	2.04	1.69	03:55	0.194	10:50	0.521	0.336	0.336	-
04/07/2021	03:35	3.16	11:00	4.61	3.79	03:25	1.30	11:15	1.95	1.65	03:25	0.192	10:55	0.486	0.320	0.320	0.22
04/08/2021	02:10	3.05	14:00	4.73	3.78	04:00	1.37	13:50	2.07	1.69	03:30	0.196	14:00	0.537	0.328	0.328	-
04/09/2021	02:40	3.04	12:05	4.62	3.75	04:00	1.39	12:00	2.02	1.68	04:05	0.194	12:10	0.513	0.323	0.323	0.03
04/10/2021	03:00	3.03	10:50	4.32	3.70	04:45	1.36	11:35	1.91	1.61	03:05	0.192	10:50	0.433	0.302	0.302	0.02
04/11/2021	04:00	3.00	10:55	4.25	3.67	04:00	1.28	10:50	1.83	1.59	04:00	0.174	10:50	0.411	0.295	0.295	-
04/12/2021	04:50	3.03	16:00	4.59	3.75	03:30	1.36	16:00	2.04	1.68	04:50	0.192	16:00	0.513	0.321	0.321	-
04/13/2021	02:40	2.99	14:45	4.65	3.76	03:15	1.35	14:45	2.00	1.67	02:40	0.184	14:45	0.511	0.321	0.321	-
04/14/2021	03:35	2.99	14:25	4.63	3.80	04:25	1.36	14:15	2.04	1.69	03:35	0.186	14:25	0.520	0.331	0.330	-
10/01/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/02/2020	23:55	3.06	09:55	4.25	3.57	23:25	1.30	09:45	1.90	1.60	23:55	0.191	09:50	0.426	0.281	0.172	-
10/03/2020	05:35	2.49	13:15	3.94	3.27	03:35	1.10	13:05	1.72	1.44	03:35	0.115	13:05	0.346	0.229	0.229	0.01
10/04/2020	02:50	2.60	14:35	3.97	3.37	04:00	1.09	14:30	1.73	1.45	04:05	0.121	14:30	0.352	0.241	0.241	0.01
10/05/2020	03:05	2.67	15:55	4.40	3.59	03:05	1.13	15:35	1.86	1.50	03:05	0.130	15:40	0.438	0.271	0.271	-
10/06/2020	03:15	2.77	15:05	4.54	3.73	01:40	1.06	15:00	1.74	1.42	03:10	0.131	15:00	0.427	0.272	0.272	-
10/07/2020	02:35	2.85	09:45	4.72	3.80	02:30	1.07	09:40	1.86	1.45	02:30	0.137	09:45	0.484	0.287	0.287	-
10/08/2020	03:35	3.00	10:35	4.71	3.87	02:15	1.08	10:25	1.83	1.44	03:40	0.147	10:30	0.471	0.292	0.292	-
10/09/2020	04:50	3.02	10:25	4.96	3.86	04:40	1.05	10:20	1.86	1.45	04:40	0.146	10:25	0.522	0.292	0.292	0.64
10/10/2020	05:10	3.47	13:05	4.65	4.08	05:10	1.27	13:00	1.77	1.54	05:15	0.213	13:10	0.451	0.331	0.331	1.04
10/11/2020	03:40	3.10	12:05	4.55	3.96	03:40	1.13	17:05	1.74	1.49	03:40	0.162	17:05	0.429	0.310	0.310	0.53
10/12/2020	03:10	3.20	15:30	4.80	4.11	03:00	1.16	15:35	1.82	1.53	03:00	0.175	15:35	0.486	0.335	0.335	-
10/13/2020	02:30	3.35	13:25	5.02	4.25	00:45	1.14	13:20	1.85	1.54	02:25	0.194	13:20	0.527	0.353	0.353	0.61
10/14/2020	03:45	3.38	10:35	5.08	4.17	04:45	1.21	15:50	1.98	1.56	03:45	0.197	10:40	0.557	0.349	0.349	-
10/15/2020	03:10	3.24	10:25	5.08	4.06	01:30	1.26	14:00	2.01	1.57	03:05	0.194	14:05	0.579	0.337	0.337	-
10/16/2020	03:25	3.19	11:00	4.80	3.95	03:25	1.20	11:00	1.91	1.54	03:25	0.179	11:00	0.512	0.319	0.319	-
10/17/2020	03:35	3.17	11:20	4.63	3.92	04:45	1.16	11:15	1.82	1.52	04:45	0.171	11:15	0.461	0.310	0.310	0.01
10/18/2020	04:25	3.17	12:25	4.58	3.91	04:20	1.17	12:20	1.80	1.50	04:20	0.174	12:30	0.451	0.305	0.305	0.03
10/19/2020	03:25	3.14	11:40	4.67	4.01	01:45	1.13	15:20	1.85	1.55	01:45	0.170	11:40	0.470	0.327	0.327	0.05
10/20/2020	02:55	3.17	10:10	5.05	4.03	03:00	1.19	10:10	2.00	1.53	02:55	0.177	10:10	0.577	0.326	0.326	-
10/21/2020	01:55	3.25	15:20	4.86	4.03	02:45	1.19	15:15	1.97	1.55	02:45	0.185	15:20	0.532	0.330	0.330	0.01
10/22/2020	04:00	3.06	14:25	4.88	4.01	00:50	1.16	15:00	1.93	1.54	03:55	0.168	14:30	0.511	0.328	0.328	-
10/23/2020	03:10	3.28	10:40	4.94	4.11	01:45	1.21	10:40	1.94	1.56	03:00	0.191	10:40	0.542	0.342	0.342	0.20
10/24/2020	03:05	3.40	11:20	4.70	4.02	06:20	1.26	11:15	1.82	1.52	06:20	0.207	11:20	0.473	0.321	0.321	0.02
10/25/2020	04:50	3.09	10:30	4.42	3.80	04:55	1.16	11:10	1.75	1.48	04:55	0.166	11:10	0.412	0.289	0.289	-
10/26/2020	03:35	2.98	11:25	4.46	3.76	00:45	1.20	11:30	1.90	1.54	03:45	0.163	11:30	0.455	0.297	0.297	-
10/27/2020	03:00	2.98	15:10	4.54	3.79	01:40	1.23	15:05	1.87	1.56	03:00	0.165	15:05	0.461	0.303	0.303	-
10/28/2020	02:50	2.89	09:30	4.50	3.70	02:35	1.19	09:20	1.86	1.52	02:35	0.156	09:25	0.452	0.287	0.287	-
10/29/2020	04:55	2.88	09:10	4.43	3.73	03:35	1.16	08:55	1.83	1.50	03:45	0.152	09:10	0.431	0.287	0.287	-
10/30/2020	03:15	2.93	17:10	4.23	3.74	03:50	1.16	10:20	1.78	1.49	03:50	0.153	15:55	0.385	0.283	0.283	0.10
10/31/2020	05:05	3.09	10:55	4.51	3.66	05:05	1.06	12:05	1.72	1.42	05:10	0.150	10:55	0.386	0.262	0.262	-
11/01/2020	05:20	2.69	12:50	4.06	3.41	05:35	1.18	12:55	1.79	1.49	05:35	0.137	12:55	0.375	0.250	0.250	-
11/02/2020	04:55	2.56	16:00	4.03	3.45	04:50	1.19	16:10	1.82	1.55	04:50	0.130	16:10	0.381	0.265	0.265	-
11/03/2020	04:35	2.47	13:25	4.47	3.49	04:25	1.21	13:25	2.02	1.61	04:35	0.125	13:25	0.488	0.283	0.283	0.83
11/04/2020	03:10	2.72	15:30	4.35	3.46	03:05	1.28	15:30	1.98	1.57	03:05	0.152	15:30	0.460	0.269	0.269	0.09
11/05/2020	03:45	2.69	16:30	4.47	3.56	03:50	1.26	10:00	2.01	1.62	03:55	0.146	10:15	0.476	0.291	0.291	0.34
11/06/2020	04:50	2.63	15:00	4.01	3.41	03:25	1.27	10:35	1.80	1.56	04:55	0.142	15:05	0.370	0.261	0.261	0.10
11/07/2020	04:05	2.64	15:55	4.15	3.36	02:25	1.27	15:50	1.85	1.54	04:10	0.144	16:00	0.403	0.252	0.252	0.07
11/08/2020	06:10	2.61	10:50	3.95	3.37	06:05	1.25	11:30	1.82	1.55	06:05	0.141	11:30	0.366	0.255	0.255	0.01
11/09/2020	03:55	2.67	11:50	4.35	3.50	05:00	1.26	13:05	1.95	1.59	03:55	0.147	12:00	0.449	0.277	0.277	0.04

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/10/2020	03:45	2.57	13:05	4.35	3.41	04:00	1.25	12:25	1.97	1.57	03:45	0.138	13:05	0.456	0.265	0.265	0.03
11/11/2020	03:55	2.59	13:35	4.60	3.42	03:30	1.27	13:40	2.14	1.58	03:55	0.140	13:40	0.530	0.269	0.269	-
11/12/2020	04:30	2.57	15:45	4.37	3.42	03:55	1.25	15:45	1.97	1.59	03:55	0.138	15:45	0.461	0.269	0.269	0.16
11/13/2020	02:50	2.78	14:10	4.48	3.56	02:35	1.33	13:45	2.08	1.64	02:50	0.162	14:10	0.500	0.291	0.291	0.38
11/14/2020	04:55	2.68	10:50	4.20	3.47	04:35	1.31	10:45	1.92	1.61	05:05	0.151	10:50	0.421	0.277	0.277	0.47
11/15/2020	05:35	2.69	18:45	4.13	3.43	05:10	1.31	18:40	1.94	1.59	05:20	0.153	18:45	0.419	0.267	0.267	0.19
11/16/2020	04:55	2.74	14:10	4.44	3.59	02:25	1.22	16:30	2.01	1.65	02:25	0.158	16:30	0.479	0.299	0.299	0.31
11/17/2020	04:15	2.75	15:55	4.35	3.57	04:35	1.33	15:55	2.00	1.64	04:35	0.160	15:55	0.465	0.295	0.295	0.20
11/18/2020	03:35	2.72	15:45	4.51	3.57	04:55	1.29	15:50	2.04	1.63	04:55	0.154	15:45	0.497	0.292	0.292	0.30
11/19/2020	03:30	2.90	11:00	4.53	3.65	02:10	1.32	16:10	2.05	1.64	03:30	0.177	16:10	0.501	0.303	0.303	0.50
11/20/2020	03:55	2.72	13:25	4.29	3.52	05:15	1.28	13:25	1.93	1.60	03:55	0.153	13:25	0.441	0.279	0.279	0.01
11/21/2020	05:50	2.74	12:15	4.24	3.48	05:55	1.27	12:15	1.88	1.58	05:55	0.152	12:15	0.422	0.273	0.273	-
11/22/2020	06:00	2.72	17:45	3.94	3.48	05:40	1.25	12:50	1.79	1.58	05:50	0.149	17:45	0.360	0.273	0.273	0.21
11/23/2020	05:00	2.86	16:45	4.46	3.68	03:10	1.32	16:25	1.99	1.67	05:05	0.167	16:50	0.475	0.313	0.313	0.14
11/24/2020	03:25	2.83	13:15	4.54	3.66	03:20	1.27	12:45	1.98	1.63	03:25	0.159	13:15	0.487	0.304	0.304	0.21
11/25/2020	05:05	2.84	15:45	4.32	3.64	04:45	1.31	09:00	1.92	1.63	04:55	0.167	15:45	0.435	0.301	0.301	0.05
11/26/2020	04:55	2.77	12:50	4.26	3.48	04:45	1.27	12:40	1.91	1.58	05:00	0.154	13:00	0.431	0.273	0.273	0.02
11/27/2020	04:50	2.71	12:25	4.12	3.47	04:45	1.31	12:25	1.85	1.58	04:50	0.155	12:25	0.397	0.271	0.271	-
11/28/2020	04:40	2.76	11:10	4.13	3.52	04:30	1.33	11:10	1.88	1.59	04:45	0.161	11:10	0.406	0.278	0.278	0.05
11/29/2020	05:55	2.81	12:20	4.04	3.47	06:35	1.28	12:10	1.81	1.55	05:45	0.161	12:15	0.377	0.266	0.266	-
11/30/2020	04:00	2.90	16:30	4.42	3.71	04:05	1.30	16:35	1.96	1.64	04:05	0.169	16:35	0.466	0.310	0.310	0.36
12/01/2020	04:45	2.80	12:45	4.61	3.59	04:10	1.26	12:40	2.03	1.61	04:30	0.157	12:40	0.512	0.292	0.292	-
12/02/2020	04:05	2.81	11:10	4.66	3.65	06:00	1.29	11:10	2.11	1.66	04:05	0.161	11:10	0.540	0.310	0.310	0.01
12/03/2020	04:50	2.86	11:35	4.49	3.62	01:35	1.31	11:45	2.00	1.66	04:55	0.167	11:45	0.487	0.304	0.304	-
12/04/2020	03:15	2.89	13:45	4.48	3.61	03:10	1.31	13:45	1.99	1.64	03:15	0.170	13:45	0.483	0.298	0.298	-
12/05/2020	04:05	2.89	10:55	4.39	3.54	03:50	1.29	10:55	1.92	1.61	06:15	0.167	10:55	0.452	0.284	0.284	0.03
12/06/2020	07:10	2.74	10:50	3.91	3.42	04:55	1.26	11:55	1.84	1.58	05:10	0.154	11:55	0.362	0.265	0.265	0.03
12/07/2020	03:50	2.73	13:25	4.46	3.56	03:45	1.28	13:20	1.98	1.63	03:45	0.153	13:20	0.476	0.292	0.292	-
12/08/2020	05:00	2.77	16:35	4.76	3.71	03:20	1.24	16:20	2.17	1.69	03:20	0.153	16:35	0.566	0.324	0.324	0.87
12/09/2020	05:10	2.98	14:50	4.55	3.68	05:50	1.34	14:50	2.03	1.67	05:10	0.186	14:50	0.503	0.311	0.311	0.17
12/10/2020	03:45	2.96	12:55	4.49	3.64	03:30	1.33	12:50	2.07	1.67	03:35	0.178	12:55	0.497	0.306	0.306	0.07
12/11/2020	04:40	2.86	10:40	4.56	3.60	04:35	1.29	10:35	2.03	1.65	04:40	0.165	11:10	0.507	0.300	0.300	0.02
12/12/2020	05:05	2.87	11:40	4.26	3.56	05:05	1.32	11:50	1.94	1.61	05:05	0.169	11:50	0.437	0.287	0.287	0.01
12/13/2020	05:40	2.93	12:00	4.27	3.62	05:45	1.31	12:00	1.89	1.61	05:40	0.174	12:00	0.428	0.294	0.294	0.24
12/14/2020	03:10	2.97	16:25	4.49	3.73	02:45	1.32	18:30	2.01	1.67	03:10	0.178	16:20	0.477	0.317	0.317	0.05
12/15/2020	03:40	2.98	14:00	4.71	3.77	03:35	1.34	14:05	2.11	1.70	03:35	0.181	14:00	0.548	0.330	0.330	0.58
12/16/2020	04:10	2.98	13:45	4.74	3.80	04:00	1.35	13:50	2.08	1.70	04:00	0.184	13:50	0.540	0.333	0.333	0.39
12/17/2020	04:30	2.99	14:30	4.58	3.75	03:10	1.35	14:40	2.11	1.71	03:10	0.187	14:30	0.525	0.328	0.328	0.08
12/18/2020	02:55	3.02	08:40	4.30	3.70	02:50	1.42	08:25	1.93	1.70	02:50	0.196	08:40	0.443	0.319	0.319	0.25
12/19/2020	06:35	2.90	17:20	4.25	3.68	04:50	1.39	13:55	1.94	1.69	06:30	0.180	17:20	0.427	0.317	0.317	0.37
12/20/2020	05:25	3.03	12:15	4.08	3.63	04:10	1.44	10:30	1.83	1.67	05:25	0.202	12:15	0.387	0.303	0.303	0.04
12/21/2020	05:05	3.19	17:00	4.76	3.94	05:00	1.49	17:00	2.18	1.77	05:10	0.223	17:00	0.577	0.365	0.365	1.07
12/22/2020	04:05	3.18	16:10	4.90	3.88	05:35	1.44	16:05	2.10	1.71	05:35	0.214	16:05	0.577	0.343	0.343	-
12/23/2020	04:05	3.09	13:40	4.76	3.80	02:30	1.38	13:30	2.06	1.68	04:00	0.202	13:35	0.543	0.329	0.329	-
12/24/2020	04:50	3.05	12:35	4.37	3.70	03:00	1.37	12:25	1.92	1.65	04:45	0.198	12:35	0.442	0.309	0.309	-
12/25/2020	06:25	2.99	15:45	4.15	3.64	05:45	1.34	13:05	1.85	1.63	06:30	0.184	15:40	0.400	0.299	0.299	0.49
12/26/2020	06:45	3.15	12:50	4.20	3.65	03:55	1.40	12:55	1.93	1.65	03:55	0.209	12:55	0.423	0.302	0.302	0.02
12/27/2020	05:00	3.00	13:15	4.41	3.67	03:25	1.37	13:05	1.92	1.65	03:25	0.189	13:15	0.455	0.306	0.306	0.13
12/28/2020	04:10	2.98	13:50	4.34	3.79	03:50	1.33	14:10	1.95	1.70	03:55	0.182	13:50	0.447	0.331	0.331	-
12/29/2020	04:35	3.01	10:20	4.61	3.83	04:55	1.34	10:30	2.06	1.70	04:50	0.184	10:20	0.516	0.336	0.336	0.14
12/30/2020	03:50	3.29	16:10	4.78	3.99	03:50	1.42	16:10	2.08	1.75	03:50	0.222	16:10	0.554	0.366	0.366	0.78
12/31/2020	04:30	3.36	11:20	4.57	3.93	04:20	1.49	11:25	1.99	1.74	04:30	0.240	11:25	0.494	0.355	0.355	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			65.672	30.65
Average	3.87	1.68	0.337	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A1_30820

				Monitor Series	Location Type
Site Address /Location:	Opposite 627 - 637 37th St NW			TRITON+	Temporary
Site Access Details:	Park by kerb	Latitude:	47.340149	Pipe Size (H x W)	Pipe Shape
		Longitude:	-122.238708	21.00 X 21.00	Circular

Manhole #	System Characteristics
A130820	Commercial
Access	Traffic
Drive	None









Installation Information	
Installation Date:	Installation Type:
Friday, October 2, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi
Installation Confirmation:	
Time	
10:41:00 AM	
Depth of Flow (Wet DOF) (in)	
3.88	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
2.02	N/A
Silt (in)	Silt Type
0	

Manhole / Pipe Information:	
Manhole Depth (Approx. FT):	Manhole Configuration
8	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
Concrete	Good
Communication Information:	
Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole
Additional Site Info. / Comments:	

ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.11.325

AUB_A10_710151

Site Commentary

SITE INFORMATION

Pipe	Elliptical (23.88 in H x 23.75 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	5.60	0.80	0.297
Minimum	3.67	0.37	0.093
Maximum	10.47	1.32	1.093
Min Time	04/04/2021 5:00:00 AM	11/24/2020 5:00:00 AM	04/04/2021 5:00:00 AM
Max Time	01/02/2021 9:00:00 PM	01/03/2021 12:00:00 AM	01/02/2021 9:00:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

Percent Uptime	
DFINAL (in)	98.75
VFINAL (ft/s)	98.75
QFINAL (MGD - Total MG)	98.75

Hydrograph Report

AUB_A10_710151

Flow Monitor

AUB_A10_710151

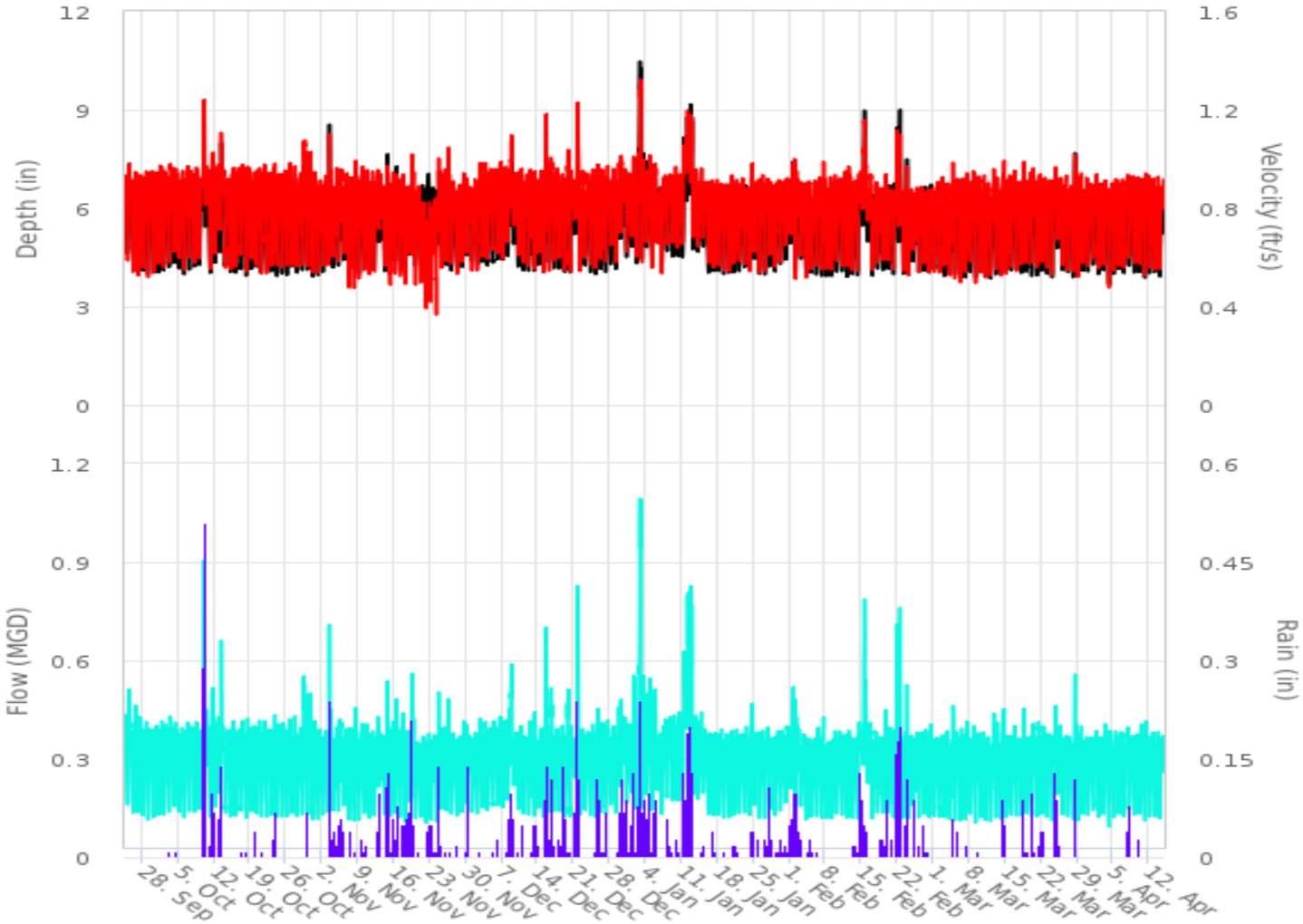
Pipe Height
23.88
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
www.adsenv.com

Scattergraph Report

AUB_A10_710151

Flow Monitor

AUB_A10_710151

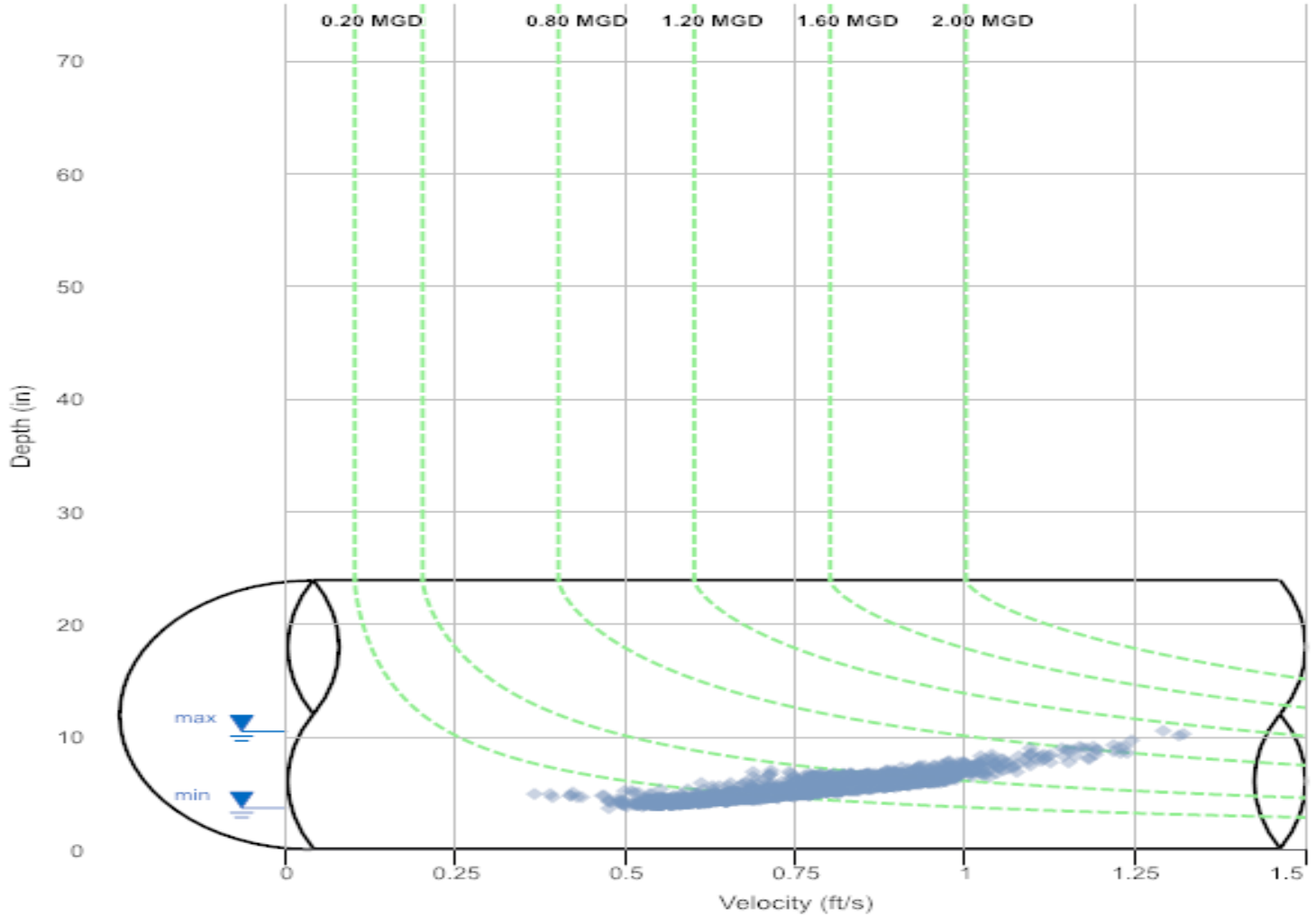
Pipe Height
23.88
in

Report Period

09/22/2020
To
04/14/2021

Legend

DFINAL - VFINAL
Iso-Q™
Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A10_710151Pipe: Elliptical (23.88 in H x 23.75 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	06:40	4.69	15:45	8.64	5.80	04:10	0.66	15:40	1.16	0.84	06:40	0.184	15:40	0.753	0.323	0.323	0.51
01/02/2021	06:15	4.28	21:10	11.06	6.65	06:30	0.56	21:25	1.42	0.89	06:30	0.137	21:10	1.246	0.451	0.451	1.69
01/03/2021	06:35	4.39	00:05	10.65	6.44	07:20	0.52	00:15	1.39	0.88	07:20	0.133	00:15	1.193	0.409	0.409	0.65
01/04/2021	03:55	4.75	19:15	7.82	6.14	06:20	0.63	19:10	1.12	0.84	04:00	0.185	19:10	0.629	0.349	0.349	0.48
01/05/2021	04:25	4.41	21:10	7.75	5.97	05:45	0.48	20:55	1.07	0.81	05:45	0.124	20:55	0.600	0.330	0.330	0.52
01/06/2021	06:00	4.97	20:05	6.73	5.96	07:05	0.58	21:25	0.93	0.78	07:05	0.177	20:15	0.401	0.309	0.309	0.22
01/07/2021	04:55	4.26	19:55	6.69	5.78	04:15	0.50	19:55	1.00	0.80	04:15	0.123	19:55	0.458	0.307	0.307	-
01/08/2021	04:05	4.67	17:35	6.92	5.93	06:20	0.60	18:35	1.02	0.83	05:40	0.169	18:35	0.478	0.329	0.329	0.22
01/09/2021	05:30	4.50	13:10	6.83	5.75	06:20	0.58	20:55	1.06	0.84	06:20	0.154	13:35	0.468	0.319	0.319	-
01/10/2021	06:20	4.52	14:15	6.94	5.83	06:25	0.57	14:15	1.03	0.85	06:25	0.149	14:15	0.500	0.327	0.327	0.07
01/11/2021	03:45	4.47	10:55	8.25	6.47	04:40	0.60	12:40	1.14	0.90	04:40	0.157	10:55	0.676	0.414	0.414	1.06
01/12/2021	00:00	6.18	19:05	9.95	7.71	15:35	0.84	18:45	1.33	1.07	00:40	0.362	19:15	0.978	0.605	0.605	2.10
01/13/2021	04:55	4.70	00:35	9.42	6.13	06:15	0.61	00:40	1.27	0.88	06:15	0.177	00:40	0.929	0.369	0.369	0.09
01/14/2021	05:05	4.62	13:10	6.80	5.85	05:00	0.58	21:15	1.04	0.82	05:00	0.158	20:40	0.476	0.320	0.320	0.01
01/15/2021	04:35	4.77	15:50	6.90	5.72	04:15	0.60	15:45	1.07	0.82	04:15	0.174	15:50	0.512	0.306	0.306	0.09
01/16/2021	06:10	3.96	12:20	6.68	5.49	06:10	0.52	19:50	0.96	0.78	06:10	0.114	16:10	0.431	0.281	0.281	-
01/17/2021	07:10	4.02	12:25	6.50	5.49	06:40	0.53	21:20	0.99	0.80	06:15	0.120	12:25	0.413	0.285	0.285	0.10
01/18/2021	04:30	4.04	18:45	6.61	5.53	04:20	0.53	22:05	0.95	0.78	04:20	0.120	18:45	0.424	0.281	0.281	-
01/19/2021	05:05	3.89	17:45	6.42	5.42	04:00	0.52	19:00	0.96	0.77	05:05	0.112	19:50	0.397	0.273	0.273	0.01
01/20/2021	05:15	3.99	18:20	6.37	5.38	04:40	0.50	20:55	1.00	0.77	04:40	0.111	20:10	0.406	0.270	0.270	-
01/21/2021	03:30	3.99	18:40	6.42	5.45	03:35	0.54	16:15	0.97	0.79	03:35	0.120	18:45	0.413	0.278	0.278	0.11
01/22/2021	05:25	4.01	18:55	6.42	5.40	04:35	0.54	16:05	0.98	0.78	04:35	0.123	16:15	0.417	0.273	0.273	-
01/23/2021	05:15	4.13	14:40	6.80	5.54	05:25	0.53	20:10	0.95	0.75	05:25	0.123	14:40	0.429	0.274	0.274	-
01/24/2021	06:50	4.05	18:05	7.08	5.62	07:30	0.50	18:45	1.07	0.80	07:05	0.117	18:45	0.511	0.299	0.299	0.16
01/25/2021	04:25	4.40	13:20	6.39	5.62	03:15	0.56	20:50	0.98	0.80	05:10	0.148	21:35	0.415	0.294	0.294	0.04
01/26/2021	04:05	3.91	13:55	6.29	5.41	05:35	0.47	13:40	0.99	0.77	05:35	0.108	13:40	0.412	0.271	0.271	-
01/27/2021	04:35	3.93	18:55	6.61	5.46	04:35	0.52	18:40	0.99	0.79	04:35	0.111	18:40	0.435	0.279	0.279	0.14
01/28/2021	03:40	4.15	19:30	6.26	5.58	03:45	0.58	12:30	0.97	0.81	03:45	0.136	12:30	0.401	0.292	0.292	0.24
01/29/2021	05:40	3.96	18:40	6.50	5.43	05:25	0.53	18:40	1.00	0.78	05:50	0.116	18:40	0.441	0.276	0.276	0.03
01/30/2021	06:05	4.18	13:00	6.50	5.51	06:05	0.54	17:10	0.98	0.79	06:05	0.128	13:05	0.417	0.286	0.286	0.07
01/31/2021	06:30	4.29	12:15	6.57	5.61	06:25	0.58	14:30	1.00	0.81	06:25	0.144	14:30	0.433	0.296	0.296	0.12
02/01/2021	07:05	4.86	18:50	7.60	6.01	00:40	0.66	19:50	1.05	0.84	07:05	0.196	18:55	0.550	0.340	0.340	0.82
02/02/2021	05:10	4.06	00:00	7.28	5.75	05:00	0.47	13:15	1.03	0.81	05:00	0.108	00:00	0.518	0.310	0.310	0.31
02/03/2021	04:10	4.31	19:15	6.40	5.49	05:55	0.55	19:10	0.96	0.79	05:55	0.140	19:10	0.409	0.279	0.279	0.06
02/04/2021	05:15	3.96	15:40	6.35	5.35	05:15	0.47	15:45	0.97	0.77	05:15	0.102	15:45	0.411	0.267	0.267	0.07
02/05/2021	04:40	3.99	13:40	6.53	5.36	06:25	0.48	22:20	0.98	0.78	06:25	0.108	22:20	0.397	0.270	0.270	0.01
02/06/2021	05:55	3.90	14:50	6.57	5.42	06:05	0.54	14:35	0.97	0.79	05:55	0.118	14:40	0.431	0.279	0.279	0.01
02/07/2021	06:25	3.84	12:10	6.60	5.42	06:20	0.51	15:20	1.05	0.80	06:20	0.107	15:20	0.459	0.285	0.285	-
02/08/2021	04:40	3.87	19:05	6.25	5.35	04:20	0.54	22:00	0.97	0.77	04:35	0.114	19:05	0.386	0.266	0.266	-
02/09/2021	04:20	3.87	20:35	6.36	5.34	04:55	0.53	22:10	0.98	0.78	04:20	0.114	20:30	0.412	0.271	0.271	-
02/10/2021	04:00	4.00	18:45	6.34	5.38	04:50	0.57	18:10	0.97	0.79	04:00	0.127	18:10	0.407	0.276	0.276	-
02/11/2021	05:40	4.02	12:20	6.18	5.37	05:35	0.49	21:40	1.02	0.81	05:35	0.109	18:05	0.414	0.280	0.280	-
02/12/2021	05:40	3.85	13:05	6.53	5.30	06:15	0.50	12:50	1.05	0.79	06:15	0.105	13:00	0.459	0.272	0.272	-
02/13/2021	05:05	3.95	16:55	6.20	5.28	04:55	0.52	15:05	0.97	0.79	04:55	0.115	16:55	0.387	0.269	0.269	0.08
02/14/2021	05:45	3.92	15:15	6.56	5.47	06:10	0.50	14:10	0.97	0.79	06:10	0.109	14:20	0.426	0.283	0.283	0.71
02/15/2021	06:50	5.37	14:05	9.19	6.91	07:10	0.68	14:10	1.23	0.97	07:10	0.234	14:10	0.869	0.477	0.477	0.78
02/16/2021	05:55	4.95	19:25	6.62	5.74	09:15	0.69	19:30	0.97	0.83	06:35	0.220	19:25	0.433	0.309	0.309	0.07
02/17/2021	04:35	3.89	16:25	6.50	5.51	04:30	0.50	19:35	0.94	0.75	04:30	0.106	19:35	0.406	0.270	0.270	-
02/18/2021	03:40	4.11	19:05	6.46	5.51	05:55	0.53	13:30	0.96	0.77	03:35	0.125	13:40	0.414	0.278	0.278	0.09
02/19/2021	05:15	3.99	19:35	7.03	5.51	05:25	0.56	19:55	0.98	0.77	05:25	0.123	19:40	0.479	0.277	0.277	0.17
02/20/2021	05:05	4.11	13:25	6.84	5.56	05:25	0.56	13:20	0.94	0.77	06:40	0.129	13:20	0.439	0.282	0.282	0.07
02/21/2021	06:25	3.94	23:50	8.91	5.76	06:30	0.53	23:50	1.25	0.78	06:30	0.115	23:50	0.847	0.304	0.304	0.42
02/22/2021	05:20	4.93	13:10	9.64	6.61	06:00	0.67	12:55	1.17	0.89	05:35	0.211	13:10	0.888	0.413	0.413	0.98
02/23/2021	05:00	3.93	22:00	8.22	5.68	04:05	0.51	21:55	1.12	0.77	05:00	0.111	21:55	0.682	0.292	0.292	0.27
02/24/2021	05:10	4.00	17:05	6.46	5.54	04:25	0.51	23:50	0.97	0.74	04:25	0.113	17:05	0.403	0.268	0.268	-
02/25/2021	03:00	4.26	18:20	6.52	5.66	03:20	0.59	14:10	0.91	0.78	03:05	0.146	19:25	0.393	0.287	0.287	0.18
02/26/2021	04:00	4.01	18:30	6.57	5.58	04:30	0.50	17:20	0.93	0.77	04:30	0.112	19:55	0.406	0.281	0.281	0.10
02/27/2021	06:25	4.02	12:15	6.75	5.61	06:20	0.54	19:05	0.92	0.77	06:20	0.122	12:15	0.404	0.283	0.283	0.02
02/28/2021	06:40	3.99	14:35	6.82	5.60	07:15	0.49	14:45	0.93	0.75	04:30	0.113	14:45	0.434	0.278	0.278	0.02
03/01/2021	05:10	4.02	18:45	6.34	5.51	05:05	0.45	18:45	0.99	0.77	05:05	0.100	18:45	0.419	0.277	0.277	-
03/02/2021	05:05	3.96	13:35	6.37	5.41	04:55	0.50	20:40	0.99	0.77	05:05	0.111	18:15	0.401	0.271	0.271	-
03/03/2021	04:45	3.90	18:45	6.42	5.40	05:00	0.51	18:05	0.98	0.78	05:00	0.109	18:05	0.421	0.273	0.273	-
03/04/2021	05:20	3.95	19:55	7.23	5.47	05:40	0.49	19:45	1.07	0.77	05:40	0.108	19:55	0.538	0.277	0.277	0.20
03/05/2021	05:10	3.94	13:30	6.34	5.40	04:40	0.47	11:35	0.99	0.78	04:40	0.103	13:20	0.405	0.275	0.275	0.05
03/06/2021	05:10	3.97	12:45	6.51	5.46	04:15	0.46	17:15	1.00	0.78	06:40	0.104	10:55	0.422	0.279	0.279	-
03/07/2021	06:00	3.77	13:00	6.62	5.44	05:55	0.50	12:55	1.04	0.80	05:55	0.102	12:55	0.464	0.286	0.286	0.04
03/08/2021	04:30	3.97	20:15	6.47	5.45	05:00	0.53	19:35	1.01	0.80	05:00	0.118	20:10	0.429	0.283	0.283	-
03/09/2021	05:00	3.80	20:50	6.31	5.37	04:55	0.46	16:20	0.97	0.77	05:10	0.094	20:45	0.406	0.270	0.270	0.01
03/10/2021	05:00	3.97	19:00	6.47	5.47	04:55	0.48	21:45	1.01	0.78	04:55	0.105	19:00	0.418	0.277	0.277	-
03/11/2021	05:15	3.89	12:35	6.30	5.42	05:05	0.49	18:10	1.00	0.77	05:10	0.104	18:10	0.410	0.273	0.273	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	04:35	3.79	18:35	7.48	5.39	04:25	0.50	18:30	1.11	0.77	04:25	0.103	18:40	0.594	0.270	0.270	-
03/13/2021	05:40	3.95	13:50	6.76	5.45	05:00	0.52	13:50	1.00	0.78	05:00	0.114	13:50	0.464	0.277	0.277	-
03/14/2021	05:25	3.94	15:35	7.15	5.63	05:15	0.50	20:05	1.07	0.81	05:30	0.107	20:05	0.518	0.304	0.304	0.30
03/15/2021	04:10	4.04	11:40	6.25	5.40	03:45	0.51	20:55	1.00	0.78	04:05	0.116	20:55	0.410	0.272	0.272	-
03/16/2021	03:50	4.02	19:00	6.42	5.47	03:25	0.54	21:55	1.03	0.78	03:50	0.119	19:00	0.437	0.280	0.280	-
03/17/2021	03:10	3.98	11:35	6.25	5.42	03:10	0.47	21:35	0.98	0.78	03:10	0.103	21:35	0.385	0.275	0.275	-
03/18/2021	03:40	3.95	16:30	7.03	5.47	02:20	0.53	16:35	1.15	0.81	03:40	0.117	16:35	0.566	0.287	0.287	0.11
03/19/2021	03:30	3.94	13:00	6.31	5.35	04:40	0.53	21:20	1.01	0.79	04:40	0.119	13:00	0.408	0.274	0.274	0.03
03/20/2021	05:15	3.85	14:30	6.44	5.47	05:20	0.53	11:00	1.06	0.81	05:20	0.112	11:00	0.440	0.288	0.288	0.17
03/21/2021	05:25	3.90	11:15	6.73	5.42	02:00	0.51	13:55	1.02	0.79	05:05	0.115	11:20	0.448	0.283	0.283	0.07
03/22/2021	02:55	3.93	10:50	6.96	5.52	03:10	0.53	10:45	1.03	0.80	02:50	0.117	10:45	0.495	0.290	0.290	0.11
03/23/2021	05:00	3.94	11:15	6.33	5.42	05:55	0.53	15:50	1.02	0.79	04:55	0.119	15:50	0.428	0.280	0.280	-
03/24/2021	04:00	3.86	20:10	7.09	5.46	03:05	0.49	20:10	1.07	0.79	03:05	0.105	20:10	0.533	0.284	0.284	0.34
03/25/2021	03:10	4.61	18:20	6.55	5.74	02:50	0.63	18:30	0.99	0.82	02:50	0.175	18:30	0.438	0.309	0.309	0.27
03/26/2021	04:35	4.05	11:20	6.27	5.47	03:30	0.53	21:00	0.98	0.80	03:30	0.123	21:00	0.397	0.284	0.284	-
03/27/2021	05:10	3.95	14:15	6.38	5.47	05:50	0.52	12:35	1.01	0.76	05:15	0.116	12:35	0.429	0.271	0.271	-
03/28/2021	06:05	3.80	14:55	8.62	5.62	06:10	0.46	15:00	1.19	0.80	06:10	0.094	15:00	0.769	0.304	0.304	0.37
03/29/2021	04:10	3.85	20:40	6.46	5.44	04:10	0.47	20:45	1.04	0.78	04:10	0.098	20:45	0.452	0.276	0.276	-
03/30/2021	02:50	3.87	12:40	6.24	5.39	02:55	0.51	12:40	0.98	0.77	02:55	0.108	12:40	0.409	0.271	0.271	-
03/31/2021	04:00	4.04	21:10	6.27	5.48	03:35	0.55	19:40	0.94	0.78	03:45	0.123	18:05	0.382	0.276	0.276	-
04/01/2021	03:35	4.25	10:30	6.34	5.57	05:20	0.55	20:40	0.99	0.78	03:55	0.138	20:40	0.412	0.283	0.283	-
04/02/2021	03:30	3.93	15:50	6.24	5.44	03:20	0.54	16:35	0.98	0.78	03:25	0.117	16:35	0.407	0.278	0.278	-
04/03/2021	04:20	4.05	11:40	6.69	5.47	04:00	0.53	13:10	0.98	0.78	04:00	0.120	11:45	0.437	0.279	0.279	-
04/04/2021	05:05	3.64	11:30	6.62	5.37	04:55	0.44	16:20	0.95	0.76	04:55	0.085	11:25	0.422	0.266	0.266	-
04/05/2021	03:20	3.93	12:00	6.41	5.48	03:00	0.50	12:05	0.97	0.79	03:00	0.111	12:05	0.418	0.282	0.282	-
04/06/2021	03:40	4.03	12:35	6.56	5.51	04:20	0.55	21:15	0.98	0.78	04:25	0.126	12:20	0.422	0.280	0.280	-
04/07/2021	03:30	3.97	21:25	6.45	5.52	03:55	0.52	11:25	0.98	0.79	03:55	0.116	21:05	0.417	0.286	0.286	0.22
04/08/2021	03:20	4.14	12:50	6.26	5.51	02:40	0.51	21:15	0.96	0.80	02:40	0.120	16:55	0.389	0.285	0.285	-
04/09/2021	04:25	3.97	13:30	6.20	5.36	03:20	0.55	13:35	0.97	0.78	04:30	0.121	13:35	0.402	0.270	0.270	0.03
04/10/2021	06:10	3.98	12:00	6.62	5.47	06:00	0.55	11:20	0.97	0.80	06:05	0.121	11:25	0.425	0.287	0.287	0.02
04/11/2021	05:10	3.81	09:15	6.75	5.49	04:20	0.48	09:10	1.07	0.79	04:20	0.102	09:10	0.495	0.288	0.288	-
04/12/2021	03:45	3.92	11:35	6.45	5.47	03:55	0.52	20:10	0.96	0.77	03:55	0.112	20:15	0.410	0.273	0.273	-
04/13/2021	02:40	3.97	19:05	6.29	5.42	02:35	0.51	19:20	0.96	0.77	02:35	0.111	20:00	0.398	0.271	0.271	-
04/14/2021	03:40	3.88	18:50	6.39	5.46	03:05	0.53	20:40	0.96	0.78	03:10	0.114	18:45	0.406	0.278	0.277	-
09/24/2020	23:55	5.34	18:40	6.86	6.37	23:25	0.68	18:45	0.97	0.85	23:55	0.233	18:45	0.461	0.365	0.158	-
09/25/2020	03:45	4.57	12:25	7.63	6.04	04:55	0.53	12:10	1.06	0.82	03:50	0.148	12:10	0.565	0.334	0.334	-
09/26/2020	04:45	4.33	15:10	7.40	5.78	06:40	0.49	15:05	1.00	0.78	06:40	0.130	15:15	0.516	0.303	0.303	-
09/27/2020	05:05	4.36	11:30	6.86	5.65	04:55	0.48	14:55	0.98	0.79	04:55	0.121	11:45	0.449	0.297	0.297	-
09/28/2020	03:10	4.07	18:20	6.55	5.52	03:35	0.48	21:00	1.00	0.81	03:35	0.110	18:15	0.441	0.292	0.292	-
09/29/2020	03:10	3.95	17:25	6.35	5.47	03:50	0.45	21:10	1.00	0.80	03:50	0.101	21:10	0.410	0.288	0.288	-
09/30/2020	04:15	3.93	19:10	6.52	5.47	05:15	0.47	20:30	1.01	0.80	05:15	0.114	20:30	0.438	0.285	0.285	-
10/01/2020	04:20	3.92	19:20	6.47	5.50	04:00	0.50	11:10	1.05	0.83	04:00	0.109	19:15	0.433	0.299	0.299	-
10/02/2020	02:50	4.05	11:05	6.43	5.57	04:55	0.48	11:00	1.06	0.80	04:00	0.113	11:00	0.458	0.293	0.293	-
10/03/2020	04:30	4.13	11:35	6.57	5.58	05:25	0.50	12:35	1.03	0.84	05:25	0.121	12:35	0.454	0.310	0.310	0.01
10/04/2020	04:45	4.23	11:25	6.52	5.53	07:20	0.56	12:10	1.02	0.82	06:25	0.140	12:10	0.441	0.297	0.297	0.01
10/05/2020	04:15	4.09	12:25	6.36	5.49	04:05	0.58	21:20	1.02	0.82	04:15	0.132	18:30	0.423	0.294	0.294	-
10/06/2020	04:00	3.86	17:45	6.40	5.47	04:00	0.49	11:05	1.01	0.81	04:00	0.103	20:25	0.426	0.290	0.290	-
10/07/2020	03:20	4.11	18:45	6.45	5.51	04:45	0.54	19:35	1.01	0.81	04:45	0.128	19:35	0.431	0.292	0.292	-
10/08/2020	03:30	4.17	18:35	6.46	5.58	03:20	0.54	18:30	1.02	0.83	03:35	0.127	18:30	0.443	0.306	0.306	-
10/09/2020	03:20	4.22	23:55	10.07	5.76	04:45	0.55	23:55	1.40	0.84	02:35	0.136	23:55	1.125	0.329	0.329	0.64
10/10/2020	05:30	5.24	01:40	11.29	6.46	23:30	0.76	01:30	1.42	0.95	23:30	0.253	01:30	1.291	0.428	0.428	1.04
10/11/2020	05:45	3.98	18:15	7.57	5.74	07:15	0.50	18:10	1.10	0.83	05:40	0.113	18:10	0.596	0.325	0.325	0.53
10/12/2020	02:45	4.29	19:50	6.58	5.58	03:00	0.59	19:40	1.05	0.84	03:00	0.144	19:50	0.466	0.306	0.306	-
10/13/2020	01:30	4.60	07:35	8.80	5.98	00:50	0.68	07:25	1.30	0.89	01:35	0.189	07:25	0.854	0.359	0.359	0.61
10/14/2020	02:35	4.17	20:05	6.42	5.49	04:35	0.50	17:40	1.01	0.80	04:35	0.121	17:40	0.426	0.285	0.285	-
10/15/2020	04:05	3.98	12:15	6.48	5.46	05:25	0.49	20:00	1.02	0.80	04:00	0.113	18:05	0.429	0.287	0.287	-
10/16/2020	03:40	3.96	12:55	6.21	5.40	03:40	0.52	13:05	1.00	0.82	03:40	0.113	13:05	0.408	0.289	0.289	-
10/17/2020	05:25	4.08	12:00	6.41	5.44	03:40	0.58	20:40	1.03	0.83	03:40	0.134	12:05	0.431	0.294	0.294	0.01
10/18/2020	04:35	3.86	13:10	6.60	5.44	05:55	0.47	12:50	1.02	0.82	05:15	0.105	12:50	0.451	0.295	0.295	0.03
10/19/2020	04:20	4.06	19:00	6.46	5.51	05:40	0.56	19:00	0.99	0.81	04:20	0.129	19:00	0.432	0.292	0.292	0.05
10/20/2020	04:05	4.16	19:30	6.44	5.54	04:15	0.54	13:15	1.07	0.81	04:20	0.126	13:15	0.443	0.296	0.296	-
10/21/2020	03:15	4.01	19:35	6.43	5.47	04:25	0.51	18:00	1.05	0.82	04:10	0.117	18:00	0.450	0.294	0.294	0.01
10/22/2020	04:20	4.07	12:05	6.28	5.49	04:25	0.48	18:00	1.05	0.82	04:25	0.109	18:00	0.436	0.295	0.295	-
10/23/2020	03:00	4.03	19:30	6.69	5.50	03:10	0.51	19:30	1.08	0.82	03:10	0.113	19:30	0.493	0.297	0.297	0.20
10/24/2020	05:35	3.86	11:10	6.61	5.49	05:25	0.53	20:40	1.04	0.81	05:35	0.112	11:05	0.453	0.293	0.293	0.02
10/25/2020	04:50	3.94	11:40	6.47	5.46	04:20	0.54	20:10	1.01	0.81	04:25	0.118	12:10	0.433	0.291	0.291	-
10/26/2020	03:10	3.91	19:30	6.51	5.41	04:15	0.54	11:15	1.01	0.81	03:15	0.119	19:30	0.446	0.285	0.285	-
10/27/2020	02:45	4.18	18:50	6.56	5.52	03:30	0.53	16:55	1.02	0.81	03:55	0.126	18:20	0.445	0.293	0.293	-
10/28/2020	03:30	3.96	19:05	6.34	5.42	04:50	0.53	21:45	1.02	0.80	03:35	0.118	19:10	0.408	0.280	0.280	-
10/29/2020	03:25	4.03	13:40	7.39	6.04	03:30	0.53	15:05	1.15	0.89	03:30	0.118	10:45	0.589	0.377	0.377	-
10/30/2020	03:35	4.09	17:10	7.07	5.75	03:25	0.51	17:50	1.10	0.84	03:35	0.116	17:50	0.545	0.325	0.325	0.10
10/31/2020	04:40	3.87	11:15	6.71	5.39	04:50	0.47	10:55	1.02	0.78	04:50	0.100	13:45	0.465	0.276	0.276	-
11/01/2020	05:30	3.93	12:55	6.57	5.40	06:50	0.52	15:30	0.98	0.77	05:35	0.114	15:30	0.420	0.273	0.273	-
11/02/2020	03:35	4.03	19:00	6.31	5.41	04:05	0.52	19:00	0.99	0.79	03:45	0.117	19:00	0.420	0.277	0.277	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/03/2020	05:30	4.19	10:20	8.75	5.92	05:25	0.53	10:20	1.19	0.83	05:25	0.126	10:20	0.792	0.339	0.339	0.83
11/04/2020	04:10	4.11	20:10	6.29	5.46	03:35	0.58	20:05	1.02	0.80	03:35	0.135	20:05	0.428	0.283	0.283	0.09
11/05/2020	05:10	4.13	13:00	6.67	5.68	04:55	0.53	12:55	1.03	0.82	04:55	0.124	12:55	0.467	0.307	0.307	0.34
11/06/2020	05:30	4.31	20:10	6.37	5.56	05:30	0.60	19:55	1.01	0.82	05:30	0.149	20:10	0.430	0.294	0.294	0.10
11/07/2020	05:25	4.19	16:15	6.51	5.49	04:55	0.44	12:45	1.00	0.77	04:55	0.107	12:45	0.432	0.278	0.278	0.07
11/08/2020	06:25	4.11	13:10	6.76	5.57	06:20	0.41	13:05	1.07	0.79	06:20	0.095	13:05	0.497	0.293	0.293	0.01
11/09/2020	04:25	3.96	19:40	6.38	5.41	04:05	0.47	21:05	0.99	0.77	04:05	0.105	21:25	0.422	0.274	0.274	0.04
11/10/2020	04:25	4.11	17:55	6.56	5.46	04:30	0.49	17:55	1.04	0.79	04:30	0.114	17:55	0.463	0.282	0.282	0.03
11/11/2020	05:30	4.00	15:00	6.33	5.41	05:00	0.48	20:00	1.00	0.78	05:15	0.109	20:00	0.409	0.276	0.276	-
11/12/2020	05:05	4.05	20:45	6.64	5.51	05:00	0.46	11:15	1.04	0.80	05:00	0.105	19:55	0.445	0.290	0.290	0.16
11/13/2020	02:05	4.94	06:45	6.85	5.76	02:40	0.66	06:50	1.07	0.83	02:40	0.198	06:50	0.506	0.311	0.311	0.38
11/14/2020	05:55	4.01	18:25	7.82	5.68	08:00	0.52	18:55	1.06	0.76	06:10	0.120	18:30	0.559	0.292	0.292	0.47
11/15/2020	07:05	4.37	13:35	6.60	5.66	07:30	0.43	23:10	1.02	0.76	07:30	0.110	19:45	0.437	0.287	0.287	0.19
11/16/2020	04:25	4.33	13:45	7.46	5.71	05:05	0.51	13:45	1.09	0.78	05:05	0.128	13:45	0.581	0.296	0.296	0.31
11/17/2020	04:55	4.10	19:50	7.31	5.56	04:35	0.48	19:45	1.09	0.76	04:35	0.110	19:45	0.564	0.281	0.281	0.20
11/18/2020	04:30	3.95	18:00	6.90	5.60	05:15	0.45	17:45	1.01	0.76	04:35	0.100	17:45	0.464	0.281	0.281	0.30
11/19/2020	03:05	4.45	13:00	8.23	5.80	07:40	0.52	12:55	1.14	0.80	03:10	0.147	12:55	0.696	0.308	0.308	0.50
11/20/2020	04:35	4.21	12:25	6.22	5.45	04:50	0.45	22:30	0.96	0.73	04:50	0.108	22:30	0.384	0.261	0.261	0.01
11/21/2020	05:55	4.27	13:30	6.80	5.65	05:55	0.45	14:30	0.88	0.70	05:55	0.108	13:35	0.395	0.262	0.262	-
11/22/2020	06:30	4.47	17:55	7.14	5.94	06:25	0.34	19:25	0.86	0.64	06:25	0.090	19:25	0.403	0.261	0.261	0.21
11/23/2020	04:15	4.47	13:25	6.72	5.95	04:00	0.36	12:50	0.91	0.69	04:00	0.094	12:50	0.415	0.275	0.275	0.14
11/24/2020	05:00	4.83	16:15	7.34	5.72	05:15	0.33	16:05	1.10	0.74	05:10	0.097	16:05	0.564	0.281	0.281	0.21
11/25/2020	04:15	4.32	22:10	6.54	5.57	04:50	0.48	22:10	1.09	0.81	04:50	0.120	22:10	0.483	0.294	0.294	0.05
11/26/2020	06:25	4.07	13:05	6.92	5.58	06:50	0.52	14:05	1.10	0.84	06:55	0.119	14:10	0.523	0.309	0.309	0.02
11/27/2020	04:25	3.82	13:55	6.38	5.37	06:05	0.45	16:35	1.01	0.78	04:25	0.095	13:55	0.419	0.271	0.271	-
11/28/2020	06:15	4.00	13:30	6.50	5.46	05:35	0.48	18:35	0.96	0.77	06:05	0.110	13:25	0.404	0.273	0.273	0.05
11/29/2020	06:20	4.04	13:35	6.75	5.50	04:35	0.49	17:55	1.01	0.78	04:35	0.113	13:35	0.435	0.283	0.283	-
11/30/2020	03:40	4.34	04:50	6.69	5.79	03:55	0.54	04:30	1.02	0.80	03:55	0.145	04:50	0.450	0.305	0.305	0.36
12/01/2020	04:25	4.23	19:10	6.37	5.53	04:10	0.48	18:15	0.97	0.76	06:15	0.119	18:15	0.410	0.273	0.273	-
12/02/2020	04:30	4.09	19:30	6.47	5.60	04:25	0.49	19:10	1.02	0.80	04:25	0.115	19:10	0.438	0.295	0.295	0.01
12/03/2020	04:55	4.16	13:20	6.39	5.52	05:40	0.52	18:40	1.04	0.83	05:20	0.125	18:40	0.436	0.297	0.297	-
12/04/2020	04:35	4.04	13:00	6.44	5.54	05:00	0.49	14:15	1.02	0.82	05:00	0.109	14:15	0.441	0.297	0.297	-
12/05/2020	06:20	4.15	15:35	6.67	5.57	06:20	0.54	12:35	1.07	0.82	06:20	0.126	12:35	0.484	0.301	0.301	0.03
12/06/2020	05:45	4.19	17:45	6.72	5.71	05:45	0.53	21:05	1.04	0.85	05:45	0.125	17:45	0.457	0.319	0.319	0.03
12/07/2020	05:10	4.26	18:30	6.52	5.63	04:10	0.50	11:35	1.04	0.83	04:40	0.131	19:40	0.443	0.306	0.306	-
12/08/2020	04:55	4.32	21:35	7.68	6.14	05:15	0.58	21:30	1.20	0.88	05:15	0.150	21:30	0.659	0.370	0.370	0.87
12/09/2020	05:50	4.63	19:10	6.38	5.68	04:55	0.60	16:00	1.00	0.86	04:55	0.171	18:30	0.421	0.315	0.315	0.17
12/10/2020	05:35	4.00	20:45	6.55	5.41	05:35	0.56	20:40	1.04	0.82	05:35	0.124	20:45	0.465	0.286	0.286	0.07
12/11/2020	04:30	3.99	12:45	6.44	5.38	04:50	0.54	12:45	0.99	0.80	05:05	0.120	12:45	0.430	0.278	0.278	0.02
12/12/2020	05:50	3.99	12:35	6.60	5.41	05:00	0.50	13:25	1.04	0.80	05:00	0.112	13:25	0.459	0.282	0.282	0.01
12/13/2020	06:50	3.96	11:50	6.92	5.54	06:25	0.46	11:45	1.03	0.81	06:50	0.106	11:50	0.494	0.294	0.294	0.24
12/14/2020	03:30	4.14	19:30	6.40	5.45	03:30	0.57	20:25	1.02	0.81	03:30	0.133	17:50	0.434	0.286	0.286	0.05
12/15/2020	04:35	3.84	16:10	8.83	5.79	04:30	0.43	16:00	1.34	0.84	04:30	0.090	16:05	0.876	0.330	0.330	0.58
12/16/2020	05:20	4.20	14:50	7.62	5.70	05:15	0.49	14:55	1.10	0.83	05:15	0.116	14:55	0.601	0.316	0.316	0.39
12/17/2020	04:10	4.14	13:00	6.26	5.39	05:10	0.53	19:10	1.01	0.81	05:10	0.123	19:10	0.420	0.279	0.279	0.08
12/18/2020	04:25	4.09	19:25	6.46	5.45	04:25	0.56	19:10	1.01	0.80	04:25	0.128	19:10	0.435	0.281	0.281	0.25
12/19/2020	06:10	3.96	21:25	7.11	5.64	07:20	0.51	21:45	1.09	0.81	06:10	0.112	21:45	0.538	0.309	0.309	0.37
12/20/2020	06:50	3.97	13:25	6.37	5.36	07:20	0.50	13:25	1.01	0.79	07:10	0.114	13:25	0.433	0.275	0.275	0.04
12/21/2020	04:55	4.97	16:40	9.65	6.44	04:50	0.66	16:45	1.37	0.93	04:50	0.203	16:45	1.029	0.427	0.427	1.07
12/22/2020	05:10	4.20	18:55	6.20	5.47	05:20	0.49	19:00	0.97	0.79	05:20	0.116	19:00	0.399	0.282	0.282	-
12/23/2020	05:10	4.22	14:20	6.32	5.41	03:15	0.56	18:30	0.99	0.79	05:45	0.135	18:30	0.414	0.275	0.275	-
12/24/2020	05:50	3.99	14:05	6.49	5.45	05:45	0.56	19:00	1.01	0.81	05:45	0.124	15:55	0.421	0.289	0.289	-
12/25/2020	06:10	3.96	16:50	6.90	5.36	07:15	0.52	16:55	1.13	0.80	07:15	0.114	16:55	0.537	0.279	0.279	0.49
12/26/2020	06:00	4.10	12:55	6.54	5.41	05:35	0.57	12:15	1.04	0.81	05:35	0.132	12:30	0.450	0.284	0.284	0.02
12/27/2020	05:35	4.01	09:35	6.62	5.51	05:35	0.53	15:45	1.07	0.81	05:35	0.118	15:45	0.480	0.293	0.293	0.13
12/28/2020	05:10	4.15	14:35	6.51	5.48	06:40	0.56	22:00	1.01	0.82	05:10	0.144	14:40	0.443	0.290	0.290	-
12/29/2020	04:15	4.14	19:50	7.07	5.46	04:15	0.57	19:55	1.10	0.81	04:20	0.132	19:55	0.541	0.287	0.287	0.14
12/30/2020	01:35	5.00	06:35	6.99	6.06	01:40	0.63	06:30	1.05	0.88	01:40	0.193	06:30	0.510	0.354	0.354	0.78
12/31/2020	06:50	4.45	00:05	6.59	5.64	06:25	0.59	00:05	1.06	0.83	06:25	0.154	00:05	0.475	0.305	0.305	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			60.203	30.65
Average	5.60	0.80	0.297	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A10_710151

Site Address /Location:	1498 Henry Rd		
Site Access Details:	Located within roadway	Latitude:	47.314373°
		Longitude:	-122.209694°

Monitor Series	Location Type
TRITON+	Temporary
Pipe Size (H x W)	Pipe Shape
14.13 x 14.13	Circular
Manhole #	System Characteristics
710-142	Residential
Access	Traffic
Drive	Light









ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519

Installation Information	
Installation Date:	Installation Type:
Wednesday, September 23, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi
Installation Confirmation:	
Time	Pipe Size (HxW)
8:49:00 AM	14.13 x 14.13
Depth of Flow (Wet DOF) (in)	
2.63	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.64	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
1.44	N/A
Silt (in)	Silt Type
0	
Hydraulic Comments:	
Manhole / Pipe Information:	
Manhole Depth (Approx. FT):	Manhole Configuration
9	Common Trench
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
PVC	Good
Communication Information:	
Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole
Additional Site Info. / Comments:	

AUB_A11_710142

Site Commentary

SITE INFORMATION

Pipe	Round (14.13 in H)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	2.41	0.84	0.071
Minimum	1.30	0.37	0.012
Maximum	4.84	1.55	0.330
Min Time	10/23/2020 4:00:00 AM	10/27/2020 4:00:00 AM	10/27/2020 4:00:00 AM
Max Time	01/03/2021 1:00:00 AM	01/03/2021 1:00:00 AM	01/03/2021 1:00:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

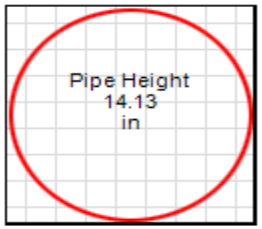
Percent Uptime	
DFINAL (in)	99.217
VFINAL (ft/s)	99.217
QFINAL (MGD - Total MG)	99.217

Hydrograph Report

AUB_A11_710142

Flow Monitor

AUB_A11_710142



Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



4455 S. 134th Place
Tukwila, WA 98168

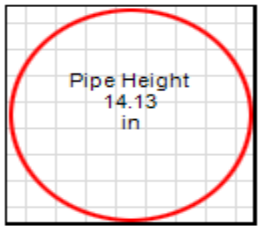
206-762-5070
www.adsenv.com

Scattergraph Report

AUB_A11_710142

Flow Monitor

AUB_A11_710142



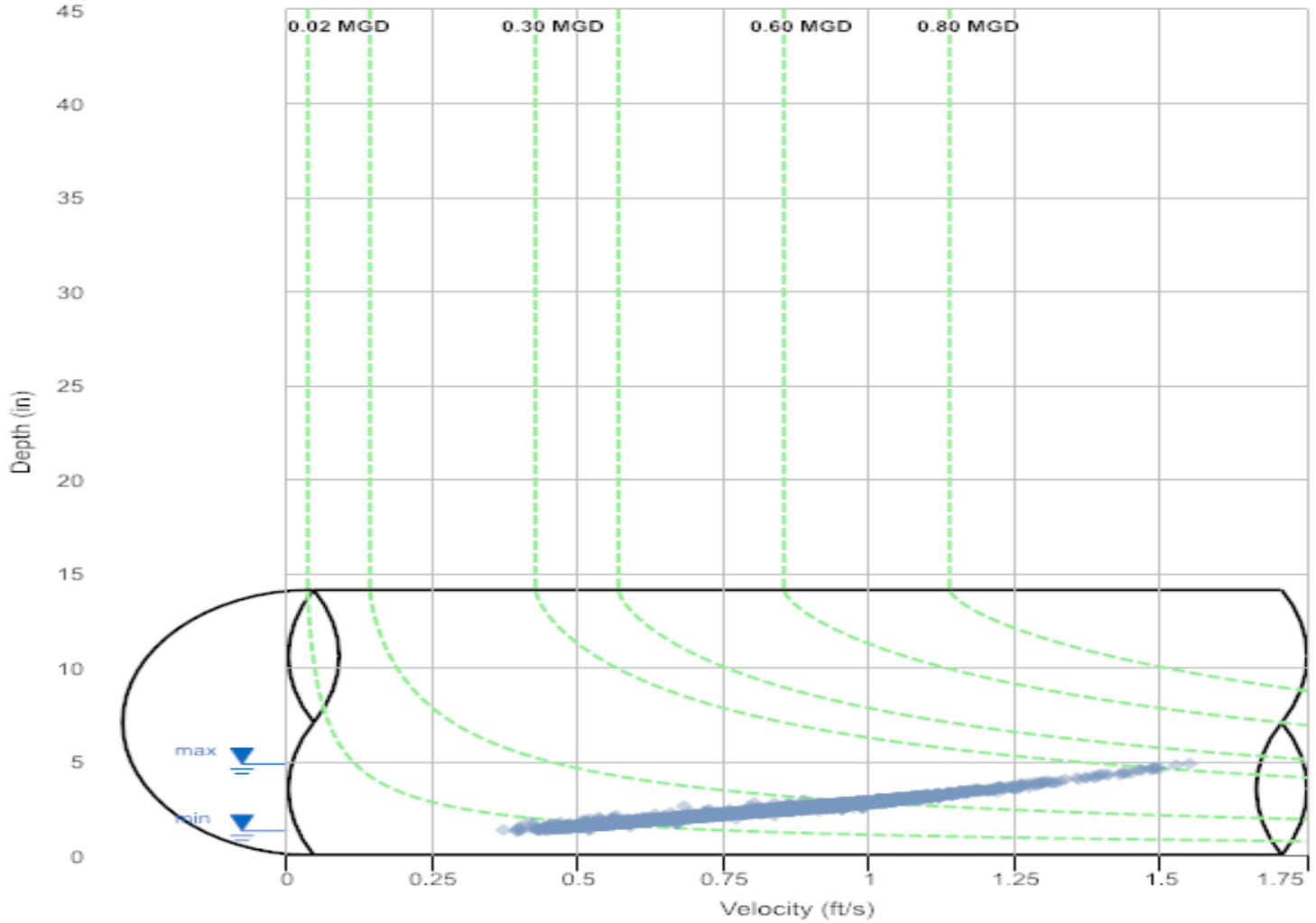
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth

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4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A11_710142Pipe: Round (14.13 in H), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	04:15	2.04	16:15	3.18	2.66	04:15	0.69	16:15	1.14	0.95	04:15	0.043	16:15	0.135	0.090	0.090	0.51
01/02/2021	05:35	2.09	22:05	4.66	3.06	05:35	0.71	22:10	1.52	1.06	05:35	0.046	22:10	0.308	0.130	0.130	1.69
01/03/2021	23:05	3.12	01:05	4.87	3.71	23:05	1.08	01:10	1.56	1.26	23:05	0.125	01:20	0.336	0.190	0.190	0.65
01/04/2021	04:15	2.83	12:35	3.62	3.23	04:15	0.98	12:35	1.26	1.13	04:15	0.099	12:35	0.179	0.137	0.137	0.48
01/05/2021	03:15	2.45	21:40	3.55	2.99	03:10	0.83	21:35	1.23	1.04	03:10	0.068	21:35	0.170	0.114	0.114	0.52
01/06/2021	23:30	2.68	10:35	3.36	3.12	23:30	0.93	10:40	1.17	1.09	23:30	0.087	10:40	0.150	0.126	0.126	0.22
01/07/2021	05:20	2.20	21:00	3.09	2.71	04:10	0.74	20:55	1.10	0.94	05:20	0.052	20:55	0.124	0.090	0.090	-
01/08/2021	03:35	2.07	13:50	2.99	2.62	03:40	0.69	12:55	1.08	0.91	03:40	0.044	18:10	0.116	0.084	0.084	0.22
01/09/2021	05:15	1.93	12:55	3.25	2.51	07:20	0.63	12:45	1.14	0.87	07:20	0.036	12:50	0.139	0.076	0.076	-
01/10/2021	05:20	1.77	13:45	2.99	2.45	03:30	0.53	13:15	1.08	0.85	03:30	0.028	13:45	0.117	0.073	0.073	0.07
01/11/2021	04:20	1.74	22:05	3.72	2.78	04:05	0.57	21:55	1.26	0.96	04:05	0.029	22:00	0.186	0.103	0.103	1.06
01/12/2021	00:25	3.14	19:40	4.69	4.14	00:15	1.06	19:30	1.52	1.37	01:35	0.124	19:30	0.310	0.238	0.238	2.10
01/13/2021	23:55	2.95	01:10	4.36	3.46	23:50	1.02	01:10	1.44	1.19	23:50	0.109	01:10	0.266	0.160	0.160	0.09
01/14/2021	04:10	2.47	20:50	3.27	2.88	04:15	0.84	16:05	1.13	1.00	04:05	0.070	20:50	0.138	0.104	0.104	0.01
01/15/2021	04:40	2.16	12:55	3.09	2.69	04:35	0.71	10:50	1.09	0.93	04:35	0.048	12:50	0.123	0.088	0.088	0.09
01/16/2021	04:15	2.04	12:30	3.26	2.68	05:00	0.68	12:30	1.14	0.93	04:20	0.043	12:30	0.140	0.088	0.088	-
01/17/2021	04:35	1.99	11:45	3.10	2.61	04:35	0.64	14:25	1.10	0.90	04:35	0.039	11:40	0.124	0.083	0.083	0.10
01/18/2021	04:45	1.86	19:55	2.99	2.55	04:40	0.62	19:55	1.07	0.88	04:45	0.034	19:55	0.116	0.078	0.078	-
01/19/2021	04:15	1.63	21:20	3.16	2.50	04:10	0.48	21:30	1.10	0.86	04:10	0.022	21:25	0.129	0.076	0.076	0.01
01/20/2021	05:05	1.75	18:45	3.03	2.54	05:00	0.57	18:45	1.07	0.88	05:05	0.028	18:45	0.118	0.078	0.078	-
01/21/2021	03:35	1.83	18:45	2.97	2.50	03:25	0.60	18:45	1.06	0.87	03:35	0.032	18:50	0.114	0.075	0.075	0.11
01/22/2021	04:00	1.80	12:45	2.89	2.46	06:10	0.59	19:50	1.05	0.85	04:00	0.031	19:55	0.109	0.072	0.072	-
01/23/2021	04:30	1.70	12:25	3.10	2.45	04:30	0.54	12:20	1.10	0.85	04:30	0.026	12:20	0.126	0.072	0.072	-
01/24/2021	02:50	1.75	12:20	3.13	2.52	02:30	0.57	12:10	1.17	0.87	02:45	0.029	12:15	0.135	0.077	0.077	0.16
01/25/2021	04:55	1.70	14:10	2.93	2.47	04:50	0.57	14:10	1.06	0.85	04:55	0.027	14:10	0.111	0.073	0.073	0.04
01/26/2021	05:35	1.71	14:40	2.84	2.43	05:35	0.55	14:45	1.02	0.85	05:30	0.027	14:45	0.103	0.071	0.071	-
01/27/2021	02:50	1.79	13:10	2.91	2.45	02:55	0.57	10:15	1.03	0.85	02:55	0.030	13:05	0.107	0.072	0.072	0.14
01/28/2021	02:30	1.79	20:25	2.97	2.52	02:30	0.59	20:35	1.07	0.88	02:30	0.031	20:35	0.115	0.077	0.077	0.24
01/29/2021	05:20	1.75	11:45	2.90	2.43	05:10	0.57	11:45	1.03	0.84	05:10	0.029	11:50	0.107	0.070	0.070	0.03
01/30/2021	06:55	1.72	13:30	2.91	2.35	06:30	0.57	13:25	1.05	0.82	06:40	0.028	13:25	0.109	0.065	0.065	0.07
01/31/2021	06:20	1.66	12:55	3.19	2.40	07:00	0.54	12:45	1.15	0.84	06:20	0.025	12:55	0.137	0.070	0.070	0.12
02/01/2021	03:50	1.88	21:05	3.42	2.65	04:00	0.61	19:05	1.19	0.93	04:00	0.034	21:05	0.157	0.089	0.089	0.82
02/02/2021	05:45	2.49	09:00	3.30	2.98	03:15	0.82	13:45	1.17	1.04	03:15	0.070	08:55	0.145	0.114	0.114	0.31
02/03/2021	05:05	2.32	19:15	3.23	2.77	05:10	0.79	19:10	1.13	0.96	05:00	0.060	19:15	0.137	0.095	0.095	0.06
02/04/2021	02:45	2.04	14:50	2.99	2.58	02:45	0.67	14:50	1.07	0.90	02:45	0.042	14:50	0.116	0.081	0.081	0.07
02/05/2021	05:20	1.93	12:25	2.85	2.49	05:15	0.65	12:25	1.02	0.87	05:55	0.037	12:25	0.103	0.074	0.074	0.01
02/06/2021	03:35	1.79	15:20	3.04	2.45	07:10	0.59	15:20	1.11	0.86	03:40	0.031	15:20	0.124	0.072	0.072	0.01
02/07/2021	05:30	1.82	12:00	2.98	2.44	05:00	0.60	12:00	1.07	0.85	05:30	0.032	12:00	0.116	0.072	0.072	-
02/08/2021	05:25	1.65	17:30	2.78	2.35	05:30	0.54	17:20	1.00	0.82	05:25	0.025	17:20	0.097	0.065	0.065	-
02/09/2021	03:15	1.60	11:55	2.80	2.31	03:30	0.50	11:55	1.03	0.80	03:30	0.022	11:55	0.101	0.063	0.063	-
02/10/2021	04:40	1.53	12:00	2.76	2.27	04:20	0.50	12:05	1.01	0.79	04:25	0.021	11:55	0.097	0.060	0.060	-
02/11/2021	03:05	1.55	19:45	2.76	2.30	03:00	0.49	19:40	0.99	0.80	03:00	0.021	19:50	0.096	0.062	0.062	-
02/12/2021	03:50	1.50	16:00	2.75	2.27	03:50	0.48	15:55	1.00	0.78	03:50	0.019	16:00	0.096	0.060	0.060	-
02/13/2021	05:55	1.53	21:30	2.81	2.27	03:35	0.49	21:35	1.00	0.77	03:35	0.021	21:35	0.100	0.059	0.059	0.08
02/14/2021	05:30	1.57	13:15	2.83	2.31	04:25	0.51	13:20	1.02	0.80	05:25	0.022	13:15	0.102	0.063	0.063	0.71
02/15/2021	00:30	2.28	15:30	3.87	3.18	00:30	0.77	15:25	1.34	1.10	00:35	0.056	15:25	0.209	0.136	0.136	0.78
02/16/2021	05:05	2.89	14:15	4.24	3.13	03:10	1.01	14:10	1.40	1.09	03:25	0.105	14:15	0.249	0.128	0.128	0.07
02/17/2021	04:15	2.31	20:35	3.13	2.79	04:20	0.75	20:30	1.10	0.97	04:20	0.057	20:30	0.127	0.096	0.096	-
02/18/2021	05:20	2.03	18:35	3.07	2.65	04:50	0.69	18:35	1.08	0.92	05:00	0.043	18:35	0.121	0.086	0.086	0.09
02/19/2021	02:20	2.19	15:10	3.13	2.65	02:20	0.74	10:35	1.09	0.92	02:30	0.051	15:05	0.126	0.085	0.085	0.17
02/20/2021	05:50	1.89	14:15	3.09	2.55	05:15	0.59	14:20	1.10	0.88	05:15	0.035	14:15	0.125	0.078	0.078	0.07
02/21/2021	05:10	1.86	12:20	3.00	2.51	04:45	0.62	23:55	1.07	0.88	04:55	0.034	12:25	0.116	0.077	0.077	0.42
02/22/2021	05:35	2.66	14:15	4.18	3.36	05:35	0.94	14:20	1.40	1.16	05:35	0.086	14:20	0.244	0.152	0.152	0.98
02/23/2021	04:25	2.61	21:50	3.49	3.06	04:20	0.88	21:50	1.19	1.06	04:25	0.078	21:55	0.162	0.120	0.120	0.27
02/24/2021	04:15	2.39	19:10	3.27	2.91	04:10	0.78	19:05	1.16	1.01	04:10	0.062	19:05	0.142	0.106	0.106	-
02/25/2021	02:50	2.28	19:35	3.18	2.85	02:50	0.73	19:25	1.13	0.99	02:50	0.054	19:25	0.133	0.101	0.101	0.18
02/26/2021	02:05	2.35	19:25	3.11	2.75	02:05	0.78	16:25	1.09	0.96	02:05	0.060	16:30	0.124	0.094	0.094	0.10
02/27/2021	06:20	2.08	13:50	3.11	2.66	06:20	0.69	13:45	1.09	0.93	06:20	0.044	13:50	0.125	0.086	0.086	0.02
02/28/2021	04:55	2.00	13:10	3.12	2.62	02:50	0.65	12:30	1.11	0.91	02:50	0.040	13:10	0.127	0.084	0.084	0.02
03/01/2021	04:40	1.85	18:30	2.96	2.54	04:35	0.61	19:45	1.07	0.89	04:40	0.033	12:40	0.113	0.079	0.079	-
03/02/2021	02:35	1.84	20:35	2.91	2.49	02:35	0.60	20:35	1.06	0.87	02:35	0.032	20:45	0.111	0.075	0.075	-
03/03/2021	04:45	1.74	19:30	2.94	2.50	04:55	0.58	19:20	1.09	0.88	04:45	0.029	19:20	0.115	0.076	0.076	-
03/04/2021	05:45	1.82	19:15	3.01	2.46	05:40	0.60	19:10	1.10	0.86	05:40	0.032	19:15	0.121	0.073	0.073	0.20
03/05/2021	03:45	1.74	19:45	2.89	2.45	05:10	0.56	19:45	1.04	0.85	03:45	0.028	19:45	0.107	0.072	0.072	0.05
03/06/2021	06:15	1.66	12:10	3.00	2.40	06:15	0.53	12:05	1.08	0.84	06:10	0.025	12:10	0.118	0.069	0.069	-
03/07/2021	06:00	1.53	11:30	2.82	2.38	06:20	0.49	12:45	1.03	0.83	06:00	0.020	12:35	0.102	0.068	0.068	0.04
03/08/2021	05:55	1.65	12:00	2.85	2.35	05:55	0.53	12:00	1.03	0.82	05:50	0.025	12:05	0.105	0.066	0.066	-
03/09/2021	05:35	1.68	20:35	2.86	2.34	04:05	0.50	20:35	1.04	0.80	05:35	0.024	20:35	0.106	0.064	0.064	0.01
03/10/2021	03:30	1.66	20:35	2.72	2.34	02:50	0.50	19:00	0.98	0.81	03:00	0.023	20:35	0.093	0.063	0.063	-
03/11/2021	04:40	1.50	19:40	2.80	2.30	04:40	0.48	19:30	1.01	0.80	04:40	0.019	19:35	0.100	0.062	0.062	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	05:00	1.61	09:50	2.73	2.28	05:00	0.53	09:45	0.98	0.79	04:50	0.024	09:50	0.094	0.060	0.060	-
03/13/2021	04:25	1.54	15:00	3.00	2.29	04:20	0.50	15:00	1.08	0.79	04:15	0.021	15:00	0.118	0.061	0.061	-
03/14/2021	05:55	1.69	20:15	2.88	2.39	05:25	0.51	20:10	1.03	0.81	05:30	0.024	20:20	0.107	0.067	0.067	0.30
03/15/2021	04:25	1.55	19:30	2.78	2.31	04:15	0.48	19:20	1.01	0.80	04:25	0.020	19:30	0.099	0.063	0.063	-
03/16/2021	03:35	1.56	19:45	3.02	2.29	03:40	0.50	19:50	1.10	0.81	03:40	0.021	19:50	0.122	0.063	0.063	-
03/17/2021	03:15	1.49	11:55	2.76	2.26	03:25	0.49	12:00	1.02	0.79	03:00	0.020	12:00	0.099	0.060	0.060	-
03/18/2021	02:45	1.48	17:00	2.73	2.26	02:30	0.49	17:05	1.00	0.79	02:40	0.019	17:00	0.095	0.060	0.060	0.11
03/19/2021	03:45	1.43	11:45	2.66	2.22	03:45	0.46	11:35	0.96	0.78	03:45	0.017	11:40	0.088	0.057	0.057	0.03
03/20/2021	03:40	1.43	10:20	2.75	2.27	03:05	0.45	10:20	1.00	0.80	03:25	0.017	10:20	0.096	0.061	0.061	0.17
03/21/2021	04:20	1.37	13:10	2.86	2.23	04:15	0.43	13:10	1.03	0.78	04:00	0.015	13:10	0.105	0.060	0.060	0.07
03/22/2021	03:45	1.54	11:10	2.86	2.35	03:40	0.51	11:10	1.04	0.83	03:40	0.021	11:10	0.106	0.066	0.066	0.11
03/23/2021	03:05	1.50	19:10	2.81	2.28	03:05	0.48	19:10	1.01	0.80	03:05	0.019	19:10	0.100	0.061	0.061	-
03/24/2021	02:35	1.48	19:55	2.89	2.28	02:00	0.48	20:00	1.05	0.80	02:25	0.019	20:00	0.109	0.062	0.062	0.34
03/25/2021	03:10	2.00	20:15	2.97	2.56	03:15	0.69	13:35	1.06	0.90	03:15	0.042	20:20	0.114	0.080	0.080	0.27
03/26/2021	03:10	1.70	11:25	2.76	2.36	02:05	0.56	11:20	0.99	0.83	02:05	0.028	11:25	0.096	0.066	0.066	-
03/27/2021	05:15	1.62	13:25	2.83	2.29	05:05	0.52	13:20	1.03	0.80	05:10	0.023	13:25	0.103	0.062	0.062	-
03/28/2021	04:05	1.49	15:40	3.19	2.39	04:45	0.46	15:35	1.15	0.83	03:20	0.019	15:40	0.137	0.070	0.070	0.37
03/29/2021	04:00	1.70	20:00	2.82	2.35	02:00	0.55	20:00	1.00	0.81	02:15	0.027	19:55	0.099	0.065	0.065	-
03/30/2021	03:55	1.60	20:35	2.80	2.30	03:55	0.52	20:30	1.02	0.80	03:55	0.023	20:35	0.101	0.062	0.062	-
03/31/2021	02:55	1.57	19:00	2.82	2.32	04:25	0.53	18:55	0.98	0.79	02:55	0.023	19:00	0.098	0.062	0.062	-
04/01/2021	03:45	1.52	18:55	2.73	2.26	03:35	0.49	19:00	0.98	0.78	03:35	0.020	18:55	0.093	0.059	0.059	-
04/02/2021	04:05	1.42	18:50	2.62	2.21	04:25	0.44	18:50	0.94	0.77	04:05	0.017	18:50	0.084	0.057	0.057	-
04/03/2021	03:20	1.33	11:55	2.93	2.25	03:15	0.39	12:00	1.06	0.78	03:15	0.013	12:00	0.113	0.060	0.060	-
04/04/2021	04:50	1.51	10:25	2.79	2.25	04:55	0.47	13:10	1.00	0.79	04:50	0.019	10:20	0.096	0.060	0.060	-
04/05/2021	03:35	1.48	20:40	2.79	2.23	03:45	0.47	20:35	1.01	0.78	03:35	0.019	20:35	0.099	0.059	0.059	-
04/06/2021	03:35	1.48	19:55	2.83	2.21	03:45	0.45	20:00	1.02	0.77	02:05	0.019	20:00	0.102	0.057	0.057	-
04/07/2021	02:55	1.46	18:10	2.94	2.30	02:20	0.49	18:05	0.92	0.75	02:55	0.019	18:05	0.097	0.058	0.058	0.22
04/08/2021	04:40	1.57	20:55	2.79	2.34	02:45	0.39	15:00	1.02	0.79	02:15	0.021	15:00	0.099	0.063	0.063	-
04/09/2021	03:50	1.45	20:15	2.81	2.32	03:40	0.45	20:20	1.01	0.81	03:50	0.017	20:15	0.100	0.064	0.064	0.03
04/10/2021	03:40	1.63	12:00	2.79	2.36	03:40	0.54	11:55	1.00	0.83	03:45	0.024	12:00	0.098	0.066	0.066	0.02
04/11/2021	03:25	1.63	11:35	2.98	2.37	03:05	0.52	11:25	1.07	0.83	02:50	0.024	11:25	0.115	0.068	0.068	-
04/12/2021	04:00	1.70	20:35	2.82	2.38	03:45	0.56	20:20	1.01	0.84	03:50	0.027	20:35	0.101	0.068	0.068	-
04/13/2021	03:05	1.54	19:35	2.87	2.35	02:35	0.52	19:35	1.05	0.83	02:55	0.022	19:35	0.108	0.067	0.067	-
04/14/2021	04:20	1.64	21:15	2.83	2.33	04:25	0.55	19:25	1.03	0.82	04:20	0.025	19:30	0.103	0.065	0.065	-
09/23/2020	23:05	2.06	17:45	2.99	2.63	23:05	0.71	17:30	1.08	0.94	23:05	0.045	17:35	0.116	0.086	0.054	-
09/24/2020	03:30	1.39	10:55	2.79	2.26	03:25	0.43	10:50	1.02	0.79	03:10	0.016	10:55	0.100	0.061	0.061	-
09/25/2020	04:15	1.44	12:50	2.86	2.30	03:00	0.45	12:45	1.06	0.81	02:45	0.018	12:50	0.108	0.064	0.064	-
09/26/2020	03:00	1.48	10:35	3.01	2.26	02:55	0.48	10:35	1.10	0.80	02:55	0.019	10:35	0.121	0.061	0.061	-
09/27/2020	03:05	1.70	14:15	2.95	2.32	03:05	0.58	14:10	1.10	0.83	03:00	0.028	14:15	0.117	0.066	0.066	-
09/28/2020	03:55	1.38	20:35	2.78	2.23	03:10	0.45	20:35	1.00	0.78	03:50	0.016	20:35	0.098	0.059	0.059	-
09/29/2020	04:05	1.38	21:05	2.89	2.28	04:10	0.47	11:50	1.02	0.80	03:45	0.017	11:50	0.098	0.062	0.062	-
09/30/2020	04:30	1.54	19:30	2.89	2.32	04:25	0.45	19:20	1.08	0.79	04:25	0.019	19:35	0.112	0.063	0.063	-
10/01/2020	03:45	1.34	20:25	2.74	2.24	04:05	0.39	19:20	1.00	0.79	03:50	0.014	20:15	0.095	0.060	0.060	-
10/02/2020	04:05	1.42	19:15	2.72	2.24	03:45	0.44	19:05	0.98	0.79	03:50	0.016	19:15	0.093	0.059	0.059	-
10/03/2020	04:40	1.53	11:35	2.71	2.25	04:25	0.50	11:30	0.98	0.79	04:35	0.021	11:35	0.093	0.060	0.060	0.01
10/04/2020	04:35	1.36	15:30	2.74	2.25	04:20	0.43	15:30	1.02	0.80	04:20	0.015	15:30	0.097	0.062	0.062	0.01
10/05/2020	03:00	1.43	20:10	2.78	2.27	02:35	0.46	20:10	1.04	0.81	02:45	0.018	20:10	0.102	0.062	0.062	-
10/06/2020	03:10	1.37	20:15	2.67	2.25	03:00	0.41	20:05	0.99	0.80	03:00	0.015	20:05	0.091	0.061	0.061	-
10/07/2020	04:45	1.46	19:30	2.72	2.26	04:30	0.47	19:35	1.01	0.81	04:40	0.018	19:35	0.096	0.062	0.062	-
10/08/2020	02:40	1.39	19:50	2.83	2.23	02:45	0.44	19:50	1.08	0.79	02:30	0.016	19:50	0.108	0.060	0.060	-
10/09/2020	04:30	1.44	23:45	3.10	2.26	03:25	0.39	23:40	1.16	0.78	04:25	0.017	23:45	0.132	0.060	0.060	0.64
10/10/2020	04:30	1.93	02:25	3.09	2.49	04:30	0.64	00:00	1.14	0.88	04:30	0.037	02:20	0.130	0.075	0.075	1.04
10/11/2020	05:15	1.43	14:55	3.07	2.30	05:50	0.47	14:55	1.15	0.82	04:35	0.018	14:55	0.130	0.066	0.066	0.53
10/12/2020	04:30	1.38	20:35	2.82	2.22	04:35	0.43	20:35	1.03	0.79	04:35	0.015	20:35	0.103	0.059	0.059	-
10/13/2020	03:25	1.56	08:05	2.92	2.33	01:55	0.52	07:55	1.10	0.83	03:30	0.022	08:00	0.115	0.066	0.066	0.61
10/14/2020	04:25	1.37	08:35	2.80	2.20	04:35	0.41	08:35	1.04	0.78	04:20	0.015	08:35	0.103	0.058	0.058	-
10/15/2020	03:45	1.47	20:55	2.74	2.28	03:45	0.46	20:55	1.00	0.81	03:45	0.018	20:55	0.096	0.062	0.062	-
10/16/2020	04:15	1.34	16:10	2.62	2.19	02:55	0.44	16:10	0.96	0.77	04:05	0.015	16:10	0.086	0.057	0.057	-
10/17/2020	04:40	1.47	13:00	2.74	2.21	04:30	0.46	13:00	1.00	0.78	04:30	0.018	13:00	0.096	0.058	0.058	0.01
10/18/2020	04:55	1.33	12:25	2.79	2.20	04:35	0.42	12:25	1.02	0.78	04:35	0.014	12:25	0.100	0.059	0.059	0.03
10/19/2020	04:15	1.46	12:15	2.75	2.23	04:20	0.41	11:25	1.00	0.78	04:20	0.016	11:25	0.095	0.058	0.058	0.05
10/20/2020	04:15	1.32	20:00	2.78	2.17	03:10	0.43	20:00	1.03	0.76	04:20	0.014	20:00	0.100	0.056	0.056	-
10/21/2020	04:25	1.34	19:15	2.71	2.17	04:15	0.40	20:50	0.95	0.75	04:10	0.014	19:15	0.088	0.055	0.055	0.01
10/22/2020	02:35	1.45	11:45	2.67	2.18	02:10	0.38	18:20	0.98	0.74	02:10	0.015	18:25	0.090	0.055	0.055	-
10/23/2020	04:00	1.28	20:05	2.68	2.16	02:50	0.38	20:10	0.97	0.76	03:55	0.012	20:10	0.090	0.056	0.056	0.20
10/24/2020	04:30	1.61	10:40	2.75	2.18	04:15	0.53	09:15	1.00	0.77	04:10	0.024	10:45	0.096	0.055	0.055	0.02
10/25/2020	06:15	1.37	14:20	2.73	2.16	06:00	0.43	14:25	0.99	0.76	06:15	0.015	14:20	0.094	0.056	0.056	-
10/26/2020	04:00	1.58	20:30	2.65	2.22	04:15	0.52	20:25	0.98	0.79	04:15	0.022	20:25	0.089	0.059	0.059	-
10/27/2020	04:35	1.30	19:25	2.74	2.15	04:20	0.35	19:25	1.04	0.76	04:10	0.012	19:25	0.100	0.055	0.055	-
10/28/2020	04:20	1.34	18:40	2.67	2.17	04:35	0.35	16:40	0.97	0.76	03:40	0.014	18:40	0.090	0.056	0.056	-
10/29/2020	02:20	1.46	19:50	2.81	2.19	02:40	0.43	19:50	1.05	0.77	02:40	0.017	19:50	0.104	0.057	0.057	-
10/30/2020	04:45	1.45	10:30	2.62	2.22	05:15	0.41	10:30	0.95	0.78	05:15	0.016	10:30	0.085	0.058	0.058	0.10
10/31/2020	03:00	1.44	13:40	2.95	2.26	03:05	0.45	13:35	1.05	0.78	02:55	0.017	13:40	0.112	0.060	0.060	-
11/01/2020	03:45	1.46	10:20	2.87	2.26	03:30	0.44	10:20	1.04	0.78	03:30	0.017	10:20	0.106	0.061	0.061	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/02/2020	05:15	1.38	16:40	2.63	2.19	04:15	0.40	16:50	0.95	0.76	04:40	0.015	16:40	0.085	0.056	0.056	-
11/03/2020	04:15	1.35	10:50	3.05	2.30	03:55	0.41	10:45	1.13	0.80	03:40	0.014	10:45	0.126	0.065	0.065	0.83
11/04/2020	04:15	1.36	18:50	2.71	2.20	04:00	0.42	18:45	0.99	0.77	04:00	0.015	18:50	0.093	0.057	0.057	0.09
11/05/2020	04:55	1.42	20:55	2.82	2.28	04:45	0.44	20:55	1.04	0.80	04:40	0.017	20:55	0.104	0.063	0.063	0.34
11/06/2020	06:05	1.67	11:00	2.69	2.25	06:10	0.53	10:55	1.00	0.78	06:00	0.025	10:55	0.092	0.058	0.058	0.10
11/07/2020	04:00	1.39	15:40	2.78	2.22	03:20	0.44	15:45	1.03	0.78	04:00	0.016	15:45	0.101	0.058	0.058	0.07
11/08/2020	05:50	1.31	12:50	2.75	2.23	05:40	0.36	21:25	1.01	0.78	05:40	0.012	21:25	0.097	0.060	0.060	0.01
11/09/2020	05:35	1.38	20:05	2.74	2.19	05:25	0.41	20:00	1.01	0.76	05:25	0.015	20:00	0.096	0.056	0.056	0.04
11/10/2020	02:50	1.41	21:15	2.67	2.18	02:40	0.43	17:00	0.98	0.77	02:40	0.016	21:15	0.091	0.056	0.056	0.03
11/11/2020	04:05	1.30	16:05	2.60	2.15	03:50	0.38	14:10	1.03	0.79	04:00	0.012	16:05	0.091	0.057	0.057	-
11/12/2020	04:50	1.30	19:40	2.77	2.14	05:10	0.45	19:40	1.01	0.78	05:10	0.015	19:40	0.098	0.056	0.056	0.16
11/13/2020	02:15	1.65	13:25	2.79	2.28	02:10	0.54	13:20	1.10	0.80	02:10	0.025	13:20	0.108	0.060	0.060	0.38
11/14/2020	04:40	1.45	18:55	3.02	2.24	04:40	0.48	18:50	1.13	0.79	04:40	0.018	18:55	0.124	0.060	0.060	0.47
11/15/2020	04:55	1.38	13:15	2.92	2.22	05:05	0.42	13:20	1.08	0.78	04:55	0.015	13:15	0.113	0.059	0.059	0.19
11/16/2020	02:50	1.53	13:55	2.95	2.25	02:50	0.49	13:50	1.10	0.79	02:50	0.020	13:55	0.117	0.061	0.061	0.31
11/17/2020	05:30	1.37	19:25	2.78	2.22	05:35	0.41	19:25	1.01	0.77	05:25	0.015	19:25	0.099	0.058	0.058	0.20
11/18/2020	04:15	1.35	20:10	2.86	2.25	04:30	0.42	18:15	1.05	0.79	03:55	0.015	18:20	0.107	0.061	0.061	0.30
11/19/2020	02:50	1.62	13:25	2.96	2.32	02:50	0.53	13:20	1.09	0.82	02:50	0.024	13:25	0.117	0.064	0.064	0.50
11/20/2020	05:50	1.60	13:20	2.69	2.28	05:05	0.52	13:15	0.98	0.79	05:20	0.023	13:15	0.091	0.060	0.060	0.01
11/21/2020	04:35	1.54	15:05	2.88	2.25	06:20	0.49	14:50	1.06	0.79	06:20	0.021	15:00	0.109	0.060	0.060	-
11/22/2020	06:05	1.35	12:15	2.81	2.26	01:15	0.37	12:10	1.02	0.78	05:55	0.014	12:25	0.102	0.061	0.061	0.21
11/23/2020	05:05	1.52	17:50	2.74	2.30	05:00	0.46	17:50	0.97	0.78	03:40	0.019	17:50	0.093	0.061	0.061	0.14
11/24/2020	05:20	1.49	16:40	2.82	2.25	03:25	0.43	16:30	1.01	0.76	03:25	0.018	16:35	0.101	0.059	0.059	0.21
11/25/2020	05:25	1.48	18:20	2.82	2.28	04:55	0.44	18:20	1.03	0.78	05:25	0.018	18:20	0.103	0.061	0.061	0.05
11/26/2020	06:25	1.60	12:15	2.88	2.24	06:15	0.52	12:20	1.06	0.78	06:20	0.023	12:20	0.109	0.059	0.059	0.02
11/27/2020	05:30	1.41	13:55	2.76	2.22	05:10	0.45	13:50	1.01	0.77	05:05	0.017	13:50	0.097	0.059	0.059	-
11/28/2020	04:50	1.61	12:50	2.87	2.25	04:40	0.51	12:45	1.06	0.78	04:50	0.022	12:50	0.109	0.060	0.060	0.05
11/29/2020	06:00	1.39	13:30	2.79	2.22	06:20	0.44	13:25	1.02	0.78	06:00	0.016	13:30	0.101	0.059	0.059	-
11/30/2020	03:45	1.48	22:05	2.70	2.29	03:35	0.48	19:15	0.99	0.81	03:35	0.019	19:20	0.093	0.062	0.062	0.36
12/01/2020	04:10	1.48	18:00	2.73	2.20	04:00	0.44	18:00	1.02	0.76	04:05	0.017	18:00	0.097	0.056	0.056	-
12/02/2020	04:00	1.31	21:10	2.75	2.19	04:05	0.38	21:15	1.01	0.77	04:00	0.013	21:15	0.097	0.056	0.056	0.01
12/03/2020	04:10	1.41	14:15	2.72	2.17	04:15	0.46	14:15	1.02	0.76	04:10	0.017	14:15	0.097	0.054	0.054	-
12/04/2020	03:20	1.49	19:40	2.62	2.16	03:30	0.45	18:15	0.96	0.76	03:25	0.018	21:25	0.087	0.054	0.054	-
12/05/2020	05:15	1.42	12:45	2.71	2.19	05:20	0.42	12:30	0.99	0.76	05:15	0.016	12:30	0.093	0.056	0.056	0.03
12/06/2020	05:20	1.49	13:20	2.86	2.23	03:30	0.48	13:25	1.06	0.78	03:35	0.019	13:25	0.108	0.059	0.059	0.03
12/07/2020	03:55	1.35	17:45	2.76	2.19	04:00	0.36	17:50	1.00	0.76	04:00	0.012	17:50	0.096	0.055	0.055	-
12/08/2020	04:30	1.42	15:35	2.95	2.35	04:40	0.41	19:00	1.09	0.82	04:35	0.015	15:35	0.114	0.067	0.067	0.87
12/09/2020	04:50	1.67	11:25	2.74	2.34	03:30	0.54	15:40	0.96	0.79	03:30	0.025	11:25	0.091	0.062	0.062	0.17
12/10/2020	02:25	1.40	11:10	2.86	2.21	02:35	0.43	11:15	0.98	0.75	02:15	0.016	11:10	0.099	0.055	0.055	0.07
12/11/2020	01:05	1.38	14:10	2.73	2.21	02:15	0.42	14:10	0.98	0.76	02:15	0.015	14:10	0.093	0.056	0.056	0.02
12/12/2020	03:20	1.43	17:50	2.67	2.18	03:20	0.46	17:55	0.98	0.76	03:20	0.017	17:50	0.090	0.055	0.055	0.01
12/13/2020	23:30	1.52	09:25	2.90	2.29	23:50	0.44	09:15	1.06	0.81	23:45	0.020	09:25	0.110	0.063	0.063	0.24
12/14/2020	02:25	1.57	13:00	2.72	2.28	00:45	0.42	13:00	1.00	0.80	00:25	0.019	13:00	0.095	0.061	0.051	0.05
12/15/2020	04:55	1.45	16:50	3.07	2.37	05:05	0.38	16:45	1.13	0.82	05:05	0.016	16:55	0.128	0.069	0.069	0.58
12/16/2020	04:55	1.80	18:10	2.89	2.43	05:00	0.53	15:25	1.05	0.84	04:55	0.028	15:30	0.108	0.071	0.071	0.39
12/17/2020	04:15	1.73	13:35	2.82	2.35	04:00	0.58	13:35	1.04	0.83	04:00	0.029	13:35	0.104	0.066	0.066	0.08
12/18/2020	03:15	1.73	15:40	2.85	2.33	04:45	0.51	15:40	1.09	0.80	03:40	0.026	15:40	0.111	0.064	0.064	0.25
12/19/2020	07:10	1.64	21:00	2.97	2.39	07:10	0.49	20:55	1.06	0.81	07:15	0.022	21:05	0.114	0.067	0.067	0.37
12/20/2020	05:40	2.01	12:05	2.89	2.48	05:30	0.61	11:50	1.01	0.83	05:40	0.038	12:00	0.104	0.071	0.071	0.04
12/21/2020	02:35	1.92	19:05	3.76	2.76	02:35	0.64	19:05	1.32	0.98	02:35	0.037	19:05	0.199	0.100	0.100	1.07
12/22/2020	05:05	2.36	00:00	3.12	2.73	05:10	0.80	00:00	1.13	0.97	05:10	0.062	00:00	0.130	0.093	0.093	-
12/23/2020	04:00	1.91	13:05	2.89	2.47	03:55	0.63	13:05	1.06	0.86	03:55	0.036	13:05	0.110	0.073	0.073	-
12/24/2020	05:15	1.64	12:50	2.85	2.34	05:15	0.55	12:50	1.04	0.82	05:15	0.025	12:50	0.105	0.065	0.065	-
12/25/2020	04:30	1.61	19:05	2.79	2.28	04:40	0.53	19:00	1.03	0.80	04:25	0.024	19:05	0.102	0.061	0.061	0.49
12/26/2020	06:45	1.68	13:35	2.75	2.29	04:55	0.50	13:00	1.00	0.81	04:55	0.024	13:35	0.096	0.062	0.062	0.02
12/27/2020	05:45	1.44	12:55	2.88	2.32	05:45	0.47	13:00	1.09	0.82	05:40	0.018	12:55	0.112	0.065	0.065	0.13
12/28/2020	05:25	1.64	13:30	2.79	2.29	05:25	0.53	13:25	1.01	0.81	05:25	0.024	13:25	0.099	0.062	0.062	-
12/29/2020	05:45	1.53	20:10	2.85	2.34	05:25	0.50	18:40	1.03	0.82	05:45	0.020	18:40	0.104	0.066	0.066	0.14
12/30/2020	04:35	1.99	14:10	3.14	2.69	04:35	0.68	14:00	1.16	0.96	04:35	0.041	14:00	0.133	0.092	0.092	0.78
12/31/2020	04:20	2.36	14:10	3.16	2.73	04:10	0.81	12:10	1.11	0.96	04:10	0.063	14:10	0.130	0.093	0.093	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			14.520	30.65
Average	2.41	0.84	0.071	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A11_710142

Site Address /Location:	1498 Henry Rd			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	Located within roadway	Latitude:	47.314373°	Pipe Size (H x W): 14.13 x 14.13	Pipe Shape: Circular
		Longitude:	-122.209694°		



Manhole #	System Characteristics
710-142	Residential
Access	Traffic
Drive	Light







ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519

Installation Information

Installation Date:	Installation Type:
Wednesday, September 23, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Time	Pipe Size (HxW)
8:49:00 AM	14.13 x 14.13
Depth of Flow (Wet DOF) (in)	
2.63	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.64	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
1.44	N/A
Silt (in)	Silt Type
0	

Hydraulic Comments:

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
9	Common Trench
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
PVC	Good

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

AUB_A12_71043

Site Commentary

SITE INFORMATION

Pipe	Elliptical (11.5 in H x 12 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	0.78	1.07	0.018
Minimum	0.10	0.21	0.000
Maximum	1.90	2.60	0.088
Min Time	09/27/2020 2:00:00 AM	11/18/2020 4:00:00 AM	10/14/2020 3:00:00 AM
Max Time	11/14/2020 6:00:00 PM	11/30/2020 11:00:00 AM	02/07/2021 10:00:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

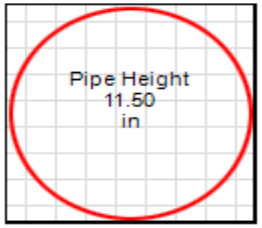
Percent Uptime	
DFINAL (in)	99.319
VFINAL (ft/s)	99.319
QFINAL (MGD - Total MG)	99.319

Hydrograph Report

AUB_A12_71043

Flow Monitor

AUB_A12_71043



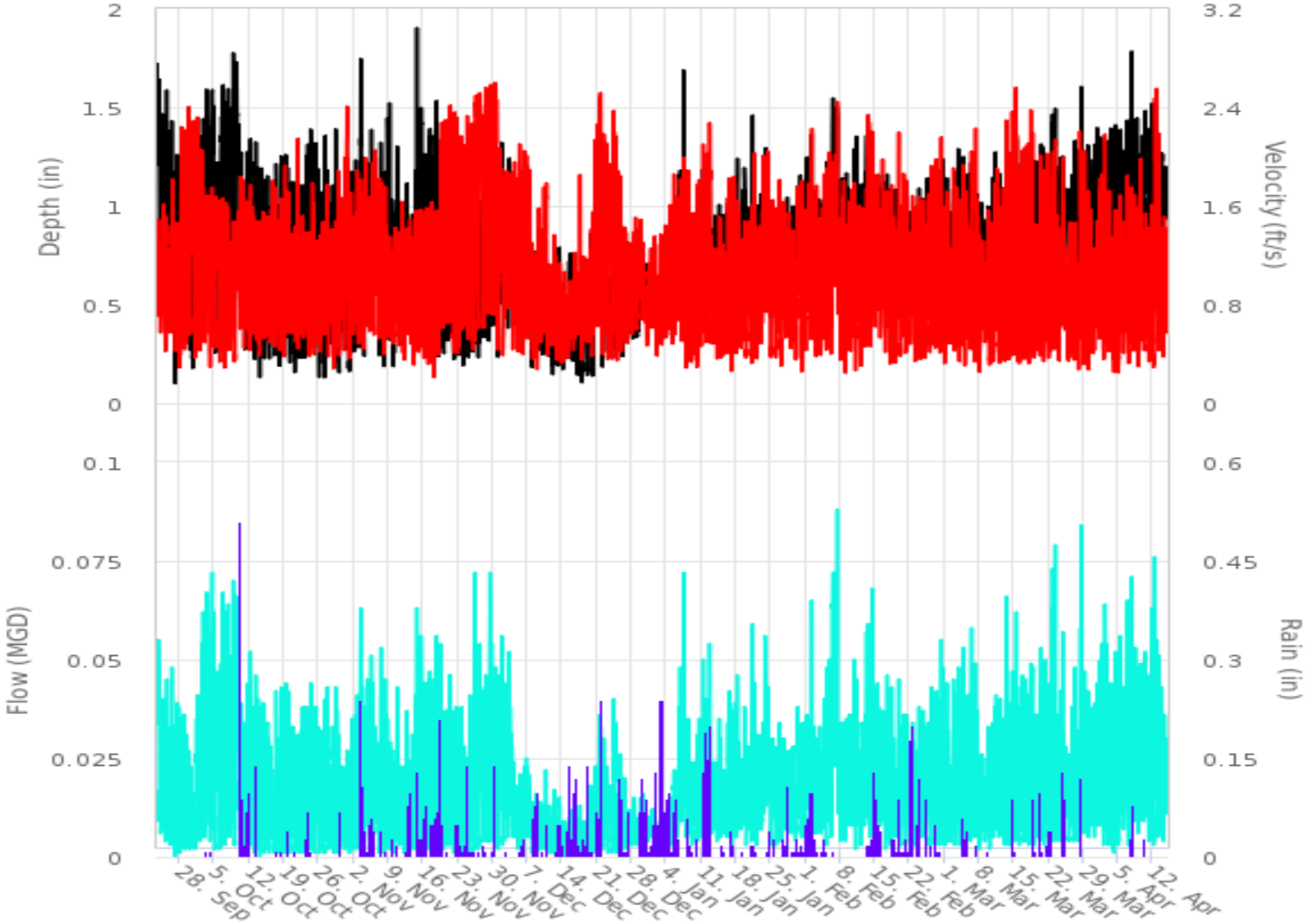
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



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Tukwila, WA 98168

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Scattergraph Report

AUB_A12_71043

Flow Monitor

AUB_A12_71043

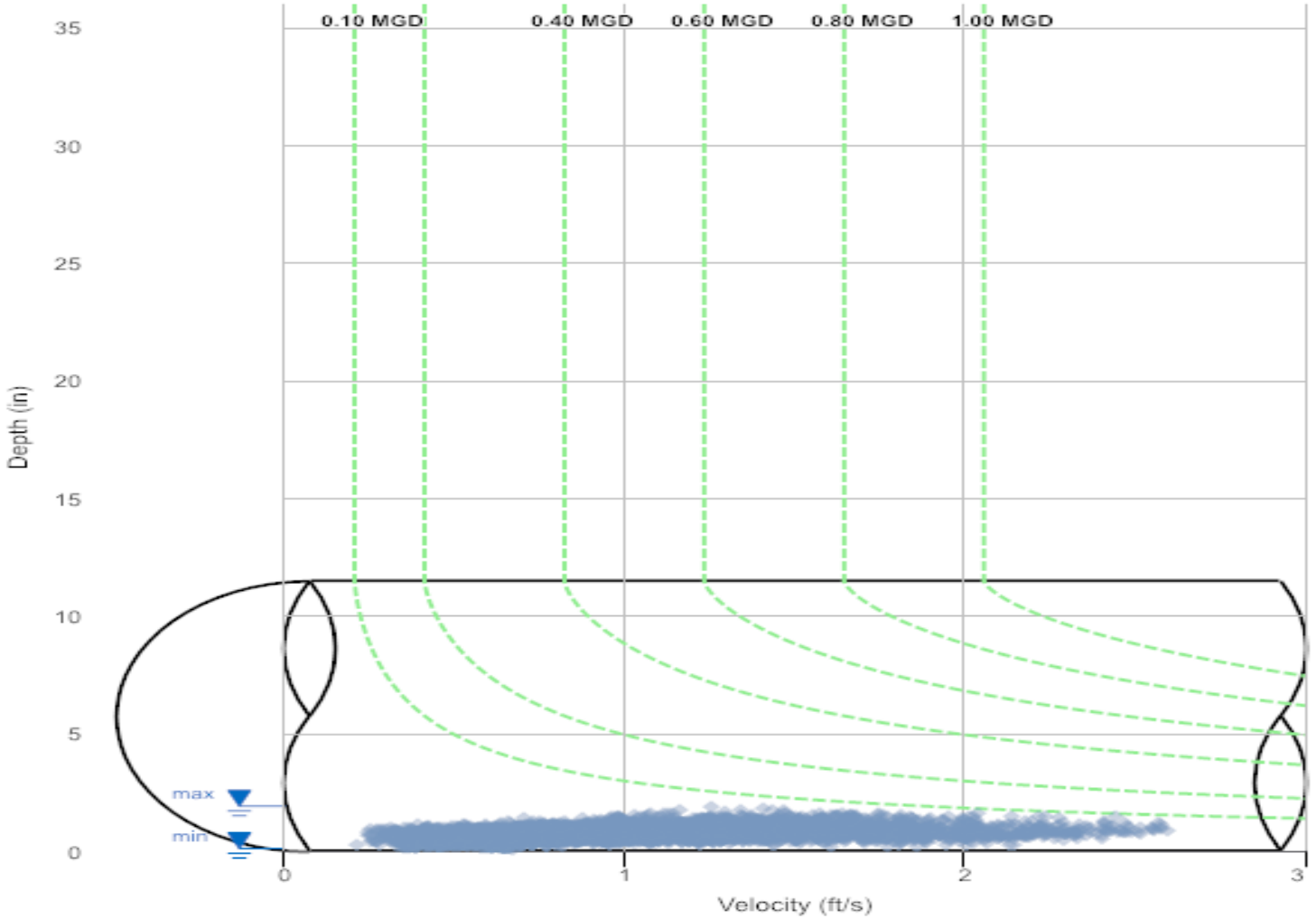
Pipe Height
11.50
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A12_71043Pipe: Elliptical (11.5 in H x 12 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	22:20	0.33	09:45	0.72	0.53	08:30	0.25	15:45	2.83	0.95	22:55	0.002	15:55	0.033	0.008	0.008	0.51
01/02/2021	07:00	0.30	23:25	0.81	0.46	01:00	0.33	21:20	2.31	0.78	07:00	0.001	15:55	0.022	0.005	0.005	1.69
01/03/2021	14:05	0.32	17:10	0.93	0.48	04:50	0.23	09:10	2.31	0.81	06:05	0.001	16:05	0.019	0.006	0.006	0.65
01/04/2021	00:30	0.43	16:10	0.99	0.59	07:05	0.26	18:35	2.35	0.85	00:15	0.002	21:40	0.029	0.008	0.008	0.48
01/05/2021	03:10	0.38	16:10	1.07	0.64	01:30	0.34	12:10	2.49	1.03	00:00	0.003	09:35	0.048	0.012	0.012	0.52
01/06/2021	23:35	0.40	17:05	1.28	0.81	11:35	0.36	21:15	2.57	1.15	04:05	0.004	16:20	0.058	0.019	0.019	0.22
01/07/2021	00:25	0.46	10:05	2.94	0.95	03:50	0.37	16:25	3.67	1.17	00:05	0.005	13:35	0.122	0.024	0.024	-
01/08/2021	04:15	0.39	01:55	1.15	0.78	02:00	0.22	16:55	2.62	0.92	04:15	0.003	16:55	0.046	0.013	0.013	0.22
01/09/2021	04:45	0.39	08:00	1.07	0.73	04:30	0.19	09:15	2.30	0.92	03:40	0.001	09:20	0.045	0.013	0.013	-
01/10/2021	02:05	0.40	22:50	1.21	0.80	04:10	0.20	13:55	2.71	1.09	04:10	0.001	13:55	0.057	0.018	0.018	0.07
01/11/2021	04:50	0.41	09:50	1.46	0.92	01:20	0.23	11:05	2.92	1.21	01:20	0.003	10:00	0.079	0.024	0.024	1.06
01/12/2021	14:40	0.65	16:25	1.39	0.95	14:00	0.33	17:40	2.59	1.42	00:55	0.004	16:25	0.065	0.028	0.028	2.10
01/13/2021	03:30	0.58	19:25	1.16	0.78	14:50	0.12	17:50	2.34	0.89	14:50	0.002	18:30	0.044	0.013	0.013	0.09
01/14/2021	02:00	0.59	15:20	1.30	0.79	04:15	0.12	16:10	3.06	0.94	04:15	0.001	15:25	0.064	0.015	0.015	0.01
01/15/2021	03:05	0.59	09:40	1.34	0.82	02:20	0.20	10:30	2.19	0.83	03:00	0.002	08:50	0.064	0.013	0.013	0.09
01/16/2021	04:20	0.42	17:25	1.32	0.85	04:20	0.21	09:45	2.53	1.09	04:20	0.001	17:25	0.059	0.020	0.020	-
01/17/2021	05:20	0.48	08:20	1.37	0.82	01:15	0.24	19:15	2.66	1.04	04:35	0.002	08:20	0.069	0.018	0.018	0.10
01/18/2021	05:55	0.51	07:15	1.36	0.81	01:40	0.24	07:55	2.34	1.05	01:40	0.003	07:20	0.065	0.018	0.018	-
01/19/2021	06:40	0.58	16:25	1.37	0.88	05:50	0.26	18:10	2.30	0.94	05:50	0.003	17:15	0.065	0.017	0.017	0.01
01/20/2021	02:10	0.38	07:00	1.22	0.80	03:50	0.23	16:00	2.48	0.97	03:45	0.001	07:05	0.055	0.016	0.016	-
01/21/2021	03:35	0.40	09:00	1.73	0.87	04:20	0.20	18:25	2.47	0.96	03:10	0.002	09:00	0.095	0.018	0.018	0.11
01/22/2021	05:05	0.40	07:25	1.31	0.82	03:55	0.26	12:20	2.54	0.97	03:05	0.002	12:20	0.073	0.016	0.016	-
01/23/2021	03:25	0.40	20:05	1.54	0.84	04:50	0.22	20:00	2.61	1.18	04:50	0.003	20:05	0.095	0.021	0.021	-
01/24/2021	03:20	0.47	00:05	1.39	0.88	06:00	0.27	09:50	2.90	1.25	03:15	0.004	00:05	0.072	0.023	0.023	0.16
01/25/2021	03:45	0.38	09:40	1.14	0.77	04:55	0.12	17:25	2.77	1.03	04:55	0.001	17:25	0.046	0.016	0.016	0.04
01/26/2021	03:05	0.42	06:00	1.39	0.76	00:55	0.34	11:55	2.49	0.96	02:25	0.002	06:00	0.051	0.015	0.015	-
01/27/2021	04:45	0.59	17:30	1.19	0.83	02:55	0.25	11:20	2.29	1.02	01:55	0.003	22:20	0.046	0.017	0.017	0.14
01/28/2021	03:45	0.65	08:30	1.17	0.84	02:35	0.34	11:55	2.61	1.07	02:35	0.004	11:55	0.052	0.018	0.018	0.24
01/29/2021	04:50	0.57	10:15	1.27	0.80	05:15	0.23	09:45	2.50	1.00	05:15	0.002	10:15	0.062	0.016	0.016	0.03
01/30/2021	02:05	0.62	10:35	1.21	0.85	02:25	0.19	12:00	2.64	1.06	02:05	0.002	12:00	0.070	0.018	0.018	0.07
01/31/2021	04:30	0.59	00:30	1.30	0.90	02:50	0.24	14:50	2.50	1.04	07:30	0.003	13:15	0.050	0.019	0.019	0.12
02/01/2021	03:35	0.72	07:30	1.37	0.92	01:15	0.38	13:45	3.09	1.08	01:05	0.005	13:45	0.066	0.021	0.021	0.82
02/02/2021	16:20	0.70	06:50	1.53	0.95	03:25	0.24	08:05	2.57	1.20	03:25	0.004	11:00	0.074	0.025	0.025	0.31
02/03/2021	02:30	0.69	08:55	1.48	0.88	04:10	0.28	17:25	2.29	0.97	02:30	0.004	08:55	0.077	0.017	0.017	0.06
02/04/2021	04:15	0.60	17:50	1.32	0.86	02:50	0.10	12:40	2.61	0.94	02:50	0.001	17:50	0.061	0.017	0.017	0.07
02/05/2021	04:00	0.41	18:15	1.38	0.95	04:45	0.22	20:00	2.31	1.19	03:35	0.001	08:30	0.065	0.027	0.027	0.01
02/06/2021	00:30	0.66	09:40	1.88	1.19	07:15	0.33	22:55	2.31	1.42	00:30	0.005	13:20	0.091	0.042	0.042	0.01
02/07/2021	19:35	0.63	11:10	1.78	1.05	19:40	0.25	13:20	2.54	1.27	19:40	0.003	11:10	0.111	0.031	0.031	-
02/08/2021	02:25	0.63	11:15	1.44	0.90	02:55	0.29	13:45	2.69	1.00	02:15	0.003	11:15	0.072	0.019	0.019	-
02/09/2021	23:35	0.59	06:50	1.37	0.93	03:30	0.20	09:35	2.29	0.93	03:20	0.003	12:30	0.060	0.018	0.018	-
02/10/2021	05:10	0.54	20:45	1.50	0.92	02:15	0.22	10:10	2.98	1.04	03:05	0.003	20:45	0.083	0.020	0.020	-
02/11/2021	02:40	0.39	07:00	1.53	0.83	03:00	0.24	08:40	2.38	0.92	02:25	0.001	07:00	0.078	0.017	0.017	-
02/12/2021	04:30	0.49	08:25	1.37	0.85	04:55	0.27	10:10	2.34	0.91	03:20	0.002	12:05	0.063	0.017	0.017	-
02/13/2021	21:35	0.71	11:30	1.61	1.09	03:30	0.22	19:30	2.67	1.59	03:15	0.003	08:45	0.084	0.038	0.038	0.08
02/14/2021	04:00	0.43	10:25	1.62	0.93	06:10	0.41	10:05	2.47	1.28	02:35	0.003	10:25	0.098	0.027	0.027	0.71
02/15/2021	00:00	0.65	19:00	1.38	0.98	23:20	0.46	11:00	3.09	1.21	00:00	0.006	11:00	0.078	0.025	0.025	0.78
02/16/2021	03:20	0.54	20:20	1.50	0.83	02:50	0.24	13:25	2.36	1.10	04:00	0.003	20:20	0.077	0.018	0.018	0.07
02/17/2021	02:10	0.38	11:10	1.56	0.81	04:25	0.10	18:25	2.43	0.93	04:25	0.001	11:10	0.088	0.016	0.016	-
02/18/2021	02:30	0.42	09:30	1.25	0.79	02:15	0.20	10:25	2.55	1.00	02:15	0.001	09:25	0.068	0.017	0.017	0.09
02/19/2021	05:55	0.53	07:30	1.23	0.83	02:40	0.28	11:00	2.97	1.00	05:50	0.003	18:50	0.063	0.017	0.017	0.17
02/20/2021	03:40	0.44	15:45	1.41	0.76	06:10	0.30	10:30	2.57	1.03	02:35	0.002	15:45	0.073	0.016	0.016	0.07
02/21/2021	03:20	0.38	08:35	1.14	0.77	06:25	0.22	09:40	2.42	0.99	02:40	0.001	09:40	0.056	0.015	0.015	0.42
02/22/2021	05:40	0.67	06:15	1.30	0.85	02:55	0.41	12:55	2.70	0.98	01:30	0.005	16:55	0.064	0.017	0.017	0.98
02/23/2021	03:35	0.43	21:35	1.30	0.79	05:30	0.21	20:20	2.66	0.92	01:25	0.002	21:45	0.061	0.015	0.015	0.27
02/24/2021	02:25	0.41	18:15	1.45	0.83	03:50	0.24	20:05	2.55	0.91	02:10	0.003	18:15	0.082	0.015	0.015	-
02/25/2021	23:35	0.67	12:00	1.49	0.87	02:40	0.32	18:30	3.33	0.94	03:50	0.004	12:00	0.089	0.017	0.017	0.18
02/26/2021	04:55	0.39	09:35	1.10	0.79	10:35	0.25	09:30	2.55	1.00	03:05	0.002	09:30	0.060	0.017	0.017	0.10
02/27/2021	04:05	0.38	10:10	1.11	0.81	03:15	0.19	12:10	2.33	1.07	03:15	0.001	10:10	0.053	0.019	0.019	0.02
02/28/2021	04:25	0.39	14:55	1.52	0.82	03:55	0.15	09:40	3.21	0.97	03:55	0.001	09:40	0.095	0.018	0.018	0.02
03/01/2021	02:45	0.41	10:45	1.35	0.80	03:00	0.21	18:30	2.44	0.93	03:00	0.001	11:10	0.072	0.016	0.016	-
03/02/2021	03:40	0.40	19:00	1.31	0.83	04:30	0.27	08:50	2.23	0.94	01:30	0.002	19:00	0.065	0.016	0.016	-
03/03/2021	02:55	0.39	18:15	1.53	0.90	03:25	0.13	10:00	2.46	0.93	03:15	0.001	18:15	0.079	0.019	0.019	-
03/04/2021	01:20	0.40	20:05	1.54	0.89	06:00	0.11	09:05	2.48	0.99	01:20	0.001	19:45	0.088	0.021	0.021	0.20
03/05/2021	03:50	0.38	19:40	1.51	0.79	02:35	0.26	08:10	2.80	0.93	01:00	0.002	19:40	0.082	0.016	0.016	0.05
03/06/2021	02:40	0.53	10:25	1.39	0.90	02:55	0.24	10:40	2.76	1.03	02:55	0.002	10:40	0.084	0.021	0.021	-
03/07/2021	17:00	0.54	08:55	1.39	0.92	05:20	0.22	10:00	2.58	1.11	00:00	0.003	10:00	0.071	0.022	0.022	0.04
03/08/2021	03:25	0.39	10:05	1.11	0.77	03:05	0.22	21:45	2.54	0.82	03:05	0.001	10:05	0.052	0.012	0.012	-
03/09/2021	03:15	0.40	12:30	1.19	0.80	03:20	0.20	11:50	3.40	0.88	03:05	0.001	11:50	0.061	0.014	0.014	0.01
03/10/2021	03:25	0.40	20:30	1.34	0.76	03:25	0.22	11:30	3.16	0.80	03:05	0.001	20:30	0.075	0.013	0.013	-
03/11/2021	14:05	0.53	10:05	1.36	0.91	04:00	0.08	08:10	2.72	1.06	04:00	0.001	10:05	0.069	0.020	0.020	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	05:15	0.44	07:45	1.40	0.87	02:45	0.20	07:45	2.42	0.88	05:10	0.001	07:45	0.082	0.016	0.016	-
03/13/2021	02:55	0.45	10:35	1.57	0.77	01:50	0.28	11:00	2.49	1.01	01:50	0.002	10:35	0.098	0.016	0.016	-
03/14/2021	04:10	0.42	20:10	1.47	0.77	06:15	0.22	20:05	2.73	1.21	01:30	0.002	20:10	0.087	0.020	0.020	0.30
03/15/2021	02:35	0.44	12:10	1.57	0.84	02:35	0.20	18:00	2.78	1.29	02:35	0.001	12:10	0.086	0.023	0.023	-
03/16/2021	02:20	0.46	08:30	1.41	0.83	00:35	0.24	19:05	2.77	0.99	00:00	0.002	08:30	0.075	0.018	0.018	-
03/17/2021	02:10	0.53	19:55	1.14	0.80	01:05	0.19	19:55	3.05	1.00	00:50	0.002	19:55	0.076	0.017	0.017	-
03/18/2021	02:20	0.43	19:40	1.82	0.82	00:55	0.16	07:10	2.77	1.17	00:55	0.001	19:40	0.118	0.021	0.021	0.11
03/19/2021	02:25	0.40	07:25	1.37	0.92	03:25	0.27	10:00	2.64	0.86	01:35	0.002	20:15	0.076	0.018	0.018	0.03
03/20/2021	01:35	0.49	12:05	1.40	0.99	04:00	0.25	21:25	2.77	0.98	01:15	0.002	07:30	0.077	0.023	0.023	0.17
03/21/2021	02:30	0.42	10:20	1.39	0.94	03:15	0.22	15:45	2.63	0.96	03:15	0.001	08:45	0.072	0.021	0.021	0.07
03/22/2021	02:25	0.58	10:55	1.67	1.04	01:20	0.24	08:55	2.42	1.01	00:25	0.004	19:30	0.092	0.026	0.026	0.11
03/23/2021	01:30	0.38	09:35	2.23	0.99	00:55	0.23	09:30	2.38	1.01	00:55	0.001	09:35	0.147	0.025	0.025	-
03/24/2021	00:45	0.41	07:50	1.55	0.95	01:20	0.26	05:50	2.49	1.04	00:25	0.002	07:50	0.072	0.022	0.022	0.34
03/25/2021	02:50	0.64	07:40	1.31	0.95	23:45	0.29	09:40	2.60	0.86	23:40	0.004	07:50	0.072	0.017	0.017	0.27
03/26/2021	01:55	0.47	19:00	1.33	0.87	04:05	0.12	14:35	2.56	0.79	04:05	0.001	18:25	0.063	0.015	0.015	-
03/27/2021	05:40	0.65	08:00	1.74	0.99	23:10	0.22	07:55	2.53	0.83	02:10	0.004	08:00	0.112	0.019	0.019	-
03/28/2021	03:35	0.49	13:45	1.71	1.05	01:25	0.18	08:55	2.52	1.17	00:20	0.003	13:45	0.098	0.031	0.031	0.37
03/29/2021	02:30	0.66	15:00	1.82	1.04	01:05	0.23	07:45	2.57	1.01	02:00	0.003	15:00	0.076	0.024	0.024	-
03/30/2021	02:40	0.64	07:30	1.39	1.00	23:20	0.20	07:50	2.52	0.87	01:00	0.003	07:50	0.084	0.019	0.019	-
03/31/2021	00:25	0.38	09:45	1.64	1.04	05:15	0.29	17:50	2.20	0.82	02:15	0.002	09:45	0.093	0.020	0.020	-
04/01/2021	03:25	0.54	14:00	1.80	1.06	03:30	0.13	08:00	2.35	1.16	03:30	0.001	14:25	0.084	0.029	0.029	-
04/02/2021	00:55	0.48	14:10	1.40	1.06	03:20	0.28	15:00	2.47	1.09	00:55	0.002	15:00	0.072	0.028	0.028	-
04/03/2021	02:05	0.44	05:15	1.96	1.01	03:40	0.25	10:55	2.37	0.84	03:05	0.002	11:00	0.102	0.020	0.020	-
04/04/2021	02:30	0.39	11:40	1.96	0.96	03:50	0.24	09:05	2.47	0.81	02:10	0.001	11:45	0.102	0.020	0.020	-
04/05/2021	04:20	0.51	04:05	1.69	1.08	01:35	0.22	20:00	2.34	0.92	01:25	0.002	23:00	0.079	0.025	0.025	-
04/06/2021	23:55	0.44	20:55	1.52	1.06	04:20	0.30	10:00	2.33	0.84	04:20	0.002	21:00	0.079	0.021	0.021	-
04/07/2021	00:45	0.38	17:10	2.67	1.00	03:05	0.19	17:45	2.39	0.87	04:00	0.001	18:10	0.121	0.023	0.023	0.22
04/08/2021	05:45	0.60	09:55	2.44	1.08	03:45	0.20	09:45	2.63	0.94	02:30	0.004	10:00	0.133	0.023	0.023	-
04/09/2021	03:30	0.52	11:55	2.06	1.06	02:25	0.19	06:05	2.37	0.94	05:05	0.003	11:55	0.096	0.023	0.023	0.03
04/10/2021	02:40	0.57	11:25	2.14	1.17	02:15	0.19	12:50	2.86	1.00	02:30	0.002	08:10	0.130	0.028	0.028	0.02
04/11/2021	03:50	0.68	09:55	1.89	1.12	04:05	0.28	11:10	2.47	0.85	04:00	0.003	09:55	0.115	0.024	0.024	-
04/12/2021	02:05	0.50	08:55	2.00	1.02	02:45	0.21	10:35	2.60	1.52	01:45	0.002	08:55	0.120	0.036	0.036	-
04/13/2021	03:20	0.41	11:55	1.39	1.00	13:30	0.23	17:00	3.48	0.88	03:10	0.002	17:00	0.112	0.020	0.020	-
04/14/2021	02:55	0.49	07:50	1.61	0.98	03:40	0.23	09:00	2.59	0.79	02:55	0.002	07:50	0.074	0.018	0.018	-
09/23/2020	23:45	0.69	11:30	1.90	1.39	21:45	0.36	14:05	1.83	1.05	21:45	0.006	16:45	0.068	0.037	0.022	-
09/24/2020	02:50	0.46	11:20	1.53	1.06	04:05	0.28	03:15	1.97	1.08	02:45	0.002	18:10	0.050	0.025	0.025	-
09/25/2020	01:55	0.43	09:20	1.65	1.10	02:45	0.18	17:15	1.93	0.96	01:35	0.001	09:20	0.054	0.025	0.025	-
09/26/2020	04:30	0.21	05:30	1.96	0.90	00:35	0.22	05:40	1.97	1.18	01:45	0.001	09:15	0.066	0.023	0.023	-
09/27/2020	02:40	0.07	10:15	1.66	0.83	04:40	0.25	20:40	1.81	1.09	02:10	0.000	10:15	0.067	0.021	0.021	-
09/28/2020	04:20	0.15	17:50	1.08	0.58	23:35	0.17	10:05	2.35	1.46	00:20	0.001	17:55	0.049	0.017	0.017	-
09/29/2020	02:10	0.14	08:00	1.41	0.49	00:05	0.12	18:55	2.56	1.51	00:05	0.001	08:00	0.069	0.013	0.013	-
09/30/2020	17:40	0.06	08:55	1.20	0.38	00:40	0.15	19:15	2.73	1.56	10:10	0.000	08:55	0.066	0.008	0.008	-
10/01/2020	01:20	0.28	18:50	1.22	0.69	01:30	0.27	10:55	2.60	1.61	00:45	0.001	18:55	0.062	0.022	0.022	-
10/02/2020	01:25	0.41	11:55	1.55	0.98	01:25	0.29	11:05	2.46	1.40	00:55	0.002	11:55	0.072	0.031	0.031	-
10/03/2020	05:00	0.34	12:15	1.75	1.14	00:00	0.28	19:50	1.85	1.30	00:00	0.002	12:15	0.085	0.037	0.037	0.01
10/04/2020	22:45	0.49	10:40	1.81	1.16	02:50	0.25	10:35	1.93	1.17	22:40	0.002	10:40	0.094	0.037	0.037	0.01
10/05/2020	01:30	0.21	08:10	1.36	0.86	03:20	0.23	08:00	1.91	1.25	00:50	0.001	08:00	0.060	0.025	0.025	-
10/06/2020	00:45	0.28	18:00	1.89	1.06	02:00	0.29	17:05	1.98	1.14	00:45	0.001	18:00	0.097	0.030	0.030	-
10/07/2020	03:45	0.22	10:45	1.67	1.11	23:50	0.21	13:45	1.91	1.13	03:30	0.001	10:45	0.079	0.033	0.033	-
10/08/2020	03:20	0.41	13:40	1.98	1.17	01:05	0.14	13:35	1.83	1.02	01:05	0.001	13:35	0.101	0.031	0.031	-
10/09/2020	01:25	0.33	22:55	1.93	1.19	02:45	0.12	23:00	1.86	1.08	01:25	0.001	22:55	0.093	0.034	0.034	0.64
10/10/2020	01:10	0.32	08:25	1.49	0.84	23:40	0.26	08:05	2.33	1.22	00:55	0.002	01:55	0.054	0.021	0.021	1.04
10/11/2020	05:40	0.20	18:15	1.42	0.76	05:15	0.23	08:00	2.77	1.10	05:15	0.001	18:15	0.052	0.020	0.020	0.53
10/12/2020	23:25	0.24	05:20	1.74	0.81	21:20	0.11	05:15	2.60	1.19	21:20	0.001	05:15	0.084	0.022	0.022	-
10/13/2020	02:25	0.11	07:30	1.55	0.72	03:50	0.29	04:10	2.11	0.96	02:10	0.001	07:30	0.064	0.016	0.016	0.61
10/14/2020	04:35	0.08	10:25	1.56	0.67	06:30	0.26	07:55	2.30	0.95	03:00	0.000	08:45	0.062	0.015	0.015	-
10/15/2020	23:00	0.16	14:50	2.06	0.66	22:05	0.22	18:50	1.93	0.94	01:10	0.001	14:50	0.100	0.014	0.014	-
10/16/2020	01:15	0.21	07:10	1.20	0.58	03:35	0.11	07:00	2.43	1.04	01:00	0.001	08:40	0.041	0.011	0.011	-
10/17/2020	04:50	0.21	10:40	1.75	0.71	19:15	0.28	08:25	2.12	1.04	00:05	0.001	10:40	0.067	0.017	0.017	0.01
10/18/2020	04:10	0.11	11:55	2.01	0.67	05:50	0.31	15:30	2.28	1.07	00:35	0.001	11:55	0.086	0.016	0.016	0.03
10/19/2020	03:45	0.19	08:15	1.81	0.70	13:25	0.31	07:15	2.39	1.09	00:10	0.001	08:15	0.082	0.017	0.017	0.05
10/20/2020	04:00	0.20	23:00	1.45	0.71	01:20	0.18	08:55	1.99	0.91	05:00	0.000	09:00	0.063	0.014	0.014	-
10/21/2020	03:00	0.15	07:00	1.31	0.52	09:45	0.26	17:40	2.29	0.98	00:20	0.001	14:35	0.048	0.011	0.011	0.01
10/22/2020	00:45	0.21	09:10	2.04	0.61	04:30	0.31	15:45	2.42	0.94	00:45	0.001	09:10	0.086	0.013	0.013	-
10/23/2020	04:30	0.13	12:30	1.81	0.73	23:40	0.24	09:45	1.96	0.97	00:15	0.001	12:25	0.076	0.016	0.016	0.20
10/24/2020	01:15	0.26	09:00	1.89	0.80	04:40	0.26	21:20	2.01	1.07	01:35	0.001	08:55	0.069	0.019	0.019	0.02
10/25/2020	04:15	0.20	07:50	1.85	0.77	23:50	0.12	06:55	1.83	0.93	02:00	0.001	17:25	0.061	0.016	0.016	-
10/26/2020	02:05	0.05	07:50	1.44	0.65	04:40	0.20	09:00	2.21	0.93	01:45	0.000	07:55	0.052	0.014	0.014	-
10/27/2020	03:25	0.05	08:45	1.78	0.68	23:50	0.26	10:00	1.98	1.11	00:30	0.000	08:45	0.069	0.015	0.015	-
10/28/2020	01:30	0.20	18:55	1.56	0.70	00:10	0.29	16:50	1.97	1.01	01:30	0.001	07:00	0.062	0.015	0.015	-
10/29/2020	02:15	0.20	09:00	2.04	0.68	03:25	0.23	11:55	2.48	1.01	00:05	0.001	09:00	0.080	0.015	0.015	-
10/30/2020	00:25	0.12	22:40	1.10	0.45	07:10	0.28	13:30	2.70	1.02	00:25	0.000	13:30	0.051	0.008	0.008	0.10
10/31/2020	03:55	0.22	07:55	0.82	0.49	03:50	0.27	16:40	2.44	1.27	00:10	0.001	16:35	0.033	0.011	0.011	-
11/01/2020	00:50	0.11	14:20	1.54	0.60	22:30	0.30	12:00	2.40	1.01	00:50	0.000	15:55	0.047	0.014	0.014	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/02/2020	02:15	0.21	10:10	1.62	0.78	04:15	0.21	15:15	2.00	1.14	02:15	0.001	10:05	0.054	0.020	0.020	-
11/03/2020	03:20	0.27	10:05	1.97	0.88	20:15	0.10	21:30	2.01	1.13	00:35	0.001	10:05	0.077	0.024	0.024	0.83
11/04/2020	04:15	0.18	08:55	1.60	0.78	00:20	0.21	08:50	2.13	1.17	00:20	0.001	18:25	0.067	0.020	0.020	0.09
11/05/2020	06:45	0.37	14:45	1.48	0.98	06:20	0.28	01:45	2.16	1.32	04:45	0.002	20:00	0.059	0.029	0.029	0.34
11/06/2020	23:35	0.28	14:55	1.66	0.73	06:00	0.29	14:50	2.46	1.34	21:05	0.002	14:55	0.066	0.018	0.018	0.10
11/07/2020	05:10	0.12	12:30	1.70	0.77	23:55	0.28	14:25	2.50	1.35	03:55	0.001	12:35	0.074	0.021	0.021	0.07
11/08/2020	02:35	0.13	18:55	1.97	0.81	07:05	0.25	09:15	2.29	0.96	02:25	0.000	18:40	0.060	0.019	0.019	0.01
11/09/2020	04:45	0.22	06:55	2.94	0.74	05:35	0.23	19:45	2.27	0.89	04:40	0.001	19:45	0.066	0.014	0.014	0.04
11/10/2020	01:05	0.13	18:40	1.92	0.68	00:20	0.29	11:50	2.26	0.88	00:55	0.001	18:40	0.078	0.013	0.013	0.03
11/11/2020	23:25	0.34	09:40	1.18	0.62	23:45	0.29	18:00	2.35	0.88	23:25	0.001	09:40	0.055	0.010	0.010	-
11/12/2020	05:00	0.26	19:45	1.89	0.63	04:55	0.30	10:00	2.19	0.87	04:05	0.001	19:45	0.085	0.011	0.011	0.16
11/13/2020	14:05	0.35	20:20	1.82	0.70	23:25	0.27	06:55	2.16	0.90	02:50	0.002	20:20	0.093	0.013	0.013	0.38
11/14/2020	06:25	0.23	18:55	2.11	0.84	04:05	0.31	15:55	2.73	0.97	05:10	0.001	10:35	0.099	0.020	0.020	0.47
11/15/2020	06:30	0.28	09:10	1.77	1.05	02:25	0.14	20:20	1.93	1.14	06:25	0.001	09:10	0.070	0.030	0.030	0.19
11/16/2020	04:35	0.25	09:35	1.56	0.84	04:55	0.22	09:30	2.11	0.88	04:30	0.001	17:50	0.067	0.017	0.017	0.31
11/17/2020	00:00	0.29	09:45	1.83	0.96	05:05	0.21	21:45	2.69	1.01	00:00	0.002	12:45	0.065	0.023	0.023	0.20
11/18/2020	04:50	0.20	17:20	1.65	0.88	02:35	0.19	16:20	2.69	1.01	04:30	0.000	16:20	0.068	0.023	0.023	0.30
11/19/2020	02:20	0.21	11:25	1.38	0.67	23:35	0.25	17:55	2.40	1.21	01:35	0.001	13:10	0.070	0.017	0.017	0.50
11/20/2020	22:50	0.23	10:05	1.42	0.52	11:00	0.13	13:50	2.46	1.37	02:30	0.001	10:05	0.074	0.014	0.014	0.01
11/21/2020	06:15	0.26	09:25	1.47	0.60	02:40	0.24	12:25	2.54	1.63	02:40	0.001	09:25	0.087	0.019	0.019	-
11/22/2020	04:30	0.17	16:20	1.18	0.55	06:45	0.35	11:20	2.67	1.51	03:05	0.001	16:15	0.062	0.017	0.017	0.21
11/23/2020	03:10	0.24	19:20	1.22	0.58	22:30	0.27	09:05	2.43	1.40	01:30	0.001	19:20	0.059	0.016	0.016	0.14
11/24/2020	04:10	0.16	07:10	1.32	0.47	00:05	0.30	08:10	2.57	1.37	00:05	0.001	07:10	0.066	0.011	0.011	0.21
11/25/2020	04:50	0.21	09:25	2.10	0.63	04:55	0.45	09:20	2.78	1.17	01:35	0.001	09:25	0.087	0.014	0.014	0.05
11/26/2020	01:30	0.20	10:55	1.44	0.65	04:15	0.37	15:10	2.66	1.52	01:05	0.001	10:50	0.085	0.023	0.023	0.02
11/27/2020	00:40	0.12	10:20	1.24	0.62	04:55	0.54	10:25	2.67	1.78	00:40	0.001	10:20	0.071	0.022	0.022	-
11/28/2020	22:20	0.21	19:55	1.25	0.65	03:10	0.54	11:35	2.72	1.81	01:50	0.002	11:45	0.063	0.023	0.023	0.05
11/29/2020	01:50	0.19	11:55	1.37	0.74	05:25	0.49	12:40	2.91	1.77	00:25	0.002	11:10	0.082	0.030	0.030	-
11/30/2020	00:05	0.21	22:30	1.97	0.73	23:15	0.37	22:20	2.78	1.82	00:05	0.002	12:05	0.073	0.026	0.026	0.36
12/01/2020	02:45	0.19	20:05	1.46	0.76	03:50	0.34	11:40	2.25	1.52	02:40	0.001	19:15	0.063	0.025	0.025	-
12/02/2020	00:45	0.27	14:55	1.73	0.79	04:50	0.28	20:05	2.10	1.08	00:45	0.001	20:10	0.063	0.018	0.018	0.01
12/03/2020	02:25	0.31	10:10	1.43	0.78	23:10	0.38	18:25	2.05	1.49	00:50	0.003	10:10	0.060	0.023	0.023	-
12/04/2020	08:00	0.32	00:45	0.97	0.59	03:45	0.09	09:25	2.07	1.33	03:45	0.001	07:45	0.034	0.012	0.012	-
12/05/2020	03:30	0.29	01:25	0.96	0.48	03:30	0.33	09:40	2.34	1.39	03:05	0.001	10:20	0.032	0.011	0.011	0.03
12/06/2020	16:00	0.25	18:20	0.90	0.53	06:45	0.36	09:20	2.23	1.41	15:50	0.001	16:40	0.034	0.013	0.013	0.03
12/07/2020	23:55	0.10	01:50	0.92	0.58	16:20	0.29	18:35	2.27	1.14	23:55	0.000	06:05	0.031	0.011	0.011	-
12/08/2020	00:00	0.07	10:00	0.87	0.48	04:30	0.21	06:40	2.36	0.71	00:00	0.000	09:55	0.033	0.006	0.006	0.87
12/09/2020	04:45	0.22	13:15	0.93	0.47	01:40	0.24	13:55	2.19	0.83	01:10	0.001	13:50	0.025	0.006	0.006	0.17
12/10/2020	04:20	0.21	17:05	0.83	0.44	05:45	0.29	20:30	2.58	0.96	02:35	0.001	18:55	0.034	0.007	0.007	0.07
12/11/2020	23:55	0.21	09:15	0.94	0.45	08:50	0.26	11:50	2.08	0.65	00:45	0.001	09:15	0.029	0.005	0.005	0.02
12/12/2020	03:50	0.11	10:10	1.02	0.37	23:30	0.22	10:10	2.42	0.81	00:00	0.001	10:10	0.051	0.005	0.005	0.01
12/13/2020	05:25	0.15	10:30	0.93	0.49	00:00	0.26	11:10	2.36	0.73	00:00	0.001	11:10	0.036	0.006	0.006	0.24
12/14/2020	03:30	0.16	12:30	0.73	0.39	17:35	0.14	12:45	2.09	0.62	03:25	0.000	11:55	0.022	0.004	0.004	0.05
12/15/2020	03:05	0.10	16:45	0.79	0.48	03:50	0.19	09:15	1.89	0.72	03:05	0.000	09:10	0.022	0.006	0.006	0.58
12/16/2020	05:50	0.14	10:40	0.97	0.40	13:45	0.12	08:00	2.01	0.74	00:15	0.001	11:35	0.019	0.005	0.005	0.39
12/17/2020	03:30	0.12	08:15	0.77	0.36	14:20	0.23	15:40	2.43	0.78	00:50	0.000	08:15	0.022	0.004	0.004	0.08
12/18/2020	00:15	0.06	08:45	0.67	0.37	04:10	0.11	07:05	1.97	0.75	00:10	0.000	08:45	0.018	0.004	0.004	0.25
12/19/2020	04:00	0.12	16:55	1.07	0.45	01:05	0.23	22:30	2.39	0.87	00:40	0.001	18:00	0.034	0.007	0.007	0.37
12/20/2020	03:50	0.13	17:30	0.85	0.42	06:20	0.32	17:35	2.48	1.06	00:45	0.001	17:30	0.040	0.007	0.007	0.04
12/21/2020	00:15	0.33	11:30	0.87	0.57	23:10	0.45	16:20	2.75	1.66	00:10	0.002	11:30	0.043	0.017	0.017	1.07
12/22/2020	04:50	0.12	07:00	0.87	0.54	23:25	0.34	19:50	2.48	1.43	03:20	0.000	11:30	0.040	0.013	0.013	-
12/23/2020	03:15	0.19	06:55	0.79	0.52	02:20	0.32	19:50	2.49	1.39	00:25	0.001	19:55	0.031	0.012	0.012	-
12/24/2020	02:55	0.20	17:50	1.77	0.55	23:45	0.22	10:30	2.79	1.29	02:05	0.001	10:40	0.081	0.014	0.014	-
12/25/2020	03:40	0.21	14:55	1.24	0.53	05:25	0.12	16:00	2.34	0.91	00:45	0.001	14:55	0.058	0.009	0.009	0.49
12/26/2020	04:00	0.19	11:55	0.88	0.47	01:45	0.21	12:30	2.32	0.88	00:25	0.001	11:55	0.036	0.007	0.007	0.02
12/27/2020	02:20	0.28	11:10	0.91	0.42	16:15	0.43	09:45	2.18	0.92	00:30	0.002	11:10	0.030	0.006	0.006	0.13
12/28/2020	08:30	0.25	11:20	0.92	0.42	05:20	0.46	19:10	2.09	1.03	00:25	0.002	10:35	0.032	0.006	0.006	-
12/29/2020	02:10	0.33	21:30	0.97	0.45	03:45	0.27	08:45	1.78	0.99	03:40	0.001	21:30	0.029	0.006	0.006	0.14
12/30/2020	15:45	0.39	09:45	1.05	0.58	22:45	0.41	21:35	1.76	0.86	11:30	0.003	09:45	0.035	0.008	0.008	0.78
12/31/2020	10:10	0.37	15:55	0.77	0.54	02:20	0.44	09:55	2.54	0.86	10:10	0.003	11:35	0.018	0.007	0.007	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			3.650	30.65
Average	0.78	1.07	0.018	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A12_71043

Site Address /Location:	510 4th St NE		
Site Access Details:	located on roadway	Latitude:	47.311779°
		Longitude:	-122.209121°

Monitor Series	Location Type
TRITON+	Temporary
Pipe Size (H x W)	Pipe Shape
11.50 x 12.00	Circular
Manhole #	System Characteristics
710-43	Residential
Access	Traffic
Drive	Light









ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519

Installation Information

Installation Date:	Installation Type:
Wednesday, September 23, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Downstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Time	Pipe Size (HxW)
9:33:00 AM	16.25x16.38
Depth of Flow (Wet DOF) (in)	
1.50	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
1.44	N/A
Silt (in)	Silt Type
0	

Hydraulic Comments:

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
9	Common Trench
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
PVC	Good

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

AUB_A13_71085

Site Commentary

SITE INFORMATION

Pipe	Round (8 in H)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

This site experienced flow changes and backwater conditions during the monitoring period. An ADS field crew removed debris buildup from the sensors during a site visit on October 30th. A confirmation was taken which verified the sensors are working properly.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	2.05	0.93	0.045
Minimum	0.67	0.22	0.005
Maximum	5.60	1.57	0.129
Min Time	01/23/2021 4:00:00 AM	12/10/2020 4:00:00 AM	01/23/2021 4:00:00 AM
Max Time	12/10/2020 12:00:00 PM	02/11/2021 6:00:00 PM	10/10/2020 11:00:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

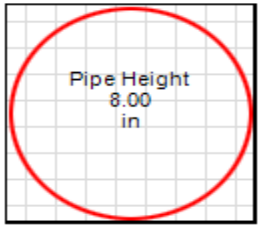
Percent Uptime	
DFINAL (in)	99.284
VFINAL (ft/s)	99.284
QFINAL (MGD - Total MG)	99.284

Hydrograph Report

AUB_A13_71085

Flow Monitor

AUB_A13_71085



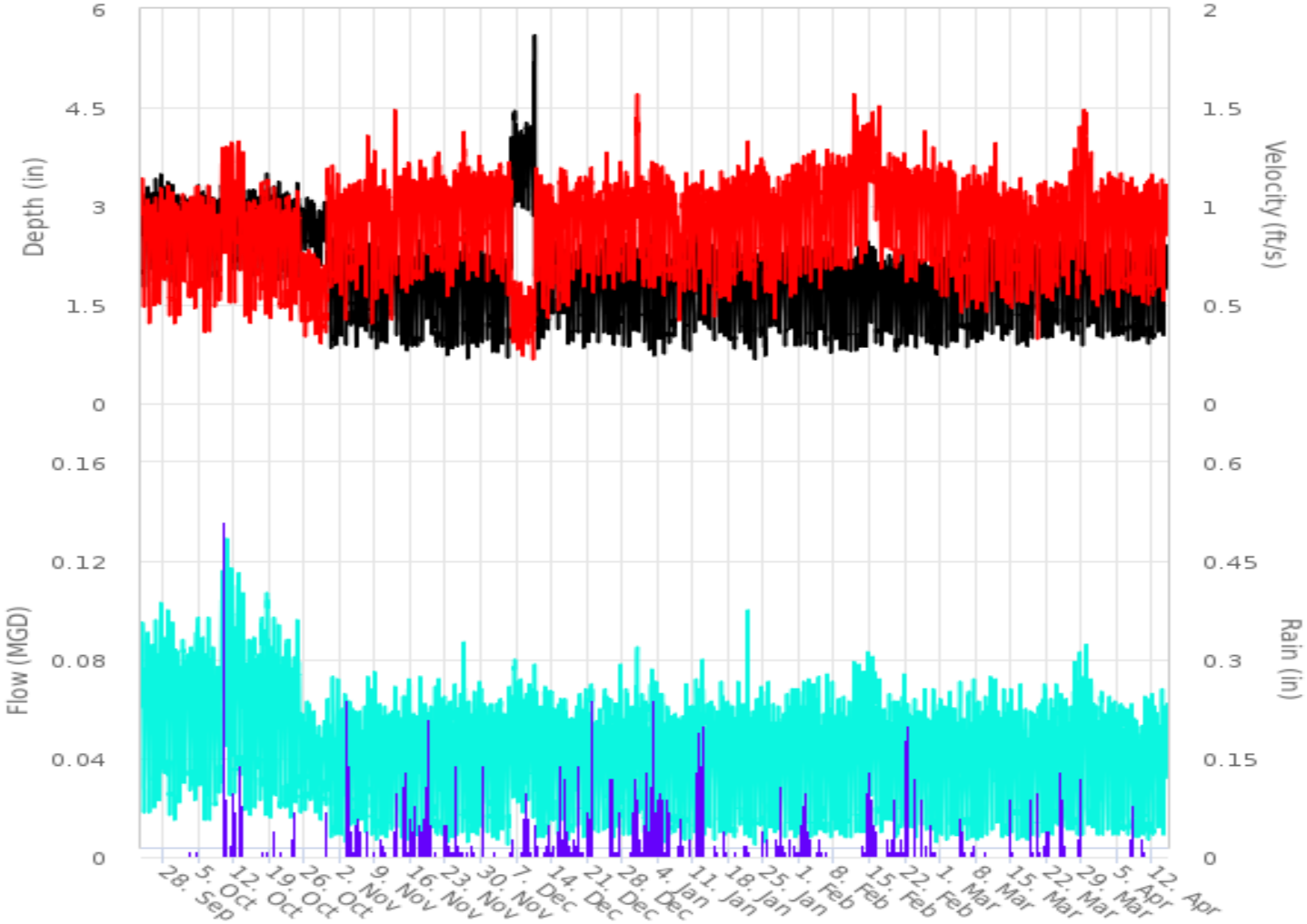
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



4455 S. 134th Place
Tukwila, WA 98168

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Scattergraph Report

AUB_A13_71085

Flow Monitor

AUB_A13_71085

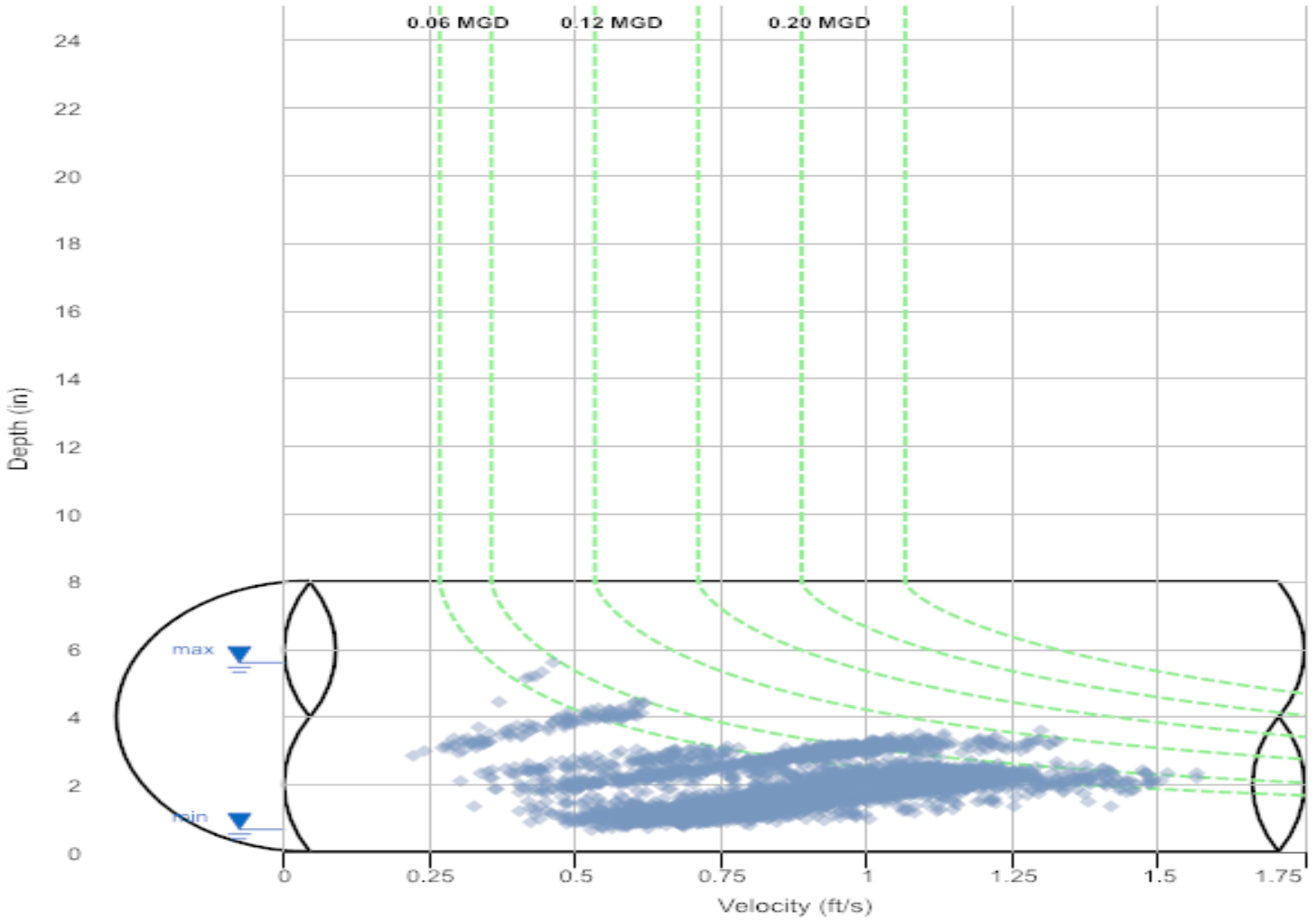
Pipe Height
8.00
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A13_71085Pipe: Round (8 in H), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	05:50	0.76	15:30	2.68	1.82	03:15	0.56	15:30	1.21	0.90	05:50	0.006	15:30	0.080	0.038	0.038	0.51
01/02/2021	04:45	0.68	11:55	2.79	1.88	05:00	0.53	17:30	1.28	0.97	04:40	0.005	17:30	0.088	0.044	0.044	1.69
01/03/2021	04:30	0.65	13:05	2.94	1.85	04:25	0.55	13:05	1.37	0.99	04:20	0.005	13:05	0.103	0.043	0.043	0.65
01/04/2021	03:00	0.86	18:30	2.73	1.86	02:50	0.61	18:30	1.29	1.01	02:50	0.008	18:30	0.087	0.043	0.043	0.48
01/05/2021	04:35	0.67	18:55	2.71	1.76	04:40	0.49	18:55	1.25	0.96	04:40	0.004	18:55	0.084	0.039	0.039	0.52
01/06/2021	02:55	0.82	21:25	2.57	1.79	03:00	0.57	19:10	1.21	0.95	02:55	0.007	14:00	0.073	0.038	0.038	0.22
01/07/2021	03:50	0.88	15:30	2.79	1.98	03:45	0.57	09:30	1.22	0.87	03:40	0.008	09:30	0.084	0.040	0.040	-
01/08/2021	04:00	1.39	17:25	2.94	2.10	03:55	0.35	19:05	1.15	0.79	03:55	0.009	21:45	0.077	0.039	0.039	0.22
01/09/2021	06:10	0.71	12:10	2.87	1.82	05:10	0.54	12:50	1.25	0.92	06:15	0.005	12:10	0.090	0.039	0.039	-
01/10/2021	04:35	0.73	16:20	2.78	1.84	04:45	0.55	14:40	1.20	0.91	04:30	0.006	16:20	0.082	0.039	0.039	0.07
01/11/2021	04:40	1.05	11:00	2.92	2.06	04:00	0.56	11:00	1.20	0.93	04:00	0.010	11:00	0.089	0.046	0.046	1.06
01/12/2021	04:20	1.22	18:25	2.99	2.09	04:25	0.66	18:30	1.24	0.96	04:15	0.015	18:25	0.095	0.047	0.047	2.10
01/13/2021	03:10	1.01	18:45	2.67	1.90	03:55	0.38	18:45	1.16	0.88	03:55	0.008	18:45	0.076	0.039	0.039	0.09
01/14/2021	04:00	1.08	10:20	3.02	1.95	04:00	0.58	10:20	1.34	0.93	03:55	0.011	10:20	0.105	0.042	0.042	0.01
01/15/2021	03:15	0.95	17:00	2.73	1.91	05:40	0.40	17:00	1.21	0.90	03:15	0.006	17:00	0.082	0.040	0.040	0.09
01/16/2021	06:20	0.91	11:25	2.96	1.94	05:10	0.44	11:30	1.29	0.93	05:10	0.007	11:25	0.096	0.043	0.043	-
01/17/2021	06:55	0.91	15:35	2.78	1.85	05:30	0.47	12:55	1.29	0.93	05:20	0.007	12:50	0.088	0.040	0.040	0.10
01/18/2021	04:55	0.49	14:10	2.58	1.81	04:55	0.24	09:35	1.35	0.92	04:55	0.001	09:35	0.081	0.038	0.038	-
01/19/2021	02:55	0.78	19:35	2.84	1.77	02:55	0.55	10:55	1.30	0.97	02:55	0.006	19:35	0.092	0.040	0.040	0.01
01/20/2021	04:15	0.72	20:05	2.71	1.77	04:10	0.55	20:05	1.30	0.97	04:10	0.006	20:05	0.087	0.039	0.039	-
01/21/2021	03:50	0.87	18:25	4.59	1.74	03:10	0.61	18:20	2.16	0.96	03:10	0.008	18:20	0.284	0.038	0.038	0.11
01/22/2021	03:55	0.77	10:25	2.62	1.73	01:55	0.54	18:45	1.27	0.99	03:20	0.007	18:30	0.081	0.038	0.038	-
01/23/2021	04:55	0.64	11:05	2.73	1.76	04:20	0.50	13:25	1.34	1.00	04:15	0.004	11:05	0.087	0.040	0.040	-
01/24/2021	06:05	0.90	11:20	2.73	1.83	05:55	0.62	10:50	1.31	1.03	05:55	0.009	10:50	0.087	0.043	0.043	0.16
01/25/2021	04:05	0.69	18:05	2.90	1.86	04:35	0.54	10:25	1.32	0.96	04:00	0.005	10:25	0.095	0.042	0.042	0.04
01/26/2021	03:55	1.11	08:45	3.07	1.88	04:00	0.46	08:45	1.32	0.90	03:55	0.009	08:45	0.105	0.039	0.039	-
01/27/2021	05:40	1.07	18:55	2.70	1.87	03:20	0.41	19:20	1.26	0.91	03:10	0.009	19:20	0.079	0.039	0.039	0.14
01/28/2021	03:45	1.01	17:45	2.72	1.87	04:05	0.50	19:15	1.27	0.94	02:35	0.010	17:50	0.081	0.040	0.040	0.24
01/29/2021	03:45	0.81	17:35	2.84	1.81	03:15	0.57	11:25	1.23	0.95	03:40	0.007	17:35	0.087	0.039	0.039	0.03
01/30/2021	02:50	0.83	11:10	2.78	1.88	06:10	0.39	16:20	1.29	0.96	02:45	0.008	11:10	0.088	0.042	0.042	0.07
01/31/2021	04:45	0.83	19:45	2.91	1.79	02:45	0.52	11:45	1.31	0.97	02:45	0.007	19:45	0.094	0.041	0.041	0.12
02/01/2021	04:40	0.78	18:55	2.97	1.82	04:35	0.57	18:55	1.39	1.04	04:40	0.006	18:55	0.106	0.043	0.043	0.82
02/02/2021	04:20	0.67	18:40	2.79	1.81	04:20	0.54	18:40	1.40	1.02	04:05	0.005	18:40	0.098	0.042	0.042	0.31
02/03/2021	04:05	0.82	18:05	2.83	1.73	03:45	0.51	19:55	1.43	1.06	03:35	0.007	18:05	0.095	0.041	0.041	0.06
02/04/2021	03:05	0.73	18:10	2.70	1.83	04:20	0.60	20:20	1.39	1.01	03:05	0.006	18:10	0.084	0.043	0.043	0.07
02/05/2021	04:20	0.93	17:10	2.70	1.80	04:20	0.49	20:20	1.28	0.93	04:20	0.007	18:40	0.075	0.038	0.038	0.01
02/06/2021	04:00	0.80	09:45	2.82	1.75	05:00	0.63	12:20	1.39	1.04	03:55	0.008	09:45	0.092	0.041	0.041	0.01
02/07/2021	04:10	0.54	13:45	2.77	1.73	05:40	0.58	12:05	1.34	1.03	04:10	0.005	12:05	0.091	0.041	0.041	-
02/08/2021	04:35	0.81	10:35	2.54	1.71	04:25	0.60	12:15	1.35	1.08	04:25	0.008	10:35	0.081	0.041	0.041	-
02/09/2021	04:45	0.70	18:05	2.55	1.69	04:00	0.63	18:05	1.32	1.06	04:45	0.006	18:05	0.081	0.040	0.040	-
02/10/2021	02:10	0.77	18:20	2.63	1.68	02:10	0.66	18:25	1.34	1.05	02:10	0.007	18:20	0.086	0.039	0.039	-
02/11/2021	04:15	0.73	17:25	2.61	1.67	04:15	0.61	17:25	1.75	1.11	04:15	0.006	17:25	0.112	0.041	0.041	-
02/12/2021	04:30	0.69	18:25	2.80	1.71	02:55	0.68	09:10	1.52	1.18	04:25	0.007	18:25	0.103	0.045	0.045	-
02/13/2021	04:45	0.75	16:45	2.78	1.74	04:05	0.62	16:45	1.50	1.19	04:40	0.007	16:45	0.104	0.048	0.048	0.08
02/14/2021	04:00	0.78	11:30	2.81	1.77	03:20	0.71	19:10	1.51	1.22	03:55	0.008	11:35	0.105	0.050	0.050	0.71
02/15/2021	04:25	1.00	10:50	2.85	1.88	23:55	0.98	13:10	1.58	1.29	04:25	0.017	10:50	0.111	0.054	0.054	0.78
02/16/2021	02:40	0.88	11:10	2.84	1.73	04:20	0.74	20:15	1.57	1.21	04:20	0.010	11:10	0.098	0.046	0.046	0.07
02/17/2021	03:55	0.65	18:50	2.58	1.71	03:40	0.61	20:15	1.34	1.03	03:55	0.005	18:50	0.083	0.039	0.039	-
02/18/2021	03:15	0.91	18:30	2.52	1.79	04:00	0.72	20:10	1.33	1.09	03:15	0.011	20:35	0.079	0.043	0.043	0.09
02/19/2021	04:10	0.77	12:30	2.41	1.69	03:05	0.61	19:10	1.35	1.05	04:10	0.008	19:10	0.076	0.039	0.039	0.17
02/20/2021	03:50	0.74	10:05	2.70	1.70	05:20	0.61	11:40	1.37	1.06	03:30	0.007	10:05	0.088	0.041	0.041	0.07
02/21/2021	04:00	0.77	19:10	2.68	1.81	06:05	0.61	09:25	1.36	1.05	04:00	0.008	19:10	0.090	0.044	0.044	0.42
02/22/2021	03:45	0.82	21:30	2.59	1.78	03:15	0.59	10:50	1.31	1.00	03:45	0.007	10:50	0.080	0.040	0.040	0.98
02/23/2021	04:35	0.84	18:10	2.63	1.82	04:30	0.48	18:10	1.29	1.00	04:30	0.006	18:10	0.083	0.041	0.041	0.27
02/24/2021	03:30	0.73	12:30	2.49	1.72	03:25	0.55	12:30	1.27	1.03	03:25	0.006	12:30	0.076	0.039	0.039	-
02/25/2021	02:05	0.80	19:10	2.47	1.68	02:55	0.57	19:45	1.45	1.05	02:00	0.007	19:10	0.085	0.039	0.039	0.18
02/26/2021	04:00	0.77	17:35	2.48	1.68	04:05	0.59	10:25	1.31	1.03	04:05	0.006	10:25	0.077	0.038	0.038	0.10
02/27/2021	05:25	0.79	20:10	2.92	1.82	03:05	0.56	11:15	1.45	1.01	05:25	0.007	11:15	0.092	0.042	0.042	0.02
02/28/2021	03:40	0.56	20:05	2.68	1.75	04:00	0.53	18:25	1.28	0.98	03:35	0.004	20:05	0.085	0.040	0.040	0.02
03/01/2021	03:30	0.76	19:25	2.57	1.68	04:45	0.49	20:05	1.32	0.98	02:45	0.006	20:10	0.080	0.037	0.037	-
03/02/2021	03:15	0.82	20:15	2.73	1.75	03:20	0.48	19:35	1.32	0.97	03:10	0.006	20:15	0.090	0.038	0.038	-
03/03/2021	01:45	0.85	19:25	2.72	1.79	01:45	0.43	09:35	1.28	0.99	01:45	0.005	19:25	0.086	0.040	0.040	-
03/04/2021	03:10	0.84	20:55	2.97	1.99	05:00	0.52	07:30	1.16	0.87	03:00	0.007	20:55	0.087	0.042	0.042	0.20
03/05/2021	04:10	1.04	11:50	2.66	1.80	03:20	0.43	11:00	1.22	0.89	03:20	0.008	12:20	0.077	0.036	0.036	0.05
03/06/2021	04:40	0.78	11:30	2.77	1.82	04:45	0.40	11:35	1.24	0.95	04:30	0.005	11:30	0.085	0.040	0.040	-
03/07/2021	04:15	0.94	11:55	2.89	1.87	04:30	0.47	12:00	1.31	0.95	04:25	0.007	11:55	0.096	0.042	0.042	0.04
03/08/2021	03:15	0.84	10:50	2.70	1.79	02:30	0.43	18:25	1.27	0.92	03:20	0.005	10:50	0.082	0.038	0.038	-
03/09/2021	04:05	0.89	18:25	3.09	1.85	04:00	0.48	18:25	1.34	0.94	03:25	0.007	18:25	0.108	0.041	0.041	0.01
03/10/2021	04:05	0.96	20:15	2.77	1.89	03:45	0.40	20:15	1.29	0.94	03:20	0.007	20:15	0.090	0.041	0.041	-
03/11/2021	03:35	0.89	18:30	2.80	1.91	03:20	0.45	21:00	1.42	0.96	03:25	0.006	21:00	0.086	0.043	0.043	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	04:20	0.98	12:25	2.76	1.93	04:05	0.52	17:00	1.20	0.91	04:05	0.008	16:55	0.080	0.041	0.041	-
03/13/2021	05:55	0.86	10:40	2.80	1.89	04:05	0.49	10:40	1.22	0.90	06:00	0.006	10:40	0.086	0.040	0.040	-
03/14/2021	06:20	0.98	11:15	2.84	1.96	05:45	0.45	17:05	1.18	0.89	03:10	0.008	11:15	0.082	0.042	0.042	0.30
03/15/2021	02:05	1.06	09:45	2.70	1.91	03:20	0.38	20:15	1.22	0.88	03:20	0.007	09:45	0.079	0.039	0.039	-
03/16/2021	03:10	0.82	19:10	2.94	1.88	03:15	0.46	15:10	1.22	0.90	03:05	0.006	19:10	0.091	0.039	0.039	-
03/17/2021	02:30	0.88	09:15	2.73	1.87	02:20	0.45	17:25	1.17	0.88	02:20	0.007	09:15	0.078	0.038	0.038	-
03/18/2021	03:20	0.84	20:50	2.69	1.86	02:55	0.47	16:30	1.16	0.85	02:55	0.006	16:30	0.076	0.037	0.037	0.11
03/19/2021	03:35	0.92	14:00	2.87	1.96	03:35	0.52	14:00	1.21	0.87	03:30	0.008	14:00	0.088	0.040	0.040	0.03
03/20/2021	05:45	1.20	16:35	2.75	1.94	04:10	0.29	10:05	1.23	0.89	03:10	0.007	10:05	0.083	0.041	0.041	0.17
03/21/2021	04:10	0.84	12:35	2.99	1.93	04:15	0.44	12:35	1.24	0.90	03:55	0.006	12:35	0.096	0.042	0.042	0.07
03/22/2021	02:25	0.90	19:25	2.82	1.90	00:15	0.48	10:55	1.21	0.90	01:40	0.007	19:25	0.086	0.040	0.040	0.11
03/23/2021	02:30	0.93	19:50	2.91	1.94	03:00	0.38	19:50	1.25	0.90	03:05	0.006	19:50	0.093	0.041	0.041	-
03/24/2021	03:20	1.13	19:20	2.81	1.93	03:15	0.53	19:20	1.20	0.90	01:50	0.011	19:20	0.085	0.040	0.040	0.34
03/25/2021	03:00	0.94	09:10	2.73	1.90	03:05	0.56	16:50	1.22	0.90	03:00	0.008	19:40	0.082	0.039	0.039	0.27
03/26/2021	01:55	0.93	10:00	2.59	1.85	01:55	0.51	17:10	1.28	0.89	00:25	0.008	18:30	0.075	0.038	0.038	-
03/27/2021	03:00	0.86	11:20	2.82	1.94	03:05	0.67	12:00	1.34	1.01	02:55	0.009	11:20	0.092	0.046	0.046	-
03/28/2021	03:35	1.00	11:25	2.89	1.96	03:30	0.50	13:40	1.52	1.04	03:30	0.008	13:40	0.110	0.049	0.049	0.37
03/29/2021	02:10	0.81	18:05	2.79	1.84	02:20	0.61	07:25	1.57	1.24	02:15	0.007	18:05	0.110	0.053	0.053	-
03/30/2021	03:30	1.14	17:20	2.83	2.03	02:30	0.64	20:25	1.48	1.03	03:00	0.013	17:20	0.094	0.049	0.049	-
03/31/2021	03:10	1.04	19:30	2.93	2.00	03:15	0.43	19:30	1.27	0.88	03:15	0.007	19:30	0.095	0.042	0.042	-
04/01/2021	03:05	0.92	20:30	2.79	1.94	03:05	0.41	20:30	1.30	0.89	02:40	0.006	20:30	0.091	0.041	0.041	-
04/02/2021	02:20	0.97	13:05	2.61	1.85	03:15	0.47	18:00	1.23	0.91	02:10	0.008	18:00	0.076	0.039	0.039	-
04/03/2021	02:10	0.99	08:35	2.76	1.87	01:10	0.51	08:35	1.33	0.95	03:30	0.008	08:35	0.092	0.041	0.041	-
04/04/2021	04:05	0.96	20:45	2.67	1.84	04:05	0.54	20:45	1.36	0.93	04:05	0.008	20:45	0.089	0.040	0.040	-
04/05/2021	03:15	0.90	19:25	2.94	1.85	03:20	0.47	19:25	1.35	0.94	03:10	0.007	19:25	0.101	0.040	0.040	-
04/06/2021	02:45	0.92	09:00	2.69	1.77	01:05	0.47	09:00	1.25	0.89	01:05	0.008	09:00	0.083	0.036	0.036	-
04/07/2021	02:30	0.90	19:25	2.85	1.81	02:55	0.48	19:25	1.33	0.91	02:25	0.007	19:25	0.096	0.038	0.038	0.22
04/08/2021	03:00	0.89	18:15	2.82	1.79	03:00	0.48	18:15	1.33	0.92	02:55	0.007	18:15	0.094	0.037	0.037	-
04/09/2021	02:00	0.88	13:40	2.54	1.79	02:00	0.50	18:40	1.19	0.90	01:55	0.007	13:40	0.073	0.036	0.036	0.03
04/10/2021	02:25	0.95	08:30	2.81	1.83	02:25	0.42	15:10	1.24	0.91	02:25	0.006	08:30	0.086	0.039	0.039	0.02
04/11/2021	03:40	0.86	10:05	2.95	1.83	03:40	0.46	10:05	1.36	0.93	03:30	0.006	10:05	0.103	0.040	0.040	-
04/12/2021	01:55	0.88	09:40	3.11	1.83	02:00	0.48	09:40	1.22	0.92	01:40	0.007	09:40	0.099	0.039	0.039	-
04/13/2021	02:25	0.94	20:10	2.95	1.85	02:25	0.49	20:15	1.26	0.90	02:25	0.007	20:10	0.094	0.038	0.038	-
04/14/2021	03:00	0.94	19:50	2.72	1.89	02:45	0.45	11:30	1.23	0.91	02:40	0.007	11:30	0.082	0.040	0.040	-
09/23/2020	23:20	2.04	12:35	3.49	2.84	23:20	0.64	12:30	1.27	1.02	23:20	0.029	12:35	0.120	0.075	0.039	-
09/24/2020	03:25	1.61	19:40	3.51	2.71	03:15	0.37	08:55	1.14	0.84	03:15	0.012	08:55	0.104	0.059	0.059	-
09/25/2020	02:55	1.86	13:55	4.30	2.74	03:10	0.33	13:55	1.35	0.82	03:10	0.013	13:55	0.167	0.059	0.059	-
09/26/2020	03:00	1.79	09:40	3.66	2.77	03:05	0.37	09:05	1.09	0.83	03:00	0.014	09:40	0.110	0.060	0.060	-
09/27/2020	04:35	1.89	09:10	3.79	2.83	03:40	0.40	09:55	1.18	0.85	04:35	0.018	09:15	0.123	0.064	0.064	-
09/28/2020	03:05	2.02	19:30	3.66	2.84	01:55	0.49	19:30	1.18	0.87	01:55	0.022	19:30	0.119	0.065	0.065	-
09/29/2020	03:20	1.79	18:30	3.75	2.73	02:20	0.39	18:30	1.21	0.84	02:20	0.015	18:30	0.126	0.060	0.060	-
09/30/2020	02:40	1.70	18:45	3.54	2.71	02:40	0.36	18:45	1.12	0.81	02:40	0.013	18:45	0.108	0.058	0.058	-
10/01/2020	04:00	1.88	18:55	3.62	2.73	02:30	0.34	18:50	1.24	0.84	02:35	0.015	18:50	0.123	0.060	0.060	-
10/02/2020	01:15	1.96	12:15	3.43	2.80	01:15	0.56	12:15	1.17	0.88	01:15	0.024	12:15	0.108	0.063	0.063	-
10/03/2020	05:15	2.12	10:00	3.30	2.76	02:35	0.39	13:30	1.18	0.86	02:35	0.022	17:00	0.104	0.061	0.061	0.01
10/04/2020	04:05	2.06	18:45	3.71	2.84	04:05	0.37	10:50	1.21	0.88	04:05	0.017	18:45	0.122	0.066	0.066	0.01
10/05/2020	02:50	2.02	09:30	3.60	2.76	02:55	0.49	09:30	1.16	0.88	02:55	0.022	09:30	0.114	0.063	0.063	-
10/06/2020	02:05	1.81	19:00	3.69	2.72	01:55	0.31	19:00	1.18	0.83	02:10	0.012	19:00	0.119	0.060	0.060	-
10/07/2020	02:50	1.82	11:35	3.54	2.66	03:10	0.27	10:55	1.10	0.83	03:10	0.011	11:35	0.106	0.057	0.057	-
10/08/2020	01:40	1.73	19:15	3.40	2.62	03:30	0.34	08:45	1.07	0.78	01:30	0.014	19:15	0.096	0.053	0.053	-
10/09/2020	00:50	2.02	14:45	3.68	2.92	00:30	0.40	17:05	1.40	0.98	00:30	0.019	17:05	0.141	0.076	0.076	0.64
10/10/2020	01:05	2.26	11:55	3.92	3.02	01:00	0.68	11:30	1.40	1.04	01:00	0.036	11:50	0.152	0.083	0.083	1.04
10/11/2020	03:25	1.98	10:50	3.72	2.85	03:55	0.45	08:45	1.41	1.00	03:25	0.021	08:45	0.135	0.076	0.076	0.53
10/12/2020	00:55	1.95	20:15	3.63	2.82	02:20	0.48	13:15	1.48	1.04	01:10	0.023	15:20	0.146	0.077	0.077	-
10/13/2020	01:15	1.90	17:00	3.94	2.78	02:35	0.63	17:05	1.49	1.02	01:15	0.029	16:35	0.147	0.073	0.073	0.61
10/14/2020	01:40	1.84	19:15	3.51	2.77	01:25	0.41	19:10	1.13	0.82	01:20	0.017	19:15	0.108	0.059	0.059	-
10/15/2020	03:20	1.83	19:05	3.71	2.79	03:20	0.37	19:05	1.18	0.84	03:20	0.014	19:05	0.121	0.062	0.062	-
10/16/2020	02:55	1.84	10:15	3.44	2.70	02:50	0.40	10:15	1.10	0.80	02:50	0.016	10:15	0.101	0.056	0.056	-
10/17/2020	02:45	1.94	10:40	3.51	2.76	02:40	0.48	09:40	1.22	0.88	02:40	0.020	09:40	0.116	0.064	0.064	0.01
10/18/2020	03:15	1.72	11:50	3.77	2.78	03:10	0.40	11:55	1.26	0.86	03:10	0.014	11:55	0.132	0.064	0.064	0.03
10/19/2020	03:40	1.73	19:00	3.67	2.73	03:35	0.41	19:00	1.22	0.85	03:35	0.015	19:00	0.123	0.061	0.061	0.05
10/20/2020	03:40	1.70	18:00	3.64	2.79	02:45	0.40	18:00	1.11	0.83	02:45	0.014	18:00	0.110	0.061	0.061	-
10/21/2020	02:30	1.75	15:20	3.50	2.72	02:00	0.44	20:10	1.08	0.81	02:00	0.016	15:20	0.100	0.057	0.057	0.01
10/22/2020	03:15	1.89	19:55	3.55	2.76	01:25	0.41	19:55	1.18	0.86	01:25	0.017	19:55	0.114	0.062	0.062	-
10/23/2020	02:25	1.74	20:35	3.52	2.74	03:55	0.37	20:35	1.11	0.82	03:50	0.014	20:35	0.106	0.059	0.059	0.20
10/24/2020	03:35	1.88	13:10	3.73	2.80	04:25	0.45	13:10	1.22	0.85	03:35	0.018	13:10	0.126	0.063	0.063	0.02
10/25/2020	03:10	1.81	14:35	3.14	2.58	05:40	0.37	17:05	0.87	0.63	03:15	0.016	09:30	0.070	0.041	0.041	-
10/26/2020	02:00	2.17	11:25	3.58	2.75	01:50	0.25	20:15	0.89	0.61	01:50	0.013	11:25	0.086	0.043	0.043	-
10/27/2020	02:15	2.28	09:35	3.34	2.70	02:20	0.24	09:35	0.85	0.59	02:20	0.013	09:35	0.076	0.040	0.040	-
10/28/2020	02:50	2.17	05:45	3.32	2.62	02:45	0.24	09:15	0.86	0.58	02:45	0.012	20:00	0.075	0.038	0.038	-
10/29/2020	03:10	1.95	20:40	3.19	2.73	04:00	0.19	11:30	0.80	0.58	03:10	0.009	09:00	0.063	0.040	0.040	-
10/30/2020	23:20	1.14	09:45	3.18	2.26	03:15	0.31	19:55	1.28	0.82	23:20	0.014	09:45	0.091	0.041	0.041	0.10
10/31/2020	04:00	0.69	09:45	2.81	1.76	04:05	0.51	10:20	1.32	0.95	03:55	0.005	11:30	0.092	0.039	0.039	-
11/01/2020	04:45	0.55	09:55	2.88	1.90	04:00	0.45	11:35	1.23	0.92	03:50	0.004	10:40	0.087	0.042	0.042	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/02/2020	03:45	1.00	20:20	2.88	1.93	04:00	0.52	20:25	1.19	0.90	03:15	0.009	20:25	0.087	0.041	0.041	-
11/03/2020	03:40	0.87	10:30	2.90	1.92	04:20	0.35	10:30	1.25	0.89	03:40	0.005	10:30	0.093	0.041	0.041	0.83
11/04/2020	02:45	1.14	09:10	2.81	1.88	02:30	0.60	19:55	1.24	0.93	02:25	0.012	09:10	0.086	0.040	0.040	0.09
11/05/2020	03:35	0.74	12:30	2.81	1.77	02:30	0.54	12:30	1.32	0.93	03:30	0.006	12:30	0.093	0.037	0.037	0.34
11/06/2020	01:45	0.97	19:10	2.72	1.84	01:45	0.60	19:15	1.24	0.95	01:45	0.009	19:10	0.083	0.039	0.039	0.10
11/07/2020	03:00	1.03	11:20	2.95	1.85	03:05	0.51	08:50	1.44	1.03	02:55	0.009	11:20	0.103	0.044	0.044	0.07
11/08/2020	04:00	0.84	13:55	2.89	1.91	05:15	0.35	17:45	1.37	1.03	05:00	0.007	13:55	0.100	0.046	0.046	0.01
11/09/2020	03:50	0.72	11:30	2.80	1.87	03:35	0.47	11:30	1.22	0.91	03:35	0.005	11:30	0.086	0.040	0.040	0.04
11/10/2020	03:35	0.75	09:05	2.61	1.86	03:40	0.50	16:55	1.49	0.95	03:35	0.005	16:55	0.081	0.041	0.041	0.03
11/11/2020	04:10	0.83	20:25	2.79	1.88	04:10	0.52	10:50	1.21	0.88	03:10	0.007	20:25	0.077	0.038	0.038	-
11/12/2020	03:50	1.17	10:05	2.95	2.02	03:50	0.34	19:05	1.63	0.85	03:50	0.007	10:05	0.082	0.040	0.040	0.16
11/13/2020	04:05	0.90	19:00	2.56	1.80	01:35	0.58	18:55	1.28	0.97	04:10	0.008	19:00	0.080	0.039	0.039	0.38
11/14/2020	04:20	0.78	11:20	2.74	1.82	05:05	0.54	17:25	1.30	0.96	04:15	0.006	17:25	0.084	0.041	0.041	0.47
11/15/2020	05:20	0.73	11:05	2.70	1.85	04:00	0.55	11:05	1.34	1.00	04:40	0.006	11:05	0.089	0.044	0.044	0.19
11/16/2020	04:45	0.81	15:45	2.58	1.78	04:45	0.58	12:55	1.26	0.97	04:35	0.007	15:45	0.076	0.039	0.039	0.31
11/17/2020	03:15	0.76	19:05	2.63	1.82	02:50	0.56	16:00	1.32	1.00	02:55	0.006	16:00	0.084	0.042	0.042	0.20
11/18/2020	03:35	0.87	21:00	2.62	1.80	02:15	0.59	17:25	1.35	0.98	02:15	0.008	17:25	0.084	0.041	0.041	0.30
11/19/2020	02:30	1.23	12:35	2.73	1.90	02:30	0.74	21:20	1.26	1.00	02:30	0.016	12:35	0.084	0.043	0.043	0.50
11/20/2020	04:30	0.87	19:40	2.82	1.77	04:25	0.59	19:40	1.35	1.00	04:25	0.008	19:40	0.096	0.040	0.040	0.01
11/21/2020	05:35	0.84	12:45	2.88	1.81	07:35	0.53	10:30	1.42	1.03	03:35	0.008	10:30	0.102	0.043	0.043	-
11/22/2020	05:45	0.69	11:55	2.87	1.87	02:45	0.54	11:55	1.36	0.99	05:45	0.005	11:55	0.099	0.043	0.043	0.21
11/23/2020	04:25	0.68	15:25	2.60	1.82	04:25	0.51	12:55	1.28	0.94	04:20	0.005	15:25	0.075	0.040	0.040	0.14
11/24/2020	04:50	0.67	17:00	2.76	1.81	04:50	0.51	17:50	1.25	0.98	04:40	0.005	17:00	0.085	0.041	0.041	0.21
11/25/2020	03:35	0.71	18:30	2.65	1.82	03:35	0.61	18:30	1.40	1.01	03:35	0.006	18:30	0.091	0.042	0.042	0.05
11/26/2020	05:05	0.84	11:05	2.83	1.82	04:35	0.69	11:10	1.47	1.05	04:25	0.009	11:10	0.105	0.045	0.045	0.02
11/27/2020	04:20	0.63	18:20	2.58	1.74	04:05	0.60	11:30	1.28	1.00	04:05	0.005	18:20	0.078	0.040	0.040	-
11/28/2020	04:45	0.84	12:10	2.63	1.79	02:25	0.64	12:10	1.28	1.00	04:40	0.008	12:10	0.083	0.041	0.041	0.05
11/29/2020	05:00	0.68	14:20	2.79	1.86	05:00	0.50	14:20	1.35	1.02	05:00	0.005	14:20	0.095	0.045	0.045	-
11/30/2020	02:45	0.89	13:35	2.66	1.83	02:40	0.72	13:35	1.30	1.02	02:35	0.010	13:35	0.086	0.042	0.042	0.36
12/01/2020	03:20	0.88	19:10	2.61	1.77	03:05	0.59	19:10	1.28	0.99	03:05	0.008	19:10	0.082	0.039	0.039	-
12/02/2020	04:15	0.73	14:55	2.82	1.74	04:15	0.63	14:55	1.34	1.01	04:20	0.006	14:55	0.095	0.039	0.039	0.01
12/03/2020	04:15	0.72	17:35	2.53	1.77	03:40	0.62	17:35	1.31	1.02	03:40	0.006	17:35	0.080	0.041	0.041	-
12/04/2020	02:50	0.74	11:35	2.62	1.79	04:25	0.53	11:35	1.28	1.00	02:45	0.007	11:35	0.082	0.040	0.040	-
12/05/2020	04:40	0.65	21:40	4.43	2.01	23:40	0.38	11:40	1.32	0.92	04:50	0.004	11:40	0.084	0.041	0.041	0.03
12/06/2020	04:35	2.96	14:35	4.82	3.85	05:05	0.28	14:40	0.71	0.49	02:15	0.022	14:40	0.101	0.054	0.054	0.03
12/07/2020	02:30	2.97	18:35	4.61	3.75	02:30	0.19	18:35	0.75	0.49	02:30	0.014	18:35	0.101	0.053	0.053	-
12/08/2020	03:55	2.93	19:15	4.53	3.77	03:15	0.20	13:05	0.63	0.45	03:15	0.015	13:05	0.079	0.048	0.048	0.87
12/09/2020	04:30	2.88	10:30	4.53	3.72	04:40	0.27	10:30	0.69	0.46	04:40	0.020	10:30	0.091	0.048	0.048	0.17
12/10/2020	23:30	1.40	13:55	6.19	3.30	04:35	0.20	18:55	1.30	0.66	04:35	0.014	11:55	0.097	0.048	0.048	0.07
12/11/2020	03:35	0.70	19:05	2.59	1.73	03:35	0.57	09:25	1.26	0.97	03:35	0.006	09:25	0.076	0.038	0.038	0.02
12/12/2020	05:10	0.92	13:15	2.97	1.95	05:00	0.44	13:15	1.20	0.89	05:10	0.006	13:15	0.091	0.041	0.041	0.01
12/13/2020	04:55	0.96	10:40	2.90	2.03	04:50	0.35	10:40	1.21	0.89	04:50	0.005	10:40	0.089	0.044	0.044	0.24
12/14/2020	02:30	1.31	18:25	2.84	2.09	02:35	0.54	12:55	1.14	0.87	02:30	0.013	12:55	0.079	0.043	0.043	0.05
12/15/2020	03:10	1.08	08:55	2.80	1.97	03:15	0.43	14:25	1.28	0.92	03:10	0.008	10:35	0.084	0.043	0.043	0.58
12/16/2020	05:35	1.05	18:25	2.66	1.88	04:40	0.36	11:35	1.30	0.97	03:25	0.008	11:35	0.082	0.041	0.041	0.39
12/17/2020	04:00	0.77	11:15	2.64	1.81	03:05	0.39	08:00	1.19	0.95	03:05	0.005	11:15	0.075	0.039	0.039	0.08
12/18/2020	03:50	0.74	18:05	2.80	1.81	03:50	0.56	18:05	1.26	0.92	03:50	0.006	18:05	0.088	0.038	0.038	0.25
12/19/2020	03:35	0.91	09:55	2.77	1.93	03:35	0.62	09:10	1.22	0.96	02:40	0.009	09:55	0.084	0.043	0.043	0.37
12/20/2020	04:50	0.70	14:15	2.78	1.88	04:45	0.56	19:55	1.25	0.96	04:30	0.006	14:15	0.086	0.042	0.042	0.04
12/21/2020	04:10	0.86	19:30	2.79	1.93	04:00	0.65	18:05	1.26	0.98	04:00	0.009	19:30	0.085	0.044	0.044	1.07
12/22/2020	04:05	0.88	18:40	2.61	1.84	04:35	0.41	20:35	1.18	0.89	04:30	0.006	20:30	0.074	0.038	0.038	-
12/23/2020	04:25	0.69	13:25	2.72	1.84	04:05	0.57	11:05	1.15	0.90	04:25	0.006	13:25	0.077	0.038	0.038	-
12/24/2020	05:25	0.99	11:35	2.94	1.95	04:55	0.55	18:20	1.46	0.96	04:25	0.009	11:35	0.095	0.044	0.044	-
12/25/2020	04:55	0.71	11:20	2.64	1.84	07:35	0.52	00:10	1.23	0.93	04:55	0.005	12:00	0.076	0.039	0.039	0.49
12/26/2020	06:45	0.80	14:55	2.67	1.78	04:35	0.50	12:15	1.19	0.90	04:35	0.006	12:15	0.077	0.037	0.037	0.02
12/27/2020	02:50	0.95	10:15	2.97	1.88	02:55	0.61	13:10	1.31	0.93	02:50	0.009	10:15	0.097	0.041	0.041	0.13
12/28/2020	03:45	0.77	13:00	2.72	1.81	04:40	0.57	18:40	1.27	0.97	03:45	0.006	13:00	0.085	0.040	0.040	-
12/29/2020	03:45	0.77	12:40	2.74	1.76	03:45	0.54	12:40	1.22	0.92	03:45	0.006	12:40	0.083	0.037	0.037	0.14
12/30/2020	03:10	0.99	12:35	2.64	1.88	03:05	0.56	23:30	1.67	1.12	03:05	0.009	20:25	0.101	0.048	0.048	0.78
12/31/2020	04:50	0.97	17:55	2.79	1.83	07:10	0.67	00:50	1.49	1.04	04:50	0.013	18:30	0.086	0.041	0.041	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			9.089	30.65
Average	2.05	0.93	0.045	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A13_71085

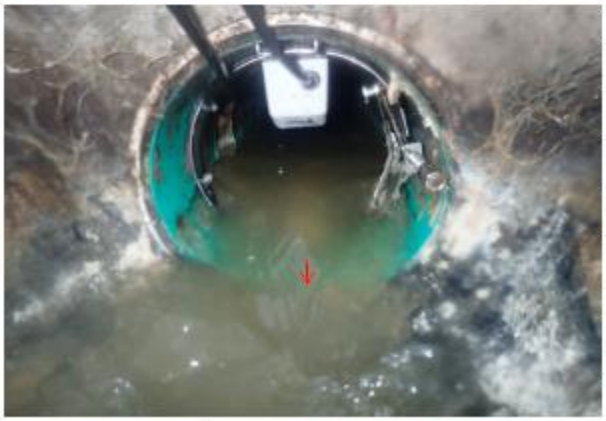
Site Address /Location:	Adjacent 1546 2nd St NE		
Site Access Details:	Inbetween Pike St NE and RSt NE	Latitude:	47.310005
		Longitude:	-122.209035

Monitor Series	Location Type
TRITON+	Temporary
Pipe Size (H x W)	Pipe Shape
8.00 x 8.00	Circular
Manhole #	System Characteristics
A13 710-85	Residential
Access	Traffic
Drive	Light









ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519

Installation Information	
Installation Date:	Installation Type:
Wednesday, September 23, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi
Installation Confirmation:	
Time	Pipe Size (HxW)
11:24:00 AM	16.25x16.38
Depth of Flow (Wet DOF) (in)	
2.50	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
0.97	N/A
Silt (in)	Silt Type
0	
Hydraulic Comments:	
Manhole / Pipe Information:	
Manhole Depth (Approx. FT):	Manhole Configuration
9	Common Trench
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
PVC	Good
Communication Information:	
Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole
Additional Site Info. / Comments:	

AUB_A14_710149

Site Commentary

SITE INFORMATION

Pipe	Elliptical (18 in H x 18 in W)
Silt	0.38 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

This site experienced some backwater conditions during the monitoring period.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	4.68	0.79	0.182
Minimum	2.63	0.40	0.068
Maximum	9.24	1.42	0.357
Min Time	11/08/2020 6:00:00 AM	01/03/2021 3:00:00 AM	11/02/2020 3:00:00 AM
Max Time	01/02/2021 9:00:00 PM	11/23/2020 8:00:00 AM	10/09/2020 11:00:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

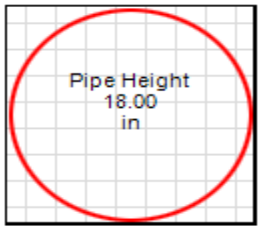
Percent Uptime	
DFINAL (in)	98.74
VFINAL (ft/s)	98.74
QFINAL (MGD - Total MG)	98.74

Hydrograph Report

AUB_A14_710149

Flow Monitor

AUB_A14_710149



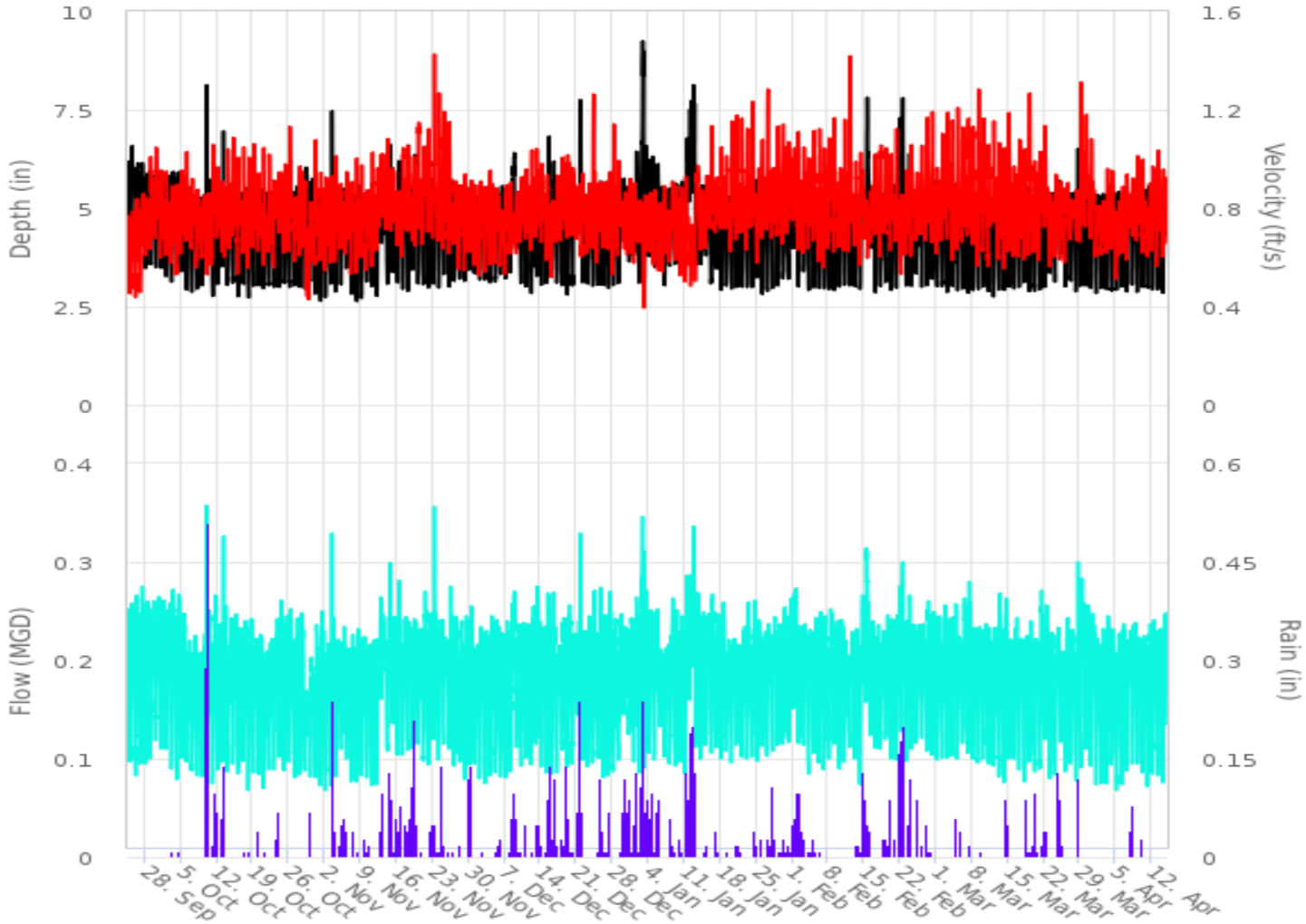
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL





4455 S. 134th Place
Tukwila, WA 98168

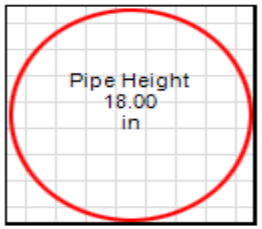
206-762-5070
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Scattergraph Report

AUB_A14_710149

Flow Monitor

AUB_A14_710149

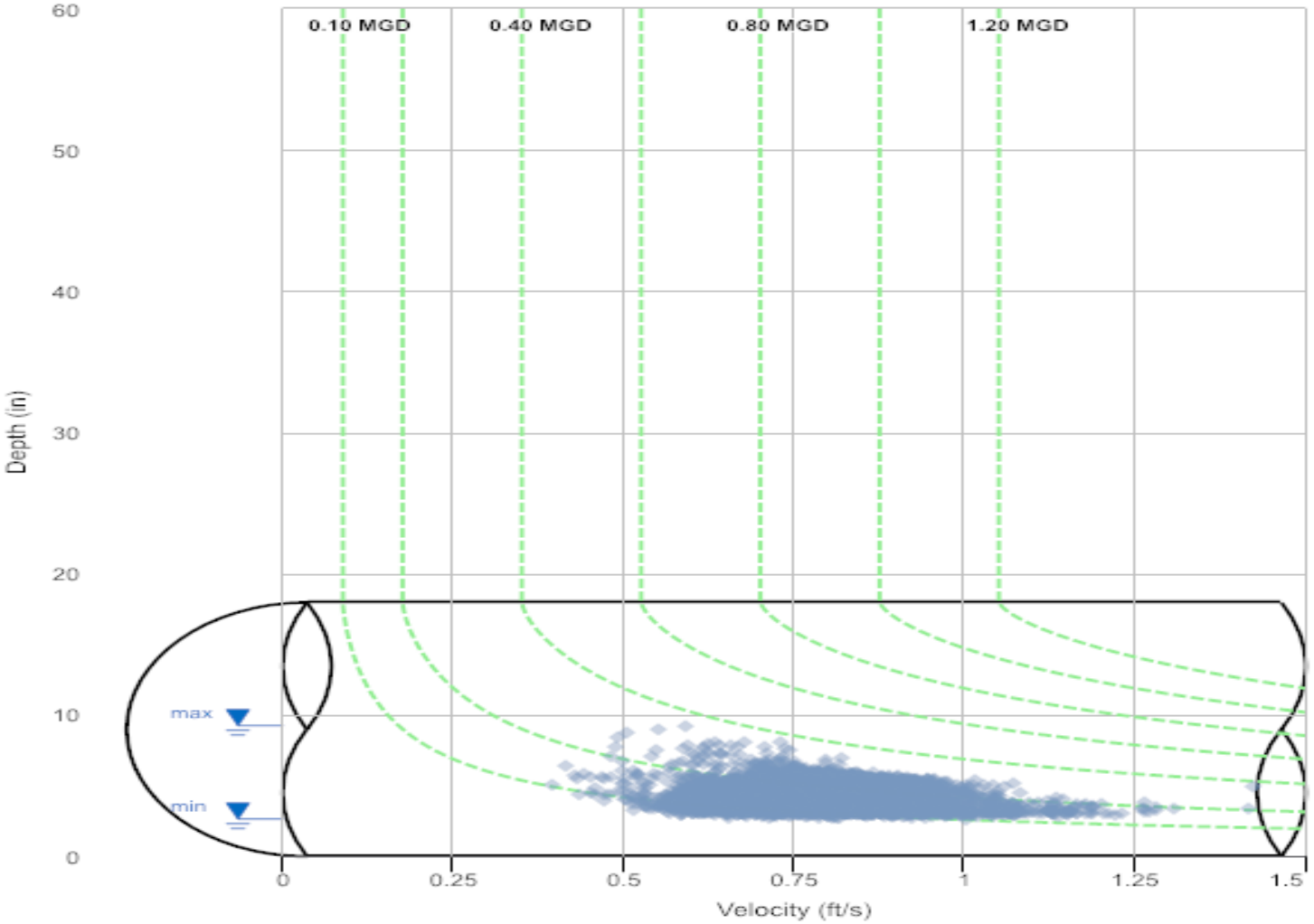


Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A14_710149Pipe: Elliptical (18 in H x 18 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	02:50	3.70	15:45	7.42	4.86	01:00	0.51	09:45	1.00	0.75	03:30	0.088	15:25	0.302	0.183	0.183	0.51
01/02/2021	03:50	2.94	21:15	9.88	5.58	22:05	0.43	07:05	0.95	0.72	04:45	0.077	21:20	0.385	0.209	0.209	1.69
01/03/2021	06:35	2.95	00:05	9.37	5.36	03:10	0.36	08:50	0.94	0.70	06:45	0.079	00:05	0.327	0.194	0.194	0.65
01/04/2021	03:20	3.67	19:15	6.69	5.12	03:30	0.52	10:10	0.97	0.73	03:30	0.089	11:55	0.280	0.190	0.190	0.48
01/05/2021	04:25	3.14	21:00	6.58	4.93	00:15	0.51	06:15	0.97	0.71	02:50	0.089	19:50	0.289	0.177	0.177	0.52
01/06/2021	05:55	3.96	19:55	5.69	4.98	18:50	0.49	07:20	0.86	0.69	04:00	0.118	11:40	0.233	0.174	0.174	0.22
01/07/2021	04:00	2.87	19:55	5.63	4.69	08:15	0.54	05:30	1.01	0.73	03:10	0.087	21:00	0.248	0.168	0.168	-
01/08/2021	04:05	3.36	17:35	5.73	4.87	01:50	0.55	16:45	0.98	0.76	02:45	0.091	17:05	0.288	0.188	0.188	0.22
01/09/2021	04:35	3.28	13:30	5.67	4.78	04:20	0.50	08:30	0.99	0.74	04:30	0.076	12:10	0.268	0.178	0.178	-
01/10/2021	05:40	3.46	14:25	5.77	4.84	02:30	0.46	17:55	0.96	0.74	03:45	0.085	17:55	0.270	0.181	0.181	0.07
01/11/2021	04:05	3.07	13:05	6.88	5.37	01:15	0.48	07:20	0.99	0.70	04:10	0.075	13:20	0.305	0.200	0.200	1.06
01/12/2021	00:40	5.11	19:05	8.91	6.60	05:55	0.45	17:15	0.88	0.62	00:45	0.147	19:10	0.376	0.231	0.231	2.10
01/13/2021	05:05	3.44	00:35	8.27	5.10	02:40	0.48	13:20	1.07	0.82	05:05	0.107	13:25	0.298	0.213	0.213	0.09
01/14/2021	03:50	3.49	13:00	5.70	4.80	02:50	0.54	06:20	0.92	0.78	02:50	0.083	18:45	0.266	0.188	0.188	0.01
01/15/2021	04:05	3.68	15:55	5.59	4.77	02:40	0.60	07:30	1.01	0.82	02:35	0.100	16:05	0.256	0.197	0.197	0.09
01/16/2021	03:35	2.83	12:35	5.63	4.54	00:50	0.64	08:20	1.27	0.87	03:45	0.092	10:50	0.280	0.192	0.192	-
01/17/2021	06:05	3.10	12:25	5.53	4.61	00:15	0.67	08:40	0.99	0.82	06:05	0.094	14:05	0.270	0.187	0.187	0.10
01/18/2021	04:35	2.80	14:50	5.64	4.57	01:30	0.64	06:25	1.19	0.85	02:45	0.083	13:20	0.278	0.190	0.190	-
01/19/2021	03:35	2.86	19:55	5.41	4.51	00:50	0.56	06:00	1.11	0.80	04:30	0.097	15:50	0.237	0.173	0.173	0.01
01/20/2021	04:35	2.89	18:15	5.34	4.43	00:00	0.55	06:25	1.42	0.82	02:45	0.083	14:25	0.256	0.174	0.174	-
01/21/2021	03:40	2.90	18:40	5.31	4.50	00:35	0.63	06:25	1.26	0.84	01:25	0.105	18:55	0.241	0.180	0.180	0.11
01/22/2021	05:25	2.88	19:10	5.38	4.44	23:55	0.57	05:10	1.25	0.86	03:40	0.091	17:35	0.259	0.182	0.182	-
01/23/2021	05:10	2.86	12:05	5.56	4.50	00:00	0.56	06:10	1.18	0.84	03:50	0.090	12:00	0.279	0.181	0.181	-
01/24/2021	05:25	2.88	18:05	5.92	4.53	23:50	0.56	07:05	1.37	0.87	03:00	0.094	18:05	0.289	0.188	0.188	0.16
01/25/2021	05:05	3.15	17:55	5.28	4.55	01:05	0.54	11:55	1.07	0.79	02:40	0.086	11:55	0.269	0.177	0.177	0.04
01/26/2021	04:05	2.74	18:05	5.22	4.37	00:20	0.63	03:50	1.13	0.86	02:00	0.101	21:10	0.257	0.176	0.176	-
01/27/2021	04:30	2.83	18:55	5.38	4.45	01:10	0.53	06:35	1.46	0.89	01:20	0.088	16:20	0.257	0.186	0.186	0.14
01/28/2021	03:20	2.84	12:45	5.25	4.59	17:50	0.65	15:30	1.03	0.84	04:00	0.094	12:55	0.271	0.190	0.190	0.24
01/29/2021	05:35	2.84	18:40	5.37	4.43	22:25	0.58	05:45	1.23	0.86	02:50	0.102	14:05	0.254	0.181	0.181	0.03
01/30/2021	04:40	3.09	12:40	5.43	4.52	23:45	0.65	05:10	1.18	0.86	02:45	0.104	14:20	0.274	0.189	0.189	0.07
01/31/2021	06:35	2.98	12:15	5.55	4.62	02:30	0.61	08:15	1.21	0.87	06:50	0.106	18:05	0.275	0.197	0.197	0.12
02/01/2021	05:10	3.93	18:45	6.52	5.00	23:50	0.63	07:10	1.13	0.85	00:40	0.132	18:55	0.297	0.214	0.214	0.82
02/02/2021	04:55	2.90	00:00	6.00	4.71	00:20	0.60	05:50	1.23	0.82	02:40	0.105	12:10	0.255	0.187	0.187	0.31
02/03/2021	04:10	3.06	19:15	5.38	4.59	01:00	0.54	06:30	1.24	0.82	04:25	0.105	16:05	0.253	0.185	0.185	0.06
02/04/2021	05:10	2.82	15:35	5.35	4.44	00:50	0.58	05:30	1.10	0.82	04:00	0.070	11:10	0.247	0.177	0.177	0.07
02/05/2021	04:20	2.87	13:40	5.54	4.47	23:40	0.51	06:20	1.24	0.83	04:10	0.092	13:40	0.296	0.178	0.178	0.01
02/06/2021	05:05	2.85	15:25	5.61	4.50	00:00	0.58	07:30	1.25	0.85	03:05	0.085	11:25	0.288	0.185	0.185	0.01
02/07/2021	05:25	2.86	13:20	5.63	4.45	02:05	0.49	06:25	1.14	0.80	03:00	0.085	12:35	0.261	0.172	0.172	-
02/08/2021	03:55	2.85	19:10	5.39	4.46	00:00	0.61	06:15	1.15	0.88	02:10	0.093	12:10	0.279	0.190	0.190	-
02/09/2021	04:30	2.77	17:10	5.37	4.46	00:40	0.56	05:10	1.25	0.88	03:55	0.106	11:45	0.272	0.186	0.186	-
02/10/2021	04:05	2.93	17:25	5.32	4.48	00:25	0.58	08:20	1.02	0.82	04:10	0.071	20:30	0.260	0.180	0.180	-
02/11/2021	03:05	3.00	18:05	5.33	4.47	01:00	0.55	06:05	1.39	0.79	02:40	0.077	09:15	0.244	0.169	0.169	-
02/12/2021	04:35	2.96	13:05	5.48	4.43	00:00	0.60	06:10	1.60	0.86	04:10	0.095	21:20	0.239	0.179	0.179	-
02/13/2021	05:50	2.96	12:20	5.29	4.44	01:35	0.60	08:15	1.10	0.81	05:30	0.092	12:05	0.266	0.175	0.175	0.08
02/14/2021	05:20	2.81	14:30	5.57	4.53	03:10	0.45	06:45	1.15	0.82	04:25	0.061	16:25	0.279	0.184	0.184	0.71
02/15/2021	05:55	4.45	14:05	8.03	5.89	14:40	0.56	09:00	0.88	0.72	06:10	0.151	13:25	0.328	0.229	0.229	0.78
02/16/2021	04:00	3.95	19:25	5.65	4.86	03:05	0.57	16:20	1.00	0.77	03:05	0.108	16:20	0.275	0.189	0.189	0.07
02/17/2021	04:05	2.74	16:20	5.62	4.59	14:25	0.63	07:00	1.14	0.83	02:30	0.100	18:55	0.248	0.183	0.183	-
02/18/2021	04:05	2.91	13:45	5.43	4.57	01:20	0.55	06:15	1.20	0.82	03:20	0.103	16:20	0.240	0.181	0.181	0.09
02/19/2021	05:00	2.99	19:35	5.91	4.61	23:55	0.58	07:20	1.16	0.84	05:00	0.104	15:40	0.263	0.189	0.189	0.17
02/20/2021	05:30	2.86	13:35	5.72	4.59	00:00	0.59	07:25	1.19	0.80	04:20	0.082	12:00	0.264	0.179	0.179	0.07
02/21/2021	06:25	2.87	23:50	7.87	4.79	23:50	0.53	07:30	1.21	0.80	05:05	0.086	23:35	0.310	0.189	0.189	0.42
02/22/2021	05:25	4.01	13:10	8.43	5.61	03:45	0.47	06:00	0.91	0.70	03:55	0.114	13:25	0.340	0.209	0.209	0.98
02/23/2021	05:05	2.82	22:00	6.87	4.73	01:30	0.55	08:00	1.06	0.77	05:15	0.086	09:10	0.296	0.182	0.182	0.27
02/24/2021	03:40	2.92	18:10	5.45	4.62	00:10	0.57	05:10	1.12	0.83	03:40	0.099	18:30	0.258	0.187	0.187	-
02/25/2021	02:50	3.05	20:05	5.51	4.76	01:35	0.62	02:00	1.06	0.80	02:50	0.097	19:00	0.261	0.190	0.190	0.18
02/26/2021	04:05	2.58	18:35	5.59	4.63	23:05	0.61	05:55	1.16	0.82	04:05	0.094	13:20	0.258	0.183	0.183	0.10
02/27/2021	04:35	2.94	12:20	5.72	4.66	00:20	0.61	08:00	1.35	0.86	03:30	0.101	11:30	0.274	0.195	0.195	0.02
02/28/2021	03:50	2.77	12:45	5.76	4.67	23:55	0.59	07:00	1.36	0.83	03:40	0.082	20:55	0.272	0.189	0.189	0.02
03/01/2021	05:05	2.92	13:45	5.37	4.61	01:00	0.58	11:20	1.07	0.82	02:45	0.087	11:20	0.294	0.186	0.186	-
03/02/2021	03:55	2.88	18:20	5.39	4.48	00:30	0.63	05:15	1.16	0.84	04:05	0.085	18:40	0.276	0.182	0.182	-
03/03/2021	03:45	2.79	17:50	5.45	4.50	00:05	0.63	06:35	1.25	0.87	02:35	0.089	19:00	0.252	0.188	0.188	-
03/04/2021	04:55	2.92	19:55	6.16	4.54	01:25	0.51	06:20	1.39	0.85	04:10	0.091	13:00	0.289	0.186	0.186	0.20
03/05/2021	04:15	2.53	13:30	5.38	4.48	02:15	0.55	05:25	1.28	0.84	04:15	0.083	14:45	0.266	0.179	0.179	0.05
03/06/2021	06:20	2.90	14:25	5.47	4.51	01:55	0.59	07:00	1.32	0.90	01:55	0.108	12:05	0.284	0.195	0.195	-
03/07/2021	06:35	2.67	13:00	5.55	4.49	23:05	0.64	07:05	1.36	0.90	03:25	0.093	10:30	0.298	0.194	0.194	0.04
03/08/2021	04:40	2.75	20:15	5.45	4.54	23:30	0.53	07:00	1.27	0.82	04:15	0.082	10:30	0.266	0.177	0.177	-
03/09/2021	05:50	2.88	20:55	5.38	4.48	01:20	0.50	07:05	1.36	0.85	01:35	0.077	11:35	0.267	0.183	0.183	0.01
03/10/2021	03:30	2.85	16:50	5.47	4.56	00:25	0.48	05:10	1.28	0.83	02:35	0.089	18:15	0.262	0.181	0.181	-
03/11/2021	04:30	2.78	12:35	5.47	4.53	00:50	0.53	06:10	1.23	0.82	03:25	0.074	09:30	0.249	0.179	0.179	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	04:40	2.40	18:40	6.24	4.46	18:35	0.53	06:15	1.34	0.82	03:40	0.078	17:00	0.250	0.175	0.175	-
03/13/2021	05:20	2.75	13:55	5.64	4.52	04:40	0.52	08:00	1.27	0.81	04:40	0.066	10:35	0.292	0.181	0.181	-
03/14/2021	06:05	2.81	15:40	5.98	4.61	02:30	0.46	06:00	1.11	0.79	04:55	0.064	15:05	0.289	0.182	0.182	0.30
03/15/2021	03:20	2.90	11:40	5.45	4.48	00:55	0.55	04:35	1.22	0.81	02:05	0.082	12:10	0.246	0.172	0.172	-
03/16/2021	04:00	2.83	18:45	5.44	4.54	00:00	0.59	05:20	1.16	0.81	05:05	0.084	16:20	0.266	0.179	0.179	-
03/17/2021	03:05	2.73	11:35	5.43	4.56	00:05	0.56	05:50	1.17	0.78	02:15	0.072	10:15	0.256	0.173	0.173	-
03/18/2021	04:30	2.95	16:35	5.78	4.55	01:25	0.53	05:45	1.10	0.78	02:00	0.067	11:55	0.258	0.172	0.172	0.11
03/19/2021	03:10	2.75	13:00	5.41	4.44	01:15	0.53	05:40	1.36	0.85	01:15	0.083	09:10	0.259	0.176	0.176	0.03
03/20/2021	04:05	2.75	14:45	5.46	4.54	23:05	0.55	05:30	1.22	0.78	04:15	0.063	13:45	0.252	0.172	0.172	0.17
03/21/2021	04:35	2.79	11:15	5.71	4.47	01:10	0.54	06:30	1.11	0.87	04:30	0.082	11:15	0.291	0.190	0.190	0.07
03/22/2021	02:30	2.93	10:45	5.81	4.63	22:45	0.54	04:20	1.22	0.86	23:50	0.111	11:55	0.278	0.192	0.192	0.11
03/23/2021	04:00	3.26	18:45	5.48	4.65	02:55	0.49	07:10	0.92	0.72	02:55	0.072	12:10	0.247	0.168	0.168	-
03/24/2021	03:15	3.05	20:10	5.98	4.63	01:45	0.51	07:10	1.02	0.75	01:45	0.073	20:20	0.245	0.171	0.171	0.34
03/25/2021	03:05	3.60	18:20	5.52	4.88	01:10	0.48	07:40	1.06	0.72	03:50	0.103	07:40	0.245	0.175	0.175	0.27
03/26/2021	04:35	2.95	11:25	5.42	4.59	00:00	0.52	06:05	0.95	0.80	03:40	0.075	11:10	0.267	0.181	0.181	-
03/27/2021	05:00	3.03	10:45	5.46	4.60	01:15	0.61	05:55	0.97	0.78	02:10	0.087	11:00	0.241	0.178	0.178	-
03/28/2021	05:05	2.78	14:55	7.39	4.67	16:25	0.59	08:20	1.03	0.74	04:15	0.073	14:35	0.339	0.172	0.172	0.37
03/29/2021	03:20	2.83	10:45	5.44	4.56	00:50	0.64	05:10	1.42	0.93	03:20	0.076	10:05	0.301	0.206	0.206	-
03/30/2021	05:15	2.84	12:30	5.43	4.51	23:40	0.64	06:20	1.26	0.92	01:35	0.098	17:15	0.282	0.199	0.199	-
03/31/2021	02:50	2.72	11:55	5.40	4.57	23:20	0.57	05:45	1.29	0.84	02:50	0.081	13:15	0.262	0.188	0.188	-
04/01/2021	03:15	2.72	11:40	5.41	4.58	02:00	0.52	10:55	0.89	0.73	02:25	0.066	10:55	0.247	0.165	0.165	-
04/02/2021	03:55	2.91	11:40	5.41	4.56	01:05	0.57	12:10	0.94	0.74	04:50	0.069	17:15	0.251	0.167	0.167	-
04/03/2021	03:15	2.91	11:10	5.59	4.51	05:15	0.52	07:50	1.03	0.76	05:15	0.062	08:50	0.270	0.170	0.170	-
04/04/2021	03:15	2.78	11:20	5.59	4.48	23:40	0.46	07:25	1.07	0.78	05:05	0.077	11:40	0.251	0.167	0.167	-
04/05/2021	02:55	2.86	11:55	5.53	4.59	00:50	0.46	15:35	0.92	0.71	01:50	0.059	15:35	0.246	0.163	0.163	-
04/06/2021	03:45	2.83	13:05	5.47	4.62	02:55	0.50	06:50	1.04	0.76	03:15	0.063	11:15	0.255	0.176	0.176	-
04/07/2021	03:10	2.81	19:05	5.45	4.62	01:15	0.54	04:45	1.03	0.80	03:05	0.077	19:05	0.253	0.182	0.182	0.22
04/08/2021	03:15	2.90	12:30	5.42	4.61	23:35	0.57	10:00	1.06	0.82	04:40	0.085	10:00	0.275	0.187	0.187	-
04/09/2021	02:50	2.67	19:00	5.42	4.47	22:35	0.63	05:50	1.10	0.81	02:10	0.082	13:00	0.255	0.174	0.174	0.03
04/10/2021	03:35	2.93	12:05	5.60	4.53	02:10	0.56	06:25	1.11	0.78	04:10	0.074	09:50	0.271	0.172	0.172	0.02
04/11/2021	03:20	2.89	09:15	5.72	4.56	06:20	0.54	16:30	0.98	0.74	03:25	0.065	16:30	0.262	0.169	0.169	-
04/12/2021	02:25	2.88	11:45	5.50	4.57	23:50	0.51	06:00	1.18	0.80	03:00	0.076	11:40	0.280	0.180	0.180	-
04/13/2021	02:20	2.80	12:05	5.42	4.53	00:00	0.55	06:30	1.14	0.80	02:15	0.072	11:25	0.256	0.179	0.179	-
04/14/2021	03:30	2.66	12:50	5.41	4.58	01:20	0.57	06:35	1.09	0.81	02:25	0.063	15:05	0.273	0.185	0.185	-
09/24/2020	23:45	4.98	18:35	6.21	5.91	22:45	0.52	14:55	0.81	0.69	23:45	0.139	19:25	0.276	0.222	0.091	-
09/25/2020	03:00	4.24	12:25	7.13	5.57	01:55	0.43	15:15	0.82	0.65	03:00	0.086	12:25	0.282	0.197	0.197	-
09/26/2020	04:45	3.74	15:15	6.41	5.34	03:15	0.38	12:30	0.94	0.66	04:25	0.071	12:30	0.300	0.188	0.188	-
09/27/2020	03:55	3.84	11:20	6.18	5.20	01:30	0.40	09:50	0.92	0.70	01:30	0.075	11:45	0.300	0.194	0.194	-
09/28/2020	03:10	3.18	18:15	5.98	5.02	02:50	0.49	06:20	0.91	0.76	03:00	0.077	12:30	0.280	0.196	0.196	-
09/29/2020	04:05	3.38	17:30	5.87	5.01	01:55	0.60	03:45	1.12	0.81	01:50	0.091	14:15	0.284	0.205	0.205	-
09/30/2020	02:55	3.21	19:05	5.98	5.01	23:45	0.58	04:20	1.13	0.82	01:00	0.109	14:50	0.303	0.206	0.206	-
10/01/2020	02:55	3.31	19:20	5.90	5.01	00:20	0.58	05:00	1.10	0.77	02:45	0.097	16:55	0.280	0.195	0.195	-
10/02/2020	02:45	3.21	10:55	5.89	5.01	00:20	0.55	04:30	1.01	0.78	01:45	0.101	16:40	0.288	0.198	0.198	-
10/03/2020	03:25	3.06	11:55	6.01	4.97	00:25	0.53	08:45	1.02	0.76	03:50	0.075	09:00	0.300	0.193	0.193	0.01
10/04/2020	03:10	3.32	11:25	6.01	4.99	04:05	0.47	15:20	1.03	0.73	04:05	0.068	15:20	0.322	0.190	0.190	0.01
10/05/2020	04:10	3.31	12:25	5.70	4.79	21:15	0.58	05:15	1.07	0.79	02:55	0.089	09:05	0.260	0.190	0.190	-
10/06/2020	04:05	2.82	12:40	5.31	4.42	01:10	0.59	04:00	1.12	0.79	01:15	0.089	17:20	0.239	0.167	0.167	-
10/07/2020	02:50	2.85	18:45	5.42	4.39	23:45	0.50	05:10	0.95	0.77	01:30	0.080	19:00	0.234	0.163	0.163	-
10/08/2020	03:30	2.90	18:35	5.40	4.47	00:00	0.55	04:30	0.98	0.72	02:45	0.077	20:05	0.257	0.157	0.157	-
10/09/2020	03:15	2.99	23:55	8.95	4.70	00:40	0.55	15:25	0.96	0.76	02:15	0.078	23:20	0.373	0.180	0.180	0.64
10/10/2020	23:55	4.01	01:40	10.26	5.35	03:15	0.51	10:30	0.97	0.73	23:55	0.110	01:45	0.382	0.201	0.201	1.04
10/11/2020	05:30	2.74	18:15	6.46	4.51	02:35	0.49	07:10	1.15	0.80	02:35	0.061	18:00	0.307	0.178	0.178	0.53
10/12/2020	02:50	3.01	17:55	5.52	4.59	23:10	0.56	05:50	1.03	0.77	03:05	0.077	11:30	0.263	0.174	0.174	-
10/13/2020	01:20	3.21	07:35	7.75	5.03	08:45	0.53	03:50	1.08	0.75	00:55	0.077	07:10	0.361	0.193	0.193	0.61
10/14/2020	01:35	2.83	20:05	5.58	4.64	11:00	0.60	04:35	1.14	0.78	01:20	0.072	19:20	0.287	0.178	0.178	-
10/15/2020	02:40	2.96	18:05	5.66	4.64	23:10	0.54	05:25	1.19	0.80	01:35	0.082	19:55	0.271	0.182	0.182	-
10/16/2020	03:05	2.41	11:45	5.53	4.56	00:40	0.47	04:50	1.08	0.79	01:00	0.071	15:40	0.266	0.175	0.175	-
10/17/2020	03:40	2.86	13:40	5.58	4.58	00:25	0.57	06:55	1.21	0.79	02:45	0.084	13:30	0.268	0.178	0.178	0.01
10/18/2020	04:40	2.66	13:00	5.60	4.48	00:50	0.49	07:10	1.22	0.78	02:15	0.060	13:10	0.264	0.173	0.173	0.03
10/19/2020	03:20	2.81	20:05	5.53	4.58	20:30	0.58	05:35	1.19	0.78	02:55	0.075	14:00	0.251	0.174	0.174	0.05
10/20/2020	04:05	2.82	19:25	5.52	4.60	23:20	0.56	05:15	0.98	0.75	03:05	0.067	20:20	0.268	0.170	0.170	-
10/21/2020	02:30	2.83	19:35	5.53	4.54	01:10	0.53	04:15	1.19	0.74	02:00	0.065	19:25	0.229	0.163	0.163	0.01
10/22/2020	04:00	2.77	12:15	5.46	4.59	22:40	0.53	04:20	1.11	0.76	01:35	0.080	12:15	0.242	0.169	0.169	-
10/23/2020	03:35	2.61	20:10	5.68	4.62	01:15	0.47	04:15	1.08	0.78	01:15	0.066	20:00	0.283	0.179	0.179	0.20
10/24/2020	04:50	2.72	11:30	5.68	4.59	20:35	0.56	08:05	1.03	0.81	04:50	0.081	12:05	0.286	0.182	0.182	0.02
10/25/2020	04:55	2.80	11:55	5.49	4.55	01:10	0.57	06:05	1.10	0.80	02:40	0.078	17:10	0.257	0.179	0.179	-
10/26/2020	03:55	2.89	17:40	5.50	4.55	23:55	0.56	04:30	1.25	0.82	01:15	0.086	09:25	0.269	0.180	0.180	-
10/27/2020	03:40	2.93	18:55	5.68	4.60	01:35	0.56	06:00	0.94	0.76	01:30	0.073	18:55	0.273	0.173	0.173	-
10/28/2020	03:35	2.95	13:10	5.42	4.52	02:10	0.56	04:30	1.04	0.81	01:40	0.077	13:00	0.278	0.180	0.180	-
10/29/2020	02:55	2.90	10:40	6.24	4.90	14:45	0.38	06:20	1.05	0.60	03:45	0.075	11:55	0.199	0.138	0.138	-
10/30/2020	04:35	2.93	16:55	5.80	4.74	23:15	0.50	05:30	1.00	0.67	04:05	0.071	19:35	0.216	0.157	0.157	0.10
10/31/2020	03:45	2.54	11:15	5.67	4.47	01:40	0.52	06:20	1.15	0.76	02:10	0.064	09:20	0.249	0.164	0.164	-
11/01/2020	04:40	2.61	12:50	5.64	4.37	01:20	0.55	06:55	1.09	0.78	03:00	0.061	13:20	0.270	0.166	0.166	-
11/02/2020	03:25	2.70	18:30	5.42	4.44	01:15	0.46	06:05	0.99	0.73	04:10	0.059	18:50	0.233	0.158	0.158	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/03/2020	05:25	2.74	10:20	7.67	4.87	04:00	0.48	06:40	1.02	0.72	04:10	0.056	10:05	0.348	0.178	0.178	0.83
11/04/2020	03:30	2.84	20:10	5.36	4.50	00:15	0.55	05:45	1.12	0.77	02:45	0.077	16:25	0.238	0.167	0.167	0.09
11/05/2020	05:10	2.93	13:40	5.55	4.71	23:55	0.56	04:40	0.98	0.78	04:10	0.103	18:15	0.275	0.180	0.180	0.34
11/06/2020	04:35	3.23	13:20	5.32	4.66	00:00	0.56	06:15	1.07	0.75	04:35	0.086	12:25	0.238	0.171	0.171	0.10
11/07/2020	06:15	2.76	16:20	5.45	4.43	01:40	0.47	08:20	1.08	0.75	01:55	0.067	11:35	0.251	0.161	0.161	0.07
11/08/2020	06:25	2.55	13:10	5.64	4.48	01:00	0.51	06:45	1.08	0.76	02:55	0.073	11:20	0.253	0.166	0.166	0.01
11/09/2020	04:15	2.36	21:30	5.43	4.50	00:35	0.56	06:00	1.10	0.77	03:05	0.066	13:35	0.240	0.166	0.166	0.04
11/10/2020	04:10	2.59	19:15	5.47	4.56	04:50	0.40	08:15	0.97	0.73	04:55	0.061	16:45	0.231	0.165	0.165	0.03
11/11/2020	05:50	2.77	14:50	5.41	4.54	01:15	0.49	08:35	1.18	0.75	04:05	0.057	11:00	0.244	0.167	0.167	-
11/12/2020	04:00	2.50	20:40	5.65	4.56	00:45	0.60	07:25	1.08	0.81	01:40	0.070	21:25	0.274	0.182	0.182	0.16
11/13/2020	02:05	3.87	06:50	5.69	4.91	21:10	0.68	06:25	1.18	0.83	23:55	0.139	06:25	0.310	0.204	0.204	0.38
11/14/2020	03:55	2.72	18:25	6.83	4.68	02:20	0.65	08:05	1.24	0.85	03:55	0.094	18:00	0.325	0.193	0.193	0.47
11/15/2020	07:20	2.94	13:35	5.53	4.71	12:00	0.64	10:30	1.07	0.83	07:30	0.109	10:30	0.271	0.191	0.191	0.19
11/16/2020	05:15	2.91	13:30	6.34	4.74	00:25	0.58	12:25	1.12	0.80	05:15	0.088	12:25	0.382	0.188	0.188	0.31
11/17/2020	04:50	2.87	19:50	6.08	4.59	00:50	0.50	06:45	1.21	0.82	00:50	0.094	19:15	0.257	0.182	0.182	0.20
11/18/2020	04:20	2.84	18:00	5.68	4.67	22:10	0.61	06:50	1.18	0.84	02:45	0.096	10:15	0.257	0.191	0.191	0.30
11/19/2020	02:50	3.10	13:05	6.93	4.87	03:40	0.55	03:10	1.26	0.82	02:50	0.101	12:35	0.291	0.198	0.198	0.50
11/20/2020	04:05	3.04	12:30	5.34	4.53	22:25	0.61	05:45	1.39	0.88	03:05	0.109	13:55	0.258	0.190	0.190	0.01
11/21/2020	02:40	2.90	13:25	5.62	4.52	01:00	0.62	09:10	1.24	0.88	02:40	0.079	13:30	0.293	0.196	0.196	-
11/22/2020	03:55	2.86	18:15	5.83	4.61	01:25	0.57	06:30	1.19	0.82	03:10	0.084	11:10	0.265	0.182	0.182	0.21
11/23/2020	05:05	2.88	13:10	5.48	4.75	23:55	0.60	08:35	1.68	0.89	02:40	0.108	08:35	0.450	0.209	0.209	0.14
11/24/2020	05:00	2.81	16:15	6.22	4.62	23:50	0.56	06:45	1.40	0.86	03:10	0.090	08:55	0.296	0.194	0.194	0.21
11/25/2020	03:35	3.03	22:10	5.46	4.70	00:05	0.53	05:15	1.34	0.83	02:50	0.099	14:05	0.244	0.188	0.188	0.05
11/26/2020	05:05	2.76	11:55	5.80	4.63	01:20	0.51	06:50	1.34	0.82	05:05	0.082	14:50	0.298	0.184	0.184	0.02
11/27/2020	04:55	2.87	12:15	5.49	4.53	03:25	0.52	08:15	1.05	0.78	04:45	0.070	12:30	0.263	0.175	0.175	-
11/28/2020	05:40	2.91	13:25	5.51	4.59	01:20	0.48	03:25	1.06	0.76	05:50	0.076	15:10	0.270	0.172	0.172	0.05
11/29/2020	05:45	2.90	13:35	5.66	4.59	02:35	0.42	08:50	1.11	0.76	02:35	0.067	12:30	0.271	0.174	0.174	-
11/30/2020	03:35	3.06	04:55	5.60	4.92	03:10	0.48	11:25	1.06	0.77	03:10	0.072	11:25	0.286	0.192	0.192	0.36
12/01/2020	04:00	3.08	19:05	5.39	4.65	01:15	0.52	08:15	1.04	0.73	04:35	0.086	12:40	0.241	0.169	0.169	-
12/02/2020	04:30	2.94	19:30	5.43	4.68	01:25	0.45	06:40	1.08	0.76	02:05	0.073	13:30	0.249	0.178	0.178	0.01
12/03/2020	04:55	2.87	13:20	5.40	4.60	01:40	0.42	06:30	1.11	0.75	01:40	0.069	20:15	0.255	0.173	0.173	-
12/04/2020	04:10	3.00	12:55	5.46	4.63	03:05	0.49	04:55	1.07	0.79	03:55	0.076	16:05	0.282	0.180	0.180	-
12/05/2020	03:50	2.90	15:35	5.62	4.60	01:25	0.53	06:15	1.01	0.75	04:20	0.074	10:40	0.259	0.171	0.171	0.03
12/06/2020	03:35	3.08	13:00	5.68	4.73	03:45	0.48	15:50	0.89	0.68	03:35	0.068	12:55	0.267	0.162	0.162	0.03
12/07/2020	05:05	2.99	17:35	5.47	4.67	00:50	0.47	09:40	0.98	0.74	04:35	0.065	13:10	0.262	0.174	0.174	-
12/08/2020	03:15	3.05	21:35	6.68	5.16	03:55	0.55	06:10	1.02	0.72	03:55	0.074	19:40	0.296	0.195	0.195	0.87
12/09/2020	05:50	3.60	18:30	5.56	4.82	04:35	0.53	15:15	0.99	0.76	04:35	0.089	19:00	0.259	0.183	0.183	0.17
12/10/2020	04:20	2.92	20:50	5.51	4.54	02:00	0.55	05:25	1.01	0.80	03:10	0.073	16:20	0.259	0.180	0.180	0.07
12/11/2020	05:00	2.91	12:55	5.42	4.50	01:55	0.58	07:10	1.12	0.84	02:30	0.090	18:50	0.266	0.181	0.181	0.02
12/12/2020	05:25	2.56	12:35	5.62	4.51	01:35	0.55	06:50	1.25	0.83	04:20	0.084	16:20	0.283	0.181	0.181	0.01
12/13/2020	07:05	3.10	11:45	5.79	4.66	00:40	0.58	05:00	1.07	0.84	02:10	0.097	10:30	0.298	0.194	0.194	0.24
12/14/2020	03:25	2.87	17:40	5.45	4.57	01:50	0.57	06:00	1.14	0.81	02:45	0.085	19:40	0.276	0.180	0.180	0.05
12/15/2020	03:40	2.85	16:10	7.63	4.85	01:55	0.48	08:10	1.04	0.78	03:45	0.077	15:50	0.320	0.191	0.191	0.58
12/16/2020	04:30	3.13	14:50	6.58	4.80	02:50	0.42	06:55	0.99	0.75	02:50	0.069	15:30	0.318	0.181	0.181	0.39
12/17/2020	04:25	2.86	13:00	5.36	4.52	01:25	0.61	07:00	1.01	0.79	03:15	0.079	18:05	0.233	0.174	0.174	0.08
12/18/2020	04:15	2.88	19:10	5.40	4.59	00:55	0.63	07:30	1.08	0.85	04:00	0.090	14:30	0.269	0.191	0.191	0.25
12/19/2020	05:45	2.35	21:20	6.08	4.64	02:20	0.62	08:15	1.21	0.82	05:45	0.072	17:20	0.271	0.186	0.186	0.37
12/20/2020	06:55	2.78	14:00	5.45	4.49	22:10	0.58	05:00	1.06	0.82	03:40	0.079	15:45	0.255	0.177	0.177	0.04
12/21/2020	04:50	4.13	16:40	8.47	5.51	20:20	0.54	16:10	0.99	0.73	04:10	0.131	16:50	0.387	0.211	0.211	1.07
12/22/2020	04:50	2.91	12:40	5.40	4.61	22:55	0.57	06:05	1.12	0.77	04:50	0.086	17:00	0.266	0.175	0.175	-
12/23/2020	05:45	3.02	14:25	5.44	4.52	01:10	0.55	11:45	1.02	0.78	02:55	0.084	11:45	0.277	0.173	0.173	-
12/24/2020	05:50	2.87	14:00	5.64	4.52	20:35	0.54	07:40	1.39	0.82	03:55	0.080	14:00	0.306	0.177	0.177	-
12/25/2020	04:45	2.72	17:15	5.79	4.45	01:15	0.57	16:00	1.04	0.80	04:45	0.079	16:10	0.318	0.174	0.174	0.49
12/26/2020	05:10	3.01	12:55	5.57	4.48	02:25	0.56	10:00	1.01	0.78	03:55	0.075	16:50	0.270	0.172	0.172	0.02
12/27/2020	06:50	2.88	12:30	5.75	4.57	02:35	0.59	07:05	1.10	0.81	03:45	0.075	14:15	0.297	0.183	0.183	0.13
12/28/2020	04:50	3.01	14:25	5.58	4.53	01:30	0.50	06:15	1.27	0.79	03:45	0.076	15:45	0.261	0.175	0.175	-
12/29/2020	03:45	2.98	19:45	6.07	4.55	00:15	0.58	06:50	1.12	0.79	03:00	0.094	19:40	0.271	0.174	0.174	0.14
12/30/2020	01:40	4.03	06:35	5.91	5.14	20:15	0.54	10:30	0.92	0.75	03:45	0.132	21:35	0.254	0.197	0.197	0.78
12/31/2020	06:50	3.38	18:15	5.57	4.73	01:20	0.58	11:10	1.03	0.78	03:20	0.115	18:00	0.286	0.183	0.183	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			36.893	30.65
Average	4.68	0.79	0.182	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A14_710149

Site Address /Location:	Auburn High School - I St NE			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	Keys Required	Latitude:	47.309599°	Pipe Size (H x W): 18.00 x 18.00	Pipe Shape: Circular
		Longitude:	-122.218373°		



Manhole #	System Characteristics
710-149	Residential
Access	Traffic
Drive	Medium







ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519

Installation Information

Installation Date:	Installation Type:
Thursday, September 24, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors): Upstream 0-5 FT	Monitor Location: Manhole
Sensors / Devices: Peak Combo (CS4), Smart Depth (CS5)	Pressure Sensor Range (psi): 0 - 5 psi

Installation Confirmation:

Time	Pipe Size (HxW)
2:10:00 PM	18.00 x 18.00
Depth of Flow (Wet DOF) (in): 5.63	
CS5 Physical Offset (in): 1.38	Measurement Confidence (in): 0.25"
Peak Velocity (fps): 0.88	Velocity Sensor Offset (in): N/A
Silt (in): 0.38	Silt Type: Soft / Loose

Hydraulic Comments:

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
6	Single
Manhole Material: Concrete	Manhole Condition: Good
Manhole Opening Diameter (in): 24	Manhole Diameter (Approx.): 26
Manhole Cover: Steel	Manhole Frame: Normal
Active Connections: Yes, Inside	Air Quality: Normal
Pipe Material: PVC	Pipe Condition: Good

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

710-149 / 710-151 In Same M/H (710-150)

AUB_A15_80930

Site Commentary

SITE INFORMATION

Pipe	Round (21 in H)
Silt	0.38 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	2.89	0.45	0.058
Minimum	1.84	0.19	0.013
Maximum	3.95	0.72	0.135
Min Time	01/07/2021 3:00:00 AM	03/31/2021 2:00:00 AM	01/07/2021 3:00:00 AM
Max Time	11/23/2020 8:00:00 AM	02/22/2021 1:00:00 PM	11/23/2020 8:00:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

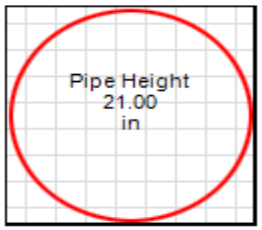
Percent Uptime	
DFINAL (in)	99.263
VFINAL (ft/s)	99.263
QFINAL (MGD - Total MG)	99.263

Hydrograph Report

AUB_A15_80930

Flow Monitor

AUB_A15_80930



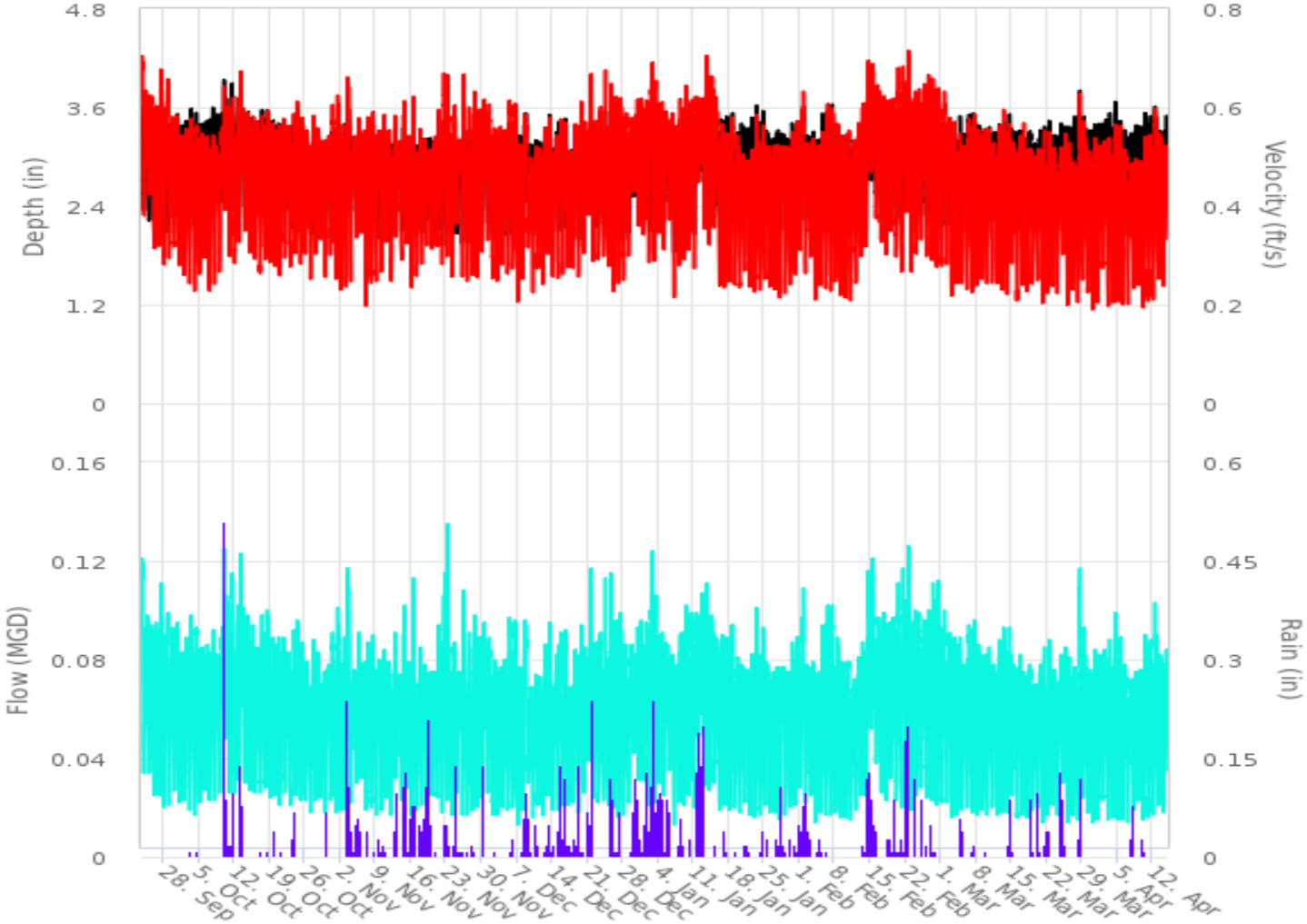
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL





4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
www.adsenv.com

Scattergraph Report

AUB_A15_80930

Flow Monitor

AUB_A15_80930

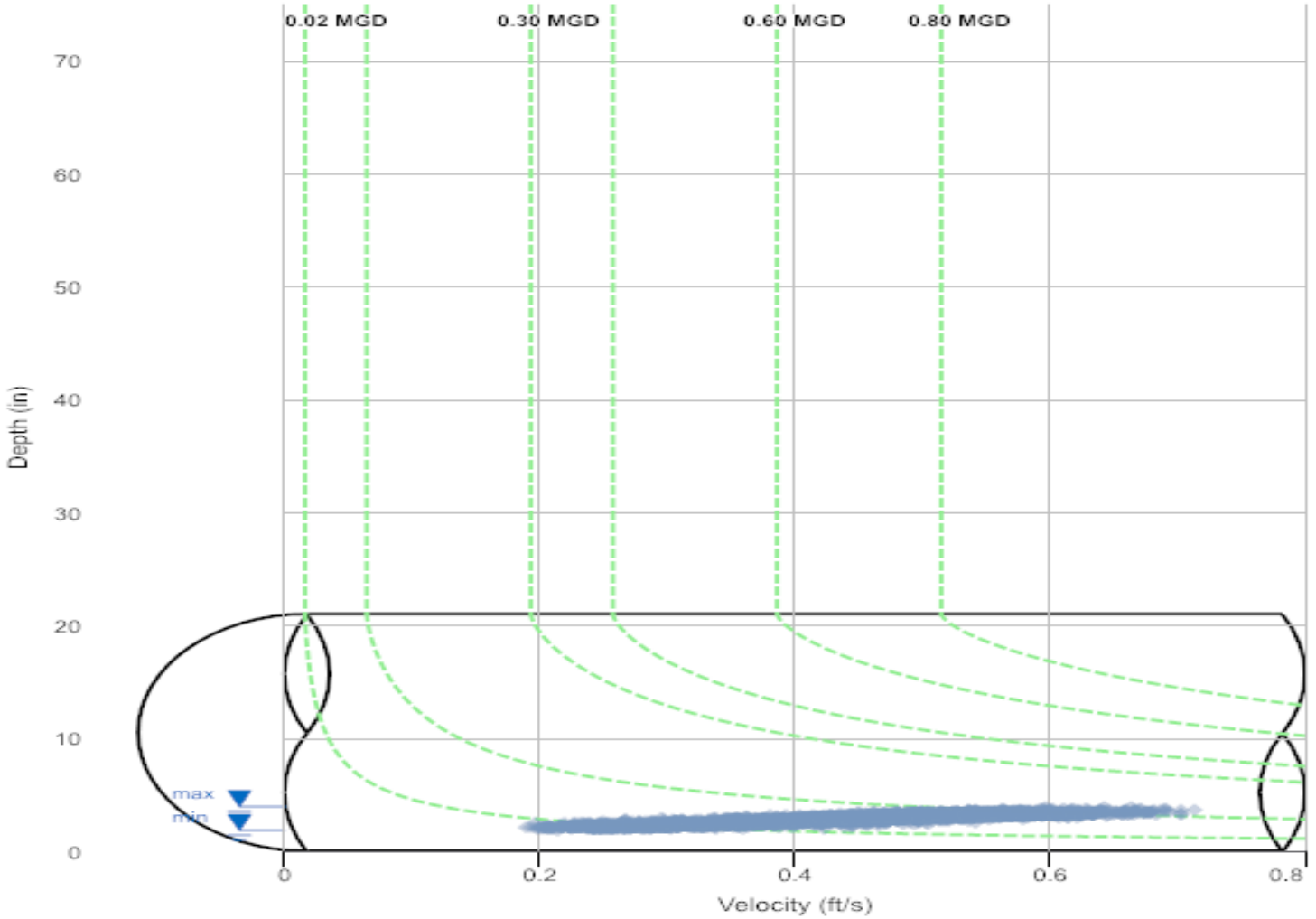
Pipe Height
21.00
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A15_80930Pipe: Round (21 in H), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	03:05	2.23	15:40	3.57	2.89	03:00	0.31	16:10	0.67	0.49	03:00	0.026	15:45	0.112	0.062	0.062	0.51
01/02/2021	04:30	2.06	19:50	3.84	3.01	03:35	0.27	19:50	0.74	0.52	03:35	0.020	19:50	0.139	0.074	0.074	1.69
01/03/2021	06:10	2.07	13:25	3.52	2.91	06:15	0.27	12:55	0.69	0.51	06:10	0.020	13:00	0.113	0.067	0.067	0.65
01/04/2021	03:50	2.28	12:00	3.41	2.93	04:10	0.33	11:55	0.66	0.51	03:40	0.029	11:55	0.103	0.066	0.066	0.48
01/05/2021	03:10	2.16	19:05	3.38	2.82	03:15	0.30	13:25	0.62	0.48	03:10	0.024	19:05	0.096	0.058	0.058	0.52
01/06/2021	04:10	2.40	20:00	3.23	2.82	04:10	0.36	19:55	0.63	0.48	04:20	0.033	20:00	0.091	0.058	0.058	0.22
01/07/2021	03:15	1.78	14:50	3.20	2.67	03:10	0.20	18:10	0.59	0.44	03:15	0.011	18:05	0.083	0.051	0.051	-
01/08/2021	02:50	2.08	16:15	3.40	2.84	03:15	0.27	09:10	0.71	0.48	03:15	0.020	09:10	0.105	0.060	0.060	0.22
01/09/2021	03:40	2.07	22:15	3.90	2.79	03:35	0.28	13:25	0.66	0.47	03:40	0.020	22:15	0.127	0.059	0.059	-
01/10/2021	02:00	2.14	14:10	3.57	2.89	02:00	0.30	11:10	0.63	0.49	02:00	0.023	14:10	0.102	0.064	0.064	0.07
01/11/2021	03:35	2.03	13:00	3.67	2.93	02:50	0.27	11:10	0.63	0.50	02:50	0.019	13:00	0.110	0.067	0.067	1.06
01/12/2021	00:10	2.66	18:50	3.81	3.13	00:10	0.44	18:50	0.65	0.55	00:10	0.047	18:50	0.120	0.078	0.078	2.10
01/13/2021	05:00	2.15	00:25	3.56	2.93	04:55	0.33	16:55	0.73	0.56	05:00	0.025	17:25	0.117	0.073	0.073	0.09
01/14/2021	04:05	2.17	11:05	3.43	2.94	03:00	0.30	11:45	0.71	0.52	03:00	0.026	11:45	0.111	0.068	0.068	0.01
01/15/2021	02:30	2.23	13:25	3.40	2.93	01:55	0.32	10:25	0.66	0.50	01:55	0.027	10:25	0.099	0.065	0.065	0.09
01/16/2021	03:50	2.06	11:40	3.53	2.89	03:55	0.22	15:30	0.58	0.42	03:55	0.016	17:25	0.095	0.056	0.056	-
01/17/2021	06:35	2.13	13:50	3.59	2.96	01:50	0.22	19:00	0.58	0.42	06:30	0.019	13:50	0.096	0.056	0.056	0.10
01/18/2021	03:05	2.10	12:55	3.68	2.89	02:20	0.24	12:50	0.65	0.45	02:20	0.018	12:55	0.115	0.058	0.058	-
01/19/2021	05:05	2.11	17:25	3.40	2.84	02:35	0.23	17:10	0.59	0.41	03:00	0.018	17:25	0.092	0.051	0.051	0.01
01/20/2021	04:15	2.05	20:10	3.46	2.89	02:00	0.21	12:25	0.54	0.40	04:20	0.015	12:25	0.087	0.052	0.052	-
01/21/2021	02:55	2.16	18:05	3.39	2.94	02:55	0.25	14:00	0.52	0.41	02:50	0.020	18:05	0.080	0.053	0.053	0.11
01/22/2021	04:10	2.01	12:00	3.56	2.90	04:10	0.21	17:10	0.56	0.40	04:10	0.015	17:10	0.093	0.053	0.053	-
01/23/2021	03:15	2.02	11:40	3.89	2.86	03:10	0.19	11:45	0.64	0.40	03:10	0.014	11:45	0.122	0.053	0.053	-
01/24/2021	03:05	2.04	17:55	3.75	2.87	02:20	0.22	17:35	0.63	0.40	02:55	0.016	17:40	0.113	0.053	0.053	0.16
01/25/2021	05:15	2.09	11:35	3.38	2.87	03:15	0.23	11:30	0.55	0.41	05:10	0.017	11:30	0.085	0.052	0.052	0.04
01/26/2021	02:55	2.06	19:30	3.29	2.80	02:45	0.22	19:20	0.55	0.40	02:40	0.016	19:20	0.082	0.049	0.049	-
01/27/2021	02:15	2.09	19:00	3.49	2.93	01:55	0.21	21:40	0.62	0.41	01:55	0.016	21:40	0.088	0.054	0.054	0.14
01/28/2021	03:00	1.95	12:45	3.35	2.92	04:00	0.17	12:40	0.56	0.42	04:00	0.012	12:40	0.085	0.055	0.055	0.24
01/29/2021	03:25	2.03	16:15	3.32	2.83	03:15	0.19	16:10	0.58	0.40	03:15	0.014	16:10	0.088	0.050	0.050	0.03
01/30/2021	03:30	2.14	12:25	3.47	2.88	02:30	0.22	12:30	0.58	0.42	03:10	0.018	12:30	0.094	0.054	0.054	0.07
01/31/2021	06:00	2.12	17:40	3.53	2.90	05:25	0.25	11:15	0.60	0.44	05:55	0.019	11:55	0.098	0.058	0.058	0.12
02/01/2021	03:20	2.35	18:50	3.72	3.05	03:10	0.30	18:45	0.67	0.48	03:15	0.027	18:45	0.118	0.066	0.066	0.82
02/02/2021	03:50	2.17	18:05	3.32	2.88	04:00	0.25	10:25	0.58	0.44	04:00	0.020	18:05	0.084	0.056	0.056	0.31
02/03/2021	03:55	2.17	18:45	3.36	2.85	04:05	0.27	11:50	0.57	0.43	04:10	0.021	12:10	0.084	0.054	0.054	0.06
02/04/2021	03:00	1.95	17:45	3.25	2.79	03:05	0.20	10:35	0.55	0.41	03:05	0.013	10:35	0.081	0.051	0.051	0.07
02/05/2021	03:35	2.06	13:15	4.89	2.85	04:00	0.21	13:15	0.67	0.42	03:35	0.016	13:15	0.179	0.054	0.054	0.01
02/06/2021	05:50	2.01	15:00	3.74	2.90	03:30	0.23	14:55	0.65	0.43	05:45	0.016	14:55	0.117	0.057	0.057	0.01
02/07/2021	04:40	2.03	12:45	3.68	2.88	04:10	0.22	11:15	0.62	0.43	04:10	0.016	12:45	0.108	0.057	0.057	-
02/08/2021	02:45	2.07	12:00	3.51	2.87	02:10	0.23	11:55	0.65	0.44	02:10	0.017	12:00	0.105	0.058	0.058	-
02/09/2021	03:40	1.98	11:20	3.40	2.81	03:35	0.20	11:20	0.58	0.43	03:35	0.014	11:20	0.091	0.053	0.053	-
02/10/2021	03:35	2.05	20:10	3.35	2.77	04:05	0.20	20:00	0.62	0.42	03:35	0.015	20:00	0.093	0.051	0.051	-
02/11/2021	03:55	1.92	08:50	3.29	2.74	03:50	0.19	09:00	0.59	0.41	03:55	0.012	09:00	0.085	0.049	0.049	-
02/12/2021	03:55	2.06	17:15	3.27	2.77	04:00	0.22	17:15	0.60	0.44	04:00	0.016	17:15	0.088	0.052	0.052	-
02/13/2021	05:10	2.22	13:05	3.39	2.85	02:05	0.29	21:15	0.65	0.47	02:15	0.024	11:55	0.095	0.059	0.059	0.08
02/14/2021	04:15	1.95	15:55	3.64	2.93	02:35	0.30	15:10	0.73	0.55	02:35	0.022	15:10	0.125	0.073	0.073	0.71
02/15/2021	05:05	2.67	11:35	3.69	3.19	04:00	0.46	11:00	0.71	0.58	04:45	0.050	11:10	0.126	0.084	0.084	0.78
02/16/2021	05:10	2.47	16:45	3.40	2.95	02:50	0.33	15:45	0.76	0.52	02:50	0.035	15:45	0.113	0.067	0.067	0.07
02/17/2021	03:35	2.14	17:25	3.48	2.91	02:00	0.31	17:40	0.66	0.49	04:05	0.024	17:40	0.107	0.064	0.064	-
02/18/2021	03:55	2.06	15:55	3.45	2.86	04:10	0.27	16:05	0.64	0.48	04:10	0.020	15:55	0.102	0.061	0.061	0.09
02/19/2021	04:40	2.32	13:30	3.47	2.95	01:20	0.34	15:35	0.65	0.50	01:20	0.030	13:30	0.103	0.065	0.065	0.17
02/20/2021	03:35	2.07	11:35	3.54	2.92	03:40	0.27	13:45	0.74	0.49	03:35	0.020	13:45	0.120	0.065	0.065	0.07
02/21/2021	04:50	1.97	12:45	3.67	2.97	05:55	0.23	11:40	0.72	0.50	04:50	0.017	11:40	0.124	0.069	0.069	0.42
02/22/2021	04:25	2.39	13:00	3.85	3.10	05:15	0.35	13:25	0.77	0.55	05:15	0.033	13:05	0.142	0.077	0.077	0.98
02/23/2021	04:00	1.99	08:45	3.84	2.90	03:50	0.23	08:45	0.80	0.49	03:50	0.016	08:45	0.150	0.064	0.064	0.27
02/24/2021	03:35	2.21	17:50	3.44	2.93	05:25	0.29	13:40	0.67	0.51	03:05	0.024	17:45	0.106	0.067	0.067	-
02/25/2021	02:25	2.24	18:55	3.34	2.91	02:50	0.32	17:10	0.71	0.52	02:20	0.027	17:10	0.104	0.066	0.066	0.18
02/26/2021	03:20	2.13	14:25	3.38	2.91	04:15	0.27	12:30	0.69	0.51	03:15	0.022	12:55	0.104	0.067	0.067	0.10
02/27/2021	04:35	2.11	11:00	3.66	3.00	04:25	0.28	10:35	0.68	0.51	04:30	0.021	10:35	0.117	0.070	0.070	0.02
02/28/2021	05:55	2.09	13:45	3.73	2.97	04:25	0.27	13:20	0.67	0.48	04:30	0.020	13:35	0.119	0.066	0.066	0.02
03/01/2021	13:05	1.62	13:10	5.17	2.92	13:05	0.10	13:30	1.03	0.48	13:05	0.005	13:30	0.245	0.064	0.064	-
03/02/2021	03:55	2.09	18:20	3.48	2.87	03:15	0.26	16:10	0.64	0.47	03:00	0.020	18:00	0.097	0.059	0.059	-
03/03/2021	04:05	2.07	18:30	3.42	2.89	03:50	0.19	18:25	0.60	0.43	03:50	0.014	18:25	0.094	0.057	0.057	-
03/04/2021	12:15	1.89	12:25	5.64	2.84	12:15	0.19	12:25	0.86	0.43	12:15	0.012	12:25	0.282	0.054	0.054	0.20
03/05/2021	04:05	2.01	11:30	3.40	2.87	03:40	0.22	11:35	0.57	0.41	04:05	0.015	11:35	0.089	0.052	0.052	0.05
03/06/2021	04:25	2.22	14:50	3.64	3.02	04:25	0.21	13:55	0.62	0.43	04:25	0.017	11:45	0.105	0.061	0.061	-
03/07/2021	05:10	2.03	10:00	3.62	2.96	04:40	0.21	15:15	0.63	0.43	05:10	0.015	15:15	0.109	0.059	0.059	0.04
03/08/2021	03:45	1.98	11:00	3.60	2.94	03:15	0.23	11:00	0.60	0.45	03:20	0.016	11:00	0.103	0.060	0.060	-
03/09/2021	03:25	2.06	11:10	3.38	2.85	03:25	0.24	18:40	0.59	0.43	03:25	0.017	18:40	0.091	0.054	0.054	0.01
03/10/2021	03:10	1.99	16:05	3.45	2.86	02:55	0.24	14:20	0.58	0.42	03:10	0.016	14:20	0.090	0.054	0.054	-
03/11/2021	02:30	2.12	13:40	3.37	2.90	03:30	0.23	12:30	0.57	0.42	02:30	0.019	12:30	0.085	0.054	0.054	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	04:00	1.96	13:30	3.50	2.87	04:05	0.20	13:25	0.60	0.42	04:00	0.014	13:25	0.097	0.054	0.054	-
03/13/2021	05:25	2.05	12:40	3.50	2.93	03:50	0.21	09:40	0.62	0.43	05:25	0.015	09:40	0.100	0.057	0.057	-
03/14/2021	05:35	2.13	15:25	3.61	2.91	04:15	0.20	19:45	0.60	0.42	03:55	0.016	15:25	0.101	0.056	0.056	0.30
03/15/2021	01:55	2.30	11:05	3.39	2.91	01:40	0.26	11:00	0.57	0.41	01:40	0.023	11:00	0.088	0.053	0.053	-
03/16/2021	01:30	2.07	19:10	3.37	2.87	03:05	0.19	17:50	0.57	0.41	03:05	0.014	19:10	0.087	0.053	0.053	-
03/17/2021	03:10	1.94	15:50	3.30	2.79	02:55	0.20	10:05	0.61	0.44	03:00	0.013	20:10	0.084	0.053	0.053	-
03/18/2021	01:25	1.99	16:25	3.43	2.79	01:20	0.21	16:25	0.56	0.41	01:25	0.014	16:25	0.089	0.051	0.051	0.11
03/19/2021	03:10	2.07	15:50	3.28	2.77	01:45	0.21	17:25	0.55	0.40	01:45	0.016	15:50	0.079	0.048	0.048	0.03
03/20/2021	04:05	2.02	16:10	3.44	2.84	04:00	0.22	16:10	0.57	0.42	04:00	0.016	16:10	0.091	0.052	0.052	0.17
03/21/2021	04:10	1.91	12:00	3.43	2.81	04:00	0.17	12:05	0.59	0.39	04:00	0.011	12:00	0.093	0.050	0.050	0.07
03/22/2021	02:45	2.05	10:40	3.53	2.90	02:30	0.19	10:45	0.57	0.42	01:55	0.015	10:45	0.094	0.055	0.055	0.11
03/23/2021	02:15	2.17	12:00	3.35	2.86	04:10	0.20	14:25	0.57	0.41	04:05	0.018	14:30	0.084	0.052	0.052	-
03/24/2021	03:25	2.00	20:05	3.50	2.87	00:50	0.20	20:05	0.55	0.39	03:25	0.014	20:05	0.091	0.050	0.050	0.34
03/25/2021	23:45	2.41	15:15	3.43	2.97	03:05	0.27	18:10	0.58	0.43	03:10	0.026	17:40	0.090	0.056	0.056	0.27
03/26/2021	02:10	1.99	10:40	3.45	2.86	02:50	0.18	10:55	0.56	0.39	02:05	0.013	10:45	0.089	0.050	0.050	-
03/27/2021	04:20	1.96	12:40	3.54	2.91	02:20	0.18	08:55	0.56	0.38	04:10	0.013	08:55	0.089	0.051	0.051	-
03/28/2021	04:20	1.95	14:35	3.91	2.95	02:05	0.18	12:30	0.65	0.42	04:15	0.012	14:35	0.125	0.059	0.059	0.37
03/29/2021	04:10	2.33	10:30	3.55	3.03	02:35	0.23	10:15	0.59	0.42	04:05	0.020	10:20	0.099	0.058	0.058	-
03/30/2021	04:15	2.11	16:40	3.41	2.91	01:50	0.21	11:55	0.54	0.40	01:50	0.016	11:55	0.083	0.053	0.053	-
03/31/2021	02:30	2.06	13:40	3.44	2.87	03:05	0.14	13:25	0.56	0.41	03:05	0.010	13:40	0.090	0.053	0.053	-
04/01/2021	02:10	2.07	13:40	3.51	2.91	02:05	0.18	10:25	0.55	0.41	02:05	0.013	13:40	0.088	0.054	0.054	-
04/02/2021	02:15	2.17	16:50	3.53	2.96	04:00	0.24	11:00	0.57	0.42	04:00	0.019	11:00	0.094	0.057	0.057	-
04/03/2021	03:55	2.03	12:05	3.65	2.98	02:50	0.18	12:05	0.57	0.40	03:55	0.013	12:05	0.100	0.055	0.055	-
04/04/2021	04:10	2.15	13:30	3.75	2.96	02:35	0.18	13:15	0.59	0.40	02:35	0.015	13:15	0.106	0.054	0.054	-
04/05/2021	01:25	2.03	10:30	3.55	2.92	01:40	0.19	09:30	0.59	0.42	01:25	0.014	14:50	0.095	0.056	0.056	-
04/06/2021	02:20	2.03	13:55	3.45	2.91	02:15	0.18	17:15	0.53	0.41	02:15	0.013	13:55	0.083	0.054	0.054	-
04/07/2021	02:20	2.01	21:55	3.46	2.87	02:20	0.17	22:05	0.54	0.38	02:20	0.012	22:05	0.086	0.049	0.049	0.22
04/08/2021	04:20	2.10	17:10	3.48	2.94	04:05	0.20	18:55	0.54	0.40	04:05	0.015	17:30	0.085	0.052	0.052	-
04/09/2021	04:00	2.39	12:30	3.48	2.97	01:20	0.21	12:30	0.54	0.37	03:40	0.020	12:30	0.087	0.049	0.049	0.03
04/10/2021	02:55	2.02	10:35	3.64	2.96	03:00	0.17	10:55	0.57	0.40	03:00	0.012	10:40	0.095	0.055	0.055	0.02
04/11/2021	05:05	2.11	13:55	3.58	2.93	04:30	0.19	11:35	0.58	0.42	02:20	0.015	13:50	0.096	0.056	0.056	-
04/12/2021	03:05	2.11	11:10	3.68	2.97	02:55	0.19	11:00	0.62	0.43	02:55	0.014	11:10	0.110	0.059	0.059	-
04/13/2021	02:10	2.13	17:55	3.42	2.90	02:50	0.24	10:55	0.57	0.43	02:15	0.019	17:55	0.090	0.056	0.056	-
04/14/2021	02:10	2.08	17:20	3.57	2.95	02:15	0.22	10:00	0.56	0.42	02:15	0.016	17:20	0.089	0.057	0.057	-
09/23/2020	23:55	2.60	16:55	3.71	3.32	22:30	0.44	17:50	0.74	0.62	23:25	0.048	16:55	0.129	0.095	0.046	-
09/24/2020	03:00	2.30	17:25	3.44	2.96	03:35	0.35	13:50	0.68	0.54	03:35	0.030	15:30	0.102	0.070	0.070	-
09/25/2020	02:10	2.19	12:05	3.46	2.92	23:55	0.31	12:15	0.66	0.53	23:55	0.028	12:15	0.104	0.068	0.068	-
09/26/2020	03:35	1.95	13:30	3.54	2.88	06:00	0.28	13:15	0.69	0.47	02:15	0.023	13:25	0.112	0.060	0.060	-
09/27/2020	03:45	2.03	11:20	3.59	2.92	01:30	0.25	11:55	0.72	0.52	03:40	0.018	11:55	0.121	0.069	0.069	-
09/28/2020	03:35	2.03	18:50	3.47	2.92	03:20	0.26	14:35	0.70	0.52	03:35	0.018	19:40	0.110	0.069	0.069	-
09/29/2020	02:25	2.01	17:15	3.54	2.92	03:35	0.25	16:50	0.63	0.47	01:15	0.019	17:15	0.104	0.061	0.061	-
09/30/2020	02:45	2.23	19:35	3.62	2.97	00:50	0.29	18:30	0.63	0.47	02:55	0.024	18:40	0.105	0.062	0.062	-
10/01/2020	03:30	2.14	19:55	3.90	2.93	03:00	0.27	08:20	0.62	0.44	03:30	0.020	19:55	0.119	0.058	0.058	-
10/02/2020	01:20	2.29	11:00	3.59	3.02	01:15	0.25	11:00	0.62	0.44	01:15	0.021	11:00	0.105	0.060	0.060	-
10/03/2020	03:30	2.14	11:50	3.68	3.01	03:40	0.22	14:00	0.62	0.45	03:40	0.017	12:50	0.104	0.062	0.062	0.01
10/04/2020	03:35	2.05	12:55	3.65	2.97	03:35	0.19	11:35	0.60	0.43	03:35	0.014	12:55	0.104	0.058	0.058	0.01
10/05/2020	02:10	2.14	19:15	3.51	3.01	01:55	0.20	14:40	0.58	0.44	01:55	0.016	14:45	0.093	0.060	0.060	-
10/06/2020	02:55	2.24	16:55	3.56	3.04	03:00	0.28	14:00	0.60	0.43	02:50	0.024	16:55	0.097	0.060	0.060	-
10/07/2020	02:00	2.47	17:10	3.66	3.12	02:15	0.21	20:30	0.62	0.43	02:05	0.021	14:15	0.101	0.061	0.061	-
10/08/2020	01:55	2.40	16:50	3.61	3.13	02:50	0.20	11:15	0.58	0.43	02:50	0.018	11:15	0.092	0.061	0.061	-
10/09/2020	02:05	2.37	23:50	3.98	3.17	02:05	0.20	23:50	0.66	0.46	02:05	0.018	23:50	0.131	0.069	0.069	0.64
10/10/2020	23:40	2.73	00:00	3.94	3.33	23:30	0.36	02:05	0.67	0.52	23:30	0.041	01:35	0.127	0.080	0.080	1.04
10/11/2020	05:10	2.31	13:25	3.96	3.21	03:15	0.28	16:25	0.64	0.48	03:15	0.025	13:05	0.122	0.074	0.074	0.53
10/12/2020	02:45	2.34	16:35	3.59	3.05	02:45	0.27	16:35	0.63	0.46	02:45	0.024	16:35	0.107	0.065	0.065	-
10/13/2020	01:35	2.23	07:15	4.05	3.14	01:35	0.28	07:15	0.75	0.50	01:35	0.023	07:20	0.153	0.072	0.072	0.61
10/14/2020	02:55	2.22	19:15	3.65	3.06	03:10	0.31	17:25	0.62	0.47	03:10	0.025	17:25	0.105	0.065	0.065	-
10/15/2020	03:05	2.29	17:40	3.57	3.02	01:00	0.29	16:25	0.62	0.46	03:10	0.025	17:40	0.103	0.063	0.063	-
10/16/2020	03:30	2.27	15:20	3.43	2.98	01:10	0.24	12:15	0.62	0.45	03:30	0.021	12:15	0.092	0.060	0.060	-
10/17/2020	03:40	2.45	12:00	3.66	3.13	01:15	0.25	12:00	0.63	0.45	03:35	0.025	12:00	0.110	0.065	0.065	0.01
10/18/2020	01:40	2.36	12:45	3.69	3.07	03:40	0.27	12:45	0.63	0.46	01:35	0.026	12:45	0.111	0.064	0.064	0.03
10/19/2020	02:00	2.22	16:30	3.50	3.00	01:55	0.26	16:25	0.60	0.44	01:55	0.021	16:25	0.098	0.059	0.059	0.05
10/20/2020	01:15	2.30	11:15	3.50	2.98	01:10	0.25	10:35	0.62	0.44	01:10	0.022	11:20	0.093	0.059	0.059	-
10/21/2020	02:20	2.08	10:40	3.43	2.94	02:15	0.23	18:25	0.61	0.45	02:15	0.017	18:25	0.096	0.059	0.059	0.01
10/22/2020	01:05	2.29	18:05	3.48	2.91	01:10	0.28	18:00	0.62	0.46	01:10	0.024	18:05	0.101	0.058	0.058	-
10/23/2020	02:25	2.04	19:30	3.51	2.86	02:10	0.24	19:25	0.64	0.45	02:15	0.017	19:25	0.106	0.057	0.057	0.20
10/24/2020	04:05	2.13	13:50	3.59	2.85	03:25	0.29	13:50	0.66	0.47	03:35	0.022	13:50	0.113	0.059	0.059	0.02
10/25/2020	03:30	2.13	10:30	3.42	2.84	04:15	0.27	10:35	0.61	0.46	03:20	0.021	10:30	0.096	0.058	0.058	-
10/26/2020	02:55	2.11	10:35	3.32	2.75	00:30	0.29	10:25	0.59	0.44	02:20	0.022	10:35	0.089	0.052	0.052	-
10/27/2020	01:55	2.00	18:35	3.42	2.76	02:00	0.24	17:35	0.63	0.45	01:55	0.017	18:30	0.097	0.054	0.054	-
10/28/2020	02:35	2.04	12:35	3.57	2.76	04:10	0.26	12:35	0.63	0.45	02:30	0.019	12:35	0.106	0.054	0.054	-
10/29/2020	03:20	2.06	18:20	3.24	2.76	01:50	0.30	18:15	0.57	0.45	03:20	0.023	18:20	0.083	0.053	0.053	-
10/30/2020	02:25	1.99	08:25	3.34	2.83	02:20	0.24	08:25	0.60	0.45	02:25	0.016	08:25	0.092	0.055	0.055	0.10
10/31/2020	02:15	1.99	13:10	3.41	2.76	02:00	0.28	15:30	0.64	0.46	02:00	0.020	11:55	0.096	0.056	0.056	-
11/01/2020	02:25	1.97	11:15	3.57	2.80	03:30	0.24	11:30	0.66	0.46	03:30	0.016	11:30	0.112	0.058	0.058	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/02/2020	03:30	2.14	18:20	3.63	2.85	03:30	0.21	12:00	0.69	0.44	03:30	0.016	12:00	0.117	0.055	0.055	-
11/03/2020	02:50	2.10	10:05	3.79	2.97	03:05	0.23	10:05	0.71	0.47	03:05	0.017	10:05	0.130	0.064	0.064	0.83
11/04/2020	03:25	2.27	17:00	3.31	2.88	02:50	0.21	20:10	0.61	0.44	02:50	0.018	20:10	0.087	0.055	0.055	0.09
11/05/2020	04:40	2.32	17:10	3.51	2.96	04:20	0.33	17:05	0.62	0.47	04:25	0.029	17:10	0.102	0.062	0.062	0.34
11/06/2020	04:25	2.38	16:55	3.28	2.87	04:00	0.32	17:00	0.60	0.46	04:00	0.030	17:00	0.088	0.056	0.056	0.10
11/07/2020	01:00	2.21	11:10	3.42	2.86	03:20	0.18	11:10	0.62	0.42	03:25	0.017	11:15	0.098	0.053	0.053	0.07
11/08/2020	03:10	2.23	14:00	3.44	2.86	03:10	0.24	13:45	0.63	0.44	03:05	0.020	13:45	0.100	0.056	0.056	0.01
11/09/2020	04:00	1.96	16:40	3.30	2.75	04:05	0.22	07:15	0.60	0.46	04:00	0.015	16:40	0.086	0.055	0.055	0.04
11/10/2020	04:00	1.95	18:50	3.25	2.72	03:15	0.25	18:45	0.61	0.45	03:55	0.017	18:45	0.088	0.052	0.052	0.03
11/11/2020	02:40	2.00	14:50	3.25	2.74	01:50	0.29	13:55	0.59	0.46	02:40	0.021	14:55	0.086	0.054	0.054	-
11/12/2020	02:50	1.89	20:50	3.52	2.84	02:50	0.22	20:45	0.61	0.44	02:50	0.014	20:45	0.099	0.055	0.055	0.16
11/13/2020	01:30	2.38	18:20	3.20	2.88	01:25	0.32	09:30	0.64	0.46	01:30	0.029	09:30	0.082	0.057	0.057	0.38
11/14/2020	02:40	2.01	18:05	3.62	2.82	03:05	0.27	17:25	0.66	0.46	02:40	0.020	18:10	0.114	0.058	0.058	0.47
11/15/2020	05:15	2.26	13:45	3.30	2.81	04:15	0.30	13:15	0.58	0.44	05:25	0.025	13:15	0.085	0.053	0.053	0.19
11/16/2020	03:55	2.04	12:05	4.62	2.80	03:15	0.22	12:05	0.90	0.42	03:15	0.016	12:05	0.223	0.052	0.052	0.31
11/17/2020	04:30	2.05	19:55	3.40	2.77	02:50	0.24	19:30	0.57	0.41	02:10	0.018	19:45	0.089	0.050	0.050	0.20
11/18/2020	03:45	2.04	18:35	3.33	2.81	02:50	0.28	18:30	0.57	0.44	02:50	0.020	18:30	0.087	0.054	0.054	0.30
11/19/2020	02:25	2.22	14:10	3.37	2.84	01:50	0.30	14:10	0.57	0.44	01:55	0.024	14:10	0.088	0.054	0.054	0.50
11/20/2020	02:50	2.09	13:25	3.31	2.77	03:15	0.29	13:25	0.59	0.44	02:50	0.023	13:25	0.088	0.053	0.053	0.01
11/21/2020	03:50	2.04	16:00	3.51	2.81	03:05	0.29	12:55	0.64	0.47	03:20	0.021	12:55	0.103	0.059	0.059	-
11/22/2020	03:25	1.90	18:25	3.71	2.85	03:10	0.28	13:30	0.69	0.51	03:10	0.018	18:25	0.120	0.067	0.067	0.21
11/23/2020	04:10	2.08	08:15	4.46	2.92	02:55	0.29	08:05	0.74	0.49	04:10	0.021	08:25	0.174	0.064	0.064	0.14
11/24/2020	03:05	1.92	08:25	3.58	2.78	03:05	0.24	22:00	0.64	0.46	02:55	0.016	16:55	0.090	0.056	0.056	0.21
11/25/2020	02:40	2.02	13:35	3.26	2.81	02:10	0.34	14:20	0.63	0.50	02:15	0.024	14:20	0.084	0.059	0.059	0.05
11/26/2020	04:50	1.91	11:10	3.54	2.77	04:40	0.25	11:10	0.70	0.46	04:45	0.016	11:10	0.116	0.057	0.057	0.02
11/27/2020	03:55	1.93	13:30	3.35	2.73	03:50	0.23	13:15	0.62	0.44	03:50	0.015	13:30	0.095	0.052	0.052	-
11/28/2020	05:50	2.05	14:50	3.45	2.78	05:50	0.25	14:45	0.67	0.46	05:50	0.018	14:45	0.106	0.056	0.056	0.05
11/29/2020	03:15	2.07	12:50	3.41	2.80	04:25	0.24	20:35	0.65	0.47	03:05	0.018	16:10	0.099	0.059	0.059	-
11/30/2020	02:45	2.06	13:05	3.48	2.92	02:40	0.26	09:35	0.68	0.51	02:40	0.019	13:05	0.105	0.065	0.065	0.36
12/01/2020	04:15	2.10	13:50	3.40	2.79	04:05	0.29	13:55	0.66	0.48	04:10	0.022	13:50	0.103	0.058	0.058	-
12/02/2020	04:15	1.94	18:05	3.30	2.76	04:15	0.23	13:40	0.60	0.46	04:15	0.015	13:40	0.089	0.055	0.055	0.01
12/03/2020	02:40	1.90	19:45	3.29	2.69	02:30	0.23	15:05	0.59	0.45	02:40	0.014	19:45	0.089	0.052	0.052	-
12/04/2020	03:55	1.95	11:55	3.30	2.75	03:50	0.25	10:25	0.60	0.45	03:50	0.016	16:00	0.087	0.054	0.054	-
12/05/2020	03:25	1.99	13:35	3.45	2.80	03:35	0.24	13:30	0.67	0.46	03:25	0.017	13:30	0.106	0.057	0.057	0.03
12/06/2020	03:00	2.01	12:30	3.53	2.83	02:55	0.25	12:20	0.67	0.46	02:55	0.017	12:20	0.111	0.058	0.058	0.03
12/07/2020	04:30	1.90	12:00	3.33	2.77	03:05	0.20	12:05	0.58	0.42	03:05	0.013	12:05	0.087	0.051	0.051	-
12/08/2020	02:40	1.98	19:25	3.59	3.07	02:40	0.22	16:15	0.61	0.47	02:40	0.015	19:05	0.102	0.067	0.067	0.87
12/09/2020	05:15	2.35	17:05	3.25	2.84	04:05	0.29	17:30	0.57	0.41	05:10	0.026	17:30	0.077	0.049	0.049	0.17
12/10/2020	03:55	2.00	19:25	3.29	2.75	03:55	0.20	21:20	0.55	0.40	03:55	0.014	17:15	0.078	0.049	0.049	0.07
12/11/2020	05:00	2.08	12:45	3.29	2.73	05:05	0.25	19:05	0.54	0.41	03:20	0.019	13:00	0.079	0.048	0.048	0.02
12/12/2020	04:05	1.94	15:45	3.57	2.73	03:50	0.22	15:45	0.62	0.42	04:05	0.014	15:45	0.104	0.051	0.051	0.01
12/13/2020	06:35	2.18	11:35	3.57	2.87	03:00	0.27	09:10	0.66	0.45	02:55	0.022	11:35	0.100	0.058	0.058	0.24
12/14/2020	03:10	2.06	19:05	3.64	2.80	02:40	0.25	19:10	0.60	0.43	02:45	0.018	19:05	0.101	0.052	0.052	0.05
12/15/2020	03:35	2.07	10:35	3.70	2.90	03:35	0.24	16:00	0.64	0.44	03:15	0.018	16:00	0.108	0.058	0.058	0.58
12/16/2020	02:05	1.95	14:05	3.55	2.81	01:55	0.22	14:05	0.61	0.45	01:55	0.015	14:05	0.103	0.055	0.055	0.39
12/17/2020	04:00	2.06	22:55	3.31	2.75	03:50	0.26	11:15	0.60	0.43	03:40	0.019	22:55	0.082	0.050	0.050	0.08
12/18/2020	03:15	2.03	14:00	3.50	2.84	03:05	0.24	14:00	0.63	0.46	03:05	0.017	14:00	0.104	0.057	0.057	0.25
12/19/2020	05:15	1.89	22:10	3.42	2.80	03:40	0.23	17:05	0.67	0.46	05:15	0.014	17:05	0.105	0.058	0.058	0.37
12/20/2020	03:10	2.12	13:40	3.39	2.84	03:05	0.26	13:35	0.60	0.45	03:05	0.020	13:35	0.094	0.056	0.056	0.04
12/21/2020	03:15	2.51	16:35	3.93	3.04	03:10	0.37	16:35	0.72	0.50	03:15	0.036	16:35	0.140	0.068	0.068	1.07
12/22/2020	04:30	2.21	16:25	3.43	2.82	02:55	0.27	13:50	0.64	0.45	03:00	0.022	16:25	0.098	0.056	0.056	-
12/23/2020	02:10	2.10	11:20	3.78	2.78	02:05	0.27	11:15	0.69	0.46	02:05	0.020	11:20	0.127	0.056	0.056	-
12/24/2020	04:40	2.14	13:40	3.69	2.84	03:10	0.28	13:10	0.72	0.46	04:40	0.022	13:40	0.124	0.058	0.058	-
12/25/2020	05:40	2.05	15:35	4.57	2.86	04:30	0.26	15:35	0.97	0.47	04:40	0.019	15:35	0.236	0.061	0.061	0.49
12/26/2020	03:35	2.24	16:20	3.64	2.87	04:30	0.22	16:20	0.73	0.46	04:30	0.018	16:20	0.126	0.059	0.059	0.02
12/27/2020	05:50	1.91	13:45	3.85	2.85	04:35	0.23	13:45	0.69	0.47	04:30	0.015	13:45	0.131	0.061	0.061	0.13
12/28/2020	03:00	1.95	10:20	4.11	2.75	03:00	0.24	10:20	0.80	0.46	03:00	0.016	10:20	0.167	0.056	0.056	-
12/29/2020	03:10	2.04	19:45	3.35	2.76	02:30	0.28	11:40	0.65	0.47	02:30	0.020	11:40	0.097	0.056	0.056	0.14
12/30/2020	03:20	2.47	21:00	3.53	2.95	03:30	0.40	21:00	0.69	0.53	03:30	0.039	21:00	0.114	0.068	0.068	0.78
12/31/2020	03:35	2.27	16:30	3.47	2.86	03:35	0.35	17:55	0.67	0.50	03:35	0.029	16:30	0.104	0.062	0.062	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			11.870	30.65
Average	2.89	0.45	0.058	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A15_80930

Site Address /Location:	641 4th St SE			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	Park on 4th St SE	Latitude:	47.304257	Pipe Size (H x W): 21.00 x 21.00	Pipe Shape: Circular
		Longitude:	-122.220984		



Manhole #	System Characteristics
809-30	Residential
Access	Traffic
Drive	Medium







ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519

Installation Information

Installation Date:	Installation Type:
Wednesday, September 23, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Time	Pipe Size (HxW)
12:23:00 PM	16.25x16.38
Depth of Flow (Wet DOF) (in)	
3.50	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
0.61	N/A
Silt (in)	Silt Type
0.38	Soft / Loose

Hydraulic Comments:

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
6	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
Concrete	Good

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

Alternate location for A15 809-02

AUB_A16_80956

Site Commentary

SITE INFORMATION

Pipe	Round (18 in H)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	2.07	3.29	0.243
Minimum	1.56	0.87	0.042
Maximum	3.04	4.51	0.575
Min Time	12/17/2020 3:00:00 AM	12/17/2020 4:00:00 AM	12/17/2020 4:00:00 AM
Max Time	01/02/2021 10:00:00 PM	01/02/2021 10:00:00 PM	01/02/2021 10:00:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

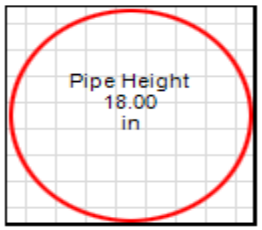
Percent Uptime	
DFINAL (in)	99.761
VFINAL (ft/s)	99.761
QFINAL (MGD - Total MG)	99.761

Hydrograph Report

AUB_A16_80956

Flow Monitor

AUB_A16_80956



Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL





4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
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Scattergraph Report

AUB_A16_80956

Flow Monitor

AUB_A16_80956

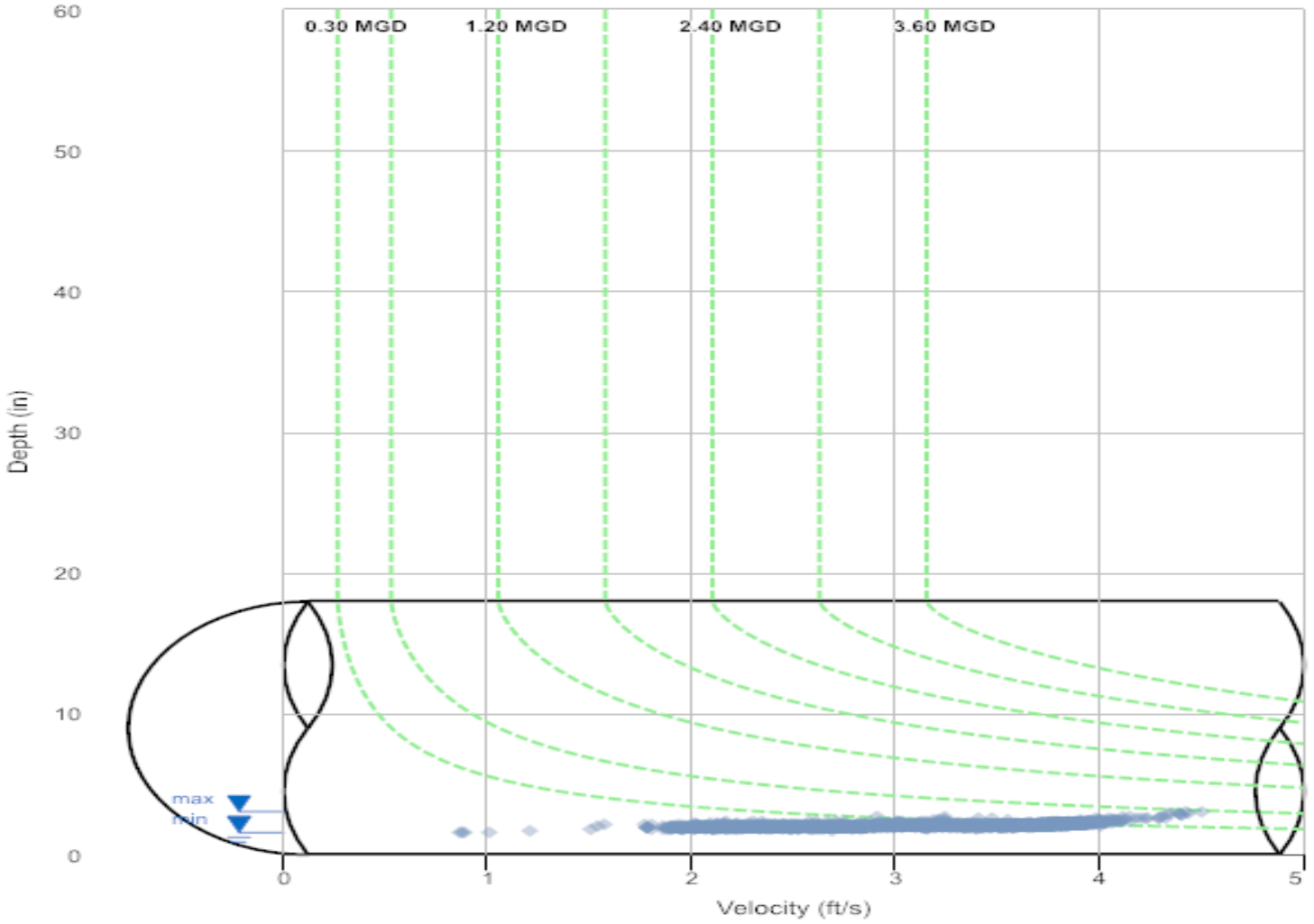
Pipe Height
18.00
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A16_80956Pipe: Round (18 in H), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	05:35	1.87	16:10	2.36	2.10	07:25	2.15	16:05	4.14	3.33	05:50	0.154	16:05	0.364	0.250	0.250	0.51
01/02/2021	02:15	1.82	22:10	3.09	2.22	06:20	2.27	22:00	4.62	3.52	06:00	0.150	22:10	0.594	0.296	0.296	1.69
01/03/2021	08:00	1.89	00:25	3.04	2.24	06:15	1.86	00:25	4.50	3.52	06:15	0.131	00:25	0.574	0.296	0.296	0.65
01/04/2021	05:15	1.82	21:05	2.34	2.10	04:05	1.96	19:10	4.01	3.44	04:05	0.141	21:05	0.348	0.258	0.258	0.48
01/05/2021	02:10	1.83	19:00	2.27	2.09	03:25	2.24	19:00	4.15	3.37	04:05	0.150	19:00	0.347	0.252	0.252	0.52
01/06/2021	05:15	1.87	07:20	2.21	2.06	03:50	2.37	20:10	3.88	3.39	03:50	0.157	20:10	0.301	0.247	0.247	0.22
01/07/2021	05:20	1.77	00:00	2.23	2.03	04:15	2.13	19:05	3.95	3.30	04:15	0.136	19:05	0.319	0.236	0.236	-
01/08/2021	02:00	1.78	16:45	2.24	2.04	02:40	2.08	16:40	4.00	3.33	02:40	0.136	16:45	0.328	0.240	0.240	0.22
01/09/2021	00:40	1.79	10:00	2.59	2.18	03:30	1.97	12:20	4.11	3.24	06:50	0.154	10:20	0.348	0.254	0.254	-
01/10/2021	07:15	1.78	13:30	2.32	2.05	05:40	2.02	16:05	4.07	3.38	05:40	0.127	16:05	0.348	0.247	0.247	0.07
01/11/2021	01:30	1.76	21:45	2.40	2.09	02:20	1.91	14:25	4.09	3.37	02:20	0.124	21:45	0.363	0.253	0.253	1.06
01/12/2021	02:45	1.97	19:25	2.68	2.31	01:35	2.71	19:30	4.40	3.84	01:40	0.192	19:30	0.467	0.332	0.332	2.10
01/13/2021	06:25	1.90	00:55	2.73	2.12	03:55	2.19	00:50	4.46	3.44	03:55	0.156	00:50	0.485	0.263	0.263	0.09
01/14/2021	05:55	1.83	23:55	2.21	2.05	02:35	2.04	20:05	4.11	3.32	02:35	0.145	20:05	0.326	0.241	0.241	0.01
01/15/2021	01:25	1.79	07:35	2.26	2.03	02:20	2.22	18:05	3.88	3.29	04:00	0.143	18:05	0.297	0.235	0.235	0.09
01/16/2021	05:00	1.78	15:20	2.31	2.03	04:55	1.87	15:20	4.05	3.27	05:00	0.110	15:20	0.347	0.236	0.236	-
01/17/2021	07:20	1.72	12:40	2.24	2.02	04:50	1.77	12:05	3.93	3.26	06:05	0.107	12:40	0.321	0.234	0.234	0.10
01/18/2021	01:50	1.80	18:00	2.24	2.03	03:15	1.72	18:05	3.96	3.32	03:15	0.108	18:00	0.322	0.239	0.239	-
01/19/2021	03:55	1.82	19:15	2.19	2.02	03:20	1.53	19:10	3.95	3.20	03:20	0.097	19:15	0.311	0.227	0.227	0.01
01/20/2021	02:20	1.82	09:10	2.32	2.07	05:05	1.50	15:25	3.91	3.18	05:05	0.112	19:35	0.314	0.232	0.232	-
01/21/2021	01:05	1.79	15:20	2.27	2.03	03:15	1.76	15:20	4.19	3.23	04:45	0.113	15:20	0.350	0.231	0.231	0.11
01/22/2021	03:00	1.76	09:50	2.34	2.05	04:20	1.86	15:20	3.94	3.20	04:15	0.112	15:25	0.329	0.234	0.234	-
01/23/2021	02:45	1.88	07:40	2.31	2.12	05:15	1.86	13:35	3.99	3.16	05:15	0.124	13:40	0.334	0.240	0.240	-
01/24/2021	05:30	1.84	18:50	2.46	2.13	05:35	1.86	18:45	4.06	3.30	05:35	0.116	18:50	0.380	0.254	0.254	0.16
01/25/2021	03:00	1.91	04:55	2.32	2.11	03:40	2.29	21:00	4.02	3.40	03:40	0.161	21:00	0.343	0.255	0.255	0.04
01/26/2021	03:00	1.83	08:05	2.25	2.06	04:10	1.70	13:00	3.95	3.18	04:10	0.108	17:45	0.320	0.233	0.233	-
01/27/2021	01:15	1.81	18:10	2.42	2.04	03:25	1.67	18:05	4.13	3.24	03:25	0.104	18:10	0.379	0.234	0.234	0.14
01/28/2021	01:05	1.83	10:05	2.29	2.08	03:50	2.13	11:40	3.84	3.25	02:35	0.140	16:35	0.302	0.241	0.241	0.24
01/29/2021	04:45	1.79	23:40	2.31	2.09	03:15	1.67	17:55	4.00	3.17	04:40	0.100	17:50	0.339	0.237	0.237	0.03
01/30/2021	05:45	1.88	22:10	2.33	2.09	03:30	2.05	12:35	3.97	3.27	03:45	0.137	17:55	0.323	0.244	0.244	0.07
01/31/2021	06:45	1.75	18:00	2.27	2.07	05:40	1.96	11:00	4.06	3.32	05:40	0.130	11:00	0.335	0.244	0.244	0.12
02/01/2021	06:00	1.76	20:00	2.31	2.06	02:55	2.07	20:00	4.09	3.36	03:05	0.133	20:00	0.351	0.246	0.246	0.82
02/02/2021	02:05	1.84	18:45	2.27	2.05	04:10	1.75	18:45	4.06	3.36	04:10	0.116	18:45	0.339	0.243	0.243	0.31
02/03/2021	01:20	1.86	05:55	2.23	2.03	05:35	2.27	18:40	3.95	3.34	04:35	0.152	18:45	0.313	0.239	0.239	0.06
02/04/2021	08:55	1.79	14:55	2.48	2.07	04:10	2.04	14:55	4.11	3.20	04:05	0.134	14:55	0.389	0.235	0.235	0.07
02/05/2021	06:50	1.90	00:00	2.28	2.08	03:35	1.80	13:05	4.02	3.16	03:35	0.124	22:45	0.330	0.235	0.235	0.01
02/06/2021	02:35	1.90	08:50	2.35	2.11	05:55	1.80	11:05	3.99	3.14	05:55	0.120	11:05	0.349	0.239	0.239	0.01
02/07/2021	06:45	1.70	11:20	2.41	2.08	05:25	1.61	11:20	4.07	3.23	05:25	0.095	11:20	0.370	0.241	0.241	-
02/08/2021	01:40	1.78	18:25	2.30	2.03	05:05	1.60	18:25	3.96	3.18	03:20	0.103	18:25	0.338	0.229	0.229	-
02/09/2021	00:45	1.81	19:50	2.29	2.03	02:30	1.78	19:55	3.98	3.22	02:30	0.118	19:55	0.334	0.231	0.231	-
02/10/2021	00:55	1.84	23:50	2.36	2.08	02:50	1.73	18:00	3.99	3.24	02:50	0.116	18:00	0.326	0.239	0.239	-
02/11/2021	01:25	1.90	09:10	2.32	2.09	04:45	1.85	11:30	3.98	3.26	04:45	0.125	17:15	0.326	0.243	0.243	-
02/12/2021	05:00	1.80	09:15	2.36	2.08	05:10	1.82	12:10	4.10	3.20	04:55	0.110	12:10	0.351	0.238	0.238	-
02/13/2021	01:25	1.92	08:45	2.29	2.08	04:40	1.97	11:30	3.94	3.24	04:40	0.133	11:30	0.305	0.240	0.240	0.08
02/14/2021	03:15	1.88	00:05	2.30	2.11	05:05	1.97	10:20	4.06	3.30	05:05	0.133	14:35	0.338	0.250	0.250	0.71
02/15/2021	01:00	2.06	14:35	2.96	2.35	04:40	2.87	14:45	4.49	3.73	04:45	0.210	14:40	0.548	0.334	0.334	0.78
02/16/2021	23:10	2.02	06:25	2.44	2.15	04:00	2.83	18:40	4.12	3.44	04:00	0.200	18:40	0.366	0.264	0.264	0.07
02/17/2021	05:45	1.71	00:00	2.24	2.05	03:45	1.95	20:10	3.96	3.24	03:45	0.126	20:20	0.314	0.236	0.236	-
02/18/2021	05:30	1.83	23:35	2.27	2.06	03:25	1.70	18:25	4.06	3.23	03:25	0.114	18:25	0.338	0.236	0.236	0.09
02/19/2021	05:40	1.77	19:50	2.21	2.05	02:45	1.79	19:55	4.02	3.24	02:50	0.120	19:55	0.323	0.234	0.234	0.17
02/20/2021	04:10	1.82	12:40	2.36	2.07	05:10	1.77	12:40	4.13	3.29	05:10	0.120	12:40	0.366	0.242	0.242	0.07
02/21/2021	02:20	1.78	19:05	2.33	2.09	05:10	1.92	19:05	4.11	3.37	05:10	0.127	19:05	0.357	0.253	0.253	0.42
02/22/2021	04:50	1.95	13:50	2.67	2.20	05:25	2.32	13:45	4.38	3.61	05:20	0.174	13:50	0.461	0.291	0.291	0.98
02/23/2021	04:45	1.85	19:15	2.24	2.05	03:00	1.95	19:15	4.05	3.30	03:00	0.126	19:15	0.332	0.240	0.240	0.27
02/24/2021	03:40	1.82	01:10	2.23	2.04	03:40	1.68	20:50	4.00	3.26	03:40	0.102	20:50	0.325	0.235	0.235	-
02/25/2021	05:25	1.77	23:30	2.31	2.05	03:45	1.82	13:20	3.98	3.27	03:45	0.123	13:20	0.319	0.237	0.237	0.18
02/26/2021	01:55	1.75	19:15	2.21	2.04	03:40	1.81	16:05	4.01	3.30	03:40	0.118	16:05	0.315	0.238	0.238	0.10
02/27/2021	06:45	1.76	23:10	2.27	2.03	05:00	1.89	10:10	3.95	3.31	05:00	0.115	11:35	0.317	0.237	0.237	0.02
02/28/2021	07:50	1.76	13:45	2.32	2.03	05:40	1.79	13:50	4.07	3.31	05:45	0.108	13:50	0.351	0.239	0.239	0.02
03/01/2021	04:55	1.80	21:35	2.25	2.03	02:50	1.84	17:55	4.02	3.31	02:50	0.126	21:35	0.328	0.237	0.237	-
03/02/2021	04:00	1.77	12:50	2.20	2.02	04:05	1.71	20:45	3.93	3.26	04:05	0.099	12:50	0.313	0.231	0.231	-
03/03/2021	01:45	1.78	23:55	2.34	2.04	03:20	1.55	17:35	4.00	3.22	03:20	0.102	17:35	0.326	0.233	0.233	-
03/04/2021	01:20	1.81	00:00	2.37	2.05	04:30	1.78	19:15	4.01	3.26	04:30	0.112	19:15	0.344	0.237	0.237	0.20
03/05/2021	04:10	1.82	23:55	2.31	2.05	04:10	1.79	21:05	3.95	3.29	04:10	0.109	21:05	0.310	0.239	0.239	0.05
03/06/2021	07:10	1.83	10:20	2.32	2.07	03:50	2.04	12:15	4.12	3.33	05:35	0.131	11:55	0.351	0.246	0.246	-
03/07/2021	06:40	1.80	15:50	2.42	2.08	06:05	1.85	12:20	4.12	3.31	06:05	0.116	15:50	0.372	0.248	0.248	0.04
03/08/2021	02:25	1.86	13:10	2.42	2.08	03:20	1.85	19:35	4.05	3.32	03:20	0.125	19:35	0.340	0.247	0.247	-
03/09/2021	01:15	1.81	08:20	2.34	2.07	03:35	1.84	20:05	4.03	3.26	04:05	0.112	20:05	0.336	0.241	0.241	0.01
03/10/2021	01:40	1.85	08:15	2.26	2.08	03:40	1.93	16:00	4.02	3.31	04:10	0.125	16:00	0.328	0.245	0.245	-
03/11/2021	01:10	1.86	07:50	2.32	2.07	04:05	1.86	17:15	3.99	3.23	04:05	0.118	17:20	0.320	0.237	0.237	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	03:25	1.81	18:00	3.12	2.08	03:25	1.80	18:00	4.69	3.19	03:25	0.108	18:00	0.621	0.239	0.239	-
03/13/2021	04:50	1.83	13:00	2.34	2.07	04:05	1.92	13:05	4.19	3.27	04:25	0.123	13:05	0.366	0.242	0.242	-
03/14/2021	04:15	1.86	11:05	2.32	2.09	05:05	1.76	11:05	4.10	3.29	05:05	0.113	11:05	0.354	0.246	0.246	0.30
03/15/2021	02:10	1.85	20:15	2.23	2.04	03:15	1.81	20:10	4.02	3.25	03:15	0.115	20:10	0.326	0.234	0.234	-
03/16/2021	00:10	1.81	21:00	2.33	2.06	02:45	2.01	21:00	4.08	3.31	02:45	0.137	21:00	0.355	0.242	0.242	-
03/17/2021	02:40	1.86	23:55	2.25	2.04	03:20	2.10	10:50	4.08	3.31	03:20	0.137	10:50	0.320	0.238	0.238	-
03/18/2021	04:30	1.75	06:55	2.31	2.05	02:00	2.07	16:30	4.03	3.35	02:40	0.131	16:40	0.334	0.244	0.244	0.11
03/19/2021	03:35	1.73	20:35	3.13	2.03	02:30	1.89	12:00	4.11	3.28	02:30	0.121	20:35	0.435	0.235	0.235	0.03
03/20/2021	05:50	1.77	13:45	2.34	2.03	04:15	2.02	13:40	4.06	3.34	04:15	0.120	13:45	0.355	0.241	0.241	0.17
03/21/2021	01:00	1.77	10:25	2.40	2.05	04:30	1.97	10:30	4.22	3.31	03:55	0.121	10:30	0.381	0.242	0.242	0.07
03/22/2021	03:40	1.77	08:40	2.20	2.02	02:05	2.13	13:20	3.97	3.36	02:05	0.132	13:20	0.311	0.240	0.240	0.11
03/23/2021	02:55	1.75	09:00	2.59	2.04	03:20	1.74	15:05	4.05	3.30	03:20	0.107	15:05	0.341	0.239	0.239	-
03/24/2021	03:30	1.64	19:30	2.29	2.04	02:50	1.99	16:00	4.08	3.28	02:50	0.125	16:00	0.343	0.238	0.238	0.34
03/25/2021	03:25	1.74	17:45	2.36	2.05	02:25	2.13	17:40	4.15	3.41	02:15	0.143	17:45	0.367	0.248	0.248	0.27
03/26/2021	02:55	1.84	11:45	2.22	2.05	03:35	2.16	11:45	3.97	3.34	03:35	0.136	11:45	0.322	0.243	0.243	-
03/27/2021	05:40	1.82	06:45	2.27	2.06	04:00	2.05	12:00	3.95	3.31	04:00	0.133	13:30	0.313	0.242	0.242	-
03/28/2021	04:55	1.80	18:50	2.43	2.08	04:30	1.79	18:45	4.20	3.32	04:30	0.108	18:50	0.385	0.250	0.250	0.37
03/29/2021	23:45	1.81	12:05	2.39	2.10	03:00	1.78	20:00	4.10	3.27	03:00	0.112	12:05	0.365	0.246	0.246	-
03/30/2021	02:05	1.78	08:10	2.19	2.04	04:20	2.06	09:25	3.94	3.32	01:45	0.126	20:30	0.307	0.239	0.239	-
03/31/2021	04:50	1.79	06:45	2.24	2.08	02:55	2.15	10:55	4.14	3.36	02:55	0.144	10:55	0.331	0.249	0.249	-
04/01/2021	03:30	1.83	19:50	2.26	2.04	02:35	1.84	19:50	4.06	3.29	02:35	0.118	19:50	0.337	0.237	0.237	-
04/02/2021	02:25	1.80	18:25	2.25	2.04	02:20	1.84	18:15	3.95	3.28	02:20	0.112	18:25	0.325	0.237	0.237	-
04/03/2021	04:20	1.73	11:00	2.39	2.06	03:25	2.09	10:55	4.20	3.36	03:25	0.137	10:55	0.375	0.247	0.247	-
04/04/2021	03:55	1.74	10:45	2.30	2.02	04:20	1.67	10:45	4.07	3.31	04:20	0.096	10:45	0.345	0.237	0.237	-
04/05/2021	03:20	1.79	11:10	2.25	2.04	02:05	2.01	11:15	4.14	3.40	02:05	0.123	11:10	0.341	0.246	0.246	-
04/06/2021	02:20	1.71	20:25	2.41	2.04	03:20	1.91	20:20	4.17	3.43	03:20	0.128	20:20	0.377	0.248	0.248	-
04/07/2021	01:05	1.78	22:55	2.30	2.05	02:35	2.04	20:25	4.21	3.40	02:35	0.129	20:15	0.329	0.246	0.246	0.22
04/08/2021	07:45	1.82	07:05	2.25	2.08	01:35	2.21	20:45	3.89	3.31	02:05	0.146	20:45	0.317	0.245	0.245	-
04/09/2021	04:40	1.82	06:40	2.30	2.08	02:30	1.93	12:40	3.92	3.24	02:30	0.127	18:05	0.314	0.240	0.240	0.03
04/10/2021	05:05	1.84	12:40	2.34	2.10	02:15	1.75	11:05	4.02	3.26	05:05	0.115	12:45	0.351	0.247	0.247	0.02
04/11/2021	05:25	1.75	08:30	2.49	2.11	02:45	1.67	08:30	4.28	3.30	05:15	0.101	08:30	0.409	0.252	0.252	-
04/12/2021	04:10	1.82	19:45	2.29	2.07	02:45	1.92	19:30	4.23	3.32	02:45	0.123	19:30	0.351	0.244	0.244	-
04/13/2021	01:30	1.58	06:30	2.29	2.06	02:40	2.14	18:15	3.95	3.32	01:40	0.134	18:20	0.323	0.243	0.243	-
04/14/2021	04:10	1.81	23:20	2.23	2.06	02:30	1.83	20:25	3.98	3.35	02:30	0.113	20:25	0.320	0.245	0.244	-
09/22/2020	23:55	1.94	19:20	2.29	2.14	22:40	2.75	19:20	4.08	3.68	23:55	0.185	19:20	0.346	0.283	0.143	-
09/23/2020	23:35	1.77	19:40	2.58	2.15	02:50	1.91	20:15	4.15	3.50	02:25	0.133	16:30	0.392	0.274	0.274	-
09/24/2020	00:20	1.86	23:15	2.33	2.14	03:25	2.08	10:50	4.02	3.40	03:25	0.154	18:20	0.348	0.261	0.261	-
09/25/2020	00:10	1.92	01:40	2.34	2.13	03:30	2.33	16:30	3.99	3.42	03:15	0.173	10:25	0.320	0.261	0.261	-
09/26/2020	00:40	1.90	13:20	2.41	2.13	04:05	2.04	10:55	4.14	3.40	03:20	0.140	13:20	0.374	0.261	0.261	-
09/27/2020	23:55	1.87	12:00	2.39	2.14	04:05	2.07	08:35	4.15	3.34	04:05	0.146	08:45	0.365	0.259	0.259	-
09/28/2020	23:45	1.91	17:40	2.41	2.13	00:30	2.10	11:00	4.15	3.29	01:20	0.143	17:40	0.375	0.252	0.252	-
09/29/2020	05:05	1.89	22:55	2.38	2.13	00:45	2.11	10:10	4.03	3.29	02:25	0.148	10:10	0.328	0.252	0.252	-
09/30/2020	03:00	1.92	07:20	2.34	2.12	00:55	2.12	18:35	4.00	3.26	03:00	0.148	19:40	0.338	0.249	0.249	-
10/01/2020	00:10	1.87	08:30	2.34	2.12	01:45	2.10	19:45	4.08	3.28	03:20	0.140	19:05	0.346	0.250	0.250	-
10/02/2020	00:15	1.87	22:45	2.41	2.11	00:35	2.10	10:20	3.99	3.30	03:35	0.136	10:10	0.326	0.250	0.250	-
10/03/2020	00:35	1.89	23:20	2.33	2.13	03:25	2.12	12:20	4.02	3.36	03:25	0.146	12:20	0.339	0.256	0.256	0.01
10/04/2020	01:45	1.85	10:50	2.32	2.14	03:40	2.11	08:40	4.18	3.36	03:40	0.147	10:50	0.347	0.259	0.259	0.01
10/05/2020	23:25	1.95	05:20	2.38	2.15	01:50	2.13	11:45	3.91	3.27	01:50	0.157	11:45	0.318	0.252	0.252	-
10/06/2020	05:25	1.91	05:05	2.51	2.16	01:25	2.10	17:05	3.96	3.23	00:30	0.157	17:10	0.328	0.250	0.250	-
10/07/2020	00:35	1.85	19:05	2.25	2.11	02:50	2.11	19:10	3.92	3.27	01:55	0.146	19:05	0.323	0.247	0.247	-
10/08/2020	01:15	1.87	23:00	2.26	2.11	02:35	2.20	12:05	3.97	3.37	03:25	0.153	12:05	0.322	0.256	0.256	-
10/09/2020	00:15	1.90	23:45	2.49	2.13	01:35	2.14	23:45	4.16	3.38	04:00	0.146	23:45	0.397	0.258	0.258	0.64
10/10/2020	04:45	1.89	00:00	2.39	2.16	05:45	2.40	10:50	4.07	3.59	04:45	0.165	10:55	0.355	0.280	0.280	1.04
10/11/2020	01:25	1.83	11:50	2.34	2.12	06:00	2.11	08:05	4.14	3.34	04:55	0.136	11:50	0.347	0.256	0.256	0.53
10/12/2020	05:30	1.89	11:55	2.36	2.12	04:25	2.12	18:55	4.04	3.32	04:25	0.155	11:55	0.353	0.253	0.253	-
10/13/2020	02:05	1.81	08:30	2.68	2.10	02:40	2.35	08:10	4.45	3.46	02:45	0.163	08:30	0.467	0.261	0.261	0.61
10/14/2020	04:40	1.83	19:25	2.33	2.06	04:05	2.15	19:30	4.01	3.28	03:30	0.142	19:25	0.347	0.240	0.240	-
10/15/2020	05:40	1.80	07:30	2.29	2.07	04:05	2.16	11:05	4.06	3.24	02:25	0.141	11:05	0.344	0.240	0.240	-
10/16/2020	03:00	1.86	07:05	2.19	2.04	01:00	2.17	17:50	3.96	3.26	03:00	0.137	17:50	0.300	0.235	0.235	-
10/17/2020	01:20	1.79	03:25	2.28	2.06	03:10	2.16	19:45	4.14	3.29	04:00	0.139	19:45	0.325	0.240	0.240	0.01
10/18/2020	00:45	1.81	12:20	2.33	2.06	06:00	2.10	12:35	4.08	3.28	01:25	0.136	12:35	0.352	0.240	0.240	0.03
10/19/2020	00:50	1.81	11:45	2.27	2.05	02:40	2.16	19:15	3.95	3.29	02:20	0.137	11:45	0.328	0.238	0.238	0.05
10/20/2020	02:40	1.82	18:20	2.31	2.06	02:35	2.10	18:20	4.03	3.30	02:30	0.136	18:20	0.345	0.242	0.242	-
10/21/2020	23:20	1.89	23:55	2.27	2.10	04:35	2.11	09:30	4.04	3.22	03:20	0.145	09:30	0.330	0.241	0.241	0.01
10/22/2020	06:35	1.94	06:05	2.45	2.13	04:30	2.10	16:35	3.88	3.22	04:20	0.154	16:35	0.312	0.246	0.246	-
10/23/2020	05:40	1.89	19:50	2.28	2.08	02:50	1.85	19:45	4.06	3.25	01:40	0.129	19:45	0.340	0.240	0.240	0.20
10/24/2020	04:30	1.84	10:30	2.26	2.08	04:25	1.77	15:55	3.96	3.25	04:25	0.110	10:30	0.325	0.242	0.242	0.02
10/25/2020	23:55	1.87	12:45	2.24	2.09	03:35	1.84	18:20	4.06	3.20	03:35	0.120	12:45	0.322	0.238	0.238	-
10/26/2020	05:35	1.86	17:05	2.23	2.07	00:50	1.83	10:20	3.98	3.18	00:50	0.125	17:05	0.320	0.234	0.234	-
10/27/2020	05:55	1.82	17:20	2.26	2.08	02:00	1.85	15:55	3.92	3.24	02:00	0.128	17:20	0.324	0.241	0.241	-
10/28/2020	23:55	1.86	01:10	2.27	2.05	02:15	1.85	16:35	3.89	3.24	03:20	0.122	16:40	0.303	0.234	0.234	-
10/29/2020	00:05	1.80	14:25	2.23	2.07	01:10	1.84	17:35	3.90	3.24	02:30	0.120	18:45	0.315	0.238	0.238	-
10/30/2020	23:25	1.87	06:50	2.28	2.07	01:40	1.82	10:05	3.95	3.27	02:40	0.123	10:05	0.321	0.240	0.240	0.10
10/31/2020	01:10	1.78	10:30	2.42	2.06	02:30	1.83	10:25	4.13	3.20	02:40	0.121	10:30	0.379	0.236	0.236	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/01/2020	06:55	1.76	13:05	2.27	2.05	05:05	1.83	14:45	4.00	3.19	04:45	0.117	14:45	0.332	0.232	0.232	-
11/02/2020	01:10	1.79	23:40	2.21	2.04	02:30	1.83	13:35	3.93	3.22	04:20	0.113	13:35	0.307	0.232	0.232	-
11/03/2020	01:40	1.84	10:35	2.31	2.07	02:25	1.80	10:25	4.03	3.33	03:55	0.118	10:30	0.344	0.246	0.246	0.83
11/04/2020	06:05	1.83	07:50	2.22	2.04	01:55	1.77	12:15	3.92	3.19	02:00	0.121	21:00	0.303	0.229	0.229	0.09
11/05/2020	01:15	1.84	09:25	2.31	2.09	04:05	1.84	16:25	3.94	3.29	03:50	0.123	16:25	0.336	0.244	0.244	0.34
11/06/2020	02:05	1.86	09:00	2.30	2.07	04:20	2.15	20:00	4.03	3.28	04:20	0.152	12:45	0.314	0.241	0.241	0.10
11/07/2020	06:55	1.83	15:20	2.29	2.07	04:30	1.96	15:20	3.98	3.25	04:35	0.132	15:20	0.336	0.238	0.238	0.07
11/08/2020	01:30	1.84	12:25	2.39	2.11	04:45	2.02	12:20	4.04	3.31	04:45	0.137	12:25	0.362	0.251	0.251	0.01
11/09/2020	00:50	1.84	23:30	2.30	2.04	02:35	1.99	20:45	3.98	3.25	04:15	0.132	20:50	0.328	0.234	0.234	0.04
11/10/2020	01:20	1.84	17:10	2.34	2.07	02:30	1.99	17:05	4.07	3.24	02:30	0.133	17:05	0.350	0.239	0.239	0.03
11/11/2020	06:25	1.81	23:50	2.32	2.05	04:15	2.10	14:05	3.99	3.23	04:15	0.135	14:10	0.320	0.234	0.234	-
11/12/2020	01:05	1.84	00:00	2.33	2.07	03:35	2.10	08:50	3.98	3.27	04:35	0.141	10:40	0.318	0.240	0.240	0.16
11/13/2020	01:45	1.87	00:30	2.28	2.08	03:05	2.23	13:50	4.13	3.34	03:05	0.155	18:55	0.333	0.246	0.246	0.38
11/14/2020	01:25	1.90	08:05	2.53	2.11	04:20	1.94	11:30	4.01	3.18	04:25	0.129	16:15	0.345	0.241	0.241	0.47
11/15/2020	04:00	1.75	15:05	2.34	2.06	03:15	2.11	11:10	4.07	3.35	05:00	0.134	15:05	0.354	0.245	0.245	0.19
11/16/2020	05:05	1.82	14:35	2.31	2.04	03:40	2.09	11:25	3.95	3.28	04:00	0.137	14:25	0.329	0.237	0.237	0.31
11/17/2020	00:45	1.88	18:55	2.29	2.05	03:35	2.04	19:00	4.01	3.28	03:35	0.135	18:55	0.337	0.237	0.237	0.20
11/18/2020	03:20	1.83	15:45	2.27	2.04	04:05	1.96	17:45	3.98	3.22	04:00	0.128	15:45	0.330	0.232	0.232	0.30
11/19/2020	00:35	1.84	19:20	2.20	2.05	03:45	2.10	13:10	3.93	3.27	03:45	0.133	19:25	0.311	0.237	0.237	0.50
11/20/2020	00:50	1.81	01:50	2.29	2.01	02:40	2.07	21:45	4.07	3.23	02:40	0.136	21:45	0.340	0.228	0.228	0.01
11/21/2020	01:55	1.76	23:15	2.31	2.04	04:00	1.98	12:35	3.97	3.23	05:25	0.130	12:35	0.329	0.233	0.233	-
11/22/2020	05:30	1.78	13:00	2.29	2.04	03:50	1.97	12:50	3.99	3.23	05:30	0.120	12:45	0.335	0.234	0.234	0.21
11/23/2020	03:15	1.80	08:45	2.18	2.03	02:20	1.86	19:40	3.88	3.19	03:25	0.112	19:45	0.299	0.229	0.229	0.14
11/24/2020	02:30	1.74	00:10	2.19	2.03	03:30	1.86	16:45	3.90	3.17	03:30	0.121	17:50	0.304	0.226	0.226	0.21
11/25/2020	01:40	1.81	21:25	2.43	2.04	02:45	1.86	21:25	4.22	3.24	02:45	0.126	21:25	0.389	0.233	0.233	0.05
11/26/2020	07:15	1.76	13:30	2.39	2.07	05:30	1.95	13:30	4.20	3.35	05:20	0.131	13:30	0.378	0.247	0.247	0.02
11/27/2020	01:20	1.79	00:35	2.19	1.99	05:30	1.86	11:25	3.88	3.18	03:25	0.112	11:35	0.284	0.221	0.221	-
11/28/2020	01:40	1.82	08:40	2.35	2.06	04:50	1.86	19:00	4.03	3.16	04:50	0.126	19:05	0.333	0.230	0.230	0.05
11/29/2020	08:05	1.82	12:40	2.35	2.05	04:55	1.88	12:40	4.13	3.22	04:55	0.122	12:40	0.363	0.235	0.235	-
11/30/2020	02:00	1.80	23:50	2.24	2.03	02:45	1.93	11:35	4.03	3.33	02:50	0.125	11:40	0.321	0.237	0.237	0.36
12/01/2020	01:55	1.78	23:10	2.31	2.03	04:40	1.86	18:40	3.96	3.21	03:20	0.127	18:40	0.301	0.229	0.229	-
12/02/2020	06:05	1.78	08:30	2.33	2.04	01:05	1.86	18:30	3.94	3.19	03:30	0.116	18:30	0.324	0.230	0.230	0.01
12/03/2020	02:25	1.77	17:35	2.35	2.02	03:05	1.81	19:25	3.87	3.17	03:35	0.119	17:35	0.317	0.225	0.225	-
12/04/2020	00:55	1.84	23:20	2.24	2.02	04:05	1.55	20:55	3.92	3.17	04:00	0.099	20:55	0.312	0.226	0.226	-
12/05/2020	01:20	1.83	21:00	2.83	2.16	04:05	1.93	11:45	3.99	3.11	04:05	0.123	19:15	0.383	0.245	0.245	0.03
12/06/2020	01:50	1.86	17:00	2.33	2.07	06:45	2.12	12:55	3.98	3.28	06:35	0.140	17:00	0.344	0.242	0.242	0.03
12/07/2020	01:20	1.88	00:15	2.32	2.04	04:50	1.86	17:45	3.91	3.25	04:50	0.120	17:45	0.321	0.234	0.234	-
12/08/2020	03:35	1.78	17:25	2.29	2.06	04:25	1.79	19:30	4.01	3.31	03:55	0.108	19:35	0.334	0.244	0.244	0.87
12/09/2020	03:10	1.79	07:55	2.23	2.04	02:20	2.40	22:20	3.95	3.32	03:00	0.155	22:20	0.311	0.238	0.238	0.17
12/10/2020	06:35	1.82	23:35	2.23	2.04	03:20	1.64	17:15	3.88	3.15	03:20	0.111	18:25	0.298	0.226	0.226	0.07
12/11/2020	06:20	1.84	08:40	2.22	2.02	02:50	1.86	12:00	3.90	3.14	02:30	0.122	12:10	0.315	0.223	0.223	0.02
12/12/2020	08:50	1.82	23:30	2.30	2.05	02:10	1.87	08:50	3.90	3.08	04:10	0.122	12:40	0.324	0.225	0.225	0.01
12/13/2020	00:50	1.84	08:25	2.26	2.05	05:45	1.69	09:10	3.98	3.08	05:45	0.105	15:30	0.320	0.224	0.224	0.24
12/14/2020	06:15	1.77	18:20	2.20	2.02	03:45	1.85	10:45	3.92	3.18	03:45	0.115	17:05	0.308	0.226	0.226	0.05
12/15/2020	01:00	1.83	16:30	2.22	2.04	02:30	1.82	16:30	3.91	3.21	03:20	0.113	16:30	0.315	0.232	0.232	0.58
12/16/2020	01:35	1.85	18:50	2.68	2.24	04:20	1.99	07:40	3.59	2.87	04:20	0.135	18:50	0.357	0.238	0.238	0.39
12/17/2020	01:55	1.48	12:25	2.41	1.93	03:15	0.77	12:15	3.92	2.55	03:15	0.037	12:20	0.343	0.180	0.180	0.08
12/18/2020	01:05	1.84	11:30	2.31	2.11	03:40	1.34	14:10	4.06	3.11	03:40	0.104	12:50	0.301	0.233	0.233	0.25
12/19/2020	02:00	1.87	22:05	2.28	2.06	04:45	1.66	12:10	3.96	3.27	04:45	0.109	22:05	0.332	0.238	0.238	0.37
12/20/2020	02:25	1.78	12:55	2.24	2.03	06:25	1.90	12:55	3.98	3.24	06:25	0.122	12:55	0.326	0.233	0.233	0.04
12/21/2020	01:10	1.76	19:15	2.99	2.21	04:15	2.18	19:10	4.51	3.51	03:35	0.145	19:05	0.556	0.289	0.289	1.07
12/22/2020	05:55	1.89	09:45	2.25	2.08	04:10	1.88	19:05	3.91	3.25	04:10	0.135	14:50	0.309	0.239	0.239	-
12/23/2020	01:55	1.81	13:30	2.26	2.05	04:10	2.28	13:20	4.00	3.29	04:25	0.144	13:30	0.329	0.238	0.238	-
12/24/2020	05:50	1.74	00:35	2.32	2.07	04:55	2.01	14:20	4.07	3.34	04:55	0.132	14:25	0.347	0.246	0.246	-
12/25/2020	03:05	1.78	00:35	2.24	2.00	04:50	1.87	16:10	4.05	3.28	04:50	0.119	16:10	0.329	0.231	0.231	0.49
12/26/2020	03:05	1.79	11:45	2.29	2.04	06:05	2.18	11:40	4.09	3.37	06:05	0.143	11:40	0.345	0.242	0.242	0.02
12/27/2020	05:25	1.75	15:05	2.39	2.04	06:55	2.18	15:00	4.17	3.32	04:55	0.135	15:00	0.371	0.241	0.241	0.13
12/28/2020	05:25	1.76	13:45	2.36	2.05	03:45	2.18	13:45	4.24	3.39	03:45	0.136	13:45	0.374	0.246	0.246	-
12/29/2020	07:25	1.84	02:15	2.22	2.06	03:15	2.15	20:00	4.15	3.26	03:50	0.146	20:00	0.329	0.238	0.238	0.14
12/30/2020	05:00	1.78	17:20	2.28	2.10	03:35	2.32	17:20	4.03	3.43	03:10	0.153	17:20	0.338	0.257	0.257	0.78
12/31/2020	02:35	1.83	22:45	2.36	2.08	04:10	2.12	17:35	3.94	3.28	06:45	0.144	17:40	0.325	0.244	0.244	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			49.698	30.65
Average	2.07	3.29	0.243	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A16_80956

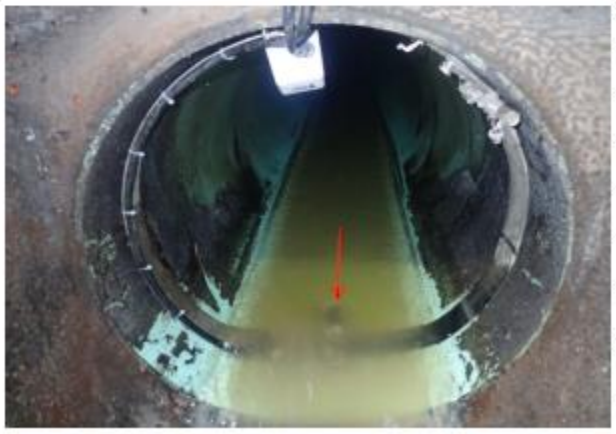
Site Address /Location:	Opposite 225 6th St SE			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	Park In Eastbound lane	Latitude:	47.3019	Pipe Size (H x W): 21.00 X 21.00	Pipe Shape: Circular
		Longitude:	-122.226958		



Manhole #	System Characteristics
A130820	Commercial
Access	Traffic
Drive	Heavy







ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.11.325

Installation Information

Installation Date:	Installation Type:
Monday, September 28, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Time	
14:26:00 AM	
Depth of Flow (Wet DOF) (in)	
2.50	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
0.58	N/A
Silt (in)	Silt Type
0	

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
8	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
PVC	Good

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

AUB_A17_80957

Site Commentary

SITE INFORMATION

Pipe	Elliptical (9.5 in H x 9.25 in W)
Silt	1.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

This site experienced a flow change on October 25th and backwater conditions April 13th through April 14th. An ADS field crew performed a confirmation on January 27th which verified the sensors are working properly.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	3.07	0.48	0.041
Minimum	1.92	0.15	0.010
Maximum	5.56	1.61	0.218
Min Time	12/10/2020 3:00:00 AM	04/14/2021 4:00:00 AM	04/06/2021 3:00:00 AM
Max Time	04/14/2021 11:00:00 AM	10/09/2020 11:00:00 PM	10/09/2020 11:00:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

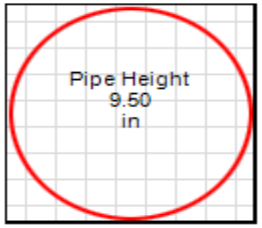
Percent Uptime	
DFINAL (in)	96.773
VFINAL (ft/s)	96.773
QFINAL (MGD - Total MG)	96.773

Hydrograph Report

AUB_A17_80957

Flow Monitor

AUB_A17_80957



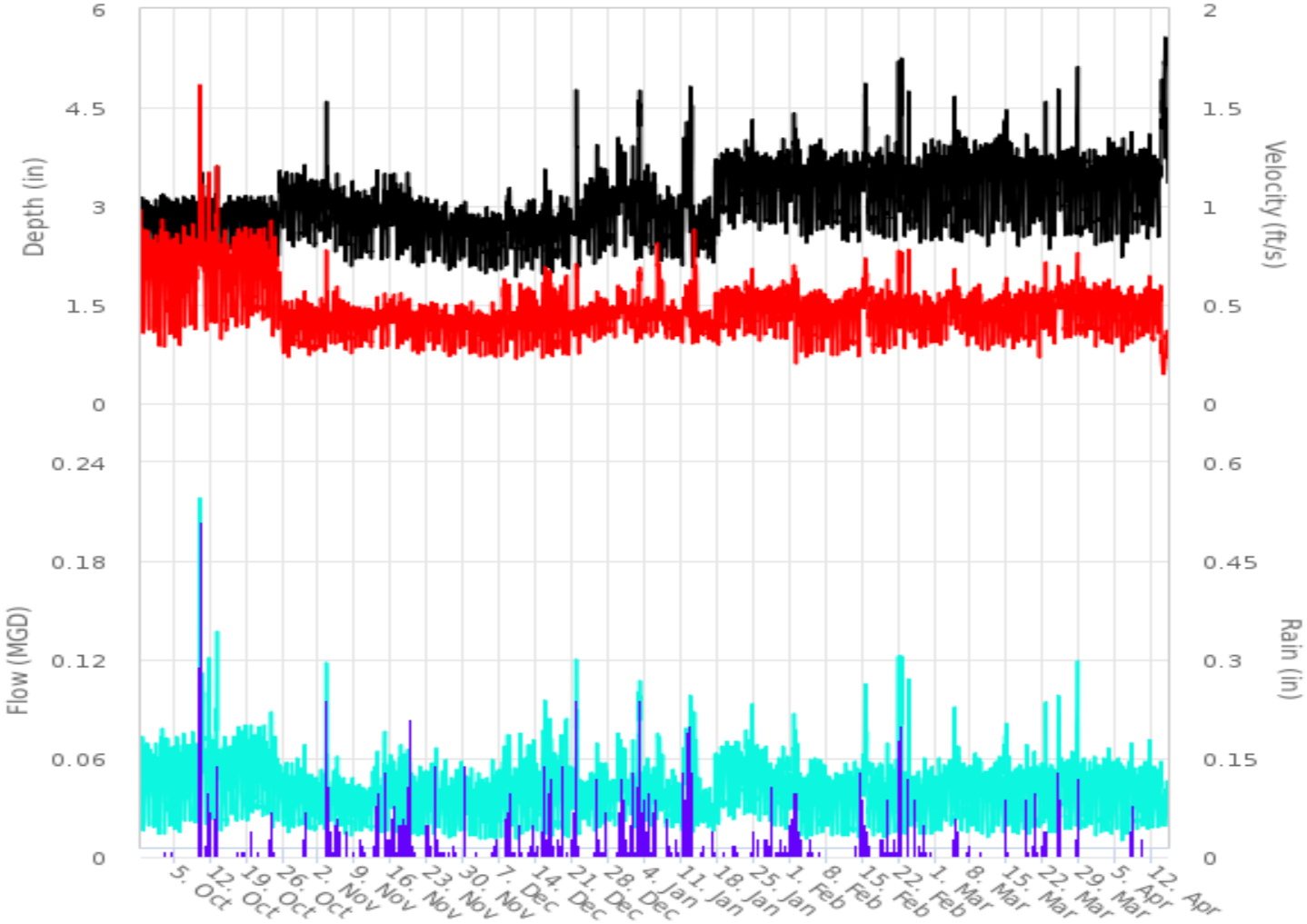
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
www.adsenv.com

Scattergraph Report

AUB_A17_80957

Flow Monitor

AUB_A17_80957

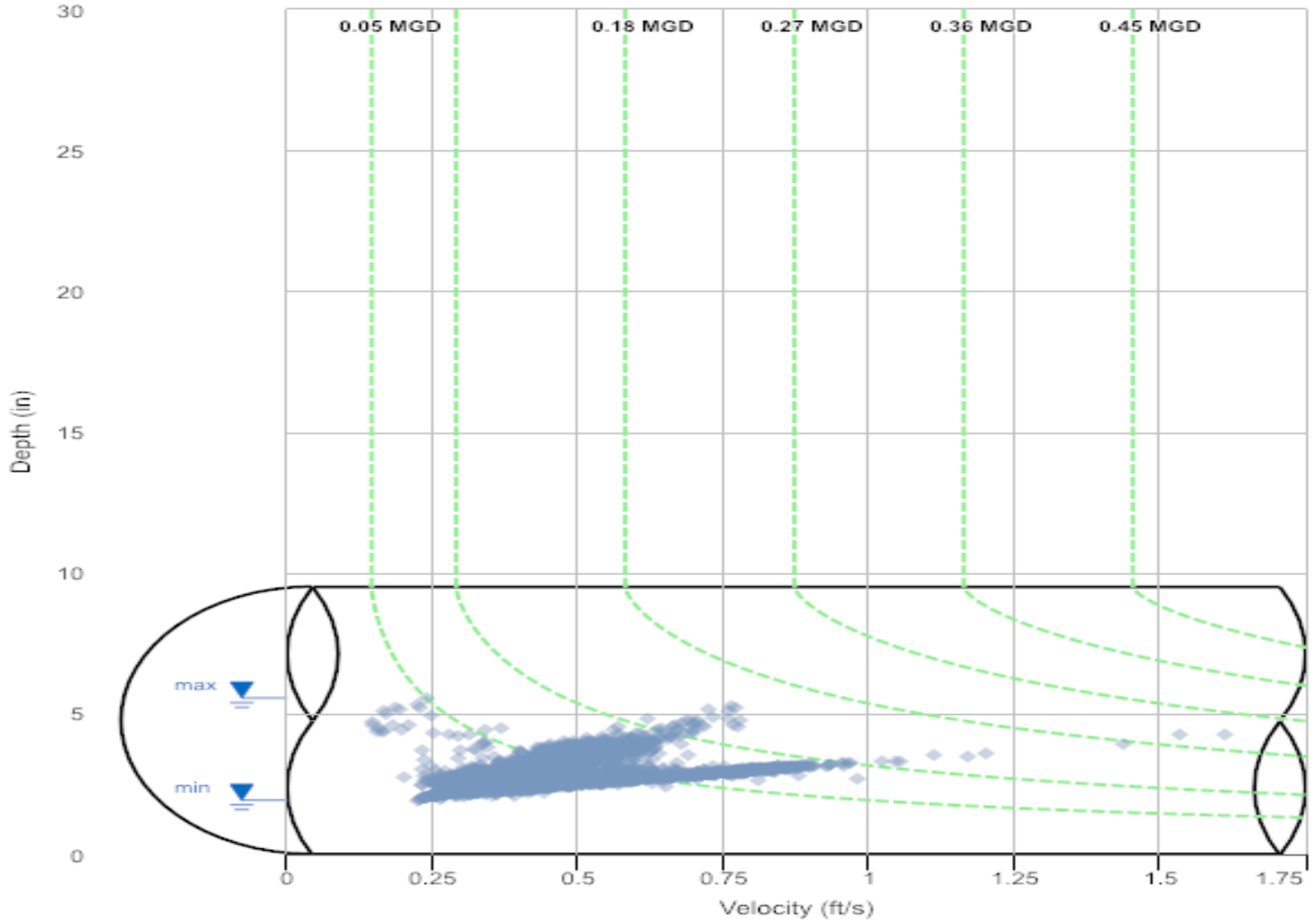
Pipe Height
9.50
in

Report Period

09/22/2020
To
04/14/2021

Legend

DFINAL - VFINAL
Iso-Q™
Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A17_80957Pipe: Elliptical (9.5 in H x 9.25 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	05:35	2.33	15:15	4.91	3.00	21:20	0.25	15:15	0.71	0.45	05:35	0.020	15:15	0.114	0.039	0.039	0.51
01/02/2021	04:10	2.11	20:55	6.19	3.34	06:30	0.26	20:55	0.83	0.49	06:30	0.014	20:55	0.178	0.052	0.052	1.69
01/03/2021	06:15	2.07	00:00	4.95	3.00	06:10	0.30	00:00	0.71	0.45	04:40	0.015	00:00	0.116	0.039	0.039	0.65
01/04/2021	05:40	2.27	11:25	4.20	2.93	03:05	0.34	11:25	0.62	0.44	05:40	0.019	11:25	0.082	0.036	0.036	0.48
01/05/2021	04:15	2.13	20:35	3.87	2.92	04:15	0.32	20:35	0.57	0.44	04:15	0.016	20:35	0.068	0.036	0.036	0.52
01/06/2021	05:50	2.21	00:10	3.51	2.84	05:40	0.33	09:20	0.87	0.57	05:40	0.018	09:20	0.092	0.053	0.053	0.22
01/07/2021	03:05	2.07	09:00	3.56	2.80	12:10	0.30	08:55	0.78	0.46	03:50	0.016	08:55	0.113	0.038	0.038	-
01/08/2021	04:35	1.94	08:50	3.57	2.82	04:35	0.28	08:50	0.53	0.42	04:35	0.013	08:50	0.057	0.033	0.033	0.22
01/09/2021	06:25	2.09	12:45	3.43	2.74	08:10	0.20	22:55	0.60	0.42	03:25	0.015	10:50	0.067	0.037	0.037	-
01/10/2021	06:20	1.99	16:45	3.47	2.74	08:35	0.24	11:10	0.64	0.41	06:15	0.014	11:10	0.070	0.032	0.032	0.07
01/11/2021	05:25	2.04	10:10	4.28	2.96	01:45	0.30	18:35	0.64	0.45	01:45	0.015	20:10	0.088	0.043	0.043	1.06
01/12/2021	15:55	2.45	18:35	5.92	3.53	11:05	0.37	18:40	0.78	0.50	15:55	0.023	18:40	0.147	0.055	0.055	2.10
01/13/2021	04:55	1.99	00:00	7.83	2.71	03:25	0.29	10:40	1.04	0.55	03:20	0.014	00:00	0.173	0.050	0.050	0.09
01/14/2021	04:20	2.03	10:10	4.03	2.66	03:20	0.21	10:10	0.58	0.40	03:20	0.014	10:05	0.072	0.031	0.031	0.01
01/15/2021	06:15	2.09	17:50	3.35	2.73	05:35	0.26	17:50	0.50	0.41	03:50	0.016	17:50	0.049	0.031	0.031	0.09
01/16/2021	03:15	2.10	18:05	3.39	2.67	06:05	0.20	18:05	0.51	0.40	06:05	0.015	18:05	0.050	0.029	0.029	-
01/17/2021	04:15	2.07	20:15	5.62	3.02	04:10	0.30	11:30	0.68	0.45	04:10	0.015	20:15	0.106	0.040	0.040	0.10
01/18/2021	05:35	2.37	20:00	4.23	3.27	05:30	0.25	20:00	0.67	0.46	05:30	0.015	20:00	0.089	0.045	0.045	-
01/19/2021	02:20	2.71	19:15	4.10	3.44	02:20	0.33	19:15	0.64	0.50	02:20	0.024	19:15	0.082	0.051	0.051	0.01
01/20/2021	04:10	2.67	15:10	4.05	3.39	02:55	0.33	15:10	0.63	0.49	04:10	0.023	15:10	0.079	0.050	0.050	-
01/21/2021	03:00	2.58	21:30	4.38	3.42	03:00	0.30	21:30	0.68	0.50	03:00	0.020	21:30	0.094	0.051	0.051	0.11
01/22/2021	02:50	2.76	10:55	4.24	3.38	02:45	0.35	10:55	0.67	0.49	02:45	0.026	10:50	0.089	0.049	0.049	-
01/23/2021	06:55	2.60	15:45	4.23	3.43	04:25	0.31	15:45	0.66	0.50	04:25	0.021	15:45	0.089	0.052	0.052	-
01/24/2021	04:40	2.58	17:15	4.44	3.47	04:40	0.30	17:15	0.71	0.51	04:40	0.021	17:15	0.101	0.054	0.054	0.16
01/25/2021	02:25	2.60	16:35	4.34	3.38	02:25	0.31	16:35	0.69	0.49	02:25	0.021	16:35	0.095	0.049	0.049	0.04
01/26/2021	04:20	2.48	21:15	3.98	3.36	04:20	0.28	21:15	0.62	0.48	04:20	0.018	21:15	0.076	0.049	0.049	-
01/27/2021	05:15	2.60	08:15	4.06	3.30	05:10	0.31	22:55	0.65	0.49	05:15	0.021	08:15	0.080	0.044	0.044	0.14
01/28/2021	03:35	2.61	17:25	4.36	3.41	03:35	0.34	04:50	0.66	0.49	03:35	0.017	17:25	0.080	0.042	0.042	0.24
01/29/2021	03:45	2.69	19:10	4.38	3.41	03:50	0.30	19:10	0.70	0.48	03:40	0.017	19:10	0.085	0.041	0.041	0.03
01/30/2021	05:20	2.65	14:55	4.18	3.41	04:55	0.30	14:35	0.71	0.49	04:55	0.016	14:55	0.076	0.042	0.042	0.07
01/31/2021	05:25	2.50	14:35	4.28	3.36	04:55	0.30	11:40	0.65	0.47	05:25	0.014	14:35	0.074	0.039	0.039	0.12
02/01/2021	00:55	2.92	18:15	4.77	3.63	00:45	0.39	18:15	0.74	0.56	00:50	0.025	18:15	0.102	0.053	0.053	0.82
02/02/2021	02:45	2.55	08:05	4.82	3.38	04:35	0.15	07:55	0.73	0.46	04:35	0.008	08:05	0.103	0.039	0.039	0.31
02/03/2021	03:20	2.48	22:50	3.97	3.24	03:15	0.23	19:15	0.61	0.44	03:15	0.011	22:50	0.063	0.034	0.034	0.06
02/04/2021	04:00	2.39	22:10	4.45	3.28	03:55	0.21	22:05	0.65	0.43	03:55	0.009	22:05	0.081	0.035	0.035	0.07
02/05/2021	03:40	2.51	19:25	4.24	3.36	03:35	0.23	19:20	0.65	0.42	03:35	0.011	19:25	0.075	0.036	0.036	0.01
02/06/2021	03:05	2.54	11:50	4.26	3.45	04:15	0.23	19:10	0.67	0.45	04:15	0.013	20:25	0.076	0.040	0.040	0.01
02/07/2021	04:10	2.58	14:25	4.26	3.31	05:05	0.20	14:25	0.62	0.43	04:05	0.013	14:25	0.073	0.035	0.035	-
02/08/2021	04:55	2.60	20:05	4.06	3.34	03:20	0.29	10:10	0.58	0.45	04:50	0.015	20:05	0.064	0.036	0.036	-
02/09/2021	05:05	2.50	22:15	4.39	3.33	03:40	0.20	22:10	0.62	0.43	03:40	0.010	22:15	0.076	0.035	0.035	-
02/10/2021	03:05	2.51	09:50	4.22	3.38	03:35	0.20	09:50	0.62	0.43	03:35	0.012	09:50	0.072	0.036	0.036	-
02/11/2021	04:30	2.30	11:05	4.06	3.27	04:25	0.23	11:05	0.63	0.45	04:30	0.009	11:05	0.069	0.036	0.036	-
02/12/2021	04:20	2.28	10:10	4.00	3.19	03:20	0.24	12:15	0.64	0.45	04:15	0.010	12:15	0.064	0.035	0.035	-
02/13/2021	04:05	2.41	13:45	4.16	3.28	03:55	0.26	13:45	0.66	0.45	03:55	0.012	13:45	0.074	0.037	0.037	0.08
02/14/2021	04:50	2.36	21:50	3.96	3.28	05:00	0.22	14:40	0.61	0.45	04:20	0.011	17:30	0.061	0.037	0.037	0.71
02/15/2021	05:55	3.04	13:25	5.07	3.92	05:50	0.45	12:50	0.75	0.61	05:50	0.031	13:25	0.113	0.065	0.065	0.78
02/16/2021	05:20	2.52	20:00	4.04	3.24	06:15	0.27	19:30	0.64	0.46	06:10	0.014	19:30	0.067	0.036	0.036	0.07
02/17/2021	03:40	2.27	21:15	4.30	3.24	03:00	0.19	19:10	0.61	0.42	03:35	0.010	21:15	0.071	0.033	0.033	-
02/18/2021	03:10	2.49	10:15	4.04	3.34	05:00	0.24	14:40	0.63	0.45	01:40	0.013	14:40	0.067	0.038	0.038	0.09
02/19/2021	04:30	2.45	19:00	4.62	3.32	03:30	0.21	19:00	0.72	0.44	04:30	0.011	19:00	0.095	0.037	0.037	0.17
02/20/2021	04:15	2.43	16:20	4.16	3.32	05:35	0.22	12:40	0.64	0.45	04:10	0.012	16:20	0.070	0.037	0.037	0.07
02/21/2021	05:25	2.38	22:50	5.83	3.51	06:50	0.24	23:25	0.81	0.47	04:50	0.012	23:35	0.146	0.044	0.044	0.42
02/22/2021	04:15	2.84	12:50	6.66	3.76	05:05	0.34	12:50	0.87	0.55	04:15	0.022	12:50	0.186	0.057	0.057	0.98
02/23/2021	04:10	2.38	21:05	5.43	3.20	04:55	0.24	21:10	0.85	0.47	04:05	0.011	21:10	0.141	0.037	0.037	0.27
02/24/2021	04:15	2.52	20:20	4.27	3.18	03:05	0.30	20:20	0.62	0.45	04:05	0.016	20:20	0.073	0.033	0.033	-
02/25/2021	02:50	2.50	20:45	4.03	3.31	01:55	0.29	04:25	0.62	0.47	01:35	0.014	20:45	0.067	0.038	0.038	0.18
02/26/2021	03:50	2.36	22:30	4.47	3.27	04:15	0.20	22:35	0.62	0.42	04:15	0.011	22:30	0.077	0.034	0.034	0.10
02/27/2021	04:25	2.38	13:00	4.19	3.34	01:25	0.24	15:55	0.59	0.44	04:25	0.011	12:55	0.063	0.037	0.037	0.02
02/28/2021	06:30	2.32	17:55	4.50	3.35	06:25	0.27	11:45	0.58	0.42	06:25	0.011	11:45	0.067	0.035	0.035	0.02
03/01/2021	02:25	2.42	19:00	4.37	3.41	01:30	0.27	22:50	0.63	0.45	01:30	0.013	19:00	0.073	0.038	0.038	-
03/02/2021	04:30	2.37	02:25	4.50	3.39	02:15	0.17	11:10	0.58	0.46	03:20	0.012	19:40	0.068	0.039	0.039	-
03/03/2021	03:05	2.48	18:30	4.13	3.37	05:10	0.18	11:40	0.61	0.51	05:05	0.014	18:30	0.067	0.042	0.042	-
03/04/2021	02:20	2.44	19:20	4.88	3.53	02:15	0.34	19:25	0.73	0.52	02:15	0.016	19:25	0.104	0.047	0.047	0.20
03/05/2021	04:30	2.38	09:40	4.59	3.48	02:30	0.33	10:55	0.64	0.50	02:30	0.018	11:10	0.080	0.043	0.043	0.05
03/06/2021	05:00	2.28	21:45	4.71	3.47	22:30	0.31	13:45	0.59	0.45	04:45	0.013	21:45	0.074	0.040	0.040	-
03/07/2021	05:00	2.52	10:05	4.74	3.40	04:45	0.28	18:20	0.65	0.46	04:50	0.014	18:25	0.082	0.040	0.040	0.04
03/08/2021	03:55	2.54	19:25	4.45	3.41	03:30	0.28	19:25	0.68	0.47	03:50	0.015	19:25	0.085	0.040	0.040	-
03/09/2021	04:05	2.50	12:20	4.65	3.44	03:25	0.25	11:55	0.70	0.45	03:20	0.013	11:15	0.073	0.039	0.039	0.01
03/10/2021	04:00	2.46	18:15	4.30	3.49	03:55	0.23	19:35	0.57	0.42	03:55	0.011	13:55	0.063	0.037	0.037	-
03/11/2021	04:20	2.35	11:45	4.47	3.42	04:20	0.24	15:55	0.60	0.43	04:20	0.010	11:45	0.070	0.038	0.038	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	02:55	2.40	20:45	4.54	3.53	02:50	0.26	20:45	0.61	0.46	02:55	0.011	20:45	0.078	0.041	0.041	-
03/13/2021	05:05	2.63	11:20	4.68	3.53	06:55	0.25	10:05	0.68	0.44	04:20	0.016	11:20	0.088	0.039	0.039	-
03/14/2021	04:20	2.52	19:20	5.45	3.60	04:05	0.24	19:20	0.71	0.46	04:05	0.013	19:20	0.119	0.044	0.044	0.30
03/15/2021	02:50	2.58	19:40	5.49	3.48	05:15	0.26	09:10	0.71	0.45	02:45	0.014	09:10	0.119	0.040	0.040	-
03/16/2021	03:35	2.47	20:25	4.17	3.39	04:30	0.23	18:20	0.63	0.46	02:35	0.012	18:20	0.066	0.039	0.039	-
03/17/2021	03:30	2.21	08:00	4.90	3.23	02:50	0.20	08:00	0.75	0.45	02:50	0.008	08:00	0.108	0.036	0.036	-
03/18/2021	03:15	2.39	15:50	5.95	3.43	04:30	0.25	06:35	0.79	0.49	03:20	0.011	15:50	0.143	0.043	0.043	0.11
03/19/2021	02:40	2.42	17:40	4.45	3.38	02:45	0.20	17:40	0.63	0.46	02:45	0.009	17:40	0.078	0.039	0.039	0.03
03/20/2021	03:05	2.58	05:25	4.79	3.47	03:15	0.26	05:25	0.73	0.48	03:15	0.016	05:25	0.102	0.042	0.042	0.17
03/21/2021	05:20	2.61	04:30	4.49	3.40	04:30	0.16	23:05	0.66	0.47	03:20	0.012	21:30	0.081	0.040	0.040	0.07
03/22/2021	02:45	2.12	10:00	5.61	3.38	02:45	0.29	10:00	0.77	0.50	02:45	0.010	10:00	0.134	0.043	0.043	0.11
03/23/2021	03:20	2.31	08:15	5.37	3.33	02:25	0.30	08:05	0.78	0.47	02:25	0.013	08:15	0.094	0.039	0.039	-
03/24/2021	02:20	2.47	19:20	5.79	3.46	03:40	0.25	19:20	0.77	0.51	02:05	0.014	19:20	0.139	0.046	0.046	0.34
03/25/2021	04:25	2.84	21:25	4.40	3.50	23:50	0.31	12:25	0.68	0.54	23:30	0.020	19:55	0.073	0.047	0.047	0.27
03/26/2021	03:25	2.45	20:00	4.19	3.38	02:30	0.31	10:25	0.67	0.50	02:55	0.015	20:00	0.077	0.042	0.042	-
03/27/2021	03:45	2.42	16:40	4.21	3.35	03:55	0.23	11:50	0.66	0.50	03:55	0.010	11:50	0.075	0.041	0.041	-
03/28/2021	03:05	2.41	14:20	7.36	3.52	04:30	0.28	14:20	0.94	0.53	03:05	0.016	14:20	0.226	0.049	0.049	0.37
03/29/2021	03:00	2.37	17:40	4.46	3.28	01:00	0.26	12:45	0.76	0.51	01:00	0.012	17:40	0.084	0.041	0.041	-
03/30/2021	01:35	2.53	17:30	4.29	3.33	01:50	0.27	10:10	0.75	0.49	01:50	0.014	10:10	0.072	0.040	0.040	-
03/31/2021	03:00	2.48	18:00	4.15	3.32	04:55	0.31	17:55	0.66	0.49	01:50	0.017	18:00	0.073	0.040	0.040	-
04/01/2021	03:30	2.31	07:25	4.15	3.27	01:50	0.24	07:25	0.65	0.48	01:50	0.011	07:25	0.073	0.038	0.038	-
04/02/2021	02:25	2.40	19:15	4.64	3.28	00:50	0.30	19:15	0.66	0.48	02:20	0.013	19:15	0.088	0.039	0.039	-
04/03/2021	01:10	2.35	12:25	4.34	3.33	03:10	0.24	14:00	0.67	0.49	03:10	0.012	12:25	0.079	0.041	0.041	-
04/04/2021	03:45	2.36	12:30	4.48	3.26	02:35	0.26	12:30	0.64	0.46	03:40	0.012	12:30	0.080	0.036	0.036	-
04/05/2021	03:05	2.50	16:40	4.34	3.44	03:00	0.31	12:30	0.66	0.49	03:00	0.015	10:30	0.073	0.043	0.043	-
04/06/2021	02:50	2.13	09:10	4.44	3.29	02:45	0.23	12:30	0.60	0.45	02:45	0.008	10:20	0.070	0.037	0.037	-
04/07/2021	04:05	2.34	23:25	5.48	3.46	04:05	0.27	23:30	0.73	0.48	04:05	0.011	23:25	0.121	0.043	0.043	0.22
04/08/2021	03:00	2.50	17:10	4.28	3.35	02:10	0.23	13:20	0.59	0.46	02:10	0.011	10:35	0.062	0.038	0.038	-
04/09/2021	03:10	2.50	10:15	4.51	3.37	03:00	0.25	10:15	0.66	0.46	03:00	0.012	10:15	0.084	0.039	0.039	0.03
04/10/2021	02:30	2.60	15:10	4.69	3.41	02:40	0.29	11:30	0.70	0.48	02:40	0.015	18:35	0.077	0.041	0.041	0.02
04/11/2021	05:00	2.40	10:50	4.45	3.31	23:35	0.27	10:50	0.70	0.48	03:15	0.016	10:50	0.088	0.040	0.040	-
04/12/2021	02:50	2.44	17:35	4.29	3.33	04:25	0.27	09:40	0.68	0.48	01:50	0.014	09:40	0.080	0.039	0.039	-
04/13/2021	03:00	2.41	20:50	5.25	3.63	23:55	0.16	11:45	0.71	0.41	02:55	0.015	11:50	0.076	0.036	0.036	-
04/14/2021	23:25	3.26	10:50	5.81	4.45	04:45	0.14	18:25	0.44	0.25	23:55	0.015	18:25	0.060	0.030	0.030	-
09/28/2020	23:45	2.33	20:40	3.32	2.91	23:50	0.46	20:40	1.00	0.76	23:50	0.025	19:40	0.087	0.058	0.022	-
09/29/2020	01:55	2.06	20:25	3.41	2.71	02:50	0.33	19:25	1.02	0.67	02:10	0.015	19:25	0.092	0.045	0.045	-
09/30/2020	03:00	2.19	08:25	3.56	2.74	03:15	0.35	08:25	1.11	0.68	03:15	0.017	08:25	0.091	0.046	0.046	-
10/01/2020	01:50	2.07	10:05	3.38	2.72	01:50	0.28	11:50	0.97	0.66	01:50	0.013	21:10	0.083	0.045	0.045	-
10/02/2020	02:45	1.96	15:10	3.58	2.78	02:10	0.26	15:10	1.17	0.69	02:10	0.012	18:20	0.104	0.051	0.051	-
10/03/2020	04:00	2.06	16:05	3.39	2.73	03:15	0.28	10:50	1.04	0.64	03:15	0.013	10:50	0.100	0.047	0.047	0.01
10/04/2020	05:20	2.09	11:25	3.42	2.71	06:50	0.30	11:25	1.03	0.62	06:50	0.015	16:15	0.099	0.045	0.045	0.01
10/05/2020	03:05	2.02	11:30	3.38	2.75	00:55	0.26	11:30	1.11	0.64	01:05	0.013	11:30	0.109	0.048	0.048	-
10/06/2020	03:00	1.93	20:20	3.36	2.73	02:55	0.24	19:10	1.01	0.65	02:50	0.011	19:10	0.099	0.047	0.047	-
10/07/2020	02:10	2.21	12:30	3.45	2.79	02:10	0.29	12:30	1.03	0.66	02:10	0.015	12:30	0.090	0.048	0.048	-
10/08/2020	03:05	2.26	13:05	3.36	2.83	02:10	0.34	20:05	1.00	0.68	02:10	0.018	20:05	0.087	0.051	0.051	-
10/09/2020	02:25	2.27	23:45	5.09	2.92	01:25	0.32	23:45	1.89	0.74	03:00	0.017	23:45	0.319	0.063	0.063	0.64
10/10/2020	04:50	2.48	01:10	4.94	3.09	16:05	0.50	01:10	1.88	0.83	23:30	0.031	01:10	0.306	0.071	0.071	1.04
10/11/2020	04:35	2.26	22:40	3.85	2.90	04:20	0.33	22:40	1.46	0.75	03:15	0.018	22:40	0.172	0.060	0.060	0.53
10/12/2020	04:15	2.26	11:00	3.35	2.76	01:40	0.33	11:00	1.06	0.66	01:40	0.020	11:00	0.103	0.047	0.047	-
10/13/2020	00:45	2.29	07:05	4.90	2.88	00:25	0.37	07:05	1.84	0.75	00:30	0.020	07:05	0.296	0.059	0.059	0.61
10/14/2020	00:30	2.08	17:50	3.18	2.69	03:10	0.26	17:50	0.97	0.64	03:10	0.012	14:45	0.082	0.045	0.045	-
10/15/2020	03:00	2.14	12:00	3.36	2.78	03:20	0.32	12:00	1.03	0.62	02:55	0.016	12:00	0.101	0.047	0.047	-
10/16/2020	02:35	2.21	18:15	3.30	2.82	02:35	0.36	18:15	0.98	0.70	02:35	0.020	18:15	0.094	0.055	0.055	-
10/17/2020	02:00	2.20	11:05	3.42	2.83	02:00	0.36	11:05	1.05	0.71	02:00	0.019	11:05	0.106	0.057	0.057	0.01
10/18/2020	03:00	2.17	10:50	3.32	2.81	04:50	0.30	10:50	0.99	0.70	04:50	0.017	10:50	0.095	0.056	0.056	0.03
10/19/2020	02:55	2.09	20:10	3.28	2.78	02:55	0.29	20:10	0.96	0.68	02:55	0.015	20:10	0.091	0.052	0.052	0.05
10/20/2020	04:15	2.17	13:25	3.25	2.79	04:15	0.29	13:25	0.95	0.69	04:15	0.017	13:25	0.089	0.054	0.054	-
10/21/2020	02:15	2.19	10:35	3.28	2.78	02:15	0.35	10:35	0.96	0.68	02:15	0.019	10:35	0.091	0.053	0.053	0.01
10/22/2020	03:25	2.16	10:35	3.38	2.78	03:25	0.34	10:35	1.03	0.68	03:25	0.018	10:35	0.102	0.052	0.052	-
10/23/2020	02:20	2.15	23:00	4.04	2.73	04:45	0.33	23:00	1.56	0.66	04:45	0.018	23:00	0.204	0.051	0.051	0.20
10/24/2020	04:05	2.03	14:50	3.40	2.70	04:05	0.26	14:50	1.04	0.63	04:05	0.012	14:50	0.103	0.048	0.048	0.02
10/25/2020	01:20	2.12	10:30	3.73	3.01	23:55	0.27	07:20	0.75	0.47	01:20	0.016	11:40	0.070	0.041	0.041	-
10/26/2020	01:55	2.51	18:40	3.75	3.14	05:15	0.19	10:30	0.66	0.40	00:55	0.014	10:30	0.075	0.039	0.039	-
10/27/2020	02:50	2.34	17:55	3.73	3.09	03:55	0.14	19:20	0.61	0.40	02:35	0.011	18:00	0.072	0.038	0.038	-
10/28/2020	02:15	2.22	18:55	3.73	3.04	04:10	0.16	18:55	0.62	0.39	02:35	0.011	18:55	0.074	0.037	0.037	-
10/29/2020	03:10	2.32	15:20	3.67	3.06	02:15	0.19	15:20	0.60	0.41	02:15	0.013	15:20	0.066	0.038	0.038	-
10/30/2020	02:30	2.47	05:20	5.06	3.04	00:45	0.22	05:15	0.91	0.42	03:15	0.015	05:15	0.142	0.037	0.037	0.10
10/31/2020	03:25	2.36	13:30	3.62	2.99	04:15	0.17	12:20	0.56	0.39	04:15	0.011	12:20	0.060	0.034	0.034	-
11/01/2020	03:00	2.31	14:30	4.21	2.98	03:05	0.18	01:50	0.62	0.40	03:05	0.011	14:30	0.075	0.034	0.034	-
11/02/2020	04:20	2.39	17:20	3.78	3.06	02:00	0.22	10:15	0.58	0.41	03:50	0.015	17:20	0.060	0.036	0.036	-
11/03/2020	02:45	2.33	09:45	5.85	3.24	04:25	0.17	09:45	0.94	0.45	04:25	0.010	09:45	0.187	0.045	0.045	0.83
11/04/2020	02:45	2.37	10:40	3.51	2.95	01:40	0.18	19:25	0.69	0.42	01:40	0.013	19:25	0.070	0.035	0.035	0.09
11/05/2020	03:55	2.17	12:20	3.72	2.95	04:40	0.23	01:35	0.78	0.44	03:55	0.015	01:35	0.079	0.038	0.038	0.34
11/06/2020	04:25	2.31	18:30	3.49	2.92	00:05	0.23	02:00	0.61	0.45	00:05	0.015	19:20	0.060	0.037	0.037	0.10

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/07/2020	03:30	1.96	09:15	3.54	2.77	03:30	0.22	09:15	0.64	0.40	03:30	0.010	09:15	0.067	0.031	0.031	0.07
11/08/2020	05:55	1.97	12:15	3.54	2.77	04:10	0.23	18:10	0.57	0.40	04:05	0.011	18:10	0.060	0.031	0.031	0.01
11/09/2020	03:10	2.02	12:10	3.50	2.81	04:20	0.21	11:40	0.52	0.39	03:10	0.011	11:40	0.053	0.031	0.031	0.04
11/10/2020	03:25	1.99	19:30	3.36	2.79	03:25	0.23	11:10	0.58	0.40	03:15	0.011	11:10	0.053	0.031	0.031	0.03
11/11/2020	04:15	2.14	20:45	3.48	2.78	04:15	0.27	20:45	0.56	0.41	04:15	0.014	20:45	0.058	0.032	0.032	-
11/12/2020	04:25	2.06	11:40	3.49	2.84	01:30	0.24	10:35	0.55	0.40	02:15	0.012	17:30	0.066	0.036	0.036	0.16
11/13/2020	21:50	2.52	06:25	4.37	2.92	12:55	0.28	06:25	0.64	0.44	21:50	0.024	06:25	0.089	0.040	0.040	0.38
11/14/2020	03:45	2.05	17:50	4.26	2.85	06:50	0.22	17:45	0.65	0.41	03:45	0.012	17:50	0.087	0.040	0.040	0.47
11/15/2020	06:20	2.05	22:35	4.12	2.92	06:20	0.24	18:20	0.62	0.43	06:20	0.012	18:20	0.083	0.040	0.040	0.19
11/16/2020	23:50	2.51	13:05	4.00	3.02	22:20	0.35	12:30	0.61	0.46	01:45	0.024	08:55	0.086	0.041	0.041	0.31
11/17/2020	04:10	1.98	19:05	4.64	2.78	04:00	0.23	19:05	0.78	0.41	04:00	0.011	19:05	0.116	0.037	0.037	0.20
11/18/2020	03:50	2.13	10:10	3.44	2.80	03:50	0.26	09:55	0.59	0.41	03:50	0.014	10:00	0.080	0.038	0.038	0.30
11/19/2020	02:50	2.15	03:05	4.20	2.83	04:45	0.24	12:35	0.67	0.42	02:50	0.014	12:45	0.090	0.038	0.038	0.50
11/20/2020	02:15	2.06	15:50	3.27	2.66	02:15	0.24	00:25	0.53	0.38	02:15	0.012	11:15	0.066	0.032	0.032	0.01
11/21/2020	03:25	2.01	11:15	3.78	2.67	03:25	0.23	11:25	0.60	0.39	03:25	0.011	11:25	0.074	0.033	0.033	-
11/22/2020	01:25	2.01	17:40	3.43	2.73	01:25	0.23	08:55	0.67	0.41	01:20	0.011	13:10	0.077	0.036	0.036	0.21
11/23/2020	03:55	2.20	13:00	3.29	2.74	04:10	0.21	05:10	0.63	0.41	04:10	0.015	05:10	0.080	0.037	0.037	0.14
11/24/2020	05:40	2.02	15:30	3.58	2.63	05:40	0.23	15:30	0.68	0.39	05:40	0.011	15:30	0.139	0.034	0.034	0.21
11/25/2020	03:05	2.11	18:30	3.22	2.67	02:40	0.25	10:25	0.52	0.40	03:05	0.013	18:25	0.063	0.034	0.034	0.05
11/26/2020	03:50	1.99	11:55	3.22	2.63	03:50	0.23	11:50	0.54	0.39	03:50	0.011	12:20	0.067	0.034	0.034	0.02
11/27/2020	04:20	1.90	19:05	3.08	2.53	02:20	0.21	18:55	0.55	0.36	02:20	0.009	18:55	0.064	0.031	0.031	-
11/28/2020	05:10	1.88	11:30	3.20	2.62	05:10	0.20	11:30	0.63	0.40	05:10	0.009	11:30	0.077	0.037	0.037	0.05
11/29/2020	05:30	2.01	13:50	3.51	2.60	08:40	0.22	13:45	0.70	0.38	05:30	0.011	13:45	0.084	0.032	0.032	-
11/30/2020	02:20	1.95	05:10	3.38	2.66	02:20	0.22	03:40	0.64	0.41	02:20	0.010	03:40	0.089	0.034	0.034	0.36
12/01/2020	02:20	1.96	21:30	3.26	2.58	02:20	0.22	10:35	0.64	0.39	02:20	0.010	10:35	0.076	0.032	0.032	-
12/02/2020	04:00	1.90	10:35	3.18	2.53	04:00	0.20	17:40	0.58	0.38	04:00	0.009	17:50	0.068	0.030	0.030	0.01
12/03/2020	04:05	1.91	18:35	3.17	2.52	02:30	0.21	20:50	0.61	0.38	02:35	0.009	20:50	0.070	0.032	0.032	-
12/04/2020	04:10	1.78	10:05	3.18	2.56	03:05	0.21	15:40	0.65	0.38	03:05	0.009	15:40	0.067	0.031	0.031	-
12/05/2020	02:10	1.89	13:30	3.28	2.54	07:45	0.18	11:00	0.59	0.38	02:10	0.009	11:35	0.073	0.034	0.034	0.03
12/06/2020	04:00	1.91	20:15	3.13	2.56	04:00	0.21	18:45	0.57	0.38	04:00	0.009	18:25	0.069	0.033	0.033	0.03
12/07/2020	03:45	1.86	21:10	3.03	2.52	02:20	0.20	20:20	0.70	0.44	02:15	0.009	21:10	0.080	0.038	0.038	-
12/08/2020	02:30	1.91	19:00	4.01	2.82	03:15	0.24	15:30	0.66	0.49	03:30	0.017	11:45	0.093	0.053	0.053	0.87
12/09/2020	05:50	2.06	02:25	3.59	2.71	05:50	0.25	23:15	0.72	0.40	05:50	0.012	19:40	0.075	0.037	0.037	0.17
12/10/2020	03:35	1.75	17:55	3.23	2.52	02:45	0.20	20:20	0.68	0.41	02:45	0.009	20:15	0.097	0.038	0.038	0.07
12/11/2020	05:15	1.86	12:50	3.21	2.57	05:10	0.20	19:25	0.64	0.44	05:10	0.009	19:25	0.075	0.041	0.041	0.02
12/12/2020	04:55	2.05	12:35	3.43	2.64	04:35	0.19	14:50	0.68	0.46	04:55	0.012	14:50	0.092	0.045	0.045	0.01
12/13/2020	05:15	1.89	08:50	3.62	2.64	05:15	0.20	16:10	0.63	0.45	05:00	0.009	10:55	0.091	0.045	0.045	0.24
12/14/2020	00:20	2.10	13:35	3.17	2.59	01:05	0.23	10:40	0.59	0.40	00:15	0.014	13:35	0.077	0.037	0.037	0.05
12/15/2020	02:35	1.83	15:45	6.49	2.68	02:30	0.21	15:40	1.17	0.46	02:30	0.009	15:45	0.237	0.047	0.047	0.58
12/16/2020	02:55	1.91	14:10	3.56	2.62	02:55	0.21	13:40	0.69	0.45	02:55	0.009	14:10	0.100	0.046	0.046	0.39
12/17/2020	03:30	1.92	12:45	3.30	2.58	03:30	0.21	12:45	0.71	0.45	03:30	0.009	12:45	0.092	0.043	0.043	0.08
12/18/2020	01:20	2.01	18:30	3.40	2.65	04:45	0.20	18:45	0.70	0.42	01:20	0.011	18:50	0.101	0.041	0.041	0.25
12/19/2020	03:25	1.97	21:05	3.51	2.66	03:25	0.22	20:55	0.72	0.46	03:30	0.011	20:55	0.107	0.048	0.048	0.37
12/20/2020	04:55	1.89	10:50	3.20	2.53	03:30	0.16	18:40	0.54	0.38	04:55	0.009	10:50	0.065	0.035	0.035	0.04
12/21/2020	04:05	2.05	16:05	6.72	2.98	04:05	0.24	16:00	0.85	0.46	04:05	0.012	16:05	0.223	0.052	0.052	1.07
12/22/2020	04:00	1.96	21:20	3.33	2.67	03:15	0.22	21:20	0.54	0.39	04:00	0.010	11:15	0.056	0.033	0.033	-
12/23/2020	05:05	2.25	11:35	3.60	2.95	04:00	0.30	09:30	0.60	0.43	05:05	0.017	11:35	0.058	0.036	0.036	-
12/24/2020	05:30	2.18	15:40	3.99	2.99	05:30	0.32	15:40	0.59	0.45	05:30	0.017	15:40	0.073	0.038	0.038	-
12/25/2020	04:45	2.03	15:10	4.31	2.97	04:40	0.30	15:10	0.63	0.44	04:45	0.014	15:10	0.086	0.038	0.038	0.49
12/26/2020	03:15	2.17	17:45	4.09	2.93	03:15	0.32	17:45	0.60	0.44	03:15	0.017	17:45	0.077	0.037	0.037	0.02
12/27/2020	05:55	2.22	08:55	3.97	2.99	05:05	0.33	08:55	0.59	0.45	05:55	0.018	08:55	0.072	0.039	0.039	0.13
12/28/2020	04:05	2.16	12:00	3.75	2.95	03:30	0.32	12:00	0.56	0.44	03:30	0.017	12:00	0.063	0.037	0.037	-
12/29/2020	02:50	2.19	19:25	4.45	2.99	02:50	0.32	19:25	0.65	0.45	02:55	0.017	19:25	0.093	0.038	0.038	0.14
12/30/2020	00:00	2.69	05:50	4.37	3.31	00:00	0.40	05:45	0.64	0.49	00:00	0.029	05:45	0.089	0.048	0.048	0.78
12/31/2020	05:45	2.18	01:45	3.82	2.99	05:45	0.32	01:45	0.57	0.45	05:45	0.017	01:45	0.066	0.038	0.038	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			8.143	30.65
Average	3.07	0.48	0.041	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A17_80957

Site Address /Location:	619 Auburn Way S			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	Drive	Latitude:	47.301528	Pipe Size (H x W): 9.50 X 9.50	Pipe Shape: Circular
		Longitude:	-122.225463		



Manhole #	System Characteristics
A1780957	Commercial
Access	**Traffic**
Drive	Light



Site Sketch Profile View or Photo

Installation Information

Installation Date:	Installation Type:
Thursday, September 24, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Time	
14:59:00 AM	
Depth of Flow (Wet DOF) (in)	
2.63	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
0.94	N/A
Silt (in)	Silt Type
0	

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
6	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
Concrete	Good

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.11.325

AUB_A1a_30822

Site Commentary

SITE INFORMATION

Pipe	Elliptical (10 in H x 9.88 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	1.73	0.71	0.029
Minimum	1.14	0.25	0.008
Maximum	3.27	2.37	0.113
Min Time	12/31/2020 4:00:00 AM	01/20/2021 9:00:00 PM	11/03/2020 2:00:00 AM
Max Time	04/02/2021 7:00:00 PM	12/11/2020 12:00:00 PM	12/10/2020 6:00:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

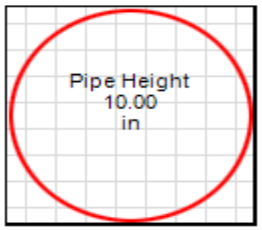
Percent Uptime	
DFINAL (in)	99.842
VFINAL (ft/s)	99.842
QFINAL (MGD - Total MG)	99.842

Hydrograph Report

AUB_A1a_30822

Flow Monitor

AUB_A1a_30822



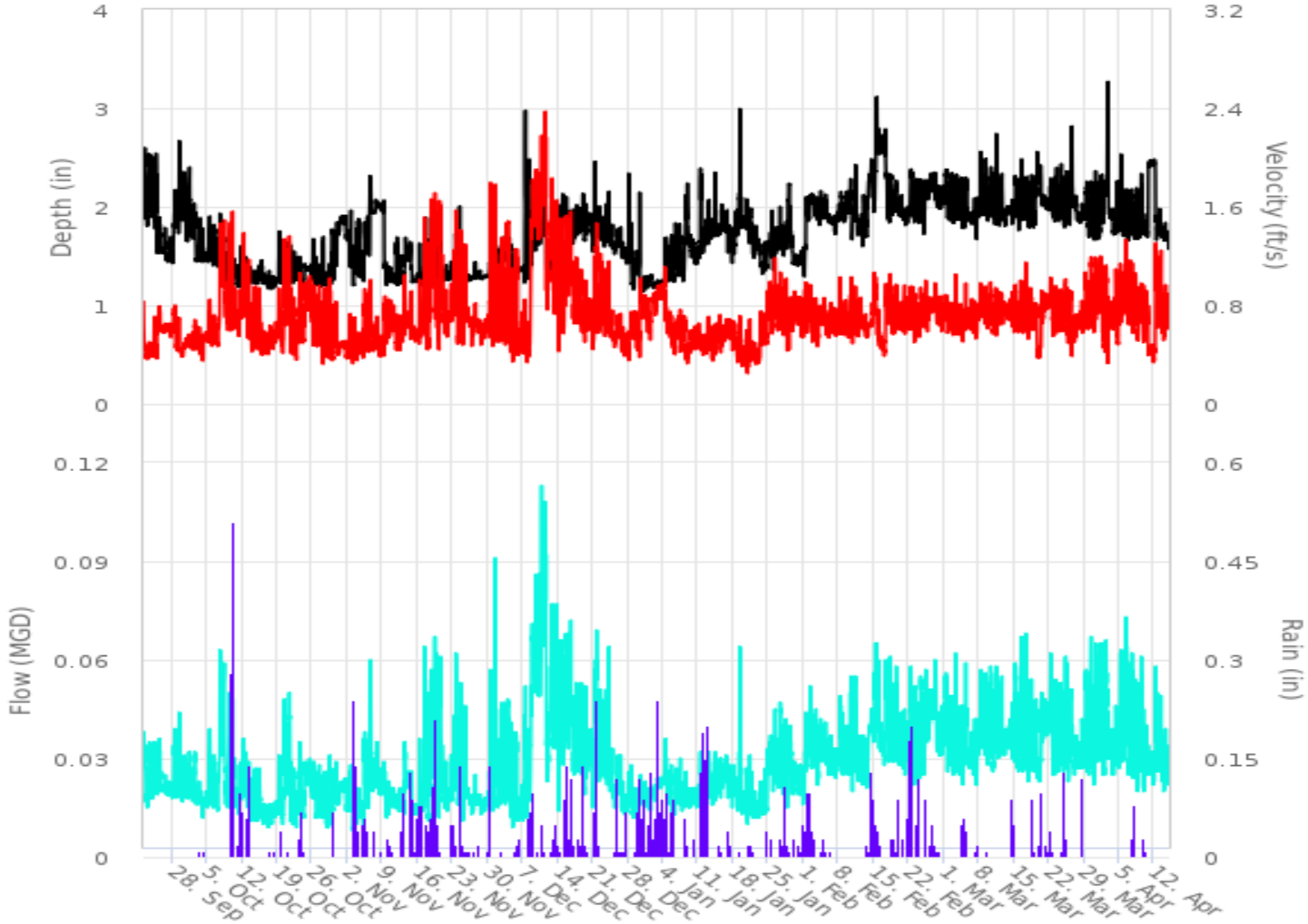
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



4455 S. 134th Place
Tukwila, WA 98168

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Scattergraph Report

AUB_A1a_30822

Flow Monitor

AUB_A1a_30822

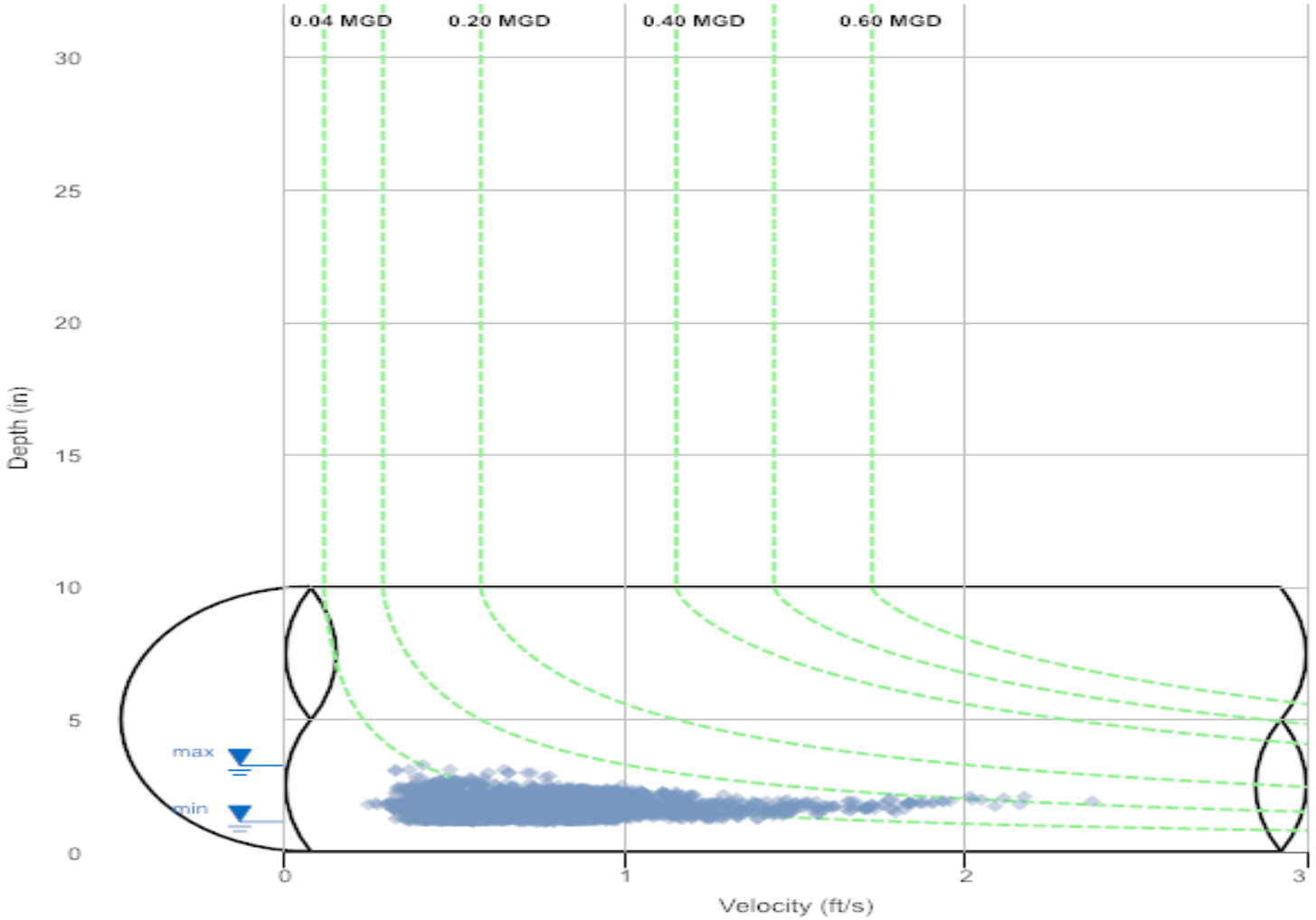
Pipe Height
10.00
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A1a_30822Pipe: Elliptical (10 in H x 9.88 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	18:55	1.17	10:45	1.35	1.25	11:30	0.48	20:20	0.92	0.70	11:20	0.013	18:10	0.023	0.018	0.018	0.51
01/02/2021	00:20	1.16	04:25	1.33	1.21	10:55	0.70	21:05	0.99	0.84	11:00	0.017	20:40	0.025	0.020	0.020	1.69
01/03/2021	07:55	1.19	19:45	1.30	1.23	13:50	0.78	00:00	1.00	0.91	13:50	0.019	19:45	0.026	0.022	0.022	0.65
01/04/2021	00:40	1.24	22:00	1.78	1.46	19:05	0.52	08:30	1.25	0.81	19:05	0.015	12:05	0.043	0.025	0.025	0.48
01/05/2021	00:45	1.12	16:50	1.83	1.45	23:10	0.42	09:25	0.97	0.61	21:20	0.011	09:25	0.033	0.019	0.019	0.52
01/06/2021	05:20	1.18	11:50	2.18	1.49	11:20	0.31	16:50	0.79	0.55	04:25	0.012	14:05	0.031	0.018	0.018	0.22
01/07/2021	23:20	1.21	08:30	1.94	1.47	12:20	0.33	10:30	1.04	0.61	19:30	0.013	10:30	0.042	0.019	0.019	-
01/08/2021	00:05	1.24	18:05	2.82	1.71	15:20	0.30	07:15	0.81	0.53	00:05	0.014	18:55	0.033	0.020	0.020	0.22
01/09/2021	16:25	1.44	00:40	1.95	1.62	00:15	0.36	12:25	0.66	0.47	07:00	0.013	13:00	0.026	0.017	0.017	-
01/10/2021	18:00	1.34	08:25	1.77	1.54	17:05	0.34	12:20	0.70	0.53	17:05	0.012	07:55	0.023	0.018	0.018	0.07
01/11/2021	03:05	1.42	11:55	2.55	1.72	20:25	0.38	02:15	0.68	0.52	23:10	0.012	11:00	0.042	0.021	0.021	1.06
01/12/2021	22:15	1.48	23:20	1.94	1.69	11:00	0.30	23:00	0.84	0.50	00:25	0.012	23:20	0.040	0.019	0.019	2.10
01/13/2021	07:05	1.52	04:35	2.36	1.80	18:10	0.30	12:50	0.81	0.52	18:10	0.013	03:10	0.038	0.022	0.022	0.09
01/14/2021	05:45	1.63	08:25	2.49	1.82	13:55	0.28	10:25	0.82	0.54	07:15	0.013	10:25	0.052	0.023	0.023	0.01
01/15/2021	09:05	1.64	17:05	2.35	1.82	14:25	0.25	14:30	0.82	0.56	01:15	0.013	14:30	0.046	0.024	0.024	0.09
01/16/2021	22:30	1.52	19:40	2.30	1.79	11:05	0.37	20:00	0.96	0.60	22:25	0.016	20:00	0.041	0.025	0.025	-
01/17/2021	19:30	1.39	10:35	2.10	1.67	19:40	0.38	13:20	0.90	0.58	19:40	0.012	10:35	0.034	0.022	0.022	0.10
01/18/2021	01:25	1.46	19:25	2.41	1.77	23:35	0.30	06:30	0.81	0.50	19:45	0.012	02:40	0.035	0.021	0.021	-
01/19/2021	16:20	1.61	07:50	3.38	1.99	23:25	0.24	07:50	0.81	0.47	19:10	0.011	07:50	0.084	0.024	0.024	0.01
01/20/2021	14:00	1.64	16:25	2.43	1.86	20:55	0.22	15:05	1.01	0.37	03:20	0.010	15:05	0.048	0.017	0.017	-
01/21/2021	20:45	1.47	13:10	2.26	1.76	04:50	0.19	16:15	0.94	0.43	04:50	0.007	08:45	0.043	0.018	0.018	0.11
01/22/2021	07:20	1.46	13:45	2.08	1.64	21:30	0.22	11:00	1.03	0.39	01:10	0.008	11:00	0.038	0.015	0.015	-
01/23/2021	19:30	1.30	03:25	1.70	1.48	02:40	0.20	12:00	0.83	0.49	02:40	0.007	12:00	0.026	0.016	0.016	-
01/24/2021	06:25	1.33	11:25	2.01	1.45	19:10	0.32	11:35	1.15	0.57	19:10	0.009	11:35	0.042	0.018	0.018	0.16
01/25/2021	12:25	1.35	18:35	2.28	1.61	18:20	0.44	13:45	1.22	0.82	17:45	0.016	20:20	0.053	0.030	0.030	0.04
01/26/2021	06:25	1.36	01:25	1.93	1.65	17:00	0.53	08:10	1.32	0.82	18:50	0.020	09:15	0.053	0.031	0.031	-
01/27/2021	01:50	1.52	08:30	2.38	1.70	23:50	0.53	11:30	1.37	0.83	01:50	0.018	12:45	0.060	0.033	0.033	0.14
01/28/2021	01:55	1.49	23:15	2.11	1.72	18:30	0.38	15:00	1.29	0.73	18:25	0.013	15:00	0.055	0.029	0.029	0.24
01/29/2021	23:10	1.41	08:35	2.41	1.81	19:00	0.35	12:05	1.27	0.72	19:00	0.012	08:40	0.051	0.030	0.030	0.03
01/30/2021	10:50	1.36	14:20	1.64	1.45	14:45	0.54	14:00	1.10	0.80	21:30	0.016	14:00	0.035	0.025	0.025	0.07
01/31/2021	18:50	1.32	18:25	1.69	1.48	15:20	0.39	20:35	1.03	0.73	22:05	0.012	20:35	0.034	0.024	0.024	0.12
02/01/2021	05:40	1.28	09:00	2.23	1.71	01:15	0.48	12:10	1.30	0.73	05:00	0.015	12:10	0.056	0.029	0.029	0.82
02/02/2021	01:45	1.85	09:35	2.26	2.03	19:50	0.40	10:30	1.23	0.74	19:50	0.021	10:30	0.066	0.037	0.037	0.31
02/03/2021	05:10	1.76	12:30	2.14	2.00	19:25	0.36	08:30	1.05	0.69	19:25	0.017	08:30	0.053	0.034	0.034	0.06
02/04/2021	05:55	1.75	11:20	2.22	1.95	00:10	0.38	07:55	0.99	0.71	00:10	0.017	07:55	0.051	0.034	0.034	0.07
02/05/2021	08:10	1.84	10:25	2.16	1.94	17:25	0.46	07:15	0.98	0.69	12:35	0.022	10:35	0.050	0.033	0.033	0.01
02/06/2021	15:25	1.81	02:20	2.18	1.86	02:05	0.48	13:25	0.85	0.64	02:05	0.021	13:30	0.039	0.028	0.028	0.01
02/07/2021	09:00	1.72	14:15	2.09	1.85	12:55	0.41	15:55	1.06	0.66	12:55	0.017	15:55	0.050	0.029	0.029	-
02/08/2021	21:35	1.73	17:45	2.30	1.98	13:40	0.42	07:55	1.16	0.71	21:35	0.019	08:00	0.057	0.035	0.035	-
02/09/2021	02:05	1.81	17:45	2.28	1.99	21:05	0.42	12:40	0.99	0.66	23:20	0.020	12:40	0.055	0.033	0.033	-
02/10/2021	16:55	1.59	10:05	2.62	1.99	03:50	0.42	13:10	1.21	0.67	18:20	0.018	13:10	0.066	0.034	0.034	-
02/11/2021	22:30	1.69	12:25	2.51	1.91	19:50	0.46	12:50	1.10	0.69	19:50	0.020	08:55	0.069	0.032	0.032	-
02/12/2021	19:10	1.54	09:30	2.10	1.77	01:15	0.49	10:00	1.19	0.69	18:35	0.019	09:55	0.052	0.029	0.029	-
02/13/2021	05:25	1.69	18:15	2.70	1.93	12:45	0.45	18:25	0.92	0.61	12:10	0.018	18:15	0.055	0.029	0.029	0.08
02/14/2021	19:30	1.81	13:55	2.63	2.29	11:00	0.57	19:15	1.13	0.66	18:55	0.031	19:15	0.080	0.040	0.040	0.71
02/15/2021	01:50	1.80	17:00	3.23	2.48	18:15	0.49	09:40	1.21	0.77	05:55	0.031	09:40	0.087	0.051	0.051	0.78
02/16/2021	14:15	2.50	16:40	2.91	2.61	17:30	0.35	01:50	0.67	0.50	17:30	0.024	06:10	0.047	0.036	0.036	0.07
02/17/2021	20:20	1.76	10:10	3.10	2.36	03:40	0.35	11:25	1.33	0.65	03:40	0.025	11:25	0.085	0.040	0.040	-
02/18/2021	01:00	1.80	10:05	2.52	2.08	20:40	0.48	09:10	1.39	0.78	20:40	0.024	08:45	0.088	0.041	0.041	0.09
02/19/2021	20:35	1.77	12:30	2.40	2.06	04:20	0.47	12:05	1.41	0.74	21:55	0.023	12:05	0.088	0.039	0.039	0.17
02/20/2021	13:55	1.75	16:00	2.37	1.95	04:50	0.49	14:05	1.20	0.71	04:50	0.022	14:05	0.063	0.034	0.034	0.07
02/21/2021	13:05	1.56	13:40	2.17	1.90	00:25	0.44	05:05	1.07	0.77	00:25	0.019	13:40	0.055	0.035	0.035	0.42
02/22/2021	22:35	1.84	14:20	2.65	2.12	02:45	0.47	09:20	1.43	0.77	02:45	0.023	09:20	0.088	0.042	0.042	0.98
02/23/2021	04:45	1.82	11:35	2.39	2.07	03:25	0.38	08:05	1.18	0.70	04:45	0.016	08:05	0.071	0.037	0.037	0.27
02/24/2021	23:05	1.69	11:10	2.57	2.05	18:35	0.50	11:10	1.31	0.73	22:15	0.021	11:10	0.092	0.038	0.038	-
02/25/2021	00:05	1.62	07:25	2.41	2.10	01:20	0.43	10:10	1.22	0.76	01:45	0.016	10:10	0.070	0.041	0.041	0.18
02/26/2021	11:05	2.05	11:20	2.62	2.21	15:40	0.58	07:05	1.26	0.77	00:05	0.032	07:05	0.069	0.044	0.044	0.10
02/27/2021	19:20	1.98	10:50	2.65	2.14	17:45	0.64	08:15	1.01	0.78	19:20	0.031	10:50	0.075	0.043	0.043	0.02
02/28/2021	09:30	1.96	16:00	2.69	2.06	14:55	0.48	16:00	1.10	0.70	14:05	0.025	16:00	0.083	0.037	0.037	0.02
03/01/2021	19:15	1.86	11:00	2.75	2.13	19:15	0.56	14:10	1.43	0.73	18:55	0.025	14:10	0.100	0.040	0.040	-
03/02/2021	21:20	1.75	15:25	2.61	2.04	21:20	0.48	15:20	1.06	0.68	19:55	0.020	15:20	0.066	0.035	0.035	-
03/03/2021	20:30	1.59	16:10	2.51	2.05	20:30	0.37	09:20	1.40	0.73	20:30	0.013	09:20	0.085	0.038	0.038	-
03/04/2021	21:00	1.63	15:40	2.46	2.04	21:00	0.39	08:30	1.05	0.66	21:00	0.015	08:30	0.063	0.034	0.034	0.20
03/05/2021	18:50	1.66	13:15	2.39	2.03	18:50	0.41	10:35	1.13	0.71	18:50	0.016	10:35	0.070	0.036	0.036	0.05
03/06/2021	15:20	1.65	14:35	2.20	1.90	03:05	0.42	15:55	0.93	0.68	03:05	0.016	14:35	0.050	0.031	0.031	-
03/07/2021	10:15	1.63	05:40	2.65	1.91	14:30	0.40	05:20	1.15	0.66	14:30	0.015	05:20	0.063	0.031	0.031	0.04
03/08/2021	00:05	1.77	09:45	3.04	2.09	09:40	0.46	08:25	1.11	0.81	23:30	0.030	09:15	0.083	0.043	0.043	-
03/09/2021	21:05	1.82	10:30	2.74	2.09	10:20	0.45	13:30	1.15	0.76	23:20	0.024	13:30	0.073	0.041	0.041	0.01
03/10/2021	22:05	1.74	16:55	2.59	2.09	22:05	0.49	08:55	1.14	0.74	22:05	0.020	08:55	0.069	0.040	0.040	-
03/11/2021	06:40	1.76	12:40	2.93	2.10	12:30	0.47	07:55	1.16	0.76	01:00	0.024	07:55	0.067	0.041	0.041	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	23:40	1.67	15:10	2.97	2.03	18:05	0.56	15:10	1.09	0.78	23:40	0.025	15:10	0.094	0.040	0.040	-
03/13/2021	00:00	1.65	20:10	2.02	1.91	22:20	0.64	13:25	0.88	0.76	00:00	0.026	10:15	0.040	0.035	0.035	-
03/14/2021	16:00	1.78	17:20	2.22	1.96	14:05	0.56	17:25	1.31	0.75	22:30	0.026	17:20	0.070	0.036	0.036	0.30
03/15/2021	23:50	1.64	07:25	2.47	2.05	22:30	0.50	07:20	1.26	0.74	23:00	0.020	07:20	0.080	0.039	0.039	-
03/16/2021	05:10	1.67	13:00	2.70	2.07	22:00	0.48	13:30	1.24	0.77	22:00	0.020	12:50	0.082	0.041	0.041	-
03/17/2021	23:15	1.75	12:00	2.43	2.04	21:30	0.48	09:35	1.25	0.75	00:30	0.021	09:35	0.075	0.039	0.039	-
03/18/2021	22:15	1.64	13:45	2.74	2.00	23:15	0.50	07:55	1.05	0.71	00:05	0.022	13:45	0.078	0.036	0.036	0.11
03/19/2021	06:30	1.76	15:25	2.67	2.19	19:50	0.32	11:45	0.94	0.60	19:50	0.021	11:45	0.058	0.033	0.033	0.03
03/20/2021	12:10	1.81	08:50	2.52	2.20	00:10	0.33	13:05	1.15	0.60	00:05	0.020	13:10	0.067	0.033	0.033	0.17
03/21/2021	15:45	1.95	16:35	2.18	2.04	00:55	0.69	12:15	1.05	0.83	00:55	0.034	12:15	0.058	0.043	0.043	0.07
03/22/2021	18:00	1.69	08:35	2.54	2.08	21:25	0.43	08:05	1.21	0.78	20:10	0.019	08:05	0.078	0.041	0.041	0.11
03/23/2021	22:45	1.69	09:50	2.50	2.05	10:00	0.44	09:30	1.24	0.71	22:50	0.020	09:30	0.080	0.037	0.037	-
03/24/2021	20:50	1.81	11:55	2.67	2.05	11:55	0.43	07:10	1.12	0.72	21:25	0.020	09:50	0.072	0.038	0.038	0.34
03/25/2021	03:55	1.78	14:00	2.54	2.05	20:35	0.33	08:05	1.24	0.75	20:35	0.016	08:05	0.079	0.039	0.039	0.27
03/26/2021	02:20	1.80	14:00	2.89	2.13	14:25	0.36	11:25	1.20	0.70	02:15	0.023	11:25	0.067	0.037	0.037	-
03/27/2021	16:25	1.85	09:50	2.34	1.95	07:20	0.42	09:50	0.96	0.61	10:20	0.020	09:50	0.059	0.029	0.029	-
03/28/2021	05:15	1.83	16:40	2.20	1.90	17:45	0.43	08:45	1.02	0.70	17:45	0.020	08:45	0.052	0.032	0.032	0.37
03/29/2021	22:30	1.69	13:45	2.44	1.97	18:20	0.45	07:35	1.22	0.80	19:50	0.018	13:40	0.072	0.040	0.040	-
03/30/2021	23:50	1.66	12:25	2.37	1.92	22:45	0.51	10:05	1.48	0.84	22:45	0.020	10:05	0.090	0.040	0.040	-
03/31/2021	01:00	1.66	07:55	2.63	1.91	07:50	0.52	09:05	1.36	0.85	00:00	0.020	09:05	0.085	0.040	0.040	-
04/01/2021	00:00	1.66	14:10	2.61	2.03	17:05	0.38	07:10	1.58	0.83	18:15	0.020	14:10	0.107	0.042	0.042	-
04/02/2021	06:45	1.85	20:30	3.37	2.38	16:20	0.30	11:20	1.47	0.68	04:25	0.023	13:25	0.085	0.041	0.041	-
04/03/2021	22:10	1.69	17:40	2.13	1.87	17:45	0.45	17:50	1.12	0.74	19:05	0.019	17:50	0.061	0.033	0.033	-
04/04/2021	10:10	1.67	20:55	2.38	1.94	19:45	0.42	12:25	1.33	0.74	19:45	0.024	12:25	0.060	0.034	0.034	-
04/05/2021	18:25	1.63	14:10	2.79	1.97	00:35	0.53	09:50	1.56	0.87	18:15	0.021	09:50	0.112	0.043	0.043	-
04/06/2021	05:40	1.64	10:10	2.39	1.91	17:10	0.52	10:10	1.55	0.95	21:05	0.021	10:10	0.099	0.045	0.045	-
04/07/2021	02:15	1.66	08:25	2.42	1.90	19:15	0.44	14:20	1.63	0.85	19:15	0.017	10:35	0.100	0.040	0.040	0.22
04/08/2021	17:35	1.63	11:30	2.36	1.88	19:30	0.38	15:30	1.39	0.78	19:30	0.015	13:35	0.081	0.036	0.036	-
04/09/2021	04:15	1.67	10:20	2.54	1.91	22:05	0.39	14:30	1.31	0.79	22:05	0.015	10:20	0.083	0.037	0.037	0.03
04/10/2021	17:15	1.66	23:05	2.48	1.87	20:05	0.36	15:40	1.15	0.69	15:45	0.018	12:35	0.049	0.030	0.030	0.02
04/11/2021	12:40	2.28	02:45	2.55	2.44	20:50	0.31	02:45	0.60	0.43	20:50	0.020	02:45	0.042	0.028	0.028	-
04/12/2021	11:35	1.62	01:30	2.56	1.98	00:40	0.33	08:05	1.69	0.76	18:40	0.019	08:05	0.079	0.035	0.035	-
04/13/2021	23:50	1.63	02:10	2.00	1.78	21:40	0.41	08:25	1.51	0.77	21:40	0.016	08:25	0.065	0.032	0.032	-
04/14/2021	21:40	1.55	05:20	1.88	1.68	00:20	0.44	07:15	1.11	0.73	00:20	0.017	07:15	0.047	0.028	0.028	-
09/22/2020	22:50	1.79	13:40	2.79	2.19	18:30	0.35	08:05	0.86	0.45	22:40	0.015	08:05	0.041	0.026	0.017	-
09/23/2020	01:05	1.80	10:00	2.73	2.15	00:45	0.36	09:55	0.55	0.42	00:45	0.015	09:55	0.042	0.024	0.024	-
09/24/2020	23:20	1.53	19:50	2.78	2.04	23:00	0.26	10:25	0.94	0.50	23:00	0.015	20:35	0.068	0.025	0.025	-
09/25/2020	00:05	1.52	10:25	2.17	1.68	18:10	0.50	14:55	0.90	0.65	00:00	0.019	08:10	0.048	0.025	0.025	-
09/26/2020	21:45	1.44	15:45	2.62	1.54	15:40	0.47	15:55	0.84	0.60	06:50	0.018	15:55	0.041	0.020	0.020	-
09/27/2020	23:25	1.43	12:45	1.98	1.53	15:20	0.46	11:25	0.75	0.60	23:40	0.017	12:45	0.032	0.020	0.020	-
09/28/2020	05:10	1.39	15:55	2.25	1.76	22:25	0.43	13:50	0.85	0.61	03:25	0.017	13:50	0.044	0.025	0.025	-
09/29/2020	07:15	1.63	10:10	2.77	2.04	13:10	0.38	09:30	0.81	0.47	23:55	0.017	10:05	0.050	0.024	0.024	-
09/30/2020	22:35	1.64	08:40	2.64	2.01	07:40	0.37	17:25	0.60	0.46	00:00	0.017	08:40	0.040	0.023	0.023	-
10/01/2020	01:35	1.64	12:25	2.65	1.87	11:50	0.30	10:15	0.81	0.51	01:40	0.017	12:40	0.047	0.023	0.023	-
10/02/2020	16:10	1.33	13:45	2.55	1.73	17:05	0.26	13:45	1.04	0.53	17:05	0.008	13:45	0.073	0.022	0.022	-
10/03/2020	21:00	1.43	23:20	2.07	1.58	23:50	0.32	10:30	0.69	0.51	23:45	0.014	15:40	0.028	0.018	0.018	0.01
10/04/2020	16:45	1.38	06:15	1.89	1.51	16:45	0.30	17:35	0.68	0.49	16:45	0.009	06:20	0.030	0.016	0.016	0.01
10/05/2020	07:05	1.29	11:10	2.05	1.59	10:40	0.23	07:10	0.97	0.61	07:25	0.009	11:10	0.046	0.023	0.023	-
10/06/2020	03:50	1.39	07:45	1.93	1.59	12:05	0.32	07:45	0.85	0.59	12:05	0.009	07:45	0.040	0.021	0.021	-
10/07/2020	01:15	1.39	13:15	2.19	1.59	03:45	0.45	13:45	1.61	0.85	02:30	0.013	13:15	0.081	0.031	0.031	-
10/08/2020	17:25	1.15	07:25	1.86	1.43	17:25	0.57	11:00	1.83	1.05	17:25	0.013	10:25	0.073	0.033	0.033	-
10/09/2020	23:50	1.16	14:55	1.61	1.32	05:05	0.53	15:00	1.91	0.92	05:05	0.013	15:00	0.069	0.026	0.026	0.64
10/10/2020	19:55	1.21	01:55	1.68	1.35	00:45	0.57	02:50	1.80	0.79	20:20	0.014	01:55	0.064	0.022	0.022	1.04
10/11/2020	06:50	1.18	22:10	1.82	1.29	08:35	0.48	11:25	1.38	0.72	08:35	0.011	22:15	0.045	0.019	0.019	0.53
10/12/2020	09:20	1.21	06:10	1.74	1.30	16:40	0.52	08:05	1.87	0.90	16:40	0.014	07:55	0.051	0.024	0.024	-
10/13/2020	11:00	1.18	16:15	1.93	1.28	23:05	0.41	08:30	1.66	0.71	22:20	0.010	16:15	0.073	0.019	0.019	0.61
10/14/2020	07:00	1.20	09:10	1.47	1.27	00:10	0.43	10:45	1.08	0.63	00:00	0.011	12:00	0.031	0.016	0.016	-
10/15/2020	02:35	1.19	14:15	1.62	1.33	23:10	0.36	09:05	1.07	0.59	02:25	0.010	09:05	0.034	0.016	0.016	-
10/16/2020	13:45	1.19	10:20	1.44	1.27	01:05	0.38	10:20	1.00	0.50	03:00	0.010	10:20	0.031	0.013	0.013	-
10/17/2020	07:35	1.14	08:10	1.51	1.23	04:30	0.39	14:25	0.85	0.50	03:10	0.009	10:15	0.023	0.012	0.012	0.01
10/18/2020	10:35	1.16	15:50	1.49	1.25	05:05	0.43	15:50	0.99	0.54	04:50	0.011	15:50	0.032	0.014	0.014	0.03
10/19/2020	05:55	1.20	11:35	2.72	1.31	11:25	0.38	11:20	1.16	0.62	01:20	0.011	11:20	0.051	0.017	0.017	0.05
10/20/2020	04:10	1.18	10:35	1.72	1.35	02:50	0.39	10:35	1.91	0.74	03:05	0.009	10:35	0.076	0.022	0.022	-
10/21/2020	20:30	1.22	10:20	1.74	1.42	20:45	0.34	06:40	1.64	0.87	20:30	0.008	09:50	0.060	0.027	0.027	0.01
10/22/2020	03:20	1.21	09:15	1.67	1.34	19:55	0.29	10:20	1.01	0.55	18:45	0.008	10:20	0.035	0.016	0.016	-
10/23/2020	21:35	1.15	12:15	1.75	1.30	00:00	0.36	11:05	1.54	0.68	00:00	0.009	11:05	0.053	0.019	0.019	0.20
10/24/2020	06:55	1.16	14:55	1.50	1.31	02:15	0.46	09:25	1.18	0.73	02:10	0.011	14:50	0.035	0.020	0.020	0.02
10/25/2020	16:20	1.30	19:05	1.43	1.36	20:55	0.52	15:15	1.19	0.85	20:55	0.015	12:45	0.036	0.024	0.024	-
10/26/2020	16:45	1.19	14:50	1.80	1.36	03:10	0.44	13:20	1.46	0.69	17:40	0.011	08:25	0.046	0.020	0.020	-
10/27/2020	16:10	1.18	05:55	1.92	1.27	01:50	0.42	09:20	1.33	0.62	00:10	0.011	09:20	0.045	0.016	0.016	-
10/28/2020	10:35	1.19	06:30	1.78	1.35	01:50	0.30	11:10	1.37	0.56	18:10	0.009	11:15	0.045	0.015	0.015	-
10/29/2020	02:40	1.18	21:35	1.83	1.35	07:45	0.33	11:55	1.32	0.58	00:50	0.008	12:00	0.042	0.016	0.016	-
10/30/2020	08:30	1.22	11:25	2.10	1.56	17:55	0.31	17:40	1.36	0.62	17:55	0.012	17:40	0.069	0.021	0.021	0.10
10/31/2020	00:10	1.30	20:05	1.93	1.80	00:10	0.38	20:05	0.52	0.45	00:10	0.010	20:00	0.024	0.019	0.019	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/01/2020	22:50	1.65	15:35	2.04	1.80	22:40	0.36	15:30	0.61	0.44	17:55	0.014	15:30	0.031	0.019	0.019	-
11/02/2020	17:50	1.23	16:25	2.50	1.63	08:55	0.24	13:20	1.00	0.48	08:55	0.007	16:30	0.049	0.018	0.018	-
11/03/2020	19:10	1.18	19:50	1.85	1.42	01:40	0.27	09:55	1.36	0.43	01:35	0.007	10:10	0.047	0.013	0.013	0.83
11/04/2020	10:40	1.23	01:20	2.11	1.51	00:05	0.35	14:50	0.96	0.46	09:00	0.009	10:30	0.036	0.015	0.015	0.09
11/05/2020	00:50	1.21	09:15	2.56	1.55	03:35	0.35	11:25	1.44	0.63	01:10	0.009	11:25	0.061	0.023	0.023	0.34
11/06/2020	08:30	1.28	10:00	2.88	1.91	09:20	0.26	08:55	1.54	0.66	01:00	0.013	13:00	0.090	0.032	0.032	0.10
11/07/2020	03:35	1.93	15:35	2.14	1.98	14:35	0.37	14:05	0.77	0.52	02:35	0.018	14:05	0.039	0.025	0.025	0.07
11/08/2020	20:55	1.95	16:55	2.11	1.99	14:00	0.32	17:15	0.83	0.48	11:05	0.016	17:15	0.042	0.024	0.024	0.01
11/09/2020	19:05	1.20	08:00	2.53	1.55	05:15	0.36	08:25	1.52	0.57	08:10	0.011	07:50	0.076	0.019	0.019	0.04
11/10/2020	07:50	1.19	14:00	1.65	1.29	10:50	0.42	07:00	1.27	0.65	08:20	0.011	07:20	0.036	0.017	0.017	0.03
11/11/2020	07:35	1.17	20:50	2.14	1.35	20:00	0.34	06:55	1.19	0.64	19:55	0.012	06:55	0.030	0.018	0.018	-
11/12/2020	17:25	1.16	12:50	2.00	1.31	12:10	0.35	20:45	0.96	0.59	07:55	0.011	12:50	0.038	0.016	0.016	0.16
11/13/2020	04:55	1.15	10:30	1.84	1.42	01:25	0.46	10:40	1.47	0.72	06:05	0.012	10:40	0.057	0.022	0.022	0.38
11/14/2020	21:05	1.22	05:10	1.77	1.45	14:55	0.50	16:40	1.26	0.70	22:00	0.012	16:40	0.038	0.022	0.022	0.47
11/15/2020	16:50	1.21	16:00	1.37	1.26	12:10	0.47	00:45	0.88	0.57	11:40	0.012	00:45	0.023	0.015	0.015	0.19
11/16/2020	21:15	1.16	09:25	1.84	1.30	07:25	0.43	10:00	2.38	0.62	07:25	0.011	10:00	0.074	0.017	0.017	0.31
11/17/2020	00:45	1.13	16:55	2.62	1.52	18:40	0.39	09:45	1.99	0.90	00:45	0.012	09:35	0.092	0.032	0.032	0.20
11/18/2020	02:00	1.22	08:05	1.67	1.38	00:15	0.41	17:00	1.84	0.89	02:20	0.010	16:15	0.066	0.027	0.027	0.30
11/19/2020	06:55	1.21	11:20	1.77	1.37	16:30	0.47	11:20	1.94	1.10	22:20	0.014	11:20	0.081	0.032	0.032	0.50
11/20/2020	20:40	1.25	14:20	2.88	1.40	06:40	0.41	09:35	1.99	1.00	06:40	0.011	09:35	0.079	0.031	0.031	0.01
11/21/2020	02:25	1.24	17:45	1.66	1.28	09:05	0.42	17:40	1.71	0.67	09:05	0.011	17:40	0.063	0.018	0.018	-
11/22/2020	21:40	1.23	17:10	1.60	1.31	02:25	0.50	16:30	1.61	0.73	02:25	0.013	17:10	0.056	0.020	0.020	0.21
11/23/2020	02:45	1.31	14:20	1.90	1.49	23:25	0.41	07:25	1.81	0.93	23:20	0.014	14:50	0.078	0.031	0.031	0.14
11/24/2020	21:50	1.20	11:05	2.25	1.45	02:55	0.39	12:40	2.31	0.83	20:50	0.011	14:25	0.082	0.027	0.027	0.21
11/25/2020	05:40	1.18	08:20	1.77	1.34	00:10	0.46	12:10	2.34	0.78	00:05	0.011	12:10	0.087	0.022	0.022	0.05
11/26/2020	06:40	1.24	00:00	1.31	1.27	19:15	0.39	00:40	0.80	0.66	19:15	0.010	00:40	0.021	0.017	0.017	0.02
11/27/2020	18:20	1.26	12:15	1.47	1.32	10:15	0.48	12:40	1.06	0.68	03:10	0.013	12:40	0.033	0.018	0.018	-
11/28/2020	19:00	1.25	11:35	1.36	1.31	15:45	0.40	13:45	0.76	0.60	15:35	0.011	13:45	0.021	0.016	0.016	0.05
11/29/2020	00:00	1.26	12:40	1.32	1.29	11:10	0.44	17:50	0.77	0.63	11:10	0.012	17:50	0.020	0.016	0.016	-
11/30/2020	00:00	1.29	17:25	2.40	1.41	20:40	0.40	13:25	2.46	0.80	07:15	0.012	17:25	0.120	0.024	0.024	0.36
12/01/2020	22:45	1.39	14:10	2.47	1.57	14:50	0.38	08:40	2.58	0.95	14:50	0.013	12:50	0.112	0.036	0.036	-
12/02/2020	05:05	1.38	09:10	1.85	1.50	23:55	0.37	11:25	2.52	0.86	01:10	0.012	11:20	0.089	0.029	0.029	0.01
12/03/2020	22:10	1.43	10:55	2.21	1.54	08:55	0.35	15:15	2.12	0.94	09:55	0.012	11:00	0.077	0.032	0.032	-
12/04/2020	23:55	1.29	08:30	1.88	1.48	23:45	0.32	16:25	1.89	0.86	22:30	0.009	08:30	0.085	0.028	0.028	-
12/05/2020	00:00	1.30	18:10	1.61	1.38	00:05	0.32	19:55	1.66	0.75	00:05	0.008	11:35	0.050	0.022	0.022	0.03
12/06/2020	00:00	1.34	13:05	1.41	1.36	01:10	0.37	21:40	0.94	0.50	01:10	0.010	21:40	0.027	0.014	0.014	0.03
12/07/2020	07:45	1.18	14:20	3.18	1.76	21:05	0.23	10:40	1.34	0.53	07:35	0.009	10:40	0.094	0.022	0.022	-
12/08/2020	17:40	1.22	08:30	2.67	1.86	05:20	0.24	23:25	2.13	0.91	12:10	0.011	22:20	0.086	0.039	0.039	0.87
12/09/2020	10:35	1.50	13:45	2.58	1.67	10:35	1.31	13:40	2.50	1.63	10:35	0.043	13:45	0.167	0.063	0.063	0.17
12/10/2020	03:25	1.60	18:25	2.22	1.77	09:10	1.29	18:25	2.25	1.67	09:10	0.046	18:25	0.130	0.071	0.071	0.07
12/11/2020	18:45	1.31	10:25	2.37	1.72	21:20	0.53	12:35	2.56	1.63	21:20	0.015	13:40	0.139	0.068	0.068	0.02
12/12/2020	12:10	1.32	23:35	2.26	1.51	04:00	0.79	19:25	2.11	1.33	01:45	0.023	19:10	0.093	0.045	0.045	0.01
12/13/2020	14:50	1.53	06:15	2.09	1.81	08:25	0.66	18:35	1.90	1.12	08:25	0.024	18:35	0.096	0.048	0.048	0.24
12/14/2020	04:15	1.41	20:00	2.30	1.83	04:05	0.38	14:55	1.73	1.02	04:05	0.012	14:55	0.079	0.045	0.045	0.05
12/15/2020	20:35	1.57	00:50	2.25	1.86	03:30	0.48	15:40	2.06	1.00	01:25	0.023	10:25	0.092	0.044	0.044	0.58
12/16/2020	02:15	1.59	13:05	2.15	1.78	03:15	0.72	10:40	2.31	1.12	03:15	0.026	10:40	0.104	0.047	0.047	0.39
12/17/2020	00:05	1.61	18:10	2.35	1.81	15:50	0.55	13:00	1.88	0.80	01:15	0.023	13:00	0.089	0.035	0.035	0.08
12/18/2020	18:00	1.68	12:00	2.29	1.87	18:00	0.41	10:15	1.51	0.77	18:00	0.016	13:40	0.065	0.035	0.035	0.25
12/19/2020	06:30	1.63	00:25	2.15	1.82	10:25	0.37	15:30	1.13	0.68	10:25	0.014	15:30	0.061	0.030	0.030	0.37
12/20/2020	22:20	1.51	17:05	2.13	1.83	23:40	0.42	21:25	1.35	0.71	22:20	0.014	21:25	0.064	0.031	0.031	0.04
12/21/2020	01:00	1.51	10:05	2.56	1.79	00:15	0.40	13:45	1.80	0.81	00:15	0.013	17:15	0.092	0.035	0.035	1.07
12/22/2020	12:45	1.63	07:00	2.17	1.76	00:20	0.38	17:25	1.68	0.84	00:20	0.015	07:00	0.065	0.035	0.035	-
12/23/2020	07:00	1.42	08:15	2.17	1.80	09:35	0.37	14:05	1.36	0.83	09:05	0.015	19:05	0.061	0.036	0.036	-
12/24/2020	22:40	1.46	05:30	2.20	1.78	08:25	0.33	05:30	1.22	0.72	08:25	0.012	05:30	0.069	0.031	0.031	-
12/25/2020	07:25	1.51	16:30	1.78	1.59	07:25	0.45	16:30	0.73	0.53	03:40	0.015	16:30	0.031	0.019	0.019	0.49
12/26/2020	19:00	1.35	00:10	2.03	1.63	18:00	0.29	01:10	1.00	0.57	18:00	0.008	01:10	0.051	0.022	0.022	0.02
12/27/2020	17:45	1.39	00:10	1.90	1.50	08:10	0.37	00:10	0.87	0.48	06:30	0.013	00:10	0.040	0.016	0.016	0.13
12/28/2020	18:25	1.18	13:45	2.50	1.62	06:10	0.24	14:50	1.06	0.55	19:15	0.012	13:45	0.044	0.020	0.020	-
12/29/2020	01:40	1.14	08:05	1.71	1.35	23:40	0.39	11:10	0.96	0.56	05:45	0.011	10:55	0.028	0.016	0.016	0.14
12/30/2020	22:35	1.12	08:05	2.64	1.30	07:55	0.25	13:05	1.13	0.72	00:00	0.012	08:05	0.043	0.018	0.018	0.78
12/31/2020	00:40	1.13	16:15	1.80	1.21	16:15	0.47	08:35	0.98	0.79	17:50	0.014	11:05	0.026	0.019	0.019	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			5.890	30.65
Average	1.73	0.71	0.029	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A1a_30822

Site Address /Location:	3802 B St NW			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	located in road	Latitude:	47.341163	Pipe Size (H x W): 10.00 X 9.88	Pipe Shape: Circular
		Longitude:	-122.232272		



Manhole #	System Characteristics
A1a30822	Commercial
Access	Traffic
Drive	Medium







ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.11.325

Installation Information

Installation Date:	Installation Type:
Tuesday, September 22, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Time	
7:57:00 AM	
Depth of Flow (Wet DOF) (in)	
1.88	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
0.97	N/A
Silt (in)	Silt Type
0	

Hydraulic Comments:

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
9	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
PVC	Good

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

AUB_A1b_30968

Site Commentary

SITE INFORMATION

Pipe	Round (11.88 in H)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

This site experienced flow changes during the monitoring period.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	2.62	0.32	0.029
Minimum	1.44	0.05	0.003
Maximum	5.65	1.57	0.214
Min Time	11/08/2020 10:00:00 PM	04/13/2021 12:00:00 AM	04/13/2021 12:00:00 AM
Max Time	03/01/2021 12:00:00 PM	11/13/2020 1:00:00 PM	11/13/2020 1:00:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

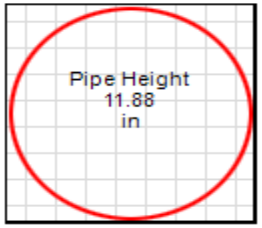
Percent Uptime	
DFINAL (in)	99.827
VFINAL (ft/s)	99.827
QFINAL (MGD - Total MG)	99.827

Hydrograph Report

AUB_A1b_30968

Flow Monitor

AUB_A1b_30968



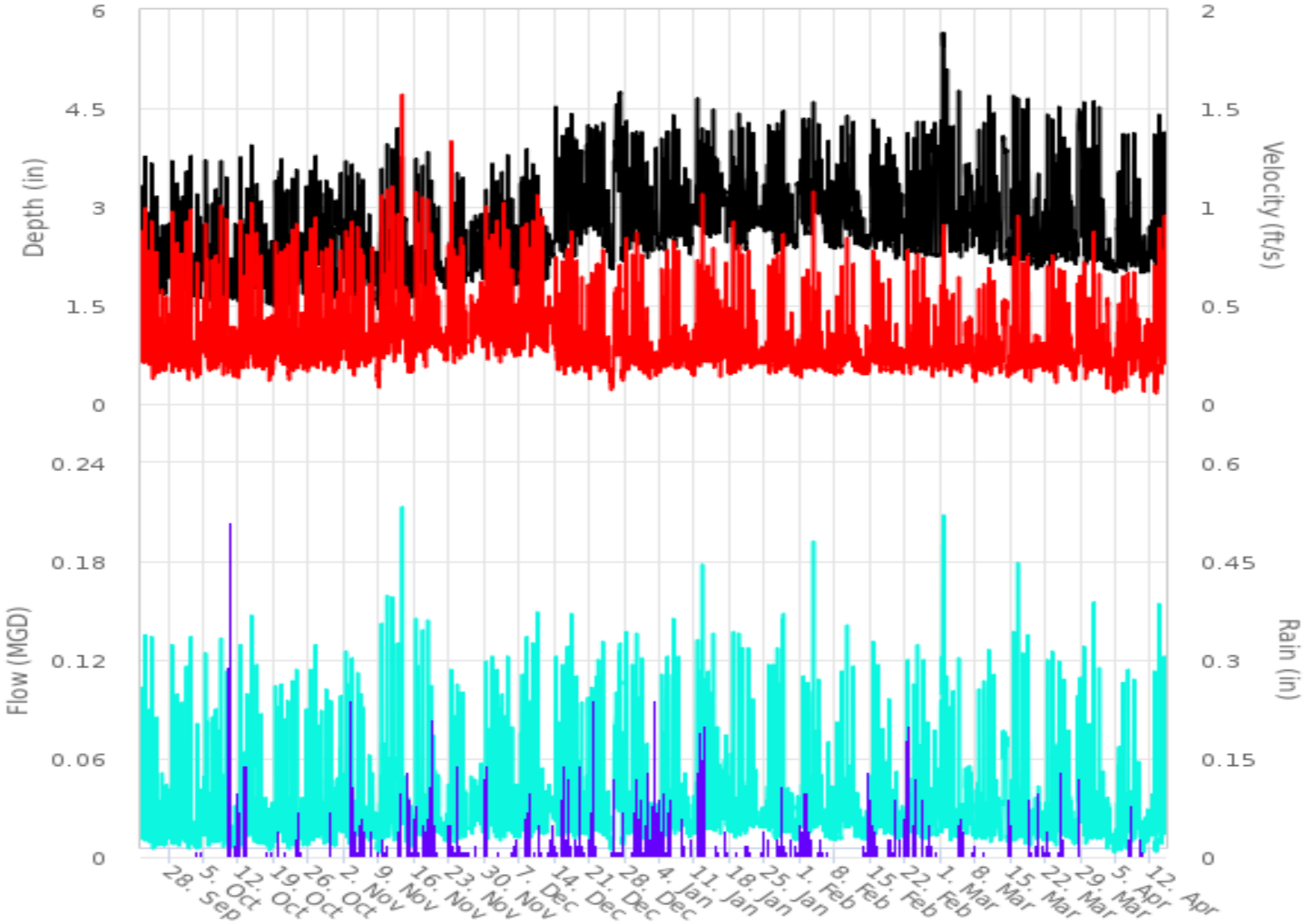
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



4455 S. 134th Place
Tukwila, WA 98168

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Scattergraph Report

AUB_A1b_30968

Flow Monitor

AUB_A1b_30968

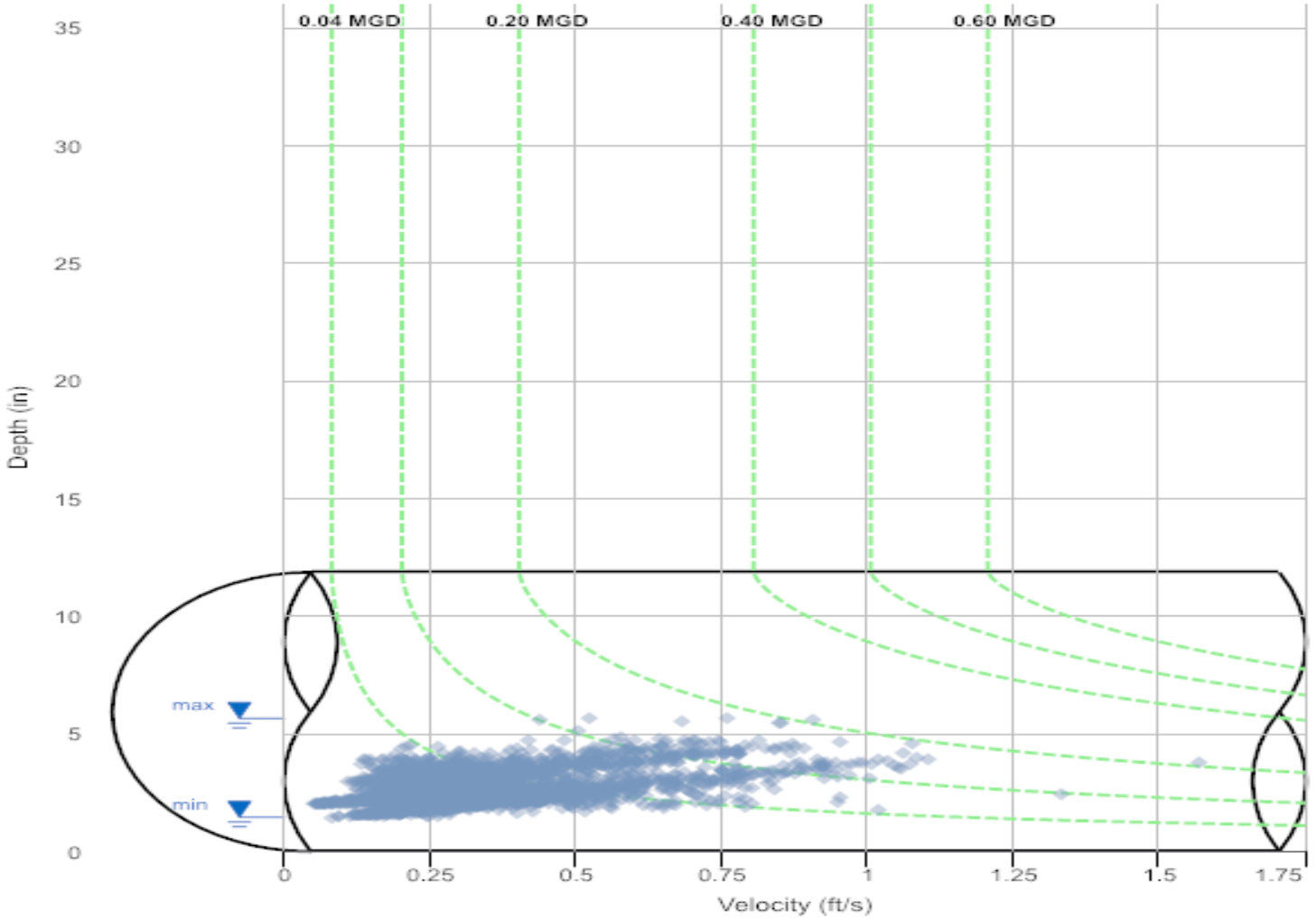
Pipe Height
11.88
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A1b_30968Pipe: Round (11.88 in H), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	12:45	2.19	10:20	4.21	2.77	13:00	0.10	10:20	0.73	0.21	12:35	0.007	10:20	0.115	0.020	0.020	0.51
01/02/2021	12:40	2.23	08:55	3.62	2.73	07:35	0.09	06:30	0.61	0.23	00:00	0.010	05:00	0.059	0.020	0.020	1.69
01/03/2021	19:25	2.34	04:50	3.97	2.72	07:15	0.11	04:40	0.51	0.20	18:30	0.011	04:40	0.070	0.017	0.017	0.65
01/04/2021	05:00	2.31	07:50	4.51	2.95	06:00	0.10	08:00	1.15	0.30	03:15	0.011	08:00	0.183	0.032	0.032	0.48
01/05/2021	01:35	2.32	15:40	4.75	2.92	04:50	0.16	10:45	0.93	0.32	00:00	0.012	10:45	0.161	0.036	0.036	0.52
01/06/2021	23:50	2.37	15:25	4.95	2.87	06:15	0.16	15:25	1.05	0.28	22:20	0.012	15:25	0.206	0.029	0.029	0.22
01/07/2021	01:50	2.27	15:35	4.48	3.02	10:50	0.10	15:45	0.92	0.29	00:55	0.013	15:45	0.151	0.032	0.032	-
01/08/2021	04:35	2.36	14:50	4.17	2.93	02:40	0.09	16:50	0.98	0.27	02:40	0.010	16:50	0.109	0.026	0.026	0.22
01/09/2021	21:25	2.25	17:50	4.25	2.82	17:50	0.10	09:30	0.64	0.27	18:25	0.009	08:10	0.076	0.025	0.025	-
01/10/2021	00:55	2.26	04:50	3.20	2.74	15:40	0.08	18:10	0.95	0.21	15:40	0.008	18:10	0.093	0.019	0.019	0.07
01/11/2021	05:40	2.41	11:05	4.77	3.20	05:10	0.13	09:25	1.01	0.33	05:35	0.012	10:35	0.171	0.041	0.041	1.06
01/12/2021	00:00	2.72	10:20	4.59	3.12	08:00	0.15	10:20	1.98	0.33	00:00	0.015	10:20	0.351	0.039	0.039	2.10
01/13/2021	02:10	2.53	15:25	4.80	3.17	06:50	0.15	08:10	1.24	0.34	20:50	0.014	15:20	0.178	0.040	0.040	0.09
01/14/2021	03:00	2.51	15:35	5.02	3.13	04:10	0.14	15:35	0.94	0.33	17:50	0.014	15:35	0.187	0.040	0.040	0.01
01/15/2021	05:40	2.52	11:45	4.20	3.00	23:55	0.12	12:05	0.86	0.30	21:10	0.013	12:05	0.130	0.032	0.032	0.09
01/16/2021	07:30	2.76	07:20	4.26	3.17	00:00	0.13	17:25	0.70	0.35	00:00	0.013	07:20	0.098	0.038	0.038	-
01/17/2021	09:20	2.36	06:25	4.19	3.01	09:30	0.12	06:05	0.84	0.34	09:30	0.010	06:25	0.093	0.034	0.034	0.10
01/18/2021	22:10	2.25	14:30	4.55	3.03	07:00	0.11	16:15	1.93	0.33	21:50	0.010	16:15	0.301	0.037	0.037	-
01/19/2021	05:15	2.30	16:10	4.50	2.92	19:40	0.10	16:20	1.09	0.28	19:40	0.010	16:20	0.188	0.030	0.030	0.01
01/20/2021	03:25	2.21	12:35	4.54	2.92	04:05	0.10	12:20	0.91	0.29	04:05	0.009	12:30	0.159	0.030	0.030	-
01/21/2021	05:25	2.31	15:20	4.65	2.96	12:30	0.14	15:10	1.00	0.31	00:05	0.010	15:20	0.163	0.033	0.033	0.11
01/22/2021	19:20	2.48	13:30	4.57	3.20	02:00	0.15	13:35	0.90	0.29	15:15	0.014	13:35	0.158	0.033	0.033	-
01/23/2021	11:20	2.55	04:55	4.20	2.93	00:40	0.18	04:55	0.60	0.24	22:55	0.017	04:55	0.094	0.023	0.023	-
01/24/2021	20:30	2.62	08:15	4.00	2.87	14:35	0.14	14:25	0.71	0.23	10:55	0.017	08:20	0.078	0.021	0.021	0.16
01/25/2021	20:50	2.42	15:20	4.64	3.07	21:05	0.11	15:20	0.86	0.27	21:05	0.010	15:20	0.155	0.030	0.030	0.04
01/26/2021	19:55	2.28	13:10	4.47	2.93	00:55	0.12	13:20	0.89	0.27	23:45	0.009	13:10	0.148	0.028	0.028	-
01/27/2021	02:15	2.21	15:45	4.86	2.95	01:30	0.12	15:45	0.99	0.30	01:30	0.008	15:45	0.190	0.034	0.034	0.14
01/28/2021	02:05	2.31	15:00	4.91	3.06	18:45	0.11	15:25	1.40	0.32	23:25	0.010	15:25	0.243	0.039	0.039	0.24
01/29/2021	04:55	2.36	12:55	3.64	2.84	23:05	0.13	13:30	0.49	0.25	04:40	0.012	13:25	0.056	0.023	0.023	0.03
01/30/2021	18:20	2.26	10:55	3.68	2.67	01:25	0.10	10:45	1.03	0.23	12:00	0.009	10:45	0.113	0.019	0.019	0.07
01/31/2021	01:05	2.36	08:30	3.78	3.01	00:50	0.11	08:25	0.45	0.21	00:10	0.008	08:25	0.056	0.022	0.022	0.12
02/01/2021	07:05	2.52	15:35	4.72	3.16	04:20	0.12	16:00	1.23	0.28	21:45	0.013	16:00	0.216	0.032	0.032	0.82
02/02/2021	23:35	2.55	15:25	4.72	3.20	04:40	0.16	15:40	0.88	0.30	23:15	0.014	15:25	0.153	0.036	0.036	0.31
02/03/2021	02:10	2.46	14:00	4.73	3.17	22:10	0.13	14:10	2.13	0.32	03:15	0.013	14:10	0.392	0.038	0.038	0.06
02/04/2021	02:10	2.67	13:40	6.61	3.28	23:20	0.13	10:20	1.91	0.30	02:10	0.014	13:40	0.539	0.037	0.037	0.07
02/05/2021	23:25	2.44	06:25	4.18	2.97	18:15	0.12	06:25	0.59	0.24	23:15	0.011	06:25	0.092	0.024	0.024	0.01
02/06/2021	05:10	2.29	15:55	4.33	2.91	08:45	0.08	15:55	0.62	0.23	19:35	0.008	15:55	0.102	0.024	0.024	0.01
02/07/2021	22:15	2.36	08:10	3.53	2.47	07:00	0.12	19:40	0.51	0.18	19:55	0.008	07:50	0.056	0.014	0.014	-
02/08/2021	00:35	2.37	07:25	4.32	2.80	22:00	0.10	07:25	0.87	0.26	22:00	0.008	07:25	0.142	0.025	0.025	-
02/09/2021	01:15	2.36	07:10	4.57	3.06	06:50	0.11	09:35	0.95	0.28	00:15	0.010	07:10	0.137	0.032	0.032	-
02/10/2021	22:00	2.41	08:05	4.57	3.07	19:15	0.10	08:00	1.54	0.30	19:15	0.009	08:00	0.270	0.034	0.034	-
02/11/2021	23:55	2.41	07:45	4.96	3.31	09:55	0.09	14:05	0.85	0.31	21:30	0.011	14:05	0.142	0.037	0.037	-
02/12/2021	23:25	2.29	22:15	3.89	2.79	02:20	0.11	22:10	0.51	0.23	02:20	0.009	22:10	0.070	0.021	0.021	-
02/13/2021	16:35	2.21	13:20	3.66	2.44	15:45	0.11	20:35	0.54	0.18	15:45	0.007	13:20	0.062	0.013	0.013	0.08
02/14/2021	08:45	2.30	08:15	2.88	2.44	07:30	0.14	08:25	0.65	0.19	08:40	0.009	08:25	0.049	0.014	0.014	0.71
02/15/2021	19:40	2.36	12:05	4.66	2.93	08:20	0.11	12:15	0.91	0.29	19:55	0.014	12:15	0.156	0.031	0.031	0.78
02/16/2021	03:20	2.28	10:40	4.62	2.86	21:45	0.14	10:45	0.90	0.28	02:20	0.013	10:55	0.162	0.028	0.028	0.07
02/17/2021	20:45	2.27	04:20	5.14	2.97	01:30	0.12	10:15	0.99	0.29	18:55	0.009	04:20	0.177	0.031	0.031	-
02/18/2021	20:55	2.30	15:35	4.45	3.12	06:35	0.14	15:25	0.82	0.28	19:00	0.014	15:25	0.134	0.031	0.031	0.09
02/19/2021	23:15	2.23	15:55	4.13	2.83	22:20	0.09	15:50	0.56	0.23	23:15	0.008	15:50	0.084	0.021	0.021	0.17
02/20/2021	02:10	2.15	09:20	3.73	2.75	09:10	0.10	06:00	0.48	0.23	02:25	0.007	05:55	0.062	0.021	0.021	0.07
02/21/2021	18:20	2.17	08:10	4.12	2.69	19:40	0.10	07:10	0.47	0.22	19:40	0.006	07:10	0.062	0.019	0.019	0.42
02/22/2021	05:55	2.14	09:50	4.42	2.95	05:55	0.09	10:00	0.88	0.29	05:55	0.005	10:05	0.148	0.030	0.030	0.98
02/23/2021	03:25	2.25	13:45	4.64	2.98	09:10	0.11	13:40	0.91	0.29	03:20	0.008	13:45	0.162	0.031	0.031	0.27
02/24/2021	04:10	2.21	09:25	4.60	2.90	05:15	0.12	09:20	0.92	0.30	22:35	0.010	09:20	0.163	0.033	0.033	-
02/25/2021	23:35	2.24	14:05	4.50	2.75	23:30	0.12	14:00	1.15	0.26	23:30	0.008	14:00	0.198	0.026	0.026	0.18
02/26/2021	01:45	2.23	11:15	4.51	2.92	01:00	0.12	11:10	0.64	0.26	01:00	0.008	11:10	0.106	0.027	0.027	0.10
02/27/2021	03:20	2.17	20:05	4.93	3.35	08:25	0.11	20:05	0.81	0.26	00:30	0.012	20:05	0.159	0.032	0.032	0.02
02/28/2021	06:25	2.14	23:35	4.23	3.34	18:40	0.11	23:25	0.60	0.26	00:05	0.012	23:45	0.096	0.031	0.031	0.02
03/01/2021	03:30	2.23	08:30	6.06	3.98	04:40	0.13	15:15	1.11	0.47	03:55	0.013	08:25	0.257	0.081	0.081	-
03/02/2021	23:55	2.29	05:35	5.41	3.21	01:20	0.12	05:35	0.91	0.31	23:50	0.009	05:35	0.200	0.039	0.039	-
03/03/2021	04:30	2.12	12:45	5.15	2.73	07:50	0.12	12:45	0.80	0.26	00:00	0.009	12:45	0.165	0.026	0.026	-
03/04/2021	23:35	2.21	14:00	5.01	2.73	01:05	0.12	14:00	0.77	0.26	00:55	0.008	14:00	0.153	0.026	0.026	0.20
03/05/2021	02:10	2.11	08:05	3.74	2.78	02:10	0.08	17:45	0.56	0.26	02:10	0.005	21:45	0.065	0.024	0.024	0.05
03/06/2021	03:45	2.21	02:55	4.48	3.17	18:10	0.12	02:55	0.66	0.34	05:20	0.009	02:55	0.113	0.038	0.038	-
03/07/2021	10:25	2.08	05:25	4.18	2.97	10:25	0.07	05:25	0.59	0.21	10:25	0.004	05:25	0.092	0.022	0.022	0.04
03/08/2021	04:35	2.21	15:30	4.81	2.87	00:45	0.11	15:25	0.74	0.26	20:30	0.010	15:30	0.140	0.027	0.027	-
03/09/2021	04:05	2.21	14:25	4.86	2.74	07:05	0.08	14:15	0.76	0.27	04:05	0.007	14:25	0.144	0.027	0.027	0.01
03/10/2021	04:30	2.10	14:55	4.94	2.74	01:20	0.09	15:25	1.30	0.27	04:25	0.005	15:25	0.239	0.027	0.027	-
03/11/2021	02:05	2.08	15:10	5.32	2.76	23:50	0.11	17:20	0.97	0.29	20:35	0.010	15:10	0.200	0.028	0.028	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	20:15	2.09	10:40	3.97	2.81	20:15	0.08	04:55	0.67	0.26	20:15	0.004	04:55	0.066	0.024	0.024	-
03/13/2021	04:40	2.02	12:00	4.12	3.34	02:25	0.10	12:30	0.58	0.37	03:35	0.006	12:35	0.089	0.046	0.046	-
03/14/2021	16:05	2.11	03:20	3.89	2.66	23:00	0.09	14:55	0.54	0.27	10:30	0.006	03:25	0.075	0.028	0.028	0.30
03/15/2021	02:00	2.11	12:00	5.25	2.69	20:55	0.09	12:00	0.93	0.28	20:55	0.006	12:00	0.197	0.027	0.027	-
03/16/2021	00:35	2.08	09:05	5.17	2.78	00:45	0.08	09:20	1.43	0.29	00:45	0.004	09:20	0.283	0.031	0.031	-
03/17/2021	19:20	1.95	08:50	4.79	2.73	02:45	0.09	08:50	0.83	0.28	02:40	0.006	08:50	0.157	0.028	0.028	-
03/18/2021	00:45	2.09	10:10	4.81	2.74	00:45	0.08	12:10	0.84	0.29	00:40	0.005	11:05	0.149	0.029	0.029	0.11
03/19/2021	03:05	2.04	10:30	3.56	2.50	00:05	0.08	04:30	0.48	0.24	00:10	0.004	10:30	0.057	0.019	0.019	0.03
03/20/2021	04:30	2.01	10:40	3.68	2.55	09:10	0.11	08:50	0.45	0.22	01:20	0.009	08:50	0.056	0.018	0.018	0.17
03/21/2021	00:10	2.06	14:55	3.46	2.55	06:45	0.08	10:55	0.44	0.22	06:45	0.009	14:55	0.052	0.017	0.017	0.07
03/22/2021	18:50	2.10	06:50	4.91	2.67	18:50	0.08	07:00	0.84	0.27	18:45	0.005	06:50	0.162	0.026	0.026	0.11
03/23/2021	20:40	2.02	05:35	4.72	2.73	20:35	0.06	06:25	1.63	0.30	20:35	0.004	06:25	0.279	0.031	0.031	-
03/24/2021	20:55	2.07	14:10	4.75	2.91	01:25	0.10	07:15	2.21	0.33	01:25	0.006	07:15	0.281	0.036	0.036	0.34
03/25/2021	22:40	2.17	08:35	4.64	2.71	20:05	0.13	08:35	1.62	0.32	20:05	0.008	08:35	0.292	0.032	0.032	0.27
03/26/2021	03:10	2.09	13:20	4.44	2.83	01:05	0.08	08:45	1.27	0.28	01:05	0.005	08:45	0.136	0.026	0.026	-
03/27/2021	11:50	2.03	14:15	3.95	2.36	11:50	0.06	06:10	0.54	0.19	11:50	0.003	01:25	0.063	0.014	0.014	-
03/28/2021	02:15	2.02	14:45	4.57	3.66	02:15	0.06	21:30	0.66	0.38	02:15	0.003	18:40	0.112	0.056	0.056	0.37
03/29/2021	23:40	2.09	14:25	4.88	3.02	23:55	0.08	04:45	1.26	0.34	23:30	0.005	14:25	0.152	0.040	0.040	-
03/30/2021	00:25	2.04	14:30	4.65	2.67	03:20	0.09	14:35	0.68	0.28	02:30	0.006	14:30	0.119	0.025	0.025	-
03/31/2021	02:15	2.07	13:50	5.18	2.69	03:20	0.10	14:55	1.17	0.29	03:20	0.006	14:55	0.191	0.029	0.029	-
04/01/2021	03:35	2.06	15:05	4.76	2.83	10:00	0.08	15:05	0.91	0.27	00:00	0.006	15:05	0.169	0.027	0.027	-
04/02/2021	22:35	2.02	11:50	5.23	2.46	01:15	0.11	11:45	0.96	0.28	01:15	0.007	11:50	0.193	0.022	0.022	-
04/03/2021	06:30	1.84	13:25	3.96	2.17	05:50	0.05	20:30	0.62	0.29	05:50	0.003	13:25	0.079	0.019	0.019	-
04/04/2021	11:55	1.99	07:10	2.42	2.06	09:45	0.05	07:10	0.34	0.12	08:55	0.003	07:10	0.024	0.007	0.007	-
04/05/2021	00:50	2.02	05:40	4.46	2.44	00:45	0.06	14:45	0.76	0.23	00:45	0.003	14:45	0.130	0.020	0.020	-
04/06/2021	23:55	1.99	10:20	4.55	2.50	23:45	0.05	10:25	0.82	0.30	02:50	0.003	10:25	0.143	0.027	0.027	-
04/07/2021	19:40	1.84	10:25	4.75	2.57	00:05	0.05	13:45	0.93	0.30	00:05	0.003	10:25	0.163	0.027	0.027	0.22
04/08/2021	01:15	1.95	13:35	4.58	2.58	01:00	0.06	00:40	1.26	0.36	01:00	0.003	13:35	0.145	0.031	0.031	-
04/09/2021	15:50	1.91	16:15	4.67	2.49	22:35	0.05	16:15	0.70	0.28	22:35	0.003	16:15	0.127	0.023	0.023	0.03
04/10/2021	14:40	1.90	06:05	3.34	2.20	13:30	0.05	19:05	0.48	0.23	14:50	0.002	06:05	0.046	0.015	0.015	0.02
04/11/2021	09:30	1.89	08:10	3.28	2.41	09:00	0.05	08:10	0.54	0.21	08:45	0.003	08:10	0.061	0.016	0.016	-
04/12/2021	22:10	1.99	15:05	4.73	2.52	22:00	0.05	15:20	0.88	0.28	20:20	0.003	15:10	0.154	0.025	0.025	-
04/13/2021	00:35	1.99	14:20	5.04	2.54	00:10	0.05	14:25	1.05	0.34	00:00	0.003	14:25	0.209	0.031	0.031	-
04/14/2021	02:25	1.85	10:05	4.62	2.64	20:20	0.08	13:25	1.12	0.40	20:20	0.005	14:00	0.161	0.038	0.038	-
09/22/2020	11:00	1.65	12:30	3.74	2.28	23:05	0.10	12:40	1.03	0.40	23:15	0.006	12:35	0.136	0.031	0.020	-
09/23/2020	03:30	1.65	06:00	3.98	2.25	02:50	0.10	14:40	1.89	0.35	03:30	0.005	14:40	0.273	0.028	0.028	-
09/24/2020	21:55	1.48	11:50	4.33	2.11	20:20	0.08	11:55	1.16	0.33	19:30	0.004	11:55	0.188	0.025	0.025	-
09/25/2020	01:40	1.47	09:35	3.90	2.05	01:10	0.10	09:45	1.06	0.34	01:20	0.003	09:45	0.150	0.025	0.025	-
09/26/2020	22:45	1.65	14:00	3.10	2.05	02:45	0.09	13:30	0.76	0.30	02:45	0.005	14:00	0.075	0.019	0.019	-
09/27/2020	00:20	1.58	11:10	2.81	2.13	23:30	0.08	17:15	1.14	0.33	01:40	0.005	17:15	0.077	0.021	0.021	-
09/28/2020	09:30	1.82	14:20	4.02	2.29	02:20	0.08	14:25	1.05	0.32	02:20	0.005	14:20	0.155	0.024	0.024	-
09/29/2020	20:45	1.43	14:50	4.05	2.08	06:40	0.09	14:45	1.03	0.30	21:50	0.004	14:45	0.150	0.021	0.021	-
09/30/2020	05:15	1.52	12:30	3.84	2.15	00:55	0.10	12:20	1.05	0.32	00:55	0.004	12:25	0.141	0.023	0.023	-
10/01/2020	23:30	1.44	11:45	3.98	2.12	23:25	0.08	11:40	1.08	0.32	18:50	0.003	11:40	0.155	0.023	0.023	-
10/02/2020	03:40	1.44	09:00	4.03	2.13	03:35	0.08	09:05	1.03	0.30	03:30	0.003	09:00	0.149	0.022	0.022	-
10/03/2020	11:05	1.32	13:40	3.51	1.87	11:55	0.09	13:40	0.82	0.24	11:55	0.003	13:40	0.101	0.015	0.015	0.01
10/04/2020	07:30	1.55	07:00	3.61	1.93	07:30	0.13	07:00	0.85	0.28	07:30	0.005	07:00	0.109	0.015	0.015	0.01
10/05/2020	18:55	1.47	06:05	3.95	2.28	21:55	0.08	15:15	1.02	0.37	18:55	0.003	06:05	0.142	0.029	0.029	-
10/06/2020	02:40	1.58	14:35	3.81	2.17	16:25	0.08	09:45	1.18	0.31	02:40	0.005	14:35	0.144	0.022	0.022	-
10/07/2020	16:40	1.58	06:35	4.10	2.35	00:40	0.10	08:45	1.03	0.35	00:40	0.005	08:40	0.154	0.028	0.028	-
10/08/2020	19:15	1.45	09:05	3.88	2.07	03:30	0.09	14:40	1.26	0.33	19:10	0.003	09:05	0.149	0.023	0.023	-
10/09/2020	20:15	1.49	09:50	3.77	2.10	00:05	0.09	10:10	1.01	0.31	00:05	0.004	09:50	0.134	0.021	0.021	0.64
10/10/2020	18:45	1.41	17:20	2.68	1.82	18:35	0.08	11:15	1.15	0.22	18:35	0.003	11:15	0.056	0.011	0.011	1.04
10/11/2020	21:50	1.55	17:50	3.14	2.06	01:30	0.11	00:05	0.84	0.23	01:30	0.005	17:55	0.062	0.014	0.014	0.53
10/12/2020	00:10	1.55	06:20	4.02	2.35	19:55	0.08	06:20	1.03	0.36	00:10	0.005	06:25	0.153	0.030	0.030	-
10/13/2020	02:25	1.59	12:30	3.89	2.25	21:40	0.08	02:00	1.30	0.35	02:30	0.006	12:30	0.150	0.026	0.026	0.61
10/14/2020	13:10	1.64	10:15	4.13	2.31	01:00	0.13	15:40	2.80	0.40	23:55	0.007	15:40	0.372	0.033	0.033	-
10/15/2020	22:25	1.48	13:40	4.37	2.10	00:50	0.12	13:40	1.20	0.34	03:05	0.005	13:40	0.200	0.025	0.025	-
10/16/2020	04:15	1.54	10:20	3.75	2.07	14:05	0.09	10:25	0.96	0.31	01:00	0.006	10:25	0.128	0.020	0.020	-
10/17/2020	11:35	1.47	07:00	3.06	2.10	04:55	0.10	06:20	0.62	0.32	11:30	0.003	06:20	0.057	0.020	0.020	0.01
10/18/2020	22:20	1.47	08:35	2.75	1.84	08:50	0.09	08:35	0.58	0.25	00:00	0.004	08:35	0.051	0.013	0.013	0.03
10/19/2020	13:35	1.64	14:45	4.15	2.43	16:40	0.10	14:45	1.28	0.39	18:55	0.007	14:45	0.198	0.034	0.034	0.05
10/20/2020	22:35	1.67	10:05	4.13	2.72	01:30	0.07	03:10	0.89	0.41	21:40	0.005	10:05	0.137	0.040	0.040	-
10/21/2020	23:55	1.49	07:40	3.82	2.32	06:40	0.09	14:45	1.23	0.35	20:30	0.004	14:45	0.168	0.031	0.031	0.01
10/22/2020	01:30	1.46	14:00	3.82	2.04	01:25	0.09	14:00	1.05	0.30	01:25	0.003	14:00	0.145	0.021	0.021	-
10/23/2020	16:50	1.62	10:05	3.92	2.07	01:30	0.12	09:55	1.00	0.28	01:30	0.005	09:55	0.142	0.019	0.019	0.20
10/24/2020	17:15	1.59	14:45	3.12	2.06	15:10	0.09	14:45	0.70	0.27	20:20	0.005	14:45	0.073	0.016	0.016	0.02
10/25/2020	16:20	1.62	11:45	3.56	2.11	08:35	0.08	11:45	0.84	0.31	14:35	0.004	11:45	0.105	0.022	0.022	-
10/26/2020	16:55	1.68	06:45	4.00	2.31	01:20	0.11	06:45	1.06	0.32	01:45	0.006	06:45	0.157	0.025	0.025	-
10/27/2020	01:50	1.84	05:55	4.16	2.55	16:45	0.10	05:55	1.02	0.40	16:45	0.006	05:55	0.159	0.035	0.035	-
10/28/2020	22:55	1.60	08:45	4.09	2.48	01:20	0.12	08:40	1.03	0.35	23:45	0.005	08:45	0.155	0.030	0.030	-
10/29/2020	20:05	1.56	08:25	4.05	2.14	05:05	0.09	08:40	1.03	0.32	19:00	0.005	08:25	0.153	0.023	0.023	-
10/30/2020	18:15	1.52	05:45	4.05	2.23	21:50	0.08	05:45	1.07	0.33	17:00	0.005	05:45	0.161	0.025	0.025	0.10
10/31/2020	04:05	1.57	08:45	3.35	2.48	04:00	0.10	07:50	1.10	0.35	04:00	0.004	07:50	0.098	0.028	0.028	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/01/2020	08:45	1.91	08:25	4.00	2.48	03:55	0.11	08:25	0.97	0.41	09:25	0.008	08:25	0.142	0.034	0.034	-
11/02/2020	23:15	1.58	07:30	4.24	2.29	04:10	0.09	07:30	1.18	0.37	21:40	0.005	07:30	0.188	0.030	0.030	-
11/03/2020	21:35	1.58	12:55	3.98	2.14	03:45	0.08	22:30	1.24	0.35	20:45	0.005	12:55	0.151	0.025	0.025	0.83
11/04/2020	01:15	1.56	14:50	3.94	2.33	23:40	0.11	21:55	1.13	0.32	00:00	0.005	15:10	0.143	0.024	0.024	0.09
11/05/2020	06:05	1.56	15:55	3.94	2.48	02:15	0.11	01:20	1.17	0.41	06:00	0.005	09:30	0.139	0.035	0.035	0.34
11/06/2020	23:30	1.67	15:00	4.38	2.20	00:40	0.12	01:55	1.32	0.28	20:10	0.006	15:00	0.178	0.019	0.019	0.10
11/07/2020	03:45	1.69	10:05	3.00	1.96	06:15	0.15	16:25	1.31	0.36	02:45	0.008	15:50	0.071	0.020	0.020	0.07
11/08/2020	15:45	1.41	08:25	2.95	1.78	22:45	0.07	10:00	0.63	0.22	22:45	0.002	10:00	0.059	0.012	0.012	0.01
11/09/2020	00:35	1.46	11:10	4.02	2.35	00:35	0.09	11:30	1.43	0.44	00:30	0.003	11:30	0.198	0.035	0.035	0.04
11/10/2020	17:55	1.63	12:05	4.51	2.32	08:55	0.15	12:05	1.21	0.45	17:45	0.007	12:05	0.210	0.036	0.036	0.03
11/11/2020	23:25	1.36	13:15	4.45	2.28	23:20	0.13	13:15	1.29	0.42	23:20	0.005	13:15	0.220	0.032	0.032	-
11/12/2020	01:20	1.41	14:10	4.92	2.43	01:15	0.12	16:35	1.83	0.43	01:15	0.005	15:25	0.259	0.034	0.034	0.16
11/13/2020	04:00	1.61	13:00	3.99	2.26	00:55	0.17	13:05	2.49	0.49	00:55	0.007	13:05	0.362	0.036	0.036	0.38
11/14/2020	20:10	1.61	04:45	3.25	2.12	19:30	0.09	17:15	1.03	0.36	19:30	0.004	04:45	0.081	0.023	0.023	0.47
11/15/2020	11:25	1.59	09:40	2.79	1.85	08:45	0.13	22:40	0.74	0.25	11:00	0.006	08:50	0.051	0.013	0.013	0.19
11/16/2020	10:55	1.73	07:10	4.02	2.34	04:50	0.08	16:30	1.89	0.47	04:50	0.007	07:10	0.273	0.039	0.039	0.31
11/17/2020	23:35	1.19	15:25	3.90	2.20	17:35	0.09	15:30	1.37	0.42	17:35	0.003	15:30	0.192	0.032	0.032	0.20
11/18/2020	07:05	1.43	15:00	4.00	2.18	07:10	0.09	05:20	1.79	0.43	07:00	0.003	15:10	0.176	0.031	0.031	0.30
11/19/2020	13:50	1.90	15:35	3.97	2.44	08:30	0.15	18:10	1.20	0.49	19:15	0.009	15:35	0.144	0.039	0.039	0.50
11/20/2020	00:35	1.45	12:45	3.75	2.39	00:35	0.08	12:50	0.89	0.38	00:35	0.003	12:45	0.116	0.029	0.029	0.01
11/21/2020	23:45	1.79	05:45	2.56	1.98	23:45	0.21	05:45	0.52	0.32	23:45	0.010	05:45	0.041	0.017	0.017	-
11/22/2020	14:30	1.73	08:50	3.17	1.89	07:25	0.21	17:15	1.71	0.35	01:40	0.010	17:15	0.088	0.018	0.018	0.21
11/23/2020	15:20	1.62	06:35	4.05	2.25	03:45	0.10	08:10	2.34	0.49	03:45	0.006	08:00	0.202	0.036	0.036	0.14
11/24/2020	19:40	1.60	12:25	4.16	2.24	06:05	0.14	14:45	1.24	0.43	19:35	0.006	12:20	0.152	0.031	0.031	0.21
11/25/2020	04:35	1.67	15:10	3.90	2.30	06:55	0.13	07:50	0.96	0.38	04:35	0.007	07:50	0.135	0.030	0.030	0.05
11/26/2020	01:15	1.80	07:15	2.88	2.04	08:15	0.13	07:05	0.62	0.33	08:15	0.008	07:15	0.058	0.019	0.019	0.02
11/27/2020	15:55	1.49	12:30	3.72	2.20	15:55	0.10	12:25	1.49	0.38	15:55	0.004	12:25	0.153	0.025	0.025	-
11/28/2020	07:40	1.29	06:05	3.28	2.42	15:30	0.17	06:05	0.75	0.45	15:30	0.007	06:05	0.084	0.034	0.034	0.05
11/29/2020	04:35	1.59	09:00	3.37	2.23	04:35	0.14	09:00	0.78	0.40	04:35	0.006	09:00	0.090	0.028	0.028	-
11/30/2020	14:15	1.70	07:20	3.85	2.34	09:45	0.15	07:30	1.41	0.46	14:15	0.008	07:30	0.190	0.036	0.036	0.36
12/01/2020	18:15	1.88	12:20	4.09	2.60	09:05	0.21	06:40	1.33	0.56	12:05	0.012	12:20	0.156	0.048	0.048	-
12/02/2020	03:45	1.69	10:30	4.24	2.41	18:45	0.09	10:45	1.14	0.44	18:45	0.005	10:45	0.176	0.037	0.037	0.01
12/03/2020	02:35	1.64	10:45	4.19	2.31	03:15	0.13	22:40	1.26	0.45	02:35	0.007	10:45	0.150	0.034	0.034	-
12/04/2020	01:10	1.78	13:00	4.07	2.39	04:40	0.11	08:50	1.08	0.43	04:40	0.008	13:00	0.147	0.033	0.033	-
12/05/2020	18:30	1.56	10:15	3.70	2.18	08:45	0.11	10:15	0.88	0.35	18:30	0.005	10:15	0.116	0.024	0.024	0.03
12/06/2020	00:00	1.80	08:15	3.19	2.00	06:55	0.09	08:20	0.69	0.30	06:35	0.008	08:20	0.071	0.018	0.018	0.03
12/07/2020	19:00	1.76	06:45	4.16	2.63	08:10	0.11	12:05	1.60	0.50	18:20	0.010	12:55	0.162	0.046	0.046	-
12/08/2020	06:25	1.94	15:40	4.57	2.69	23:15	0.12	15:55	1.63	0.57	14:15	0.011	15:55	0.264	0.052	0.052	0.87
12/09/2020	04:10	1.73	14:20	4.08	2.37	06:05	0.14	02:20	1.34	0.46	06:05	0.007	14:25	0.171	0.037	0.037	0.17
12/10/2020	23:15	1.83	12:20	4.18	2.39	06:10	0.10	12:25	2.04	0.47	06:10	0.010	12:25	0.314	0.038	0.038	0.07
12/11/2020	04:00	1.73	02:35	3.34	2.14	02:55	0.11	12:50	1.20	0.49	04:55	0.006	02:35	0.088	0.030	0.030	0.02
12/12/2020	15:40	1.78	04:40	3.19	2.28	20:40	0.10	16:00	1.66	0.39	04:47	0.007	16:00	0.145	0.028	0.028	0.01
12/13/2020	06:40	2.18	02:40	2.93	2.37	23:50	0.17	06:15	1.00	0.42	23:50	0.013	06:15	0.085	0.030	0.030	0.24
12/14/2020	19:40	2.25	04:50	4.72	3.17	23:00	0.10	15:35	0.92	0.35	01:10	0.010	15:35	0.168	0.043	0.043	0.05
12/15/2020	06:15	2.20	13:35	4.59	2.95	01:35	0.09	13:40	1.12	0.30	06:20	0.010	13:40	0.197	0.033	0.033	0.58
12/16/2020	03:00	2.05	13:10	4.59	3.37	03:00	0.07	07:30	1.31	0.31	02:55	0.004	07:30	0.195	0.038	0.038	0.39
12/17/2020	01:10	2.07	07:10	4.77	3.11	01:05	0.08	07:10	1.01	0.33	01:05	0.004	07:10	0.188	0.040	0.040	0.08
12/18/2020	22:50	2.01	18:35	4.61	2.99	22:50	0.05	07:45	0.90	0.30	22:45	0.003	07:45	0.152	0.033	0.033	0.25
12/19/2020	05:20	2.13	08:40	4.48	3.12	11:40	0.08	08:40	0.94	0.29	05:20	0.005	08:40	0.161	0.032	0.032	0.37
12/20/2020	07:05	2.55	08:25	4.46	3.10	08:05	0.08	08:25	0.66	0.30	00:00	0.009	08:25	0.112	0.033	0.033	0.04
12/21/2020	19:40	2.44	07:50	4.68	3.21	00:00	0.12	06:45	1.09	0.31	00:00	0.010	08:40	0.161	0.038	0.038	1.07
12/22/2020	19:15	2.40	15:45	5.12	3.35	04:35	0.12	15:45	1.10	0.33	18:45	0.011	15:45	0.226	0.043	0.043	-
12/23/2020	20:55	2.22	05:25	4.68	3.00	04:35	0.09	13:05	0.90	0.27	20:55	0.007	13:15	0.156	0.030	0.030	-
12/24/2020	22:00	2.10	15:20	3.87	2.70	03:00	0.08	15:50	0.71	0.25	21:50	0.005	15:20	0.073	0.022	0.022	-
12/25/2020	02:20	1.97	21:50	4.22	2.52	02:00	0.06	22:05	0.57	0.20	02:00	0.003	22:05	0.085	0.021	0.021	0.49
12/26/2020	18:00	2.97	06:45	5.08	4.01	09:45	0.07	06:45	0.84	0.46	09:45	0.009	06:45	0.171	0.071	0.071	0.02
12/27/2020	15:55	2.14	09:00	5.03	3.09	12:30	0.09	09:00	0.83	0.32	15:55	0.005	09:00	0.167	0.041	0.041	0.13
12/28/2020	05:25	2.15	07:05	4.44	2.95	04:40	0.11	06:55	0.90	0.30	22:45	0.008	07:05	0.152	0.032	0.032	-
12/29/2020	06:10	2.23	09:40	4.55	3.16	04:15	0.10	09:00	1.15	0.33	03:40	0.009	09:00	0.164	0.038	0.038	0.14
12/30/2020	20:05	2.30	03:25	4.62	3.19	04:50	0.08	08:55	1.52	0.33	18:55	0.009	06:55	0.255	0.040	0.040	0.78
12/31/2020	19:35	2.21	08:10	4.47	2.97	19:25	0.11	08:20	0.90	0.30	19:25	0.007	08:20	0.154	0.032	0.032	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			5.885	30.65
Average	2.62	0.32	0.029	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A1b_30968

Site Address /Location:	Cnr 37th St and C St NE			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	Located on road edge	Latitude:	47.340252	Pipe Size (H x W): 11.88 X 11.88	Pipe Shape: Circular
		Longitude:	-122.226663		



Manhole #	System Characteristics
A1b30968	Commercial
Access	Traffic
Drive	Light





Installation Information	
Installation Date:	Installation Type:
Tuesday, September 22, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi
Installation Confirmation:	
Time	
8:35:00 AM	
Depth of Flow (Wet DOF) (in)	
1.75	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
0.35	N/A
Silt (in)	Silt Type
0	



Manhole / Pipe Information:	
Manhole Depth (Approx. FT):	Manhole Configuration
7	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
PVC	Good
Communication Information:	
Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole
Additional Site Info. / Comments:	

ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.11.325

AUB_A1c_30906

Site Commentary

SITE INFORMATION

Pipe	Round (18 in H)
Silt	2.50 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	7.27	0.67	0.234
Minimum	5.45	0.31	0.064
Maximum	9.70	1.04	0.555
Min Time	10/01/2020 2:00:00 AM	10/19/2020 2:00:00 AM	10/09/2020 2:00:00 AM
Max Time	01/02/2021 9:00:00 PM	01/02/2021 9:00:00 PM	01/02/2021 9:00:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

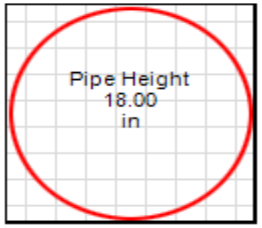
Percent Uptime	
DFINAL (in)	99.334
VFINAL (ft/s)	99.324
QFINAL (MGD - Total MG)	99.324

Hydrograph Report

AUB_A1c_30906

Flow Monitor

AUB_A1c_30906



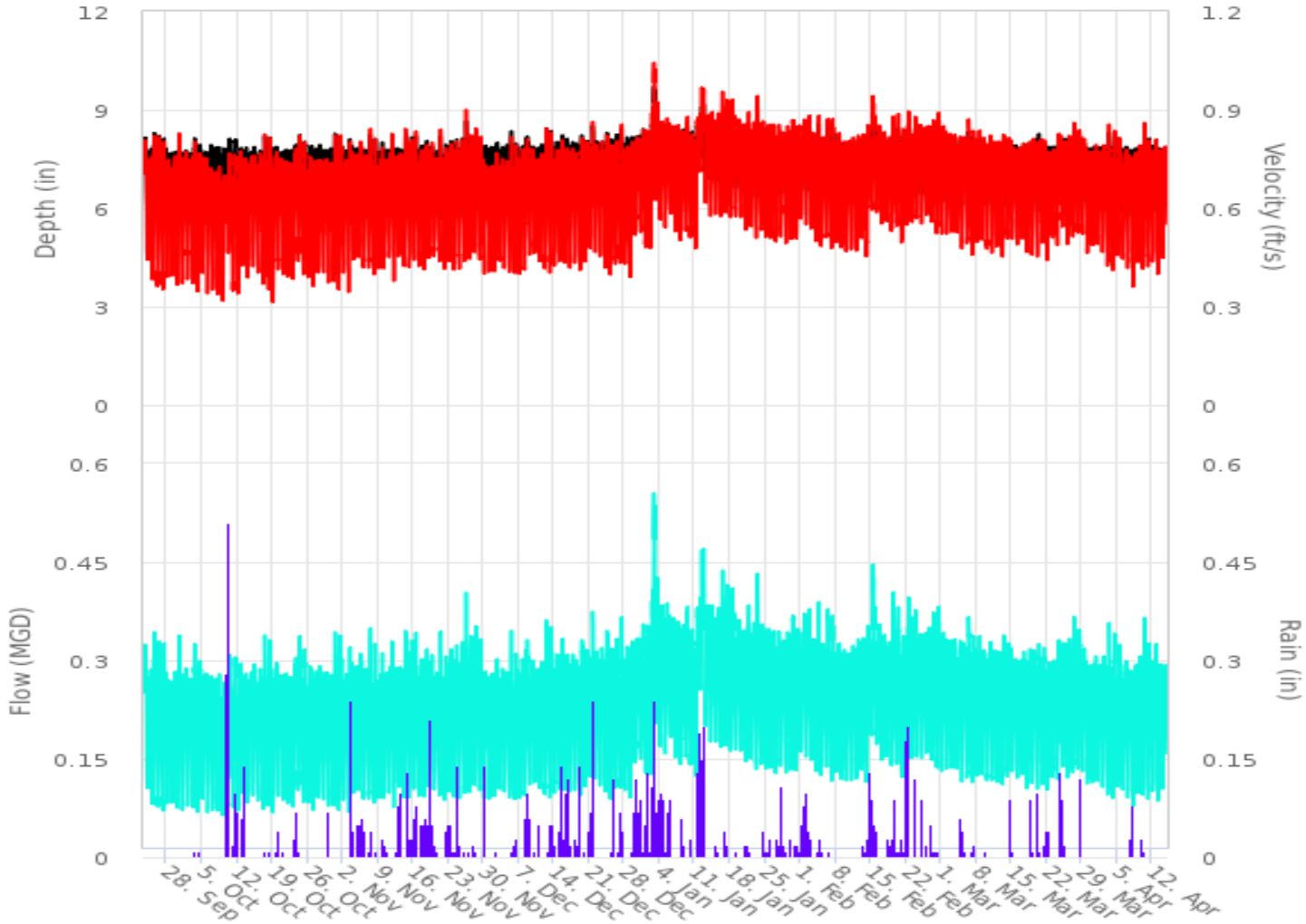
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL





4455 S. 134th Place
Tukwila, WA 98168

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Scattergraph Report

AUB_A1c_30906

Flow Monitor

AUB_A1c_30906

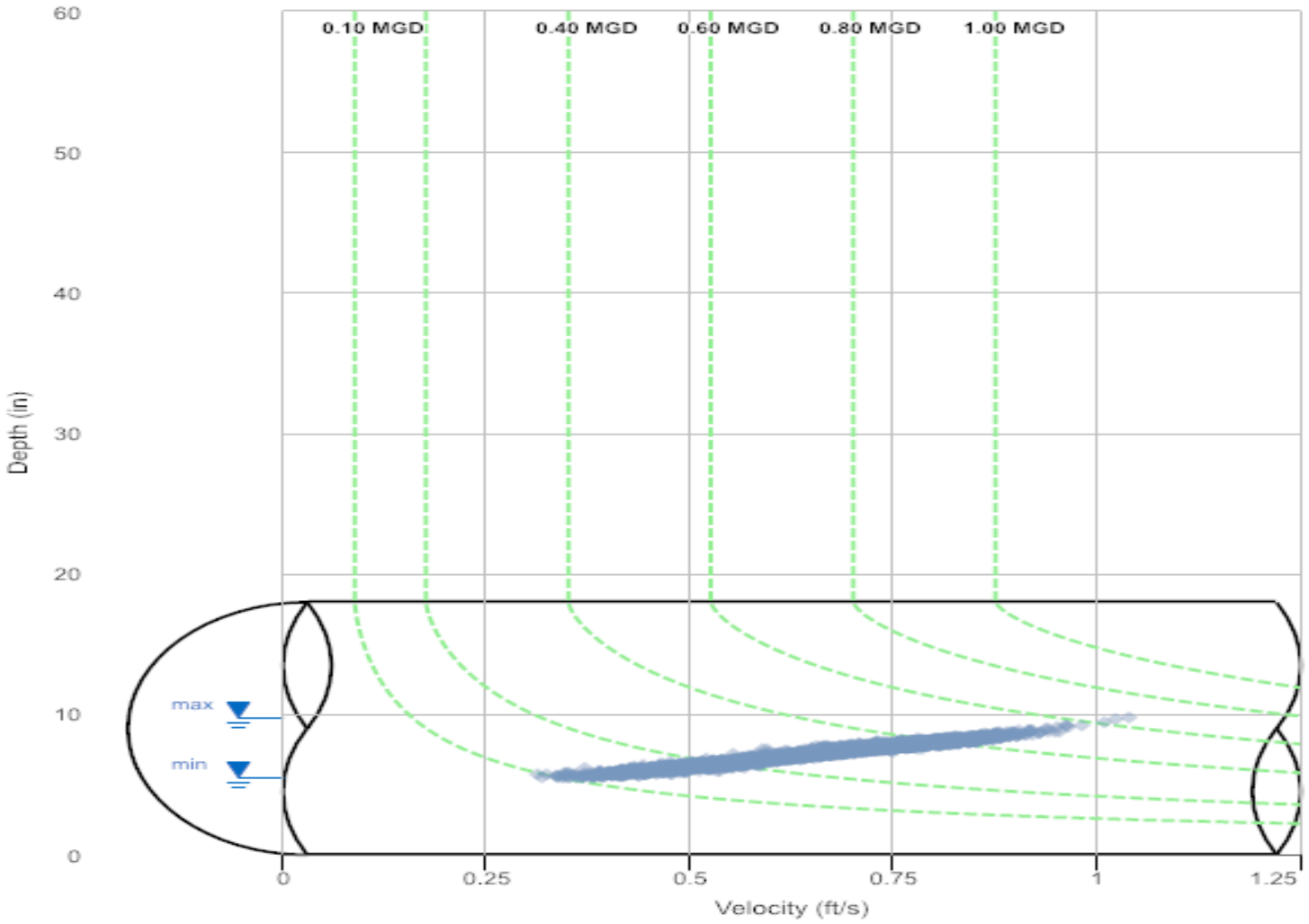
Pipe Height
18.00
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A1c_30906Pipe: Round (18 in H), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	05:10	6.23	15:40	8.53	7.36	07:55	0.44	15:35	0.87	0.67	06:05	0.115	15:40	0.382	0.238	0.238	0.51
01/02/2021	04:15	6.08	21:15	9.98	7.94	04:10	0.42	21:05	1.07	0.77	04:15	0.103	21:10	0.593	0.317	0.317	1.69
01/03/2021	04:55	7.00	00:00	9.77	8.17	04:35	0.60	00:05	1.05	0.80	04:45	0.189	00:00	0.560	0.332	0.332	0.65
01/04/2021	03:40	6.70	10:35	8.78	7.84	03:20	0.55	10:35	0.89	0.74	03:25	0.160	10:35	0.405	0.288	0.288	0.48
01/05/2021	03:20	6.52	13:40	9.20	7.76	02:55	0.51	13:40	1.00	0.73	03:25	0.140	13:40	0.489	0.280	0.280	0.52
01/06/2021	05:00	6.80	17:35	8.60	7.76	05:00	0.54	17:30	0.89	0.74	05:00	0.161	17:35	0.394	0.280	0.280	0.22
01/07/2021	04:05	6.47	16:00	8.48	7.60	03:05	0.49	16:00	0.87	0.71	03:05	0.136	16:00	0.375	0.262	0.262	-
01/08/2021	04:10	6.31	17:40	8.59	7.57	01:40	0.47	13:30	0.86	0.70	04:15	0.123	17:45	0.378	0.257	0.257	0.22
01/09/2021	03:55	6.42	14:10	8.62	7.60	03:40	0.49	14:00	0.90	0.71	03:55	0.132	13:55	0.396	0.265	0.265	-
01/10/2021	05:25	6.32	12:00	8.40	7.50	02:20	0.45	10:45	0.85	0.70	05:25	0.119	10:45	0.355	0.253	0.253	0.07
01/11/2021	03:30	6.10	15:00	8.80	7.74	03:25	0.41	11:10	0.92	0.74	03:25	0.102	11:10	0.422	0.286	0.286	1.06
01/12/2021	01:15	7.40	19:00	9.37	8.46	00:05	0.68	18:55	1.00	0.86	00:05	0.236	19:00	0.506	0.375	0.375	2.10
01/13/2021	04:45	6.90	00:35	8.76	7.98	03:45	0.59	00:35	0.92	0.79	04:40	0.181	00:35	0.419	0.313	0.313	0.09
01/14/2021	04:10	6.66	12:55	8.91	7.82	03:10	0.53	12:55	1.00	0.76	03:15	0.155	12:55	0.466	0.294	0.294	0.01
01/15/2021	04:20	6.63	17:15	8.54	7.79	03:10	0.51	17:15	0.92	0.77	03:10	0.149	17:15	0.401	0.297	0.297	0.09
01/16/2021	03:55	6.55	12:00	8.87	7.80	03:30	0.52	12:00	0.97	0.78	04:50	0.148	12:00	0.449	0.303	0.303	-
01/17/2021	05:00	6.52	11:10	8.86	7.72	05:00	0.55	11:10	0.98	0.78	05:00	0.152	11:10	0.456	0.295	0.295	0.10
01/18/2021	03:25	6.42	13:05	8.79	7.70	03:25	0.52	13:25	1.02	0.78	03:25	0.140	13:25	0.446	0.295	0.295	-
01/19/2021	03:15	6.49	18:50	8.46	7.62	01:20	0.54	18:50	0.91	0.76	03:20	0.151	18:50	0.391	0.279	0.279	0.01
01/20/2021	03:35	6.38	18:15	8.25	7.57	03:30	0.52	15:30	0.91	0.76	03:30	0.139	15:30	0.378	0.277	0.277	-
01/21/2021	03:40	6.31	18:05	8.77	7.55	03:30	0.48	18:00	0.95	0.75	03:30	0.126	18:05	0.434	0.274	0.274	0.11
01/22/2021	04:10	6.27	18:30	8.39	7.52	01:45	0.50	18:30	0.88	0.74	04:00	0.129	18:30	0.374	0.268	0.268	-
01/23/2021	03:35	6.22	12:30	9.37	7.54	05:45	0.44	12:30	1.06	0.74	05:45	0.112	12:30	0.535	0.272	0.272	-
01/24/2021	05:00	6.13	11:00	8.36	7.48	04:45	0.49	14:30	0.93	0.73	04:45	0.122	14:30	0.375	0.263	0.263	0.16
01/25/2021	03:40	6.13	17:50	8.51	7.46	03:30	0.47	17:45	0.91	0.73	03:30	0.118	17:50	0.395	0.262	0.262	0.04
01/26/2021	03:05	6.09	18:15	8.48	7.42	02:30	0.43	18:05	0.90	0.73	03:05	0.110	18:10	0.391	0.259	0.259	-
01/27/2021	03:35	6.10	17:45	8.23	7.39	03:15	0.46	17:45	0.89	0.72	03:35	0.112	17:45	0.367	0.254	0.254	0.14
01/28/2021	04:05	6.22	09:50	8.32	7.47	02:45	0.43	09:45	0.88	0.73	02:45	0.113	09:50	0.369	0.261	0.261	0.24
01/29/2021	03:05	6.12	11:10	8.29	7.43	04:05	0.45	11:10	0.88	0.72	04:05	0.113	11:10	0.369	0.257	0.257	0.03
01/30/2021	05:15	6.13	13:30	8.47	7.46	04:00	0.47	11:40	0.89	0.72	05:10	0.117	12:35	0.381	0.262	0.262	0.07
01/31/2021	04:55	6.09	10:40	8.36	7.44	05:45	0.47	18:00	0.89	0.72	05:50	0.118	10:55	0.370	0.258	0.258	0.12
02/01/2021	03:05	6.36	18:55	8.49	7.57	03:05	0.51	14:25	0.89	0.74	03:05	0.134	18:55	0.387	0.273	0.273	0.82
02/02/2021	03:25	6.32	20:15	8.78	7.65	03:15	0.51	20:10	0.92	0.75	03:25	0.136	20:10	0.422	0.281	0.281	0.31
02/03/2021	03:40	6.39	13:55	8.27	7.54	03:35	0.51	13:55	0.86	0.73	03:35	0.137	13:55	0.359	0.266	0.266	0.06
02/04/2021	03:35	6.12	17:10	9.07	7.41	02:20	0.45	17:05	0.95	0.70	03:35	0.114	17:10	0.459	0.250	0.250	0.07
02/05/2021	03:45	6.15	10:50	8.35	7.40	03:25	0.46	10:45	0.87	0.70	03:30	0.116	10:50	0.369	0.248	0.248	0.01
02/06/2021	06:00	6.20	12:45	9.01	7.44	05:45	0.46	12:45	0.95	0.71	05:45	0.118	12:45	0.451	0.256	0.256	0.01
02/07/2021	05:35	5.94	10:10	8.56	7.35	03:05	0.44	10:05	0.91	0.70	04:15	0.105	10:10	0.398	0.247	0.247	-
02/08/2021	03:55	6.01	15:55	8.17	7.36	03:45	0.43	18:25	0.91	0.70	03:55	0.103	18:25	0.365	0.246	0.246	-
02/09/2021	03:15	5.95	12:25	8.15	7.28	04:20	0.44	18:25	0.84	0.68	04:20	0.104	18:25	0.337	0.236	0.236	-
02/10/2021	04:05	5.92	12:10	8.11	7.27	04:00	0.42	11:25	0.84	0.68	04:00	0.098	12:10	0.337	0.237	0.237	-
02/11/2021	03:15	5.89	12:15	8.16	7.32	02:55	0.43	12:15	0.84	0.68	03:20	0.098	12:15	0.341	0.238	0.238	-
02/12/2021	04:30	5.98	12:55	8.69	7.30	02:35	0.43	13:05	0.88	0.68	03:25	0.102	12:55	0.388	0.237	0.237	-
02/13/2021	04:30	6.11	13:15	8.43	7.28	05:35	0.45	13:10	0.87	0.68	05:35	0.110	13:15	0.374	0.235	0.235	0.08
02/14/2021	05:20	5.94	11:40	8.34	7.42	04:55	0.40	11:35	0.88	0.69	04:55	0.097	11:40	0.369	0.249	0.249	0.71
02/15/2021	02:35	6.73	13:45	9.08	7.89	06:00	0.52	13:40	0.98	0.77	06:10	0.157	13:45	0.469	0.305	0.305	0.78
02/16/2021	03:35	6.52	17:05	8.40	7.58	01:50	0.55	15:45	0.90	0.73	03:15	0.158	17:05	0.371	0.267	0.267	0.07
02/17/2021	03:55	6.16	16:00	8.40	7.48	06:35	0.49	20:00	0.91	0.71	03:55	0.129	16:00	0.373	0.257	0.257	-
02/18/2021	04:20	6.21	17:30	8.57	7.44	02:35	0.45	17:20	0.89	0.71	02:35	0.116	17:30	0.386	0.252	0.252	0.09
02/19/2021	02:55	6.18	12:05	9.76	7.47	03:20	0.46	12:00	1.08	0.71	03:20	0.123	12:05	0.580	0.257	0.257	0.17
02/20/2021	04:35	6.06	12:00	8.56	7.40	04:30	0.50	13:05	0.93	0.72	04:35	0.121	13:05	0.406	0.256	0.256	0.07
02/21/2021	05:30	5.95	13:35	8.20	7.37	07:00	0.46	13:35	0.89	0.71	07:00	0.111	13:35	0.364	0.252	0.252	0.42
02/22/2021	04:30	6.32	12:30	8.78	7.60	03:20	0.51	13:00	0.94	0.74	03:20	0.135	13:00	0.426	0.273	0.273	0.98
02/23/2021	03:35	6.21	14:35	10.04	7.51	02:05	0.47	14:40	0.93	0.73	02:05	0.129	14:40	0.507	0.267	0.267	0.27
02/24/2021	02:30	6.27	20:00	8.20	7.49	02:00	0.49	19:55	0.88	0.74	04:50	0.136	19:55	0.360	0.265	0.265	-
02/25/2021	03:15	6.18	20:25	8.26	7.49	03:10	0.52	11:55	0.90	0.74	03:15	0.130	12:05	0.363	0.268	0.268	0.18
02/26/2021	03:45	6.24	10:55	8.44	7.54	03:45	0.53	17:45	0.90	0.75	03:45	0.135	10:55	0.378	0.273	0.273	0.10
02/27/2021	03:20	6.17	15:00	9.22	7.47	02:35	0.49	14:55	0.98	0.73	02:35	0.130	14:55	0.483	0.265	0.265	0.02
02/28/2021	05:35	6.04	12:55	8.68	7.42	02:20	0.46	12:50	0.95	0.73	04:05	0.122	12:50	0.424	0.261	0.261	0.02
03/01/2021	03:35	6.02	12:55	8.24	7.41	01:50	0.47	17:05	0.89	0.72	03:35	0.116	17:05	0.359	0.256	0.255	-
03/02/2021	04:05	6.04	17:55	8.26	7.39	02:15	0.46	13:50	0.88	0.71	02:15	0.120	13:50	0.362	0.252	0.252	-
03/03/2021	03:50	5.94	17:25	8.22	7.37	04:00	0.47	12:15	0.88	0.70	04:00	0.112	12:15	0.361	0.247	0.247	-
03/04/2021	03:25	6.01	18:00	8.22	7.33	03:25	0.47	17:25	0.87	0.70	03:25	0.113	18:05	0.346	0.243	0.243	0.20
03/05/2021	03:50	5.94	16:00	8.17	7.30	03:10	0.43	12:00	0.86	0.69	03:15	0.105	12:00	0.348	0.239	0.239	0.05
03/06/2021	05:25	5.97	15:55	8.57	7.36	03:35	0.47	11:40	0.89	0.71	05:25	0.109	12:40	0.375	0.250	0.250	-
03/07/2021	04:25	5.95	12:20	8.28	7.30	05:15	0.42	11:05	0.87	0.69	05:20	0.102	11:05	0.357	0.242	0.242	0.04
03/08/2021	03:40	5.96	17:15	8.22	7.29	03:20	0.46	16:50	0.85	0.70	03:45	0.108	17:15	0.352	0.243	0.243	-
03/09/2021	02:45	5.93	18:00	8.09	7.26	02:40	0.46	12:45	0.84	0.69	02:45	0.106	17:55	0.327	0.236	0.236	0.01
03/10/2021	02:55	5.88	19:20	8.15	7.29	02:35	0.44	19:20	0.85	0.69	02:50	0.102	19:20	0.344	0.238	0.238	-
03/11/2021	04:05	5.84	17:30	8.24	7.23	02:40	0.43	17:30	0.86	0.68	04:05	0.097	17:30	0.354	0.231	0.231	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	03:05	5.87	12:15	8.07	7.19	05:20	0.43	12:00	0.82	0.67	03:05	0.103	12:15	0.326	0.228	0.228	-
03/13/2021	04:40	5.81	10:50	8.39	7.25	05:50	0.39	09:25	0.90	0.68	05:50	0.089	11:55	0.369	0.236	0.236	-
03/14/2021	06:10	5.88	15:10	8.32	7.28	04:35	0.46	20:15	0.84	0.69	04:35	0.106	15:10	0.347	0.239	0.239	0.30
03/15/2021	02:55	6.11	20:35	8.11	7.31	02:35	0.45	10:15	0.82	0.69	02:35	0.114	20:35	0.330	0.240	0.240	-
03/16/2021	02:35	5.89	19:25	8.04	7.18	02:30	0.41	19:15	0.85	0.66	02:30	0.095	19:20	0.332	0.223	0.223	-
03/17/2021	02:05	5.80	10:25	8.32	7.21	03:20	0.46	16:25	0.88	0.67	02:05	0.105	10:25	0.361	0.229	0.229	-
03/18/2021	02:50	5.82	16:10	8.17	7.19	02:00	0.45	12:00	0.84	0.67	02:30	0.100	12:00	0.341	0.228	0.228	0.11
03/19/2021	03:15	5.84	10:50	8.10	7.23	01:35	0.40	11:05	0.85	0.68	01:35	0.095	10:45	0.338	0.233	0.233	0.03
03/20/2021	04:10	5.75	11:20	8.41	7.23	04:00	0.41	09:50	0.85	0.67	04:00	0.090	09:55	0.351	0.232	0.232	0.17
03/21/2021	03:20	5.72	15:05	8.19	7.15	03:05	0.45	09:15	0.85	0.67	05:15	0.098	11:35	0.336	0.227	0.227	0.07
03/22/2021	02:40	5.78	11:20	8.08	7.20	02:35	0.38	11:15	0.81	0.66	02:35	0.085	11:20	0.325	0.224	0.224	0.11
03/23/2021	01:45	5.74	11:15	8.06	7.16	01:40	0.47	13:10	0.81	0.68	01:40	0.103	11:15	0.319	0.227	0.227	-
03/24/2021	02:15	5.91	11:15	8.52	7.27	03:00	0.40	11:15	0.90	0.69	03:00	0.097	11:15	0.394	0.238	0.238	0.34
03/25/2021	03:15	6.07	15:10	8.32	7.35	03:15	0.49	15:05	0.83	0.69	03:20	0.118	15:10	0.350	0.240	0.240	0.27
03/26/2021	02:15	5.98	16:50	8.35	7.34	03:35	0.47	11:50	0.85	0.70	03:35	0.115	16:45	0.353	0.245	0.245	-
03/27/2021	04:35	5.90	11:10	8.51	7.34	04:30	0.46	11:10	0.89	0.71	04:30	0.106	11:10	0.387	0.249	0.249	-
03/28/2021	04:45	5.99	13:00	8.47	7.37	01:50	0.43	16:35	0.90	0.71	01:50	0.110	12:55	0.374	0.252	0.252	0.37
03/29/2021	02:05	6.02	12:55	8.10	7.30	03:15	0.48	12:25	0.83	0.70	03:25	0.117	12:25	0.329	0.241	0.241	-
03/30/2021	03:10	5.86	19:20	8.19	7.18	01:30	0.43	15:50	0.84	0.67	01:35	0.100	15:55	0.332	0.226	0.226	-
03/31/2021	01:25	5.67	13:50	8.02	7.19	01:15	0.44	12:00	0.82	0.68	03:10	0.098	19:40	0.321	0.228	0.228	-
04/01/2021	02:45	5.78	16:10	7.97	7.20	02:20	0.46	09:55	0.83	0.67	02:40	0.102	15:45	0.310	0.228	0.228	-
04/02/2021	02:35	5.75	09:55	8.08	7.17	02:05	0.41	09:30	0.82	0.66	02:05	0.092	09:55	0.329	0.224	0.224	-
04/03/2021	03:45	5.64	11:05	8.45	7.19	01:55	0.37	11:05	0.89	0.65	01:55	0.082	11:05	0.385	0.226	0.226	-
04/04/2021	03:55	5.62	11:05	8.71	7.11	03:55	0.37	11:50	0.88	0.64	03:55	0.077	11:55	0.388	0.217	0.217	-
04/05/2021	02:05	5.78	11:45	8.22	7.19	00:05	0.42	11:45	0.86	0.67	02:00	0.092	11:45	0.355	0.227	0.226	-
04/06/2021	02:00	5.72	20:20	7.95	7.16	01:00	0.36	09:20	0.80	0.64	02:00	0.078	20:40	0.308	0.217	0.217	-
04/07/2021	02:40	5.68	12:45	8.06	7.11	02:50	0.35	12:45	0.83	0.64	02:55	0.074	12:45	0.330	0.215	0.215	0.22
04/08/2021	02:10	5.66	13:25	7.99	7.14	03:35	0.35	15:10	0.83	0.65	03:40	0.075	13:30	0.318	0.219	0.219	-
04/09/2021	03:05	5.73	16:20	8.16	7.16	02:00	0.40	16:15	0.84	0.67	03:15	0.091	16:15	0.342	0.225	0.225	0.03
04/10/2021	04:25	5.67	10:25	8.58	7.15	02:20	0.39	10:25	0.89	0.66	02:25	0.087	10:25	0.392	0.225	0.225	0.02
04/11/2021	04:30	5.61	10:20	8.33	7.13	02:10	0.38	10:20	0.85	0.65	04:30	0.080	10:20	0.356	0.220	0.220	-
04/12/2021	03:00	5.73	20:10	8.31	7.15	01:35	0.41	20:00	0.84	0.66	03:15	0.090	20:10	0.354	0.222	0.222	-
04/13/2021	02:40	5.62	11:40	7.94	7.11	02:00	0.39	18:25	0.81	0.65	02:45	0.080	18:30	0.315	0.218	0.218	-
04/14/2021	03:00	5.66	12:40	7.99	7.16	02:50	0.40	15:40	0.84	0.67	02:55	0.085	15:40	0.321	0.225	0.225	-
09/23/2020	23:40	6.25	16:50	8.47	7.68	23:40	0.48	16:50	0.85	0.74	23:40	0.124	16:55	0.369	0.274	0.185	-
09/24/2020	02:15	5.84	19:35	7.86	7.06	02:15	0.39	19:15	0.79	0.63	02:15	0.088	19:40	0.300	0.207	0.207	-
09/25/2020	03:50	5.54	12:10	8.56	7.11	03:40	0.35	12:05	0.86	0.64	03:40	0.073	12:10	0.380	0.216	0.216	-
09/26/2020	03:45	5.60	11:15	8.29	7.07	03:50	0.33	11:10	0.86	0.63	03:50	0.068	11:15	0.353	0.211	0.211	-
09/27/2020	04:10	5.33	11:20	8.22	7.03	04:00	0.31	10:25	0.82	0.62	04:00	0.059	11:15	0.338	0.207	0.207	-
09/28/2020	02:40	5.38	19:00	7.95	6.92	02:35	0.32	10:40	0.78	0.61	02:35	0.062	10:40	0.293	0.195	0.195	-
09/29/2020	03:15	5.43	13:15	8.06	6.95	02:00	0.34	17:25	0.79	0.63	02:00	0.068	13:15	0.308	0.202	0.202	-
09/30/2020	03:15	5.31	11:10	8.63	7.01	01:35	0.33	11:05	0.91	0.64	03:10	0.062	11:10	0.404	0.210	0.210	-
10/01/2020	03:05	5.34	11:10	7.91	6.96	02:25	0.33	19:05	0.80	0.63	02:35	0.062	11:10	0.301	0.204	0.204	-
10/02/2020	03:05	5.35	20:10	7.78	6.98	02:40	0.31	12:45	0.80	0.64	02:45	0.059	12:55	0.295	0.207	0.207	-
10/03/2020	03:00	5.43	11:45	8.32	6.99	02:55	0.34	11:40	0.84	0.62	03:00	0.066	11:40	0.351	0.204	0.204	0.01
10/04/2020	03:40	5.39	12:50	8.13	7.02	02:10	0.33	13:55	0.82	0.63	03:40	0.064	14:05	0.331	0.209	0.209	0.01
10/05/2020	02:30	5.50	11:05	7.75	6.98	02:15	0.35	13:40	0.78	0.63	02:20	0.071	10:05	0.287	0.203	0.203	-
10/06/2020	02:40	5.40	16:00	8.09	6.95	02:25	0.32	15:55	0.77	0.59	02:25	0.062	19:15	0.309	0.192	0.192	-
10/07/2020	02:10	5.43	19:25	8.01	6.99	02:05	0.30	10:35	0.75	0.58	02:05	0.059	19:20	0.293	0.188	0.188	-
10/08/2020	01:40	5.45	10:15	7.98	6.92	01:40	0.30	10:20	0.77	0.56	01:40	0.059	10:20	0.301	0.181	0.181	-
10/09/2020	04:15	5.44	23:25	8.05	7.04	02:15	0.28	09:50	0.74	0.58	02:10	0.057	23:20	0.293	0.194	0.194	0.64
10/10/2020	04:40	6.14	12:30	8.27	7.34	04:35	0.44	10:35	0.80	0.63	04:40	0.110	10:35	0.330	0.220	0.220	1.04
10/11/2020	03:00	5.47	13:20	8.29	7.16	05:00	0.29	09:40	0.79	0.61	03:05	0.061	13:20	0.325	0.211	0.211	0.53
10/12/2020	02:35	5.48	18:40	8.00	7.01	02:25	0.31	19:10	0.81	0.61	02:25	0.061	19:10	0.314	0.199	0.199	-
10/13/2020	02:55	5.63	19:05	7.98	7.15	02:00	0.37	19:00	0.80	0.65	02:00	0.078	19:00	0.311	0.220	0.220	0.61
10/14/2020	03:10	5.56	15:50	7.93	7.04	01:20	0.36	12:45	0.78	0.63	02:35	0.075	14:20	0.303	0.209	0.209	-
10/15/2020	02:35	5.72	09:55	8.95	7.06	02:25	0.39	09:55	0.90	0.63	02:30	0.084	09:55	0.425	0.209	0.209	-
10/16/2020	02:55	5.45	12:45	7.96	6.98	02:55	0.33	13:00	0.82	0.63	02:55	0.064	13:00	0.313	0.203	0.203	-
10/17/2020	04:00	5.38	10:55	8.35	7.02	02:50	0.33	10:40	0.87	0.63	02:55	0.065	10:40	0.362	0.208	0.208	0.01
10/18/2020	03:50	5.38	11:45	8.32	7.06	06:40	0.31	11:45	0.86	0.63	03:35	0.068	11:55	0.362	0.211	0.211	0.03
10/19/2020	02:55	5.46	11:10	8.14	7.06	02:55	0.27	18:15	0.80	0.59	02:55	0.053	18:15	0.309	0.198	0.198	0.05
10/20/2020	04:05	5.55	18:35	7.80	7.01	03:15	0.36	11:30	0.77	0.64	03:15	0.073	18:30	0.291	0.207	0.207	-
10/21/2020	03:55	5.55	10:50	8.07	7.01	02:30	0.35	10:45	0.80	0.62	02:30	0.074	10:50	0.322	0.204	0.204	0.01
10/22/2020	03:15	5.36	12:05	7.88	7.01	02:05	0.34	12:00	0.78	0.62	03:10	0.065	12:00	0.296	0.205	0.205	-
10/23/2020	02:50	5.45	11:25	8.32	7.07	02:45	0.34	11:25	0.87	0.64	02:45	0.066	11:25	0.364	0.212	0.212	0.20
10/24/2020	06:50	5.83	11:00	8.28	7.13	02:40	0.40	11:00	0.85	0.65	02:40	0.092	11:00	0.353	0.219	0.219	0.02
10/25/2020	04:15	5.35	10:45	8.11	7.02	04:15	0.33	09:55	0.81	0.63	04:15	0.063	10:45	0.325	0.207	0.207	-
10/26/2020	03:05	5.51	12:25	8.09	7.04	02:50	0.35	12:20	0.81	0.62	03:05	0.069	12:25	0.325	0.205	0.205	-
10/27/2020	02:20	5.46	19:15	7.93	7.03	01:10	0.33	12:45	0.82	0.62	01:10	0.069	19:15	0.303	0.205	0.205	-
10/28/2020	03:20	5.55	10:50	8.60	7.01	02:05	0.35	10:50	0.80	0.61	02:05	0.073	10:50	0.354	0.200	0.200	-
10/29/2020	03:15	5.40	11:45	8.08	7.04	03:10	0.34	16:50	0.79	0.62	03:15	0.065	11:45	0.312	0.204	0.204	-
10/30/2020	03:00	5.45	19:00	8.00	7.02	02:30	0.33	18:40	0.79	0.62	02:35	0.066	19:00	0.310	0.203	0.203	0.10
10/31/2020	04:25	5.62	10:25	8.47	7.11	04:10	0.37	10:35	0.87	0.64	04:30	0.076	10:25	0.370	0.216	0.216	-
11/01/2020	05:00	5.42	12:20	8.26	7.05	04:55	0.32	12:15	0.84	0.63	04:55	0.063	12:15	0.349	0.211	0.211	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/02/2020	04:15	5.31	12:35	7.81	6.99	04:10	0.32	12:35	0.78	0.62	04:10	0.060	12:35	0.295	0.201	0.201	-
11/03/2020	04:00	5.36	16:30	8.46	7.10	04:00	0.31	20:00	0.89	0.64	04:00	0.059	16:30	0.360	0.215	0.215	0.83
11/04/2020	02:40	5.61	18:00	7.99	7.02	02:15	0.39	20:30	0.83	0.64	02:15	0.084	20:30	0.308	0.209	0.209	0.09
11/05/2020	03:15	5.65	12:40	8.12	7.13	03:20	0.40	12:35	0.86	0.67	03:20	0.085	12:40	0.348	0.223	0.223	0.34
11/06/2020	02:50	5.50	14:25	8.19	6.99	00:40	0.38	14:20	0.84	0.63	03:55	0.077	14:25	0.342	0.205	0.205	0.10
11/07/2020	03:15	5.59	12:05	8.49	6.98	03:10	0.38	12:05	0.89	0.63	05:20	0.078	12:05	0.385	0.206	0.206	0.07
11/08/2020	05:35	5.41	10:15	8.22	7.01	05:30	0.35	10:15	0.84	0.62	05:30	0.067	10:15	0.347	0.206	0.206	0.01
11/09/2020	03:15	5.48	20:05	8.31	7.01	03:10	0.36	20:05	0.84	0.64	03:10	0.072	20:05	0.352	0.208	0.208	0.04
11/10/2020	03:25	5.52	12:45	7.97	6.96	02:55	0.36	12:40	0.78	0.63	02:55	0.073	12:40	0.306	0.201	0.201	0.03
11/11/2020	03:20	5.56	18:30	8.29	7.03	02:55	0.40	18:15	0.92	0.64	02:55	0.083	18:15	0.371	0.212	0.212	-
11/12/2020	03:20	5.46	21:45	7.95	7.01	03:05	0.33	12:10	0.79	0.64	03:10	0.066	12:15	0.309	0.209	0.209	0.16
11/13/2020	02:20	5.82	10:25	7.96	7.16	01:55	0.40	10:25	0.79	0.66	01:55	0.092	10:25	0.310	0.221	0.221	0.38
11/14/2020	04:30	5.47	10:20	8.68	7.19	04:10	0.39	10:15	0.93	0.66	04:30	0.078	10:20	0.416	0.230	0.230	0.47
11/15/2020	05:00	5.54	18:10	8.68	7.15	04:55	0.37	18:05	0.87	0.66	04:55	0.075	18:10	0.392	0.223	0.223	0.19
11/16/2020	04:20	5.64	13:45	8.37	7.14	04:15	0.37	13:40	0.85	0.65	04:15	0.078	13:45	0.363	0.218	0.218	0.31
11/17/2020	04:00	5.57	12:35	8.14	7.07	01:50	0.40	12:15	0.85	0.64	03:55	0.081	12:15	0.339	0.212	0.212	0.20
11/18/2020	04:25	5.56	18:20	8.15	7.10	04:20	0.37	12:05	0.85	0.64	04:25	0.075	12:05	0.341	0.216	0.216	0.30
11/19/2020	02:55	5.70	10:30	8.19	7.13	01:40	0.39	12:45	0.84	0.66	02:55	0.085	10:30	0.339	0.220	0.220	0.50
11/20/2020	03:25	5.57	17:20	8.01	6.97	03:00	0.41	17:20	0.84	0.64	03:00	0.088	17:20	0.331	0.207	0.207	0.01
11/21/2020	05:10	5.49	11:50	8.38	7.04	05:05	0.40	11:45	0.87	0.66	05:05	0.081	11:45	0.368	0.217	0.217	-
11/22/2020	05:35	5.52	12:15	8.05	7.07	05:30	0.39	12:15	0.81	0.65	05:30	0.078	12:15	0.323	0.217	0.217	0.21
11/23/2020	04:30	5.71	13:45	8.39	7.17	04:15	0.40	13:40	0.86	0.65	04:15	0.088	13:40	0.367	0.222	0.222	0.14
11/24/2020	02:55	5.57	13:40	8.47	7.13	02:40	0.38	09:30	0.88	0.65	02:45	0.078	13:40	0.377	0.218	0.218	0.21
11/25/2020	04:30	5.59	18:25	8.68	7.15	04:30	0.39	18:20	0.90	0.66	04:30	0.081	18:25	0.404	0.224	0.224	0.05
11/26/2020	07:00	5.66	12:25	8.76	7.23	05:05	0.40	12:25	0.93	0.68	06:55	0.086	12:25	0.422	0.237	0.237	0.02
11/27/2020	04:10	5.58	11:50	8.39	7.16	01:50	0.40	13:40	0.86	0.66	04:10	0.081	13:45	0.365	0.223	0.223	-
11/28/2020	04:10	5.61	10:40	8.45	7.23	04:00	0.40	10:45	0.88	0.67	04:00	0.083	10:45	0.378	0.231	0.231	0.05
11/29/2020	05:20	5.70	11:40	8.30	7.12	05:05	0.40	11:50	0.85	0.65	05:20	0.085	11:50	0.354	0.217	0.217	-
11/30/2020	03:35	5.72	13:40	8.15	7.22	03:15	0.38	13:40	0.80	0.63	03:30	0.082	13:40	0.326	0.215	0.215	0.36
12/01/2020	04:15	5.62	15:25	8.51	7.09	04:05	0.35	15:20	0.82	0.60	04:05	0.074	15:20	0.355	0.201	0.201	-
12/02/2020	03:30	5.61	10:45	8.24	7.16	03:25	0.37	13:05	0.81	0.63	03:25	0.077	16:30	0.327	0.214	0.214	0.01
12/03/2020	04:20	5.74	12:05	7.96	7.15	04:10	0.40	19:30	0.77	0.62	04:15	0.086	19:35	0.300	0.210	0.210	-
12/04/2020	02:50	5.85	14:55	8.20	7.15	02:40	0.38	14:50	0.79	0.62	02:50	0.085	14:50	0.324	0.208	0.208	-
12/05/2020	03:35	5.69	12:00	8.57	7.15	03:15	0.37	12:00	0.84	0.64	03:15	0.080	12:00	0.368	0.216	0.216	0.03
12/06/2020	06:30	5.66	10:25	8.05	7.07	06:35	0.35	10:05	0.83	0.63	06:35	0.074	10:05	0.327	0.210	0.210	0.03
12/07/2020	03:20	5.69	17:35	8.05	7.08	03:25	0.34	17:25	0.82	0.63	03:25	0.073	17:30	0.328	0.210	0.210	-
12/08/2020	04:25	5.65	16:10	8.33	7.26	02:40	0.37	16:20	0.86	0.65	04:15	0.078	16:20	0.358	0.228	0.228	0.87
12/09/2020	04:35	5.88	18:55	8.04	7.18	05:05	0.42	18:25	0.82	0.65	04:35	0.100	18:30	0.321	0.220	0.220	0.17
12/10/2020	03:15	5.88	08:35	8.11	7.15	02:50	0.42	08:35	0.79	0.63	03:15	0.095	08:35	0.320	0.213	0.213	0.07
12/11/2020	03:55	5.84	16:20	8.16	7.20	03:55	0.40	12:00	0.80	0.64	03:55	0.091	16:20	0.327	0.218	0.218	0.02
12/12/2020	04:40	5.80	11:15	8.59	7.24	04:40	0.39	11:15	0.87	0.65	04:40	0.087	11:15	0.382	0.225	0.225	0.01
12/13/2020	05:00	5.74	11:30	8.45	7.21	04:50	0.38	11:10	0.86	0.64	05:00	0.083	11:30	0.364	0.221	0.221	0.24
12/14/2020	02:40	5.68	18:00	8.94	7.15	02:40	0.39	17:55	0.98	0.64	02:40	0.084	18:00	0.460	0.215	0.215	0.05
12/15/2020	04:05	5.80	16:10	8.41	7.25	02:45	0.39	16:05	0.83	0.65	02:45	0.088	16:10	0.348	0.225	0.225	0.58
12/16/2020	03:35	5.80	15:15	8.69	7.28	02:00	0.40	09:15	0.82	0.65	03:30	0.092	15:10	0.357	0.228	0.228	0.39
12/17/2020	03:55	5.78	17:45	8.12	7.18	04:45	0.36	17:25	0.82	0.64	04:45	0.083	17:25	0.327	0.218	0.218	0.08
12/18/2020	04:00	5.87	12:50	8.33	7.21	02:30	0.39	12:45	0.83	0.64	02:30	0.089	12:45	0.347	0.217	0.217	0.25
12/19/2020	04:20	5.80	16:50	8.42	7.31	04:40	0.38	16:45	0.90	0.65	04:40	0.087	16:50	0.380	0.232	0.232	0.37
12/20/2020	04:55	5.88	11:45	8.28	7.27	05:00	0.35	12:35	0.86	0.65	05:00	0.081	11:40	0.344	0.226	0.226	0.04
12/21/2020	04:50	6.21	17:00	8.73	7.51	02:50	0.44	17:00	0.91	0.70	03:25	0.114	17:00	0.411	0.256	0.256	1.07
12/22/2020	03:45	6.07	09:35	8.36	7.33	04:55	0.39	15:25	0.86	0.67	04:55	0.096	09:35	0.354	0.234	0.234	-
12/23/2020	03:35	5.92	12:55	8.33	7.29	01:55	0.41	12:55	0.85	0.66	03:25	0.098	13:00	0.359	0.229	0.229	-
12/24/2020	04:15	5.89	12:05	8.63	7.28	04:15	0.39	12:00	0.87	0.65	04:15	0.090	12:05	0.386	0.227	0.227	-
12/25/2020	05:30	5.80	15:10	8.29	7.18	06:00	0.37	11:35	0.83	0.63	06:00	0.082	15:05	0.334	0.214	0.214	0.49
12/26/2020	04:40	5.92	12:20	8.38	7.21	04:40	0.39	12:00	0.85	0.64	04:40	0.091	12:20	0.359	0.219	0.219	0.02
12/27/2020	04:30	5.78	12:40	8.68	7.25	05:40	0.40	12:40	0.91	0.65	04:20	0.097	12:40	0.407	0.228	0.228	0.13
12/28/2020	03:35	5.85	13:05	8.28	7.29	03:30	0.37	13:00	0.83	0.64	03:30	0.084	13:05	0.344	0.224	0.224	-
12/29/2020	04:45	5.89	14:25	8.78	7.32	04:25	0.37	14:25	0.89	0.65	04:10	0.086	14:25	0.406	0.231	0.231	0.14
12/30/2020	03:15	6.24	14:25	8.37	7.51	04:15	0.46	14:20	0.85	0.70	03:15	0.123	14:20	0.357	0.255	0.255	0.78
12/31/2020	04:05	6.42	17:35	8.53	7.51	05:10	0.48	10:45	0.87	0.70	05:10	0.133	18:20	0.380	0.254	0.254	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			47.749	30.65
Average	7.27	0.67	0.234	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A1c_30906

Site Address /Location:	184 37th St NE			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	located in middle lane on yellow lines	Latitude:	47.340141	Pipe Size (H x W): 18.00 X 18.00	Pipe Shape: Circular
		Longitude:	-122.224548		



Manhole #	System Characteristics
A1c30906	Residential
Access	Traffic
Drive	Medium







Installation Information	
Installation Date: Wednesday, September 23, 2020	Installation Type: Doppler Standard Ring and Crank
Monitoring Location (Sensors): Upstream 0-5 FT	Monitor Location: Manhole
Sensors / Devices: Peak Combo (CS4), Smart Depth (CS5)	Pressure Sensor Range (psi): 0 - 5 psi
Installation Confirmation:	
Time: 7:50:00 AM	
Depth of Flow (Wet DOF) (in): 7.00	
CS5 Physical Offset (in): 1.38	Measurement Confidence (in): 0.25"
Peak Velocity (fps): 0.81	Velocity Sensor Offset (in): N/A
Silt (in): 2.5	Silt Type
Hydraulic Comments:	
Manhole / Pipe Information:	
Manhole Depth (Approx. FT): 8	Manhole Configuration: Single
Manhole Material: Concrete	Manhole Condition: Good
Manhole Opening Diameter (in): 24	Manhole Diameter (Approx.): 26
Manhole Cover: Steel	Manhole Frame: Normal
Active Connections: No	Air Quality: Normal
Pipe Material: Concrete	Pipe Condition: Good
Communication Information:	
Communication Type: Wireless	Antenna Location: Manhole Pick / Vent Hole
Additional Site Info. / Comments:	

ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.11.325

AUB_A1d_30910

Site Commentary

SITE INFORMATION

Pipe	Elliptical (18.13 in H x 18 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Data are not available from February 15th through February 19th due to a monitor problem. The monitor was replaced on February 19th to resolve the problem.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	1.81	1.41	0.087
Minimum	0.63	0.55	0.012
Maximum	2.94	2.27	0.190
Min Time	11/02/2020 3:00:00 AM	12/20/2020 3:00:00 AM	11/01/2020 4:00:00 AM
Max Time	01/02/2021 1:00:00 PM	11/01/2020 11:00:00 AM	01/03/2021 12:00:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

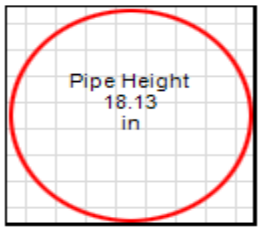
Percent Uptime	
DFINAL (in)	97.749
VFINAL (ft/s)	97.749
QFINAL (MGD - Total MG)	97.749

Hydrograph Report

AUB_A1d_30910

Flow Monitor

AUB_A1d_30910



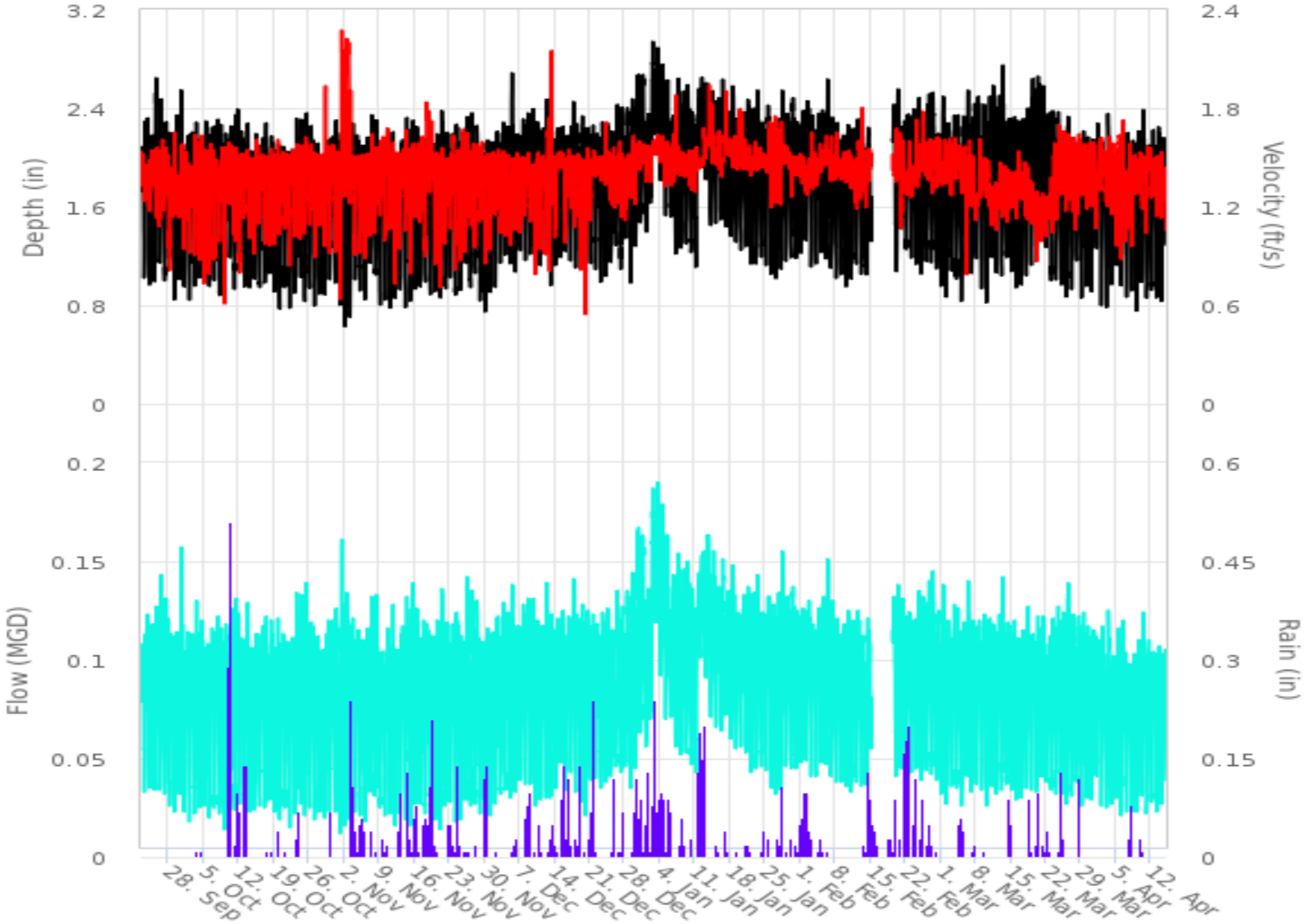
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



4455 S. 134th Place
Tukwila, WA 98168

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Scattergraph Report

AUB_A1d_30910

Flow Monitor

AUB_A1d_30910

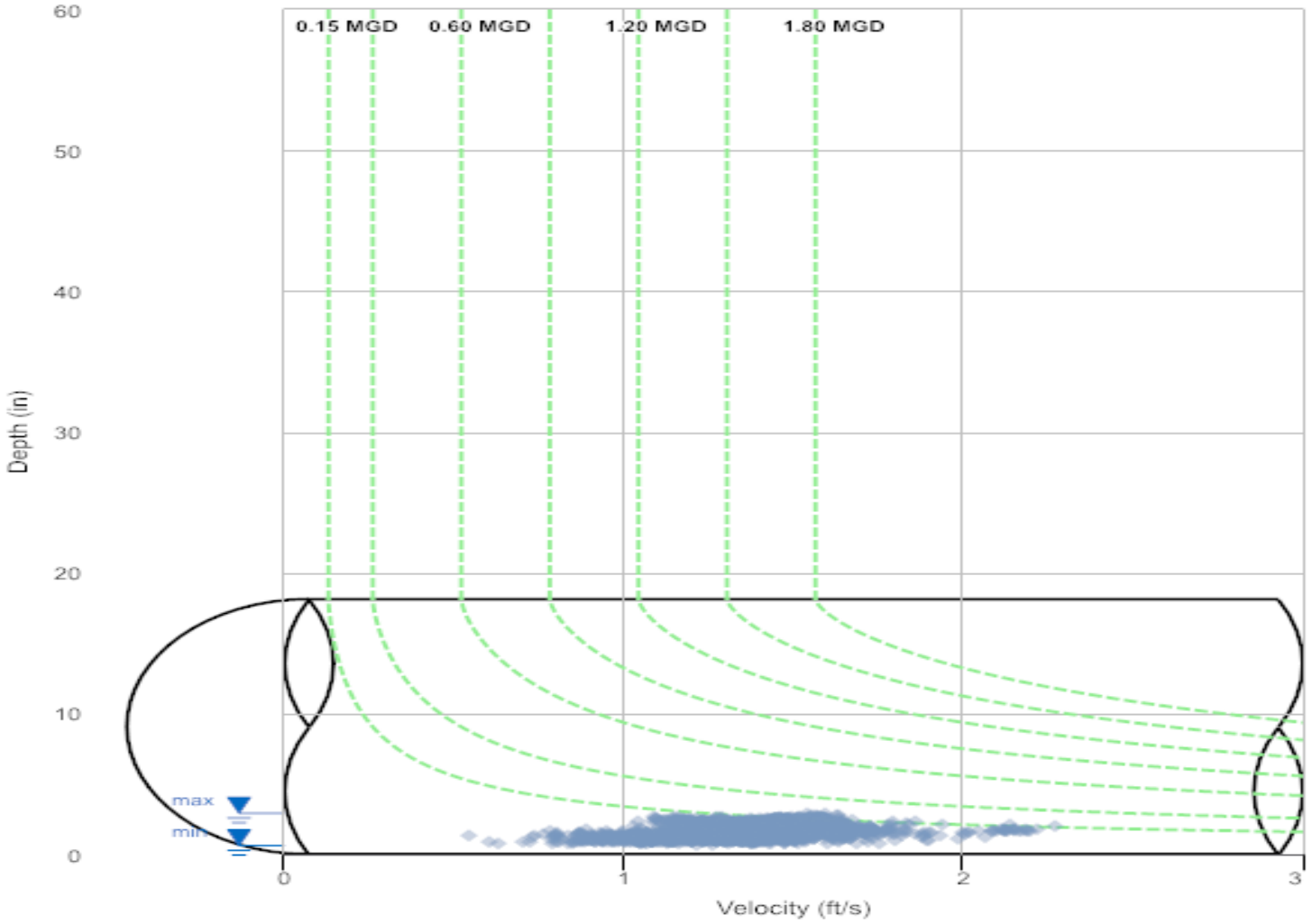
Pipe Height
18.13
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A1d_30910Pipe: Elliptical (18.13 in H x 18 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	07:40	1.17	16:55	2.50	1.93	03:45	1.29	08:20	1.87	1.50	05:00	0.045	16:55	0.150	0.100	0.100	0.51
01/02/2021	01:50	1.43	13:20	3.01	2.32	02:50	1.25	20:45	1.70	1.51	01:50	0.059	13:15	0.200	0.132	0.132	1.69
01/03/2021	23:50	1.92	13:40	3.04	2.45	21:30	1.42	10:55	1.79	1.55	23:55	0.100	12:20	0.211	0.145	0.145	0.65
01/04/2021	03:40	1.71	12:00	2.88	2.30	22:45	1.26	12:45	1.79	1.53	03:10	0.085	12:45	0.202	0.130	0.130	0.48
01/05/2021	03:25	1.44	14:45	2.84	2.14	04:35	1.17	12:45	1.87	1.48	03:25	0.064	13:30	0.186	0.114	0.114	0.52
01/06/2021	04:30	1.48	13:20	2.52	1.98	07:30	1.21	13:15	1.76	1.48	04:25	0.068	13:15	0.163	0.102	0.102	0.22
01/07/2021	03:25	1.04	16:55	2.76	2.03	05:55	1.35	05:35	1.96	1.52	03:25	0.043	16:55	0.167	0.108	0.108	-
01/08/2021	03:50	1.15	16:10	2.61	2.00	05:50	1.30	04:35	1.64	1.46	04:15	0.044	16:05	0.153	0.103	0.103	0.22
01/09/2021	03:45	1.16	12:35	2.70	2.00	07:55	1.30	08:25	1.74	1.47	03:45	0.047	12:35	0.160	0.104	0.104	-
01/10/2021	04:25	1.13	11:40	2.48	1.85	07:25	1.15	15:35	1.65	1.45	04:35	0.042	14:05	0.148	0.092	0.092	0.07
01/11/2021	04:45	0.97	20:20	2.63	2.04	05:50	1.21	07:20	1.82	1.44	04:45	0.037	20:20	0.157	0.105	0.105	1.06
01/12/2021	01:40	1.85	09:50	2.84	2.36	01:50	1.37	18:25	1.72	1.50	01:35	0.090	09:45	0.172	0.133	0.133	2.10
01/13/2021	23:25	1.62	09:30	2.70	2.16	11:30	1.44	19:55	1.99	1.65	04:25	0.085	17:15	0.186	0.128	0.128	0.09
01/14/2021	04:10	1.41	12:35	2.68	2.04	11:55	1.38	08:35	1.92	1.61	04:10	0.068	15:15	0.163	0.114	0.114	0.01
01/15/2021	03:45	1.39	12:25	2.55	2.07	10:20	1.37	20:10	1.74	1.50	04:05	0.062	17:30	0.147	0.110	0.110	0.09
01/16/2021	02:40	1.41	11:55	2.79	2.07	08:15	1.26	19:35	1.79	1.48	02:40	0.058	11:55	0.166	0.109	0.109	-
01/17/2021	06:30	1.37	17:15	2.44	1.91	02:35	1.40	03:45	1.94	1.62	01:45	0.062	17:30	0.141	0.104	0.104	0.10
01/18/2021	03:50	1.32	13:25	2.67	2.01	17:15	1.36	19:05	1.75	1.53	05:05	0.055	15:35	0.157	0.107	0.107	-
01/19/2021	03:55	1.23	08:20	2.44	1.81	14:50	1.31	16:30	1.96	1.59	03:45	0.049	16:40	0.146	0.095	0.095	0.01
01/20/2021	03:50	1.09	11:35	2.52	1.95	16:45	1.35	05:35	1.91	1.54	03:50	0.046	11:30	0.144	0.102	0.102	-
01/21/2021	03:45	1.15	13:45	2.55	1.96	05:05	1.34	06:20	1.78	1.50	03:40	0.047	12:55	0.143	0.101	0.101	0.11
01/22/2021	03:30	1.09	14:45	2.50	1.94	04:35	1.33	23:20	1.68	1.47	03:30	0.040	17:25	0.142	0.099	0.099	-
01/23/2021	03:40	0.98	10:55	2.68	1.90	06:45	1.31	00:25	1.69	1.47	03:40	0.035	10:55	0.155	0.096	0.096	-
01/24/2021	05:05	1.04	13:10	2.42	1.82	07:35	1.26	08:10	1.68	1.48	05:05	0.039	19:15	0.136	0.091	0.091	0.16
01/25/2021	03:10	1.06	13:25	2.57	1.90	09:00	1.28	22:45	1.83	1.51	03:20	0.040	14:20	0.150	0.098	0.098	0.04
01/26/2021	03:45	1.01	08:45	2.41	1.75	02:55	0.96	15:25	1.86	1.58	02:55	0.030	08:40	0.144	0.093	0.093	-
01/27/2021	04:30	0.92	17:25	2.53	1.74	23:50	1.06	15:45	1.89	1.60	02:55	0.026	17:30	0.149	0.092	0.092	0.14
01/28/2021	03:40	0.92	09:25	3.09	1.87	02:15	0.94	09:20	2.14	1.47	02:15	0.026	09:20	0.228	0.095	0.095	0.24
01/29/2021	02:50	1.07	17:00	2.52	1.88	22:50	1.35	10:15	1.70	1.50	02:50	0.041	10:20	0.148	0.097	0.097	0.03
01/30/2021	04:15	1.09	10:30	2.57	1.89	06:35	1.18	00:00	1.65	1.44	04:00	0.040	09:55	0.144	0.094	0.094	0.07
01/31/2021	03:45	1.09	10:30	2.51	1.82	06:30	1.28	09:55	1.66	1.45	03:45	0.039	10:25	0.145	0.090	0.090	0.12
02/01/2021	03:45	1.14	15:00	2.48	1.93	08:10	1.26	01:15	1.71	1.43	02:30	0.045	13:25	0.137	0.095	0.095	0.82
02/02/2021	02:00	1.19	10:10	2.61	2.01	04:00	1.19	18:45	1.57	1.38	02:00	0.043	18:50	0.146	0.098	0.098	0.31
02/03/2021	03:15	1.08	12:25	2.54	1.90	12:25	1.19	05:35	1.76	1.44	03:15	0.039	08:40	0.129	0.093	0.093	0.06
02/04/2021	02:55	1.08	12:05	2.50	1.85	06:00	1.25	22:35	1.65	1.43	02:55	0.038	17:40	0.138	0.090	0.090	0.07
02/05/2021	02:50	1.00	09:35	2.52	1.90	05:55	1.25	22:15	1.72	1.49	02:50	0.036	17:35	0.141	0.096	0.096	0.01
02/06/2021	03:05	0.97	10:50	2.91	1.87	03:15	1.26	00:00	1.72	1.50	03:05	0.034	10:50	0.174	0.096	0.096	0.01
02/07/2021	02:30	1.01	10:00	2.69	1.76	01:55	1.29	05:00	1.70	1.46	01:25	0.036	10:00	0.157	0.084	0.084	-
02/08/2021	04:05	0.87	09:55	2.42	1.80	01:40	1.20	05:55	1.89	1.45	04:05	0.028	09:50	0.134	0.087	0.087	-
02/09/2021	03:20	0.96	16:20	2.32	1.78	01:15	1.21	18:10	1.70	1.42	03:20	0.034	18:25	0.130	0.084	0.084	-
02/10/2021	03:35	0.75	15:35	2.55	1.76	05:45	1.22	05:35	1.76	1.47	03:35	0.025	15:35	0.154	0.086	0.086	-
02/11/2021	03:45	0.96	14:55	2.42	1.80	03:55	1.08	06:40	1.63	1.41	03:55	0.029	19:25	0.138	0.086	0.086	-
02/12/2021	02:20	1.01	12:35	2.43	1.74	05:15	0.73	15:00	1.74	1.42	05:15	0.025	16:50	0.135	0.083	0.083	-
02/13/2021	03:00	1.00	11:25	2.32	1.67	01:40	1.03	08:45	2.07	1.45	05:20	0.031	11:25	0.135	0.078	0.078	0.08
02/14/2021	04:10	0.94	14:30	2.38	1.74	02:20	0.88	09:10	1.65	1.43	02:20	0.027	11:15	0.135	0.084	0.084	0.71
02/15/2021	03:30	1.14	00:35	1.75	1.49	02:50	1.35	03:55	1.57	1.48	03:35	0.044	04:00	0.087	0.067	0.012	0.78
02/16/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.07
02/17/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/18/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.09
02/19/2021	23:15	1.33	15:50	2.52	2.11	21:05	1.31	11:15	1.65	1.43	23:15	0.058	15:50	0.140	0.107	0.062	0.17
02/20/2021	04:45	0.85	11:40	2.64	1.80	00:40	1.24	07:30	1.80	1.51	04:45	0.034	11:40	0.147	0.091	0.091	0.07
02/21/2021	01:30	1.32	11:15	2.48	1.86	03:45	0.97	11:35	1.71	1.38	03:05	0.040	11:15	0.152	0.088	0.088	0.42
02/22/2021	02:25	0.98	16:30	2.55	1.94	05:25	1.17	18:35	1.72	1.40	02:25	0.033	18:35	0.151	0.094	0.094	0.98
02/23/2021	03:35	1.08	10:05	2.60	1.97	08:05	1.13	10:30	1.64	1.36	03:35	0.037	10:05	0.142	0.094	0.094	0.27
02/24/2021	02:45	1.00	17:20	2.71	1.95	10:30	1.25	05:10	1.79	1.45	02:45	0.038	17:25	0.153	0.097	0.097	-
02/25/2021	02:15	0.80	17:20	2.53	1.88	11:20	1.34	11:05	1.91	1.51	02:15	0.026	08:20	0.148	0.097	0.097	0.18
02/26/2021	03:35	1.00	17:40	2.61	1.91	02:00	1.27	23:35	1.77	1.48	03:35	0.037	17:40	0.148	0.097	0.097	0.10
02/27/2021	02:50	0.96	12:20	2.68	1.84	06:00	1.18	07:50	1.76	1.48	02:50	0.031	11:30	0.154	0.093	0.093	0.02
02/28/2021	02:20	0.92	11:40	2.47	1.69	06:05	1.20	08:40	1.86	1.52	02:20	0.031	10:45	0.146	0.085	0.085	0.02
03/01/2021	01:20	0.89	16:45	2.70	1.82	08:50	1.21	04:40	1.69	1.45	01:40	0.028	16:45	0.153	0.089	0.089	-
03/02/2021	02:45	0.76	17:40	2.44	1.74	00:35	1.24	05:40	1.67	1.48	02:45	0.023	17:40	0.135	0.085	0.085	-
03/03/2021	03:25	0.84	17:15	2.62	1.76	05:30	1.18	20:05	1.70	1.47	03:25	0.024	17:10	0.149	0.086	0.086	-
03/04/2021	04:35	0.88	12:35	2.57	1.73	04:25	1.19	05:35	1.83	1.48	03:05	0.028	12:35	0.143	0.085	0.085	0.20
03/05/2021	02:00	0.73	14:40	2.53	1.73	03:40	1.16	05:40	1.75	1.43	02:00	0.021	14:40	0.134	0.082	0.082	0.05
03/06/2021	02:40	1.22	11:45	2.65	1.85	05:15	0.68	19:55	1.65	1.34	05:15	0.032	11:40	0.152	0.085	0.085	-
03/07/2021	04:10	0.90	10:55	2.55	1.85	19:40	1.08	11:25	1.57	1.30	02:45	0.027	10:50	0.141	0.083	0.083	0.04
03/08/2021	04:35	1.02	16:40	2.93	1.93	02:45	1.07	19:45	1.68	1.30	04:35	0.031	16:40	0.163	0.087	0.087	-
03/09/2021	02:35	0.80	17:45	2.59	1.73	01:40	1.11	08:25	1.59	1.40	02:35	0.024	17:25	0.132	0.079	0.079	0.01
03/10/2021	03:10	0.72	11:45	2.57	1.86	16:15	1.11	04:45	1.56	1.33	03:10	0.021	12:50	0.141	0.085	0.085	-
03/11/2021	04:20	1.07	16:35	2.78	2.01	02:50	1.00	22:55	1.41	1.21	04:20	0.032	16:30	0.136	0.086	0.086	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	02:35	1.02	17:30	2.65	1.89	04:10	0.98	19:55	1.52	1.26	02:35	0.030	17:35	0.133	0.083	0.083	-
03/13/2021	04:10	0.86	10:10	2.88	1.85	06:05	1.06	05:40	1.54	1.32	04:10	0.027	10:10	0.160	0.084	0.084	-
03/14/2021	03:10	1.08	11:10	2.45	1.81	05:45	1.02	12:20	1.50	1.32	04:20	0.034	20:05	0.133	0.081	0.081	0.30
03/15/2021	03:20	0.91	15:15	2.69	1.84	04:30	1.12	18:55	1.50	1.32	03:20	0.028	15:15	0.142	0.083	0.083	-
03/16/2021	01:15	0.84	10:55	2.50	1.77	03:00	1.07	14:50	1.67	1.34	01:15	0.024	14:55	0.138	0.080	0.080	-
03/17/2021	01:50	0.84	08:40	2.48	1.78	23:15	1.09	18:55	1.52	1.34	01:45	0.025	12:35	0.130	0.080	0.080	-
03/18/2021	02:45	0.95	11:45	2.59	1.83	22:20	0.90	12:05	1.57	1.32	01:45	0.031	11:45	0.144	0.082	0.082	0.11
03/19/2021	02:35	1.08	10:35	2.77	2.04	23:45	0.96	07:30	1.43	1.17	02:35	0.030	08:35	0.128	0.085	0.085	0.03
03/20/2021	01:05	1.24	10:55	2.80	2.03	03:05	0.79	09:15	1.46	1.12	01:50	0.029	10:55	0.143	0.083	0.083	0.17
03/21/2021	23:25	1.09	11:20	2.79	2.01	00:30	0.88	08:20	1.42	1.16	23:25	0.032	08:25	0.139	0.083	0.083	0.07
03/22/2021	01:55	1.16	12:55	2.65	1.98	03:20	0.97	07:25	1.41	1.17	01:50	0.035	19:05	0.133	0.081	0.081	0.11
03/23/2021	01:30	0.92	11:05	3.04	1.79	07:50	0.99	19:00	1.69	1.34	03:05	0.030	11:05	0.146	0.080	0.080	-
03/24/2021	00:50	0.90	11:35	2.66	1.80	21:25	0.97	15:30	1.76	1.41	00:05	0.028	14:30	0.151	0.086	0.086	0.34
03/25/2021	03:20	0.81	12:15	2.31	1.65	22:50	1.00	13:20	1.76	1.48	03:25	0.026	12:10	0.146	0.081	0.081	0.27
03/26/2021	02:10	0.73	07:55	2.50	1.74	19:50	1.04	07:20	1.69	1.48	02:10	0.021	07:55	0.152	0.088	0.088	-
03/27/2021	04:30	0.79	11:00	2.39	1.65	21:35	0.92	14:45	1.72	1.43	04:30	0.024	11:00	0.145	0.078	0.078	-
03/28/2021	02:55	0.96	12:20	2.33	1.67	06:35	0.89	14:10	1.74	1.44	02:55	0.028	12:20	0.137	0.080	0.080	0.37
03/29/2021	02:30	0.70	12:15	2.48	1.71	21:45	1.14	19:15	1.66	1.47	02:30	0.018	12:15	0.142	0.084	0.084	-
03/30/2021	02:30	0.71	09:30	2.33	1.71	22:20	1.10	17:15	1.74	1.45	02:30	0.019	09:20	0.129	0.083	0.083	-
03/31/2021	01:30	0.85	11:55	2.26	1.70	23:55	1.03	19:10	1.77	1.45	01:25	0.027	19:10	0.136	0.082	0.082	-
04/01/2021	23:55	1.05	11:55	2.53	1.85	00:10	1.00	18:50	1.71	1.35	23:55	0.035	15:45	0.131	0.085	0.085	-
04/02/2021	01:00	0.56	07:20	2.35	1.65	23:05	1.13	03:35	1.72	1.46	01:00	0.014	07:20	0.129	0.078	0.078	-
04/03/2021	02:40	0.67	10:55	2.54	1.62	00:20	1.06	16:50	1.76	1.43	02:40	0.021	10:55	0.150	0.076	0.076	-
04/04/2021	02:00	0.66	21:25	2.13	1.56	23:25	0.90	09:20	1.68	1.37	02:00	0.017	11:10	0.123	0.068	0.068	-
04/05/2021	23:50	1.01	13:15	2.31	1.73	02:50	0.82	16:10	1.72	1.36	23:55	0.021	13:25	0.143	0.080	0.080	-
04/06/2021	01:40	0.82	12:15	2.36	1.70	01:15	0.70	10:55	1.88	1.36	00:45	0.016	11:10	0.136	0.077	0.077	-
04/07/2021	02:40	0.75	09:35	2.49	1.68	01:10	0.53	20:35	1.72	1.31	01:10	0.012	16:20	0.114	0.072	0.072	0.22
04/08/2021	02:45	0.71	15:00	2.33	1.70	03:10	0.73	18:40	1.60	1.31	02:45	0.018	13:20	0.125	0.074	0.074	-
04/09/2021	01:45	0.66	10:10	2.33	1.67	00:00	1.14	03:20	1.72	1.42	01:45	0.019	13:45	0.117	0.077	0.077	0.03
04/10/2021	02:45	0.86	09:50	2.57	1.70	05:15	0.97	06:10	1.69	1.39	05:15	0.022	09:50	0.135	0.078	0.078	0.02
04/11/2021	02:50	0.80	11:25	2.18	1.53	01:45	0.81	06:15	1.69	1.44	01:10	0.017	09:50	0.114	0.071	0.071	-
04/12/2021	01:45	0.84	10:50	2.35	1.70	01:50	0.97	22:55	1.57	1.38	01:50	0.020	19:30	0.121	0.077	0.077	-
04/13/2021	01:50	0.77	11:25	2.43	1.73	00:55	0.86	06:55	1.63	1.30	03:05	0.017	17:45	0.122	0.076	0.076	-
04/14/2021	02:00	0.72	12:00	2.44	1.71	23:20	0.87	04:45	1.65	1.34	01:30	0.021	12:00	0.125	0.075	0.075	-
09/22/2020	23:55	1.21	20:10	2.23	1.91	23:15	0.97	16:10	1.76	1.45	23:15	0.047	20:10	0.127	0.094	0.057	-
09/23/2020	03:00	0.88	10:55	2.52	1.87	02:40	1.01	00:30	1.76	1.34	02:20	0.026	18:45	0.138	0.086	0.086	-
09/24/2020	03:55	0.85	08:40	2.38	1.74	05:25	1.05	15:00	1.87	1.41	01:35	0.025	12:55	0.138	0.082	0.082	-
09/25/2020	02:30	0.85	11:55	2.89	1.85	09:55	0.98	07:25	1.91	1.37	03:35	0.025	07:25	0.196	0.086	0.086	-
09/26/2020	02:35	0.95	11:25	2.52	1.80	02:30	0.76	18:10	1.96	1.38	02:35	0.020	18:10	0.182	0.087	0.087	-
09/27/2020	03:50	0.79	10:30	2.43	1.78	23:40	0.79	10:25	1.75	1.37	03:50	0.023	10:30	0.158	0.083	0.083	-
09/28/2020	02:10	1.06	10:25	2.36	1.84	02:55	0.65	10:05	1.58	1.26	02:55	0.018	10:20	0.130	0.080	0.080	-
09/29/2020	02:25	0.69	15:50	2.48	1.80	02:20	0.72	04:40	1.83	1.32	02:20	0.012	19:05	0.137	0.080	0.080	-
09/30/2020	02:35	0.91	10:50	3.47	1.82	23:45	0.92	13:55	1.72	1.41	02:25	0.029	10:50	0.247	0.088	0.088	-
10/01/2020	02:05	0.82	18:55	2.31	1.74	02:05	0.64	10:25	1.74	1.35	02:05	0.012	10:30	0.133	0.079	0.079	-
10/02/2020	02:20	0.79	09:10	2.40	1.78	02:15	0.77	03:35	1.65	1.31	02:15	0.014	15:55	0.129	0.081	0.081	-
10/03/2020	04:20	0.70	11:05	2.57	1.72	06:40	0.70	05:05	1.76	1.40	00:40	0.016	11:30	0.142	0.081	0.081	0.01
10/04/2020	02:30	0.91	13:00	2.30	1.76	02:15	0.54	11:35	1.72	1.35	02:15	0.013	13:00	0.143	0.082	0.082	0.01
10/05/2020	01:20	1.08	09:55	2.56	1.84	00:10	0.67	16:30	1.70	1.27	00:25	0.021	16:40	0.135	0.080	0.080	-
10/06/2020	23:15	0.84	15:40	2.57	1.75	01:20	0.55	06:15	1.72	1.30	01:25	0.012	18:50	0.151	0.079	0.079	-
10/07/2020	01:25	0.89	15:40	2.60	1.83	00:10	0.61	13:25	1.85	1.28	01:35	0.016	19:05	0.139	0.082	0.082	-
10/08/2020	03:40	0.57	10:10	2.61	1.72	01:35	0.56	14:40	1.80	1.36	01:35	0.007	10:05	0.130	0.079	0.079	-
10/09/2020	04:10	0.58	09:15	2.40	1.69	01:35	0.37	13:25	1.74	1.37	01:30	0.007	09:35	0.131	0.079	0.079	0.64
10/10/2020	04:00	1.05	11:10	2.52	1.78	23:10	0.84	00:40	1.89	1.45	23:10	0.028	10:45	0.144	0.087	0.087	1.04
10/11/2020	02:40	0.73	16:25	2.52	1.81	02:30	0.53	08:35	1.66	1.33	02:35	0.009	11:15	0.149	0.085	0.085	0.53
10/12/2020	23:55	0.95	12:20	2.48	1.79	04:55	0.67	07:30	1.76	1.27	00:50	0.019	18:20	0.144	0.079	0.079	-
10/13/2020	03:10	0.85	10:05	2.37	1.79	01:50	0.82	03:40	1.73	1.42	01:35	0.019	18:45	0.139	0.087	0.087	0.61
10/14/2020	02:00	0.74	12:20	2.29	1.70	03:20	0.84	15:05	1.68	1.37	03:30	0.017	20:05	0.125	0.078	0.078	-
10/15/2020	03:40	0.79	09:45	2.34	1.70	00:10	0.69	11:40	1.74	1.40	01:10	0.017	11:40	0.127	0.079	0.079	-
10/16/2020	03:00	0.85	08:50	2.41	1.70	03:00	0.83	04:25	1.77	1.39	03:00	0.016	16:25	0.132	0.079	0.079	-
10/17/2020	04:50	0.71	10:15	2.50	1.70	05:50	0.58	03:50	1.66	1.35	04:50	0.011	10:10	0.139	0.078	0.078	0.01
10/18/2020	02:05	0.83	12:00	2.35	1.71	02:00	0.59	12:00	1.74	1.35	02:05	0.011	12:00	0.152	0.079	0.079	0.03
10/19/2020	01:15	0.62	09:15	2.30	1.69	02:20	0.60	04:15	1.83	1.41	01:15	0.009	18:50	0.144	0.079	0.079	0.05
10/20/2020	03:35	0.57	09:05	2.28	1.70	01:40	0.48	19:40	1.71	1.37	03:35	0.007	19:05	0.135	0.079	0.079	-
10/21/2020	01:50	0.77	15:45	2.27	1.67	01:45	0.60	12:15	1.67	1.36	01:50	0.010	15:40	0.131	0.076	0.076	0.01
10/22/2020	02:05	0.66	11:55	2.28	1.67	02:00	0.49	18:15	1.78	1.38	02:00	0.007	16:10	0.134	0.077	0.077	-
10/23/2020	02:05	0.79	11:10	3.29	1.69	02:20	0.86	11:05	1.98	1.41	02:05	0.015	11:10	0.228	0.080	0.080	0.20
10/24/2020	00:20	0.88	10:35	2.47	1.73	00:15	0.63	14:20	1.89	1.37	00:15	0.013	10:30	0.151	0.082	0.082	0.02
10/25/2020	03:00	0.67	09:35	2.66	1.71	03:10	0.84	07:55	1.86	1.41	03:00	0.012	09:35	0.180	0.081	0.081	-
10/26/2020	01:35	0.66	10:10	2.65	1.74	01:35	0.44	18:25	1.91	1.39	01:35	0.006	18:30	0.142	0.082	0.082	-
10/27/2020	01:50	0.64	11:10	2.36	1.67	04:10	0.49	10:00	1.92	1.38	01:35	0.011	11:10	0.128	0.077	0.077	-
10/28/2020	04:15	0.73	19:20	2.20	1.65	03:10	0.60	04:20	1.77	1.39	03:15	0.010	19:15	0.125	0.076	0.076	-
10/29/2020	03:50	0.78	12:20	2.39	1.67	03:20	0.82	05:25	2.05	1.45	04:00	0.015	19:10	0.154	0.080	0.080	-
10/30/2020	03:35	0.90	16:05	2.32	1.71	00:25	0.79	06:55	1.83	1.39	03:30	0.018	06:55	0.139	0.080	0.080	0.10
10/31/2020	05:25	0.84	09:20	2.50	1.69	04:15	0.61	20:30	1.84	1.36	04:10	0.015	09:15	0.140	0.078	0.078	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/01/2020	05:20	0.66	10:15	2.30	1.53	04:35	0.48	11:45	2.38	1.67	04:35	0.007	10:45	0.172	0.087	0.087	-
11/02/2020	04:00	0.54	08:35	2.13	1.43	04:10	0.94	08:30	2.39	2.00	03:55	0.010	08:35	0.170	0.091	0.091	-
11/03/2020	03:00	0.61	06:55	2.51	1.71	03:15	0.52	06:40	2.16	1.47	03:15	0.006	17:15	0.136	0.082	0.082	0.83
11/04/2020	03:30	0.97	06:55	2.43	1.74	02:50	0.67	18:50	1.89	1.33	03:20	0.018	06:55	0.141	0.079	0.079	0.09
11/05/2020	03:45	0.87	14:30	2.32	1.75	03:30	0.55	05:40	1.79	1.38	03:30	0.012	14:25	0.121	0.082	0.082	0.34
11/06/2020	02:40	0.78	08:40	2.40	1.68	03:45	0.52	04:50	1.72	1.38	03:20	0.010	17:00	0.138	0.077	0.077	0.10
11/07/2020	03:50	1.05	11:50	2.52	1.68	02:50	0.78	15:10	1.76	1.35	02:50	0.022	11:50	0.145	0.076	0.076	0.07
11/08/2020	06:30	0.89	10:45	2.47	1.67	02:45	0.86	06:45	1.67	1.39	06:25	0.020	10:45	0.153	0.077	0.077	0.01
11/09/2020	04:00	0.67	13:35	2.19	1.59	02:45	0.81	18:00	1.95	1.46	02:45	0.016	14:10	0.117	0.074	0.074	0.04
11/10/2020	03:10	0.69	12:35	2.27	1.60	04:10	0.59	14:00	1.85	1.42	03:10	0.014	19:20	0.144	0.075	0.075	0.03
11/11/2020	03:45	0.59	12:50	2.62	1.65	03:55	0.73	08:40	1.80	1.38	03:55	0.008	18:15	0.164	0.076	0.076	-
11/12/2020	04:50	0.58	21:40	2.29	1.62	04:40	0.52	07:40	1.82	1.33	04:45	0.006	21:40	0.132	0.072	0.072	0.16
11/13/2020	03:00	0.81	15:10	2.93	1.70	03:05	0.57	12:55	1.73	1.38	03:05	0.011	15:10	0.174	0.079	0.079	0.38
11/14/2020	04:10	0.62	12:35	2.68	1.63	04:20	0.60	07:45	1.95	1.45	04:10	0.008	12:30	0.169	0.078	0.078	0.47
11/15/2020	04:10	0.74	17:55	3.70	1.69	04:25	0.38	17:50	2.48	1.36	04:20	0.006	17:55	0.351	0.080	0.080	0.19
11/16/2020	04:05	0.83	11:05	2.46	1.68	04:00	0.80	17:55	1.70	1.39	04:00	0.016	11:05	0.151	0.078	0.078	0.31
11/17/2020	03:55	0.86	12:25	2.34	1.69	04:00	0.71	08:15	1.84	1.42	04:00	0.015	19:55	0.134	0.080	0.080	0.20
11/18/2020	03:05	0.85	12:50	2.20	1.58	03:05	0.60	15:50	2.20	1.53	03:05	0.012	12:15	0.140	0.080	0.080	0.30
11/19/2020	04:30	0.62	15:25	2.71	1.63	04:25	0.79	15:20	2.35	1.50	04:30	0.010	15:25	0.138	0.079	0.079	0.50
11/20/2020	04:10	0.78	12:50	2.38	1.67	04:10	0.48	08:20	2.03	1.33	04:10	0.008	12:45	0.140	0.075	0.075	0.01
11/21/2020	03:00	0.74	10:50	2.55	1.70	04:45	0.52	08:35	1.74	1.31	03:00	0.010	10:40	0.156	0.078	0.078	-
11/22/2020	07:10	0.75	12:30	2.31	1.66	05:30	0.79	07:10	1.80	1.35	05:30	0.014	12:20	0.134	0.075	0.075	0.21
11/23/2020	02:25	0.92	13:40	2.33	1.75	02:20	0.75	15:25	1.70	1.40	02:25	0.017	13:30	0.128	0.083	0.083	0.14
11/24/2020	04:35	0.79	13:30	4.03	1.73	02:30	0.64	12:15	2.17	1.36	02:30	0.012	13:30	0.286	0.081	0.081	0.21
11/25/2020	03:45	0.84	09:20	2.18	1.64	03:40	0.60	13:50	1.86	1.42	03:40	0.013	17:15	0.132	0.078	0.078	0.05
11/26/2020	06:35	1.03	13:45	2.51	1.72	06:40	0.41	07:45	1.86	1.36	06:40	0.011	13:45	0.168	0.080	0.080	0.02
11/27/2020	05:50	0.80	11:35	2.51	1.68	03:55	0.62	07:55	1.86	1.39	05:45	0.013	11:25	0.151	0.079	0.079	-
11/28/2020	01:45	0.79	11:40	2.38	1.69	01:35	0.66	11:10	1.66	1.38	01:40	0.014	11:30	0.143	0.079	0.079	0.05
11/29/2020	05:05	0.70	19:05	2.19	1.58	02:35	0.65	05:40	1.84	1.40	02:30	0.012	19:05	0.123	0.072	0.072	-
11/30/2020	03:35	0.63	11:25	2.32	1.73	02:15	0.69	00:55	1.98	1.38	02:35	0.010	11:25	0.129	0.081	0.081	0.36
12/01/2020	03:15	0.84	16:45	2.39	1.72	04:30	0.61	17:35	1.64	1.35	04:30	0.013	16:45	0.144	0.079	0.079	-
12/02/2020	02:25	0.87	16:20	2.47	1.75	06:45	0.73	08:15	1.67	1.38	06:45	0.018	16:15	0.147	0.083	0.083	0.01
12/03/2020	03:00	0.97	18:30	2.42	1.80	03:00	0.73	22:30	1.93	1.38	03:00	0.017	18:25	0.148	0.085	0.085	-
12/04/2020	04:55	1.10	15:15	2.34	1.86	01:30	0.79	07:25	1.88	1.35	03:25	0.028	15:10	0.131	0.087	0.087	-
12/05/2020	01:30	1.10	11:00	2.82	1.92	04:45	0.64	18:45	1.62	1.29	04:50	0.020	12:25	0.150	0.088	0.088	0.03
12/06/2020	04:15	0.87	19:00	2.32	1.75	06:55	0.69	11:10	1.76	1.34	02:25	0.021	11:10	0.146	0.080	0.080	0.03
12/07/2020	03:30	1.11	17:25	2.46	1.84	03:00	0.74	19:50	1.71	1.34	02:35	0.027	17:20	0.140	0.085	0.085	-
12/08/2020	04:10	0.95	16:05	2.53	1.90	01:45	0.93	06:35	1.70	1.39	04:00	0.026	16:05	0.147	0.093	0.093	0.87
12/09/2020	02:55	1.01	18:35	2.61	1.93	02:45	0.92	09:40	1.59	1.30	02:45	0.024	18:30	0.155	0.088	0.088	0.17
12/10/2020	01:35	1.06	12:00	2.73	1.84	03:05	0.57	18:20	1.74	1.29	03:05	0.019	12:00	0.145	0.083	0.083	0.07
12/11/2020	03:35	0.85	13:50	2.36	1.80	03:25	0.62	08:15	1.59	1.35	03:25	0.014	13:45	0.131	0.084	0.084	0.02
12/12/2020	05:55	1.12	10:45	2.54	1.75	04:45	0.60	21:45	2.01	1.40	02:45	0.019	10:40	0.148	0.084	0.084	0.01
12/13/2020	04:50	0.90	09:50	2.36	1.75	00:35	0.69	09:45	2.37	1.44	00:35	0.023	10:35	0.141	0.085	0.085	0.24
12/14/2020	04:15	0.87	16:15	2.34	1.80	04:15	0.77	12:00	1.61	1.38	04:15	0.015	16:40	0.130	0.085	0.085	0.05
12/15/2020	03:50	1.08	16:20	2.41	1.84	23:35	1.17	07:35	1.76	1.46	02:40	0.043	16:45	0.142	0.091	0.091	0.58
12/16/2020	03:25	1.10	18:35	2.41	1.85	03:20	0.72	18:25	1.68	1.35	03:20	0.021	18:40	0.144	0.087	0.087	0.39
12/17/2020	02:30	1.11	17:30	2.55	1.85	23:30	0.89	12:55	1.80	1.41	01:25	0.038	17:30	0.151	0.089	0.089	0.08
12/18/2020	03:25	1.04	10:40	2.35	1.81	03:00	0.64	09:10	1.65	1.38	03:00	0.021	13:50	0.136	0.086	0.086	0.25
12/19/2020	02:20	1.07	13:10	2.49	1.85	03:10	0.59	09:40	1.63	1.30	03:10	0.019	13:05	0.146	0.085	0.085	0.37
12/20/2020	04:10	1.07	20:25	2.43	1.86	03:35	0.45	20:20	1.75	1.23	04:05	0.013	20:20	0.155	0.082	0.082	0.04
12/21/2020	04:20	1.04	16:20	2.48	1.87	03:30	0.95	17:25	1.72	1.41	03:35	0.030	16:20	0.142	0.091	0.091	1.07
12/22/2020	03:55	0.98	10:05	2.36	1.84	04:35	1.24	07:25	1.67	1.45	03:55	0.035	10:05	0.136	0.090	0.090	-
12/23/2020	02:50	0.94	14:25	2.44	1.82	05:25	1.19	07:00	1.64	1.43	02:50	0.032	12:50	0.141	0.088	0.088	-
12/24/2020	02:35	1.00	09:50	2.50	1.78	06:50	1.10	05:55	1.77	1.43	03:10	0.035	09:45	0.139	0.085	0.085	-
12/25/2020	06:15	1.06	11:10	2.27	1.74	02:35	0.99	18:50	1.70	1.34	03:40	0.037	12:10	0.130	0.076	0.076	0.49
12/26/2020	04:55	1.12	12:20	2.62	1.88	23:55	1.08	17:15	1.64	1.34	04:55	0.041	12:20	0.150	0.087	0.087	0.02
12/27/2020	04:55	0.98	11:50	2.55	1.83	07:55	1.04	05:00	1.98	1.38	05:50	0.037	12:00	0.140	0.085	0.085	0.13
12/28/2020	03:25	1.25	11:35	2.58	1.91	01:05	0.92	18:00	1.64	1.37	00:50	0.039	11:35	0.151	0.092	0.092	-
12/29/2020	03:15	0.79	11:25	2.59	1.89	06:00	1.10	18:10	1.71	1.48	03:15	0.025	13:25	0.160	0.097	0.097	0.14
12/30/2020	05:10	1.20	12:35	2.86	2.08	01:45	0.99	05:25	1.74	1.49	01:45	0.037	17:10	0.187	0.113	0.113	0.78
12/31/2020	02:05	1.26	11:10	2.85	2.11	11:10	1.24	07:15	1.81	1.51	02:50	0.051	14:20	0.177	0.115	0.115	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			17.381	30.65
Average	1.81	1.41	0.087	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES	AUB_A1D_30910

Site Address /Location:	35th St NE			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	Right lane closure needed	Latitude:	47°20'19.65"N	Pipe Size (H x W): 18.13 X 18.00	Pipe Shape: Circular
		Longitude:	122°13'20.72"W		

Manhole #: A1D30910	System Characteristics: Residential
Access: Drive	Traffic: Heavy









ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.11.325

Installation Information

Installation Date:	Installation Type:
Tuesday, September 22, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Downstream 5-10 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Time	
9:25:00 AM	
Depth of Flow (Wet DOF) (in)	
2.25	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
1.57	N/A
Silt (in)	Silt Type
0	

Hydraulic Comments:

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
10	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
Concrete	Good

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

AUB_A2_40805K

Site Commentary

SITE INFORMATION

Pipe	Elliptical (71.5 in H x 70 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	15.12	2.00	5.587
Minimum	9.17	1.29	1.708
Maximum	25.82	2.57	14.268
Min Time	10/04/2020 5:00:00 AM	10/04/2020 5:00:00 AM	10/04/2020 5:00:00 AM
Max Time	01/12/2021 8:00:00 PM	01/13/2021 2:00:00 AM	01/12/2021 9:00:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

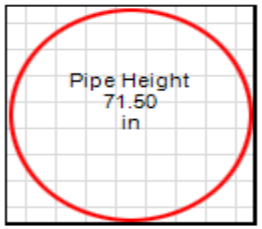
Percent Uptime	
DFINAL (in)	95.015
VFINAL (ft/s)	95.015
QFINAL (MGD - Total MG)	95.015

Hydrograph Report

AUB_A2_40805K

Flow Monitor

AUB_A2_40805K



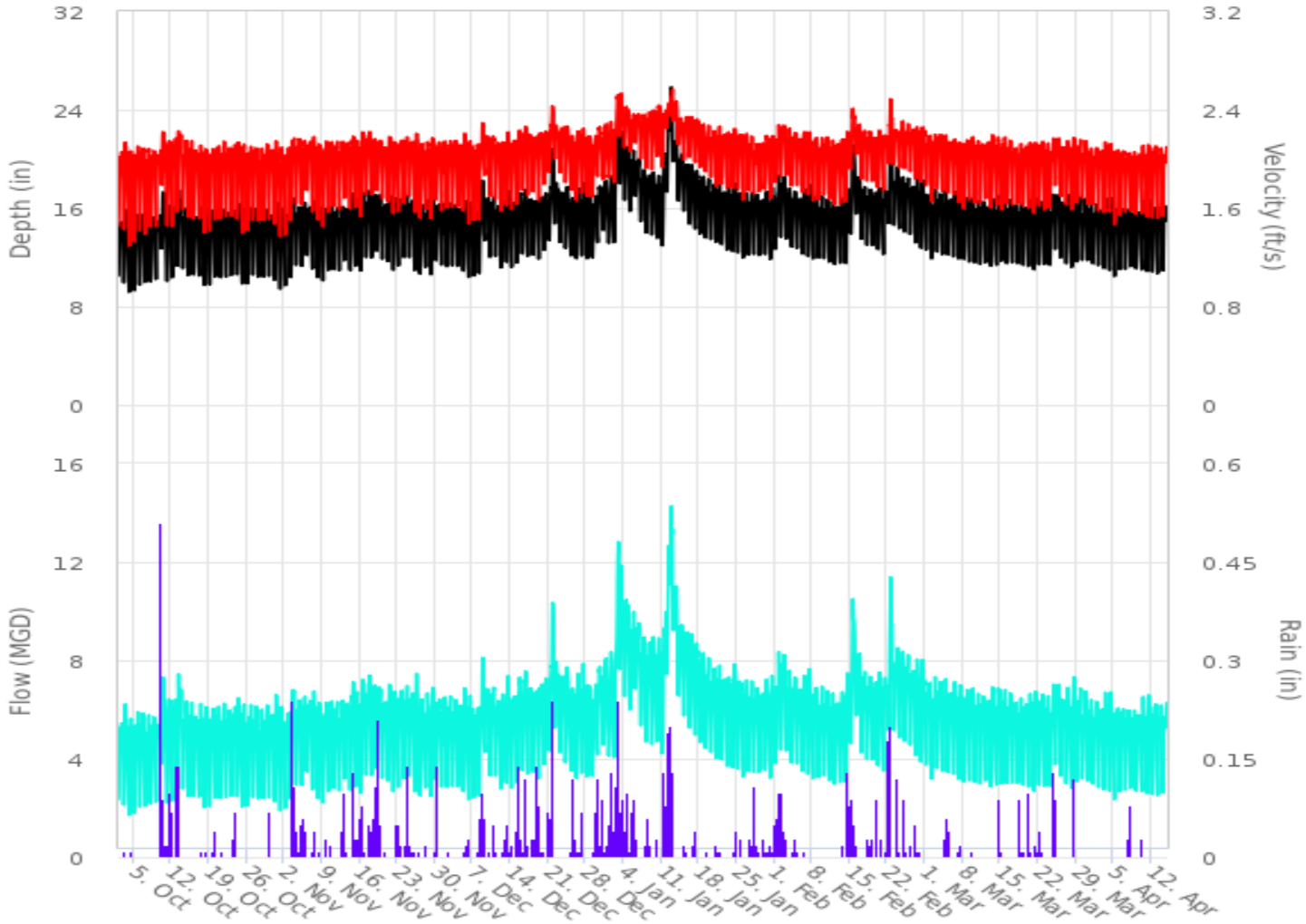
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
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Scattergraph Report

AUB_A2_40805K

Flow Monitor

AUB_A2_40805K

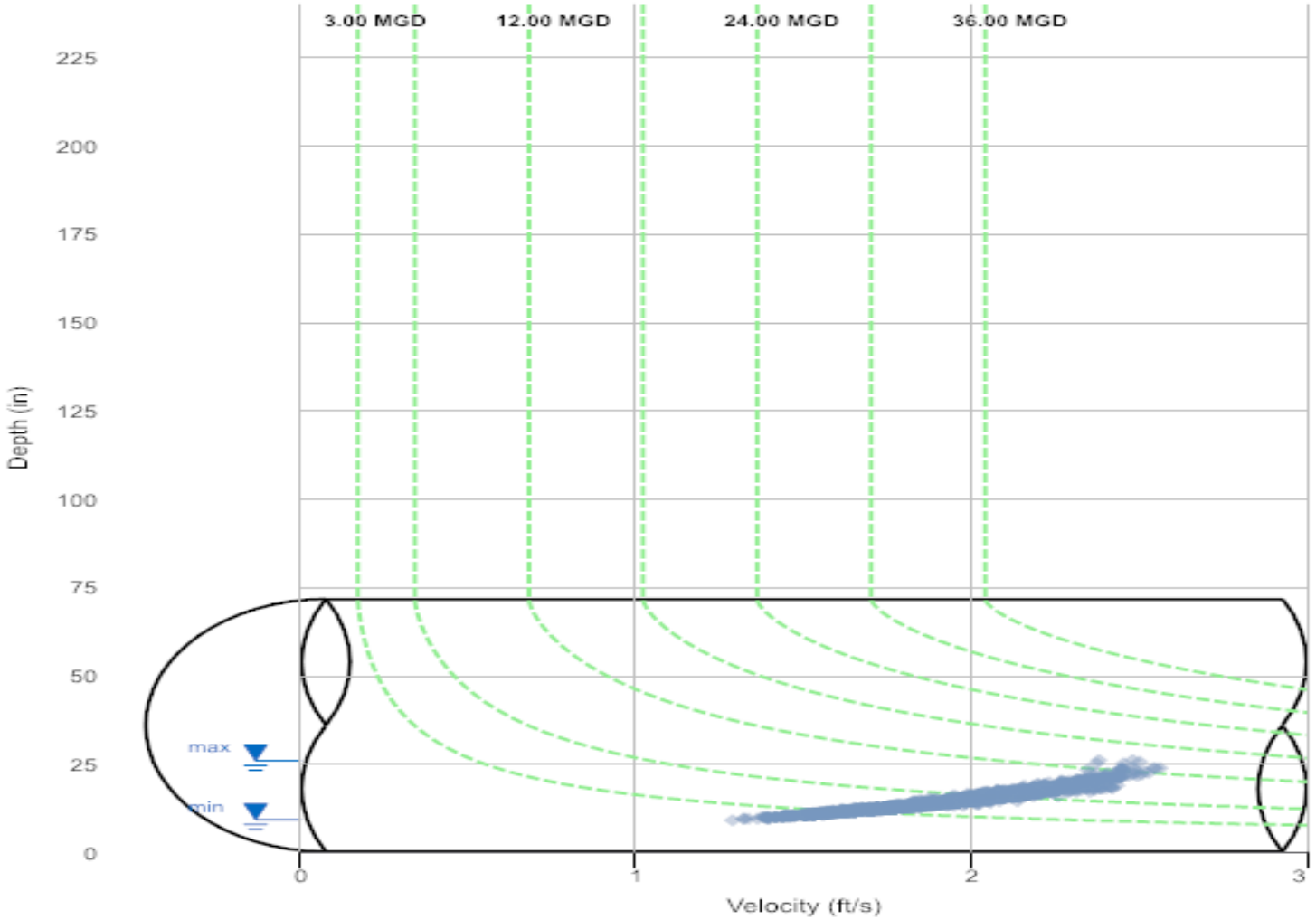
Pipe Height
71.50
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A2_40805KPipe: Elliptical (71.5 in H x 70 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	06:10	13.03	17:35	18.67	15.91	07:10	1.80	16:45	2.34	2.09	07:10	3.987	17:25	8.558	6.223	6.223	0.51
01/02/2021	06:30	13.08	23:55	22.98	17.22	05:40	1.77	22:00	2.57	2.14	07:20	3.968	23:55	12.470	7.234	7.234	1.69
01/03/2021	08:40	17.90	01:50	24.01	20.81	06:35	2.12	14:45	2.58	2.36	08:35	7.539	01:50	13.050	10.145	10.145	0.65
01/04/2021	05:05	16.56	13:45	21.20	19.33	04:30	2.04	13:35	2.45	2.29	05:05	6.416	13:50	10.710	8.884	8.884	0.48
01/05/2021	05:20	15.64	22:15	20.81	18.39	03:30	2.02	22:05	2.42	2.24	04:45	5.784	22:05	10.300	8.089	8.089	0.52
01/06/2021	05:45	16.92	20:00	20.06	18.87	05:15	2.10	13:15	2.40	2.28	05:15	6.725	19:55	9.718	8.512	8.512	0.22
01/07/2021	05:40	14.84	20:20	19.20	17.45	05:00	1.96	19:55	2.41	2.21	05:00	5.245	19:55	9.089	7.410	7.410	-
01/08/2021	06:00	13.87	19:40	18.78	16.98	04:30	1.90	19:50	2.42	2.20	05:55	4.584	19:50	8.928	7.124	7.124	0.22
01/09/2021	06:10	13.72	14:15	18.94	16.66	05:55	1.86	20:20	2.43	2.22	06:00	4.446	14:15	9.000	7.024	7.024	-
01/10/2021	06:55	13.42	14:45	18.73	16.43	06:50	1.95	12:10	2.48	2.26	06:55	4.467	14:45	9.088	7.013	7.013	0.07
01/11/2021	05:50	12.78	22:10	20.54	17.20	05:35	1.87	21:45	2.40	2.22	05:45	4.081	22:10	10.050	7.404	7.404	1.06
01/12/2021	02:35	17.23	20:55	25.96	22.11	02:15	2.25	22:50	2.55	2.40	02:35	7.359	21:25	14.490	11.194	11.194	2.10
01/13/2021	06:30	19.73	00:00	24.52	21.20	04:30	2.23	02:05	2.62	2.42	07:10	9.008	02:05	13.850	10.623	10.623	0.09
01/14/2021	05:50	16.52	20:00	20.39	18.82	03:50	2.07	15:15	2.37	2.25	03:50	6.481	19:35	9.614	8.370	8.370	0.01
01/15/2021	05:10	15.71	19:20	19.61	18.22	04:35	1.97	20:05	2.38	2.21	04:35	5.693	15:20	9.284	7.883	7.883	0.09
01/16/2021	06:00	14.58	13:55	19.74	17.41	06:40	1.95	13:15	2.38	2.21	06:40	5.103	14:00	9.304	7.398	7.398	-
01/17/2021	07:30	14.19	15:00	19.11	17.06	04:15	1.90	14:20	2.36	2.18	08:15	4.824	14:20	8.878	7.111	7.111	0.10
01/18/2021	05:55	13.84	20:35	18.62	16.73	05:55	1.90	21:30	2.32	2.14	05:55	4.554	21:30	8.460	6.806	6.806	-
01/19/2021	05:15	13.43	21:30	18.41	16.44	05:00	1.86	20:15	2.30	2.10	05:10	4.290	20:15	8.208	6.509	6.509	0.01
01/20/2021	06:10	13.29	20:30	18.02	16.14	05:05	1.81	21:20	2.27	2.08	06:10	4.100	20:30	7.895	6.285	6.285	-
01/21/2021	05:00	13.14	21:15	17.92	16.12	04:40	1.71	20:50	2.29	2.07	04:40	3.875	21:20	7.922	6.233	6.233	0.11
01/22/2021	05:20	12.92	21:15	17.30	15.83	04:20	1.74	20:05	2.22	2.05	04:20	3.854	20:05	7.304	6.032	6.032	-
01/23/2021	05:55	12.36	13:20	17.64	15.55	05:00	1.70	12:05	2.25	2.04	05:50	3.501	13:10	7.522	5.860	5.860	-
01/24/2021	05:35	12.33	14:10	18.07	15.71	06:25	1.72	13:45	2.28	2.07	06:25	3.535	13:45	7.941	6.062	6.062	0.16
01/25/2021	05:40	12.17	14:15	17.24	15.51	05:25	1.73	19:35	2.24	2.06	05:40	3.469	19:35	7.227	5.887	5.887	0.04
01/26/2021	05:05	11.70	21:35	17.24	15.21	05:05	1.62	21:25	2.23	2.01	05:05	3.051	21:25	7.267	5.615	5.615	-
01/27/2021	05:40	12.02	20:50	17.30	15.28	05:20	1.72	20:40	2.22	2.02	05:35	3.390	20:40	7.315	5.645	5.645	0.14
01/28/2021	05:20	11.99	21:15	17.13	15.38	04:15	1.69	20:40	2.16	1.97	05:20	3.309	20:40	6.997	5.562	5.562	0.24
01/29/2021	05:25	11.98	20:20	16.76	15.12	05:00	1.70	10:50	2.17	2.00	05:25	3.336	20:15	6.746	5.508	5.508	0.03
01/30/2021	07:05	12.01	14:15	17.38	15.12	06:55	1.72	13:55	2.23	2.02	07:00	3.382	14:15	7.397	5.586	5.586	0.07
01/31/2021	06:40	11.65	14:15	17.75	15.19	06:40	1.64	14:00	2.23	2.00	06:40	3.067	14:00	7.595	5.602	5.602	0.12
02/01/2021	05:15	12.51	20:40	18.75	15.78	04:05	1.78	20:35	2.32	2.04	04:15	3.686	20:35	8.545	5.983	5.983	0.82
02/02/2021	05:50	13.45	21:05	18.61	16.71	05:50	1.79	13:55	2.34	2.13	05:50	4.109	21:05	8.484	6.760	6.760	0.31
02/03/2021	05:45	13.41	21:00	17.71	16.13	04:50	1.84	20:45	2.27	2.07	05:10	4.247	21:00	7.711	6.233	6.233	0.06
02/04/2021	05:40	12.72	20:40	17.42	15.61	04:40	1.73	21:40	2.25	2.05	04:40	3.719	21:00	7.422	5.913	5.913	0.07
02/05/2021	05:10	12.56	20:20	16.81	15.39	04:45	1.70	12:35	2.21	2.03	06:05	3.612	19:55	6.892	5.722	5.722	0.01
02/06/2021	06:35	12.04	13:35	17.62	15.39	05:30	1.69	16:35	2.26	2.03	06:35	3.342	13:40	7.479	5.763	5.763	0.01
02/07/2021	07:05	11.88	14:25	17.95	15.30	05:45	1.65	13:00	2.26	2.01	05:45	3.194	13:05	7.785	5.673	5.673	-
02/08/2021	05:20	11.64	20:55	17.01	15.09	05:10	1.62	20:10	2.19	1.97	05:10	3.064	20:55	7.029	5.428	5.428	-
02/09/2021	05:00	11.60	22:05	16.98	14.87	05:00	1.63	21:10	2.22	1.96	05:00	3.039	21:10	7.095	5.297	5.297	-
02/10/2021	04:55	11.72	21:05	16.76	14.79	04:50	1.68	20:25	2.21	1.99	04:55	3.182	21:00	6.887	5.328	5.328	-
02/11/2021	05:20	11.50	21:05	16.68	14.70	05:25	1.63	20:55	2.19	1.98	05:25	2.993	21:00	6.841	5.251	5.251	-
02/12/2021	05:35	11.14	20:50	16.13	14.56	05:30	1.57	15:10	2.17	1.96	05:35	2.769	15:10	6.360	5.143	5.143	-
02/13/2021	05:35	11.33	15:25	16.84	14.54	05:25	1.59	14:55	2.23	1.95	05:30	2.860	14:55	6.882	5.119	5.119	0.08
02/14/2021	07:15	11.14	14:30	17.67	14.91	05:55	1.61	14:45	2.26	1.98	07:10	2.856	14:45	7.605	5.430	5.430	0.71
02/15/2021	06:15	13.82	15:20	21.16	17.71	07:40	1.84	15:05	2.43	2.19	06:00	4.501	15:15	10.610	7.624	7.624	0.78
02/16/2021	05:35	15.50	00:00	19.03	17.50	06:05	1.99	14:25	2.34	2.18	06:05	5.630	00:00	8.677	7.339	7.339	0.07
02/17/2021	05:00	13.19	20:10	17.73	16.16	04:05	1.78	19:40	2.28	2.09	04:50	4.059	21:10	7.691	6.323	6.323	-
02/18/2021	05:30	12.74	21:45	17.62	15.85	03:35	1.76	19:05	2.28	2.07	05:30	3.854	21:50	7.504	6.068	6.068	0.09
02/19/2021	06:10	12.70	20:55	17.40	15.68	05:55	1.79	12:25	2.22	2.06	06:10	3.791	21:00	7.251	5.944	5.944	0.17
02/20/2021	07:10	12.50	13:45	17.67	15.50	06:00	1.72	13:30	2.27	2.05	07:00	3.600	13:40	7.662	5.872	5.872	0.07
02/21/2021	06:40	12.03	13:30	17.49	15.36	05:30	1.72	20:40	2.26	2.03	06:35	3.373	13:40	7.357	5.750	5.750	0.42
02/22/2021	06:05	14.40	14:55	22.12	18.47	06:00	1.89	14:45	2.54	2.22	06:00	4.851	14:45	11.770	8.137	8.137	0.98
02/23/2021	05:50	14.56	23:20	19.53	17.30	03:35	1.92	14:45	2.29	2.14	05:30	5.035	23:20	8.682	7.110	7.110	0.27
02/24/2021	05:30	14.16	00:00	18.88	17.00	05:25	1.90	21:55	2.37	2.15	05:30	4.704	21:55	8.636	6.947	6.947	-
02/25/2021	05:05	13.98	20:50	18.57	16.91	05:00	1.84	21:40	2.32	2.13	05:00	4.484	20:55	8.388	6.856	6.856	0.18
02/26/2021	06:00	13.70	20:35	17.76	16.44	05:20	1.84	21:30	2.30	2.13	05:20	4.422	21:30	7.735	6.568	6.568	0.10
02/27/2021	05:30	13.07	13:05	18.42	16.16	03:45	1.79	12:20	2.33	2.09	05:30	4.046	12:20	8.260	6.344	6.344	0.02
02/28/2021	06:35	12.53	13:40	18.31	15.87	06:25	1.80	13:50	2.32	2.10	06:35	3.740	13:50	8.267	6.207	6.207	0.02
03/01/2021	05:40	12.51	21:40	17.21	15.50	04:15	1.74	19:40	2.22	2.03	05:35	3.647	21:30	7.218	5.796	5.796	-
03/02/2021	05:40	11.69	21:25	17.53	15.13	05:25	1.63	20:55	2.24	2.00	05:40	3.084	21:25	7.434	5.540	5.540	-
03/03/2021	05:20	12.34	20:55	17.16	15.47	05:35	1.72	20:45	2.22	2.05	05:35	3.504	22:35	7.216	5.837	5.837	-
03/04/2021	05:45	12.00	21:30	17.49	15.24	05:45	1.71	21:45	2.22	2.02	05:45	3.345	21:30	7.378	5.639	5.639	0.20
03/05/2021	05:25	12.14	20:30	16.79	15.23	04:30	1.71	13:30	2.17	2.01	05:35	3.408	20:30	6.775	5.589	5.589	0.05
03/06/2021	05:50	11.79	14:10	17.35	15.16	07:15	1.65	13:25	2.21	2.00	07:15	3.158	13:25	7.283	5.540	5.540	-
03/07/2021	06:10	11.77	13:05	17.45	15.13	06:30	1.60	12:00	2.17	1.96	06:30	3.048	13:20	7.177	5.428	5.428	0.04
03/08/2021	05:55	11.64	21:40	16.91	14.94	04:50	1.54	21:00	2.21	1.96	04:50	2.933	21:00	6.918	5.346	5.346	-
03/09/2021	06:10	11.23	21:50	16.83	14.78	04:55	1.62	22:10	2.22	1.99	06:10	2.893	22:10	7.025	5.317	5.317	0.01
03/10/2021	05:35	11.41	21:20	16.62	14.76	05:00	1.59	21:10	2.18	1.99	05:15	2.948	21:10	6.762	5.309	5.309	-
03/11/2021	05:05	11.22	21:10	16.58	14.70	05:00	1.60	22:00	2.16	1.97	05:05	2.831	21:10	6.642	5.229	5.229	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	05:20	11.41	20:40	16.19	14.56	04:00	1.59	20:40	2.18	1.97	05:15	2.994	20:40	6.531	5.156	5.156	-
03/13/2021	05:40	11.03	14:05	16.85	14.56	05:20	1.58	13:25	2.29	1.97	05:40	2.744	13:25	7.181	5.186	5.186	-
03/14/2021	07:25	11.12	21:35	17.07	14.82	07:15	1.58	14:40	2.25	1.97	07:25	2.765	14:40	7.112	5.332	5.332	0.30
03/15/2021	04:05	11.40	21:25	16.75	14.80	04:00	1.53	19:20	2.22	1.95	04:00	2.808	21:25	6.922	5.257	5.257	-
03/16/2021	03:50	11.30	21:40	16.70	14.67	03:30	1.60	20:45	2.20	1.97	03:50	2.864	20:45	6.863	5.210	5.210	-
03/17/2021	05:05	11.18	21:45	16.32	14.56	04:55	1.56	21:45	2.12	1.94	05:05	2.756	21:45	6.419	5.070	5.070	-
03/18/2021	05:00	11.25	20:30	16.44	14.50	03:30	1.58	20:00	2.15	1.93	05:05	2.861	20:40	6.554	5.017	5.017	0.11
03/19/2021	05:10	11.00	19:50	16.06	14.49	05:05	1.55	19:30	2.16	1.94	05:10	2.694	19:30	6.375	5.050	5.050	0.03
03/20/2021	04:45	10.98	13:05	16.71	14.54	04:30	1.55	11:15	2.16	1.95	04:35	2.689	12:15	6.743	5.118	5.118	0.17
03/21/2021	06:10	10.83	12:50	16.92	14.53	06:00	1.52	12:20	2.18	1.94	06:10	2.567	13:55	6.862	5.109	5.109	0.07
03/22/2021	05:05	11.04	21:20	16.60	14.60	05:10	1.54	20:30	2.17	1.96	05:10	2.669	21:20	6.736	5.158	5.158	0.11
03/23/2021	03:45	11.25	21:05	16.62	14.54	04:25	1.55	21:00	2.16	1.94	04:50	2.775	21:05	6.715	5.075	5.075	-
03/24/2021	03:50	11.10	21:40	17.30	14.62	03:50	1.57	21:35	2.22	1.94	03:50	2.740	21:35	7.303	5.122	5.122	0.34
03/25/2021	04:55	12.42	20:55	17.17	15.41	04:50	1.74	11:30	2.19	2.01	04:55	3.573	20:55	7.138	5.675	5.675	0.27
03/26/2021	04:05	11.72	12:40	16.52	14.97	04:05	1.63	13:30	2.15	1.97	04:05	3.079	12:40	6.532	5.347	5.347	-
03/27/2021	05:35	11.29	12:05	17.15	14.76	05:25	1.58	11:30	2.20	1.96	05:30	2.834	11:40	7.086	5.241	5.241	-
03/28/2021	05:15	11.07	16:35	17.63	14.90	05:10	1.55	16:10	2.22	1.94	05:15	2.709	16:10	7.464	5.326	5.326	0.37
03/29/2021	04:25	11.44	21:20	16.96	14.93	04:20	1.62	21:10	2.18	1.96	04:25	2.952	21:20	6.974	5.326	5.326	-
03/30/2021	04:50	11.60	21:40	16.83	14.61	04:30	1.63	21:25	2.18	1.95	04:30	3.059	21:25	6.885	5.128	5.128	-
03/31/2021	04:45	11.60	22:00	16.52	14.76	04:45	1.60	21:00	2.12	1.94	04:45	2.977	21:35	6.510	5.181	5.181	-
04/01/2021	04:10	11.30	22:05	16.36	14.50	04:00	1.56	22:10	2.15	1.93	04:00	2.807	22:10	6.527	5.010	5.010	-
04/02/2021	04:35	11.18	20:45	15.97	14.36	04:10	1.55	20:05	2.10	1.91	04:35	2.731	20:45	6.085	4.894	4.894	-
04/03/2021	05:55	10.77	12:25	16.86	14.40	05:50	1.51	11:10	2.18	1.92	05:50	2.539	11:20	6.824	4.981	4.981	-
04/04/2021	06:20	10.76	13:10	16.87	14.28	06:15	1.53	11:00	2.15	1.91	06:20	2.560	12:55	6.813	4.902	4.902	-
04/05/2021	04:35	10.24	21:40	16.04	14.14	04:45	1.41	20:30	2.09	1.88	04:45	2.208	21:25	6.148	4.761	4.761	-
04/06/2021	04:30	10.92	21:35	15.96	14.26	04:40	1.52	19:35	2.11	1.90	04:40	2.593	12:35	6.099	4.844	4.844	-
04/07/2021	05:00	10.81	19:35	15.90	14.13	05:20	1.53	21:40	2.09	1.89	04:55	2.591	20:30	6.085	4.747	4.747	0.22
04/08/2021	04:55	10.94	22:00	15.88	14.24	04:45	1.50	21:25	2.09	1.88	05:00	2.572	22:00	6.095	4.766	4.766	-
04/09/2021	04:20	10.96	11:55	15.75	14.14	04:25	1.51	11:35	2.07	1.89	04:30	2.588	11:35	5.958	4.742	4.742	0.03
04/10/2021	07:00	10.81	13:15	16.58	14.20	06:50	1.50	12:20	2.16	1.90	06:50	2.531	12:25	6.696	4.815	4.815	0.02
04/11/2021	05:55	10.47	12:25	16.83	14.27	05:45	1.46	11:50	2.18	1.90	05:50	2.353	11:50	6.848	4.882	4.882	-
04/12/2021	04:35	10.70	20:45	16.06	14.16	04:40	1.47	20:35	2.13	1.90	04:40	2.446	20:35	6.291	4.801	4.801	-
04/13/2021	04:25	10.45	21:55	16.21	14.15	04:10	1.47	22:15	2.19	1.89	04:25	2.348	22:15	6.512	4.780	4.780	-
04/14/2021	04:45	10.68	22:20	16.41	14.25	04:50	1.47	22:20	2.17	1.90	04:50	2.430	22:20	6.640	4.842	4.829	-
10/01/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/02/2020	06:10	10.36	12:20	14.87	13.90	05:45	1.43	20:45	2.08	1.92	06:00	2.308	20:45	5.511	4.692	3.633	-
10/03/2020	05:55	9.55	12:30	15.94	13.30	05:55	1.37	12:45	2.18	1.86	06:00	1.923	13:05	6.362	4.353	4.353	0.01
10/04/2020	06:50	8.86	11:45	15.29	12.91	05:00	1.25	13:20	2.14	1.79	05:30	1.623	13:20	5.804	4.067	4.067	0.01
10/05/2020	04:35	9.06	20:25	15.52	13.25	03:55	1.27	19:55	2.15	1.85	04:35	1.677	20:15	5.954	4.300	4.300	-
10/06/2020	04:40	9.51	21:15	15.69	13.31	04:35	1.38	19:55	2.12	1.85	04:40	1.921	21:05	6.064	4.320	4.320	-
10/07/2020	05:00	9.68	20:40	15.41	13.24	04:25	1.27	21:25	2.13	1.85	04:25	1.921	21:25	5.927	4.269	4.269	-
10/08/2020	05:10	9.84	20:20	15.27	13.38	05:05	1.38	20:20	2.10	1.85	05:05	2.023	20:20	5.793	4.335	4.335	-
10/09/2020	04:10	10.04	20:00	14.98	13.35	05:20	1.41	13:45	2.09	1.84	05:20	2.144	13:45	5.569	4.291	4.291	0.64
10/10/2020	05:25	12.47	13:10	17.36	15.27	06:20	1.75	11:35	2.25	2.04	05:25	3.652	13:00	7.415	5.669	5.669	1.04
10/11/2020	06:50	9.72	14:35	16.32	13.82	06:45	1.39	19:40	2.18	1.89	06:45	2.016	14:20	6.555	4.680	4.680	0.53
10/12/2020	04:40	10.16	11:00	16.74	14.06	04:35	1.40	11:00	2.27	1.92	04:35	2.160	11:00	7.124	4.841	4.841	-
10/13/2020	04:05	10.98	09:20	17.83	14.88	03:40	1.54	09:05	2.28	2.00	04:05	2.710	09:15	7.813	5.426	5.426	0.61
10/14/2020	05:00	10.86	21:05	16.11	14.10	03:35	1.55	21:05	2.19	1.94	04:55	2.646	21:05	6.534	4.856	4.856	-
10/15/2020	04:40	10.36	21:10	16.03	13.96	04:10	1.47	20:20	2.16	1.93	04:40	2.376	21:00	6.381	4.791	4.791	-
10/16/2020	04:40	10.41	14:05	15.32	13.77	04:30	1.47	13:05	2.12	1.89	04:35	2.338	13:05	5.820	4.601	4.601	-
10/17/2020	06:20	10.29	12:55	16.18	13.75	05:05	1.48	13:45	2.17	1.88	06:20	2.306	13:45	6.416	4.591	4.591	0.01
10/18/2020	05:30	9.55	13:00	16.00	13.42	05:05	1.34	11:50	2.13	1.83	05:20	1.908	12:55	6.275	4.349	4.349	0.03
10/19/2020	04:50	9.50	20:20	15.84	13.59	04:50	1.37	20:45	2.12	1.86	04:50	1.909	20:45	6.172	4.481	4.481	0.05
10/20/2020	04:40	10.29	20:50	15.97	13.83	04:05	1.44	19:40	2.15	1.90	04:30	2.316	20:40	6.257	4.664	4.664	-
10/21/2020	05:30	10.14	20:50	15.99	13.79	04:05	1.44	20:35	2.19	1.90	04:05	2.272	20:35	6.385	4.646	4.646	0.01
10/22/2020	05:15	10.21	21:05	15.82	13.59	04:55	1.47	20:40	2.14	1.89	05:00	2.289	21:10	6.204	4.511	4.511	-
10/23/2020	05:05	10.24	21:15	15.91	13.82	05:10	1.45	21:05	2.19	1.91	05:10	2.260	21:05	6.351	4.676	4.676	0.20
10/24/2020	05:55	10.22	12:30	16.44	13.88	05:55	1.46	11:20	2.18	1.90	05:55	2.254	12:25	6.654	4.710	4.710	0.02
10/25/2020	06:00	9.57	13:40	16.00	13.43	05:50	1.34	13:45	2.16	1.84	05:50	1.892	13:45	6.373	4.388	4.388	-
10/26/2020	05:10	9.51	20:50	16.07	13.65	04:55	1.36	19:35	2.13	1.86	04:55	1.908	20:55	6.268	4.525	4.525	-
10/27/2020	04:30	10.39	21:00	16.09	13.84	04:15	1.46	19:20	2.15	1.89	04:25	2.314	20:55	6.316	4.640	4.640	-
10/28/2020	04:20	10.18	20:05	15.82	13.48	04:10	1.44	19:30	2.14	1.85	04:10	2.226	19:50	6.167	4.373	4.373	-
10/29/2020	04:40	10.19	21:10	16.02	13.81	04:45	1.47	21:20	2.16	1.89	04:45	2.279	21:20	6.339	4.630	4.630	-
10/30/2020	04:50	10.23	20:15	15.51	13.82	05:00	1.42	14:25	2.11	1.90	05:00	2.223	19:40	5.947	4.648	4.648	0.10
10/31/2020	05:40	9.99	12:25	16.54	13.57	05:40	1.43	12:35	2.20	1.87	05:40	2.143	12:35	6.774	4.478	4.478	-
11/01/2020	06:05	9.24	13:30	16.03	13.22	06:15	1.23	12:10	2.14	1.81	06:15	1.655	13:40	6.192	4.240	4.240	-
11/02/2020	04:50	9.16	20:20	15.55	13.45	04:45	1.32	20:15	2.11	1.84	04:45	1.754	20:15	5.954	4.371	4.371	-
11/03/2020	06:15	10.06	12:40	16.87	14.32	04:55	1.41	18:00	2.22	1.94	04:55	2.147	12:50	6.964	5.053	5.053	0.83
11/04/2020	05:25	11.11	21:00	16.21	14.44	05:25	1.60	20:30	2.19	1.98	05:25	2.801	21:00	6.521	5.124	5.124	0.09
11/05/2020	05:55	11.15	21:35	16.49	14.36	06:55	1.55	21:20	2.23	1.95	06:55	2.742	21:20	6.828	5.024	5.024	0.34
11/06/2020	06:10	11.93	20:45	16.19	14.68	04:05	1.70	10:45	2.18	1.99	05:10	3.349	20:35	6.492	5.255	5.255	0.10
11/07/2020	05:25	10.91	13:30	16.58	14.28	05:20	1.53	18:00	2.22	1.94	05:20	2.624	13:30	6.871	4.991	4.991	0.07
11/08/2020	07:30	10.11	12:45	16.18	13.89	06:10	1.45	15:10	2.16	1.90	07:25	2.233	12:35	6.444	4.703	4.703	0.01
11/09/2020	05:20	9.92	21:15	16.04	13.85	05:15	1.40	20:20	2.17	1.89	05:20	2.080	21:15	6.404	4.665	4.665	0.04

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/10/2020	06:00	10.77	20:35	16.09	14.12	04:45	1.47	20:35	2.16	1.93	04:45	2.488	20:35	6.429	4.852	4.852	0.03
11/11/2020	05:10	10.76	21:50	16.04	14.14	04:25	1.53	20:35	2.18	1.95	06:10	2.633	20:40	6.389	4.916	4.916	-
11/12/2020	06:25	10.81	21:35	16.16	14.09	06:05	1.56	21:05	2.18	1.94	06:30	2.653	21:05	6.455	4.867	4.867	0.16
11/13/2020	04:35	11.55	19:55	16.00	14.61	04:30	1.64	12:10	2.17	1.98	04:30	3.035	12:15	6.359	5.205	5.205	0.38
11/14/2020	07:20	10.71	20:15	17.29	14.57	06:00	1.54	19:50	2.25	1.96	07:25	2.575	19:50	7.364	5.187	5.187	0.47
11/15/2020	07:10	11.02	14:05	16.68	14.50	04:45	1.50	14:25	2.20	1.94	07:05	2.727	14:25	6.876	5.070	5.070	0.19
11/16/2020	05:50	10.67	15:05	17.42	14.91	05:10	1.50	14:30	2.31	1.97	05:45	2.491	14:45	7.607	5.391	5.391	0.31
11/17/2020	05:10	11.84	21:30	17.46	15.12	04:50	1.67	21:30	2.25	2.02	05:10	3.199	21:30	7.515	5.588	5.588	0.20
11/18/2020	05:50	11.69	20:55	17.15	15.18	05:50	1.63	18:50	2.23	2.01	05:50	3.067	20:25	7.174	5.585	5.585	0.30
11/19/2020	04:05	12.40	14:50	17.15	15.21	04:50	1.62	13:55	2.19	2.00	04:50	3.372	14:30	7.047	5.554	5.554	0.50
11/20/2020	05:35	11.63	19:50	16.47	14.88	05:35	1.65	13:35	2.14	1.97	05:35	3.087	20:00	6.471	5.296	5.296	0.01
11/21/2020	06:20	11.47	13:10	17.12	14.87	07:25	1.59	13:20	2.21	1.98	06:20	2.937	13:20	7.129	5.381	5.381	-
11/22/2020	07:05	10.67	13:30	16.91	14.44	07:20	1.50	12:40	2.20	1.92	07:20	2.479	13:15	6.862	5.025	5.025	0.21
11/23/2020	05:35	11.20	21:25	16.82	14.88	04:20	1.52	20:20	2.19	1.96	04:25	2.739	21:25	6.946	5.306	5.306	0.14
11/24/2020	05:45	11.73	21:05	17.02	15.05	05:15	1.55	21:00	2.26	1.99	05:25	3.088	21:00	7.247	5.479	5.479	0.21
11/25/2020	05:50	11.73	21:00	16.65	15.02	04:35	1.64	20:05	2.21	2.00	05:50	3.168	20:05	6.856	5.466	5.466	0.05
11/26/2020	06:10	10.77	13:55	17.74	14.44	06:00	1.51	14:50	2.27	1.94	06:00	2.549	14:50	7.671	5.081	5.081	0.02
11/27/2020	06:00	10.44	13:25	16.34	14.03	06:25	1.47	13:55	2.17	1.90	06:00	2.392	13:55	6.531	4.751	4.751	-
11/28/2020	06:50	10.98	14:40	16.69	14.29	05:35	1.53	14:00	2.18	1.92	06:50	2.671	14:40	6.836	4.941	4.941	0.05
11/29/2020	05:55	10.45	14:40	16.95	14.35	05:50	1.48	20:00	2.24	1.93	05:50	2.379	14:40	6.986	5.026	5.026	-
11/30/2020	05:00	11.50	20:35	16.33	14.78	05:00	1.62	19:00	2.17	1.98	05:00	2.979	20:50	6.568	5.275	5.275	0.36
12/01/2020	05:55	11.03	11:45	16.63	14.38	04:35	1.52	20:20	2.21	1.93	04:35	2.683	20:45	6.729	4.976	4.976	-
12/02/2020	05:35	11.03	21:45	16.47	14.49	05:20	1.57	14:00	2.17	1.96	05:35	2.734	21:40	6.654	5.105	5.105	0.01
12/03/2020	05:55	11.10	12:25	17.40	14.44	05:30	1.58	20:05	2.19	1.95	05:55	2.749	20:05	6.499	5.058	5.058	-
12/04/2020	05:50	11.06	21:20	15.98	14.38	05:40	1.58	13:10	2.12	1.96	05:50	2.742	21:20	6.239	5.044	5.044	-
12/05/2020	06:20	10.64	14:30	16.66	14.31	06:15	1.54	14:00	2.25	1.96	06:15	2.551	14:00	6.989	5.062	5.062	0.03
12/06/2020	06:15	10.17	14:05	16.49	13.92	06:05	1.42	13:20	2.20	1.90	06:15	2.199	13:20	6.728	4.736	4.736	0.03
12/07/2020	05:05	10.23	21:00	15.70	13.80	04:55	1.42	15:05	2.15	1.90	05:00	2.231	20:55	6.143	4.633	4.633	-
12/08/2020	05:05	10.45	21:15	18.27	14.69	04:55	1.44	21:00	2.34	1.97	05:05	2.320	21:00	8.274	5.324	5.324	0.87
12/09/2020	06:00	13.19	00:00	16.92	15.67	05:55	1.85	14:05	2.24	2.08	05:55	4.156	21:05	7.047	6.010	6.010	0.17
12/10/2020	04:40	11.79	22:20	16.94	15.10	05:25	1.65	19:45	2.23	2.02	04:40	3.180	19:45	7.103	5.572	5.572	0.07
12/11/2020	06:20	11.83	20:15	16.23	14.78	05:20	1.62	17:30	2.18	1.98	05:20	3.139	19:00	6.488	5.269	5.269	0.02
12/12/2020	06:45	10.99	14:15	16.70	14.43	05:35	1.54	16:05	2.20	1.95	06:45	2.648	14:00	6.820	5.072	5.072	0.01
12/13/2020	07:00	11.36	14:40	17.46	14.70	05:35	1.59	12:40	2.26	1.98	07:00	2.883	14:35	7.472	5.294	5.294	0.24
12/14/2020	05:05	10.98	21:05	16.48	14.61	04:00	1.52	22:05	2.20	1.96	05:00	2.643	20:20	6.687	5.193	5.193	0.05
12/15/2020	05:15	11.34	18:05	17.41	15.17	05:15	1.59	18:05	2.27	2.02	05:15	2.859	18:05	7.559	5.649	5.649	0.58
12/16/2020	05:20	12.13	19:20	17.56	15.43	05:15	1.70	19:20	2.31	2.05	05:15	3.383	19:20	7.757	5.851	5.851	0.39
12/17/2020	05:00	11.97	21:00	16.83	15.23	04:20	1.64	21:20	2.26	2.04	05:00	3.221	21:20	7.025	5.695	5.695	0.08
12/18/2020	05:55	12.07	20:30	16.67	15.10	05:50	1.69	20:25	2.24	2.04	05:50	3.344	20:25	6.966	5.605	5.605	0.25
12/19/2020	06:45	11.75	23:05	16.97	14.97	06:35	1.63	12:15	2.25	2.02	06:35	3.108	22:55	7.177	5.517	5.517	0.37
12/20/2020	07:15	12.35	15:05	17.34	15.39	05:30	1.69	14:50	2.27	2.07	06:05	3.586	15:05	7.497	5.840	5.840	0.04
12/21/2020	05:50	13.24	20:40	20.90	16.91	05:50	1.82	19:50	2.47	2.18	05:50	4.093	20:25	10.510	7.096	7.096	1.07
12/22/2020	06:20	14.63	00:00	19.43	16.91	05:55	1.93	00:00	2.39	2.17	05:55	5.040	00:00	9.283	6.948	6.948	-
12/23/2020	05:20	13.11	13:30	17.30	15.91	05:15	1.83	20:15	2.29	2.11	05:20	4.091	13:30	7.467	6.237	6.237	-
12/24/2020	06:10	12.51	13:50	17.80	15.61	05:05	1.80	13:15	2.32	2.09	06:10	3.770	13:15	7.880	6.040	6.040	-
12/25/2020	07:00	11.89	14:15	16.83	14.97	08:30	1.71	14:10	2.24	2.01	07:05	3.332	14:10	7.078	5.461	5.461	0.49
12/26/2020	07:15	11.74	14:30	17.66	15.18	07:15	1.62	15:40	2.28	2.02	07:15	3.073	13:55	7.676	5.642	5.642	0.02
12/27/2020	07:25	11.99	14:10	18.14	15.40	06:10	1.71	14:00	2.26	2.03	07:25	3.329	14:10	7.975	5.789	5.789	0.13
12/28/2020	06:20	11.70	13:50	17.22	15.08	06:20	1.67	13:35	2.27	2.01	06:20	3.150	13:40	7.327	5.544	5.544	-
12/29/2020	05:50	11.72	21:10	17.06	14.94	05:45	1.64	20:55	2.22	1.99	05:45	3.113	21:00	7.115	5.408	5.408	0.14
12/30/2020	05:20	13.03	15:40	17.85	16.24	03:30	1.80	12:50	2.30	2.11	05:15	3.981	15:15	7.838	6.413	6.413	0.78
12/31/2020	06:35	14.05	19:20	18.26	16.52	04:55	1.80	19:10	2.33	2.08	06:35	4.403	19:10	8.258	6.476	6.476	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			1088.339	30.65
Average	15.13	2.00	5.588	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A2_40805K

Site Address /Location:	29th St Nw and Emerald downs Dr			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	Outside of Emerald Downs Racetrack	Latitude:	47.333005	Pipe Size (H x W): 71.50 X 70.00	Pipe Shape: Circular
		Longitude:	-122.237737		



Manhole #	System Characteristics
A240805K	Commercial
Access	Traffic
Drive	Light







ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.11.325

Installation Information

Installation Date:	Installation Type:
Friday, October 2, 2020	Doppler Special Installation
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Time	
05:24AM	
Depth of Flow (Wet DOF) (in)	
10.50	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
1.6	N/A
Silt (in)	Silt Type
0	

Hydraulic Comments:

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
12	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
Yes, Inside	Normal
Pipe Material	Pipe Condition:
Concrete	Good

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

AUB_A3_40834

Site Commentary

SITE INFORMATION

Pipe	Round (18 in H)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	2.17	3.55	0.282
Minimum	1.43	2.13	0.096
Maximum	3.13	4.25	0.566
Min Time	09/27/2020 2:00:00 AM	10/02/2020 3:00:00 AM	09/25/2020 2:00:00 AM
Max Time	01/12/2021 9:00:00 AM	01/12/2021 9:00:00 AM	01/12/2021 9:00:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

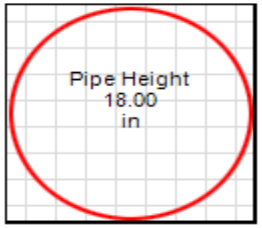
Percent Uptime	
DFINAL (in)	99.782
VFINAL (ft/s)	99.782
QFINAL (MGD - Total MG)	99.782

Hydrograph Report

AUB_A3_40834

Flow Monitor

AUB_A3_40834



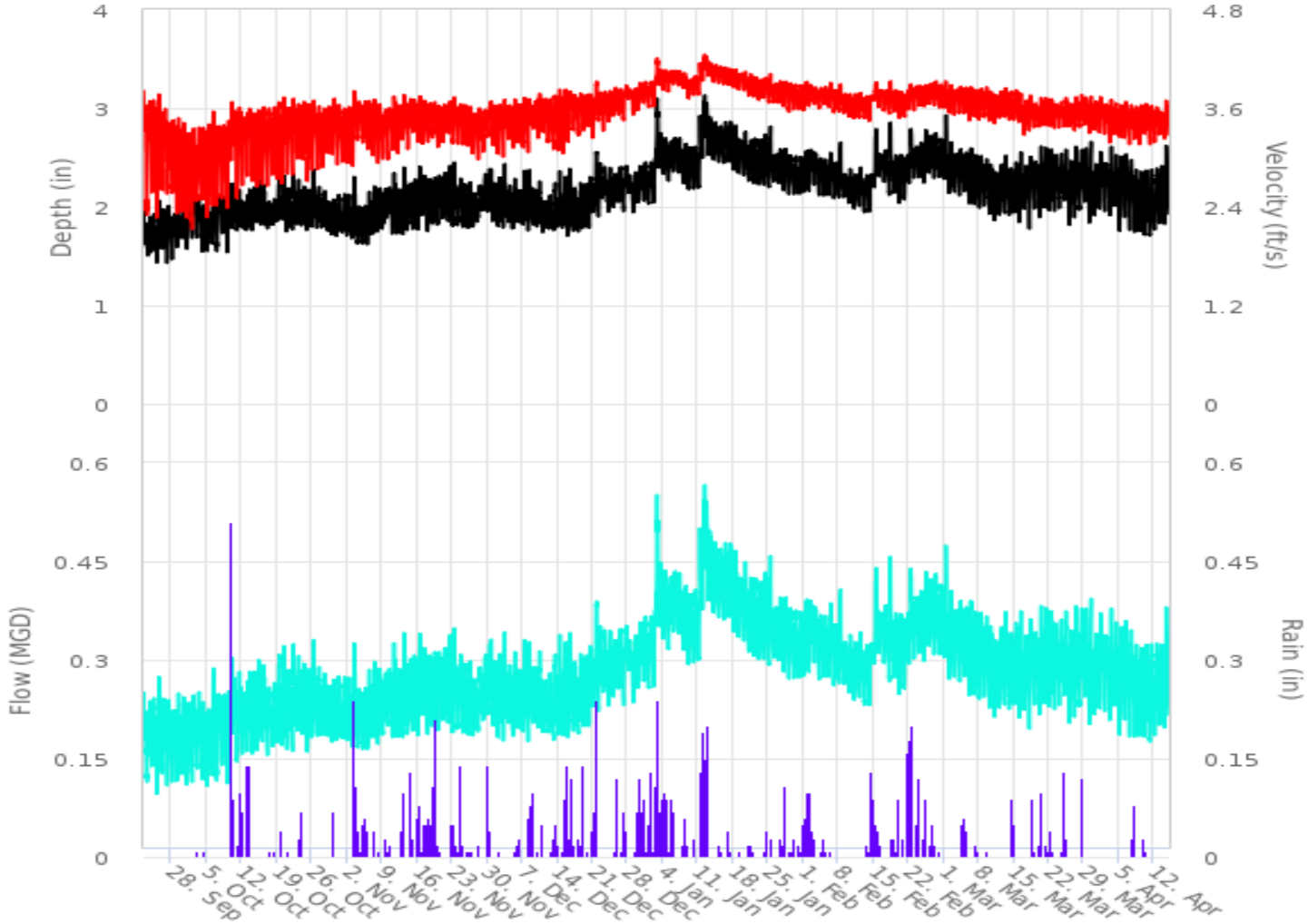
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL





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Tukwila, WA 98168

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Scattergraph Report

AUB_A3_40834

Flow Monitor

AUB_A3_40834

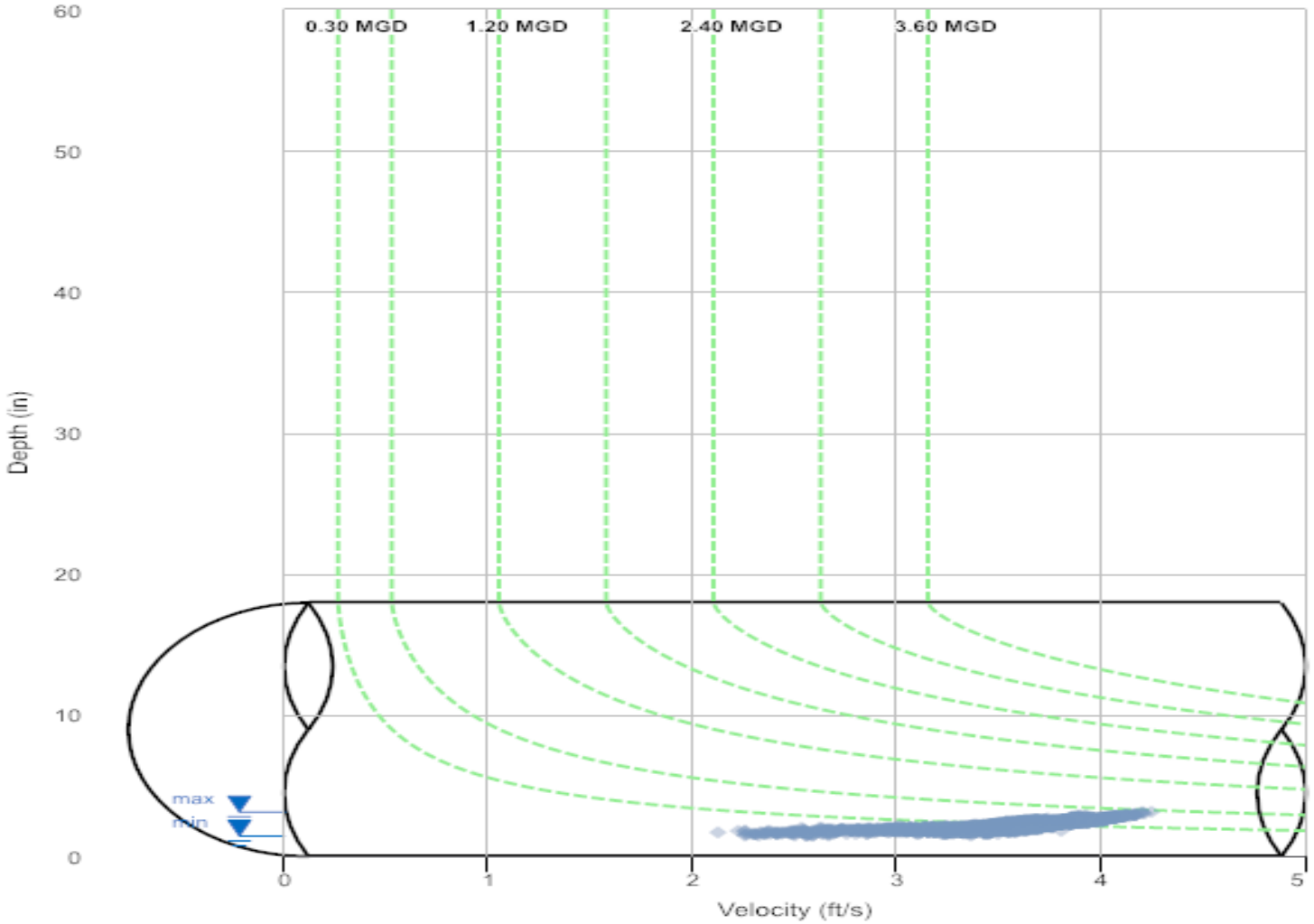
Pipe Height
18.00
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A3_40834Pipe: Round (18 in H), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	05:35	2.01	15:25	2.56	2.24	02:35	3.60	15:30	3.99	3.77	05:35	0.252	15:30	0.398	0.309	0.309	0.51
01/02/2021	04:35	2.02	20:50	3.21	2.47	04:35	3.60	20:50	4.29	3.89	04:35	0.254	20:50	0.592	0.372	0.372	1.69
01/03/2021	04:45	2.37	00:05	3.01	2.56	23:25	3.82	00:05	4.20	3.98	05:00	0.346	00:05	0.529	0.396	0.396	0.65
01/04/2021	03:05	2.31	11:55	2.74	2.49	02:35	3.79	07:40	4.11	3.96	03:05	0.328	11:55	0.449	0.379	0.379	0.48
01/05/2021	03:00	2.24	14:05	2.69	2.46	04:25	3.77	20:45	4.10	3.95	03:00	0.309	20:45	0.438	0.372	0.372	0.52
01/06/2021	02:50	2.33	18:50	2.74	2.54	03:10	3.82	10:40	4.10	3.99	03:50	0.337	18:50	0.446	0.394	0.394	0.22
01/07/2021	23:45	2.30	09:00	2.75	2.47	23:35	3.77	10:05	4.09	3.96	23:35	0.327	09:00	0.447	0.375	0.375	-
01/08/2021	04:30	2.19	17:20	2.68	2.42	23:10	3.74	09:15	4.09	3.91	23:45	0.300	09:15	0.425	0.360	0.360	0.22
01/09/2021	02:35	2.16	10:40	2.67	2.39	01:10	3.68	11:15	3.98	3.85	02:35	0.287	10:40	0.417	0.347	0.347	-
01/10/2021	04:35	2.17	09:35	2.67	2.41	04:10	3.72	14:05	4.05	3.88	04:10	0.292	14:05	0.425	0.354	0.354	0.07
01/11/2021	00:55	2.19	10:20	2.98	2.53	04:45	3.74	10:15	4.19	3.96	04:35	0.297	10:20	0.518	0.391	0.391	1.06
01/12/2021	00:00	2.49	18:55	3.20	2.86	00:35	3.91	18:55	4.32	4.13	00:00	0.379	18:55	0.593	0.483	0.483	2.10
01/13/2021	04:05	2.51	00:35	2.97	2.75	21:40	3.94	00:30	4.21	4.08	04:55	0.386	00:35	0.519	0.450	0.450	0.09
01/14/2021	03:35	2.46	12:50	2.92	2.65	03:05	3.90	12:55	4.18	4.03	03:45	0.369	12:50	0.500	0.421	0.421	0.01
01/15/2021	04:35	2.43	13:00	2.86	2.65	03:15	3.88	13:05	4.14	4.02	04:35	0.361	13:05	0.484	0.420	0.420	0.09
01/16/2021	03:20	2.43	13:10	2.95	2.65	07:15	3.82	12:10	4.12	4.00	04:40	0.356	13:05	0.502	0.420	0.420	-
01/17/2021	05:15	2.44	12:55	2.92	2.64	04:00	3.79	11:20	4.11	3.98	05:20	0.360	12:50	0.489	0.414	0.414	0.10
01/18/2021	02:15	2.36	13:25	2.85	2.61	02:50	3.83	12:15	4.10	3.98	03:25	0.339	13:30	0.474	0.408	0.408	-
01/19/2021	02:00	2.32	09:50	2.70	2.54	03:05	3.80	15:20	4.04	3.95	03:05	0.331	15:40	0.434	0.390	0.390	0.01
01/20/2021	03:00	2.30	12:25	2.80	2.50	03:15	3.79	12:25	4.08	3.92	02:05	0.325	12:30	0.463	0.378	0.378	-
01/21/2021	03:10	2.25	13:20	2.69	2.46	03:50	3.72	13:45	4.04	3.89	03:10	0.310	13:45	0.430	0.366	0.366	0.11
01/22/2021	01:45	2.23	08:10	2.74	2.47	03:35	3.72	10:45	4.02	3.87	01:45	0.303	08:10	0.436	0.365	0.365	-
01/23/2021	03:05	2.22	14:00	2.78	2.43	03:05	3.67	14:00	3.99	3.84	03:05	0.297	14:00	0.447	0.355	0.355	-
01/24/2021	04:40	2.21	11:45	2.81	2.45	03:20	3.67	12:00	4.02	3.85	03:20	0.299	12:00	0.455	0.359	0.359	0.16
01/25/2021	01:55	2.19	12:50	2.86	2.44	04:40	3.62	12:55	4.11	3.83	04:35	0.288	12:55	0.478	0.357	0.357	0.04
01/26/2021	04:05	2.24	22:30	2.70	2.42	04:20	3.63	22:30	3.95	3.82	04:10	0.298	22:30	0.424	0.350	0.350	-
01/27/2021	02:20	2.23	12:40	2.65	2.40	01:55	3.63	10:35	3.97	3.81	03:15	0.296	12:45	0.412	0.346	0.346	0.14
01/28/2021	04:30	2.13	10:00	2.65	2.38	04:00	3.59	13:30	3.99	3.79	04:30	0.273	13:30	0.412	0.341	0.341	0.24
01/29/2021	03:30	2.10	09:55	2.56	2.35	04:10	3.50	10:25	3.93	3.76	04:10	0.265	10:00	0.390	0.331	0.331	0.03
01/30/2021	05:15	2.10	10:45	2.55	2.33	04:55	3.55	13:50	3.93	3.74	05:10	0.267	10:45	0.388	0.325	0.325	0.07
01/31/2021	05:00	2.11	14:40	2.54	2.31	05:10	3.54	12:40	3.91	3.74	05:10	0.265	12:35	0.381	0.322	0.322	0.12
02/01/2021	03:05	2.12	18:25	2.64	2.38	02:00	3.51	11:30	3.96	3.79	00:30	0.270	18:25	0.411	0.340	0.340	0.82
02/02/2021	04:25	2.14	12:45	2.66	2.43	02:45	3.58	11:00	3.92	3.78	04:20	0.279	12:45	0.411	0.351	0.351	0.31
02/03/2021	04:25	2.21	10:30	2.57	2.41	04:40	3.58	09:45	3.90	3.76	04:40	0.287	11:25	0.389	0.342	0.342	0.06
02/04/2021	02:45	2.10	13:40	2.52	2.34	03:55	3.58	13:55	3.88	3.74	03:45	0.267	13:50	0.376	0.326	0.326	0.07
02/05/2021	03:00	2.08	11:25	2.55	2.31	04:50	3.61	11:20	3.93	3.74	02:55	0.267	11:25	0.387	0.321	0.321	0.01
02/06/2021	05:15	2.08	11:15	2.58	2.33	03:55	3.60	11:20	3.93	3.76	05:15	0.265	11:20	0.395	0.328	0.328	0.01
02/07/2021	02:40	2.08	11:45	2.51	2.29	03:30	3.52	11:50	3.88	3.71	03:30	0.259	11:45	0.374	0.314	0.314	-
02/08/2021	04:15	2.08	12:05	2.75	2.30	04:25	3.52	09:55	3.95	3.72	04:25	0.259	12:10	0.434	0.318	0.318	-
02/09/2021	03:35	2.08	11:45	2.36	2.21	00:55	3.51	11:35	3.82	3.66	03:35	0.260	11:50	0.335	0.295	0.295	-
02/10/2021	01:55	2.02	09:30	2.44	2.22	02:35	3.47	08:00	3.82	3.65	04:25	0.245	09:30	0.352	0.295	0.295	-
02/11/2021	04:25	1.97	12:35	2.38	2.16	02:10	3.43	12:40	3.81	3.63	04:45	0.234	12:35	0.338	0.282	0.282	-
02/12/2021	04:05	2.00	12:10	2.45	2.18	04:05	3.45	09:20	3.82	3.64	04:05	0.240	12:10	0.353	0.288	0.288	-
02/13/2021	05:05	1.91	17:20	2.39	2.15	03:00	3.46	17:20	3.83	3.62	05:05	0.224	17:20	0.345	0.279	0.279	0.08
02/14/2021	04:50	1.92	14:05	2.36	2.19	02:00	3.42	18:00	3.79	3.63	04:50	0.226	14:05	0.330	0.289	0.289	0.71
02/15/2021	02:20	2.17	15:05	2.88	2.47	05:25	3.60	15:10	4.00	3.80	05:25	0.282	15:05	0.472	0.361	0.361	0.78
02/16/2021	02:30	2.28	10:00	2.55	2.43	02:25	3.57	09:40	3.89	3.74	02:30	0.302	09:40	0.381	0.345	0.345	0.07
02/17/2021	02:35	2.24	12:35	2.60	2.40	02:25	3.54	12:35	3.88	3.71	02:25	0.291	12:35	0.395	0.336	0.336	-
02/18/2021	02:35	2.11	10:15	2.93	2.41	00:45	3.45	10:05	3.96	3.73	02:35	0.265	10:15	0.477	0.341	0.341	0.09
02/19/2021	04:45	2.06	12:15	2.56	2.37	05:05	3.49	09:55	3.85	3.71	04:45	0.257	12:20	0.381	0.329	0.329	0.17
02/20/2021	04:05	2.02	13:00	2.57	2.32	01:20	3.44	11:30	3.84	3.65	04:10	0.243	13:00	0.381	0.317	0.317	0.07
02/21/2021	06:20	2.03	23:35	2.59	2.31	03:35	3.45	22:55	3.85	3.65	04:40	0.250	23:35	0.388	0.314	0.314	0.42
02/22/2021	04:30	2.22	12:50	2.89	2.51	03:50	3.56	12:30	3.92	3.76	04:35	0.288	12:50	0.465	0.364	0.364	0.98
02/23/2021	04:55	2.25	15:40	2.70	2.46	02:10	3.53	20:25	3.91	3.75	04:50	0.295	20:30	0.420	0.353	0.353	0.27
02/24/2021	02:45	2.26	12:10	2.70	2.47	01:15	3.59	12:55	3.90	3.77	03:15	0.301	12:15	0.418	0.356	0.356	-
02/25/2021	02:45	2.21	11:10	2.82	2.52	02:40	3.58	10:55	3.96	3.78	02:50	0.288	11:10	0.447	0.370	0.370	0.18
02/26/2021	03:00	2.29	12:15	2.78	2.52	02:00	3.62	14:00	3.99	3.79	03:00	0.312	12:05	0.438	0.370	0.370	0.10
02/27/2021	02:30	2.25	11:07	2.76	2.50	04:45	3.60	13:45	3.96	3.78	02:30	0.299	11:10	0.438	0.363	0.363	0.02
02/28/2021	05:25	2.27	19:50	2.96	2.47	04:15	3.50	19:50	3.93	3.76	04:15	0.301	19:50	0.482	0.356	0.356	0.02
03/01/2021	23:40	2.24	10:30	3.01	2.50	03:10	3.56	10:35	3.96	3.75	23:40	0.296	10:35	0.496	0.361	0.361	-
03/02/2021	02:40	2.11	12:40	2.70	2.40	04:05	3.51	11:50	3.92	3.71	02:40	0.267	12:40	0.418	0.337	0.337	-
03/03/2021	04:05	2.12	18:10	2.60	2.37	03:05	3.50	12:45	3.87	3.71	04:15	0.267	18:10	0.389	0.332	0.332	-
03/04/2021	04:40	2.09	11:05	2.64	2.37	01:05	3.50	11:15	3.90	3.72	04:35	0.260	11:15	0.404	0.332	0.332	0.20
03/05/2021	04:35	2.12	12:35	2.64	2.36	01:10	3.51	11:05	3.89	3.70	03:10	0.269	12:35	0.404	0.328	0.328	0.05
03/06/2021	03:35	2.00	12:15	2.71	2.32	03:35	3.43	11:15	3.89	3.68	03:35	0.238	12:15	0.419	0.318	0.318	-
03/07/2021	03:55	2.00	11:00	2.64	2.28	23:15	3.42	10:35	3.88	3.65	04:05	0.244	11:00	0.401	0.309	0.309	0.04
03/08/2021	03:40	1.97	12:50	2.57	2.25	00:30	3.42	13:00	3.90	3.65	03:40	0.236	13:00	0.388	0.303	0.303	-
03/09/2021	01:25	1.98	14:20	2.53	2.25	02:15	3.44	14:15	3.91	3.67	02:25	0.238	14:30	0.379	0.304	0.304	0.01
03/10/2021	04:05	1.90	10:30	2.47	2.19	03:05	3.38	12:20	3.85	3.61	02:45	0.222	10:25	0.359	0.287	0.287	-
03/11/2021	04:15	1.84	13:50	2.40	2.17	04:15	3.40	10:35	3.88	3.63	04:25	0.208	10:35	0.344	0.286	0.286	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	03:05	1.87	16:15	2.50	2.20	01:35	3.43	15:25	3.85	3.65	03:05	0.219	16:15	0.364	0.294	0.294	-
03/13/2021	04:00	1.89	10:30	2.60	2.22	05:00	3.43	13:55	3.92	3.66	04:00	0.226	10:30	0.393	0.297	0.297	-
03/14/2021	02:40	1.86	09:30	2.44	2.19	23:50	3.42	14:45	3.86	3.63	02:40	0.217	09:30	0.353	0.289	0.289	0.30
03/15/2021	03:15	1.89	10:55	2.60	2.22	00:05	3.40	10:50	3.89	3.65	03:15	0.221	10:50	0.394	0.296	0.296	-
03/16/2021	02:15	1.80	10:30	2.67	2.19	23:30	3.33	10:25	3.85	3.56	01:35	0.206	10:30	0.405	0.284	0.284	-
03/17/2021	02:10	1.95	11:45	2.46	2.20	01:30	3.21	12:10	3.80	3.53	02:10	0.215	11:45	0.351	0.282	0.282	-
03/18/2021	03:25	1.75	12:15	3.08	2.24	02:05	3.23	12:15	3.87	3.55	03:25	0.189	12:15	0.502	0.294	0.294	0.11
03/19/2021	03:30	1.95	09:15	2.48	2.28	02:10	3.31	08:40	3.71	3.53	03:35	0.226	10:25	0.348	0.298	0.298	0.03
03/20/2021	02:55	1.85	11:25	2.67	2.30	22:40	3.30	11:20	3.81	3.55	02:55	0.209	11:20	0.401	0.304	0.304	0.17
03/21/2021	03:35	1.95	10:30	2.66	2.30	00:30	3.36	10:25	3.79	3.55	03:35	0.226	10:25	0.397	0.302	0.302	0.07
03/22/2021	02:10	1.93	11:15	2.64	2.29	01:05	3.31	16:35	3.78	3.54	02:35	0.221	11:15	0.391	0.302	0.302	0.11
03/23/2021	03:30	1.92	12:10	2.60	2.28	03:35	3.26	08:45	3.73	3.53	03:35	0.212	12:10	0.375	0.297	0.297	-
03/24/2021	02:40	1.93	12:00	2.62	2.28	01:05	3.30	11:50	3.78	3.54	02:35	0.219	12:00	0.384	0.299	0.299	0.34
03/25/2021	23:55	1.99	10:20	2.61	2.30	23:55	3.32	10:10	3.80	3.55	23:55	0.228	10:20	0.384	0.303	0.303	0.27
03/26/2021	03:30	1.79	10:35	2.51	2.22	00:50	3.28	10:30	3.71	3.53	03:30	0.199	10:30	0.357	0.286	0.286	-
03/27/2021	03:35	1.86	10:00	2.65	2.27	03:20	3.24	10:45	3.79	3.55	03:20	0.207	10:05	0.390	0.298	0.298	-
03/28/2021	01:40	1.90	13:10	2.66	2.27	05:20	3.31	13:05	3.83	3.56	01:40	0.218	13:10	0.403	0.299	0.299	0.37
03/29/2021	23:45	1.99	10:30	2.62	2.29	23:40	3.27	09:40	3.79	3.56	23:40	0.226	09:40	0.387	0.302	0.302	-
03/30/2021	02:15	1.79	10:25	2.74	2.24	03:40	3.22	10:20	3.82	3.54	02:15	0.191	10:20	0.416	0.292	0.292	-
03/31/2021	03:45	1.88	10:10	2.47	2.23	03:10	3.27	09:50	3.72	3.53	03:00	0.213	10:10	0.346	0.288	0.288	-
04/01/2021	02:20	1.96	07:35	2.59	2.30	02:25	3.24	07:50	3.83	3.55	02:20	0.222	07:50	0.386	0.304	0.304	-
04/02/2021	03:50	1.93	13:55	2.52	2.27	02:05	3.22	11:50	3.72	3.51	03:15	0.218	13:55	0.360	0.296	0.296	-
04/03/2021	04:05	1.85	11:10	2.63	2.26	03:40	3.11	10:25	3.77	3.47	02:40	0.196	11:15	0.384	0.290	0.290	-
04/04/2021	01:50	1.96	10:10	2.57	2.25	01:45	3.22	21:50	3.73	3.48	01:50	0.221	10:10	0.369	0.288	0.288	-
04/05/2021	03:30	1.73	13:35	2.54	2.22	02:55	3.15	10:55	3.72	3.48	02:55	0.180	10:55	0.359	0.284	0.284	-
04/06/2021	03:50	1.81	10:35	2.57	2.21	01:25	3.17	09:15	3.73	3.45	03:50	0.198	10:40	0.373	0.279	0.279	-
04/07/2021	02:55	1.75	11:30	2.53	2.16	01:10	3.11	11:10	3.71	3.44	03:00	0.179	11:30	0.358	0.270	0.270	0.22
04/08/2021	01:50	1.72	11:30	2.49	2.05	02:25	3.18	11:20	3.69	3.43	01:50	0.180	11:25	0.349	0.247	0.247	-
04/09/2021	23:45	1.73	11:35	2.42	2.06	01:05	3.07	11:35	3.73	3.45	01:05	0.178	11:35	0.341	0.252	0.252	0.03
04/10/2021	03:50	1.69	11:00	2.58	2.05	23:05	3.21	10:55	3.73	3.47	01:45	0.178	11:00	0.372	0.251	0.251	0.02
04/11/2021	01:10	1.68	12:15	2.44	2.01	04:10	3.11	13:00	3.81	3.42	04:35	0.171	12:15	0.339	0.241	0.241	-
04/12/2021	00:47	1.74	14:05	2.43	2.09	02:45	3.14	08:40	3.64	3.43	02:45	0.181	14:05	0.333	0.255	0.255	-
04/13/2021	02:30	1.82	12:25	2.45	2.16	02:40	3.18	08:35	3.63	3.45	02:40	0.192	08:35	0.337	0.269	0.269	-
04/14/2021	02:15	1.79	09:45	2.70	2.16	00:35	3.16	09:45	3.78	3.46	02:15	0.189	09:45	0.405	0.270	0.270	-
09/22/2020	20:40	1.52	11:10	2.02	1.74	23:55	2.37	10:55	3.81	3.36	23:55	0.125	11:10	0.266	0.190	0.104	-
09/23/2020	07:50	1.47	16:40	2.01	1.70	01:35	2.15	16:45	3.82	3.27	03:50	0.104	16:45	0.267	0.180	0.180	-
09/24/2020	20:20	1.49	12:25	2.04	1.71	02:45	2.32	12:20	3.79	3.27	23:55	0.119	12:25	0.271	0.182	0.182	-
09/25/2020	02:10	1.40	12:00	2.12	1.72	02:35	2.14	11:55	3.85	3.25	02:20	0.090	12:00	0.291	0.186	0.186	-
09/26/2020	02:25	1.51	10:55	2.03	1.73	04:15	2.44	18:00	3.76	3.23	04:15	0.117	09:35	0.253	0.183	0.183	-
09/27/2020	04:00	1.30	10:15	2.05	1.72	03:25	2.35	16:55	3.59	3.07	04:00	0.095	10:15	0.255	0.173	0.173	-
09/28/2020	02:45	1.41	09:45	1.99	1.76	02:45	2.41	09:40	3.55	3.05	02:45	0.100	09:40	0.242	0.178	0.178	-
09/29/2020	03:45	1.54	10:35	2.11	1.78	01:25	2.25	10:35	3.51	2.99	01:25	0.110	10:40	0.264	0.177	0.177	-
09/30/2020	03:50	1.63	11:40	2.11	1.88	00:40	2.23	11:40	3.48	2.99	02:20	0.120	11:40	0.261	0.191	0.191	-
10/01/2020	02:00	1.54	11:25	2.10	1.86	03:40	2.17	18:05	3.43	2.85	02:15	0.103	11:25	0.252	0.180	0.180	-
10/02/2020	03:30	1.63	10:10	2.13	1.95	03:30	2.08	09:45	3.46	2.81	03:30	0.107	10:10	0.259	0.190	0.190	-
10/03/2020	02:55	1.61	11:10	2.15	1.90	02:50	2.28	11:05	3.43	2.96	02:50	0.119	11:10	0.264	0.192	0.192	0.01
10/04/2020	04:30	1.51	09:00	2.14	1.85	02:05	2.27	08:55	3.48	2.94	04:25	0.114	08:55	0.265	0.184	0.184	0.01
10/05/2020	03:40	1.51	11:25	2.02	1.83	03:00	2.22	12:25	3.51	3.00	03:00	0.105	11:25	0.247	0.184	0.184	-
10/06/2020	02:35	1.59	08:55	2.34	1.89	02:35	2.32	08:45	3.64	3.01	02:35	0.115	08:55	0.309	0.195	0.195	-
10/07/2020	01:20	1.51	11:15	2.17	1.93	00:05	2.27	11:15	3.51	2.99	00:05	0.111	11:15	0.274	0.199	0.199	-
10/08/2020	22:55	1.70	07:50	2.15	1.98	02:00	2.40	07:45	3.50	3.06	03:25	0.136	07:45	0.269	0.211	0.211	-
10/09/2020	02:55	1.50	23:15	2.23	1.94	03:45	2.31	23:25	3.60	3.03	03:05	0.108	23:15	0.288	0.204	0.204	0.64
10/10/2020	18:50	1.70	02:05	2.60	1.98	23:45	2.74	02:05	3.97	3.35	23:45	0.167	02:05	0.404	0.230	0.230	1.04
10/11/2020	01:20	1.71	14:40	2.21	1.93	02:05	2.42	14:40	3.69	3.21	01:20	0.139	14:40	0.296	0.214	0.214	0.53
10/12/2020	15:55	1.73	11:20	2.12	1.90	03:50	2.60	11:20	3.57	3.25	03:50	0.151	11:20	0.270	0.209	0.209	-
10/13/2020	00:20	1.75	14:35	2.23	1.94	01:50	2.74	14:35	3.63	3.31	02:00	0.158	14:35	0.295	0.222	0.222	0.61
10/14/2020	02:55	1.73	13:25	2.22	1.98	02:50	2.66	09:25	3.59	3.23	02:50	0.150	09:25	0.288	0.223	0.223	-
10/15/2020	21:30	1.78	09:10	2.37	1.99	02:20	2.59	09:15	3.69	3.19	02:20	0.156	09:15	0.329	0.221	0.221	-
10/16/2020	21:15	1.77	11:20	2.28	2.00	03:35	2.61	09:55	3.67	3.24	03:35	0.169	10:00	0.306	0.227	0.227	-
10/17/2020	03:40	1.75	12:45	2.08	1.91	01:30	2.58	11:50	3.64	3.23	03:40	0.150	11:35	0.264	0.211	0.211	0.01
10/18/2020	20:40	1.77	12:05	2.10	1.94	02:00	2.68	12:55	3.64	3.27	02:05	0.160	12:00	0.269	0.218	0.218	0.03
10/19/2020	01:35	1.83	11:10	2.42	2.03	03:40	2.67	11:05	3.76	3.29	02:05	0.167	11:10	0.344	0.235	0.235	0.05
10/20/2020	22:45	1.67	11:50	2.43	2.00	01:15	2.59	11:40	3.81	3.33	03:50	0.165	11:50	0.350	0.233	0.233	-
10/21/2020	23:00	1.72	09:25	2.25	1.94	02:25	2.72	08:45	3.67	3.34	02:30	0.158	09:25	0.301	0.222	0.222	0.01
10/22/2020	03:10	1.74	09:35	2.49	1.97	03:30	2.73	09:30	3.83	3.34	03:30	0.154	09:35	0.366	0.229	0.229	-
10/23/2020	21:55	1.76	09:40	2.32	2.01	04:00	2.88	09:45	3.71	3.41	03:10	0.188	09:40	0.318	0.240	0.240	0.20
10/24/2020	21:50	1.70	10:00	2.29	1.97	04:10	2.93	09:55	3.77	3.35	22:05	0.176	10:00	0.317	0.230	0.230	0.02
10/25/2020	02:45	1.77	11:45	2.20	1.97	02:50	2.63	11:50	3.69	3.29	02:50	0.153	11:45	0.292	0.225	0.225	-
10/26/2020	23:25	1.76	09:10	2.53	2.03	02:45	2.72	09:10	3.83	3.34	00:00	0.176	09:10	0.373	0.239	0.239	-
10/27/2020	22:10	1.75	10:30	2.22	1.98	04:05	2.77	11:00	3.66	3.35	23:20	0.179	11:00	0.295	0.231	0.231	-
10/28/2020	23:05	1.75	09:05	2.20	1.98	03:35	2.83	13:40	3.66	3.36	04:00	0.181	14:10	0.290	0.231	0.231	-
10/29/2020	21:45	1.69	10:05	2.07	1.89	03:05	3.04	18:00	3.71	3.43	04:45	0.179	18:00	0.267	0.219	0.219	-
10/30/2020	21:50	1.65	11:40	2.12	1.90	02:25	3.01	11:40	3.77	3.43	02:20	0.168	11:40	0.285	0.223	0.223	0.10
10/31/2020	19:40	1.72	09:25	2.19	1.90	00:30	2.88	09:25	3.71	3.32	00:30	0.176	09:25	0.293	0.215	0.215	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/01/2020	22:35	1.67	12:30	2.17	1.91	04:20	2.84	13:15	3.72	3.35	22:50	0.173	13:15	0.287	0.219	0.219	-
11/02/2020	23:35	1.65	10:05	2.14	1.87	03:35	2.88	11:30	3.68	3.38	23:35	0.168	10:05	0.280	0.214	0.214	-
11/03/2020	00:10	1.65	10:30	2.36	1.93	04:40	2.82	11:30	3.85	3.44	04:40	0.158	10:30	0.338	0.229	0.229	0.83
11/04/2020	01:35	1.58	09:45	2.11	1.83	03:10	3.13	09:50	3.71	3.50	02:35	0.158	09:45	0.277	0.214	0.214	0.09
11/05/2020	02:40	1.53	15:00	2.11	1.84	04:55	3.13	16:05	3.72	3.49	02:40	0.154	15:00	0.278	0.217	0.217	0.34
11/06/2020	01:20	1.59	11:45	2.21	1.90	04:55	3.05	09:45	3.73	3.46	01:25	0.160	11:45	0.298	0.224	0.224	0.10
11/07/2020	00:25	1.70	11:45	2.32	1.95	04:55	2.99	12:30	3.75	3.41	00:25	0.178	11:45	0.321	0.230	0.230	0.07
11/08/2020	00:35	1.72	11:55	2.28	1.97	04:25	2.89	13:10	3.71	3.36	04:30	0.167	11:50	0.309	0.231	0.231	0.01
11/09/2020	00:15	1.75	09:50	2.30	2.00	04:05	2.92	17:50	3.70	3.36	03:25	0.179	17:50	0.313	0.234	0.234	0.04
11/10/2020	23:55	1.76	11:55	2.25	2.05	04:25	2.88	11:45	3.67	3.40	04:25	0.188	11:55	0.302	0.246	0.246	0.03
11/11/2020	00:30	1.69	11:00	2.47	2.02	04:00	3.05	10:55	3.81	3.46	02:20	0.176	11:00	0.359	0.246	0.246	-
11/12/2020	00:50	1.70	12:30	2.25	1.93	05:05	2.93	12:20	3.69	3.40	05:05	0.173	12:30	0.304	0.225	0.225	0.16
11/13/2020	03:10	1.67	09:45	2.65	2.03	01:50	3.14	09:50	3.90	3.50	03:10	0.172	09:45	0.405	0.250	0.250	0.38
11/14/2020	00:55	1.72	13:35	2.30	2.03	03:15	3.04	17:05	3.77	3.46	00:55	0.180	13:35	0.317	0.248	0.248	0.47
11/15/2020	04:30	1.73	15:05	2.37	2.03	04:55	3.27	11:35	3.74	3.49	04:30	0.185	15:10	0.330	0.249	0.249	0.19
11/16/2020	04:15	1.74	13:20	2.47	2.10	04:40	3.09	12:55	3.81	3.52	04:40	0.180	16:25	0.358	0.266	0.266	0.31
11/17/2020	00:50	1.84	11:35	2.38	2.12	02:15	3.14	11:30	3.74	3.49	06:55	0.204	11:35	0.334	0.264	0.264	0.20
11/18/2020	02:30	1.72	13:05	2.33	2.07	04:40	3.14	17:30	3.74	3.49	02:30	0.182	17:30	0.324	0.257	0.257	0.30
11/19/2020	01:15	1.81	12:25	2.42	2.08	02:25	3.19	13:25	3.76	3.48	01:05	0.196	12:25	0.341	0.258	0.258	0.50
11/20/2020	00:55	1.79	10:35	2.42	2.10	03:10	3.08	10:40	3.70	3.44	03:30	0.189	10:35	0.337	0.258	0.258	0.01
11/21/2020	02:20	1.86	16:10	2.37	2.12	04:30	3.14	11:20	3.70	3.44	02:40	0.204	11:25	0.327	0.262	0.262	-
11/22/2020	04:50	1.82	15:40	2.64	2.11	02:50	3.26	15:40	3.82	3.48	05:40	0.199	15:40	0.396	0.262	0.262	0.21
11/23/2020	02:05	1.77	10:55	2.52	2.10	04:45	3.11	09:45	3.82	3.48	04:45	0.184	11:05	0.367	0.262	0.262	0.14
11/24/2020	00:25	1.79	16:20	2.37	2.05	04:15	3.09	15:45	3.73	3.45	02:15	0.190	16:25	0.328	0.250	0.250	0.21
11/25/2020	03:00	1.76	11:05	2.31	2.04	04:35	3.12	14:30	3.73	3.47	03:25	0.183	12:30	0.311	0.250	0.250	0.05
11/26/2020	04:55	1.76	14:30	2.39	1.96	05:10	3.06	14:40	3.68	3.38	05:35	0.177	14:30	0.329	0.230	0.230	0.02
11/27/2020	00:35	1.76	12:05	2.21	1.97	04:25	2.96	10:30	3.64	3.36	04:25	0.179	10:30	0.283	0.230	0.230	-
11/28/2020	02:45	1.82	13:30	2.29	2.04	04:25	2.84	10:35	3.65	3.35	04:55	0.179	13:30	0.306	0.242	0.242	0.05
11/29/2020	01:00	1.93	14:10	2.37	2.13	05:10	3.01	10:35	3.66	3.39	03:45	0.201	18:45	0.317	0.260	0.260	-
11/30/2020	02:10	1.91	11:55	2.59	2.20	02:15	3.22	19:50	3.78	3.51	02:10	0.210	11:55	0.374	0.281	0.281	0.36
12/01/2020	23:40	1.81	12:20	2.33	2.03	04:30	3.11	12:30	3.71	3.43	04:40	0.195	12:35	0.321	0.244	0.244	-
12/02/2020	02:50	1.77	14:20	2.40	2.04	05:05	2.99	12:20	3.71	3.41	04:45	0.175	12:20	0.332	0.246	0.246	0.01
12/03/2020	04:25	1.76	12:15	2.55	2.04	03:10	2.95	12:25	3.76	3.43	04:25	0.172	12:20	0.369	0.246	0.246	-
12/04/2020	23:35	1.73	12:40	2.25	2.00	05:00	3.18	10:10	3.71	3.46	06:45	0.190	12:40	0.298	0.241	0.241	-
12/05/2020	04:55	1.76	12:55	2.41	1.99	04:35	3.10	12:45	3.77	3.45	04:55	0.180	12:55	0.341	0.239	0.239	0.03
12/06/2020	21:10	1.80	13:10	2.23	1.98	03:15	3.13	13:15	3.71	3.45	03:20	0.192	13:15	0.300	0.237	0.237	0.03
12/07/2020	03:35	1.80	12:10	2.47	1.99	04:50	3.09	10:35	3.80	3.44	01:50	0.188	10:45	0.354	0.238	0.238	-
12/08/2020	03:40	1.73	09:45	2.52	2.03	05:00	2.99	09:45	3.79	3.46	05:00	0.170	09:45	0.368	0.248	0.248	0.87
12/09/2020	21:10	1.77	13:20	2.25	1.94	04:50	3.15	14:05	3.71	3.50	04:50	0.195	13:20	0.305	0.232	0.232	0.17
12/10/2020	23:35	1.72	10:25	2.41	1.99	02:40	3.19	10:25	3.85	3.55	05:00	0.192	10:25	0.350	0.246	0.246	0.07
12/11/2020	01:25	1.72	10:20	2.14	1.90	05:00	3.27	14:05	3.77	3.53	01:30	0.185	10:20	0.288	0.227	0.227	0.02
12/12/2020	07:30	1.75	13:45	2.23	1.88	02:45	3.12	13:40	3.83	3.45	05:40	0.184	13:45	0.308	0.220	0.220	0.01
12/13/2020	03:20	1.74	13:00	2.40	1.94	05:10	2.97	09:50	3.87	3.49	05:10	0.169	13:00	0.348	0.234	0.234	0.24
12/14/2020	23:00	1.75	12:05	2.44	1.94	03:15	2.94	11:30	3.89	3.53	03:15	0.175	12:05	0.355	0.236	0.236	0.05
12/15/2020	23:05	1.70	15:55	2.52	1.98	01:40	2.87	15:55	3.96	3.56	02:00	0.176	15:55	0.385	0.245	0.245	0.58
12/16/2020	00:55	1.67	10:15	2.47	2.02	03:30	3.00	11:35	3.86	3.62	03:30	0.173	10:15	0.363	0.258	0.258	0.39
12/17/2020	04:20	1.73	14:45	2.26	1.94	02:05	3.29	10:50	3.82	3.58	04:45	0.187	11:05	0.313	0.240	0.240	0.08
12/18/2020	01:50	1.71	14:40	2.32	1.96	01:55	3.21	15:35	3.83	3.58	04:25	0.178	14:40	0.326	0.244	0.244	0.25
12/19/2020	00:45	1.72	20:50	2.32	2.02	04:05	3.28	16:25	3.80	3.60	00:50	0.189	20:45	0.323	0.256	0.256	0.37
12/20/2020	08:25	1.73	12:45	2.33	2.00	23:55	3.31	12:35	3.80	3.59	04:50	0.193	12:45	0.327	0.251	0.251	0.04
12/21/2020	04:45	1.87	17:00	2.77	2.20	00:25	3.12	19:05	4.02	3.65	00:25	0.216	17:00	0.445	0.293	0.293	1.07
12/22/2020	01:40	1.88	14:25	2.49	2.16	04:30	3.37	09:55	3.89	3.65	03:55	0.217	14:50	0.363	0.285	0.285	-
12/23/2020	22:20	2.02	12:40	2.43	2.21	03:20	3.25	12:35	3.85	3.61	03:20	0.240	12:40	0.355	0.290	0.290	-
12/24/2020	04:35	1.91	11:10	2.42	2.16	04:25	3.36	12:25	3.88	3.65	04:35	0.222	12:40	0.356	0.284	0.284	-
12/25/2020	03:45	1.93	13:35	2.40	2.16	01:20	3.42	14:00	4.01	3.68	04:50	0.229	13:30	0.347	0.287	0.287	0.49
12/26/2020	22:10	1.98	14:10	2.44	2.19	05:05	3.46	14:05	3.89	3.68	22:10	0.242	14:10	0.361	0.291	0.291	0.02
12/27/2020	04:20	1.91	18:00	2.47	2.23	04:15	3.42	19:25	3.94	3.71	04:15	0.223	17:55	0.368	0.304	0.304	0.13
12/28/2020	23:05	2.05	12:30	2.39	2.20	23:10	3.59	12:30	3.90	3.76	23:05	0.260	12:30	0.350	0.301	0.301	-
12/29/2020	02:50	1.91	15:35	2.41	2.15	04:30	3.44	14:40	3.90	3.71	02:50	0.229	15:30	0.351	0.287	0.287	0.14
12/30/2020	01:20	2.00	23:50	2.54	2.26	00:35	3.48	23:45	3.96	3.78	01:20	0.248	23:50	0.388	0.315	0.315	0.78
12/31/2020	04:40	2.05	14:05	2.49	2.27	03:15	3.54	00:00	3.95	3.80	03:15	0.259	14:15	0.378	0.318	0.318	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			57.723	30.65
Average	2.17	3.55	0.282	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A3_40834

Site Address /Location:	221 30th St NE			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	located in middle lane on yellow line. Small traffic diverson	Latitude:	47.333897	Pipe Size (H x W): 18.00 X 18.00	Pipe Shape: Circular
		Longitude:	-122.227492		



Manhole #	System Characteristics
A340834	Industrial
Access	Traffic
Drive	Medium







ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.11.325

Installation Information

Installation Date:	Installation Type:
Tuesday, September 22, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Time	
10:58:00 AM	
Depth of Flow (Wet DOF) (in)	
2.00	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
4.48	N/A
	Silt Type
0	

Hydraulic Comments:

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
9	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
Concrete	Good

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

AUB_A4_50817

Site Commentary

SITE INFORMATION

Pipe	Elliptical (12 in H x 11.75 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

This site experienced flow changes during the monitoring period.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	3.65	2.02	0.259
Minimum	1.66	0.71	0.030
Maximum	6.66	2.57	0.593
Min Time	02/13/2021 10:00:00 AM	02/13/2021 10:00:00 AM	02/13/2021 10:00:00 AM
Max Time	02/13/2021 3:00:00 PM	10/09/2020 8:00:00 AM	02/13/2021 3:00:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

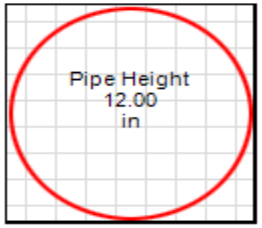
Percent Uptime	
DFINAL (in)	94.975
VFINAL (ft/s)	94.975
QFINAL (MGD - Total MG)	94.975

Hydrograph Report

AUB_A4_50817

Flow Monitor

AUB_A4_50817



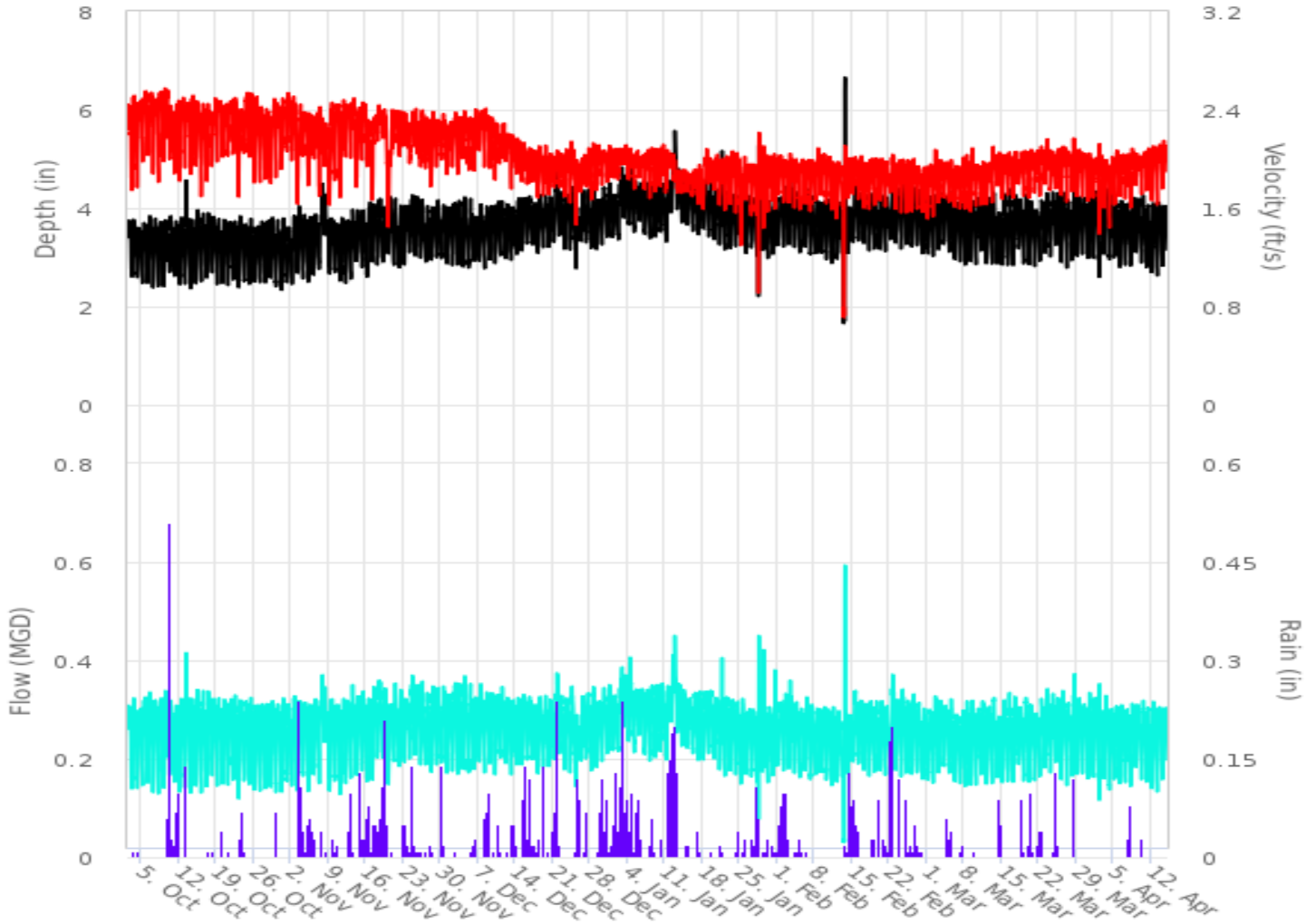
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
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Scattergraph Report

AUB_A4_50817

Flow Monitor

AUB_A4_50817

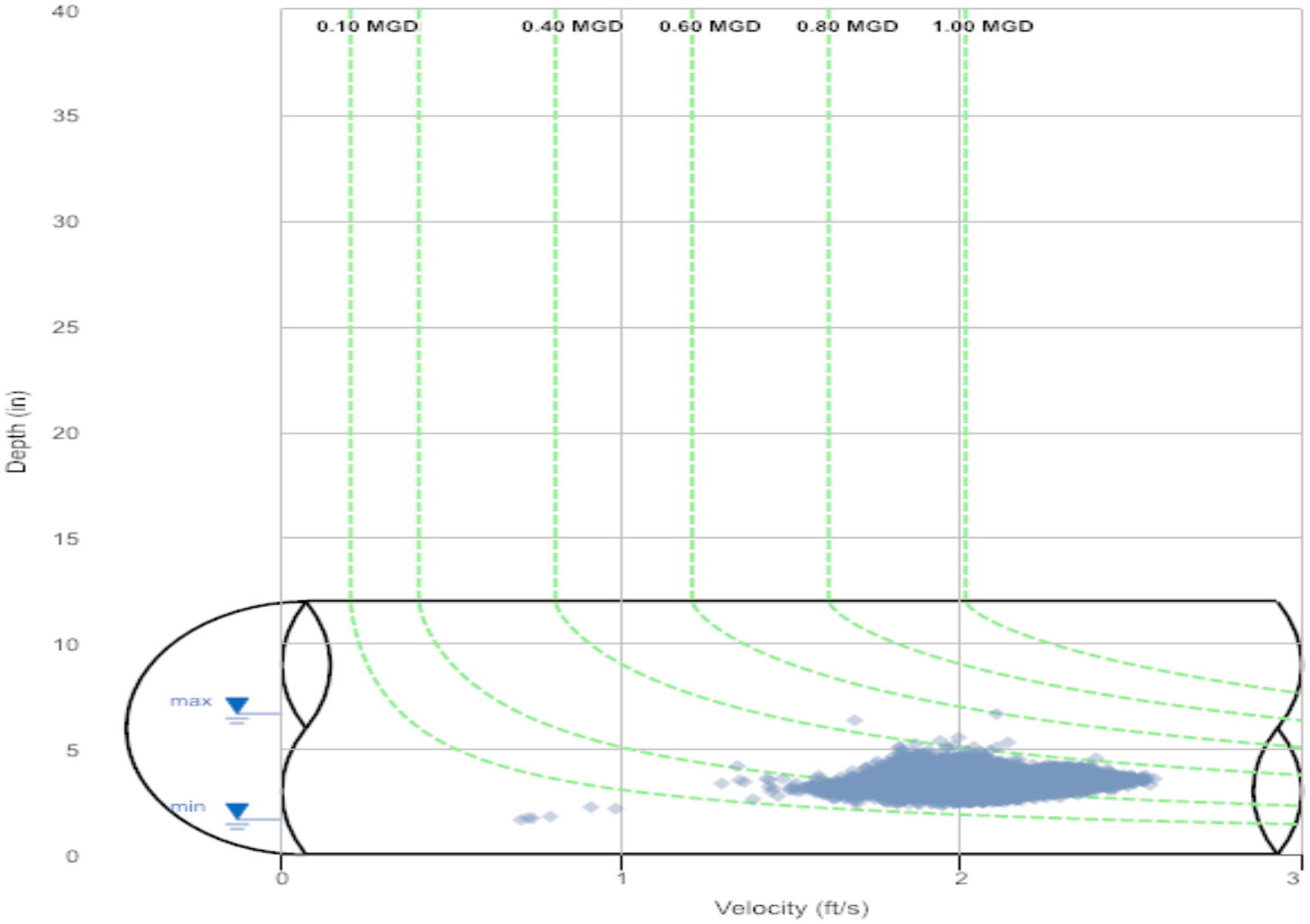
Pipe Height
12.00
in

Report Period

09/22/2020
To
04/14/2021

Legend

DFINAL - VFINAL
Iso-Q™
Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A4_50817Pipe: Elliptical (12 in H x 11.75 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	03:40	3.32	15:40	4.37	3.89	04:25	1.60	21:50	2.23	1.97	04:25	0.186	13:40	0.356	0.276	0.276	0.51
01/02/2021	05:20	3.29	22:25	4.88	4.07	03:55	1.64	16:15	2.32	1.98	03:55	0.194	18:05	0.409	0.297	0.297	1.69
01/03/2021	06:05	3.74	13:35	4.72	4.33	05:00	1.70	16:25	2.30	2.03	06:05	0.244	12:35	0.389	0.328	0.328	0.65
01/04/2021	06:05	3.59	10:25	5.26	4.20	01:00	1.70	15:10	2.26	1.98	03:15	0.220	10:25	0.447	0.309	0.309	0.48
01/05/2021	03:55	3.38	12:25	4.56	4.10	04:10	1.62	22:10	2.27	1.95	04:10	0.193	17:25	0.372	0.295	0.295	0.52
01/06/2021	03:20	3.64	15:15	4.59	4.15	06:25	1.71	22:15	2.28	1.96	06:25	0.223	15:15	0.377	0.299	0.299	0.22
01/07/2021	04:10	3.36	14:45	4.55	4.05	04:10	1.58	06:50	2.27	1.94	04:10	0.181	15:10	0.365	0.288	0.288	-
01/08/2021	02:40	3.30	15:00	4.52	3.99	02:30	1.56	20:45	2.35	1.96	02:40	0.176	15:00	0.388	0.285	0.285	0.22
01/09/2021	03:40	3.34	12:15	4.57	4.00	03:25	1.56	21:30	2.27	1.97	03:25	0.179	12:15	0.376	0.287	0.287	-
01/10/2021	01:55	3.43	11:15	4.57	4.00	01:30	1.66	15:20	2.31	1.96	01:30	0.198	11:30	0.375	0.285	0.285	0.07
01/11/2021	04:40	3.28	14:00	4.62	4.07	00:40	1.56	10:20	2.23	1.93	00:40	0.184	11:30	0.382	0.289	0.289	1.06
01/12/2021	01:00	3.89	18:30	5.75	4.74	16:25	1.64	00:15	2.19	1.93	02:05	0.251	18:30	0.481	0.352	0.352	2.10
01/13/2021	04:50	3.94	13:20	4.89	4.46	23:00	1.62	13:20	2.08	1.83	05:55	0.233	13:20	0.396	0.310	0.310	0.09
01/14/2021	05:00	3.63	11:50	4.76	4.28	03:25	1.58	13:00	2.08	1.84	03:25	0.213	11:35	0.358	0.293	0.293	0.01
01/15/2021	02:15	3.58	12:05	4.62	4.17	02:45	1.56	14:55	2.08	1.82	02:45	0.198	14:55	0.358	0.280	0.280	0.09
01/16/2021	04:45	3.49	21:05	4.85	4.17	00:50	1.55	21:20	2.08	1.82	04:45	0.192	21:20	0.368	0.280	0.280	-
01/17/2021	05:25	3.39	12:10	4.76	4.11	02:40	1.51	09:20	2.19	1.79	04:50	0.181	10:40	0.361	0.271	0.271	0.10
01/18/2021	03:10	3.55	10:30	4.70	4.09	03:50	1.48	18:05	2.26	1.87	03:50	0.184	18:05	0.370	0.281	0.281	-
01/19/2021	03:45	3.28	12:35	4.64	4.03	08:10	1.65	13:15	2.22	1.92	03:40	0.195	13:15	0.372	0.282	0.282	0.01
01/20/2021	04:05	3.28	12:50	4.53	3.93	00:25	1.67	16:10	2.35	1.90	04:05	0.184	16:10	0.363	0.271	0.271	-
01/21/2021	03:35	3.19	15:20	5.29	3.92	03:45	1.50	13:30	2.34	1.88	03:45	0.161	15:20	0.432	0.268	0.268	0.11
01/22/2021	05:05	3.10	11:40	4.45	3.83	02:55	1.49	21:10	2.26	1.85	02:55	0.155	15:00	0.348	0.257	0.257	-
01/23/2021	04:35	3.08	15:05	4.37	3.82	03:00	1.57	14:30	2.30	1.86	03:40	0.167	14:30	0.356	0.256	0.256	-
01/24/2021	04:40	3.20	12:55	4.33	3.77	03:05	1.40	11:00	2.17	1.85	03:05	0.149	11:00	0.334	0.250	0.250	0.16
01/25/2021	03:40	3.29	11:25	4.62	3.94	03:10	1.17	21:35	2.16	1.72	03:25	0.134	11:25	0.346	0.248	0.248	0.04
01/26/2021	03:20	3.03	19:30	4.32	3.80	04:05	1.53	18:30	2.18	1.85	04:05	0.156	18:30	0.326	0.252	0.252	-
01/27/2021	02:15	3.14	11:15	4.24	3.78	02:20	1.41	21:20	2.13	1.81	02:20	0.146	10:40	0.323	0.245	0.245	0.14
01/28/2021	10:30	1.57	11:35	7.62	3.76	10:35	0.57	13:15	2.34	1.82	10:30	0.022	11:40	0.637	0.254	0.254	0.24
01/29/2021	08:45	2.14	09:50	7.58	3.70	08:45	0.98	13:45	2.29	1.86	08:45	0.059	09:50	0.692	0.248	0.248	0.03
01/30/2021	06:05	2.89	11:05	4.85	3.64	04:05	1.41	12:55	2.18	1.85	06:05	0.134	11:05	0.409	0.240	0.240	0.07
01/31/2021	13:00	2.41	13:25	6.38	3.66	13:00	1.17	13:20	2.40	1.84	13:00	0.083	13:20	0.581	0.241	0.241	0.12
02/01/2021	04:10	3.19	09:30	4.31	3.85	05:30	1.54	12:35	2.15	1.89	04:55	0.171	12:35	0.339	0.263	0.263	0.82
02/02/2021	03:20	3.16	13:50	4.60	3.95	02:40	1.55	21:25	2.20	1.87	03:15	0.168	21:25	0.384	0.269	0.269	0.31
02/03/2021	03:50	3.20	09:05	5.28	3.96	03:25	1.57	18:10	2.25	1.86	03:25	0.172	09:05	0.456	0.269	0.269	0.06
02/04/2021	04:00	3.18	13:45	4.34	3.84	04:05	1.53	10:45	2.20	1.85	04:05	0.161	13:45	0.347	0.256	0.256	0.07
02/05/2021	04:05	3.04	12:45	4.28	3.76	04:30	1.50	09:20	2.13	1.85	04:05	0.153	12:45	0.324	0.250	0.250	0.01
02/06/2021	05:10	3.08	12:40	4.48	3.83	03:25	1.45	19:30	2.11	1.86	03:25	0.156	12:30	0.352	0.257	0.257	0.01
02/07/2021	05:10	2.95	13:30	4.33	3.67	02:45	1.45	14:25	2.14	1.84	03:30	0.146	13:10	0.329	0.240	0.240	-
02/08/2021	03:30	3.04	19:55	4.58	3.72	02:35	1.52	15:45	2.32	1.89	02:35	0.158	19:55	0.378	0.251	0.251	-
02/09/2021	03:20	3.00	09:35	4.48	3.71	06:00	1.40	09:30	2.29	1.89	06:00	0.143	09:30	0.384	0.250	0.250	-
02/10/2021	03:15	2.93	12:25	4.31	3.63	04:05	1.47	17:45	2.23	1.88	04:05	0.139	14:05	0.333	0.242	0.242	-
02/11/2021	04:10	2.80	11:10	4.27	3.66	03:55	1.37	09:05	2.16	1.80	03:55	0.127	11:45	0.318	0.233	0.233	-
02/12/2021	04:35	2.90	11:05	4.14	3.62	00:50	1.39	10:55	2.20	1.81	03:35	0.141	10:55	0.324	0.232	0.232	-
02/13/2021	10:05	1.61	14:20	8.84	3.42	10:00	0.64	22:00	2.28	1.62	10:00	0.026	14:20	0.775	0.215	0.215	0.08
02/14/2021	06:50	3.04	12:40	4.21	3.65	03:10	1.48	12:40	2.28	1.88	03:10	0.151	12:40	0.355	0.242	0.242	0.71
02/15/2021	04:15	3.23	13:35	4.62	3.96	03:50	1.61	13:30	2.24	1.90	03:05	0.181	13:30	0.385	0.275	0.275	0.78
02/16/2021	04:25	3.28	18:20	4.42	3.93	04:00	1.56	11:00	2.26	1.86	04:00	0.181	11:00	0.369	0.265	0.265	0.07
02/17/2021	04:15	3.23	12:45	4.38	3.85	04:25	1.45	21:25	2.18	1.83	04:25	0.156	12:50	0.339	0.255	0.255	-
02/18/2021	04:00	3.04	13:10	4.41	3.83	03:25	1.47	20:55	2.21	1.84	04:00	0.152	20:55	0.345	0.254	0.254	0.09
02/19/2021	04:25	3.10	13:40	4.34	3.77	05:45	1.49	18:55	2.19	1.86	05:45	0.155	13:30	0.334	0.252	0.252	0.17
02/20/2021	04:45	3.09	13:15	4.43	3.73	03:35	1.54	10:20	2.10	1.84	04:50	0.159	13:15	0.344	0.245	0.245	0.07
02/21/2021	04:45	3.04	12:05	4.29	3.69	04:40	1.53	11:20	2.13	1.81	04:45	0.151	11:20	0.330	0.237	0.237	0.42
02/22/2021	03:55	3.29	16:50	4.95	4.06	01:10	1.55	15:10	2.14	1.88	06:15	0.181	13:55	0.400	0.281	0.281	0.98
02/23/2021	03:35	3.24	10:55	4.46	3.94	03:35	1.49	15:10	2.21	1.84	03:35	0.162	15:10	0.366	0.264	0.264	0.27
02/24/2021	03:40	3.07	11:35	4.68	3.92	03:15	1.50	10:35	2.24	1.82	03:35	0.156	10:35	0.379	0.260	0.260	-
02/25/2021	03:40	3.22	11:20	4.45	3.91	03:30	1.44	10:00	2.17	1.83	03:30	0.162	10:00	0.345	0.259	0.259	0.18
02/26/2021	03:55	3.13	13:30	4.49	3.89	03:55	1.38	15:50	2.27	1.81	03:55	0.142	15:50	0.354	0.256	0.256	0.10
02/27/2021	03:05	3.22	11:55	4.44	3.81	03:40	1.49	18:05	2.09	1.80	03:40	0.161	12:05	0.336	0.246	0.246	0.02
02/28/2021	03:55	2.95	11:35	4.32	3.66	02:35	1.45	12:55	2.06	1.78	02:35	0.145	12:55	0.323	0.231	0.231	0.02
03/01/2021	04:10	2.95	11:50	4.44	3.77	03:25	1.29	21:55	2.16	1.81	03:25	0.135	13:00	0.337	0.246	0.246	-
03/02/2021	03:25	2.94	11:30	4.36	3.80	03:25	1.36	13:45	2.38	1.84	03:25	0.128	13:45	0.366	0.252	0.252	-
03/03/2021	04:30	3.10	14:30	4.44	3.80	02:40	1.51	14:30	2.14	1.85	02:55	0.164	14:30	0.357	0.252	0.252	-
03/04/2021	04:55	3.22	11:05	4.31	3.83	03:25	1.48	12:10	2.15	1.86	03:25	0.166	12:10	0.341	0.255	0.255	0.20
03/05/2021	04:00	3.01	12:40	4.51	3.75	01:20	1.52	12:35	2.15	1.83	04:00	0.156	12:35	0.362	0.245	0.245	0.05
03/06/2021	04:55	2.91	12:55	4.28	3.67	06:05	1.39	11:15	2.18	1.79	06:05	0.136	13:00	0.338	0.233	0.233	-
03/07/2021	05:30	2.85	19:30	4.23	3.60	03:10	1.51	10:25	2.36	1.81	05:30	0.140	19:45	0.341	0.230	0.230	0.04
03/08/2021	03:30	2.75	12:05	4.42	3.68	04:15	1.53	11:00	2.18	1.85	03:30	0.132	11:50	0.343	0.242	0.242	-
03/09/2021	03:05	2.87	12:35	4.29	3.63	06:00	1.48	11:35	2.25	1.85	03:10	0.142	11:35	0.335	0.238	0.238	0.01
03/10/2021	04:10	2.80	15:10	4.25	3.64	04:25	1.53	08:30	2.11	1.83	04:15	0.138	16:15	0.323	0.236	0.236	-
03/11/2021	03:45	3.06	10:50	4.51	3.77	02:55	1.55	13:50	2.14	1.86	03:35	0.158	10:35	0.337	0.251	0.251	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	02:40	2.85	15:50	4.32	3.65	04:15	1.53	20:50	2.18	1.85	02:15	0.144	15:20	0.338	0.239	0.239	-
03/13/2021	04:55	2.81	13:00	4.48	3.63	04:05	1.49	13:00	2.26	1.91	04:05	0.137	13:00	0.383	0.245	0.245	-
03/14/2021	06:05	2.80	14:00	4.12	3.50	21:50	1.59	13:10	2.17	1.92	05:25	0.152	14:10	0.315	0.233	0.233	0.30
03/15/2021	02:30	2.73	12:35	4.39	3.57	02:30	1.49	11:25	2.26	1.92	02:30	0.127	11:25	0.341	0.241	0.241	-
03/16/2021	03:55	2.78	11:25	4.47	3.62	01:15	1.52	19:45	2.16	1.91	03:55	0.144	10:45	0.353	0.243	0.243	-
03/17/2021	03:10	2.75	11:40	4.47	3.66	01:40	1.48	11:00	2.32	1.91	01:55	0.138	11:00	0.353	0.249	0.249	-
03/18/2021	23:55	3.00	10:20	4.33	3.65	03:45	1.65	19:35	2.18	1.92	23:55	0.167	10:15	0.337	0.246	0.246	0.11
03/19/2021	02:35	2.83	12:05	4.38	3.68	04:25	1.56	08:25	2.23	1.93	04:25	0.141	11:05	0.349	0.253	0.253	0.03
03/20/2021	02:50	2.80	13:15	4.25	3.59	02:45	1.52	12:00	2.28	1.94	02:45	0.136	09:55	0.341	0.246	0.246	0.17
03/21/2021	02:55	2.68	09:55	4.18	3.52	02:50	1.52	11:15	2.28	1.94	02:50	0.128	09:55	0.328	0.238	0.238	0.07
03/22/2021	03:05	2.87	11:15	4.34	3.69	05:50	1.48	09:20	2.33	1.98	02:30	0.147	14:00	0.360	0.259	0.259	0.11
03/23/2021	03:10	3.02	10:55	4.45	3.72	03:10	1.62	13:35	2.38	1.97	03:10	0.159	13:35	0.379	0.260	0.260	-
03/24/2021	04:05	2.90	14:05	4.47	3.74	04:10	1.56	16:35	2.26	1.93	04:10	0.147	14:10	0.358	0.258	0.258	0.34
03/25/2021	03:50	3.14	11:55	4.36	3.88	03:45	1.53	17:05	2.29	1.95	03:45	0.163	11:50	0.352	0.273	0.273	0.27
03/26/2021	03:05	2.84	10:45	4.49	3.71	02:40	1.49	12:35	2.27	1.97	02:40	0.145	10:40	0.361	0.260	0.260	-
03/27/2021	03:40	2.74	10:30	4.28	3.62	05:20	1.52	06:40	2.31	1.93	04:15	0.135	10:20	0.333	0.247	0.247	-
03/28/2021	02:35	2.86	15:15	5.07	3.67	04:55	1.61	10:10	2.51	1.95	02:25	0.154	15:15	0.446	0.254	0.254	0.37
03/29/2021	02:40	2.94	10:55	4.28	3.70	01:00	1.61	20:35	2.32	1.94	02:45	0.155	07:25	0.348	0.255	0.255	-
03/30/2021	02:35	2.95	10:40	4.34	3.73	02:35	1.59	09:50	2.25	1.93	02:35	0.151	09:50	0.344	0.256	0.256	-
03/31/2021	01:30	2.94	12:05	4.52	3.71	00:45	1.43	09:45	2.29	1.88	02:50	0.143	10:05	0.365	0.249	0.249	-
04/01/2021	03:25	2.93	12:20	4.47	3.74	03:20	1.55	09:35	2.26	1.89	03:20	0.146	11:55	0.346	0.252	0.252	-
04/02/2021	06:50	2.15	07:00	6.24	3.70	06:45	1.08	07:55	2.26	1.87	06:45	0.066	07:00	0.540	0.248	0.248	-
04/03/2021	03:35	3.00	10:35	4.46	3.78	03:20	1.40	19:30	2.19	1.84	03:55	0.140	12:35	0.343	0.249	0.249	-
04/04/2021	04:15	2.89	10:50	4.40	3.62	02:00	1.35	16:25	2.23	1.75	04:10	0.126	16:25	0.346	0.225	0.225	-
04/05/2021	01:45	2.88	09:45	4.40	3.66	04:00	1.54	20:10	2.31	1.89	04:00	0.146	14:15	0.331	0.245	0.245	-
04/06/2021	02:50	2.74	10:05	4.30	3.56	01:10	1.54	10:40	2.19	1.91	01:10	0.136	10:40	0.338	0.239	0.239	-
04/07/2021	03:15	2.78	12:10	4.17	3.57	02:35	1.57	18:10	2.23	1.88	03:10	0.143	12:35	0.327	0.236	0.236	0.22
04/08/2021	02:45	2.64	10:25	4.28	3.65	02:45	1.47	09:35	2.29	1.92	02:45	0.120	10:20	0.348	0.249	0.249	-
04/09/2021	02:15	3.00	10:45	4.48	3.65	02:20	1.54	08:00	2.22	1.94	02:20	0.150	10:45	0.346	0.249	0.249	0.03
04/10/2021	03:55	2.81	12:10	4.40	3.61	02:50	1.50	16:00	2.28	1.95	03:45	0.139	12:10	0.355	0.248	0.248	0.02
04/11/2021	02:35	2.72	10:55	4.25	3.49	03:35	1.59	08:15	2.28	1.96	03:35	0.139	10:45	0.345	0.238	0.238	-
04/12/2021	03:10	2.57	09:25	4.32	3.49	02:30	1.59	20:30	2.29	1.94	01:40	0.128	09:25	0.360	0.238	0.238	-
04/13/2021	03:10	2.55	10:50	4.30	3.52	02:15	1.48	19:45	2.41	1.96	02:15	0.116	10:50	0.337	0.242	0.242	-
04/14/2021	02:20	2.74	14:30	4.16	3.55	03:40	1.58	18:50	2.38	1.99	02:20	0.138	14:30	0.338	0.248	0.247	-
10/01/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/02/2020	23:50	2.86	16:30	3.91	3.54	23:30	1.89	15:10	2.70	2.29	23:55	0.172	15:10	0.347	0.282	0.195	-
10/03/2020	03:20	2.53	10:45	3.84	3.28	03:05	1.66	12:30	2.69	2.23	03:20	0.131	12:30	0.351	0.251	0.251	0.01
10/04/2020	03:35	2.54	11:05	3.81	3.12	03:35	1.65	14:40	2.68	2.27	03:35	0.127	11:05	0.350	0.237	0.237	0.01
10/05/2020	03:00	2.40	10:20	3.90	3.23	03:05	1.82	18:20	2.70	2.37	03:05	0.130	11:30	0.350	0.259	0.259	-
10/06/2020	03:15	2.39	12:35	3.99	3.25	03:05	1.75	15:30	2.81	2.35	03:05	0.125	11:50	0.361	0.259	0.259	-
10/07/2020	02:50	2.33	13:35	4.00	3.21	02:20	1.73	09:40	2.68	2.32	02:20	0.121	13:35	0.346	0.252	0.252	-
10/08/2020	01:05	2.37	16:35	3.88	3.22	02:25	1.68	08:05	2.71	2.34	02:25	0.117	16:25	0.359	0.257	0.257	-
10/09/2020	02:35	2.38	10:20	3.82	3.20	01:25	1.88	08:05	2.84	2.39	02:45	0.135	10:55	0.352	0.259	0.259	0.64
10/10/2020	05:05	2.60	09:10	4.04	3.33	04:50	1.74	08:15	2.66	2.28	04:50	0.141	09:10	0.357	0.259	0.259	1.04
10/11/2020	03:20	2.59	09:55	3.93	3.24	02:00	1.76	13:05	2.64	2.27	03:00	0.143	09:55	0.369	0.250	0.250	0.53
10/12/2020	02:50	2.41	10:00	4.20	3.21	02:45	1.61	18:30	2.63	2.30	02:50	0.116	10:00	0.376	0.250	0.250	-
10/13/2020	02:40	2.28	07:45	5.09	3.33	03:00	1.59	13:50	2.62	2.30	03:00	0.109	07:45	0.486	0.263	0.263	0.61
10/14/2020	03:10	2.23	10:25	4.07	3.20	03:10	1.69	11:05	2.70	2.33	03:10	0.108	10:25	0.367	0.251	0.251	-
10/15/2020	02:35	2.39	11:20	4.20	3.30	02:00	1.72	10:20	2.74	2.24	02:00	0.129	10:20	0.373	0.252	0.252	-
10/16/2020	03:25	2.37	12:35	3.99	3.31	03:45	1.60	11:15	2.70	2.19	03:25	0.119	12:35	0.361	0.249	0.249	-
10/17/2020	02:40	2.49	10:15	4.12	3.35	02:35	1.70	09:40	2.63	2.24	02:40	0.127	10:15	0.372	0.259	0.259	0.01
10/18/2020	03:20	2.63	10:50	4.05	3.31	02:35	1.82	18:40	2.61	2.28	03:15	0.152	12:55	0.367	0.257	0.257	0.03
10/19/2020	03:00	2.35	10:10	3.93	3.20	02:55	1.75	15:00	2.71	2.33	02:55	0.121	10:10	0.350	0.252	0.252	0.05
10/20/2020	03:15	2.32	17:45	4.11	3.22	02:40	1.85	15:20	2.65	2.30	03:15	0.132	17:40	0.351	0.250	0.250	-
10/21/2020	03:00	2.27	10:45	3.94	3.22	02:50	1.86	09:05	2.79	2.33	03:00	0.124	09:05	0.352	0.255	0.255	0.01
10/22/2020	02:45	2.45	10:05	3.82	3.24	03:10	1.84	13:45	2.83	2.32	03:10	0.135	09:50	0.366	0.253	0.253	-
10/23/2020	03:40	2.32	10:20	3.95	3.24	03:35	1.54	09:20	2.61	2.21	03:40	0.106	10:30	0.347	0.244	0.244	0.20
10/24/2020	03:55	2.47	11:55	3.83	3.21	04:30	1.76	19:40	2.85	2.33	04:30	0.134	19:40	0.364	0.252	0.252	0.02
10/25/2020	03:10	2.41	10:00	3.97	3.15	04:15	1.84	12:45	2.72	2.31	03:15	0.136	10:05	0.357	0.244	0.244	-
10/26/2020	01:40	2.45	10:45	3.81	3.18	04:00	1.61	07:00	2.76	2.23	04:00	0.119	13:05	0.345	0.240	0.240	-
10/27/2020	03:10	2.45	11:55	4.01	3.24	00:00	1.44	14:40	2.57	2.20	02:20	0.128	11:55	0.356	0.243	0.243	-
10/28/2020	03:00	2.42	14:50	4.01	3.30	03:10	1.59	08:25	2.53	2.20	03:10	0.117	14:50	0.359	0.249	0.249	-
10/29/2020	03:10	2.45	11:20	3.94	3.21	00:15	1.51	11:30	2.59	2.25	03:15	0.117	11:30	0.352	0.243	0.243	-
10/30/2020	03:10	2.29	12:20	4.01	3.19	02:20	1.70	14:55	2.56	2.26	03:10	0.117	11:30	0.340	0.242	0.242	0.10
10/31/2020	04:15	2.23	13:00	3.91	3.11	04:10	1.80	09:05	2.77	2.29	04:20	0.117	14:10	0.342	0.239	0.239	-
11/01/2020	03:00	2.41	10:30	3.70	3.08	05:15	1.91	14:10	2.81	2.31	05:15	0.141	14:10	0.330	0.237	0.237	-
11/02/2020	01:50	2.38	11:55	3.89	3.27	04:45	1.83	09:20	2.61	2.28	02:45	0.131	15:20	0.346	0.254	0.254	-
11/03/2020	04:10	2.59	11:20	4.06	3.40	03:45	1.43	16:50	2.63	2.12	03:45	0.120	14:10	0.336	0.250	0.250	0.83
11/04/2020	03:35	2.51	12:50	3.97	3.35	03:30	1.85	16:55	2.50	2.23	03:30	0.142	12:50	0.337	0.256	0.256	0.09
11/05/2020	03:20	2.44	14:55	3.99	3.35	03:15	1.64	21:35	2.55	2.21	03:15	0.123	14:50	0.344	0.254	0.254	0.34
11/06/2020	02:40	2.56	12:30	4.08	3.36	06:20	1.79	22:20	2.50	2.22	02:30	0.148	13:10	0.346	0.255	0.255	0.10
11/07/2020	04:00	2.70	20:30	4.59	3.52	05:50	1.52	10:30	2.68	2.16	05:50	0.135	20:35	0.380	0.267	0.267	0.07
11/08/2020	06:00	2.64	06:05	5.10	3.70	05:50	1.35	20:25	2.47	2.14	05:55	0.111	06:05	0.454	0.280	0.280	0.01
11/09/2020	04:40	2.61	10:20	4.56	3.33	04:00	1.48	10:45	2.75	2.16	04:00	0.120	10:20	0.425	0.247	0.247	0.04

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/10/2020	04:20	2.57	20:15	3.89	3.26	03:25	1.60	12:55	2.86	2.25	03:25	0.136	12:55	0.356	0.249	0.249	0.03
11/11/2020	03:30	2.46	11:10	3.92	3.28	04:20	1.50	19:00	2.79	2.21	04:10	0.112	19:00	0.343	0.247	0.247	-
11/12/2020	04:15	2.36	17:35	3.88	3.28	04:10	1.74	14:30	2.78	2.30	04:10	0.121	14:30	0.359	0.257	0.257	0.16
11/13/2020	02:45	2.51	11:05	4.39	3.33	02:25	1.70	17:10	2.59	2.30	02:25	0.142	11:00	0.410	0.262	0.262	0.38
11/14/2020	02:10	2.74	09:50	4.16	3.47	04:50	1.60	20:30	2.56	2.20	04:50	0.148	11:20	0.368	0.264	0.264	0.47
11/15/2020	06:25	2.67	11:40	4.11	3.33	03:50	1.74	21:50	2.65	2.31	04:50	0.157	09:50	0.358	0.262	0.262	0.19
11/16/2020	02:15	2.53	12:10	4.20	3.49	04:10	1.74	14:35	2.47	2.14	04:05	0.137	11:15	0.364	0.260	0.260	0.31
11/17/2020	04:05	2.81	10:45	4.35	3.57	03:50	1.49	15:50	2.63	2.14	03:50	0.138	10:45	0.409	0.269	0.269	0.20
11/18/2020	02:35	2.76	15:55	4.38	3.58	04:25	1.98	08:20	2.65	2.31	02:35	0.181	10:10	0.394	0.289	0.289	0.30
11/19/2020	04:10	2.81	13:15	4.25	3.54	23:40	1.73	09:25	2.59	2.23	04:05	0.175	13:15	0.384	0.274	0.274	0.50
11/20/2020	04:15	2.97	13:50	4.35	3.64	03:45	1.30	22:50	2.52	1.95	04:15	0.129	10:05	0.350	0.252	0.252	0.01
11/21/2020	05:35	2.79	12:45	4.32	3.47	03:40	1.86	09:25	2.56	2.27	03:40	0.172	13:10	0.389	0.272	0.272	-
11/22/2020	03:15	2.73	11:40	4.17	3.40	06:20	1.82	16:15	2.59	2.23	06:20	0.165	12:30	0.369	0.260	0.260	0.21
11/23/2020	03:50	2.72	09:30	4.26	3.58	18:10	1.90	08:00	2.50	2.21	03:50	0.178	09:25	0.379	0.275	0.275	0.14
11/24/2020	03:55	2.99	15:55	5.12	3.75	03:05	1.72	15:40	2.50	2.20	03:05	0.170	15:55	0.480	0.295	0.295	0.21
11/25/2020	03:35	2.97	13:10	4.38	3.65	01:25	1.85	19:35	2.69	2.21	01:25	0.191	15:35	0.378	0.283	0.283	0.05
11/26/2020	03:30	2.90	11:30	4.32	3.50	04:20	1.73	14:25	2.50	2.15	04:20	0.162	11:30	0.384	0.262	0.262	0.02
11/27/2020	05:05	2.83	10:40	4.14	3.50	02:45	1.74	14:30	2.45	2.17	02:45	0.172	10:40	0.368	0.265	0.265	-
11/28/2020	05:10	2.91	17:00	4.14	3.58	01:30	1.57	12:30	2.49	2.10	01:30	0.158	12:35	0.372	0.265	0.265	0.05
11/29/2020	04:55	2.88	11:35	4.40	3.51	04:35	1.78	15:25	2.69	2.19	04:35	0.176	11:35	0.375	0.266	0.266	-
11/30/2020	02:35	2.84	12:00	4.28	3.61	03:00	1.65	11:25	2.51	2.19	03:00	0.168	12:00	0.388	0.278	0.278	0.36
12/01/2020	03:15	2.80	11:50	4.20	3.57	05:00	1.75	14:35	2.47	2.15	03:20	0.158	12:35	0.359	0.269	0.269	-
12/02/2020	03:35	2.74	15:30	4.24	3.58	02:15	1.72	18:25	2.56	2.19	02:15	0.155	18:25	0.393	0.275	0.275	0.01
12/03/2020	02:15	2.81	11:45	4.25	3.54	03:00	1.70	11:25	2.53	2.18	03:00	0.155	11:25	0.380	0.271	0.271	-
12/04/2020	04:00	2.70	11:05	4.27	3.52	00:40	1.74	10:20	2.52	2.22	04:15	0.159	11:30	0.395	0.274	0.274	-
12/05/2020	07:55	2.33	08:20	5.29	3.51	07:55	1.45	10:45	2.55	2.17	07:55	0.098	08:20	0.470	0.267	0.267	0.03
12/06/2020	05:30	2.82	13:00	4.04	3.44	04:15	1.77	12:00	2.55	2.22	05:30	0.158	13:05	0.358	0.263	0.263	0.03
12/07/2020	04:25	2.87	11:55	4.24	3.51	00:50	1.83	21:05	2.64	2.25	04:25	0.177	12:35	0.395	0.275	0.275	-
12/08/2020	04:10	2.73	14:45	4.19	3.50	04:15	1.75	10:40	2.56	2.23	04:15	0.150	14:35	0.371	0.272	0.272	0.87
12/09/2020	04:25	2.88	18:15	4.67	3.61	03:15	1.79	18:25	3.20	2.18	03:15	0.174	18:10	0.404	0.277	0.277	0.17
12/10/2020	04:15	2.81	20:30	4.36	3.61	03:15	1.66	16:25	2.48	2.12	03:15	0.150	20:25	0.380	0.269	0.269	0.07
12/11/2020	04:35	2.97	11:55	4.21	3.63	22:45	1.83	20:15	2.45	2.15	02:10	0.184	12:10	0.364	0.274	0.274	0.02
12/12/2020	03:15	2.88	11:20	4.16	3.61	05:15	1.74	20:30	2.42	2.12	03:15	0.160	11:25	0.344	0.267	0.267	0.01
12/13/2020	03:40	2.81	10:35	4.06	3.61	03:40	1.54	06:15	2.44	2.04	03:40	0.136	12:20	0.333	0.260	0.260	0.24
12/14/2020	04:55	3.02	16:35	4.26	3.70	05:55	1.65	11:20	2.35	2.05	05:55	0.170	11:20	0.362	0.269	0.269	0.05
12/15/2020	03:05	3.05	16:45	4.30	3.81	02:55	1.53	12:00	2.32	2.00	02:55	0.154	13:35	0.353	0.272	0.272	0.58
12/16/2020	08:25	2.97	08:55	4.63	3.83	03:40	1.60	08:40	2.41	1.97	08:30	0.163	08:40	0.397	0.271	0.271	0.39
12/17/2020	03:55	3.13	15:55	4.19	3.75	04:50	1.66	13:10	2.24	1.95	03:50	0.176	13:10	0.336	0.260	0.260	0.08
12/18/2020	03:55	3.02	13:35	4.34	3.75	03:55	1.51	10:45	2.33	1.93	03:55	0.148	10:30	0.354	0.259	0.259	0.25
12/19/2020	03:55	3.13	13:15	4.30	3.79	03:00	1.59	14:40	2.26	1.92	04:00	0.171	14:00	0.353	0.261	0.261	0.37
12/20/2020	03:55	3.10	12:15	4.27	3.79	05:10	1.52	12:35	2.25	1.91	05:10	0.163	12:35	0.354	0.259	0.259	0.04
12/21/2020	03:35	3.23	19:55	4.87	4.07	02:50	1.59	19:30	2.19	1.93	02:50	0.179	20:00	0.408	0.289	0.289	1.07
12/22/2020	03:30	3.37	11:35	4.39	3.95	06:35	1.59	14:15	2.23	1.92	05:40	0.193	14:15	0.356	0.275	0.275	-
12/23/2020	03:25	3.05	13:00	4.31	3.83	05:10	1.54	12:40	2.23	1.90	03:25	0.164	12:45	0.353	0.263	0.263	-
12/24/2020	03:55	3.05	13:05	4.47	3.80	04:35	1.51	10:10	2.31	1.93	04:25	0.157	13:25	0.373	0.264	0.264	-
12/25/2020	07:55	1.59	08:25	4.92	3.60	07:50	0.68	10:45	2.35	1.83	07:55	0.027	08:20	0.426	0.234	0.234	0.49
12/26/2020	04:50	3.21	12:45	4.66	3.79	06:00	1.56	19:25	2.17	1.90	04:45	0.173	12:45	0.376	0.258	0.258	0.02
12/27/2020	03:35	3.25	12:00	4.40	3.84	08:30	1.63	20:35	2.35	1.92	03:35	0.185	12:00	0.347	0.264	0.264	0.13
12/28/2020	03:45	3.05	13:15	4.46	3.85	04:25	1.54	12:50	2.38	1.96	03:50	0.164	13:10	0.383	0.273	0.273	-
12/29/2020	03:45	3.08	11:00	4.25	3.78	02:55	1.64	22:10	2.23	1.97	03:40	0.168	12:40	0.339	0.267	0.267	0.14
12/30/2020	03:30	3.16	11:30	4.50	3.97	03:50	1.71	15:50	2.28	1.98	03:30	0.183	15:50	0.371	0.286	0.286	0.78
12/31/2020	02:55	3.36	15:05	4.56	3.93	04:10	1.66	18:50	2.29	1.97	04:10	0.193	15:10	0.371	0.281	0.281	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			50.442	30.65
Average	3.65	2.02	0.259	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A4_50817

Site Address /Location:	1704 B St, NW			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	Back of parking lot	Latitude:	47.324355°	Pipe Size (H x W): 12 X 11.75	Pipe Shape: Circular
		Longitude:	-122.230253		



Manhole #	System Characteristics
A450817	Commercial
Access	Traffic
Walk (Commercial)	None







ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.11.325

Installation Information	
Installation Date:	Installation Type:
Friday, October 2, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi
Installation Confirmation:	
Time	
7:20:00 AM	
Depth of Flow (Wet DOF) (in)	
3.25	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
2.24	N/A
Silt (in)	Silt Type
0	
Hydraulic Comments:	
Manhole / Pipe Information:	
Manhole Depth (Approx. FT):	Manhole Configuration
9	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
Concrete	Good
Communication Information:	
Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole
Additional Site Info. / Comments:	

AUB_A6_61009K

Site Commentary

SITE INFORMATION

Pipe	Elliptical (11.75 in H x 12 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	4.88	0.47	0.096
Minimum	3.28	0.21	0.025
Maximum	10.05	1.32	0.400
Min Time	04/14/2021 2:00:00 AM	12/15/2020 3:00:00 AM	12/15/2020 3:00:00 AM
Max Time	01/12/2021 7:00:00 PM	01/21/2021 1:00:00 PM	01/02/2021 9:00:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

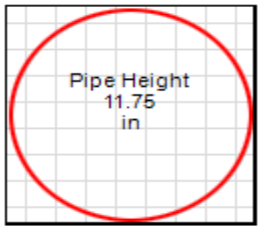
Percent Uptime	
DFINAL (in)	99.741
VFINAL (ft/s)	99.741
QFINAL (MGD - Total MG)	99.741

Hydrograph Report

AUB_A6_61009K

Flow Monitor

AUB_A6_61009K



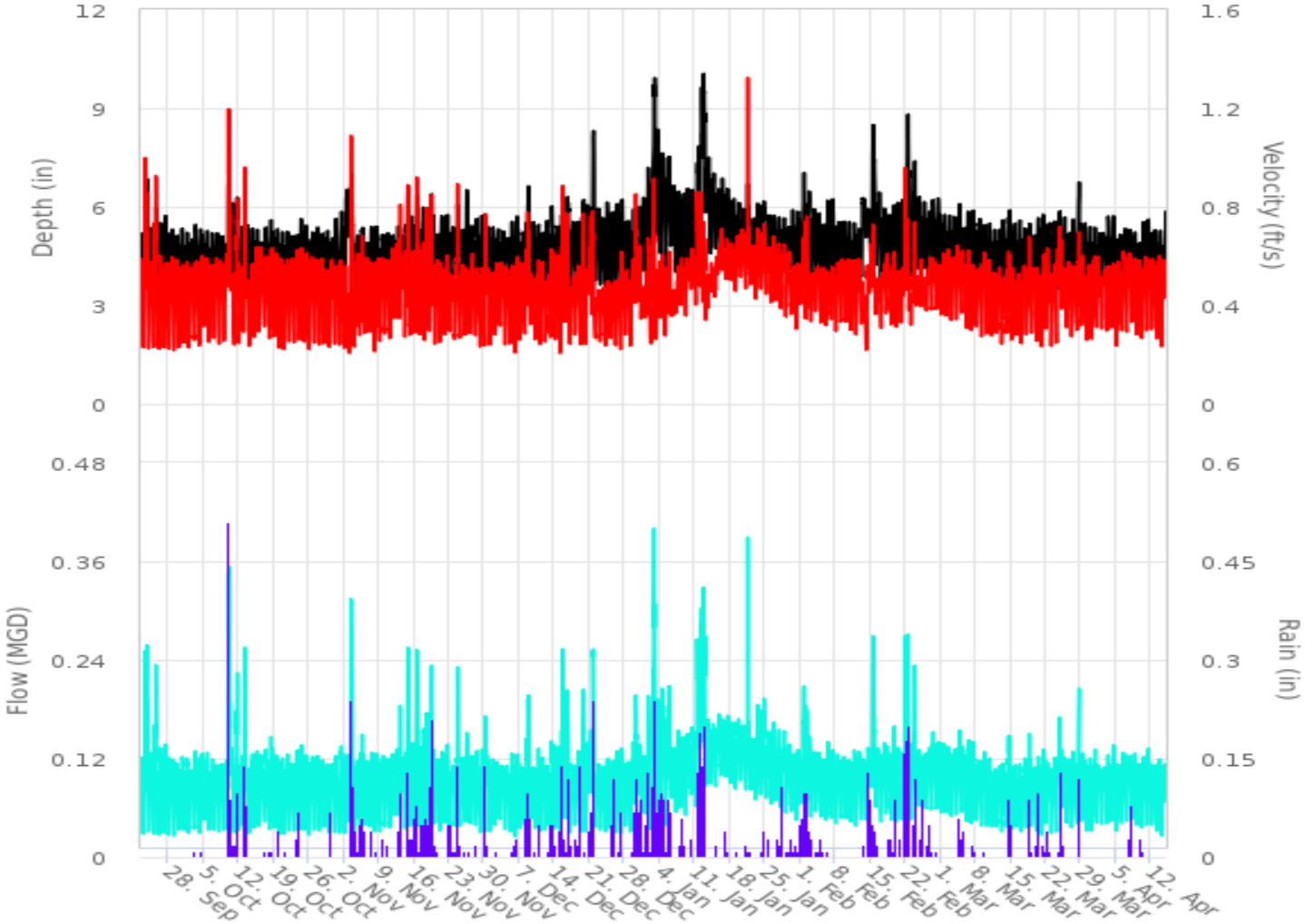
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



4455 S. 134th Place
Tukwila, WA 98168

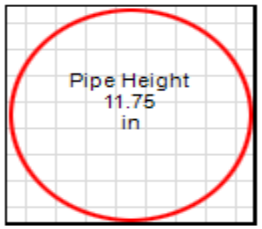
206-762-5070
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Scattergraph Report

AUB_A6_61009K

Flow Monitor

AUB_A6_61009K



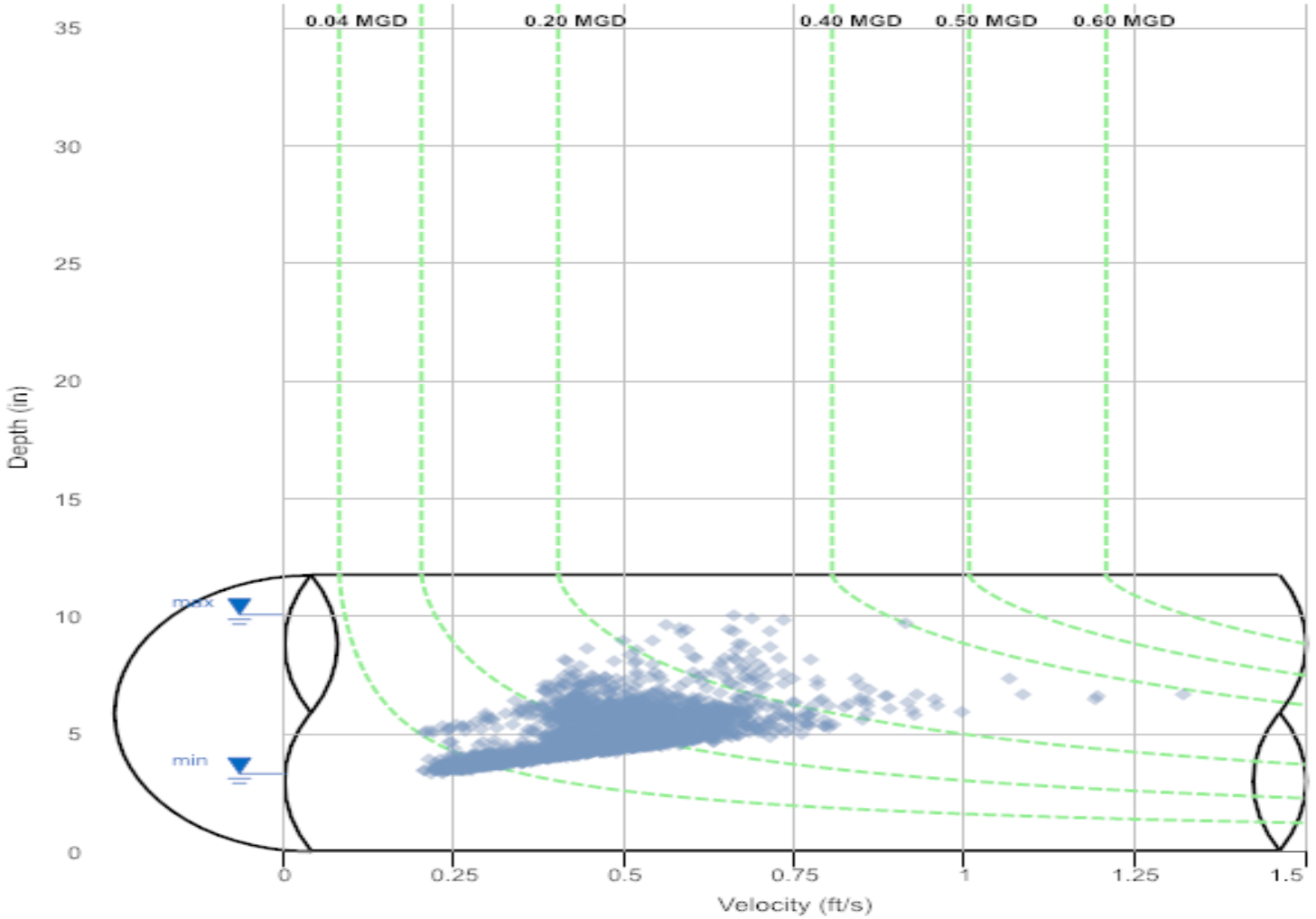
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth





4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A6_61009KPipe: Elliptical (11.75 in H x 12 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	06:40	3.84	16:10	7.40	5.23	01:10	0.30	15:40	0.93	0.46	04:00	0.045	15:40	0.270	0.102	0.102	0.51
01/02/2021	04:35	3.54	21:45	10.03	6.23	07:05	0.18	21:05	1.17	0.50	05:15	0.025	21:05	0.489	0.150	0.150	1.69
01/03/2021	06:25	5.08	00:20	10.00	7.08	05:25	0.23	00:20	0.74	0.42	06:10	0.049	00:20	0.334	0.138	0.138	0.65
01/04/2021	04:15	4.40	12:35	7.81	6.29	03:20	0.29	12:00	0.73	0.45	03:20	0.054	12:10	0.239	0.123	0.123	0.48
01/05/2021	04:45	3.73	21:30	7.66	5.72	02:05	0.23	20:50	0.73	0.43	03:05	0.032	20:50	0.239	0.110	0.110	0.52
01/06/2021	04:20	4.68	18:55	6.76	5.90	11:50	0.29	02:35	0.63	0.43	06:30	0.060	01:05	0.147	0.108	0.108	0.22
01/07/2021	04:50	3.90	19:25	6.59	5.36	05:55	0.34	17:25	0.65	0.45	04:50	0.050	18:50	0.177	0.102	0.102	-
01/08/2021	03:35	3.89	18:00	6.60	5.29	03:40	0.37	09:05	0.67	0.49	03:40	0.053	17:25	0.159	0.108	0.108	0.22
01/09/2021	05:25	3.79	13:35	6.59	5.27	04:20	0.32	08:45	0.66	0.52	05:20	0.046	10:35	0.164	0.113	0.113	-
01/10/2021	05:10	4.20	12:30	6.60	5.34	10:45	0.43	09:40	0.73	0.54	04:00	0.072	12:40	0.170	0.121	0.121	0.07
01/11/2021	04:50	4.05	21:00	7.97	6.04	04:00	0.38	10:30	0.94	0.61	04:55	0.058	11:35	0.278	0.164	0.164	1.06
01/12/2021	01:20	5.63	19:25	10.23	8.21	13:15	0.37	02:35	0.94	0.61	00:00	0.112	19:05	0.386	0.225	0.225	2.10
01/13/2021	04:50	5.71	01:00	9.20	7.01	03:10	0.31	00:20	0.72	0.45	04:40	0.075	00:40	0.288	0.142	0.142	0.09
01/14/2021	04:40	4.51	18:45	7.17	6.03	21:40	0.37	07:35	0.63	0.51	04:55	0.081	09:30	0.176	0.130	0.130	0.01
01/15/2021	04:15	4.67	18:55	6.61	5.72	05:40	0.41	21:45	0.69	0.55	04:00	0.079	18:25	0.182	0.133	0.133	0.09
01/16/2021	04:35	4.57	12:35	7.02	5.67	12:30	0.46	09:25	0.77	0.60	04:25	0.095	18:20	0.185	0.142	0.142	-
01/17/2021	02:45	4.69	12:05	6.66	5.62	05:50	0.47	09:20	0.73	0.60	05:50	0.091	11:05	0.189	0.142	0.142	0.10
01/18/2021	04:25	4.54	19:05	6.28	5.47	19:35	0.47	09:35	0.73	0.57	04:25	0.086	15:05	0.177	0.130	0.130	-
01/19/2021	04:05	4.55	18:30	6.23	5.36	02:55	0.44	13:55	0.74	0.59	03:45	0.079	17:35	0.178	0.131	0.131	0.01
01/20/2021	02:15	4.53	18:50	6.10	5.25	02:10	0.50	15:40	0.77	0.60	02:20	0.088	15:40	0.183	0.130	0.130	-
01/21/2021	03:20	4.41	13:35	7.09	5.25	03:25	0.44	13:35	1.53	0.63	03:25	0.075	13:35	0.479	0.139	0.139	0.11
01/22/2021	03:35	4.35	19:20	5.73	5.02	03:00	0.46	09:55	0.69	0.58	03:00	0.078	12:35	0.159	0.118	0.118	-
01/23/2021	05:20	4.20	12:35	6.21	5.10	04:10	0.40	12:35	0.75	0.57	04:10	0.065	12:35	0.199	0.121	0.121	-
01/24/2021	04:35	4.20	18:30	6.25	5.24	04:25	0.44	18:30	0.76	0.60	04:30	0.070	18:30	0.205	0.131	0.131	0.16
01/25/2021	04:30	4.17	18:40	5.85	5.01	04:30	0.42	18:30	0.65	0.56	04:30	0.067	18:40	0.161	0.114	0.114	0.04
01/26/2021	04:55	4.06	19:10	5.85	4.96	04:40	0.37	19:25	0.75	0.55	04:50	0.056	19:25	0.180	0.111	0.111	-
01/27/2021	04:20	4.18	19:50	5.83	4.96	03:40	0.39	19:25	0.66	0.55	04:20	0.062	19:45	0.163	0.111	0.111	0.14
01/28/2021	03:30	4.10	19:25	5.74	4.99	03:30	0.36	19:25	0.66	0.55	03:30	0.056	18:55	0.158	0.113	0.113	0.24
01/29/2021	04:15	3.95	19:00	5.52	4.81	04:15	0.31	17:25	0.63	0.52	04:15	0.046	19:00	0.146	0.102	0.102	0.03
01/30/2021	05:50	3.96	13:25	5.98	4.93	05:50	0.32	17:20	0.60	0.47	05:50	0.047	17:25	0.138	0.095	0.095	0.07
01/31/2021	05:15	3.92	12:55	5.97	5.01	05:00	0.29	10:10	0.67	0.47	05:05	0.042	11:25	0.153	0.096	0.096	0.12
02/01/2021	03:15	4.05	19:20	7.17	5.33	01:00	0.38	23:55	0.83	0.54	03:15	0.057	19:00	0.233	0.122	0.122	0.82
02/02/2021	04:15	3.87	19:05	6.58	5.44	03:30	0.31	08:30	0.88	0.50	03:30	0.045	00:00	0.226	0.115	0.115	0.31
02/03/2021	04:20	3.85	19:45	6.06	5.04	03:25	0.28	17:05	0.58	0.46	03:25	0.041	19:05	0.141	0.094	0.094	0.06
02/04/2021	03:20	3.91	20:50	5.97	4.89	01:20	0.34	13:15	0.61	0.49	01:20	0.051	20:55	0.145	0.097	0.097	0.07
02/05/2021	04:20	3.83	17:35	5.59	4.78	03:05	0.30	17:45	0.60	0.46	04:15	0.042	17:45	0.139	0.089	0.089	0.01
02/06/2021	03:40	3.74	12:10	6.28	4.96	05:40	0.29	08:45	0.59	0.45	03:30	0.041	12:15	0.156	0.092	0.092	0.01
02/07/2021	06:00	3.71	13:45	6.34	4.92	06:00	0.29	09:10	0.59	0.46	06:00	0.039	11:30	0.148	0.092	0.092	-
02/08/2021	04:05	3.66	19:30	5.64	4.74	03:15	0.26	18:00	0.64	0.46	04:10	0.034	18:00	0.139	0.089	0.089	-
02/09/2021	04:45	3.79	19:35	5.62	4.70	04:55	0.30	13:15	0.66	0.48	04:55	0.042	18:00	0.144	0.092	0.092	-
02/10/2021	02:05	3.73	20:10	5.63	4.66	04:50	0.30	11:35	0.66	0.48	04:50	0.041	14:00	0.135	0.091	0.091	-
02/11/2021	03:15	3.73	19:55	5.58	4.64	03:30	0.26	14:10	0.70	0.47	03:30	0.036	14:10	0.146	0.089	0.089	-
02/12/2021	04:05	3.62	18:35	5.45	4.63	04:05	0.25	09:00	0.73	0.48	04:05	0.033	09:00	0.151	0.089	0.089	-
02/13/2021	04:20	3.77	13:45	6.37	5.31	04:15	0.30	09:30	0.61	0.40	04:35	0.041	13:40	0.126	0.089	0.089	0.08
02/14/2021	23:45	4.66	09:30	6.38	5.47	04:45	0.19	09:35	0.78	0.42	03:25	0.041	09:35	0.163	0.096	0.096	0.71
02/15/2021	05:45	4.36	14:10	8.60	6.35	22:50	0.41	13:05	0.77	0.58	05:45	0.081	14:15	0.284	0.161	0.161	0.78
02/16/2021	04:15	4.10	19:55	6.52	5.48	02:40	0.30	13:55	0.56	0.44	02:40	0.052	13:55	0.147	0.101	0.101	0.07
02/17/2021	04:05	3.75	19:15	6.06	5.00	04:00	0.28	18:10	0.69	0.47	04:00	0.038	18:10	0.164	0.096	0.096	-
02/18/2021	04:20	3.81	18:50	5.90	4.92	02:20	0.34	11:35	0.68	0.49	04:20	0.048	11:35	0.149	0.099	0.099	0.09
02/19/2021	04:25	3.76	19:45	6.15	4.89	04:20	0.30	19:15	0.67	0.47	04:25	0.040	19:20	0.176	0.093	0.093	0.17
02/20/2021	05:35	3.67	12:45	6.21	4.96	05:25	0.29	23:25	0.61	0.45	05:30	0.038	12:10	0.148	0.092	0.092	0.07
02/21/2021	06:30	3.68	23:40	6.77	5.08	02:55	0.29	23:10	1.00	0.47	02:55	0.040	23:40	0.291	0.102	0.102	0.42
02/22/2021	05:35	4.33	13:30	8.93	6.38	22:55	0.31	00:00	0.93	0.56	05:35	0.079	13:05	0.322	0.153	0.153	0.98
02/23/2021	03:55	3.81	22:10	7.57	5.52	02:40	0.28	21:15	0.79	0.46	02:40	0.041	21:25	0.246	0.111	0.111	0.27
02/24/2021	04:00	4.00	20:00	6.40	5.30	04:05	0.37	07:05	0.59	0.47	04:00	0.056	18:40	0.155	0.103	0.103	-
02/25/2021	03:05	4.08	19:45	6.27	5.24	02:00	0.37	05:05	0.64	0.48	03:10	0.056	19:10	0.141	0.103	0.103	0.18
02/26/2021	04:15	4.03	19:20	5.97	5.07	04:10	0.35	22:25	0.66	0.50	04:10	0.054	20:05	0.147	0.105	0.105	0.10
02/27/2021	05:10	3.97	11:45	6.34	5.10	05:10	0.36	08:45	0.69	0.51	05:10	0.053	13:15	0.180	0.108	0.108	0.02
02/28/2021	04:05	3.98	13:05	6.39	5.17	03:35	0.35	18:15	0.64	0.50	03:35	0.053	15:05	0.163	0.107	0.107	0.02
03/01/2021	03:15	3.93	20:25	5.95	4.96	03:10	0.34	12:00	0.66	0.52	03:10	0.050	18:35	0.157	0.105	0.105	-
03/02/2021	04:20	3.99	19:55	6.04	4.87	04:05	0.31	13:10	0.66	0.50	04:05	0.047	13:10	0.143	0.100	0.100	-
03/03/2021	02:40	3.85	19:20	5.87	4.83	02:35	0.31	15:55	0.65	0.50	02:35	0.044	21:20	0.146	0.098	0.098	-
03/04/2021	03:30	3.89	20:25	6.26	4.83	03:35	0.30	10:05	0.69	0.51	03:30	0.044	19:35	0.175	0.100	0.100	0.20
03/05/2021	04:30	3.87	19:20	5.48	4.78	04:30	0.32	11:45	0.70	0.50	04:30	0.046	11:45	0.154	0.096	0.096	0.05
03/06/2021	05:10	3.70	13:20	6.10	4.85	04:55	0.28	15:15	0.67	0.48	05:00	0.038	15:15	0.155	0.096	0.096	-
03/07/2021	04:25	3.68	12:15	5.98	4.90	04:20	0.27	12:20	0.63	0.46	04:20	0.036	12:20	0.157	0.094	0.094	0.04
03/08/2021	03:20	3.76	20:40	5.81	4.74	03:15	0.29	10:20	0.61	0.46	03:15	0.040	20:40	0.136	0.088	0.088	-
03/09/2021	03:55	3.70	21:20	5.54	4.68	03:10	0.26	16:25	0.65	0.48	03:50	0.035	19:10	0.137	0.090	0.090	0.01
03/10/2021	03:00	3.61	19:40	5.58	4.58	03:25	0.27	17:20	0.63	0.46	03:25	0.035	20:45	0.135	0.084	0.084	-
03/11/2021	04:05	3.53	20:20	5.38	4.55	04:00	0.23	12:15	0.61	0.45	04:00	0.029	17:30	0.122	0.082	0.082	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	04:00	3.52	19:20	5.56	4.51	03:25	0.26	18:55	0.62	0.44	04:00	0.032	18:55	0.127	0.079	0.079	-
03/13/2021	04:40	3.39	11:50	5.71	4.60	04:35	0.21	08:50	0.61	0.43	04:35	0.025	10:50	0.136	0.080	0.080	-
03/14/2021	04:25	3.41	20:00	6.05	4.80	02:25	0.25	13:30	0.83	0.45	02:25	0.030	13:30	0.204	0.090	0.090	0.30
03/15/2021	02:30	3.39	19:45	5.61	4.63	02:30	0.21	10:35	0.59	0.44	02:30	0.025	19:40	0.120	0.083	0.083	-
03/16/2021	01:15	3.55	19:40	5.75	4.59	02:20	0.24	13:00	0.61	0.42	01:15	0.032	19:40	0.131	0.078	0.078	-
03/17/2021	03:35	3.35	20:00	5.44	4.51	03:25	0.21	18:20	0.70	0.44	03:25	0.025	18:20	0.145	0.080	0.080	-
03/18/2021	02:15	3.51	19:20	5.56	4.54	03:15	0.25	16:20	0.89	0.45	03:15	0.031	16:20	0.202	0.082	0.082	0.11
03/19/2021	03:20	3.51	19:50	5.27	4.51	03:15	0.26	13:10	0.69	0.46	03:15	0.032	19:55	0.140	0.083	0.083	0.03
03/20/2021	04:55	3.31	12:40	5.72	4.72	04:55	0.20	06:00	0.66	0.44	04:55	0.023	11:45	0.132	0.085	0.085	0.17
03/21/2021	04:20	3.29	11:40	5.92	4.66	04:50	0.21	16:35	0.76	0.44	04:55	0.024	16:35	0.168	0.084	0.084	0.07
03/22/2021	02:00	3.58	20:15	5.67	4.75	01:55	0.27	07:45	0.68	0.45	02:00	0.034	12:05	0.130	0.087	0.087	0.11
03/23/2021	02:30	3.38	19:10	5.63	4.57	02:15	0.21	15:05	0.65	0.45	02:30	0.024	16:40	0.131	0.083	0.083	-
03/24/2021	03:20	3.32	20:10	6.05	4.60	03:05	0.21	19:35	0.89	0.50	03:05	0.025	19:35	0.219	0.093	0.093	0.34
03/25/2021	03:00	3.96	20:10	5.86	4.87	03:05	0.34	01:00	0.75	0.49	03:05	0.051	01:00	0.154	0.097	0.097	0.27
03/26/2021	03:00	3.55	18:55	5.41	4.59	02:55	0.28	17:15	0.65	0.47	02:55	0.035	17:15	0.136	0.087	0.087	-
03/27/2021	05:00	3.49	11:30	5.83	4.66	02:25	0.24	10:00	0.61	0.45	02:25	0.030	10:30	0.142	0.087	0.087	-
03/28/2021	05:40	3.58	15:25	6.97	4.97	05:40	0.26	14:50	0.87	0.48	05:40	0.034	14:50	0.252	0.102	0.102	0.37
03/29/2021	03:20	3.64	20:10	5.70	4.65	01:45	0.29	10:25	0.64	0.45	01:50	0.038	11:10	0.134	0.085	0.085	-
03/30/2021	03:45	3.32	19:15	5.51	4.49	03:45	0.23	15:30	0.69	0.44	03:45	0.026	15:30	0.141	0.079	0.079	-
03/31/2021	03:40	3.30	19:50	5.48	4.52	03:40	0.23	14:00	0.69	0.48	03:40	0.026	19:15	0.142	0.087	0.087	-
04/01/2021	03:15	3.57	19:50	5.34	4.52	03:15	0.28	09:10	0.68	0.46	03:15	0.036	09:10	0.130	0.083	0.083	-
04/02/2021	03:15	3.50	11:20	5.34	4.60	03:10	0.26	23:35	0.63	0.47	03:10	0.032	21:00	0.122	0.087	0.087	-
04/03/2021	03:55	3.71	10:50	5.91	4.73	03:50	0.27	18:35	0.61	0.46	03:50	0.036	10:45	0.138	0.088	0.088	-
04/04/2021	02:35	3.79	11:55	6.00	4.70	02:35	0.27	10:25	0.63	0.46	02:35	0.037	12:00	0.148	0.089	0.089	-
04/05/2021	02:50	3.63	20:45	5.34	4.56	02:45	0.20	09:15	0.62	0.45	02:50	0.026	19:55	0.120	0.083	0.083	-
04/06/2021	03:05	3.65	19:55	5.43	4.62	01:50	0.27	12:30	0.69	0.49	01:55	0.035	18:25	0.142	0.091	0.091	-
04/07/2021	03:10	3.91	18:35	5.40	4.69	00:35	0.26	23:50	0.72	0.49	03:10	0.037	23:50	0.146	0.092	0.092	0.22
04/08/2021	02:55	3.61	20:05	5.33	4.59	02:45	0.29	00:00	0.69	0.49	02:50	0.038	19:35	0.139	0.089	0.089	-
04/09/2021	04:15	3.66	19:05	5.02	4.47	02:35	0.26	10:20	0.63	0.48	03:00	0.035	10:20	0.124	0.084	0.084	0.03
04/10/2021	04:00	3.55	11:45	5.65	4.60	01:45	0.23	20:00	0.67	0.46	03:55	0.029	12:45	0.138	0.085	0.085	0.02
04/11/2021	03:35	3.53	10:25	5.76	4.66	03:00	0.27	16:30	0.65	0.48	03:00	0.034	11:20	0.146	0.090	0.090	-
04/12/2021	02:05	3.41	19:35	5.47	4.50	02:00	0.27	08:30	0.66	0.47	02:00	0.032	08:30	0.124	0.085	0.085	-
04/13/2021	03:45	3.26	19:40	5.45	4.42	03:50	0.24	08:15	0.66	0.46	03:40	0.028	19:25	0.127	0.082	0.082	-
04/14/2021	02:10	3.13	21:10	6.48	4.41	02:00	0.21	10:40	0.65	0.46	02:05	0.022	10:40	0.127	0.080	0.080	-
09/22/2020	23:35	3.79	19:35	5.29	4.64	23:35	0.32	19:05	0.61	0.52	23:35	0.044	19:35	0.132	0.096	0.045	-
09/23/2020	02:35	3.30	17:30	7.04	4.97	02:30	0.20	11:25	1.19	0.56	02:35	0.023	16:55	0.338	0.121	0.121	-
09/24/2020	01:30	3.66	19:10	5.52	4.55	01:10	0.20	19:00	0.65	0.45	01:15	0.026	19:00	0.141	0.082	0.082	-
09/25/2020	02:40	3.31	12:15	6.07	4.69	02:45	0.19	12:15	1.06	0.51	02:45	0.022	12:15	0.275	0.101	0.101	-
09/26/2020	03:30	3.32	10:45	5.68	4.54	03:10	0.19	09:15	0.69	0.44	03:10	0.024	10:30	0.148	0.082	0.082	-
09/27/2020	05:05	3.37	11:55	5.84	4.58	02:55	0.20	08:55	0.64	0.43	02:55	0.024	10:55	0.149	0.082	0.082	-
09/28/2020	01:55	3.28	19:35	5.43	4.47	01:45	0.20	15:50	0.63	0.44	01:50	0.022	10:10	0.127	0.079	0.079	-
09/29/2020	02:30	3.20	19:50	5.31	4.43	00:45	0.18	11:05	0.68	0.45	02:25	0.021	11:05	0.143	0.080	0.080	-
09/30/2020	03:10	3.78	20:00	5.45	4.53	03:20	0.15	20:05	0.62	0.44	03:20	0.025	20:05	0.136	0.080	0.080	-
10/01/2020	03:20	3.50	20:05	5.40	4.49	02:30	0.22	18:20	0.62	0.45	03:15	0.028	19:55	0.131	0.081	0.081	-
10/02/2020	02:30	3.46	19:30	5.10	4.47	02:25	0.19	10:05	0.65	0.44	02:25	0.024	10:05	0.129	0.079	0.079	-
10/03/2020	05:25	3.38	11:30	5.53	4.48	04:15	0.21	10:50	0.64	0.45	04:15	0.026	10:50	0.143	0.082	0.082	0.01
10/04/2020	04:10	3.27	11:20	5.48	4.49	04:05	0.20	20:20	0.70	0.46	04:05	0.023	20:20	0.150	0.085	0.085	0.01
10/05/2020	23:55	3.64	19:15	5.37	4.51	23:55	0.28	17:40	0.67	0.47	23:55	0.037	19:20	0.140	0.085	0.085	-
10/06/2020	01:45	3.42	19:00	5.28	4.43	01:40	0.22	19:40	0.65	0.45	01:40	0.027	19:40	0.140	0.081	0.081	-
10/07/2020	03:40	3.37	20:25	5.35	4.41	02:05	0.23	12:05	0.62	0.46	02:05	0.027	20:25	0.129	0.082	0.082	-
10/08/2020	03:10	3.32	19:25	5.23	4.37	04:40	0.20	17:30	0.63	0.45	03:10	0.026	19:15	0.127	0.078	0.078	-
10/09/2020	03:10	3.46	23:55	7.00	4.52	02:35	0.22	23:20	1.34	0.50	03:10	0.027	23:20	0.386	0.095	0.095	0.64
10/10/2020	23:55	3.95	02:15	8.04	5.48	23:20	0.33	01:40	1.66	0.61	23:55	0.048	01:40	0.539	0.146	0.146	1.04
10/11/2020	04:15	3.32	15:00	6.40	4.91	04:15	0.20	18:00	0.99	0.48	04:15	0.023	18:00	0.259	0.103	0.103	0.53
10/12/2020	02:10	3.53	18:00	5.44	4.55	01:45	0.23	16:55	0.60	0.43	01:45	0.029	18:00	0.135	0.079	0.079	-
10/13/2020	00:55	3.52	07:55	6.86	4.89	00:50	0.26	07:30	1.16	0.51	00:55	0.032	07:30	0.316	0.104	0.104	0.61
10/14/2020	04:20	3.30	20:05	5.46	4.47	02:10	0.21	17:50	0.64	0.44	02:15	0.025	20:10	0.143	0.080	0.080	-
10/15/2020	03:15	3.45	18:40	5.45	4.52	02:55	0.25	15:20	0.68	0.48	03:05	0.031	18:00	0.138	0.087	0.087	-
10/16/2020	02:35	3.49	11:45	5.03	4.43	02:35	0.27	11:45	0.70	0.48	02:35	0.034	11:45	0.142	0.084	0.084	-
10/17/2020	04:40	3.62	12:05	5.46	4.53	04:15	0.29	12:15	0.67	0.48	04:15	0.038	12:10	0.149	0.088	0.088	0.01
10/18/2020	03:50	3.44	12:25	5.72	4.62	03:50	0.23	18:25	0.68	0.48	03:50	0.028	11:50	0.154	0.092	0.092	0.03
10/19/2020	03:20	3.46	19:00	5.46	4.52	03:15	0.23	16:05	0.68	0.48	03:10	0.029	16:05	0.141	0.087	0.087	0.05
10/20/2020	03:10	3.42	18:35	5.37	4.48	01:55	0.22	18:10	0.63	0.45	03:05	0.026	18:10	0.130	0.082	0.082	-
10/21/2020	01:50	3.41	18:45	5.34	4.47	01:45	0.20	18:00	0.65	0.45	01:50	0.024	18:00	0.138	0.082	0.082	0.01
10/22/2020	02:50	3.39	20:35	5.23	4.39	02:45	0.23	16:20	0.66	0.45	02:40	0.028	20:35	0.129	0.079	0.079	-
10/23/2020	03:15	3.31	20:15	5.27	4.40	02:15	0.20	19:15	0.66	0.46	02:15	0.023	19:50	0.138	0.082	0.082	0.20
10/24/2020	05:00	3.32	11:30	5.71	4.53	05:10	0.21	14:25	0.76	0.45	05:10	0.025	14:30	0.171	0.082	0.082	0.02
10/25/2020	03:25	3.49	12:10	5.53	4.55	03:25	0.22	11:00	0.68	0.46	03:25	0.027	11:00	0.153	0.085	0.085	-
10/26/2020	02:35	3.27	19:30	5.40	4.44	02:35	0.19	16:10	0.67	0.47	02:30	0.022	12:00	0.135	0.083	0.083	-
10/27/2020	03:10	3.54	19:05	5.45	4.47	03:20	0.22	20:00	0.68	0.46	03:20	0.028	20:00	0.152	0.083	0.083	-
10/28/2020	01:45	3.40	18:55	5.36	4.42	02:40	0.20	12:15	0.64	0.46	02:35	0.025	18:55	0.130	0.082	0.082	-
10/29/2020	04:15	3.67	19:35	5.39	4.60	02:05	0.22	16:30	0.61	0.43	02:05	0.032	18:25	0.125	0.079	0.079	-
10/30/2020	02:35	3.52	13:55	5.28	4.49	02:35	0.21	05:50	0.67	0.45	02:20	0.027	05:50	0.136	0.082	0.082	0.10
10/31/2020	03:30	3.38	11:45	5.88	4.44	05:10	0.21	14:00	0.64	0.44	04:30	0.027	10:40	0.140	0.079	0.079	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/01/2020	04:00	3.25	13:20	6.08	4.68	02:25	0.17	12:55	0.70	0.43	02:25	0.022	12:55	0.167	0.085	0.085	-
11/02/2020	03:40	3.42	17:15	6.64	5.38	02:50	0.20	10:15	0.69	0.38	02:50	0.025	10:15	0.148	0.088	0.088	-
11/03/2020	23:35	4.21	10:35	7.00	5.43	02:35	0.20	10:05	1.23	0.52	04:05	0.039	10:10	0.334	0.119	0.119	0.83
11/04/2020	03:30	3.32	19:25	5.27	4.46	03:00	0.19	16:55	0.67	0.46	03:30	0.024	16:55	0.132	0.083	0.083	0.09
11/05/2020	04:35	3.69	18:10	5.46	4.70	04:40	0.26	15:25	0.77	0.48	04:40	0.035	15:30	0.170	0.092	0.092	0.34
11/06/2020	05:15	3.54	17:30	5.03	4.49	05:05	0.26	12:15	0.66	0.46	05:15	0.032	12:15	0.131	0.083	0.083	0.10
11/07/2020	05:15	3.38	13:30	5.48	4.54	05:10	0.26	10:15	0.64	0.46	05:15	0.031	13:45	0.142	0.085	0.085	0.07
11/08/2020	06:10	3.53	12:30	5.47	4.62	04:10	0.21	19:25	0.65	0.45	04:50	0.029	12:40	0.140	0.086	0.086	0.01
11/09/2020	04:25	3.40	20:05	5.29	4.42	04:25	0.23	13:50	0.69	0.47	04:25	0.027	13:50	0.135	0.084	0.084	0.04
11/10/2020	03:05	3.42	19:00	5.30	4.41	03:10	0.25	17:35	0.66	0.46	03:05	0.031	17:35	0.132	0.080	0.080	0.03
11/11/2020	04:20	3.57	19:30	5.28	4.48	04:10	0.22	16:50	0.68	0.46	04:10	0.029	19:35	0.141	0.084	0.084	-
11/12/2020	02:25	3.77	20:20	5.52	4.66	02:15	0.30	17:20	0.70	0.51	02:15	0.041	17:00	0.142	0.096	0.096	0.16
11/13/2020	01:15	3.84	06:45	5.93	4.78	01:15	0.31	06:45	1.05	0.54	01:15	0.044	06:45	0.263	0.104	0.104	0.38
11/14/2020	04:45	3.55	19:05	6.79	4.90	04:45	0.25	18:10	0.94	0.53	04:45	0.032	18:20	0.266	0.112	0.112	0.47
11/15/2020	05:30	3.58	13:35	5.78	4.81	05:20	0.26	20:15	0.70	0.47	05:30	0.033	20:15	0.160	0.093	0.093	0.19
11/16/2020	04:20	3.58	13:50	6.62	4.86	04:20	0.26	13:35	1.03	0.52	04:20	0.033	13:50	0.292	0.107	0.107	0.31
11/17/2020	03:10	3.55	20:10	6.20	4.70	05:25	0.19	08:55	0.94	0.48	05:25	0.031	08:55	0.225	0.093	0.093	0.20
11/18/2020	03:35	3.42	18:30	6.07	4.73	03:30	0.24	17:35	0.93	0.48	03:35	0.029	17:45	0.225	0.095	0.095	0.30
11/19/2020	02:40	3.49	13:25	6.53	4.94	02:40	0.25	12:55	1.21	0.52	02:40	0.032	13:00	0.329	0.107	0.107	0.50
11/20/2020	01:35	3.85	18:50	5.47	4.73	02:25	0.17	15:20	0.66	0.43	02:25	0.031	16:20	0.144	0.081	0.081	0.01
11/21/2020	04:00	3.45	13:10	5.83	4.71	01:55	0.21	09:25	0.63	0.44	03:50	0.028	15:05	0.146	0.086	0.086	-
11/22/2020	04:05	3.86	12:55	5.85	4.94	04:05	0.24	16:25	0.72	0.45	04:05	0.034	16:25	0.158	0.093	0.093	0.21
11/23/2020	05:00	3.41	20:00	5.58	4.69	05:00	0.24	10:40	0.58	0.44	05:00	0.029	18:15	0.118	0.083	0.083	0.14
11/24/2020	01:55	3.67	16:35	6.30	4.77	01:55	0.22	15:55	1.02	0.49	01:55	0.029	16:10	0.259	0.097	0.097	0.21
11/25/2020	02:05	3.73	20:25	5.44	4.68	02:55	0.25	20:25	0.62	0.46	03:00	0.034	20:25	0.139	0.087	0.087	0.05
11/26/2020	04:25	3.93	12:20	6.67	4.94	04:25	0.25	10:35	0.59	0.44	04:25	0.037	12:55	0.164	0.091	0.091	0.02
11/27/2020	03:35	3.71	13:25	5.56	4.59	03:35	0.25	17:30	0.70	0.45	03:35	0.034	17:30	0.138	0.083	0.083	-
11/28/2020	06:00	3.69	12:20	5.74	4.66	06:00	0.25	18:50	0.58	0.43	06:00	0.033	12:20	0.131	0.081	0.081	0.05
11/29/2020	05:10	3.51	14:00	5.83	4.69	05:15	0.20	09:55	0.58	0.44	05:15	0.025	12:35	0.132	0.086	0.086	-
11/30/2020	03:20	3.48	18:15	5.54	4.83	03:20	0.20	05:00	0.82	0.48	03:20	0.024	05:00	0.188	0.095	0.095	0.36
12/01/2020	03:40	3.45	18:45	5.51	4.60	04:15	0.19	12:55	0.59	0.43	04:15	0.024	18:45	0.134	0.080	0.080	-
12/02/2020	04:15	3.61	20:35	5.41	4.60	05:45	0.23	17:35	0.62	0.42	04:15	0.032	12:50	0.129	0.078	0.078	0.01
12/03/2020	04:15	3.77	19:20	5.39	4.62	04:10	0.29	13:15	0.62	0.47	04:10	0.040	13:15	0.122	0.088	0.088	-
12/04/2020	01:30	3.66	18:20	5.13	4.54	03:45	0.21	22:10	0.65	0.43	03:35	0.029	22:10	0.127	0.079	0.079	-
12/05/2020	05:35	3.32	13:15	5.65	4.60	00:30	0.21	15:50	0.64	0.43	05:40	0.024	12:30	0.146	0.080	0.080	0.03
12/06/2020	05:50	3.37	13:30	5.84	4.67	03:40	0.18	17:25	0.63	0.42	05:50	0.022	17:20	0.130	0.082	0.082	0.03
12/07/2020	04:20	3.45	19:40	5.32	4.53	04:15	0.22	10:00	0.68	0.44	04:20	0.027	10:00	0.127	0.080	0.080	-
12/08/2020	04:20	3.62	20:10	6.68	5.09	03:50	0.26	16:25	0.88	0.52	03:55	0.034	16:20	0.221	0.114	0.114	0.87
12/09/2020	05:05	3.73	19:55	5.65	4.82	05:05	0.28	03:00	0.57	0.45	05:05	0.038	12:35	0.119	0.088	0.088	0.17
12/10/2020	03:25	3.53	21:00	5.63	4.61	03:20	0.23	20:30	0.66	0.44	03:20	0.029	20:30	0.152	0.082	0.082	0.07
12/11/2020	04:00	3.49	18:00	5.38	4.53	03:45	0.23	17:30	0.62	0.43	03:50	0.029	17:55	0.130	0.078	0.078	0.02
12/12/2020	04:25	3.49	13:10	5.72	4.62	03:15	0.22	21:45	0.58	0.41	04:25	0.027	11:45	0.127	0.077	0.077	0.01
12/13/2020	06:10	3.38	12:55	6.14	4.80	06:05	0.21	09:40	0.68	0.47	06:10	0.024	10:40	0.165	0.094	0.094	0.24
12/14/2020	03:05	3.55	19:05	5.55	4.63	04:10	0.23	19:00	0.62	0.47	03:05	0.030	19:00	0.143	0.089	0.089	0.05
12/15/2020	03:40	3.31	16:35	6.96	4.94	03:40	0.17	16:05	1.14	0.44	03:35	0.020	16:10	0.320	0.094	0.094	0.58
12/16/2020	01:30	3.66	15:15	6.41	4.93	01:30	0.28	15:00	0.88	0.47	01:30	0.037	15:00	0.235	0.098	0.098	0.39
12/17/2020	03:30	3.45	19:20	5.65	4.70	03:45	0.22	17:50	0.61	0.42	03:45	0.027	17:50	0.138	0.080	0.080	0.08
12/18/2020	03:10	3.59	19:40	5.64	4.72	03:05	0.24	19:20	0.60	0.44	03:05	0.032	19:25	0.140	0.084	0.084	0.25
12/19/2020	03:45	3.40	18:15	6.29	5.01	03:45	0.21	20:40	0.81	0.48	03:45	0.025	20:40	0.218	0.103	0.103	0.37
12/20/2020	05:15	3.52	14:20	6.23	4.92	05:05	0.21	18:45	0.60	0.44	05:15	0.026	14:15	0.156	0.090	0.090	0.04
12/21/2020	02:05	4.12	18:50	8.58	5.93	10:55	0.31	16:30	1.04	0.54	02:05	0.068	16:35	0.328	0.137	0.137	1.07
12/22/2020	04:20	3.67	20:55	6.12	5.18	02:40	0.23	20:55	0.74	0.38	04:15	0.032	20:55	0.192	0.083	0.083	-
12/23/2020	04:20	3.43	12:30	5.83	4.84	02:55	0.22	19:45	0.51	0.39	03:00	0.027	19:45	0.118	0.078	0.078	-
12/24/2020	04:35	3.48	12:20	6.20	4.91	05:15	0.20	17:15	0.55	0.41	05:15	0.026	12:35	0.133	0.083	0.083	-
12/25/2020	05:35	3.47	17:35	5.96	4.77	05:30	0.23	21:40	0.54	0.41	05:35	0.028	18:35	0.127	0.080	0.080	0.49
12/26/2020	05:25	3.39	13:25	6.17	4.77	05:05	0.21	11:40	0.57	0.40	05:05	0.025	13:35	0.144	0.079	0.079	0.02
12/27/2020	06:30	3.47	13:00	6.33	4.91	05:50	0.19	09:50	0.69	0.40	05:50	0.023	09:50	0.165	0.083	0.083	0.13
12/28/2020	03:35	3.51	14:55	5.70	4.75	03:25	0.24	11:00	0.62	0.44	03:25	0.031	14:40	0.143	0.085	0.085	-
12/29/2020	03:50	3.49	20:25	6.05	4.68	03:50	0.20	19:45	0.72	0.43	03:50	0.025	19:45	0.175	0.083	0.083	0.14
12/30/2020	01:25	4.09	18:05	6.12	5.49	01:00	0.36	06:35	0.88	0.53	01:00	0.057	06:50	0.208	0.120	0.120	0.78
12/31/2020	05:50	3.94	18:55	6.34	5.21	05:50	0.30	00:00	0.71	0.44	05:50	0.044	00:05	0.166	0.095	0.095	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			19.631	30.65
Average	4.88	0.47	0.096	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A6_61009K

Site Address /Location:	12th St NE + Pike St NE			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	located in residental road, light traffic	Latitude:	47.318639	Pipe Size (H x W): 11.75 X 12.00	Pipe Shape: Circular
		Longitude:	-122.210787		



Manhole #	System Characteristics
A661009k	Residential
Access	Traffic
Drive	Light







ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.11.325

Installation Information

Installation Date:	Installation Type:
Tuesday, September 22, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Time	
12:47:00 PM	
Depth of Flow (Wet DOF) (in)	
4.75	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
0.9	N/A
Silt (in)	Silt Type
0	

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
5	Single
6	Manhole Condition:
PVC	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	28
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
Concrete	Good

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

AUB_A7_70807

Site Commentary

SITE INFORMATION

Pipe	Elliptical (18 in H x 18 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

This site experienced some backwater conditions during the monitoring period.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	3.15	1.15	0.166
Minimum	1.65	0.40	0.030
Maximum	6.64	2.37	0.908
Min Time	11/01/2020 3:00:00 AM	11/29/2020 5:00:00 AM	11/01/2020 4:00:00 AM
Max Time	01/12/2021 9:00:00 AM	01/12/2021 9:00:00 AM	01/12/2021 9:00:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

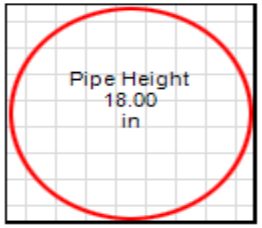
Percent Uptime	
DFINAL (in)	89.609
VFINAL (ft/s)	89.609
QFINAL (MGD - Total MG)	89.609

Hydrograph Report

AUB_A7_70807

Flow Monitor

AUB_A7_70807



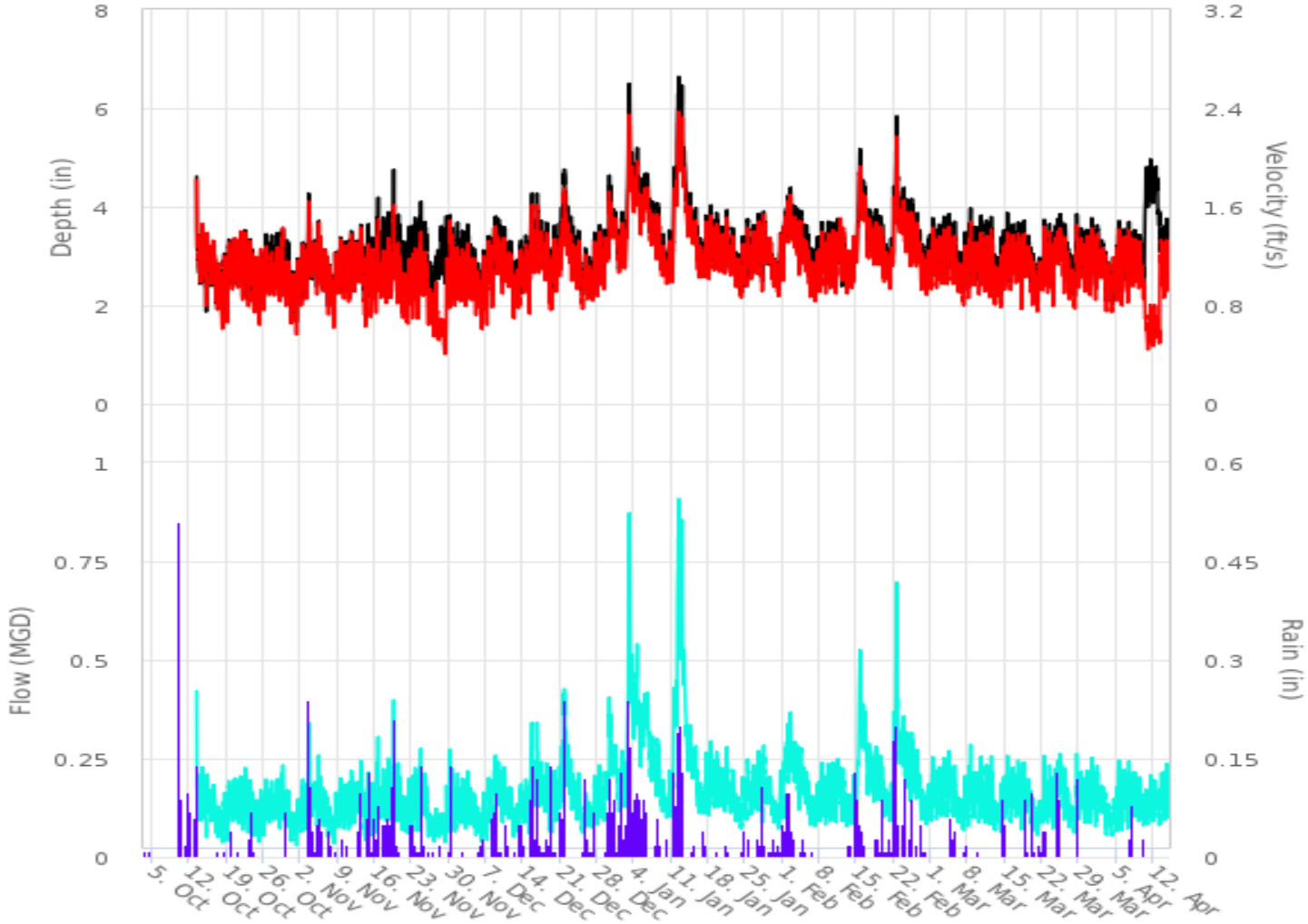
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL





4455 S. 134th Place
Tukwila, WA 98168

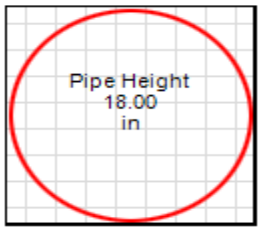
206-762-5070
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Scattergraph Report

AUB_A7_70807

Flow Monitor

AUB_A7_70807

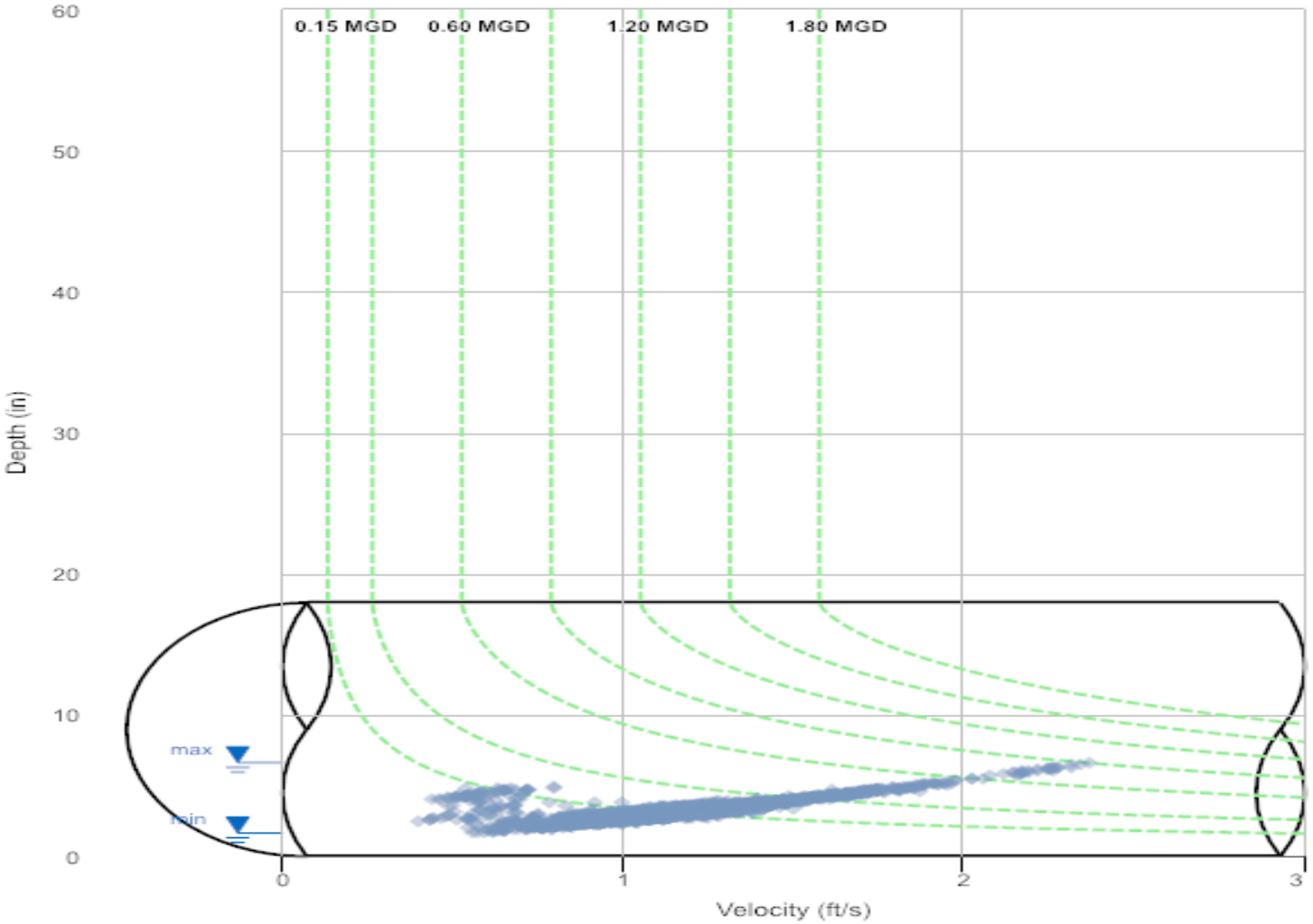


Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A7_70807Pipe: Elliptical (18 in H x 18 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	01:50	2.58	15:40	4.63	3.27	01:30	1.00	15:40	1.76	1.25	01:50	0.100	15:40	0.409	0.182	0.182	0.51
01/02/2021	04:40	2.82	21:15	6.82	3.91	04:25	1.08	21:15	2.40	1.48	04:25	0.125	21:15	0.952	0.300	0.300	1.69
01/03/2021	22:25	3.98	00:20	6.62	4.85	22:25	1.50	00:20	2.40	1.85	22:25	0.282	00:20	0.913	0.471	0.471	0.65
01/04/2021	23:45	3.85	08:35	5.98	4.53	23:45	1.42	08:35	2.16	1.72	23:45	0.255	08:35	0.718	0.391	0.391	0.48
01/05/2021	03:35	3.58	21:10	5.14	4.20	06:00	1.34	21:05	1.94	1.57	06:00	0.216	21:05	0.520	0.321	0.321	0.52
01/06/2021	23:30	3.45	12:35	5.49	4.29	23:30	1.31	12:35	2.07	1.61	23:30	0.200	12:35	0.610	0.341	0.341	0.22
01/07/2021	04:35	3.22	11:50	4.96	3.69	03:05	1.20	11:50	1.88	1.40	04:35	0.168	11:50	0.481	0.239	0.239	-
01/08/2021	04:50	2.92	08:40	4.52	3.48	04:50	1.09	08:40	1.70	1.32	04:50	0.131	08:40	0.383	0.208	0.208	0.22
01/09/2021	05:40	2.73	11:15	3.60	3.00	22:55	1.01	11:20	1.35	1.12	22:55	0.110	11:20	0.219	0.142	0.142	-
01/10/2021	02:35	2.55	13:45	4.69	2.96	01:25	0.95	13:45	1.76	1.11	02:35	0.094	13:45	0.418	0.139	0.139	0.07
01/11/2021	04:50	2.47	12:35	5.20	3.94	04:55	0.91	21:15	1.99	1.47	04:50	0.086	21:20	0.538	0.292	0.292	1.06
01/12/2021	00:35	4.30	09:40	7.02	5.83	00:30	1.63	09:40	2.47	2.13	00:35	0.341	09:40	1.019	0.690	0.690	2.10
01/13/2021	23:25	3.69	00:45	6.57	4.83	23:10	1.37	00:40	2.38	1.78	23:10	0.232	00:45	0.893	0.452	0.452	0.09
01/14/2021	21:15	3.33	13:40	4.89	3.90	21:15	1.24	13:40	1.87	1.47	21:15	0.180	13:40	0.468	0.271	0.271	0.01
01/15/2021	23:55	2.94	14:25	4.64	3.58	23:55	1.11	14:25	1.76	1.35	23:55	0.135	14:25	0.411	0.221	0.221	0.09
01/16/2021	05:20	2.71	08:10	3.71	3.08	03:35	1.00	01:00	1.45	1.17	03:35	0.109	01:00	0.245	0.153	0.153	-
01/17/2021	01:20	2.63	16:40	4.62	3.08	01:25	0.99	16:40	1.81	1.19	01:25	0.102	16:40	0.418	0.158	0.158	0.10
01/18/2021	02:25	2.58	06:55	4.58	3.28	04:45	0.98	06:55	1.77	1.26	02:25	0.099	06:55	0.404	0.184	0.184	-
01/19/2021	06:10	2.56	12:55	4.59	3.32	06:10	0.99	12:55	1.68	1.26	06:10	0.098	12:55	0.385	0.187	0.187	0.01
01/20/2021	03:00	2.51	07:40	4.35	3.27	03:00	0.93	07:40	1.66	1.25	03:00	0.090	07:40	0.353	0.181	0.181	-
01/21/2021	02:00	2.49	13:15	4.47	3.26	01:55	0.96	13:15	1.67	1.26	01:55	0.092	13:15	0.370	0.181	0.181	0.11
01/22/2021	03:35	2.52	23:40	4.06	3.09	03:35	0.97	23:40	1.62	1.19	03:35	0.094	23:40	0.312	0.158	0.158	-
01/23/2021	02:50	2.28	03:10	3.64	2.75	02:55	0.85	03:10	1.42	1.06	02:50	0.072	03:10	0.236	0.119	0.119	-
01/24/2021	05:25	2.22	11:40	4.37	2.81	03:30	0.84	11:35	1.69	1.07	05:20	0.068	11:35	0.360	0.126	0.126	0.16
01/25/2021	03:20	2.38	10:40	4.50	3.19	03:25	0.89	10:35	1.71	1.21	03:20	0.080	10:35	0.380	0.172	0.172	0.04
01/26/2021	04:10	2.41	11:45	4.12	3.16	04:05	0.91	12:35	1.60	1.21	04:10	0.083	12:35	0.309	0.167	0.167	-
01/27/2021	00:15	2.52	11:40	4.61	3.27	01:45	0.94	11:40	1.79	1.24	00:20	0.092	11:40	0.415	0.182	0.182	0.14
01/28/2021	04:05	2.29	09:55	4.65	3.26	04:05	0.81	09:55	1.82	1.27	04:05	0.069	09:55	0.426	0.186	0.186	0.24
01/29/2021	01:55	2.43	13:25	4.02	3.08	23:50	0.93	13:25	1.66	1.23	23:55	0.085	13:25	0.315	0.163	0.163	0.03
01/30/2021	02:35	2.32	00:55	3.50	2.73	02:35	0.88	00:50	1.45	1.08	02:35	0.076	00:55	0.227	0.119	0.119	0.07
01/31/2021	05:15	2.23	13:00	4.39	2.76	04:40	0.86	13:00	1.75	1.09	04:50	0.070	13:00	0.378	0.126	0.126	0.12
02/01/2021	01:45	2.42	17:35	4.55	3.54	01:40	0.96	07:25	1.85	1.40	01:50	0.088	07:25	0.416	0.228	0.228	0.82
02/02/2021	04:15	3.06	12:05	5.02	3.87	04:10	1.21	12:05	1.95	1.49	04:15	0.156	12:05	0.508	0.274	0.274	0.31
02/03/2021	23:55	3.04	08:50	4.78	3.65	23:35	1.13	14:25	1.86	1.36	23:55	0.144	14:25	0.445	0.230	0.230	0.06
02/04/2021	02:40	2.64	08:35	4.92	3.47	02:35	0.98	08:35	1.94	1.28	02:40	0.101	08:35	0.490	0.203	0.203	0.07
02/05/2021	03:55	2.69	03:05	4.57	3.29	03:55	0.96	03:05	1.68	1.19	03:55	0.103	03:05	0.383	0.174	0.174	0.01
02/06/2021	05:20	2.41	01:20	3.68	2.90	05:30	0.83	01:20	1.38	1.04	05:25	0.077	01:20	0.231	0.126	0.126	0.01
02/07/2021	05:30	2.37	09:50	4.32	2.91	05:30	0.79	09:50	1.63	1.04	05:30	0.070	09:50	0.344	0.128	0.128	-
02/08/2021	04:15	2.40	08:55	4.82	3.14	04:20	0.83	08:55	1.78	1.17	04:15	0.076	08:55	0.437	0.163	0.163	-
02/09/2021	02:50	2.34	15:10	4.27	3.12	05:55	0.84	13:50	1.62	1.17	02:50	0.075	13:50	0.333	0.159	0.159	-
02/10/2021	04:20	2.28	11:05	4.28	3.21	04:20	0.84	12:20	1.66	1.19	04:20	0.070	11:05	0.341	0.168	0.168	-
02/11/2021	02:55	2.38	11:00	4.72	3.18	02:50	0.84	23:05	1.77	1.24	02:55	0.075	11:00	0.419	0.175	0.175	-
02/12/2021	04:00	2.28	11:45	4.06	2.95	04:00	0.92	11:45	1.68	1.23	04:00	0.077	11:45	0.323	0.155	0.155	-
02/13/2021	03:55	2.28	01:20	3.59	2.71	03:40	0.83	23:55	1.54	1.09	03:40	0.071	01:20	0.249	0.120	0.120	0.08
02/14/2021	04:00	2.26	10:05	4.16	2.83	01:50	0.87	10:00	1.76	1.13	04:00	0.072	10:00	0.349	0.133	0.133	0.71
02/15/2021	00:00	2.92	14:10	5.65	4.26	00:00	1.16	14:10	2.08	1.64	00:00	0.140	14:10	0.639	0.349	0.349	0.78
02/16/2021	23:30	3.47	07:30	5.29	4.12	23:55	1.31	10:45	1.97	1.57	23:30	0.203	07:30	0.542	0.312	0.312	0.07
02/17/2021	03:00	3.07	06:40	5.03	3.62	02:05	1.16	06:40	1.97	1.36	03:05	0.150	06:40	0.514	0.226	0.226	-
02/18/2021	04:50	2.80	15:10	4.85	3.49	03:15	1.05	15:10	1.83	1.30	03:20	0.120	15:10	0.455	0.206	0.206	0.09
02/19/2021	04:30	2.72	13:10	4.37	3.36	04:30	1.00	13:10	1.68	1.27	04:30	0.109	13:10	0.360	0.191	0.191	0.17
02/20/2021	04:50	2.54	00:25	3.86	2.97	04:40	0.95	00:25	1.50	1.13	04:50	0.093	00:25	0.270	0.141	0.141	0.07
02/21/2021	04:35	2.48	23:50	4.95	3.05	04:35	0.91	23:45	1.88	1.14	04:35	0.087	23:50	0.479	0.152	0.152	0.42
02/22/2021	05:15	3.53	13:10	6.13	4.46	05:05	1.34	13:35	2.25	1.67	05:10	0.213	13:10	0.766	0.378	0.378	0.98
02/23/2021	04:50	3.31	21:35	5.27	3.91	04:55	1.25	21:35	1.97	1.47	04:55	0.180	21:35	0.550	0.272	0.272	0.27
02/24/2021	05:55	3.12	12:00	4.76	3.69	05:55	1.18	12:05	1.83	1.38	05:55	0.156	12:05	0.442	0.236	0.236	-
02/25/2021	02:50	2.88	09:15	4.92	3.68	02:40	1.06	17:15	1.87	1.36	02:50	0.125	09:15	0.464	0.234	0.234	0.18
02/26/2021	04:50	2.82	10:45	4.74	3.44	04:35	1.01	10:45	1.85	1.28	04:50	0.116	10:45	0.445	0.198	0.198	0.10
02/27/2021	05:35	2.54	00:00	3.87	2.96	05:00	0.84	00:00	1.50	1.09	05:00	0.085	00:00	0.270	0.135	0.135	0.02
02/28/2021	04:10	2.43	22:20	4.00	2.91	04:05	0.87	12:45	1.54	1.04	04:05	0.080	22:20	0.291	0.128	0.128	0.02
03/01/2021	02:45	2.43	08:20	4.68	3.23	02:40	0.86	08:20	1.79	1.20	02:40	0.080	08:20	0.422	0.173	0.173	-
03/02/2021	05:10	2.42	08:35	4.77	3.22	02:55	0.85	08:35	1.77	1.20	02:55	0.079	08:35	0.428	0.170	0.170	-
03/03/2021	02:20	2.50	09:20	4.58	3.27	03:20	0.89	09:20	1.76	1.19	02:20	0.086	09:20	0.404	0.174	0.174	-
03/04/2021	05:35	2.44	11:10	4.94	3.27	03:00	0.87	11:10	1.85	1.20	05:35	0.080	11:10	0.472	0.176	0.176	0.20
03/05/2021	05:30	2.52	06:05	4.67	3.16	02:45	0.92	06:00	1.79	1.17	05:30	0.090	06:00	0.415	0.162	0.162	0.05
03/06/2021	03:20	2.38	00:55	3.66	2.83	06:20	0.85	00:55	1.35	1.04	03:20	0.077	00:55	0.225	0.121	0.121	-
03/07/2021	04:20	2.23	11:30	4.56	2.79	04:15	0.77	11:30	1.73	1.02	04:15	0.063	11:30	0.393	0.118	0.118	0.04
03/08/2021	04:30	2.33	12:25	4.89	3.20	04:20	0.83	12:25	1.86	1.17	04:25	0.072	12:25	0.466	0.168	0.168	-
03/09/2021	02:50	2.37	11:30	4.44	3.13	03:15	0.84	11:30	1.67	1.15	03:15	0.075	11:30	0.367	0.157	0.157	0.01
03/10/2021	03:05	2.26	12:25	4.69	3.17	03:05	0.79	13:25	1.68	1.17	03:05	0.066	12:30	0.384	0.165	0.165	-
03/11/2021	03:55	2.21	12:45	4.55	3.15	03:55	0.80	12:45	1.68	1.17	03:55	0.064	12:45	0.381	0.163	0.163	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	03:35	2.18	09:05	4.75	3.04	03:35	0.75	09:05	1.82	1.12	03:35	0.059	09:05	0.440	0.148	0.148	-
03/13/2021	03:55	2.16	00:20	3.55	2.73	03:45	0.75	00:20	1.36	0.98	03:45	0.059	00:20	0.217	0.108	0.108	-
03/14/2021	03:55	2.18	09:00	4.39	2.83	03:50	0.76	09:00	1.55	1.02	03:55	0.059	09:00	0.333	0.122	0.122	0.30
03/15/2021	02:55	2.48	10:20	4.79	3.25	02:55	0.84	10:20	1.77	1.16	02:55	0.080	10:20	0.431	0.166	0.166	-
03/16/2021	02:45	2.28	12:30	3.84	3.11	03:25	0.84	12:25	1.46	1.16	02:40	0.072	12:30	0.261	0.157	0.157	-
03/17/2021	02:25	2.43	11:15	4.95	3.20	22:55	0.86	11:15	1.83	1.16	02:25	0.082	11:15	0.468	0.165	0.165	-
03/18/2021	02:55	2.27	08:35	4.77	3.13	02:50	0.71	08:35	1.81	1.14	02:50	0.060	08:35	0.437	0.158	0.158	0.11
03/19/2021	02:10	2.30	10:35	4.22	2.97	02:00	0.86	10:35	1.59	1.12	02:05	0.074	10:35	0.324	0.142	0.142	0.03
03/20/2021	03:50	2.05	06:00	3.38	2.66	03:50	0.70	06:00	1.27	0.99	03:50	0.050	06:00	0.189	0.106	0.106	0.17
03/21/2021	02:45	2.05	21:35	3.57	2.62	02:45	0.71	21:30	1.43	1.00	02:40	0.052	21:30	0.228	0.106	0.106	0.07
03/22/2021	01:50	2.27	02:30	4.56	3.00	01:50	0.85	02:30	1.77	1.16	01:50	0.071	02:30	0.402	0.149	0.149	0.11
03/23/2021	02:45	2.21	11:20	4.61	3.07	01:50	0.79	11:20	1.77	1.14	02:45	0.064	11:20	0.409	0.152	0.152	-
03/24/2021	02:05	2.20	13:15	4.28	3.17	02:00	0.72	13:15	1.62	1.17	02:00	0.058	13:15	0.336	0.164	0.164	0.34
03/25/2021	23:55	2.87	09:30	4.82	3.45	02:35	1.02	09:30	1.82	1.27	23:55	0.120	09:30	0.447	0.198	0.198	0.27
03/26/2021	03:45	2.47	04:05	4.42	3.15	03:45	0.83	04:05	1.67	1.16	03:45	0.079	04:05	0.363	0.159	0.159	-
03/27/2021	04:00	2.28	09:50	3.15	2.68	03:55	0.80	15:00	1.25	0.97	04:00	0.067	15:00	0.160	0.104	0.104	-
03/28/2021	03:40	2.17	14:55	4.58	2.88	04:35	0.76	14:55	1.74	1.07	03:40	0.060	14:55	0.398	0.134	0.134	0.37
03/29/2021	03:05	2.31	13:30	4.17	3.11	03:05	0.85	05:30	1.62	1.16	03:05	0.073	05:30	0.321	0.157	0.157	-
03/30/2021	03:05	2.26	10:45	4.08	3.10	02:50	0.83	10:45	1.60	1.18	02:55	0.069	10:45	0.311	0.159	0.159	-
03/31/2021	02:35	2.37	09:35	4.48	3.13	02:35	0.81	09:35	1.72	1.18	02:35	0.072	09:35	0.382	0.162	0.162	-
04/01/2021	02:05	2.32	10:25	4.53	3.11	02:05	0.79	10:25	1.74	1.17	02:05	0.068	10:25	0.392	0.159	0.159	-
04/02/2021	23:15	2.35	20:00	4.02	2.96	02:25	0.83	19:55	1.63	1.14	02:25	0.073	20:00	0.310	0.143	0.143	-
04/03/2021	03:15	2.02	06:40	3.24	2.53	03:10	0.72	06:40	1.35	0.97	03:20	0.050	06:40	0.189	0.097	0.097	-
04/04/2021	03:15	2.02	12:35	3.30	2.53	03:15	0.72	12:35	1.33	0.99	03:15	0.051	12:35	0.191	0.100	0.100	-
04/05/2021	02:15	2.04	13:45	4.39	3.01	02:10	0.77	13:45	1.71	1.17	02:10	0.055	13:45	0.368	0.153	0.153	-
04/06/2021	03:10	2.11	11:45	4.50	3.03	03:10	0.71	11:45	1.74	1.16	03:05	0.054	11:45	0.388	0.152	0.152	-
04/07/2021	02:20	2.18	10:05	4.65	3.04	02:20	0.74	10:05	1.79	1.16	02:20	0.058	10:05	0.417	0.154	0.154	0.22
04/08/2021	02:55	2.16	12:15	4.34	3.09	02:55	0.76	12:15	1.63	1.17	02:55	0.059	12:15	0.347	0.158	0.158	-
04/09/2021	02:00	2.33	11:50	4.20	3.02	02:00	0.84	06:20	1.65	1.11	02:00	0.073	11:50	0.333	0.145	0.145	0.03
04/10/2021	02:10	2.34	18:30	5.19	3.66	23:15	0.39	00:35	1.24	0.74	02:10	0.070	18:30	0.234	0.119	0.119	0.02
04/11/2021	16:05	3.75	11:20	5.40	4.38	23:15	0.37	11:20	1.13	0.57	23:15	0.066	11:20	0.324	0.124	0.124	-
04/12/2021	23:10	3.63	12:55	5.32	4.41	00:25	0.40	06:15	1.06	0.63	02:10	0.077	04:35	0.261	0.137	0.137	-
04/13/2021	22:40	2.59	05:35	4.55	3.39	04:35	0.45	05:35	1.89	1.02	04:35	0.070	05:35	0.429	0.151	0.151	-
04/14/2021	04:20	2.49	12:10	4.79	3.21	00:55	0.77	12:10	1.72	1.11	04:20	0.074	12:10	0.420	0.159	0.158	-
10/01/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/02/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/03/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
10/04/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
10/05/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/06/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/08/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/09/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64
10/10/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.04
10/11/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.53
10/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/13/2020	23:45	2.18	07:45	4.85	3.08	23:40	0.88	07:45	1.88	1.25	23:45	0.069	07:45	0.466	0.169	0.116	0.61
10/14/2020	04:20	2.01	09:55	4.21	2.85	04:20	0.83	09:55	1.74	1.21	04:20	0.058	09:55	0.354	0.147	0.147	-
10/15/2020	02:40	1.83	08:10	4.27	2.80	02:30	0.76	06:15	1.72	1.17	02:30	0.047	08:10	0.358	0.138	0.138	-
10/16/2020	03:05	1.90	03:55	4.18	2.76	03:00	0.74	03:55	1.73	1.14	03:05	0.047	03:55	0.348	0.132	0.132	-
10/17/2020	03:00	1.79	20:25	3.51	2.38	04:10	0.71	20:25	1.44	0.96	03:00	0.043	20:25	0.227	0.088	0.088	0.01
10/18/2020	03:10	1.81	12:30	4.06	2.43	03:20	0.58	12:30	1.60	0.92	03:20	0.035	12:30	0.308	0.091	0.091	0.03
10/19/2020	03:40	1.79	07:55	4.55	2.80	03:25	0.63	07:55	1.72	1.11	03:40	0.037	07:55	0.391	0.132	0.132	0.05
10/20/2020	02:55	1.98	15:15	4.52	2.86	02:50	0.70	15:20	1.73	1.17	02:50	0.050	15:15	0.383	0.142	0.142	-
10/21/2020	01:25	1.94	13:05	4.01	2.88	23:45	0.72	11:20	1.66	1.18	23:45	0.048	11:20	0.313	0.145	0.145	0.01
10/22/2020	02:55	2.01	10:50	4.39	2.90	02:55	0.77	10:15	1.68	1.16	02:55	0.054	10:50	0.354	0.143	0.143	-
10/23/2020	03:05	1.92	06:50	4.34	2.82	02:50	0.70	06:50	1.70	1.11	02:55	0.046	06:50	0.360	0.133	0.133	0.20
10/24/2020	02:55	1.86	20:30	3.55	2.46	02:45	0.66	13:55	1.45	0.99	02:50	0.041	13:55	0.230	0.096	0.096	0.02
10/25/2020	04:30	1.75	09:30	3.78	2.50	04:25	0.60	09:25	1.58	0.97	04:25	0.035	09:25	0.274	0.098	0.098	-
10/26/2020	03:35	1.83	06:30	4.70	2.94	03:35	0.67	06:30	1.73	1.07	03:35	0.041	06:30	0.411	0.137	0.137	-
10/27/2020	02:30	1.94	11:45	4.33	2.98	02:35	0.67	11:45	1.61	1.05	02:30	0.045	11:45	0.339	0.136	0.136	-
10/28/2020	02:20	2.03	10:30	4.12	3.03	02:20	0.71	11:55	1.54	1.08	02:20	0.051	12:00	0.299	0.143	0.143	-
10/29/2020	02:35	1.94	05:05	4.31	3.01	23:25	0.70	14:15	1.73	1.10	02:35	0.047	14:15	0.349	0.145	0.145	-
10/30/2020	03:50	2.07	04:00	4.08	2.92	03:45	0.68	05:45	1.47	1.01	03:45	0.050	04:00	0.281	0.126	0.126	0.10
10/31/2020	04:05	1.69	00:10	3.00	2.31	04:00	0.57	00:10	1.24	0.89	04:00	0.031	00:10	0.155	0.078	0.078	-
11/01/2020	02:55	1.62	12:10	3.80	2.31	04:20	0.55	12:10	1.54	0.89	04:20	0.028	12:10	0.270	0.082	0.082	-
11/02/2020	02:40	1.79	09:40	4.46	2.77	02:30	0.64	14:25	1.72	1.08	02:30	0.038	09:35	0.374	0.127	0.127	-
11/03/2020	03:40	1.81	03:50	4.81	3.07	03:40	0.64	03:50	1.85	1.20	03:35	0.039	03:50	0.453	0.167	0.167	0.83
11/04/2020	02:35	2.22	12:00	4.03	2.97	03:15	0.88	12:00	1.59	1.19	02:35	0.072	12:00	0.304	0.150	0.150	0.09
11/05/2020	04:05	2.14	09:05	4.72	2.91	04:05	0.77	09:05	1.81	1.15	04:05	0.059	09:05	0.432	0.143	0.143	0.34
11/06/2020	06:30	2.16	02:35	4.59	2.85	23:25	0.80	02:30	1.79	1.13	23:25	0.062	02:30	0.398	0.137	0.137	0.10
11/07/2020	04:20	1.92	01:10	3.50	2.41	04:25	0.68	01:10	1.42	0.94	04:20	0.045	01:10	0.222	0.088	0.088	0.07
11/08/2020	03:45	1.70	12:00	3.76	2.41	03:30	0.60	12:00	1.51	0.94	03:40	0.033	12:00	0.262	0.091	0.091	0.01
11/09/2020	03:20	1.89	13:25	4.10	2.86	03:10	0.70	08:40	1.61	1.13	03:10	0.046	13:25	0.315	0.139	0.139	0.04

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/10/2020	04:10	2.01	08:40	3.99	2.88	02:30	0.74	08:40	1.62	1.12	04:10	0.052	08:40	0.304	0.137	0.137	0.03
11/11/2020	03:05	1.92	13:00	4.17	2.91	03:00	0.65	13:00	1.62	1.12	03:05	0.042	13:00	0.326	0.141	0.141	-
11/12/2020	02:30	2.05	07:55	4.09	2.92	03:20	0.72	15:00	1.67	1.14	02:30	0.052	15:00	0.325	0.143	0.143	0.16
11/13/2020	23:20	2.15	07:00	5.00	2.99	23:20	0.73	07:00	1.96	1.13	23:20	0.056	07:00	0.507	0.147	0.147	0.38
11/14/2020	04:45	1.80	18:30	3.74	2.60	04:45	0.54	18:30	1.34	0.92	04:45	0.032	18:30	0.229	0.099	0.099	0.47
11/15/2020	05:40	2.13	23:30	3.96	2.69	05:25	0.69	23:30	1.49	0.97	05:45	0.052	23:30	0.278	0.107	0.107	0.19
11/16/2020	03:20	2.13	09:05	4.85	3.17	03:20	0.67	09:05	1.81	1.08	03:20	0.051	09:05	0.449	0.157	0.157	0.31
11/17/2020	04:35	2.31	13:25	4.69	3.26	04:35	0.65	13:25	1.64	1.05	04:35	0.055	13:25	0.389	0.153	0.153	0.20
11/18/2020	02:25	2.36	17:50	4.81	3.27	02:25	0.62	17:45	1.72	1.07	02:25	0.055	17:45	0.413	0.158	0.158	0.30
11/19/2020	02:50	2.40	13:00	5.59	3.47	02:50	0.73	13:15	1.91	1.15	02:50	0.066	13:00	0.560	0.184	0.184	0.50
11/20/2020	04:55	2.50	10:40	4.54	3.26	04:50	0.70	10:40	1.61	1.04	04:50	0.068	10:40	0.365	0.152	0.152	0.01
11/21/2020	04:35	2.30	11:00	3.80	2.87	06:45	0.61	01:00	1.32	0.86	04:35	0.054	01:00	0.230	0.103	0.103	-
11/22/2020	04:55	2.32	12:10	4.60	2.90	05:30	0.60	12:10	1.63	0.88	04:55	0.052	12:10	0.376	0.109	0.109	0.21
11/23/2020	03:05	2.26	06:30	4.63	3.25	03:00	0.61	06:30	1.63	1.04	03:05	0.050	06:30	0.378	0.153	0.153	0.14
11/24/2020	03:05	2.28	12:40	4.58	3.26	03:00	0.62	12:40	1.66	1.05	03:05	0.052	12:40	0.380	0.157	0.157	0.21
11/25/2020	05:20	2.34	13:30	4.48	3.15	05:20	0.68	13:25	1.57	1.02	05:20	0.060	13:30	0.348	0.141	0.141	0.05
11/26/2020	01:55	2.15	00:20	3.27	2.56	01:55	0.60	02:05	1.11	0.79	01:55	0.046	00:20	0.156	0.080	0.080	0.02
11/27/2020	04:30	2.01	21:45	3.28	2.64	23:40	0.51	11:15	1.04	0.73	04:30	0.037	11:05	0.136	0.079	0.079	-
11/28/2020	04:00	2.40	12:30	3.71	3.09	23:55	0.45	02:35	0.95	0.60	01:50	0.044	02:40	0.154	0.081	0.081	0.05
11/29/2020	22:50	2.29	11:40	4.45	2.84	05:30	0.39	11:40	1.74	0.77	05:25	0.036	11:40	0.382	0.091	0.091	-
11/30/2020	02:35	2.03	05:25	4.84	3.01	02:40	0.68	05:25	1.88	1.15	02:40	0.048	05:25	0.464	0.152	0.152	0.36
12/01/2020	04:30	1.98	13:00	4.74	2.97	04:30	0.67	12:55	1.73	1.07	04:30	0.046	13:00	0.409	0.139	0.139	-
12/02/2020	04:55	2.07	16:00	4.41	3.05	04:50	0.64	16:00	1.61	1.06	04:50	0.047	16:00	0.349	0.142	0.142	0.01
12/03/2020	04:15	2.03	10:05	4.30	2.96	02:50	0.65	10:05	1.61	1.03	04:20	0.046	10:05	0.336	0.132	0.132	-
12/04/2020	05:10	1.93	02:15	4.51	2.84	05:05	0.61	02:15	1.63	1.02	05:10	0.040	02:15	0.364	0.123	0.123	-
12/05/2020	01:55	2.09	00:10	3.31	2.50	01:00	0.70	00:10	1.28	0.91	01:00	0.052	00:10	0.185	0.089	0.089	0.03
12/06/2020	05:45	1.85	11:45	3.96	2.46	05:45	0.58	11:45	1.57	0.90	05:45	0.036	11:45	0.292	0.089	0.089	0.03
12/07/2020	03:40	1.89	08:55	4.13	2.84	03:40	0.60	08:55	1.66	1.07	03:40	0.038	08:55	0.327	0.129	0.129	-
12/08/2020	03:35	2.11	19:10	4.44	3.24	04:00	0.73	15:05	1.69	1.22	04:00	0.055	19:10	0.370	0.178	0.178	0.87
12/09/2020	23:45	2.52	08:05	5.08	3.30	22:00	0.91	08:05	1.87	1.20	23:45	0.089	08:05	0.494	0.177	0.177	0.17
12/10/2020	03:30	2.24	06:30	4.60	3.11	03:25	0.79	06:30	1.76	1.16	03:25	0.065	06:30	0.404	0.157	0.157	0.07
12/11/2020	05:35	2.15	02:35	3.92	2.96	05:35	0.75	03:20	1.55	1.09	05:35	0.058	02:30	0.276	0.137	0.137	0.02
12/12/2020	04:55	2.01	19:35	3.54	2.54	04:55	0.65	19:35	1.39	0.91	04:45	0.046	19:35	0.221	0.091	0.091	0.01
12/13/2020	06:15	2.12	13:20	4.00	2.71	06:15	0.72	13:20	1.57	1.00	06:15	0.055	13:20	0.297	0.113	0.113	0.24
12/14/2020	02:35	2.16	02:45	4.07	2.99	02:30	0.75	02:45	1.61	1.12	02:30	0.059	02:45	0.312	0.143	0.143	0.05
12/15/2020	04:40	1.99	14:45	4.86	3.25	04:25	0.65	14:45	1.86	1.21	04:35	0.045	14:45	0.464	0.181	0.181	0.58
12/16/2020	04:15	2.49	14:20	4.93	3.39	04:00	0.92	14:20	1.91	1.27	04:05	0.088	14:20	0.486	0.197	0.197	0.39
12/17/2020	02:45	2.57	01:10	4.40	3.26	02:50	0.93	10:50	1.70	1.22	02:50	0.093	10:50	0.362	0.178	0.178	0.08
12/18/2020	04:20	2.36	10:00	4.52	3.11	04:20	0.80	10:00	1.74	1.16	04:20	0.070	10:00	0.391	0.159	0.159	0.25
12/19/2020	04:15	2.17	01:15	3.70	2.83	04:20	0.71	00:15	1.46	1.04	04:20	0.056	00:15	0.244	0.126	0.126	0.37
12/20/2020	04:20	2.57	20:40	4.63	3.01	04:10	0.90	20:35	1.71	1.09	04:20	0.090	20:40	0.394	0.140	0.140	0.04
12/21/2020	00:40	2.78	16:50	5.61	3.90	00:35	1.00	16:45	2.07	1.43	00:40	0.112	16:50	0.620	0.271	0.271	1.07
12/22/2020	23:50	3.11	01:55	5.14	3.68	22:50	1.08	01:55	1.87	1.33	23:50	0.143	01:55	0.504	0.227	0.227	-
12/23/2020	04:20	2.71	00:25	4.60	3.27	04:10	0.93	00:30	1.78	1.19	04:20	0.101	00:30	0.410	0.171	0.171	-
12/24/2020	23:55	2.40	09:55	4.57	2.88	02:40	0.84	09:55	1.75	1.07	02:40	0.077	09:55	0.400	0.129	0.129	-
12/25/2020	04:35	2.17	16:45	3.27	2.65	00:50	0.72	16:40	1.27	0.97	04:35	0.058	16:40	0.179	0.104	0.104	0.49
12/26/2020	04:45	2.37	11:15	3.11	2.69	04:10	0.84	11:15	1.18	0.98	04:45	0.074	11:15	0.155	0.106	0.106	0.02
12/27/2020	04:05	2.28	11:35	3.81	2.89	02:35	0.81	11:35	1.43	1.08	04:00	0.069	11:35	0.252	0.133	0.133	0.13
12/28/2020	01:35	2.41	13:30	4.24	3.08	01:40	0.84	13:30	1.65	1.16	01:35	0.077	13:30	0.339	0.157	0.157	-
12/29/2020	05:35	2.31	10:20	4.37	3.16	02:10	0.80	10:20	1.68	1.20	02:15	0.070	10:20	0.360	0.167	0.167	0.14
12/30/2020	00:25	2.82	10:35	5.29	3.80	01:15	1.07	09:20	1.95	1.45	01:10	0.124	10:35	0.534	0.261	0.261	0.78
12/31/2020	23:30	2.87	07:30	4.84	3.53	23:25	1.08	07:30	1.87	1.36	23:25	0.127	07:30	0.462	0.219	0.219	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			30.413	30.65
Average	3.15	1.15	0.166	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A7_70807

Site Address /Location:	Opposite 420 H St NW			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	Located on Interurban trail	Latitude:	47.3125628	Pipe Size (H x W): 18.00 X 18.00	Pipe Shape: Circular
		Longitude:	-122.2394872		



Manhole #	System Characteristics
A770807	Residential
Access	Traffic
Drive	Light







ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.11.325

Installation Information

Installation Date:	Installation Type:
Tuesday, October 13, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Time	
7:25:00 PM	
Depth of Flow (Wet DOF) (in)	
4.63	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
2.13	N/A
Silt (in)	Silt Type
0	

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
5	Single
Pipe Material	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	28
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
Concrete	Good

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

King County M/H

AUB_A8_70829

Site Commentary

SITE INFORMATION

Pipe	Elliptical (15 in H x 15 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

This site experienced backwater conditions from October 9th through October 12th.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	1.77	2.72	0.148
Minimum	1.30	0.47	0.047
Maximum	7.85	4.27	0.458
Min Time	12/06/2020 2:00:00 AM	10/10/2020 12:00:00 AM	11/11/2020 2:00:00 AM
Max Time	10/10/2020 1:00:00 AM	01/12/2021 9:00:00 AM	01/12/2021 9:00:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

Percent Uptime	
DFINAL (in)	97.749
VFINAL (ft/s)	97.749
QFINAL (MGD - Total MG)	97.749

Hydrograph Report

AUB_A8_70829

Flow Monitor

AUB_A8_70829

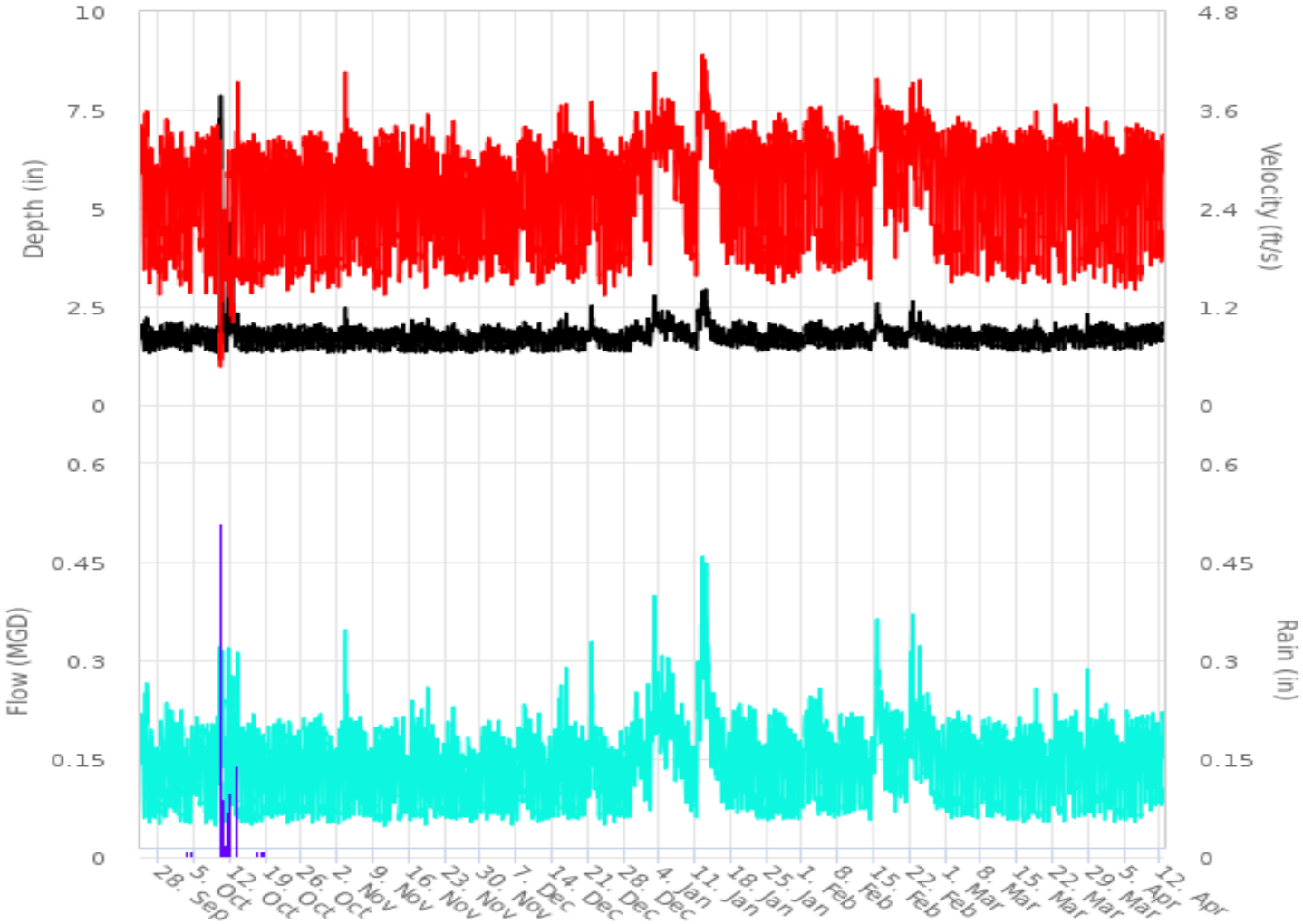
Pipe Height
15.00
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL



4455 S. 134th Place
Tukwila, WA 98168

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Scattergraph Report

AUB_A8_70829

Flow Monitor

AUB_A8_70829

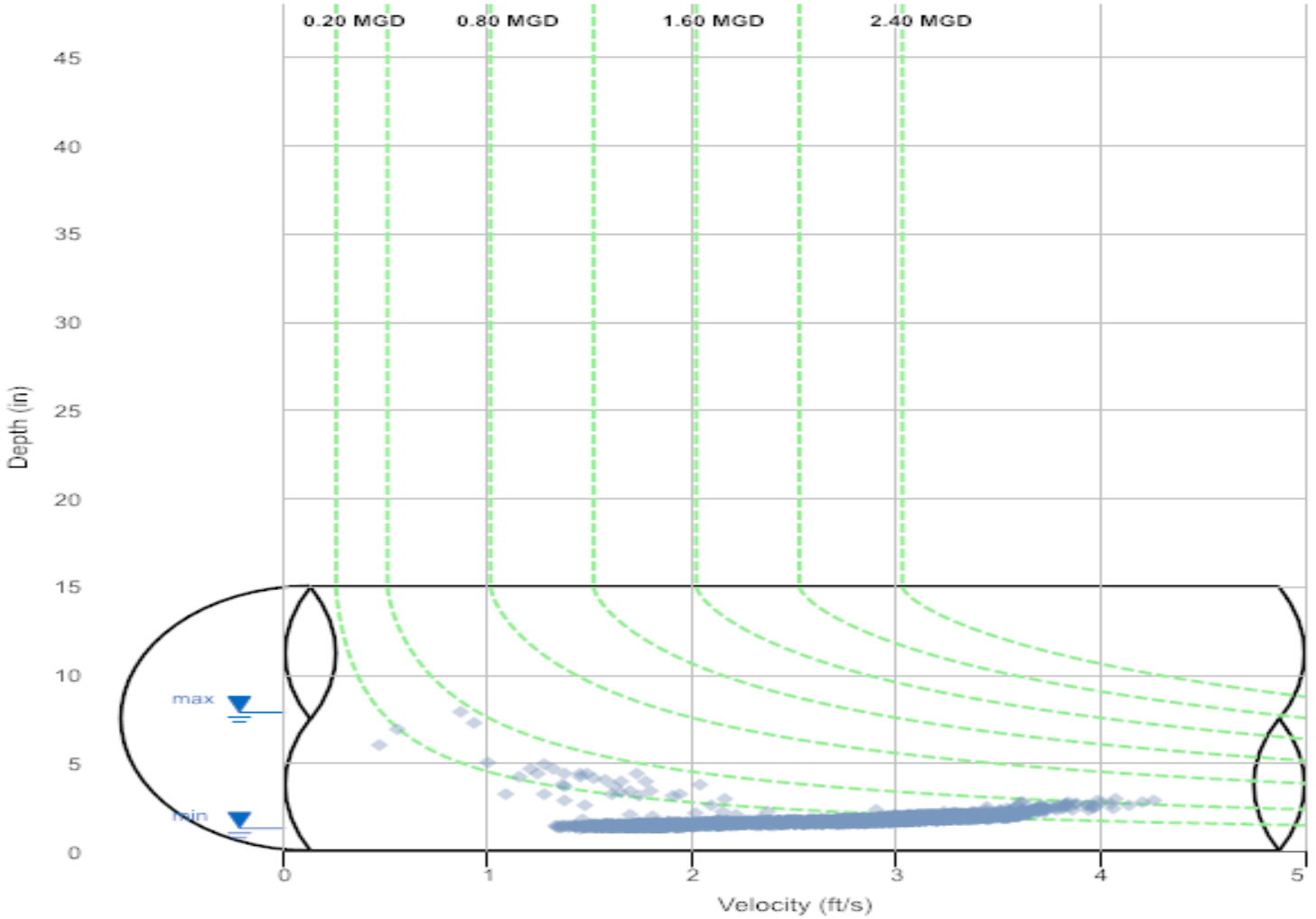
Pipe Height
15.00
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A8_70829Pipe: Elliptical (15 in H x 15 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	01:35	1.50	15:35	2.51	1.75	01:00	1.64	15:30	4.02	2.85	01:00	0.071	15:35	0.348	0.150	0.150	-
01/02/2021	04:45	1.48	23:35	3.02	1.97	04:45	1.51	21:10	4.38	2.99	04:45	0.061	21:10	0.455	0.197	0.197	-
01/03/2021	22:25	1.88	00:05	2.93	2.18	04:55	2.85	02:40	4.53	3.32	22:35	0.169	02:50	0.490	0.239	0.239	-
01/04/2021	02:55	1.72	11:50	2.70	2.07	02:45	2.80	11:45	4.11	3.38	02:55	0.141	11:50	0.398	0.226	0.226	-
01/05/2021	03:30	1.62	13:55	2.61	2.00	01:20	2.71	13:55	3.94	3.33	03:30	0.131	13:55	0.364	0.212	0.212	-
01/06/2021	23:45	1.66	12:00	2.62	1.98	23:15	2.77	10:20	3.90	3.36	23:45	0.135	12:00	0.360	0.210	0.210	-
01/07/2021	03:40	1.59	08:55	2.35	1.87	04:20	2.30	08:55	3.70	3.05	04:20	0.105	08:55	0.294	0.176	0.176	-
01/08/2021	02:55	1.56	08:25	2.33	1.86	01:20	1.87	08:25	3.65	2.86	04:05	0.086	08:25	0.287	0.165	0.165	-
01/09/2021	04:00	1.55	10:55	2.50	1.74	06:15	1.70	10:50	3.76	2.56	06:15	0.076	10:55	0.324	0.134	0.134	-
01/10/2021	02:35	1.43	13:45	1.99	1.68	01:05	1.57	19:40	3.40	2.60	01:05	0.062	13:50	0.211	0.130	0.130	-
01/11/2021	04:20	1.37	11:00	2.63	1.95	02:25	1.37	10:55	3.73	2.94	04:45	0.051	11:00	0.348	0.189	0.189	-
01/12/2021	00:25	1.82	09:15	3.04	2.53	00:25	2.96	18:55	4.53	3.78	00:25	0.163	09:15	0.492	0.337	0.337	-
01/13/2021	22:40	1.73	00:40	3.06	2.18	22:50	2.97	00:35	4.21	3.56	22:40	0.156	00:40	0.488	0.257	0.257	-
01/14/2021	23:45	1.57	09:05	2.49	1.88	02:55	2.72	09:00	3.88	3.29	03:40	0.123	16:05	0.329	0.193	0.193	-
01/15/2021	03:25	1.50	11:10	2.36	1.80	23:25	2.29	11:05	3.91	3.19	23:25	0.099	11:10	0.305	0.175	0.175	-
01/16/2021	02:45	1.48	09:05	2.25	1.70	03:25	1.64	09:05	3.80	2.91	03:25	0.067	09:05	0.284	0.147	0.147	-
01/17/2021	05:20	1.46	17:40	2.23	1.71	04:30	1.53	08:40	3.69	2.76	02:05	0.064	17:40	0.268	0.141	0.141	-
01/18/2021	03:10	1.39	11:05	2.34	1.81	03:00	1.43	11:05	3.60	2.72	03:00	0.054	11:05	0.285	0.155	0.155	-
01/19/2021	04:15	1.42	14:05	2.50	1.82	05:40	1.53	14:05	3.67	2.79	05:40	0.059	14:05	0.319	0.158	0.158	-
01/20/2021	02:50	1.50	11:15	2.32	1.81	02:50	1.60	11:15	3.74	2.86	02:50	0.066	11:15	0.292	0.159	0.159	-
01/21/2021	02:50	1.44	11:00	2.43	1.85	02:55	1.41	10:55	3.76	2.80	02:55	0.055	11:00	0.312	0.163	0.163	-
01/22/2021	02:15	1.47	09:50	2.29	1.79	02:30	1.23	09:50	3.73	2.88	02:30	0.049	09:50	0.286	0.158	0.158	-
01/23/2021	04:35	1.34	13:15	1.93	1.62	02:25	1.28	21:45	3.69	2.64	02:25	0.046	10:00	0.210	0.126	0.126	-
01/24/2021	04:10	1.34	14:35	1.88	1.62	01:30	1.46	08:35	3.49	2.60	01:30	0.053	14:35	0.200	0.125	0.125	-
01/25/2021	02:50	1.37	11:20	2.38	1.75	03:15	1.36	11:20	3.82	2.72	03:00	0.051	11:20	0.309	0.146	0.146	-
01/26/2021	01:35	1.36	11:05	2.28	1.76	02:50	1.25	11:25	3.82	2.80	01:30	0.046	11:05	0.286	0.152	0.152	-
01/27/2021	02:15	1.38	16:35	2.31	1.77	02:10	1.51	08:40	3.84	2.93	02:10	0.056	16:35	0.298	0.160	0.160	-
01/28/2021	02:20	1.35	13:55	2.17	1.73	02:25	1.24	17:40	3.86	2.92	02:25	0.045	13:55	0.270	0.153	0.153	-
01/29/2021	00:35	1.38	11:00	2.08	1.68	01:30	1.30	12:55	3.81	2.71	01:30	0.049	12:55	0.253	0.137	0.137	-
01/30/2021	02:25	1.36	12:50	1.94	1.64	04:45	1.28	12:50	3.66	2.63	04:50	0.048	12:50	0.220	0.127	0.127	-
01/31/2021	03:10	1.34	13:05	1.94	1.62	00:55	1.41	13:05	3.53	2.63	00:55	0.051	13:05	0.212	0.126	0.126	-
02/01/2021	01:30	1.36	17:15	2.23	1.81	01:35	1.43	23:55	3.90	3.04	01:30	0.052	23:55	0.279	0.169	0.169	-
02/02/2021	03:45	1.50	09:40	2.52	1.86	03:40	1.64	12:20	4.11	3.14	03:40	0.068	09:40	0.358	0.183	0.183	-
02/03/2021	04:30	1.48	10:30	2.21	1.80	04:10	1.77	10:30	3.78	3.12	04:35	0.073	10:30	0.275	0.172	0.172	-
02/04/2021	02:35	1.41	09:40	2.39	1.79	02:25	1.58	09:40	3.92	2.95	02:25	0.062	09:40	0.319	0.163	0.163	-
02/05/2021	03:05	1.43	13:25	2.09	1.74	03:05	1.52	13:25	3.62	2.88	03:05	0.059	13:25	0.242	0.151	0.151	-
02/06/2021	04:40	1.38	19:35	2.00	1.67	04:40	1.46	19:35	3.46	2.68	04:40	0.053	19:35	0.218	0.133	0.133	-
02/07/2021	04:50	1.37	11:50	2.01	1.71	05:10	1.48	08:20	3.34	2.53	04:55	0.055	11:50	0.194	0.130	0.130	-
02/08/2021	02:25	1.41	11:35	2.07	1.74	01:50	1.33	11:35	3.72	2.85	01:50	0.054	11:35	0.246	0.150	0.150	-
02/09/2021	02:40	1.37	14:45	2.35	1.71	02:15	1.49	14:45	4.03	2.82	02:40	0.057	14:45	0.321	0.147	0.147	-
02/10/2021	01:35	1.39	13:05	2.26	1.77	03:30	1.43	13:00	3.80	2.87	03:45	0.054	13:00	0.280	0.157	0.157	-
02/11/2021	02:35	1.42	15:05	2.17	1.76	04:15	1.51	15:05	3.60	2.78	02:40	0.058	15:05	0.254	0.149	0.149	-
02/12/2021	04:45	1.42	13:25	2.13	1.77	04:55	1.56	08:40	3.45	2.71	04:45	0.060	13:35	0.230	0.148	0.148	-
02/13/2021	04:40	1.39	11:35	1.97	1.66	01:15	1.35	08:40	3.25	2.57	01:15	0.054	11:35	0.197	0.125	0.125	-
02/14/2021	03:30	1.36	14:20	1.98	1.69	02:25	1.25	13:15	3.34	2.63	02:25	0.048	16:20	0.205	0.133	0.133	-
02/15/2021	00:10	1.63	15:10	2.65	2.10	00:05	2.27	13:00	4.05	3.50	00:10	0.108	15:10	0.375	0.243	0.243	-
02/16/2021	23:55	1.66	10:25	2.19	1.95	23:55	2.82	12:40	3.76	3.40	23:55	0.135	10:25	0.268	0.206	0.206	-
02/17/2021	01:20	1.59	11:45	2.25	1.79	02:10	1.71	11:45	3.85	3.18	02:10	0.078	11:45	0.287	0.173	0.173	-
02/18/2021	04:30	1.47	11:30	2.24	1.77	04:25	1.72	07:30	3.88	3.18	04:25	0.070	13:10	0.282	0.170	0.170	-
02/19/2021	03:55	1.37	11:10	2.33	1.76	03:50	1.61	11:05	3.92	3.11	03:50	0.059	11:10	0.301	0.167	0.167	-
02/20/2021	04:15	1.44	10:40	2.12	1.70	04:25	1.80	10:30	3.80	3.07	04:25	0.070	10:40	0.258	0.154	0.154	-
02/21/2021	04:55	1.42	23:35	2.52	1.74	02:10	1.82	23:40	4.12	3.06	03:40	0.074	23:40	0.361	0.161	0.161	-
02/22/2021	04:30	1.70	13:05	2.76	2.11	23:05	2.77	13:00	4.27	3.34	03:35	0.142	13:05	0.422	0.232	0.232	-
02/23/2021	05:50	1.64	21:45	2.48	1.93	04:15	1.82	21:15	4.06	3.27	04:15	0.088	21:30	0.342	0.198	0.198	-
02/24/2021	05:20	1.57	10:30	2.30	1.84	02:30	1.93	10:30	3.83	3.17	02:30	0.087	10:30	0.295	0.180	0.180	-
02/25/2021	02:25	1.58	12:35	2.32	1.87	02:40	2.42	12:35	3.96	3.21	02:40	0.108	12:35	0.308	0.186	0.186	-
02/26/2021	04:15	1.52	09:30	2.17	1.82	04:15	1.83	09:30	3.71	3.05	04:15	0.077	09:30	0.263	0.169	0.169	-
02/27/2021	06:05	1.46	11:55	1.95	1.72	06:05	1.54	09:15	3.48	2.75	06:05	0.061	09:15	0.209	0.142	0.142	-
02/28/2021	03:45	1.41	10:35	2.11	1.69	04:30	1.47	10:30	3.69	2.69	03:45	0.056	10:30	0.249	0.136	0.136	-
03/01/2021	02:15	1.40	17:15	2.27	1.78	02:00	1.45	07:30	3.72	2.85	02:00	0.055	17:15	0.277	0.156	0.156	-
03/02/2021	02:45	1.41	13:25	2.34	1.73	02:50	1.21	13:25	3.87	2.85	02:50	0.046	13:25	0.304	0.150	0.150	-
03/03/2021	02:25	1.41	15:00	2.26	1.76	02:25	1.34	15:00	3.74	2.91	02:25	0.051	15:00	0.280	0.157	0.157	-
03/04/2021	02:30	1.41	10:55	2.07	1.77	02:20	1.24	14:15	3.61	2.91	02:20	0.047	14:15	0.239	0.158	0.158	-
03/05/2021	02:30	1.40	11:40	2.11	1.73	02:30	1.35	10:35	3.58	2.78	02:30	0.050	11:40	0.243	0.146	0.146	-
03/06/2021	04:20	1.41	11:20	1.96	1.68	02:50	1.42	11:20	3.60	2.77	04:35	0.056	11:20	0.219	0.138	0.138	-
03/07/2021	03:45	1.38	12:25	1.98	1.68	03:30	1.38	16:05	3.41	2.62	03:30	0.052	16:05	0.210	0.131	0.131	-
03/08/2021	04:20	1.48	10:45	2.12	1.81	03:15	1.60	10:40	3.48	2.78	03:15	0.067	10:45	0.237	0.155	0.155	-
03/09/2021	02:55	1.44	09:10	2.16	1.78	04:45	1.23	09:05	3.55	2.72	02:55	0.050	09:10	0.248	0.149	0.149	-
03/10/2021	02:05	1.39	09:10	2.09	1.76	01:45	1.31	09:10	3.61	2.80	01:50	0.050	09:10	0.241	0.152	0.152	-
03/11/2021	02:50	1.40	09:10	2.04	1.75	02:45	1.49	09:10	3.57	2.83	02:45	0.057	09:10	0.230	0.151	0.151	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	02:40	1.37	13:00	2.03	1.71	04:00	1.35	10:45	3.51	2.75	04:00	0.049	13:00	0.224	0.142	0.142	-
03/13/2021	02:25	1.36	09:50	1.91	1.66	02:40	1.48	16:10	3.52	2.66	02:00	0.054	16:10	0.202	0.131	0.131	-
03/14/2021	01:50	1.32	19:40	2.03	1.66	03:05	1.25	19:40	3.60	2.57	03:05	0.044	19:40	0.232	0.128	0.128	-
03/15/2021	01:25	1.33	10:35	2.10	1.73	03:20	1.34	10:30	3.64	2.75	01:30	0.048	10:30	0.245	0.146	0.146	-
03/16/2021	02:55	1.34	09:20	2.07	1.72	02:55	1.25	09:20	3.57	2.78	02:55	0.044	09:20	0.235	0.146	0.146	-
03/17/2021	00:55	1.32	11:50	2.04	1.71	00:40	1.27	11:50	3.68	2.79	00:55	0.044	11:50	0.238	0.145	0.145	-
03/18/2021	01:55	1.37	16:05	2.47	1.76	01:55	1.35	16:10	4.09	2.78	01:55	0.049	16:10	0.345	0.150	0.150	-
03/19/2021	04:30	1.34	08:15	2.05	1.71	03:10	1.18	10:10	3.54	2.72	03:10	0.042	10:10	0.227	0.141	0.141	-
03/20/2021	02:15	1.32	05:40	2.07	1.60	02:05	1.22	05:40	3.73	2.65	02:15	0.042	05:40	0.246	0.125	0.125	-
03/21/2021	02:05	1.33	07:30	1.90	1.62	02:15	1.23	09:30	3.53	2.57	02:15	0.042	09:30	0.206	0.122	0.122	-
03/22/2021	00:35	1.40	10:10	2.33	1.71	00:25	1.44	10:00	4.16	2.77	00:25	0.055	10:05	0.314	0.143	0.143	-
03/23/2021	02:55	1.36	14:55	2.28	1.74	04:15	1.24	14:55	3.79	2.80	04:15	0.048	14:55	0.287	0.149	0.149	-
03/24/2021	01:30	1.35	09:45	2.32	1.75	01:20	1.26	09:45	3.77	2.89	01:20	0.046	09:45	0.294	0.155	0.155	-
03/25/2021	02:55	1.51	10:00	2.16	1.81	02:45	1.72	08:40	3.75	3.03	02:45	0.074	10:00	0.258	0.168	0.168	-
03/26/2021	03:00	1.42	09:55	2.22	1.76	03:10	1.36	09:55	3.71	2.81	03:15	0.052	09:55	0.272	0.152	0.152	-
03/27/2021	02:30	1.40	09:25	2.05	1.67	02:25	1.52	09:25	3.51	2.66	02:25	0.057	09:25	0.229	0.132	0.132	-
03/28/2021	02:05	1.39	14:45	2.67	1.75	01:05	1.39	14:35	4.28	2.64	01:05	0.054	14:40	0.396	0.144	0.144	-
03/29/2021	02:30	1.46	09:35	2.10	1.80	02:45	1.36	09:35	3.52	2.83	02:45	0.055	09:35	0.237	0.156	0.156	-
03/30/2021	02:50	1.43	10:20	2.12	1.81	02:35	1.42	08:15	3.53	2.76	02:35	0.056	08:15	0.238	0.155	0.155	-
03/31/2021	03:00	1.43	09:10	2.22	1.81	03:00	1.40	09:15	3.45	2.74	03:00	0.054	09:10	0.251	0.155	0.155	-
04/01/2021	01:50	1.40	09:50	2.28	1.82	01:55	1.27	09:50	3.58	2.82	01:55	0.047	09:50	0.272	0.160	0.160	-
04/02/2021	01:50	1.48	09:30	2.13	1.79	01:20	1.48	09:25	3.51	2.75	01:20	0.062	09:25	0.235	0.152	0.152	-
04/03/2021	02:55	1.34	08:55	2.00	1.69	03:05	1.18	11:45	3.43	2.59	03:05	0.042	08:25	0.212	0.132	0.132	-
04/04/2021	03:50	1.38	10:25	2.01	1.67	01:05	1.20	18:25	3.38	2.51	01:05	0.045	10:25	0.208	0.125	0.125	-
04/05/2021	02:50	1.39	10:30	2.17	1.79	02:35	1.19	10:30	3.59	2.75	02:55	0.046	10:30	0.255	0.152	0.152	-
04/06/2021	02:50	1.39	08:50	2.08	1.75	03:15	1.25	08:50	3.56	2.76	03:15	0.046	08:50	0.237	0.148	0.148	-
04/07/2021	01:55	1.36	23:30	2.32	1.77	02:00	1.26	23:30	3.77	2.81	01:55	0.045	23:30	0.294	0.153	0.153	-
04/08/2021	02:05	1.38	10:05	2.14	1.79	03:50	1.21	09:20	3.55	2.78	03:50	0.044	10:05	0.240	0.155	0.155	-
04/09/2021	01:30	1.53	12:45	2.27	1.82	00:45	1.59	12:45	3.69	2.91	00:45	0.070	12:45	0.278	0.162	0.162	-
04/10/2021	02:15	1.49	12:45	2.24	1.79	02:15	1.56	15:10	3.49	2.78	02:15	0.064	12:45	0.245	0.153	0.153	-
04/11/2021	03:50	1.53	10:10	2.11	1.80	01:30	1.63	18:40	3.43	2.72	03:50	0.070	18:40	0.228	0.149	0.149	-
04/12/2021	00:40	1.56	09:35	2.23	1.88	00:40	1.56	13:05	3.50	2.82	00:40	0.068	09:35	0.253	0.167	0.120	-
09/24/2020	23:20	1.49	08:30	2.30	1.84	23:50	1.56	09:40	3.74	3.00	23:50	0.066	09:45	0.277	0.170	0.113	-
09/25/2020	01:55	1.36	12:55	2.45	1.77	02:20	1.36	12:00	4.05	2.77	02:20	0.049	12:00	0.337	0.154	0.154	-
09/26/2020	02:30	1.29	09:35	2.02	1.64	01:10	1.26	17:30	3.39	2.46	01:10	0.043	10:35	0.209	0.121	0.121	-
09/27/2020	03:35	1.34	08:25	2.00	1.66	03:10	1.34	16:10	3.37	2.40	03:10	0.049	16:10	0.210	0.119	0.119	-
09/28/2020	02:50	1.35	09:55	2.33	1.74	02:35	1.11	09:55	3.73	2.63	02:35	0.040	09:55	0.292	0.140	0.140	-
09/29/2020	02:55	1.34	10:25	2.33	1.78	02:30	1.14	08:05	3.79	2.81	02:30	0.043	10:25	0.285	0.155	0.155	-
09/30/2020	03:35	1.44	09:40	2.25	1.79	00:55	1.59	09:40	3.66	2.78	00:55	0.064	09:40	0.274	0.154	0.154	-
10/01/2020	02:55	1.34	08:40	2.16	1.78	02:50	1.11	13:50	3.53	2.61	02:50	0.039	13:50	0.247	0.144	0.144	-
10/02/2020	00:55	1.36	09:20	2.33	1.74	02:55	1.13	10:40	3.81	2.57	02:55	0.042	10:40	0.290	0.137	0.137	-
10/03/2020	03:00	1.28	10:20	2.05	1.65	01:00	1.22	10:10	3.44	2.44	03:10	0.042	10:15	0.219	0.120	0.120	0.01
10/04/2020	04:45	1.29	09:55	2.12	1.68	03:00	1.01	09:55	3.52	2.52	03:05	0.037	09:55	0.241	0.127	0.127	0.01
10/05/2020	01:50	1.45	08:55	2.17	1.79	23:45	1.63	08:55	3.58	2.77	02:25	0.070	08:55	0.253	0.151	0.151	-
10/06/2020	02:05	1.43	11:45	2.05	1.75	02:45	1.35	13:50	3.57	2.71	02:45	0.054	11:40	0.228	0.144	0.144	-
10/07/2020	03:05	1.38	10:30	2.07	1.71	02:15	1.23	10:25	3.65	2.65	02:15	0.046	10:25	0.240	0.138	0.138	-
10/08/2020	03:00	1.33	09:20	2.06	1.68	02:40	1.00	13:55	3.64	2.64	02:40	0.038	13:55	0.236	0.134	0.134	-
10/09/2020	02:30	1.29	23:55	9.60	1.93	23:35	0.57	10:20	3.89	2.62	00:25	0.037	23:00	0.584	0.148	0.148	0.64
10/10/2020	22:35	1.45	01:35	10.66	3.53	00:55	0.30	18:15	3.06	1.71	00:55	0.052	01:15	0.446	0.207	0.207	1.04
10/11/2020	02:30	1.33	14:35	5.92	2.68	16:40	0.57	11:55	3.55	1.92	04:50	0.039	13:35	0.445	0.174	0.174	0.53
10/12/2020	02:25	1.40	08:25	5.78	2.45	08:25	0.49	10:00	3.59	2.13	22:20	0.052	09:55	0.413	0.157	0.157	-
10/13/2020	01:10	1.42	07:30	2.48	1.82	01:05	1.18	07:05	4.34	2.83	01:05	0.046	07:10	0.365	0.161	0.161	0.61
10/14/2020	02:50	1.32	15:10	2.25	1.72	03:55	1.04	15:10	3.63	2.53	03:55	0.038	15:10	0.270	0.133	0.133	-
10/15/2020	01:50	1.31	15:20	2.31	1.72	00:45	1.15	15:15	3.73	2.57	00:45	0.042	15:20	0.288	0.137	0.137	-
10/16/2020	02:50	1.34	10:45	2.25	1.72	01:10	1.18	10:45	3.66	2.54	04:15	0.044	10:45	0.273	0.134	0.134	-
10/17/2020	04:05	1.31	10:10	2.04	1.65	02:45	1.19	08:50	3.47	2.48	02:45	0.041	10:10	0.223	0.123	0.123	0.01
10/18/2020	02:20	1.30	09:05	2.05	1.67	00:15	1.17	09:00	3.48	2.44	00:15	0.044	09:05	0.224	0.121	0.121	0.03
10/19/2020	02:55	1.34	10:35	2.13	1.73	01:25	1.30	10:35	3.68	2.61	02:50	0.047	10:35	0.253	0.137	0.137	-
10/20/2020	02:25	1.33	11:45	2.19	1.72	01:25	1.29	14:00	3.62	2.61	01:25	0.049	11:45	0.253	0.138	0.138	-
10/21/2020	00:50	1.40	10:10	2.20	1.76	03:15	1.24	08:00	3.55	2.62	03:15	0.049	10:10	0.253	0.142	0.142	-
10/22/2020	03:55	1.33	10:15	2.06	1.72	01:50	1.16	08:00	3.51	2.62	01:50	0.043	10:15	0.223	0.137	0.137	-
10/23/2020	01:55	1.37	09:15	2.25	1.77	02:15	1.21	10:40	3.60	2.63	02:15	0.045	09:15	0.260	0.144	0.144	-
10/24/2020	04:45	1.36	11:45	2.07	1.68	02:20	1.08	16:30	3.46	2.43	02:20	0.040	11:45	0.221	0.123	0.123	-
10/25/2020	00:30	1.36	09:30	2.10	1.69	03:45	1.24	08:35	3.34	2.39	00:35	0.045	09:30	0.210	0.122	0.122	-
10/26/2020	03:00	1.34	09:50	2.09	1.75	00:45	1.24	13:20	3.55	2.68	02:40	0.048	13:20	0.230	0.144	0.144	-
10/27/2020	03:30	1.40	08:30	2.07	1.74	01:35	1.29	13:45	3.55	2.68	01:35	0.054	18:10	0.231	0.142	0.142	-
10/28/2020	01:20	1.37	12:45	2.14	1.75	01:10	1.23	08:30	3.64	2.66	01:10	0.045	12:45	0.245	0.143	0.143	-
10/29/2020	02:10	1.34	09:45	2.20	1.76	03:40	1.25	09:45	3.56	2.64	02:20	0.046	09:45	0.257	0.144	0.144	-
10/30/2020	23:55	1.34	05:35	2.40	1.73	01:20	1.29	05:30	3.97	2.64	23:40	0.053	05:35	0.318	0.139	0.139	-
10/31/2020	00:20	1.31	10:10	2.06	1.63	00:10	1.23	10:10	3.58	2.39	00:10	0.042	10:10	0.234	0.117	0.117	-
11/01/2020	03:05	1.31	10:45	2.05	1.63	02:15	1.18	10:45	3.45	2.40	02:15	0.042	10:45	0.224	0.115	0.115	-
11/02/2020	03:45	1.32	15:55	2.09	1.71	02:25	1.17	15:55	3.60	2.57	02:25	0.040	15:55	0.242	0.134	0.134	-
11/03/2020	03:15	1.30	16:05	2.57	1.80	02:50	1.13	10:15	4.31	2.76	02:50	0.039	10:15	0.364	0.161	0.161	-
11/04/2020	03:20	1.41	12:30	2.25	1.75	02:30	1.26	12:30	3.85	2.75	02:30	0.049	12:30	0.288	0.147	0.147	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/05/2020	03:20	1.36	08:40	2.24	1.74	05:10	1.28	08:40	3.75	2.70	05:10	0.049	08:40	0.277	0.144	0.144	-
11/06/2020	05:00	1.37	09:05	2.32	1.77	23:55	1.38	09:05	3.84	2.66	04:45	0.052	09:05	0.300	0.144	0.144	-
11/07/2020	03:05	1.42	09:25	2.03	1.68	03:45	1.30	09:20	3.35	2.41	03:45	0.052	09:25	0.216	0.121	0.121	-
11/08/2020	02:50	1.33	10:05	2.01	1.64	00:55	1.27	10:00	3.41	2.42	00:55	0.046	10:05	0.210	0.117	0.117	-
11/09/2020	02:40	1.42	10:50	2.14	1.72	03:55	1.23	10:45	3.75	2.64	01:50	0.049	10:50	0.255	0.138	0.138	-
11/10/2020	03:30	1.33	16:20	2.20	1.68	02:50	1.17	10:10	3.78	2.69	02:50	0.042	16:20	0.270	0.138	0.138	-
11/11/2020	02:40	1.31	10:15	2.09	1.69	02:15	1.25	18:15	3.75	2.67	02:45	0.043	18:15	0.249	0.137	0.137	-
11/12/2020	02:30	1.34	10:05	2.13	1.72	03:35	1.23	10:05	3.66	2.69	03:35	0.044	10:05	0.252	0.140	0.140	-
11/13/2020	23:55	1.40	06:30	2.22	1.78	23:55	1.37	13:55	3.79	2.75	23:55	0.051	06:35	0.273	0.150	0.150	-
11/14/2020	05:55	1.30	18:05	2.12	1.66	01:45	1.12	18:05	3.59	2.46	01:45	0.041	18:05	0.247	0.124	0.124	-
11/15/2020	03:40	1.31	23:00	1.92	1.63	02:30	1.33	23:05	3.43	2.41	02:30	0.050	23:05	0.202	0.115	0.115	-
11/16/2020	03:45	1.28	12:25	2.43	1.74	04:20	1.18	13:25	3.68	2.53	04:20	0.042	12:25	0.304	0.138	0.138	-
11/17/2020	04:20	1.31	14:10	2.17	1.73	01:45	1.15	10:40	3.63	2.63	01:45	0.044	14:10	0.251	0.141	0.141	-
11/18/2020	02:30	1.30	10:40	2.14	1.74	00:35	1.32	18:25	3.54	2.58	00:35	0.050	10:35	0.242	0.138	0.138	-
11/19/2020	02:40	1.30	13:00	2.58	1.78	02:25	1.08	12:45	4.48	2.72	02:25	0.037	12:45	0.388	0.152	0.152	-
11/20/2020	23:50	1.35	10:35	2.07	1.71	03:00	1.41	10:30	3.66	2.61	03:00	0.057	10:30	0.240	0.136	0.136	-
11/21/2020	03:00	1.33	10:10	1.98	1.63	00:40	1.34	10:10	3.43	2.33	02:15	0.051	10:10	0.212	0.112	0.112	-
11/22/2020	04:10	1.32	09:10	1.97	1.64	06:05	1.36	18:45	3.47	2.37	01:55	0.050	18:45	0.211	0.115	0.115	-
11/23/2020	02:40	1.34	09:35	2.08	1.73	01:30	1.31	11:05	3.62	2.58	01:20	0.052	11:05	0.241	0.136	0.136	-
11/24/2020	05:25	1.31	15:45	2.39	1.71	02:15	1.14	15:45	3.92	2.58	02:15	0.042	15:45	0.319	0.136	0.136	-
11/25/2020	03:10	1.33	13:10	2.03	1.68	03:35	1.28	17:35	3.64	2.58	03:35	0.045	13:10	0.223	0.131	0.131	-
11/26/2020	05:00	1.34	10:55	1.84	1.56	03:45	1.33	09:45	3.39	2.30	01:25	0.053	09:45	0.182	0.103	0.103	-
11/27/2020	03:50	1.32	10:40	2.00	1.62	06:40	1.27	10:40	3.42	2.36	00:20	0.046	10:40	0.215	0.113	0.113	-
11/28/2020	05:00	1.30	09:20	2.07	1.58	02:55	1.10	09:20	3.42	2.27	02:55	0.039	09:20	0.226	0.106	0.106	-
11/29/2020	04:50	1.31	09:50	1.95	1.60	03:20	1.32	09:45	3.27	2.28	03:20	0.048	09:45	0.194	0.107	0.107	-
11/30/2020	01:45	1.33	11:15	2.33	1.76	01:00	1.29	14:05	3.50	2.61	03:05	0.048	11:15	0.273	0.141	0.141	-
12/01/2020	02:35	1.33	11:15	2.17	1.73	01:05	1.21	11:15	3.64	2.53	01:35	0.046	11:15	0.258	0.135	0.135	-
12/02/2020	05:10	1.38	11:50	2.07	1.71	01:00	1.17	19:00	3.48	2.56	01:00	0.049	14:35	0.226	0.134	0.134	-
12/03/2020	02:20	1.29	11:55	2.17	1.69	01:25	1.39	13:55	3.53	2.53	01:25	0.053	11:55	0.239	0.130	0.130	-
12/04/2020	04:15	1.31	10:30	2.09	1.70	02:20	1.26	09:05	3.49	2.49	03:35	0.045	09:05	0.230	0.128	0.128	-
12/05/2020	23:50	1.34	11:15	2.12	1.64	02:00	1.26	11:15	3.49	2.35	02:00	0.047	11:15	0.239	0.115	0.115	-
12/06/2020	02:15	1.28	11:30	2.06	1.62	02:20	1.20	11:25	3.33	2.27	02:20	0.039	11:25	0.204	0.108	0.108	-
12/07/2020	03:05	1.31	10:05	2.16	1.70	01:40	1.03	11:25	3.74	2.60	01:40	0.037	11:25	0.263	0.135	0.135	-
12/08/2020	01:45	1.38	11:50	2.41	1.82	02:50	1.62	11:45	3.97	2.92	02:50	0.066	11:45	0.319	0.165	0.165	-
12/09/2020	04:50	1.44	10:55	2.13	1.72	04:20	1.50	13:50	3.59	2.71	04:20	0.061	10:55	0.246	0.140	0.140	-
12/10/2020	02:25	1.34	13:25	2.08	1.69	02:35	1.16	10:20	3.66	2.59	02:35	0.041	10:20	0.240	0.132	0.132	-
12/11/2020	01:25	1.31	10:15	2.32	1.68	03:30	1.24	10:15	3.64	2.54	03:30	0.043	10:15	0.284	0.130	0.130	-
12/12/2020	04:15	1.31	10:55	2.03	1.60	04:05	1.15	12:40	3.40	2.30	04:05	0.039	10:55	0.216	0.108	0.108	-
12/13/2020	05:55	1.31	10:30	2.06	1.60	02:10	1.11	10:30	3.54	2.40	02:10	0.041	10:30	0.232	0.113	0.113	-
12/14/2020	01:35	1.33	12:30	2.10	1.68	23:50	1.28	19:05	3.52	2.54	03:45	0.049	12:30	0.235	0.130	0.130	-
12/15/2020	03:00	1.34	15:55	2.50	1.77	00:25	1.20	15:55	4.49	2.78	04:50	0.048	15:55	0.389	0.154	0.154	-
12/16/2020	03:40	1.37	14:05	2.47	1.76	01:50	1.32	14:00	3.85	2.79	03:40	0.049	14:05	0.323	0.152	0.152	-
12/17/2020	04:10	1.37	12:30	2.17	1.73	02:15	1.18	15:10	3.77	2.67	04:05	0.043	12:30	0.248	0.140	0.140	-
12/18/2020	02:45	1.38	10:20	2.14	1.74	01:50	1.28	10:20	3.57	2.66	01:50	0.048	10:20	0.247	0.141	0.141	-
12/19/2020	03:35	1.33	17:05	2.17	1.67	04:25	1.34	17:05	3.59	2.51	04:55	0.049	17:05	0.254	0.126	0.126	-
12/20/2020	03:45	1.37	16:25	2.10	1.64	00:40	1.38	16:20	3.61	2.39	04:05	0.052	16:20	0.240	0.116	0.116	-
12/21/2020	02:00	1.53	16:35	2.78	1.94	01:40	1.44	16:15	4.08	2.97	01:40	0.062	16:35	0.383	0.184	0.184	-
12/22/2020	23:10	1.58	02:00	2.53	1.82	23:00	1.85	02:00	4.37	2.83	23:00	0.085	02:00	0.387	0.158	0.158	-
12/23/2020	01:45	1.42	13:00	2.12	1.72	02:25	1.14	10:25	3.60	2.65	02:25	0.045	10:25	0.244	0.138	0.138	-
12/24/2020	03:50	1.37	08:45	2.02	1.66	02:10	1.14	08:45	3.54	2.48	02:10	0.042	08:45	0.225	0.123	0.123	-
12/25/2020	04:00	1.34	16:20	1.90	1.58	02:50	1.30	16:15	3.45	2.37	02:50	0.049	16:20	0.199	0.108	0.108	-
12/26/2020	04:10	1.35	10:35	1.90	1.59	03:30	1.26	10:30	3.43	2.39	03:30	0.046	10:35	0.197	0.111	0.111	-
12/27/2020	03:35	1.33	09:05	1.96	1.61	01:05	1.28	09:15	3.41	2.45	01:05	0.051	09:10	0.207	0.116	0.116	-
12/28/2020	03:20	1.33	11:15	2.08	1.68	04:40	1.21	11:15	3.61	2.56	04:40	0.043	11:15	0.241	0.130	0.130	-
12/29/2020	02:25	1.34	09:25	2.14	1.74	01:50	1.19	09:25	3.65	2.65	01:50	0.043	09:25	0.254	0.142	0.142	-
12/30/2020	03:55	1.58	09:15	2.43	1.89	01:25	1.84	09:15	3.88	3.11	03:35	0.085	09:15	0.323	0.183	0.183	-
12/31/2020	02:55	1.60	11:45	2.14	1.78	03:30	2.18	07:50	3.65	3.00	03:30	0.100	12:35	0.247	0.162	0.162	-

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			29.674	2.88
Average	1.77	2.72	0.148	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A8_70829

Site Address /Location:	3rd St NW			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	Located in parking area next to driveway	Latitude:	47.310238	Pipe Size (H x W): 15.00 X 15.00	Pipe Shape: Circular
		Longitude:	122.234096		



Manhole #	System Characteristics
AUB_A8_70829	Commercial
Access	Traffic
Walk (Commercial)	Light







ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.11.325

Installation Information

Installation Date:	Installation Type:
Thursday, September 24, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Time	
8:06:00 AM	
Depth of Flow (Wet DOF) (in)	
2.13	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
4.14	N/A
Silt (in)	Silt Type
0	

Hydraulic Comments:

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
6	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
Concrete	Good

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

AUB_A9_71031

Site Commentary

SITE INFORMATION

Pipe	Round (10 in H)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	2.73	0.76	0.063
Minimum	1.39	0.33	0.011
Maximum	6.15	1.48	0.336
Min Time	12/07/2020 3:00:00 AM	04/03/2021 2:00:00 AM	12/07/2020 3:00:00 AM
Max Time	01/03/2021 12:00:00 AM	01/03/2021 12:00:00 AM	01/03/2021 12:00:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

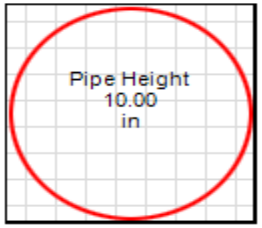
Percent Uptime	
DFINAL (in)	98.801
VFINAL (ft/s)	98.801
QFINAL (MGD - Total MG)	98.801

Hydrograph Report

AUB_A9_71031

Flow Monitor

AUB_A9_71031



Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
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Scattergraph Report

AUB_A9_71031

Flow Monitor

AUB_A9_71031

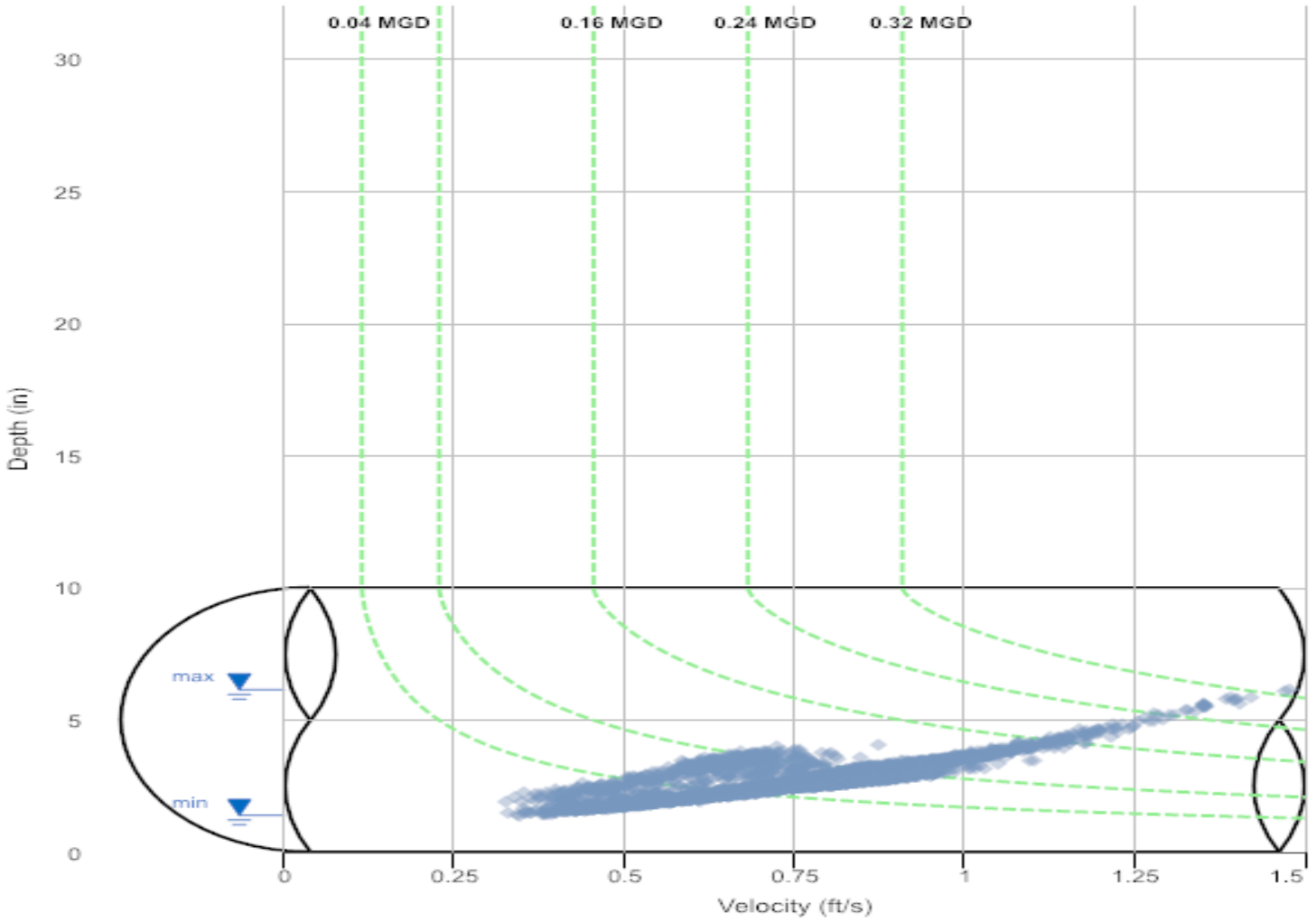
Pipe Height
10.00
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_A9_71031Pipe: Round (10 in H), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	03:55	2.27	15:55	3.91	3.12	03:50	0.63	15:55	1.08	0.87	03:50	0.038	15:55	0.138	0.085	0.085	0.51
01/02/2021	05:00	2.35	23:55	5.98	3.68	05:05	0.63	23:50	1.45	0.99	05:05	0.040	23:55	0.319	0.127	0.127	1.69
01/03/2021	22:40	3.63	00:55	6.23	4.51	22:40	1.00	00:50	1.50	1.19	22:40	0.116	00:55	0.346	0.187	0.187	0.65
01/04/2021	03:55	3.37	12:15	4.43	3.85	03:50	0.95	12:50	1.21	1.07	03:50	0.100	12:15	0.180	0.134	0.134	0.48
01/05/2021	02:50	2.81	21:20	4.25	3.50	02:35	0.79	21:15	1.18	0.99	02:50	0.064	21:25	0.169	0.111	0.111	0.52
01/06/2021	23:10	2.98	10:10	4.13	3.69	23:10	0.83	10:15	1.17	1.03	23:10	0.073	10:15	0.161	0.123	0.123	0.22
01/07/2021	05:05	2.46	20:35	3.66	3.10	03:45	0.69	20:35	1.03	0.88	05:05	0.046	20:35	0.121	0.083	0.083	-
01/08/2021	03:10	2.30	17:45	3.59	2.99	03:20	0.63	17:55	1.02	0.85	03:10	0.039	17:55	0.116	0.077	0.077	0.22
01/09/2021	04:35	2.12	12:35	3.58	2.83	07:00	0.55	11:05	1.05	0.81	07:00	0.031	12:35	0.116	0.068	0.068	-
01/10/2021	04:50	1.99	11:50	3.47	2.75	04:50	0.55	11:45	0.99	0.78	04:50	0.027	11:45	0.107	0.064	0.064	0.07
01/11/2021	03:55	1.96	21:45	4.60	3.28	05:15	0.49	21:25	1.20	0.89	03:55	0.025	21:45	0.190	0.099	0.099	1.06
01/12/2021	00:05	3.69	09:35	6.03	5.15	00:00	1.00	09:30	1.44	1.29	00:05	0.118	09:30	0.317	0.238	0.238	2.10
01/13/2021	23:55	3.37	01:00	5.60	4.17	23:55	0.88	01:00	1.38	1.11	23:55	0.092	01:00	0.280	0.156	0.156	0.09
01/14/2021	23:55	2.87	20:30	4.00	3.37	23:55	0.77	20:30	1.07	0.92	23:55	0.065	20:30	0.140	0.097	0.097	0.01
01/15/2021	04:15	2.47	12:40	3.86	3.15	04:05	0.66	12:35	1.07	0.86	04:05	0.045	12:35	0.133	0.083	0.083	0.09
01/16/2021	03:55	2.25	12:15	4.01	3.04	01:35	0.43	12:15	1.12	0.87	03:55	0.038	12:15	0.148	0.081	0.081	-
01/17/2021	04:10	2.17	11:35	3.59	2.91	04:00	0.60	15:15	1.04	0.85	03:55	0.035	15:15	0.118	0.074	0.074	0.10
01/18/2021	04:25	1.94	19:35	3.54	2.80	04:25	0.56	19:30	1.02	0.82	04:25	0.027	19:30	0.113	0.068	0.068	-
01/19/2021	03:35	1.75	12:50	3.80	2.79	03:45	0.46	12:50	1.11	0.82	03:45	0.019	12:50	0.136	0.068	0.068	0.01
01/20/2021	04:35	1.89	18:25	3.60	2.76	05:35	0.54	18:20	1.05	0.81	04:35	0.026	18:20	0.119	0.067	0.067	-
01/21/2021	03:05	1.84	14:45	3.50	2.73	03:05	0.51	14:40	1.02	0.80	03:05	0.023	18:25	0.111	0.065	0.065	0.11
01/22/2021	03:35	1.84	19:35	3.48	2.70	03:35	0.52	19:35	1.01	0.80	03:35	0.023	19:35	0.110	0.063	0.063	-
01/23/2021	04:05	1.80	12:05	3.69	2.68	04:00	0.46	12:00	1.05	0.78	04:00	0.020	12:05	0.123	0.062	0.062	-
01/24/2021	02:30	1.88	13:15	3.72	2.78	02:25	0.54	12:05	1.06	0.81	02:25	0.025	13:15	0.126	0.067	0.067	0.16
01/25/2021	04:25	1.79	13:45	3.50	2.69	04:25	0.51	13:40	1.02	0.79	04:25	0.022	13:45	0.112	0.063	0.063	0.04
01/26/2021	02:35	1.81	14:15	3.40	2.68	05:10	0.46	11:50	1.00	0.79	05:10	0.020	14:15	0.105	0.062	0.062	-
01/27/2021	04:45	1.90	12:40	3.48	2.69	04:45	0.54	12:45	1.01	0.79	04:45	0.025	12:45	0.110	0.063	0.063	0.14
01/28/2021	02:05	1.93	18:05	3.54	2.81	02:00	0.55	12:50	1.01	0.83	02:00	0.027	18:05	0.113	0.069	0.069	0.24
01/29/2021	05:00	1.88	16:25	3.37	2.66	04:40	0.54	13:15	0.99	0.79	04:40	0.025	13:15	0.102	0.061	0.061	0.03
01/30/2021	06:30	1.90	13:05	3.43	2.60	05:50	0.52	13:05	0.99	0.76	04:40	0.026	13:05	0.106	0.058	0.058	0.07
01/31/2021	05:40	1.76	12:35	3.72	2.62	05:40	0.49	12:40	1.05	0.77	05:35	0.021	12:35	0.125	0.059	0.059	0.12
02/01/2021	01:15	2.06	19:00	4.14	3.04	01:00	0.59	19:05	1.15	0.87	01:10	0.031	19:05	0.156	0.083	0.083	0.82
02/02/2021	05:15	2.76	08:35	4.03	3.45	05:20	0.79	08:30	1.12	0.98	05:20	0.063	08:35	0.149	0.107	0.107	0.31
02/03/2021	04:45	2.59	18:50	3.89	3.16	04:40	0.74	18:50	1.09	0.92	04:40	0.054	18:50	0.139	0.088	0.088	0.06
02/04/2021	02:30	2.15	17:00	3.60	2.89	02:05	0.60	14:30	1.03	0.85	02:30	0.034	17:00	0.117	0.073	0.073	0.07
02/05/2021	04:55	2.15	18:15	3.39	2.77	04:50	0.59	09:55	1.02	0.81	04:50	0.033	09:55	0.107	0.066	0.066	0.01
02/06/2021	03:10	1.98	15:00	3.65	2.69	03:10	0.56	14:55	1.05	0.79	03:10	0.028	14:55	0.121	0.063	0.063	0.01
02/07/2021	05:10	1.98	11:40	3.53	2.71	04:25	0.53	11:25	1.00	0.77	04:25	0.027	11:30	0.111	0.061	0.061	-
02/08/2021	05:00	1.83	19:55	3.25	2.60	05:45	0.49	20:35	0.93	0.74	05:45	0.022	19:50	0.090	0.056	0.056	-
02/09/2021	02:55	1.74	11:25	3.41	2.58	02:55	0.43	11:30	0.95	0.73	02:50	0.018	11:30	0.101	0.055	0.055	-
02/10/2021	04:15	1.74	11:35	3.38	2.55	04:10	0.47	11:30	0.94	0.72	04:05	0.020	11:30	0.098	0.053	0.053	-
02/11/2021	02:25	1.70	18:10	3.28	2.55	02:40	0.42	19:20	0.92	0.73	02:40	0.016	18:15	0.091	0.054	0.054	-
02/12/2021	03:05	1.68	15:40	3.30	2.48	03:50	0.41	15:35	0.96	0.72	03:50	0.016	15:35	0.097	0.052	0.052	-
02/13/2021	05:05	1.70	21:15	3.38	2.45	05:05	0.44	21:15	0.95	0.71	05:05	0.017	21:15	0.099	0.050	0.050	0.08
02/14/2021	04:00	1.67	12:30	3.14	2.52	03:50	0.47	12:20	0.90	0.73	03:55	0.018	12:30	0.086	0.054	0.054	0.71
02/15/2021	00:05	2.42	17:00	4.86	3.83	00:00	0.71	15:05	1.23	1.04	00:00	0.047	17:00	0.210	0.134	0.134	0.78
02/16/2021	22:45	3.33	13:55	5.69	3.70	03:45	0.92	13:55	1.39	1.03	22:50	0.096	13:55	0.287	0.123	0.123	0.07
02/17/2021	03:45	2.59	00:00	3.74	3.17	03:40	0.75	12:40	1.09	0.92	03:40	0.055	12:40	0.129	0.089	0.089	-
02/18/2021	04:10	2.27	18:05	3.62	2.97	03:40	0.66	17:55	1.01	0.87	03:40	0.041	18:05	0.116	0.078	0.078	0.09
02/19/2021	01:55	2.40	14:45	3.89	2.99	02:05	0.69	14:45	1.11	0.87	01:50	0.046	14:45	0.141	0.078	0.078	0.17
02/20/2021	05:00	2.12	14:05	3.55	2.84	05:15	0.59	13:55	1.02	0.83	05:15	0.032	14:00	0.114	0.070	0.070	0.07
02/21/2021	04:55	2.05	23:50	3.83	2.82	04:40	0.55	23:50	1.08	0.82	04:40	0.029	23:50	0.134	0.069	0.069	0.42
02/22/2021	05:15	3.09	14:10	5.37	4.09	05:10	0.88	14:00	1.31	1.09	05:10	0.082	14:10	0.253	0.151	0.151	0.98
02/23/2021	04:00	2.98	21:30	4.34	3.60	04:00	0.84	21:40	1.15	1.00	04:00	0.074	21:30	0.167	0.115	0.115	0.27
02/24/2021	04:00	2.68	16:15	4.03	3.39	04:05	0.76	18:40	1.09	0.95	04:05	0.058	16:10	0.144	0.101	0.101	-
02/25/2021	02:30	2.43	16:50	3.90	3.33	03:25	0.70	10:50	1.04	0.92	02:30	0.048	16:45	0.131	0.096	0.096	0.18
02/26/2021	00:45	2.62	19:05	3.94	3.21	05:50	0.74	19:05	1.05	0.90	00:40	0.056	19:05	0.135	0.089	0.089	0.10
02/27/2021	06:00	2.23	13:30	3.81	3.05	06:00	0.63	15:30	1.10	0.86	06:00	0.037	13:25	0.128	0.080	0.080	0.02
02/28/2021	02:30	2.14	12:55	3.86	3.01	04:30	0.60	12:15	1.03	0.84	02:30	0.034	12:50	0.129	0.077	0.077	0.02
03/01/2021	05:15	1.95	18:10	3.78	2.94	05:20	0.55	18:10	0.99	0.81	05:15	0.027	18:10	0.121	0.072	0.072	-
03/02/2021	04:05	2.01	19:05	3.62	2.90	02:15	0.54	19:05	0.96	0.78	02:15	0.028	19:05	0.110	0.068	0.068	-
03/03/2021	04:25	1.93	15:25	3.66	2.91	04:20	0.55	18:55	0.97	0.78	04:20	0.027	15:25	0.112	0.069	0.069	-
03/04/2021	05:15	1.99	18:50	3.81	2.80	05:15	0.49	18:50	1.03	0.77	05:15	0.024	18:50	0.127	0.064	0.064	0.20
03/05/2021	03:20	1.93	19:20	3.56	2.78	03:20	0.53	19:15	0.94	0.78	03:20	0.025	19:20	0.106	0.064	0.064	0.05
03/06/2021	04:50	1.76	19:05	3.70	2.73	04:50	0.49	19:05	1.02	0.77	04:50	0.020	19:05	0.120	0.063	0.063	-
03/07/2021	05:45	1.66	11:05	3.32	2.62	05:35	0.45	10:55	0.93	0.74	05:35	0.018	11:00	0.095	0.057	0.057	0.04
03/08/2021	05:15	1.83	11:30	3.31	2.63	05:15	0.49	18:25	0.92	0.74	05:15	0.022	11:35	0.093	0.057	0.057	-
03/09/2021	02:55	1.84	20:05	3.39	2.57	05:10	0.51	20:05	0.93	0.73	02:55	0.023	20:05	0.097	0.054	0.054	0.01
03/10/2021	02:35	1.73	10:50	3.24	2.56	02:50	0.42	18:30	0.92	0.73	02:50	0.017	18:25	0.090	0.054	0.054	-
03/11/2021	04:10	1.65	19:20	3.26	2.55	04:20	0.44	10:20	0.88	0.72	04:05	0.017	19:15	0.087	0.053	0.053	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	04:45	1.65	09:25	3.16	2.57	04:20	0.41	09:20	0.87	0.68	04:20	0.016	09:30	0.083	0.051	0.051	-
03/13/2021	03:50	1.77	14:40	3.34	2.58	03:45	0.44	14:45	0.93	0.71	03:45	0.019	14:45	0.096	0.053	0.053	-
03/14/2021	05:05	1.79	16:55	3.42	2.63	02:45	0.49	16:40	0.92	0.73	05:40	0.021	16:55	0.097	0.057	0.057	0.30
03/15/2021	04:00	1.69	13:05	3.41	2.62	03:45	0.46	13:05	0.90	0.72	04:00	0.018	13:05	0.095	0.055	0.055	-
03/16/2021	05:10	1.72	19:25	3.65	2.56	01:25	0.49	19:25	0.98	0.72	01:25	0.020	19:25	0.114	0.053	0.053	-
03/17/2021	02:40	1.66	11:30	3.44	2.54	02:50	0.45	11:30	0.93	0.70	02:35	0.018	11:30	0.100	0.052	0.052	-
03/18/2021	02:25	1.69	16:45	3.29	2.55	02:25	0.43	15:50	0.88	0.71	02:25	0.017	16:40	0.089	0.053	0.053	0.11
03/19/2021	03:20	1.63	11:10	3.28	2.53	03:15	0.43	11:10	0.89	0.70	03:15	0.016	11:10	0.090	0.051	0.051	0.03
03/20/2021	02:55	1.56	10:00	3.29	2.56	03:00	0.42	09:55	0.90	0.71	03:00	0.015	09:55	0.090	0.053	0.053	0.17
03/21/2021	03:45	1.55	11:55	3.46	2.53	03:40	0.40	11:55	0.90	0.69	03:40	0.014	11:55	0.098	0.051	0.051	0.07
03/22/2021	03:10	1.72	18:30	3.72	2.79	03:10	0.47	10:55	0.89	0.69	03:10	0.019	18:30	0.100	0.057	0.057	0.11
03/23/2021	02:40	1.80	11:10	3.82	2.86	02:35	0.39	11:10	0.84	0.63	02:35	0.017	11:10	0.104	0.054	0.054	-
03/24/2021	01:30	1.80	19:30	3.82	2.85	01:40	0.40	19:20	0.84	0.63	01:40	0.017	19:25	0.103	0.055	0.055	0.34
03/25/2021	02:45	2.47	14:10	3.98	3.20	02:35	0.53	13:20	0.89	0.71	02:40	0.036	13:20	0.111	0.070	0.070	0.27
03/26/2021	03:00	2.00	11:10	3.60	2.88	02:35	0.45	11:05	0.84	0.68	02:35	0.023	11:10	0.095	0.059	0.059	-
03/27/2021	04:00	1.98	13:05	3.69	2.79	02:00	0.45	13:00	0.89	0.66	02:00	0.023	13:00	0.105	0.055	0.055	-
03/28/2021	04:20	1.74	15:15	4.34	3.04	04:10	0.38	15:15	0.95	0.66	04:05	0.016	15:15	0.139	0.064	0.064	0.37
03/29/2021	02:05	2.35	19:40	3.99	3.24	02:00	0.39	19:40	0.77	0.59	02:00	0.025	19:40	0.101	0.060	0.060	-
03/30/2021	03:40	2.18	20:15	4.12	3.17	03:25	0.38	20:15	0.79	0.57	03:30	0.022	20:15	0.108	0.057	0.057	-
03/31/2021	04:05	2.14	18:35	4.09	3.17	02:35	0.32	18:30	0.78	0.58	02:35	0.018	18:30	0.105	0.058	0.058	-
04/01/2021	03:45	2.02	18:30	3.84	3.07	03:25	0.34	18:25	0.72	0.57	03:25	0.018	18:25	0.090	0.055	0.055	-
04/02/2021	03:40	2.03	20:10	3.85	3.04	03:45	0.31	20:05	0.72	0.55	03:45	0.016	20:10	0.091	0.052	0.052	-
04/03/2021	03:00	1.84	11:35	4.30	3.10	05:20	0.27	11:25	0.82	0.56	02:25	0.014	11:30	0.117	0.055	0.055	-
04/04/2021	04:45	1.94	12:45	3.87	3.03	04:25	0.35	09:55	0.74	0.57	04:35	0.017	12:45	0.092	0.054	0.054	-
04/05/2021	03:15	1.87	20:20	3.89	2.98	01:15	0.34	18:00	0.75	0.58	03:15	0.016	20:20	0.092	0.053	0.053	-
04/06/2021	03:15	1.87	19:30	4.13	2.96	03:05	0.35	19:30	0.81	0.58	03:05	0.016	19:30	0.112	0.053	0.053	-
04/07/2021	01:50	1.93	17:35	3.84	2.98	02:35	0.31	17:30	0.77	0.58	01:45	0.018	17:35	0.096	0.053	0.053	0.22
04/08/2021	02:05	1.87	14:35	3.99	3.06	04:10	0.35	14:35	0.78	0.58	01:50	0.018	14:35	0.103	0.055	0.055	-
04/09/2021	03:00	1.99	12:00	4.03	3.14	03:05	0.37	18:50	0.81	0.61	03:00	0.019	19:50	0.103	0.060	0.060	0.03
04/10/2021	03:10	2.16	11:30	3.92	3.15	03:05	0.44	20:10	0.76	0.62	03:05	0.025	11:25	0.096	0.061	0.061	0.02
04/11/2021	03:20	1.97	20:25	4.19	3.10	02:20	0.38	20:20	0.86	0.62	01:55	0.020	20:25	0.121	0.060	0.060	-
04/12/2021	03:10	2.24	11:50	3.83	3.15	05:20	0.42	12:40	0.76	0.61	03:00	0.026	19:55	0.093	0.060	0.060	-
04/13/2021	02:30	2.03	19:15	4.14	3.13	02:05	0.42	19:15	0.82	0.62	02:30	0.021	19:15	0.113	0.061	0.061	-
04/14/2021	02:30	2.16	17:30	4.43	3.10	02:25	0.38	20:45	0.85	0.62	02:25	0.021	20:50	0.107	0.060	0.060	-
09/24/2020	23:55	2.08	13:05	3.17	2.71	23:55	0.57	13:00	1.02	0.83	23:55	0.030	13:00	0.096	0.065	0.035	-
09/25/2020	02:00	1.81	12:30	3.28	2.55	03:55	0.32	12:25	1.03	0.76	03:45	0.016	12:30	0.104	0.057	0.057	-
09/26/2020	02:40	1.62	21:55	3.01	2.43	02:35	0.43	21:55	0.96	0.75	02:35	0.016	21:55	0.086	0.052	0.052	-
09/27/2020	06:35	1.70	13:50	3.74	2.49	06:35	0.47	13:45	1.19	0.77	06:35	0.019	13:50	0.143	0.056	0.056	-
09/28/2020	04:30	1.70	11:25	3.19	2.43	03:25	0.35	11:20	1.02	0.73	03:35	0.014	11:25	0.099	0.051	0.051	-
09/29/2020	03:30	1.50	20:20	3.10	2.47	03:40	0.40	20:15	1.03	0.76	03:30	0.013	20:15	0.096	0.054	0.054	-
09/30/2020	03:35	1.63	19:05	3.32	2.45	03:25	0.45	19:10	1.06	0.76	03:25	0.017	19:05	0.108	0.054	0.054	-
10/01/2020	02:15	1.60	19:00	3.18	2.52	03:10	0.36	19:00	0.99	0.72	03:25	0.013	19:00	0.095	0.053	0.053	-
10/02/2020	03:05	1.74	17:15	3.15	2.50	03:20	0.37	11:20	0.97	0.71	03:25	0.015	17:15	0.092	0.052	0.052	-
10/03/2020	02:05	1.70	11:15	3.10	2.50	04:10	0.38	11:10	0.96	0.73	04:05	0.016	11:15	0.089	0.052	0.052	0.01
10/04/2020	04:10	1.63	15:00	3.23	2.55	04:05	0.35	08:30	0.97	0.71	04:05	0.013	15:00	0.093	0.054	0.054	0.01
10/05/2020	02:15	1.91	13:40	3.21	2.62	02:25	0.32	19:55	0.99	0.70	02:25	0.015	19:55	0.096	0.054	0.054	-
10/06/2020	02:40	1.61	15:40	3.50	2.56	02:35	0.33	21:45	0.99	0.71	02:35	0.012	21:45	0.090	0.053	0.053	-
10/07/2020	02:10	1.72	16:40	3.10	2.47	04:00	0.37	10:55	1.07	0.74	02:05	0.016	14:55	0.093	0.052	0.052	-
10/08/2020	02:05	1.54	19:25	3.26	2.41	02:00	0.39	19:25	1.02	0.74	02:00	0.013	19:25	0.102	0.052	0.052	-
10/09/2020	04:15	1.47	23:20	3.65	2.44	04:15	0.37	23:20	1.18	0.76	04:15	0.012	23:20	0.137	0.054	0.054	0.64
10/10/2020	04:05	2.03	01:50	3.68	2.68	23:55	0.61	01:45	1.16	0.85	04:00	0.032	01:45	0.136	0.066	0.066	1.04
10/11/2020	04:15	1.59	14:35	3.42	2.47	05:05	0.41	14:30	1.09	0.77	05:00	0.015	14:35	0.116	0.057	0.057	0.53
10/12/2020	05:10	1.45	20:10	3.25	2.40	03:55	0.37	20:15	1.05	0.75	03:55	0.012	20:10	0.104	0.052	0.052	-
10/13/2020	01:20	1.71	07:40	3.48	2.52	01:20	0.47	07:40	1.13	0.79	01:15	0.019	07:40	0.124	0.058	0.058	0.61
10/14/2020	04:10	1.43	10:00	3.71	2.39	04:10	0.35	10:05	1.12	0.74	04:05	0.011	10:05	0.128	0.051	0.051	-
10/15/2020	03:30	1.50	12:30	3.14	2.47	03:25	0.38	20:30	1.01	0.77	03:25	0.013	12:30	0.094	0.055	0.055	-
10/16/2020	03:35	1.45	13:10	2.94	2.36	03:25	0.33	14:40	0.94	0.72	03:30	0.010	13:05	0.080	0.049	0.049	-
10/17/2020	04:10	1.64	12:35	3.11	2.43	04:05	0.43	10:00	0.97	0.72	04:05	0.016	12:35	0.090	0.051	0.051	0.01
10/18/2020	04:10	1.56	18:15	3.23	2.49	04:25	0.30	18:10	1.00	0.71	04:25	0.011	18:10	0.098	0.053	0.053	0.03
10/19/2020	03:50	1.64	12:00	3.17	2.46	03:55	0.39	11:55	1.02	0.72	03:50	0.015	11:55	0.097	0.051	0.051	0.05
10/20/2020	03:35	1.53	19:40	3.14	2.38	04:20	0.34	19:40	1.02	0.71	03:30	0.012	19:40	0.097	0.049	0.049	-
10/21/2020	02:05	1.46	18:55	3.04	2.33	02:10	0.35	18:55	0.97	0.70	02:05	0.011	18:55	0.088	0.047	0.047	0.01
10/22/2020	03:45	1.47	11:25	2.98	2.33	02:05	0.38	11:35	0.94	0.70	03:45	0.012	11:35	0.082	0.046	0.046	-
10/23/2020	03:30	1.44	12:50	3.07	2.36	02:10	0.30	19:50	0.96	0.70	02:05	0.010	19:50	0.086	0.047	0.047	0.20
10/24/2020	06:45	1.73	09:05	3.07	2.36	06:35	0.47	09:10	0.99	0.71	06:45	0.019	09:10	0.091	0.047	0.047	0.02
10/25/2020	05:55	1.45	12:20	3.10	2.35	04:30	0.34	09:00	0.99	0.69	05:25	0.011	09:00	0.090	0.047	0.047	-
10/26/2020	01:20	1.78	12:50	3.06	2.41	00:45	0.49	12:50	1.02	0.74	00:50	0.021	12:50	0.093	0.051	0.051	-
10/27/2020	04:00	1.34	19:05	3.04	2.30	03:45	0.31	19:05	0.98	0.68	03:35	0.009	19:05	0.089	0.045	0.045	-
10/28/2020	03:35	1.50	16:15	3.02	2.33	03:30	0.32	16:15	0.99	0.69	03:30	0.011	16:15	0.089	0.046	0.046	-
10/29/2020	02:15	1.58	19:25	3.19	2.37	02:15	0.37	19:25	1.02	0.70	02:15	0.013	19:25	0.099	0.048	0.048	-
10/30/2020	04:30	1.55	10:10	3.00	2.41	02:35	0.38	18:35	0.96	0.72	04:30	0.013	18:35	0.084	0.049	0.049	0.10
10/31/2020	02:20	1.58	13:10	3.27	2.40	02:30	0.41	13:10	1.01	0.72	02:15	0.015	13:10	0.101	0.050	0.050	-
11/01/2020	03:45	1.45	19:10	3.23	2.38	03:20	0.28	19:10	0.99	0.71	03:50	0.011	19:10	0.097	0.050	0.050	-
11/02/2020	04:05	1.48	17:45	3.00	2.32	03:15	0.36	13:40	0.96	0.70	03:45	0.012	17:45	0.085	0.046	0.046	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/03/2020	03:50	1.44	10:30	3.46	2.47	03:45	0.35	10:30	1.08	0.76	03:45	0.011	10:30	0.117	0.056	0.056	0.83
11/04/2020	03:45	1.47	12:55	3.18	2.34	03:50	0.38	12:50	1.02	0.70	03:50	0.012	12:50	0.097	0.047	0.047	0.09
11/05/2020	04:30	1.53	13:10	3.09	2.42	04:35	0.39	13:10	0.98	0.74	04:35	0.013	13:10	0.091	0.052	0.052	0.34
11/06/2020	05:45	1.65	10:35	3.04	2.35	05:15	0.45	10:35	0.98	0.72	04:50	0.018	10:35	0.089	0.047	0.047	0.10
11/07/2020	03:35	1.49	15:20	3.15	2.38	03:20	0.40	15:10	0.98	0.73	03:15	0.014	15:15	0.093	0.049	0.049	0.07
11/08/2020	05:15	1.36	21:05	3.17	2.38	05:15	0.36	21:00	1.01	0.72	05:20	0.010	21:00	0.096	0.050	0.050	0.01
11/09/2020	05:15	1.39	19:45	3.10	2.32	05:15	0.35	19:45	1.00	0.71	05:15	0.010	19:45	0.093	0.047	0.047	0.04
11/10/2020	03:15	1.41	09:25	3.11	2.34	02:10	0.33	09:20	0.97	0.71	03:15	0.010	09:25	0.091	0.047	0.047	0.03
11/11/2020	03:45	1.41	15:45	3.02	2.32	03:15	0.37	15:45	0.96	0.71	03:25	0.011	15:45	0.086	0.047	0.047	-
11/12/2020	05:35	1.40	11:45	3.13	2.32	04:05	0.31	11:40	1.00	0.71	05:35	0.010	11:45	0.095	0.047	0.047	0.16
11/13/2020	01:55	1.67	13:05	3.38	2.44	01:55	0.47	13:00	1.04	0.75	01:55	0.018	13:00	0.108	0.051	0.051	0.38
11/14/2020	04:10	1.56	18:45	3.47	2.42	04:15	0.40	18:40	1.08	0.73	04:10	0.014	18:40	0.117	0.052	0.052	0.47
11/15/2020	08:20	1.45	12:50	3.39	2.39	06:10	0.36	12:50	1.05	0.73	04:25	0.012	12:50	0.110	0.051	0.051	0.19
11/16/2020	02:30	1.65	13:30	3.43	2.41	03:50	0.46	13:20	1.07	0.74	02:25	0.018	13:25	0.114	0.051	0.051	0.31
11/17/2020	05:05	1.44	16:20	3.18	2.40	04:55	0.41	19:05	1.00	0.73	05:00	0.013	19:05	0.096	0.050	0.050	0.20
11/18/2020	03:45	1.46	17:50	3.23	2.42	03:50	0.37	11:35	1.00	0.73	03:35	0.012	17:50	0.099	0.052	0.052	0.30
11/19/2020	02:30	1.64	13:05	3.49	2.48	02:25	0.44	13:00	1.09	0.75	02:20	0.017	13:00	0.119	0.054	0.054	0.50
11/20/2020	05:10	1.80	16:20	2.98	2.44	05:25	0.50	11:00	0.94	0.74	05:05	0.022	11:00	0.081	0.051	0.051	0.01
11/21/2020	01:55	1.58	12:25	3.13	2.41	01:55	0.45	12:15	0.98	0.73	01:55	0.016	12:20	0.091	0.051	0.051	-
11/22/2020	05:45	1.52	13:05	3.17	2.41	03:30	0.41	13:10	0.99	0.72	05:15	0.014	13:10	0.094	0.050	0.050	0.21
11/23/2020	04:40	1.45	17:30	3.03	2.42	04:40	0.35	17:30	0.93	0.73	04:40	0.011	17:30	0.084	0.050	0.050	0.14
11/24/2020	05:05	1.59	16:15	3.24	2.41	05:00	0.44	16:10	0.99	0.72	04:55	0.016	16:15	0.098	0.050	0.050	0.21
11/25/2020	04:30	1.59	20:15	3.03	2.39	04:25	0.42	20:20	0.93	0.71	04:25	0.015	20:15	0.083	0.048	0.048	0.05
11/26/2020	05:55	1.71	13:15	3.14	2.38	05:45	0.39	13:10	0.98	0.70	05:45	0.016	13:15	0.093	0.048	0.048	0.02
11/27/2020	05:05	1.62	13:30	3.15	2.43	05:05	0.39	13:25	0.97	0.69	05:05	0.014	13:30	0.092	0.048	0.048	-
11/28/2020	05:55	1.63	13:15	3.19	2.40	05:35	0.39	13:10	1.00	0.69	05:30	0.015	13:10	0.096	0.047	0.047	0.05
11/29/2020	05:40	1.59	13:05	3.04	2.42	05:55	0.40	15:20	0.95	0.70	04:30	0.015	15:20	0.085	0.049	0.049	-
11/30/2020	03:05	1.63	14:25	3.01	2.47	03:15	0.43	21:40	0.94	0.74	03:15	0.016	18:55	0.083	0.052	0.052	0.36
12/01/2020	01:35	1.46	17:30	3.05	2.33	01:30	0.36	19:35	0.98	0.70	01:35	0.011	17:35	0.087	0.046	0.046	-
12/02/2020	03:45	1.25	20:50	3.06	2.33	03:40	0.33	20:50	0.96	0.69	03:35	0.009	20:50	0.088	0.046	0.046	0.01
12/03/2020	03:45	1.48	13:50	3.09	2.33	03:45	0.43	13:45	1.00	0.69	03:45	0.014	13:50	0.092	0.045	0.045	-
12/04/2020	03:55	1.59	20:55	2.96	2.30	03:50	0.42	19:25	0.92	0.69	03:50	0.015	20:55	0.080	0.044	0.044	-
12/05/2020	03:50	1.55	12:05	3.03	2.33	03:50	0.41	12:10	0.96	0.70	03:50	0.014	12:10	0.086	0.046	0.046	0.03
12/06/2020	03:15	1.53	13:10	3.50	2.40	03:15	0.41	12:50	1.02	0.72	03:15	0.014	13:10	0.113	0.050	0.050	0.03
12/07/2020	03:25	1.25	19:50	3.12	2.34	03:20	0.25	13:10	1.02	0.70	03:20	0.007	13:10	0.094	0.047	0.047	-
12/08/2020	04:55	1.50	19:55	3.37	2.54	04:55	0.40	19:50	1.06	0.77	04:55	0.013	19:55	0.110	0.058	0.058	0.87
12/09/2020	06:05	1.47	12:50	3.06	2.48	06:05	0.40	12:50	0.97	0.76	06:05	0.013	12:50	0.088	0.053	0.053	0.17
12/10/2020	04:00	1.49	23:25	3.46	2.41	03:55	0.40	13:05	1.05	0.69	04:00	0.013	23:20	0.110	0.048	0.048	0.07
12/11/2020	04:20	1.28	16:30	3.08	2.39	04:15	0.29	11:00	0.92	0.71	04:15	0.008	11:00	0.084	0.048	0.048	0.02
12/12/2020	05:50	1.44	20:40	3.45	2.35	05:50	0.37	20:40	1.02	0.69	05:45	0.012	20:40	0.110	0.046	0.046	0.01
12/13/2020	05:10	1.95	12:20	3.37	2.52	03:30	0.53	12:15	0.99	0.75	03:30	0.027	12:15	0.103	0.054	0.054	0.24
12/14/2020	03:50	1.56	12:40	3.15	2.37	03:25	0.42	12:30	0.95	0.70	03:15	0.015	12:40	0.091	0.047	0.047	0.05
12/15/2020	05:10	1.64	16:30	3.73	2.60	03:25	0.36	16:30	1.07	0.75	03:45	0.016	16:30	0.128	0.058	0.058	0.58
12/16/2020	04:50	1.79	17:35	3.39	2.66	04:30	0.53	17:30	0.98	0.77	04:30	0.023	17:40	0.103	0.061	0.061	0.39
12/17/2020	03:55	1.92	13:05	3.37	2.59	03:45	0.56	13:00	0.99	0.77	03:45	0.027	13:05	0.104	0.058	0.058	0.08
12/18/2020	03:05	1.76	19:40	3.32	2.53	03:20	0.51	19:30	0.97	0.75	03:20	0.021	19:40	0.099	0.054	0.054	0.25
12/19/2020	06:50	1.73	20:35	3.52	2.63	06:55	0.48	20:35	1.00	0.77	06:45	0.020	20:35	0.110	0.060	0.060	0.37
12/20/2020	05:40	2.05	11:30	3.36	2.66	05:45	0.61	12:45	1.02	0.79	05:40	0.032	12:45	0.103	0.061	0.061	0.04
12/21/2020	02:10	2.05	18:45	4.66	3.18	02:10	0.60	18:35	1.26	0.93	02:10	0.031	18:45	0.202	0.095	0.095	1.07
12/22/2020	23:10	2.59	00:00	3.52	3.05	21:45	0.78	13:10	1.05	0.92	23:10	0.056	13:15	0.114	0.084	0.084	-
12/23/2020	05:15	2.11	12:40	3.32	2.71	05:25	0.58	12:40	1.05	0.81	05:10	0.032	12:40	0.107	0.064	0.064	-
12/24/2020	04:45	1.69	12:25	3.22	2.55	04:45	0.41	12:25	1.00	0.76	04:45	0.016	12:25	0.098	0.056	0.056	-
12/25/2020	04:00	1.76	18:35	3.27	2.52	03:45	0.50	18:35	1.00	0.76	03:50	0.021	18:35	0.100	0.055	0.055	0.49
12/26/2020	04:25	1.90	13:10	3.12	2.53	06:30	0.53	12:05	0.97	0.76	06:30	0.025	12:05	0.091	0.055	0.055	0.02
12/27/2020	05:10	1.60	12:30	3.48	2.59	05:10	0.43	12:30	0.98	0.74	05:10	0.015	12:30	0.107	0.057	0.057	0.13
12/28/2020	05:00	1.71	13:05	3.24	2.50	05:00	0.48	12:55	0.95	0.74	05:00	0.019	13:05	0.094	0.053	0.053	-
12/29/2020	05:20	1.54	19:10	3.30	2.54	05:20	0.43	19:10	0.95	0.75	05:20	0.015	19:10	0.096	0.056	0.056	0.14
12/30/2020	01:05	2.20	13:40	3.92	3.15	02:10	0.64	17:25	1.08	0.88	01:05	0.038	13:40	0.136	0.087	0.087	0.78
12/31/2020	07:00	2.71	12:50	3.75	3.18	21:10	0.74	11:55	1.07	0.89	06:25	0.058	11:55	0.128	0.086	0.086	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			12.854	30.65
Average	2.73	0.76	0.063	

Auburn.TFM.WA20-22		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES®	AUB_A9_71031

Site Address /Location:	Frank Fulmer Park			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	Entrance on 5th St NE	Latitude:	47.313160°	Pipe Size (H x W): 10 x 10	Pipe Shape: Circular
		Longitude:	-122.214022°		



Manhole #	System Characteristics
710-31	Residential
Access	Traffic
Drive	None







Installation Information	
Installation Date:	Installation Type:
Thursday, September 24, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi
Installation Confirmation:	
Time	Pipe Size (HxW)
10:46:00 AM	10 x 10
Depth of Flow (Wet DOF) (in)	
3.13	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.64	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
1.15	N/A
Silt (in)	Silt Type
0	
Hydraulic Comments:	
Manhole / Pipe Information:	
Manhole Depth (Approx. FT):	Manhole Configuration
9	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
24	26
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
PVC	Good
Communication Information:	
Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole
Additional Site Info. / Comments:	

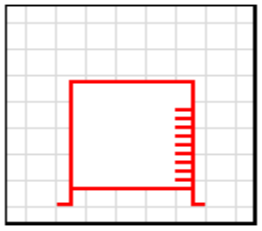
ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519

Hydrograph Report

AUB_RG

Rain Gauge

AUB_RG



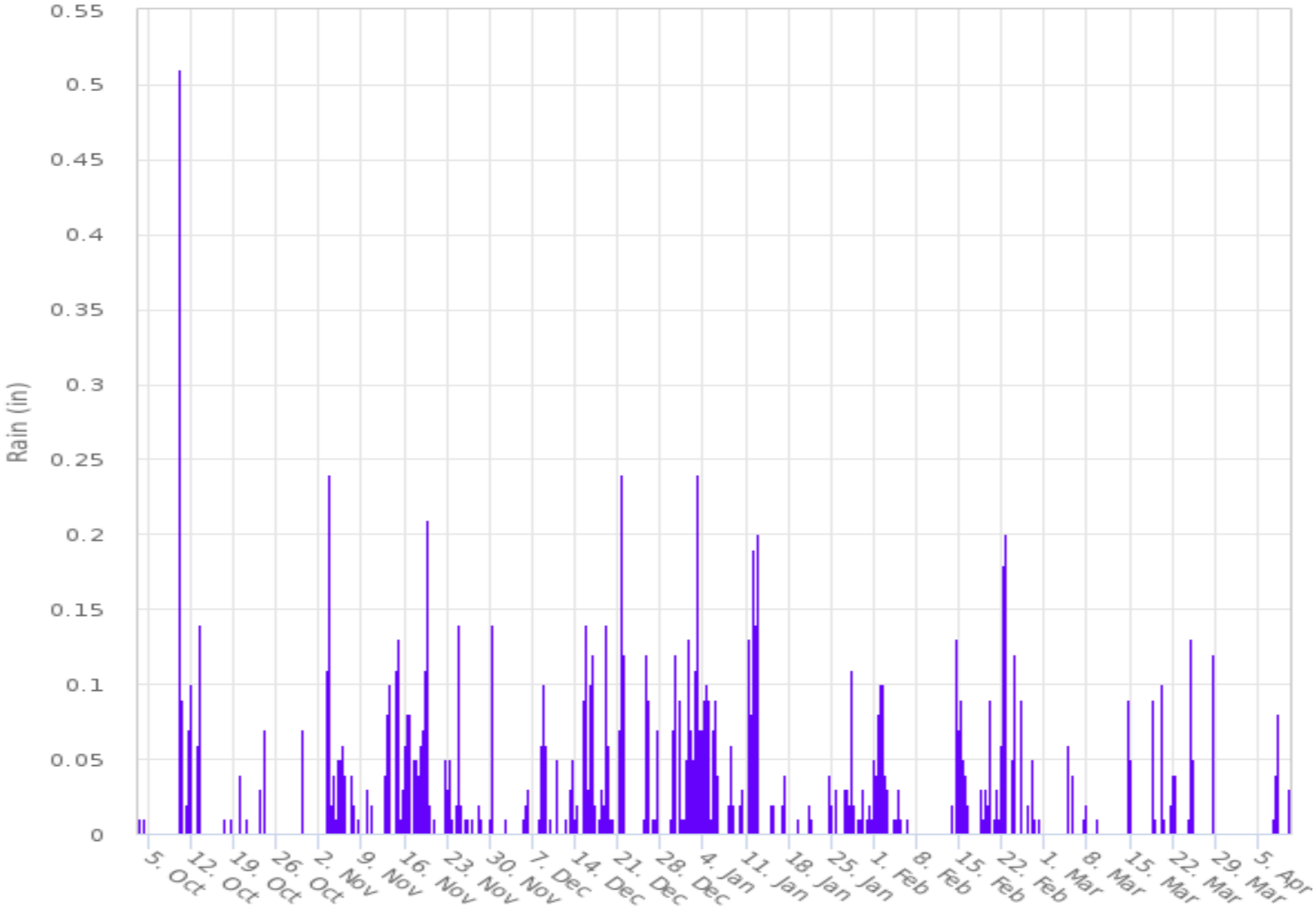
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
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AUB_Y-1_41016

Site Commentary

SITE INFORMATION

Pipe	Elliptical (17.63 in H x 18 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

This site experienced surcharge events during the month of January.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	5.58	1.36	0.421
Minimum	3.79	0.49	0.088
Maximum	23.30	2.25	0.907
Min Time	10/21/2020 3:00:00 AM	09/22/2020 3:00:00 AM	09/22/2020 3:00:00 AM
Max Time	01/12/2021 9:00:00 PM	02/23/2021 10:00:00 PM	01/12/2021 9:00:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

Percent Uptime	
DFINAL (in)	100
VFINAL (ft/s)	100
QFINAL (MGD - Total MG)	100

Hydrograph Report

AUB_Y-1_41016

Flow Monitor

AUB_Y-1_41016

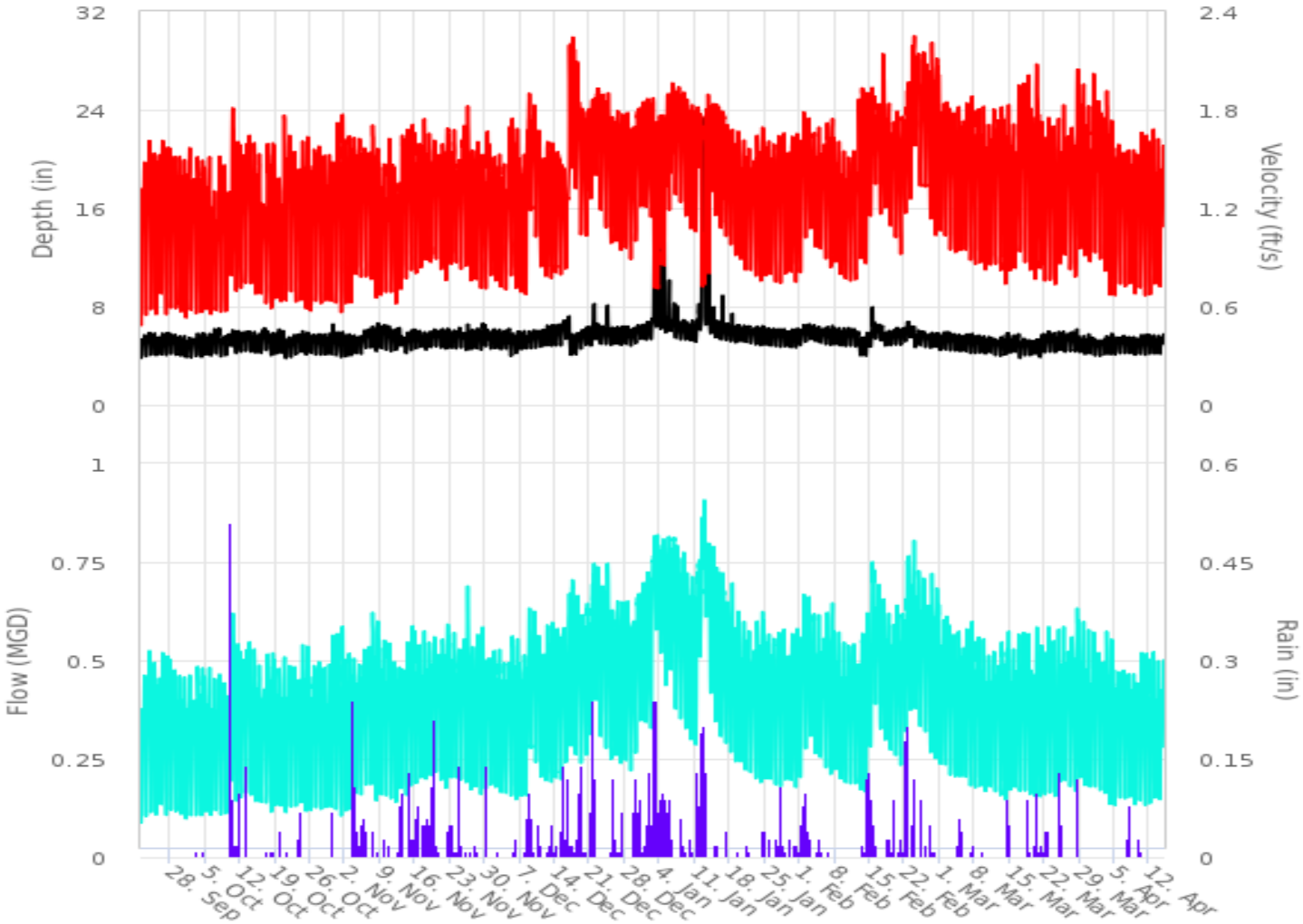
Pipe Height
17.63
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL



4455 S. 134th Place
Tukwila, WA 98168

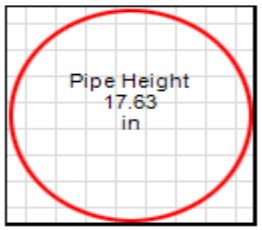
206-762-5070
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Scattergraph Report

AUB_Y-1_41016

Flow Monitor

AUB_Y-1_41016



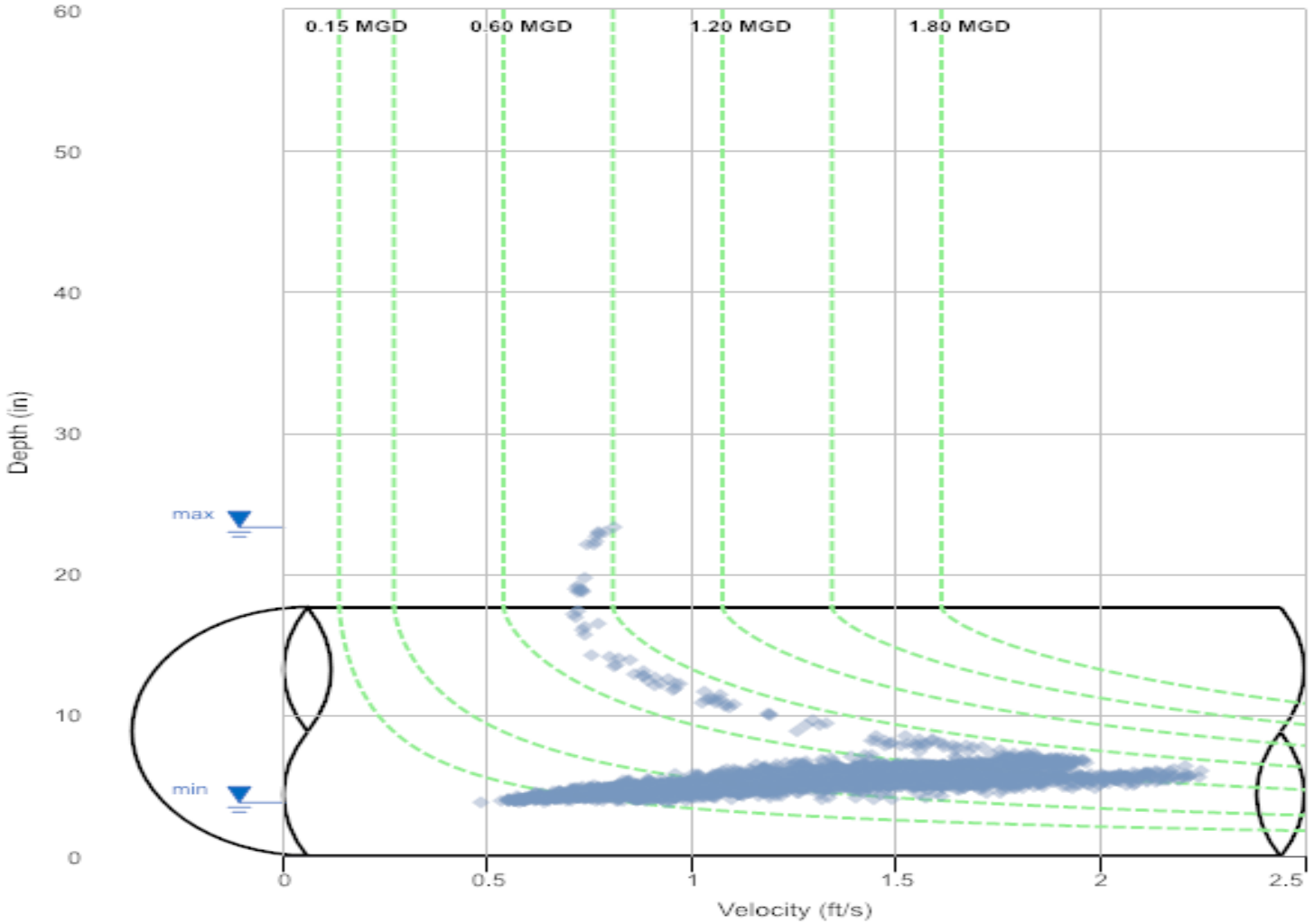
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth

ADS ENVIRONMENTAL SERVICES



4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_Y-1_41016Pipe: Elliptical (17.63 in H x 18 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	06:20	5.13	16:20	6.86	6.12	04:50	0.98	12:10	1.92	1.60	04:50	0.269	13:25	0.762	0.563	0.563	0.51
01/02/2021	05:35	5.13	22:35	19.58	8.24	23:30	0.70	15:05	1.92	1.40	05:35	0.265	22:40	0.817	0.615	0.615	1.69
01/03/2021	06:30	6.30	14:15	19.43	12.12	12:05	0.69	08:55	1.86	1.10	06:40	0.550	13:15	0.829	0.738	0.738	0.65
01/04/2021	03:55	5.97	20:50	14.44	9.23	20:50	0.82	00:55	1.86	1.31	03:55	0.461	17:30	0.832	0.719	0.719	0.48
01/05/2021	04:10	5.71	21:10	10.60	6.99	21:10	1.14	17:00	1.97	1.64	04:45	0.376	19:35	0.841	0.674	0.674	0.52
01/06/2021	04:10	5.86	21:10	9.15	6.79	03:45	1.29	12:15	2.04	1.73	03:25	0.427	18:15	0.854	0.688	0.688	0.22
01/07/2021	05:00	5.29	10:50	8.69	6.36	04:45	1.14	18:35	1.97	1.69	05:00	0.321	10:15	0.833	0.621	0.621	-
01/08/2021	04:45	5.13	18:45	7.08	6.14	04:45	1.02	18:25	1.98	1.66	04:45	0.276	18:25	0.808	0.585	0.585	0.22
01/09/2021	04:55	5.05	12:25	6.80	6.08	04:55	0.96	11:10	1.91	1.57	04:55	0.256	11:40	0.755	0.546	0.546	-
01/10/2021	06:00	5.00	12:55	7.21	6.06	04:50	0.91	11:25	1.87	1.53	06:00	0.237	12:35	0.736	0.532	0.532	0.07
01/11/2021	03:30	4.89	19:00	8.74	6.40	03:30	0.88	15:20	1.88	1.53	03:30	0.224	21:40	0.789	0.577	0.577	1.06
01/12/2021	02:20	5.95	20:55	23.57	14.73	14:50	0.70	07:30	1.88	1.08	02:40	0.459	21:00	0.933	0.748	0.748	2.10
01/13/2021	04:05	6.46	00:00	18.48	9.23	00:10	0.72	15:10	1.96	1.42	05:30	0.593	18:05	0.865	0.736	0.736	0.09
01/14/2021	04:40	5.67	19:25	8.79	6.67	04:25	1.17	18:50	1.92	1.63	04:25	0.367	18:50	0.818	0.638	0.638	0.01
01/15/2021	03:50	5.34	19:50	7.13	6.27	04:05	0.98	19:25	1.92	1.57	04:05	0.284	19:45	0.760	0.569	0.569	0.09
01/16/2021	05:50	5.10	13:45	9.14	6.32	05:50	0.93	17:35	1.86	1.44	05:50	0.249	12:25	0.754	0.528	0.528	-
01/17/2021	05:30	5.04	11:45	6.70	6.03	05:30	0.85	11:45	1.80	1.43	05:30	0.225	11:45	0.701	0.492	0.492	0.10
01/18/2021	04:35	4.96	12:30	7.76	6.06	03:55	0.83	11:40	1.80	1.40	04:35	0.214	12:05	0.730	0.488	0.488	-
01/19/2021	04:00	4.83	17:25	6.57	5.98	04:00	0.74	11:25	1.76	1.37	04:00	0.185	17:50	0.655	0.470	0.470	0.01
01/20/2021	05:00	4.93	20:55	6.53	5.91	05:00	0.75	19:55	1.66	1.31	05:00	0.192	20:55	0.623	0.437	0.437	-
01/21/2021	04:20	4.90	21:00	6.49	5.92	03:10	0.67	19:15	1.62	1.29	03:10	0.170	20:55	0.598	0.433	0.433	0.11
01/22/2021	04:15	4.83	20:25	6.40	5.78	04:15	0.68	20:25	1.72	1.26	05:05	0.169	20:25	0.629	0.409	0.409	-
01/23/2021	05:10	4.57	11:25	6.42	5.78	05:10	0.58	11:25	1.70	1.29	05:10	0.135	11:25	0.624	0.423	0.423	-
01/24/2021	04:35	4.59	13:20	6.54	5.81	04:35	0.61	14:00	1.78	1.34	05:25	0.140	13:20	0.666	0.447	0.447	0.16
01/25/2021	04:35	4.65	20:10	6.32	5.72	04:35	0.63	20:10	1.71	1.31	04:35	0.148	20:10	0.617	0.420	0.420	0.04
01/26/2021	04:20	4.46	20:25	6.30	5.65	03:50	0.59	20:25	1.71	1.27	03:50	0.131	20:25	0.613	0.402	0.402	-
01/27/2021	04:30	4.56	18:40	6.45	5.64	04:30	0.61	18:40	1.82	1.29	04:30	0.141	18:40	0.673	0.405	0.405	0.14
01/28/2021	03:55	4.42	20:35	6.29	5.60	03:25	0.56	21:15	1.75	1.30	03:25	0.124	21:15	0.628	0.405	0.405	0.24
01/29/2021	04:10	4.41	11:55	6.06	5.56	04:10	0.61	13:25	1.62	1.28	04:10	0.133	13:25	0.549	0.396	0.396	0.03
01/30/2021	06:20	4.36	12:50	6.23	5.59	05:00	0.59	10:15	1.74	1.31	05:00	0.128	12:35	0.599	0.413	0.413	0.07
01/31/2021	05:35	4.38	11:25	6.32	5.64	05:35	0.58	11:25	1.77	1.32	05:35	0.126	11:25	0.640	0.422	0.422	0.12
02/01/2021	03:10	4.53	19:45	6.55	5.74	03:10	0.65	19:00	1.86	1.38	03:10	0.148	19:00	0.695	0.450	0.450	0.82
02/02/2021	04:10	4.95	21:30	6.64	6.00	04:10	0.88	20:50	1.79	1.48	04:10	0.228	20:50	0.684	0.504	0.504	0.31
02/03/2021	03:15	5.15	21:10	6.54	5.99	04:20	0.89	21:50	1.71	1.42	03:15	0.245	21:50	0.645	0.482	0.482	0.06
02/04/2021	03:20	5.00	20:15	6.50	5.87	03:20	0.80	20:55	1.80	1.38	03:55	0.209	20:55	0.664	0.455	0.455	0.07
02/05/2021	03:55	4.82	18:55	6.30	5.75	03:55	0.70	18:30	1.66	1.36	03:55	0.173	18:55	0.597	0.437	0.437	0.01
02/06/2021	05:40	4.69	11:55	6.42	5.75	04:35	0.72	13:50	1.76	1.39	05:40	0.172	14:00	0.644	0.451	0.451	0.01
02/07/2021	05:20	4.61	12:40	6.51	5.75	05:20	0.65	12:40	1.78	1.37	05:20	0.151	12:40	0.668	0.447	0.447	-
02/08/2021	04:05	4.65	19:35	6.33	5.71	03:25	0.70	20:35	1.64	1.31	03:25	0.166	20:00	0.589	0.419	0.419	-
02/09/2021	03:25	4.52	20:55	6.37	5.63	03:25	0.65	19:40	1.63	1.25	03:25	0.147	20:55	0.595	0.393	0.393	-
02/10/2021	04:10	4.48	19:35	6.33	5.66	04:10	0.59	19:30	1.56	1.22	04:10	0.133	19:35	0.563	0.385	0.385	-
02/11/2021	04:15	4.46	20:45	6.28	5.62	04:15	0.59	20:45	1.65	1.22	04:15	0.131	20:45	0.590	0.381	0.381	-
02/12/2021	04:15	4.40	19:50	6.12	5.40	04:15	0.56	20:15	1.99	1.28	04:15	0.122	19:55	0.541	0.374	0.374	-
02/13/2021	05:05	3.82	19:05	5.75	4.92	04:35	0.72	21:20	2.08	1.54	05:05	0.128	13:35	0.607	0.408	0.408	0.08
02/14/2021	05:55	3.74	13:20	5.96	5.11	06:25	0.65	13:20	1.97	1.49	06:25	0.114	13:20	0.656	0.420	0.420	0.71
02/15/2021	04:00	4.50	14:15	8.37	6.00	04:00	0.88	12:25	2.00	1.61	04:00	0.199	21:45	0.787	0.560	0.560	0.78
02/16/2021	04:00	5.19	20:30	6.64	6.04	03:45	1.16	20:15	1.88	1.65	03:45	0.322	20:30	0.723	0.562	0.562	0.07
02/17/2021	14:45	5.06	13:45	6.53	5.76	03:30	0.98	14:35	2.21	1.62	03:30	0.260	20:50	0.707	0.514	0.514	-
02/18/2021	04:10	4.51	21:05	6.15	5.51	04:10	0.92	21:05	1.97	1.60	04:10	0.208	21:05	0.683	0.484	0.484	0.09
02/19/2021	04:50	4.61	19:55	6.19	5.59	04:50	0.89	19:50	1.82	1.49	04:50	0.208	19:55	0.636	0.462	0.462	0.17
02/20/2021	05:00	4.67	12:40	6.36	5.69	06:00	0.81	10:50	1.85	1.45	06:00	0.193	12:40	0.670	0.463	0.463	0.07
02/21/2021	05:10	4.63	11:25	6.29	5.72	04:05	0.74	11:15	1.82	1.45	05:10	0.175	13:30	0.648	0.469	0.469	0.42
02/22/2021	03:40	4.93	13:55	7.02	6.08	03:20	0.96	19:25	2.01	1.65	03:20	0.252	20:45	0.799	0.578	0.578	0.98
02/23/2021	16:00	5.27	21:15	6.72	5.85	02:40	1.07	20:40	2.32	1.81	02:55	0.306	21:05	0.865	0.589	0.589	0.27
02/24/2021	03:15	4.50	19:50	6.14	5.48	03:15	1.27	10:20	2.24	1.94	03:15	0.286	19:50	0.760	0.582	0.582	-
02/25/2021	03:50	4.65	17:55	6.15	5.53	02:45	1.13	18:45	2.27	1.79	03:50	0.267	19:10	0.753	0.542	0.542	0.18
02/26/2021	04:20	4.49	09:15	5.88	5.34	04:20	1.08	09:35	2.20	1.79	04:20	0.243	09:15	0.698	0.519	0.519	0.10
02/27/2021	04:35	4.49	11:45	6.01	5.38	05:45	0.98	11:40	2.31	1.74	05:45	0.220	11:40	0.772	0.514	0.514	0.02
02/28/2021	05:00	4.50	11:30	6.03	5.40	05:00	0.81	11:30	2.19	1.70	05:00	0.183	11:30	0.740	0.504	0.504	0.02
03/01/2021	03:50	4.19	20:10	6.06	5.27	03:50	0.83	20:10	1.96	1.55	03:50	0.170	20:10	0.667	0.443	0.443	-
03/02/2021	02:45	4.27	10:05	6.28	5.29	02:45	0.83	10:05	1.99	1.51	02:45	0.173	10:05	0.713	0.435	0.435	-
03/03/2021	04:00	4.15	18:45	5.88	5.24	04:00	0.69	21:20	1.89	1.45	04:00	0.139	19:10	0.613	0.411	0.411	-
03/04/2021	04:00	4.15	19:40	6.02	5.17	04:00	0.66	20:00	1.97	1.47	04:00	0.132	19:40	0.662	0.410	0.410	0.20
03/05/2021	03:50	4.12	19:55	5.82	5.17	03:50	0.73	18:55	1.86	1.47	03:50	0.145	20:25	0.580	0.412	0.412	0.05
03/06/2021	06:20	4.10	10:15	5.93	5.17	05:30	0.73	10:15	2.01	1.50	05:30	0.144	10:15	0.665	0.423	0.423	-
03/07/2021	06:00	3.98	10:50	5.88	5.16	04:40	0.67	11:35	2.01	1.50	04:40	0.127	11:35	0.654	0.424	0.424	0.04
03/08/2021	04:25	3.99	19:50	5.87	5.07	04:25	0.68	20:15	1.94	1.43	04:25	0.130	20:40	0.631	0.392	0.392	-
03/09/2021	04:10	3.97	19:45	5.70	5.03	04:10	0.65	09:00	1.96	1.43	04:10	0.122	09:00	0.605	0.385	0.385	0.01
03/10/2021	04:20	3.92	19:40	5.63	4.99	04:20	0.60	19:40	1.91	1.37	04:20	0.110	19:40	0.588	0.365	0.365	-
03/11/2021	04:10	3.96	19:35	5.57	4.95	04:10	0.63	21:30	1.98	1.41	04:10	0.119	21:30	0.589	0.372	0.372	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	04:20	3.73	20:00	5.55	4.85	04:20	0.59	19:05	1.96	1.44	04:20	0.101	20:00	0.591	0.370	0.370	-
03/13/2021	05:15	3.72	11:10	5.71	4.89	04:40	0.61	14:40	2.02	1.45	04:40	0.105	11:10	0.625	0.381	0.381	-
03/14/2021	04:40	3.85	13:00	6.03	5.22	04:40	0.59	20:00	1.99	1.38	04:40	0.106	19:35	0.643	0.399	0.399	0.30
03/15/2021	03:00	3.98	20:20	5.78	5.09	02:55	0.63	20:20	1.89	1.36	02:55	0.119	20:20	0.601	0.374	0.374	-
03/16/2021	03:05	4.04	20:10	5.94	5.15	03:05	0.62	20:30	2.18	1.37	03:05	0.120	20:30	0.683	0.381	0.381	-
03/17/2021	02:45	3.54	19:45	5.51	4.76	02:15	0.67	20:50	2.09	1.52	02:15	0.110	20:50	0.625	0.382	0.382	-
03/18/2021	03:05	3.80	15:50	5.44	4.83	03:05	0.65	19:05	2.16	1.49	03:05	0.116	19:05	0.634	0.380	0.380	0.11
03/19/2021	02:30	3.79	16:50	5.62	4.79	02:30	0.61	11:30	1.95	1.45	02:30	0.107	16:50	0.553	0.367	0.367	0.03
03/20/2021	03:55	3.84	11:30	5.43	4.86	04:25	0.53	10:35	2.27	1.52	04:25	0.096	10:45	0.648	0.394	0.394	0.17
03/21/2021	03:45	3.65	19:45	5.88	5.07	03:45	0.63	10:25	1.87	1.38	03:45	0.106	13:10	0.606	0.384	0.384	0.07
03/22/2021	03:00	4.00	20:05	6.08	5.22	03:55	0.58	20:05	1.82	1.30	03:55	0.112	20:05	0.621	0.371	0.371	0.11
03/23/2021	03:30	4.01	20:25	5.91	5.13	02:55	0.53	20:00	1.79	1.28	02:55	0.102	20:25	0.589	0.355	0.355	-
03/24/2021	02:25	3.99	20:40	6.05	5.15	02:25	0.54	20:40	1.84	1.29	02:25	0.102	20:40	0.625	0.362	0.362	0.34
03/25/2021	02:35	4.25	19:35	6.10	5.42	03:20	0.65	20:40	1.92	1.37	03:20	0.137	20:40	0.623	0.407	0.407	0.27
03/26/2021	02:25	4.10	18:45	5.96	5.28	02:25	0.74	11:30	1.84	1.40	02:25	0.146	11:30	0.591	0.402	0.402	-
03/27/2021	03:20	4.11	11:40	6.03	5.34	03:20	0.62	11:40	1.80	1.36	03:20	0.122	11:40	0.607	0.400	0.400	-
03/28/2021	04:25	3.98	13:05	6.34	5.26	04:25	0.58	13:30	2.27	1.52	04:25	0.109	13:30	0.753	0.440	0.440	0.37
03/29/2021	03:30	4.04	19:55	5.77	5.00	03:30	0.73	20:45	2.06	1.57	03:30	0.141	19:55	0.649	0.419	0.419	-
03/30/2021	03:35	3.86	20:20	5.87	5.02	03:35	0.67	07:50	1.99	1.45	03:35	0.121	20:20	0.637	0.391	0.391	-
03/31/2021	03:15	3.88	16:55	5.70	4.98	02:45	0.61	19:40	2.16	1.44	02:45	0.113	19:40	0.631	0.383	0.383	-
04/01/2021	03:25	3.73	21:15	5.37	4.81	02:50	0.67	14:55	1.99	1.49	03:25	0.116	21:15	0.568	0.377	0.377	-
04/02/2021	03:15	3.75	20:25	5.46	4.86	02:45	0.66	18:00	1.95	1.46	02:45	0.115	18:00	0.553	0.376	0.376	-
04/03/2021	03:55	3.89	09:35	5.78	5.03	03:00	0.63	10:10	2.03	1.41	03:55	0.116	10:10	0.634	0.385	0.385	-
04/04/2021	03:20	3.81	13:05	5.92	5.12	03:20	0.48	09:55	1.87	1.31	03:20	0.085	10:00	0.609	0.369	0.369	-
04/05/2021	03:55	3.82	21:45	5.60	5.01	03:55	0.51	20:50	1.69	1.25	03:55	0.090	20:50	0.511	0.336	0.336	-
04/06/2021	03:35	3.91	20:25	5.72	5.08	03:35	0.55	08:50	1.66	1.25	03:35	0.102	20:05	0.504	0.341	0.341	-
04/07/2021	02:35	3.93	20:00	5.64	5.01	02:35	0.55	18:10	1.74	1.23	02:35	0.102	18:10	0.534	0.330	0.330	0.22
04/08/2021	02:55	3.93	20:05	5.71	5.01	02:55	0.54	20:05	1.69	1.24	02:55	0.101	20:05	0.530	0.335	0.335	-
04/09/2021	03:10	3.81	11:05	5.50	4.98	03:45	0.51	18:00	1.69	1.25	03:45	0.091	18:00	0.501	0.333	0.333	0.03
04/10/2021	03:55	3.84	11:10	5.83	5.03	04:25	0.54	10:35	1.78	1.28	04:25	0.097	10:35	0.573	0.348	0.348	0.02
04/11/2021	03:15	3.76	09:45	5.84	5.13	04:20	0.49	13:40	1.73	1.29	04:20	0.087	09:45	0.557	0.364	0.364	-
04/12/2021	03:40	3.82	20:35	5.79	5.07	03:05	0.50	20:30	1.79	1.25	03:05	0.090	20:35	0.570	0.342	0.342	-
04/13/2021	03:10	3.79	19:00	5.74	5.01	03:10	0.54	18:30	1.73	1.23	03:10	0.095	19:25	0.542	0.332	0.332	-
04/14/2021	02:40	3.80	20:50	5.85	5.11	02:40	0.51	19:30	1.71	1.22	02:40	0.090	20:25	0.550	0.338	0.337	-
09/22/2020	04:00	3.51	20:00	5.79	4.98	03:55	0.35	20:55	1.56	1.12	04:00	0.055	20:55	0.498	0.304	0.304	-
09/23/2020	02:45	3.57	20:05	6.01	5.09	03:25	0.37	19:15	1.72	1.19	03:25	0.060	19:15	0.573	0.334	0.334	-
09/24/2020	03:00	3.69	20:15	5.94	5.15	03:00	0.41	18:55	1.64	1.16	03:00	0.070	18:55	0.537	0.328	0.328	-
09/25/2020	04:00	3.72	19:55	5.73	5.07	02:40	0.42	19:55	1.66	1.24	02:40	0.073	19:55	0.524	0.340	0.340	-
09/26/2020	04:05	3.86	10:05	5.93	5.13	04:05	0.51	10:05	1.71	1.24	04:35	0.092	10:05	0.566	0.349	0.349	-
09/27/2020	03:45	3.77	11:40	6.02	5.17	03:45	0.42	09:25	1.70	1.20	03:45	0.074	09:25	0.569	0.344	0.344	-
09/28/2020	03:05	3.76	20:10	5.82	5.07	03:05	0.41	20:10	1.60	1.14	03:05	0.071	20:10	0.514	0.314	0.314	-
09/29/2020	02:30	3.76	20:20	5.65	4.96	02:25	0.43	08:00	1.61	1.15	02:30	0.075	21:50	0.495	0.308	0.308	-
09/30/2020	03:00	3.62	20:15	5.71	4.96	03:00	0.39	11:30	1.60	1.16	03:00	0.064	11:30	0.493	0.311	0.311	-
10/01/2020	03:05	3.61	21:00	5.61	4.86	03:50	0.38	20:05	1.69	1.16	03:50	0.063	20:05	0.511	0.302	0.302	-
10/02/2020	02:50	3.44	08:45	5.56	4.92	02:50	0.40	20:00	1.52	1.14	02:50	0.061	20:00	0.458	0.302	0.302	-
10/03/2020	04:35	3.52	10:35	5.89	5.07	04:35	0.37	10:25	1.58	1.13	04:35	0.059	10:35	0.513	0.315	0.315	0.01
10/04/2020	04:45	3.49	11:50	5.92	5.14	04:45	0.37	14:20	1.59	1.15	04:45	0.058	14:20	0.521	0.330	0.330	0.01
10/05/2020	02:30	3.75	20:10	5.86	5.10	02:30	0.41	20:10	1.66	1.12	02:30	0.071	20:10	0.539	0.312	0.312	-
10/06/2020	02:20	3.69	20:00	6.32	5.28	02:20	0.42	19:15	1.39	1.01	02:20	0.071	20:25	0.489	0.296	0.296	-
10/07/2020	02:55	3.71	19:20	6.59	5.34	02:55	0.41	20:15	1.69	1.02	02:55	0.070	20:15	0.552	0.302	0.302	-
10/08/2020	02:55	3.53	20:00	5.72	4.95	02:55	0.38	21:15	1.63	1.12	02:55	0.061	21:15	0.511	0.301	0.301	-
10/09/2020	02:35	3.69	17:50	5.97	5.20	03:45	0.39	17:50	1.46	1.08	03:45	0.067	17:50	0.487	0.308	0.308	0.64
10/10/2020	04:40	4.46	10:50	6.18	5.51	04:40	0.66	10:50	1.91	1.38	04:40	0.147	10:50	0.668	0.421	0.421	1.04
10/11/2020	04:05	3.92	10:55	6.12	5.38	04:35	0.55	10:55	1.75	1.29	04:35	0.103	10:55	0.605	0.388	0.388	0.53
10/12/2020	03:15	4.00	19:05	6.14	5.32	02:45	0.58	19:05	1.66	1.24	02:45	0.111	19:05	0.576	0.364	0.364	-
10/13/2020	01:55	3.95	07:55	6.09	5.39	02:45	0.43	07:55	1.79	1.31	02:45	0.082	07:55	0.612	0.393	0.393	0.61
10/14/2020	03:10	4.00	19:20	6.02	5.28	02:40	0.58	18:55	1.66	1.25	03:10	0.110	18:55	0.561	0.361	0.361	-
10/15/2020	02:50	3.87	19:45	5.88	5.20	02:50	0.50	19:45	1.59	1.21	02:50	0.092	19:55	0.520	0.344	0.344	-
10/16/2020	03:40	3.91	19:30	6.45	5.52	02:05	0.50	08:15	1.33	1.06	02:05	0.093	19:35	0.462	0.327	0.327	-
10/17/2020	03:35	4.07	08:45	6.38	5.32	03:35	0.50	10:25	1.66	1.18	03:35	0.097	10:25	0.543	0.348	0.348	0.01
10/18/2020	04:50	3.75	11:10	5.97	5.17	04:10	0.44	13:00	1.73	1.22	04:10	0.079	11:10	0.571	0.351	0.351	0.03
10/19/2020	02:40	3.80	18:35	6.46	5.38	02:40	0.47	18:35	1.51	1.11	02:40	0.084	18:35	0.561	0.332	0.332	0.05
10/20/2020	03:10	3.79	16:50	6.59	5.23	03:10	0.45	18:20	1.94	1.16	03:10	0.080	18:20	0.558	0.330	0.330	-
10/21/2020	03:15	3.59	20:05	5.76	4.81	03:15	0.49	20:00	1.78	1.29	03:15	0.080	20:00	0.563	0.331	0.331	0.01
10/22/2020	03:40	3.60	20:00	5.82	4.91	02:30	0.47	20:00	1.69	1.22	03:40	0.077	20:00	0.546	0.323	0.323	-
10/23/2020	02:50	3.76	19:35	5.92	5.19	02:50	0.45	19:35	1.61	1.15	02:50	0.079	19:35	0.530	0.327	0.327	0.20
10/24/2020	04:35	3.88	11:15	6.06	5.28	04:35	0.45	10:00	1.69	1.19	04:35	0.082	10:00	0.568	0.351	0.351	0.02
10/25/2020	04:05	3.67	11:35	6.00	5.21	04:05	0.40	11:25	1.72	1.18	04:05	0.067	11:35	0.570	0.344	0.344	-
10/26/2020	04:15	3.88	18:35	5.84	5.11	02:25	0.42	18:35	1.67	1.18	02:25	0.078	18:35	0.539	0.329	0.329	-
10/27/2020	02:40	3.75	20:10	5.91	5.06	02:40	0.48	18:50	1.64	1.18	02:40	0.083	20:10	0.533	0.325	0.325	-
10/28/2020	02:45	3.73	20:05	5.85	5.09	02:45	0.43	20:05	1.59	1.18	02:45	0.074	20:05	0.514	0.328	0.328	-
10/29/2020	03:40	3.74	19:35	5.94	5.09	03:40	0.43	19:35	1.67	1.17	03:40	0.075	19:35	0.553	0.324	0.324	-
10/30/2020	03:15	3.77	13:45	8.61	5.16	03:15	0.46	13:35	1.93	1.21	03:15	0.081	13:35	0.803	0.343	0.343	0.10
10/31/2020	03:50	3.71	11:30	6.03	5.11	03:50	0.44	10:15	1.80	1.27	03:50	0.076	11:30	0.606	0.359	0.359	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/01/2020	04:55	3.54	10:05	6.05	5.13	04:55	0.38	11:15	1.93	1.29	04:55	0.062	11:15	0.655	0.371	0.371	-
11/02/2020	03:45	3.55	19:45	5.83	5.05	03:45	0.39	19:00	1.71	1.27	03:45	0.063	20:10	0.541	0.351	0.351	-
11/03/2020	03:55	3.70	18:15	5.87	5.08	03:55	0.44	19:20	1.75	1.31	03:55	0.074	18:15	0.559	0.363	0.363	0.83
11/04/2020	03:35	3.91	21:10	5.71	5.05	03:35	0.56	21:10	1.70	1.32	03:35	0.103	21:10	0.533	0.359	0.359	0.09
11/05/2020	04:10	3.76	21:05	6.14	5.23	04:10	0.52	10:15	1.70	1.29	04:10	0.092	21:50	0.571	0.371	0.371	0.34
11/06/2020	04:10	4.36	20:50	6.26	5.60	04:05	0.61	09:45	1.64	1.27	04:05	0.131	09:45	0.581	0.398	0.398	0.10
11/07/2020	05:25	4.24	10:40	6.48	5.66	04:50	0.54	13:15	1.83	1.29	04:50	0.114	13:15	0.681	0.415	0.415	0.07
11/08/2020	05:45	3.95	11:00	6.71	5.84	05:45	0.47	10:55	1.65	1.24	05:45	0.089	10:55	0.637	0.419	0.419	0.01
11/09/2020	05:00	4.14	21:20	6.60	5.82	03:55	0.48	21:00	1.54	1.15	03:55	0.097	21:00	0.586	0.386	0.386	0.04
11/10/2020	04:20	3.92	18:10	6.89	5.70	03:20	0.46	20:15	1.76	1.15	03:20	0.086	20:15	0.602	0.370	0.370	0.03
11/11/2020	04:50	4.07	21:05	6.41	5.45	03:45	0.52	12:45	1.58	1.21	03:45	0.103	21:05	0.568	0.369	0.369	-
11/12/2020	03:20	3.99	09:45	6.39	5.65	03:20	0.44	22:00	1.44	1.08	03:20	0.084	22:00	0.520	0.345	0.345	0.16
11/13/2020	03:15	4.45	07:35	6.46	5.24	03:10	0.57	09:25	1.77	1.32	03:10	0.128	07:35	0.612	0.370	0.370	0.38
11/14/2020	06:50	4.00	10:30	5.99	5.27	06:20	0.60	11:55	1.78	1.35	06:50	0.115	11:55	0.595	0.395	0.395	0.47
11/15/2020	05:40	4.22	12:05	6.21	5.50	05:10	0.66	12:50	1.79	1.37	05:40	0.135	12:50	0.620	0.424	0.424	0.19
11/16/2020	03:50	4.30	20:00	6.11	5.46	03:50	0.61	19:45	1.69	1.28	03:50	0.128	19:45	0.575	0.389	0.389	0.31
11/17/2020	04:05	4.42	20:05	5.99	5.33	04:05	0.63	20:05	1.79	1.37	04:05	0.139	20:05	0.599	0.399	0.399	0.20
11/18/2020	04:10	4.23	19:30	6.06	5.39	04:10	0.69	19:30	1.77	1.38	04:10	0.141	19:30	0.602	0.409	0.409	0.30
11/19/2020	03:55	4.45	22:10	6.20	5.58	02:45	0.73	22:10	1.67	1.32	02:50	0.164	22:10	0.586	0.411	0.411	0.50
11/20/2020	03:40	4.55	18:50	6.10	5.59	03:20	0.75	18:50	1.60	1.31	03:20	0.174	18:50	0.551	0.406	0.406	0.01
11/21/2020	04:35	4.26	11:25	6.24	5.58	04:35	0.62	12:55	1.66	1.31	04:35	0.129	13:20	0.585	0.410	0.410	-
11/22/2020	06:00	4.21	13:25	6.26	5.60	04:15	0.61	14:05	1.75	1.34	06:00	0.125	12:45	0.618	0.426	0.426	0.21
11/23/2020	03:25	4.27	19:30	6.15	5.52	03:25	0.65	19:30	1.76	1.36	03:25	0.137	19:30	0.613	0.417	0.417	0.14
11/24/2020	04:05	4.26	19:40	6.40	5.59	02:40	0.69	21:30	1.57	1.28	04:05	0.143	21:30	0.574	0.401	0.401	0.21
11/25/2020	04:05	4.29	08:55	6.24	5.46	05:15	0.61	11:35	1.78	1.38	05:15	0.130	08:55	0.625	0.416	0.416	0.05
11/26/2020	05:25	4.19	12:35	6.68	5.60	03:25	0.65	12:25	1.89	1.40	05:25	0.132	12:30	0.726	0.446	0.446	0.02
11/27/2020	05:45	4.22	13:15	6.23	5.47	05:45	0.61	12:00	1.62	1.24	05:45	0.125	12:00	0.561	0.378	0.378	-
11/28/2020	04:15	4.21	13:55	6.34	5.54	04:15	0.61	13:55	1.67	1.26	04:15	0.125	13:55	0.606	0.392	0.392	0.05
11/29/2020	05:50	4.13	13:10	6.68	5.82	05:50	0.55	12:55	1.56	1.19	05:50	0.110	12:45	0.601	0.399	0.399	-
11/30/2020	03:25	4.42	08:25	6.35	5.51	03:25	0.59	09:05	1.93	1.29	03:25	0.130	09:05	0.658	0.391	0.391	0.36
12/01/2020	04:15	4.19	20:55	6.25	5.49	04:15	0.59	21:35	1.60	1.24	04:15	0.120	20:55	0.562	0.377	0.377	-
12/02/2020	03:50	4.17	21:25	6.20	5.51	03:50	0.56	21:20	1.57	1.21	03:50	0.113	21:25	0.552	0.369	0.369	0.01
12/03/2020	04:45	4.16	21:15	6.14	5.47	05:10	0.54	21:15	1.62	1.19	05:10	0.112	21:15	0.560	0.361	0.361	-
12/04/2020	04:25	4.10	20:05	6.54	5.50	04:25	0.54	20:35	1.89	1.19	04:25	0.106	13:00	0.555	0.360	0.360	-
12/05/2020	04:15	3.79	11:55	5.90	5.11	04:15	0.60	11:35	1.81	1.38	04:15	0.105	11:55	0.587	0.385	0.385	0.03
12/06/2020	05:55	3.95	14:05	6.07	5.34	05:55	0.54	11:35	1.76	1.30	05:55	0.100	12:25	0.596	0.387	0.387	0.03
12/07/2020	04:10	4.26	20:30	6.11	5.42	03:45	0.52	20:30	1.62	1.19	03:45	0.108	20:30	0.557	0.358	0.358	-
12/08/2020	04:35	4.30	09:10	6.39	5.30	03:10	0.52	20:05	1.99	1.41	03:10	0.110	20:30	0.671	0.410	0.410	0.87
12/09/2020	03:55	4.41	20:30	6.15	5.43	04:25	0.93	20:30	1.90	1.56	04:25	0.208	20:30	0.659	0.464	0.464	0.17
12/10/2020	03:40	4.46	18:30	6.13	5.47	04:40	0.84	20:45	1.77	1.45	04:40	0.189	20:45	0.609	0.438	0.438	0.07
12/11/2020	04:05	4.46	18:20	6.20	5.64	04:05	0.67	20:15	1.59	1.29	04:05	0.149	20:15	0.555	0.404	0.404	0.02
12/12/2020	04:35	4.52	11:00	6.63	5.75	04:35	0.59	10:25	1.66	1.28	04:35	0.134	11:00	0.635	0.418	0.418	0.01
12/13/2020	05:30	4.46	11:40	6.62	5.81	06:10	0.61	11:40	1.67	1.28	05:30	0.138	11:40	0.639	0.424	0.424	0.24
12/14/2020	03:55	4.52	13:40	6.70	5.90	03:30	0.62	11:00	1.66	1.27	03:30	0.142	11:05	0.646	0.429	0.429	0.05
12/15/2020	03:50	4.42	20:10	6.97	6.05	03:50	0.62	09:50	1.52	1.22	03:50	0.135	20:05	0.616	0.428	0.428	0.58
12/16/2020	23:55	4.89	20:35	7.28	6.24	04:00	0.71	21:20	2.36	1.29	04:00	0.187	21:05	0.755	0.457	0.457	0.39
12/17/2020	03:20	3.83	09:45	5.91	5.09	04:35	1.16	12:50	2.32	2.00	04:35	0.211	11:20	0.748	0.546	0.546	0.08
12/18/2020	04:05	3.86	13:20	6.02	5.19	04:25	1.03	09:00	2.14	1.76	04:05	0.190	13:20	0.700	0.493	0.493	0.25
12/19/2020	04:10	4.34	18:20	6.19	5.52	05:10	0.82	11:25	1.89	1.51	05:10	0.175	11:30	0.653	0.465	0.465	0.37
12/20/2020	06:05	4.69	11:10	6.42	5.72	04:50	0.87	21:00	1.88	1.52	04:50	0.210	11:10	0.673	0.489	0.489	0.04
12/21/2020	04:30	4.60	21:20	8.94	6.15	04:30	1.06	22:45	1.98	1.62	04:30	0.246	21:55	0.776	0.571	0.571	1.07
12/22/2020	04:15	5.19	12:05	6.74	6.03	04:15	1.29	12:45	2.05	1.76	04:15	0.356	12:45	0.775	0.601	0.601	-
12/23/2020	04:00	4.83	11:50	6.50	5.86	04:00	1.05	15:45	1.95	1.67	04:00	0.261	11:50	0.715	0.551	0.551	-
12/24/2020	05:05	4.73	13:10	8.31	6.05	05:05	0.90	11:20	1.95	1.55	05:05	0.218	11:40	0.809	0.537	0.537	-
12/25/2020	05:35	4.63	12:35	6.37	5.76	05:35	0.75	11:50	1.83	1.49	05:35	0.175	12:35	0.647	0.484	0.484	0.49
12/26/2020	05:35	4.73	11:55	6.45	5.77	05:55	0.81	13:25	1.88	1.46	05:55	0.197	13:25	0.696	0.474	0.474	0.02
12/27/2020	05:40	4.62	13:25	6.44	5.79	05:40	0.76	15:25	1.89	1.46	05:40	0.178	15:25	0.697	0.480	0.480	0.13
12/28/2020	03:35	4.75	12:05	6.44	5.78	03:15	0.79	12:00	1.84	1.45	03:15	0.193	12:05	0.679	0.472	0.472	-
12/29/2020	04:25	4.59	20:10	6.30	5.64	04:25	0.73	11:35	1.76	1.38	04:25	0.169	20:10	0.618	0.434	0.434	0.14
12/30/2020	03:55	4.67	12:55	6.55	5.93	03:55	0.75	12:55	1.84	1.52	03:55	0.178	12:55	0.697	0.513	0.513	0.78
12/31/2020	03:55	5.15	17:20	6.67	6.06	03:55	1.10	11:45	1.95	1.60	03:55	0.298	17:15	0.744	0.552	0.552	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			86.275	30.65
Average	5.58	1.36	0.421	

Auburn.TFM.WA20-22

Flow Monitoring Site Report

ADS ENVIRONMENTAL SERVICES®

Site Name

AUB_Y-1_41016

Site Address /Location:	Green River Rd SE		
Site Access Details:	Park at Pump Station Along Green River	Latitude:	47.330137°
		Longitude:	-122.210973°

Monitor Series	Location Type
TRITON+	Temporary
Pipe Size (H x W)	Pipe Shape
17.63 x 18.00	Circular
Manhole #	System Characteristics
Y-1 (410-16)	Residential
Access	Traffic
Drive	None









ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.22.325

Installation Information

Installation Date:	Installation Type:
Thursday, May 14, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Confirmation Time:	Pipe Size (HxW)
14:04:00 PM	17.63 x 18.00
Depth of Flow (Wet DOF) (in)	
4.63"	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
1.69	0"
Silt (in)	Silt Type
0.00"	

Hydraulic Comments:
Screen structure downstream

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
3	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
26	
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
PVC	Fair

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

Green River Siphon Downstream

AUB_Y-2_61102

Site Commentary

SITE INFORMATION

Pipe	Elliptical (14.25 in H x 14.5 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	3.10	9.02	1.095
Minimum	1.93	6.02	0.362
Maximum	5.82	11.70	2.995
Min Time	10/03/2020 3:00:00 AM	11/10/2020 4:00:00 AM	11/01/2020 4:00:00 AM
Max Time	01/03/2021 12:00:00 AM	01/12/2021 11:00:00 AM	01/03/2021 12:00:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

Percent Uptime	
DFINAL (in)	100
VFINAL (ft/s)	100
QFINAL (MGD - Total MG)	100

Hydrograph Report

AUB_Y-2_61102

Flow Monitor

AUB_Y-2_61102

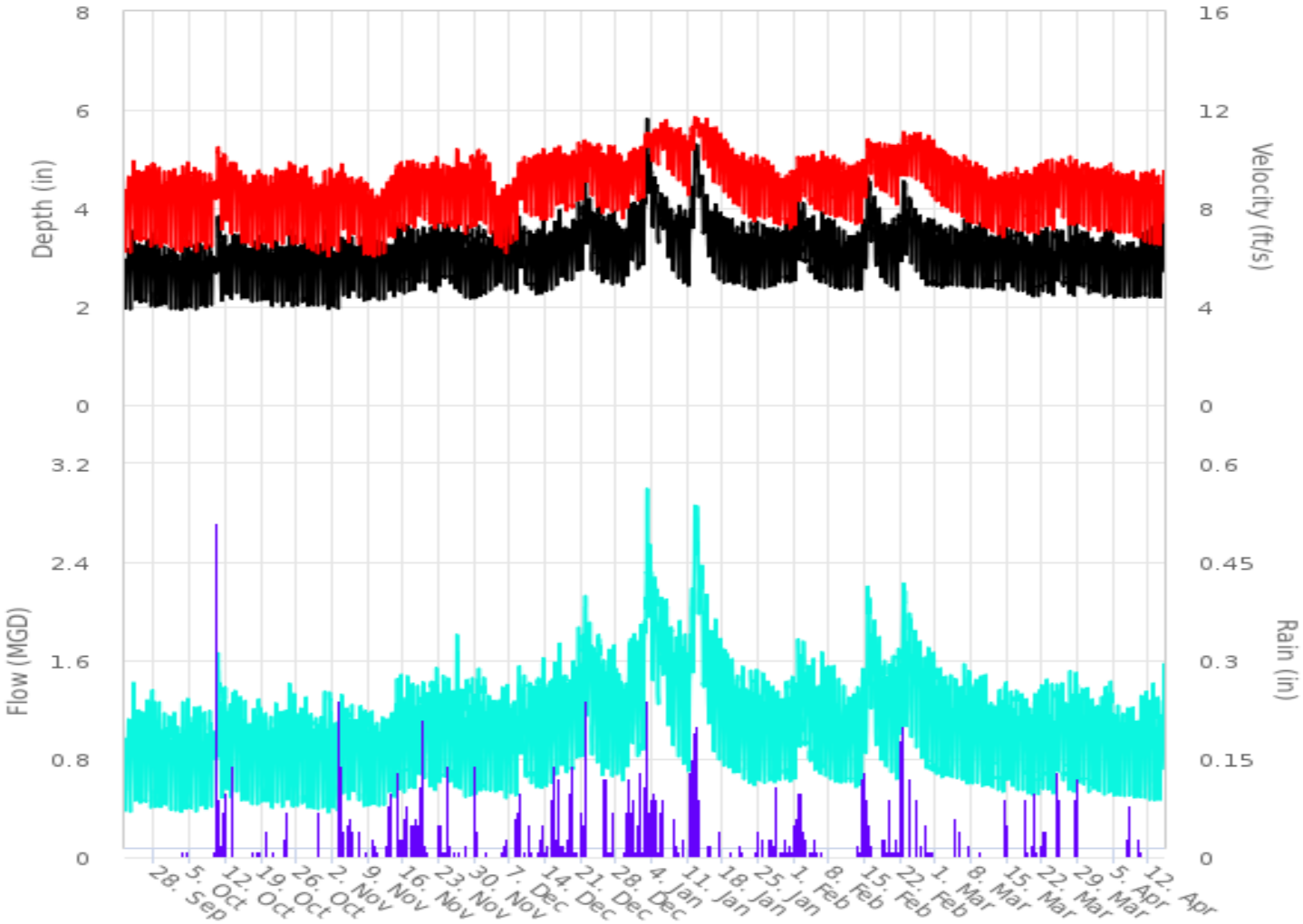
Pipe Height
14.25
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
www.adsenv.com

Scattergraph Report

AUB_Y-2_61102

Flow Monitor

AUB_Y-2_61102

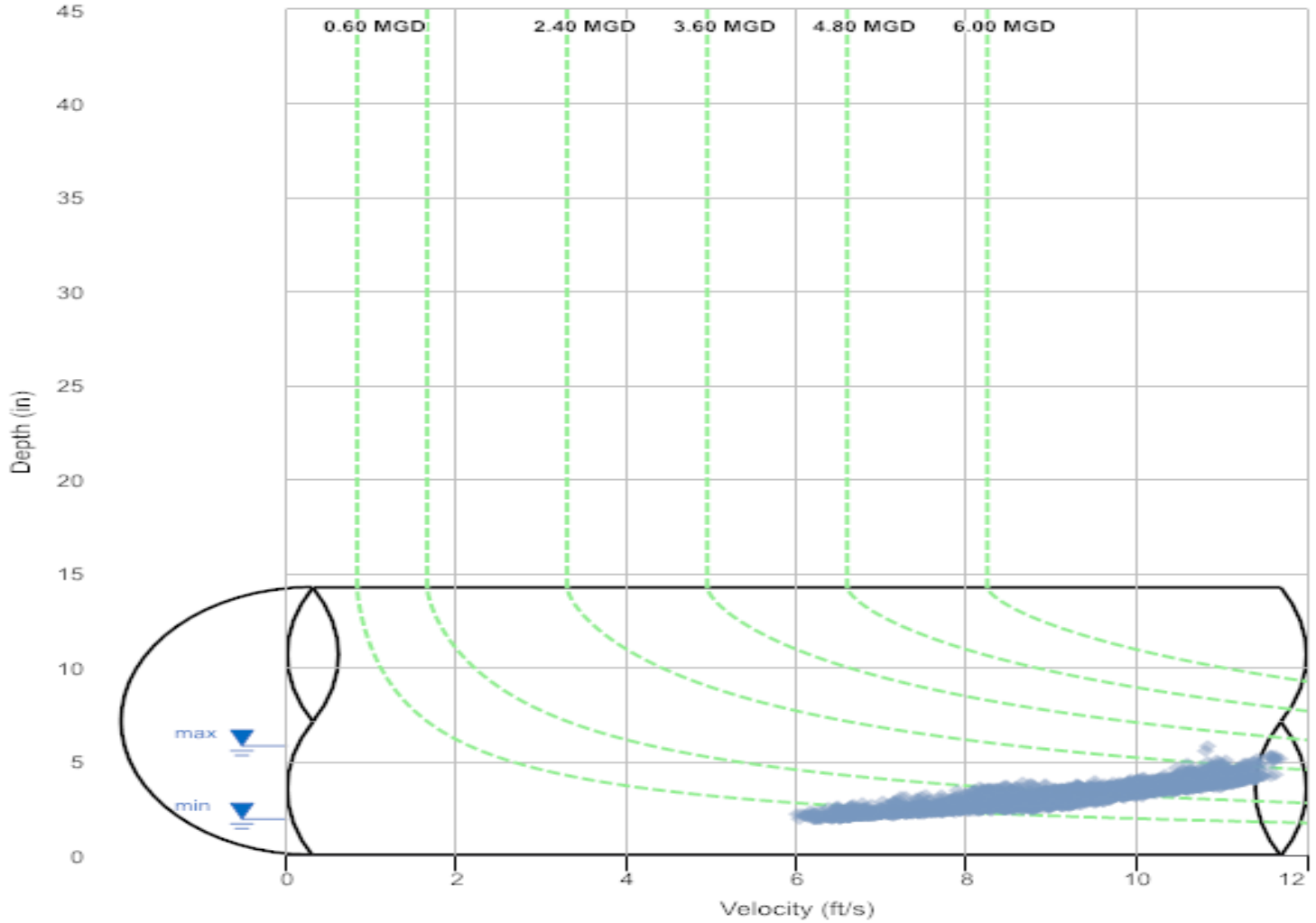
Pipe Height
14.25
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_Y-2_61102Pipe: Elliptical (14.25 in H x 14.5 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	04:30	2.68	18:10	4.76	3.53	04:30	7.91	11:15	11.29	9.61	04:30	0.751	18:10	2.369	1.380	1.380	0.51
01/02/2021	04:05	2.78	23:55	7.63	3.87	04:05	8.11	21:25	11.52	9.97	04:05	0.812	23:55	3.936	1.641	1.641	1.69
01/03/2021	05:15	4.15	00:10	8.06	4.71	00:10	9.89	01:00	11.42	10.83	05:15	1.826	00:10	4.199	2.280	2.280	0.65
01/04/2021	03:50	3.43	17:55	5.11	4.23	03:50	9.69	15:25	11.49	10.75	03:50	1.306	13:35	2.664	1.955	1.955	0.48
01/05/2021	05:05	3.09	13:20	4.59	3.86	05:05	9.30	23:30	11.81	10.74	05:05	1.081	13:20	2.375	1.723	1.723	0.52
01/06/2021	02:05	3.50	19:45	4.61	3.95	02:35	10.10	18:00	11.93	11.10	03:20	1.428	18:00	2.422	1.835	1.835	0.22
01/07/2021	04:20	2.69	20:30	4.53	3.63	04:20	9.31	18:50	11.67	10.68	04:20	0.890	20:30	2.316	1.577	1.577	-
01/08/2021	02:05	2.58	18:15	4.34	3.45	02:05	8.98	14:40	11.64	10.49	02:05	0.810	18:15	2.152	1.444	1.444	0.22
01/09/2021	04:40	2.47	11:55	4.41	3.43	02:25	8.66	11:35	11.70	10.33	04:40	0.756	10:20	2.233	1.421	1.421	-
01/10/2021	04:35	2.42	12:20	4.47	3.32	05:40	8.58	15:35	11.51	10.10	05:40	0.707	12:20	2.248	1.329	1.329	0.07
01/11/2021	03:10	2.30	21:40	4.84	3.51	03:55	8.15	11:15	11.58	10.20	03:10	0.637	20:50	2.474	1.468	1.468	1.06
01/12/2021	02:15	3.51	19:45	6.03	4.71	01:10	10.26	09:05	12.03	11.28	02:15	1.441	19:45	3.461	2.392	2.392	2.10
01/13/2021	23:55	3.99	00:55	5.22	4.54	13:45	10.74	01:20	11.89	11.19	23:55	1.798	00:55	2.781	2.239	2.239	0.09
01/14/2021	03:55	3.15	00:15	4.73	3.92	03:40	9.62	18:45	11.95	10.93	03:55	1.169	00:15	2.395	1.791	1.791	0.01
01/15/2021	03:15	2.91	13:35	4.36	3.60	03:15	9.26	16:10	12.12	10.70	03:15	0.990	13:35	2.277	1.559	1.559	0.09
01/16/2021	04:10	2.48	12:05	4.80	3.48	05:45	8.63	10:00	11.97	10.37	04:10	0.760	12:05	2.578	1.456	1.456	-
01/17/2021	05:50	2.44	11:05	4.47	3.35	04:45	8.58	11:05	11.61	10.11	05:50	0.724	11:05	2.271	1.348	1.348	0.10
01/18/2021	04:40	2.22	12:40	4.42	3.29	04:40	8.10	11:15	11.54	9.89	04:40	0.587	12:40	2.199	1.287	1.287	-
01/19/2021	04:05	2.39	23:00	4.41	3.24	04:45	7.81	20:50	11.11	9.68	04:05	0.640	23:00	2.110	1.227	1.227	0.01
01/20/2021	03:20	2.34	15:55	4.31	3.14	02:55	7.34	17:20	11.49	9.49	03:20	0.604	17:20	2.136	1.148	1.148	-
01/21/2021	02:35	2.36	20:35	4.71	3.14	03:30	7.64	16:50	11.14	9.38	02:30	0.610	20:35	2.308	1.138	1.138	0.11
01/22/2021	03:40	2.28	18:45	4.30	3.07	03:30	7.27	12:15	10.96	9.21	03:40	0.554	18:45	1.956	1.082	1.082	-
01/23/2021	05:15	2.26	14:20	4.22	3.09	06:00	7.16	09:55	10.95	9.09	05:15	0.544	22:25	1.871	1.087	1.087	-
01/24/2021	04:10	2.13	20:20	4.33	3.17	04:10	6.35	10:20	10.94	9.17	04:10	0.432	10:20	2.017	1.144	1.144	0.16
01/25/2021	02:45	2.27	14:15	4.41	3.07	02:05	7.02	15:40	10.82	9.17	02:05	0.528	20:55	1.999	1.080	1.080	0.04
01/26/2021	04:25	2.23	20:55	4.48	3.05	04:25	7.13	20:55	10.83	9.05	04:25	0.520	20:55	2.125	1.054	1.054	-
01/27/2021	04:10	2.30	16:45	4.59	3.05	03:00	6.91	16:45	10.61	8.92	04:10	0.537	16:45	2.152	1.039	1.039	0.14
01/28/2021	04:50	2.34	13:40	4.58	3.15	04:50	6.96	12:20	10.47	8.76	04:50	0.545	13:40	2.092	1.067	1.067	0.24
01/29/2021	03:45	2.34	11:05	4.41	3.16	04:25	6.57	09:05	10.26	8.61	03:45	0.543	11:05	1.905	1.049	1.049	0.03
01/30/2021	05:05	2.43	12:45	4.44	3.18	05:05	6.92	08:40	9.85	8.61	05:05	0.569	12:45	1.892	1.067	1.067	0.07
01/31/2021	04:20	2.26	21:35	4.79	3.21	06:50	6.37	15:05	10.63	8.71	03:15	0.515	15:05	2.259	1.099	1.099	0.12
02/01/2021	03:45	2.46	21:05	5.04	3.34	03:50	7.06	18:20	10.61	8.99	03:50	0.593	21:05	2.388	1.200	1.200	0.82
02/02/2021	03:35	2.90	19:35	4.77	3.61	04:10	8.10	20:50	10.64	9.49	04:50	0.860	20:50	2.269	1.395	1.395	0.31
02/03/2021	05:10	2.76	10:40	4.47	3.46	04:05	8.22	17:15	10.90	9.53	05:10	0.836	17:40	2.059	1.317	1.317	0.06
02/04/2021	02:00	2.64	19:05	4.42	3.28	05:15	7.90	19:05	11.03	9.37	05:15	0.747	19:05	2.121	1.205	1.205	0.07
02/05/2021	01:10	2.48	15:25	4.30	3.19	03:00	7.60	15:25	10.74	9.29	04:00	0.673	15:25	1.987	1.148	1.148	0.01
02/06/2021	05:00	2.18	12:55	4.77	3.25	05:20	7.33	11:05	10.91	9.30	05:00	0.518	12:55	2.256	1.195	1.195	0.01
02/07/2021	05:50	2.32	11:20	4.53	3.19	05:50	7.27	20:35	10.62	9.20	05:50	0.562	11:20	2.081	1.149	1.149	-
02/08/2021	02:30	2.14	21:20	4.51	3.11	04:05	7.19	15:05	11.10	9.22	02:30	0.509	21:20	2.153	1.107	1.107	-
02/09/2021	03:25	2.31	11:25	4.51	3.03	04:05	7.15	22:00	10.94	9.12	03:25	0.551	11:25	2.046	1.054	1.054	-
02/10/2021	04:05	2.27	15:25	4.36	2.99	04:45	7.02	16:40	10.82	9.01	04:45	0.530	15:25	2.033	1.020	1.020	-
02/11/2021	03:30	2.28	15:55	4.42	2.99	03:30	6.97	15:55	10.86	8.93	03:30	0.525	15:55	2.089	1.010	1.010	-
02/12/2021	04:20	2.21	19:35	4.41	2.99	04:20	6.88	17:55	10.81	8.90	04:20	0.496	19:35	1.989	1.010	1.010	-
02/13/2021	05:55	2.21	12:05	4.22	2.99	05:55	6.44	14:55	10.92	8.89	05:55	0.464	12:05	1.899	1.013	1.013	0.08
02/14/2021	03:35	2.19	14:00	4.74	3.14	03:35	6.73	15:55	10.71	8.94	03:35	0.478	14:00	2.234	1.102	1.102	0.71
02/15/2021	04:00	2.69	13:15	5.08	3.80	04:15	8.07	13:15	11.27	9.90	04:00	0.773	13:15	2.626	1.594	1.594	0.78
02/16/2021	05:10	3.20	14:45	4.88	3.85	03:00	9.13	19:45	11.15	10.17	04:05	1.127	14:45	2.392	1.624	1.624	0.07
02/17/2021	04:20	2.79	20:05	4.69	3.46	03:35	8.67	15:20	11.31	9.95	04:20	0.875	20:05	2.331	1.377	1.377	-
02/18/2021	03:35	2.52	14:10	4.50	3.26	04:15	8.14	20:20	11.44	9.87	04:15	0.724	14:10	2.248	1.258	1.258	0.09
02/19/2021	04:10	2.35	19:20	4.42	3.18	03:45	8.21	20:15	11.41	9.84	04:10	0.649	19:20	2.175	1.213	1.213	0.17
02/20/2021	06:05	2.34	13:10	4.53	3.16	06:05	7.96	19:20	11.47	9.75	06:05	0.623	13:10	2.213	1.200	1.200	0.07
02/21/2021	05:10	2.29	19:25	4.48	3.21	04:10	7.80	09:20	11.33	9.72	05:10	0.599	17:15	2.139	1.229	1.229	0.42
02/22/2021	04:25	2.71	14:00	5.07	3.85	03:25	8.85	12:45	11.56	10.40	03:55	0.864	20:35	2.594	1.685	1.685	0.98
02/23/2021	03:15	2.98	13:10	4.70	3.72	03:10	9.20	22:05	11.45	10.30	03:15	1.016	13:10	2.381	1.576	1.576	0.27
02/24/2021	03:30	2.76	19:35	4.63	3.55	03:20	8.97	17:00	11.58	10.38	03:35	0.913	19:35	2.337	1.485	1.485	-
02/25/2021	02:50	2.51	18:00	4.44	3.43	02:00	8.65	15:55	11.69	10.38	02:50	0.758	18:00	2.263	1.416	1.416	0.18
02/26/2021	04:20	2.44	08:55	4.45	3.27	03:45	8.63	19:00	11.70	10.21	03:45	0.724	08:55	2.266	1.304	1.304	0.10
02/27/2021	04:10	2.39	11:20	4.58	3.26	05:30	8.49	11:20	11.73	10.06	04:10	0.693	11:20	2.370	1.290	1.290	0.02
02/28/2021	05:20	2.33	12:05	4.61	3.23	05:00	8.05	12:05	11.61	9.86	05:00	0.628	12:05	2.371	1.253	1.253	0.02
03/01/2021	04:20	2.33	18:50	4.40	3.12	04:20	7.82	21:20	11.49	9.67	04:20	0.609	18:50	2.163	1.165	1.165	-
03/02/2021	03:05	2.29	12:45	4.26	3.07	03:45	7.48	12:45	11.44	9.50	03:05	0.576	12:45	2.093	1.115	1.115	-
03/03/2021	04:05	2.23	15:55	4.26	3.10	04:00	7.38	21:15	11.27	9.41	04:00	0.541	15:55	1.963	1.121	1.121	-
03/04/2021	04:00	2.31	16:50	4.54	3.02	03:15	7.18	19:05	11.08	9.20	02:50	0.556	16:50	2.166	1.055	1.055	0.20
03/05/2021	03:45	2.35	22:05	4.34	3.08	03:25	7.35	22:05	11.15	9.19	03:45	0.577	22:05	2.090	1.085	1.085	0.05
03/06/2021	03:50	2.35	21:05	4.55	3.11	05:05	7.22	08:30	10.93	9.06	05:05	0.567	21:05	2.184	1.089	1.089	-
03/07/2021	05:30	2.22	14:30	4.48	3.15	05:30	6.86	14:30	10.79	8.99	05:30	0.496	14:30	2.115	1.108	1.108	0.04
03/08/2021	04:10	2.33	20:25	4.68	3.08	04:25	7.03	20:25	10.82	8.93	04:25	0.547	20:25	2.251	1.054	1.054	-
03/09/2021	03:45	2.27	21:25	4.49	3.05	02:10	6.65	13:25	10.62	8.83	03:00	0.520	19:20	2.058	1.028	1.028	0.01
03/10/2021	02:55	2.25	19:40	4.42	3.05	04:25	6.84	17:15	10.59	8.66	04:25	0.505	19:40	1.931	1.010	1.010	-
03/11/2021	04:15	2.15	14:15	4.36	3.04	03:20	6.63	18:20	10.27	8.50	04:15	0.478	14:15	1.937	0.987	0.987	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	05:15	2.28	20:30	4.07	3.05	03:50	6.74	08:40	10.25	8.42	05:15	0.514	20:30	1.622	0.975	0.975	-
03/13/2021	05:15	2.21	12:05	4.68	3.11	04:10	6.31	21:05	10.25	8.44	05:15	0.468	12:05	2.114	1.017	1.017	-
03/14/2021	04:10	2.20	20:15	4.82	3.15	04:10	6.39	15:30	10.27	8.49	04:10	0.455	20:15	2.207	1.044	1.044	0.30
03/15/2021	03:00	2.35	16:30	4.45	3.10	03:20	6.77	15:35	10.39	8.55	03:00	0.538	16:30	1.969	1.017	1.017	-
03/16/2021	01:50	2.27	20:15	4.64	3.03	03:10	6.68	17:20	10.75	8.62	03:10	0.502	20:15	2.134	0.998	0.998	-
03/17/2021	03:15	2.22	21:10	4.56	2.99	02:40	6.77	21:25	10.39	8.60	03:15	0.491	21:10	2.036	0.975	0.975	-
03/18/2021	02:15	2.20	18:40	4.46	2.94	03:10	6.70	09:00	10.41	8.62	03:10	0.484	19:20	2.008	0.952	0.952	0.11
03/19/2021	03:25	2.16	10:05	4.43	2.90	03:25	6.47	10:05	10.62	8.63	03:25	0.450	10:05	2.052	0.937	0.937	0.03
03/20/2021	03:05	2.11	19:05	4.52	2.99	03:00	6.76	20:40	10.86	8.78	03:00	0.458	19:05	2.029	1.004	1.004	0.17
03/21/2021	04:20	2.13	19:45	4.62	2.98	03:50	6.65	15:50	10.76	8.83	03:50	0.455	19:45	2.187	1.009	1.009	0.07
03/22/2021	02:30	2.22	20:50	4.44	2.98	03:50	6.76	18:35	11.03	8.94	03:50	0.497	20:50	2.066	1.016	1.016	0.11
03/23/2021	02:25	2.22	19:00	4.47	2.90	02:50	6.77	15:10	11.09	8.87	02:50	0.491	19:00	2.066	0.966	0.966	-
03/24/2021	02:20	2.13	18:55	4.40	2.90	01:35	6.69	18:55	10.71	8.83	02:20	0.461	18:55	2.047	0.961	0.961	0.34
03/25/2021	03:45	2.37	18:10	4.31	3.13	03:45	7.37	13:50	11.08	9.30	03:45	0.586	18:10	2.024	1.124	1.124	0.27
03/26/2021	03:10	2.34	08:30	4.34	2.98	02:50	6.96	08:30	10.75	9.04	02:50	0.548	08:30	2.017	1.014	1.014	-
03/27/2021	04:15	2.13	10:05	4.65	2.98	04:15	6.78	10:05	10.93	9.04	04:15	0.462	10:05	2.257	1.028	1.028	-
03/28/2021	03:55	2.11	18:55	4.59	3.07	02:35	6.70	14:35	10.71	9.00	03:55	0.469	14:35	2.145	1.070	1.070	0.37
03/29/2021	03:05	2.32	19:20	4.36	3.03	03:25	6.90	10:05	10.88	8.88	03:05	0.540	10:05	2.027	1.027	1.027	-
03/30/2021	02:20	2.26	19:40	4.38	2.95	01:25	6.26	21:15	10.89	8.81	01:25	0.476	19:40	2.014	0.982	0.982	-
03/31/2021	02:40	2.17	18:20	4.25	2.92	02:40	6.60	19:50	10.88	8.74	02:40	0.463	19:50	1.944	0.960	0.960	-
04/01/2021	02:55	2.11	17:50	4.20	2.91	02:55	6.71	08:00	10.73	8.74	02:55	0.452	12:05	1.880	0.953	0.953	-
04/02/2021	03:15	2.15	09:20	4.47	2.93	03:15	6.63	06:55	10.77	8.78	03:15	0.459	21:35	2.053	0.967	0.967	-
04/03/2021	04:00	2.13	16:50	4.33	2.95	05:30	6.54	15:05	10.69	8.68	04:25	0.450	16:50	1.930	0.971	0.971	-
04/04/2021	03:50	2.14	13:10	4.36	2.94	05:20	6.63	08:30	10.89	8.66	05:20	0.459	22:40	1.928	0.969	0.969	-
04/05/2021	03:05	2.03	09:25	4.33	2.84	02:40	6.62	18:35	10.75	8.60	03:05	0.423	09:25	1.991	0.906	0.906	-
04/06/2021	02:55	2.12	16:30	4.09	2.81	01:40	6.55	09:00	10.59	8.55	02:55	0.453	09:00	1.778	0.887	0.887	-
04/07/2021	03:10	2.07	19:45	4.27	2.80	03:10	6.46	19:45	10.66	8.55	03:10	0.423	19:45	1.957	0.885	0.885	0.22
04/08/2021	02:50	2.10	10:25	4.34	2.86	03:55	6.63	06:45	10.71	8.57	02:50	0.446	10:25	2.010	0.915	0.915	-
04/09/2021	03:45	2.10	19:45	4.16	2.83	03:10	6.46	18:25	10.48	8.39	03:45	0.436	19:45	1.836	0.881	0.881	0.03
04/10/2021	03:50	2.10	16:45	4.36	2.97	03:50	6.35	13:35	10.30	8.44	03:50	0.424	16:45	1.941	0.956	0.956	0.02
04/11/2021	06:00	1.95	12:40	4.51	2.98	03:20	6.10	12:05	10.62	8.44	06:00	0.400	12:05	2.053	0.966	0.966	-
04/12/2021	00:50	2.00	19:50	4.66	2.94	03:00	6.08	20:15	10.61	8.41	00:50	0.403	19:50	2.126	0.941	0.941	-
04/13/2021	04:30	2.06	18:55	4.50	2.89	03:10	5.96	06:30	10.40	8.31	03:10	0.391	18:55	2.040	0.901	0.901	-
04/14/2021	03:15	2.09	21:00	4.75	2.90	02:35	6.01	18:10	10.37	8.17	03:45	0.400	21:00	2.111	0.893	0.890	-
09/22/2020	02:20	1.87	17:15	4.11	2.70	02:10	5.73	17:15	10.65	8.13	02:20	0.328	17:15	1.850	0.802	0.802	-
09/23/2020	03:20	1.83	18:35	4.48	2.83	03:15	5.65	18:50	11.05	8.42	03:20	0.308	18:50	2.153	0.899	0.899	-
09/24/2020	03:05	2.03	08:40	4.08	2.82	03:05	6.28	16:10	10.84	8.47	03:05	0.399	08:40	1.821	0.884	0.884	-
09/25/2020	03:10	1.99	13:50	4.32	2.83	02:30	5.96	13:50	10.73	8.54	02:30	0.370	13:50	2.001	0.905	0.905	-
09/26/2020	05:30	1.95	13:45	4.23	2.83	05:30	5.80	13:45	10.90	8.56	05:30	0.349	13:45	1.974	0.909	0.909	-
09/27/2020	04:20	1.94	12:10	4.25	2.84	04:20	5.88	19:45	11.11	8.55	04:20	0.349	19:30	1.968	0.918	0.918	-
09/28/2020	03:00	1.93	09:35	4.12	2.74	03:00	5.90	17:50	10.64	8.42	03:00	0.348	09:35	1.846	0.852	0.852	-
09/29/2020	02:30	1.93	08:05	4.06	2.70	03:35	6.05	16:25	10.47	8.31	02:30	0.360	08:05	1.777	0.819	0.819	-
09/30/2020	03:00	1.90	15:10	3.96	2.72	02:20	6.01	13:30	10.81	8.37	02:50	0.350	21:30	1.682	0.834	0.834	-
10/01/2020	03:35	1.86	19:00	4.29	2.67	03:35	5.63	16:45	10.87	8.33	03:35	0.315	19:00	1.989	0.812	0.812	-
10/02/2020	02:50	1.83	11:15	3.86	2.65	02:30	5.42	15:50	10.75	8.35	02:30	0.311	15:50	1.706	0.801	0.801	-
10/03/2020	02:35	1.80	12:45	4.08	2.67	03:45	5.75	10:45	11.22	8.36	02:35	0.310	12:45	1.890	0.821	0.821	0.01
10/04/2020	03:30	1.87	12:30	4.43	2.72	05:25	5.81	13:15	11.01	8.46	03:30	0.330	12:30	2.115	0.854	0.854	0.01
10/05/2020	02:25	1.89	08:35	4.19	2.72	03:05	6.05	19:25	11.09	8.42	02:25	0.349	16:50	1.931	0.843	0.843	-
10/06/2020	02:55	1.87	18:55	4.08	2.69	02:15	5.81	18:55	11.15	8.32	02:55	0.329	18:55	1.918	0.820	0.820	-
10/07/2020	02:55	1.91	17:05	4.18	2.69	02:55	5.89	17:05	10.99	8.27	02:55	0.344	17:05	1.960	0.815	0.815	-
10/08/2020	03:35	1.77	18:40	4.20	2.69	02:50	5.79	11:30	10.69	8.27	03:35	0.317	18:40	1.900	0.814	0.814	-
10/09/2020	02:25	1.87	09:30	3.98	2.67	02:25	6.07	19:10	10.85	8.25	02:25	0.343	21:00	1.749	0.800	0.800	0.64
10/10/2020	01:05	2.55	14:30	4.46	3.18	03:50	7.79	18:05	11.37	9.49	01:05	0.699	14:30	2.183	1.172	1.172	1.04
10/11/2020	05:50	2.02	16:40	4.26	2.93	05:50	6.14	11:25	11.50	9.09	05:50	0.388	16:40	2.027	1.021	1.021	0.53
10/12/2020	02:40	2.18	21:10	4.23	2.85	05:30	6.99	11:20	11.26	8.97	02:40	0.506	21:10	2.017	0.951	0.951	-
10/13/2020	02:45	2.06	18:55	4.34	2.95	02:00	6.25	18:55	11.08	8.89	02:00	0.409	18:55	2.082	0.994	0.994	0.61
10/14/2020	03:05	2.14	19:45	4.19	2.88	03:05	6.67	19:45	10.74	8.48	03:05	0.459	19:45	1.917	0.910	0.910	-
10/15/2020	02:50	1.85	19:20	4.40	2.88	03:35	5.44	09:10	10.51	8.29	02:50	0.329	19:20	1.993	0.895	0.895	-
10/16/2020	03:00	2.09	12:25	4.28	2.85	01:45	5.96	12:25	10.50	8.21	01:45	0.406	12:25	1.930	0.873	0.873	-
10/17/2020	04:00	2.01	16:05	4.17	2.86	04:00	5.98	16:55	10.39	8.28	04:00	0.375	20:50	1.816	0.893	0.893	0.01
10/18/2020	04:10	2.00	14:55	4.39	2.91	04:10	5.87	13:10	10.70	8.37	04:10	0.365	14:55	2.030	0.926	0.926	0.03
10/19/2020	03:15	2.05	15:25	4.44	2.85	05:00	5.96	19:15	10.75	8.35	03:05	0.412	15:25	2.047	0.892	0.892	0.05
10/20/2020	03:10	1.99	20:05	4.15	2.80	03:10	6.20	12:20	10.35	8.29	03:10	0.383	20:05	1.810	0.857	0.857	-
10/21/2020	02:55	1.92	19:00	4.10	2.76	03:00	5.92	19:55	10.73	8.29	03:00	0.349	09:20	1.793	0.846	0.846	0.01
10/22/2020	02:30	1.98	15:15	4.31	2.71	03:40	6.11	20:50	10.70	8.35	03:40	0.376	15:15	1.982	0.829	0.829	-
10/23/2020	02:50	1.90	17:55	4.21	2.71	01:15	5.92	19:45	10.91	8.40	01:15	0.349	17:55	1.897	0.833	0.833	0.20
10/24/2020	03:00	1.98	11:55	4.29	2.77	03:55	6.39	11:55	10.73	8.59	03:00	0.397	11:55	1.985	0.885	0.885	0.02
10/25/2020	05:10	1.84	09:05	4.31	2.78	05:10	5.71	13:50	10.92	8.53	05:10	0.316	09:05	2.023	0.890	0.890	-
10/26/2020	03:00	1.96	18:50	4.21	2.75	02:15	6.22	18:50	10.77	8.44	02:55	0.379	18:50	1.935	0.858	0.858	-
10/27/2020	02:45	1.94	19:45	4.12	2.76	01:40	5.85	19:45	10.82	8.37	02:45	0.353	19:45	1.890	0.855	0.855	-
10/28/2020	02:45	1.87	12:10	4.05	2.78	02:40	5.44	17:50	10.82	8.24	02:45	0.318	17:50	1.757	0.849	0.849	-
10/29/2020	01:45	1.85	18:55	4.35	2.80	02:55	5.75	18:55	10.29	8.03	02:30	0.347	18:55	1.939	0.832	0.832	-
10/30/2020	03:20	1.92	18:50	4.05	2.82	03:20	5.67	18:50	10.23	8.03	03:20	0.333	18:50	1.742	0.846	0.846	0.10
10/31/2020	04:20	1.97	11:45	4.38	2.81	03:40	5.66	12:55	10.50	8.14	03:40	0.353	11:45	1.984	0.860	0.860	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/01/2020	04:55	1.81	12:20	4.64	2.77	04:55	5.52	11:05	10.87	8.28	04:55	0.297	12:20	2.236	0.862	0.862	-
11/02/2020	03:50	1.94	20:55	4.24	2.69	02:30	6.14	20:55	11.10	8.32	03:50	0.368	20:55	2.014	0.817	0.817	-
11/03/2020	04:00	1.82	18:50	4.27	2.81	04:00	5.55	18:50	11.15	8.56	04:00	0.301	18:50	2.044	0.904	0.904	0.83
11/04/2020	04:40	2.13	23:05	4.25	2.83	03:25	6.83	12:10	10.82	8.61	04:40	0.475	09:55	1.935	0.898	0.898	0.09
11/05/2020	04:10	2.09	18:10	4.32	2.87	03:35	6.22	16:15	10.35	8.29	04:10	0.418	18:10	1.895	0.892	0.892	0.34
11/06/2020	03:00	2.12	17:35	4.19	2.86	03:00	6.07	11:15	10.23	8.34	03:00	0.412	17:35	1.800	0.885	0.885	0.10
11/07/2020	04:05	2.12	14:10	4.31	2.86	05:20	6.10	15:10	10.40	8.23	05:25	0.413	15:10	1.887	0.886	0.886	0.07
11/08/2020	05:50	2.04	20:35	4.31	2.91	05:05	5.67	20:35	10.04	8.07	05:05	0.369	20:35	1.865	0.890	0.890	0.01
11/09/2020	03:25	2.00	16:05	4.03	2.92	04:45	5.52	18:35	9.70	7.76	04:45	0.351	16:05	1.624	0.855	0.855	0.04
11/10/2020	04:25	2.08	13:35	3.79	2.92	04:20	5.10	13:35	9.38	7.61	04:25	0.342	13:35	1.454	0.835	0.835	0.03
11/11/2020	04:25	2.05	22:00	4.31	2.87	03:45	5.63	18:30	9.77	7.74	03:45	0.367	18:30	1.798	0.833	0.833	-
11/12/2020	03:25	2.05	18:20	4.12	2.80	03:20	5.69	21:50	10.11	7.93	03:25	0.367	18:20	1.653	0.823	0.823	0.16
11/13/2020	03:15	2.20	14:00	4.19	2.92	03:15	6.49	14:00	10.45	8.46	03:15	0.465	14:00	1.869	0.925	0.925	0.38
11/14/2020	05:05	2.05	18:55	4.41	2.94	05:05	6.25	18:55	10.79	8.58	05:05	0.404	18:55	2.067	0.963	0.963	0.47
11/15/2020	05:40	2.23	15:50	4.49	3.01	05:40	6.93	15:50	10.93	8.85	05:40	0.505	15:50	2.149	1.022	1.022	0.19
11/16/2020	03:25	2.17	20:45	4.46	3.03	04:35	6.67	20:45	10.71	8.85	04:35	0.479	20:45	2.085	1.028	1.028	0.31
11/17/2020	04:05	2.21	17:25	4.33	2.98	03:10	7.03	20:45	10.75	8.85	04:05	0.515	17:25	1.970	1.001	1.001	0.20
11/18/2020	03:05	2.25	20:00	4.29	3.00	02:15	6.42	14:40	10.84	8.88	02:15	0.489	14:40	1.949	1.013	1.013	0.30
11/19/2020	03:10	2.29	15:35	4.40	3.10	03:30	6.92	10:25	10.71	9.04	03:30	0.530	15:35	2.050	1.078	1.078	0.50
11/20/2020	04:25	2.36	20:40	4.48	3.04	04:25	6.99	10:55	10.74	8.88	04:25	0.553	20:40	2.053	1.026	1.026	0.01
11/21/2020	05:00	2.29	11:15	4.31	3.06	03:50	6.83	18:05	10.93	8.94	03:50	0.525	11:15	1.995	1.054	1.054	-
11/22/2020	05:10	2.21	11:50	4.53	3.06	04:15	6.84	14:10	11.07	8.92	06:05	0.500	11:50	2.135	1.058	1.058	0.21
11/23/2020	03:30	2.36	20:15	4.66	3.13	03:00	7.00	19:20	10.90	8.87	03:00	0.565	20:15	2.236	1.071	1.071	0.14
11/24/2020	03:25	2.35	18:45	4.66	3.15	03:25	6.74	18:05	10.91	8.61	03:25	0.528	18:45	2.178	1.050	1.050	0.21
11/25/2020	05:10	2.35	18:45	4.56	3.10	05:10	6.09	20:45	10.73	8.69	05:10	0.478	18:45	2.071	1.034	1.034	0.05
11/26/2020	04:35	2.28	10:45	4.62	3.14	04:15	6.73	14:25	10.83	8.92	03:30	0.512	12:20	2.177	1.103	1.103	0.02
11/27/2020	04:05	2.19	17:50	4.19	2.89	04:05	6.54	11:00	10.94	8.75	04:05	0.464	11:00	1.888	0.947	0.947	-
11/28/2020	05:00	2.09	12:50	4.48	2.93	05:20	6.32	23:00	10.97	8.73	05:00	0.430	12:50	2.048	0.974	0.974	0.05
11/29/2020	05:55	2.09	16:20	4.33	2.96	05:55	6.75	16:20	11.30	9.06	05:55	0.447	16:20	2.115	1.027	1.027	-
11/30/2020	03:20	2.12	20:00	4.30	3.02	03:05	6.61	20:30	11.75	9.26	03:05	0.449	20:00	2.088	1.073	1.073	0.36
12/01/2020	03:50	2.16	20:15	4.25	2.92	05:00	7.10	18:50	11.58	9.18	03:50	0.499	20:15	2.037	1.012	1.012	-
12/02/2020	03:05	2.10	17:45	4.31	2.93	04:20	6.87	11:30	11.12	8.86	03:05	0.461	17:45	2.022	0.979	0.979	0.01
12/03/2020	04:50	2.26	17:55	4.26	3.04	04:50	6.57	14:40	10.54	8.29	04:50	0.488	17:55	1.852	0.960	0.960	-
12/04/2020	03:55	2.33	19:25	4.37	3.20	03:25	5.96	10:20	9.63	7.78	03:25	0.483	08:25	1.818	0.972	0.972	-
12/05/2020	04:50	2.35	13:35	4.65	3.26	04:50	5.85	12:50	9.57	7.77	04:50	0.461	13:35	1.954	1.003	1.003	0.03
12/06/2020	04:30	2.17	13:20	4.53	3.16	06:00	5.66	13:20	9.97	7.88	04:30	0.401	13:20	1.988	0.978	0.978	0.03
12/07/2020	04:15	2.19	20:30	4.35	3.02	04:15	6.05	20:30	10.52	8.16	04:15	0.428	20:30	1.982	0.937	0.937	-
12/08/2020	03:40	2.18	18:10	4.54	3.07	03:40	6.28	21:50	10.74	8.57	03:40	0.443	18:10	2.117	1.020	1.020	0.87
12/09/2020	02:55	2.73	21:15	4.47	3.22	02:55	8.03	09:55	10.95	9.40	02:55	0.784	21:15	2.111	1.170	1.170	0.17
12/10/2020	04:05	2.35	14:25	4.29	3.01	05:35	7.06	20:45	11.53	9.15	05:35	0.577	14:25	2.052	1.042	1.042	0.07
12/11/2020	04:10	2.26	17:35	4.19	2.99	04:10	7.22	19:50	11.37	9.22	04:10	0.535	17:35	1.993	1.043	1.043	0.02
12/12/2020	03:55	2.15	18:30	4.21	2.98	03:35	6.94	18:30	11.24	9.22	03:55	0.490	18:30	2.025	1.050	1.050	0.01
12/13/2020	04:25	2.18	13:30	4.48	3.05	06:15	6.56	13:30	11.56	9.27	06:15	0.474	13:30	2.267	1.095	1.095	0.24
12/14/2020	04:45	2.19	19:45	4.27	3.01	04:40	6.51	14:50	11.45	9.33	04:40	0.478	19:45	2.028	1.071	1.071	0.05
12/15/2020	04:40	2.06	21:20	4.44	3.10	03:50	7.08	21:20	11.54	9.44	04:40	0.461	21:20	2.235	1.139	1.139	0.58
12/16/2020	04:15	2.32	19:35	4.46	3.22	04:15	7.75	12:10	11.36	9.60	04:15	0.597	17:00	2.197	1.211	1.211	0.39
12/17/2020	04:50	2.52	22:05	4.48	3.26	04:50	7.80	14:20	11.05	9.53	04:50	0.678	22:05	2.134	1.216	1.216	0.08
12/18/2020	03:35	2.42	11:55	4.40	3.18	03:35	7.56	15:20	11.45	9.36	03:35	0.618	15:20	2.151	1.155	1.155	0.25
12/19/2020	03:50	2.39	19:35	4.57	3.29	04:55	7.30	10:10	11.28	9.47	04:55	0.596	19:35	2.227	1.236	1.236	0.37
12/20/2020	03:55	2.63	13:45	4.81	3.43	04:50	8.00	13:45	11.45	9.68	06:50	0.770	13:45	2.478	1.333	1.333	0.04
12/21/2020	03:15	2.71	21:45	5.11	3.72	03:40	8.12	14:30	11.62	9.95	03:25	0.800	21:45	2.592	1.546	1.546	1.07
12/22/2020	04:05	3.12	17:35	4.76	3.77	03:30	8.89	20:10	11.24	10.03	04:05	1.057	17:35	2.279	1.557	1.557	-
12/23/2020	04:40	2.65	11:50	4.63	3.45	03:20	8.29	15:45	11.52	9.82	04:40	0.793	15:45	2.301	1.356	1.356	-
12/24/2020	04:25	2.54	13:10	4.70	3.40	04:20	7.54	09:35	11.36	9.59	04:20	0.670	13:10	2.374	1.309	1.309	-
12/25/2020	05:40	2.36	22:15	4.52	3.25	05:40	7.36	21:40	11.08	9.30	05:40	0.583	22:15	2.197	1.191	1.191	0.49
12/26/2020	04:20	2.47	20:05	4.51	3.24	04:20	7.63	12:25	11.15	9.40	04:20	0.645	20:05	2.154	1.199	1.199	0.02
12/27/2020	04:45	2.32	11:50	4.64	3.24	05:20	7.15	11:50	11.26	9.38	05:20	0.564	11:50	2.318	1.198	1.198	0.13
12/28/2020	03:35	2.42	19:05	4.37	3.16	03:00	7.61	18:25	11.39	9.33	03:35	0.630	21:20	2.041	1.144	1.144	-
12/29/2020	04:35	2.33	21:45	4.37	3.06	05:15	7.20	12:00	10.80	9.00	05:15	0.565	21:45	2.006	1.053	1.053	0.14
12/30/2020	01:20	2.51	23:25	4.70	3.48	02:00	7.03	11:25	10.88	9.45	02:00	0.641	23:25	2.271	1.335	1.335	0.78
12/31/2020	05:10	2.86	13:25	4.67	3.61	05:10	8.37	10:55	11.12	9.68	05:10	0.874	13:25	2.227	1.424	1.424	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			224.444	30.65
Average	3.10	9.02	1.095	

Auburn.TFM.WA20-22

Flow Monitoring Site Report

ADS ENVIRONMENTAL SERVICES®

Site Name

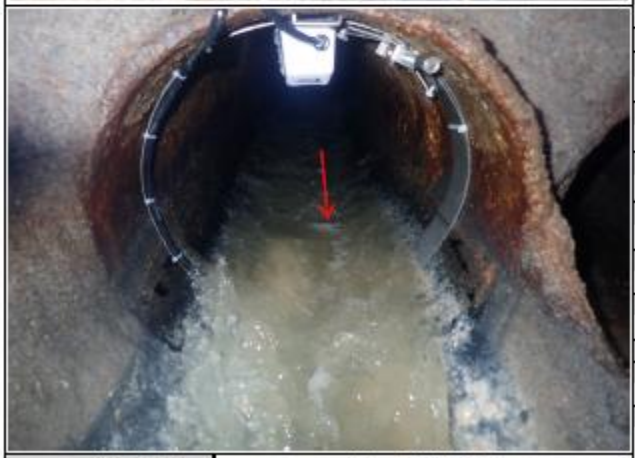
AUB_Y-2_61102

Site Address /Location:	1608 8th St NE, Auburn WA			Monitor Series: TRITON+	Location Type: Temporary
Site Access Details:	Site within West bound lane control required	Traffic	Latitude: 47.315348° Longitude: -122.206307°	Pipe Size (H x W): 14.25 x 14.50	Pipe Shape: Circular
				Manhole #: AUB Y-2(611-02)	System Characteristics: Residential
				Access: Drive	Traffic: Heavy









ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.22.325

Installation Information

Installation Date:	Installation Type:
Thursday, May 14, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Confirmation Time:	Pipe Size (HxW)
7:49:00 PM	14.25 x 14.50
Depth of Flow (Wet DOF) (in)	
2.63"	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.38"
Peak Velocity (fps)	Velocity Sensor Offset (in)
11.15	0"
Silt (in)	Silt Type
0.00"	

Hydraulic Comments:

Fast Flow, 0.25 Ripples

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
6	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
26	
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
Vitrified Clay Pipe	Fair

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

Siphon Upstream

AUB_Y-3_101255

Site Commentary

SITE INFORMATION

Pipe	Elliptical (23 in H x 23.5 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	2.79	5.27	0.722
Minimum	1.82	3.21	0.231
Maximum	5.34	7.28	2.420
Min Time	11/01/2020 4:00:00 AM	10/03/2020 3:00:00 AM	10/03/2020 3:00:00 AM
Max Time	01/03/2021 1:00:00 AM	01/12/2021 10:00:00 AM	01/03/2021 1:00:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

Percent Uptime	
DFINAL (in)	100
VFINAL (ft/s)	100
QFINAL (MGD - Total MG)	100

Hydrograph Report

AUB_Y-3_101255

Flow Monitor

AUB_Y-3_101255

Pipe Height
23.00
in

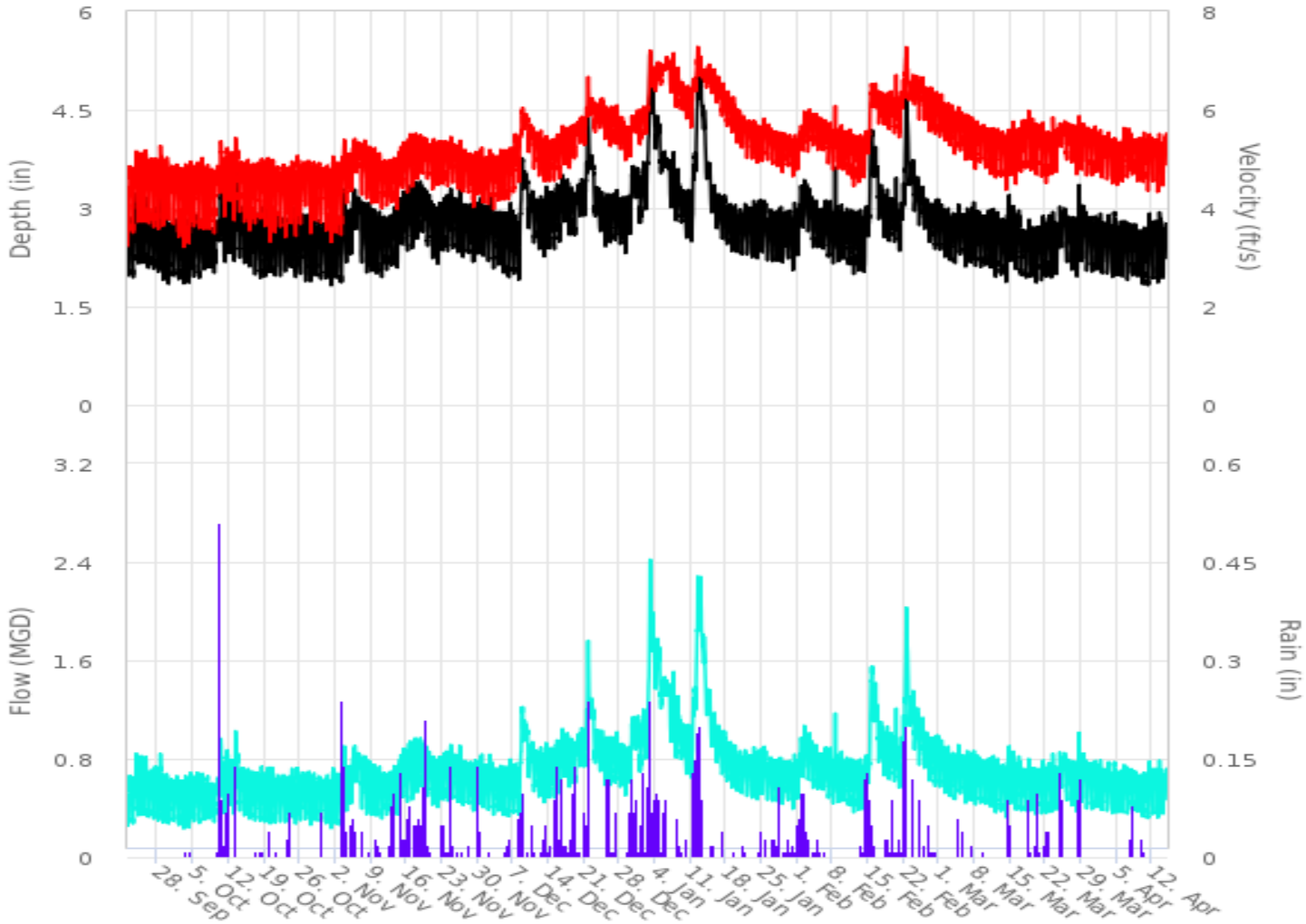
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



4455 S. 134th Place
Tukwila, WA 98168

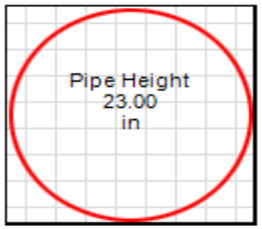
206-762-5070
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Scattergraph Report

AUB_Y-3_101255

Flow Monitor

AUB_Y-3_101255

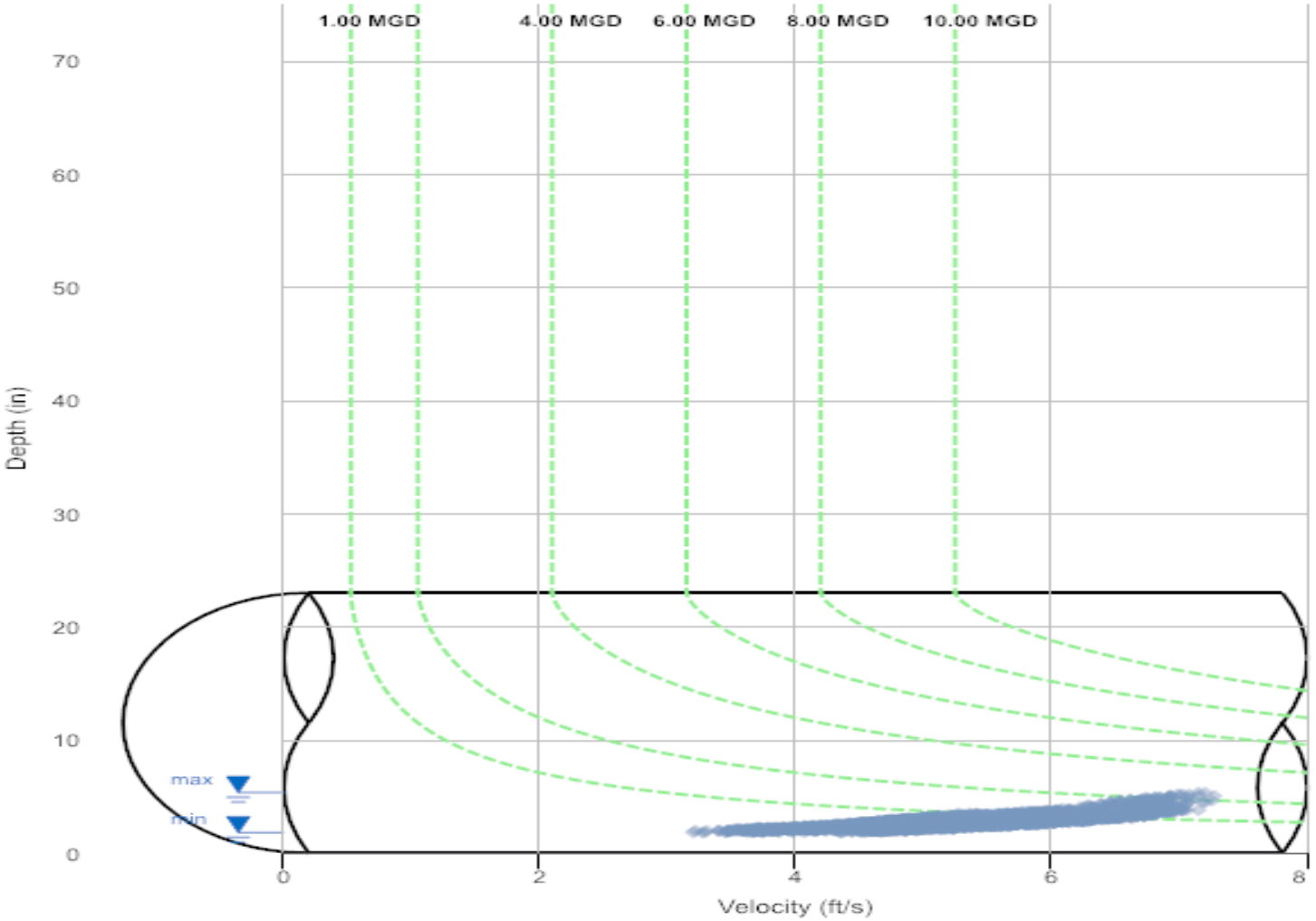


Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_Y-3_101255Pipe: Elliptical (23 in H x 23.5 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	01:25	2.62	15:20	3.98	3.28	01:20	4.94	17:55	6.50	5.79	01:25	0.599	17:55	1.421	0.974	0.974	0.51
01/02/2021	05:50	2.76	23:40	5.07	3.67	01:45	5.21	23:30	7.14	6.01	05:50	0.678	23:40	2.217	1.203	1.203	1.69
01/03/2021	22:05	4.01	00:45	5.50	4.63	07:35	6.12	01:05	7.37	6.70	22:05	1.393	00:55	2.530	1.843	1.843	0.65
01/04/2021	04:00	3.57	10:55	4.67	4.17	04:00	6.10	18:45	7.18	6.74	04:00	1.150	10:55	1.965	1.590	1.590	0.48
01/05/2021	04:10	3.21	00:10	4.14	3.75	05:30	6.07	19:10	7.21	6.77	04:10	0.990	00:10	1.628	1.371	1.371	0.52
01/06/2021	23:15	3.17	05:55	4.05	3.66	23:15	6.33	21:05	7.33	6.93	23:15	1.003	05:55	1.653	1.358	1.358	0.22
01/07/2021	04:20	2.68	16:45	4.05	3.30	04:20	5.78	16:45	7.30	6.62	04:20	0.718	16:45	1.648	1.118	1.118	-
01/08/2021	02:35	2.50	13:20	3.69	3.16	04:40	5.37	10:15	7.03	6.44	02:35	0.626	13:20	1.383	1.023	1.023	0.22
01/09/2021	04:45	2.39	18:10	3.51	3.05	01:50	5.51	12:35	6.92	6.29	04:45	0.581	18:10	1.267	0.949	0.949	-
01/10/2021	05:15	2.26	14:15	3.49	2.94	06:40	5.33	10:25	6.83	6.14	05:15	0.516	14:15	1.217	0.882	0.882	0.07
01/11/2021	03:05	2.24	21:25	4.16	3.19	04:20	5.04	11:40	6.89	6.25	03:05	0.490	21:25	1.593	1.022	1.022	1.06
01/12/2021	01:05	3.18	19:35	5.21	4.61	00:10	6.07	10:15	7.44	6.87	01:05	0.968	10:15	2.390	1.884	1.884	2.10
01/13/2021	22:10	3.68	00:30	5.32	4.47	21:30	6.37	00:30	7.27	6.72	22:10	1.264	00:30	2.429	1.756	1.756	0.09
01/14/2021	23:40	3.03	00:40	4.06	3.59	01:35	6.14	12:55	7.19	6.70	23:40	0.939	12:55	1.553	1.271	1.271	0.01
01/15/2021	04:25	2.70	11:30	3.61	3.16	04:25	5.88	11:30	7.19	6.62	04:25	0.737	11:30	1.378	1.050	1.050	0.09
01/16/2021	06:35	2.46	16:05	3.40	2.98	05:50	5.63	10:30	7.00	6.39	05:50	0.625	16:05	1.192	0.930	0.930	-
01/17/2021	05:25	2.30	14:05	3.39	2.92	05:25	5.45	11:00	6.77	6.21	05:25	0.540	14:05	1.180	0.879	0.879	0.10
01/18/2021	05:00	2.29	13:30	3.30	2.81	01:45	5.32	08:40	6.71	6.06	05:00	0.529	13:30	1.113	0.810	0.810	-
01/19/2021	03:45	2.18	20:05	3.20	2.76	02:45	5.05	10:55	6.55	5.91	03:45	0.481	20:00	1.018	0.770	0.770	0.01
01/20/2021	04:30	2.20	18:40	3.10	2.69	04:30	4.98	10:30	6.36	5.77	04:30	0.464	18:40	0.942	0.726	0.726	-
01/21/2021	03:45	2.13	19:50	3.23	2.73	02:15	4.77	11:40	6.20	5.63	02:50	0.428	19:50	0.980	0.724	0.724	0.11
01/22/2021	03:50	2.12	17:25	3.25	2.74	03:50	4.55	08:30	6.07	5.50	03:50	0.401	17:25	0.984	0.710	0.710	-
01/23/2021	04:45	2.05	12:00	3.31	2.71	03:20	4.59	12:00	6.29	5.45	03:20	0.396	12:00	1.064	0.696	0.696	-
01/24/2021	05:55	2.07	19:20	3.30	2.76	04:15	4.58	09:25	6.10	5.41	04:15	0.403	19:20	1.014	0.709	0.709	0.16
01/25/2021	04:20	2.17	13:55	3.18	2.75	02:45	4.62	18:55	6.03	5.45	04:20	0.429	18:55	0.958	0.710	0.710	0.04
01/26/2021	03:20	2.10	18:45	3.12	2.66	03:10	4.63	11:25	6.02	5.42	03:20	0.402	18:45	0.901	0.671	0.671	-
01/27/2021	04:25	1.91	17:55	3.13	2.63	03:20	4.43	07:40	6.01	5.32	04:25	0.336	21:30	0.922	0.648	0.648	0.14
01/28/2021	04:20	2.00	20:00	3.18	2.69	02:35	4.47	08:10	5.92	5.28	04:20	0.374	20:00	0.935	0.665	0.665	0.24
01/29/2021	04:45	2.00	19:40	3.11	2.68	04:45	4.09	10:50	5.90	5.24	04:45	0.329	10:50	0.898	0.656	0.656	0.03
01/30/2021	04:40	2.01	13:55	3.17	2.67	05:10	4.26	09:45	5.85	5.22	05:10	0.348	15:50	0.917	0.649	0.649	0.07
01/31/2021	06:30	1.93	12:55	3.21	2.67	04:00	4.33	11:10	5.88	5.19	06:30	0.339	15:40	0.930	0.652	0.652	0.12
02/01/2021	01:25	2.08	20:45	3.47	2.84	01:25	4.26	22:30	5.85	5.33	01:25	0.365	20:45	1.048	0.729	0.729	0.82
02/02/2021	04:40	2.51	11:30	4.28	3.14	04:35	4.78	11:30	6.50	5.57	04:40	0.540	11:30	1.591	0.880	0.880	0.31
02/03/2021	03:55	2.36	17:40	3.43	2.97	03:10	4.69	19:30	6.41	5.64	03:10	0.487	19:30	1.115	0.821	0.821	0.06
02/04/2021	04:20	2.12	18:35	3.45	2.82	04:20	4.74	17:45	6.50	5.67	04:20	0.418	17:45	1.132	0.767	0.767	0.07
02/05/2021	03:35	2.15	17:20	3.41	2.76	03:35	4.78	07:55	6.26	5.57	03:35	0.430	17:20	1.095	0.729	0.729	0.01
02/06/2021	05:45	2.05	19:25	3.38	2.77	03:20	4.72	08:25	6.33	5.49	05:45	0.396	19:25	1.089	0.724	0.724	0.01
02/07/2021	05:10	1.97	13:45	3.39	2.73	02:30	4.42	13:45	6.13	5.38	03:25	0.358	13:45	1.071	0.695	0.695	-
02/08/2021	03:55	1.92	13:05	3.71	2.72	03:00	4.31	13:20	6.33	5.36	03:00	0.335	13:20	1.261	0.694	0.694	-
02/09/2021	04:20	1.90	19:10	3.25	2.67	01:50	4.32	19:05	6.16	5.32	04:20	0.332	19:05	0.996	0.666	0.666	-
02/10/2021	03:55	1.88	18:45	3.22	2.65	03:45	4.29	10:45	6.11	5.27	03:55	0.323	18:45	0.952	0.652	0.652	-
02/11/2021	03:20	1.84	18:15	3.28	2.63	03:20	4.07	12:50	6.18	5.23	03:20	0.291	21:40	1.006	0.642	0.642	-
02/12/2021	04:25	1.77	20:45	3.24	2.56	04:25	4.02	13:05	6.04	5.13	04:25	0.271	17:00	0.973	0.609	0.609	-
02/13/2021	04:55	1.75	12:15	3.25	2.56	04:55	4.01	11:15	5.98	5.12	04:55	0.266	12:15	0.970	0.606	0.606	0.08
02/14/2021	05:50	1.74	15:30	3.32	2.62	03:50	4.11	09:50	6.15	5.20	05:50	0.277	16:10	1.012	0.639	0.639	0.71
02/15/2021	01:20	2.30	20:25	4.39	3.50	01:20	4.61	17:00	6.75	5.99	01:20	0.456	16:00	1.698	1.133	1.133	0.78
02/16/2021	23:55	2.94	13:40	4.15	3.60	02:55	5.57	12:05	6.74	6.27	23:50	0.816	12:05	1.562	1.201	1.201	0.07
02/17/2021	02:15	2.59	13:00	3.69	3.11	04:25	5.33	11:25	6.75	6.13	04:25	0.633	13:00	1.329	0.954	0.954	-
02/18/2021	04:35	2.31	19:40	3.56	2.95	05:25	5.26	16:45	6.67	6.06	04:35	0.528	19:40	1.230	0.873	0.873	0.09
02/19/2021	03:50	2.26	19:25	3.39	2.86	05:15	5.18	08:35	6.70	6.00	03:50	0.504	12:10	1.141	0.829	0.829	0.17
02/20/2021	03:35	2.20	13:30	3.57	2.80	04:20	4.96	13:15	6.96	5.97	04:20	0.464	13:20	1.301	0.800	0.800	0.07
02/21/2021	03:55	2.10	23:20	3.72	2.80	03:55	4.92	23:20	6.90	6.02	03:55	0.428	23:20	1.378	0.808	0.808	0.42
02/22/2021	01:45	2.80	13:10	4.73	3.92	01:45	5.91	13:05	7.35	6.79	01:45	0.780	13:10	2.068	1.484	1.484	0.98
02/23/2021	06:15	2.99	21:25	3.95	3.50	06:15	5.73	21:15	6.96	6.39	06:15	0.835	21:25	1.512	1.175	1.175	0.27
02/24/2021	04:45	2.63	18:30	3.66	3.26	07:20	5.62	17:25	6.89	6.39	04:45	0.697	18:30	1.326	1.061	1.061	-
02/25/2021	03:00	2.47	09:40	3.50	3.12	02:45	4.98	18:05	6.93	6.38	02:15	0.579	09:40	1.261	0.995	0.995	0.18
02/26/2021	05:25	2.40	13:25	3.37	2.96	03:55	5.03	21:05	6.89	6.22	05:25	0.532	22:05	1.166	0.899	0.899	0.10
02/27/2021	06:10	2.26	11:35	3.38	2.83	03:40	4.95	09:10	6.83	6.10	03:40	0.488	11:35	1.187	0.830	0.830	0.02
02/28/2021	05:30	2.12	14:10	3.42	2.80	05:30	4.95	15:40	6.73	6.00	05:30	0.436	14:05	1.158	0.806	0.806	0.02
03/01/2021	04:20	2.05	19:25	3.34	2.74	04:20	4.92	07:40	6.62	5.92	04:20	0.413	19:25	1.102	0.768	0.768	-
03/02/2021	03:30	1.99	19:00	3.32	2.66	03:30	4.85	10:10	6.61	5.83	03:30	0.390	18:55	1.080	0.724	0.724	-
03/03/2021	03:40	1.91	18:05	3.27	2.62	05:15	4.56	07:45	6.56	5.74	05:15	0.354	18:00	1.066	0.698	0.698	-
03/04/2021	02:30	1.91	19:20	3.28	2.60	02:30	4.41	08:00	6.42	5.66	02:30	0.332	19:20	1.034	0.683	0.683	0.20
03/05/2021	04:30	1.92	19:50	3.21	2.65	03:35	4.59	11:55	6.38	5.64	04:30	0.351	19:50	0.997	0.698	0.698	0.05
03/06/2021	05:40	1.87	20:30	3.25	2.61	05:40	4.45	11:20	6.34	5.54	05:40	0.325	20:30	1.038	0.670	0.670	-
03/07/2021	03:25	1.85	13:50	3.29	2.66	05:15	4.36	11:40	6.22	5.45	03:25	0.316	12:20	1.014	0.680	0.680	0.04
03/08/2021	04:45	1.89	13:00	3.29	2.63	04:25	4.30	13:40	6.20	5.39	04:45	0.327	13:00	1.017	0.663	0.663	-
03/09/2021	05:10	1.83	20:40	3.23	2.56	03:30	4.11	11:10	6.17	5.39	03:35	0.301	20:40	0.971	0.637	0.637	0.01
03/10/2021	04:05	1.78	20:30	3.27	2.59	04:05	4.19	08:45	6.18	5.33	04:05	0.285	20:25	0.983	0.640	0.640	-
03/11/2021	03:10	1.78	20:15	3.25	2.61	03:10	3.89	11:50	6.13	5.31	03:10	0.264	20:15	0.974	0.645	0.645	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	03:35	1.75	14:05	3.17	2.53	02:30	4.13	10:00	6.19	5.24	04:20	0.280	14:05	0.944	0.611	0.611	-
03/13/2021	06:15	1.69	15:20	3.16	2.49	05:00	3.99	11:15	6.10	5.17	05:00	0.263	15:20	0.930	0.588	0.588	-
03/14/2021	04:50	1.62	19:15	3.46	2.59	04:50	3.76	12:00	5.96	5.18	04:50	0.222	19:15	1.058	0.629	0.629	0.30
03/15/2021	03:35	1.78	18:55	3.26	2.65	03:20	4.05	15:45	6.05	5.22	03:35	0.275	15:45	0.991	0.649	0.649	-
03/16/2021	04:20	1.76	17:15	3.64	2.56	04:20	3.87	17:15	6.26	5.21	04:20	0.259	17:15	1.210	0.618	0.618	-
03/17/2021	02:45	1.73	20:20	3.02	2.42	04:40	4.10	20:20	6.39	5.44	02:45	0.276	20:20	0.946	0.592	0.592	-
03/18/2021	03:15	1.68	18:05	3.15	2.39	03:15	4.25	18:00	6.36	5.46	03:15	0.267	18:05	0.995	0.585	0.585	0.11
03/19/2021	02:00	1.72	13:55	3.02	2.43	02:00	4.24	17:45	6.37	5.43	02:00	0.273	17:45	0.902	0.593	0.593	0.03
03/20/2021	04:25	1.63	16:05	3.01	2.42	04:20	3.96	12:25	6.16	5.34	04:25	0.244	16:00	0.891	0.582	0.582	0.17
03/21/2021	04:45	1.64	13:20	3.22	2.47	04:45	4.11	08:15	6.27	5.27	04:45	0.249	13:15	0.990	0.594	0.594	0.07
03/22/2021	02:40	1.73	16:55	3.14	2.52	02:40	4.08	13:50	6.04	5.22	02:40	0.267	16:50	0.916	0.604	0.604	0.11
03/23/2021	03:45	1.70	10:35	3.34	2.52	01:25	4.14	10:35	6.29	5.33	03:40	0.265	10:35	1.074	0.617	0.617	-
03/24/2021	03:25	1.72	19:15	3.41	2.50	03:25	4.14	15:00	6.13	5.34	03:25	0.268	19:15	1.077	0.612	0.612	0.34
03/25/2021	01:05	2.12	19:50	3.28	2.75	02:35	4.73	18:55	6.18	5.53	01:05	0.419	19:50	1.008	0.719	0.719	0.27
03/26/2021	02:40	1.89	14:55	3.19	2.62	02:40	4.29	11:45	6.21	5.46	02:40	0.320	10:25	0.978	0.665	0.665	-
03/27/2021	04:50	1.82	10:55	3.17	2.53	03:05	4.42	08:25	6.24	5.39	04:50	0.315	17:50	0.962	0.627	0.627	-
03/28/2021	04:50	1.72	15:30	3.51	2.67	03:40	4.31	13:55	6.20	5.38	03:40	0.284	14:00	1.119	0.682	0.682	0.37
03/29/2021	02:45	1.84	12:55	3.30	2.67	02:40	4.31	06:35	6.15	5.36	02:45	0.311	12:50	0.999	0.674	0.674	-
03/30/2021	02:15	1.79	16:30	3.15	2.58	02:10	4.09	13:20	6.13	5.31	02:15	0.281	16:30	0.962	0.636	0.636	-
03/31/2021	02:00	1.76	19:50	3.26	2.55	01:50	4.24	12:45	6.08	5.30	02:00	0.285	19:50	1.001	0.621	0.621	-
04/01/2021	03:10	1.74	20:40	3.23	2.52	02:20	4.00	15:35	6.10	5.27	02:20	0.267	20:40	0.969	0.609	0.609	-
04/02/2021	02:35	1.72	14:15	3.04	2.48	02:35	3.98	08:20	6.00	5.17	02:35	0.258	14:05	0.877	0.582	0.582	-
04/03/2021	03:05	1.68	12:40	3.22	2.50	04:55	3.87	10:45	5.90	5.09	05:00	0.243	10:50	0.950	0.584	0.584	-
04/04/2021	03:20	1.74	13:20	3.35	2.56	03:10	3.99	09:50	5.93	5.06	04:15	0.263	13:20	0.992	0.601	0.601	-
04/05/2021	02:30	1.69	19:25	3.15	2.48	02:30	3.87	19:20	6.02	5.09	02:30	0.245	19:25	0.939	0.574	0.574	-
04/06/2021	02:50	1.70	10:20	2.98	2.44	02:50	4.06	13:05	6.13	5.20	02:50	0.258	20:10	0.871	0.575	0.575	-
04/07/2021	02:10	1.62	20:30	3.08	2.40	03:55	4.12	07:55	6.15	5.21	02:10	0.247	19:25	0.918	0.564	0.564	0.22
04/08/2021	03:30	1.75	12:10	3.17	2.48	02:25	4.22	21:05	5.96	5.11	03:30	0.283	12:10	0.932	0.576	0.576	-
04/09/2021	04:10	1.67	15:25	3.04	2.40	02:15	3.96	19:00	6.00	5.13	04:10	0.247	19:00	0.874	0.553	0.553	0.03
04/10/2021	05:35	1.63	19:50	3.09	2.41	02:30	3.93	19:50	6.14	5.12	05:35	0.238	19:50	0.939	0.556	0.556	0.02
04/11/2021	04:30	1.57	12:45	3.22	2.46	04:30	3.50	08:00	6.09	5.08	04:30	0.198	12:45	0.952	0.571	0.571	-
04/12/2021	03:30	1.60	13:30	3.15	2.46	03:25	3.73	06:50	5.87	5.06	03:25	0.220	13:30	0.907	0.567	0.567	-
04/13/2021	02:40	1.64	10:10	3.21	2.48	00:35	3.85	10:10	5.82	4.98	02:40	0.235	10:10	0.937	0.568	0.568	-
04/14/2021	02:20	1.61	19:20	3.03	2.42	02:20	3.85	14:35	6.11	5.13	02:20	0.225	19:20	0.877	0.560	0.558	-
09/22/2020	03:30	1.92	10:50	3.23	2.45	02:50	2.80	10:50	5.41	4.34	02:50	0.217	10:50	0.882	0.486	0.486	-
09/23/2020	01:55	1.90	20:00	3.53	2.63	00:55	3.08	20:00	5.80	4.53	01:05	0.235	20:00	1.074	0.565	0.565	-
09/24/2020	03:50	1.96	15:45	3.46	2.74	02:05	3.32	14:15	5.67	4.62	03:45	0.266	15:45	1.009	0.610	0.610	-
09/25/2020	03:05	1.94	14:55	3.50	2.73	03:05	3.12	14:50	5.71	4.62	03:05	0.242	14:50	1.035	0.604	0.604	-
09/26/2020	05:40	1.91	17:55	3.23	2.61	05:35	3.11	16:00	5.47	4.53	05:35	0.238	17:55	0.876	0.555	0.555	-
09/27/2020	04:15	1.90	11:20	3.23	2.60	04:05	3.02	16:45	5.48	4.51	04:05	0.231	11:20	0.887	0.552	0.552	-
09/28/2020	02:15	1.93	12:10	3.43	2.58	02:15	3.02	12:05	5.64	4.57	02:15	0.232	12:10	0.993	0.553	0.553	-
09/29/2020	01:50	1.74	13:20	3.23	2.47	03:05	3.05	13:15	5.58	4.54	03:05	0.206	13:15	0.906	0.513	0.513	-
09/30/2020	04:25	1.63	17:10	3.13	2.42	01:45	3.18	12:35	5.45	4.51	04:20	0.204	12:35	0.845	0.495	0.495	-
10/01/2020	01:10	1.80	18:30	3.10	2.46	02:55	3.17	18:25	5.39	4.44	01:10	0.222	18:25	0.823	0.497	0.497	-
10/02/2020	03:25	1.84	14:40	3.06	2.43	03:50	3.00	14:40	5.34	4.38	03:50	0.220	14:40	0.802	0.483	0.483	-
10/03/2020	03:35	1.83	11:00	3.11	2.44	03:20	2.89	21:10	5.53	4.40	03:45	0.210	21:10	0.818	0.489	0.489	0.01
10/04/2020	03:40	1.81	11:25	3.19	2.48	05:35	2.80	11:25	5.46	4.42	03:50	0.197	11:25	0.876	0.506	0.506	0.01
10/05/2020	01:55	1.87	20:15	3.24	2.52	03:05	3.03	20:15	5.53	4.44	02:00	0.223	20:15	0.907	0.516	0.516	-
10/06/2020	03:25	1.87	18:45	3.13	2.49	01:45	3.12	18:40	5.55	4.47	04:35	0.236	18:45	0.856	0.512	0.512	-
10/07/2020	03:40	1.95	20:05	3.11	2.49	01:50	3.06	20:05	5.43	4.38	02:05	0.258	20:05	0.836	0.496	0.496	-
10/08/2020	03:10	1.90	09:20	3.00	2.45	03:00	3.33	16:35	5.28	4.37	03:10	0.250	09:20	0.766	0.486	0.486	-
10/09/2020	03:35	1.91	12:05	3.00	2.48	03:35	3.17	14:55	5.26	4.35	03:35	0.239	14:55	0.765	0.492	0.492	0.64
10/10/2020	05:10	2.21	10:50	3.70	2.91	04:40	3.82	10:50	5.86	4.83	04:45	0.366	10:50	1.160	0.686	0.686	1.04
10/11/2020	02:10	2.04	19:25	3.72	2.76	03:40	3.36	17:35	5.82	4.68	03:40	0.288	19:25	1.158	0.625	0.625	0.53
10/12/2020	02:30	2.12	13:05	3.44	2.76	04:15	3.54	13:05	5.67	4.72	04:15	0.314	13:05	1.012	0.620	0.620	-
10/13/2020	00:40	2.10	09:40	3.75	2.95	02:45	3.34	17:30	5.78	4.83	02:40	0.293	07:35	1.138	0.708	0.708	0.61
10/14/2020	03:15	2.03	18:40	3.18	2.71	03:10	3.41	18:40	5.25	4.61	03:15	0.287	18:40	0.838	0.589	0.589	-
10/15/2020	04:35	2.06	17:20	3.13	2.64	01:15	3.28	19:40	5.26	4.52	01:15	0.285	17:15	0.797	0.559	0.559	-
10/16/2020	03:25	2.04	11:45	3.17	2.57	03:25	3.22	17:35	5.39	4.45	03:25	0.269	11:45	0.804	0.529	0.529	-
10/17/2020	05:00	1.92	10:40	3.34	2.53	05:05	3.19	10:40	5.37	4.46	05:05	0.242	10:40	0.921	0.521	0.521	0.01
10/18/2020	05:35	1.80	10:55	3.17	2.55	02:45	3.16	11:55	5.52	4.55	02:45	0.224	11:55	0.863	0.540	0.540	0.03
10/19/2020	03:35	1.87	18:00	3.13	2.53	03:50	3.28	17:00	5.38	4.52	03:50	0.239	18:00	0.831	0.528	0.528	0.05
10/20/2020	03:35	1.95	13:55	3.39	2.55	03:45	3.09	18:15	5.53	4.50	03:35	0.245	13:55	0.950	0.535	0.535	-
10/21/2020	05:20	1.90	18:00	3.10	2.50	02:40	2.88	11:55	5.36	4.44	02:40	0.221	09:55	0.816	0.509	0.509	0.01
10/22/2020	03:25	1.84	19:00	3.16	2.50	03:10	3.04	18:55	5.45	4.43	03:25	0.219	19:00	0.851	0.507	0.507	-
10/23/2020	05:30	1.94	18:55	3.06	2.50	03:50	3.03	17:00	5.31	4.37	03:55	0.237	17:00	0.793	0.502	0.502	0.20
10/24/2020	05:20	1.92	10:55	3.30	2.56	05:15	3.00	10:50	5.46	4.48	05:15	0.231	10:55	0.914	0.532	0.532	0.02
10/25/2020	02:50	1.88	12:00	3.21	2.53	03:00	2.81	20:15	5.54	4.46	03:00	0.207	20:15	0.889	0.527	0.527	-
10/26/2020	03:10	1.88	21:00	3.17	2.55	03:20	3.07	20:55	5.51	4.51	03:20	0.232	20:55	0.870	0.532	0.532	-
10/27/2020	03:15	1.61	19:15	3.15	2.49	02:55	3.48	10:05	5.52	4.61	03:10	0.211	10:05	0.861	0.525	0.525	-
10/28/2020	03:15	1.76	10:35	3.25	2.49	03:30	2.88	19:20	5.63	4.49	03:25	0.196	19:20	0.910	0.515	0.515	-
10/29/2020	04:15	1.81	19:10	3.06	2.46	03:00	3.17	19:05	5.47	4.47	03:05	0.226	19:10	0.819	0.499	0.499	-
10/30/2020	04:30	1.75	16:55	3.09	2.43	02:55	3.00	17:50	5.37	4.44	02:55	0.203	16:55	0.813	0.490	0.490	0.10
10/31/2020	05:50	1.79	10:40	3.15	2.42	04:25	2.97	20:10	5.42	4.37	04:25	0.206	10:40	0.828	0.481	0.481	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/01/2020	03:05	1.75	13:10	3.20	2.42	04:45	2.76	13:05	5.46	4.41	04:45	0.186	13:05	0.872	0.489	0.489	-
11/02/2020	02:30	1.87	12:55	3.13	2.47	01:35	3.17	12:50	5.53	4.47	01:35	0.234	12:55	0.862	0.506	0.506	-
11/03/2020	03:30	1.77	17:25	3.54	2.64	03:30	2.92	20:00	5.81	4.65	03:30	0.198	20:00	1.074	0.594	0.594	0.83
11/04/2020	02:50	1.97	20:20	3.31	2.68	02:50	3.79	20:20	5.74	4.78	02:50	0.299	20:20	0.968	0.603	0.603	0.09
11/05/2020	02:10	2.00	16:10	3.59	2.88	01:10	3.92	16:05	5.95	4.97	03:35	0.316	16:05	1.125	0.700	0.700	0.34
11/06/2020	01:45	2.35	16:55	3.51	2.97	03:05	4.22	12:30	5.83	5.11	01:45	0.437	14:15	1.028	0.746	0.746	0.10
11/07/2020	05:40	1.93	14:35	3.32	2.71	05:40	3.78	19:35	5.75	4.96	05:40	0.289	19:40	0.954	0.637	0.637	0.07
11/08/2020	04:55	1.77	19:15	3.32	2.65	04:50	3.88	19:15	5.75	4.89	04:55	0.261	19:15	0.975	0.610	0.610	0.01
11/09/2020	03:55	1.80	18:55	3.24	2.59	03:55	3.70	18:50	5.74	4.79	03:55	0.255	18:50	0.933	0.579	0.579	0.04
11/10/2020	02:20	1.78	17:10	3.44	2.55	02:15	3.57	17:10	5.72	4.72	02:20	0.246	17:10	1.020	0.557	0.557	0.03
11/11/2020	02:25	1.78	19:00	3.17	2.52	02:25	3.56	14:15	5.50	4.64	02:25	0.242	13:25	0.853	0.539	0.539	-
11/12/2020	04:15	1.76	10:50	3.17	2.54	04:15	3.41	10:50	5.61	4.59	04:15	0.229	10:50	0.889	0.537	0.537	0.16
11/13/2020	02:55	1.90	17:35	3.32	2.66	02:55	3.73	21:00	5.53	4.68	02:55	0.279	17:35	0.915	0.585	0.585	0.38
11/14/2020	04:45	1.86	21:00	3.46	2.71	04:45	3.48	22:30	5.76	4.72	04:45	0.253	22:30	1.024	0.611	0.611	0.47
11/15/2020	05:30	2.11	13:05	3.58	2.93	05:30	3.83	20:40	5.82	4.98	05:30	0.334	13:05	1.086	0.715	0.715	0.19
11/16/2020	03:20	2.07	19:05	3.58	2.91	03:15	3.92	19:00	5.92	5.01	03:20	0.334	19:05	1.093	0.715	0.715	0.31
11/17/2020	03:10	2.17	21:30	3.70	2.99	02:55	3.92	18:05	6.01	5.10	03:00	0.363	21:30	1.157	0.755	0.755	0.20
11/18/2020	04:00	2.29	15:25	3.66	3.05	03:10	4.22	13:55	6.01	5.15	03:10	0.425	13:55	1.147	0.782	0.782	0.30
11/19/2020	03:35	2.28	11:15	3.57	2.99	02:00	4.19	13:55	5.96	5.12	03:35	0.414	11:15	1.099	0.754	0.754	0.50
11/20/2020	03:45	2.17	13:35	3.47	2.84	04:45	4.05	15:55	5.79	5.00	03:45	0.371	12:45	1.024	0.684	0.684	0.01
11/21/2020	03:55	1.96	12:35	3.44	2.71	04:45	3.87	10:40	5.86	4.99	04:50	0.305	12:35	1.033	0.639	0.639	-
11/22/2020	04:05	1.88	13:45	3.36	2.72	05:50	4.08	10:05	5.85	5.02	04:05	0.304	10:05	0.992	0.652	0.652	0.21
11/23/2020	04:15	2.02	13:30	3.46	2.85	04:15	4.08	18:25	5.76	5.04	04:15	0.334	13:30	1.031	0.693	0.693	0.14
11/24/2020	03:20	2.08	17:15	3.62	2.88	03:10	4.01	21:25	5.89	5.01	04:10	0.349	17:15	1.123	0.706	0.706	0.21
11/25/2020	03:20	2.13	17:40	3.57	2.87	03:15	4.01	19:45	5.83	5.01	03:20	0.357	17:40	1.093	0.697	0.697	0.05
11/26/2020	05:45	2.03	13:20	3.65	2.84	05:45	3.90	16:10	5.81	4.96	05:45	0.322	13:20	1.112	0.686	0.686	0.02
11/27/2020	04:45	1.95	14:50	3.31	2.72	04:45	3.84	14:50	5.62	4.84	04:45	0.298	14:50	0.950	0.623	0.623	-
11/28/2020	04:20	2.04	15:25	3.42	2.74	02:45	3.90	15:25	5.63	4.80	04:20	0.325	15:25	0.996	0.627	0.627	0.05
11/29/2020	05:20	1.92	14:35	3.47	2.72	05:15	3.55	14:30	5.87	4.73	05:20	0.270	14:30	1.054	0.614	0.614	-
11/30/2020	02:15	2.03	21:35	3.56	2.83	03:10	3.78	14:35	5.80	4.83	02:15	0.313	21:35	1.061	0.659	0.659	0.36
12/01/2020	04:00	2.00	15:50	3.40	2.73	04:00	3.53	20:30	5.54	4.71	04:00	0.285	15:50	0.960	0.612	0.612	-
12/02/2020	04:20	1.96	16:05	3.87	2.72	04:05	3.55	16:05	5.86	4.70	04:05	0.280	16:05	1.242	0.609	0.609	0.01
12/03/2020	04:55	1.85	19:05	3.25	2.65	04:55	3.51	14:55	5.54	4.74	04:55	0.254	12:50	0.894	0.590	0.590	-
12/04/2020	04:30	1.82	14:45	3.28	2.60	04:30	3.57	13:20	5.64	4.78	04:30	0.251	13:20	0.921	0.580	0.580	-
12/05/2020	06:30	1.81	12:05	3.34	2.60	06:20	3.79	10:30	5.74	4.84	06:30	0.272	12:05	0.963	0.586	0.586	0.03
12/06/2020	05:15	1.76	11:55	3.43	2.60	03:20	3.81	13:15	5.83	4.84	05:15	0.261	11:55	1.024	0.591	0.591	0.03
12/07/2020	05:25	1.71	13:05	3.21	2.51	03:30	3.84	20:20	5.94	5.03	03:30	0.256	13:05	0.927	0.578	0.578	-
12/08/2020	04:05	1.68	19:10	3.99	2.89	04:00	4.06	21:55	6.38	5.40	04:05	0.255	21:55	1.380	0.784	0.784	0.87
12/09/2020	23:30	2.93	07:25	3.78	3.42	23:20	5.07	08:00	6.29	5.78	23:20	0.722	13:10	1.266	1.028	1.028	0.17
12/10/2020	03:55	2.31	18:55	3.54	3.03	03:10	4.76	17:15	6.26	5.49	03:55	0.482	17:15	1.130	0.822	0.822	0.07
12/11/2020	04:00	2.07	13:45	3.37	2.90	04:00	4.14	17:00	6.04	5.28	04:00	0.353	17:00	1.038	0.743	0.743	0.02
12/12/2020	03:30	1.98	15:45	3.43	2.83	03:30	4.12	12:35	5.96	5.17	03:30	0.327	20:45	1.055	0.705	0.705	0.01
12/13/2020	04:35	1.97	14:00	3.61	2.84	02:10	4.01	19:00	5.94	5.07	04:35	0.331	14:00	1.114	0.701	0.701	0.24
12/14/2020	03:00	2.04	20:05	3.54	2.88	03:50	4.08	21:35	5.74	5.07	03:50	0.339	20:05	1.060	0.712	0.712	0.05
12/15/2020	02:35	2.04	18:15	3.64	2.95	03:55	3.95	18:10	5.93	5.11	03:55	0.331	18:10	1.142	0.746	0.746	0.58
12/16/2020	04:05	2.16	19:20	3.73	3.06	02:30	4.17	14:40	6.16	5.21	04:05	0.383	14:40	1.219	0.799	0.799	0.39
12/17/2020	04:25	2.40	16:30	3.68	3.17	04:25	4.48	16:15	6.10	5.36	04:25	0.472	16:30	1.171	0.856	0.856	0.08
12/18/2020	05:30	2.25	11:55	3.61	3.03	01:45	4.44	11:55	6.18	5.38	05:30	0.432	11:55	1.184	0.808	0.808	0.25
12/19/2020	04:00	2.23	20:10	3.64	3.02	05:55	4.59	19:20	6.24	5.49	05:15	0.440	20:10	1.202	0.820	0.820	0.37
12/20/2020	06:30	2.56	17:15	3.72	3.20	06:30	4.92	17:15	6.25	5.61	06:30	0.571	17:15	1.248	0.907	0.907	0.04
12/21/2020	01:30	2.49	18:35	4.67	3.61	01:30	4.78	20:55	6.91	5.93	01:30	0.534	20:55	1.901	1.163	1.163	1.07
12/22/2020	23:05	3.14	00:20	4.19	3.68	05:35	5.44	14:45	6.49	6.07	23:05	0.893	00:25	1.515	1.197	1.197	-
12/23/2020	23:55	2.68	11:30	3.68	3.16	04:30	5.14	20:55	6.47	5.93	03:05	0.644	11:30	1.259	0.943	0.943	-
12/24/2020	05:35	2.36	15:00	3.59	2.96	04:45	5.13	12:10	6.59	5.95	04:45	0.533	14:50	1.225	0.860	0.860	-
12/25/2020	03:55	2.18	16:35	3.53	2.86	04:30	4.90	11:35	6.35	5.77	03:55	0.451	16:35	1.170	0.795	0.795	0.49
12/26/2020	05:45	2.23	14:50	3.46	2.93	05:05	4.83	09:40	6.51	5.73	05:05	0.465	14:50	1.134	0.818	0.818	0.02
12/27/2020	05:00	2.13	12:40	3.54	2.92	05:00	4.84	11:05	6.42	5.72	05:00	0.427	12:40	1.166	0.815	0.815	0.13
12/28/2020	03:20	2.16	18:45	3.46	2.85	03:20	4.70	10:50	6.27	5.58	03:20	0.426	18:45	1.117	0.764	0.764	-
12/29/2020	04:05	2.09	17:35	3.45	2.82	03:20	4.58	11:00	6.13	5.41	03:20	0.399	17:35	1.075	0.731	0.731	0.14
12/30/2020	03:05	2.27	19:10	3.92	3.28	03:00	4.67	17:30	6.22	5.61	03:05	0.458	19:10	1.330	0.946	0.946	0.78
12/31/2020	04:20	2.80	17:00	3.94	3.39	02:35	5.10	16:50	6.34	5.77	04:20	0.681	17:00	1.374	1.013	1.013	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			148.023	30.65
Average	2.79	5.27	0.722	

Auburn.TFM.WA20-22

Flow Monitoring Site Report

ADS ENVIRONMENTAL SERVICES®

Site Name

AUB_Y-3_101255

Site Address /Location:	2272 Riverwalk Dr SE		
Site Access Details:	Park next to M/H	Latitude:	47.288431°
		Longitude:	-122.197152°

Monitor Series	Location Type
TRITON+	Temporary
Pipe Size (H x W)	Pipe Shape
23.00 x 23.50	Circular
Manhole #	System Characteristics
Y-3(101-255)	Residential
Access	Traffic
Drive	None









Installation Information

Installation Date:	Installation Type:
Thursday, May 14, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Confirmation Time:	Pipe Size (HxW)
12:46:00 PM	23.00 x 23.50
Depth of Flow (Wet DOF) (in)	
2.63"	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.38"
Peak Velocity (fps)	Velocity Sensor Offset (in)
5.4	0"
Silt (in)	Silt Type
0.00"	

Hydraulic Comments:

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
9	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
26	
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
PVC	Fair

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.22.325

AUB_Y-4_101002

Site Commentary

SITE INFORMATION

Pipe	Elliptical (18 in H x 18 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021**, along with observed minimum and maximum data, are provided in the following table.

This site experienced backwater conditions during the month of January.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	2.77	1.25	0.145
Minimum	1.72	0.48	0.044
Maximum	5.91	1.65	0.274
Min Time	11/10/2020 4:00:00 AM	01/13/2021 4:00:00 AM	04/04/2021 4:00:00 AM
Max Time	01/12/2021 7:00:00 PM	11/26/2020 11:00:00 AM	01/12/2021 7:00:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the one hour average.

DATA UPTIME

Data uptime observed during **Tuesday, September 22, 2020 to Wednesday, April 14, 2021** is provided in the following table:

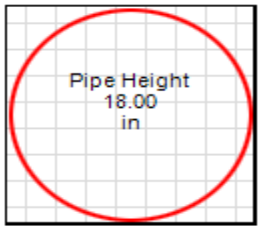
Percent Uptime	
DFINAL (in)	100
VFINAL (ft/s)	100
QFINAL (MGD - Total MG)	100

Hydrograph Report

AUB_Y-4_101002

Flow Monitor

AUB_Y-4_101002



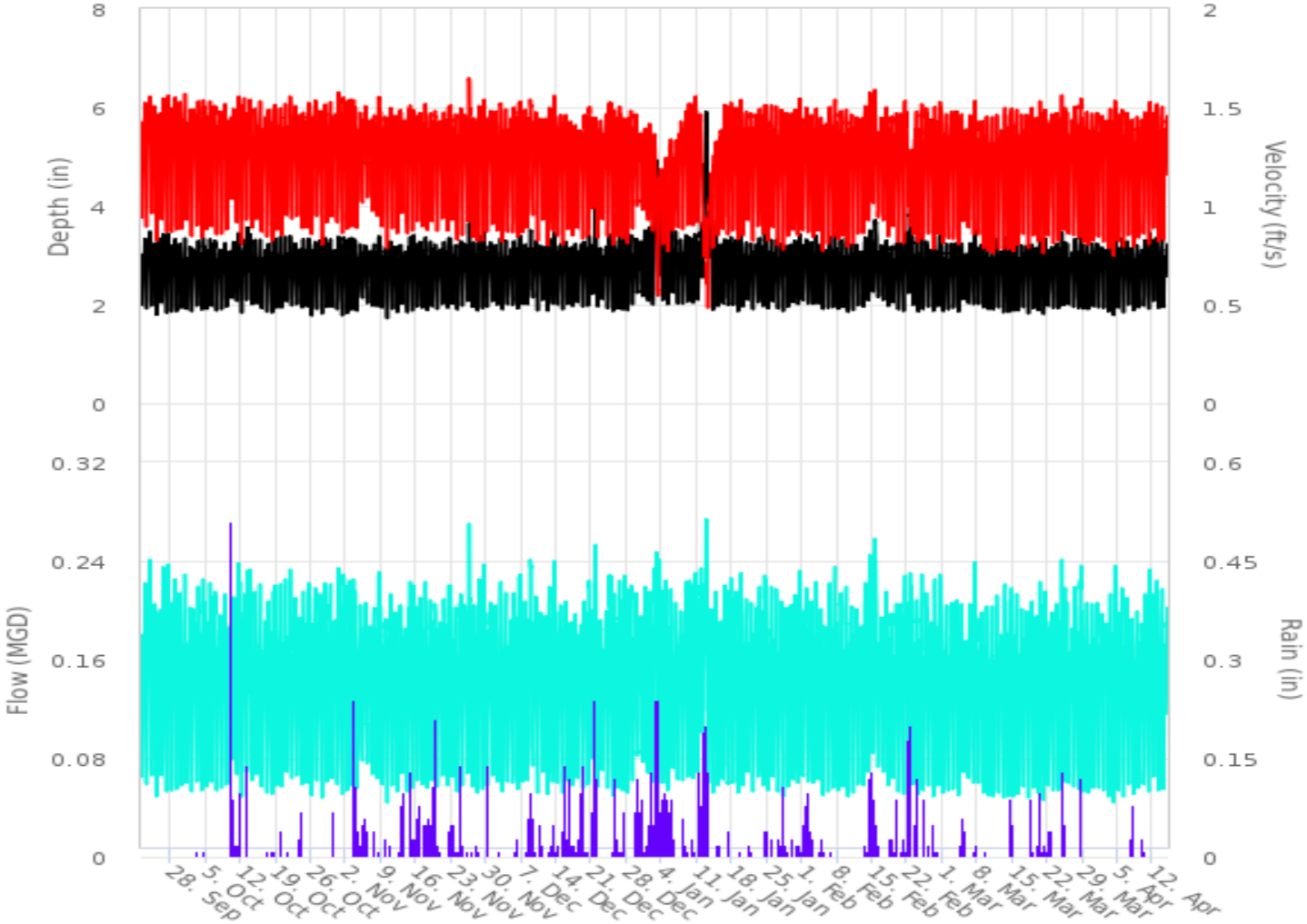
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



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Tukwila, WA 98168

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Scattergraph Report

AUB_Y-4_101002

Flow Monitor

AUB_Y-4_101002

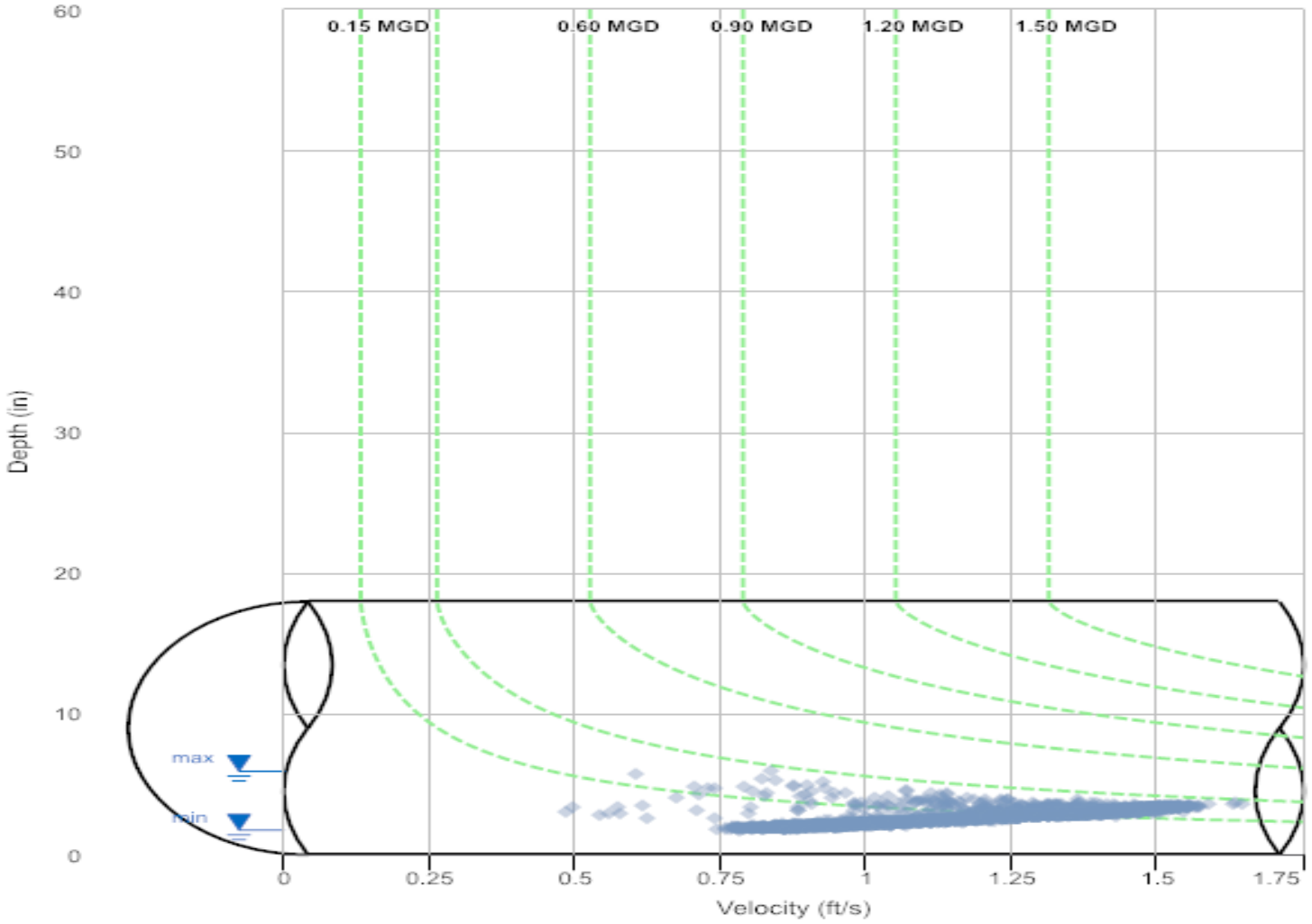
Pipe Height
18.00
in

Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



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Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
AUB_Y-4_101002Pipe: Elliptical (18 in H x 18 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	07:30	2.01	16:15	3.88	2.85	07:25	0.89	11:40	1.45	1.17	07:25	0.063	16:15	0.254	0.141	0.141	0.51
01/02/2021	03:20	1.98	21:55	4.91	3.25	03:15	0.84	12:20	1.44	1.14	03:20	0.058	21:50	0.295	0.167	0.167	1.69
01/03/2021	07:05	2.44	00:45	5.20	3.71	05:20	0.48	11:55	1.25	0.95	05:20	0.056	12:00	0.269	0.166	0.166	0.65
01/04/2021	04:20	2.06	12:20	4.13	3.19	04:50	0.70	19:50	1.38	1.07	04:50	0.055	19:40	0.239	0.150	0.150	0.48
01/05/2021	03:00	1.95	19:45	3.77	2.93	04:05	0.67	19:15	1.46	1.14	04:15	0.048	19:15	0.229	0.144	0.144	0.52
01/06/2021	05:00	2.15	18:25	3.68	2.91	06:00	0.79	19:50	1.51	1.16	04:55	0.066	18:20	0.222	0.142	0.142	0.22
01/07/2021	04:30	1.99	16:55	3.48	2.77	04:20	0.87	19:00	1.49	1.23	04:25	0.060	19:00	0.220	0.141	0.141	-
01/08/2021	03:50	1.97	18:15	3.55	2.76	03:50	0.84	18:15	1.57	1.25	03:50	0.057	18:15	0.250	0.143	0.143	0.22
01/09/2021	05:45	2.03	11:25	3.43	2.82	04:25	0.89	14:35	1.58	1.29	05:45	0.063	14:35	0.240	0.154	0.154	-
01/10/2021	04:45	2.02	13:30	3.47	2.84	04:45	0.88	18:15	1.60	1.29	04:45	0.062	18:50	0.245	0.157	0.157	0.07
01/11/2021	04:00	2.07	21:05	3.70	2.96	03:15	0.90	18:15	1.53	1.26	03:55	0.066	21:15	0.250	0.161	0.161	1.06
01/12/2021	01:30	2.43	19:10	6.26	4.19	11:40	0.65	00:00	1.19	0.89	02:05	0.093	19:15	0.292	0.178	0.178	2.10
01/13/2021	23:50	2.68	00:35	6.06	3.58	04:10	0.42	19:50	1.27	0.91	04:10	0.056	00:50	0.222	0.146	0.146	0.09
01/14/2021	04:00	1.79	18:35	3.82	2.90	03:50	0.71	18:25	1.47	1.13	03:50	0.042	20:05	0.232	0.141	0.141	0.01
01/15/2021	04:30	1.93	17:50	3.31	2.77	05:05	0.82	20:50	1.43	1.20	04:30	0.054	21:00	0.205	0.139	0.139	0.09
01/16/2021	05:20	1.95	12:55	3.46	2.76	05:20	0.83	17:40	1.59	1.26	05:20	0.056	12:55	0.241	0.146	0.146	-
01/17/2021	04:40	1.97	18:15	3.44	2.79	04:45	0.82	18:05	1.55	1.27	04:40	0.056	18:15	0.236	0.151	0.151	0.10
01/18/2021	05:00	1.90	18:25	3.38	2.78	05:00	0.83	18:20	1.56	1.28	05:00	0.053	18:25	0.232	0.151	0.151	-
01/19/2021	03:55	1.84	20:05	3.49	2.73	03:55	0.82	18:40	1.63	1.27	03:55	0.050	20:05	0.245	0.144	0.144	0.01
01/20/2021	04:30	1.93	21:25	3.36	2.72	04:30	0.83	21:20	1.52	1.25	04:30	0.055	21:20	0.224	0.141	0.141	-
01/21/2021	04:15	2.05	19:25	3.34	2.75	04:05	0.90	19:15	1.51	1.26	04:05	0.065	19:20	0.220	0.143	0.143	0.11
01/22/2021	04:50	1.88	20:05	3.28	2.72	04:25	0.81	20:05	1.50	1.24	04:25	0.052	20:05	0.214	0.140	0.140	-
01/23/2021	04:50	2.02	12:10	3.45	2.76	04:40	0.87	12:10	1.52	1.26	04:40	0.062	12:10	0.233	0.146	0.146	-
01/24/2021	05:30	1.94	11:30	3.49	2.82	05:20	0.84	11:30	1.55	1.27	05:20	0.056	11:30	0.241	0.154	0.154	0.16
01/25/2021	04:45	1.86	20:45	3.44	2.74	04:45	0.78	20:45	1.56	1.25	04:45	0.049	20:45	0.237	0.143	0.143	0.04
01/26/2021	04:10	2.04	20:10	3.42	2.76	04:05	0.87	19:50	1.54	1.26	04:10	0.062	20:00	0.231	0.145	0.145	-
01/27/2021	03:50	1.88	18:20	3.34	2.72	03:50	0.78	18:15	1.54	1.24	03:50	0.050	18:20	0.225	0.139	0.139	0.14
01/28/2021	04:20	1.77	18:55	3.31	2.70	03:50	0.71	18:55	1.50	1.23	04:20	0.041	18:55	0.217	0.138	0.138	0.24
01/29/2021	03:40	1.91	19:45	3.38	2.70	03:30	0.83	19:35	1.53	1.24	03:35	0.054	19:45	0.227	0.138	0.138	0.03
01/30/2021	05:55	1.99	10:55	3.38	2.75	05:55	0.83	10:50	1.52	1.25	05:55	0.057	10:55	0.226	0.144	0.144	0.07
01/31/2021	04:20	1.99	14:05	3.46	2.82	03:45	0.82	12:10	1.60	1.26	03:50	0.057	11:25	0.240	0.152	0.152	0.12
02/01/2021	03:55	2.05	20:05	3.45	2.81	02:15	0.86	18:55	1.55	1.26	04:00	0.062	20:05	0.238	0.149	0.149	0.82
02/02/2021	05:05	1.97	08:25	3.41	2.78	04:05	0.85	08:20	1.55	1.25	05:00	0.058	08:25	0.234	0.144	0.144	0.31
02/03/2021	03:45	1.97	19:45	3.48	2.77	03:45	0.81	20:45	1.54	1.24	03:45	0.055	19:40	0.234	0.144	0.144	0.06
02/04/2021	04:10	1.96	18:40	3.35	2.76	03:30	0.84	14:20	1.50	1.24	04:05	0.057	14:20	0.219	0.142	0.142	0.07
02/05/2021	04:15	1.89	17:30	3.15	2.72	04:10	0.75	17:30	1.46	1.20	04:15	0.048	17:30	0.196	0.135	0.135	0.01
02/06/2021	04:35	1.89	11:40	3.57	2.76	04:20	0.78	11:30	1.60	1.23	04:35	0.050	11:40	0.255	0.144	0.144	0.01
02/07/2021	04:55	1.88	13:50	3.50	2.80	04:45	0.81	12:10	1.59	1.26	04:55	0.051	12:10	0.242	0.152	0.152	-
02/08/2021	04:30	1.88	19:10	3.40	2.74	04:25	0.82	21:05	1.52	1.23	04:30	0.052	19:10	0.226	0.141	0.141	-
02/09/2021	05:05	1.87	19:50	3.42	2.73	04:55	0.81	19:15	1.53	1.24	05:00	0.051	19:50	0.228	0.140	0.140	-
02/10/2021	04:45	1.83	20:10	3.34	2.70	04:05	0.77	20:10	1.52	1.22	04:05	0.047	20:10	0.222	0.137	0.137	-
02/11/2021	04:10	1.88	20:25	3.32	2.70	03:40	0.78	20:30	1.51	1.22	04:20	0.050	20:30	0.219	0.137	0.137	-
02/12/2021	03:35	1.94	18:00	3.24	2.73	03:35	0.82	17:55	1.48	1.25	03:35	0.055	18:00	0.207	0.141	0.141	-
02/13/2021	05:30	1.91	14:25	3.45	2.78	05:30	0.82	14:20	1.56	1.26	05:30	0.053	14:25	0.238	0.148	0.148	0.08
02/14/2021	04:20	2.04	12:10	3.53	2.86	04:15	0.88	11:20	1.63	1.29	04:15	0.063	11:20	0.255	0.158	0.158	0.71
02/15/2021	04:50	2.23	14:10	3.87	3.04	05:00	0.98	10:50	1.64	1.28	05:00	0.079	12:40	0.275	0.169	0.169	0.78
02/16/2021	03:50	2.13	19:05	3.32	2.78	03:50	0.93	20:35	1.55	1.24	03:50	0.071	19:05	0.211	0.143	0.143	0.07
02/17/2021	03:45	2.07	20:15	3.41	2.74	04:15	0.90	20:10	1.56	1.25	04:15	0.066	20:15	0.233	0.141	0.141	-
02/18/2021	05:00	1.92	21:15	3.23	2.74	05:00	0.81	16:55	1.48	1.25	05:00	0.053	21:20	0.204	0.141	0.141	0.09
02/19/2021	04:25	2.00	19:10	3.35	2.70	04:15	0.88	19:00	1.53	1.23	04:25	0.061	19:00	0.223	0.136	0.136	0.17
02/20/2021	05:00	1.82	12:45	3.32	2.73	04:55	0.77	18:25	1.55	1.25	05:00	0.046	13:20	0.217	0.144	0.144	0.07
02/21/2021	05:30	1.85	23:40	3.84	2.81	05:05	0.80	13:20	1.56	1.26	05:20	0.050	12:35	0.233	0.152	0.152	0.42
02/22/2021	04:45	2.18	13:20	5.10	3.34	13:10	0.83	19:35	1.36	1.14	04:45	0.076	19:40	0.246	0.166	0.166	0.98
02/23/2021	04:50	1.96	21:45	3.78	2.76	03:10	0.84	20:50	1.53	1.23	04:50	0.057	20:50	0.221	0.141	0.141	0.27
02/24/2021	04:10	1.85	20:20	3.53	2.73	04:35	0.79	20:20	1.65	1.24	04:35	0.049	20:20	0.260	0.141	0.141	-
02/25/2021	03:30	1.86	18:00	3.38	2.72	03:45	0.80	18:00	1.52	1.24	03:50	0.050	18:00	0.226	0.139	0.139	0.18
02/26/2021	04:00	1.87	16:20	3.16	2.70	04:00	0.81	16:40	1.45	1.24	04:00	0.051	16:20	0.194	0.137	0.137	0.10
02/27/2021	04:25	1.86	11:00	3.45	2.71	05:45	0.76	10:25	1.56	1.23	04:25	0.048	10:55	0.235	0.140	0.140	0.02
02/28/2021	04:30	1.94	11:20	3.47	2.78	04:30	0.83	11:20	1.58	1.27	04:30	0.055	11:20	0.244	0.151	0.151	0.02
03/01/2021	04:00	1.78	20:30	3.35	2.68	03:50	0.77	19:50	1.52	1.23	04:00	0.045	20:30	0.220	0.137	0.137	-
03/02/2021	03:55	1.87	20:50	3.33	2.70	03:45	0.77	21:50	1.54	1.23	03:50	0.049	20:50	0.220	0.137	0.137	-
03/03/2021	03:15	1.88	21:10	3.45	2.69	03:15	0.79	21:05	1.52	1.24	03:15	0.050	21:10	0.233	0.137	0.137	-
03/04/2021	04:35	1.81	20:35	3.36	2.69	04:20	0.79	20:25	1.49	1.23	04:35	0.047	20:30	0.218	0.137	0.137	0.20
03/05/2021	06:00	2.08	13:30	3.14	2.71	03:00	0.91	13:30	1.43	1.23	03:20	0.067	13:30	0.191	0.136	0.136	0.05
03/06/2021	05:25	2.00	12:15	3.37	2.76	03:50	0.87	20:05	1.50	1.25	03:50	0.061	12:10	0.220	0.144	0.144	-
03/07/2021	05:30	1.96	11:15	3.55	2.79	05:30	0.79	10:45	1.59	1.25	05:30	0.053	11:15	0.250	0.149	0.149	0.04
03/08/2021	04:15	1.98	20:05	3.28	2.75	04:15	0.82	19:50	1.46	1.21	04:15	0.056	20:05	0.207	0.139	0.139	-
03/09/2021	04:30	1.91	21:25	3.37	2.73	04:30	0.76	21:15	1.50	1.21	04:30	0.050	21:25	0.221	0.137	0.137	0.01
03/10/2021	04:35	1.87	20:55	3.38	2.72	04:30	0.75	21:00	1.48	1.20	04:35	0.047	20:55	0.219	0.135	0.135	-
03/11/2021	03:30	1.86	19:40	3.40	2.73	03:25	0.74	19:25	1.50	1.20	03:30	0.046	19:45	0.225	0.137	0.137	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/12/2021	04:30	1.90	19:05	3.20	2.71	04:25	0.74	17:50	1.43	1.20	04:25	0.048	19:05	0.195	0.134	0.134	-
03/13/2021	04:05	1.82	11:05	3.42	2.72	04:00	0.76	10:20	1.55	1.22	04:00	0.046	10:20	0.230	0.140	0.140	-
03/14/2021	04:35	1.82	20:25	3.44	2.75	04:30	0.76	20:20	1.54	1.23	04:30	0.046	20:25	0.235	0.145	0.145	0.30
03/15/2021	03:55	1.82	20:05	3.36	2.71	03:35	0.75	20:05	1.52	1.22	03:50	0.046	20:05	0.223	0.137	0.137	-
03/16/2021	02:30	1.83	21:10	3.29	2.69	02:25	0.77	19:45	1.52	1.23	02:25	0.047	21:05	0.213	0.137	0.137	-
03/17/2021	03:40	1.92	20:05	3.33	2.70	02:55	0.84	20:00	1.53	1.24	03:40	0.055	20:05	0.223	0.138	0.138	-
03/18/2021	03:05	1.76	20:40	3.29	2.68	03:05	0.75	20:20	1.56	1.23	03:05	0.043	20:20	0.218	0.137	0.137	0.11
03/19/2021	04:00	1.86	18:15	3.27	2.68	04:05	0.79	18:10	1.49	1.23	04:05	0.049	18:15	0.212	0.136	0.136	0.03
03/20/2021	03:55	1.81	10:10	3.38	2.73	03:50	0.78	10:20	1.62	1.25	03:55	0.046	10:20	0.240	0.143	0.143	0.17
03/21/2021	04:10	1.79	12:45	3.38	2.73	04:05	0.74	10:50	1.55	1.23	04:10	0.044	10:55	0.229	0.143	0.143	0.07
03/22/2021	02:45	1.96	14:20	3.31	2.72	02:20	0.84	14:20	1.51	1.24	02:40	0.057	14:20	0.217	0.140	0.140	0.11
03/23/2021	02:50	1.83	20:40	3.32	2.71	02:50	0.76	18:55	1.51	1.24	02:50	0.046	20:40	0.218	0.139	0.139	-
03/24/2021	02:55	1.87	20:30	3.58	2.75	02:50	0.80	20:25	1.71	1.26	02:55	0.050	20:30	0.275	0.144	0.144	0.34
03/25/2021	03:00	1.88	10:25	4.10	2.76	03:00	0.81	10:25	1.84	1.26	03:00	0.051	10:25	0.360	0.145	0.145	0.27
03/26/2021	03:20	1.98	19:10	3.14	2.68	03:10	0.83	19:15	1.50	1.23	03:15	0.057	19:15	0.199	0.135	0.135	-
03/27/2021	04:40	1.90	10:00	3.39	2.74	04:40	0.79	10:00	1.54	1.24	04:40	0.051	10:00	0.230	0.143	0.143	-
03/28/2021	04:10	1.90	15:05	3.53	2.80	04:05	0.81	14:45	1.57	1.26	04:15	0.052	15:20	0.248	0.152	0.152	0.37
03/29/2021	03:05	1.87	20:15	3.35	2.70	01:35	0.80	20:20	1.55	1.22	03:10	0.050	20:15	0.225	0.138	0.138	-
03/30/2021	02:35	1.85	20:25	3.29	2.69	02:45	0.75	20:25	1.49	1.22	02:45	0.046	20:25	0.213	0.136	0.136	-
03/31/2021	03:55	1.92	10:00	3.30	2.74	03:55	0.79	19:30	1.49	1.24	03:55	0.052	10:00	0.212	0.141	0.141	-
04/01/2021	02:50	1.91	19:45	3.27	2.72	03:25	0.82	18:45	1.51	1.23	03:25	0.053	19:45	0.209	0.138	0.138	-
04/02/2021	03:20	1.91	19:00	3.32	2.74	03:20	0.80	18:55	1.49	1.25	03:20	0.052	19:00	0.216	0.142	0.142	-
04/03/2021	03:10	1.84	11:45	3.43	2.70	03:15	0.77	11:45	1.59	1.22	03:10	0.048	11:45	0.242	0.138	0.138	-
04/04/2021	04:35	1.77	10:45	3.49	2.77	04:35	0.73	10:40	1.57	1.25	04:35	0.042	10:40	0.244	0.148	0.148	-
04/05/2021	02:05	1.91	19:55	3.43	2.76	02:00	0.79	12:05	1.56	1.25	02:05	0.051	12:05	0.236	0.145	0.145	-
04/06/2021	03:25	1.80	19:35	3.40	2.68	03:20	0.77	19:30	1.55	1.21	03:20	0.046	19:30	0.232	0.135	0.135	-
04/07/2021	02:05	1.96	19:45	3.24	2.67	02:05	0.82	17:45	1.46	1.21	02:00	0.056	19:45	0.205	0.132	0.132	0.22
04/08/2021	03:20	1.84	13:10	3.27	2.69	03:20	0.76	13:10	1.49	1.21	03:20	0.047	13:10	0.211	0.134	0.134	-
04/09/2021	03:55	1.90	19:10	3.25	2.71	03:20	0.82	18:40	1.49	1.24	04:00	0.053	18:45	0.207	0.138	0.138	0.03
04/10/2021	03:50	1.92	10:30	3.41	2.76	03:30	0.84	10:35	1.51	1.25	03:45	0.055	10:35	0.226	0.144	0.144	0.02
04/11/2021	04:35	1.89	09:55	3.50	2.83	04:15	0.79	09:50	1.62	1.27	04:45	0.050	09:50	0.252	0.154	0.154	-
04/12/2021	03:05	2.05	20:30	3.46	2.77	03:00	0.87	20:15	1.57	1.25	03:05	0.062	20:30	0.239	0.144	0.144	-
04/13/2021	03:20	1.88	20:10	3.45	2.76	03:20	0.79	20:10	1.55	1.25	03:20	0.050	20:10	0.237	0.144	0.144	-
04/14/2021	03:55	1.90	21:20	3.32	2.74	03:55	0.81	21:20	1.51	1.25	03:55	0.052	21:20	0.219	0.142	0.141	-
09/22/2020	02:55	1.96	19:35	3.42	2.75	02:55	0.89	20:20	1.57	1.29	02:55	0.060	19:35	0.236	0.146	0.146	-
09/23/2020	04:05	1.89	19:30	3.52	2.80	02:05	0.88	19:30	1.61	1.32	03:45	0.057	19:30	0.254	0.155	0.155	-
09/24/2020	04:00	1.95	20:05	3.34	2.73	02:55	0.92	15:35	1.55	1.31	02:45	0.062	19:55	0.217	0.148	0.148	-
09/25/2020	03:30	1.75	16:50	3.41	2.80	03:35	0.79	20:20	1.52	1.27	03:35	0.045	19:45	0.223	0.150	0.150	-
09/26/2020	03:40	2.01	11:20	3.52	2.77	03:40	0.89	11:20	1.61	1.30	03:40	0.063	11:20	0.253	0.150	0.150	-
09/27/2020	04:15	1.79	11:50	3.54	2.74	04:00	0.85	11:20	1.60	1.29	04:15	0.050	11:50	0.254	0.150	0.150	-
09/28/2020	04:00	1.81	20:40	3.38	2.73	04:05	0.83	18:40	1.61	1.31	04:00	0.050	20:35	0.231	0.149	0.149	-
09/29/2020	04:00	1.84	19:45	3.33	2.68	02:30	0.84	19:55	1.57	1.30	03:45	0.053	19:55	0.228	0.144	0.144	-
09/30/2020	03:25	1.91	19:55	3.42	2.70	03:00	0.88	20:00	1.61	1.30	03:25	0.057	19:55	0.242	0.145	0.145	-
10/01/2020	03:25	1.88	19:40	3.22	2.67	03:20	0.90	19:10	1.54	1.29	03:20	0.057	19:10	0.211	0.140	0.140	-
10/02/2020	03:20	1.84	10:40	3.75	2.64	03:20	0.83	10:40	1.76	1.26	03:20	0.051	10:40	0.304	0.136	0.136	-
10/03/2020	04:15	1.95	10:55	3.38	2.74	04:15	0.88	10:55	1.56	1.29	04:10	0.059	10:55	0.232	0.147	0.147	0.01
10/04/2020	04:30	1.87	10:35	3.37	2.75	04:20	0.82	13:30	1.58	1.28	04:20	0.052	13:35	0.228	0.149	0.149	0.01
10/05/2020	04:00	1.85	19:20	3.35	2.70	03:50	0.85	19:25	1.58	1.28	04:05	0.052	19:20	0.231	0.144	0.144	-
10/06/2020	03:15	1.96	19:25	3.34	2.74	03:20	0.88	17:15	1.55	1.30	03:20	0.059	17:20	0.224	0.148	0.148	-
10/07/2020	04:05	1.83	19:15	3.17	2.65	04:10	0.81	19:20	1.50	1.26	04:10	0.049	19:50	0.202	0.137	0.137	-
10/08/2020	04:00	1.82	18:50	3.31	2.71	04:00	0.81	19:55	1.54	1.28	04:00	0.049	18:50	0.220	0.144	0.144	-
10/09/2020	03:50	1.89	19:05	3.24	2.73	03:55	0.85	14:00	1.55	1.29	03:50	0.055	19:05	0.210	0.146	0.146	0.64
10/10/2020	04:25	2.09	13:10	3.31	2.85	04:20	0.98	11:40	1.52	1.33	04:20	0.073	11:40	0.217	0.158	0.158	1.04
10/11/2020	04:45	2.05	12:40	3.52	2.86	03:55	0.90	12:40	1.60	1.30	04:50	0.064	12:40	0.252	0.160	0.160	0.53
10/12/2020	03:25	1.82	19:05	3.41	2.74	03:20	0.78	15:25	1.61	1.28	03:20	0.047	19:05	0.232	0.147	0.147	-
10/13/2020	02:20	2.07	07:30	4.28	2.85	02:15	0.91	07:45	1.71	1.29	02:20	0.066	07:35	0.346	0.155	0.155	0.61
10/14/2020	04:20	1.97	19:10	3.45	2.72	04:20	0.86	18:45	1.55	1.25	04:20	0.059	18:50	0.235	0.141	0.141	-
10/15/2020	03:10	1.99	19:00	3.38	2.73	03:10	0.89	18:55	1.56	1.29	03:10	0.062	19:00	0.231	0.146	0.146	-
10/16/2020	03:15	1.91	18:15	3.18	2.69	03:15	0.85	19:50	1.47	1.25	03:15	0.055	18:20	0.196	0.138	0.138	-
10/17/2020	04:45	1.81	11:35	3.35	2.71	03:35	0.82	11:30	1.55	1.25	04:45	0.049	11:35	0.228	0.140	0.140	0.01
10/18/2020	04:30	1.79	12:15	3.40	2.76	04:30	0.79	19:35	1.54	1.26	04:30	0.047	12:15	0.229	0.148	0.148	0.03
10/19/2020	03:55	1.87	20:00	3.48	2.73	03:55	0.83	20:00	1.56	1.26	03:50	0.053	20:00	0.241	0.143	0.143	0.05
10/20/2020	02:20	1.92	20:00	3.43	2.75	02:15	0.84	19:35	1.54	1.27	02:20	0.055	20:00	0.233	0.146	0.146	-
10/21/2020	02:20	2.00	18:25	3.46	2.73	02:10	0.91	18:20	1.59	1.28	02:15	0.063	18:25	0.245	0.144	0.144	0.01
10/22/2020	03:45	1.91	20:25	3.31	2.70	03:45	0.89	21:05	1.54	1.29	03:45	0.058	20:25	0.220	0.143	0.143	-
10/23/2020	03:10	1.99	19:55	3.24	2.68	03:00	0.89	19:55	1.51	1.27	03:00	0.063	19:55	0.212	0.139	0.139	0.20
10/24/2020	04:25	1.92	10:05	3.43	2.71	04:35	0.87	10:05	1.51	1.26	04:25	0.058	10:05	0.230	0.143	0.143	0.02
10/25/2020	04:50	1.95	11:40	3.40	2.76	04:45	0.86	09:45	1.57	1.28	04:45	0.058	11:40	0.235	0.150	0.150	-
10/26/2020	02:25	1.75	19:15	3.35	2.69	02:20	0.84	19:15	1.59	1.27	02:20	0.048	19:15	0.234	0.143	0.143	-
10/27/2020	03:10	1.88	19:45	3.44	2.73	03:00	0.93	17:10	1.56	1.26	03:05	0.059	19:45	0.233	0.143	0.143	-
10/28/2020	03:35	1.79	19:05	3.42	2.74	02:50	0.79	19:05	1.57	1.26	03:40	0.046	19:05	0.237	0.144	0.144	-
10/29/2020	02:50	1.91	20:35	3.36	2.78	03:20	0.88	20:00	1.57	1.30	03:20	0.057	20:00	0.228	0.151	0.151	-
10/30/2020	02:30	1.92	15:35	3.22	2.74	02:30	0.92	19:45	1.56	1.31	02:30	0.060	15:30	0.206	0.148	0.148	0.10
10/31/2020	04:40	1.87	10:15	3.42	2.74	04:45	0.89	10:20	1.61	1.29	04:40	0.056	10:20	0.242	0.149	0.149	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/01/2020	04:15	1.73	11:25	3.39	2.76	04:10	0.81	13:25	1.60	1.29	04:10	0.046	11:05	0.236	0.154	0.154	-
11/02/2020	04:00	1.79	20:20	3.43	2.72	04:00	0.85	19:35	1.59	1.29	04:00	0.050	19:40	0.240	0.146	0.146	-
11/03/2020	03:25	1.85	10:45	3.37	2.80	03:35	0.86	10:15	1.56	1.30	03:35	0.053	10:15	0.228	0.154	0.154	0.83
11/04/2020	04:10	1.83	19:40	3.29	2.70	04:10	0.84	19:30	1.50	1.26	04:10	0.051	19:40	0.214	0.141	0.141	0.09
11/05/2020	03:55	2.07	19:55	3.25	2.75	03:55	0.98	19:05	1.53	1.30	04:00	0.071	19:55	0.215	0.147	0.147	0.34
11/06/2020	04:50	1.98	18:50	3.23	2.69	04:25	1.02	17:20	1.49	1.31	04:45	0.071	17:25	0.207	0.143	0.143	0.10
11/07/2020	05:40	1.92	13:25	3.29	2.73	05:40	0.92	13:15	1.49	1.29	05:40	0.061	13:15	0.211	0.146	0.146	0.07
11/08/2020	04:35	1.94	12:10	3.43	2.78	04:35	0.93	10:45	1.59	1.31	04:35	0.062	12:20	0.239	0.154	0.154	0.01
11/09/2020	03:45	1.91	19:45	3.18	2.67	03:40	0.87	18:30	1.50	1.26	03:45	0.057	18:30	0.203	0.138	0.138	0.04
11/10/2020	04:20	1.67	20:00	3.35	2.66	03:35	0.75	19:45	1.53	1.24	04:20	0.041	20:00	0.224	0.138	0.138	0.03
11/11/2020	04:20	1.88	19:35	3.29	2.67	04:35	0.86	19:35	1.50	1.26	04:20	0.055	19:35	0.214	0.138	0.138	-
11/12/2020	04:30	1.82	18:45	3.27	2.66	04:30	0.83	18:40	1.53	1.27	04:30	0.050	18:45	0.217	0.139	0.139	0.16
11/13/2020	03:10	1.98	19:40	3.22	2.67	02:45	0.94	19:40	1.49	1.28	03:10	0.064	19:40	0.206	0.139	0.139	0.38
11/14/2020	05:50	1.75	18:55	3.46	2.73	05:50	0.81	18:50	1.61	1.28	05:50	0.046	18:50	0.247	0.147	0.147	0.47
11/15/2020	05:45	1.85	10:55	3.46	2.81	05:35	0.84	10:40	1.53	1.29	05:50	0.052	10:45	0.234	0.153	0.153	0.19
11/16/2020	04:25	1.90	17:50	3.40	2.77	04:25	0.88	17:50	1.56	1.30	04:25	0.057	17:50	0.234	0.150	0.150	0.31
11/17/2020	04:30	1.90	19:55	3.57	2.72	04:30	0.88	19:55	1.64	1.27	04:30	0.057	19:55	0.264	0.144	0.144	0.20
11/18/2020	04:25	1.84	19:00	3.32	2.72	04:30	0.84	18:20	1.49	1.26	04:30	0.051	19:00	0.214	0.143	0.143	0.30
11/19/2020	03:15	1.92	20:05	3.32	2.73	02:15	0.87	17:45	1.52	1.27	03:15	0.058	17:45	0.216	0.144	0.144	0.50
11/20/2020	04:15	1.87	20:15	3.17	2.69	03:25	0.84	10:45	1.46	1.25	03:25	0.053	18:05	0.194	0.139	0.139	0.01
11/21/2020	04:45	1.97	11:15	3.33	2.74	04:35	0.91	11:20	1.49	1.28	04:35	0.062	11:15	0.216	0.145	0.145	-
11/22/2020	05:20	1.88	11:40	3.43	2.81	05:20	0.84	11:40	1.56	1.28	05:20	0.053	11:40	0.236	0.154	0.154	0.21
11/23/2020	05:05	1.90	19:00	3.36	2.72	05:00	0.87	19:00	1.52	1.26	05:00	0.057	19:00	0.225	0.142	0.142	0.14
11/24/2020	05:00	1.84	16:25	3.41	2.75	04:55	0.78	20:20	1.61	1.25	04:55	0.048	16:25	0.231	0.143	0.143	0.21
11/25/2020	03:20	1.94	14:45	3.44	2.76	03:15	0.82	14:45	1.51	1.26	03:15	0.055	14:45	0.230	0.145	0.145	0.05
11/26/2020	06:35	2.05	11:55	3.69	2.89	06:45	0.89	11:30	1.70	1.32	06:45	0.064	11:50	0.283	0.165	0.165	0.02
11/27/2020	05:05	1.90	12:20	3.38	2.68	05:05	0.82	12:35	1.48	1.22	05:05	0.053	12:15	0.217	0.136	0.136	-
11/28/2020	05:55	1.80	12:55	3.49	2.78	05:55	0.78	12:45	1.55	1.26	05:55	0.046	12:55	0.240	0.149	0.149	0.05
11/29/2020	05:15	1.86	12:55	3.53	2.77	06:05	0.78	12:35	1.60	1.25	05:15	0.050	12:35	0.247	0.148	0.148	-
11/30/2020	03:20	1.94	18:45	3.36	2.77	03:10	0.85	19:10	1.52	1.28	03:10	0.056	18:50	0.220	0.147	0.147	0.36
12/01/2020	05:00	1.97	19:55	3.28	2.73	05:00	0.85	19:20	1.52	1.25	05:00	0.058	19:20	0.212	0.141	0.141	-
12/02/2020	03:10	1.96	20:50	3.48	2.74	02:55	0.86	20:45	1.57	1.26	03:00	0.058	20:55	0.244	0.145	0.145	0.01
12/03/2020	04:20	1.88	20:45	3.37	2.74	04:20	0.80	20:40	1.53	1.26	04:20	0.051	20:45	0.226	0.143	0.143	-
12/04/2020	04:30	1.97	19:05	3.26	2.70	04:25	0.85	19:05	1.48	1.25	04:25	0.058	19:05	0.208	0.139	0.139	-
12/05/2020	04:10	1.97	10:55	3.44	2.73	04:25	0.83	10:55	1.55	1.25	04:25	0.057	10:55	0.237	0.144	0.144	0.03
12/06/2020	05:10	1.84	18:25	3.52	2.83	05:05	0.81	18:00	1.57	1.28	05:05	0.050	18:25	0.245	0.156	0.156	0.03
12/07/2020	04:40	1.95	18:45	3.29	2.72	04:35	0.83	18:15	1.50	1.25	04:35	0.056	18:50	0.215	0.141	0.141	-
12/08/2020	04:55	1.96	17:40	3.57	2.88	04:55	0.85	17:50	1.59	1.30	04:55	0.057	17:50	0.254	0.161	0.161	0.87
12/09/2020	05:05	2.05	13:35	3.39	2.78	05:05	0.89	19:20	1.50	1.27	05:05	0.064	13:35	0.221	0.146	0.146	0.17
12/10/2020	04:40	1.86	18:25	3.27	2.72	03:55	0.81	20:55	1.48	1.25	04:40	0.050	18:25	0.208	0.141	0.141	0.07
12/11/2020	04:30	2.04	18:05	3.29	2.76	04:30	0.89	10:00	1.49	1.27	04:30	0.064	18:10	0.211	0.145	0.145	0.02
12/12/2020	04:30	1.85	12:30	3.42	2.74	04:35	0.77	12:20	1.53	1.24	04:30	0.048	12:30	0.230	0.143	0.143	0.01
12/13/2020	06:00	1.99	11:20	3.56	2.80	04:55	0.82	12:20	1.67	1.27	04:55	0.058	12:20	0.262	0.151	0.151	0.24
12/14/2020	04:50	1.95	18:20	3.37	2.74	03:35	0.80	18:15	1.52	1.24	03:35	0.055	18:20	0.225	0.141	0.141	0.05
12/15/2020	04:30	1.89	19:15	3.43	2.77	04:30	0.78	17:50	1.54	1.25	04:30	0.050	19:15	0.230	0.146	0.146	0.58
12/16/2020	05:00	1.98	11:20	3.30	2.77	04:05	0.86	11:20	1.49	1.25	04:05	0.060	11:20	0.214	0.145	0.145	0.39
12/17/2020	04:15	1.91	18:15	3.34	2.75	04:05	0.82	17:20	1.44	1.23	04:15	0.053	18:15	0.210	0.140	0.140	0.08
12/18/2020	05:05	1.98	20:30	3.38	2.78	02:55	0.85	13:00	1.42	1.23	05:05	0.059	20:30	0.202	0.142	0.142	0.25
12/19/2020	06:15	1.93	11:45	3.38	2.76	06:05	0.81	11:50	1.49	1.25	06:15	0.053	11:45	0.219	0.145	0.145	0.37
12/20/2020	05:05	1.89	12:10	3.48	2.79	05:05	0.81	13:05	1.60	1.26	05:00	0.052	11:40	0.239	0.148	0.148	0.04
12/21/2020	04:05	2.16	18:55	4.18	2.98	04:00	0.96	18:30	1.66	1.24	04:05	0.074	18:30	0.295	0.157	0.157	1.07
12/22/2020	04:30	1.90	18:05	3.19	2.75	04:25	0.81	18:10	1.48	1.23	04:25	0.052	18:10	0.201	0.141	0.141	-
12/23/2020	04:10	2.08	20:40	3.26	2.73	03:55	0.92	21:05	1.52	1.25	03:55	0.068	21:05	0.209	0.140	0.140	-
12/24/2020	04:20	1.89	14:40	3.50	2.83	04:30	0.81	14:30	1.58	1.28	04:25	0.052	14:30	0.244	0.155	0.155	-
12/25/2020	06:00	1.80	12:45	3.40	2.70	05:55	0.76	12:35	1.53	1.23	06:00	0.045	12:45	0.225	0.140	0.140	0.49
12/26/2020	06:05	1.91	12:00	3.44	2.76	06:15	0.82	11:50	1.53	1.24	06:15	0.053	11:55	0.232	0.144	0.144	0.02
12/27/2020	04:20	1.84	12:10	3.58	2.81	04:25	0.79	12:40	1.50	1.24	04:25	0.048	12:40	0.238	0.149	0.149	0.13
12/28/2020	04:30	1.86	20:30	3.59	2.77	04:25	0.80	18:20	1.52	1.24	04:30	0.050	20:30	0.242	0.146	0.146	-
12/29/2020	03:50	1.99	20:45	3.46	2.75	03:00	0.88	20:40	1.54	1.25	03:15	0.061	20:45	0.237	0.143	0.143	0.14
12/30/2020	02:00	2.21	18:15	3.38	2.86	02:00	0.96	21:35	1.48	1.25	02:00	0.077	21:35	0.216	0.149	0.149	0.78
12/31/2020	04:55	2.12	17:30	3.63	2.90	04:50	0.94	17:55	1.49	1.24	04:50	0.071	17:55	0.241	0.153	0.153	0.17

09/22/2020 00:00 - 04/14/2021 23:56

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total			29.683	30.65
Average	2.77	1.25	0.145	

Auburn.TFM.WA20-22

Flow Monitoring Site Report

ADS ENVIRONMENTAL SERVICES®

Site Name

AUB_Y-4_101002

Site Address /Location:	Cnr K St SE and 17th SE, Auburn		
Site Access Details:	Park on K St SE	Latitude:	47.293542°
		Longitude:	-122.216166°

Monitor Series	Location Type
TRITON+	Temporary
Pipe Size (H x W)	Pipe Shape
18.00 x18.00	Circular



Manhole #	System Characteristics
Y-4(1010-02)	Residential
Access	Traffic
Drive	None







ADS Project Name:	Auburn.TFM.WA20-22
ADS Project Number:	22519.22.325

Installation Information

Installation Date:	Installation Type:
Thursday, May 14, 2020	Doppler Standard Ring and Crank
Monitoring Location (Sensors):	Monitor Location:
Upstream 0-5 FT	Manhole
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4), Smart Depth (CS5)	0 - 5 psi

Installation Confirmation:

Confirmation Time:	Pipe Size (HxW)
10:08:00 PM	18.00 x 18.00
Depth of Flow (Wet DOF) (in)	
2.88	
CS5 Physical Offset (in)	Measurement Confidence (in)
1.38	0.38"
Peak Velocity (fps)	Velocity Sensor Offset (in)
1.42	0"
Silt (in)	Silt Type
0.00"	

Hydraulic Comments:
Slight bend after monitoring point

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
9	Single
Manhole Material:	Manhole Condition:
Concrete	Good
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
26	
Manhole Cover	Manhole Frame
Steel	Normal
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
Vitrified Clay Pipe	Fair

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

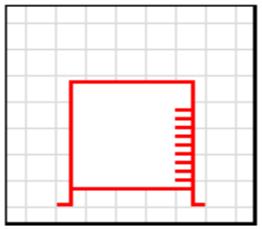
Additional Site Info. / Comments:

Hydrograph Report

RainGage_RG41Y

Rain Gauge

RainGage_RG41Y



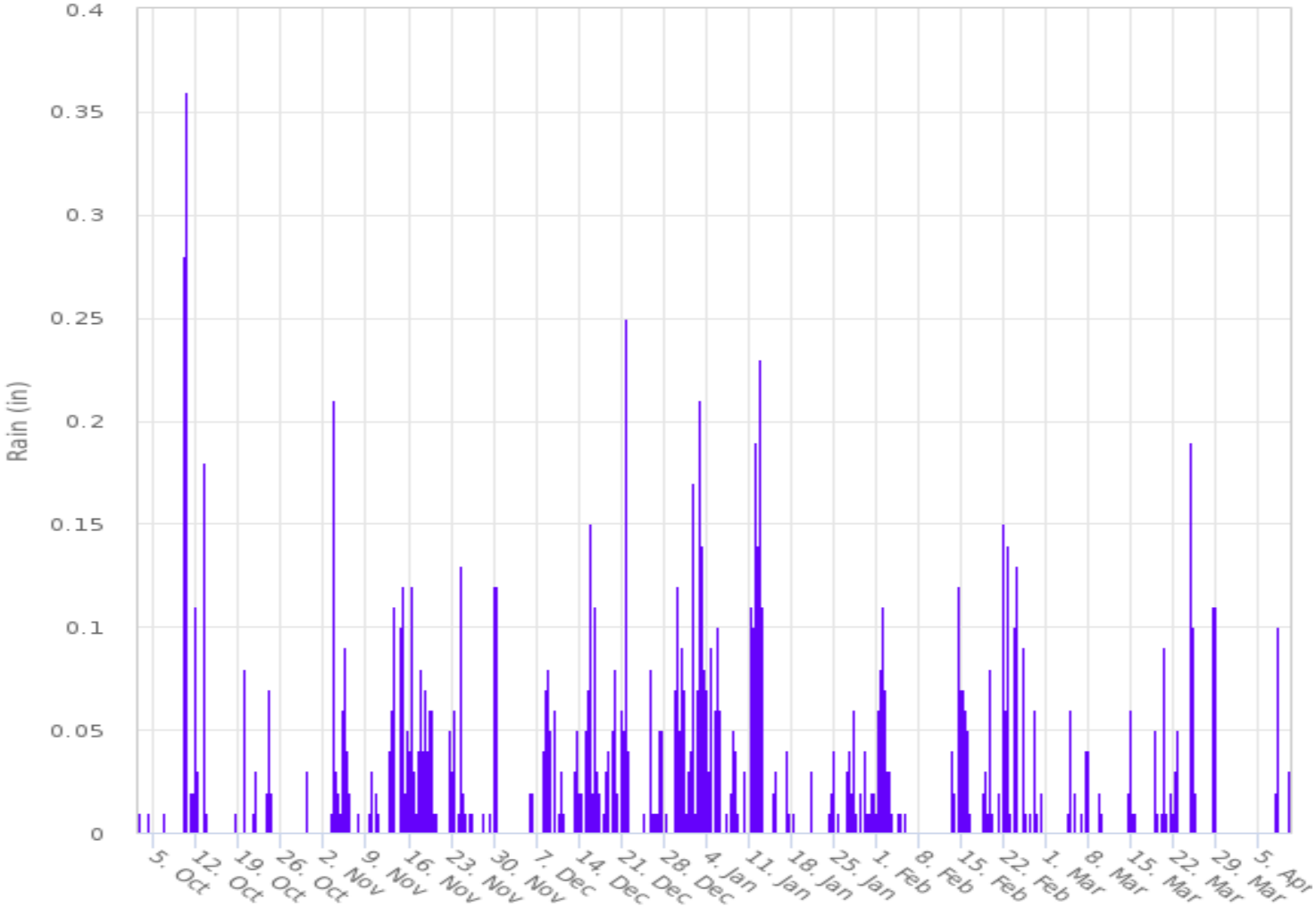
Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL

ADS ENVIRONMENTAL SERVICES



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
www.adsenv.com

Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
RainGage_RG41YRain Gauge: Rain Gauge (0 H x 0 W), Silt0.00

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.48
01/02/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.64
01/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.59
01/04/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.45
01/05/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.47
01/06/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19
01/07/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
01/08/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.23
01/09/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
01/10/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.07
01/11/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.99
01/12/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.04
01/13/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10
01/14/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
01/15/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.09
01/16/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/17/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08
01/18/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
01/19/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/20/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/21/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.09
01/22/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/23/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.14
01/25/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
01/26/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/27/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.16
01/28/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22
01/29/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
01/30/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.09
01/31/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13
02/01/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78
02/02/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.35
02/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06
02/04/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03
02/05/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
02/06/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/07/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/08/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/09/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/10/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/11/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/12/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/13/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.09
02/14/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.68
02/15/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.65
02/16/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
02/17/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/18/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.09
02/19/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.15
02/20/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
02/21/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.34
02/22/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.71
02/23/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.39
02/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
02/25/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.18
02/26/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12
02/27/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
02/28/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
03/01/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/02/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/04/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22
03/05/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03
03/06/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
03/07/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08
03/08/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/09/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
03/10/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/11/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/12/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/13/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/14/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.23
03/15/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
03/16/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/17/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/18/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10
03/19/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03
03/20/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.18
03/21/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06
03/22/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10
03/23/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.33
03/25/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.36
03/26/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/27/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/28/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.40
03/29/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/30/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/31/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/01/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/02/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/04/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/05/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/06/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/07/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.09
04/08/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10
04/09/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/10/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
04/11/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/12/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/13/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/14/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/01/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/02/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
10/03/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/04/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
10/05/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/06/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
10/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/08/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/09/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.35
10/10/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.47
10/11/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.55
10/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/13/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.60
10/14/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/15/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/16/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/17/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/18/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
10/19/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10
10/20/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/21/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
10/22/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/23/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.20
10/24/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05
10/25/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/26/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/27/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/28/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
10/31/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/01/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/02/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/03/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.81
11/04/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10
11/05/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.39
11/06/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
11/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
11/08/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/09/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.07

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/10/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
11/11/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.15
11/13/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.41
11/14/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.46
11/15/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.21
11/16/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.32
11/17/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19
11/18/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.28
11/19/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.26
11/20/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
11/21/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/22/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22
11/23/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.16
11/24/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17
11/25/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
11/26/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
11/27/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/28/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03
11/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
11/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.34
12/01/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/02/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/03/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/04/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/05/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
12/06/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
12/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/08/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.71
12/09/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22
12/10/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
12/11/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
12/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/13/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.21
12/14/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05
12/15/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.52
12/16/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.37
12/17/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06
12/18/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.18
12/19/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.43
12/20/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06
12/21/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.14
12/22/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/23/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/24/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
12/25/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.36
12/26/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03
12/27/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13
12/28/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
12/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17
12/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.81
12/31/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.18

09/22/2020 00:00 - 04/14/2021 23:56

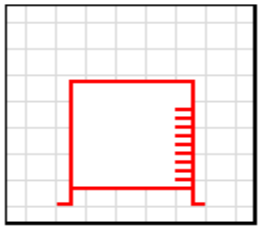
	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total				29.40
Average				

Hydrograph Report

RainGage_RGAUB

Rain Gauge

RainGage_RGAUB

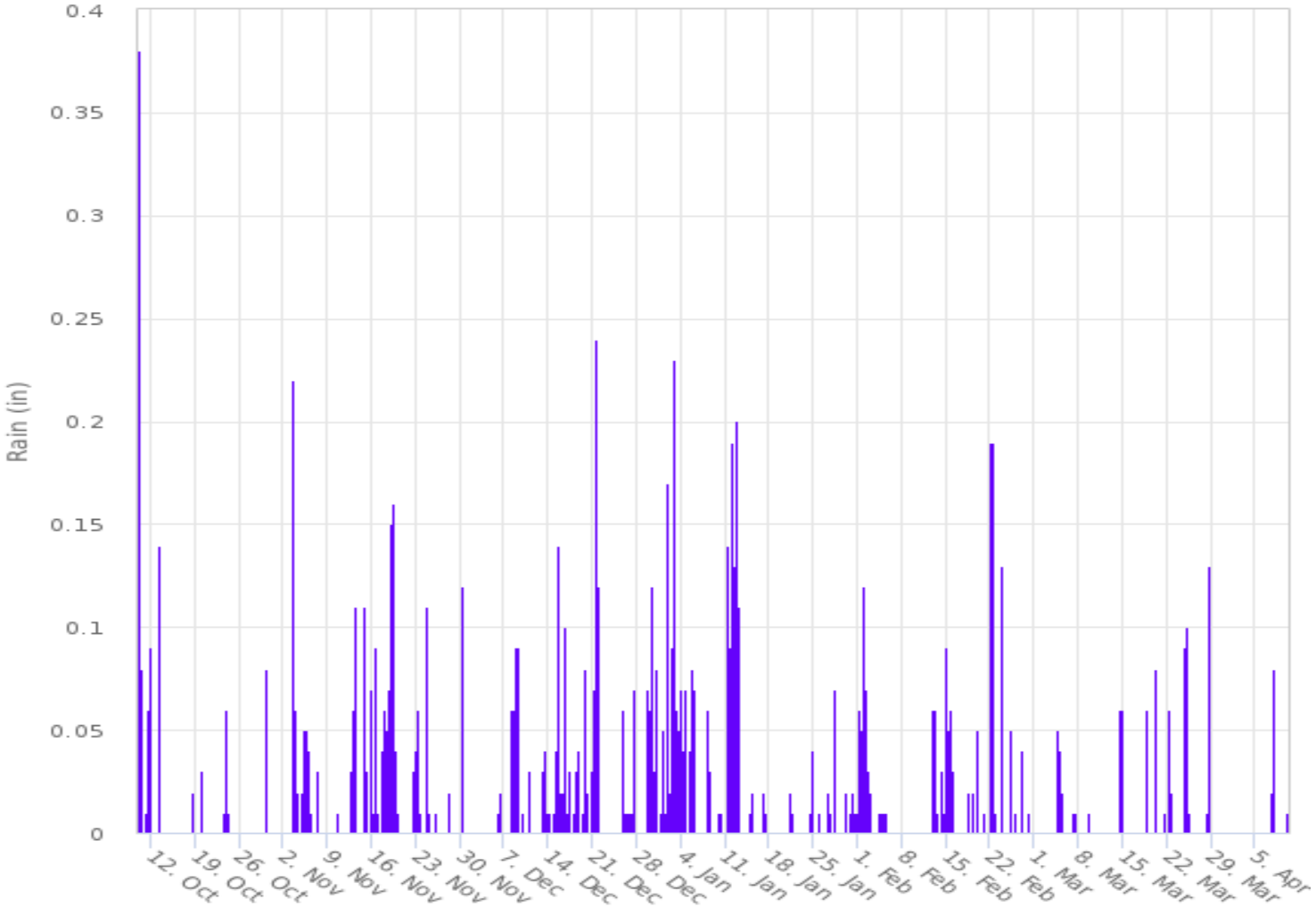


Report Period

09/22/2020
To
04/14/2021

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL



4455 S. 134th Place
Tukwila, WA 98168

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Daily Tabular Report

09/22/2020 00:00 - 04/14/2021 23:56
RainGage_RGAUBRain Gauge: Rain Gauge (0 H x 0 W), Silt0.00

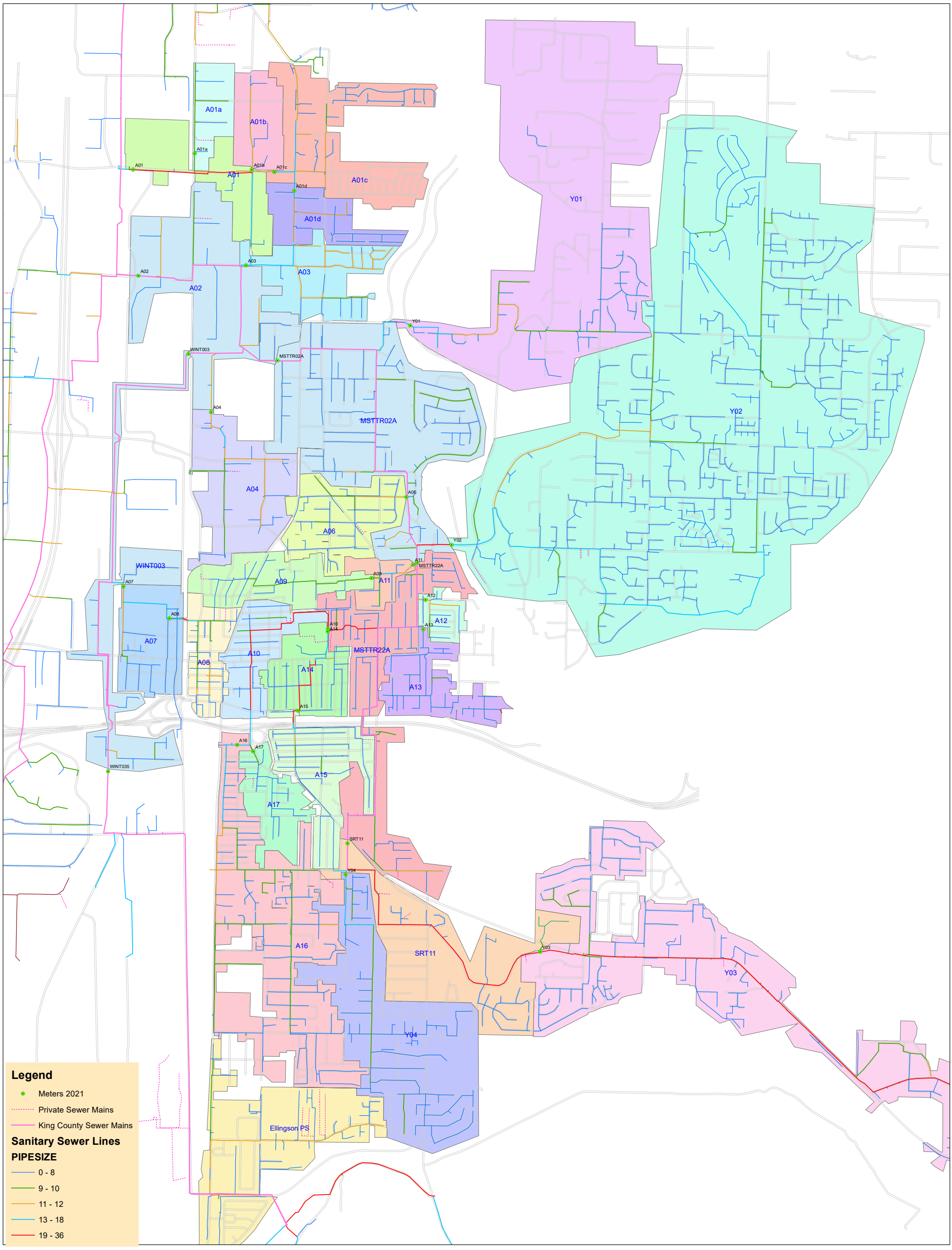
	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
01/01/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.48
01/02/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.40
01/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.51
01/04/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.40
01/05/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.41
01/06/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22
01/07/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/08/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17
01/09/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/10/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03
01/11/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.02
01/12/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.87
01/13/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.11
01/14/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/15/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.09
01/16/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/17/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.07
01/18/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/19/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/20/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/21/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05
01/22/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/23/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.09
01/25/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
01/26/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/27/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08
01/28/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.18
01/29/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/30/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05
01/31/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10
02/01/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78
02/02/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.26
02/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
02/04/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03
02/05/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
02/06/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/07/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/08/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/09/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/10/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/11/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/12/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.14
02/13/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.36
02/14/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19
02/15/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.58
02/16/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05
02/17/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/18/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
02/19/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10
02/20/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
02/21/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.37
02/22/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.94
02/23/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.20
02/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/25/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12
02/26/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06
02/27/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/28/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
03/01/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/02/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/04/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17
03/05/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03
03/06/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/07/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
03/08/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/09/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
03/10/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
03/11/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/12/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/13/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/14/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22
03/15/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/16/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/17/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/18/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12
03/19/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/20/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.15
03/21/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03
03/22/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13
03/23/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.21
03/25/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.35
03/26/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/27/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/28/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.34
03/29/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/30/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/31/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/01/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/02/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/04/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/05/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/06/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/07/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10
04/08/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08
04/09/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/10/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03
04/11/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/12/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/13/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/14/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/01/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/02/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/03/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/04/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/05/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/06/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/08/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/09/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30
10/10/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.22
10/11/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.46
10/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/13/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.59
10/14/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/15/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/16/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/17/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/18/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
10/19/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
10/20/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/21/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/22/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/23/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17
10/24/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
10/25/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/26/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/27/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/28/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.09
10/31/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/01/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/02/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/03/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.79
11/04/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06
11/05/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.29
11/06/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10
11/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03
11/08/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/09/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

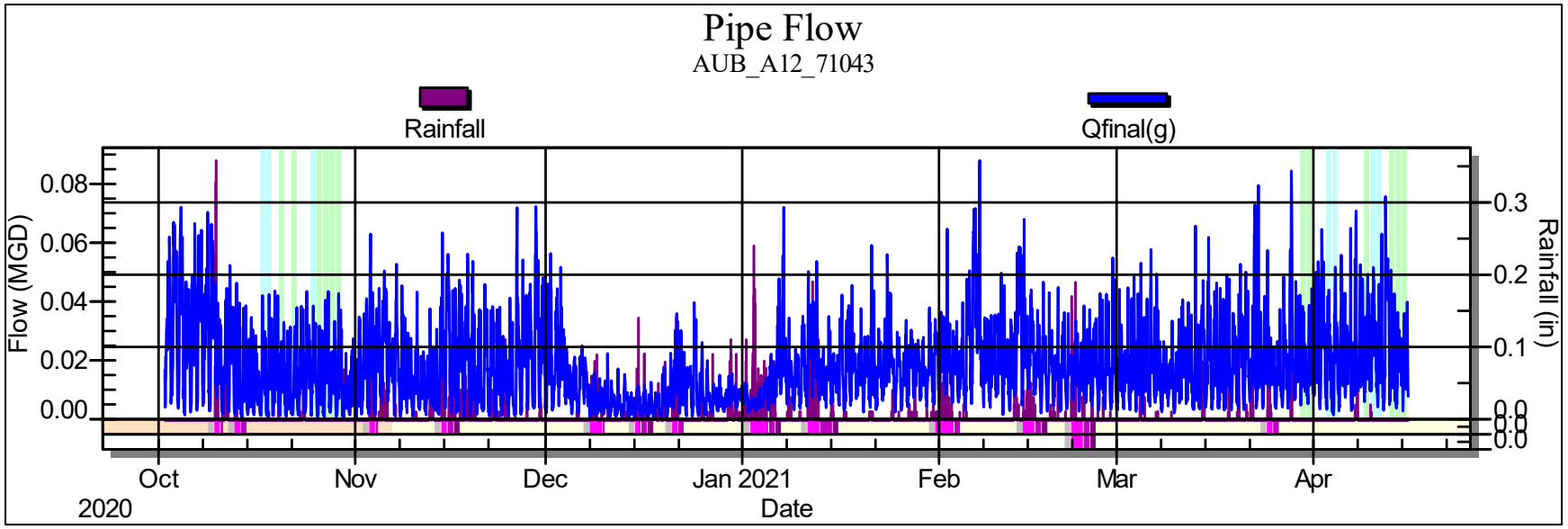
	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						Rain (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/10/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
11/11/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.11
11/13/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.32
11/14/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.40
11/15/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17
11/16/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.33
11/17/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.15
11/18/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.25
11/19/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.43
11/20/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/21/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/22/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19
11/23/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.11
11/24/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.16
11/25/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
11/26/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
11/27/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/28/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03
11/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30
12/01/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/02/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/03/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/04/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/05/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
12/06/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
12/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/08/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.81
12/09/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19
12/10/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
12/11/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
12/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/13/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.16
12/14/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
12/15/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.51
12/16/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.33
12/17/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03
12/18/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.16
12/19/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.41
12/20/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
12/21/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.07
12/22/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/23/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/24/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/25/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.25
12/26/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
12/27/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13
12/28/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13
12/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.71
12/31/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.15

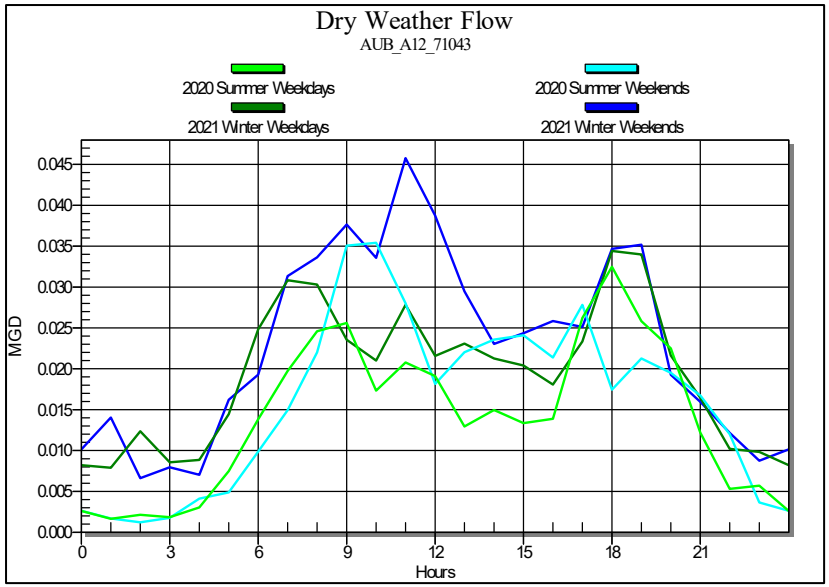
09/22/2020 00:00 - 04/14/2021 23:56

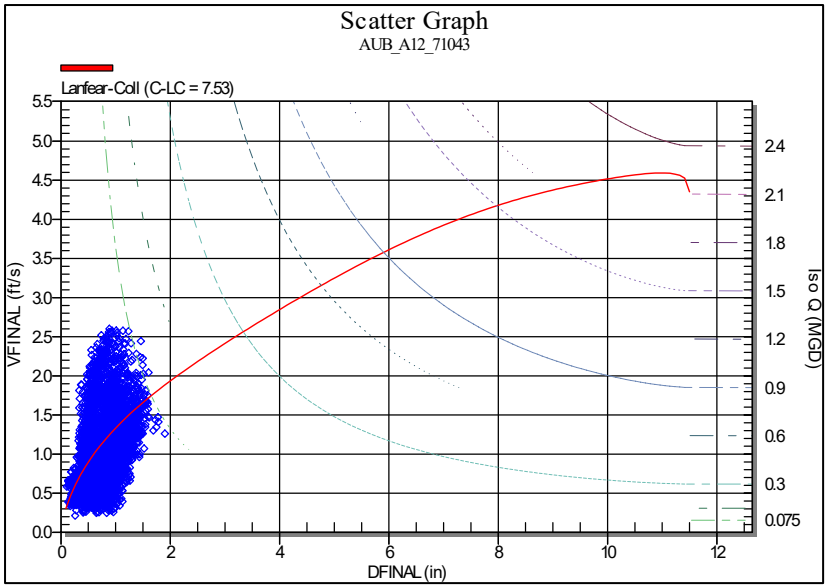
	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	Rain (in)
Total				26.02
Average				

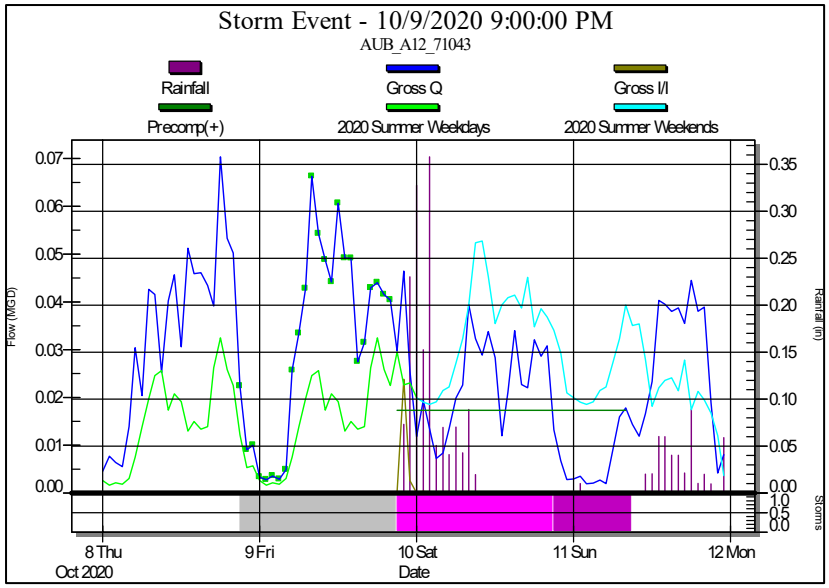


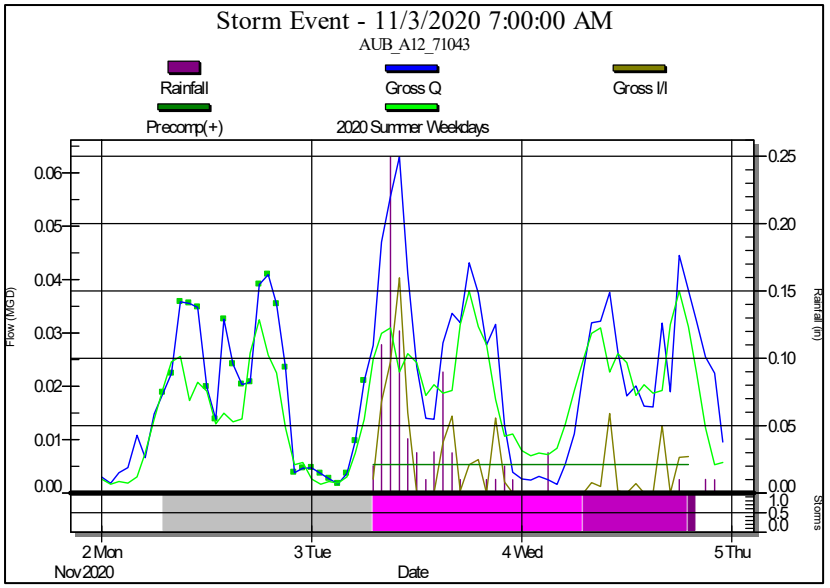
Meter Basins - 29 April 2021

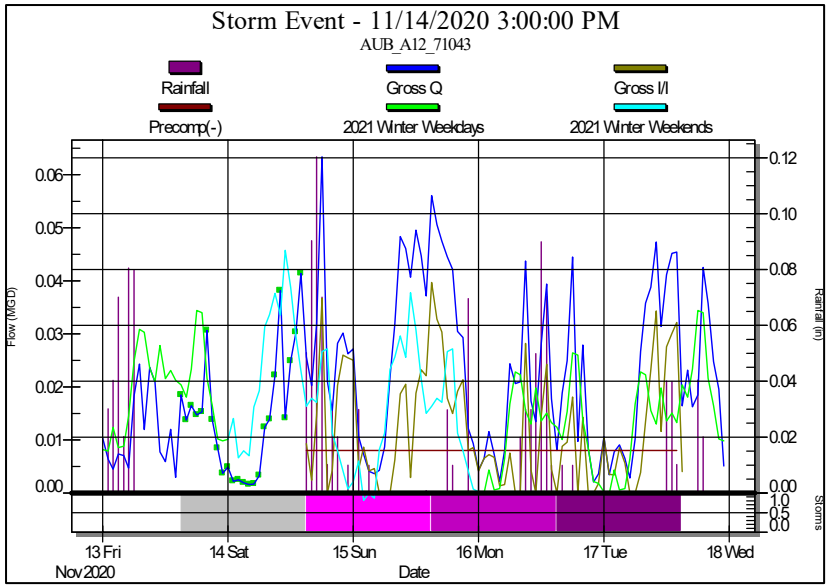

Pipe Flow
AUB_A12_71043
Rainfall
Qfinal(g)
Flow (MGD)
0.08
0.06
0.04
0.02
0.00
0.3
0.2
0.1
0.0
Rainfall (in)
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

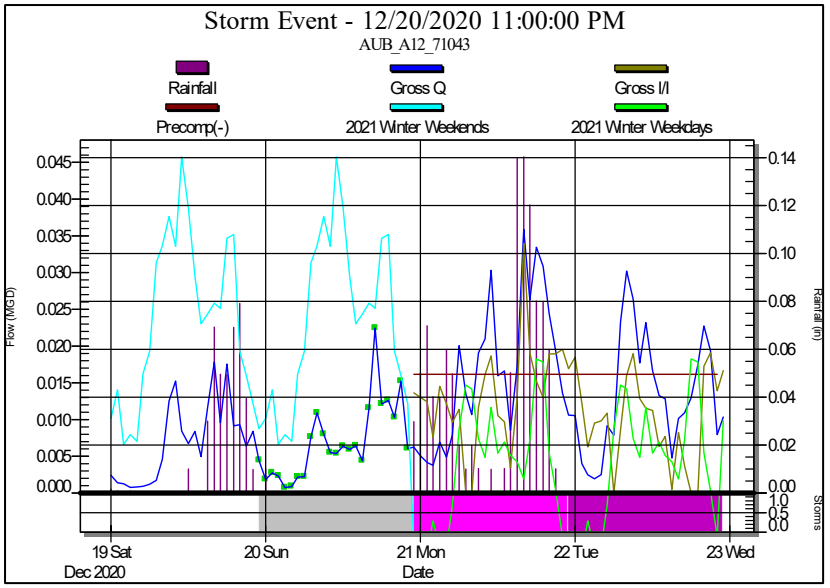

Dry Weather Flow
AUB_A12_71043
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
0
3
6
9
12
15
18
21
Hours

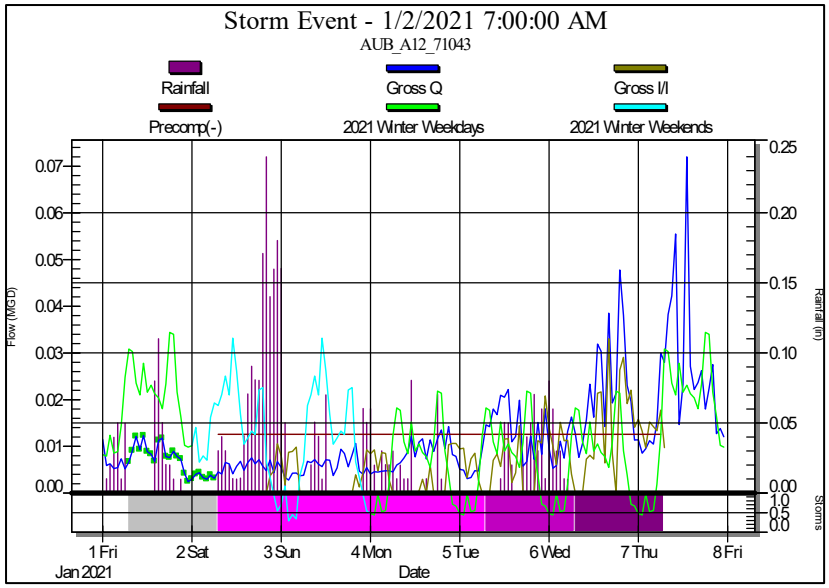

Scatter Graph
AUB_A12_71043
Lanfear-Coll (C-LC = 7.53)
VFINAL (ft/s)
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
2
4
6
8
10
12
DFINAL (in)
Iso Q (MGD)
2.4
2.1
1.8
1.5
1.2
0.9
0.6
0.3
0.075

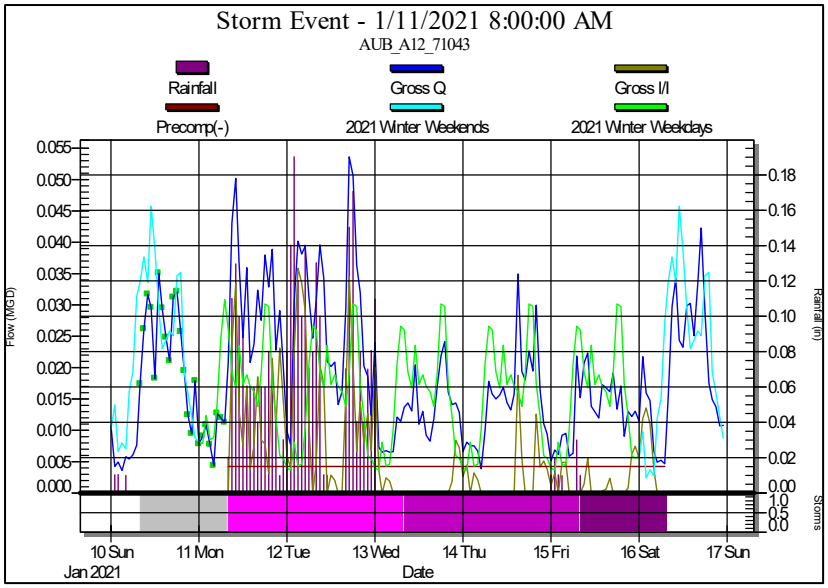

Storm Event - 10/9/2020 9:00:00 PM
AUB_A12_71043
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

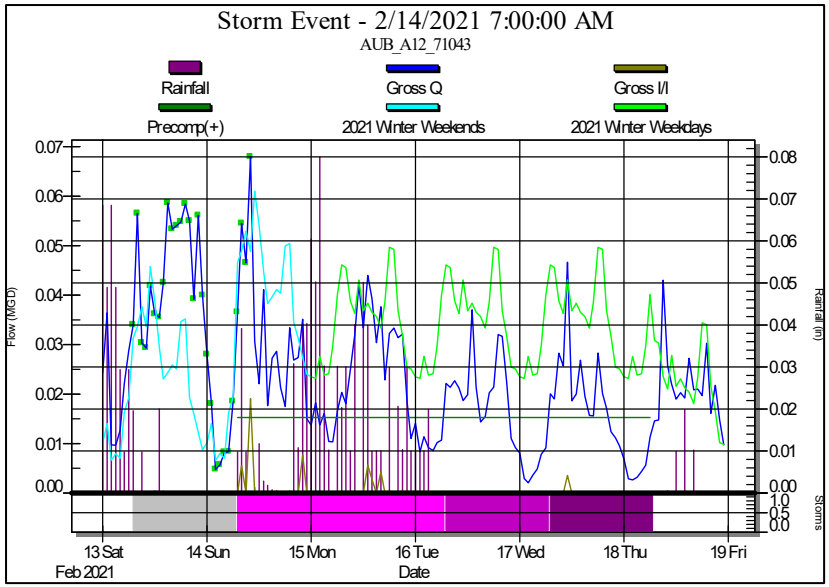

Storm Event - 11/3/2020 7:00:00 AM
AUB_A12_71043
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

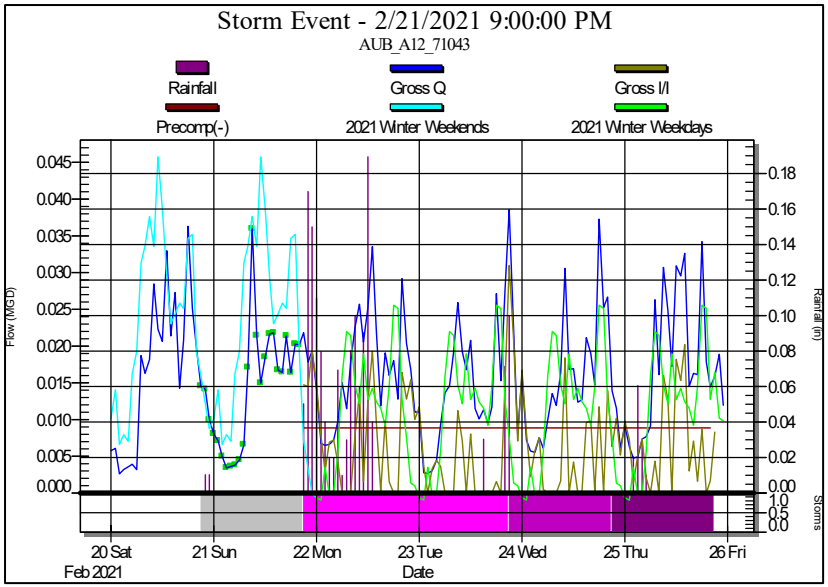

Storm Event - 11/14/2020 3:00:00 PM
AUB_A12_71043
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

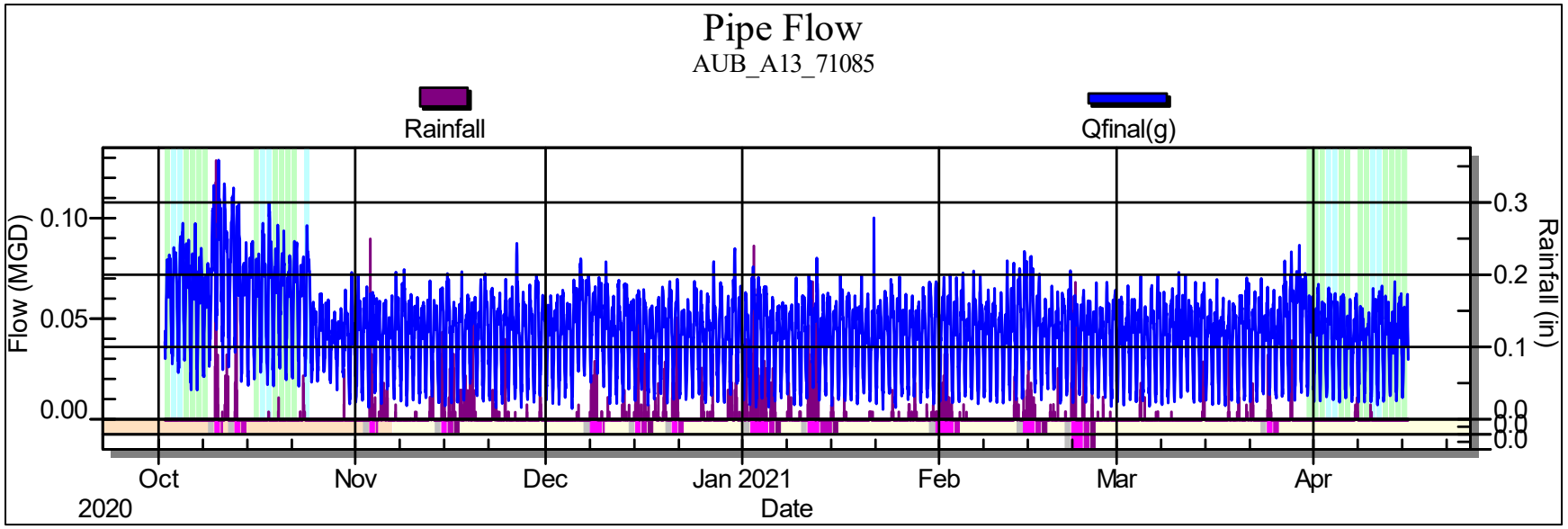

Storm Event - 12/20/2020 11:00:00 PM
AUB_A12_71043
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

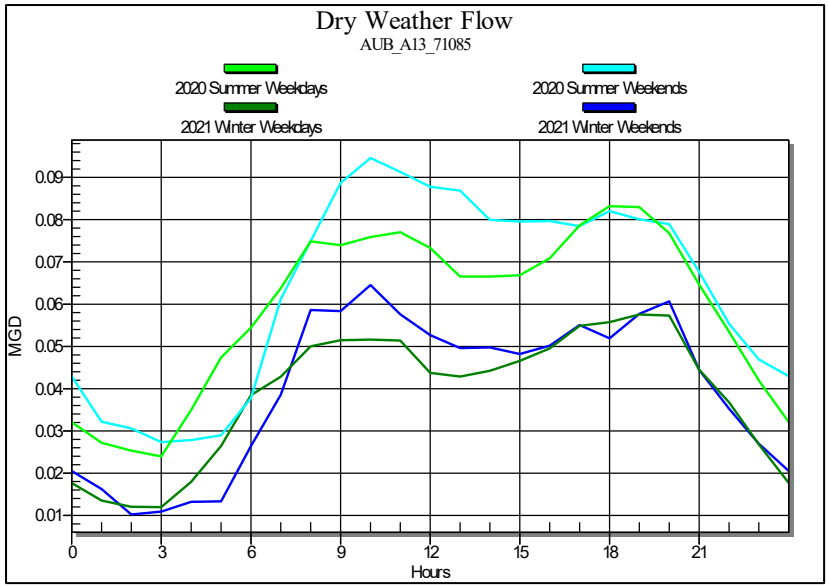

Storm Event - 1/2/2021 7:00:00 AM
AUB_A12_71043
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

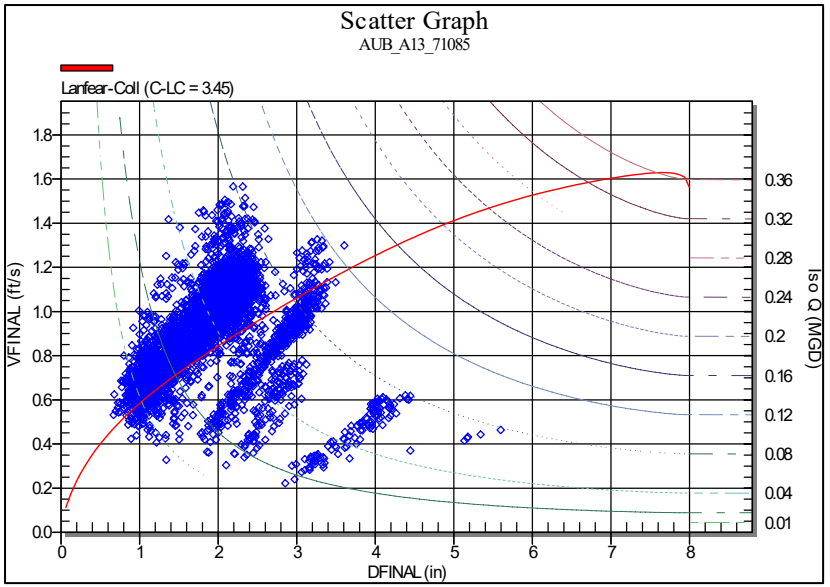

Storm Event - 1/11/2021 8:00:00 AM
AUB_A12_71043
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

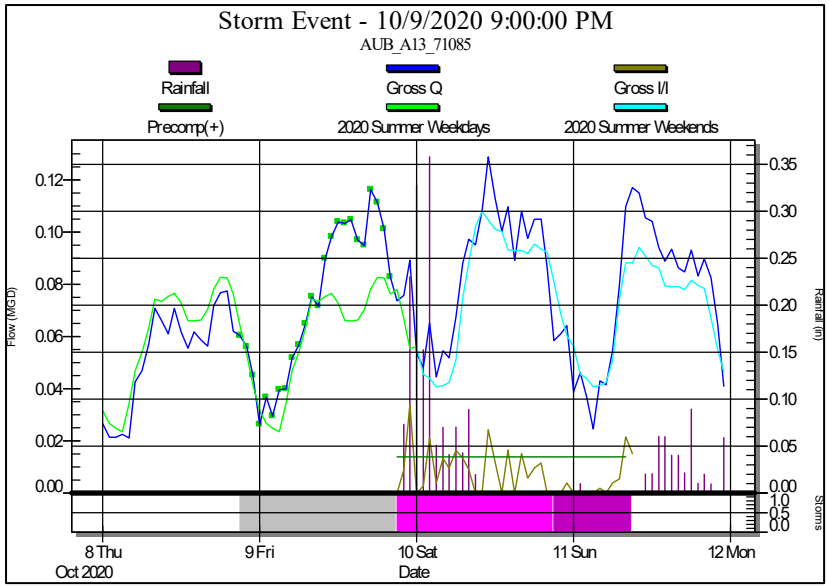

Storm Event - 2/14/2021 7:00:00 AM
AUB_A12_71043
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

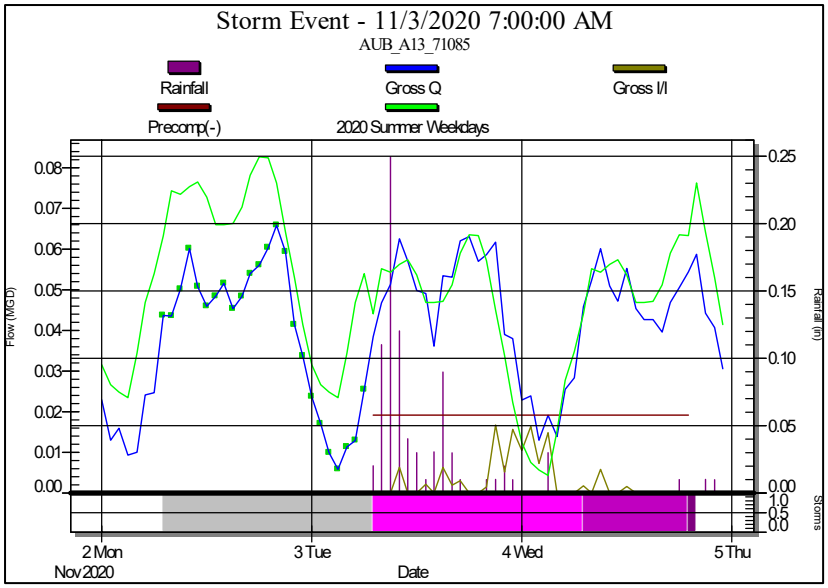

Storm Event - 2/21/2021 9:00:00 PM
AUB_A12_71043
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

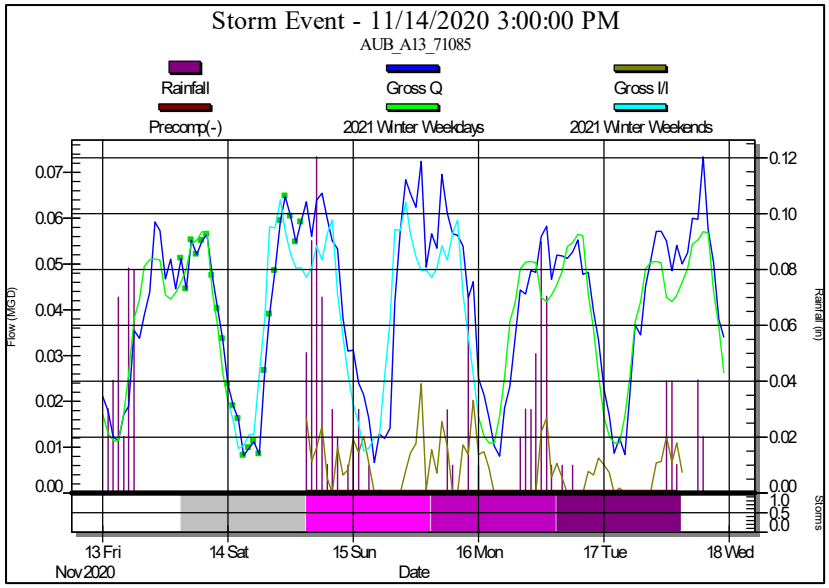

Pipe Flow
AUB_A13_71085
Rainfall
Qfinal(g)
Flow (MGD)
0.10
0.05
0.00
0.3
0.2
0.1
0.0
Rainfall (in)
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

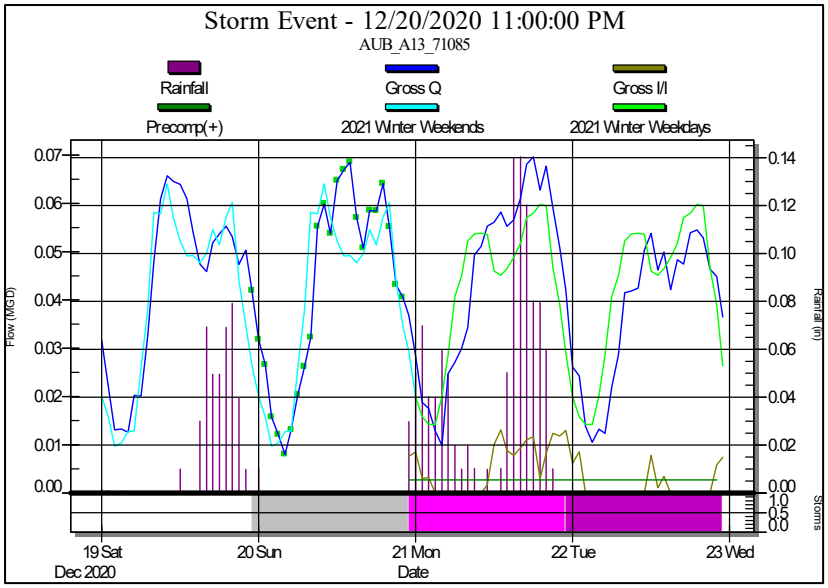

Dry Weather Flow
AUB_A13_71085
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
3
6
9
12
15
18
21
Hours

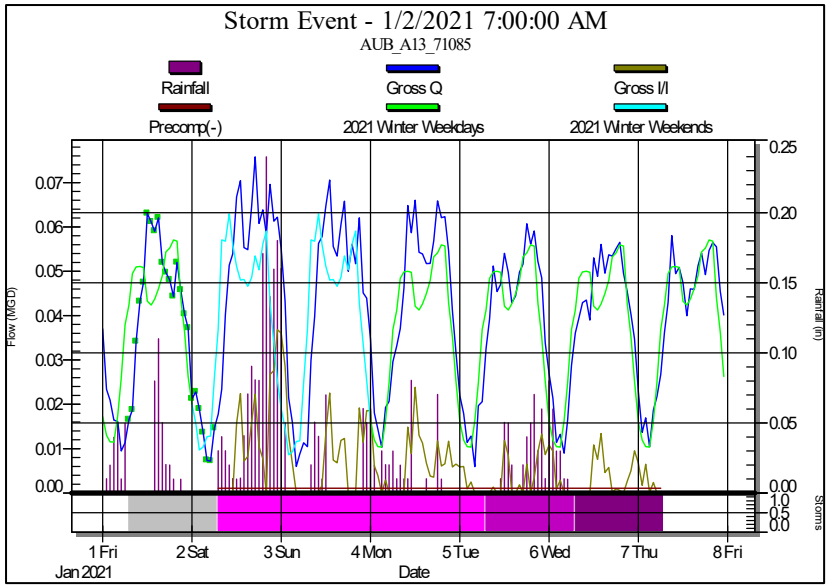

Scatter Graph
AUB_A13_71085
Lanfear-Coll (C-LC = 3.45)
VFINAL (ft/s)
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.36
0.32
0.28
0.24
0.2
0.16
0.12
0.08
0.04
0.01
Iso Q (MGD)
0
1
2
3
4
5
6
7
8
DFINAL (in)

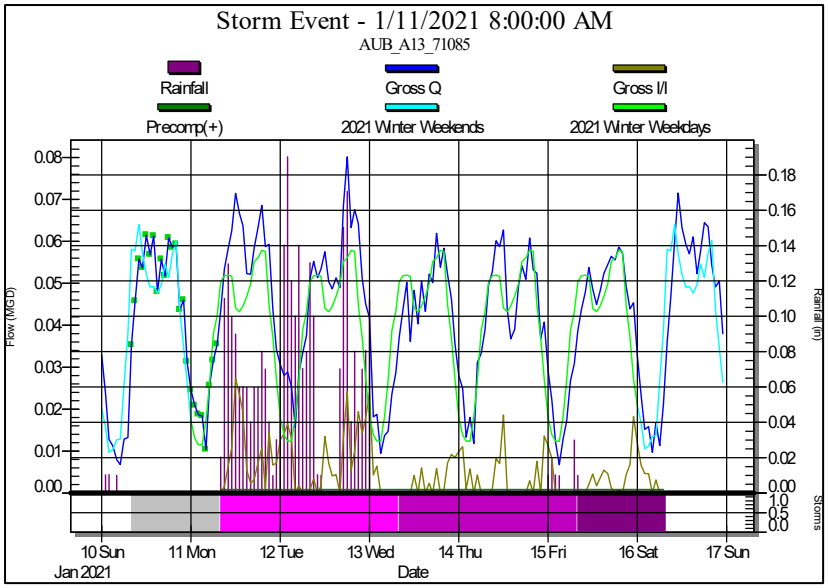

Storm Event - 10/9/2020 9:00:00 PM
AUB_A13_71085
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

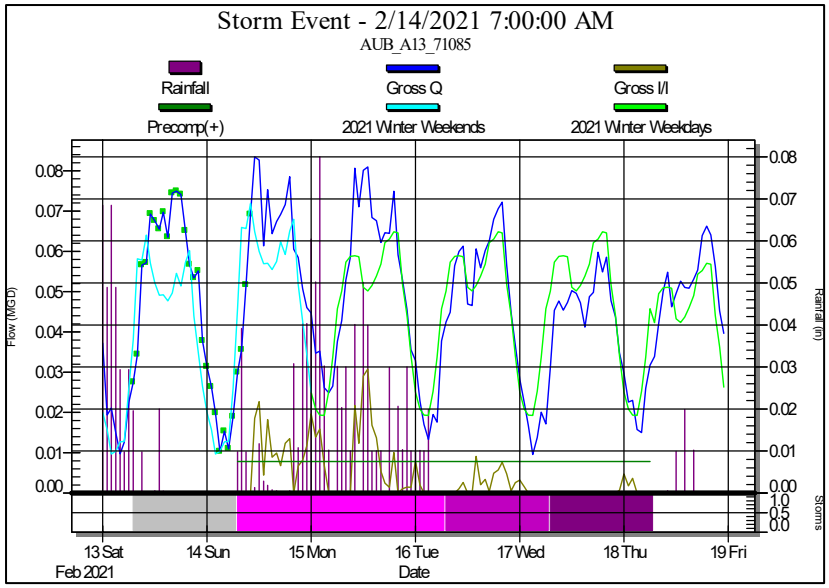

Storm Event - 11/3/2020 7:00:00 AM
AUB_A13_71085
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

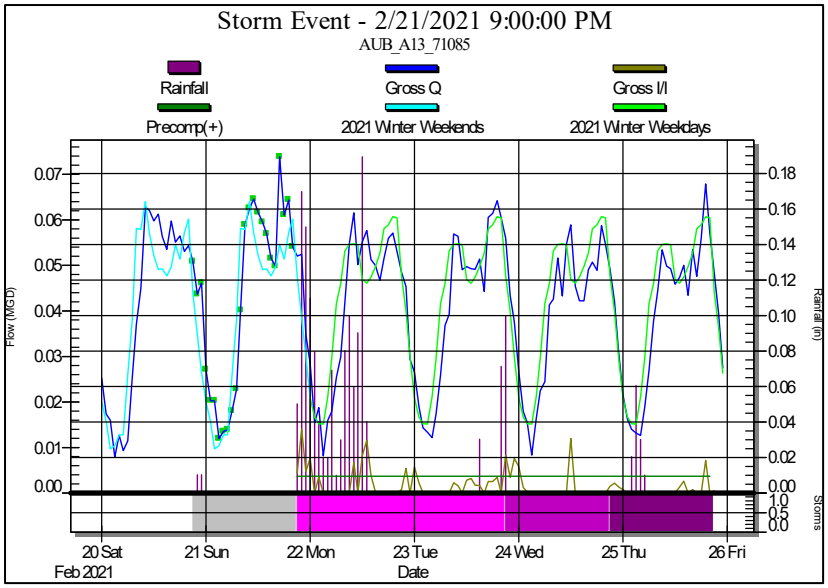

Storm Event - 11/14/2020 3:00:00 PM
AUB_A13_71085
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

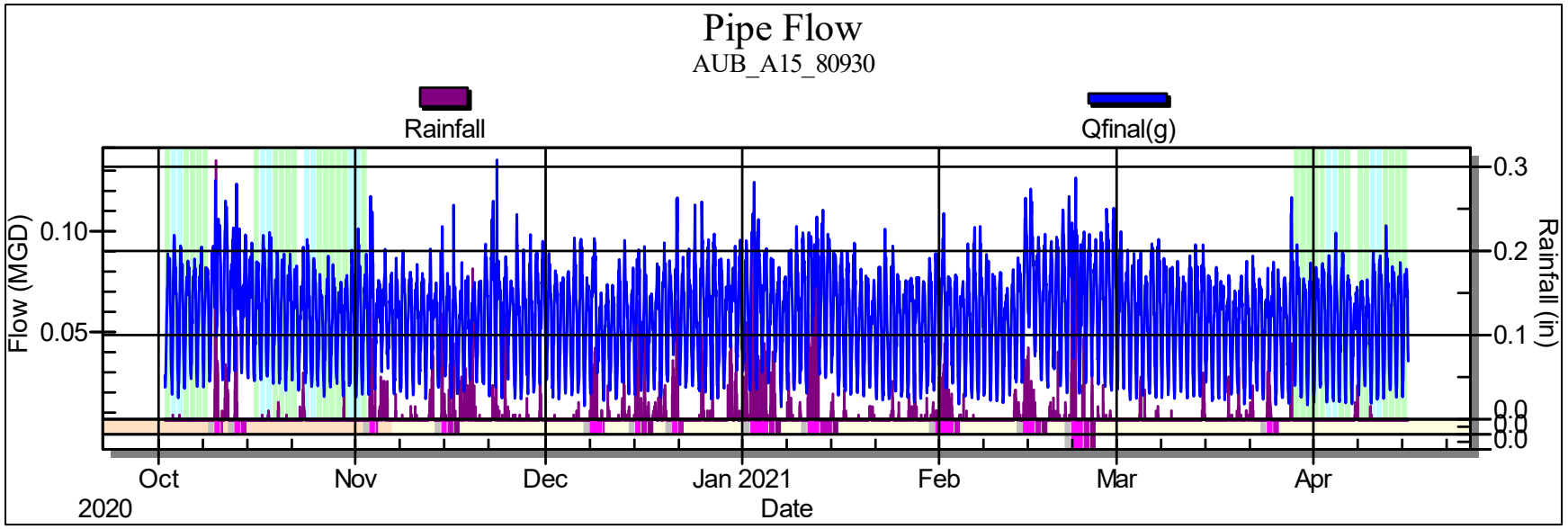

Storm Event - 12/20/2020 11:00:00 PM
AUB_A13_71085
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

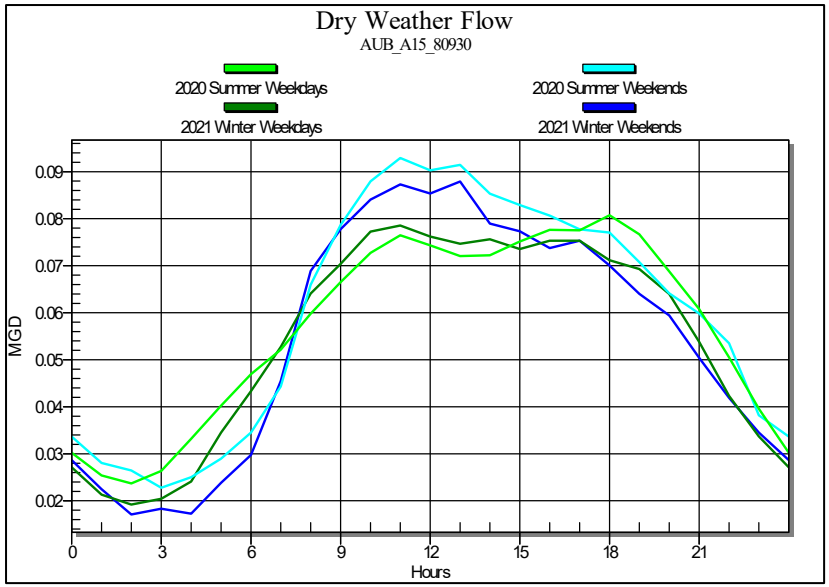

Storm Event - 1/2/2021 7:00:00 AM
AUB_A13_71085
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

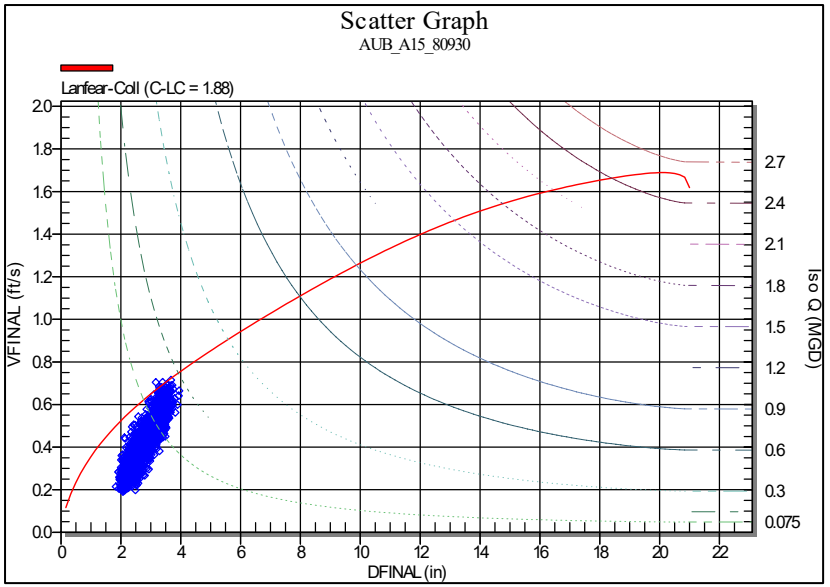

Storm Event - 1/11/2021 8:00:00 AM
AUB_A13_71085
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

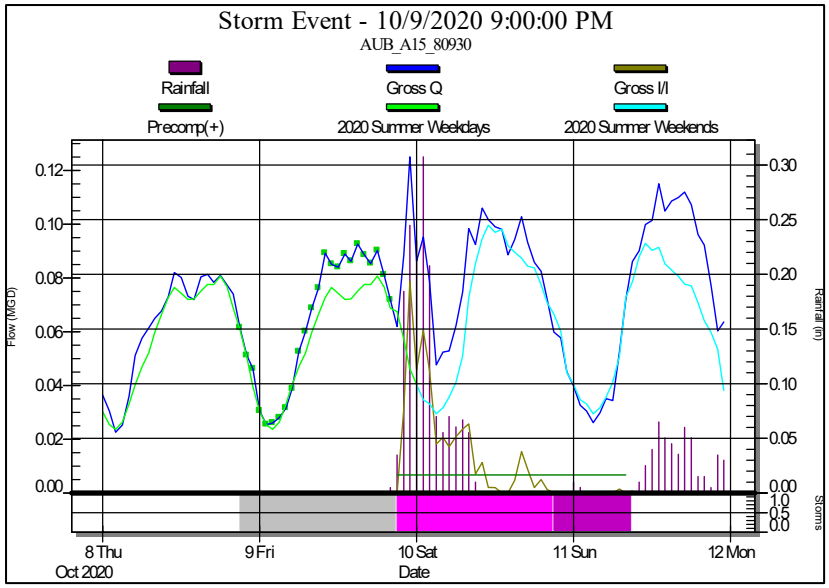

Storm Event - 2/14/2021 7:00:00 AM
AUB_A13_71085
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

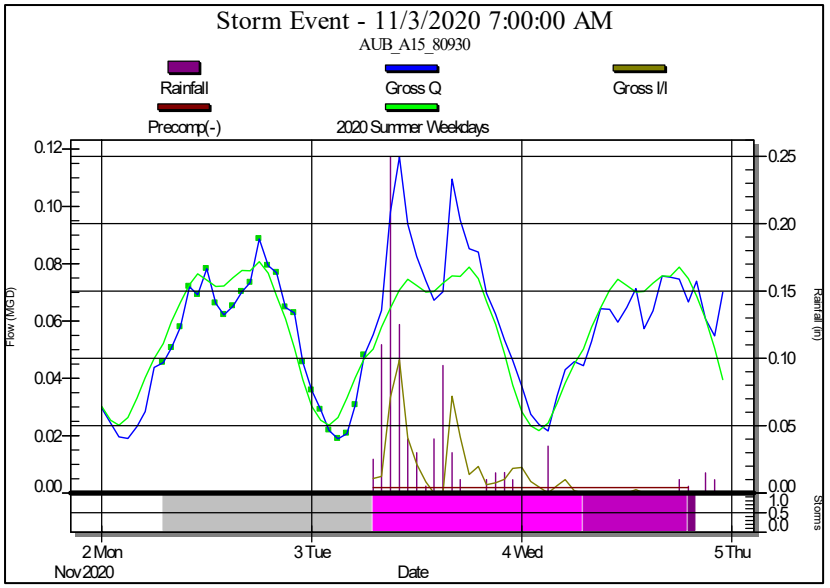

Storm Event - 2/21/2021 9:00:00 PM
AUB_A13_71085
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

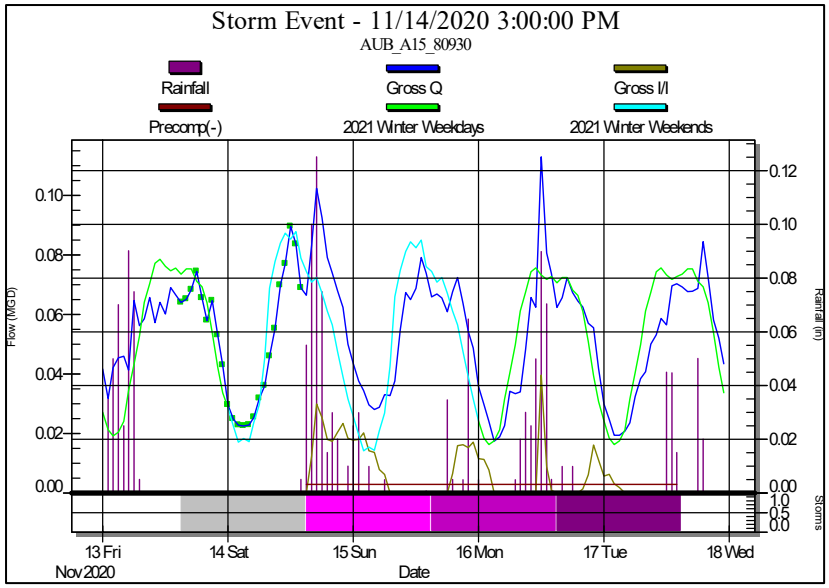

Pipe Flow
AUB_A15_80930
Rainfall
Qfinal(g)
Flow (MGD)
0.10
0.05
0.3
0.2
0.1
0.0
Rainfall (in)
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

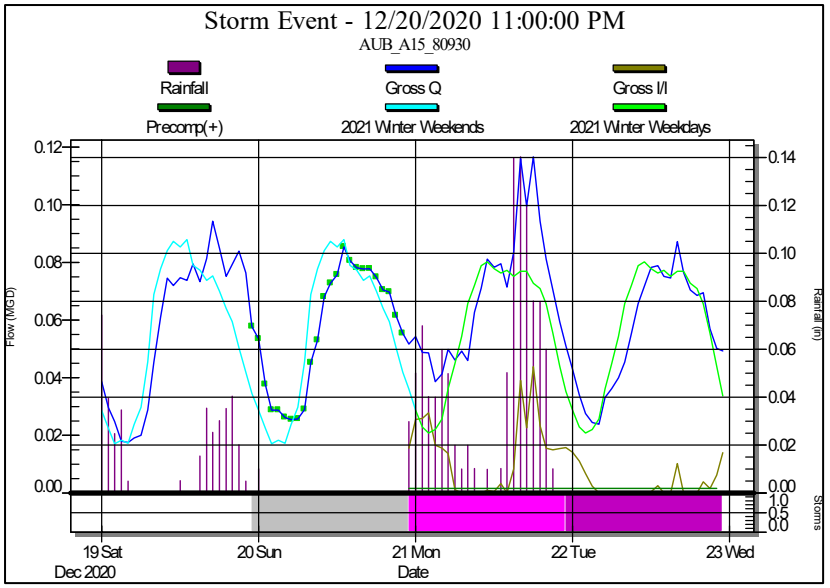

Dry Weather Flow
AUB_A15_80930
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0
3
6
9
12
15
18
21
Hours

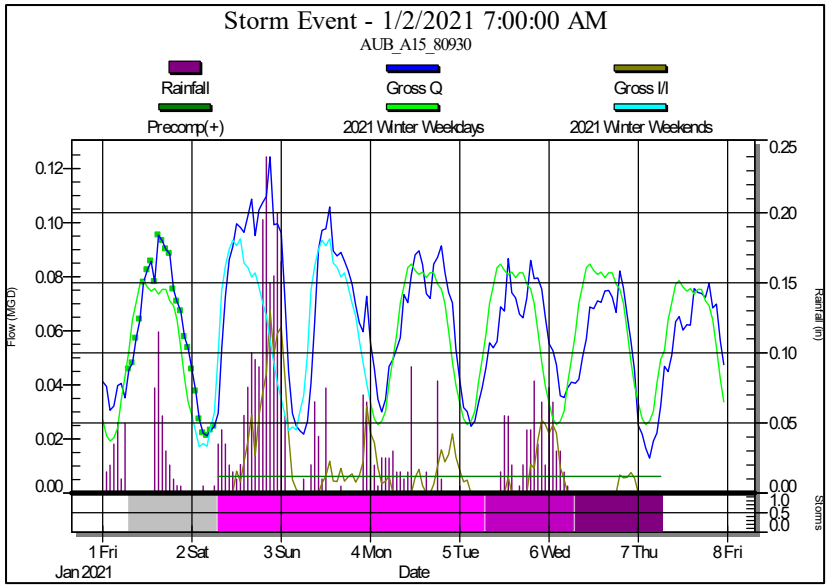

Scatter Graph
AUB_A15_80930
Lanfear-Coll (C-LC = 1.88)
VFINAL (ft/s)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Iso Q (MGD)
2.7
2.4
2.1
1.8
1.5
1.2
0.9
0.6
0.3
0.075
0
2
4
6
8
10
12
14
16
18
20
22
DFINAL (in)

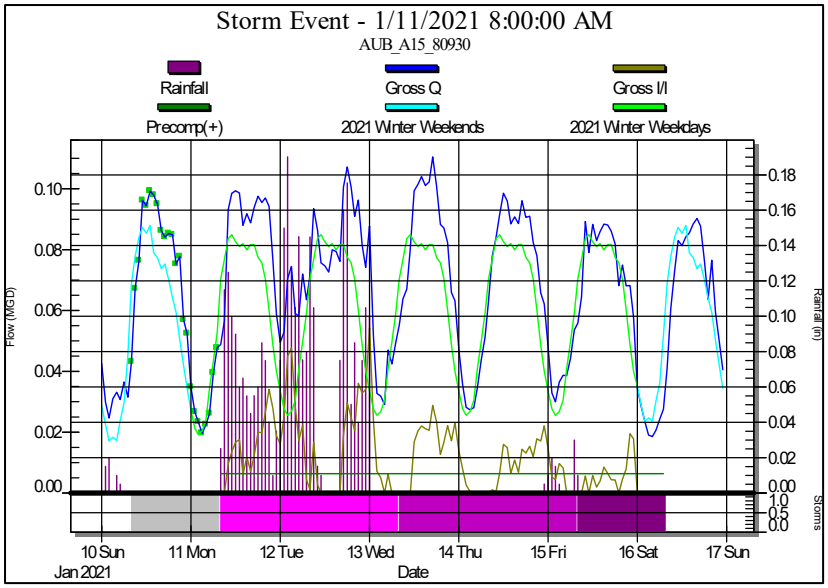

Storm Event - 10/9/2020 9:00:00 PM
AUB_A15_80930
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

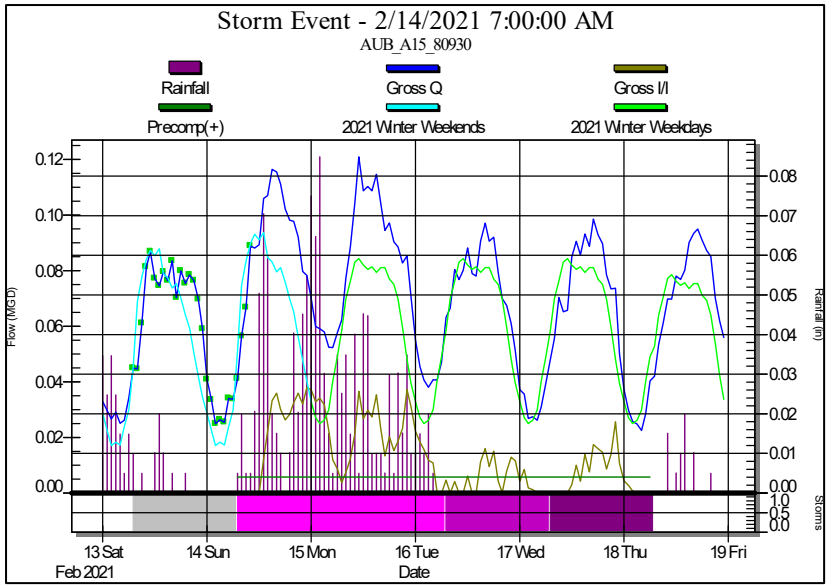

Storm Event - 11/3/2020 7:00:00 AM
AUB_A15_80930
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

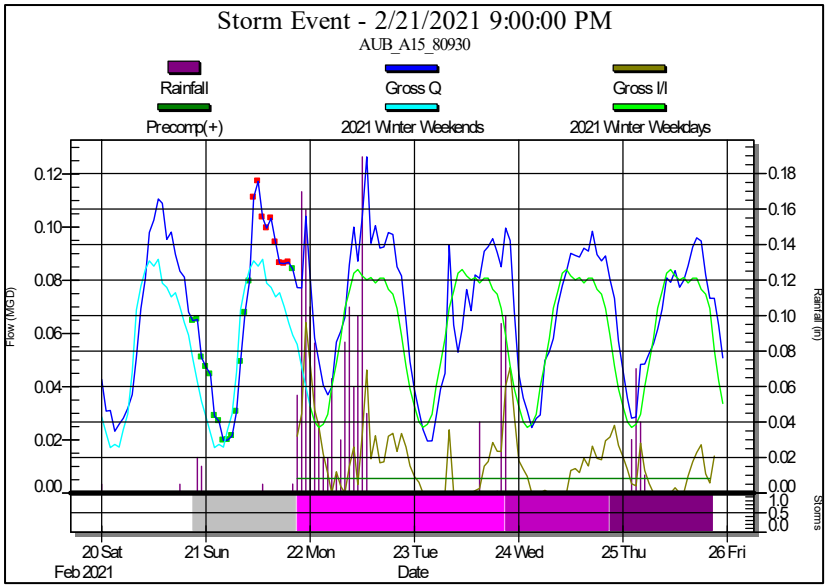

Storm Event - 11/14/2020 3:00:00 PM
AUB_A15_80930
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

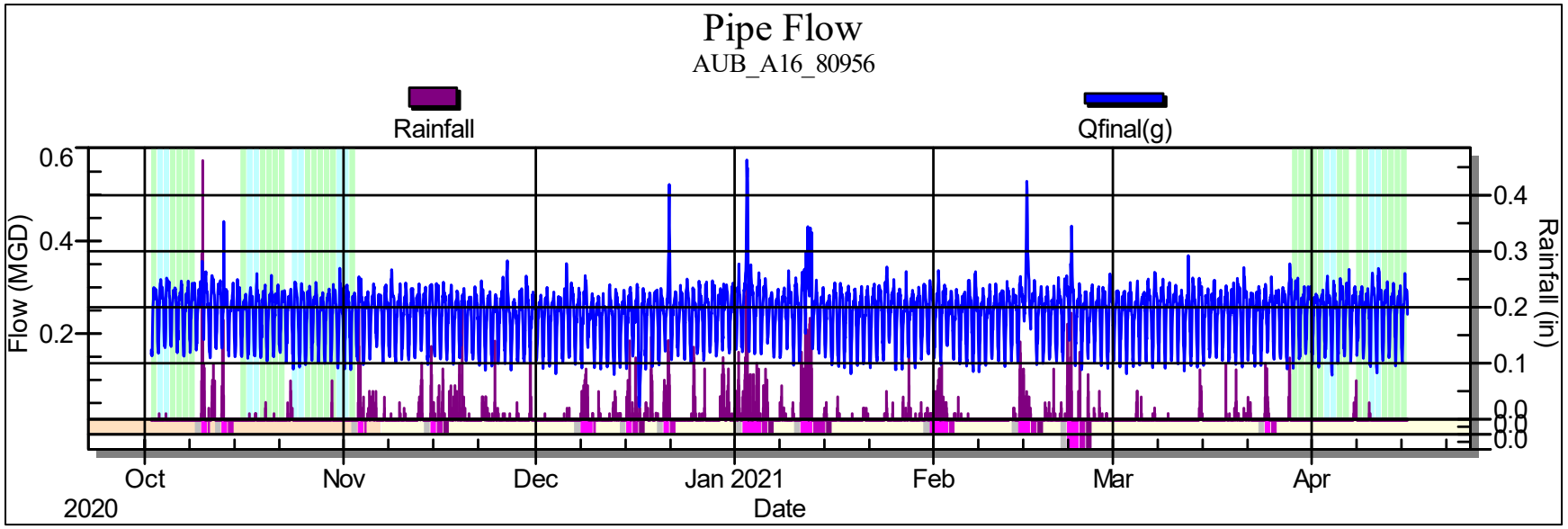

Storm Event - 12/20/2020 11:00:00 PM
AUB_A15_80930
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

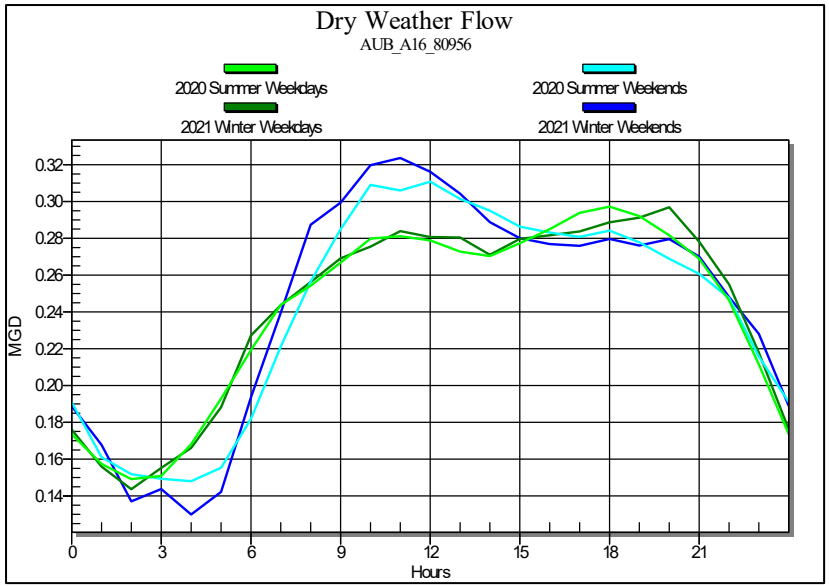

Storm Event - 1/2/2021 7:00:00 AM
AUB_A15_80930
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

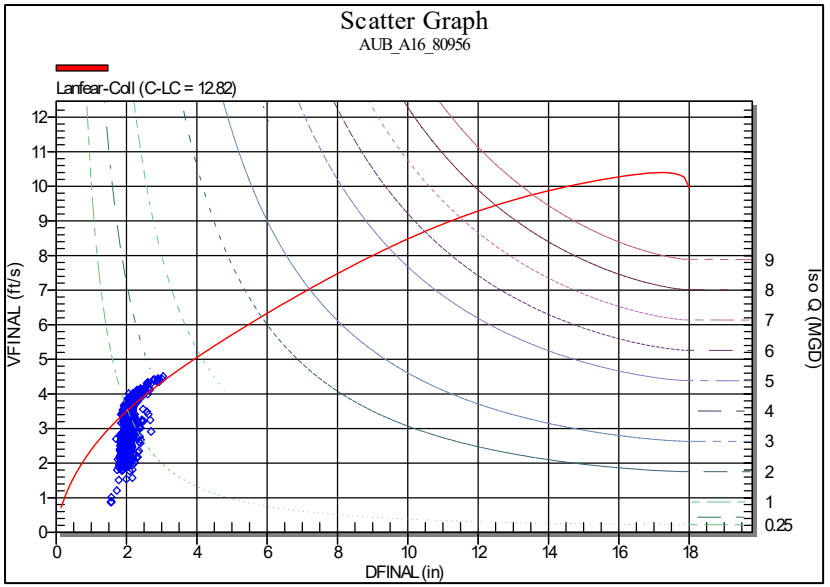

Storm Event - 1/11/2021 8:00:00 AM
AUB_A15_80930
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

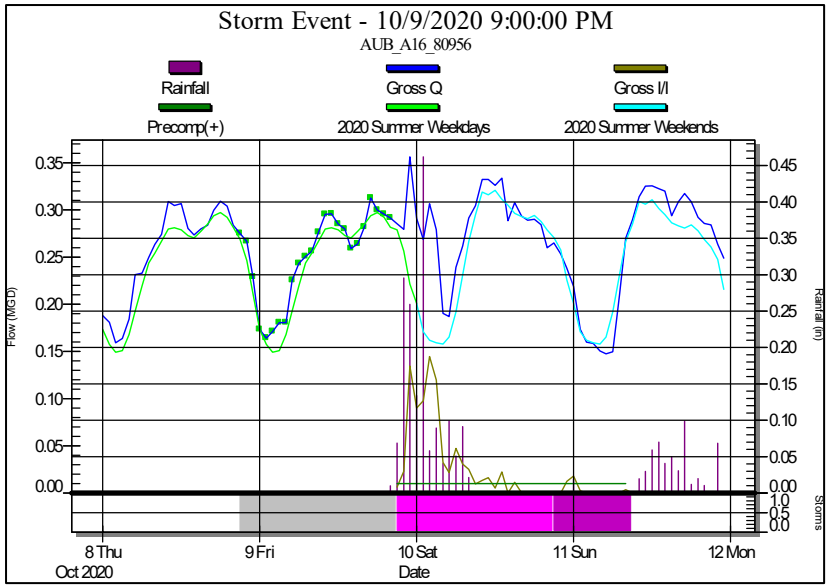

Storm Event - 2/14/2021 7:00:00 AM
AUB_A15_80930
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

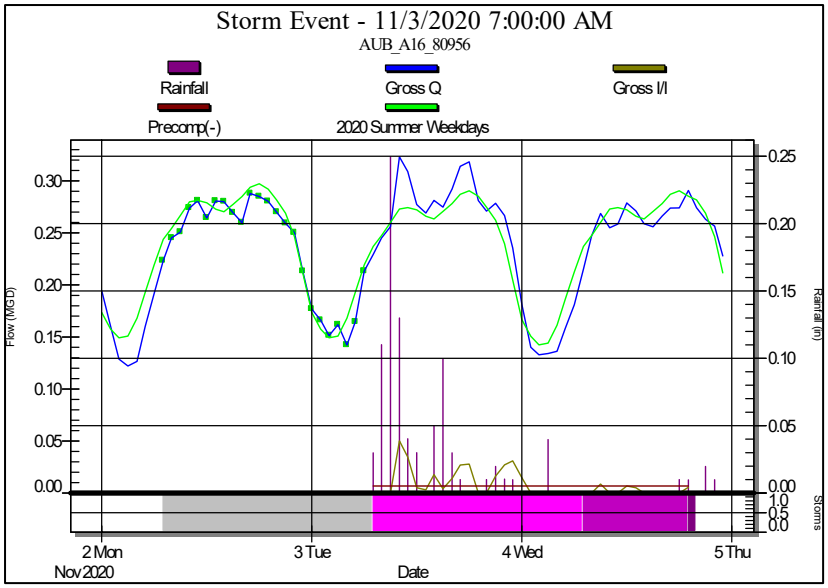

Storm Event - 2/21/2021 9:00:00 PM
AUB_A15_80930
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

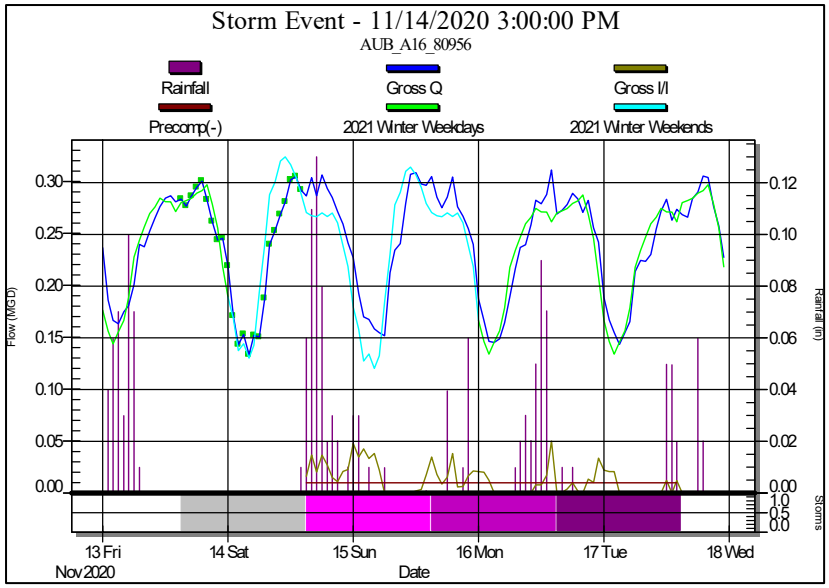

Pipe Flow
AUB_A16_80956
Rainfall
Qfinal(g)
Flow (MGD)
Rainfall (in)
0.6
0.4
0.2
0.4
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

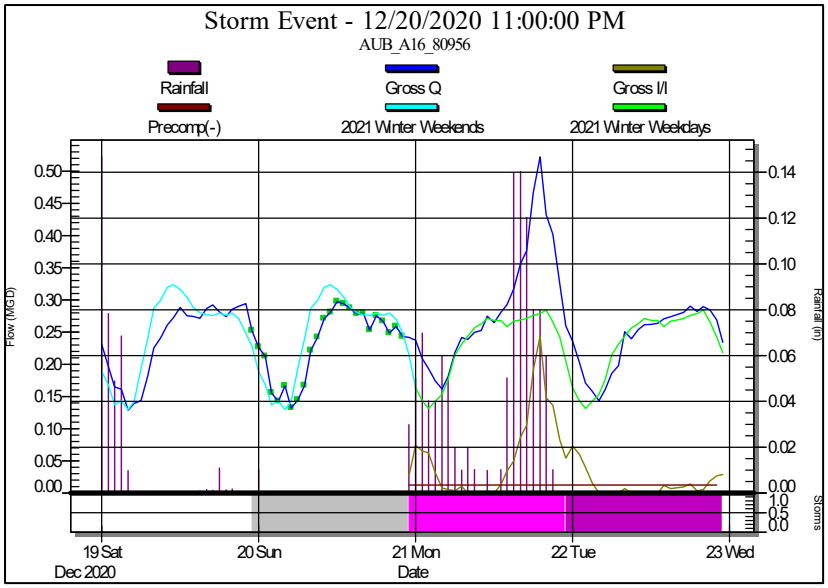

Dry Weather Flow
AUB_A16_80956
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.32
0.30
0.28
0.26
0.24
0.22
0.20
0.18
0.16
0.14
0
3
6
9
12
15
18
21
Hours

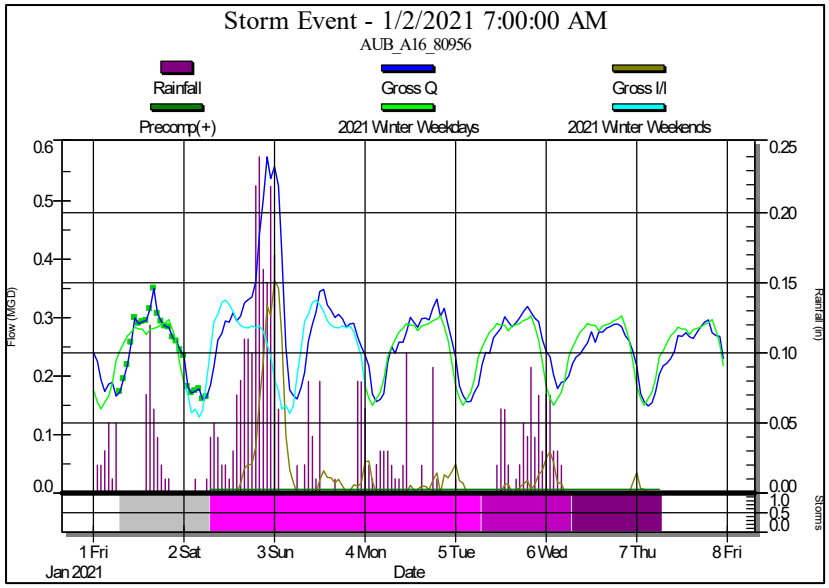

Scatter Graph
AUB_A16_80956
Lanfear-Coll (C-LC = 12.82)
VFINAL (ft/s)
Iso Q (MGD)
12
11
10
9
8
7
6
5
4
3
2
1
0
9
8
7
6
5
4
3
2
1
0.25
0
2
4
6
8
10
12
14
16
18
DFINAL (in)

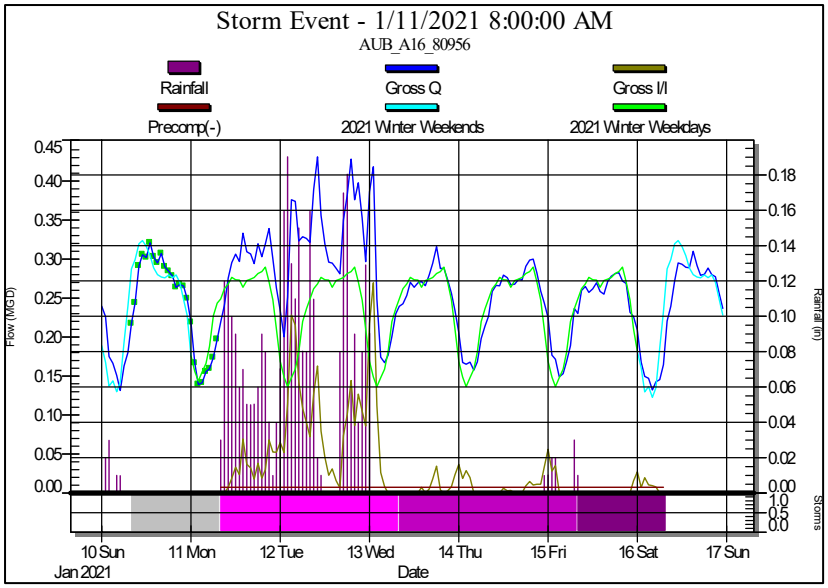

Storm Event - 10/9/2020 9:00:00 PM
AUB_A16_80956
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

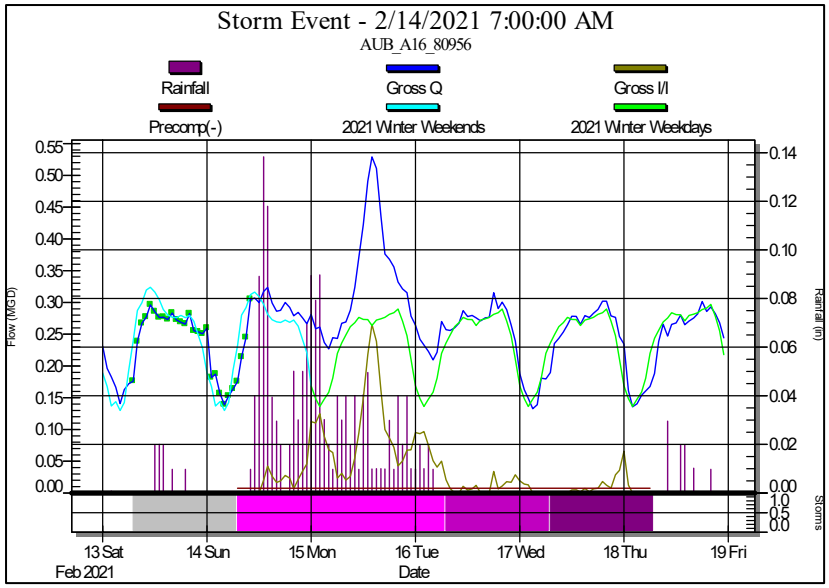

Storm Event - 11/3/2020 7:00:00 AM
AUB_A16_80956
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

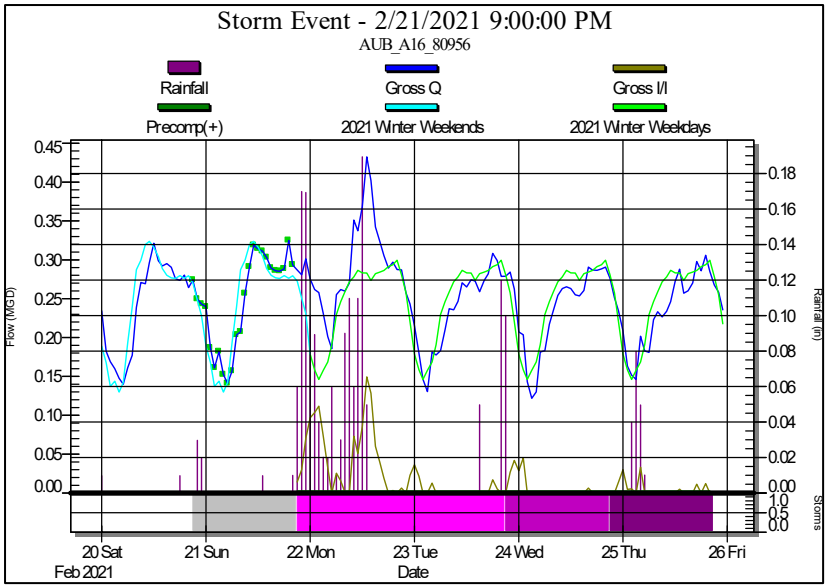

Storm Event - 11/14/2020 3:00:00 PM
AUB_A16_80956
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

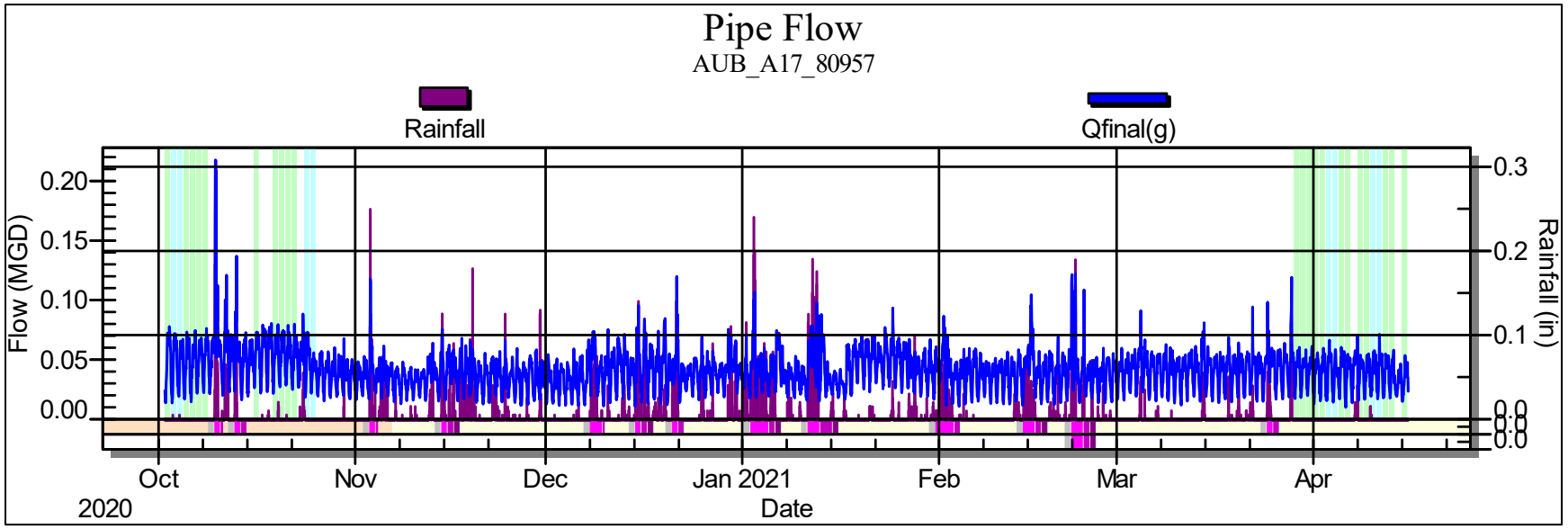

Storm Event - 12/20/2020 11:00:00 PM
AUB_A16_80956
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

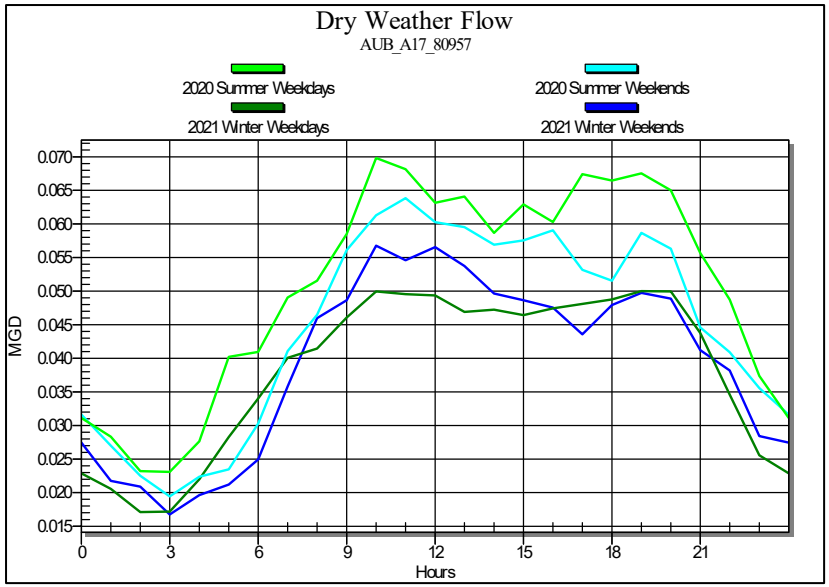

Storm Event - 1/2/2021 7:00:00 AM
AUB_A16_80956
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

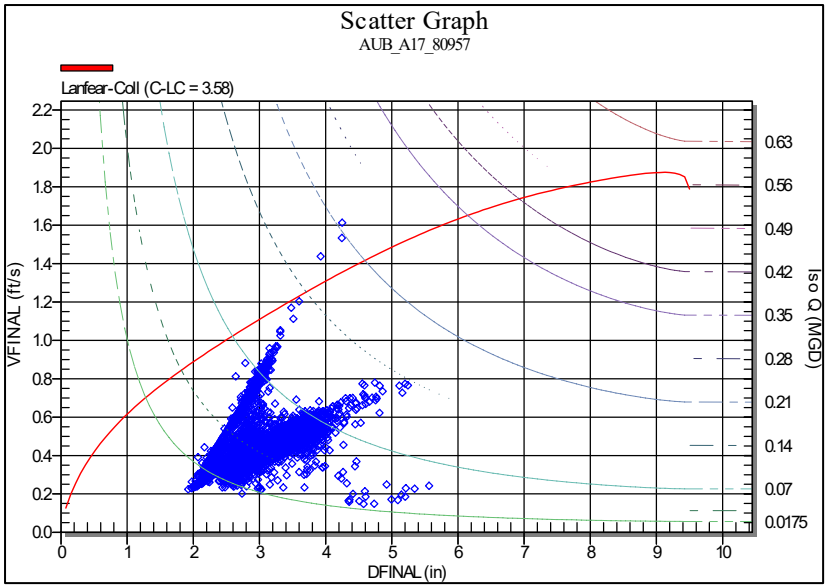

Storm Event - 1/11/2021 8:00:00 AM
AUB_A16_80956
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

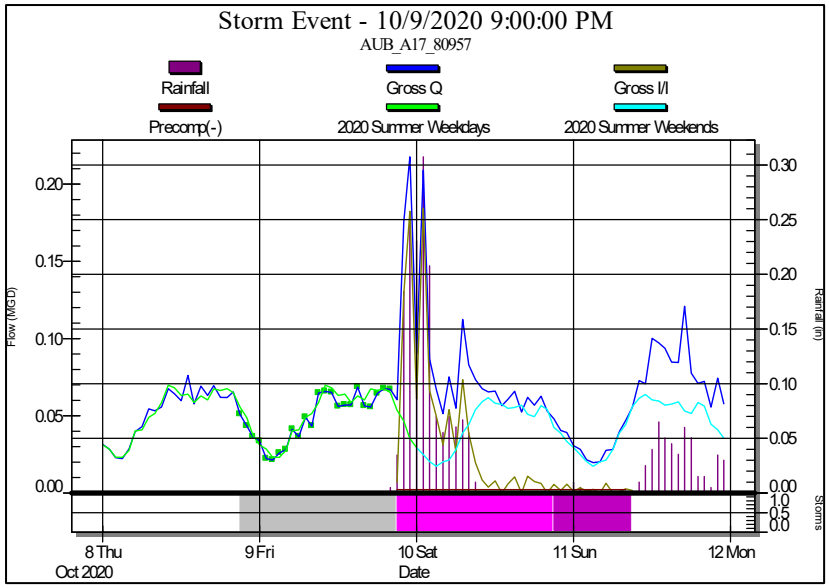

Storm Event - 2/14/2021 7:00:00 AM
AUB_A16_80956
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

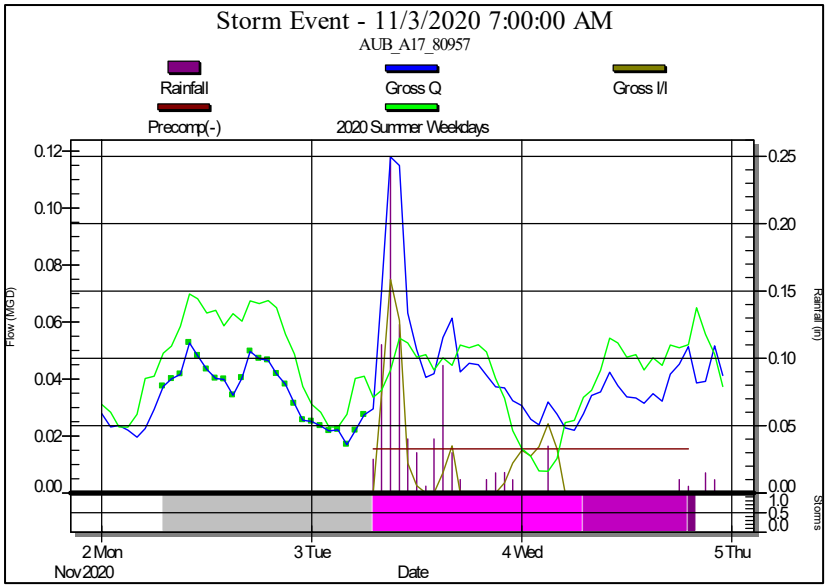

Storm Event - 2/21/2021 9:00:00 PM
AUB_A16_80956
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

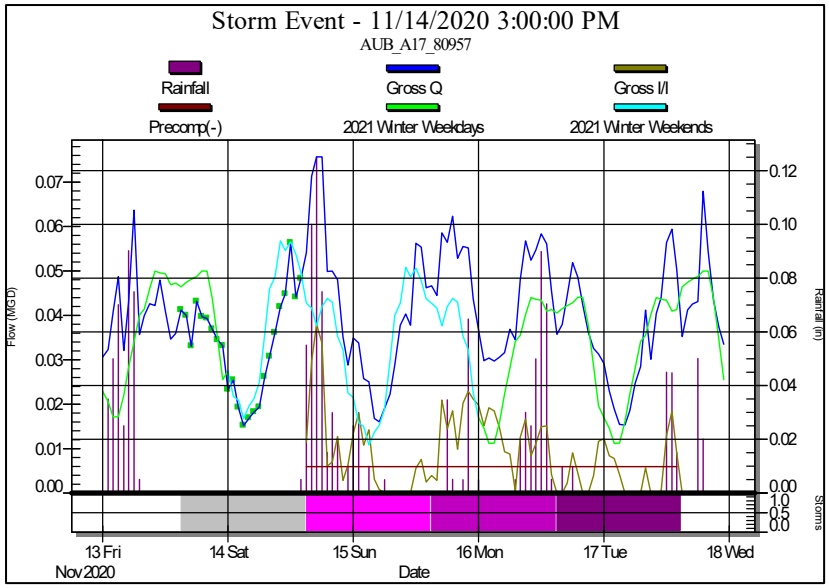

Pipe Flow
AUB_A17_80957
Rainfall
Qfinal(g)
Flow (MGD)
Rainfall (in)
0.20
0.15
0.10
0.05
0.00
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

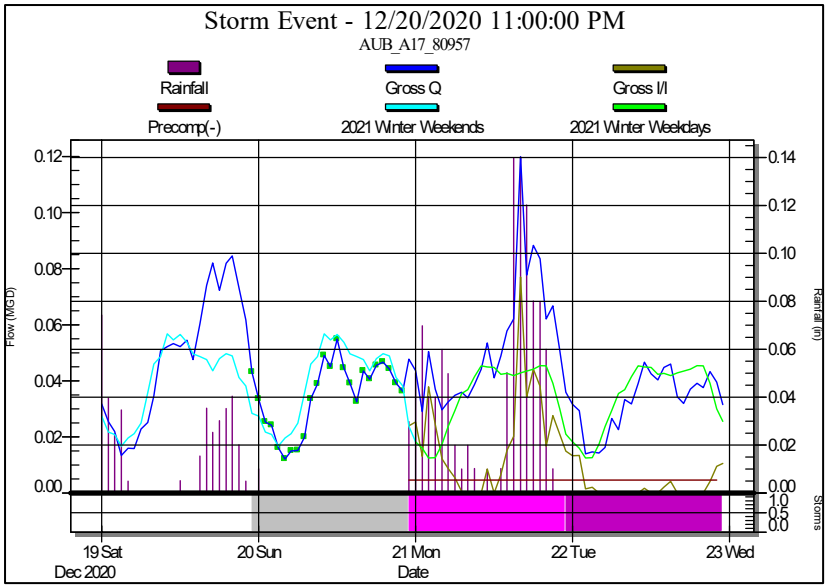

Dry Weather Flow
AUB_A17_80957
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.070
0.065
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0
3
6
9
12
15
18
21
Hours

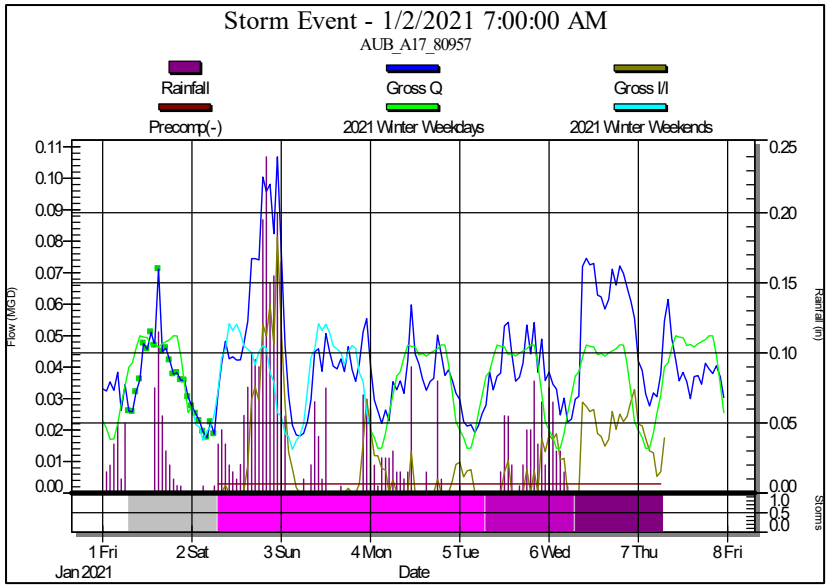

Scatter Graph
AUB_A17_80957
Lanfear-Coll (C-LC = 3.58)
VFINAL (ft/s)
Iso Q (MGD)
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.63
0.56
0.49
0.42
0.35
0.28
0.21
0.14
0.07
0.0175
0
1
2
3
4
5
6
7
8
9
10
DFINAL (in)

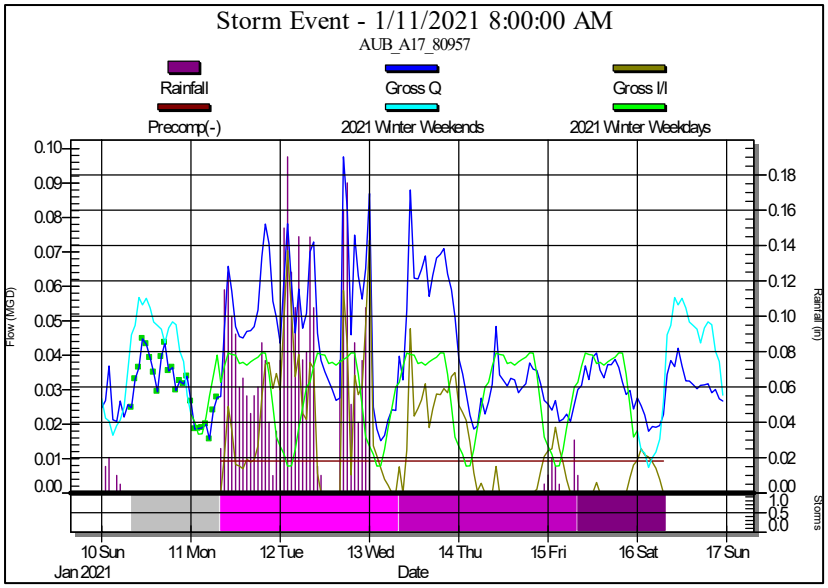

Storm Event - 10/9/2020 9:00:00 PM
AUB_A17_80957
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

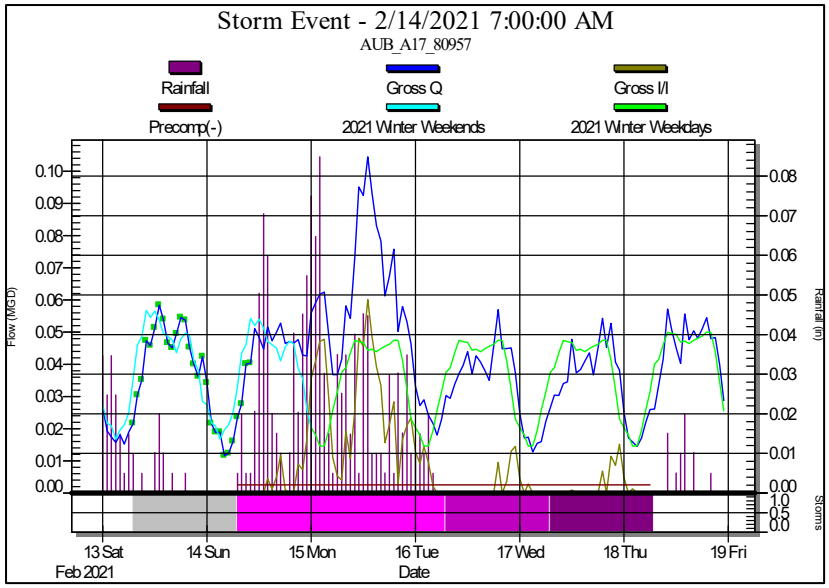

Storm Event - 11/3/2020 7:00:00 AM
AUB_A17_80957
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

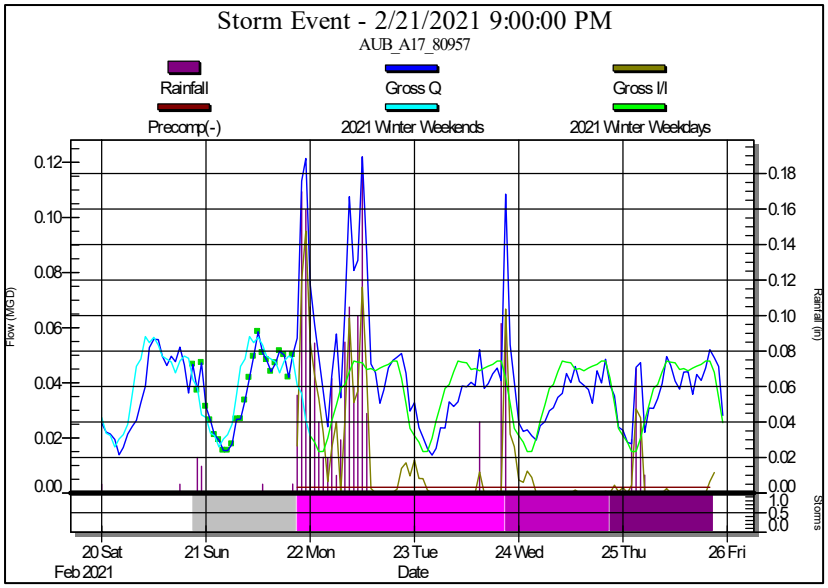

Storm Event - 11/14/2020 3:00:00 PM
AUB_A17_80957
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

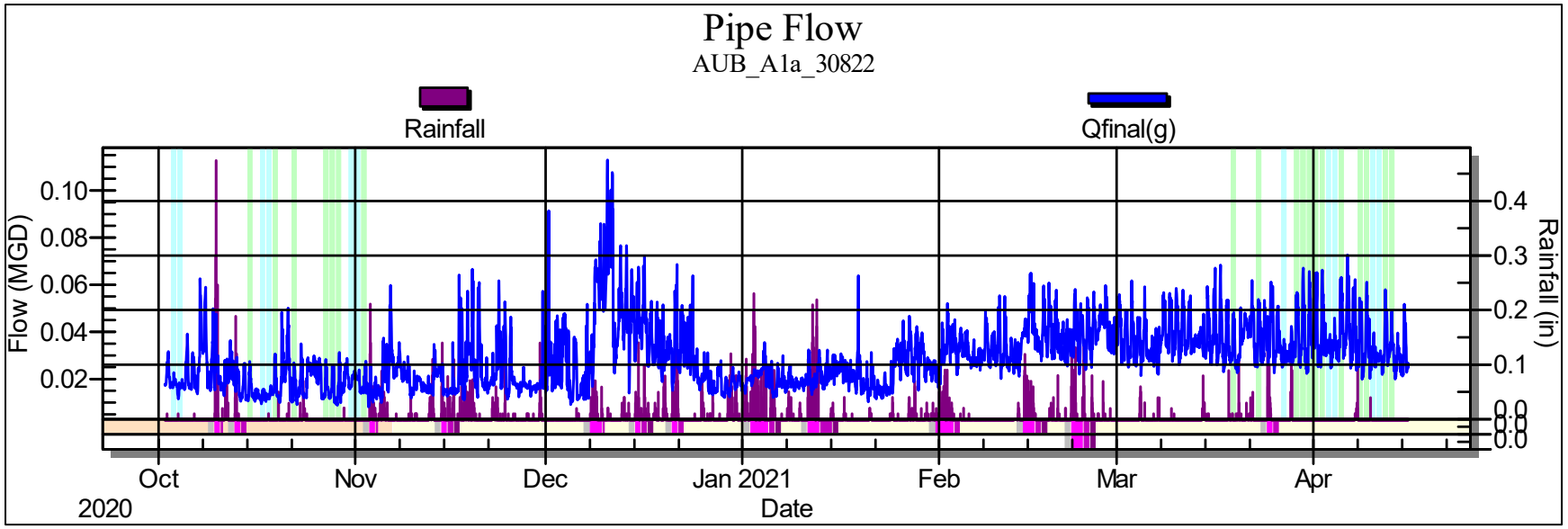

Storm Event - 12/20/2020 11:00:00 PM
AUB_A17_80957
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

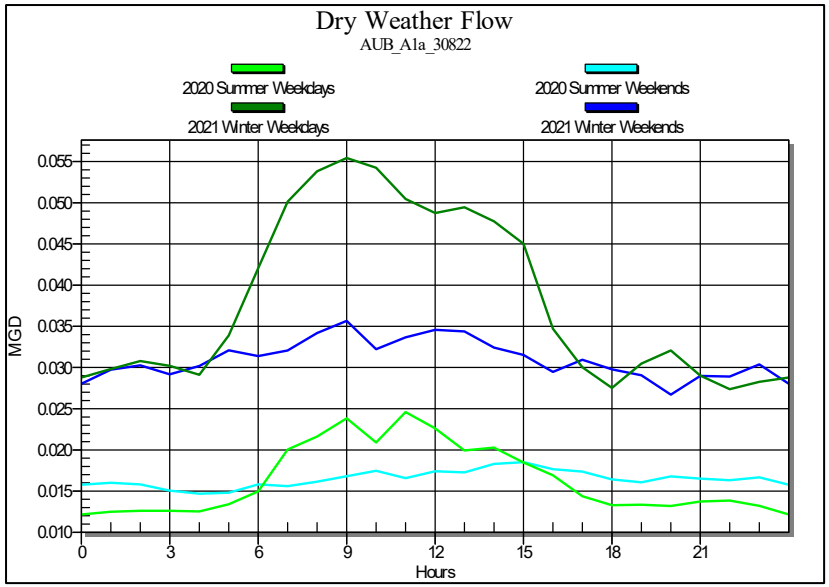

Storm Event - 1/2/2021 7:00:00 AM
AUB_A17_80957
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

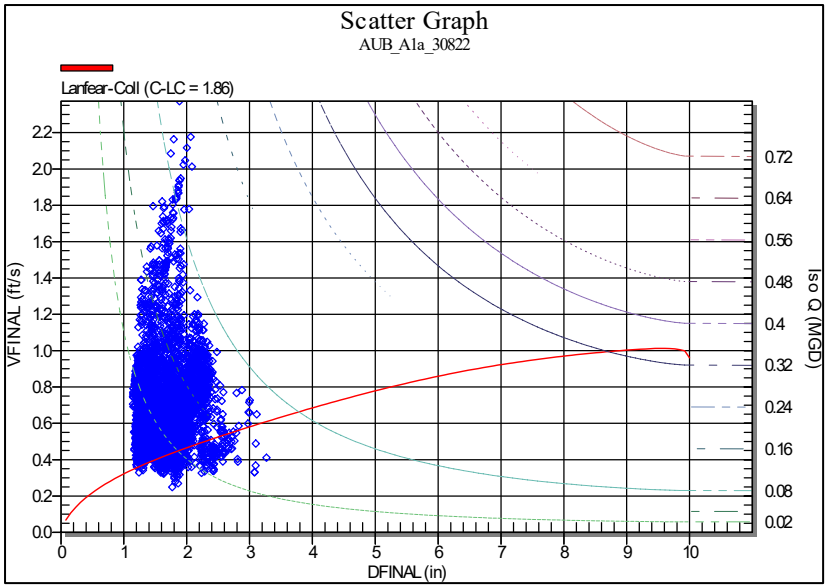

Storm Event - 1/11/2021 8:00:00 AM
AUB_A17_80957
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

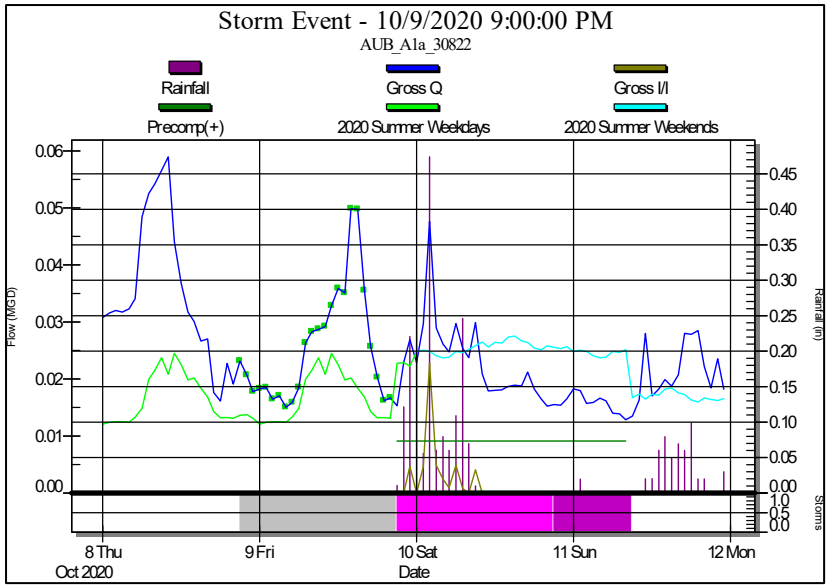

Storm Event - 2/14/2021 7:00:00 AM
AUB_A17_80957
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

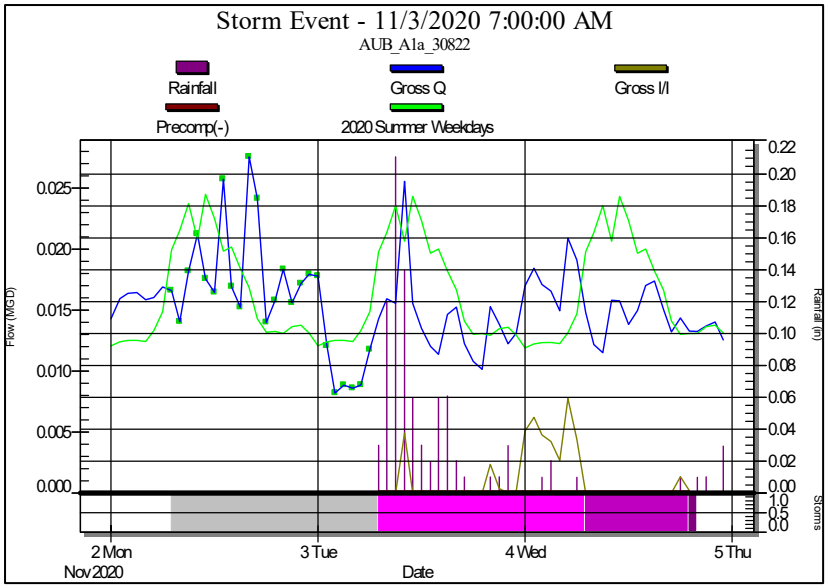

Storm Event - 2/21/2021 9:00:00 PM
AUB_A17_80957
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

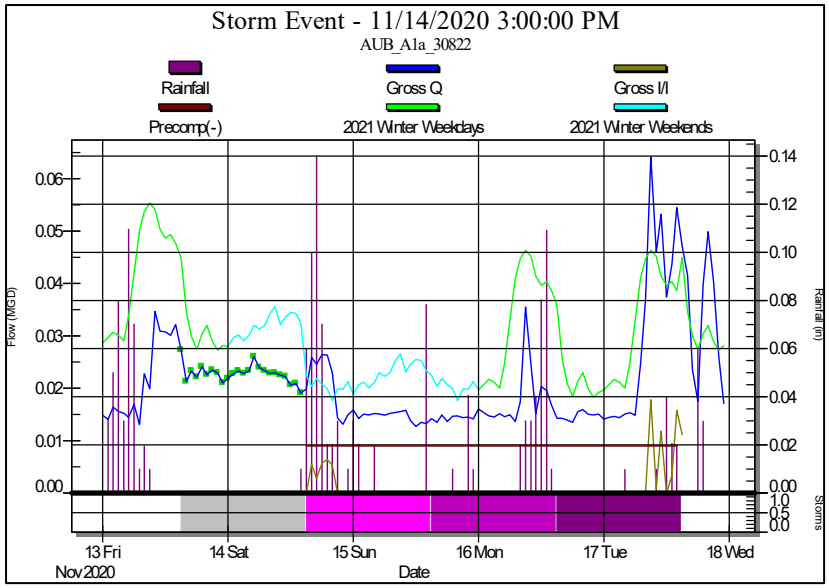

Pipe Flow
AUB_A1a_30822
Rainfall
Qfinal(g)
Flow (MGD)
0.10
0.08
0.06
0.04
0.02
0.4
0.3
0.2
0.1
0.0
Rainfall (in)
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

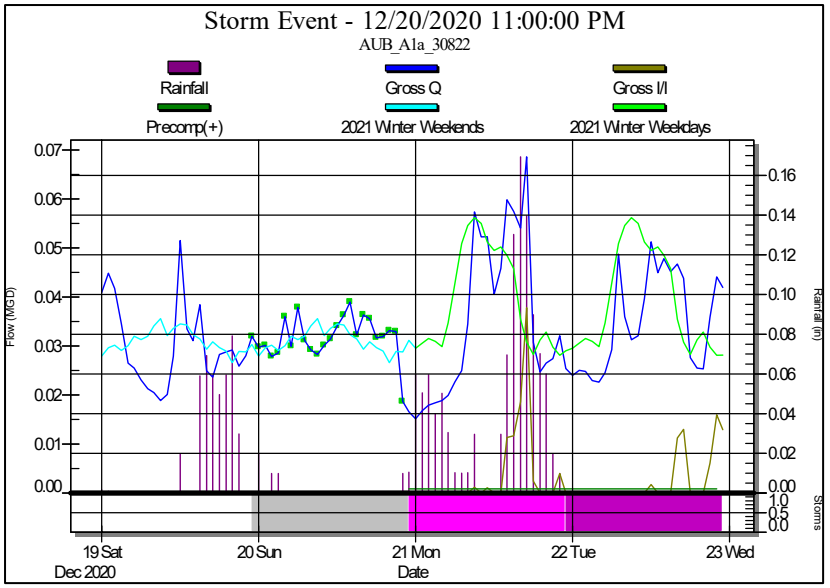

Dry Weather Flow
AUB_A1a_30822
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0
3
6
9
12
15
18
21
Hours

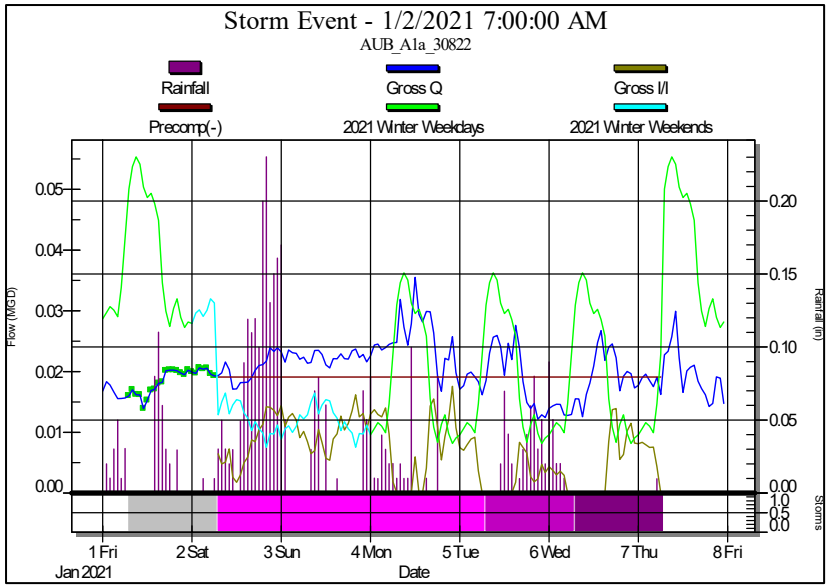

Scatter Graph
AUB_A1a_30822
Lanfear-Coll (C-LC = 1.86)
VFINAL (ft/s)
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
1
2
3
4
5
6
7
8
9
10
DFINAL (in)
0.72
0.64
0.56
0.48
0.4
0.32
0.24
0.16
0.08
0.02
Iso Q (MGD)

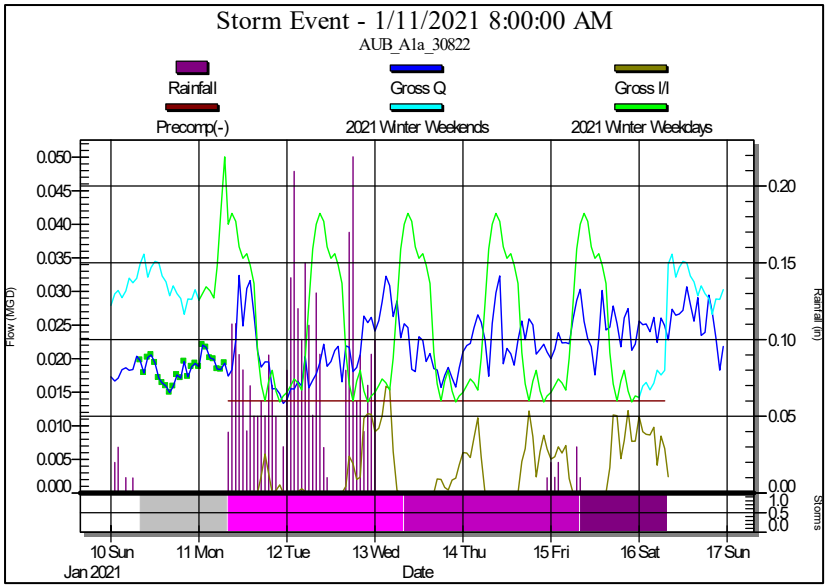

Storm Event - 10/9/2020 9:00:00 PM
AUB_A1a_30822
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

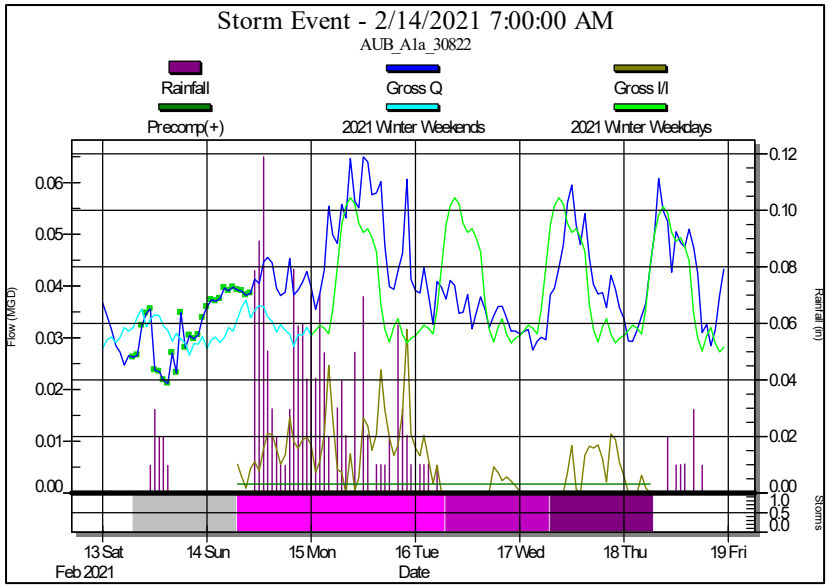

Storm Event - 11/3/2020 7:00:00 AM
AUB_A1a_30822
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

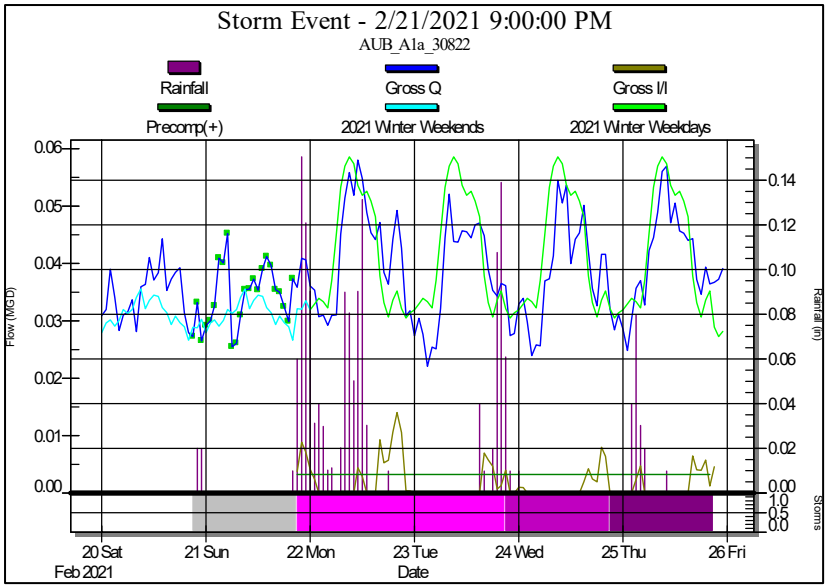

Storm Event - 11/14/2020 3:00:00 PM
AUB_A1a_30822
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

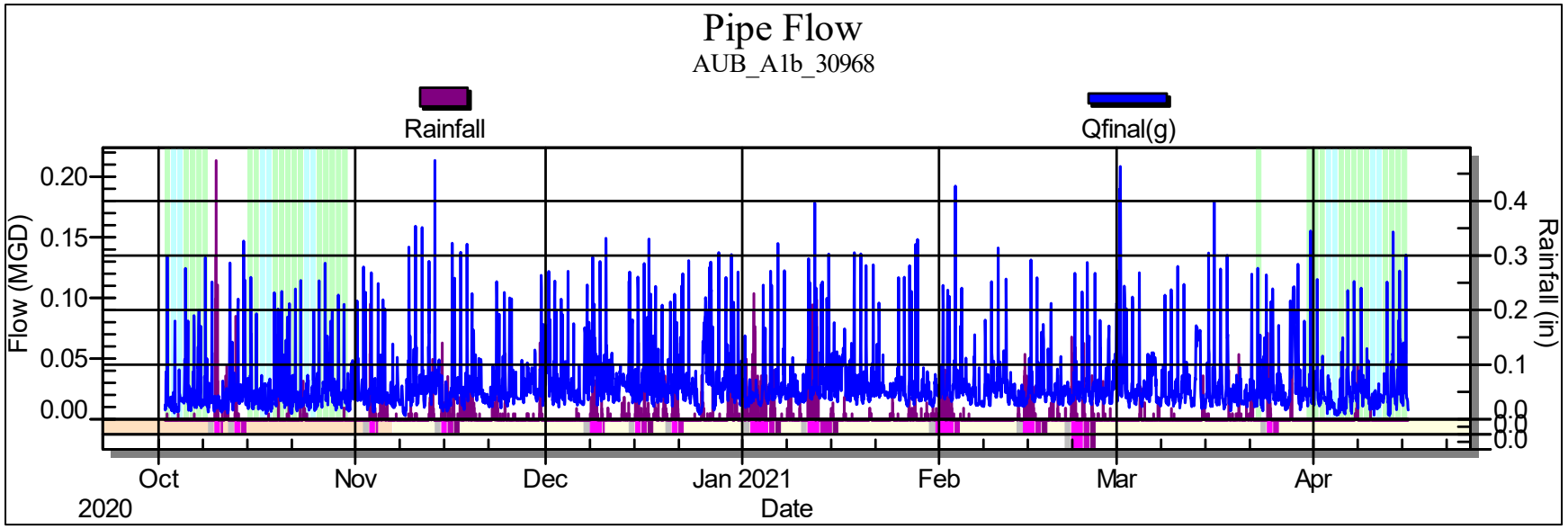

Storm Event - 12/20/2020 11:00:00 PM
AUB_A1a_30822
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

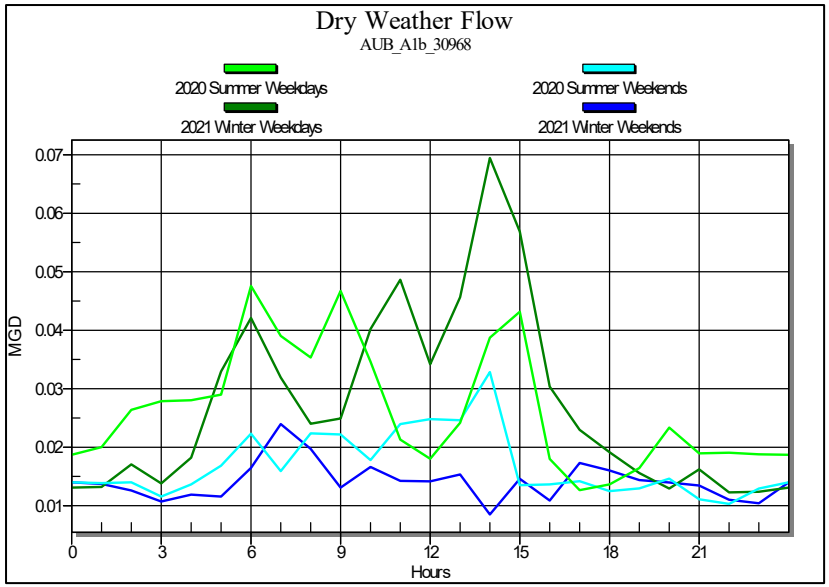

Storm Event - 1/2/2021 7:00:00 AM
AUB_A1a_30822
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
Jan 2021
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Date

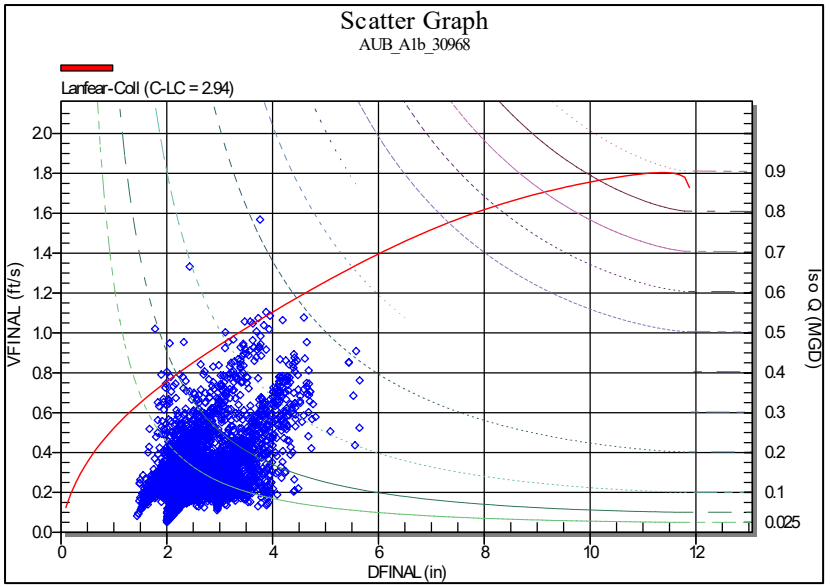

Storm Event - 1/11/2021 8:00:00 AM
AUB_A1a_30822
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
Jan 2021
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Date

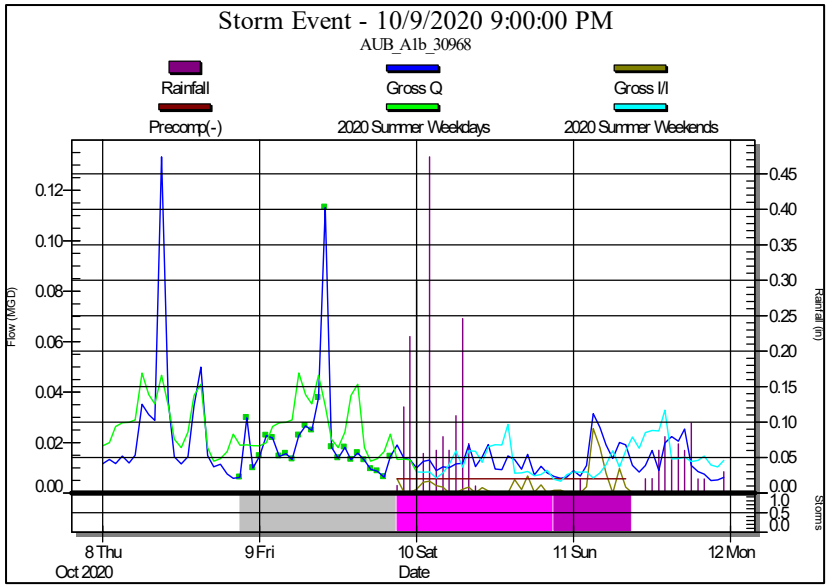

Storm Event - 2/14/2021 7:00:00 AM
AUB_A1a_30822
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
Feb 2021
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Date

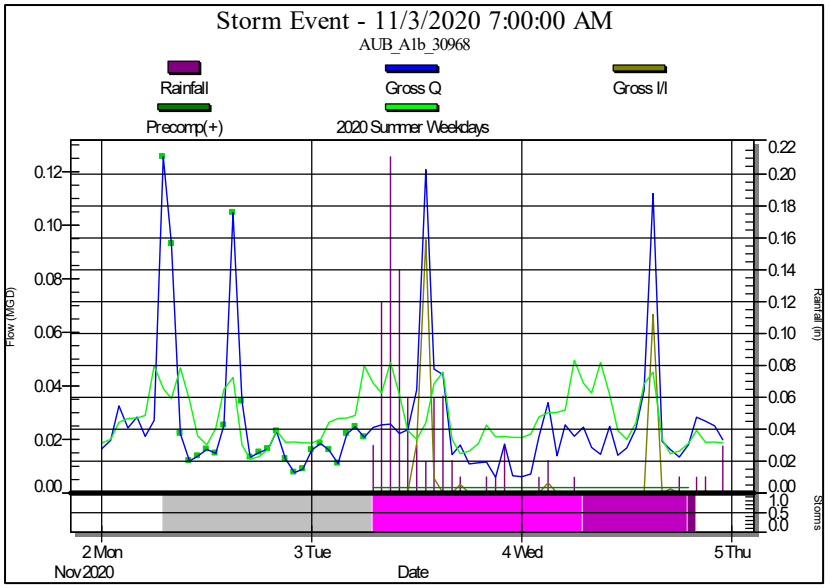

Storm Event - 2/21/2021 9:00:00 PM
AUB_A1a_30822
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
Feb 2021
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Date

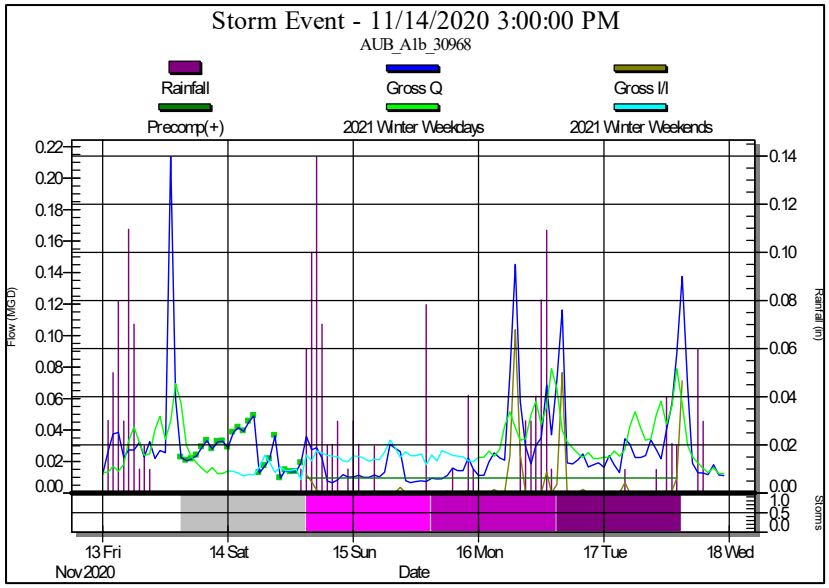

Pipe Flow
AUB_A1b_30968
Rainfall
Qfinal(g)
Flow (MGD)
0.20
0.15
0.10
0.05
0.00
Rainfall (in)
0.4
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

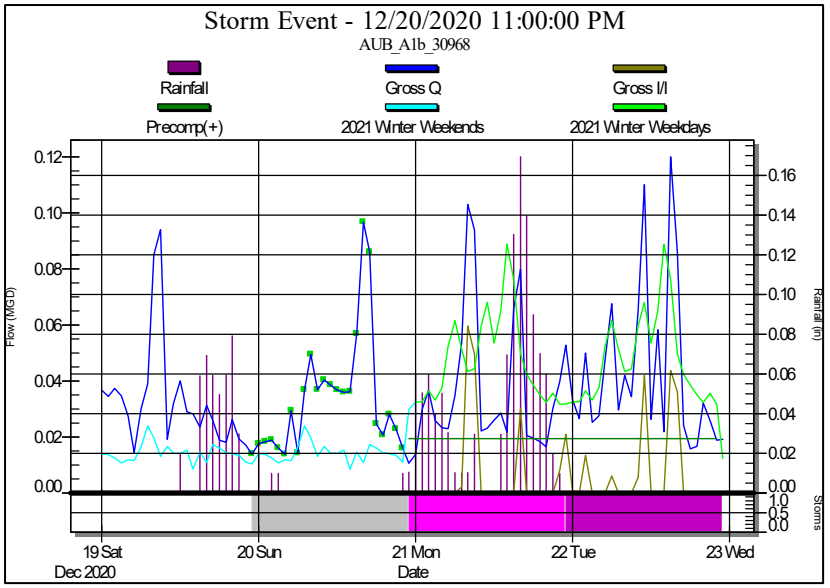

Dry Weather Flow
AUB_A1b_30968
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
3
6
9
12
15
18
21
Hours

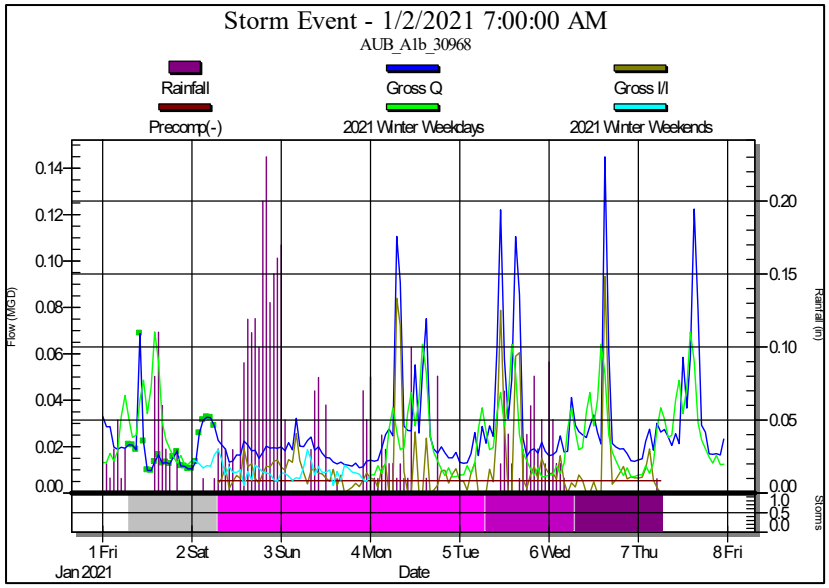

Scatter Graph
AUB_A1b_30968
Lanfear-Coll (C-LC = 2.94)
VFINAL (ft/s)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Iso Q (MGD)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.025
0
2
4
6
8
10
12
DFINAL (in)

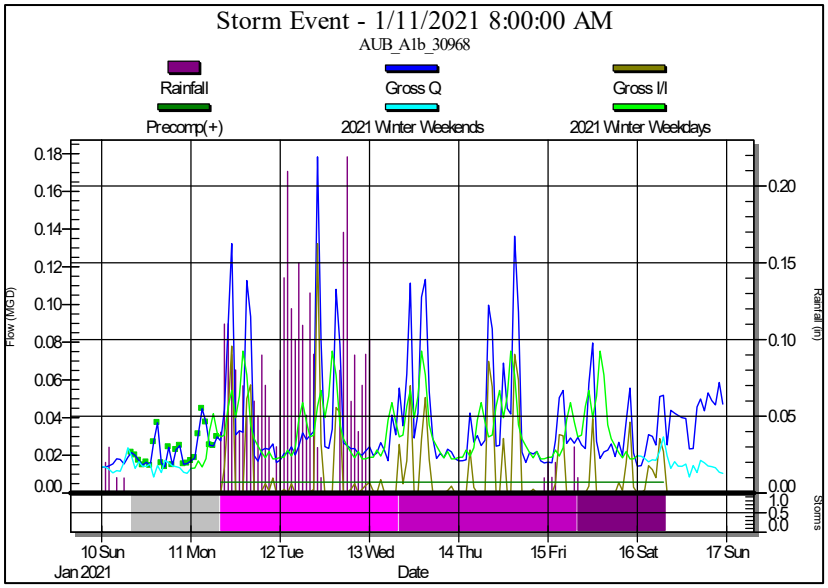

Storm Event - 10/9/2020 9:00:00 PM
AUB_A1b_30968
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

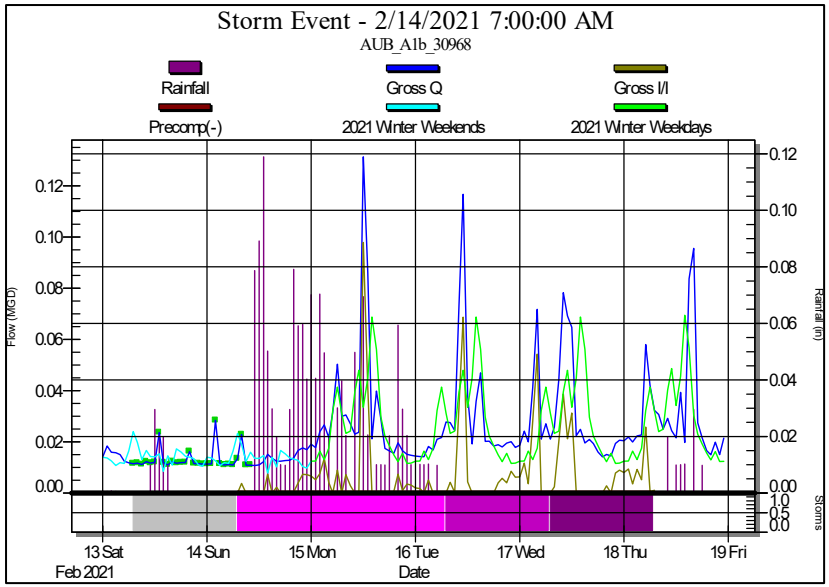

Storm Event - 11/3/2020 7:00:00 AM
AUB_A1b_30968
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

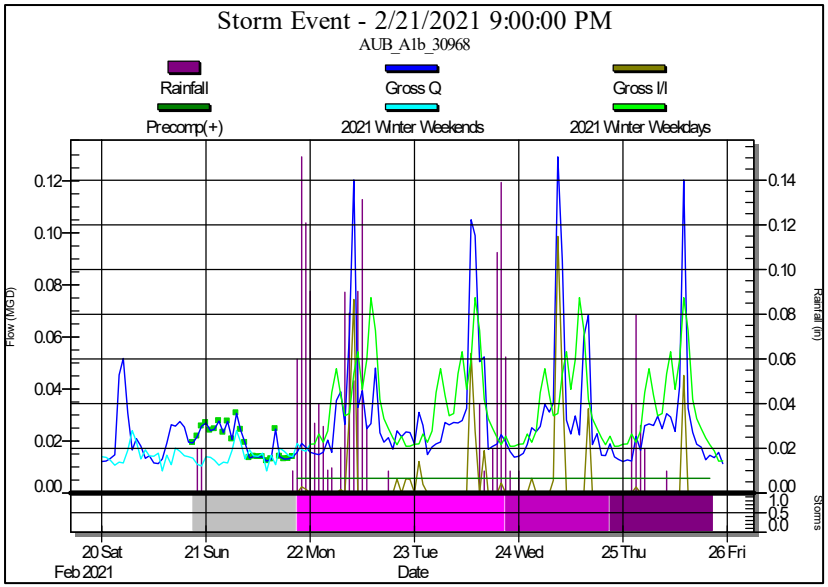

Storm Event - 11/14/2020 3:00:00 PM
AUB_A1b_30968
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

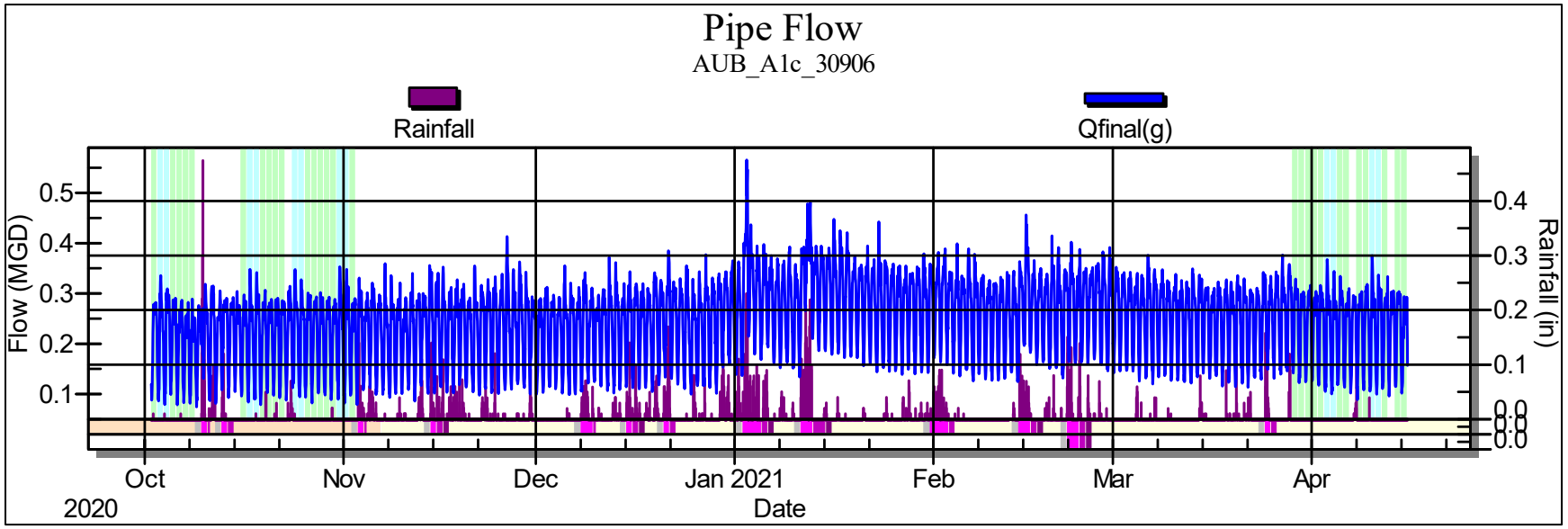

Storm Event - 12/20/2020 11:00:00 PM
AUB_A1b_30968
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

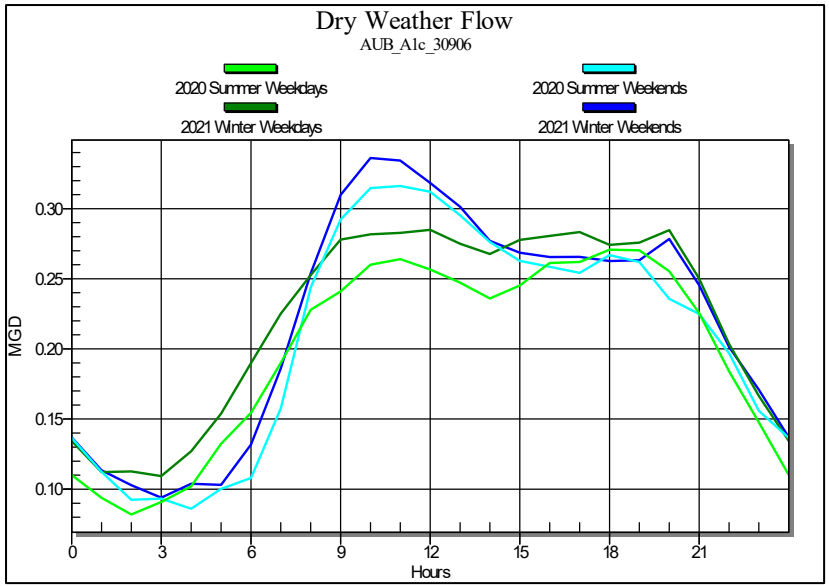

Storm Event - 1/2/2021 7:00:00 AM
AUB_A1b_30968
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

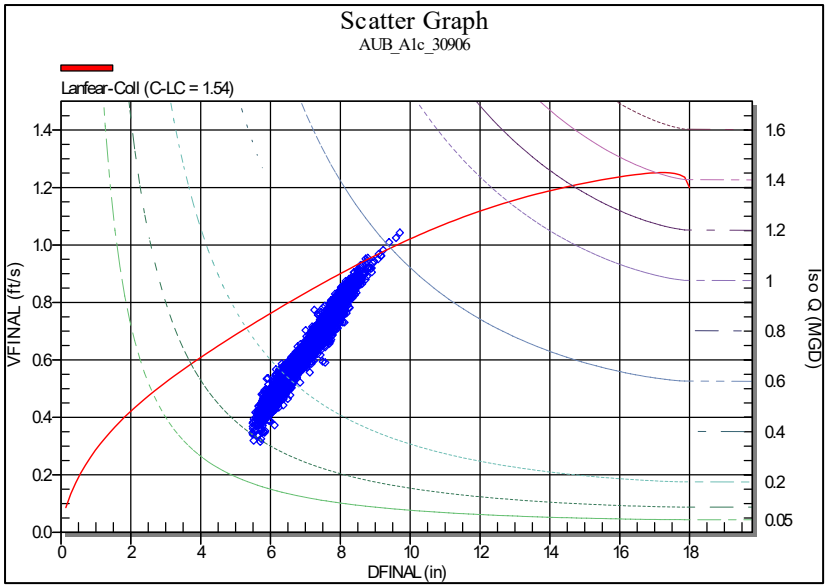

Storm Event - 1/11/2021 8:00:00 AM
AUB_A1b_30968
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

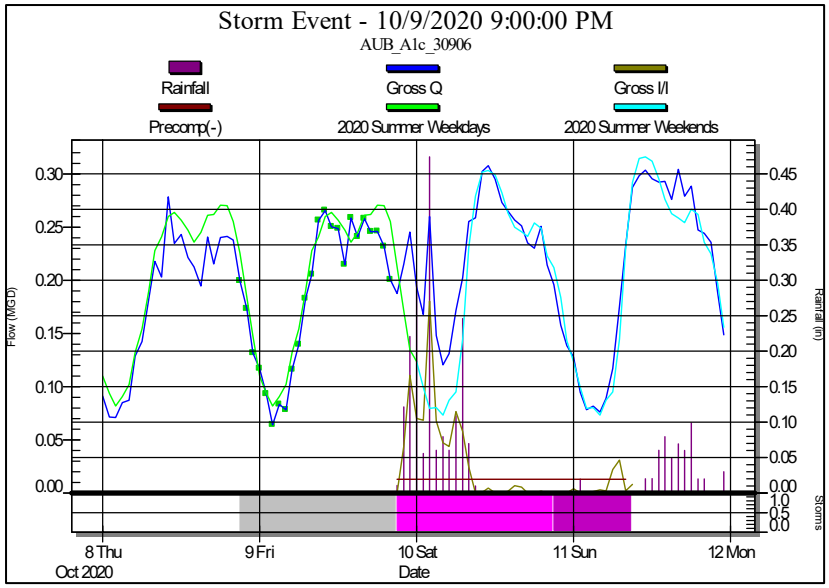

Storm Event - 2/14/2021 7:00:00 AM
AUB_A1b_30968
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

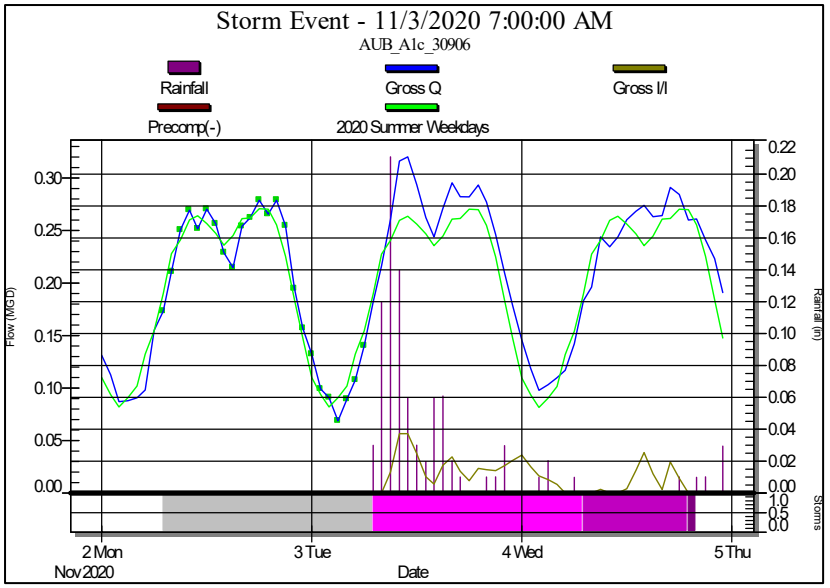

Storm Event - 2/21/2021 9:00:00 PM
AUB_A1b_30968
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

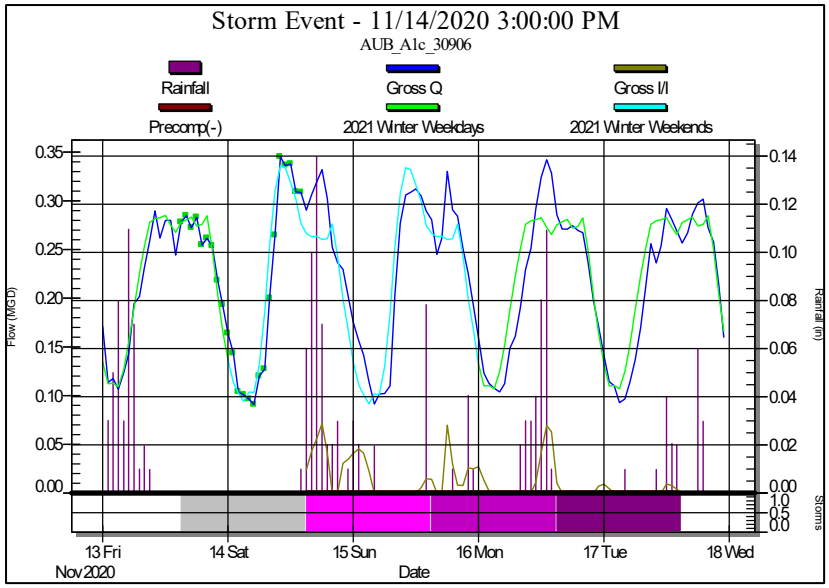

Pipe Flow
AUB_A1c_30906
Rainfall
Qfinal(g)
Flow (MGD)
0.5
0.4
0.3
0.2
0.1
Rainfall (in)
0.4
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

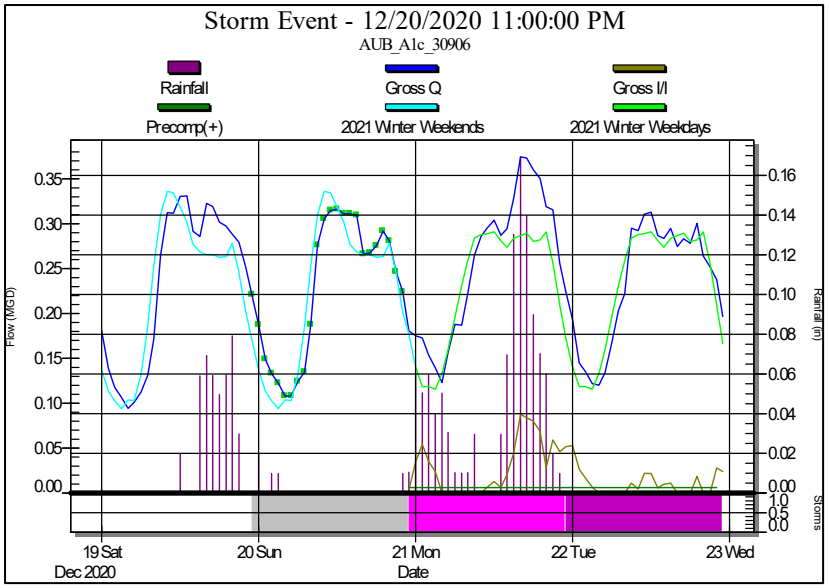

Dry Weather Flow
AUB_A1c_30906
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.30
0.25
0.20
0.15
0.10
0
3
6
9
12
15
18
21
Hours

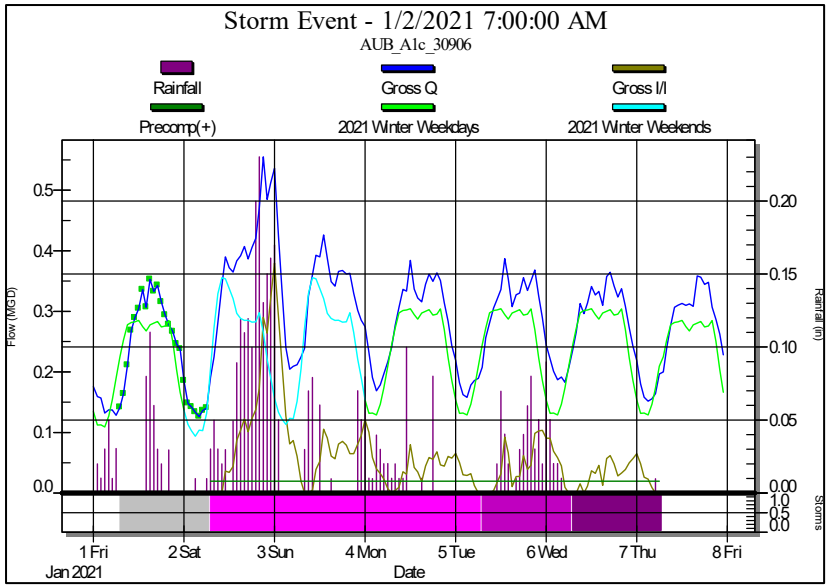

Scatter Graph
AUB_A1c_30906
Lanfear-Coll (C-LC = 1.54)
VFINAL (ft/s)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Iso Q (MGD)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0.05
0
2
4
6
8
10
12
14
16
18
DFINAL (in)

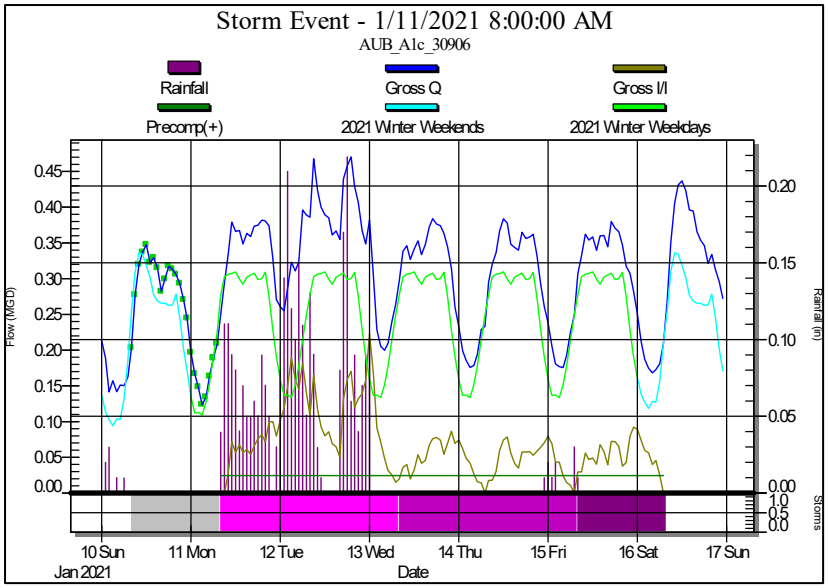

Storm Event - 10/9/2020 9:00:00 PM
AUB_A1c_30906
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

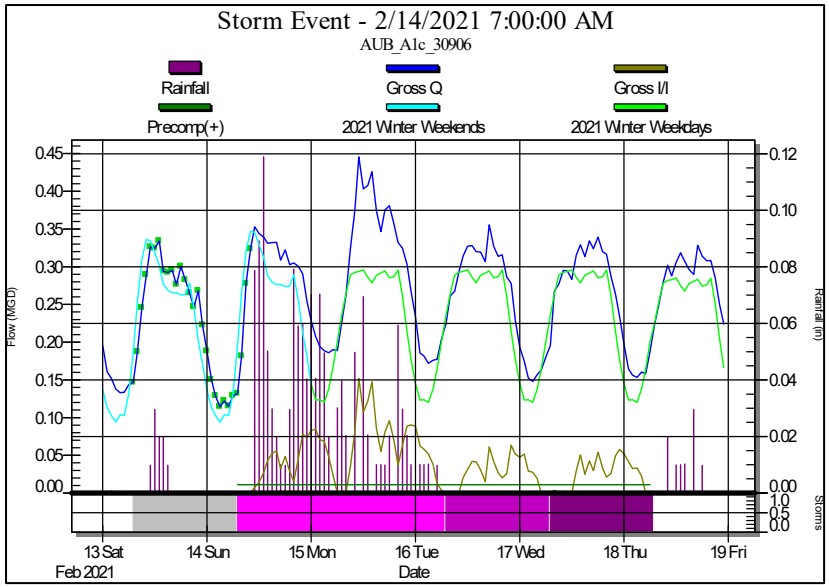

Storm Event - 11/3/2020 7:00:00 AM
AUB_A1c_30906
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

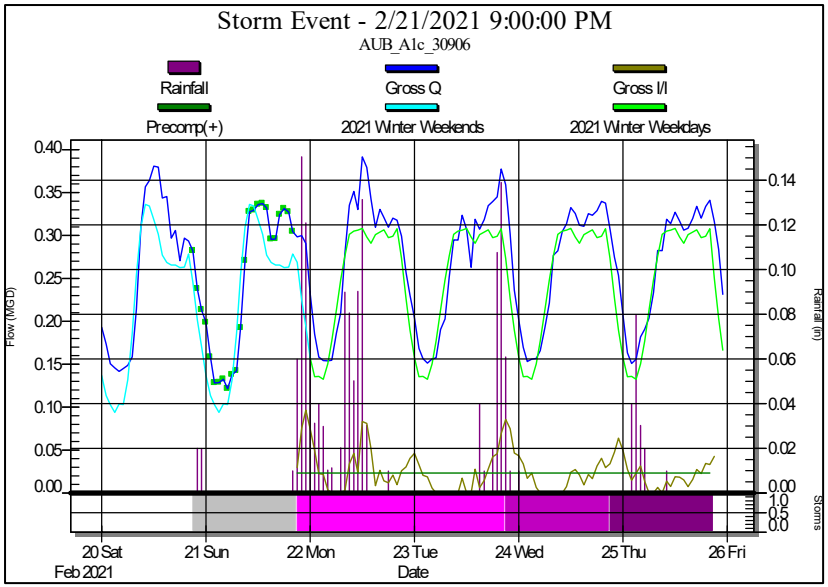

Storm Event - 11/14/2020 3:00:00 PM
AUB_A1c_30906
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

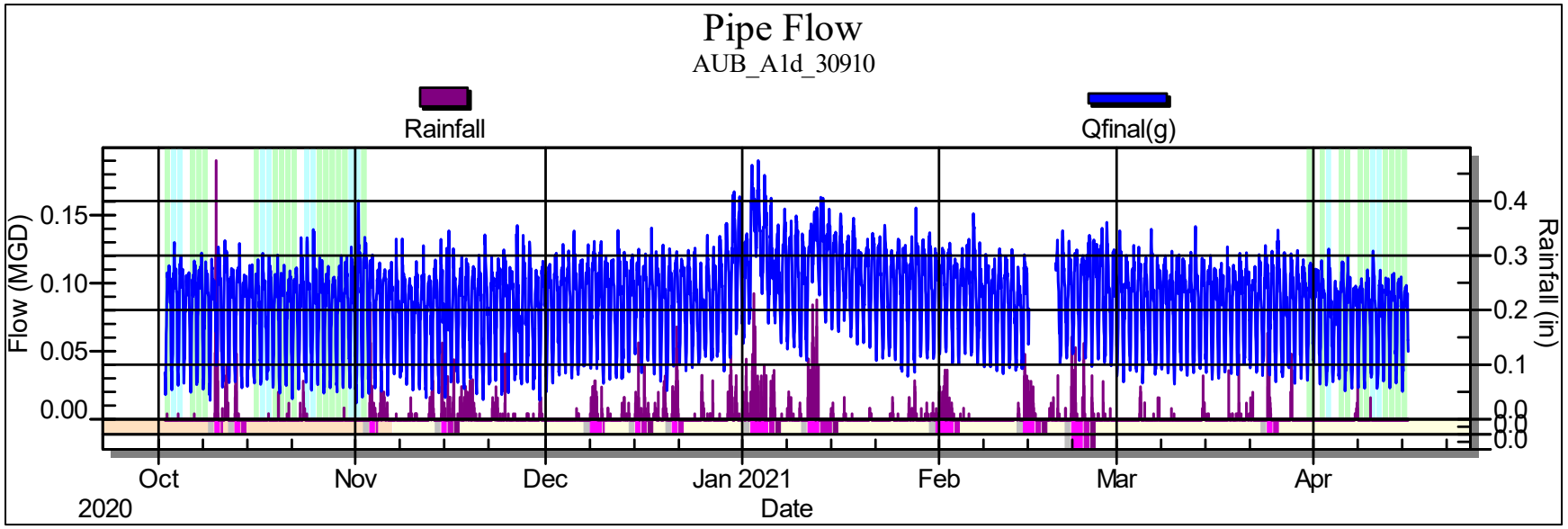

Storm Event - 12/20/2020 11:00:00 PM
AUB_A1c_30906
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

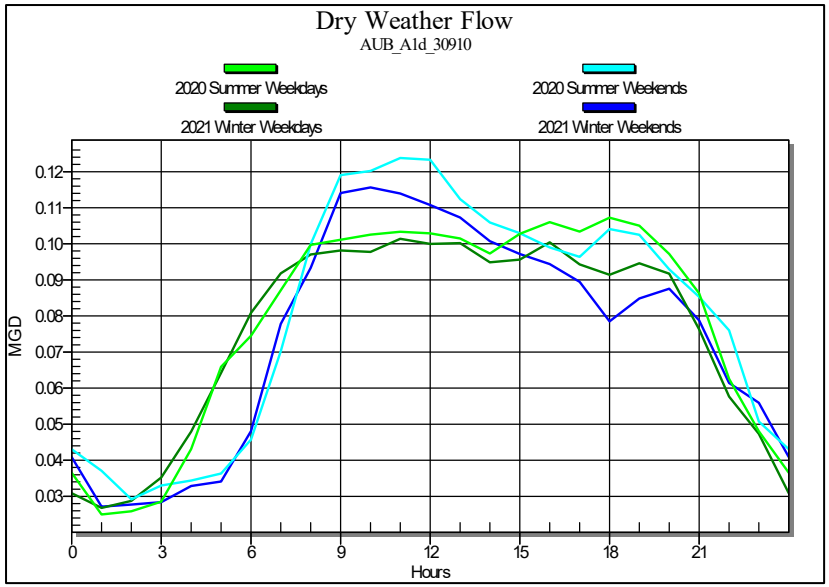

Storm Event - 1/2/2021 7:00:00 AM
AUB_A1c_30906
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
Jan 2021
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Date

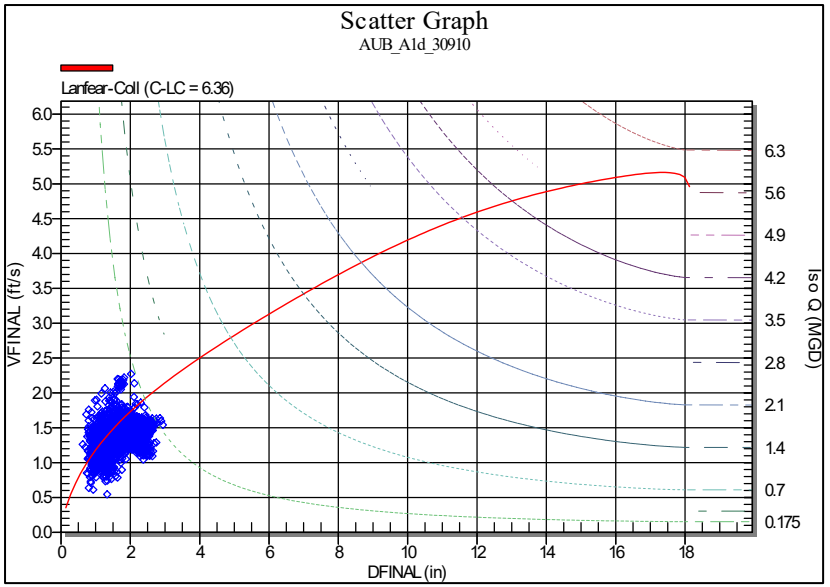

Storm Event - 1/11/2021 8:00:00 AM
AUB_A1c_30906
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
Jan 2021
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Date

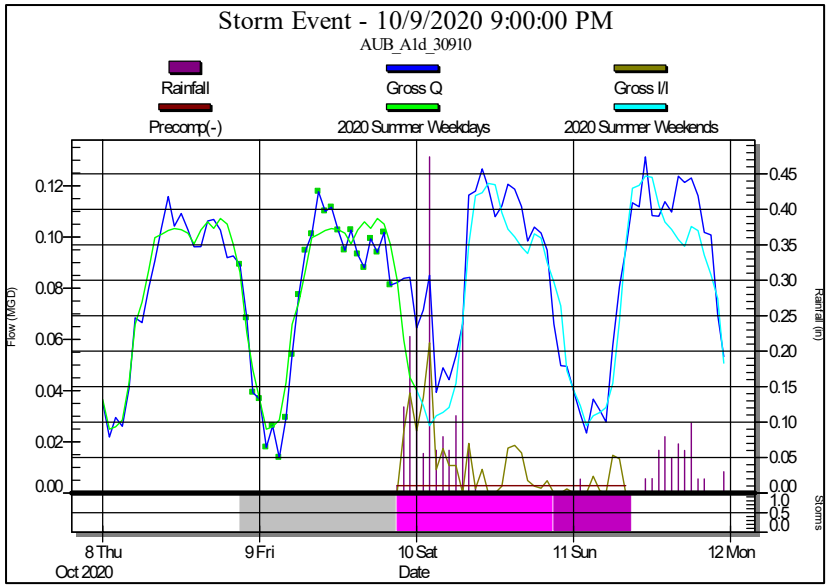

Storm Event - 2/14/2021 7:00:00 AM
AUB_A1c_30906
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
Feb 2021
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Date

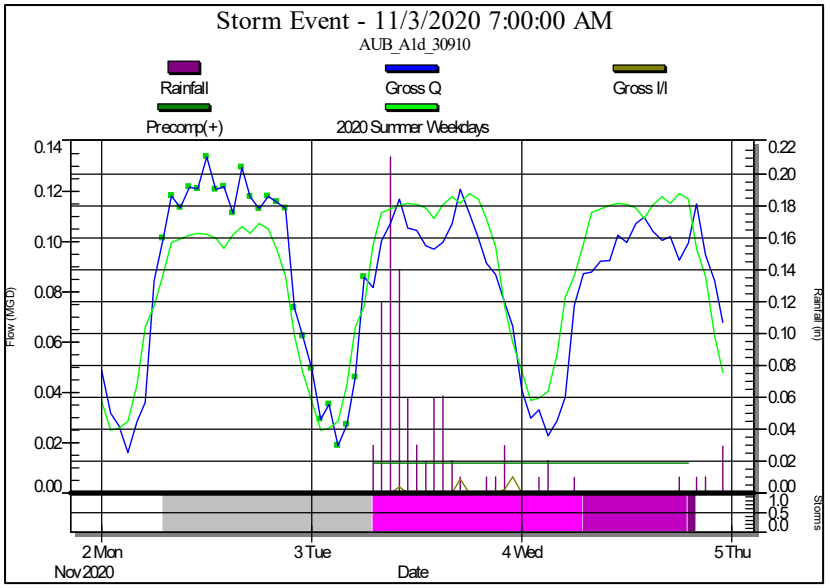

Storm Event - 2/21/2021 9:00:00 PM
AUB_A1c_30906
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
Feb 2021
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Date

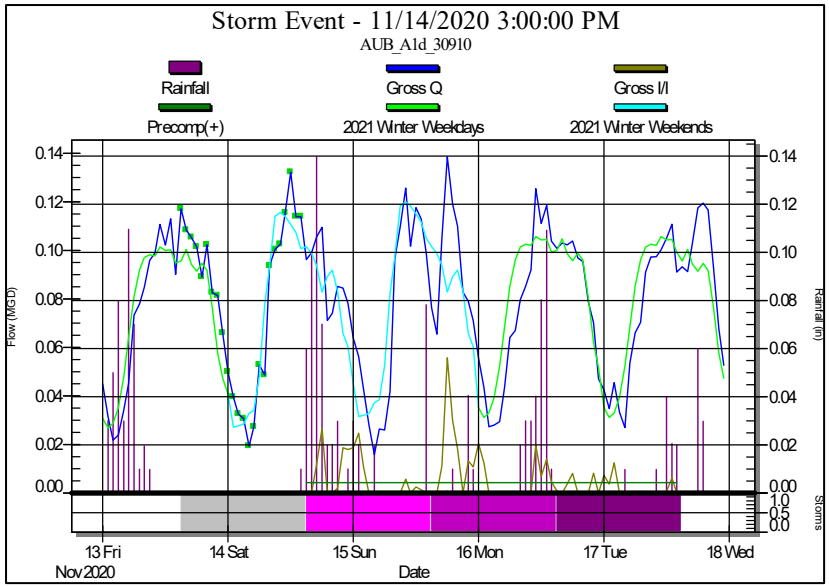

Pipe Flow
AUB_A1d_30910
Rainfall
Qfinal(g)
Flow (MGD)
0.15
0.10
0.05
0.00
0.4
0.3
0.2
0.1
0.0
Rainfall (in)
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

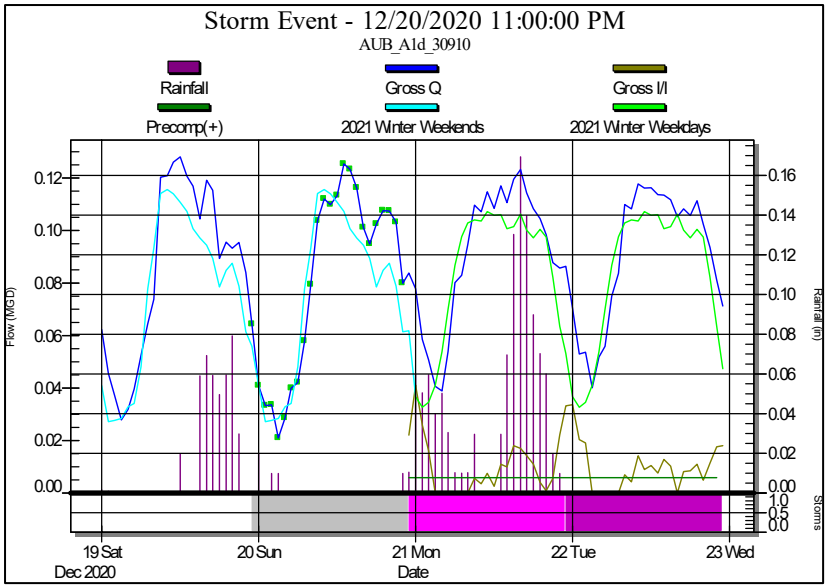

Dry Weather Flow
AUB_A1d_30910
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.12
0.11
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0
3
6
9
12
15
18
21
Hours

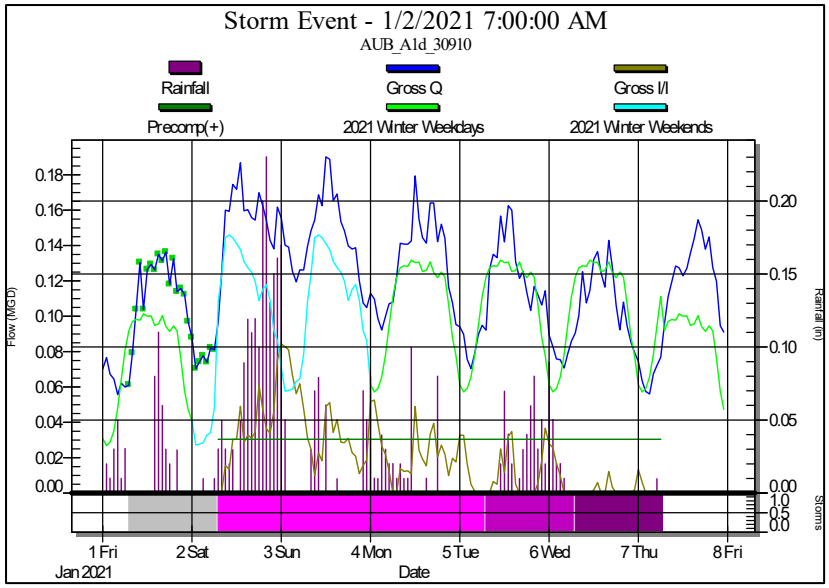

Scatter Graph
AUB_A1d_30910
Lanfear-Coll (C-LC = 6.36)
VFINAL (ft/s)
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
2
4
6
8
10
12
14
16
18
DFINAL (in)
Iso Q (MGD)
6.3
5.6
4.9
4.2
3.5
2.8
2.1
1.4
0.7
0.175

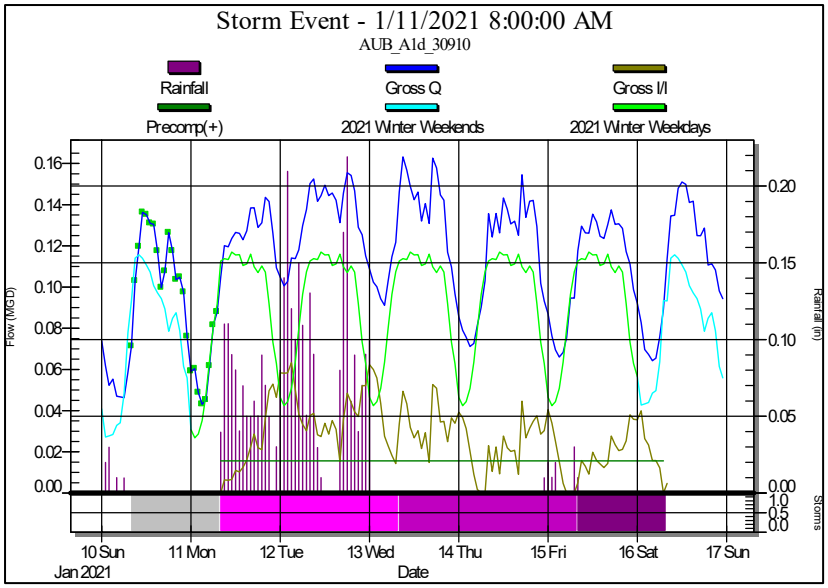

Storm Event - 10/9/2020 9:00:00 PM
AUB_A1d_30910
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

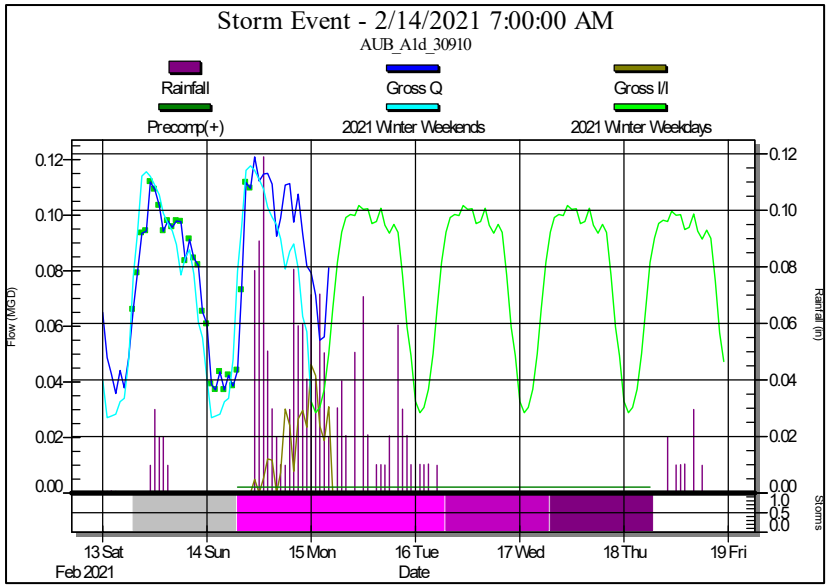

Storm Event - 11/3/2020 7:00:00 AM
AUB_A1d_30910
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

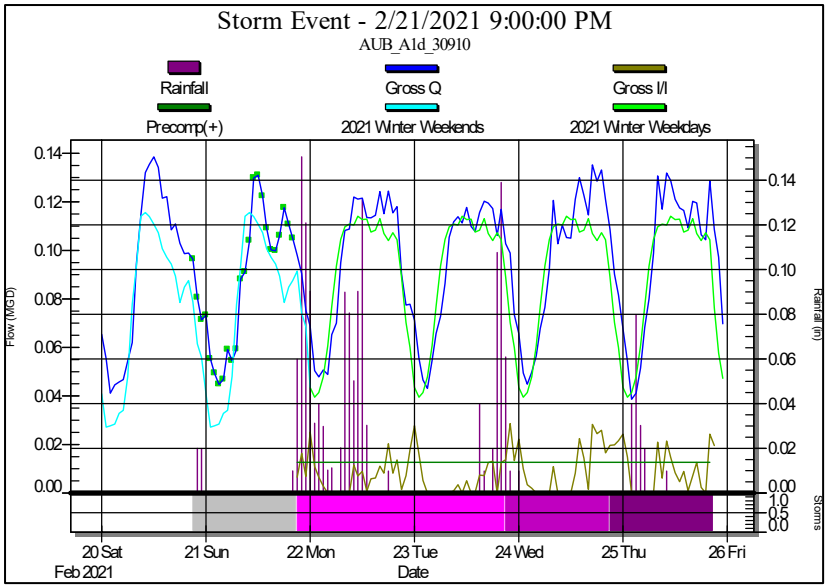

Storm Event - 11/14/2020 3:00:00 PM
AUB_A1d_30910
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

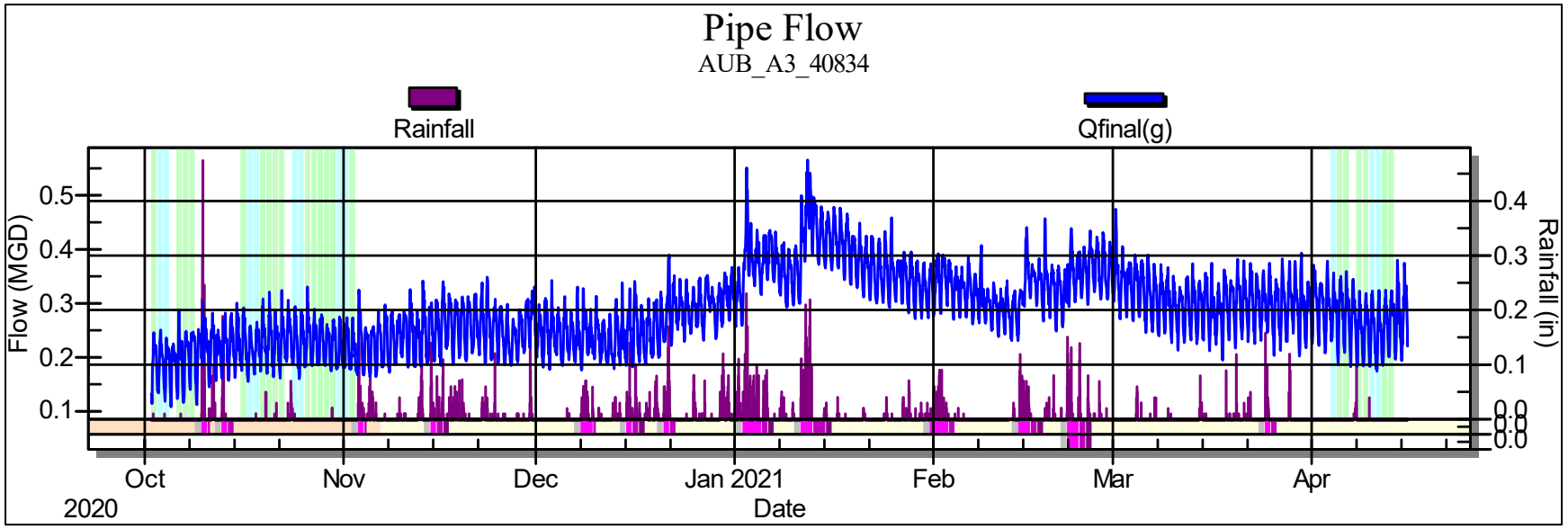

Storm Event - 12/20/2020 11:00:00 PM
AUB_A1d_30910
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

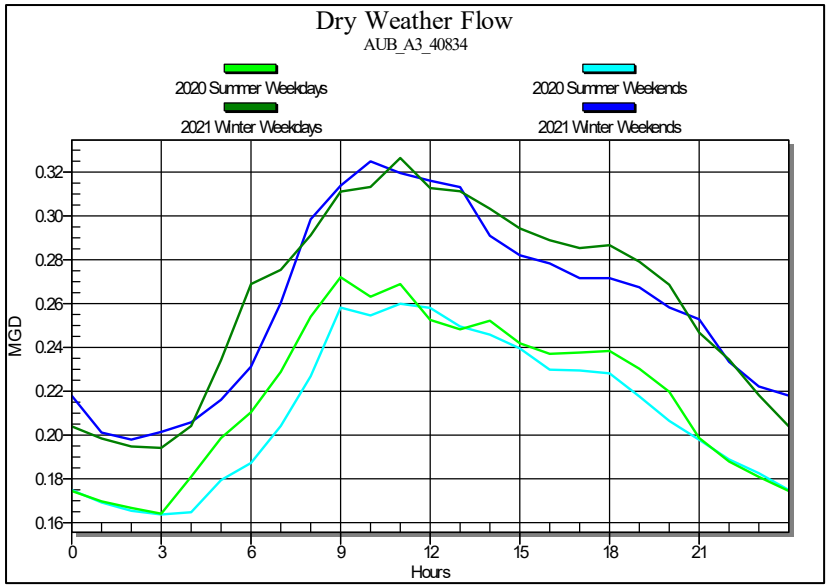

Storm Event - 1/2/2021 7:00:00 AM
AUB_A1d_30910
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

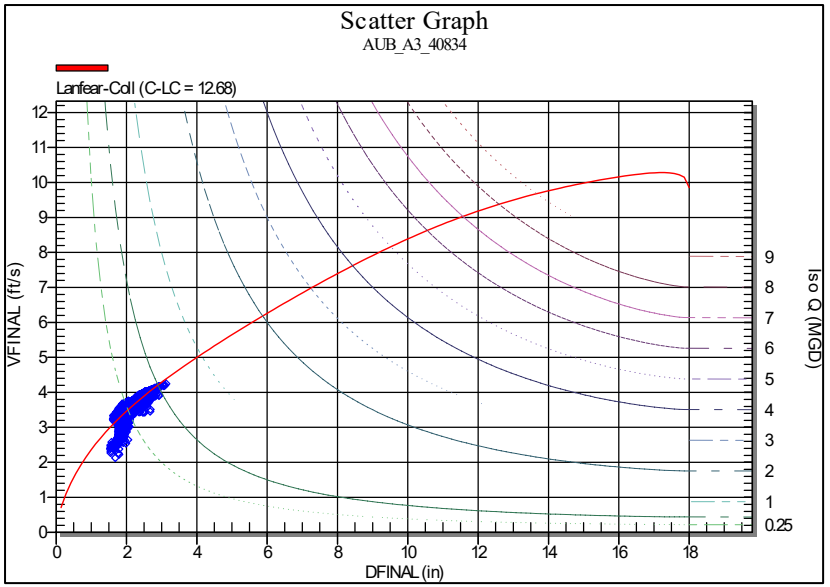

Storm Event - 1/11/2021 8:00:00 AM
AUB_A1d_30910
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

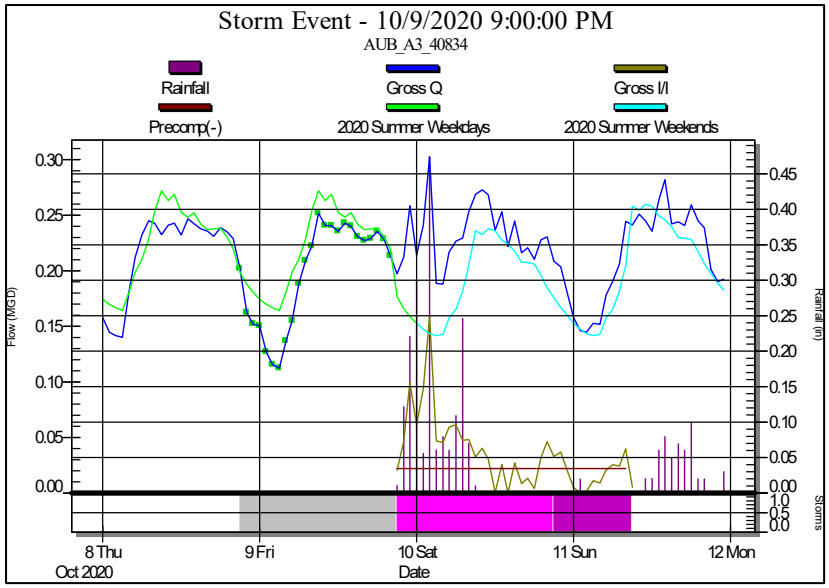

Storm Event - 2/14/2021 7:00:00 AM
AUB_A1d_30910
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

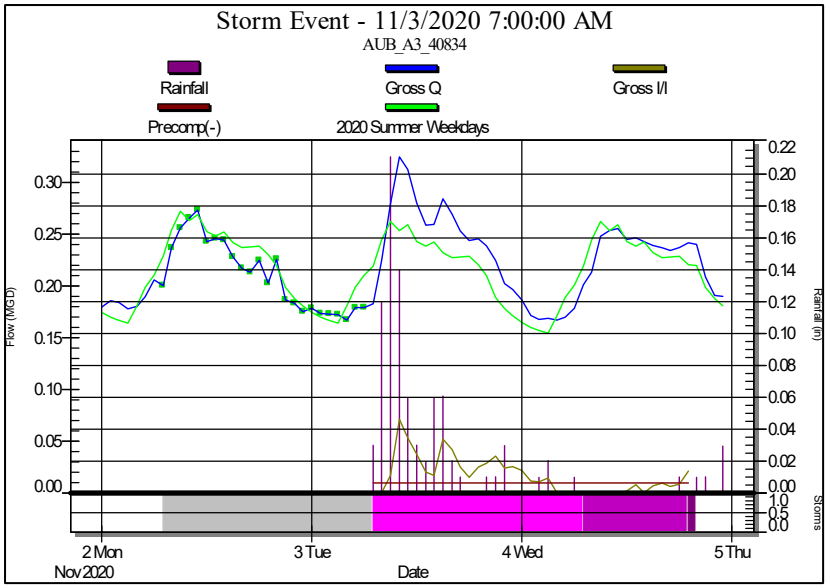

Storm Event - 2/21/2021 9:00:00 PM
AUB_A1d_30910
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

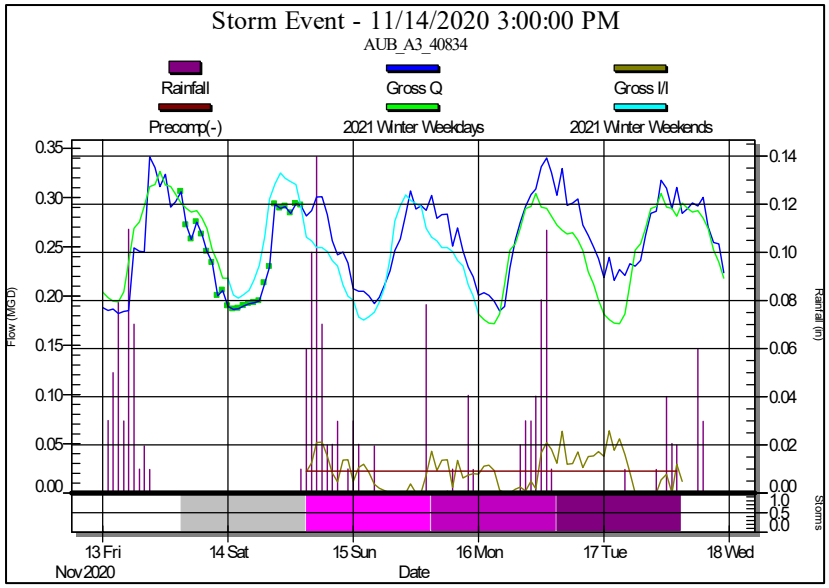

Pipe Flow
AUB_A3_40834
Rainfall
Qfinal(g)
Flow (MGD)
Rainfall (in)
0.5
0.4
0.3
0.2
0.1
0.4
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

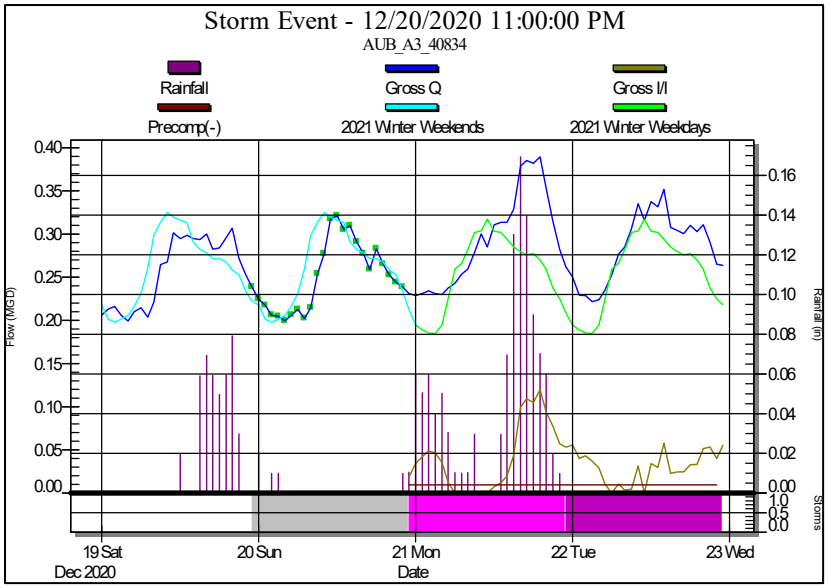

Dry Weather Flow
AUB_A3_40834
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.32
0.30
0.28
0.26
0.24
0.22
0.20
0.18
0.16
0
3
6
9
12
15
18
21
Hours

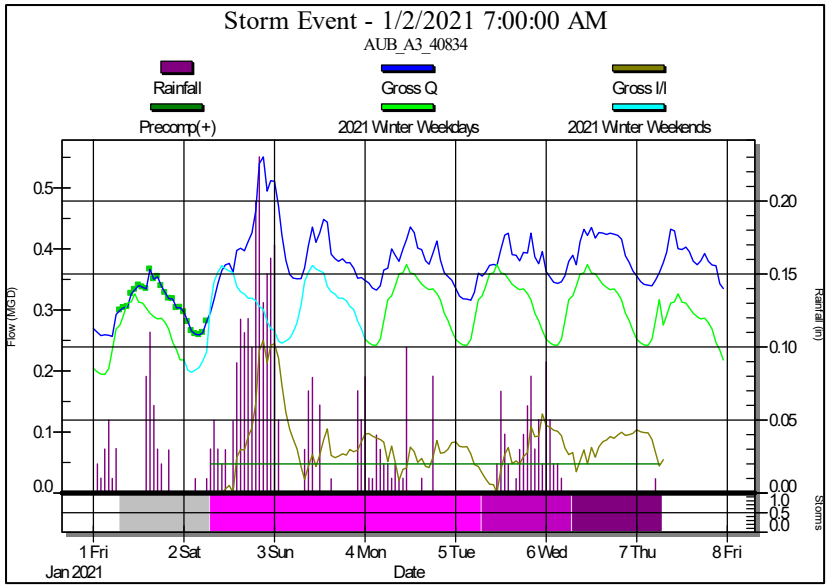

Scatter Graph
AUB_A3_40834
Lanfear-Coll (C-LC = 12.68)
VFINAL (ft/s)
Iso Q (MGD)
12
11
10
9
8
7
6
5
4
3
2
1
0
9
8
7
6
5
4
3
2
1
0.25
0
2
4
6
8
10
12
14
16
18
DFINAL (in)

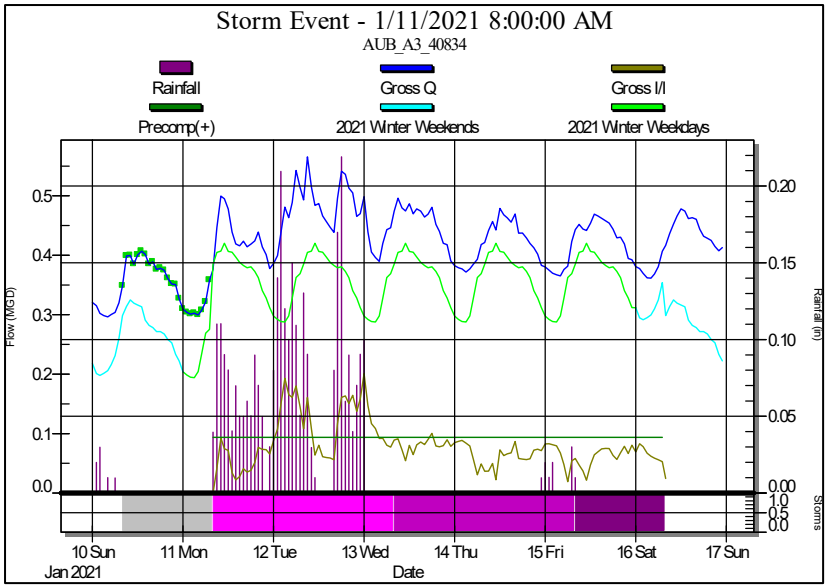

Storm Event - 10/9/2020 9:00:00 PM
AUB_A3_40834
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

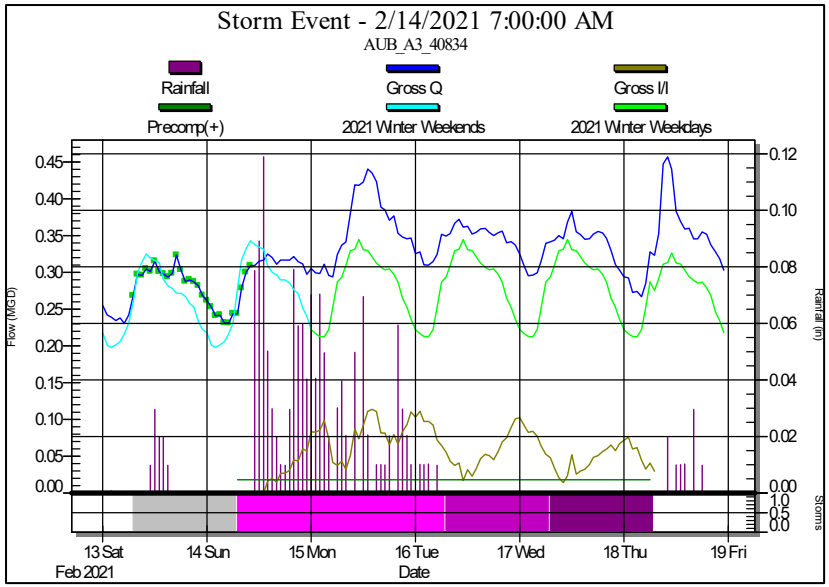

Storm Event - 11/3/2020 7:00:00 AM
AUB_A3_40834
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

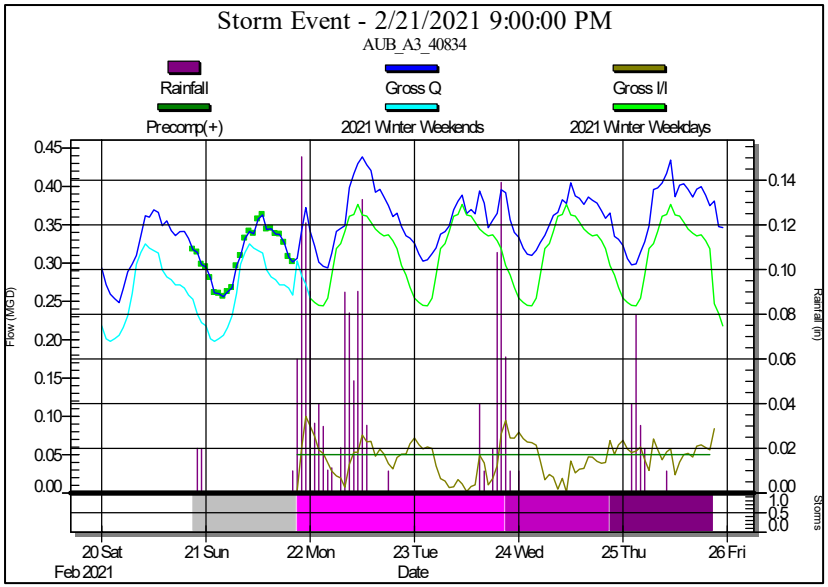

Storm Event - 11/14/2020 3:00:00 PM
AUB_A3_40834
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

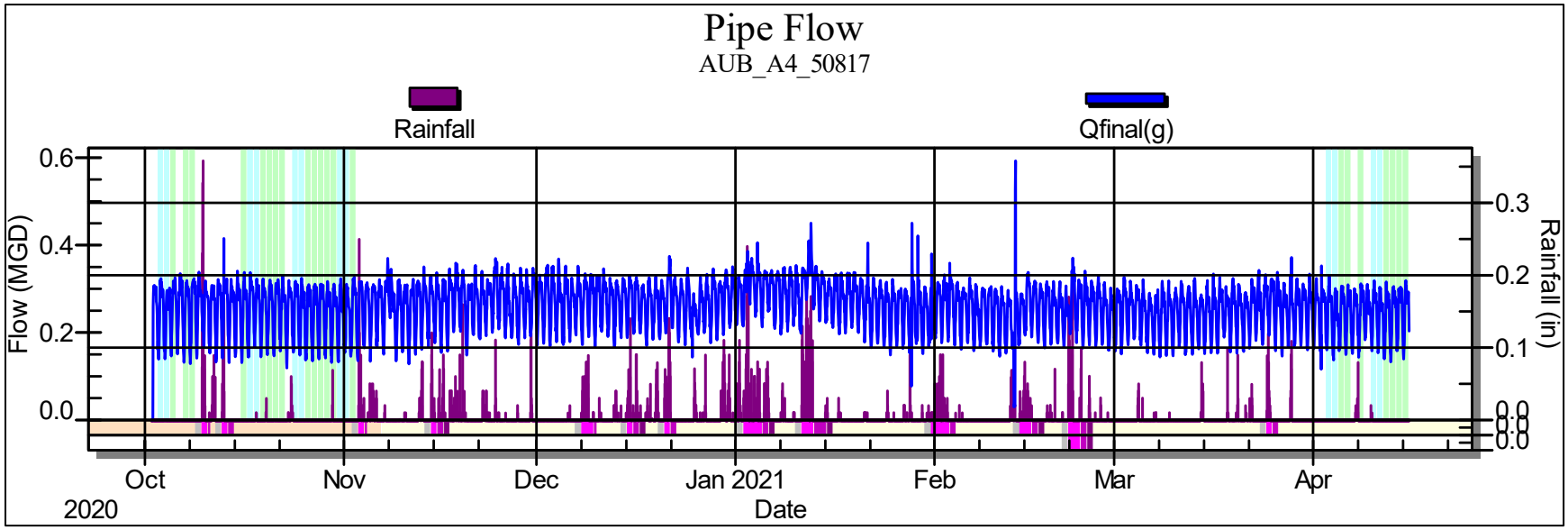

Storm Event - 12/20/2020 11:00:00 PM
AUB_A3_40834
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

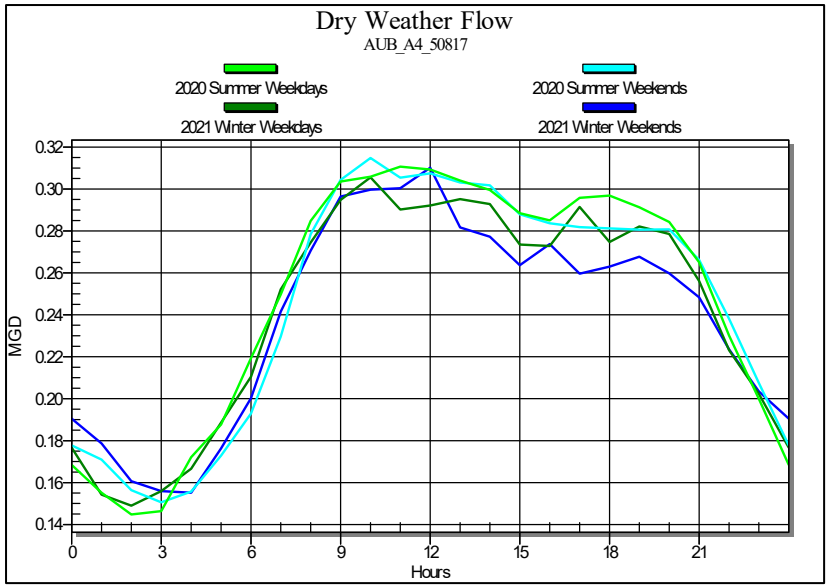

Storm Event - 1/2/2021 7:00:00 AM
AUB_A3_40834
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
Jan 2021
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Date

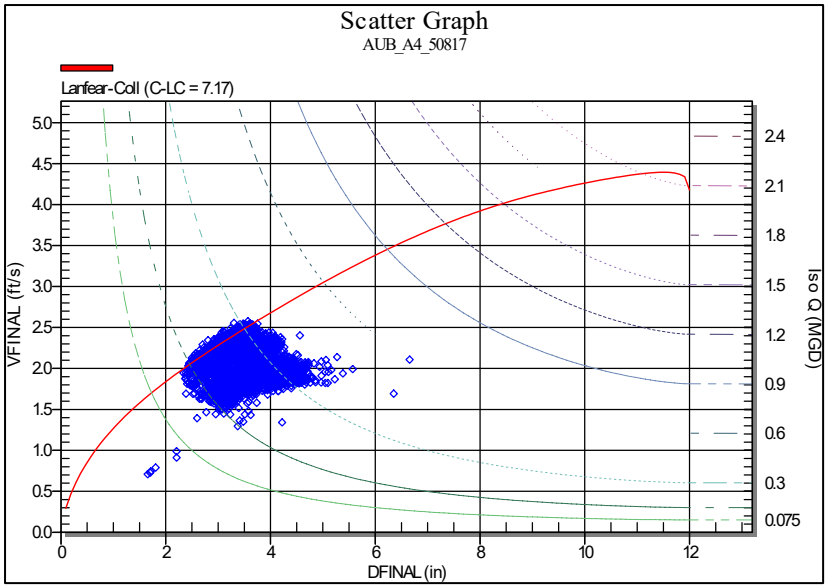

Storm Event - 1/11/2021 8:00:00 AM
AUB_A3_40834
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
Jan 2021
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Date

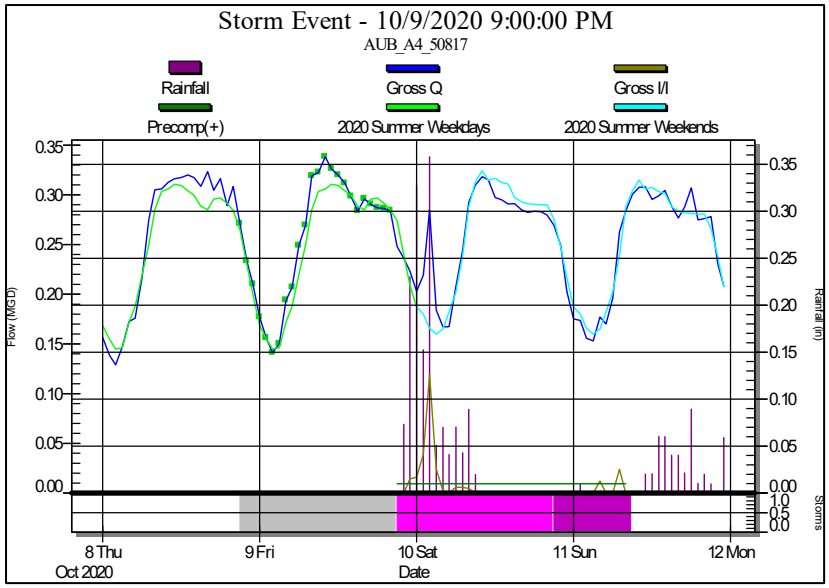

Storm Event - 2/14/2021 7:00:00 AM
AUB_A3_40834
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
Feb 2021
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Date

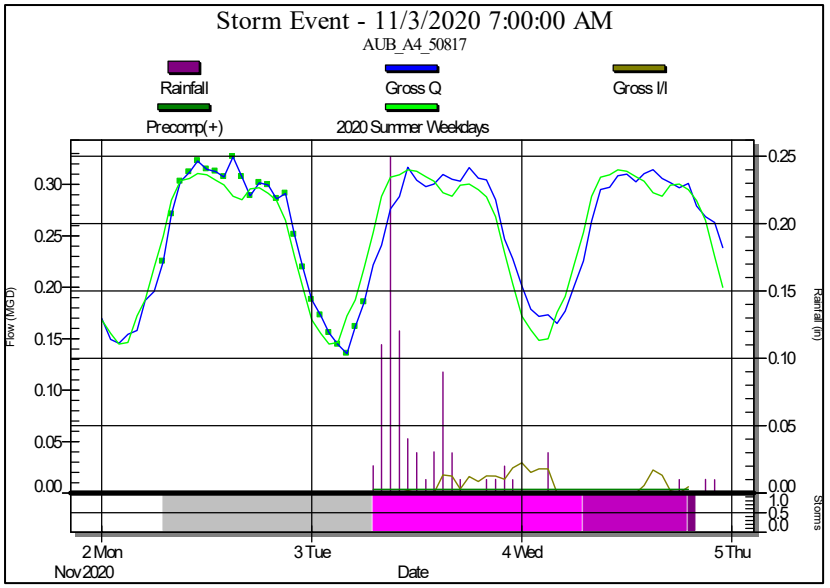

Storm Event - 2/21/2021 9:00:00 PM
AUB_A3_40834
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
Feb 2021
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Date

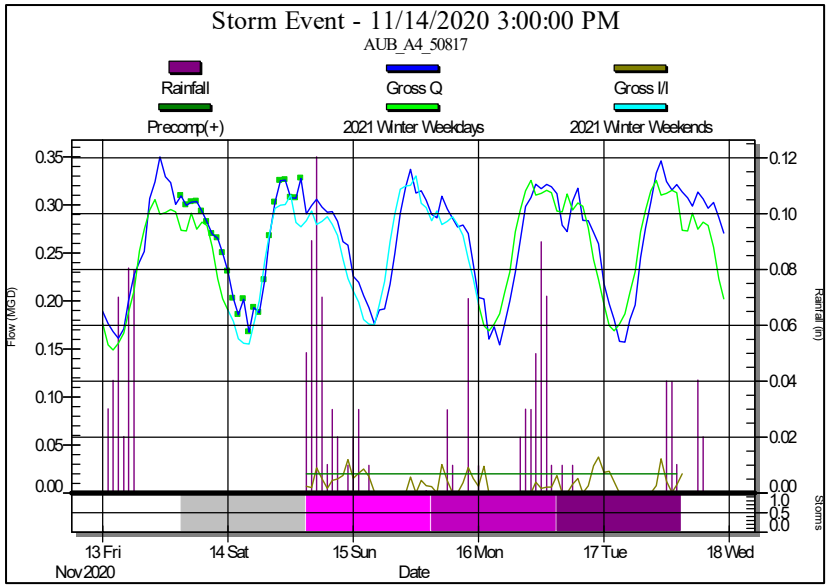

Pipe Flow
AUB_A4_50817
Rainfall
Qfinal(g)
Flow (MGD)
Rainfall (in)
0.6
0.4
0.2
0.0
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

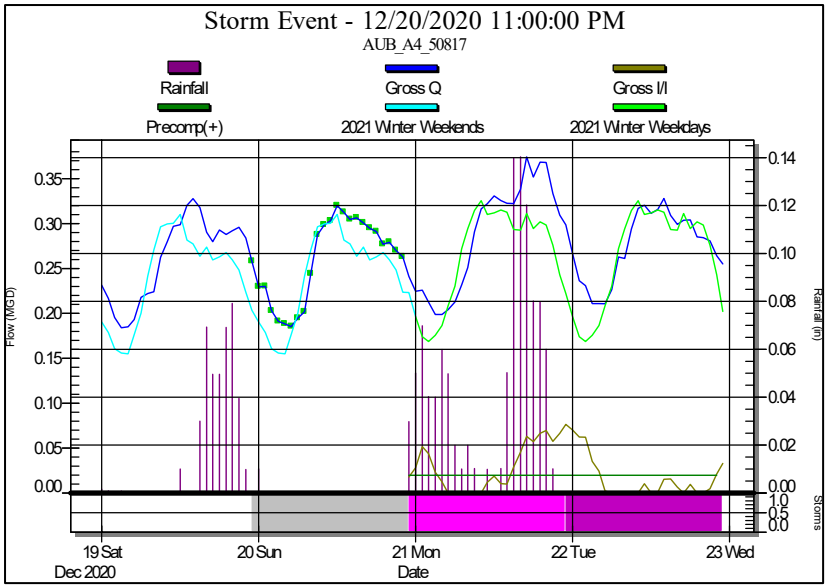

Dry Weather Flow
AUB_A4_50817
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.32
0.30
0.28
0.26
0.24
0.22
0.20
0.18
0.16
0.14
0
3
6
9
12
15
18
21
Hours

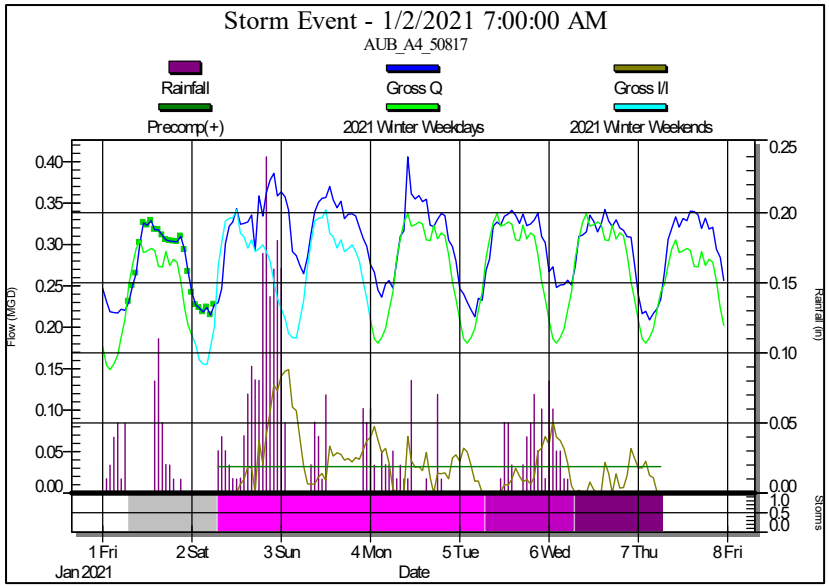

Scatter Graph
AUB_A4_50817
Lanfear-Coll (C-LC = 7.17)
VFINAL (ft/s)
Iso Q (MGD)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
2.4
2.1
1.8
1.5
1.2
0.9
0.6
0.3
0.075
0
2
4
6
8
10
12
DFINAL (in)

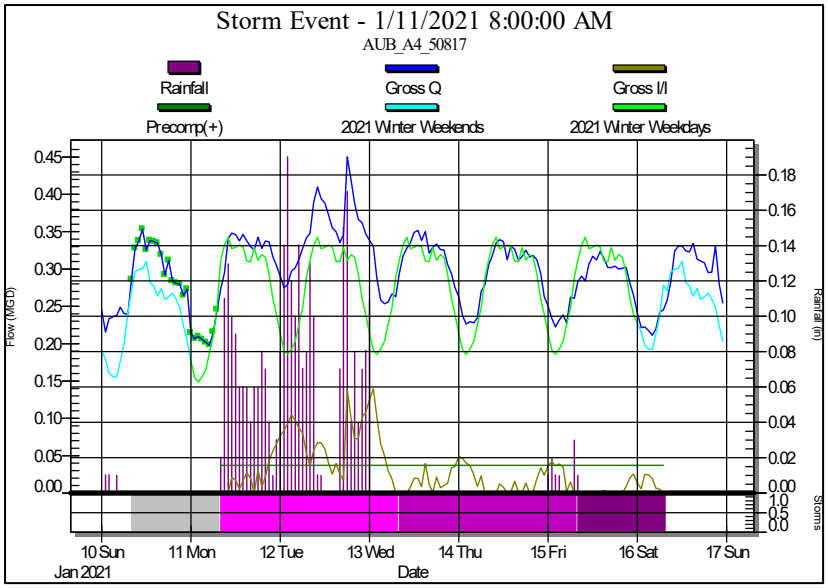

Storm Event - 10/9/2020 9:00:00 PM
AUB_A4_50817
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

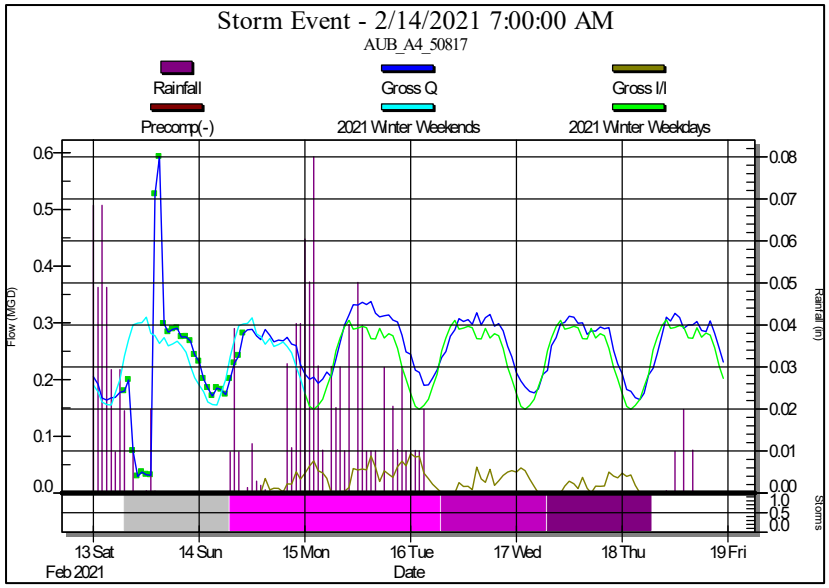

Storm Event - 11/3/2020 7:00:00 AM
AUB_A4_50817
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

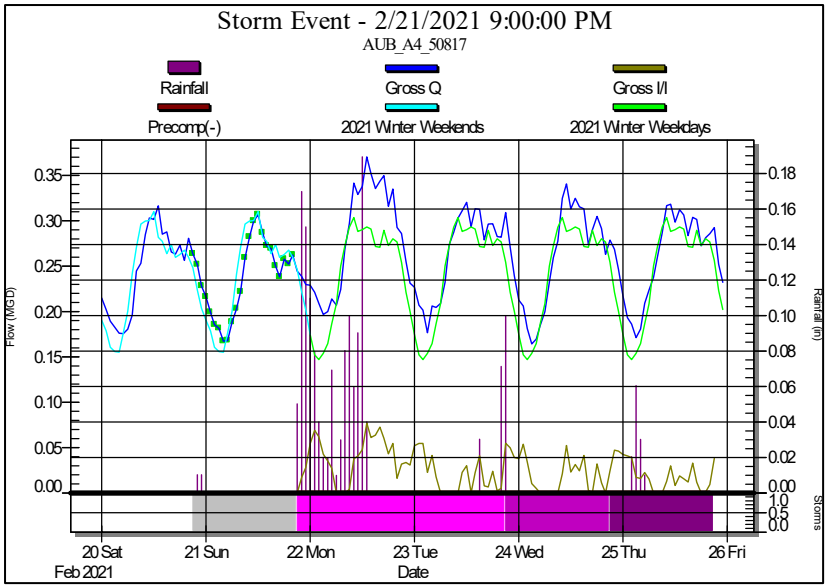

Storm Event - 11/14/2020 3:00:00 PM
AUB_A4_50817
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

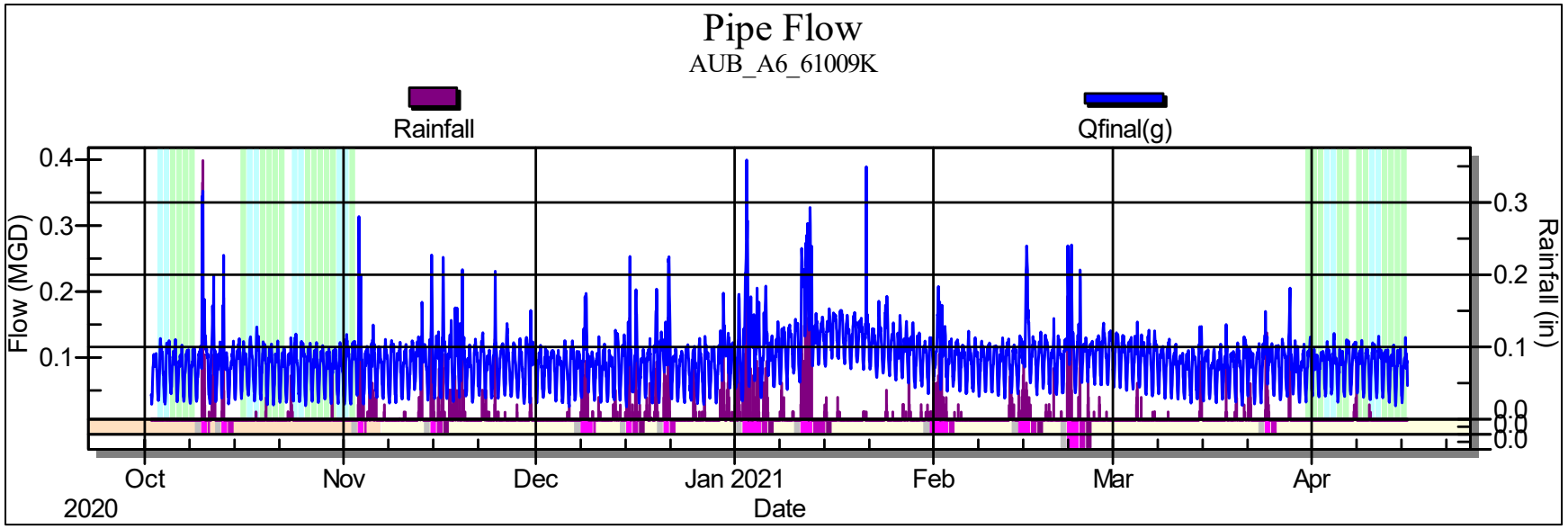

Storm Event - 12/20/2020 11:00:00 PM
AUB_A4_50817
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

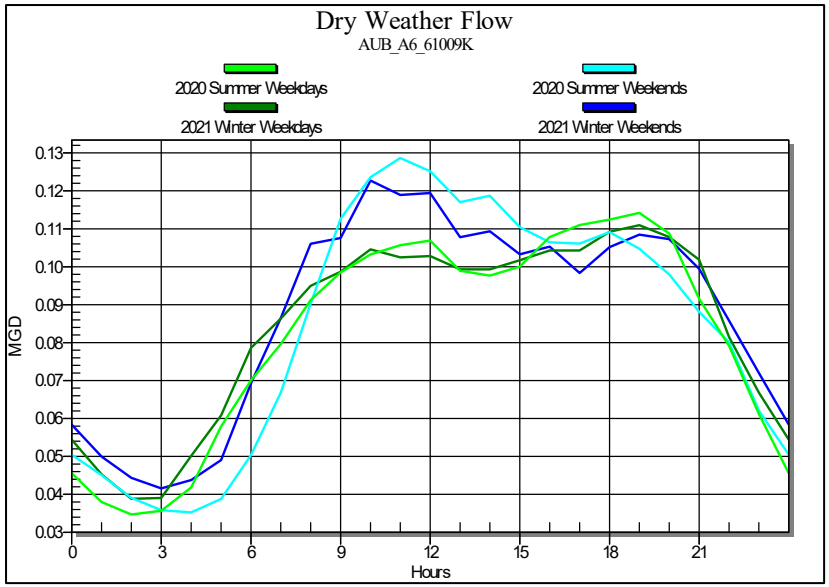

Storm Event - 1/2/2021 7:00:00 AM
AUB_A4_50817
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

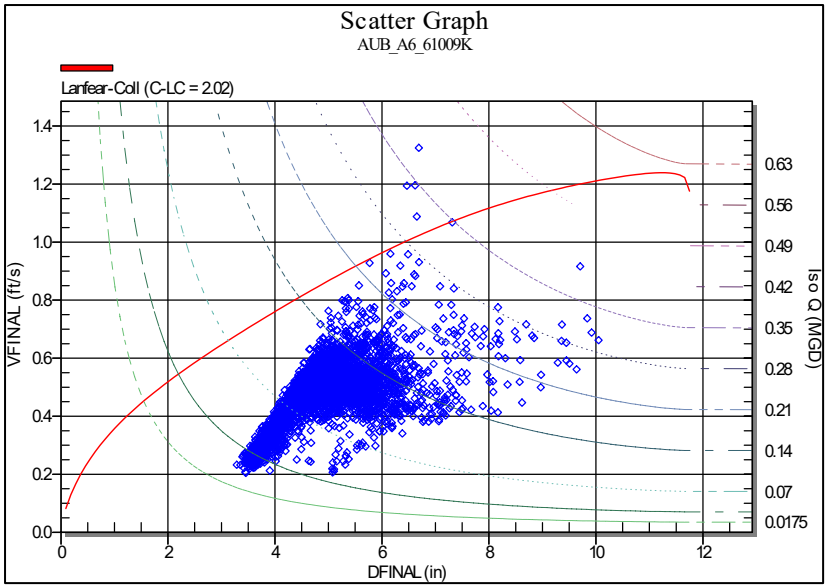

Storm Event - 1/11/2021 8:00:00 AM
AUB_A4_50817
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

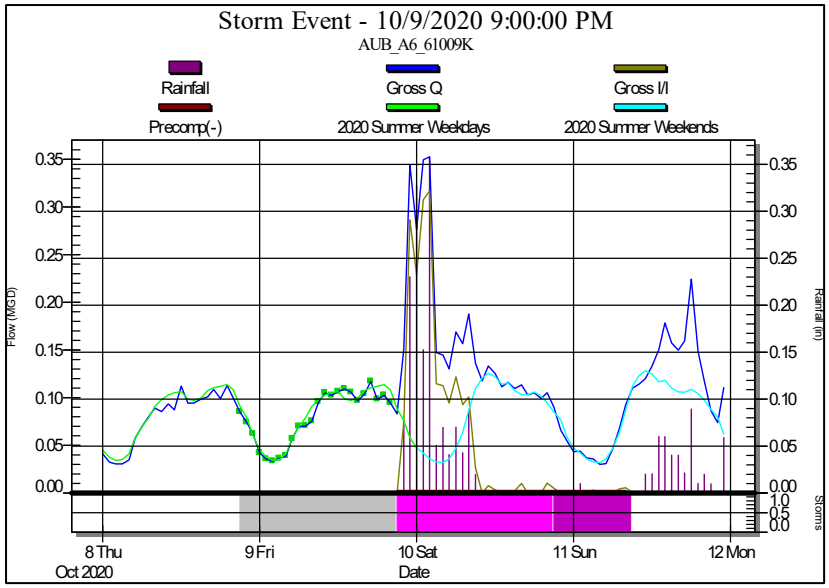

Storm Event - 2/14/2021 7:00:00 AM
AUB_A4_50817
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

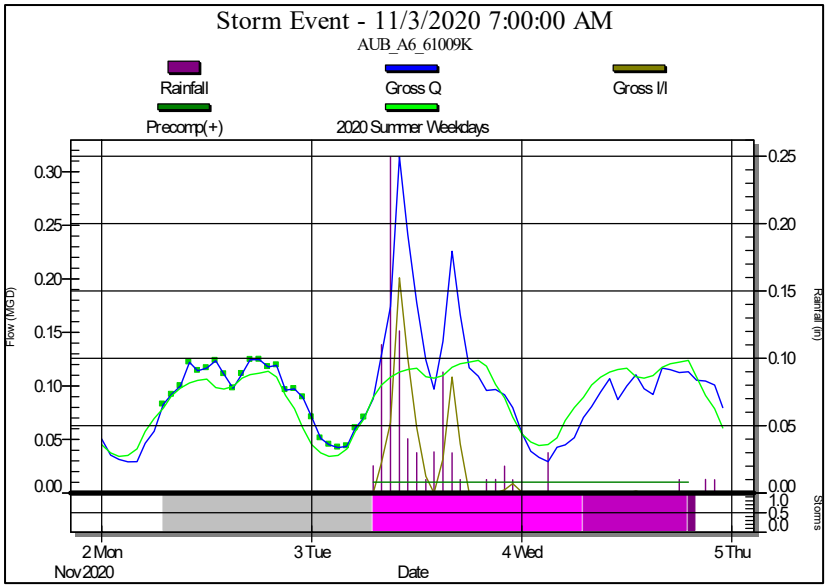

Storm Event - 2/21/2021 9:00:00 PM
AUB_A4_50817
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

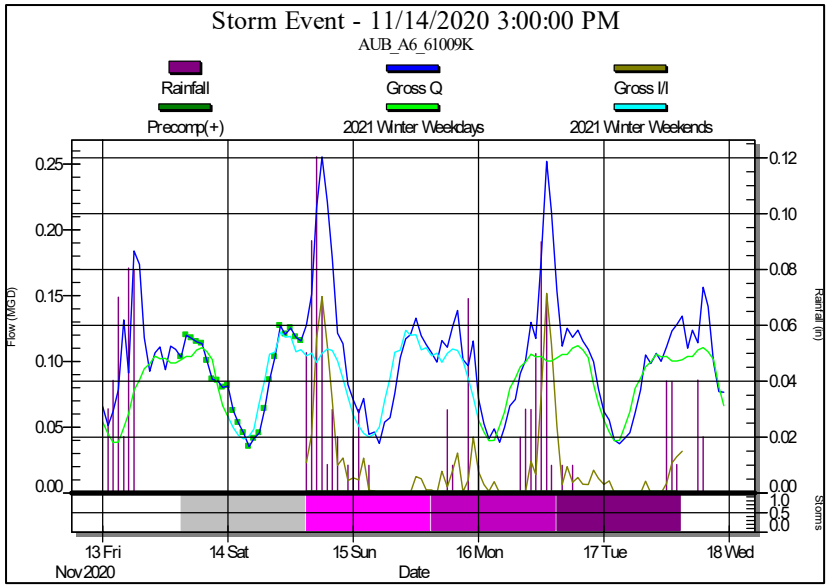

Pipe Flow
AUB_A6_61009K
Rainfall
Qfinal(g)
Flow (MGD)
Rainfall (in)
0.4
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

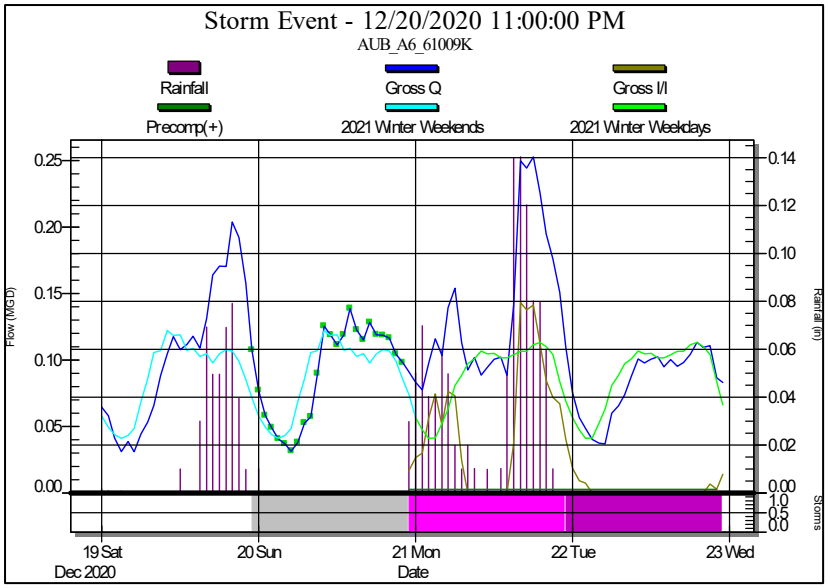

Dry Weather Flow
AUB_A6_61009K
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
Hours

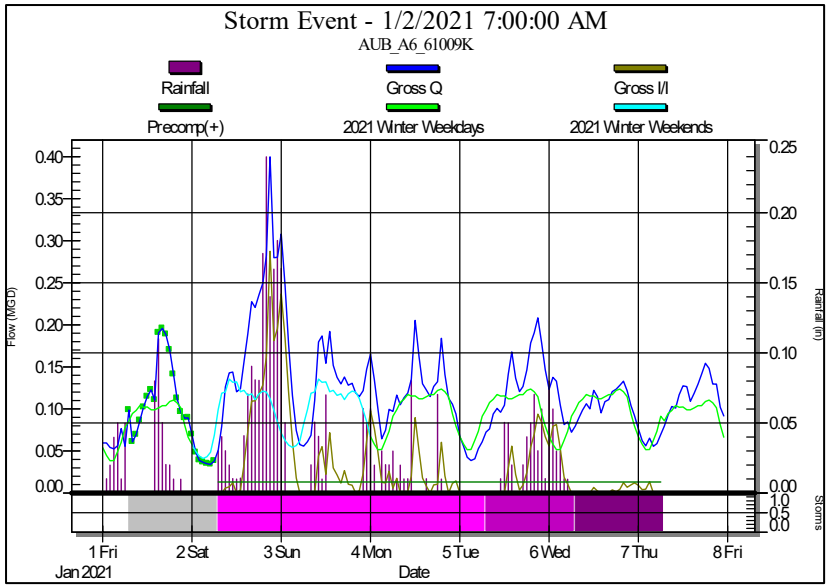

Scatter Graph
AUB_A6_61009K
Lanfear-Coll (C-LC = 2.02)
VFINAL (ft/s)
DFINAL (in)
Iso Q (MGD)

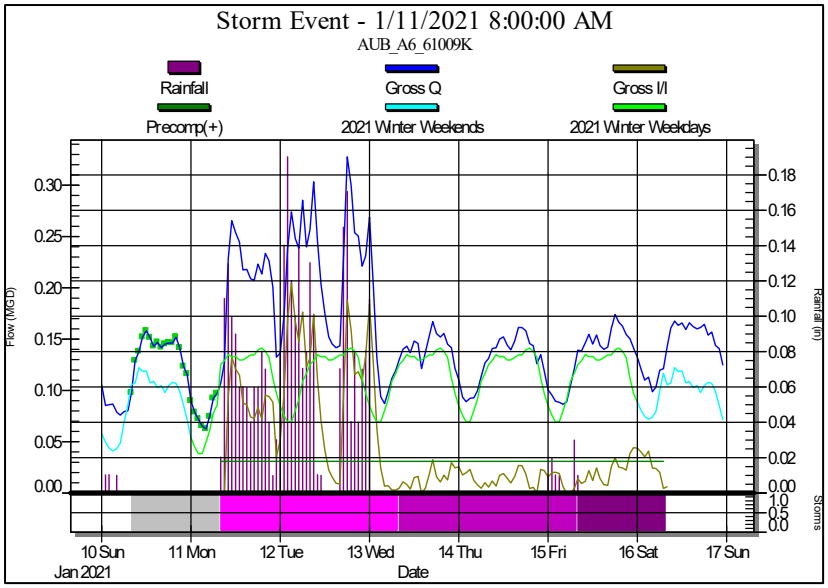

Storm Event - 10/9/2020 9:00:00 PM
AUB_A6_61009K
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

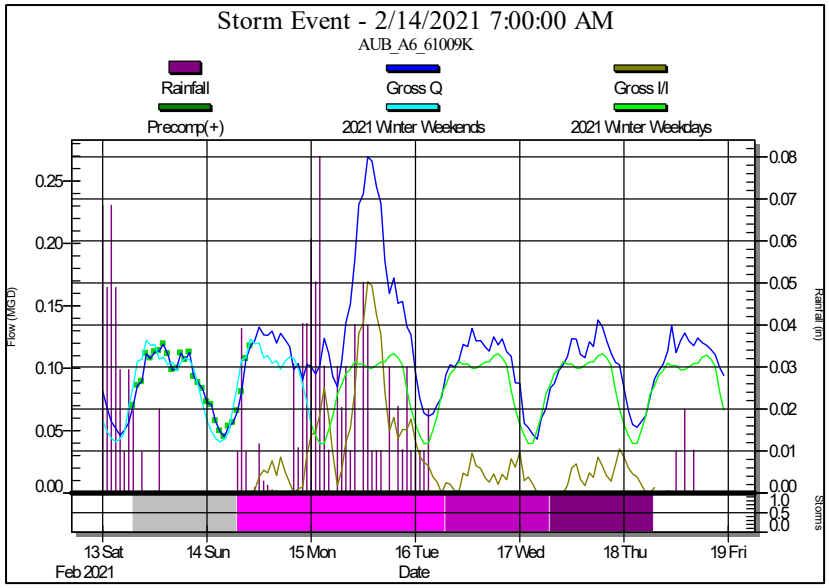

Storm Event - 11/3/2020 7:00:00 AM
AUB_A6_61009K
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

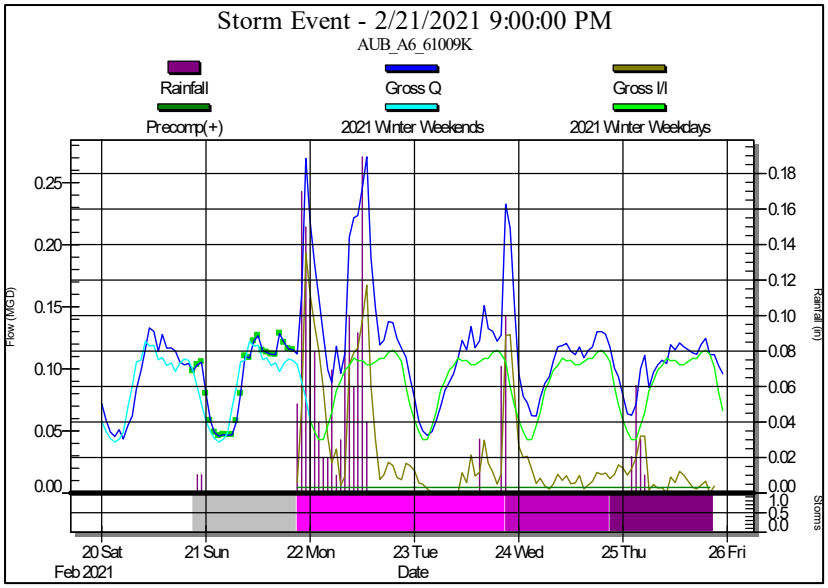

Storm Event - 11/14/2020 3:00:00 PM
AUB_A6_61009K
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

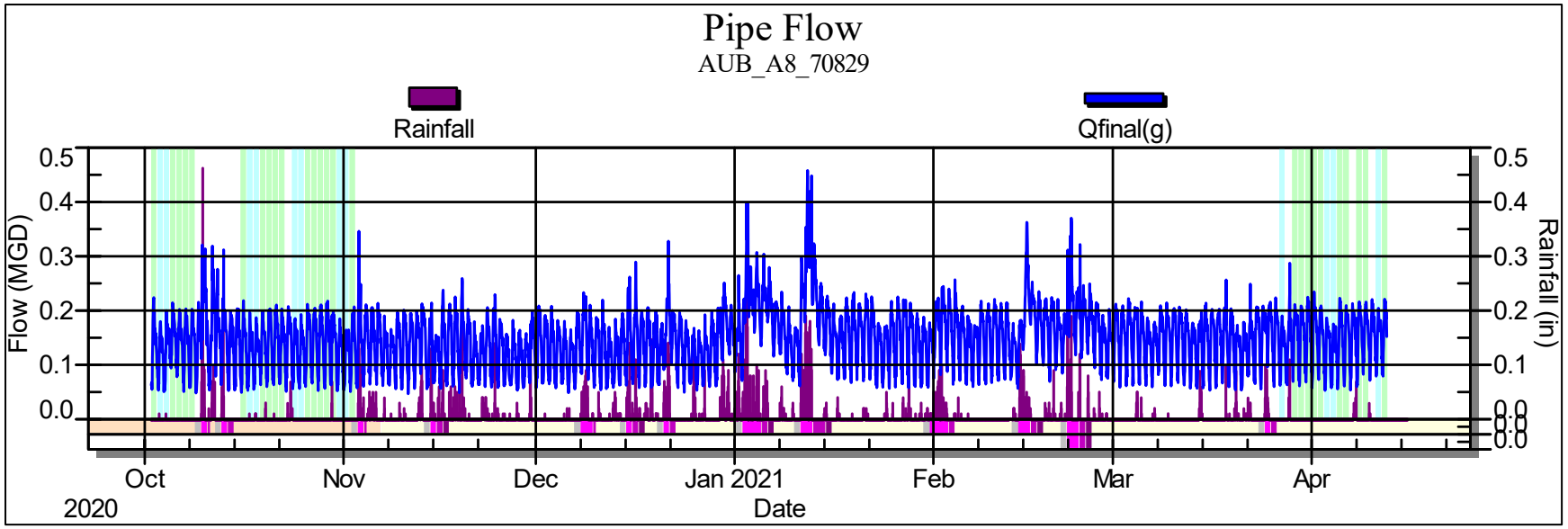

Storm Event - 12/20/2020 11:00:00 PM
AUB_A6_61009K
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

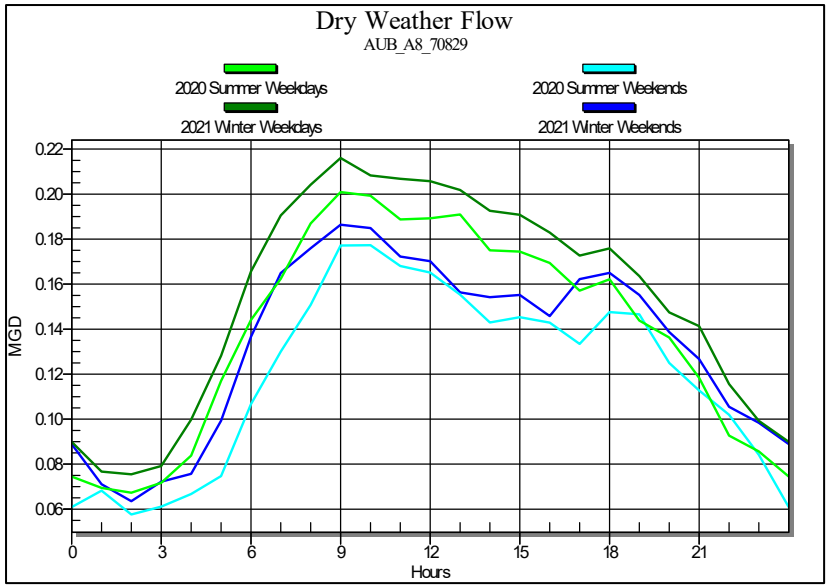

Storm Event - 1/2/2021 7:00:00 AM
AUB_A6_61009K
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

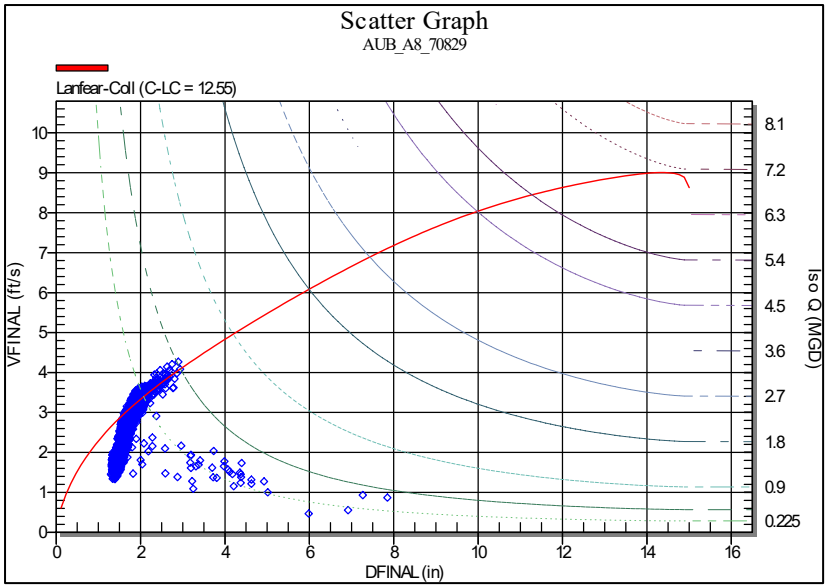

Storm Event - 1/11/2021 8:00:00 AM
AUB_A6_61009K
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

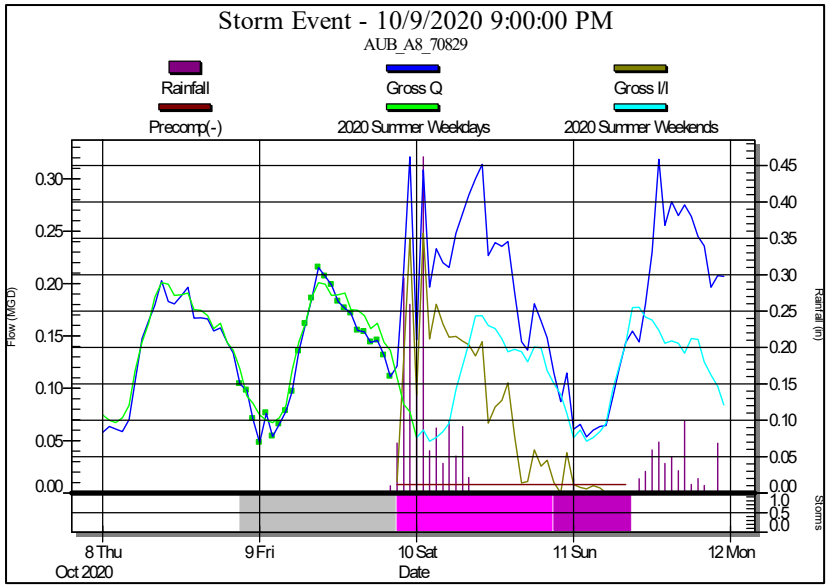

Storm Event - 2/14/2021 7:00:00 AM
AUB_A6_61009K
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

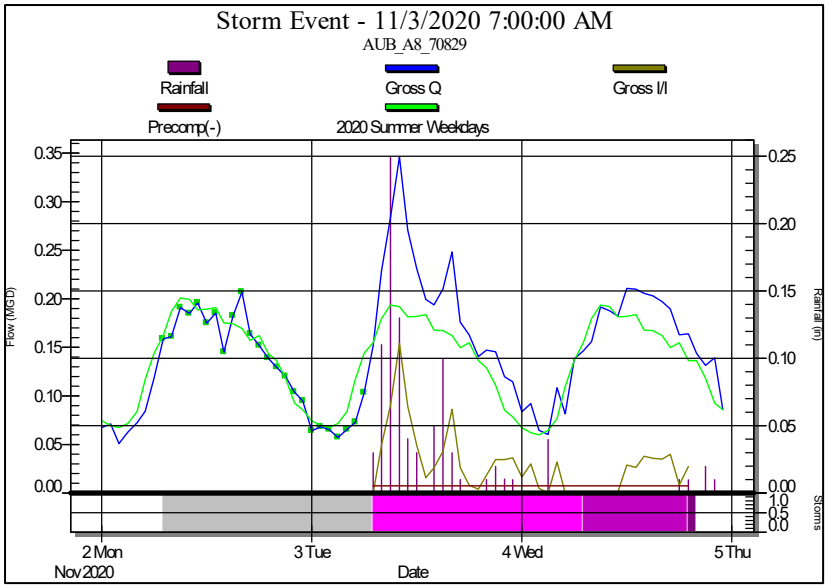

Storm Event - 2/21/2021 9:00:00 PM
AUB_A6_61009K
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

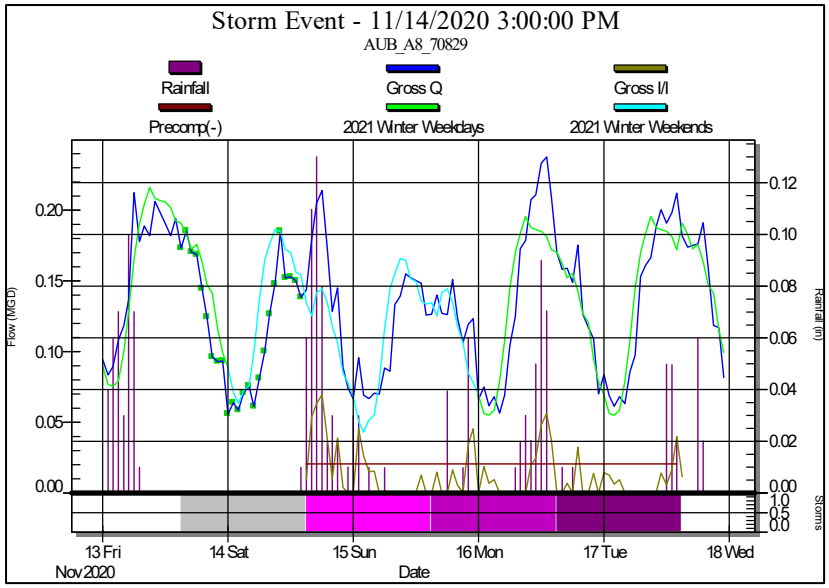

Pipe Flow
AUB_A8_70829
Rainfall
Qfinal(g)
Flow (MGD)
Rainfall (in)
0.5
0.4
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

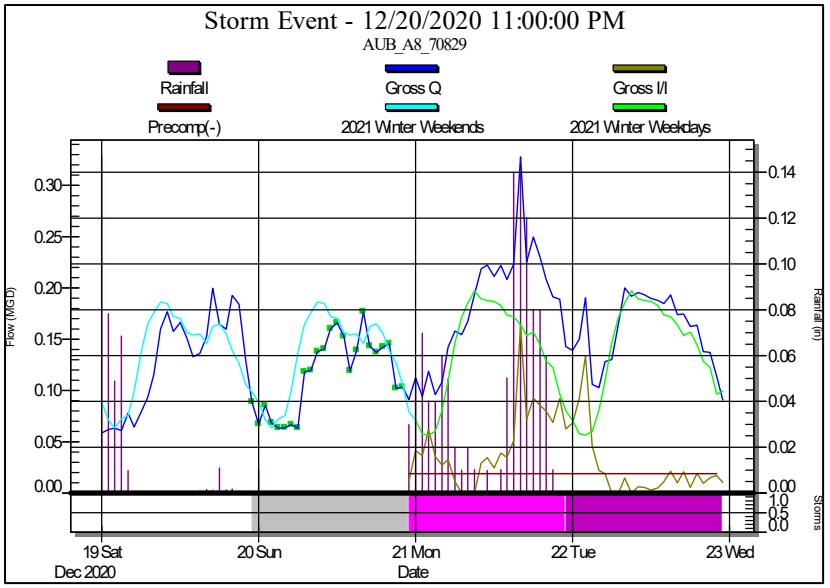

Dry Weather Flow
AUB_A8_70829
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.22
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0
3
6
9
12
15
18
21
Hours

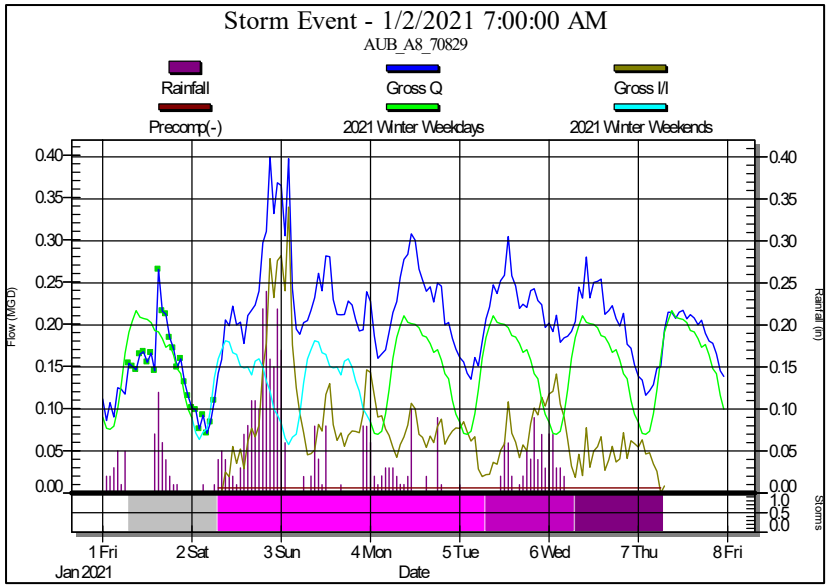

Scatter Graph
AUB_A8_70829
Lanfear-Coll (C-LC = 12.55)
VFINAL (ft/s)
Iso Q (MGD)
10
9
8
7
6
5
4
3
2
1
0
8.1
7.2
6.3
5.4
4.5
3.6
2.7
1.8
0.9
0.225
0
2
4
6
8
10
12
14
16
DFINAL (in)

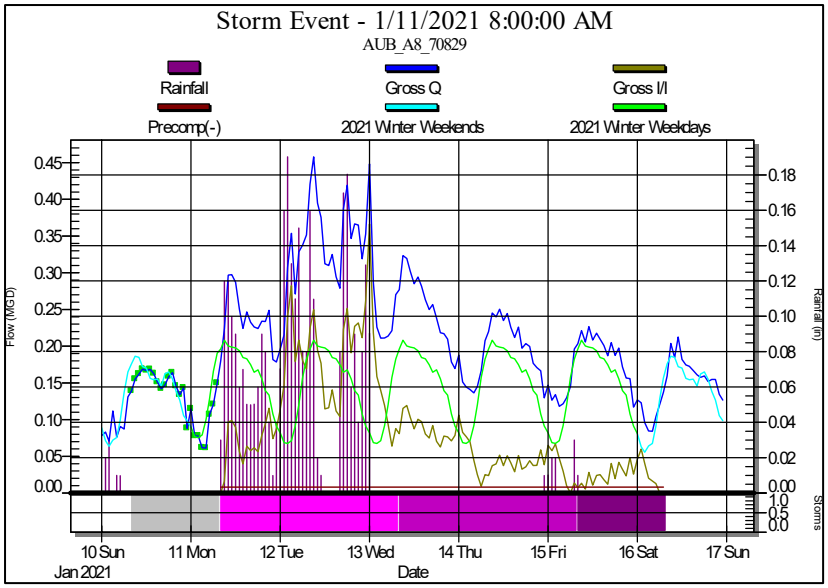

Storm Event - 10/9/2020 9:00:00 PM
AUB_A8_70829
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

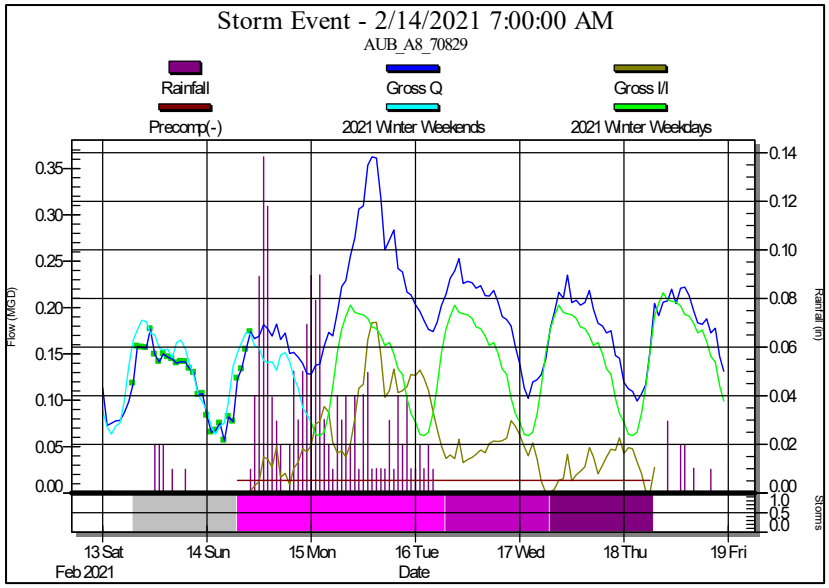

Storm Event - 11/3/2020 7:00:00 AM
AUB_A8_70829
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

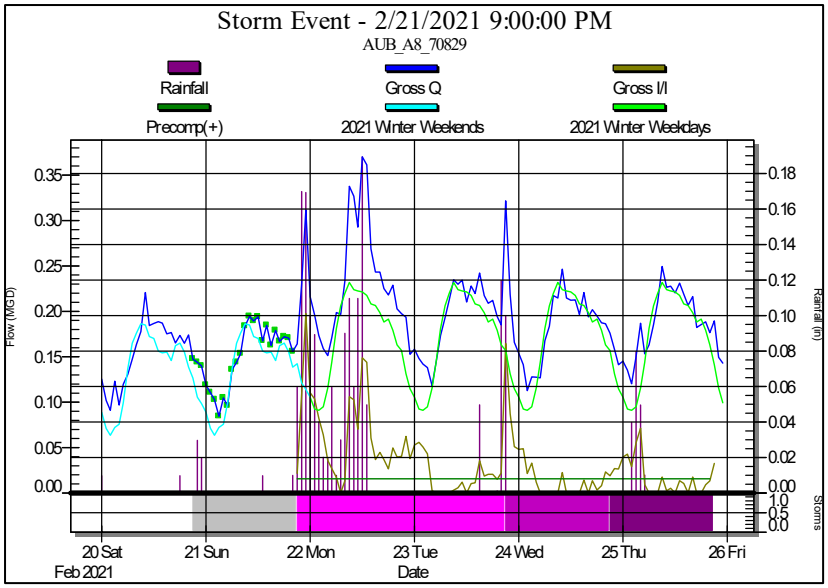

Storm Event - 11/14/2020 3:00:00 PM
AUB_A8_70829
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

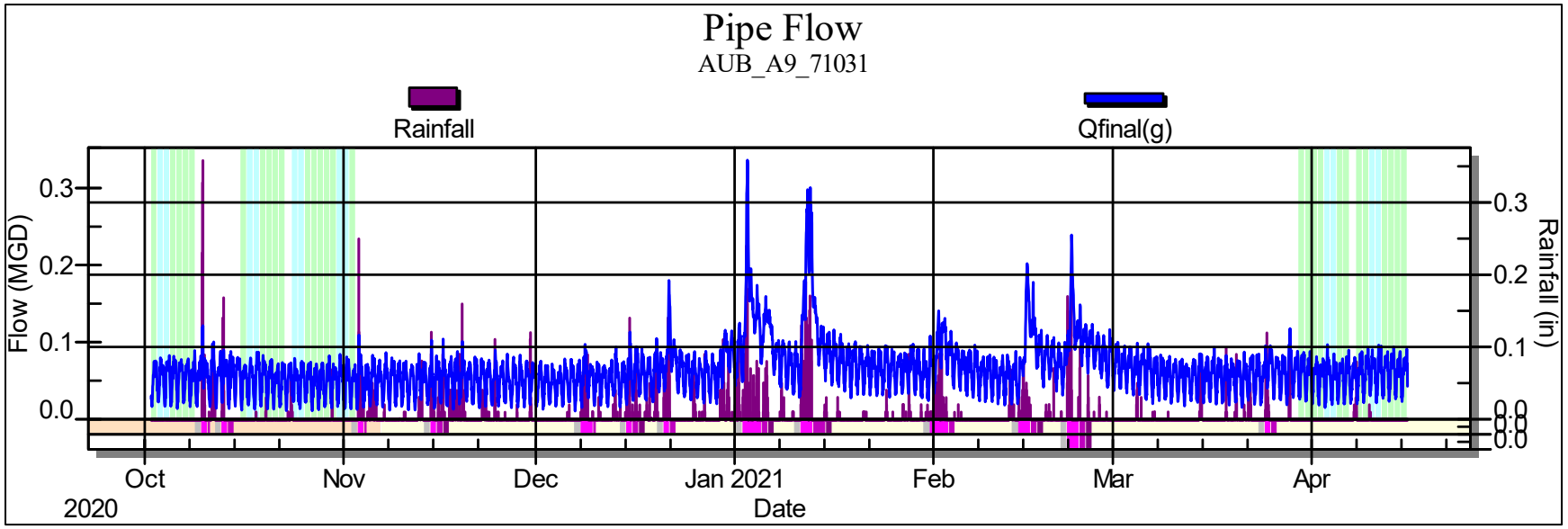

Storm Event - 12/20/2020 11:00:00 PM
AUB_A8_70829
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

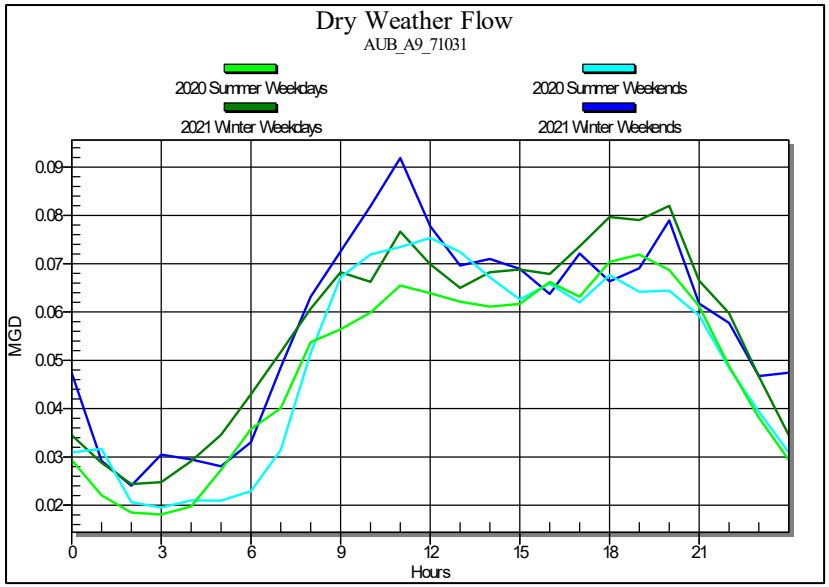

Storm Event - 1/2/2021 7:00:00 AM
AUB_A8_70829
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

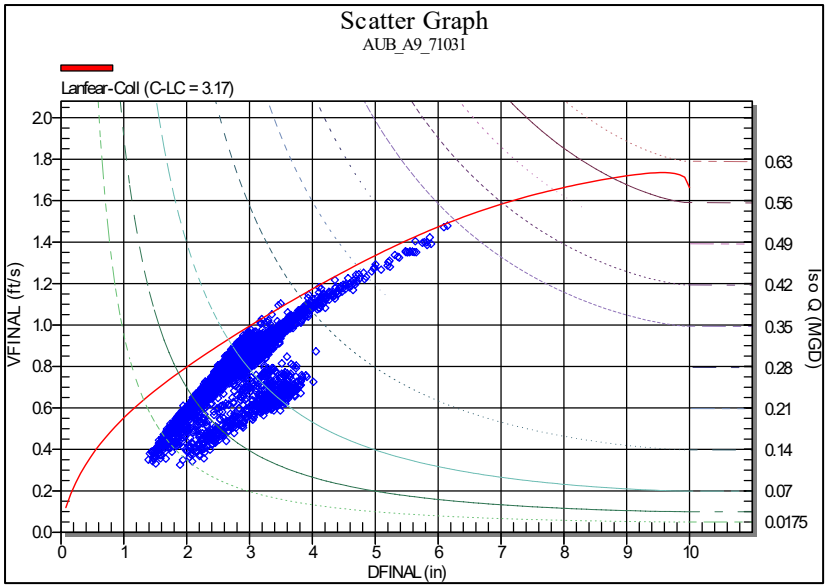

Storm Event - 1/11/2021 8:00:00 AM
AUB_A8_70829
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

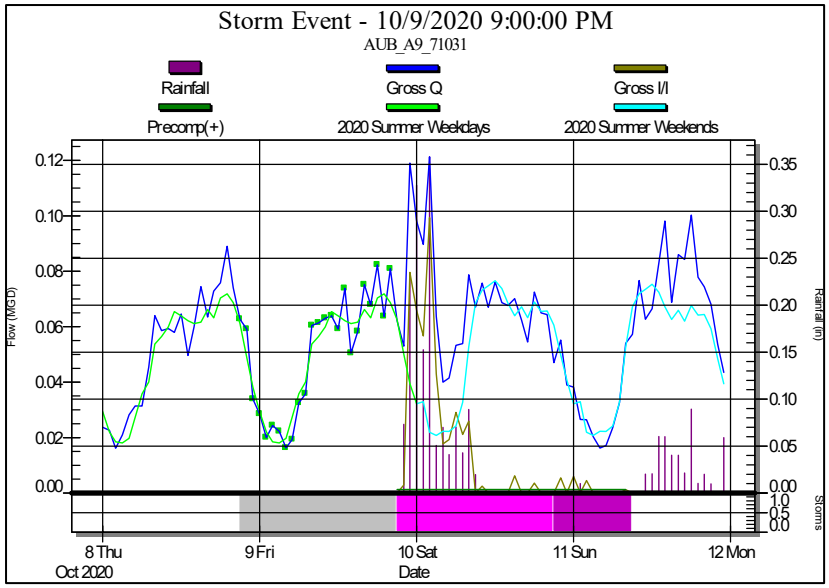

Storm Event - 2/14/2021 7:00:00 AM
AUB_A8_70829
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

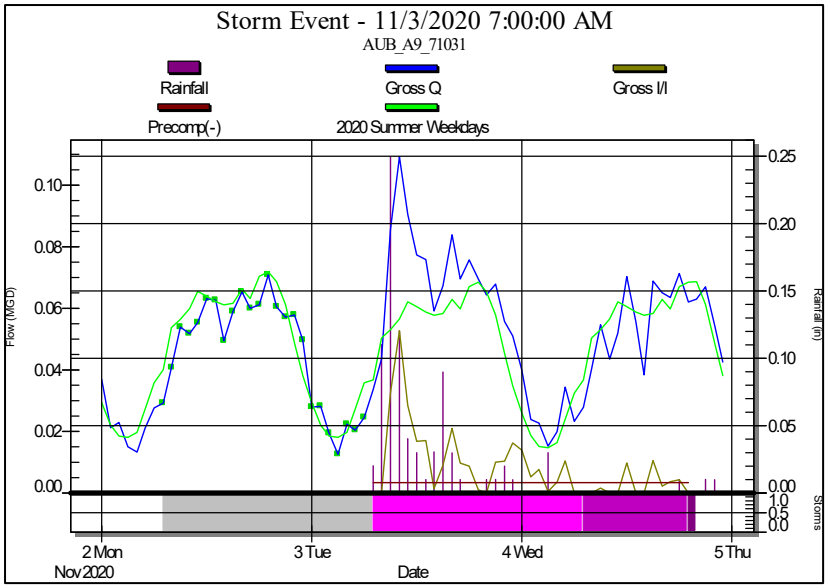

Storm Event - 2/21/2021 9:00:00 PM
AUB_A8_70829
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

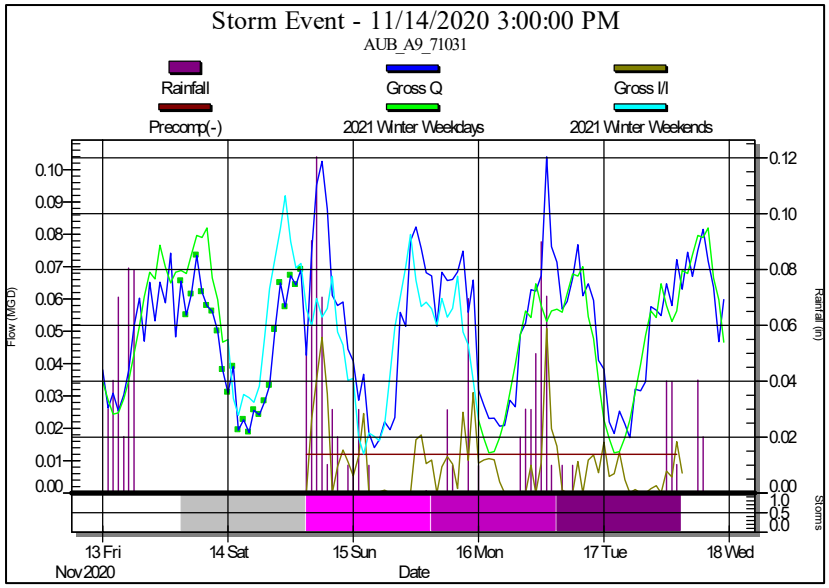

Pipe Flow
AUB_A9_71031
Rainfall
Qfinal(g)
Flow (MGD)
Rainfall (in)
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

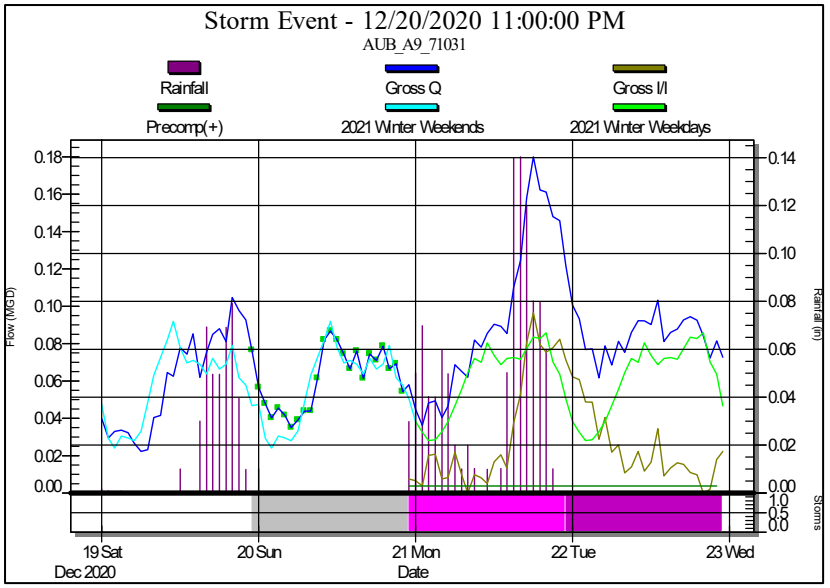

Dry Weather Flow
AUB_A9_71031
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
Hours

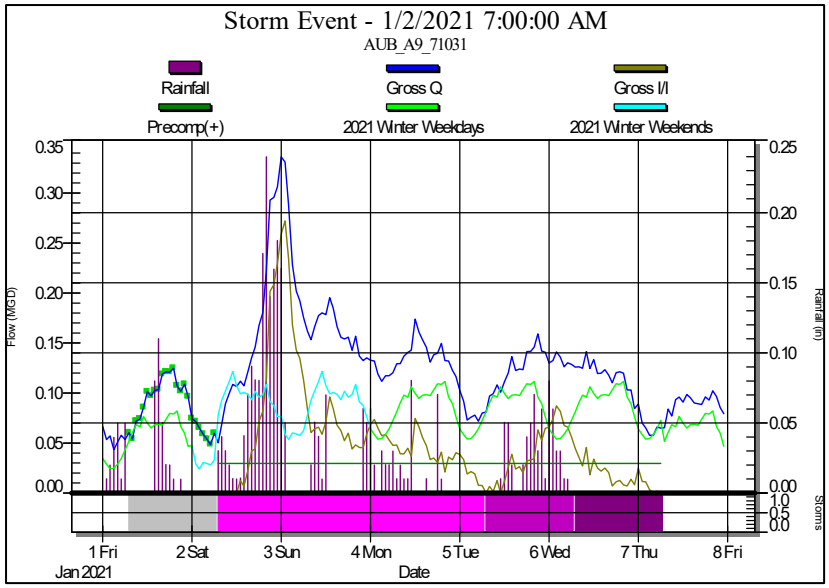

Scatter Graph
AUB_A9_71031
Lanfear-Coll (C-LC = 3.17)
VFINAL (ft/s)
DFINAL (in)
Iso Q (MGD)

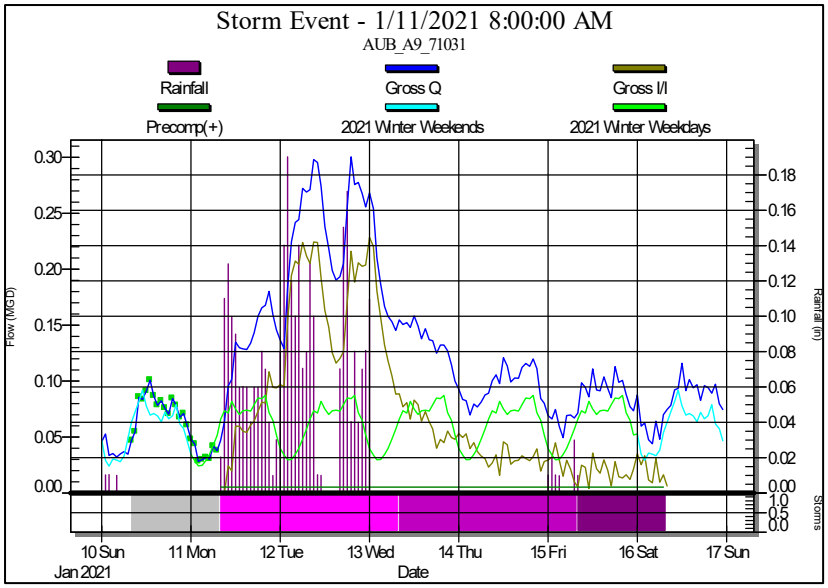

Storm Event - 10/9/2020 9:00:00 PM
AUB_A9_71031
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

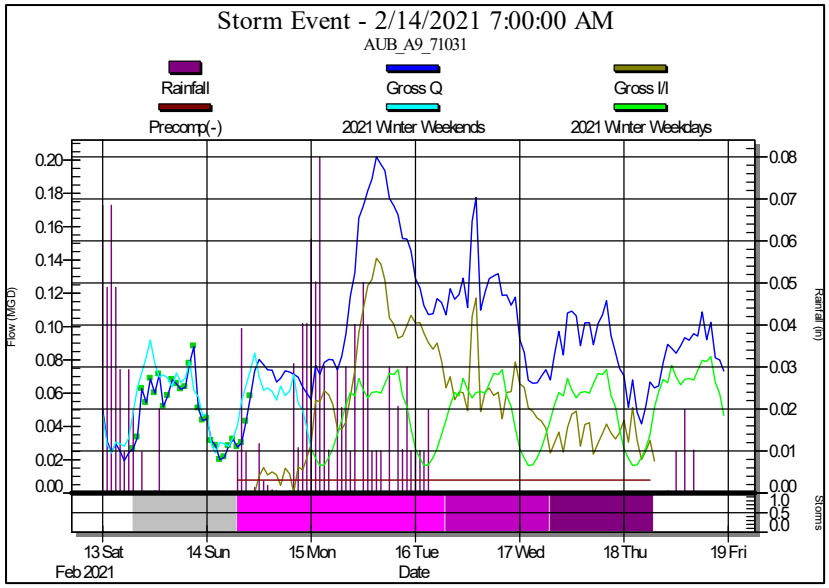

Storm Event - 11/3/2020 7:00:00 AM
AUB_A9_71031
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

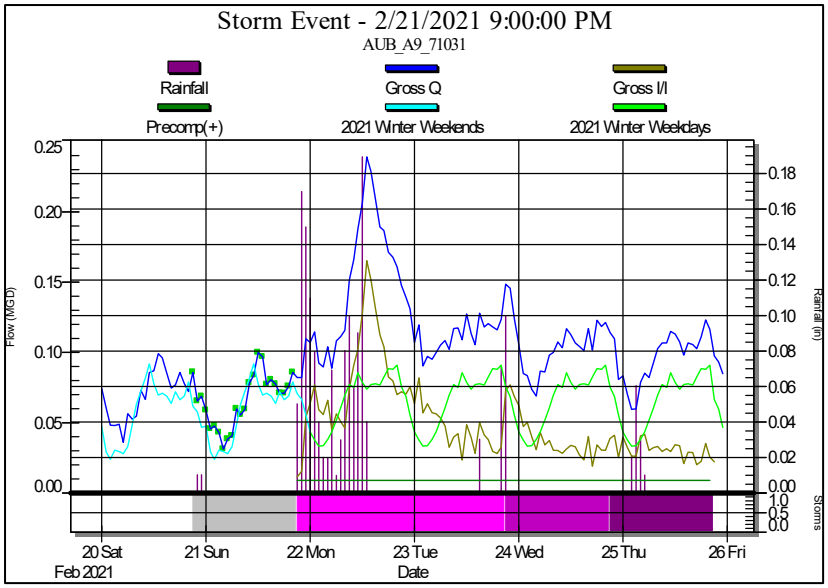

Storm Event - 11/14/2020 3:00:00 PM
AUB_A9_71031
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

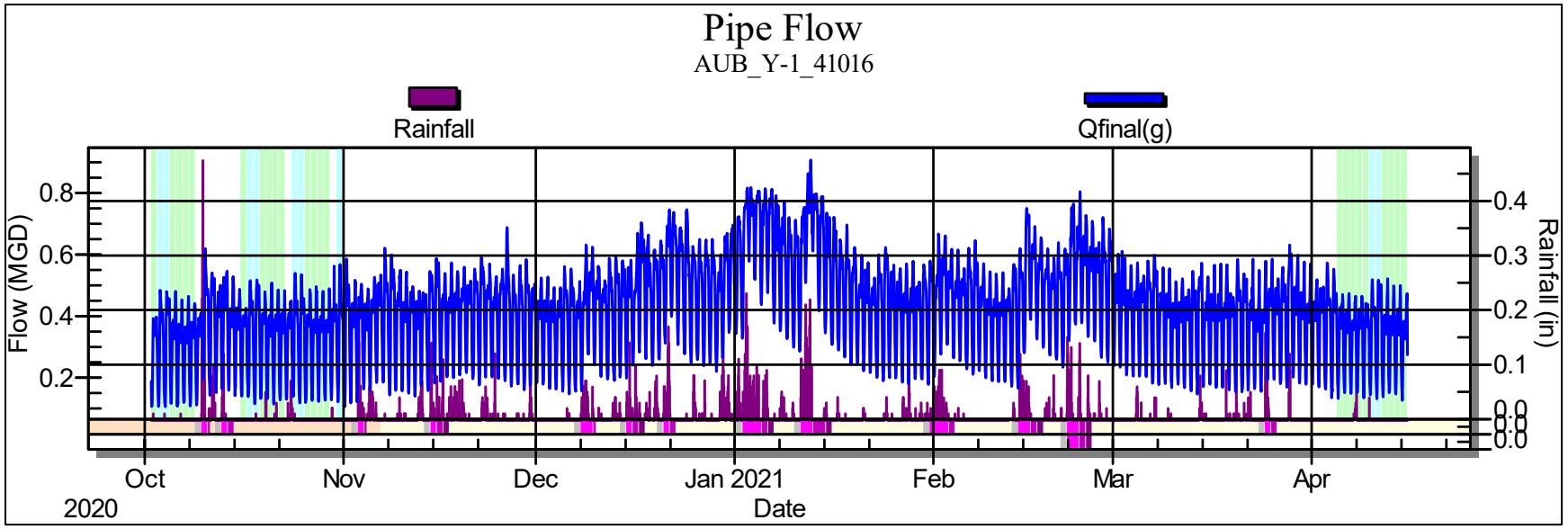

Storm Event - 12/20/2020 11:00:00 PM
AUB_A9_71031
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

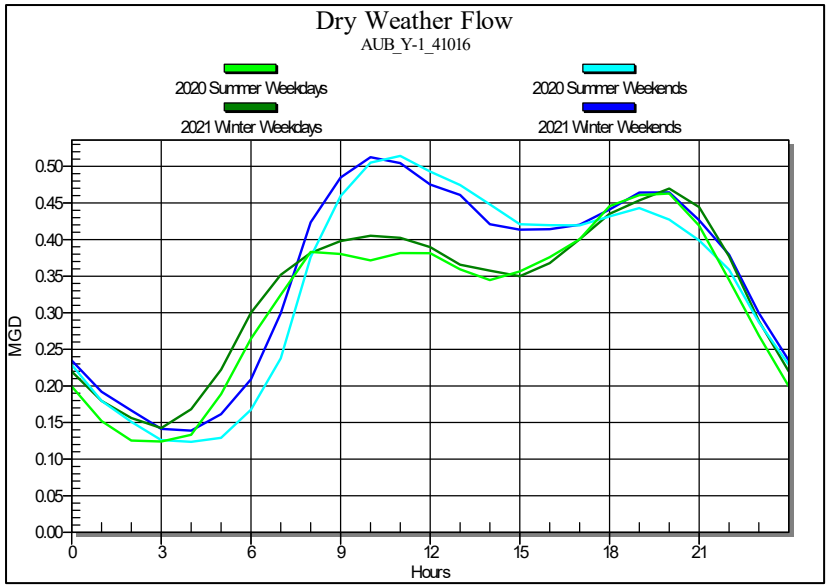

Storm Event - 1/2/2021 7:00:00 AM
AUB_A9_71031
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

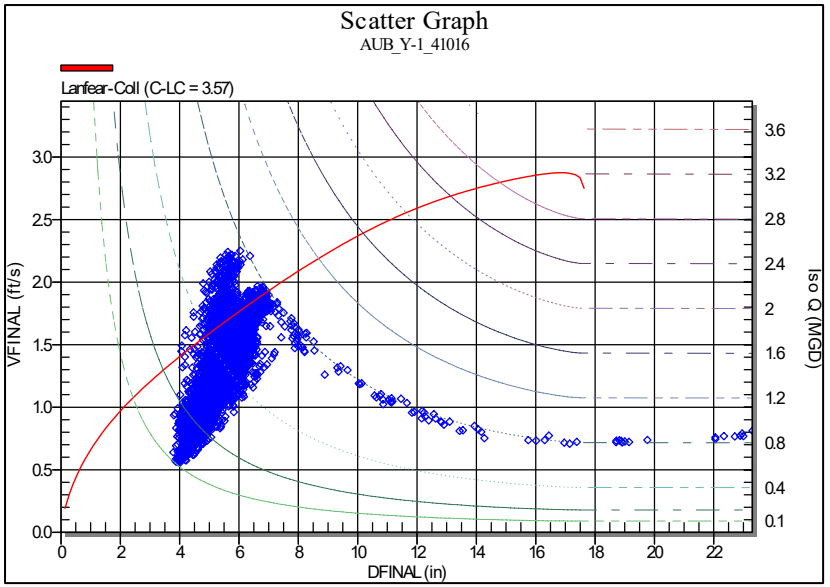

Storm Event - 1/11/2021 8:00:00 AM
AUB_A9_71031
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

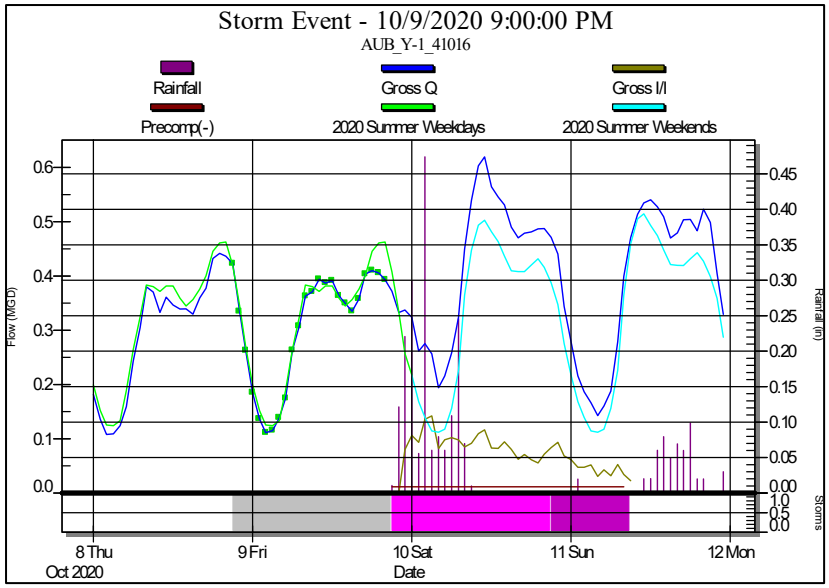

Storm Event - 2/14/2021 7:00:00 AM
AUB_A9_71031
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

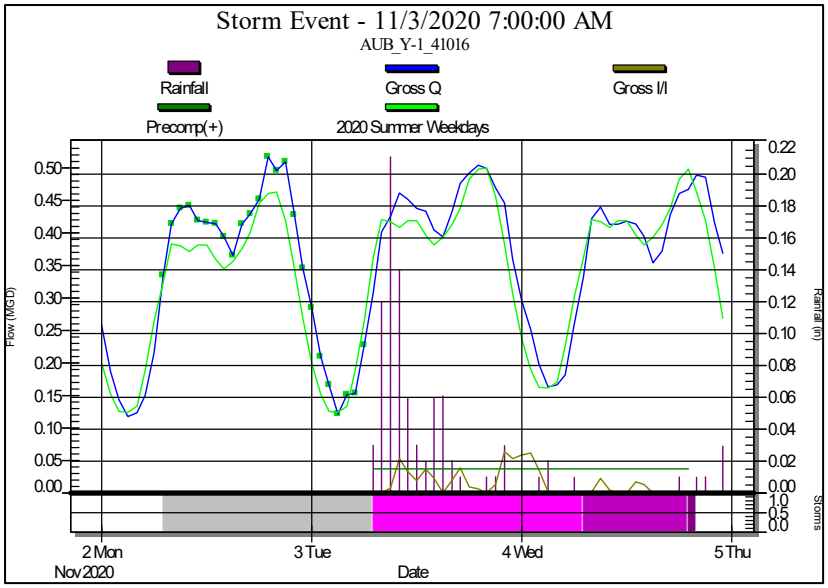

Storm Event - 2/21/2021 9:00:00 PM
AUB_A9_71031
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

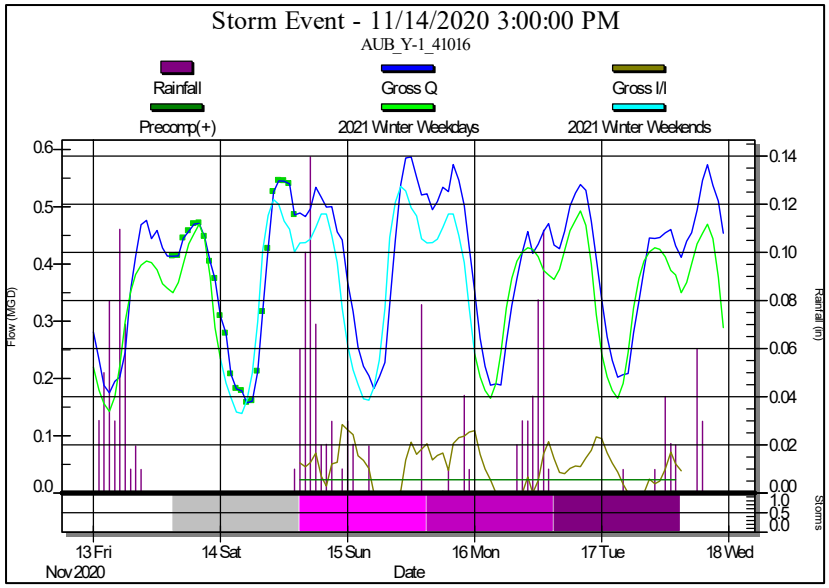

Pipe Flow
AUB_Y-1_41016
Rainfall
Qfinal(g)
Flow (MGD)
Rainfall (in)
0.8
0.6
0.4
0.2
0.4
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

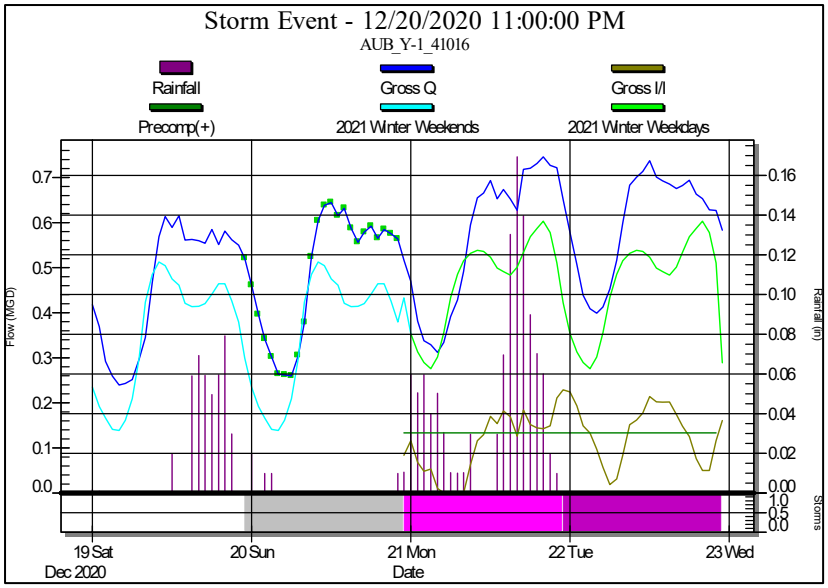

Dry Weather Flow
AUB_Y-1_41016
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
3
6
9
12
15
18
21
Hours

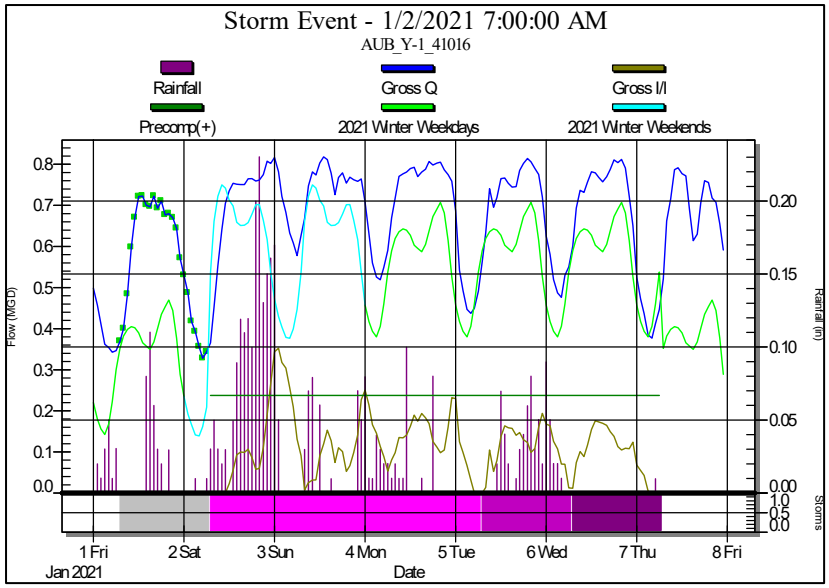

Scatter Graph
AUB_Y-1_41016
Lanfear-Coll (C-LC = 3.57)
VFINAL (ft/s)
Iso Q (MGD)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
3.6
3.2
2.8
2.4
2
1.6
1.2
0.8
0.4
0.1
0
2
4
6
8
10
12
14
16
18
20
22
DFINAL (in)

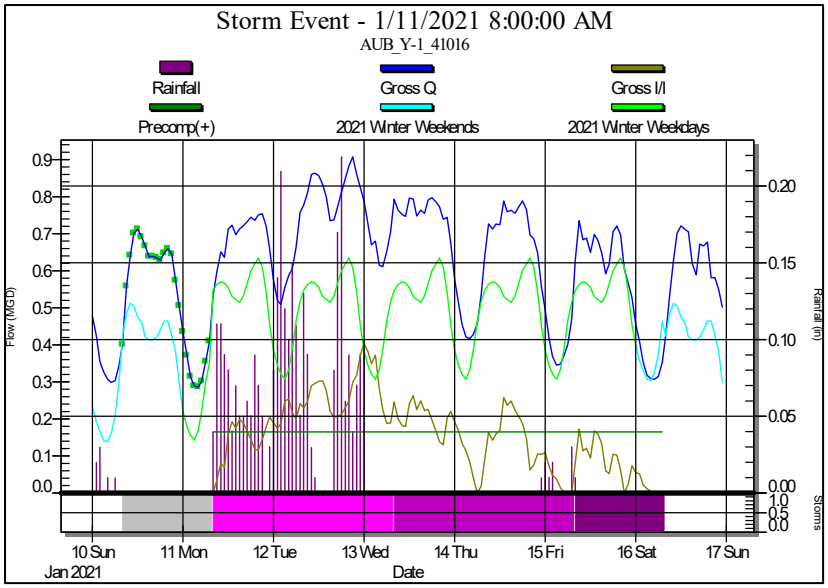

Storm Event - 10/9/2020 9:00:00 PM
AUB_Y-1_41016
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

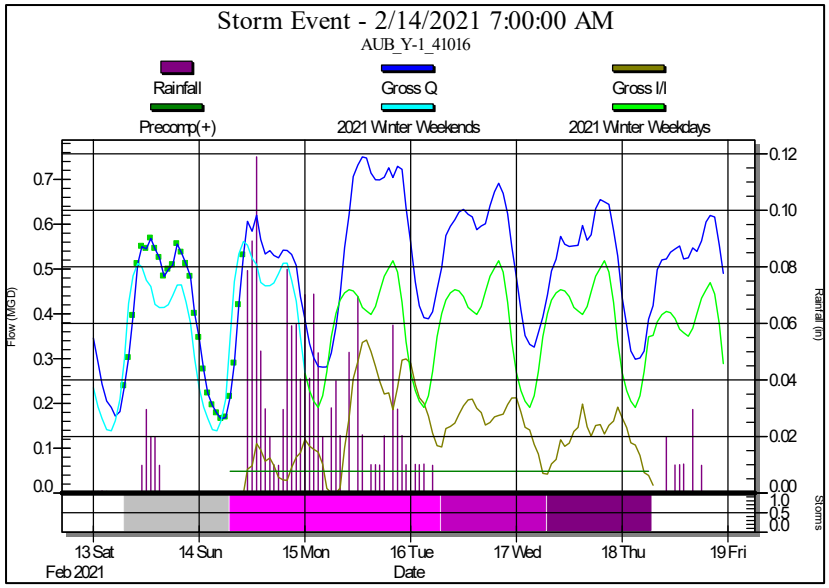

Storm Event - 11/3/2020 7:00:00 AM
AUB_Y-1_41016
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

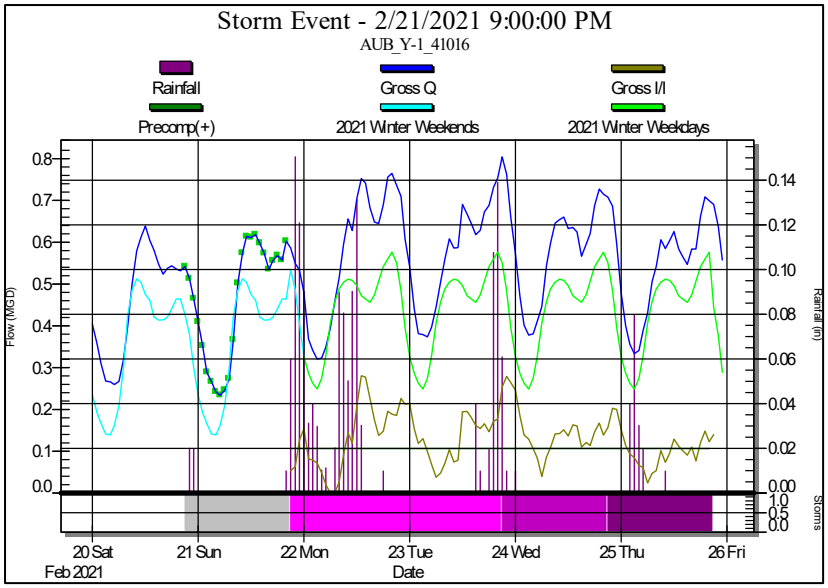

Storm Event - 11/14/2020 3:00:00 PM
AUB_Y-1_41016
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

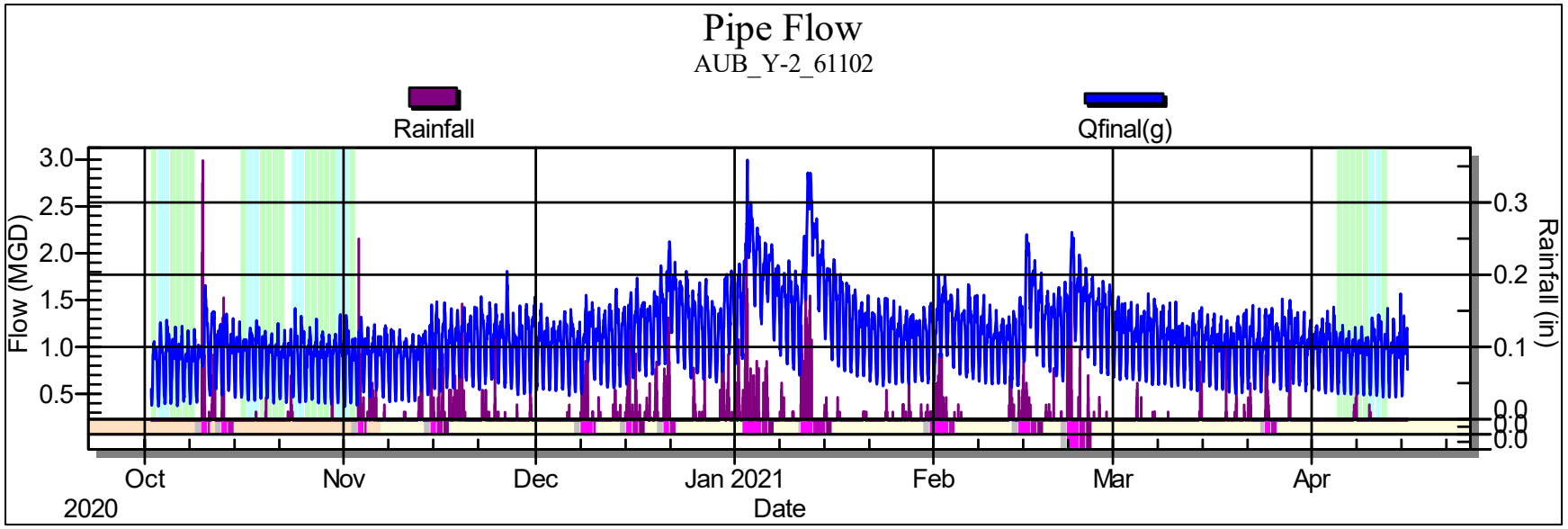

Storm Event - 12/20/2020 11:00:00 PM
AUB_Y-1_41016
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

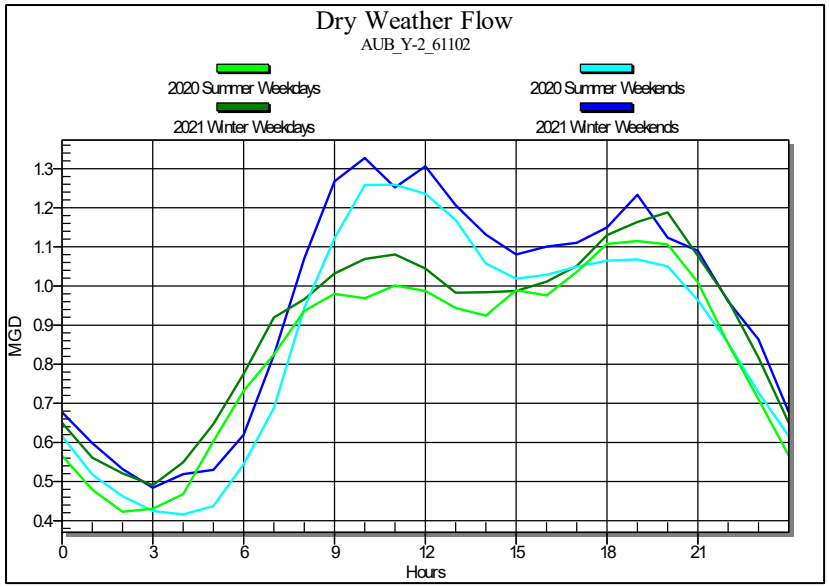

Storm Event - 1/2/2021 7:00:00 AM
AUB_Y-1_41016
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
Jan 2021
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Date

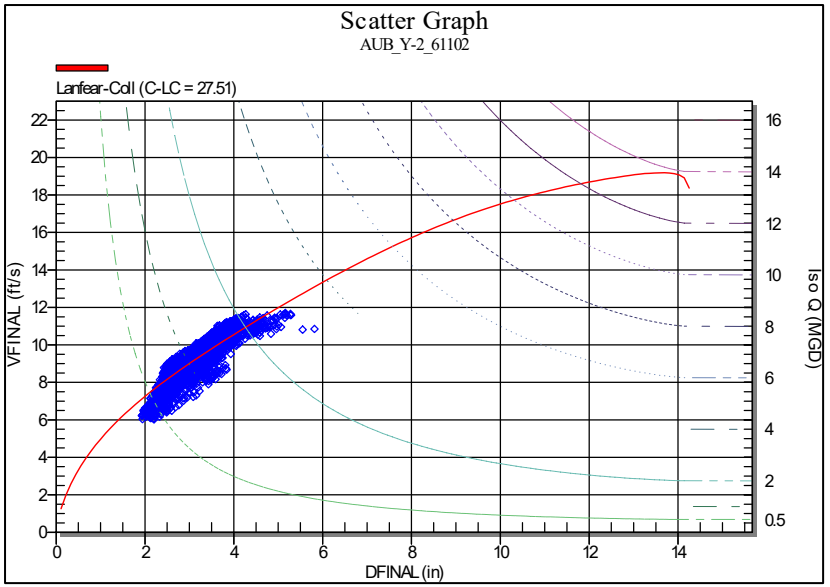

Storm Event - 1/11/2021 8:00:00 AM
AUB_Y-1_41016
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
Jan 2021
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Date

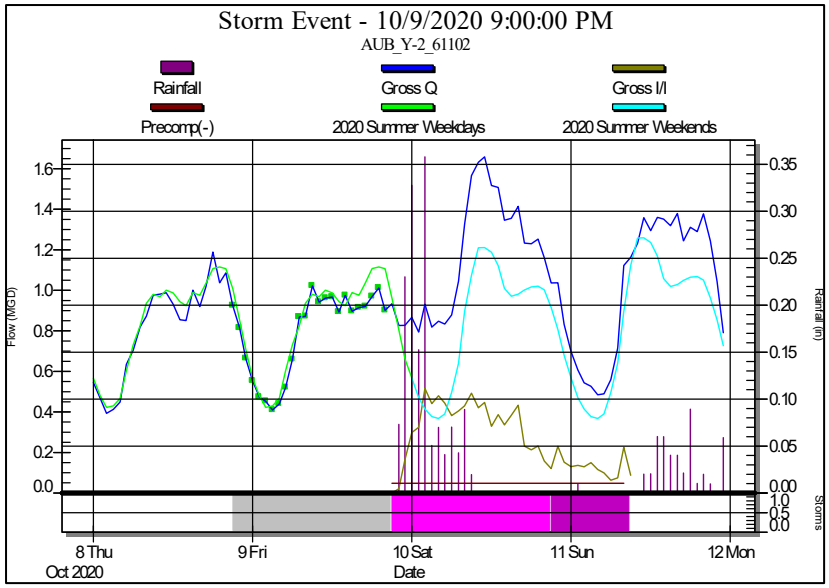

Storm Event - 2/14/2021 7:00:00 AM
AUB_Y-1_41016
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
Feb 2021
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Date

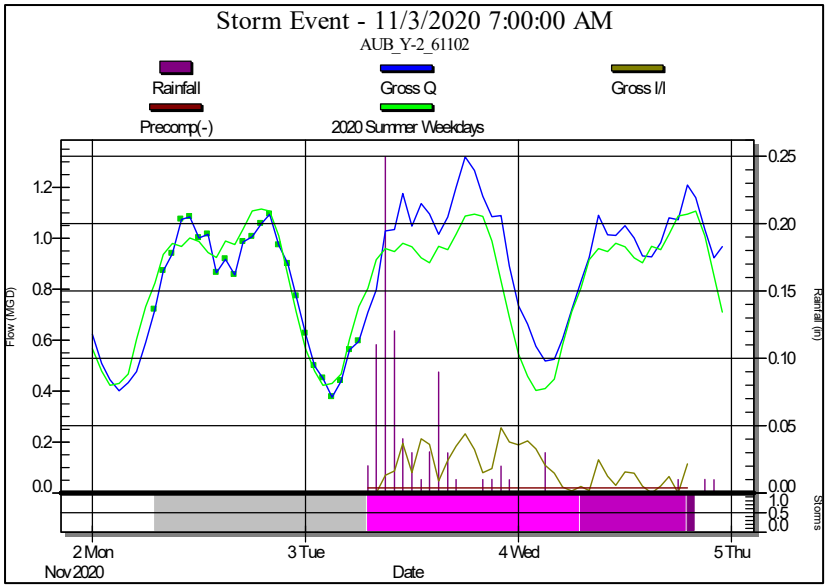

Storm Event - 2/21/2021 9:00:00 PM
AUB_Y-1_41016
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
Feb 2021
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Date

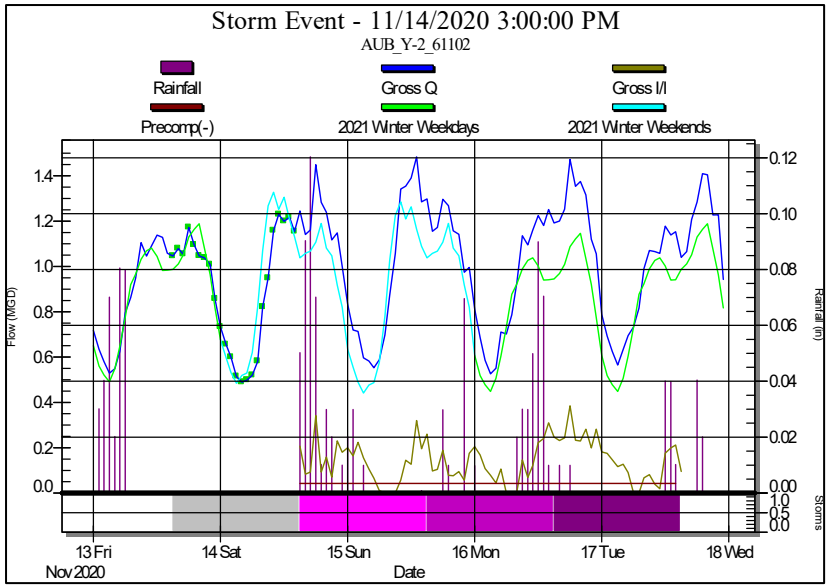

Pipe Flow
AUB_Y-2_61102
Rainfall
Qfinal(g)
Flow (MGD)
Rainfall (in)
3.0
2.5
2.0
1.5
1.0
0.5
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

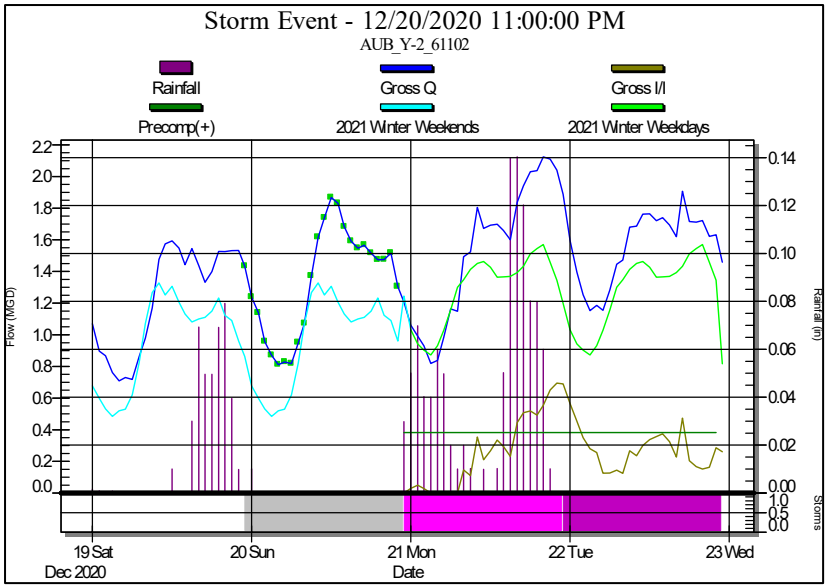

Dry Weather Flow
AUB_Y-2_61102
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0
3
6
9
12
15
18
21
Hours

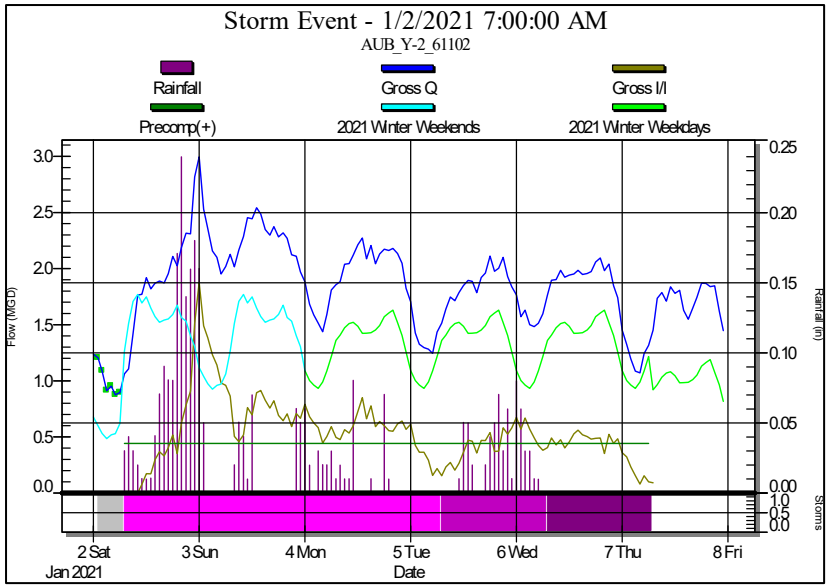

Scatter Graph
AUB_Y-2_61102
Lanfear-Coll (C-LC = 27.51)
VFINAL (ft/s)
Iso Q (MGD)
22
20
18
16
14
12
10
8
6
4
2
0
16
14
12
10
8
6
4
2
0.5
0
2
4
6
8
10
12
14
DFINAL (in)

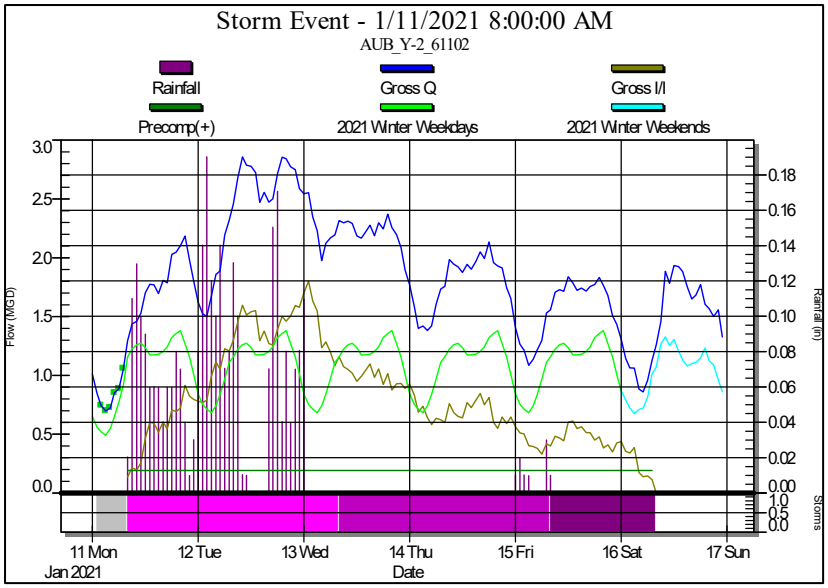

Storm Event - 10/9/2020 9:00:00 PM
AUB_Y-2_61102
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

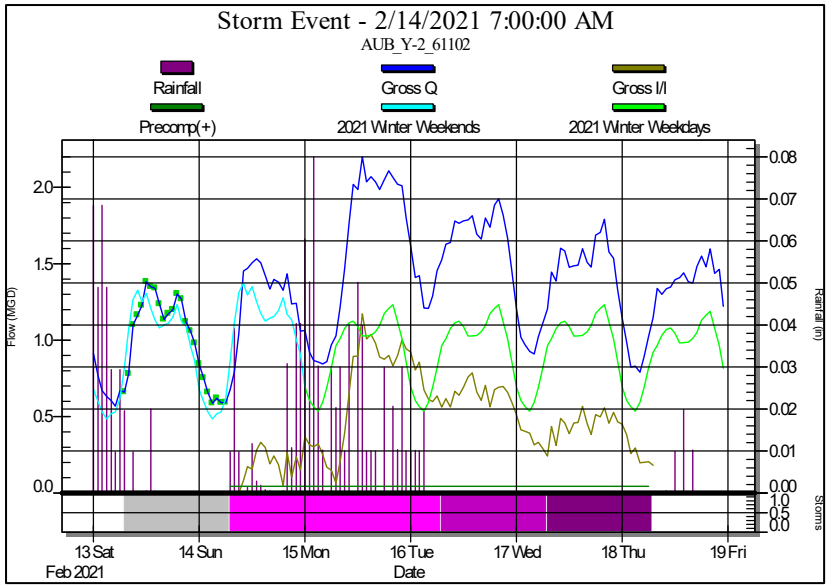

Storm Event - 11/3/2020 7:00:00 AM
AUB_Y-2_61102
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

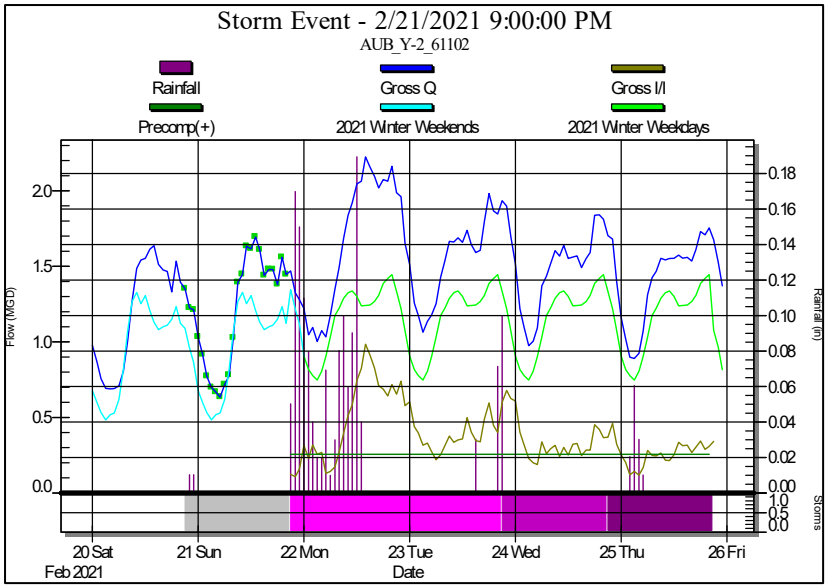

Storm Event - 11/14/2020 3:00:00 PM
AUB_Y-2_61102
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

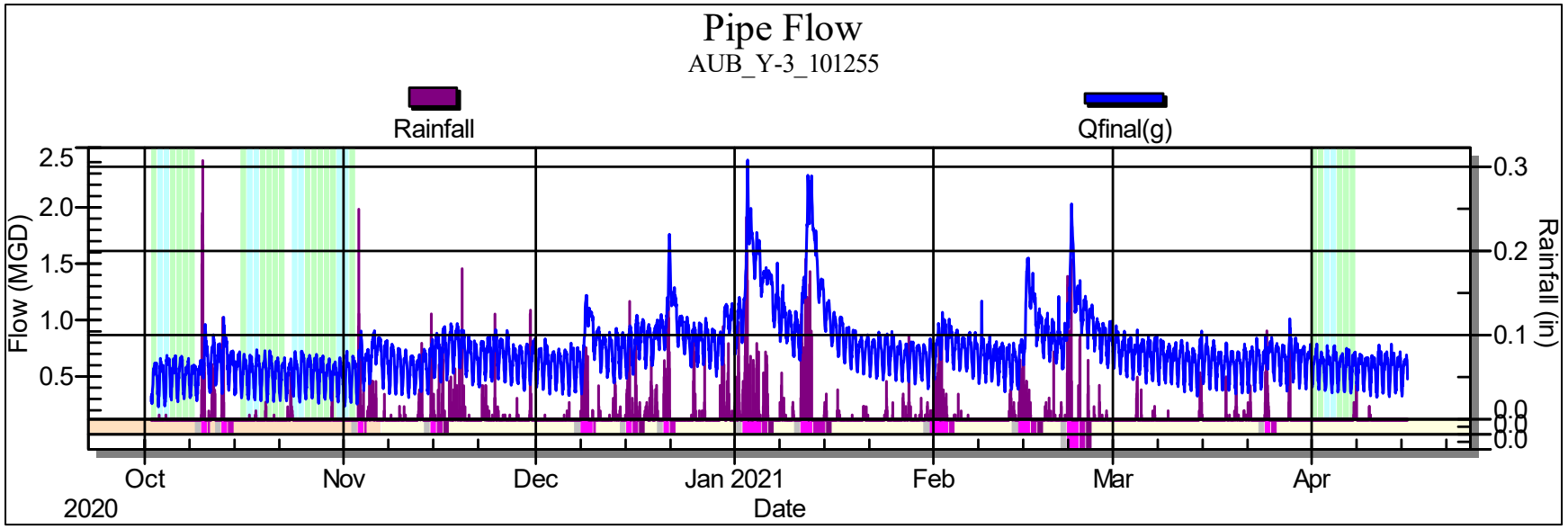

Storm Event - 12/20/2020 11:00:00 PM
AUB_Y-2_61102
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

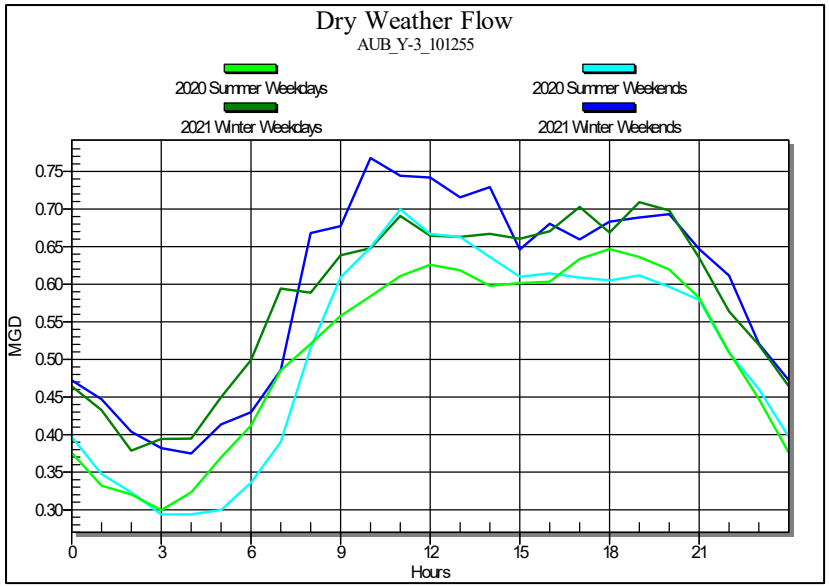

Storm Event - 1/2/2021 7:00:00 AM
AUB_Y-2_61102
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Sat
Jan 2021
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Date

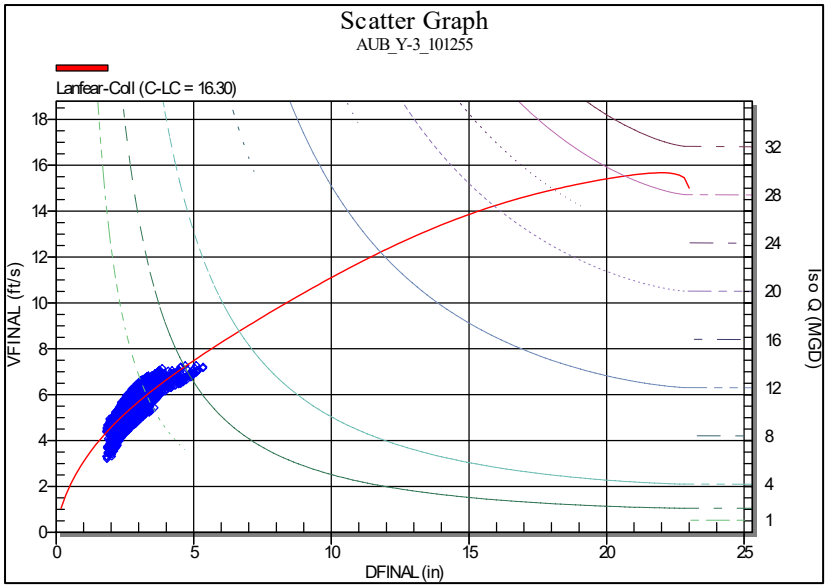

Storm Event - 1/11/2021 8:00:00 AM
AUB_Y-2_61102
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
11 Mon
Jan 2021
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Date

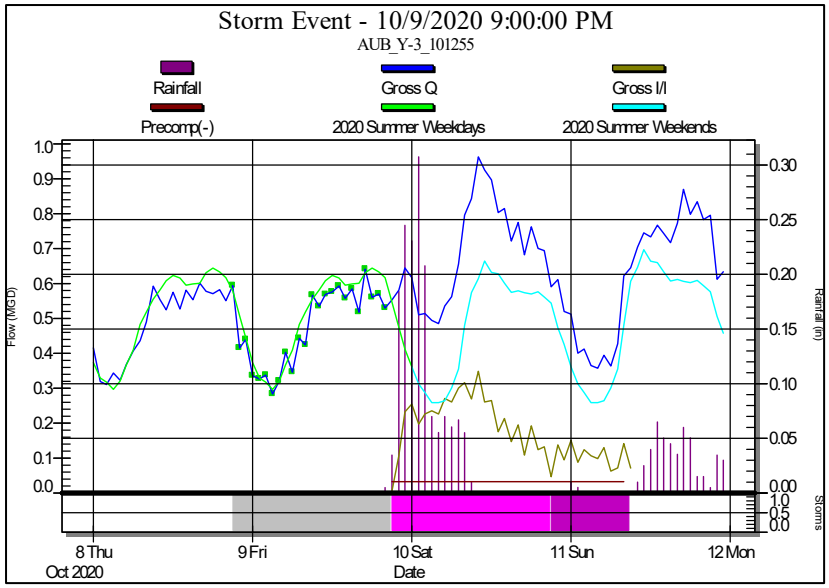

Storm Event - 2/14/2021 7:00:00 AM
AUB_Y-2_61102
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
Feb 2021
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Date

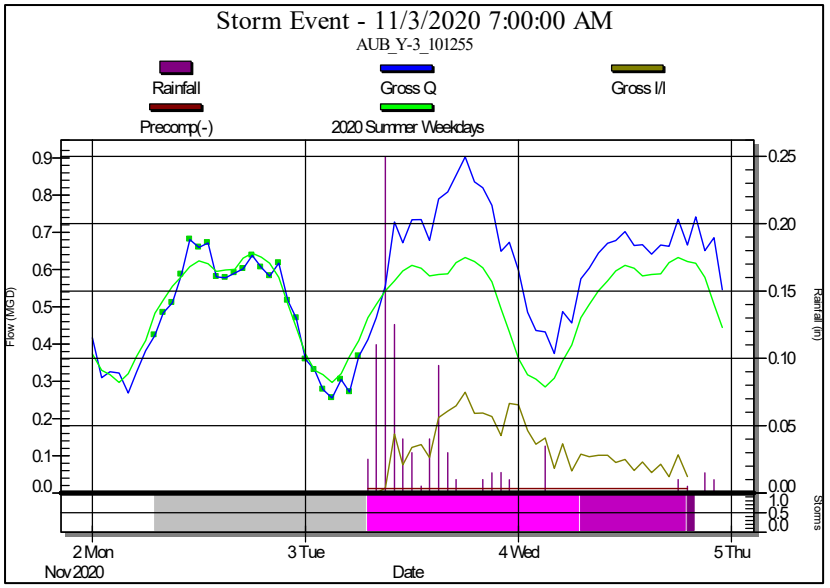

Storm Event - 2/21/2021 9:00:00 PM
AUB_Y-2_61102
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
Feb 2021
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Date

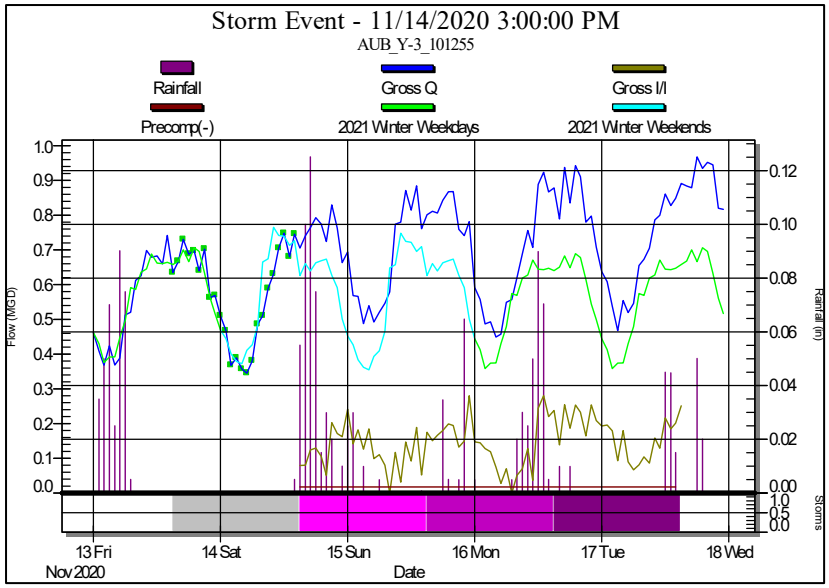

Pipe Flow
AUB_Y-3_101255
Rainfall
Qfinal(g)
Flow (MGD)
Rainfall (in)
2.5
2.0
1.5
1.0
0.5
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

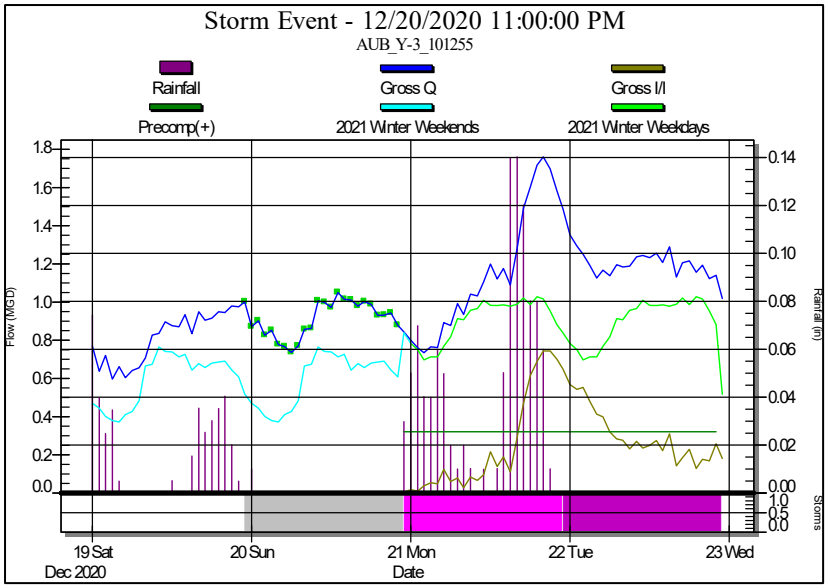

Dry Weather Flow
AUB_Y-3_101255
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0
3
6
9
12
15
18
21
Hours

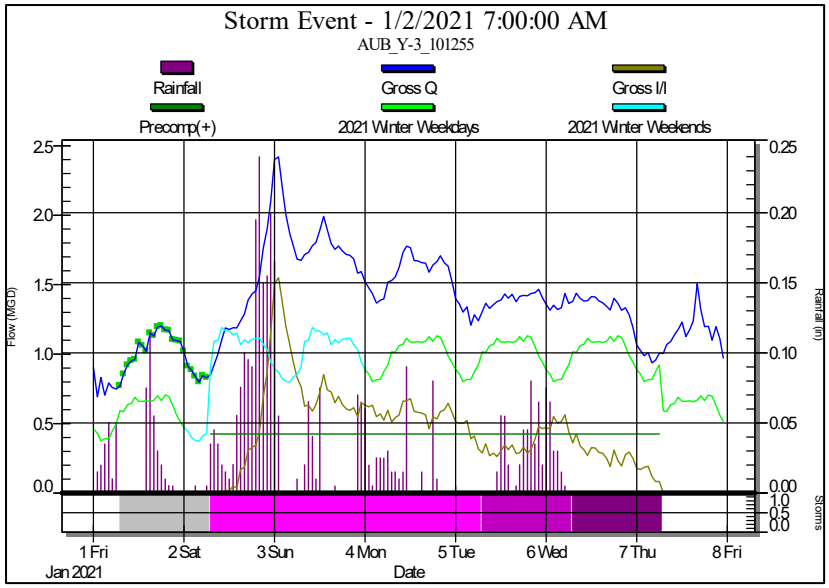

Scatter Graph
AUB_Y-3_101255
Lanfear-Coll (C-LC = 16.30)
VFINAL (ft/s)
Iso Q (MGD)
18
16
14
12
10
8
6
4
2
0
32
28
24
20
16
12
8
4
1
0
5
10
15
20
25
DFINAL (in)

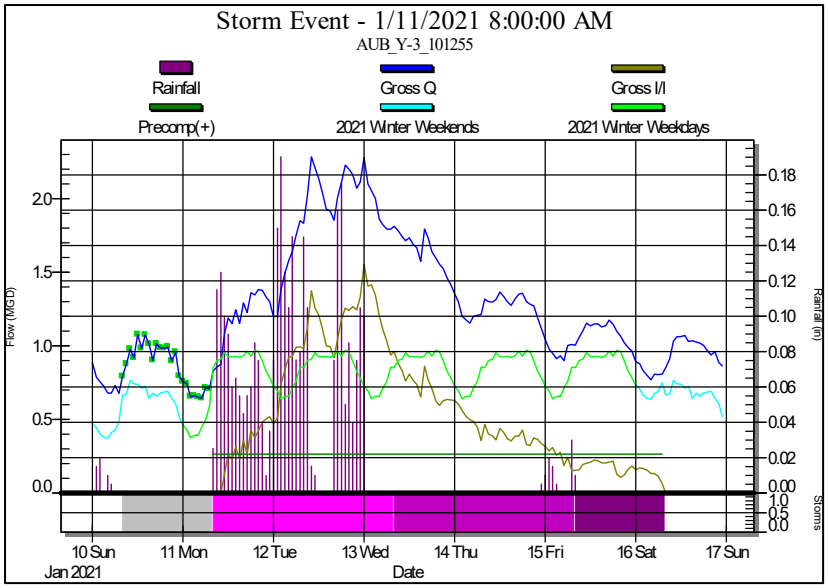

Storm Event - 10/9/2020 9:00:00 PM
AUB_Y-3_101255
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

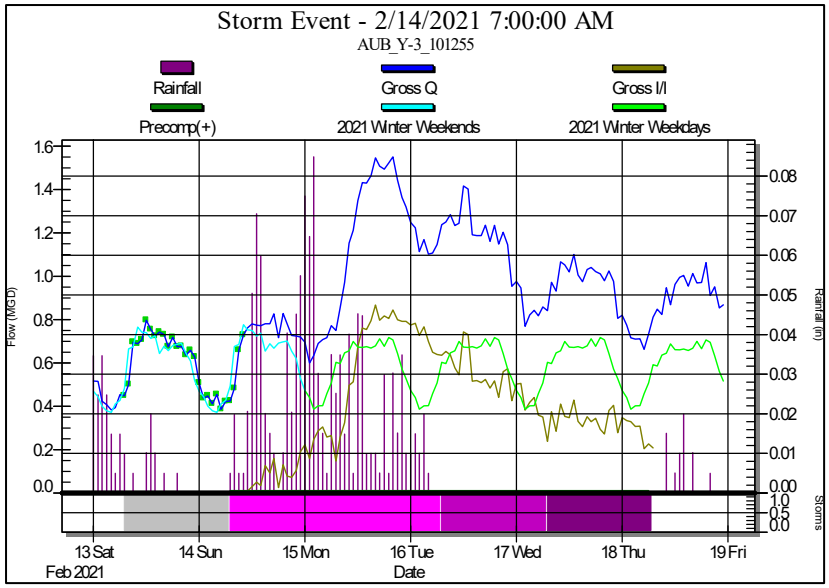

Storm Event - 11/3/2020 7:00:00 AM
AUB_Y-3_101255
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

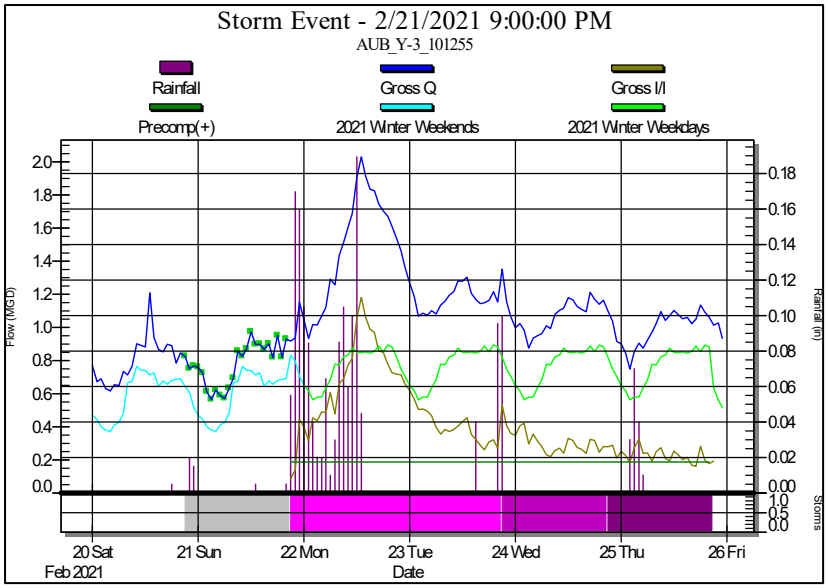

Storm Event - 11/14/2020 3:00:00 PM
AUB_Y-3_101255
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

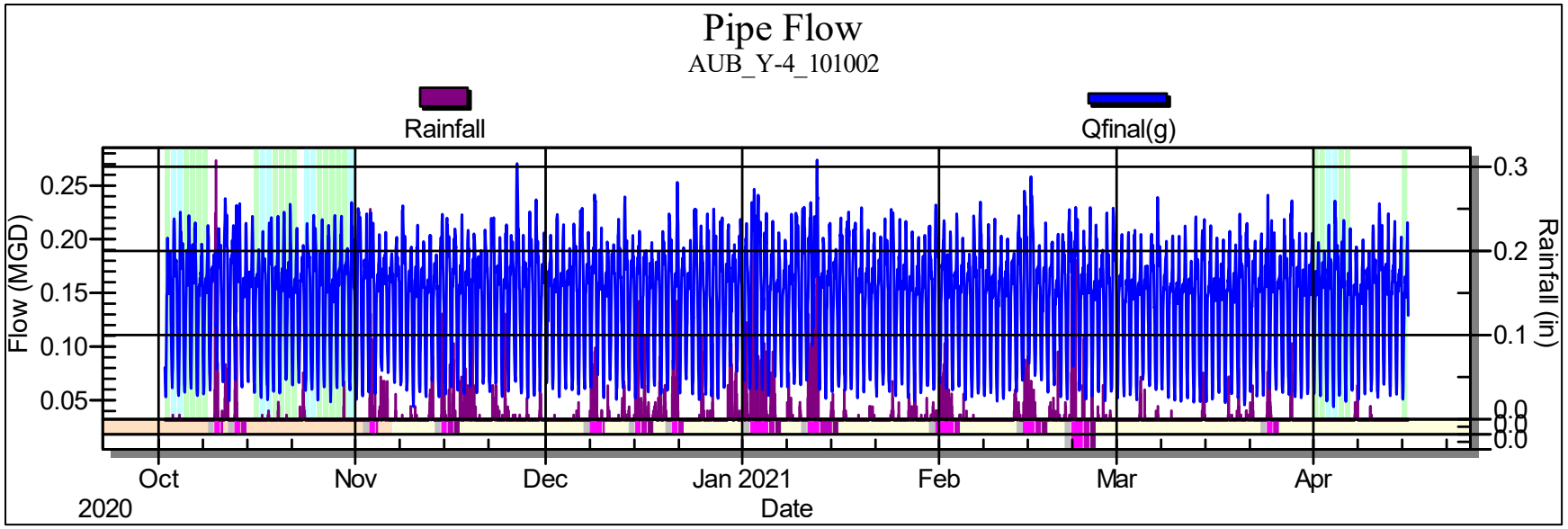

Storm Event - 12/20/2020 11:00:00 PM
AUB_Y-3_101255
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

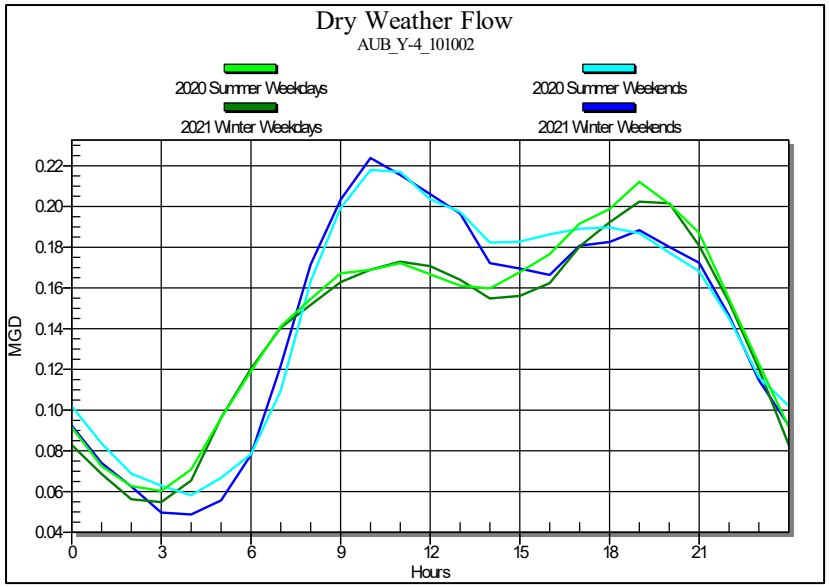

Storm Event - 1/2/2021 7:00:00 AM
AUB_Y-3_101255
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

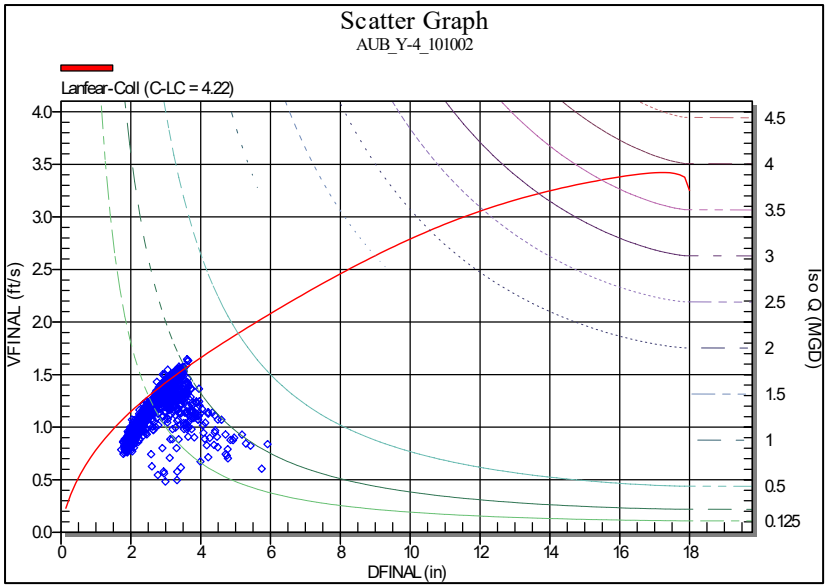

Storm Event - 1/11/2021 8:00:00 AM
AUB_Y-3_101255
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

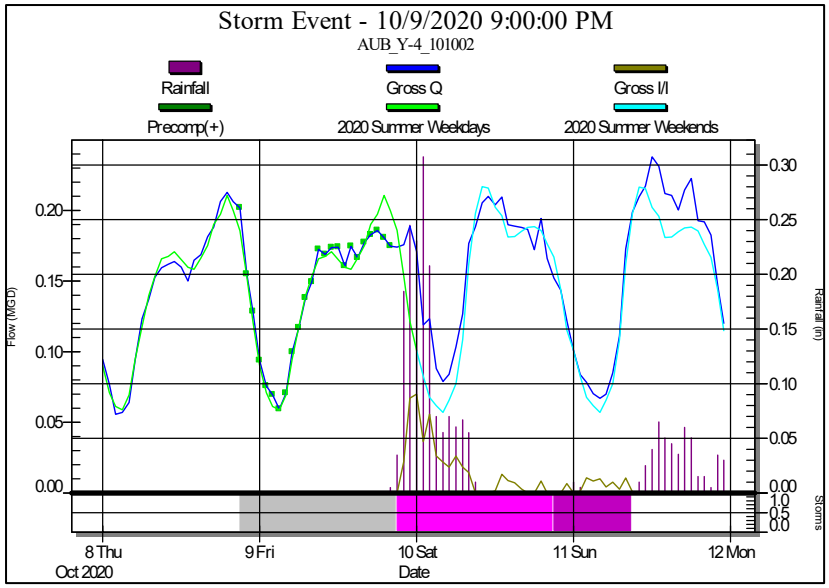

Storm Event - 2/14/2021 7:00:00 AM
AUB_Y-3_101255
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

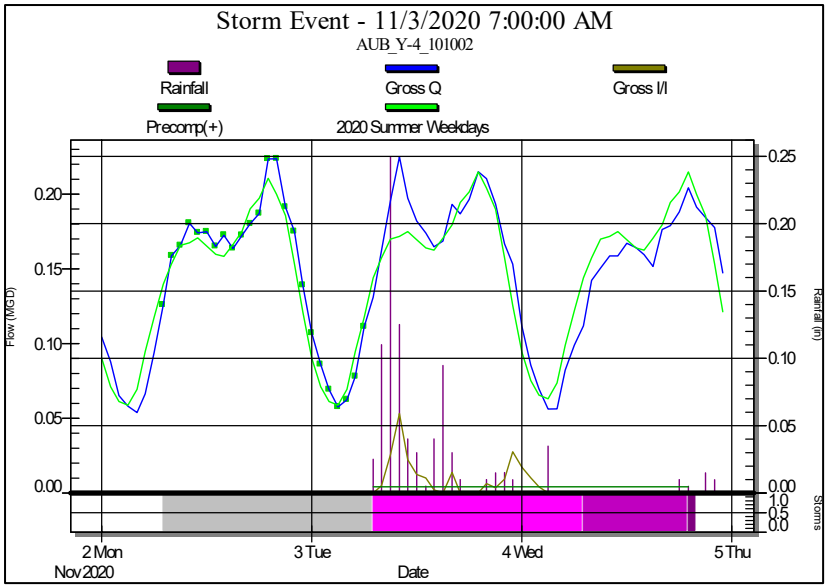

Storm Event - 2/21/2021 9:00:00 PM
AUB_Y-3_101255
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

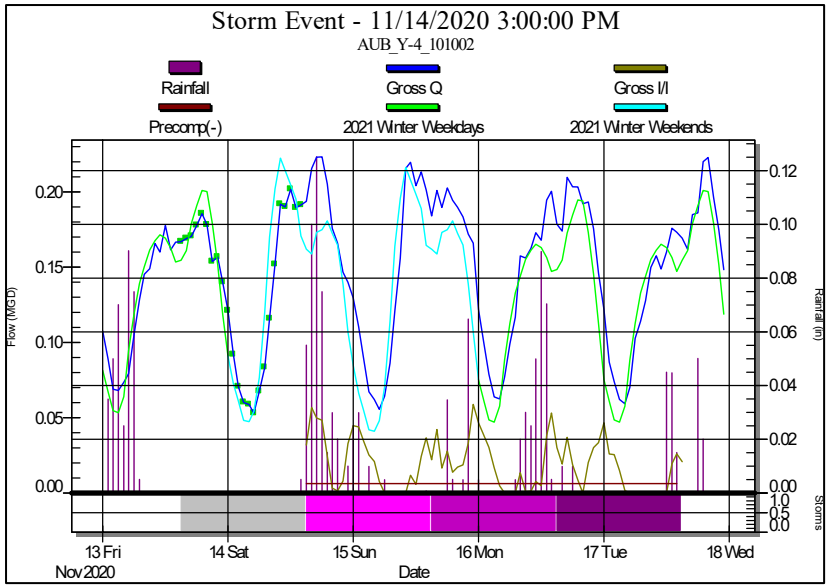

Pipe Flow
AUB_Y-4_101002
Rainfall
Qfinal(g)
Flow (MGD)
Rainfall (in)
0.25
0.20
0.15
0.10
0.05
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

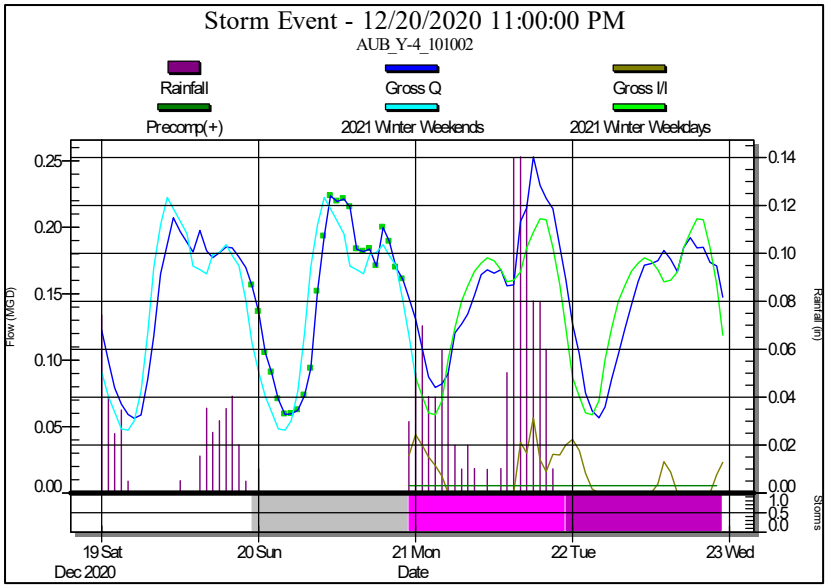

Dry Weather Flow
AUB_Y-4_101002
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.22
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0
3
6
9
12
15
18
21
Hours

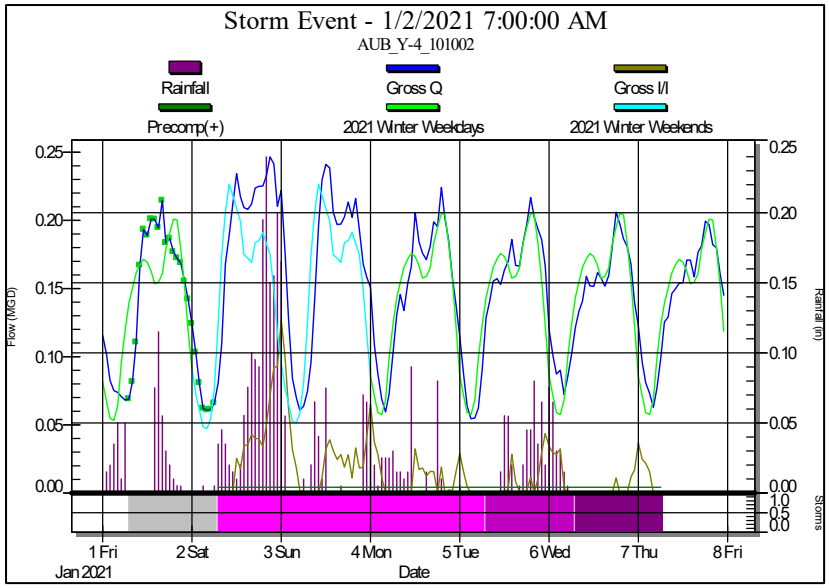

Scatter Graph
AUB_Y-4_101002
Lanfear-Coll (C-LC = 4.22)
VFINAL (ft/s)
Iso Q (MGD)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0.125
0
2
4
6
8
10
12
14
16
18
DFINAL (in)

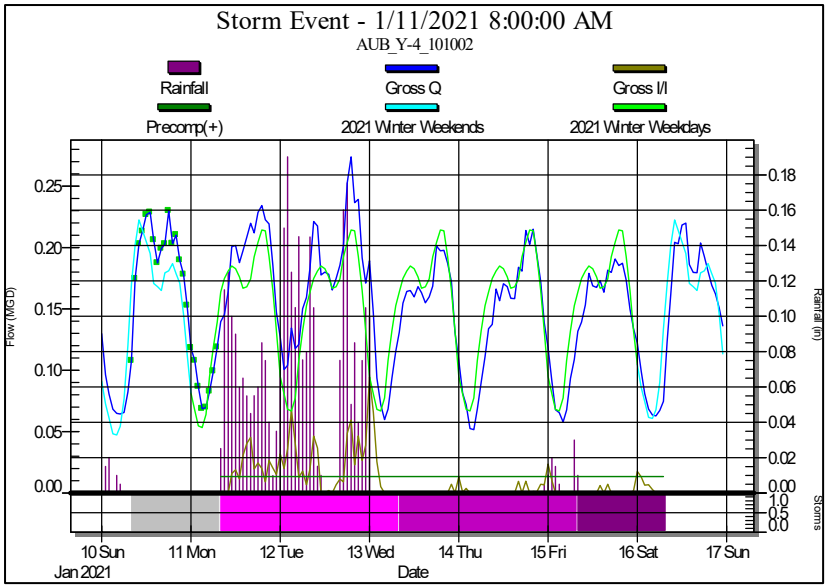

Storm Event - 10/9/2020 9:00:00 PM
AUB_Y-4_101002
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

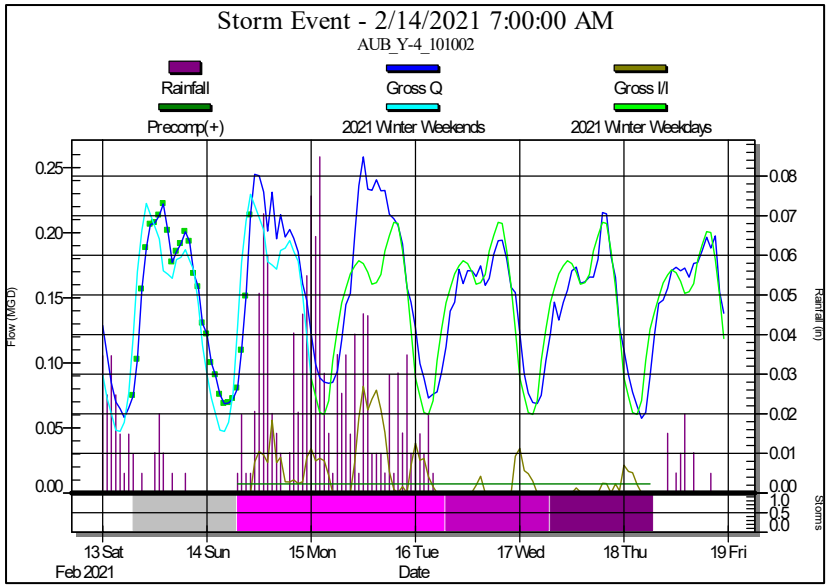

Storm Event - 11/3/2020 7:00:00 AM
AUB_Y-4_101002
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

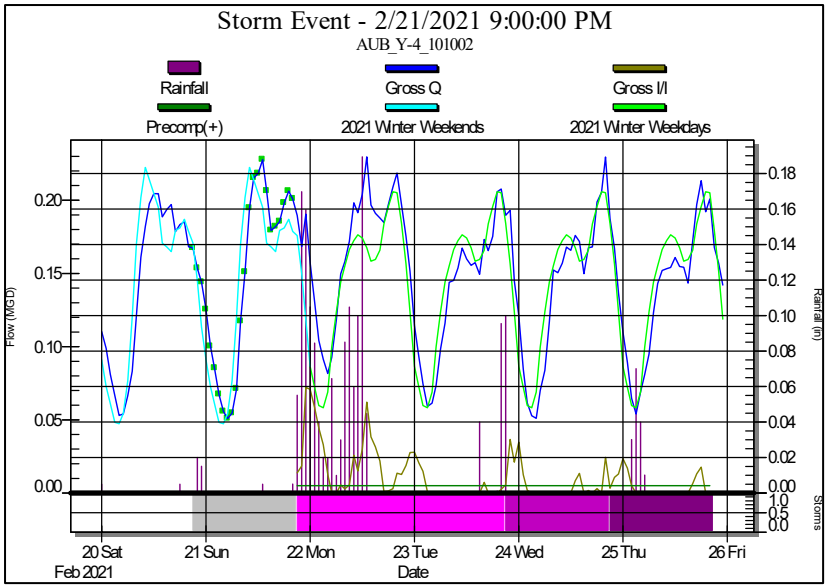

Storm Event - 11/14/2020 3:00:00 PM
AUB_Y-4_101002
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

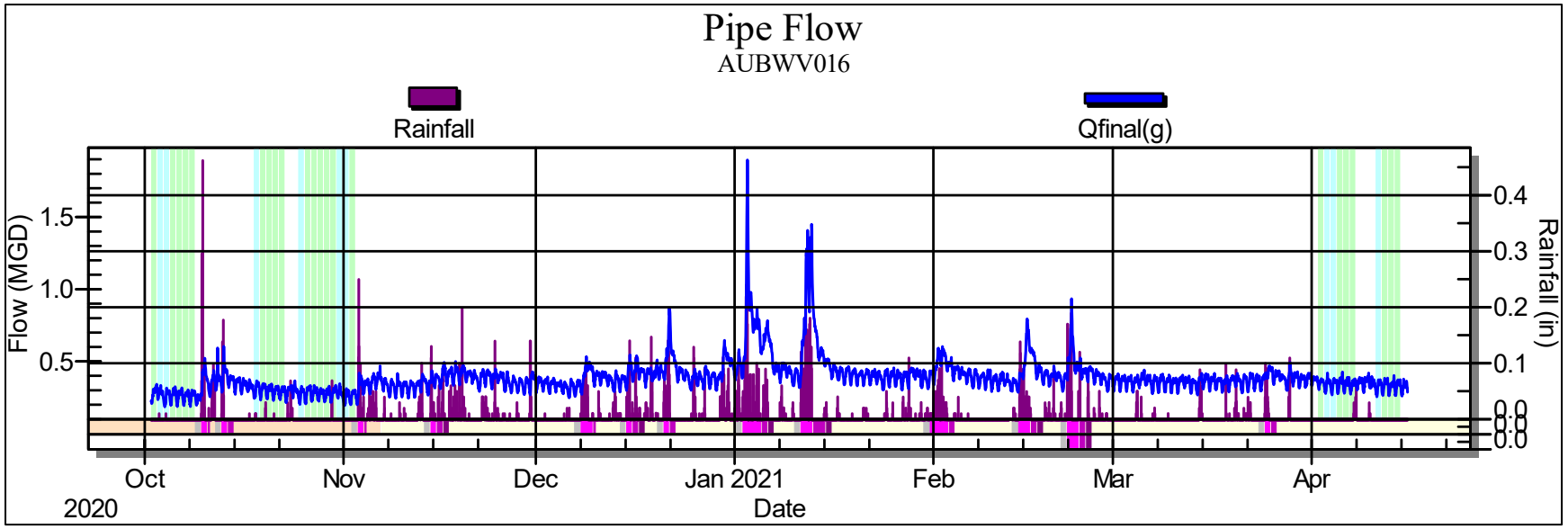

Storm Event - 12/20/2020 11:00:00 PM
AUB_Y-4_101002
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

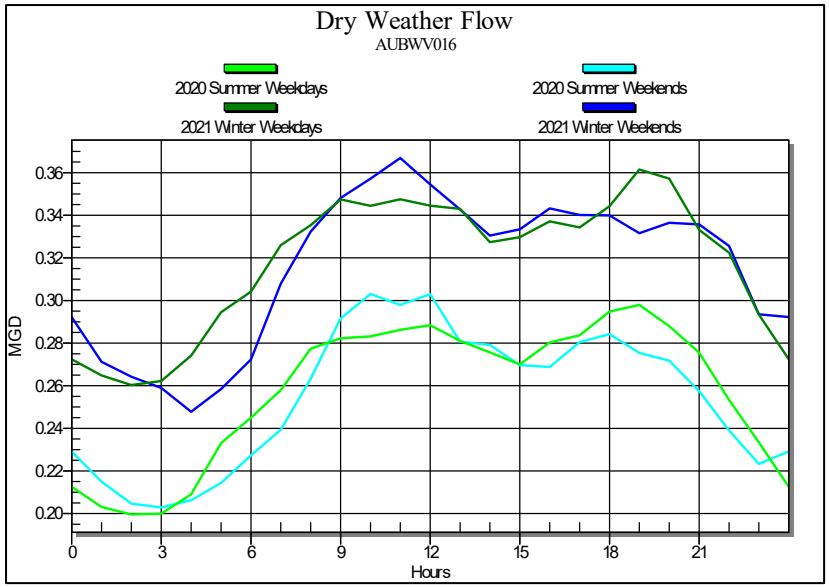

Storm Event - 1/2/2021 7:00:00 AM
AUB_Y-4_101002
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
Jan 2021
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Date

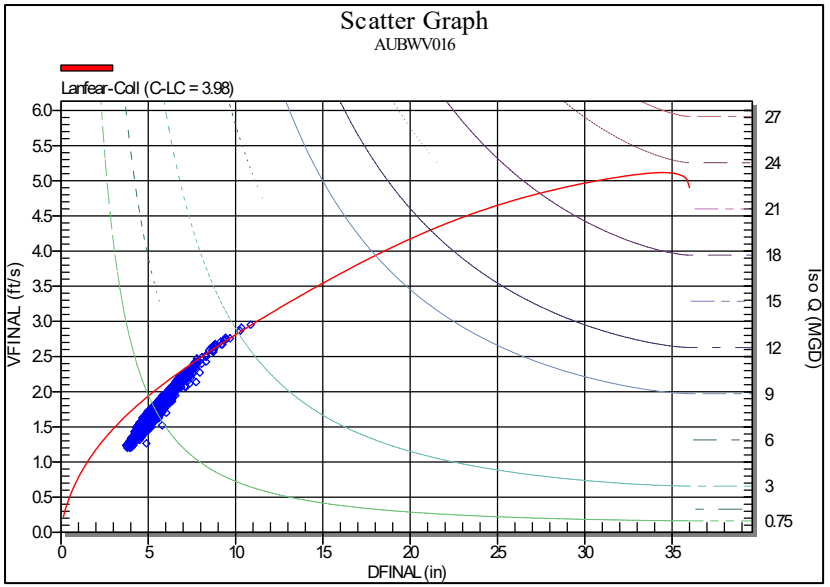

Storm Event - 1/11/2021 8:00:00 AM
AUB_Y-4_101002
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
Jan 2021
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Date

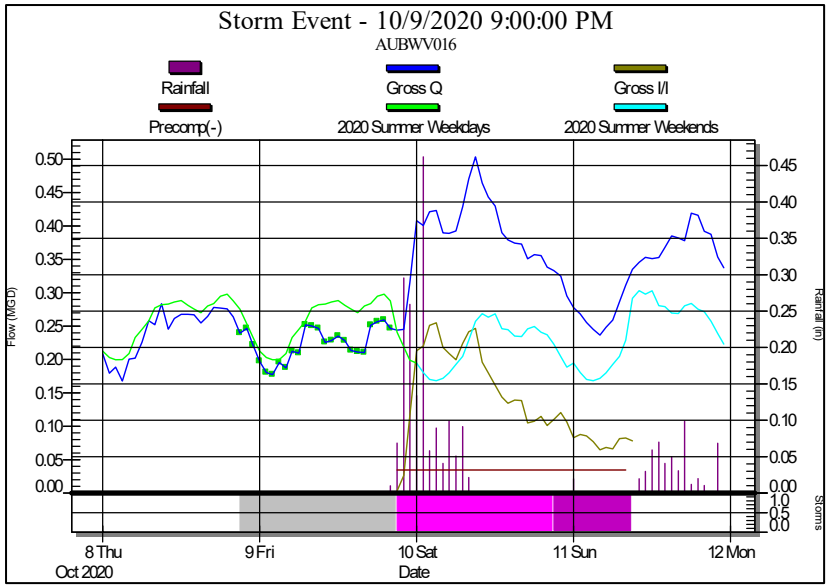

Storm Event - 2/14/2021 7:00:00 AM
AUB_Y-4_101002
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
Feb 2021
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Date

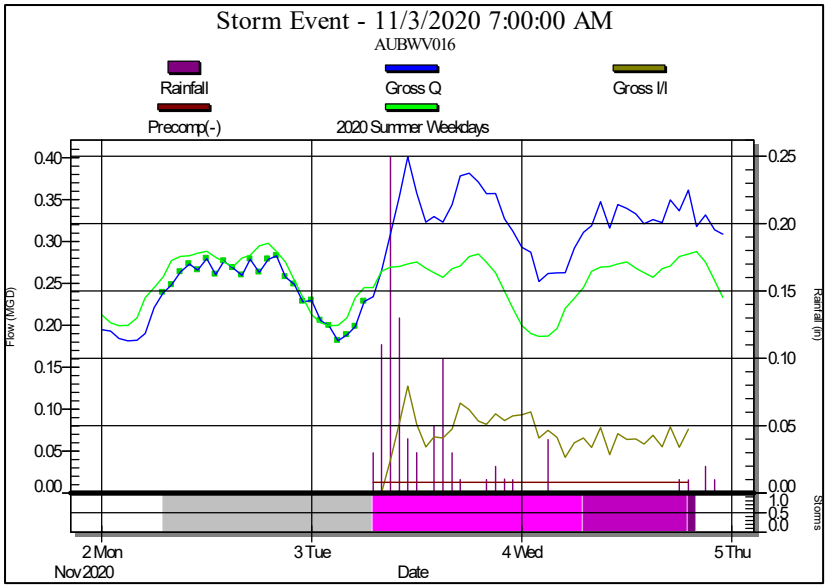

Storm Event - 2/21/2021 9:00:00 PM
AUB_Y-4_101002
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
Feb 2021
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Date

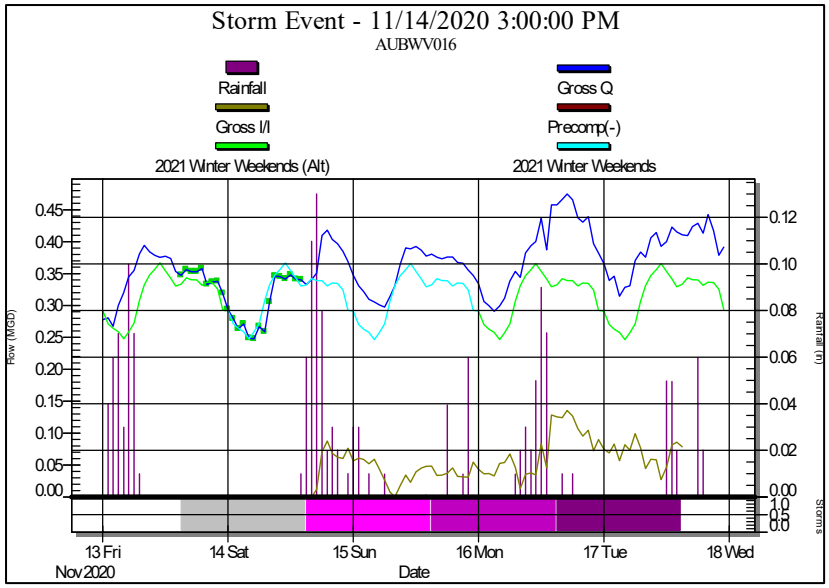

Pipe Flow
AUBWV016
Rainfall
Qfinal(g)
Flow (MGD)
1.5
1.0
0.5
0.4
0.3
0.2
0.1
0.0
Rainfall (in)
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

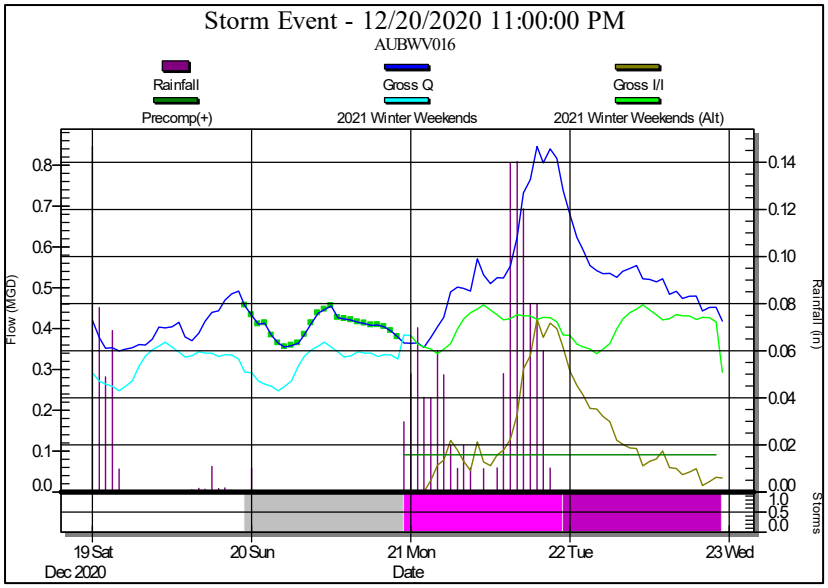

Dry Weather Flow
AUBWV016
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.36
0.34
0.32
0.30
0.28
0.26
0.24
0.22
0.20
0
3
6
9
12
15
18
21
Hours

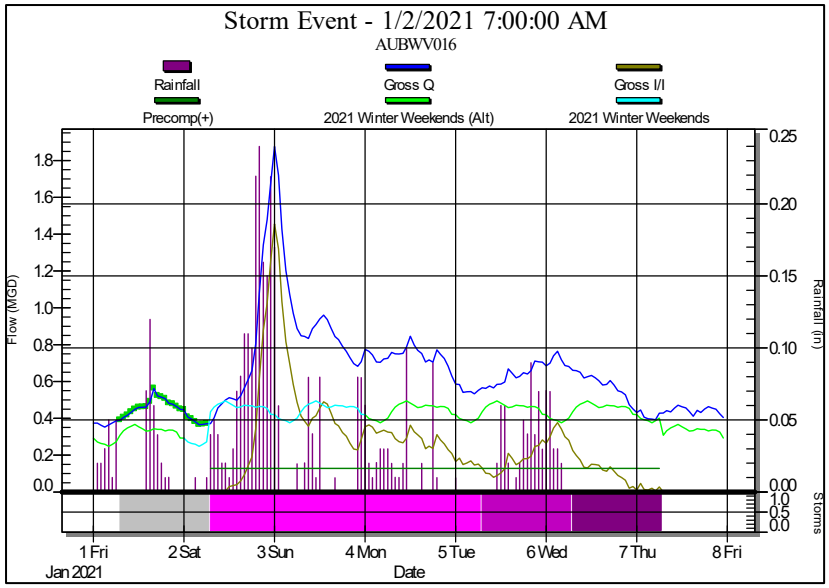

Scatter Graph
AUBWV016
Lanfear-Coll (C-LC = 3.98)
VFINAL (ft/s)
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
5
10
15
20
25
30
35
DFINAL (in)
Iso Q (MGD)
27
24
21
18
15
12
9
6
3
0.75

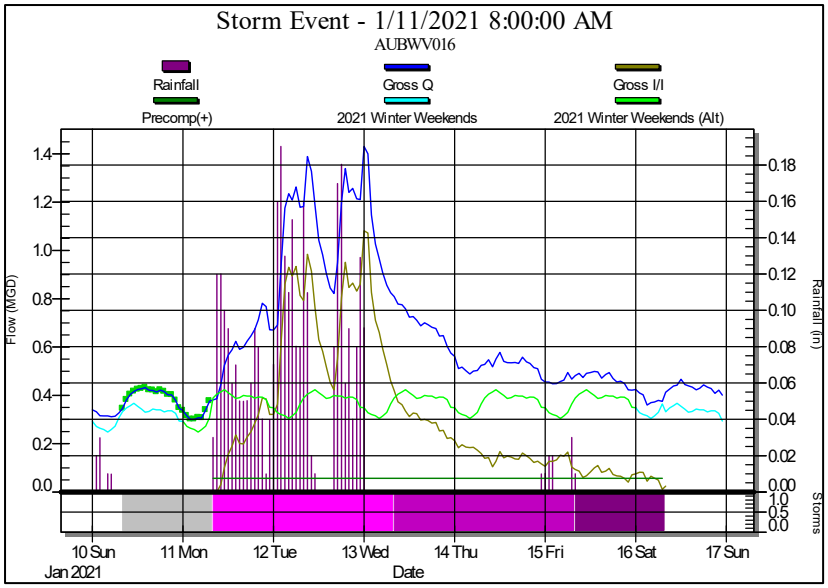

Storm Event - 10/9/2020 9:00:00 PM
AUBWV016
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

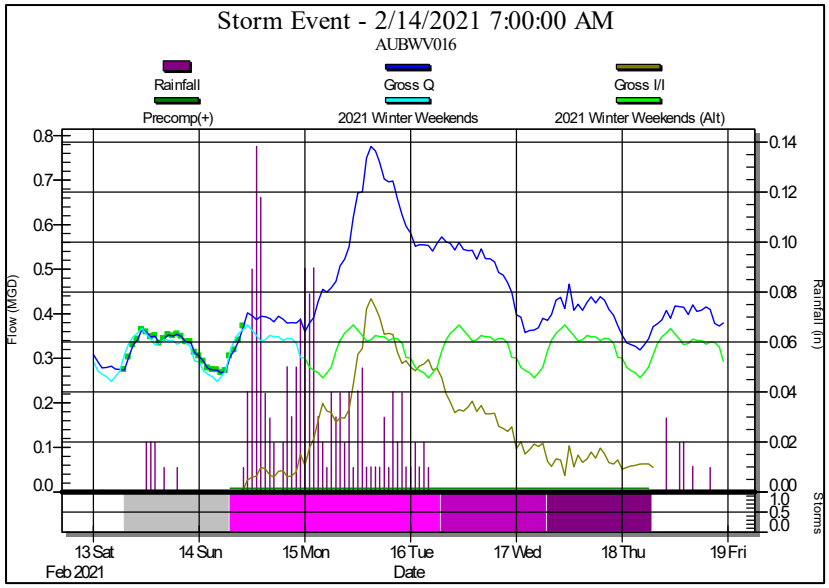

Storm Event - 11/3/2020 7:00:00 AM
AUBWV016
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

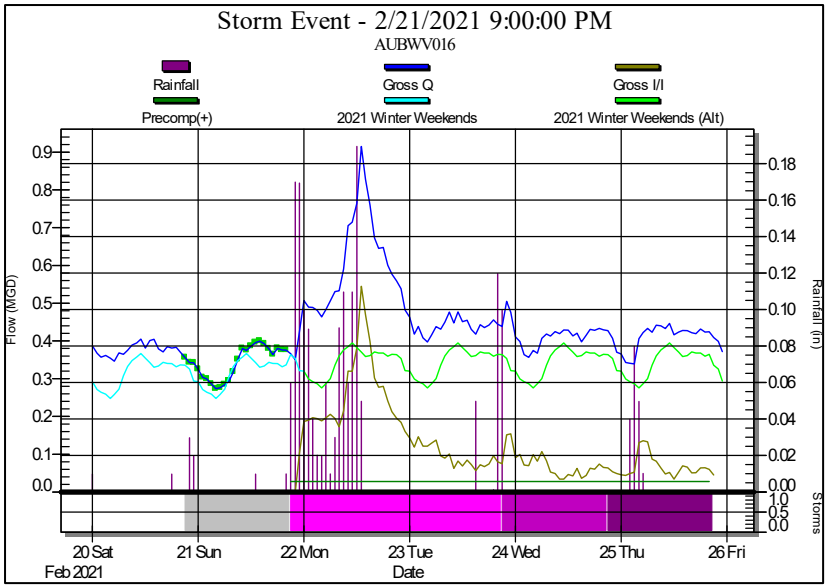

Storm Event - 11/14/2020 3:00:00 PM
AUBWV016
Rainfall
Gross Q
Gross I/I
Precomp(-)
2021 Winter Weekends (Alt)
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

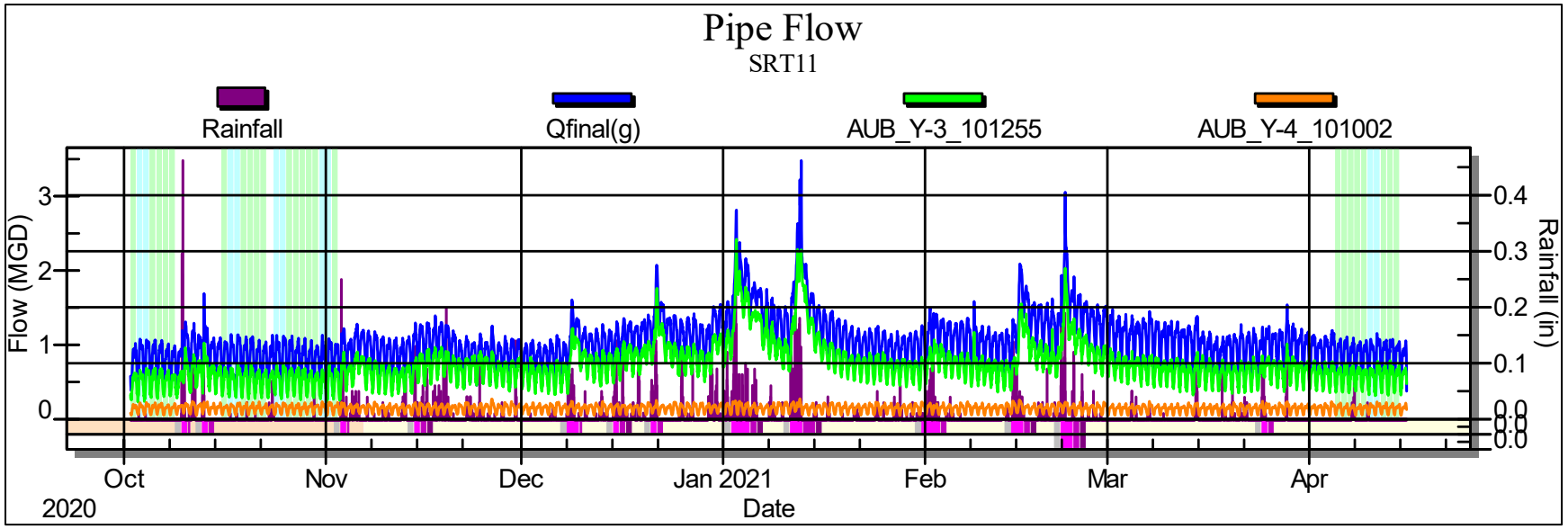

Storm Event - 12/20/2020 11:00:00 PM
AUBWV016
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekends (Alt)
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

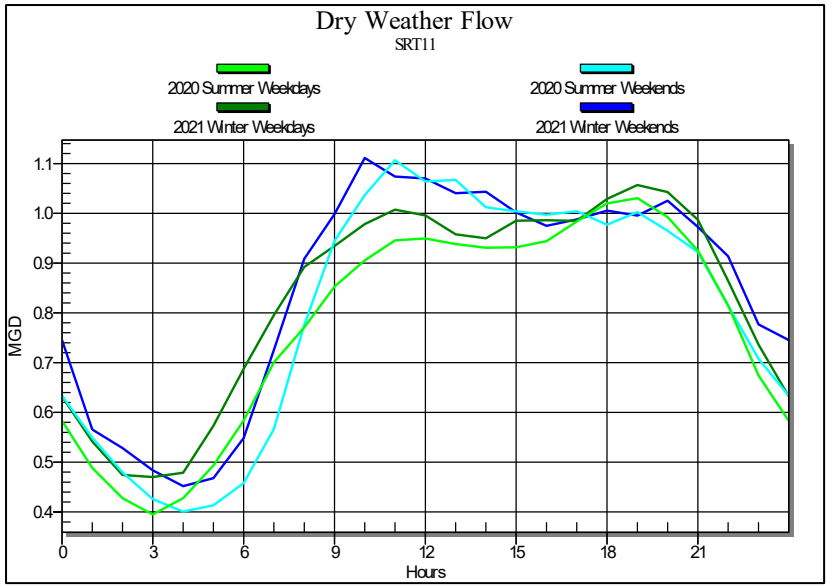

Storm Event - 1/2/2021 7:00:00 AM
AUBWV016
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends (Alt)
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

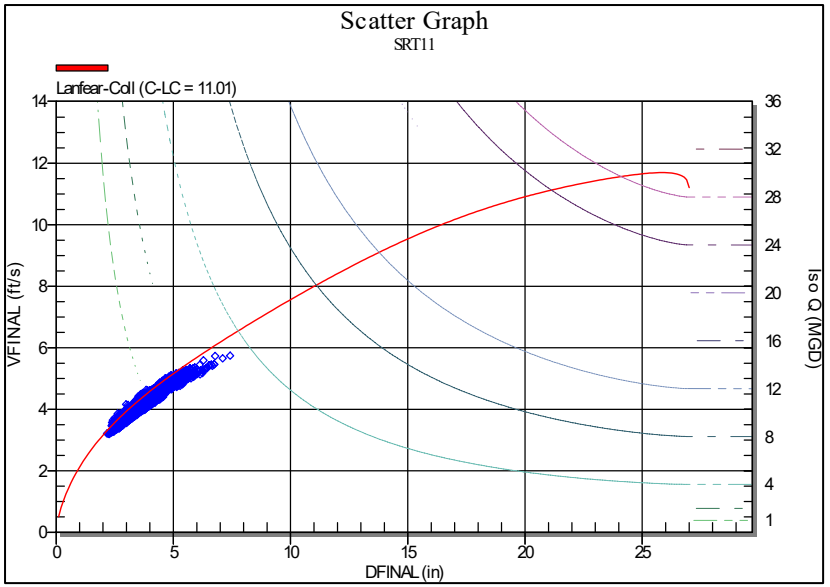

Storm Event - 1/11/2021 8:00:00 AM
AUBWV016
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekends (Alt)
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

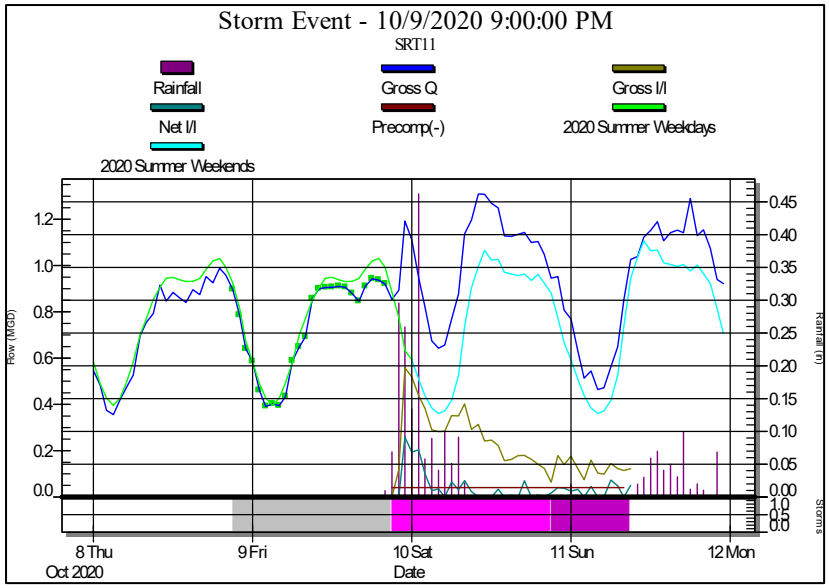

Storm Event - 2/14/2021 7:00:00 AM
AUBWV016
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekends (Alt)
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

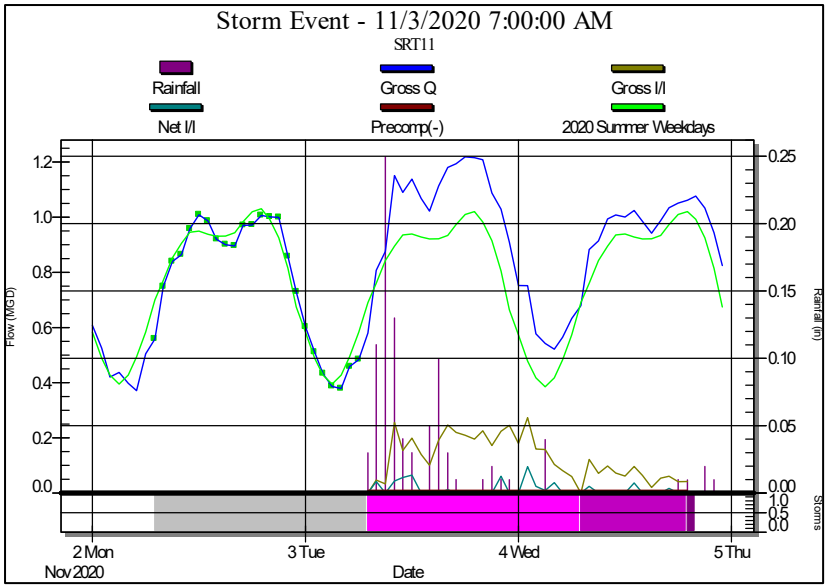

Storm Event - 2/21/2021 9:00:00 PM
AUBWV016
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekends (Alt)
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

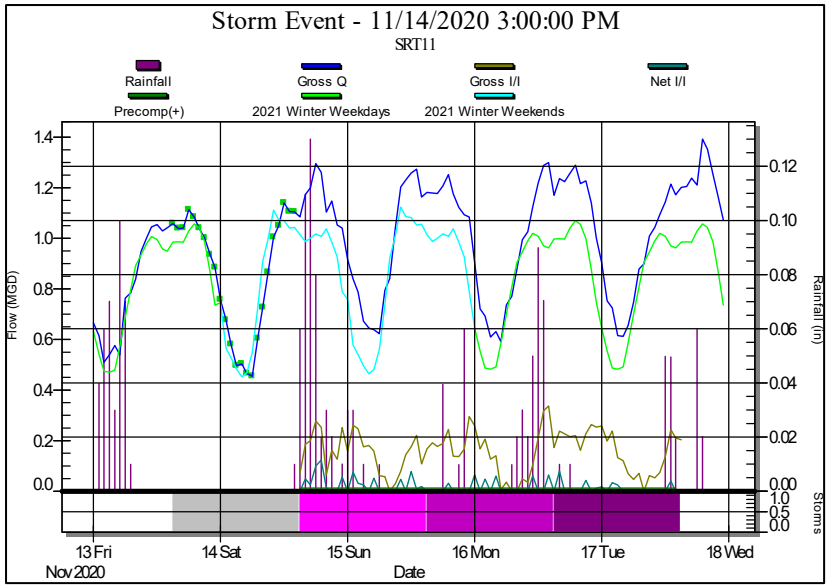

Pipe Flow
SRT11
Rainfall
Qfinal(g)
AUB_Y-3_101255
AUB_Y-4_101002
Flow (MGD)
Rainfall (in)
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

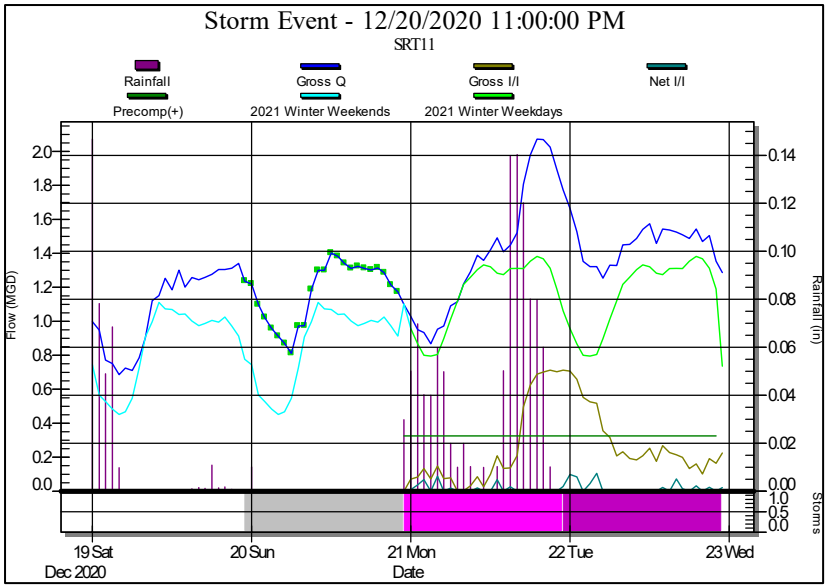

Dry Weather Flow
SRT11
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
Hours

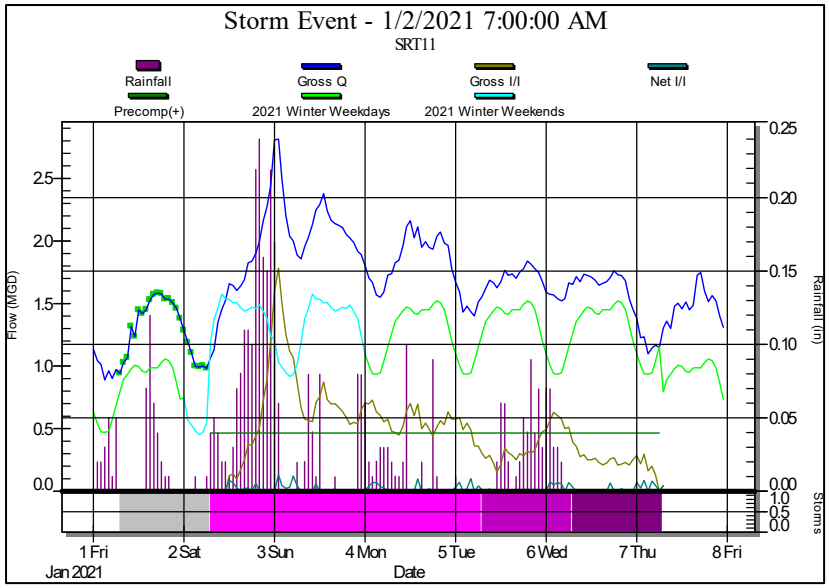

Scatter Graph
SRT11
Lanfear-Coll (C-LC = 11.01)
VFINAL (ft/s)
Iso Q (MGD)
DFINAL (in)

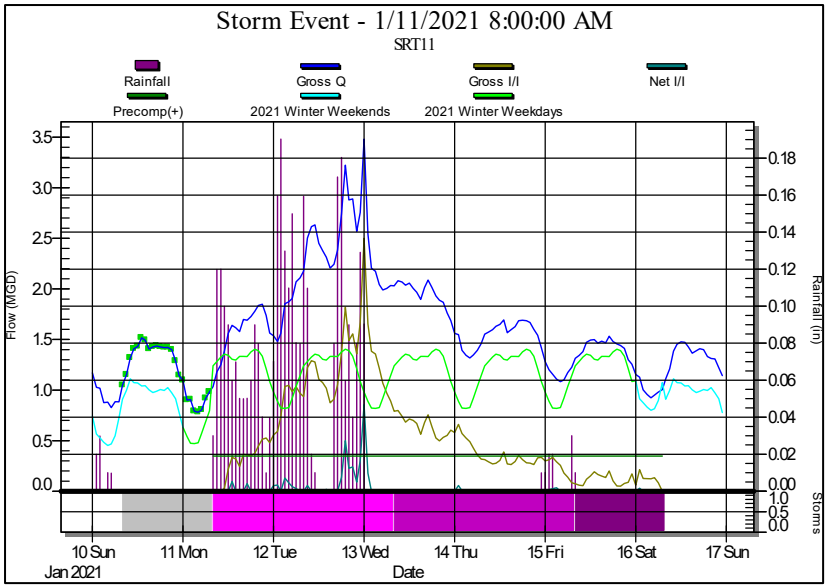

Storm Event - 10/9/2020 9:00:00 PM
SRT11
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

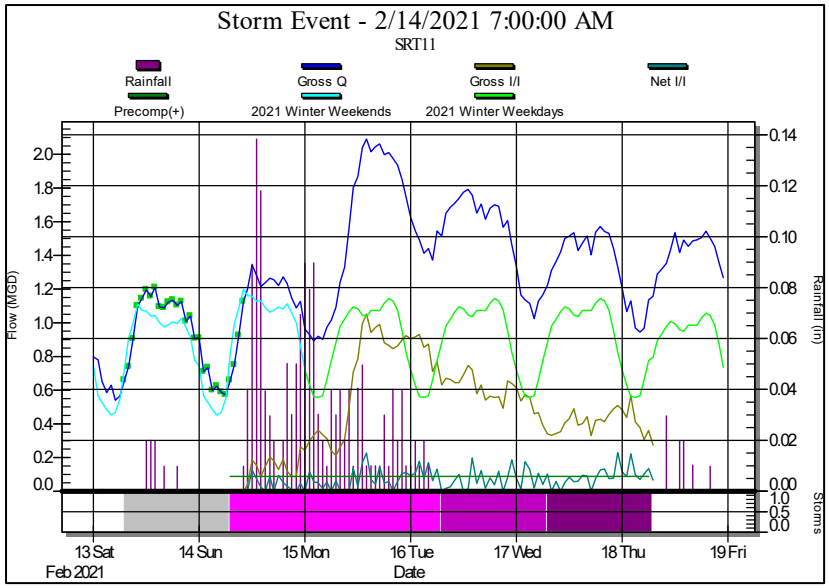

Storm Event - 11/3/2020 7:00:00 AM
SRT11
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

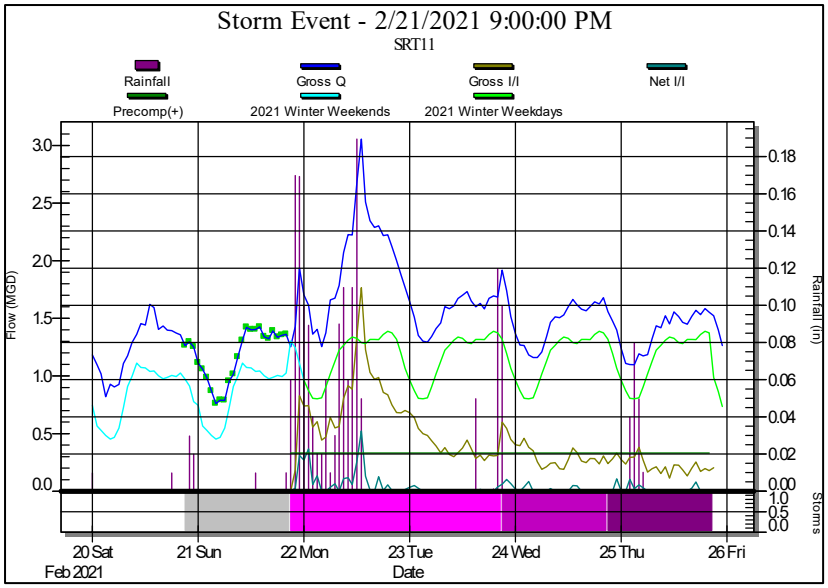

Storm Event - 11/14/2020 3:00:00 PM
SRT11
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

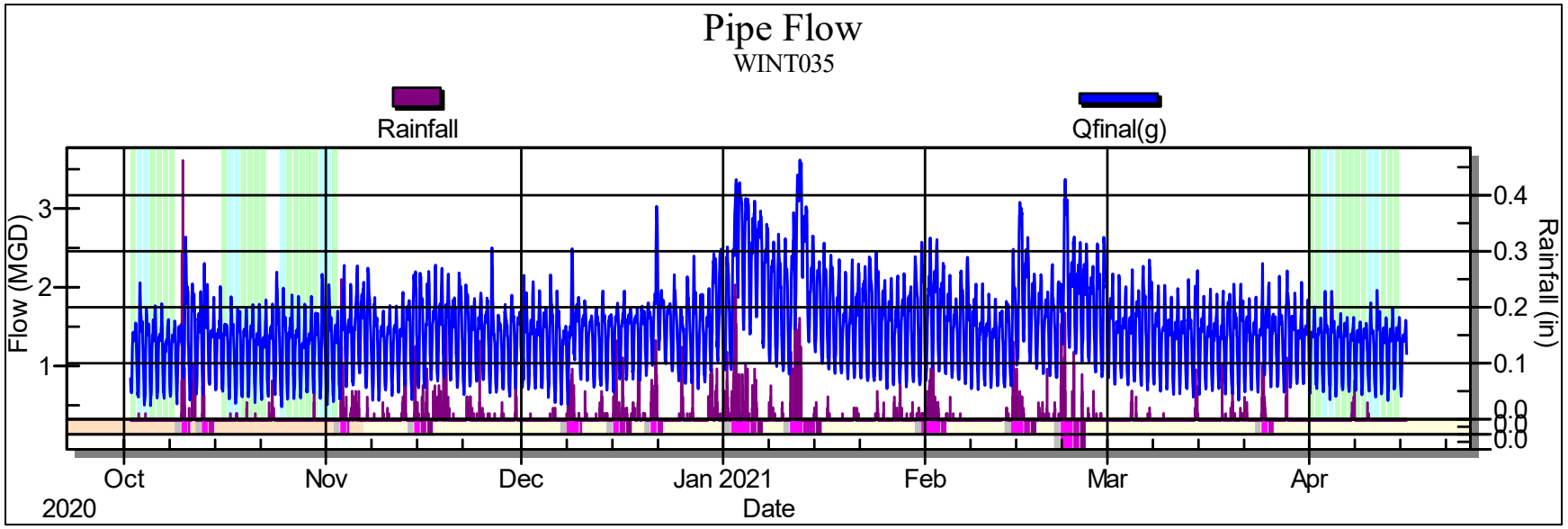

Storm Event - 12/20/2020 11:00:00 PM
SRT11
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

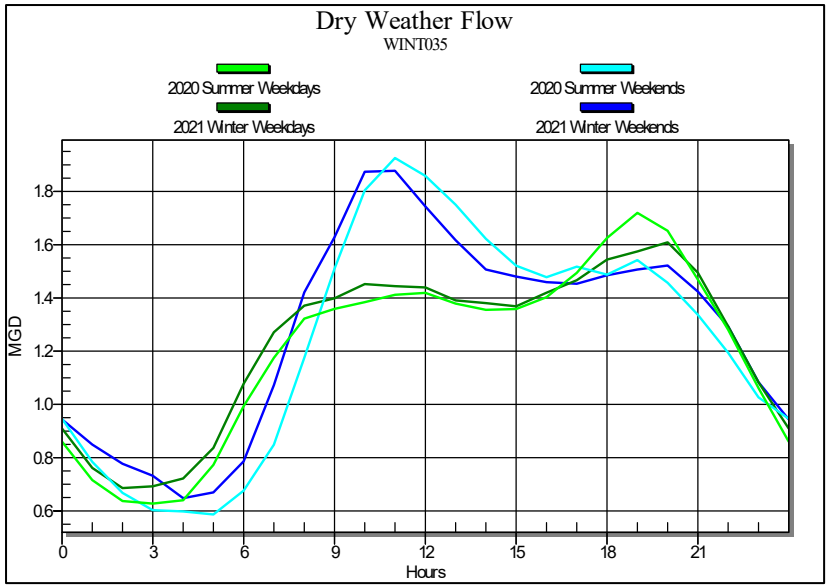

Storm Event - 1/2/2021 7:00:00 AM
SRT11
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

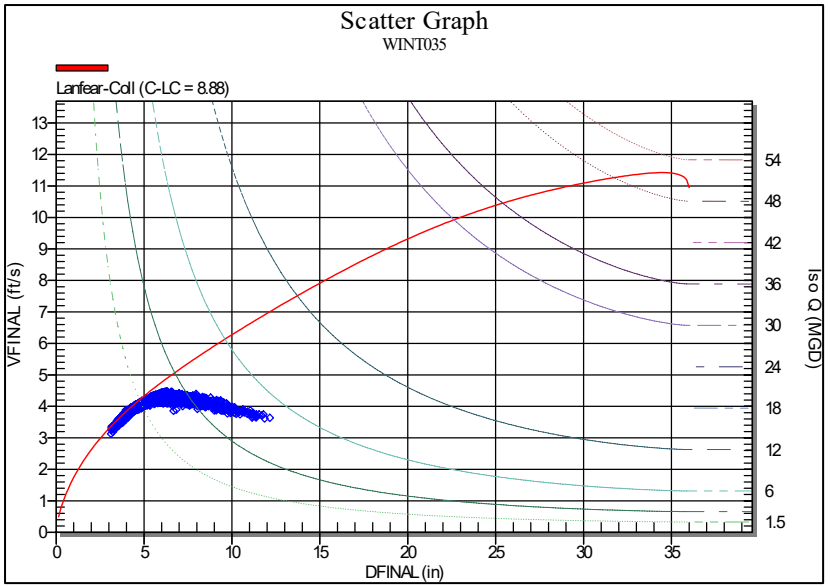

Storm Event - 1/11/2021 8:00:00 AM
SRT11
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

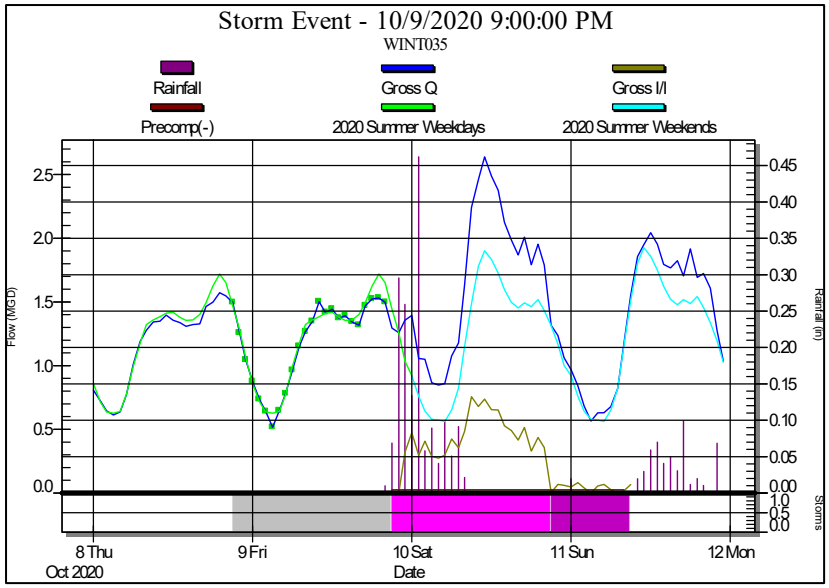

Storm Event - 2/14/2021 7:00:00 AM
SRT11
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

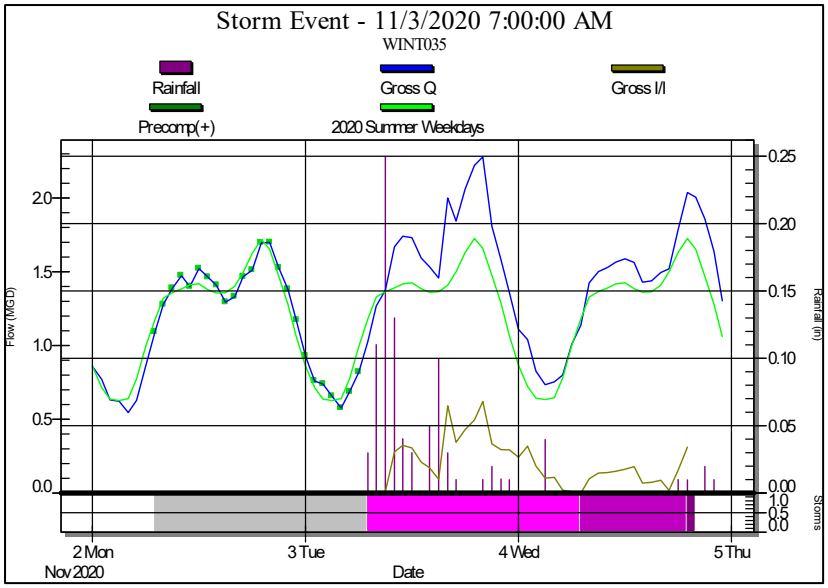

Storm Event - 2/21/2021 9:00:00 PM
SRT11
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

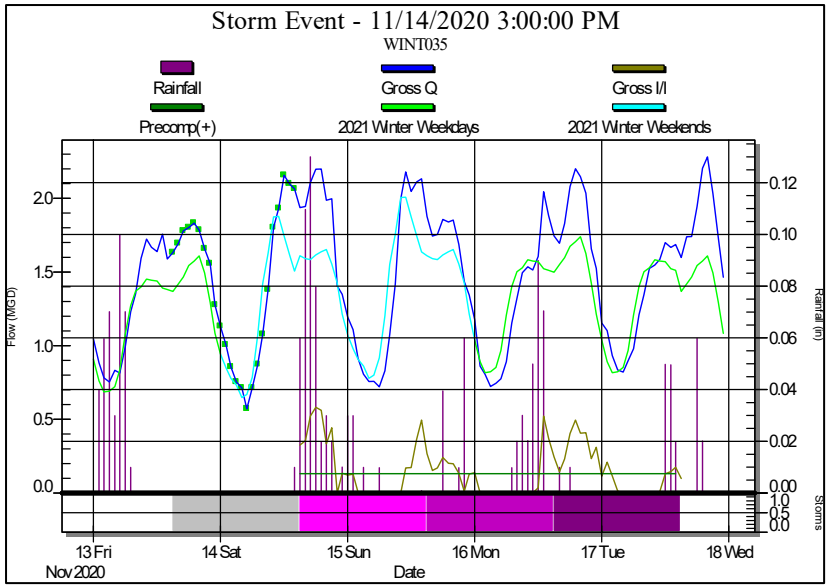

Pipe Flow
WINT035
Rainfall
Qfinal(g)
Flow (MGD)
Rainfall (in)
3
2
1
0.4
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

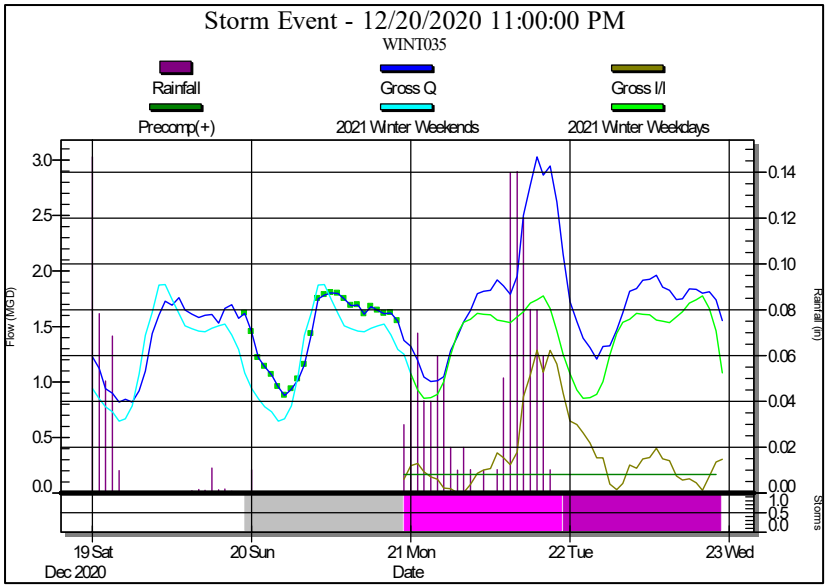

Dry Weather Flow
WINT035
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0
3
6
9
12
15
18
21
Hours

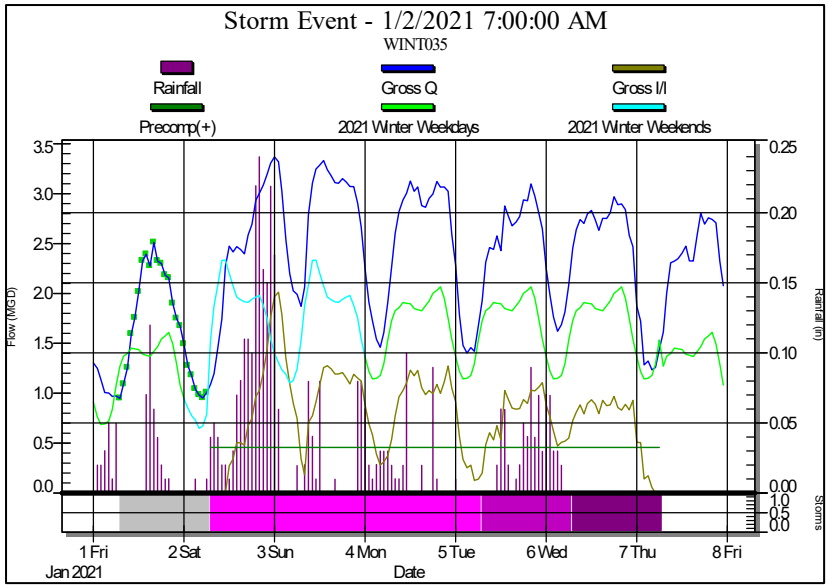

Scatter Graph
WINT035
Lanfear-Coll (C-LC = 8.88)
VFINAL (ft/s)
Iso Q (MGD)
13
12
11
10
9
8
7
6
5
4
3
2
1
0
54
48
42
36
30
24
18
12
6
1.5
0
5
10
15
20
25
30
35
DFINAL (in)

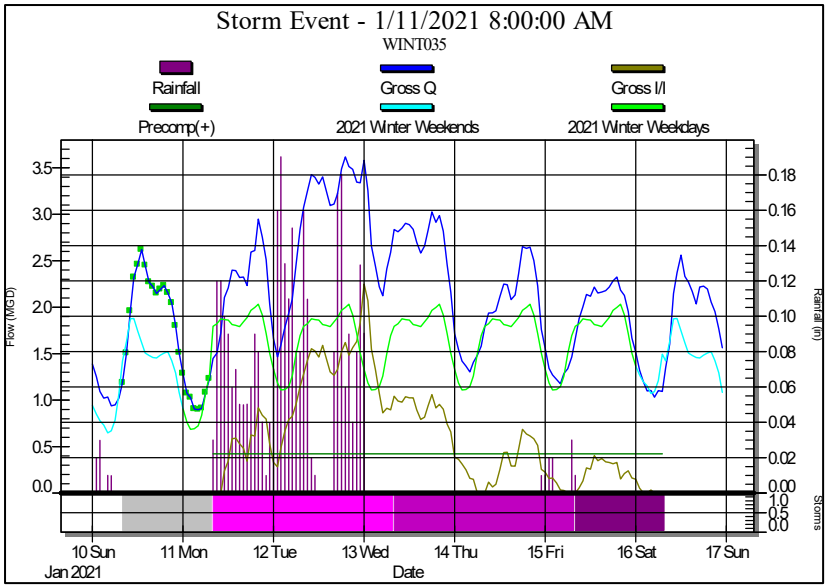

Storm Event - 10/9/2020 9:00:00 PM
WINT035
Rainfall
Gross Q
Gross I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

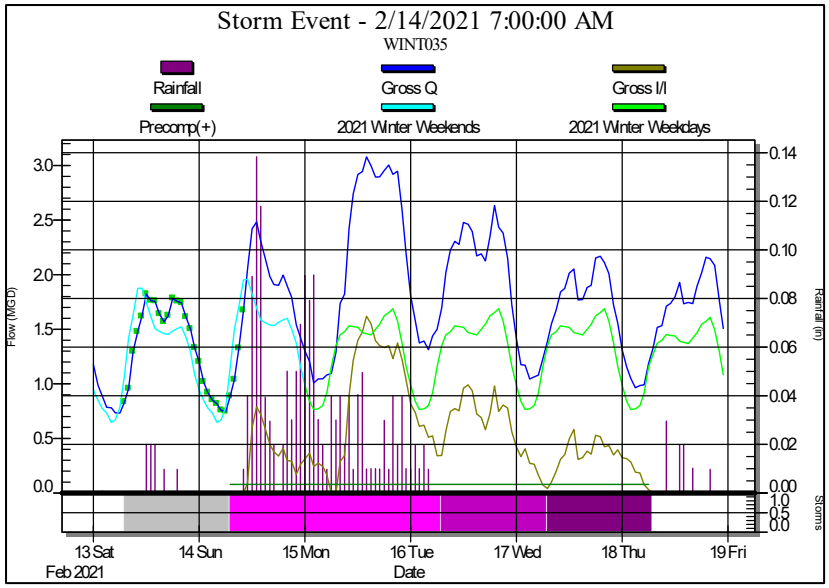

Storm Event - 11/3/2020 7:00:00 AM
WINT035
Rainfall
Gross Q
Gross I/I
Precomp(+)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

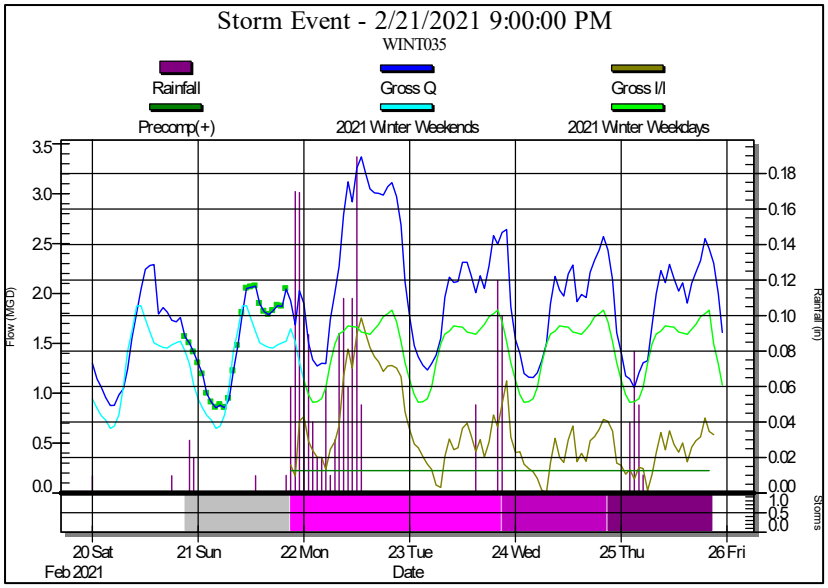

Storm Event - 11/14/2020 3:00:00 PM
WINT035
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

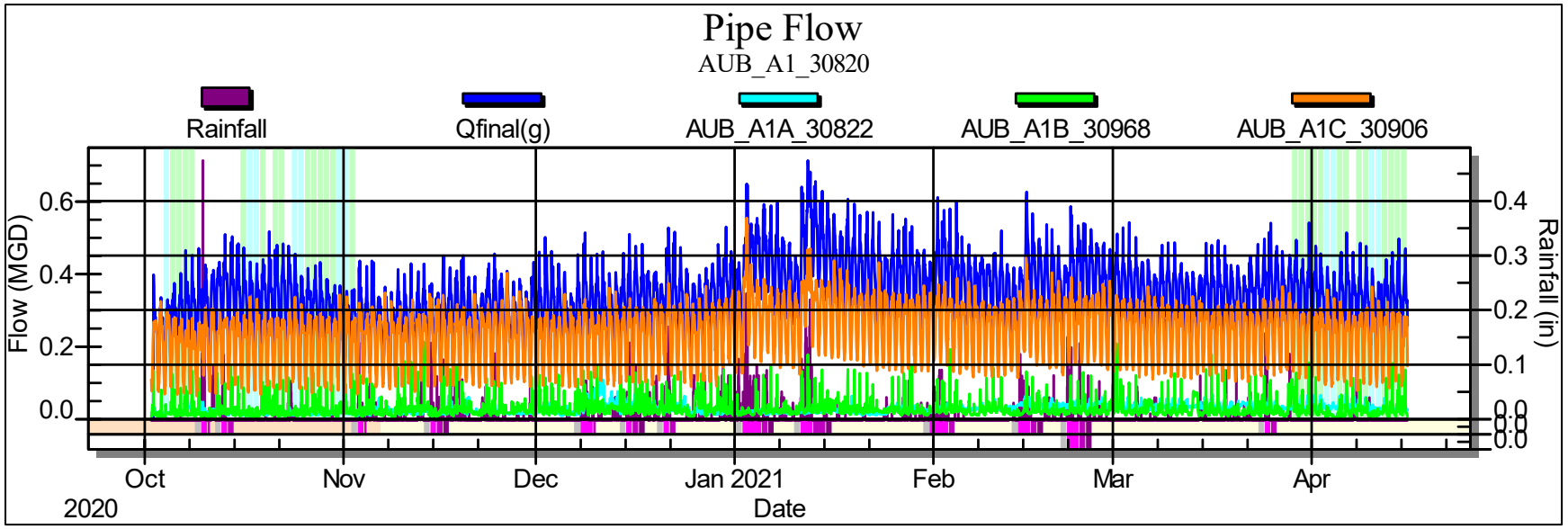

Storm Event - 12/20/2020 11:00:00 PM
WINT035
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

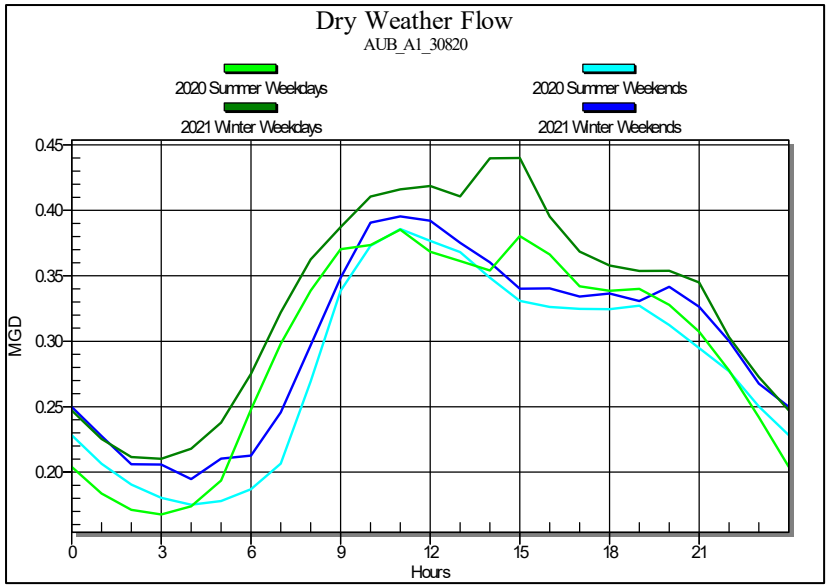

Storm Event - 1/2/2021 7:00:00 AM
WINT035
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
Jan 2021
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Date

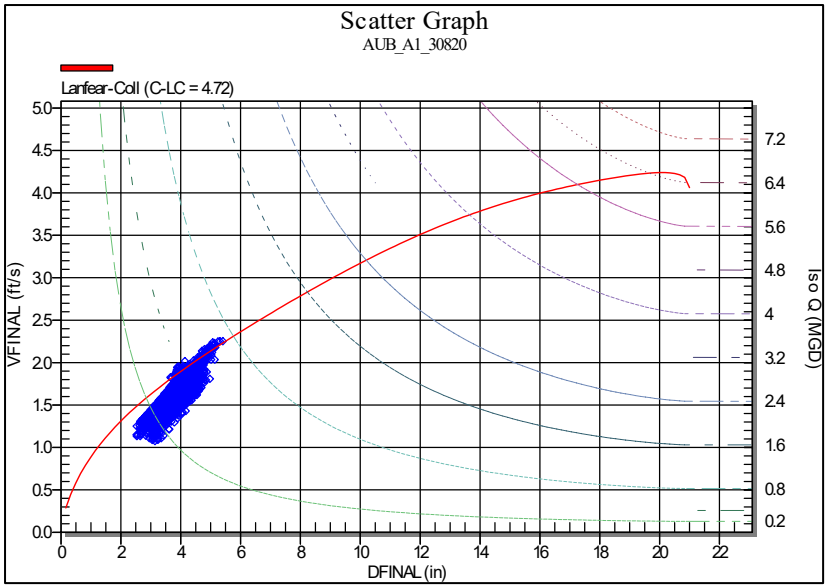

Storm Event - 1/11/2021 8:00:00 AM
WINT035
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
Jan 2021
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Date

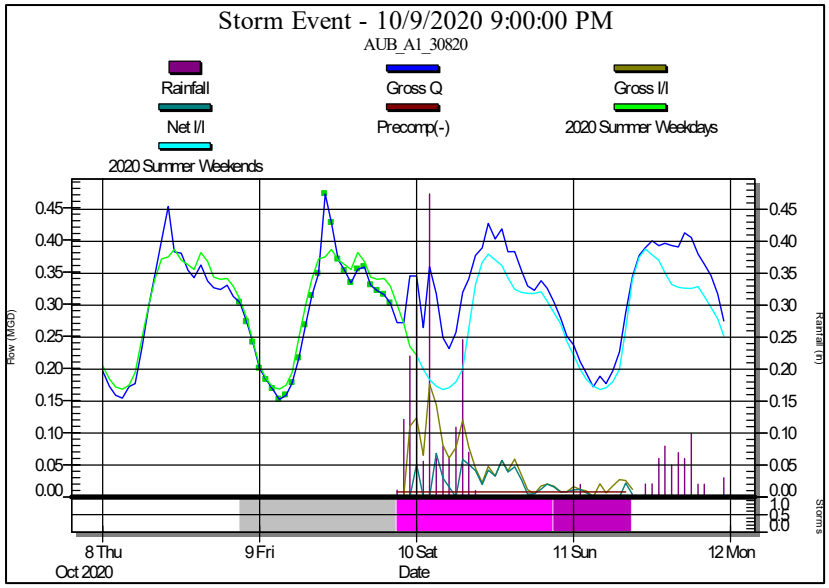

Storm Event - 2/14/2021 7:00:00 AM
WINT035
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
Feb 2021
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Date

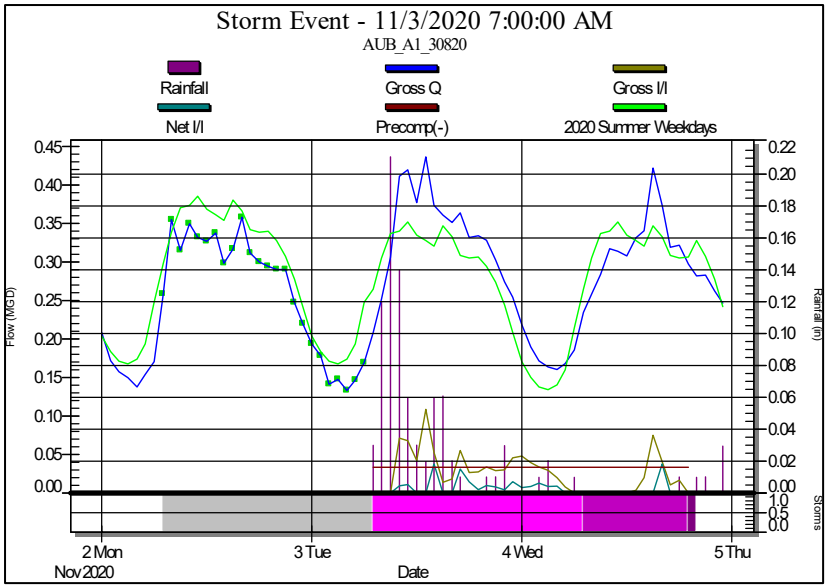

Storm Event - 2/21/2021 9:00:00 PM
WINT035
Rainfall
Gross Q
Gross I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
Feb 2021
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Date

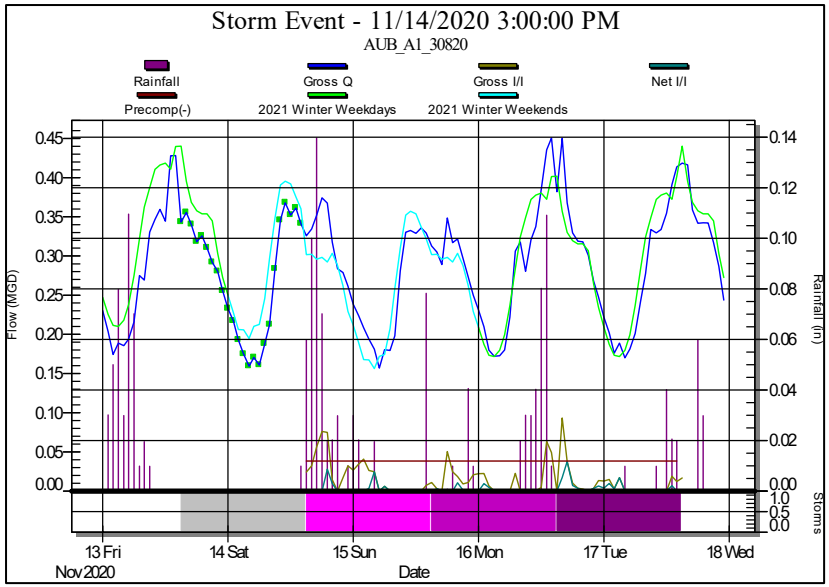

Pipe Flow
AUB_A1_30820
Rainfall
Qfinal(g)
AUB_A1A_30822
AUB_A1B_30968
AUB_A1C_30906
Flow (MGD)
0.6
0.4
0.2
0.0
Rainfall (in)
0.4
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

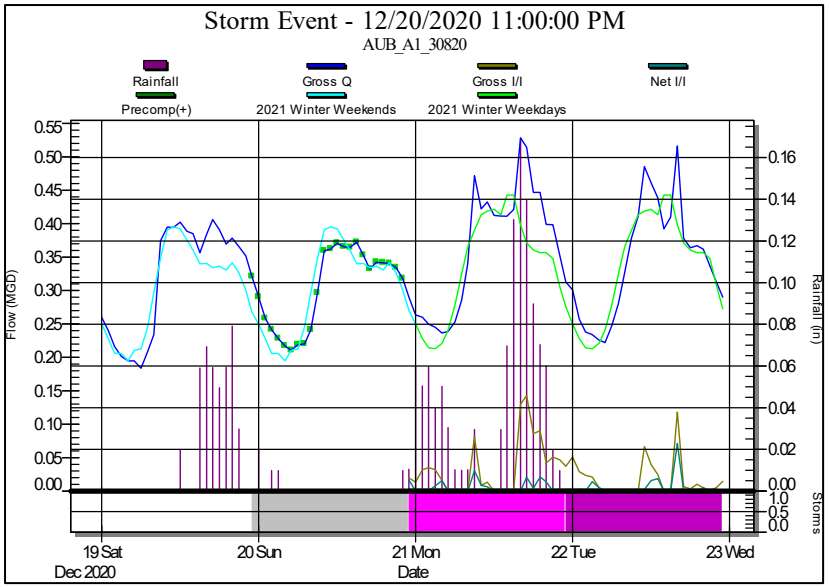

Dry Weather Flow
AUB_A1_30820
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.45
0.40
0.35
0.30
0.25
0.20
0
3
6
9
12
15
18
21
Hours

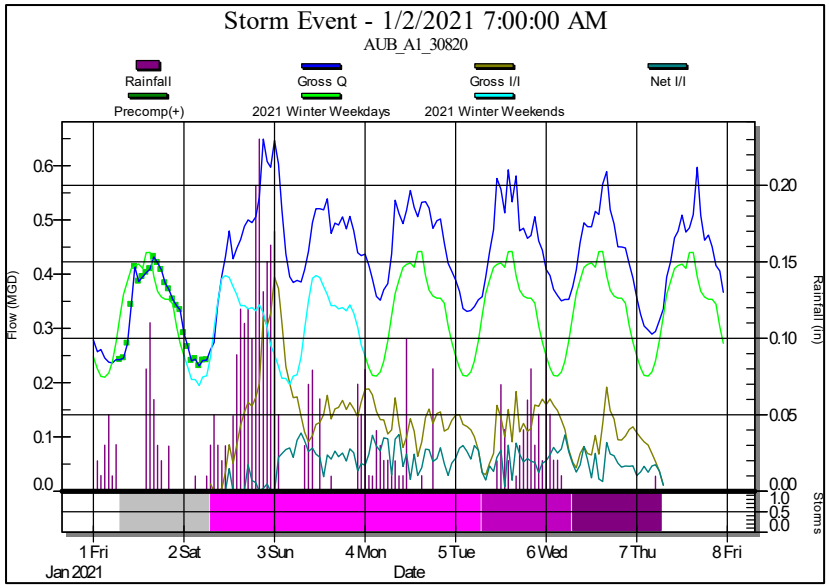

Scatter Graph
AUB_A1_30820
Lanfear-Coll (C-LC = 4.72)
VFINAL (ft/s)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Iso Q (MGD)
7.2
6.4
5.6
4.8
4
3.2
2.4
1.6
0.8
0.2
0
2
4
6
8
10
12
14
16
18
20
22
DFINAL (in)

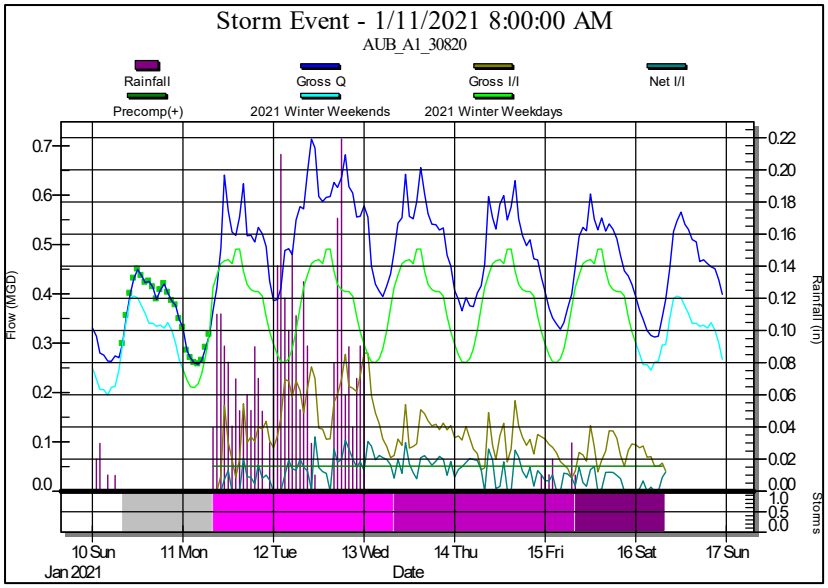

Storm Event - 10/9/2020 9:00:00 PM
AUB_A1_30820
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

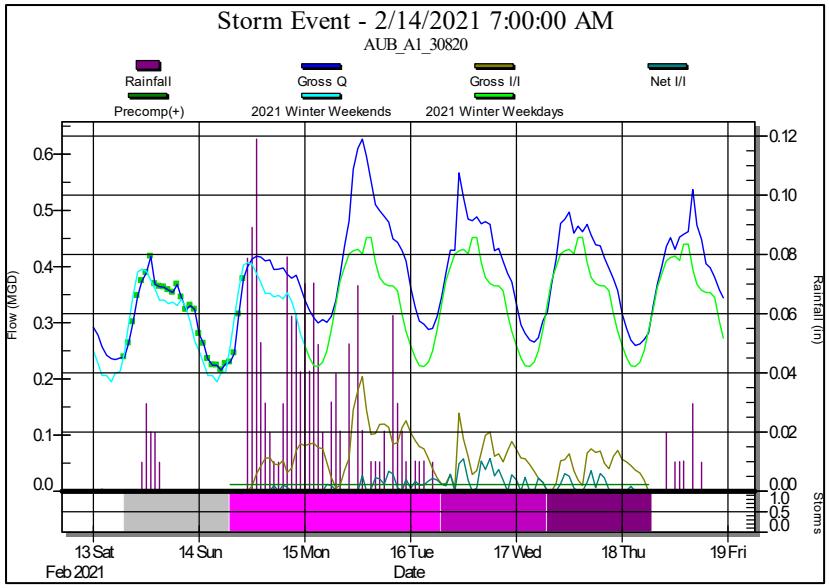

Storm Event - 11/3/2020 7:00:00 AM
AUB_A1_30820
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

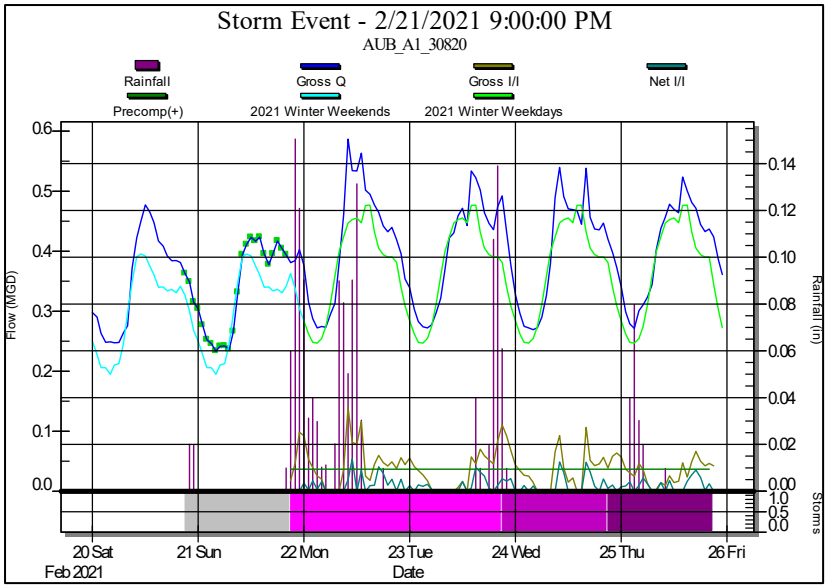

Storm Event - 11/14/2020 3:00:00 PM
AUB_A1_30820
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

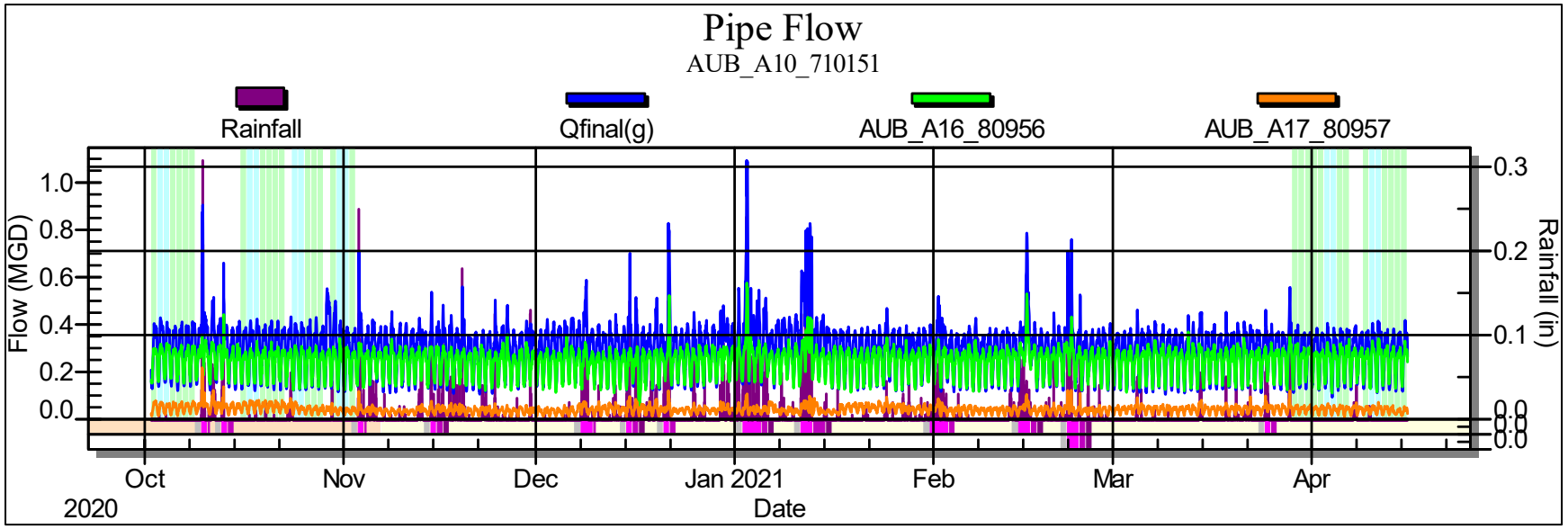

Storm Event - 12/20/2020 11:00:00 PM
AUB_A1_30820
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

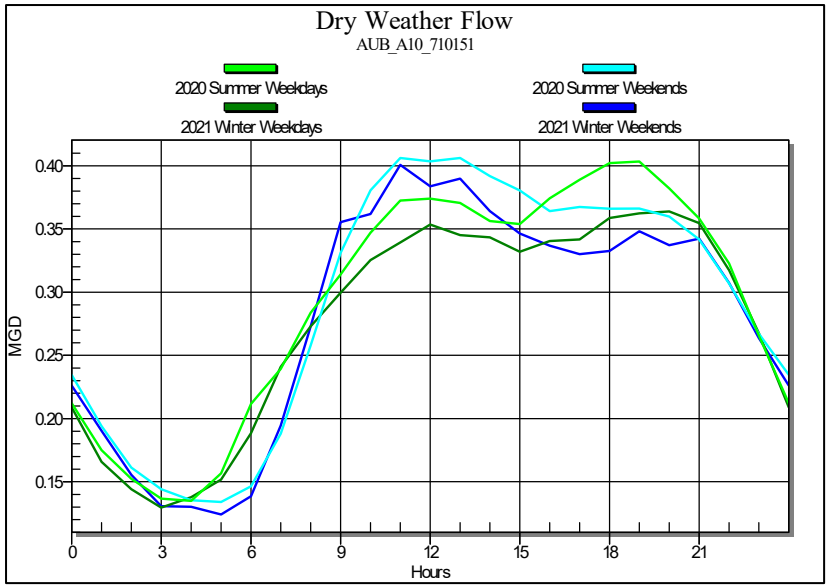

Storm Event - 1/2/2021 7:00:00 AM
AUB_A1_30820
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

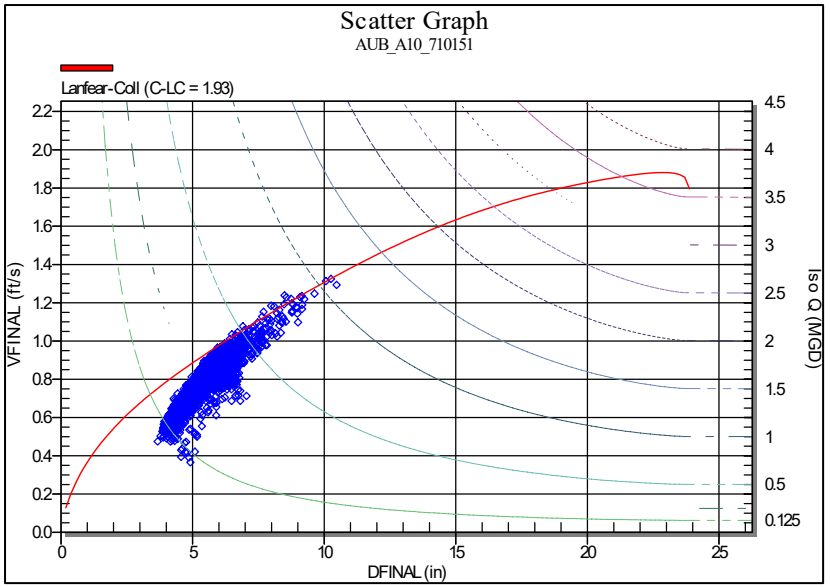

Storm Event - 1/11/2021 8:00:00 AM
AUB_A1_30820
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

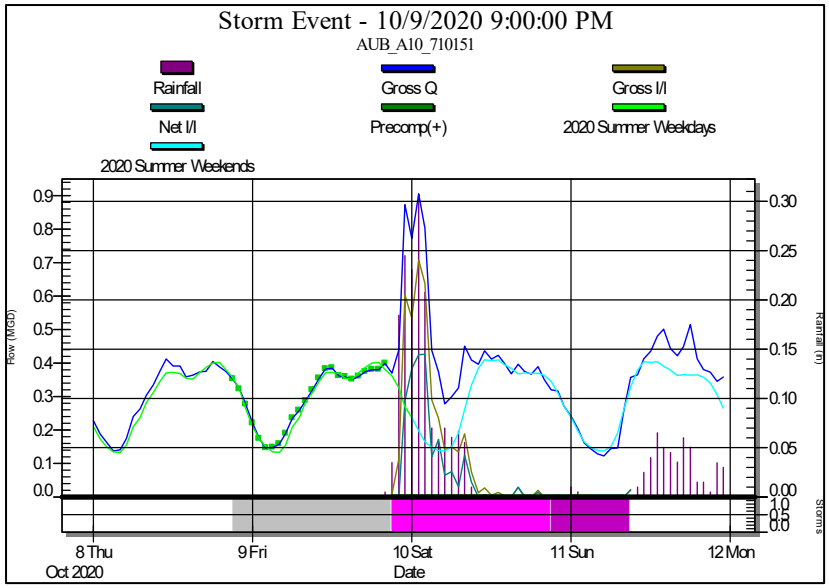

Storm Event - 2/14/2021 7:00:00 AM
AUB_A1_30820
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

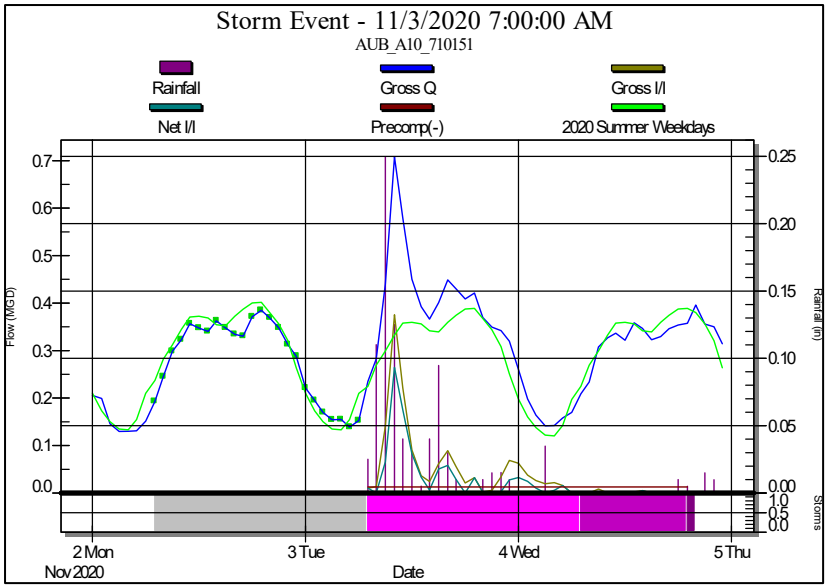

Storm Event - 2/21/2021 9:00:00 PM
AUB_A1_30820
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

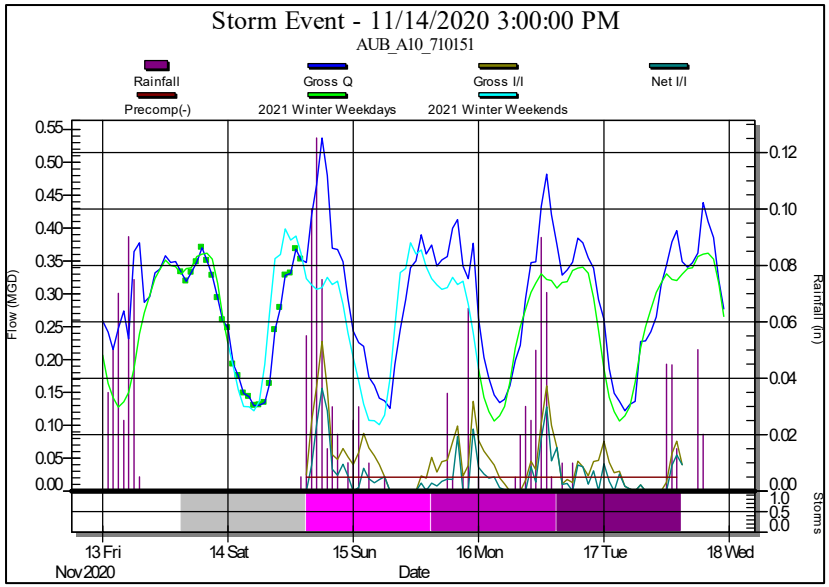

Pipe Flow
AUB_A10_710151
Rainfall
Qfinal(g)
AUB_A16_80956
AUB_A17_80957
Flow (MGD)
Rainfall (in)
1.0
0.8
0.6
0.4
0.2
0.0
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

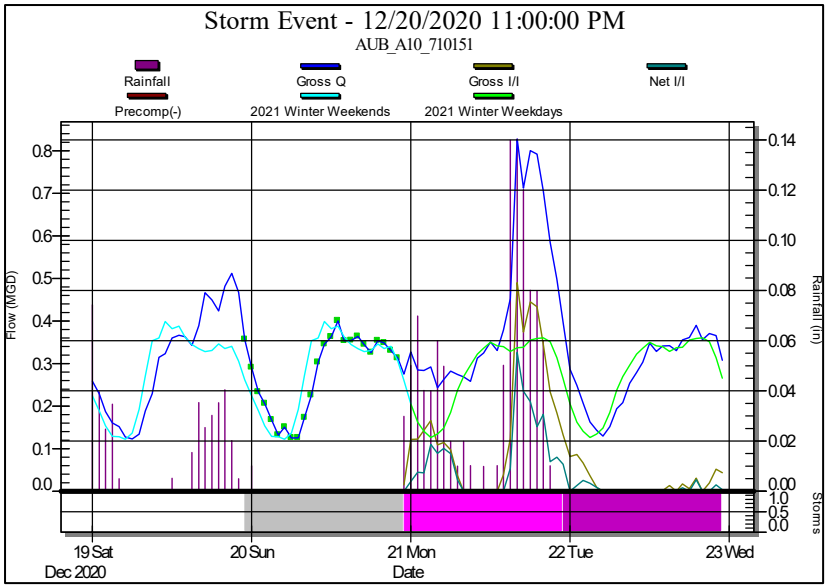

Dry Weather Flow
AUB_A10_710151
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.40
0.35
0.30
0.25
0.20
0.15
0
3
6
9
12
15
18
21
Hours

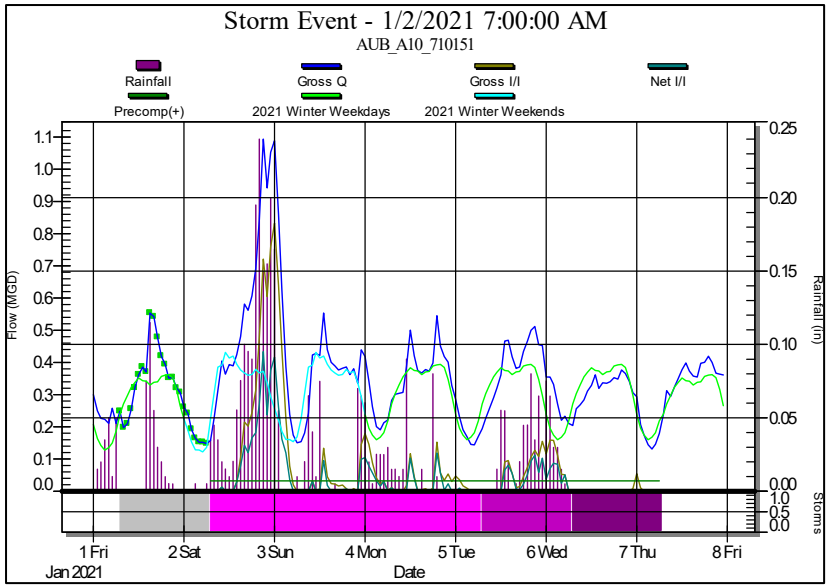

Scatter Graph
AUB_A10_710151
Lanfear-Coll (C-LC = 1.93)
VFINAL (ft/s)
Iso Q (MGD)
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0.125
0
5
10
15
20
25
DFINAL (in)

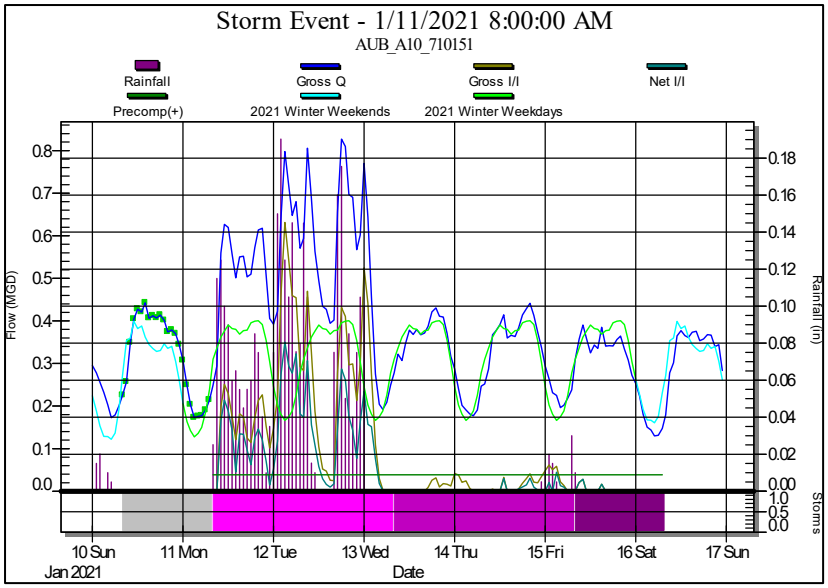

Storm Event - 10/9/2020 9:00:00 PM
AUB_A10_710151
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

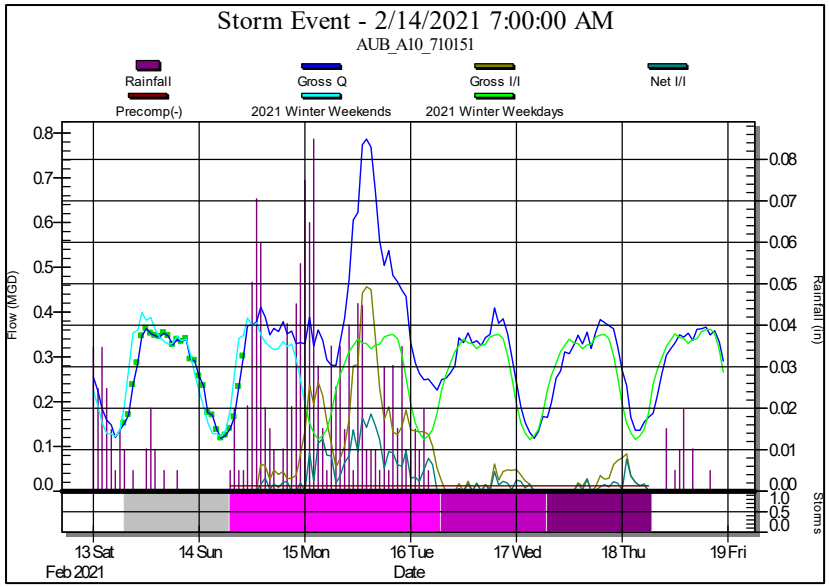

Storm Event - 11/3/2020 7:00:00 AM
AUB_A10_710151
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

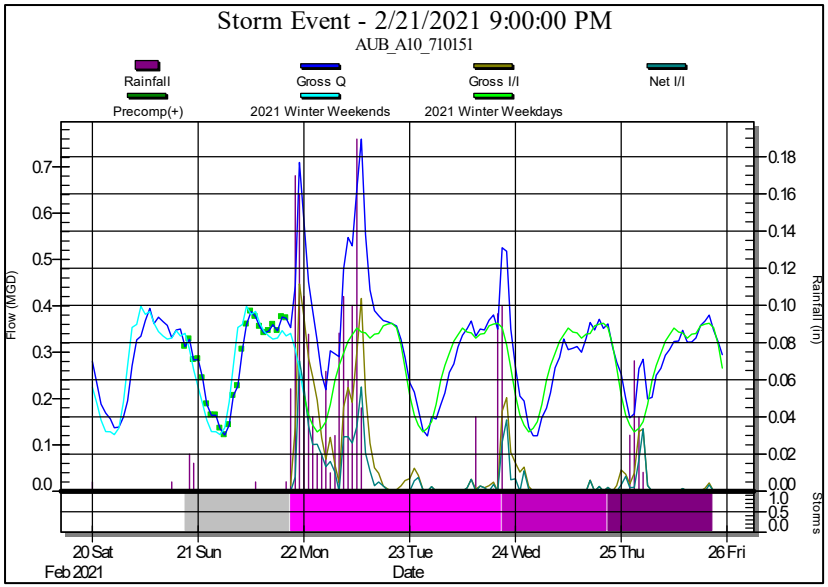

Storm Event - 11/14/2020 3:00:00 PM
AUB_A10_710151
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

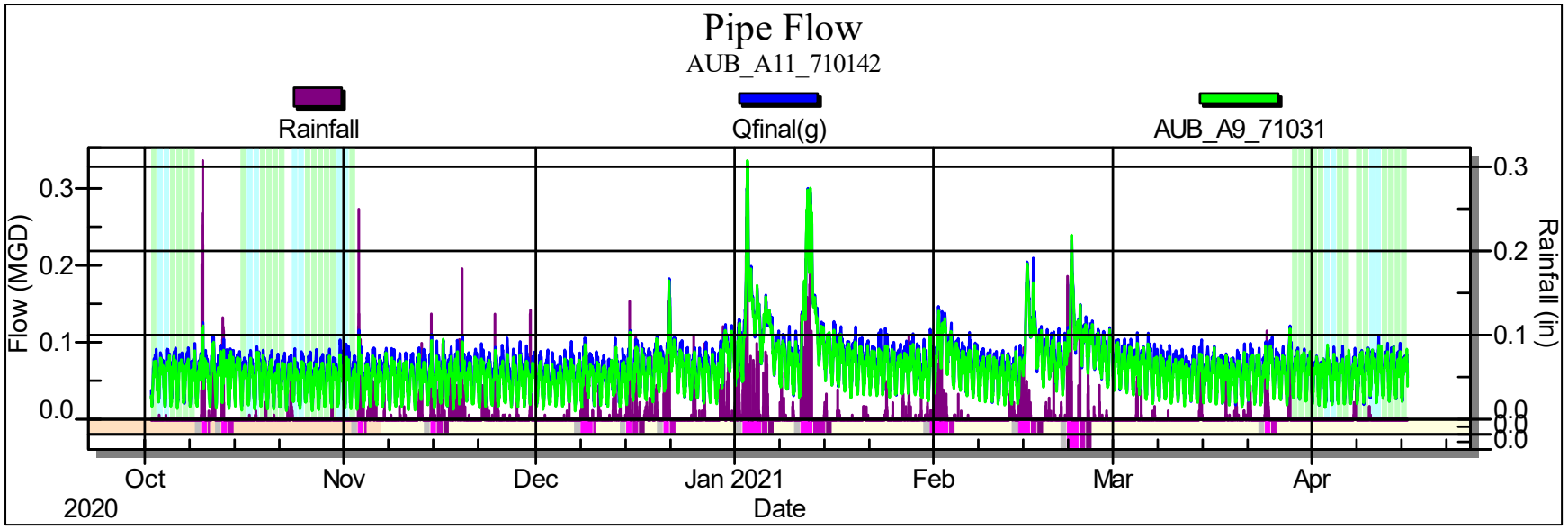

Storm Event - 12/20/2020 11:00:00 PM
AUB_A10_710151
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

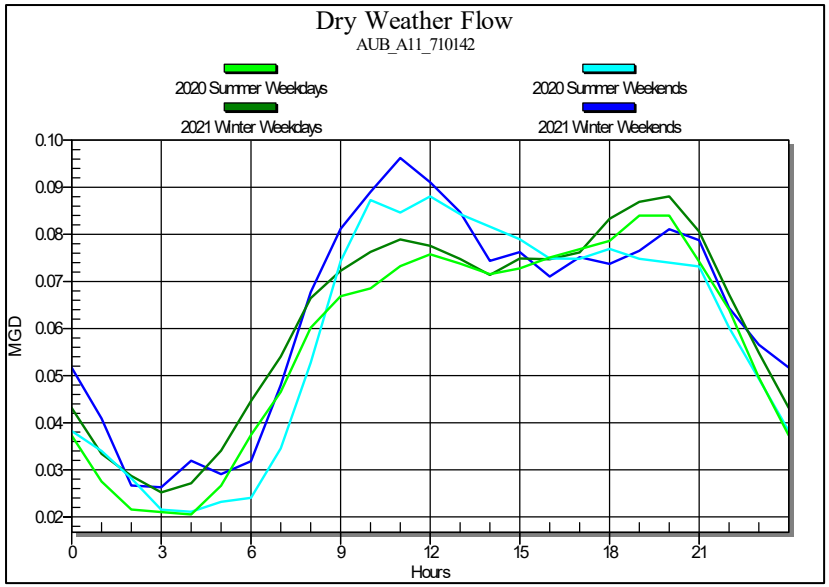

Storm Event - 1/2/2021 7:00:00 AM
AUB_A10_710151
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

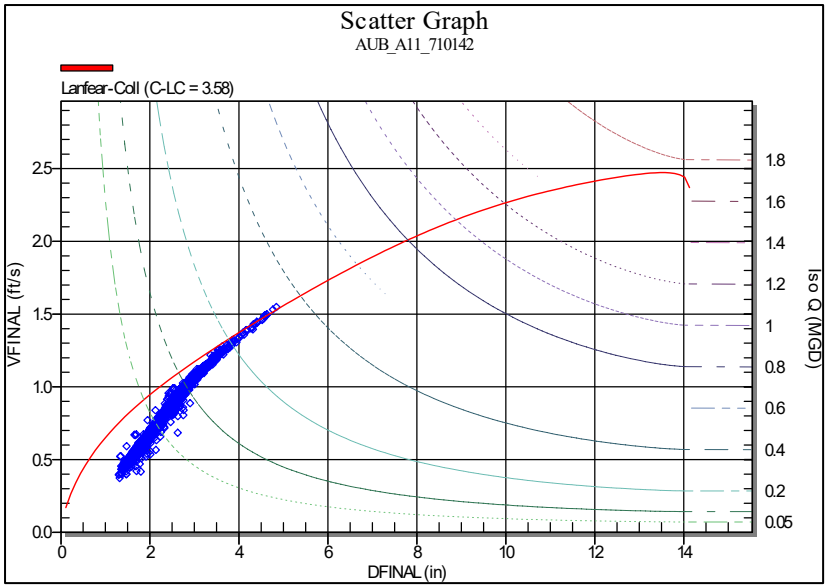

Storm Event - 1/11/2021 8:00:00 AM
AUB_A10_710151
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

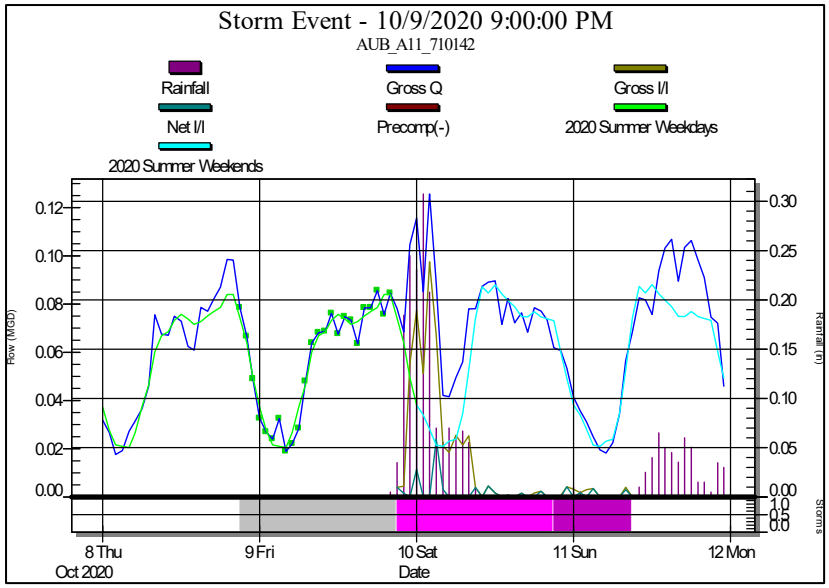

Storm Event - 2/14/2021 7:00:00 AM
AUB_A10_710151
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

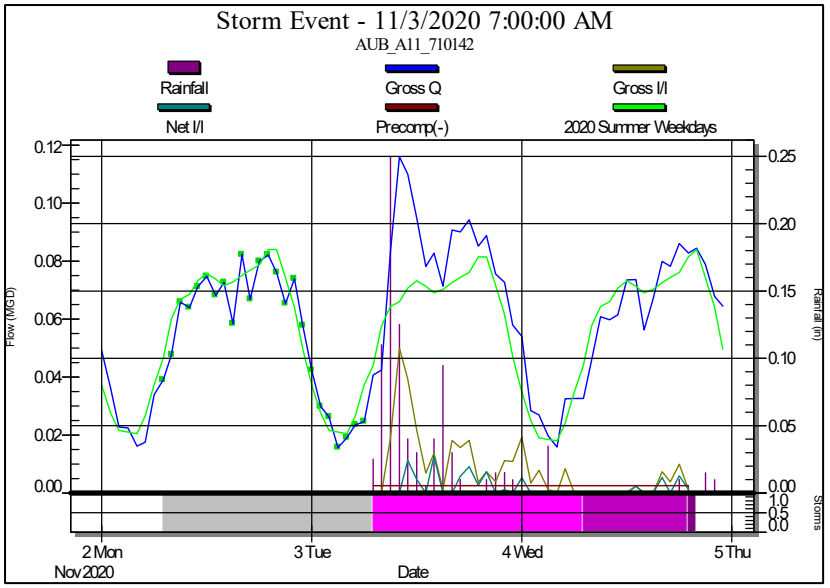

Storm Event - 2/21/2021 9:00:00 PM
AUB_A10_710151
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

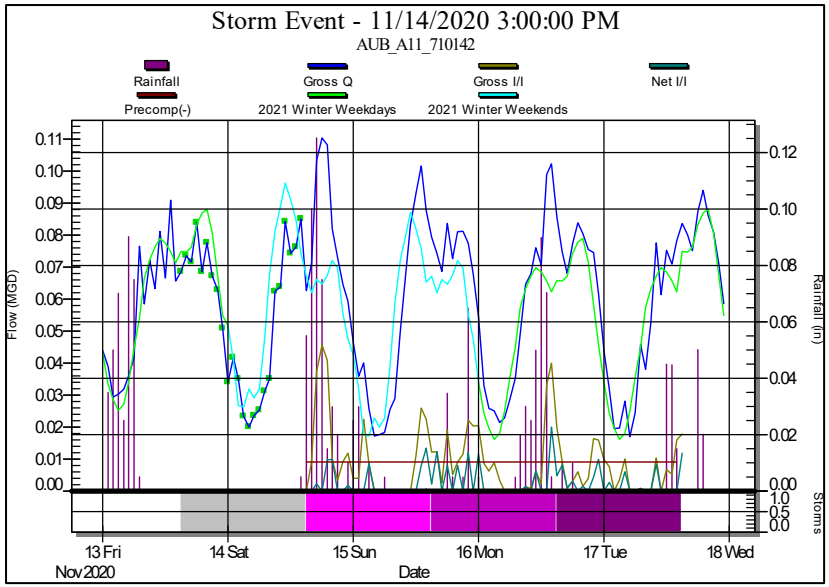

Pipe Flow
AUB_A11_710142
Rainfall
Qfinal(g)
AUB_A9_71031
Flow (MGD)
Rainfall (in)
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

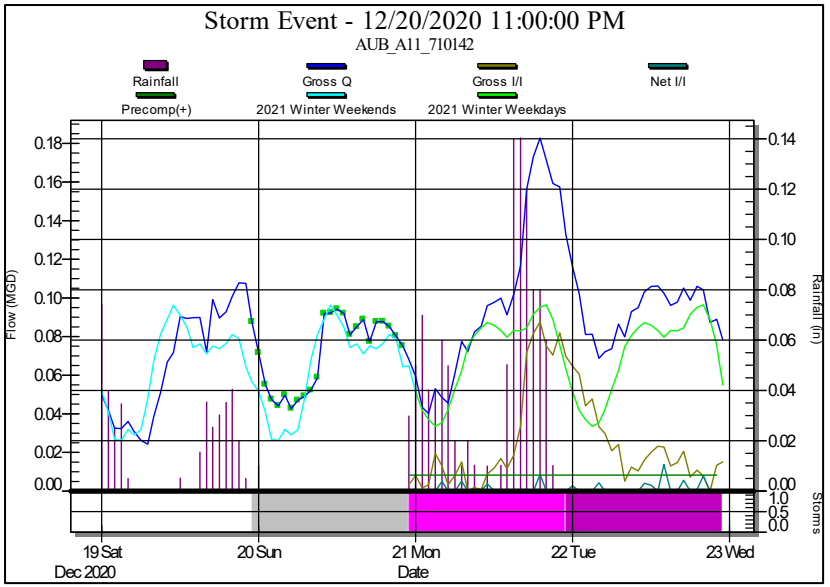

Dry Weather Flow
AUB_A11_710142
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
Hours

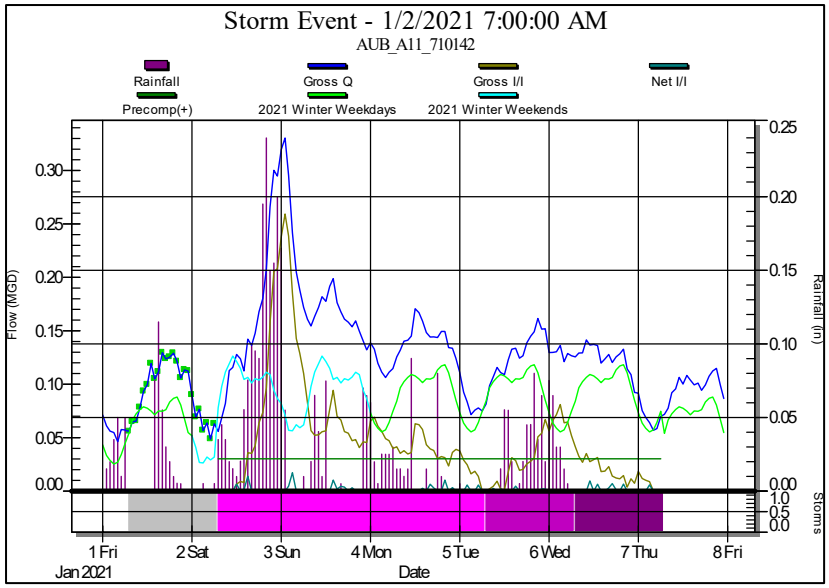

Scatter Graph
AUB_A11_710142
Lanfear-Coll (C-LC = 3.58)
VFINAL (ft/s)
Iso Q (MGD)
DFINAL (in)

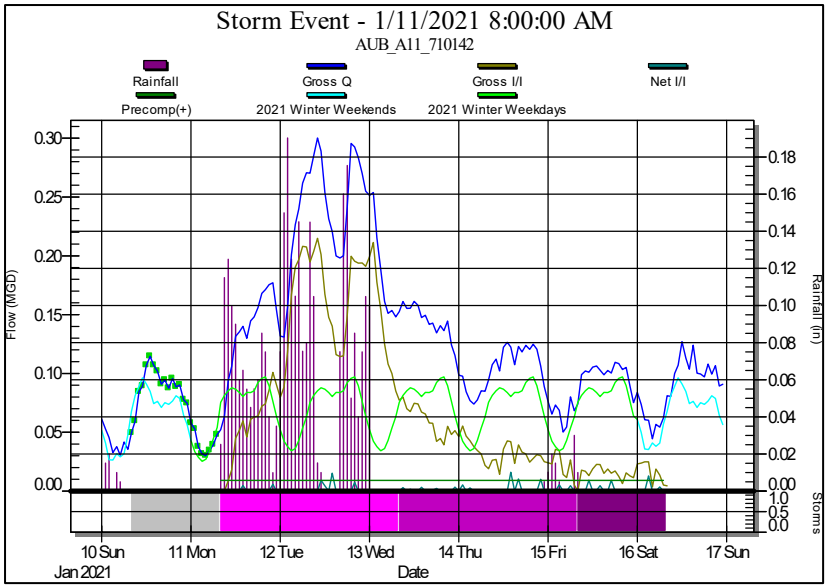

Storm Event - 10/9/2020 9:00:00 PM
AUB_A11_710142
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

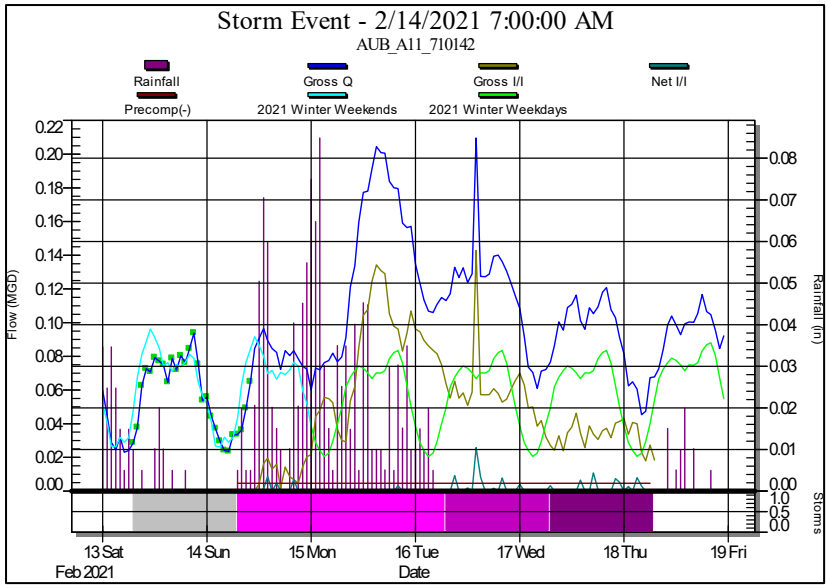

Storm Event - 11/3/2020 7:00:00 AM
AUB_A11_710142
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

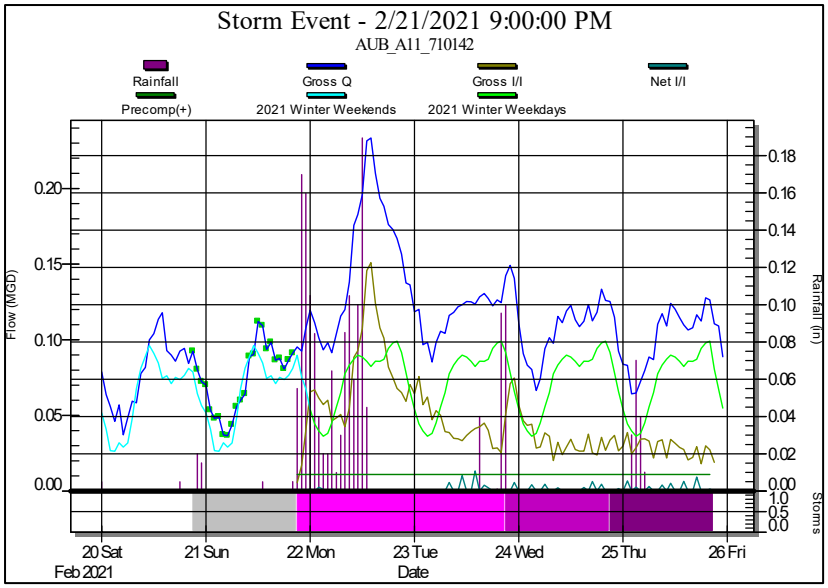

Storm Event - 11/14/2020 3:00:00 PM
AUB_A11_710142
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

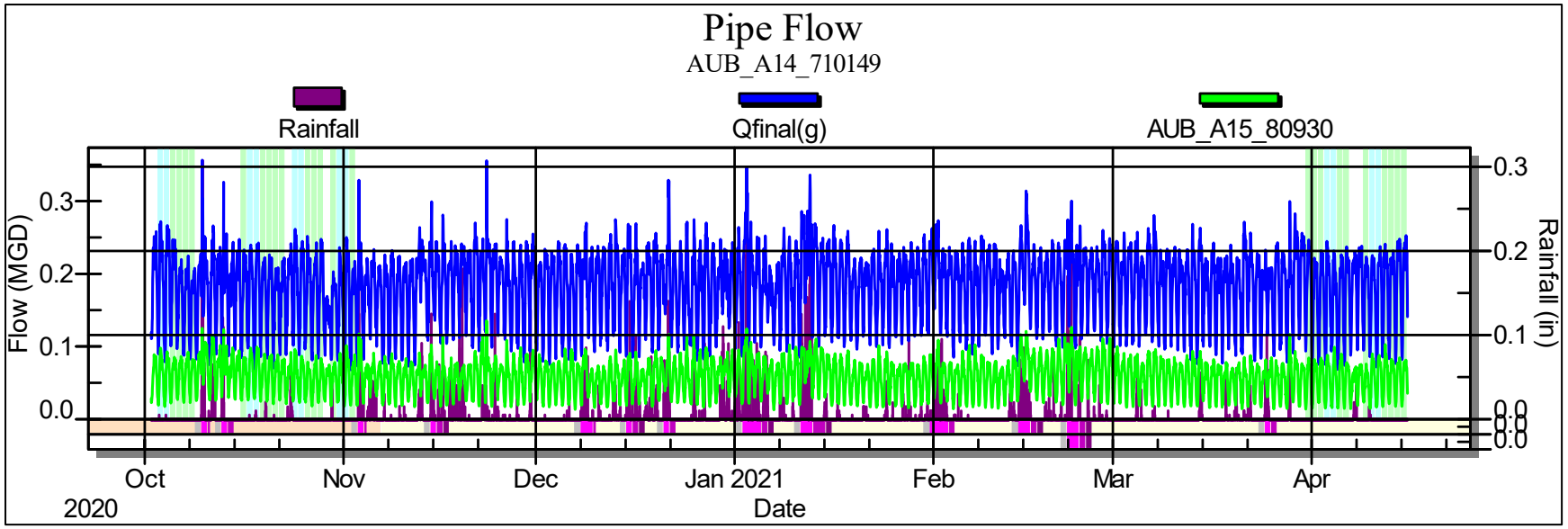

Storm Event - 12/20/2020 11:00:00 PM
AUB_A11_710142
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

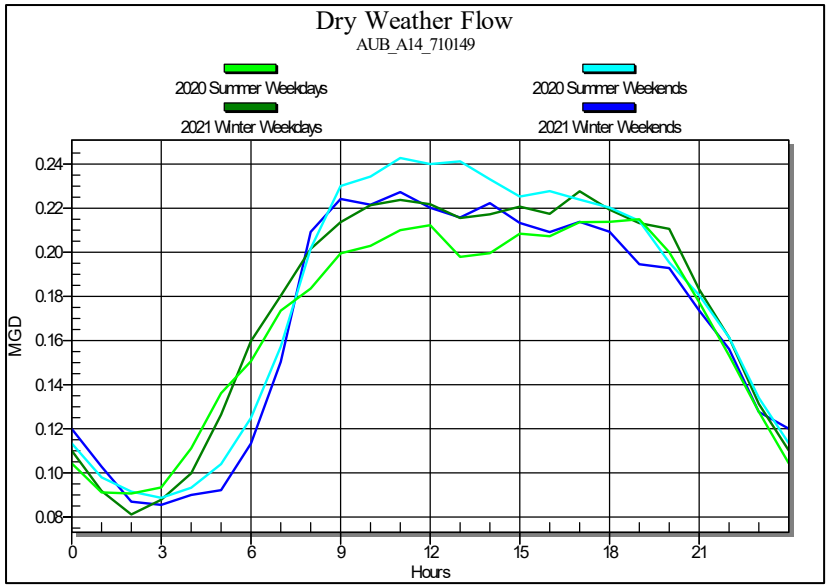

Storm Event - 1/2/2021 7:00:00 AM
AUB_A11_710142
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

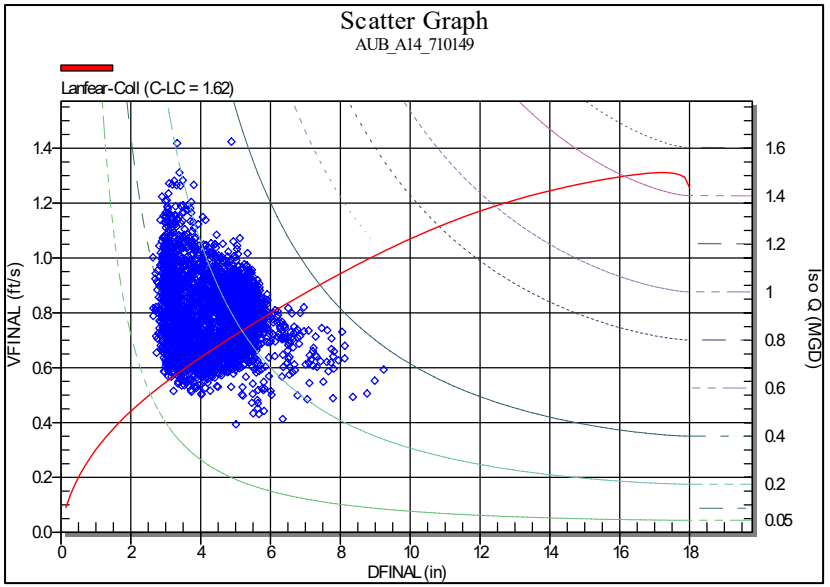

Storm Event - 1/11/2021 8:00:00 AM
AUB_A11_710142
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

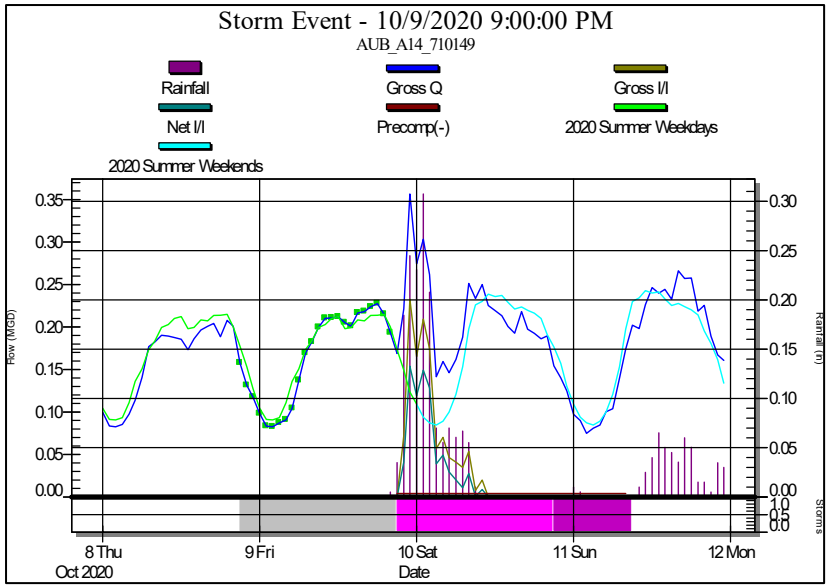

Storm Event - 2/14/2021 7:00:00 AM
AUB_A11_710142
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

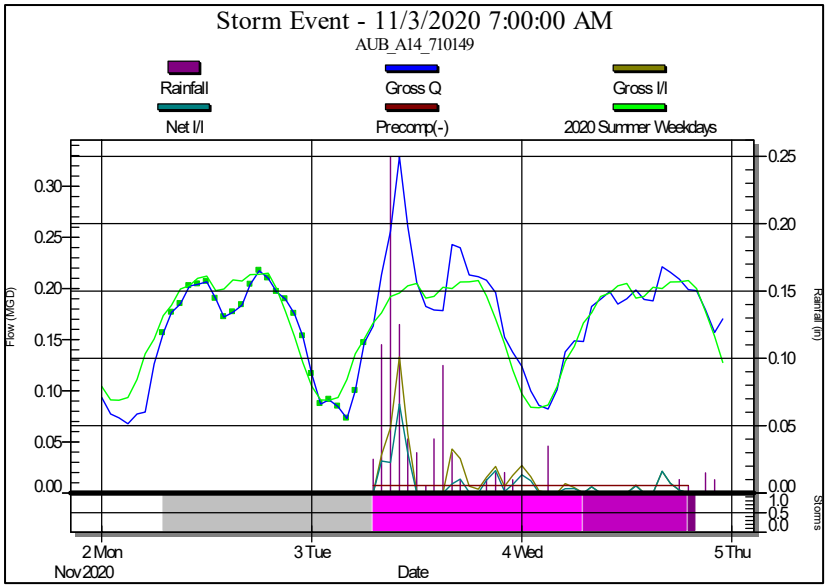

Storm Event - 2/21/2021 9:00:00 PM
AUB_A11_710142
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

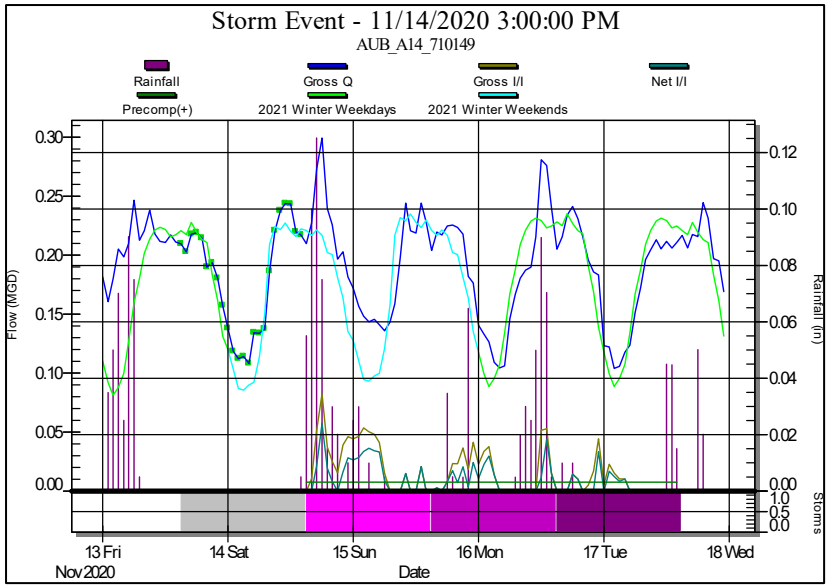

Pipe Flow
AUB_A14_710149
Rainfall
Qfinal(g)
AUB_A15_80930
Flow (MGD)
Rainfall (in)
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

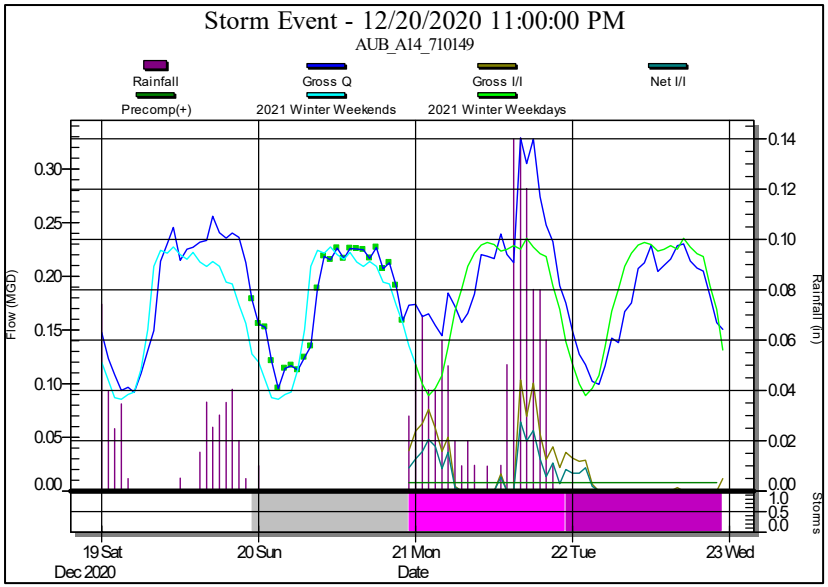

Dry Weather Flow
AUB_A14_710149
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
Hours

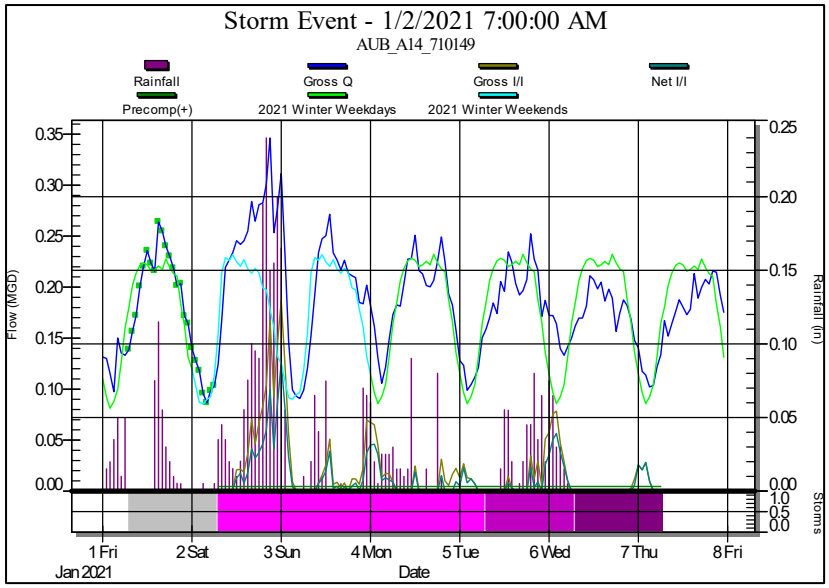

Scatter Graph
AUB_A14_710149
Lanfear-Coll (C-LC = 1.62)
VFINAL (ft/s)
Iso Q (MGD)
DFINAL (in)

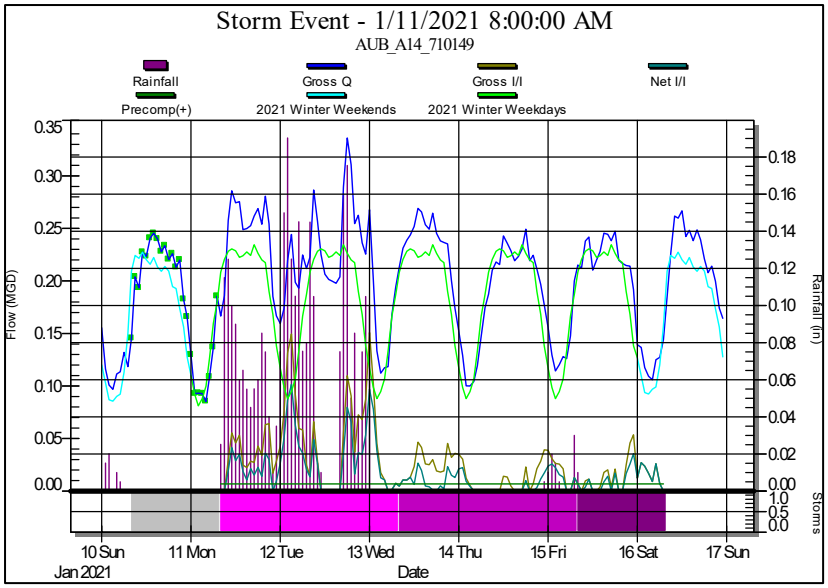

Storm Event - 10/9/2020 9:00:00 PM
AUB_A14_710149
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

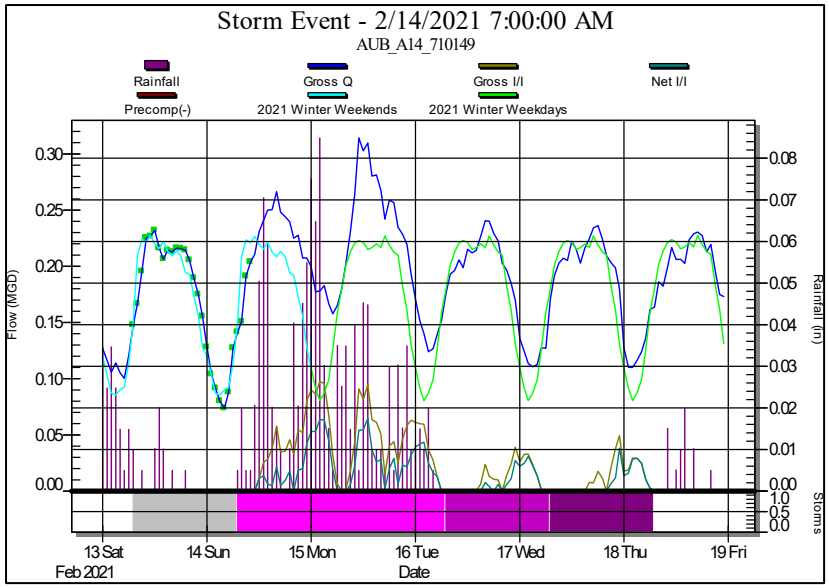

Storm Event - 11/3/2020 7:00:00 AM
AUB_A14_710149
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

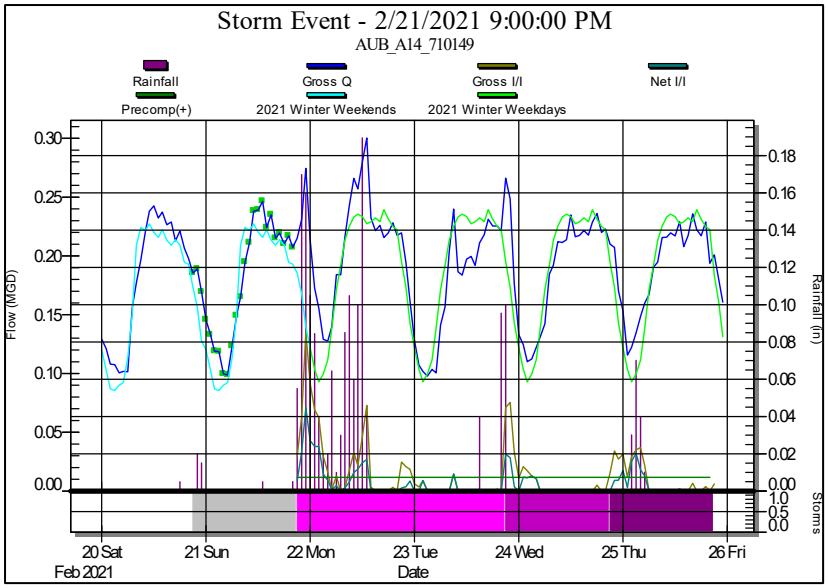

Storm Event - 11/14/2020 3:00:00 PM
AUB_A14_710149
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

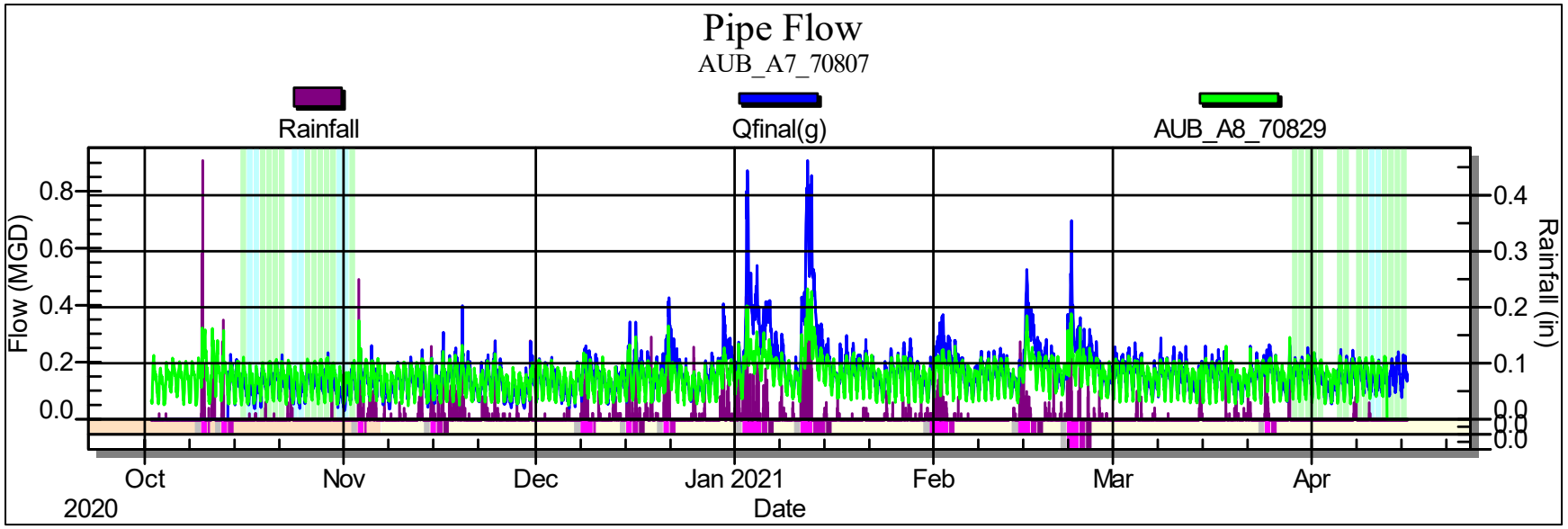

Storm Event - 12/20/2020 11:00:00 PM
AUB_A14_710149
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

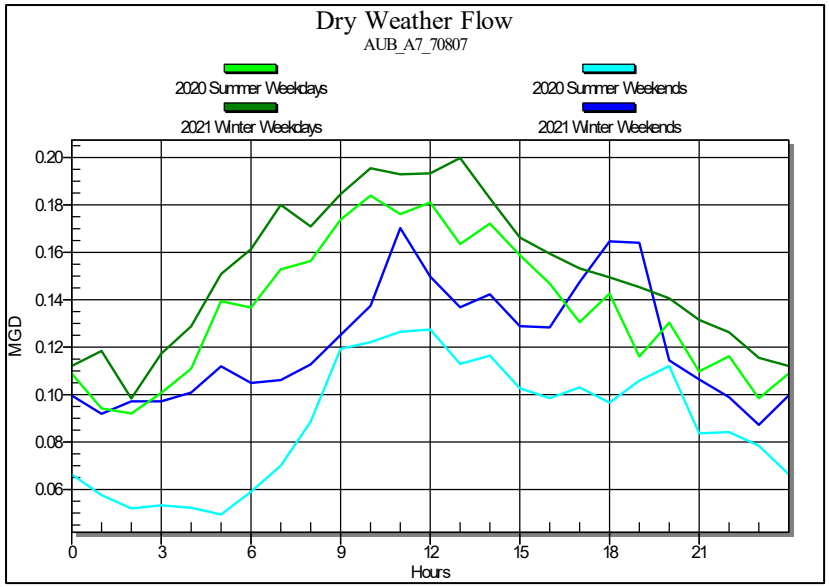

Storm Event - 1/2/2021 7:00:00 AM
AUB_A14_710149
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

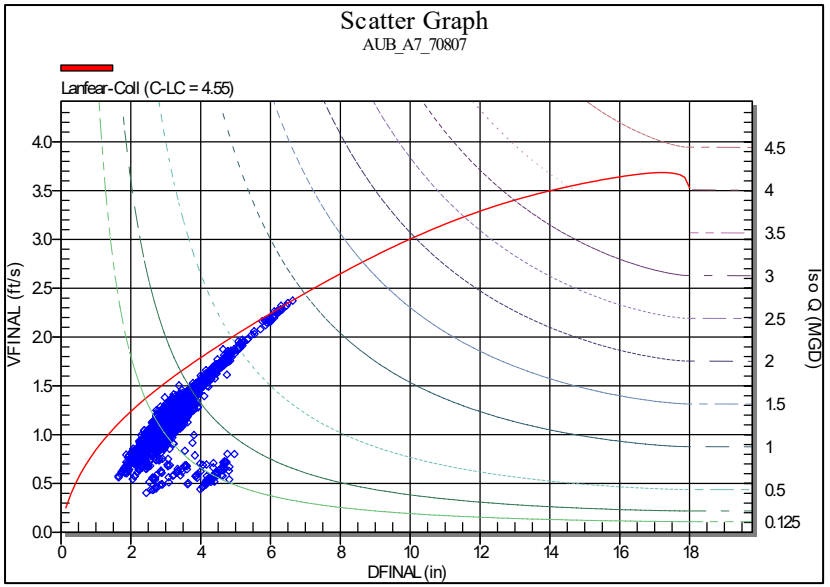

Storm Event - 1/11/2021 8:00:00 AM
AUB_A14_710149
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

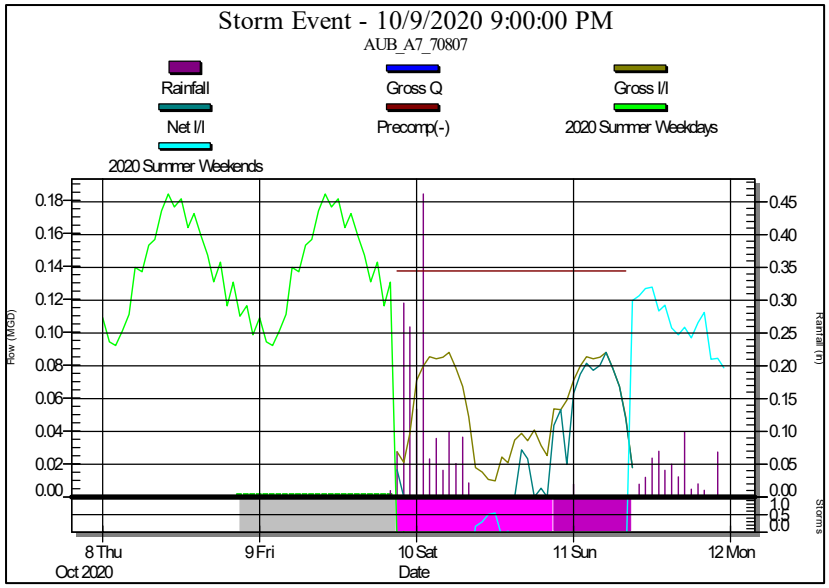

Storm Event - 2/14/2021 7:00:00 AM
AUB_A14_710149
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

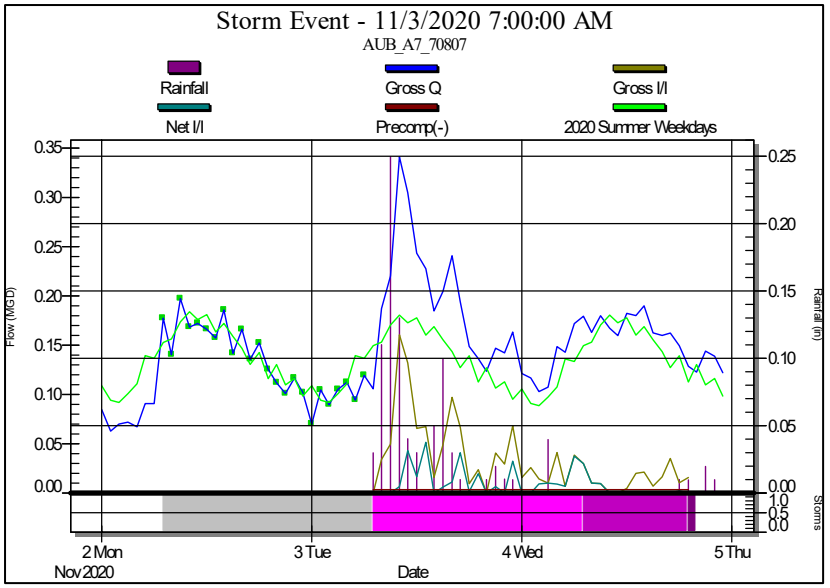

Storm Event - 2/21/2021 9:00:00 PM
AUB_A14_710149
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

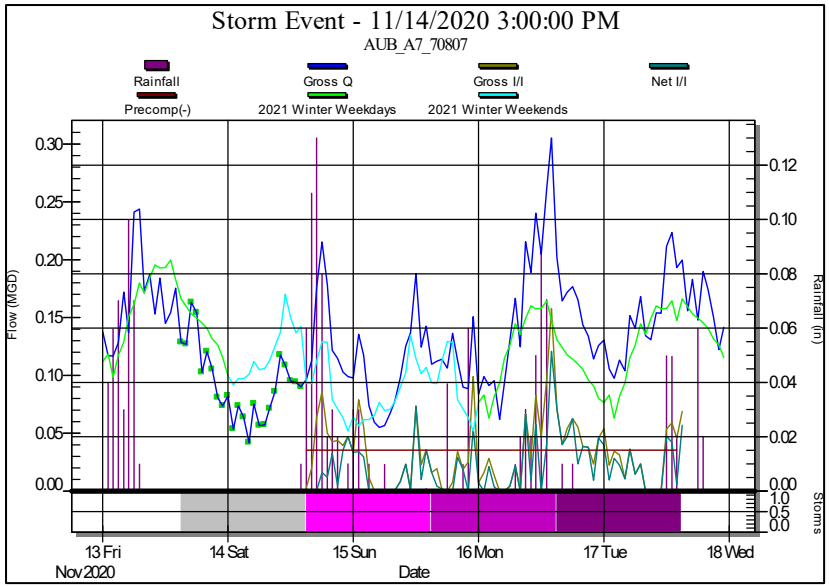

Pipe Flow
AUB_A7_70807
Rainfall
Qfinal(g)
AUB_A8_70829
Flow (MGD)
Rainfall (in)
0.8
0.6
0.4
0.2
0.0
0.4
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

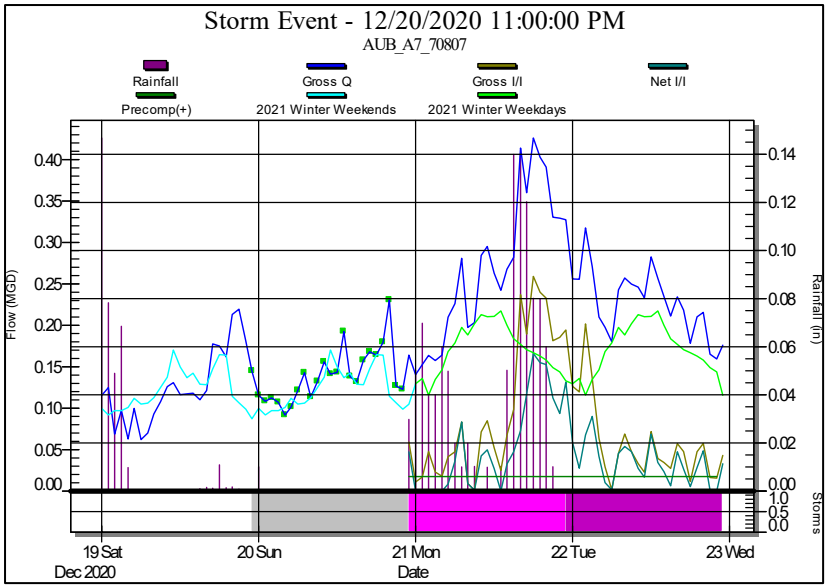

Dry Weather Flow
AUB_A7_70807
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0
3
6
9
12
15
18
21
Hours

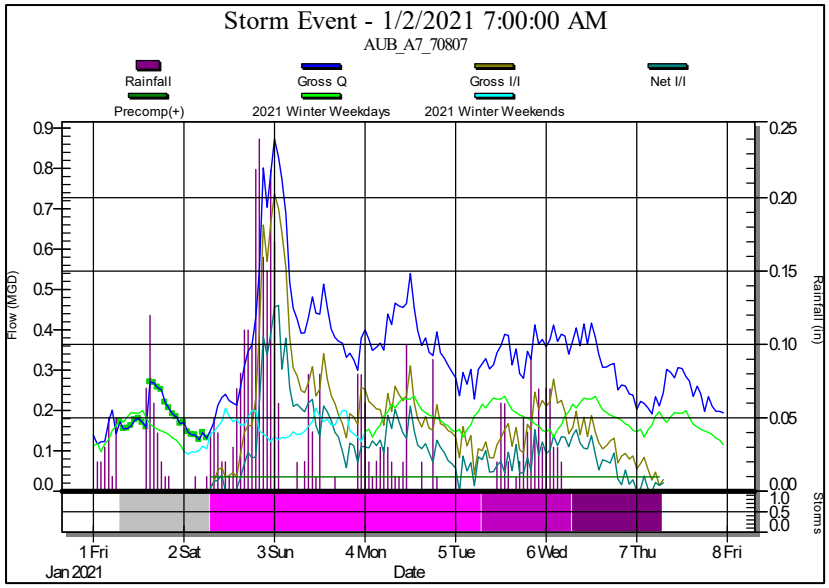

Scatter Graph
AUB_A7_70807
Lanfear-Coll (C-LC = 4.55)
VFINAL (ft/s)
Iso Q (MGD)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0.125
0
2
4
6
8
10
12
14
16
18
DFINAL (in)

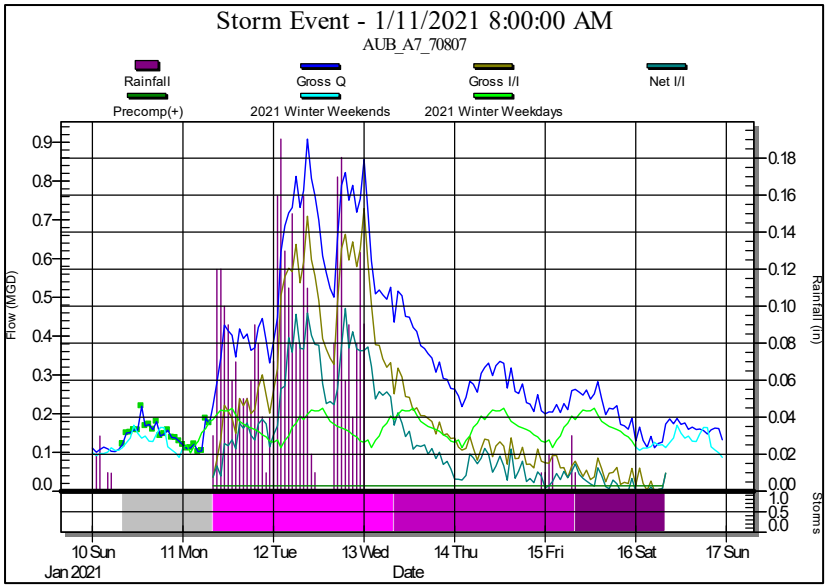

Storm Event - 10/9/2020 9:00:00 PM
AUB_A7_70807
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

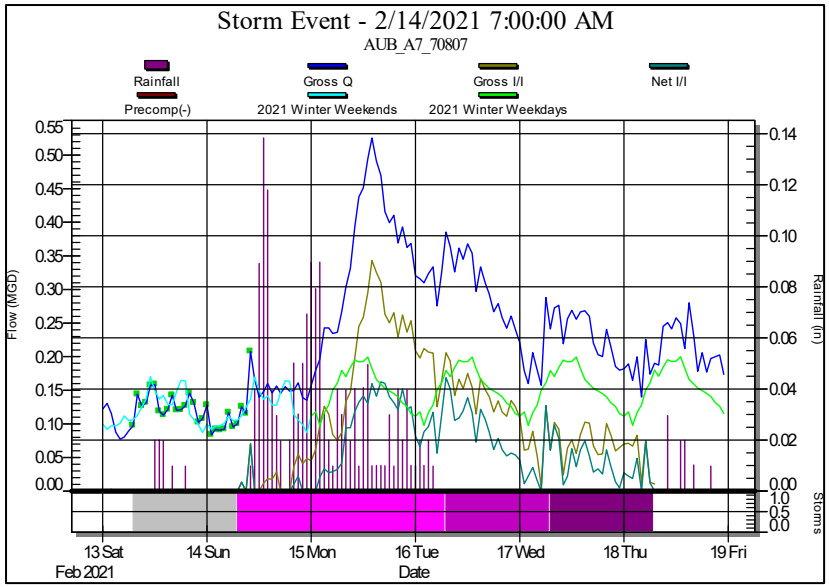

Storm Event - 11/3/2020 7:00:00 AM
AUB_A7_70807
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

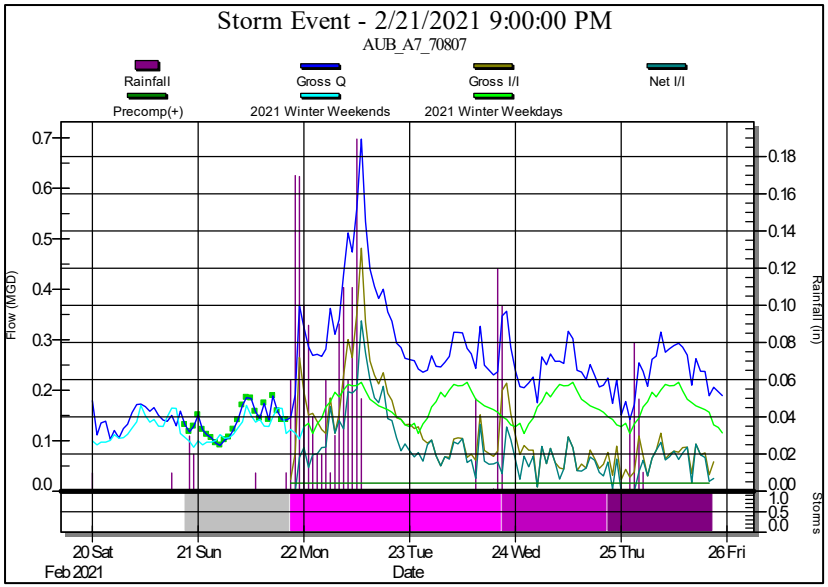

Storm Event - 11/14/2020 3:00:00 PM
AUB_A7_70807
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

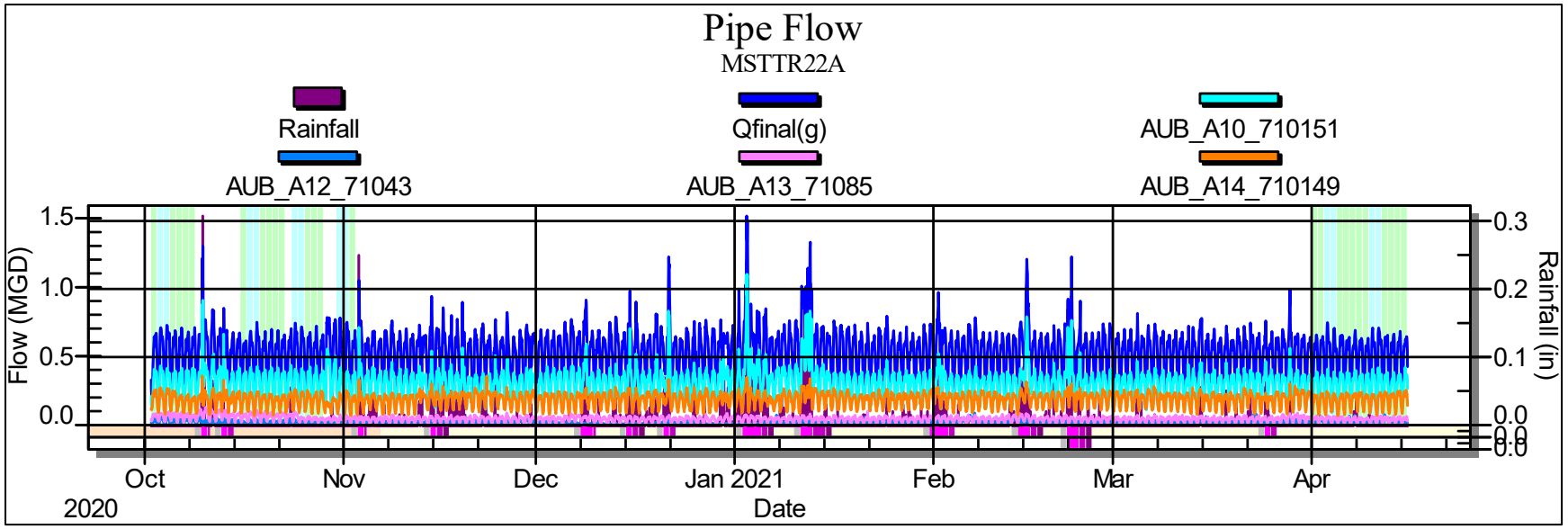

Storm Event - 12/20/2020 11:00:00 PM
AUB_A7_70807
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

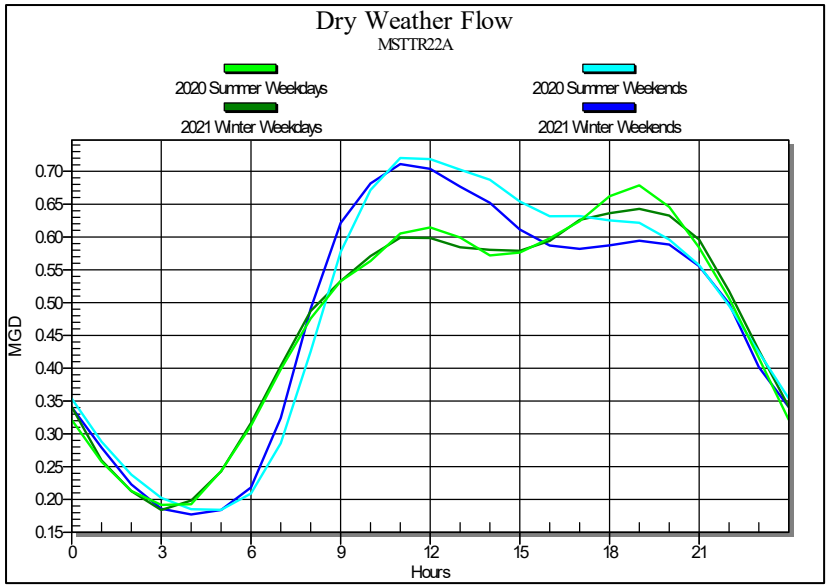

Storm Event - 1/2/2021 7:00:00 AM
AUB_A7_70807
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
Jan 2021
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Date

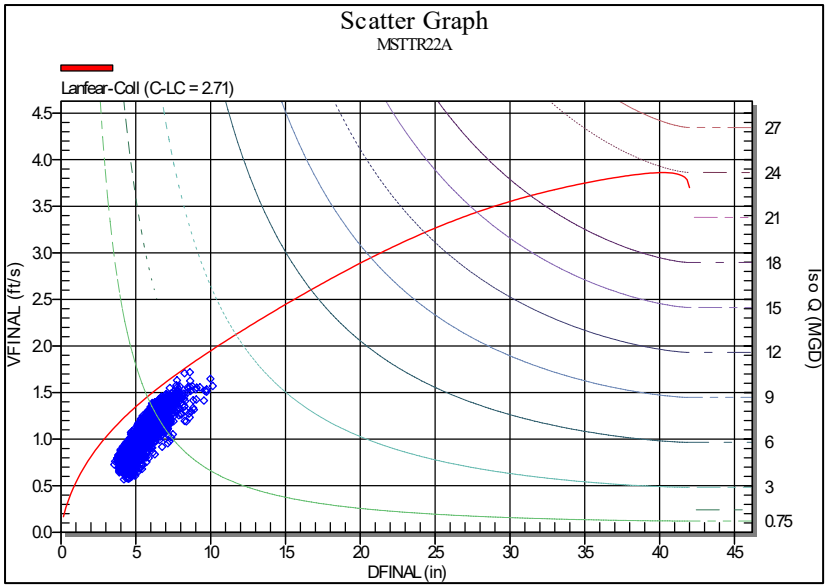

Storm Event - 1/11/2021 8:00:00 AM
AUB_A7_70807
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
Jan 2021
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Date

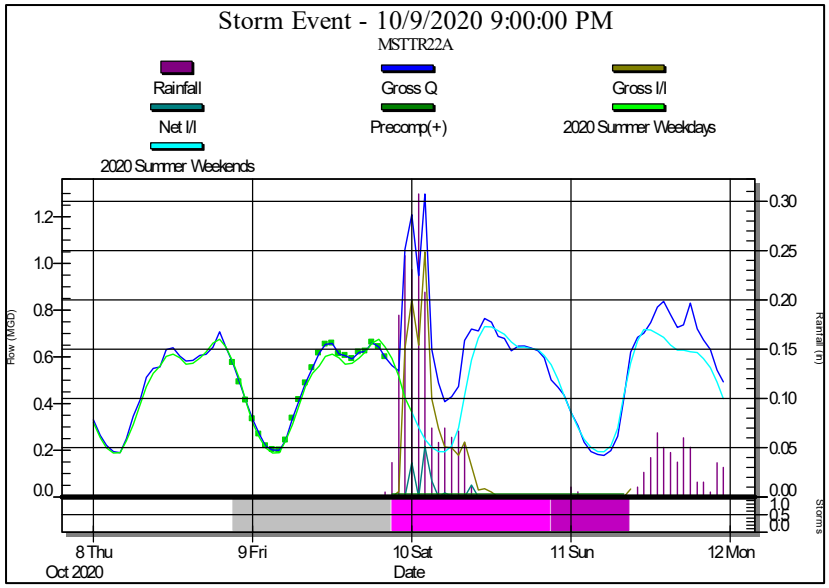

Storm Event - 2/14/2021 7:00:00 AM
AUB_A7_70807
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
Feb 2021
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Date

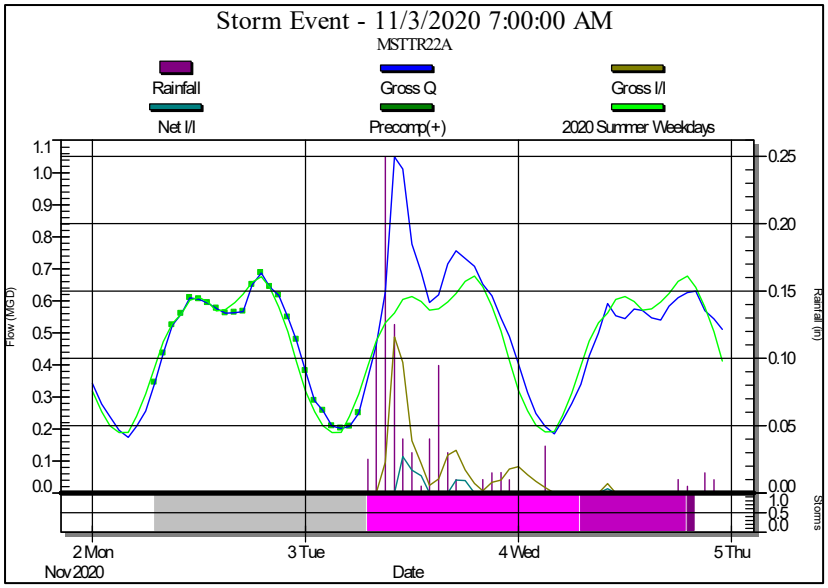

Storm Event - 2/21/2021 9:00:00 PM
AUB_A7_70807
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
Feb 2021
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Date

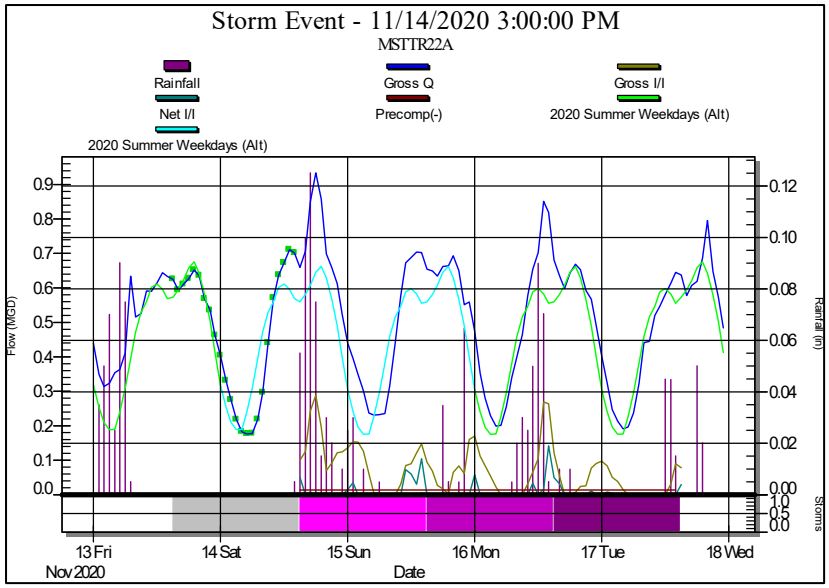

Pipe Flow
MSTTR22A
Rainfall
Qfinal(g)
AUB_A10_710151
AUB_A12_71043
AUB_A13_71085
AUB_A14_710149
Flow (MGD)
Rainfall (in)
1.5
1.0
0.5
0.0
0.3
0.2
0.1
0.0
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

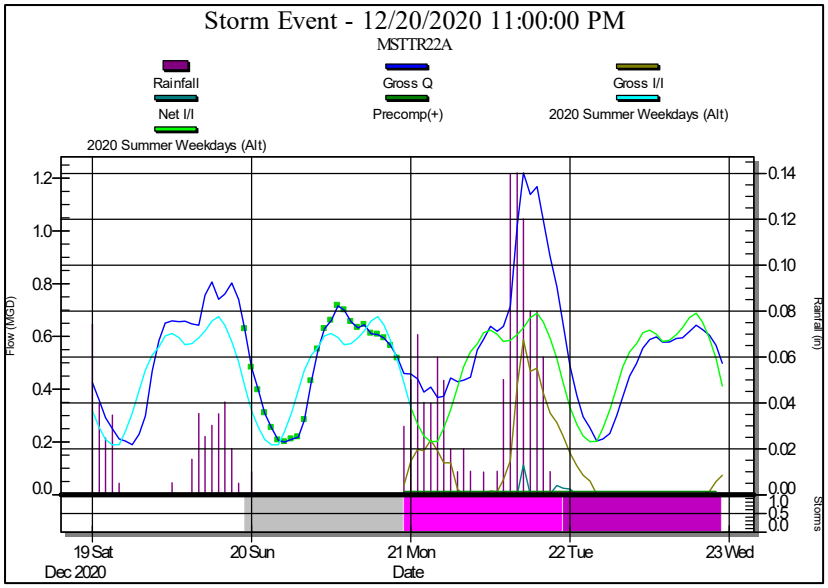

Dry Weather Flow
MSTTR22A
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
Hours

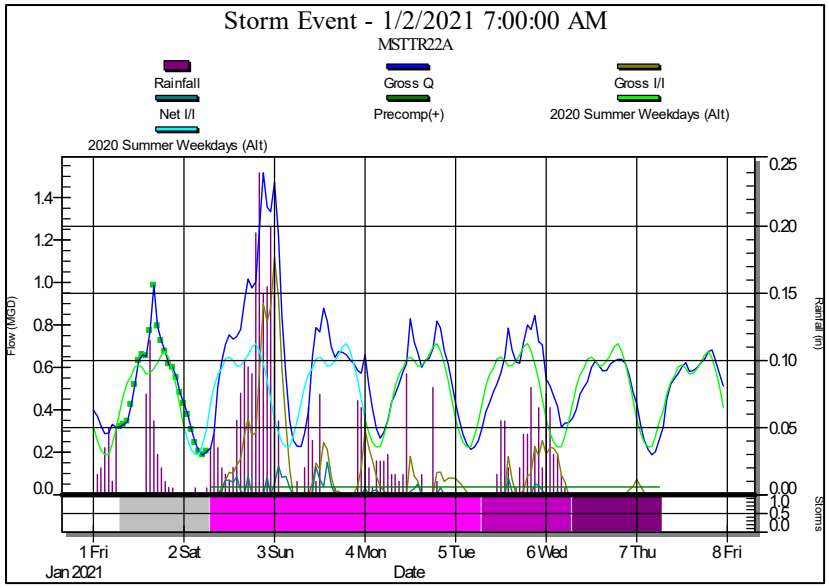

Scatter Graph
MSTTR22A
Lanfear-Coll (C-LC = 2.71)
VFINAL (ft/s)
DFINAL (in)
Iso Q (MGD)

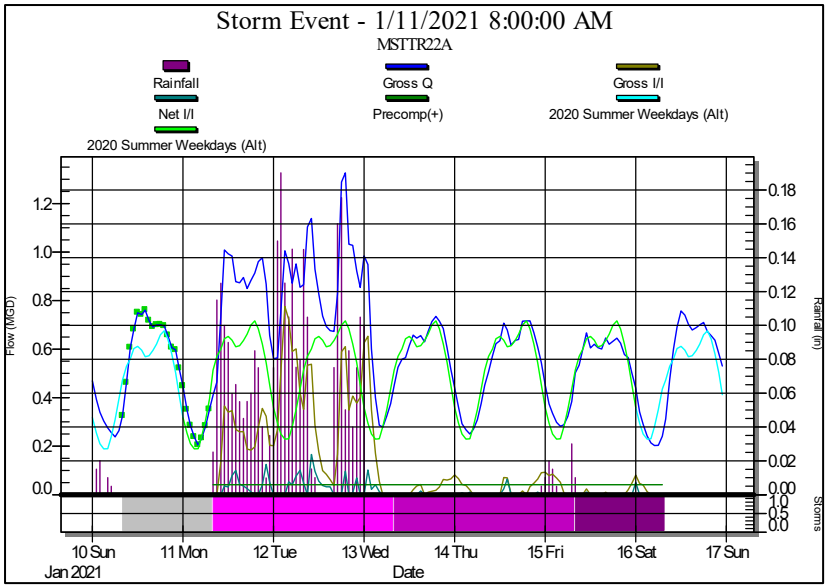

Storm Event - 10/9/2020 9:00:00 PM
MSTTR22A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
9 Fri
10 Sat
11 Sun
12 Mon
Oct 2020
Date

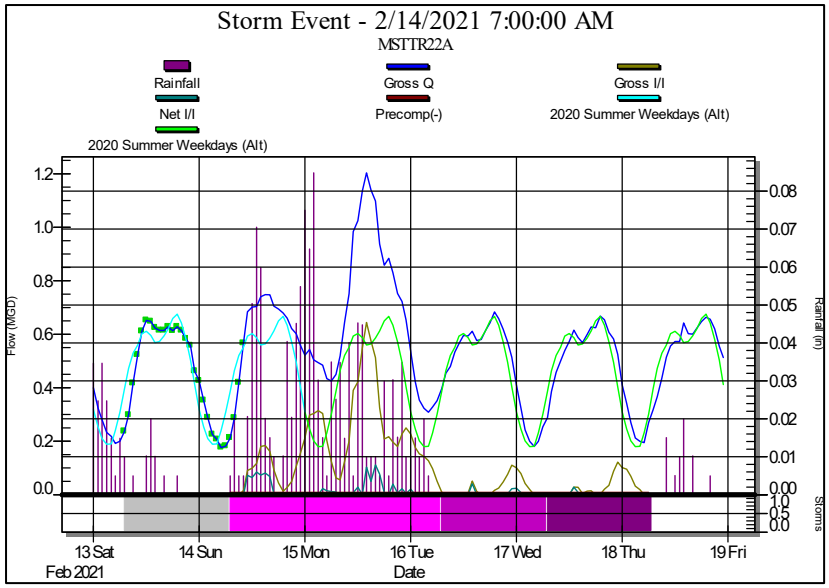

Storm Event - 11/3/2020 7:00:00 AM
MSTTR22A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
3 Tue
4 Wed
5 Thu
Nov 2020
Date

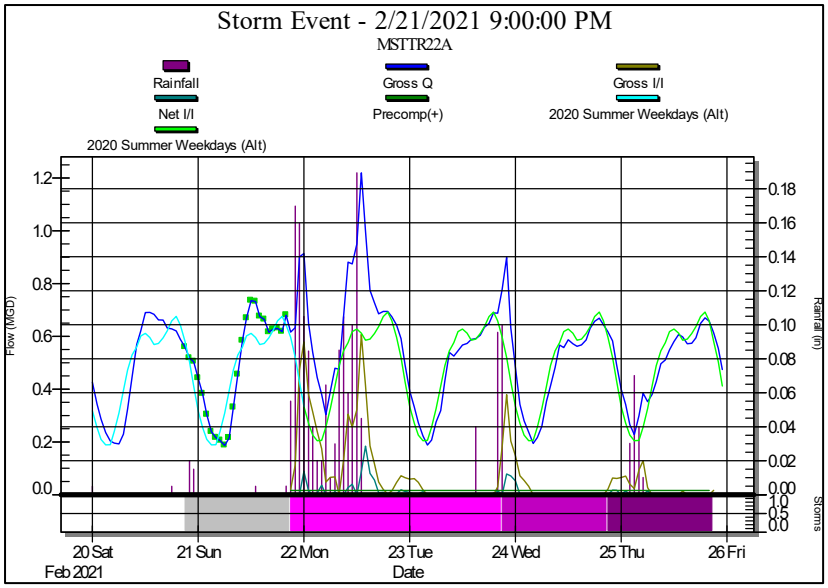

Storm Event - 11/14/2020 3:00:00 PM
MSTTR22A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays (Alt)
Flow (MGD)
Rainfall (in)
Storms
13 Fri
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Nov 2020
Date

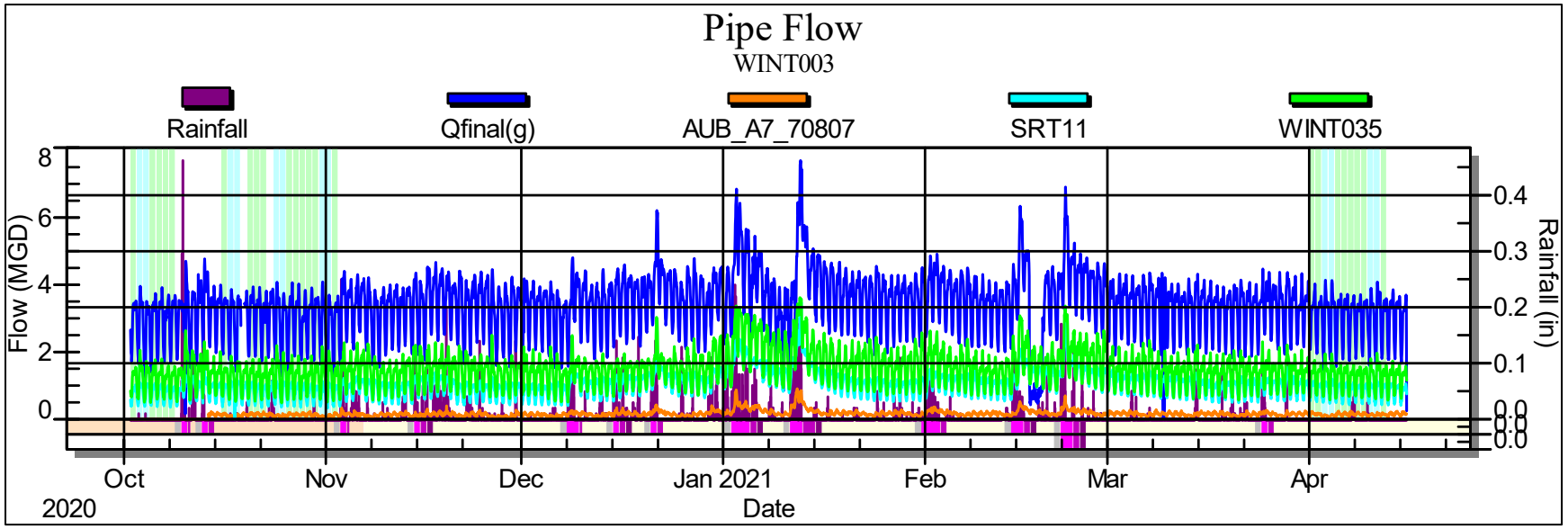

Storm Event - 12/20/2020 11:00:00 PM
MSTTR22A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2020 Summer Weekdays (Alt)
Flow (MGD)
Rainfall (in)
Storms
19 Sat
20 Sun
21 Mon
22 Tue
23 Wed
Dec 2020
Date

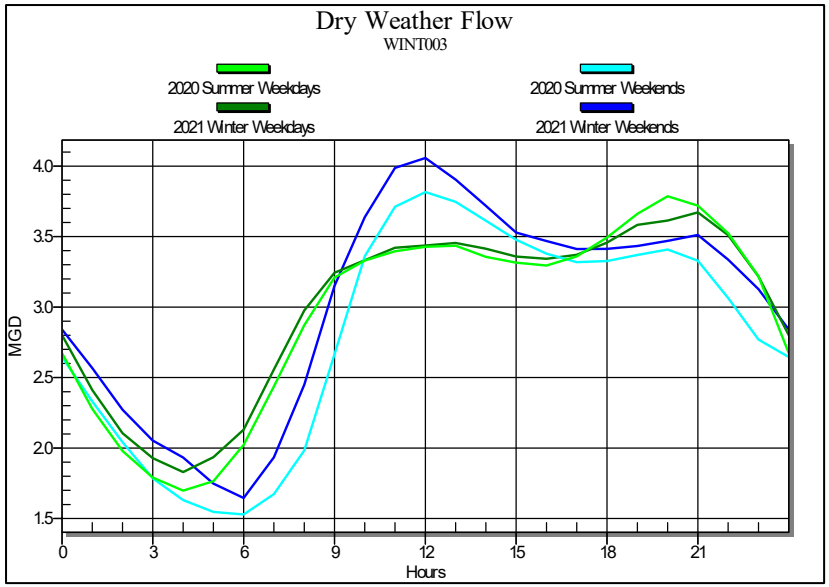

Storm Event - 1/2/2021 7:00:00 AM
MSTTR22A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2020 Summer Weekdays (Alt)
2020 Summer Weekdays (Alt)
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

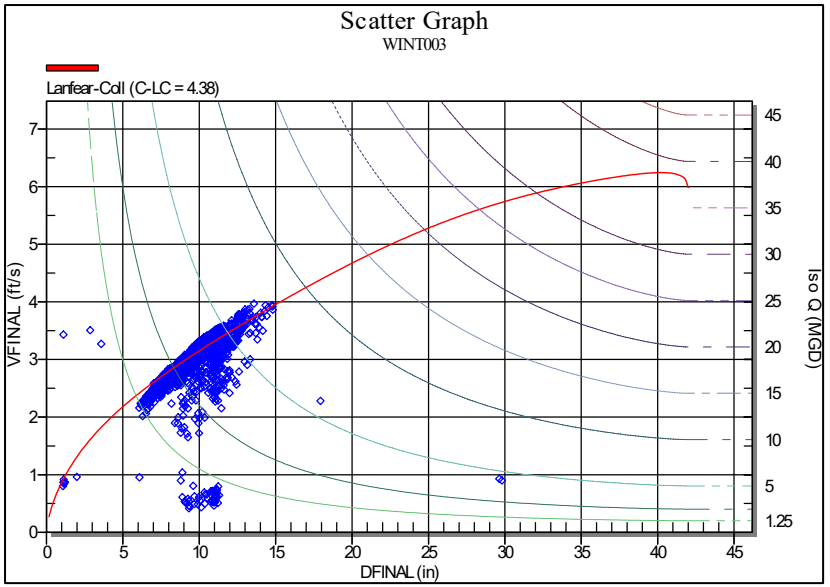

Storm Event - 1/11/2021 8:00:00 AM
MSTTR22A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2020 Summer Weekdays (Alt)
2020 Summer Weekdays (Alt)
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

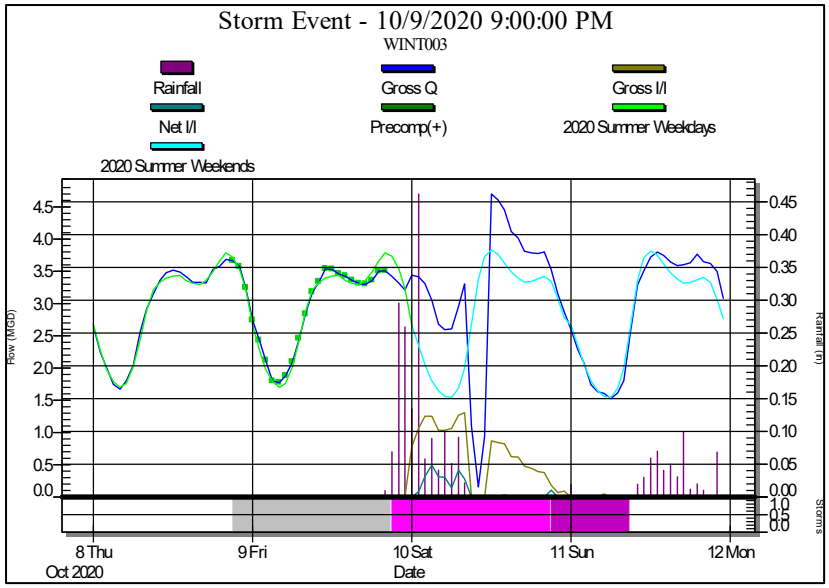

Storm Event - 2/14/2021 7:00:00 AM
MSTTR22A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays (Alt)
2020 Summer Weekdays (Alt)
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

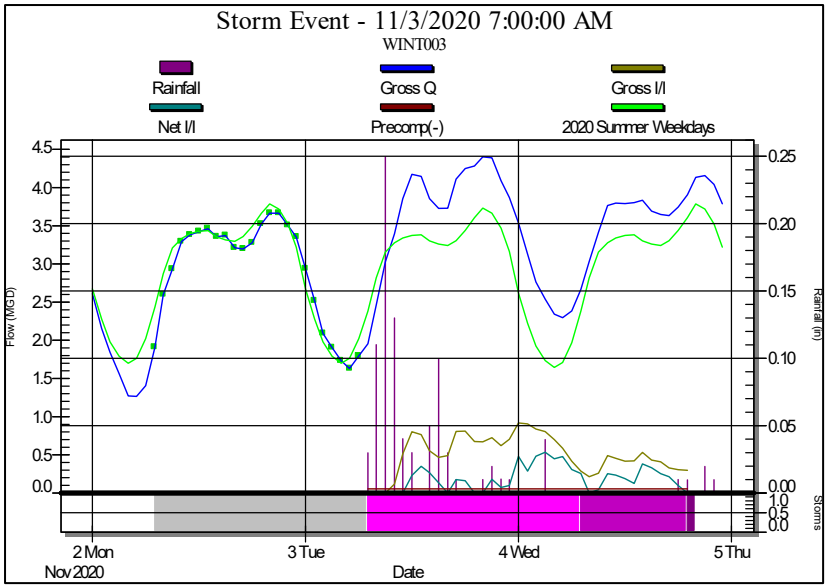

Storm Event - 2/21/2021 9:00:00 PM
MSTTR22A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2020 Summer Weekdays (Alt)
2020 Summer Weekdays (Alt)
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

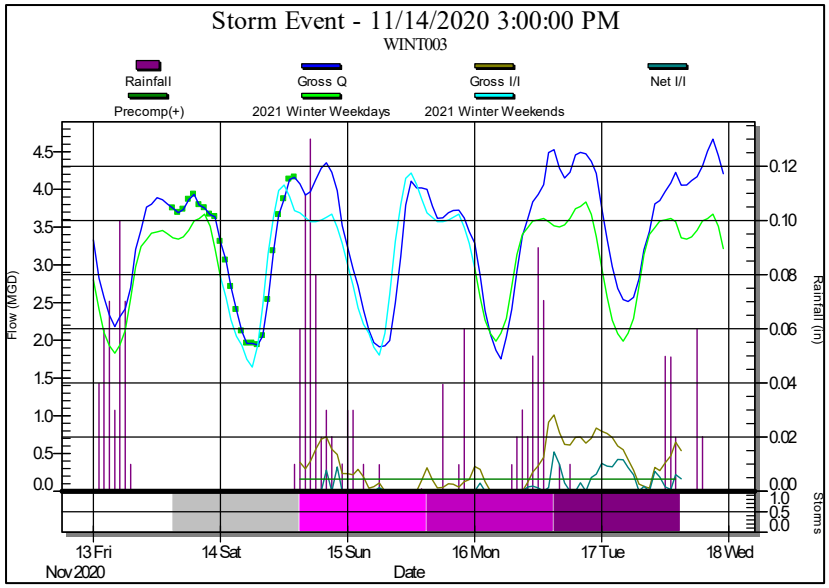

Pipe Flow
WINT003
Rainfall
Qfinal(g)
AUB_A7_70807
SRT11
WINT035
Flow (MGD)
Rainfall (in)
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

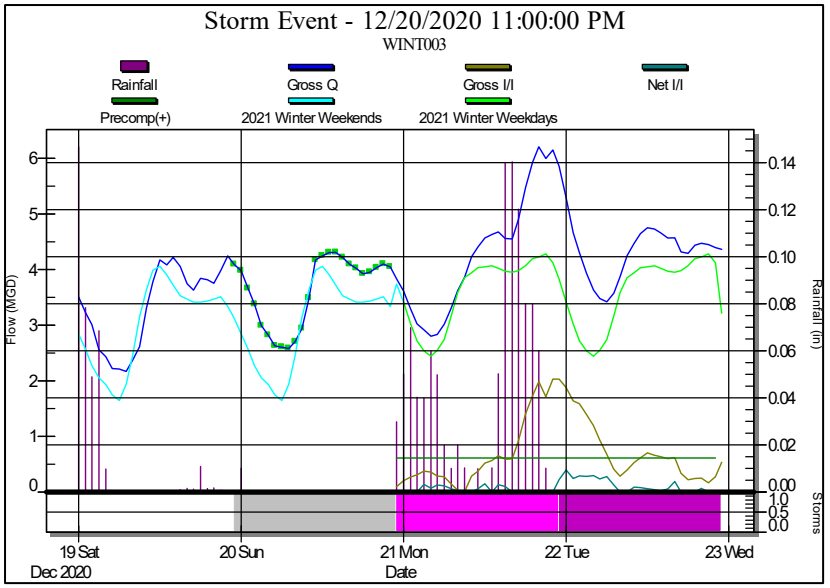

Dry Weather Flow
WINT003
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
Hours

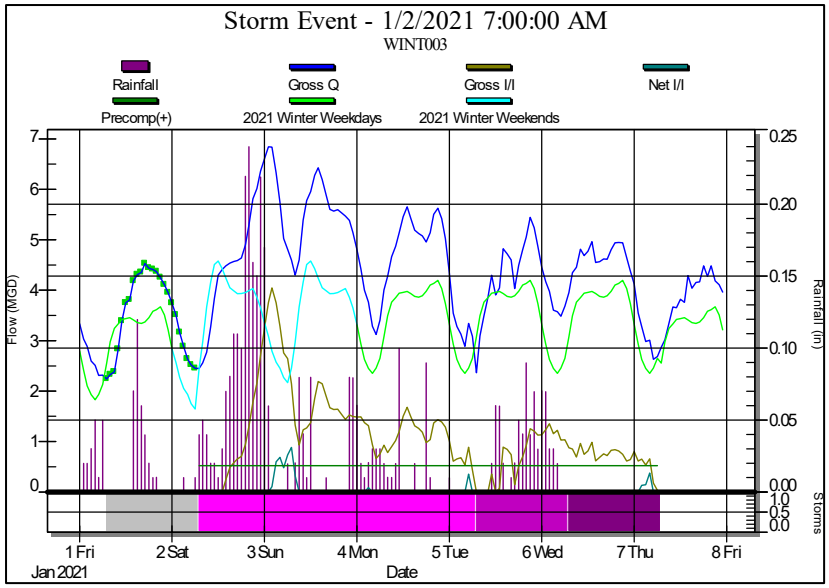

Scatter Graph
WINT003
Lanfear-Coll (C-LC = 4.38)
VFINAL (ft/s)
DFINAL (in)
Iso Q (MGD)

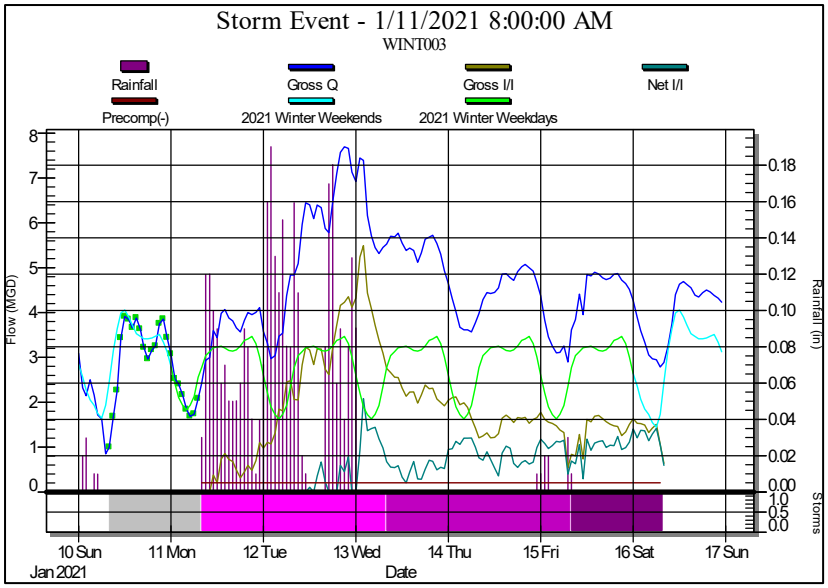

Storm Event - 10/9/2020 9:00:00 PM
WINT003
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
Oct 2020
9 Fri
10 Sat
11 Sun
12 Mon
Date

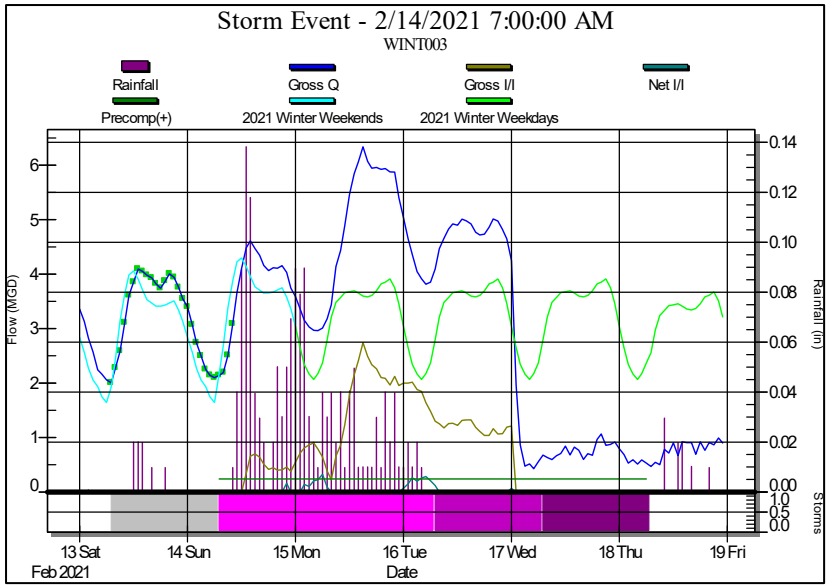

Storm Event - 11/3/2020 7:00:00 AM
WINT003
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
Nov 2020
3 Tue
4 Wed
5 Thu
Date

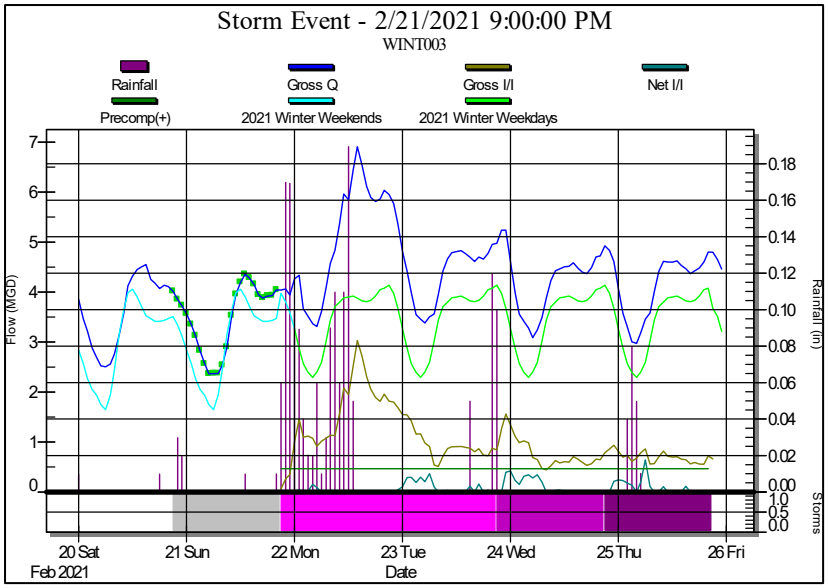

Storm Event - 11/14/2020 3:00:00 PM
WINT003
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
Nov 2020
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Date

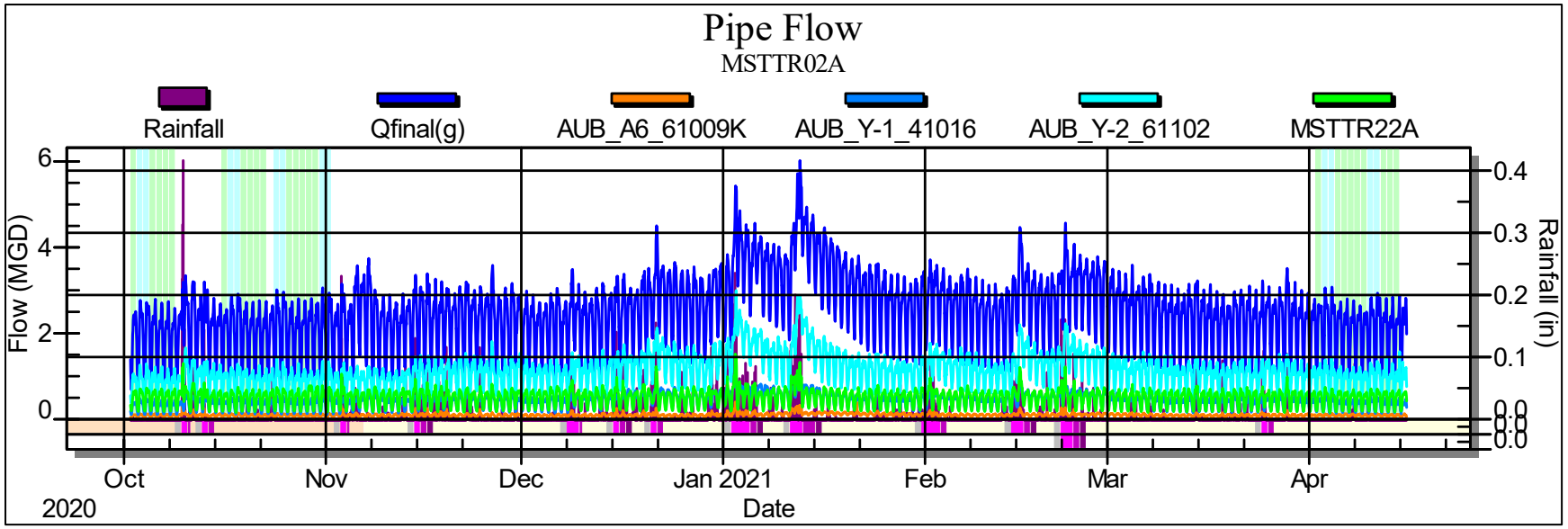

Storm Event - 12/20/2020 11:00:00 PM
WINT003
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
Dec 2020
20 Sun
21 Mon
22 Tue
23 Wed
Date

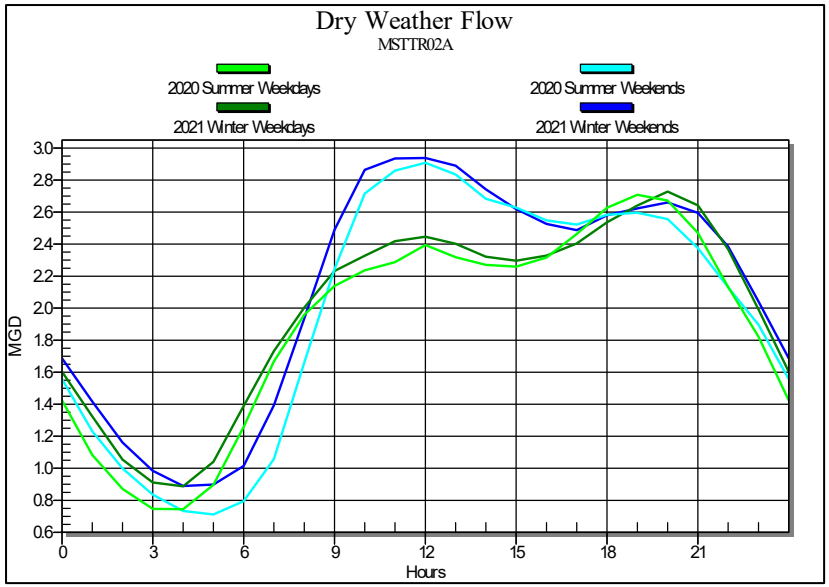

Storm Event - 1/2/2021 7:00:00 AM
WINT003
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

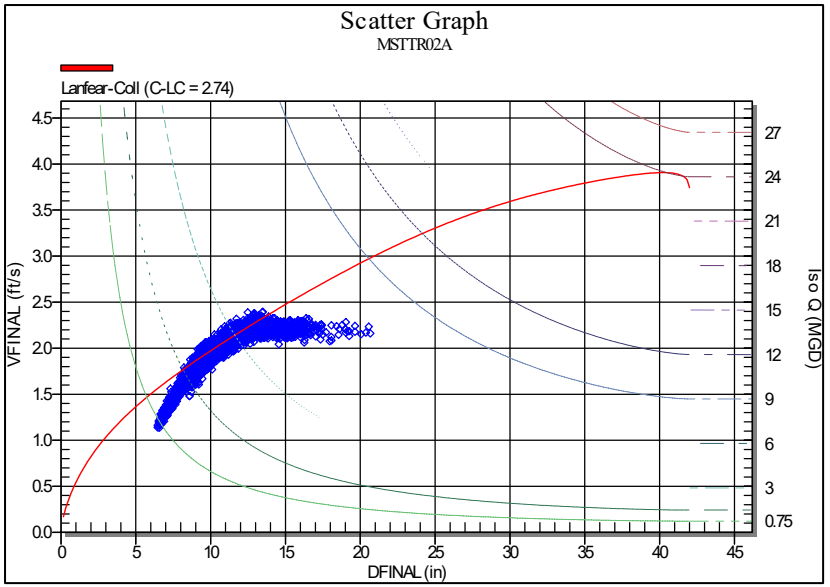

Storm Event - 1/11/2021 8:00:00 AM
WINT003
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

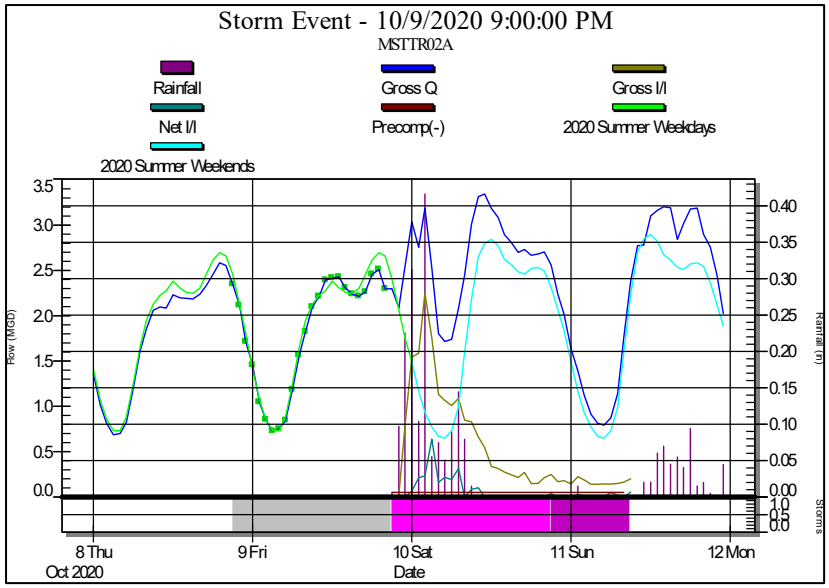

Storm Event - 2/14/2021 7:00:00 AM
WINT003
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

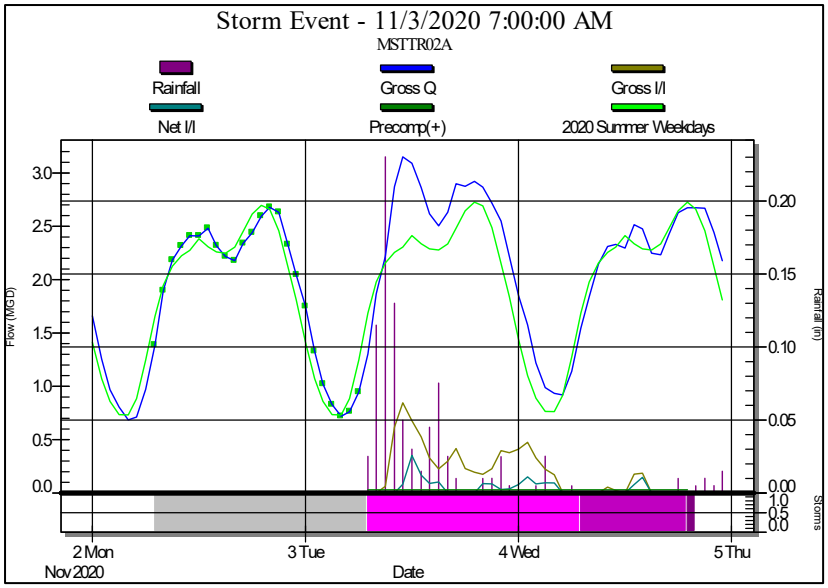

Storm Event - 2/21/2021 9:00:00 PM
WINT003
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

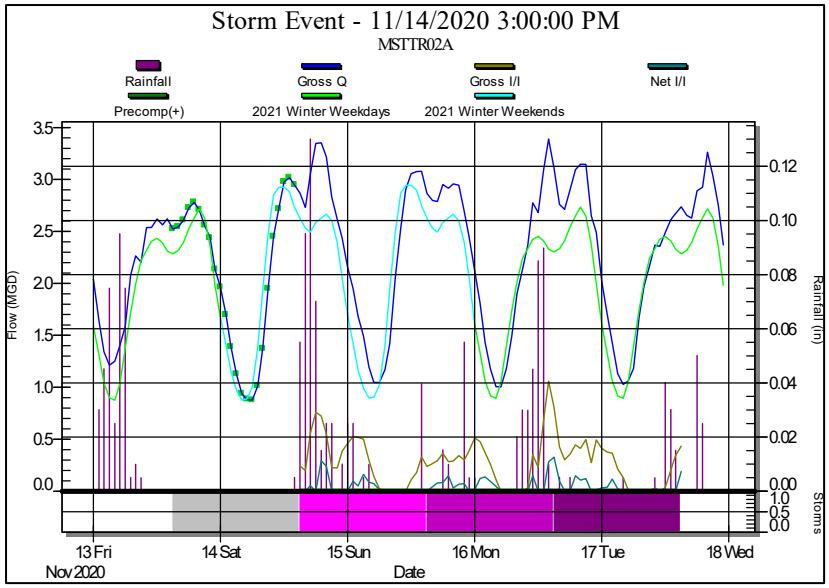

Pipe Flow
MSTTR02A
Rainfall
Qfinal(g)
AUB_A6_61009K
AUB_Y-1_41016
AUB_Y-2_61102
MSTTR22A
Flow (MGD)
Rainfall (in)
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

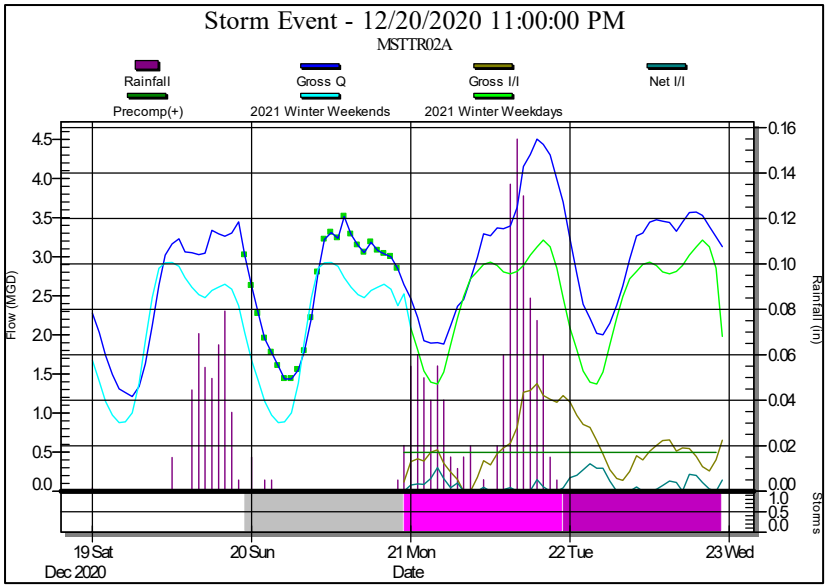

Dry Weather Flow
MSTTR02A
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
Hours

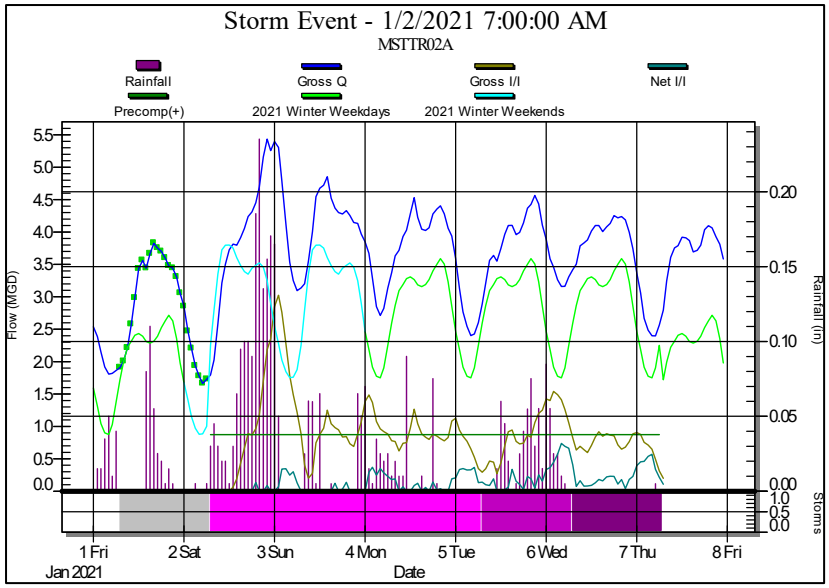

Scatter Graph
MSTTR02A
Lanfear-Coll (C-LC = 2.74)
VFINAL (ft/s)
Iso Q (MGD)
DFINAL (in)

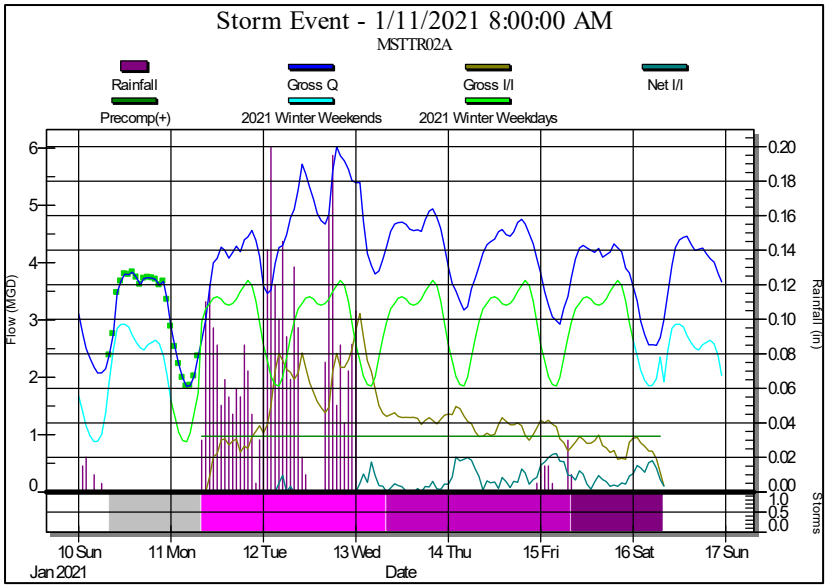

Storm Event - 10/9/2020 9:00:00 PM
MSTTR02A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
9 Fri
10 Sat
11 Sun
12 Mon
Oct 2020
Date

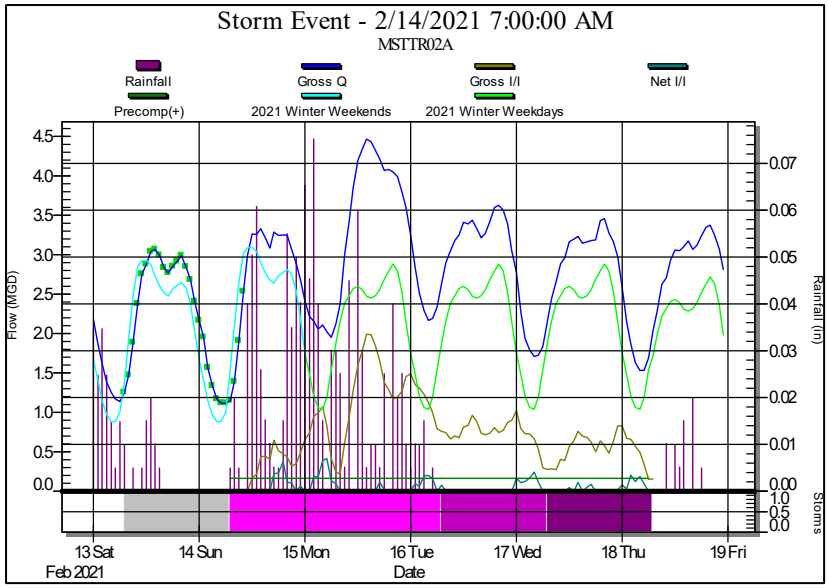

Storm Event - 11/3/2020 7:00:00 AM
MSTTR02A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
3 Tue
4 Wed
5 Thu
Nov 2020
Date

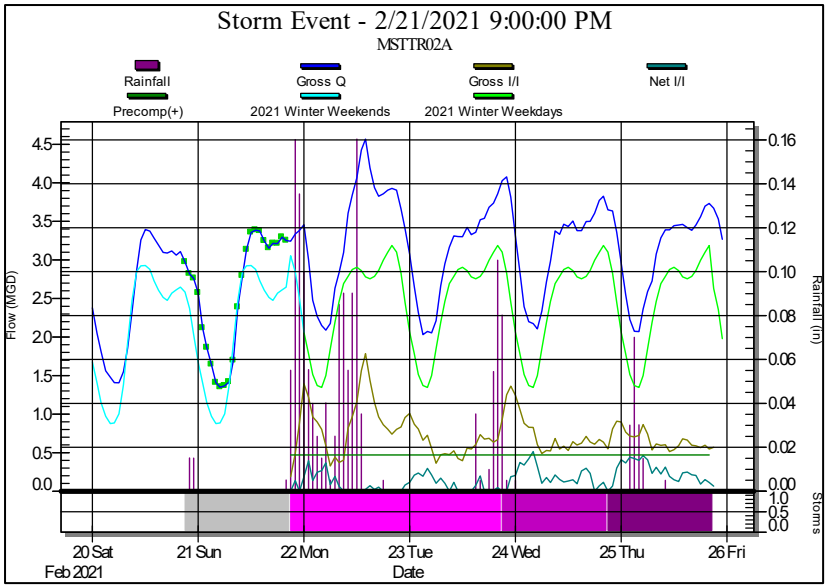

Storm Event - 11/14/2020 3:00:00 PM
MSTTR02A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Nov 2020
Date

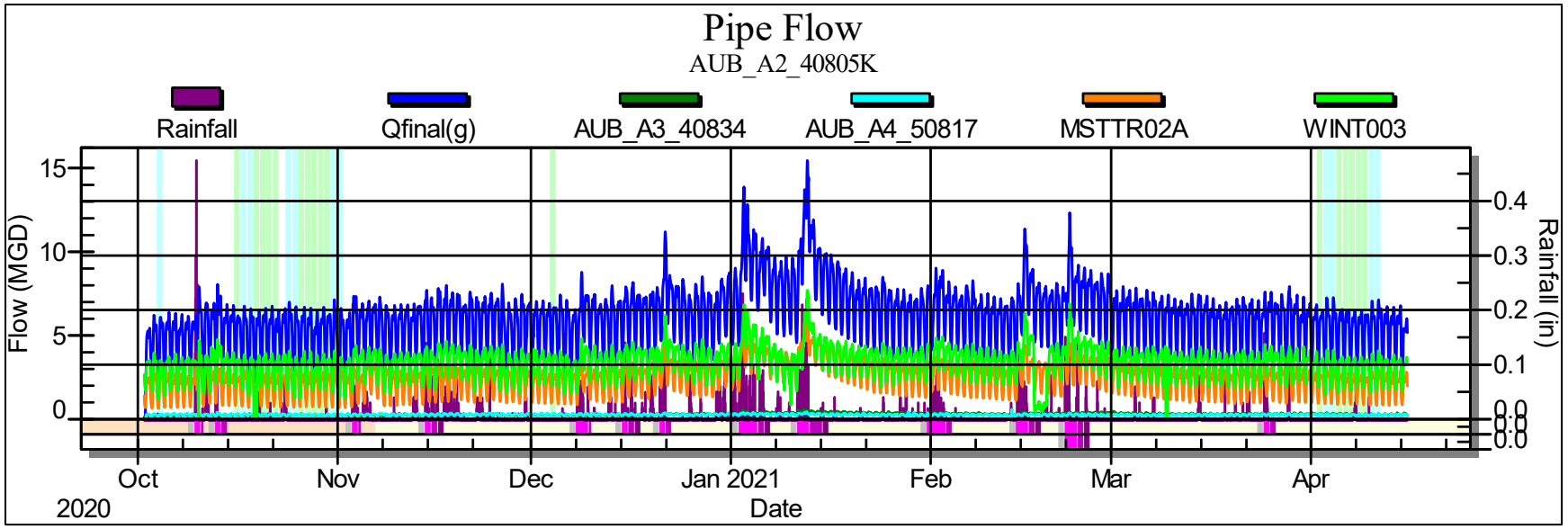

Storm Event - 12/20/2020 11:00:00 PM
MSTTR02A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
20 Sun
21 Mon
22 Tue
23 Wed
Dec 2020
Date

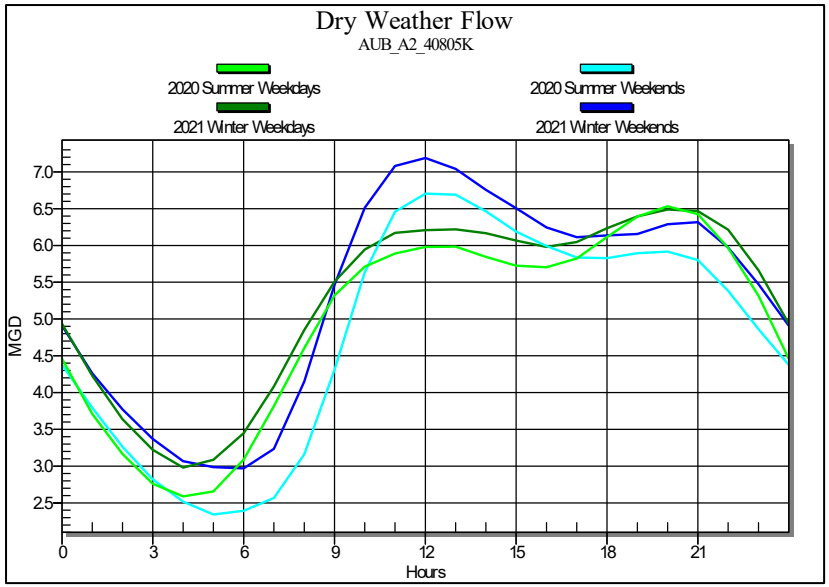

Storm Event - 1/2/2021 7:00:00 AM
MSTTR02A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

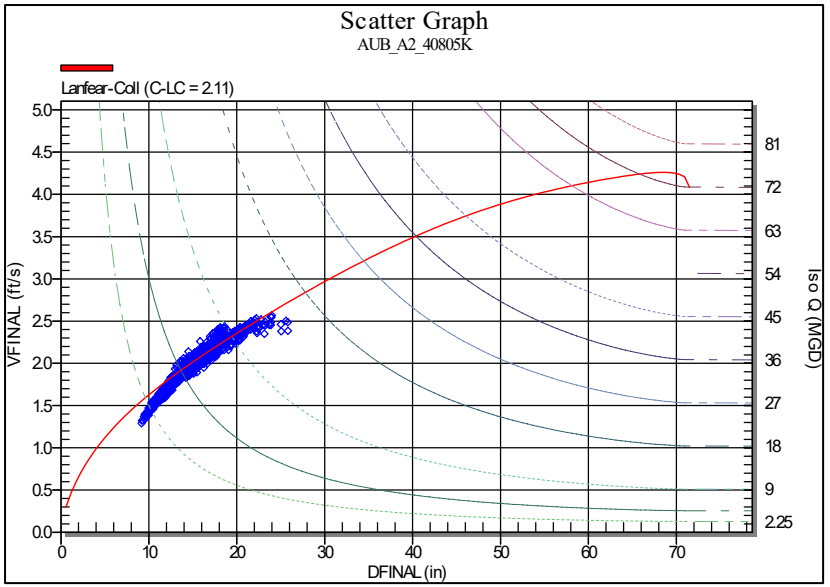

Storm Event - 1/11/2021 8:00:00 AM
MSTTR02A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

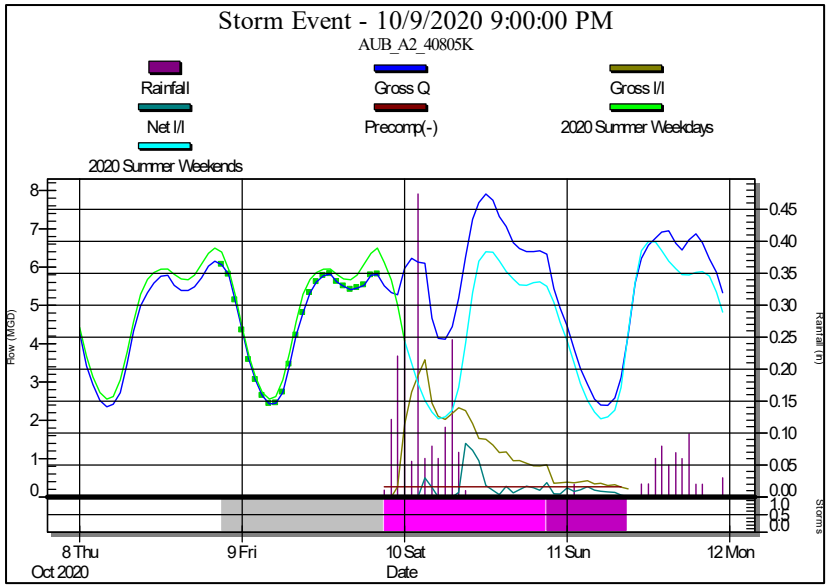

Storm Event - 2/14/2021 7:00:00 AM
MSTTR02A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

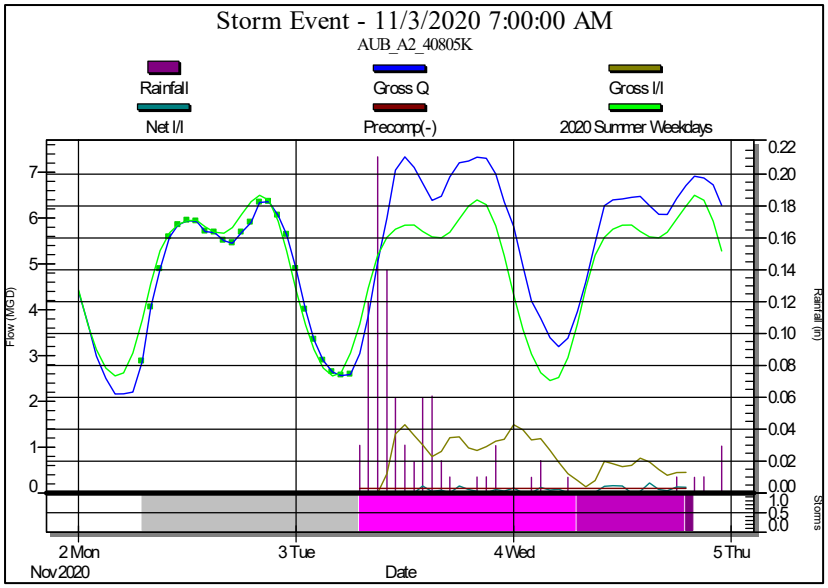

Storm Event - 2/21/2021 9:00:00 PM
MSTTR02A
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

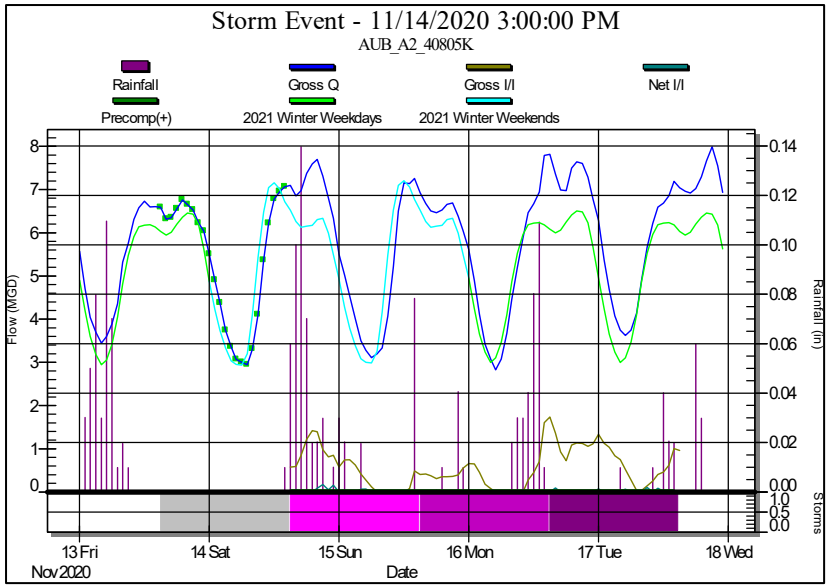

Pipe Flow
AUB_A2_40805K
Rainfall
Qfinal(g)
AUB_A3_40834
AUB_A4_50817
MSTTR02A
WINT003
Flow (MGD)
Rainfall (in)
Oct
2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
Date

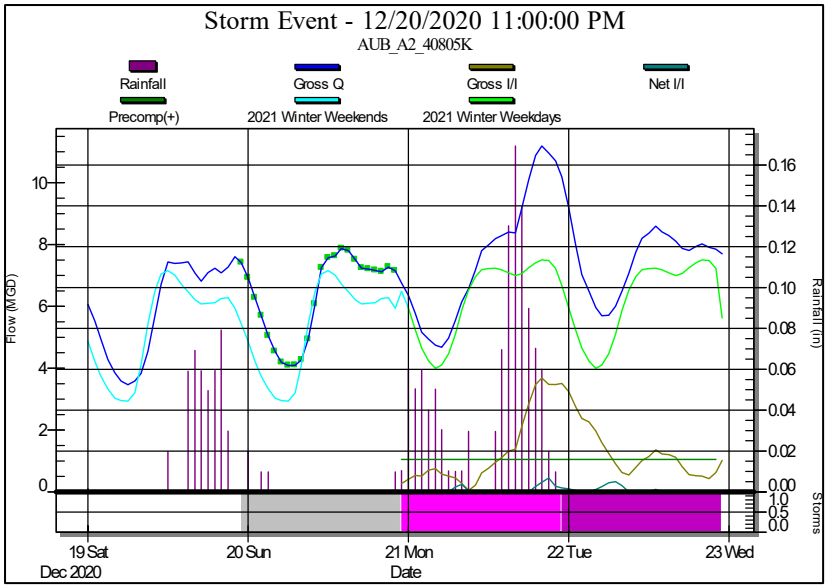

Dry Weather Flow
AUB_A2_40805K
2020 Summer Weekdays
2020 Summer Weekends
2021 Winter Weekdays
2021 Winter Weekends
MGD
Hours

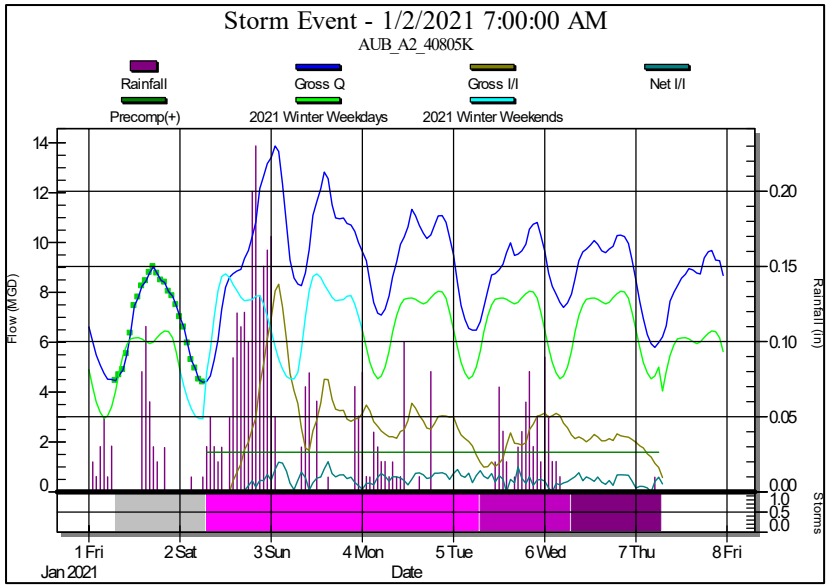

Scatter Graph
AUB_A2_40805K
Lanfear-Coll (C-LC = 2.11)
VFINAL (ft/s)
Iso Q (MGD)
DFINAL (in)

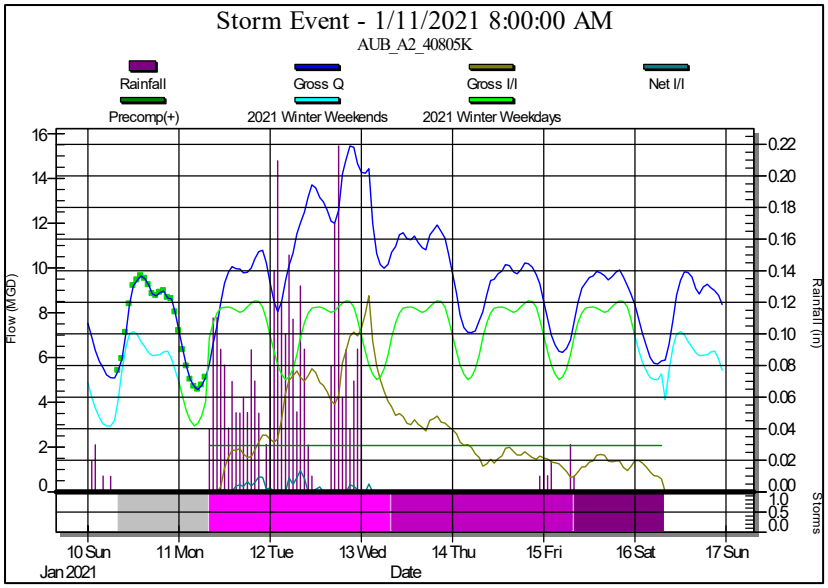

Storm Event - 10/9/2020 9:00:00 PM
AUB_A2_40805K
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
2020 Summer Weekends
Flow (MGD)
Rainfall (in)
Storms
8 Thu
9 Fri
10 Sat
11 Sun
12 Mon
Oct 2020
Date

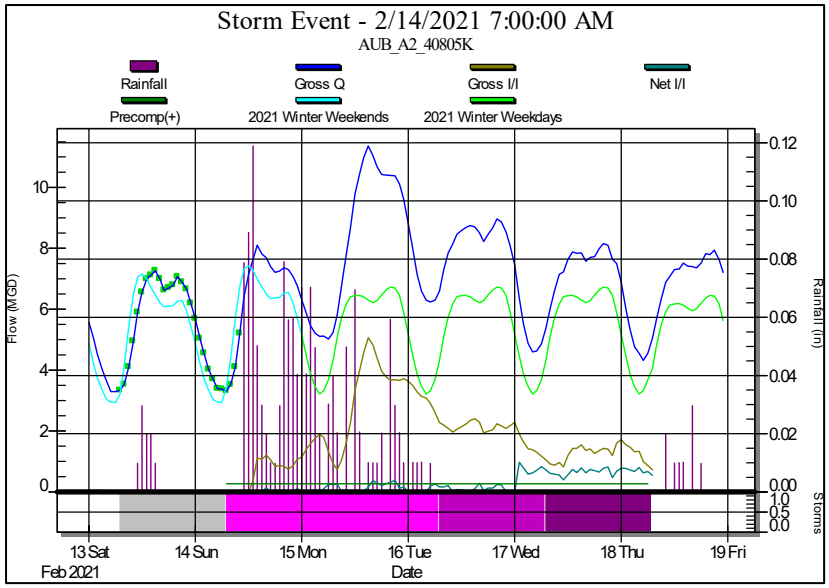

Storm Event - 11/3/2020 7:00:00 AM
AUB_A2_40805K
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(-)
2020 Summer Weekdays
Flow (MGD)
Rainfall (in)
Storms
2 Mon
3 Tue
4 Wed
5 Thu
Nov 2020
Date

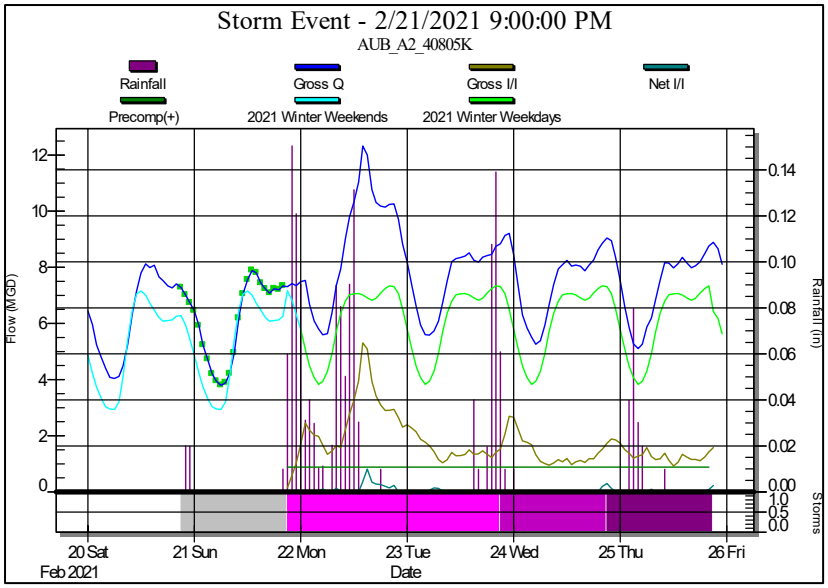

Storm Event - 11/14/2020 3:00:00 PM
AUB_A2_40805K
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
13 Fri
14 Sat
15 Sun
16 Mon
17 Tue
18 Wed
Nov 2020
Date

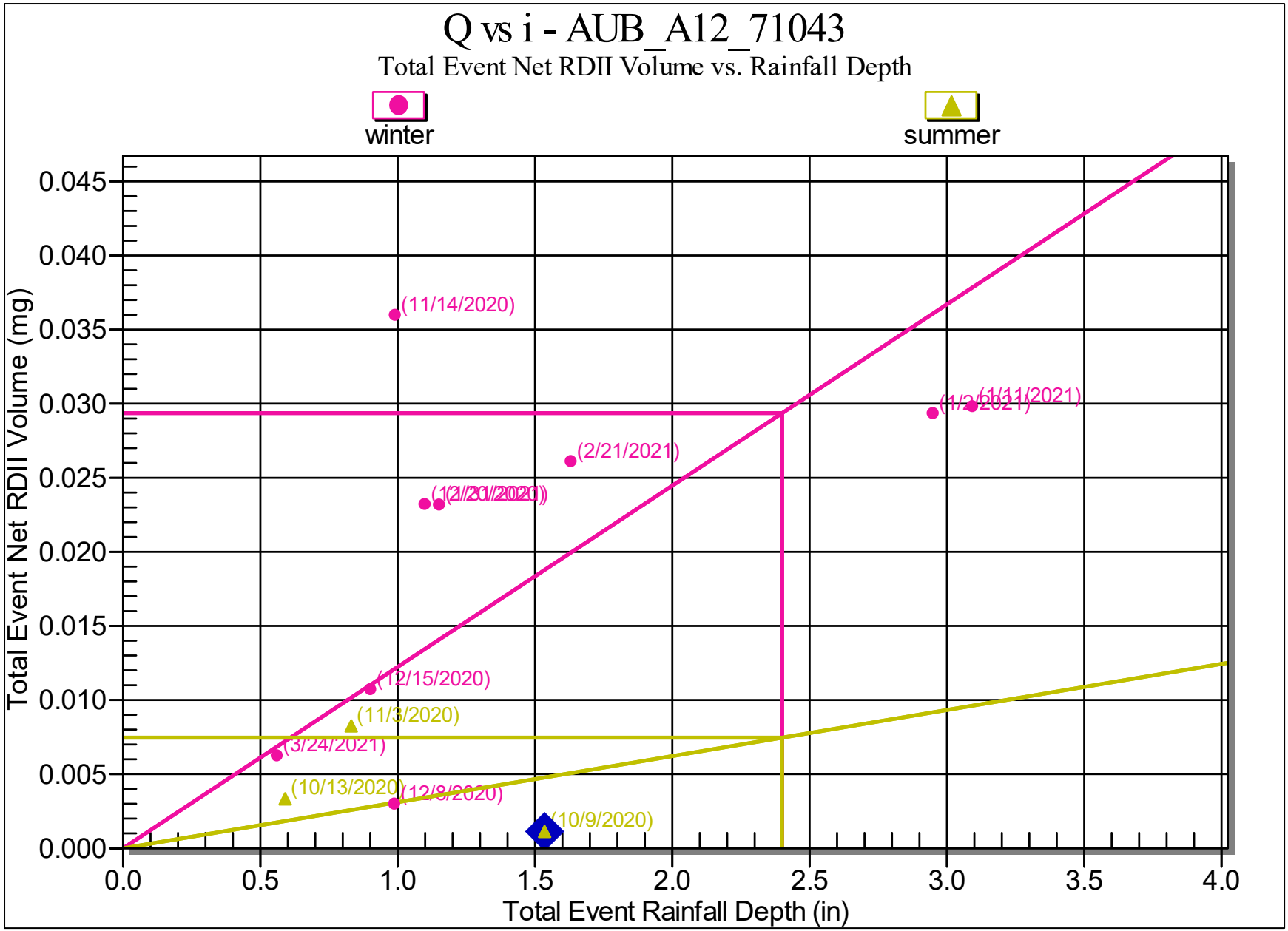

Storm Event - 12/20/2020 11:00:00 PM
AUB_A2_40805K
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
19 Sat
20 Sun
21 Mon
22 Tue
23 Wed
Dec 2020
Date

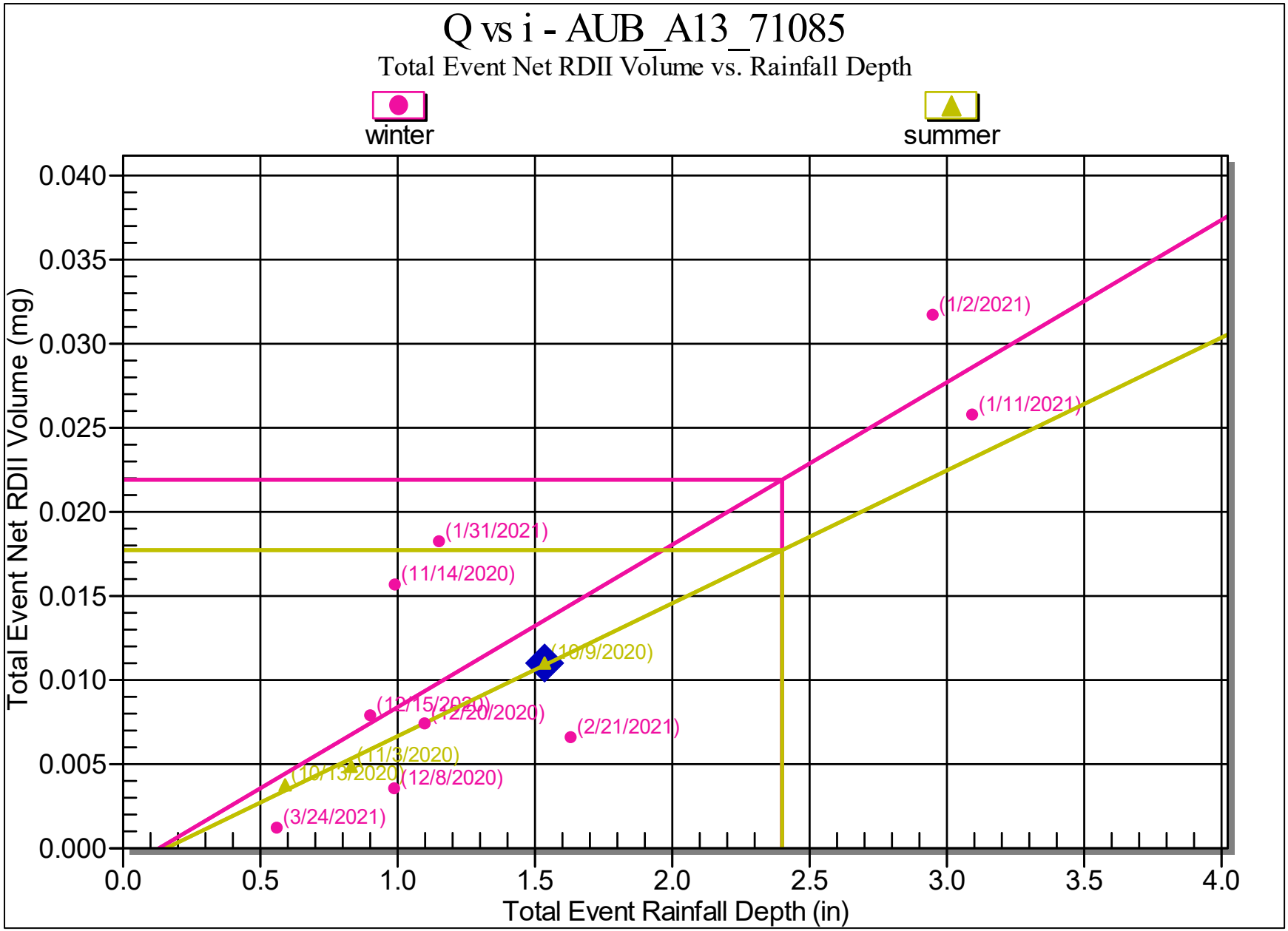

Storm Event - 1/2/2021 7:00:00 AM
AUB_A2_40805K
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekdays
2021 Winter Weekends
Flow (MGD)
Rainfall (in)
Storms
1 Fri
2 Sat
3 Sun
4 Mon
5 Tue
6 Wed
7 Thu
8 Fri
Jan 2021
Date

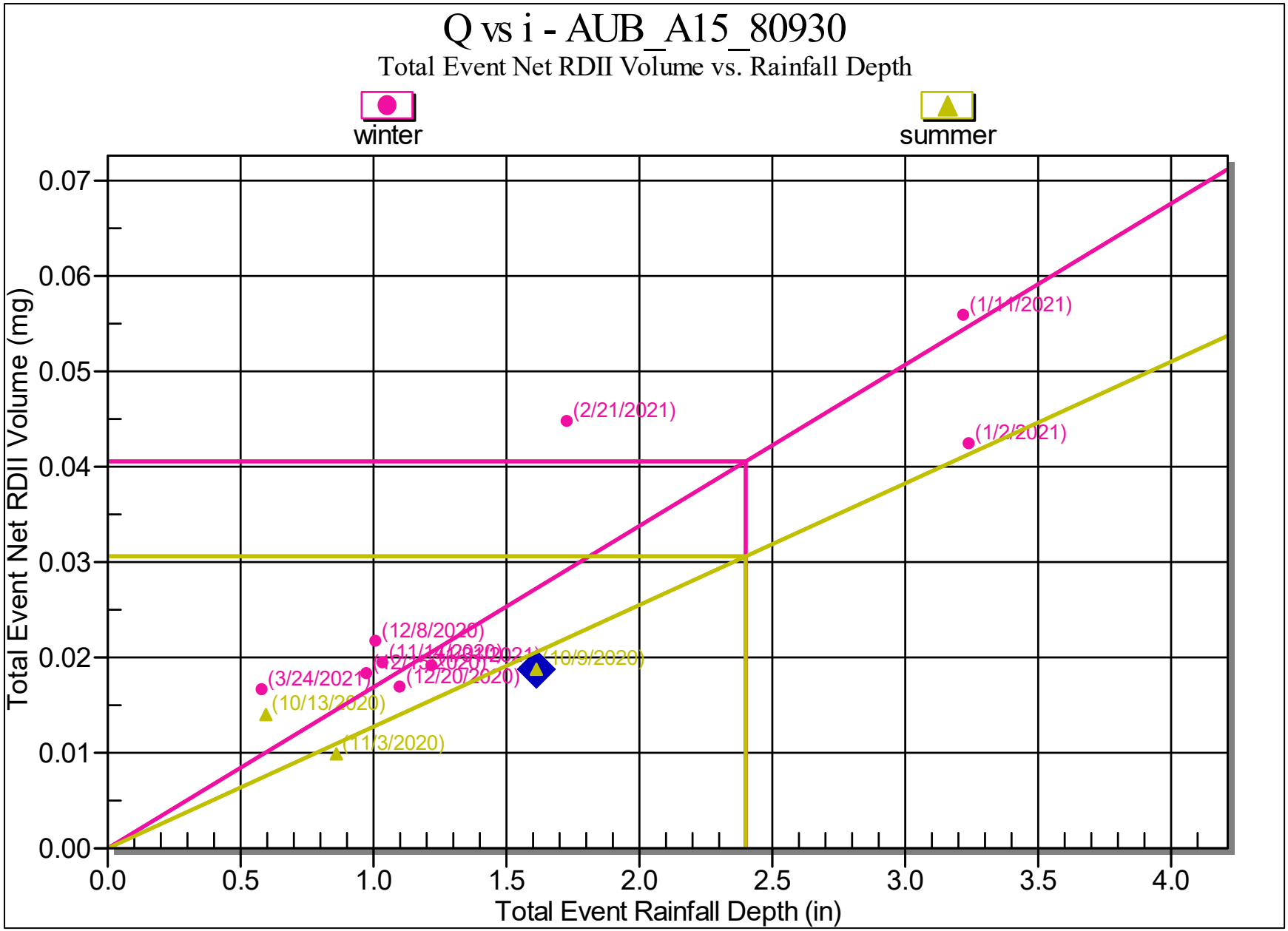

Storm Event - 1/11/2021 8:00:00 AM
AUB_A2_40805K
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
10 Sun
11 Mon
12 Tue
13 Wed
14 Thu
15 Fri
16 Sat
17 Sun
Jan 2021
Date

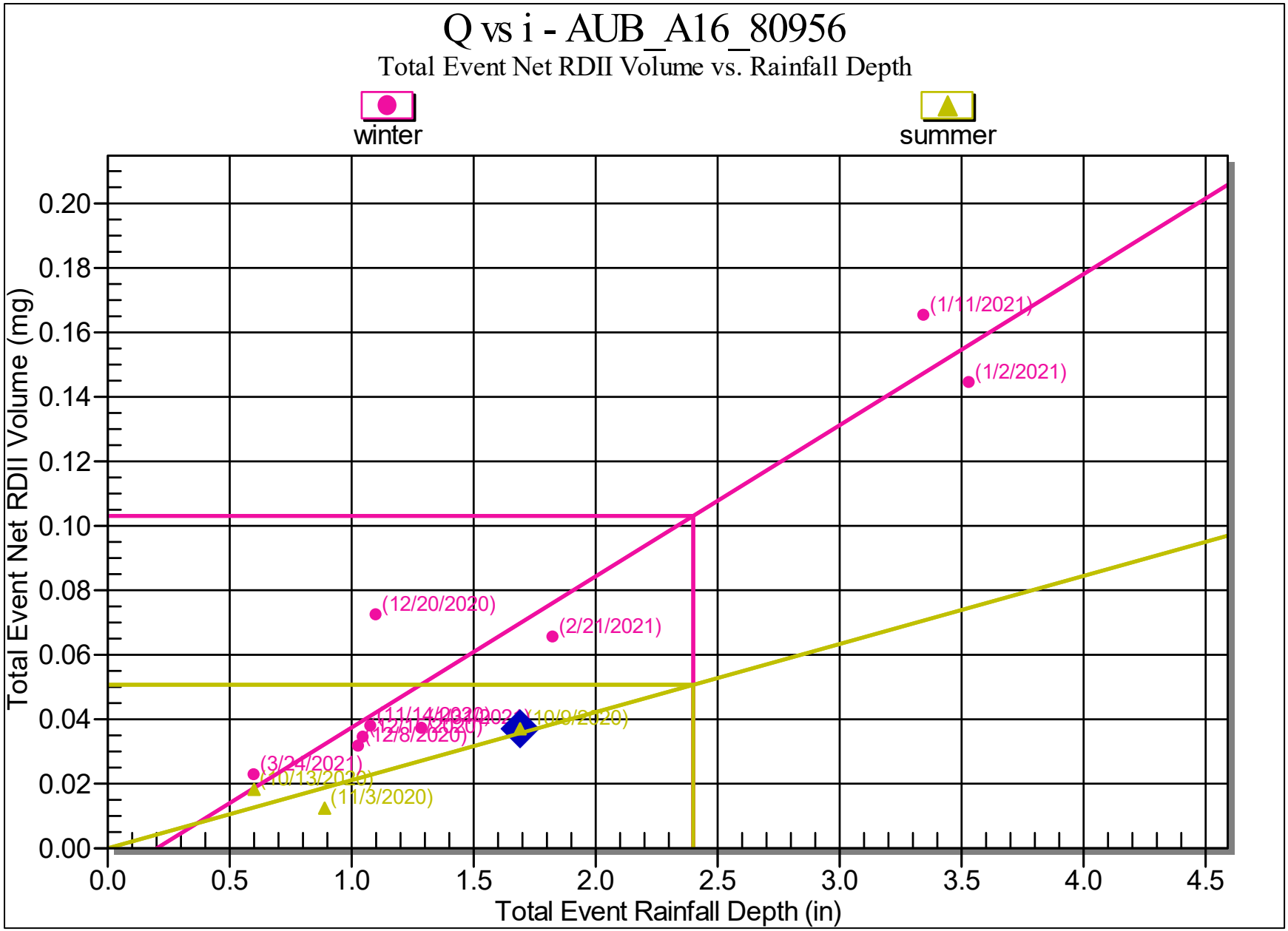

Storm Event - 2/14/2021 7:00:00 AM
AUB_A2_40805K
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
13 Sat
14 Sun
15 Mon
16 Tue
17 Wed
18 Thu
19 Fri
Feb 2021
Date

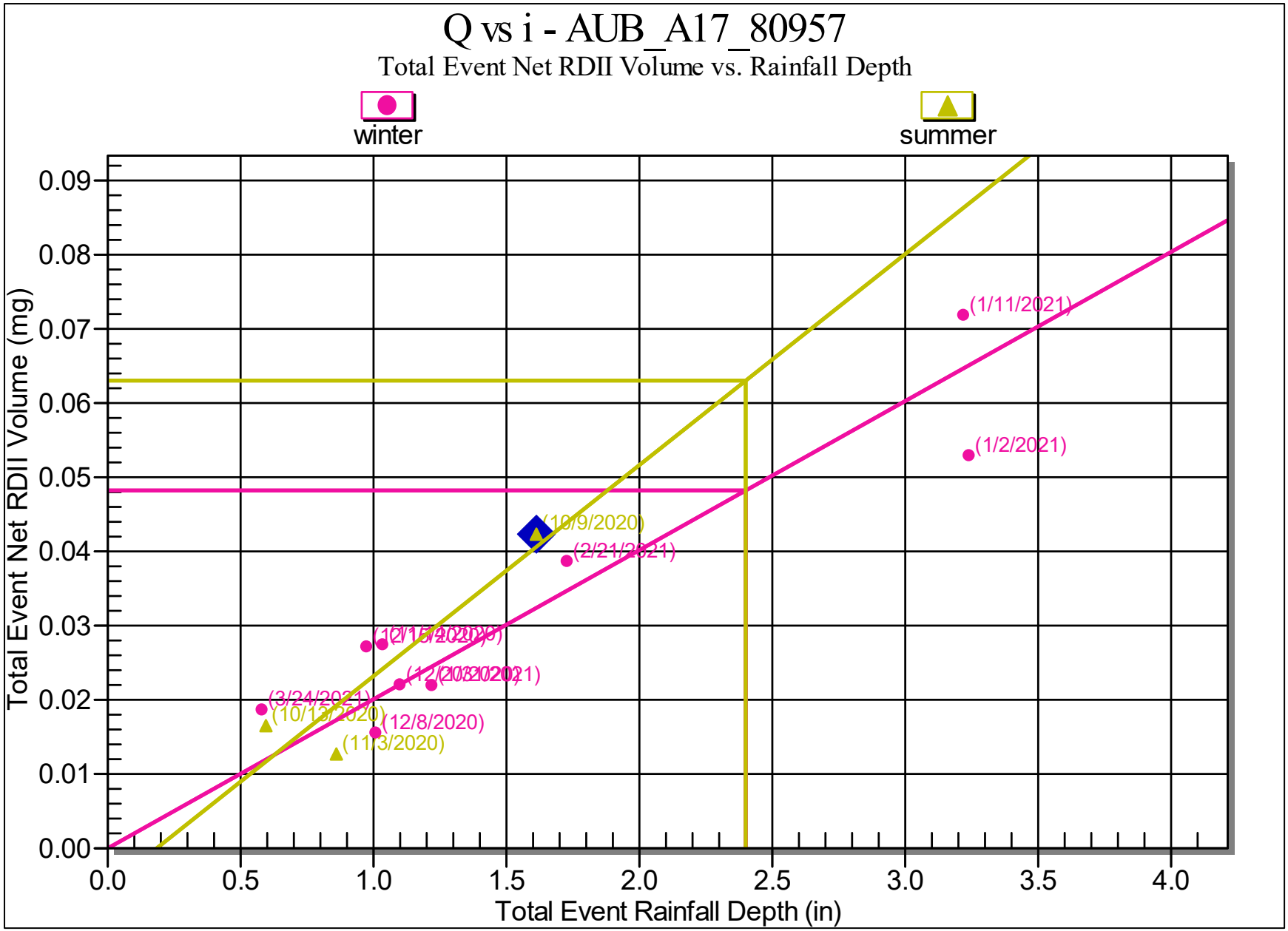

Storm Event - 2/21/2021 9:00:00 PM
AUB_A2_40805K
Rainfall
Gross Q
Gross I/I
Net I/I
Precomp(+)
2021 Winter Weekends
2021 Winter Weekdays
Flow (MGD)
Rainfall (in)
Storms
20 Sat
21 Sun
22 Mon
23 Tue
24 Wed
25 Thu
26 Fri
Feb 2021
Date

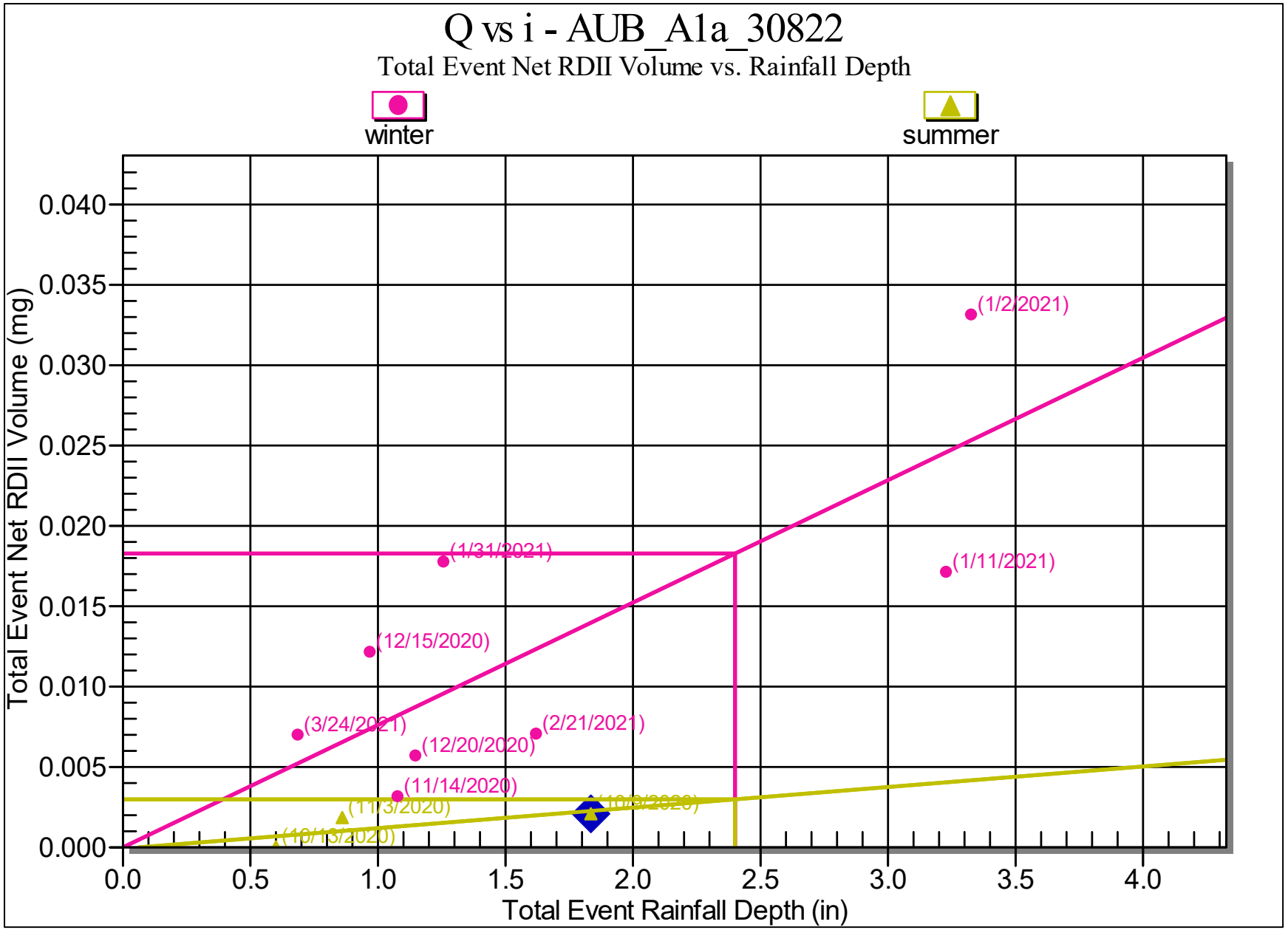

Q vs i - AUB_A12_71043
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
(11/14/2020)
(2/21/2021)
(12/15/2020)
(11/3/2020)
(3/24/2021)
(10/13/2020)
(10/9/2020)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)

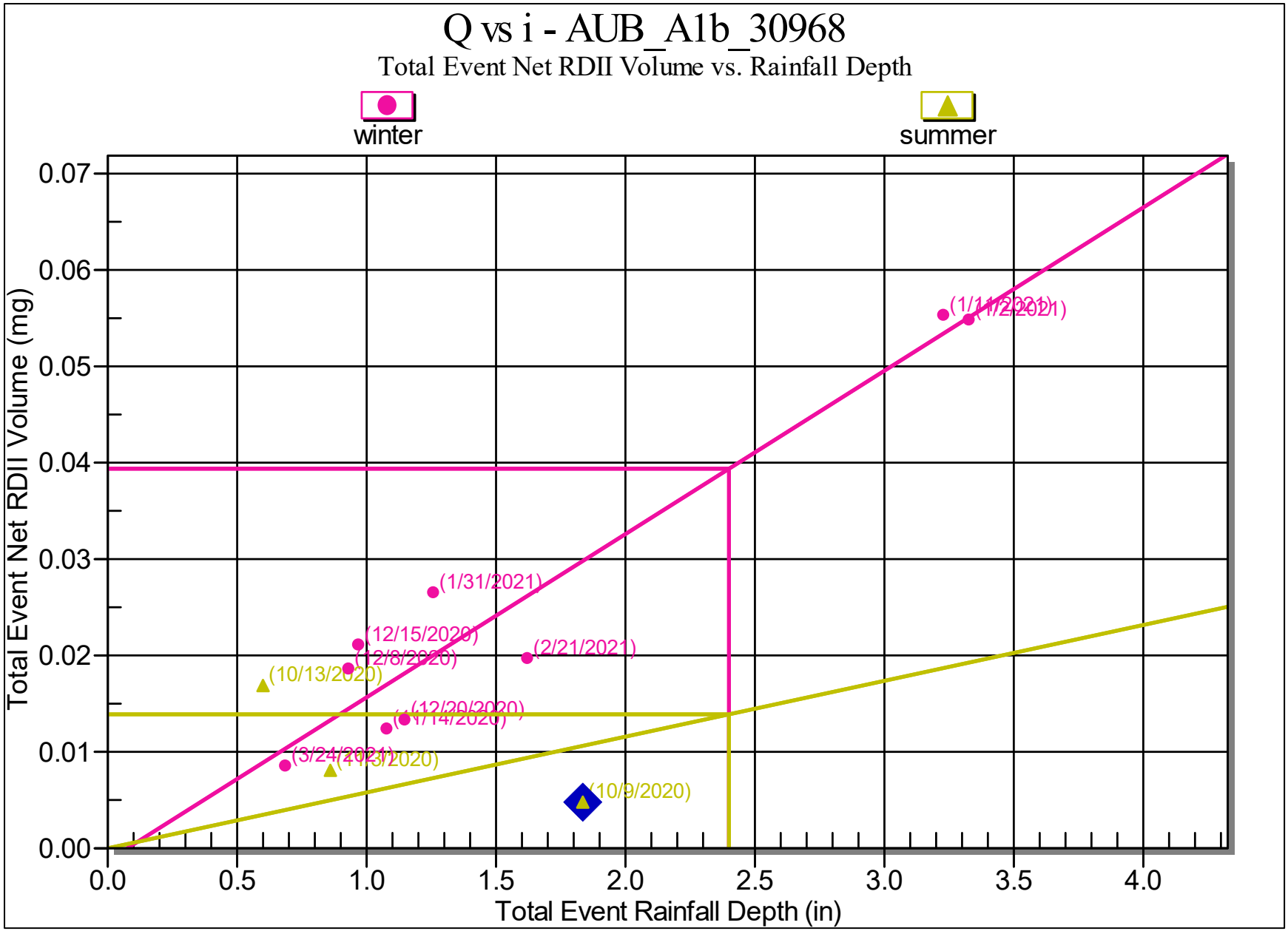

Q vs i - AUB_A13_71085
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/2/2021)
(1/11/2021)
(1/31/2021)
(11/14/2020)
(10/9/2020)
(12/15/2020)
(12/20/2020)
(2/21/2021)
(11/3/2020)
(10/13/2020)
(12/8/2020)
(3/24/2021)

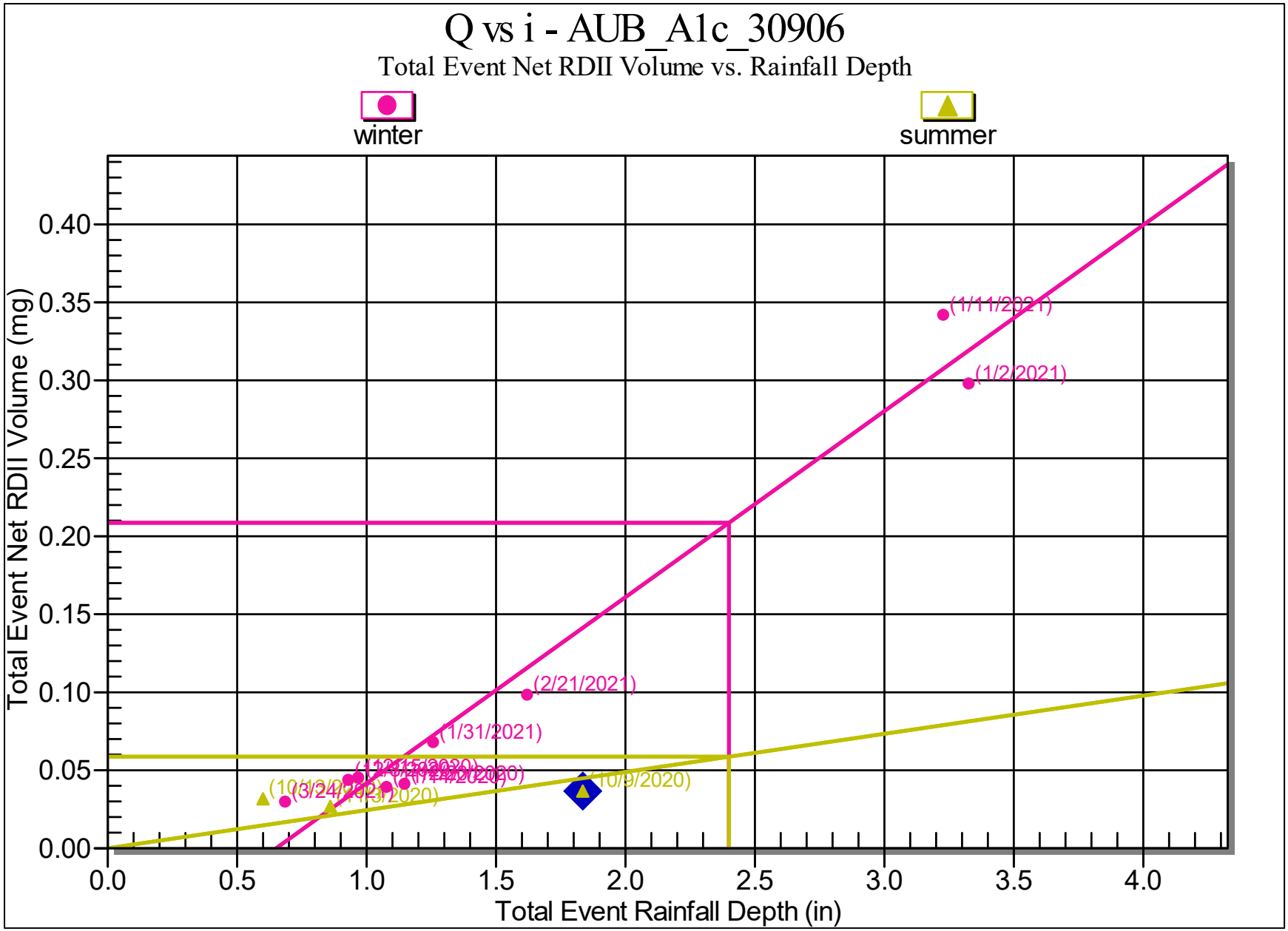

Q vs i - AUB_A15_80930
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/11/2021)
(2/21/2021)
(1/2/2021)
(12/8/2020)
(3/24/2021)
(12/20/2020)
(10/9/2020)
(10/13/2020)
(11/3/2020)

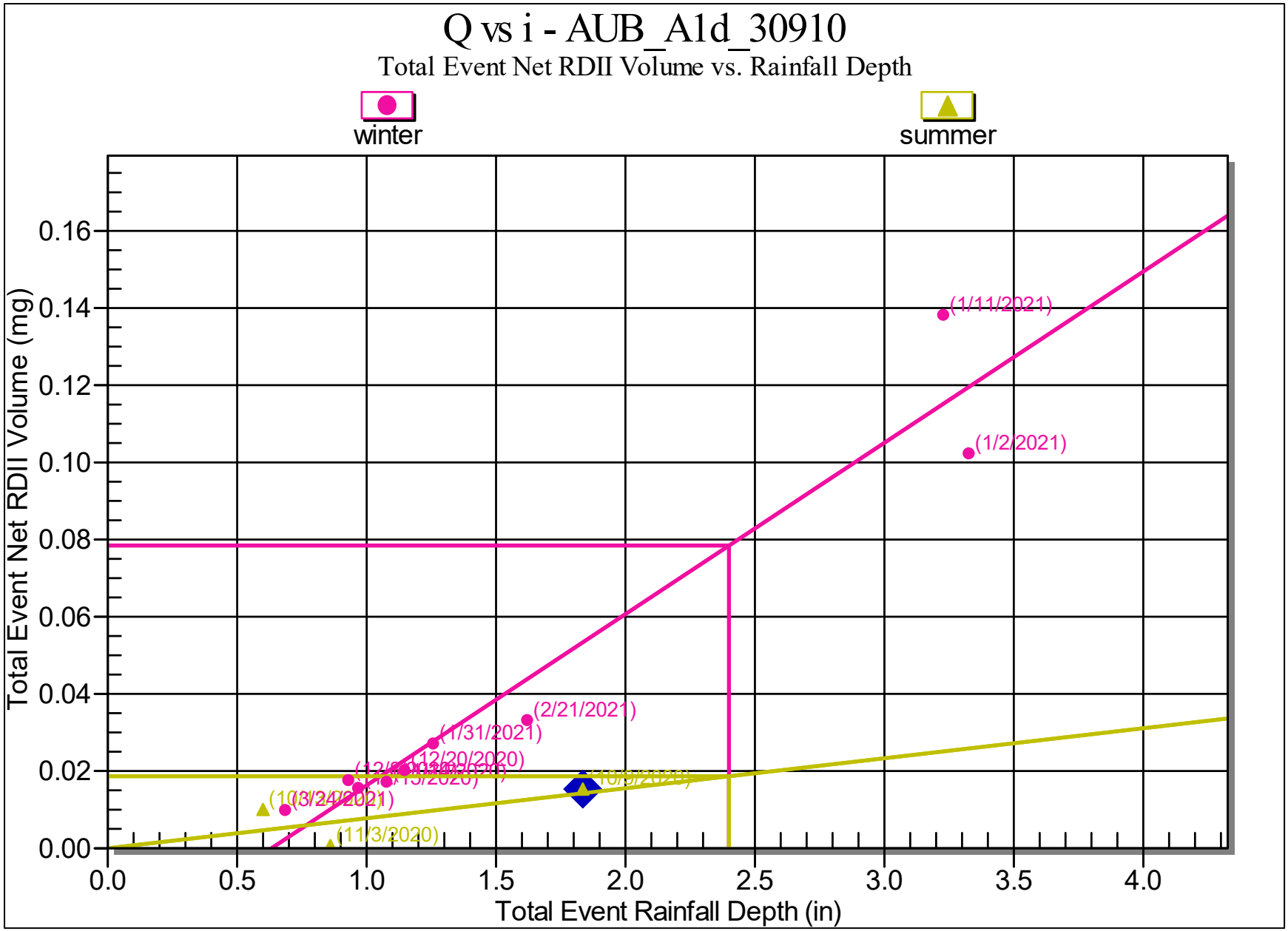

Q vs i - AUB_A16_80956
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0.18
0.20
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
Total Event Rainfall Depth (in)
(1/11/2021)
(1/2/2021)
(12/20/2020)
(2/21/2021)
(12/8/2020)
(10/9/2020)
(3/24/2021)
(11/3/2020)

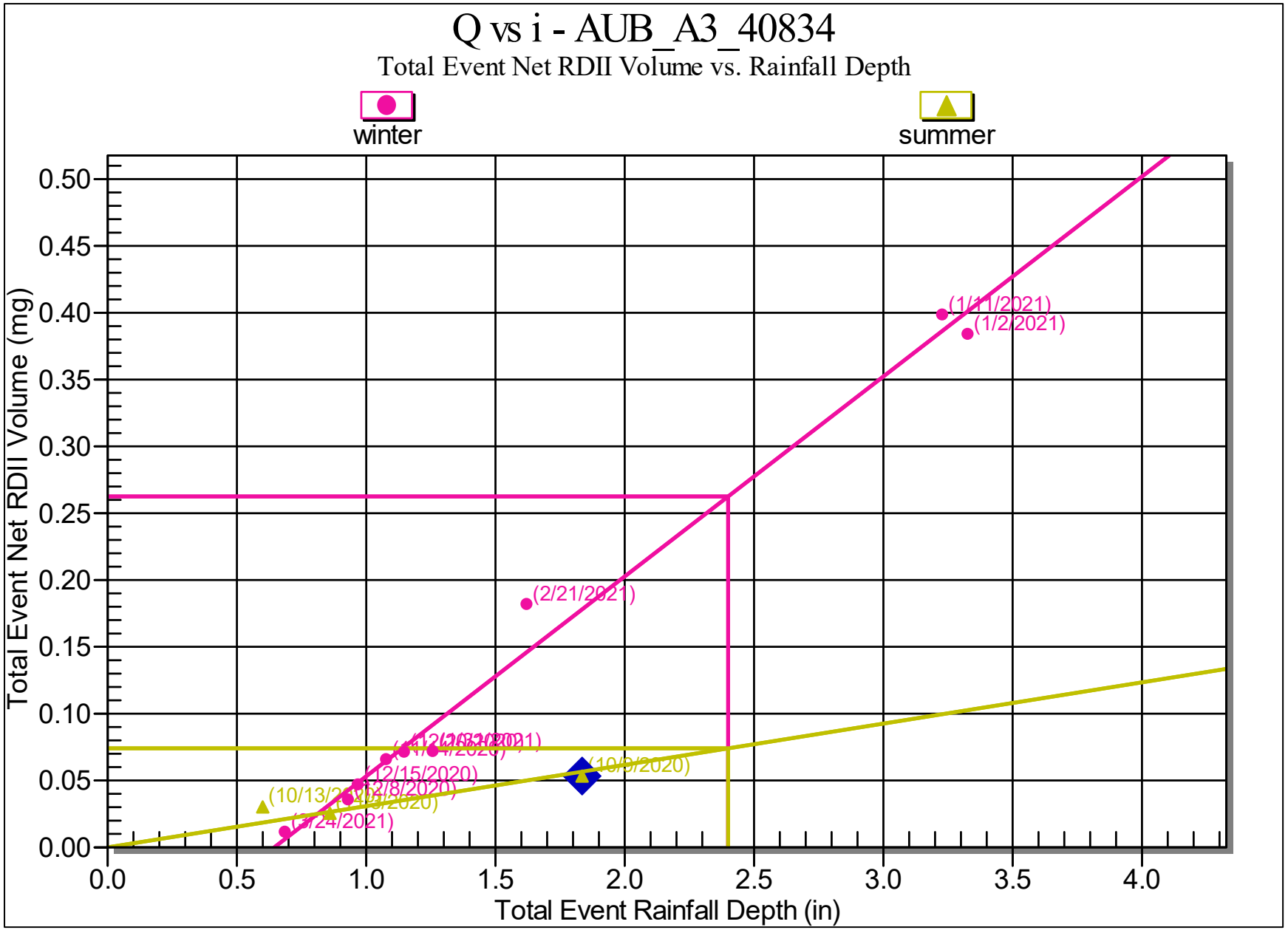

Q vs i - AUB_A17_80957
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/11/2021)
(1/2/2021)
(10/9/2020)
(2/21/2021)
(12/8/2020)
(11/3/2020)

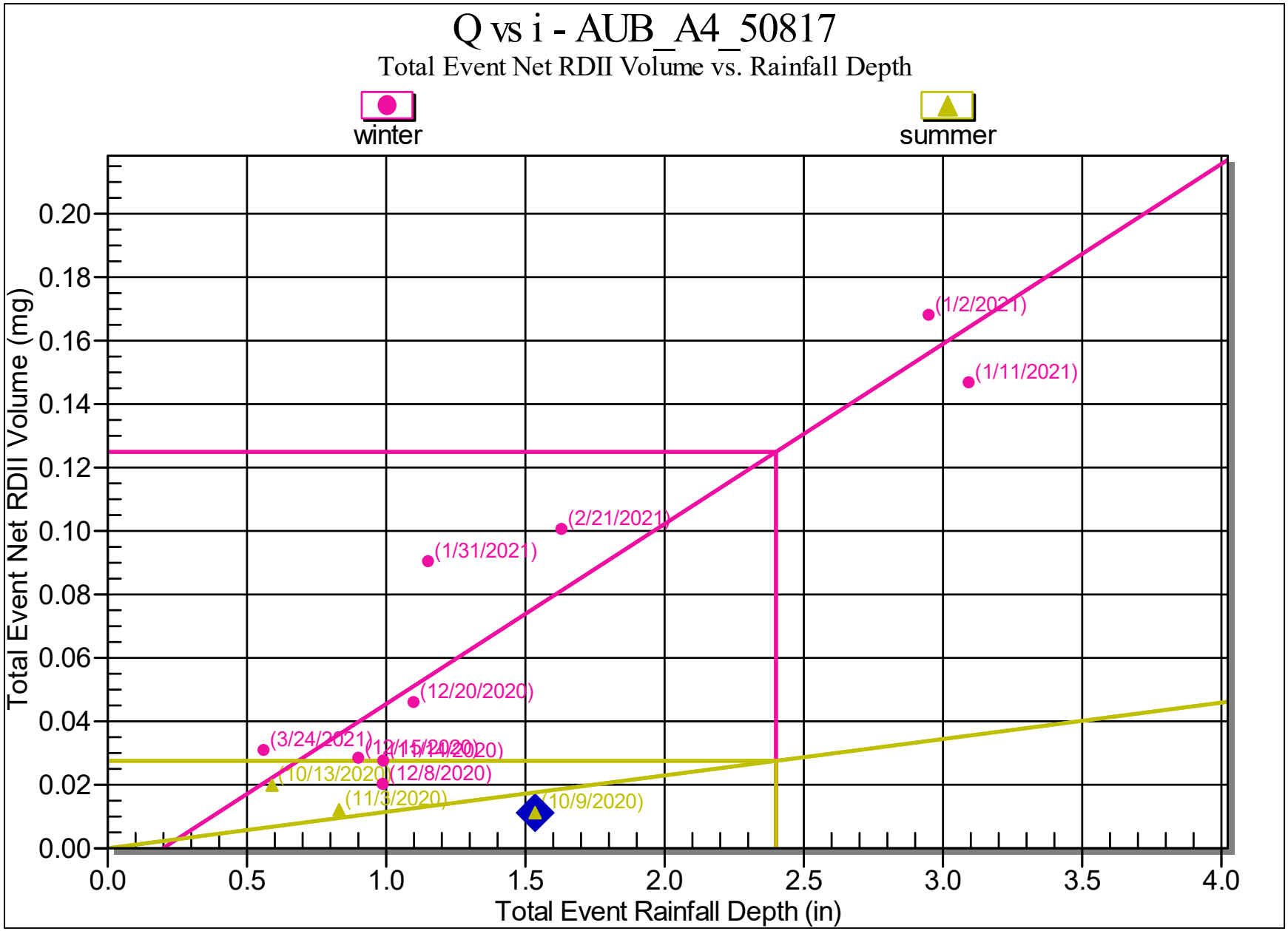

Q vs i - AUB_A1a_30822
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/2/2021)
(1/31/2021)
(1/11/2021)
(12/15/2020)
(3/24/2021)
(2/21/2021)
(12/20/2020)
(11/14/2020)
(11/3/2020)
(10/13/2020)

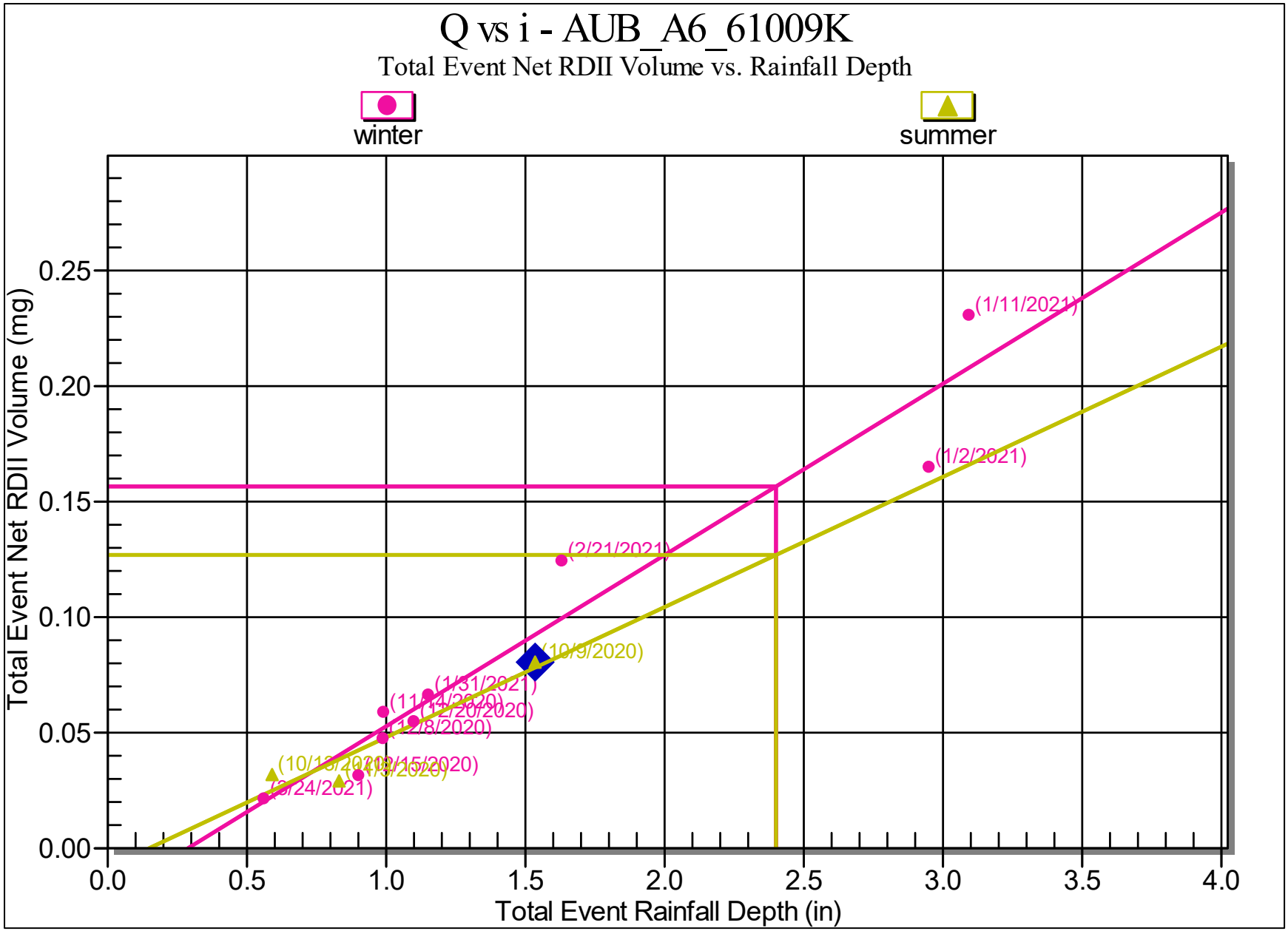

Q vs i - AUB_A1b_30968
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/31/2021)
(12/15/2020)
(2/21/2021)
(10/13/2020)
(10/9/2020)

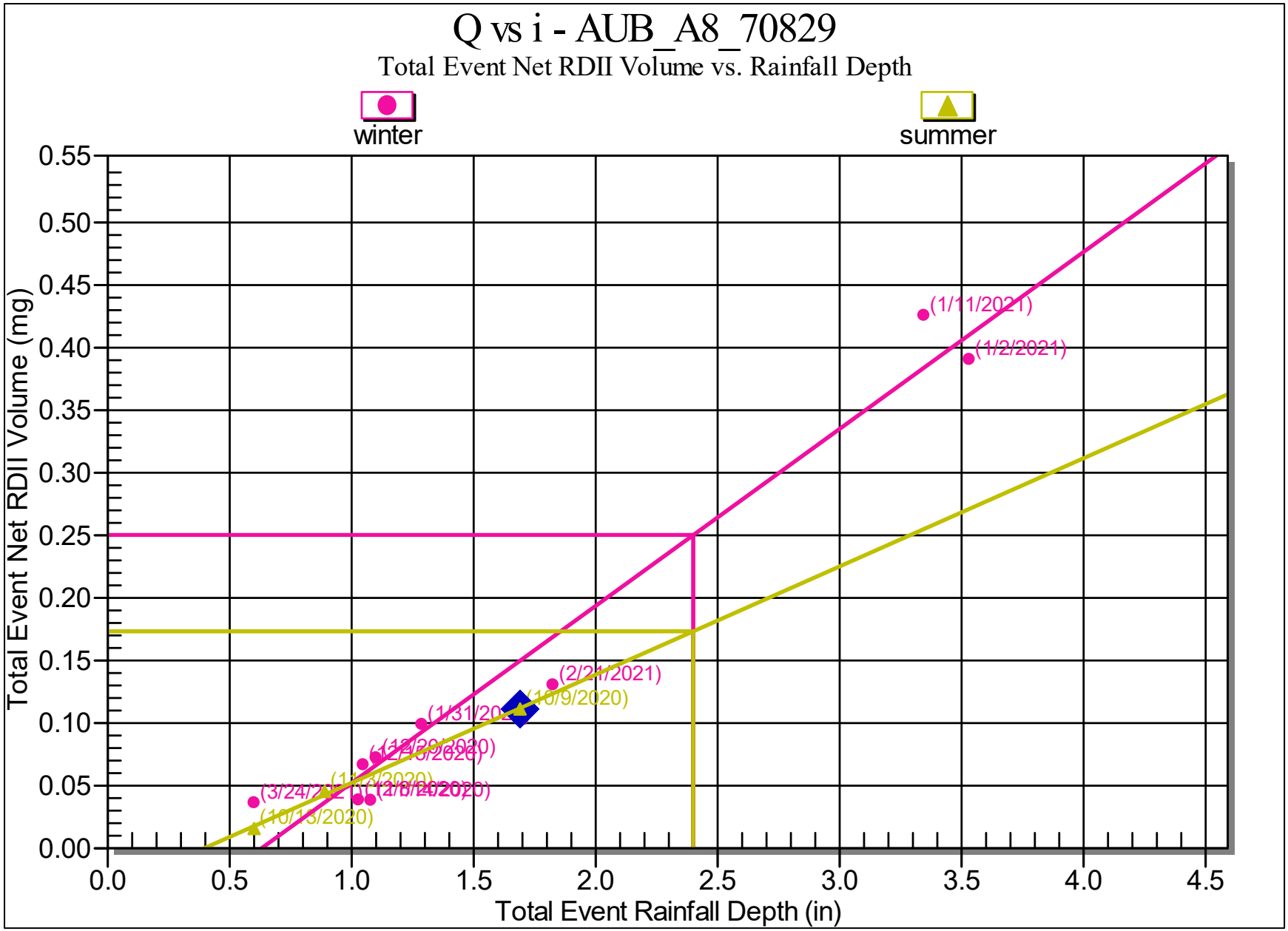

Q vs i - AUB_A1c_30906
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/11/2021)
(1/2/2021)
(2/21/2021)
(1/31/2021)
(10/9/2020)

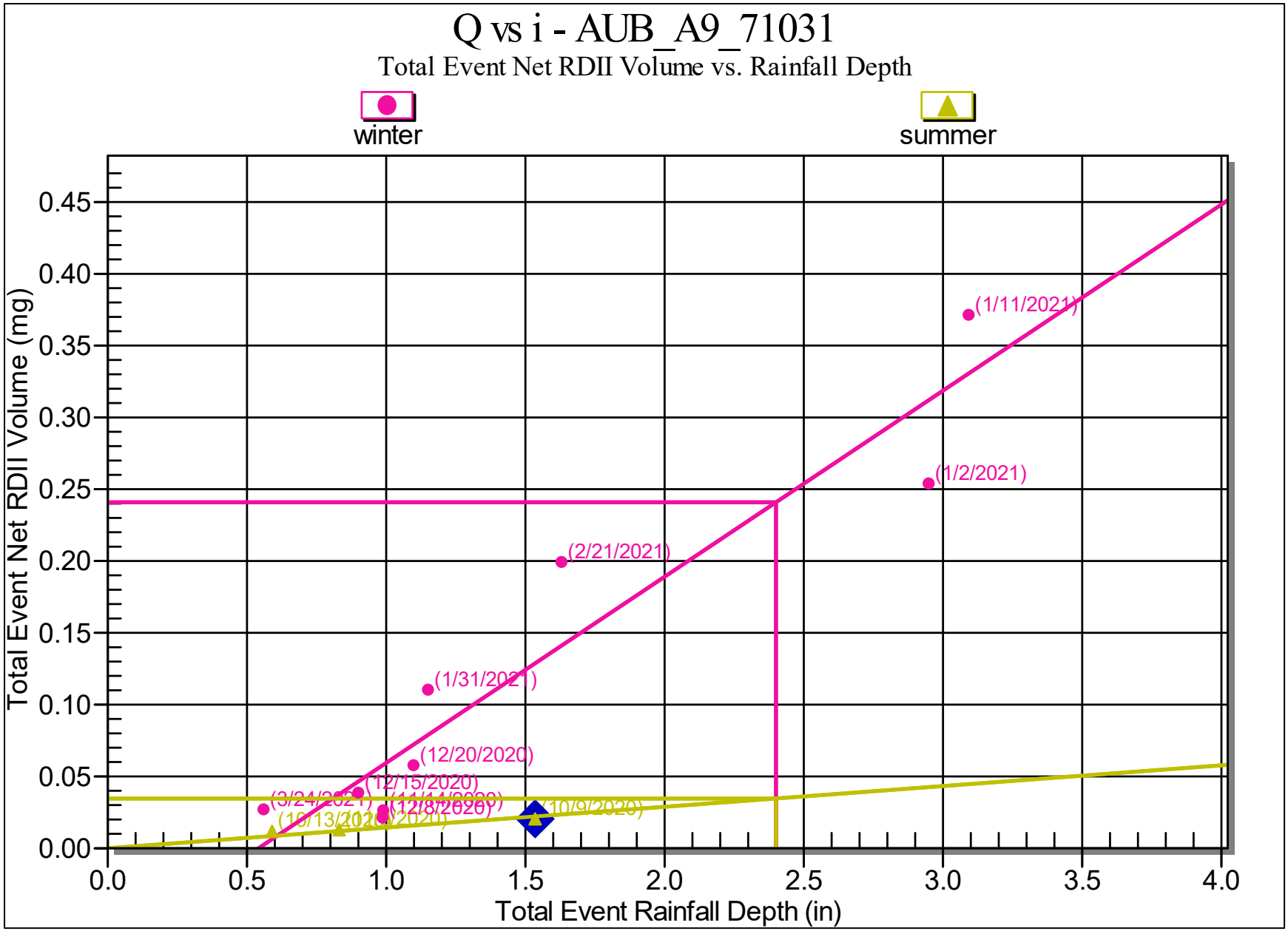

Q vs i - AUB_A1d_30910
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/11/2021)
(1/2/2021)
(2/21/2021)
(1/31/2021)
(12/20/2020)
(11/3/2020)

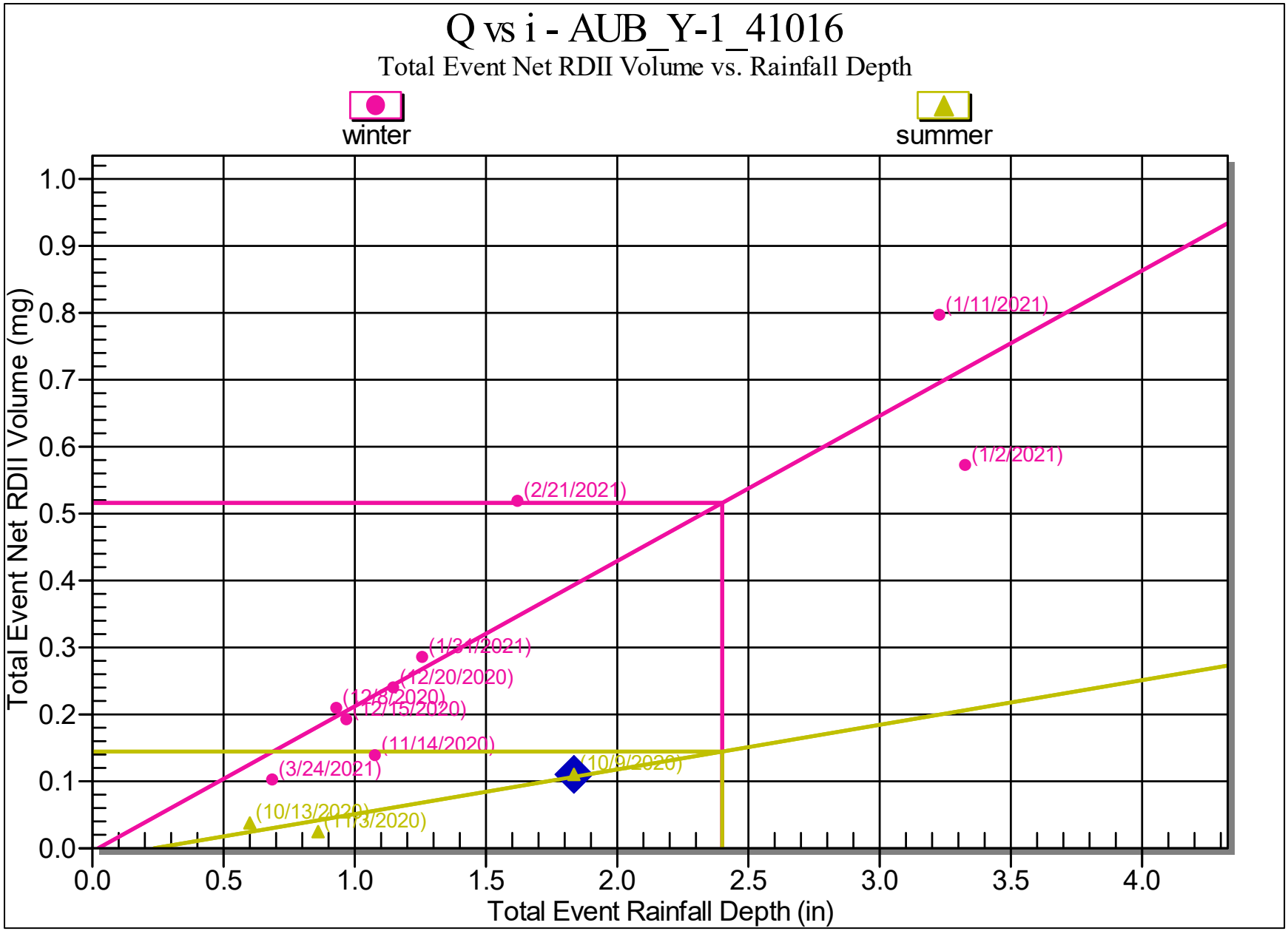

Q vs i - AUB_A3_40834
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.50
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/11/2021)
(1/2/2021)
(2/21/2021)
(2/15/2020)
(10/9/2020)

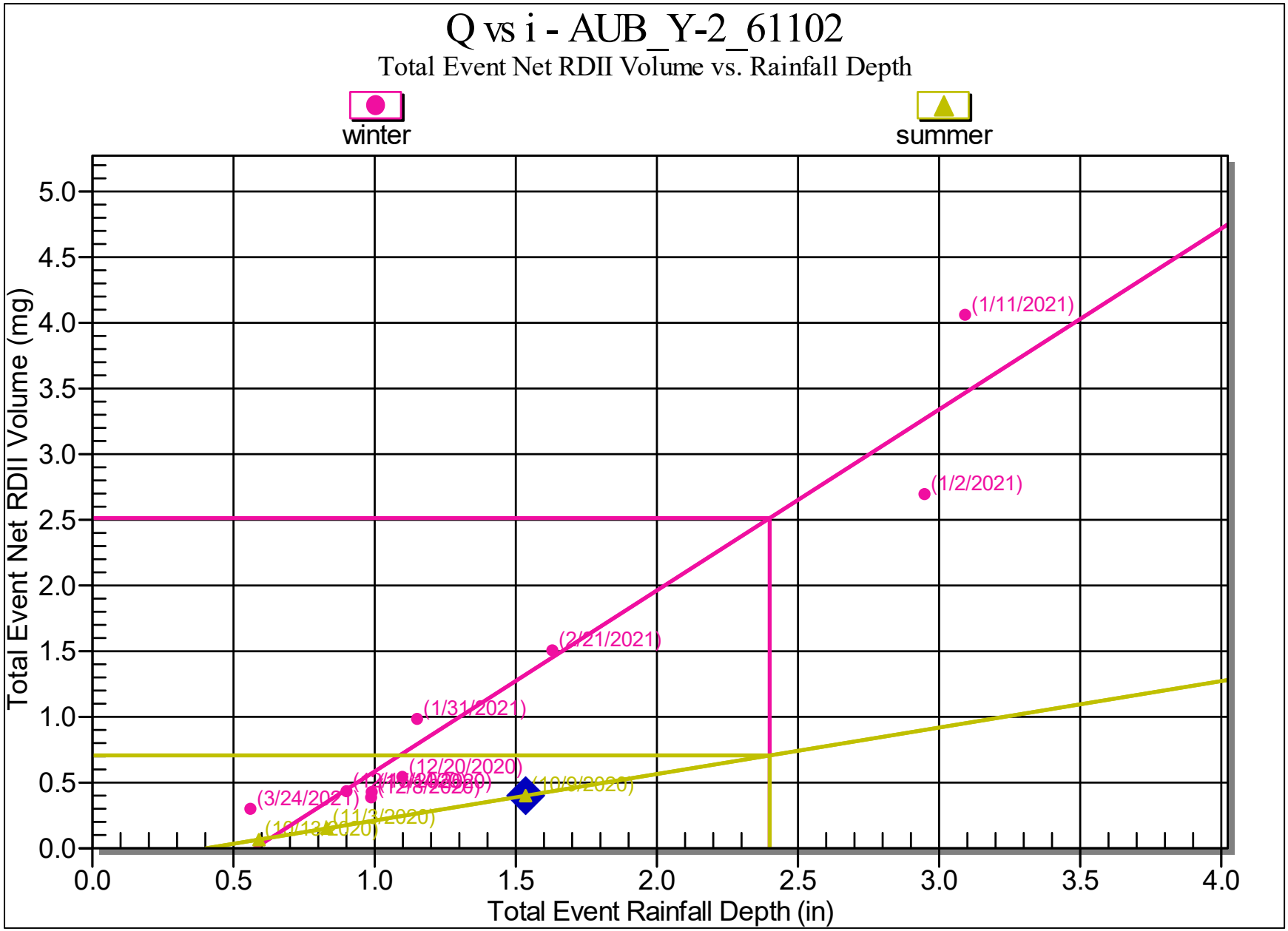

Q vs i - AUB_A4_50817
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0.18
0.20
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/2/2021)
(1/11/2021)
(2/21/2021)
(1/31/2021)
(12/20/2020)
(3/24/2021)
(12/15/2020)
(12/14/2020)
(10/13/2020)
(12/8/2020)
(11/3/2020)
(10/9/2020)

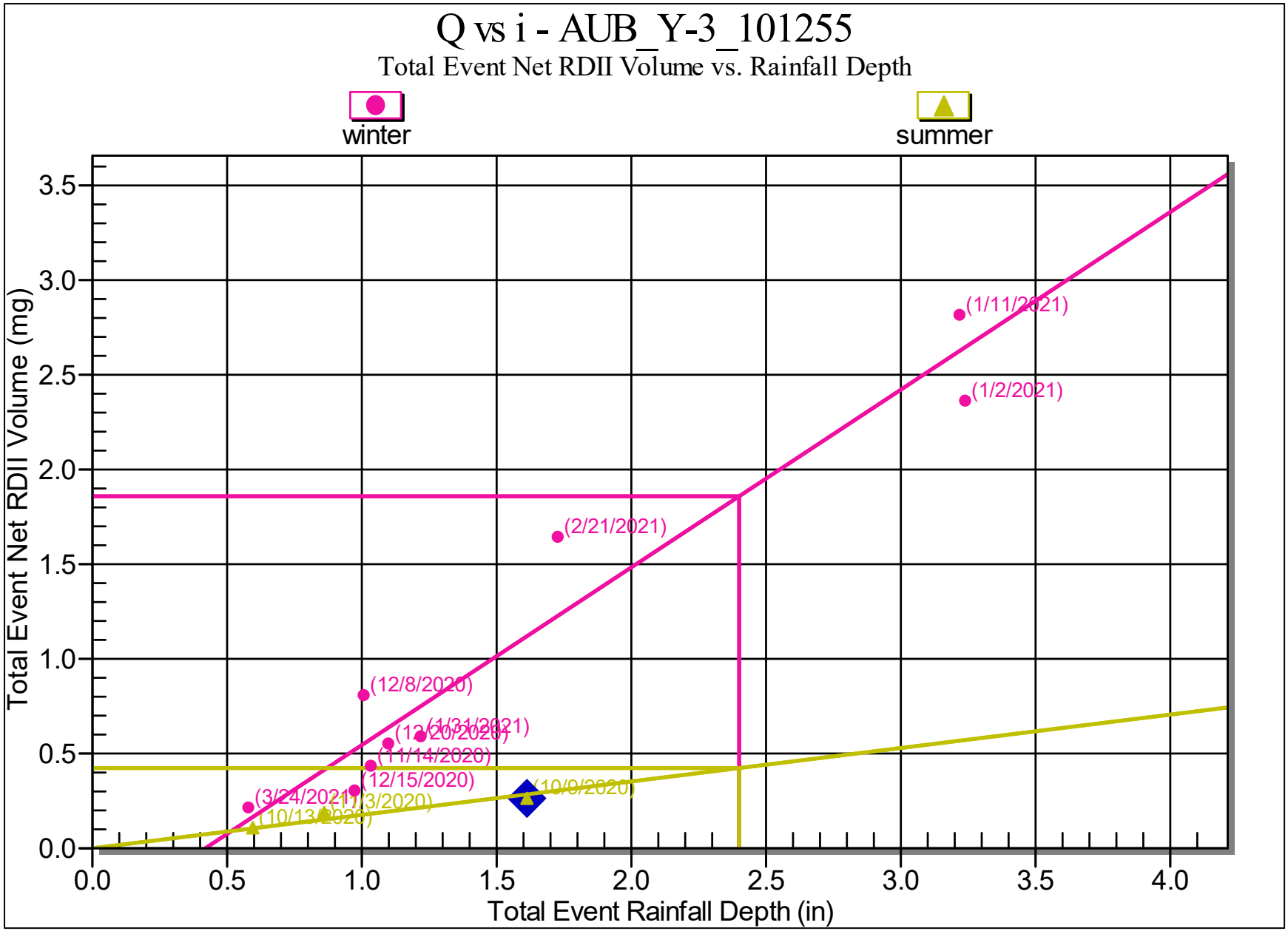

Q vs i - AUB_A6_61009K
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.00
0.05
0.10
0.15
0.20
0.25
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/11/2021)
(1/2/2021)
(2/21/2021)
(10/9/2020)
(1/31/2021)
(11/20/2020)
(11/28/2020)
(10/15/2020)
(3/24/2021)

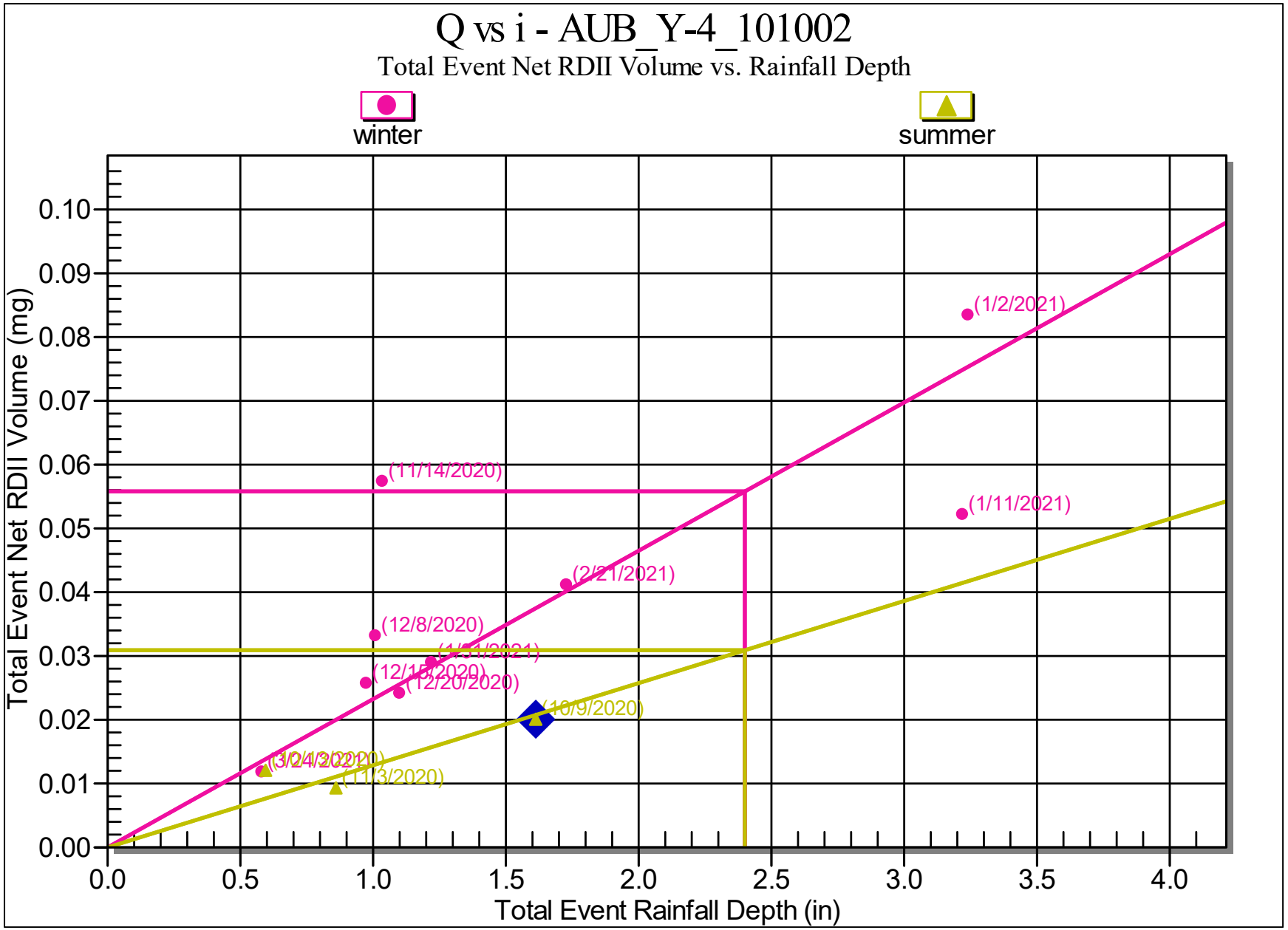

Q vs i - AUB_A8_70829
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
Total Event Rainfall Depth (in)
(1/11/2021)
(1/2/2021)
(2/21/2021)
(10/9/2020)
(10/13/2020)

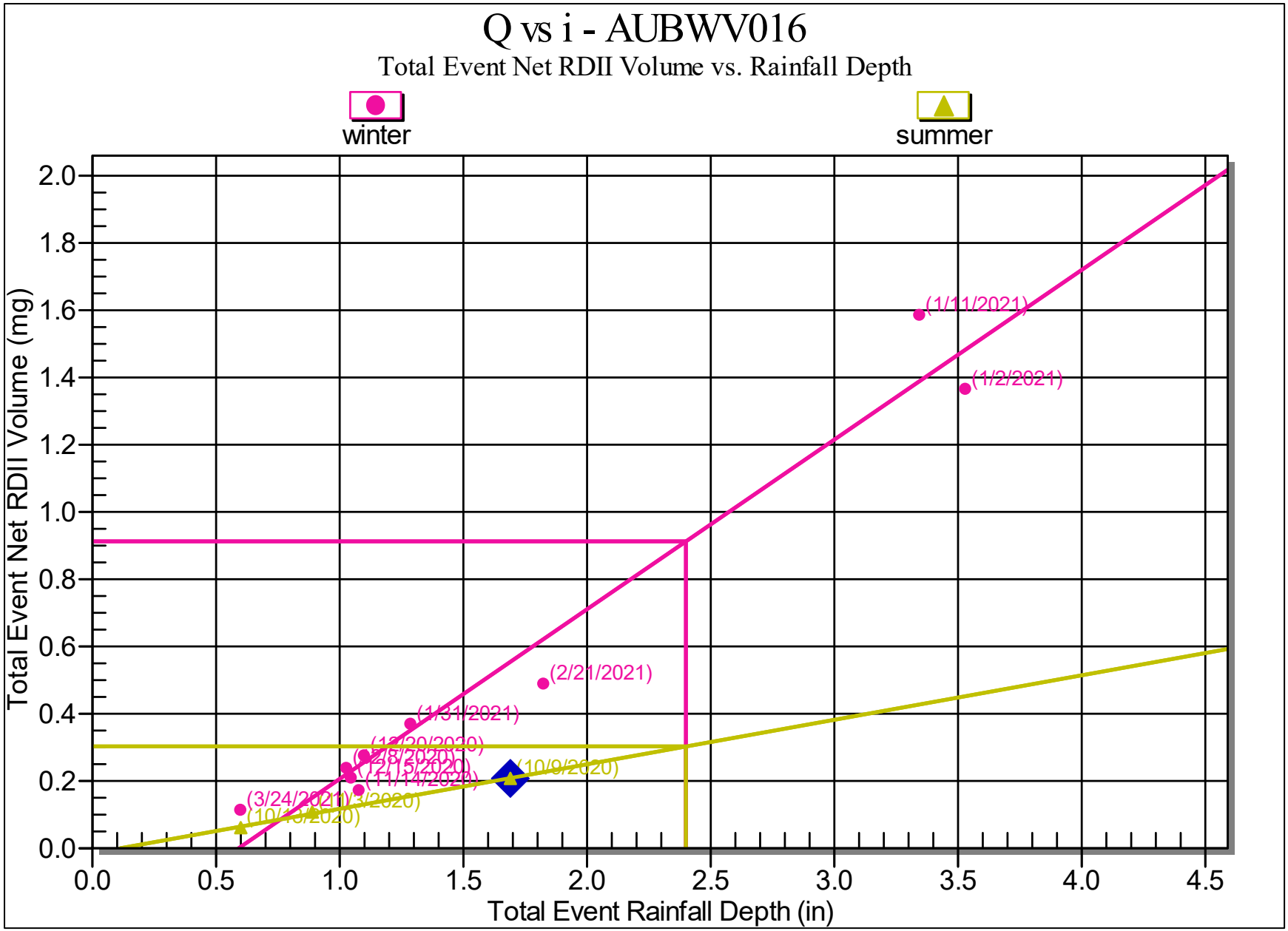

Q vs i - AUB_A9_71031
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/11/2021)
(1/2/2021)
(2/21/2021)
(1/31/2021)
(12/20/2020)
(12/15/2020)
(12/8/2020)
(10/9/2020)

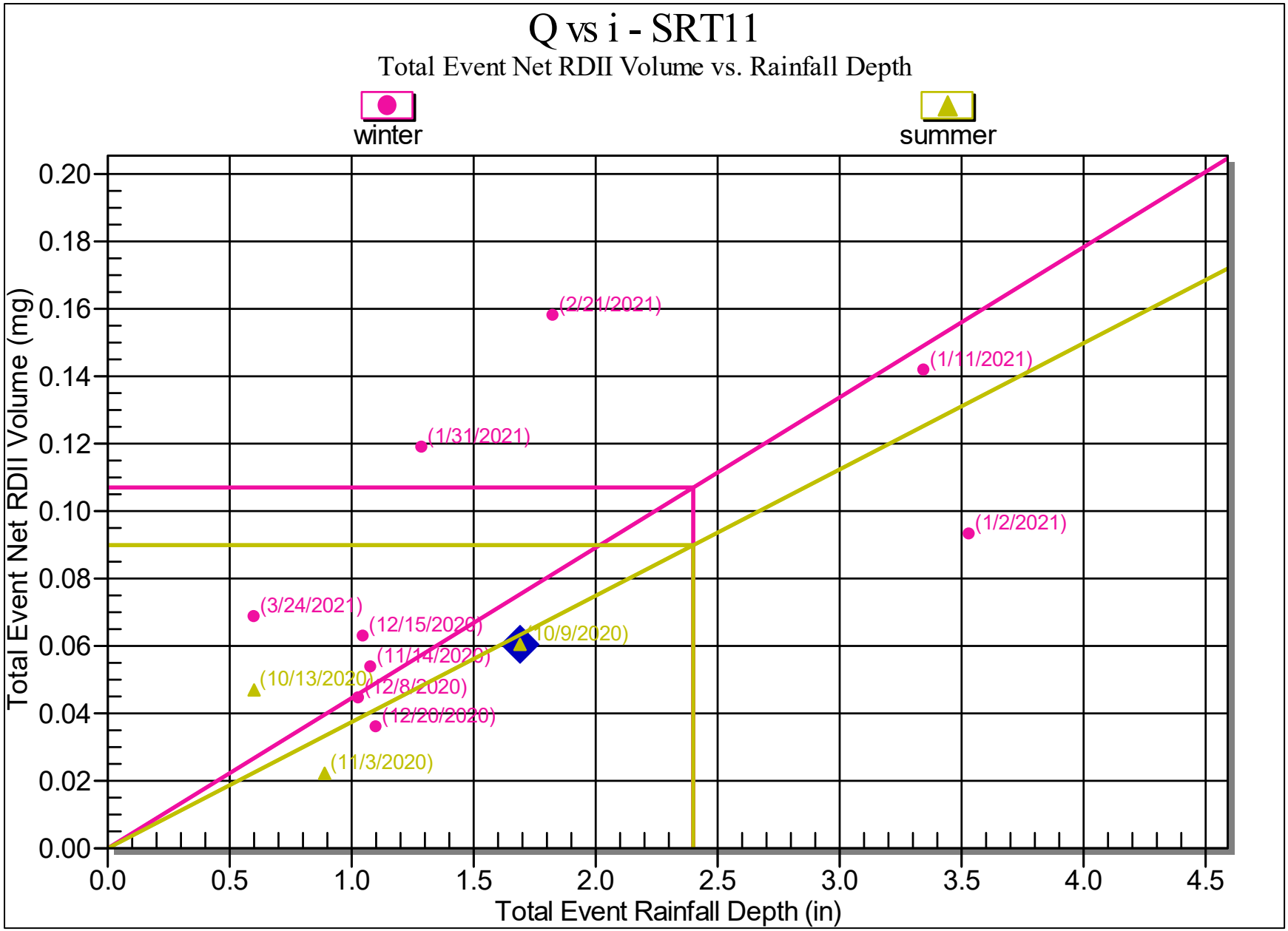

Q vs i - AUB_Y-1_41016
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
Total Event Rainfall Depth (in)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
(1/11/2021)
(1/2/2021)
(2/21/2021)
(1/31/2021)
(12/20/2020)
(12/8/2020)
(12/15/2020)
(11/14/2020)
(3/24/2021)
(10/9/2020)
(10/13/2020)
(11/3/2020)

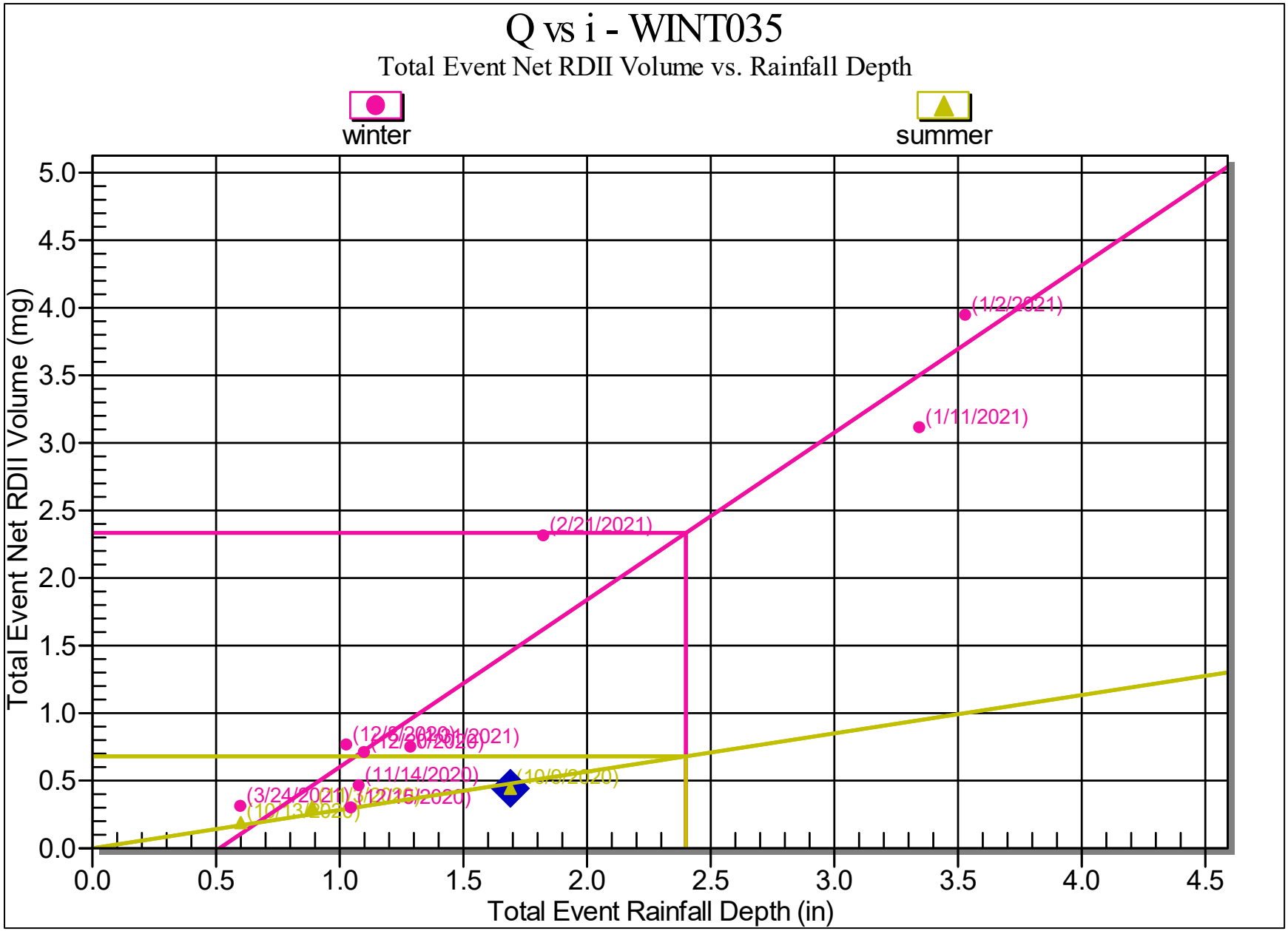

Q vs i - AUB_Y-2_61102
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
Total Event Rainfall Depth (in)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
(1/11/2021)
(1/2/2021)
(2/21/2021)
(1/31/2021)
(12/20/2020)
(3/24/2021)
(11/3/2020)
(10/9/2020)

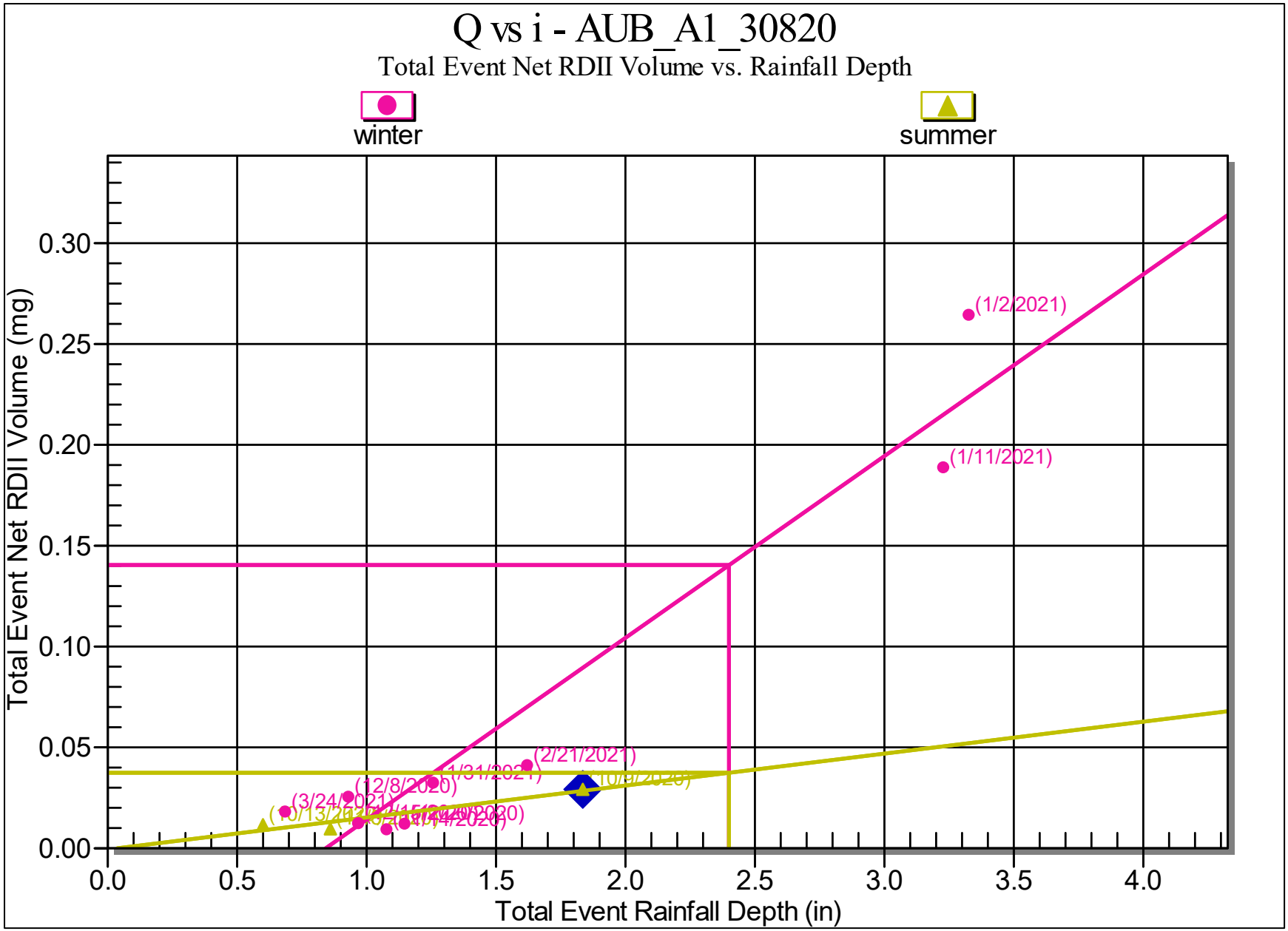

Q vs i - AUB_Y-3_101255
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
Total Event Rainfall Depth (in)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
(1/11/2021)
(1/2/2021)
(2/21/2021)
(12/8/2020)
(1/31/2021)
(12/20/2020)
(11/14/2020)
(12/15/2020)
(3/24/2021)
(11/3/2020)
(10/13/2020)
(10/9/2020)

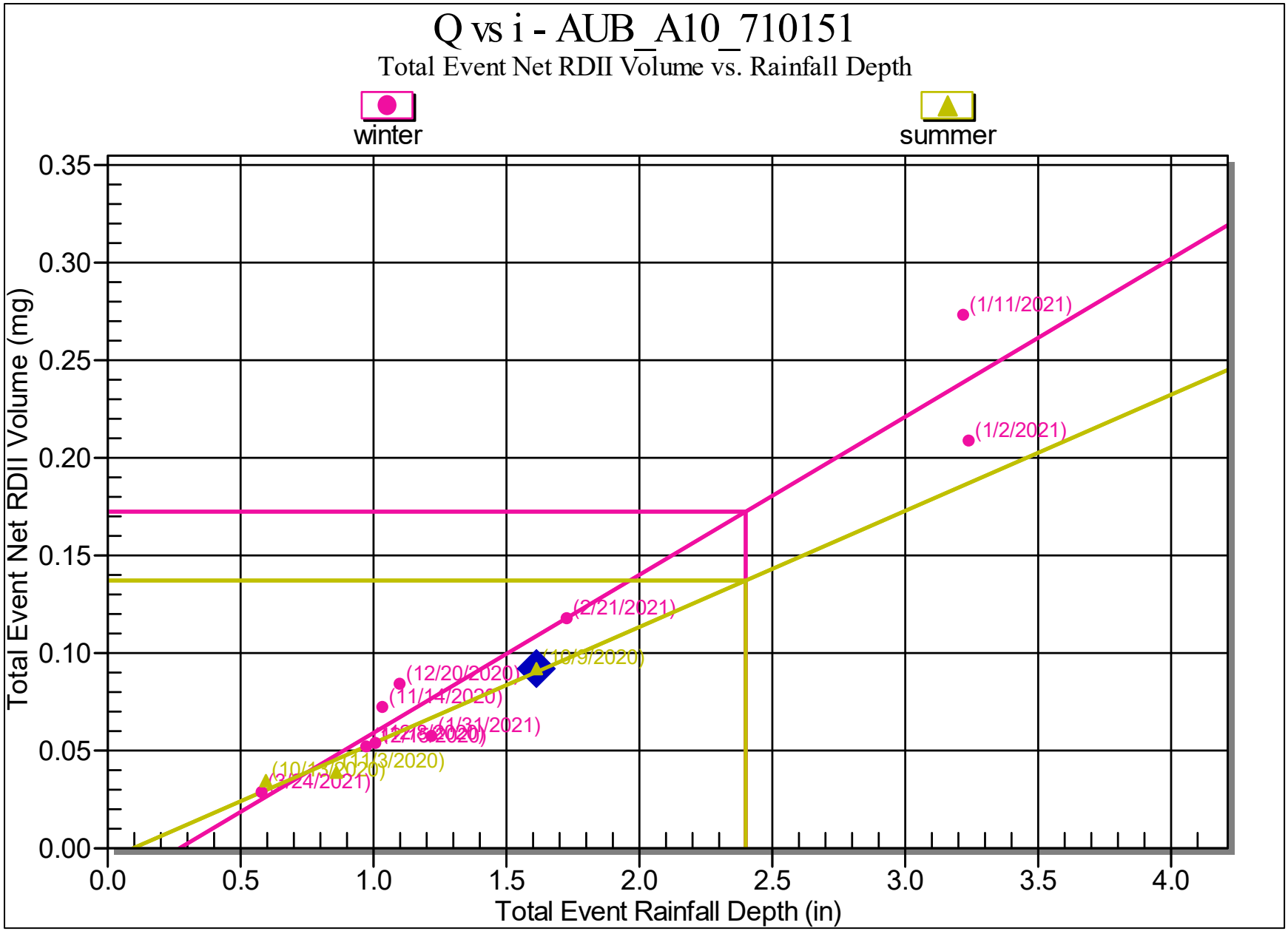

Q vs i - AUB_Y-4_101002
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/2/2021)
(11/14/2020)
(1/11/2021)
(2/21/2021)
(12/8/2020)
(12/20/2020)
(10/9/2020)
(11/3/2020)

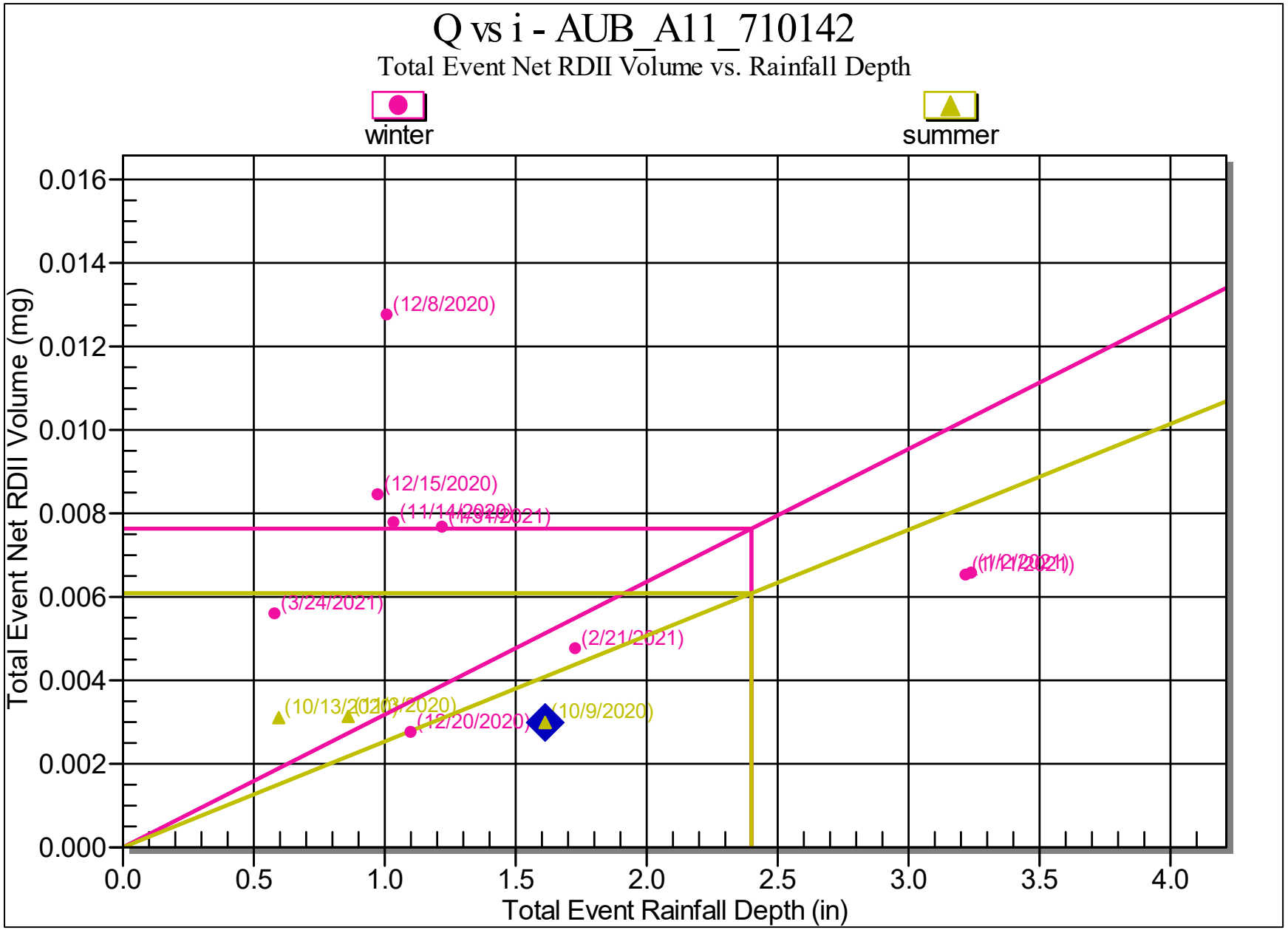

Q vs i - AUBWV016
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
Total Event Rainfall Depth (in)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
(1/11/2021)
(1/2/2021)
(2/21/2021)
(1/31/2021)
(10/9/2020)
(3/24/2021)

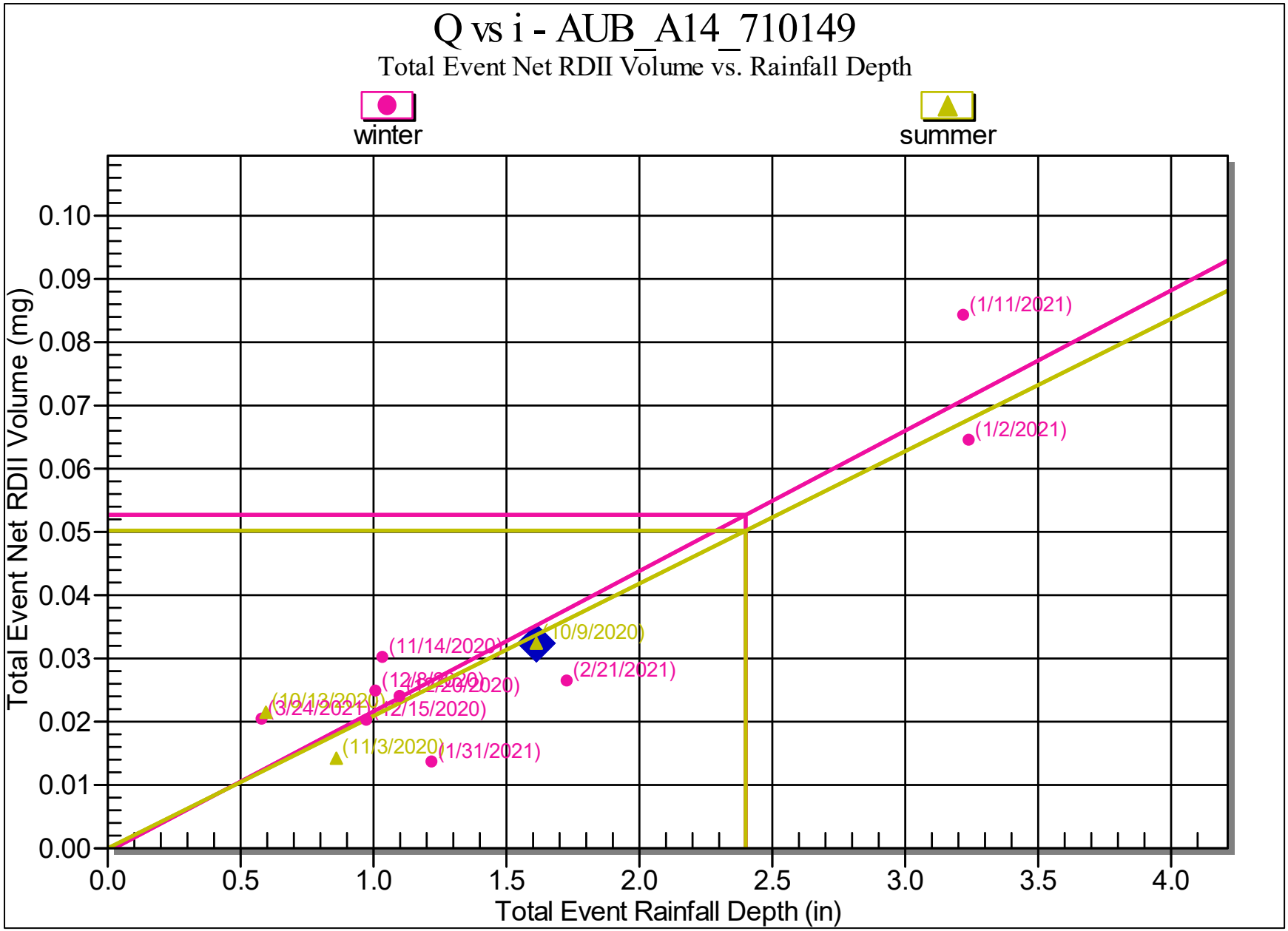

Q vs i - SRT11
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0.18
0.20
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
Total Event Rainfall Depth (in)
(2/21/2021)
(1/11/2021)
(1/31/2021)
(1/2/2021)
(3/24/2021)
(12/15/2020)
(10/9/2020)
(11/14/2020)
(10/13/2020)
(12/8/2020)
(12/20/2020)
(11/3/2020)

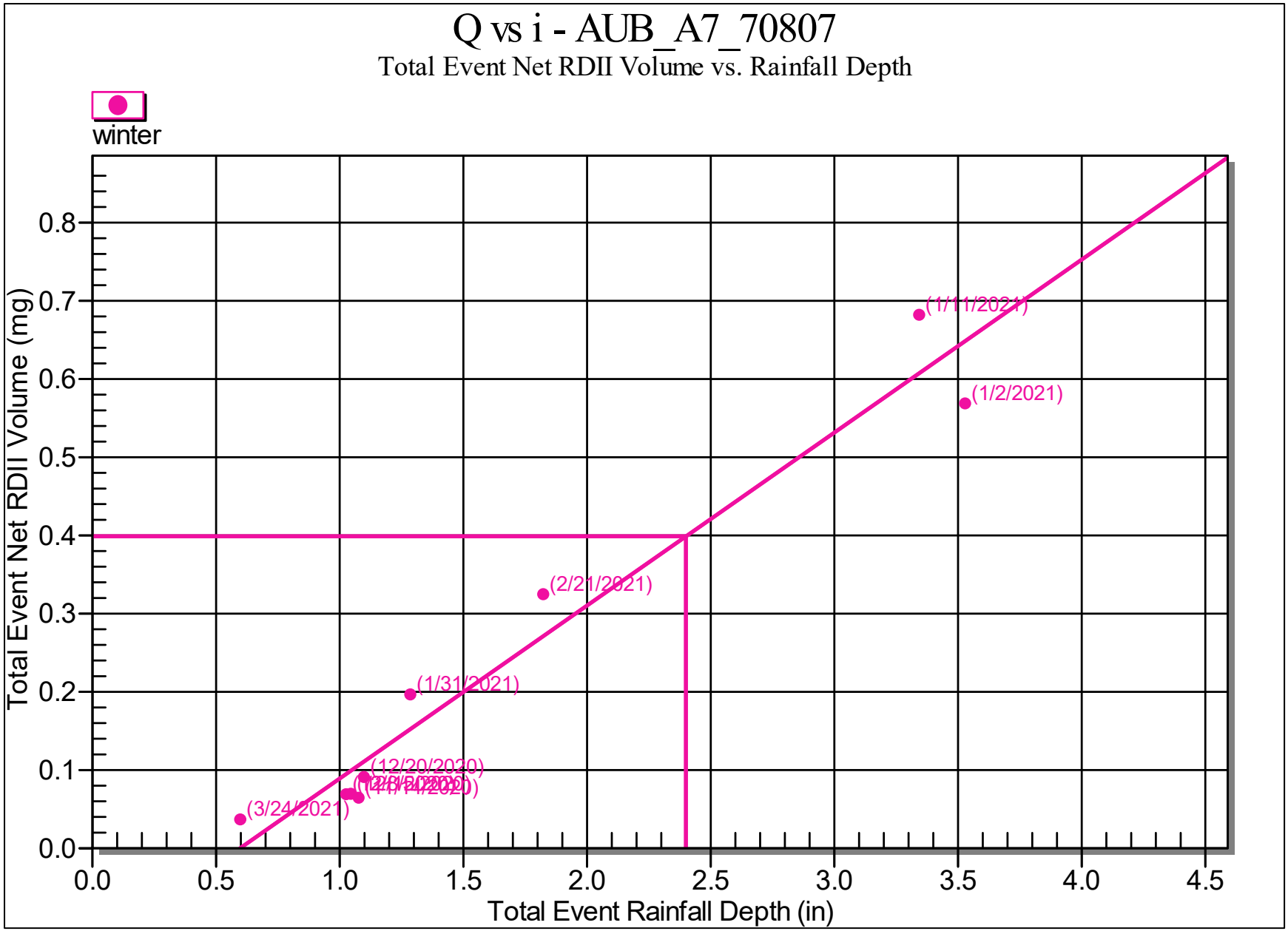

Q vs i - WINT035
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
Total Event Rainfall Depth (in)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
(1/2/2021)
(1/11/2021)
(2/21/2021)
(11/14/2020)
(10/9/2020)

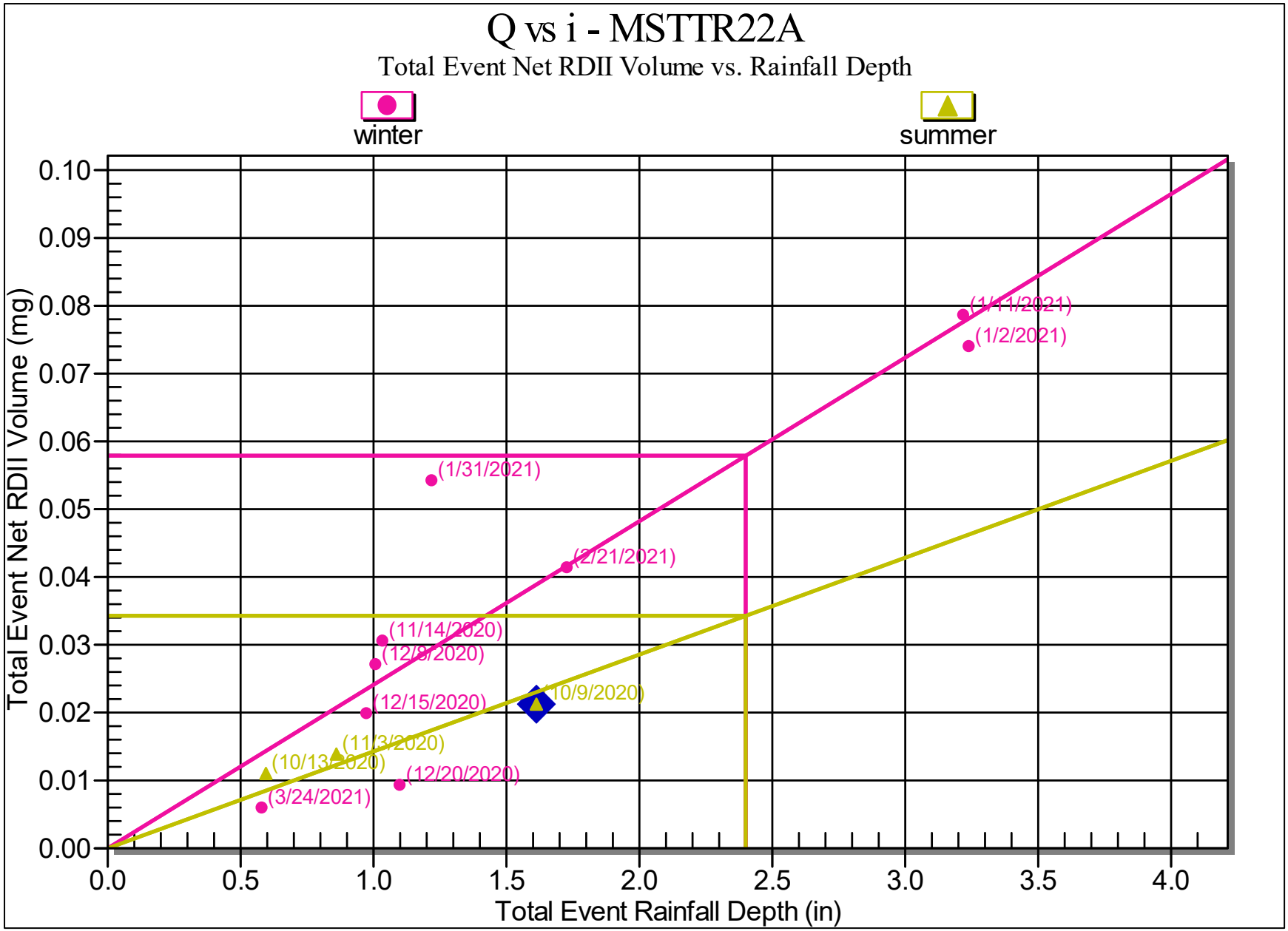

Q vs i - AUB_A1_30820
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/2/2021)
(1/11/2021)
(2/21/2021)
(12/8/2020)
(3/24/2021)

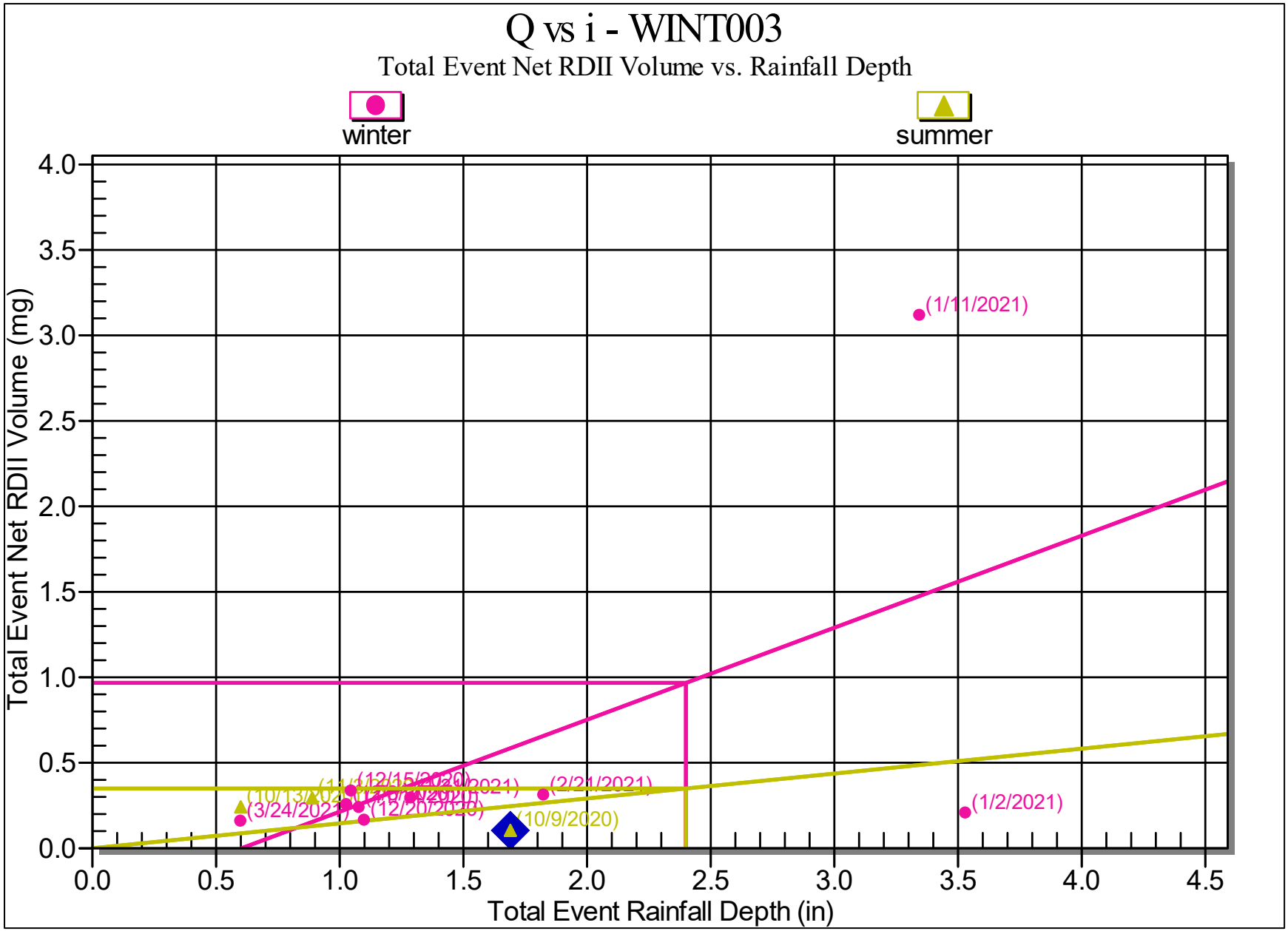

Q vs i - AUB_A10_710151
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/11/2021)
(1/2/2021)
(2/21/2021)
(12/20/2020)
(11/14/2020)
(1/31/2021)
(10/9/2020)
(11/3/2020)
(3/24/2021)

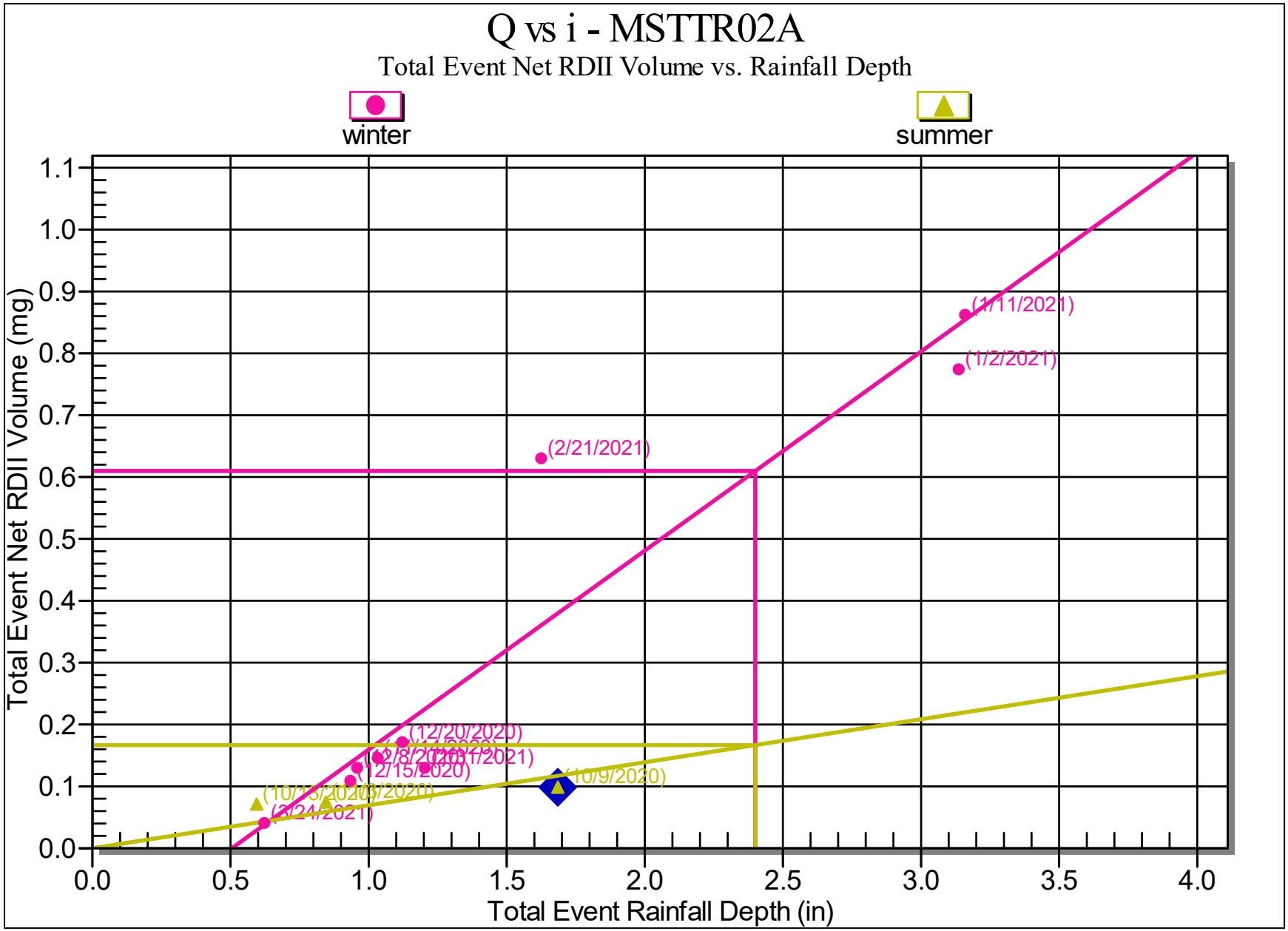

Q vs i - AUB_A11_710142
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
(12/8/2020)
(12/15/2020)
(3/24/2021)
(2/21/2021)
(10/9/2020)
(12/20/2020)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)

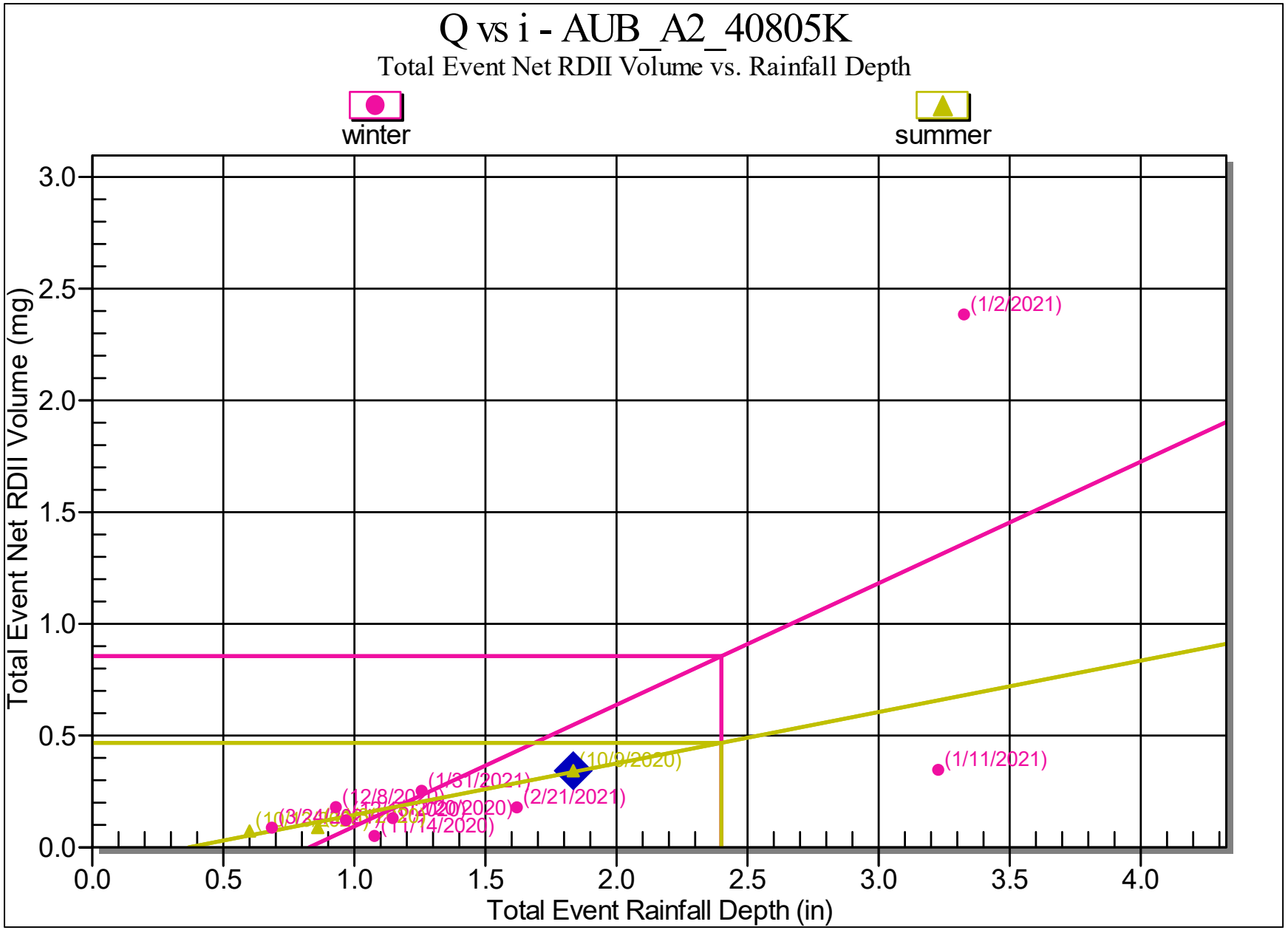

Q vs i - AUB_A14_710149
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/11/2021)
(1/2/2021)
(10/9/2020)
(11/14/2020)
(2/21/2021)
(3/24/2021)
(12/15/2020)
(11/3/2020)
(1/31/2021)


Q vs i - AUB_A7_70807
Total Event Net RDII Volume vs. Rainfall Depth
winter
Total Event Net RDII Volume (mg)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
Total Event Rainfall Depth (in)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
(1/11/2021)
(1/2/2021)
(2/21/2021)
(1/31/2021)
(12/20/2020)
(3/24/2021)


Q vs i - MSTTR22A
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Total Event Rainfall Depth (in)
(1/11/2021)
(1/2/2021)
(1/31/2021)
(2/21/2021)
(11/14/2020)
(12/8/2020)
(12/15/2020)
(10/9/2020)
(11/3/2020)
(10/13/2020)
(12/20/2020)
(3/24/2021)


Q vs i - WINT003
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
Total Event Rainfall Depth (in)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
(1/11/2021)
(2/21/2021)
(1/2/2021)
(10/9/2020)
(3/24/2021)
(12/20/2020)


Q vs i - MSTTR02A
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
Total Event Rainfall Depth (in)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
(1/11/2021)
(1/2/2021)
(2/21/2021)
(12/20/2020)
(12/15/2020)
(10/9/2020)
(2/24/2021)

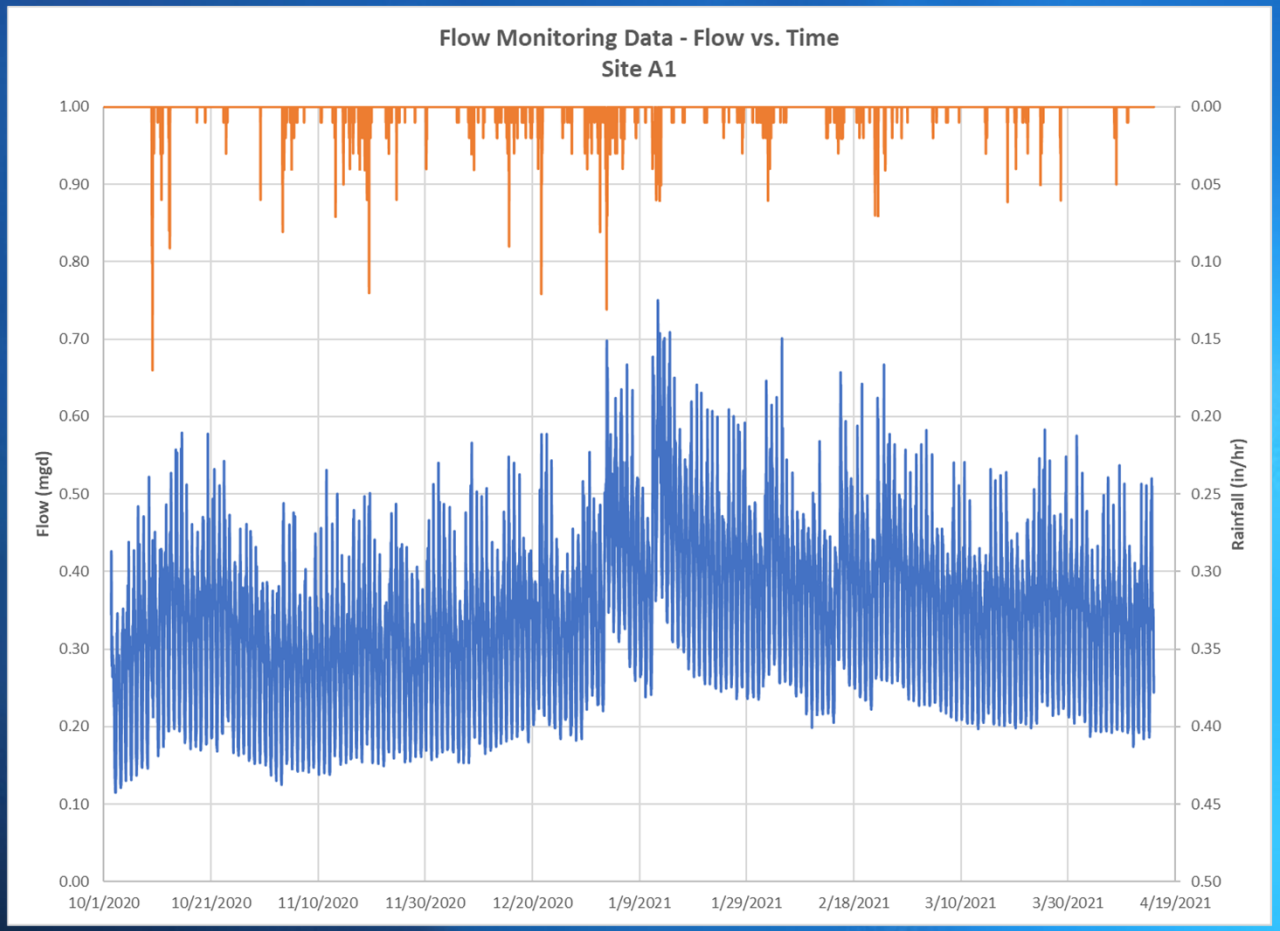

Q vs i - AUB_A2_40805K
Total Event Net RDII Volume vs. Rainfall Depth
winter
summer
Total Event Net RDII Volume (mg)
Total Event Rainfall Depth (in)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
(1/2/2021)
(1/11/2021)
(10/9/2020)
(1/31/2021)
(2/21/2021)
(11/14/2020)

ATTACHMENT 1B

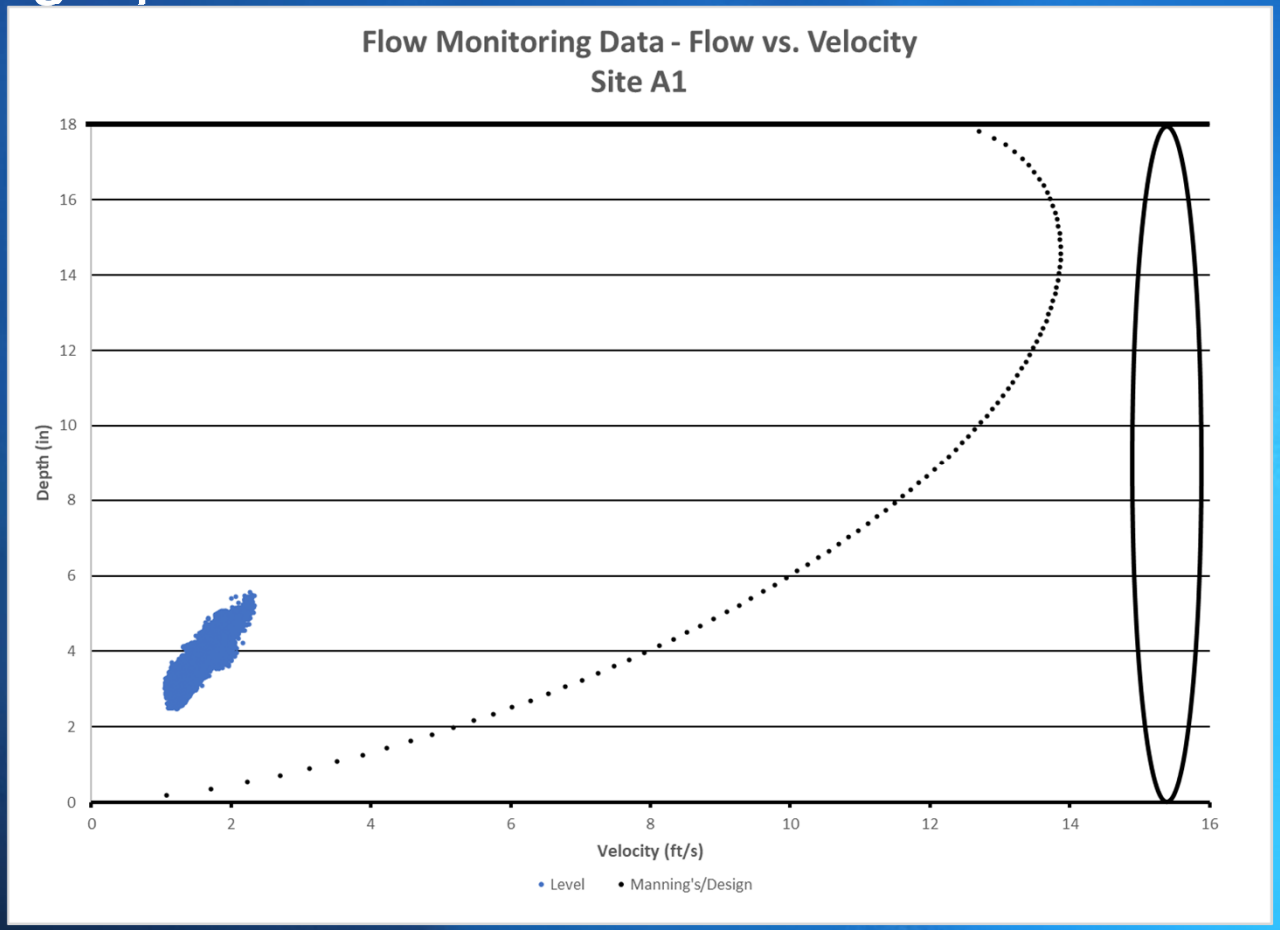
FLOW METER QUALITY REVIEW

Meter AUB_A1

Flow vs Rainfall

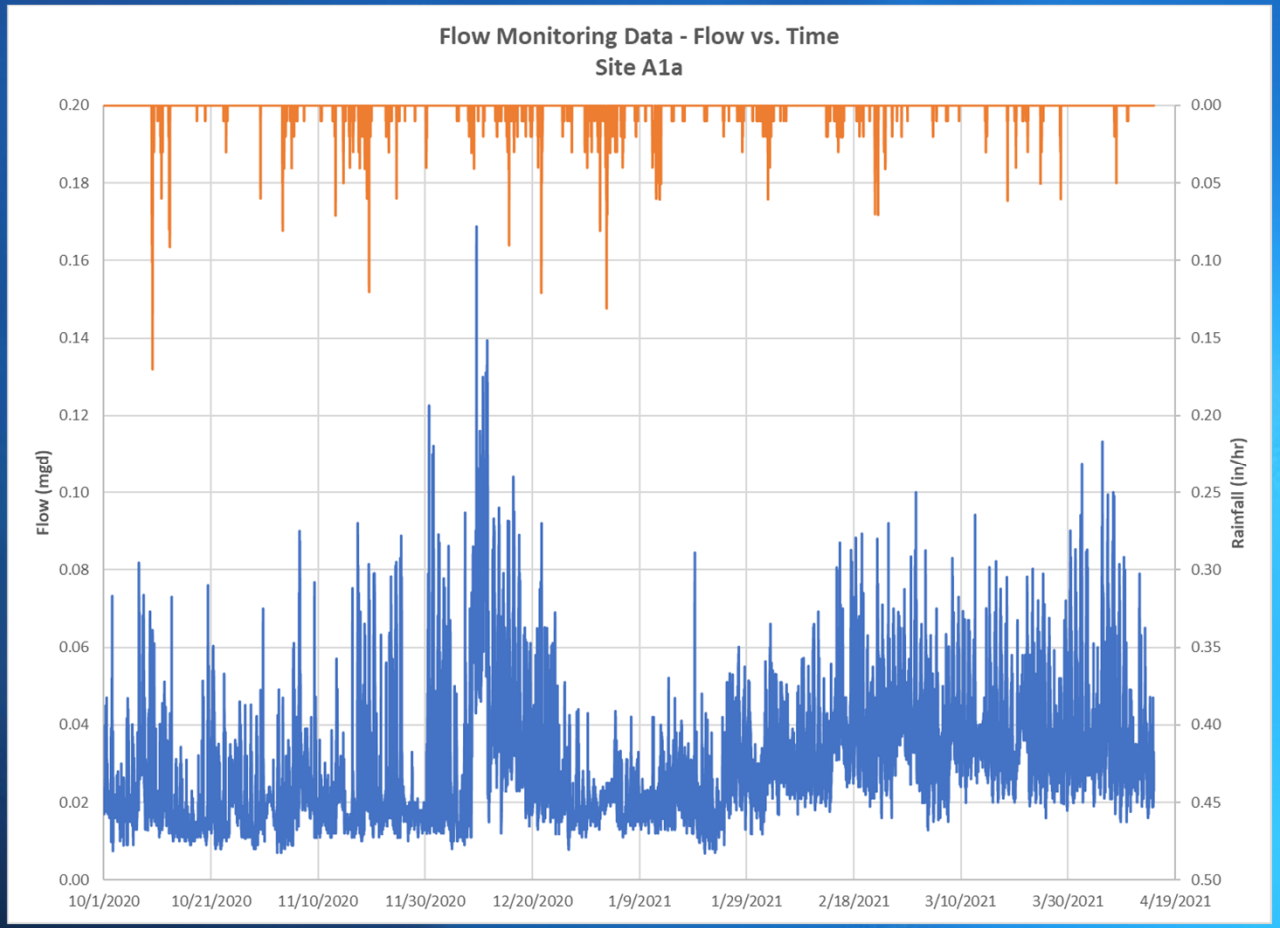


Meter AUB_A1
Scattergraph

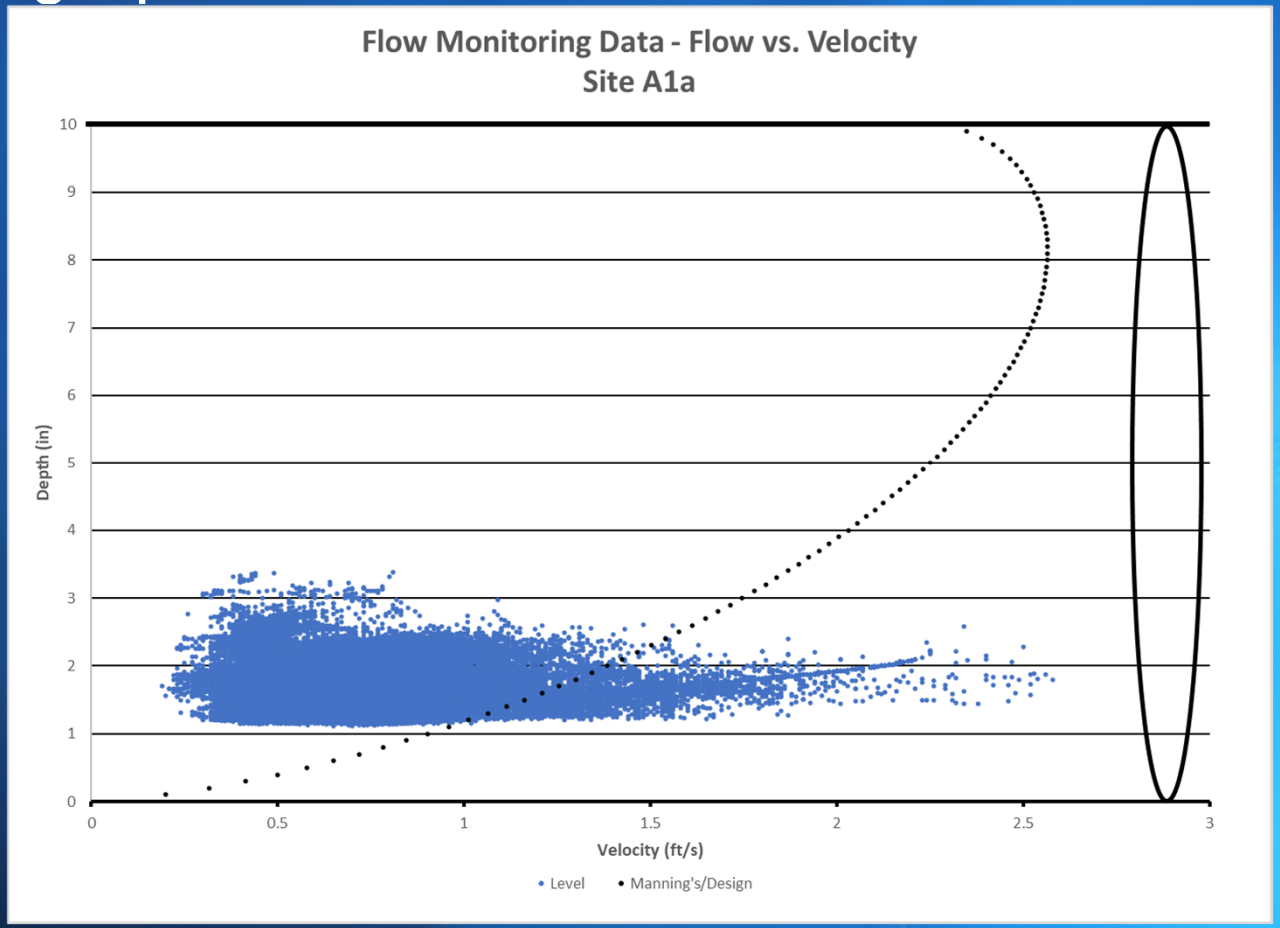


Meter AUB_A1a

Flow vs Rainfall

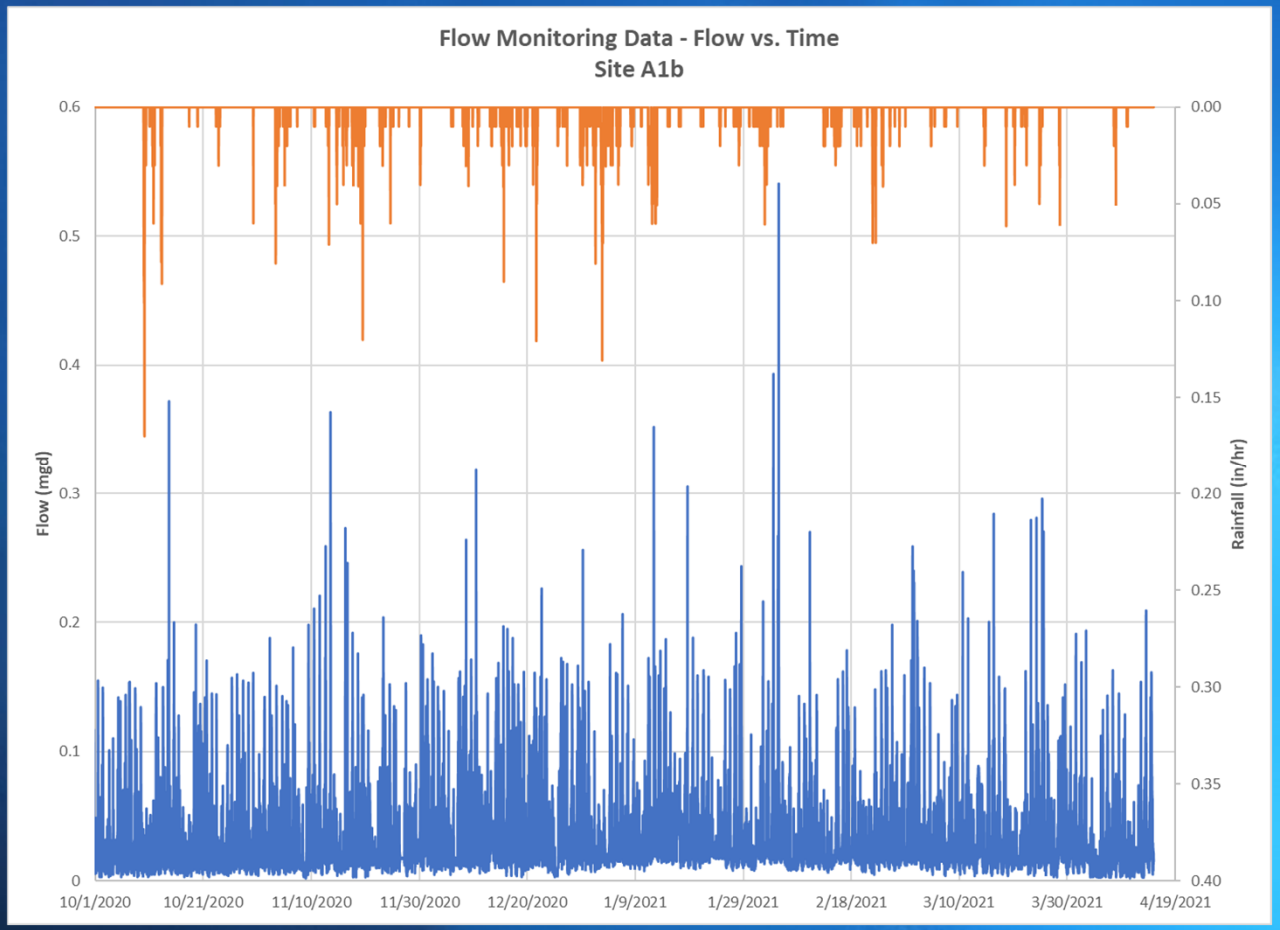


Meter AUB_A1a
Scattergraph

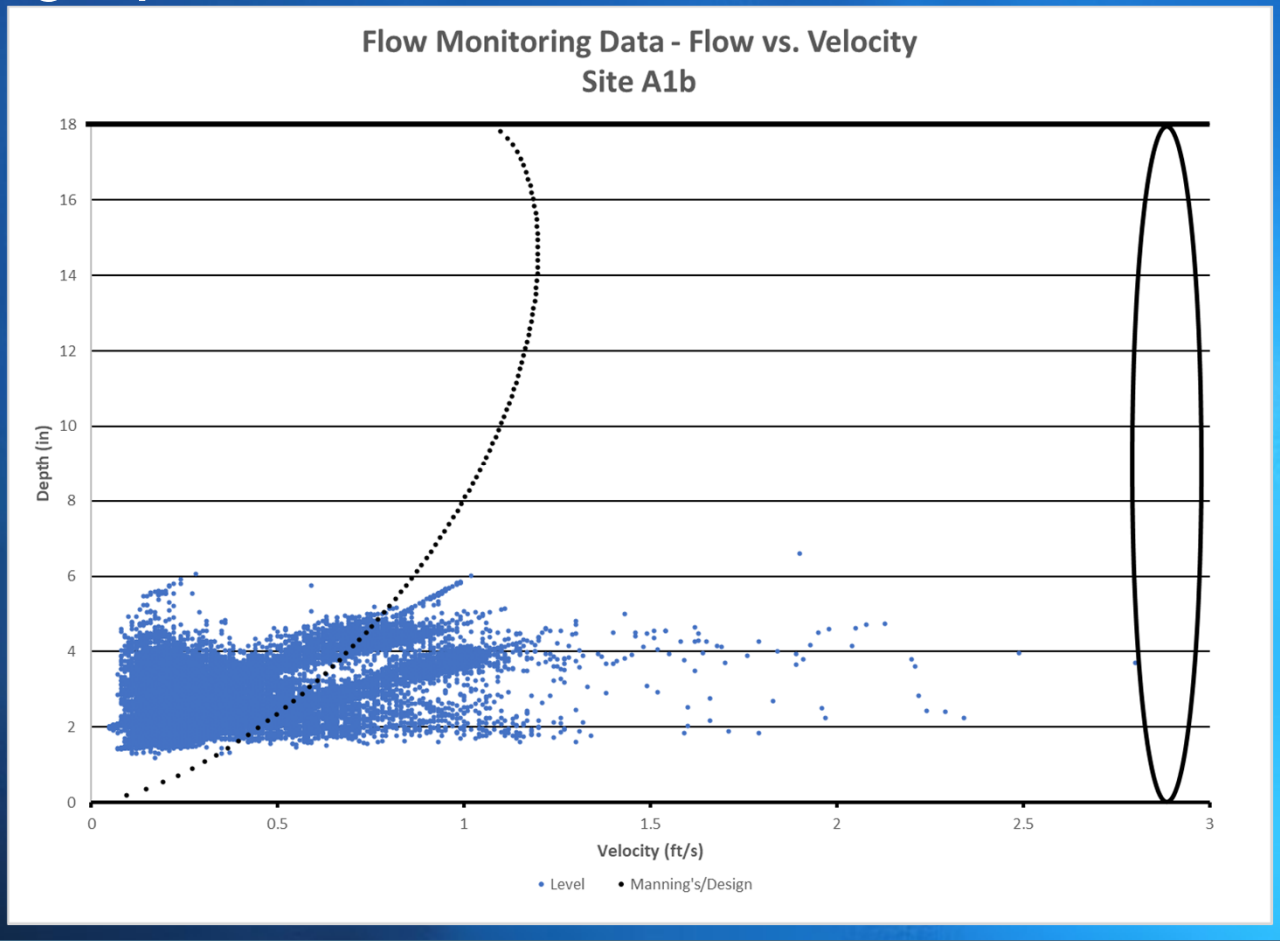


Meter AUB_A1b

Flow vs Rainfall

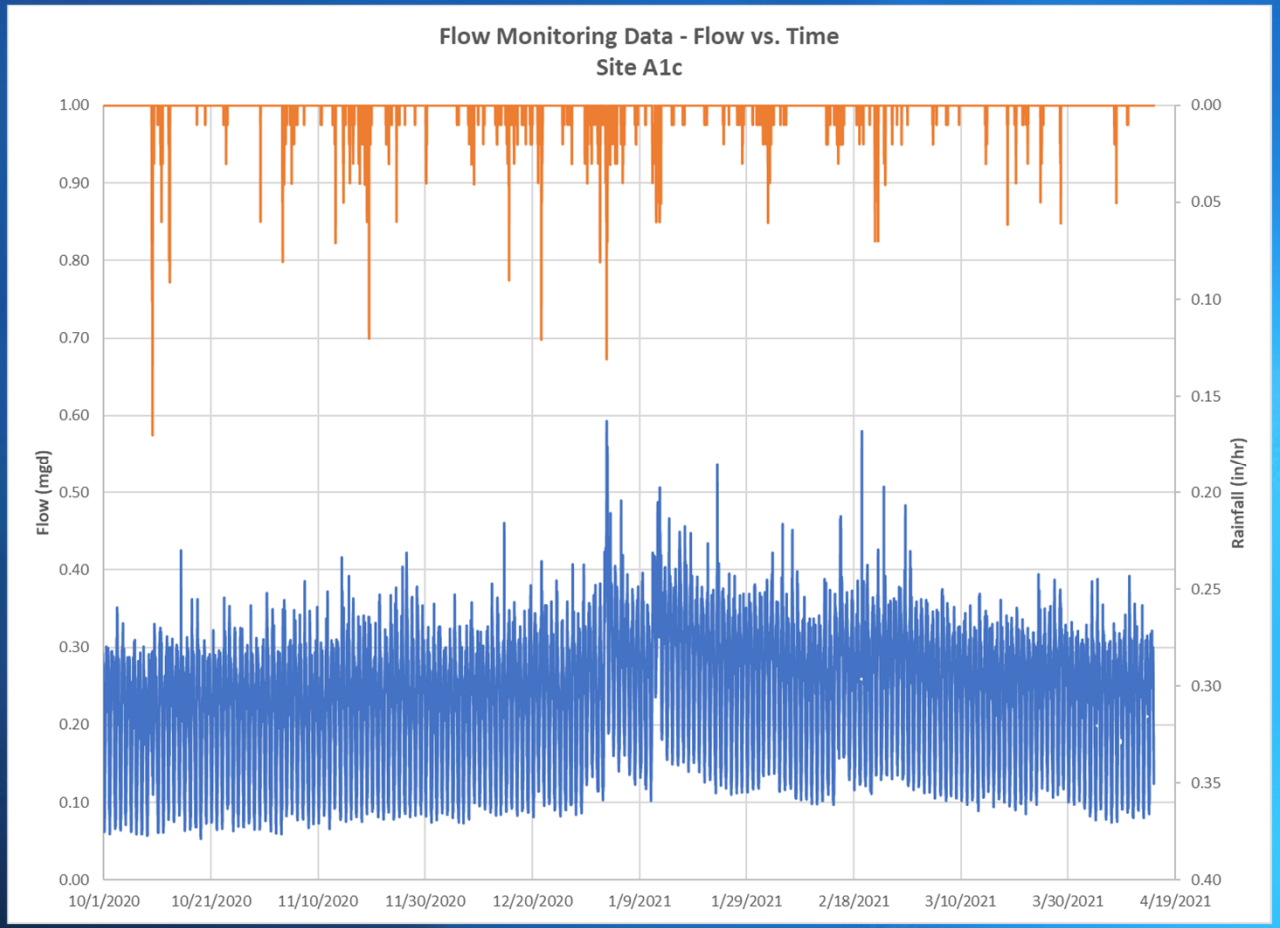


Meter AUB_A1b
Scattergraph

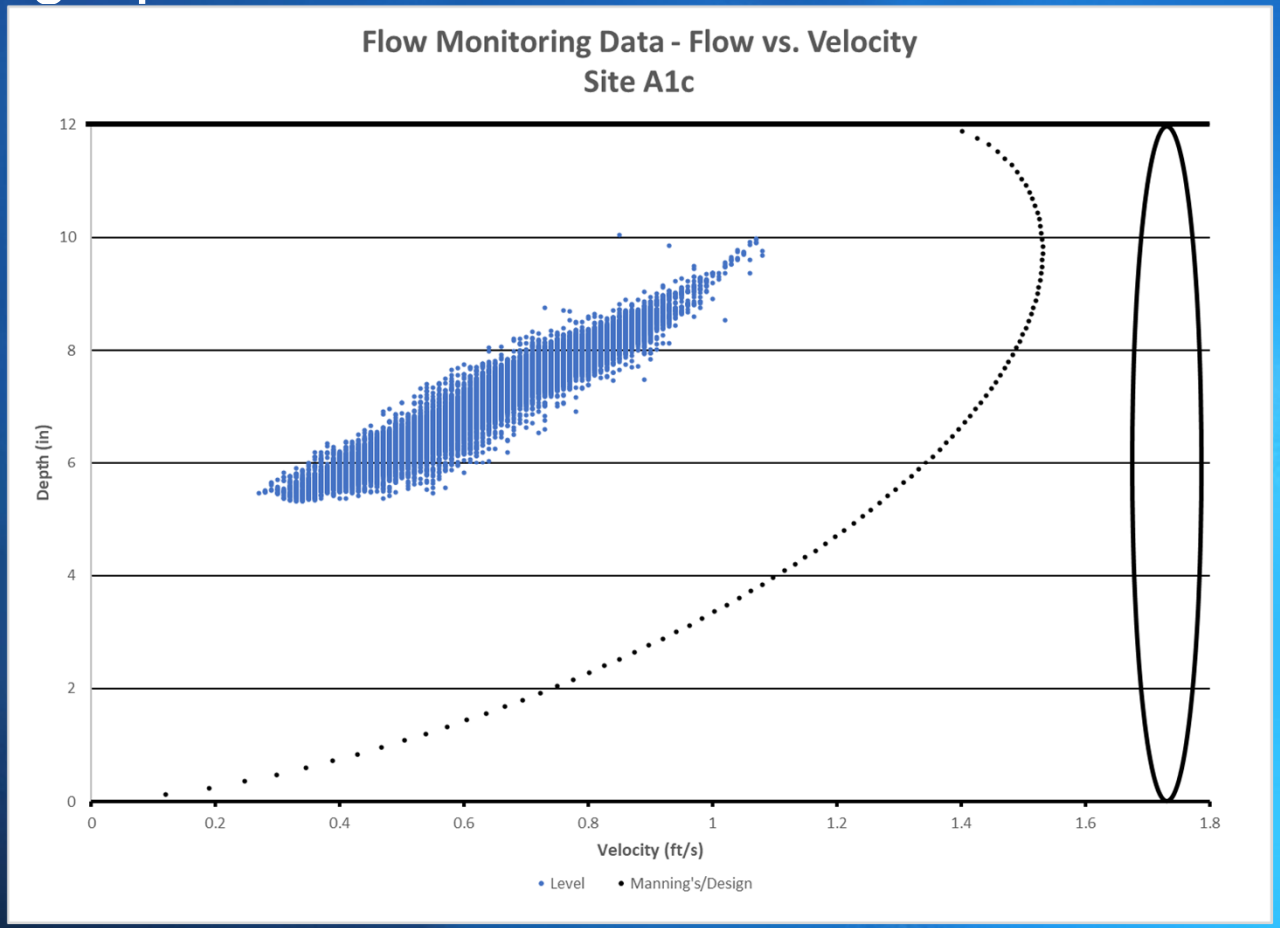


Meter AUB_A1c

Flow vs Rainfall

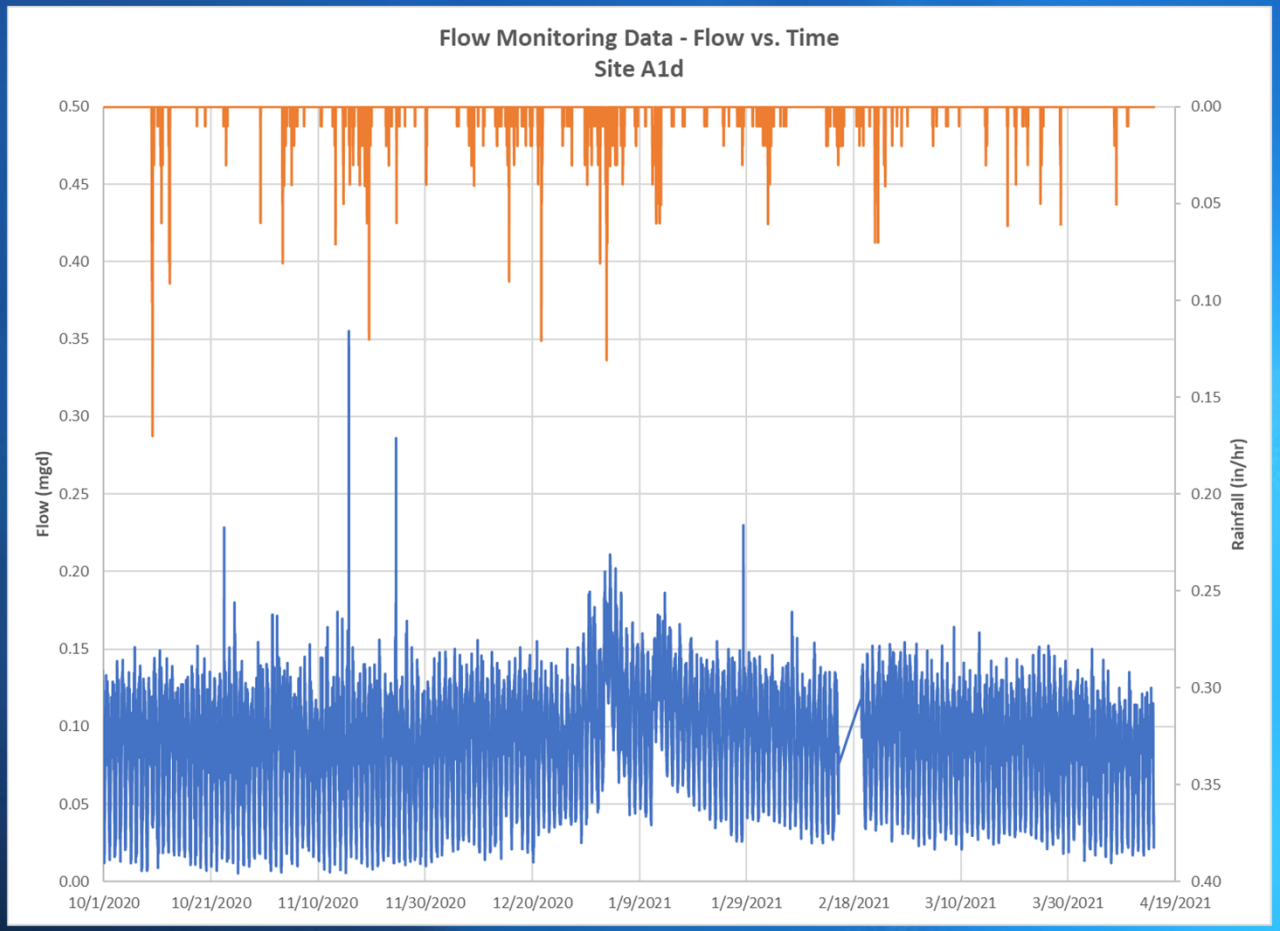


Meter AUB_A1c Scattergraph

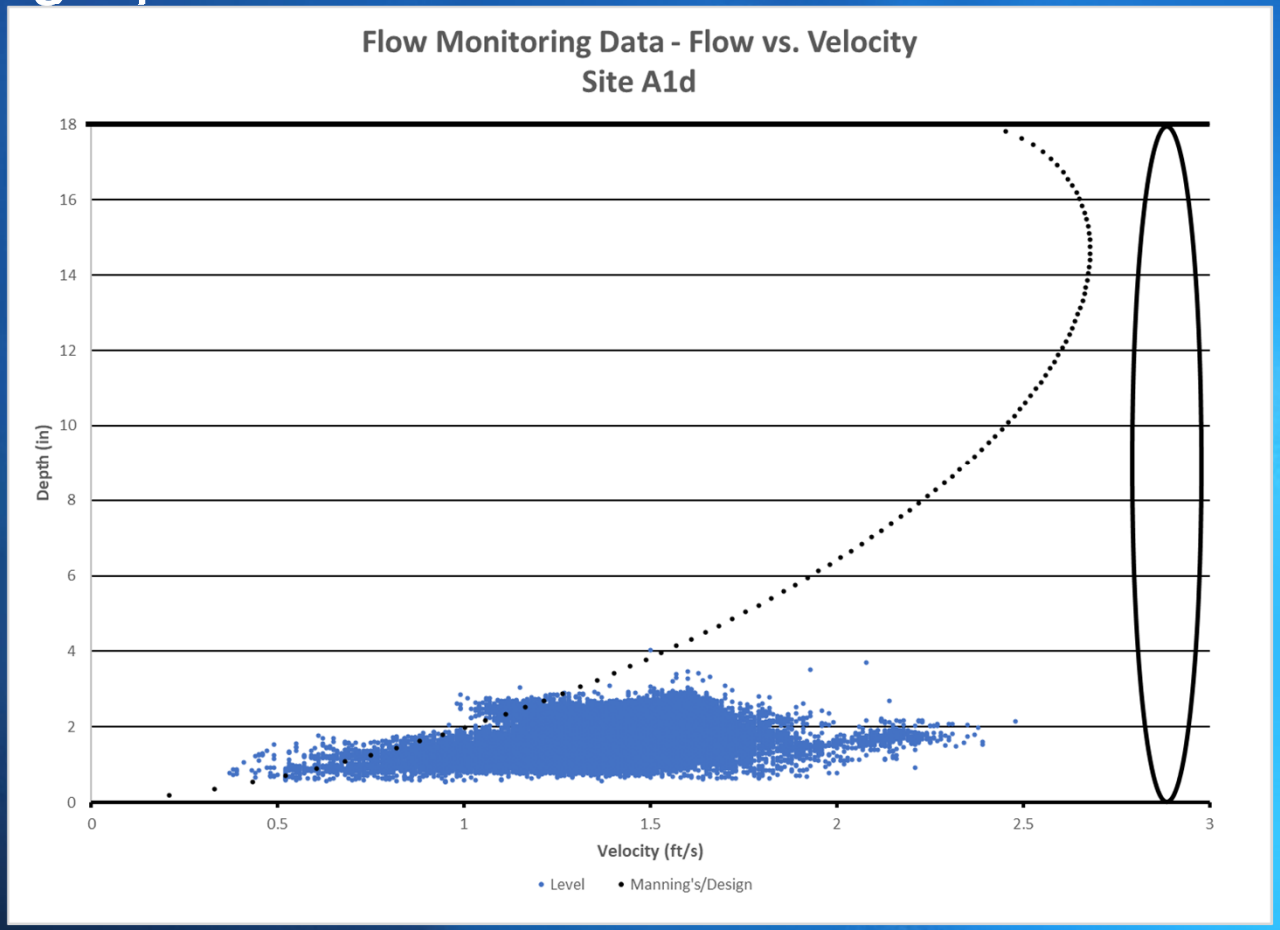


Meter AUB_A1d

Flow vs Rainfall

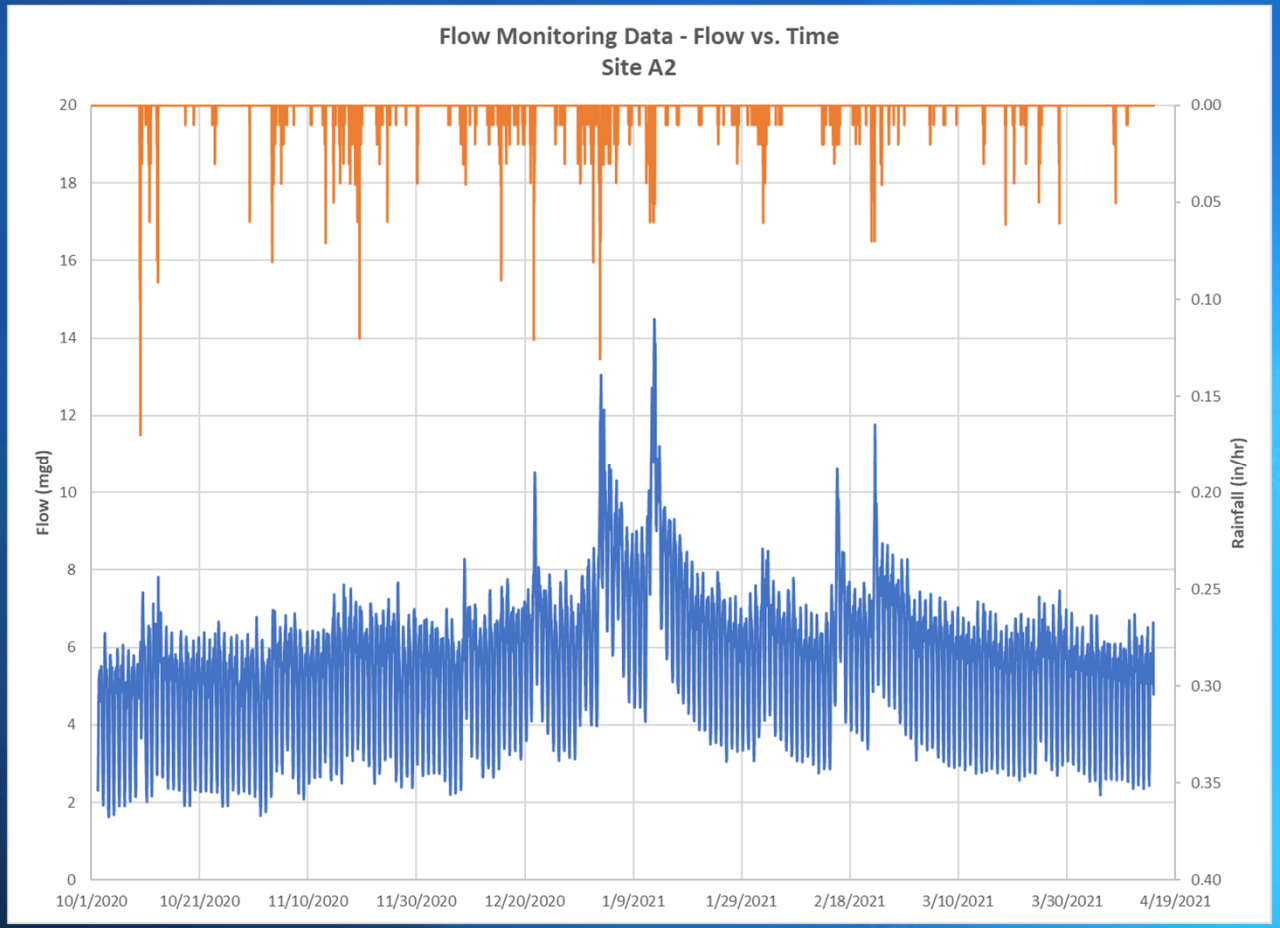


Meter AUB_A1d Scattergraph

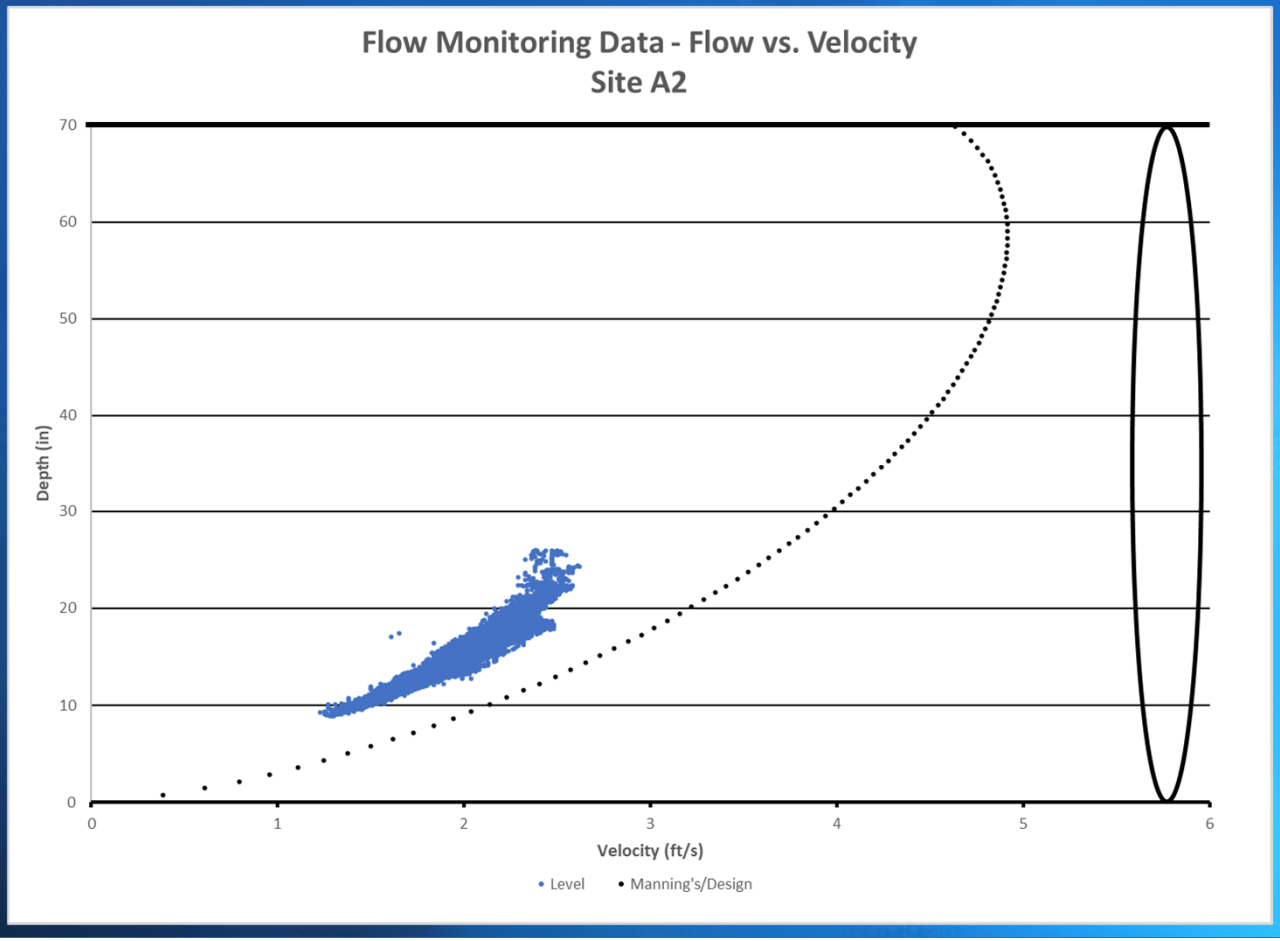


Meter AUB_A2

Flow vs Rainfall

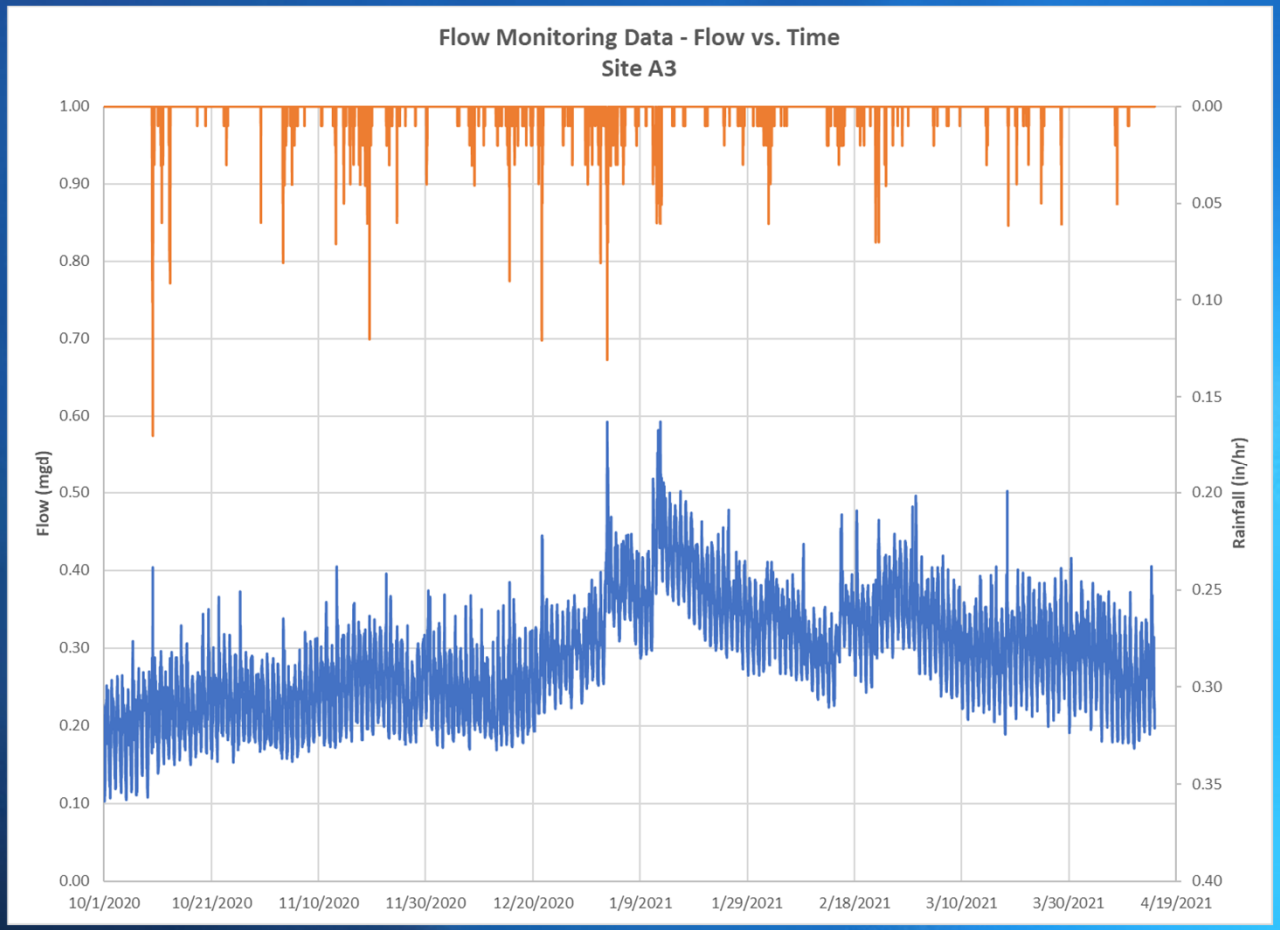


Meter AUB_A2
Scattergraph

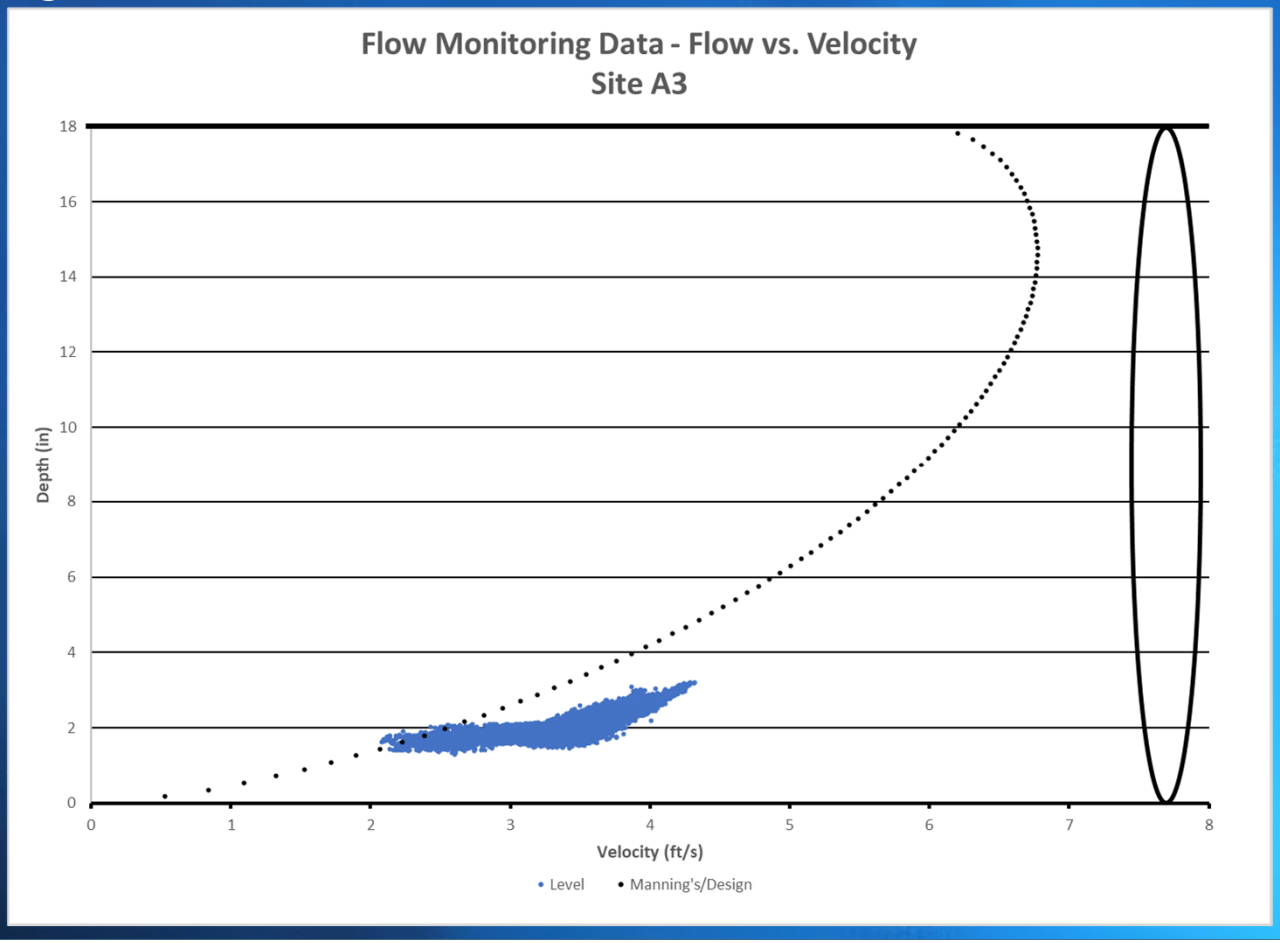


Meter AUB_A3

Flow vs Rainfall

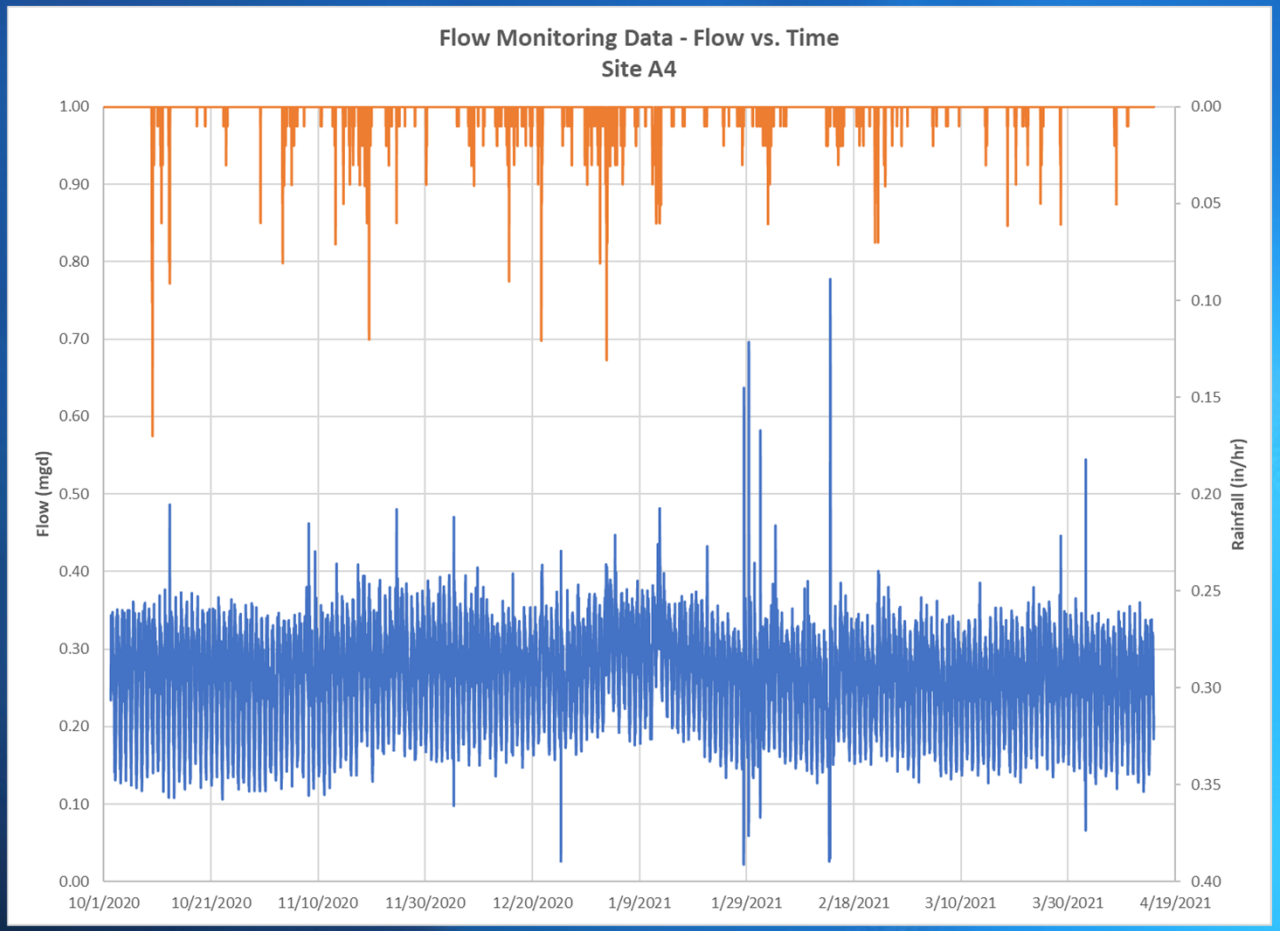


Meter AUB_A3
Scattergraph

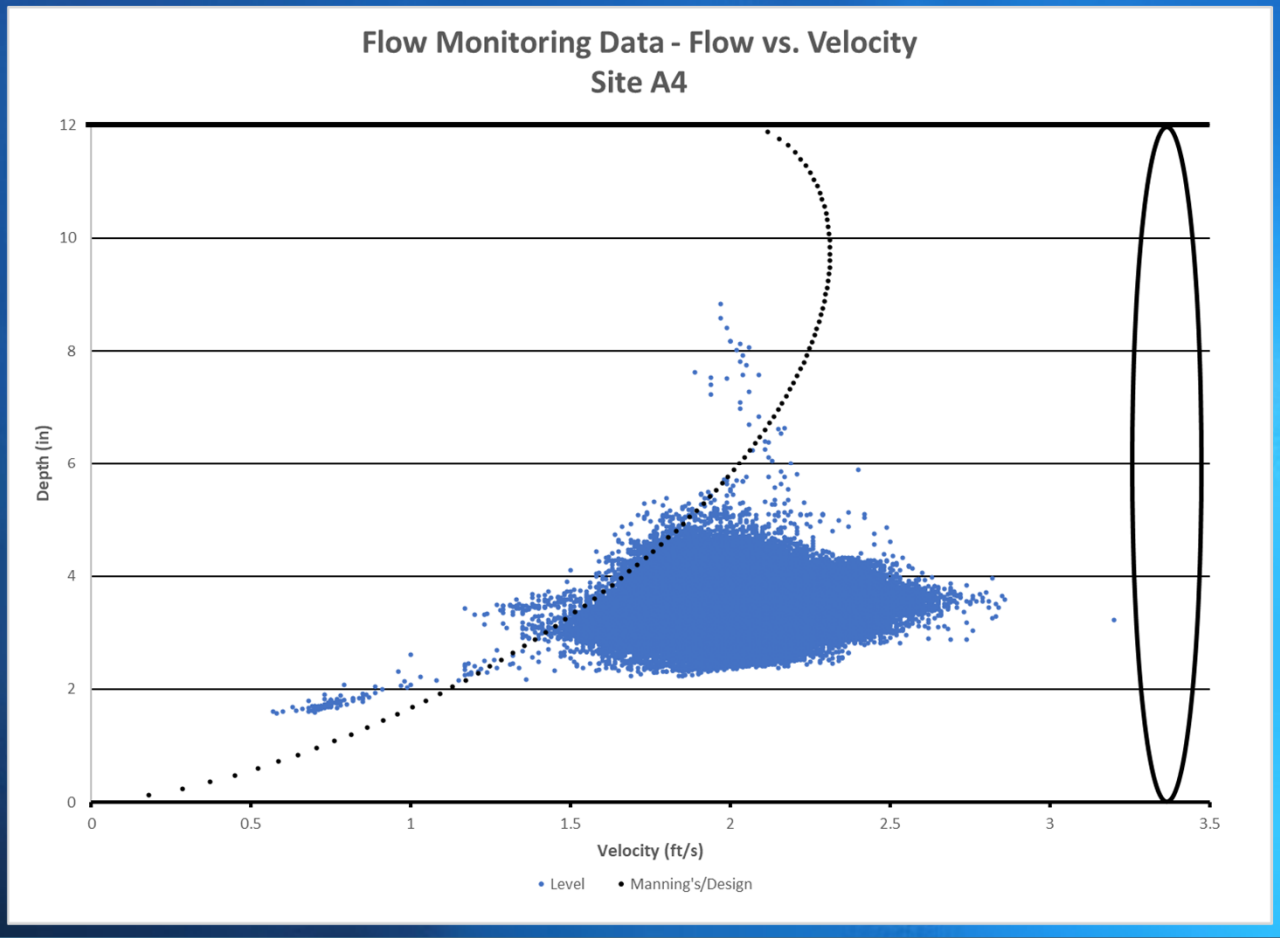


Meter AUB_A4

Flow vs Rainfall

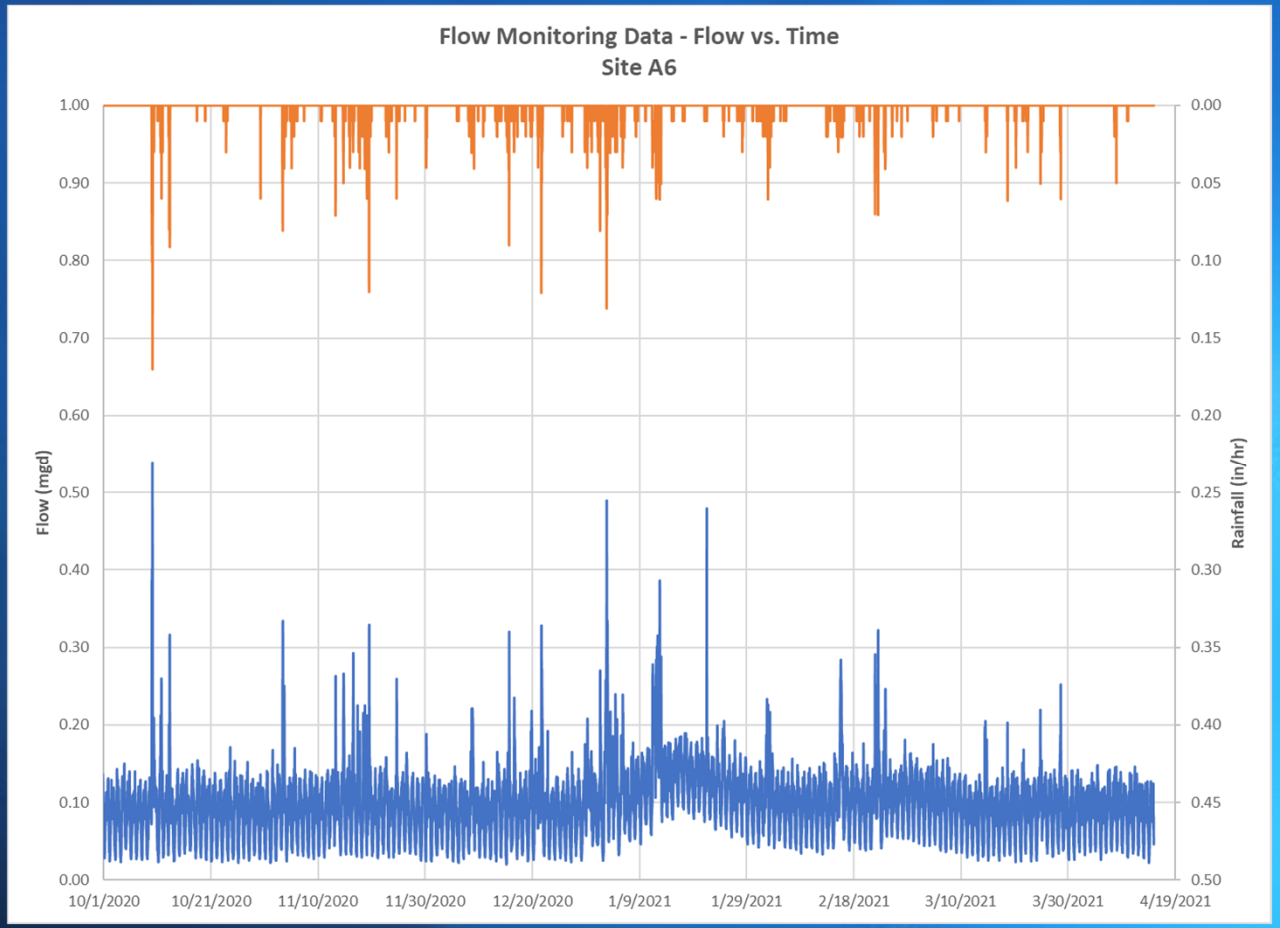


Meter AUB_A4
Scattergraph

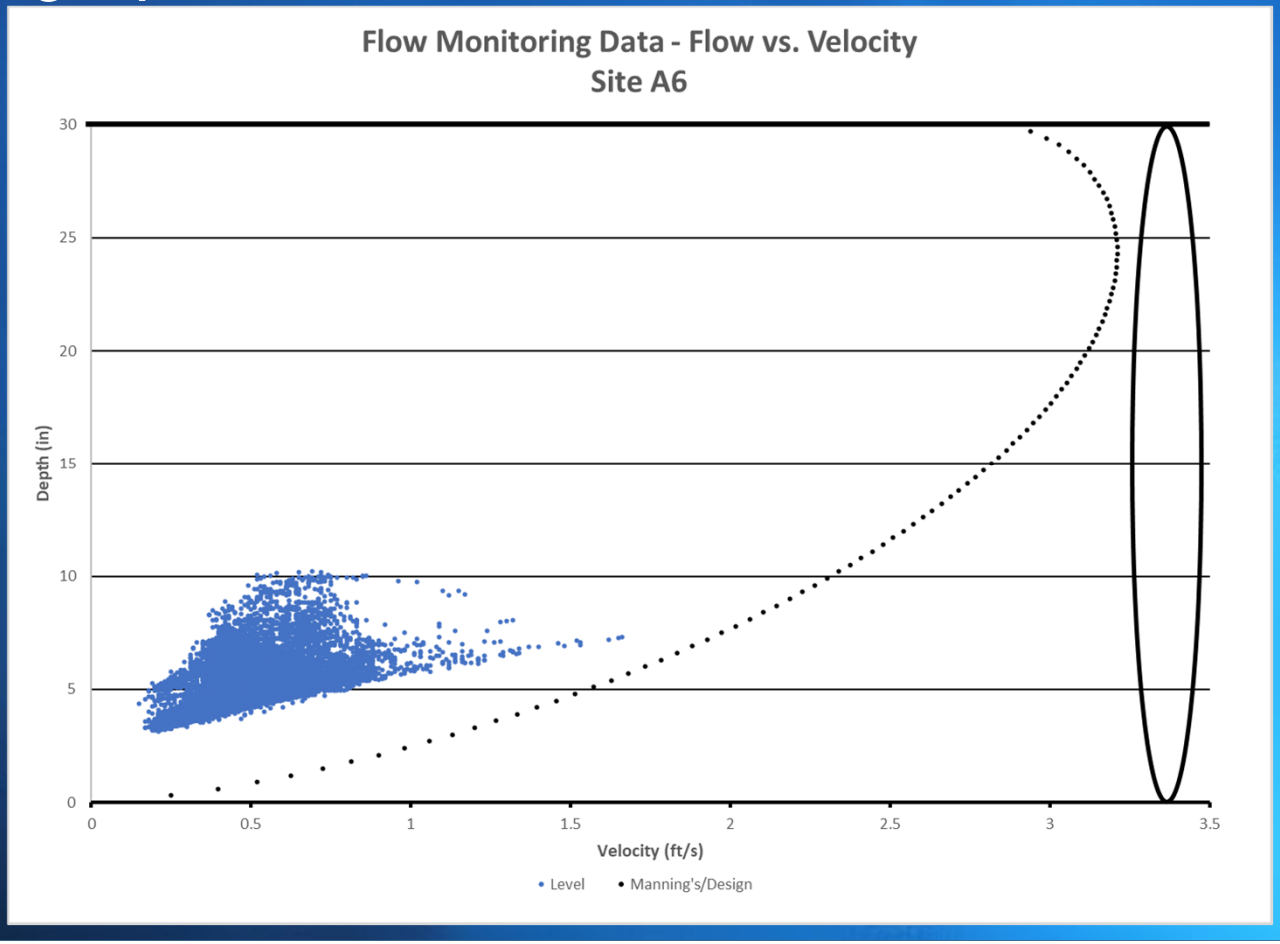


Meter AUB_A6

Flow vs Rainfall

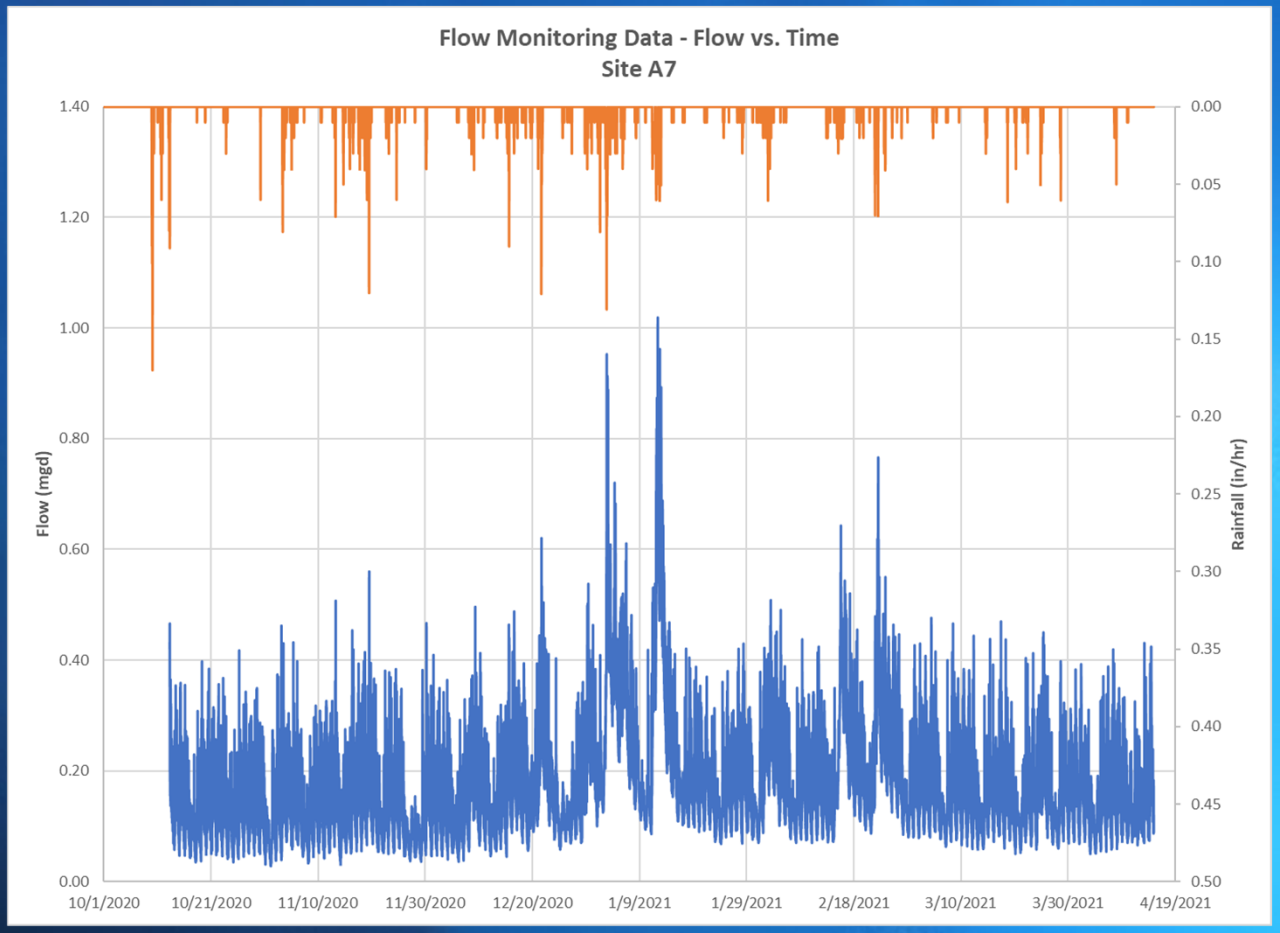


Meter AUB_A6
Scattergraph

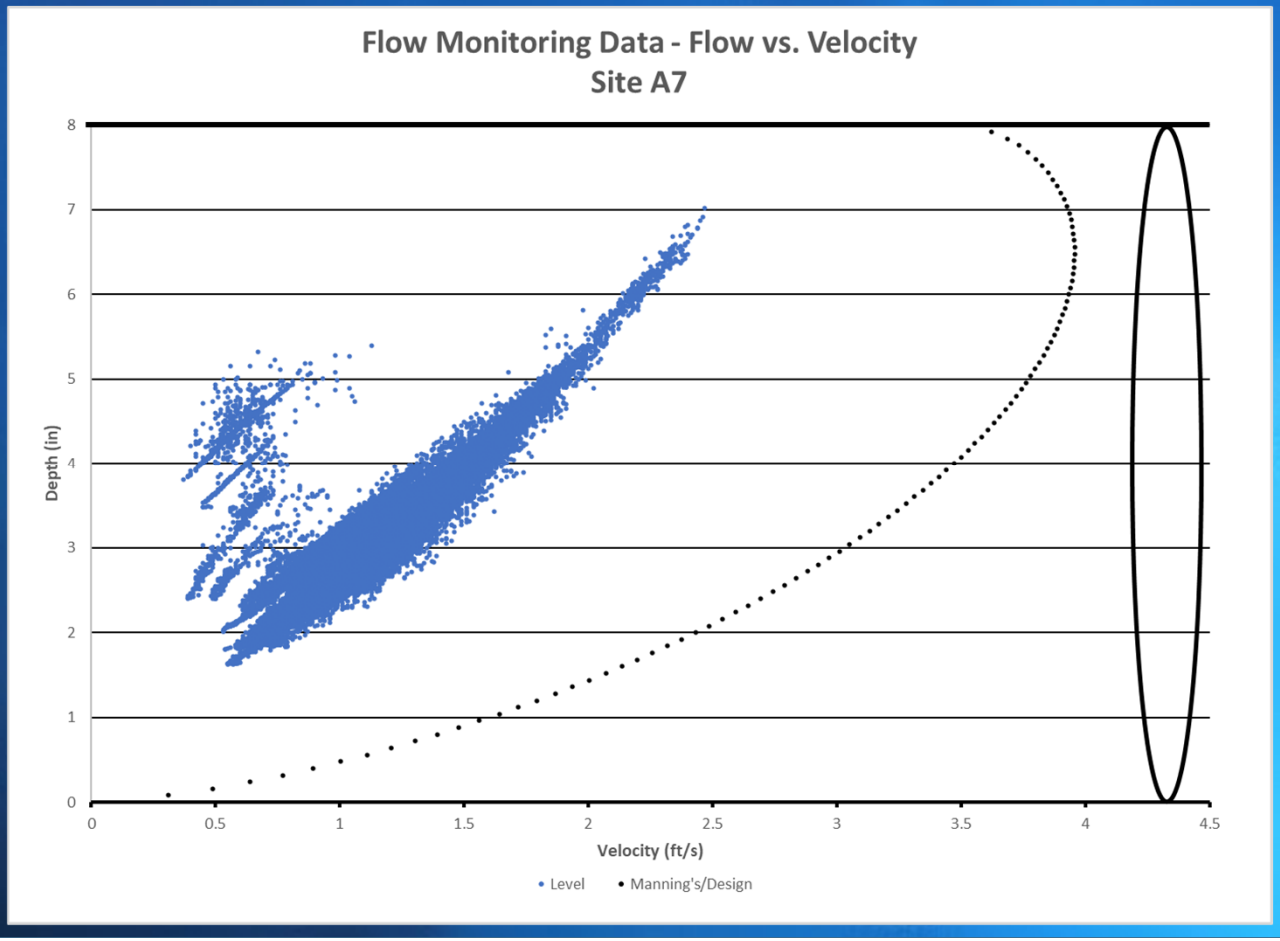


Meter AUB_A7

Flow vs Rainfall

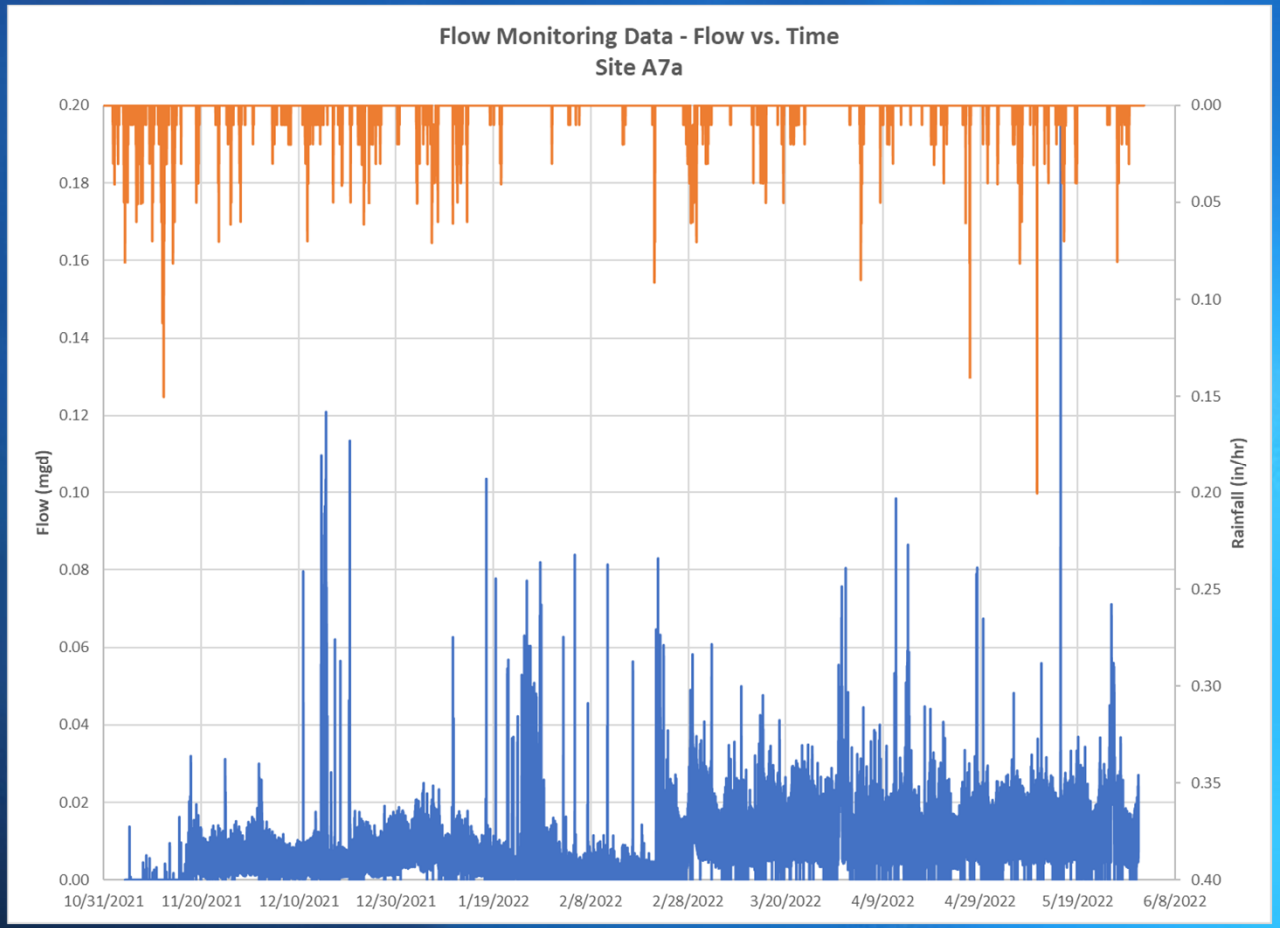


Meter AUB_A7
Scattergraph

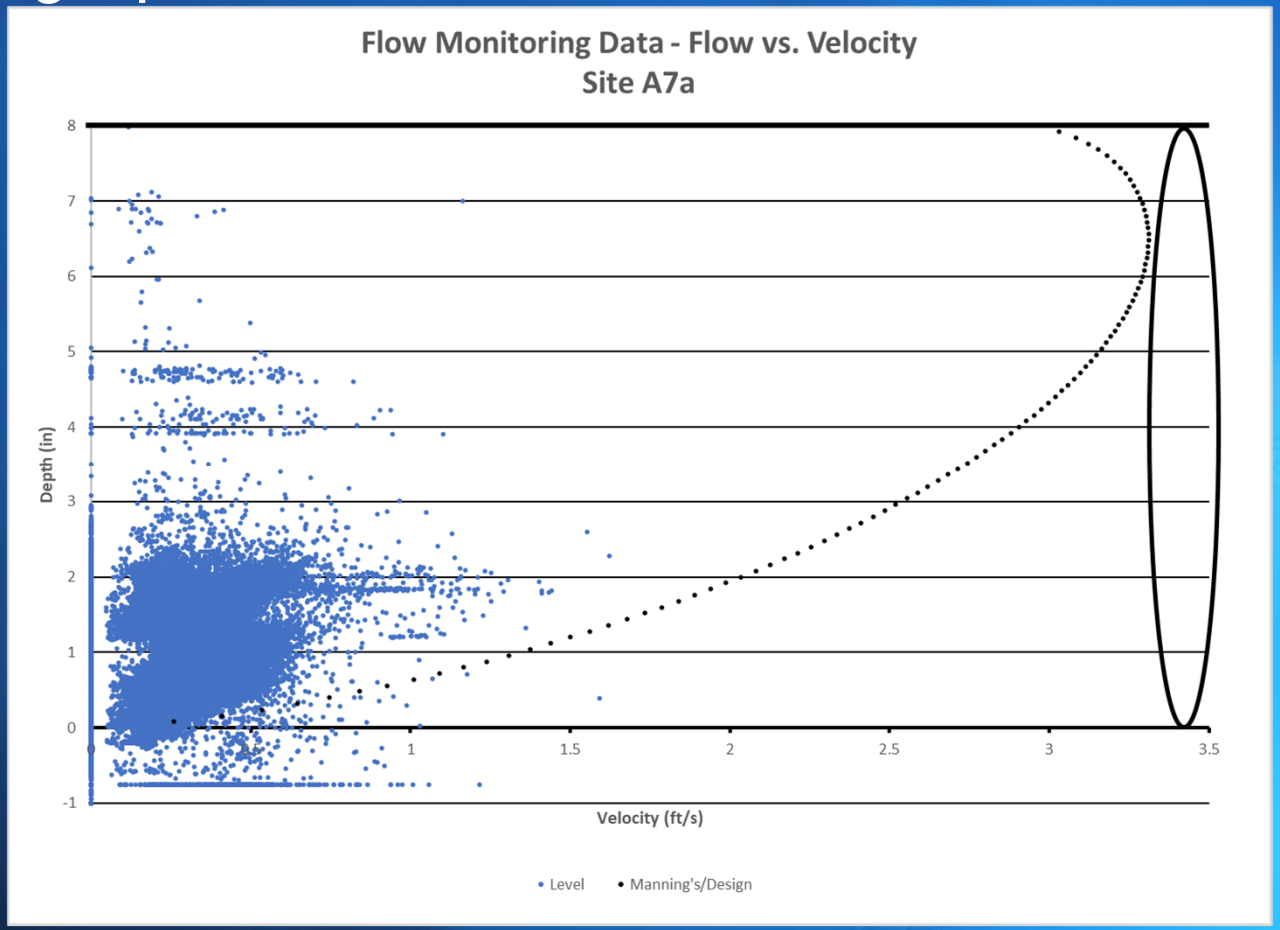


Meter AUB_A7a

Flow vs Rainfall

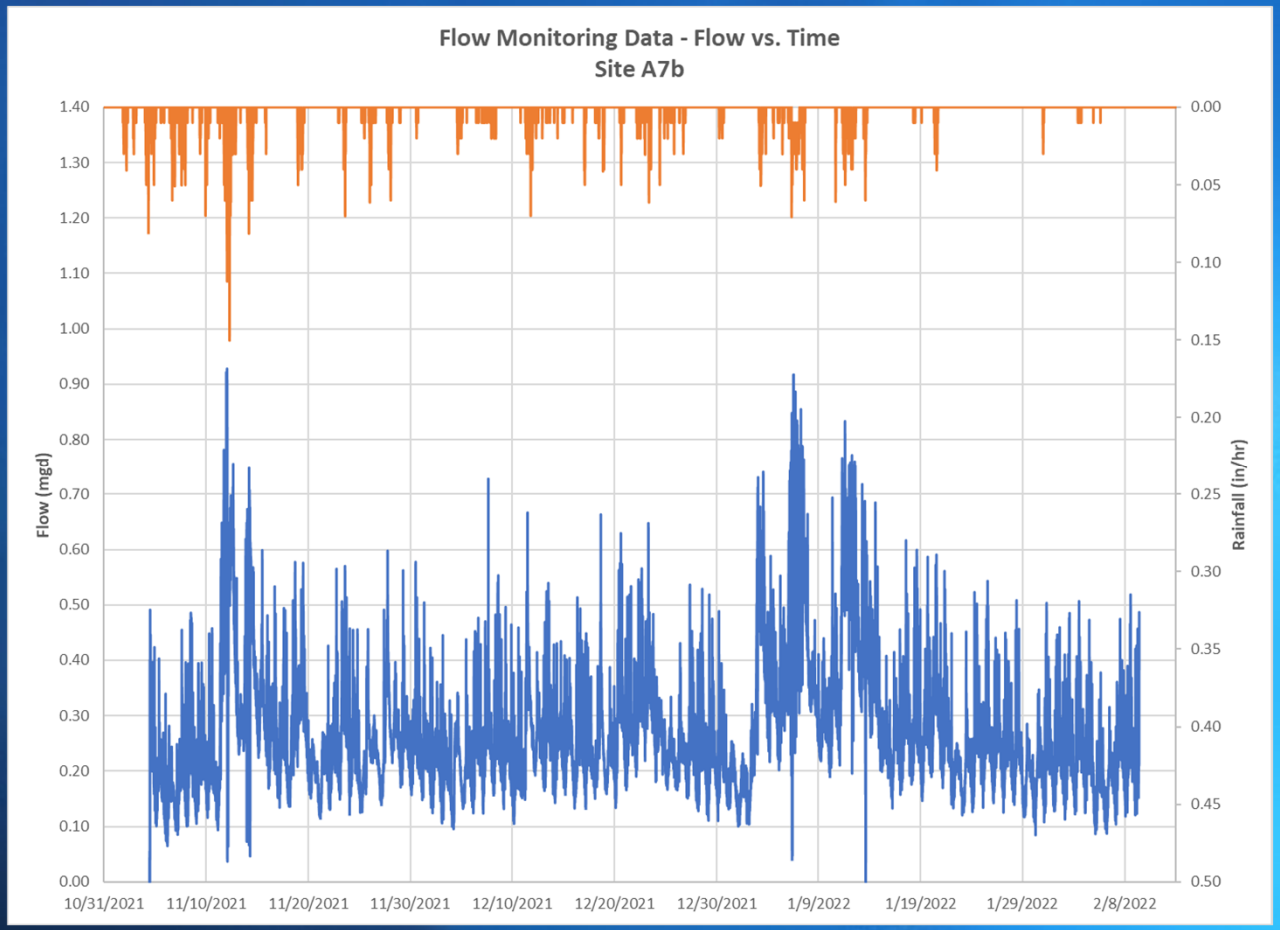


Meter AUB_A7a Scattergraph



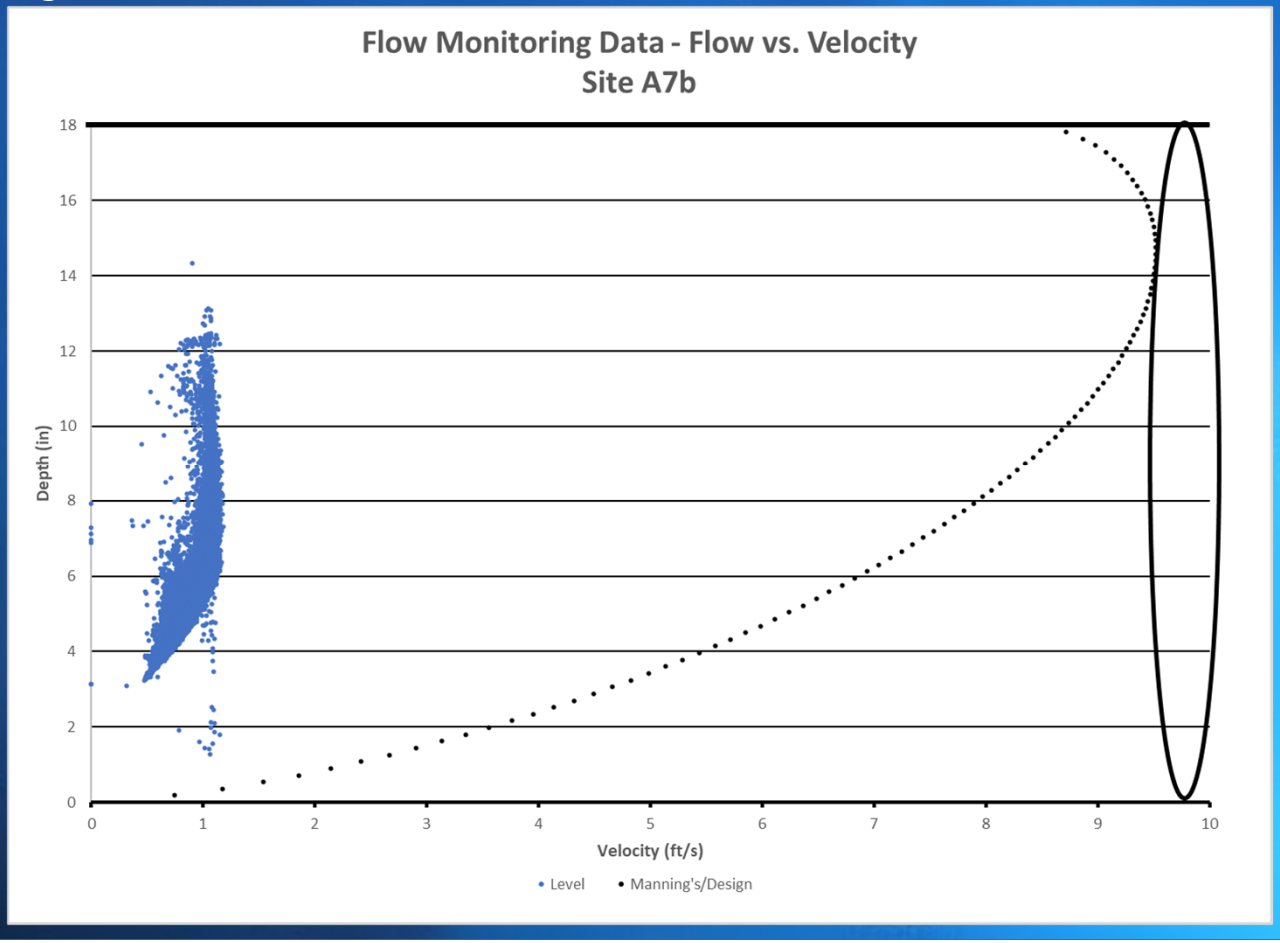
Meter AUB_A7b

Flow vs Rainfall



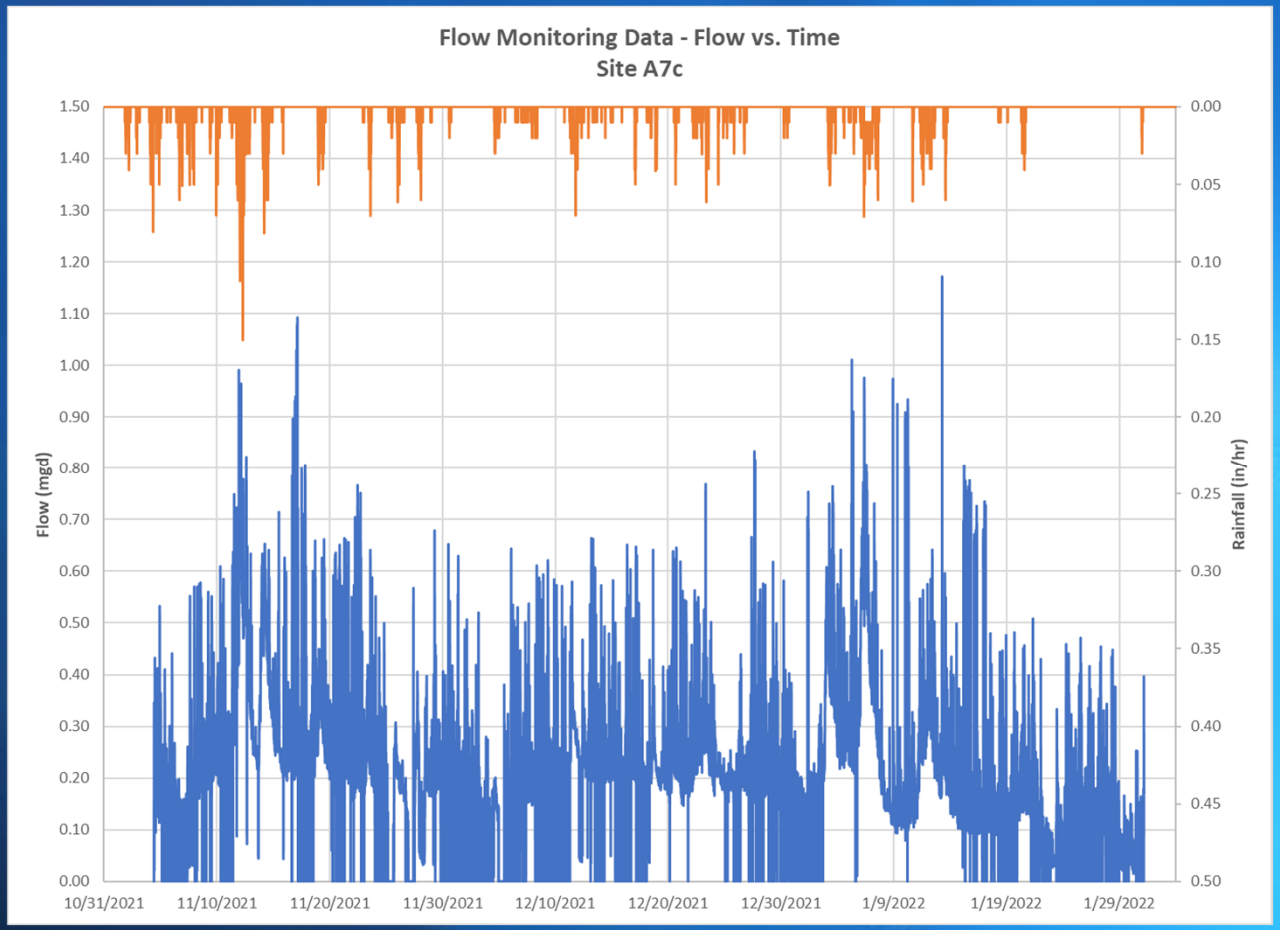
Meter AUB_A7b Scattergraph

Note: 3 data points with negative velocity, including 1 data point with negative depth

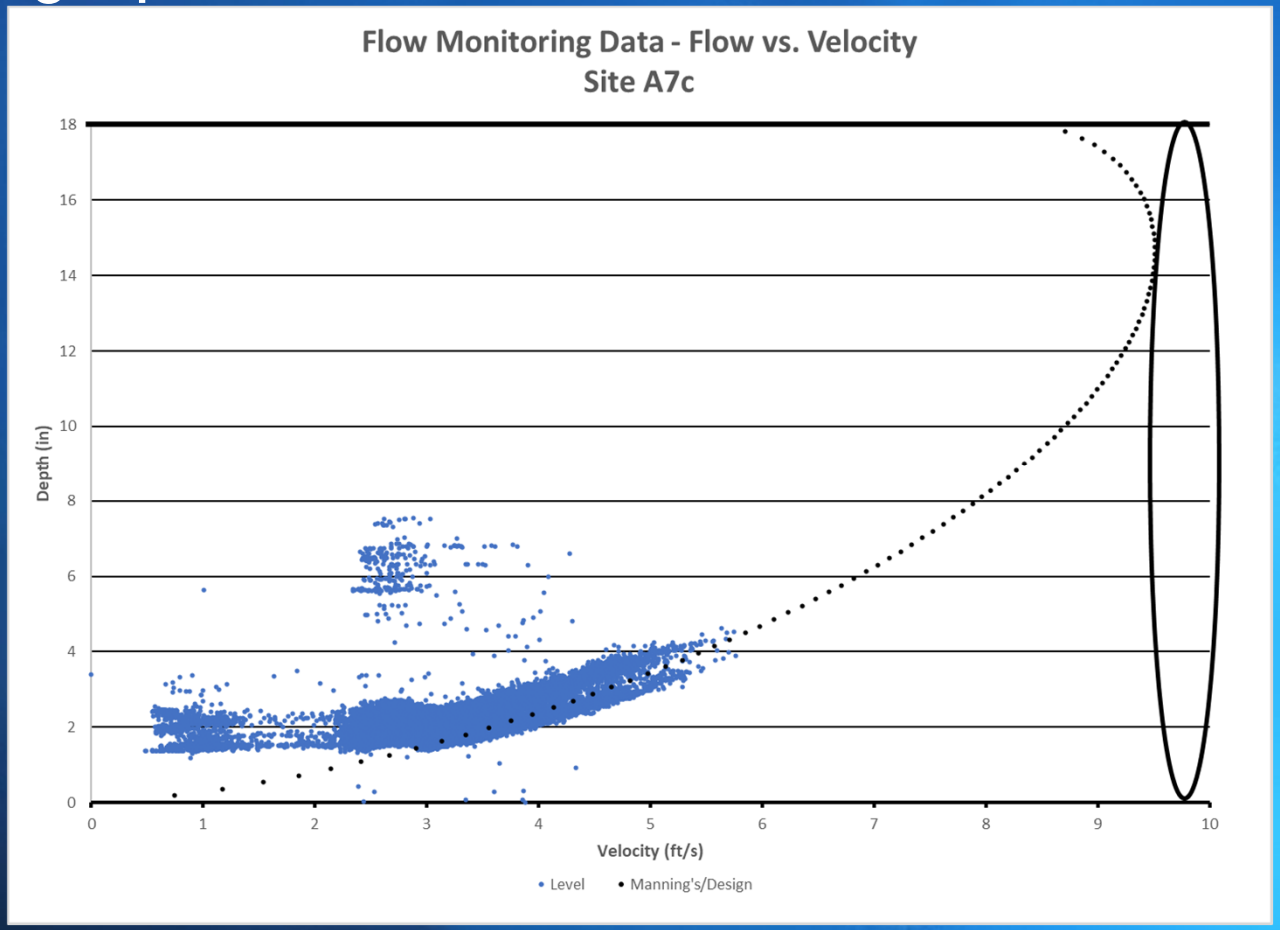


Meter AUB_A7c

Flow vs Rainfall

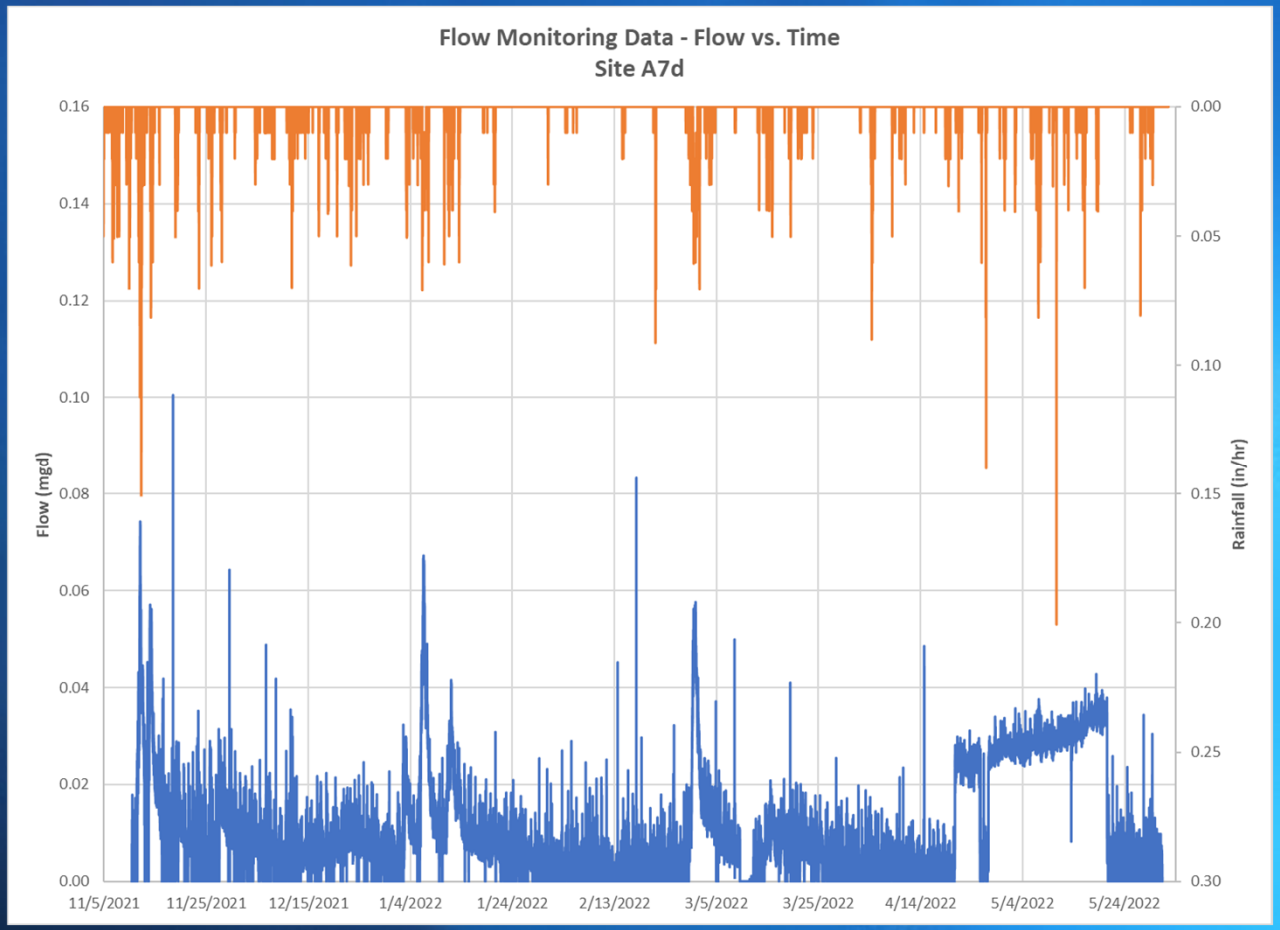


Meter AUB_A7c Scattergraph

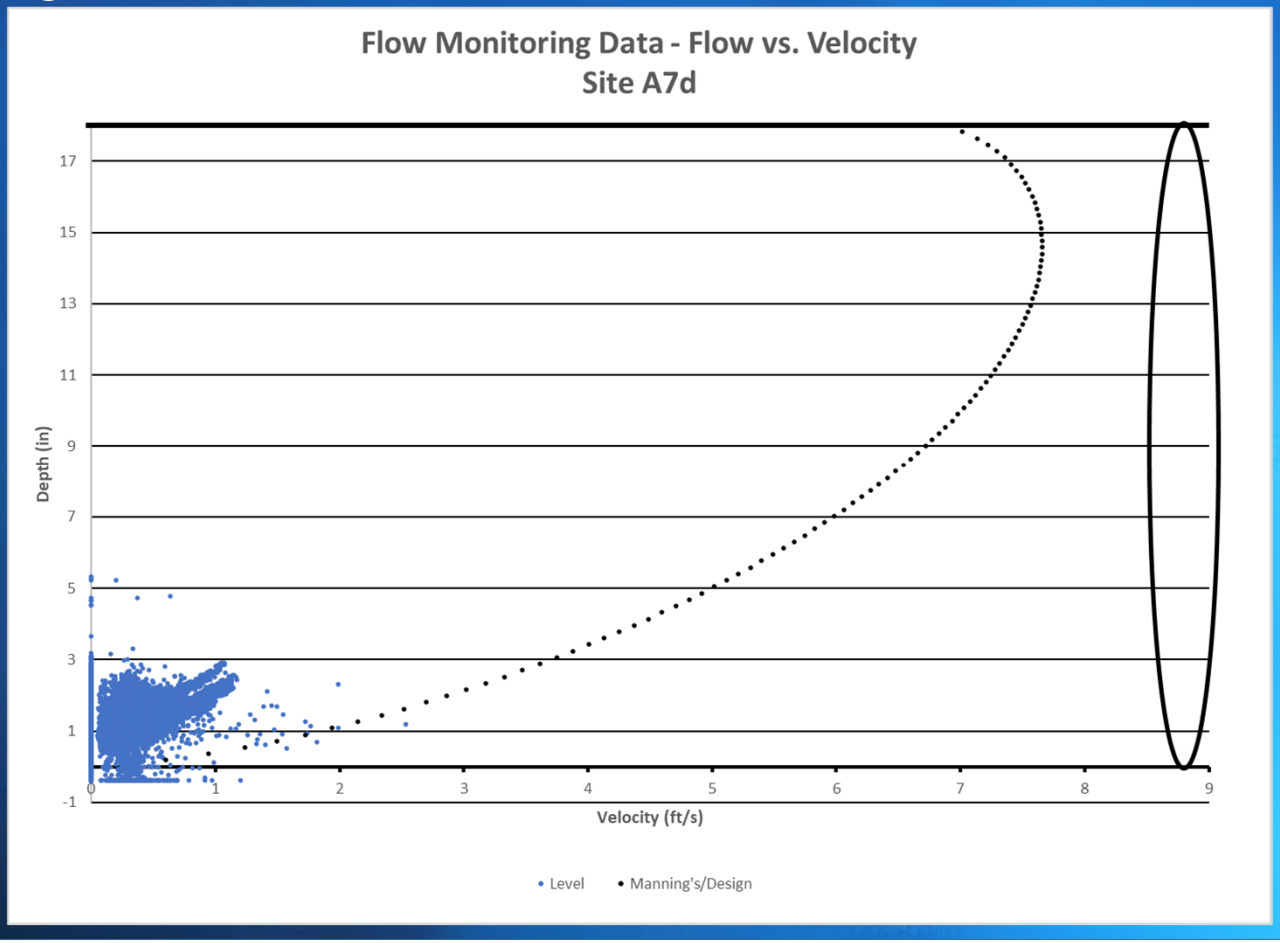


Meter AUB_A7d

Flow vs Rainfall

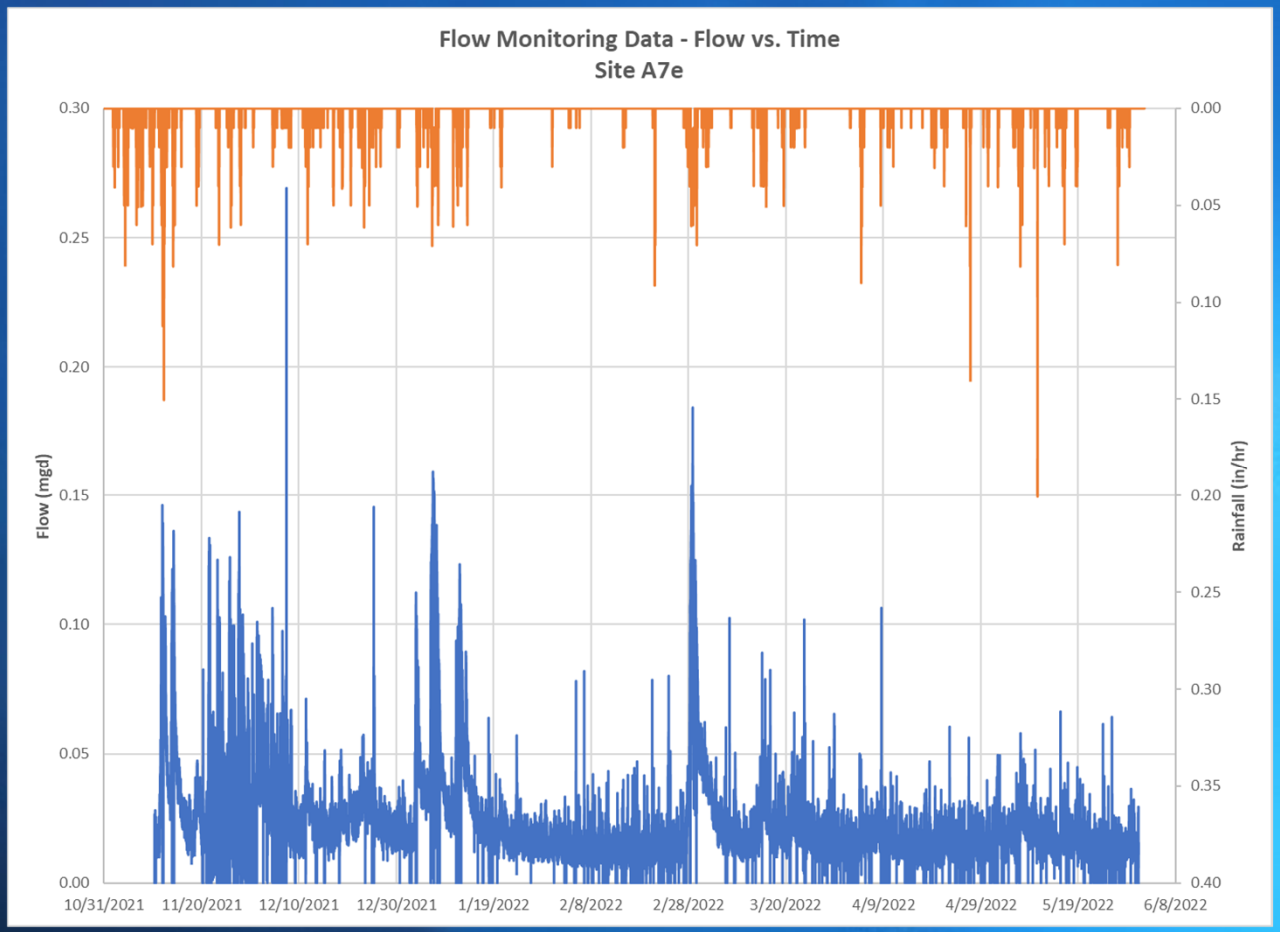


Meter AUB_A7d Scattergraph



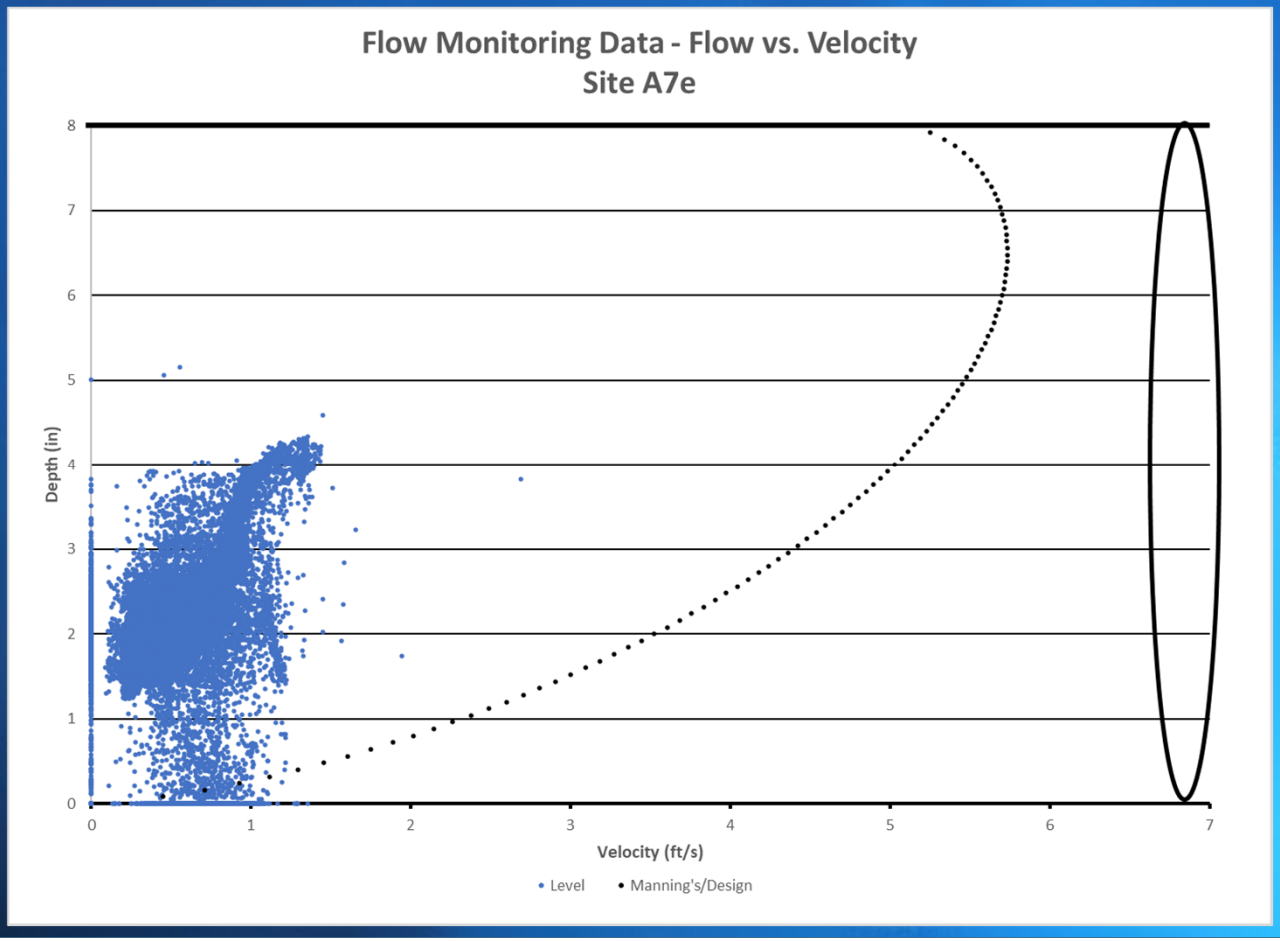
Meter AUB_A7e

Flow vs Rainfall



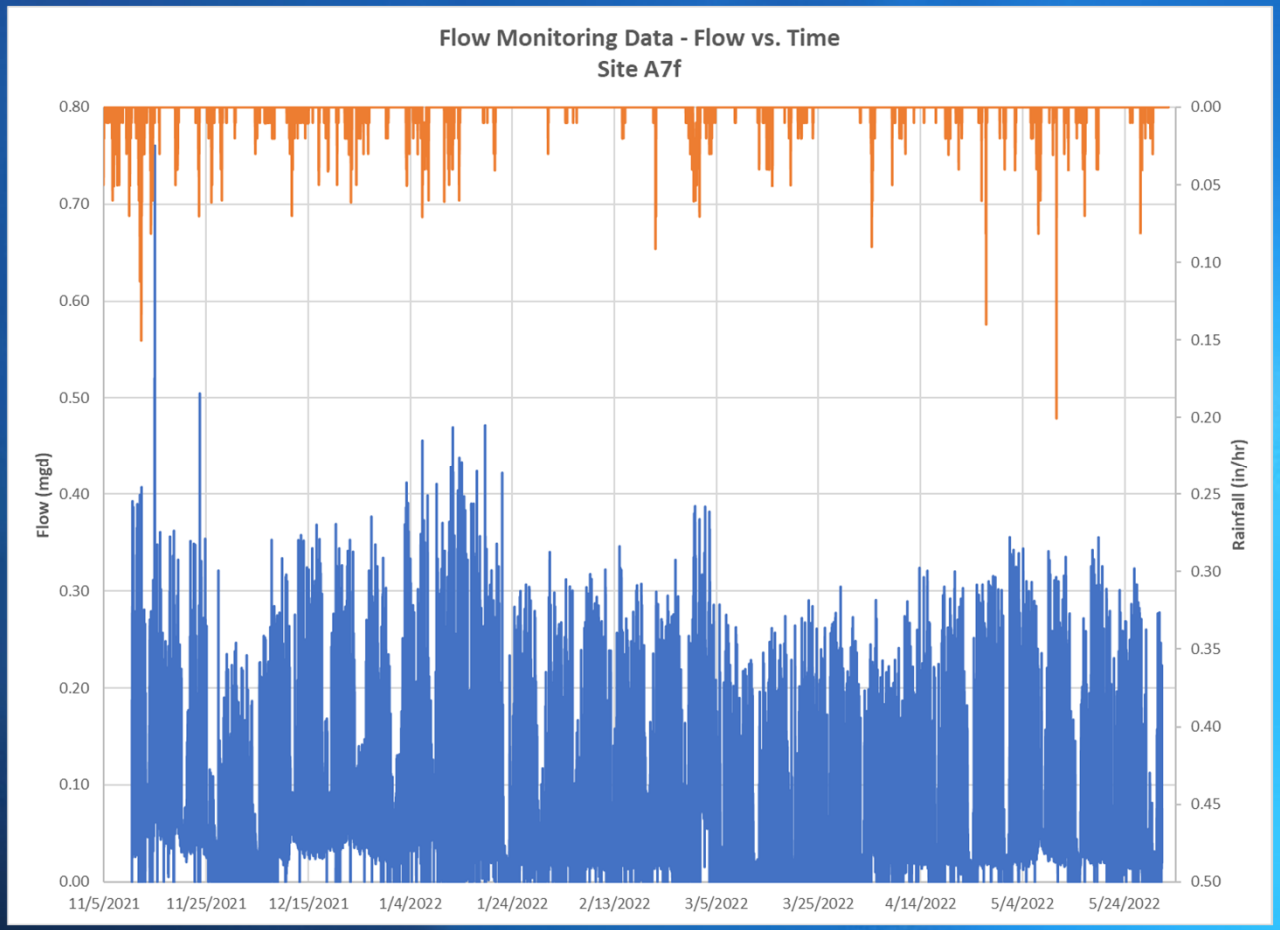
Meter AUB_A7e Scattergraph

Note: 1 data point with negative depth

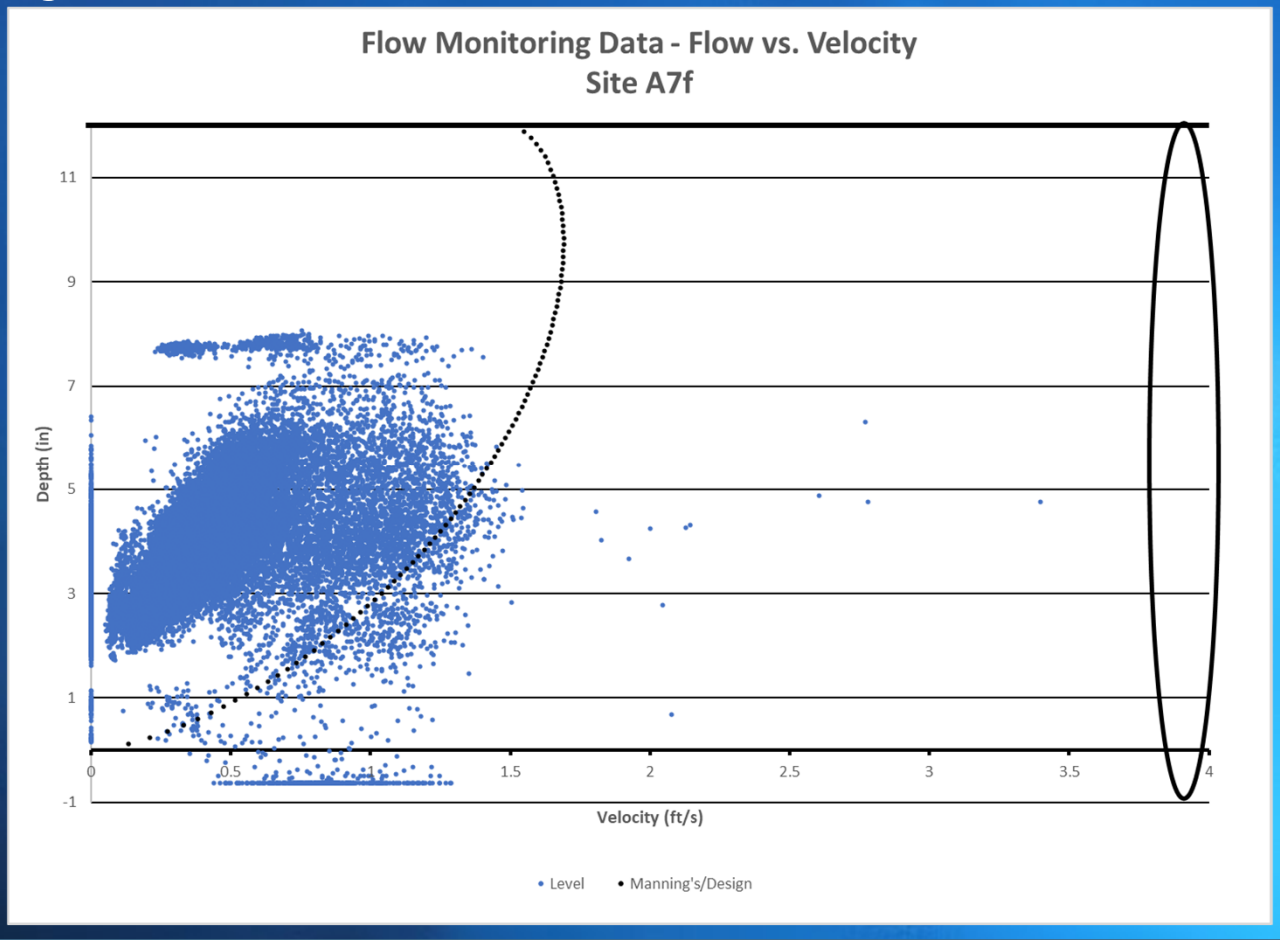


Meter AUB_A7f

Flow vs Rainfall

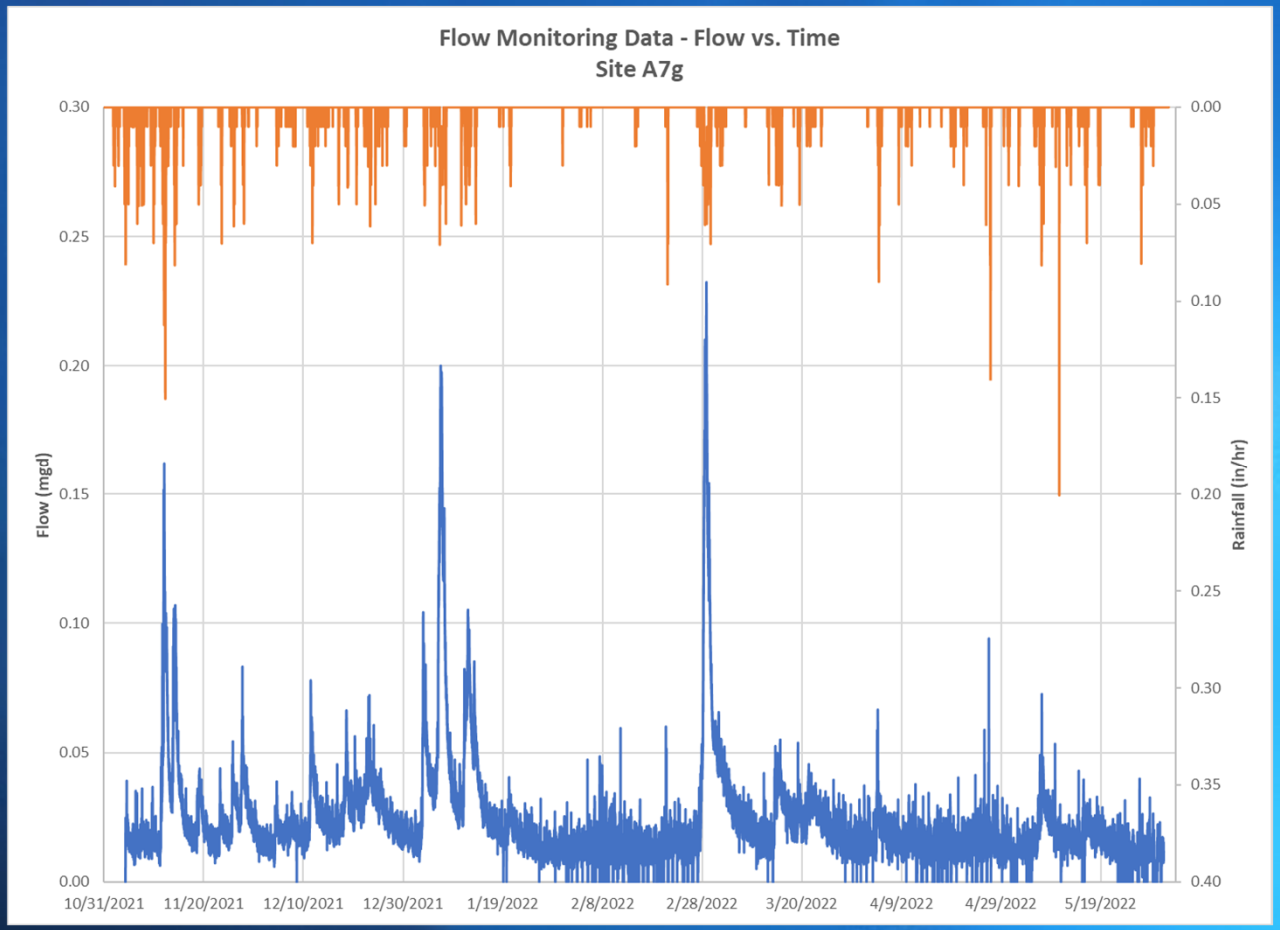


Meter AUB_A7f Scattergraph

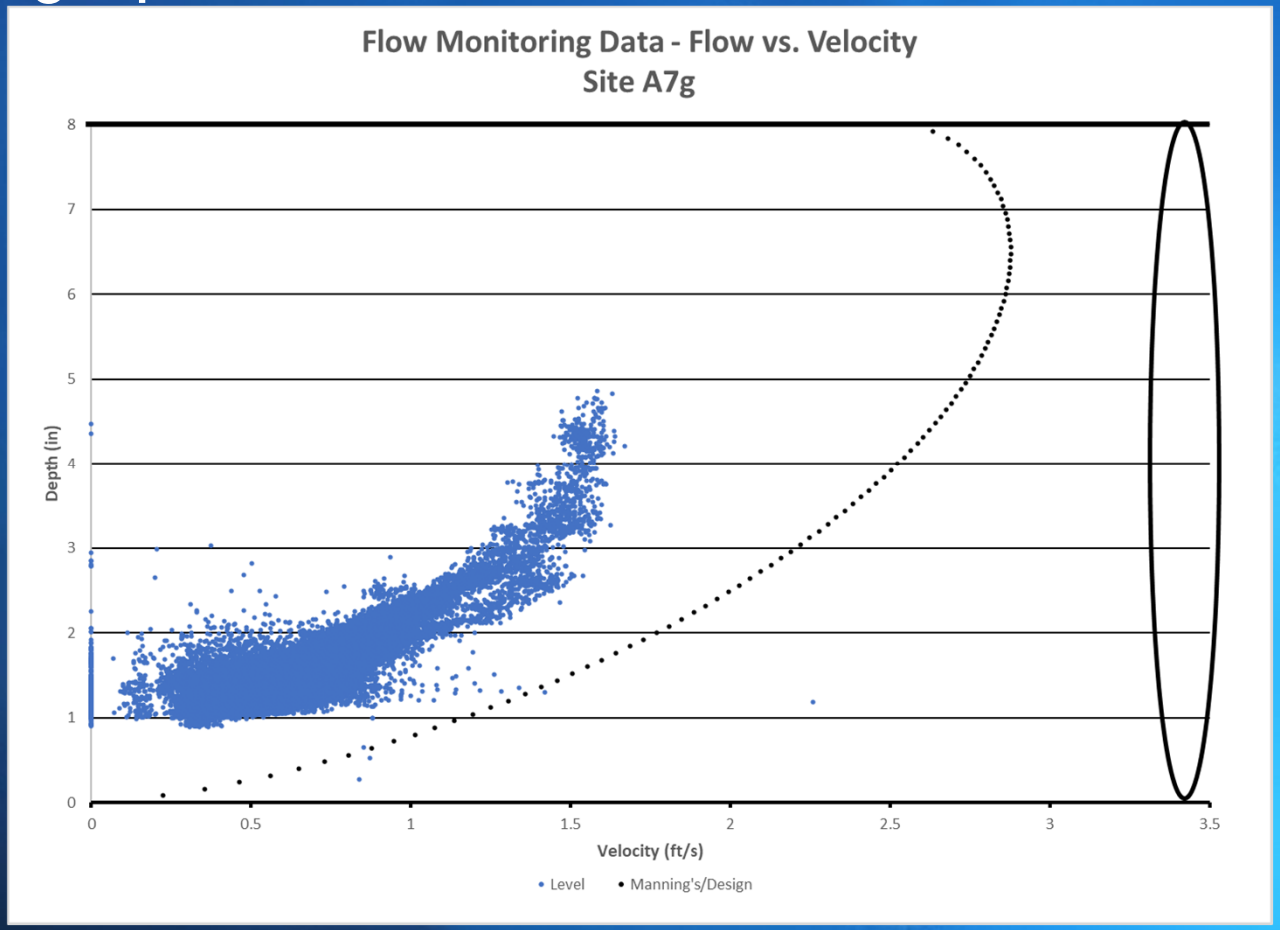


Meter AUB_A7g

Flow vs Rainfall

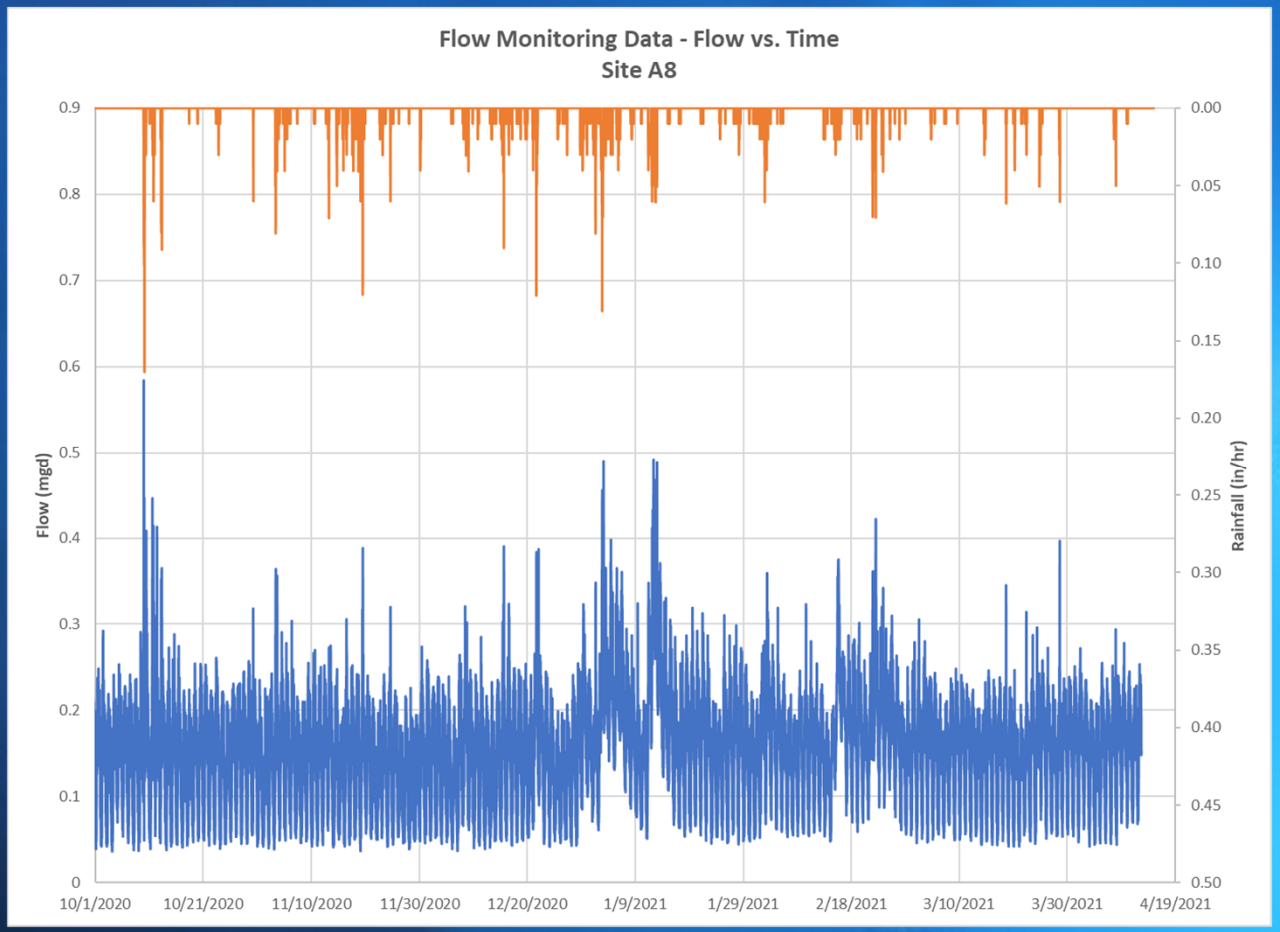


Meter AUB_A7g Scattergraph

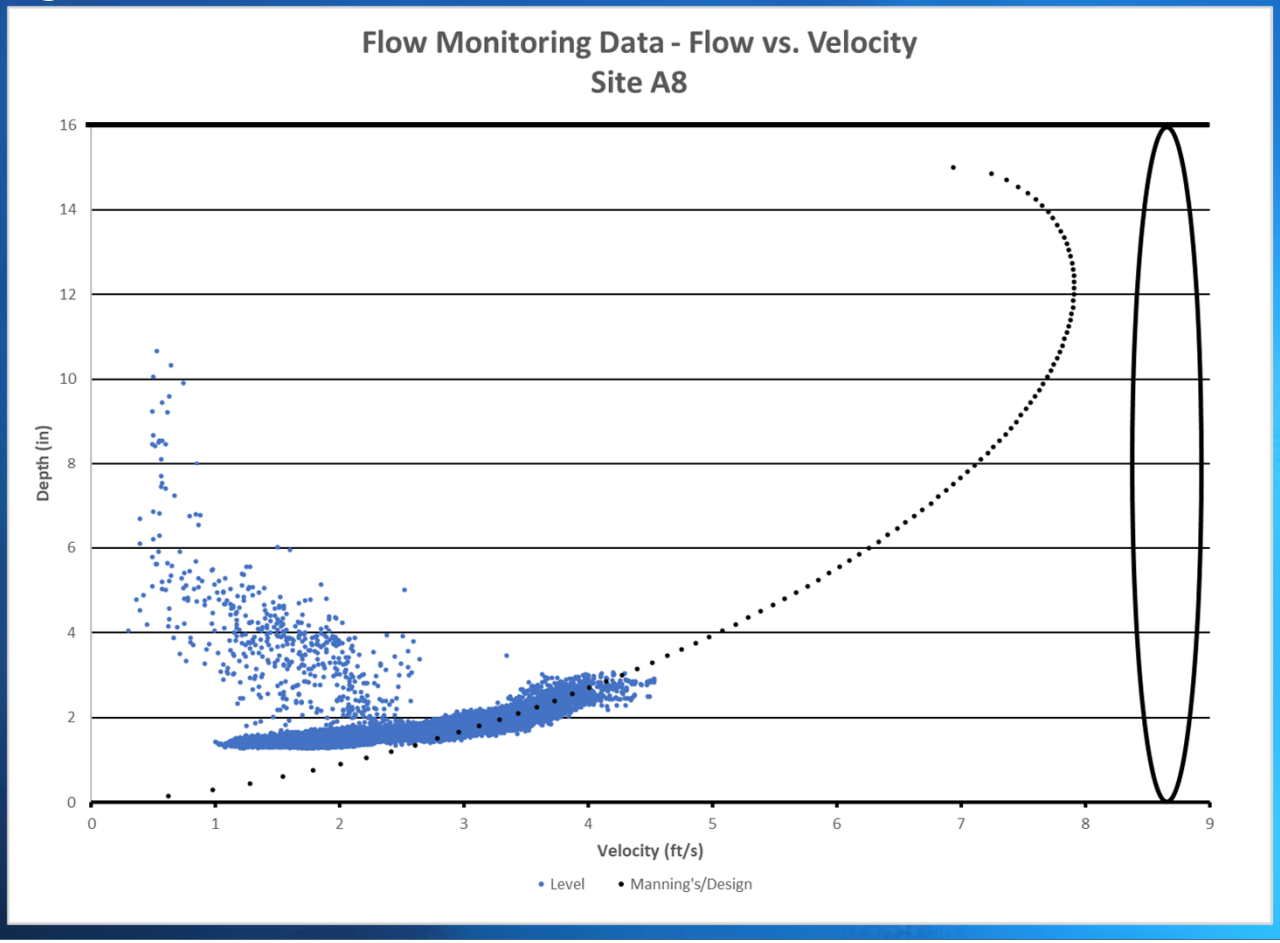


Meter AUB_A8

Flow vs Rainfall

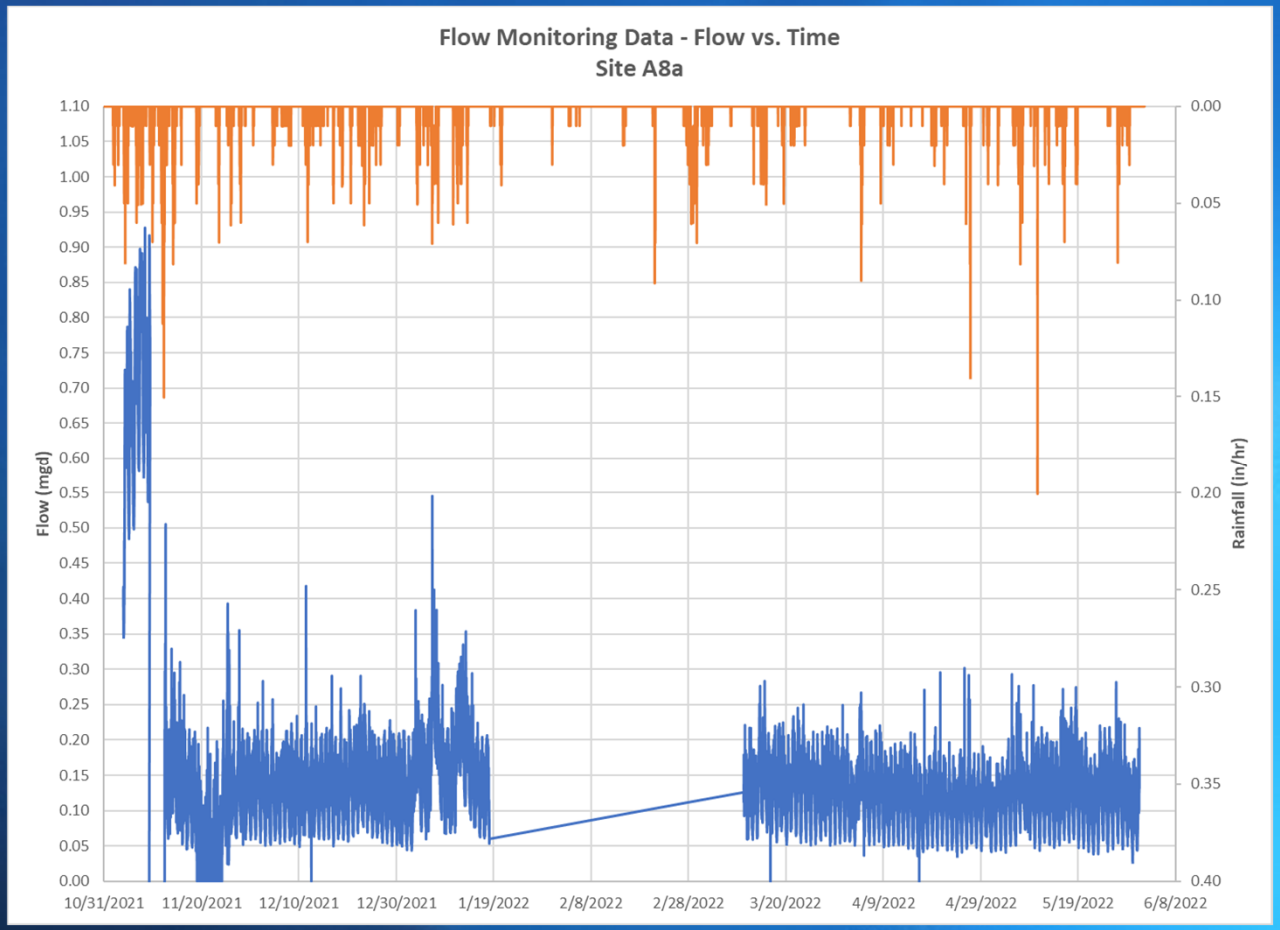


Meter AUB_A8
Scattergraph

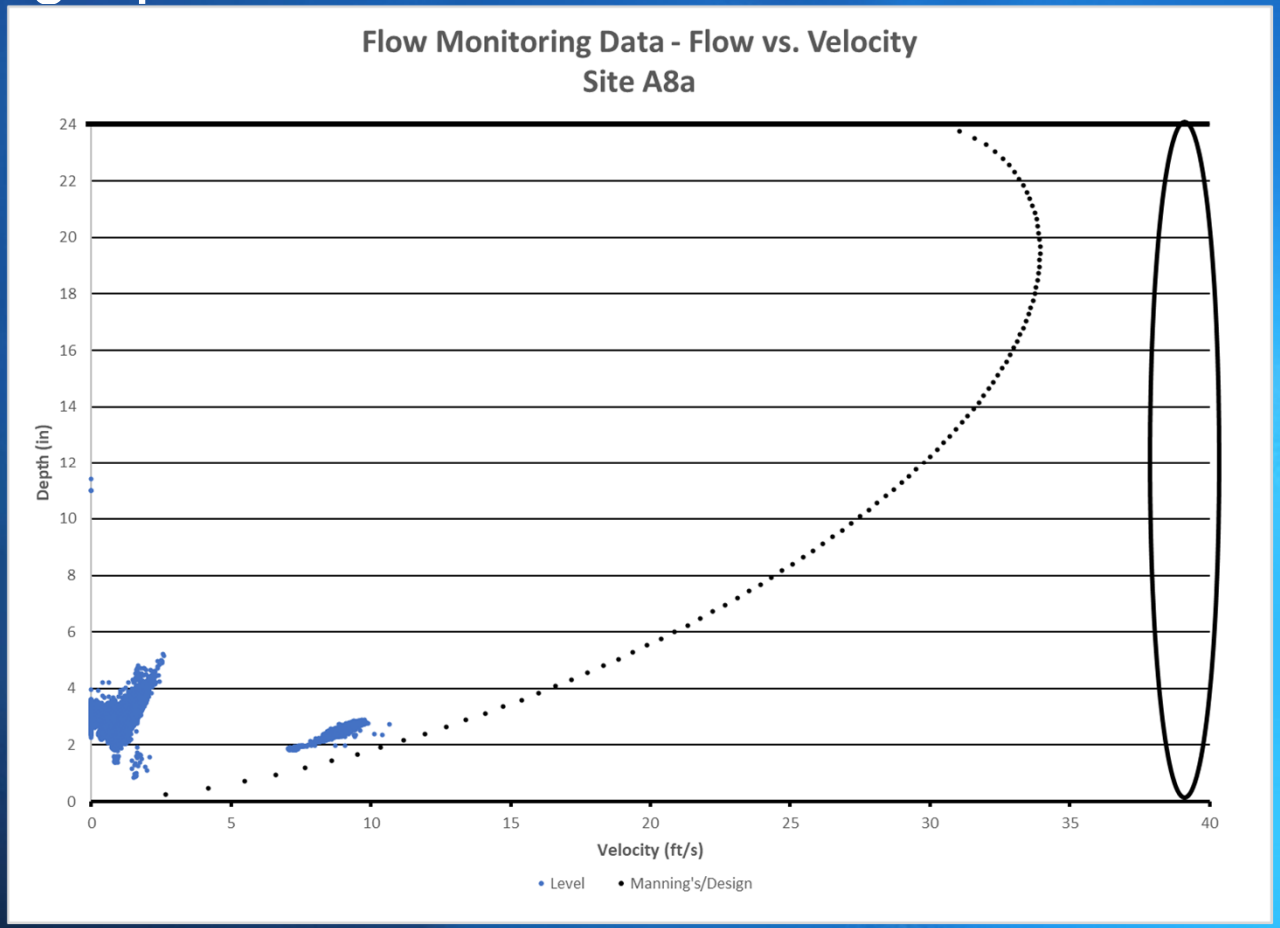


Meter AUB_A8a

Flow vs Rainfall

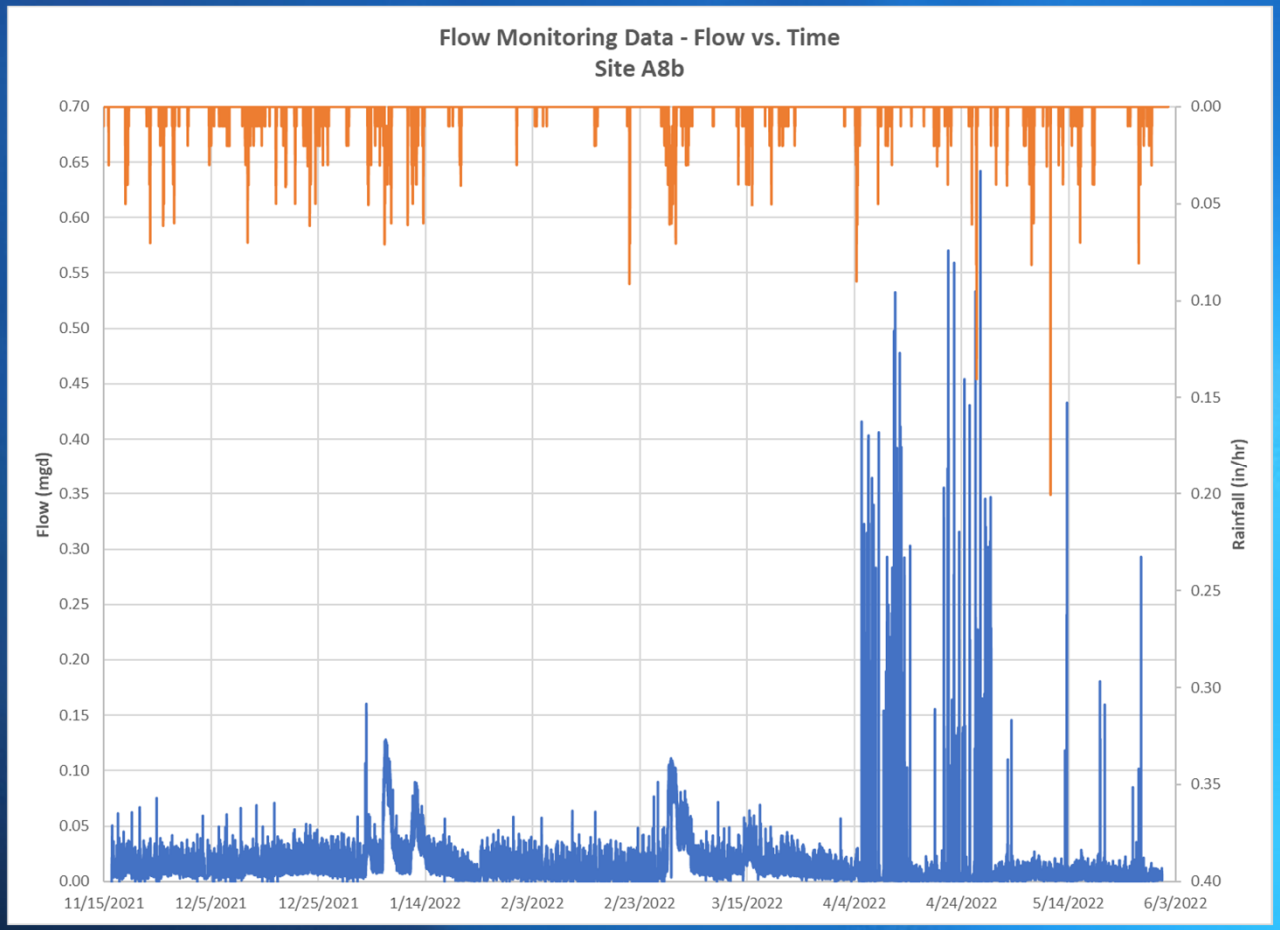


Meter AUB_A8a Scattergraph

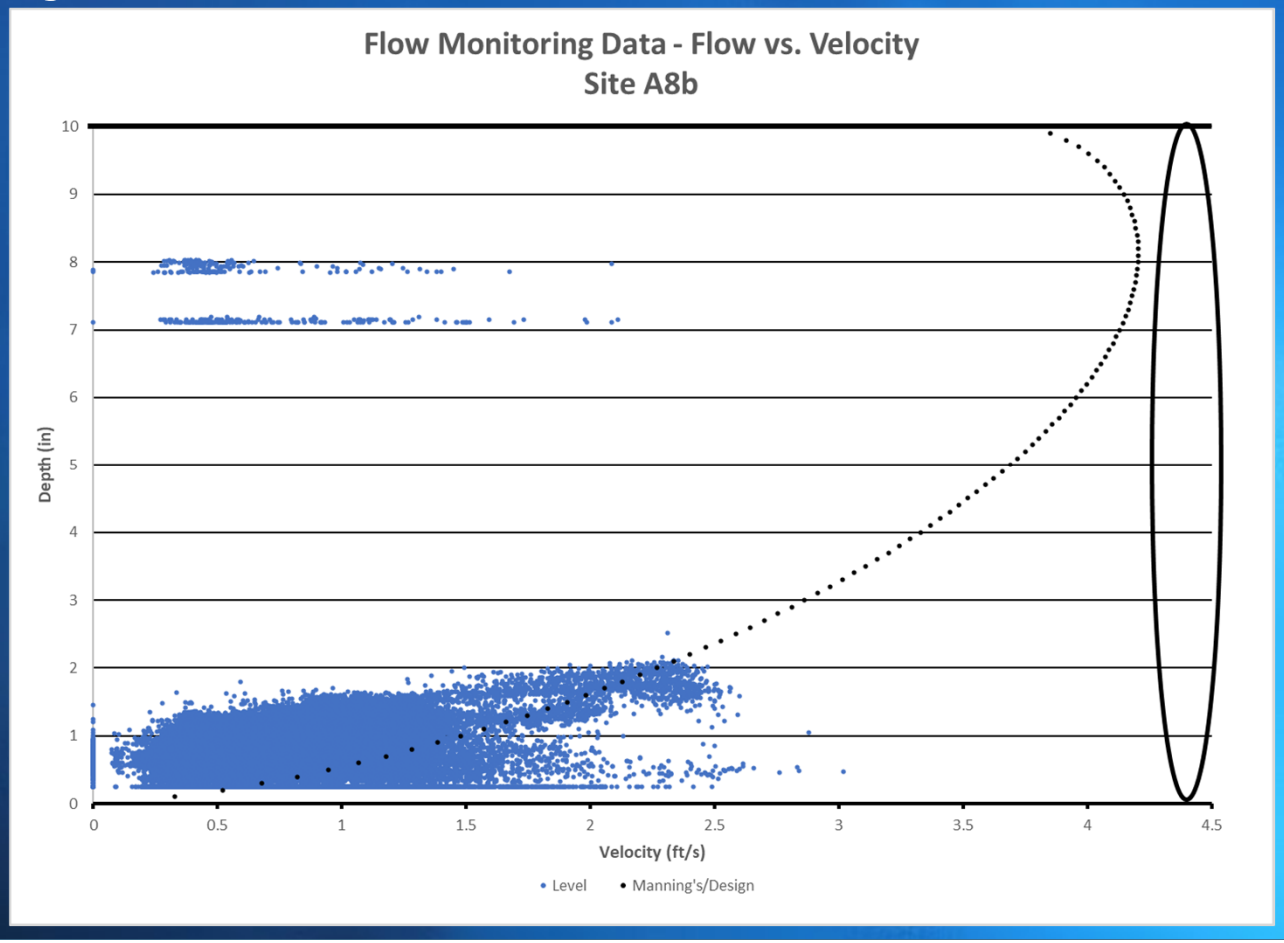


Meter AUB_A8b

Flow vs Rainfall

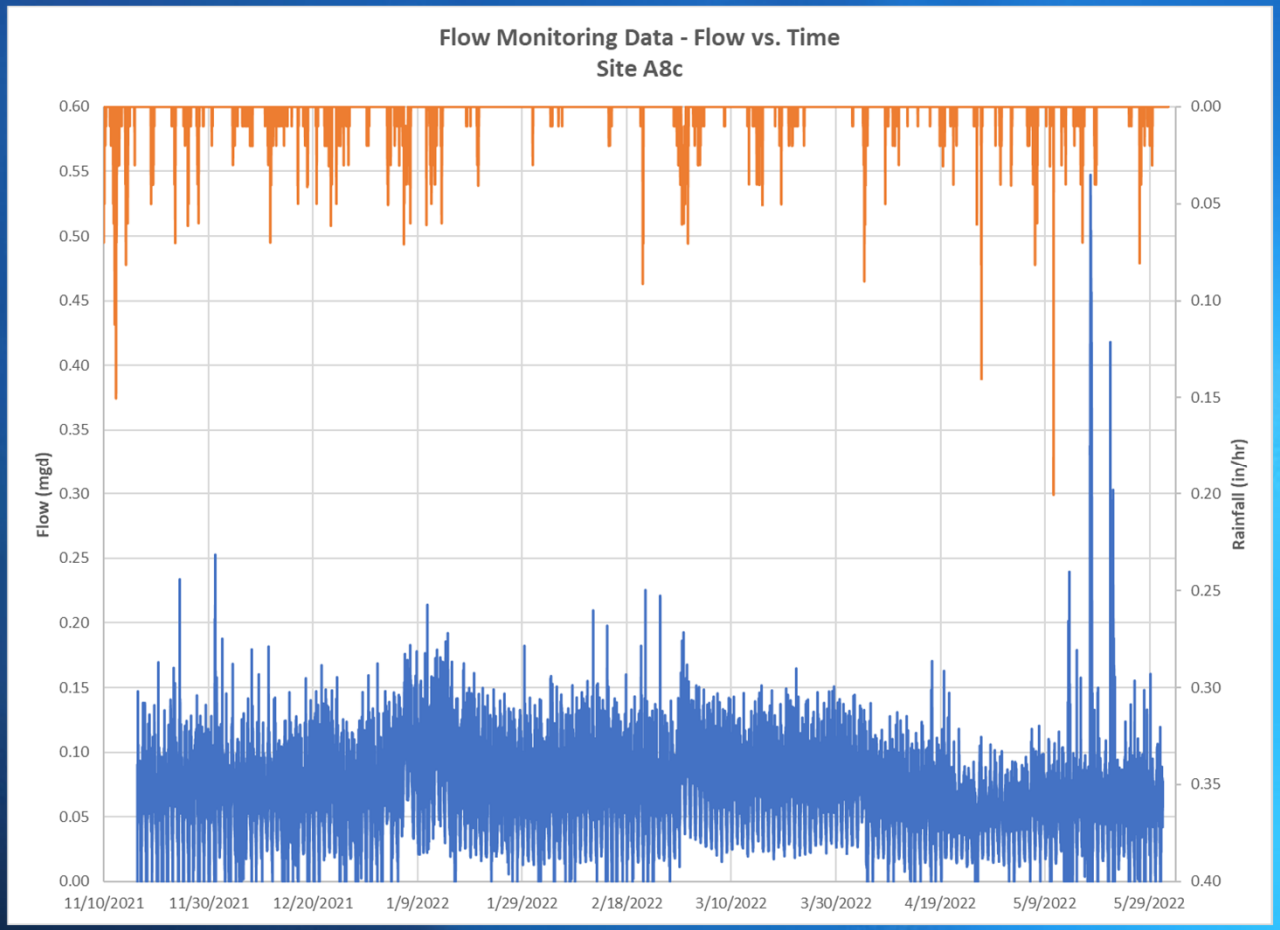


Meter AUB_A8b Scattergraph

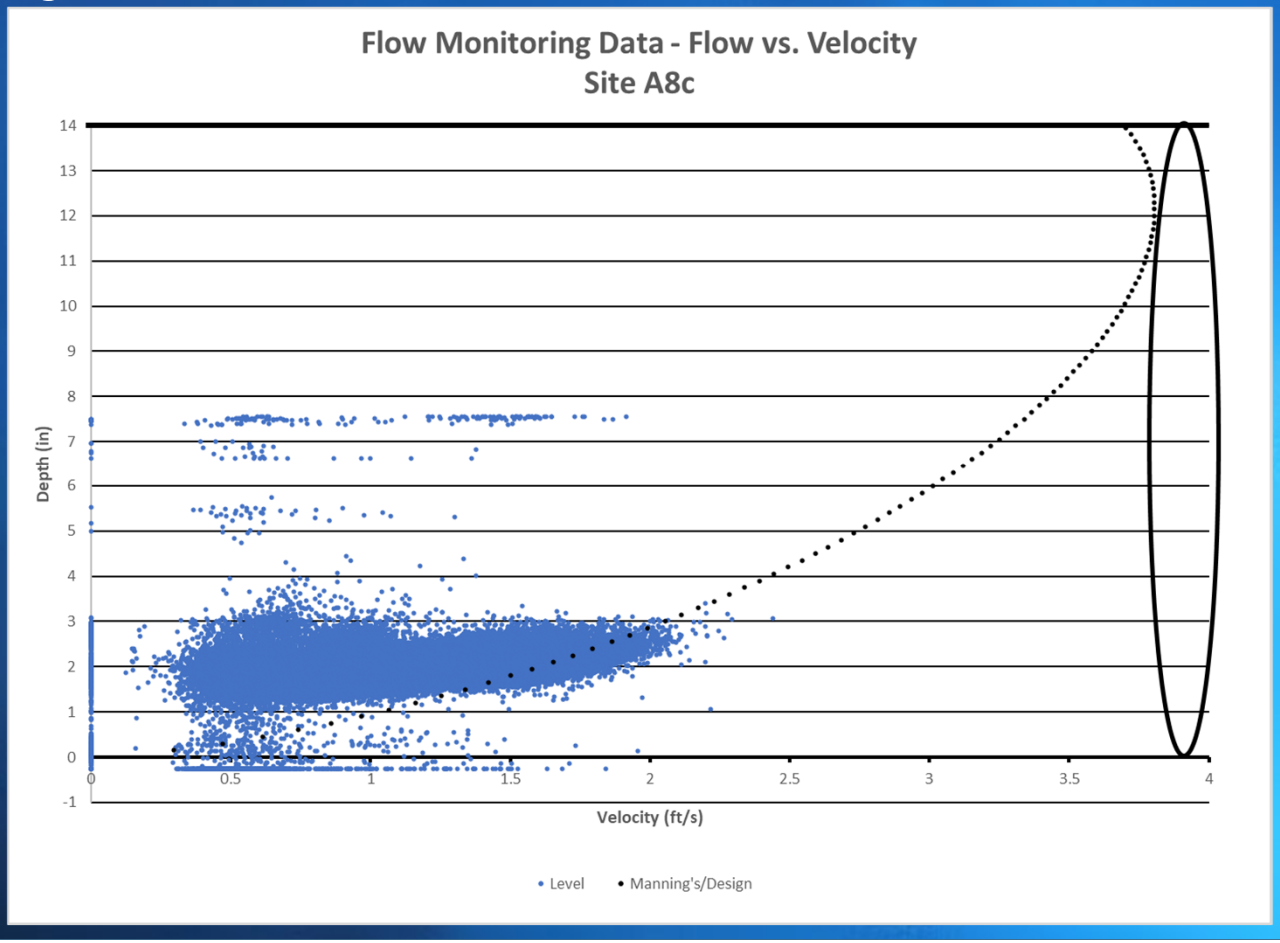


Meter AUB_A8c

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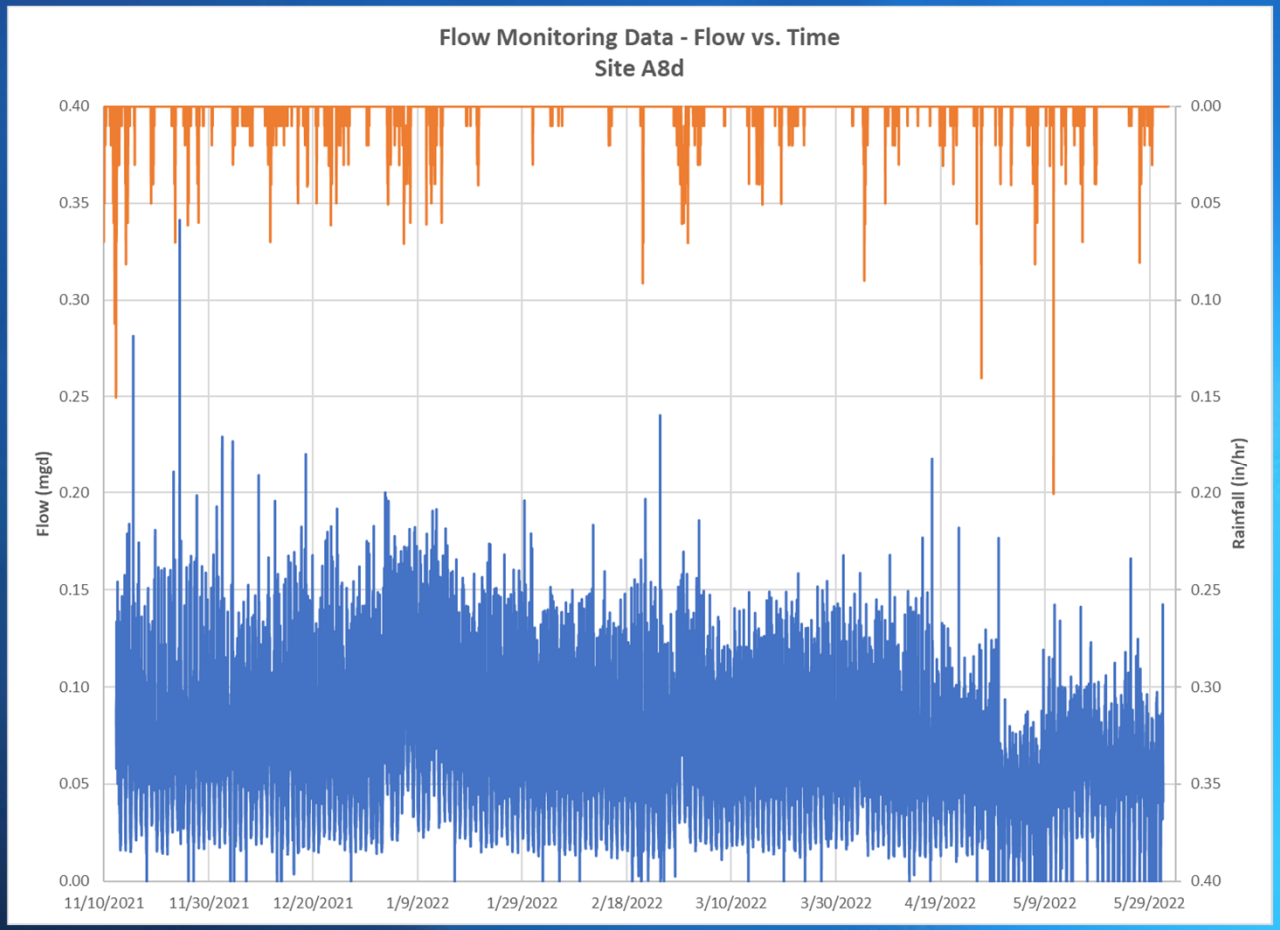


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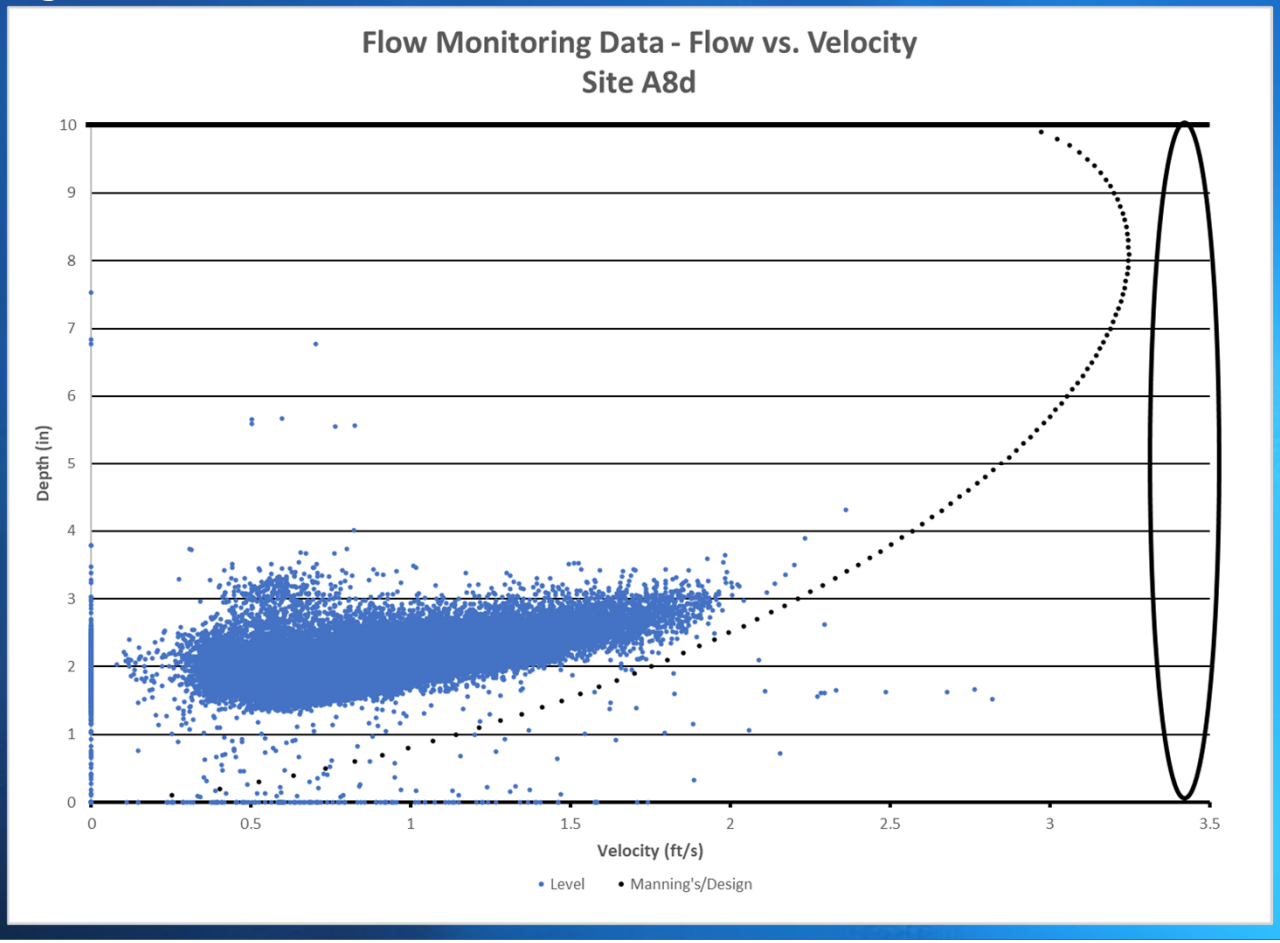


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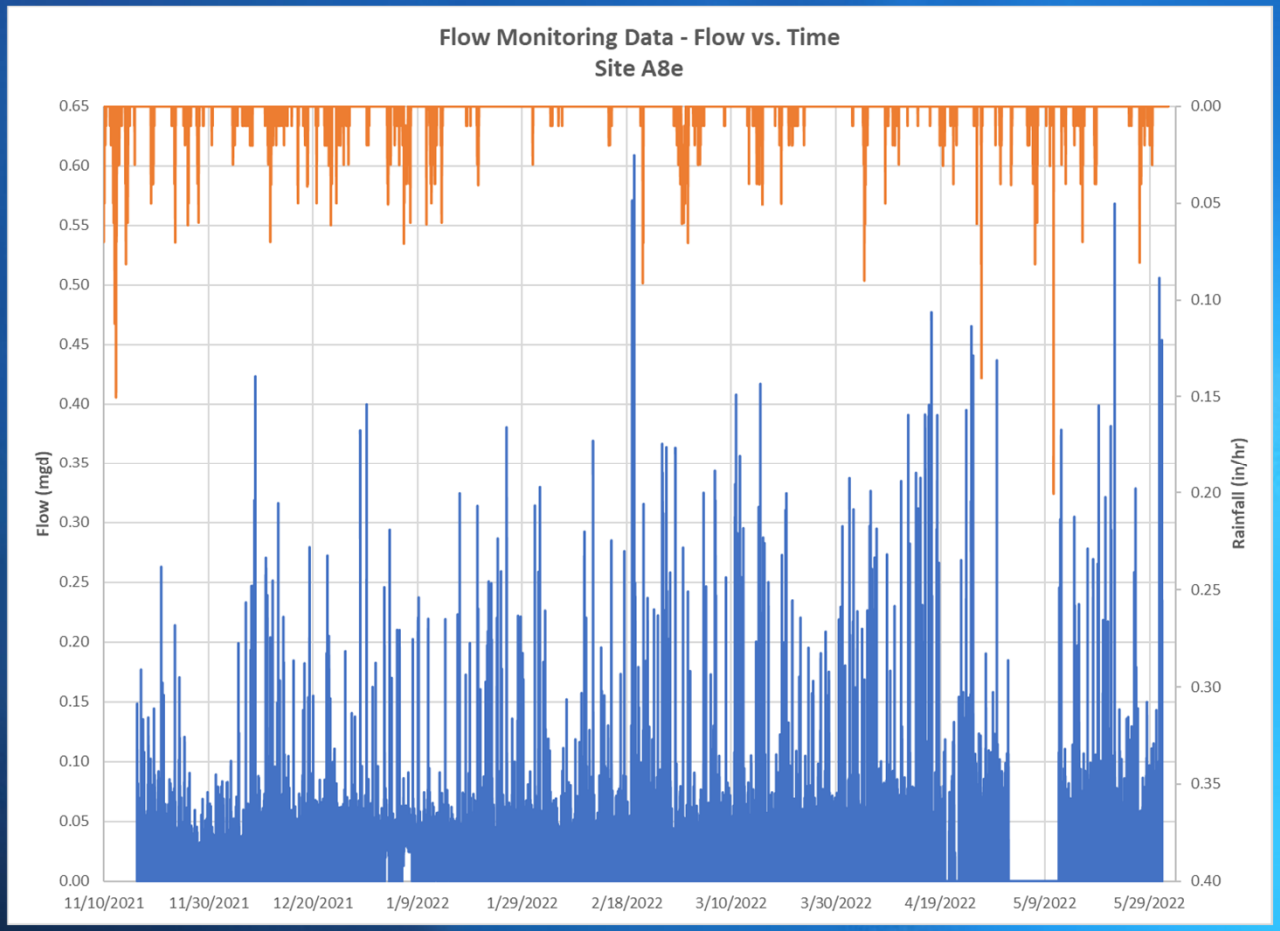


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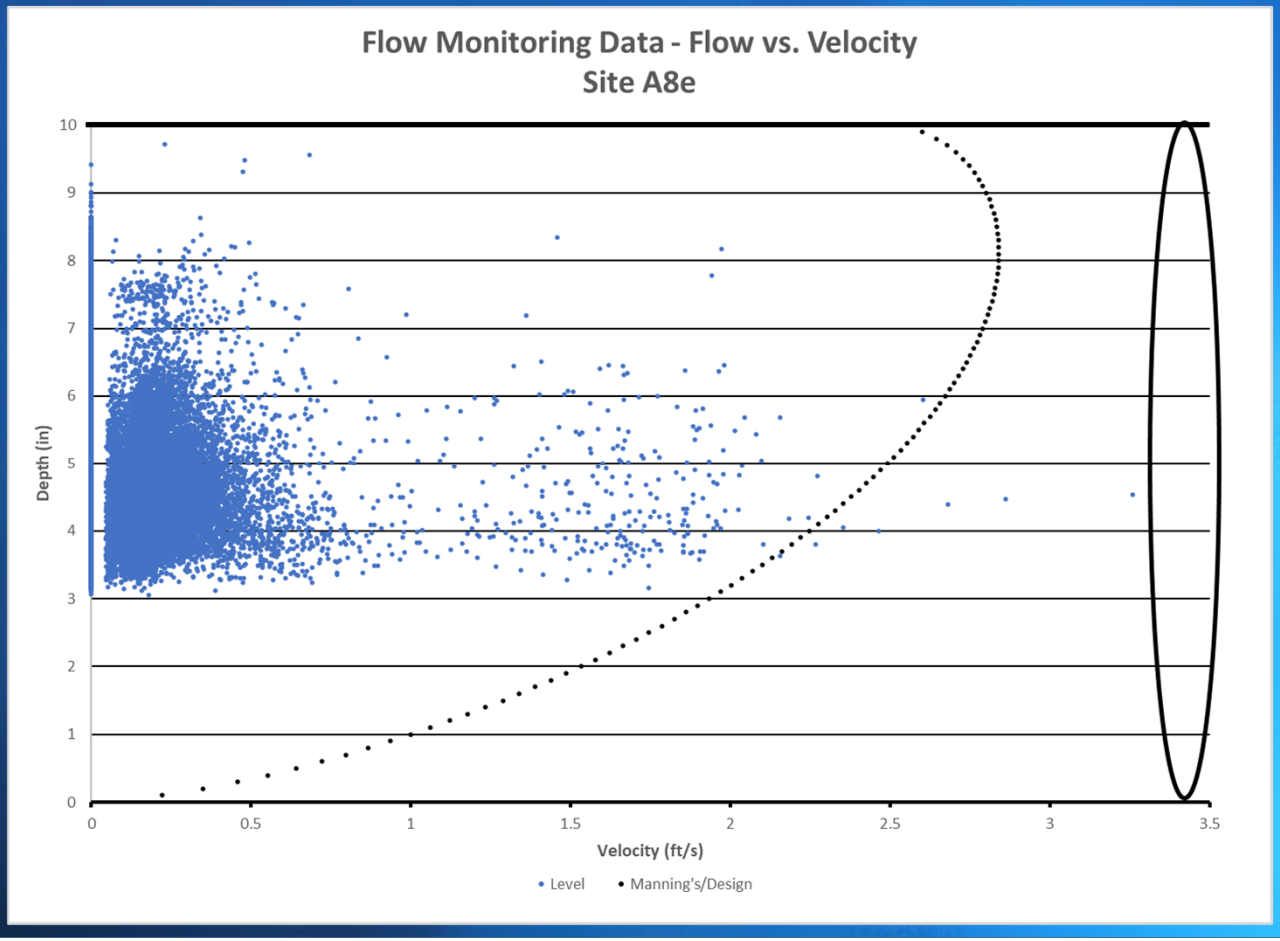


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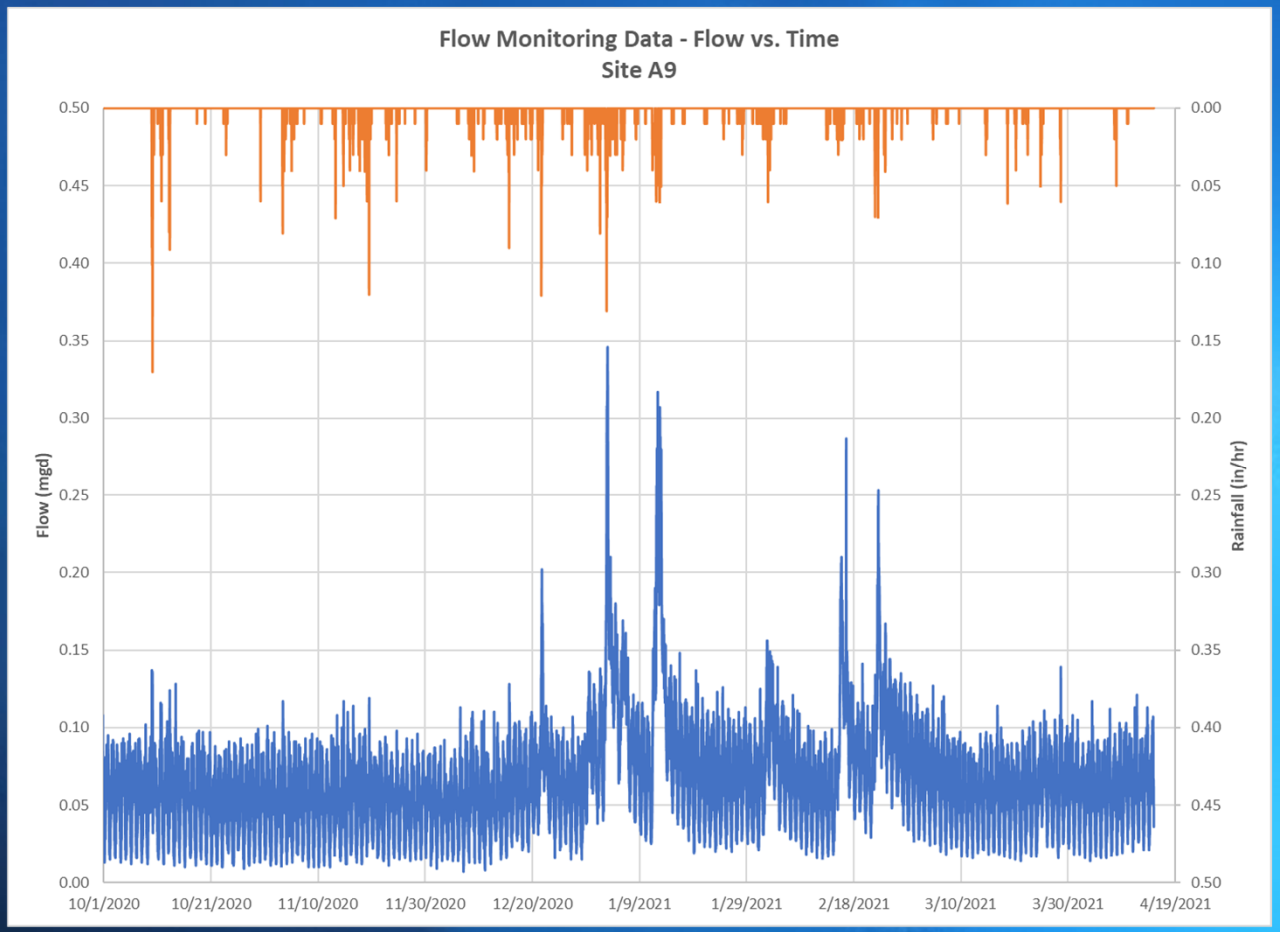


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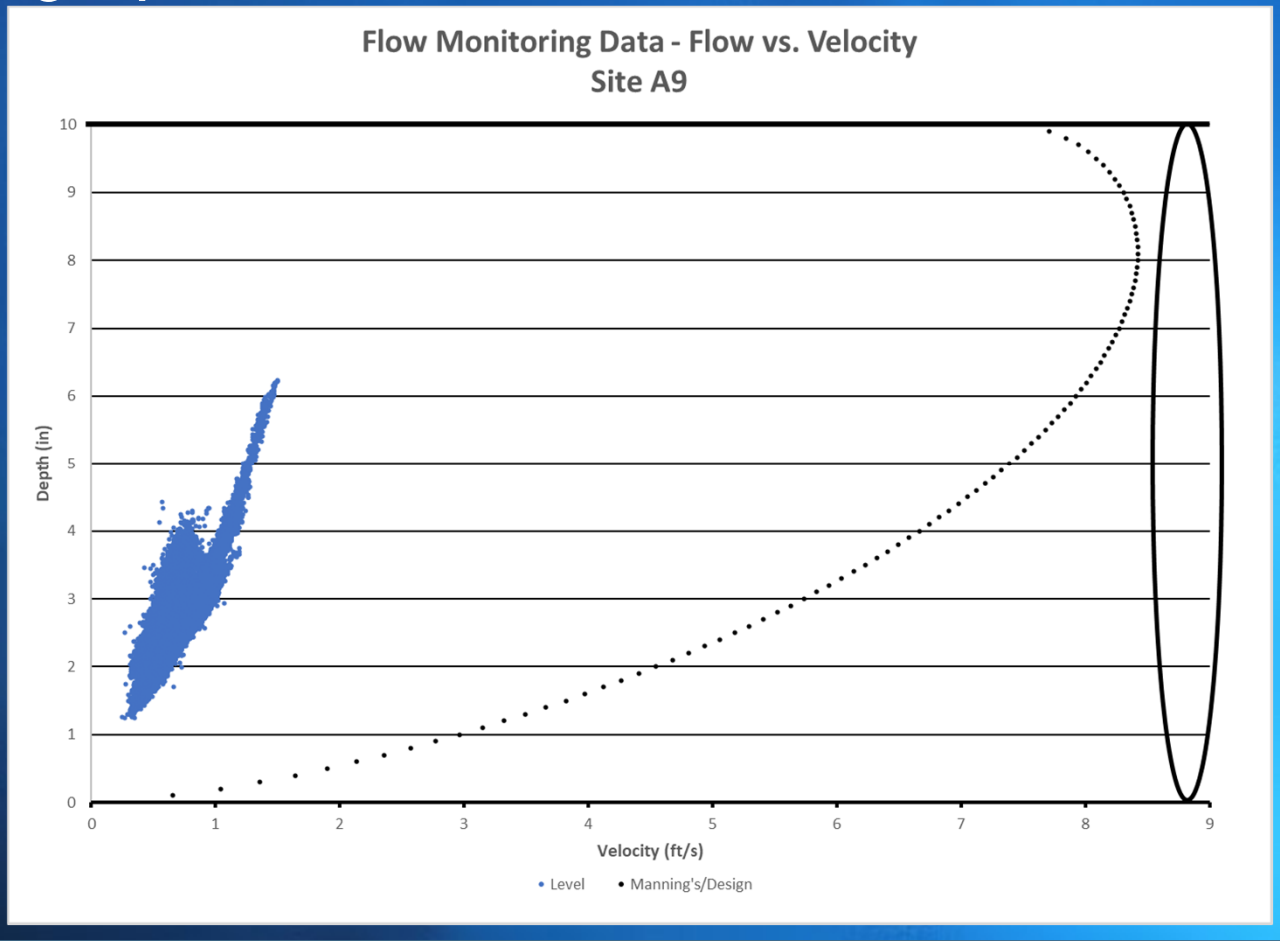


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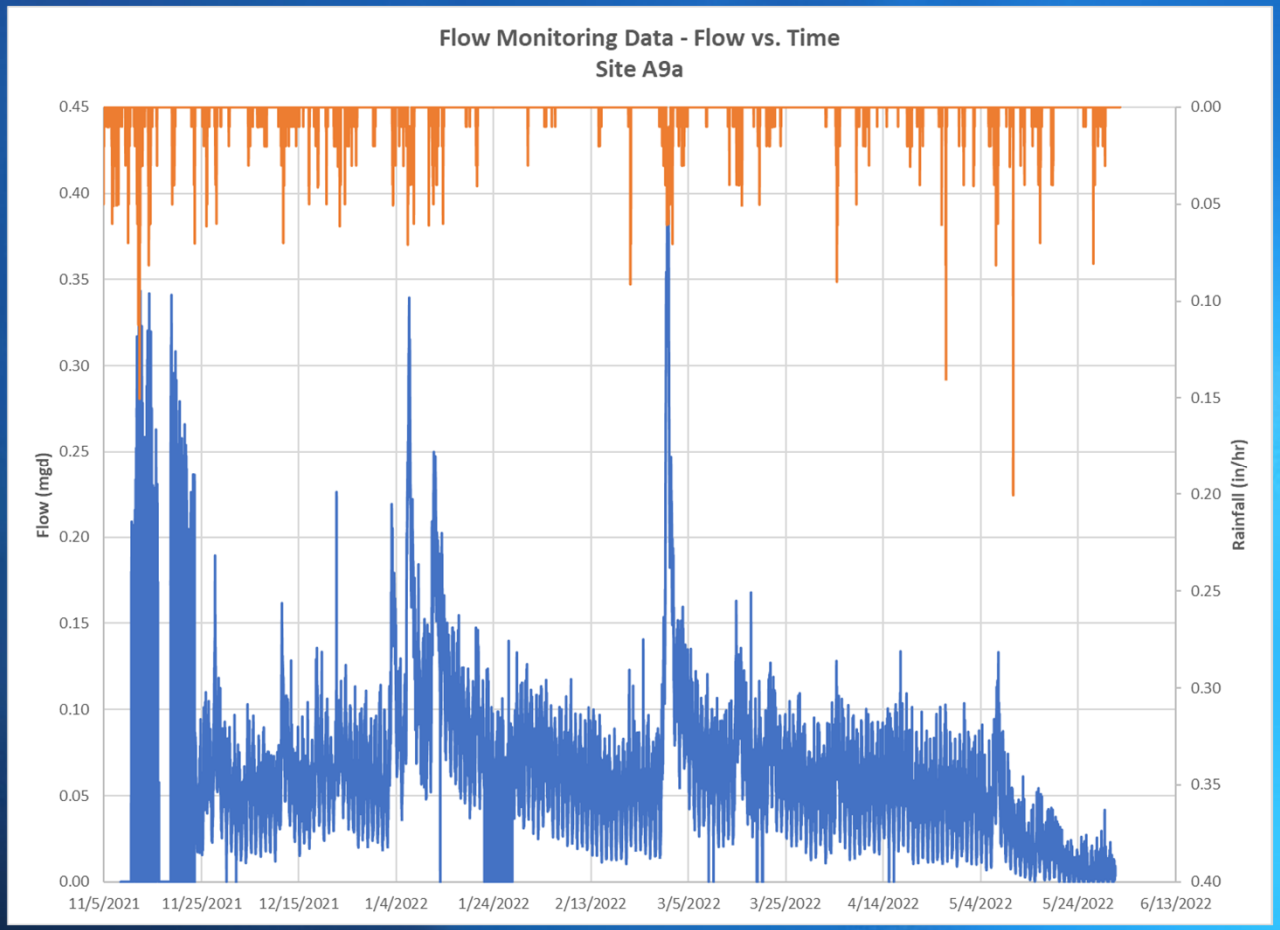


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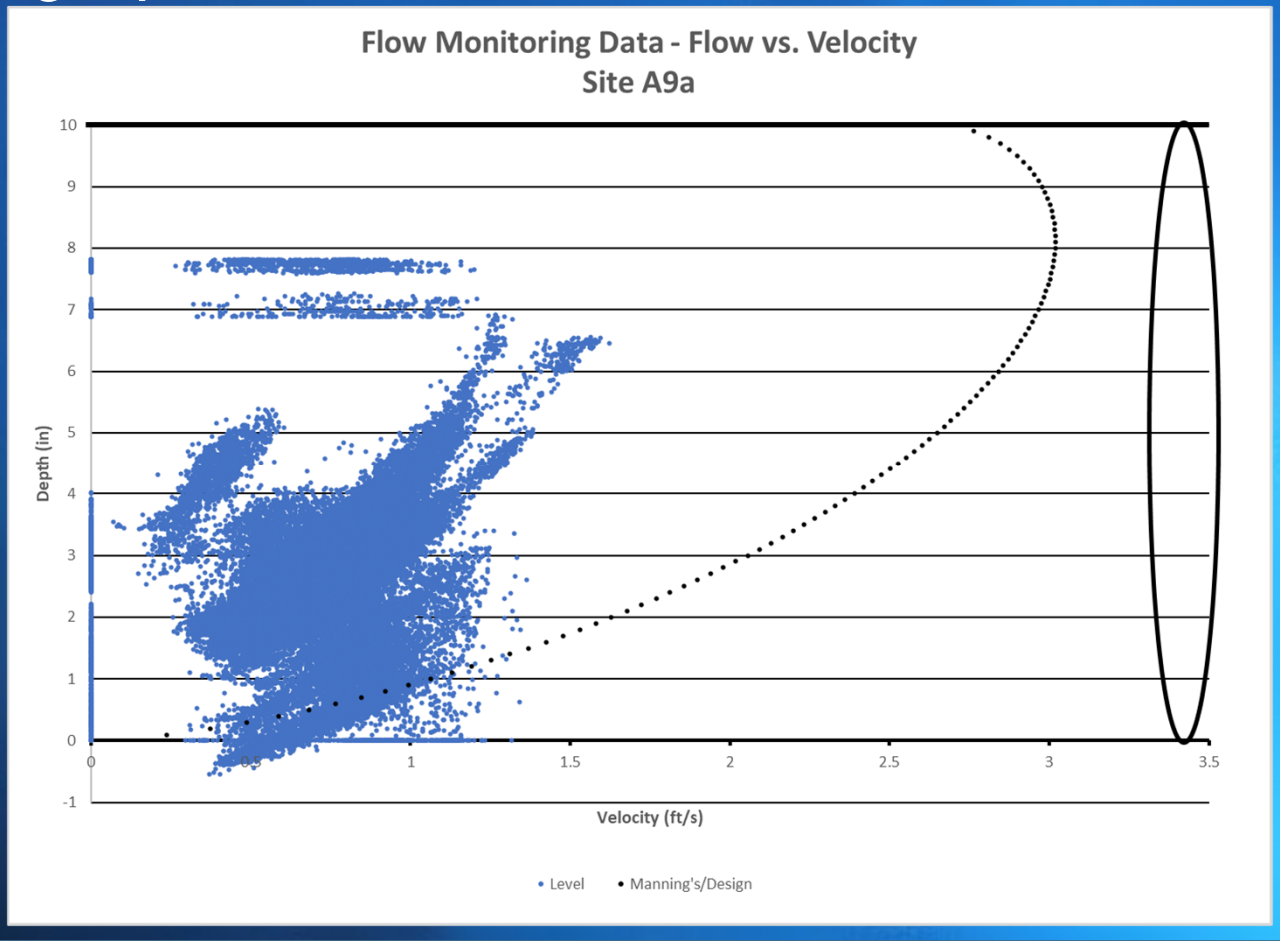


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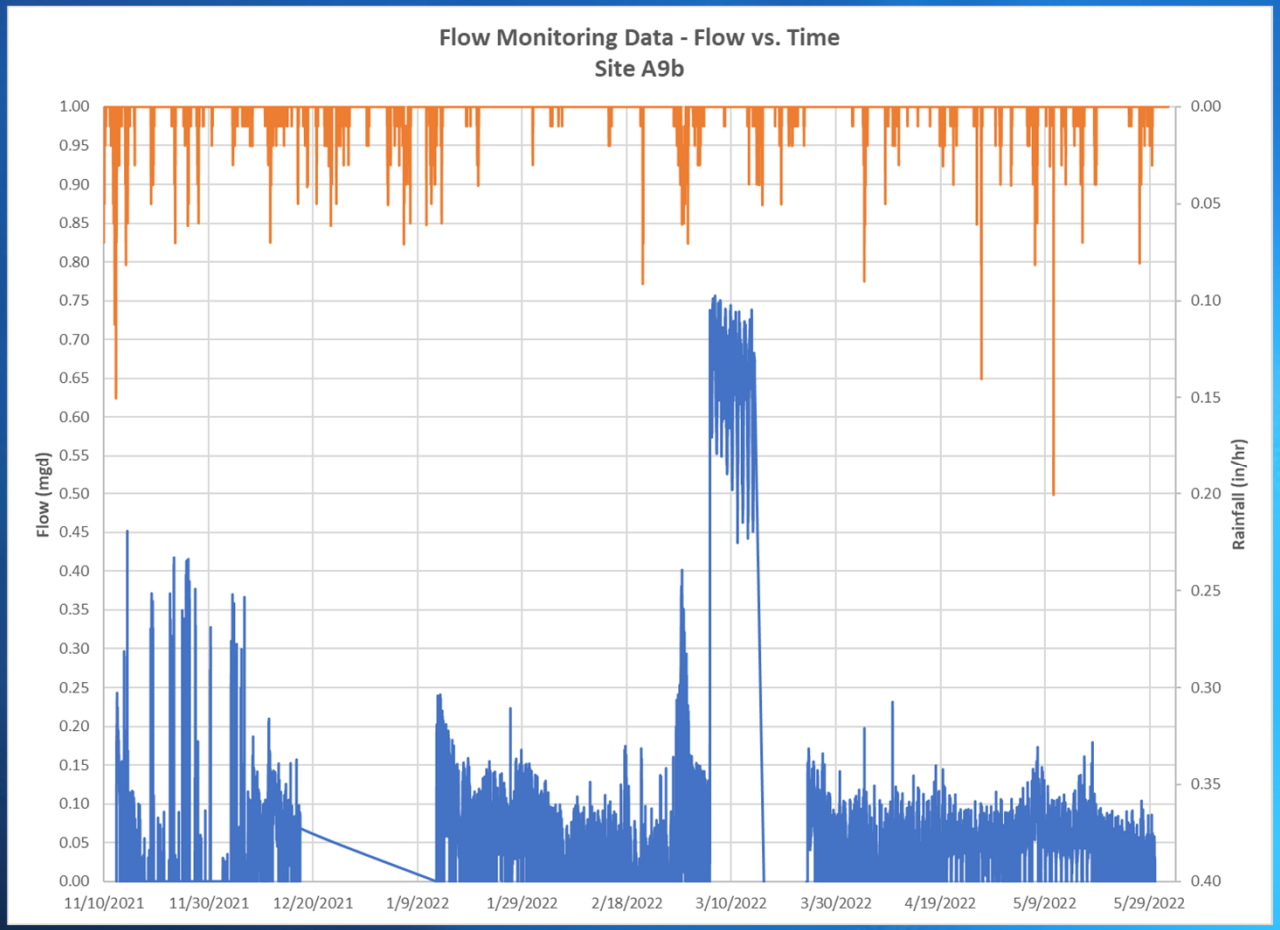


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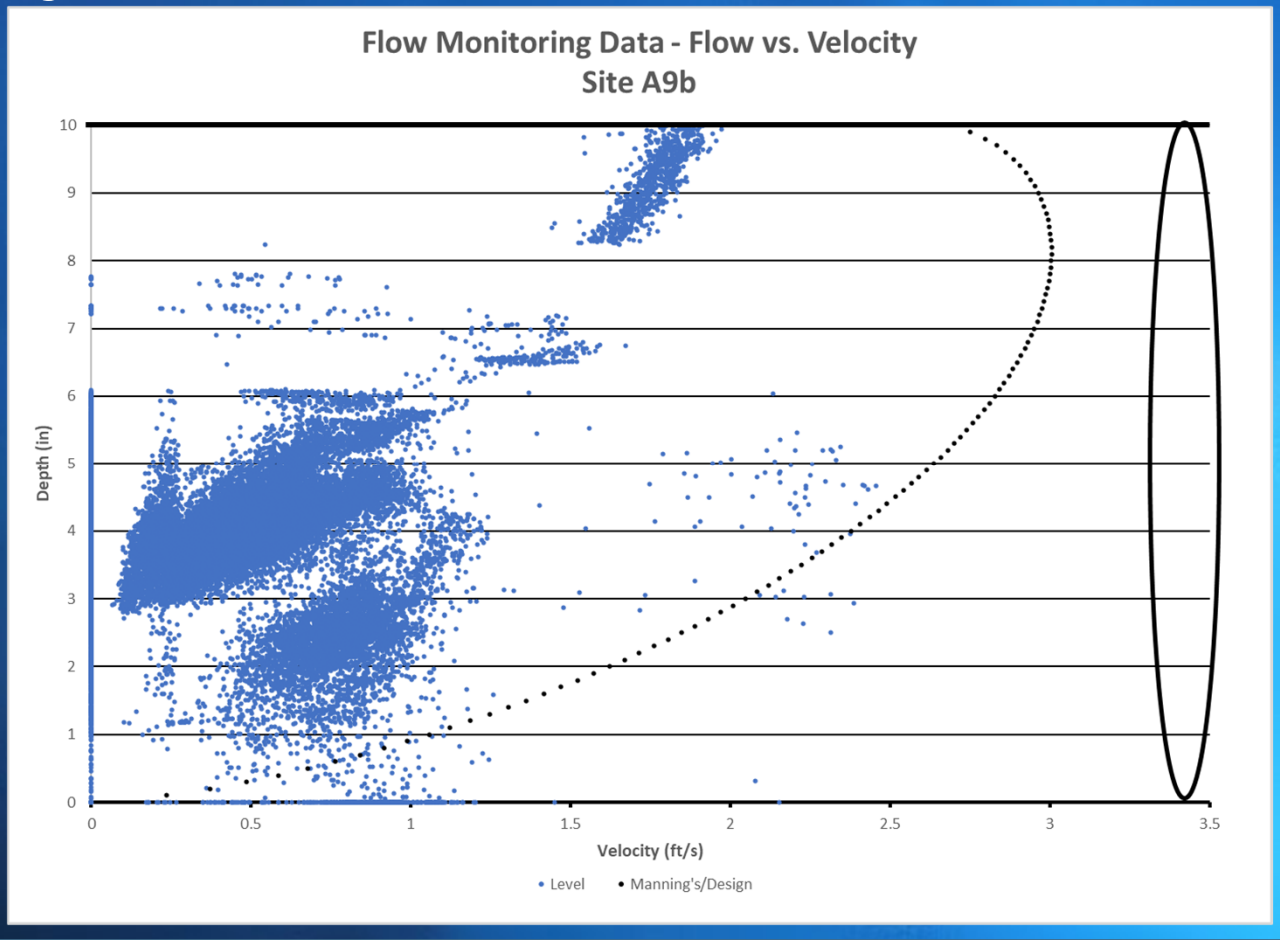


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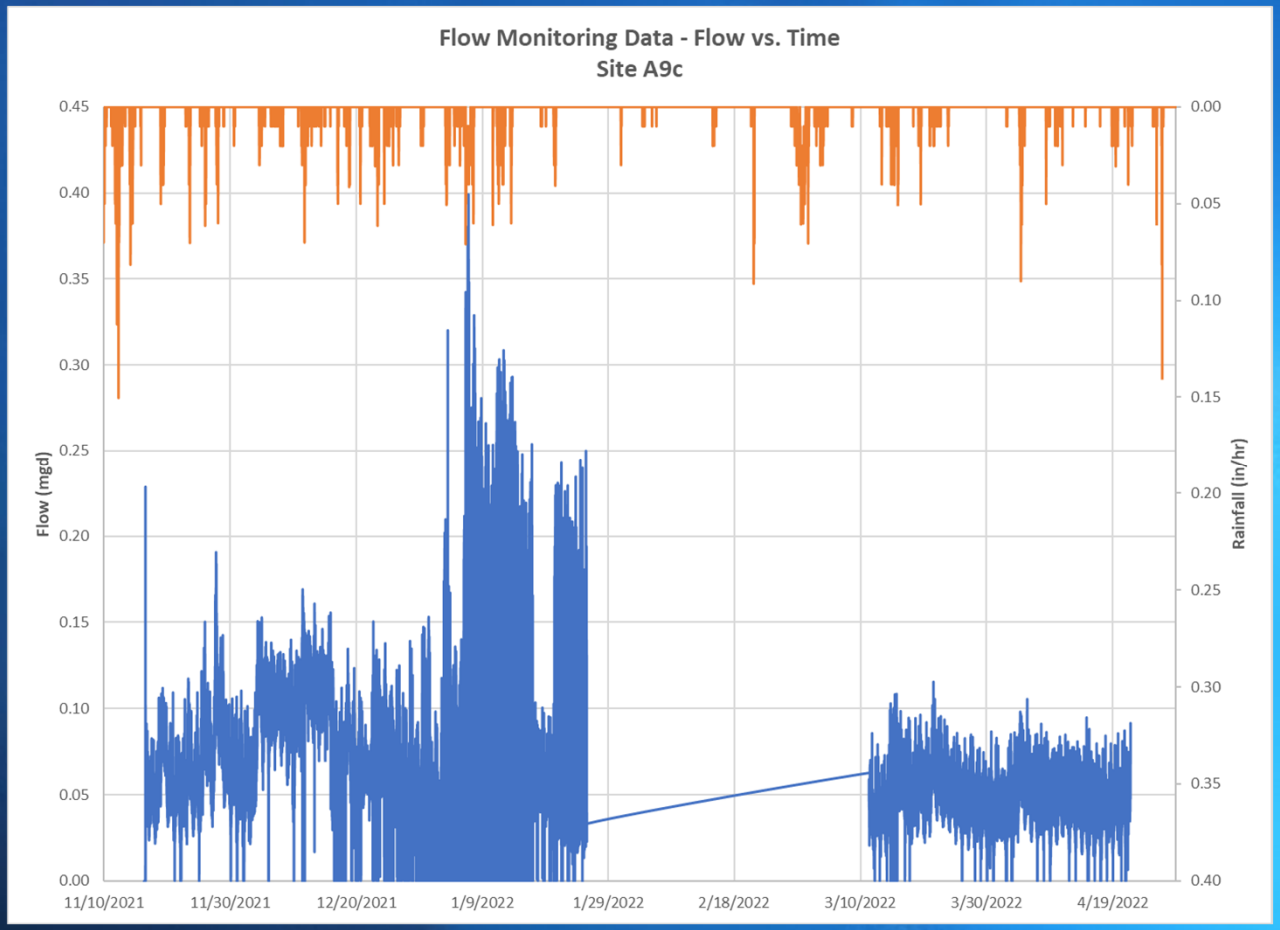


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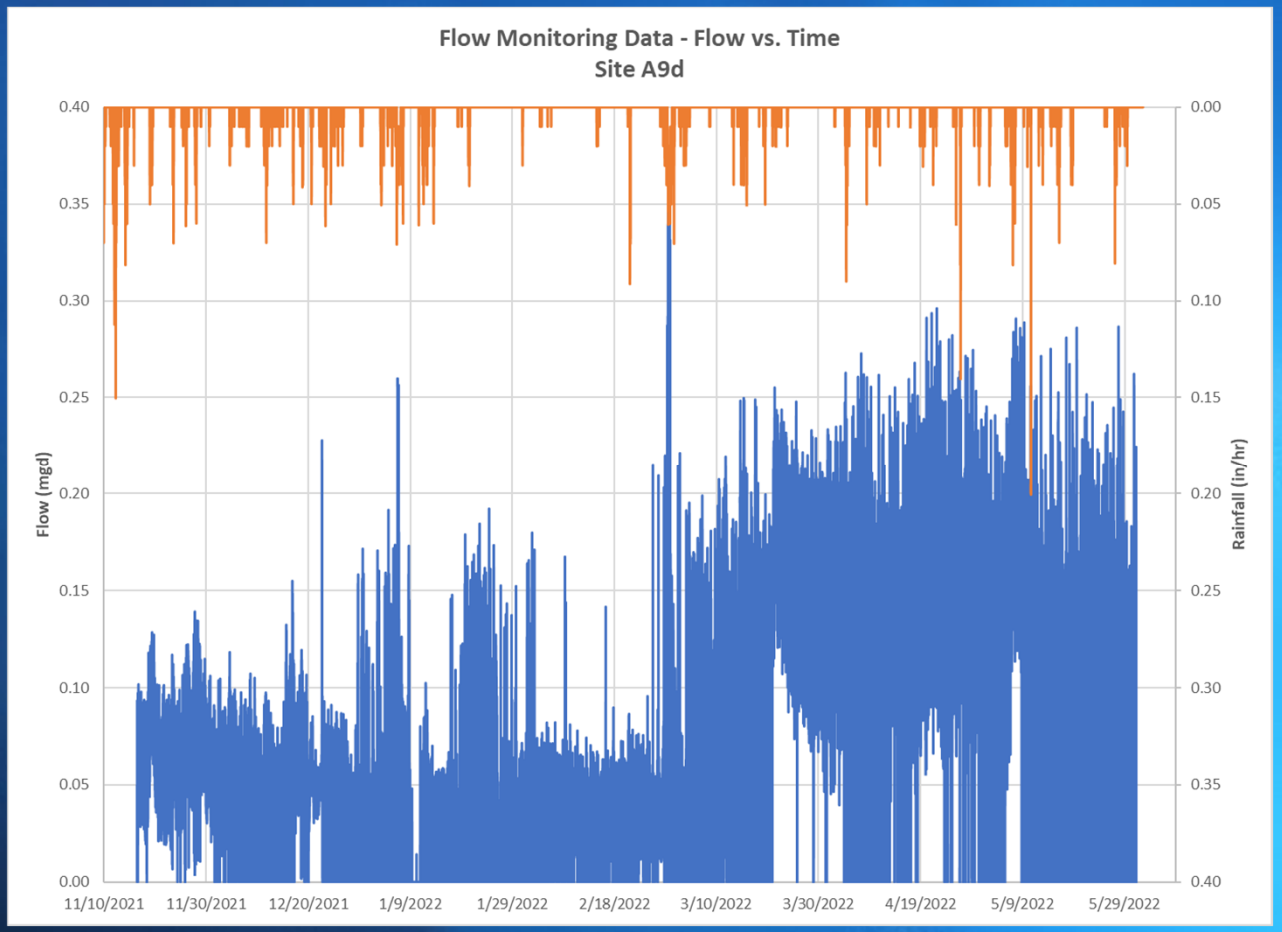
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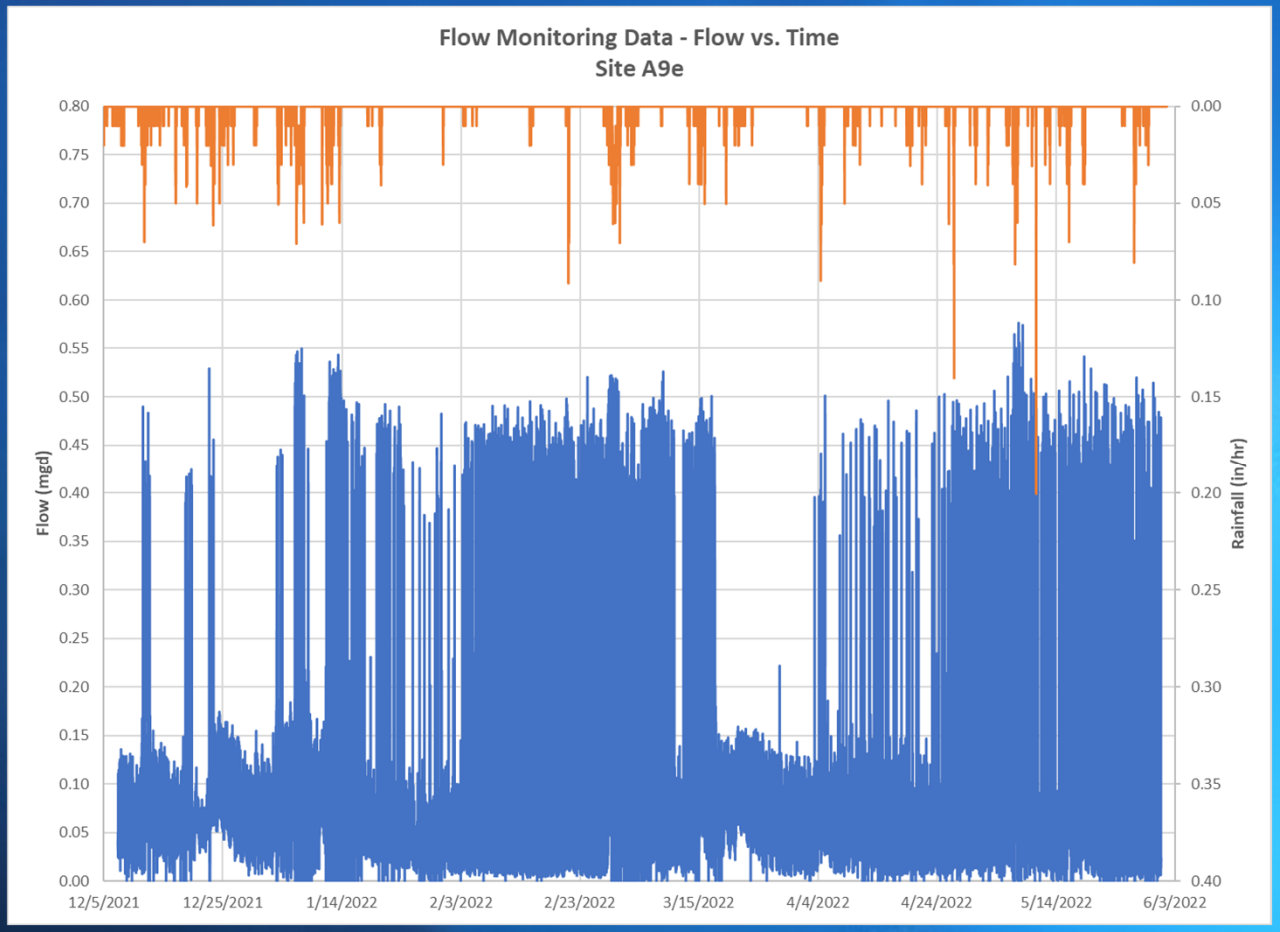
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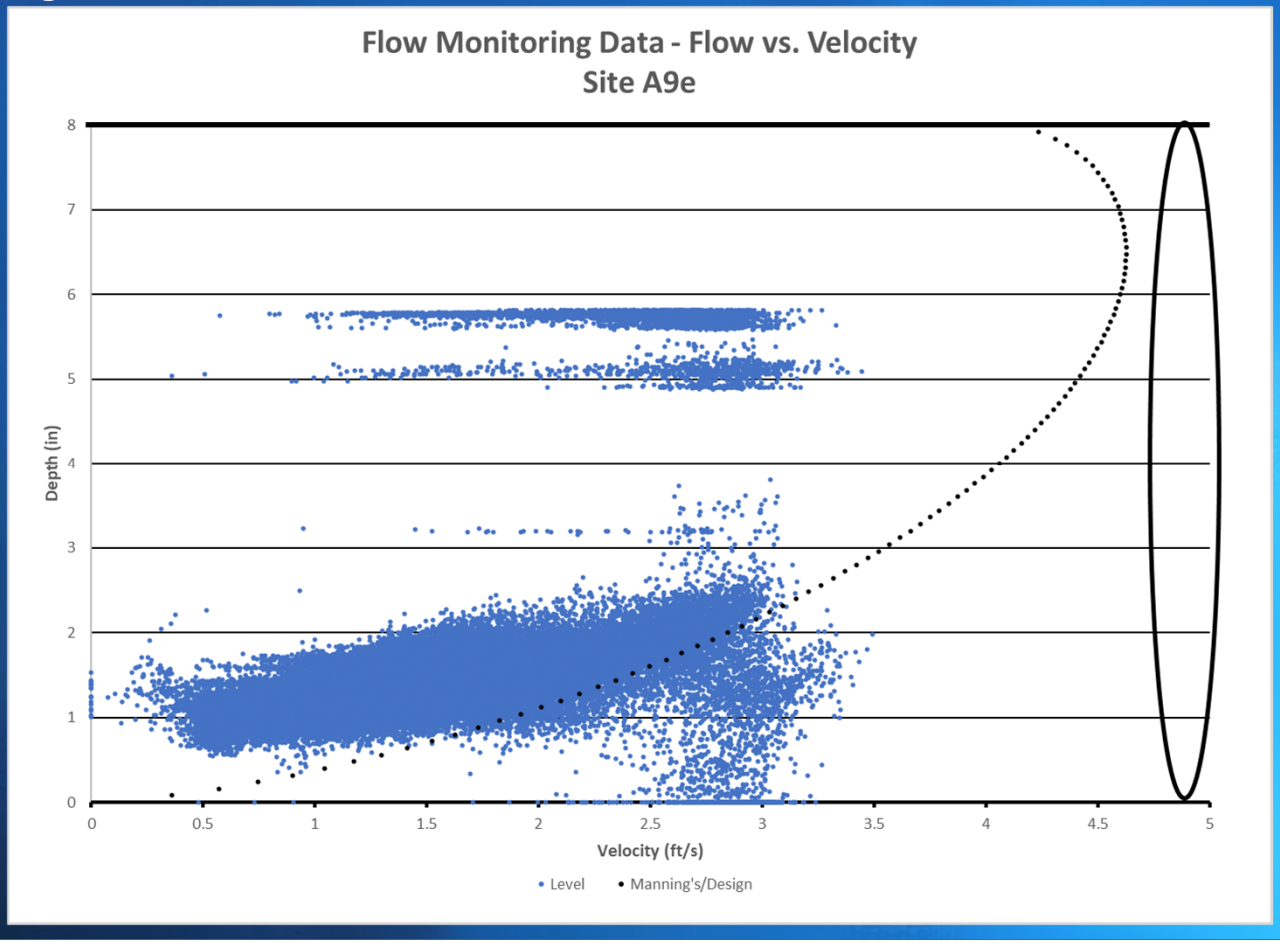


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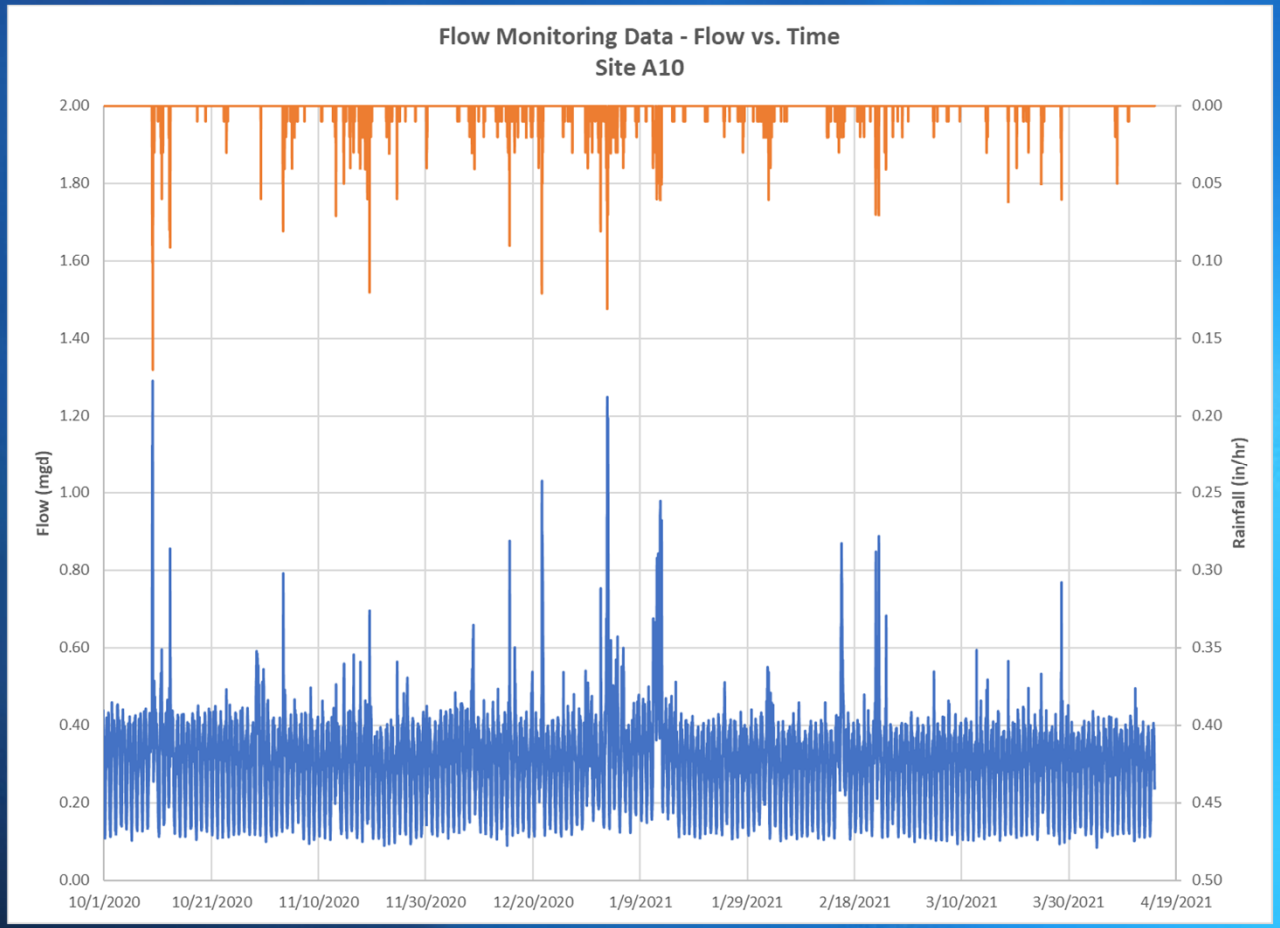


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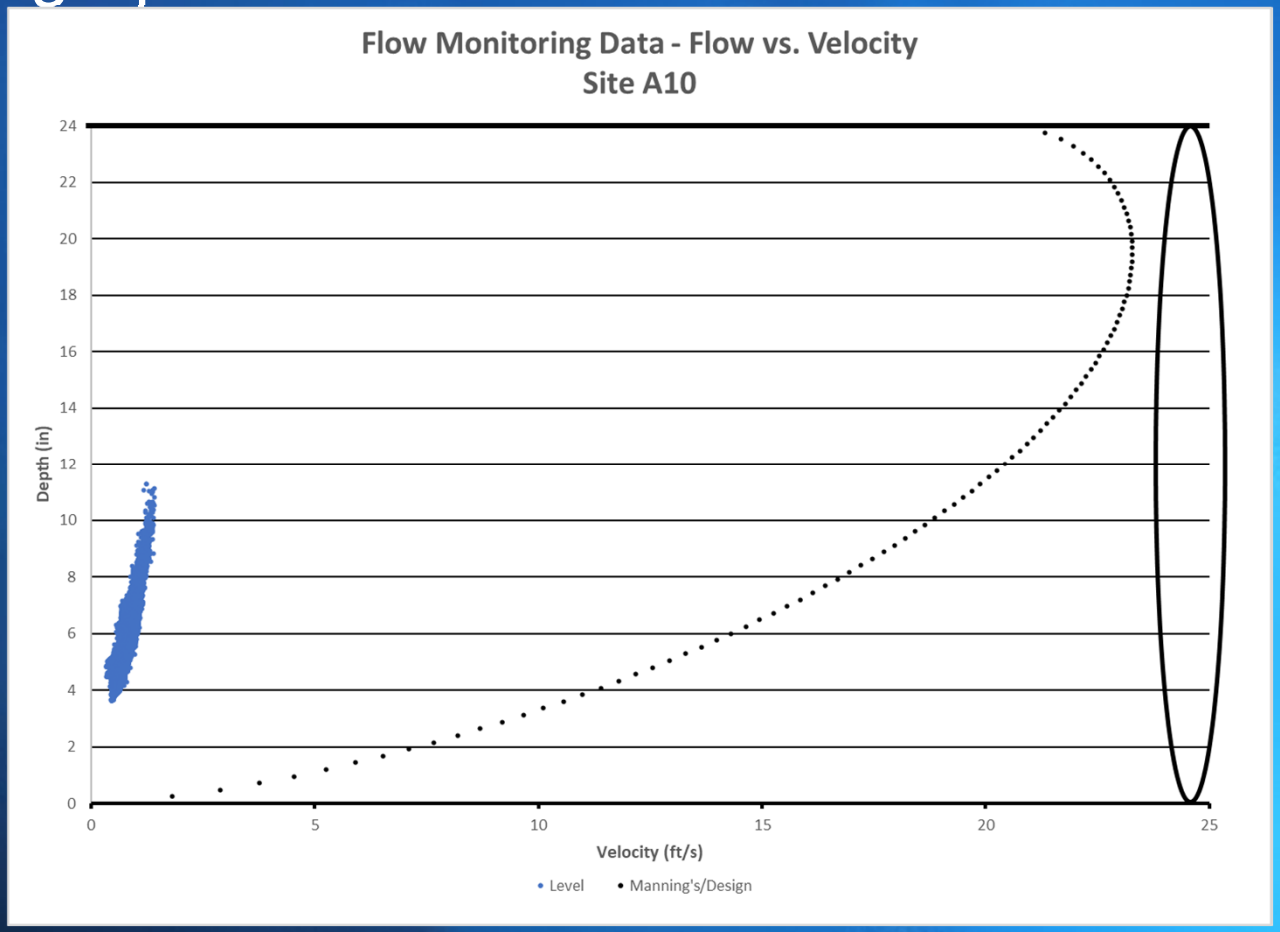


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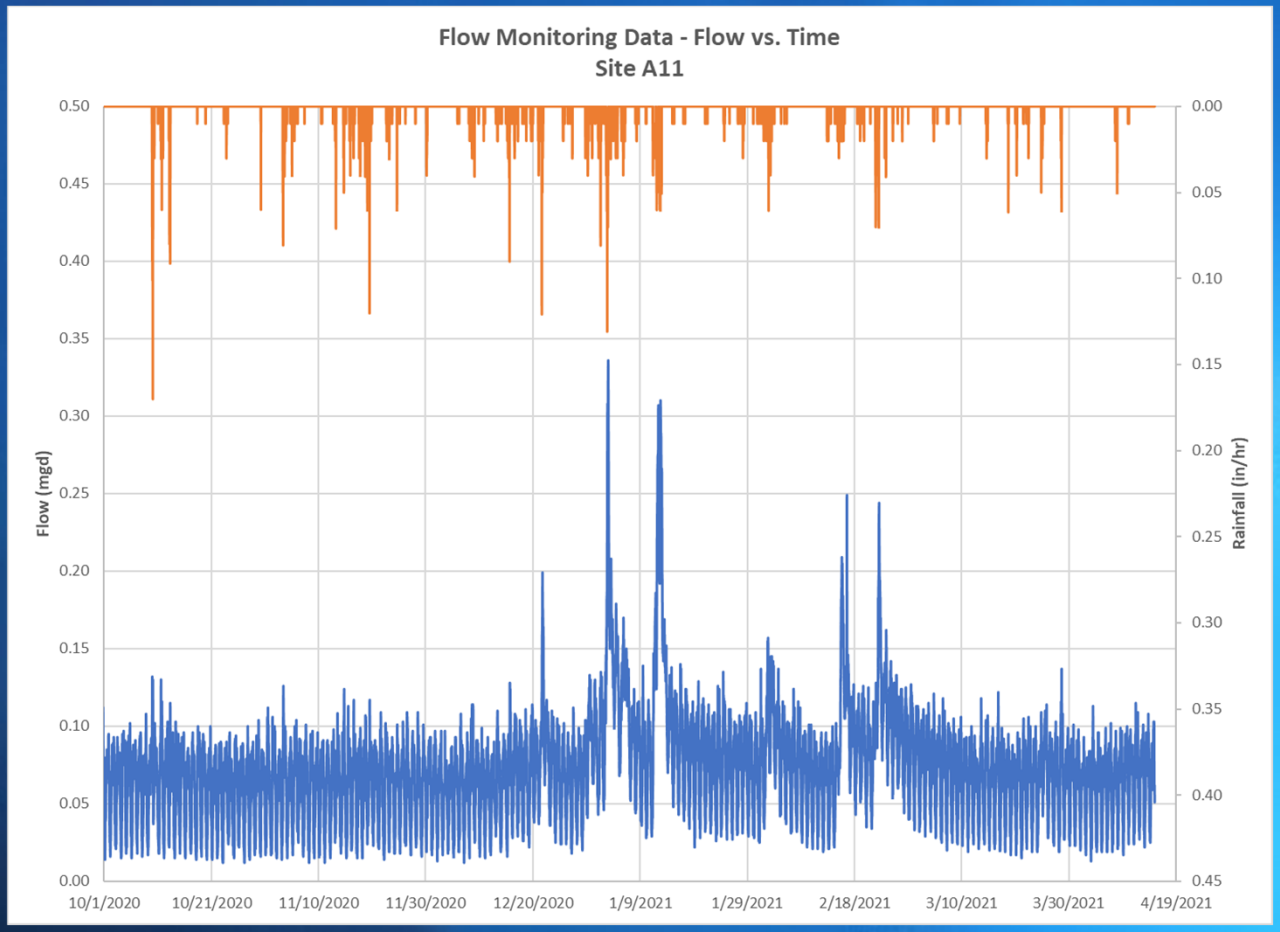


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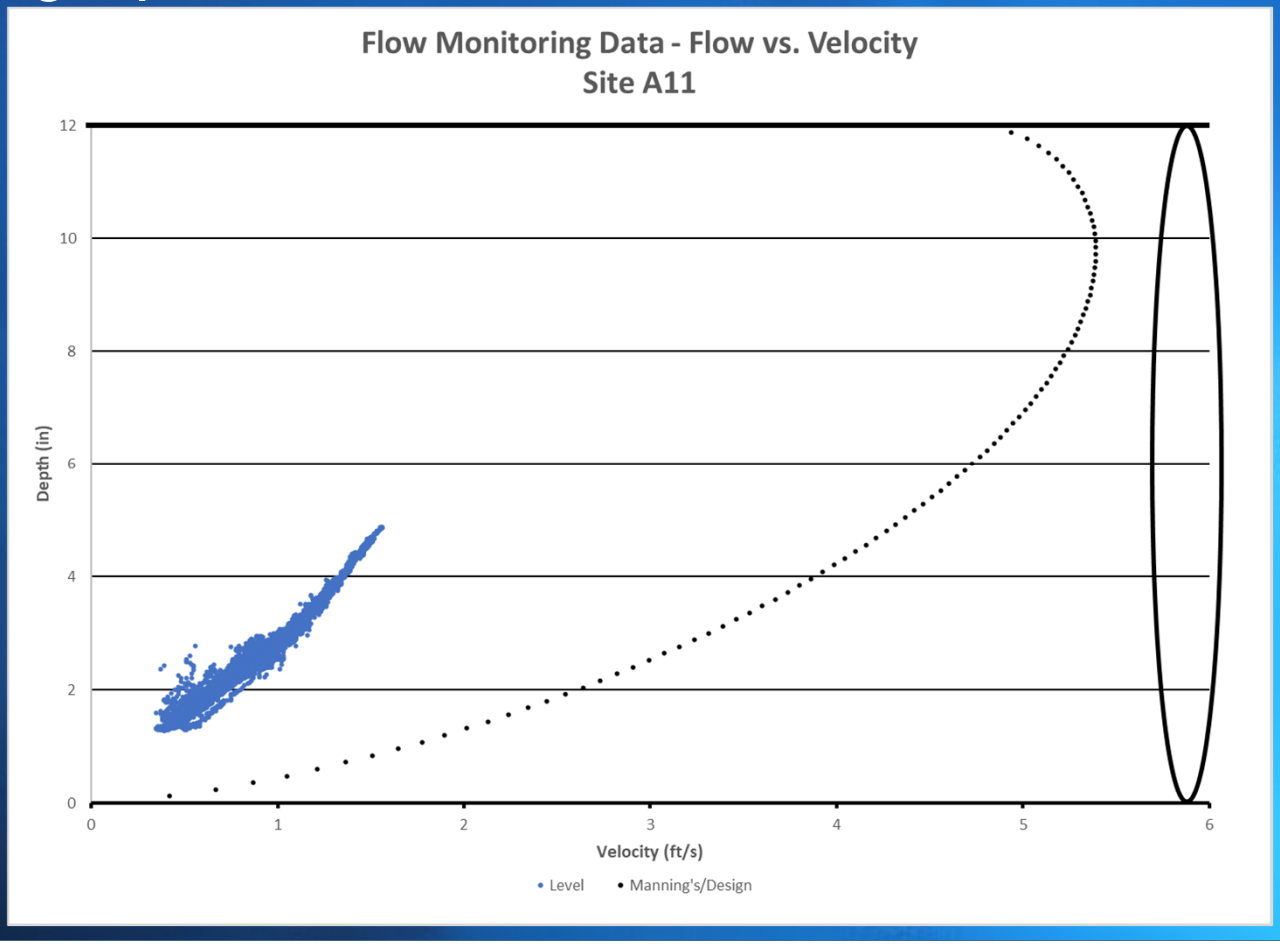


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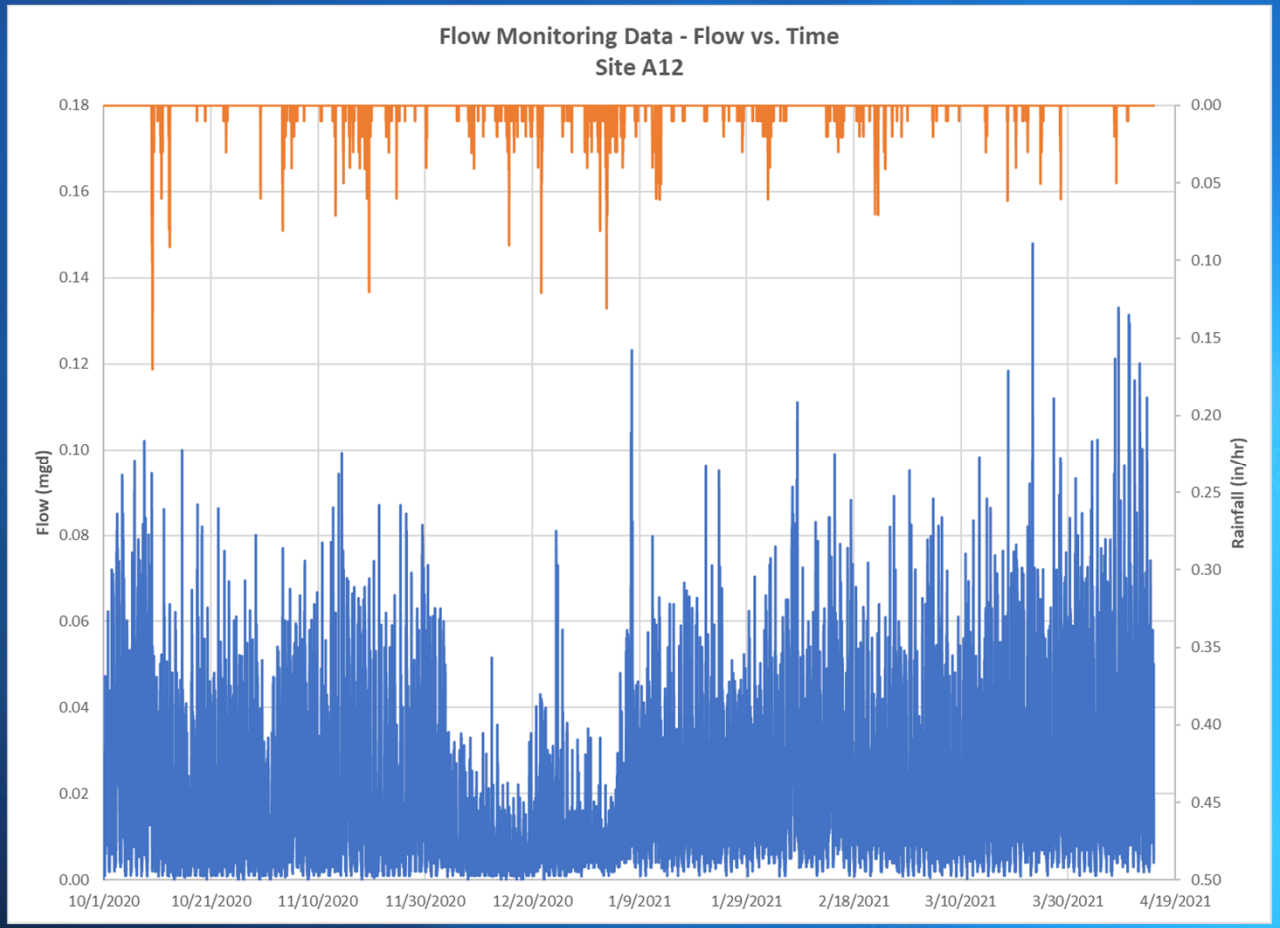


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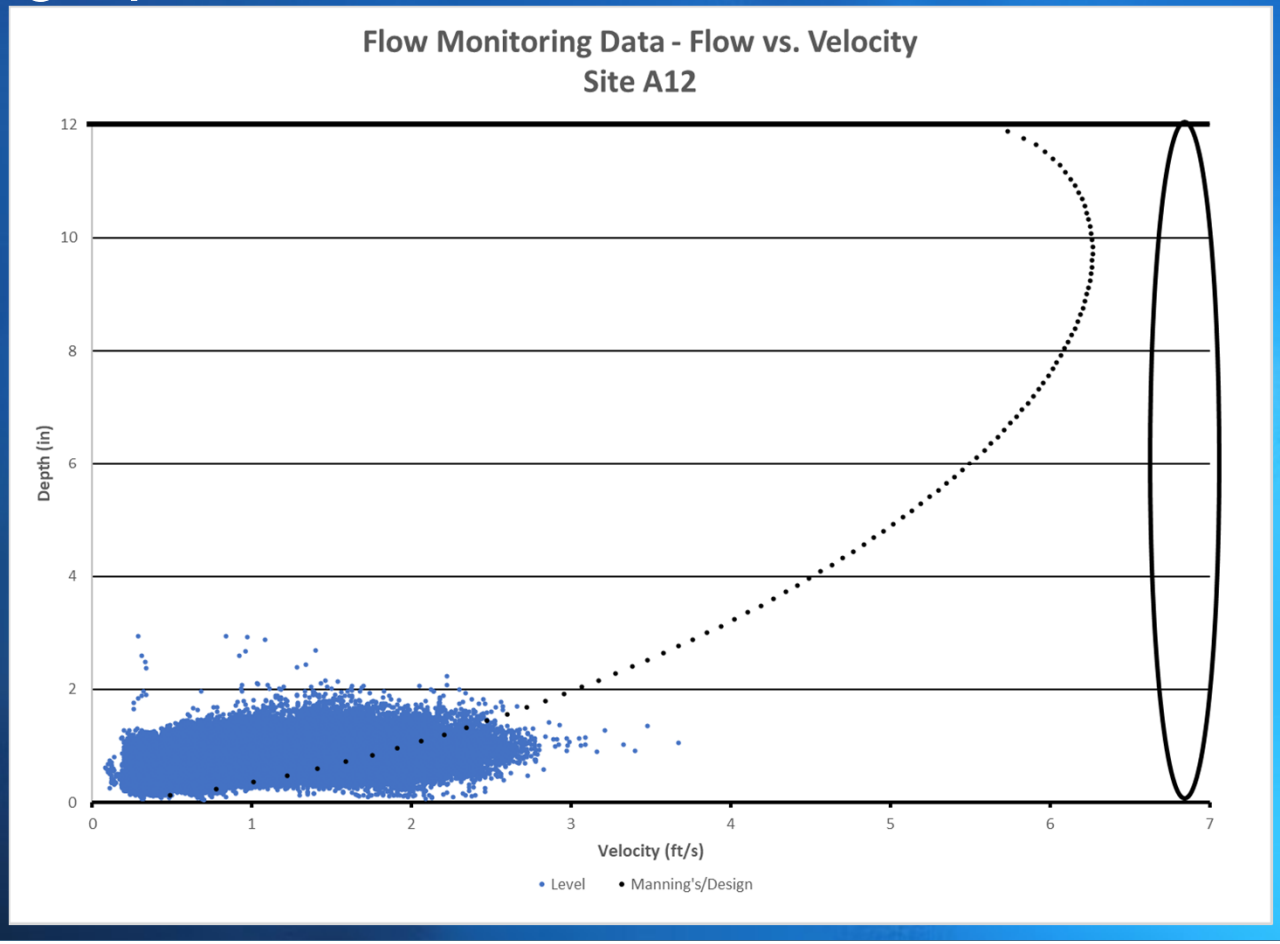


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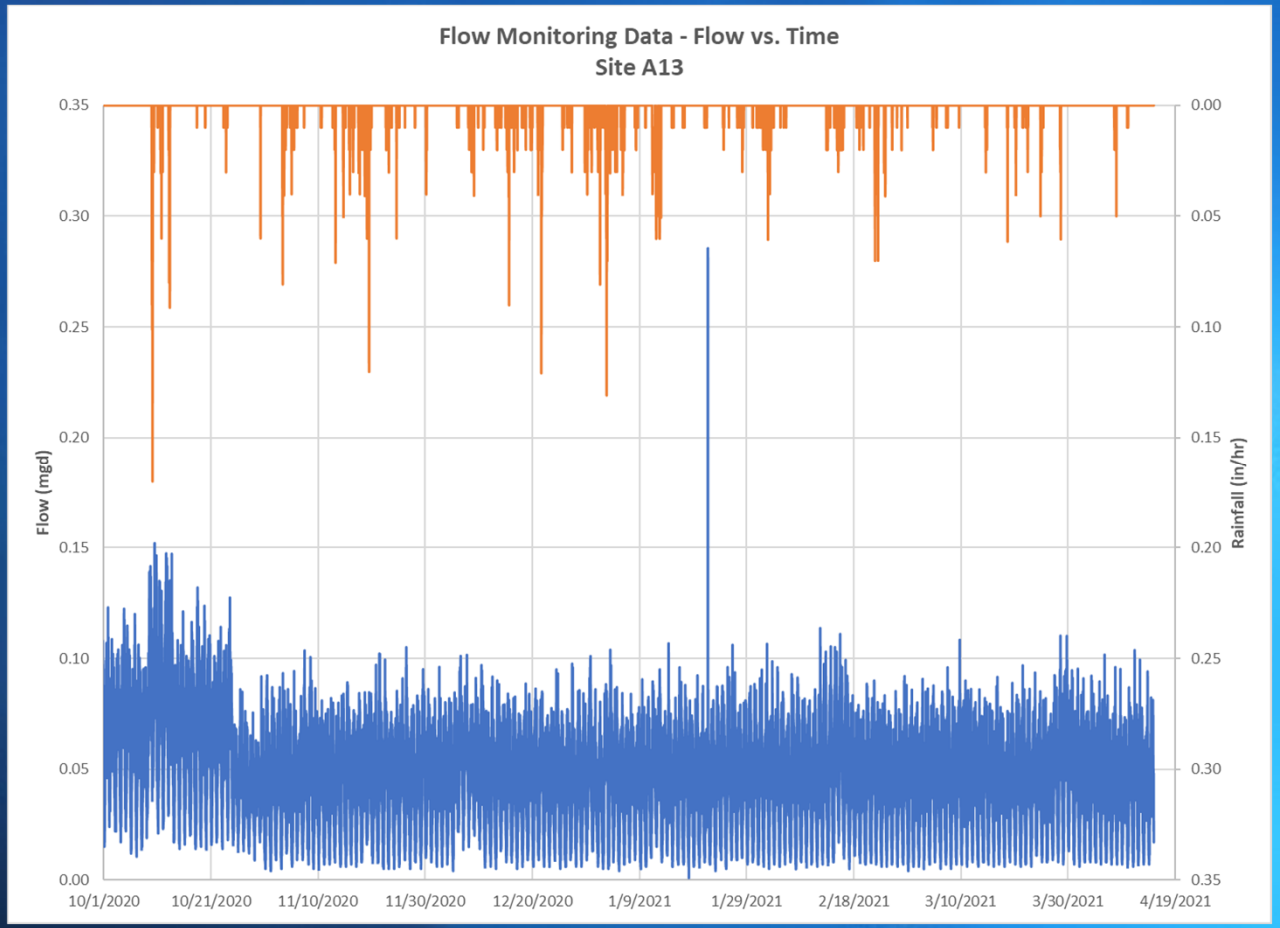


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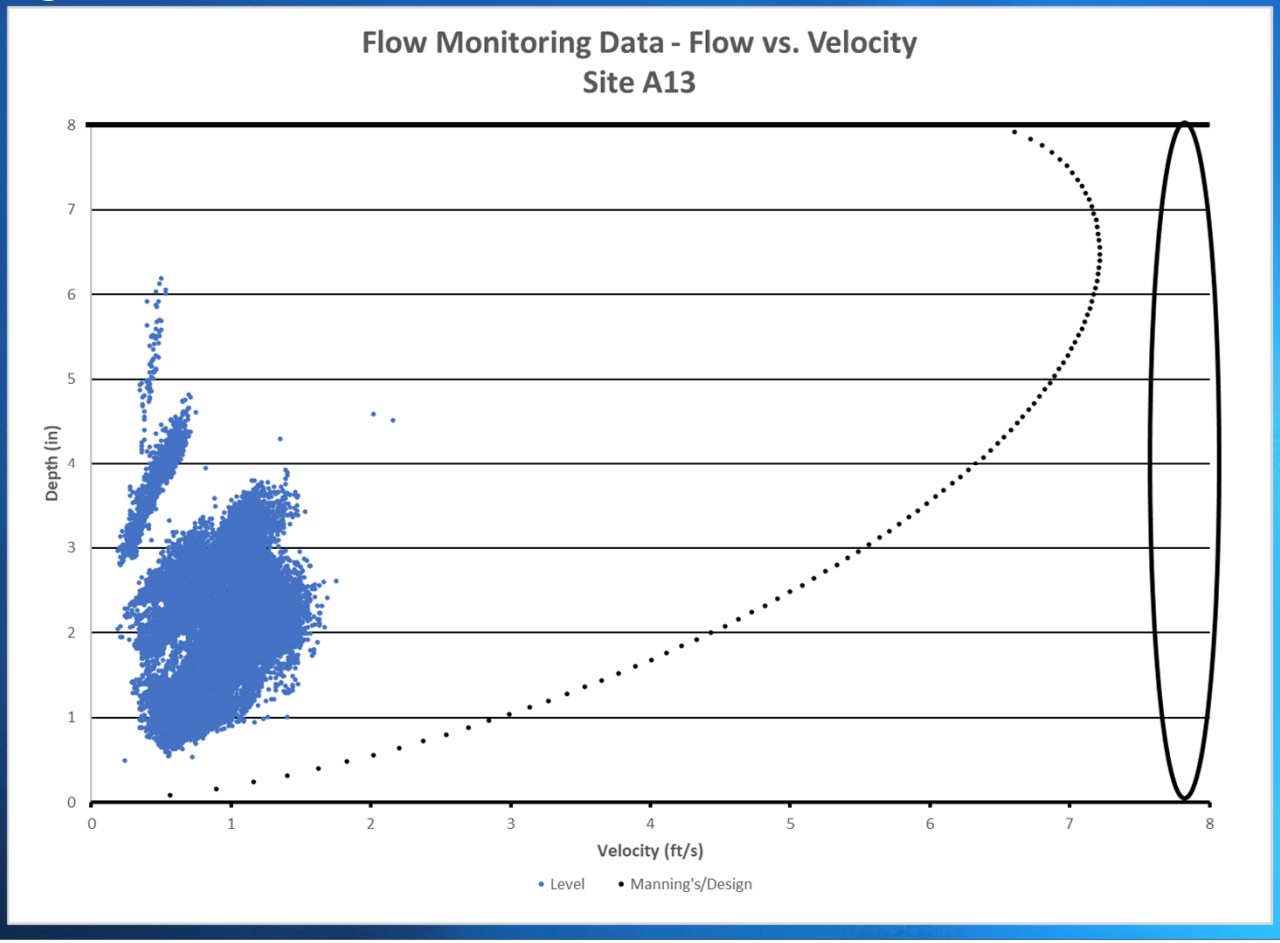


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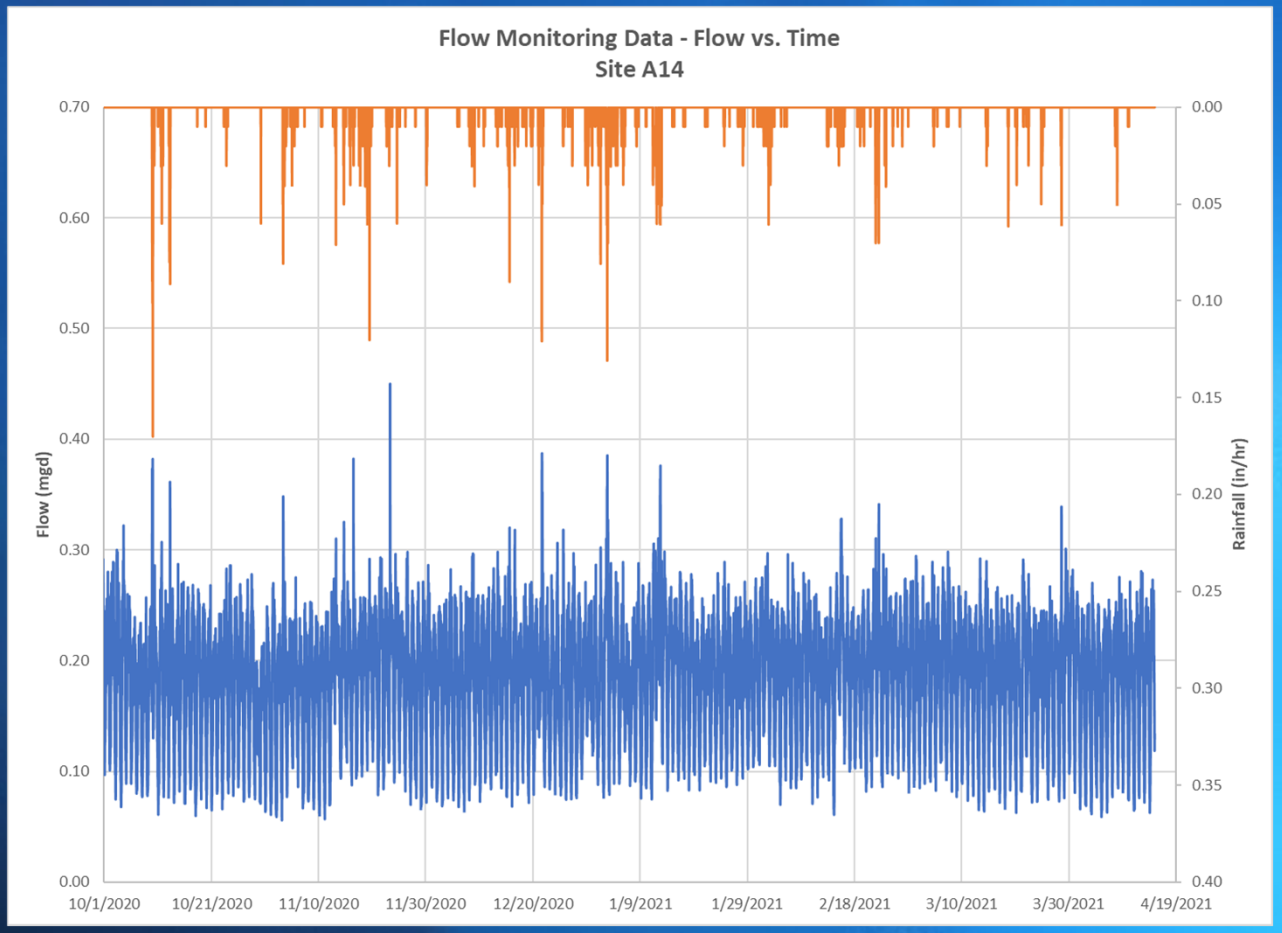


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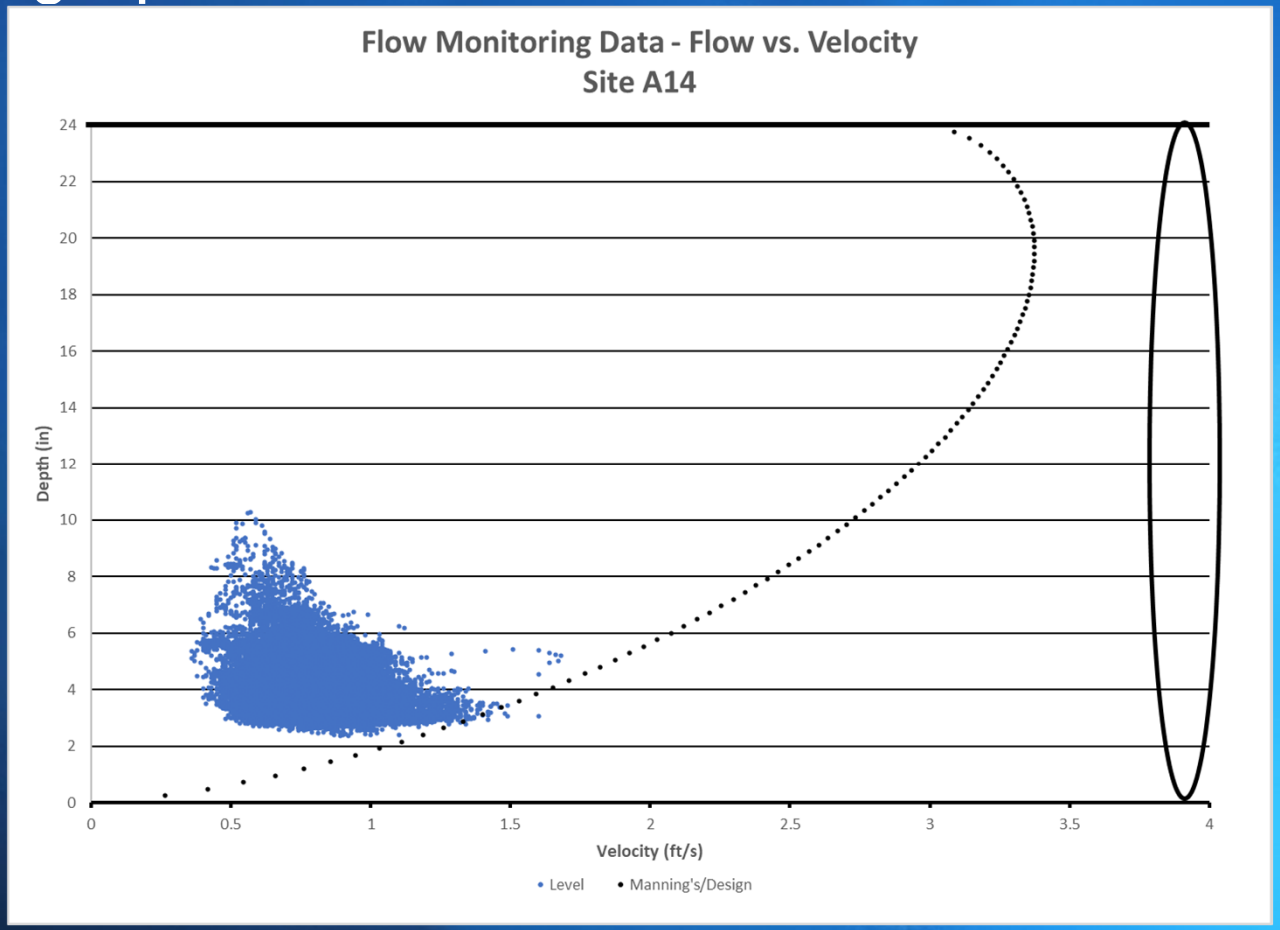


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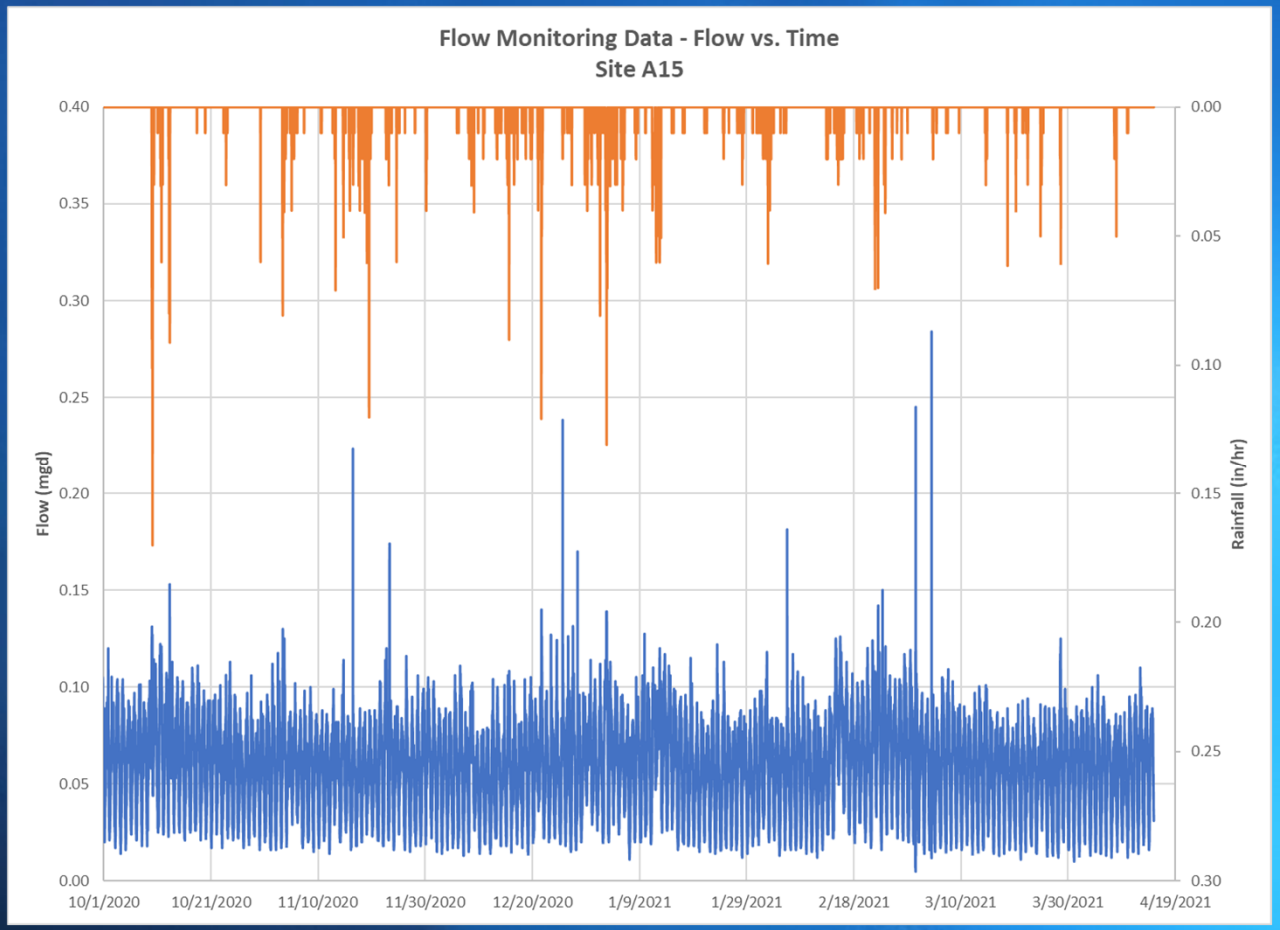


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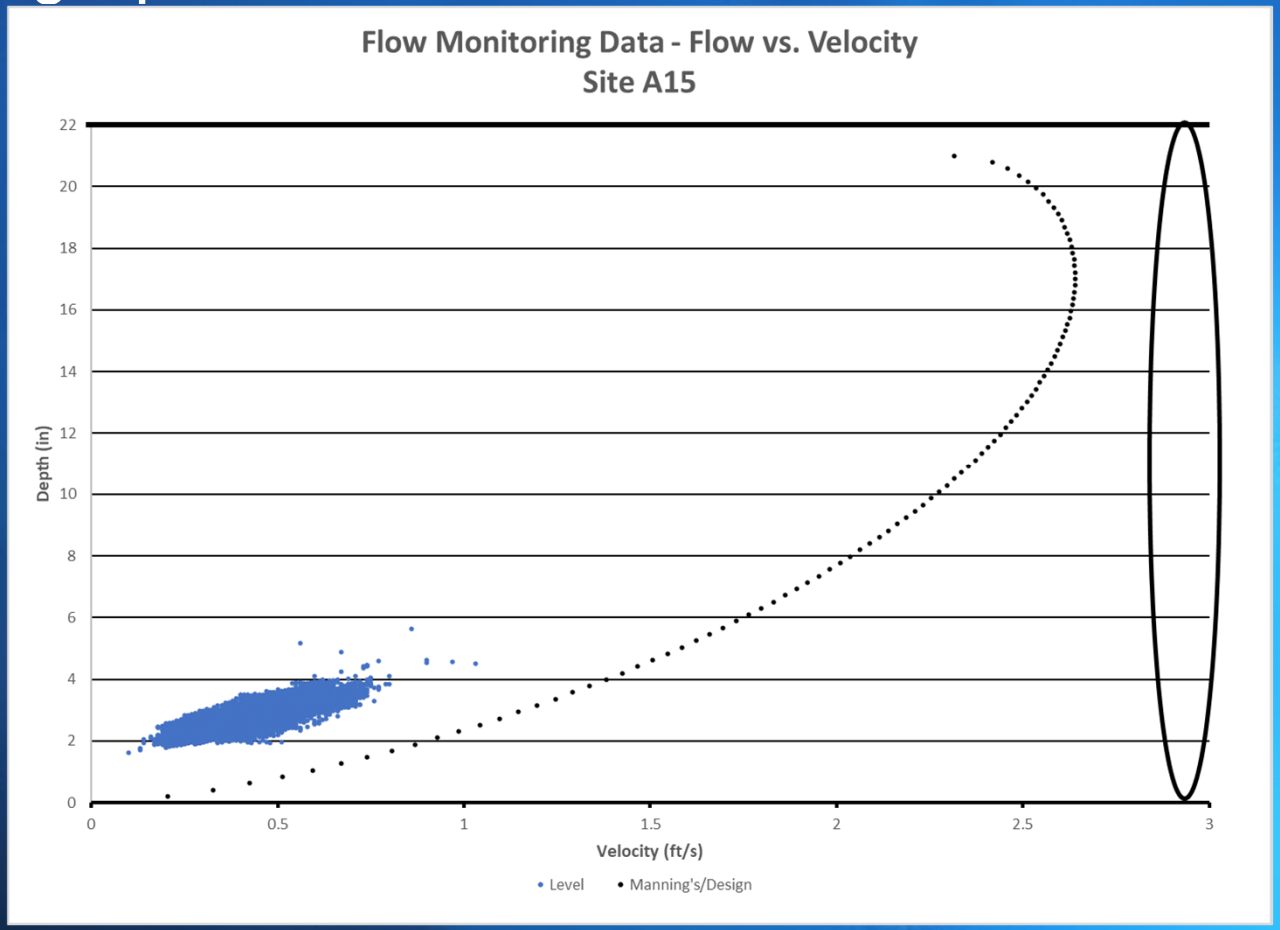


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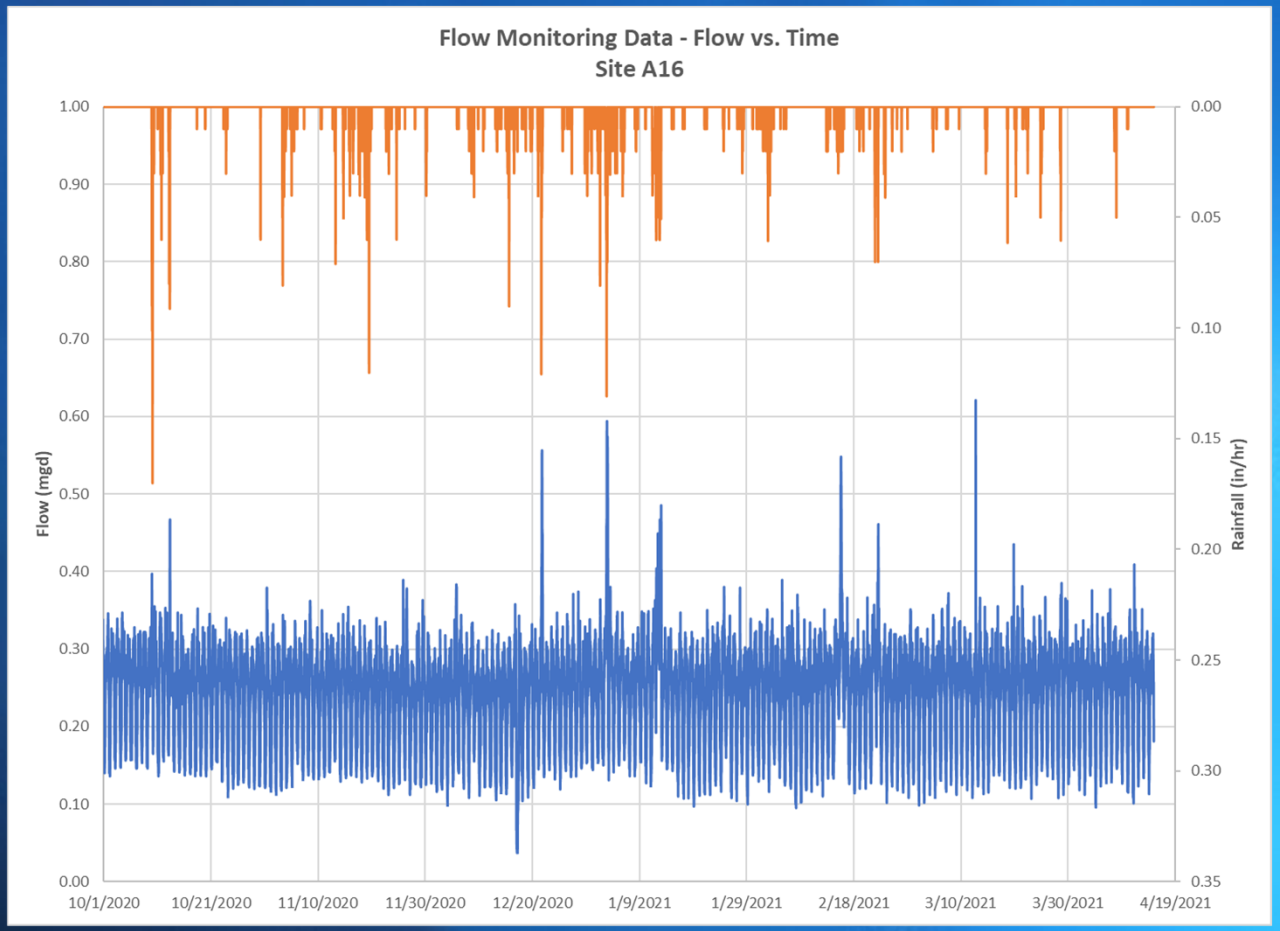


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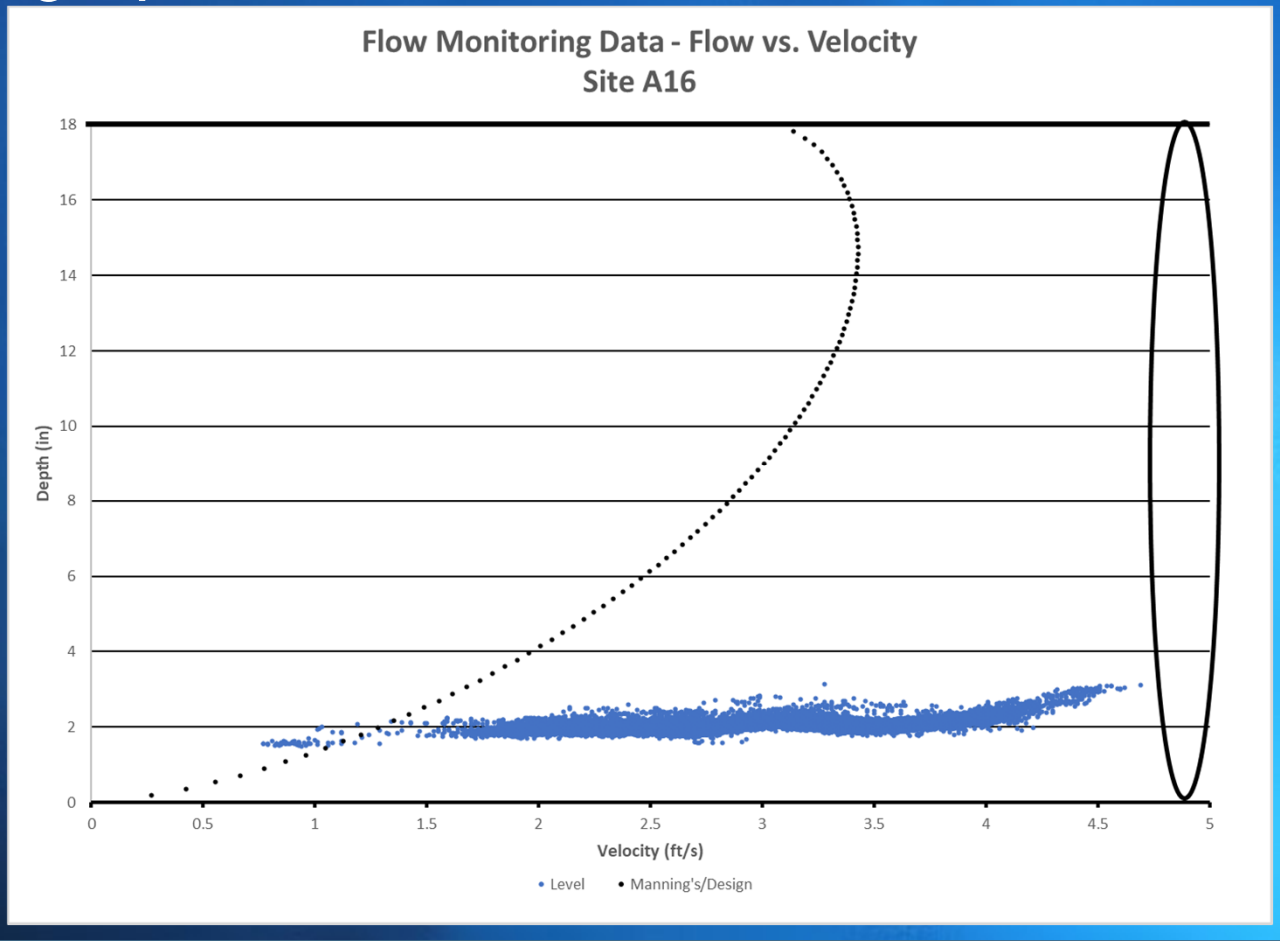


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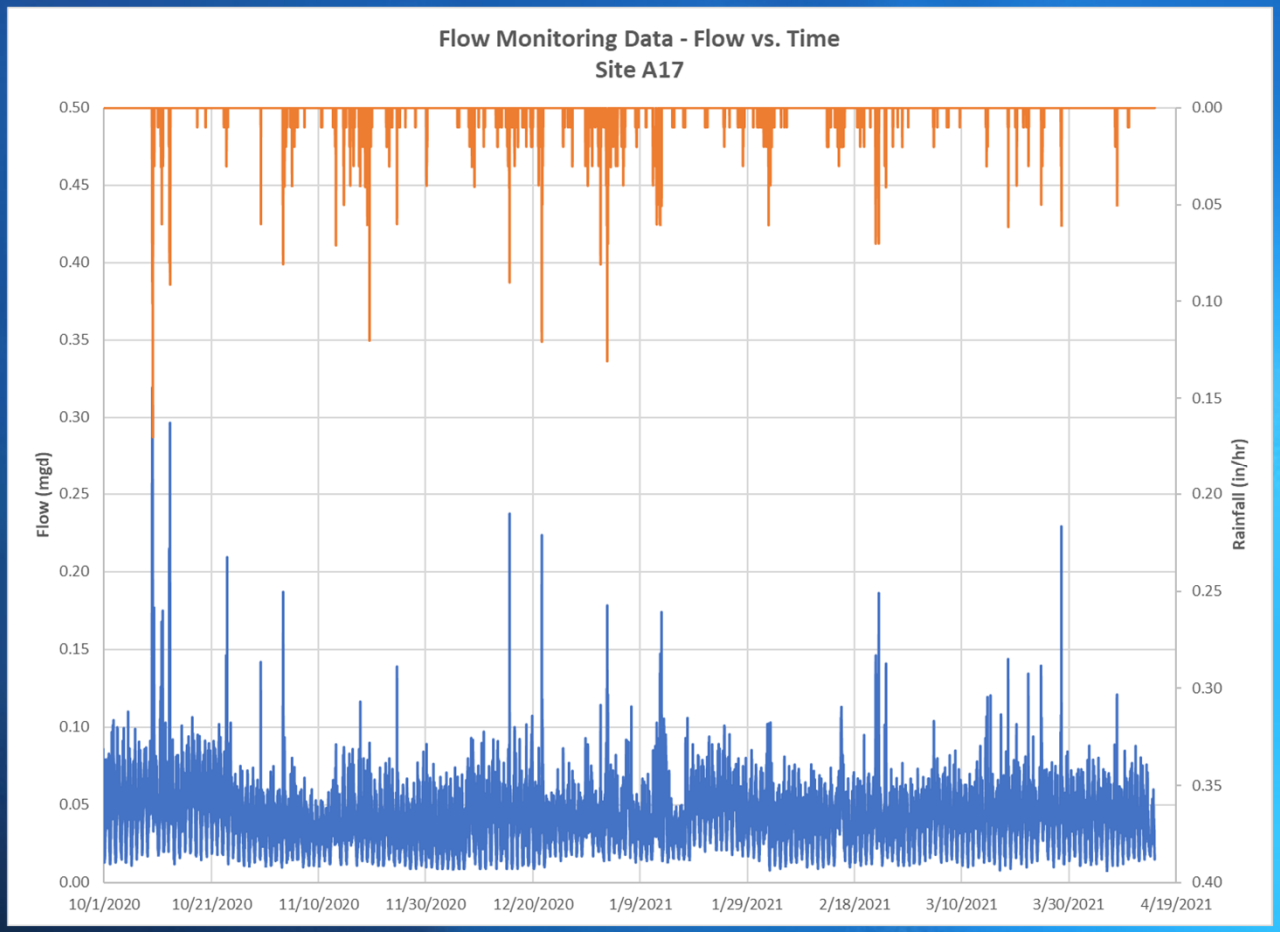


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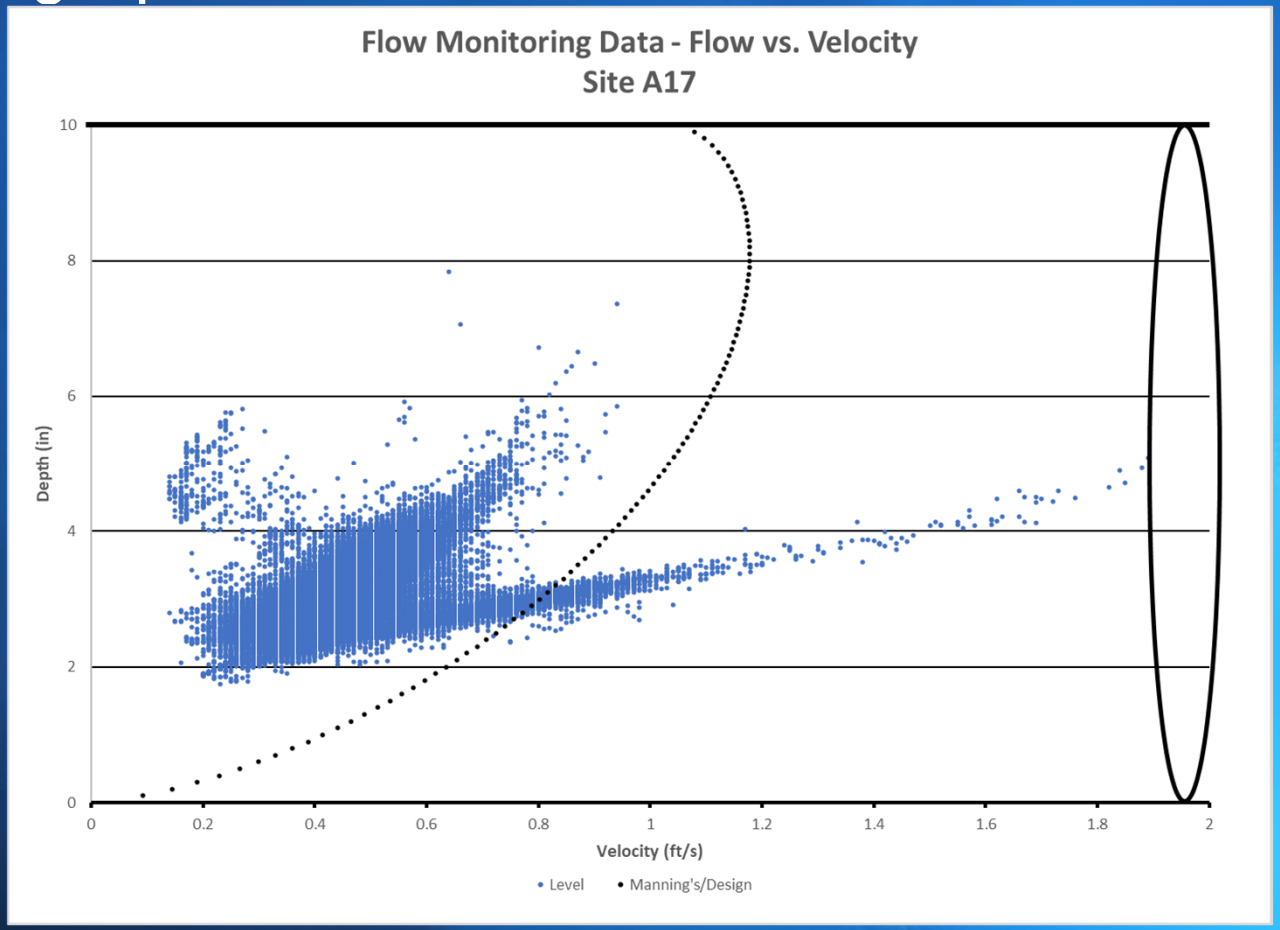


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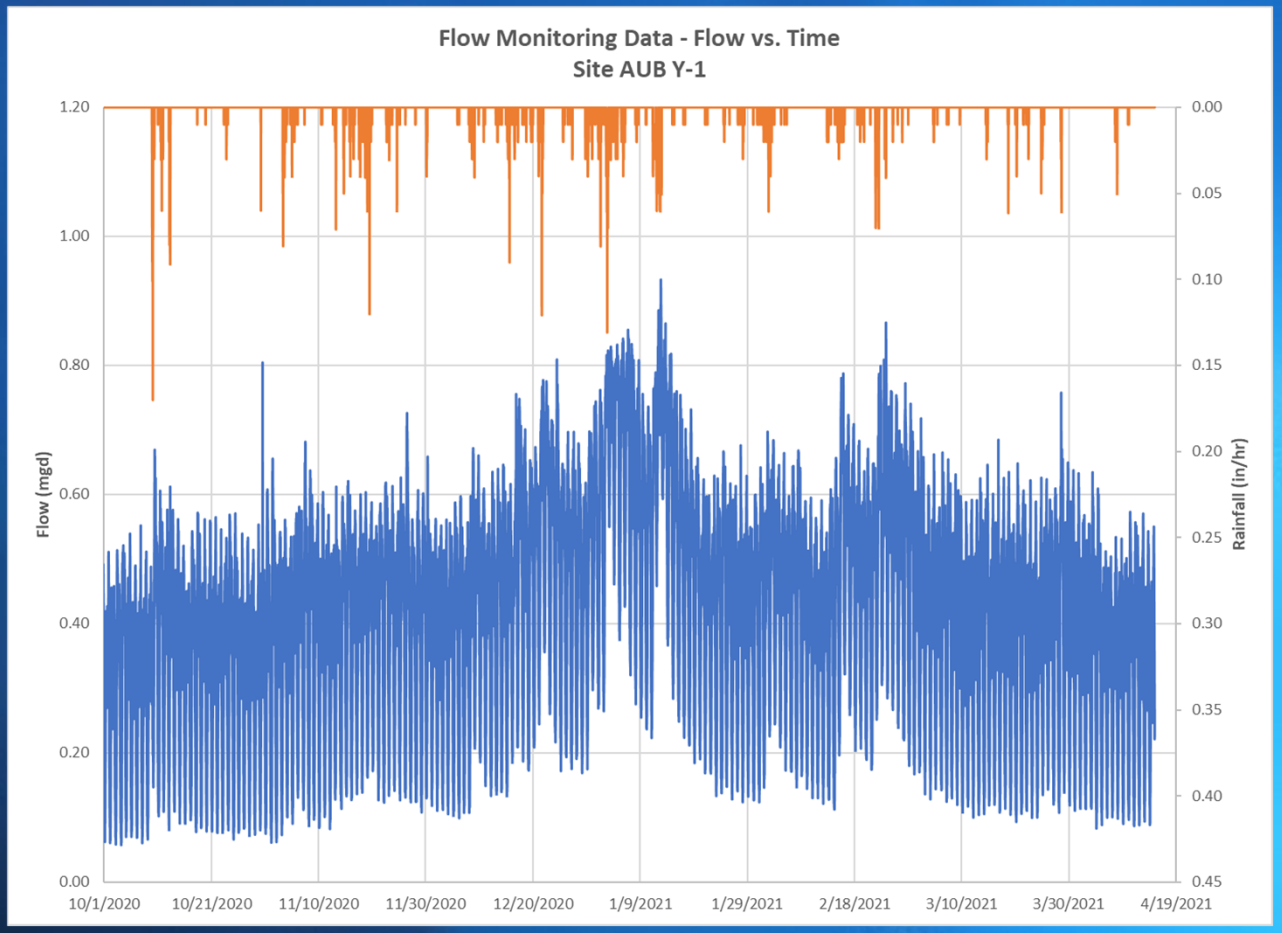


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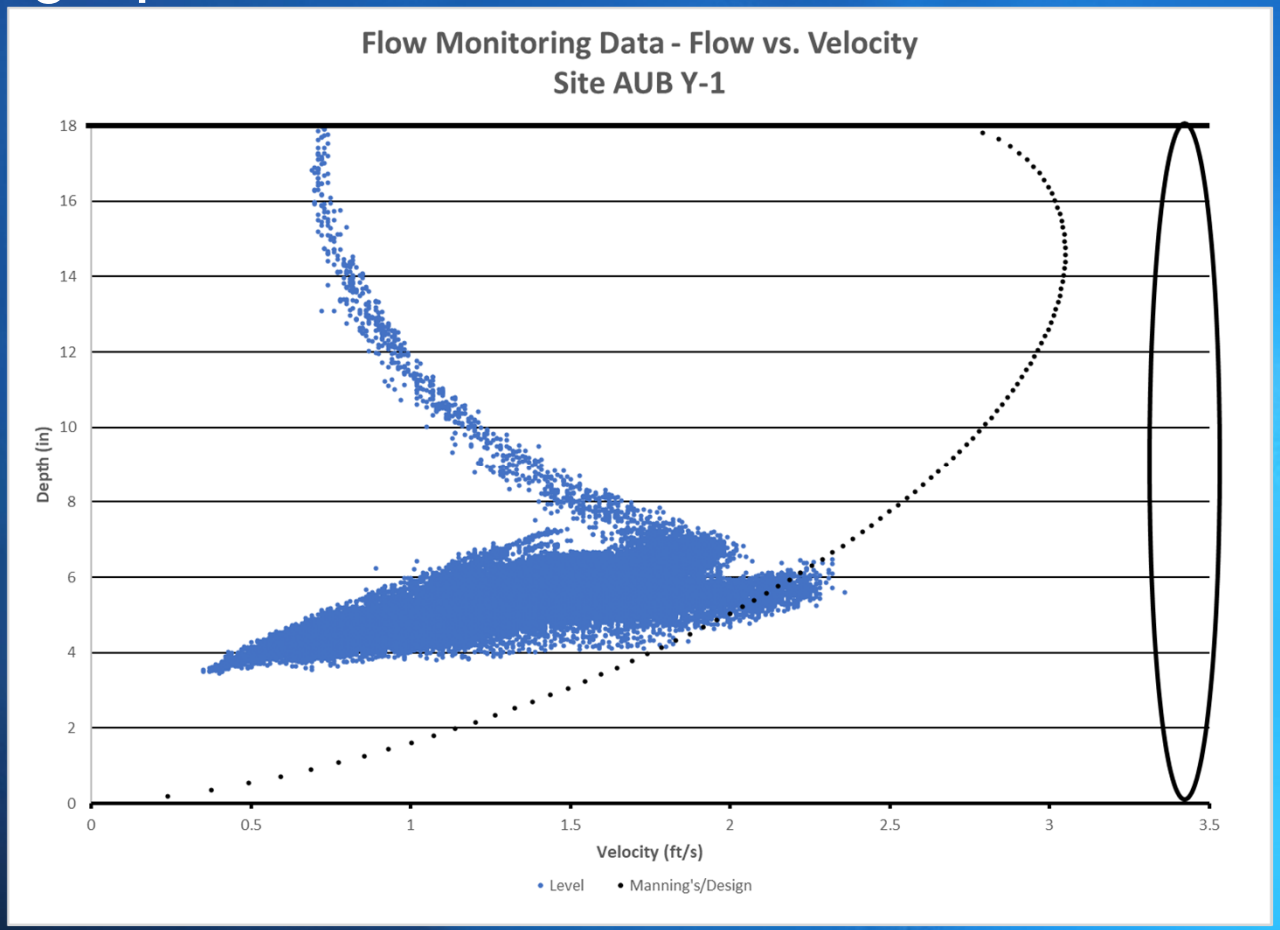


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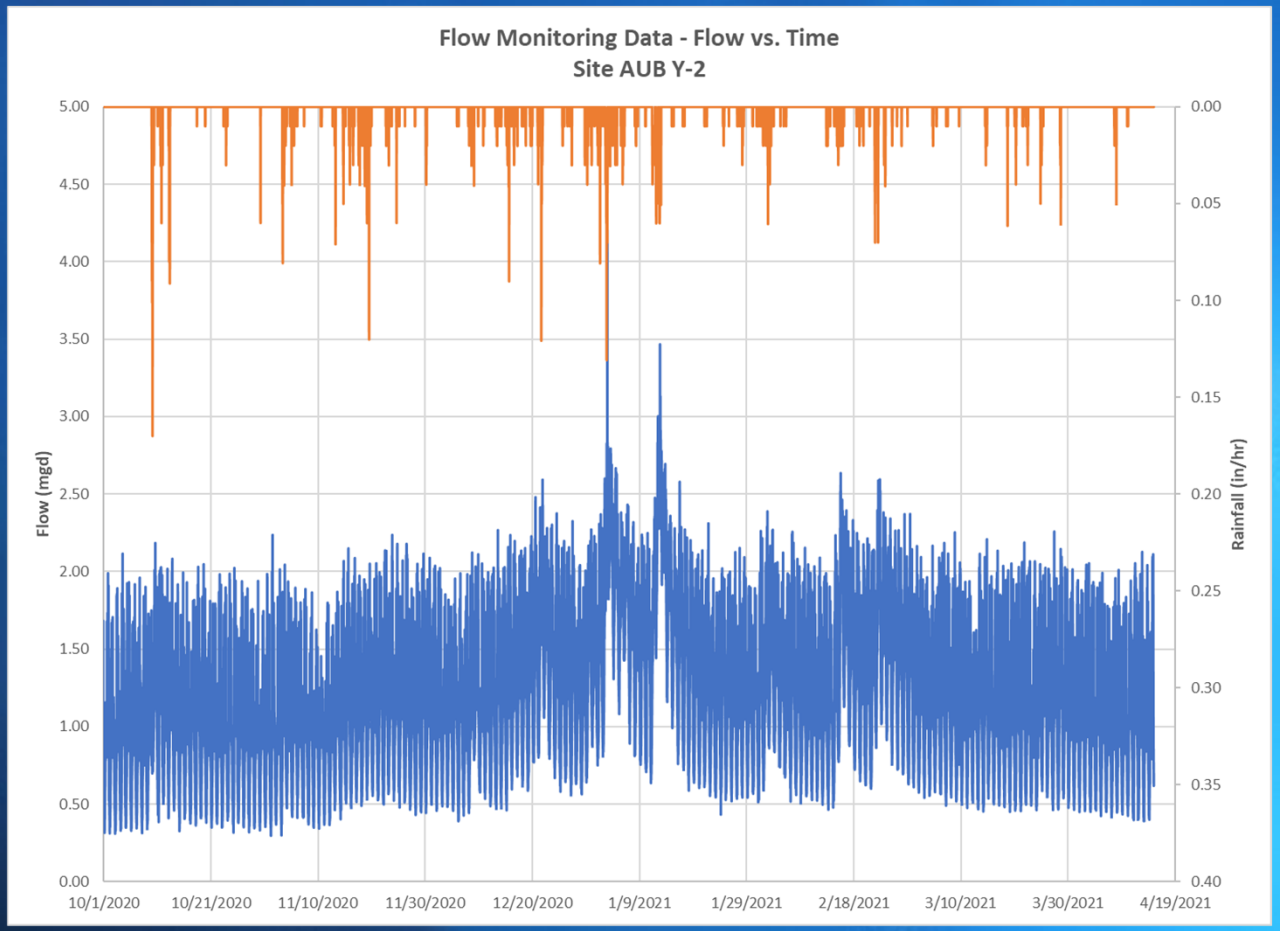


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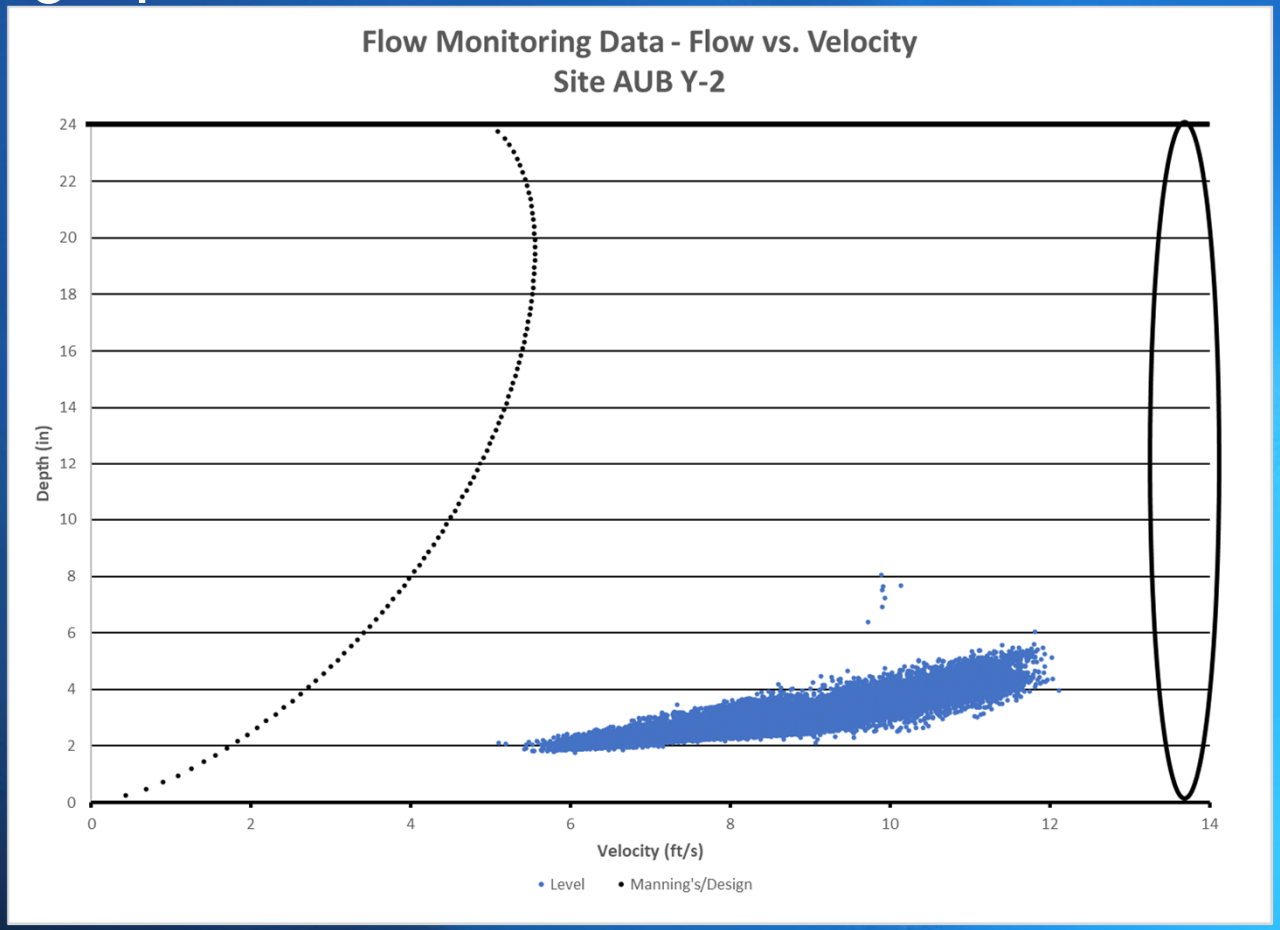


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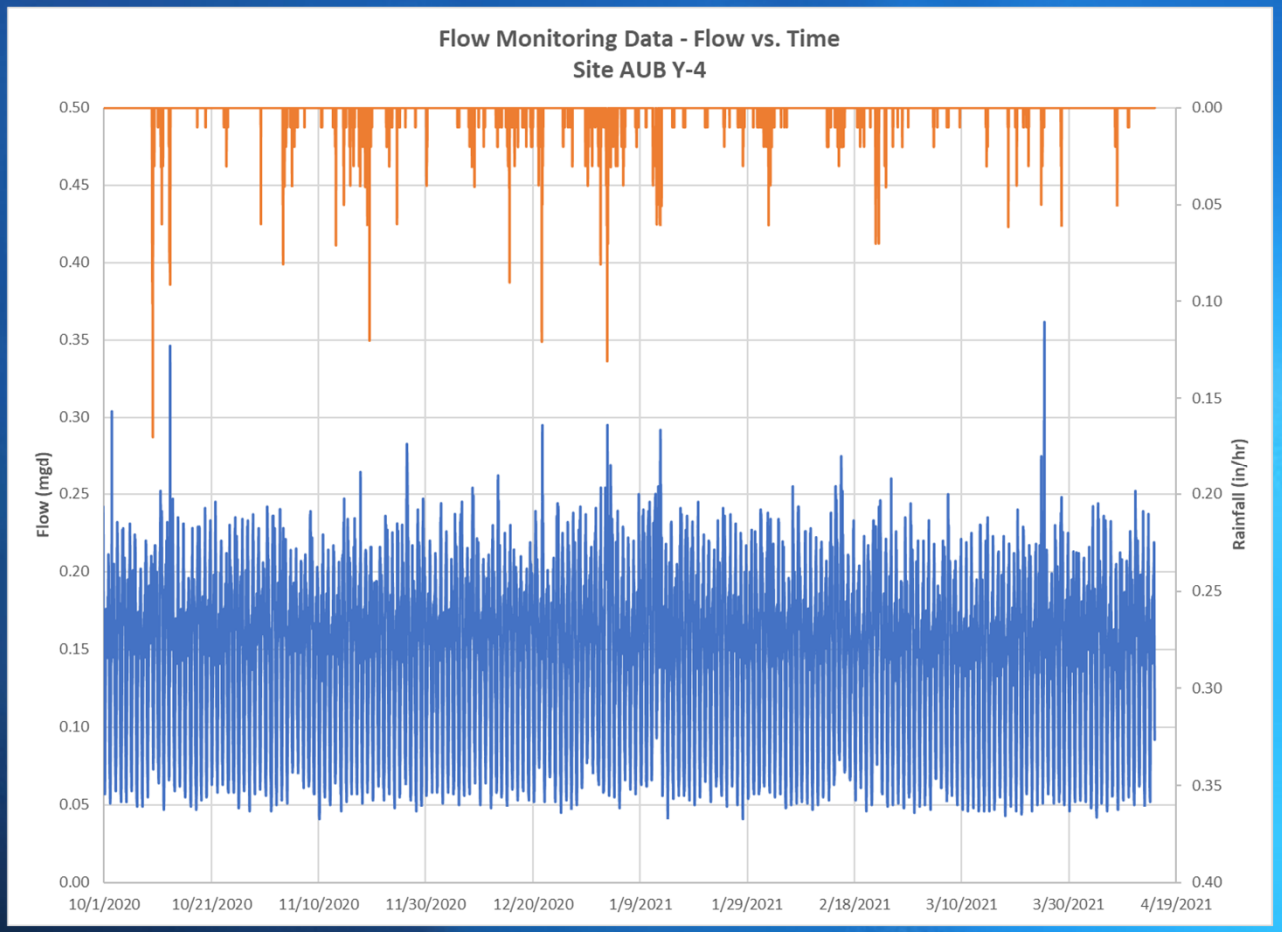


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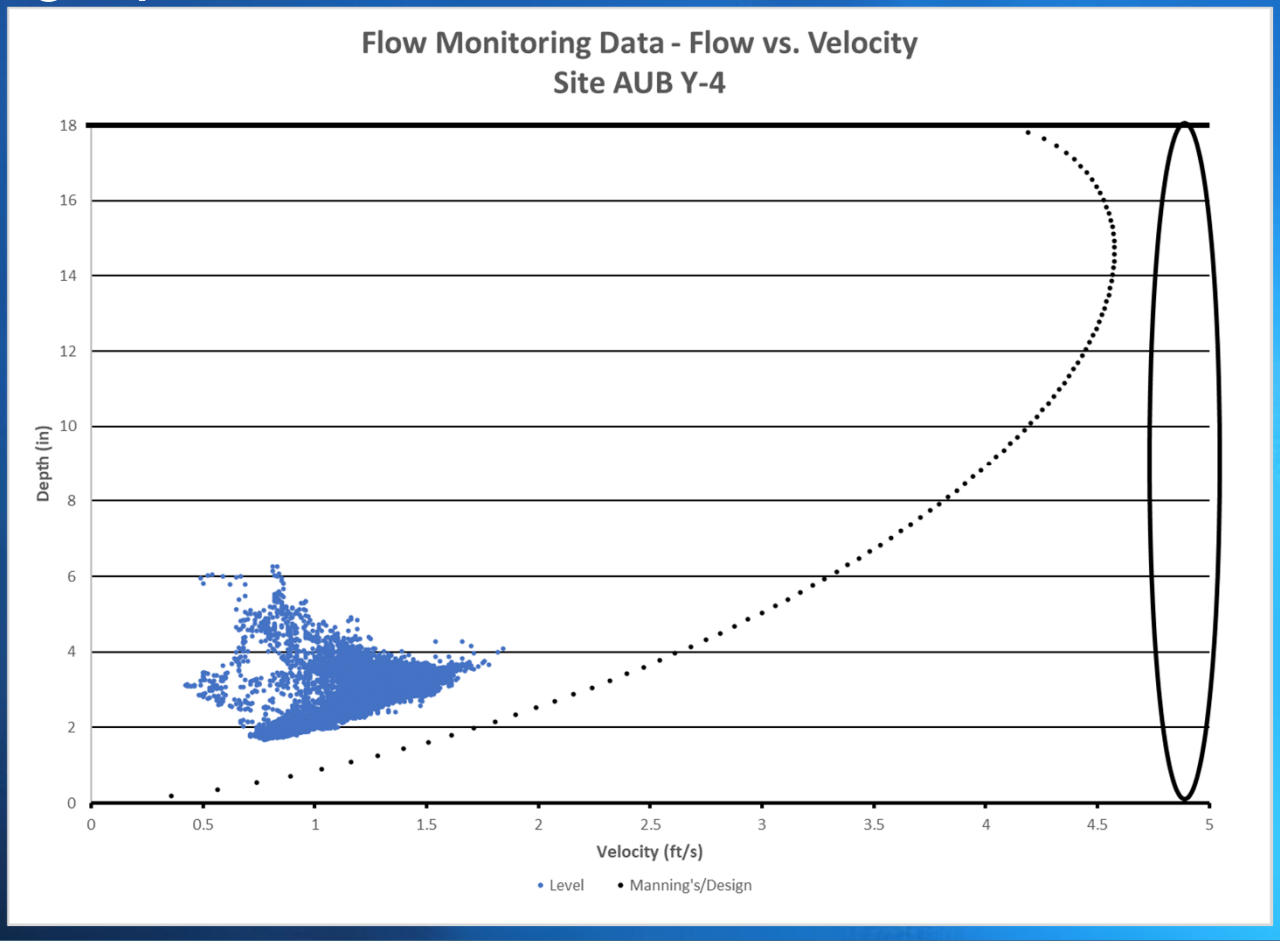


Meter AUB_Y-4

Flow vs Rainfall



Meter AUB_Y-4
Scattergraph



ATTACHMENT 1C

LAND USE ELEMENTS OF COMPREHENSIVE PLAN

LAND USE ELEMENT





LAND USE ELEMENT

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LAND USE ELEMENT

Vision

The Auburn community is both physically and socially connected. We take pride in the quality of our built environment as well as the beauty and function of our natural environment. Land use patterns are supported by a complete and efficient transportation and utility infrastructure system. Neighborhoods, commercial centers, and parks are attractive, interesting, accessible, and well maintained. Natural riverine and forested corridors are interspersed throughout the city, offering sanctuaries where fish and wildlife reside, and providing opportunities for people to observe and learn about the environment. Residents have a strong association with their neighborhoods, and are engaged and involved in the decisions that steer Auburn into the future.

Conditions and Trends

Dispersed Land Use Pattern

For the first 100 years of Auburn's existence, the land use pattern developed in a relatively logical manner. Auburn was fully contained to the valley floor with a traditional downtown urban center, several north/south heavy commercial and industrial corridors paralleling Highway 167, and a surrounding housing stock that was built primarily between 1910 and 1960. In the last 30 years, the land use pattern of Auburn has changed, primarily from incorporation of areas to the south, east, and west. Each newly incorporated area has its own identity and land use pattern.

Disconnected Communities

Because a significant portion of today's Auburn was settled prior to incorporation, the basic land use patterns and infrastructure have already been established. Furthermore, much of today's Auburn land use pattern was established in either Auburn, the Muckleshoot Reservation, or prior to incorporation in King County or Pierce County. Given the mix of jurisdictional oversight, myriad land use policies, regulations, infrastructure standards, and investments have been applied in these areas. This has resulted in a relatively uncoordinated and random land use pattern. It also means that the various communities lack connectivity to each other, have a mix of identities, and are experiencing a change in their character from rural to more urban.

Robust Diversity of Land Use

Auburn has a strong mix of housing and industry. Auburn's residential land use pattern includes a variety of densities, ages, and housing type. Auburn's nonresidential land use pattern includes a mix of local and regional retail, entertainment, services, manufacturing, warehousing, and distribution centers. This mix of land use is a strength because it exemplifies social, economic, and cultural diversity.

Diversity in Natural Resources

Auburn's natural resources include the Green River and its tributaries, the White River and its tributaries, a robust inventory of wetlands, floodplains, steep slopes, and mature open spaces. With a strong base to work from, the City and its partners can be strategic about how to better connect and preserve natural areas so that the overall system is enhanced for future generations to enjoy.

Introduction

All land within the City of Auburn is assigned a land use designation, which builds off the past Comprehensive Plan Map, the existing land use

pattern, previously approved subarea plans, topography, natural features, and targeted goals for shifting the character of specified areas. This chapter provides a description for each designation, general criteria for how to assign the designation, and a series of policies that govern land use within each designation. The Comprehensive Plan Land Use Map contained in the Core Comprehensive Plan shows the location and boundaries for each designation. This map should be consulted together with the written policies of this Plan when decisions about zoning designations, land use activities, and development of public infrastructure are considered.

This Section of the document also explains the reasoning and intention behind the Plan Map's land use designations. This should be useful in:

- developing and implementing tools (such as zoning provisions)
- interpreting the Plan Map as it applies to specific regulatory decisions or development proposals
- adjusting or amending the Plan Map when changing conditions or land use markets warrant
- planning for public services and infrastructure

Finally, this chapter sets forth special policies intended to address the unique challenges and opportunities of specific locations within Auburn. These specific policies supplement the general goals, objectives and policies found elsewhere in this plan.

Residential Land Use Designations

Character Sketch

Residential uses will comprise a diverse arrangement of multiple densities. The pattern of one single density in a zone or neighborhood will evolve into increased and mixed densities in exchange for amenities that enhance quality of life. There will be greater connectivity and stronger spatial relationships between neighborhoods through strategic locations of roadway, trail, park, and neighborhood-serving businesses. These amenities will help create localized identity while also linking one area to another. The design and build quality of new construction and infill will be held to a high standard. The City will encourage projects to be unique, innovative, and provide the residents of Auburn true choice.

Values

Character: Residential neighborhoods will include amenities, features, and layouts that promote interaction amongst residents.

Wellness: The design of residential neighborhoods will emphasize safety and nonmotorized connectivity.

Service: Through outreach and engagement, individual residents and homeowners' associations are connected to and aware of municipal services, events, and activities.

Economy: Neighborhoods have a physical and personal connection to Auburn's commercial centers and attractions. People want to move to Auburn because of the commercial and recreational opportunities it has to offer.

Celebration: Districts and neighborhoods are identified, promoted, and celebrated.

Environment: The built environment will fit into the natural landscape in a way that protects and respects ecosystem function and that preserves native vegetation and soils.

Sustainability: Natural resources, economic prosperity, and cultural vibrancy are balanced in a way that builds and maintains a thriving and long-lasting community.

General Policies

LU-1 Regulations for new developments and infill should address the following elements:

a. Connectivity by multiple means to adjacent subdivisions, nearby commercial hubs, and parks and recreation facilities.

b. Relationship to nearby existing or future transit service.

c. Usable community amenities and spaces.

d. Environmental protection and preservation of natural features.

e. Preservation of areas that can support low-impact development techniques.

f. Promote the use of energy and water conservation measures

g. Efficient and effective delivery of utility service.

h. Innovative design.

i. Crime prevention through environmental design.

j. Long-term maintenance considerations.

LU-2 As the market and availability of utilities enable denser development to occur, standards should be developed to maximize density while preserving open space and critical areas.

LU-3 Programs should be implemented to improve the quality of low-income neighborhoods and encourage rehabilitation of deteriorating structures and facilities.

LU-4 Public and institutional uses may be permitted as a conditional use if designed in a manner that enhances the residential character of the area. Special care shall be given to ensuring adequate parking, landscaping, and traffic circulation to avoid conflict with residential uses.

LU-5 New residential development should contribute to the creation, enhancement, and improvement of the transportation system, health and human services, emergency services, school system, and park system. This may be accomplished through the development of level-of-service standards, mitigation fees, impact fees, or construction contributions.

LU-6 Cluster development is the preferred form of residential development in all residential designations with the goal of preserving natural areas, critical areas, and areas that support low-impact development. Where clustering accomplishes these objectives, it should not come at the expense of lost development potential. Variances to lot size, lot dimensions, building height, and other bulk or dimensional standards should be utilized in order to create incentives that promote preservation.

Residential Conservancy Designation

Description

This designation should consist primarily of low-density residential uses (one dwelling unit per four acres is allowed) and accessory agricultural uses in areas featuring environmental constraints or requiring special protection such as the Coal Creek Springs watershed area, low-lying areas along the Green River, and areas that are isolated from urban services. This designation will serve to both protect environmental features and hold areas for higher density development until such time public facilities become available.

Designation Criteria

1. Areas with significant environmental constraints, intrinsic value, or that may pose environmental hazards if developed, such as areas tributary to public water sources;

2. Affords greater protections to environmental features than existing designation;

3. Level of service for property consistent with adjacent residential conservancy properties; or

4. Location, size of properties, and character is consistent with a residential conservancy use.

Implementing Zoning Designations

Residential Conservancy

Policies

LU-7 Densities and activities shall be of a very low intensity and shall not compromise environmental and watershed resources.

LU-8 In addition to single-family homes, these larger properties can also be developed with garages, accessory dwelling units, barns, and other accessory outbuildings. Home occupations, agricultural uses, and other allowed nonresidential activities may

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operate out of any type of permitted building, subject to intensity and use limitations.

LU-9 Until these areas are served by public utilities (water, sewer, storm services), existing and new development is not expected to be served by public infrastructure, such as urban streets, curbs, gutters, sidewalks, street lighting, and landscaping.

LU-10 As the market and utility availability enable denser development to occur, standards should be developed to maximize density while preserving open space and critical areas.

LU-11 Small-scale agricultural uses are allowed and encouraged. Commercial activities that are directly related to and support agricultural uses may also be allowed. The procedural standards may vary depending upon the type and scale of agricultural uses and supporting commercial activities. Small-scale agricultural uses are allowed and encouraged.

LU-12 Land use standards should adequately limit and control excessive accumulation of debris. Where a permitted activity does allow outdoor storage, it should be adequately screened from adjacent properties and roads, as well as ensuring adequate soil and environmental protection.

LU-13 Public, institutional, and resource-extractive uses that are low-intensity and preserve the environment may be considered conditional uses.

Single-Family Residential Designation

Description

This designation is the predominant land use category in the City. Maintaining and creating a diverse arrangement of interconnected subdivisions, neighborhoods, and communities that have a mix of densities and housing types; linkages with other residential areas and commercial hubs through nonmotorized modes, such as pedestrian and bicycling, and vehicular modes will be encouraged.

Designation Criteria

1. Previously developed single-family residential areas;
2. Undeveloped areas that do not meet the designation criteria for other Residential, Commercial, Industrial, Institutional or Public/Quasi-Public designations; or
3. Residential Conservancy areas that contain limited critical areas, are served by public utilities (water, sewer, storm services), and meet the development parameters of the single-family designation.

Implementing Zoning Designations

R-1 Residential Zone (One Dwelling Unit Per Acre): All properties located within the Urban Separator Overlay are zoned R-1, as consistent with King County County-wide Planning Policies.

R-5 Residential Zone (Five Dwelling Units Per Acre): All properties not located within the Urban Separator Overlay may be zoned R-5.

R-7 Residential Zone (Seven Dwelling Units Per Acre): All properties not located within the Urban Separator Overlay may be zoned R-7.

Policies

LU-14 Accessory dwelling units should play an integral part of promoting infill development and affordable housing, and are therefore encouraged within this land use category.

LU-15 Home occupations, bed-and-breakfasts, day cares, and other appropriate uses should be encouraged as viable accessory uses.

LU-16 Manufactured homes shall be permitted on single-family lots provided they are sited and constructed in a manner that would blend with adjacent homes.

LU-17 Provide a variety of housing typologies to suit the needs of various potential residents.

LU-18 Density bonuses outside of the Urban Separator Overlay should be approved based on innovations in transportation, stormwater management, and public amenities proposed for the development or adjacent neighborhoods associated

with the request. The onus is on the developer to justify density above baseline. Examples of amenities and concepts that justify density bonuses include park space, art, enhanced landscaping, trails that connect to adjacent properties, neighborhood commercial property set asides, use of low-impact development techniques beyond the minimum code requirements, incorporation of CPTED concepts, and variation of architecture and housing typology.

Moderate Density Residential Designation

Description

Moderate Density Residential designated areas are planned to accommodate a variety of residential dwelling types. Varying intensities may be permitted to provide a transition between single-family residential and other more intensive uses or activities (such as arterial streets) based on adjacent density, intensity, and/or character. Appropriate densities in these areas generally range from 7 up to 20 dwelling units per acre. Dwelling types generally range from single-family dwelling to multiple-family dwellings, with larger structures allowed (within the density range) where offsetting community benefits can be identified.

Designation Criteria

1. Previously developed moderate-density residential areas; or
2. Areas that provide a transition between single-family and multifamily, single-family and nonresidential, multifamily and nonresidential zones or development that are adjacent and meet the development parameters of the Moderate Density Residential designation.

Implementing Zoning Designations

Residential Transition

R-10 Residential (Ten Dwelling Units Per Acre)

R-16 Residential (Sixteen Dwelling Units Per Acre)

Policies

LU-19 Density bonuses and flexible development standards should be considered an incentive for innovative neighborhood design.

LU-20 Carefully developed low-intensity office, or residentially related commercial uses (such as day care centers) can be compatible.

LU-21 Accessory dwelling units should play an integral part of promoting infill development and affordable housing and are therefore encouraged within this land use category.

Multiple-family Designation

Description

This category shall be applied to those areas that are either now developed or are reserved for multiple family dwellings. Densities may range from 20 to 24 units per acre. These communities are served by transit, have nonmotorized connections to surrounding amenities and services, or have access to on-site amenities.

Designation Criteria

1. Previously developed high-density residential or manufactured/mobile home parks; or
2. Properties that are connected to single-family and nonresidential designations by the Residential Transition designation and meet the development parameters of the Multifamily designation.

Implementing Zoning Designations

R-20 Residential Zone (Twenty Dwelling Units Per Acre): All Multiple-family designated land not previously developed as manufactured/mobile home parks are zoned R-20.

Manufactured/Mobile Home Park: All previously developed manufactured/mobile home parks are zoned RMHC.

Policies

LU-22 Development regulations should include density bonuses and flexible development standards that create incentives for innovative site and building design, incorporation of open space and public art, nonmotorized connectivity to parks and commercial areas, proximity to transit services,

supplemental natural resource protection, supplemental use of CPTED, and supplemental use of low-impact development techniques.

LU-23 Home occupations and shared housing should be allowed in this designation; however, given their high densities, it is appropriate to establish additional restrictions, procedures, and requirements in order to ensure that they are compatible with their surroundings and do not adversely affect the community.

LU-24 Live–work units are encouraged.

LU-25 Improve the quality of low-income neighborhoods and implement programs that encourage rehabilitation of deteriorating structures and facilities the downtown area, areas between lower-density residential uses and more intense nonresidential activities, and areas with high levels of transit service and available high-quality services.

LU-26 Multiple-family development should be subject to building and site design standards. These standards should address the appearance of buildings, compatibility with nearby uses, exterior lighting, connectivity with surrounding properties and uses, the relationship of ground floor spaces and entryways with the streetscape, and connectivity to nearby nonresidential hubs (shopping centers and schools).

LU-27 Provide a variety of housing typologies to suit the needs of various potential residents.

LU-28 Establish intensity limitations such as floor area ratios, density, building height, coverage ratios, setbacks, and other standards.

LU-29 Access to nearby amenities and health and human services should be considered when reviewing senior housing developments.

LU-30 Encourage development of permanent supportive housing to address the homeless population and those with special needs.

LU-31 Encourage adaptive reuse, particularly of historic properties.

Commercial Land Use Designations

Character Sketch

Commercial uses will be wide ranging in terms of scale and type. A mix of businesses – local, regional, and national – will be among the businesses in the various designations, and will be carefully located to create balance and maintain appropriateness based on adjacent uses. These commercial areas will be economically vibrant, unique, and active outside of traditional work hours. They will be accessible by foot, bike, car, and public transport.

Values

Character – Active gathering spaces, such as parks, plazas, cafes, concert venues, festivals and markets, will be distributed throughout the City; these spaces will be engaging and filled with people interacting, irrespective of culture, age, or income level.

Wellness: A variety of healthy food options will be physically and economically accessible to all members of the Auburn community.

Service: The City's resources and services are available and utilized by the business community. The business community finds the City approachable, empathetic, and responsive. An open and collaborative dialogue exists to help identify problems and find solutions.

Economy: A wide complement of retail, service, and dining options will cater to local needs, attract visitors, and encourage consistent patronage of local businesses.

Celebration: Auburn will have a thriving and expanding arts and culture community. There will be events, amenities, and attractions that draw people to congregate and socialize.

Environment: Local businesses benefit from Auburn's collection of natural resources and amenities because residents and visitors are choosing Auburn as their home or destination.

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Sustainability: Local businesses benefit from, and contribute to, a sustainable economy because Auburn is an easy location to start up, maintains opportunity for growth, and has a business friendly economic climate.

General Policies

LU-32 The commercial uses permitted must be carefully regulated in regards to performance criteria and design.

LU-33 Permitted uses would consist of local-serving and community-serving retail trade, offices, personal services, and eating establishments.

LU-34 Encourage uses that provide health and human services to the adjacent community.

LU-35 Encourage adaptive reuse, particularly of historic properties.

LU-36 Promote the use of energy and water conservation measures (PSRC 11/12/15)

LU-37 Ensure that legally established existing uses that may not conform with the underlying zone, but that are compatible with their surrounding uses, and are allowed to continue to evolve and operate without being classified as "nonconforming" uses.

Downtown Urban Center Designation

Description

This category should be applied exclusively in downtown Auburn. The area should be developed in a manner consistent with and conducive to pedestrian-oriented activities. The ambiance of the downtown should encourage leisure shopping, provide services to local residents and area employees, and provide amenities that attract regional visitors and shoppers.

Designation Criteria

1. Located within the Urban Center boundaries established by the King County Countywide planning policies or within Business Improvement Area boundaries.

Implementing Zoning Designations

Downtown Urban Center

Policies

LU-38 Vertical mixed-use should be encouraged; the location of retail sales and services should predominately be on the ground floor with residential or more retail or services above. However, small freestanding commercial spaces may be established as an accessory use to a larger vertical mixed-use development.

LU-39 Deviations of height, density or intensity limitations should be allowed when supplemental amenities are incorporated into site and building design. Examples of amenities include use of low-impact development, use of sustainable site and building techniques, public space and art, transit-oriented development, landscaping and lighting, and bike shelters - as well as the inclusion of affordable housing.

LU-40 Encourage a broad mix of uses within the downtown area. A wide range of consumer-oriented goods and services are compatible within this designation since creating an attractive shopping environment is a primary emphasis. Permitted uses include retail trade, offices, personal services, eating and drinking establishments, financial institutions, governmental offices, and similar uses. Legally established existing uses that do not fit within the range of desired new uses continue to be a valuable part of the downtown economy and character and should be allowed to evolve and operate in a manner that resembles listed permitted uses.

LU-41 Encourage multiple family dwellings, particularly within the upper stories of buildings.

LU-42 Drive-in windows should not be permitted to maintain the area's pedestrian environment.

LU-43 Parking standards within the downtown should reflect the pedestrian orientation of the area, but also consider parking's impact for economic development.

LU-44 Discourage uses that rely on direct access by vehicles or involve heavy truck traffic (other than for merchandise delivery).

LU-45 Unsightly outdoor storage and similar activities should be prohibited.

LU-46 The downtown should capitalize on opportunities for multimodal transportation.

LU-47 Encourage adaptive reuse, particularly of historic properties.

LU-48 As a designated VISION 2040 Regional Growth Center that contains a transit station, land use policies and regulations should encourage population and employment growth.

Neighborhood Commercial Designation

Description

Low-intensity, small-scale commercial services that meet the daily needs of and complement the quality of the residential neighborhoods they serve. Commercial uses need to be carefully located (if located within single-family residential neighborhoods) or should be buffered from single-family residential areas. These areas are characterized by lower traffic generation, fewer operating hours, smaller-scale buildings, and less signage than light commercial areas.

Designation Criteria

1. Located along arterial or collector streets;
2. Properties that are buffered from the single-family designation by landscaping, environmental features, or the Residential Transition designation; and
3. Meets the development parameters of the Neighborhood Commercial designation.

Implementing Zoning Designations

Neighborhood Commercial

Policies

LU-49 The commercial uses permitted must be carefully regulated in regards to performance criteria and design. Architectural style, building height and size, lighting, and signage should be consistent with the surrounding residential properties.

LU-50 Permitted uses would consist of small-scale local-serving and community-serving retail trade, offices, personal services, and non-drive-through eating establishments.

LU-51 Special emphasis will be directed at those accessory activities that can alter the character of these areas into heavier commercial areas. Examples include outdoor storage, location and screening of trash receptacles, loading and unloading zones, and parking lots. Regulations and permit conditions will employ techniques that mitigate light and noise impacts associated with surrounding residential properties.

LU-52 Encourage adaptive reuse of existing residential buildings and historic properties.

LU-53 Commercial uses will have an orientation that is directed toward adjacent public streets while also providing pedestrian and bike-oriented access.

LU-54 Upzone requests to the next zone should be approved based on the innovations in transportation and stormwater management and public amenities proposed for the development associated with the request.

Light Commercial Designation

Description

This category represents the prime commercial designation for small-to moderate-scale commercial activities. These commercial areas should be developed in a manner consistent with and attracts pedestrian-oriented activities. Such areas should encourage walkability, leisure shopping, engaging public space, and should provide other amenities conducive to attracting shoppers.

Designation Criteria

1. Previously developed light commercial areas buffered from more intense commercial or

industrial designations by landscaping or environmental features; or
2. Located along arterial or collector streets;
3. Properties that are buffered from the single-family designation by landscaping, environmental features, or the Residential Transition designation; and
4. Meets the development parameters of the Light Commercial designation.

Implementing Zoning Designations

Light Commercial

Policies

LU-55 A wide range of consumer-oriented goods and services are compatible within this designation since creating an attractive shopping environment is a primary emphasis. Permitted uses would consist of local-serving and community-serving retail trade, offices, personal services, eating establishments, financial institutions, governmental offices, and similar uses.

LU-56 Parking lots must be located and designed in a manner that softens their appearance from adjacent public roads. This is accomplished through landscaping, pedestrian spaces, and the location of buildings on the property. Where practicable, low-impact development techniques and landscaping should be used to promote on site stormwater infiltration and shading of hard surfaces. Minimum and maximum parking ratios must be established for each type of permitted use.

LU-57 Development incentives should be established that encourage the creation of electric car charging stations, use of sustainable building and/or operational practices, development of nonmotorized infrastructure, and proximity and connection to public transit.

LU-58 Multiple family dwellings are only allowed as part of mixed-use developments where they do not interfere with the shopping character of the area, such as within the upper stories of buildings.

LU-59 Drive in windows should only be allowed accessory to a permitted use, and only when carefully sited under the administrative use process, in order to ensure that an area's pedestrian environment is not compromised.

LU-60 Large-scale regional retail uses and uses that rely on direct access by vehicles or involve heavy truck traffic (other than for merchandise delivery) are not appropriate in this category.

LU-61 Unsightly outdoor storage and similar activities should be prohibited.

LU-62 Encourage adaptive reuse, particularly of historic properties.

LU-63 Upzone requests to the next zone should be approved based on the innovations in transportation and stormwater management and public amenities proposed for the development associated with the request.

Heavy Commercial Designation

Description

This category is intended to accommodate uses that would also accommodate a wide range of heavier commercial uses involving extensive storage or vehicular movement.

Designation Criteria

1. Previously developed heavy commercial areas; or
2. Located along major arterial streets;
3. Properties that are buffered from the single-family designation by landscaping, environmental features, or the Residential Transition designation and buffered from all other Residential designations; and
4. Meets the development parameters of the Heavy Commercial designation.

Implementing Zoning Designations

Heavy Commercial: All Heavy Commercial designated land not located within the Northeast Auburn Special Planning Area or located within the Northeast Auburn Special Planning Area,

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but incapable of meeting the C-MU zoning requirements.

Policies

LU-69 A wide variety of commercial-oriented services are appropriate within this category. This includes but is not limited to regional-scale retail and entertainment uses, commercial uses with outdoor sales areas, drive-in restaurant or other drive in commercial businesses, and commercial services with outdoor storage as an accessory use.

LU-70 Parking lots must be located and designed in a manner that softens their appearance from adjacent public roads. This is accomplished through landscaping, pedestrian spaces, and the location of buildings on the property. Where practicable, low-impact development techniques and landscaping should be used to promote on site stormwater infiltration and shading of hard surfaces. Minimum and maximum parking ratios must be established for each type of permitted use.

LU-71 Development incentives should be established that encourage the creation of electric car charging stations, use of sustainable building and/or operational practices, development of nonmotorized infrastructure, and proximity and connection to public transit.

Industrial Land Use Designations

Character Sketch

Industrial uses will become a more integrated part of the physical and social life of the City. Since so many people work in these areas and these companies contribute so much to the financial life of the city, it is important that they are connected through paths, roads and by public transportation. Locations that have access to rail and highways that also encourage intelligent growth patterns will be prioritized. Innovation will be a key requirement of new and infill projects as the City looks to mitigate impacts of production and limit damage to the environment.

Values

Character: Buildings, landscaping, and outdoor spaces will be attractive, interesting, well designed, and well maintained.

Wellness: Risk to life and property from all hazards will be minimized. Properties and businesses are connected to nonmotorized corridors that offers alternative means to commute.

Service: The city works closely with individuals and organizations to fully understand the demands, needs, and concerns of the industrial community so that the City can sponsor initiatives that help aid in their success.

Economy: Cornerstone institutions will strategically expand in regional prominence. As industry grows, land use policy will support efforts to grow within Auburn.

Celebration: The Community will be made aware of and celebrate the accomplishments of our local, regional and international leaders in manufacturing, warehousing, and distribution.

Environment: The built environment will fit into the natural landscape in a way that protects and respects ecosystem function. Natural resource protection will be supported and celebrated by City leadership and the community.

Sustainability: Industrial uses are contributing to, and supportive of, efforts to build and maintain a transportation system that ensures the people and goods move safely throughout the City and beyond.

General Policies

LU-72 A wide range of industrial uses may be permitted, subject to performance standards.

LU-73 Outside storage shall be permitted subject to performance criteria addressing its quantity and location.

LU-74 Development incentives should be established that encourage the creation of electric car charging stations, use of sustainable building and/or operational practices, development of nonmotorized

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infrastructure, and proximity and connection to public transit.

LU-75 Promote the use of energy and water conservation measures

Light Industrial Designation

Description

This category is intended to accommodate a wide range of industrial and commercial uses. This designation is intended to provide an attractive location for manufacturing, processing and assembling land use activities that contribute to quality surroundings. A wide variety of appropriate commercial uses in this designation benefit from the location, access, physical configuration, and building types of these properties. It is distinguished from heavier industrial uses by means of performance criteria. All significant activities shall take place inside buildings, and the processing or storage of hazardous materials shall be strictly controlled and permitted only as an incidental part of another use.

Designation Criteria

1. Previously developed light industrial areas; or
2. Located along high-visibility corridors;
3. Provides buffering for heavy industrial areas or is buffered from the single-family designation by landscaping, environmental features, or the Residential Transition designation and buffered from all other Residential designations; and
4. Meets the development parameters of the Light Industrial designation.

Implementing Zoning Designations

Light Industrial

Policies

LU-76 A wide range of industrial uses may be permitted, subject to performance standards. Heavy commercial uses that serve the needs of workers in light industries are also appropriate. These uses include indoor manufacturing, processing, and assembling of materials from previously prepared or raw materials and ancillary and necessary warehousing and distribution of finished goods associated with manufacturing and industrial uses.

LU-77 Parking lots must be located and designed in a manner that softens their appearance from adjacent public roads. This is accomplished through landscaping, pedestrian spaces, and the location of buildings on the property. Where practicable, low-impact development techniques and landscaping should be used to promote on site stormwater infiltration and shading of hard surfaces. Minimum and maximum parking ratios must be established for each type of permitted use.

LU-78 Landscaping, sidewalks, and bike paths will be integral parts of site design if a development is located on an impression corridor or located within or adjacent to an identified nonmotorized corridor.

LU-79 Outside storage shall be permitted subject to performance criteria addressing its quantity and location. This is to ensure compatibility with adjacent uses, so that such storage would not detract from the potential use of the area for light industry. In all cases, such storage shall be extensively screened.

LU-80 Where a light industrial use is located adjacent to a property with a less intense zoning designation, the light industrial use bears the burden of incorporating techniques that mitigate the visual, noise, dust, and odor impacts.

LU-81 Uses involving substantial storage or processing of hazardous materials, as well as substantial emissions, should not be permitted in these areas.

LU-82 A wide range of commercial activities may be allowed to provide increased opportunities for sales tax revenue.

LU-83 The Burlington Northern Santa Fe Railroad Auburn Yard located within the Railroad Special Plan Area is considered a compatible use at its current level of usage. It is not bound by the policies concerning outside storage under the existing light industrial designation

as it was an existing use prior to the development of this policy. Should BNSF decide to reactivate its applications to upgrade the yard to an intermodal facility, the proposal will be subject to the essential public facility siting process as defined in the Capital Facilities Element.

LU-84 Upzone requests to the next zone should be approved based on the innovations in transportation and stormwater management and public amenities proposed for the development associated with the request.

Heavy Industrial Designation

Description

This designation allows the full range of industrial uses, as well as certain heavy commercial uses that serve the needs of workers in light industries are also appropriate.

Designation Criteria

1. Previously developed heavy industrial areas; or
2. Not located along high-visibility corridors;
3. Buffered by the Light Industrial Designation or otherwise buffered from all other compatible designations; and
4. Meets the development parameters of the Heavy Industrial designation.

Implementing Zoning Designations

Heavy Industrial

Policies

LU-85 While this zone should be reserved primarily for the heavier forms of industrial activities, a wide range of industrial activities may be permitted. These heavier forms of industrial activities may include outdoor or semi-enclosed manufacturing, processing, or assembling activities, significant outdoor storage, and uses involving substantial storage or processing of hazardous materials. Heavy commercial uses that serve the needs of workers in heavy industries are also appropriate.

LU-86 Parking lots must be located and designed in a manner that softens their appearance from adjacent public roads. This is accomplished through landscaping, pedestrian spaces, and the location of buildings on the property. Where practicable, low-impact development techniques and landscaping should be used to promote on site stormwater infiltration and shading of hard surfaces. Minimum and maximum parking ratios must be established for each type of permitted use.

LU-87 Landscaping, sidewalks, and bike paths will be integral parts of site design if a development is located on an impression corridor or located within or adjacent to an identified nonmotorized corridor.

LU-88 Where a heavy industrial use is located adjacent to a property with a less intense zoning designation, the heavy industrial use bears the burden of incorporating techniques that mitigate the visual, noise, dust, and odor impacts.

Public and Institutional Land Use Designations

Character Sketch

Public and institutional uses will occur in both low- and high-density environments. For passive uses, land and views will be protected; limited access to these areas will be typical. For more active uses, usability and accessibility will be key features and new development will be subject to standards reflecting programmed space and interconnectivity. These spaces will be varied in type, providing service to areas large and small, urban and more rural in character. Sustainable solutions and innovations that are responsive to the native ecology will be typical of public and institutional uses.

Values

Character: Community facilities and programs bring people together and connect residents and visitors to our natural resources.

Wellness: Multiple recreation options, and nearby trails, parks, activities, and events will be readily accessible to the entire community.

Service: Land use policy supports the provision of community, health and human services to all residents.

Economy: Residents and visitors seek Auburn as a residence or destination because of its natural resources, community events, and community pride.

Celebration: We utilize our open spaces and public facilities to promote who we are, our diversity, and our community pride.

Environment: Residents and visitors will enjoy open spaces and environmentally sensitive areas, while encouraging the appreciation of their importance and beauty. Impacts of new development on natural resources are considerate of their sensitivity and importance.

Sustainability: Public and private funds are used to make investments in land preservation, restoration and protection. Public investments in land and facilities are considered for their perpetual or generational value versus short-term motivations.

General Policies

LU-89 The primary purpose of this designation is to address public needs while taking advantage of synergies with the adjacent areas where they are sited.

LU-90 Innovative strategies to integrate the uses and sites into the areas where they are sited is encouraged. These strategies should maximize use of the site while minimizing fiscal impacts and impacts to adjacent areas.

LU-91 Increase visibility of resources through public information campaigns.

LU-92 Appropriate uses include low-intensity recreational uses, passive use open areas, protected environmental habitat, stormwater detention facilities, and similar low-intensity uses.

LU-93 Promote the use of energy and water conservation measures

Open Space Designation

Description

This category shall be applied to areas that are owned by a public entity and managed in a largely undeveloped character. It includes parks, watersheds, shoreline areas, significant wildlife habitats, storm drainage ponds, utility corridors with public access, and areas with significant development restrictions.

Designation Criteria

1. Passive parks or undeveloped Parks Department property;
2. Any site containing a significant developmental hazard; or
3. Any site containing open space value suitable for public protection without unduly encroaching on private property rights.

Implementing Zoning Designations

Open Space

Policies

LU-94 Active parks that provide sports field, activity and community centers, cemeteries, and public buildings should not be designated as open space.

LU-95 Open space lands are primarily designated to provide wildlife and aquatic habitat, flood detention, vegetation and soil preservation, and view shed protection. Land designated as open space may be used for public access to trails, interpretive centers, education opportunities, and other uses and facilities that support the purpose of their designation.

LU-96 Increase distribution of open space and increase access to open space amenities throughout Auburn.

LU-97 Enhance restoration, preservation and protection of natural resources and critical areas.

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LU-98 Seek out opportunities to develop recreation and education opportunities on public lands or through public–private partnerships.

LU-99 Increase visibility of resources through public information campaigns. Continue to work with regional partners to develop and maintain trail systems that connect Auburn with regional destinations.

LU-100 Build on partnerships with school districts to expand public use of school facilities for recreation and exercise, and to improve public access to facilities for this purpose, as appropriate.

Public/Quasi-Public Designation

Description

This category includes those areas that are reserved for public or quasi-public uses. It is intended to include those of a significant extent, and not those smaller public uses that are consistent with and may be included in another designation. These public uses include public schools, developed parks, and uses of quasi-public character such as large churches and private schools. Public uses of an industrial character are included in the industrial designation, and small-scale religious institutions of a residential character are included in the residential designation. Streets, utilities, and other separate uses are not intended to be mapped separately as Public/Quasi-Public.

Designation Criteria

1. Previously developed institutional uses; or
2. Meets the development parameters of the Public/Quasi-Public designation.
3. Properties identified in the Airport Master Plan as Landing Field.

Implementing Zoning Designations

Institutional
Public Use
Landing Field

Policies

LU-101 A responsible management entity and the purpose for the public/quasi-public designation should be identified for each property interest within this designation. Management policies and plans are appropriate for all lands in this designation.

LU-102 Appropriate uses for this designation include facilities that serve the needs of the larger community such as public schools, active parks, city operated municipal facilities, large churches, and fire stations.

LU-103 This designation permits a wide array of uses that tend to be located in the midst of other dissimilar uses. For this reason, the following must be considered of new requests for this designation:

a. The impacts that the designation may have on the surrounding community.
b. Site-specific conditions that should be attached to new requests for this designation that are designed to mitigate impacts on the surrounding community.
c. Site-specific conditions that should be attached to development proposals that are designed to mitigate impacts on the surrounding community.

LU-104 Coordination with other public or institutional entities is essential in the implementation of this land use designation.

LU-105 Industrial and commercial uses that are affiliated with and managed by educational institutions for vocational educational purposes may be classified as an institutional use and permitted on a con¬ditional basis.

LU-106 For the Landing Field (LF) zone, an Airport Master Plan (AMP) should be developed that establishes the vision, policies, and implementation strategies that govern uses, management principles, and future planning efforts. The AMP shall be incorporated by reference in the Auburn Comprehensive Plan as an appendix.

LU-107 Auburn Municipal Airport is included in the federal airport system - the National Plan of Integrated Airport Systems (NPIAS). Participation in the NPIAS is limited to public use airports that meet specific FAA criteria. NPIAS airports are eligible for federal funding of improvements through FAA programs. To maintain eligibility for funding through FAA programs, the Airport Master Plan should be periodically updated as conditions change.

LU-108 Uses, activities, and operations within the LF Airport Landing Field District must be coordinated and consistent with the Airport Master Plan.

LU-109 Future expansions of the LF Airport Landing Field District, for the purpose of airport uses, activities, and operations, should be coordinated and consistent with the Airport Master Plan.

LU-110 While the industrially designated area east of the Airport is highly suited for airport related activities, other industrial type uses are now located here. Therefore, the City will encourage use in this area to take advantage of its proximity to the Airport.

LU-111 New commercial land uses in proximity to the airport should be air-related and/or complementary to the airport.

LU-112 To protect the viability of the Auburn Municipal Airport the City shall create an airport overlay that is consistent with FAA regulations and WSDOT guidance.

LU-113 The City's zoning ordinance and other appropriate regulatory measures shall enforce the airport overlay and the FAR Part 77 surfaces.

LU-114 The airport overlay shall protect the operations of the Auburn Municipal Airport by establishing controls on incompatible land uses and development.

LU-115 The airport overlay should be implemented to manage land uses and development around the airport to ensure compatibility into the future and prevent incompatible future uses. The regulations applied to properties surrounding the airport should encourage land uses that are related to, and benefit from, proximity to the airport but not restricted exclusively to only these.

LU-116 The impact of development on air safety shall be assessed through the City zoning ordinance, FAA regulations, SEPA review, input from the Auburn Municipal Airport, and relevant technical guidance. Appropriate mitigation measures shall be required by the City.

LU-117 Uses in proximity to the airport that may create potential operational (e.g. height or noise) conflicts shall be reviewed for their consistency to airport operations and conformance with the FAA regulations.

LU-118 The airport should be protected from nonconforming uses and structures that pose a safety concern to airport operations.

LU-119 The City shall determine whether nonconforming uses and structures affect airport operations and require their minimization or elimination, at cost to owner, based on individualized study of proposals, City regulations, input from the Auburn Municipal Airport, and relevant technical guidance.

Overlays, Urban Growth Area, and Special Planning Land Use Designations

Character Sketch

These areas help control growth, protect the environment, and prevent urban sprawl conditions in our City. For a variety of reasons, specific areas exist within the City that require further specificity or focus of land use planning, policy, regulation, or investment. Overlays, urban growth areas, and special planning areas may be designated that help further enumerate a purpose. These areas are to be designated through the Comprehensive Plan and treated as a component of the Land Use

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Element of the Plan.

Values

Each area designated as an overlay, urban growth area, or special planning area shall reflect the values identified in the Core Comprehensive Plan.

General Policies

LU-120 These land use designations must be consistent with the Growth Management Act, Puget Sound Regional Council, and countywide planning policies.

LU-121 Any proposed changes to these designations must be pursued in coordination with applicable State, Regional and County agencies.

Urban Separator Designation

Description

Urban separators are areas designated for low-density uses in the King County Countywide planning policies. They are intended to "protect Resource Lands, the Rural Area, and environmentally sensitive areas, and create open space and wildlife corridors within and between communities while also providing public health, environmental, visual, and recreational benefits." There are two primary areas of urban separators, one on Lea Hill and one on West Hill.

Designation Criteria

Areas designated through the process of annexation

Implementing Overlay Designations

Lea Hill Overlay
West Hill Overlay
Urban Separator Overlay

Policies

LU-122 The City is obligated to maintain (and not redesignate) until at least the year 2022, pursuant to countywide planning policies and an annexation agreement with King County.

LU-123 Urban separators are deemed to be both a regional as well as local concern and no modifications to development regulations governing their use may be made without King County review and concurrence. Therefore, the areas designated as "urban separator" on the Comprehensive Land Use map, will be zoned for densities not to exceed one dwelling unit per acre, with lot clustering being required if a subdivision of land is proposed.

Urban Growth Area and Potential Annexation Area Designation

Description

Urban growth areas and potential annexation areas are areas located outside of the municipal city limits of Auburn. They are areas that are anticipated to be incorporated into the City within 10 years of their designation.

Designation Criteria

Potential annexation areas are jointly developed by cities and the County in which they are located. They are based upon countywide growth projections that are divided among all urban growth areas within each respective County. Urban growth areas and potential annexation areas are distinguished from each other by whether they have been assigned to a City or not. Urban growth areas have been identified but have not been assigned to a City. Potential annexation areas are urban growth areas that have been assigned to a specific City.

Implementing Designations

Urban Growth Area
Potential Annexation Area

Policies

LU-124 Work with King and Pierce County, as well as nearby cities, to redesignate urban growth areas into potential annexation areas.

LU-125 Auburn's Potential Annexation Area is shown on the Comprehensive Plan Land Use Map (Map 1.1). Map 1.1 also depicts Growth Impact Areas. These Growth

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Impact Areas are generally adjacent cities or unincorporated County lands in which development that occurs potentially impacts the city of Auburn.

LU-126 The Auburn City Council may revise the boundaries of the Potential Annexation Area in the future, in response to:

a. Amendments to King and Pierce County Urban Growth Areas as specified in the King and Pierce County countywide policies
b. Discussions between Auburn and adjacent jurisdictions regarding POTENTIAL ANNEXATION AREA boundaries
c. Discussions with Pierce County concerning the designation of POTENTIAL ANNEXATION AREA boundaries
d. Changed circumstances relating to population and employment growth and projections, urban service feasibility, or similar factors.

LU-127 Develop strategies and agreements for the review of development and provision of utilities within potential annexation areas that have yet to be annexed.

LU-128 Prior to annexation, develop strategies and agreements that address the orderly transition of areas into the City such as transfer of permit authority, infrastructure financing, financing of fire and police services, and interim development regulations.

Transition Designation

Description

The Transition Designation following establishes policies and guidance are intended to provide a basis for future development of zoning and other regulatory tools to manage and reduce impacts from proximity of boundaries between sharper differences of intensity in land uses and is meant to apply city-wide.

Designation Criteria

The Designation should apply to areas that are located between single-family and multifamily land use designations; between multifamily and nonresidential land use designations; and between single-family and nonresidential land use designations.

Implementing Designations

The Designation and implementing zoning and other regulatory tools shall generally apply to the more intense land use designation.

Policies

LU-129 Between single-family and multifamily:

a. Where a multifamily use is proposed to be located adjacent to a single-family zone, the multifamily use will bear the burden of providing an adequate transition of land use. Mitigating measures that control light, noise, and dust should be incorporated into multifamily development proposals.
b. Provide non-motorized access through the site in order to connect the adjacent land uses.
c. Housing size, type, and orientation shall be utilized as a means of providing harmonious transition of the built environment.
d. Provide a mix of townhomes, duplexes, cottage housing and small-scale multifamily housing.

LU-130 Between multifamily and nonresidential

a. Where a non-residential use is proposed to be located adjacent to a multifamily zone, the non-residential use will bear the burden of providing an adequate transition of land use. Mitigating measures that control light, noise, and dust should be incorporated into nonresidential development proposals.
b. Provide non-motorized access through the site in order to connect the adjacent land uses.
c. Provide a mix of townhomes, duplexes, cottage housing and small-scale multifamily housing.

LU-131 Between single-family and nonresidential:

a. Where a non-residential use is proposed to be located adjacent to a single-family zone, the non-residential use will bear the burden of providing an adequate transition of land use. Mitigating measure that control light, noise, and dust should be incorporated into nonresidential development proposals.

b. Provide non-motorized access through the site in order to connect the adjacent land uses.

Critical Area Overlay Land Use

Description

Under the Growth Management Act cities and counties are required to identify, designate and protect critical areas. Critical areas include (a) wetlands, (b) areas with a critical recharging effect on aquifers used for potable water, (c) fish and wildlife habitat conservation areas, (d) frequently flooded areas, and (e) geologically hazardous areas.

Designation Criteria

Designation of critical areas includes both criteria that should be applied to the specific type of critical area as well as buffers and/or setbacks that are necessary for the protection of the critical area and/or life and property. Designation of critical areas is based on best available science as it applies to local conditions.

Implementing Designations

Wetlands
Critical Aquifer Recharge Areas
Fish and Wildlife Habitat Conservation Areas
Frequently Flooded Areas
Geologically Hazardous Areas

Policies

LU-132 Best available science will be utilized for the specific designation criteria and the associated adopted protection standards and development regulations.

LU-133 Reasonable use provisions will be included within the critical area regulations that ensure a property owner is not denied use of a preexisting parcel, lot or tract.

LU-134 Exemptions to the critical areas ordinance should be provided for very limited and justified circumstances such as maintenance of existing land uses, work within some types of human-made features, limited types of site investigation work, emergency activities, and certain types of invasive vegetation control.

LU-135 Critical area regulations will identify the process and standards for alteration of a critical area and criteria related to mitigation, performance, and monitoring.

Special Planning Area Designation

Description

"Special Planning Areas" consist of Districts, subareas, Impression Corridors, and Gateways within Auburn that warrant additional empha¬sis in planning, investments, and policy develop¬ment. Each may be recognized separately within the Comprehensive Plan, as an Element of the Comprehensive Plan, or as an subarea plan (dis¬cussed below). There are a variety of reasons for designating and distinguishing a special planning area, and once designated, a variety of poten¬tial outcomes. Reasons for designating a special planning area include:

- Areas of high visibility and traffic. These areas create an impression or image of Auburn. It is therefore particularly important to ensure that they are attractive and well maintained. Examples include Auburn Way South and as¬sociated major highway on- and off-ramps.
- Land use activities that warrant joint planning between the City and owner/operator. In ad¬dition to developing approaches and strat¬egies for the land use activity, there may be additional emphasis on ensuring compatibility with surrounding land uses. Examples include, Green River College, the Auburn Municipal Airport, and Emerald Downs Thoroughbred Horse Racetrack.

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- Neighborhoods in which a resident and mer¬chant live and conduct daily business and leisure. Neighborhoods may also be distin¬guished by physical setting, physical separa¬tions, and similarity over an area. Examples include downtown, Lea Hill, and Lakeland.
- Areas with a focused desire to create great¬er physical and economic cohesiveness. These may be large planned developments or clus¬ters. Examples include the Auburn North Business Area and Mt. Rainier Vista.
- Areas with an existing built environment or an existing regulatory framework that does not, in itself, meet the expectations of the seven val¬ues that underscore the Comprehensive Plan. Examples include the need for multimodal connections between West Hill and Lea Hill to north and downtown Auburn.

Designation Criteria

1. **Districts**: The geographic limit of districts and areas that make up this category of Special Planning Areas extends beyond an alignment with any particular street, trail, river, stream, or other linear corridor. Districts may contain other smaller Special Planning Areas, such as subareas. Additionally, districts are generally consistent with the geography of one of the eight "neighborhoods"[1] identified in the 2014 City of Auburn Community Vision Report. Generally speaking, districts are identified for the purpose of creating identity. This means that the land use designations and overarching policies and implementing regulations are not going to change from one district to the next. Instead, Districts are important for event planning, establishing park and open space level-of-service standards, and promoting community identity.

Districts (see Map 1.2)

- West Hill
- North Auburn
- Lea Hill
- Downtown
- South Auburn
- Plateau
- Lakeland
- Southeast Auburn

2. **Subareas**: Subareas are smaller in geography than a district. Though relatively large, multiple subareas may be located within a single district. Subareas allow for the refinement and recognition of existing unique characteristics within a district. Subareas are intended to anticipate, support, and guide long-term growth and redevelopment through planned development and a unique vision for how that area should look and function in the future. It can also be used to provide flexibility when there is uncertainty regarding how an area may be most appropriately developed in the future.

   Twenty-eight (28) subareas currently exist. These subareas are categorized into five different types of subareas:

- Identified Areas;
- Designatged Areas;
  - Economic Development Strategy Areas (a Designated Areas sub-category);
  - Areas of Concern (another Designated Areas sub-category; and
- Adopted Areas.

Uses, intensities, and infrastructure development determined for each subarea or planned area through individual planning processes. Connectivity throughout the planned area, and connections to multimodal transportation opportunities outside of the planned area are also emphasized through the individual planning process. The result of each individual planning process is the adoption of Comprehensive Plan element or subarea plan for the particular subarea by City Council. Each Plan element must be consistent with the general goals, objectives, and policies of the Comprehensive Plan, and once adopted, subarea plans are intended to guide the future development of each respectively adopted subarea.

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1. The eight "neighborhoods" are identified for comprehensive planning purposes only, as neither the City nor its neighborhoods have elected to officially designate the boundaries of City neighborhoods.

2a. Identified Areas: Identified areas are identified as a subarea within the Comprehensive Plan, but have not been established on the Comprehensive Plan Map. Therefore, the specific and detailed boundaries of an identified subarea have not been defined. Identification of a subarea within the Comprehensive Plan occurs by official action of the City Council.

Identified Areas

- Auburn Golf Course
- GSA/Boeing
- Green River College
- Mary Olsen Farm
- Les Gove Campus
- Emerald Downs
- Auburn High School

2b. Desginated Areas: Designated Areas have been designated on the Comprehensive Plan Map, which defines the specific and detailed boundaries of the area. Designation of an area on the Comprehensive Plan Map occurs by official action of the Auburn City Council. It is intended that future development of these areas will be guided by individual Plan element or subarea plan of the Comprehensive Plan. The future subarea plan will either supplement existing goals, policies, and implement strategies, or replace existing Comprehensive Plan designations and policies for the area within the specific and detailed boundary.

Designated Areas (see Map 1.3)

- Auburn Municipal Airport
- BNSF Rail Yard
- Stuck River Road
- Lakeview
- Mt. Rainier

2b(1). Designated Areas - Areas of Concern: Areas of Concern are a specific type (or subcategory) of designated area. Areas of Concern are established because they represent an area that features a lack in the infrastructure and services (e.g. municipal water and sewer service, urban roads, traffic demand, and storm water management) necessary to support increase in density or other development. These areas require a close assessment of and an emphasis on infrastructure development and planning to support further development. While this Plan may not fully represent the intensity of uses that could ultimately be supported in these areas (in part due to the current weakness of the City's infrastructure to support future growth). Development intensification within the Area of Concern needs to be coordinated with the necessary infrastructure and services to support growth.

Designated Areas - Areas of Concern (see Map 1.3):

- AWS/Auburn Black Diamond Rd.
- Pike Street NE
- 8th Street NE

2b(2). Designated Areas - Economic Development Strategy Areas: The Economic Development Strategy Areas are a specific type (or subcategory) of designated area. In 2005, City Council adopted six Economic Development Strategy Areas under Resolution No. 3944. These areas, initially identified by a focus group of diverse business and community interests, are targeted for population and employment growth within the planning horizon of the City's 20-year growth target (2031). By 2012, the City Council added three additional economic development strategy areas , bringing the total to nine (9) strategy areas.

During the City's 2015 update of the Comprehensive Plan the list of economic development strategy areas to reflect current conditions and status of these areas. As such, two of the original six economic development strategy areas was removed from the list. The Urban Center, one of the original six development strategy areas, was removed as it is no longer a designated area. The Urban Center, also known as "Downtown Auburn" or the "Downtown Urban Center" is an adopted area (since 2001) and features its own subarea plan. The Auburn Environmental Park (AEP)/Green Zone has also been removed as an economic development strategy area. The AEP/Green Zone economic development strategy area

was previously zoned EP, Environmental Park Zone. The intent of this zone was to encourage economic development in the form of medical, biotech and "green" technologies including energy conservation, engineering, water quality and similar uses. Through Ordinance No. 6660 City Council rezoned the AEP/Green Zone from EP, Environmental Park Zone to M-1, Light Industrial, hereby effectively removing the need to designate the AEP/Green Zone as an specific economic development strategy area.

The current economic development strategy areas are included below. The boundaries of the economic development strategy areas are incorporated as designated subareas "Designated Areas – Special Planning Areas" map of the Land Use Element.

Designated Areas -Economic Development Strategy Areas (see Map 1.3)

- A St SE (corridor)
- Auburn Way South (AWS) Corridor
- Auburn Way North (AWN) Corridor
- M St SE (between AWN and AWS)
- SE 312th/124th Ave
- NW Manufacturing Village
- 15th St SW/West Valley Hwy N

2c. Adopted Areas: Adopted Areas include an Adopted Subarea Plan incorporated into the Comprehensive Plan that establishes the purpose of its designation, goals and policies, and implementation strategies. Adoption of a subarea plan occurs by official action of the City Council. As an adopted document of the Comprehensive Plan, the subarea Plans are subject to a review, and if necessary, revision to address changes in conditions, issues, or even characteristics of the planned areas. The review and revision a subarea Plan will also include the review and, if necessary, a revision of zoning regulations and architectural design standards.

Adopted Areas (see Map 1.4)

- Downtown (Ordinance No. 5549)
- Auburn Adventist Academy (Resolution No. 2254)
- Auburn North Business Area (Resolution No. 2283)
- Lakeland Hills (Resolution No. 1851)
- Lakeland Hills South (County H.E. Case Z15/UP70)
- Northeast Auburn (Ordinance No. 6183)

3. **Impression Corridors**: Impression corridors are aligned with a particular street, trail, river, stream, or specific linear corridor. Some corridors may be part of a subarea, in which case the Impression Corridor policies are additive to a subarea plan. Impression corridors enhance the areas in which residents, businesses, visitors move throughout the City. The benefit of an impression corridor is twofold: residents know that the City is invested in the aesthetic of main thoroughfares and businesses can build off of the design and aesthetic provided by the impression corridor. Improvements or modification to impression corridors consist of aesthetic signage, landscaping, and monument features, and the rehabilitation or removal of existing buildings and property. Impression Corridor boundaries and policies are formally designated by adoption of the Comprehensive Plan. Priority is given to the impression corridors that are a part of a subarea. Priority impression corridors are the thoroughfares in which residents, businesses, visitors move throughout a specific subarea. The priority impression corridors are italicized below.

Impression Corridors (see Map 1.5)

- *Auburn Way North*
- *Auburn Way South*
- *Auburn Black Diamond Road*
- *A Street SE/Auburn Avenue*
- *C Street SW*
- *Division Street*
- *M Street/Harvey Road*
- *Main Street*
- *8th Street NE*
- *15th Street SW*
- *West Valley Highway*
- *15th Street NW/NE*
- 132nd Ave SE

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- SE 320th Street
- SE 312th Street
- SE 304th Street
- R Street
- Lake Tapps Pkwy SE
- Green River Road
- 37th Street NW
- S 277th Street
- Interurban Trail
- Green River
- White River
- Mill Creek

4. **Gateways**: Gateways are specific places, intersections, or blocks within the City. These essential locations are established because they constitute the first impression into of Auburn. Gateways are intended to create a "welcome" into distinct areas of the City or into the City itself. They are therefore highly important to plan, construct, maintain, and enhance their appearance and function. Gateway locations and policies are formally designated by adoption of the Comprehensive Plan. Priority is given to those gateways that are along an priority impression corridor. Priority gateways function as a entrance to an impression corridor. The priority gateways are italicized below.

Gateways (see Map 1.6)

- *Auburn Way North and Auburn Avenue (where the roads converge)*
- *East Main Street and M Street NE/ SE (at the intersection)*
- *Auburn Way South and 4th Street SE*
- *Auburn Way S and 6th Street SE*
- *West Main Street between C Street NW and B Street NW*
- All roads with an entry into the city
- Hwy 167 Off Ramps
- SR 18 Off Ramps

Implementing Designations

Planned Unit Development (PUD)
Master Plans

Policies

District Policies.

LU-123 Through regulation, capital investment, and community planning, identify, promote and market district identity.

Subarea Policies.

LU-124 Each subarea will contain its own vision, goals, policies and strategies.

LU-125 BNSF Rail Yard - This approximately 150 acre Special Planning Area is located in the south-central portion of the City and surrounded by SR-18 to the North, Ellingson Road to the South, C Street SW to the west and A Street SE to the East. The Special Planning Area should consider both sides of C Street and A Street. Consideration should be given to:

- The needs of Burlington Northern.
- Providing pedestrian, bicycle and vehicular access across the site to connect the southeast and southwest sides of the city.
- Providing a more visually appealing "entry corridor" into the City from the south along A and C Streets.
- Allowing for a mix of uses including single and multifamily development and commercial and industrial uses where appropriate.

LU-126 Stuck River Road - A portion of the Stuck River Road Special Planning Area is currently the site of a large sand and gravel mining operation. This area and other adjacent land comprising a total of approximately 664 acres has been designated as a long term resource area (mineral resource area), so development of the Special Area Plan for this area should be a low priority as mining is expected to continue on this site for as long as 30 years. The land uses for the Stuck River Road Special Planning Area will be determined through the subarea planning process and the City Council's adoption of the subarea plan. Potential land uses applied through the subarea planning process could include single-family

residential, multi-family residential, commercial, institutional, and recreational. Some light industrial uses may be appropriate for consideration and designation through the subarea planning process if the uses are "industrial or business park" in character, conducted entirely within an enclosed building, and exhibit a high degree of performance standards and are non-nuisance in nature and if appropriately limited in extent and location. A mix of housing types ranging from single family residential to multi-family residential is appropriate for this planning area. The subarea plan should be adopted taking into consideration the period during which mining is expected and the intent of the ultimate development of the area. An active permit has been processed by the City with respect to the mining activity on a portion (approximately 664 acres) of the mineral extraction operation. The permit process should continue, however, any permit for mining in the mineral resource area should be granted for the life of the resource, with reviews conducted periodically (every five years) to determine whether changes in the originally proposed mineral extraction operation have arisen and give rise to the need for additional or revised permit conditions to address the new impacts (if any) of any such changes. Any permit applications for additional acreage within the mineral resource area shall be processed by the City.

Development of this area should not occur until adequate public facilities are available to support the development consistent with City concurrency policy.

The City recognizes the potential for expanding the Stuck River Road Special Planning Area to include additional land east of Kersey Way and north of the Covington-Chehalis power line easement, and will consider a proposal by all affected property owners. If the area is expanded, the number of non-multiple family, non-manufactured home park dwellings units may be increased proportionate to the increase in acreage. Any such proposal shall specifically apportion the types and quantities of development to occur within each separate ownership.

LU-127 Lakeview - The Lakeview subarea is currently the site of two independent sand and gravel mining operations. While mining activity continues in the eastern operation, indications in 1995 are that the western operation has ceased. Activity in the western portion is now limited to a concrete batch plant and future site reclamation. Following reclamation, the area should be developed as a primarily single family residential neighborhood of low to moderate urban density. A planned development would be particularly appropriate for this approximately 235 acre site. The permitted development density of the site will depend heavily upon the ability of the transportation system near the site to handle the new uses. Consideration shall be given to the environmental, recreational and amenity value of White Lake, the historical and cultural significance, as well as tribal ownership and jurisdiction of the Muckleshoot Tribe in the development of the Lakeview Plan element. Permit applications have been accepted and are currently being processed by the City with respect to the mining activity on the eastern portion of the area. The permit process should continue, however, any permit for continued mining in this portion of the area should be limited to 10 years to encourage completion of the mining, and subsequent reclamation by the property owner in preparation for development. The Lakeview Plan element should be adopted prior to the City's acceptance or processing of any other permit applications for the mining operation in the Lakeview Special Planning Area. The environmental information and analysis included in the Final Environmental Impact Statement for Lakeview (November 1980), shall be considered in the development of the

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Lakeview Plan element. While heavy commercial or industrial uses would not be appropriate as permanent uses of this area, conversion of the area now zoned for heavy industry to office commercial (or similar) uses would be appropriate.

LU-128 Mt. Rainier Vista - This 145 acre subarea is located south of Coal Creek Springs Watershed. Overall development of the Mt. Rainier Vista subarea plan shall be consistent with the following conditions:

1. Primary consideration in use and development of the property shall be given to protection of Coal Creek Springs' water quality. Development types, patterns and standards determined to pose a substantial risk to the public water source shall not be allowed.

2. The maximum number of dwelling units will be determined as part of any sub-area plan process. Dwelling units shall be located within portions of the property where development poses the least risk of contamination for Coal Creek Springs. Lands upon which any level of development would have a high risk for contaminating the water supply shall not be developed, but would be retained as open space. The development pattern shall provide for a logical transition between areas designated for rural uses and those designated for single family residential use. All dwelling units shall be served by municipal water and sanitary sewer service, and urban roads. If 53rd Street S.E. is the major access to serve the Special Planning Area, the developer will be responsible for developing the street to urban standards, from the property owners' eastern property line that abuts 53rd Street, west to the intersection of 53rd and Kersey Way.

3. Percolation type storm sewer disposal systems shall not be permitted. All surface water drainage shall be conveyed consistent with the City's current storm drainage standards. Treatment of stormwater shall occur prior to its discharge to any surface water body, consistent with standard public works or other requirements in general effect at the time of development.

4. The site shall be zoned temporarily, at one unit per four acres, until the sub-area plan is completed and the long-term urban zoning determined.

5. The Mt. Rainier Vista special planning area boundary may be modified through the development of the subarea plan.

6. The Mt. Rainier Vista and Stuck River Road Special Planning Areas shall be coordinated subarea plans.

Designated Areas - Areas of Concern Policies.

LU-129 AWS/Auburn Black Diamond Rd – The area between Auburn-Black Diamond Road and the Burlington Northern Railroad currently lacks urban facilities necessary to support urban development. Major development proposals shall be carefully assessed under SEPA to ensure that the development can be supported by the available facilities. Once property owners are able to demonstrate to the City that they can provide urban services (municipal water and sewer service, urban roads and storm water management) necessary to support the intensity of development proposed within the entire area, the Plan designation and zoning for this area should be changed to an urban residential or commercial classification. The appropriate classification(s) shall be determined after a review of the development proposal and the pertinent Comprehensive Plan policies.

LU-130 Pike Street NE – The area located north of 8th NE, east of Harvey Road, and south of 22nd NE is inadequately served by residential arterials. No increase in density or other development which would increase traffic demand in this area should be approved.

LU-131 8th Street NE – The areas paralleling 8th Street NE located between Auburn Way and M Street are designated for multiple

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family residential while 8th Street NE is designated as a minor arterial. However, the road is not currently constructed to this standard and is not able to support current traffic demand adequately. The Plan designation would greatly increase traffic volumes. Implementation of the Plan designations should not occur until 8th Street NE is constructed to the adequate arterial standard and water service is upgraded. Up zones should not be granted from current zoning until these stems are upgraded or guaranteed.

Designated Areas - Economic Development Strategy Ares Policies.

LU-132 The City should adopt a formal subarea plan for each of the seven economic development strategy areas (listed below) as an element of the Comprehensive Plan. Each economic development strategy area subarea plan should identify the uses, intensities, and infrastructure development necessary to support the types of business and activities that are most consistent with community aspirations. Each subarea plan should address and include policies regarding the expected level of housing density (or residential growth targets) and employment growth targets.

- Auburn Way South Corridor
- Auburn Way North Corridor
- NW Auburn Manufacturing Village
- 15th St. SW/C St. SW/W Valley Hwy. N
- A St. SE
- SE 312th St. /124th Ave SE
- M St. SE between Auburn Way N and Auburn Way S

Adopted Areas Policies.

LU-133 Adoption or revision of a subarea plan will be treated as a comprehensive plan amendment and will comply with the Growth Management Act, Countywide planning policies, Vision 2040, and the Core Comprehensive Plan.

LU-134 Adventist Academy - Adopted under Resolution No. 2254 on November 14, 1991. The Auburn Adventist Academy is Special Planning Area (Adopted Area) is a multi-use campus operated by the Western Washington Conference of Seventh-Day Adventists. The Campus plays a large role in the Western Washington Conference of Seventh-Day Adventists' private elementary and secondary education system in Washington and hosts many community events as well as an annual regional camp meeting for Adventists from Washington and around the world. The Campus previously housed Harris Pine Mill, a furniture manufacturer, for many years. The Mill provided financial benefit to the Academy's budget and provided employment opportunities, learning experiences, and vocational education for Academy students. The Academy continues to include in its plan industrial uses that support the mission of the school financially. The reuse of existing mill buildings and redevelopment of buildings lost to a fire in 1989 are the focal points of the current industrial development. In addition to institutional and industrial uses, the Academy is also operates a landing strip and associated aircraft hangars for student aviation and flight training. A single family subdivision is located to the south of the airstrip. In addition to these uses, the Academy wishes to allow development of uses such a multi-family and senior housing and assisted living and memory care which will generate perpetual revenue through a long-term land lease on a portion of the Campus lying generally north of Auburn Way South and south of 32nd Street S.E. that will directly aid its mission. The financial benefit from these uses will allow funding an endowment, subsidize student tuition, provide financial aid for students needing tuition assistance, for new educational programs, for additional faculty, facility maintenance and upgrades, and other needs. The plan focuses on provides predictability to planning, zoning, subdivision, and development decisions within the Special

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Planning Area (Adopted Area) made by the City.

LU-135 Auburn North Business Area - Adopted under Resolution No. 2283 on March 2, 1992. The Auburn North Business Area Special Planning Area Plan was the result of a comprehensive planning study due to increased development pressure north of the Central Business District. Since the Central Business District, which contains Downtown, the core of Auburn, is adjacent to these areas, future development in this area is crucial. A comprehensive and cohesive direction was also needed based on increased development proposals and rezone requests. In addition to development concerns, many of the considerable undeveloped parcels contain wetlands. All of these factors made development controls beyond zoning and development regulations advisable.

LU-136 Lakeland Hills - Adopted under Resolution No. 1851 on April 18, 1988. Lakeland Hills area lies between the Stuck River and the southern City limits of Auburn in the most southwestern part of the City. The area consists of planned residential and commercial subdivisions, and is predominately residential in nature, offering a range of housing types, including single family and multi-family dwellings. The Lakeland Hills Plan was intended to provide long-term predictability to both the City and potential developers. As a planned community, development and design must be consistent with the policy guidance of the Lakeland Hills Plan.

LU-137 Lakeland Hills South - Approved under Pierce County Hearing Examiner Case Z15/UP70.Lakeland Hills South lies south of the Lakeland Hills special plan area and is the most southwestern part of the City. The area is predominately residential, allowing for a range of housing types, with commercial uses, including Lakeland Town Center, in the center. Nonresidential uses, including civic, religious, and municipal services are allowed throughout the area through an Administrative Use Permit. Unlike Lakeland Hills, Lakeland Hills South was accepted into Auburn was a Planned Unit Development (PUD). The Lakeland Hills PUD, originally the Lakeland Hills South Planned Development District (PDD), was approved under Pierce County Hearing Examiner Case no Z15-UP70 in 1990. Lakeland Hills South PUD is intended to provide enhanced flexibility to develop a site through innovative and alternative development standards. As a PUD, specific development and design standards are prescribed.

LU-138 Auburn Downtown Plan (Urban Center) - Adopted under Ordinance No. 5549 on May 21, 2001. Downtown Auburn is the business, governmental, and cultural hub of Auburn, its physical and cultural heart. Many stores, restaurants, service providers, and small offices are well-represented throughout this district. Downtown hosts many community events and activities, such as the weekly Auburn International Farmers Market in the summer, Soundbites! Concert Series (in the City Hall Plaza) and the Veterans Day Parade. Downtown features public art that includes temporary installations such as Pianos on Parade and a permanent outdoor Downtown Sculpture Gallery with rotating pieces. This dynamism is possible because the district is a collection of uses that coexist in close proximity to one another. Due to the value, importance, and complexity of this district, The Auburn Downtown Plan identified four general needs to be addressed by the plan:

- Update of the existing plan in order to continue Downtown revitalization
- Concern over the reopening of Stampede Pass
- Multiple large projects proposed for Downtown

- Scarce private investment

In conjunction with project-based items, a regulatory element that emerged from the goals of the Auburn Downtown Plan was the Downtown Urban Center (DUC) zoning district, which was established in 2007. While the DUC zoning district is intended specifically to address the needs of downtown, though the implementation of policies identified by the Downtown Auburn Plan , many challenges related to public and private investment, development, and strategic planning have yet to be addressed as downtown has evolved.

LU-139 Northeast Auburn Special Plan Area – Adopted under Ordinance No. 6183 on June 5, 2008. The Plan was prepared in fulfillment of the policies included in the Comprehensive Plan for the area between Auburn Way North and the Green River, south of 277th Street (52nd Street NE) and north of approximately 37th Street NE in the City of Auburn (Map No. 14.2). The planning area was narrowed to an area covering approximately 120 acres, north of 45th Street NW and between Auburn Way North and the existing I Street NE right-of-way. The Northeast Auburn/ Robertson Properties Special Area Plan focuses on proposed develop of the Auburn Gateway project area, a 60-acre group of properties owned or under consideration for purchase by Robertson Properties Group, owners of the Valley 6 Drive-In Theater. The plan calls for a mix of office, retail, and multifamily development under a new zoning designation (C-4, Mixed Use Commercial) for the central portion of this planning area, created to accommodate mixed use development. The plan calls for phased development in coordination with the provision of new roads, stormwater and other utilities, and flood management measures.

Impression Corridor Policies.

LU-140 Create specific plans for each identified corridor, outlining development policies and regulations, necessary capital improvements, and implementation strategies. In the absence of any specific corridor plans, this section contains general policies that are to be applied within designated impression corridors.

LU-141 Coordinate corridor planning, design, construction, and maintenance with other agencies, such as BNSF, the Muckleshoot Indian Reservation, and the Washington State Department of Transportation. Where one agency may more effectively manage the corridor, management or ownership consolidation is appropriate.

LU-142 Promote the elimination or renovation of existing derelict or unmaintained structures, signs, fences, and properties along impression corridors through regulatory or enforcement mechanisms

LU-143 Work with private and public property owners to educate, create incentives, and enforce regulations that are intended to improve the overall appearance of identified corridors.

LU-144 Emphasize the design, orientation, construction materials, landscaping, and site layout for development proposals of new and existing buildings along impression corridors. New construction and the renovation of existing buildings create important opportunities for enhancing the appearance of impression corridors.

LU-145 Establish regulations that ensure coordinated, attractive commercial signage is of an appropriate size and quantity. Signage regulations along these corridors may be different than those in other areas.

LU-146 Take advantage of opportunities to provide informational signs, wayfinding signs, and traffic control signs that

are attractive, useful, and integrated into a larger citywide signage plan or policy.

LU-147 Outdoor storage of materials, inventory, and other goods and off-street surface parking should be located at the rear of the property. If outdoor storage cannot be located in the rear of the property, then it should be screened from view from adjacent rights-of-way.

LU-148 Design, construct, and enhance impression corridors to accommodate multimodal uses.

LU-149 Design and construct vehicular access points in a manner that consolidates access points serving multiple uses.

LU-150 Signage, landscaping, and monument features should be used to establish prominent access points.

LU-151 Discourage aerial utilities.

LU-152 Invest in impression corridors by acquiring rights-of-way, constructing and widening sidewalks, installing landscaping, building center medians, constructing parklets, providing street furniture, and constructing other improvements.

Gateway Policies.

LU-153 Prioritize by rank all gateways and develop potential opportunities and designs for each location.

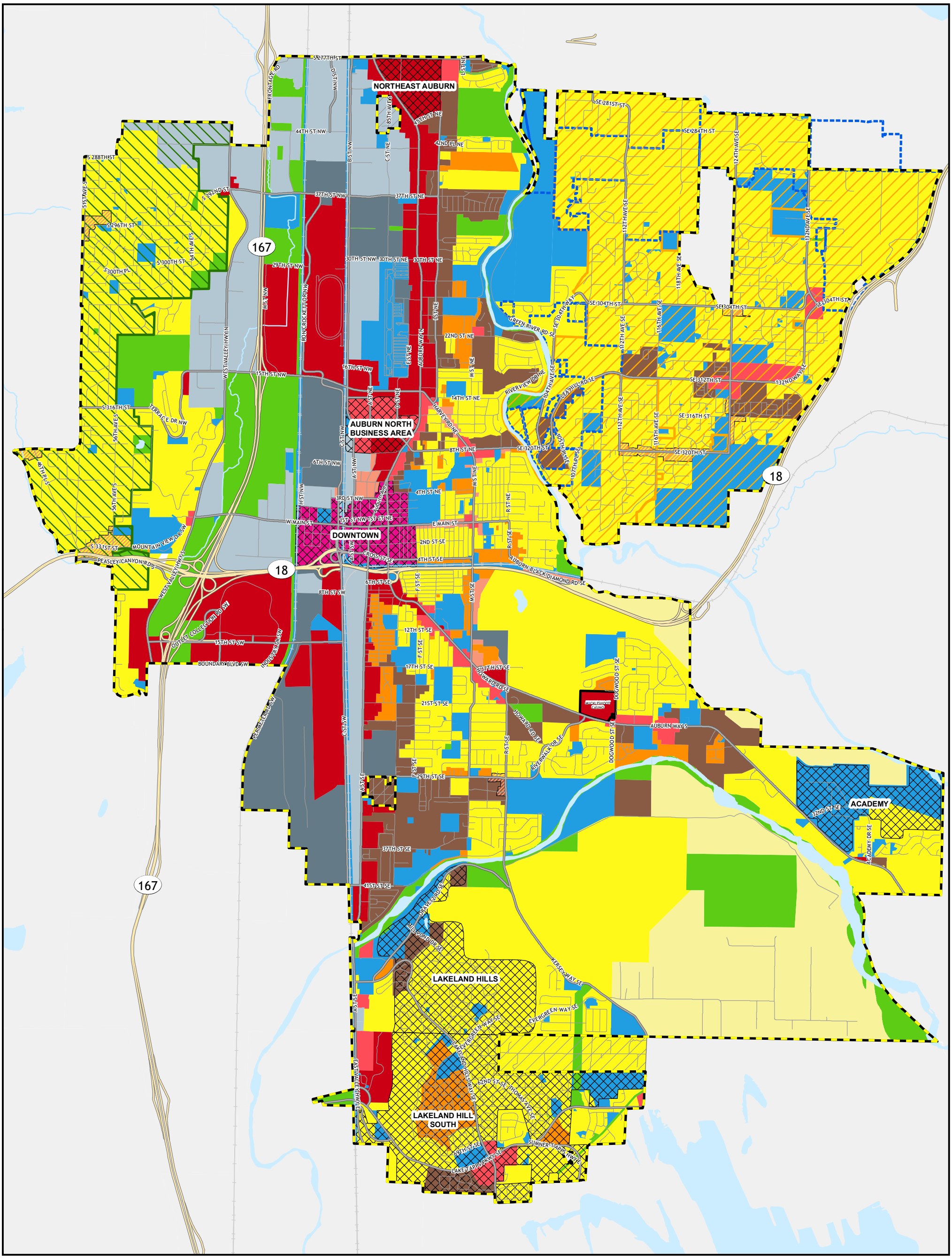
LU-154 Develop land use regulations that incorporate gateway priorities and concepts into private development proposals that are located at identified gateways.

LU-155 Coordinate with the Washington State Department of Transportation to understand options and implement actions at gateway location. Many of the gateway locations are within the WSDOT right-of-way.

LU-156 Develop design layouts for gateway locations. Designs will identify key areas that greet residents and visitors as they enter the City or downtown center, opportunities for signage and monument features, and landscaping.

LU-157 Maintain established gateways.

City of Auburn Comprehensive Land Use



Adopted Areas
Downtown Urban Center
Heavy Commercial
Heavy Industrial
Public/Quasi-Public
Light Commercial
Light Industrial
Moderate Density Residential
Multiple-Family
Neighborhood Commercial
Neighborhood Commercial Overlay
Open Space
Residential Conservancy
Residential Transition Overlay
Single Family
Auburn City Limits
Potential Annexation Areas
Water Features
Lea Hill Overlay (Ordinance: 5346 & 6121)
West Hill Overlay (Ordinance: 6122)
Urban Separators Overlay

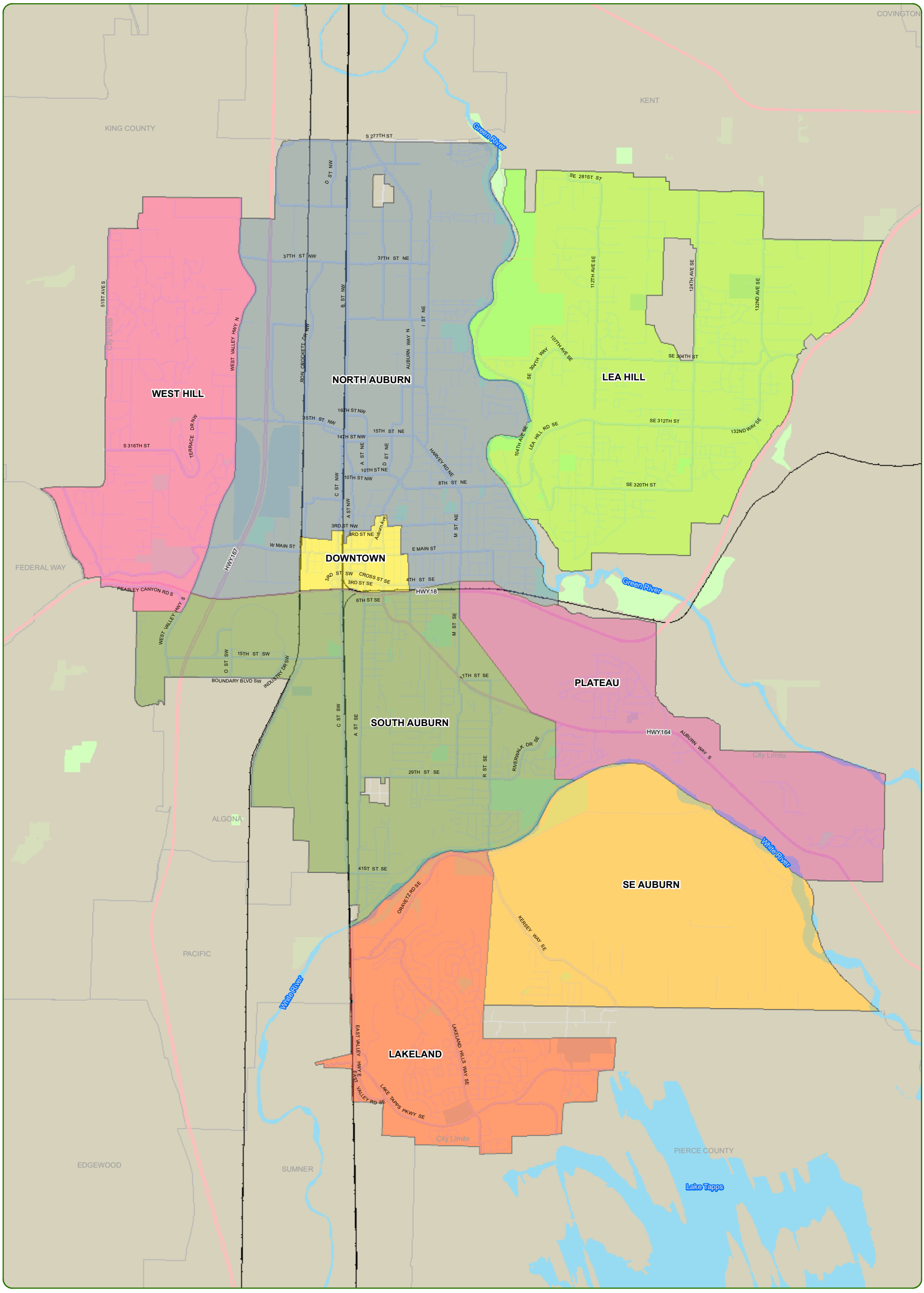
0 1,000 2,000 3,000 4,000 5,000
FEET

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Printed On: 9/14/2022
Map ID: 6208

Information shown is for general reference purposes only and does not necessarily represent exact geographic or cartographic data as mapped. The City of Auburn makes no warranty as to its accuracy.

Zoning map is current through Ordinance No. 6698, December 17, 2018



Districts

Special Planning Areas

(Map 1.2)

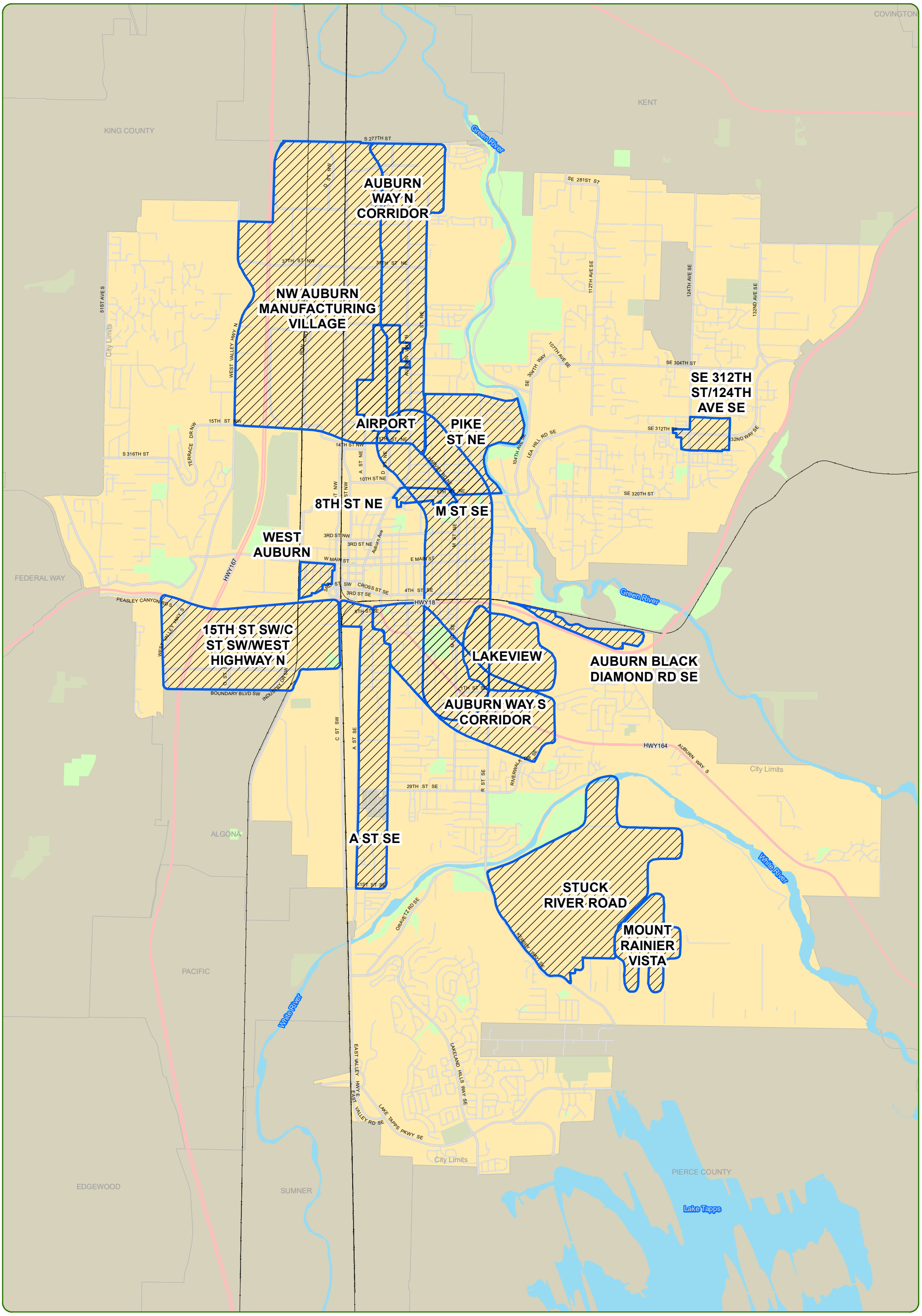
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Map ID: 6094

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Map is current through Ordinance No. 6584 & 6698, December 17, 2018



Designated Areas

Designated Areas

Proposed Special Planning Areas

(Map 1.3)

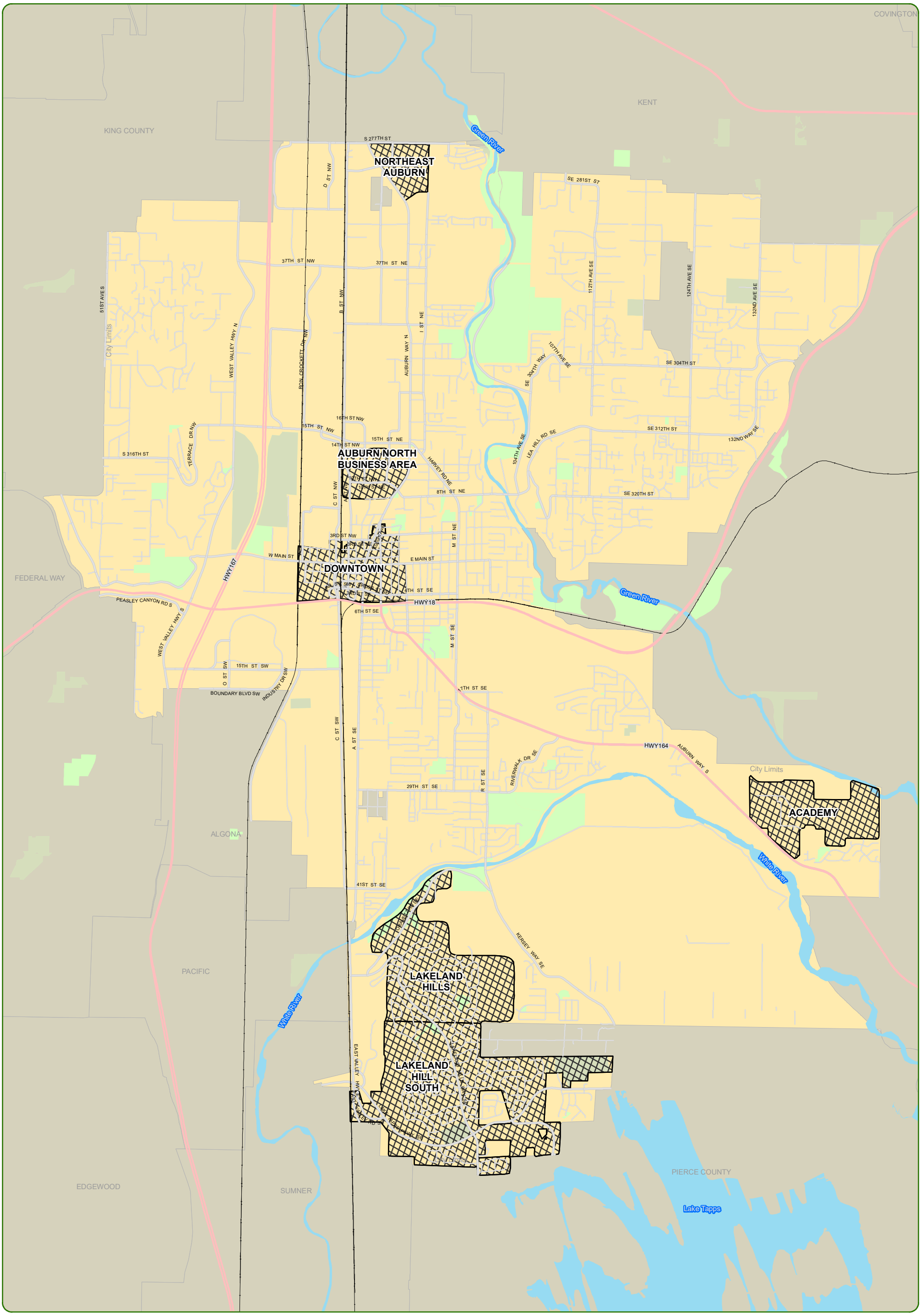
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Map ID: 6061

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Map is current through Ordinance No. 6584 & 6698, December 17, 2018



Adopted Areas

Adopted Areas

Special Planning Areas

(Map 1.4)

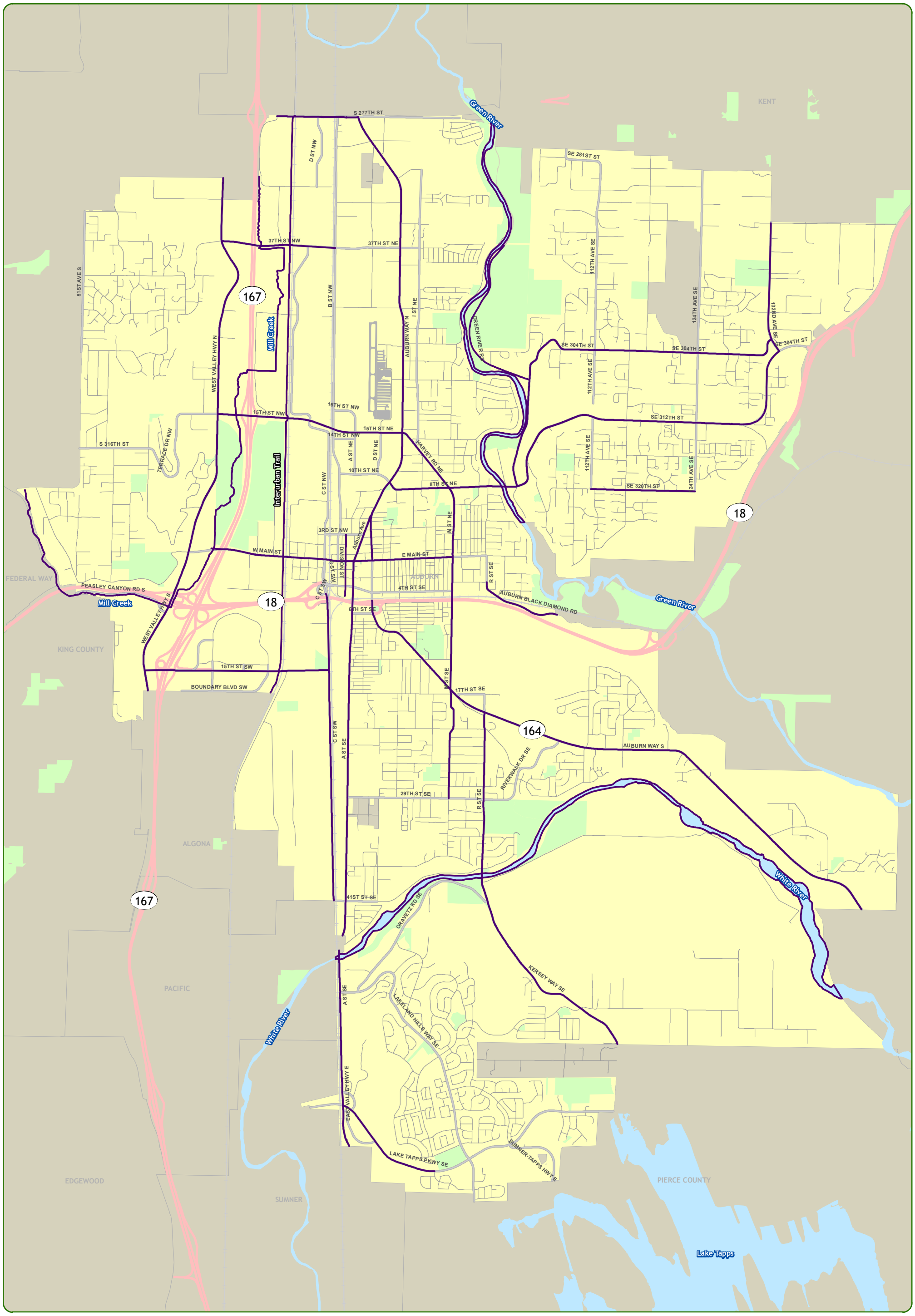
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Printed Date: 1/9/2019
Map ID: 6093

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Map is current through Ordinance No. 6584 & 6698, December 17, 2018



Impression Corridors

Special Planning Areas

(Map 1.5)

Impression Corridors

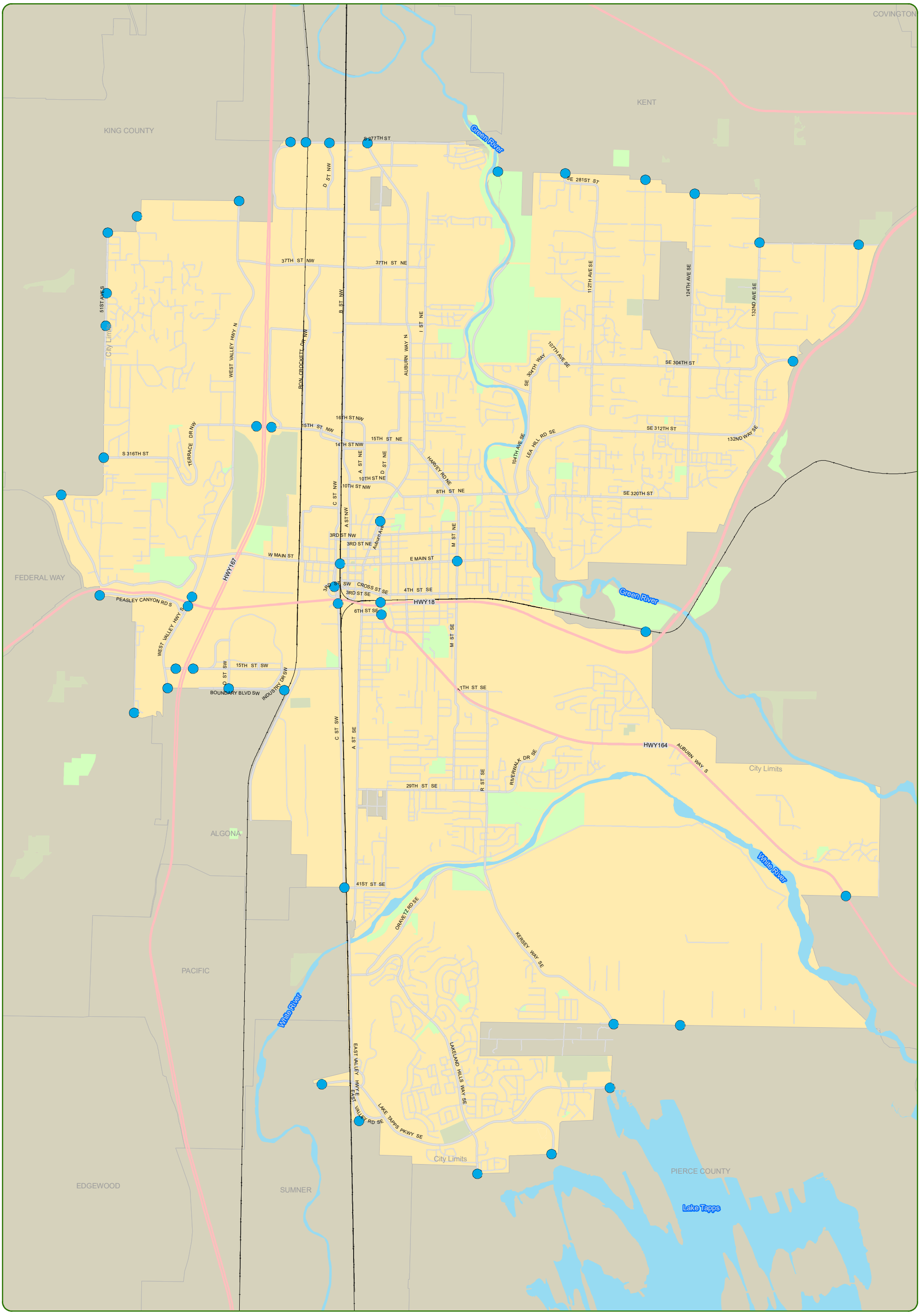
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Printed Date: 1/9/2019
Map ID: 6070

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Map is current through Ordinance No. 6698, December 17, 2018



Gateways

Special Planning Areas

(Map 1.6)

- Gateways

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Printed Date: 1/9/2019
Map ID: 6092

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Map is Current through Ordinance No. 6584 & 6698, December 17, 2018

ATTACHMENT 1D

FLOW FACTORS

Table 1 - Existing Acreage by Land Use Classification

Land Use Classification	Total	A1	A1c	A1d	A3	A4	A6	A7	A9	A10	A11	A12	A13	A14	A15	A16	AUB Y-1	AUB Y-2	AUB Y-3	AUB Y-4	WINT003	MSTTR02A	AUBURN53
SINGLE FAMILY	2,778	0.0	40.2	22.6	31.4	0.0	72.4	9.9	17.0	23.2	7.7	20.4	40.1	55.8	46.4	93.5	90.8	603.1	355.4	144.1	624.1	306.5	173.7
MODERATE DENSITY	147	0.0	0.0	0.0	5.0	0.0	2.0	0.0	4.6	2.8	2.6	0.0	17.2	1.7	14.9	27.5	0.0	0.0	20.9	8.5	3.2	35.9	0.0
RESIDENTIAL	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7	0.0	0.0	0.0	0.0
OPEN SPACE	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.4	0.0	0.1
NEIGHBORHOOD	64	0.0	0.0	0.0	0.0	0.9	8.2	6.1	9.8	0.0	1.7	0.0	1.5	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.7	0.0
NEIGHBORHOOD COMMERCIAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MULTI-FAMILY	335	0.0	52.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	0.0	26.8	57.4	35.8	104.8	50.0	0.0
LIGHT INDUSTRIAL	721	103.2	1.0	0.0	0.0	6.7	0.0	36.3	8.6	1.9	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	70.7	0.0	490.6
LIGHT	165	0.0	0.0	0.0	0.0	43.1	12.4	0.0	4.9	4.1	0.6	0.0	0.0	1.2	4.7	10.2	0.0	25.2	11.6	0.0	31.6	13.7	1.7
INSTITUTIONAL	953	0.0	7.9	0.0	23.4	0.0	0.0	4.8	15.9	36.6	4.1	0.0	4.4	0.0	24.4	28.3	115.3	191.2	75.1	103.9	169.9	52.1	95.9
HEAVY	861	0.2	80.4	33.3	28.0	66.0	3.0	1.0	7.4	12.6	0.0	0.0	0.0	0.0	1.8	33.5	0.0	0.0	5.0	0.0	266.6	56.7	265.6
HEAVY	414	61.3	0.0	1.5	8.8	0.0	0.0	23.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.5	0.0	0.0	0.0	0.0	238.9	10.8	37.6
DOWNTOWN	58	0.0	0.0	0.0	0.0	0.0	0.0	27.4	0.0	30.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 2 - Planning Flow Factors

Land Use Classification	Total	A1	A1c	A1d	A3	A4	A6	A7	A9	A10	A11	A12	A13	A14	A15	A16	AUB Y-1	AUB Y-2	AUB Y-3	AUB Y-4	WINT003	MSTTR02A	AUBURN53
SINGLE FAMILY	920	850	600	950	2,100		900	800	600	250	400	900	650	1,900	600	850	1,500	1,100	1,050	400	750	800	900
MODERATE DENSITY	950				2,100		1,000		900	600	600		750	2,400	800	1,000			1,000	600	800	1,000	
RESIDENTIAL	800																		800				
OPEN SPACE	0																						
NEIGHBORHOOD	1020					1,000	1,000	1,000	1,000		800		1,000	1,800								1,000	
MULTI-FAMILY	2440		1,400	2,500												1,700		2,600	2,500	1,500	3,000	3,000	
LIGHT INDUSTRIAL	530	500	250		700	800		600	500	200						500					800		500
LIGHT	640					800	800		500	300	300			1,200	500			500	600		800	600	500
INSTITUTIONAL	1230		400		2,500		1,500	1,000	1,000	200	500		900	1,800	550	800	2,300	1,400	1,000	300	1,500	1,000	1,000
HEAVY	1920	800	600	1,800	3,800	3,200	3,000	1,600	1,500	450					800	1,500			1,500		2,500	1,400	1,500
HEAVY	1890	750		1,700	3,600			1,600								1,500					2,200	1,700	2,000
DOWNTOWN	1500							2,300		800													

Table 3 - ADWF by Land Use

Land Use Classification	Total	A1	A1c	A1d	A3	A4	A6	A7	A9	A10	A11	A12	A13	A14	A15	A16	AUB Y-1	AUB Y-2	AUB Y-3	AUB Y-4	WINT003	MSTTR02A	AUBURN53
SINGLE FAMILY	2,405,279	3	24,102	21,502	66,001	-	65,130	7,946	10,208	5,799	3,063	18,320	26,060	######	27,822	79,452	136,247	663,409	373,206	57,653	468,051	245,191	156,360
MODERATE DENSITY	140,545	-	-	-	10,405	-	2,009	-	4,156	1,669	1,552	-	12,922	4,012	11,881	27,509	-	-	20,866	5,126	2,569	35,871	-
RESIDENTIAL	8,540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8,540	-	-	-	-
OPEN SPACE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEIGHBORHOOD	65,725	-	-	-	-	910	8,233	6,144	9,765	-	1,400	-	1,474	4,073	-	-	-	-	-	-	-	33,726	-
MULTI-FAMILY	817,559	-	73,176	505	-	-	-	-	-	-	-	-	-	-	-	12,780	-	69,623	143,472	53,659	314,256	150,088	-
LIGHT INDUSTRIAL	140,237	51,614	241	-	-	5,378	-	21,783	4,301	374	-	-	-	-	-	0	-	-	-	-	56,544	-	245,314
LIGHT	105,240	-	-	-	-	34,478	9,957	-	2,458	1,224	193	-	-	1,471	2,366	-	-	12,596	6,955	-	25,301	8,241	835
INSTITUTIONAL	1,078,078	-	3,169	-	58,607	-	16	4,809	15,869	7,315	2,026	-	3,988	21	13,437	22,668	265,188	267,688	75,122	31,157	254,895	52,102	95,935
HEAVY	1,258,311	127	48,229	59,970	106,241	211,291	8,956	1,571	11,109	5,682	-	-	-	-	1,464	50,259	-	-	7,425	-	666,624	79,364	398,378
HEAVY	709,541	45,965	-	2,487	31,630	-	-	38,245	-	-	-	-	-	-	-	47,211	-	-	-	-	525,561	18,441	75,148
DOWNTOWN	87,521	-	-	-	-	-	-	63,013	-	24,509	-	-	-	-	-	-	-	-	-	-	-	-	-
Measured ADWF	7.81	0.099	0.146	0.085	0.281	0.255	0.092	0.145	0.057	0.046	0.008	0.018	0.044	0.122	0.057	0.240	0.401	1.033	0.657	0.143	2.321	0.611	0.949
Estimated ADWF	7.79	0.098	0.149	0.084	0.273	0.252	0.094	0.144	0.058	0.047	0.008	0.018	0.044	0.116	0.057	0.240	0.401	1.013	0.636	0.148	2.314	0.623	0.972
% Difference		1%	-2%	1%	3%	1%	-3%	1%	-1%	-1%	0%	0%	-1%	5%	-1%	0%	0%	2%	3%	-3%	0%	-2%	-2%

AUBWV016	SRT11	WINT035	Unmetered
0.0	0.0	0.0	18.1
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	106.7
0.0	0.0	0.0	0.0
0.0	0.0	0.0	4.1
0.0	0.0	0.0	37.8
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0

FM_Basin_1st_Season	FM_Basin_1st_Season
A1	Unmetered
A10	A1
A11	AUB Y-2
A12	AUBURN53
A13	MSTTR02A
A14	A16
A15	A3
A16	WINT035
A1c	A1c
A1d	AUBY-1
A2	AUB Y-3
A3	A13
A4	A12
A6	WINT003
A7	SRT11
A9	A1d
AUB Y-2	A10
AUB Y-3	A14
AUB Y-4	A7
AUBWV016	A15
AUBY-1	A6
MSTTR02A	AUB Y-4
SRT11	AUBWV016
Unmetered	A9
WINT035	A2
	A11

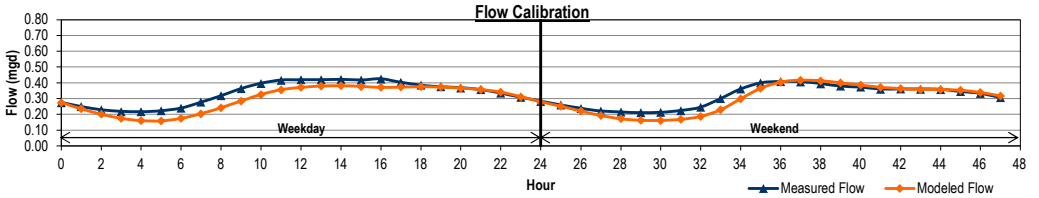
ATTACHMENT 1E

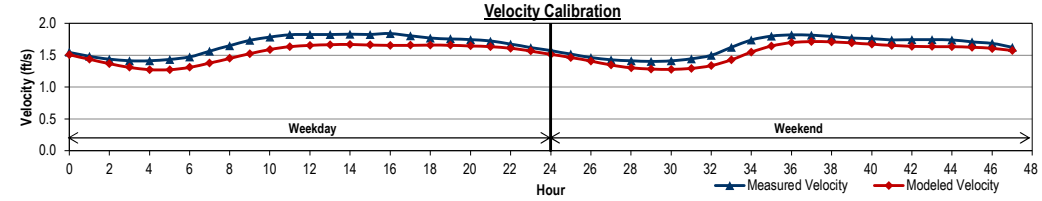
DRY WEATHER CALIBRATION SUMMARY SHEETS

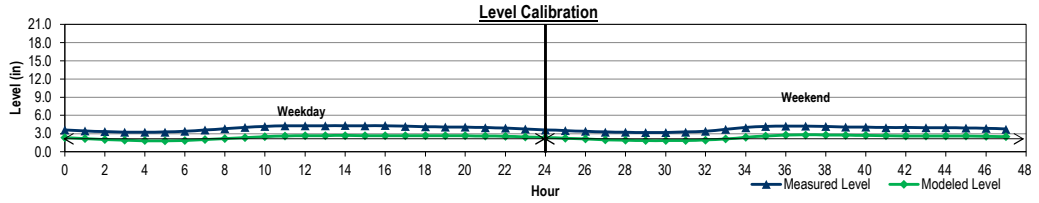
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A1 DRY WEATHER FLOW CALIBRATION

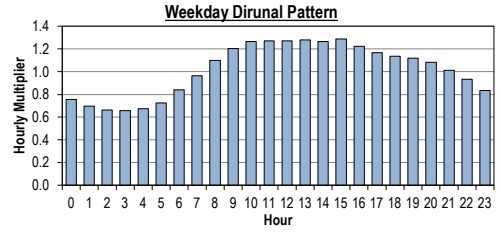
	Hour	Measured Data Flow (mgd)	Measured Data Level (in)	Measured Data Velocity (ft/s)	Modeled Data Flow (mgd)	Modeled Data Level (in)	Modeled Data Velocity (ft/s)	Level Diff (in)	Diurnal Initial Curve	Diurnal Modified Curve	Diurnal Calibrated Diurnal
Weekday	0	0.28	3.59	1.55	0.28	2.33	1.51	1.26	0.76	0.76	0.76
	1	0.25	3.44	1.48	0.24	2.17	1.44	1.27	0.70	0.70	0.70
	2	0.23	3.32	1.44	0.20	2.02	1.37	1.30	0.66	0.66	0.66
	3	0.22	3.25	1.41	0.18	1.90	1.31	1.34	0.66	0.66	0.66
	4	0.22	3.23	1.41	0.16	1.83	1.27	1.40	0.68	0.68	0.68
	5	0.22	3.26	1.43	0.16	1.81	1.27	1.45	0.73	0.73	0.73
	6	0.24	3.36	1.47	0.17	1.88	1.31	1.49	0.84	0.84	0.84
	7	0.28	3.58	1.56	0.20	2.01	1.38	1.56	0.96	0.96	0.96
	8	0.32	3.79	1.65	0.24	2.17	1.45	1.62	1.10	1.10	1.10
	9	0.36	4.02	1.73	0.28	2.34	1.53	1.68	1.20	1.20	1.20
	10	0.40	4.20	1.79	0.33	2.49	1.59	1.71	1.26	1.26	1.26
	11	0.42	4.29	1.82	0.36	2.60	1.63	1.69	1.27	1.27	1.27
	12	0.42	4.30	1.83	0.37	2.65	1.66	1.65	1.27	1.27	1.27
	13	0.42	4.30	1.83	0.38	2.67	1.67	1.63	1.28	1.28	1.28
	14	0.42	4.31	1.83	0.38	2.68	1.67	1.63	1.27	1.27	1.27
	15	0.42	4.28	1.83	0.38	2.66	1.66	1.62	1.29	1.29	1.29
	16	0.43	4.31	1.84	0.37	2.64	1.65	1.66	1.22	1.22	1.22
	17	0.40	4.21	1.81	0.37	2.64	1.66	1.57	1.17	1.17	1.17
	18	0.38	4.13	1.77	0.38	2.65	1.66	1.49	1.14	1.14	1.14
	19	0.38	4.09	1.76	0.37	2.64	1.66	1.45	1.12	1.12	1.12
	20	0.37	4.05	1.75	0.37	2.62	1.65	1.43	1.08	1.08	1.08
	21	0.36	4.00	1.72	0.36	2.60	1.63	1.40	1.01	1.01	1.01
	22	0.33	3.89	1.68	0.34	2.55	1.61	1.34	0.93	0.93	0.93
	23	0.31	3.76	1.62	0.31	2.46	1.57	1.31	0.83	0.83	0.83
Weekend	24	0.28	3.62	1.57	0.28	2.34	1.51	1.28	0.79	0.79	0.79
	25	0.26	3.49	1.52	0.25	2.23	1.46	1.26	0.72	0.72	0.72
	26	0.24	3.37	1.47	0.22	2.11	1.41	1.25	0.67	0.67	0.67
	27	0.22	3.26	1.43	0.19	1.99	1.35	1.27	0.65	0.65	0.65
	28	0.22	3.21	1.41	0.17	1.89	1.30	1.33	0.64	0.64	0.64
	29	0.21	3.18	1.40	0.16	1.84	1.28	1.34	0.65	0.65	0.65
	30	0.21	3.20	1.41	0.16	1.83	1.28	1.37	0.68	0.68	0.68
	31	0.22	3.26	1.44	0.17	1.86	1.29	1.41	0.75	0.75	0.75
	32	0.25	3.39	1.50	0.19	1.94	1.34	1.45	0.91	0.91	0.91
	33	0.30	3.69	1.62	0.23	2.12	1.43	1.57	1.10	1.10	1.10
	34	0.36	4.01	1.74	0.30	2.38	1.55	1.62	1.21	1.21	1.21
	35	0.40	4.19	1.80	0.36	2.61	1.65	1.58	1.24	1.24	1.24
	36	0.41	4.23	1.82	0.40	2.74	1.70	1.49	1.24	1.24	1.24
	37	0.41	4.23	1.82	0.42	2.78	1.71	1.44	1.20	1.20	1.20
	38	0.39	4.17	1.79	0.41	2.78	1.71	1.39	1.15	1.15	1.15
	39	0.38	4.09	1.77	0.40	2.74	1.69	1.35	1.13	1.13	1.13
	40	0.37	4.06	1.76	0.39	2.69	1.67	1.37	1.09	1.09	1.09
	41	0.36	4.00	1.74	0.37	2.64	1.65	1.35	1.09	1.09	1.09
	42	0.36	3.99	1.75	0.36	2.61	1.64	1.38	1.09	1.09	1.09
	43	0.36	3.99	1.74	0.36	2.60	1.64	1.39	1.09	1.09	1.09
	44	0.36	3.98	1.74	0.36	2.60	1.64	1.38	1.05	1.05	1.05
	45	0.35	3.92	1.71	0.35	2.58	1.63	1.34	1.01	1.01	1.01
	46	0.33	3.86	1.69	0.34	2.54	1.61	1.32	0.93	0.93	0.93
	47	0.31	3.74	1.62	0.32	2.47	1.57	1.27	0.86	0.86	0.86
Average											
	Weekday	**0.34**	**3.87**	**1.67**	**0.30**	**2.38**	**1.53**		**1.02**	**1.02**	**1.02**
	Weekend	**0.32**	**3.75**	**1.64**	**0.30**	**2.37**	**1.53**		**0.96**	**0.96**	**0.96**
	ADWF[1]	**0.33**	**3.84**	**1.66**	**0.30**	**2.37**	**1.53**		**1.00**	**1.00**	**1.00**
% Error											
	Weekday				**-11.0%**			**1.71**			
	Weekend				**-5.3%**			**1.62**			

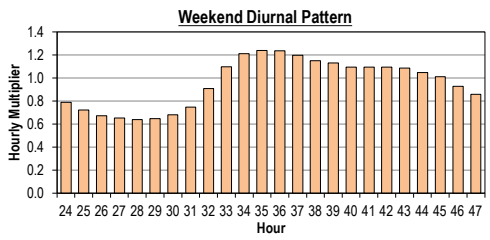
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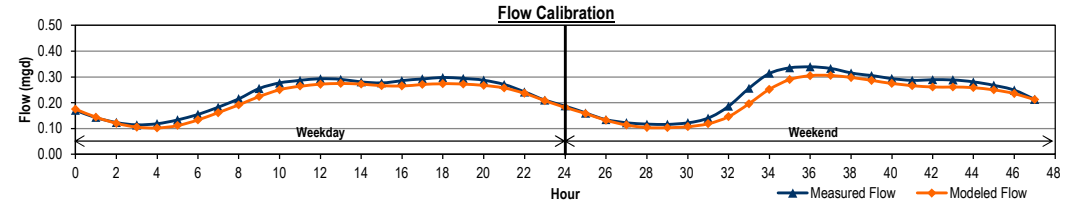


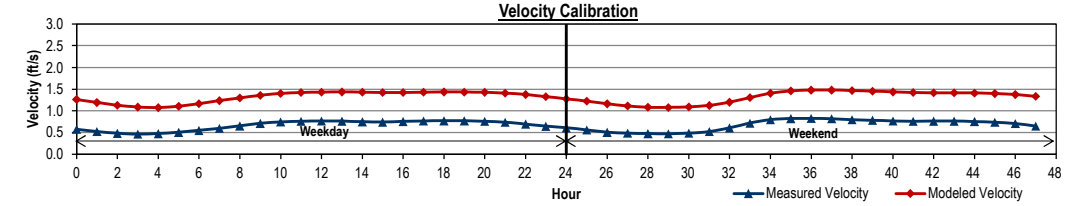


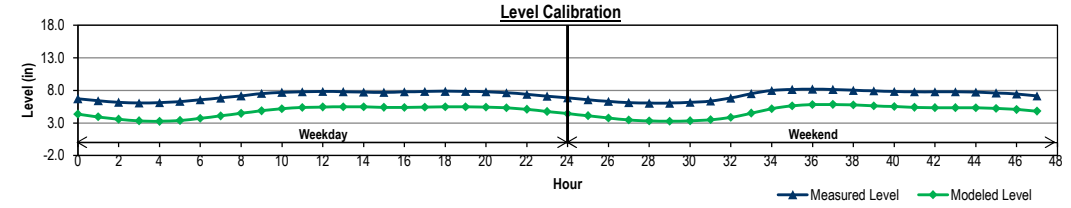
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A1c DRY WEATHER FLOW CALIBRATION

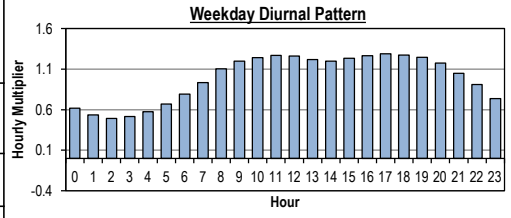
		Measured Data			Modeled Data				Diurnal		
	Hour	Flow (mgd)	Level (in)	Velocity (ft/s)	Flow (mgd)	Level (in)	Velocity (ft/s)	Level Diff (in)	Initial Curve	Modified Curve	Calibrated Diurnal
Weekday	0	0.17	6.70	0.58	0.18	4.35	1.26	2.35	0.62	0.62	0.62
	1	0.14	6.40	0.52	0.14	3.93	1.19	2.47	0.53	0.53	0.53
	2	0.12	6.17	0.48	0.12	3.57	1.13	2.60	0.49	0.49	0.49
	3	0.11	6.05	0.46	0.11	3.33	1.09	2.72	0.51	0.51	0.51
	4	0.12	6.11	0.48	0.10	3.25	1.08	2.86	0.58	0.58	0.58
	5	0.13	6.28	0.51	0.11	3.37	1.11	2.91	0.67	0.67	0.67
	6	0.15	6.54	0.55	0.13	3.69	1.17	2.85	0.79	0.79	0.79
	7	0.18	6.83	0.60	0.16	4.08	1.23	2.76	0.93	0.93	0.93
	8	0.22	7.15	0.65	0.19	4.47	1.30	2.68	1.11	1.11	1.11
	9	0.26	7.51	0.72	0.22	4.87	1.36	2.65	1.20	1.20	1.20
	10	0.28	7.69	0.75	0.25	5.18	1.40	2.50	1.24	1.24	1.24
	11	0.29	7.77	0.76	0.26	5.36	1.42	2.41	1.27	1.27	1.27
	12	0.29	7.82	0.77	0.27	5.45	1.43	2.37	1.26	1.26	1.26
	13	0.29	7.81	0.76	0.27	5.49	1.44	2.32	1.22	1.22	1.22
	14	0.28	7.73	0.75	0.27	5.47	1.43	2.26	1.20	1.20	1.20
	15	0.28	7.70	0.74	0.27	5.40	1.42	2.30	1.24	1.24	1.24
	16	0.29	7.76	0.76	0.26	5.38	1.42	2.39	1.27	1.27	1.27
	17	0.29	7.82	0.77	0.27	5.43	1.43	2.39	1.29	1.29	1.29
	18	0.30	7.86	0.77	0.27	5.48	1.44	2.38	1.27	1.27	1.27
	19	0.29	7.83	0.77	0.27	5.47	1.43	2.37	1.25	1.25	1.25
	20	0.29	7.78	0.76	0.27	5.41	1.43	2.37	1.17	1.17	1.17
	21	0.27	7.64	0.74	0.26	5.31	1.41	2.33	1.05	1.05	1.05
	22	0.24	7.39	0.70	0.24	5.08	1.38	2.31	0.91	0.91	0.91
	23	0.21	7.10	0.65	0.21	4.76	1.33	2.34	0.74	0.74	0.74
Weekend	24	0.19	6.86	0.61	0.18	4.42	1.28	2.44	0.69	0.69	0.69
	25	0.16	6.57	0.56	0.16	4.11	1.22	2.47	0.58	0.58	0.58
	26	0.13	6.30	0.51	0.13	3.75	1.16	2.54	0.53	0.53	0.53
	27	0.12	6.13	0.49	0.11	3.46	1.11	2.67	0.51	0.51	0.51
	28	0.12	6.04	0.48	0.10	3.30	1.08	2.74	0.50	0.50	0.50
	29	0.12	6.05	0.48	0.10	3.27	1.08	2.78	0.53	0.53	0.53
	30	0.12	6.15	0.49	0.11	3.32	1.09	2.82	0.61	0.61	0.61
	31	0.14	6.35	0.52	0.12	3.48	1.13	2.86	0.81	0.81	0.81
	32	0.19	6.83	0.61	0.15	3.86	1.20	2.97	1.11	1.11	1.11
	33	0.26	7.48	0.72	0.20	4.49	1.31	2.99	1.36	1.36	1.36
	34	0.31	7.97	0.80	0.25	5.17	1.40	2.80	1.45	1.45	1.45
	35	0.33	8.15	0.82	0.29	5.62	1.46	2.53	1.47	1.47	1.47
	36	0.34	8.19	0.83	0.30	5.81	1.48	2.38	1.44	1.44	1.44
	37	0.33	8.15	0.82	0.31	5.83	1.48	2.32	1.37	1.37	1.37
	38	0.32	8.01	0.80	0.30	5.75	1.47	2.26	1.32	1.32	1.32
	39	0.31	7.92	0.78	0.29	5.63	1.45	2.29	1.27	1.27	1.27
	40	0.29	7.83	0.77	0.28	5.51	1.44	2.32	1.24	1.24	1.24
	41	0.29	7.77	0.76	0.27	5.40	1.42	2.37	1.25	1.25	1.25
	42	0.29	7.77	0.77	0.26	5.34	1.42	2.43	1.25	1.25	1.25
	43	0.29	7.77	0.77	0.26	5.33	1.42	2.44	1.22	1.22	1.22
	44	0.28	7.72	0.75	0.26	5.31	1.41	2.41	1.16	1.16	1.16
	45	0.27	7.59	0.74	0.25	5.22	1.40	2.37	1.08	1.08	1.08
	46	0.25	7.44	0.71	0.24	5.06	1.38	2.38	0.92	0.92	0.92
	47	0.21	7.13	0.65	0.21	4.80	1.33	2.33	0.81	0.81	0.81
Average											
	Weekday	**0.23**	**7.23**	**0.67**	**0.21**	**4.73**	**1.32**		**0.99**	**0.99**	**0.99**
	Weekend	**0.24**	**7.26**	**0.68**	**0.21**	**4.72**	**1.32**		**1.02**	**1.02**	**1.02**
	ADWF[1]	**0.23**	**7.24**	**0.67**	**0.21**	**4.73**	**1.32**		**1.00**	**1.00**	**1.00**
% Error											
	Weekday				-6.9%			2.91			
	Weekend				-9.5%			2.99			

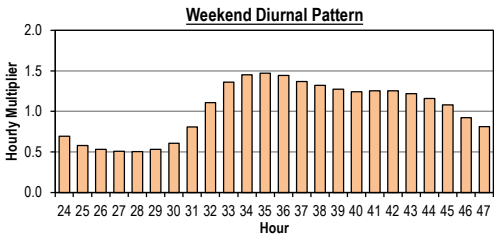
Note:







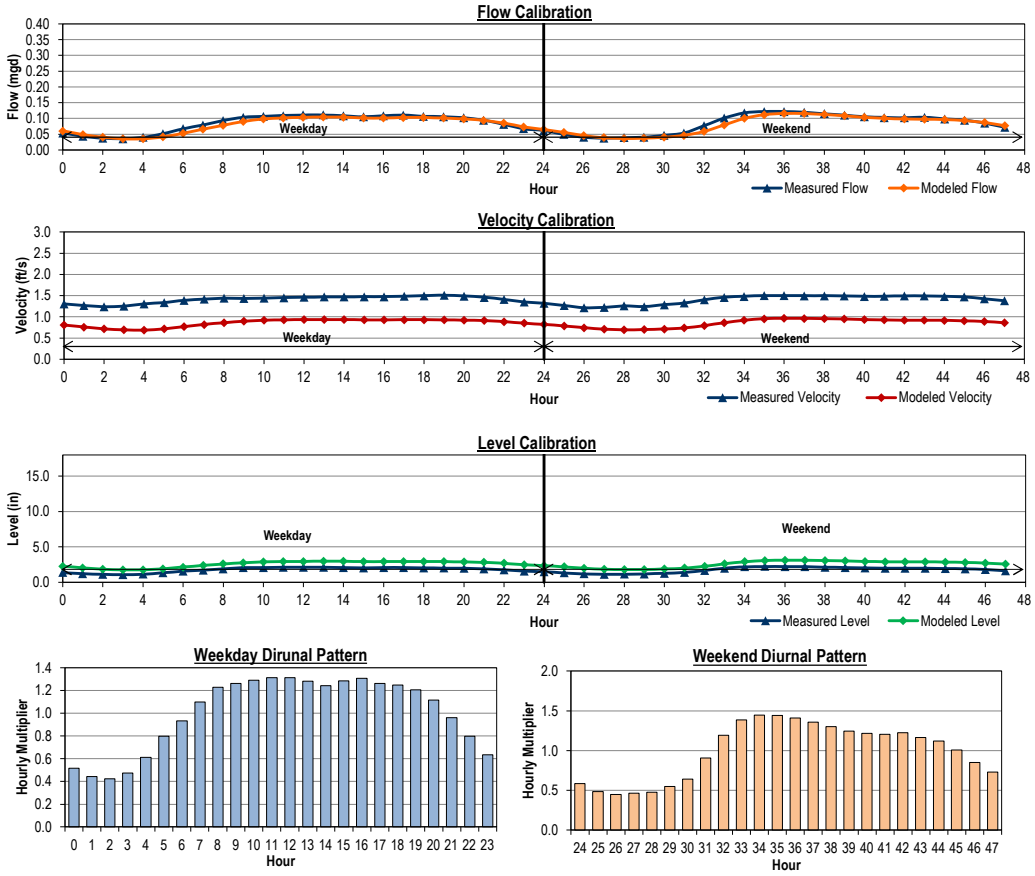




City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A1d DRY WEATHER FLOW CALIBRATION

		Measured Data			Modeled Data				Diurnal		
	Hour	Flow (mgd)	Level (in)	Velocity (ft/s)	Flow (mgd)	Level (in)	Velocity (ft/s)	Level Diff (in)	Initial Curve	Modified Curve	Calibrated Diurnal
Weekday	0	0.05	1.39	1.31	0.06	2.28	0.81	-0.89	0.52	0.52	0.52
	1	0.04	1.22	1.27	0.05	2.06	0.76	-0.83	0.44	0.44	0.44
	2	0.04	1.12	1.24	0.04	1.88	0.72	-0.76	0.42	0.42	0.42
	3	0.04	1.08	1.26	0.04	1.77	0.69	-0.69	0.47	0.47	0.47
	4	0.04	1.15	1.30	0.04	1.77	0.69	-0.63	0.61	0.61	0.61
	5	0.05	1.34	1.34	0.04	1.91	0.72	-0.57	0.80	0.80	0.80
	6	0.07	1.57	1.39	0.05	2.16	0.77	-0.59	0.93	0.93	0.93
	7	0.08	1.72	1.42	0.07	2.39	0.82	-0.67	1.10	1.10	1.10
	8	0.09	1.91	1.44	0.08	2.60	0.86	-0.69	1.23	1.23	1.23
	9	0.10	2.07	1.44	0.09	2.78	0.90	-0.71	1.26	1.26	1.26
	10	0.11	2.10	1.45	0.10	2.89	0.92	-0.79	1.29	1.29	1.29
	11	0.11	2.12	1.45	0.10	2.94	0.93	-0.82	1.31	1.31	1.31
	12	0.11	2.14	1.46	0.10	2.97	0.94	-0.83	1.31	1.31	1.31
	13	0.11	2.13	1.47	0.10	2.98	0.94	-0.85	1.28	1.28	1.28
	14	0.11	2.09	1.47	0.10	2.97	0.94	-0.88	1.24	1.24	1.24
	15	0.11	2.04	1.48	0.10	2.93	0.93	-0.89	1.28	1.28	1.28
	16	0.11	2.09	1.48	0.10	2.93	0.93	-0.84	1.31	1.31	1.31
	17	0.11	2.11	1.49	0.10	2.96	0.94	-0.85	1.26	1.26	1.26
	18	0.11	2.04	1.50	0.10	2.96	0.94	-0.91	1.25	1.25	1.25
	19	0.11	2.01	1.51	0.10	2.93	0.93	-0.91	1.21	1.21	1.21
	20	0.10	1.98	1.49	0.10	2.89	0.92	-0.91	1.12	1.12	1.12
	21	0.09	1.91	1.46	0.09	2.82	0.91	-0.92	0.96	0.96	0.96
	22	0.08	1.76	1.41	0.09	2.69	0.89	-0.93	0.80	0.80	0.80
	23	0.07	1.59	1.35	0.07	2.50	0.85	-0.91	0.63	0.63	0.63
Weekend	24	0.06	1.52	1.32	0.07	2.37	0.82	-0.85	0.59	0.59	0.59
	25	0.05	1.34	1.27	0.06	2.19	0.79	-0.85	0.48	0.48	0.48
	26	0.04	1.20	1.22	0.05	1.99	0.75	-0.79	0.45	0.45	0.45
	27	0.04	1.14	1.23	0.04	1.85	0.71	-0.71	0.46	0.46	0.46
	28	0.04	1.15	1.26	0.04	1.80	0.70	-0.65	0.48	0.48	0.48
	29	0.04	1.19	1.24	0.04	1.82	0.70	-0.63	0.55	0.55	0.55
	30	0.05	1.29	1.29	0.04	1.89	0.71	-0.60	0.64	0.64	0.64
	31	0.05	1.40	1.33	0.05	2.01	0.74	-0.62	0.91	0.91	0.91
	32	0.08	1.69	1.40	0.06	2.26	0.79	-0.57	1.19	1.19	1.19
	33	0.10	2.00	1.46	0.08	2.62	0.86	-0.62	1.39	1.39	1.39
	34	0.12	2.20	1.48	0.10	2.92	0.92	-0.73	1.44	1.44	1.44
	35	0.12	2.24	1.50	0.11	3.08	0.96	-0.84	1.44	1.44	1.44
	36	0.12	2.23	1.50	0.12	3.13	0.97	-0.90	1.41	1.41	1.41
	37	0.12	2.21	1.50	0.12	3.12	0.97	-0.92	1.36	1.36	1.36
	38	0.12	2.15	1.50	0.11	3.08	0.96	-0.93	1.30	1.30	1.30
	39	0.11	2.10	1.49	0.11	3.03	0.95	-0.93	1.25	1.25	1.25
	40	0.11	2.04	1.48	0.10	2.97	0.94	-0.93	1.22	1.22	1.22
	41	0.10	2.00	1.49	0.10	2.91	0.93	-0.91	1.21	1.21	1.21
	42	0.10	1.99	1.49	0.10	2.89	0.92	-0.90	1.23	1.23	1.23
	43	0.10	2.00	1.50	0.10	2.88	0.92	-0.88	1.17	1.17	1.17
	44	0.10	1.95	1.48	0.10	2.87	0.92	-0.92	1.12	1.12	1.12
	45	0.09	1.91	1.47	0.09	2.81	0.91	-0.90	1.01	1.01	1.01
	46	0.09	1.80	1.43	0.09	2.72	0.89	-0.92	0.85	0.85	0.85
	47	0.07	1.64	1.38	0.08	2.57	0.86	-0.92	0.73	0.73	0.73
Average											
	Weekday	**0.08**	**1.78**	**1.41**	**0.08**	**2.58**	**0.86**		**1.00**	**1.00**	**1.00**
	Weekend	**0.08**	**1.77**	**1.41**	**0.08**	**2.57**	**0.86**		**0.99**	**0.99**	**0.99**
	ADWF[1]	**0.08**	**1.77**	**1.41**	**0.08**	**2.58**	**0.86**		**1.00**	**1.00**	**1.00**
% Error											
	Weekday				-5.4%			0.93			
	Weekend				-4.7%			0.93			

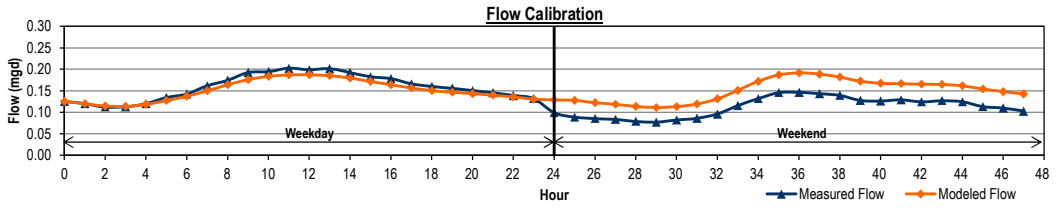
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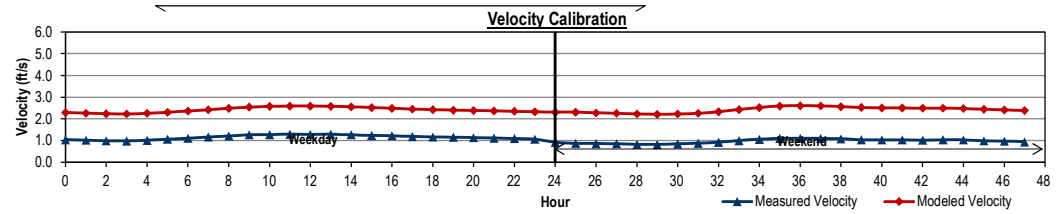


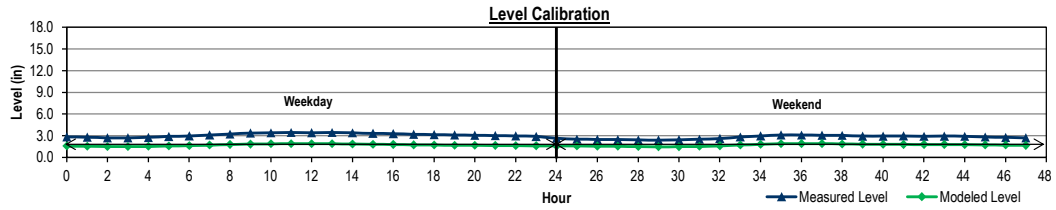
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A3 DRY WEATHER FLOW CALIBRATION

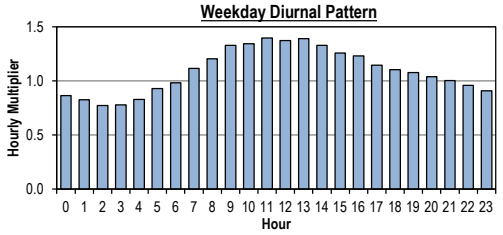
	Hour	Measured Data Flow (mgd)	Measured Data Level (in)	Measured Data Velocity (ft/s)	Modeled Data Flow (mgd)	Modeled Data Level (in)	Modeled Data Velocity (ft/s)	Level Diff (in)	Diurnal Initial Curve	Diurnal Modified Curve	Diurnal Calibrated Diurnal
Weekday	0	0.13	2.85	1.04	0.13	1.58	2.29	1.27	0.83	0.86	0.86
	1	0.12	2.80	1.02	0.12	1.55	2.26	1.25	0.77	0.83	0.83
	2	0.11	2.73	0.99	0.11	1.52	2.23	1.21	0.78	0.77	0.77
	3	0.11	2.72	0.99	0.11	1.51	2.23	1.22	0.83	0.78	0.78
	4	0.12	2.79	1.02	0.12	1.53	2.26	1.25	0.93	0.83	0.83
	5	0.13	2.91	1.07	0.13	1.58	2.30	1.33	0.98	0.93	0.93
	6	0.14	2.97	1.10	0.14	1.64	2.36	1.33	1.12	0.98	0.98
	7	0.16	3.13	1.17	0.15	1.71	2.42	1.42	1.20	1.12	1.12
	8	0.17	3.24	1.21	0.16	1.79	2.49	1.46	1.33	1.20	1.20
	9	0.19	3.38	1.27	0.18	1.85	2.54	1.53	1.34	1.33	1.33
	10	0.19	3.40	1.27	0.18	1.89	2.57	1.51	1.40	1.34	1.34
	11	0.20	3.46	1.30	0.19	1.90	2.59	1.55	1.37	1.40	1.40
	12	0.20	3.43	1.29	0.19	1.91	2.59	1.53	1.39	1.37	1.37
	13	0.20	3.46	1.29	0.19	1.89	2.58	1.56	1.33	1.39	1.39
	14	0.19	3.40	1.27	0.18	1.87	2.55	1.53	1.26	1.33	1.33
	15	0.18	3.33	1.23	0.17	1.83	2.52	1.50	1.23	1.26	1.26
	16	0.18	3.30	1.22	0.16	1.79	2.49	1.51	1.15	1.23	1.23
	17	0.17	3.21	1.19	0.16	1.75	2.45	1.46	1.10	1.15	1.15
	18	0.16	3.16	1.17	0.15	1.72	2.42	1.44	1.08	1.10	1.10
	19	0.16	3.13	1.16	0.15	1.70	2.40	1.43	1.04	1.08	1.08
	20	0.15	3.08	1.14	0.14	1.68	2.39	1.39	1.00	1.04	1.04
	21	0.15	3.03	1.12	0.14	1.66	2.37	1.37	0.96	1.00	1.00
	22	0.14	2.98	1.10	0.14	1.64	2.35	1.33	0.91	0.96	0.96
	23	0.13	2.91	1.07	0.13	1.61	2.32	1.29	0.86	0.91	0.91
Weekend	24	0.10	2.65	0.92	0.13	1.60	2.31	1.05	0.61	0.68	0.68
	25	0.09	2.54	0.88	0.13	1.59	2.31	0.94	0.59	0.61	0.61
	26	0.09	2.51	0.87	0.12	1.56	2.28	0.94	0.58	0.59	0.59
	27	0.08	2.48	0.85	0.12	1.54	2.25	0.94	0.54	0.58	0.58
	28	0.08	2.43	0.83	0.11	1.51	2.22	0.92	0.53	0.54	0.54
	29	0.08	2.42	0.82	0.11	1.49	2.21	0.93	0.56	0.53	0.53
	30	0.08	2.46	0.85	0.11	1.50	2.22	0.96	0.59	0.56	0.56
	31	0.09	2.51	0.88	0.12	1.53	2.26	0.98	0.66	0.59	0.59
	32	0.10	2.62	0.93	0.13	1.61	2.33	1.01	0.80	0.66	0.66
	33	0.12	2.83	1.00	0.15	1.71	2.43	1.11	0.91	0.80	0.80
	34	0.13	2.99	1.06	0.17	1.83	2.52	1.16	1.01	0.91	0.91
	35	0.15	3.12	1.10	0.19	1.90	2.59	1.22	1.01	1.01	1.01
	36	0.15	3.10	1.10	0.19	1.92	2.61	1.18	0.99	1.01	1.01
	37	0.14	3.08	1.10	0.19	1.91	2.59	1.17	0.96	0.99	0.99
	38	0.14	3.04	1.08	0.18	1.88	2.56	1.16	0.88	0.96	0.96
	39	0.13	2.96	1.04	0.17	1.83	2.52	1.12	0.87	0.88	0.88
	40	0.13	2.96	1.03	0.17	1.81	2.50	1.15	0.89	0.87	0.87
	41	0.13	2.98	1.04	0.17	1.80	2.50	1.18	0.86	0.89	0.89
	42	0.12	2.94	1.02	0.17	1.80	2.49	1.14	0.88	0.86	0.86
	43	0.13	2.96	1.04	0.16	1.79	2.49	1.17	0.86	0.88	0.88
	44	0.12	2.93	1.03	0.16	1.78	2.48	1.16	0.78	0.86	0.86
	45	0.11	2.83	0.99	0.15	1.74	2.44	1.09	0.76	0.78	0.78
	46	0.11	2.78	0.98	0.15	1.71	2.41	1.07	0.71	0.76	0.76
	47	0.10	2.72	0.94	0.14	1.68	2.38	1.04	0.68	0.71	0.71
Average											
	Weekday	**0.16**	**3.12**	**1.15**	**0.15**	**1.71**	**2.42**		**1.09**	**1.09**	**1.09**
	Weekend	**0.11**	**2.78**	**0.97**	**0.15**	**1.71**	**2.41**		**0.77**	**0.77**	**0.77**
	ADWF[1]	**0.14**	**3.02**	**1.10**	**0.15**	**1.71**	**2.41**		**1.00**	**1.00**	**1.00**
% Error											
	Weekday				-4.9%			1.56			
	Weekend				34.3%			1.22			

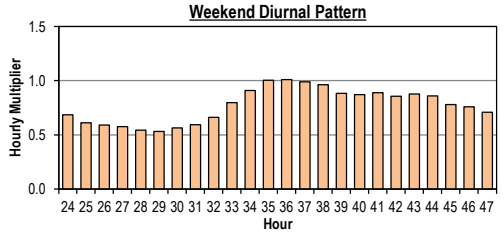
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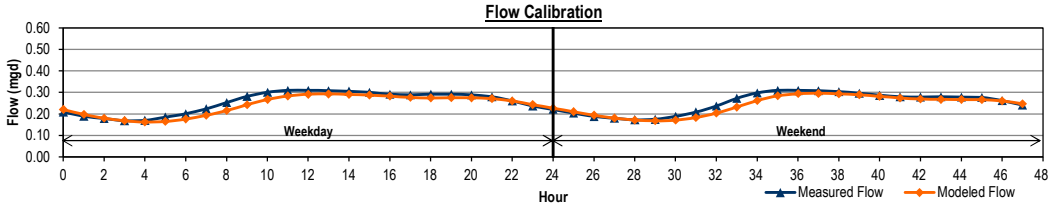


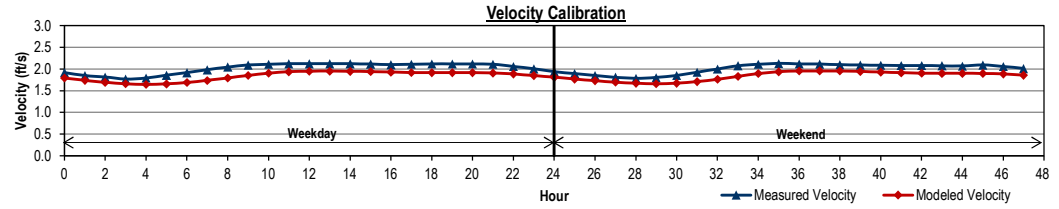


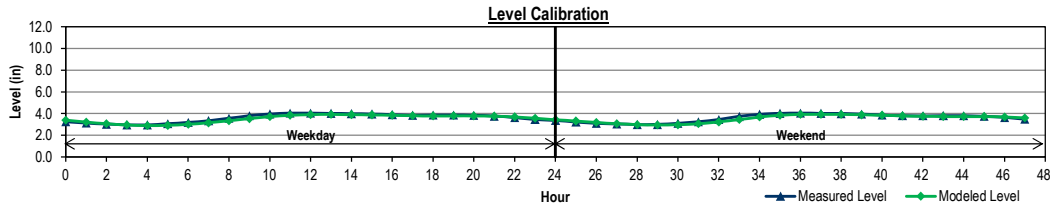
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A4 DRY WEATHER FLOW CALIBRATION

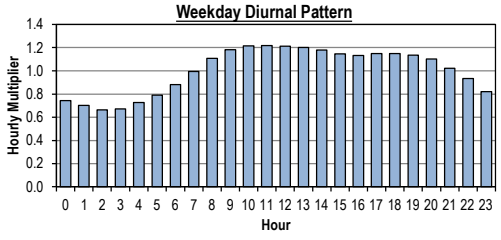
	Hour	Measured Data Flow (mgd)	Measured Data Level (in)	Measured Data Velocity (ft/s)	Modeled Data Flow (mgd)	Modeled Data Level (in)	Modeled Data Velocity (ft/s)	Level Diff (in)	Diurnal Initial Curve	Diurnal Modified Curve	Diurnal Calibrated Diurnal
Weekday	0	0.21	3.26	1.92	0.22	3.40	1.79	-0.13	0.74	0.74	0.74
	1	0.19	3.12	1.85	0.20	3.21	1.74	-0.09	0.70	0.70	0.70
	2	0.18	3.03	1.81	0.18	3.06	1.69	-0.03	0.66	0.66	0.66
	3	0.17	2.97	1.77	0.17	2.96	1.66	0.01	0.67	0.67	0.67
	4	0.17	2.96	1.79	0.16	2.90	1.64	0.07	0.73	0.73	0.73
	5	0.18	3.06	1.86	0.16	2.92	1.65	0.15	0.79	0.79	0.79
	6	0.20	3.18	1.91	0.18	3.01	1.69	0.17	0.88	0.88	0.88
	7	0.22	3.35	1.98	0.19	3.15	1.74	0.20	0.99	0.99	0.99
	8	0.25	3.57	2.04	0.22	3.33	1.79	0.24	1.11	1.11	1.11
	9	0.28	3.80	2.09	0.24	3.54	1.85	0.26	1.18	1.18	1.18
	10	0.30	3.96	2.11	0.27	3.72	1.90	0.24	1.22	1.22	1.22
	11	0.31	4.03	2.12	0.28	3.84	1.93	0.19	1.22	1.22	1.22
	12	0.31	4.04	2.12	0.29	3.90	1.95	0.14	1.21	1.21	1.21
	13	0.31	4.02	2.12	0.29	3.91	1.95	0.11	1.20	1.20	1.20
	14	0.31	4.00	2.12	0.29	3.90	1.95	0.10	1.18	1.18	1.18
	15	0.30	3.96	2.11	0.29	3.88	1.94	0.08	1.15	1.15	1.15
	16	0.29	3.90	2.10	0.28	3.84	1.93	0.05	1.13	1.13	1.13
	17	0.29	3.85	2.11	0.28	3.80	1.92	0.05	1.15	1.15	1.15
	18	0.29	3.87	2.12	0.27	3.79	1.91	0.08	1.15	1.15	1.15
	19	0.29	3.87	2.12	0.28	3.79	1.92	0.08	1.13	1.13	1.13
	20	0.29	3.84	2.12	0.28	3.79	1.91	0.05	1.10	1.10	1.10
	21	0.28	3.77	2.11	0.27	3.76	1.91	0.01	1.02	1.02	1.02
	22	0.26	3.64	2.06	0.26	3.69	1.88	-0.05	0.93	0.93	0.93
	23	0.24	3.47	2.00	0.24	3.57	1.85	-0.10	0.82	0.82	0.82
Weekend	24	0.22	3.37	1.94	0.23	3.44	1.81	-0.07	0.80	0.80	0.80
	25	0.20	3.23	1.89	0.21	3.31	1.77	-0.08	0.74	0.74	0.74
	26	0.19	3.11	1.85	0.19	3.18	1.73	-0.07	0.71	0.71	0.71
	27	0.18	3.05	1.81	0.18	3.06	1.69	-0.02	0.68	0.68	0.68
	28	0.17	2.99	1.79	0.17	2.98	1.67	0.01	0.69	0.69	0.69
	29	0.17	3.00	1.80	0.17	2.94	1.66	0.06	0.74	0.74	0.74
	30	0.19	3.11	1.85	0.17	2.97	1.67	0.14	0.82	0.82	0.82
	31	0.21	3.25	1.92	0.18	3.07	1.71	0.18	0.93	0.93	0.93
	32	0.24	3.45	2.00	0.20	3.23	1.76	0.22	1.07	1.07	1.07
	33	0.27	3.74	2.07	0.23	3.45	1.83	0.29	1.17	1.17	1.17
	34	0.30	3.93	2.11	0.26	3.68	1.89	0.25	1.22	1.22	1.22
	35	0.31	4.02	2.13	0.28	3.84	1.94	0.18	1.22	1.22	1.22
	36	0.31	4.03	2.12	0.29	3.92	1.95	0.11	1.21	1.21	1.21
	37	0.31	4.03	2.11	0.30	3.93	1.95	0.09	1.19	1.19	1.19
	38	0.30	4.01	2.10	0.29	3.92	1.95	0.09	1.16	1.16	1.16
	39	0.30	3.95	2.09	0.29	3.89	1.94	0.06	1.13	1.13	1.13
	40	0.29	3.86	2.09	0.28	3.84	1.93	0.02	1.10	1.10	1.10
	41	0.28	3.81	2.08	0.27	3.79	1.91	0.02	1.10	1.10	1.10
	42	0.28	3.79	2.08	0.27	3.75	1.90	0.05	1.10	1.10	1.10
	43	0.28	3.81	2.07	0.27	3.73	1.90	0.07	1.09	1.09	1.09
	44	0.28	3.80	2.07	0.27	3.73	1.90	0.07	1.09	1.09	1.09
	45	0.28	3.75	2.09	0.27	3.72	1.90	0.03	1.03	1.03	1.03
	46	0.26	3.65	2.06	0.26	3.69	1.88	-0.04	0.95	0.95	0.95
	47	0.24	3.49	2.01	0.25	3.59	1.85	-0.10	0.87	0.87	0.87
Average											
	Weekday	0.255	3.6	2.02	0.241	3.5	1.84		1.00	1.00	1.00
	Weekend	0.252	3.6	2.00	0.241	3.5	1.84		0.99	0.99	0.99
	ADWF[1]	0.254	3.6	2.01	0.241	3.5	1.84		1.00	1.00	1.00
% Error											
	Weekday				-5.4%			0.26			
	Weekend				-4.3%			0.29			

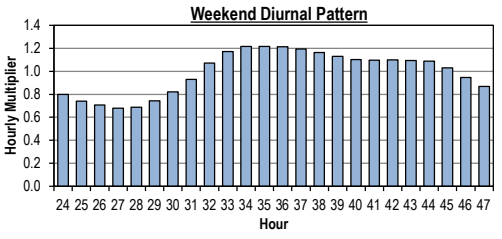
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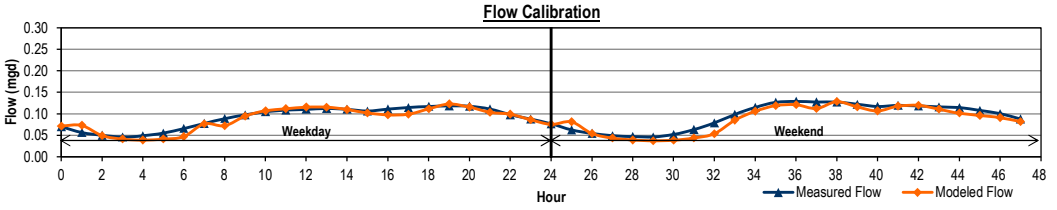


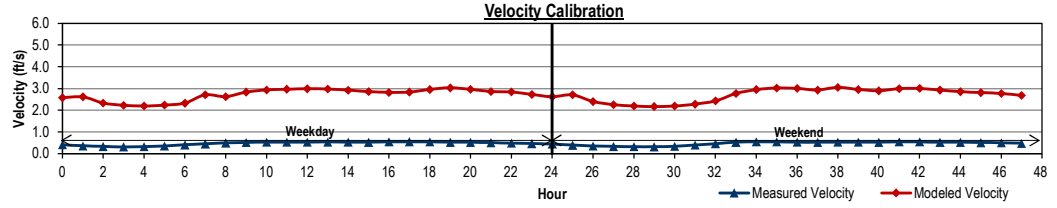


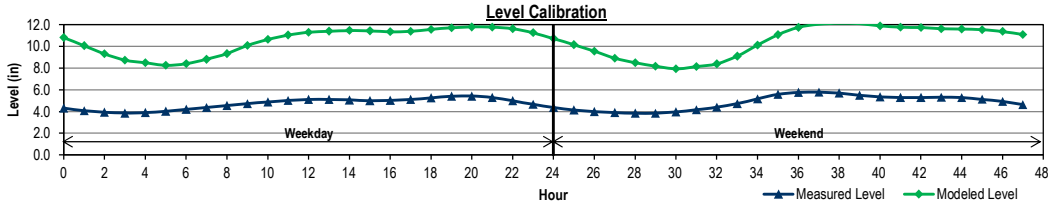
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A6 DRY WEATHER FLOW CALIBRATION

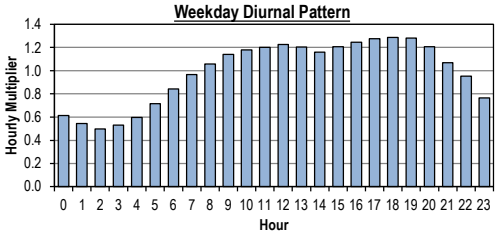
	Hour	Measured Data Flow (mgd)	Measured Data Level (in)	Measured Data Velocity (ft/s)	Modeled Data Flow (mgd)	Modeled Data Level (in)	Modeled Data Velocity (ft/s)	Level Diff (in)	Diurnal Initial Curve	Diurnal Modified Curve	Diurnal Calibrated Diurnal
Weekday	0	0.07	4.31	0.42	0.07	10.80	2.58	-6.49	0.61	0.61	0.61
	1	0.06	4.07	0.36	0.07	10.07	2.62	-6.00	0.54	0.54	0.54
	2	0.05	3.94	0.33	0.05	9.30	2.34	-5.36	0.50	0.50	0.50
	3	0.05	3.85	0.31	0.04	8.73	2.23	-4.87	0.53	0.53	0.53
	4	0.05	3.90	0.33	0.04	8.48	2.20	-4.58	0.60	0.60	0.60
	5	0.05	4.01	0.36	0.04	8.25	2.24	-4.23	0.72	0.72	0.72
	6	0.07	4.20	0.41	0.05	8.39	2.33	-4.19	0.84	0.84	0.84
	7	0.08	4.37	0.46	0.08	8.80	2.71	-4.43	0.97	0.97	0.97
	8	0.09	4.55	0.50	0.07	9.33	2.63	-4.78	1.06	1.06	1.06
	9	0.10	4.73	0.52	0.09	10.08	2.84	-5.35	1.14	1.14	1.14
	10	0.10	4.88	0.53	0.11	10.63	2.94	-5.75	1.18	1.18	1.18
	11	0.11	5.00	0.54	0.11	11.03	2.97	-6.03	1.20	1.20	1.20
	12	0.11	5.10	0.53	0.12	11.29	2.99	-6.19	1.23	1.23	1.23
	13	0.11	5.11	0.54	0.12	11.39	2.98	-6.28	1.20	1.20	1.20
	14	0.11	5.06	0.54	0.11	11.45	2.92	-6.39	1.16	1.16	1.16
	15	0.11	4.99	0.53	0.10	11.42	2.86	-6.43	1.21	1.21	1.21
	16	0.11	5.02	0.55	0.10	11.33	2.82	-6.31	1.25	1.25	1.25
	17	0.11	5.10	0.55	0.10	11.38	2.84	-6.27	1.28	1.28	1.28
	18	0.12	5.26	0.54	0.11	11.55	2.95	-6.30	1.29	1.29	1.29
	19	0.12	5.41	0.53	0.12	11.70	3.03	-6.29	1.28	1.28	1.28
	20	0.12	5.42	0.52	0.12	11.78	2.96	-6.36	1.21	1.21	1.21
	21	0.11	5.28	0.51	0.10	11.75	2.86	-6.47	1.07	1.07	1.07
	22	0.10	4.98	0.49	0.10	11.63	2.84	-6.64	0.95	0.95	0.95
	23	0.09	4.65	0.47	0.09	11.25	2.73	-6.59	0.76	0.76	0.76
Weekend	24	0.08	4.37	0.45	0.08	10.71	2.63	-6.34	0.68	0.68	0.68
	25	0.06	4.14	0.39	0.08	10.14	2.71	-6.00	0.59	0.59	0.59
	26	0.05	4.00	0.36	0.05	9.54	2.40	-5.55	0.53	0.53	0.53
	27	0.05	3.89	0.33	0.04	8.91	2.26	-5.02	0.51	0.51	0.51
	28	0.05	3.84	0.32	0.04	8.49	2.20	-4.64	0.50	0.50	0.50
	29	0.05	3.84	0.32	0.04	8.16	2.17	-4.33	0.56	0.56	0.56
	30	0.05	3.97	0.34	0.04	7.92	2.20	-3.95	0.69	0.69	0.69
	31	0.06	4.15	0.40	0.04	8.13	2.28	-3.98	0.86	0.86	0.86
	32	0.08	4.38	0.46	0.05	8.38	2.43	-4.00	1.07	1.07	1.07
	33	0.10	4.72	0.53	0.09	9.09	2.77	-4.37	1.25	1.25	1.25
	34	0.11	5.16	0.55	0.11	10.11	2.95	-4.95	1.38	1.38	1.38
	35	0.13	5.57	0.54	0.12	11.07	3.02	-5.49	1.40	1.40	1.40
	36	0.13	5.76	0.53	0.12	11.74	3.01	-5.98	1.39	1.39	1.39
	37	0.13	5.77	0.52	0.11	12.03	2.93	-6.26	1.39	1.39	1.39
	38	0.13	5.69	0.53	0.13	12.12	3.06	-6.43	1.33	1.33	1.33
	39	0.12	5.50	0.53	0.12	12.08	2.95	-6.58	1.28	1.28	1.28
	40	0.12	5.35	0.53	0.11	11.87	2.90	-6.53	1.30	1.30	1.30
	41	0.12	5.29	0.55	0.12	11.75	3.00	-6.46	1.29	1.29	1.29
	42	0.12	5.29	0.54	0.12	11.72	3.00	-6.43	1.26	1.26	1.26
	43	0.12	5.31	0.53	0.11	11.61	2.93	-6.31	1.24	1.24	1.24
	44	0.11	5.27	0.53	0.10	11.59	2.85	-6.32	1.17	1.17	1.17
	45	0.11	5.12	0.51	0.10	11.53	2.81	-6.41	1.09	1.09	1.09
	46	0.10	4.92	0.50	0.09	11.36	2.77	-6.44	0.96	0.96	0.96
	47	0.09	4.62	0.48	0.08	11.09	2.68	-6.47	0.84	0.84	0.84
Average											
	Weekday	0.091	4.7	0.47	0.087	10.5	2.72		0.99	0.99	0.99
	Weekend	0.094	4.8	0.47	0.087	10.5	2.70		1.02	1.02	1.02
	ADWF[1]	0.092	4.7	0.47	0.087	10.5	2.72		1.00	1.00	1.00
% Error											
	Weekday				-3.8%			6.64			
	Weekend				-7.9%			6.58			

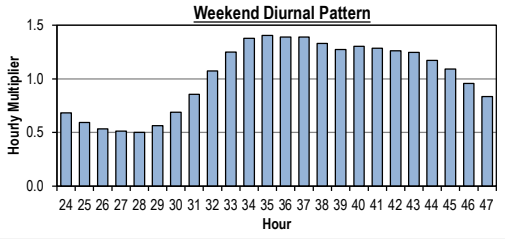
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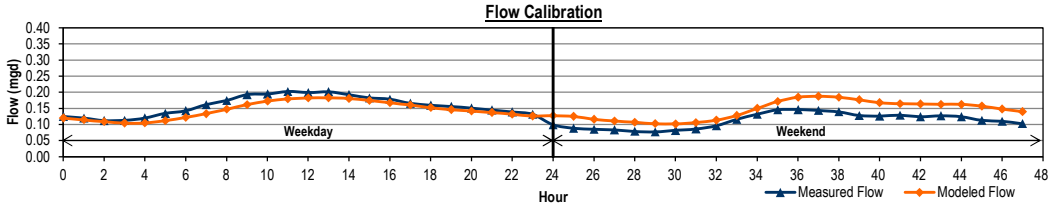


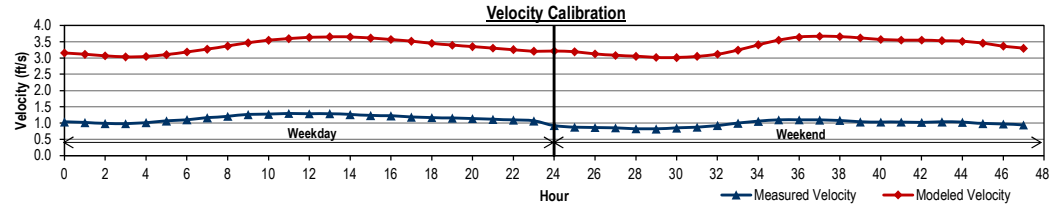


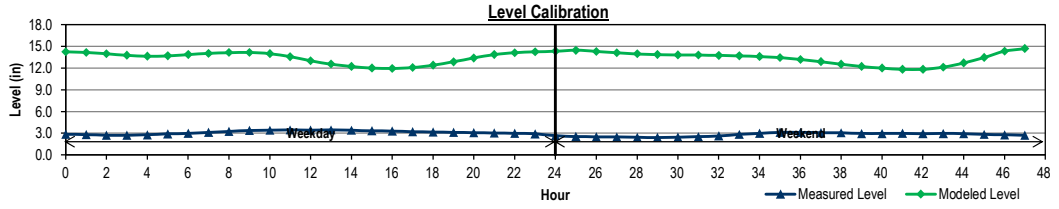
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A7 DRY WEATHER FLOW CALIBRATION

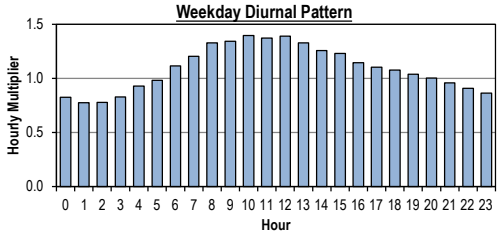
	Hour	Measured Data Flow (mgd)	Measured Data Level (in)	Measured Data Velocity (ft/s)	Modeled Data Flow (mgd)	Modeled Data Level (in)	Modeled Data Velocity (ft/s)	Level Diff (in)	Diurnal Initial Curve	Diurnal Modified Curve	Diurnal Calibrated Diurnal
Weekday	0	0.13	2.85	1.04	0.12	14.23	3.16	-11.38	0.83	0.83	0.83
	1	0.12	2.80	1.02	0.11	14.14	3.11	-11.34	0.77	0.77	0.77
	2	0.11	2.73	0.99	0.11	13.96	3.07	-11.23	0.78	0.78	0.78
	3	0.11	2.72	0.99	0.10	13.76	3.03	-11.04	0.83	0.83	0.83
	4	0.12	2.79	1.02	0.10	13.62	3.04	-10.84	0.93	0.93	0.93
	5	0.13	2.91	1.07	0.11	13.68	3.10	-10.77	0.98	0.98	0.98
	6	0.14	2.97	1.10	0.12	13.86	3.18	-10.88	1.12	1.12	1.12
	7	0.16	3.13	1.17	0.13	14.02	3.27	-10.89	1.20	1.20	1.20
	8	0.17	3.24	1.21	0.15	14.13	3.37	-10.89	1.33	1.33	1.33
	9	0.19	3.38	1.27	0.16	14.14	3.47	-10.76	1.34	1.34	1.34
	10	0.19	3.40	1.27	0.17	14.00	3.54	-10.59	1.40	1.40	1.40
	11	0.20	3.46	1.30	0.18	13.56	3.59	-10.11	1.37	1.37	1.37
	12	0.20	3.43	1.29	0.18	13.00	3.63	-9.57	1.39	1.39	1.39
	13	0.20	3.46	1.29	0.18	12.54	3.65	-9.08	1.33	1.33	1.33
	14	0.19	3.40	1.27	0.18	12.22	3.64	-8.82	1.26	1.26	1.26
	15	0.18	3.33	1.23	0.17	12.00	3.61	-8.68	1.23	1.23	1.23
	16	0.18	3.30	1.22	0.17	11.95	3.56	-8.66	1.15	1.15	1.15
	17	0.17	3.21	1.19	0.16	12.07	3.51	-8.86	1.10	1.10	1.10
	18	0.16	3.16	1.17	0.15	12.40	3.45	-9.24	1.08	1.08	1.08
	19	0.16	3.13	1.16	0.15	12.86	3.39	-9.74	1.04	1.04	1.04
	20	0.15	3.08	1.14	0.14	13.38	3.35	-10.31	1.00	1.00	1.00
	21	0.15	3.03	1.12	0.14	13.86	3.30	-10.83	0.96	0.96	0.96
	22	0.14	2.98	1.10	0.13	14.11	3.25	-11.14	0.91	0.91	0.91
	23	0.13	2.91	1.07	0.13	14.23	3.21	-11.32	0.86	0.86	0.86
Weekend	24	0.10	2.65	0.92	0.13	14.31	3.21	-11.66	0.61	0.61	0.61
	25	0.09	2.54	0.88	0.13	14.45	3.19	-11.91	0.59	0.59	0.59
	26	0.09	2.51	0.87	0.12	14.30	3.12	-11.79	0.58	0.58	0.58
	27	0.08	2.48	0.85	0.11	14.10	3.08	-11.62	0.54	0.54	0.54
	28	0.08	2.43	0.83	0.11	13.95	3.05	-11.52	0.53	0.53	0.53
	29	0.08	2.42	0.82	0.10	13.85	3.02	-11.43	0.56	0.56	0.56
	30	0.08	2.46	0.85	0.10	13.80	3.01	-11.34	0.59	0.59	0.59
	31	0.09	2.51	0.88	0.11	13.78	3.05	-11.27	0.66	0.66	0.66
	32	0.10	2.62	0.93	0.11	13.74	3.12	-11.12	0.80	0.80	0.80
	33	0.12	2.83	1.00	0.13	13.68	3.24	-10.85	0.91	0.91	0.91
	34	0.13	2.99	1.06	0.15	13.57	3.40	-10.58	1.01	1.01	1.01
	35	0.15	3.12	1.10	0.17	13.43	3.55	-10.31	1.01	1.01	1.01
	36	0.15	3.10	1.10	0.18	13.18	3.64	-10.08	0.99	0.99	0.99
	37	0.14	3.08	1.10	0.19	12.87	3.67	-9.78	0.96	0.96	0.96
	38	0.14	3.04	1.08	0.18	12.53	3.66	-9.48	0.88	0.88	0.88
	39	0.13	2.96	1.04	0.18	12.23	3.62	-9.27	0.87	0.87	0.87
	40	0.13	2.96	1.03	0.17	11.98	3.57	-9.02	0.89	0.89	0.89
	41	0.13	2.98	1.04	0.16	11.82	3.55	-8.84	0.86	0.86	0.86
	42	0.12	2.94	1.02	0.16	11.83	3.55	-8.89	0.88	0.88	0.88
	43	0.13	2.96	1.04	0.16	12.12	3.53	-9.16	0.86	0.86	0.86
	44	0.12	2.93	1.03	0.16	12.70	3.51	-9.77	0.78	0.78	0.78
	45	0.11	2.83	0.99	0.16	13.45	3.45	-10.62	0.76	0.76	0.76
	46	0.11	2.78	0.98	0.15	14.31	3.36	-11.53	0.71	0.71	0.71
	47	0.10	2.72	0.94	0.14	14.69	3.30	-11.98	0.68	0.68	0.68
Average											
	Weekday	0.158	3.1	1.15	0.144	13.4	3.35		1.09	1.09	1.09
	Weekend	0.112	2.8	0.97	0.144	13.4	3.35		0.77	0.77	0.77
	ADWF[1]	0.145	3.0	1.10	0.144	13.4	3.35		1.00	1.00	1.00
% Error											
	Weekday				-8.7%			11.38			
	Weekend				29.0%			11.98			

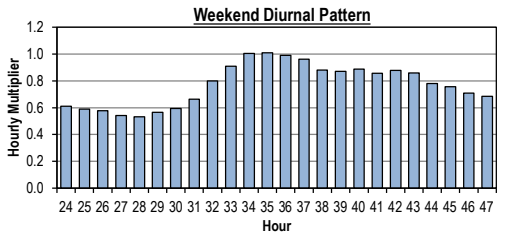
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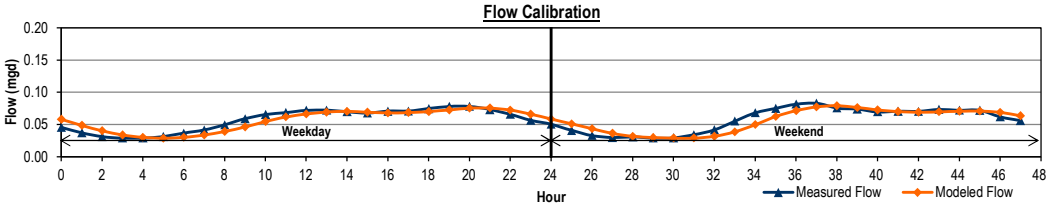


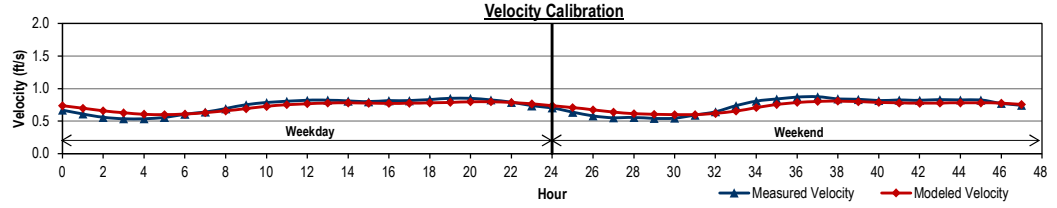


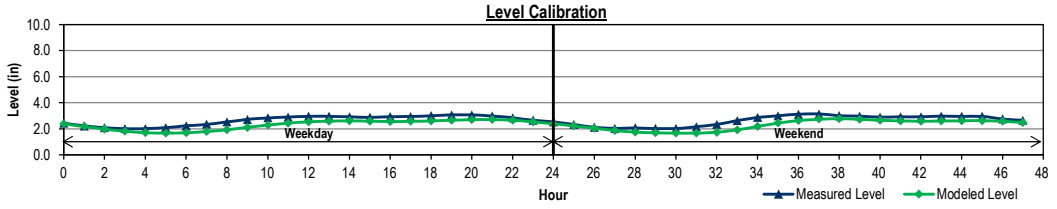
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A9 DRY WEATHER FLOW CALIBRATION

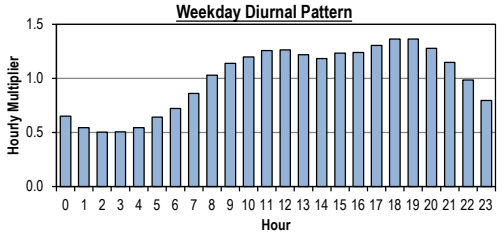
	Hour	Measured Data Flow (mgd)	Measured Data Level (in)	Measured Data Velocity (ft/s)	Modeled Data Flow (mgd)	Modeled Data Level (in)	Modeled Data Velocity (ft/s)	Level Diff (in)	Diurnal Initial Curve	Diurnal Modified Curve	Diurnal Calibrated Diurnal
Weekday	0	0.05	2.44	0.67	0.06	2.38	0.73	0.06	0.65	0.65	0.65
	1	0.04	2.23	0.61	0.05	2.18	0.70	0.05	0.54	0.54	0.54
	2	0.03	2.08	0.56	0.04	1.98	0.66	0.11	0.50	0.50	0.50
	3	0.03	2.01	0.54	0.03	1.81	0.63	0.20	0.51	0.51	0.51
	4	0.03	2.02	0.54	0.03	1.71	0.61	0.31	0.55	0.55	0.55
	5	0.03	2.09	0.56	0.03	1.67	0.60	0.43	0.64	0.64	0.64
	6	0.04	2.23	0.60	0.03	1.70	0.61	0.53	0.72	0.72	0.72
	7	0.04	2.35	0.64	0.03	1.79	0.63	0.55	0.86	0.86	0.86
	8	0.05	2.53	0.69	0.04	1.93	0.66	0.60	1.03	1.03	1.03
	9	0.06	2.72	0.75	0.05	2.11	0.69	0.61	1.14	1.14	1.14
	10	0.07	2.84	0.78	0.05	2.29	0.72	0.56	1.20	1.20	1.20
	11	0.07	2.90	0.80	0.06	2.44	0.75	0.46	1.26	1.26	1.26
	12	0.07	2.96	0.82	0.07	2.53	0.77	0.43	1.26	1.26	1.26
	13	0.07	2.96	0.82	0.07	2.59	0.78	0.37	1.22	1.22	1.22
	14	0.07	2.92	0.81	0.07	2.61	0.78	0.31	1.18	1.18	1.18
	15	0.07	2.89	0.80	0.07	2.59	0.78	0.29	1.23	1.23	1.23
	16	0.07	2.94	0.81	0.07	2.57	0.77	0.37	1.24	1.24	1.24
	17	0.07	2.94	0.81	0.07	2.58	0.77	0.37	1.30	1.30	1.30
	18	0.07	3.01	0.83	0.07	2.61	0.78	0.40	1.36	1.36	1.36
	19	0.08	3.07	0.85	0.07	2.65	0.79	0.41	1.36	1.36	1.36
	20	0.08	3.07	0.85	0.08	2.70	0.80	0.36	1.28	1.28	1.28
	21	0.07	2.98	0.83	0.08	2.71	0.80	0.27	1.15	1.15	1.15
	22	0.07	2.84	0.79	0.07	2.66	0.79	0.19	0.99	0.99	0.99
	23	0.06	2.66	0.74	0.07	2.54	0.76	0.13	0.79	0.79	0.79
Weekend	24	0.05	2.53	0.70	0.06	2.39	0.74	0.15	0.71	0.71	0.71
	25	0.04	2.33	0.64	0.05	2.22	0.71	0.11	0.57	0.57	0.57
	26	0.03	2.13	0.58	0.04	2.05	0.67	0.08	0.52	0.52	0.52
	27	0.03	2.04	0.55	0.04	1.88	0.64	0.16	0.54	0.54	0.54
	28	0.03	2.07	0.56	0.03	1.75	0.61	0.32	0.50	0.50	0.50
	29	0.03	2.02	0.54	0.03	1.69	0.60	0.33	0.51	0.51	0.51
	30	0.03	2.03	0.55	0.03	1.67	0.60	0.36	0.60	0.60	0.60
	31	0.03	2.16	0.59	0.03	1.67	0.60	0.49	0.73	0.73	0.73
	32	0.04	2.34	0.64	0.03	1.74	0.62	0.60	0.96	0.96	0.96
	33	0.06	2.63	0.73	0.04	1.92	0.65	0.71	1.19	1.19	1.19
	34	0.07	2.87	0.81	0.05	2.18	0.71	0.69	1.31	1.31	1.31
	35	0.08	3.00	0.84	0.06	2.44	0.75	0.56	1.42	1.42	1.42
	36	0.08	3.11	0.87	0.07	2.63	0.78	0.49	1.45	1.45	1.45
	37	0.08	3.14	0.87	0.08	2.74	0.80	0.40	1.32	1.32	1.32
	38	0.08	3.01	0.84	0.08	2.78	0.81	0.23	1.29	1.29	1.29
	39	0.07	2.97	0.83	0.08	2.73	0.80	0.24	1.22	1.22	1.22
	40	0.07	2.90	0.82	0.07	2.66	0.79	0.24	1.23	1.23	1.23
	41	0.07	2.92	0.82	0.07	2.61	0.78	0.30	1.23	1.23	1.23
	42	0.07	2.92	0.82	0.07	2.59	0.78	0.33	1.28	1.28	1.28
	43	0.07	2.97	0.83	0.07	2.60	0.78	0.37	1.26	1.26	1.26
	44	0.07	2.95	0.83	0.07	2.62	0.78	0.33	1.26	1.26	1.26
	45	0.07	2.95	0.82	0.07	2.62	0.78	0.33	1.08	1.08	1.08
	46	0.06	2.76	0.77	0.07	2.59	0.77	0.17	0.98	0.98	0.98
	47	0.06	2.65	0.74	0.06	2.49	0.76	0.16	0.88	0.88	0.88
Average											
	Weekday	0.057	2.7	0.73	0.056	2.3	0.72		1.00	1.00	1.00
	Weekend	0.057	2.6	0.73	0.056	2.3	0.72		1.00	1.00	1.00
	ADWF[1]	0.057	2.7	0.73	0.056	2.3	0.72		1.00	1.00	1.00
% Error											
	Weekday				-1.8%			0.61			
	Weekend				-1.9%			0.71			

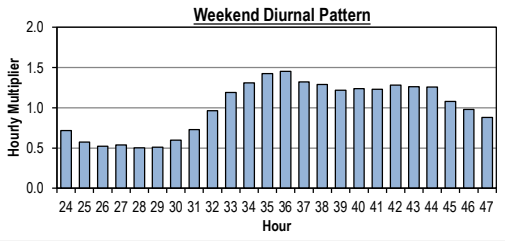
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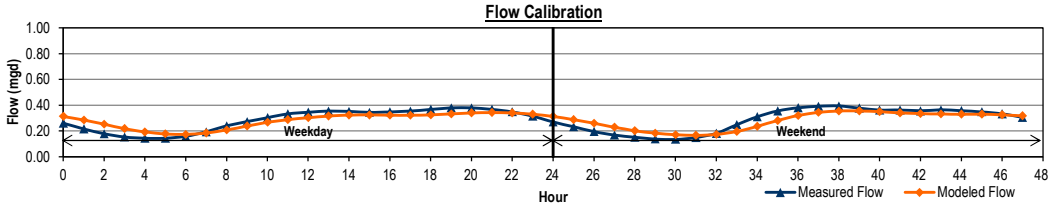


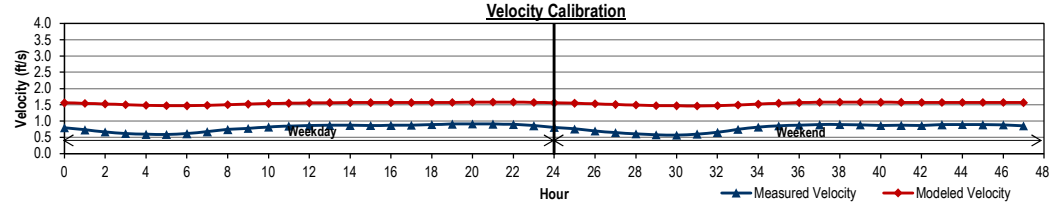


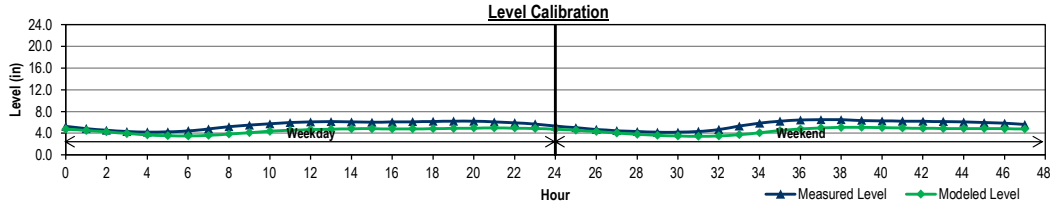
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A10 DRY WEATHER FLOW CALIBRATION

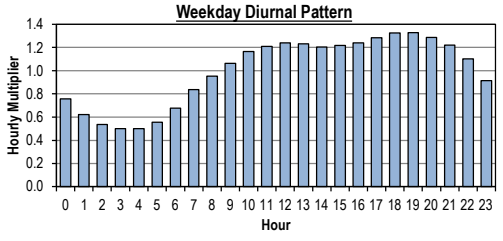
		Measured Data			Modeled Data				Diurnal		
	Hour	Flow (mgd)	Level (in)	Velocity (ft/s)	Flow (mgd)	Level (in)	Velocity (ft/s)	Level Diff (in)	Initial Curve	Modified Curve	Calibrated Diurnal
Weekday	0	0.26	5.25	0.80	0.31	4.73	1.56	0.52	0.76	0.76	0.76
	1	0.22	4.88	0.73	0.29	4.52	1.55	0.36	0.62	0.62	0.62
	2	0.18	4.54	0.67	0.25	4.24	1.53	0.30	0.54	0.54	0.54
	3	0.15	4.31	0.62	0.22	3.94	1.50	0.36	0.50	0.50	0.50
	4	0.14	4.21	0.60	0.19	3.70	1.48	0.52	0.50	0.50	0.50
	5	0.14	4.23	0.59	0.18	3.54	1.47	0.69	0.55	0.55	0.55
	6	0.16	4.42	0.62	0.17	3.51	1.47	0.91	0.68	0.68	0.68
	7	0.19	4.76	0.68	0.18	3.61	1.48	1.16	0.84	0.84	0.84
	8	0.24	5.18	0.74	0.21	3.83	1.50	1.35	0.95	0.95	0.95
	9	0.27	5.49	0.78	0.24	4.11	1.52	1.38	1.06	1.06	1.06
	10	0.30	5.73	0.82	0.27	4.35	1.54	1.38	1.17	1.17	1.17
	11	0.33	5.96	0.85	0.29	4.53	1.55	1.44	1.21	1.21	1.21
	12	0.35	6.07	0.86	0.30	4.66	1.56	1.41	1.24	1.24	1.24
	13	0.35	6.12	0.87	0.32	4.75	1.56	1.37	1.23	1.23	1.23
	14	0.35	6.09	0.87	0.32	4.81	1.57	1.28	1.20	1.20	1.20
	15	0.34	6.03	0.87	0.32	4.82	1.57	1.21	1.22	1.22	1.22
	16	0.35	6.06	0.87	0.32	4.80	1.57	1.26	1.24	1.24	1.24
	17	0.35	6.10	0.88	0.32	4.80	1.57	1.30	1.28	1.28	1.28
	18	0.37	6.17	0.89	0.33	4.83	1.57	1.34	1.33	1.33	1.33
	19	0.38	6.23	0.91	0.33	4.88	1.57	1.35	1.33	1.33	1.33
	20	0.38	6.21	0.92	0.34	4.94	1.58	1.27	1.29	1.29	1.29
	21	0.37	6.10	0.91	0.34	4.96	1.58	1.14	1.22	1.22	1.22
	22	0.35	5.92	0.90	0.34	4.93	1.58	0.99	1.10	1.10	1.10
	23	0.31	5.67	0.86	0.33	4.86	1.57	0.81	0.92	0.92	0.92
Weekend	24	0.27	5.32	0.81	0.31	4.73	1.56	0.59	0.81	0.81	0.81
	25	0.23	5.01	0.76	0.29	4.53	1.55	0.47	0.68	0.68	0.68
	26	0.20	4.69	0.70	0.26	4.30	1.53	0.39	0.59	0.59	0.59
	27	0.17	4.46	0.65	0.23	4.04	1.51	0.42	0.53	0.53	0.53
	28	0.15	4.31	0.61	0.20	3.79	1.49	0.52	0.48	0.48	0.48
	29	0.14	4.18	0.58	0.18	3.60	1.48	0.58	0.47	0.47	0.47
	30	0.13	4.18	0.57	0.17	3.48	1.47	0.69	0.52	0.52	0.52
	31	0.15	4.32	0.60	0.17	3.43	1.47	0.89	0.64	0.64	0.64
	32	0.18	4.67	0.65	0.17	3.50	1.47	1.17	0.87	0.87	0.87
	33	0.25	5.29	0.75	0.20	3.72	1.49	1.58	1.09	1.09	1.09
	34	0.31	5.83	0.82	0.24	4.08	1.52	1.75	1.25	1.25	1.25
	35	0.36	6.22	0.86	0.28	4.47	1.55	1.74	1.33	1.33	1.33
	36	0.38	6.42	0.88	0.32	4.78	1.57	1.63	1.37	1.37	1.37
	37	0.39	6.48	0.89	0.34	4.97	1.58	1.51	1.38	1.38	1.38
	38	0.39	6.47	0.90	0.35	5.06	1.58	1.42	1.32	1.32	1.32
	39	0.38	6.34	0.88	0.36	5.06	1.58	1.28	1.27	1.27	1.27
	40	0.36	6.26	0.87	0.35	5.01	1.58	1.25	1.27	1.27	1.27
	41	0.36	6.22	0.87	0.34	4.95	1.58	1.27	1.25	1.25	1.25
	42	0.36	6.18	0.87	0.33	4.91	1.57	1.28	1.27	1.27	1.27
	43	0.36	6.15	0.89	0.33	4.88	1.57	1.27	1.25	1.25	1.25
	44	0.36	6.07	0.89	0.33	4.87	1.57	1.20	1.22	1.22	1.22
	45	0.35	5.96	0.89	0.33	4.86	1.57	1.10	1.17	1.17	1.17
	46	0.33	5.83	0.88	0.33	4.82	1.57	1.01	1.07	1.07	1.07
	47	0.31	5.60	0.85	0.32	4.76	1.57	0.84	0.94	0.94	0.94
Average											
	Weekday	0.285	5.5	0.80	0.280	4.4	1.54		1.00	1.00	1.00
	Weekend	0.286	5.5	0.79	0.280	4.4	1.54		1.00	1.00	1.00
	ADWF[1]	0.285	5.5	0.79	0.280	4.4	1.54		1.00	1.00	1.00
% Error											
	Weekday				-1.9%			1.44			
	Weekend				-2.0%			1.75			

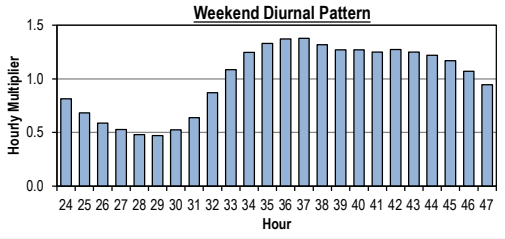
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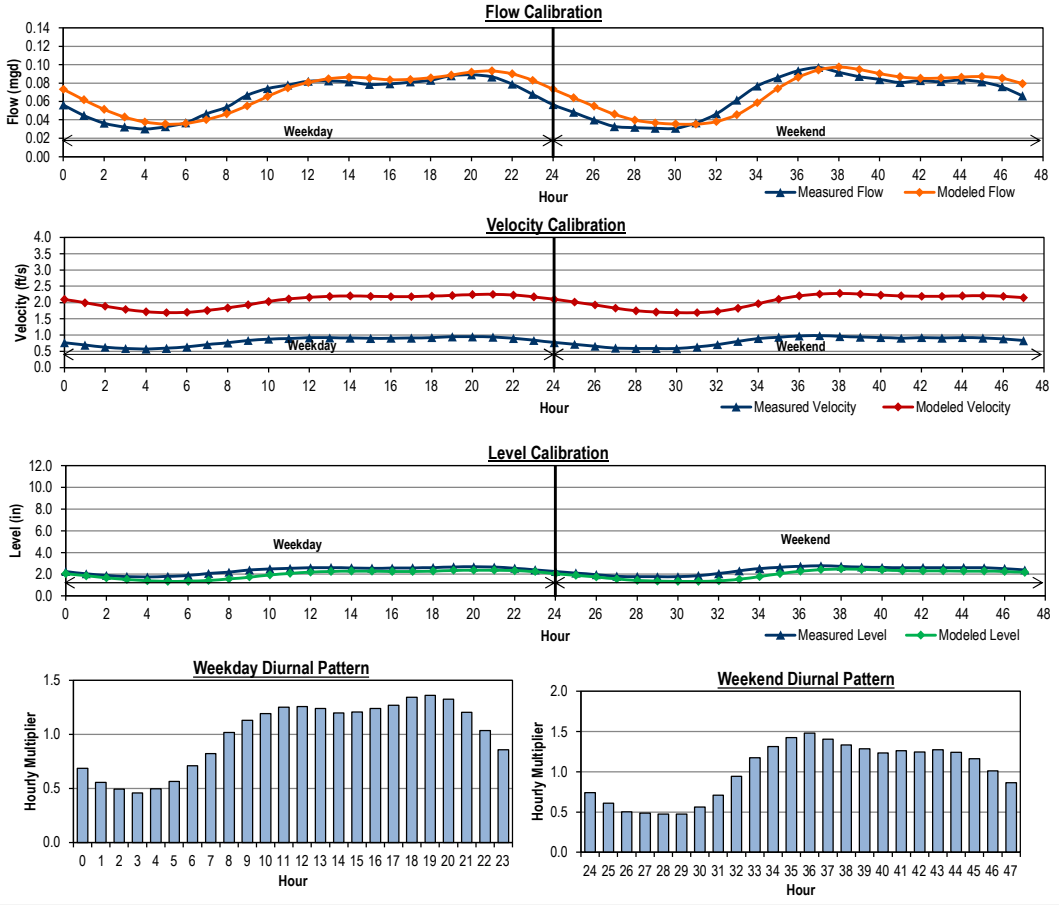




City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A11 DRY WEATHER FLOW CALIBRATION

		Measured Data			Modeled Data				Diurnal		
	Hour	Flow (mgd)	Level (in)	Velocity (ft/s)	Flow (mgd)	Level (in)	Velocity (ft/s)	Level Diff (in)	Initial Curve	Modified Curve	Calibrated Diurnal
Weekday	0	0.06	2.23	0.77	0.07	2.05	2.10	0.18	0.69	0.69	0.69
	1	0.04	2.04	0.69	0.06	1.86	1.99	0.18	0.56	0.56	0.56
	2	0.04	1.88	0.63	0.05	1.66	1.89	0.22	0.49	0.49	0.49
	3	0.03	1.79	0.59	0.04	1.52	1.79	0.27	0.46	0.46	0.46
	4	0.03	1.74	0.57	0.04	1.40	1.72	0.34	0.50	0.50	0.50
	5	0.03	1.79	0.60	0.04	1.34	1.69	0.45	0.56	0.56	0.56
	6	0.04	1.89	0.64	0.04	1.35	1.70	0.54	0.71	0.71	0.71
	7	0.05	2.07	0.71	0.04	1.43	1.76	0.64	0.82	0.82	0.82
	8	0.05	2.19	0.76	0.05	1.56	1.84	0.63	1.02	1.02	1.02
	9	0.07	2.38	0.84	0.06	1.73	1.93	0.65	1.13	1.13	1.13
	10	0.07	2.49	0.88	0.07	1.94	2.03	0.55	1.19	1.19	1.19
	11	0.08	2.54	0.90	0.07	2.08	2.11	0.46	1.25	1.25	1.25
	12	0.08	2.59	0.92	0.08	2.18	2.16	0.41	1.26	1.26	1.26
	13	0.08	2.60	0.92	0.08	2.25	2.19	0.35	1.24	1.24	1.24
	14	0.08	2.58	0.91	0.09	2.28	2.20	0.30	1.20	1.20	1.20
	15	0.08	2.55	0.90	0.09	2.27	2.19	0.28	1.21	1.21	1.21
	16	0.08	2.56	0.90	0.08	2.25	2.18	0.31	1.24	1.24	1.24
	17	0.08	2.58	0.91	0.08	2.25	2.18	0.33	1.27	1.27	1.27
	18	0.08	2.61	0.92	0.09	2.29	2.20	0.32	1.35	1.35	1.35
	19	0.09	2.67	0.95	0.09	2.35	2.22	0.32	1.36	1.36	1.36
	20	0.09	2.68	0.95	0.09	2.36	2.24	0.32	1.32	1.32	1.32
	21	0.09	2.65	0.94	0.09	2.37	2.25	0.28	1.20	1.20	1.20
	22	0.08	2.55	0.90	0.09	2.32	2.23	0.23	1.04	1.04	1.04
	23	0.07	2.41	0.84	0.08	2.23	2.17	0.18	0.86	0.86	0.86
Weekend	24	0.06	2.24	0.77	0.07	2.05	2.10	0.19	0.74	0.74	0.74
	25	0.05	2.11	0.72	0.06	1.90	2.01	0.20	0.61	0.61	0.61
	26	0.04	1.96	0.66	0.06	1.73	1.93	0.23	0.50	0.50	0.50
	27	0.03	1.81	0.60	0.05	1.56	1.83	0.24	0.48	0.48	0.48
	28	0.03	1.78	0.59	0.04	1.43	1.75	0.35	0.47	0.47	0.47
	29	0.03	1.77	0.59	0.04	1.37	1.71	0.40	0.47	0.47	0.47
	30	0.03	1.76	0.59	0.04	1.34	1.69	0.42	0.56	0.56	0.56
	31	0.04	1.87	0.64	0.04	1.34	1.69	0.54	0.71	0.71	0.71
	32	0.05	2.06	0.71	0.04	1.39	1.73	0.67	0.94	0.94	0.94
	33	0.06	2.31	0.81	0.05	1.53	1.82	0.78	1.17	1.17	1.17
	34	0.08	2.52	0.89	0.06	1.79	1.97	0.74	1.31	1.31	1.31
	35	0.09	2.64	0.94	0.07	2.05	2.11	0.59	1.43	1.43	1.43
	36	0.09	2.73	0.97	0.09	2.27	2.20	0.46	1.48	1.48	1.48
	37	0.10	2.77	0.99	0.09	2.41	2.26	0.36	1.40	1.40	1.40
	38	0.09	2.72	0.96	0.10	2.47	2.28	0.25	1.33	1.33	1.33
	39	0.09	2.66	0.94	0.09	2.44	2.26	0.21	1.28	1.28	1.28
	40	0.08	2.62	0.92	0.09	2.38	2.23	0.25	1.23	1.23	1.23
	41	0.08	2.59	0.91	0.09	2.32	2.20	0.26	1.26	1.26	1.26
	42	0.08	2.61	0.92	0.09	2.31	2.19	0.30	1.24	1.24	1.24
	43	0.08	2.59	0.91	0.09	2.31	2.19	0.28	1.27	1.27	1.27
	44	0.08	2.61	0.92	0.09	2.28	2.20	0.33	1.24	1.24	1.24
	45	0.08	2.59	0.91	0.09	2.28	2.21	0.30	1.16	1.16	1.16
	46	0.08	2.52	0.88	0.09	2.25	2.19	0.27	1.01	1.01	1.01
	47	0.07	2.38	0.83	0.08	2.18	2.15	0.21	0.86	0.86	0.86
Average											
	Weekday	0.065	2.3	0.82	0.069	2.0	2.04		1.00	1.00	1.00
	Weekend	0.066	2.3	0.82	0.069	2.0	2.04		1.01	1.01	1.01
	ADWF[1]	0.065	2.3	0.82	0.069	2.0	2.04		1.00	1.00	1.00
% Error											
	Weekday				5.9%			0.65			
	Weekend				4.9%			0.78			

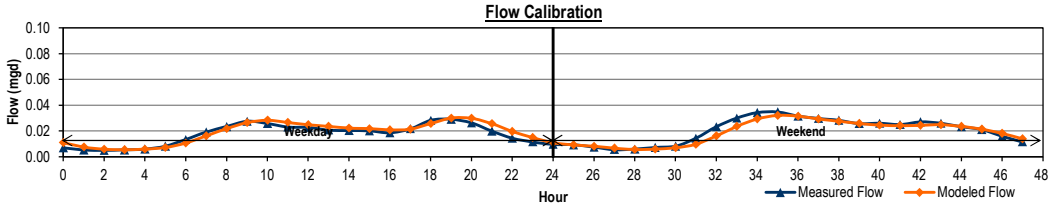
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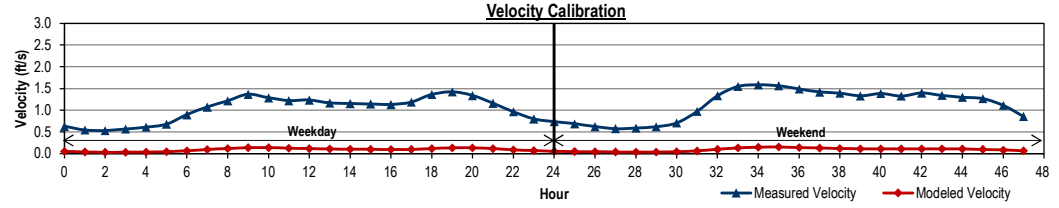


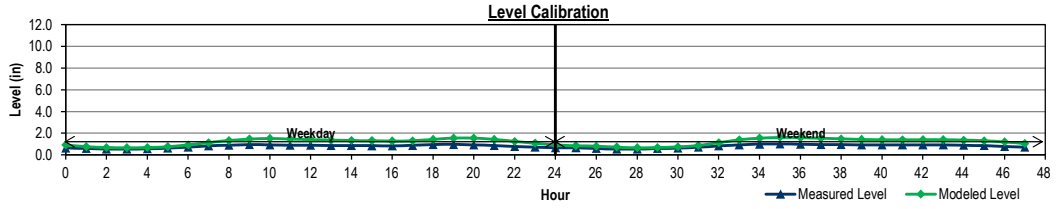
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A12 DRY WEATHER FLOW CALIBRATION

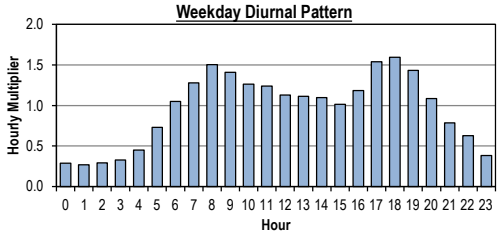
	Hour	Measured Data Flow (mgd)	Measured Data Level (in)	Measured Data Velocity (ft/s)	Modeled Data Flow (mgd)	Modeled Data Level (in)	Modeled Data Velocity (ft/s)	Level Diff (in)	Diurnal Initial Curve	Diurnal Modified Curve	Diurnal Calibrated Diurnal
Weekday	0	0.01	0.64	0.63	0.01	0.92	0.05	-0.28	0.29	0.29	0.29
	1	0.01	0.58	0.55	0.01	0.76	0.04	-0.18	0.27	0.27	0.27
	2	0.00	0.55	0.53	0.01	0.67	0.03	-0.12	0.29	0.29	0.29
	3	0.01	0.54	0.57	0.01	0.65	0.03	-0.11	0.33	0.33	0.33
	4	0.01	0.56	0.61	0.01	0.68	0.04	-0.12	0.45	0.45	0.45
	5	0.01	0.63	0.68	0.01	0.75	0.05	-0.12	0.73	0.73	0.73
	6	0.01	0.72	0.90	0.01	0.91	0.07	-0.19	1.05	1.05	1.05
	7	0.02	0.84	1.08	0.02	1.14	0.10	-0.30	1.28	1.28	1.28
	8	0.02	0.90	1.22	0.02	1.32	0.12	-0.43	1.50	1.50	1.50
	9	0.03	0.94	1.37	0.03	1.46	0.14	-0.52	1.41	1.41	1.41
	10	0.03	0.93	1.29	0.03	1.51	0.14	-0.58	1.26	1.26	1.26
	11	0.02	0.89	1.22	0.03	1.46	0.13	-0.57	1.24	1.24	1.24
	12	0.02	0.89	1.23	0.02	1.41	0.12	-0.52	1.13	1.13	1.13
	13	0.02	0.86	1.17	0.02	1.37	0.11	-0.50	1.11	1.11	1.11
	14	0.02	0.86	1.15	0.02	1.33	0.10	-0.47	1.10	1.10	1.10
	15	0.02	0.85	1.14	0.02	1.31	0.10	-0.46	1.02	1.02	1.02
	16	0.02	0.83	1.13	0.02	1.29	0.10	-0.45	1.18	1.18	1.18
	17	0.02	0.88	1.19	0.02	1.30	0.10	-0.42	1.54	1.54	1.54
	18	0.03	0.95	1.36	0.03	1.43	0.12	-0.48	1.59	1.59	1.59
	19	0.03	0.97	1.42	0.03	1.55	0.13	-0.58	1.43	1.43	1.43
	20	0.03	0.93	1.34	0.03	1.55	0.13	-0.61	1.09	1.09	1.09
	21	0.02	0.85	1.16	0.03	1.43	0.12	-0.58	0.78	0.78	0.78
	22	0.01	0.77	0.97	0.02	1.25	0.09	-0.48	0.63	0.63	0.63
	23	0.01	0.72	0.80	0.01	1.08	0.07	-0.36	0.38	0.38	0.38
Weekend	24	0.01	0.66	0.74	0.01	0.92	0.05	-0.26	0.51	0.51	0.51
	25	0.01	0.65	0.69	0.01	0.84	0.05	-0.19	0.41	0.41	0.41
	26	0.01	0.60	0.63	0.01	0.80	0.05	-0.20	0.30	0.30	0.30
	27	0.01	0.54	0.58	0.01	0.72	0.04	-0.18	0.32	0.32	0.32
	28	0.01	0.53	0.59	0.01	0.66	0.04	-0.12	0.39	0.39	0.39
	29	0.01	0.60	0.62	0.01	0.68	0.04	-0.08	0.45	0.45	0.45
	30	0.01	0.62	0.71	0.01	0.74	0.05	-0.12	0.79	0.79	0.79
	31	0.01	0.71	0.97	0.01	0.88	0.06	-0.17	1.27	1.27	1.27
	32	0.02	0.82	1.33	0.02	1.14	0.10	-0.31	1.64	1.64	1.64
	33	0.03	0.92	1.55	0.02	1.38	0.13	-0.47	1.87	1.87	1.87
	34	0.03	1.00	1.59	0.03	1.54	0.15	-0.54	1.90	1.90	1.90
	35	0.03	1.01	1.56	0.03	1.61	0.15	-0.59	1.72	1.72	1.72
	36	0.03	0.99	1.49	0.03	1.59	0.14	-0.60	1.62	1.62	1.62
	37	0.03	0.95	1.42	0.03	1.53	0.13	-0.57	1.55	1.55	1.55
	38	0.03	0.95	1.39	0.03	1.48	0.12	-0.53	1.40	1.40	1.40
	39	0.03	0.93	1.33	0.03	1.43	0.11	-0.50	1.42	1.42	1.42
	40	0.03	0.91	1.39	0.02	1.39	0.11	-0.48	1.37	1.37	1.37
	41	0.02	0.93	1.32	0.02	1.38	0.11	-0.45	1.48	1.48	1.48
	42	0.03	0.93	1.40	0.02	1.39	0.11	-0.46	1.42	1.42	1.42
	43	0.03	0.92	1.34	0.02	1.40	0.11	-0.48	1.27	1.27	1.27
	44	0.02	0.89	1.30	0.02	1.37	0.11	-0.48	1.15	1.15	1.15
	45	0.02	0.85	1.27	0.02	1.30	0.10	-0.45	0.87	0.87	0.87
	46	0.02	0.78	1.11	0.02	1.20	0.09	-0.42	0.63	0.63	0.63
	47	0.01	0.71	0.86	0.01	1.05	0.07	-0.33	0.53	0.53	0.53
Average											
	Weekday	0.018	0.8	1.03	0.019	1.2	0.09		0.96	0.96	0.96
	Weekend	0.020	0.8	1.13	0.019	1.2	0.09		1.09	1.09	1.09
	ADWF[1]	0.018	0.8	1.06	0.019	1.2	0.09		1.00	1.00	1.00
% Error											
	Weekday				7.2%			0.61			
	Weekend				-5.7%			0.60			

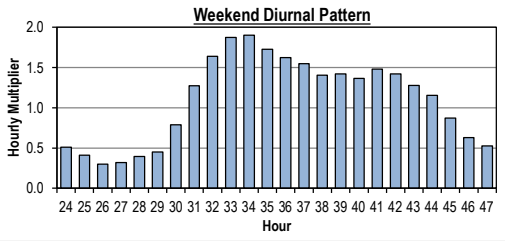
Note:







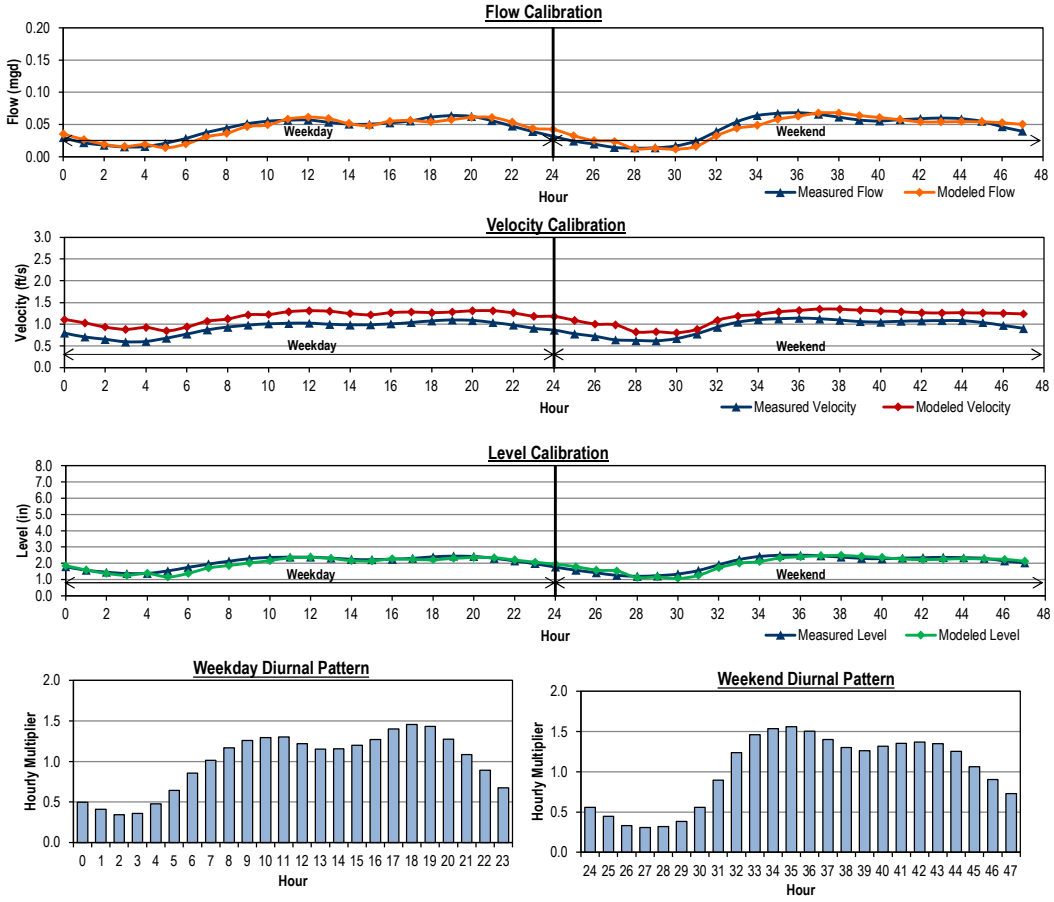




City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A13 DRY WEATHER FLOW CALIBRATION

		Measured Data			Modeled Data				Diurnal		
	Hour	Flow (mgd)	Level (in)	Velocity (ft/s)	Flow (mgd)	Level (in)	Velocity (ft/s)	Level Diff (in)	Initial Curve	Modified Curve	Calibrated Diurnal
Weekday	0	0.03	1.79	0.80	0.04	1.85	1.11	-0.06	0.50	0.50	0.50
	1	0.02	1.57	0.71	0.03	1.59	1.03	-0.01	0.41	0.41	0.41
	2	0.02	1.46	0.65	0.02	1.38	0.93	0.08	0.34	0.34	0.34
	3	0.02	1.37	0.60	0.02	1.27	0.88	0.11	0.36	0.36	0.36
	4	0.02	1.38	0.60	0.02	1.39	0.93	-0.01	0.48	0.48	0.48
	5	0.02	1.54	0.68	0.01	1.17	0.85	0.37	0.65	0.65	0.65
	6	0.03	1.75	0.77	0.02	1.38	0.94	0.36	0.86	0.86	0.86
	7	0.04	1.96	0.87	0.03	1.72	1.07	0.24	1.02	1.02	1.02
	8	0.04	2.12	0.93	0.04	1.86	1.12	0.26	1.17	1.17	1.17
	9	0.05	2.28	0.98	0.05	2.02	1.22	0.26	1.26	1.26	1.26
	10	0.06	2.35	1.01	0.05	2.16	1.23	0.19	1.30	1.30	1.30
	11	0.06	2.38	1.02	0.06	2.33	1.29	0.05	1.30	1.30	1.30
	12	0.06	2.38	1.02	0.06	2.36	1.31	0.02	1.22	1.22	1.22
	13	0.05	2.32	1.00	0.06	2.30	1.30	0.02	1.15	1.15	1.15
	14	0.05	2.25	0.99	0.05	2.16	1.25	0.08	1.15	1.15	1.15
	15	0.05	2.22	0.99	0.05	2.15	1.22	0.07	1.20	1.20	1.20
	16	0.05	2.26	1.01	0.05	2.27	1.26	-0.01	1.27	1.27	1.27
	17	0.06	2.31	1.04	0.06	2.24	1.28	0.07	1.40	1.40	1.40
	18	0.06	2.40	1.08	0.05	2.22	1.26	0.18	1.46	1.46	1.46
	19	0.06	2.45	1.10	0.06	2.31	1.28	0.14	1.43	1.43	1.43
	20	0.06	2.43	1.09	0.06	2.36	1.31	0.07	1.28	1.28	1.28
	21	0.06	2.31	1.04	0.06	2.34	1.31	-0.03	1.08	1.08	1.08
	22	0.05	2.15	0.98	0.05	2.20	1.26	-0.05	0.89	0.89	0.89
	23	0.04	1.98	0.91	0.04	2.06	1.18	-0.09	0.67	0.67	0.67
Weekend	24	0.03	1.77	0.86	0.04	1.95	1.18	-0.18	0.56	0.56	0.56
	25	0.02	1.58	0.78	0.03	1.79	1.09	-0.21	0.45	0.45	0.45
	26	0.02	1.42	0.72	0.03	1.58	1.00	-0.16	0.33	0.33	0.33
	27	0.01	1.26	0.64	0.02	1.53	0.99	-0.26	0.31	0.31	0.31
	28	0.01	1.21	0.63	0.01	1.12	0.82	0.09	0.32	0.32	0.32
	29	0.01	1.24	0.62	0.01	1.15	0.83	0.08	0.38	0.38	0.38
	30	0.02	1.34	0.67	0.01	1.07	0.81	0.27	0.56	0.56	0.56
	31	0.02	1.55	0.78	0.02	1.26	0.88	0.30	0.89	0.89	0.89
	32	0.04	1.91	0.93	0.03	1.72	1.09	0.19	1.24	1.24	1.24
	33	0.05	2.23	1.05	0.04	2.01	1.19	0.22	1.46	1.46	1.46
	34	0.06	2.43	1.11	0.05	2.11	1.23	0.32	1.53	1.53	1.53
	35	0.07	2.49	1.13	0.06	2.33	1.29	0.16	1.56	1.56	1.56
	36	0.07	2.50	1.14	0.06	2.40	1.32	0.10	1.50	1.50	1.50
	37	0.07	2.46	1.12	0.07	2.47	1.35	-0.01	1.40	1.40	1.40
	38	0.06	2.38	1.10	0.07	2.49	1.35	-0.10	1.30	1.30	1.30
	39	0.06	2.31	1.06	0.06	2.43	1.32	-0.12	1.26	1.26	1.26
	40	0.06	2.28	1.05	0.06	2.36	1.31	-0.08	1.31	1.31	1.31
	41	0.06	2.32	1.07	0.06	2.26	1.29	0.05	1.35	1.35	1.35
	42	0.06	2.35	1.08	0.05	2.22	1.26	0.13	1.37	1.37	1.37
	43	0.06	2.36	1.08	0.05	2.25	1.26	0.11	1.35	1.35	1.35
	44	0.06	2.34	1.08	0.05	2.28	1.26	0.07	1.25	1.25	1.25
	45	0.05	2.30	1.04	0.05	2.27	1.26	0.03	1.06	1.06	1.06
	46	0.05	2.15	0.97	0.05	2.25	1.25	-0.09	0.90	0.90	0.90
	47	0.04	2.02	0.90	0.05	2.13	1.24	-0.11	0.73	0.73	0.73
Average											
	Weekday	0.044	2.1	0.91	0.043	2.0	1.16		0.99	0.99	0.99
	Weekend	0.044	2.0	0.94	0.044	2.0	1.16		1.02	1.02	1.02
	ADWF[1]	0.044	2.0	0.92	0.043	2.0	1.16		1.00	1.00	1.00
% Error											
	Weekday				-1.1%			0.37			
	Weekend				-0.7%			0.32			

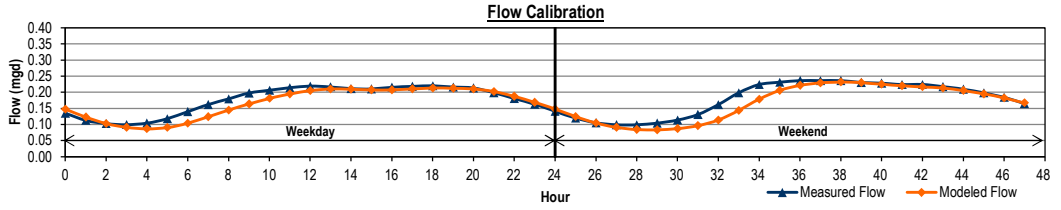
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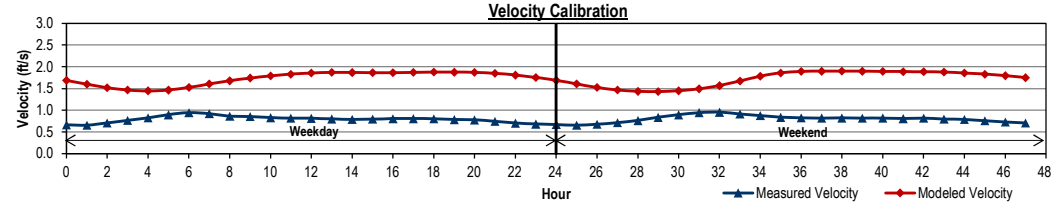


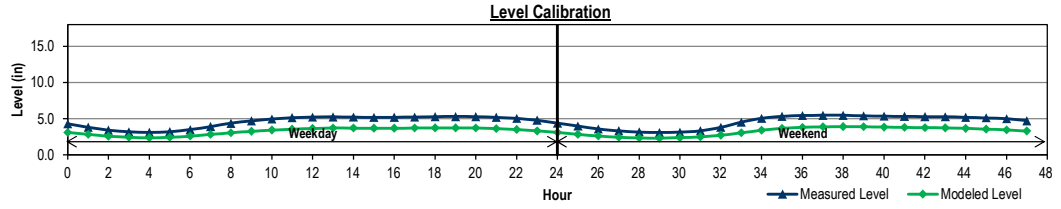
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A14 DRY WEATHER FLOW CALIBRATION

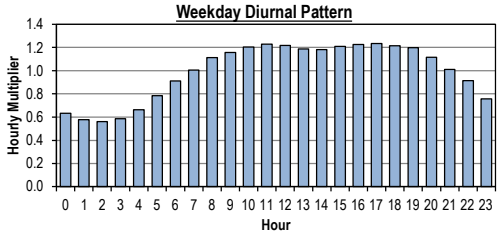
	Hour	Measured Data Flow (mgd)	Measured Data Level (in)	Measured Data Velocity (ft/s)	Modeled Data Flow (mgd)	Modeled Data Level (in)	Modeled Data Velocity (ft/s)	Level Diff (in)	Diurnal Initial Curve	Diurnal Modified Curve	Diurnal Calibrated Diurnal
Weekday	0	0.14	4.29	0.66	0.15	3.09	1.69	1.20	0.63	0.63	0.63
	1	0.11	3.83	0.66	0.12	2.83	1.60	1.00	0.58	0.58	0.58
	2	0.10	3.42	0.71	0.10	2.58	1.52	0.84	0.56	0.56	0.56
	3	0.10	3.19	0.77	0.09	2.43	1.47	0.76	0.59	0.59	0.59
	4	0.10	3.12	0.83	0.09	2.37	1.45	0.75	0.66	0.66	0.66
	5	0.12	3.21	0.90	0.09	2.42	1.47	0.79	0.79	0.79	0.79
	6	0.14	3.49	0.94	0.10	2.59	1.53	0.90	0.91	0.91	0.91
	7	0.16	3.91	0.92	0.12	2.83	1.61	1.09	1.01	1.01	1.01
	8	0.18	4.37	0.86	0.14	3.06	1.68	1.32	1.11	1.11	1.11
	9	0.20	4.71	0.86	0.16	3.25	1.74	1.46	1.16	1.16	1.16
	10	0.21	4.94	0.83	0.18	3.43	1.79	1.51	1.20	1.20	1.20
	11	0.21	5.13	0.82	0.19	3.56	1.83	1.57	1.23	1.23	1.23
	12	0.22	5.22	0.81	0.21	3.66	1.86	1.57	1.22	1.22	1.22
	13	0.22	5.25	0.80	0.21	3.70	1.87	1.55	1.19	1.19	1.19
	14	0.21	5.21	0.79	0.21	3.70	1.87	1.51	1.18	1.18	1.18
	15	0.21	5.17	0.80	0.21	3.68	1.86	1.49	1.21	1.21	1.21
	16	0.22	5.20	0.81	0.21	3.68	1.86	1.52	1.23	1.23	1.23
	17	0.22	5.23	0.81	0.21	3.71	1.87	1.52	1.23	1.23	1.23
	18	0.22	5.28	0.80	0.21	3.73	1.88	1.55	1.21	1.21	1.21
	19	0.22	5.30	0.79	0.21	3.73	1.88	1.58	1.20	1.20	1.20
	20	0.21	5.29	0.78	0.21	3.70	1.87	1.59	1.12	1.12	1.12
	21	0.20	5.19	0.75	0.20	3.64	1.85	1.55	1.01	1.01	1.01
	22	0.18	5.03	0.71	0.19	3.49	1.81	1.53	0.91	0.91	0.91
	23	0.16	4.78	0.68	0.17	3.31	1.76	1.46	0.76	0.76	0.76
Weekend	24	0.14	4.40	0.67	0.15	3.10	1.69	1.30	0.67	0.67	0.67
	25	0.12	3.99	0.66	0.12	2.84	1.61	1.15	0.59	0.59	0.59
	26	0.11	3.59	0.68	0.10	2.61	1.53	0.98	0.56	0.56	0.56
	27	0.10	3.32	0.72	0.09	2.43	1.47	0.89	0.56	0.56	0.56
	28	0.10	3.17	0.77	0.08	2.34	1.43	0.83	0.59	0.59	0.59
	29	0.10	3.09	0.84	0.08	2.33	1.43	0.77	0.64	0.64	0.64
	30	0.11	3.14	0.90	0.09	2.38	1.45	0.76	0.73	0.73	0.73
	31	0.13	3.32	0.95	0.10	2.50	1.49	0.83	0.91	0.91	0.91
	32	0.16	3.81	0.96	0.11	2.71	1.57	1.09	1.11	1.11	1.11
	33	0.20	4.51	0.91	0.14	3.04	1.68	1.47	1.26	1.26	1.26
	34	0.22	5.04	0.88	0.18	3.40	1.79	1.64	1.30	1.30	1.30
	35	0.23	5.32	0.84	0.21	3.66	1.86	1.66	1.33	1.33	1.33
	36	0.24	5.44	0.83	0.22	3.80	1.89	1.64	1.32	1.32	1.32
	37	0.24	5.47	0.82	0.23	3.87	1.90	1.60	1.33	1.33	1.33
	38	0.24	5.47	0.82	0.23	3.90	1.90	1.57	1.30	1.30	1.30
	39	0.23	5.40	0.82	0.23	3.88	1.90	1.52	1.28	1.28	1.28
	40	0.23	5.35	0.82	0.22	3.84	1.89	1.51	1.26	1.26	1.26
	41	0.22	5.32	0.81	0.22	3.79	1.89	1.52	1.26	1.26	1.26
	42	0.22	5.29	0.82	0.22	3.77	1.89	1.53	1.22	1.22	1.22
	43	0.22	5.27	0.80	0.21	3.73	1.88	1.53	1.18	1.18	1.18
	44	0.21	5.19	0.79	0.21	3.66	1.86	1.52	1.11	1.11	1.11
	45	0.20	5.11	0.76	0.20	3.57	1.83	1.54	1.03	1.03	1.03
	46	0.18	4.99	0.73	0.18	3.45	1.80	1.54	0.93	0.93	0.93
	47	0.16	4.72	0.71	0.17	3.29	1.75	1.43	0.79	0.79	0.79
Average											
	Weekday	0.177	4.6	0.80	0.167	3.3	1.73		1.00	1.00	1.00
	Weekend	0.180	4.6	0.80	0.167	3.2	1.72		1.01	1.01	1.01
	ADWF[1]	0.178	4.6	0.80	0.167	3.3	1.73		1.00	1.00	1.00
% Error											
	Weekday				-6.0%			1.59			
	Weekend				-7.4%			1.66			

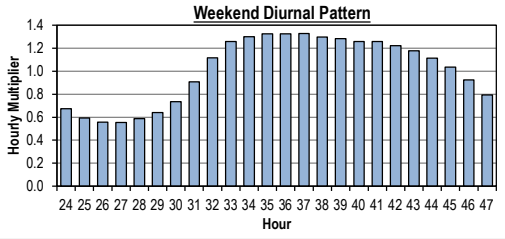
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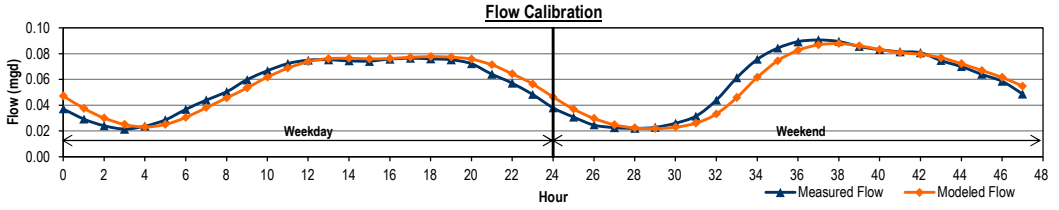


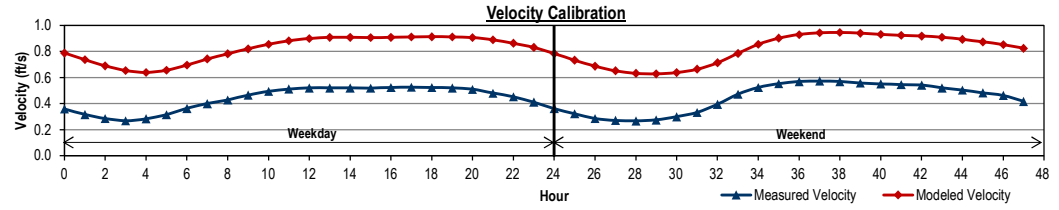


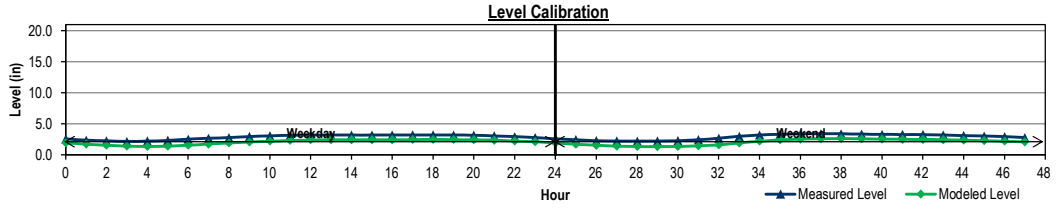
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A15 DRY WEATHER FLOW CALIBRATION

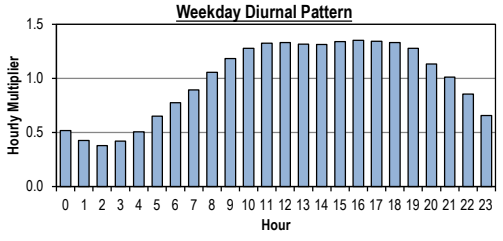
	Hour	Measured Data Flow (mgd)	Measured Data Level (in)	Measured Data Velocity (ft/s)	Modeled Data Flow (mgd)	Modeled Data Level (in)	Modeled Data Velocity (ft/s)	Level Diff (in)	Diurnal Initial Curve	Diurnal Modified Curve	Diurnal Calibrated Diurnal
Weekday	0	0.04	2.57	0.36	0.05	1.93	0.79	0.64	0.52	0.52	0.52
	1	0.03	2.39	0.32	0.04	1.73	0.74	0.66	0.43	0.43	0.43
	2	0.02	2.26	0.28	0.03	1.55	0.69	0.71	0.38	0.38	0.38
	3	0.02	2.18	0.27	0.03	1.42	0.65	0.76	0.42	0.42	0.42
	4	0.02	2.22	0.28	0.02	1.37	0.64	0.86	0.51	0.51	0.51
	5	0.03	2.35	0.31	0.03	1.42	0.66	0.93	0.65	0.65	0.65
	6	0.04	2.53	0.36	0.03	1.56	0.70	0.97	0.78	0.78	0.78
	7	0.04	2.67	0.40	0.04	1.74	0.74	0.93	0.89	0.89	0.89
	8	0.05	2.81	0.43	0.05	1.90	0.78	0.91	1.06	1.06	1.06
	9	0.06	2.97	0.47	0.05	2.05	0.82	0.91	1.18	1.18	1.18
	10	0.07	3.07	0.49	0.06	2.20	0.85	0.87	1.28	1.28	1.28
	11	0.07	3.16	0.51	0.07	2.32	0.88	0.83	1.33	1.33	1.33
	12	0.07	3.20	0.52	0.07	2.40	0.90	0.80	1.33	1.33	1.33
	13	0.08	3.21	0.52	0.08	2.44	0.91	0.77	1.32	1.32	1.32
	14	0.07	3.19	0.52	0.08	2.45	0.91	0.74	1.31	1.31	1.31
	15	0.07	3.19	0.52	0.08	2.44	0.91	0.75	1.34	1.34	1.34
	16	0.08	3.21	0.52	0.08	2.44	0.91	0.77	1.35	1.35	1.35
	17	0.08	3.23	0.53	0.08	2.46	0.91	0.77	1.34	1.34	1.34
	18	0.08	3.22	0.52	0.08	2.47	0.91	0.76	1.33	1.33	1.33
	19	0.08	3.22	0.52	0.08	2.46	0.91	0.76	1.28	1.28	1.28
	20	0.07	3.17	0.51	0.08	2.44	0.91	0.73	1.13	1.13	1.13
	21	0.06	3.05	0.48	0.07	2.37	0.89	0.68	1.01	1.01	1.01
	22	0.06	2.94	0.45	0.06	2.25	0.86	0.69	0.85	0.85	0.85
	23	0.05	2.79	0.41	0.06	2.11	0.83	0.68	0.66	0.66	0.66
Weekend	24	0.04	2.60	0.36	0.05	1.92	0.78	0.69	0.54	0.54	0.54
	25	0.03	2.45	0.32	0.04	1.71	0.73	0.73	0.44	0.44	0.44
	26	0.02	2.30	0.29	0.03	1.54	0.69	0.76	0.40	0.40	0.40
	27	0.02	2.24	0.27	0.02	1.41	0.65	0.82	0.39	0.39	0.39
	28	0.02	2.21	0.27	0.02	1.35	0.63	0.87	0.40	0.40	0.40
	29	0.02	2.23	0.27	0.02	1.33	0.63	0.90	0.46	0.46	0.46
	30	0.03	2.29	0.30	0.02	1.36	0.64	0.93	0.56	0.56	0.56
	31	0.03	2.43	0.33	0.03	1.45	0.66	0.98	0.78	0.78	0.78
	32	0.04	2.68	0.39	0.03	1.63	0.71	1.06	1.09	1.09	1.09
	33	0.06	2.98	0.47	0.05	1.91	0.78	1.08	1.34	1.34	1.34
	34	0.08	3.21	0.52	0.06	2.20	0.86	1.01	1.49	1.49	1.49
	35	0.08	3.33	0.55	0.07	2.41	0.90	0.92	1.58	1.58	1.58
	36	0.09	3.40	0.57	0.08	2.54	0.93	0.86	1.60	1.60	1.60
	37	0.09	3.41	0.57	0.09	2.60	0.94	0.81	1.58	1.58	1.58
	38	0.09	3.40	0.57	0.09	2.62	0.95	0.78	1.52	1.52	1.52
	39	0.09	3.34	0.56	0.09	2.59	0.94	0.75	1.47	1.47	1.47
	40	0.08	3.31	0.55	0.08	2.55	0.93	0.76	1.44	1.44	1.44
	41	0.08	3.29	0.55	0.08	2.52	0.92	0.77	1.43	1.43	1.43
	42	0.08	3.27	0.54	0.08	2.49	0.92	0.78	1.32	1.32	1.32
	43	0.07	3.19	0.52	0.08	2.45	0.91	0.74	1.24	1.24	1.24
	44	0.07	3.13	0.50	0.07	2.38	0.89	0.75	1.13	1.13	1.13
	45	0.06	3.04	0.48	0.07	2.29	0.87	0.74	1.04	1.04	1.04
	46	0.06	2.94	0.46	0.06	2.20	0.85	0.74	0.86	0.86	0.86
	47	0.05	2.78	0.42	0.05	2.08	0.82	0.71	0.67	0.67	0.67
Average											
	Weekday	0.056	2.9	0.44	0.057	2.1	0.82		0.99	0.99	0.99
	Weekend	0.058	2.9	0.44	0.057	2.1	0.81		1.03	1.03	1.03
	ADWF[1]	0.056	2.9	0.44	0.057	2.1	0.82		1.00	1.00	1.00
% Error											
	Weekday				2.0%			0.97			
	Weekend				-2.4%			1.08			

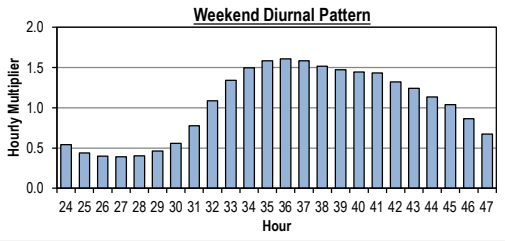
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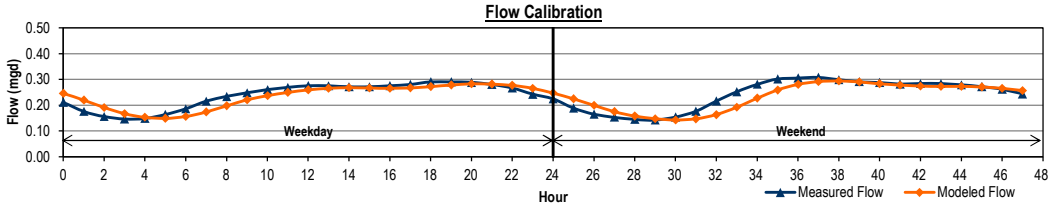


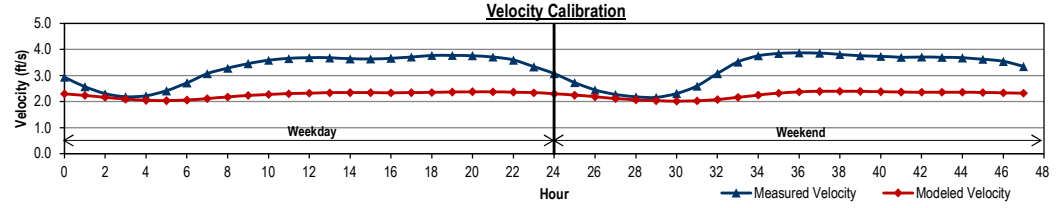


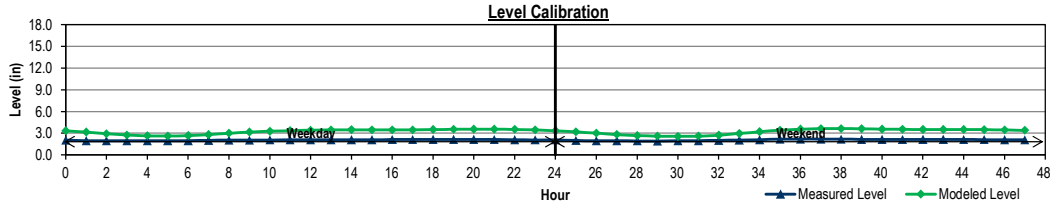
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE A16 DRY WEATHER FLOW CALIBRATION

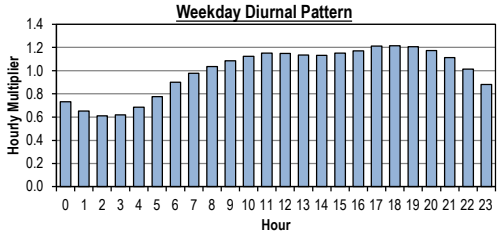
		Measured Data			Modeled Data				Diurnal		
	Hour	Flow (mgd)	Level (in)	Velocity (ft/s)	Flow (mgd)	Level (in)	Velocity (ft/s)	Level Diff (in)	Initial Curve	Modified Curve	Calibrated Diurnal
Weekday	0	0.21	2.05	2.93	0.25	3.32	2.30	-1.28	0.73	0.73	0.73
	1	0.18	1.98	2.57	0.22	3.15	2.24	-1.17	0.65	0.65	0.65
	2	0.16	1.97	2.30	0.19	2.94	2.16	-0.97	0.61	0.61	0.61
	3	0.15	1.95	2.19	0.17	2.75	2.09	-0.80	0.62	0.62	0.62
	4	0.15	1.95	2.22	0.15	2.64	2.05	-0.69	0.68	0.68	0.68
	5	0.16	1.97	2.41	0.15	2.61	2.04	-0.64	0.78	0.78	0.78
	6	0.19	1.98	2.72	0.16	2.67	2.06	-0.69	0.90	0.90	0.90
	7	0.22	2.01	3.07	0.17	2.81	2.11	-0.80	0.98	0.98	0.98
	8	0.23	2.04	3.28	0.20	2.99	2.18	-0.96	1.04	1.04	1.04
	9	0.25	2.05	3.46	0.22	3.15	2.23	-1.11	1.09	1.09	1.09
	10	0.26	2.06	3.59	0.24	3.26	2.27	-1.20	1.12	1.12	1.12
	11	0.27	2.08	3.65	0.25	3.35	2.30	-1.27	1.15	1.15	1.15
	12	0.28	2.10	3.69	0.26	3.41	2.32	-1.31	1.15	1.15	1.15
	13	0.28	2.10	3.68	0.27	3.45	2.34	-1.35	1.13	1.13	1.13
	14	0.27	2.10	3.64	0.27	3.47	2.34	-1.37	1.13	1.13	1.13
	15	0.27	2.10	3.64	0.27	3.46	2.34	-1.36	1.15	1.15	1.15
	16	0.28	2.11	3.66	0.27	3.45	2.34	-1.34	1.17	1.17	1.17
	17	0.28	2.12	3.71	0.27	3.46	2.34	-1.34	1.21	1.21	1.21
	18	0.29	2.15	3.77	0.27	3.50	2.35	-1.35	1.21	1.21	1.21
	19	0.29	2.15	3.77	0.28	3.53	2.37	-1.39	1.21	1.21	1.21
	20	0.29	2.14	3.76	0.28	3.56	2.37	-1.42	1.17	1.17	1.17
	21	0.28	2.12	3.71	0.28	3.56	2.37	-1.43	1.11	1.11	1.11
	22	0.27	2.09	3.59	0.28	3.52	2.36	-1.43	1.01	1.01	1.01
	23	0.24	2.06	3.34	0.27	3.45	2.34	-1.38	0.88	0.88	0.88
Weekend	24	0.22	2.07	3.07	0.25	3.33	2.30	-1.26	0.79	0.79	0.79
	25	0.19	1.99	2.73	0.22	3.18	2.25	-1.19	0.69	0.69	0.69
	26	0.17	1.96	2.45	0.20	3.00	2.18	-1.04	0.64	0.64	0.64
	27	0.15	1.96	2.28	0.17	2.82	2.12	-0.86	0.60	0.60	0.60
	28	0.14	1.93	2.18	0.16	2.68	2.07	-0.75	0.59	0.59	0.59
	29	0.14	1.92	2.16	0.15	2.60	2.03	-0.67	0.64	0.64	0.64
	30	0.15	1.94	2.31	0.14	2.56	2.02	-0.61	0.74	0.74	0.74
	31	0.18	1.97	2.60	0.15	2.59	2.03	-0.62	0.90	0.90	0.90
	32	0.22	2.02	3.08	0.16	2.73	2.08	-0.71	1.05	1.05	1.05
	33	0.25	2.05	3.52	0.19	2.95	2.16	-0.91	1.17	1.17	1.17
	34	0.28	2.10	3.75	0.23	3.20	2.25	-1.10	1.26	1.26	1.26
	35	0.30	2.17	3.85	0.26	3.41	2.32	-1.24	1.28	1.28	1.28
	36	0.31	2.18	3.87	0.28	3.55	2.37	-1.37	1.29	1.29	1.29
	37	0.31	2.20	3.86	0.29	3.62	2.39	-1.42	1.25	1.25	1.25
	38	0.30	2.17	3.81	0.29	3.63	2.40	-1.45	1.22	1.22	1.22
	39	0.29	2.15	3.76	0.29	3.60	2.39	-1.45	1.20	1.20	1.20
	40	0.29	2.15	3.74	0.28	3.56	2.38	-1.42	1.18	1.18	1.18
	41	0.28	2.13	3.70	0.28	3.53	2.36	-1.40	1.19	1.19	1.19
	42	0.28	2.14	3.71	0.27	3.51	2.36	-1.37	1.19	1.19	1.19
	43	0.28	2.14	3.70	0.27	3.50	2.35	-1.36	1.17	1.17	1.17
	44	0.28	2.13	3.68	0.27	3.50	2.35	-1.37	1.14	1.14	1.14
	45	0.27	2.11	3.63	0.27	3.48	2.35	-1.37	1.09	1.09	1.09
	46	0.26	2.09	3.54	0.27	3.45	2.34	-1.36	1.02	1.02	1.02
	47	0.24	2.07	3.35	0.26	3.39	2.32	-1.32	0.94	0.94	0.94
Average											
	Weekday	0.238	2.1	3.26	0.234	3.2	2.26		1.00	1.00	1.00
	Weekend	0.242	2.1	3.26	0.234	3.2	2.26		1.01	1.01	1.01
	ADWF[1]	0.239	2.1	3.26	0.234	3.2	2.26		1.00	1.00	1.00
% Error											
	Weekday				-2.0%			1.43			
	Weekend				-3.2%			1.45			

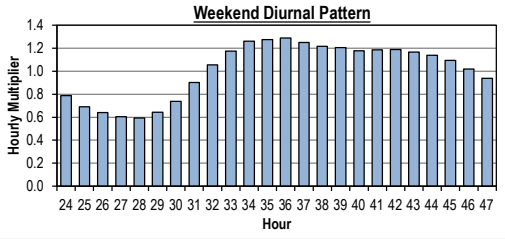
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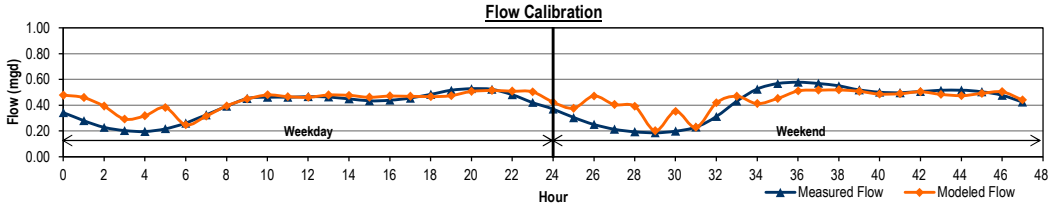


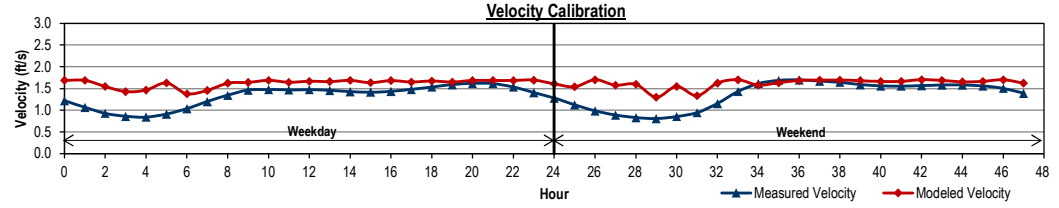


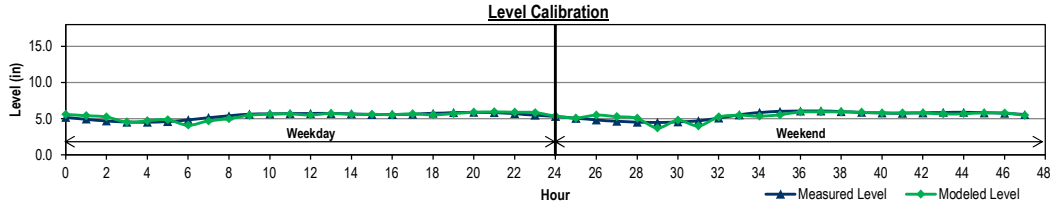
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE Y-1 DRY WEATHER FLOW CALIBRATION

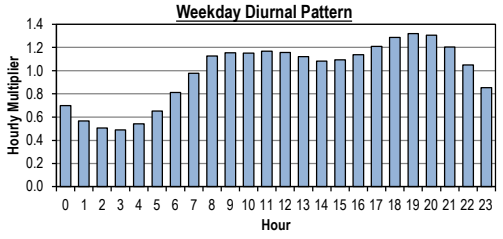
	Hour	Measured Data Flow (mgd)	Measured Data Level (in)	Measured Data Velocity (ft/s)	Modeled Data Flow (mgd)	Modeled Data Level (in)	Modeled Data Velocity (ft/s)	Level Diff (in)	Diurnal Initial Curve	Diurnal Modified Curve	Diurnal Calibrated Diurnal
Weekday	0	0.34	5.20	1.22	0.48	5.59	1.69	-0.39	0.70	0.70	0.70
	1	0.28	4.93	1.07	0.46	5.41	1.69	-0.48	0.57	0.57	0.57
	2	0.23	4.68	0.93	0.39	5.24	1.55	-0.57	0.51	0.51	0.51
	3	0.20	4.55	0.86	0.29	4.53	1.43	0.02	0.49	0.49	0.49
	4	0.20	4.51	0.84	0.32	4.71	1.46	-0.20	0.54	0.54	0.54
	5	0.22	4.61	0.91	0.38	4.86	1.63	-0.24	0.65	0.65	0.65
	6	0.26	4.85	1.04	0.25	4.10	1.38	0.75	0.81	0.81	0.81
	7	0.33	5.14	1.20	0.31	4.70	1.46	0.44	0.98	0.98	0.98
	8	0.39	5.40	1.34	0.39	4.98	1.62	0.42	1.13	1.13	1.13
	9	0.45	5.63	1.46	0.45	5.48	1.64	0.16	1.15	1.15	1.15
	10	0.46	5.68	1.48	0.48	5.63	1.69	0.05	1.15	1.15	1.15
	11	0.46	5.70	1.47	0.47	5.66	1.64	0.04	1.17	1.17	1.17
	12	0.47	5.73	1.47	0.46	5.52	1.67	0.21	1.16	1.16	1.16
	13	0.46	5.73	1.46	0.48	5.71	1.66	0.02	1.12	1.12	1.12
	14	0.45	5.68	1.43	0.48	5.59	1.69	0.09	1.08	1.08	1.08
	15	0.43	5.58	1.42	0.46	5.63	1.64	-0.04	1.10	1.10	1.10
	16	0.44	5.58	1.43	0.47	5.55	1.68	0.03	1.14	1.14	1.14
	17	0.46	5.63	1.48	0.47	5.66	1.65	-0.03	1.21	1.21	1.21
	18	0.48	5.74	1.53	0.47	5.54	1.67	0.20	1.29	1.29	1.29
	19	0.52	5.84	1.59	0.47	5.70	1.65	0.14	1.32	1.32	1.32
	20	0.53	5.88	1.62	0.51	5.89	1.68	-0.02	1.30	1.30	1.30
	21	0.52	5.84	1.62	0.51	5.94	1.69	-0.10	1.20	1.20	1.20
	22	0.48	5.70	1.54	0.51	5.90	1.68	-0.20	1.05	1.05	1.05
	23	0.42	5.48	1.41	0.50	5.83	1.69	-0.34	0.85	0.85	0.85
Weekend	24	0.37	5.33	1.28	0.42	5.36	1.61	-0.03	0.76	0.76	0.76
	25	0.30	5.07	1.13	0.38	5.10	1.54	-0.04	0.63	0.63	0.63
	26	0.25	4.83	0.99	0.47	5.49	1.70	-0.66	0.53	0.53	0.53
	27	0.21	4.64	0.89	0.40	5.28	1.58	-0.64	0.48	0.48	0.48
	28	0.19	4.54	0.83	0.39	5.06	1.60	-0.52	0.46	0.46	0.46
	29	0.19	4.49	0.81	0.20	3.72	1.30	0.77	0.50	0.50	0.50
	30	0.20	4.56	0.85	0.35	4.80	1.55	-0.25	0.57	0.57	0.57
	31	0.23	4.71	0.95	0.23	4.00	1.33	0.71	0.78	0.78	0.78
	32	0.31	5.09	1.15	0.42	5.24	1.62	-0.15	1.08	1.08	1.08
	33	0.43	5.54	1.43	0.47	5.48	1.70	0.06	1.31	1.31	1.31
	34	0.52	5.86	1.61	0.41	5.34	1.58	0.52	1.42	1.42	1.42
	35	0.57	6.01	1.69	0.45	5.55	1.63	0.45	1.44	1.44	1.44
	36	0.58	6.06	1.70	0.51	5.91	1.68	0.14	1.42	1.42	1.42
	37	0.57	6.07	1.67	0.52	5.94	1.69	0.13	1.37	1.37	1.37
	38	0.55	5.99	1.64	0.52	5.95	1.70	0.04	1.30	1.30	1.30
	39	0.52	5.87	1.59	0.51	5.91	1.68	-0.04	1.25	1.25	1.25
	40	0.50	5.79	1.56	0.49	5.78	1.66	0.00	1.24	1.24	1.24
	41	0.50	5.78	1.56	0.49	5.78	1.67	-0.01	1.26	1.26	1.26
	42	0.51	5.82	1.57	0.50	5.80	1.70	0.02	1.29	1.29	1.29
	43	0.52	5.86	1.58	0.48	5.66	1.68	0.20	1.29	1.29	1.29
	44	0.52	5.88	1.58	0.47	5.69	1.65	0.18	1.26	1.26	1.26
	45	0.50	5.83	1.56	0.49	5.80	1.67	0.03	1.19	1.19	1.19
	46	0.48	5.75	1.50	0.50	5.80	1.70	-0.05	1.06	1.06	1.06
	47	0.42	5.57	1.39	0.44	5.46	1.62	0.11	0.92	0.92	0.92
Average											
	Weekday	0.395	5.4	1.33	0.436	5.4	1.62		0.99	0.99	0.99
	Weekend	0.414	5.5	1.35	0.438	5.4	1.62		1.03	1.03	1.03
	ADWF[1]	0.400	5.4	1.33	0.437	5.4	1.62		1.00	1.00	1.00
% Error											
	Weekday				10.3%			0.75			
	Weekend				5.9%			0.77			

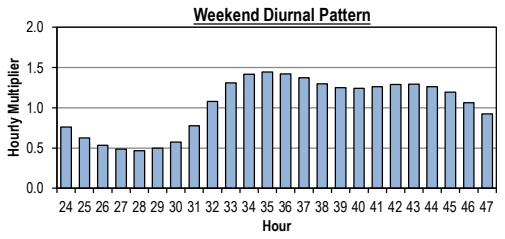
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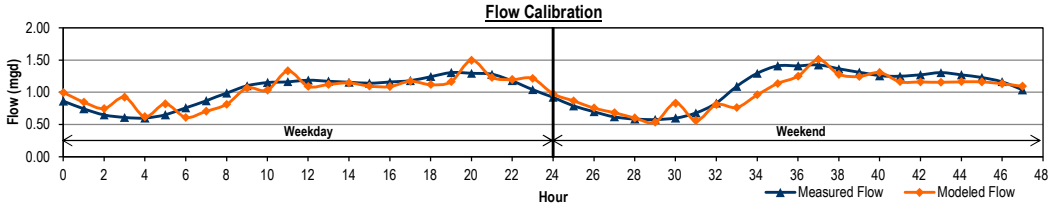


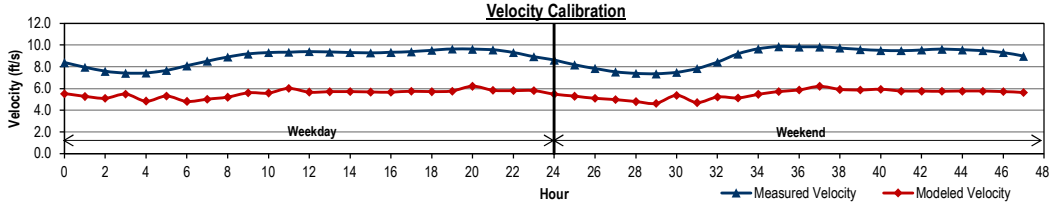


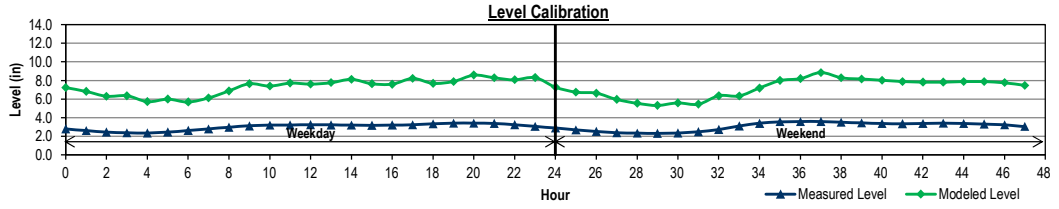
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE Y-2 DRY WEATHER FLOW CALIBRATION

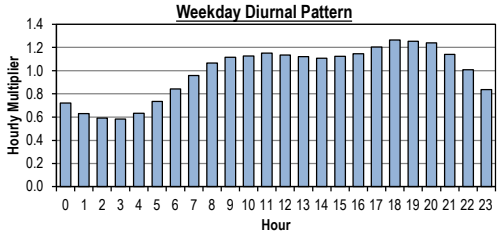
	Hour	Measured Data Flow (mgd)	Measured Data Level (in)	Measured Data Velocity (ft/s)	Modeled Data Flow (mgd)	Modeled Data Level (in)	Modeled Data Velocity (ft/s)	Level Diff (in)	Diurnal Initial Curve	Diurnal Modified Curve	Diurnal Calibrated Diurnal
Weekday	0	0.86	2.80	8.39	1.00	7.24	5.53	-4.44	0.72	0.72	0.72
	1	0.74	2.61	7.96	0.85	6.83	5.28	-4.22	0.63	0.63	0.63
	2	0.65	2.45	7.59	0.75	6.30	5.10	-3.85	0.59	0.59	0.59
	3	0.61	2.38	7.43	0.92	6.36	5.49	-3.98	0.58	0.58	0.58
	4	0.60	2.36	7.43	0.62	5.72	4.84	-3.36	0.63	0.63	0.63
	5	0.65	2.45	7.67	0.82	5.99	5.30	-3.54	0.74	0.74	0.74
	6	0.76	2.63	8.09	0.61	5.68	4.82	-3.05	0.84	0.84	0.84
	7	0.87	2.79	8.52	0.71	6.12	5.02	-3.32	0.96	0.96	0.96
	8	0.99	2.97	8.89	0.81	6.87	5.20	-3.90	1.07	1.07	1.07
	9	1.10	3.13	9.19	1.06	7.65	5.61	-4.52	1.12	1.12	1.12
	10	1.15	3.20	9.32	1.03	7.39	5.58	-4.19	1.13	1.13	1.13
	11	1.16	3.22	9.35	1.33	7.72	6.01	-4.51	1.15	1.15	1.15
	12	1.19	3.25	9.39	1.09	7.60	5.67	-4.35	1.14	1.14	1.14
	13	1.17	3.22	9.36	1.12	7.75	5.71	-4.53	1.12	1.12	1.12
	14	1.16	3.20	9.32	1.15	8.11	5.72	-4.91	1.11	1.11	1.11
	15	1.14	3.18	9.29	1.10	7.65	5.67	-4.46	1.12	1.12	1.12
	16	1.16	3.21	9.33	1.09	7.59	5.66	-4.38	1.15	1.15	1.15
	17	1.18	3.24	9.39	1.17	8.21	5.75	-4.97	1.21	1.21	1.21
	18	1.24	3.33	9.52	1.12	7.68	5.70	-4.35	1.27	1.27	1.27
	19	1.31	3.42	9.64	1.16	7.88	5.76	-4.46	1.26	1.26	1.26
	20	1.30	3.40	9.62	1.50	8.58	6.21	-5.18	1.24	1.24	1.24
	21	1.28	3.38	9.56	1.23	8.29	5.84	-4.90	1.14	1.14	1.14
	22	1.18	3.25	9.32	1.20	8.07	5.81	-4.82	1.01	1.01	1.01
	23	1.04	3.05	8.94	1.21	8.31	5.81	-5.25	0.84	0.84	0.84
Weekend	24	0.92	2.88	8.62	0.98	7.27	5.49	-4.39	0.77	0.77	0.77
	25	0.79	2.68	8.18	0.87	6.74	5.29	-4.06	0.68	0.68	0.68
	26	0.70	2.53	7.85	0.76	6.63	5.10	-4.09	0.60	0.60	0.60
	27	0.62	2.39	7.53	0.68	5.96	4.98	-3.57	0.57	0.57	0.57
	28	0.59	2.33	7.40	0.60	5.55	4.80	-3.21	0.56	0.56	0.56
	29	0.58	2.32	7.36	0.53	5.32	4.64	-2.99	0.58	0.58	0.58
	30	0.60	2.36	7.49	0.83	5.59	5.38	-3.23	0.66	0.66	0.66
	31	0.68	2.50	7.84	0.56	5.45	4.70	-2.95	0.81	0.81	0.81
	32	0.83	2.73	8.43	0.81	6.35	5.22	-3.62	1.06	1.06	1.06
	33	1.09	3.11	9.18	0.76	6.34	5.13	-3.23	1.25	1.25	1.25
	34	1.29	3.40	9.65	0.96	7.18	5.47	-3.78	1.37	1.37	1.37
	35	1.41	3.56	9.86	1.14	7.99	5.72	-4.43	1.37	1.37	1.37
	36	1.41	3.57	9.83	1.25	8.18	5.88	-4.62	1.38	1.38	1.38
	37	1.43	3.59	9.83	1.51	8.84	6.20	-5.25	1.32	1.32	1.32
	38	1.36	3.50	9.73	1.28	8.28	5.91	-4.78	1.27	1.27	1.27
	39	1.31	3.44	9.61	1.24	8.16	5.87	-4.72	1.22	1.22	1.22
	40	1.26	3.36	9.51	1.31	8.02	5.93	-4.65	1.21	1.21	1.21
	41	1.25	3.35	9.49	1.16	7.88	5.76	-4.53	1.23	1.23	1.23
	42	1.27	3.38	9.55	1.16	7.83	5.76	-4.45	1.26	1.26	1.26
	43	1.30	3.42	9.63	1.16	7.82	5.75	-4.40	1.23	1.23	1.23
	44	1.27	3.38	9.57	1.16	7.88	5.76	-4.50	1.19	1.19	1.19
	45	1.23	3.31	9.48	1.16	7.88	5.76	-4.56	1.13	1.13	1.13
	46	1.16	3.23	9.31	1.13	7.76	5.72	-4.53	1.01	1.01	1.01
	47	1.04	3.05	8.99	1.09	7.47	5.64	-4.42	0.89	0.89	0.89
Average											
	Weekday	1.021	3.0	8.85	1.027	7.3	5.55		0.99	0.99	0.99
	Weekend	1.058	3.1	8.91	1.004	7.2	5.49		1.03	1.03	1.03
	ADWF[1]	1.031	3.0	8.87	1.021	7.3	5.53		1.00	1.00	1.00
% Error											
	Weekday				0.6%			5.25			
	Weekend				-5.1%			5.25			

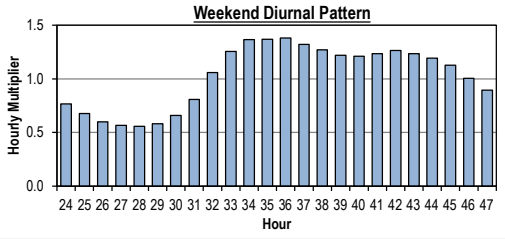
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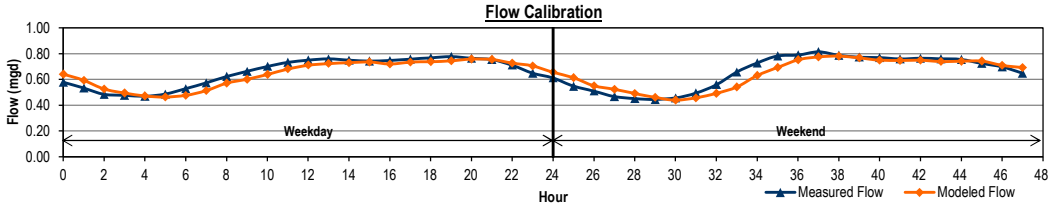


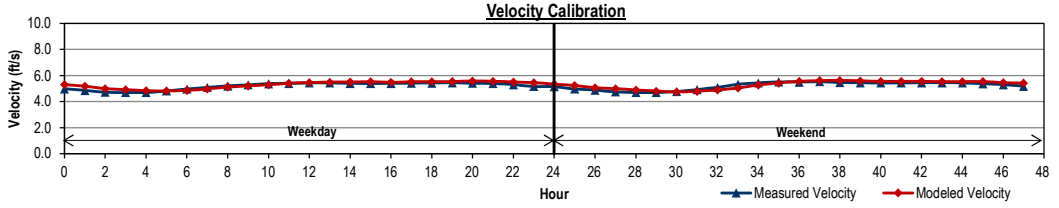


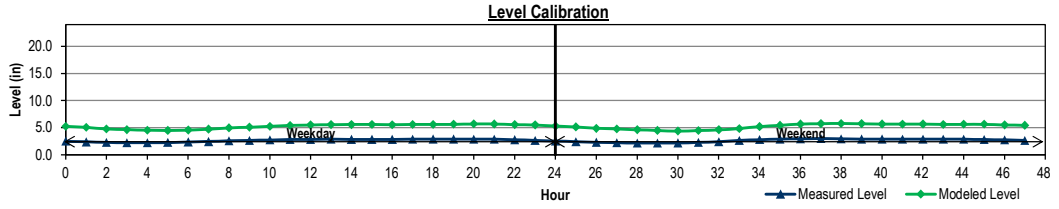
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE Y-3 DRY WEATHER FLOW CALIBRATION

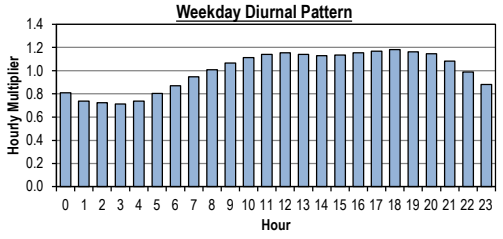
	Hour	Measured Data Flow (mgd)	Measured Data Level (in)	Measured Data Velocity (ft/s)	Modeled Data Flow (mgd)	Modeled Data Level (in)	Modeled Data Velocity (ft/s)	Level Diff (in)	Diurnal Initial Curve	Diurnal Modified Curve	Diurnal Calibrated Diurnal
Weekday	0	0.58	2.51	4.99	0.64	5.26	5.30	-2.74	0.81	0.81	0.81
	1	0.53	2.40	4.85	0.59	5.06	5.18	-2.66	0.74	0.74	0.74
	2	0.48	2.30	4.71	0.53	4.79	5.00	-2.49	0.72	0.72	0.72
	3	0.48	2.27	4.70	0.49	4.64	4.91	-2.38	0.71	0.71	0.71
	4	0.47	2.25	4.70	0.47	4.55	4.84	-2.30	0.74	0.74	0.74
	5	0.49	2.27	4.82	0.46	4.50	4.81	-2.23	0.80	0.80	0.80
	6	0.53	2.37	4.96	0.48	4.57	4.85	-2.20	0.87	0.87	0.87
	7	0.57	2.47	5.08	0.51	4.73	4.96	-2.26	0.95	0.95	0.95
	8	0.62	2.59	5.20	0.57	4.98	5.12	-2.39	1.01	1.01	1.01
	9	0.66	2.67	5.28	0.60	5.10	5.20	-2.43	1.07	1.07	1.07
	10	0.70	2.75	5.37	0.64	5.24	5.29	-2.49	1.11	1.11	1.11
	11	0.73	2.82	5.40	0.68	5.41	5.39	-2.59	1.14	1.14	1.14
	12	0.75	2.86	5.42	0.71	5.52	5.46	-2.66	1.15	1.15	1.15
	13	0.76	2.88	5.44	0.72	5.57	5.49	-2.69	1.14	1.14	1.14
	14	0.75	2.86	5.40	0.73	5.59	5.50	-2.73	1.13	1.13	1.13
	15	0.74	2.85	5.39	0.74	5.62	5.52	-2.76	1.14	1.14	1.14
	16	0.75	2.86	5.40	0.72	5.56	5.48	-2.70	1.15	1.15	1.15
	17	0.76	2.89	5.41	0.73	5.60	5.51	-2.72	1.17	1.17	1.17
	18	0.77	2.91	5.42	0.74	5.63	5.52	-2.72	1.18	1.18	1.18
	19	0.78	2.93	5.44	0.74	5.64	5.53	-2.71	1.16	1.16	1.16
	20	0.76	2.91	5.41	0.76	5.70	5.57	-2.79	1.15	1.15	1.15
	21	0.75	2.88	5.38	0.75	5.69	5.56	-2.80	1.08	1.08	1.08
	22	0.71	2.80	5.30	0.73	5.58	5.50	-2.78	0.99	0.99	0.99
	23	0.65	2.66	5.17	0.70	5.50	5.45	-2.83	0.88	0.88	0.88
Weekend	24	0.61	2.57	5.14	0.66	5.32	5.33	-2.75	0.83	0.83	0.83
	25	0.55	2.43	4.97	0.61	5.15	5.23	-2.72	0.78	0.78	0.78
	26	0.51	2.34	4.88	0.55	4.88	5.06	-2.55	0.71	0.71	0.71
	27	0.47	2.24	4.74	0.52	4.78	4.99	-2.53	0.69	0.69	0.69
	28	0.45	2.20	4.70	0.49	4.63	4.89	-2.43	0.68	0.68	0.68
	29	0.45	2.19	4.70	0.46	4.50	4.80	-2.31	0.70	0.70	0.70
	30	0.46	2.21	4.77	0.44	4.39	4.74	-2.19	0.75	0.75	0.75
	31	0.49	2.29	4.92	0.46	4.48	4.79	-2.19	0.85	0.85	0.85
	32	0.56	2.44	5.09	0.49	4.63	4.90	-2.20	1.00	1.00	1.00
	33	0.66	2.65	5.32	0.54	4.85	5.04	-2.20	1.11	1.11	1.11
	34	0.73	2.81	5.43	0.63	5.22	5.27	-2.41	1.19	1.19	1.19
	35	0.78	2.92	5.51	0.69	5.46	5.42	-2.54	1.20	1.20	1.20
	36	0.79	2.95	5.50	0.75	5.68	5.55	-2.73	1.24	1.24	1.24
	37	0.81	3.00	5.52	0.78	5.76	5.60	-2.76	1.20	1.20	1.20
	38	0.79	2.95	5.46	0.78	5.78	5.62	-2.83	1.18	1.18	1.18
	39	0.77	2.92	5.44	0.77	5.74	5.59	-2.81	1.17	1.17	1.17
	40	0.77	2.91	5.43	0.75	5.66	5.55	-2.75	1.16	1.16	1.16
	41	0.76	2.89	5.42	0.75	5.65	5.54	-2.76	1.16	1.16	1.16
	42	0.76	2.89	5.44	0.75	5.66	5.55	-2.77	1.16	1.16	1.16
	43	0.76	2.88	5.44	0.74	5.63	5.52	-2.75	1.15	1.15	1.15
	44	0.75	2.88	5.43	0.74	5.64	5.53	-2.76	1.10	1.10	1.10
	45	0.72	2.82	5.37	0.74	5.64	5.53	-2.82	1.06	1.06	1.06
	46	0.70	2.76	5.30	0.71	5.52	5.46	-2.76	0.99	0.99	0.99
	47	0.65	2.66	5.18	0.69	5.45	5.42	-2.78	0.93	0.93	0.93
Average											
	Weekday	0.657	2.7	5.19	0.643	5.3	5.29		1.00	1.00	1.00
	Weekend	0.656	2.7	5.21	0.645	5.3	5.29		1.00	1.00	1.00
	ADWF[1]	0.657	2.7	5.20	0.644	5.3	5.29		1.00	1.00	1.00
% Error											
	Weekday				-2.1%			2.83			
	Weekend				-1.6%			2.83			

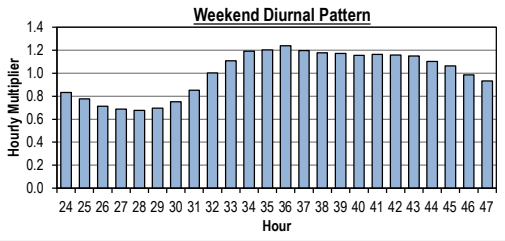
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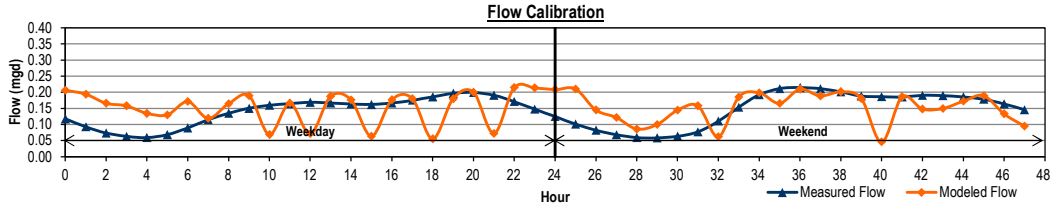


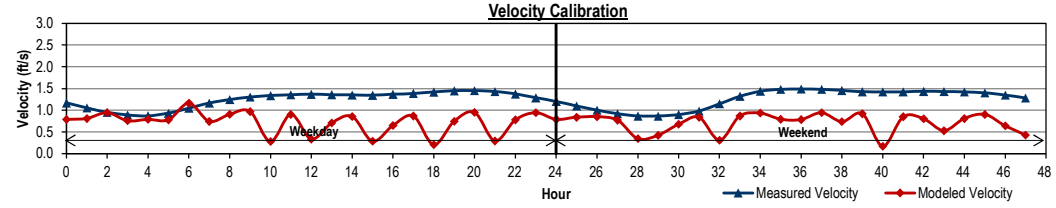


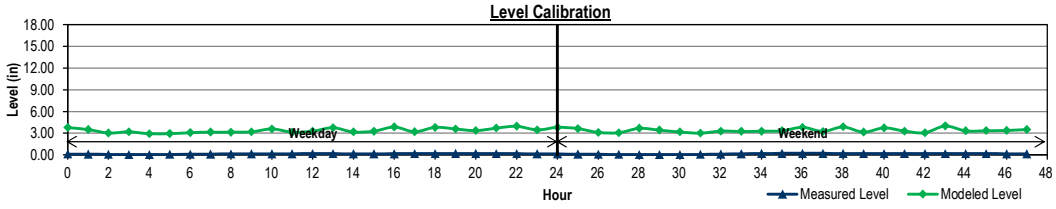
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE Y-4 DRY WEATHER FLOW CALIBRATION

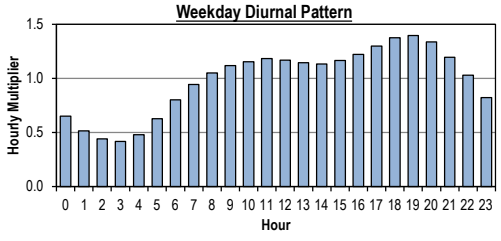
	Hour	Measured Data Flow (mgd)	Measured Data Level (in)	Measured Data Velocity (ft/s)	Modeled Data Flow (mgd)	Modeled Data Level (in)	Modeled Data Velocity (ft/s)	Level Diff (in)	Diurnal Initial Curve	Diurnal Modified Curve	Diurnal Calibrated Diurnal
Weekday	0	0.12	0.12	1.17	0.21	3.78	0.79	-3.66	0.65	0.65	0.65
	1	0.09	0.09	1.05	0.19	3.49	0.81	-3.40	0.52	0.52	0.52
	2	0.07	0.07	0.95	0.17	3.04	0.94	-2.96	0.44	0.44	0.44
	3	0.06	0.06	0.89	0.16	3.18	0.76	-3.12	0.42	0.42	0.42
	4	0.06	0.06	0.87	0.13	2.92	0.79	-2.86	0.48	0.48	0.48
	5	0.07	0.07	0.93	0.13	2.94	0.78	-2.87	0.63	0.63	0.63
	6	0.09	0.09	1.05	0.17	3.07	1.16	-2.98	0.80	0.80	0.80
	7	0.11	0.11	1.17	0.12	3.14	0.74	-3.03	0.94	0.94	0.94
	8	0.13	0.13	1.25	0.16	3.13	0.91	-3.00	1.05	1.05	1.05
	9	0.15	0.15	1.30	0.19	3.18	0.97	-3.03	1.12	1.12	1.12
	10	0.16	0.16	1.34	0.07	3.59	0.28	-3.43	1.15	1.15	1.15
	11	0.16	0.16	1.35	0.17	3.13	0.90	-2.97	1.18	1.18	1.18
	12	0.17	0.17	1.37	0.07	3.28	0.34	-3.11	1.17	1.17	1.17
	13	0.17	0.17	1.36	0.19	3.76	0.71	-3.59	1.15	1.15	1.15
	14	0.16	0.16	1.35	0.18	3.17	0.86	-3.00	1.13	1.13	1.13
	15	0.16	0.16	1.35	0.06	3.26	0.29	-3.10	1.17	1.17	1.17
	16	0.17	0.17	1.37	0.18	3.85	0.65	-3.69	1.22	1.22	1.22
	17	0.17	0.17	1.39	0.18	3.19	0.87	-3.02	1.30	1.30	1.30
	18	0.19	0.19	1.42	0.06	3.79	0.21	-3.61	1.38	1.38	1.38
	19	0.20	0.20	1.45	0.18	3.59	0.75	-3.39	1.40	1.40	1.40
	20	0.20	0.20	1.45	0.20	3.36	0.95	-3.16	1.34	1.34	1.34
	21	0.19	0.19	1.43	0.07	3.70	0.29	-3.51	1.20	1.20	1.20
	22	0.17	0.17	1.37	0.21	3.95	0.78	-3.78	1.03	1.03	1.03
	23	0.15	0.15	1.29	0.21	3.46	0.94	-3.31	0.82	0.82	0.82
Weekend	24	0.12	0.12	1.20	0.21	3.79	0.79	-3.67	0.71	0.71	0.71
	25	0.10	0.10	1.10	0.21	3.64	0.84	-3.53	0.57	0.57	0.57
	26	0.08	0.08	1.00	0.15	3.11	0.85	-3.03	0.48	0.48	0.48
	27	0.07	0.07	0.92	0.12	3.05	0.77	-2.98	0.42	0.42	0.42
	28	0.06	0.06	0.87	0.09	3.67	0.35	-3.61	0.41	0.41	0.41
	29	0.06	0.06	0.87	0.10	3.43	0.42	-3.37	0.44	0.44	0.44
	30	0.06	0.06	0.90	0.14	3.17	0.68	-3.10	0.54	0.54	0.54
	31	0.08	0.08	0.98	0.16	3.00	0.84	-2.92	0.77	0.77	0.77
	32	0.11	0.11	1.15	0.06	3.29	0.31	-3.18	1.07	1.07	1.07
	33	0.15	0.15	1.32	0.19	3.25	0.87	-3.10	1.34	1.34	1.34
	34	0.19	0.19	1.44	0.20	3.26	0.93	-3.07	1.48	1.48	1.48
	35	0.21	0.21	1.48	0.17	3.32	0.79	-3.11	1.50	1.50	1.50
	36	0.21	0.21	1.49	0.21	3.82	0.79	-3.60	1.48	1.48	1.48
	37	0.21	0.21	1.48	0.19	3.23	0.94	-3.02	1.41	1.41	1.41
	38	0.20	0.20	1.46	0.20	3.88	0.74	-3.67	1.32	1.32	1.32
	39	0.19	0.19	1.43	0.18	3.14	0.92	-2.96	1.30	1.30	1.30
	40	0.19	0.19	1.42	0.05	3.73	0.17	-3.55	1.30	1.30	1.30
	41	0.19	0.19	1.42	0.19	3.29	0.85	-3.10	1.33	1.33	1.33
	42	0.19	0.19	1.44	0.15	3.06	0.80	-2.87	1.33	1.33	1.33
	43	0.19	0.19	1.43	0.15	4.01	0.53	-3.82	1.30	1.30	1.30
	44	0.19	0.19	1.42	0.17	3.32	0.81	-3.14	1.25	1.25	1.25
	45	0.18	0.18	1.40	0.19	3.35	0.90	-3.17	1.15	1.15	1.15
	46	0.16	0.16	1.35	0.13	3.37	0.64	-3.21	1.02	1.02	1.02
	47	0.15	0.15	1.28	0.09	3.52	0.43	-3.37	0.87	0.87	0.87
Average											
	Weekday	0.141	0.1	1.25	0.153	3.4	0.73		0.99	0.99	0.99
	Weekend	0.148	0.1	1.26	0.154	3.4	0.71		1.03	1.03	1.03
	ADWF[1]	0.143	0.1	1.25	0.153	3.4	0.72		1.00	1.00	1.00
% Error											
	Weekday				8.1%			3.78			
	Weekend				4.0%			3.82			

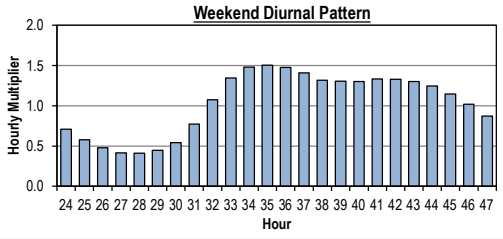
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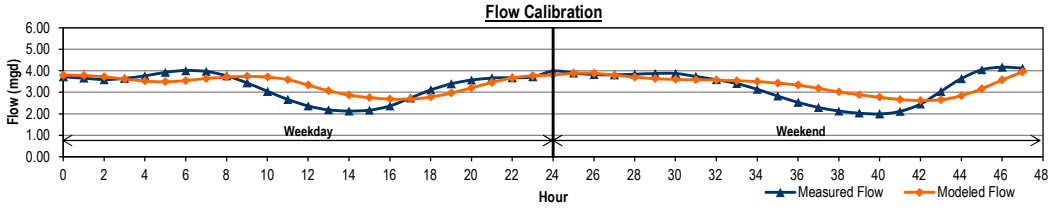


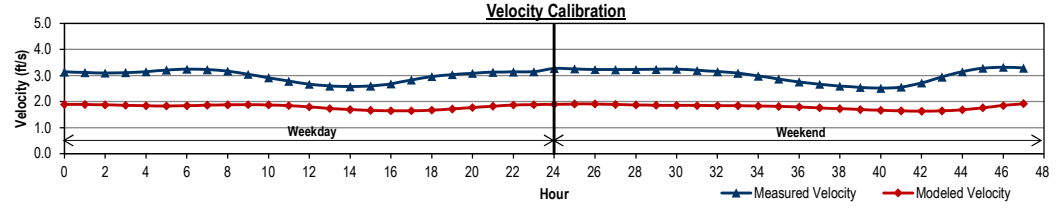


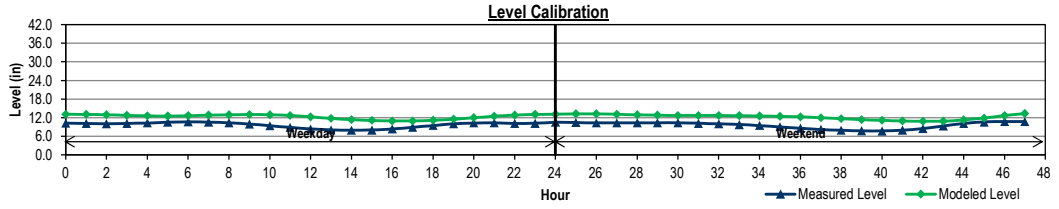
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE WINT003 DRY WEATHER FLOW CALIBRATION

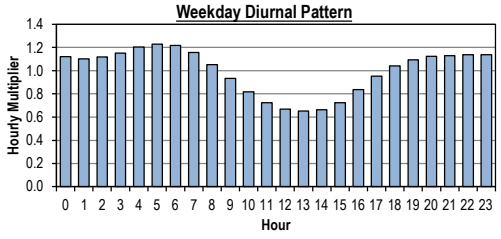
	Hour	Measured Data Flow (mgd)	Measured Data Level (in)	Measured Data Velocity (ft/s)	Modeled Data Flow (mgd)	Modeled Data Level (in)	Modeled Data Velocity (ft/s)	Level Diff (in)	Diurnal Initial Curve	Diurnal Modified Curve	Diurnal Calibrated Diurnal
Weekday	0	3.72	10.21	3.14	3.80	13.08	1.89	-2.87	1.12	1.12	1.12
	1	3.66	10.15	3.12	3.78	13.05	1.89	-2.90	1.10	1.10	1.10
	2	3.59	10.07	3.10	3.72	12.94	1.88	-2.88	1.12	1.12	1.12
	3	3.65	10.15	3.11	3.62	12.76	1.85	-2.61	1.15	1.15	1.15
	4	3.76	10.27	3.15	3.52	12.58	1.84	-2.31	1.20	1.20	1.20
	5	3.93	10.51	3.21	3.49	12.52	1.83	-2.01	1.23	1.23	1.23
	6	4.01	10.63	3.24	3.55	12.62	1.84	-1.99	1.22	1.22	1.22
	7	3.97	10.58	3.23	3.64	12.79	1.86	-2.21	1.16	1.16	1.16
	8	3.77	10.35	3.17	3.71	12.92	1.87	-2.57	1.05	1.05	1.05
	9	3.44	9.94	3.05	3.74	12.99	1.88	-3.05	0.93	0.93	0.93
	10	3.05	9.41	2.92	3.71	12.94	1.87	-3.53	0.82	0.82	0.82
	11	2.67	8.85	2.78	3.58	12.71	1.85	-3.86	0.72	0.72	0.72
	12	2.36	8.37	2.67	3.34	12.26	1.79	-3.89	0.67	0.67	0.67
	13	2.18	8.06	2.60	3.06	11.74	1.73	-3.68	0.65	0.65	0.65
	14	2.12	7.96	2.58	2.87	11.35	1.69	-3.39	0.66	0.66	0.66
	15	2.17	8.02	2.60	2.75	11.11	1.66	-3.08	0.72	0.72	0.72
	16	2.36	8.36	2.68	2.69	10.97	1.65	-2.61	0.84	0.84	0.84
	17	2.73	8.92	2.83	2.68	10.96	1.65	-2.04	0.95	0.95	0.95
	18	3.11	9.46	2.96	2.78	11.15	1.67	-1.69	1.04	1.04	1.04
	19	3.40	10.03	3.03	2.97	11.52	1.72	-1.49	1.09	1.09	1.09
	20	3.57	10.28	3.09	3.20	11.98	1.77	-1.70	1.12	1.12	1.12
	21	3.67	10.31	3.13	3.46	12.47	1.82	-2.16	1.13	1.13	1.13
	22	3.68	10.16	3.14	3.66	12.84	1.86	-2.69	1.14	1.14	1.14
	23	3.72	10.20	3.15	3.77	13.04	1.88	-2.83	1.14	1.14	1.14
Weekend	24	3.99	10.51	3.27	3.81	13.10	1.89	-2.59	1.20	1.20	1.20
	25	3.90	10.39	3.25	3.88	13.23	1.91	-2.84	1.17	1.17	1.17
	26	3.83	10.30	3.23	3.89	13.24	1.91	-2.94	1.17	1.17	1.17
	27	3.82	10.30	3.22	3.79	13.07	1.89	-2.78	1.18	1.18	1.18
	28	3.84	10.32	3.23	3.70	12.91	1.87	-2.59	1.19	1.19	1.19
	29	3.88	10.37	3.24	3.64	12.79	1.86	-2.42	1.19	1.19	1.19
	30	3.88	10.36	3.24	3.60	12.72	1.85	-2.36	1.15	1.15	1.15
	31	3.74	10.20	3.20	3.59	12.70	1.85	-2.50	1.10	1.10	1.10
	32	3.58	10.00	3.15	3.57	12.67	1.85	-2.67	1.05	1.05	1.05
	33	3.41	9.79	3.09	3.54	12.62	1.84	-2.82	0.96	0.96	0.96
	34	3.13	9.46	2.98	3.50	12.55	1.83	-3.09	0.87	0.87	0.87
	35	2.83	9.04	2.87	3.43	12.42	1.81	-3.38	0.78	0.78	0.78
	36	2.53	8.59	2.76	3.34	12.25	1.79	-3.67	0.70	0.70	0.70
	37	2.29	8.20	2.66	3.18	11.96	1.76	-3.76	0.65	0.65	0.65
	38	2.12	7.92	2.59	3.02	11.65	1.73	-3.73	0.62	0.62	0.62
	39	2.03	7.77	2.55	2.88	11.37	1.69	-3.60	0.61	0.61	0.61
	40	1.99	7.72	2.51	2.77	11.14	1.67	-3.42	0.65	0.65	0.65
	41	2.11	7.97	2.56	2.66	10.92	1.64	-2.95	0.75	0.75	0.75
	42	2.45	8.49	2.71	2.62	10.82	1.63	-2.33	0.93	0.93	0.93
	43	3.04	9.33	2.95	2.65	10.89	1.64	-1.56	1.11	1.11	1.11
	44	3.64	10.12	3.15	2.84	11.27	1.69	-1.15	1.24	1.24	1.24
	45	4.05	10.61	3.28	3.16	11.90	1.76	-1.29	1.28	1.28	1.28
	46	4.17	10.77	3.31	3.58	12.67	1.85	-1.90	1.26	1.26	1.26
	47	4.12	10.73	3.29	3.95	13.35	1.92	-2.61	1.22	1.22	1.22
Average											
	Weekday	3.262	9.6	2.99	3.379	12.3	1.80		1.00	1.00	1.00
	Weekend	3.266	9.6	3.01	3.358	12.3	1.80		1.00	1.00	1.00
	ADWF[1]	3.263	9.6	2.99	3.373	12.3	1.80		1.00	1.00	1.00
% Error											
	Weekday				3.6%			3.89			
	Weekend				2.8%			3.76			

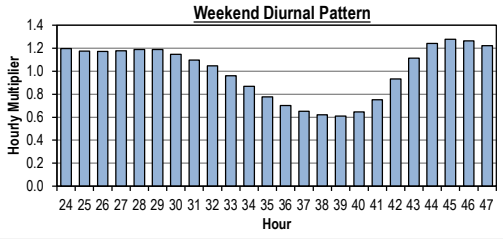
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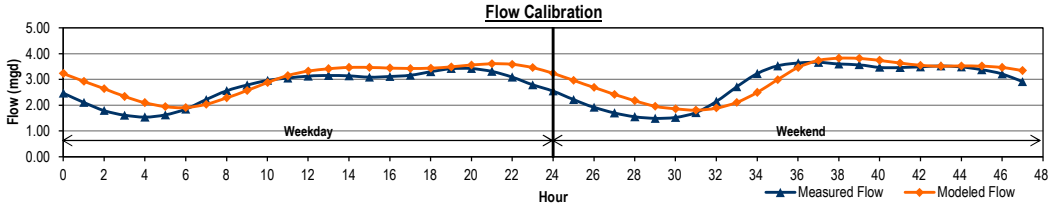


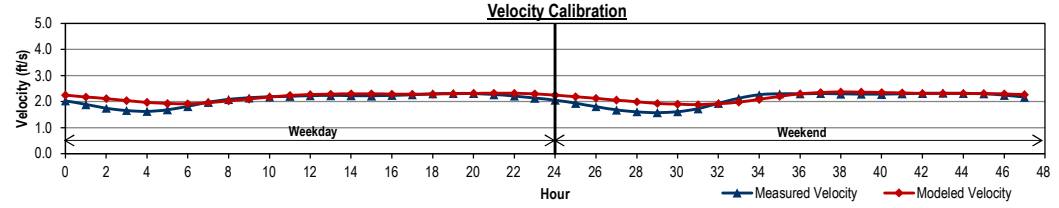


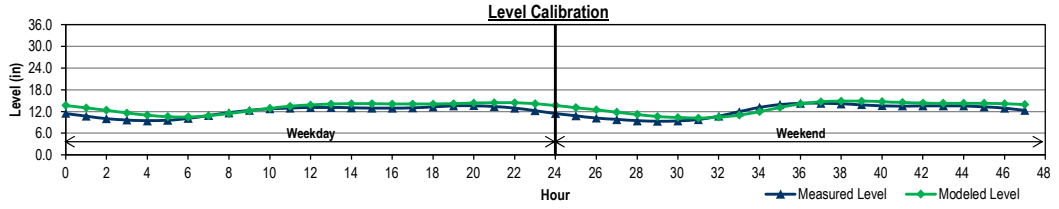
City of Auburn
Collection System Planning Project
FLOW MONITORING SITE MSTTR02 DRY WEATHER FLOW CALIBRATION

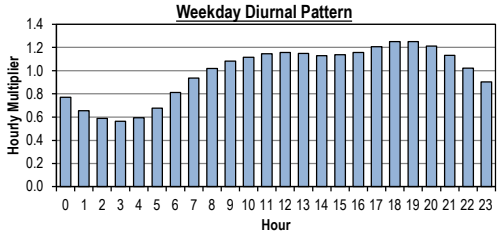
		Measured Data			Modeled Data				Diurnal		
	Hour	Flow (mgd)	Level (in)	Velocity (ft/s)	Flow (mgd)	Level (in)	Velocity (ft/s)	Level Diff (in)	Initial Curve	Modified Curve	Calibrated Diurnal
Weekday	0	2.46	11.47	2.03	3.23	13.65	2.24	-2.18	0.77	0.77	0.77
	1	2.11	10.69	1.89	2.93	12.98	2.18	-2.29	0.66	0.66	0.66
	2	1.79	10.02	1.75	2.64	12.33	2.11	-2.31	0.59	0.59	0.59
	3	1.61	9.62	1.65	2.34	11.60	2.03	-1.98	0.56	0.56	0.56
	4	1.54	9.45	1.63	2.10	10.98	1.97	-1.53	0.59	0.59	0.59
	5	1.62	9.59	1.68	1.94	10.56	1.93	-0.98	0.68	0.68	0.68
	6	1.85	10.09	1.81	1.91	10.46	1.91	-0.38	0.81	0.81	0.81
	7	2.22	10.90	1.97	2.03	10.80	1.95	0.10	0.94	0.94	0.94
	8	2.56	11.66	2.08	2.28	11.45	2.03	0.21	1.02	1.02	1.02
	9	2.78	12.32	2.14	2.56	12.13	2.10	0.20	1.08	1.08	1.08
	10	2.96	12.74	2.18	2.88	12.85	2.17	-0.12	1.12	1.12	1.12
	11	3.05	12.94	2.20	3.15	13.45	2.23	-0.51	1.15	1.15	1.15
	12	3.13	13.09	2.23	3.32	13.83	2.27	-0.74	1.16	1.16	1.16
	13	3.15	13.13	2.23	3.42	14.04	2.29	-0.91	1.15	1.15	1.15
	14	3.14	13.05	2.23	3.47	14.14	2.30	-1.09	1.13	1.13	1.13
	15	3.09	12.94	2.22	3.46	14.14	2.29	-1.20	1.14	1.14	1.14
	16	3.11	12.94	2.24	3.44	14.09	2.29	-1.14	1.16	1.16	1.16
	17	3.16	12.99	2.26	3.42	14.05	2.29	-1.07	1.21	1.21	1.21
	18	3.30	13.26	2.30	3.43	14.08	2.29	-0.82	1.25	1.25	1.25
	19	3.42	13.55	2.31	3.49	14.18	2.30	-0.63	1.25	1.25	1.25
	20	3.42	13.58	2.30	3.56	14.33	2.31	-0.74	1.21	1.21	1.21
	21	3.31	13.38	2.27	3.61	14.44	2.32	-1.06	1.13	1.13	1.13
	22	3.09	12.91	2.21	3.59	14.39	2.32	-1.48	1.02	1.02	1.02
	23	2.79	12.23	2.14	3.46	14.13	2.29	-1.89	0.90	0.90	0.90
Weekend	24	2.55	11.46	2.06	3.24	13.66	2.25	-2.21	0.81	0.81	0.81
	25	2.21	10.77	1.94	2.96	13.06	2.19	-2.29	0.70	0.70	0.70
	26	1.92	10.16	1.80	2.69	12.44	2.12	-2.28	0.62	0.62	0.62
	27	1.70	9.79	1.68	2.42	11.79	2.06	-2.00	0.57	0.57	0.57
	28	1.55	9.45	1.61	2.18	11.18	1.99	-1.73	0.55	0.55	0.55
	29	1.49	9.29	1.58	1.96	10.61	1.93	-1.31	0.56	0.56	0.56
	30	1.52	9.36	1.61	1.85	10.32	1.90	-0.96	0.63	0.63	0.63
	31	1.72	9.77	1.73	1.81	10.19	1.88	-0.42	0.79	0.79	0.79
	32	2.14	10.70	1.93	1.89	10.41	1.91	0.28	0.99	0.99	0.99
	33	2.71	11.92	2.13	2.11	10.99	1.98	0.93	1.18	1.18	1.18
	34	3.23	13.14	2.26	2.49	11.95	2.08	1.19	1.29	1.29	1.29
	35	3.53	13.91	2.30	2.99	13.10	2.20	0.82	1.33	1.33	1.33
	36	3.64	14.24	2.30	3.46	14.11	2.30	0.13	1.34	1.34	1.34
	37	3.66	14.29	2.31	3.73	14.68	2.35	-0.40	1.32	1.32	1.32
	38	3.60	14.13	2.30	3.83	14.88	2.37	-0.74	1.31	1.31	1.31
	39	3.57	13.85	2.29	3.81	14.86	2.36	-1.01	1.27	1.27	1.27
	40	3.47	13.59	2.28	3.74	14.71	2.35	-1.12	1.27	1.27	1.27
	41	3.46	13.48	2.30	3.63	14.49	2.33	-1.01	1.28	1.28	1.28
	42	3.49	13.52	2.32	3.55	14.32	2.31	-0.80	1.29	1.29	1.29
	43	3.52	13.58	2.33	3.51	14.24	2.30	-0.66	1.28	1.28	1.28
	44	3.49	13.53	2.31	3.52	14.25	2.31	-0.73	1.24	1.24	1.24
	45	3.38	13.27	2.30	3.52	14.25	2.31	-0.98	1.18	1.18	1.18
	46	3.21	12.93	2.25	3.46	14.14	2.29	-1.21	1.07	1.07	1.07
	47	2.91	12.33	2.17	3.34	13.89	2.27	-1.56	0.93	0.93	0.93
Average											
	Weekday	2.694	12.0	2.08	2.985	13.0	2.18		0.99	0.99	0.99
	Weekend	2.819	12.2	2.09	2.987	13.0	2.18		1.03	1.03	1.03
	ADWF[1]	2.730	12.1	2.08	2.985	13.0	2.18		1.00	1.00	1.00
% Error											
	Weekday				10.8%			2.31			
	Weekend				5.9%			2.29			

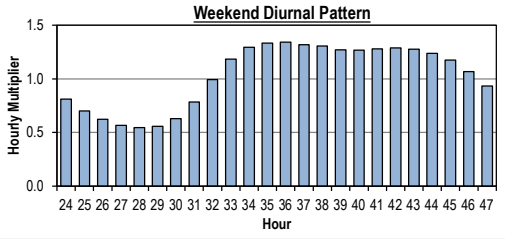
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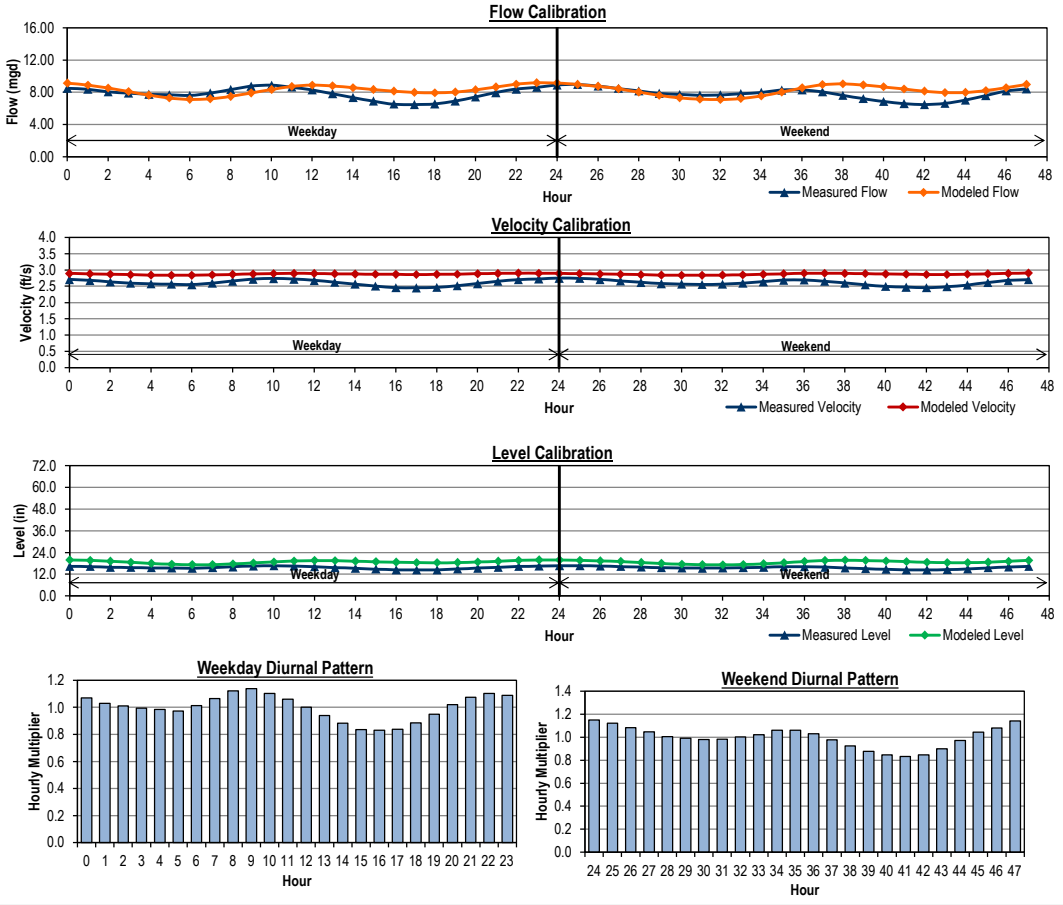




City of Auburn
Collection System Planning Project
FLOW MONITORING SITE AUBRN53 DRY WEATHER FLOW CALIBRATION

		Measured Data			Modeled Data				Diurnal		
	Hour	Flow (mgd)	Level (in)	Velocity (ft/s)	Flow (mgd)	Level (in)	Velocity (ft/s)	Level Diff (in)	Initial Curve	Modified Curve	Calibrated Diurnal
Weekday	0	8.50	16.35	2.71	9.14	19.87	2.89	-3.52	1.07	1.07	1.07
	1	8.36	16.20	2.68	8.90	19.58	2.88	-3.38	1.03	1.03	1.03
	2	8.05	15.87	2.63	8.52	19.12	2.87	-3.25	1.01	1.01	1.01
	3	7.90	15.68	2.60	8.09	18.57	2.86	-2.89	0.99	0.99	0.99
	4	7.76	15.51	2.57	7.65	17.98	2.84	-2.48	0.98	0.98	0.98
	5	7.69	15.42	2.56	7.29	17.49	2.84	-2.07	0.97	0.97	0.97
	6	7.60	15.33	2.55	7.11	17.21	2.84	-1.88	1.01	1.01	1.01
	7	7.91	15.64	2.60	7.19	17.27	2.85	-1.63	1.07	1.07	1.07
	8	8.33	16.08	2.66	7.48	17.65	2.86	-1.57	1.12	1.12	1.12
	9	8.76	16.52	2.72	7.91	18.21	2.88	-1.69	1.14	1.14	1.14
	10	8.89	16.68	2.74	8.34	18.78	2.89	-2.10	1.10	1.10	1.10
	11	8.63	16.46	2.72	8.72	19.27	2.89	-2.81	1.06	1.06	1.06
	12	8.29	16.14	2.68	8.88	19.52	2.89	-3.38	1.00	1.00	1.00
	13	7.81	15.68	2.62	8.79	19.43	2.88	-3.75	0.94	0.94	0.94
	14	7.35	15.23	2.57	8.57	19.15	2.87	-3.93	0.88	0.88	0.88
	15	6.90	14.78	2.51	8.35	18.87	2.87	-4.09	0.84	0.84	0.84
	16	6.53	14.40	2.46	8.14	18.61	2.86	-4.20	0.83	0.83	0.83
	17	6.49	14.37	2.45	7.99	18.39	2.86	-4.02	0.84	0.84	0.84
	18	6.55	14.45	2.47	7.93	18.30	2.86	-3.85	0.89	0.89	0.89
	19	6.91	14.83	2.52	8.03	18.41	2.87	-3.58	0.95	0.95	0.95
	20	7.42	15.34	2.58	8.29	18.73	2.88	-3.39	1.02	1.02	1.02
	21	7.96	15.86	2.65	8.65	19.17	2.90	-3.31	1.07	1.07	1.07
	22	8.40	16.27	2.70	9.00	19.62	2.90	-3.36	1.10	1.10	1.10
	23	8.62	16.46	2.72	9.19	19.89	2.90	-3.43	1.09	1.09	1.09
Weekend	24	8.91	16.69	2.75	9.15	19.87	2.89	-3.18	1.15	1.15	1.15
	25	8.97	16.71	2.74	8.97	19.66	2.89	-2.95	1.12	1.12	1.12
	26	8.76	16.51	2.71	8.74	19.38	2.88	-2.87	1.08	1.08	1.08
	27	8.47	16.21	2.67	8.44	19.01	2.87	-2.80	1.04	1.04	1.04
	28	8.16	15.90	2.62	8.02	18.48	2.85	-2.58	1.01	1.01	1.01
	29	7.86	15.59	2.58	7.63	17.95	2.84	-2.36	0.99	0.99	0.99
	30	7.73	15.44	2.57	7.31	17.51	2.84	-2.06	0.98	0.98	0.98
	31	7.64	15.35	2.56	7.14	17.25	2.84	-1.91	0.98	0.98	0.98
	32	7.68	15.39	2.57	7.11	17.18	2.84	-1.79	1.00	1.00	1.00
	33	7.83	15.60	2.60	7.22	17.32	2.85	-1.72	1.02	1.02	1.02
	34	7.98	15.80	2.64	7.54	17.71	2.87	-1.92	1.06	1.06	1.06
	35	8.28	16.13	2.69	8.01	18.33	2.88	-2.20	1.06	1.06	1.06
	36	8.29	16.12	2.69	8.55	19.03	2.90	-2.90	1.03	1.03	1.03
	37	8.05	15.87	2.65	8.94	19.56	2.90	-3.69	0.98	0.98	0.98
	38	7.62	15.45	2.60	9.03	19.71	2.89	-4.26	0.92	0.92	0.92
	39	7.21	15.05	2.54	8.91	19.58	2.89	-4.53	0.88	0.88	0.88
	40	6.85	14.70	2.50	8.67	19.29	2.88	-4.60	0.84	0.84	0.84
	41	6.60	14.45	2.47	8.40	18.95	2.87	-4.50	0.83	0.83	0.83
	42	6.49	14.38	2.46	8.13	18.60	2.86	-4.22	0.85	0.85	0.85
	43	6.61	14.52	2.48	7.97	18.36	2.86	-3.85	0.90	0.90	0.90
	44	7.03	14.95	2.54	7.98	18.35	2.87	-3.40	0.97	0.97	0.97
	45	7.60	15.50	2.61	8.20	18.61	2.88	-3.12	1.04	1.04	1.04
	46	8.15	16.03	2.68	8.57	19.07	2.89	-3.05	1.08	1.08	1.08
	47	8.43	16.28	2.71	8.98	19.58	2.90	-3.30	1.14	1.14	1.14
Average											
	Weekday	7.817	15.6	2.61	8.256	18.7	2.87		1.00	1.00	1.00
	Weekend	7.800	15.6	2.61	8.233	18.7	2.87		1.00	1.00	1.00
	ADWF[1]	7.812	15.6	2.61	8.250	18.7	2.87		1.00	1.00	1.00
% Error											
	Weekday				5.6%			4.20			
	Weekend				5.6%			4.60			

Note:



ATTACHMENT 1F

RDII PARAMETERS

Table 1 Connected Basin Area

Basin	Area (acres)	Connected Impervious (acres)	Connected Pervious (acres)	Total Connected (acres)	Total Connected (%)
A1	223.6	1.2	5.8	7.0	3.2
A1c	151.1	0.5	2.4	2.9	1.9
A1d	52.5	0.3	4.2	4.5	8.6
A3	83.0	1.4	31.5	33.0	39.7
A4	113.1	0.5	3.8	4.4	3.9
A6	97.6	0.6	5.4	6.0	6.1
A7	109.1	3.3	17.4	20.7	19.0
A9	52.5	1.5	4.9	6.4	12.1
A10	115.3	3.8	5.8	9.6	8.3
A11	16.7	0.0	0.0	0.0	0.2
A12	21.4	0.2	0.0	0.2	0.9
A13	63.3	0.2	0.3	0.5	0.8
A14	102.2	1.5	1.0	2.6	2.5
A15	72.3	0.3	0.4	0.7	1.0
A16	285.4	1.7	2.0	3.7	1.3
AUB Y-1	93.7	0.2	0.7	0.8	0.9
AUB Y-2	872.1	11.3	78.5	89.8	10.3
AUB Y-3	541.4	8.7	54.1	62.8	11.6
AUB Y-4	177.7	0.2	0.2	0.4	0.2
AUBRN53	997.7	10.0	29.9	39.9	4.0
AUBWV016	214.2	1.7	6.4	8.1	3.8
MSTTR02A	481.9	1.4	3.9	5.3	1.1
SRT11	111.4	0.9	3.3	4.2	3.8
WINT003	74.5	0.2	0.3	0.5	0.7
WINT035	1,685.2	13.5	50.6	64.0	3.8
Default	101.7	0.7	3.1	3.8	3.7

Table 2 Model A Parameters

Basin	Impervious (%)	Time of Concentration (min)	Reduction Factor	Initial Loss (in)
A1	0.55	7	0.9	0.0020
A1c	0.3	7	0.9	0.0020
A1d	0.6	7	0.9	0.0020
A3	1.7	7	0.9	0.0020
A4	0.47	7	0.9	0.0020
A6	0.6	7	0.9	0.0020
A7	3	7	0.9	0.0020
A9	2.8	7	0.9	0.0020
A10	3.3	7	0.9	0.0020
A11	0.1	7	0.9	0.0020
A12	0.8	3	0.9	0.0020
A13	0.3	7	0.9	0.0020
A14	1.5	7	0.9	0.0020
A15	0.4	7	0.9	0.0020
A16	0.6	7	0.9	0.0020
AUB Y-1	0.2	7	0.9	0.0020
AUB Y-2	1.3	7	0.9	0.0020
AUB Y-3	1.6	7	0.9	0.0020
AUB Y-4	0.1	7	0.9	0.0020
AUBRN53	1	20	0.9	0.0020
AUBWV016	0.8	120	0.9	0.1327
MSTTR02A	0.3	80	1	0.0000
SRT11	0.8	7	0.9	0.0020
WINT003	0.3	80	1	0.0000
WINT035	0.8	7	0.9	0.0020
Unmetered	0.7	7	0.9	0.0020

Table 3 RDI Parameters

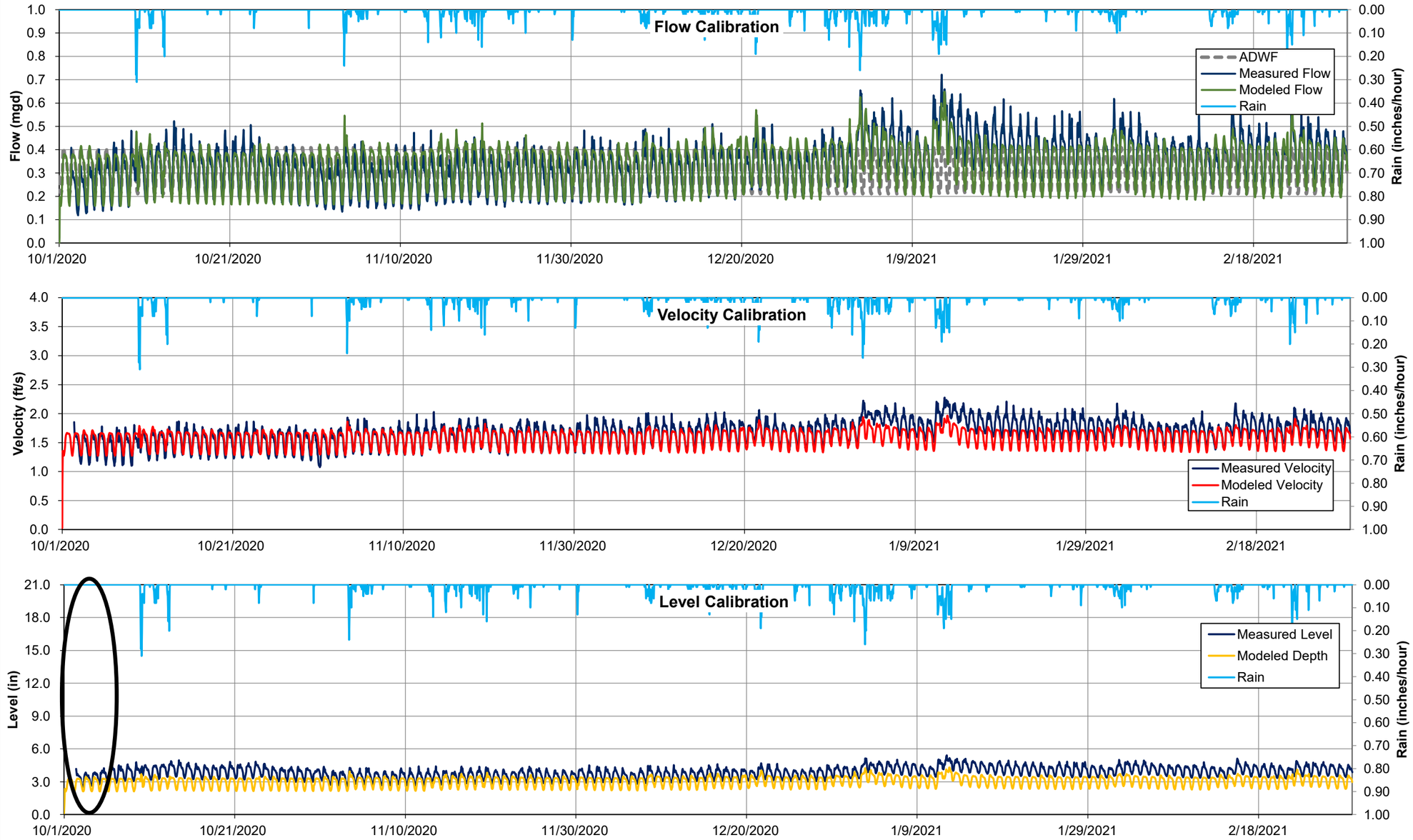
Basin	Percent RDI Area (%)	Surface Storage (Umax)	Root Zone Storage (Lmax)	Overland Coefficient (Cqof)	Groundwater Coefficient (Carea)	TC Overland Flow (CKof)	TC Interflow (CKif)	TC Baseflow (CKbf)	Overland Flow Threshold (Tof)	Interflow Threshold (Tif)	Groundwater Threshold (Tg)	Initial Surface Storage (U)	Initial Root Zone Moisture (L)	Initial Groundwater Depth (GWL)	Initial Overland Flow (OF)	Initial Interflow (IF)	Specific Yield (Sy)	Minimum Groundwater Depth	Max GW depth causing Baseflow	GW Depth for Unit Capillary flux (GWLfl1)
A1	2.60	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
A1c	1.60	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
A1d	8.00	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
A3	38.00	0.030	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
A4	3.40	0.060	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
A6	5.50	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
A7	16.00	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
A9	9.30	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
A10	5.00	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
A11	0.10	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
A12	0.05	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
A13	0.45	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
A14	1.00	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
A15	0.60	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
A16	0.70	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
AUB Y-1	0.70	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
AUB Y-2	9.00	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
AUB Y-3	10.00	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
AUB Y-4	0.10	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
AUBRN53	3.00	0.063	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
AUBWV016	3.00	0.032	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
MSTTR02A	0.80	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
SRT11	3.00	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
WINT003	0.40	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
WINT035	3.00	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0
Unmetered	3.00	0.033	0.328	0.200	1	10	200	1000	0	0	0	0	0	32.8	0	0	0.1	0	32.8	0

ATTACHMENT 1G

WET WEATHER CALIBRATION SUMMARY SHEETS

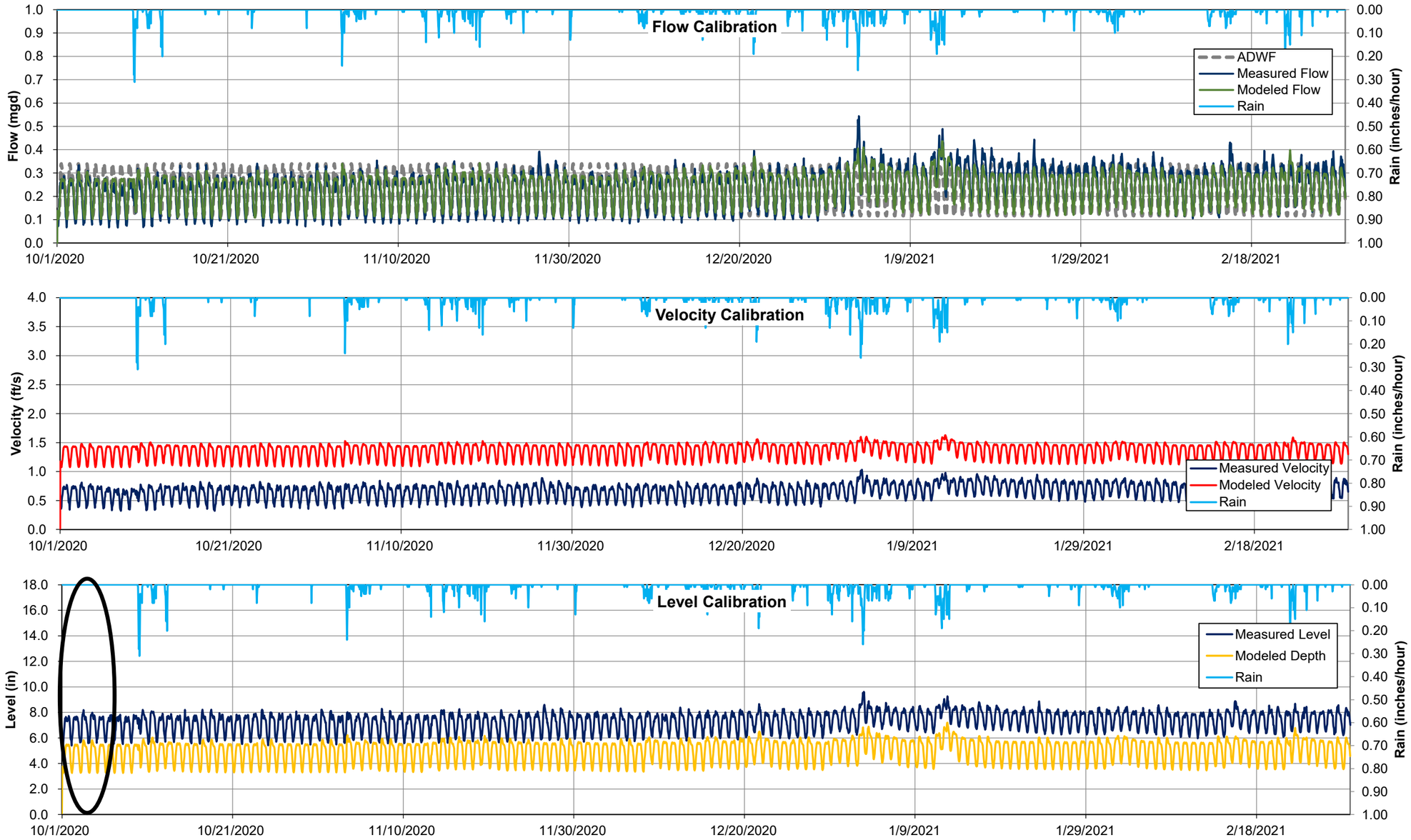
FLOW MONITORING A1 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: A1
Pipeline diameter: 21"
City Manhole ID: 308-20



FLOW MONITORING A1c WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: A1c
Pipeline diameter: 18"
City Manhole ID: 309-06



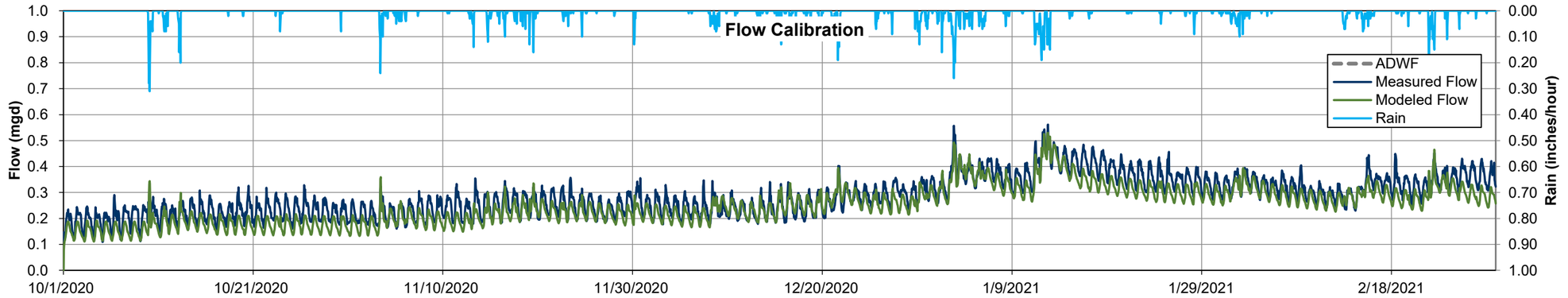
FLOW MONITORING A1d WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

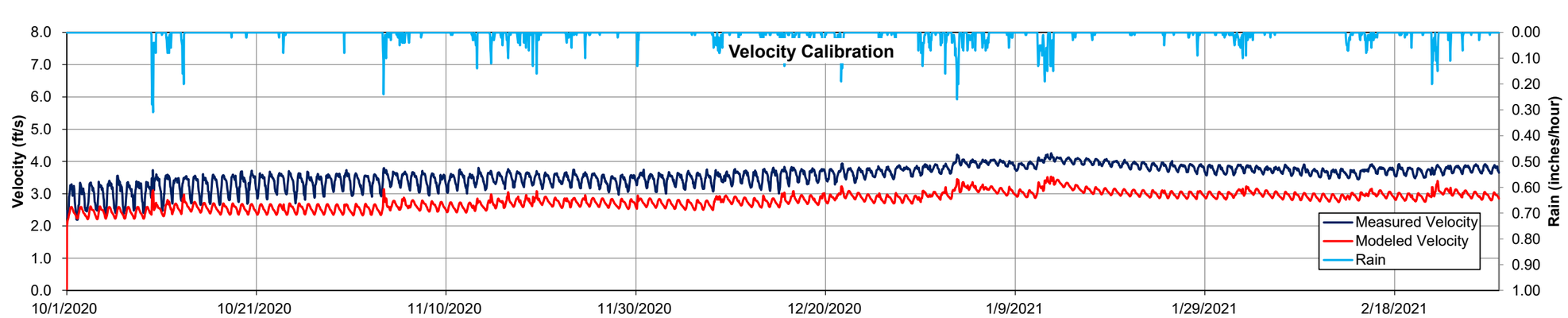
Location: A1d
Pipeline diameter: 18"
City Manhole ID: 309-10

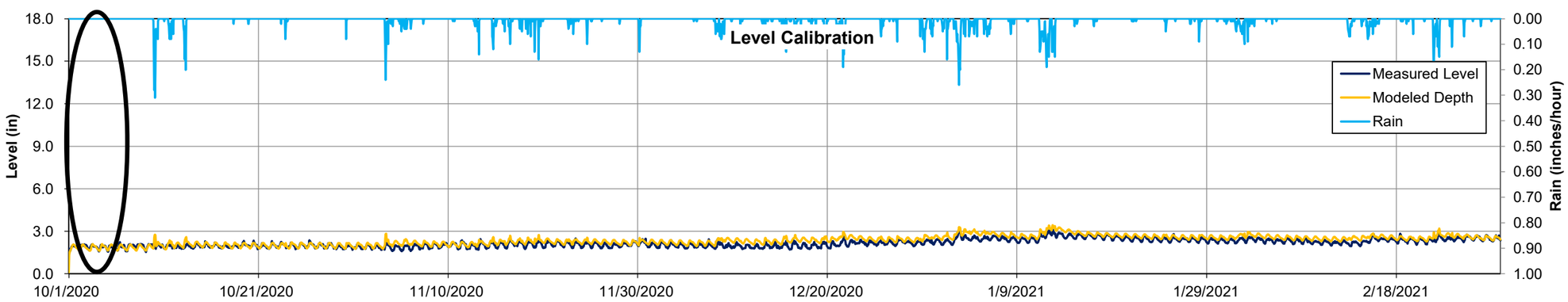


FLOW MONITORING A3 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: A3
Pipeline diameter: 18"
City Manhole ID: 409-34

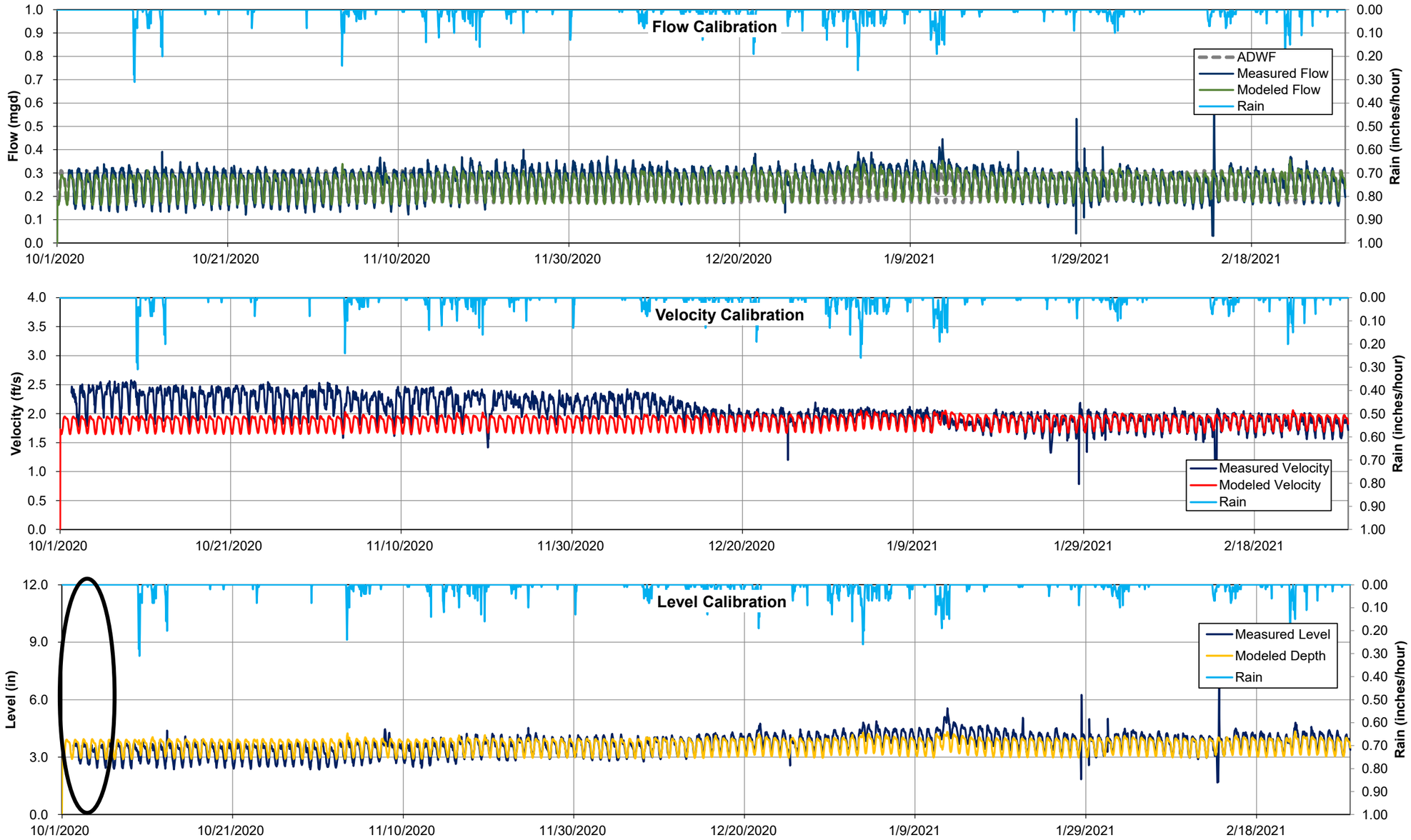






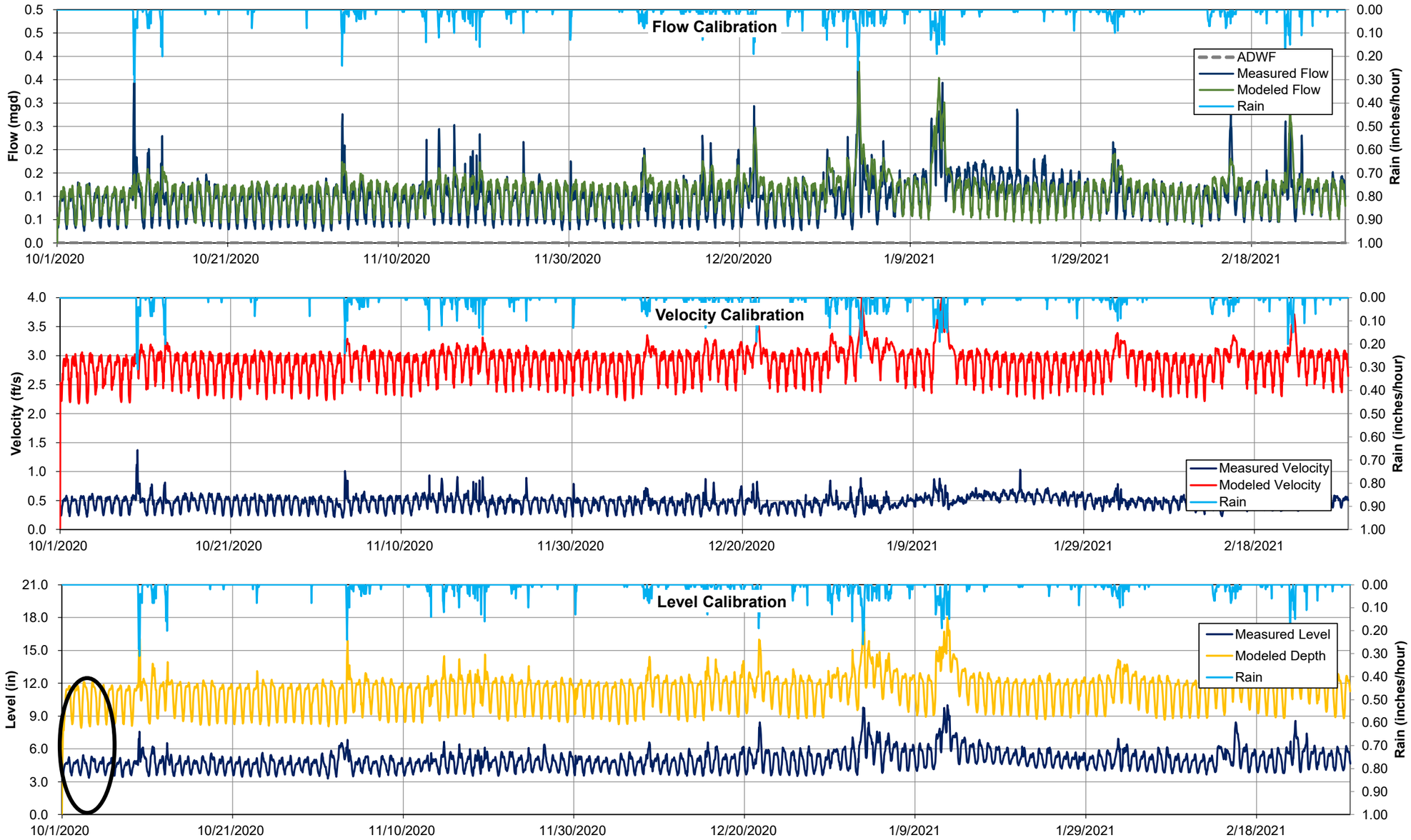
FLOW MONITORING A4 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: A4
Pipeline diameter: 12"
City Manhole ID: 508-17



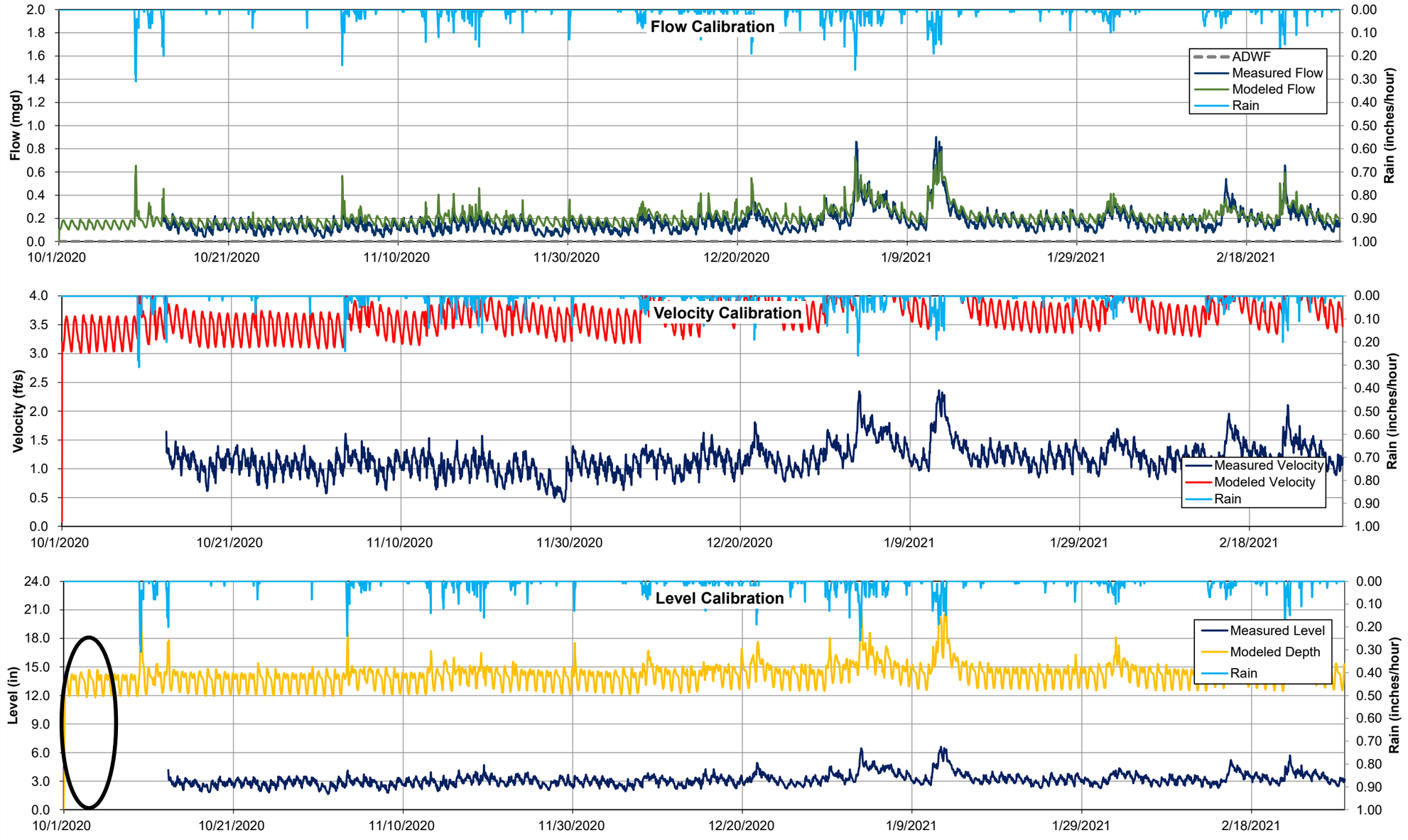
FLOW MONITORING A6 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: A6
Pipeline diameter: 12"
City Manhole ID: 610-31



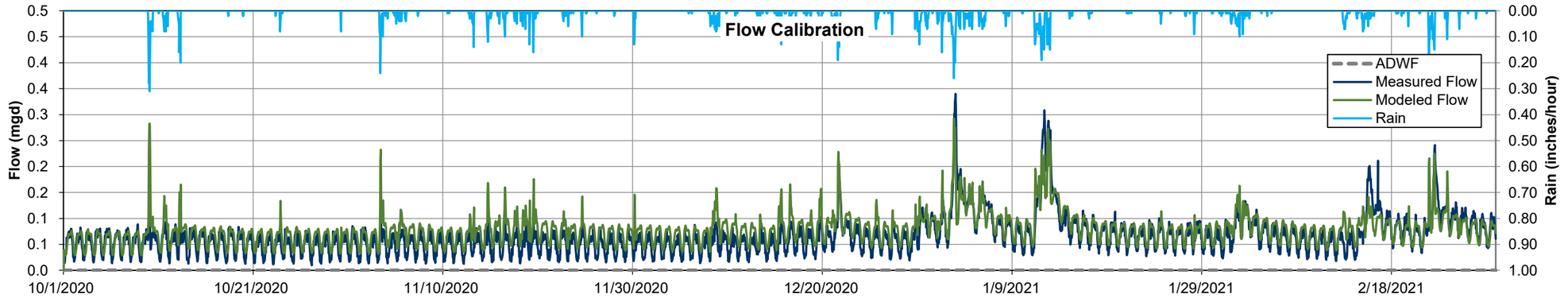
FLOW MONITORING A7 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

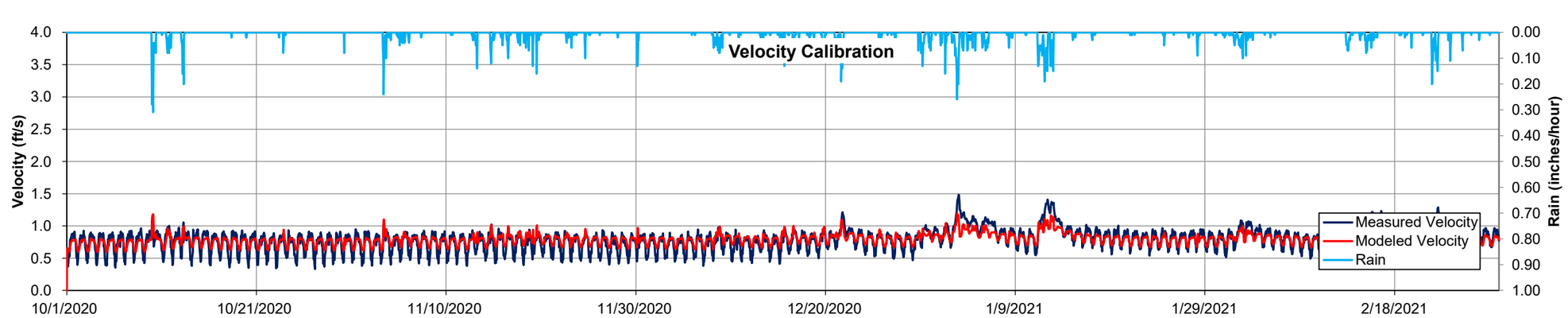
Location: A7
Pipeline diameter: 18"
City Manhole ID: 707-03

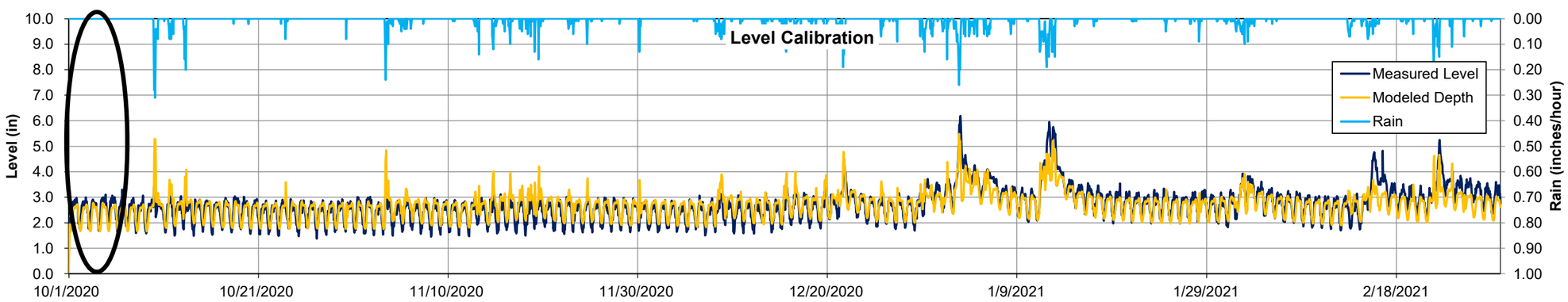


FLOW MONITORING A9 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: A9
Pipeline diameter: 10"
City Manhole ID: 710-31

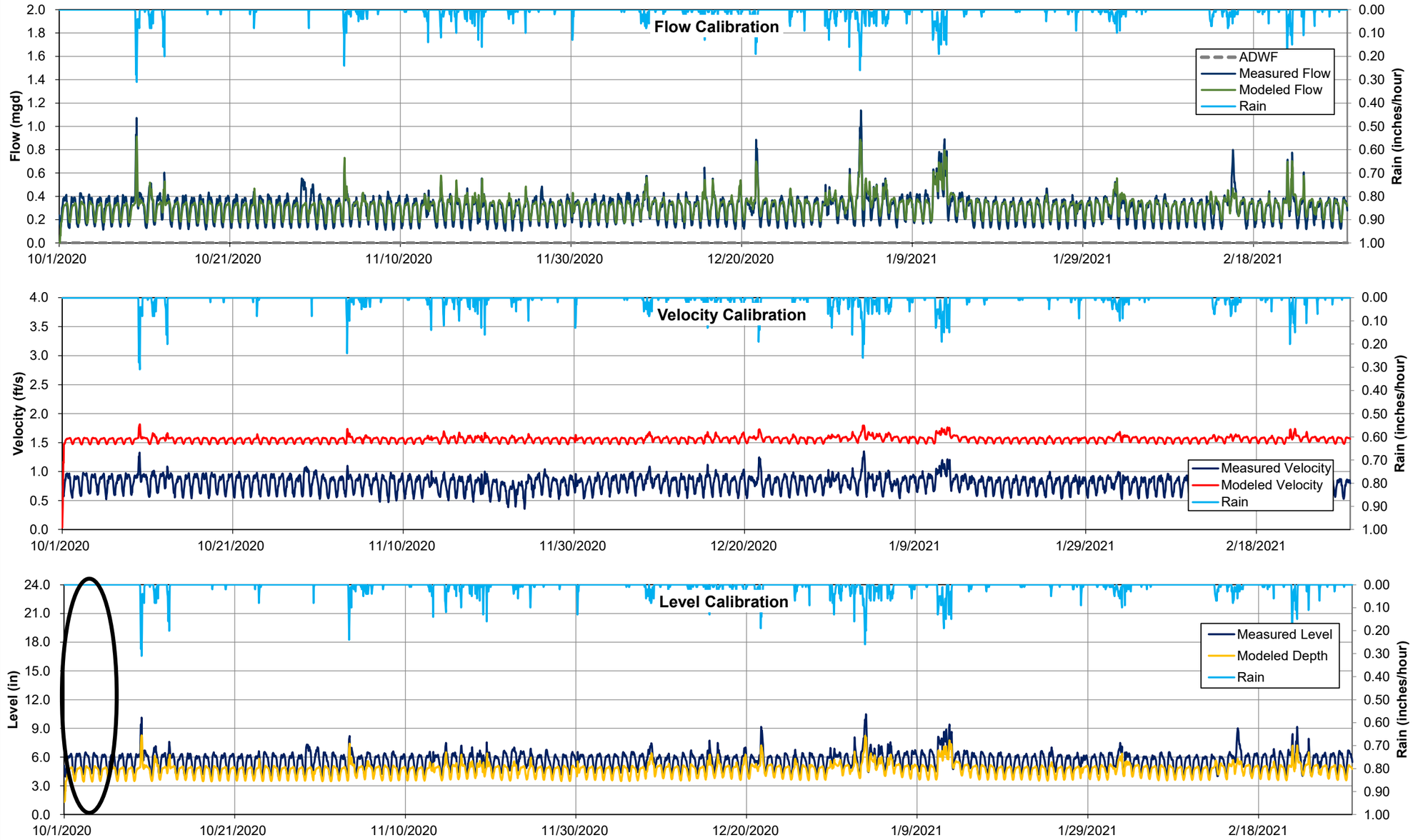






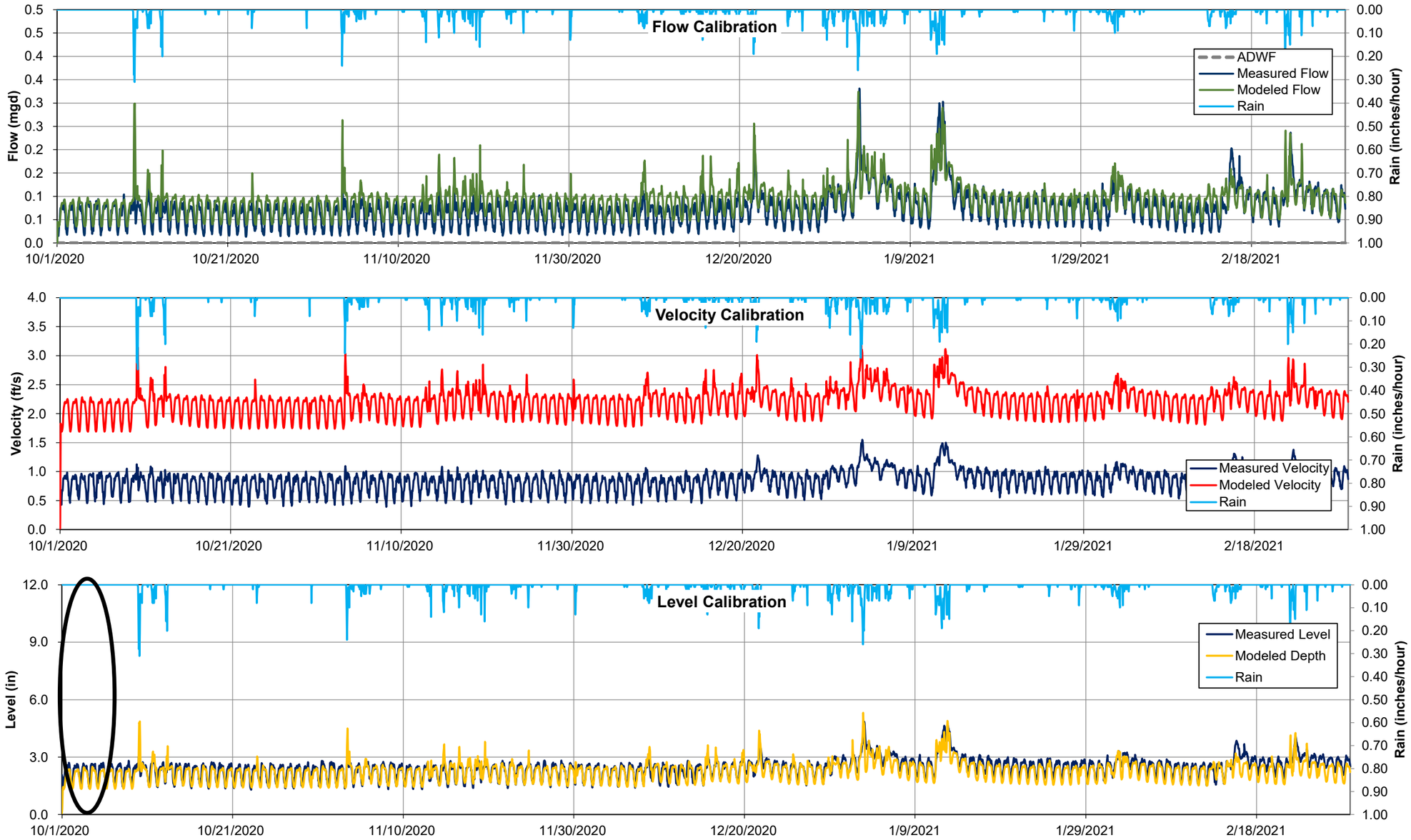
FLOW MONITORING A10 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: A10
Pipeline diameter: 24"
City Manhole ID: 710-151



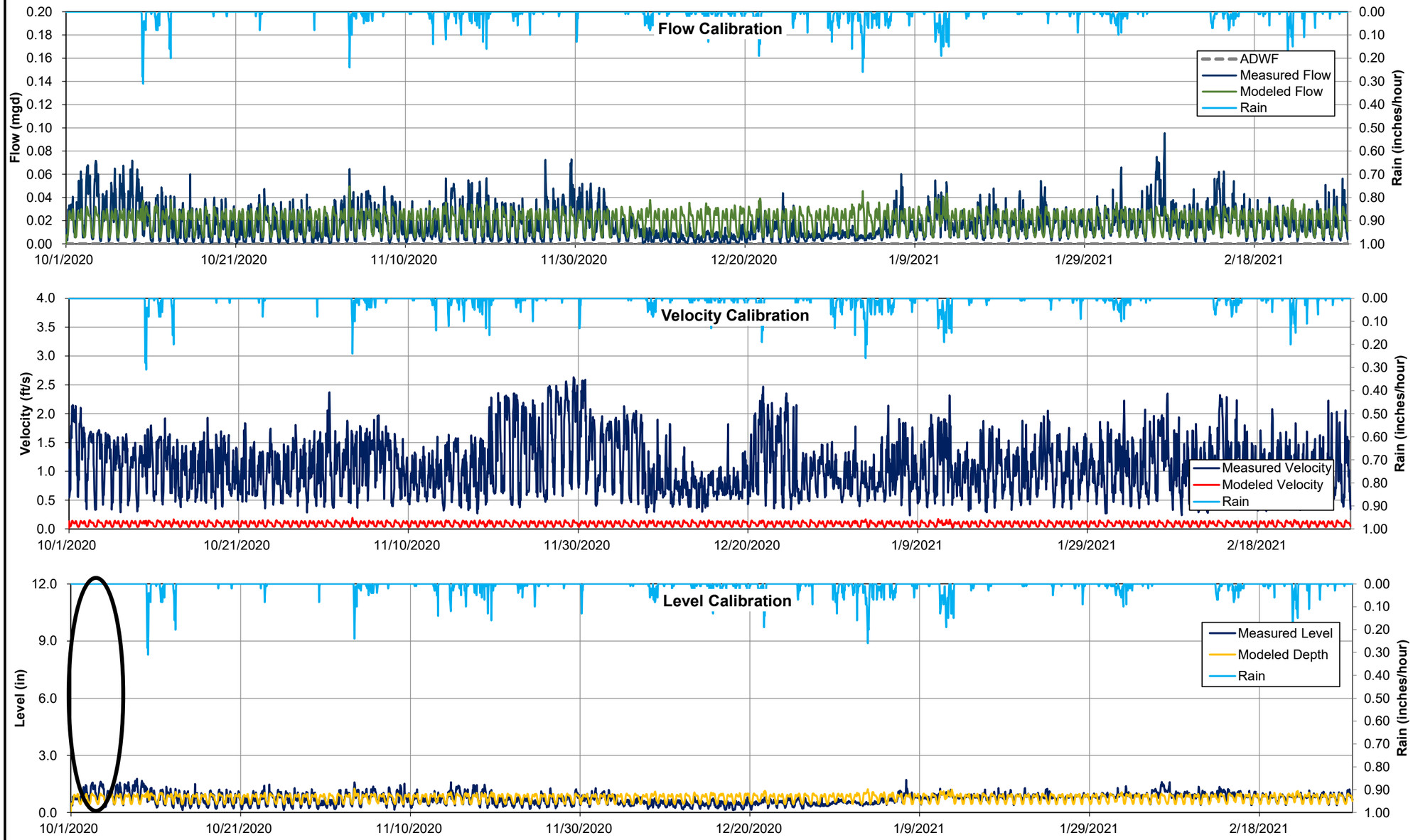
FLOW MONITORING A11 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: A11
Pipeline diameter: 12"
City Manhole ID: 710-142



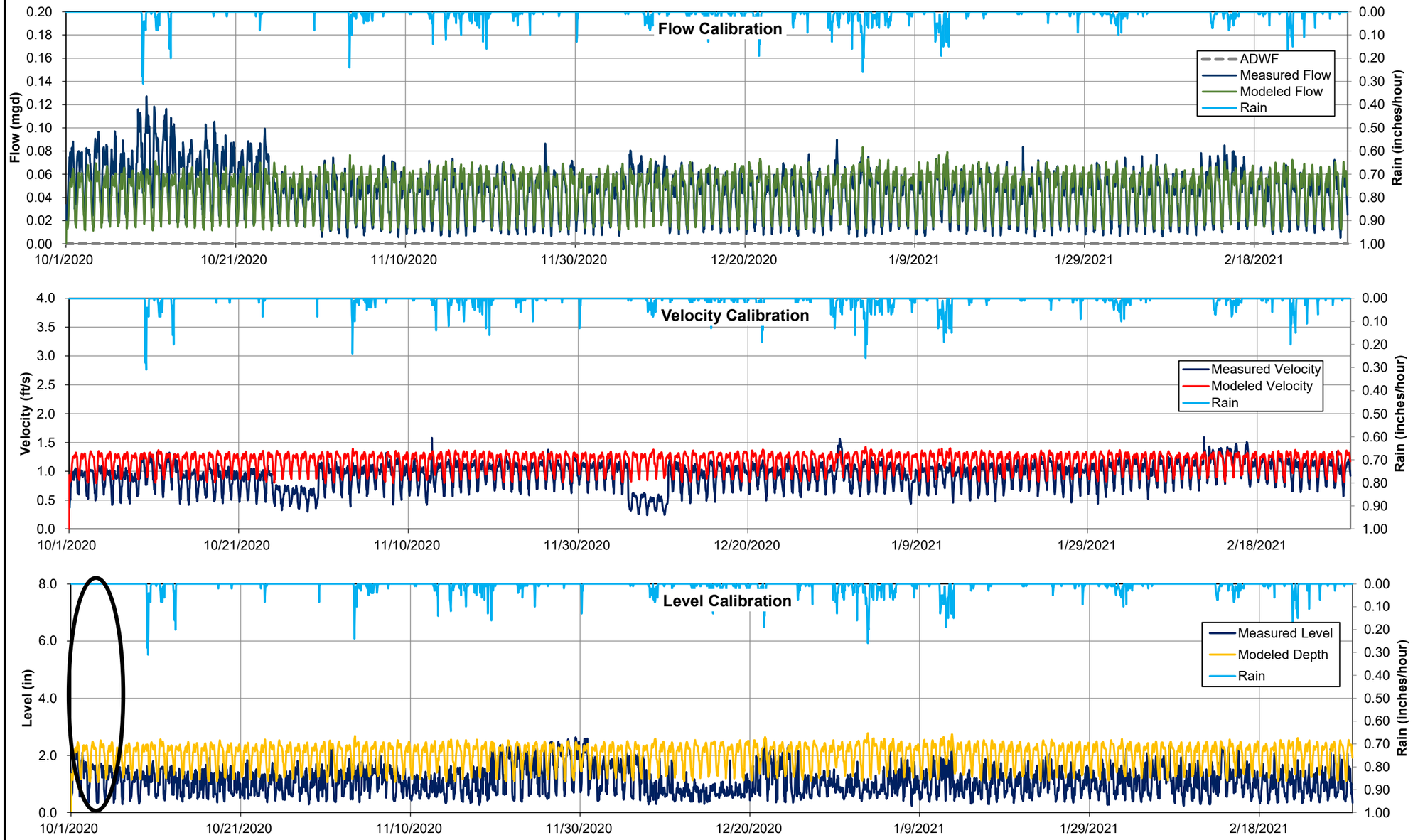
FLOW MONITORING A12 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: A12
Pipeline diameter: 12"
City Manhole ID: 710-43



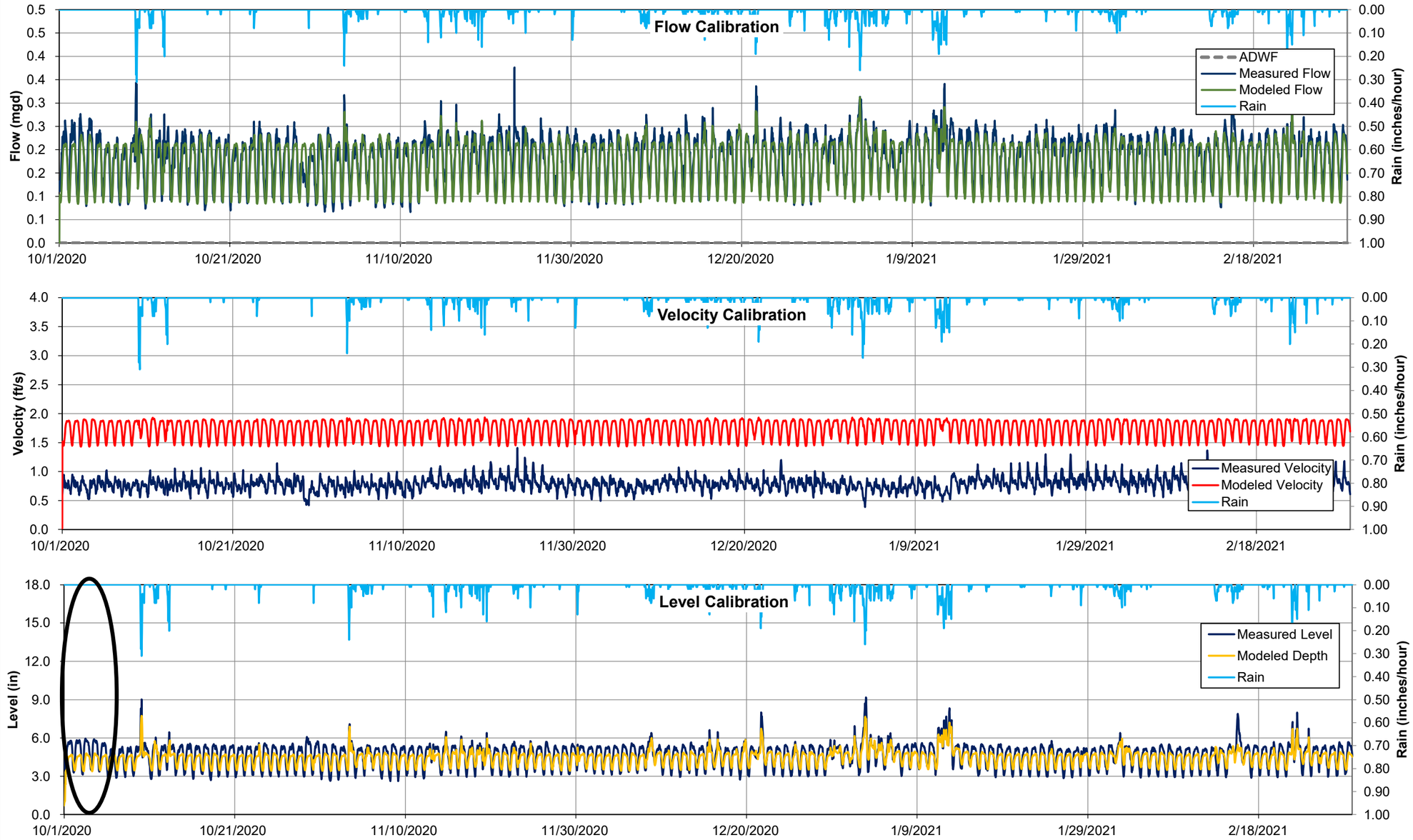
FLOW MONITORING A13 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: A13
Pipeline diameter: 8"
City Manhole ID: 710-85



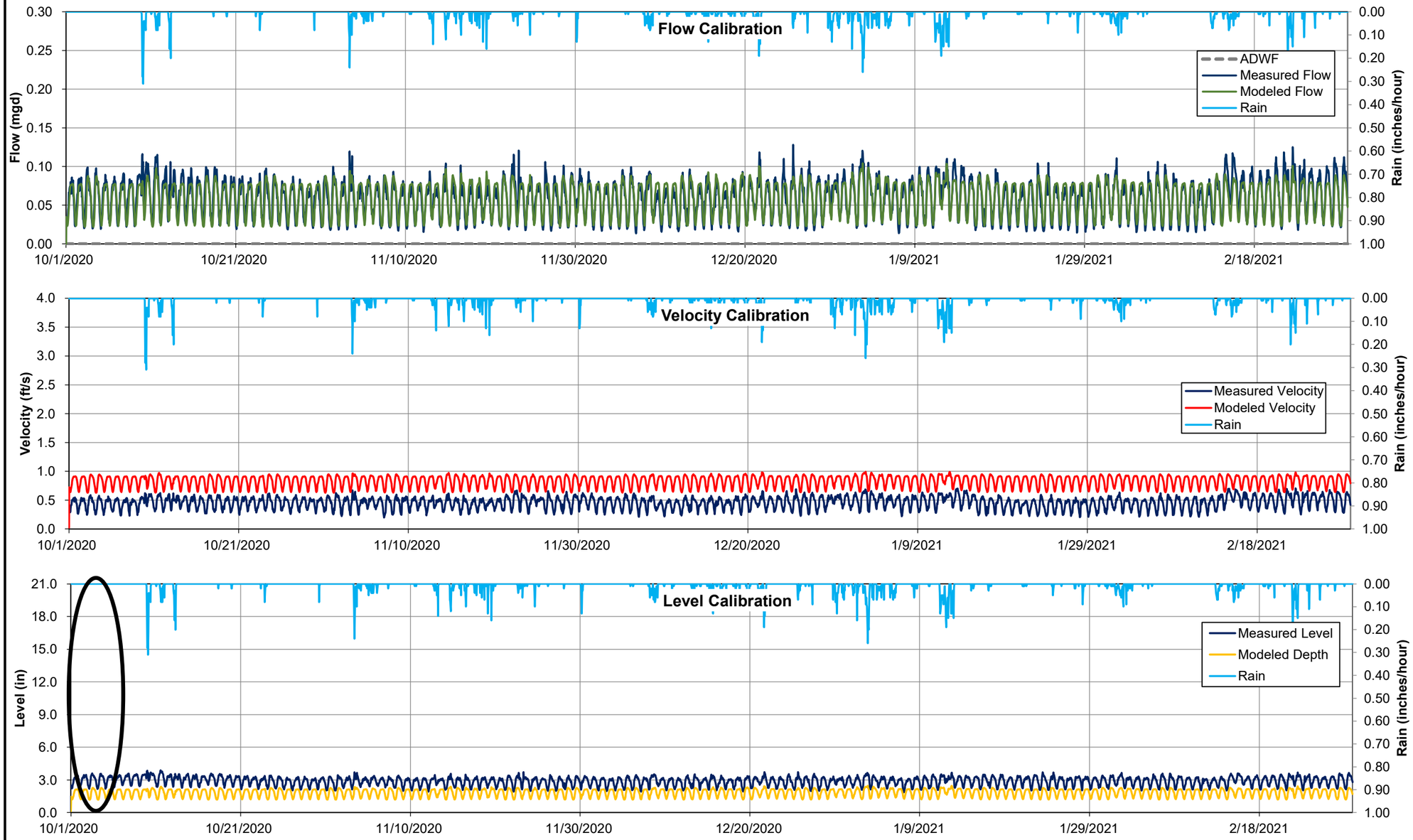
FLOW MONITORING A14 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: A14
Pipeline diameter: 18"
City Manhole ID: 710-149



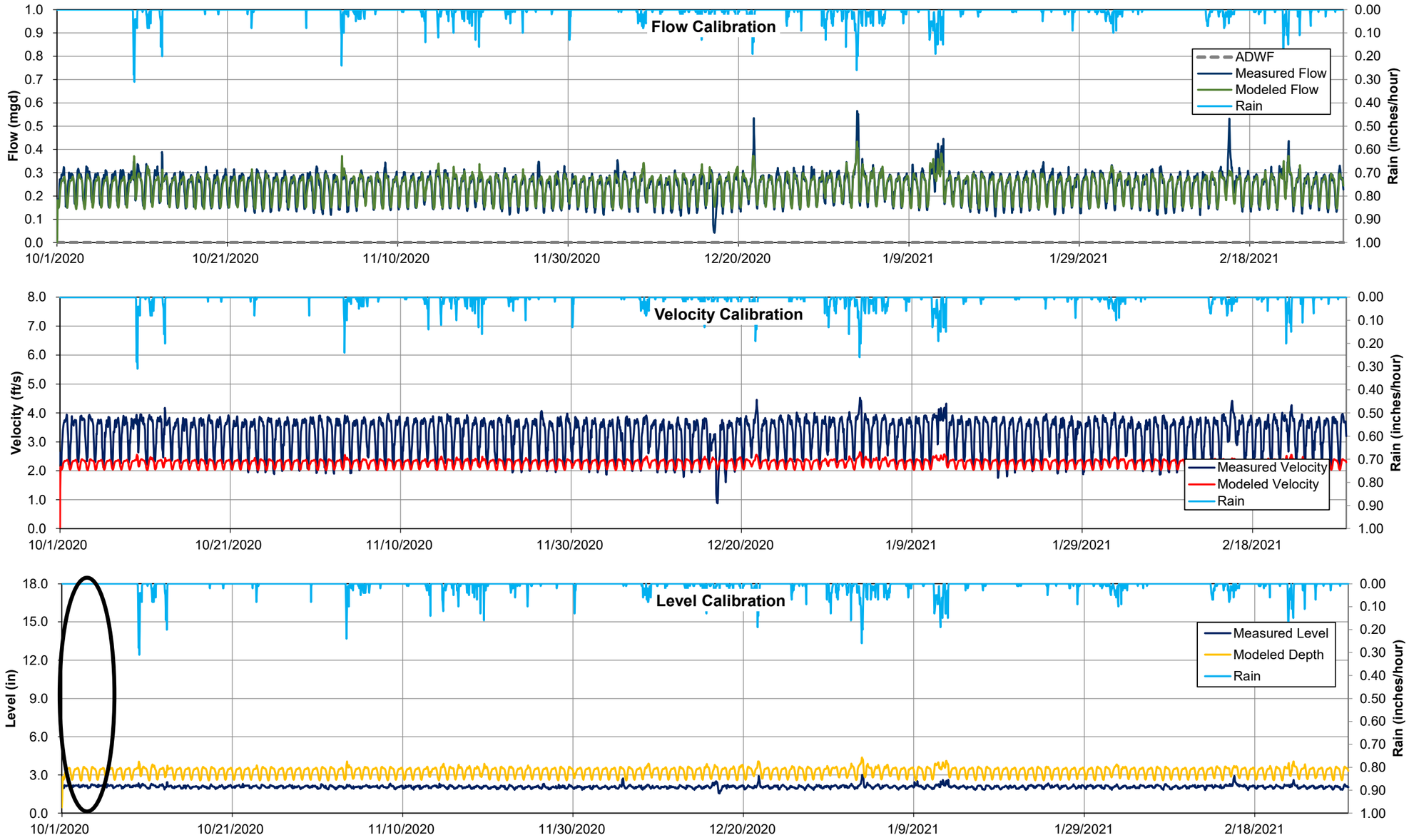
FLOW MONITORING A15 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: A15
Pipeline diameter: 21"
City Manhole ID: 809-30



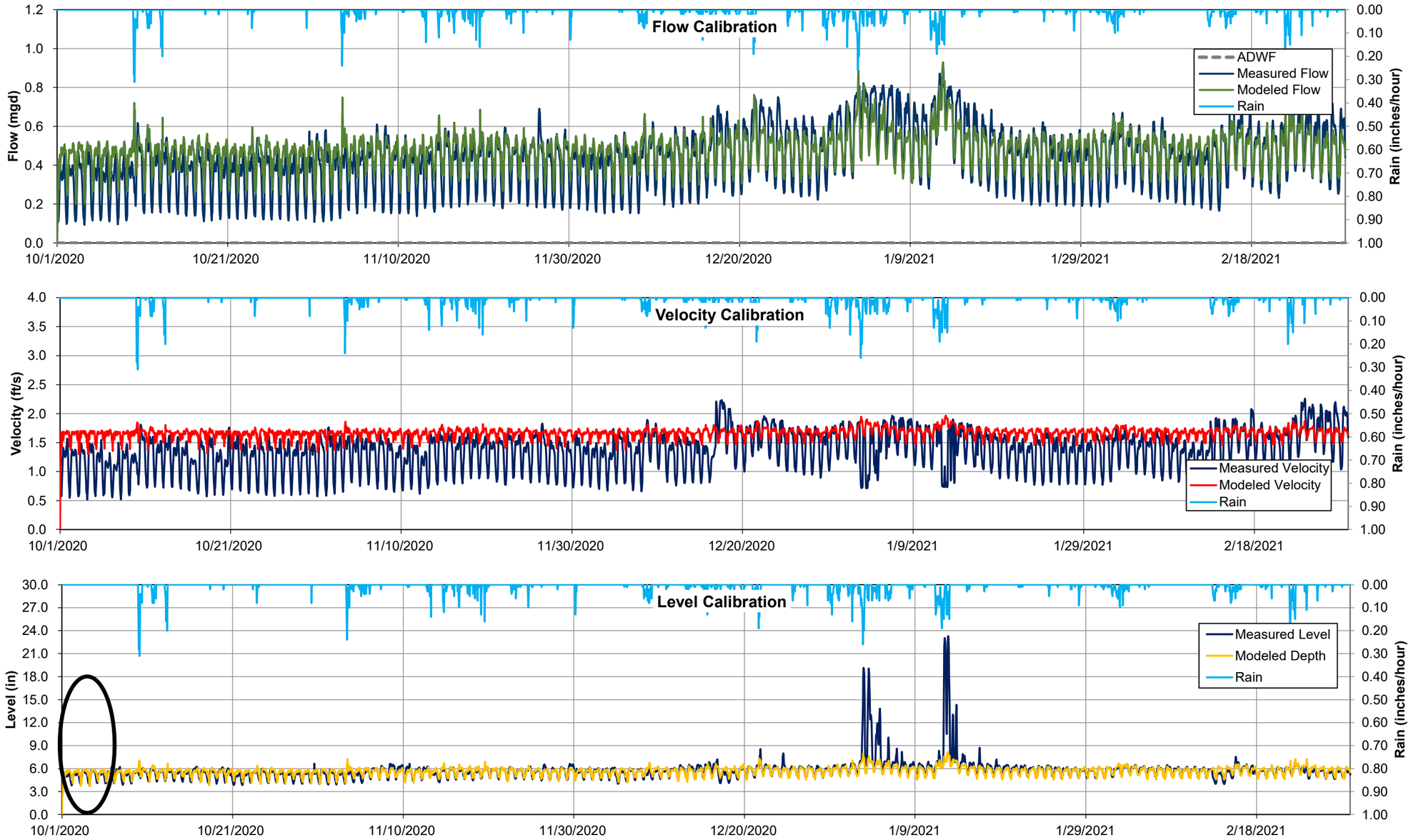
FLOW MONITORING A16 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: A16
Pipeline diameter: 18"
City Manhole ID: 809-56



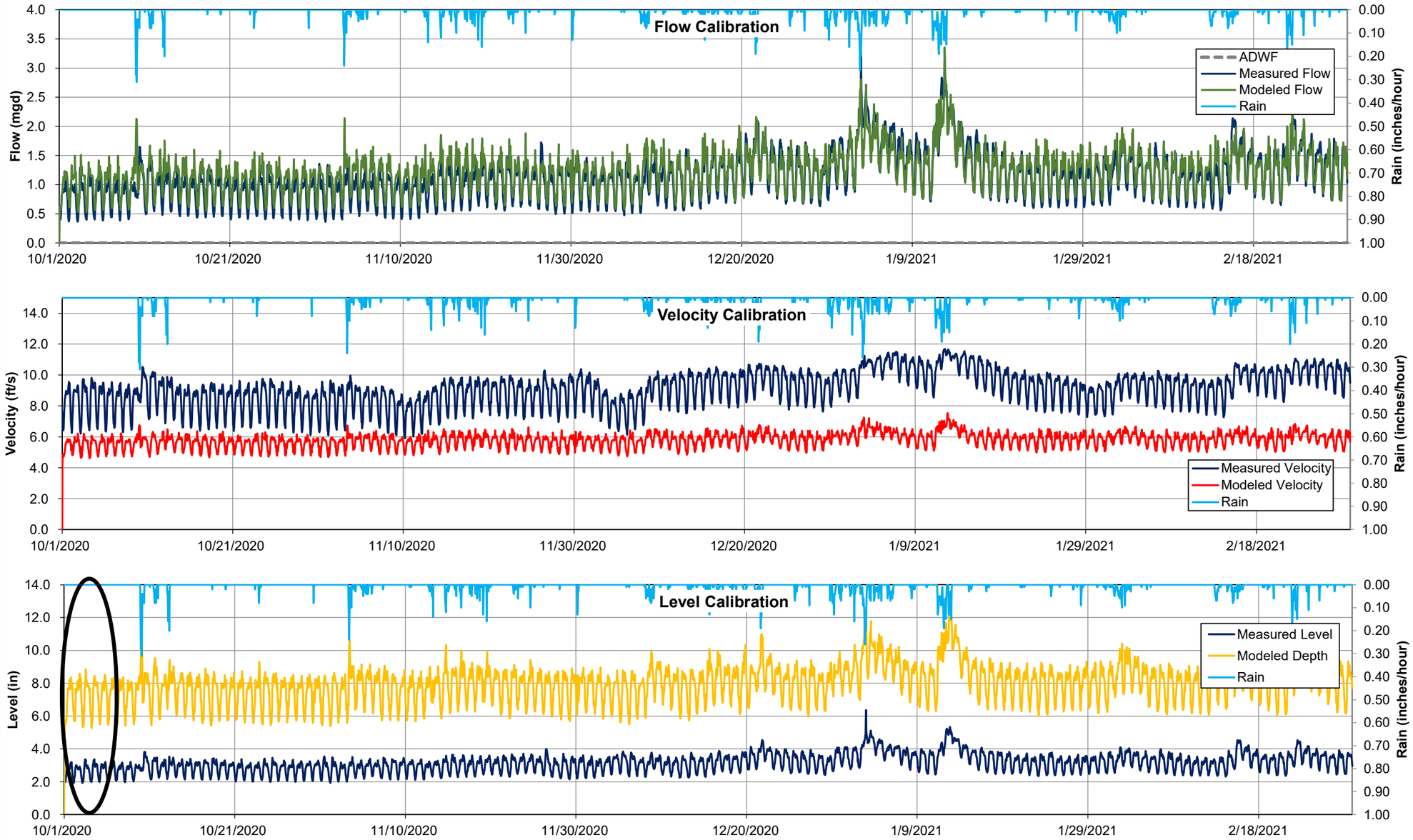
FLOW MONITORING Y-1 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: Y-1
Pipeline diameter: 18"
City Manhole ID: 410-16



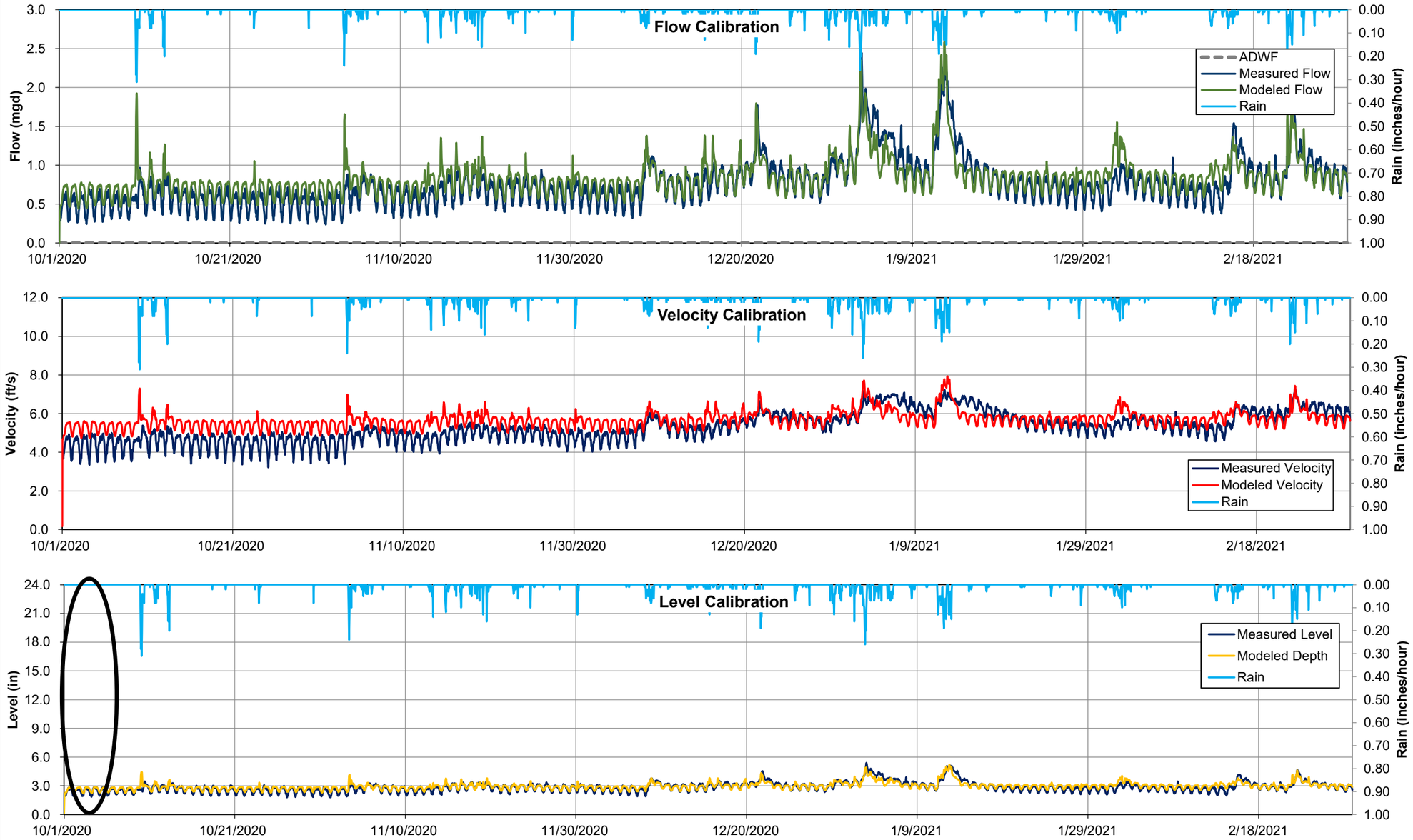
FLOW MONITORING Y-2 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: Y-2
Pipeline diameter: 14"
City Manhole ID: 611-02



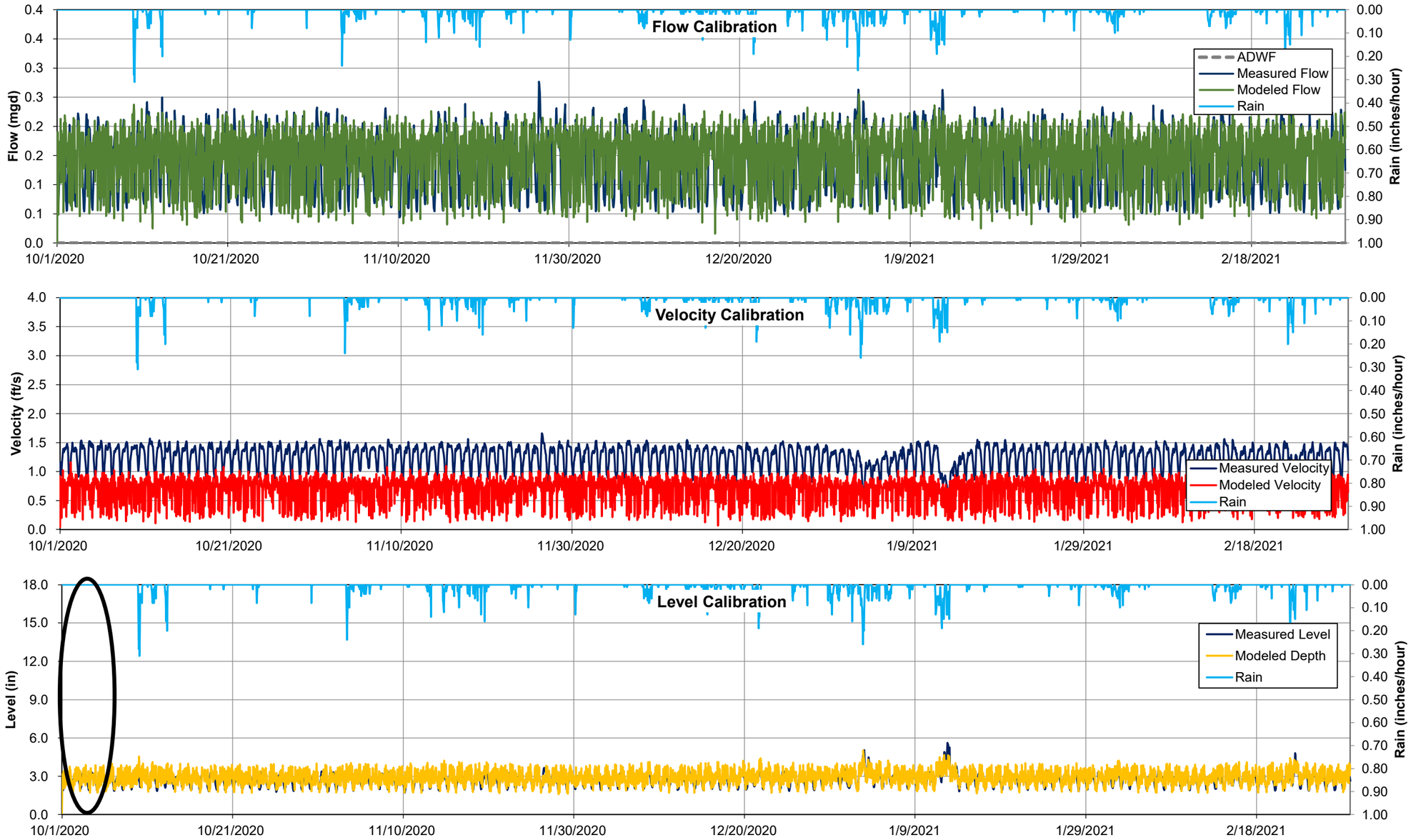
FLOW MONITORING Y-3 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: Y-3
Pipeline diameter: 24"
City Manhole ID: 1012-55



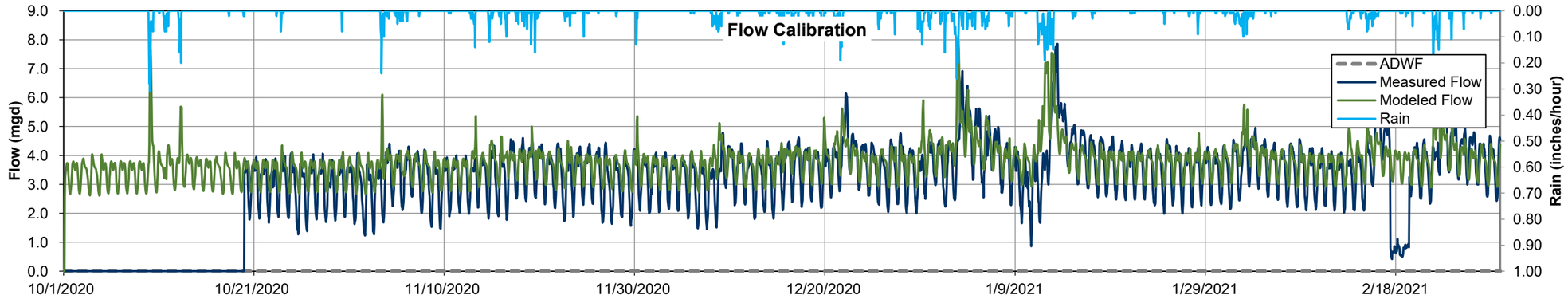
FLOW MONITORING Y-4 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

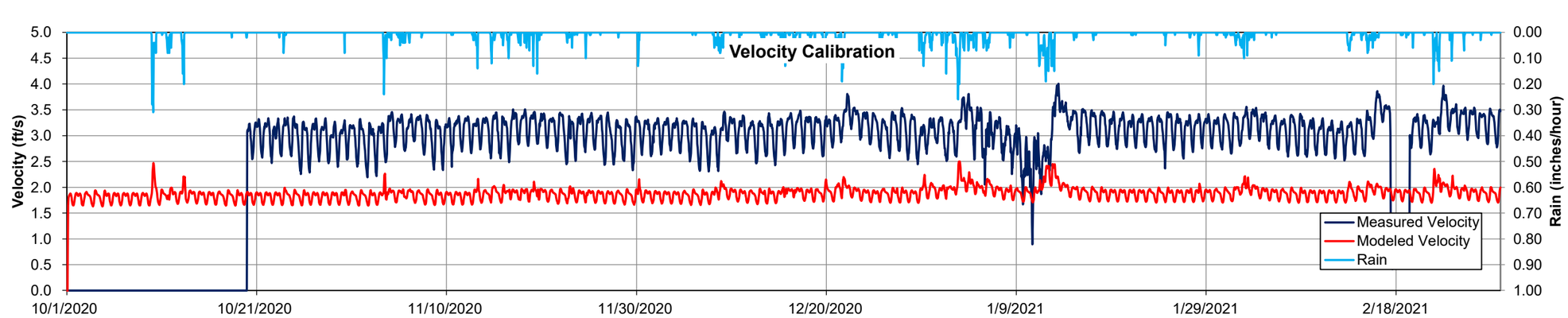
Location: Y-4
Pipeline diameter: 18"
City Manhole ID: 1010-02

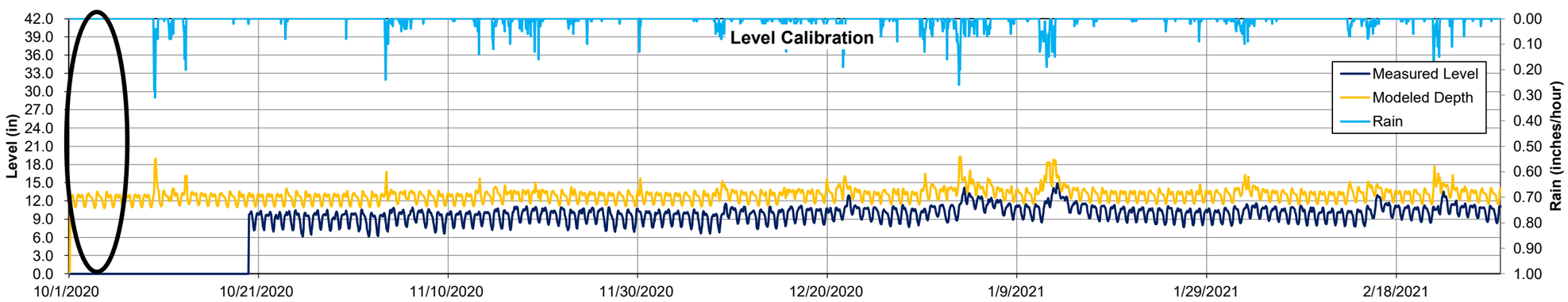


FLOW MONITORING WINT003 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: WINT003
Pipeline diameter: 42"
City Manhole ID: 508-02

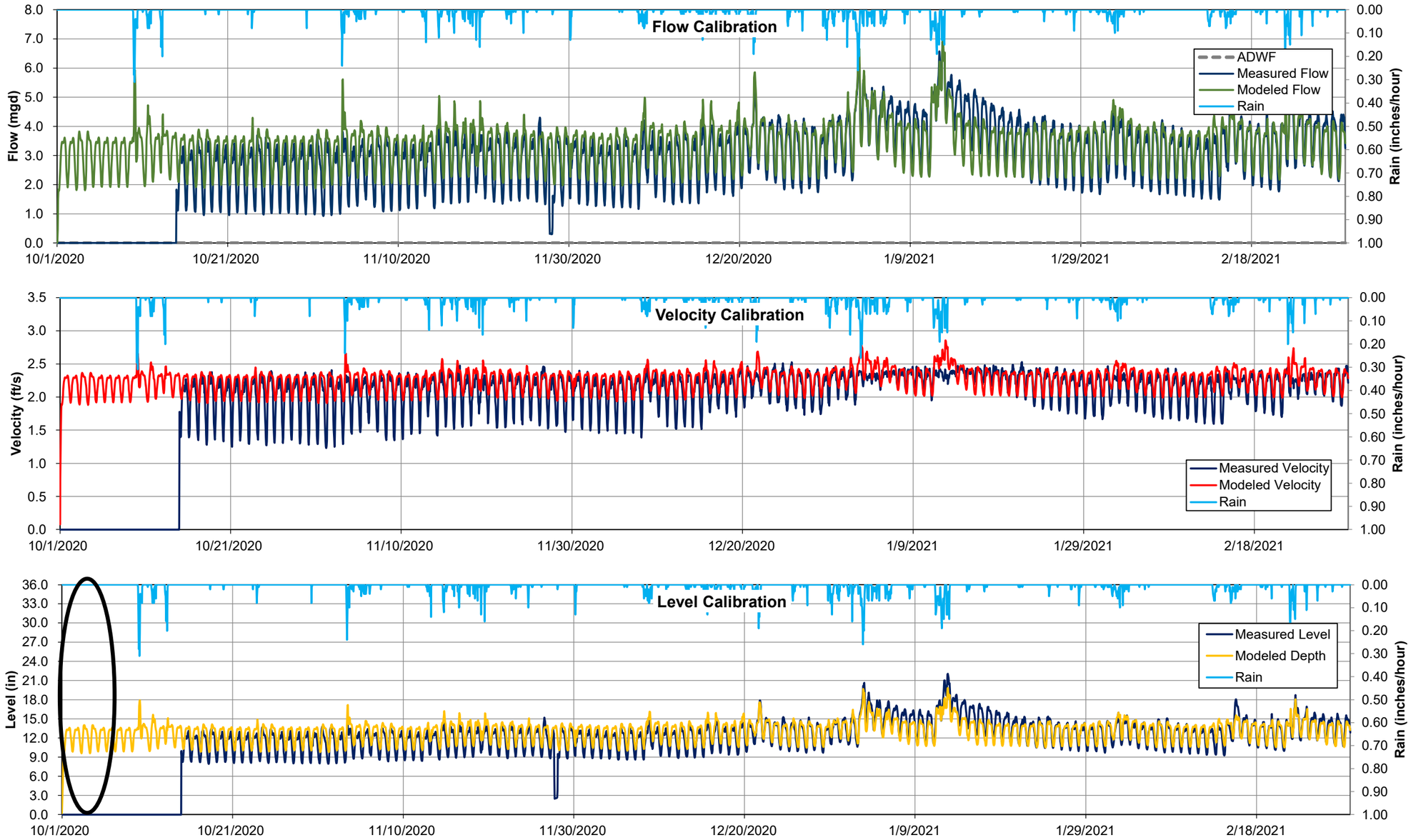






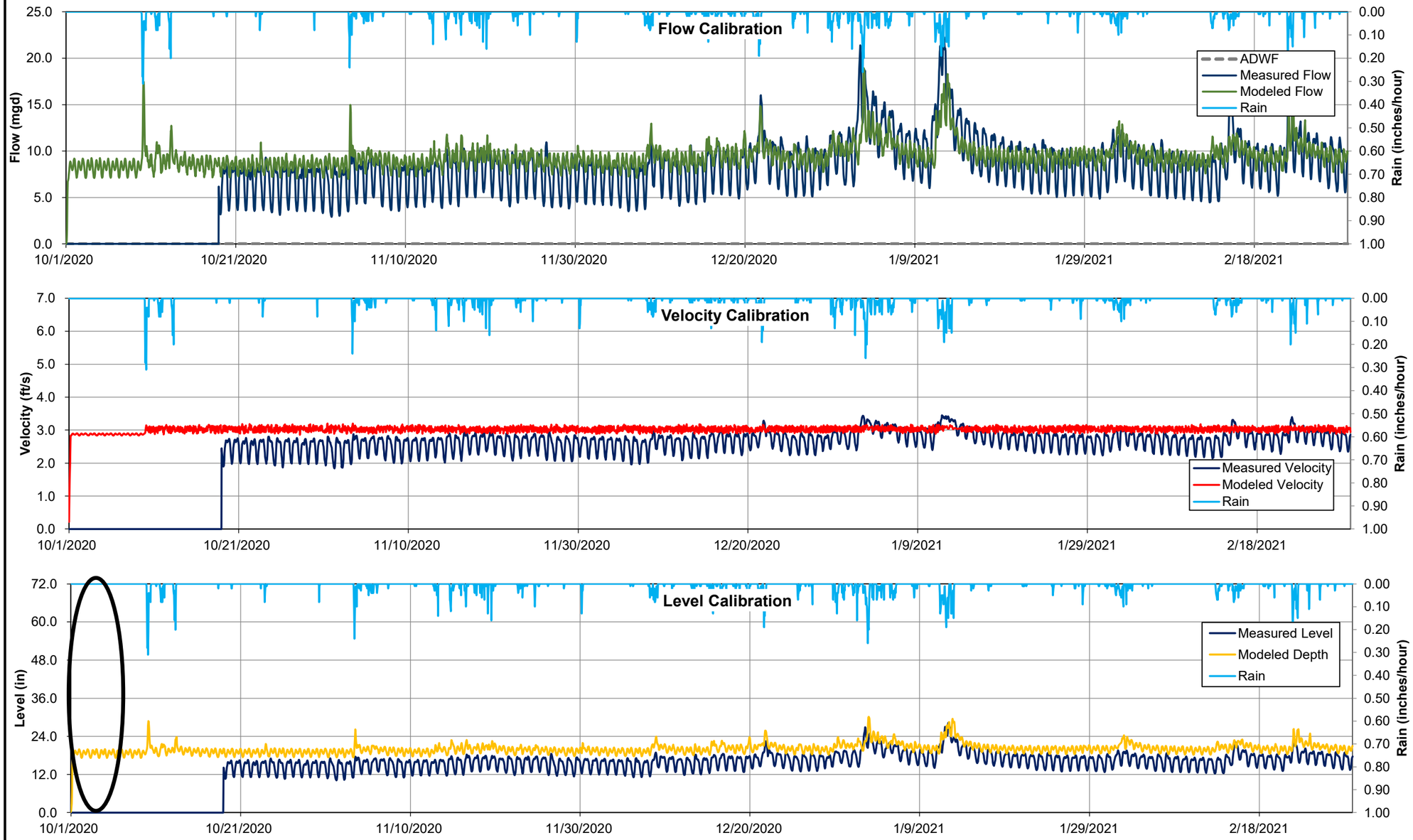
FLOW MONITORING MSTTR02 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: MSTTR02
Pipeline diameter: 36"
City Manhole ID: 509-16



FLOW MONITORING AUBRN53 WET WEATHER FLOW CALIBRATION
Collection System Planning Project
City of Auburn

Location: AUBRN53
Pipeline diameter: 72"
City Manhole ID: 207-01



APPENDIX E

PUMP STATION DATA SUMMARY

PUMP STATION DATA SUMMARY

Structure ID	Pump Station Name	Year Built	Serial Number	Number of Pumps	Wet Well						Lead Pump		Lag Pump		Single Pump Capacity (gpm)	Single Pump Capacity (mgd)	Total Station Capacity (All Pumps Running)- (mgd)
					Invert Elevation (feet)	Rim Elevation (feet)	Depth (feet)	Unit Area (ft^3/ft)	Volume (ft^3)	Diameter, Assuming Circular (feet)	Start Level (feet)	Stop Level (feet)	Start Level (feet)	Stop Level (feet)			
South Hill Sewer Basin																	
1610	Area 19	2006	09-07383-00V	2	522.21	540.81	18.6	28.27	525.8	6	529.2	527.5	530.2	527.5	325	0.468	0.702
1511	North Tapps	2007	09-07382-00N	2	505	537.45	32.45	28.26	917.0	6	512	510.6	513	510.6	510	0.734	1.101
1509	Terrace View	2007	09-07382-00N	2	58.5	77.6	19.1	28.27	540.0	6	64.6	63.8	65.6	63.8	675	0.972	1.458
Valley Sewer Basin																	
210	Auburn 40	2010	12-07206-00	2	23	57.4	34.4	63.6	2187.8	9	28.5	26.5	29.5	26.5	440	0.634	0.951
1309	Ellingson Road	2011	12-07210-00-F	2	72.3	93.9	21.6	50.27	1085.8	8	77.5	75.8	79.0	75.8	1527	2.199	3.299
1009	F Street	1980	08-7822-D	2	80.2	103.3	23.1	28.27	653.0	6	86.7	85.3	87.7	85.3	400	0.576	0.864
710	R Street	1977	07-7563-F	2	53.98	71	17.02	28.26	481.0	6	60.2	59.2	61.2	59.2	100	0.144	0.216
811	Valley Meadows	1992	14-1723-Z	2	46.98	72.5	25.52	28.26	721.2	6	51.5	50.5	52.5	50.5	125	0.180	0.270
710	8th Street	1974	14-1795-Z	2	60.25	78.25	18	28.27	508.9	6	64.1	63.05	65.05	63.05	150	0.216	0.324
511	22nd Street	1967	800-5	2	41	57.43	16.43	28.7	471.5	6	47.1	45.8	48.1	45.8	550	0.792	1.188
Auburn Way South Sewer Basin																	
912	Dogwood	2010	09-07394-00-F	2	255	273.4	18.4	50.26	924.8	8	260	259	260.8	259	300	0.432	0.648
West Hill Sewer Basin																	
705	Peasley Ridge	2001	08-8478-K	2	454.55	474.25	19.7	28.26	556.7	6	460.5	458.6	461.5	458.6	275	0.396	0.594
206	Hudson	2018	18-01131-00-X	2	25.58	53.23	27.7	50.27	1392.5	8	29.0	27.1	30.0	27.1	600	0.864	1.296
Lea Hill Sewer Basin																	
614	Rainer Ridge	1980	07-7699-C	2	385.25	405	19.75	28.26	558.1	6	391.2	389.1	392.2	389.1	200	0.288	0.432
611	Riverside	1981	07-7784-R	2	41.96	71.21	29.25	28.26	826.6	6	48.4	47.0	49.4	47.0	400	0.576	0.864
413	Verdana	2011	19-01368-00-N	3	363.17	394	30.83	175	5395.3	15	371.37	369.37	372.37	369.37	1750	2.520	3.780
514	Promenade	2018	09-07404-00-X	2	370.60	391	20.40	79	1611.6	10	374.10	372.10	374.60	372.10	174	0.250	0.375

Pump/Pump Station Manufacturer Information

All pump stations except 22nd Street Pump Station

Lenexa, Kansas 66215
Phone: 913.888.5201

22nd Street Pump Station

Smith and Loveless
Cornell Pumps 14040 Santa Fe Trail Drive, Portland, OR

Local Equipment Representative

ADS Equipment
PO Box 81045
Seattle, WA 98108
Phone: 206.763.3600

Local Equipment Representative

Ideal Pump
8625 219th SE
Woodinville, WA 98072
Phone: 425.481.7777

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APPENDIX F

SEPA CHECKLIST

SEPA[1] Environmental Checklist

Purpose of checklist

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization, or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. **You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown.** You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to **all parts of your proposal**, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for lead agencies

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B, plus the Supplemental Sheet for Nonproject Actions (Part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in "Part B: Environmental Elements" that do not contribute meaningfully to the analysis of the proposal.

[1] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/Checklist-guidance

A.Background

Find help answering background questions[2]

1. **Name of proposed project, if applicable:**

   City of Auburn, 2024 Comprehensive Sewer Plan

2. **Name of applicant:**

   City of Auburn, Public Works Department, Sewer Division

3. **Address and phone number of applicant and contact person:**

   City of Auburn
   Public Works Department
   25 West Main Street
   Auburn, WA 98001
   253-931-3010

   Robert Elwell, Sewer Utility Engineer
   253-931-4008

4. **Date checklist prepared:**

   June 17, 2024

5. **Agency requesting checklist:**

   City of Auburn

6. **Proposed timing of schedule (including phasing, if applicable):**

   The Comprehensive Sewer Plan is scheduled for adoption during 2024. It identifies near-term projects for the next six years, and long-term projects over the next twenty years. It also provides direction for inspection, maintenance, and operation of the utility. A public hearing was held regarding the adoption of the Plan at the June 4, 2024 Planning Commission meeting.

7. **Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.**

None beyond those discussed in this Comprehensive Sewer Plan The next comprehensive sewer plan update is proposed for the year 2032.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Depending upon the scope of projects proposed in the plan, an individual environmental checklist and threshold determination would be completed as specified projects are proposed for construction. There are no environmental or background studies that have been completed for this sanitary sewer plan.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

At this time, there are no known pending applications for general applicability related to the area covered by the sewer system. There may be applications pending related to improvements to the sewer system such as various on-going plats and developer extensions occurring within the sewer service area. The City plans to adopt the capital improvement plan outlined in this document as part of the City's six-year capital facilities plan.

10. List any government approvals or permits that will be needed for your proposal, if known.

The Comprehensive Sewer Plan must be approved by the City of Auburn City Council, the King County Council, and the Washington State Department of Ecology.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.

The proposed non-project action includes adoption of the Comprehensive Sewer Plan as an element of the City's Comprehensive Plan. The City of Auburn's 2024 Comprehensive Sewer Plan replaces the City of Auburn's 2016 Comprehensive Sewer Plan. The plan examines the existing sewer service area which includes both areas within the city limits and potential annexation areas for the City of Auburn. It addresses policies, design criteria, and recommends improvements to the sewer system and its service area. The plan analyzes the current level of service and identifies important projects necessary to meet City and State Standards regarding public health, facility efficiency, and operations and maintenance. The wide range of facility improvements includes repair and replacement, system improvements, facility evaluations, and extensions of the utility to meet future sewer demands. The Comprehensive Sewer Plan is an ongoing element of the city Comprehensive Plan and serves as a guide for the operation, maintenance and expansion of the utility within its Sewer Service Area, in accordance with local, County, and State requirements.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The sewer service planning area as established in the plan is defined as the City of Auburn's existing city limits and potential annexation areas. The City of Auburn's service area has been modified by several interlocal agreements with neighboring sewer service providers. Those agreements are included in Appendix A of the Comprehensive Sewer Plan. The service area is shown on Figure 1.2 of the Comprehensive Sewer Plan and reflects those agreements.

B.Environmental Elements

1. Earth

Find help answering earth questions[3]

a. General description of the site:

The sewer service area is characterized by a relatively flat valley floor bordered by steep hillsides and upland plateaus overlooking the valley.

Circle or highlight one: Flat, rolling, hilly, steep slopes, mountainous, other:

b. What is the steepest slope on the site (approximate percent slope)?

The actual land slopes vary throughout the planning area. Steep slopes exist east and north of the Green River on Lea Hill, south of the White River, and west along the West Valley Highway toward the West Hill. The steepest slopes are close to 100 percent.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them, and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

The valley floor is made up primarily of soils of the Oridia, Renton, Snohomish, and Briscott series. These soils are poorly drained and formed in the alluvium (river

[3] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-earth

sediments) associated with the White and Green rivers. These are considered good agricultural soils, though in many areas, are not well-drained. There is no designated farmland within the City of Auburn.

The hillsides and plateaus are made up of primarily Alderwood associated soils and a small amount of Everett associated soils (U.S. Department of Agriculture, 1973). Alderwood soils are moderately well drained gravelly sandy loams 20-40 inches deep. Beneath these soils is glacial till with low permeability. Roots penetrate easily to the hardpan layer. Runoff potential is slow to medium. Erosion and slippage hazard is moderate, ranging to severe on steeper slopes. The Everett series consists of somewhat excessively drained soils that are underlain by very gravelly sand. These soils formed in very gravelly glacial outwash deposits under conifers. They are found on terraces and terrace fronts and are gently undulating to moderately steep.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Some steep slopes, in the areas described earlier, are possible locations of unstable soils. Geologic hazard areas including volcanic, seismic, landslide, and erosion hazard areas are mapped in the City Comprehensive Plan and sensitive areas maps.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Does not apply, since the proposed Comprehensive Sewer Plan is a non-project action. Sewer system construction projects identified in the plan will require excavation and grading of an undetermined quantity of material. Specific projects will be subject to individual environmental review prior to construction.

f. Could erosion occur because of clearing, construction, or use? If so, generally describe.

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Does not apply, since this non-project action does not involve site specific development proposals.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any.

This is a non-project action, so no site specific erosion control is proposed. Specific projects described by the plan will be subject to individual environmental review

before implementation. Where applicable, erosion and sedimentation control measures together with best management practices per the 2019 Surface Water Management Manual will be used in all areas of potential erosion.

2. Air

Find help answering air questions[4]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Does not apply to this non-project action. Specific projects, which are subject to environmental review, will be evaluated for their potential impact and corresponding mitigation measures prior to implementation.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

Does not apply to this non-project action. Specific projects, which are subject to environmental review, will be evaluated for their potential impact and corresponding mitigation measures prior to implementation.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation. However, standard emission controls for construction equipment will be utilized during construction of projects recommended by this plan.

3. Water

Find help answering water questions[5]

a. Surface:

Find help answering surface water questions[6]

1. Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

[4] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-Air
[5] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water
[6] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water/Environmental-elements-Surface-water

The major bodies of water within Auburn are the Green River, the White River, Mill Creek, Bowman Creek, and White Lake.

2. **Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.**

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation and compliance with the City's Shoreline Master Program.

3. **Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

4. **Will the proposal require surface water withdrawals or diversions? Give a general description, purpose, and approximate quantities if known.**

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

5. **Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

Several areas within Auburn lie within the 100-year floodplain of the Green or White River and Mill Creek. . Specific projects described by the plan which lie within these flood plains will be subject to individual environmental review before implementation and must comply with all applicable regulations.

6. **Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

No

b. Ground:

Find help answering ground water questions[7]

1. **Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate**

[7] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water/Environmental-elements-Groundwater

quantities withdrawn from the well. Will water be discharged to groundwater? Give a general description, purpose, and approximate quantities if known.

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

2. **Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (domestic sewage; industrial, containing the following chemicals…; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

Does not apply to this non-project action. No waste material will be discharged into the ground as a result of this Plan.

c. Water Runoff (including stormwater):

1. **Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

2. **Could waste materials enter ground or surface waters? If so, generally describe.**

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

3. **Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.**

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

4. Plants

Find help answering plants questions

a. Check the types of vegetation found on the site:

☒ **deciduous tree: alder, maple, aspen, other**

☒ **evergreen tree: fir, cedar, pine, other**

☒ **shrubs**

☒ **grass**

☒ **pasture**

☒ **crop or grain**

☒ **orchards, vineyards, or other permanent crops.**

☒ **wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other**

☒ **water plants: water lily, eelgrass, milfoil, other**

☒ **other types of vegetation**

Does not apply to this non-project action. A wide variety of plants exist across the Plan area. Specific projects described by the plan will be subject to individual environmental review before implementation.

b. What kind and amount of vegetation will be removed or altered?

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

c. List threatened and endangered species known to be on or near the site.

Does not apply to this non-project action. Any threatened or endangered species on or near the recommended projects of this Plan will be listed at the time of the environmental review process for each individual project.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any.

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation.

e. List all noxious weeds and invasive species known to be on or near the site.

Does not apply to this non-project action. Any noxious weeds or invasive species on or near the recommended projects of this plan will be listed at the time of environmental review process for each individual project.

5. Animals

Find help answering animal questions[8]

a. List any birds and other animals that have been observed on or near the site or are known to be on or near the site.

Examples include:

- **Birds: hawk, heron, eagle, songbirds, other: geese, ducks, crows**
- **Mammals: deer, beaver, other: urban animals such as dogs, cats, squirrels, rodents, opossums, raccoons, etc are also present.**
- **Fish: salmon, trout**

Does not apply to this non-project action. Adoption of the Comprehensive Sewer Plan does not involve a specific site. Many of the following species could be present within the project area. Specific projects will be subject to individual environmental review for the identification of species present before implementation.

b. List any threatened and endangered species known to be on or near the site.

The City of Auburn Comprehensive Plan identifies the presence of Great Blue Heron and Bald Eagles within the sewer service area. The Environmental Impact Statement for the Auburn Thoroughbred Racetrack indicates that peregrine falcons, bald eagles, and the Aleutian Canadian Goose have been seen in the Auburn area. Chinook Salmon have been listed as endangered by the National Marine Fisheries Service and Bull Trout have been listed as endangered by the US Fish and Wildlife Service. Chinook are known to use Mill Creek and the Green and White Rivers. Bull Trout may inhabit the Green and White Rivers.

c. Is the site part of a migration route? If so, explain.

Does not apply to this non-project action. Adoption of the Comprehensive Sewer Plan does not involve a specific site. Specific projects will be subject to individual environmental review before implementation. Auburn is a portion of the Pacific Flyway for migratory birds and the migration route of a threatened or endangered species on or near the location of recommended projects of this plan will be listed at the time of the environmental review process for that particular project.

d. Proposed measures to preserve or enhance wildlife, if any.

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation.

[8] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-5-Animals

e. List any invasive animal species known to be on or near the site.

Does not apply to this non-project action. Any invasive animal species on or near the recommended projects of this Plan will be listed at the time of environmental review process for each individual project.

6. Energy and natural resources

Find help answering energy and natural resource questions[9]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any.

Does not apply to this non-project action. Adoption of the Comprehensive Sewer Plan itself will not result in the direct reduction or control of energy impacts. The policies included in Chapter 2 of this plan do promote sustainability practices within the Sewer Utility.

7. Environmental health

Health Find help with answering environmental health questions[10]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur because of this proposal? If so, describe.

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation.

[9] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-6-Energy-natural-resou
[10] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-7-Environmental-health

1. **Describe any known or possible contamination at the site from present or past uses.**

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation.

2. **Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.**

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation.

3. **Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.**

-

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation.

4. **Describe special emergency services that might be required.**

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation.

5. **Proposed measures to reduce or control environmental health hazards, if any.**

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation.

b. Noise

1. **What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?**

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation.

2. **What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site)?**

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation.

3. **Proposed measures to reduce or control noise impacts, if any:**

Does not apply to this non-project action. Specific projects will be subject to individual environmental review before implementation.

8. Land and shoreline use

Find help answering land and shoreline use questions[11]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The sewer service area comprises various land uses including residential, industrial, commercial, open space, and public land uses.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses because of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

Much of Green and White River Valleys and the City of Auburn were used for agriculture at some time in the past. Over the last several decades, rapid growth in the area resulted in much of the agricultural land converting to urban uses. No land within the city is designated as agricultural, though some parcels continue as that type of use. No change in land use will result from the adoption of the Comprehensive Sewer Plan.

1. **Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how?**

No.

c. Describe any structures on the site.

Many types of structures exist in the sewer service area, including residential, commercial, institutional, manufacturing, and industrial buildings.

d. Will any structures be demolished? If so, what?

[11] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-8-Land-shoreline-use

Does not apply to this non-project action. Projects which are subject to environmental review will identify any structures proposed for demolition.

e. What is the current zoning classification of the site?

In general, the sewer service area contains various zoning districts in Auburn and Unincorporated King and Pierce Counties. In general, the zoning includes single-family and multi-family residential, light and heavy commercial, light and heavy industrial, public, and open spaces. Specific Comprehensive Plan Land Use designations will be identified along with each project's individual environmental review.

f. What is the current comprehensive plan designation of the site?

-
- *The sewer service area contains various Comprehensive Plan designations. The City of Auburn has jurisdiction over the majority of the service area. Several small portions of the service area, as shown on Figure 2-2, lie within King County or Pierce County. Those areas are subject to the land use designations of the King County and Pierce County Comprehensive Plans. Specific zoning designations will be identified along with each project's individual environmental review.*
-

g. If applicable, what is the current shoreline master program designation of the site?

Portions of the City along the Green and White Rivers fall under the Shoreline Master Program. Shorelines of the State are reflected in Auburn's Shorelines Master Program, and specific projects described by the plan will be required to comply with the program.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Lands classified as critical areas exist within the sewer service area, including wetlands and streams, geologic hazard areas, aquifer recharge, habitat areas, groundwater protection areas, and frequently flooded areas. Specific projects described by the plan will be subject to individual environmental review before implementation.

i. Approximately how many people would reside or work in the completed project?

Does not apply to this non-project action. No specific development is proposed

j. Approximately how many people would the completed project displace?

Does not apply to this non-project action. The Plan's programs and project are not intended to displace any people.

k. Proposed measures to avoid or reduce displacement impacts, if any.

Does not apply to this non-project action.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any.

The Comprehensive Sewer Plan is written in accordance with all existing local, county, and state regulations. This includes the City Comprehensive Plan developed under the Growth Management Act policies, the King County Comprehensive Plan, the King County Regional Wastewater Services Plan, and the Pierce County Comprehensive Plan.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

The Comprehensive Sewer Plan includes policies consistent with King County and Pierce County policies to not extend sanitary sewer service to county rural zoned properties.

9. Housing

Find help answering housing questions[12]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

Does not apply to this non-project action.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

Does not apply to this non-project action.

[12] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-9-Housing

c. Proposed measures to reduce or control housing impacts, if any:

Does not apply to this non-project action.

10. Aesthetics

Find help answering aesthetics questions[13]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

b. What views in the immediate vicinity would be altered or obstructed?

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

c. Proposed measures to reduce or control aesthetic impacts, if any:

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

11. Light and glare

Find help answering light and glare questions[14]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

c. What existing off-site sources of light or glare may affect your proposal?

[13] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-10-Aesthetics
[14] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-11-Light-glare

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

d. Proposed measures to reduce or control light and glare impacts, if any:

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

12. Recreation

Find help answering recreation questions

a. What designated and informal recreational opportunities are in the immediate vicinity?

The City of Auburn provides a full range of parks and recreational facilities.

b. Would the proposed project displace any existing recreational uses? If so, describe.

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

13. Historic and cultural preservation

Find help answering historic and cultural preservation questions[15]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

Although this non-project action will not directly affect any of these structures, there are several such buildings located within the sewer service area within the City of Auburn. Policies concerning these sites are addressed in the Historic Preservation Element of the City's Comprehensive Plan.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

[15] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-13-Historic-cultural-p

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

14. Transportation

Find help with answering transportation questions[16]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

Numerous streets and highways traverse the service area. State Highways 18 and 167 are the two major highways crossing the service area. The City is served by a network of streets classified as arterials, collectors, and local streets.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

Yes, the City of Auburn is served by Sound Transit, King County Metro, Pierce Transit, and Muckleshoot Tribal Transit.

c. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

[16] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-14-Transportation

d. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

Does not apply to this non-project action. Specific projects described by the plan will be subject to individual environmental review before implementation.

e. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

Does not apply to this non-project action.

f. Will the proposal interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

Does not apply to this non-project action.

g. Proposed measures to reduce or control transportation impacts, if any:

Does not apply to this non-project action.

15. Public services

Find help answering public service questions[17]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

Does not apply to this non-project action.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Does not apply to this non-project action.

16. Utilities

Find help answering utilities questions[18]

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other: cable television.

[17] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-15-public-services
[18] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-16-utilities

Various levels of service are available throughout the service area.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

The recommended repairs, replacements, improvements, or extensions to sewer system facilities are required to meet the level of service criteria set forth by local, county, and state governments. The facilities include sewer mains, manholes, pump stations, force mains and related appurtenances. Each recommended project will be subject to its own environmental review process.

C.Signature

Find help about who should sign[19]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee Robert Elwell

Position and Agency/Organization Sewer Utility Engineer, City of Auburn

Date Submitted: May 24, 2024

D.Supplemental sheet for nonproject actions

Find help for the nonproject actions worksheet[20]

Do not use this section for project actions.

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

[19] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-C-Signature

[20] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-d-non-project-actions

1. **How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?**

The proposed non-project action consists of adoption of the Comprehensive Sewer Plan, which will not itself increase discharge to water or air. Implementation of some elements of the Comprehensive Sewer Plan has the potential to result in discharges to water and air. For example construction projects identified in the Plan have the potential to result in increased noise and exhaust from construction equipment and dust from exposed soils.

- **Proposed measures to avoid or reduce such increases are:**

No specific mitigation is proposed for the Plan adoption. The potential for discharge to air or water will be minimized through the use of best management practices and through the design and construction and operation consistent with the applicable local, state, and federal laws. Proposed projects will be reviewed and addressed on an individual basis by the appropriate agencies prior to implementation.

2. **How would the proposal be likely to affect plants, animals, fish, or marine life?**

It is not anticipated that the proposed projects will have a significant impact upon fish or wildlife. Improvements to the system described by the plan are intended to increase reliability, thereby reducing the risk of environmental contamination, thereby reducing potential harmful effects on wildlife.

- **Proposed measures to protect or conserve plants, animals, fish, or marine life are:**

No such measures are proposed for the plan adoption. Proposed projects will be reviewed on an individual basis and addressed by the appropriate agencies as they commence.

3. **How would the proposal be likely to deplete energy or natural resources?**

It is not anticipated that any of the proposed projects will have significant impact on the use of or need for energy or natural resources. Specific projects described by the plan will reviewed for their potential impact to energy and resource use as part of individual environmental reviews prior to implementation.

- **Proposed measures to protect or conserve energy and natural resources are:**

None specifically, as this is a non-project action. However, the proposed Sewer Comprehensive Plan includes a policy to evaluate activities to emphasize "sustainability practices." Specific projects described by the plan will reviewed for their potential impact to energy and resource use as part of individual environmental reviews prior to implementation.

4. **How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection, such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?**

It is not anticipated that the proposed projects will have a significant impact upon environmentally sensitive areas or areas designated for governmental protection. Improvements to the system described by the plan are intended to increase reliability, thereby reducing the risk of impacts to sensitive areas..

- **Proposed measures to protect such resources or to avoid or reduce impacts are:**

The Plan does not increase the ability of any person, company, or agency to develop projects that would affect sensitive areas. Proposed projects identified as part of the plan will be reviewed on an individual basis and addressed by the appropriate agencies prior to implementation. Conformance with the applicable local, state, and federal guidelines and regulations will be required.

5. **How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?**

The Comprehensive Sewer Plan does not allow or encourage uses incompatible with existing plans. Specific projects will be subject to individual environmental review before implementation.

- **Proposed measures to avoid or reduce shoreline and land use impacts are:**

None specifically, as this is a non-project action. However, specific projects described by the plan will reviewed for their potential impact to shoreline use and land use as part of individual environmental reviews prior to implementation.

6. **How would the proposal be likely to increase demands on transportation or public services and utilities?**

The proposal will not result in an increase in demands on transportation and public services. The Comprehensive Sewer Plan responds to growth by identifying the public facilities and improvement needed to address future growth addressed by the City Comprehensive Plan.

- **Proposed measures to reduce or respond to such demand(s) are:**

The Comprehensive Sewer Plan identifies sewer facilities required to accommodate growth. Any proposal to construct those facilities will be subject to environmental review which will identify specific impacts to transportation, public services or other utilities.

7. **Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.**

The Sewer Comprehensive Plan does not appear to present any conflict with local, state, or federal laws or requirements.

[Correction]

DETERMINATION OF NON-SIGNIFICANCE (DNS)
City of Auburn Comprehensive Plan Sewer Update
SEP24-0008

The City of Auburn is issuing a Notice of Application (NOA) and a Determination of Non-Significance (DNS) for the following described project. The permit applications and listed studies may be reviewed at the Auburn Department of Community Development at One E Main St., 2nd Floor, Customer Service Center, Auburn, WA 98001 and by visiting www.auburnwa.gov/landuse.

Proposal: The proposed non-project action includes adoption of the Comprehensive Sewer Plan as an element of the city's Comprehensive Plan. The City of Auburn's 2024 Comprehensive Sewer Plan replaces the City of Auburn's 2016 Comprehensive Sewer Plan. The plan examines the existing sewer service area which includes both areas within the city limits and potential annexation areas for the City of Auburn. It addresses policies, design criteria, and recommends improvements to the sewer system within its service area. The plan analyzes the current level of service and identifies important projects necessary to meet city and state standards regarding public health, facility efficiency, and operations and maintenance. The wide range of facility improvements includes repair and replacement, system improvements, facility evaluations, and extensions of the utility to meet future sewer demands. The Comprehensive Sewer Plan is an ongoing element of the city's Comprehensive Plan and serves as a guide for the operation, maintenance and expansion of the utility within the sewer service area, in accordance with the local, County, and State requirements.

Location: City-wide

Notice of Application:
Not Applicable.
Application Complete:
June 25, 2024
Permit Application:
June 17, 2024

File Nos.
SEP24-0008

Property Owner:
City of Auburn
25 W Main St.
Auburn WA, 98001

Applicant:
City of Auburn
Robert Elwell
25 W Main St.
Auburn WA, 98001

Studies/Plans Submitted with Application:
SEPA Environmental Checklist, prepared by City of Auburn, revision dated September 2023
Sewer Comprehensive Plan Element, prepared by City of Auburn, revision dated June 2024

Other Permits, Plans, and Approvals Needed:
Not Applicable.

Statement of Consistency and List of Applicable Development Regulations: This proposal is subject to and shall be consistent with the Auburn City Code, Comprehensive Plan, and Public Works Design and Construction Standards.

Lead Agency: City of Auburn. The lead agency for this proposal has determined that it does not have probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed

environmental checklist and other information on file with the lead agency. This information is available to the public on request.

SEPA Environmental Review: This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below.

Public Comment Period: This may be your only opportunity to comment on the environmental impact of the proposal. All persons may comment on this application. Comments must be in writing and submitted by **5:00 p.m. on August 26, 2024** to the mailing address of 25 W Main St., Auburn, WA, 98001 or emailed to the contact below. Any person wishing to become a party of record, shall include in their comments that they wish to receive notice of and participate in any hearings, if relevant, and request a copy of decisions once made. *The responsible official will reconsider the DNS based on timely comments and may retain, modify, or, if significant adverse impacts are likely, withdraw the DNS.* ***If the DNS is retained, it will be final after the expiration of the comment deadline.***

Any person aggrieved of the City's determination may file an appeal with the Auburn City Clerk at 25 West Main Street, Auburn, WA 98001-4998 within 14 days of the close of the comment period, or by 5:00 p.m. on September 9, 2024.

For questions regarding this project, please contact Gabriel Clark, Planner I, at planning@auburnwa.gov or 253-470-2147.

Public Hearing: N/A

RESPONSIBLE SEPA OFFICIAL:
Alexandria D. Teague, Planning Services Manager

ADDRESS:
25 West Main St.
Auburn, WA 98001
253-931-3090

DATE ISSUED: August 8, 2024 SIGNATURE: Alexandria D. Teague

Note: This determination does not constitute approval of the proposal. Approval of the proposal can only be made by the legislative or administrative body vested with that authority. The proposal is required to meet all applicable regulations.

APPENDIX G

RECLAIMED WATER CHECKLIST

For questions, call Kristina Westbrook,
King County Reclaimed Water Program Manager at (206) 296-5279
www.kingcounty.gov/reclaimedwater

King County

Water Reclamation Evaluation Checklist
For Systems with 1,000 or more Connections

The County and State recognize that changing conditions could initiate a need to respond in new ways to future water quality standards, wastewater discharge requirements, take advantage of advances in treatment technologies and/or allow our region to be positioned to respond to changes associated with climate change and population growth.

In 2003, Chapter 90.46 of the Revised Code of Washington (RCW) was amended to require public water systems serving 1,000 or more connections to evaluate opportunities for reclaimed water when completing their water system plans. Please use this checklist to meet King County consistency requirements in responding to this legislation.

Please use this checklist, including the inventory template, to ensure that your water system plan includes sufficient information about opportunities for reclaimed water and your system's efforts to develop those opportunities. If a question is not applicable or the information is unavailable, then answer, "unknown" or "n/a." King County will consider the checklist completed if each answer is filled in with the best available information, even if the utility states that it is not aware of any reclaimed water opportunities within its service area.

Water System Name: City of Auburn
Date: 03/11/2024
PWS ID# 03350V
Contact: Senait Gebreeyesus

1. **Identifying Potential Future Demand for Reclaimed Water:** King County maintains a database and map of potential reclaimed water users for evaluating future projects. Please use the template below, or similar table, to provide information to assist King County in further researching these potential uses.
   - **Large Utility Water Users** (choose one):
     - ☐ Attached is an inventory of twenty large (above 20,000 gallons/month on average), non single-family residential, water users served by our utility that have a potential for reclaimed water use, or
     - ☑ Attached is an inventory of our utility's top twenty water users, or
     - ☐ The information requested is unknown or not available.
       Additional Comments: _____
   - **Large Self Suppliers** (choose one):
     - ☐ Attached is an inventory of large, self-supplied water users within our water utility's service boundaries - especially those near wastewater treatment plants, mainlines, outfalls, and pump stations or similar reclaimed water facilities), or
     - ☑ The information requested is unknown or not available.
       Additional Comments: _____
   - **Other** (choose one):
     - ☐ Attached is an inventory of other water users (such as those that are clustered near one another and could be served by a single system) that may be likely candidates for reclaimed water use, or
     - ☑ The information requested is unknown or not available.
       Additional Comments: _____

2. **Environmental Commitment**: Are you a city/town, or providing water service to a city/town, that has made commitments within resource management plans, salmon recovery plans, or other environmental initiatives for which there is a potential opportunity for using reclaimed water to assist in meeting commitments? (choose one)

☐ Yes, here are plans that have potential for reclaimed water use in our service area to meet the above commitments:

_____

_____

☑ The information requested is unknown, not available.
Additional Comments: _____

3. **Identifying Areas of Potential Use of Reclaimed Water for Environmental Benefit:**
Below are ***examples*** of uses of reclaimed water ***that comply with State, Federal and other reclaimed water environmental, health and safety standards***. All of these uses are currently in effect somewhere in Washington State. To the best of your knowledge, are any of these potential uses for reclaimed water applicable to your area?

River Augmentation (choose one):

☐ Yes, our water rights are limited by instream flows. For more information, King County may contact:

_____

_____

☑ The information requested is unknown, or not available.
Additional Comments: _____

Groundwater Recharge (choose one):

☐ Yes, we withdraw water from an aquifer that is in a groundwater management area, or from a declining aquifer, where water levels may need to be replenished or to maintain aquifer storage. For more information, King County may contact:

_____

☑ The information requested is unknown, or not available.
Additional Comments: _____

Water Rights Mitigation (choose one):

☑ Yes, our area is pursuing, or planning to pursue, new or additional water rights, and there may be an opportunity to use reclaimed water for mitigation of those new water rights. For more information, King County may contact:
Application G1-28404. Contact Ingrid Gaub, 253-804-3113

☐ The information requested is unknown, or not available.
Additional Comments: _____

Potential Areas of Environmental Need (choose one):

☐ Yes, parts of our service area include potential environmental enhancement locations, such as wetlands enhancement, aquifer recharge, stream flow augmentation, that might be candidates for reclaimed water use. For more information, King County may contact:

_____

☑ The information requested is unknown, or not available.
Additional Comments: _____

4. **Local Reclaimed Water Legislation**: If water reclamation is mandated for this water system through local government agreement, contract, local regulations, ordinances, or other mechanisms, please provide a copy of the governing mechanism (choose one).

   ☐ Yes, local legislation exists in our area in support of reclaimed water use. The following relevant legislation is attached (please list titles of documents):

   _____

   _____

   ☑ No water reclamation legislation exists, or is known to exist, at a local level in our service area.

5. **Coordination with Local Wastewater Utility:** Include a brief description of your interactions with any wastewater or reclaimed water utility (King County or other) adjacent to your service area to evaluate any potential opportunities to develop reclaimed water (choose one).

   ☑ Describe if applicable:
   The City of Auburn's policy is to coordinate with King County to explore potential opportunities for water reclamation.

   ☐ None. Additional Comments: _____

Template for
Inventory of Water Users and Identification of Potential Reclaimed Water Users

Site Owner or Site Name	Site Address (for general mapping purposes)	Estimated Annual Water Use	Water uses not requiring potable water[1]	Is this a Potential Reclaimed Water Customer?
Boeing	700 15th St SW	188,246,355 gal.	?	Yes
Muckleshoot Casino	2402 Auburn Way S	32,219,539 gal.		No
Auburn Manor	210 37th St SE	22,827,838 gal.		No
Copper Gate	4750 Auburn Way N	14,905,895 gal.		No? (new)
Emerald Downs	2828 Emerald Downs Dr.	29,984,048 gal.	12,095,080	Yes
White River Estates	4248 A St. SE	15,270,794 gal.		No
Laundry Facility	1600 M ST. NW	25,749,807 gal.		No? (new)
Promenade Apartments	12902 SE 312th St	15,666,411 gal.		No? (new)
MultiCare	202 N Division St	13,091,590 gal.		No
Villas/Reserve	1107 A St NE	11,592,354 gal.		No? (new)
Walmart/Supermall	1200 Supermall Way	13,991,247 gal.	1,319,101	Yes
Auburn Dairy	702 W Main St	10,548,203 gal.		No
Rio Verde	1402 22nd St NE	12,753,400 gal.		No
College Place	31600 126th Ave SE	11,624,762 gal.		No? (new)
Skylark Village	900 29th St SE	12,359,952 gal.		No? (new)
The River Estates	3611 I St. NE	10,086,593 gal.		No? (new)
Safeway	3520 Pacific Ave S	9,678,279 gal.		No
Adventist Academy	32nd St SE & Wyman Dr.	9,028,734 gal.	?	Yes
Forest Villa (PIC)	4205 Auburn Way S	9,163,094 gal.		No
Tall Cedars	40137th St SE	6,759,209 gal.		No

[1] See Washington State Reclamation and Reuse Standards, September 1997, Section 1, Articles 1-5 for allowable uses of reclaimed water. http://www.ecy.wa.gov/PROGRAMS/WQ/reclaim/standards.html



Comprehensive Storm Drainage Plan Update

Prepared for

CITY OF AUBURN WASHINGTON

November 2024

Parametrix

Comprehensive Storm Drainage Plan Update

Prepared for

City of Auburn
25 W Main Street
Auburn, WA 98001

Prepared by

Parametrix
719 2nd Avenue, Suite 200
Seattle, WA 98104
T. 206.394.3700 F. 1.206.649.6353
www.parametrix.com

November 2024 | 553-1931-052

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B Hydrologic and Hydraulic Modeling Analysis

C Asset Management Evaluation

D Noted Changes to the NPDES MS4 Permit

E Ditch Maintenance and Operations Program - Development and Recommended Actions

F SEPA Compliance Documentation

Acronyms and Abbreviations

ACC	Auburn City Code
BMP	best management practice
CCTV	closed-circuit television
CDR	critical drainage review
CEMP	City Emergency Management Plan
CFP	capital facilities plan
CIP	capital improvement project
CMMS	computerized maintenance management system
COA Supplement	City of Auburn Supplement
CWA	Clean Water Act
DEM	digital elevation model
Ecology	Washington State Department of Ecology
Engineering	City of Auburn Department of Engineering Services
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESU	equivalent service unit
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FTE	full-time equivalent
GASB	Governmental Accounting Standards Board
GIS	geographic information system
GMA	Growth Management Act
G.O.	general obligation
H&H	hydrologic and hydraulic

Acronyms and Abbreviations (continued)

HPA	Hydraulic Project Approval
IDDE	illicit discharge detection and elimination
KCFCD	King County Flood Control District
KCSWDM	King County Surface Water Design Manual
LID	low impact development
LOMR	Letters of Map Revision
LOS	level of service
MEP	maximum extent practicable
M&O	maintenance and operations
MS4	municipal separate storm sewer system
NASSCO	National Association of Sewer Service Companies
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NSF	non-single family
OCI	Overall condition index
OCR	overall condition rating
PACP	Pipeline Assessment and Certification Program
PCB	polychlorinated biphenyl
PFAS	per- and polyfluoroalkyl substance
Plan	Comprehensive Storm Drainage Plan
RCP	Representation Concentration Pathway
RCW	Revised Code of Washington
ROW	right-of-way
R&R	repair and replacement

Acronyms and Abbreviations (continued)

RSI	required supplementary information
SCIP	Source Control Inspection Program
SEPA	State Environmental Policy Act
SDC	system development charge
SFHA	Special Flood Hazard Areas
SMAP	Stormwater Management Action Plan
SR	State Route
SRP	soluble reactive phosphorus
SWMP	Stormwater Management Program
SWMMWW	Surface Water Management Manual for Western Washington
TAPE	Technology Assessment Protocol – Ecology
TMDL	total maximum daily load
UIC	underground injection control
ULID	utility local improvement district
USACE	U.S. Army Corps of Engineers
VRFA	Valley Regional Fire Authority
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation

1. Introduction

This Comprehensive Storm Drainage Plan (Plan) for the City of Auburn, Washington, updates the previous plan that was completed in December 2015. The 2015 Plan is being updated for several reasons:

- The Washington State Growth Management Act (GMA) requires planning documents to be reassessed and updated periodically.
- Current and future regulatory and permitting requirements, such as those associated with the National Pollutant Discharge Elimination System (NPDES), need to be addressed. Since adoption of the 2015 Plan, the NPDES permit was updated and reissued in 2019 and will be updated again in August 2024.
- New compliance elements, such as the Stormwater Management Action Plan (SMAP) and the Source Control Inspection Program (SCIP) require new activities and regulatory responsibilities.
- Continued growth and system expansion via development, in addition to the 2024 annexed development area from the City of Kent, requires new and revised evaluations of the storm drainage system maintenance responsibilities and expanded service area.
- The storm drainage system inventory has been updated and is needed to manage utility assets and to update the analyses used for condition assessments and replacement planning.
- The capital improvements identified in the 2015 Plan needed reevaluation to account for completed projects, new compliance elements, changes in system conditions, new problem areas identified, and new development, as well as to incorporate new financial information.

In addition, expectations and changes to the stormwater program mission are evolving, which may include increasing coordination with land use and watershed planning, identifying proactive actions to update and retrofit the system, improving the maintenance programs and record-keeping, providing area-wide or basin stormwater control systems, and considering long-term retrofitting.

This Plan contains time frames that are the intended framework for future funding decisions and within which future actions and decisions are intended to occur. However, these time frames are estimates and, depending on factors involved in the processing of applications and project work and the availability of funding, the timing may change from the included time frames. The framework does not represent actual commitments by the City of Auburn, which may depend on funding resources available.

1.1 Purpose and Objectives

The purpose of this Plan is to guide the City's Storm Drainage Utility with respect to future activities and improvements. The Plan's objectives are to:

- Evaluate environmental, social, and regulatory drivers to update the system goals for capital facility infrastructure development, operation, maintenance, and other key elements of utility management.
- Perform hydraulic modeling analysis to evaluate system capacity, focusing on known problems and areas where data are available for model development and calibration. Incorporate those updates into the hydraulic models used for analyzing the system.
- Develop capital improvements that meet system needs and effectively manage risks.

- Document maintenance and operations (M&O) activities and develop recommendations for improving the M&O program.
- Review and document the condition of existing stormwater system assets and develop a prioritization system for inspecting critical system elements.
- List and describe Capital Improvement Projects (CIPs) to prioritize 6- and 20-year funding frameworks.
- Provide future-looking suggestions based on potential changing climate factors.
- Incorporate information and activities from current and anticipated NPDES compliance planning.
- Identify additional staffing needed based on NPDES requirements and future maintenance and operation activities.
- Coordinate the capital and operations plans to meet the anticipated revenue stream.
- Develop programmatic recommendations to address utility needs.

1.2 Approach and Document Organization

This Plan is organized to focus on the actions the utility will take to implement the Plan. In most cases, supporting documentation and background information is included in appendices rather than chapters of the Plan. The Plan is organized into the following chapters:

Chapter 1 Introduction: Describes the reasons for developing an updated Plan and states the purpose and objectives of the Plan.

Chapter 2 Background: Provides background information regarding the Storm Drainage Utility and regulatory drivers for developing system goals.

Chapter 3 System Goals and Policies: Specifies the system goals used to develop capital improvements and future M&O activities.

Chapter 4 Drainage System: Describes the existing conditions of the City's drainage system.

Chapter 5 Evolution of the Storm Drainage Utility: Describes methodologies used to evaluate existing problems and develop CIPs.

Chapter 6 Maintenance and Operations: Documents existing Storm Drainage Utility M&O activities.

Chapter 7 Capital Improvements: Describes recommended capital improvement projects, including cost estimates and conceptual figures.

Chapter 8 Implementation Plan: Prioritizes CIPs and lays out a future work plan.

Chapter 9 Finance: Identifies the total cost of providing stormwater drainage services and provides a program for the utility to remain viable during execution of the CIP.

Chapter 10 Limitations: Sets the limits of legal applications of this document.

Chapter 11 References: Lists documents referenced throughout the Plan.

2. Background

This chapter provides a brief description of the Storm Drainage Utility, organizational structure, and funding mechanisms, as well as an overview of the federal, state, and local regulations that can affect stormwater management in the City.

2.1 Storm Drainage Utility

2.1.1 Organizational Structure

The City's Storm Drainage Utility is organized under the larger umbrella of the Public Works Department (see Figure 2-1). The Public Works Department covers several areas of responsibility related to stormwater management:

- Utility Program.
- Transportation Program.
- M&O Program.
- Project Engineering.
- GIS (Asset Management).

Under these programs, the Public Works Department is responsible for the planning, design, construction, operations, and maintenance of the City's storm drainage. Management and construction of storm drainage CIPs is provided by Engineering Services, while maintenance of storm drainage facilities is provided by dedicated stormwater and vegetation divisions within M&O.

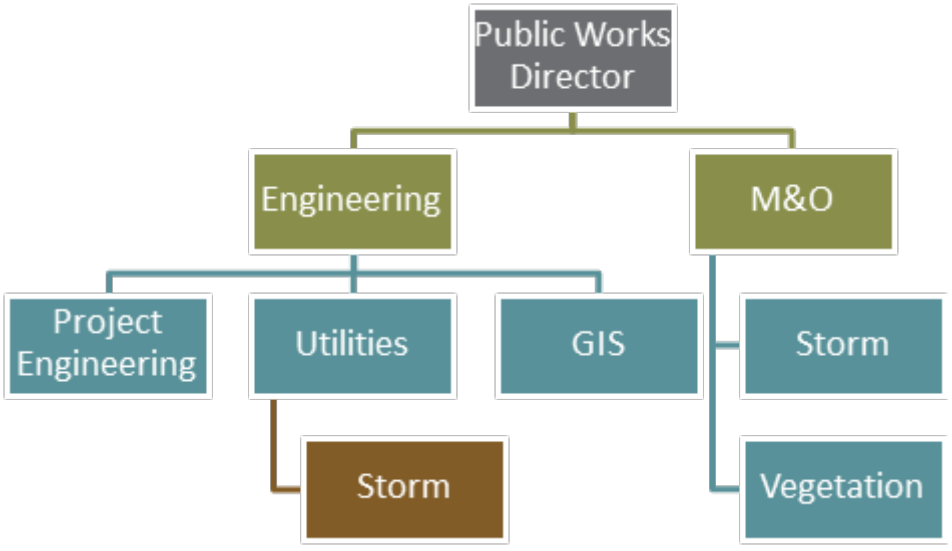


Figure 2-1. Public Works Department Staff Organizational Chart

2.1.2 Funding Mechanisms

The following section provides adapted text from Auburn City Code (ACC) Title 13: Water, Sewers and Public Utilities, Chapter 13.48, Storm Drainage Utility, §13.48.060, Authority to establish rates. Per the ACC, the City has established rate classifications, service charges, and various fees and charges to pay for the following costs:

- The development, adoption, and implementation of a Comprehensive Storm Drainage Plan.
- The debt service and related financing expenses of the design and construction of storm drainage and water quality facilities required for the management of stormwater and surface waters that benefit the service area.
- The operation, repair, maintenance, improvement, replacement, and reconstruction of storm drainage facilities that benefit the present service area (e.g., CIPs to increase system capacity in accordance with level of service [LOS] goals).
- The purchase of a fee or lesser interest, including easements, in land that may be necessary for the storm drainage system in the service area, including, but not limited to, land necessary for the installation and construction of storm drainage facilities and all other facilities that are reasonably required for proper and adequate management of stormwater for the benefit of the service area.
- The costs of monitoring, inspection, enforcement, and administration of the utility, including, but not limited to, water quality surveillance, private system maintenance inspection, construction inspection, and other activities that are reasonably required for the proper and adequate implementation of the City's stormwater and surface water policies and regulations.
- Preparing and implementing requirements for the City's municipal separated storm sewer system (MS4) permit.

2.1.2.1 Rates

The currently established rates for the storm drainage service are provided in Table 2-1 below, which lists rates for 2024 and 2025. Base rates are the monthly charge for service from the Storm Drainage Utility to recover costs incurred by the utility, such as administrative, billing, and collection. Equivalent service units (ESU) are used as a means for estimating the development or impervious surfaces[1] estimated to contribute an amount of runoff to the City's storm drainage system, which is approximately equal to that which is created by the average single-family residential parcel. Open, uncovered, retention/detention facilities shall not be considered as impervious surfaces for the purpose of ESU calculations. One ESU is equal to 2,600 square feet of impervious surface area or any portion thereof. Table 2-1 provides the current monthly charges, base rates, and ESU monthly rates for classifications used by the utility.

[1] An impervious surface is a hard surface area that prevents the entry of water into the soil mantle (see ACC Chapter 13.41). Common impervious surfaces include, but are not limited to rooftops, walkways, patios, concrete, or asphalt paving.

Table 2-1. 2024 and 2025 Utility Rates for Storm Drainage Service

	Effective as of January 1, 2024	Effective as of January 1, 2025
Single-family parcel types	Monthly charge, $	Monthly charge, $
Single-family residential parcels [a]	18.09	19.31
Two-family residential parcels [b]	19.25	19.31
Non-single-family (NSF) parcels	ESU rate per month, $	ESU rate per month, $
NSF [c]	18.09	19.31
NSF with detention [d]	15.57	16.62
NSF with retention [e]	13.04	13.92
NSF with water quality treatment [f]	16.64	17.76
NSF with detention and water quality treatment	4.12	15.07
NSF with retention and water quality treatment	11.59	12.37

[a.] Any parcel of land having on it a single detached dwelling unit that is designed for occupancy by one family or a similar group of people.
[b.] A building designed exclusively for occupancy by two families living independently of each other and containing two dwelling units.
[c.] Any parcel of developed land other than single-family or two-family (duplex) residential.
[d.] Detention is the temporary storage of stormwater and surface water runoff, with provisions for the controlled offsite surface release of the stored water.
[e.] Retention means the storage of stormwater and surface water runoff, with no provisions for off-site surface release of the stored water other than by evaporation and infiltration.
[f.] Water quality treatment means an engineered and approved facility to remove contaminants in the existing flow regime of stormwater generated from a developed parcel pursuant to applicable design standards in place at the time of approval.

Storm Drainage Utility rates are billed monthly. Storm drainage charges start from the day a water meter servicing the property is installed by the City. In cases where the property does not receive water service from the City, storm drainage charges start from the day that the storm drainage permit is finalized by the City. Payments received for utility bills are applied to expenses in the following order of priority: late charges, additional fees, stormwater, garbage, sewer, and water. Payment for stormwater drainage service charges is due and payable to the Finance Department office 15 days after the billing date that appears on the bill. Utility charges are constituted as a lien and thus can be applied to a lien upon the property from which such charges are due, superior to all other liens and encumbrances whatsoever, except for general taxes and local special assessments.

2.1.2.2 Connection Fees

Connection fees are comprised of a connection permit fee and a system development charge (SDC). Connection permit fees are applied to cover the planning, review, inspection, record drawings, and processing of permit information for new connections to the public storm drainage system. Other permit fees are assessed for inspection and permit processing for various repair, retrofit, and demolition activities.

A utility SDC is a charge imposed on new customers, or existing customers revising use of their property, in recognition of the previous investment of the City and its customers in the utility systems. The purpose of an SDC is to recover a fair share of the costs of providing existing utility system infrastructure to serve new customers or revised uses of existing customers and provide for future improvements to serve new customers. As with Storm Drainage Utility rates, SDCs are based on the relative amount of impervious surface added to the system. In 2024, SDCs were estimated to be $1,759 per ESU.

2.2 Development Code and Design Standards Updates

In compliance with the previous NPDES MS4 permit, the City has conducted updates to its development regulations and design standards and adopted a stormwater manual as required by the permit. Specifically, the City adopted the Washington State Department of Ecology (Ecology) 2019 Surface Water Management Manual for Western Washington (SWMMWW), with a City of Auburn Supplement (COA Supplement). The COA Supplement has received minor updates as needed—generally annually—to include new technologies and regulations. Ecology has recently adopted an update to the 2024 SWMMWW. The City has formally updated the standards to the revised manual as a condition of the NPDES MS4 permit.

In August 2024, Ecology issued an updated NPDES MS4 permit to comply with requirements of the federal Clean Water Act (CWA) when the current permit expires. The new permit would be effective through July 31, 2029.

Development regulations related to stormwater and drainage design standards will also be reviewed for potential revision consistent with current policies and LOS goals.

See the following section for an overview of the City's Stormwater Management Program (SWMP) and Chapter 8 for specific steps needed to maintain compliance with updated NPDES MS4 permit requirements.

2.3 Regulatory and Policy Considerations

Numerous federal, state, and local regulations govern stormwater management in the City. Other plans and programs provide additional guidance. Applicable regulations and policy guidance are summarized in Table 2-2.

Table 2-2. Federal, State, and City Regulations, Guidance, and Programs Relevant to the Auburn Storm Drainage Utility

Title	Regulation, Guidance, or Program	Application to the City
Federal		
Clean Water Act (CWA): §402 NPDES	Regulation	The National Pollutant Discharge Elimination System (NPDES) permit includes several requirements that affect stormwater management in the City. See Section 2.3.2 below.
CWA: §303(d) Impaired Waters and Total Maximum Daily Load (TMDL) Program	Regulation	In addition to existing TMDLs, new TMDLs could lead to more stringent stormwater quality controls in future NPDES permits.
CWA: §404 Permit Program	Regulation	Some stormwater Capital Improvement Projects (CIPs) can affect wetlands or other "waters of the U.S." §404 permitting and mitigation can increase CIP costs and schedules.
Endangered Species Act (ESA)	Regulation	Stormwater CIPs that involve federal permitting or funding could require consultation with federal agencies under §7 of the ESA. ESA consultation could increase project timelines and costs.

Table 2-2. Federal, State, and City Regulations, Guidance, and Programs Relevant to the Auburn Storm Drainage Utility (continued)

Title	Regulation, Guidance, or Program	Application to the City
National Flood Insurance Program	Program	The Plan could affect the City's rating under the Community Rating System, which affects flood insurance rates.
Governmental Accounting Standards Board (GASB) Statement 34	Program	Requires accurate inventory of City's stormwater infrastructure. See Section 2.3.3 below.
State		
State Environmental Policy Act (SEPA) (Washington Administrative Code [WAC] 197-11)	Regulation	Each CIP would require SEPA review prior to implementation unless that project is categorically exempt.
Water quality standards (WAC 173-201A)	Regulation	The NPDES MS4 permit does not authorize discharges that would violate State water quality standards. The State may establish TMDLs for water bodies that violate the standards. As noted above, the TMDLs can become NPDES permit requirements.
§401 water quality certification	Regulation	Individual projects that require §404 or other federal permits would also require a §401 certification from Ecology. A §401 certification could include site-specific mitigation measures, which could affect CIP design and cost estimates.
Puget Sound Water Quality Management Plan	Guidance	Plan recommendations should be consistent with the Puget Sound Water Quality Management Plan.
Puget Sound Partnership	Guidance	In 2007, the Washington State Legislature created a State agency for the purpose of developing and overseeing the implementation of a 2014/2015 "Action Agenda" to clean up, restore, and protect Puget Sound by 2020. The partnership's "Action Agenda" identified three priorities, one of which is to prevent pollution from urban stormwater runoff.
Growth Management Act (GMA) and City Comprehensive Plan	Regulation	This Plan is required by the GMA. GMA is discussed in Section 2.3.1 below.
State Hydraulic Code (Revised Code of Washington 77.55, WAC 220-660)	Regulation	CIPs that involve work in waters of the State would require a Hydraulic Project Approval (HPA) permit. HPA permitting and mitigation measures could affect CIP costs.
Archaeological and cultural coordination	Regulation	If any CIPs are planned for areas with known or suspected archaeological sites, the City will need to coordinate with the Department of Archaeology and Historic Preservation, local Indian tribes, and King County Historic Preservation.

Table 2-2. Federal, State, and City Regulations, Guidance, and Programs Relevant to the Auburn Storm Drainage Utility (continued)

Title	Regulation, Guidance, or Program	Application to the City
City		
Environmental review (Auburn City Code [ACC] Title 16.06)	Regulation	Each CIP would be subject to environmental review prior to permitting and construction as prescribed in ACC 16.06. This chapter of the ACC was adopted under the authority of SEPA.
Critical areas ordinance (ACC Title 16.10)	Regulation	The Plan should avoid CIPs in critical areas (e.g., wetlands, groundwater protection zones, or wildlife habitat). If a CIP must be sited in a critical area, the cost estimate should include costs for mitigation and permitting as prescribed in ACC 16.10.
Development regulations (ACC Title 18)	Regulation	The City's development regulations must be consistent with NPDES MS4 permit requirements.
Shoreline Master Program (ACC Title 16.08)	Regulation	Future projects should be located and designed to be consistent with the City shoreline regulations (ACC 16.08). Projects within designated shorelines could require permits and mitigation, which could affect project costs and schedules.

Most of the regulations listed in Table 2-2 primarily affect the implementation of specific measures recommended in the Plan. For example, CIPs that could affect wetlands would need to comply with City critical areas regulations and possibly federal CWA Section 404 regulations. However, three of the regulations listed in Table 2-2—the GMA, Ecology's Phase II NPDES Stormwater permit, and federal Governmental Accounting Standards Board (GASB) Statement 34—directly affect the LOS for this Plan.

These regulations are discussed in greater detail in Sections 2.3.1 through 2.3.3 below.

2.3.1 Growth Management Act

The Washington State Legislature enacted the GMA in 1990 in response to rapid population growth and concerns with suburban sprawl, environmental protection, quality of life, and related issues. The GMA is codified primarily in Revised Code of Washington (RCW) Chapter 36.70A.

The GMA provides a framework for regional coordination, and counties planning under the GMA are required to adopt countywide planning policies to guide plan adoption within the county and to establish urban growth areas. Local comprehensive plans must include the following elements: land use, housing, capital facilities, utilities, transportation, economic development, parks and recreation, and, for counties, a rural element. This Plan serves as a component of the utilities element for City-owned storm drainage assets.

2.3.2 Phase II Municipal Stormwater Permit

The NPDES MS4 permit program is a requirement of the federal CWA, which is intended to protect and restore waters for "fishable, swimmable" uses. The federal Environmental Protection Agency (EPA) has delegated permit authority to state environmental agencies, and these agencies can set

permit conditions in accordance with and in addition to the minimum federal requirements. In Washington, Ecology is the NPDES-delegated permit authority.

Phase I of the stormwater NPDES regulation applies to cities and counties that operate MS4s and had populations of 100,000 people or more according to the 1990 census. Phase II of the stormwater NPDES regulation applies to municipalities that operate MS4s and have populations of fewer than 100,000 people according to the 1990 census. Auburn is a Phase II permittee.

Ecology issued the current Western Washington Phase II Municipal Stormwater permit (the NPDES MS4 permit) in July 2024, with an effective date of August 2024. The NPDES MS4 permit term will last until July 2029.

The NPDES MS4 permit requires the City to submit a SWMP Plan by March 31 of each year, in which the City identifies activities to be completed in compliance with the permit requirements. The permit also requires submittal of an annual report that looks back on SWMP activities for the prior year. The NPDES MS4 permit and associated requirements are described in detail in the City's current SWMP Plan, which is available on the City's website.

The NPDES MS4 permit allows municipalities to discharge stormwater runoff from their municipal drainage systems into the state's water bodies (e.g., streams, rivers, lakes, and wetlands) as long as municipalities implement programs to protect water quality by reducing the discharge of "nonpoint source" pollutants to the "maximum extent practicable" (MEP) through application of permit-specified "best management practices" (BMPs). The stormwater management activities specified in the NPDES MS4 permit are collectively referred to as the SWMP and grouped under the following program components:

- SWMP administration.
- Public education and outreach.
- Public involvement and participation.
- Illicit discharge detection and elimination (IDDE).
- Control of runoff from new development, redevelopment, and construction sites.
- Municipal operations and maintenance.
- Monitoring and assessment.

The NPDES MS4 permit also requires compliance with established total maximum daily loads (TMDLs).[2] The current NPDES MS4 permit requires the City to monitor discharges to the White River, in association with the Puyallup River watershed fecal coliform TMDL. Additional actions required by the City to ensure compliance with TMDLs are listed in Appendix 2 of the NPDES MS4 permit (Appendix A of this Plan). Ecology has identified several other water bodies in the vicinity of Auburn that do not appear to meet the water quality standards, and additional TMDL requirements are possible in future permits.

[2] A total maximum daily load (TMDL) is a calculated maximum pollutant loading a water body can receive while still meeting water quality standards. Once a TMDL is established, the State determines how much each source must reduce its discharges of the pollutant in order to bring the water body back into compliance with the water quality standards. The federal CWA requires that TMDLs be established for all water bodies that do not meet water quality standards, and that TMDL requirements be included in the NPDES permits for dischargers into the affected water bodies.

2.3.3 Governmental Accounting Standards Board

Financial reporting by public utilities must adhere to requirements set by the GASB, the agency responsible for developing standards of state and local governmental accounting and financial reporting. Most prominent is GASB Statement 34, "Basic Financial Statements—and Management's Discussion and Analysis—for State and Local Governments," which was issued in June 1999. The main objective of Statement 34's requirements is to have financial reports that are more comprehensive and are easier to understand by the public. Statement 34 consists of several components, which can be seen in full in paragraphs 3 to 166 of the GASB publications. In summary, Statement 34 requires that the basic financial statements and required supplementary information (RSI) for general purpose governments should consist of the following:

- Management's discussion and analysis. In sum, this requirement states that prior to the basic financial statements, a discussion providing an analytical overview of the government's financial activities is necessary.
- Basic financial statements, which should include:
  - → Government-wide financial statements that include information on net assets (e.g., storm drainage infrastructure) and a statement of activities.
  - → Fund financial statements that focus on information about the government's major governmental and enterprise funds (e.g., the City's Storm Drainage Utility), including its blended component units.
  - → Notes to the financial statements that will enable users to understand the basic financial statements.
- Required supplementary information. Budgetary comparison schedules should be presented as RSI along with other types of data, as required by previous GASB pronouncements.

Consequently, the City needs an accurate inventory of its stormwater infrastructure in order to comply with the GASB 34 requirements.

3. System Goals and Policies

This chapter describes a set of overarching goals for the City's Storm Drainage Utility and policies for complying with these goals.

3.1 City Comprehensive Plan Consistency

The City Comprehensive Plan is the City's growth management plan and contains policies for protecting critical areas and natural resource lands, designating urban growth areas, preparing comprehensive utility plans, and implementing them through capital investments and development regulations. Therefore, the City Comprehensive Plan provides a framework of policies for development, expansion, and maintenance of the Storm Drainage Utility reflected in this Storm Drainage Comprehensive Plan.

3.2 Storm Drainage Comprehensive Plan Policy Goals

The City's Storm Drainage Utility policies are grouped within goal statements that are headlined under the following categories:

- System Planning.
- Operations and Maintenance.
- Fiscal Responsibility.
- Environment and Regional Coordination.

Taken together with the City Comprehensive Plan and ACC these goals define how the Storm Drainage Utility shall be operated and maintained. Several policies have been developed within each goal, many of which are also based on the Washington Department of Ecology SWMMWW and the City's Phase II NPDES MS4 permit.

3.2.1 System Planning

Goal 1: Employ recognized best business practices resulting in creating a sustainable, efficient, and cost-effective operation of the Storm Drainage Utility.

POLICY 1.1 Incorporate the Comprehensive Storm Drainage Plan as an Element of the City's Comprehensive Plan.

POLICY 1.2 The City shall seek to manage stormwater runoff within the public Right Of Way (ROW):

- to provide access to and functionality of critical services.
- to preserve mobility on major transportation routes (i.e., arterial roads) and residential roads.
- to protect real property structures (e.g., residences and businesses).

POLICY 1.3 The City shall seek to provide pump redundancy and backup power generators or dual power feeds at City-owned and -operated drainage pump stations.

POLICY 1.4 The City shall routinely assess the performance of pumped systems with a focus on capacity and vulnerability. This review aims to ensure that these systems operate efficiently, meet their intended capacity, and remain resilient against potential risks.

POLICY 1.5 The City shall require the separation of sanitary and storm sewer facilities wherever combined sewers may be discovered.

POLICY 1.6 Establish, maintain, and update an asset database to be used in prioritizing asset maintenance and repair and replacement activities. The database will include asset age and material information and will be validated and updated through inspections, records review, and other available information.

POLICY 1.7 Review complaints/citizen reports and claims made against the City and create a list of operational and capital improvements to be implemented by the Plan.

POLICY 1.8 The City shall use the outcomes of future rainfall intensity data updates for informing the design of its stormwater systems. Specifically, the same design storms—such as the 25-year event for pipe capacity and the 100-year event for storage facilities—shall be employed using projected rainfall statistics. The City shall draw upon relevant studies, including those mentioned in the King County Surface Water Design Manual (KCSWDM) or other ongoing regional research once the results become available (King County DNR 2021).

3.2.2 Operations and Maintenance

Goal 2: Maintain existing infrastructure and ensure facilities are reliable and operational now and into the future.

POLICY 2.1 The City shall maintain or seek access to all City-owned facilities for necessary maintenance and operation. [ACC 13.48.440B]

POLICY 2.2 The City's Storm Drainage Utility shall be responsible for implementation, maintenance, and operation of the City's public storm drainage system. Storm systems serving City-owned properties managed by other departments and/or divisions of the City that are not part of the public storm drainage serving the public ROW (e.g., Parks, Arts & Recreation; Administration – Facilities; Public Works – Airport) shall be responsible for their own maintenance and upkeep.

POLICY 2.3 Drainage facilities constructed to serve private property shall be owned and maintained by the property owner. Drainage facilities constructed to serve public ROW shall be owned and maintained by the City.

POLICY 2.4 The City shall seek to maintain storm drainage infrastructure to ensure proper function of drainage facilities by performing scheduled maintenance in accordance with the NPDES permit. [ACC 13.48.180]

POLICY 2.5 The City shall seek to seasonally maintain storm drain inlets, conveyance, and outfalls to preserve design conveyance capacity.

POLICY 2.6 Employee safety will be a primary consideration in the design, construction, operation, and maintenance of storm drainage infrastructure.

POLICY 2.7 Investigate all customer service calls within 24 hours and record results in the computerized maintenance management system (CMMS.)

3.2.3 Fiscal Responsibility

Goal 3: Responsibly manage funds, employ best business practices, and operate the utility in a cost-effective manner.

POLICY 3.1 Appropriate rates and system development charges shall be assessed and periodically updated to fund the ongoing maintenance, operation, and capital expenditures of the utility. [ACC 13.48.060]

POLICY 3.2 Manage the Storm Drainage Utility funds and resources in a professional manner in compliance with applicable laws, regulations, and City financial policies, which requires ongoing monitoring of revenues and expenses in order to make prudent business decisions, and report to City officials, as needed, regarding the status of utility operations.

POLICY 3.3 The City shall require that developers evaluate off-site storm drainage systems, consider improvements needed to serve new development, and construct identified improvements prior to or simultaneously with such development.

POLICY 3.4 The City shall continue to prioritize asset management as a business practice and use it to plan for preventative maintenance, predict system depreciation and replacement costs, prioritize inspections for condition status to inform system risk, and prepare to minimize the occurrence and impact of system failures.

POLICY 3.5 The City will monitor capital project implementation by tracking schedule, budget accuracy, and overall efficiency.

POLICY 3.6 Consider replacing or upgrading storm facilities to current standards in the ROW whenever a street is to be substantially reconstructed or other significant utility work is to be completed, especially when storm improvements are specifically identified in the Plan. In addition, consider street and other utility improvement needs when replacing or upgrading storm facilities.

POLICY 3.7 Pursue opportunities to secure grants and other revenue partnerships to fund storm drainage program needs.

POLICY 3.8 The utility will not accept nonstandard, powered, or private facilities for ownership, operation, or maintenance by the utility.

3.2.4 Environment and Regional Coordination

Goal 4: Work to protect the natural environment within the City and contribute to the preservation of natural resources throughout the region.

POLICY 4.1 The Storm Drainage Utility shall work with other jurisdictions and agencies to address regional water quality issues.

POLICY 4.2 The City shall comply with all federal, state, and local regulations pertaining to stormwater management, facility maintenance, and pollution control.

POLICY 4.3 The City shall promote policies that preserve existing native vegetation and natural drainage courses while maintaining their conveyance capacity.

POLICY 4.4 Environmental issues, such as water quality and fish habitat protection, shall be considered in all new development applications and new storm drainage improvements. This policy includes consideration of new and emerging concerns, such as the chemical 6PPD-quinone in street runoff and the effects of climate change on stream temperatures.

POLICY 4.5 The City shall seek to minimize impacts to natural river systems by encouraging pretreatment of surface flows from new development and reintroduction into groundwater, where feasible.

POLICY 4.6 The City shall seek opportunities, where feasible, to reintroduce treated urban runoff back into the groundwater system as new development and redevelopment occurs in order to minimize urbanization impacts to the hydrology of natural river systems.

POLICY 4.7 The City shall evaluate the feasibility of improving the water quality of its existing discharges into river systems.

POLICY 4.8 The City shall seek to comply with all federal, state, and local regulations to reduce runoff volumes and pollutant loads associated with new development and redevelopment.

POLICY 4.9 The City shall seek to prevent erosion and landslides related to construction, operation, and maintenance of the publicly owned drainage system.

4. Drainage System

Chapter 4 develops a future work plan to collect and organize information describing the current conditions of the storm drainage system, which provides the basis for investigations (Chapter 5) designed to evaluate the Storm Drainage Utility performance relative to the system goals. This chapter provides an overview of the City's drainage system, including both natural (Section 4.1) and constructed (Section 4.2) drainage elements. It also summarizes key factors related to the storm drainage system, namely critical facilities (Section 4.3) and water quality (Section 4.4), and existing issues facing the Storm Drainage Utility (Section 4.5).

Figures presented in this chapter consist of several maps of the Storm Drainage Utility service, drainage and surrounding areas.

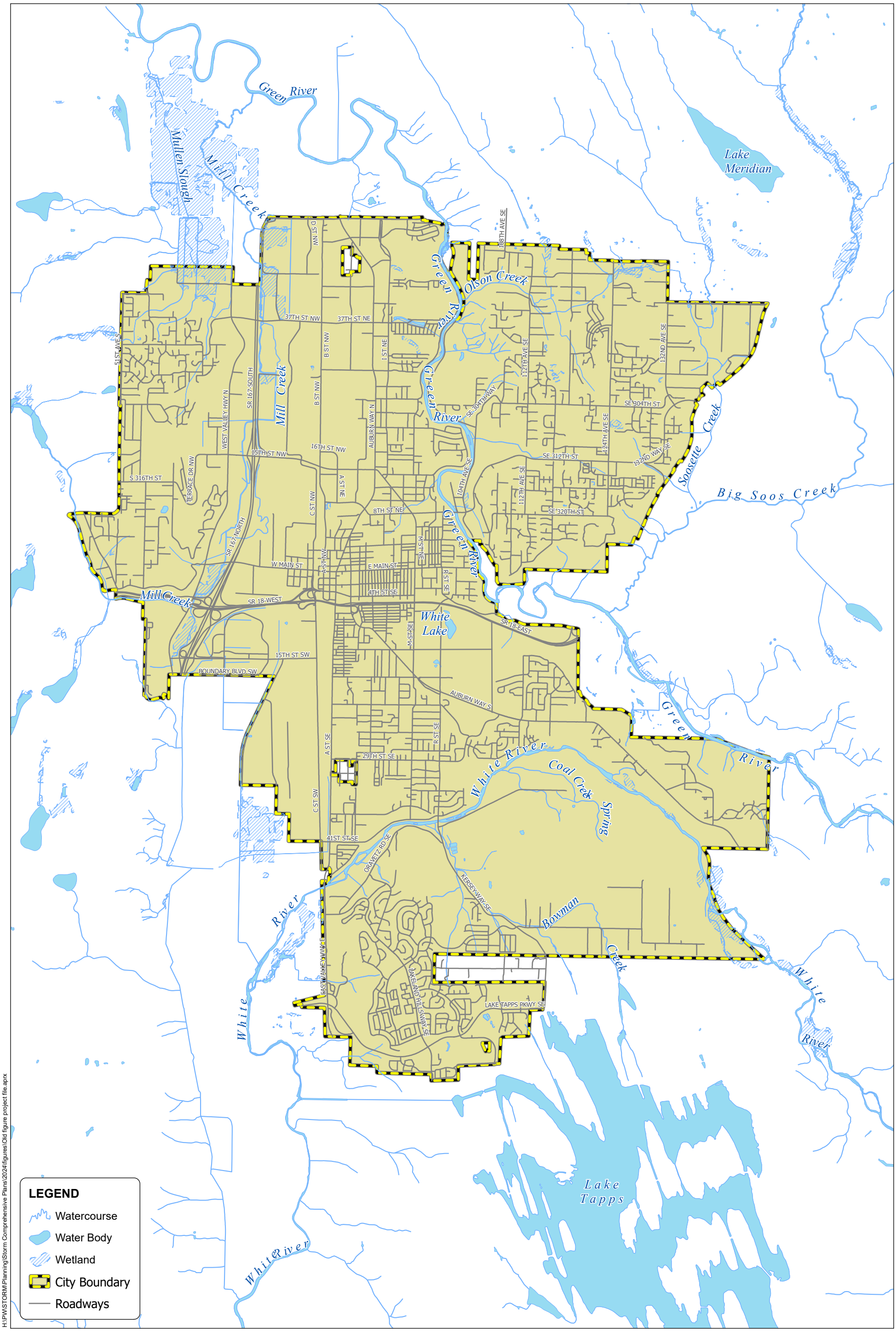
4.1 Natural Drainage

The City of Auburn encompasses approximately 30 square miles; the central portion of the City lies along the bottom of a valley, while the outer edges of the City extend into the surrounding hills (see Figure 4-1). In general, stormwater runoff from the City flows to one of three major receiving waters: the Green River, the White River, and Mill Creek. Other notable water features in the Auburn area include the following:

- Big Soos Creek, which drains southeast into the Green River.
- Soosette Creek (also known as Little Soos Creek), which drains south into Big Soos Creek.
- Mullen Slough, which drains along the northwest side of Mill Creek toward the Green River.
- Bowman Creek, which drains north into the White River.
- Olson Creek, which drains west into the Green River.
- Lake Tapps, which is located just south of the City.
- White Lake, which is located southeast of R Street SE and State Route (SR) 18.
- Coal Creek Springs, which drains north to the White River.

The City contains nearly 30 miles of rivers and streams and more than 1,000 acres of floodplain area associated with these water features. There are over 1,500 acres of wetlands, including forested/shrub and freshwater emergent wetlands.

The following section provides additional information on each of the three major receiving waters.



LEGEND

- Watercourse
- Water Body
- Wetland
- City Boundary
- Roadways

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Figure 4-1
Natural Drainage Features of the City of Auburn

4.1.1 Receiving Waters

4.1.1.1 Green River

The Green River flows over 93 miles, beginning on the west slope of the Cascade mountains and ending in the Duwamish Waterway, meandering through the northeast portion of Auburn along the east valley wall. Throughout the last century, the Green River was altered for the purpose of flood control, including the construction of levees and bank revetments and the diversion of the White River in the early 1900s. In 1962, the Howard A. Hanson Dam was built on the Green River to control flooding in the valley.

From 1960 to 2007, the City of Auburn participated in Green River flood management activities as part of the Green River Flood Control District. In 2007, the Green River Flood Control District was phased out because flood control and management efforts for the Green River are now included in the King County Flood Control District (KCFCD), which was established in 2007. These efforts are reflected in the 2006 King County Flood Hazard Management Plan. The KCFCD goals and objectives include maintaining and repairing levees and revetments and acquiring at-risk floodplain properties. Auburn elected officials and staff serve on advisory committees for the KCFCD.

4.1.1.2 White River

The White River originates on the slopes of Mount Rainier and flows generally northward and westward into the Puget Sound lowlands. Near Auburn, the White River flows north and then west through the southern portions of the City before it curves southward toward the Puyallup River. The White River is a very dynamic, sediment-laden river, which has led to changing channel morphology.

Prior to 1900, the White River flowed into the Green-Duwamish River; however, floodwaters from the White River drained to both the Green-Duwamish River and the Puyallup River. A flood in 1906 caused the White River to shift and flow into the old Stuck River channel, which leads to the Puyallup River. In 1907, a diversion wall was constructed in Game Farm Park to permanently direct the White River flow into the Puyallup River (USACE 2009a).

The shifting of floodwaters from the White River caused inter-jurisdictional conflicts between King and Pierce Counties. After attempts by the two counties to control flooding along the White River met with limited success, the U.S. Army Corps of Engineers (USACE) was engaged for help. In 1948, the USACE finished construction of the Mud Mountain Dam to control floods on the White River.

At the time Mud Mountain Dam was finished, White River channel capacity in Auburn was estimated to be 20,000 cubic feet per second. Since then, vegetation encroachment and sediment accumulation have reduced channel capacity (USACE 2009a). Reduced channel capacity causes higher river levels during large storm events, which can impact the City's gravity drainage outfalls along the White River.

4.1.1.3 Mill Creek

Mill Creek flows out of the hills on the west side of the valley near SR 18 and then turns northward along the western portion of the City, running adjacent to SR 167. It crosses under SR 167 several times as it flows through the valley floor. Approximately 1 mile north of the City boundary, Mill Creek discharges into the Green River.

Historically, Mill Creek served as vital habitat for migrating salmon and provided ideal conditions for rearing and storm refuge. However, increasing development has altered the natural flow pattern of Mill Creek, including the installation of diversions and culverts, channel straightening, degradation of water quality, and aggradation from increased stormwater inflows with high sediment loads. In many

areas the stream is straight and shallow and exhibits a lack of quality riparian habitat for Endangered Species Act (ESA)-listed species such as Chinook salmon and bull trout (USACE 2009b). Aggradation along Mill Creek has also contributed to flooding and drainage problems in the City. The City's drainage outfalls to Mill Creek can become submerged, thereby reducing the hydraulic capacity of the system.

4.1.2 Drainage Areas

The City's drainage can be described by dividing the City into six general subareas and their discharge location (Figure 4-2):

- Lea Hill lies northeast of the Green River. Most of the Lea Hill area drains west into the Green River. However, the eastern edge drains south and east out of the City into Soosette Creek and Big Soos Creek.
- West Hill lies west of Mill Creek. The West Hill area drains into several small tributaries to Mill Creek. The northern portion of West Hill drains to the northeast into steep ravines that discharge to Mullen Slough and other wetland areas on the valley floor.
- The southern portion of the City drains to the White River. The area west of Bowman Creek consists largely of single family residential developments, which drain to the White River to the west and north and Bowman Creek to the east, with a small portion draining south toward Lake Tapps. The area east of Bowman Creek consists of rural residential development. This area drains to Bowman Creek on the southwest and the White River on the northeast side.
- The southeast portion of the City lies along a narrow plateau between the Green and White Rivers. Runoff from this area drains to the Green River along the north side and the White River along the south side.
- The north central portion of the City lies along the valley floor and is located north of 27th Street SE. This is part of the central and most developed area of the City. The topography in this area is so flat that roadways and storm drainage infrastructure largely determine the receiving water to which runoff is diverted. Runoff from this area is generally split between Mill Creek and the Green River.
- The south central portion of the City also lies along the valley floor and is located south of 27th Street SE. This area is also part of the most developed area of the City. The topography in this area is so flat that roadways and storm drainage infrastructure largely determine the receiving water to which runoff is directed. This area features extensive infiltration into groundwater, but otherwise drains toward the White River.

The above-described areas can be divided into smaller drainage subbasins. The City maintains a mapping of the storm drainage basins and subbasins, with a total of 59 drainage subbasins. Each subbasin is identified by a series of one, two, or three letters (Figure 4-2).

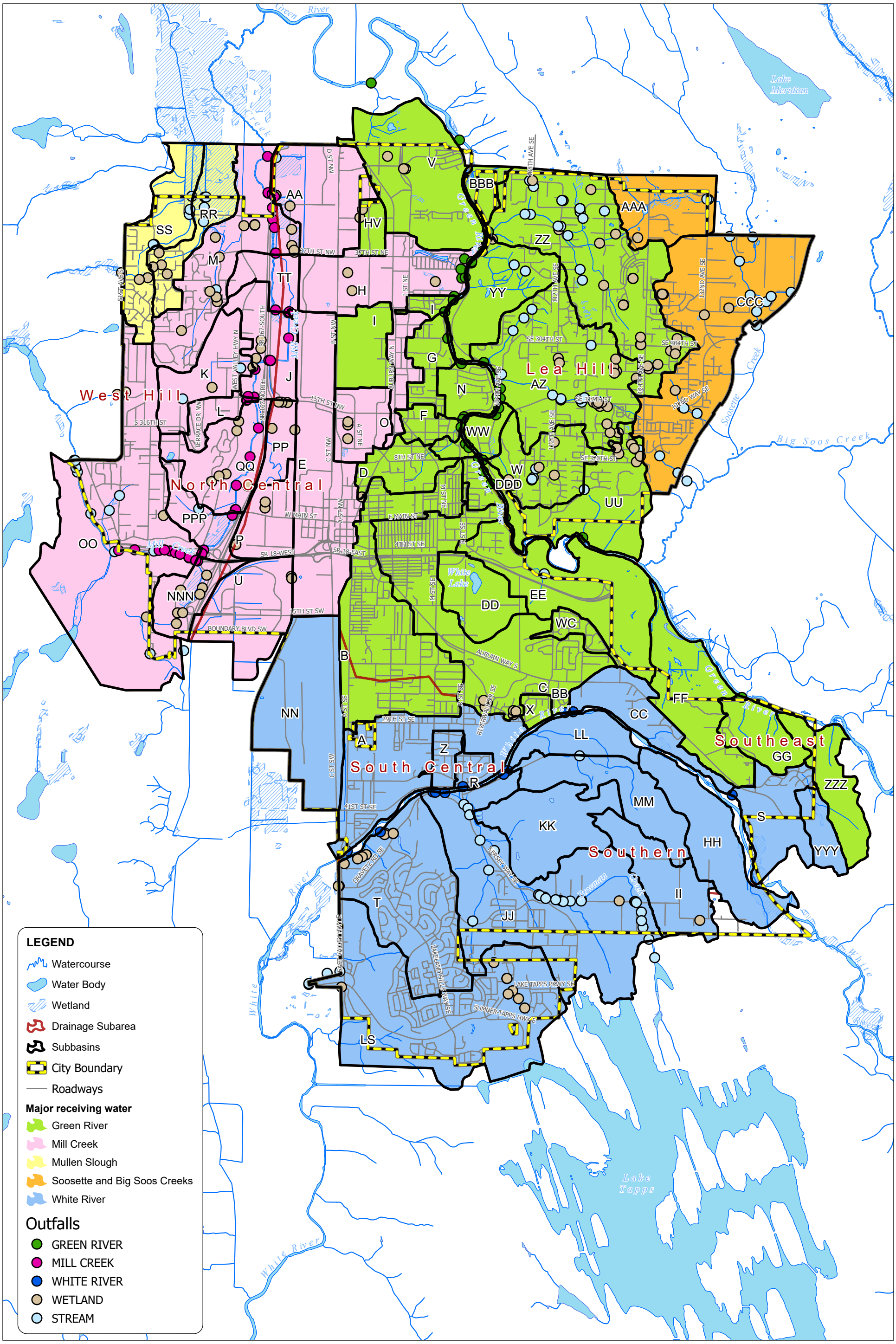


Figure 4-2
Drainage Subareas for the City of Auburn Storm Drainage Utility

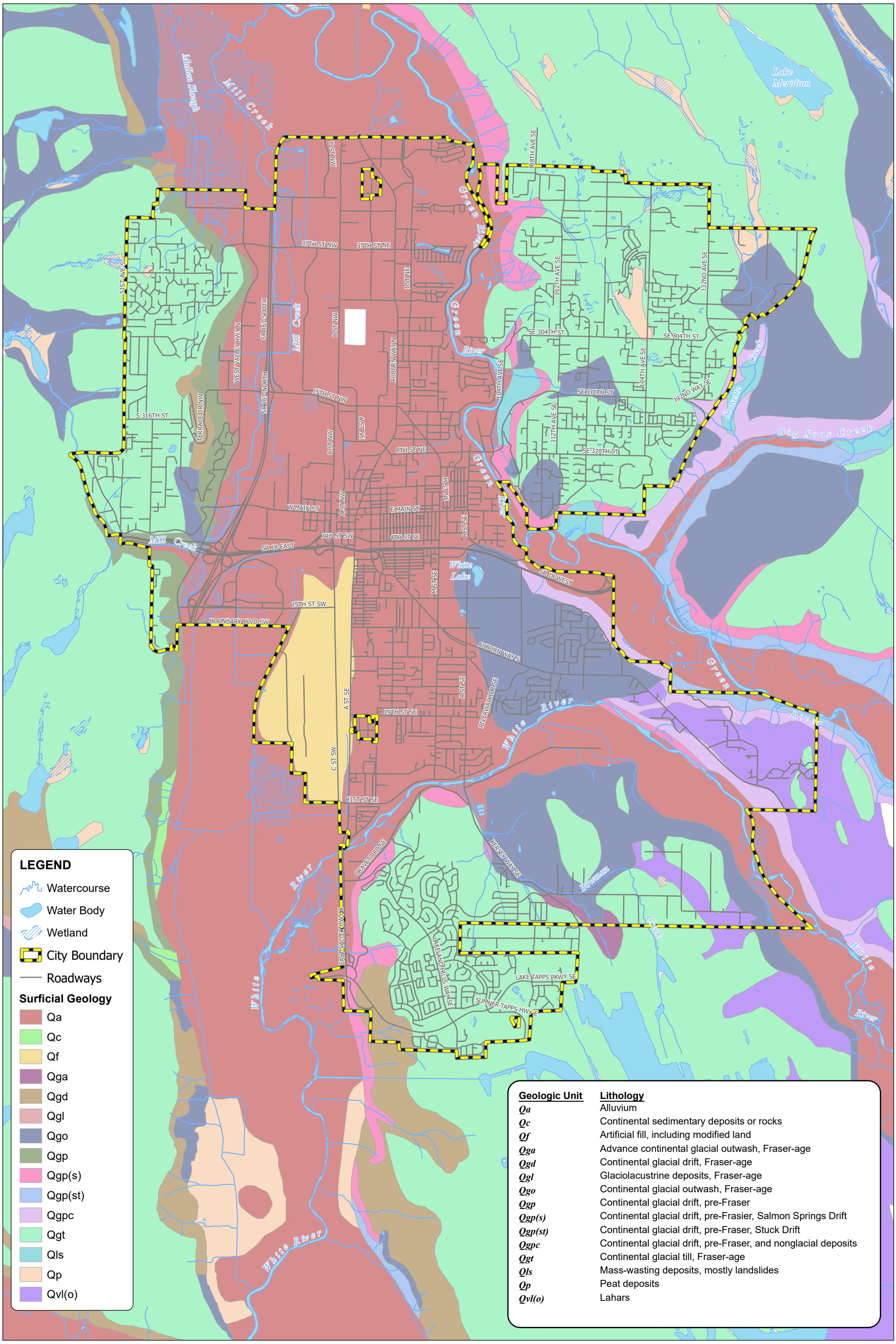
4.1.3 Geology and Groundwater

Topography and geology in the Auburn region has been influenced largely by millions of years of advancing and retreating glaciers, most recently with the Vashon glaciation occurring approximately 12,000 to 18,000 years ago (Booth 1991). Following the retreat of the glacier, interglacial processes, such as landslides, mudflows, erosion, and alluvial deposition, have continued to shape the region. In general, the upland hills around the City's periphery comprise glacial and interglacial deposits, while the valley is filled with more recent deposits overlying glacial and older interglacial deposits.

Major geologic units of the White and Green River valley include undifferentiated glacial and interglacial deposits, Vashon recessional deltaic deposits, undifferentiated alluvium, Osceola mudflow, and White River alluvium. The undifferentiated glacial and interglacial deposits form the lowest layer in the valley consist of materials deposited during the glacial periods. As the glacier retreated, meltwater flowed into a water-filled embayment then occupying the present White and Green River valley area. This meltwater deposited sand and gravel known as the Vashon recessional deltaic deposits. After the end of the glacial period, the Green River deposited undifferentiated alluvium in the valley because of erosion of upland glacial deposits. Approximately 5,700 years ago, a massive volcanic mudflow from Mount Rainier, known as the Osceola mudflow, flowed down into the valley (Troost and Booth 2008). White River alluvium is the geologic unit nearest the surface and consists of alluvial deposits from the White and Green Rivers.

Bedrock is found approximately 1,280 feet beneath the valley floor. Surficial geologic mapping of the Auburn region is shown in Figure 4-3.

In general, groundwater flow systems in the Auburn area are characterized by upland recharge flowing toward the valley. The two major aquifers in the White and Green River valley are the modern alluvium aquifer and a deep deltaic valley aquifer; the latter is used for Auburn's water supply. The modern alluvium aquifer is the shallowest aquifer in the Auburn-Kent Valley, often lying 10 to 15 feet below the ground surface. Groundwater in the deep deltaic valley generally flows in a pattern parallel to the direction of the Green River in the north and the White River in the south.



LEGEND

- Watercourse
- Water Body
- Wetland
- City Boundary
- Roadways

Surficial Geology

- Qa
- Qc
- Qf
- Qga
- Qgd
- Qgl
- Qgo
- Qgp
- Qgp(s)
- Qgp(st)
- Qgpc
- Qgt
- Qls
- Qp
- Qvl(o)

Geologic Unit	Lithology
Qa	Alluvium
Qc	Continental sedimentary deposits or rocks
Qf	Artificial fill, including modified land
Qga	Advance continental glacial outwash, Fraser-age
Qgd	Continental glacial drift, Fraser-age
Qgl	Glaciolacustrine deposits, Fraser-age
Qgo	Continental glacial outwash, Fraser-age
Qgp	Continental glacial drift, pre-Fraser
Qgp(s)	Continental glacial drift, pre-Frasier, Salmon Springs Drift
Qgp(st)	Continental glacial drift, pre-Fraser, Stuck Drift
Qgpc	Continental glacial drift, pre-Fraser, and nonglacial deposits
Qgt	Continental glacial till, Fraser-age
Qls	Mass-wasting deposits, mostly landslides
Qp	Peat deposits
Qvl(o)	Lahars

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Figure 4-3
Surface Geology in the Vicinity of the City of Auburn

4.1.4 Soils and Runoff Potential

Surface soils are classified by the Natural Resources Conservation Service (NRCS) into four hydrologic soil groups based on the soil's runoff potential: A, B, C, and D. Group A soils generally have the lowest runoff potential while Group D soils have the highest. Hydrologic soil groups are defined by NRCS (1986) as follows:

- Group A is sand, loamy sand, or sandy loam types of soils. It has low runoff potential and high infiltration rates, even when thoroughly wetted. It consists chiefly of deep, well- to excessively drained sands or gravels and has a high rate of water transmission.
- Group B is silt loam or loam. It has a moderate infiltration rate when thoroughly wetted and consists chiefly of moderately deep to deep, moderately well- to well-drained soils with moderately fine to moderately coarse textures.
- Group C is sandy clay loam. It has low infiltration rates when thoroughly wetted and consists chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine structure.
- Group D is clay loam, silty clay loam, sandy clay, silty clay, or clay. It has very low infiltration rates when thoroughly wetted and consists chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material.

Areas in the valley floor is mostly Group D soils, which typically have very low infiltration rates and high runoff potential. The West Hill, Lea Hill, and Lakeland Hills areas are predominantly Group C soils, which have low infiltration rates and moderate to high runoff potential. The Southeast area, Bowman Creek area, and valley area located generally between SR 18 and the White River have Group A soils, which are characterized by high infiltration rates and low runoff potential. See the NRCS maps (http://www.nrcs.usda.gov/) for mapped soils within the City.

4.1.5 Land Use and Development

Land use and the intensity of development have considerable effects on the quality and quantity of stormwater runoff flowing into the drainage system and ultimately discharging to receiving waters. As the population of the City increases, new areas of the City are developed or existing areas are redeveloped at a higher density. These changes can result in increased stormwater runoff and greater water quality impacts to water bodies. However, development regulations and drainage design standards imposed by the City are intended to mitigate these impacts. The following sections describe expected growth and how development regulations and design standards are being updated to reduce impacts to stormwater runoff.

4.1.5.1 Recent Growth

Auburn's population has steadily increased since the 1950s. Auburn's population increased by an average of 8% per year from 1960 to 1980, then slowed to approximately 1.7% per year from 1980 to 1994. Auburn's population growth rate began to increase in 1998 and continued as the City annexed new areas, known locally as the Lea Hill, West Hill, and Lakeland Hills areas. The larger Lea Hill area annexations began in 2000 and continued to 2024. The West Hill area was annexed in 2007, while the Lakeland Hills area annexations occurred between 1998 and 2005. As of 2010, the population of Auburn increased to 70,180 and increased to 86,340 by 2020. The Washington State Office of Financial Management indicates that Auburn's population in 2023 was approximately 88,820 (approximately 78,760 in King County and 10,060 in Pierce County).

4.1.5.2 Future Growth

The City's goals, objectives, and policies for growth and development are described in detail in the 2025 Comprehensive Plan. These goals, objectives, and policies are applied to different areas of the City through land use designations (see Figure 4-4). The City also has developed special land use plans for certain areas of the City where specific land use goals have been identified. An important example is the City's downtown area; one of the goals described in the Comprehensive Plan is to encourage development and redevelopment in the downtown area to serve as an urban center for the community.

4.1.5.3 Development Regulations and Drainage Design Standards

The City implements state and federal stormwater regulations through the stormwater code, the COA Supplement, and related stormwater management programs and policies. City stormwater regulations contain specific requirements for managing stormwater quality and quantity in areas subject to new development and redevelopment. For example, the SWMMWW provides guidance for implementing low impact development (LID) measures that are designed both to improve water quality and to control peak flows and durations of runoff. The City reviews and updates its local development regulations and design standards as necessary to meet the NPDES MS4 permit requirements. The COA Supplement was last updated in 2022.

City stormwater regulations and development standards are intended to avoid substantial increases in stormwater discharges to the existing drainage system through the implementation of on-site stormwater controls. This would keep stormwater conveyance demands at or near existing levels.

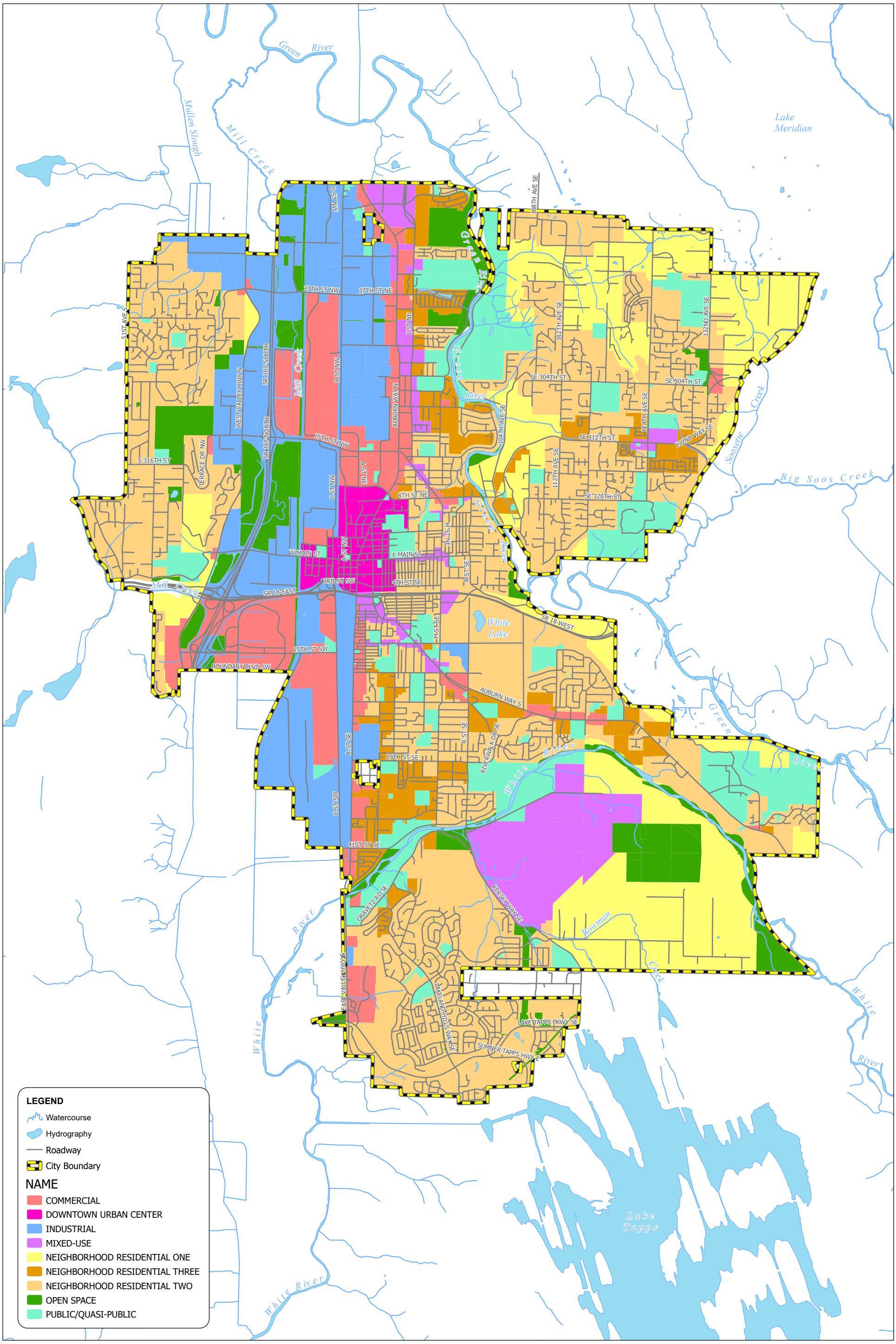


Figure 4-4
Land Use Designations for the City of Auburn

4.1.6 Flood Hazard Mapping

The City of Auburn is a participant in the National Flood Insurance Program (NFIP) administered through the Federal Emergency Management Agency (FEMA) to enable property owners to purchase insurance protection from the government against losses from flooding. Participation in the NFIP is based on an agreement between the City and the federal government, stating that if the City adopts and enforces a floodplain management ordinance to reduce future flood risks to new construction in areas designated as Special Flood Hazard Areas (SFHA), the federal government will make flood insurance available within the community as a financial protection against flood losses. The SFHAs and other risk premium zones applicable to each participating community are depicted on Flood Insurance Rate Maps (FIRMs).

FEMA established flood hazard zones from a Flood Insurance Study (FIS) for King County conducted in 2013, which examined flooding along several major rivers. Although the primary purpose of the FIS was to establish flood insurance rates, the flood mapping resulting from these studies is also used for floodplain management and flood hazard mitigation planning. Updates to the flood hazard zones are continually being made at local levels (King County and Pierce County) and represented in Preliminary FIRMs or Letters of Map Revision (LOMR). Preliminary FIRMs for all of King County were reissued on August 19, 2020. The most recent flood hazard mapping for Pierce County is presented in its Rivers Flood Hazard Management Plan adopted in 2023 and also in LOMR files located on the FEMA Map Service Center Web page (Pierce County 2023). Table 4-1 lists the FIRMs developed for areas within the City of Auburn.

Table 4-1. Federal Emergency Management Agency Flood Insurance Rate Maps Applicable to Auburn

53033CIND1B	53033CIND2B	53033C1232G	53033C1235G
53033C1242G	53033C1251G	53033C1252G	53033C1253G
53033C1254G	53033C1257G	53033C1259G	53033C1261G
53033C1262G	53033C1263G	53033C1264G	53033C1266G
53033C1267G	53033C1268G	53033C1269G	53033C1476F
53033C1477F			

4.1.7 Recent Climate and Precipitation Trends

Auburn's climate is typical of that in the Puget Sound lowlands of Western Washington, where the summers are cool and comparatively dry, while the winters are mild, wet, and cloudy (WRCC 2014). Mean annual precipitation in the Puget Sound lowlands varies from 32 inches (north Seattle) to approximately 47 inches (near Centralia, Washington).

The precipitation gauge at Auburn City Hall has been recording data since 1995. The mean annual precipitation recorded at that gauge (with missing data filled in from the nearby King County Lakeland Hills gauge) from 2015 to 2022 was approximately 39 inches. This is very similar to the mean annual precipitation recorded at the two nearest long-term gauges:

- Seattle-Tacoma Airport, which is part of the National Oceanic and Atmospheric Administration (NOAA) Cooperative Network (Station 457473), has a mean annual precipitation of approximately 38 inches based on 74 years of recorded data (WRCC 2014b). The Seattle-Tacoma Airport gauge is located approximately 8 miles northwest of Auburn.
- Kent, Washington (NOAA Co-op Station 454169) has a mean annual precipitation of approximately 39 inches based on 57 years of recorded data (WRCC 2014c). The Kent gauge is located approximately 7 miles north of Auburn.

Precipitation-frequency data for Washington are compiled in Volume 9 of NOAA Atlas 2 (Miller et al. 1973); precipitation-frequency estimates for Auburn, Washington, are listed in Table 4-2.

Table 4-2. Precipitation Frequency Data for Auburn, Washington, from NOAA Atlas 2

Frequency, duration	Precipitation (inches)
2-year, 6-hour	0.95
2-year, 24-hour	1.75
100-year, 6-hour	1.90
100-year, 24-hour	3.80

4.1.8 Anticipated Changes in Climate

Changing climate will continue to be a key factor in the performance, operation, maintenance, and design of the City's stormwater system. According to the publication, *Climate Change Impacts and Adaptation in Washington State*, the state is projected to experience decreases in snowpack, increases in stream temperatures, changes in stream base flow, increased frequency of high rainfall intensity and magnitude, and changes in peak stormwater runoff, streamflow, and flooding frequency (Snover et al. 2013). This section provides an assessment and strategy for the City to address future changes and effects to the storm sewer and flood management systems while considering the range of uncertain climate projections.

The available information on future climate conditions will help guide decisions and investments, avert impending impacts on stormwater programs from climate change, and enhance the effectiveness and resilience of stormwater systems in the face of environmental uncertainties. Assessing future climate impact magnitude, risk, and uncertainty are critical to making appropriate decisions about physical attributes (size, location, elevation, capacity) and performance (service levels, acceptable impacts, failure scenarios) for stormwater programs.

The following future climate conditions are potentially impactful to the City's stormwater programs:

- **Precipitation:** Projected changes in precipitation show evidence for increased frequency of intense, large, or persistent rains in the future, mostly in the winter storm season. These increases could exceed the existing level of performance in the City's stormwater system.
- **System performance and flooding:** Increased frequency of larger or more intense storms could lead to increased stormwater runoff and thus more frequent flooding of existing storm drainage systems in the City. Pumped or other operated systems are typically more vulnerable to changing storms.
- **River and stream flooding:** Increased frequency of larger and longer duration storms could lead to increased local stream and river flooding, increased stages over known or mapped floodplains, and different flood control operations on the White and Green River dams.
- **Groundwater:** More frequent storms of higher magnitude have the potential for increased infiltration and thus rising groundwater table. This should be a consideration in infiltration facility design, subsurface excavations, and installation of stormwater structures such as vaults.
- **High temperature:** Average and extreme high temperatures in Auburn are expected to be higher in the future, causing effects like higher summer surface water temperatures that can be harmful to aquatic life and fisheries.

4.1.8.1 Uncertainty and Risk Management

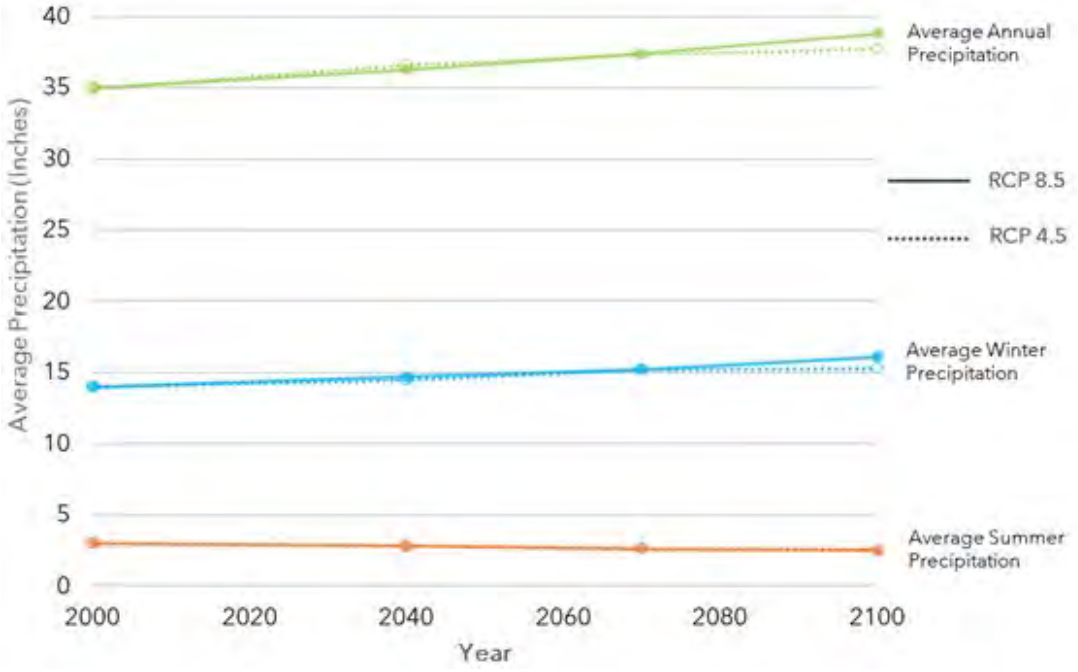
Addressing uncertainty in climate projections is an important aspect of climate research. Since future outcomes in climate conditions heavily rely on human activities and the Earth's climate system is extraordinarily complex, global climate models have an amount of uncertainty. All future climactic conditions are projections, not predictions. Ongoing research aims to reduce uncertainties by improving climate models, refining data collection methods, and enhancing our understanding of the Earth's climate system and its interactions with human activities.

When possible, this section uses locally refined, dynamic data to inform potential future climate scenarios. Because uncertainty is inherent in projections of climate change, the likelihood of a range of possibilities are presented.

Stormwater management is a risk-based practice, which means that standards are typically based on the likelihood or probability that an event will occur, and the level of protection needed is related to that possibility. Consequently, the approaches to applying recommendations in part consider the coincident events (e.g., sea level rise ranges plus event probability) with expected performance. No "reasonable" or applicable stormwater standards can apply to all possible events or outcomes, and extremes can exceed system capacity. An important consideration that is a core practice when establishing storm system criteria is to consider the consequences of failure, because all systems (unless designed for the probable maximum flood) can fail in any year.

4.1.8.2 Precipitation Projections

According to climate models, the region's average precipitation is expected to undergo minimal changes (Hegewisch et al. 2023). Figure 4-5 illustrates the projected alterations in average precipitation for two climate scenarios: Representation Concentration Pathway (RCP) 4.5 (low end) and RCP 8.5 (high end). When examining individual seasons, we observe a slight increase in total precipitation during the winter, an almost negligible loss of precipitation in the summer, a slight increase in precipitation in the fall, and a slight decrease in precipitation in the spring.



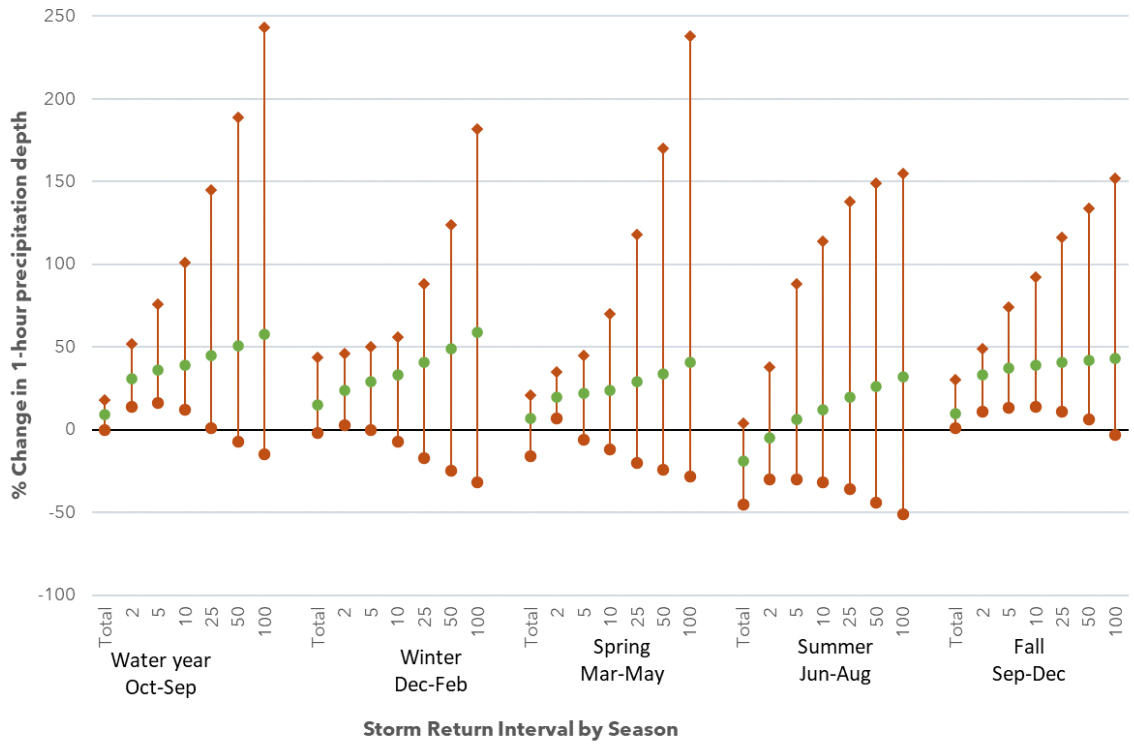
Modified from Hegewisch et al. 2023.

Figure 4-5. Projected Change in Average Precipitation for Seattle, Washington.

Although the City is not predicted to see a significant increase in overall precipitation, climate models predict an increase in the intensity of precipitation, specifically during the winter months. Heavy rain events in the Pacific Northwest are often caused by atmospheric rivers, where long, narrow regions of concentrated moisture are carried from lower latitudes (Morgan et al. 2021). Intensification of atmospheric rivers is projected to cause an increase in extreme winter precipitation frequency.

Figure 4-6 outlines the anticipated percentage change in extreme heavy rain events in SeaTac, Washington. The figure shows predicted changes in short duration storms (1 hour) across different return frequencies (ranging from 2 to 100 years) during the entire water year, as well as individual seasons (winter, spring, summer, and fall) for the 2080s (spanning from 2070 to 2099) relative to 1970 to 1999. Key details are summarized below:

- **Projection scope:** The total projection includes all precipitation occurring in a season or water year.
- **Return frequencies:** The 2- to 100-year return frequency projections represent the high- and low-end extremes, estimated based on only the largest value in each year.
- **Measurement:** All 2080 projections are expressed as the percent change in 1-hour precipitation depth relative to the climate normal period from 1970 to 1999, following the convention established by NOAA.
- **Climate scenarios:** The results are based on two greenhouse gas scenarios: RCP 8.5 (high end) and RCP 4.5 (low end).
- **Data presentation:** The data is organized by water year, season, total annual precipitation, and extremity.



*Green circles indicate model average, red diamonds represent the high model results,red circles represent the low model

Modified from Mauger et al. 2019

Figure 4-6. Projected Changes in 1-Hour Precipitation Statistics for the 2080s vs. 1970–1999

4.1.8.3 Implications

The increase in precipitation intensity will have several key implications or risks to the stormwater system. More frequent and intense winter storms are likely to exceed the capacity of the stormwater system more often than current conditions.

Impact

Stormwater structures are sized to meet system LOS objectives, considering the anticipated frequency of storm events. Historical rainfall data are collected and characterized by intensity (e.g., inches of rain per minute or hour) or magnitude over a certain time period (e.g., X-inches in 24 hours). The design storms are usually described in the likelihood of exceeding a certain depth. For instance, a 4% chance of occurrence may also be described by the "average" frequency of occurrence for that duration, such as a 25-year, 24-hour event (for a 4% exceedance event).

Future rainfall patterns are predicted to deviate from historic norms. Note that storms are not "increasing in size" (larger storms are possible any time without climate change), but rather the *frequency* of larger events is greater. For example, if a 3-inch, 24-hour storm has occurred every 25 years in the recent past, climate change can cause a 3-inch storm to occur more frequently in the future. The new 25-year, 24-hour storm could be 3.5 inches of rain or more at the same potential frequency. Storm intensity (the rate of rainfall depth per unit of time) follows the same pattern—the same extreme rates are more frequent.

For example, when a storm system is designed to convey water away from a roadway for a 25-year, 24-hour event, we assume that the system may fail, on average, once every 25 years. We accept this failure level because the impact may be modest and the cost of providing additional protection is high. However, with more frequent events of the same size, flooding could happen every 10 to 15 years, which may not be tolerable for safety, system disruption, or property damage. Consequently, returning to the same LOS would require a new drainage system to provide the same frequency of performance. However, floods could still occur that exceed that LOS. If a higher LOS is desired, careful consideration of a new, future design storm becomes necessary.

4.2 Stormwater Drainage Infrastructure

As part of the implementation of the City's NPDES MS4 permit, the City embarked on a substantial effort to update its inventory of drainage system infrastructure owned or operated by the Storm Drainage Utility. The citywide inventory is completed, but continued maintenance and new features will be ongoing. An up-to-date system inventory will assist the City in the following objectives:

- Help to meet regulatory requirements.
- Provide input for hydraulic models to analyze system conveyance capacity.
- Serve as a basis for an asset criticality database used to prioritize repair and replacement (R&R) activities.
- Support the City's M&O activities through the CMMS.

Table 4-3 provides a summary of stormwater infrastructure inventory.

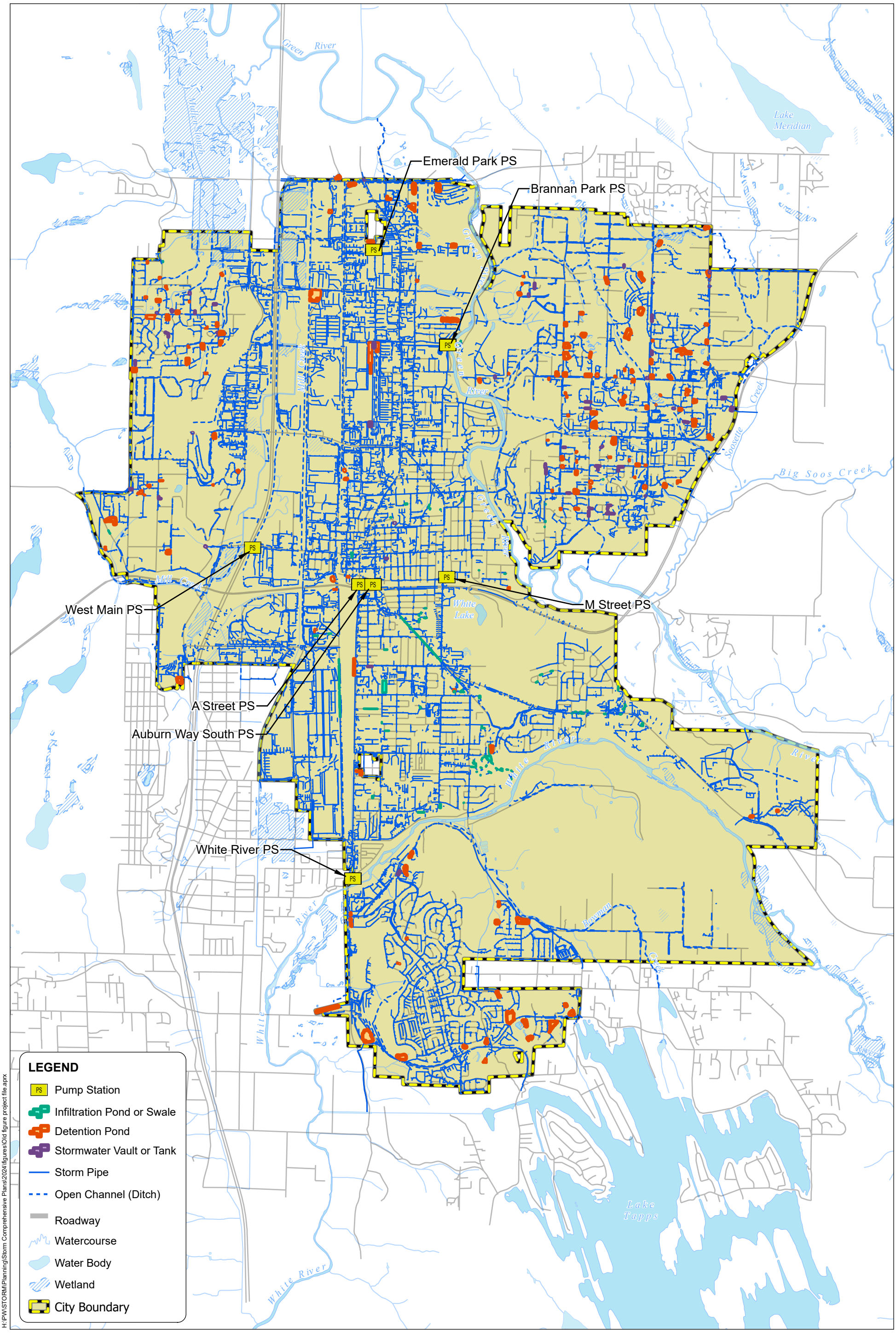
Table 4-3. Stormwater Drainage Infrastructure Summary

Infrastructure element	Quantity [a]	Unit
Pipes, all sizes	1,310,937	Linear feet
Pipes, all sizes (excluding force mains)	15,259	Count
6–10 in. diameter	3,361	Count
	215,900	Linear feet
12–15 in. diameter	8,822	Count
	698,000	Linear feet
16–18 in. diameter	1,480	Count
	165,600	Linear feet
21–24 in. diameter	858	Count
	106,500	Linear feet
27–36 in. diameter	548	Count
	85,200	Linear feet
42–48 in. diameter	173	Count
	37,200	Linear feet
54–72 in. diameter	17	Count
	2,300	Linear feet
Force mains	35	Count
	4,400	Linear feet
Open channels	222,000 [b]	Linear feet
Culverts	1,164	Count
Manholes	3,172	Count
Catch basins	10,800	Count
Control structures	223	Count
Outfalls (to water courses, ditches, etc.)	124	Count
Detention ponds	156	Count
Infiltration ponds	14	Count
Vaults	8	Count
Pump stations	7	Count

[a.] Quantities are based on current inventory and have not yet been finalized.

[b.] Length has been approximated based on available data.

Most storm drainage infrastructure is in the City's core between Mill Creek and the Green River, where development densities are highest. Figure 4-7 shows an overview of the City's stormwater drainage infrastructure.



COMPREHENSIVE STORM DRAINAGE PLAN
May 2024

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Figure 4-7
Drainage Infrastructure for the City of Auburn Storm Drainage Utility

4.3 Critical Facilities

Policies and system goals for managing the City's critical facilities and critical stormwater assets are described in Chapter 3, Section 3.2. Two groups of system goals and policies in particular focus on criticality. The first applies to critical facilities, stating that the City will manage stormwater runoff within the public ROW in the vicinity of critical facilities to allow access and ensure function of these facilities at all times (Policy 1.2). Ten critical facilities have been identified and included in Table 4-4.

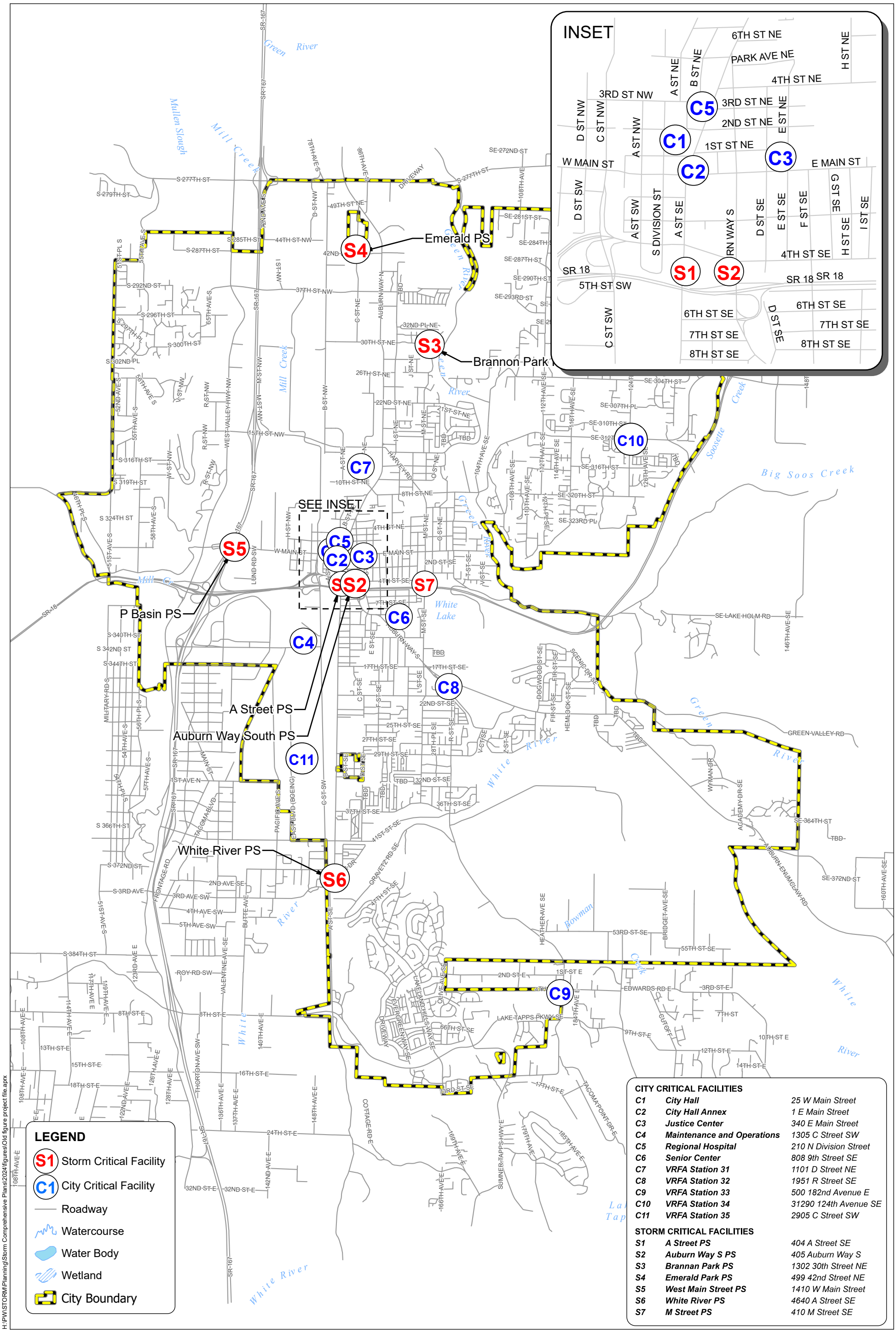
The second group of policies relates to the management of the City's critical stormwater assets (Policies 1.4, 1.6, 2.4, 2.5, and 3.4). The City will modify its inspection and maintenance practices to prioritize active management of facilities with the highest combined risk and likelihood of failure (i.e., a criticality based maintenance program). Factors that impact likelihood of failure include the age of the asset, inspection or repair history of the asset, and condition of the asset. The consequences of a system failure impacting a hospital or school are considered more serious than one affecting a residence or unoccupied property and are thus assigned as critical assets. The City has identified 10 City facilities (Table 4-4) and seven stormwater pump stations (Table 4-5) as critical assets. The list of critical stormwater assets may expand as the City refines its criticality database by adding information (e.g., inspection and repair logs, asset age; see Policy 1.6). The locations of these critical facilities are shown in Figure 4-8.

Table 4-4. Critical City Facilities

Facility	Address
City Hall	25 W Main Street
City Hall Annex	1 E Main Street
Justice Center	340 E Main Street
Maintenance and Operation Facility	1305 C Street SW
Regional Hospital	201 N Division Street
Valley Regional Fire Authority (VRFA) Station 31	1101 D Street NE
VRFA Station 32	1951 R Street SE
VRFA Station 33	500 182nd Avenue E
VRFA Station 34	31290 124th Avenue SE
VRFA Station 35	2905 C Street SW

Table 4-5. Critical Stormwater Facilities

Storm drainage facility	Year constructed	Address
A Street Pump Station	1973	404 A Street SE
Auburn Way S Pump Station	1994	405 Auburn Way S
Brannan Park Pump Station	2001	1302 30th Street NE
Emerald Park Pump Station	1999	499 42nd Street NE
M Street Pump Station	2014	410 M Street SE
West Main Street Pump Station	2008	1410 W Main Street
White River Pump Station	2012	4640 A Street SE



COMPREHENSIVE STORM DRAINAGE PLAN
August 2024

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Figure 4-8
City and Storm Drainage Critical Facilities for the City of Auburn

4.4 Water Quality

This section describes the existing water quality and regulatory conditions that affect surface water quality in Auburn and describes processes that are required to maintain compliance with the City's NPDES MS4 permit.

4.4.1 Existing Conditions

According to water resource inventories by Ecology, the main water bodies within the City's administrative boundaries include the Green River, Mill Creek, White Lake, White River, Bowman Creek, and Soosette Creek. Municipal storm sewers that discharge runoff to surface waters are not authorized to violate state water quality standards.

Appendix 2 of the NPDES MS4 permit (Appendix A of this Plan) describes water bodies that are impaired and have additional requirements based on established TMDLs. A fecal coliform TMDL for the Puyallup River watershed is included in the current NPDES MS4 permit. As part of the TMDL, Ecology has designated the basin as a high-priority basin for IDDE screenings. Details of the required activities are included in Appendix 2 to the NPDES MS4 permit.

The Green River has a TMDL for temperature that was approved by EPA in 2011. The TMDL report indicated a cumulative waste load allocation was developed for all the municipal stormwater permittees. However, the TMDL did not contain any additional TMDL-related actions for stormwater permittees (Ecology 2011).

Other TMDLs under development include the lower White River pH TMDL and the Soos Creek subbasin multiparameter (temperature, dissolved oxygen, bacteria, and fine sediment) TMDL, described in the following paragraphs.

The lower White River pH TMDL was approved by EPA on January 13, 2023, and additional stormwater actions are listed in the public comment draft of the 2024–2029 NPDES MS4 permit. These include outfall and tributary conveyance mapping, monthly IDDE screening for flow in the critical period of May 1 to October 31, soluble reactive phosphorus (SRP) testing of flow from outfalls in the watershed during the critical period under certain sampling conditions (preceding precipitation, stormwater flow, and river flow), and source control tracing for any flow with SRP values that exceed the specified limits. Phosphorus treatment BMPs for new development and redevelopment will be required in the watershed no later than June 30, 2027.

The Soos Creek TMDL is not expected to be complete in time for the 2024–2029 Municipal Stormwater Permit. The temperature, dissolved oxygen, and bacteria TMDL is expected to be finalized in 2026. The fine sediment portion has become a separate TMDL and development of the draft implementation plan began in 2023. The impairments in this TMDL have been identified as fine sediment, high peak flows during storm events, and issues related to habitat degradation.

Other waterbodies listed as impaired on the Ecology water quality map include Mill Creek for bacteria (fecal coliform and e. coli), dissolved oxygen, pH, and benthic macro invertebrates; Bowman Creek for dissolved oxygen, temperature, and fecal coliform; and Olson Creek for benthic macroinvertebrates. These impairments will be addressed through future TMDLs.

4.4.2 Regulatory Compliance

The City has a well-developed MS4 M&O program that employs and provides training on numerous processes and procedures to minimize water quality impacts from municipal operations. The City also actively implements stormwater management BMPs in its municipal activities. BMPs include activities, prohibitions of practices, maintenance procedures, and structural and/or managerial

practices that prevent or reduce the release of pollutants and other adverse impacts to waters of Washington State.

The current NPDES MS4 permit includes provisions for monitoring and assessment of water quality. Permittees have the option of paying annual fees to participate in statewide monitoring programs or developing individual monitoring programs to meet the requirement. The City notified Ecology in 2013 that it intends to participate in the statewide monitoring programs and has continued contributing the required funds every year since.

The City is in full compliance with its NPDES MS4 permit, with programs, codes, processes, and procedures that meet all of the requirements currently in effect. The City's SWMP Plan contains a summary of the NPDES MS4 permit requirements and descriptions of the City's current and planned activities for permit compliance.

The City will continue to make sundry changes to comply with updated requirements of the NPDES MS4 permit that phase in during the permit term. The City is conducting a process to identify and implement needed updates to codes, standards, and programs by the relevant due dates.

A schedule of relevant due dates to comply with updated NPDES MS4 permit requirements is provided in Chapter 8, Figure 8-2.

4.5 Existing Drainage Problems

Members of the City staff working within the Storm Drainage Utility are experienced and familiar with the condition of the drainage system. Existing drainage problems have been observed by the staff and are known to cause frequent flooding of roadways. The most apparent problems were identified for analysis (see Hydraulic Evaluation, Section 5.1). Existing drainage problems are described in Table 4-6 and locations are mapped in Figure 4-9. Problems were evaluated for potential inclusion in the capital improvement plan. CIPs developed to address these problems are described in Chapter 7.

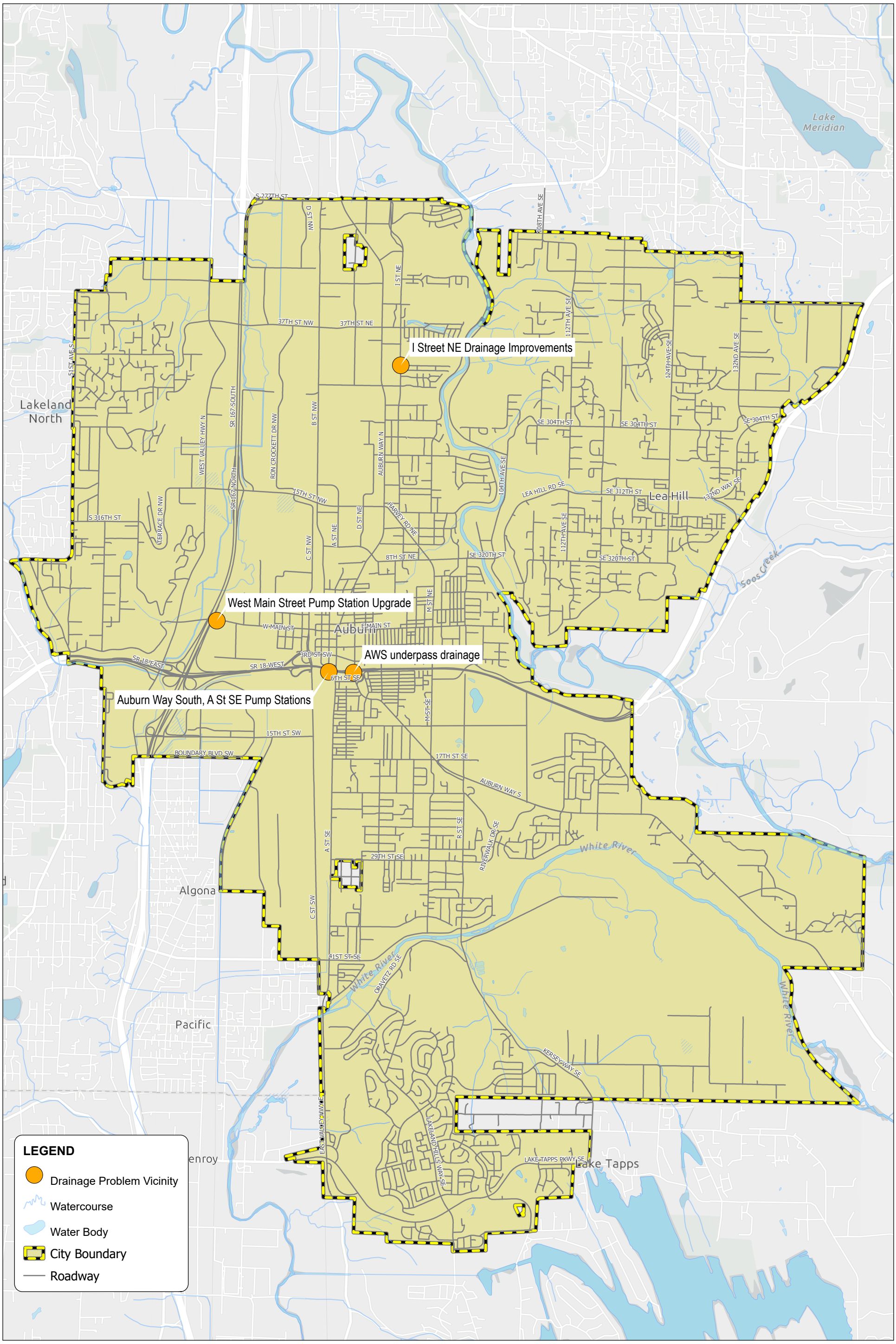
Table 4-6. Existing Drainage Problems

No.	Priority	Location	Description	Approximate frequency or last noted occurrence
1	1	West Main Street dead end near SR 167	The dead-end portion of Old West Main Street near State Route (SR) 167 has a history of observed flooding. The City installed a temporary pump station to dewater the gravity pipe flowing on the south side of Old West Main Street in an effort to protect local businesses from flooding. Since its installation in 2008, the pump station has eliminated flooding at the observed location. The pump station, however, does not meet the City's level of service guidelines regarding pump redundancy and may be insufficient to convey the 25-year flow rate. The City's gravity pipe on the north side of Old West Main Street experiences flooding at one catch basin approximately once per year. High water persists even in summer months. The pump station and gravity pipe discharge to a Washington State Department of Transportation ditch along the east side of SR 167.	Catch basin flooding once per year and system surcharging
2	2	Auburn Way South	Auburn Way South/SR 18 Underpass – minor roadway flooding causes disruptions to traffic during periods of intense rainfall.	Every few years

Table 4-6. Existing Drainage Problems (continued)

No.	Priority	Location	Description	Approximate frequency or last noted occurrence
3	3	I St NE	The area between 33rd Street NE and 35th Street NE on the east side of I Street NE has reoccurring flooding when the river level is high.	Every few years
4	2	Auburn Way South and A Street Pump Stations	Two existing stormwater pumping stations are reliant on portable emergency power, increasing workflow and reducing system reliability at time of need.	
5	3	Storm Pipeline Extension[a]	There are areas within the City not served by the public storm system, such as paved alleys and residential streets where roadwork is not anticipated.	

[a] Drainage problem 5, Storm Pipeline Extension, is not depicted in Figure 4-9 because it applies to multiple areas across the City and does not pertain to a specific location.



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COMPREHENSIVE STORM DRAINAGE PLAN
August 2024

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Figure 4-9
Drainage Problem Locations for the Storm Drainage Utility

5. Evaluation of the Storm Drainage Utility

This chapter presents analyses conducted to evaluate the Storm Drainage Utility and identify gaps between existing service levels and the system goals described in Section 3.2. The following types of evaluations were completed to identify Storm Drainage Utility future activities to address the range of system goals:

- Existing system deficiency and future service area expansion: Identified existing system deficiencies and future service areas in Chapter 4 and considered them in developing the capital improvement plan (Chapter 7). Did not evaluate improvements to address existing deficiencies and future expansion relative to policy and system goals as a part of this Plan.
- Hydraulic: Gathered system data, updated or developed computer models, assessed hydraulic performance, and developed CIPs with respect to associated system design criteria.
- Asset management: Reviewed existing asset system for data gaps, analyzed the adequacy of the condition assessment data being collected, established criteria for preparing criticality and risk analyses, developed the prioritization system to inspect critical system elements, developed the system requirements specification for integrating pipe criticality into the City's CMMS, estimated the funds needed for future asset repair and replacement, and included those estimates in the resource planning assessment (Chapter 6).
- Regulatory-driven improvements: Determined differences between the 2024–2029 permit and the previous NPDES MS4 permit and evaluated how the differences could affect City regulations, infrastructure, and activities; estimated the time and costs for NPDES MS4 permit compliance.
- Climate change analysis: Conducted a climate change analysis by reviewing the projected alterations in climate outlined in Chapter 4 and offered recommendations for effective mitigation measures.
- Maintenance and operations: Assessed process performance, equipment, and personnel with respect to service levels for M&O (covered in Chapter 6).

These evaluations were conducted to develop capital improvements for the 6- and 20-year horizons, as well as to identify future M&O needs. The following sections summarize the hydraulic, asset management, regulatory-driven improvements, and climate change evaluations. The existing system deficiency and future service area expansion are described in Chapter 4, and the M&O evaluations are described in Chapter 6.

5.1 Hydraulic Evaluation

As described in Chapter 4, the City of Auburn owns and operates a large system of stormwater drainage infrastructure to collect and convey stormwater runoff to nearby receiving waters.

Hydraulic modeling efforts for the 2024 Plan focused on updating models covering locations of proposed capital projects. The model updates were based on recent geographic information system (GIS) data, design drawings, and record drawings.

The City reviewed the remaining CIPs listed in the 2015 Plan and the recent proposed stormwater CIPs. Six projects are located within existing subbasins represented by hydrologic and hydraulic (H&H) subbasin models. Two of the projects were evaluated with associated H&H subbasins models

and were included in this Plan's CIP program. Appendix B provides a detailed description of the H&H model updates and CIP evaluation results.

The following sections describe the steps used to update existing models or develop new models.

5.1.1 Updating Existing Models

The hydraulic components of existing models were updated with recent GIS data. The following model data were verified against the GIS data:

- Pipe size.
- Pipe invert elevations.
- Pipe material (for estimating pipe roughness).
- Node rim elevation.
- System connectivity.

Where the GIS data did not accurately describe the existing system, technical reports, record drawings, or construction drawings were used to update the model. Where data were available, models were given more detail with respect to pump and storage facility information.

For model hydrology, subcatchment delineations within problem areas were reviewed and revised based on recent GIS data, topographic data, and 2024 aerial photography. For subbasins with significant changes in basin delineation, total impervious area was updated with the City's impervious area coverage. No existing models were calibrated or uncalibrated. If new and significant large infiltration facilities were constructed since the 2015 Plan, the percent impervious area was reduced based on an assumed contributing area by visual inspection of aerial photography.

5.1.2 Creating New Models

The following is a general description of steps followed to develop new Personal Computer Stormwater Management Models (PCSWMM)[3].

1. Infrastructure data from existing GIS databases were used to build drainage networks in problem areas. Drainage network models consist of catch basins, manholes, pipes, junctions, ditches, control structures, vaults, storage ponds, pump stations, and outfalls. GIS data were validated and augmented as necessary based on record drawings and City-conducted field investigations.
2. The drainage network was developed to a level of detail that is sufficient for analyzing conveyance on a subbasin-wide or problem-specific scale. In general, pipes 1 foot in diameter or greater were included. Smaller-diameter pipes and pipes that were part of private systems were generally not included in the model unless they provided an important link within the system.
3. Subbasin areas were divided into smaller drainage area delineations called subcatchments, which in the model are linked into the drainage network at specific nodes. Hydrologic parameters, such as area, slope, and percent impervious area, are developed for each subcatchment. Subcatchment slope was estimated as the average slope based on a digital elevation model (DEM). Total impervious area was estimated with the City's impervious area coverage.

[3] PCSWMM is a GIS-based hydraulic and hydrologic modeling platform developed by Computational Hydraulics International (CHI). The software fully supports the EPA SWMM5 hydrology and hydraulics engine, thus providing comparable computation between EPA SWMM and PCSWMM models. Information about PCSWMM software can be found at http://www.chiwater.com/Software/PCSWMM/index.asp.

For the purposes of this plan, there was no requirement to develop new models. Rather, the existing H&H models from the 2015 Plan underwent refinement and updates. Further information on these specific modifications is available in Appendix B.

5.1.3 Updating Precipitation Record and Flow Frequency

Auburn's H&H models use historical meteorological data to estimate stormwater flows and storage within the City's storm drainage system. The data consist of monthly evaporation and 15-minute precipitation volumes. As part of the Plan, the 15-minute precipitation record was extended to September 30, 2022, creating an approximate 74-year precipitation record.

Long-term simulations were performed using the extended precipitation record to determine the 2% and 4% exceedance storms (one in 50-year and one in 25-year flows, respectively) for the updated models. These storms were used as design storms to size capital improvements, which meet the water treatment standards and LOS (see Chapter 7 for a description of proposed capital improvements).

5.2 Asset Management Review

All utilities manage their assets in one way or another through maintenance practices, CIPs, and repair and replacement (R&R) activities. However, the ability to make an informed decision regarding where and how to direct limited resources is dependent on the quality of the utility's asset management. A comprehensive asset management framework includes building a thorough asset inventory, using that inventory to prioritize and document maintenance and inspection tasks, and tracking annual management expenses. An asset management framework developed in this way will demonstrate both the extent of the existing system, as well as aid in forecasting its useful life and the future costs of maintenance, reparation, and replacement.

Stormwater system assets fall into this framework but also exhibit unique characteristics regarding their service levels, failure risk and consequences, and asset response approaches. For example, the consequence of failure for a stormwater pipe is less significant than it would be for a water pipe, and this distinction is reflected in the asset management approach. The asset management plan for the City's stormwater system accounts for these considerations along with the current inventory and condition information while adopting a responsible approach to resource management of the assets.

5.2.1 Best Practices

The best practices for asset management involve methodically basing choices on an understanding of asset condition and performance, risks, and costs in the long term. Asset management best practices include the following:

- Establishing and maintaining a sustainable LOS that balances the performance goals of the utility, regulatory requirements, and consumer demand.
- Preparing and regularly updating an inventory and map of the system.
- Understanding the risk associated with managing a given asset (i.e., defining the asset's likelihood and consequence of failure).
- Implementing a prioritization process for work based on condition assessments and taking a life cycle approach to asset management planning.
- Establishing funding levels and rates to provide reliable, cost-effective service, and support ongoing infrastructure rehabilitation or replacement projects.

These best practices were followed in evaluating the management of the City's assets, as described below. System goals for the City's Storm Drainage Utility were established in Chapter 3 of this Plan.

5.2.2 Evaluation

For the Plan, the preliminary focus of the asset management evaluation was on the City's stormwater collection pipe network, the results of which may be used to inform the management plan for the other categories of assets within the City's Storm Drainage Utility system. The City uses Cartegraph as its CMMS to store and map its asset inventory, so all evaluations were performed on data exported from this source.

Data Gaps Analysis & Condition Assessment

The first step in the evaluation involved assessing the comprehensiveness of the asset inventory. To do so, a data gaps analysis and condition assessment was necessary to understand the completeness of the asset inventory and the availability of feature data for developing criticality and risk analyses. The results of these analyses demonstrated a pipe inventory that was incomplete. Several pipes were missing attribute data—namely installation date and material—critical for estimating risk of failure in the next step in the evaluation. See Figure 5-1 and Figure 5-2 for the availability of pipe attribute data relative to the total length of pipe in the system for reference.

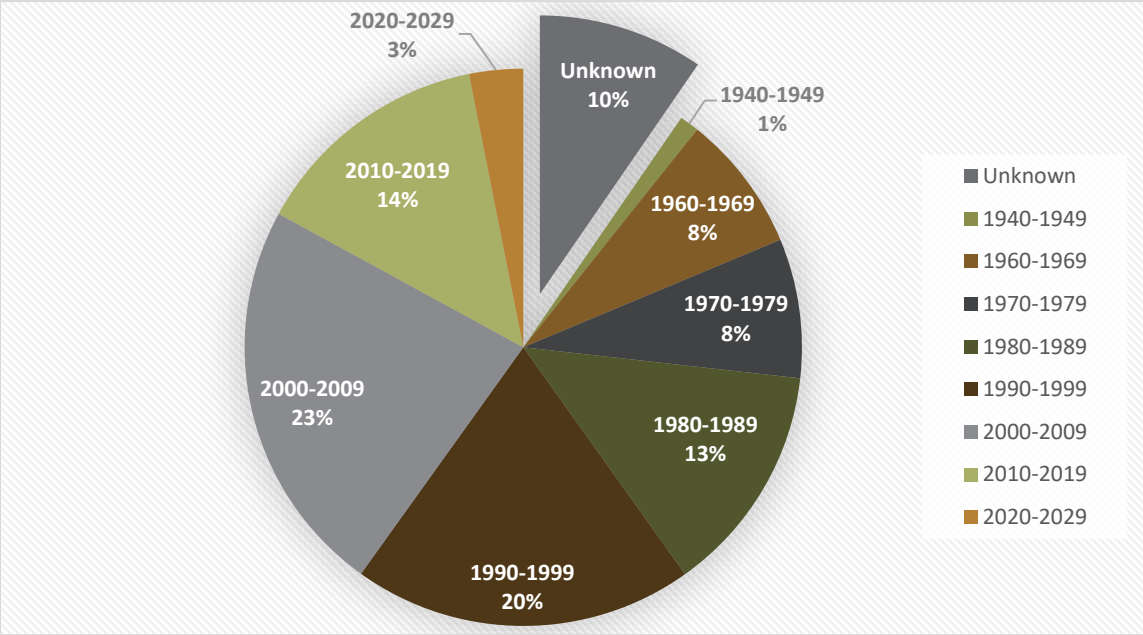


Figure 5-1. Pipe Installation Date Relative to Total Linear Feet of Pipe

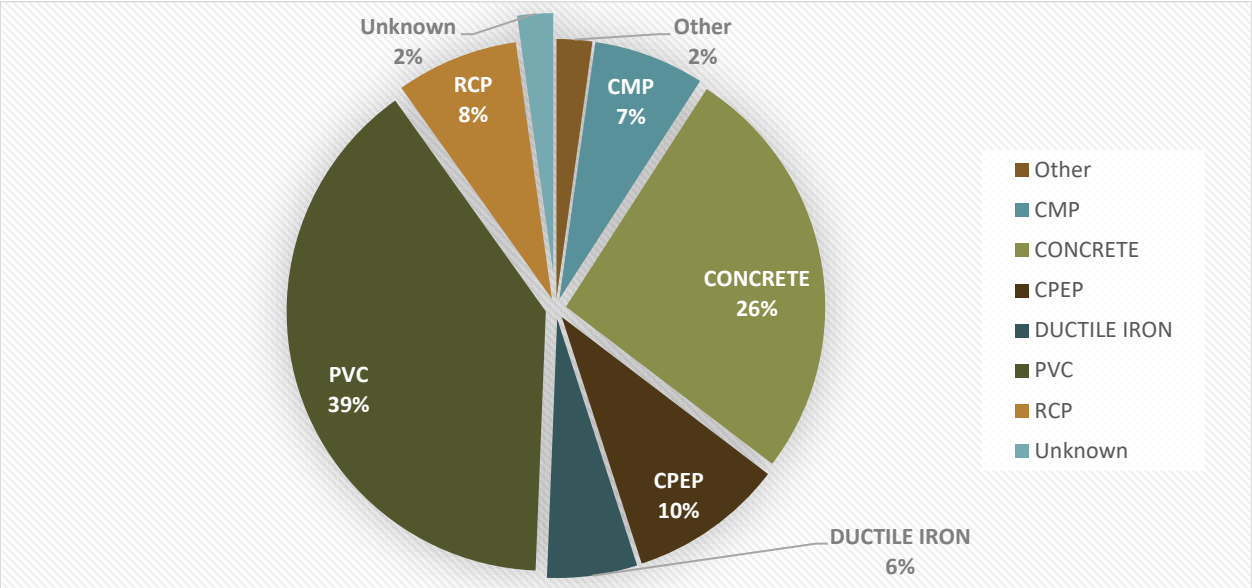


Figure 5-2. Pipe Material Relative to Total Linear Feet of Pipe

For the purposes of the risk evaluation, professional estimates were made to serve as placeholders for missing attribute data. A preliminary GIS-based assessment was performed to provide an estimate installation date based on adjacent infrastructure, parcel build-out years, and historical imagery as needed. Estimated inputs were added to a copy of the installation date attribute to ensure estimates could be distinguished from the original dataset. Further detail regarding the steps taken in the data gaps analysis and condition assessment is provided in Appendix C. There were critical data gaps in other stormwater asset inventories, namely culverts. Thus it could be beneficial to do a similar GIS-based assessment for other asset types to have a comprehensive starting point for prioritization of work. It is recommended that critical data gaps be addressed as part of the asset management program, as summarized in the following paragraphs.

Risk Determination

The next step in the evaluation involves determining the risk associated with managing each of the City's storm drainage assets. The exported pipe data from the City's Cartegraph database was used to build a risk assessment spreadsheet. The spreadsheet evaluates specified criteria to generate a score for likelihood of failure and criticality of failure for each asset. Within the spreadsheet, likelihood of failure is largely dependent on critical attributes specific to the feature, while criticality of failure is dependent on location-based factors.

For the City's pipe network, the attributes used to develop the likelihood of failure score include installation data and material. The installation date provides the age of the pipe, while the installation material is used to estimate the expected useful life. Combining these characteristics provides an estimate for the pipe's remaining useful life, which is the basis for the likelihood of failure score. In general, if a pipe had a negative remaining useful life, it had a high likelihood of failure (the highest score being 5), whereas if it had a positive remaining useful life, it had a low likelihood of failure (the lowest score possible is 1).

The criticality of failure score was developed by evaluating a pipe's proximity to critical facilities, high-priority roadways, and high-trafficked roadways. If a pipe is in close proximity to one of the aforementioned factors, this results in a higher criticality of failure score (the highest score being 5). Conversely, a pipe not in close proximity to any evaluated factors results in a low criticality of failure score (the lowest score being 1).

While the spreadsheet was developed solely for the City's pipe system, a similar process may be followed for the other asset types within the stormwater inventory. See Appendix C for the critical attributes recommended to use in determining the risk for the other types of stormwater assets.

Work Prioritization

The resulting failure scores allow for the City to rank different assets both on likelihood and criticality of failure. It is recommended to use this ranking strategy to develop an inspection program where inspections of different types of assets are prioritized based on their rank. The asset inspection program will serve to fill data gaps, update the likelihood of failure score based on field verification, and identify asset features requiring repair or replacement. After inspection data are input for an asset feature, the results of the inspection will supersede the use of estimated remaining useful life and installation date (where applicable) in calculating a likelihood of failure score. Using this system to prioritize maintenance allows resources to be used more efficiently and fills in data gaps resulting in a more robust asset inventory.

For the City's pipe system, the recommended program would prioritize inspection based on likelihood of failure and then criticality of failure. In this way, pipes with likelihood of failure scores greater than or equal to 4 (or a negative useful life estimate) will be inspected first. The next tier of inspections should address pipes with likelihood of failure scores equal to 3 and pipes with unknown installation dates. After pipes are inspected, they should be assigned a condition score, which will supersede the installation date and useful life expectancy in determining the likelihood of failure. The likelihood of failure for a pipe will increase over time, and this prioritization method will take this into account while integrating field inspection data. Since storm catch basins and storm manholes are related to pipes, it is recommended to inspect these at the same time as adjacent pipes.

The same inspection prioritization method is recommended for culverts as the failure consequences are similar. For storm pumps, it is recommended to closely evaluate their condition as their useful life nears the end (e.g., 5 or fewer years) and upgrade or replace them before probable failure. Stormwater control facilities should be routinely inspected and prioritized for inspection when critical feature data are unavailable. As mentioned previously, critical feature data for each asset type are listed in Appendix C. More detail regarding the inspection frequency and schedule for each type of stormwater asset is included in Chapter 6.

Life Cycle Estimation

A life cycle analysis was performed for pipes to demonstrate the expected depreciation rate of each asset and provide background for the recommended maintenance frequency of the entire system. To do so, the remaining useful life estimate for the City's pipe database was analyzed over time. This analysis was used to identify any spikes in development (and accordingly when spikes in R&R would be expected) and estimate the total linear feet of pipe "lost" (or whose projected remaining useful life becomes negative) per year. This rate of pipe loss may be used as a point of comparison for basing the resource planning recommendations in Chapter 6. A similar life cycle analysis could be beneficial for culverts.

As features are updated with field-verified data (during inspection or maintenance), the results of this life cycle analysis are expected to change. For this reason, the pipe depreciation analysis may be reconducted to evaluate the effect on the projected rate of pipe loss. The results of the pipe depreciation analysis can be found in Appendix C.

Cost Projection

A brief review of costs were included in the asset management evaluation for consideration in setting the R&R budget and resource planning goals in Chapter 6. Two options were contemplated in setting the R&R budget: investigating the prior use or need and evaluating the results of the life cycle estimation. The City's R&R spending in previous years was compiled to investigate the prior use. To evaluate the results of the life cycle estimation, the cost of replacing pipes based on the rate of depreciation was projected. The useful life of the system was also varied to observe the change in budgetary needs.

A comprehensive cost estimate was prepared for both pipe replacement and the replacement of catch basins and manholes within the City. Notably, the cost estimate for pipe replacement serves as a generic assessment for the City of Auburn rather than being tied to any specific project or geographical area. The primary calculations for cost estimation assume the replacement of 5,000 linear feet of pipe along with the associated conveyance structures, such as manholes and catch basins. To simplify these calculations, certain generalizations were made—including the assumption that all pipes are of uniform size, material, and depth—based on GIS averages for the City.

Furthermore, various scenarios were explored to assess how the cost of pipe replacement might vary based on location (downtown versus rural) and quantity (5,000 versus 10,000 linear feet). The resulting cost opinion is intentionally conservative, approximately $1,500 per linear foot, to account for the wide range of generalizations and assumptions inherent in the process. Notably, the analysis indicated that pipe replacement in rural areas is expected to be less costly than in the City center. Additionally, replacing a larger quantity of pipe is only marginally more cost-effective.

For detailed estimates and further information regarding the cost projection, please refer to Appendix C.

As a prudent practice, it is recommended to diligently track the costs associated with installation, repair, and replacement of asset features on an annual basis. This data serve as valuable reference information for future asset replacement budget planning. As additional data are collected, cost opinions can be updated to enhance accuracy.

5.2.3 Recommendations

Evaluations completed for this Plan consisted of developing a system requirements specification for implementing risk assessment using the data in the City's asset management system, Cartegraph. The spreadsheet's scoring methods may be integrated into Cartegraph so that, as the pipe inventory is updated, likelihood of failure and criticality of failure scores can be used to inform future R&R priorities. Currently, the spreadsheet only includes collection system piping scores. However, there is an opportunity to expand the scoring methods to include other asset features, as described in Appendix C.

The following are recommended to implement the asset management strategy:

- Train staff in asset inventory needs, capability, data collection, data quality objectives, and maintenance of system.
- Implement the likelihood of failure and criticality of failure scoring methods into Cartegraph.
- Implement the prioritized inspection and asset information update process to fill data gaps in the asset data and provide observation-based condition assessments.

- Develop a process for reviewing the asset inventory and a routine for updating when changes and inspections occur.
- Expand scoring methods to include asset types other than collection system piping and implement them similarly into Cartegraph and inspection prioritization techniques.
- Consider reconducting pipe depreciation analysis every 5 years to evaluate the effect of implementing the prioritization practice.
- Assess the inspection process in 5 years to assess the efficiency of the program and identify areas for improvement.

5.3 Regulatory-Driven Improvements Investigation

The federal Clean Water Act requires municipalities to help maintain fishable/swimmable waters through the NPDES MS4 permit program (see Section 2.3.2 and Appendix A), which requires municipalities to reduce the discharge of pollutants from their stormwater systems to the MEP by implementing municipal stormwater management programs. The City has an established municipal SWMP that complies with all NPDES MS4 permit requirements currently in effect. Updates to the City's codes, programs, and standards are being developed to comply with the requirements of the updated 2024 NPDES MS4 permit.

The City's SWMP plan identifies activities that will be implemented by the City to comply with NDPES MS4 permit requirements. The SWMP plan is updated annually to reflect new requirements that phase in during each year, including one-time and new ongoing activities. An updated SWMP is submitted to Ecology in March of each year. The City's current SWMP plan is accessible on the City website.

To plan for upcoming requirements of the new NPDES MS4 permit, the City formed a project team consisting of staff from the City Public Works department and Parametrix.

The project team reviewed Auburn's citywide stormwater management programs, codes, standards, processes, and documentation protocols in order to identify potential actions to comply with the NPDES MS4 permit conditions over the 5-year permit period. From these sources, the project team catalogued responsible City departments/entities, reference documents, and potential requirements for each updated section of the permit. Interviews were then conducted with appropriate staff (e.g., stormwater M&O staff) to discuss the potential implications of permit changes for existing City codes, programs, and standards. The information on existing City practices and programs was then compared to the updated permit requirements to identify potential compliance needs. Some policy issues and potential compliance strategies were also identified. This Plan was developed using the draft 2024 NPDES MS4 permit and updated as needed following the release of the final 2024 NPDES MS4 permit. A table summarizing the notable changes between the previous permit, the draft 2024 NPDES MS4 permit, and the final 2024 NPDES MS4 permit was developed and is included in Appendix D. Recommended future activities are summarized below and included in the implementation plan in Chapter 8.

5.3.1 New Permit Requirements and Recommendations

Table 5-1 summarizes the recommended actions to address regulatory driven stormwater program responsibilities.

Table 5-1. Recommended Actions Regarding New Permit Requirements

Permit Section	New Requirement	Recommended Action(s)
S5.C.1.c.iii	Adopt and implement tree canopy goals and policies to support stormwater management and water quality improvement in receiving waters.	Prepare an assessment of existing conditions. Draft a list of potential policies. Select and adopt policies.
S5.C.1.d.i	Complete a stormwater management action plan (SMAP) for at least one new high-priority catchment area or additional actions for the existing SMAP.	Identify a preferred catchment area for inclusion or enhancement. Prepare a new SMAP or update the existing SMAP.
S5.C.1.d.i.(a)	Consider implementing projects that address transportation-related runoff from high traffic areas.	Review the road system plan. Review high-priority roadways. Determine candidate sites for retrofitting using SMAPs, capital improvement projects, or other relevant plans. Select projects and include in capital improvement plan.
S5.C.2.a.i.(b)	Provide public education regarding source control best management practices (BMPs) for building materials to reduce pollution to stormwater, including stormwater pollution from materials containing polychlorinated biphenyls (PCBs).	Provide public education regarding source control BMPs for building materials.
S5.C.4.b.ii	Map permittee-owned or operated properties with tree canopy.	Begin mapping of permittee-owned or operated properties with tree canopy based on available, existing data.
S5.C.4.b.iii	Develop a map of discharge points that have stormwater treatment and flow control BMPs/facilities. Use to estimate the area managed by stormwater treatment and flow control BMPs/facilities.	Develop a methodology to map tributary basins to outfalls. Identify facilities to be mapped. Use a geographic information system (GIS) to prepare a map of catchment areas. Quantify the total managed or unmanaged acreage of treated or controlled City-owned facilities.
S5.C.4.b.iv	Map overburdened communities in relation to stormwater treatment and flow control BMPs/facilities, outfalls, discharge points, and tree canopy on permittee-owned or operated properties.	Overlay available data regarding overburdened communities with previously prepared maps of areas with stormwater treatment or flow control facilities and tree canopy.
S5.C.5.e.ii	Develop a management plan for per- and polyfluoroalkyl substances (PFAS).	Coordinate with firefighting agencies/departments to implement specific protocols regarding PFAS discharges into stormwater.
S5.C.7.c	Fully fund, start construction, or completely implement project(s) that meet the City's assigned equivalent acreage of 14.2 acres.	Prioritize projects developed in the SMAP that together meet the City's assigned 14.2 acres.
S5.C.9.e	Develop and implement a municipal street sweeping program to target high-priority areas.	Review and revise the existing sweeping program as needed. Include map of swept priority areas in annual report.

5.4 Climate Change Analysis

Section 4.1.8 reviewed the projected climate changes specific to the City. This section focuses on potential strategies to mitigate these changes and provides recommendations for effective implementation. By comprehending expected shifts in the environment, the City can proactively adapt its practices and policies to safeguard the community.

5.4.1 Discussion of Proposed Approaches

Although the City is not predicted to see a significant increase in overall precipitation, climate models predict an increase in the frequency of intense precipitation, specifically during the winter months (see Figure 4-5). Increased winter storm intensity frequency is most likely to push the stormwater system past the accepted LOS over time up to the projected time frame of the reported climate models.

Storm intensity (rate of rainfall for a unit of time, usually in inches per minute) tends to affect storm drainage systems differently than prolonged, atmospheric river systems. Storm sewers and local conveyance systems are generally designed for the peak runoff intensity (within a short or long event), whereas larger conveyance systems, streams and floodplains, and stormwater control facilities are designed using hydrographs for longer duration events. This would suggest, based on the predictions regarding total rainfall versus intense rainfall, that storm sewers, conveyance systems, and culverts will be more vulnerable to capacity exceedance and subsequent flooding.

One approach to addressing this potential service deficiency is to design with future projected storm patterns or to apply a larger design storm. This would address the greater flood frequency risk. However, it would not “prevent” flooding. This would increase the costs of all projects for both public and private development and would also impact the cost of housing impacting the affordability of future housing developments. Stormwater conveyance systems are designed to manage a specific LOS, usually the peak runoff rate from a 25-year, 24-hour storm. Performance is typically evaluated by hydraulic metrics, such as minimum freeboard in a channel, headwater depth on a culvert, or surcharging in a storm sewer that keeps water in the system and away from property. While a stormwater system may not be performing according to design, the impacts may not be flooding or property damage. In addition, storms larger than the design storm can and will occur, with adverse consequences.

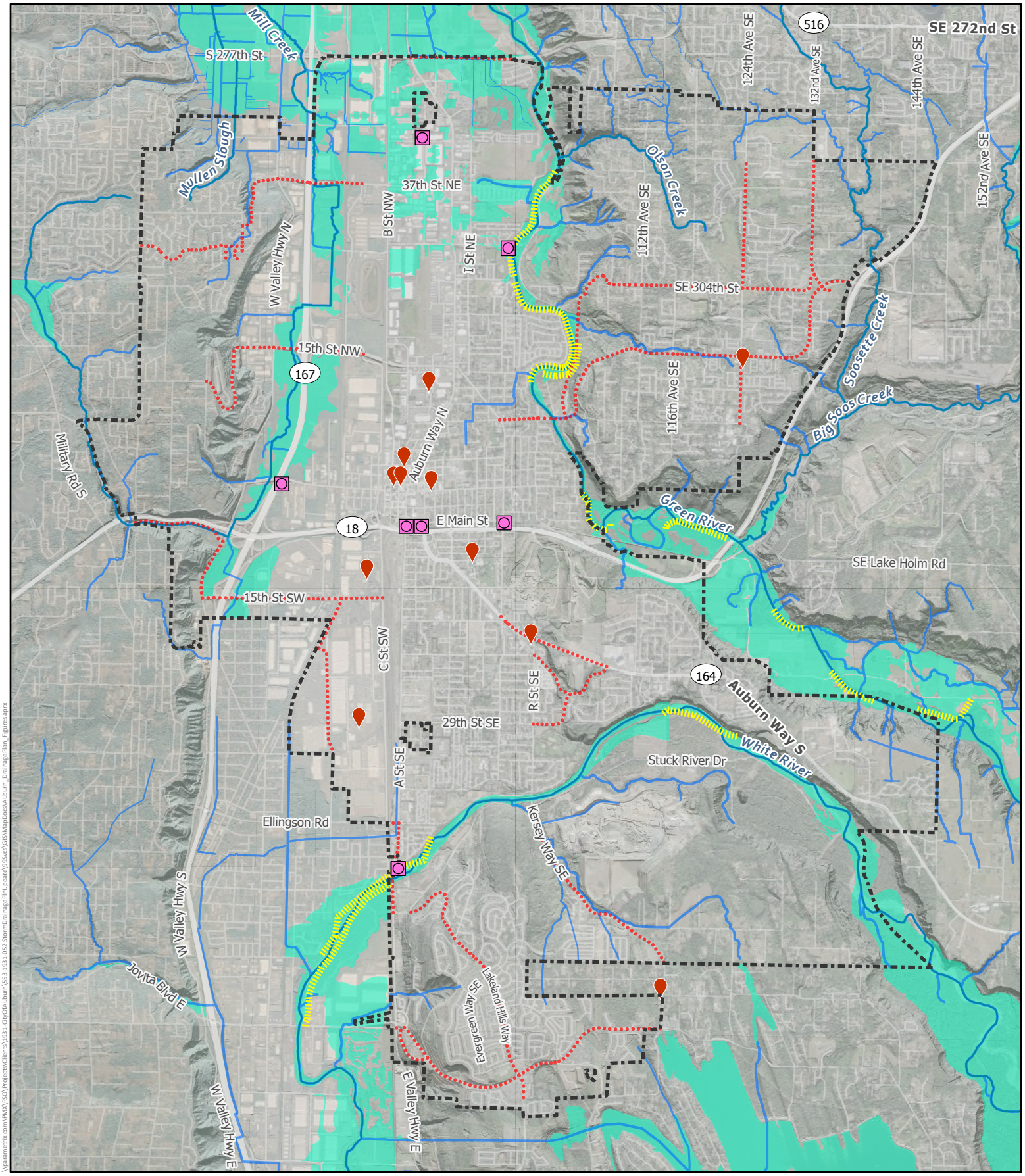
It has generally been deemed to not meet cost-benefit metrics to build systems to address every likely storm outcome. An event exceeding the design capacity of a system could occur at any time; the “average” number of times it occurs is likely to increase with increased storm intensity frequency due to climate change. Another approach would be to address the *consequences* of the projected change on a site-by-site basis rather than a blanket change in service levels for future rainfall.

Stormwater flow control facilities are designed to manage changes to the landscape and resultant runoff to existing or predeveloped levels. The analyses use a historical rainfall record and projections of that record over an extended time period, all based on past rainfall patterns. The stormwater control standards require runoff changes to be matched to land conditions prior to development or existing conditions, typically a forested condition. One approach to new stormwater standards to address flow control under a changed climate with more frequent intense rains is to use projected rainfall patterns that are modified to add climate change projections. In addition, flow control evaluations are comparative, which means they evaluate the hydrologic changes due to development. This is different than considering the changes in hydrology from the site today with a site under future climate conditions (in addition to restoring existing hydrology to predevelopment

conditions). The comparative change (future climate to compare existing and future site development) may not be significant.

Another approach involves identifying the City's most vulnerable areas to the effects of climate change and using this information to make informed decisions about potential stormwater infrastructure improvements. Figure 5-3 highlights key areas of vulnerability. The extent of floodplains indicates where the City is most susceptible to flooding. Similarly, levee locations should be evaluated to determine if adjustments are necessary due to changes in flood levels. Pump stations should be assessed for capacity. Ensuring access to critical facilities and emergency routes is crucial; both the areas around these facilities and the routes to them should be evaluated for vulnerability. By assessing the stormwater infrastructure in these areas, the City can better understand the impact of potential infrastructure failures and make decisions to mitigate the most harmful consequences.

River and stream flooding could increase in frequency due to climate change. According to the stream flow projections shown in the publication, Effect of Climate Change on Flooding in King County Rivers, winter flow volumes are expected to rise due to an increase in the proportion of precipitation falling as rain over the course of the 21st century (Lee et al. 2018). This increase is anticipated despite the modest long-term projections for average annual rainfall shown in Figure 4-5. Smaller, local stream systems (e.g., Olson Creek, Mill Creek, Bowman Creek) are expected to have more frequent flooding (i.e., flow overflowing its confined banks), and extreme events are more likely to occur (i.e., the current 1% probability flood would have a higher percentage chance of occurring in the future). Storm drainage infrastructure that interfaces with these natural drainages should be reevaluated to consider negative consequences and resiliency (the ability to safely withstand critical service disruption).



Date: 8/14/2024
Sources: City of Auburn, King County, WA Ecology, WA DNR, FEMA, USGS, ESRI
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

- Critical Facilities
- Pump Stations
- Watercourse
- Evacuation Routes
- Levees
- Auburn City Limits
- Floodplain

0 ¼ ½ 1 Miles

Figure 5-3
Key Areas for Vulnerability Assessment
Stormwater Drainage Utility
Comprehensive Storm Drainage Plan

Parametrix | City of Auburn Washington

5.4.2 Recommendations

Stormwater design guidelines will need to consider the possible changes in storms that are *informed* by future climate scenarios. The strategy aligns with the guidance for stormwater design and sizing recommended and approved by the Water and Land Resources Division of the King County Department of Natural Resources (King County DNR 2021). For example, the guidance provides direction for the design of new pipe systems with sufficient capacity to convey and contain (at minimum) the future predicted 25-year peak flow. Pipe system structures may overtop during runoff events that exceed the 25-year design capacity. However, this is permissible as long as the overflow resulting from a larger event (e.g., a 100-year runoff event) does not lead to severe flooding or erosion issues. Additional design guidelines for new flow control standards, conveyance standards, culverts, ditches, and canals are also included.

The recommended approach to mitigate effects due to climate change is described as follows.

Drainage System Performance. Because of likely changes in the frequency of intense rainfall, the following recommendations should be considered in the design of conveyance systems:

- Review and revise the hydraulic performance metrics related to freeboard, headwater depth, and surcharging. Evaluate the financial implications associated with enforcing strict hydraulic performance standards.
- Prepare a critical drainage review (CDR) process (as identified as a work order in Section 8) to evaluate the consequences of storm events exceeding the design parameters. Establish clear policies regarding safety, property protection, service continuity, and mitigation of nuisance flooding to make systems more resilient to infrequent but probable flooding. Ensure that the level of protection aligns with the associated costs and risk factors.
- Prioritize effective hydraulic performance and resilience measures for critical facilities during severe storm events that go beyond the intended design limits.
- Perform a vulnerability analysis of critical drainage and stormwater infrastructure to identify any areas where the effects of climate change may be intolerable. Prioritize these areas for capital improvement projects to minimize the adverse effects of flooding.

River and Stream Flooding. River and stream flooding frequency is expected to increase. The vulnerability of existing infrastructure in or near streams or floodplains has not been assessed in this Plan.

6. Maintenance and Operations

An evaluation of existing Storm Drainage Utility M&O activities was conducted in support of this Plan. This chapter documents existing Storm Drainage Utility M&O activities with the primary purpose of establishing a baseline understanding of the proactive and responsive maintenance procedures performed by City Storm Drainage Utility M&O staff. This baseline understanding is used herein to evaluate utility staffing, data collection and computerized record-keeping needs, and other utility needs necessary to continue to meet system goals.

The information provided in this chapter is a summary of information collected during City Storm Drainage Utility staff interviews, review of computerized records, and existing utility forms/checklists.

6.1 Utility Responsibility and Authority

This section provides an overview of the Storm Drainage Utility organization and basic information related to utility staffing, training, and education.

6.1.1 Organizational Structure

The City Storm Drainage Utility is operated as a utility enterprise under the direction of the director of public works. The Public Works Department is responsible for planning, design, construction, operation, maintenance, quality control, and management of the storm drainage system. The City has a mayor-council form of government; therefore, the director of public works reports to the mayor, with input from council through council study sessions and meetings. The mayor provides oversight for the implementation of policies, planning, and management for the Storm Drainage Utility. The City Council provides direction on policy and budget considerations.

The Engineering Services Department is the lead group for comprehensive storm drainage system planning, development of a CIP, and the design, construction, and inspection of projects related to the storm drainage system.

M&O Services is the lead group responsible for the day-to-day maintenance and operation of the storm drainage system. The storm drainage/sanitary sewer manager reports to the M&O Services general manager and oversees 11 total storm drainage employees (1 field supervisor and 10 maintenance workers, as shown in Table 6-1). The Vegetation Maintenance Division is responsible for mowing, tree trimming, and weed control of City ROW and storm facilities.

The overall Public Works Department organizational structure is shown in Figure 2-1.

6.1.2 Staffing Level

The Storm Drainage Utility currently includes 10 full-time M&O field staff, plus a field supervisor and a manager, who perform administrative duties. This chapter does not include an evaluation of utility management, which includes regulatory compliance, planning, and coordination with other City departments. Position titles and the primary functions of the M&O staff working within the Storm Drainage Utility are shown in Table 6-1.

Table 6-1. Storm Drainage Utility M&O Personnel

Position	Primary function(s)
Storm drainage/sanitary sewer manager	Management of sanitary sewer and storm drainage M&O staff
Storm field supervisor	Supervision of field staff
Maintenance worker	Ten full-time staff dedicated to field inspection and maintenance

M&O = Maintenance and Operations

In addition to the M&O field staff identified in Table 6-1, secondary staff support the following Storm Drainage Utility functions:

- Management and administration: A full-time manager performs administrative duties for both the Sanitary Sewer and Storm Divisions. Management and administrative tasks include general oversight of the Sanitary Sewer and Storm Drainage Utility M&O staff, regulatory compliance, planning, and coordination with other City departments. Field work is supervised by a full-time field supervisor.
- Vegetation maintenance: The Vegetation Maintenance Division consists of 10 full-time staff, a field supervisor, and a manager. These staff primarily support the Storm Drainage Utility M&O field staff (approximately 60% of total staff effort) with pond vegetative control, weed control and herbicide spraying, ROW and ditch mowing, tree trimming and removal, and leaf removal.
- Contracted services: The Storm Drainage Utility uses other City departments or external contractors for some services, as discussed in Section 6.3.

M&O activities routinely performed by Storm Drainage Utility staff are discussed in Section 6.2. The staffing plan presented in Section 6.6 considers M&O activities performed by Storm Drainage Utility and Vegetation Maintenance staff.

6.1.3 Level of Service

The Storm Drainage Utility operates in accordance with the system goals and policies outlined in Chapter 3 and internally adopted objectives integral to meeting those goals. These objectives are generally based on the current staffing level and tasks deemed most critical to the City and its residents. However, the existing staffing requirements discussed in Section 6.6 herein include near-term goals that may not be met by existing staff.

6.1.4 Training and Education

The City recognizes the value of having a knowledgeable and well-trained staff operating the storm drainage system and encourages employees to obtain the highest level of training available. At this time, the State of Washington does not require certification for stormwater maintenance operators, but the City would support any effort to establish certification for these positions. Seminars, conferences, and college coursework have become tools to advance knowledge for maintenance staff.

Many M&O staff are specialized in specific job functions, which can promote expertise through specialization but also has the potential to limit the ability of the utility to absorb absences due to vacation, sickness, retirement, resignation, and termination. To mitigate this limitation, the City has broadened the scope of the Storm Drainage Utility's education system by conducting cross-training programs.

6.2 Routine Operations Provided by the Storm Drainage Utility

This section discusses routine operations provided by the Storm Drainage Utility M&O staff shown in Table 6-1. Each subsection provides a brief description of the M&O activity, City goals with respect to proactive maintenance, and the estimated Storm Drainage Utility staff effort to achieve the proactive maintenance goal.

6.2.1 Catch Basin and Manhole Inspection, Cleaning, and Repair

The storm drainage system includes approximately 10,800 catch basins and 3,172 manholes. Catch basin and manhole maintenance includes initial inspection and potential follow-up cleaning and/or repair. Inspection is performed by a two-person crew using utility mapping to locate the targeted facilities. M&O staff use condition categories from the CMMS asset management system to identify which facilities require further cleaning or repair. The condition categories consider items such as observation of trash, debris, sediment, or vegetation blocking or within the catch basin/manhole; structural damage; evidence of contamination or pollution; and the integrity of catch basin grates, manhole covers, and ladders. Follow-up cleaning and maintenance work orders are generated based upon the results of initial inspection and typically include a two-person crew. Based upon recent maintenance history, approximately one in five catch basin and manhole inspections leads to further cleaning. The City assumes that a total of 5% of catch basins and manholes per year require an additional visit post inspection for some level of maintenance or repair. Catch basins and manholes requiring only minor maintenance tasks that can be performed during inspection are not included in this total.

Catch basin inspection is required as part of the City's NPDES MS4 permit, per the most recent permit, 2024–2029 issuance. The City is required to inspect and maintain all catch basin facilities every 2 years, with each 2-year cycle ending on December 31. To achieve this permit requirement, the City goal is to inspect 40 catch basins per day. Manhole inspection frequency is not mandated by the permit, but the City's goal is to complete inspection of all City manholes on a 4-year rotating schedule.

The City will use the CMMS software (see Section 6.5) to record and track results of catch basin inspection, cleaning, and maintenance efforts. In the future, if catch basin inspection records demonstrate that catch basins generally comply with maintenance standards and do not require inspection every 2 years, the City may be able to justify and suggest a less frequent inspection schedule for compliance with the Permit.

6.2.2 Stormwater Pipeline Cleaning

The storm drainage system includes approximately 250 miles of collection system piping. The City currently cleans its stormwater pipelines on an as-needed basis. Cleaning of the storm drainage system is performed using a City-owned Vactor/jet truck. Cleaning is typically performed from structure to structure (e.g., catch basin or manhole) by a two-person crew.

Jetting of stormwater pipelines is the principal means of removing debris or obstructions from the storm drainage system. A hose with a special end fitting is inserted into a pipe and high-pressure water (up to 2,500 pounds per square inch) is sent through the hose. The high-pressure water exits the small hole at the tip of the nozzle, breaking down and/or scouring obstructions. Debris is then removed via suction by the Vactor truck equipment at each manhole.

The City expects to clean 4% of its stormwater pipeline system per year. On average, a two-person crew can clean approximately 1,500 feet of pipe per day and inspect approximately 500 feet of pipe per day.

6.2.3 Stormwater Outfall Inspection, Cleaning, and Maintenance

The storm drainage system includes 124 outfalls or discharges from localized collection systems to the Green River, White River, or Mill Creek. Outfall maintenance includes initial inspection and potential follow-up corrective actions. Outfall inspections are performed to identify the following: excessive vegetative growth that could obstruct flow, outfall erosion protection, structural damage to the conveyance system itself, and abnormal discharge that might be indicative of contamination (as demonstrated by a color, sheen, or odor). Cleaning and minor maintenance tasks are performed during inspection. Necessary follow-up repairs or more intensive maintenance work orders are generated based upon the results of the initial inspection. The City goal is to inspect, clean, and perform minor maintenance tasks at each outfall twice per year. The City assumes that 5% of outfall inspections per year require an additional visit post-inspection for some level of maintenance/repair. For a two-person crew, it is anticipated that inspection, cleaning, and minor maintenance requires 2 hours per outfall, while follow-up maintenance or repairs requires 0.5 hour per outfall.

6.2.4 Drainage Ditch Maintenance and Restoration

The storm drainage system includes approximately 42 miles of drainage ditches (as shown in Figure 6-1). Drainage ditch maintenance is required to preserve the original line and grade, hydraulic capacity, and purpose of the ditch. Routine maintenance activities include regrading and removal of sediment; nuisance vegetation; and isolated obstructions, such as trash, trees, and accumulated debris. Because vegetation is important for erosion control, the City strives to minimize the removal of beneficial vegetation.

Up to six M&O staff are required for a single ditch maintenance crew to operate the City-owned excavator, control traffic (as necessary), and manually regrade or remove obstructions. On average, these crews can complete 200 feet of ditch maintenance per hour. This rate does not include mobilization and demobilization, equipment repair and other downtime, waste disposal, and administrative tasks, such as training and record keeping. Currently the ditch inventory is maintained on an as-needed basis, however the City has a target to maintain all ditches within the system on a 5-year cycle.

6.2.5 Stormwater Facility Inspection, Maintenance, and Restoration

Inspection of the approximate 300 City stormwater facilities is performed by a one-person crew using an inspection checklist to identify conditions that require correction. Facilities include stormwater ponds, swales, vaults, tanks, UIC, LID, and manufactured treatment devices. The checklist includes items such as observation of trash, debris, sediment, and animal or insect infestation that could impact function or future maintenance; structural damage or erosion; evidence of contamination or pollution; and the integrity and/or function of emergency overflow spillways (as applicable). The City goal is to inspect each facility once per year. On average, inspection activities require 0.75 hours for a one-person crew per location. This rate does not include mobilization and demobilization, equipment repair and other downtime, waste disposal, and administrative tasks, such as training and record keeping.

Maintenance and restoration of each facility type varies. The City has a goal of maintaining permeable pavement twice per year. On average, a four-person crew can maintain 0.3 miles of permeable pavement per hour. The maintenance of vaults, tanks, and underground injection control (UIC) wells are all accounted for under general facility maintenance in Section 6.2.9, Manufactured treatment devices are maintained by an outside contractor and included in Section 6.3.3.

Maintenance of ponds and swales (of which there are approximately 184) are performed as necessary, with the expectation of maintaining or restoring 20% of the system each year. A six-person stormwater pond crew is required for pond maintenance, while swales require a four-person crew. For the purposes

of the full-time equivalent (FTE) calculation, the expected maintenance of ponds and swales have been combined (as there are only two swales within the system). Follow-up maintenance and restoration is scheduled during the summer months. The City assigns a six-person stormwater pond/swale crew approximately 21 days per year (3 days per week for 3 out of 4 months in the summer).

After significant storms, it is recommended that some stormwater facilities be inspected to verify proper function and identify damage, if any. It is recommended that the City develop a list of facilities that should be inspected following these larger storm events.

6.2.6 Culvert Inspection and Cleaning

Culvert maintenance includes inspection and cleaning of the approximately 1,164 culverts within the storm drainage system. Culverts are typically inspected by a two-person crew, with corrective actions and cleaning performed during the inspection when possible. On average, inspection and cleaning activities require 1 hour per culvert for a two-person crew. Culvert inspection focuses on the assessment of free flow within the culvert and identifying any structural defects. Any debris that cannot be removed during the initial inspection or any noted structural concerns result in a work order for corrective action. The City goal is to inspect (and clean as necessary) each culvert once per year.

6.2.7 General Facility Maintenance and Other Field Tasks

Storm Drainage Utility M&O staff perform a number of field tasks that do not readily fall into the categories previously listed and often support other City departments. Examples of these additional storm drainage tasks include the following:

- General facility maintenance: Maintenance may include detention vault and tank cleaning and sediment removal, weir cleaning, filter inspection and cleaning, and maintenance of oil/water separators and UIC.
- Engineering support: Storm Drainage Utility M&O staff often provide facility inspection services for engineering projects and support Engineering through visual observation in the field. M&O staff also make small repairs such as replacing catch basins or failed culverts or minor drainage pipe replacement. See Section 6.7 for recommendations related to documenting M&O repair projects.

Identifying the FTE for each task identified above was not considered as a part of this Plan. Instead, the FTE for the above tasks have been combined into one group summarizing the general inspection and field tasks performed by the Storm Drainage Utility staff. The City may choose to identify the expected FTE for each task at a later date, if desired. FTE assumptions are summarized in Section 6.6.

6.2.8 Storm Drainage Utility Overhead

The Storm Drainage Utility is responsible for ensuring routine operations are carried out as described above. To do so, several tasks not readily assigned to any one of the routine operation categories must be performed. Examples of these tasks are listed below:

- Training: Staff must be trained in routine field operations as well as the general order of processes required before and after field operations
- Record keeping and map maintenance: The utility ensures the results of routine operations are recorded and updated with condition assessments and mapped appropriately. The utility also notes any other field observations that may require further investigation. Additional details regarding this topic are given in Section 6.5.

- Equipment repair: Staff must address equipment malfunctions and necessary repairs, as needed.
- Preparation: Time is needed to prepare for routine operations

These tasks are expected for each routine operation previously described, but they have not been allocated to the specific tasks. For the purposes of resource planning, overhead is expected to account for 10% of the available staffing time.

6.3 Routine Operations Provided to the Storm Drainage Utility

This section discusses routine operations performed by other City staff or by contracted services in support of the Storm Drainage Utility. Each subsection provides a brief description of the M&O activity. FTE efforts for these activities are funded by the Storm Drainage Utility. Because Vegetation Maintenance staff primarily support the Storm Drainage Utility (approximately 60% of total staff effort), these staff are included in the existing staffing requirements discussed in Section 6.6.

6.3.1 Vegetation Maintenance

Vegetation maintenance is performed by Vegetation Maintenance Division full-time and seasonal staff that support City Storm Drainage Utility M&O staff. Vegetation maintenance includes mowing, herbicide application, seeding and replanting, and removal of nuisance vegetation or vegetation that impairs the function of storm drainage facilities. In the fall, vegetation maintenance also includes removal of leaves that can accumulate and block flow to catch basins (performed as needed).

Full-time Storm Drainage Utility staff may also perform limited vegetation maintenance as part of the routine operations discussed in Section 6.2.

6.3.2 Stormwater Pump Station Maintenance

Maintenance of the seven pump stations within the City storm drainage system is performed by Sanitary Sewer Utility staff because they have pump specialists who perform all pump station maintenance. Sanitary ewer Utility staff perform scheduled weekly and monthly maintenance inspections, as described in the City of Auburn Sewer Comprehensive Plan Update and summarized below.

Pump station maintenance activities include both weekly and monthly inspections and include checking lubrication, seals, valves, and general cleanliness of pump stations, as well as cleaning out sumps and trash racks.

6.3.3 Manufactured Treatment Device Maintenance

As described in Section 6.2.5, manufactured treatment devices are inspected by city staff annually to identify conditions that require additional, unscheduled maintenance. Such conditions could include excess sediment accumulation, damaged piping, or vault and access cover damage. Manufactured treatment devices are serviced by City staff, as noted in the inspections. Some proprietary media or filter units are maintained by a private contractor, as needed.

6.4 Non-Routine and Emergency Operations

The intent of the routine inspection and maintenance activities discussed in Sections 6.2 and 6.3 is to minimize, through proactive management of the stormwater facilities, the potential for conditions that could lead to emergencies. This section discusses unscheduled activities performed by Storm Drainage Utility M&O staff and describes a response plan for emergency conditions.

6.4.1 Customer Service Requests

Customer service requests, typically related to a local drainage complaint, trigger creation of a work order to inspect the affected area or stormwater facility and identify potential solutions. In some cases, relatively simple solutions, such as removal of blockages, can alleviate the issue. However, other cases require coordination with Engineering or other City departments. On average, City Storm Drainage Utility staff respond to approximately five customer service/complaint-related work orders per week. The effort required to resolve these complaints varies considerably.

Good recordkeeping helps in complaint resolution by ensuring that all relevant data are gathered and by serving as a reminder to resolve the complaint and notify the complainant. When a complaint is received, the following information is recorded to the extent possible:

- Name and contact information of the person making the complaint.
- Brief description of the nature of the complaint.
- Time and date the complaint was received.
- Storm Drainage Utility staff assigned to respond.

Following initial response, the complaint record gets updated to include the results of inspections and any corrective actions taken. If the complaint cannot be resolved internally within the Storm Drainage Utility, the complaint record will be forwarded to Engineering for further investigation.

Notification of any system investigation and/or action is provided to the customer making the complaint.

6.4.2 Emergency Response Program

The Storm Drainage Utility, in conjunction with the other utility divisions, has prepared an Emergency Binder as a guide on how to handle emergency situations. While the guide is by no means all-inclusive for every type of disaster, it is a valuable tool for dealing with many of the emergency situations that municipalities face. Copies of the Emergency Binder are available at the M&O Building, and at City Hall Annex with the Director.

The primary objectives of the Utilities response is ensuring public safety, restoring essential services as quickly as possible, and providing assistance to other areas as required. There is also a master response program for the entire City, as documented in the City's Comprehensive Emergency Management Plan (CEMP). The material in the CEMP provides guidance for mitigation, preparedness, responsibilities, recovery operations, training, and community education activities. Copies of the CEMP are located in each City department, the M&O Building, and the VRFA.

The utility has implemented a standby program whereby one on-call employee is designated to be the first to receive after-hours emergency calls. Most storm drainage system problems that occur outside of normal working hours are reported through the City's 911 emergency response system or a non- emergency response number. An emergency callout list is provided to the emergency operator in order to contact utility staff in case of an emergency. The primary responder to those after-hours

calls is the on-call employee. Storm Drainage Utility M&O staff have been trained to respond to system emergencies. The contacted staff assesses the situation, contacts additional staff as necessary, and then responds in accordance with established emergency response procedures.

6.4.3 Source Control Inspection Program

Per the NPDES MS4 permit, the City must implement a program to prevent pollutant-laden runoff from existing development to its MS4. A source control inventory of publicly and privately owned institutional, commercial, and industrial sites with the potential to contribute pollutants to the MS4 was developed in 2022 and must be updated once every 5 years. The City is required to annually inspect 20% of the sites listed in its source control inventory to assess compliance with source control requirements, evaluate the effectiveness of existing BMPs (and provide recommendations), and ensure required BMPs and actions are enacted through enforcement (as needed).

The City has hired a full-time employee to handle the SCIP. As the program is only in its second year, the required time and resources are still being evaluated. It is recommended that the City document these aspects and evaluate after 5 years. This will allow the City to develop a more accurate estimate of the required FTE for implementation of the SCIP.

6.5 Data Collection and Record-Keeping

Data collection and record-keeping functions for the Storm Drainage Utility are performed using a CMMS system called Cartegraph, a web-based commercial software package provided by Cartegraph Inc. Cartegraph integrates GIS data with utility M&O records, providing managers with overview information about system and operational performance and field crews with information related to the condition and failure history of specific stormwater facilities. The City currently uses Cartegraph to plan field staff activities (work orders), record results of both routine and non-routine maintenance, and compare actual maintenance efforts to City goals. The City recently upgraded its Cartegraph system and plans to transition toward the use of Cartegraph as an asset management tool, through which the City would optimize staffing and capital resource planning.

In recent years, the City has made considerable progress in adding asset information to Cartegraph, specifically GIS data, physical information related to size and material, and installation dates. However, to fully utilize the asset management function of Cartegraph, additional information related to risk, asset criticality, and condition is also necessary. To assist the City's transition to an asset management program, as described in Chapter 5, the attributes listed below should be used within Cartegraph to define each of the City stormwater assets (catch basin, pipe segment, stormwater pond, etc.).

Asset-specific attributes. The following asset-specific attributes are related to the asset and remain relatively unchanged over time.

- Asset ID: The unique asset number that is used by all business systems to identify an asset.
- Location: Where the asset is located (GIS).
- Installation date: The date the asset was installed.
- In-service date: The date the asset was placed into service.
- Material: The material making up the composition of the asset's structure.
- Asset class: A group of assets that share the same characteristics (e.g., ponds, pipe segments). Asset class is used to estimate replacement costs and useful life of groups of assets.
- Nameplate information and asset specifications: Important information that is used to uniquely describe an asset, such as the manufacturer name, type of asset, serial number, size, material, etc. This information is used for asset identification, replacement, and repair.

Operation-specific attributes: The following attributes are related to routine operations (inspection and repair or replacement) for each asset and must be updated afterwards accordingly.

- Replacement cost: The cost to replace the asset.
- Replacement year: The year the replacement cost data were calculated.
- Inspection date: The date the asset was inspected.
- Overall condition rating (OCR): The condition rating of the asset assigned as a result of the inspection.
- Overall condition index (OCI): A numeric score describing the condition of the asset, assigned as a result of the inspection (related to OCR).

Post-processing attributes. The attributes listed below are generated using asset-specific and operation-specific attributes data for each asset. These attributes are not manually entered. They are calculated to determine the risk associated with each asset and prioritize future work accordingly (as previously described in Chapter 5, and detailed in Appendix C).

- Useful life: The average life expectancy of the asset (life expectancy estimates for the different asset types can be found in Appendix C).
- Remaining useful life: The age of the asset (installation year – current year) subtracted from its useful life.
- Asset criticality: A value assigned to each asset that indicates how essential it is to maintain a defined LOS. Typically it is defined as a combined score based on the consequence of failure and the likelihood of failure.
  - → Criticality of failure: A score assigned to an asset on the scale of 1 to 5 that communicates the social and economic cost if the asset fails, where a score of 1 would represent an asset not expected to have extreme consequences after failure, and a score of 5 would represent an asset that may have detrimental consequences after failure. This score will not be entered manually into Cartegraph; it is determined largely based on location-based factors and will be assigned using a GIS-based spatial analysis.
  - → Likelihood of failure (condition): A score assigned to an asset on a scale of 1 to 5 that communicates the estimated time until the asset fails, where a score of 1 would represent an asset in excellent condition, and a score of 5 would represent an asset on the brink of failure. This score will not be entered manually into Cartegraph. It is initially calculated based on critical attributes (as defined in Appendix C), but after the inspection date becomes available, the results of the inspection (OCI and OCR) will supersede the estimated rank based on critical attributes in assigning a likelihood of failure score.

M&O attributes. The following M&O attributes are captured as part of the operations, maintenance, and repair history associated with each asset:

- Asset ID: The unique asset number that is used by all business systems to identify an asset. Work orders should be associated with one or more assets.
- Issue, cause, action: These codes are used to classify historical M&O activities associated with corrective actions or unplanned maintenance.
  - → Issue: What is the problem observed in the field?
  - → Cause: What is the underlying cause of the problem?
  - → Action: What was done to address the cause?

- Target hours and actual hours: Recording the estimated hours and actual hours to complete a work order can help in determining efficiency, planning workloads, and assessing repair costs.
- Target start and stop dates and actual dates: Recording the estimated and actual start and stop dates for a work order can help in determining efficiency, planning workloads, and assessing repair costs.
- Work order costs: Work order costs include labor, parts, materials, and equipment and should be accurately recorded for each work order.
- Work order type: Work order types are used to group and compare different types of work activities. Typical work order types are as follows:
  - → Capital improvement: Work associated with a CIP.
  - → Corrective maintenance: Work associated with an unplanned repair.
  - → Preventive maintenance: Work associated with a planned preventive maintenance activity (or inspection).
  - → Predictive maintenance: Work associated with predictive measures (usually for critical assets).
- Warranty information: Helps to determine assets that are under warranty and the warranty maintenance requirements.

6.6 M&O Staffing Requirements

This section outlines existing and future staffing requirements for M&O staff.

6.6.1 Existing Staffing Requirements

Existing staffing requirements for M&O activities discussed in this chapter were compiled and evaluated to determine the M&O staffing level needed to efficiently operate, maintain, repair the storm drainage system and collect and report the information necessary to properly operate system. Table 6-2 and Table 6-3 evaluate Storm Drainage Utility and Vegetation Maintenance Division staff, respectively. Each table evaluates the estimated time to conduct storm drainage system M&O tasks in the manner currently performed. Calculated days for each M&O activity are for a single person performed over an 8-hour "day." Therefore, an activity that is performed quarterly and that requires 4 hours and two M&O staff to complete would result in an annual requirement of 4 days.

Table 6-2. Existing Storm Drainage System Maintenance and Staffing Requirements

Work activity	FTE days required annually	Assumptions/City goal
Catch basin and manhole inspection, cleaning, and repair		
Catch basin inspection	270	Inspect once every 2 years, total of 10,800 catch basins. Perform 40 inspections per day with 2-person crew.
Manhole inspection	79	Inspect once every 4 years, total of 3,172 manholes. Perform 20 inspections per day with 2-person crew.
Catch basin cleaning	68	1 cleaning is required for every 10 inspections. 2-person crew, 0.25 hour each.

Table 6-2. Existing Storm Drainage System Maintenance and Staffing Requirements (continued)

Work activity	FTE days required annually	Assumptions/City goal
Manhole cleaning	32	1 cleaning is required for every 10 inspections. 2-person crew, 0.4 hour each.
Catch basin/manhole repair	155	310 repairs (approximately 5% of all inspected) per year. 2-person crew, 0.5 hours each.
Stormwater pipeline cleaning		
Pipeline cleaning	67	City expects 50,688 ft per year (entire system in 25 years). 2-person crew can clean 1,500 ft of pipe per day.
Stormwater outfall inspection, cleaning, and maintenance		
Inspection/Cleaning	124	City goal is 2 times per year (124 total outfalls). 2-person crew, 2 hours each.
Maintenance	2	City expects 10% of annual outfall inspections to require an additional maintenance visit. 2-person crew, 0.5 hours each.
Maintenance and restoration of drainage ditches, stormwater ponds/swales, and permeable pavement		
Drainage ditch maintenance and restoration	166	City's goal is once every 5 years. 6-person crew, 200 ft per hour.
Stormwater pond and swale maintenance and restoration	28	6-person crew expected to maintain/restore 20% of the ponds and swales within the system per year.
Permeable pavement maintenance and restoration	9	City's goal is 2 times per year (approximately 89,000 square feet). 4-person crew, 0.3 miles per hour.
Stormwater facility inspection		
Stormwater facility inspection	28	City goal is once per year for each facility (approximately 300 total). Includes ponds, swales, vaults, tanks, UIC, LID, and manufactured treatment devices" 1-person crew, 0.75 hours each.
Culvert inspection and cleaning		
Culvert inspection and cleaning	291	City goal of once per year for each of 1,164 culverts. 2-person crew, 1 hour each.
Other stormwater M&O activities		
General facility maintenance and other field tasks	26	1 day per week. 2-person crew, 2 hours each.
Customer service requests/complaints	65	5 requests per week.[a] 2-person crew, 1 hour each.
Utility overhead for routine operations		
FTE total for Routine Operations	1410	
Overhead	141	Assumed 10% of FTE total.
Data entry	130	20 hours per week total (8 people at 0.5 hours per day).

Table 6-2. Existing Storm Drainage System Maintenance and Staffing Requirements (continued)

Work activity	FTE days required annually	Assumptions/City goal
SCIP		
Implementation of SCIP	260	FTE reflects the full-time employee who will be implementing the SCIP. 1 person, 52 weeks per year, 40 hours per week.
Subtotal	1,941	
Total	2,135	Assumes 10% unquantified work
Total number of working days available per FTE	221	365 minus weekends (104), holidays (12), vacation (15), sick (12) and training (1).
Number of FTEs required	9.7	2,135 days required divided by 221 days per FTE year.
Current funded FTEs	10.0	10 full-time staff dedicated to field inspection and maintenance.

Note: FTE = full-time equivalent. FTE days are defined as 8 hours.

a. Many customer service requests are related to maintenance needs for privately owned drainage systems.

Table 6-3. Existing Vegetation Maintenance and Staffing Requirements

Work activity	FTE days required annually	Assumptions/City goal
Pond/Vegetation Management		
Mowing	683	6-person crew, 40 hours per week for 7 months
Weeding/Spraying	152	4-person crew, 20 hours per week for 7 months
Weed Control/Herbicide Spraying		
Weed Control/Herbicide Spraying	59	2-person crew, 3 days per week for 6 months
ROW and Ditch Mowing		
Staff 1	137	40 hours per week for 9 months
Staff 2	49	2 days per week for 8 months
Tree Trimming and Removal		
Tree Trimming and Removal	173	4-person crew, 40 hours per week for 4 months
Leaf Removal		
Leaf Removal	390	2-person crew, 40 hours per week for 12 months
Total	1,641	
Total number of working days available per FTE	221	365 minus weekends (104), holidays (12), vacation (15), sick (12), and training (1).
Number of FTEs required	7.4	1,641 days required divided by 221 days per FTE year
Current funded FTEs	7.6	6.6 FTE 3 seasonal staff

Note: FTE = full-time equivalent. FTE days are defined as 8 hours.

Table 6-2 shows that the Storm Drainage Utility meets the base level of staffing required with respect to meeting current City proactive goals for M&O activities. Additional staffing needs required to implement future regulatory requirements and recommended management activities are discussed in Section 6.6.2. Table 6-3 shows that there is adequate staffing to meet current vegetation maintenance needs of the Storm Drainage Utility.

6.6.2 Future Staffing Requirements and Equipment Needs

The M&O activities discussed in Section 6.2 and summarized in Table 6-2 are current efforts and do not include additional activities that will be required as part of the revised NPDES MS4 permit. In order to implement newly recommended asset management tasks with respect to drainage ditches and pipe inspection (see Table 6-4), additional staffing may be required. Future staffing requirements are summarized in the sections below.

6.6.2.1 Drainage Ditch Maintenance Program

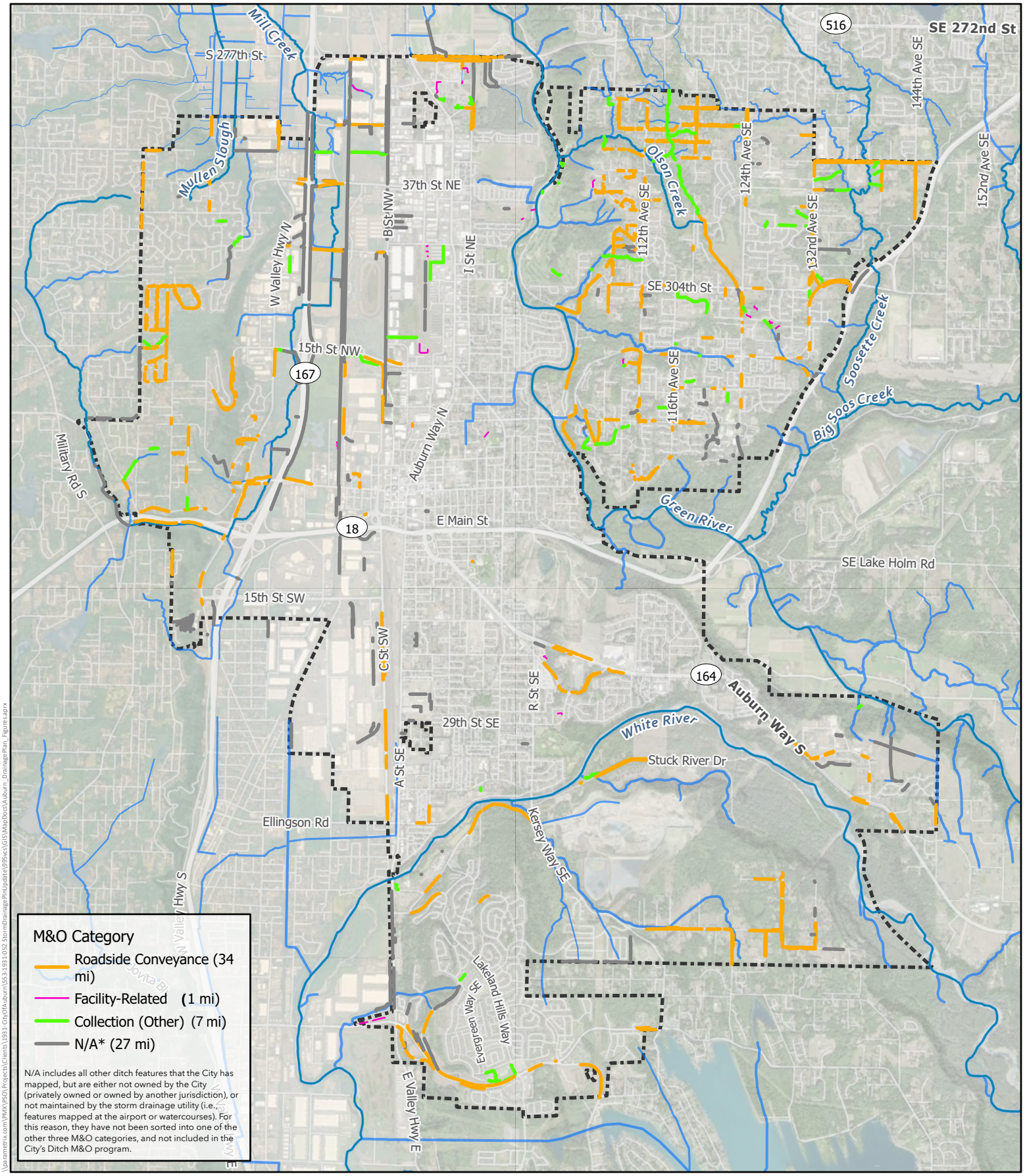
The City's ditch maintenance program was reviewed by Parametrix on behalf of this Plan to determine if additional controls and resources are required to meet needs and address potential liabilities. As a result of the review, it is recommended that the City categorize ditches according to the anticipated M&O needs (roadside ditch, facility-related, and collection [other]) and incorporate inspection as a new aspect in the ditch maintenance program. Figure 6-1 shows the extent of the City's ditch inventory and the recommended categorization according to M&O needs.

Roadside ditches are expected to require constant maintenance. Additional or enhanced actions are not anticipated at this time but could be an outcome of an enhanced maintenance program that could be proposed or required under the NPDES MS4 permit. The collection ditches will require additional routine maintenance, such as annual mowing and sediment removal. Facility-related ditches are recommended to be maintained and inspected with the facilities they are related to. This will require adjusting the City's goal of maintenance frequency.

Inspection will involve field verifying the condition, updating the asset inventory with findings, and generating a work order (as needed). Work orders will ensure the appropriate staff are aware of the issue (M&O, vegetation, office staff, etc.). Features in need of action are prioritized, and that work is scheduled appropriately. The following items will require consideration in incorporating the proposed ditch maintenance program.

- How does inspection turn into a work order?
- How often should ditches be inspected?
- What are the thresholds for action?

Because the inspection process is new, it is expected to take time to understand the staff and time needed as well as to set an achievable goal for inspection of the entire system. To begin to understand the expectation of M&O staff, starting estimates were developed for consideration. For the purposes of this Plan, inspection is anticipated to require a one-person crew to inspect 500 feet of ditch per hour, and it is recommended to inspect all ditches within the program annually. Further, the frequency and resources needed for this program should be evaluated every 5 years.



Date: 5/10/2024
Sources: City of Auburn, King County, Pierce County, WA Ecology, WA DNR, USGS, ESRI
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

Figure 6-1
City Drainage Ditch Inventory
Maintenance & Operations (M&O) Categorization
Stormwater Drainage Utility
Comprehensive Storm Drainage Plan

Parametrix | City of Auburn Washington

For the near-term future ditch program, additional analysis and resource streams have been identified. The proposed ditch inspection program and recordkeeping will be initiated. New protocols for finding, adding, mapping, and classifying ditches in the system are needed and should primarily focus on collector and facility ditches. Newly added ditches will require ownership and responsibility research and subsequent easements or purchase. The ditch inspections may reveal system failures that require minor capitol repairs or replacement. The projects should be added as a programmatic CIP. In addition, an assessment to consider ditch improvements for water quality improvement will be prepared, focused on roadside ditches.

The findings and recommendations of the drainage ditch maintenance program have been discussed in further detail in Appendix E.

Taking this into consideration, the City will need to increase the expectation of overall Storm Drainage Utility staffing in order to dedicate more staff to drainage ditch maintenance and restoration (see Table 6-4). It is recommended that the City consider adjusting from the current levels to a regulated biannual basis for maintaining the its ditch inventory. In addition, it would be recommended to inspect the ditch inventory annually to prioritize ditches for maintenance. In order to meet this goal, approximately 363 FTE days (with a six-person crew), or 1.6 FTE per year would be needed (see Table 6-4).

6.6.2.2 Stormwater Pipe Inspection

As explained in Chapter 5.2, the City has a goal to implement an inspection prioritization program for its stormwater pipe system. The program will prioritize inspection for pipes with the highest likelihood of failure scores, which are generally those that are older, have little to no critical attribute data on record, or have no recorded history inspection. As part of the inspection process, feature attributes will be added/updated to the CMMS system, resulting in a robust pipe inventory and a more efficient use of resources. In the beginning of the program, there will be a greater number of pipes with high likelihood of failure scores (approximately 52,000 feet of pipe) since there is a large amount of missing feature data, and approximately 15,000 feet of the City's pipe system per year is expected to have surpassed its expected useful life (see Appendix C).

They City will slowly expand its pipe inspection program as time and finances allow, beginning with periodic use of the Sanitary Sewer Utility's closed-circuit television (CCTV) equipment on an as-needed basis. Since the CCTV equipment will be used as-needed, it is not anticipated to require additional FTE days at this time and has not been included in Table 6-4. Dedicated equipment for the storm utility will be investigated and worked into future budget cycles.

"Lamping" inspections, where the camera is inserted into the manhole or catch basin but not advanced through the pipe system, are typically performed as a first step of the CCTV process. Although the visual range is limited, lamping can identify structures and piping that are in very good condition. In these cases, no additional CCTV inspection would be necessary. Lamping can be utilized in many areas to get a baseline and can be done with current equipment. It is not a full substitute for CCTV inspections but will help get the program going before additional equipment can be purchased.

6.6.2.3 Other M&O Activities

The NPDES MS4 permit requires the City to implement a municipal street sweeping program to target high-priority areas (see Section 5.3). The City will need to review the existing street sweeping program and ensure the permit requirements are addressed or revised, as necessary. The new requirements are not anticipated to require additional FTE days for sweeping crews.

Table 6-4. Future Storm Drainage System Maintenance and Staffing Requirements

Work activity	FTE days required annually	Assumptions/City goal
Drainage ditch maintenance program		
Drainage ditch inspection	55	1-person crew, 500 ft per hour. Inspection of the entire system (~220,000 ft) annually.
Roadside ditch maintenance and restoration	327	6-person crew, 200 ft per hour. Expect to maintain the entire category (79% of drainage ditch inventory) every 2 years.
Collector-ditch maintenance and restoration	79	6-person crew, 200 ft per hour. Expect to maintain the entire category (20% of drainage ditch inventory) every 2 years.
Facility-related ditch maintenance and restoration	20	6-person crew, 200 ft per hour. Expect to maintain (1% of drainage ditch inventory) at the same time as maintenance occurs for the related facility (annually).
Total	530	Assumes 10% unquantified work
Additional FTE required for ditch maintenance and restoration	363	Subtracting the existing staffing goal (166 FTE days) to understand the additional need.
Total number of working days available per FTE	221	365 minus weekends (104), holidays (12), vacation (15), sick (12), and training (1).
Number of FTEs required	1.6	363 days required divided by 221 days per FTE year.

Note: FTE = full-time equivalent

6.6.2.4 Equipment Considerations

The Storm Drainage Utility utilizes the Sanitary Sewer Utility's reallocated CCTV inspection equipment and truck. New equipment would allow for increased efficiency and inspection frequency. It is recommended that the City consider the benefit of acquiring a CCTV for the Storm Drainage Utility after the pipe inspection program has been in effect for 5 years.

6.7 Potential Improvement Opportunities and Capital Needs

The Storm Drainage Utility has a positive track record for M&O, as evidenced by the limited need for non-routine maintenance and few customer service complaints about the City's drainage system. Routine facility cleaning, regular inspections, experienced staff, and a well-planned storm drainage system contribute to that success. Additionally, significant increases to the drainage ditch maintenance and pipeline inspection program could be addressed by the City by adding to the current Storm Drainage Utility M&O staff. An additional 1.6 FTEs are required to achieve proactive City M&O goals (Table 6-4).

Based upon discussions with City staff and analysis of M&O activities discussed in this chapter, the following improvement opportunities are available to the Storm Drainage Utility. These opportunities are based on improving existing services, regulatory compliance, and improving work productivity:

- Continue to integrate asset management with existing utility management software (Cartegraph and GIS).
  - → Continue to add GIS attributes to known Storm Drainage Utility assets.
  - → Perform and document condition assessments. Use defined criteria (such as leaks/cracks observed, cleanliness, and other specific measures), and provide staff training to ensure assessment consistency.
  - → Use results of condition assessments to move toward risk-based maintenance to best utilize staff resources. For example, consistently high assessment scores would result in a lower risk or need for maintenance, allowing M&O staff to be diverted to more essential activities.
  - → Over time, demonstrate (through maintenance records) that a subset of City catch basins do not require inspection, cleaning, and maintenance every 2 years per the NPDES MS4 permit.
- Reevaluate the inspection frequency and expected effort for the pipe inspection and ditch maintenance programs to adjust as needed.
- Consider obtaining a CCTV inspection equipment for pipe inspection the following utility equipment to improve M&O efficiency.
- Consider aligning catch basin cleaning with stormwater pipeline cleaning and CCTV to ensure efficient use of available resources.
- All M&O repair projects should be constructed to established City engineering standards. It is recommended that the City develop a more formal procedure for tracking M&O repair projects to ensure that as-built and GIS records are updated when repairs are completed.
- Develop a list of facilities that should be inspected following major design storms and inspect accordingly to verify proper function and identify damage, if any.
- Document the time and resources required on behalf of the SCIP program. Evaluate the resource need of the program after 5 years. This will allow the City to develop a more accurate estimate of the required FTE for implementation of the SCIP.
- Continue to develop the ditch maintenance program as broken down in the steps below.
  - → Ditch mapping and classification: Develop protocols for finding, adding, mapping, and classifying ditches within the system. Focus primarily on collector and facility ditches. Accurate mapping and classification will help prioritize maintenance efforts.
  - → Adding new ditches: Consider the steps required when adding new ditches to the system. Elements to address include determining ownership, responsibility, and any necessary easements or land purchases. Having a clear plan in place ensures smooth integration of new ditches.
  - → System failures and CIP: Use the results of regular ditch inspections to identify system failures. System failures may include erosion, blockages, or other issues that require capital repair or replacement. Add a program to the CIP to address ditches with these system failures.

- → Water quality improvements: Implement a program that focuses on retrofitting ditches with water quality enhancements. Specifically target roadside ditches, which play a crucial role in managing runoff and pollutant removal.

- Coordinate with the Street division to review and revise the City's street sweeping plan, as needed.

7. Capital Improvements

This chapter describes the recommended capital improvement plan for the City of Auburn Storm Drainage Utility. Of the 12 CIPs described in this chapter, 4 are included in the 6-year plan (2025–2030) and 8 are included in the 20-year plan (2031–2044). The 6-year plan includes the highest priority CIPs that address existing drainage problems, address an ongoing waste disposal issue, and ensure compliance with NPDES MS4 permit deadlines. The 20-year plan addresses longer-term capital goals (see Chapter 8). This Plan contains timeframes that are the intended framework for future funding decisions and within which future actions and decisions are intended to occur. However, these time frames are estimates and, depending on factors involved in the processing of applications and project work and the availability of funding, the timing may change. The framework, which may depend on available funding resources, does not represent actual commitments by the City of Auburn.

In general, CIPs are modifications to stormwater drainage infrastructure designed to improve the condition and function of the drainage system so that it can meet the LOS goals established for the City's Storm Drainage Utility (see Chapter 3). CIPs may also be developed to ensure the utility is able to carry out routine operations and ensure compliance with permit requirements.

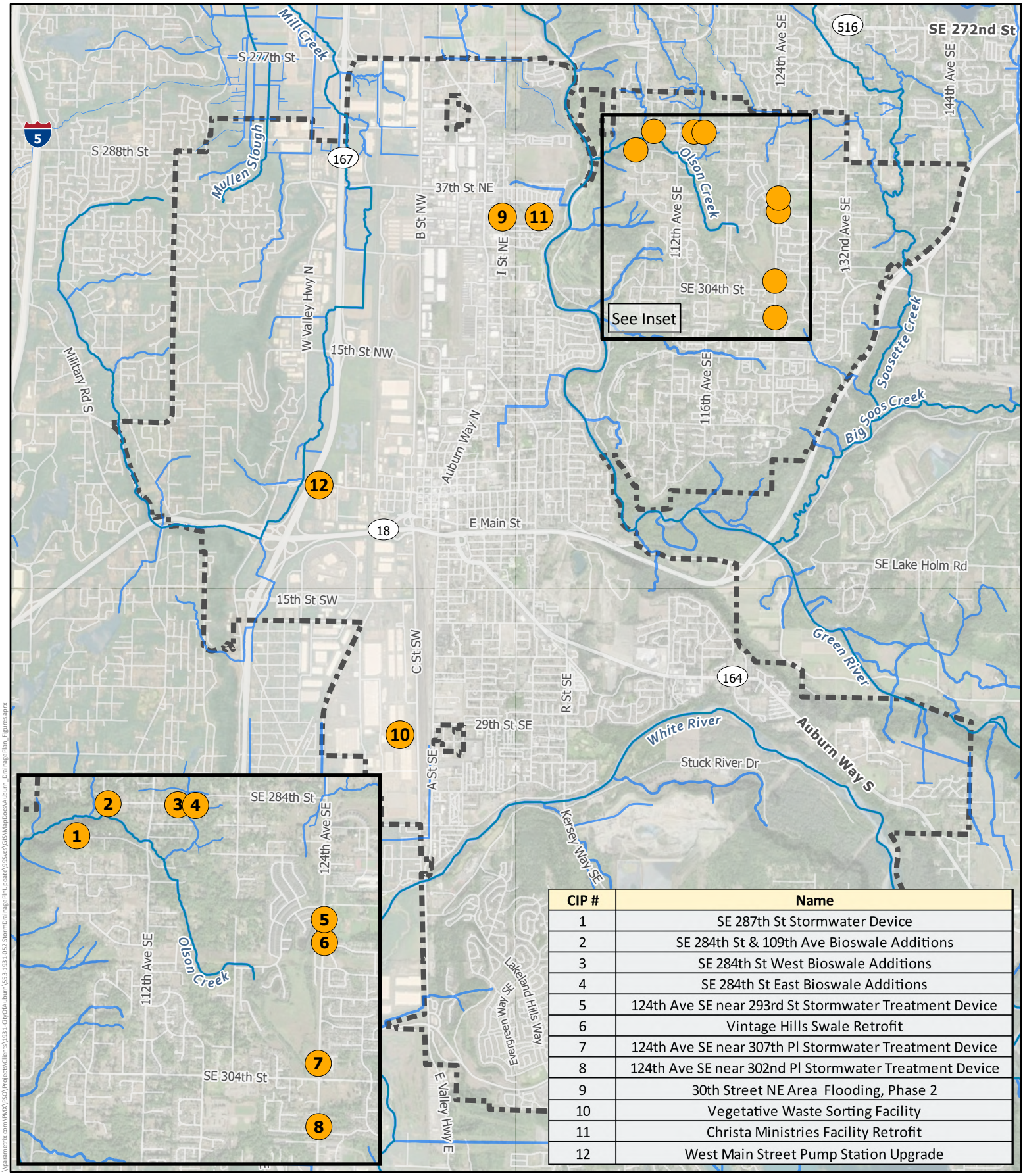
The CIPs presented in this chapter were identified and developed through focused investigations and by working collaboratively with City staff. This focused and collaborative approach was based on the practical consideration that the quantity and delivery of CIPs the City can implement is limited by existing revenue streams and staff availability. The intent is to produce an economical capital improvement plan that addresses the most salient issues in the near term, while still planning for the long-term ability of the Storm Drainage Utility to meet LOS goals. The following steps were used to develop the CIPs.

A list of potential projects was developed for further investigation. The list was developed by working closely with City staff to identify the delayed projects from the 2015 Plan that were still necessary or beneficial to the Utility, locate and characterize existing problems based on direct staff observations, recognize potential opportunities for enhancement, and address needs of the utility. Projects that were generated on behalf of the SMAP for Olsen Creek were also included in this list. Such observations are a valuable supplement to modeling analyses and, in this case, were used in conjunction with modeling activities to assist with model development.

For the potential projects that required H&H analyses, modeling was completed using PCSWMM, a software package that uses GIS technology to import and export data, allowing a seamless transition between the system inventories and modeling input files. Models used the historical event that most closely produced a once per 25-year flow rate (the specific event varied by basin). Results from historical events were used to assess the extent and severity of the drainage problem. Results from the design event were used to understand the feasibility of the potential project in mitigating the drainage problem.

Potential projects were developed and discussed with members of the City staff to identify the most viable alternative/solution. Potential projects were then evaluated based on their potential benefit and feasibility, and a final list was developed. Once the projects were defined, the project team developed concept-level cost estimates.

An overview of project locations is shown in Figure 7-1. Section 7.1 describes a tiered method for establishing project priorities. Section 7.2 presents detailed descriptions of CIPs. Section 7.3 describes programmatic drainage projects.



CIP #	Name
1	SE 287th St Stormwater Device
2	SE 284th St & 109th Ave Bioswale Additions
3	SE 284th St West Bioswale Additions
4	SE 284th St East Bioswale Additions
5	124th Ave SE near 293rd St Stormwater Treatment Device
6	Vintage Hills Swale Retrofit
7	124th Ave SE near 307th Pl Stormwater Treatment Device
8	124th Ave SE near 302nd Pl Stormwater Treatment Device
9	30th Street NE Area Flooding, Phase 2
10	Vegetative Waste Sorting Facility
11	Christa Ministries Facility Retrofit
12	West Main Street Pump Station Upgrade

Date: 5/9/2024
Sources: City of Auburn, King County, Pierce County, WA Ecology, WA DNR, USGS, ESRI
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

Auburn City Limits
Watercourse
CIP Location

0 ¼ ½ 1 Miles

Figure 7-1
Capital Improvement Project (CIP) Locations
Stormwater Drainage Utility
Comprehensive Storm Drainage Plan

\\parametrix.com\PMX\PSO\Projects\Clients\1931-CityOfAuburn\553-1931-052 StormDrainagePlnUpdate\99Svcs\GIS\MapDocs\Auburn_DrainagePlan_Figure.aprx

7.1 Project Prioritization

Storm Drainage Utility staff prioritized CIPs by grouping them into one of three tiers. Projects in the top tier, or highest priority, are classified as tier 1. Projects with medium priority are classified as tier 2. And projects with lowest priority relative to the other projects are considered tier 3.

The following items were considered when prioritizing the CIPs:

- The magnitude of the LOS gap that would be addressed by a CIP. For example, a project that rectifies an annual flooding problem would rank higher than a project in a different area that eliminates less frequent flooding.
- The reduction in risk and reduction in consequences associated with a CIP. For example, the consequence of flooding that occurs near critical facilities (e.g., hospital or fire station) or along major arterial streets may be larger than flooding along residential streets. A CIP that addresses a larger consequence would rank higher.
- The opportunity for coordination with ongoing City of Auburn street improvements or other utility or transportation projects. Coordinated projects that reduce the overall cost of a CIP would rank higher.
- The capital funding capacity of the Storm Drainage Utility. The overall list of project priorities attempts to balance the need for action with the funding and implementation capacity of the Storm Drainage Utility.
- The action deadlines necessary for compliance with the NPDES MS4 permit.
- Other considerations with the potential to improve water quality, reductions in maintenance, and increased reliability of the system.

Priorities for each project are included in each project description in the following sections. Project priority and budgetary constraints were considered together in developing the year-by-year schedules for project implementation in the 6- and 20-year capital improvement plans (see Chapter 8).

7.2 Proposed Capital Improvement Projects

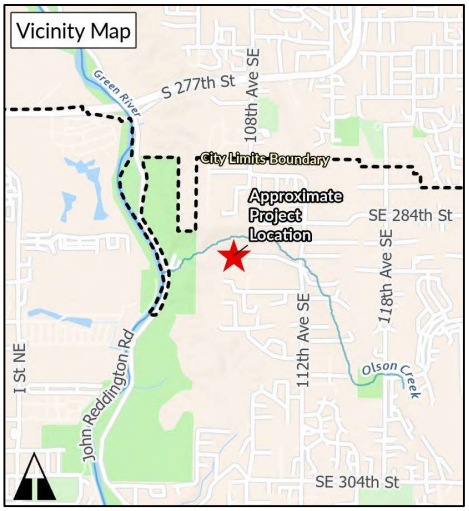
CIPs described in this section were developed as part of this Plan and are described in sufficient detail to allow the City to proceed with budgeting and design. Project descriptions are organized into summaries containing the following information:

- Project number: CIP numbers generally assigned to align with the number given in the SMAP (as applicable) for consistency.
- Project name: A short, descriptive name assigned to each project.
- Project type: A brief description of the specific type of project being undertaken, used to categorize and identify the purpose or focus of the project.
- Location: A simple description of the project location, such as the cross streets.
- Existing and proposed use: A summary of the existing and proposed site conditions.
- Drainage basin: The receiving water drainage basin where the project is situated.
- Tributary drainage area: Area (in acres) that drains to the project (as applicable).
- Total cost: The estimated cost of the project, based on the attached opinion (estimate) of probable cost.

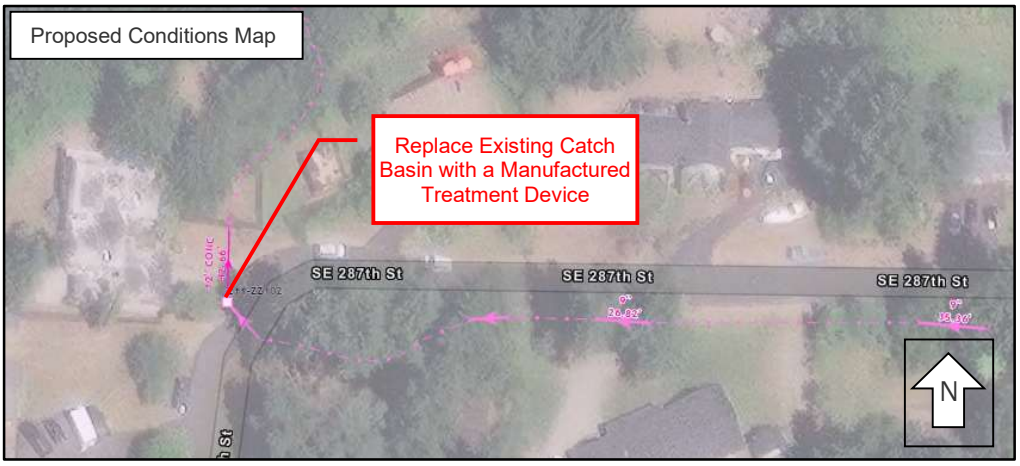
- Project description: A description of the proposed project, including major project elements and sizes.
- Site opportunities: The anticipated opportunities and benefits of the project.
- Site challenges: The anticipated challenges in undertaking the project.
- Opinion (estimate) of probable cost: A list of estimated costs, including construction costs, engineering and administrative costs, taxes, and contingency costs. The estimate was developed based on the conceptual design, preliminary quantity take-offs, and estimated unit costs. Estimated unit costs were based on bids from the WSDOT Unit Bid Tab, vendor quotes, and escalated project costs from recent projects with similar components.
- Vicinity map: A figure showing the location of the project relative to the City of Auburn.
- Proposed conditions figures: Figures showing the conceptual design and location of project elements.

CIP summaries and cost opinions are presented on the following pages.

CIP 1 – SE 287th Street Stormwater Device
6-Year Capital Improvement Plan (Priority 1)







RETROFIT TYPE
Road retrofit
Manufactured treatment device

LOCATION
At the end of SE 287th Street

EXISTING USE
ROW

PROPOSED USE
ROW with enhanced runoff treatment

DRAINAGE BASIN
Olson Creek

TRIBUTARY DRAINAGE AREA
7.3 acres total
2.0 acres impervious

TOTAL COST (2024 DOLLARS)
$427,000

Project Description

This project is proposing to replace the existing Type 1 catch basin with a stormwater treatment technology reviewed and certified by the Washington state Technology Assessment Protocol – Ecology (TAPE) program to provide 7.3 acres with enhanced water quality treatment. This project would provide treatment for approximately 700 linear feet of roadway. The catch basin replacement will likely be low complexity since there is existing infrastructure in place and traffic control needs will be low. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Opportunities

- Low traffic control requirements.

Site Challenges

- Water quality only, no flow control.
- Need site survey to confirm catch basin is located within City ROW.

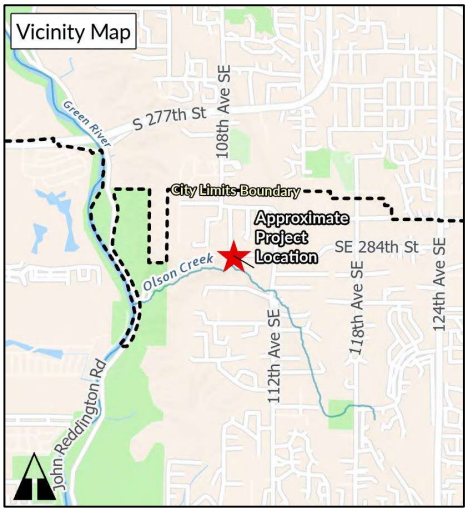
Opinion (Estimate) of Probable Cost

Project Name	CIP 1 - SE 287th Street Stormwater Device
Location	At the end of SE 287th Street (Near 10624 SE 287th Street, Auburn, WA 98092)

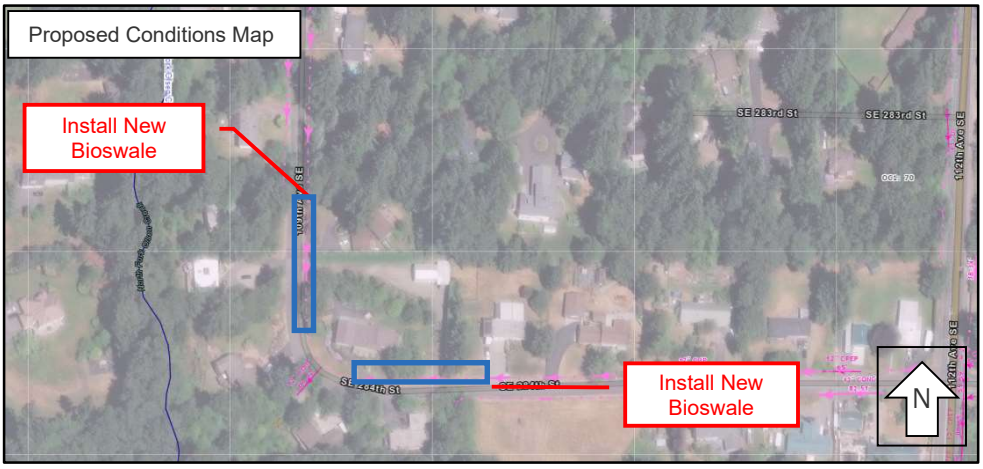
ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
		SITE PREP AND TESC				
1		MOBILIZATION (10%)	10%	% of lines 5-13		$14,442
2		CONTRACTOR PROVIDED SURVEY (3%)	3%	% of lines 5-13		$4,332
3		TESC (5%)	5%	% of lines 5-13		$7,221
4		DEWATERING (2%)	2%	% of lines 5-13		$2,888
					Lines 1 - 4 Subtotal	**$28,883**
		MATERIALS				
5		SAWCUTTING	56	LF	$31	$1,715
6		PAVEMENT REMOVAL/RESTORATION	11	SY	$220	$2,347
7		ENHANCED MEDIA FILTER SYSTEM 6X8	2	EA	$60,000	$120,000
8		CONNECTION TO DRAINAGE STRUCTURE	4	EA	$3,415	$13,661
9		STRUCTURE EXCAVATION CLASS A INCL. HAUL	44	CY	$41	$1,824
10		SHORING OR EXTRA EXCAVATION CLASS B	1	LS	$1,000	$1,000
11		STRUCTURE EX AND SHORING LABOR (50% OF EACH)	50	% of lines 9-10		$1,412
12		CRUSHED SURFACING BASE COURSE	3	TN	$54	$176
13		RECORD DRAWINGS	1	LS	$2,280	$2,280
					Lines 5 - 13 Subtotal	**$144,416**
					Subtotal Line-Item Costs	**$173,299**
					Design Contigency 50%	**$86,649**
					Permitting 5%	**$8,665**
					Design 25%	**$43,325**
					City Project Mgmt. Admin. 5%	**$8,665**
					Construction Management 25%	**$43,325**
					Management Reserve 10%	**$17,330**
					TOTAL PROJECT COST	**$382,000**

CIP 2 – SE 284th Street & 109th Avenue SE Bioswale Additions

20-Year Capital Improvement Plan (Priority 3)







RETROFIT TYPE
Road retrofit
New bioswales

LOCATION
SE 284th Street and 109th Avenue SE

EXISTING USE
ROW (vegetated and gravel driveway)

PROPOSED USE
ROW with basic runoff treatment

DRAINAGE BASIN
Olson Creek

TRIBUTARY DRAINAGE AREA
20.6 acres total
3.0 acres impervious

TOTAL COST (2024 DOLLARS)
$143,000

Project Description

This project will retrofit a section of SE 284th Street by adding two bioswale ditch enhancements. The bioswales will provide basic water quality treatment to 20.6 acres, including approximately 2,300 linear feet of roadway. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Opportunities

- Treatment can be situated within ROW.
- Provides some flow control.

Site Challenges

- Clearing and grubbing required.

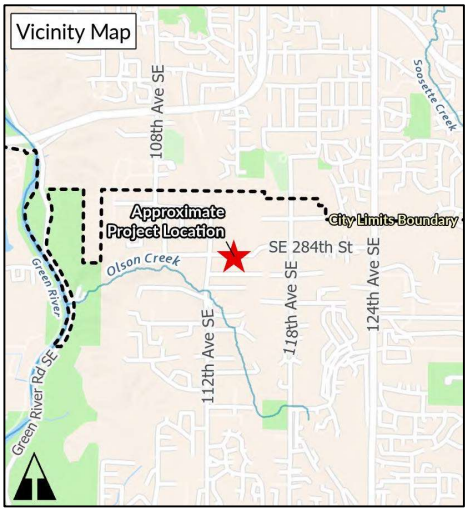
Opinion (Estimate) of Probable Cost

Project Name	CIP 2 - SE 284th Street & 109th Avenue SE Bioswale Additions
Location	SE 284th Street and 109th Avenue SE

ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
		SITE PREP AND TESC				
1		MOBILIZATION (10%)	10%	% of lines 5-9		$5,390
2		CONTRACTOR PROVIDED SURVEY (3%)	3%	% of lines 5-9		$1,617
3		TESC (5%)	5%	% of lines 5-9		$2,695
4		DEWATERING (2%)	2%	% of lines 5-9		$1,078
					Lines 1 - 4 Subtotal	**$10,781**
		MATERIALS				
5		CLEARING AND GRUBBING	0.1	ACRE	$10,000	$1,045
6		CHANNEL EXCAVATION INCL. HAUL	169	CY	$40	$6,724
7		TOPSOIL TYPE A	253	SY	$66	$16,599
8		COMPOST BLANKET	42	SY	$8	$337
9		SEEDING, FERTILIZING, AND MULCHING	506	SY	$58	$29,200
					Lines 5 - 9 Subtotal	**$53,904**
					Subtotal Line-Item Costs	**$64,685**
					Design Contigency	**50%**	**$32,343**
					Permitting	**5%**	**$3,234**
					Design	**25%**	**$16,171**
					City Project Mgmt. Admin.	**5%**	**$3,234**
					Construction Management	**25%**	**$16,171**
					Management Reserve	**10%**	**$6,469**
					TOTAL PROJECT COST	**$143,000**

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CIP 3 – SE 284th Street West Bioswale Additions
6-Year Capital Improvement Plan (Priority 1)





RETROFIT TYPE
Road retrofit
New bioswales

LOCATION
Along SE 284th Street

EXISTING USE
ROW

PROPOSED USE
ROW with basic runoff treatment

DRAINAGE BASIN
Olson Creek

TRIBUTARY DRAINAGE AREA
2.2 acres total
1.1 acres impervious

TOTAL COST (2024 DOLLARS)
$52,000



Project Description

This project will retrofit a section of SE 284th Street by adding two bioswale ditch enhancements to the side of the road. The bioswales will provide basic water quality treatment to 2.2 acres, including approximately 700 linear feet of roadway. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Opportunities

- Treatment can be situated within ROW.
- Provides some flow control.

Site Challenges

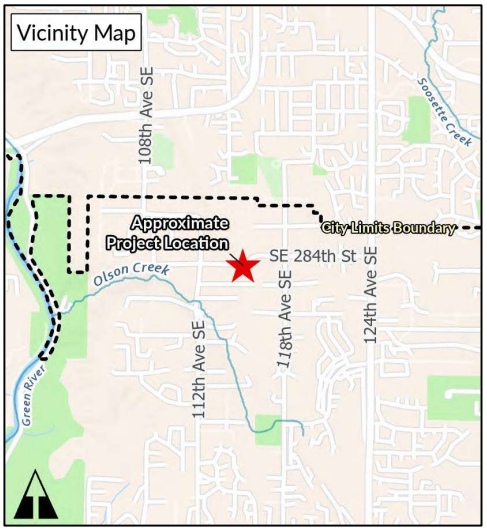
- Clearing and grubbing required.

Opinion (Estimate) of Probable Cost

Project Name	CIP 3 - SE 284th Street West Bioswale Additions
Location	Along SE 284th Street (Near 11429 SE 284th Street, Auburn, WA 98082)

ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
		SITE PREP AND TESC				
1		MOBILIZATION (10%)	10%	% of lines 6-10		$1,719
2		CONTRACTOR PROVIDED SURVEY (3%)	3%	% of lines 6-10		$516
3		TESC (5%)	5%	% of lines 6-10		$860
4		DEWATERING (2%)	2%	% of lines 6-10		$344
5		PROJECT TEMPORARY TRAFFIC CONTROL (15%)	15%	% of lines 6-10		$2,579
					Lines 1 - 5 Subtotal	**$6,017**
		MATERIALS				
6		CLEARING AND GRUBBING	0.04	ACRE	$10,000	$419
7		CHANNEL EXCAVATION INCL. HAUL	68	CY	$40	$2,698
8		TOPSOIL TYPE A	34	SY	$66	$2,221
9		COMPOST BLANKET	17	SY	$8	$135
10		SEEDING, FERTILIZING, AND MULCHING	203	SY	$58	$11,718
					Lines 6 - 10 Subtotal	**$17,192**
					Subtotal Line-Item Costs	**$23,209**
					Design Contigency **50%**	**$11,604**
					Permitting **5%**	**$1,160**
					Design **25%**	**$5,802**
					City Project Mgmt. Admin. **5%**	**$1,160**
					Construction Management **25%**	**$5,802**
					Management Reserve **10%**	**$2,321**
					TOTAL PROJECT COST	**$52,000**

CIP 4 – SE 284th Street East Bioswale Additions
20-Year Capital Improvement Plan (Priority 3)





RETROFIT TYPE
Road retrofit
New bioswale

LOCATION
Along SE 284th Street

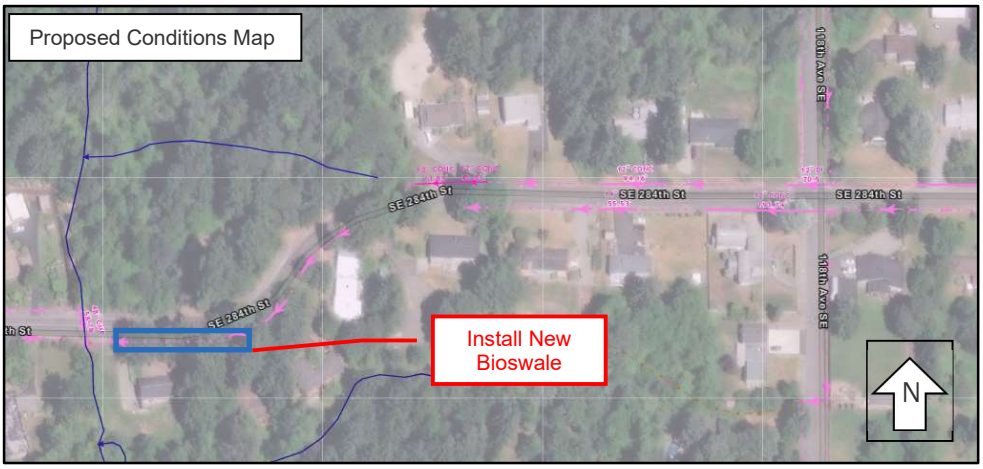
EXISTING USE
Roadside ditch

PROPOSED USE
Roadside bioswale

DRAINAGE BASIN
Olson Creek

TRIBUTARY DRAINAGE AREA
1.8 acres total
0.8 acres impervious

TOTAL COST (2024 DOLLARS)
$28,000



Project Description

This project will retrofit a section of SE 284th Street by adding a bioswale ditch enhancement to the side of the road. This bioswale will provide basic water quality treatment to 1.8 acres, including approximately 1,600 linear feet of roadway. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Opportunities

- Treatment can be situated within ROW.
- Provides some flow control.

Site Challenges

- Clearing and grubbing required.

Opinion (Estimate) of Probable Cost

Project Name	CIP 4 - SE 284th Street East Bioswale Additions
Location	Along SE 284th Street (Near 11619 SE 284th Street, Auburn, WA 98082)

ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
		SITE PREP AND TESC				
1		MOBILIZATION (10%)	10%	% of lines 6-10		$932
2		CONTRACTOR PROVIDED SURVEY (3%)	3%	% of lines 6-10		$280
3		TESC (5%)	5%	% of lines 6-10		$466
4		DEWATERING (2%)	2%	% of lines 6-10		$186
5		PROJECT TEMPORARY TRAFFIC CONTROL (15%)	15%	% of lines 6-10		$1,398
					Lines 1 - 5 Subtotal	**$3,262**
		MATERIALS				
6		CLEARING AND GRUBBING	0.02	ACRE	$10,000	$227
7		CHANNEL EXCAVATION INCL. HAUL	37	CY	$40	$1,463
8		TOPSOIL TYPE A	18	SY	$66	$1,204
9		COMPOST BLANKET	9	SY	$8	$73
10		SEEDING, FERTILIZING, AND MULCHING	110	SY	$58	$6,353
					Lines 6 - 10 Subtotal	**$9,321**
					Subtotal Line-Item Costs	**$12,583**
					Design Contigency **50%**	**$6,292**
					Permitting **5%**	**$629**
					Design **25%**	**$3,146**
					City Project Mgmt. Admin. **5%**	**$629**
					Construction Management **25%**	**$3,146**
					Management Reserve **10%**	**$1,258**
					TOTAL PROJECT COST	**$28,000**

CIP 5 – 124th Avenue SE near SE 293rd Street Stormwater Treatment Device

20 Capital Improvement Plan (Priority 2)





RETROFIT TYPE
Road retrofit
Manufactured treatment device

LOCATION
124th Avenue SE near SE 293rd Street

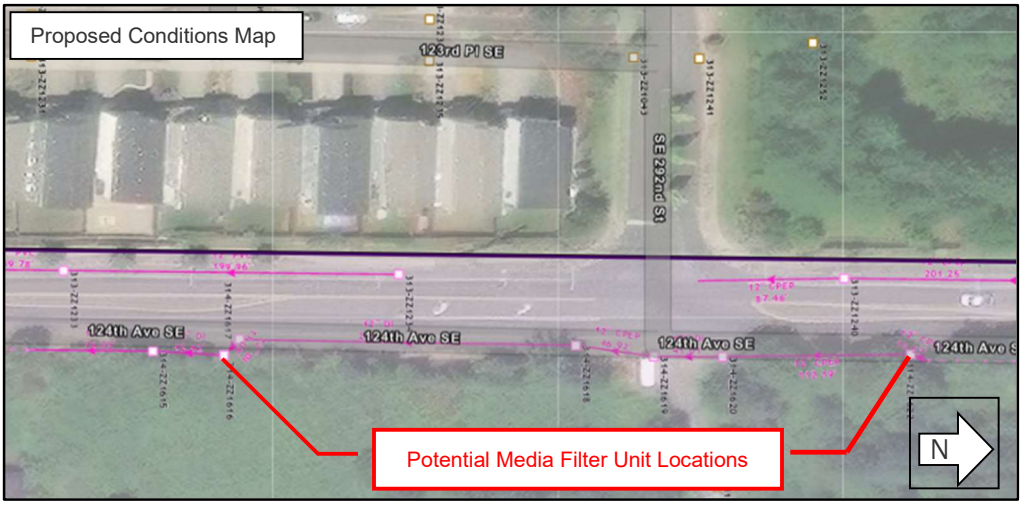
EXISTING USE
Untreated ROW

PROPOSED USE
ROW with enhanced runoff treatment

DRAINAGE BASIN
Olson Creek

TRIBUTARY DRAINAGE AREA
14.1 acres total
2.4 acres impervious

TOTAL COST (2024 DOLLARS)
$581,000



Project Description

This project will retrofit a section of 124th Avenue SE by replacing existing Type 1 catch basins with TAPE-approved manufactured treatment devices. The manufactured treatment devices will provide enhanced water quality treatment to 14.1 acres, including approximately 800 linear feet of roadway. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Opportunities

- Provides enhanced stormwater treatment for a high traffic roadway.

Site Challenges

- May be constrained by outlet height.
- Coordination with other utilities.

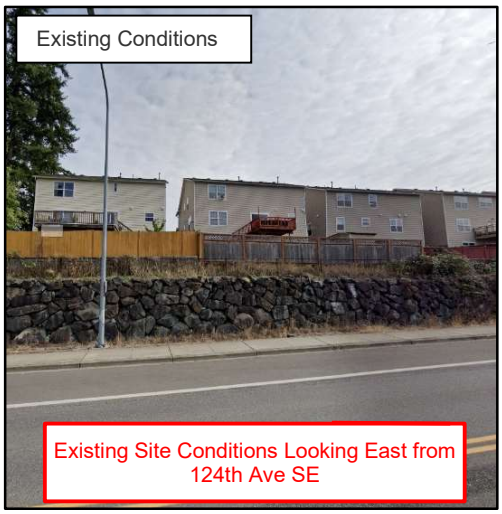
Opinion (Estimate) of Probable Cost

Project Name	CIP 5 - 124th Avenue SE near SE 293rd Street Stormwater Treatment Device
Location	Along 124th Avenue SE near SE 293rd Street

ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
		SITE PREP AND TESC				
1		MOBILIZATION (10%)	10%	% of lines 6-16		$19,562
2		CONTRACTOR PROVIDED SURVEY (3%)	3%	% of lines 6-16		$5,868
3		TESC (5%)	5%	% of lines 6-16		$9,781
4		DEWATERING (2%)	2%	% of lines 6-16		$3,912
5		PROJECT TEMPORARY TRAFFIC CONTROL (15%)	15%	% of lines 6-16		$29,342
					Lines 1 - 5 Subtotal	**$68,466**
		MATERIALS				
6		UTILITY RELOCATION (SMALL)	1	LS	$15,000	$15,000
7		PAVEMENT REMOVAL/RESTORATION	52	SY	$220	$11,489
8		REMOVE CEMENT CONCRETE CURB AND GUTTER	20	LF	$14	$274
9		ENHANCED MEDIA FILTER SYSTEM 6X10	2	EA	$68,000	$136,000
10		CONNECTION TO DRAINAGE STRUCTURE	4	EA	$3,415	$13,661
11		STRUCTURE EXCAVATION CLASS A INCL. HAUL	52	CY	$41.04	$2,128
12		SHORING OR EXTRA EXCAVATION CLASS B	1	LS	$1,000	$1,000
13		STRUCTURE EX AND SHORING LABOR (50% OF EACH)	50	% of lines 11-12		$1,564
14		CRUSHED SURFACING BASE COURSE	4	TN	$54	$220
15		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	100	LF	$120	$12,000
16		RECORD DRAWINGS	1	LS	$2,280	$2,280
					Lines 6 - 16 Subtotal	**$195,616**
					Subtotal Line-Item Costs	**$264,082**
					Design Contigency **50%**	**$132,041**
					Permitting **5%**	**$13,204**
					Design **25%**	**$66,020**
					City Project Mgmt. Admin. **5%**	**$13,204**
					Construction Management **25%**	**$66,020**
					Management Reserve **10%**	**$26,408**
					TOTAL PROJECT COST	**$581,000**

CIP 6 – Vintage Hills Swale Retrofit
20-Year Capital Improvement Plan (Priority 1)





RETROFIT TYPE
Existing facility retrofit
Swale soil amendment

LOCATION
Along 124th Avenue SE

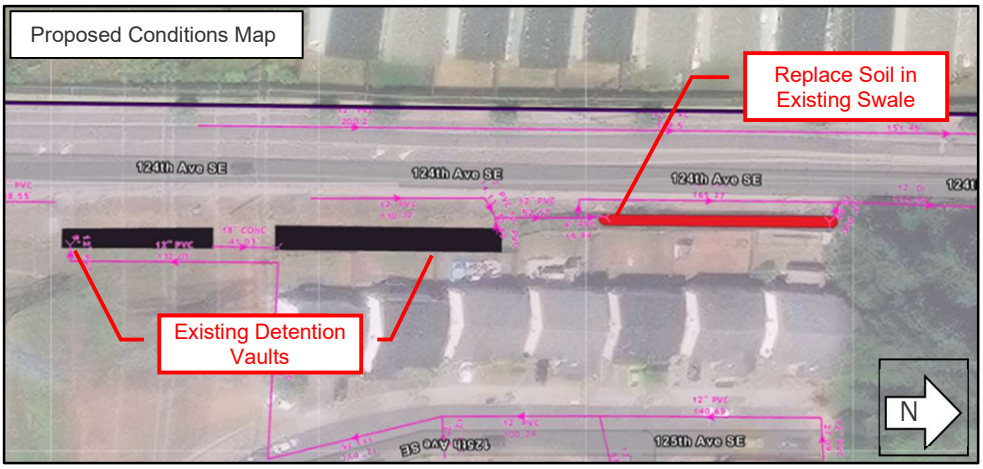
EXISTING USE
Bioswale

PROPOSED USE
Bioretention swale with enhanced treatment

DRAINAGE BASIN
Olson Creek

TRIBUTARY DRAINAGE AREA
5.0 acres total
1.1 acres impervious

TOTAL COST (2024 DOLLARS)
$264,000



Project Description

This project is proposing to amend the soil in the existing Vintage Hills swale. The soil will be replaced from conventional soil to bioretention soil to provide enhanced treatment for 5.0 acres. Rock check dams may be required throughout the length of the swale to ensure infiltration occurs to provide treatment. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Opportunities

- Upgrading vintage basic treatment to enhanced treatment.

Site Challenges

- Water quality only, no flow control (though flow control is provided by the detention vaults).

Opinion (Estimate) of Probable Cost

Project Name	CIP 6 - Vintage Hills Swale Retrofit
Location	Along 124th Avenue SE (Near 29501 125th Avenue SE, Auburn, WA 98082)

ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
		SITE PREP AND TESC				
1		MOBILIZATION (10%)	10%	% of lines 6-13		$10,458
2		CONTRACTOR PROVIDED SURVEY (3%)	3%	% of lines 6-13		$3,137
3		TESC (5%)	5%	% of lines 6-13		$5,229
4		DEWATERING (2%)	2%	% of lines 6-13		$2,092
5		PROJECT TEMPORARY TRAFFIC CONTROL (15%)	15%	% of lines 6-13		$15,687
					Lines 1 - 5 Subtotal	**$20,915**
		MATERIALS				
6		CHANNEL EXCAVATION INCL. HAUL	151	CY	$40	$6,012
7		EROSION CONTROL BLANKET	75	SY	$9	$687
8		18" BIORETENTION SOIL	750	SF	$120	$90,000
9		COMPOST BLANKET	75	SY	$8	$603
10		QUARRY SPALLS	6	TN	$70	$424
11		TRASH RACK	1	EA	$500	$500
12		SEEDING, FERTILIZING, AND MULCHING	75	SY	$58	$4,351
13		RECORD DRAWINGS	1	LS	$2,000	$2,000
					Lines 6 - 13 Subtotal	**$104,577**
					Subtotal Line-Item Costs	**$125,492**
					Design Contigency **50%**	**$62,746**
					Permitting **5%**	**$6,275**
					Design **15%**	**$18,824**
					City Project Mgmt. Admin. **5%**	**$6,275**
					Construction Management **25%**	**$31,373**
					Management Reserve **10%**	**$12,549**
					TOTAL PROJECT COST	**$264,000**

Parametrix

CIP 7 – 124th Avenue SE near SE 307th Place Stormwater Treatment Device

20-Year Capital Improvement Plan (Priority 2)





RETROFIT TYPE
Road retrofit
Manufactured treatment device

LOCATION
124th Avenue SE near SE 307th Place

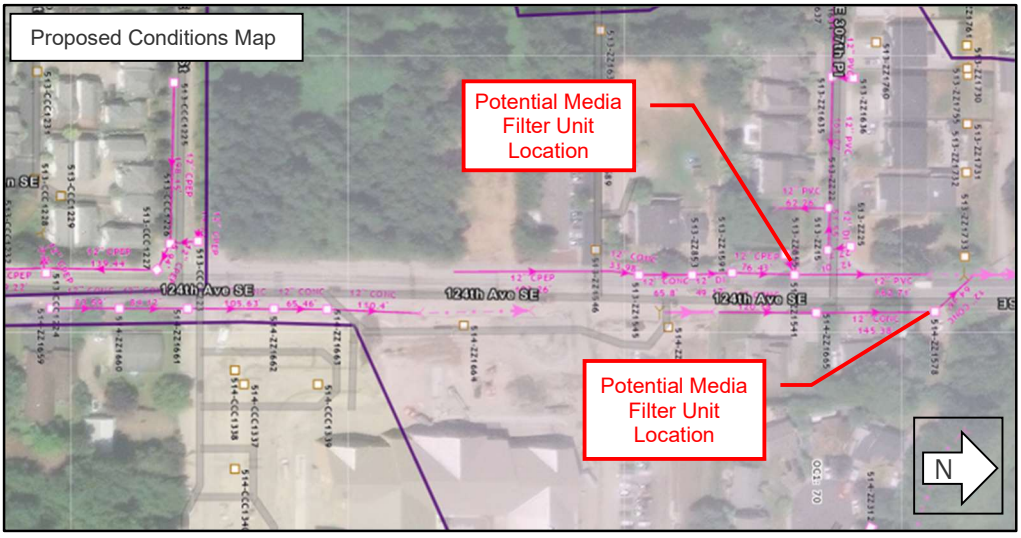
EXISTING USE
Untreated ROW

PROPOSED USE
ROW with enhanced runoff treatment

DRAINAGE BASIN
Olson Creek

TRIBUTARY DRAINAGE AREA
5.9 acres total
1.4 acres impervious

TOTAL COST (2024 DOLLARS)
$531,000



Project Description

This project will retrofit a section of 124th Avenue SE by replacing existing Type 1 catch basins with TAPE-approved manufactured treatment devices. The manufactured treatment devices will provide enhanced water quality treatment to 5.9 acres, including approximately 1,200 linear feet of roadway. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Opportunities

- Provides enhanced stormwater treatment for a high traffic roadway.

Site Challenges

- May be constrained by outlet height.
- Coordination with other utilities.
- Traffic control requirements.

Opinion (Estimate) of Probable Cost

Project Name	CIP 7 - 124th Avenue SE near SE 307th Place Stormwater Treatment Device
Location	124th Avenue SE near SE 307th Place

ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
		SITE PREP AND TESC				
1		MOBILIZATION (10%)	10%	% of lines 6-16		$17,847
2		CONTRACTOR PROVIDED SURVEY (3%)	3%	% of lines 6-16		$5,354
3		TESC (5%)	5%	% of lines 6-16		$8,924
4		DEWATERING (2%)	2%	% of lines 6-16		$3,569
5		PROJECT TEMPORARY TRAFFIC CONTROL (15%)	15%	% of lines 6-16		$26,771
					Lines 1 - 5 Subtotal	**$62,466**
		MATERIALS				
6		UTILITY RELOCATION (SMALL)	1	LS	$15,000	$15,000
7		PAVEMENT REMOVAL/RESTORATION	50	SY	$220	$10,902
8		REMOVE CEMENT CONCRETE CURB AND GUTTER	16	LF	$14	$219
9		ENHANCED MEDIA FILTER SYSTEM 6X8	2	EA	$60,000	$120,000
10		CONNECTION TO DRAINAGE STRUCTURE	4	EA	$3,415	$13,661
11		STRUCTURE EXCAVATION CLASS A INCL. HAUL	44	CY	$41.04	$1,824
12		SHORING OR EXTRA EXCAVATION CLASS B	1	LS	$1,000	$1,000
13		STRUCTURE EX AND SHORING LABOR (50% OF EACH)	50	% of lines 11-12		$1,412
14		CRUSHED SURFACING BASE COURSE	3	TN	$54	$176
15		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	100	LF	$120	$12,000
16		RECORD DRAWINGS	1	LS	$2,280	$2,280
					Lines 6 - 16 Subtotal	**$178,475**
					Subtotal Project Cost	**$240,941**
					Design Contigency **50%**	**$120,470**
					Permitting **5%**	**$12,047**
					Design **25%**	**$60,235**
					City Project Mgmt. Admin. **5%**	**$12,047**
					Construction Management **25%**	**$60,235**
					Management Reserve **10%**	**$24,094**
					TOTAL PROJECT COST	**$531,000**

Parametrix

CIP 8 – 124th Avenue SE near SE 302nd Place Stormwater Treatment Device

20-Year Capital Improvement Plan (Priority 2)





RETROFIT TYPE
Road retrofit
Manufactured treatment device

LOCATION
124th Avenue SE near SE 302nd Place

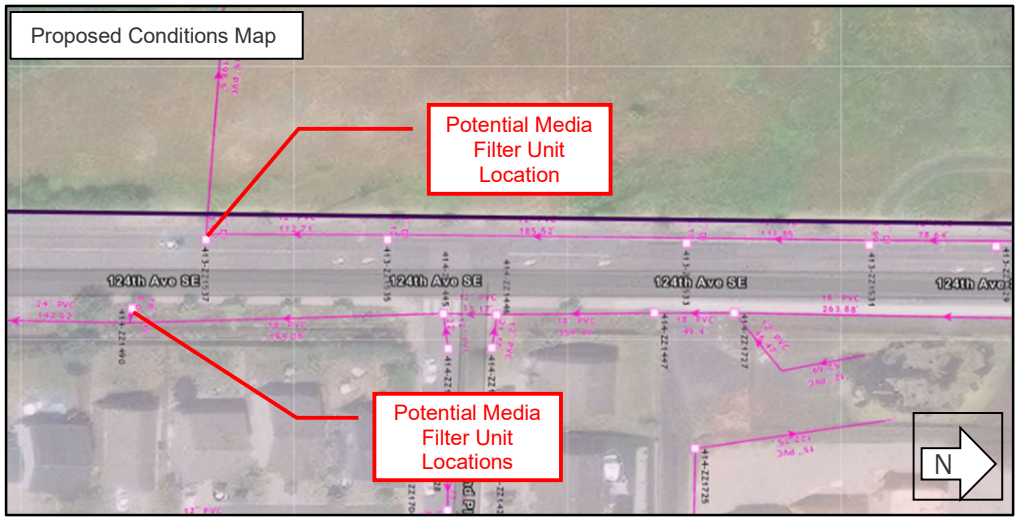
EXISTING USE
Untreated ROW

PROPOSED USE
ROW with enhanced runoff treatment

DRAINAGE BASIN
Olson Creek

TRIBUTARY DRAINAGE AREA
2.9 acres total
1.3 acres impervious

TOTAL COST (2024 DOLLARS)
$531,000



Project Description

This project will retrofit a section of 124th Avenue SE by replacing existing Type 1 catch basins with a TAPE-approved manufactured treatment devices. The manufactured treatment devices will provide enhanced water quality treatment to 2.9 acres, including approximately 1,600 linear feet of roadway. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Opportunities

- Provides enhanced stormwater treatment for a high traffic roadway.

Site Challenges

- May be constrained by outlet height.
- Coordination with other utilities.
- Traffic control requirements.

Opinion (Estimate) of Probable Cost

Project Name	CIP 8 - 124th Avenue SE near SE 302nd Place Stormwater Treatment Device
Location	124th Avenue SE near SE 302nd Place

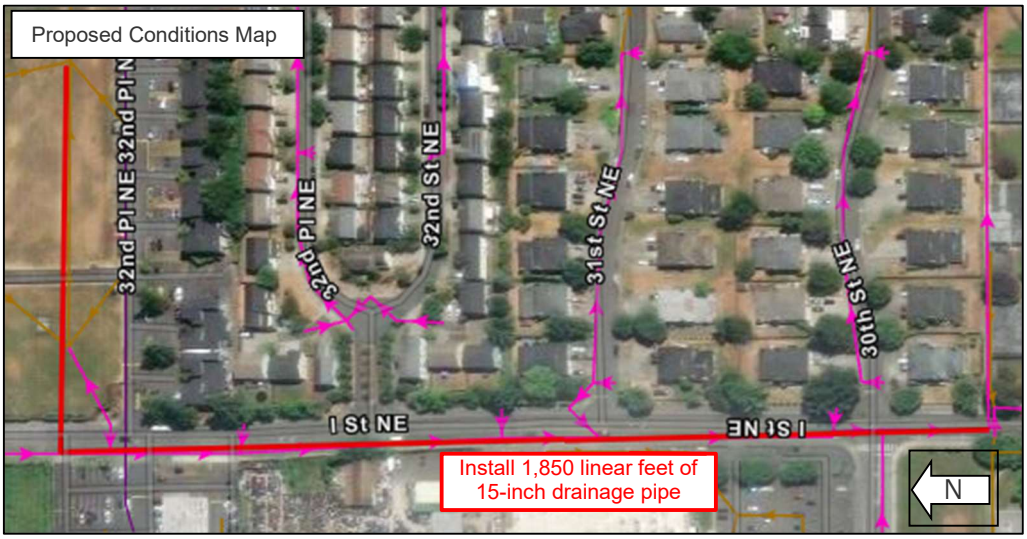
ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
		SITE PREP AND TESC				
1		MOBILIZATION (10%)	10%	% of lines 6-16		$17,847
2		CONTRACTOR PROVIDED SURVEY (3%)	3%	% of lines 6-16		$5,354
3		TESC (5%)	5%	% of lines 6-16		$8,924
4		DEWATERING (2%)	2%	% of lines 6-16		$3,569
5		PROJECT TEMPORARY TRAFFIC CONTROL (15%)	15%	% of lines 6-16		$26,771
					Lines 1 - 5 Subtotal	**$62,466**
		MATERIALS				
6		UTILITY RELOCATION (SMALL)	1	LS	$15,000	$15,000
7		PAVEMENT REMOVAL/RESTORATION	50	SY	$220	$10,902
8		REMOVE CEMENT CONCRETE CURB AND GUTTER	16	LF	$14	$219
9		ENHANCED MEDIA FILTER SYSTEM 6X8	2	EA	$60,000	$120,000
10		CONNECTION TO DRAINAGE STRUCTURE	4	EA	$3,415	$13,661
11		STRUCTURE EXCAVATION CLASS A INCL. HAUL	44	CY	$41.04	$1,824
12		SHORING OR EXTRA EXCAVATION CLASS B	1	LS	$1,000	$1,000
13		STRUCTURE EX AND SHORING LABOR (50% OF EACH)	50	% of lines 11-12		$1,412
14		CRUSHED SURFACING BASE COURSE	3	TN	$54	$176
15		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	100	LF	$120	$12,000
16		RECORD DRAWINGS	1	LS	$2,280	$2,280
					Lines 6 - 16 Subtotal	**$178,475**
					Subtotal Line-Item Costs	**$240,941**
					Design Contigency 50%	**$120,470**
					Permitting 5%	**$12,047**
					Design 25%	**$60,235**
					City Project Mgmt. Admin. 5%	**$12,047**
					Construction Management 25%	**$60,235**
					Management Reserve 10%	**$24,094**
					TOTAL PROJECT COST	**$531,000**

Parametrix

CIP 9 – 30th Street NE Area Flooding, Phase 2
20-Year Capital Improvement Plan (Priority 3)







RETROFIT TYPE
Road retrofit
Upgraded conveyance system

LOCATION
East of I Street NE between 32nd Street NE and 35th Street NE

EXISTING USE
Conveyance system

PROPOSED USE
New conveyance system and upgraded pipe

DRAINAGE BASIN
Mill Creek and Green River

TRIBUTARY DRAINAGE AREA
Unknown

TOTAL COST (2024 DOLLARS)
$1,186,000

NOTES
Cost, design, figures, and description completed by Brown & Caldwell in 2015. Cost and description updated by Parametrix per City comments

Project Description

The north-central area of Auburn has a history of surface flooding with street flooding occurring once every few years. The residential development east of I Street NE between 32nd Street NE and 35th Street NE discharges flows into a City-owned infiltration area. The infiltration area commonly experiences prolonged periods of standing water due to high groundwater from extended high flows in the Green River, which is adjacent to the infiltration area. The drainage system on I Street NE currently lacks infrastructure to collect and convey stormwater away from the infiltration area, as well as residential roadways and parking area. Ponding occurs within the parking areas of the developments and presents a nuisance and potential hazard to local residents.

This project is Phase 2 of a three-phased capital improvement project (Relieve 30th Street NE Area Flooding) from the 2015 Comprehensive Stormwater Drainage Plan. The goal of the 2015 CIP was to increase the capacity of the 30th Street NE system to reduce flooding along 30th Street NE and to provide capacity to connect other flooding drainage systems (C Street NE and I Street NE). The implementation of this CIP is occurring in phases, as funding, staff availability, and priorities allow. The first phase (30th Street NE Area Flooding, Phase 1) was scheduled for construction in 2015/2016. The next phase, referred to as CIP 9 in this Plan, is scheduled for the 2031–2044 timeframe.

This project would address the flooding adjacent to I Street NE. This project would locate a storm drain line to capture stormwater from the two residential developments currently discharging stormwater to the City's infiltration area. In addition, this project would construct a new storm drain within I Street NE southward to connect into the 42-inch-diameter storm drain (constructed as part of the 30th Street NE Area Flooding project, Phase I, from the 2015 Plan) near the intersection of I Street NE and 30th Street NE. The 42-inch-diameter line will have sufficient available capacity to convey the I Street NE flows.

Site Opportunities

- Public drainage infrastructure will be designed and maintained so that the annual chance of a flooding disruption that inundates the city roadways to an impassable level occurs no more than once every 25 years.
- Public drainage infrastructure will be designed and maintained so that the annual chance of occurrence of flooding (surface water from ROW runoff entering premises and damaging building structures) will occur no more than once every 50 years.

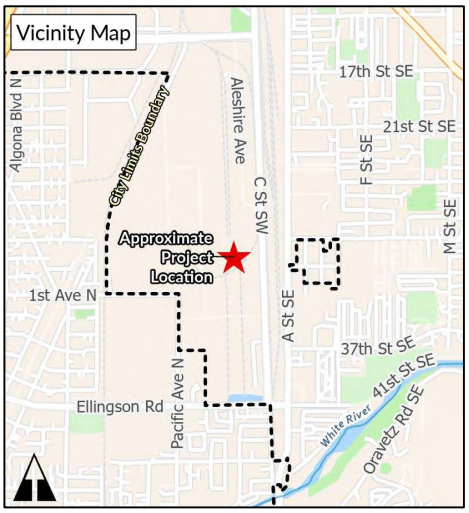
Opinion (Estimate) of Probable Cost

Project Name	CIP 9 - 30th Street NE Area Flooding, Phase 2
Location	30th Street NE and I Street NE

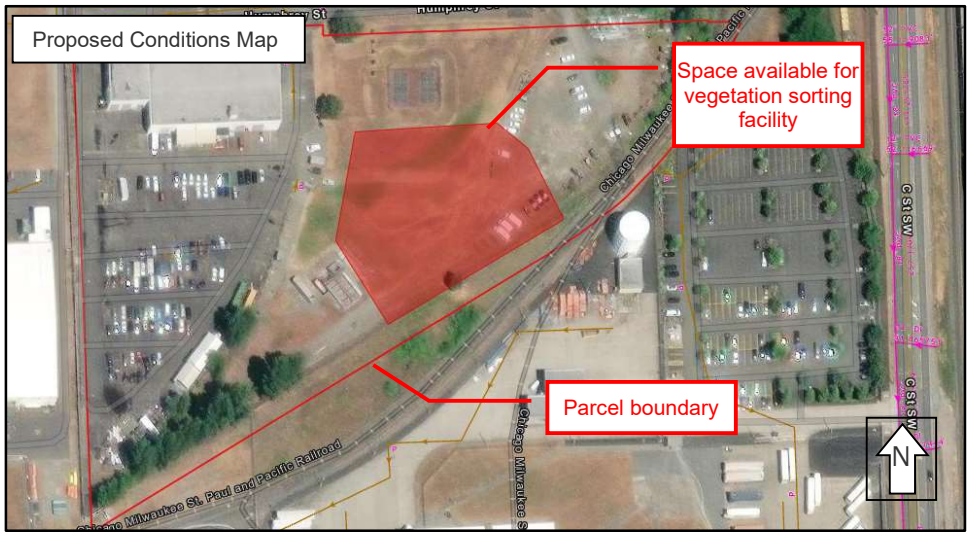
ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
		SITE PREP AND TESC				
1		CONTRACTOR OVERHEAD, PROFIT, AND MOBILIZATION	18%	% of lines 2-2		$115,380
					Lines 1 - 1 Subtotal	**$115,380**
		MATERIALS				
2		2015 PROJECT (4A) 1,850 LF OF 15-IN DRAINAGE PIPE	1	LS	$641,000	$641,000
					Lines 2 - 2 Subtotal	**$641,000**
					Subtotal Line-Item Costs	**$756,380**
					Construction Contingency 20%	**$151,276**
					Sales Tax (all above costs) 9%	**$79,874**
					Subtotal Construction Costs	**$987,530**
					Permitting, design, management, and administration 20%	**$197,506**
					TOTAL PROJECT COST	**$1,186,000**

Parametrix

CIP 10 – Vegetative Waste Sorting Facility
6-Year Capital Improvement Plan (Priority 3)







RETROFIT TYPE
New waste sorting facility

LOCATION
GSA site

EXISTING USE
Shared open space

PROPOSED USE
Waste sorting facility for plant/organic material pulled from conveyance and treatment systems and facilities

DRAINAGE BASIN
White River

TRIBUTARY DRAINAGE AREA
N/A

TOTAL COST (2024 DOLLARS)
$200,000

NOTES
Cost, design, figures, and description completed by Brown & Caldwell. Cost and description updated by Parametrix per City comments.

Project Description

The Storm Drainage Utility is responsible for the M&O of the storm drainage system. Pond and drainage ditch maintenance and rehabilitation involves removal of plant material and sediments, which are considered non-hazardous and are suitable for recycling. During fall and winter, debris from storm cleanups also yield materials suitable for recycling. The Storm Drainage Utility currently uses the City-owned Jacobson Tree Farm property for storing and drying of these materials prior to hauling off-site for recycling. The property is owned by the Parks Department and is scheduled to be repurposed, precluding its use for ongoing M&O activities.

This project addresses the need for a new site to sort, dry, and store materials removed from drainage ditches, swales, and ponds during maintenance and restoration activities necessary to maintain the storm drainage system. The project property is being sourced from existing land owned by the City. The cost to develop the property and purchase equipment are represented in the project cost.

Site Opportunities

- The City shall seek to maintain storm drainage infrastructure to ensure proper function of drainage facilities in accordance with Ecology requirements.

Site Challenges

- Coordination with other users of the site.

Opinion (Estimate) of Probable Cost

Project Name	CIP 10 - Vegetative Waste Sorting Facility
Location	GSA Site

ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
		SITE PREP AND TESC				
1		MOBILIZATION (10%)	10%	% of lines 5-5		$10,000
2		CONTRACTOR PROVIDED SURVEY (5%)	5%	% of lines 5-5		$5,000
3		TESC (5%)	5%	% of lines 5-5		$5,000
4		PROJECT TEMPORARY TRAFFIC CONTROL (5%)	5%	% of lines 5-5		$5,000
					Lines 1 - 4 Subtotal	**$25,000**
		MATERIALS				
5		2015 PROJECT (10) DEVELOP PROPERTY AND PURCHASE EQUIPMENT	1	LS	$100,000	$100,000
					Lines 5 - 5 Subtotal	**$100,000**
					Subtotal Line-Item Costs	**$125,000**
					Construction Cost Contigency **20%**	**$25,000**
					Permitting **5%**	**$6,250**
					Design **10%**	**$12,500**
					City Project Mgmt. Admin. **5%**	**$6,250**
					Construction Management **10%**	**$12,500**
					Management Reserve **10%**	**$12,500**
					TOTAL PROJECT COST	**$200,000**

Parametrix

CIP 11 – Christa Ministries Facility Retrofit

20-Year Capital Improvement Plan (Priority 3)





RETROFIT TYPE
Existing facility retrofit
New water quality pond

LOCATION
Christa Ministries property

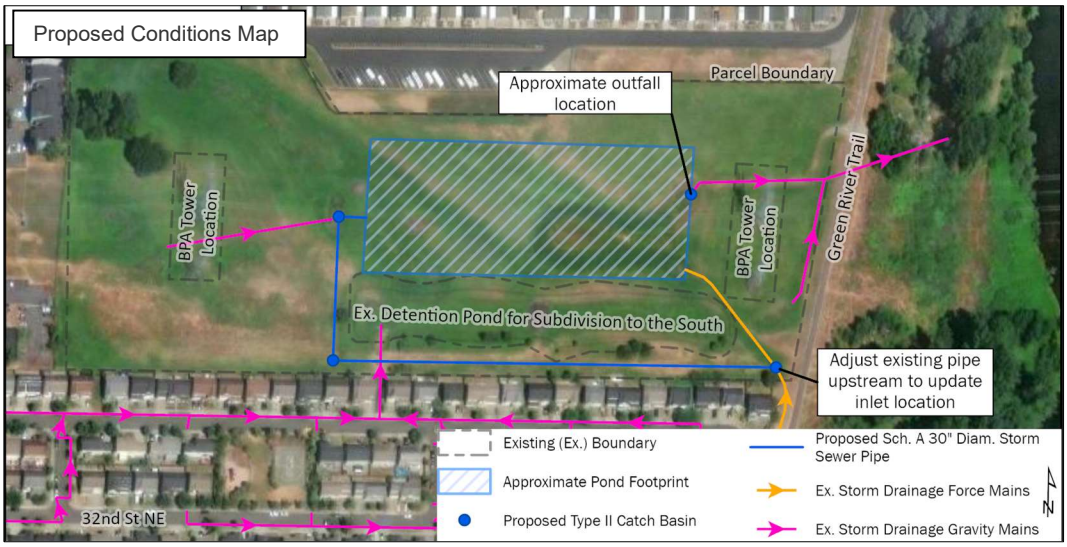
EXISTING USE
Bioswale

PROPOSED USE
Enhanced water quality treatment pond

DRAINAGE BASIN
Green River

TRIBUTARY DRAINAGE AREA
377 acres total
242 acres impervious

TOTAL COST (2024 DOLLARS)
$2,906,000



Project Description

This project proposes retrofitting an existing stormwater swale to an enhanced water qualtiy treatment pond. The pond would be sized based on current enhanced treatment standards for 377 acres of contributing area before discharging into the Green River. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Opportunities

- The location may be suited to provide educational signage due to surrounding residential areas and the Green River Trail to the east.
- Provides enhanced water quality treatment of stormwater from large contributing drainage area based on current standards.

Site Challenges

- Adjacent utilities will likely require coordination (sewer, water, gas, and communications) and may constrain placement locations of the treatment systems.
- Field verification of stormwater infrastructure will be necessary to ensure project feasibility.
- Verification of inlet and outlet pipe elevations will need to be verified to determine feasibility.
- Coordination with BPA easement will be needed.
- A condition assessment of the existing storm pipe at the proposed outfall will be required to evaluate whether repair or replacement will be necessary.
- A wetland impact mitigation analysis will be needed.

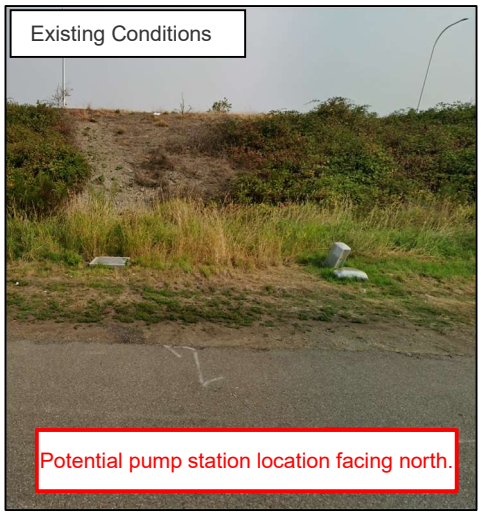
Opinion (Estimate) of Probable Cost

Project Name	CIP11 - Christa Ministries Facility Retrofit
Location	Christa Ministries Property (Southeast in 35th St NE & I St NE intersection)

ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
		SITE PREP AND TESC				
1		MOBILIZATION (10%)	10%	% of lines 1-4		$107,010
2		CONTRACTOR PROVIDED SURVEY (6%)	6%	% of lines 1-4		$64,206
3		TESC (5%)	5%	% of lines 1-4		$53,505
4		PROJECT TEMPORARY TRAFFIC CONTROL (3%)	3%	% of lines 1-4		$32,103
					Lines 1 - 4 Subtotal	**$256,825**
		MATERIALS				
5		CLEARING AND GRUBBING	4	ACRE	$45,471	$175,703
6		CHANNEL EXCAVATION INCL. HAUL	7,065	CY	$39	$275,535
7		COMMON BORROW INCL. HAUL	1,445	CY	$30	$43,350
8		EMBANKMENT COMPACTION	1,445	CY	$9	$13,005
9		SCHEDULE A STORM SEWER PIPE 30 IN. DIAM.	1,190	LF	$311	$370,090
10		CATCH BASIN TYPE 2 60 IN. DIAM.	3	EACH	$9,978	$29,934
11		CONNECTION TO DRAINAGE STRUCTURE	2	EACH	$3,535	$7,070
12		QUARRY SPALLS	18	TON	$68	$1,224
13		GRAVEL MAINTENANCE ROAD	3,028	SY	$32	$96,882
14		CATCH BASIN TYPE 2 72 IN. DIAM.	1	EACH	$11,877	$11,877
15		SEEDING, FERTILIZING, AND MULCHING (BY ACRE)	4	ACRE	$10,205	$39,433
16		RECORD DRAWINGS	1	LS	$6,000.00	$6,000
					Lines 5 - 16 Subtotal	**$1,070,103**
					Subtotal Line-Item Costs	**$1,326,927**
				Construction Cost Contingency	**30%**	**$398,078**
				Permitting	**9%**	**$119,423**
				Design (Including Contingency)	**40%**	**$530,771**
				City Project Mgmt. Admin.	**10%**	**$132,693**
				Construction Management	**20%**	**$265,385**
				Management Reserve	**10%**	**$132,693**
					TOTAL PROJECT COST	**$2,906,000**

CIP 12 – West Main Street Pump Station Upgrade
6-Year Capital Improvement Plan (Priority 1)





RETROFIT TYPE
Existing facility retrofit
Pump station upgrade

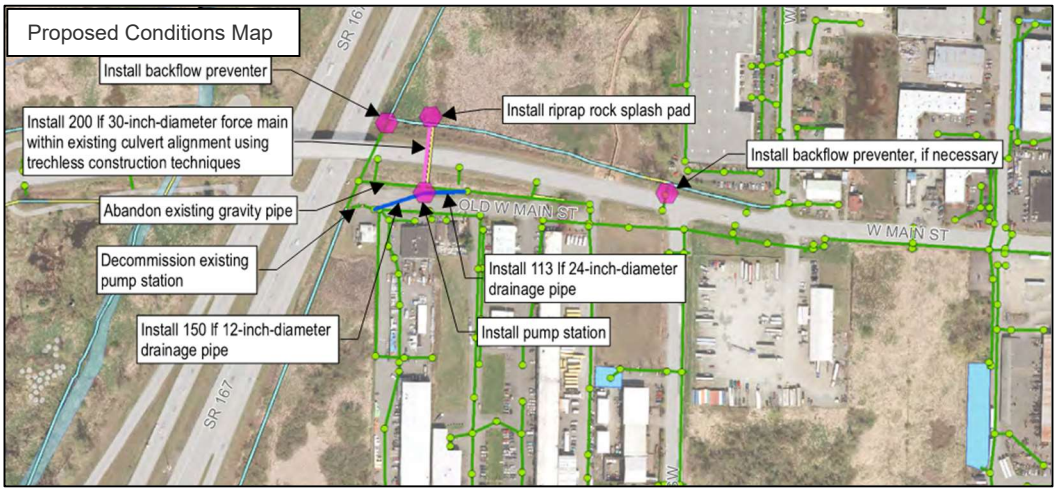
LOCATION
South of West Main Street, east of the SR 167 overpass

EXISTING USE
Pump station

PROPOSED USE
Upgraded pump station

DRAINAGE BASIN
Mill Creek

TRIBUTARY DRAINAGE AREA
N/A



TOTAL COST (2024 DOLLARS)
$3,929,000

NOTES
Cost, design, figures, and description completed by Brown & Caldwell. Cost and description updated by Parametrix per City comments.

Site Opportunities

This project consists of building a new pump station sized to convey the peak 25-year flow rate with multiple pumps to meet the pump redundancy LOS. The new pump station would convey all flows from the gravity pipe on the north and south sides of Old West Main Street. The pump station and its associated area pipes will be reassessed for overall function and purpose. A new design for the pump station will be created that will allow for adequate pumping capacity and a new discharge location that will alleviate backflow flooding from Mill Creek and its drainage ditches.

Site Opportunities

- Meet pump redundancy LOS goal.
- Address history of local flooding.

Site Challenges

- May require post-construction monitoring to determine whether an additional backflow preventer is warranted.
- Discharges to WSDOT ditch may require additional coordination with WSDOT.

Opinion (Estimate) of Probable Cost

Project Name	CIP 12 -West Main Street Pump Station Upgrade
Location	South of West Main Street east of the SR 167 overpass

ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
		SITE PREP AND TESC				
1		WETLAND PERMITTING AND MITIGATION	20%	% of construction subtotal		$302,000
2		CONTRACTOR OVERHEAD, PROFIT, AND MOBILIZATION	18%	% of construction subtotal		$271,800
					Lines 1 - 2 Subtotal	**$573,800**
		MATERIALS				
3		2015 PROJECT (1) STORMWATER PUMP STATION WITH SCADA/TELEMETRY	1	LS	$999,000	$999,000
4		2015 PROJECT (1) GRAVITY PIPING: 150 FT OF 12-INCH-DIAMETER PIPE AND 113 FT OF 24-INCH-DIAMETER PIPE	1	LS	$114,000	$114,000
5		2015 PROJECT (1) FORCE MAIN: 200 FT OF 30-INCH-DIAMETER FORCE MAIN, ABANDON CULVERT, RIPRAP ROCK SPLASH PAD AT CULVERT OUTFALL	1	LS	$343,000	$343,000
6		2015 PROJECT (1) ANCILLARY IMPROVEMENTS: DECOMMISION EXISTING STATION, INSTALL BACKFLOW PREVENTER ON WSDOT CULVERT	1	LS	$54,000	$54,000
					Lines 3 - 6 Subtotal	**$1,510,000**
					Subtotal Line-Item Costs	**$2,083,800**
					Construction Contingency 30%	**$625,140**
					Sales Tax (all above costs) 9%	**$238,387**
					Subtotal Construction Costs	**$2,947,327**
					Permitting, Design, Management, Administration, Contingency 33.3%	**$981,460**
					TOTAL PROJECT COST	**$3,929,000**

7.3 Programmatic Drainage Projects

To ensure an adequate level of utility funding in the future, the City must consider longer-range programmatic efforts to maintain and/or improve storm drainage service. Table 7-1 lists programmatic projects that should be included in the Storm Drainage Utility budget. These projects are not linked to any specific problem or location, but are included for budgetary purposes. By itemizing these activities, the Storm Drainage Utility can track actual costs to compare with budgeted costs and specifically track how these expenditures address the LOS goals listed in Chapter 3. The items listed in the table below are distributed between the 6- and 20-year CIPs in Chapter 8.

Table 7-1. Summary Programmatic Drainage Projects

Project Number	Program Name	Description	Priority	Total Project Cost (2024 dollars)
13	Street Utility Improvements	The Storm Drainage Utility will seek opportunities to incorporate drainage improvements into transportation and pavement projects on City roads. A significant portion of storm drainage costs related to projects make improvements to the street network are incurred by the City's Transportation Program.	2	$5,200,000
14	Frame & Grate Replacement	As manholes and catch basins age and their condition deteriorates, frame and grates can become loose and/or misoriented or, due to age, are no longer meeting standards. This annual project will replace approximately 50 storm manhole and catch basin frame and grates to maintain access to the storm system and decrease the likelihood of the manholes becoming road hazards. In some years, this replacement will be a stand-alone project, and in some years, many of these replacements will be in conjunction with other City projects.	2	$1,700,000
15	Storm Drainage Infrastructure Repair & Replacement Program	This program addresses the need to repair or replace storm drainage infrastructure, such as individual pipes, pump station repair and maintenance, and pond improvements. The long-term priorities for R&R should be developed by adhering to the City's system goals regarding the maintenance of a criticality database and the prioritized assessment of critical infrastructure.	1	$14,400,000
16	Storm Pipeline Extension Program	Program to extend stormwater infrastructure into areas lacking infrastructure or where known stormwater issues occur.	3	$7,450,000

Note: All costs are in 2024 dollars.

8. Implementation Plan

This chapter presents the implementation plan, which brings together information from the preceding chapters of this 2024 Comprehensive Storm Drainage Plan to form a work plan of future activities for the Storm Drainage Utility. The information in this chapter serves as a road map to the Storm Drainage Utility staff. This road map outlines the critical elements of plan implementation (e.g., capital improvement plan implementation, NPDES MS4 permit compliance, future staffing, asset management, drainage ditch maintenance program, climate change, etc.) and links them into a schedule of utility activities.

The implementation plan is divided into five main sections:

- Section 8.1 presents the capital improvement plan for both 6-year and 20-year time frames.
- Section 8.2 contains a summary of activities for NPDES MS4 permit compliance.
- Section 8.3 presents recommendations for future staffing and M&O activities.
- Section 8.4 summarizes the recommendations for continuing the implementation of best practices for asset management.
- Section 8.5 lists recommendations for additional activities that help the Storm Drainage Utility achieve the system goals.

The foldout chart (Figure 8-3) at the conclusion of this chapter shows the proposed implementation timeline. Appendix F provides the SEPA determination for the implementation plan.

8.1 6-Year and 20-Year Capital Improvement Program

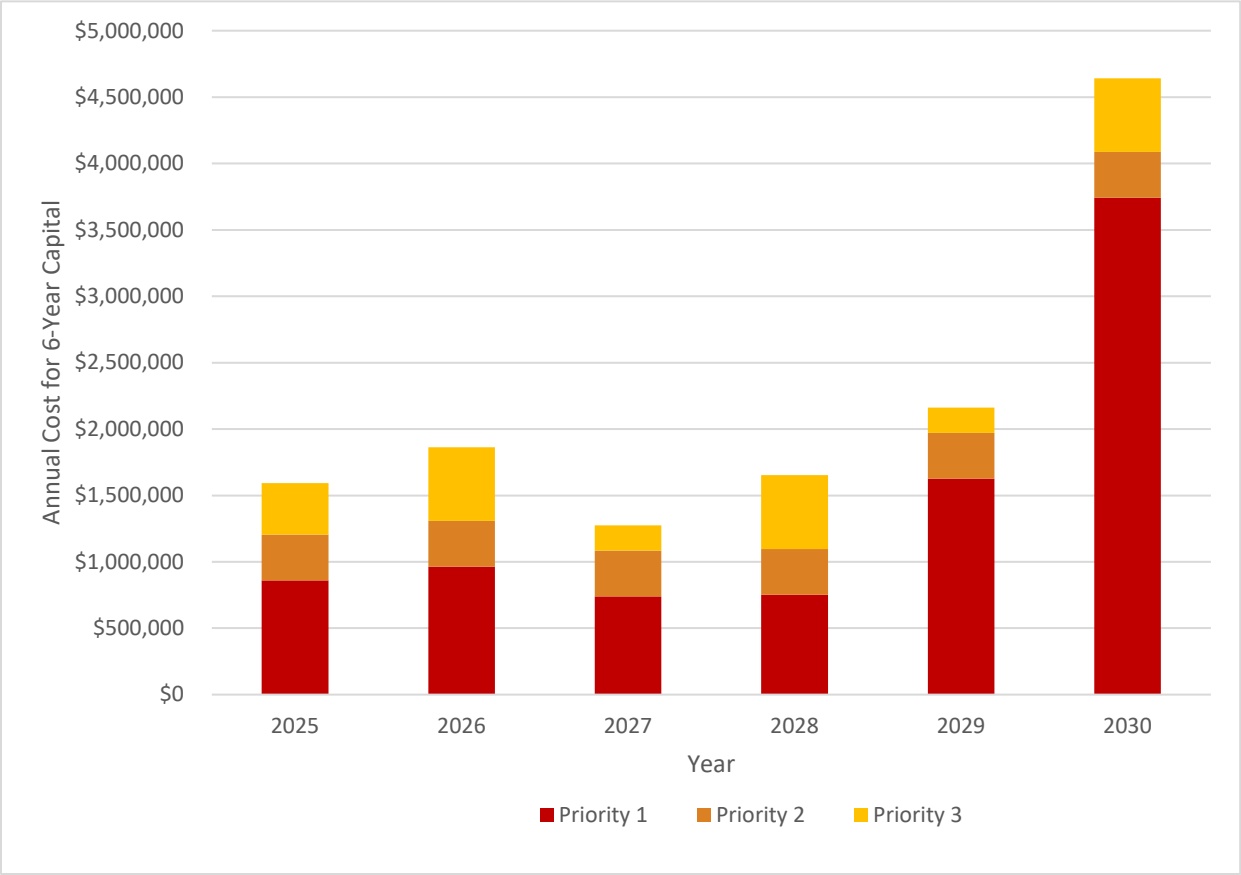
The 6-year CIP contains near-term capital improvement projects focused on mitigating critical existing drainage problems that have been observed and are well understood by the City's staff, addressing an ongoing waste disposal issue and ensuring compliance with NPDES MS4 permit requirements. These projects are described in detail in Chapter 7. In addition to site-specific projects, the 6-year CIP contains ongoing programmatic efforts, such as the Storm Drainage Utility's participation in the Street Utility Improvement program, which is a program designed to complete storm repairs and replacements in conjunction with transportation projects. Table 8-1 lists the short-term capital improvement projects and programs described in Chapter 7 and lays out annual expenditures for the 6-year capital improvement time frame. Project timing is based on project priorities weighed with likely budgetary constraints such that costs are distributed somewhat evenly from year to year (see Table 8-1 and Figure 8-1).

Table 8-1. Annual Cost Summary for 6-Year Capital Improvement Plan

Project Number	Project Name	Priority	Repair/ Replacement	Upgrade/ Expansion	2025	2026	2027	2028	2029	2030	6-Year Cost
1	SE 287th Street Stormwater Device	1	0%	100%	$139,000	$243,000	$0	$0	$0	$0	$382,000
3	SE 284th Street West Bioswale Additions	1	0%	100%	$0	$0	$20,000	$32,000	$0	$0	$52,000
10	Vegetative Waste Sorting Facility	3	90%	10%	$200,000	$0	$0	$0	$0	$0	$200,000
12	West Main Street Pump Station Upgrade	1	25%	75%	$0	$0	$0	$0	$907,000	$3,022,000	$3,929,000
13	Street Utility Improvements	2	100%	0%	$260,000	$260,000	$260,000	$260,000	$260,000	$260,000	$1,560,000
14	Frame & Grate Replacement	2	100%	0%	$85,000	$85,000	$85,000	$85,000	$85,000	$85,000	$510,000
15	Storm Drainage Infrastructure Repair & Replacement Program	1	100%	0%	$720,000	$720,000	$720,000[a]	$720,000[a]	$720,000	$720,000	$4,320,000
16	Storm Pipeline Extension Program	3	0%	100%	$190,000	$555,000	$190,000	$555,000	$190,000	$555,000	$2,235,000
	Total 6-year CIP cost for priority 1 projects/programs:				$859,000	$963,000	$740,000	$752,000	$1,627,000	$3,742,000	$8,683,000
	Total 6-year CIP cost for priority 2 projects/programs:				$345,000	$345,000	$345,000	$345,000	$345,000	$345,000	$2,070,000
	Total 6-year CIP cost for priority 3 projects/programs:				$390,000	$555,000	$190,000	$555,000	$190,000	$555,000	$2,435,000
	Total 6-year cost:				$1,594,000	$1,863,000	$1,275,000	$1,652,000	$2,162,000	$4,642,000	$13,188,000

Note: All costs are in 2024 dollars.

[a] Funding includes budget for implementing CIP 6 following updated requirements from the 2024 NPDES MS4 permit.



Note: All costs are in 2024 dollars.

Figure 8-1. Annual Costs for 6-Year Capital Improvement Plan

After high-priority drainage problems are addressed, the City will be able to focus on the remaining projects described in Chapter 7. In addition, the City will continue to emphasize the management of existing storm drainage assets to ensure that LOS goals are continuously met. Table 8-2 summarizes the program expenditures and forecasts total capital improvement costs for the years 2031 to 2044.

In addition to the identified projects and programs, the Storm Drainage Utility will be involved in several ongoing system updates and capital facilities plan (CFP) projects that will require the utility's time and expenditures. Additional detail regarding these items are provided in Section 8.5.

Table 8-2. Capital Improvement Cost Summary for 2031–2044

Project Number	Project Name	Priority	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Cost for 2031–2044
2	SE 284th Street & 109th Avenue Bioswale Additions	3													$55,000	$88,000	$143,000
4	SE 284th Street East Bioswale Additions	3													$11,000	$17,000	$28,000
5	124th Avenue SE near SE 293rd Street Stormwater Treatment Device	2									$225,000	$356,000					$581,000
6	Vintage Hills Swale Retrofit	1	$95,000[a]	$169,000[a]													$264,000
7	124th Avenue SE near SE 307th Place Stormwater Treatment Device	2					$205,000	$326,000									$531,000
8	124th Avenue SE near SE 302nd Place Stormwater Treatment Device	2							$205,000	$326,000							$531,000
9	30th Street NE Area Flooding, Phase 2	3											$198,000	$988,000			$1,186,000
11	Christa Ministries Facility Retrofit	1			$774,000	$2,132,000											$2,906,000
13	Street Utility Improvements	2	$260,000	$260,000	$260,000	$260,000	$260,000	$260,000	$260,000	$260,000	$260,000	$260,000	$260,000	$260,000	$260,000	$260,000	$3,640,000
14	Frame & Grate Replacement	2	$85,000	$85,000	$85,000	$85,000	$85,000	$85,000	$85,000	$85,000	$85,000	$85,000	$85,000	$85,000	$85,000	$85,000	$1,190,000
15	Storm Drainage Infrastructure Repair & Replacement Program	1	$720,000[a]	$720,000[a]	$720,000	$720,000	$720,000	$720,000	$720,000	$720,000	$720,000	$720,000	$720,000	$720,000	$720,000	$720,000	$10,080,000
16	Storm Pipeline Extension Program	3	$190,000	$555,000	$190,000	$555,000	$190,000	$555,000	$190,000	$555,000	$190,000	$555,000	$190,000	$555,000	$190,000	$555,000	$5,215,000
Total 2031–2044 cost for priority 1 projects/programs:			$815,000	$889,000	$1,494,000	$2,852,000	$720,000	$720,000	$720,000	$720,000	$720,000	$720,000	$720,000	$720,000	$720,000	$720,000	$13,250,000
Total 2031–2044 cost for priority 2 projects/programs:			$345,000	$345,000	$345,000	$345,000	$550,000	$671,000	$550,000	$671,000	$570,000	$701,000	$345,000	$345,000	$345,000	$345,000	$6,473,000
Total 2031–2044 cost for priority 3 projects/programs:			$190,000	$555,000	$190,000	$555,000	$190,000	$555,000	$190,000	$555,000	$190,000	$555,000	$388,000	$1,543,000	$256,000	$660,000	$6,572,000
Total 2031–2044 cost for projects/programs:			$1,350,000	$1,789,000	$2,029,000	$3,752,000	$1,460,000	$1,946,000	$1,460,000	$1,946,000	$1,480,000	$1,976,000	$1,453,000	$2,608,000	$1,321,000	$1,725,000	$26,295,000

Note: All costs are in 2024 dollars.

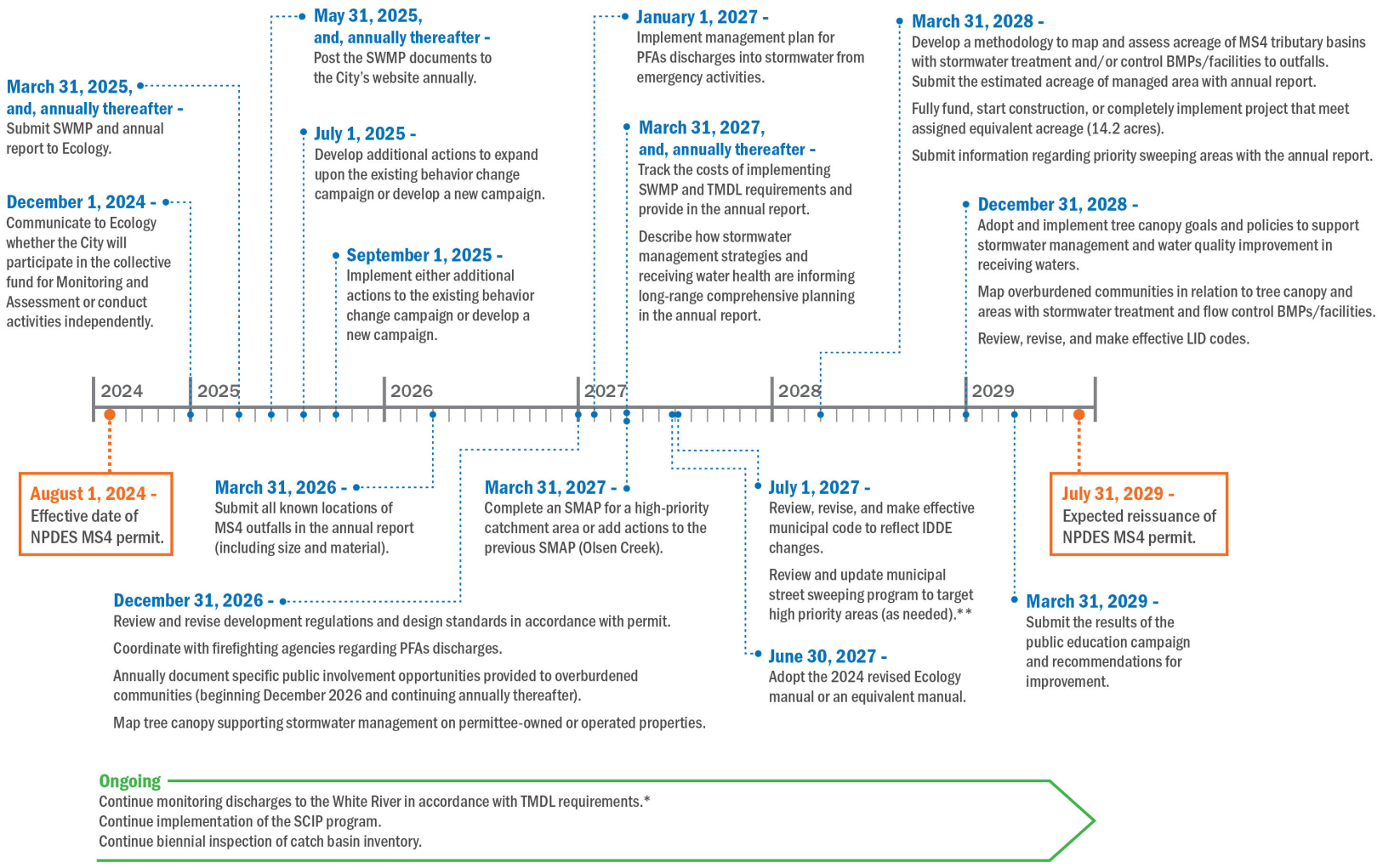
[a] CIP 6 will be funded earlier (2027–2028) to comply with requirements from the 2024 NPDES MS4 permit. Projected cost to implement CIP 6 in 2027 and 2028 will be added back to the budget for the Storm Drainage Infrastructure Repair & Replacement Program in 2031 and 2032.

8.2 Programmatic Measures for NPDES Compliance

The City of Auburn is covered by the Western Washington Phase II Municipal Stormwater permit. The permit regulates stormwater discharges from the City's MS4 (see Section 2.3.2). The current version of the NPDES MS4 permit was issued in August 2024 and will remain in effect through July 2029, when a new version is due to be issued. A regulatory-driven improvements investigation was performed on behalf of this Plan and was discussed in Chapter 5.3. The recommended actions on behalf of this investigation have been summarized below.

- Update local development regulations and drainage standards in accordance with updated NPDES MS4 permit requirements.
- Review and revise municipal code to reflect IDDE changes, specifically concerning routine washdowns of structures likely to have PCB-containing materials.
- Carry out permit-required activities related to TMDLs (identified in Chapter 4.4.1).
- Develop and implement protocols with firefighting agencies regarding PFAS discharges into stormwater.
- Develop and implement tree canopy goals to support stormwater management and improve receiving water quality.
- Prepare an SMAP for a new high-priority catchment area or enhance the existing one for Olson Creek.
- Ensure the existing street sweeping plan covers the permit requirements.
- Reflect on the ongoing public outreach campaign and consider adding new actions or developing a new campaign.
- Map piped MS4 outfalls with flow control or stormwater treatment upstream to determine the amount of treated/untreated area within the MS4.
- Continue implementing the SCIP.

These actions have been further detailed and organized on a timeline in Figure 8-3. Additionally, the compliance-specific schedule for key requirements under the current NPDES MS4 permit is shown in Figure 8-2.



Note

*Important dates for other TMDL requirements (mandated by the NPDES MS4 permit) are shown in Figure 8-3.
**Only one sweeping event is required in 2027. Three sweeping events are required each year thereafter, with at least one event occurring between July and September.

Abbreviation Key

ACC: *Auburn City Code*
IDDE: *Illicit Discharge Detection and Elimination*
BMP: *Best Management Practice*
NPDES: *National Pollutant Discharge Elimination System*
SWMP: *Stormwater Management Program*
MS4: *Municipal Separate Storm Sewer System*
TMDL: *Total Maximum Daily Load*
PFAS: *Per- and Polyfluoroalkyl Substance*
SMAP: *Stormwater Management Action Plan*
LID: *Low Impact Development*
SCIP: *Source Control Improvement Program*

Figure 8-2. NPDES Compliance Schedule

8.3 Future Staffing and Equipment Needs

During this planning effort, current Engineering and M&O staffing were considered in light of future activities that will need to be performed to maintain compliance with the NPDES MS4 permit. M&O staffing and equipment were also reviewed, taking into account existing maintenance goals and future, additional M&O responsibilities. The following sections summarize the additional staffing, staffing responsibilities, and equipment needs for the Storm Drainage Utility.

8.3.1 Engineering Services

As part of this Plan, the City evaluated engineering staffing responsibilities required to address the revised NPDES MS4 permit and other storm drainage system deficiencies. The recommended actions in Figure 8-3 are expected to be managed by engineering staff.

8.3.2 Maintenance and Operation Services

The evaluation of M&O staffing for managing, operating, and maintaining the storm drainage system in Chapter 6 revealed that the Storm Drainage Utility is adequately staffed to meet current proactive City goals. However, additional staff and equipment may be necessary to fulfill NPDES MS4 permit requirements and anticipated future work (as outlined in Section 6.6.2). Although no immediate staffing additions are planned, ongoing monitoring of staffing levels will assess the need.

Support from M&O staff will be needed in the following actions (identified in Chapter 6 and summarized below):

- Asset management recommendations (Section 8.4):
  - → Prioritizing work using risk-based scoring methods.
  - → Documenting condition assessments and work orders in Cartegraph.
- Street Sweeping Plan (NPDES MS4 permit):
  - → Coordinating with the Street Division (as needed) to implement the required street sweeping plan.
- Ditch Maintenance Program (Section 8.5):
  - → Carrying out the recommended needs from the ditch maintenance program.

Additionally, based on discussions with City staff and analysis of M&O activities, the Storm Drainage Utility will consider obtaining CCTV inspection equipment for pipe inspection within five years.

8.4 Continue Implementation of Best Practices for Asset Management

As an integral part of this comprehensive plan, the City conducted a thorough review of its existing asset inventory and management practices, as discussed in Chapter 5.2. The recommended actions have been summarized below.

- System inventory:
  - → Continuously update the inventory with additional data collected during maintenance activities (e.g., condition assessment and frequency of maintenance).

- → Train staff on asset inventory needs, capability, data collection, data quality objectives, and maintenance processes.
- → Develop a process for reviewing and updating the asset inventory when changes and inspections occur (see Section 5.2.3).
- → Implement the prioritized inspection and asset information update process to address data gaps and provide observation-based condition assessments.

- Risk-based scoring in Cartegraph:
  - → Integrate scoring methods into Cartegraph.
  - → Populate critical feature attributes (used in risk calculations).
  - → Add scoring fields to calculate likelihood of failure and criticality of failure scores for each pipe in Cartegraph.
- Risk-based scoring improvements:
  - → Expand scoring methods to include asset types beyond collection system piping.
  - → Implement these improvements into Cartegraph and inspection prioritization techniques (see Appendix C for recommended attributes for other stormwater assets).
- Maintenance and R&R prioritization:
  - → Prioritize maintenance activities for assets with the highest risk.
  - → Assess the inspection process every 5 years to evaluate efficiency and identify areas for improvement.
  - → Consider reconducting pipe depreciation analysis periodically to assess the impact of prioritization practices.

8.5 Recommendations for Additional Activities

The following sections summarize recommendations for additional activities discussed during this Plan for the Storm Drainage Utility. Section 8.5 is divided into the following three sub-sections:

- Section 8.5.1 summarizes recommendations discussed in Section 5.4.2.
- Section 8.5.2 summarizes recommendations discussed in Section 6.6.2.1.
- Section 8.5.3 presents the ongoing system updates carried out by the Storm Drainage Utility and the CFP projects that will require coordination from the Utility.

8.5.1 Climate Change

As discussed in Chapter 5.4, climate change will need to be considered in developing and implementing stormwater design guidelines for future scenarios. The actions recommended on behalf of climate change are summarized below.

- Review and revise the hydraulic performance metrics related to freeboard, headwater depth, and surcharging. Evaluate the financial implications associated with enforcing strict hydraulic performance standards.
- Prepare a CDR process to evaluate the consequences of storm events exceeding the design parameters. Establish clear policies regarding safety, property protection, service continuity, and mitigation of nuisance flooding to make systems more resilient to infrequent but

probable flooding. Ensure that the level of protection aligns with the associated costs and risk factors.

- Prioritize effective hydraulic performance and resilience measures for critical facilities during severe storm events that go beyond the intended design limits.
- Perform a vulnerability analysis of stormwater infrastructure along critical roadways to identify any areas where the effects of climate change may be intolerable. Prioritize these areas for capital improvement projects to minimize the adverse effects of flooding.

8.5.2 Ditch Maintenance Program

A drainage ditch maintenance program was developed as a part of this Plan. See Chapter 6.6.2.1 for more details. The previously discussed recommendations have been summarized below.

- Develop protocols for finding, adding, mapping, and classifying ditches within the system.
- Consider the steps required when adding new ditches to the system.
- Use the results of regular ditch inspections to identify system failures.
- Implement a program that focuses on retrofitting ditches with water quality enhancements.

8.5.3 Ongoing System Updates and Capital Facilities Plan Projects

The City will be involved in several ongoing system updates throughout the period of 2031–2044. These updates and their projected costs and timelines have been listed in Table 8-3 below.

Table 8-3. Ongoing System Updates

Name	Description	2031–2044 Cost
Pump Station Level of Service Review	Program to review all pump stations for level of service. Specifically focus on A Street SE and Auburn Way S as an existing drainage issue has been identified there (see Section 4.5).	$400,000
Pump Station Update	Program to update the pump stations according to the results of the level of service review.	$2,000,000
Underground Injection Wells Retrofit Program	Retrofit program to map underground injection wells in the City with water quality treatment.	$975,000
	Total 2031–2044 cost:	$3,375,000

Note: All costs are in 2024 dollars.

In addition, there are several CFP projects that will require coordination from the Storm Drainage Utility from 2024–2026. These projects are listed in Table 8-4 below.

Table 8-4. Capital Facilities Plan Project Schedule 2024–2026

Name	2024 Cost	2025 Cost	2026 Cost	Cost for 2024–2026
R Street SE Widening - 22nd Street SE to 33rd Street SE		$303,850	$938,897	$1,242,747
Regional Growth Center Improvements	$100,000			$100,000
R Street SE Preservation	$320,000			$320,000
12th Street SE Water Main Improvements	$16,000			$16,000
Arterial Preservation	$215,000			$215,000
Jornada Park Access Improvements	$100,000			$100,000
C Street SW Preservation (W Main to GSA signal)	$50,000			$50,000
M Street NE Widening		$824,000		$824,000
Total project cost for 2024–2026:	$801,000	$1,127,850	$938,897	$2,867,747

Note: Costs shown in this table have been escalated as described in Section 9.

8.6 Implementation Plan

The recommended actions within this Plan have been organized in a timeline, as depicted in Figure 8-3. This timeline serves as a guide for implementing the actions in a structured manner.

Implementation Plan Activities Timeline

Chapter	Action	2024 Q1-Q4	2025 Q1	2025 Q2	2025 Q3	2025 Q4	2026 Q1	2026 Q2	2026 Q3	2026 Q4	2027 Q1	2027 Q2	2027 Q3	2027 Q4	2028 Q1	2028 Q2	2028 Q3	2028 Q4	2029 Q1	2029 Q2	2029 Q3	2029 Q4	2030 Q1	2030 Q2	2030 Q3	2030 Q4	2031-2044
CIP																											
7	1. SE 287th St Stormwater Device																										
7	2. SE 284th St & 109th Ave Bioswale Additions																										
7	3. SE 284th St West Bioswale Additions																										
7	4. SE 284th St East Bioswale Additions																										
7	5. 124th Ave SE near 293rd St Stormwater Treatment Device																										
7	6. Vintage Hills Swale Retrofit																										
7	7. 124th Ave SE near 307th Pl Stormwater Treatment Device																										
7	8. 124th Ave SE near 302nd Pl Stormwater Treatment Device																										
7	9. 30th Street NE Area Flooding, Phase 2																										
7	10. Vegetative Waste Sorting Facility																										
7	11. Christa Ministries Facility Retrofit																										
7	12. West Main Street Pump Station Upgrade																										
7	Street Utility Improvements																										
7	Frame & Grate Replacement																										
7	Storm Drainage Infrastructure Repair & Replacement Program																										
System Goals and Policies																											
2	Review and update inventory of existing capital facilities.																										
2	Forecast capital facility needs for planning period. Consider reducing LOS or																										
2	Identify the proposed locations and capacity of expanded/new facilities.																										
2	Update the 6-year plan biennially.																										
3	Routinely assess performance of pumped systems.																										
3	Consider using future rainfall intensity data for designing stormwater systems.																										
4	Address the existing drainage problems through capital or otherwise.																										
NPDES MS4 permit Compliance																											
2	Review development regulations from new permit to ensure consistency with																										
2	Adopt the revised manual as required by NPDES MS4 permit.																										
	Review and revise municipal code to reflect IDDE changes.																										
2	Submit a SWMP plan to Ecology every year.																										
2	Submit an annual report to Ecology by March 31 every year.																										
2	Track the costs of implementing SWMP and TMDL requirements and provide in																										
2	By March 31, 2027, describe how stormwater management strategies and receiving water health are informing long-range comprehensive planning in the annual report.																										
2	Monitor discharges to the White River, in association with the Puyallup River																										
2	Routinely update and review asset inventory for accuracy.																										
4	Update development regulations and design standards in accordance with NPDES																										
4	Map all known piped MS4 outfalls to the Lower White River.																										
4	Screen all known piped MS4 outfalls to the Lower White River for illicit discharges.																										
4	Require phosphorus treatment BMPs for all new and redevelopment projects in the Lower White River implementation area.																										

Legend

Completed

Recommended Start

Midway Point (Anticipated Duration)

Deadline

Repeated Action

Ongoing Action

Figure 8-3.
Implementation Plan Activities Timeline
(1 of 3)

Implementation Plan Activities Timeline

Chapter	Action	2024 Q1-Q4	2025 Q1	2025 Q2	2025 Q3	2025 Q4	2026 Q1	2026 Q2	2026 Q3	2026 Q4	2027 Q1	2027 Q2	2027 Q3	2027 Q4	2028 Q1	2028 Q2	2028 Q3	2028 Q4	2029 Q1	2029 Q2	2029 Q3	2029 Q4	2030 Q1	2030 Q2	2030 Q3	2030 Q4	2031-2044
4	Continue ongoing inspection programs and re-inspect facilities found to have																										
4	Enact public education and outreach activities to increase awareness of bacterial																										
4	Maintain pet waste collection stations at Permittee owned or operated lands, as																										
4	Review expected activities for Soos Creek TMDL when it becomes available and																										
4	Develop process to identify and implement needed updates to codes, standards,																										
5	Coordinate with firefighting agencies/departments to implement specific protocols regarding PFAS discharges into stormwater.																										
5	Prepare an assessment of existing conditions.																										
5	Draft a list of potential policies.																										
5	Select and adopt policies.																										
5	Identify a preferred catchment area for inclusion or enhancement.																										
5	Prepare a new SMAP or update the existing SMAP.																										
5	Review the road system plan.																										
5	Review high-priority roadways.																										
5	Determine candidate sites for retrofitting using SMAPs, capital improvement																										
5	Select projects and include in capital improvement plan.																										
5	Document the effectiveness of the behavior change campaign required under the																										
5	Develop a public education campaign. Consider source control BMPs for building																										
5	Submit results of public education campaign and recommended strategies for																										
5	Document public involvement opportunities to overburdened communities.																										
5	Identify facilities to be mapped.																										
5	Develop a methodology for mapping outfalls.																										
5	Use a geographic information system (GIS) to prepare a map of catchment areas.																										
5	Begin mapping of permittee-owned or operated properties with tree canopy based																										
5	Prioritize projects developed in the SMAP that together meet the City's assigned 8.9																										
5	Review and revise the existing sweeping program.																										
5	Enact the modified sweeping program.																										
5	Review, revise, and make effective LID codes																										
6	Evaluate the resource need of the SCIP program and update accordingly.																										
6	Coordinate with the Street utility to review and revise the City's street sweeping																										
Asset Management																											
5	Implement asset management program.																										
5	Train staff on asset inventory needs, data collection and quality objectives, and																										
5	Implement the likelihood of failure and criticality of failure scoring methods into																										
5	Establish & conduct the practice for prioritization of inspection and other work																										
5	Develop & conduct process for reviewing the asset inventory and a routine for updating when changes and inspections occur.																										
5	Expand scoring methods to include asset types other than collection system piping, and implement similarly into Cartegraph and inspection prioritization techniques.																										
5	Re-conduct pipe depreciation analysis every 5 years to evaluate the effect of the																										

Legend

Completed

Recommended Start

Midway Point (Anticipated Duration)

Deadline

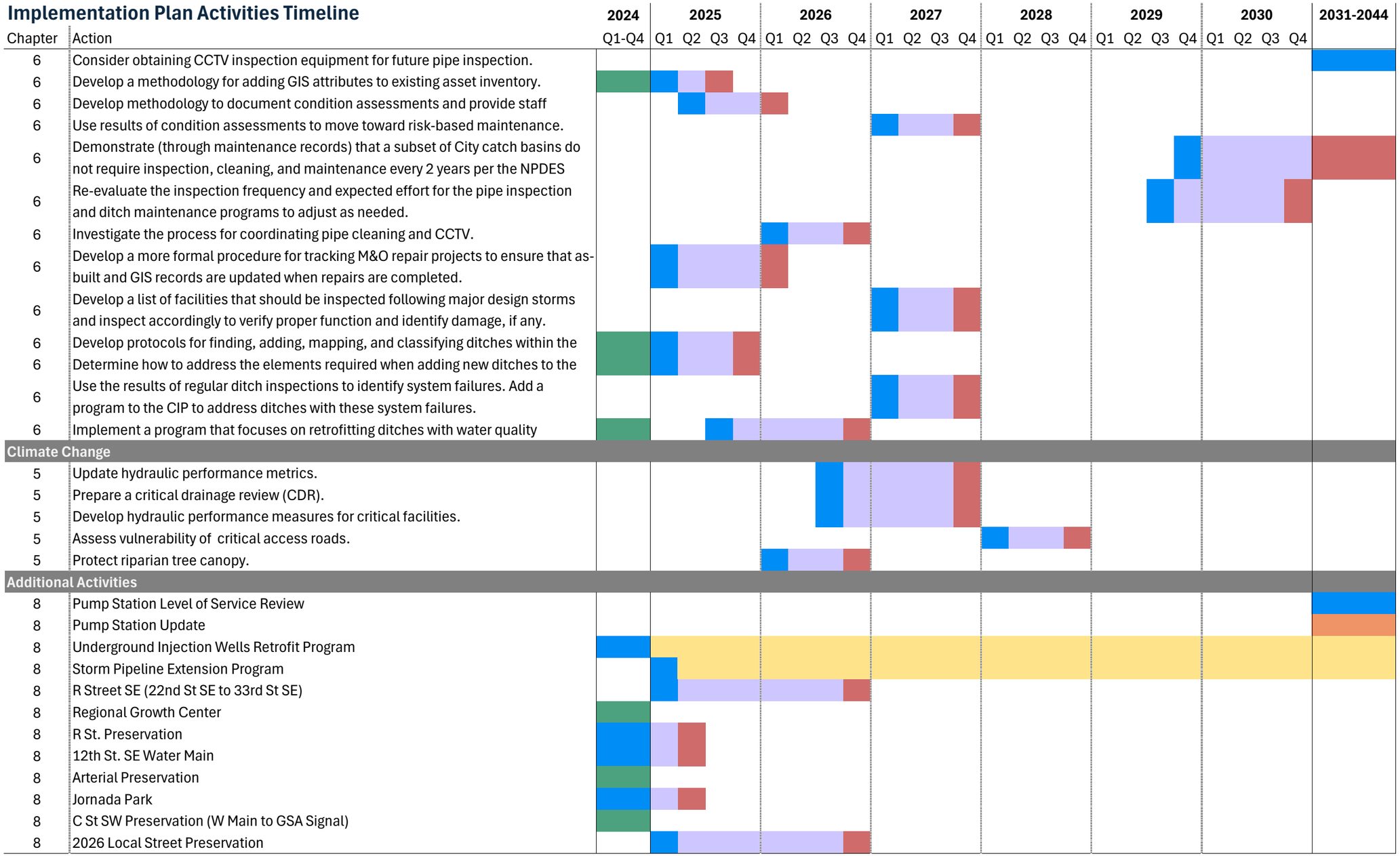
Repeated Action

Ongoing Action

Figure 8-3.
Implementation Plan Activities Timeline
(2 of 3)

Implementation Plan Activities Timeline

Chapter	Action
6	Consider obtaining CCTV inspection equipment for future pipe inspection.
6	Develop a methodology for adding GIS attributes to existing asset inventory.
6	Develop methodology to document condition assessments and provide staff
6	Use results of condition assessments to move toward risk-based maintenance.
6	Demonstrate (through maintenance records) that a subset of City catch basins do not require inspection, cleaning, and maintenance every 2 years per the NPDES
6	Re-evaluate the inspection frequency and expected effort for the pipe inspection and ditch maintenance programs to adjust as needed.
6	Investigate the process for coordinating pipe cleaning and CCTV.
6	Develop a more formal procedure for tracking M&O repair projects to ensure that as-built and GIS records are updated when repairs are completed.
6	Develop a list of facilities that should be inspected following major design storms and inspect accordingly to verify proper function and identify damage, if any.
6	Develop protocols for finding, adding, mapping, and classifying ditches within the
6	Determine how to address the elements required when adding new ditches to the
6	Use the results of regular ditch inspections to identify system failures. Add a program to the CIP to address ditches with these system failures.
6	Implement a program that focuses on retrofitting ditches with water quality
Climate Change	
5	Update hydraulic performance metrics.
5	Prepare a critical drainage review (CDR).
5	Develop hydraulic performance measures for critical facilities.
5	Assess vulnerability of critical access roads.
5	Protect riparian tree canopy.
Additional Activities	
8	Pump Station Level of Service Review
8	Pump Station Update
8	Underground Injection Wells Retrofit Program
8	Storm Pipeline Extension Program
8	R Street SE (22nd St SE to 33rd St SE)
8	Regional Growth Center
8	R St. Preservation
8	12th St. SE Water Main
8	Arterial Preservation
8	Jornada Park
8	C St SW Preservation (W Main to GSA Signal)
8	2026 Local Street Preservation



Legend

Completed

Recommended Start

Midway Point (Anticipated Duration)

Deadline

Repeated Action

Ongoing Action

Figure 8-3.
Implementation Plan Activities Timeline
(3 of 3)

9. Financial Plan

9.1 Introduction

This chapter was prepared by FCS Group to provide a financial program that allows the City of Auburn Storm Drainage Utility to remain financially viable during the planning period. This financial viability analysis considers the historical financial condition, current and identified future financial goals and policy obligations, M&O needs, and the financial impacts of the capital projects identified in this Comprehensive Storm Drainage Plan. Furthermore, this chapter provides a review of the Storm Drainage Utility's current rate structure with respect to rate adequacy and customer affordability.

9.2 Past Financial Performance

This section includes a historical summary of financial performance as reported by the City, including fund resources and uses arising from cash transactions.

9.2.1 Comparative Financial Statements

The City legally owns and operates the Auburn Storm Drainage Utility. Table 9-1 shows a summary of storm drainage fund resources and uses arising from cash transactions for the previous six years (2017 through 2022). The 2023 financial statements were not available at the time this chapter was developed. Table 9-2 shows a summary of assets and liabilities, with the difference between the two reported as "net position." Increases and decreases in net position are useful indicators of the financial position of the City's utility. Noteworthy findings and trends for the historical performance and condition of the City's Storm Drainage Utility are then discussed.

Table 9-1. Summary of Historical Fund Resources and Uses Arising from Cash Transactions

	2017	2018	2019	2020	2021	2022
OPERATING REVENUES						
Charges for Service	$ 9,778,102	$ 9,809,840	$ 10,110,490	$ 10,301,049	$ 10,591,890	$ 10,985,794
Other Operating Revenue	-	-	-	-	-	-
Total Operating Revenues	$ 9,778,102	$ 9,809,840	$ 10,110,490	$ 10,301,049	$ 10,591,890	$ 10,985,794
OPERATING EXPENSES						
Operations and Maintenance	$ 3,379,046	$ 3,568,600	$ 3,509,728	$ 3,360,404	$ 4,150,264	$ 4,135,306
Administration	3,372,935	3,326,599	3,230,505	3,144,182	3,109,673	3,835,875
Depreciation and Amortization	1,885,931	2,067,030	2,092,443	2,120,788	2,133,233	1,837,459
Other Operating Expenses	13,085	-	-	-	-	-
Total Operating Expenses	$ 8,650,997	$ 8,962,229	$ 8,832,676	$ 8,625,374	$ 9,393,170	$ 9,808,640
Operating Income (Loss)	$ 1,127,105	$ 847,611	$ 1,277,814	$ 1,675,675	$ 1,198,720	$ 1,177,154
NONOPERATING REVENUES (EXPENSES)						
Interest Revenue	$ 151,733	$ 327,884	$ 518,073	$ 162,516	$ (34,640)	$ 300,426
Other Non-Operating Revenue	78,397	165,136	81,307	125,963	102,214	132,440
Gain (Loss) on Sale of Capital Assets	-	-	-	-	-	-
Interest Expense	(328,972)	(310,816)	(293,420)	(129,471)	(152,526)	(133,330)
Other Non-Operating Expense	-	(101,328)	-	(26,022)	-	(428,759)
Total Non-Operating Revenues (Expenses)	$ (98,842)	$ 80,876	$ 305,960	$ 132,986	$ (84,952)	$ (129,223)
Income (Loss) before Contributions and Transfers	$ 1,028,263	$ 928,487	$ 1,583,774	$ 1,808,661	$ 1,113,768	$ 1,047,931
Capital Contributions	$ 2,313,033	$ 995,853	$ 1,021,824	$ 1,546,772	$ 5,364,962	$ 1,408,167
Transfers In	300,000	125,000	-	-	-	-
Transfers Out	(672,122)	(332,589)	(138,357)	(137,399)	(155,972)	(133,555)
Change in Net Position	$ 2,969,174	$ 1,716,751	$ 2,467,241	$ 3,218,034	$ 6,322,758	$ 2,322,543
Net Position, January 1	$ 64,010,652	$ 66,979,826	$ 68,696,577	$ 71,163,818	$ 74,381,852	$ 80,704,610
Net Position, December 31	$ 66,979,826	$ 68,696,577	$ 71,163,818	$ 74,381,852	$ 80,704,610	$ 83,027,153
O&M Coverage Ratio	113.0%	109.5%	114.5%	119.4%	112.8%	112.0%
Net Operating Income as a % of Operating Revenue	11.5%	8.6%	12.6%	16.3%	11.3%	10.7%
Debt Service Coverage Ratio	3.75	3.63	4.21	5.59	4.92	4.46

9.2.1.1 Findings and Trends

- The City's storm drainage charges for services increased from $9.8 million in 2017 to $11.0 million in 2022. The average annual increase was approximately 2.4% per year, with a total increase of 12.4% from 2017 to 2022. Operating expenditures increased by $1.2million across the 6 years with an average annual increase of 2.5%. While operating expenditures increased across the 6 years, they fell in 2019 and 2020 before increasing by 8.9% in 2021. With growth in total operating revenues slightly below growth in operating expenses, operating income has remained positive in all years.
- The M&O coverage ratio (total operating revenues divided by total operating expenses) was 113% in 2017. With relatively balanced revenues and expenses, this metric has maintained its stability, ending 2022 at 112.0%. A ratio of 100% or greater shows that operating revenue will successfully cover operating expenses, and the utility has remained above this ratio for the past 6 years.
- Net operating income as a percentage of operating revenue was 11.5% in 2017, decreasing to 8.6% in 2018, before recovering back to 10.7% by 2022. Similar to the M&O coverage ratio, these trends show how successfully operating revenue actually covered operating expenses, with higher positive numbers being the best and negative numbers showing a need for improvement. In addition, these trends demonstrate the ability of the utility to invest in capital, whether through direct cash transfers or the issuance and servicing of debt.

- The debt service coverage ratio measures the amount of cash flow available to meet principal and interest payments. Typically, revenue bond debt service coverage requires a minimum factor of 1.25 during the life of the loans. This ratio is calculated by dividing cash or net operating income (operating revenues minus operating expenses) by annual revenue bond debt service. The debt service coverage ratio for all outstanding revenue bond debt ended 2017 at 3.8, decreasing to 3.6 in 2018, before increasing to 4.5 by 2022. The fact that this ratio has sustained levels higher than the minimum target of 1.25 indicates a stable capacity for new debt and will likely result in favorable terms when entering the bond market.

Table 9-2. Summary of Historical Comparative Statements of Net Position

	2017	2018	2019	2020	2021	2022
CURRENT ASSETS						
Cash and Cash Equivalents	$ 14,545,114	$ 10,644,121	$ 12,738,639	$ 17,124,762	$ 16,904,318	$ 16,689,485
Investments	-	4,781,224	4,389,043	2,729,581	4,951,200	4,566,850
Restricted Cash:						
Bond Payments	804,480	803,251	800,093	679,184	657,541	658,088
Customer Deposits	3,422	3,422	3,422	3,422	3,422	3,422
Other (Reserve for Bonds and Rate Stabilization)	1,195,817	1,203,670	1,211,285	1,081,961	1,082,389	1,088,818
Customer Accounts	1,066,124	1,105,972	1,631,660	1,712,774	1,611,351	1,796,825
Other Receivables	-	14,757	14,757	-	7,104	7,104
Due From Other Governmental Units	70,124	103,343	-	72,123	109,161	122,276
Inventories	7,390	4,795	9,099	8,745	9,597	10,414
Total Current Assets	$ 17,692,471	$ 18,664,555	$ 20,797,998	$ 23,412,552	$ 25,336,083	$ 24,943,282
NONCURRENT ASSETS						
Long-Term Contracts, Leases and Notes	$ -	$ -	$ -	$ -	$ -	$ -
Net Pension Asset	-	-	-	-	2,040,168	751,962
Capital Assets Not Being Depreciated:						
Land	5,937,014	5,937,014	5,937,014	5,937,014	5,937,014	5,937,014
Intangible - Water Rights	-	-	-	-	-	-
Construction In Progress	459,310	153,082	648,531	342,126	980,569	1,135,843
Capital Assets:						
Buildings and Equipment	290,575	290,575	290,575	282,111	282,111	282,111
Improvements Other Than Buildings	79,177,949	81,449,103	82,903,631	84,749,193	89,739,833	93,201,563
Right of Use (Leases)		-	-	-	-	-
Less Accumulated Depreciation	(26,325,396)	(28,392,426)	(30,484,869)	(32,587,697)	(34,720,930)	(36,558,389)
Total Noncurrent Assets Net of Accumulated Depreciation	$ 59,539,452	$ 59,437,348	$ 59,294,882	$ 58,722,747	$ 64,258,765	$ 64,750,104
TOTAL ASSETS	$ 77,231,923	$ 78,101,903	$ 80,092,880	$ 82,135,299	$ 89,594,848	$ 89,693,386
DEFFERED OUTFLOWS OF RESOURCES						
Deferred Outflow from Bond Refunding	$ -	$ -	$ -	$ 29,232	$ 29,232	$ 29,232
Deferred Outflow related to Pensions	292,611	254,676	274,851	309,222	286,842	820,313
Total Deferred Outflows of Resources	292,611	254,676	274,851	338,454	316,074	$ 849,545
CURRENT LIABILITIES						
Current Payables	$ 391,180	$ 308,381	$ 578,689	$ 305,576	$ 626,924	$ 496,608
Claims Payable	-	-	-	-	-	-
Loans Payable - Current	-	-	-	-	-	-
Employee Leave Benefits - Current	173,857	156,429	154,609	156,429	199,603	246,831
Leases Payable - Current	-	-	-	-	-	-
Revenue Bonds Payable - Current	425,578	437,948	452,418	411,430	426,973	446,716
Payable From Restricted Assets:						
Accrued Interest	377,766	365,303	347,675	267,753	249,914	229,124
Deposits	3,422	3,422	3,422	3,422	3,422	3,422
Other Liabilities Payable	469					
Total Current Liabilities	$ 1,372,272	$ 1,271,483	$ 1,536,813	$ 1,144,610	$ 1,506,836	$ 1,422,701
NONCURRENT LIABILITIES						
Employee Leave Benefits	$ 52,506	$ 56,590	$ 41,091	$ 56,590	$ 86,394	$ 94,689
Loans Payable	-	-	-	-	-	-
Leases Payable	-	-	-	-	-	-
Revenue Bonds Payable	7,495,862	7,030,496	6,550,661	6,069,633	5,564,619	5,039,861
Net Pension Liability	1,339,843	805,573	527,198	509,014	(122,090)	128,697
Total Non Current Liabilities	$ 8,888,211	$ 7,892,659	$ 7,118,950	$ 6,635,237	$ 5,528,923	$ 5,263,247
TOTAL LIABILITIES	$ 10,260,483	$ 9,164,142	$ 8,655,763	$ 7,779,847	$ 7,035,759	$ 6,685,948
DEFERRED INFLOWS OF RESOURCES						
Deferred Inflow Related to Leases	$ -	$ -	$ -	$ -	$ -	$ -
Deferred Inflow Related to Pensions	284,225	495,860	548,150	312,054	2,170,553	829,830
Total Deferred Inflows of Resources	$ 284,225	$ 495,860	$ 548,150	$ 312,054	$ 2,170,553	$ 829,830
NET POSITION						
Net Investment in Capital Assets	$ 52,422,492	$ 52,772,155	$ 53,091,896	$ 52,920,868	$ 56,884,546	$ 58,512,575
Restricted For:						
Debt Service	398,648	411,110	426,793	375,725	393,992	1,078,288
Rate Stabilization	419,403	427,257	436,817	438,483	438,483	438,483
Pension Asset		-	-	-	-	751,962
Unrestricted	13,739,283	15,086,055	17,208,312	20,646,776	22,987,589	22,245,845
TOTAL NET POSITION	$ 66,979,826	$ 68,696,577	$ 71,163,818	$ 74,381,852	$ 80,704,610	$ 83,027,153
Current Ratio	12.9	14.7	13.5	20.5	16.8	17.5
Debt to Net Position Ratio	0.12	0.11	0.10	0.09	0.08	0.07
Debt to Noncurrent Capital Assets Ratio	0.14	0.13	0.12	0.11	0.10	0.09

9.2.1.2 Findings and Trends

- The current ratio is calculated by dividing unrestricted current assets by current liabilities and measures an entity's ability to pay short-term obligations. This ratio ranges from a low of 12.9 in 2017, reaching a high of 20.5 in 2020, before ending at 17.5 in 2022. Anything above 2.0 for this liquidity ratio is good.
- The debt-to-net-position ratio compares total debt to total net position, which is the difference between current assets and liabilities. This ratio begins at 0.12 or 12% debt in 2017 and decreases to 0.07 or 7% by 2022. These results indicate the utility has ample borrowing capacity to address future capital improvement needs. For utilities, a ratio of 40% to 60% helps to moderate rate impacts by spreading costs over a longer period. Based on these results, the City may consider utilizing debt service for future capital investments, especially if it benefits system expansion.
- The debt-to-noncurrent-capital-asset ratio compares total debt to noncurrent capital assets, which are also known as property, plant, and equipment. This ratio begins at 0.14 or 14% debt to 86% noncurrent assets in 2017. Noncurrent capital assets increase by $5.2 million throughout the 6-year history, while debt decreases $2.5 million, and the ratio decreases to 0.09 or 9% by 2022. Similar to the debt-to-net position ratio, these results indicate the utility has ample borrowing capacity and may consider utilizing debt service for future capital investments, especially if it benefits system expansion. A ratio of 40% debt to 60% equity or below is a general industry target.

9.3 Financial Plan

The Storm Drainage Utility is responsible for generating sufficient revenue to meet all of its costs. The primary source of funding is derived from ongoing monthly service charges, with additional revenue coming from late fees, storm applications and investment interest. The City controls the level of user charges and, with City Council approval, can adjust user charges as needed to meet financial objectives.

The financial plan can only confirm financial feasibility if it considers the total system costs of providing storm drainage services, both operating and capital. To meet these objectives, the following elements have been completed.

1. Capital Funding Plan. Identifies the total capital improvement plan obligations of the planning period. The plan defines a strategy for funding the capital improvement plan, including an analysis of available resources from rate revenues, existing reserves, system development charges, debt financing, and any special resources that may be readily available (e.g., grants, developer contributions). The capital funding plan impacts the financial plan through the use of debt financing (resulting in annual debt service) and the assumed rate revenue made available for capital funding.
2. Financial Forecast. Identifies future annual non-capital costs associated with the operation, maintenance, and administration of the storm drainage system. Included in the financial plan is a reserve analysis that forecasts cash flow and fund balance activity, along with testing for satisfaction of actual or recommended minimum fund balance policies. The financial plan ultimately evaluates the sufficiency of utility revenues in meeting all obligations, including cash uses such as operating expenses, debt service, capital outlays, and reserve contributions, as well as any coverage requirements associated with long-term debt. The plan also identifies the future adjustments required to fully fund all utility obligations in the planning period.

9.3.1.1 Capital Funding Plan

To properly evaluate future capital funding needs, capital costs were escalated by 3% annually to the year of planned spending. The capital improvement plan developed for this Plan identifies $26.5 million in escalated project costs over the 10-year planning horizon from 2024 to 2033. The 20-year period through 2043 includes $61.7 million in total escalated project costs.

A summary of the 10-year and 20-year capital improvement plans are shown in Table 9-3. As shown, each year has varied capital cost obligations depending on construction schedules and infrastructure planning needs.

Table 9-3. 10-Year and 20-Year Capital Improvement Plans

Year	Unescalated $	Escalated $
2024	$ 2,531,000	$ 2,531,000
2025	3,498,220	3,603,167
2026	6,257,780	6,638,879
2027	1,282,000	1,400,876
2028	1,659,000	1,867,219
2029	1,255,000	1,454,889
2030	1,620,000	1,934,365
2031	1,352,000	1,662,789
2032	2,065,000	2,615,880
2033	2,104,000	2,745,243
10-Year Total	$ 23,624,000	$ 26,454,307
2034 - 2043	23,073,000	35,209,528
20-Year Total	$ 46,697,000	$ 61,663,835

Table 9-4 provides more detail for the 10-year capital improvement plan.

Table 9-4. 10-Year Capital Improvement Plan (Escalated $)

Project	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Vegetative Waste Sorting Facility		$206,000								
SE 287th Street Stormwater Device		158,332	289,923							
2026 Local Street Preservation		157,075	485,362							
R Street SE Widening - 22nd Street SE to 33rd Street SE		303,850	938,897							
Storm Pipeline Extension Program		195,700	588,800	207,618	624,657	220,262	662,699	233,676	703,057	247,907
Street Utility Improvements	260,000	267,800	275,834	284,109	292,632	301,411	310,454	319,767	329,360	339,241
Frame & Grate Replacement	85,000	87,550	90,177	92,882	95,668	98,538	101,494	104,539	107,675	110,906
Storm Drainage Infrastructure Repair & Replacement Program	720,000	741,600	763,848	786,763	810,366	834,677	859,718	885,509	912,074	939,437
SE 284th Street West Bioswale Additions				29,504	43,895					
West Main Street Pump Station Upgrade	265,000	661,260	3,206,040							
Pump Station Level of Service Review									253,354	
Vintage Hills Swale Retrofit								119,298	215,351	
Storm Comprehensive Plan Update	400,000									
Underground Injection Wells Retrofit Program									95,008	97,858
Christa Ministries Facility Retrofit										1,009,894
Regional Growth Center Improvements	100,000									
R Street SE Preservation	320,000									
12th Street SE Water Main Improvements	16,000									
Arterial Preservation	215,000									
Jornada Park Access Improvements	100,000									
C Street SW Preservation (W Main to GSA signal)	50,000									
M Street NE Widening		824,000								
Total	$2,531,000	$3,603,167	$6,638,879	$1,400,876	$1,867,219	$1,454,889	$1,934,365	$1,662,789	$2,615,880	$2,745,243

9.4 Available Funding Assistance and Financing Resources

Feasible long-term capital funding strategies must be defined to ensure that adequate resources are available to fund the capital improvement plan identified in this Plan. In addition to the City's resources, such as accumulated cash reserves, capital revenues, and rate revenues designated for capital purposes, capital needs can be met from outside sources, such as grants, low-interest loans, and bond financing. The following is a summary of the City's internal and external resources.

9.4.1 City Resources

Resources appropriate for funding capital needs include accumulated cash in the capital fund, rate revenues designated for capital spending purposes, developer contributions, and capital-related charges such as system development charges. The first two resources will be discussed in the Fiscal Policies section of the Financial Forecast. Capital-related charges are discussed below.

9.4.1.1 System Development Charges

A connection charge, such as the City's SDC, refers to a one-time charge imposed on new customers as a condition of connecting to the storm drainage system. The purpose of the SDC is two-fold: (1) to promote equity between new and existing customers and (2) to provide a source of revenue to fund capital projects necessary for meeting growth. This revenue can only be used to fund utility capital projects or to pay debt service incurred to finance those projects. In the absence of a connection charge, growth-related capital costs would be borne in large part by existing customers. In 2024, the City charged all new customers an SDC of $1,759 per ESU, which is defined as 2,600 square feet of impervious surface area.

9.4.1.2 Local Facilities Charge

A utility local improvement district (ULID) is another mechanism for funding infrastructure that assesses benefited properties based on the special benefit received by the construction of specific facilities. Most often used for local facilities, some ULIDs also recover related general facilities costs. Substantial legal and procedural requirements can make this a relatively expensive process, and there are mechanisms by which a ULID can be rejected.

9.4.2 Outside Resources

This section outlines various grant, loan, and bond opportunities available to the City through federal and state agencies to fund the capital improvement plan identified in the Plan.

9.4.2.1 Grants and Low-Cost Loans

Historically, federal and state grant programs were available to local utilities for capital funding assistance. However, these assistance programs have been mostly eliminated, substantially reduced in scope and amount, or replaced by loan programs. Remaining grant programs are generally lightly funded and heavily subscribed. Nonetheless, the benefit of low-interest loans makes the effort of applying worthwhile.

The State of Washington's Department of Commerce maintains a document currently entitled "Funding Programs for Drinking Water and Wastewater Projects; Updated 3-5-2024," which contains details on government programs, eligibility requirements, and contact information, should the City wish to inquire about program offerings and eligibility requirements.

9.4.2.2 Bond Financing

General Obligation Bonds – General obligation (G.O.) bonds are bonds secured by the full faith and credit of the issuing agency, committing all available tax and revenue resources to debt repayment. With this high level of commitment, G.O. bonds have relatively low interest rates and few financial restrictions. However, the authority to issue G.O. bonds is restricted in terms of the amount and use of the funds, as defined by the Washington constitution and statute. Specifically, the amount of debt that can be issued is linked to assessed valuation.

RCW 39.36.020 states:

> *(2)(a)(ii) Counties, cities, and towns are limited to an indebtedness amount not exceeding one and one-half percent of the value of the taxable property in such counties, cities, or towns without the assent of three-fifths of the voters therein voting at an election held for that purpose.*
>
> *(b) In cases requiring such assent counties, cities, towns, and public hospital districts are limited to a total indebtedness of two and one-half percent of the value of the taxable property therein.*

While bonding capacity can limit the availability of G.O. bonds for utility purposes, these can sometimes play a valuable role in project financing. A utility rate savings may be realized through two avenues: the lower interest rate and related bond costs and the extension of repayment obligation to all tax-paying properties (not just developed properties) through the authorization of an ad valorem property tax levy.

Revenue Bonds – Revenue bonds are commonly used to fund utility capital improvements. The debt is secured by the revenues of the issuing utility. With this limited commitment, revenue bonds typically bear higher interest rates than G.O. bonds and require security conditions related to the maintenance of dedicated reserves (a bond reserve) and financial performance (added bond debt service coverage). The City agrees to satisfy these requirements by resolution as a condition of bond sale.

Revenue bonds can be issued in Washington without a public vote. There is no bonding limit, except perhaps the practical limit of the utility's ability to generate sufficient revenue to repay the debt and provide coverage. In some cases, poor credit might make issuing revenue bonds problematic.

9.4.3 Capital Financing Strategy

An ideal capital financing strategy would include the use of grants and low-cost loans when debt issuance is required. However, these resources are very limited and competitive in nature and do not provide a reliable source of funding for planning purposes. It is recommended that the City pursue these funding avenues but assume revenue bond financing to meet the needs that can't be met by available cash resources. The capital financing strategy developed to fund the capital improvement plan identified in this Plan assumes the following funding resources:

- Accumulated cash reserves.
- Transfers of excess cash (over minimum balance targets) from the operating fund.
- System development charge revenues.
- King County Opportunity Fund grant revenues.
- Interest earned on capital fund balances.

The majority, 83%, of projects are funded through cash resources. The remaining 17% are funded through a combination of system development charges and grants. No new debt is anticipated in the next 10-year or 20-year planning periods. Table 9-5 presents the 10-year and 20-year capital financing strategy.

Table 9-5. 10-Year and 20-Year Capital Financing Strategy

Year	Capital Expenditures Escalated	System Development Charge Revenue	Grant Funding	Cash / Reserve Funding	Total Financial Resources
2024	$ 2,531,000	$ 375,000	$ -	$ 2,156,000	$ 2,531,000
2025	3,603,167	362,335	-	3,240,832	3,603,167
2026	6,638,879	374,698	500,000	5,764,181	6,638,879
2027	1,400,876	387,482	-	1,013,394	1,400,876
2028	1,867,219	400,703	-	1,466,516	1,867,219
2029	1,454,889	414,375	-	1,040,514	1,454,889
2030	1,934,365	428,514	-	1,505,851	1,934,365
2031	1,662,789	443,135	-	1,219,655	1,662,789
2032	2,615,880	458,255	-	2,157,626	2,615,880
2033	2,745,243	473,890	-	2,271,353	2,745,243
Subtotal	$ 26,454,307	$ 4,118,387	$ 500,000	$ 21,835,920	$ 26,454,307
2034 - 2043	35,209,528	5,725,752	-	29,483,776	35,209,528
Total	$ 61,663,835	$ 9,844,139	$ 500,000	$ 51,319,696	$ 61,663,835

9.5 Financial Forecast

The financial forecast, or revenue requirement analysis, forecasts the amount of annual revenue that needs to be generated by storm drainage service rates. The analysis incorporates operating revenues, M&O expenses, debt service payments, rate-funded capital needs, and any other identified revenues or expenses related to operations. The objective of the financial forecast is to evaluate the sufficiency of the current level of rates. In addition to annual operating costs, the revenue needs also include debt covenant requirements and specific fiscal policies and financial goals of the City.

For this analysis, two revenue sufficiency tests have been developed to reflect the financial goals and constraints of the City—cash needs must be met, and debt coverage requirements must be realized. In order to operate successfully with respect to these goals, both tests of revenue sufficiency must be met.

Cash Test – The cash flow test identifies all known cash requirements for the City in each year of the planning period. Typically, these include M&O expenses, debt service payments, rate-funded system reinvestment funding or directly funded capital outlays, and any additions to specified reserve balances. The total annual cash needs of the City are then compared to projected cash revenues using the current rate structure. Any projected revenue shortfalls are identified, and the rate increases necessary to make up the shortfalls are established.

Coverage Test – The coverage test is based on a commitment made by the City when issuing revenue bonds and some other forms of long-term debt. For the purposes of this analysis, revenue bond debt is assumed for any needed debt issuance. As a security condition of issuance, the City would be required per covenant to agree that the revenue bond debt would have a higher priority for payment (a senior lien) compared to most other expenditures; the only outlays with a higher lien are M&O expenses. Debt service coverage is expressed as a multiplier of the annual revenue bond debt service payment. For example, a 1.00 coverage factor would imply that no additional cushion is required. A 1.25 coverage factor means revenue must be sufficient to pay M&O expenses, annual revenue bond debt service payments, and an additional 25% of annual revenue bond debt service payments. The excess cash flow derived from the added coverage, if any, can be used for any purpose, including funding capital projects. Targeting a higher coverage factor can help the City achieve a better credit rating and provide lower interest rates for future debt issues.

In determining the annual revenue requirement, both the cash and coverage sufficiency tests must be met, and the test with the greatest deficiency drives the level of needed rate increase in any given year.

9.5.1 Current Financial Structure

The City maintains a fund structure and implements financial policies that target management of a financially viable and fiscally responsible storm drainage system.

9.5.1.1 Fiscal Policies

A summary of the key financial policies employed by the City, as well as those recommended and incorporated in the financial program, are discussed below.

Operating Fund – Operating reserves are designed to provide a liquidity cushion to ensure that adequate cash working capital will be maintained to deal with significant cash balance fluctuations, such as seasonal fluctuations in billings and receipts, unanticipated cash expenses, or lower than expected revenue collections. Like other types of reserves, operating reserves also serve another purpose: they help smooth rate increases over time. Target funding levels for an operating reserve are generally expressed as a certain number of days of M&O expenses, with the minimum requirement varying with the expected revenue volatility. Industry practice for utility operating reserves ranges from 30 days (8%) to 120 days (33%) of M&O expenses, with the lower end more appropriate for utilities with stable revenue streams and the higher end more appropriate for utilities with significant seasonal or consumption-based fluctuations.

This financial plan targets a minimum balance in the Storm Drainage Utility operating fund equal to 60 days of M&O expenses.

Capital Fund – A utility capital contingency reserve is an amount of cash set aside in case of an emergency should a piece of equipment or a portion of the utility's infrastructure fail unexpectedly. The reserve could also be used for other unanticipated capital needs, including capital project cost overruns. Industry practices range from maintaining a balance equal to 1% to 2% of fixed assets, an amount equal to a 5-year rolling average of capital improvement plan costs, or an amount determined sufficient to fund equipment failure (other than catastrophic failure). The final target level should balance industry standards with the risk level of the City.

This financial plan targets a minimum balance in the Storm Drainage Utility capital fund equal to 1% of fixed assets.

Rate Stabilization Fund - A rate stabilization reserve is a restricted fund balance intended to be available to offset specific variations in revenues or expenses. For rate modeling, planned deposits into the fund would appear as an expense, and use of the reserve would rarely appear in rate

planning (only when analyzing adverse conditions). The reserve is established with specific rules and restrictions regarding contributions, withdrawals, and replenishment. These rules are generally constructed to minimize or mitigate rate impacts.

The City currently maintains a rate stabilization reserve for the Storm Drainage Utility but does not have a formal rate stabilization reserve policy. For modeling purposes, the study does not assume additional reserves are funded. Rather, the City will maintain the reserve at its current level.

System Reinvestment – System reinvestment funding promotes system integrity through ongoing repair and replacement of system infrastructure. Ideally, a detailed asset management plan would guide the level of rate funded system reinvestment. However, in absence of this level of effort, annual depreciation expense is commonly used as a measure of the decline in asset value associated with routine use of the system. Particularly for utilities that do not already have an explicit system reinvestment policy in place, implementing a funding level based on full depreciation expense could significantly impact rates. An alternative benchmark is annual depreciation expense net of debt principal payments on outstanding debt. This approach recognizes that customers are still paying for certain assets through the debt component of their rate and intends to avoid simultaneously charging customers for an asset and its future replacement. The specific benchmark used to set system reinvestment funding targets is a matter of policy that must balance various objectives, including managing rate impacts, keeping long-term costs down, and promoting "generational equity" (i.e., not excessively burdening current customers with paying for facilities that will serve a larger group of customers in the future).

The City is currently phasing in system reinvestment funding and is forecast to reach 67% of annual depreciation levels by 2033. With this phase-in strategy in place, the City is forecast to fund an average of $1.1 million in capital costs annually through rate revenues within the 10-year forecast period.

Debt Management – It is prudent to consider policies related to debt management as part of a broader utility financial policy structure. Debt management policies should be evaluated and formalized, including the level of acceptable outstanding debt, debt repayment, bond coverage, and total debt coverage targets. The City has two outstanding storm drainage revenue bonds, one of which will be fully repaid in 2030, with the second fully repaid by 2032. This forecast meets or exceeds the required revenue bond debt service coverage of 1.25.

9.5.2 Financial Forecast

The financial forecast is primarily based upon the City's budget through 2024 and takes into consideration other key factors and assumptions needed to develop a complete portrait of the City's annual Storm Drainage Utility financial obligations. The following is a list of the key revenue and expense factors and assumptions used to develop the financial forecast.

- Growth – Rate revenue is escalated utilizing a 0.4% growth rate developed based on actual historical trends within the City.
- Revenue – The City has two general revenue sources: (1) storm drainage service charges (rate revenue) and (2) miscellaneous (non-rate) revenue. In the event of a forecasted annual shortfall, rate revenue can be increased to meet the annual revenue requirement. For the purpose of this financial forecast, rate revenues are forecasted to increase with customer growth. Non-rate revenues are held constant throughout the forecast period, with the exception of interest earnings, which are calculated based on projected balances, assumed investment rates, and senior rebates, which increase with customer growth assumptions.

- System Development Charge Revenue – The existing system development charges are applied to the projected new connections to forecast revenue. Connection charges are forecasted to generate an average of $412,000 annually from 2024 through 2033. This equates to an average of 204 new ESUs per year. Connection charge revenue is directed towards annual capital needs.
- Expenses – M&O expense projections are based on the City's budget through 2024 with general cost inflation increases of 3%, labor cost inflation of 5% for 2025 and 2026, decreasing to 3% thereafter and benefit cost inflation increases of 12.5% for 2025 and 2026, decreasing to 5.5% per year thereafter. Budget figures were used for taxes through 2024. Future taxes are calculated based on forecasted revenues and prevailing tax rates.
- Facilities GO Bond - In order to construct a new facility for M&O for the City, the Storm Drainage Utility will fund part of a G.O. bond totaling approximately $38 million. Beginning in 2025, the Storm Drainage Utility's proportionate share of the bond is forecasted at $333,000 annually for the remainder of the 20-year forecast.
- Existing Debt – The Storm Drainage Utility has two outstanding revenue bond debt issues. The 2020 refunding bond has annual payments of $314,000 that end after 2030, with the 2013 revenue bond carrying payments of $343,000 annually, ending after 2032. The total annual existing debt service obligations begin 2024 at $659,000 and are completely repaid by 2033.
- Future Debt – No new debt is anticipated in the 10-year and 20-year forecast periods.
- Transfers to Capital – Operating fund balance above the minimum requirement is assumed to be available to fund capital projects and projected to be transferred to the capital fund each year, if needed. In total, the utility is forecast to fund $13 million in capital projects from excess operating fund cash within the 10-year forecast period.

Although the financial plan is completed through 2043, the rate strategy focuses on the shorter-term planning period of 2024 through 2033. It is recommended that the City revisit the proposed rates every 2 to 3 years to ensure that the rate projections developed remain adequate. Any significant changes should be incorporated into the financial plan and future rates should be adjusted as needed.

Table 9-6 summarizes the annual revenue requirements based on the forecast of revenues, expenditures, fund balances, and fiscal policies.

Table 9-6. 10-Year Financial Forecast

Revenue Requirement	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Revenues										
Rate Revenues Under Existing Rates	$ 12,458,782	$ 12,508,618	$ 12,558,652	$ 12,608,887	$ 12,659,322	$ 12,709,959	$ 12,760,799	$ 12,811,843	$ 12,863,090	$ 12,914,542
Non-Rate Revenues	262,900	291,876	206,130	181,367	181,869	182,399	182,953	183,531	184,135	184,766
Total Revenues	$ 12,721,682	$ 12,800,494	$ 12,764,782	$ 12,790,254	$ 12,841,191	$ 12,892,359	$ 12,943,752	$ 12,995,373	$ 13,047,225	$ 13,099,308
Expenses										
Cash Operating Expenses	$ 10,828,608	$ 11,812,282	$ 12,353,297	$ 12,714,570	$ 13,093,018	$ 13,485,879	$ 13,893,762	$ 14,317,305	$ 14,757,174	$ 15,214,068
Existing Debt Service	659,447	659,311	657,169	657,253	658,401	656,328	655,274	342,972	342,888	-
New Debt Service	-	-	-	-	-	-	-	-	-	-
Rate Funded System Reinvestment	1,000,000	903,142	717,190	782,323	838,652	899,000	958,051	1,330,768	1,388,178	1,790,229
Total Expenses	$ 12,488,055	$ 13,374,736	$ 13,727,656	$ 14,154,146	$ 14,590,070	$ 15,041,207	$ 15,507,087	$ 15,991,045	$ 16,488,240	$ 17,004,297
Total Surplus (Deficiency)	$ 233,628	$ (574,242)	$ (962,874)	$ (1,363,891)	$ (1,748,878)	$ (2,148,849)	$ (2,563,335)	$ (2,995,672)	$ (3,441,016)	$ (3,904,990)
Annual Rate Adjustment		6.75%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Cumulative Annual Rate Adjustment		6.75%	9.95%	13.25%	16.65%	20.15%	23.75%	27.47%	31.29%	35.23%
Rate Revenues After Rate Increase	$ 12,458,782	$ 13,352,949	$ 13,808,552	$ 14,279,700	$ 14,766,923	$ 15,270,770	$ 15,791,809	$ 16,330,626	$ 16,887,827	$ 17,464,039
Additional Taxes from Rate Increase	-	97,098	143,738	192,143	242,374	294,493	348,566	404,660	462,845	523,192
Net Cash Flow After Rate Increase	$ 233,628	$ 172,992	$ 143,288	$ 114,778	$ 116,348	$ 117,469	$ 119,109	$ 118,451	$ 120,876	$ 121,315
Coverage After Rate Increases	4.84	5.87	5.21	4.90	4.99	5.11	5.22	10.15	10.36	n/a

The financial forecast indicates that at existing rate levels the utility will become deficient in 2025 as growth in expenses outpaces growth in revenues and the utility phases in rate funded system reinvestment levels, reaching 67% of annual depreciation by 2033. The City has adopted a 6.75% increase for 2025, in order to resolve the remaining projected deficiency, rates will need to increase by 3% annually from 2026 through 2033.

9.5.2.1 City Funds and Reserves

Table 9-7 shows a summary of the projected operating fund and capital fund ending balances through 2033 based on the rate forecasts presented above. The operating fund is maintained at a minimum of 60 days of M&O expenses, and the capital fund balance continues to meet or exceed the minimum target of 1% of fixed assets in every year of the forecast.

Table 9-7. Ending Cash Balance Summary

Ending Fund Balances	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Operating Fund	$ 1,804,768	$ 1,968,714	$ 2,058,883	$ 2,119,095	$ 2,182,170	$ 2,247,646	$ 2,315,627	$ 2,386,218	$ 2,459,529	$ 2,535,678
Capital Fund	20,694,062	18,986,240	14,372,092	14,339,309	13,908,111	13,957,671	13,600,577	13,895,557	13,312,629	13,009,799
Total	$ 22,498,830	$ 20,954,954	$ 16,430,975	$ 16,458,404	$ 16,090,281	$ 16,205,318	$ 15,916,204	$ 16,281,774	$ 15,772,158	$ 15,545,477

9.6 Current and Projected Rates

9.6.1 Current Rates

The existing storm drainage rate is a monthly flat rate that is charged to each customer per ESU. Each single-family customer is considered one ESU. All non-single-family customers are charged based on the total amount of impervious surface area on-site. The average single family residential lot has 2,600 square feet of impervious surface area, so the total impervious surface area for a non-residential lot is divided by 2,600 to calculate the number of ESUs for that site. Table 9-8 shows the existing City of Auburn storm drainage rate schedule.

Table 9-8. Existing Schedule of Rates

Description	2024 Existing
Per ESU Rate	
Single Family	$ 18.09
Non-Single Family (NSF)	18.09
NSF w/Detention	15.57
NSF w/Retention	13.04
NSF w/Water Quality	16.64
NSF w/Detention & Water Quality	14.12
NSF w/Retention & Water Quality	11.59

9.6.2 Projected Rates

The financial forecast discussed above indicates the need for annual rate adjustments in order to satisfy all forecasted financial obligations. The City has adopted a 6.75% rate increase for 2025, with annual 3% increases forecasted from 2026 through 2033. Table 9-9 shows the projected rates with increases applied uniformly to all storm drainage classes.

Table 9-9. Proposed Storm Drainage Rates

Description	Existing	Proposed								
		2025	2026	2027	2028	2029	2030	2031	2032	2033
	Per ESU Rate									
Single Family	$ 18.09	$ 19.31	$ 19.89	$ 20.49	$ 21.10	$ 21.73	$ 22.38	$ 23.05	$ 23.74	$ 24.45
Non-Single Family (NSF)	18.09	19.31	19.89	20.49	21.10	21.73	22.38	23.05	23.74	24.45
NSF w/Detention	15.57	16.62	17.12	17.63	18.16	18.70	19.26	19.84	20.44	21.05
NSF w/Retention	13.04	13.92	14.34	14.77	15.21	15.67	16.14	16.62	17.12	17.63
NSF w/Water Quality	16.64	17.76	18.29	18.84	19.41	19.99	20.59	21.21	21.85	22.51
NSF w/Detention & Water Quality	14.12	15.07	15.52	15.99	16.47	16.96	17.47	17.99	18.53	19.09
NSF w/Retention & Water Quality	11.59	12.37	12.74	13.12	13.51	13.92	14.34	14.77	15.21	15.67

9.6.3 Affordability

A common affordability metric used by the EPA to measure the relative financial impact storm drainage rates have on a community as a whole considers whether rates exceed 2.5% of a community's median household income. The average median household income for the City was $87,406 between 2018 and 2022 according to the U.S. Census Bureau. The 2022 value is escalated based on the actual rate of inflation in 2023 of 4.31% and the 3% inflation rate used in the financial forecast to project the median household income in future years. Table 9-10 presents the City's monthly storm drainage bill, projected to 2033 and tested against the 2.5% monthly affordability threshold.

Table 9-10. Community Affordability Test

Year	Inflation	Median HH Income	2.5% Monthly Threshold	Projected Monthly Bill	% of Median HH Income
2022		$ 87,406			
2023	4.31%	91,173			
2024	3.00%	93,908	$ 195.64	$ 18.09	0.23%
2025	3.00%	96,726	201.51	19.31	0.24%
2026	3.00%	99,627	207.56	19.89	0.24%
2027	3.00%	102,616	213.78	20.49	0.24%
2028	3.00%	105,695	220.20	21.10	0.24%
2029	3.00%	108,866	226.80	21.73	0.24%
2030	3.00%	112,132	233.61	22.38	0.24%
2031	3.00%	115,495	240.62	23.05	0.24%
2032	3.00%	118,960	247.83	23.74	0.24%
2033	3.00%	122,529	255.27	24.45	0.24%

Applying the 2.50% test, the City's rates are forecasted to remain within the indicated affordability range through 2033.

9.7 Conclusion

The results of this analysis indicate that at existing rate levels the utility will be deficient beginning in 2025. To keep pace with expenses and continue to phase in rate-funded system reinvestment towards depreciation levels, the City has adopted a 6.75% rate increase in 2025. Forecasting into the future, a 3% annual rate increase will be required from 2026 through 2033. It is recommended that the City regularly review and update the key underlying assumptions that compose the multiyear financial plan to ensure that adequate revenues are collected to meet the City's total financial obligations.

10. Limitations

This document was prepared solely for the City of Auburn in accordance with professional standards at the time the services were performed and in accordance with the contract between City of Auburn and Parametrix dated March 16, 2022. This document is governed by the specific scope of work authorized by the City of Auburn; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by the City of Auburn and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

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Appendix A

Western Washington Phase II NPDES MS4 Permit

Issuance Date:	July 1, 2024
Effective Date:	August 1, 2024
Expiration Date:	July 31, 2029

WESTERN WASHINGTON PHASE II MUNICIPAL STORMWATER PERMIT

National Pollutant Discharge Elimination System and
State Waste Discharge General Permit for discharges from
Small Municipal Separate Storm Sewer Systems
In Western Washington

State of Washington
Department of Ecology
Olympia, WA 98504-7600

In compliance with the provisions of
The State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington
and
The Federal Water Pollution Control Act
(The Clean Water Act)
Title 33 United States Code, Section 1251 *et seq*.

Until this Permit expires, is modified, or revoked, Permittees that have properly obtained coverage under this Permit are authorized to discharge to waters of the State in accordance with the special and general conditions which follow.

Vincent McGowan, P.E.
Water Quality Program Manager
Washington State Department of Ecology

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ADA ACCESSIBILITY

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[1] https://ecology.wa.gov/About-us/Accessibility-equity/Accessibility/

SPECIAL CONDITIONS

S1. PERMIT COVERAGE AREA AND PERMITTEES

A. Geographic Area of Permit Coverage

This Permit is applicable to owners or operators of regulated small Municipal Separate Storm Sewer Systems (MS4s) located west of the eastern boundaries of the following counties: Whatcom, Skagit, Snohomish, King, Pierce, Lewis, and Skamania.

1. For all cities required to obtain coverage under this Permit, the geographic area of coverage is the entire incorporated area of the city.
2. For all counties required to have coverage under this Permit, the geographic area of coverage is the urban areas and urban growth areas associated with permitted cities under the jurisdictional control of the county. The geographic area of coverage also includes any urban growth area contiguous to permitted urban areas under the jurisdictional control of the county.
3. For Whatcom County, the geographic area of coverage also includes the unincorporated Birch Bay urban growth area.

   For Thurston County, the geographic area of coverage also includes the unincorporated Yelm urban growth area.
4. For Secondary Permittees required to obtain coverage under this Permit, the minimum geographic area of coverage is all areas identified under S1.A.1 and S1.A.2. At the time of Permit coverage, the Washington State Department of Ecology (Ecology) may establish a geographic area of coverage specific to an individual Secondary Permittee.
5. All regulated small MS4s owned or operated by the Permittees named in S1.D.2.a(i), and (ii), and S1.D.2.b and located in another city or county area requiring coverage under this Permit, or the *Phase I Municipal Stormwater Permit* or the *Eastern Washington Phase II Municipal Stormwater Permit*, are also covered under this Permit.

B. Regulated Small Municipal Separate Storm Sewer Systems (MS4s)

All operators of regulated small MS4s are required to apply for and obtain coverage under this Permit or be permitted under a separate individual permit, unless waived or exempted in accordance with Section S1.C.

1. A regulated small MS4:
    a. Is a "Small MS4" as defined in the *Definitions and Acronyms* section at the end of this Permit; and
    b. Is located within, or partially located within, an urban area as defined by the latest decennial census conducted by the U.S. Census Bureau, or designated by Ecology pursuant to 40 CFR 123.35(b) or 40 CFR 122.26(f); and
    c. Discharges stormwater from the MS4 to a surface water of Washington State; and
    d. Is not eligible for a waiver or exemption under S1.C, below.
2. All other operators of MS4s, including special purpose districts, which meet the criteria for a regulated small MS4 shall obtain coverage under this Permit. Other operators of small MS4s may include, but are not limited to: flood control, or diking and drainage districts; schools, including universities; and correctional facilities that own or operate a small MS4 serving non-agricultural land uses.
3. Any other operators of small MS4s may be required by Ecology to obtain coverage under this Permit or an alternative NPDES permit if Ecology determines the small MS4 is a significant source of pollution to surface waters of the State. Notification of Ecology's determination that permit coverage is required will be through the issuance of an Administrative Order issued in accordance with Chapter 90.48 RCW.
4. The owner or operator of a regulated small MS4 may obtain coverage under this Permit as a Permittee, Co-Permittee, or Secondary Permittee as defined in S1.D.1, below.
5. Pursuant to 40 CFR 122.26(f), any person or organization may petition Ecology to require that additional small MS4s obtain coverage under this Permit. The process for petitioning Ecology is:
    a. The person or organization shall submit a complete petition in writing to Ecology. A complete petition shall address each of the relevant factors for petitions outlined on Ecology's website.
    b. In making its determination on the petition, Ecology may request additional information from either the petitioner or the entity that is the subject of the petition.
    c. Ecology will make a final determination on a complete petition within 180 days of receipt of the petition and inform both the petitioner and the MS4 of the decision, in writing.

d. If Ecology's final determination is that the candidate MS4 will be regulated, Ecology will issue an order to the operator of the MS4 requiring them to obtain coverage under this Permit. The order will specify:

   i. The geographic area of permit coverage for the MS4.

   ii. Any modified dates or deadlines for developing and implementing this Permit, as appropriate to the MS4, and for submitting their first annual report.

   iii. A deadline for the operator of the MS4 to submit a complete Notice of Intent (NOI, provided on Ecology's website) to Ecology.

C. Permit Waivers

Owners and operators of an otherwise regulated small MS4 are not required to obtain coverage under this Permit if:

1. The small MS4 is operated by:

   a. A federal entity, including any department, agency, or instrumentality of the executive, legislative, and judicial branches of the Federal government of the United States.

   b. Federally recognized Indian Tribes located within Indian Country, including all trust or restricted lands within the 1873 Survey Area of the Puyallup Tribe of Indians.

   c. The Washington State Department of Transportation.

Or

2. The portions of the small MS4 located within the census defined urban area(s) serve a total population of less than 1000 people ***and*** a, b, and c, below ***all*** apply:

   a. The small MS4 is not contributing substantially to the pollutant loadings of a physically interconnected MS4 that is regulated by the NPDES stormwater program.

   b. The discharge of pollutants from the small MS4 has not been identified as a cause of impairment of any water body to which the MS4 discharges.

   c. In areas where an EPA approved TMDL has been completed, stormwater controls on the MS4 have not been identified as necessary to meet wasteload allocations established in the TMDL that address the pollutant(s) of concern.

In determining the total population served, both resident and commuter populations shall be included. For example:

- For publicly operated school complexes including universities and colleges, the total population served would include the sum of the average annual student enrollment plus staff.
- For flood control, diking, and drainage districts, the total population served would include residential population and any non-residents regularly employed in the areas served by the small MS4.

D. Obtaining Coverage Under this Permit

All operators of regulated small MS4s are required to apply for and obtain coverage in accordance with this Section, unless waived or exempted in accordance with Section S1.C.

1. Unless otherwise noted, the term "Permittee" shall include a city, town, or county Permittee, New Permittee, Co-Permittee, Secondary Permittee, and New Secondary Permittee as defined below:
   a. "Permittee" is a city, town, or county owning or operating a regulated small MS4 applying and receiving a permit as a single entity.
   b. "New Permittee" is a city, town, or county that is subject to *the Western Washington Phase II Municipal Stormwater General Permit* and was not subject to the Permit prior to August 1, 2024.
   c. "Co-Permittee" is any owner or operator of a regulated small MS4 that is applying in a cooperative agreement with at least one other applicant for coverage under this Permit. Co-Permittees own or operate a regulated small MS4 located within or in proximity to another regulated small MS4.
   d. A "Secondary Permittee" is an operator of a regulated small MS4 that is not a city, town, or county. Secondary Permittees include special purpose districts and other MS4s that meet the criteria for a regulated small MS4 in S1.B, above.
   e. "New Secondary Permittee" is a Secondary Permittee that is covered under a Municipal Stormwater General Permit and was not covered by the Permit prior to August 1, 2024.
2. Operators of regulated small MS4s have submitted, or shall submit, to Ecology either a Notice of Intent (NOI) for Coverage under National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater General Permit or a Duty to Reapply - NOI provided on Ecology's Water Quality Permitting Portal (WQWebPortal).

a. The following Permittees and Secondary Permittees submitted a Duty to Reapply - NOI to Ecology prior to February 1, 2024:

   i. **Cities and towns:** Aberdeen, Algona, Anacortes, Arlington, Auburn, Bainbridge Island, Battle Ground, Bellevue, Bellingham, Black Diamond, Bonney Lake, Bothell, Bremerton, Brier, Buckley, Burien, Burlington, Camas, Centralia, Clyde Hill, Covington, Des Moines, DuPont, Duvall, Edgewood, Edmonds, Enumclaw, Everett, Federal Way, Ferndale, Fife, Fircrest, Gig Harbor, Granite Falls, Issaquah, Kelso, Kenmore, Kent, Kirkland, Lacey, Lake Forest Park, Lake Stevens, Lakewood, Longview, Lynden, Lynnwood, Maple Valley, Marysville, Medina, Mercer Island, Mill Creek, Milton, Monroe, Mountlake Terrace, Mount Vernon, Mukilteo, Newcastle, Normandy Park, Oak Harbor, Olympia, Orting, Pacific, Port Orchard, Port Angeles, Poulsbo, Puyallup, Redmond, Renton, Sammamish, SeaTac, Sedro-Woolley, Shelton, Shoreline, Snohomish, Snoqualmie, Steilacoom, Sumner, Tukwila, Tumwater, University Place, Vancouver, Washougal, and Woodinville.

   ii. **Counties:** Cowlitz, Kitsap, Thurston, Skagit, and Whatcom.

   iii. **Secondary Permittees:** Bainbridge Island School District #303, Bellingham School District, Bellingham Technical College, Cascadia College, Central Kitsap School District, Centralia College, Clark College, Consolidated Diking Improvement District #1 of Cowlitz County, Edmonds Community College, Evergreen College, Highline Community College, Kelso School District, Kent School District, Longview School District, Lower Columbia College, Port of Anacortes, Port of Bellingham, Port of Everett, Port of Olympia, Port of Skagit County, Port of Vancouver, Skagit Valley College, University of Washington Bothell, Washington State University Vancouver, Washington State Department of Enterprise Services (Capitol Campus), Washington Department of Corrections (Larch Corrections Center, Monroe Correctional Complex, Washington Corrections Center for Women, and Washington State Penitentiary), Western Washington University, and Whatcom Community College.

b. Operators of regulated small MS4s have submitted or shall submit to Ecology a "Notice of Intent (NOI) for Coverage under National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater General Permit" provided on Ecology's website before the effective date of this Permit, with the following exceptions:

   i. Operators of regulated small MS4s located in the Cities of Ridgefield and Yelm, and Sound Transit shall submit a NOI, or application, to Ecology no later than 30 days after the effective date of this Permit.

ii. Operators of regulated small MS4s listed in S1.D.2.a do not need to submit a new application to be covered under this Permit.

c. For operators of regulated small MS4s listed in S1.D.2.a, coverage under this Permit is automatic and begins on the effective date of this Permit, unless the operator chooses to opt out of this General Permit. Any operator of a regulated small MS4 that is opting out of this Permit shall submit an application for an individual MS4 permit in accordance with 40 CFR 122.33(b)(2)(ii) no later than the effective date of this Permit.

d. Operators of regulated small MS4s which want to be covered under this Permit as Co-Permittees shall each submit a NOI to Ecology.

e. Operators of regulated small MS4s which are relying on another entity to satisfy all of their permit obligations shall submit a NOI to Ecology.

f. Operators of small MS4s designated by Ecology pursuant to S1.B.3 of this Permit shall submit a NOI to Ecology within 120 days of receiving notification from Ecology that permit coverage is required.

3. Application Requirements

a. For NOIs submitted after the issuance date of this Permit, the applicant shall include a certification that the public notification requirements of WAC 173-226-130(5) have been satisfied. Ecology will notify applicants in writing of their status concerning coverage under this Permit within 90 days of Ecology's receipt of a complete NOI.

b. Each Permittee applying as a Co-Permittee shall submit a NOI provided on Ecology's website. The NOI shall clearly identify the areas of the MS4 for which the Co-Permittee is responsible.

c. Permittees relying on another entity or entities to satisfy one or more of their permit obligations shall notify Ecology in writing. The notification shall include a summary of the permit obligations that will be carried out by another entity. The summary shall identify the other entity or entities and shall be signed by the other entity or entities. During the term of the Permit, Permittees may terminate or amend shared responsibility arrangements by notifying Ecology, provided this does not alter implementation deadlines.

d. Secondary Permittees required to obtain coverage under this Permit, and the *Phase I Municipal Stormwater Permit* or the *Eastern Washington Phase II Municipal Stormwater Permit*, may obtain coverage by submitting a single NOI.

S2. AUTHORIZED DISCHARGES

A. Stormwater Discharges

This Permit authorizes the discharge of stormwater to surface waters and to groundwaters of the State from MS4s owned or operated by each Permittee covered under this Permit, in the geographic area covered pursuant to S1.A. These discharges are subject to the following limitations:

1. Discharges to groundwaters of the State through facilities regulated under the Underground Injection Control (UIC) program, Chapter 173-218 WAC, are not authorized under this Permit.
2. Discharges to groundwaters not subject to regulation under the federal *Clean Water Act* are authorized in this Permit only under state authorities, Chapter 90.48 RCW, the *Water Pollution Control Act*.

B. Non-Stormwater Discharges

This Permit authorizes discharges of non-stormwater flows to surface waters and to groundwaters of the State from MS4s owned or operated by each Permittee covered under this Permit, in the geographic area covered pursuant to S1.A, only under one or more of the following conditions:

1. The discharge is authorized by a separate NPDES or State Waste Discharge permit.
2. The discharge is from emergency firefighting activities. See Special Conditions S5.C.5, S6.D.3 to address non-stormwater discharges (e.g., discharges associated with cleanup after the emergency).
3. The discharge is from another illicit or non-stormwater discharge that is managed by the Permittee as provided in Special Condition S5.C.5 or S6.D.3.

These discharges are also subject to the limitations in S2.A.1 and S2.A.2, above.

C. Responsibilities and Liabilities

This Permit does not relieve entities that cause illicit discharges, including spills of oil or hazardous substances, from responsibilities and liabilities under state and federal laws and regulations pertaining to those discharges.

D. Compliance with State and Local Authorizations

Discharges from MS4s constructed after the effective date of this Permit shall receive all applicable state and local permits and use authorizations, including compliance with Chapter 43.21C RCW (the *State Environmental Policy Act*).

E. Indian Country

This Permit does not authorize discharges of stormwater to waters within Indian Country as defined in 18 U.S.C. §1151, or to waters subject to water quality standards of Indian Tribes, including portions of the Puyallup River and other waters on trust or restricted lands within the 1873 Survey Area of the Puyallup Tribe of Indians Reservation, except where authority has been specifically delegated to Ecology by the U.S. Environmental Protection Agency. The exclusion of such discharges from this Permit does not waive any rights the State may have with respect to the regulation of the discharges. Indian Country includes:

1. All land within any Indian Reservation notwithstanding the issuance of any patent and including rights-of-way running through the reservation. This includes all federal, tribal, and Indian and non-Indian privately owned land within the reservation.
2. All off-reservation Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.
3. All off-reservation federal trust lands held for Native American Tribes.

   Puyallup Exception: Following the "Puyallup Tribes of Indians Land Settlement Act of 1989," 25 USC §1773; the permit does apply to land within the Puyallup Reservation except for discharges to surface water on land held in trust by the federal government.

S3. RESPONSIBILITIES OF PERMITTEES

A. Compliance with Conditions

Each Permittee covered under this Permit is responsible for compliance with the terms of this Permit for the regulated small MS4s that they own or operate. Compliance with (1) or (2) below is required as applicable to each Permittee, whether the Permittee has applied for coverage as a Permittee, Co-Permittee, or Secondary Permittee.

1. All city, town, and county Permittees are required to comply with all conditions of this Permit, including any appendices referenced therein, except for Special Condition S6 – *Stormwater Management Program for Secondary Permittees*.
2. All Secondary Permittees are required to comply with all conditions of this Permit, including any appendices referenced therein, except for Section S5 – *Stormwater Management Program for Cities, Towns, and Counties* and S8 – *Monitoring and Assessment*.

B. Reliance on Another Entity

Permittees may rely on another entity to satisfy one or more of the requirements of this Permit. Permittees that are relying on another entity to satisfy one or more of their permit obligations remain responsible for permit compliance if the other entity fails to implement permit conditions. Permittees may rely on another entity provided all the requirements of 40 CFR 122.35(a) are satisfied including, but not limited to:

1. The other entity, in fact, implements the Permit requirements.
2. The other entity agrees to take on responsibility for implementation of the Permit requirement(s) on the Permittee's behalf. This shall be indicated on the NOI or Annual Report.

S4. COMPLIANCE WITH STANDARDS

A. Prohibition of Discharge of Toxicants

In accordance with RCW 90.48.520, the discharge of toxicants to waters of the State of Washington which would violate any water quality standard, including toxicant standards, sediment criteria, and dilution zone criteria is prohibited. The required response to such discharges is defined in Section S4.F, below.

B. Compliance with Standards

This Permit does not authorize a discharge which would be a violation of Washington State *Surface Water Quality Standards* (Chapter 173-201A WAC), *Groundwater Quality Standards* (Chapter 173-200 WAC), *Sediment Management Standards* (Chapter 173-204 WAC), or human health-based criteria in the *National Toxics Rule* (40 CFR 131.45). The required response to such discharges is defined in Section S4.F, below.

C. MEP Standard

The Permittee shall reduce the discharge of pollutants to the Maximum Extent Practicable (MEP).

D. AKART Standard

The Permittee shall use All Known, Available, and Reasonable methods of prevention, control, and Treatment (AKART) to prevent and control pollution of waters of the State of Washington.

E. Responsibilities of Permittees

In order to meet the goals of the *Clean Water Act*, and comply with S4.A, S4.B, S4.C, and S4.D, each Permittee shall comply with all of the applicable requirements of this Permit as identified in S3 – *Responsibilities of Permittees*.

F. Violations of Water Quality Standards and Adaptive Management

A Permittee remains in compliance with S4 despite any discharges prohibited by S4.A or S4.B, when the Permittee undertakes the following response toward long-term water quality improvement:

1. A Permittee shall notify Ecology in writing within 30 days of becoming aware, based on credible site-specific information that a discharge from the MS4 owned or operated by the Permittee is causing or contributing to a known or likely violation of Water Quality Standards in the receiving water. Written notification provided under this subsection shall, at a minimum, identify the source of the site-specific information, describe the nature and extent of the known or likely violation in the receiving water, and explain the reasons why the MS4 discharge is believed to be causing or contributing to the problem. For ongoing or continuing violations, a single written notification to Ecology will fulfill this requirement.
2. In the event that Ecology determines, based on a notification provided under S4.F.1 or through any other means, that a discharge from an MS4 owned or operated by the Permittee is causing or contributing to a violation of Water Quality Standards in a receiving water, Ecology will notify the Permittee in writing that an adaptive management response, outlined in S4.F.3, below, is required, unless:
    a. Ecology also determines that the violation of Water Quality Standards is already being addressed by a Total Maximum Daily Load (TMDL) or other enforceable water quality cleanup plan; or
    b. Ecology concludes the MS4 contribution to the violation will be eliminated through implementation of other permit requirements.
3. Adaptive Management Response
    a. Within 60 days of receiving a notification under S4.F.2, or by an alternative date established by Ecology, the Permittee shall review its Stormwater Management Program (SWMP) and submit a report to Ecology. The report shall include:
        i. A description of the operational and/or structural BMPs that are currently being implemented to prevent or reduce any pollutants that are causing or contributing to the violation of Water Quality Standards, including a qualitative assessment of the effectiveness of each Best Management Practice (BMP).
        ii. A description of potential additional operational and/or structural BMPs that will or may be implemented in order to apply AKART on a site-specific basis to prevent or reduce any pollutants that are causing or contributing to the violation of Water Quality Standards.

iii. A description of the potential monitoring or other assessment and evaluation efforts that will or may be implemented to monitor, assess, or evaluate the effectiveness of the additional BMPs.

iv. A schedule for implementing the additional BMPs including, as appropriate: funding, training, purchasing, construction, monitoring, and other assessment and evaluation components of implementation.

b. Ecology will, in writing, acknowledge receipt of the report within a reasonable time and notify the Permittee when it expects to complete its review of the report. Ecology will either approve the additional BMPs and implementation schedule or require the Permittee to modify the report as needed to meet AKART on a site-specific basis. If modifications are required, Ecology will specify a reasonable time frame in which the Permittee shall submit, and Ecology will review the revised report.

c. The Permittee shall implement the additional BMPs, pursuant to the schedule approved by Ecology, beginning immediately upon receipt of written notification of approval.

d. The Permittee shall include with each subsequent annual report a summary of the status of implementation and the results of any monitoring, assessment or evaluation efforts conducted during the reporting period. If, based on the information provided under this subsection, Ecology determines that modification of the BMPs or implementation schedule is necessary to meet AKART on a site-specific basis, the Permittee shall make such modifications as Ecology directs. In the event there are ongoing violations of water quality standards despite the implementation of the BMP approach of this Section, the Permittee may be subject to compliance schedules to eliminate the violation under WAC 173-201A-510(4) and WAC 173-226-180 or other enforcement orders as Ecology deems appropriate during the term of this Permit.

e. A TMDL or other enforceable water quality cleanup plan that has been approved and is being implemented to address the MS4's contribution to the Water Quality Standards violation supersedes and terminates the S4.F.3 implementation plan.

f. Provided the Permittee is implementing the approved adaptive management response under this Section, the Permittee remains in compliance with Special Condition S4, despite any on-going violations of Water Quality Standards identified under S4.A or B, above.

g. The adaptive management process provided under Section S4.F is not intended to create a shield for the Permittee from any liability it may face under 42 U.S.C. 9601 et seq. or Chapter 70.105D RCW.

G. Revoke and Reissue Permit

Ecology may modify or revoke and reissue this General Permit in accordance with G14 – *General Permit Modification and Revocation*, if Ecology becomes aware of additional control measures, management practices, or other actions beyond what is required in this Permit that are necessary to:

1. Reduce the discharge of pollutants to the MEP;
2. Comply with the state AKART requirements; or
3. Control the discharge of toxicants to waters of the State of Washington.

S5. STORMWATER MANAGEMENT PROGRAM FOR CITIES, TOWNS, AND COUNTIES

A. Stormwater Management Program General Requirements

Each Permittee shall develop and implement a Stormwater Management Program (SWMP). A SWMP is a set of actions and activities comprising the components listed in S5 and any additional actions necessary to meet the requirements of applicable TMDLs pursuant to S7 – *Compliance with Total Maximum Daily Load Requirements* and S8 – *Monitoring and Assessment*. This Section applies to all cities, towns, and counties covered under this Permit (termed as "Permittee," including cities, towns, and counties that are Co-Permittees).

New Permittees subject to this Permit, as described in S1.D.1.b, shall fully meet the requirements in S5 as modified in footnotes below or as specified in an alternate schedule as a condition of coverage by Ecology. Permittees obtaining coverage after the issuance date of this Permit shall fully meet the requirements in S5 as specified in an alternate schedule as a condition of coverage by Ecology.

1. At a minimum, the Permittee's SWMP shall be implemented throughout the geographic area subject to this Permit as described in S1.A.[2]
2. Each Permittee shall prepare written documentation of the SWMP, called the SWMP Plan. The SWMP Plan shall be organized according to the program components in S5.C, or a format approved by Ecology and shall be updated at least annually for submittal with the Permittee's annual reports to Ecology (see S9 – *Reporting Requirements*). The SWMP Plan shall be written to inform the public of the planned SWMP activities for the upcoming calendar year, and shall include a description of:
    a. Planned activities for each of the program components included in S5.C.
    b. Any additional planned actions to meet the requirements of applicable TMDLs pursuant to S7– *Compliance with Total Maximum Daily Load Requirements*.
    c. Any additional planned actions to meet the requirements of S8 – *Monitoring and Assessment*.
3. The SWMP shall include an ongoing program for gathering, tracking, maintaining, and using information to evaluate SWMP development, implementation, and permit compliance and to set priorities.

[2] New Permittees shall fully develop and implement the SWMP in accordance with the schedules contained in this Section no later than March 31, 2029.

a. Each Permittee shall track the cost or estimated cost of development and implementation of each component of the SWMP and sources of funding. This information shall be provided with each Annual Report, no later than March 31, 2027. Permittees shall provide annual average costs (or estimates) to implement the SWMP and TMDL requirements.[3]

b. Each Permittee shall track the number of inspections, follow-up actions because of inspections, official enforcement actions, and types of public education activities as required by the respective program component. This information shall be included in the annual report.

4. Permittees shall continue implementation of existing stormwater management programs until they begin implementation of the updated stormwater management program in accordance with the terms of this Permit, including implementation schedules.

5. Coordination among Permittees

a. Coordination among entities covered under municipal stormwater NPDES permits may be necessary to comply with certain conditions of the SWMP. The SWMP shall include, when needed, coordination mechanisms among entities covered under a municipal stormwater NPDES permit to encourage coordinated stormwater-related policies, programs, and projects within adjoining or shared areas, including:

i. Coordination mechanisms clarifying roles and responsibilities for the control of pollutants between physically interconnected MS4s covered by a Municipal Stormwater Permit.

ii. Coordinating stormwater management activities for shared water bodies, or watersheds among Permittees to avoid conflicting plans, policies, and regulations.

b. The SWMP shall include coordination mechanisms among departments within each jurisdiction to eliminate barriers to compliance with the terms of this Permit. Permittees shall include a written description of internal coordination mechanisms in the Annual Report due no later than March 31, 2026.

[3] New Permittees shall begin cost tracking as required in S5.A.3.a, no later than January 1, 2026.

B. Stormwater Management Program Standards

The SWMP shall be designed to reduce the discharge of pollutants from regulated small MS4s to the MEP, meet state AKART requirements, and protect water quality.

C. Stormwater Management Program Components

The SWMP shall include the components listed below. To the extent allowable under state or federal law, all components are mandatory for city, town, or county Permittees covered under this Permit.

1. Stormwater Planning

Each Permittee shall implement a Stormwater Planning program to inform and assist in the development of policies and strategies as water quality management tools to protect receiving waters.

The minimum performance measures are:

a. Each Permittee shall continue to convene an inter-disciplinary team to inform and assist in the development, progress, and influence of this program.[4]

b. Coordination with long-range plan updates.

   i. Each Permittee shall describe how stormwater management needs and protection/improvement of receiving water health are (or are not) informing the long-range or comprehensive planning update processes and influencing policies and implementation strategies in their jurisdiction in the Annual Report, due March 31, 2027. The Annual Report shall describe the water quality and watershed protection policies, strategies, codes, and other measures intended to protect and improve local receiving water health through planning, considering stormwater management needs or limitations.

c. Low Impact Development (LID) code-related requirements.

   i. Permittees shall continue to require LID Principles and LID BMPs when updating, revising, and developing new local development-related codes, rules, standards, or other enforceable documents, as needed.

      The intent shall be to make LID the preferred and commonly used approach to site development. The local development-related codes, rules, standards, or other enforceable documents shall be designed to

[4] New Permittees shall convene an interdisciplinary team no later than August 1, 2025.

minimize impervious surfaces, native vegetation loss, and stormwater runoff in all types of development situations, where feasible.

(a) Annually, each Permittee shall assess and document any newly identified administrative or regulatory barriers to implementation of LID Principles or LID BMPs since local codes were updated in accordance with the 2013 Permit, and the measures developed to address the barriers. If applicable, the report shall describe mechanisms adopted to encourage or require implementation of LID principles or LID BMPs.

ii. By December 31, 2028, New Permittees shall review, revise, and make effective their local development-related codes, rules, standards, or other enforceable documents to incorporate and require LID principles and LID BMPs. New Permittees shall conduct a similar review and revision process, and consider the range of issues, outlined in the following document: *Integrating LID into Local Codes: A Guidebook for Local Governments* (Puget Sound Partnership, 2012).

New Permittees shall submit a summary of the results of the review and revision process with the annual report due no later than March 31, 2029. This summary shall be in the required format described in Appendix 5 and include, at a minimum, a list of the participants (job title, brief job description, and department represented), the codes, rules, standards, and other enforceable documents reviewed, and the revisions made to those documents which incorporate and require LID principles and LID BMPs. The summary shall include existing requirements for LID principles and LID BMPs in development-related codes. The summary shall be organized as follows:

(a) Measures to minimize impervious surfaces;

(b) Measures to minimize loss of native vegetation; and

(c) Other measures to minimize stormwater runoff.

iii. No later than December 31, 2028, adopt and implement tree canopy goals and policies to support stormwater management. Permittees shall consider how existing or future tree canopy can support stormwater management and water quality improvements in receiving waters. Establish a long-term (e.g. 5, 10 year or longer) goal of canopy, existing or future projection, to be used for stormwater management that is appropriate to the jurisdiction. Specific considerations for canopy for

stormwater management on Permittee-owned or operated lands shall include (but are not limited to):

(a) Maintaining or increasing canopy in overburdened communities.

(b) Maintaining existing mature canopy.

Document considerations, reasoning, and rationale for goals and policies.

d. Stormwater Management Action Planning (SMAP).[5] Permittees shall conduct a similar process and consider the range of issues outlined in the *Stormwater Management Action Planning Guidance* (Ecology, 2024; Publication no. 24-10-027) for one new priority catchment or additional actions for an existing SMAP.[6] A purpose of the SMAP is to support implementation in the Stormwater Management for Existing Development (SMED) Program with the identification of strategic investments through the identification of projects and actions.

i. Stormwater Management Action Plan (SMAP). No later than March 31, 2027, Permittees shall complete and submit a SMAP for at least one new high priority catchment area, or additional actions for an existing SMAP, that identifies all of the following:

(a) A description of the stormwater facility retrofits needed for the area, including the BMP types and preferred locations. Include projects that address transportation-related runoff from high traffic areas.

(b) Land management/development strategies and/or actions identified for water quality management.

(c) Focused, enhanced, or customized implementation of stormwater management actions related to Permit sections within S5, including:

- IDDE field screening;
- Prioritization of Source Control inspections;
- O&M inspections or enhanced maintenance; or
- Public Education and Outreach behavior change programs.

Identified actions shall support other specifically identified stormwater management strategies and actions for the basin overall, or for the catchment area in particular.

[5] New Permittees are exempt from S5.C.1.d. for this Permit term.
[6] City of Shelton shall follow the SMAP requirements outlined in Appendix 14.

(d) If applicable, identification of changes needed to local long-range plans to address SMAP priorities.

(e) A proposed implementation schedule and budget sources for:

- Short-term actions (i.e., actions to be accomplished within six years); and
- Long-term actions (i.e., actions to be accomplished within seven to 20 years).

(f) Actions in the SMAP that may benefit overburdened communities, including specifically vulnerable populations and highly impacted Communities.

(g) A process and schedule to provide future assessment and feedback to improve the planning process and implementation of procedures or projects.

2. Public Education and Outreach

The SWMP shall include an education and outreach program designed to:

- Build general awareness about methods to address and reduce impacts from stormwater runoff;
- Effect behavior change to reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts; and
- Create stewardship opportunities that encourages community engagement in addressing the impacts from stormwater runoff.

Permittees may choose to meet these requirements individually or as a member of a regional group. Regional collaboration on general awareness or behavior change programs, or both, includes Permittees developing a consistent message, determining best methods for communicating the message, and when appropriate, creating strategies to effect behavior change. If a Permittee chooses to adopt one or more elements of a regional program, the Permittee should participate in the regional group and shall implement the adopted element(s) of the regional program in the local jurisdiction.

The minimum performance measures are:

a. Each Permittee shall implement an education and outreach program. The program design shall be based on local or regional (or a combination of both) water quality information and priority audience characteristics to identify high priority audiences, subject areas, and/or BMPs. Based on the priority

audience's demographic, the Permittee shall consider delivering its selected messages in language(s) other than English, as appropriate to the priority audience.[7]

i. ***General awareness.*** To build general awareness, Permittees shall annually select, at a minimum, one priority audience and one subject area from either (a) or (b):

(a) *Priority audiences:* General public (including overburdened communities, school age children, college/university, or trade students) or businesses (including home-based, or mobile businesses). Subject areas:

- General impacts of stormwater on surface waters, including impacts from impervious surfaces.
- Low impact development (LID) principles and LID BMPs.

(b) *Priority audiences:* Engineers, contractors, developers, property owners/managers, or land use planners. Subject areas:

- Technical standards for stormwater site and erosion control plans.
- LID principles and LID BMPs.
- Stormwater treatment and flow control BMPs/facilities.
- Source control BMPs for building materials to reduce pollution to stormwater, including but not limited to stormwater pollution from PCB-containing materials.

(c) Permittees shall provide subject area information to the priority audience on an ongoing or strategic schedule.

ii. ***Behavior change.*** To affect behavior change, Permittees shall select, at a minimum, one priority audience and one BMP.

(a) *Priority Audiences:* Residents, landscapers, property managers/owners, developers, school age children, college/university, trade students, or businesses (including home-based or mobile businesses).

BMPs:

[7] New Permittees shall begin implementing the requirements of S5.C.2.a no later than August 1, 2027.

- Use and storage of: pesticides, fertilizers, and/or other household chemicals.
- Use and storage of: automotive chemicals, hazardous cleaning supplies, carwash soaps, and/or other hazardous materials.
- Prevention of illicit discharges.
- Yard care techniques protective of water quality.
- Carpet cleaning.
- Repair and maintenance BMPs for: vehicles, equipment, and/or home/buildings.
- Pet waste management and disposal.
- LID Principles and LID BMPs.
- Stormwater facility maintenance, including LID facilities.
- Dumpster and trash compactor maintenance.
- Litter and debris prevention.
- Sediment and erosion control.
- (Audience specific) Source control BMPs (refer to S5.C.8).
- (Audience specific) Locally important, municipal stormwater-related subject area.

(b) Social marketing campaign development. Based on the recommendation from 2024 evaluation and report, no later than July 1, 2025, each Permittee shall follow social marketing practices and methods and develop a campaign that is tailored to the community, including development of a program evaluation plan. Each Permittee shall:[8]

1. Develop a strategy and schedule to implement the existing campaign more effectively; or
2. Develop a strategy and schedule to expand the existing campaign to a new priority audience or BMPs; or

[8] No later than August 1, 2025, New Permittees shall follow social marketing practices and methods to develop a behavior change program that is tailored to the community per S5.C.2.a.ii(b).

3. Develop a strategy and schedule for a new priority audience and BMP behavior change campaign.

(c) Behavior change campaign implementation. No later than September 1, 2025, begin to implement the strategy developed in S5.C.2.a.ii.(b).[9]

(d) Behavior change campaign evaluation. No later than March 31, 2029, evaluate and submit report on:

1. The changes in understanding and adoption of behaviors resulting from the implementation of the strategy; and

2. Any planned or recommended changes to the campaign to be more effective; describe the strategies and process to achieve the results.

(e) Behavior change campaign adaptive management. Permittees shall use results of the evaluation to continue to direct effective methods and implementation of the ongoing behavior change program.

iii. ***Stewardship.*** Each Permittee shall provide, partner with, or promote stewardship opportunities to encourage residents or businesses to participate in activities or events planned and organized within the community, such as: stream teams, storm drain marking, volunteer monitoring, riparian plantings, and watershed habitat improvement. Permittees may provide, partner with, or promote stewardship opportunities created or organized by existing organizations (including non-Permittees).[10]

3. Public Involvement and Participation

Permittees shall provide ongoing opportunities for public involvement and participation through advisory councils, public hearings, watershed committees, participation in developing rate-structures or other similar activities. Each Permittee shall comply with applicable state and local public notice requirements when developing elements of the SWMP and SMAP.

The minimum performance measures are:

a. Permittees shall create opportunities for the public, including overburdened communities, to participate in the decision-making processes involving the development, implementation, and update of the Permittee's SMAP and

[9] No later than October 1, 2025, New Permittees shall begin to implement the strategy developed in S5.C.2.a.ii(b).
[10] New Permittees shall implement the stewardship requirements according to S5.C.2.a.iii no later than August 1, 2027.

SWMP.[11] Permittees shall document specific outreach measures for overburdened communities.

i. Annually, document specific public involvement and participation opportunities provided to overburdened communities and specifically, highly impacted communities.

ii. No later than December 31, 2026, document methods used to identify overburdened communities.

b. Each Permittee shall post on their website their SWMP Plan and the Annual Report, required under S9.A, no later than May 31 each year. All other submittals shall be available to the public upon request.

4. MS4 Mapping and Documentation

The SWMP shall include an ongoing program for mapping and documenting the MS4.[12]

The minimum performance measures are:

a. *Ongoing Mapping:* Each Permittee shall maintain mapping data for the features listed below:

i. Known MS4 outfalls and known MS4 discharge points.

(a) Map outfall size and material, where known.

ii. Receiving waters, other than groundwater.

iii. Stormwater treatment and flow control BMPs/facilities owned or operated by the Permittee.

iv. Geographic areas served by the Permittee's MS4 that do not discharge stormwater to surface waters.

v. Tributary conveyances to all known outfalls and discharge points with a 24-inch nominal diameter or larger, or an equivalent cross-sectional area for non-pipe systems. The following features or attributes (or both) shall be mapped:

(a) Tributary conveyance type, material, and size where known.

(b) Associated drainage areas.

[11]New Permittees shall develop and begin to implement requirements according to S5.C.3.a no later than August 1, 2025. New Permittees are exempt from SMAP this permit term.

[12]New Permittees shall meet the requirements to map the MS4 according to S5.C.4 no later than March 31, 2029, except where otherwise noted in this Section.

(c) Land use.

vi. Connections between the MS4 owned or operated by the Permittee and other municipalities or public entities.

vii. All connections to the MS4 authorized or allowed by the Permittee after February 16, 2007. [13,14]

viii. All known connections from the MS4 to a privately owned stormwater system.

b. *New Mapping.* Each Permittee shall:

i. No later than March 31, 2026, submit locations of all known MS4 outfalls according to the standard templates and format provided in the Annual Report. Report the size and material of the outfalls, where known.

ii. No later than December 31, 2026, using available, existing data, map tree canopy to support stormwater management on Permittee-owned or operated properties. Permittees shall develop and follow a methodology to intentionally identify canopy for stormwater management purposes, which may be updated annually or as needed.

iii. No later than March 31, 2028, implement a methodology to map and assess acreage of MS4 tributary basins to outfalls with a 24-inch nominal diameter or larger, or an equivalent cross-sectional area for non-pipe systems that have stormwater treatment and flow control BMPs/facilities owned or operated by the Permittee. Submit with the March 31, 2028 Annual Report a map(s) (.pdf) and table (.xlsx) with a breakdown of the MS4 tributary basins quantifying estimated acres managed or unmanaged by stormwater treatment and flow control BMPs/facilities owned or operated by the Permittee.

iv. No later than December 31, 2028, using available, existing data map overburdened communities in relation to stormwater treatment and flow control BMPs/facilities, outfalls, discharge points, and tree canopy on Permittee-owned or operated properties.

c. The required format for mapping is electronic (e.g. Geographic Information System, CAD drawings, or other software that can map and store points,

[13]New Permittees shall meet the requirements of S5.C.4.a.vii after August 1, 2024, for all connections to the MS4 authorized after August 1, 2024.

[14]Permittees do not need to map the following residential connections: individual driveways, sump pumps, or roof downspouts.

lines, polygons, and associated attributes), with fully described mapping standards.

d. To the extent consistent with national security laws and directives, each Permittee shall make available to Ecology, upon request, available maps depicting the information required in S5.C.4.a through c, above.

e. Upon request, and to the extent appropriate, Permittees shall provide mapping information to federally recognized Indian Tribes, municipalities, and other Permittees. This Permit does not preclude Permittees from recovering reasonable costs associated with fulfilling mapping information requests by federally recognized Indian Tribes, municipalities, and other Permittees.

5. Illicit Discharge Detection and Elimination

The SWMP shall include an ongoing program designed to prohibit, prevent, detect, characterize, trace, and eliminate illicit connections and illicit discharges into the MS4.[15]

The minimum performance measures are:

a. The program shall include procedures for reporting and correcting or removing illicit connections, spills, and other illicit discharges when they are suspected or identified. The program shall also include procedures for addressing pollutants entering the MS4 from an interconnected, adjoining MS4.

Illicit connections and illicit discharges shall be identified through, but not limited to, field screening, inspections, complaints/reports, construction inspections, maintenance inspections, source control inspections, and/or monitoring information, as appropriate.

b. Permittees shall inform public employees, businesses, and the public of hazards associated with illicit discharges and improper disposal of waste.

c. Each Permittee shall implement an ordinance or other regulatory mechanism to effectively prohibit non-stormwater, illicit discharges into the Permittee's MS4 to the maximum extent allowable under state and federal law. The ordinance or other regulatory mechanism in effect as of the effective date of this Permit shall be revised, if necessary, to meet the requirements of this Section no later than July 1, 2027.

[15]New Permittees shall meet the requirements of S5.C.5 no later than August 1, 2026 except where otherwise noted in this Section.

i. *Allowable Discharges:* The regulatory mechanism does not need to prohibit the following categories of non-stormwater discharges:

(a) Diverted stream flows

(b) Rising groundwaters

(c) Uncontaminated groundwater infiltration (as defined at 40 CFR 35.2005(b)(20))

(d) Uncontaminated pumped groundwater

(e) Foundation drains

(f) Air conditioning condensation

(g) Irrigation water from agricultural sources that is commingled with urban stormwater

(h) Springs

(i) Uncontaminated water from crawl space pumps

(j) Footing drains

(k) Flows from riparian habitats and wetlands

(l) Non-stormwater discharges authorized by another NPDES or State Waste Discharge permit

(m) Non-stormwater discharges from emergency firefighting activities in accordance with S2 Authorized Discharges

ii. *Conditionally allowable discharges:* The regulatory mechanism may allow the following categories of non-stormwater discharges only if the stated conditions are met:

(a) Discharges from potable water sources, including but not limited to water line flushing, hyperchlorinated water line flushing, fire hydrant system flushing, and pipeline hydrostatic test water. Planned discharges shall be dechlorinated to a total residual chlorine concentration of 0.1 ppm or less, pH-adjusted, if necessary, and volumetrically and velocity controlled to prevent re-suspension of sediments in the MS4.

(b) Discharges from lawn watering and other irrigation runoff, including from reclaimed water sources. These discharges shall be minimized

through, at a minimum, public education activities and water conservation efforts.

(c) Discharges from swimming pools, spas, and hot tubs. The discharges shall be dechlorinated/debrominated to a total residual concentration of 0.1 ppm or less, free from sodium chloride, pH-adjusted, and reoxygenated if necessary, volumetrically and velocity controlled to prevent re-suspension of sediments in the MS4. Discharges shall be thermally controlled to prevent an increase in temperature of the receiving water. Swimming pool cleaning wastewater and filter backwash shall not be discharged to the MS4.

(d) Street and sidewalk wash water and water used to control dust. The Permittee shall reduce these discharges through, at a minimum, public education activities and/or water conservation efforts. To avoid washing pollutants into the MS4 Permittees shall minimize the amount of street wash and dust control water used.

(e) Routine external building washdown that does not use detergents for buildings built or renovated before 1950 and after 1980. These discharges shall be reduced through, at minimum, public education activities and water conservation efforts.

Commercial, industrial, and multi-story residential structures constructed or renovated between the years 1950 and 1980 (i.e. those most likely to have PCB-containing building materials), shall be assessed for PCB-containing materials consistent with *How to find and address PCBs in building materials* (Ecology, 2024, Publication No. 22-04-024) prior to routine building washdown to the MS4. Structures confirmed or suspected to have PCB-containing materials shall not discharge washdown to the MS4.

Single-family residential buildings are exempt from PCB assessment prior to building washdown, for the purposes of this section. Structures built or renovated between 1950-1980 and determined to be without PCB-containing materials may conduct routine building washdown (without detergents) as described above.

(f) Other non-stormwater discharges. The discharges shall be in compliance with the requirements of a pollution prevention plan reviewed by the Permittee which addresses control of such discharges.

iii. The Permittee shall further address any category of discharges in (i) or (ii), above if the discharges are identified as significant sources of pollutants to waters of the State.

iv. The ordinance or other regulatory mechanism shall include escalating enforcement procedures and actions.

d. Each Permittee shall implement an ongoing program designed to detect and identify non-stormwater discharges and illicit connections into the Permittee's MS4.[16] The program shall include the following components:

i. Procedures for conducting investigations of the Permittee's MS4, including field screening and methods for identifying potential sources. These procedures may also include source control inspections.

The Permittee shall implement a field screening methodology appropriate to the characteristics of the MS4 and water quality concerns. Screening for illicit connections may be conducted using *Illicit Connection and Illicit Discharge Field Screening and Source Tracing Guidance Manual* (Herrera Environmental Consultants, Inc.; May 2020), or another methodology of comparable or improved effectiveness. The Permittee shall document the field screening methodology in the Annual Report.

(a) All Permittees shall complete field screening for an average of 12% of the MS4 each year.[17]

ii. A publicly listed and publicized hotline or other telephone number for public reporting of spills and other illicit discharges.

iii. An ongoing training program for all municipal field staff who, as part of their normal job responsibilities, might come into contact with or otherwise observe an illicit discharge and/or illicit connection to the MS4, on the identification of an illicit discharge and/or connection, and on the proper procedures for reporting and responding to the illicit discharge and/or connection. Follow-up training shall be provided, as needed, to address changes in procedures, techniques, requirements, or staffing. Permittees shall document and maintain records of the trainings provided and the staff trained.[18]

[16]New Permittees shall fully implement the requirements of S5.C.5.d no later than August 1, 2028.

[17]New Permittees shall complete S5.C.5.d.i requirements for field screening covering at least 40% of the MS4 within the Permittee's coverage area no later than December 31, 2028, and on average 12% each year thereafter.

[18]New Permittees shall develop and begin implementing the ongoing training program described in S5.C.5.d.iii no later than March 31, 2026.

e. Each Permittee shall implement an ongoing program designed to address illicit discharges, including spills and illicit connections, into the Permittee's MS4.[19] The program shall include:

i. Procedures for characterizing the nature of, and potential public or environmental threat posed by, any illicit discharges found by or reported to the Permittee. Procedures shall address the evaluation of whether the discharge must be immediately contained and steps to be taken for containment of the discharge.

ii. Procedures for the post-emergency clean-up of firefighting activities:

(a) No later than December 31, 2026, the Permittee shall coordinate with firefighting agencies/departments that serve the areas that discharge to the MS4 to be notified when PFAS-containing AFFFs are used during emergency firefighting activities.

(b) No later than January 1, 2027, Permittee shall update and implement procedures to minimize discharges to the MS4 during post-emergency clean-up and disposal activities including, but not limited to, the immediate clean-up in all situations where PFAS-containing AFFFs have been used, diversions, and other measures that prevent discharges to the MS4. The Permittee is not expected to deploy control measures during an emergency.

iii. Procedures for tracing the source of an illicit discharge; including visual inspections and, when necessary, opening manholes, using mobile cameras, collecting and analyzing water samples, and/or other detailed inspection procedures.

iv. Procedures for eliminating the discharge including notification of appropriate authorities (including owners or operators of interconnected MS4s), notification of the property owner, technical assistance, follow-up inspections, and use of the compliance strategy developed pursuant to S5.C.5.c.iv, including escalating enforcement and legal actions if the discharge is not eliminated.

v. Compliance with the provisions in (i)-(iv) above shall be achieved by meeting the following timelines:

[19]New Permittees shall fully develop and implement the requirements of S5.C.5.e no later than August 1, 2028.

(a) Immediately respond to all illicit discharges, including spills, which are determined to constitute a threat to human health, welfare, or the environment, consistent with General Condition G3.

(b) Investigate (or refer to the appropriate agency with the authority to act) within 7 days, on average, any complaints, reports, or monitoring information that indicates a potential illicit discharge.

(c) Initiate an investigation within 21 days of any report or discovery of a suspected illicit connection to determine the source of the connection, the nature and volume of discharge through the connection, and the party responsible for the connection.

(d) Upon confirmation of an illicit connection, use the compliance strategy in a documented effort to eliminate the illicit connection within 6 months. All known illicit connections to the MS4 shall be eliminated.

f. Permittees shall train staff who are responsible for identification, investigation, termination, cleanup, and reporting of illicit discharges, including spills, and illicit connections, to conduct these activities. Follow-up training shall be provided as needed to address changes in procedures, techniques, requirements, or staffing. Permittees shall document and maintain records of the training provided and the staff trained.[20]

g. Recordkeeping: Each Permittee shall track and maintain records of the activities conducted to meet the requirements of this Section. In the Annual Report, each Permittee shall submit data for the illicit discharges, spills, and illicit connections including those that were found by, reported to, or investigated by the Permittee during the previous calendar year. The data shall include the information and format specified in Appendix 13 and WQWebIDDE. Each Permittee may either use their own system or WQWebIDDE for recording this data.

[20]New Permittees shall meet the requirements of S5.C.5.f no later than March 31, 2026.

6. Controlling Runoff from New Development, Redevelopment, and Construction Sites

Each Permittee shall implement and enforce a program to reduce pollutants in stormwater runoff to a regulated small MS4 from new development, redevelopment, and construction site activities. The program shall apply to private and public development, including transportation projects.[21]

The minimum performance measures are:

a. Implement an ordinance or other enforceable mechanism that addresses runoff from new development, redevelopment, and construction site projects.

   No later than June 30, 2027, each Permittee shall adopt and make effective a local program, that meets the requirements of S5.C.6.b(i) through (iii), below, and shall apply to all applications[22] submitted:

   i. On or after July 1, 2027.

   ii. Prior to January 1, 2017, that have not started construction[23] by July 1, 2022.[24]

   iii. Prior to July 1, 2022, that have not started construction by July 1, 2027.

   iv. Prior to July 1, 2027, that have not started construction by July 1, 2032.

b. The ordinance or other enforceable mechanism shall include, at a minimum:

   i. The Minimum Requirements, thresholds, and definitions in Appendix 1, or the 2019 Appendix 1 amended to include the changes identified in Appendix 10, or Phase I program approved by Ecology and amended to include Appendix 10, for new development, redevelopment, and construction sites. Adjustment and exceptions criteria equivalent to those in Appendix 1 shall be included. More stringent requirements may

[21]For continuing Permittees, this means continuing to implement existing programs developed under previous permits until updates are made to meet the schedules defined. *New Permittees shall meet the requirements of S5.C.6 no later than June 30, 2027, except where otherwise specified in this Section.*

[22]In this context, "application" means, at a minimum a complete project description, site plan, and, if applicable, SEPA checklist. Permittees may establish additional elements of a completed application.

[23]In this context "started construction" means the site work associated with, and directly related to the approved project has begun. For example: grading the project site to final grade or utility installation. Simply clearing the project site does not constitute the start of construction. Permittees may establish additional requirements related to the start of construction.

[24]**For Lynden, Snoqualmie S5.C.6.a.ii is replaced with these dates**: Prior to January 1, 2018, that have not started construction by January 1, 2023. **For Aberdeen S5.C.6.a.ii is replaced with these dates**: Prior to July 1, 2018, that have not started construction by June 30, 2023. **Shelton S5.C.6.a.ii and iii is replaced with these dates:** Prior to January 1, 2023, which have not started construction by January 1, 2028.

be used, and/or certain requirements may be tailored to local circumstances through the use of Ecology-approved basin plans or other similar water quality and quantity planning efforts. Such local requirements and thresholds shall provide equal protection of receiving waters and equal levels of pollutant control to those provided in Appendix 1.

ii. The local requirements shall include the following requirements, limitations, and criteria that, when used to implement the minimum requirements in Appendix 1 (or program approved by Ecology under the 2024 Phase I Permit), will protect water quality, reduce the discharge of pollutants to the MEP, and satisfy the State requirement under Chapter 90.48 RCW to apply AKART prior to discharge:

(a) Site planning requirements;

(b) BMP selection criteria.

(c) BMP design criteria.

(d) BMP infeasibility criteria.

(e) LID competing needs criteria.

(f) BMP limitations.

Permittees shall document how the criteria and requirements will protect water quality, reduce the discharge of pollutants to the MEP, and satisfy the state AKART requirements.

Permittees who choose to use the requirements, limitations, and criteria above in the *Stormwater Management Manual for Western Washington*, or a Phase I program approved by Ecology, may cite this choice as their sole documentation to meet this requirement.

iii. The legal authority, through the approval process for new development and redevelopment, to inspect and enforce maintenance standards for private stormwater facilities approved under the provisions of this Section that discharge to the Permittee's MS4.

c. The program shall include a permitting process with site plan review, inspection, and enforcement capability to meet the standards listed in (i) through (iv) below, for both private and public projects, using qualified personnel (as defined in *Definitions and Acronyms*). At a minimum, this program shall be applied to all sites that meet the minimum thresholds adopted pursuant to S5.C.6.b.i, above.

i. Review of all stormwater site plans for proposed development activities.

ii. Inspect, prior to clearing and construction, all permitted development sites that have a high potential for sediment transport as determined through plan review based on definitions and requirements in Appendix 7 – *Determining Construction Site Sediment Damage Potential*. As an alternative to evaluating each site according to Appendix 7, Permittees may choose to inspect all construction sites that meet the minimum thresholds adopted pursuant to S5.C.6.b.i, above.

iii. Inspect all permitted development sites during construction to verify proper installation and maintenance of required erosion and sediment controls. Enforce, as necessary, based on the inspection.

iv. Each Permittee shall manage maintenance activities to inspect all stormwater treatment and flow control BMPs/facilities, and catch basins, in new residential developments at least twice per 12-month period with no less than 4 months between inspections, until 90% of the lots are constructed (or when construction has stopped and the site is fully stabilized), to identify maintenance needs and enforce compliance with maintenance standards as needed.

v. Inspect all permitted development sites upon completion of construction and prior to final approval or occupancy to ensure proper installation of permanent stormwater facilities. Verify that a maintenance plan is completed and responsibility for maintenance is assigned for stormwater treatment and flow control BMPs/facilities. Enforce, as necessary, based on the inspection.

vi. Compliance with the inspection requirements in (ii) through (v), above, shall be determined by the presence and records of an established inspection program designed to inspect all sites. Compliance shall be determined by achieving at least 80% of required inspections annually. The inspections may be combined with other inspections provided they are performed using qualified personnel.

vii. The program shall include a procedure for keeping records of inspections and enforcement actions by staff including inspection reports, warning letters, notices of violations, and other enforcement records. Records of maintenance inspections and maintenance activities shall be maintained.

viii. An enforcement strategy shall be implemented to respond to issues of non-compliance.

d. The program shall make available to representatives of proposed new development and redevelopment, as applicable: the link to the online *Construction Stormwater General Permit* Notice of Intent (NOI) form for construction activity, a link to the online *Industrial Stormwater General Permit* NOI form for industrial activity, and a link to the online registration requirements for Underground Injection Control (UIC) wells. Permittees shall continue to enforce local ordinances controlling runoff from sites that are also covered by stormwater permits issued by Ecology.[25]

e. Each Permittee shall ensure that all staff whose primary job duties are implementing the program to Control Stormwater Runoff from New Development, Redevelopment, and Construction Sites, including permitting, plan review, construction site inspections, and enforcement, are trained to conduct these activities. Follow-up training shall be provided as needed to address changes in procedures, techniques, or staffing. Permittees shall document and maintain records of the training provided and the staff trained.[26]

7. Stormwater Management for Existing Development

Each Permittee shall implement a Program to control or reduce stormwater discharges to waters of the State from areas of existing development.[27] The Program shall aim to focus on strategic stormwater investments over longer planning timeframes.

The minimum performance measures are:

a. Permittees shall implement stormwater facility retrofits, or tailored SWMP actions that meet the criteria described in Appendix 12, using one or a combination of the following:

   i. Strategic stormwater investments identified in Stormwater Management Action Plan(s) (SMAPs, S5.C.1.d.), or similar stormwater planning process; and/or

   ii. Opportunistic stormwater investments identified by leveraging projects outside of SMAP areas to improve stormwater management and infrastructure.

[25]New Permittees shall meet the requirements of S5.C.6.d beginning no later than August 1, 2024.
[26]New Permittees shall meet the requirements of S5.C.6.e no later than December 31, 2027.
[27] New Permittees are exempt from this permit section.

b. With each Annual Report, each Permittee shall provide a list of planned, individual projects scheduled for funding or implementation during this Permit term for the purpose of meeting the assigned equivalent acreage in Appendix 12. This list shall include at a minimum the information and use the formatting specified in Appendix 12 (.xlsx file format).

c. No later than March 31, 2028, Permittees shall fully fund, start construction, or completely implement project(s) that meet the assigned equivalent acreage and submit documentation with the Annual Report (due on March 31, 2028) as described in Appendix 12.[28]

   i. Projects that started construction on or after January 1, 2023, may be included towards achieving the acres required.

   ii. Permittees may contribute to meeting an overall regional goal to satisfy this permit requirement as described in S5.C.7.d.

   iii. Permittees that completely implement stormwater facility retrofit projects by the expiration date of this Permit that will exceed the area required for this Permit term may apply the excess as a credit to be used for the next Permit term (e.g. 2029-2034 Permit term), not to exceed 50% of the next Permit's requirement.

   iv. Permittees shall report which projects may provide Tribal benefits and benefits to overburdened communities including specifically Vulnerable Populations and Highly Impacted Communities.

d. Permittees may collaborate to meet a regional goal.

   i. Each Permittee is required to manage at least 0.5 equivalent acres within their own jurisdiction but may receive acreage credit for contributing to meeting an overall regional goal outside their defined MS4 Permit coverage area. For Permittees assigned 0.5 acres, participation and in-kind services to regional collaboration projects may count as the contribution for this Permit term if there is regional agreement on the strategy.

   ii. Permittees may contribute to a regional goal, that is the sum of Phase II partners assigned acreage from Appendix 12. Projects may be implemented outside of Permit coverage areas to meet their individual requirement as part of a regional goal where benefits to receiving waters within the Permit coverage areas are identified and anticipated.

[28] See Appendix 12 for descriptions of project status types: fully fund, start construction, and completely implement.

e. Permittees shall report the amount of estimated or projected equivalent acres managed by stormwater facility retrofits for the next Permit term (e.g. 2029-2032). This report shall be submitted to Ecology no later than March 31, 2028.

8. Source Control Program for Existing Development

The Permittee shall implement a program to prevent and reduce pollutants in runoff from areas of existing development that discharge to the MS4. The program shall include application of source control BMPs, inspections, and enforcement.

The minimum performance measures are:

a. Permittees shall enforce ordinance(s), or other enforceable documents, requiring the application of source control BMPs for pollutant generating sources associated with existing land uses and activities (see Appendix 8 to identify pollutant generating sources). [29]

Permittees shall update and make effective the ordinance(s), or other enforceable documents, as necessary to meet the requirements of this Section no later than August 1, 2027.

The requirements of this subsection are met by using the source control BMPs in the SWMMWW, or a Phase I Program approved by Ecology. In cases where the manual(s) lack guidance for a specific source of pollutants, the Permittee shall work with the owner/operator to implement or adapt BMPs based on the best professional judgement of the Permittee.

Applicable operational source control BMPs shall be required for all pollutant generating sources. Structural source control BMPs, or treatment BMPs/facilities, or both, shall be required for pollutant generating sources if operational source control BMPs do not prevent illicit discharges or violations of surface water, groundwater, or sediment management standards because of inadequate stormwater controls. Implementation of source control requirements may be done through education and technical assistance programs, provided that formal enforcement authority is available to the Permittee and is used as determined necessary by the Permittee, in accordance with S5.C.8.d., below.

[29] No later than August 1, 2026, New Permittees shall adopt and make effective ordinance(s), or other enforceable documents, requiring the application of source control BMPs for pollutant generating sources associated with existing land uses and activities (see Appendix 8 to identify pollutant generating sources).

b. Permittees shall implement a program to identify publicly and privately owned institutional, commercial, and industrial sites which have the potential to generate pollutants to the MS4.[30] Permittees shall update the inventory at least once every 5 years. The inventory shall include:

   i. Businesses and/or sites identified based on the presence of activities that are pollutant generating (refer to Appendix 8); and

   ii. Other pollutant generating sources, based on complaint response, such as: home-based businesses and multi-family sites.

c. Permittees shall implement an inspection program, performed by qualified personnel, for sites identified pursuant to S5.C.8.a.i., above.[31]

   i. All identified sites with a business address shall be provided information about activities that may generate pollutants and the source control requirements applicable to those activities. This information shall be provided by mail, telephone, electronic communications, or in person. This information may be provided all at one time or spread out over the Permit term to allow for tailoring and distribution of the information during site inspections.

   ii. The Permittee shall annually complete the number of inspections equal to 20% of the businesses and/or sites listed in their source control inventory to assess BMP effectiveness and compliance with source control requirements. The Permittee may count follow-up compliance inspections at the same site toward the 20% inspection rate. The Permittee may select which sites to inspect each year and is not required to inspect 100% of sites over a 5-year period. Sites may be prioritized for inspection based on their land use category, potential for pollution generation, proximity to receiving waters, or to address an identified pollution problem within a specific geographic area or sub-basin.

   iii. Each Permittee shall inspect 100% of sites identified through credible complaints.

   iv. Permittees may count inspections conducted based on complaints, or when the property owner denies entry, to the 20% inspection rate.

[30] No later than August 1, 2027, New Permittees shall establish an inventory that follows this permit section.
[31] No later than January 1, 2028, New Permittees shall implement an inspection program for sites identified.

v. Annual Reporting of inspections shall be organized by business type or activities with potential to generate pollutants to the MS4. Standard Industrial Code (SIC), Major Group, and NAICS numbers may be provided for reference as noted in Appendix 8.

d. Permittees shall implement a progressive enforcement policy that requires sites to comply with stormwater requirements within a reasonable time period as specified below:[32]

i. If the Permittee determines, through inspections or otherwise, that a site has failed to adequately implement required BMPs, the Permittee shall take appropriate follow-up action(s), which may include phone calls, reminder letters, emails, or follow-up inspections.

ii. When a Permittee determines that a site has failed to adequately implement BMPs after a follow-up inspection(s) the Permittee shall take enforcement action as established through authority in its municipal codes or ordinances, or through the judicial system.

iii. Each Permittee shall maintain records, including documentation of each site visit, inspection reports, warning letters, notices of violations, and other enforcement records demonstrating an effort to bring sites into compliance. Each Permittee shall also maintain records of sites that are not inspected because the property owner denies entry.

iv. A Permittee may refer non-emergency violations of local ordinances to Ecology, provided, the Permittee also makes a documented effort of progressive enforcement. At a minimum, a Permittee's enforcement effort shall include documentation of inspections and warning letters or notices of violation.

v. Application and enforcement of local ordinances at sites identified pursuant to S5.C.8.a.i., including sites with discharges authorized by a separate NPDES permit.

[32] No later than January 1, 2028, New Permittees shall implement a progressive enforcement policy as described in this permit section.

e. Permittees shall train staff who are responsible for implementing the source control program to conduct these activities.[33] The ongoing training program shall cover the legal authority for source control, source control BMPs and their proper application, inspection protocols, lessons learned, typical cases, and enforcement procedures. Follow-up training shall be provided as needed to address changes in procedures, techniques, requirements, or staff. Permittees shall document and maintain records of the training provided and the staff trained.

9. Operations and Maintenance

Each Permittee shall implement and document a program to regulate maintenance activities and to conduct maintenance activities by the Permittee to prevent or reduce stormwater impacts.[34]

The minimum performance measures are:

a. Each Permittee shall implement maintenance standards that are as protective, or more protective, of facility function than those specified in the *Stormwater Management Manual for Western Washington,* or a Phase I program approved by Ecology. For facilities which do not have maintenance standards, the Permittee shall develop a maintenance standard. No later than June 30, 2027, Permittees shall update their maintenance standards as necessary to meet the requirements of this Section.

   i. The purpose of the maintenance standard is to determine if maintenance is required. The maintenance standard is not a measure of the facility's required condition at all times between inspections. Exceeding the maintenance standard between inspections and/or maintenance is not a Permit violation.

   ii. Unless there are circumstances beyond the Permittee's control, when an inspection identifies an exceedance of the maintenance standard, maintenance shall be performed:

      - Within 1 year for typical maintenance of facilities, except catch basins.
      - Within 6 months for catch basins.
      - Within 2 years for maintenance that requires capital construction of less than $25,000.

[33] New Permittees shall develop and implement a training program no later than December 31, 2027.
[34] New Permittees shall develop and implement the requirements of S5.C.9 no later than June 30, 2027 except where otherwise noted in this Section.

Circumstances beyond the Permittee's control include denial or delay of access by property owners, denial or delay of necessary Permit approvals, and unexpected reallocations of maintenance staff to perform emergency work. For each exceedance of the required timeframe, the Permittee shall document the circumstances and how they were beyond their control.

b. Maintenance of stormwater treatment and flow control BMPs/facilities regulated by the Permittee:

i. The program shall include provisions to verify adequate long-term O&M of stormwater treatment and flow control BMPs/facilities that are permitted and constructed pursuant to S5.C.6.c and shall be maintained in accordance with S5.C.9.a.

The provisions shall include:

(a) Implementation of an ordinance or other enforceable mechanism that:

- Clearly identifies the party responsible for maintenance in accordance with maintenance standards established under S5.C.9.a.
- Requires inspection of facilities in accordance with the requirements in (b), below.
- Establishes enforcement procedures.

(b) Annual inspections of all stormwater treatment and flow control BMPs/facilities that discharge to the MS4 and were permitted by the Permittee according to S5.C.6.c, including those permitted in accordance with requirements adopted pursuant to the 2007-2024 Ecology municipal stormwater permits, unless there are maintenance records to justify a different frequency. Inspections shall be conducted by qualified personnel or a qualified third party.

Permittees may reduce the inspection frequency based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records, the Permittee may substitute written statements to document a specific less frequent inspection schedule. Written statements shall be based on actual inspection and maintenance experience and shall be certified in accordance with G19 – *Certification and Signature*.

ii. Compliance with the inspection requirements in (b), above, shall be determined by the presence and records of an established inspection program designed to inspect all facilities, and achieving at least 80% of required inspections annually.

iii. The program shall include a procedure for keeping records of inspections and enforcement actions by staff, qualified personnel, and qualified third parties, including inspection reports, warning letters, notices of violations, and other enforcement records. Records of maintenance inspections and maintenance activities shall be maintained.

c. Maintenance of stormwater facilities owned or operated by the Permittee:

i. Each Permittee shall implement a program to annually inspect all municipally owned or operated stormwater treatment and flow control BMPs/facilities. Permittees shall implement appropriate maintenance action(s) in accordance with the adopted maintenance standards. The inspection program shall be implemented by qualified personnel.

Permittees may reduce the inspection frequency based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records, the Permittee may substitute written statements to document a specific less frequent inspection schedule. Written statements shall be based on actual inspection and maintenance experience and shall be certified in accordance with G19 – *Certification and Signature*.

ii. Each Permittee shall spot check potentially damaged stormwater treatment and flow control BMPs/facilities after major storm events (24-hour storm event with a 10 year or greater recurrence interval). If spot checks indicate widespread damage/maintenance needs, inspect all stormwater treatment and flow control BMPs/facilities that may be affected. Conduct repairs or take appropriate maintenance action in accordance with maintenance standards established above, based on the results of the inspections.

iii. Each Permittee shall continue to inspect all catch basins and inlets owned or operated by the Permittee by December 31, 2025 and every two years after.[35] Clean catch basins if the inspection indicates cleaning is needed to comply with maintenance standards established in the *Stormwater Management Manual for Western Washington.* Decant water shall be disposed of in accordance with Appendix 6 – *Street Waste Disposal*.

The following alternatives to the standard approach of inspecting all catch basins every two years may be applied to all or portions of the system:

(a) The catch basin inspection schedule of every two years may be changed as appropriate to meet the maintenance standards based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records for catch basins, the Permittee may substitute written statements to document a specific, less frequent inspection schedule. Written statements shall be based on actual inspection and maintenance experiences and shall be certified in accordance with G19 – *Certification and Signature*.

(b) Inspections every two years may be conducted on a "circuit basis" whereby 25% of catch basins and inlets within each circuit are inspected to identify maintenance needs. Include an inspection of the catch basin immediately upstream of any MS4 outfall, discharge point, or connections to public or private storm systems, if applicable. Clean all catch basins within a given circuit for which the inspection indicates cleaning is needed to comply with maintenance standards established under S5.C.9.a, above.

(c) The Permittee may clean all pipes, ditches, and catch basins and inlets within a circuit once during the Permit term. Circuits selected for this alternative must drain to a single point.

iv. Compliance with the inspection requirements in S5.C.9.c.i-iii, above, shall be determined by the presence of an established inspection program achieving at least 95% of required inspections.

[35] New Permittees shall inspect and, if needed, clean all catch basins and inlets owned or operated by the Permittee in accordance with the requirements of S5.C.7.c once during the permit term, to be completed no later than December 31, 2028 and every two years after.

d. Implement practices, policies, and procedures to reduce stormwater impacts associated with runoff from all lands owned or maintained by the Permittee, and road maintenance activities under the functional control of the Permittee. No later than December 31, 2027, document the practices, policies, and procedures. Lands owned or maintained by the Permittee include but are not limited to: streets; parking lots; roads; highways; buildings; parks; open space; road rights-of-way; maintenance yards; and stormwater treatment and flow control BMPs/facilities.

   The following activities shall be addressed:

   i. Pipe cleaning.

   ii. Cleaning of culverts that convey stormwater in ditch systems.

   iii. Ditch maintenance.

   iv. Street cleaning.

   v. Road repair and resurfacing, including pavement grinding.

   vi. Snow and ice control.

   vii. Utility installation.

   viii. Pavement striping maintenance.

   ix. Maintaining roadside areas, including vegetation management.

   x. Dust control.

   xi. Application of fertilizers, pesticides, and herbicides according to the instructions for their use including reducing nutrients and pesticides and using alternatives that minimize environmental impacts.

   xii. Sediment and erosion control.

   xiii. Landscape maintenance and vegetation disposal.

   xiv. Trash and pet waste management.

   xv. Building exterior cleaning and maintenance.

      (a) For Permittee-owned buildings built or renovated between 1950-1980, update policies, practices, or procedures to include Source Control BMPs to minimize PCBs from entering the MS4. Permittees shall not discharge washdown water to the MS4 if the building is confirmed or suspected to have PCB-containing materials.

   xvi. Preparing Permittee-owned buildings for renovation or demolition.

(a) Update policies, practices, or procedures to include Source Control BMPs for building materials to prevent PCBs from entering the MS4 in preparation for and during demolition and renovations.

e. No later than July 1, 2027, develop and implement a municipal street sweeping program to focus on priority areas and times during the year that would reasonably be expected to result in the maximum water quality benefits to receiving waters. The following program elements shall be included:

i. Priority areas: Apply street sweeping program to curbed municipal streets that discharge to outfalls and meet any of the following criteria:

(a) High traffic streets, such as arterials or collectors.

(b) Streets that serve commercial or industrial land use areas.

ii. Program timing: Sweep priority areas at least once between July and September each year and at least two additional times a year as determined by the Permittee to provide additional water quality benefits. For calendar year 2027, only one sweeping event is required between July and December.

(a) Compliance during this Permit term shall be determined by records of a sweeping program designed to sweep all priority areas identified and sweeping at least 90% of priority areas each sweeping event.

(b) Permittee may document reasoning for alternative sweeping timing and frequency based on local conditions (e.g., climate) and estimated pollutant deposition quantities. Documentation shall also be based on actual maintenance experience and be certified in accordance with G19 – *Certification and Signature*.

iii. Operational Procedures: Procedures to follow equipment design performance specifications to ensure that street sweeping equipment is operated at the proper design speed with appropriate verification, and that it is properly maintained.

iv. Street Waste Disposal: Dispose of sweeper waste material in accordance with Appendix 6 – *Street Waste Disposal*.

v. Reporting: No later than March 31, 2028, submit with the Annual Report the following information about the priority areas:

(a) Priority areas swept identified on a map (i.e. streets that are considered high traffic (estimated number of vehicles served/or arterials or collectors, and streets serving commercial or industrial land use).

(b) Sweeping date(s).

(c) Sweeping frequency.

(d) Type of sweeper.

(e) Total curb miles of priority areas and curb miles swept.

(f) Approximation of street waste solids removed for each sweeping event (indicate unit of measurement and wet or dry weight, where available).

f. Implement a Stormwater Pollution Prevention Plan (SWPPP) for all heavy equipment maintenance or storage yards and material storage facilities owned or operated by the Permittee in areas subject to this Permit that are not required to have coverage under the *Industrial Stormwater General Permit* or another NPDES permit that authorizes stormwater discharges associated with the activity. SWPPPs shall include the following information, at a minimum:

i. A detailed description of the operational and structural BMPs in use at the facility and a schedule for implementation of additional BMPs when needed. BMPs selected shall be consistent with the *Stormwater Management Manual for Western Washington*, or a Phase I program approved by Ecology. The SWPPP shall be updated as needed to maintain relevancy with the facility.

ii. At minimum, annual inspections of the facility, including visual observations of discharges, to evaluate the effectiveness of the BMPs, identify maintenance needs, and determine if additional or different BMPs are needed. The results of these inspections shall be documented in an inspection report or check list.

iii. An inventory of the materials and equipment stored on-site, and the activities conducted at the facility which may be exposed to precipitation or runoff and could result in stormwater pollution.

iv. A site map showing the facility's stormwater drainage, discharge points, and areas of potential pollutant exposure.

v. A plan for preventing and responding to spills at the facility which could result in an illicit discharge.

g. Implement an ongoing training program for employees of the Permittee whose primary construction, operations, or maintenance job functions may impact stormwater quality. The training program shall address the importance of protecting water quality, operation and maintenance standards, inspection procedures, relevant SWPPPs, selecting appropriate BMPs, street sweeper operation, ways to perform their job activities to prevent or minimize impacts to water quality, and procedures for reporting water quality concerns. Follow-up training shall be provided as needed to address changes in procedures, techniques, requirements, or staffing. Permittees shall document and maintain records of training provided. The staff training records to be kept include dates, activities or course descriptions, and names and positions of staff in attendance.

h. Maintain records of the activities conducted to meet the requirements of this Section.

S6. STORMWATER MANAGEMENT PROGRAM FOR SECONDARY PERMITTEES

A. Secondary Permittees and New Secondary Permittees Coverage

This Section applies to all Secondary Permittees and all New Secondary Permittees, whether coverage under this Permit is obtained individually or as a Co-Permittee with a city, town, county, or another Secondary Permittee.

New Secondary Permittees subject to this Permit shall fully meet the requirements of this Section as modified in the footnotes in S6.D below, or as established as a condition of coverage by Ecology.

1. To the extent allowable under state, federal or local law, all components are mandatory for each Secondary Permittee covered under this Permit, whether covered as an individual Permittee or as a Co-Permittee.
2. Each Secondary Permittee shall develop and implement a Stormwater Management Program (SWMP). A SWMP is a set of actions and activities comprising the components listed in S6 and any additional actions necessary to meet the requirements of applicable TMDLs pursuant to S7 – *Compliance with Total Maximum Daily Load Requirements*. The SWMP shall be designed to reduce the discharge of pollutants from regulated small MS4s to the MEP and protect water quality.
3. Unless an alternate implementation schedule is established by Ecology as a condition of Permit coverage, the SWMP shall be developed and implemented in accordance with the schedules contained in this Section and shall be fully developed and implemented no later than four and one-half years from the initial Permit coverage date. Secondary Permittees that are already implementing some or all of the required SWMP components shall continue implementation of those components.
4. Secondary Permittees may implement parts of their SWMP in accordance with the schedule for cities, towns, and counties in S5, provided they have signed a memorandum of understanding or other agreement to jointly implement the activity or activities with one or more jurisdictions listed in S1.D.2.a or S1.D.2.b and submitted a copy of the agreement to Ecology.
5. Each Secondary Permittee shall prepare written documentation of the SWMP, called the SWMP Plan. The SWMP Plan shall be updated annually to include a description of program activities for the upcoming calendar year and shall be submitted with the Annual Report.

B. Coordination

Secondary Permittees shall coordinate stormwater-related policies, programs, and projects within a watershed and interconnected MS4s. Where relevant and appropriate, the SWMP shall coordinate among departments of the Secondary Permittee to ensure compliance with the terms of this Permit.

C. Legal Authority

To the extent allowable under state law and federal law, each Secondary Permittee shall be able to demonstrate that they can operate pursuant to legal authority which authorizes or enables the Secondary Permittee to control discharges to and from MS4s owned or operated by the Secondary Permittee.

This legal authority may be a combination of statutes, ordinances, permits, contracts, orders, interagency agreements, or similar instruments.

D. Stormwater Management Program for Secondary Permittees

The SWMP for Secondary Permittees shall include the following components:

1. Public Education and Outreach

Each Secondary Permittee shall implement the following stormwater education strategies:

a. Storm drain inlets owned or operated by the Secondary Permittee that are located in maintenance yards, in parking lots, along sidewalks, and at pedestrian access points shall be clearly labeled with a message similar to "Dump no waste – Drains to waterbody."[36]

   As identified during visual inspection and regular maintenance of storm drain inlets per the requirements of S6.D.3.d and S6.D.6.a.i, below, or as otherwise reported to the Secondary Permittee, any inlet having a label that is no longer clearly visible and/or easily readable shall be re-labeled within 90 days.

b. Each year beginning no later than three years from the initial date of Permit coverage, public ports, colleges, and universities shall distribute educational information to tenants and residents on the impact of stormwater discharges on receiving waters, and steps that can be taken to reduce pollutants in stormwater runoff. Distribution may be by hard copy or electronic means. Appropriate topics may include:

[36]New Secondary Permittees shall label all inlets as described in S6.D.1.a no later than four years from the initial date of permit coverage.

i. How stormwater runoff affects local water bodies.

ii. Proper use and application of pesticides and fertilizers.

iii. Benefits of using well-adapted vegetation.

iv. Alternative equipment washing practices, including cars and trucks that minimize pollutants in stormwater.

v. Benefits of proper vehicle maintenance and alternative transportation choices; proper handling and disposal of vehicle wastes, including the location of hazardous waste collection facilities in the area.

vi. Hazards associated with illicit connections and illicit discharges.

vii. Benefits of litter control of pet waste.

viii. Source control BMPs for building materials to reduce pollution to stormwater including, but not limited to, stormwater pollution from PCB-containing materials.

2. Public Involvement and Participation

Each year, no later than May 31, each Secondary Permittee shall:

a. Make the annual report available on the Permittee's website; and

b. Make available on the Permittee's website, the latest updated version of the SWMP Plan.

3. Illicit Discharge Detection and Elimination

Each Secondary Permittee shall:

a. From the initial date of Permit coverage, comply with all relevant ordinances, rules, and regulations of the local jurisdiction(s) in which the Secondary Permittee is located that govern non-stormwater discharges.

b. Implement appropriate policies prohibiting illicit discharges,[37] and an enforcement plan to ensure compliance with illicit discharge policies.[38] These policies shall address, at a minimum: illicit connections, non-stormwater discharges, including spills of hazardous materials, and improper disposal of pet waste and litter. Policies shall be revised, if necessary, to meet the requirements of this Section no later than July 1, 2027.

   i. *Allowable discharges*: The policies do not need to prohibit the following categories of non-stormwater discharges:

      (a) Diverted stream flows

      (b) Rising groundwaters

      (c) Uncontaminated groundwater infiltration (as defined at 40 CFR 35.2005(b)(20))

      (d) Uncontaminated pumped groundwater

      (e) Foundation drains

      (f) Air conditioning condensation

      (g) Irrigation water from agricultural sources that is commingled with urban stormwater

      (h) Springs

      (i) Uncontaminated water from crawl space pumps

      (j) Footing drains

      (k) Flows from riparian habitats and wetlands

      (l) Discharges from emergency firefighting activities in accordance with S2 – *Authorized Discharges*

      (m) Non-stormwater discharges authorized by another NPDES or State Waste Discharge Permit

[37]New Secondary Permittees shall develop and implement appropriate policies prohibiting illicit discharges and identify possible enforcement mechanisms as described in S6.D.3.b no later than one year from the initial date of permit coverage.

[38]New Secondary Permittees shall develop and implement an enforcement plan as described in S6.D.3.b no later than 18 months from the initial date of permit coverage.

ii. *Conditionally allowable discharges*: The policies may allow the following categories of non-stormwater discharges only if the stated conditions are met and such discharges are allowed by local codes:

(a) Discharges from potable water sources including, but not limited to, water line flushing, hyperchlorinated water line flushing, fire hydrant system flushing, and pipeline hydrostatic test water. Planned discharges shall be dechlorinated to a total residual chlorine concentration of 0.1 ppm or less, pH-adjusted if necessary, and volumetrically and velocity controlled to prevent resuspension of sediments in the MS4.

(b) Discharges from lawn watering and other irrigation runoff, including from reclaimed water sources. These discharges shall be minimized through, at a minimum, public education activities and water conservation efforts conducted by the Secondary Permittee and/or the local jurisdiction.

(c) Discharges from swimming pools, spas, and hot tubs. The discharges shall be dechlorinated/debrominated to a total residual concentration of 0.1 ppm or less, free from sodium chloride, pH-adjusted and reoxygenated if necessary, and volumetrically and velocity controlled to prevent resuspension of sediments in the MS4. Discharges shall be thermally controlled to prevent an increase in temperature of the receiving water. Swimming pool cleaning wastewater and filter backwash shall not be discharged to the MS4.

(d) Street and sidewalk wash water, water used to control dust. The Secondary Permittee shall reduce these discharges through, at a minimum, public education activities and/or water conservation efforts conducted by the Secondary Permittee and/or the local jurisdiction. To avoid washing pollutants into the MS4, the Secondary Permittee shall minimize the amount of street wash and dust control water used.

(e) Routine external building washdown that does not use detergents for buildings built before 1950 and after 1980. These discharges shall be reduced through, at minimum, public education activities or water conservation efforts, or both.

Commercial, industrial, and multi-story residential structures constructed or renovated between the years 1950 and 1980 (i.e. those most likely to have PCB containing building materials), shall be assessed for PCB-containing materials consistent with *How to Find PCBs in Building Materials* (Ecology, 2024; Publication No. 22-040-024) prior to routine building washdown to the MS4. Structures confirmed or suspected to have PCB-containing materials shall not discharge washdown water to the MS4. Structures built between 1950-1980, without PCB-containing materials, may proceed with routine building washdown (without detergents) as described above.

(f) Other non-stormwater discharges shall be in compliance with the requirements of a pollution prevention plan reviewed by the Permittee which addresses control of such discharges.

iii. The Secondary Permittee shall address any category of discharges in (i) or (ii), above, if the discharge is identified as a significant source of pollutants to waters of the State.

c. Maintain a storm sewer system map showing the locations of all known MS4 outfalls and discharge points, labeling the receiving waters (other than groundwater) and delineating the areas contributing runoff to each outfall and discharge point. Make the map (or completed portions of the map) available on request to Ecology and to the extent appropriate to other Permittees.

i. No later than December 31, 2026, the required format for mapping is an electronic format with fully described mapping standards.[39]

ii. No later than March 31, 2027, Permittees shall submit locations of all known MS4 outfalls according to the standard templates and format provided in the Annual Report. This reporting shall include the size and material of the outfalls.

d. Conduct field inspections and visually inspect for illicit discharges at all known MS4 outfalls and discharge points. Visually inspect at least one third (on average) of all known outfalls and discharge points each year beginning no later than two years from the initial date of Permit coverage. Implement procedures to identify and remove any illicit discharges. Keep records of inspections and follow-up activities.

[39]New Secondary Permittees shall meet the requirements of S6.D.3.c no later than four and one-half years from the initial date of permit coverage.

e. Implement a spill response plan that includes coordination with a qualified spill responder.[40]

f. No later than two years from initial date of Permit coverage, provide staff training or coordinate with existing training efforts to educate staff on proper BMPs for preventing illicit discharges, including spills. Train all Secondary Permittee staff who, as part of their normal job responsibilities, have a role in preventing such illicit discharges.

4. Construction Site Stormwater Runoff Control

From the initial date of Permit coverage, each Secondary Permittee shall:

a. Comply with all relevant ordinances, rules, and regulations of the local jurisdiction(s) in which the Secondary Permittee is located that govern construction phase stormwater pollution prevention measures.

b. Ensure that all construction projects under the functional control of the Secondary Permittee which require a construction stormwater permit obtain coverage under the NPDES *Construction Stormwater General Permit* or an individual NPDES permit prior to discharging construction related stormwater.

c. Coordinate with the local jurisdiction regarding projects owned or operated by other entities which discharge into the Secondary Permittee's MS4, to assist the local jurisdiction with achieving compliance with all relevant ordinances, rules, and regulations of the local jurisdiction(s).

d. Provide training or coordinate with existing training efforts to educate relevant staff in erosion and sediment control BMPs and requirements or hire trained contractors to perform the work.

e. Coordinate, as requested, with Ecology or the local jurisdiction to provide access for inspection of construction sites or other land disturbances which are under the functional control of the Secondary Permittee during land disturbing activities and/or construction period.

[40]New Secondary Permittees shall develop and implement a spill response plan as described in S6.D.3.e no later than four and one-half years from the initial date of permit coverage.

5. Post-Construction Stormwater Management for New Development and Redevelopment

From the initial date of Permit coverage, each Secondary Permittee shall:

a. Comply with all relevant ordinances, rules, and regulations of the local jurisdiction(s) in which the Secondary Permittee is located that govern post-construction stormwater pollution prevention measures.

b. Coordinate with the local jurisdiction regarding projects owned or operated by other entities which discharge into the Secondary Permittee's MS4 to assist the local jurisdiction with achieving compliance with all relevant ordinances, rules, and regulations of the local jurisdiction(s).

6. Pollution Prevention and Good Housekeeping for Municipal Operations

Each Secondary Permittee shall:

a. Implement a municipal operation and maintenance (O&M) plan to minimize stormwater pollution from activities conducted by the Secondary Permittee. The O&M Plan shall include appropriate pollution prevention and good housekeeping procedures for all of the following operations, activities, and/or types of facilities that are present within the Secondary Permittee's boundaries and under the functional control of the Secondary Permittee.[41] The O&M Plan Shall be updated, as needed, no later than July 1, 2027.

   i. *Stormwater collection and conveyance systems* including catch basins, stormwater pipes, open channels, culverts, and stormwater treatment and flow control BMPs/facilities. The O&M Plan shall address, at a minimum: scheduled inspections and maintenance activities including cleaning and proper disposal of waste removed from the system. Secondary Permittees shall properly maintain stormwater collection and conveyance systems owned or operated by the Secondary Permittee and annually inspect and maintain all stormwater facilities to ensure facility function.

   Secondary Permittees shall establish maintenance standards that are as protective or more protective of facility function than those specified in the *Stormwater Management Manual for Western Washington*. Secondary Permittees shall review their maintenance standards to ensure they are consistent with the requirements of this Section.

[41]New Secondary Permittees shall develop and implement the operation and maintenance plan described in S6.D.6.a no later than three years from initial date of permit coverage.

Secondary Permittees shall conduct spot checks of potentially damaged permanent stormwater treatment and flow control BMPs/facilities following major storm events (24-hour storm event with a 10-year or greater recurrence interval).

ii. *Roads, highways, and parking lots*. The O&M Plan shall address, at a minimum: deicing, anti-icing, and snow removal practices; snow disposal areas; material (e.g., salt, sand, or other chemical) storage areas; and all-season BMPs to reduce road and parking lot debris and other pollutants from entering the MS4.

iii. *Vehicle fleets*. The O&M Plan shall address, at a minimum: storage, washing, and maintenance of Secondary Permittee vehicle fleets; and fueling facilities. Secondary Permittees shall conduct all vehicle and equipment washing and maintenance in a self-contained covered building or in designated wash and/or maintenance areas.

iv. *External building maintenance*. The O&M Plan shall address, at a minimum: building exterior cleaning and maintenance including cleaning, washing, painting; maintenance and management of dumpsters; and other maintenance activities. For buildings owned by the Secondary Permittee and built or renovated between 1950 and 1980, the O&M Plan shall include building material assessment for PCBs consistent with *How to Find and Address PCBs in Building Materials* guidance (Ecology, 2024; Publication No. 22-040-024) prior to exterior building washdown to the MS4. Structures confirmed or suspected to have PCB-containing materials shall not discharge washdown water to the MS4.

v. *Preparing Permittee-owned buildings for renovation or demolition.* The O&M Plan shall address Source Control BMPs for building materials to prevent PCBs from entering the MS4 in preparation for and during demolition and renovations.

vi. *Parks and open space*. The O&M Plan shall address, at a minimum: proper application of fertilizer, pesticides, and herbicides; sediment and erosion control; BMPs for landscape maintenance and vegetation disposal; and trash and pet waste management.

vii. *Material storage facilities and heavy equipment maintenance or storage yards*. Secondary Permittees shall develop and implement a Stormwater Pollution Prevention Plan to protect water quality at each of these facilities owned or operated by the Secondary Permittee and not covered under the *Industrial Stormwater General Permit* or under another NPDES

permit that authorizes stormwater discharges associated with the activity.

viii. *Other facilities* that would reasonably be expected to discharge contaminated runoff. The O&M Plan shall address proper stormwater pollution prevention practices for each facility.

b. From the initial date of Permit coverage, Secondary Permittees shall also have permit coverage for all facilities operated by the Secondary Permittee that are required to be covered under the *Industrial Stormwater General Permit* or another NPDES permit that authorizes discharges associated with the activity.

c. The O&M Plan shall include sufficient documentation and records as necessary to demonstrate compliance with the O&M Plan requirements in S6.D.6.a(i) through (viii), above.

d. No later than three years from the initial date of Permit coverage, Secondary Permittees shall implement a program designed to train all employees whose primary construction, operations, or maintenance job functions may impact stormwater quality. The training shall address:

i. The importance of protecting water quality.

ii. The requirements of this Permit.

iii. Operation and maintenance requirements.

iv. Inspection procedures.

v. Ways to perform their job activities to prevent or minimize impacts to water quality.

vi. Procedures for reporting water quality concerns, including potential illicit discharges (including spills).

S7. COMPLIANCE WITH TOTAL MAXIMUM DAILY LOAD REQUIREMENTS

The following requirements apply if an applicable TMDL is approved for stormwater discharges from MS4s owned or operated by the Permittee. Applicable TMDLs are TMDLs which have been approved by EPA on or before the issuance date of this Permit or prior to the date that Ecology issues coverage under this Permit, whichever is later.

A. TMDL Specific Requirements

1. For applicable TMDLs listed in Appendix 2, affected Permittees shall comply with the specific requirements identified in Appendix 2. Each Permittee shall keep records of all actions required by this Permit that are relevant to applicable TMDLs within their jurisdiction. The status of the TMDL implementation shall be included as part of the annual report submitted to Ecology. Each annual report shall include a summary of relevant SWMP and Appendix 2 activities conducted in the TMDL area to address the applicable TMDL parameter(s).
2. For applicable TMDLs not listed in Appendix 2, compliance with this Permit shall constitute compliance with those TMDLs.

S8. MONITORING AND ASSESSMENT

A. Regional Status and Trends Monitoring

1. All Permittees that chose S8.A.2 Regional Status and Trends Monitoring Option in the *Phase II Western Washington Municipal Stormwater Permit*, August 1, 2019 – July 31, 2024, shall make a one-time payment into the Stormwater Action Monitoring (SAM) collective fund to implement regional small streams and marine nearshore areas status and trends monitoring in Puget Sound or, urban streams in the Lower Columbia River basin. This payment is due on or before December 1, 2024. Submit payment amount according to Section S8.D, below.
2. All City and County Permittees covered under the *Phase II Western Washington Municipal Stormwater Permit*, August 1, 2019 – July 31, 2024, except the Cities of Aberdeen and Centralia, shall notify Ecology in writing which of the following two options for regional status and trends monitoring (S8.A.2.a or S8.A.2.b) the Permittee chooses to carry out during this Permit term. The written notification with G19 signature is due to Ecology no later than December 1, 2024. Either option will fully satisfy the Permittee's obligations under this Section (S8.A.2). Each Permittee shall select a single option for this Permit term.

a. Make annual payments into a Stormwater Action Monitoring (SAM) collective fund to implement regional receiving water status and trends monitoring of either: small streams and marine nearshore areas in Puget Sound, or urban streams in Clark and Cowlitz Counties in the Lower Columbia River basin, depending on the Permittee's location. The annual payments into the collective fund are due on or before August 15 each year beginning in 2025. Submit payments according to Section S8.D, below.

Or

b. Conduct stormwater discharge monitoring per the requirements in Section S8.C.

B. Stormwater Management Program (SWMP) Effectiveness and Source Identification Studies

1. All Permittees that chose S8.B Effectiveness Studies Option in the *Phase II Western Washington Municipal Stormwater Permit,* August 1, 2019 – July 31, 2024, shall make a one-time payment into the collective fund for Stormwater Action Monitoring (SAM) to implement effectiveness studies and source identification studies. The payment is due on or before December 1, 2024. Submit payment according to Section S8.D, below.
2. All City and County Permittees covered under the *Phase II Western Washington Municipal Stormwater Permit*, August 1, 2019 – July 31, 2024, shall notify Ecology in writing which of the following two options (S8.B.2.a or S8.B.2.b) for effectiveness and source identification studies the Permittee chooses to carry out during this Permit term. The written notification with G19 signature is due to Ecology no later than December 1, 2024. Either option will fully satisfy the Permittee's obligations under this Section (S8.B.2). Each Permittee shall select a single option for this Permit term.

   a. Make annual payments into a SAM collective fund to implement effectiveness and source identification studies. The annual payments into the collective fund are due on or before August 15 each year beginning in 2025. Submit payments according to Section S8.D, below.

   Or

   b. Conduct stormwater discharge monitoring per the requirements in Section S8.C.

3. All Permittees shall provide information as requested for effectiveness and source identification studies that are under contract with Ecology as active Stormwater Action Monitoring (SAM) projects. These requests will be limited to records of SWMP activities and associated data tracked and/or maintained in accordance with S5 – *Stormwater Management Program for Cities, Towns, and Counties* and/or S9 – *Reporting Requirements*. A maximum of three requests during the Permit term from the SAM Coordinator will be transmitted to the Permittee's permit coordinator via Ecology's regional permit manager. The Permittee shall have 90 days to provide the requested information.

C. Stormwater Discharge Monitoring.

1. This Section applies only to Permittees who choose to conduct stormwater discharge monitoring per S8.A.2.b and/or S8.B.2.b in lieu of participation in the regional status and trends monitoring and/or effectiveness and source identification studies. These Permittees shall conduct monitoring in accordance with Appendix 9 and an Ecology-approved Quality Assurance Project Plan (QAPP) as follows:

   a. Permittees who choose the option to conduct stormwater discharge monitoring for either S8.A.2 or S8.B.2 shall monitor three independent discharge locations.

      Permittees who choose the option to conduct stormwater discharge monitoring for both S8.A.2 and S8.B.2 shall conduct this monitoring at a total of six locations; at least four locations shall be independent (one location may be nested in another basin).

   b. No later than February 1, 2025, each Permittee shall submit to Ecology a draft stormwater discharge monitoring QAPP for review and approval. The QAPP shall be prepared in accordance with the requirements in Appendix 9. The final QAPP shall be submitted to Ecology for approval as soon as possible following finalization, and before August 15, 2025 or within 60 days of receiving Ecology's comments on the draft QAPP (whichever is later).

   c. Flow monitoring shall begin no later than October 1, 2025, or within 30 days of receiving Ecology's approval of the final QAPP (whichever is later). Stormwater discharge monitoring shall be fully implemented no later than October 1, 2026.

   d. Data and analyses shall be reported annually in accordance with the Ecology-approved QAPP. Each Permittee shall enter into the Department's Environmental Information Management (EIM) database all water and solids concentration data collected pursuant to Appendix 9.

i. Within 60 days of completing the study, or no later than March 31, 2029, publish a final report with the results of the study and recommended future actions based on findings, include a summary of results.

D. Payments into the Stormwater Action Monitoring Collective Fund.

1. This Section applies to all Permittees who choose to make annual payments into the SAM collective funds for S8.A *Regional Status and Trends Monitoring* and/or S8.B *Effectiveness and Source Identification Studies*.
2. Permittees submitting payment for S8.A.1. or S8.B.1., payment amounts are listed in Appendix 11 of the WWA Phase II Municipal Stormwater Permit, August 1, 2019– July 31, 2024.
3. Each Permittee's S8.A.2.a and S8.B.2.a payment amounts are listed in Appendix 11 and in the invoices that will be sent to the Permittee approximately three months in advance of each payment due date. Mail payments according to the instructions in the invoice.

S9. REPORTING & RECORDKEEPING REQUIREMENTS

A. Annual Report Submittal

1. No later than March 31 of each year beginning in 2025, each Permittee shall submit an Annual Report. The reporting period for the first Annual Report will be from January 1, 2024, through December 31, 2024. The reporting period for all subsequent Annual Reports will be the previous calendar year unless otherwise specified.
2. Permittees shall submit Annual Reports electronically using Ecology's Water Quality Permitting Portal (WQWebPortal) available on Ecology's website.

B. Records Retention

Each Permittee is required to keep all records related to this Permit and the SWMP for at least five years after the expiration date of this Permit.

C. Records Available to the Public

Each Permittee shall make all records related to this Permit and the Permittee's SWMP available to the public at reasonable times during business hours. The Permittee will provide a copy of the most recent annual report to any individual or entity, upon request.

1. A reasonable charge may be assessed by the Permittee for making photocopies of records.
2. The Permittee may require reasonable advance notice of intent to review records related to this Permit.

D. Annual Report for Cities, Towns, and Counties

Each annual report shall include the following:

1. A copy of the Permittee's current Stormwater Management Program Plan (SWMP Plan), as required by S5.A.2.
2. Submittal of the annual report form as provided by Ecology pursuant to S9.A, describing the status of implementation of the requirements of this Permit during the reporting period.

3. Attachments to the annual report form including summaries, descriptions, reports, and other information as required, or as applicable, to meet the requirements of this Permit during the reporting period, or as a required submittal. Refer to Appendix 3 for annual report questions.[42]
4. If applicable, notice that the MS4 is relying on another entity to satisfy any of the obligations under this Permit.
5. Certification and signature pursuant to G19.D, and notification of any changes to authorization pursuant to G19.C.
6. A notification of any annexations, incorporations or jurisdictional boundary changes resulting in an increase or decrease in the Permittee's geographic area of Permit coverage during the reporting period.

E. Annual Report for Secondary Permittees

Each annual report shall include the following:

1. A copy of the Permittee's current Stormwater Management Program Plan (SWMP Plan), as required by S6.A.2.
2. Submittal of the annual report form as provided by Ecology pursuant to S9.A, describing the status of implementation of the requirements of this Permit during the reporting period.
3. Attachments to the annual report form including summaries, descriptions, reports, and other information as required, or as applicable, to meet the requirements of this Permit during the reporting period. Refer to Appendix 4 for annual report questions.
4. If applicable, notice that the MS4 is relying on another entity to satisfy any of the obligations under this Permit.
5. Certification and Signature pursuant to G19.D, and notification of any changes to authorization pursuant to G19.C.
6. A notification of any jurisdictional boundary changes resulting in an increase or decrease in the Secondary Permittee's geographic area of Permit coverage during the reporting period.

[42]New Permittees refer to Appendix 5 for annual report questions.

GENERAL CONDITIONS

G1. DISCHARGE VIOLATIONS

All discharges and activities authorized by this Permit shall be consistent with the terms and conditions of this Permit.

G2. PROPER OPERATION AND MAINTENANCE

The Permittee shall, at all times, properly operate and maintain all facilities and systems of collection, treatment, and control (and related appurtenances) which are installed or used by the Permittee for pollution control to achieve compliance with the terms and conditions of this Permit.

G3. NOTIFICATION OF DISCHARGE, INCLUDING SPILLS

If a Permittee has knowledge of a discharge, including spills, into or from a MS4 which could constitute a threat to human health, welfare, or the environment, the Permittee shall:

A. Take appropriate action to correct or minimize the threat to human health, welfare and/or the environment.

B. Notify the Ecology regional office and other appropriate spill response authorities immediately but in no case later than within 24 hours of obtaining that knowledge.

C. Immediately report spills or other discharges which might cause bacterial contamination of marine waters, such as discharges resulting from broken sewer lines and failing onsite septic systems, to the Ecology regional office and to the Washington State Department of Health, Shellfish Program.

D. Immediately report spills or discharges of oils or hazardous substances to the Ecology regional office and to the Washington Emergency Management Division at 1-800-258-5990.

G4. BYPASS PROHIBITED

The intentional bypass of stormwater from all or any portion of a stormwater treatment BMP whenever the design capacity of the treatment BMP is not exceeded, is prohibited unless the following conditions are met:

A. Bypass is: (1) unavoidable to prevent loss of life, personal injury, or severe property damage; or (2) necessary to perform construction or maintenance-related activities essential to meet the requirements of the *Clean Water Act* (CWA); and

B. There are no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated stormwater, or maintenance during normal dry periods.

"Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.

G5. RIGHT OF ENTRY

The Permittee shall allow Ecology, or an authorized representative of Ecology (including an authorized contractor acting as a representative of Ecology), upon the presentation of credentials and such other documents as may be required by law, to:

A. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records shall be kept under the conditions of this Permit;

B. To have access to, and copy at reasonable cost and at reasonable times, any records that shall be kept under the terms of the Permit;

C. To inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit;

D. Sample or monitor at reasonable times, for the purposes of assuring Permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

G6. DUTY TO MITIGATE

The Permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this Permit which has a reasonable likelihood of adversely affecting human health or the environment.

G7. PROPERTY RIGHTS

This Permit does not convey any property rights of any sort, or any exclusive privilege.

G8. COMPLIANCE WITH OTHER LAWS AND STATUTES

Nothing in the Permit shall be construed as excusing the Permittee from compliance with any other applicable federal, state, or local statutes, ordinances, or regulations.

G9. MONITORING

A. Representative Sampling

Samples and measurements taken to meet the requirements of this Permit shall be representative of the volume and nature of the monitored discharge, including representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions affecting effluent quality.

B. Records Retention

The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this Permit, and records of all data used to complete the application for this Permit, for a period of at least five years. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by the Ecology. On request, monitoring data and analysis shall be provided to Ecology.

C. Recording of Results

For each measurement or sample taken, the Permittee shall record the following information: (1) the date, exact place and time of sampling; (2) the individual who performed the sampling or measurement; (3) the dates and times the analyses were performed; (4) who performed the analyses; (5) the analytical techniques or methods used; and (6) the results of all analyses.

D. Test Procedures

All sampling and analytical methods used to meet the monitoring requirements in this Permit shall conform to the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136, unless otherwise specified in this Permit or approved in writing by Ecology.

E. Flow Measurement

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the accepted industry standard for that type of device. Frequency of calibration shall be in conformance with manufacturer's recommendations or at a minimum frequency of at least one calibration per year. Calibration records should be maintained for a minimum of three years.

F. Lab Accreditation

The Permittee shall ensure all monitoring data that it is required to submit to Ecology under this Permit is prepared by a laboratory registered or accredited under the provisions of Accreditation of Environmental Laboratories, Chapter 173-50 WAC. Flow, temperature, and settleable solids are exempt from this requirement. Conductivity, turbidity, and pH are also exempt from this requirement, unless the laboratory must be registered or accredited for any other parameter. Quick methods of field detection of pollutants are exempted from this requirement when the purpose of the sampling is identification and removal of a suspected illicit discharge.

G. Additional Monitoring

Ecology may establish specific monitoring requirements in addition to those contained in this Permit by administrative order or Permit modification.

G10. REMOVED SUBSTANCES

With the exception of decant from street waste vehicles, the Permittee shall not allow collected screenings, grit, solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of stormwater to be resuspended or reintroduced to the MS4 or to waters of the State. Decant from street waste vehicles resulting from cleaning stormwater facilities may be reintroduced only when other practical means are not available and only in accordance with the *Street Waste Disposal* guidelines in Appendix 6. Solids generated from maintenance of the MS4 may be reclaimed, recycled, or reused when allowed by local codes and ordinances. Soils that are identified as contaminated pursuant to Chapter 173-350 WAC shall be disposed at a qualified solid waste disposal facility (see Appendix 6).

G11. SEVERABILITY

The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Permit shall not be affected thereby.

G12. REVOCATION OF COVERAGE

The director may terminate coverage under this General Permit in accordance with Chapter 43.21B RCW and Chapter 173-226 WAC. Cases where coverage may be terminated include, but are not limited to the following:

A. Violation of any term or condition of this General Permit;

B. Obtaining coverage under this General Permit by misrepresentation or failure to disclose fully all relevant facts;

C. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

D. A determination that the permitted activity endangers human health or the environment, or contributes significantly to water quality standards violations;

E. Failure or refusal of the Permittee to allow entry as required in RCW 90.48.090; and

F. Nonpayment of permit fees assessed pursuant to RCW 90.48.465.

Revocation of coverage under this General Permit may be initiated by Ecology or requested by any interested person.

G13. TRANSFER OF COVERAGE

This Permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the Permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

G14. GENERAL PERMIT MODIFICATION AND REVOCATION

This General Permit may be modified, revoked and reissued, or terminated in accordance with the provisions of WAC 173-226-230. Grounds for modification, revocation and reissuance, or termination include, but are not limited to, the following:

A. A change occurs in the technology or practices for control or abatement of pollutants applicable to the category of dischargers covered under this General Permit;

B. Effluent limitation guidelines or standards are promulgated pursuant to the CWA or Chapter 90.48 RCW, for the category of dischargers covered under this General Permit;

C. A water quality management plan containing requirements applicable to the category of dischargers covered under this General Permit is approved;

D. Information is obtained which indicates that cumulative effects on the environment from dischargers covered under this General Permit are unacceptable; or

E. Changes in state law that reference this Permit.

G15. REPORTING A CAUSE FOR MODIFICATION OR REVOCATION

A Permittee who knows or has reason to believe that any activity has occurred, or will occur, which would constitute cause for modification or revocation and reissuance under General Condition G12, G14, or 40 CFR 122.62 shall report such plans, or such information, to Ecology so that a decision can be made on whether action to modify, or revoke and reissue, this Permit will be required. Ecology may then require submission of a new or amended application. Submission of such application does not relieve the Permittee of the duty to comply with this Permit until it is modified or reissued.

G16. APPEALS

A. The terms and conditions of this General Permit, as they apply to the appropriate class of dischargers, are subject to appeal within thirty days of issuance of this General Permit in accordance with Chapter 43.21B RCW, and Chapter 173-226 WAC.

B. The terms and conditions of this General Permit, as they apply to an individual discharger, are appealable in accordance with Chapter 43.21B RCW within thirty days of the effective date of coverage of that discharger. Consideration of an appeal of General Permit coverage of an individual discharger is limited to the General Permit's applicability or non-applicability to that individual discharger.

C. The appeal of General Permit coverage of an individual discharger does not affect any other dischargers covered under this General Permit. If the terms and conditions of this General Permit are found to be inapplicable to any individual discharger(s), the matter shall be remanded to Ecology for consideration of issuance of an individual permit or permits.

D. Modifications of this Permit are appealable in accordance with Chapter 43.21B RCW and Chapter 173-226 WAC.

G17. PENALTIES

40 CFR 122.41(a)(2) and (3), 40 CFR 122.41(j)(5), and 40 CFR 122.41(k)(2) are hereby incorporated into this Permit by reference.

G18. DUTY TO REAPPLY

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. The Permittee shall apply for permit renewal at least 180 days prior to the specified expiration date of this Permit.

G19. CERTIFICATION AND SIGNATURE

All formal submittals to Ecology shall be signed and certified.

A. All permit applications shall be signed by either a principal executive officer or ranking elected official.

B. All formal submittals required by this Permit shall be signed by a person described, above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described, above, and submitted to Ecology; and

2. The authorization specifies either an individual or a position having responsibility for the overall development and implementation of the stormwater management program. A duly authorized representative may thus be either a named individual or any individual occupying a named position.

C. Changes to authorization. If an authorization under condition G19.B.2 is no longer accurate because a different individual or position has responsibility for the overall development and implementation of the stormwater management program, a new authorization satisfying the requirements of condition G19.B.2 shall be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.

D. Certification. Any person signing a formal submittal under this Permit shall make the following certification:

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that Qualified Personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information

submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for willful violations."

G20. NON-COMPLIANCE NOTIFICATION

In the event a Permittee is unable to comply with any of the terms and conditions of this Permit, the Permittee shall:

A. Notify Ecology of the failure to comply with the permit terms and conditions in writing within 30 days of becoming aware that the non-compliance has occurred. The written notification shall include all of the following:

1. A description of the non-compliance, including dates.
2. Beginning and end dates of the non-compliance, and if the compliance has not been corrected, the anticipated date of correction.
3. Steps taken or planned to reduce, eliminate, or prevent reoccurrence of the non-compliance.

B. Take appropriate action to stop or correct the condition of non-compliance.

G21. UPSETS

Permittees shall meet the conditions of 40 CFR 122.41(n) regarding "Upsets." The conditions are as follows:

A. ***Definition***. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

B. ***Effect of an upset***. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph (C) of this condition are met. Any determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, will not constitute final administrative action subject to judicial review.

C. ***Conditions necessary for demonstration of upset***. A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed contemporaneous operating logs, or other relevant evidence that:

1. An upset occurred and that the Permittee can identify the cause(s) of the upset;
2. The permitted facility was at the time being properly operated;
3. The Permittee submitted notice of the upset as required in 40 CFR 122.41(l)(6)(ii)(B) (24-hour notice of noncompliance); and
4. The Permittee complied with any remedial measures required under 40 CFR 122.41(d) (Duty to Mitigate).

D. ***Burden of proof***. In any enforcement proceeding the Permittee seeking to establish the occurrence of an upset has the burden of proof.

G22. DUTY TO PROVIDE INFORMATION

The Permittee shall furnish to Ecology, within a reasonable time, any information which the Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Ecology upon request, copies of records required to be kept by this permit.

G23. OTHER INFORMATION

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Ecology, it shall promptly submit such facts or information.

G24. OTHER REQUIREMENTS OF 40 CFR

The other requirements of 40 CFR Part 122.41 and 40 CFR Part 122.42 are incorporated in this permit by reference.

DEFINITIONS AND ACRONYMS

This Section includes definitions for terms used in the body of the Permit and in all the appendices except Appendix 1. Terms defined in Appendix 1 are necessary to implement requirements related to Appendix 1.

40 CFR means Title 40 of the Code of Federal Regulations, which is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.

AKART means All Known, Available, and Reasonable methods of prevention, control, and Treatment. See also state *Water Pollution Control Act*, RCW 90.48.010 and RCW 90.48.520.

All Known, Available and Reasonable Methods of Prevention, Control and Treatment (AKART) refers to the state *Water Pollution Control Act*, RCW 90.48.010 and RCW 90.48.520.

Applicable TMDL means a TMDL which has been approved by EPA on or before the issuance date of this Permit, or prior to the date that Ecology issues coverage under this Permit, whichever is later.

Aqueous Film-Forming Foam (AFFF) is a type of foam used to fight liquid-fueled fires (i.e., those started by oil, gasoline, or other flammable liquids).

Beneficial Uses means uses of waters of the State which include, but are not limited to: use for domestic, stock watering, industrial, commercial, agricultural, irrigation, mining, fish and wildlife maintenance and enhancement, recreation, generation of electric power and preservation of environmental and aesthetic values, and all other uses compatible with the enjoyment of the public waters of the State.

Best Management Practices are the schedules of activities, prohibitions of practices, maintenance procedures, and structural and/or managerial practices approved by Ecology that, when used singly or in combination, prevent or reduce the release of pollutants and other adverse impacts to waters of Washington State.

BMP means Best Management Practice.

Bypass means the diversion of stormwater from any portion of a stormwater treatment facility.

Circuit means a portion of a MS4 discharging to a single point or serving a discrete area determined by traffic volumes, land use, topography, or the configuration of the MS4.

Component or **Program Component** means an element of the Stormwater Management Program listed in S5 - *Stormwater Management Program for Cities, Towns, and Counties*, S6 – *Stormwater Management Program for Secondary Permittees*, S7 – *Compliance with Total Maximum Daily Load Requirements*, or S8 – *Monitoring and Assessment*, of this Permit.

Conveyance System means that portion of the municipal separate storm sewer system designed or used for conveying stormwater.

Co-Permittee means an owner or operator of an MS4 which is in a cooperative agreement with at least one other applicant for coverage under this Permit. A Co-Permittee is an owner or operator of a regulated MS4 located within or in proximity to another regulated MS4. A Co-Permittee is only responsible for permit conditions relating to discharges from the MS4 the Co-Permittee owns or operates. See also 40 CFR 122.26(b)(1).

CWA means the federal *Clean Water Act* (formerly referred to as the federal *Water Pollution Control Act* or federal *Water Pollution Control Act Amendments of 1972*) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. (6-483 and Pub. L. 97-117, 33 U.S.C. 1251 et seq.).

Director means the Director of the Washington State Department of Ecology, or an authorized representative.

Discharge Point means the location where a discharge leaves the Permittee's MS4 through the Permittee's MS4 facilities/BMPs designed to infiltrate.

Entity means a governmental body, or a public or private organization.

EPA means the U.S. Environmental Protection Agency.

Fully Stabilized means the establishment of a permanent vegetative cover, or equivalent permanent stabilization measures (such as riprap, gabions, or geotextiles) which prevents erosion.

General Permit means a permit which covers multiple dischargers of a point source category within a designated geographical area, in lieu of individual permits being issued to each discharger.

Groundwater means water in a saturated zone or stratum beneath the surface of the land or below a surface water body. Refer to Chapter 173-200 WAC.

Hazardous Substance means any liquid, solid, gas, or sludge, including any material, substance, product, commodity, or waste, regardless of quantity, that exhibits any of the physical, chemical, or biological properties described in WAC 173-303-090 or WAC 173-303-100.

Heavy Equipment Maintenance or Storage Yard means an uncovered area where any heavy equipment, such as mowing equipment, excavators, dump trucks, backhoes, or bulldozers are washed or maintained, or where at least five pieces of heavy equipment are stored on a long-term basis.

Highway means a main public road connecting towns and cities.

Hydraulically Near means runoff from the site discharges to the sensitive feature without significant natural attenuation of flows that allows for suspended solids removal. See Appendix 7- *Determining Construction Site Sediment Damage Potential* for a more detailed definition.

Hyperchlorinated means water that contains more than 10 mg/Liter chlorine.

Illicit Connection means any infrastructure connection to the MS4 that is not intended, permitted or used for collecting and conveying stormwater or non-stormwater discharges allowed as specified in this Permit (S5.C.5 and S6.D.3). Examples include sanitary sewer connections, floor drains, channels, pipelines, conduits, inlets, or outlets that are connected directly to the MS4.

Illicit Discharge means any discharge to a MS4 that is not composed entirely of stormwater or of non-stormwater discharges allowed as specified in this Permit (S5.C.5 and S6.D.3).

Impervious Surface means a non-vegetated surface area that either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development. A non-vegetated surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or stormwater areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater.

Land Disturbing Activity means any activity that results in a change in the existing soil cover (both vegetative and non-vegetative) and/or the existing soil topography. Land disturbing activities include, but are not limited to clearing, grading, filling and excavation. Compaction that is associated with stabilization of structures and road construction shall also be considered land disturbing activity. Vegetation maintenance practices, including landscape maintenance and gardening, are not considered land disturbing activity. Stormwater facility maintenance is not considered land disturbing activity if conducted according to established standards and procedures.

LID means Low Impact Development.

LID BMP means Low Impact Development Best Management Practices.

LID Principles means land use management strategies that emphasize conservation, use of on-site natural features, and site planning to minimize impervious surfaces, native vegetation loss, and stormwater runoff.

Low Impact Development (LID) means a stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.

Low Impact Development Best Management Practices (LID BMP) means distributed stormwater management practices, integrated into a project design, that emphasize pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration. LID BMPs include, but are not limited to, bioretention, rain gardens, permeable pavements, roof downspout controls, dispersion, soil quality and depth, vegetated roofs, minimum excavation foundations, and water re-use.

Material Storage Facilities means an uncovered area where bulk materials (liquid, solid, granular, etc.) are stored in piles, barrels, tanks, bins, crates, or other means.

Maximum Extent Practicable refers to paragraph 402(p)(3)(B)(iii) of the federal *Clean Water Act* which reads as follows: Permits for discharges from municipal storm sewers shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques, and system, design, and engineering methods, and other such provisions as the Administrator or the State determines appropriate for the control of such pollutants.

MEP means Maximum Extent Practicable.

MS4 means Municipal Separate Storm Sewer System.

Municipal Separate Storm Sewer System means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

1. Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the CWA that discharges to waters of Washington State.
2. Designed or used for collecting or conveying stormwater.
3. Which is not a combined sewer.
4. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

5. Which is defined as "large" or "medium" or "small" or otherwise designated by Ecology pursuant to 40 CFR 122.26.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking, and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the federal *Clean Water Act*, for the discharge of pollutants to surface waters of the State from point sources. These permits are referred to as NPDES permits and, in Washington State, are administered by the Washington State Department of Ecology.

Native Vegetation means vegetation comprised of plant species, other than noxious weeds, that are indigenous to the coastal region of the Pacific Northwest, and which reasonably could have been expected to naturally occur on the site. Examples include trees such as Douglas Fir, western hemlock, western red cedar, alder, big-leaf maple; shrubs such as willow, elderberry, salmonberry, and salal; and herbaceous plants such as sword fern, foam flower, and fireweed.

New Development means land disturbing activities, including Class IV General Forest Practices that are conversions from timber land to other uses; structural development, including construction or installation of a building or other structure; creation of hard surfaces; and subdivision, short subdivision and binding site plans, as defined and applied in Chapter 58.17 RCW. Projects meeting the definition of redevelopment shall not be considered new development. Refer to Appendix 1 for a definition of hard surfaces.

New Permittee means a city, town, or county that is subject to the Western Washington Municipal Stormwater General Permit and was not subject to the permit prior to August 1, 2024.

New Secondary Permittee means a Secondary Permittee that is covered under a Municipal Stormwater General Permit and was not covered by the permit prior to August 1, 2024.

NOI means Notice of Intent.

Notice of Intent (NOI) means the application for, or a request for coverage under, a General Permit pursuant to WAC 173-226-200.

Notice of Intent for Construction Activity means the application form for coverage under the *Construction Stormwater General Permit*.

Notice of Intent for Industrial Activity means the application form for coverage under the *Industrial Stormwater General Permit*.

NPDES means National Pollutant Discharge Elimination System.

Outfall means a point source as defined by 40 CFR 122.2 at the point where a discharge leaves the Permittee's MS4 and enters a surface receiving waterbody or surface receiving waters. Outfall does not include pipes, tunnels, or other conveyances which connect segments of the same stream or other surface waters and are used to convey primarily surface waters (i.e., culverts).

Overburdened Community means a geographic area where vulnerable populations face combined, multiple environmental harms and health impacts, and includes, but is not limited to, highly impacted communities.

> "Vulnerable populations" means population groups that are more likely to be at higher risk for poor health outcomes in response to environmental harms, due to:
>
> (i) Adverse socioeconomic factors, such as unemployment, high housing and transportation costs relative to income, limited access to nutritious food and adequate health care, linguistic isolation, and other factors that negatively affect health outcomes and increase vulnerability to the effects of environmental harms; and
>
> (ii) Sensitivity factors, such as low birth weight and higher rates of hospitalization.
>
> "Vulnerable populations" includes, but is not limited to:
>
> - Racial or ethnic minorities;
> - Low-income populations;
> - Populations disproportionately impacted by environmental harms; and
> - Populations of workers experiencing environmental harms.
>
> "Highly impacted community" means a community designated by the Department of Health based on cumulative impact analyses or a community located in census tracts that are fully or partially on "Indian country" as defined in 18 U.S.C. Sec. 1151.

PCBs means Polychlorinated biphenyls.

Permittee unless otherwise noted, the term "Permittee" includes city, town, or county Permittee, Co-Permittee, New Permittee, Secondary Permittee, and New Secondary Permittee.

PFAS means Per and Polyfluoroalkyl Substances

Physically Interconnected means that one MS4 is connected to another storm sewer system in such a way that it allows for direct discharges to the second system. For example, the roads with drainage systems and municipal streets of one entity are physically connected directly to a storm sewer system belonging to another entity.

Project site means that portion of a property, properties, or rights-of-way subject to land disturbing activities, new hard surfaces, or replaced hard surfaces. Refer to Appendix 1 for a definition of hard surfaces.

QAPP means Quality Assurance Project Plan.

Qualified Personnel means someone who has professional training in the aspects of stormwater management for which they are responsible and are under the functional control of the Permittee. Qualified Personnel may be staff members, contractors, or trained volunteers with professional certification. Permittees may train and certify volunteers.

Qualified Third Party means someone who has professional training in the aspects of stormwater management for which they are responsible but are hired by private entities and not under the functional control of the Permittee. Qualified Third Parties may be contractors, or consultants.

Quality Assurance Project Plan means a document that describes the objectives of an environmental study and the procedures to be followed to achieve those objectives.

RCW means the Revised Code of Washington State.

Receiving Waterbody or **Receiving Waters** means naturally and/or reconstructed naturally occurring surface water bodies, such as creeks, streams, rivers, lakes, wetlands, estuaries, and marine waters, or groundwater, to which a MS4 discharges.

Reclaimed water means water derived in any part from a wastewater with a domestic wastewater component that has been adequately and reliably treated to meet the requirements of Chapter 173-219 WAC, so that it can be used for beneficial purposes. Reclaimed water is not considered a wastewater**.**

Redevelopment means, on a site that is already substantially developed (i.e., has 35% or more of existing hard surface coverage), the creation or addition of hard surfaces; the expansion of a building footprint or addition or replacement of a structure; structural development including construction, installation or expansion of a building or other structure; replacement of hard surface that is not part of a routine maintenance activity; and land disturbing activities. Refer to Appendix 1 for a definition of hard surfaces.

Regulated Small Municipal Separate Storm Sewer System means a Municipal Separate Storm Sewer System which is automatically designated for inclusion in the Phase II stormwater permitting program by its location within an Urban Area, or by designation by Ecology and is not eligible for a waiver or exemption under S1.C.

Runoff is water that travels across the land surface and discharges to water bodies either directly or through a collection and conveyance system. See also "**Stormwater**."

SAM means Stormwater Action Monitoring.

Secondary Permittee is an operator of a regulated small MS4 which is not a city, town or county. Secondary Permittees include special purpose districts and other public entities that meet the criteria in S1.B.

Sediment/Erosion-Sensitive Feature means an area subject to significant degradation due to the effects of construction runoff, or areas requiring special protection to prevent erosion. See Appendix 7 *Determining Construction Site Sediment Damage Potential* for a more detailed definition.

Shared Water Bodies means water bodies, including downstream segments, lakes and estuaries that receive discharges from more than one Permittee.

Significant Contributor means a discharge that contributes a loading of pollutants considered to be sufficient to cause or exacerbate the deterioration of receiving water quality or instream habitat conditions.

Small Municipal Separate Storm Sewer System means an MS4 that is not defined as "large" or "medium" pursuant to 40 CFR 122.26(b)(4) & (7) or designated under 40 CFR 122.26 (a)(1)(v).

Source Control BMP means a structure or operation that is intended to prevent pollutants from coming into contact with stormwater through physical separation of areas or careful management of activities that are sources of pollutants. The SWMMWW separates source control BMPs into two types. Structural Source Control BMPs are physical, structural, or mechanical devices, or facilities, that are intended to prevent pollutants from entering stormwater. Operational BMPs are non-structural practices that prevent or reduce pollutants from entering stormwater.

Stormwater means runoff during and following precipitation and snowmelt events, including surface runoff, drainage or interflow.

Stormwater Action Monitoring (SAM) is the regional stormwater monitoring program for Washington State. This means a stormwater-focused monitoring and assessment program consisting of these components: status and trends monitoring in small streams and marine nearshore areas, stormwater management program effectiveness studies, and source identification projects. The priorities and scope for SAM are set by a formal stakeholder group that selects the studies and oversees the program's administration.

Stormwater Associated with Industrial and Construction Activity means the discharge from any conveyance which is used for collecting and conveying stormwater, which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant, or associated with clearing, grading and/or excavation, and is required to have an NPDES permit in accordance with 40 CFR 122.26.

Stormwater Facility Retrofits means both: projects that retrofit existing treatment and/or flow control facilities; and new flow control or treatment facilities or BMPs that will address impacts from existing development.

Stormwater Management Program (SWMP) means a set of actions and activities designed to reduce the discharge of pollutants from the MS4 to the MEP and to protect water quality, and comprising the components listed in S5 (for cities, towns, and counties) or S6 (for Secondary Permittees) of this Permit and any additional actions necessary to meet the requirements of applicable TMDLs pursuant to S7 –*Compliance with TMDL Requirements*, and S8– *Monitoring and Assessment*.

Stormwater Treatment and Flow Control BMPs/Facilities means detention facilities, permanent treatment BMPs/facilities; and bioretention, vegetated roofs, and permeable pavements that help meet Appendix 1 Minimum Requirements #6 (treatment), #7 (flow control), or both.

Surface Waters includes lakes, rivers, ponds, streams, inland waters, salt waters, and all other surface waters and water courses within the jurisdiction of the State of Washington.

SWMMWW or ***Stormwater Management Manual for Western Washington*** means the technical manual published by the Department of Ecology in 2024 (Publication No. 24-10-013, 2024*).*

SWMP means Stormwater Management Program.

TMDL means Total Maximum Daily Load.

Total Maximum Daily Load (TMDL) means a water cleanup plan. A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The calculation must include a margin of safety to ensure that the water body can be used for the purposes the state has designated. The calculation must also account for seasonable variation in water quality. Water quality standards are set by states, territories, and tribes. They identify the uses for each water body, for example, drinking water supply, contact recreation (swimming), and aquatic life support (fishing), and the scientific criteria to support that use. The *Clean Water Act*, Section 303, establishes the water quality standards and TMDL programs.

Tributary Conveyance means pipes, ditches, catch basins, and inlets owned or operated by the Permittee and designed or used for collecting and conveying stormwater.

UGA means Urban Growth Area.

Urban Growth Area (UGA) means those areas designated by a county pursuant to RCW 36.70A.110.

Urban Area means urban areas with a population of 50,000 or more people. Urban Areas are designated by the U.S. Census Bureau based on the most recent decennial census.

Vehicle Maintenance or Storage Facility means an uncovered area where any vehicles are regularly washed or maintained, or where at least 10 vehicles are stored.

Water Quality Standards means *Surface Water Quality Standards*, Chapter 173-201A WAC, *Groundwater Quality Standards*, Chapter 173-200 WAC, and *Sediment Management Standards*, Chapter 173-204 WAC.

Waters of the State includes those waters as defined as "waters of the United States" in 40 CFR Subpart 122.2 within the geographic boundaries of Washington State and "waters of the State" as defined in Chapter 90.48 RCW which includes lakes, rivers, ponds, streams, inland waters, underground waters, salt waters and all other surface waters and water courses within the jurisdiction of the State of Washington.

Waters of the United States refers to the definition in 40 CFR 122.2.

Errata for 2024-2029 Municipal Stormwater Permits

Permits Issued on July 1, 2024 |Effective August 1, 2024

Phase I, and WWA Phase II Permit:

Appendix 11 was missing the label for Mount Vernon on page 3, in the row that displayed their population and costs for SAM contributions. The appendix was updated to include the city's name for clarity.

EWA Phase II Permit:

Appendix 8 was missing the label for Mount Vernon on page 4, in the row that displayed their population and costs for SAM contributions. The appendix was updated to include the city's name for clarity.

WWA Phase II Permit:

- Permit section S5.C.8.c and S5.C.8.d.v reference to "S5.C.8.a.i." should reference "S5.C.8.b."
- Permit Section S5.C.7.e refers to "(e.g.2029-2032)" this should reference "(e.g. 2029-2034)."
- Appendix 3, Question 31 references "(S5.C.2.b.iv)" this should be "(S5.C.4.b.iv)."

Issued 7/3/24; 7/17/24

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APPENDIX 1 - Minimum Technical Requirements for New Development and Redevelopment

Section 1. Exemptions

The purpose of this section is to identify activities whose resulting surfaces may be considered "exempt" from the Minimum Requirements, even though those surfaces, per the definitions in **Section 2. Definitions Related to Minimum Requirements**, would be considered replaced hard surfaces or land disturbed.

Unless otherwise indicated in this section, the surfaces that result from the activities described below are exempt from the Minimum Requirements. Exempt surfaces do not need to be included when evaluating the Project Level Thresholds or TDA Level Thresholds as described in **Section 3. Applicability of the Minimum Requirements**.

The following list further defines how these exemptions may be used:

- A project may combine different types of exempt activities. If the project includes only exempt activities, then the whole project is exempt.
- If the "exempt" activity is part of, directly related to, or caused by a new development or redevelopment project, then it is not considered an exempt activity. It is considered part of the new development or redevelopment project.
- If an exempt activity requires making an ADA update per the federal Americans with Disabilities Act requirements, then the ADA update is considered part of the exempt activity, and the exemption applies to the surfaces disturbed for the ADA update. Note that this exemption does not extend to additional work, such as extending a sidewalk beyond what is necessary for the ADA update.

Forest Practice Activities

Forest practices regulated under Title 222 WAC, except for Class IV-General forest practices that are conversions from timberland to other uses, are exempt from the provisions of the Minimum Requirements.

Commercial Agriculture Activities

Commercial agriculture activities involving working the land for production are generally exempt. However, the conversion from timberland to agriculture, and the construction of impervious surfaces are not exempt.

Oil and Gas Field Activities

Construction of drilling sites, waste management pits, and access roads, as well as construction of transportation and treatment infrastructure such as pipelines, natural gas treatment plants, natural gas pipeline compressor stations, and crude oil pumping stations are exempt. Operators are encouraged to implement and maintain Best Management Practices (BMPs) to minimize erosion and control sediment during and after construction activities to help ensure protection of surface water quality during storm events.

Pavement Maintenance Activities

Pavement maintenance activities include only targeted pavement repairs or maintenance. The limits of the exempt surfaces include only the area that must be disturbed to repair or maintain the pavement.

Pavement maintenance activities do not:

- change the characteristics of a roadway (e.g. changing a four-way intersection to a roundabout).
- increase the traffic capacity of a roadway or parking area (e.g. include restriping to add lanes or parking spaces).
- expand the area of coverage (i.e. add new hard surfaces).

The following pavement maintenance activities are exempt from all Minimum Requirements:

- pothole patching, square cut patching, or other targeted preservation work,
- overlaying (including grinding and overlaying, so long as base course is not exposed) existing asphalt or concrete pavement. Examples of overlay materials include bituminous surface treatment (BST or “chip seal”), asphalt, or concrete,
- shoulder grading,
- reshaping/regrading drainage systems (including adding curb/gutter and/or wedge curbs),
- crack sealing, and
- vegetation maintenance associated with the road right-of-way.

The following are not pavement maintenance activities, and are not exempt:

- Removing and replacing a pavement to base course or lower, or repairing the pavement base (except for pothole or square cut patching): These are considered replaced hard surfaces.
- Extending the pavement edge, or paving graveled shoulders: These are

considered new hard surfaces.

- Upgrading from dirt to gravel, a bituminous surface treatment ("chip seal"), asphalt, concrete, or permeable pavement; upgrading from gravel to chip seal, asphalt, concrete, or permeable pavement; or upgrading from chip seal to asphalt, concrete, or permeable pavement: These are considered new hard surfaces.

Underground Utility Activities

Underground utility activities include installing, maintaining, and/or upgrading an underground utility. The limits of the exempt surfaces include only the area disturbed by the trench work necessary for the underground utility work (including any over-excavating necessary for the utility trench).

For an underground utility activity to be exempt, it cannot be part of, directly related to, or caused by a new development or redevelopment project.

Underground utility activities must replace the ground surface with in-kind material or materials with similar runoff characteristics.

Underground utility activities are subject to only **4.2 Minimum Requirement #2: Construction Stormwater Pollution Prevention Plan (SWPPP)**.

Section 2. Definitions Related to Minimum Requirements

ADT

Average Daily Traffic

Arterial

A road or street primarily for through traffic. The term generally includes roads or streets considered collectors. It does not include local access roads which are generally limited to providing access to abutting property. See also RCW 35.78.010, RCW 36.86.070, and RCW 47.05.021.

Bioretention BMPs

Engineered stormwater facilities that provide Runoff Treatment by passing the stormwater through a specified soil profile (Bioretention Soil Mix, or BSM), and typically either retain or detain the treated stormwater for Flow Control. Bioretention facilities include a variety of plant material including trees, shrubs, grasses, and/or other herbaceous plants adapted to the local climate and soil moisture conditions. Bioretention is typically implemented as an LID practice, and

as such is typically sited to receive stormwater runoff from a small contributing area.

Certified Erosion and Sediment Control Lead (CESCL)

An individual who has current certification through an approved erosion and sediment control training program that meets the minimum training standards established by Ecology (see **BMP C160: Certified Erosion and Sediment Control Lead**). A CESCL is knowledgeable in the principles and practices of erosion and sediment control. The CESCL must have the skills to assess site conditions and construction activities that could impact the quality of stormwater and, the effectiveness of erosion and sediment control measures used to control the quality of stormwater discharges. Certification is obtained through an Ecology approved erosion and sediment control course. Course listings are provided online at Ecology's website.

Commercial agriculture

Those activities conducted on lands defined in RCW 84.34.020(2), and activities involved in the production of crops or livestock for commercial trade. An activity ceases to be considered commercial agriculture when the area on which it is conducted is proposed for conversion to a nonagricultural use or has lain idle for more than five years, unless the idle land is registered in a federal or state soils conservation program, or unless the activity is maintenance of irrigation ditches, laterals, canals, or drainage ditches related to an existing and ongoing agricultural activity.

Common plan of development or sale

A site where multiple separate and distinct construction activities may be taking place at different times on different schedules and/or by different contractors, but still under a single plan. Examples include:

1. phased projects and projects with multiple filings or lots, even if the separate phases or filings/lots will be constructed under separate contract or by separate owners (e.g. a development where lots are sold to separate builders);
2. a development plan that may be phased over multiple years, but is still under a consistent plan for long-term development;
3. projects in a contiguous area that may be unrelated but still under the same contract, such as construction of a building extension and a new parking lot at the same facility; and
4. linear projects such as roads, pipelines, or utilities.

If the project is part of a common plan of development or sale, the disturbed area of the entire plan must be used in determining permit requirements.

Converted vegetation (areas)

The surfaces on a project site where native vegetation, pasture, scrub/shrub, or unmaintained non-native vegetation (e.g., Himalayan blackberry, scotch broom) are converted to lawn or landscaped areas, or where native vegetation is converted to pasture.

Effective impervious surface

Those impervious surfaces that are connected via sheet flow or discrete conveyance to a drainage system. Impervious surfaces are considered ineffective if:

1. the runoff is fully dispersed in accordance with **BMP T5.30: Full Dispersion**;
2. residential roof runoff is infiltrated in accordance with **BMP T5.10A: Downspout Full Infiltration**; or
3. all runoff from the impervious surface is infiltrated (i.e. approved continuous runoff modeling methods indicate that the entire runoff file is infiltrated).

Erodible or leachable materials

Wastes, chemicals, or other substances that measurably alter the physical or chemical characteristics of runoff when exposed to rainfall. Examples include erodible soils that are stockpiled, uncovered process wastes, manure, fertilizers, oily substances, ashes, kiln dust, and garbage dumpster leakage.

Hard surface

An impervious surface, a permeable pavement, or a vegetated roof.

Highway

A main public road connecting towns and cities.

Impervious surface

A surface area which either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development. A surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater.

- For purposes of determining whether the thresholds for application of Minimum Requirements are exceeded, open, uncovered retention or detention BMPs shall not be considered as impervious surfaces. Open, uncovered retention or detention BMPs shall be considered impervious surfaces for the purposes of runoff modeling.

- When an underdrain (not intended to infiltrate) is used below an artificial turf surface, that surface shall be considered (and modeled) as impervious surface.

Land disturbing activity

Any activity that results in a change in the existing soil cover (both vegetative and nonvegetative) and/or the existing soil topography. Land disturbing activities include, but are not limited to clearing, grading, filling, and excavation. Compaction that is associated with stabilization of structures and road construction shall also be considered a land disturbing activity. Vegetation maintenance practices, including landscape maintenance and gardening, are not considered land-disturbing activity. Stormwater facility maintenance is not considered land disturbing activity if conducted according to established standards and procedures.

Low impact development (LID)

A stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation, and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.

Low Impact Development Best Management Practices (LID BMPs)

Distributed stormwater management practices, integrated into a project design, that emphasize pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation, and transpiration. LID BMPs include, but are not limited to:

- **BMP T7.30: Bioretention**,
- **BMP T5.14: Rain Gardens**,
- **BMP T5.15: Permeable Pavements**,
- **BMP T5.10A: Downspout Full Infiltration**,
- **BMP T5.10B: Downspout Dispersion Systems**,
- **BMP T5.10C: Perforated Stub-out Connections**
- **BMP T5.30: Full Dispersion**,
- **BMP T5.13: Post-Construction Soil Quality and Depth**,
- **BMP T5.19: Minimal Excavation Foundations**,
- **BMP T5.17: Vegetated Roofs**, and
- **BMP T5.20: Rainwater Harvesting**.

Low Impact Development (LID) Principles

Land use management strategies that emphasize conservation, use of on-site natural features, and site planning to minimize impervious surfaces, native vegetation loss, and stormwater runoff.

Maintenance

Repair and maintenance includes activities conducted on currently serviceable structures, facilities, and equipment that involves no expansion or use beyond that previously existing and results in no significant adverse hydrologic impact. It includes those usual activities taken to prevent a decline, lapse, or cessation in the use of structures and systems. Those usual activities may include replacement of dysfunctional facilities, including cases where environmental permits require replacing an existing structure with a different type of structure, if the functioning characteristics of the original structure are not changed. One example is the replacement of a collapsed, fish blocking, round culvert with a new box culvert under the same span, or width, of roadway. Regarding stormwater facilities, maintenance includes assessment to ensure ongoing proper operation, removal of built-up pollutants (i.e. sediments), replacement of failed or failing treatment media, and other actions taken to correct defects as identified in the BMP design guidance within Volume V of the SWMMWW. See also Pavement Maintenance exemptions in **Section 1. Exemptions**.

Native vegetation

Vegetation comprised of plant species, other than noxious weeds, that are indigenous to the coastal region of the Pacific Northwest and which reasonably could have been expected to naturally occur on the site. Examples include trees such as Douglas fir, western hemlock, western red cedar, alder, big-leaf maple, and vine maple; shrubs such as willow, elderberry, salmonberry and salal; and herbaceous plants such as sword fern, foam flower, and fireweed.

New development

Land disturbing activities, including Class IV-general forest practices that are conversions from timberland to other uses; structural development, including construction or installation of a building or other structure; creation of hard surfaces; and subdivision, short subdivision and binding site plans, as defined and applied in Chapter 58.17 RCW. Projects meeting the definition of redevelopment shall not be considered new development.

New hard surface

A surface that is:

- upgraded from dirt to gravel, a bituminous surface treatment ("chip seal"), asphalt, concrete, permeable pavement, a structure with a vegetated roof, or an impervious structure; or
- upgraded from gravel to chip seal, asphalt, concrete, permeable pavement, a structure with a vegetated roof, or an impervious structure; or
- upgraded from chip seal to asphalt, concrete, permeable pavement, a structure with a vegetated roof, or an impervious structure.

  Note that if asphalt or concrete has been overlaid by a chip seal, the existing condition should be considered as asphalt or concrete.

New impervious surface

A surface that is:

- changed from a pervious surface to an impervious surface (e.g. resurfacing by upgrading from dirt to gravel, a bituminous surface treatment ("chip seal"), asphalt, concrete, or an impervious structure); or
- upgraded from gravel to chip seal, asphalt, concrete, or an impervious structure; or
- upgraded from chip seal to asphalt, concrete, or an impervious structure.

  Note that if asphalt or concrete has been overlaid by a chip seal, the existing condition should be considered as asphalt or concrete.

On-site stormwater management BMPs

Development and mitigation techniques that serve to infiltrate, disperse, and retain stormwater runoff on a project site. As used in this appendix, a synonym for Low Impact Development BMPs.

Permeable pavement

Pervious concrete, porous asphalt, permeable pavers, or other forms of pervious or porous paving material intended to allow passage of water through the pavement section. It often includes an aggregate base that provides structural support and acts as a stormwater reservoir.

Pervious surface

Any surface material that allows stormwater to infiltrate into the ground. Examples include lawn, landscape, pasture, native vegetation areas, and permeable pavements.

Pollution-generating hard surface (PGHS)

Those hard surfaces considered to be a significant source of pollutants in stormwater runoff. See the listing of surfaces under pollution-generating impervious surface.

Pollution-generating impervious surface (PGIS)

Those impervious surfaces considered to be a significant source of pollutants in stormwater runoff. Such surfaces include those which are subject to any of the following:

- vehicular use (as further defined in this section).
- industrial activities (as further defined in the glossary of the SWMMWW).
- storage of erodible or leachable materials, wastes, or chemicals, and which receive direct rainfall or the run-on or blow-in of rainfall.
- metal roofs unless they are coated with an inert, non-leachable material (e.g. baked-on enamel coating).
- roofs that are subject to venting significant amounts of dusts, mists, or fumes from manufacturing, commercial, or other indoor activities.

Pollution-generating pervious surface (PGPS)

Any pervious surface subject to any of the following:

- vehicular use (as further defined in this glossary).
- industrial activities (as further defined in the glossary of the SWMMWW).
- storage of erodible or leachable materials, wastes or chemicals, and that receive direct rainfall or run-on or blow-in of rainfall.
- use of pesticides and fertilizers.
- loss of soil.

Artificial turf is also considered to be PGPS.

Typical PGPS include permeable pavement subject to vehicular use, lawns and landscaped areas including: golf courses, parks, cemeteries, and sports fields (natural and artificial turf).

Pre-developed condition

The native vegetation and soils that existed at a site prior to the influence of Euro-American settlement. The pre-developed condition shall be assumed to be forested land cover unless reasonable, historic information is provided that indicates the site was prairie prior to settlement.

Project

Any proposed action to alter or develop a site; or the proposed action of a permit application or an approval that requires drainage review.

Project site

That portion of a property, properties, and right-of-way subject to land disturbing activities, new hard surfaces, or replaced hard surfaces.

Rain garden

A non-engineered shallow landscaped depression, with compost-amended native soils and adapted plants. The depression is designed to pond and temporarily store stormwater runoff from adjacent areas, and to allow stormwater to pass through the amended soil profile. See **BMP T5.14: Rain Gardens**.

Receiving waterbody or receiving waters

Naturally and/or reconstructed naturally occurring surface water bodies, such as creeks, streams, rivers, lakes, wetlands, estuaries, and marine waters, or groundwater, to which a MS4 discharges.

Redevelopment

On a site that is already substantially developed (i.e. has 35% or more of existing hard surface coverage), the creation or addition of hard surfaces; the expansion of a building footprint or addition or replacement of a structure; structural development including construction, installation, or expansion of a building or other structure; replacement of hard surface that is not part of a routine maintenance activity; and land disturbing activities.

Replaced hard surface

For structures, the removal down to (i.e. exposing the top of) the foundation and replacement. For other hard surfaces, the removal down to (i.e. exposing the top of) bare soil or base course and replacement.

Replaced impervious surface

For structures, the removal down to (i.e. exposing the top of) the foundation and replacement. For other impervious surfaces, the removal down to (i.e. exposing the top of) bare soil or base course and replacement.

Site

The area defined by the legal boundaries of a parcel or parcels of land that is (are) subject to new development or redevelopment. For road projects, the length of the project site and the right-of-way boundaries define the site.

A Site may include multiple parcels and/or sections of right-of-way, if multiple parcels and/or sections of right-of-way are subject to the new development or redevelopment project.

Source control BMP

A structure or operation intended to prevent pollutants from coming into contact with stormwater through physical separation of areas or careful management of activities that are sources of pollutants. The SWMMWW separates source control BMPs into two types: structural and operational.

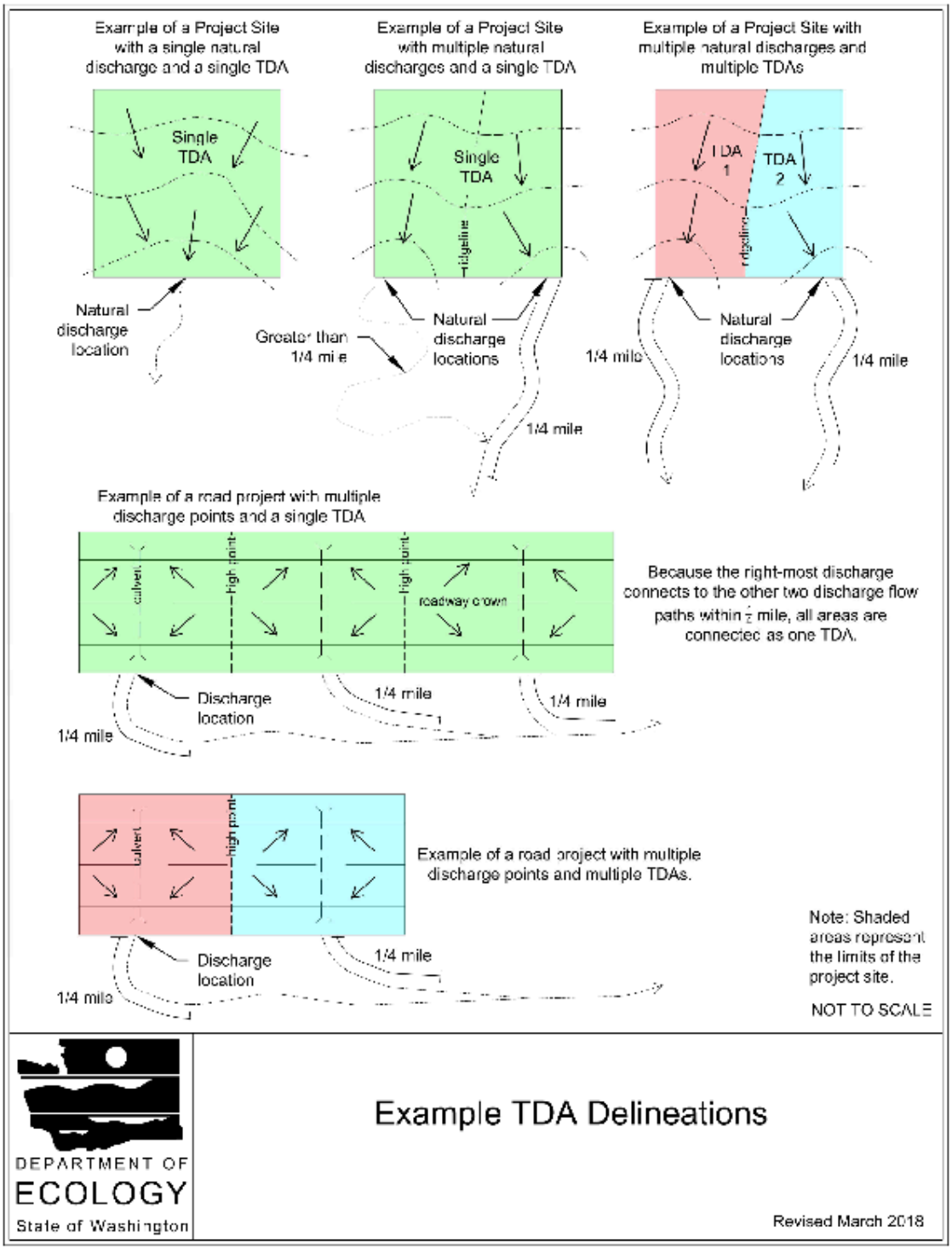
- *Structural Source Control BMPs* are physical, structural, or mechanical devices or facilities that are intended to prevent pollutants from entering stormwater.
- *Operational Source Control BMPs* are non-structural practices that prevent or reduce pollutants from entering stormwater.

Threshold Discharge Area

An area within a project site draining to a single natural discharge location or multiple natural discharge locations that combine within one-quarter mile downstream (as determined by the shortest flowpath). The examples in **Figure 1: Example TDA Delineations** below illustrate this definition. The purpose of this definition is to clarify how the thresholds of this appendix are applied to project sites with multiple discharge points.

If the project site does not currently discharge at the natural location and is such that it is impractical (as determined by the local jurisdiction) to return the discharge to the natural location, then the TDA delineation would be based on the discharge(s) at the existing location(s). An example of this case is a site in an ultra-urban environment, where fully built-out conveyance systems exist and are not in the natural (i.e. historic) locations.

Figure 1: Example TDA Delineations



Vehicular use

Regular use of an impervious or pervious surface by motor vehicles. The following are subject to regular vehicular use:

- roads,
- un-vegetated road shoulders,
- bike lanes within the traveled lane of a roadway,
- driveways,
- parking lots,
- unrestricted access fire lanes,
- vehicular equipment storage yards,
- railway lines, including light rail elevated and non-elevated guideways/tracks, and
- airport runways and other surfaces intended for movement and/or storage of aircraft.

The following are not considered subject to regular vehicular use:

- sidewalks not subject to drainage from roads for motor vehicles,
- paved bicycle pathways separated from and not subject to drainage from roads for motor vehicles,
- restricted access fire lanes, and
- infrequently used maintenance access roads.

Wetlands

Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from non-wetland areas to mitigate the conversion of wetlands.

Section 3. Applicability of the Minimum Requirements

3.1 Minimum Requirement Thresholds

Not all the Minimum Requirements apply to every new development or redevelopment project. The applicability varies depending on the project type and size. This section identifies thresholds that determine the applicability of the Minimum Requirements to projects. Use the flow charts in **Figure 2: Flow Chart for Determining Whether the Permittee Must Regulate the Project**, **Figure 3: Flow Chart for Determining Requirements for New Development**, and **Figure 4: Flow Chart for Determining Requirements for Redevelopment** to determine which of the Minimum Requirements apply. The Minimum Requirements themselves are presented in **Section 4. Minimum Requirements**.

Use the thresholds in **sections 3.2 and 3.3** at the time of application for a subdivision, plat, short plat, building permit, or other construction permit. The plat or short plat approval shall identify all stormwater BMPs that are required for each lot. For projects involving only land disturbing activities, (e.g. clearing or grading), the thresholds apply at the time of application for the permit allowing or authorizing that activity. Note the exemption in **Section 1. Exemptions** for forest practices other than Class IV General.

For projects that are implemented in incremental stages or phases as part of a common plan of development or sale, the thresholds below must be considered for the complete project at full build-out.

The Permittee may allow the Minimum Requirements to be met for an equivalent (flow and pollution characteristics) area. The equivalent area may be within the same TDA. If the equivalent area is outside the TDA, or off-site, the equivalent area must drain to the same receiving water and the guidance for equivalent facilities using in-basin transfers must be followed, as detailed in ***I-D.6 Regional Facility Area Transfers*** in the SWMMWW. The Permittee is responsible for maintaining tracking records for all area transfers approved by the Permittee.

Figure 2: Flow Chart for Determining Whether the Permittee Must Regulate the Project

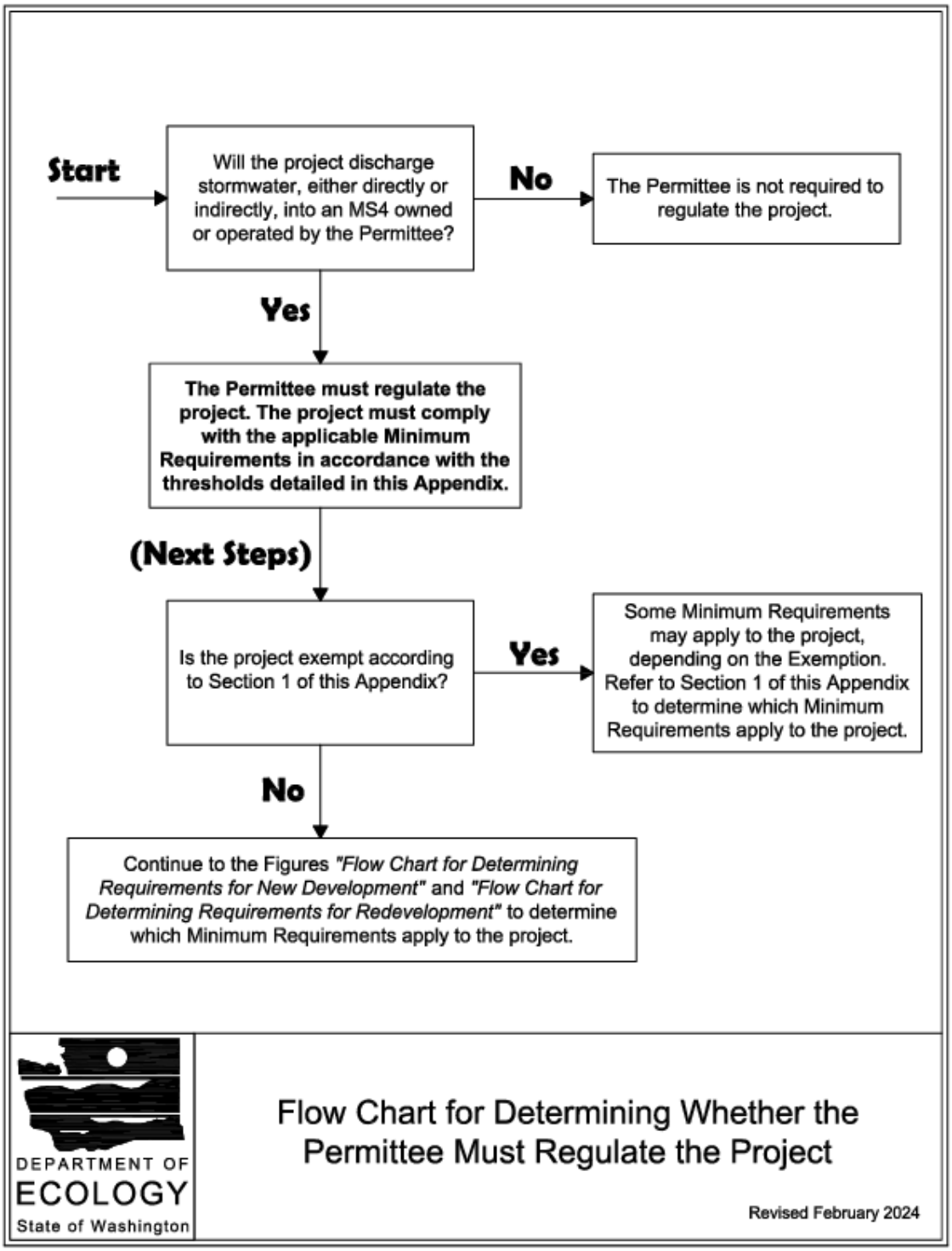


Figure 3: Flow Chart for Determining Requirements for New Development

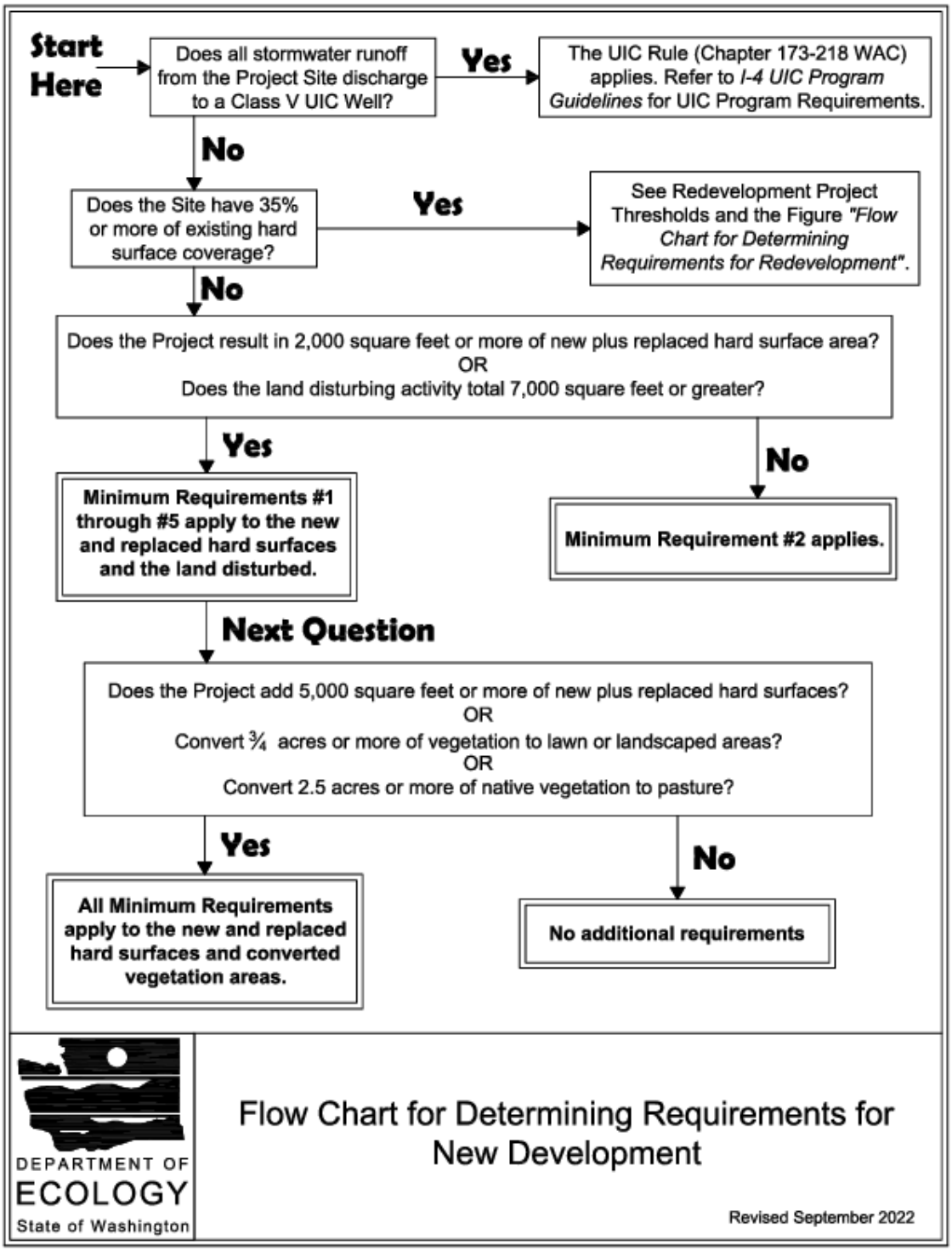
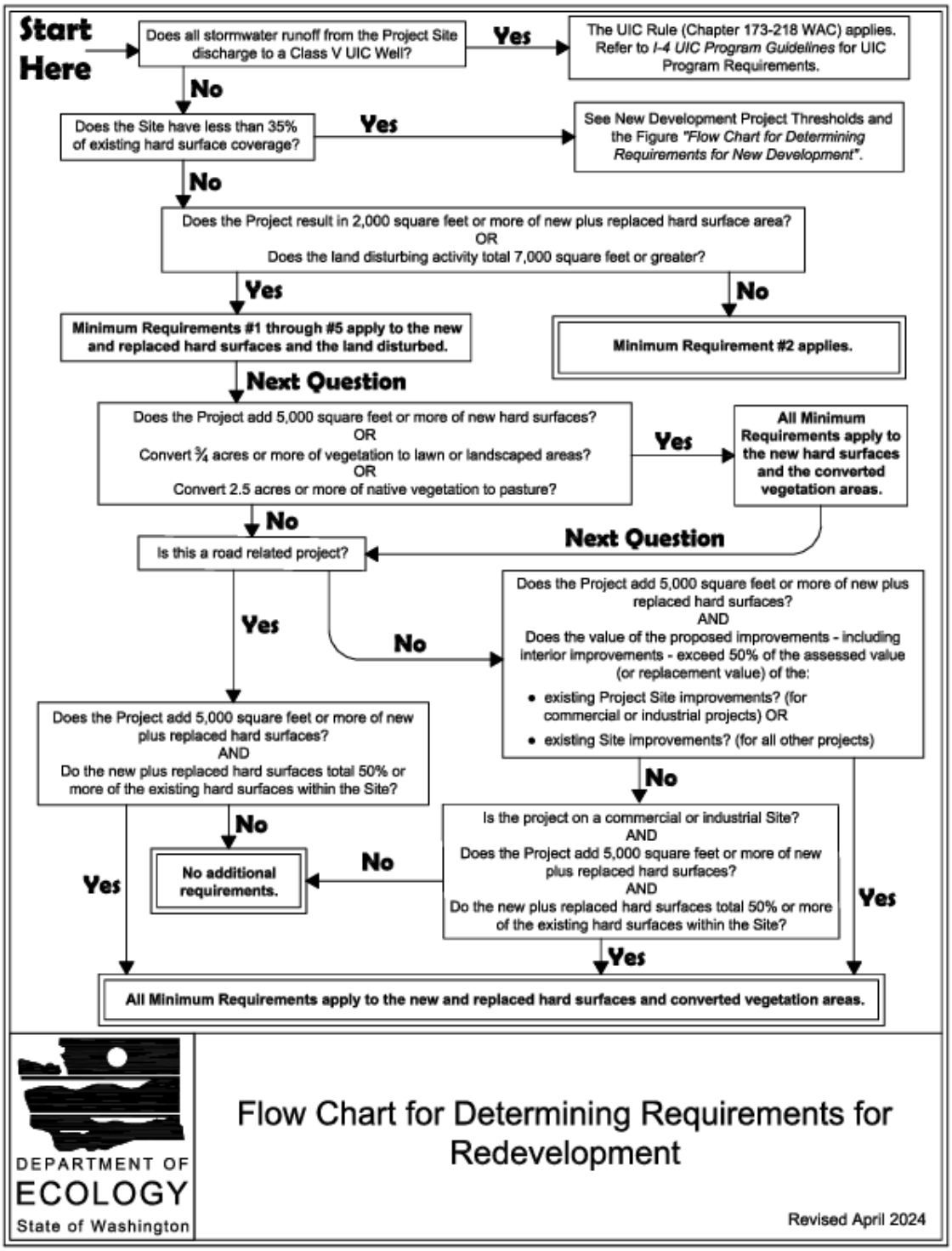


Figure 4: Flow Chart for Determining Requirements for Redevelopment



3.2 New Development Project Thresholds

All new development shall be required to comply with Minimum Requirement #2.

The following new development shall comply with Minimum Requirements #1 through #5 for the new and replaced hard surfaces and the land disturbed:

- Results in 2,000 square feet, or greater, of new plus replaced hard surface area, or
- Has land disturbing activity of 7,000 square feet or greater.

The following new development shall comply with all Minimum Requirements for the new and replaced hard surfaces and the converted vegetation areas:

- the Project adds 5,000 square feet, or more, of new plus replaced hard surface area, or
- Converts ¾ acres, or more, of vegetation to lawn or landscaped areas, or
- Converts 2.5 acres, or more, of native vegetation to pasture.

3.3 Redevelopment Project Thresholds

All redevelopment shall be required to comply with Minimum Requirement #2.

The following redevelopment shall comply with Minimum Requirements #1 through #5 for the new and replaced hard surfaces and the land disturbed:

- Results in 2,000 square feet, or more, of new plus replaced hard surface area, or
- Has land disturbing activity of 7,000 square feet or greater.

The following redevelopment shall comply with all Minimum Requirements for the new hard surfaces and converted vegetation areas:

- Adds 5,000 square feet or more of new hard surfaces or,
- Converts ¾ acres, or more, of vegetation to lawn or landscaped areas, or
- Converts 2.5 acres, or more, of native vegetation to pasture.

3.4 Additional Requirements for Redevelopment

Road-related projects shall comply with all Minimum Requirements for the new and replaced hard surfaces and the converted vegetation areas if:

- the Project adds 5,000 square feet or more of new plus replaced hard surfaces, and
- the new plus replaced hard surfaces total 50% or more of the existing hard surfaces within the Site.

Other types of redevelopment projects shall comply with all the Minimum Requirements for the new and replaced hard surfaces and the converted vegetation areas if either of the two thresholds below are crossed:

- Threshold 1:
    - the Project adds 5,000 square feet or more of new plus replaced hard surfaces, and
        - For commercial or industrial projects: the valuation of the proposed improvements, including interior improvements, exceeds 50% of the assessed value of the existing Project Site improvements.
        - For all other projects: the valuation of the proposed improvements, including interior improvements, exceeds 50% of the assessed value of the existing Site improvements.
- Threshold 2 (for commercial or industrial sites only):
    - the Project adds 5,000 square feet or more of new plus replaced hard surfaces, and
    - the new plus replaced hard surfaces total 50% or more of the existing hard surfaces within the Site.

The Permittee may exempt or institute a stop-loss provision for redevelopment projects from compliance with Minimum Requirement #5, #6, #7, and/or #8 as applied to the replaced hard surfaces if the Permittee has adopted a plan and a schedule that fulfills those requirements in regional facilities.

Section 4. Minimum Requirements

This Section describes the Minimum Requirements for stormwater management for new development projects and redevelopment projects. **Section 3. Applicability of the Minimum Requirements** should be consulted to determine which of the Minimum Requirements apply to any given project. **Figure 3: Flow Chart for Determining Requirements for New Development** and **Figure 4: Flow Chart for Determining Requirements for Redevelopment** should be consulted to determine whether the Minimum Requirements apply to new surfaces, replaced surfaces, or new and replaced surfaces.

4.1 Minimum Requirement #1: Preparation of a Stormwater Site Plan

All projects meeting the Project Thresholds in **Section 3. Applicability of the Minimum Requirements** shall prepare a Stormwater Site Plan for local jurisdiction review. Stormwater Site Plans shall use site-appropriate development principles, as required, and encouraged by local development codes, to retain native vegetation and minimize impervious surfaces to the extent feasible. Stormwater Site Plans shall be prepared in accordance with the guidance in ***III-3 Stormwater Site Plans*** in the SWMMWW.

4.2 Minimum Requirement #2: Construction Stormwater Pollution Prevention Plan (SWPPP)

Permittees may choose to allow compliance with this Minimum Requirement to be achieved for an individual site if the site is covered under and fully implementing the requirements of Ecology's *CONSTRUCTION STORMWATER GENERAL PERMIT - National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit for Stormwater Discharges Associated with Construction Activity*.

All new development and redevelopment projects are responsible for preventing erosion and discharge of sediment and other pollutants into receiving waters.

Minimum Requirement Thresholds

Compliance requirements for this Minimum Requirement are as follows:

- Projects that meet either of the following thresholds must prepare a Construction Stormwater Pollution Prevention Plan (SWPPP) for local jurisdiction review:
    - result in 2,000 square feet or more of new plus replaced hard surface area, or
    - disturb 7,000 square feet or more of land,
- Projects below those thresholds (listed directly above) are not required to prepare a Construction SWPPP but must consider all of the Construction SWPPP Elements (listed below) and develop controls for all Construction SWPPP Elements that pertain to the project site.

General Requirements

The Construction SWPPP shall include a narrative and drawings. All BMPs shall be clearly referenced in the narrative and marked on the drawings. The Construction SWPPP narrative shall include documentation to explain and justify the pollution prevention decisions made for the project. Each of the 13 Construction SWPPP Elements (listed below) must be considered and included in the Construction SWPPP unless site conditions render the Element unnecessary and the exemption from that Element is clearly justified in the narrative of the SWPPP.

Clearing and grading activities for developments shall be allowed only if conducted pursuant to an approved site development plan (e.g. subdivision approval) that establishes permitted areas of clearing, grading, cutting, and filling. These permitted clearing and grading areas and any other areas required to preserve critical or sensitive areas, buffers, native growth protection easements, or tree retention areas (as may be required by local jurisdictions), shall be delineated on the site plans and the development site.

The Construction SWPPP shall be implemented beginning with initial land disturbance and until final stabilization. Sediment and Erosion control BMPs shall be consistent with the BMPs contained in ***II-4 Construction Stormwater BMPs*** in the SWMMWW.

Seasonal Work Limitations: From October 1 through April 30, land disturbing activities shall only be permitted if shown to the satisfaction of the local jurisdiction that turbid water will be prevented from leaving the site through a combination of the following:

1. Site conditions including existing vegetative coverage, slope, soil type and proximity to receiving waters; and
2. Limitations on activities and the extent of disturbed areas; and
3. Proposed erosion and sediment control measures.

Based on the information provided and/or local weather conditions, the local jurisdiction may expand or restrict the seasonal work limitations.

The following activities are exempt from the seasonal work limitations:

1. Routine maintenance and necessary repair of erosion and sediment control BMPs,
2. Routine maintenance of public facilities or existing utility structures that do not expose the soil or result in the removal of the vegetative cover to soil, and
3. Activities where there is one hundred percent infiltration of stormwater runoff within the site in approved and installed erosion and sediment control facilities.

If erosion and sediment control requirements are not being met (i.e. turbid water is leaving the site), then the local jurisdiction shall require that the contractor maintain the existing BMPs or implement other BMPs as appropriate.

Construction SWPPP Elements

Element 1: Preserve Vegetation / Mark Clearing Limits

a. Before beginning land disturbing activities, including clearing and grading, clearly mark all clearing limits, sensitive areas and their buffers, and trees that are to be preserved within the construction area.
b. Retain the duff layer, topsoil, and natural vegetation in an undisturbed state to the maximum degree practicable.

Element 2: Establish Construction Access

a. Limit construction vehicle access and exit to one route, if possible.
b. Stabilize access points with a pad of quarry spalls, crushed rock, or other equivalent BMPs, to minimize tracking of sediment onto roads.
c. Locate wheel wash or tire baths on site if the stabilized construction entrance is not effective in preventing tracking sediment onto roads.
d. If sediment is tracked off site, clean the affected roadway(s) thoroughly at the end of each day, or more frequently as necessary (for example, during wet weather). Remove sediment from roads by shoveling, sweeping, or picking up and transporting the sediment to a controlled sediment disposal area.
e. Conduct street washing only after sediment is removed in accordance with 2.d (above).
f. Control street wash wastewater by pumping back on site, or otherwise prevent it from discharging into systems tributary to waters of the State.

Element 3: Control Flow Rates

a. Protect properties and waterways downstream of construction sites from erosion and the associated discharge of turbid waters due to increases in the velocity and peak volumetric flow rate of stormwater runoff from the project site.
b. Where necessary to comply with 3.a (above), construct stormwater infiltration or detention BMPs as one of the first steps in grading. Ensure that detention BMPs function properly before constructing site improvements (e.g. impervious surfaces).
c. If permanent infiltration BMPs are used for temporary flow control during construction, protect these BMPs from sedimentation during the construction phase.

Element 4: Install Sediment Controls

Design, install, and maintain effective erosion controls and sediment controls to minimize the discharge of pollutants. At a minimum:

a. Construct sediment control BMPs (sediment ponds, traps, filters, etc.) as one of the first steps in grading. These BMPs must be functional before other land disturbing activities take place.
b. Minimize sediment discharges from the site. The design, installation and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site.
c. Direct stormwater runoff from disturbed areas through **BMP C241: Sediment Pond (Temporary)** or other appropriate sediment removal BMP, before the runoff leaves a construction site or before discharge to an infiltration facility. Runoff from fully stabilized areas may be discharged without a sediment removal BMP but must control flow rates per **Element 3: Control Flow Rates**.
d. Locate BMPs intended to trap sediment on site in a manner to avoid interference with the movement of juvenile salmonids attempting to enter off-channel areas or drainages.
e. Provide and maintain natural buffers around surface waters, direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration, unless infeasible.
f. Where feasible, design outlet structures that withdraw impounded stormwater from the surface to avoid discharging sediment that is still suspended lower in the water column.

Element 5: Stabilize Soils

a. Stabilize exposed and unworked soils by application of effective BMPs that prevent erosion. Applicable BMPs include but are not limited to: temporary and permanent seeding, sodding, mulching, plastic covering, erosion control fabrics and matting, soil application of polyacrylamide (PAM), the early application of gravel base on areas to be paved, and dust control.
b. Control stormwater volume and velocity within the site to minimize soil erosion.
c. Control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion.

d. Soils must not remain exposed and unworked for more than the time periods set forth below to prevent erosion:
    - During the dry season (May 1 - September 30): 7 days
    - During the wet season (October 1 - April 30): 2 days
e. Stabilize soils at the end of the shift before a holiday or weekend if needed based on the weather forecast.
f. Stabilize soil stockpiles from erosion, protect with sediment trapping measures, and where possible, locate away from storm drain inlets, waterways, and drainage channels.
g. Minimize the amount of soil exposed during construction activity.
h. Minimize the disturbance of steep slopes.
i. Minimize soil compaction and, unless infeasible, preserve topsoil.

Element 6: Protect Slopes

a. Design and construct cut-and-fill slopes in a manner to minimize erosion. Applicable practices include, but are not limited to, reducing continuous length of slope with terracing and diversions, reducing slope steepness, and roughening slope surfaces (for example, track walking).
b. Divert off-site stormwater (run-on) or groundwater away from slopes and disturbed areas with interceptor dikes, pipes and/or swales. Off-site stormwater should be managed separately from stormwater generated on site.
c. At the top of slopes, collect drainage in pipe slope drains or protected channels to prevent erosion. Temporary pipe slope drains must be sized to convey the flow rate calculated by one of the following methods:
    - Single Event Hydrograph Method: The peak volumetric flow rate calculated using a 10-minute time step from a Type 1A, 10-year, 24-hour frequency storm.

      OR
    - Continuous Simulation Method: The 10-year peak flow rate, as determined by an approved continuous runoff model with a 15-minute time step.

    The hydrologic analysis must use the existing land cover condition for predicting flow rates from tributary areas outside the project limits. For tributary areas on the project site, the analysis must use the temporary or permanent project land cover condition, whichever will produce the highest flow rates. If using the Western Washington Hydrology Model (WWHM) to predict flows, bare soil areas should be modeled as "lawn" area.

d. Place excavated material on the uphill side of trenches, consistent with safety and space considerations.

e. Place check dams at regular intervals within constructed channels that are cut down a slope.

Element 7: Protect Drain Inlets

a. Protect all storm drain inlets made operable during construction so that stormwater runoff does not enter the conveyance system without first being filtered or treated to remove sediment.

b. Clean or remove and replace storm drain inlet protection devices when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).

Element 8: Stabilize Channels and Outlets

a. Design, construct, and stabilize all on-site conveyance channels to prevent erosion from the flow rate calculated by one of the following methods:

- Single Event Hydrograph Method: The peak volumetric flow rate calculated using a 10-minute time step from a Type 1A, 10-year, 24-hour frequency storm.

  OR

- Continuous Simulation Method: The 10-year peak flow rate, as determined by an approved continuous runoff model with a 15-minute time step.

The hydrologic analysis must use the existing land cover condition for predicting flow rates from tributary areas outside the project limits. For tributary areas on the project site, the analysis must use the temporary or permanent project land cover condition, whichever will produce the highest flow rates. If using the Western Washington Hydrology Model (WWHM) to predict flows, bare soil areas should be modeled as "lawn" area.

b. Provide stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent stream banks, slopes, and downstream reaches at the outlets of all conveyance systems.

Element 9: Control Pollutants

Design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants. The project proponent must:

a. Handle and dispose of all pollutants, including waste materials and demolition debris that occur on site, in a manner that does not cause contamination of stormwater.

b. Provide cover, containment, and protection from vandalism for all chemicals, liquid products, petroleum products, and other materials that have the potential to pose a threat to human health or the environment. Minimize storage of hazardous materials on-site. Safety Data Sheets (SDS) should be supplied for all materials stored. Chemicals should be kept in their original labeled containers. On-site fueling tanks must include secondary containment. Secondary containment means placing tanks or containers within an impervious structure capable of containing 110% of the volume of the largest tank within the containment structure. Double-walled tanks do not require additional secondary containment.

c. Conduct maintenance, fueling, and repair of heavy equipment and vehicles using spill prevention and control measures. Clean contaminated surfaces immediately following any spill incident.

d. Discharge wheel wash or tire bath wastewater to:
   - a separate on-site treatment system that prevents discharge to surface water, or
   - to the sanitary sewer, with local sewer district approval.

e. Apply fertilizers and pesticides in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Follow manufacturers' label requirements for application rates and procedures.

f. Use BMPs to prevent contamination of stormwater runoff by pH-modifying sources. The sources for this contamination include, but are not limited to bulk cement, cement kiln dust, fly ash, new concrete washing and curing waters, recycled concrete stockpiles, waste streams generated from concrete grinding and sawing, exposed aggregate processes, dewatering concrete vaults, concrete pumping and mixer washout waters.

g. Adjust the pH of stormwater if necessary to prevent violations of water quality standards.

h. Ensure that washout of concrete trucks is performed off-site or in designated concrete washout areas only. Do not wash out concrete truck drums onto the ground, or into storm drains, open ditches, streets, or streams. Washout of small concrete handling equipment may be disposed of in a formed area awaiting

concrete where it will not contaminate surface or groundwater. Do not dump excess concrete on site, except in designated concrete washout areas. Concrete spillage or concrete discharge directly to groundwater or surface waters of the State is prohibited. At no time shall concrete be washed off into the footprint of an area where an infiltration BMP will be installed.

i. Obtain written approval from Ecology before using chemical treatment other than CO_2, dry ice, or food grade vinegar to adjust pH.

j. Uncontaminated water from water-only based shaft drilling for construction of building, road, and bridge foundations may be infiltrated provided the wastewater is managed in a way that prohibits discharge to surface waters. Prior to infiltration, water from water-only based shaft drilling that comes into contact with curing concrete must be neutralized until pH is in the range of 6.5 to 8.5 (su).

Element 10: Control Dewatering

a. Discharge foundation, vault, and trench dewatering water, which have similar characteristics to stormwater runoff at the site, into a controlled conveyance system before discharge to:
    i. A sediment control BMP (e.g. **BMP C240: Sediment Trap** or **BMP C241: Sediment Pond (Temporary)**);
    ii. Infiltration;
    iii. Transport off site in a vehicle, such as a vacuum flush truck, for legal disposal in a manner that does not pollute state waters;
    iv. Ecology-approved on-site chemical treatment or other suitable treatment technologies;
    v. Sanitary or combined sewer discharge with local sewer district approval, if there is no other option; or
    vi. Use of a sedimentation bag that discharges to a ditch or swale for small volumes of localized dewatering.

b. Discharge clean, non-turbid dewatering water, such as well-point groundwater, to systems tributary to, or directly into surface waters of the State, as specified in **Element 8: Stabilize Channels and Outlets**, provided the dewatering flow does not cause erosion or flooding of receiving waters. Do not route clean dewatering water through stormwater sediment BMPs. Note that "surface waters of the State" may exist on a construction site as well as off site; for example, a creek running through a site.

c. Handle highly turbid or otherwise contaminated dewatering water separately from stormwater.

Element 11: Maintain BMPs

a. Maintain and repair all temporary and permanent erosion and sediment control BMPs as needed to ensure continued performance of their intended function in accordance with BMP specifications.
b. Remove all temporary erosion and sediment control BMPs within 30 days after achieving final site stabilization or after the temporary BMPs are no longer needed.

Element 12: Manage the Project

a. Phase development projects to the maximum degree practicable and consider seasonal work limitations.
b. Inspect, maintain, and repair all BMPs as needed to ensure continued performance of their intended function.
c. Maintain, update, and implement the Construction SWPPP.
d. Projects that disturb one or more acres must have site inspections conducted by a Certified Erosion and Sediment Control Lead (CESCL). Project sites disturbing less than one acre may have a CESCL or a person without CESCL certification conduct inspections. By the initiation of construction, the Construction SWPPP must identify the CESCL or inspector, who must be present on site or on-call at all times.

Element 13: Protect Infiltration BMPs

The project proponent must protect existing and proposed infiltration BMPs during construction. The primary purpose of On-Site Stormwater Management (often referred to as Low Impact Development, or LID) is to reduce the disruption of the natural site hydrology through infiltration. BMPs used to meet **4.5 Minimum Requirement #5: On-Site Stormwater Management** (often called LID BMPs) are permanent facilities.

a. Protect all infiltration BMPs from sedimentation through installation and maintenance of erosion and sediment control BMPs on portions of the site that drain into the infiltration BMPs. Restore the BMPs to their fully functioning condition if they accumulate sediment during construction. Restoring the BMP must include removal of sediment and any sediment-laden soils within the BMP and replacing the removed soils with soils meeting the design specification.
b. Prevent compacting infiltration BMPs by excluding construction equipment and foot traffic. Protect completed lawn and landscaped areas from compaction due to construction equipment.

c. Control erosion and avoid introducing sediment from surrounding land uses onto **BMP T5.15: Permeable Pavement**. Do not allow muddy construction equipment on the base material or pavement. Do not allow sediment-laden runoff onto permeable pavements.
d. Permeable pavement fouled with sediments or no longer passing an initial infiltration test must be cleaned using procedures from the local stormwater manual or the manufacturer's procedures.
e. Keep all heavy equipment off existing soils under infiltration BMPs that have been excavated to final grade to retain the infiltration rate of the soils.

4.3 Minimum Requirement #3: Source Control of Pollution

Following construction, all new development and redevelopment projects meeting the Project Thresholds in **Section 3. Applicability of the Minimum Requirements** shall apply all known, available, and reasonable Source Control BMPs.

Source Control BMPs shall be selected, designed, and maintained in accordance with ***III-1.1 Choosing Your Source Control BMPs*** and **Volume IV** of the SWMMWW.

4.4 Minimum Requirement #4: Preservation of Natural Drainage Systems and Outfalls

All new development and redevelopment projects meeting the Project Thresholds in **Section 3. Applicability of the Minimum Requirements** shall preserve and maintain natural drainage patterns to the maximum extent practicable at the site. Discharges from the Project Site shall occur at the natural location, to the maximum extent practicable.

The manner by which runoff is discharged from the Project Site must not cause a significant adverse impact to downstream receiving waters and downgradient properties, and should be addressed as part of the off-site analysis described in the SWMMWW.

All concentrated discharge locations (i.e. discharges from pipe systems, culverts, and ditches) must address energy dissipation. A project proponent who believes that energy dissipation should not be required must provide justification in the project's stormwater site plan.

4.5 Minimum Requirement #5: On-Site Stormwater Management

All new development and redevelopment projects meeting the Project Thresholds in **Section 3. Applicability of the Minimum Requirements** shall apply Stormwater Management BMPs in accordance with the following thresholds, standards, and lists to infiltrate, disperse, and retain stormwater runoff on site to the extent feasible without causing flooding or erosion impacts.

Compliance Options by Project Type

All projects that require Minimum Requirement #5 (per the Project Thresholds in **Section 3. Applicability of the Minimum Requirements**) must employ Stormwater Management BMPs as detailed below. The compliance options for the project depend on the amount of improvements proposed, the location of the project, the size of the parcel the project is on, and whether or not the project is Flow Control exempt.

Each project must use a single compliance option (either the List Approach or the LID Performance Standard and **BMP T5.13: Post-Construction Soil Quality and Depth**). Use of both compliance options on a single project is not allowed.

Projects that Trigger Only Minimum Requirements #1 - #5

Projects that are not Flow Control exempt that trigger only Minimum Requirements #1 through #5 (per the Project Thresholds in **Section 3. Applicability of the Minimum Requirements**) shall either:

- Use the LID BMPs from List #1 for all surfaces within each type of surface in List #1;

  or

- Use any Flow Control BMP(s) desired to achieve the LID Performance Standard and apply **BMP T5.13: Post-Construction Soil Quality and Depth** (if feasible).

Projects that Trigger Minimum Requirements #1 - #9

Projects that are not Flow Control exempt that trigger Minimum Requirements #1 through #9 (per the Project Thresholds in **Section 3. Applicability of the Minimum Requirements**) have the compliance options shown in **Table 1: Minimum Requirement #5 Compliance Options for Projects Triggering Minimum Requirements #1 - #9**.

Table 1: Minimum Requirement #5 Compliance Options for Projects Triggering Minimum Requirements #1 - #9

Project Location and Parcel Size	Minimum Requirement #5 Compliance Options
Projects inside the UGA, on any size parcel	• Use the LID BMPs from List #2 for all surfaces within each type of surface in List #2; or • Use any Flow Control BMPs desired to achieve the LID Performance Standard and apply **BMP T5.13: Post-Construction Soil Quality and Depth** (if feasible).
Projects outside the UGA, on a parcel smaller than 5 acres	
Projects outside the UGA, on a parcel 5 acres or larger	Use any Flow Control BMPs desired to achieve the LID Performance Standard and apply **BMP T5.13: Post-Construction Soil Quality and Depth** (if feasible).
Note: This text refers to the Urban Growth Area (UGA) as designated under the Growth Management Act (GMA) (Chapter 36.70A RCW) of the State of Washington. If the project is located in a county that is not subject to planning under the GMA, the city limits shall be used instead.	

Flow Control Exempt Projects

Projects qualifying as Flow Control exempt in accordance with the **TDA Exemption** in **4.7 Minimum Requirement #7: Flow Control** shall either:

- Use the LID BMPs from List #3 for all surfaces within each type of surface in List #3;

  or

- Use any Flow Control BMP(s) desired to achieve the LID Performance Standard and apply **BMP T5.13: Post-Construction Soil Quality and Depth** (if feasible).

If the project has multiple TDAs, all TDAs must be Flow Control exempt per the **TDA Exemption** in **4.7 Minimum Requirement #7: Flow Control** for the project to use the options listed here.

Compliance Methods

LID Performance Standard

The LID Performance Standard compliance method for Minimum Requirement #5 requires modeling the proposed Flow Control BMPs to demonstrate the flow reduction as described below.

Stormwater discharges shall match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 8% of the 2-year peak flow to 50% of the 2-year peak flow. Refer to the **Flow Control Performance Standard** section in **4.7 Minimum Requirement #7: Flow Control** for information about the assignment of the pre-developed condition. Project sites that must also meet **4.7 Minimum Requirement #7: Flow Control** must match flow durations between 8% of the 2-year flow through the full 50-year flow.

Designers selecting this option cannot use **BMP T5.14: Rain Gardens** to achieve the LID Performance Standard. They may choose to use BMP T7.30: Bioretention to achieve the LID Performance Standard.

The List Approach

The List Approach compliance method for Minimum Requirement #5 requires evaluating the BMPs in **Table 2: The List Approach for MR5 Compliance**.

For each surface, evaluate the feasibility of the BMPs in the order listed for that type of surface, and use the first BMP that is considered feasible. The designer must document the site conditions and infeasibility criteria used to deem BMPs infeasible. Once a BMP is deemed feasible and used for a surface, no other BMP from the list is necessary for that surface.

If all BMPs in the list are infeasible, then the designer must document the site conditions and infeasibility criteria used to deem each BMP infeasible. This documentation will demonstrate compliance with Minimum Requirement #5.

Feasibility shall be determined by evaluation against:

- Design criteria, limitations, and infeasibility criteria identified for each BMP in **Volume V** of the SWMMWW; and
- Competing Needs Criteria as listed in ***I-3.4.5 MR5: On-Site Stormwater Management*** in the SWMMWW.

Table 2: The List Approach for MR5 Compliance

List #1 (For MR #1 - #5 Projects That Are Not Flow Control Exempt)	List #2 (For MR #1 - #9 Projects That Are Not Flow Control Exempt)	List #3 (For Flow Control Exempt Projects)
Surface Type: Lawn and Landscaped Areas		
BMP T5.13: Post-Construction Soil Quality and Depth	**BMP T5.13: Post-Construction Soil Quality and Depth**	**BMP T5.13: Post-Construction Soil Quality and Depth**
Surface Type: Roofs		
1. **BMP T5.30: Full Dispersion** or **BMP T5.10A: Downspout Full Infiltration**	1. **BMP T5.30: Full Dispersion** or **BMP T5.10A: Downspout Full Infiltration**	1. **BMP T5.10A: Downspout Full Infiltration**
2. **BMP T5.14: Rain Gardens** or **BMP T7.30: Bioretention Cells, Swales, and Planter Boxes**	2. **BMP T7.30: Bioretention Cells, Swales, and Planter Boxes**	2. **BMP T5.10B: Downspout Dispersion Systems**
3. **BMP T5.10B: Downspout Dispersion Systems**	3. **BMP T5.10B: Downspout Dispersion Systems**	3. **BMP T5.10C: Perforated Stub-out Connections**
4. **BMP T5.10C: Perforated Stub-out Connections**	4. **BMP T5.10C: Perforated Stub-out Connections**	
Surface Type: Other Hard Surfaces		
1. **BMP T5.30: Full**	1. **BMP T5.30: Full**	**BMP T5.12: Sheet Flow**

<table>
<tr><th>List #1

(For MR #1 - #5 Projects That Are Not Flow Control Exempt)</th><th>List #2

(For MR #1 - #9 Projects That Are Not Flow Control Exempt)</th><th>List #3

(For Flow Control Exempt Projects)</th></tr>
<tr><td>Dispersion</td><td>Dispersion</td><td rowspan="3">Dispersion

or

BMP T5.11: Concentrated Flow Dispersion</td></tr>
<tr><td>2. BMP T5.15: Permeable Pavement
or
BMP T5.14: Rain Gardens
or
BMP T7.30: Bioretention Cells, Swales, and Planter Boxes</td><td>2. BMP T5.15: Permeable Pavement</td></tr>
<tr><td>3. BMP T5.12: Sheet Flow Dispersion
or
BMP T5.11: Concentrated Flow Dispersion</td><td>3. BMP T7.30: Bioretention Cells, Swales, and Planter Boxes

4. BMP T5.12: Sheet Flow Dispersion
or
BMP T5.11: Concentrated Flow Dispersion</td></tr>
<tr><td colspan="3">Notes for using the List Approach:

1. Size BMP T5.14: Rain Gardens and BMP T7.30: Bioretention used in the List Approach to have a minimum horizontal projected surface area below the overflow which is at least 5% of the area draining to it.
2. When the designer encounters BMP T5.15: Permeable Pavement in the List Approach, it is not a requirement to pave these surfaces. Where pavement is proposed, it must be permeable to the extent feasible unless BMP T5.30: Full Dispersion is employed.</td></tr>
</table>

4.6 Minimum Requirement #6: Runoff Treatment

All new development and redevelopment projects meeting the Project Thresholds in **Section 3. Applicability of the Minimum Requirements** shall apply Runoff Treatment BMPs in accordance with the following thresholds, standards, and requirements to remove pollutants from stormwater runoff.

TDA Thresholds

Each TDA within a project that requires Minimum Requirement #6 (per the Project Thresholds in **Section 3. Applicability of the Minimum Requirements**) must be reviewed to determine if Runoff Treatment BMPs are required for the TDA to be in compliance with Minimum Requirement #6.

Note that it is possible for a project that triggers the thresholds for Minimum Requirement #6, per the Project Thresholds in **Section 3. Applicability of the Minimum Requirements,** to not need Runoff Treatment BMP(s) in one or more individual TDAs to be in compliance with Minimum Requirement #6. If a TDA does not trigger either of the TDA thresholds for Runoff Treatment BMPs, then the designer must document the areas within the TDA used to determine that neither of the TDA thresholds are met. This documentation will demonstrate compliance with Minimum Requirement #6 for the TDA.

When assessing a TDA against the following thresholds, only consider the types of surfaces (e.g. new hard surfaces, replaced hard surfaces, converted vegetation areas) that are subject to Minimum Requirement #6, per the Project Thresholds in **Section 3. Applicability of the Minimum Requirements**.

The following TDAs require construction of Runoff Treatment BMPs. If a TDA meets either of the following thresholds, Runoff Treatment BMPs are required. The project proponent must demonstrate that the TDA does not meet either of the following thresholds for Runoff Treatment BMPs to not be required for that TDA.

- TDAs that have a total of 5,000 square feet or more of pollution-generating hard surface (PGHS), or
- TDAs that have a total of 3/4 of an acre or more of pollution-generating pervious surfaces (PGPS) – not including permeable pavements, and from which there will be a surface discharge in a natural or man-made conveyance system from the site.

Runoff Treatment Performance Goal Thresholds

1. Oil Control

Oil Control BMPs are required for areas that typically generate high concentrations of oil due to high traffic turnover or the frequent transfer of oil. These types of areas include:

- An area of a commercial or industrial site subject to an expected average daily traffic (ADT) count equal to or greater than 100 vehicles per 1,000 square feet of gross building area, or 300 total trip ends per day.
- An area of a commercial or industrial site subject to petroleum storage and transfer in excess of 1,500 gallons per year, not including routinely delivered heating oil.
- An area of a commercial or industrial site subject to parking, storage, or maintenance of 25 or more vehicles that are over 10 tons gross weight (trucks, buses, trains, heavy equipment, etc.).
- A road intersection with a measured ADT count of 25,000 vehicles or more on the main roadway and 15,000 vehicles or more on any intersecting roadway, excluding projects proposing primarily pedestrian or bicycle use improvements.

2. Phosphorus Treatment

Phosphorus Treatment BMPs are required for projects (or portions of projects) within watersheds that have been determined by the local jurisdiction (e.g. through a lake management plan), Ecology (e.g. through a TMDL waste load allocation), or the USEPA to be sensitive to phosphorus and are being managed to control phosphorus. The following are examples of sources that the local jurisdiction can use for determining whether a water body is sensitive to phosphorus:

- Those waterbodies reported under section 303(d) of the Clean Water Act, where designated uses are not supported due to phosphorous or other water quality criteria related to excessive phosphorus. This information can be viewed on Ecology's Water Quality Atlas at the following web address:

  https://apps.ecology.wa.gov/waterqualityatlas/wqa/map

- Those listed in Washington State's Nonpoint Source Assessment required under section 319(a) of the Clean Water Act due to nutrients.
- A locally adopted plan that contains requirements, recommendations, or policies indicating that a particular receiving water is sensitive to phosphorus

3. Metals Treatment

Metals Treatment BMPs are required for the types of project sites listed below that:

a. discharge directly to fresh waters designated for aquatic life use or that have an existing aquatic life use; or
b. discharge to conveyance systems that are tributary to fresh waters designated for aquatic life use or that have an existing aquatic life use; or
c. infiltrate stormwater within ¼ mile of a fresh water designated for aquatic life use or that has an existing aquatic life use.

The types of project sites are:

- Sites subject to industrial activities,
- Commercial project sites,
- Multifamily residential project sites, and
- High ADT roads as follows:
    - Within Urban Growth Areas:
        - Roads with an ADT of 7,500 or greater.
    - Outside of Urban Growth Areas:
        - Roads with an ADT of 15,000 or greater
- Light rail elevated and non-elevated guideways/tracks
- Other project sites that are anticipated to generate a high pollutant loading, including:
    - Parking areas as follows:
        - Commercial or industrial areas: All on-street parking areas.
        - Areas other than commercial or industrial areas: On-street parking areas on streets with an expected total ADT of ≥ 7,500.
        - Parking areas with an expected trip end count ≥ 40 vehicles per 1,000 sf of gross building area.
        - Parking areas with ≥ 100 expected trip ends per day.
    - Fueling stations
    - Transit center bus stops

The following areas of the above-listed project sites do not require Metals Treatment BMPs:

- Areas that discharge directly, or indirectly through a municipal separate storm sewer system, to a water listed in ***Appendix III-A: Basic Treatment Receiving Waters*** in the SWMMWW.

- Landscaped areas of industrial, commercial, and multi-family project sites that do not involve any other pollution-generating sources (e.g. industrial activities, customer parking, storage of erodible or leachable material, wastes, or chemicals).
- Parking lots of industrial and commercial project sites, dedicated solely to parking of employees' private vehicles that do not involve any other pollution-generating sources (e.g. industrial activities, customer parking, storage of erodible or leachable material, wastes, or chemicals).

For TDAs with a mix of land use types, Metals Treatment BMPs are required when the runoff from the areas subject to the Metals Treatment Performance Goal comprises 50% or more of the total runoff from the TDA.

4. Basic Treatment

Areas that must provide Phosphorus Treatment BMPs or Metals Treatment BMPs do NOT have to provide additional Basic Treatment BMPs to meet the Basic Treatment Performance Goal.

If Phosphorus Treatment BMPs or Metals Treatment BMPs are not provided, Basic Treatment BMPs are required.

Runoff Treatment BMP Sizing

Size Runoff Treatment BMPs for the entire area that drains to them, even if some of those areas are not pollution-generating or were not included in the Project Thresholds decisions (see **Section 3. Applicability of the Minimum Requirements**) or the TDA Thresholds decisions of this Minimum Requirement.

Runoff Treatment BMPs are sized by using either a volume (the Water Quality Design Volume) or a flow rate (the Water Quality Design Flow Rate), depending on the Runoff Treatment BMP selected. Refer to the selected Runoff Treatment BMP to determine whether the BMP is sized based on a volume or a flow rate. See below for details about the Water Quality Design Volume and the Water Quality Design Flow Rate used to size Runoff Treatment BMPs.

Water Quality Design Volume

The Water Quality Design Volume may be calculated by either of the following methods:

- *Continuous Simulation Method:* Using an approved continuous runoff model, the Water Quality Design Volume shall be the simulated daily volume that represents the upper limit of the range of daily volumes that accounts for 91% of the entire runoff volume over a multi-decade period of record.
- *Single Event Hydrograph Method:* The Water Quality Design Volume shall be the volume of runoff predicted by the Natural Resource Conservation Service (NRCS) curve number equations (as detailed in ***III-2.3 Single Event Hydrograph Method*** in the SWMMWW). The precipitation depth used in the equations shall be as predicted from a 24-hour storm with a 6-month return frequency (a.k.a., 6-month, 24-hour storm).

Water Quality Design Flow Rate

The Water Quality Design Flow Rate is dependent on the location of the Runoff Treatment BMP relative to Detention BMP(s):

- *Upstream of Detention BMPs or when there are no Detention BMPs:* The Water Quality Design Flow Rate shall be the flow rate at or below which 91% of the total runoff volume, as estimated by an approved continuous runoff model, will be treated.

  Ecology has assigned design criteria for Runoff Treatment BMPs to achieve the BMP's Runoff Treatment Performance Goal (e.g. Basic Treatment Performance Goal, Metals Treatment Performance Goal, etc.) at the Water Quality Design Flow Rate. At a minimum, 91% of the total runoff volume, as estimated by an approved continuous runoff model, must pass through Runoff Treatment BMP(s) at or below the approved hydraulic loading rate for the BMP(s).

- *Downstream of Detention BMPs:* The Water Quality Design Flow Rate shall be the full 2-year release rate from the Detention BMP.

Runoff Treatment BMP Selection, Design, and Maintenance

Runoff Treatment BMPs shall be:

- Selected in accordance with the process identified in ***III-1.2 Choosing Your Runoff Treatment BMPs*** in the SWMMWW,
- Designed in accordance with the design criteria in **Volume V** of the SWMMWW, and

- Maintained in accordance with the maintenance criteria in **Volume V** of the SWMMWW.

Additional Requirements

The (direct or indirect) discharge of untreated stormwater from pollution-generating hard surfaces to groundwater must not be authorized by the Permittee, except for infiltration or dispersion of runoff through LID BMPs per **The List Approach** in **4.5 Minimum Requirement #5: On-Site Stormwater Management**.

4.7 Minimum Requirement #7: Flow Control

All new development and redevelopment projects meeting the Project Thresholds in **Section 3. Applicability of the Minimum Requirements** shall apply Flow Control BMPs in accordance with the following thresholds, standards, and requirements to reduce the impacts of stormwater runoff from hard surfaces and land cover conversions.

TDA Exemption

Flow Control is not required for TDAs that discharge directly to, or indirectly through an MS4 to a water listed in ***Appendix I-A: Flow Control Exempt Receiving Waters*** in the SWMMWW, subject to all of the following restrictions:

- Direct discharge to the exempt receiving water does not result in the diversion of drainage from any perennial stream classified as Types 1, 2, 3, or 4 in the State of Washington Interim Water Typing System, or Types “S”, “F”, or “Np” in the Permanent Water Typing System, or from any category I, II, or III wetland.
- If flow splitters or conveyance elements are applied to route natural runoff volumes from the TDA to any downstream Type 5 stream or category IV wetland, then:
    - Design of the flow splitters or conveyance elements must be based on approved continuous simulation modeling analysis. The design must assure that flows delivered to Type 5 stream reaches will approximate, but in no case exceed, durations ranging from 50% of the 2-year to the 50-year peak flow.
    - Flow splitters or conveyance elements that deliver flow to category IV wetlands must also be designed using approved continuous simulation modeling to preserve pre-project wetland hydrologic conditions unless specifically waived or exempted by regulatory agencies with permitting jurisdiction.
- The TDA must be drained by a conveyance system that is comprised entirely of manmade conveyance elements (e.g. pipes, ditches, outfall protection).

- The conveyance system must extend to the ordinary high-water mark of the exempt receiving water (or the mean higher high-water mark for tidally influenced exempt receiving waters). To avoid construction activities in sensitive areas, an alternative to extending the conveyance system to the ordinary high-water mark is to ensure that flows are properly dispersed before reaching the buffer zone of the sensitive or critical area.
- The conveyance system between the TDA and the exempt receiving water shall have sufficient hydraulic capacity (per local jurisdiction conveyance sizing requirements) to convey discharges from future build-out conditions (under current zoning) from contributing areas of the Site, and the existing condition from contributing off-site areas.
- Any erodible elements of the manmade conveyance system must be adequately stabilized to prevent erosion under the conditions noted above.

Note that Ecology does not consider newly constructed or reconstructed stream channels to be manmade conveyance elements.

Permittees may petition Ecology to exempt projects in additional areas. A petition must justify the proposed exemption based upon a hydrologic analysis that demonstrates that the potential stormwater runoff from the exempted area will not significantly increase the erosion forces on the stream channel nor have near field impacts. See ***Appendix I-A: Flow Control Exempt Receiving Waters*** in the SWMMWW for details

TDA Thresholds

Each TDA within a project that requires Minimum Requirement #7 (per the Project Thresholds in **Section 3. Applicability of the Minimum Requirements**) must be reviewed to determine if Flow Control BMPs are required for the TDA to be in compliance with Minimum Requirement #7.

Note that it is possible for a project that triggers the thresholds for Minimum Requirement #7, per the Project Thresholds in **Section 3. Applicability of the Minimum Requirements,** to not need Flow Control BMP(s) in one or more individual TDAs to be in compliance with Minimum Requirement #7. If a TDA does not trigger any of the TDA thresholds for Flow Control BMPs, then the designer must document the areas within the TDA used to determine that none of the TDA thresholds are met. This documentation will demonstrate compliance with Minimum Requirement #7 for the TDA.

When assessing a TDA against the following thresholds, only consider the types of surfaces (e.g. new hard surfaces, replaced hard surfaces, converted vegetation areas) that are subject to Minimum Requirement #7, per the Project Thresholds in **Section 3. Applicability of the Minimum Requirements**.

The following TDAs require construction of Flow Control BMPs to achieve the Flow Control Performance Standard. If a TDA meets any of the following thresholds, Flow Control BMPs are required. The project proponent must demonstrate that the TDA does not meet any of the following thresholds for Flow Control BMPs to not be required for that TDA.

- TDAs that have a total of 10,000 square feet or more of effective impervious surfaces, or
- TDAs that convert ¾ acres or more of native vegetation, pasture, scrub/shrub, or unmaintained non-native vegetation to lawn or landscape, or convert 2.5 acres or more of native vegetation to pasture, and from which there is a surface discharge in a natural or man-made conveyance system from the TDA, or
- TDAs that through a combination of effective hard surfaces and converted vegetation areas cause a 0.15 cubic feet per second (cfs) or greater increase in the 100-year flow frequency as estimated using an approved continuous simulation model and 15-minute time steps.

  The 0.15 cfs increase should be a comparison of the post project runoff to the existing condition runoff. For the purpose of applying this threshold, the existing condition is either the pre-project land cover, or the land cover that existed prior to the first issue date of the Municipal Stormwater Permit to the local jurisdiction.

Flow Control Performance Standard

Stormwater discharges shall match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow. The pre-developed condition to be matched shall be a forested land cover unless:

- Reasonable, historic information is provided that indicates the site was prairie prior to settlement (modeled as pasture in the approved continuous simulation model); or,
- The drainage area of the immediate stream and all subsequent downstream basins have had at least 40% total impervious area (TIA) since 1985. ***Figure I-3.4: Basins with 40% Total Impervious Area as of 1985*** in the SWMMWW depicts those areas which meet this criterion.

  In this case, the pre-developed condition to be matched shall be the existing land cover condition. Where basin-specific studies determine a stream channel to be unstable, even though the above criterion is met, the pre-developed condition assumption shall be the “historic” land cover condition, or a land cover condition commensurate with achieving a target flow regime identified by an approved basin study.

Alternative Flow Control Performance Standard

An alternative Flow Control Performance Standard may be established through application of watershed-scale hydrologic modeling and supporting field observations. Possible reasons for an alternative Flow Control Performance Standard include:

- Establishment of a stream–specific threshold of significant bedload movement other than the assumed 50% of the 2-year peak flow;
- Zoning and Land Clearing Ordinance restrictions that, in combination with an alternative Flow Control Performance Standard, maintain or reduce the naturally occurring erosive forces on the stream channel; or
- A duration control standard is not necessary for protection, maintenance, or restoration of designated and existing beneficial uses or Clean Water Act compliance.

See the SWMMWW for details on how an Alternative Flow Control Performance Standard may be established.

Additional Requirement

Flow Control BMPs shall be selected in accordance with ***III-1.3 Choosing Your Flow Control BMPs*** and designed and maintained in accordance with **Volume V** of the SWMMWW.

4.8 Minimum Requirement #8: Wetlands Protection

All new development and redevelopment projects meeting the Project Thresholds in **Section 3. Applicability of the Minimum Requirements** shall include Stormwater Management BMPs in accordance with the following thresholds, standards, and requirements to reduce the impacts of stormwater runoff to wetlands.

TDA Thresholds

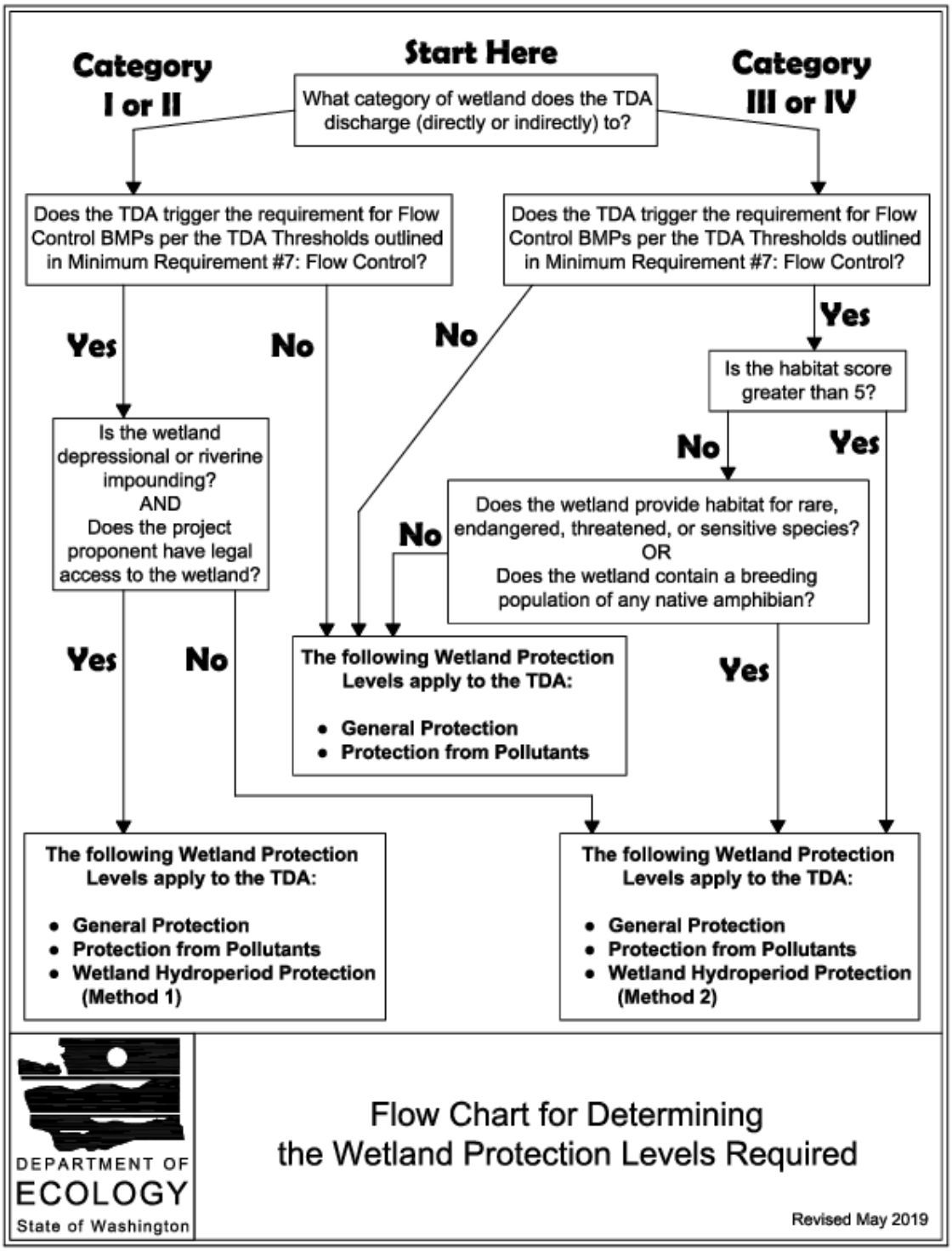
This Minimum Requirement applies only to TDAs whose stormwater discharges into a wetland, either directly or indirectly through a conveyance system.

Each TDA within a project that requires Minimum Requirement #8 (per the Project Thresholds in **Section 3. Applicability of the Minimum Requirements**) must be reviewed to determine what Level(s) of Wetland Protection must be applied to the TDA to comply with Minimum Requirement #8. The Level(s) of Wetland Protection that must be applied are dependent upon:

- The category of wetland that the TDA is discharging to,
- Whether or not the TDA triggers the requirement for Flow Control BMPs per the **TDA Thresholds** in **4.7 Minimum Requirement #7: Flow Control**,
- Whether or not the wetland is a depressional or impounded wetland,
- Whether or not the project proponent has legal access to the wetland,
- The wetland habitat score,
- Whether or not the wetland provides habitat for rare, endangered, threatened, and/or sensitive species, and
- Presence of a breeding population of native amphibians.

Refer to **Figure 5: Flow Chart for Determining Wetland Protection Level Requirements** to determine what Level(s) of Wetland Protection must be applied to comply with Minimum Requirement #8.

Figure 5: Flow Chart for Determining Wetland Protection Level Requirements



Levels of Wetland Protection

The following Levels of Wetland Protection are further explained in ***Appendix I-C: Wetland Protection Guidelines*** in the SWMMWW.

General Protection

General Protection includes general practices that benefit wetlands of all types.

Protection from Pollutants

Protection from Pollutants includes measures to protect the wetland from pollutants in stormwater runoff. Measures of protection include Construction Stormwater BMPs, Source Control BMPs, LID practices and principles, and Runoff Treatment BMPs.

Wetland Hydroperiod Protection

Wetland Hydroperiod Protection includes measures to avoid excessive hydrologic alteration of existing wetlands from development. There are two methods within Wetland Hydroperiod Protection:

- Method 1: Monitoring and Wetland Stage Modeling

  This method requires data collection specific to the wetland, as well as continuous simulation modeling to demonstrate that the proposed project will not negatively alter the wetland hydrology.

- Method 2: Site Discharge Modeling

  This method requires continuous simulation modeling of the runoff from the TDA to demonstrate that the changes in total discharge volume to the wetland will remain similar to the pre-development condition.

Additional Requirements

Stormwater Management BMPs shall not be built within a wetland or its buffer, except for:

- Necessary conveyance systems as approved by the Permittee; or
- As allowed in ***I-C.6 Compensatory Mitigation of Wetlands*** in the SWMMWW.

4.9 Minimum Requirement #9: Operation and Maintenance

All new development and redevelopment projects meeting the Project Thresholds in **Section 3. Applicability of the Minimum Requirements** shall create an operation and maintenance (O&M) manual for all BMPs used to meet **4.6 Minimum Requirement #6: Runoff Treatment**, **4.7 Minimum Requirement #7: Flow Control**, and/or **4.8 Minimum Requirement #8: Wetlands Protection**.

The O&M manual shall identify:

- Maintenance requirements that are consistent with the provisions in **Volume V** of the SWMMWW, and
- The party (or parties) responsible for the operation, maintenance, and long-term funding source(s).

For private facilities approved by the Permittee, a copy of the O&M manual shall be retained on site or within reasonable access to the site and shall be transferred with the property to the new owner. For public facilities, a copy of the O&M manual shall be retained in the appropriate department.

A log of maintenance activity that indicates what actions were taken shall be kept and be available for inspection by the local government.

Section 5. Adjustments

Adjustments to the Minimum Requirements may be granted by the Permittee provided that written findings of fact are prepared that address the following:

- The adjustment provides substantially equivalent environmental protection.
- Based on sound Engineering practices, the objectives of safety, function, environmental protection, and facility maintenance are met.

Section 6. Exceptions

Exceptions to the Minimum Requirements may be granted by the Permittee following legal public notice of an application for an exception, legal public notice of the Permittee's decision on the application, and written findings of fact that document the Permittee's determination to grant an exception. Permittees shall keep records, including the written findings of fact, of all local exceptions to the Minimum Requirements.

The Permittee may grant an exception to the Minimum Requirements if such application imposes a severe and unexpected economic hardship. To determine whether the application imposes a severe and unexpected economic hardship on the project applicant, the Permittee must consider and document, with written findings of fact, the following:

- The current (pre-project) use of the Site, and
- How the application of the Minimum Requirement(s) restricts the proposed use of the Site compared to the restrictions that existed prior to the adoption of the Minimum Requirements; and
- The possible remaining uses of the Site if the exception were not granted; and
- The uses of the Site that would have been allowed prior to the adoption of the Minimum Requirements; and
- A comparison of the estimated amount and percentage of value loss as a result of the Minimum Requirements versus the estimated amount and percentage of value loss as a result of requirements that existed prior to adoption of the Minimum Requirements; and
- The feasibility for the owner to alter the project to apply the Minimum Requirements.

In addition, any exception must meet the following criteria:

- The exception will not increase risk to the public health and welfare, nor be injurious to other properties in the vicinity and/or downstream, and to the quality of waters of the state; and
- The exception is the least possible exception that could be granted to comply with the intent of the Minimum Requirements.

Section 7. Altering the Minimum Requirements with Basin Plans

Basin Plans provide a mechanism by which the performance standards in the Minimum Requirements can be evaluated and refined based on an analysis of a basin or watershed. Basin Plans may be used to develop control strategies to address impacts from future development and to correct specific problems whose sources are known or suspected. Basin Plans can be effective at addressing both long-term cumulative impacts of pollutant loads and short-term acute impacts of pollutant concentrations, as well as hydrologic impacts to streams, wetlands, and groundwater resources.

Basin Plans may be used by the Permittee to revise the default standards of the following Minimum Requirements:

- **4.5 Minimum Requirement #5: On-Site Stormwater Management**,
- **4.6 Minimum Requirement #6: Runoff Treatment**,
- **4.7 Minimum Requirement #7: Flow Control**, and/or
- **4.8 Minimum Requirement #8: Wetlands Protection**.

For a Basin Plan to serve as a means of revising the standards of one or more of the Minimum Requirements listed above, the following conditions must be met:

- The Basin Plan must be formally adopted by all jurisdictions with responsibilities under the plan; and
- All ordinances or regulations called for by the Basin Plan must be in effect; and
- The Basin Plan must be reviewed and approved by Ecology.

Basin Plans may also be used to demonstrate an equivalent level of Runoff Treatment, Flow Control, and/or wetland protection through the construction and use of regional stormwater facilities.

Basin Plans will require the use of continuous runoff computer models and field work to verify and support the models. Permittees who are considering the use of Basin Plans to revise the default standards of one or more of the Minimum Requirements are encouraged to contact Ecology early in the planning stage.

Some examples of how Basin Plans can alter the Minimum Requirements are given in within the guidance for each Minimum Requirement in the SWMMWW. See ***I-3.4 Minimum Requirements (MRs)*** in the SWMMWW.

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APPENDIX 2 – TOTAL MAXIMUM DAILY LOAD (TMDL) REQUIREMENTS

Additional Permit requirements are based on applicable TMDLs in accordance with Special Condition S7 – Compliance with Total Maximum Daily Load Requirements

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Name of TMDL	WRIA 1 - NOOKSACK RIVER WATERSHED BACTERIA TMDL
Document(s) for TMDL	*Nooksack River Watershed Bacteria Total Maximum Daily Load*, June 2000, Ecology Publication No. 00-10-036. https://fortress.wa.gov/ecy/publications/publications/0010036.pdf *Nooksack River Watershed Bacteria Total Maximum Daily Load Detailed Implementation Plan,* January 2002, Ecology Publication No. 01-10-060. https://fortress.wa.gov/ecy/publications/publications/0110060.pdf
Location of Original 303(d) Listings	WA-01-1010, WA-01-1012, WA-01-1014, WA-01-1015, WA-01-1016, WA-01-1110, WA-01-1111, WA-01-1115, WA-01-1116, WA-01-1117, WA-01-1118, WA-01-1119, WA-01-1120, WA-01-1125, AR42TO, BX84LO, UZ70KA, LLPL
Area Where TMDL Requirements Apply	TMDL coverage includes areas served by an MS4 draining to the Nooksack River and its tributaries, Fishtrap Creek, Bertrand Creek, Double Ditch drain, Duffner Ditch, Bender road ditch, between Nugents Corner and Marine Drive.
Parameter(s)	Fecal Coliform
EPA Approval Date	August 8, 2000
MS4 Permittee	Phase II Permit: City of Ferndale WAR04-5552 Phase II Permit: City of Lynden WAR04-5719

CITY OF FERNDALE

Actions Required

Business Inspections:

The Permittee shall inspect facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities) as part of their ongoing inspection program identified in S5.C.8. If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement action.

Public Education and Outreach:

Each Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance:

Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (dog and horse) use and the potential for pollution to stormwater**.**

Illicit Connection/Illicit Discharge Detection and Elimination:

When conducting IDDE field screening during normal course of business (as required by S5.C.5.d for Phase II Permittees, and IDDE as required by S5.C.9.c for Phase I Permittees) in a TMDL area, Permittees shall obtain a grab sample to screen for bacteria sources when at the drainage circuit's most downstream sampling location if there is water flow. For the purposes of IDDE, stormwater quality sampling is defined as obtaining and processing grab samples of stormwater within the conveyance system of the MS4, at discharge points, and/or outfalls (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow their adopted IDDE Procedures to conduct source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results (including documenting no flow) shall be annually documented in TMDL reporting in the Annual Report.

CITY OF LYNDEN

Actions Required

Business Inspections:

The Permittee shall inspect facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities) as part of their ongoing inspection program identified in S5.C.8. If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement action.

Public Education and Outreach:

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Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (dog and horse) use and the potential for pollution to stormwater.

Illicit Connection/ Illicit Discharge Detection and Elimination:

When conducting IDDE field screening during normal course of business (as required by S5.C.5.d for Phase II Permittees, and IC/IDDE as required by S5.C.9.c for Phase I Permittees) in a TMDL area, Permittees shall obtain a grab sample to screen for bacteria sources when at the drainage circuit's most downstream sampling location if there is water flow. For the purposes of IC/IDDE, stormwater quality sampling is defined as obtaining and processing grab samples of stormwater within the conveyance system of the MS4, at discharge points, and/or outfalls (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow their adopted IDDE Procedures to conduct source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results (including documenting no flow) shall be annually documented in TMDL reporting in the Annual Report.

Name of TMDL	WRIA 1 - LAKE WHATCOM WATERSHED TOTAL PHOSPHORUS AND BACTERIA TMDL
EPA Approved Document(s) for TMDL	*Lake Whatcom Watershed Total Phosphorus and Bacteria Total Maximum Daily Loads. Volume 1 (Water Quality Study Findings)*, November 2008, Ecology Publication No. 08-03-024 https://fortress.wa.gov/ecy/publications/summarypages/0803024.html *Volume* 2 *(Water Quality Improvement Report and Implementation Strategy)* November 2014 revised February 2016, Ecology Publication No. 13-10-012
Location of Original 303(d) Listings	Whatcom Lake 5846 and 8621 (WA-01-9170) Austin Creek 9719 Anderson Creek 39036 Brannian Creek 45603 Smith Creek 39145 Olsen Creek 45589 (WA-01-3150) Carpenter Creek 45604 Euclid Creek 45618 Silver Beach Creek 45633 (WA-01-3120) Mill Wheel Creek 45652 Euclid Creek 48035
Area Where TMDL Requirements Apply	These requirements apply to areas served by MS4s within the City of Bellingham and Whatcom County
Parameter(s)	Total Phosphorus, Fecal Coliform Bacteria
EPA Approval Date	April 7, 2016
MS4 Permittee	City of Bellingham WAR04-5550 Whatcom County WAR04-5557

CITY OF BELLINGHAM & WHATCOM COUNTY

Actions Required

Business Inspections:

The Permittee shall inspect facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities) as part of their ongoing inspection program identified in S5.C.8. If the Permittee determines, through inspections or otherwise, that

a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement action.

Public Education and Outreach:

Each Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance:

Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (dog and horse) use and the potential for pollution to stormwater.

All permanent stormwater treatment facilities/BMPs within the TMDL area that treat phosporus shall be inspected and maintained in accordance with the requirements of S5.C.9.b and S5.C.9.c; reduced inspection frequency options do not apply.

Illicit Connection/ Illicit Discharge Detection and Elimination:

When conducting IDDE field screening during normal course of business (as required by S5.C.5.d for Phase II Permittees, and IC/IDDE as required by S5.C.9.c for Phase I Permittees) in a TMDL area, Permittees shall obtain a grab sample to screen for bacteria sources when at the drainage circuit's most downstream accessible sampling location if there is water flow. For the purposes of IC/IDDE, stormwater quality sampling is defined as obtaining and processing grab samples of stormwater within the conveyance system of the MS4, at discharge points, and/or outfalls (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow their adopted IDDE Procedures to conduct source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results (including documenting no flow) shall be annually documented in TMDL reporting in the Annual Report.

Administration

a. By March 31, 2028, the City and the County shall submit a draft update of the "Lake Whatcom Implementation" tasks as developed under the previous permit term. The updated draft will include actions for the next permit term that build upon 2024-2029 implementation tasks. The City and the County shall finalize the Lake Whatcom Implementation tasks for 2029-2034 and submit with the March 31, 2029 Annual Report.

b. Include in the Annual Report the phosphorus reduction activities based on the current accepted TMDL reassessment model and the 2024-2029 "Lake Whatcom Implementation" tasks.

Name of TMDL	WRIA 3 – PADILLA BAY FRESHWATER TRIBUTARIES FECAL COLIFORM BACTERIA TOTAL MAXIMUM DAILY LOAD
Document(s) for TMDL	Padilla Bay Freshwater Tributaries Fecal Coliform Bacteria Total Maximum Daily Load Report - Water Quality Improvement Report and Implementation Plan (20-10-036) https://apps.ecology.wa.gov/publications/documents/2010036.pdf
Location of Original 303(d) Listings	Big Indian Slough (45711) No Name Slough (7158) Joe Leary Slough (16410) Joe Leary Slough (39607) Joe Leary Slough (39608)
Area Where TMDL Requirements Apply	These requirements apply to areas served by MS4s listed below within the TMDL coverage area.
Parameter(s)	Fecal coliform bacteria
EPA Approval Date	December 22nd, 2020
MS4 Permittee	Phase II Permit: Skagit County (WAR045556), City of Burlington (WAR045551)

SKAGIT COUNTY & CITY OF BURLINGTON

Actions Required

Business Inspections:

The Permittee shall inspect facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities) as part of their ongoing inspection program identified in S5.C.8. If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement action.

Public Education and Outreach:

Each Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance:

Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (dog and horse) use and the potential for pollution to stormwater.

Illicit Connection/Illicit Discharge Detection and Elimination:

When conducting IDDE field screening during normal course of business (as required by S5.C.5.d for Phase II Permittees, and IC/IDDE as required by S5.C.9.c for Phase I Permittees) in a TMDL area, Permittees shall obtain a grab sample to screen for bacteria sources when at the drainage circuit's most downstream sampling location if there is water flow. For the purposes of IC/IDDE, stormwater quality sampling is defined as obtaining and processing grab samples of stormwater within the conveyance system of the MS4, at discharge points, and/or outfalls (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow their adopted IDDE Procedures to conduct source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results (including documenting no flow) shall be annually documented in TMDL reporting in the Annual Report.

Name of TMDL	WRIA 5 – STILLAGUAMISH RIVER
EPA Approved Document(s) for TMDL	*Stillaguamish River Watershed Fecal Coliform, Dissolved Oxygen, pH, Arsenic, and Mercury Total Maximum Daily Load (Water Cleanup Plan) – Submittal Report*, May 2005, Ecology Publication No. 05-10-044. https://fortress.wa.gov/ecy/publications/publications/0510044.pdf *Stillaguamish River Watershed Fecal Coliform, Dissolved Oxygen, pH, Arsenic, and Mercury Total Maximum Daily Load (Water Cleanup Plan) – Water Quality Implementation Plan*, June 2007, Ecology Publication No. 07-10-033. https://fortress.wa.gov/ecy/publications/documents/0710033.pdf
Location of Original 303(d) Listings	QJ28UC, HD76OJ, JU33JU, GH05SX, IJ55EP, VJ74AO, 390KRD, OT80TY, QE93BW, ZO73WL, WO38NV, SN06ZT, LU17DC
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittees' municipal stormwater permit and draining to fresh or marine waters within Water Resource Inventory Area (WRIA) 5
Parameter	Fecal Coliform, Dissolved Oxygen
EPA Approval Date	June 21, 2005
MS4 Permittee	Phase I Permit: Snohomish County Phase II Permit: Arlington

SNOHOMISH COUNTY & CITY OF ARLINGTON

Actions Required

Business Inspections:

Each Permittee shall continue their ongoing inspection programs for facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities). If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, each Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement actions.

Public Education and Outreach:

Each Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance:

Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (dog and horse) use and the potential for pollution to stormwater.

Illicit Connection/ Illicit Discharge Detection and Elimination:

When conducting IDDE field screening during normal course of business (as required by S5.C.5.d for Phase II Permittees, and IC/IDDE as required by S5.C.9.c for Phase I Permittees) in a TMDL area, Permittees shall obtain a grab sample to screen for bacteria sources when at the drainage circuit's most downstream sampling location if there is water flow. For the purposes of IC/IDDE, stormwater quality sampling is defined as obtaining and processing grab samples of stormwater within the conveyance system of the MS4, at discharge points, and/or outfalls (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow their adopted IDDE Procedures to conduct source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results (including documenting no flow) shall be annually documented in TMDL reporting in the Annual Report.

Name of TMDL	**WRIA 7 – SNOHOMISH RIVER TRIBUTARIES**
EPA Approved Document(s) for TMDL	*Water Quality Assessment of Tributaries to the Snohomish River and Nonpoint Source Pollution TMDL*, September 1997, Ecology Publication No. 97-334. https://fortress.wa.gov/ecy/publications/SummaryPages/97334.html *Snohomish River Tributaries Fecal Coliform Total Maximum Daily Load Submittal Report*, June 2001, Ecology publication No. 00-10-087. https://fortress.wa.gov/ecy/publications/summarypages/0010087.html *Lower Snohomish River Tributaries Fecal Coliform Bacterial Total Maximum Daily Load: Detailed Implementation Plan*, June 2003, Ecology Publication No. 03-10-031. https://fortress.wa.gov/ecy/publications/documents/0310031.pdf
Location of Original 303(d) Listings	WA-07-1012, WA-07-015, WA-07-1052, WA-07-1163WA-07-1163, WA-07-1030 and WA-07-040
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittees' municipal stormwater permit and draining to the WASWIS segment number, and all upstream tributaries within the jurisdiction of the Permittee and within the geographic area covered by this Permit contributing to waterbodies: Allen Creek, YT94RF: Quilceda Creek, TH58TS: French Creek, XZ24XU: Woods Creek, FZ74HO: Pilchuck River, NF79WA: Marshland Watershed, XW79FQ.
Parameter	Fecal Coliform
EPA Approval Date	August 9, 2001
MS4 Permittee	Phase I Permit: Snohomish County Phase II Permit: Granite Falls, Lake Stevens, Monroe, Snohomish, Marysville, Arlington, Everett

SNOHOMISH COUNTY

Actions Required

Business Inspections:

Each Permittee shall continue their ongoing inspection programs for facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities). If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, each Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement actions.

Public Education and Outreach: Each Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance: Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (dog and horse) use and the potential for pollution to stormwater.

Targeted Illicit Connection and Illicit Discharge Detection and Elimination:

During each permit term, Permittees shall use their available data (such as land use data, age of infrastructure, information on type of business activities, and water quality sampling results) to identify at least one high priority area (such as a tributary or a stream segment) that will be the target of a bacteria focused IC/IDDE effort. Sampling of stormwater shall be conducted as part of the Permittee's Targeted IC/IDDE efforts to focus investigations on municipal stormwater contributions of bacteria to receiving waters. For the purposes of Targeted IC/IDDE, stormwater quality sampling is defined as obtaining grab samples of stormwater within the conveyance system of the MS4, and/or outfalls. Permittees shall annually screen for bacteria sources by inspecting and taking grab samples (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow their adopted IDDE Procedures to conduct source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

No later than December 31, 2025, each Permittee shall have a written plan and include documentation of how the high priority area was selected and include a preliminary sampling schedule and locations. For Permittees with multiple TMDL areas, the plan may include rationale for staggering the implementation in the identified high priority areas. Documentation shall be submitted with the Annual Report due by March 31, 2026. Begin implementing the plan and schedule no later than January 1, 2026, and implement annually within the high priority area through December 31, 2028. For Permittees implementing a staggered schedule, implementation may be extended to June 30, 2029. Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, all

sampling locations, and sampling results shall be annually documented in TMDL reporting in the Annual Report. Sampling methodology must include collecting grab samples (or documenting no flow) during the critical period if a critical period is identified in the TMDL.

CITY OF GRANITE FALLS, LAKE STEVENS, MONROE, SNOHOMISH, MARYSVILLE, EVERETT AND ARLINGTON

Actions Required

***Business Inspections**:*

Each Permittee shall continue their ongoing inspection programs for facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities). If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, each Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement actions.

***Public Education and Outreach**:* Each Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance: Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (dog and horse) use and the potential for pollution to stormwater.

Illicit Connection/Illicit Discharge Detection and Elimination:

When conducting IDDE field screening during normal course of business (as required by S5.C.5.d for Phase II Permittees, and IC/IDDE as required by S5.C.9.c for Phase I Permittees) in a TMDL area, Permittees shall obtain a grab sample to screen for bacteria sources when at the drainage circuit's most downstream accessible sampling location if there is water flow. For the purposes of IC/IDDE, stormwater quality sampling is defined as obtaining and processing a grab samples of stormwater within the conveyance system of the MS4, at discharge points, and/or outfalls (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow their adopted IDDE Procedures to conduct source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results (including documenting no flow) shall be annually documented in TMDL reporting as required in the Permittees' Annual Report.

Name of TMDL	WRIA 8 - NORTH CREEK
EPA Approved Document(s) for TMDL	*North Creek Watershed: Total Maximum Daily Load Evaluation for Fecal Coliform Bacteria*, June 2001, Ecology Publication No. 01-03-020. https://fortress.wa.gov/ecy/publications/summarypages/0103020.html *North Creek Fecal Coliform Total Maximum Daily Load Submittal Report*, June 2002, Ecology publication No. 02-10-020. https://fortress.wa.gov/ecy/publications/summarypages/0210020.html *North Creek Fecal Coliform Bacteria Total Maximum Daily Load: Detailed Implementation Plan*, October 2003, Ecology Publication No. 03-10-047. https://fortress.wa.gov/ecy/publications/SummaryPages/0310047.html
Location of Original 303(d) Listings	WA-08-1065
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittees' municipal stormwater permit and draining to the portion of the WASWIS segment SM74QQ starting at the confluence with the Sammamish River and including all upstream tributaries contributing to the North Creek segment of WASWIS SM74QQ.
Parameter	Fecal Coliform
EPA Approval Date	August 2, 2002
MS4 Permittee	Phase I Permit: Snohomish County Phase II Permit: Everett, Bothell, Mill Creek

SNOHOMISH COUNTY & EVERETT, BOTHELL & MILL CREEK

Actions Required

Business Inspections: Each Permittee shall continue their ongoing inspection programs for facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities). If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement actions.

***Public Education and Outreach**:* Each Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance: Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (e.g., dog and horse) use and the potential for pollution to stormwater.

***Targeted Illicit Connection and Illicit Discharge Detection and Elimination (IDDE)**:* During each permit term, Permittees shall use their available data (such as land use data, age of infrastructure, information on type of business activities, and water quality sampling results) to identify at least one high priority area (such as a tributary or a stream segment) that will be the focus of a bacteria targeted IC/IDDE effort. Sampling of stormwater shall be conducted as part of the Permittee's Targeted IDDE to focus investigations on municipal stormwater contributions of bacteria to receiving waters. For the purposes of Targeted IC/IDDE, stormwater quality sampling is defined as obtaining grab samples of stormwater within the conveyance system of the MS4 and/or outfalls. Annually Permittees shall screen for bacteria sources by taking grab samples (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow the Permittee's own adopted IDDE Procedures to conduct source tracing if bacteria levels and/or observations trigger a response (see IDDE annual for bacteria trigger levels).

No later than December 31, 2025, each Permittee shall prepare a written plan and include documentation of how the high priority area was selected and include a preliminary sampling schedule and locations. For Permittees with multiple TMDL areas, the plan may include rationale for staggering the implementation in the identified high priority areas. Documentation shall be submitted with the Annual Report due by March 31, 2026. Permittees shall begin implementing the plan and schedule no later than January 1, 2026. Targeted IC/IDDE shall be implemented annually within the high priority area through December 31, 2028. For Permittees implementing a staggered schedule, implementation may be extended to June 30, 2029. Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results shall be documented annually in TMDL reporting as required in the Permittee's Annual Report. Sampling methodology must include collecting grab samples (or document no flow) during the critical period, if a critical period is identified in the TMDL.

Name of TMDL	WRIA 8 - SWAMP CREEK
EPA Approved Document(s) for TMDL	*Swamp Creek Fecal Coliform Bacteria Total Maximum Daily Load: Water Quality Improvement Report and Implementation Plan*, June 2006, Ecology Publication No. 06-10-021. https://fortress.wa.gov/ecy/publications/publications/0610021.pdf
Location of Original 303(d) Listings	WA-08-1060
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittees municipal stormwater permit and draining to the portion of the WASWIS segment SM74QQ starting at the confluence with the Sammamish River and including all upstream tributaries contributing to the Swamp Creek segment of WASWIS GJ57UL.
Parameter	Fecal Coliform
EPA Approval Date	August 16, 2006
MS4 Permittee	Phase I Permit: Snohomish County Phase II Permit: Everett, Bothell, Lynnwood, Brier, Mountlake Terrace, Kenmore

SNOHOMISH COUNTY & CITY OF EVERETT, BOTHELL, LYNWOOD, BRIER, MOUNT LAKE TERRACE & KENMORE

Actions Required

Business Inspections: Each Permittee shall continue their ongoing inspection programs for facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities). If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement actions.

Public Education and Outreach: Each Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance: Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (e.g., dog and horse) use and the potential for pollution to stormwater.

Targeted Illicit Connection and Illicit Discharge Detection and Elimination*:* During each permit term, Permittees shall use their available data (such as land use data, age of infrastructure, information on type of business activities, and water quality sampling results) to identify at least one high priority area (such as a tributary or a stream segment) that will be the focus of a targeted IC/IDDE effort. Sampling of stormwater shall be conducted as part of the Permittee's Targeted IC/IDDE efforts to focus investigations on municipal stormwater contributions of bacteria to receiving waters. For the purposes of Targeted IC/IDDE, stormwater quality sampling is defined as obtaining grab samples of stormwater within the conveyance system of the MS4 and/or outfalls. Permittees shall screen for bacteria sources annually by inspecting and taking grab samples (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow their adopted IDDE Procedures to conduct source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

No later than December 31, 2025, each Permittee shall prepare a written plan and include documentation of how the high priority area was selected and include a preliminary sampling schedule and locations. For Permittees with multiple TMDL areas, the plan may include rationale for staggering the implementation in the identified high priority areas. Documentation shall be submitted with the Annual Report due by March 31, 2026. Permittees shall begin implementing the plan and schedule no later than January 1, 2026. Targeted IC/IDDE shall be implemented annually within the high priority area through December 31, 2028. For Permittees implementing a staggered schedule, implementation may be extended to June 30, 2029. Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results shall be documented annually in TMDL reporting as required in the Permittee's Annual Report. Sampling methodology must include collecting grab samples (or document no flow) during the critical period, if a critical period is identified in the TMDL.

Name of TMDL	WRIA 8 - BEAR-EVANS WATERSHED
Document(s) for TMDL	*Bear-Evans Watershed Fecal Coliform Bacteria Total Maximum Daily Load, Water Quality Improvement Report*, June 2008, Ecology Publication No. 08-10-026. https://fortress.wa.gov/ecy/publications/documents/0810026.pdf *Bear-Evans Watershed Temperature, Dissolved Oxygen and Fecal Coliform Bacteria Total Maximum Daily Load, Water Quality Implementation Plan*, March 2011, Ecology Publication No. 11-10-024. https://fortress.wa.gov/ecy/publications/documents/1110024.pdf
Location of Original 303(d) Listings	Bear Creek (EW54VY, BA64JJ, WR69YU)) Cottage Lake Creek (NO74J5) Unnamed Tributary to Bear Creek (EU47RU) Evans Creek (MI67EG)
Area Where TMDL Requirements Apply	Bear Creek and Evans Creek watersheds (includes Cottage Lake watershed)
Parameter	Fecal Coliform
EPA Approval Date	August 11, 2008
MS4 Permittee	Phase I: King County Phase II: No actions identified for Phase II Permittees

KING COUNTY

Actions Required

Business Inspections: The Permittee shall inspect facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities) as part of their ongoing inspection program identified in S5.C.8. If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement action.

Public Education and Outreach: The Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance: The Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (e.g., dog and horse) use and the potential for pollution to stormwater.

Illicit Discharge Detection and Elimination: When conducting IDDE field screening during normal course of business (as required by S5.C.9.c for Phase I Permittees) in a TMDL area, the Permittee shall obtain a grab sample to screen for bacteria sources at the drainage circuit's most downstream sampling location if there is water flow. For the purposes of IDDE, stormwater quality sampling is defined as obtaining and processing grab samples of stormwater within the conveyance system of the MS4, at discharge points, and/or outfalls (if there is flow) at each drainage circuit's most downstream accessible sampling location. The Permittee shall follow their adopted IDDE Procedures to conduct source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results (including documenting no flow) shall be documented annually in TMDL reporting in the Annual Report.

Name of TMDL	WRIA 8 - ISSAQUAH CREEK BASIN WATER CLEANUP PLAN FOR FECAL COLIFORM BACTERIA
EPA Approved Document(s) for TMDL	*Issaquah Creek Basin Water Cleanup Plan for Fecal Coliform Bacteria: Total Maximum Daily Load Submittal Report*, June 2004, Ecology Publication No. 04-10-055. https://fortress.wa.gov/ecy/publications/documents/0410055.pdf
Location of Original 303(d) Listings	Issaquah Creek, TF310B (WA-08-1110) North Fork Issaquah Creek, CZ80NC (WA-08-1110) Tibbetts Creek, MB51QQ, EA48LQ (WA-08-1115)
Area Where TMDL Requirements Apply	These requirements apply to areas served by MS4s within the TMDL coverage area.
Parameter(s)	Fecal Coliform Bacteria
EPA Approval Date	October 1, 2004
MS4 Permittee:	Phase I Permit: King County Phase II Permit: City of Issaquah, WAR04-5518

KING COUNTY & CITY OF ISSAQUAH

Actions Required

Business Inspections: Each Permittee shall inspect facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities) as part of their ongoing inspection program identified in S5.C.8. If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement action.

Public Education and Outreach: Each Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance: Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (e.g., dog and horse) use and the potential for pollution to stormwater.

Illicit Discharge Detection and Elimination: When conducting IDDE field screening during normal course of business (as required by S5.C.5.d for Phase II Permittees and IDDE as required by S5.C.9.c for Phase I Permittees) in a TMDL area, Permittees shall obtain a grab sample to screen for bacteria sources at the drainage circuit's most downstream sampling location if there is water flow. For the purposes of IDDE, stormwater quality sampling is defined as obtaining and processing grab samples of stormwater within the conveyance system of the MS4, at discharge points, and/or outfalls (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow their adopted IDDE Procedures to conduct source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results (including documenting no flow) shall be documented annually in TMDL reporting as required in the Permittees' Annual Report.

Name of TMDL	WRIA 8 - LITTLE BEAR CREEK FECAL COLIFORM WATER QUALITY IMPROVEMENT PROJECT
Document(s) for TMDL	*Little Bear Creek Fecal Coliform Total Maximum Daily Load (Water Cleanup Plan),* May 2005, Ecology Publication No. 05-10-034. https://fortress.wa.gov/ecy/publications/publications/0510034.pdf
Location of Original 303(d) Listings	Little Bear Creek, UT96KR (WA-08-1085).
Area Where TMDL Requirements Apply	These requirements apply to areas served by MS4s within the TMDL coverage area.
Parameter(s)	Fecal coliform bacteria
EPA Approval Date	July 1, 2005
MS4 Permittee:	Phase I Permit: Snohomish County Phase II Permit: City of Woodinville, WAR04-5545

SNOHOMISH COUNTY & CITY OF WOODINVILLE

Actions Required

Business Inspections: Each Permittee shall inspect facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities) as part of their ongoing inspection program identified in S5.C.8. If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement action.

Public Education and Outreach: Each Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance: Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (e.g., dog and horse) use and the potential for pollution to stormwater.

Illicit Connection/Illicit Discharge Detection and Elimination: When conducting IDDE field screening during normal course of business (as required by S5.C.5.d for Phase II Permittees and IC/IDDE as required by S5.C.9.c for Phase I Permittees) in a TMDL area, Permittees shall obtain a grab sample to screen for bacteria sources at the drainage circuit's most downstream sampling location if there is water flow. For the purposes of IC/IDDE, stormwater quality sampling is defined as obtaining and processing grab samples of stormwater within the conveyance system of the MS4, at discharge points, and/or outfalls (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow their adopted IDDE Procedures to conduct source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results (including documenting no flow) shall be documented annually in TMDL reporting in the Annual Report.

Name of TMDL	WRIA 10 – LOWER WHITE RIVER PH TMDL
Document(s) for TMDL	*Lower White River (LWR) pH Total Maximum Daily Load – Technical Analysis and TMDL Allocations*, Ecology Publication No. 2-10-011 https://apps.ecology.wa.gov/publications/documents/2210011.pdf
Location of Original 303(d) Listings	White River, multiple locations 7524, 7525, 7526
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittee's municipal stormwater permit and discharging to water bodies listed within the specific requirement in this TMDL section.
Parameter	pH[1]
EPA Approval Date	January 2023
MS4 Permittees	Phase I Permit: King County, Pierce County Phase II Permit: Auburn, Algona, Buckley, Enumclaw, Pacific, Sumner

KING AND PIERCE COUNTIES AND ASSOCIATED CITIES

Actions Required

1. MS4 Mapping: No later than March 31, 2029:
    a. The Permittee shall ensure all known piped MS4 outfalls that they own or operate, which discharge to the Lower White River or its primary tributaries within the TMDL implementation area, are mapped and documented.[2, 3]
    b. The Permittee shall map all tributary conveyances to their piped MS4 outfalls identified in (1)(a), if not already mapped.
2. Illicit Discharge Detection and Elimination:

[1] This TMDL sets soluble reactive phosphorus (SRP) allocations in order to limit periphyton growth and meet the numeric water quality criteria for pH in the White River.

[2] The screening program is limited to "piped outfalls" owned or operated by the Permittee, which means only MS4 outfalls that are made of pipe material (e.g., corrugated metal, concrete, etc.) require screening; it does not include open pervious outfalls, such as ditches.

[3] The TMDL implementation area is the contributing drainage area to the White River between RM 3.6 and RM 28 where phosphorus management practices are necessary to meet allocations for discharges to the river and the TMDL load capacity of the river itself. Primary tributaries to the Lower White River within the TMDL area include Boise Creek, Second Creek, Pussyfoot Creek, Bowman Creek, and Government Canal.

a. No later than October 31, 2028, the Permittee shall screen all known piped MS4 outfalls that they own or operate, which discharge to the Lower White River and its primary tributaries, within the TMDL implementation area.
    i. For at least one dry season within this permit cycle, the Permittee shall screen piped MS4 outfalls once a month, from May 1st – October 31st, for the presence of a discharge. All piped MS4 outfalls may be screened within the same year or divided into groups and screened over multiple years.
    ii. Document MS4 outfall screening results. If no discharge is found during outfall screening by October 31, 2028, the Permittee may plan to reduce this screening to once in May and again once in October, or as close to these months as practicable, during low flow tier conditions (i.e. <900 cfs), for future permit cycles.
    iii. Actively controlled stormwater discharges (e.g., pump stations, batch treatment systems) are included in the screening program, but they have slightly different sampling requirements as described in (2)(b)(iii).
b. If a discharge at the piped MS4 outfall is present and estimated to be more than 2.24 gallons per minute, the Permittee shall collect an end-of-pipe sample for soluble reactive phosphorus (SRP) analysis.
    i. Sampling is restricted to May 1st - October 31st when there is little to no rain locally (<0.2" rainfall in past 48 hours).
    ii. Sampling is restricted to when the daily average flow in the White River is lower than 2000 cfs (USGS gage 12100490 at R Street near Auburn).
    iii. For all actively controlled municipal stormwater discharges (e.g., pump stations, batch treatment systems), no later than October 31, 2028, monthly sample events must be scheduled for dates/times when discharge is known to occur within the May 1-October 31 period. If monthly sampling meets any of the SRP requirements in section (2)(d)(i) through (iv) in the one season sampled during this permit cycle, the Permittee may plan to reduce screening to once in May and once in October, or as close to these months as practicable, for future permit cycles.
c. If any stormwater outfall samples collected during the critical period and analyzed for SRP concentrations exceed the values in (2)(c)(i) and (ii) below, the Permittee shall begin source tracing for SRP sources to the MS4[4]. Any sample exceedances of the SRP values in (2)(c)(i) and (ii) below are not a violation of this Permit. Analytical methods should follow approved methods as listed in this Permit's Appendix 9, Stormwater Discharge Monitoring, and 40 CFR Section 136.3 for ortho-phosphate (parameter #44 in Table 1B). Standard Method 4500-P G-2011 (for ortho-phosphate) is recommended for obtaining reporting limits needed for (c)(i) and (ii) below.

[4] WLAs apply during the critical period from May 1st to October 31st.

i. 7.5 ug/L of SRP (when the daily average White River flow is less than 900 cfs at USGS gage 12100490) or,
ii. 79 ug/L of SRP (when the daily average river flow is between 900 cfs and 2000 cfs at USGS gage 12100490) or,
iii. The load of SRP is less than the WLA assigned to the Permittee.

d. Permittees are meeting TMDL requirements, and no additional source tracing is required, if MS4 outfall screening and sampling results find any one of the following:

i. There is no discharge or, where it is not feasible to measure flow, there is no visible or measurable surface velocity (i.e., stagnant water).
ii. The flow of any discharge is less than 0.005 cfs (2.24 gallons per minute).
iii. The flow of any discharge is less than 0.9 cfs (400 gpm) and the concentration of discharge is less than 7.5 ug/L of SRP (when the daily average White River flow is less than 900 cfs at USGS gage 12100490) or less than 79 ug/L of SRP (when the daily average river flow is between 900 cfs and 2000 cfs at USGS gage 12100490) during the critical period.
iv. The flow of any discharge is greater than 0.9 cfs (400 gpm) and the load of SRP is less than the WLAs as assigned to the Permittee. The Permittee may calculate a load only if none of the above (2)(d)(i) through (iii) conditions apply.

e. The Permittee may discontinue MS4 outfall screening and sampling at outfalls where the following applies:

i. The Permittee screens all known piped MS4 outfalls owned or operated by the Permittee as described in section (2)(a) every month within the dry season, for two consecutive years in a row, and both years show these MS4 outfalls meeting requirements in section (2)(d).

3. Controlling runoff from new development and redevelopment:
   a. No later than July 1, 2026, Pierce and King Counties shall require Phosphorus Treatment BMPs as described in Ecology's Stormwater Management Manual for Western Washington or an equivalent manual approved by Ecology for all new development and redevelopment projects within the TMDL implementation area that require Minimum Requirement #6, Runoff Treatment.
   b. No later than June 30, 2027, the cities of Auburn, Algona, Buckley, Enumclaw, Pacific and Sumner shall require Phosphorus Treatment BMPs as described in Ecology's Stormwater Management Manual for Western Washington or an equivalent manual approved by Ecology for all new development and redevelopment projects within the TMDL implementation area that require Minimum Requirement #6, Runoff Treatment.

Name of TMDL	WRIA 10 - PUYALLUP WATERSHED WATER QUALITY IMPROVEMENT PROJECT
Document(s) for TMDL	*Puyallup River Watershed Fecal Coliform Total Maximum Daily Load – Water Quality Improvement Report and Implementation Plan*, June 2011, Ecology Publication No. 11-10-040. https://fortress.wa.gov/ecy/publications/publications/1110040.pdf
Location of Original 303(d) Listings	Puyallup River 16712, 7498, White River 16711, 16708, 16709, Clear Creek 7501, Swan Creek 7514, Boise Creek 16706, Deer Creek 45616, Salmon Creek 45601, Unnamed Creek (Tributary to the Puyallup River) 45688
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittee's municipal stormwater permit and discharging to water bodies listed within the specific requirement in this TMDL section.
Parameter	Fecal Coliform
EPA Approval Date	September 2011
MS4 Permittee	Phase I Permit: King County, Pierce County Phase II Permit: Auburn, Bonney Lake, Edgewood, Enumclaw, Puyallup, Sumner

CITY OF AUBURN

Actions Required

Business Inspections:

Permittee shall inspect facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities) as part of their ongoing inspection program identified in S5.C.8. If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement action.

Public Education and Outreach:

Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance:

Permittee shall maintain pet waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (dog and horse) use and the potential for pollution to stormwater.

Illicit Discharge Detection and Elimination

Designate areas discharging via MS4 to the TMDL area as high priority areas for illicit discharge detection and elimination. Complete IDDE screening for bacteria sources in 100% of these sub-basins by July 31, 2029, and implement the schedules and activities identified in S5.C.5 of the Western Washington Phase II Permit in response to any illicit connections and illicit discharges found. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and stormwater sampling results.

CITY OF BONNEY LAKE

Actions Required

- Designate areas discharging via MS4 to Fennel Creek as high priority areas for illicit discharge detection and elimination.
- No later than July 31, 2029, complete IDDE screening for bacteria sources in 100% of these MS4 sub-basins, and implement the schedule and activities identified in S5.C.5 of the Western Washington Phase II Permit in response to any illicit connections and illicit discharges found. IDDE screening for bacteria sources includes the inspection of city owned MS4 outfalls that are safely accessible, or the next safely accessible drainage access point that discharge to Fennel Creek.
- The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and sampling results.

CITY OF EDGEWOOD

Actions Required

- Designate areas discharging via the MS4 to Jovita Creek as high priority areas for illicit discharge detection and elimination.
- Complete IDDE screening for bacteria sources in 100% of these MS4 sub-basins by July 31, 2029, and implement the schedules and activities identified in S5.C.5 of the Western Washington Phase II Permit in response to any illicit connections and illicit discharges

found. IDDE screening for bacteria sources includes the inspection of city owned MS4 outfalls that are safely accessible, or the next safely accessible drainage access point that discharge to Jovita Creek.

- The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and stormwater sampling results.

CITY OF ENUMCLAW

Actions Required

- Designate areas discharging via the MS4 to:
  - Boise Creek from creek mile 1.7 to 1.0.
  - The flume and laterals approximately 1 mile north of the confluence with the mainstem, north of SE 456th Street, between Highway 410 to the west and Watson Street N. to the east.

  These locations are high priority areas for illicit discharge detection and elimination. Complete IDDE screening for bacteria sources in 100% of these MS4 sub-basins by July 31, 2029, and implement the schedules and activities identified in S5.C.5 of the Western Washington Phase II Permit in response to any illicit connections and illicit discharges found. Investigation must include activities for both the dry season (May through September) and the wet season (October through April). IDDE screening for bacteria sources includes the inspection of city owned MS4 outfalls that are safely accessible, or the next safely accessible drainage access point that discharge to the abovementioned receiving waters.

  The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and sampling results.
- Permittee shall inspect commercial animal handling areas and commercial composting facilities to ensure implementation of source control BMPs for bacteria. Commercial animal handling areas are associated with Standard Industrial Code (SIC) 074 and 075 and include veterinary and pet care/boarding services, animal slaughtering, and support activities for animal production. Facilities where the degradation and transformation of organic solid waste takes place under controlled conditions designed to promote aerobic decomposition are considered composting facilities (definition in accordance with Chapter 173-350 WAC). Implement an ongoing inspection program to re-inspect facilities or areas with bacteria source control problems at least every three years.
- Conduct public education and outreach activities to increase awareness of bacterial pollution problems and promote proper pet waste management behavior.
- Install and maintain animal waste education signage and/or pet waste bag dispenser stations at municipal parks and other Permittee owned and operated lands reasonably expected to have substantial domestic animal (dog and horse) use and where stormwater runoff can enter the MS4.

KING COUNTY

Actions Required

Business Inspections:

Permittee shall continue their ongoing inspection programs for facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities). If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement actions.

Public Education and Outreach:

Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance:

Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (dog and horse) use and the potential for pollution of stormwater.

Illicit Discharge Detection and Elimination

When conducting IDDE-related field screening under S5.C.9 of the Phase I Permit, King County shall screen for bacteria sources in any MS4 sub-basins which discharge to surface waters in the TMDL area. Implement the schedules and activities identified in S5.C.9 of the Phase I Permit for response to any illicit connections and illicit discharges found. The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and stormwater sampling results.

PIERCE COUNTY

Actions Required

- Designate areas discharging via the MS4 to Swan Creek as high priority areas for illicit discharge detection and elimination. Complete IDDE screening for bacteria sources in 100% of these MS4 sub-basins by July 31, 2029, and implement the schedules and activities identified in S5.C.5 of the Western Washington Phase II Permit in response to any illicit connections and illicit discharges found. IDDE screening for bacteria sources includes the inspection of city

owned MS4 outfalls that are safely accessible, or the next safely accessible drainage access point that discharge to Swan Creek. The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and stormwater sampling results.

- Designate areas discharging via the MS4 to Salmon Creek as high priority areas for illicit discharge detection and elimination. Complete IDDE screening for bacteria sources in 100% of these MS4 sub-basins by July 31, 2029, and implement the schedules and activities identified in S5.C.5 of the Western Washington Phase II Permit in response to any illicit connections and illicit discharges found. IDDE screening for bacteria sources includes the inspection of city owned MS4 outfalls that are safely accessible, or the next safely accessible drainage access point that discharge to Salmon Creek. The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and stormwater sampling results.
- Designate areas discharging via the MS4 to Alderton Creek as high priority areas for illicit discharge detection and elimination. Complete IDDE screening for bacteria sources in 100% of these MS4 sub-basins by July 31, 2029, and implement the schedules and activities identified in S5.C.5 of the Western Washington Phase II Permit in response to any illicit connections and illicit discharges found. IDDE screening for bacteria sources includes the inspection of city owned MS4 outfalls that are safely accessible, or the next safely accessible drainage access point that discharge to Alderton Creek. The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and stormwater sampling results.
- Designate areas discharging via the MS4 to Fennell Creek as high priority areas for illicit discharge detection and elimination. Complete IDDE screening for bacteria sources in 100% of these MS4 sub-basins by July 31, 2029, and implement the schedules and activities identified in S5.C.5 of the Western Washington Phase II Permit in response to any illicit connections and illicit discharges found. IDDE screening for bacteria sources includes the inspection of city owned MS4 outfalls that are safely accessible, or the next safely accessible drainage access point that discharge to Fennell Creek. The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and stormwater sampling results.

CITY OF PUYALLUP

Action Required

Designate areas discharging via the MS4 to Deer Creek as high priority areas for illicit discharge detection and elimination. Complete IDDE screening for bacteria sources in 100% of these MS4 sub-basins by July 31, 2029, and implement the schedules and activities identified in S5.C.5 of the Western Washington Phase II Permit in response to any illicit connections and illicit discharges found. IDDE screening for bacteria sources includes the inspection of city owned MS4 outfalls that are safely accessible, or the next safely accessible drainage access point that discharge to Deer Creek. The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and stormwater sampling results.

CITY OF SUMNER

Action Required

Designate areas discharging via the MS4 to Salmon Creek as high priority areas for illicit discharge detection and elimination. Complete IDDE screening for bacteria sources in 100% of these MS4 sub-basins by July 31, 2029, and implement the schedules and activities identified in S5.C.5 of the Western Washington Phase II Permit in response to any illicit connections and illicit discharges found. IDDE screening for bacteria sources includes the inspection of city owned MS4 outfalls that are safely accessible, or the next safely accessible drainage access point that discharge to Salmon Creek. The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and stormwater sampling results.

Name of TMDL	WRIA 10 - CLARKS CREEK FECAL COLIFORM TMDL
Document(s) for TMDL	*Clarks Creek Watershed Fecal Coliform Bacteria Total Maximum Daily Load (Water Quality Improvement Report)*, May 2008, Ecology Publication No. 07-10-110. https://fortress.wa.gov/ecy/publications/documents/0710110.pdf *Clarks Creek Watershed Fecal Coliform Bacteria Total Maximum Daily Load (Water Quality Implementation Plan)*, December 2009, Ecology Publication No. 09-10-081. https://apps.ecology.wa.gov/publications/documents/0910081.pdf
Location of Original 303(d) Listings	Clarks Creek 7497, 7501, Meeker Creek 7508, 7507
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittee's municipal stormwater permit and discharging to water bodies listed within the specific requirement in this TMDL section.
Parameter	Fecal Coliform
EPA Approval Date	June 4, 2008
MS4 Permittee	Phase II Permit: Puyallup

CITY OF PUYALLUP

Actions Required

- **Education and Outreach**: No later than July 1, 2026, conduct public education and outreach activities to increase awareness of proper pet waste management and other fecal bacterial pollution problems, such as the negative impacts of waterflow feeding.
- **IDDE**: Designate areas discharging via MS4 to Meeker Creek and Clarks Creek as high priority areas for illicit discharge detection and elimination. Complete IDDE screening for bacteria sources in 100% of these MS4 sub-basins by July 31, 2029, and implement the schedules and activities identified in S5.C.5 of the Western Washington Phase II Permit in response to any illicit connections and illicit discharges found. IDDE screening for bacteria sources includes the inspection of city owned MS4 outfalls that are safely accessible, or the next safely accessible

drainage access point that discharge to Meeker and Clarks Creeks. The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and sampling results.

- **Operations and Maintenance**:
    - No later than June 30, 2027, install and maintain pet waste education signage and bag dispenser stations at municipal parks and other Permittee owned and operated lands reasonably expected to have substantial dog use and where stormwater runoff can enter the MS4 and discharge to surface waters.
    - If a concentrated waterfowl presence is found at a city-owned stormwater pond during routine inspection, the Permittee shall implement waterfowl deterrence measures where appropriate (e.g., signage to discourage feeding, landscaping to discourage waterfowl presence). If a city-owned stormwater pond has a concentrated Canada geese presence, where feasible and as needed, periodically pick up and dispose of geese droppings in the garbage during routine facility maintenance completed per S5.C.9.c of this Permit.

Name of TMDL	WRIA 10 - CLARKS CREEK DISSOLVED OXYGEN AND SEDIMENT TOTAL MAXIMUM DAILY LOAD
Document(s) for TMDL	*Clarks Creek Dissolved Oxygen and Sediment Total Maximum Daily Load – Water Quality Improvement Report and Implementation Plan*, December 2014, Ecology Publication No. 14-10-030. https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Total-Maximum-Daily-Load-process/Directory-of-improvement-projects/Clarks-Creek
Location of Original 303(d) Listings	Clarks Creek 35407 47590 47591 47592 Meeker Creek 7510 47578 47579 Rody Creek 47593 Silver Creek
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittee's municipal stormwater permit and discharging to water bodies listed within the specific requirement in this TMDL section.
Parameter	Dissolved Oxygen and Sediment
EPA Approval Date	May 27, 2015
MS4 Permittee	Phase I Permit: Pierce County Phase II Permit: Puyallup

PIERCE COUNTY

Actions Required

1. The Permittee shall operate, inspect, and maintain the water quality improvement projects (WQIPs) prescribed in the Permittee's TMDL Restoration Plan (hereafter, the July 2022 Plan).[5] The July 2022 Plan estimated that existing WQIPs reduce the annual average sediment load by approximately 38.8 tons per year (29 percent of the TMDL target) and treat or remove approximately 13.7 million gallons (MG) of stormwater runoff per year based on the critical (October 21, 2003) storm event (46 percent of the TMDL target).[6] The Permittee shall apply crediting methodologies described in the July 2022 Plan, or an Ecology accepted updated Plan, to estimate the annual sediment load removal and the annual stormwater volume treated or removed by each WQIP. Any updates to the July 2022 Plan shall comply with the WLAs in the TMDL and align with previous Ecology Plan approvals.

[5] "TMDL Restoration Plan" means Pierce County's Clarks Creek Restoration Plan, July 2022 Update. Ecology reviewed and accepted the municipal stormwater permit components of the TMDL Restoration Plan, as revised in 2022, as communicated in our letter dated August 2, 2022, Re: Clarks Creek Restoration Plan, Updated July 1, 2021.

[6] Existing WQIPs are stormwater treatment facilities/BMPs constructed and operational after October 21, 2003. These include treatment facilities/BMPs implemented through retrofit or redevelopment.

2. Permittee shall operate, inspect, and maintain existing WQIPs in the updated five-year Plan (2024-2029); and construct, operate, inspect, and maintain new WQIPs in this updated Plan. The updated 2024-2029 Plan takes effect when Ecology accepts it. Ecology reserves the right to require changes to the updated Plan. The Permittee shall implement a project delivery program to meet the estimated annual average sediment load reduction and stormwater volume treated or reduced targets identified in this updated Plan. The municipal stormwater permit components and WQIPs in the July 2022 Plan remain in effect until Ecology accepts these components and WQIPs in the Permittee's 2024-2029 Plan.

3. No later than November 1, 2028, the Permittee shall submit an updated Plan (2029-2034) that includes existing and proposed WQIPs for the next five-year TMDL reporting period estimated to begin August 1, 2029. The updated Plan shall include sediment load reduction and stormwater volume treated or removed credit estimated for each WQIP, and it shall identify the 75 percent compliance milestone for the sediment WLA and the 75 percent compliance milestone for the stormwater volume treated/removed credit estimates for all existing and proposed WQIPs. Estimates of sediment load reduction and stormwater volumes treated or removed by each stormwater BMP and facility shall be consistent with the TMDL WLAs for Dissolved Oxygen Deficit (DOD) and sediment. The Permittee shall include anticipated project schedules, construction timelines, estimated costs, and funding strategies, where available, for proposed WQIPs in their updated Plan (2029-2034). Ecology reserves the right to require changes to the updated Plan.

4. The Permittee shall submit a reporting ledger to Ecology that quantifies the annual sediment load reduction (tons) credits and stormwater volume treated or removed (MG) credits awarded to all operational WQIPs during calendar years (CYs) 2023 and 2024 by March 31, 2025. The Permittee shall submit an updated reporting ledger annually thereafter by March 31st for CYs 2025 through 2028. This ledger serves as the reporting instrument to track each year's WLA compliance credits as they relate to the Permittee's assigned numeric WLAs. Stormwater retrofit or redevelopment projects constructed since October 21, 2003, may receive sediment reduction (tons) and stormwater volume treated/removed (MG) credits for each year the project was inspected, maintained, and determined to be operational. All WQIPs must be inspected, maintained, and determined to be operational to receive annual sediment load reduction and stormwater volume treated or removed credits.

5. The Permittee shall inspect WQIPs annually at a minimum during May, June, or July to assess whether the facilities are functioning as designed. If the Permittee's inspection records show a stormwater facility or BMP is in functional disrepair and is not operational, then the Permittee has 90 days from the time of the inspection to complete the corrective actions necessary to restore the BMP's functionality to receive annual pollution reduction credit for that facility/BMP for the reporting year. The Permittee will not receive sediment load reduction and stormwater volume treated or removed credit for a facility or BMP that has not received the corrective actions necessary to restore functionality within 90 days of the inspection. The Permittee's BMP inspection pertains to the calendar year for which the BMP credits are awarded. WQIPs/BMPs that exceed maintenance standards must perform required maintenance in accordance with schedules identified under S5.C.10.

6. Public Education and Outreach: The Permittee shall conduct public education and outreach activities that increase awareness among residents of the sources of polluted runoff affecting Clarks Creek and its tributaries.

CITY OF PUYALLUP

Actions Required

1. The Permittee shall operate, inspect, and maintain the water quality improvement projects (WQIPs) prescribed in the Permittee's TMDL Retrofit Plan (hereafter, the December 2022 Plan).[7] The December 2022 Plan estimated the existing and new WQIPs to be implemented by July 31, 2024, will reduce the annual average sediment load by approximately 52.95 tons per year (32 percent of the TMDL target) and treat or remove approximately 22.75 million gallons (MG) of stormwater runoff per year based on the critical (October 21, 2003) storm event (98 percent of the TMDL target).[8] The Permittee shall apply crediting methodologies described in the December 2022 Plan, or an Ecology accepted updated Plan, to estimate the annual sediment load removal and the annual stormwater volume treated or removed by each WQIP. Any updates to the December 2022 Plan shall comply with the WLAs in the TMDL and align with previous Ecology Plan approvals.

2. The Permittee shall operate, inspect, and maintain existing WQIPs in the updated five-year Plan (2024-2029); and construct, operate, inspect, and maintain new WQIPs in this updated Plan. The updated 2024-2029 Plan takes effect when Ecology accepts it. Ecology reserves the right to require changes to the updated Plan. The Permittee shall implement a project delivery program to meet the estimated annual average sediment load reduction and stormwater volume treated or reduced targets identified in this updated Plan. The municipal stormwater permit components and WQIPs in the December 2022 Plan remain in effect until Ecology accepts these components and WQIPs in the Permittee's 2024-2029 Plan.

3. No later than November 1, 2028, the Permittee shall submit an updated Plan (2029-2034) that includes existing and proposed WQIPs for the next five-year TMDL reporting period estimated to begin August 1, 2029, and the sediment load reduction and stormwater volume treated or removed credit estimated for each WQIP. Estimates of sediment load reduction and stormwater volumes treated or removed by each stormwater BMP and facility shall be consistent with the TMDL WLAs for Dissolved Oxygen Deficit (DOD) and sediment. The goal is to achieve TMDL reductions needed to meet WLAs by 2034. The Permittee shall include anticipated project schedules, construction timelines, estimated costs, and funding strategies, where available, for proposed WQIPs in their updated Plan (2029-2034). Ecology reserves the right to require changes to the updated Plan.

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[7] "TMDL Retrofit Plan" means the Clarks Creek Retrofit Plan Update, Prepared for City of Puyallup, WA, Revised December 2022, by Brown and Caldwell. Ecology reviewed and accepted the municipal stormwater permit components of the TMDL Retrofit Plan in December 2022, as conditioned in our letter dated December 19, 2022, Re: Clarks Creek Retrofit Plan, Revised December 2022.

[8] Existing WQIPs are stormwater treatment facilities/BMPs constructed and operational after October 21, 2003. These include treatment facilities/BMPs implemented through retrofit or redevelopment.

4. The Permittee shall submit a reporting ledger to Ecology that quantifies the annual sediment load reduction (tons) credits and stormwater volume treated or removed (MG) credits awarded to all operational WQIPs during calendar years (CYs) 2023 and 2024 by March 31, 2025. The Permittee shall submit an updated reporting ledger annually thereafter by March 31st for CYs 2025 through 2028. This ledger serves as the reporting instrument to track each year's WLA compliance credits as they relate to the Permittee's assigned numeric WLAs. Stormwater retrofit or redevelopment projects constructed since October 21, 2003, may receive sediment reduction (tons) and stormwater volume treated/removed (MG) credits for each year the project was inspected, maintained, and determined to be operational. All WQIPs must be inspected, maintained, and determined to be operational to receive annual sediment load reduction and stormwater volume treated or removed credits.

5. The Permittee shall inspect WQIPs annually at a minimum during May, June, or July to assess whether the facilities are functioning as designed. If the Permittee's inspection records show a stormwater facility or BMP is in functional disrepair and is not operational, then the Permittee has 90 days from the time of the inspection to complete the corrective actions necessary to restore the BMP's functionality to receive annual pollution reduction credit for that facility/BMP for the reporting year. The Permittee will not receive sediment load reduction and stormwater volume treated or removed credit for a facility or BMP that has not received the corrective actions necessary to restore functionality within 90 days of the inspection. The Permittee's BMP inspection pertains to the calendar year for which the BMP credits are awarded. WQIPs/BMPs that exceed maintenance standards must perform required maintenance in accordance with schedules identified under S5.C.9.

6. Street Sweeping Program: The Permittee can only include sediment load reduction credit for its street sweeping program under an Ecology-approved QAPP.[9] The Permittee shall not credit sediment removal from sweeping until their pilot study on sweeping is completed and their updated 2024-2029 Plan takes effect.

7. Public Education and Outreach: The Permittee shall conduct public education and outreach activities that increase awareness among residents of the sources of polluted runoff affecting Clarks Creek and its tributaries.

[9] Ecology approved the City of Puyallup's Clarks Creek Street Sweeping Study Quality Assurance Project Plan (QAPP), Prepared by Brown and Caldwell on January 20, 2022.

Name of TMDL	WRIA 10 - SOUTH PRAIRIE CREEK WATER QUALITY IMPROVEMENT PROJECT
Document(s) for TMDL	*South Prairie Creek Bacteria and Temperature Total Maximum Daily Load (Water Cleanup Plan): Submittal Report*, June 2003, Ecology Publication No. 03-10-055. https://fortress.wa.gov/ecy/publications/publications/0310055.pdf *South Prairie Creek Bacteria and Temperature Total Maximum Daily Load (Water Cleanup Plan): Detailed Implementation Plan*, July 2006, Ecology Publication No. 06-10-018. https://fortress.wa.gov/ecy/publications/documents/0610018.pdf
Location of Original 303(d) Listings	South Prairie Creek VC19MO (WA-10-1085), Wilkeson Creek NX07HW (WA-10-1087)
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittee's municipal stormwater permit and discharging to water bodies listed within the specific requirement in this TMDL section.
Parameter	Fecal Coliform
EPA Approval Date	August 6, 2003
MS4 Permittee	Phase I Permit: Pierce County Phase II Permit: Buckley

PIERCE COUNTY

Actions Required

- Designate areas discharging via the MS4 to Tributary 1 upstream of SR162 as high priority areas for illicit discharge detection and elimination. No later than July 31, 2029, complete IDDE screening for bacteria sources in 100% of these sub-basins and implement the schedules and activities identified in S5.C.9 of the Phase I Permit in response to any illicit connections and illicit discharges found. Investigation must include activities for both the dry season (May through September) and the wet season (October through April). IDDE screening for bacteria sources includes the inspection of county owned MS4 outfalls that are safely accessible, or the next safely accessible upstream drainage access point that

discharge to creeks in the TMDL area. The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and sampling results.

- Designate areas discharging via the MS4 upstream of SR165 along Spiketon Road, Mundy Loss Road, and Spiketon Ditch Road as high priority areas for illicit discharge detection and elimination. No later than July 31, 2029, complete IDDE screening for bacteria sources in 100% of these sub-basins and implement the schedules and activities identified in S5.C.9 of the Phase I Permit, in response to any illicit connections and illicit discharges found. Investigation must include activities for both the dry season (May through September) and the wet season (October through April). IDDE screening for bacteria sources includes the inspection of county owned MS4 outfalls that are safely accessible, or the next safely accessible upstream drainage access point that discharge to creeks in the TMDL area. The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and sampling results.

CITY OF BUCKLEY

Action Required

Designate areas discharging via the MS4 to Spiketon Creek as high priority areas for illicit discharge detection and elimination. No later than July 31, 2029, complete IDDE screening for bacteria sources in 100% of these sub-basins and implement the schedules and activities identified in S5.C.5 of the Western Washington Phase II Permit, in response to any illicit connections and illicit discharges found. Investigation must include activities for both the dry season (May through September) and the wet season (October through April). IDDE screening for bacteria sources includes the inspection of city owned MS4 outfalls that are safely accessible, or the next safely accessible upstream drainage access point that discharge to Spiketon Creek. The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and sampling results.

Name of TMDL	WRIA 11 - NISQUALLY RIVER BASIN WATER QUALITY IMPROVEMENT PROJECT
EPA Approved Document(s) for TMDL	*Nisqually Watershed Bacteria and Dissolved Oxygen Total Maximum Daily Load (Water Cleanup Plan): Submittal Report*, May 2005, Ecology Publication No. 05-10-040. https://fortress.wa.gov/ecy/publications/documents/0503002.pdf *Nisqually River Basin Fecal Coliform Bacteria and Dissolved Oxygen Total Maximum Daily Load: Water Quality Implementation Plan (WQIP)*, June 2007, Ecology Publication No. 07-10-016. https://fortress.wa.gov/ecy/publications/documents/0710016.pdf
Location of Original 303(d) Listings	Nisqually Reach 390KRD (WA-PS-0290), Nisqually River OE72JI (WA-11-1010), McAllister Creek LD26OX (WA-11-2000), Ohop Creek MW64EV (WA-11-1024), Red Salmon Creek NoID (WA-PS-0290)
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittee's municipal stormwater permit and discharging to water bodies listed within the specific requirement in this TMDL section.
Parameter	Fecal Coliform, Dissolved Oxygen
EPA Approval Date	August 5, 2005
MS4 Permittee	Phase I Permit: Pierce County Phase II Permit: Thurston County

PIERCE COUNTY

Action Required

- Designate areas discharging via the MS4 to Ohop Creek and Lynch Creek as high priority areas for illicit discharge detection and elimination. No later than July 31, 2029, complete IDDE screening for bacteria sources in 100% of these sub-basins and implement the schedules and activities identified in S5.C.9 of the Phase I Permit in response to any illicit connections and illicit discharges found. Investigation must include activities for both the dry season (May through September) and the wet season (October through April). IDDE screening for bacteria sources includes the inspection of county owned MS4 outfalls that

are safely accessible, or the next safely accessible upstream drainage access point that discharge to Ohop and Lynch Creeks. The results of all bacterial screening conducted in these sub-basins shall be included in the annual reports submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and sampling results.

THURSTON COUNTY

Action Required

- Annually implement the following best management practices for reducing fecal coliform bacteria in areas discharging to the Nisqually Reach and McAllister Creek via the MS4 in accordance with S5.C.2 and S5.C.9 of the Western Washington Phase II Permit:
    - Reach households in the targeted watersheds through mailings, door hangers, etc. to increase awareness of the sources of bacteria pollution.
    - Adequately maintain vegetation around stormwater facilities, ditches, and ponds.
    - Install and maintain pet waste education signage and bag dispenser stations at municipal parks and other Permittee owned and operated lands reasonably expected to have substantial dog use, and where stormwater runoff can enter the MS4 and discharge to surface waters and/or marine shorelines.
    - Distribute pet waste stations (i.e., bag dispensers and educational signage) for installation in residential neighborhood locations where people commonly walk their dogs and stormwater runoff can enter the MS4 and discharge to surface waters and/or marine shorelines.

Name of TMDL	WRIA 13 - HENDERSON INLET WATERSHED FECAL COLIFORM BACTERIA WATER QUALITY IMPROVEMENT PROJECT
Document(s) for TMDL	*Henderson Inlet Watershed Fecal Coliform Bacteria, Dissolved Oxygen, pH, and Temperature Total Maximum Daily Load Study*, March 2006, Ecology Publication No. 06-03-012. https://fortress.wa.gov/ecy/publications/documents/0603012.pdf *Henderson Inlet Watershed Fecal Coliform Bacteria, Dissolved Oxygen, and pH Total Maximum Daily Load: Water Quality Improvement Report Implementation Strategy*, October 2006, Ecology Publication No. 06-10-058. https://fortress.wa.gov/ecy/publications/documents/0610058.pdf *Henderson Inlet Watershed Fecal Coliform Bacteria Total Maximum Daily Load: Water Quality Implementation Plan*, July 2008, Ecology Publication No. 08-10-040. https://fortress.wa.gov/ecy/publications/documents/0810040.pdf
Location of Original 303(d) Listings	Henderson Inlet (WA-13-0010), Dobbs Creek (WA-13-1400), Sleepy Creek (WA-13-1700), Woodard Creek (WA-13-1600), Woodland Creek (WA-13-1500)
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittee's municipal stormwater permit and discharging to water bodies listed within the specific requirement in this TMDL section.
Parameter	Fecal Coliform, Dissolved Oxygen, pH, Temperature
EPA Approval Date	January 8, 2007
MS4 Permittee	Phase II Permit: Lacey, Olympia, Thurston County

THURSTON COUNTY

Actions Required

1. Annually implement the following best management practices in areas discharging to the Henderson Inlet via the MS4 in accordance with S5.C.6 of the Western Washington Phase II Permit:

a. Require phosphorus control for new and redevelopment projects that discharge via the MS4 to Woodard Creek and meet the project thresholds in Appendix 1, Minimum Requirement #6: Runoff Treatment of the Western Washington Phase II Permit.

2. Annually implement the following best management practices for reducing fecal coliform in areas discharging to the Henderson Inlet via the MS4 in accordance with S5.C.2 of the Western Washington Phase II Permit.

   a. Continue offering public education and outreach efforts for fecal coliform reduction such as brochures, signage, and pet waste stations to homeowner associations.

3. Annually produce a report that details all actions completed as part of Appendix 2 requirements.

CITY OF LACEY

Actions Required

1. Annually implement the following best management practices in areas discharging to the Henderson Inlet via the MS4 in accordance with S5.C.2 of the Western Washington Phase II Permit:

   a. Continue the Private Stormwater Facilities Maintenance Program, providing commercial and residential stormwater facility/BMP owners educational resources for facility function and maintenance requirements.

   b. Offer bacteria pollution reduction brochures, signage, and pet waste stations to homeowners associations.

   c. Maintain pet waste bag dispenser units in city parks.

   d. Install educational signage at City facilities/property.

   e. Submit a summary of actions completed with each annual report.

2. Implement the Fecal Coliform Bacteria Wet Weather Sampling Program for the College Regional Stormwater Facility in accordance with the illicit discharge detection and elimination efforts and activities identified in S5.C.5 of the Western Washington Phase II Permit.

   a. Continue to use the Fecal Coliform Wet Weather Sampling Plan. The sampling program shall establish a regularly scheduled sampling schedule (at least two times per year), during the wet season (November through April), specific sampling locations, sampling protocols, parameters, analytical methods, and timelines for implementation.

   b. If sampling results indicate potential illicit discharges, conduct an investigation in accordance with S5.C.5 of the Western Washington Phase II Permit.

   c. Submit a summary of sampling and investigations with each annual report.

3. Continue to communicate with the City of Olympia to monitor and reduce fecal coliform bacteria discharges from the Fones/Taylor wetland treatment facilities by December 31, 2024, in accordance with S5.C.5 of the Western Washington Phase II Permit.
    a. If sampling results indicate potential illicit discharges, conduct an investigation in accordance with S5.C.5 of the Western Washington Phase II Permit.
    b. Submit a summary of efforts with sampling, investigation, and enforcement actions taken with the annual reports.
4. Annually implement the following best management practices in areas discharging to the Henderson Inlet via the MS4 in accordance with S5.C.9 of the Western Washington Phase II Permit:
    a. Continue re-vegetation and nuisance vegetation management along Woodland Creek and its tributaries. Submit a summary of actions completed with each annual report.

CITY OF OLYMPIA

Actions Required

1. Annually implement the following BMPs in areas discharging to the Henderson Inlet via the MS4 in accordance with S5.C.6 of the Western Washington Phase II Permit:
    a. Require phosphorus control for new and redevelopment projects that discharge via MS4 to Woodard Creek and meet the project thresholds in Appendix 1, Minimum Requirement #6: Runoff Treatment of the Western Washington Phase II Permit.
2. Continue to communicate with the City of Lacey to monitor and reduce fecal coliform bacteria discharges from the Fones/Taylor wetland treatment facilities by December 31, 2024 in accordance with S5.C.5 Illicit Discharge Detection and Elimination of the Western Washington Phase II Permit.
    a. Continue fecal coliform sampling. The sampling program shall require at least one sampling event during the wet season (November through April) in each of Year 1 and Year 3 of the permit cycle. The sampling program shall also require specific sampling locations, sampling protocols, parameters, analytical methods, and timelines for implementation.
    b. If sampling results indicate potential illicit discharges, conduct an investigation in accordance with S5.C.5 of the Western Washington Phase II Permit.
    c. Submit a summary of efforts with sampling, investigation and enforcement actions taken with each annual report.

Name of TMDL	WRIA 13 - DESCHUTES RIVER WATERSHED
Document(s) for TMDL	*Deschutes River, Percival Creek, and Budd Inlet Tributaries Temperature, Fecal Coliform Bacteria, Dissolved Oxygen, pH, and Fine Sediment Total Maximum Daily Load Technical Report: Water Quality Study Findings.* Ecology Publication No. 12-03-008. https://fortress.wa.gov/ecy/publications/documents/1203008.pdf *Deschutes River, Percival Creek, and Budd Inlet Tributaries Temperature, Fecal Coliform Bacteria, Dissolved Oxygen, pH, and Fine Sediment Total Maximum Daily Load: Water Quality Improvement and Implementation Plan.* Ecology Publication No. 15-10-012. https://fortress.wa.gov/ecy/publications/documents/1510012.pdf
Location of Original 303(d) Listings	Deschutes River 6576 7590 48710 48711 48712 48713 48714 48715 48717 48718 9439 7588 7592 7593 7595 48720 48721 48724 48726. Huckleberry Creek 3757. Reichel Creek 48666. Tempo Lake Outlet 48696. Unnamed Creek (Trib to Deschutes River) 7591. Unnamed Spring (Trib to Deschutes River) 48923. Black Lake Ditch 48733 48734 48735. Percival Creek 42321 48249 48727 48729.
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittee's municipal stormwater permit and discharging to water bodies listed within the specific requirement in this TMDL section.
Parameter	Temperature
EPA Approval Date	Temperature approved: June 29, 2018
MS4 Permittee	Phase II Permit: Thurston County, Olympia, Lacey, Tumwater

Cities of Olympia; Lacey; Tumwater; and Thurston County

Actions Required

- Annually report on temperature reduction measures in the watershed.

Name of TMDL	WRIA 13 – BUDD INLET
Document(s) for TMDL	*Budd Inlet Dissolved Oxygen Total Maximum Daily Load* Publication No. 22-10-012. Budd Inlet Total Maximum Daily Load for Dissolved Oxygen (wa.gov)
Location of Original 303(d) Listings	Budd Inlet (inner): 5852, 5853, 5862, 5863, 5864. Budd Inlet (outer): 7582, 7583, 7584, 7585, 7586, 7587, 10188, 81727
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittee's municipal stormwater permit and discharging to water bodies listed within the specific requirement in this TMDL section.
Parameter	Dissolved Oxygen
EPA Approval Date	Approved:December 16, 2022
MS4 Permittee	Phase II Permit: Thurston County, Olympia, Lacey, Tumwater

CITY OF OLYMPIA, LACEY, TUMWATER, & THURSTON COUNTY

Actions required

- No later than March 31, 2025, annually report on municipal stormwater BMPs implemented (in addition to those already required by S5 of the permit) since the effective date of this permit (August 1, 2024) to help control nutrients for areas discharging to Budd Inlet via the MS4.
- No later than December 31, 2027, begin using existing data to conduct spatial analysis of nutrient loading from the MS4. This analysis shall consider land use sources of nutrients, existing municipally owned/operated BMPs, and privately owned BMPs regulated by the Permit that provide management of nutrients and which drain to and are discharged from the MS4.
- No later than August 1, 2028, develop and implement priority BMPs to minimize the transport of nutrients via the MS4.
- Designate areas discharging via the MS4 to Budd Inlet as high priority areas for illicit discharge detection and elimination. Complete IDDE screening for nutrient sources in 100% of these areas by July 31, 2029, and implement the schedules and activities

identified in S5.C.5 of the Western Washington Phase II Permit in response to any illicit discharges found.

- For the actions described above, prioritize work and implementation actions within areas identified as priorities by the TMDL that are within the applicable jurisdiction, including East Bay Drive, West Bay Drive and Deschutes Parkway, tributaries draining directly to Budd Inlet, with extra emphasis on Schneider Creek, Ellis Creek, Mission Creek, Moxlie Creek, Percival Creek, Black Lake, and Black Lake Ditch.

Name of TMDL	**WRIA 14 - OAKLAND BAY, HAMMERSLEY INLET, AND SELECTED TRIBUTARIES FECAL COLIFORM TMDL**
Document(s) for TMDL	*Oakland Bay, Hammersley Inlet, and Selected Tributaries Fecal Coliform Bacteria Total Maximum Daily Load (Water Quality Improvement Report)*, June 2011, Ecology Publication No. 11-10-039. https://apps.ecology.wa.gov/publications/SummaryPages/1110039.html
Location of Original 303(d) Listings	Campbell Creek 24239 7596 Uncle John Creek 40618 Malaney Creek 24237 Goldsborough Creek 6659 Shelton Creek 6660 Inner Shelton Harbor 6658 Oakland Bay 39857 39861 39862 39872 45159 45215 53164 Hammersley Inlet/mouth of Mill Creek 39800 Hammersley Inlet 39801 39803 39804 39810 45220 45915 53178
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittee's municipal stormwater permit and discharging to water bodies listed within the specific requirement in this TMDL section.
Parameter	Fecal Coliform
EPA Approval Date	August 18, 2011
MS4 Permittee	Phase II Permit: Shelton

CITY OF SHELTON

Actions Required

- Designate areas discharging via MS4 to Goldsborough Creek, Inner Shelton Harbor, and Oakland Bay as high priority areas for illicit discharge detection and elimination and implement the schedules and activities identified in S5.C.5 of the Western Washington Phase II Permit. IDDE screening for bacteria sources includes the inspection of city owned MS4 outfalls that are safely accessible, or the next safely accessible upstream drainage access point that discharge to Goldsborough Creek, Inner Shelton Harbor, and Oakland Bay. Bacterial screening results shall be included in annual reporting submitted to Ecology. Each annual report's TMDL summary shall include, where applicable, qualitative, and quantitative information about IDDE field screening activities for bacteria sources, including source identification and elimination activities and sampling results.
- Conduct public education and outreach activities to increase awareness of bacterial pollution problems and promote proper pet waste management behavior.
- Install and maintain animal waste education signage and/or pet waste bag dispenser stations at municipal parks and other Permittee owned and operated lands reasonably expected to have substantial domestic animal (dog and horse) use where stormwater runoff can enter the MS4 and discharge to surface waters and/or marine shorelines.

Name of TMDL	WRIA 15 - SINCLAIR AND DYES INLETS FECAL COLIFORM BACTERIA TOTAL MAXIMUM DAILY LOAD
Document(s) for TMDL	*Sinclair and Dyes Inlets Fecal Coliform Bacteria Total Maximum Daily Load (TMDL) Water Quality Implementation Plan*, In Draft, Ecology Publication No. 11-10-051. https://fortress.wa.gov/ecy/publications/publications/1110051.pdf
Location of Original 303(d) Listings	Dyes Inlet & Port Washington Narrows (WA-15-0020) Gorst Creek (WA-15-4000) Blackjack Creek (WA-15-4200) Annapolis Creek (WA-15-4400) Beaver Creek (WA-15-4900) Clear Creek (WA-15-5000) Barker Creek (WA-15-5100) Sinclair Inlet (WA-15-0040)
Area Where TMDL Requirements Apply	These requirements apply to areas served by MS4s listed below within the TMDL coverage area.
Parameter(s)	Fecal coliform bacteria
EPA Approval Date	July 5, 2012
MS4 Permittee	Phase II Permit: City of Bainbridge Island, WAR04-5503; City of Bremerton, WAR04-5507; City of Port Orchard, WAR04-5536; Kitsap County, WAR04-5546

CITY OF BAINBRIDGE ISLAND

Actions Required

Business Inspections:

The Permittee shall inspect facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities) as part of their ongoing inspection program identified in S5.C.8. If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement action.

***Public Education and Outreach**:* Each Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance: Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (dog and horse) use and the potential for pollution to stormwater.

Illicit Connection/ Illicit Discharge Detection and Elimination:

When conducting IDDE field screening during normal course of business (as required by S5.C.5.d for Phase II Permittees, and IC/IDDE as required by S5.C.9.c for Phase I Permittees) in a TMDL area, Permittees are shall screen for bacteria sources when at the drainage circuit's most downstream sampling location. For the purposes of IC/IDDE, stormwater quality sampling is defined as obtaining grab samples of stormwater within the conveyance system of the MS4, at discharge points, and/or outfalls (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow their adopted IDDE procedures to conduct source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results shall be annually documented in TMDL reporting as required in the Permittees' Annual Report.

CITY OF BREMERTON

Actions Required

***Business Inspections**:*

The Permittee shall inspect facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities) as part of their ongoing inspection program identified in S5.C.8. If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement action.

***Public Education and Outreach**:* Each Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance: Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (dog and horse) use and the potential for pollution to stormwater.

Illicit Connection/ Illicit Discharge Detection and Elimination:

When conducting IDDE field screening during normal course of business (as required by S5.C.5.d for Phase II Permittees, and IC/IDDE as required by S5.C.9.c for Phase I Permittees) in a TMDL area, Permittees are shall screen for bacteria sources when at the drainage circuit's most downstream sampling location. For the purposes of IC/IDDE, stormwater quality sampling is defined as obtaining grab samples of stormwater within the conveyance system of the MS4, at discharge points, and/or outfalls (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow their adopted IDDE Procedures to conduct source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results shall be annually documented in TMDL reporting as required in the Permittees' Annual Report.

CITY OF PORT ORCHARD

Actions Required

Business Inspections:

The Permittee shall inspect facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities) as part of their ongoing inspection program identified in S5.C.8. If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement action.

Public Education and Outreach: Each Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance: Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (dog and horse) use and the potential for pollution to stormwater.

Illicit Connection/ Illicit Discharge Detection and Elimination:

When conducting IDDE field screening during normal course of business (as required by S5.C.5.d for Phase II Permittees, and IC/IDDE as required by S5.C.9.c for Phase I Permittees) in a TMDL area, Permittees are shall screen for bacteria sources when at the drainage circuit's most downstream sampling location. For the purposes of IC/IDDE, stormwater quality sampling is defined as obtaining grab samples of stormwater within the conveyance system of the MS4, at discharge points, and/or outfalls (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow their adopted IDDE Procedures to conduct

source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results shall be annually documented in TMDL reporting as required in the Permittees' Annual Report.

KITSAP COUNTY

Actions Required

Business Inspections:

The Permittee shall inspect facilities with SIC Industry Group no. 074, 075, including NAICS Major Group 1152xx, and NAICS 325315 (composting facilities) as part of their ongoing inspection program identified in S5.C.8. If the Permittee determines, through inspections or otherwise, that a facility has failed to adequately implement BMPs to prevent bacteria source potential, the Permittee shall re-inspect the facility at least once more during the permit term to verify compliance, and/or initiate enforcement action.

Public Education and Outreach: Each Permittee shall include public education and outreach activities that increase awareness of bacterial pollution problems and promote proper pet waste management as a BMP under General Awareness.

Operations and Maintenance: Each Permittee shall maintain Pet Waste collection stations at Permittee owned or operated lands that are reasonably expected to have domestic animal (dog and horse) use and the potential for pollution to stormwater.

Illicit Connection/ Illicit Discharge Detection and Elimination:

When conducting IDDE field screening during normal course of business (as required by S5.C.5.d for Phase II Permittees, and IC/IDDE as required by S5.C.9.c for Phase I Permittees) in a TMDL area, Permittees are shall screen for bacteria sources when at the drainage circuit's most downstream sampling location. For the purposes of IC/IDDE, stormwater quality sampling is defined as obtaining grab samples of stormwater within the conveyance system of the MS4, at discharge points, and/or outfalls (if there is flow) at each drainage circuit's most downstream accessible sampling location. Permittees shall follow their adopted IDDE Procedures to conduct source tracing efforts if bacteria levels and/or observations trigger a response (see IDDE guidance manual for bacteria trigger levels).

Qualitative and quantitative information about the source identification and elimination activities, including procedures followed, sampling locations, and results shall be annually documented in TMDL reporting as required in the Permittees' Annual Report.

Name of TMDL	WRIA 22 - GRAYS HARBOR/CHEHALIS WATERSHED FECAL COLIFORM BACTERIA TOTAL MAXIMUM DAILY LOAD
Document(s) for TMDL	*Grays Harbor/Chehalis Watershed Fecal Coliform Bacteria Total Maximum Daily Load Submittal Report*, December 2001, Ecology Publication No. 01-10-025. https://fortress.wa.gov/ecy/publications/documents/0110025.pdf *Quality Assurance Project Plan: Grays Harbor Fecal Coliform Bacteria Monitoring to Characterize Water Quality in Urban Stormwater Drains*, October 2010, Ecology Publication No. 10-10-066. https://fortress.wa.gov/ecy/publications/documents/1010066.pdf
Location of Original 303(d) Listings	Outer Grays Harbor (WA-22-0020), Inner Grays Harbor (WA-22-030), Inner Grays Harbor (WA-22-0030), Chehalis River (WA-22-4040)
Area Where TMDL Requirements Apply	Requirements apply in all areas regulated under the Permittee's municipal stormwater permit and discharging to water bodies listed within the specific requirement in this TMDL section.
Parameter	Fecal Coliform
EPA Approval Date	December 2002
MS4 Permittee	Phase II Permit: Aberdeen

CITY OF ABERDEEN

Actions Required

1. Implement the schedules and activities identified in S5.C.2 of the Western Washington Phase II Permit. Continue to implement the Public Education and Outreach and Involvement Plan (Plan). The Plan shall target the reduction of fecal coliform pollution by increasing public awareness, effecting behavior changes and shall include: goals, target audiences, messages, format, distribution, and evaluation methods.
    a. The Plan shall include at least the following elements:
        i. Target the residents of the three high priority water bodies identified under the 2024-2029 Permit.

ii. Reach households in targeted watersheds through mailings, door hangers, or similar outreach tools.

iii. Reach 4-6th grade students.

b. Continue program which notifies residents, in a timely manner, when bacteria pollution that poses a public health concern (such as a wastewater overflow) reaches the MS4.

c. Conduct two public education surveys gauging 4-6th grade student knowledge of general stormwater knowledge, the sources of bacteria and preventing bacteria pollution. One survey should measure resident's knowledge of bacteria pollution before outreach and the other should measure knowledge and likelihood of action after outreach.

d. Continue to implement the City's stream team program and work cooperatively with Grays Harbor Stream Team.

e. Maintain pet waste bag dispenser units and explanatory signs in public areas with dog usage.

f. Maintain an inventory of sources that have potential for bacteria runoff such as manure-composting facilities, stables, and kennels.

i. Continue to use the City's targeted manure management educational plan for such facility owners. Send one letter annually that outlines compliance requirements. Maintain a resource webpage on the City's website. Submit a summary of actions completed with each annual report.

2. Designate areas discharging to the MS4 urban drains identified in the TMDL, as the highest priority areas for illicit discharge detection and elimination routine field screening efforts and implement the schedules and activities identified in S5.C.5 of the Western Washington Phase II Permit. Field screening and source tracing methodology (see S5.C.5.d) must be consistent with the *Quality Assurance Project Plan: Grays Harbor Fecal Coliform Bacteria Monitoring to Characterize Water Quality in Urban Stormwater Drains,* October 2010.

a. Enforce the City's regulatory mechanism to control pet waste.

b. Designate areas discharging via MS4 to the following discharge points: 501-ABDN, 510-MST, and 514-MST as high priority areas for illicit discharge detection and elimination efforts.

i. Complete field screening and implement the schedules and priority area for illicit discharge detection and elimination field screening identified in S5.C.5 of the Western Washington Phase II Permit. Investigation must include activities for both the dry season (May through October) and the wet season (November through April).

ii. Conduct twice monthly wet weather sampling of the discharge points 501-ABDN, 510-MST, and 514-MST to determine if specific discharges from Aberdeen's MS4 exceed the water quality criteria for fecal coliform bacteria.

- Data shall be collected for two wet seasons.
- Data shall be collected in accordance with an Ecology-approved QAPP.
- Samples must be analyzed using an Ecology accredited lab.
- If sampling results indicate potential illicit discharges, conduct an investigation in accordance with S5.C.5 – *Illicit Discharge Detection and Elimination* of the Western Washington Phase II Permit.
- Data shall be submitted to Ecology in an approved format with the annual reports.

APPENDIX 3 - Annual Report Questions for Cities, Towns, and Counties

Permittees are required to submit the following information in an online annual report form, or an alternative format provided by Ecology if requested, pursuant to Special Condition S9.

Reporting Requirements and SWMP

1. **Attach** a map of any annexations, incorporations, or boundary changes resulting in an increase or decrease in the Permittee's geographic area of permit coverage during the reporting period, per S9.D.6.
2. **Attach** updated annual Stormwater Management Program Plan (SWMP Plan). (S5.A.2)
3. Implemented an ongoing program to gather, track, and maintain information per S5.A.3, including costs or estimated costs of implementing the SWMP.
    a. What was the annual expenditure or estimate to develop and implement the SWMP this reporting period?
    b. What was the annual expenditure or estimate to develop and implement Appendix 2 TMDL requirements, if applicable?
    c. What were your source(s) of funding for the stormwater program?
4. Continued to coordinate among departments within the jurisdiction for permit compliance. (S5.A.5.b)
    a. **Attach** a written description of internal coordination mechanisms. (S5.A.5.b) no later than March 31, 2026
5. If applicable, identify other entities relied on to satisfy any of the obligations under the Permit. (S9.D.4)

Stormwater Planning

6. Continue to convene an interdisciplinary team to inform and assist in the development, progress, and influence of the stormwater planning program? (S5.C.1.a.)

Coordination with long-range plan updates

7. List the relevant land use planning efforts that have taken place in your jurisdiction (land use plans that are used to accommodate growth, stormwater management, or transportation). (S5.C.1.b.i. – Required by March 31, 2027.)
8. List of stormwater capital projects (currently in or slated for future design and construction) that resulted from this planning. (S5.C.1.b.i. – Required by March 31, 2027.)

9. Describe watershed protection measures associated with stormwater management and land use planning actions that resulted from this planning. (S5.C.1.b.i. – Required by March 31, 2027.)

10. Were land acquisitions identified (or are planning ahead for) that are useful for stormwater facilities to: accommodate growth or to better serve an existing developed area? (S5.C.1.b.i. – Required by March 31, 2027.)

    a. If yes, for what purpose?

11. Updates to goals and policies related to investment in stormwater management facilities/BMPs? (yes/no) (S5.C.1.b.i. – Required by March 31, 2027)

    a. If yes, briefly describe.

Low impact development code-related requirements

12. Continue to design and implement local development-related codes, rules, standards, or other enforceable documents to minimize impervious surfaces, native vegetation loss, and stormwater runoff, where feasible? See S5.C.1.c.i. (Required annually)

13. From the assessment described in S5.C.1.c.i.(a), did you identify any administrative or regulatory barriers to implementation of LID Principles or LID BMPs? (Required annually)

    a. If yes, describe the barrier(s) and the measures taken to address them**.** (S5.C.1.c.i.(a))

14. Adopted and implemented tree canopy goals and policies to support stormwater management. (S5.C.1.c.iii; December 31, 2028)

    a. **Attach** goals and policies and documented considerations, reasoning, and rationale for tree canopy goals and policies.

Stormwater Management Action Planning

15. Shelton Only: Developed a watershed inventory as outlined in Appendix 14? (Submitted by March 31, 2027)

    a. **Attach** watershed inventory as described in S5.C.1.d.i.

16. Shelton Only: Developed a receiving water prioritization method and process as described in Appendix 14? (Required by June 30, 2027)

    a. **Attach** receiving water priority ranking process as described in Appendix 14.

17. Shelton Only: Developed a Stormwater Action Plan (SMAP) for at least one high priority area? (Appendix 14, March 31, 2028)

    a. **Attach** SMAP(s).

18. Developed a Stormwater Management Action Plan (SMAP) for at least one new high priority area or additional actions for an existing SMAP? (S.5.C.1.d.i; Required by March 31, 2027)

- **a. Attach** SMAP(s).

Education and Outreach

19. Did you choose to adopt one or more elements of a regional program? (S5.C.2)

- **a.** If yes, list the elements, and the regional program.

20. **Attach** a description of general awareness efforts conducted, including your priority audiences and subject areas, per S5.C.2.a.i.

21. Developed a behavior change campaign that is tailored to the community in accordance with S5.C.2.a.ii(b)? (Required no later than July 1, 2025)

- **a. Attach** the strategy and schedule developed in accordance with S5.C.2.a.ii.(b).

22. Began implementing strategy outlined in S.5.C.2.a.ii(b). (S5.C.2.a.ii(c)) – Required by September 1, 2025)

23. **Attach** the report developed in accordance with S5.C.2.a.ii.(d), which evaluated the changes in understanding and adoption of targeted behaviors resulting from the implementation of the strategy and any planned or recommended changes to the program in order to be more effective. (Required to submit no later March 31, 2029)

24. Provided, partnered, or promoted stewardship opportunities to encourage resident participation in activities such as those described in S5.C.2.a.iii.

- **a. Attach** a list of stewardship opportunities.

Public Involvement and Participation

25. Describe in *Comments* field the opportunities created for the public to participate in the decision-making processes involving the development, implementation, and updates of the Permittee's SWMP and the SMAP.

- **a.** Describe specific public involvement and participation opportunities provided to overburdened communities and specifically, highly impacted communities. (S5.C.3.a.i)
- **b.** Document methods used to identify overburdened communities. (No later than December 31, 2026, S5.C.3.a.ii)

26. Posted the updated SWMP Plan and latest annual report on your website no later than May 31 of each year? (S5.C.3.b)

a. List the website address in *Comments* field.

MS4 Mapping and Documentation

27. Maintained an electronic map of the MS4 including the requirements listed in S5.C.4.?

28. **Attach** file with all known outfall locations, size, and materials no later than March 31, 2026, in accordance with S5.C.4.b.i. The data shall be in one of the following formats:

- ESRI file geodatabase template[1] (feature class in a .gdb).
- Shapefile template[2]
- ArcGIS Online template (sharing template a or b via ArcGIS Online).
- Excel template[3]

29. No later than December 31, 2026, mapped tree canopy to support stormwater management on Permittee-owned or operated properties, using available, existing data (S5.C.4.b.ii).

30. Mapped and assessed acreage of MS4 tributary basins to 24-inch outfalls (or equivalent) that have stormwater treatment and flow control BMPs/facilities owned or operated by the Permittee per S5.C.4.b.iii (no later than March 31, 2028).

a. **Attach** map of the MS4 tributary basins (.pdf file format).

b. **Attach** a table with a breakdown of MS4 tributary basins quantifying estimated acres managed or unmanaged by stormwater treatment and flow control BMPs/facilities owned or operated by the Permittee (.xlsx file format).

31. No later than December 31, 2028, use available, existing data to map overburdened communities in relation to stormwater treatment and flow control BMPs/facilities, outfalls, discharge points, and tree canopy on Permittee-owned or operated properties. (S5.C.2.b.iv)

Illicit Discharge Detection and Elimination

32. Informed public employees, businesses, and the general public of hazards associated with illicit discharges and improper disposal of waste. (S5.C.5.b)

a. Describe actions in *Comments* field. (S5.C.5.b)

[1] https://fortress.wa.gov/ecy/ezshare/wq/permits/MS4GP.Mapoutfall.prelim.gdb.zip
[2] https://fortress.wa.gov/ecy/ezshare/wq/permits/MS4GP.Mapoutfall.prelim.shape.zip
[3] https://fortress.wa.gov/ecy/ezshare/wq/permits/MS4GP.Mapoutfall.prelim.excel.xlsx

33. Continued to implement an ordinance or other regulatory mechanism to effectively prohibit stormwater, illicit discharges, as described in S5.C.5.c.

34. Updated an ordinance or other regulatory mechanism, if necessary, to effectively prohibit non-stormwater, illicit discharges, as described in S5.C.5.c. Required no later than July 1, 2027.

35. Implemented procedures for conducting illicit discharge investigations in accordance with S5.C.5.d.i.

- **a.** Cite field screening methodology in *Comments* field.

36. Percentage of MS4 coverage area screened in the reporting year per S5.C.5.d.i.(a). (Required to screen 12% on average each year.)

- **a.** Cite field screening techniques used to determine percent of MS4 screened.

37. Describe how you publicized a hotline telephone number for public reporting of spills and other illicit discharges in the *Comments* field (S5.C.5.d.ii).

38. Implemented an ongoing illicit discharge training program for all municipal field staff, per S5.C.5.d.iii.

39. Implemented an ongoing program to characterize, trace, and eliminate illicit discharges, including spills and illicit discharges, into the MS4, per S5.C.5.e.

- **a.** No later than December 31, 2026, coordinated with firefighting agencies/departments to be notified when PFAS-containing AFFFs are used, per S5.C.5.e.ii.(a)?
- **b.** No later than January 1, 2027, updated procedures to minimize discharge of PFAS-containing AFFFs during post-emergency clean-up, per S5.C.5.e.ii.(b)?

40. Implemented an ongoing illicit discharge training program for all staff responsible for implementing the procedures and program described in S5.C.5.f.

41. **Attach** a report with data describing the actions taken to characterize, trace, and eliminate each illicit discharge reported to, or investigated by, the Permittee, as described in S5.C.5.g. The submittal must include all of the applicable information and must follow the instructions, timelines, and format described in Appendix 13.

Controlling Runoff from New Development, Redevelopment, and Construction Sites

42. Continued to implement an ordinance or other enforceable mechanism to effectively address runoff from new development, redevelopment, and construction sites, per the requirements of S5.C.6.b.i-iii.

43. Updated ordinance or other enforceable mechanism to effectively address runoff from new development, redevelopment, and construction sites, per the requirements of S5.C.6.b.i-iii. (Required no later than June 30, 2027)

- **a.** Cite code reference in *Comments* field.

44. Does the ordinance or other enforceable mechanism follow a Phase I program approved by Ecology (S5.C.6.b.i)?

- **a.** If yes, state the title of the Stormwater Management Manual and which Phase I Program.

45. Number of adjustments granted to the Minimum Requirements in Appendix 1. (S5.C.6.b.i and Section 5 of Appendix 1)

- **a.** Number of adjustments granted to Minimum Requirement #5?

46. Number of exceptions granted to the Minimum Requirements in Appendix 1. (S5.C.6.b.i and Section 6 of Appendix 1)

- **a.** Number of exceptions granted to the Minimum Requirements #5?

47. Reviewed *Stormwater Site Plans* for all proposed development activities that meet the thresholds adopted pursuant to S5.C.6.b.i. (S5.C.6.c.i)

- **a.** Number of site plans reviewed during the reporting period.

48. Inspected, prior to clearing and construction, permitted development sites, per S5.C.6.c.ii

49. Inspected permitted development sites during construction to verify proper installation and maintenance of required erosion and sediment controls, per S5.C.6.c.iii.

- **a.** Number of construction sites inspected, per S5.C.6.c.iii.
- **b.** Inspected stormwater treatment and flow control BMPs/facilities and catch basins in new residential developments at least twice per 12-month period with no less than 4 months between inspections, per S5.C.6.c.iv?

50. Inspected all permitted development sites upon completion of construction and prior to final approval or occupancy to ensure proper installation of permanent stormwater facilities. (S5.C.6.c.v)

51. Verified a maintenance plan is completed and responsibility for maintenance is assigned for stormwater treatment and flow control BMPs/facilities prior to final approval and occupancy being granted. (S5.C.6.c.v)

52. Number of enforcement actions taken during the reporting period (based on construction phase inspections at new development and redevelopment projects, per S5.C.6.c.ii-iv). (S5.C.6.c.viii)

53. Achieved at least 80% of scheduled construction-related inspections. (S5.C.6.c.vi)

54. Made online links to Ecology's *Construction Stormwater General Permit* Notice of Intent, the *Industrial Stormwater General Permit* Notice of Intent, and the registration requirements for Underground Injection Control (UIC) available to representatives of proposed new development and redevelopment? (S5.C.6.d)

55. All staff whose primary job duties are implementing the program to control stormwater runoff from new development, redevelopment, and construction sites including permitting, plan review, construction site inspections, and enforcement are trained to conduct these activities. (S5.C.6.e)

Stormwater Management for Existing Development

56. **Attach** a list of projects that are fully funded, started, completed and/or scheduled for implementation during this permit term for the purpose of meeting S5.C.7.b, with the information and formatting specified in Appendix 12. **Attach** an updated list annually. (S5.C.7.b,)

Source Control Program for Existing Development

57. Updated inventory to identify institutional, commercial and industrial properties which have the potential to generate pollutants to the Permittee's MS4 per S5.C.8.b? (Required at least once every five years)

- **a.** Number of total sites identified for the inventory.

58. **Attach** a summary of actions taken to implement the source control program, per S5.C.8.a-d.

59. **Attach** a list of inspections, per S5.C.8.c.v, organized by the business category, noting the number of times each business was inspected and if enforcement actions were taken, per S5.C.8.d.

60. Implemented an ongoing source control training program, per S5.C.8.e?

Operations and Maintenance

61. Implemented maintenance standards that are as protective, or more protective, of facility function than those specified in the *Stormwater Management Manual for Western Washington,* or a Phase I program approved by Ecology, per S5.C.9.a.?

62. Updated maintenance standards specified in *Stormwater Management Manual for Western Washington,* or a Phase I program approved by Ecology, per S5.C.9.a? (Required no later than June 30, 2027)

63. Applied a maintenance standard for a facility or facilities which do not have maintenance standards specified in the *Stormwater Management Manual for Western Washington*?

- **a.** If so, note in the *Comments* field what kinds of facilities are covered by this alternative standard. (S5.C.9.a)

64. Verified that maintenance was performed per the schedule in S5.C.9.a.ii, when an inspection identified an exceedance of the maintenance standard.

- **a.** **Attach** documentation of maintenance time frame exceedances that were beyond the Permittee's control.

65. Implemented an ordinance, or other enforceable mechanisms, to verify long-term operation and maintenance of stormwater treatment and flow control BMPs/facilities regulated by the Permittee per S5.C.9.b.i(a)?

66. Inspected stormwater treatment and flow control BMPs/facilities regulated by the Permittee, per S5.C.9.b.i(b).

- **a.** Are you using a reduced stormwater treatment and flow control BMPs/facilities inspection frequency?
- **b.** If using a reduced inspection frequency on stormwater facilities regulated by the Permittee for the first time during this permit cycle, **attach** documentation per S5.C.9.b.i.(b).

67. Achieved at least 80% of required inspections to verify adequate long-term O&M. (S5.C.9.b.ii)

68. Annually inspected municipally owned or operated stormwater treatment and flow control BMPs/facilities, as per S5.C.9.c.i.

- **a.** Number of known stormwater treatment and flow control BMPs/facilities owned or operated by the Permittee.
- **b.** Number of facilities inspected during the reporting period.
- **c.** Number of facilities for which maintenance was performed during the reporting period.

69. If using a reduced inspection frequency, **attach** documentation per S5.C.9.c.i.

70. Conducted spot checks and inspections of potentially damaged stormwater facilities after major storms as per S5.C.9.c.ii.

71. Inspected catch basins owned or operated by the Permittee every two years or used an alternative approach? (S.5.C.9.c.iii)

- **a.** Number of known catch basins and inlets?
- **b.** Number of catch basins and inlets inspected during the reporting period?
- **c.** Number of catch basins and inlets cleaned during the reporting period?

72. **Attach** documentation of alternative catch basin inspection approach for those owned or operated by the Permittee, if used, per S5.C.9.c.iii.

73. Implemented practices, policies, and procedures to reduce stormwater impacts associated with runoff from all lands owned or maintained by the Permittee, and road maintenance activities under the functional control of the Permittee. (S5.C.9.d)

74. Updated documented practices, policies, and procedures to reduce stormwater impacts associated with runoff from all lands owned or maintained by the Permittee, and road maintenance activities under the functional control of the Permittee. (S5.C.9.d –No later than December 31, 2027)

- **a.** Cite documentation in *Comments.*

75. No later than July 1, 2027, developed and implemented a municipal street sweeping program to focus on priority areas and times during the year that would reasonably be expected to result in the maximum water quality benefits to receiving waters (S5.C.9.e, required to report beginning March 31, 2028).

76. **Attach** documentation if implementing an alternative sweeping timing and frequency based on local conditions. (S5.C.9.e.ii.b.)

77. Document the following information for the sweeping program's priority areas (S5.C.9.e.v, Beginning no later than March 31, 2028):

- **a.** **Attach** priority areas swept on a map
- **b.** Sweeping dates
- **c.** Sweeping frequency
- **d.** Type of sweeper
- **e.** Total curb miles of priority areas and curb miles swept
- **f.** Approximation of street waste solids removed for each sweeping event, with unit of weight and wet or dry weight, where available.

78. Disposed of sweeper waste material in accordance with Appendix 6- *Street Waste Disposal* (S5.C.9.e.iv)?

79. Implemented a *Stormwater Pollution Prevention Plan* (SWPPP) for all heavy equipment maintenance or storage yards, and material storage facilities owned or operated by the Permittee in areas subject to this Permit that are not required to have coverage under an NPDES permit that covers stormwater discharges associated with the activity. (S5.C.9.f)

80. Implemented an ongoing training program for Permittee employees whose primary construction, operations or maintenance job functions may impact stormwater quality. (S5.C.9.g)

Compliance with Total Maximum Daily Load Requirements

81. Complied with the Total Maximum Daily Load (TMDL)-specific requirements identified in Appendix 2. (S7.A)

- **a**. List any requirements that were not met.

82. For TMDLs listed in Appendix 2: **Attach** a summary of relevant SWMP and Appendix 2 activities to address the applicable TMDL parameter(s). (S7.A)

Monitoring and Assessment

83. Submitted payment for cost-sharing for Stormwater Action Monitoring (SAM) status and trends monitoring no later than December 1, 2024 (S8.A.1); and no later than August 15 of each subsequent year. (S8.A.2.a)

84. Notified Ecology in writing by December 1, 2024, which option you selected: S8.A.2.a, or S8.A.2.b.

85. Submitted payment for cost-sharing for SAM effectiveness and source identification studies no later than December 1, 2024 (S8.B.1); and no later than August 15 of each subsequent year. (S8.B.3.a)

86. Notified Ecology by December 1, 2024, which option you selected: S8.B.2.a, or S8.B.2.b.

87. If conducting stormwater discharge monitoring in accordance with S8.C.1, submitted a QAPP to Ecology no later than February 1, 2025? (S8.C.1.b and Appendix 9)

88. If conducting stormwater discharge monitoring in accordance with S8.C.1, **attach** a data and analysis report, per S8.C.1.d and Appendix 9. (Due annually beginning March 31, 2026)

General Conditions and Compliance with Standards

89. Notified Ecology in accordance with G3 of any discharge into or from the Permittee's MS4 which could constitute a threat to human health, welfare, or the environment. (G3)

90. Took appropriate action to correct or minimize the threat to human health, welfare, and/or the environment, per G3.A.

91. Notified Ecology within 30 days of becoming aware that a discharge from the Permittee's MS4 caused or contributed to a known or likely violation of water quality standards in the receiving water. (S4.F.1)

92. If requested, submitted an *Adaptive Management Response* report in accordance with S4.F.3.a.

93. **Attach** a summary of the status of implementation of any actions taken pursuant to S4.F.3 and the status of any monitoring, assessment, or evaluation efforts conducted during the reporting period. (S4.F.3.d)

94. Notified Ecology of the failure to comply with permit terms and conditions within 30 days of becoming aware of the non-compliance. (G20)

95. Number of non-compliance notifications (G20) provided in reporting year. List permit conditions described in non-compliance notification(s) in *Comments* field.

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APPENDIX 4 – Annual Report Questions for Secondary Permittees

Permittees are required to submit annual reports online or in a format provided by Ecology, upon request, pursuant to Permit condition S9.

S6.D Stormwater Management Program

1. **Attach** a map of any jurisdictional boundary changes resulting in an increase or decrease in the Secondary Permittee's geographic area of coverage during the reporting period. (Required annually, S9.E.6)
2. **Attach** updated annual Stormwater Management Program Plan (SWMP Plan). (S6.A.2)
3. If applicable, identify other entities relied on to satisfy any of the obligations under the Permit. (S9.E.4)

S6.D.1 Public Education and Outreach

4. Labeled all storm drain inlets owned or operated by the Secondary Permittee that are located in maintenance yards, in parking lots, along sidewalks, and at pedestrian access points. (New Secondary Permittees – Required no later than four years from initial date of Permit coverage, S6.D.1.a)
5. Re-labeled all storm drain inlets with labels when no longer clearly visible and/or easily readable within 90 days. (Required no later than four years from initial date of Permit coverage, S6.D.1.a)
6. (***Public ports, colleges, and universities only***) Distributed educational information to tenants and residents about the impact of stormwater discharges on receiving waters and steps that can be taken to reduce pollutants in stormwater runoff. (Required no later than three years from initial date of Permit coverage, S6.D.1.b)

S6.D.2 Public Involvement and Participation

7. Made the annual report and SWMP Plan available on website. (Required annually no later than May 31, S6.D.2.a and b.)

S6.D.3 Illicit Discharge Detection and Elimination

8. Complied with all relevant ordinances, rules, and regulations of the local jurisdiction(s) that govern non-stormwater discharges. (Required after initial date of Permit coverage, S6.D.3.a)

9. Implemented policies to prohibit illicit discharges and identified enforcement mechanisms. (New Secondary Permittees – Required no later than one year from initial date of Permit coverage, S6.D.3.b)

10. Updated policies to prohibit illicit discharges and identified enforcement mechanisms. (Required no later than July 1, 2027, S6.D.3.b)

11. Implemented an enforcement plan to ensure compliance with policies to prohibit illicit discharges. (New Secondary Permittees – Required no later than 18 months from initial date of Permit coverage, S6.D.3.b)

12. Developed and maintained a map of the storm sewer system showing all known storm drain outfalls, receiving waters, and areas contributing runoff to each outfall. (New Secondary Permittees – Required no later than four and one half years from initial date of Permit coverage, S6.D.3.c)

13. Maintained an electronic map of the MS4 showing all known storm drain outfalls, receiving waters, and areas contributing runoff to each outfall. Made the map available on request to Ecology or others. (Required by December 31, 2026; S6.D.3.c)

14. Submitted locations of all known MS4 outfalls, including size and material, (S5.D.3.c.ii. March 31, 2027). The data shall be in one of the following formats and templates:

- ESRI file geodatabase template[1] (feature class in a .gdb)
- Shapefile template[2]
- ArcGIS Online template (sharing template a or b via ArcGIS Online)
- Excel template[3]

15. Conducted field inspections and visually inspected for illicit discharges at approximately one third of all known MS4 outfalls. (Required no later than two years from initial date of Permit coverage, S6.D.3.d)

16. Implemented procedures to identify and remove illicit discharges. (Required no later than two years from initial date of Permit coverage, S6.D.3.d)

17. **Attach** a summary of each illicit discharge discovered and actions taken to eliminate each of the discharges. (S6.D.3.d).

[1] https://fortress.wa.gov/ecy/ezshare/wq/permits/MS4GP.Mapoutfall.prelim.gdb.zip
[2] https://fortress.wa.gov/ecy/ezshare/wq/permits/MS4GP.Mapoutfall.prelim.shape.zip
[3] https://fortress.wa.gov/ecy/ezshare/wq/permits/MS4GP.Mapoutfall.prelim.excel.xlsx

18. Implemented a spill response plan that includes coordination with a qualified spill responder. (Required no later than four and one-half years from initial date of Permit coverage, S6.D.3.e)

19. Provided staff training or coordinated with existing training to educate staff on proper BMPs for preventing illicit discharges, including spills, as described in S6.D.3.f. (Required no later than two years from initial date of Permit coverage)

S6.D.4 Construction Site Stormwater Control

20. Complied with all relevant ordinances, rules, and regulations of the local jurisdiction(s) that govern construction phase stormwater pollution prevention activities, if applicable. (Required after initial date of Permit coverage, S6.D.4.a)

21. Ensured that all applicable construction projects under the functional control of the Secondary Permittee obtained NPDES Permit coverage. (Required after initial date of Permit coverage, S6.D.4.b)

22. Coordinated with local jurisdictions on construction projects owned or operated by other entities that discharge into Secondary Permittee's MS4, as per S6.D.4.c. (Required after initial date of Permit coverage)

23. Provided training for relevant staff in erosion and sediment control BMPs and requirements or hired trained contractors to perform the work for all construction projects owned and operated by the Secondary Permittee. (Required after initial date of permit coverage, S6.D.4.d)

24. Provided access, as requested, for inspection of construction sites under the control of the Secondary Permittee during the land disturbing activity and/or construction period. (Required after initial date of Permit coverage, S6.D.4.e)

S6.D.5 Post-Construction Stormwater Management for New Development and Redevelopment

25. Complied with all relevant ordinances, rules, and regulations of the local jurisdiction(s) that govern post-construction stormwater pollution prevention activities, including proper operation and maintenance of the MS4. (Required after initial date of Permit coverage, S6.D.5.a)

26. Coordinated with local jurisdiction regarding projects owned or operated by other entities which discharge into the Secondary Permittee's MS4. (Required after initial date of Permit coverage, S6.D.5.b)

S6.D.6 Pollution Prevention and Good Housekeeping for Municipal Operations

27. Implemented an Operation and Maintenance program. (New Secondary Permittees – Required no later than three years from initial date of Permit coverage, S6.D.6.a)

28. Updated O&M Plan, as needed, no later than July 1, 2027 (S6.D.6.a).

29. Established and implemented maintenance standards for stormwater collection and conveyance systems, as described in S6.D.6.a.i. (New Secondary Permittees – Required no later than three years from initial date of Permit coverage.)

30. Conducted spot checks of potentially damaged stormwater treatment and flow control BMPs/facilities after major storms. (New Secondary Permittees – Required no later than three years from initial date of Permit coverage, S6.D.6.a.i)

31. Developed and implemented a Stormwater Pollution Prevention Plan (SWPP) for material storage areas, heavy equipment maintenance or storage yards not covered by another NPDES Permit that authorizes stormwater discharges associated with the activity. (New Secondary Permittees – Required no later than three years from initial date of Permit coverage, S6.D.6.a.viii)

32. Have NPDES Permit coverage for *Industrial Stormwater General Permit* for all applicable industrial facilities operated by the Permittee, or another NPDES Permit that authorizes surface water discharges associated with the activity. (Required after initial date of Permit coverage, S6.D.6.b)

33. Implemented a program designed to train staff to carry out the Operations and Maintenance plan as described in S6.D.6.d. (Required no later than three years from initial date of Permit coverage)

S7. Compliance with Total Maximum Daily Load Requirements

34. Is there an approved Total Maximum Daily Load (TMDL) applicable to stormwater discharges from a MS4 owned or operated by the Permittee? (S7)

35. Complied with the specific requirements identified in Appendix 2. (S7.A)

36. **Attach** status report of TMDL implementation. (S7.A)

General Conditions

37. Notified Ecology of the failure to comply with the Permit terms and conditions within 30 days of becoming aware of the non-compliance. (G20)

38. Notified Ecology immediately in cases where the Permittee becomes aware of a discharge into or from the Permittee's MS4 which may constitute a threat to human health, welfare, or the environment. (G3)

39. Took appropriate action to correct or minimize discharges into or from the MS4 which could constitute a threat to human health, welfare, or the environment. (G3.A)

S4 Compliance with Standards

40. If applicable, **attach** a summary of the status of implementation of any actions taken pursuant to S4.F, and the status of any monitoring, assessment, or evaluation efforts conducted during the reporting period. (S4.F.3.d)

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APPENDIX 5 – Annual Report Questions for New Permittees

New Permittees that are Cities, Towns, or Counties are required to submit the following information in an online annual report form, or an alternative format provided by Ecology, upon request, pursuant to Special Condition S9.

Reporting Requirements and SWMP

1. **Attach** annual Stormwater Management Program Plan (SWMP). (Required no later than March 31, 2029, S5.A.2)
2. **Attach** a notification of any annexations, incorporations, or boundary changes resulting in an increase or decrease in the Permittee's geographic area of Permit coverage during the reporting period per S9.D.6.
3. Implemented an ongoing program to gather, track, and maintain information per S5.A.3, including costs or estimated costs of developing and implementing the SWMP. (Required to begin no later than January 1, 2026)
4. Provide a breakdown of average annual costs (or estimates) to implement the SWMP and permit programs (S5.A.3.a, required to be submitted no later than March 31, 2027):
    a. What was the annual expenditure or estimate to develop and implement the SWMP this reporting period?
    b. What was the annual expenditure or estimate to develop and implement Appendix 2 TMDL requirements, if applicable?
    c. What were your source(s) of funding for the stormwater program?
5. Coordinated among departments within the jurisdiction to eliminate barriers to Permit compliance. (S5.A.5.b)
    a. **Attach** a written description of internal coordination mechanisms. (Required no later than March 31, 2026, S5.A.5.b)
6. If applicable, identify other entities relied on to satisfy any of the obligations under the Permit. (S9.D4).

Stormwater Planning

7. Have you convened an interdisciplinary team to inform and assist in the development, progress, and influence of the stormwater planning program? (Required by August 1, 2025, S.5.C.1.a)

Coordination with Long-range Plan Updates

8. List the relevant land use planning efforts that have taken place in your jurisdiction (i.e., land use plans that are used to accommodate growth, stormwater management, or transportation). (S5.C.1.b.i.- Required by March 31, 2027)

9. List of stormwater capital projects (currently in or slated for future design and construction) that resulted from this planning. (S5.C.1.b.i – Required by March 31, 2027)

10. Describe watershed protection measures associated with stormwater management and land use planning actions that resulted from this planning. (S5.C.1.b.i– Required by March 31, 2027)

11. Were land acquisitions identified (or are planning ahead for) that are useful for stormwater facilities to accommodate growth or to better serve an existing developed area? (S5.C.1.b.i– Required by March 31, 2027,)

- **a.** If yes, for what purpose?

12. Updates to goals and policies related to investment in stormwater management facilities/BMPs? (yes/no) (S5.C.1.b.i– Required by March 31, 2027)

- **a.** If yes, briefly describe in *Comments*.

Low Impact Development Code-related Requirements

13. Reviewed, revised and made effective the low impact development-related enforceable documents per S5.C.1.c.ii. (Required by December 31, 2028)

- **a.** **Attach** a summary of the LID review and revision process that includes the requirements listed in S.5.C.1.c.ii. (Required no later than March 31, 2029)

14. Adopted and implemented tree canopy goals and policies to support stormwater management and water quality improvement in receiving waters. (S5.C.1.c.iii; December 31, 2028)

Education and Outreach

15. **Attach** a description of general awareness efforts conducted per S5.C.2.a.i, including what, if any, regional program you are participating in. (Required to begin no later than August 1, 2027)

16. Developed a behavior change program that is tailored to the community in accordance with S5.C.2.a.ii.(c)? (Required no later than August 1, 2025)

a. **Attach** the strategy and schedule developed in accordance with S5.C.2.a.ii(c).

17. Began implementing strategy outlined in S.5.C.2.a.ii.(c). (Required by October 1, 2025)

18. Provided stewardship opportunities (or partnered with others) to encourage resident participation. (Required to begin no later than August 1, 2027, S5.C.2.a.iii)

Public Involvement and Participation

19. Describe in *Comments* field the opportunities created for the public, including overburdened communities, to participate in the decision-making processes involving the development, implementation, and updates of the Permittee's SWMP. (Required to begin no later than August 1, 2025, S5.C.3.a)

20. Describe specific public involvement opportunities provided to overburdened communities. (S5.C.3.a.i)

21. Document methods used to identify overburdened communities. (No later than December 31, 2026, S5.C.3.a.ii)

22. Posted the updated SWMP Plan and latest annual report on your website no later than May 31. List the website address in *Comments* field. (Required to begin posting no later than May 31, 2026, S5.C.3.b)

MS4 Mapping and Documentation

23. Developed a map of the MS4 that includes the requirements listed in S5.C.4. (Required no later than March 31, 2029)

24. Met the requirements of S5.C.4.a.vii for all connections to the MS4 authorized after August 1, 2024. (Required to begin no later than August 1, 2024)

25. No later than March 31, 2027, submitted locations of all known MS4 outfalls, including size and material, in accordance with S5.D.4.b.i. The data shall be in one of the following formats:

- ESRI file geodatabase template[1] (feature class in .gdb)
- Shapefile template[2]
- ArcGIS Online template (sharing template a or b via ArcGIS Online)
- Excel template[3]

Illicit Discharge Detection and Elimination

26. Informed public employees, businesses, and the general public of hazards associated with illicit discharges, per S.5.C.5.b? (Required no later than August 1, 2026)

27. Adopted and implemented an ordinance or other regulatory mechanism to effectively prohibit illicit discharges, per the requirements in S5.C.5.c.i-iv. (Required no later than August 1, 2026)

a. Cite reference for ordinance or other regulatory mechanism to meet this requirement in *Comments* field.

28. Developed and implemented procedures for conducting illicit discharge investigations in accordance with S5.C.5.d.i? Cite methodology used in the *Comments* sections. (Required no later than August 1, 2028)

29. Screened the MS4 within coverage area each year in accordance with S5.C.5.d.i.(a) (Required to screen 40% no later than December 31, 2028; 12% on average each year, thereafter)

30. How are you publicizing your hotline? (Required to be available no later than August 1, 2026, S5.C.5.d.ii)

31. Developed and implemented an ongoing illicit discharge training program for all municipal field staff per S5.C.5.d.iii. (Required to begin no later than March 31, 2026)

32. Developed and implemented a program to characterize, trace, and eliminate illicit discharges into the MS4 found by or reported to the Permittee. (Required no later than August 1, 2028, S5.C.5.e)

33. Trained municipal illicit discharge detection staff to conduct illicit discharge detection and elimination activities referenced in S5.C.5.f. (Required no later than March 31, 2026)

[1] https://fortress.wa.gov/ecy/ezshare/wq/permits/MS4GP.Mapoutfall.prelim.gdb.zip
[2] https://fortress.wa.gov/ecy/ezshare/wq/permits/MS4GP.Mapoutfall.prelim.shape.zip
[3] https://fortress.wa.gov/ecy/ezshare/wq/permits/MS4GP.Mapoutfall.prelim.excel.xlsx

34. **Attach** a report with data describing the actions taken to characterize, trace, and eliminate each illicit discharge reported to, or investigated by, the Permittee, as described in S5.C.5.g. The submittal must include all of the applicable information and must follow the instructions, timelines, and format described in Appendix 13.

Controlling Runoff from New Development, Redevelopment and Construction Sites

35. Developed and implemented a program to reduce pollutants in stormwater runoff to the MS4 from new development, redevelopment and construction site activities. (Required no later than June 30, 2027, S5.C.6)

36. Adopted and implemented an ordinance or other enforceable mechanism to address runoff from new development, redevelopment and construction sites per the requirements of S5.C.6.a. (Required no later than June 30, 2027)

- **a.** Cite the jurisdiction code reference used to meet this requirement in *Comments* field.

37. Number of exceptions granted to the minimum requirements in Appendix 1. (Required March 31, 2028, S5.C.6.b.i and Section 6 of Appendix 1)

38. Number of adjustments granted to the minimum requirements in Appendix 1. (Required March 31, 2028, S5.C.6.b.i and Section 6 of Appendix 1)

39. Reviewed Stormwater Site Plans for all proposed development activities that meet the thresholds adopted pursuant to S5.C.6.b.ii. (Required no later than June 30, 2027, S5.C.6.c.i)

- **a**. Number of site plans reviewed during the reporting period.

40. Inspected, prior to clearing and construction, all permitted development sites, per S5.C.6.c.ii. (Required no later than June 30, 2027)

41. Inspected all permitted development sites during construction to verify proper installation and maintenance of required erosion and sediment controls. (Required no later than June 30, 2027, S5.C.6.c.iii)

- **a.** Inspected new residential stormwater treatment and flow control BMPs/facilities and catch basins at least twice per 12-month period, with no less than 4 months between inspections, per S5.C.6.c.iv, to identify maintenance needs and enforce compliance with maintenance standards.

42. Number of enforcement actions taken during the reporting period based on construction phase inspections at new development and redevelopment projects. (Required no later than June 30, 2027, S5.C.6.c.ii-iv)

43. Inspected all permitted development sites upon completion of construction and prior to final approval or occupancy to ensure proper installation of stormwater facilities. (Required no later than June 30, 2027, S5.C.6.c.v)

44. Verified a maintenance plan is completed, and responsibility for maintenance is assigned for projects. (Required no later than June 30, 2027, S5.C.6.c.v)

45. Achieved at least 80% of scheduled construction-related inspections. (Required no later than June 30, 2027, S5.C.6.c.vi)

46. Made Ecology's Construction Stormwater General Permit *Notice of Intent* and Industrial Stormwater General Permit *Notice of Intent* available to representatives of proposed new development and redevelopment? (Required no later than August 1, 2024, S5.C.6.d)

47. All staff whose primary job duties are implementing the program to control stormwater runoff from new development, redevelopment, and construction sites are trained to conduct these activities? (Required no later than December 31, 2027, S5.C.6.e)

Source Control Program for Existing Development

48. Adopted ordinance(s), or other enforceable documents, requiring the application of source control BMPs for pollutant generating sources associated with existing land uses and activities, per S.5.C.8.a. (Required by August 1, 2026)

- **a**. Cite ordinance in *Comments* field.

49. Established an inventory per S5.C.8.b. (Required by August 1, 2027)

- **a.** Number of total sites identified for the inventory.

50. Implemented an inspection program, per S5.C.8.c. (Required by January 1, 2028)

51. Implemented a progressive enforcement policy, per S5.C.8.d. (Required by January 1, 2028)

52. **Attach** a summary of actions taken to implement the Source Control program, per S5.C.8.d.iii (March 31, 2029)

- **a.** **Attach** a list of inspections, per S5.C.8.d, organized by the business category, noting the amount of times each business was inspected, and if enforcement actions were taken.

53. Implemented a Source Control training program, per S5.C.8.e. (December 31, 2027)

Operation and Maintenance

54. Developed and implemented maintenance standards as protective, or more protective, of facility function as those specified in the *Stormwater Management Manual for Western Washington*. (Required no later than June 30, 2027, S5.C.9.a)

55. Applied a maintenance standard for a facility or facilities which do not have maintenance standards specified in the *Stormwater Management Manual for Western Washington*. (Required to report, if applicable, no later than June 30, 2027, S5.C.9.a)

- **a**. Note in the *Comments* field what kinds of facilities are covered by this alternative maintenance standard.

56. Verified that maintenance was performed per the schedule in S5.C.9.a.ii when an inspection identified an exceedance of the maintenance standard. (June 30, 2027)

- **a.** **Attach** documentation of any maintenance delays.

57. Implemented an ordinance or other enforceable mechanisms to verify long-term operation and maintenance of stormwater treatment and flow control BMPs/facilities regulated by the Permittee, per S5.C.9.b.i?

58. Annually inspected stormwater treatment and flow control BMPs/facilities regulated by the Permittee, per S5.C.9.b.i(b).

- **a.** If using reduced inspection frequency for the first time during this permit cycle, **attach** documentation, per S5.C.9.b.i(b).

59. Achieved at least 80% of scheduled inspections to verify adequate long-term O&M. (S5.C.9.b.ii)

60. Annually inspected all municipally owned or operated permanent stormwater treatment and flow control BMPs/facilities. (Required no later than June 30, 2027, S5.C.9.c.i)

- **a.** Number of municipally owned or operated stormwater treatment and flow control BMPs/facilities.
- **b.** Number of facilities inspected during the reporting period.
- **c**. Number of facilities for which maintenance was performed during the reporting period.

61. **Attach** documentation of a reduced stormwater treatment and flow control BMPs/facilities inspection frequency as per S5.C.9.c.i. (Required, if applicable)

62. Conducted spot checks and inspections of potentially damaged stormwater facilities after major storms. (Required no later than June 30, 2027, S5.C.9.c.ii)

63. Inspected all municipally owned or operated all catch basins and inlets owned or operated by the Permittee at least once every two years, or used an alternative approach. (Required no later than December 31, 2028, S5.C.9.c.iii)

a. Number of known catch basins.

b. Number of catch basins inspected.

c. Number of catch basins cleaned.

64. **Attach** documentation of alternative catch basin inspection approach, if used. (Required, if applicable, S5.C.9.c.iii)

65. Developed and implemented practices, policies, and procedures to reduce stormwater impacts associated with runoff from all lands owned or maintained by the Permittee, and road maintenance activities under the functional control of the Permittee. (Required no later than December 31, 2027, S5.C.9.d)

66. No later than July 1, 2027, developed and implemented a municipal street sweeping program to focus on priority areas and times during the year that would reasonably be expected to result in the maximum water quality benefits to receiving waters (S5.C.9.e, required to report beginning March 31, 2028).

67. Attach documentation if implementing an alternative sweeping timing and frequency, based on local conditions (S5.C.9.e.ii.b.)

a. **Attach** priority areas swept on a map
b. Sweeping dates
c. Sweeping frequency
d. Type of sweeper
e. Total curb miles of priority areas and curb miles swept
f. Approximation of street waste solids removed for each sweeping event, with unit of weight and wet or dry weight, where available.

68. Disposed of sweeper waste material in accordance with Appendix 6- Street Waste Disposal (S5.C.9.e.iv)?

69. Developed and implemented a Stormwater Pollution Prevention Plan (SWPPP) for all heavy equipment maintenance or storage yards, and material storage facilities owned or operated by the Permittee in areas subject to this Permit, as described in (Required no later than June 30, 2027, S5.C.9.f)

70. Developed and implemented an ongoing training program for Permittee employees whose primary construction, operations or maintenance job functions may impact stormwater quality. (Required no later than June 30, 2027, S5.C.9.g)

Compliance with Total Maximum Daily Load Requirements

71. Complied with the Total Maximum Daily Load (TMDL) - specific requirements identified in Appendix 2, if applicable. (S7.A)

a. List and requirements that were not met.

72. For TMDLs listed in Appendix 2, **attach** a summary of relevant SWMP and Appendix 2 activities to address the applicable TMDL parameter. (S7.A.1)

General Conditions and Compliance with Standards

73. Notified Ecology in accordance with G3 of any discharge into or from the Permittee's MS4 which could constitute a threat to human health, welfare, or the environment. (G3)

74. Took appropriate action to correct or minimize the threat to human health, welfare, and/or the environment, per G3.A.

75. Notified Ecology within 30 days of becoming aware that a discharge from the Permittee's MS4 caused or contributed to a known or likely violation of water quality standards in the receiving water. (S4.F.1)

76. If requested, submitted an *Adaptive Management Response* report in accordance with S4.F.3.a.

77. **Attach** a summary of the status of implementation of any actions taken pursuant to S4.F.3 and the status of any monitoring, assessment, or evaluation efforts conducted during the reporting period? (S4.F.3.d)

78. Notified Ecology of the failure to comply with the permit terms and conditions within 30 days of becoming aware of the non-compliance? (G20)

79. Number of non-compliance notifications (G20s) provided in reporting year. List Permit conditions described in non-compliance notification(s) in *Comments* field.

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APPENDIX 6 – Street Waste Disposal

Street Waste Liquids General Procedures

Street waste collection should emphasize retention of solids in preference to liquids. Street waste solids are the principal objective in street waste collection and are substantially easier to store and treat than liquids.

Street waste liquids require treatment before their discharge. Street waste liquids, which include, but are not limited to, eductor and street sweeping truck decant and drainage from piles and containers, usually contain high amounts of suspended and total solids and absorbed metals. Treatment requirements depend on the discharge location.

Discharges to sanitary sewer and storm sewer systems must be approved by the entity responsible for operation and maintenance of the system. Ecology will not generally require waste discharge permits for discharge of stormwater decant to sanitary sewers or to stormwater treatment BMPs constructed and maintained in accordance with Ecology's *Stormwater Management Manual for Western or Eastern Washington,* as appropriate.

The following order of preference, for disposal of liquid from collection of street waste and water removed from stormwater treatment BMPs, is ***required***.

1. **Discharge of street waste decant liquids to a municipal sanitary sewer connected to a Publicly Owned Treatment Works (POTW) is the *preferred disposal option*.** Discharge to a municipal sanitary sewer requires the approval of the sewer authority. Approvals for discharge to a POTW will likely contain pretreatment, quantity, and location conditions to protect the POTW.

2. **Discharge of street waste decant liquids may be allowed into a Basic or Metals Runoff Treatment BMP, if option 1 is not available.** Street waste liquid may be discharged back into the storm sewer system under the following conditions only when ***all*** of the following apply:
   - The preferred disposal option of discharge to sanitary sewer is not reasonably available;
   - The liquid comes from street waste only. Do not send liquids decanted from sanitary wastes to stormwater BMPs;
   - The discharge is to a Basic or Metals Runoff Treatment BMP. If pretreatment does not remove visible sheen from oils, the Runoff Treatment BMP must be able to prevent the discharge of oils causing a visible sheen;

- The discharge from the eductor or sweeper truck is as near to the inlet of the Runoff Treatment BMP as is practical, to minimize contamination or recontamination of the collection system;
- The storm sewer system owner/operator has granted approval and has determined that the Runoff Treatment BMP will accommodate the increased loading. Pretreatment conditions to protect the Runoff Treatment BMP may be issued as part of the approval process. Following local pretreatment conditions is a requirement of this Permit; and
- Ecology must approve in advance flocculants for the pretreatment of street waste liquids. The liquids must be non-toxic under the circumstances of use. If the owner/operator adds flocculants to street waste liquids, they must follow the requirements of BMP C250/C250E: Construction Stormwater Chemical Treatment and BMP C251/251E: Construction Stormwater Filtration.

The reasonable availability of sanitary sewer discharge will be determined by the Permittee, by evaluating such factors as distance, time of travel, load restrictions, and capacity of the Runoff Treatment BMP.

3. **Operators may temporarily place portable tanks (e.g. Baker Tanks) near where sweeping is taking place to temporarily hold water and solids from the sweeper**. Transfer this water/solid mixture to the decant facility at a later time.
4. **Operators may discharge liquids removed from the street while sweeping during rain events, if the designated decant facility is a distance away (i.e., travel time would significantly impact the amount of sweeping).** When sweeping during rain events, the sweeper will fill with water quickly.

   Discharge to Wastewater Collection System: Operators may discharge water from eductor or sweeper trucks to the wastewater collection system through manholes located in the street that is swept with approval from the Sewer Authority. The method used to move water from the sweeper to the wastewater collection system should be developed by the Sewer Authority.

   Discharge to Stormwater Collection System: Operators may discharge clear decanted water to the stormwater collection system for the roadway being swept when all of the conditions listed below apply. Operators cannot deposit decanted water into a collection system different from the system for the roadway being swept. Conditions to discharge:

   - The catch basin receiving the decanted water already receives runoff from the swept street.
   - The water entering the sweeper storage tank is runoff from the street and not water placed on the street by a water truck or the sweeper during the sweeping operation.

- The sweeper stays in place for a minimum of 15 minutes at the discharge location to allow solids to settle prior to decanting the water from the storage tank.
- The operator places an appropriately sized catch basin filter in the catch basin or a filter sock attached to the end of the outlet hose allowing for a slow release of water. Remove the catch basin filter or filter sock following its use.
- The operator stops discharging liquids to the catch basin when there is a concentration of solids leaving the tank.
- The storm sewer system owner/operator shall approve the discharge.

5. **Operators may return water removed from stormwater ponds, vaults, and oversized catch basins to the storm sewer system.** Stormwater ponds, vaults, and oversized catch basins contain substantial amounts of liquid, which hampers the collection of solids and poses problems if the removed waste must be hauled away from the site. Water removed from these facilities may be discharged back into the pond, vault, or oversized catch basin provided:
   - Clear water removed from a stormwater treatment structure may be discharged directly to a down gradient cell of a treatment pond or into the storm sewer system.
   - Turbid water may be discharged back into the structure it was removed from if:
     - The removed water has been stored in a clean container (eductor truck, Baker tank, or other appropriate container or facility used specifically for handling stormwater or clean water); ***and***
     - There will be no discharge from the pond, vault, or oversized catch basin for at least 24 hours.
   - The discharge must be approved by the storm sewer system owner/operator.

Street Waste Solids

Soils generated from maintenance of the MS4 may be reclaimed, recycled or reused when allowed by local codes and ordinances. Street Wastes are defined in Chapter 173-350 WAC[1]. Soils that are identified as contaminated, pursuant to Chapter 173-350 WAC, shall be disposed of at a qualified solid waste disposal facility.

Typically, the County Health Department produces permits for disposal of solid waste and not Ecology. Ecology's authority does not extend to actual disposal of street waste material.

[1] https://apps.leg.wa.gov/wac/default.aspx?cite=173-350

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APPENDIX 7 – Determining Construction Site Sediment Damage Potential

The following rating system allows objective evaluation of a particular development site's potential to discharge sediment. Permittees may use the rating system below or develop alternative process designed to identify site-specific features which indicate that the site must be inspected prior to clearing and construction. Any alternative evaluation process must be documented and provide for equivalent environmental review.

Step 1 is to determine if there is a sediment/erosion sensitive feature downstream of the development site. If there is such a site downstream, complete Step 2, assessment of hydraulic nearness. If there is a sediment/erosion sensitive feature and it is hydraulically near the site, go to Step 3 to determine the construction site sediment transport potential.

STEP 1 – Sediment/Erosion Sensitive Feature Identification

Sediment/erosion sensitive features are areas subject to significant degradation due to the effect of sediment deposition or erosion. Special protection must be provided to protect them. Sediment/erosion sensitive features include but are not limited to:

i. Salmonid bearing fresh water streams and their tributaries or freshwater streams that would be Salmonid bearing if not for anthropogenic barriers;
ii. Lakes;
iii. Category I, II, and III wetlands;
iv. Marine near-shore habitat;
v. Sites containing contaminated soils where erosion could cause dispersal of contaminants; and
vi. Steep slopes (25% or greater) associated with one of the above features.

Identify any sediment/erosion sensitive features, and proceed to Step 2. If there are none, the assessment is complete.

STEP 2 – Hydraulic Nearness Assessment

Sites are hydraulically near a feature if the pollutant load and peak quantity of runoff from the site will not be naturally attenuated before entering the feature. The conditions that render a site hydraulically near to a feature include, but are not limited to, the following:

i. The feature or a buffer to protect the feature is within 200 feet downstream of the site.
ii. Runoff from the site is tight-lined to the feature or flows to the feature through a channel or ditch.

A site is not hydraulically near a feature if one of the following takes place to provide attenuation before runoff from the site enters the feature:

i. Sheet flow through a vegetated area with dense ground cover
ii. Flow through a wetland not included as a sensitive feature
iii. Flow through a significant shallow or adverse slope, not in a conveyance channel, between the site and the sensitive feature.

Identify any of the sediment/erosion sensitive features from Step 1 that are hydraulically near the site, and proceed to Step 3. If none of the sediment/erosion sensitive features are hydraulically near the site, the assessment is complete.

STEP 3 – Construction Site Sediment Transport Potential

Using the worksheet below, determine the total points for each development site. Assign points based on the most critical condition that affects 10% or more of the site.

If soil testing has been performed on site, the results should be used to determine the predominant soil type on the site. Otherwise, soil information should be obtained from the county soil survey to determine Hydrologic Soil Group (Table of Engineering Index Properties for step 1.D) and Erosion Potential (Table of Water Features for step 1.E).

When using the county soil survey, the dominant soil type may be in question, particularly when the site falls on a boundary between two soil types or when one of two soil types may be present on a site. In this case, the soil type resulting in the most points on the rating system will be assumed unless site soil tests indicate that another soil type dominates the site.

Use the point score from Step 3 to determine whether the development site has a high potential for sediment transport off of the site.

Total Score	**Transport Rating**
<100	Low
≥100	High

A high transport rating indicates a higher risk that the site will generate sediment contaminated runoff.

Construction Site Sediment Transport Potential Worksheet

A. Existing slope of site (average, weighted by aerial extent): Points

2% or less 0

>2-5% 5

>5-10% 15

>10-15% 30

>15% 50

B. Site Area to be cleared and/or graded:

<5,000 sq. ft. 0

5,000 sq. ft. – 1 acre 30

>1 acres 50

C. Quantity of cut and/or fill on site:

<500 cubic yards 0

500 – 5,000 cubic yards 5

>5,000 – 10,000 cubic yards 10

>10,000 – 20,000 cubic yards 25

>20,000 cubic yards 40

D. Runoff potential of predominant soils (Soil Conservation Service):

Hydrologic soil group A 0

Hydrologic soil group B 10

Hydrologic soil group C 20

Hydrologic soil group D 40

E. Erosion Potential of predominant soils (Unified Classification System):

GW, GP, SW, SP soils 0

Dual classifications (GW-GM, GP-GM, GW-GC,

GP-GC, SW-SM, SW-SC, SP-SM, SP-SC) 10

GM, GC, SM, SC soils 20

ML, CL, MH, CH soils 40

F. Surface or Groundwater entering site identified and intercepted1:

Yes 0

No 25

G. Depth of cut or height of fill >10 feet:

Yes 25

No 0

H. Clearing and grading will occur in the wet season (October 1 – May 1):

Yes 50

No 0

TOTAL POINTS ..... _____

[1] If no surface or ground water enters the site, assign 0 points.

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APPENDIX 8 – Businesses and Activities that are Potential Sources of Pollutants

Use this appendix to help identify businesses and/or activities with potential outdoor pollutant-generating sources that discharge to the MS4 and should be included in the Permittee's source control inventory, developed pursuant to S5.C.8.b.ii. The Standard Industrial Code (SIC), Major Group, and NAICS numbers are provided for reference. Permittees may include additional outdoor pollutant-generating sources that are located within their jurisdictions.

Group Description	SIC Major Group	SIC Industry Group No.	NAICS Major Group
Support Activities for Animal Production		074, 075	1152xx,
Construction of Buildings	15		236
Heavy and Civil Engineering Construction	16		237
Specialty Trade Contractors	17		238
Beverage, Food, and Tobacco Manufacturing	20		311, 312
Wood Product Manufacturing	24		321
Paper Manufacturing	26		3221xx, 3222xx
Printing and Related Support Activities	27		323
Chemical Manufacturing	28		325
Petroleum and Coal Products Manufacturing	29		3241xx
Plastics and Rubber Product Manufacturing	30		326
Leather and Allied Product Manufacturing	31		316
Nonmetallic Mineral Product Manufacturing	32		327
Primary Metal Manufacturing	33		331
Fabricated Metal Product Manufacturing	34		332
Machinery, Computer, and Electronic Product manufacturing	35		333, 334
Electrical Equipment, Appliance, and Component Manufacturing	36		335
Transportation Equipment Manufacturing	37		336
Rail Transportation	40		482

Group Description	SIC Major Group	SIC Industry Group No.	NAICS Major Group
Transit and Ground Passenger Transportation	41		485
Truck Transportation and Warehousing	42		484, 493
Support Activities for Transportation		473, 474, 478	4881xx, 4882xx, 4884xx, 4889xx,
Utilities	49		2211xx
Wholesale Trade – Durable Goods		501, 503, 505, 506, 507, 509	423140, 423930, 423110, 4233xx, 4237xx, 4238xx,
Wholesale Trade – Nondurable Goods		514, 515, 516, 517, 518, 519	424930, 4244xx, 4246xx, 4247xx, 4248xx,
Building Materials, Hardware, Garden Supplies Dealers		521, 523, 526	444
Food and Beverage Stores	54		445
Automotive Dealers and Gasoline Service Stations	55		441, 447
Food Services and Drinking Places	58		722
Rental and Leasing Services		735	5321xx, 5324xx
Repair and Maintenance	75		811192, 8111xx, 8112xx, 8113xx, 8114xx,
Ambulatory Health Care Services and Hospitals		806, 807	621910,
Educational Services	82		6111xx, 6112xx, 6113xx, 6115xx
Museums, Historical Sites, and Similar Institutions		842	712

APPENDIX 9 – Stormwater Discharge Monitoring

This Appendix applies to Phase I and II Permittees with requirements pursuant to Special Condition S8.C – Stormwater Discharge Monitoring.

Stormwater discharge monitoring is intended to characterize stormwater runoff quantity and quality at a limited number of locations in a manner that allows analysis of loadings and changes in conditions over time and generalization across the Permittee's jurisdiction.

QAPP PREPARATION

Permittees shall prepare a Quality Assurance Project Plan (QAPP). The QAPP shall be developed by qualified staff or contractors with experience in applying Ecology or U.S. Environmental Protection Agency (EPA) QAPP Guidelines. General Ecology guidelines can be found at https://ecology.wa.gov/ and in the *Quality Assurance Project Plan Guidance*, Special Condition S8.D, *Phase I Municipal Stormwater Permit,* December 2010 (Ecology Publication no. 10-10-075, https://apps.ecology.wa.gov/publications/documents/1010075.pdf).

A stormwater discharge monitoring QAPP shall be submitted to Ecology in accordance with the deadlines in S8.C. The QAPP shall describe field collection methods and sample preparation methods appropriate to each group of analytes, reporting limits, and field conditions.

Permittees are responsible for maintaining an up-to-date approved QAPP for stormwater discharge monitoring. Significant changes shall be reviewed by Ecology and reflected in a revised QAPP. Significant changes include, but are not limited to:

- Land disturbing activities over 10 acres in size within the sampled drainage area;
- Relocating a monitoring station;
- Introducing new sampling equipment;
- Unanticipated back water conditions, base flow, or tidal influences; and
- Changes in laboratories, analytical methods, or reporting limits.

Permittees continuing their stormwater monitoring discharge programs from prior permits are required to update their QAPP to reflect the changes of this Appendix and extend the timeframe. Locations, methodology, and laboratory techniques previously approved by Ecology should be discussed in the QAPP.

DISCHARGE MONITORING LOCATION SELECTION

Stormwater monitoring discharge monitoring locations shall have mapped tributary conveyance systems and drainage areas and be suitable for permanent installation and operation of flow-weighted composite sampling equipment. Additional monitoring location selection guidance and information about how to estimate a rainfall to runoff relationship is available in *Standard Operating Procedure for Automatic Sampling for Stormwater Monitoring*, WQP002, https://apps.ecology.wa.gov/publications/SummaryPages/1810024.html.

Permittees may identify a discharge monitoring location upstream in the conveyance system (*i.e.*, up- gradient of the outfall) in order to achieve the desired land use, to accommodate the installation of sampling equipment, and/or to avoid or minimize back water or tidal interference.

The QAPP shall describe each stormwater discharge monitoring location and associated drainage basin in detail. The QAPP must describe how each discharge monitoring location was selected, the size of the drainage basin, and the percentage of area in the drainage basin representing the following land uses: high density residential, low density residential, commercial, industrial, agriculture, and transportation right-of-way. Table A9-1, below, provides characteristics to consider for some of these land uses. However, density definitions can vary from jurisdiction to jurisdiction and may be defined locally in codes and comprehensive plans. Report the residential density definitions used if they differ from these.

Table A9-1 Land Use Selection Characteristics

Land use category	Characteristics
High density residential	4 dwelling units per acre or greater
Medium to high density residential	2 to 4 dwelling units per acre
Low density residential	1 to 2 dwelling units per acre
Commercial	Includes multi-family residential
Industrial	Not predominated by one facility with a few operators

FLOW MONITORING

Discharge monitoring locations must be evaluated for a rainfall to runoff relationship in order to ensure that the discharge monitoring location will receive enough runoff for sufficient sample volume. This rainfall to runoff relationship will also assist in programming the automatic sampling equipment. In order to establish the rainfall to runoff relationship, one year of continuous flow recording (including base flow and all storm events) is necessary.

MONITORING FREQUENCY

Permittees shall sample each stormwater discharge monitoring location according to the frequency described below. Documented good faith efforts with good professional practice by the Permittee which do not result in collecting a successful sample for the full number of required storms may be considered as contributing toward compliance with this requirement.

For each location, the Permittee shall sample and analyze a minimum of eleven (11) qualifying storm events per water year. Qualifying storm event sampling must be distributed throughout the year, approximately reflecting the distribution of rainfall between the wet and dry seasons (with a goal of 60- 80% of the samples collected during the wet season and a goal of 20-40% of the samples collected in the dry season).

Ecology may approve a reduced sampling frequency if the Permittee provides a statistical analysis demonstrating that monitoring and reporting goals can be met with fewer samples.

QUALIFYING STORM EVENT CRITERIA

The wet season is from October 1 through April 30. A qualifying wet season storm event is defined as follows when all of these conditions apply:

- Rainfall volume: 0.20” minimum, no fixed maximum;
- Rainfall duration: No fixed minimum or maximum;
- Antecedent dry period: Less than or equal to 0.05” rain in the previous 6 hours, unless more time is needed to return to baseflow at the sampling point; and
- Inter-event dry period: 6 hours.

The dry season is from May 1 through September 30. A qualifying dry season storm event is defined as follows when all of these conditions apply:

- Rainfall volume: 0.20” minimum, no fixed maximum;
- Rainfall duration: No fixed minimum or maximum;
- Antecedent dry period: less than or equal to 0.02” rain in the previous 24 hours; and
- Inter-event dry period: 6 hours.

TYPES OF SAMPLING

Storm events shall be sampled using flow-weighted composite sampling techniques. Automatic samplers shall be programmed to begin sampling as early in the runoff event as practical and to continue sampling past the longest estimated time of concentration for the tributary area. Refer to *Standard Operating Procedure for Automatic Sampling for Stormwater Monitoring,* WQP002, https://apps.ecology.wa.gov/publications/SummaryPages/1810024.html.

For storm events lasting less than 24 hours, samples shall be collected for at least 75% of the storm event hydrograph. For storm events lasting longer than 24 hours, samples shall be collected for at least 75% of the hydrograph of the first 24 hours of the storm.

Each composite sample shall be targeted to contain at least 10 aliquots. Composite samples with 7 to 9 aliquots are acceptable if they meet the other sampling criteria and help achieve a representative balance of wet season/dry season events and storm sizes.

Continuous flow recording of all storm events (not just sampled storm events) is necessary for at least one complete water year to establish a baseline rainfall/runoff relationship. Ongoing continuous flow monitoring is required for each of the sampled storm events as necessary to properly conduct the flow- weighted composite sampling. Precipitation data shall be collected from the nearest rain gauge reporting at least hourly rainfall amounts.

Grab samples are necessary for some parameters (Table A9-2) and shall be collected early in the storm event. Refer to *Standard Operating Procedure for Grab Sampling for Stormwater Monitoring,* WQP001, https://apps.ecology.wa.gov/publications/SummaryPages/1810023.html.

Stormwater solids samples shall be collected twice per water year at each stormwater discharge monitoring location, or in the vicinity of each stormwater monitoring location. Ecology may approve reducing this requirement to a once per year frequency if the Permittee provides evidence demonstrating that insufficient material is present in the conveyance. In-line conveyance system locations are the target for stormwater solids sampling (e.g., catch basin sumps), not receiving waters nor BMPs where soils could be inadvertently sampled. Use of in-line traps or similar collection system is needed for stormwater solids sampling; refer to *Standard Operating Procedure for Collection of Stormwater Solids using In-Line Traps,* WQP003*,* https://apps.ecology.wa.gov/publications/SummaryPages/1810025.html. The QAPP will need to specify the sampling approach for the selected sampling sites.

PARAMETERS

Flow-weighted composite samples shall be analyzed for the following parameters utilizing an Ecology- or EPA-accredited laboratory and the methods and reporting limits as provided in table A9-2 or otherwise approved by Ecology.

- Conventional parameters;
- Methylene blue activating substances (MBAS);
- Nutrients;
- Metals; and
- Organics:
  - Polycyclic aromatic hydrocarbons (PAHs)
  - Pesticides
  - Phthalates

If the volume of the stormwater sample collected from a qualifying storm is insufficient to allow analysis for all of the parameters listed above, the sample shall be analyzed for as many parameters as possible in the following priority order: (1) metals and hardness; (2) conductivity; (3) TSS; (4) nutrients; (5) organics: PAHs, phthalates, insecticide, and herbicides; (6) BOD_5; and (7) remaining conventional parameters. If insufficient sample exists to run the next highest priority pollutant, that analysis may be bypassed, and analyses run on lower priority pollutants in accordance with the remaining priority order to the extent possible. Parameters that are below reporting limits after two years of data may be dropped from the analysis.

Grab samples shall be analyzed for the following parameters utilizing an Ecology- or EPA-accredited laboratory and the methods and reporting limits listed in Table A9-2 at the end of this Appendix.

- Fecal coliform bacteria; and
- Total petroleum hydrocarbons – diesel fraction

Stormwater solids samples shall be analyzed for the following parameters utilizing an Ecology- or EPA- accredited laboratory and the methods and reporting limits listed in table A9-3 or otherwise approved by Ecology.

- Conventional parameters;
- Metals;
- Organics:
    - Pesticides
    - PAHs
    - Phthalates
    - Phenolics
    - Polychlorinated biphenyls (PCBs)
    - Polybrominated diphenyl ethers (PBDEs)
    - Total petroleum hydrocarbon – diesel fraction (TPH-Dx)

If the stormwater solids sample volume is insufficient to analyze for all of the parameters listed below, the sample shall be analyzed for as many parameters as possible in the following priority order: (1) conventional parameters; (2) metals; (3) TPH-Dx; (4) Phenolics; (5) PAHs and phthalates; (6) pesticides; (7) PBDEs; and (8) PCBs. If insufficient sample exists to run the next highest priority pollutant, that analysis may be bypassed, and analyses run on lower priority pollutants in accordance with the remaining priority order to the extent possible. Additional samples shall be collected if insufficient sample exists from a single sample to run all of the organic pollutants listed above. A visual, qualitative determination of grain size shall be reported for all stormwater solids samples (in addition to the quantitative analysis for all samples with sufficient volume). Parameters that are below reporting limits after two years of data may be dropped from the analysis.

RECORDKEEPING AND REPORTING

An "Annual Stormwater Discharge Monitoring Report" shall be submitted with each Annual Report beginning in 2025. Each report shall summarize all monitoring data collected during the preceding water year (October 1 – September 30). The first annual monitoring report submitted will include data from a partial water year. Each report shall integrate data from earlier years into the analysis of results, as appropriate. Permittees continuing their stormwater monitoring discharge programs at the same locations will continue summarizing data from prior permit periods.

ANNUAL MONITORING REPORTS

Annual Stormwater Discharge Monitoring Reports shall provide all monitoring data collected during the preceding water year (October 1 – September 30). Concentration data shall be provided in the same units that are specified for Reporting Limits in Tables A9-2 and A9-3. Flow data shall be provided in gallons per minute. Loading data for each water year shall be provided in total pounds and in pounds per acre. Annual Stormwater Discharge Monitoring Reports shall consist of a narrative report, an Excel spreadsheet with concentration data (summary statistics: minimum, maximum, mean, median and standard deviation), pollutant loading calculations, and a submittal to Ecology's Environmental Information Management (EIM) database for applicable data. For the Annual Stormwater Discharge Monitoring Report to be considered on time, the EIM data submission process must be initiated before April 1 of each relevant year and completed by June 15 of each relevant year.

The report shall include:

- A brief summary of each monitored drainage basin (full details of the monitoring drainage basin shall be in the QAPP), including any changes within the contributing drainage area or changes to the monitoring station that could affect hydrology and/or pollutant loading.
- A description of each flow-weighted composite and grab sampled storm event, including:
    - General summary about storm event criteria, including:
        - Precipitation data (in inches) including antecedent dry period and rainfall distribution throughout the event;
        - Flow and hydrograph data including sampled and total runoff time periods and volumes;
        - Total number of qualifying storm events captured and analyzed at each monitoring location;
        - Distribution of storms collected between wet and dry seasons (permit goals include 60-80% of storms during the wet season and 20-40% of storms during the dry season); and
        - Logistical problems associated with any storm event criterion.
    - A hyetograph and a hydrograph for each sampled storm event. Include properly labeled graphs that display the following:
        - Date of the storm event;

        - Time of day versus precipitation information;
        - Time versus flow rate (in gallons per minute);
        - Time versus aliquot collection; and
        - Display the total duration of the storm event, not just the duration when samples were collected (remember your pollutant load calculation must include flow for the entire storm event, not just the water quality sampled portion).
    - A summary of (or in the graph) the total runoff volume in gallons.
    - A rainfall/runoff relationship table used to estimate the un-sampled storm events (when water quality samples were not collected). This is used for future estimations of annual and seasonal loads.
    - Whether or not any chemicals were removed from the list of analysis due to two years of non-detect data.
    - A brief summary with storm event dates where insufficient volumes were collected. Include the parameters analyzed.
- A description of the stormwater solids sampling event, including:
    - Timeframe for the sampling event.
    - A summary of stormwater solids sampling (including dates) where insufficient volumes were collected. Include the parameters analyzed.
    - Whether or not any chemicals were removed from the list of analysis due to two years of non-detect data.
- Event Mean Concentrations (EMCs).
- The wet and dry season pollutant loads and annual pollutant load based on water year for each discharge monitoring location expressed in total pounds, and pounds per acre. The loadings must take into account potential pollutant load from base flow. Loadings shall be calculated following *Standard Operating Procedure for Calculating Pollutant Loads for Stormwater Discharges, WQP004* https://apps.ecology.wa.gov/publications/SummaryPages/1810026.html. Pollutant loading calculations and reporting are required only for the nutrients, metals, and organics parameters in stormwater. Include the following:
    - For storm events where water quality samples were collected, the load in pounds per day for each parameter for each sampled storm event, include date of storm events.
    - An estimated seasonal pollutant load for each parameter at each discharge monitoring location. This is calculated using all storm events (when water quality samples were collected and when samples were not collected).
    - A total annual pollutant load (wet season load + dry season load) for each parameter (include estimated events).
    - The rainfall/runoff relationship including your pollutant load estimates for un-sampled events.
    - Note that if any data is unavailable to effectively estimate your rainfall to runoff relationship due to an incomplete water year, submit this information in the next year's stormwater monitoring report.

- Quality Assurance/Quality Control information for each successfully sampled qualifying storm event at each discharge monitoring location and solids sample collection event at each discharge monitoring location, including:
  - A narrative summary of your field and laboratory verification, validation results and quality control checks performed.
  - A narrative analysis of your field and laboratory quality control sample results and how they compare with your data quality objectives/indicators in your QAPP.
  - Corrective actions reported/taken.
- An explanation and discussion of results from each successfully sampled qualifying storm event at each discharge monitoring location and solids sample collection event collected at each discharge monitoring location, including:
  - A statistical analysis of the event means concentrations for each parameter and a narrative description of significant findings from this analysis.
  - Any conclusions based on data from this study including analyses of previously collected data from these discharge monitoring locations.
- A description of activities currently taking place or planned within the monitoring station's drainage area that may have affected or may potentially affect future monitoring results.

If the Permittee monitors any pollutant more frequently at the stormwater discharge monitoring locations, the results of this monitoring shall be included in the annual monitoring report reflecting the water year in which the monitoring occurred.

After three (3) water years of data, the Annual Monitoring Report shall include:

- Trend analyses;
- An evaluation of the data as it applies to the Stormwater Management Program (SWMP); and
- Any stormwater management activities the Permittee has identified that can be implemented or adjusted to respond to this data.

LABORATORY METHODS

The Permittee's stormwater discharge monitoring program shall use the following analytical methods or other methods approved by the U.S. Environmental Protection Agency or Ecology with similar reporting limits unless alternative methods are approved by Ecology. Any alternative method proposed by a Permittee must have a similar reporting limit, or must be justified as adequate for the likely, expected range of concentrations. Permittees are not guaranteed approval of alternative methods or reporting limits.

In cases where smaller volumes of water are expected to be collected, or to save analytical costs, Permittees may propose that some of the analyses be optimized for specific parameters or groups. The Permittee must, in consultation with a qualified chemist, define the exact volumes and optimization steps and include them in the QAPP.

The QAPP shall identify Ecology- or EPA-approved methods with appropriate reporting limits. An individual sample that could not be run at a reporting limit because of matrix interference or other such reasons would not be called into question for compliance purposes. All results shall be reported. This includes positive detections between the method detection limit (MDL) and the reporting limit (RL), with the appropriate lab qualifier, and the non-detected concentrations at the value of the MDL or lower limit of quantitation (LLOQ) with the appropriate lab qualifier of "U" for undetected at that concentration. Non-detections must be reported and analyzed in the dataset. Results must be evaluated and censored for blank contamination (e.g., organic parameters should consider a censor threshold of less than 5x the laboratory blank contamination). All data gathering and data handling approaches should be explained in the QAPP.

Table A9-2 Analytical Procedures in Stormwater

Analyte	Method in Water	Method Detection Limit Target[a]	Reporting Limit or Lower Limit of Quantitation (LLOQ)[b]
Conventional Parameters			
Total suspended solids[c]	SM2540B or SM2540D		1.0 mg/L
Turbidity	EPA Method 180.1 or SM2130B		± 0.2 NTU
Conductivity	EPA Method 120.1 or SM2510B		± 1 µmhos/cm
Chloride	EPA Method 300.0, EPA Method 325.2, or SM4110B or SM4500 Cl-B, SM4500 Cl-C, SM4500 Cl-D, SM4500 Cl- EPAHS		0.2 mg/L
BOD5	SM5210B		2.0 mg/L
pH	EPA Method 150.2 or SM4500H+ B		0.2 units
Hardness as CaCO3	EPA Method 200.7, SM2340B(ICP), SM2340C (titration), or SM3120B		1.0 mg/L
Methylene blue activated substances (MBAS)	CHEMetrics Colorimetric or SM5540C		0.025 mg/L
Bacteria			
Fecal Coliform	SM9221E		Specified in method -

Analyte	Method in Water	Method Detection Limit Target[a]	Reporting Limit or Lower Limit of Quantitation (LLOQ)[b]
			sample aliquot dependent
E.coli (freshwater)	SM9221 B, SM9221 F, SM9223 B		Specified in method - sample aliquot dependent
Enterococci (marine)	EPA Method 1600, SM9230 B, SM9230 C, SM9230D		Specified in method - sample aliquot dependent
Nutrients			
Orthophosphate as P	EPA Method 365.3, EPA Method 365.1, SM4500-P E, SM4500-P F, or SM4500- P G	0.003 mg/L	0.01 mg/L
Total phosphorus as P	EPA Method 365.3, EPA Method 365.4, or SM4500-P-B followed by SM4500-P E or P F	0.003 mg/L	0.01 mg/L
Total Kjeldahl nitrogen as N or Total Nitrogen	EPA Method 351.2, EPA Method 351.1, SM4500 Norg-B, SM4500 Norg-C, SM4500 NH3-D, SM4500 NH3-G, SM4500 NH3-E, SM4500 NH3-F, SM4500 NH3-G, SM4500 NH3-H, SM4500 N-B, SM4500 N-C, SM4500 N-E		0.3 mg/L
Ammonia as N	SM4500 NH3-D, SM4500 NH3-G, SM4500 NH3-E, SM4500 NH3-F, SM4500 NH3-G, or SM4500 NH3-H		0.02 mg/L
Nitrate-Nitrite as N	EPA Method 353.2, SM4500 -$NO3^-$ E, SM4500 -$NO3^-$ F, or SM4500 -$NO3^-$ H		0.1 mg/L
Metals			

Analyte	Method in Water	Method Detection Limit Target[a]	Reporting Limit or Lower Limit of Quantitation (LLOQ)[b]
Total zinc	EPA Method 200.8 or SM 3125B		5.0 µg/L
Dissolved zinc	EPA Method 200.8 or SM 3125B		1.0 µg/L
Total lead, copper and cadmium	EPA Method 200.8 or SM 3125B		0.1 µg/L, 0.5 µg/L, and 0.2 µg/L
Dissolved lead, copper, and cadmium	EPA Method 200.8 or SM 3125B	0.05, 0.02, and 0.03 µg/L	0.1 µg/L
Organics			
PAHs[d]	EPA Method 8270D SIM or EPA 8270E SIM		0.1 µg/L
Pesticides: Bifenthrin (pyrethroid insecticide) and dichlobenil (herbicide)	EPA Method 8270D SIM, EPA 8270E SIM, or EPA Method 625.1	0.02 µg/L	0.05 µg/L
Phthalates[e]	EPA Method 8270D SIM or EPA 8270E SIM	0.5 µg/L	1 µg/L
Petroleum Hydrocarbons			
NWTPH-Dx (diesel, heavy oil, and summed total)	Ecology, 1997	0.1 mg/L	0.25-0.5 mg/L

NA – Not applicable
SM – Standard Methods
SIM – Selective Ion Monitoring mode

a. If a value is not present in this column, then the target MDL is not published or not different from reporting limit target.
b. The QAPP shall identify Ecology- or EPA-approved methods with appropriate reporting limits. An individual sample that could not be run at a reporting limit because of matrix interference or other such reasons would not be called into question for compliance purposes.
c. Research results indicate that errors may be introduced by decanting a subsample, care and use of tools like a funnel splitter may help.
d. Polycyclic aromatic hydrocarbons (PAH), total and these individual compounds: acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, pyrene, and retene. Report the individual compound concentrations, and their summed total.
e. Phthalates, total and these individual compounds: bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, di-n-octyl phthalate, dibutyl phthalate, and diethyl phthalate. Report the individual compound concentrations, and their summed total.

Table A9-3 Analytical Procedures in Stormwater Solids

Analyte	Method for Solid/Sediment	Reporting Limit or LLOQ[a]
Conventional Parameters		
Percent solids	SM 2540G	0.1 %
Total organic carbon	Puget Sound Estuary Protocols (PSEP 1997), SM5310B, SM5310C, SM5310D, or EPA Method 9060	0.1%
Grain size	Sieve and Pipette (ASTM 1997), ASTM F312-97, ASTMD422, or PSEP 1986/2003	Not Applicable
Total phosphorus	EPA Method 365.3, EPA Method 365.4, SM4500 P E, or SM4500 P F	0.01 mg/kg
Total volatile solids	EPA Method 160.4 or SM2540G	0.1%
Analyte	**Method for Solid/Sediment**	**Reporting Limit or LLOQ[a]**
Metals, dry weight		
Total zinc	EPA Method 200.8, EPA Method 6010D, EPA Method 6020B, or SM3125B	5.0 mg/kg
Total lead	EPA Method 200.8, EPA Method 6010D, EPA Method 6020B, or SM 3125B	0.1 mg/kg
Total copper	EPA Method 200.8, EPA Method 6010D, EPA Method 6020B, or SM 3125B	0.1 mg/kg
Total cadmium	EPA Method 200.8, EPA Method 6010D, EPA Method 6020B, or SM 3125B	0.1 mg/kg
Organics, dry weight		
Pesticides: Bifenthrin and dichlobenil	EPA Method 8270D, EPA 8270E, or EPA Method 1660	1.0 µg/kg
PAHs[b]	EPA Method 8270D or EPA 8270E SIM	70 µg/kg
Phthalates[c]	EPA Method 8270D or EPA 8270E SIM	70 µg/kg Except di-n-octlyphthalate (250 µg/kg)
Phenolics[d]	EPA Method 8270D or EPA 8270E SIM	660 µg/kg

PCBs[e]	EPA Method 608.3 or EPA Method 8082A	0.195 µg/kg or 5-20 ng/kg
PBDEs[f]	EPA Method 1614	5-10 ng/kg Except PBDE 209: (200 ng/kg)
Petroleum Hydrocarbons		
TPH-Dx (diesel, heavy oil, and summed total)	Ecology, 1997 or EPA Method 8015B	25-100 mg/kg

NA – Not applicable

SM – Standard Methods

SIM – Selective Ion Monitoring mode

a. The QAPP shall identify Ecology- or EPA-approved methods with appropriate reporting limits. An individual sample that could not be run at a reporting limit because of matrix interference or other such reasons would not be called into question for compliance purposes.
b. Polycyclic aromatic hydrocarbon (PAH) compounds, total and these individual compounds: acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, pyrene, and retene. Report the individual compound concentrations, and their summed total.
c. Phthalates: bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, di-n-octyl phthalate, dibutyl phthalate, and diethyl phthalate. Report the individual compound concentrations, and their summed total.
d. Phenolics: pentachlorophenol, p-cresol, and o-cresol. Report the individual compound concentrations.
e. PCBs. EPA Methods 608.3 or EPA Method 8082A for Aroclors: 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, 1268 are suitable starting points for stormwater solids characterization. If a more sensitive congener analysis is conducted (EPA Method 8082A or EPA Method 1668C) then those individual compound concentrations should also be reported in the annual report.
f. Polybrominated diphenyl ethers (PBDEs): congener numbers 47, 49, 66, 71, 99, 100, 138, 153, 154, 183, 184, 191, and 209. Report the individual compound concentrations, and their summed total.

REFERENCES

ASTM. 1997. *Standard test methods for determining sediment concentration in water samples. Method D 3977.* American Society for Testing and Materials, Philadelphia, PA.

PSEP. 1986. *Recommended Protocols for measuring conventional sediment variables in Puget Sound.* Prepared by Tetra Tech, Inc. for U.S. Environmental Protection Agency and Puget Sound Water Quality Authority. Tetra Tech Inc., Bellevue, WA.

Ecology, 1997. *Analytical Methods for Petroleum Hydrocarbons*. Washington State Department of Ecology, Toxics Cleanup Program. Olympia, WA. Publication No. 97-602.

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APPENDIX 10 – Equivalent Programs for Runoff Controls for New and Redevelopment and Construction Sites

Ecology determined that the following list shall be used to amend any enforceable documents, including codes, ordinances, director's rules, public rules and/or manuals, to be functionally equivalent to Appendix I in the *Western Washington Phase II Municipal Stormwater Permit* (effective August 1, 2024) and the required portions of Ecology's 2024 *Stormwater Management Manual for Western Washington.*

1. **Redevelopment Project Level Thresholds:** The "Project Level" thresholds for applying the Minimum Requirements to redevelopment projects have been updated.

    - Project Level - Redevelopment Thresholds / Road Related Projects

      The updated threshold for road related projects states that all Minimum Requirements apply to the new and replaced hard surfaces and converted vegetation areas if the project adds 5,000 square feet of new plus replaced hard surfaces AND the new plus replaced hard surfaces total 50% or more of the existing hard surfaces on the Site (underline shows the new language).
    - Project Level - Redevelopment Thresholds / Commercial or Industrial Projects

      The updates include a new threshold for commercial or industrial Sites. The new threshold states that all Minimum Requirements apply to the new and replaced hard surfaces and converted vegetation areas if the Project adds more than 5,000 square feet of new plus replaced hard surfaces AND the new plus replaced hard surfaces total 50% or more of the existing hard surfaces within the Site.

    See **Section 3** of Appendix 1.

2. **Project Exemptions:** The text describing the exemptions from Minimum Requirements has been updated to ensure that the project scope does not exceed the intention of these limited exemptions.

    See **Section 1** of Appendix 1.

3. **Wetland Hydroperiod Protection Method 2:** The hydroperiod protection requirements for Criteria 2 in Method 2 have been updated. The updates include an increase from 15% to 20% allowable monthly discharge volume deviations during October, November, and December, and an "allowable exception" for summer months.

    See **I-C.4 Wetland Hydroperiod Protection** in the 2024 SWMMWW.

4. **Definitions Related to Minimum Requirements:** Multiple definitions related to the Minimum Requirements have been updated for statewide consistency and/or to reflect updated requirements.

An example of a term with an updated definition to reflect an updated requirement is "vehicular use". The definition for "vehicular use" has been updated to identify Light Rail tracks (both elevated and non-elevated) as a pollution generating impervious surface.

See **Section 2** of Appendix 1.

5. **Runoff Treatment Performance Goal Thresholds:** Some thresholds for Runoff Treatment BMP types (i.e. basic, metals, oil, and/or phosphorus) have been updated for statewide consistency and/or to reflect updated requirements.

   An example of an edit to the Runoff Treatment Performance Goal Thresholds that reflects an updated requirement is identifying Light Rail guideways as a Site type that requires metals treatment.
   See **Section 4.6** of Appendix 1.

6. **Source Control BMPs - PCB Edits:** The following Source Control BMPs have been updated to include guidance for preventing pollution from PCBs in building materials:

   - S424 BMPs for Roof / Building Drains at Manufacturing and Commercial Buildings
   - S431 BMPs for Washing and Steam Cleaning Vehicles / Equipment / Building Structures
   - S438 BMPs for Construction Demolition
   - S451 BMPs for Building Repair, Remodeling, Painting, and Construction

   See **Volume IV** in the 2024 SWMMWW.

7. **Bioretention:** The guidance within **BMP T7.30: Bioretention** has been updated to include the option to use the High Performance Bioretention Soil Mix (HPBSM). The design guidance was also updated to clarify the design infiltration rate to use for all three bioretention soil mix options.

   See **BMP T7.30: Bioretention** in the 2024 SWMMWW.

Appendix 11 - Annual contribution amounts for Stormwater Action Monitoring Collective Funds

Western Washington

Permittee *Permittees are grouped by County and listed alphabetically*	**Population used for cost allocation** [1]	**Annual amount for S8.A**	**Annual amount for S8.B**
Clallam			
Port Angeles	20,200	$5,050	$7,474
Clark			
Unincorporated	237,650	$78,425	$87,931
Battle Ground	21,780	$7,187	$8,059
Camas	27,250	$8,993	$10,083
Vancouver	197,600	$65,208	$73,112
Washougal	17,390	$5,739	$6,434
Cowlitz			
Unincorporated	13,059	$4,309	$4,832
Kelso	12,720	$4,198	$4,706
Longview	37,780	$12,467	$13,979
Grays Harbor			
Aberdeen	17,040	N/A	$6,305
Island			
Oak Harbor	24,760	$6,190	$9,161
King			
Unincorporated	248,160	$62,040	$91,819
Algona	3,300	$825	$1,221
Auburn	88,750	$22,188	$32,838
Bellevue	153,900	$38,475	$56,943
Black Diamond	6,145	$1,536	$2,274
Bothell	48,940	$12,235	$18,108
Burien	52,490	$13,123	$19,421
Clyde Hill	3,110	$778	$1,151
Covington	21,200	$5,300	$7,844
Des Moines	33,160	$8,290	$12,269
Duvall	8,320	$2,080	$3,078
Enumclaw	12,910	$3,228	$4,777
Federal Way	101,800	$25,450	$37,666
Issaquah	40,950	$10,238	$15,152
Kenmore	24,090	$6,023	$8,913
Kent	137,900	$34,475	$51,023
Kirkland	93,570	$23,393	$34,621
Lake Forest Park	13,620	$3,405	$5,039

Permittee *Permittees are grouped by County and listed alphabetically*	**Population used for cost allocation** [1]	**Annual amount for S8.A**	**Annual amount for S8.B**
Maple Valley	28,920	$7,230	$10,700
Medina	2,915	$729	$1,079
Mercer Island	25,780	$6,445	$9,539
Newcastle	13,560	$3,390	$5,017
Normandy Park	6,790	$1,698	$2,512
Pacific	7,270	$1,818	$2,690
Port of Seattle	20,196	$5,049	$7,473
Redmond	75,270	$18,818	$27,850
Renton	107,500	$26,875	$39,775
Sammamish	68,150	$17,038	$25,216
SeaTac	31,910	$7,978	$11,807
Seattle	762,500	$190,625	$282,125
Shoreline	60,320	$15,080	$22,318
Snoqualmie	14,490	$3,623	$5,361
Tukwila	22,620	$5,655	$8,369
Woodinville	13,450	$3,363	$4,977
Kitsap			
Unincorporated	55,271	$13,818	$20,450
Bainbridge Island	25,060	$6,265	$9,272
Bremerton	45,220	$11,305	$16,731
Port Orchard	16,400	$4,100	$6,068
Poulsbo	12,180	$3,045	$4,507
Lewis			
Centralia	18,360	N/A	$6,793
Mason			
Shelton	10,430	$2,608	$3,859
Pierce			
Unincorporated	440,800	$110,200	$163,096
Bonney Lake	22,990	$5,748	$8,506
Buckley	5,315	$1,329	$1,967
DuPont	10,180	$2,545	$3,767
Edgewood	13,520	$3,380	$5,002
Fife	11,130	$2,783	$4,118
Fircrest	7,215	$1,804	$2,670
Gig Harbor	12,540	$3,135	$4,640
Lakewood	63,800	$15,950	$23,606
Milton	8,695	$2,174	$3,217
Orting	9,055	$2,264	$3,350
Port of Tacoma	20,196	$5,049	$7,473
Puyallup	43,260	$10,815	$16,006

Permittee *Permittees are grouped by County and listed alphabetically*	**Population used for cost allocation** [1]	**Annual amount for S8.A**	**Annual amount for S8.B**
Steilacoom	6,790	$1,698	$2,512
Sumner	10,800	$2,700	$3,996
Tacoma	220,800	$55,200	$81,696
University Place	35,420	$8,855	$13,105
Skagit			
Unincorporated	11,396	$2,849	$4,217
Burlington	9,800	$2,450	$3,626
Anacortes	17,880	$4,470	$6,616
Mount Vernon*	35,500	$8,875	$13,135
Sedro-Woolley	12,590	$3,148	$4,658
Snohomish			
Unincorporated	371,915	$92,979	$137,609
Arlington	21,260	$5,315	$7,866
Brier	6,590	$1,648	$2,438
Edmonds	42,980	$10,745	$15,903
Everett	113,300	$28,325	$41,921
Granite Falls	4,705	$1,176	$1,741
Lake Stevens	40,700	$10,175	$15,059
Lynnwood	38,740	$9,685	$14,334
Marysville	72,380	$18,095	$26,781
Mill Creek	21,510	$5,378	$7,959
Monroe	19,700	$4,925	$7,289
Mountlake Terrace	22,070	$5,518	$8,166
Mukilteo	21,590	$5,398	$7,988
Snohomish	10,200	$2,550	$3,774
Thurston			
Unincorporated	55,887	$13,972	$20,678
Lacey	58,180	$14,545	$21,527
Olympia	56,370	$14,093	$20,857
Tumwater	26,360	$6,590	$9,753
Whatcom			
Unincorporated	18,942	$4,736	$7,009
Bellingham	93,910	$23,478	$34,747
Ferndale	15,970	$3,993	$5,909
Lynden	16,150	$4,038	$5,976
WSDOT			
Lower Columbia	37,780	$12,467	N/A
Puget Sound	137,900	$34,475	N/A

*Mount Vernon name added 7/3/24 .

Permittee *Permittees are grouped by County and listed alphabetically*	**Population used for cost allocation** [1]	**Annual amount for S8.A**	**Annual amount for S8.B**
Totals	5,302,795	$ 1,419,123[3]	$1,976,984

[1] Populations are based on Office of Financial Management data for 2022, accessed in April 2023. The derivation of the populations used to calculate the cost allocations for Phase II counties, Ports of Seattle and Tacoma, and WSDOT are explained in the permit fact sheet.

[2] The first S8.A and S8.B payments are not due until the second year of permit (2025) for Shelton in Mason County. These were new permittees/permit coverage areas in the 2019- 2024 Western Washington Phase II permit.

[3] The total annual S8.A amount for Lower Columbia is $198,993 and the total annual S8.A amount for Puget Sound is $1,220,130. These pooled funding contributions will be managed in separate accounts.

Eastern Washington

Permittee *Permittees are grouped by County and listed alphabetically*	**Population used for cost allocation** [1]	**Annual amount for S8.B**
Asotin County		
Unincorporated	20,000	$7,400
Asotin	1,220	$451
Clarkston	7215	$2,670
Benton County		
Kennewick	85320	$31,568
Richland	62220	$23,021
West Richland	17410	$6,442
Chelan County		
Unincorporated	5395	$1,996
Wenatchee	35650	$13,191
Douglas County	16509	$6,108
East Wenatchee	14180	$5,247
Franklin County		
Pasco	80180	$29,667
Grant County		
Moses Lake	26040	$9,635
Kittitas County		
Ellensburg	20940	$7,748
Spokane County		
Unincorporated	64879	$24,005
Spokane	230900	$85,433
Spokane Valley	107100	$39,627
Walla Walla County		
Unincorporated	2944	$1,089
College Place	9855	$3,646
Walla Walla	34020	$12,587
Whitman County		
Pullman	32790	$12,132
Yakima County		
Unincorporated	17984	$6,654
Selah	8365	$3,095
Sunnyside	16500	$6,105
Union Gap	6640	$2,457
Yakima	98200	$36,334
Totals	1,022,456	$378,308

[1] Populations are based on Office of Financial Management data for 2022, accessed in April 2023. The derivation of the populations used to calculate the cost allocations for Phase II counties are explained in the permit fact sheet. Since Asotin County unincorporated UGA population is not available, Ecology used Local information (NOI).

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APPENDIX 12 –Stormwater Management for Existing Development Program Reporting

Each Permittee shall implement a Stormwater Management for Existing Development (SMED) Program to control or reduce stormwater discharges to waters of the state from areas of existing development.[1] The Program shall aim to focus on strategic stormwater investments over longer planning timeframes.

This Appendix describes project criteria, assigned area required to be managed by Permittees, and reporting SMED requirements associated with Permit Section S5.C.7.

Permittee Assignment of Equivalent Acres

Permittees are required to fully fund, start construction, or completely implement projects that meet the assigned equivalent acres listed in Table 1. Equivalent acres are calculated as described below and is intended to be a measure that compares the project area and BMPs with Appendix 1 standards for LID, flow control, or runoff treatment BMPs where appropriate.

Table 1: Assigned Equivalent Acres according to population for Phase II Permittees.

PERMITTEE	POPULATION[2]	ASSIGNED EQUIVALENT ACRES BASED ON 8 ACRES/50,000 POP.
CITY OF MEDINA	2,915	0.5
CITY OF CLYDE HILL	3,110	0.5
CITY OF ALGONA	3,300	0.5
CITY OF GRANITE FALLS	4,705	0.8
CITY OF BUCKLEY	5,315	0.9
CITY OF BLACK DIAMOND	6,145	1
CITY OF BRIER	6,590	1.1
CITY OF STEILACOOM	6,790	1.1
CITY OF NORMANDY PARK	6,790	1.1
CITY OF FIRCREST	7,215	1.2
CITY OF PACIFIC	7,270	1.2
CITY OF DUVALL	8,320	1.3
CITY OF MILTON	8,695	1.4
CITY OF ORTING	9,055	1.4
CITY OF BURLINGTON	9,800	1.6
CITY OF DUPONT	10,180	1.6

[1] New Permittees are exempt from this permit section.
[2] Populations are based on Office of Financial Management data for 2022, accessed in April 2023.

PERMITTEE	POPULATION[2]	ASSIGNED EQUIVALENT ACRES BASED ON 8 ACRES/50,000 POP.
CITY OF SNOHOMISH	10,200	1.6
CITY OF SHELTON	10,430	1.7
CITY OF SUMNER	10,800	1.7
CITY OF FIFE	11,130	1.8
COUNTY OF SKAGIT	11,396	1.8
CITY OF POULSBO	12,180	1.9
CITY OF GIG HARBOR	12,540	2
CITY OF SEDRO-WOOLLEY	12,590	2
CITY OF KELSO	12,720	2
CITY OF ENUMCLAW	12,910	2.1
COUNTY OF COWLITZ	13,059	2.1
CITY OF WOODINVILLE	13,450	2.2
CITY OF EDGEWOOD	13,520	2.2
CITY OF NEWCASTLE	13,560	2.2
CITY OF LAKE FOREST PARK	13,620	2.2
CITY OF SNOQUALMIE	14,490	2.3
CITY OF FERNDALE	15,970	2.6
CITY OF LYNDEN	16,150	2.6
CITY OF PORT ORCHARD	16,400	2.6
CITY OF ABERDEEN	17,040	2.7
CITY OF WASHOUGAL	17,390	2.8
CITY OF ANACORTES	17,880	2.9
CITY OF CENTRALIA	18,360	2.9
COUNTY OF WHATCOM	18,942	3
CITY OF MONROE	19,700	3.2
CITY OF PORT ANGELES	20,200	3.2
CITY OF COVINGTON	21,200	3.4
CITY OF ARLINGTON	21,260	3.4
CITY OF MILL CREEK	21,510	3.4
CITY OF MUKILTEO	21,590	3.5
CITY OF BATTLE GROUND	21,780	3.5
CITY OF MOUNTLAKE TERRACE	22,070	3.5
CITY OF TUKWILA	22,620	3.6
CITY OF BONNEY LAKE	22,990	3.7

PERMITTEE	POPULATION[2]	ASSIGNED EQUIVALENT ACRES BASED ON 8 ACRES/50,000 POP.
CITY OF KENMORE	24,090	3.9
CITY OF OAK HARBOR	24,760	4
CITY OF BAINBRIDGE ISLAND	25,060	4
CITY OF MERCER ISLAND	25,780	4.1
CITY OF TUMWATER	26,360	4.2
CITY OF CAMAS	27,250	4.4
CITY OF MAPLE VALLEY	28,920	4.6
CITY OF SEATAC	31,910	5.1
CITY OF DES MOINES	33,160	5.3
CITY OF UNIVERSITY PLACE	35,420	5.7
CITY OF MOUNT VERNON	35,500	5.7
CITY OF LONGVIEW	37,780	6
CITY OF LYNNWOOD	38,740	6.2
CITY OF LAKE STEVENS	40,700	6.5
CITY OF ISSAQUAH	40,950	6.6
CITY OF EDMONDS	42,980	6.9
CITY OF PUYALLUP	43,260	6.9
CITY OF BREMERTON	45,220	7.2
CITY OF BOTHELL	48,940	7.8
CITY OF BURIEN	52,490	8.4
COUNTY OF KITSAP	55,271	8.8
COUNTY OF THURSTON	55,887	8.9
CITY OF OLYMPIA	56,370	9
CITY OF LACEY	58,180	9.3
CITY OF SHORELINE	60,320	9.7
CITY OF LAKEWOOD	63,800	10.2
CITY OF SAMMAMISH	68,150	10.9
CITY OF MARYSVILLE	72,380	11.6
CITY OF REDMOND	75,270	12
CITY OF AUBURN	88,750	14.2
CITY OF KIRKLAND	93,570	15
CITY OF BELLINGHAM	93,910	15
CITY OF FEDERAL WAY	101,800	16.3
CITY OF RENTON	107,500	17.2

PERMITTEE	POPULATION[2]	ASSIGNED EQUIVALENT ACRES BASED ON 8 ACRES/50,000 POP.
CITY OF EVERETT	113,300	18.1
CITY OF KENT	137,900	22.1
CITY OF BELLEVUE	153,900	24.6
CITY OF VANCOUVER	197,600	25

SMED Stormwater Investments

Permit section S5.C.7.a states:

Permittees shall implement stormwater facility retrofits, or tailored SWMP actions that meet the criteria described in Appendix 12, using one or a combination of the following:

i. *Strategic stormwater investments identified in Stormwater Management Action Plan(s) (SMAPs, S5.C.1.d.), or similar stormwater planning process; and/or*

ii. *Opportunistic stormwater investments identified by leveraging projects outside of SMAP areas to improve stormwater management and infrastructure.*

The following describes the eligible project types for SMAP and Opportunistic stormwater investment to be used to meet the assigned acreage in Table 1, how to calculate credit to project types, and a standard reporting method.

Stormwater Management Action Plan - background

During the 2019 Permit term, where applicable, Permittees were required to develop a Stormwater Management Action Plan (SMAP) for a high priority catchment area.

The SMAP is required to identify:

1. A description of the stormwater facility retrofits needed for the area, including the BMP types and preferred locations.
2. Land management/development strategies and/or actions identified for water quality management.
3. Focused, enhanced, or customized implementation of stormwater management actions related to permit sections within S5, including:
    a. IDDE field screening,
    b. Prioritization of Source Control inspections,
    c. O&M inspections or enhanced maintenance, or
    d. Public Education and Outreach behavior change programs.

Identified actions shall support other specifically identified stormwater management strategies for the basin overall, or for the catchment area in particular.

- If applicable, identification of changes needed to local long-range plans, to address SMAP priorities.
- A proposed implementation schedule and budget sources for:
    - Short-term actions (i.e., actions to be accomplished within six years), and
    - Long-term actions (i.e., actions to be accomplished within seven to 20 years).
- A process and schedule to provide future assessment and feedback to improve the planning process and implementation of procedures or projects.

Opportunistic stormwater investments – background

Aimed at encouraging eligible project types to improve stormwater management infrastructure. These projects do not need to be included in an SMAP to help address the stormwater runoff issues in the area. This is intended to drive stormwater investment wherever feasible and needed. This provision is modeled after the Phase I SMED Program (formerly named Structural Stormwater Control (SSC)), including the list of eligible project types. Opportunistic projects are stormwater projects planned or leveraged outside of the SMAP planning area that meet project eligibility as described below.

SMAP Project Types

Stormwater Facility Retrofits

Stormwater facility retrofits means both projects that retrofit existing treatment and/or flow control facilities and new flow control or treatment facilities or BMPs that will address impacts from existing development. SMAPs were intended to identify the needed flow control or runoff treatment BMP types and preferred locations. BMPs or project types included in this section match the Opportunistic Project types for stormwater facility retrofits:

New Flow Control Facilities

Flow control facilities need not be regional. These facilities do not have to meet the "standard flow control requirement" (refer to Appendix 1, Section 4.7) but they shall be new facilities designed to control stormwater flow from existing development. Project proponents that don't follow design criteria from the SWMMWW, or equivalent manual, should be prepared to provide additional project details at Ecology's request to support calculations for equivalent area. Qualifying projects in this category will be compared against the Flow Control Standard (Minimum Requirement #7).

New Runoff Treatment Facilities

Runoff treatment facilities include facilities that provide oil control, phosphorus treatment, enhanced (dissolved metals) treatment, and basic treatment. Facilities in this category do not have to meet runoff treatment requirements (e.g., treat 91% of the average annual runoff) but they shall be new facilities that provide a treatment benefit for existing development. Project proponents that don't follow design criteria from the SWMMWW, or equivalent manual, should be prepared to provide additional project details at Ecology's request to support calculations for equivalent area. Qualifying

projects in this category will be compared against the Runoff Treatment Standard (Minimum Requirement #6).

New LID BMPs

These facilities are consistent with the lists of On-Site Stormwater Management BMPs of Minimum Requirement 5 and reduce the volume of runoff by infiltrating runoff from the small, more frequent storms. Qualifying new LID BMP projects result in the reduction or prevention of hydrologic changes through use of on-site (e.g., infiltration, dispersion, evapotranspiration, rainwater harvesting) stormwater management BMPs. Qualifying projects in this category will be compared against the LID Performance Standard (Minimum Requirement #5).

Retrofitting of Existing Treatment and/or Flow Control Facilities

Retrofitting is expected to occur on previously constructed stormwater facilities that, if modified, would provide additional hydrologic or runoff treatment benefits. For example, Ecology considers the retrofit of a stormwater pond to provide a settling area and more storage, a retrofit to a stormwater facility.

Land Management/Development Strategies

SMAPs may include identification of lands to protect or conserve from impervious surface conversions or native vegetation removal, and the strategic means for providing the needed protection, which could be addressed via purchase or zoning or land use policy changes, to name a few options. SMAP may also include other zoning or land use policy changes deemed necessary to prevent the water body from maintaining its current designated uses.

Focused, Enhanced, or Customized Stormwater Management Actions

SMAP may include implementation of focused, enhanced, or customized implementation of stormwater management actions related to the following Permit provisions within S5.C in addition to the other required SMAP actions:

- Focused or more frequent IDDE field screening;
- Prioritization of Source Control inspections;
- O&M inspections or enhanced maintenance of facilities you own or operate;
- Maintenance that requires capital construction of more than $25,000; and/or
- Public Education and Outreach behavior change programs to support SMAP actions for the receiving water overall, or for the catchment area in particular.

Opportunistic Stormwater Investments

Below is a listing of eligible opportunistic project types, outside of SMAPs, that Permittees may implement to receive credits toward managed acres. Project types listed as 2-8 are non-structural BMPs that will receive limited credit for this permit term.

Project Types

(1) Stormwater facility retrofits (as described above):

a. New flow control facility

b. New runoff treatment facility (or treatment and flow control facility)

c. New LID BMPs

d. Retrofit of existing treatment and/or flow control facility

(2) Maintenance with capital construction costs ≥ $25,000

This project type applies to maintenance or repair projects that improve the hydrologic or treatment performance of stormwater facilities. This project type is directly related to Operations and Maintenance Program requirements at S5.C.9.a.ii. which reflects that maintenance projects, including repairs, which require capital construction ≥ $25,000 are not subject to the required 2-year window for completing the maintenance. These projects typically compete with the other types of retrofit projects for limited capital construction funding. Ecology intends that these projects be reflected in the SMED program to provide a comprehensive view of MS4 maintenance activities and requirements. Permittees may develop criteria for identifying maintenance projects that reach the capital construction cost threshold on an area-wide or system-wide basis as part of the project prioritization process. A maintenance project that removes sediment from an existing pond to re-establish the original design volume, will qualify under this project type.

(3) Property Acquisition for Water Quality and/or Flow Control Benefits

This category excludes the purchase of property for the siting of a stormwater facility. Instead, purchase of a likely development site to permanently prevent it from being developed would qualify under this category. This category includes forest protection and conservation easements. Riparian habitat acquisition qualifies under this project type. Property used for dispersion does not qualify under this project type; it is considered a New LID BMP.

(4) Restoration of Riparian Buffers

This project type describes planting and restoring of riparian buffers above the ordinary high watermark that can reduce the discharge of pollutants and reduce impacts to waters of the state by protecting or restoring hydrologic capacity.

(5) Restoration of Forest Cover

This project type describes planting and restoring of forest cover that can reduce the discharge of pollutants and reduce impacts to waters of the state by protecting or restoring hydrologic capacity.

(6) Floodplain Reconnection Projects on Water Bodies That Are Not Flow Control Exempt Per Appendix 1

Qualifying floodplain reconnection projects will provide flow reduction and runoff treatment benefits.

(7) Permanent Removal of Impervious Surfaces

This project type describes permanent removal of impervious surfaces and replacement with pervious vegetated surfaces meeting BMP T5.13 or trees that promote infiltration, dispersion, and uptake by plants or reduce the amount of pollution generating impervious surfaces.

(8) Sweeping and line cleaning

Sweeping and line cleaning shall be documented to be in addition to the requirements established in S5.C.9 Operation and Maintenance.

Non-Qualifying Project Types

1. Projects that do not have a nexus with the current MS4 or do not prevent future MS4 impacts.
2. Projects that occur within the receiving water do not qualify, including but not limited to:
    a. In-channel habitat and stream restoration
    b. Fish barrier removal
    c. Stabilization of down cutting
    d. In-stream culvert replacement
    e. Mitigation projects otherwise required to compensate for problems caused by excessive stormwater runoff peak flows and geomorphologically significant flows

How to Calculate Equivalent Acres

Use this section to determine how to credit project types to meeting the assigned Equivalent Acres in Table 1. Counties may implement projects outside of Permit coverage areas to meet their assignment where benefits to receiving waters within the Permit coverage are identified and anticipated.

Stormwater Facility Retrofits

Use the following procedures to calculate the areas managed by stormwater facility retrofits. These may be SMAP or Opportunistic projects. A single project may be eligible to gain equivalent area credit for LID, Runoff Treatment, and Flow Control, based on the water quality benefits provided by the project.

How to Calculate Area for Small Projects under 1 Acre

Small stormwater facility retrofit projects can receive equivalent acres through a simpler calculation, by determining the total area (in acres) draining to the project.

This procedure only applies to projects whose total basin area is one (1.0) acre or less. Projects with basin areas larger than 1 acre must follow the Equivalent Area Calculation process for each appropriate BMP type.

LID Performance Standard Equivalent Area Process

1. Determine the total area (in acres) draining to the project. This is called the "full basin" in these steps.
2. Run the Western Washington Hydrology Model (WWHM, 2012), or other approved continuous simulation model, to determine if the BMP meets the LID Performance Standard for the full basin area.
    - If the project meets the LID Performance Standard, the Equivalent Area equals the area draining to the BMP.
    - If the project uses Full Dispersion functionally equivalent to BMP T 5.30 in Chapter 5 of Volume V of the *Stormwater Management Manual for Western Washington*, the Equivalent Area equals the area draining to the BMP.
3. If the project does not meet the LID Performance Standard for the full basin use the Western Washington Hydrology Model (WWHM 2012), or other approved continuous simulation model to calculate the infiltration area of the BMP required to meet the LID Performance Standard Requirement (refer to Permit Appendix 1, Section 4.5) (e.g., match developed discharge durations to applicable pre-developed durations for the range of pre-developed discharge rates from 8% of the 2-year peak flow up to 50% of the 2-year peak flow). Identify the area available for infiltration in the new facility. This is the "required" New/Redevelopment infiltration area for a new BMP project, or the "required" area added through a project that retrofits an existing BMP.
4. Determine the infiltration area provided by the project under consideration. This is the "actual" infiltration area.
5. Divide the actual infiltration area (4) by required New/Redevelopment infiltration area (3) to get the LID Benefit ratio.
6. Multiply the LID Benefit ratio (5) by the full basin area (1) to get LID Equivalent area. The equivalent area cannot be greater than the full basin area.

Runoff Treatment Equivalent Area Process

1. Determine the total area (in acres) draining to the project. This is called the "full basin" in these steps.
2. Use an approved continuous simulation model to determine the required New/Redevelopment Runoff Treatment flow (cfs) or Volume (ac-ft) for the full basin using WWHM 2012.
3. Determine the flow rate or volume provided by the project. This is the "actual" runoff treatment flow rate or volume of a new BMP project, or the "actual" flow rate or volume added through a project that retrofits an existing BMP.
4. Divide the actual flow rate or volume (3) by the full basin required flow rate or volume (2) to get the Runoff Treatment Benefit ratio.

5. Multiply the Runoff Treatment Benefit ratio (4) by the full basin area (1) to get the MR #6 Runoff Treatment Equivalent area. The equivalent area cannot be greater than the full basin area.

Flow Control Equivalent Area Process

1. Determine the total area (in acres) draining to the project. This is called the "full basin" in these steps. This area can include basins upstream of the new pond that are upstream of other retention/detention facilities if there is a series of facilities that work together to control stormwater flows.
2. Use an approved continuous simulation model, to calculate the amount of retention/detention storage required to meet the Standard Flow Control Requirement (refer to Permit Appendix 1, Section 4.7) (e.g., match developed discharge durations to applicable pre-developed durations for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow) for the full basin.
3. Identify the volume of retention/detention at the overflow installed for the project (ac-ft). This is the "actual" retention/detention volume of a new BMP project, or the "actual" volume added through a project that retrofits an existing BMP.
4. Divide the actual retention/detention volume (3) by the full basin required New/Redevelopment retention/detention volume (2) to get the Flow Control Benefit ratio. If the ratio is greater than 1.0, use 1.0 as your Flow Control Benefit ratio.
5. Multiply the Flow Control Benefit ratio (4) by the full basin area (1) to get the Flow Control Equivalent area. The equivalent area cannot be greater than the full basin area.

SMAP: Land Management/Development Strategies and Focused, Enhanced, Custom SWMP (Non-structural BMPs)

Permittees that continue to engage in or complete these project types may receive 25% of their assigned equivalent acres from Table 1 by implementing one or both project types. For each of these project types, Permittees shall document actions taken, planned, and estimated/anticipated stormwater benefits of actions each reporting year.

For land management or development strategies, Permittees must document the process to develop, adopt or implement (or both) the strategy. Permittees must describe and document the public process, meetings, and method of implementation.

Focused, Enhanced, Custom SWMP actions shall be actions applied to the SMAP area and exceeds the requirements described in the respective program Permit section. For example, a behavior change program applied to the SMAP area must be in addition to another behavior change campaign being implemented during the same permit term.

Opportunistic project types (non-structural)

Permittees that implement these project types may receive up to 25% of the assigned equivalent acres. Actions above the 25% may still be reported, but will not receive credit. For these project types, the total project area is multiplied by the factor shown below.

Table 2: Non-structural project type multipliers

Project type	Project type factor
Maintenance with capital construction costs ≥ $25,000	0.5 times the acres served by the maintenance activity
Property acquisition	0.5 times acres acquired
Restoration of riparian buffer	0.35 times acres restored
Restoration of forest cover	0.25 times acres restored
Floodplain reconnection projects	0.10 times acres reconnected
Removal of impervious surfaces	1.0 times sq. ft of impervious surface removed
Sweeping and line cleaning	0.1 times curb miles swept 0.01 times the linear feet of lines cleaned

Street Sweeping Programs – Permittees may include street sweeping area, only if they are above and beyond the sweeping requirements in S5.C.9 Operations and Maintenance. They must be designed, executed, and documented to have the following characteristics:

- Only using a high efficiency sweeper.
- Only street sweeping routes from applicable MS4 service areas can be used to support runoff treatment benefit calculations.
- Qualifying street sweeping program is based on curb miles or acres swept (as documented through broom use and tracking of parked cars, vegetation, and other conditions that prevent the sweeper from reaching the edge of the roadway) and frequency of sweeping that is in addition to the street sweeping requirements in S5.C.9 Operations and Maintenance Program.

Stormdrain Line Cleaning Programs – Equivalent Area is based solely on linear-feet cleaned during the specified time. Line cleaning of the same section of stormwater conveyance pipe within a 5-year permit cycle does not qualify. Portions of lines that were inaccessible during line cleaning cannot be included in the calculation. If line cleaning is used to comply with S5.C.9 Catch Basin Inspection Alternative (c), it cannot be counted here.

How to Calculate Credit for Regional Collaboration

If a regional collaborative project reaches a cross-jurisdictional agreement or committed funding stage (but doesn't yet meet 'fully funded'), Phase II permittees may receive up to 25 percent of their assigned acreage credit from these collaborative projects. Once a project is complete, the Permittee will receive credit for their individual assignment. Document actions taken, planned, and estimated/anticipated stormwater benefits.

Instructions for Appendix 12 Reporting

Each year, City and County Permittees must submit an updated list of SMED projects to Ecology with their Annual Reports. The submittal shall be in .xlsx (Excel) file and include the information in this Appendix. This section provides additional information and instructions for Permit section S5.C.7.

Annual Reporting of projects provides the opportunity to track and report progress. Fill in all values as completely as possible each year. In subsequent years, Permittees should update the values for each project and add projects to new rows, as needed. You may remove projects that are cancelled or otherwise will not be used toward achieving the defined level of effort (as expressed in equivalent acres as shown in Table 1). Projects that were started on or after January 1, 2023, and are fully funded, started construction, completed, or regional collaboration by March 31, 2028, may be included.

Enter project status of stormwater facility retrofits on separate lines.

Report the following:

Project List & Project Name

Permittees shall assign each project its own row. Project names may change over time. If a project name changes, include a note or parenthetical that ties the new name to the old name. Maintenance actions with a recurring event frequency over multiple years must be named uniquely for each year (*e.g.*, Sweeping for WQ 2025).

Project Type

Project type shall be reported as described in this Appendix, distinguish between SMAP and opportunistic project types, stormwater facility retrofit type or non-structural project type.

SMAP land management/development strategies or Focused, Enhanced, or Customized SWMP actions must be fully described, including completed and anticipated actions.

Transportation-related Project Type

Describe how a project is transportation related and addressing high traffic areas. Describe in Comments how high traffic is determined locally. Note here whether the project is managing stormwater from road surfaces or other transportation-related surfaces.

Status

Report the status of the project type as follows:

- Fully Funded is for stormwater facility retrofit projects that are at or beyond design report stage and there is a documented source of funding and commitment to complete the project during the next permit cycle by March 31, 2028. Design Report Stage means project feasibility is established, BMP(s) are selected and their location(s) identified, site lay-out established, project cost developed, and proposed schedule is created.

- The started construction stage is for stormwater retrofit facilities that have begun a construction activities.
- Complete/Implementation stage is for completed stormwater facility retrofit projects, for SMAP land management/development strategies or Focused, enhanced, or customized SWMP actions, fully executed property purchases, implemented maintenance actions (as described herein), and completed restoration projects. A restoration project is not considered completed until any maintenance warranty times established with the construction contract have been completed, or vegetation establishment can be verified.
- For tracking purposes, update the status of projects for each yearly submittal.

Latitude/Longitude

If your project has multiple locations, include a Lat/Long for each location and describe the reason why in an explanatory note. Report Lat/Long in decimal degrees to six decimal places, and include the Geographic Coordinate System (e.g., WGS84). Maintenance actions that cover a geographic area shall provide zip codes for the area addressed and attach a map with the final reporting period.

Receiving Waterbody Name

List the waterbody to which the stormwater from the project discharges. If a receiving water body is unnamed, also include the name of the water body that the unnamed creek/lake is a tributary. Also indicate if the stormwater from the project is infiltrated wholly or partially to groundwater.

Cost Estimate

Estimate total project costs and update costs over the course of the project where known.

Where known, include local/state/federal funding sources by percentage in the 'Comments' field. Once a project is complete, the comments should reflect the accurate funding source distribution. For projects still underway, you may want to include an explanatory note to distinguish between funding sources that are secured and funding sources that you estimate.

Basin Area

Enter the total area served by the stormwater retrofit facility project (e.g., the full basin area). For stormwater facilities, this is the catchment area contributing runoff to the facility, including upstream facilities working as a system.

If the project serves an area under one acre, enter the total area for the basin. There are more detailed instructions in the "How to Calculate Area for Small Projects Under One Acre".

LID Equivalent Area

For each stormwater retrofit facility project that you expect to result in a hydrologic benefit for small storms, use the LID Performance Standard Equivalent Area process described in the section titled 'How to Calculate Equivalent Area.'

Runoff Treatment (RT) Equivalent Area

For each stormwater retrofit facility project that you expect to result in a runoff treatment benefit (e.g., TSS, dissolved Copper, dissolved Zinc, or Total Phosphorus), calculate Runoff Treatment Equivalent Area as described in the section titled, "How to Calculate Equivalent Area."

Flow Control (FC) Equivalent Area

For each stormwater retrofit facility project that you expect to result in a hydrologic benefit for larger storms, use the Flow Control Equivalent Area process described in the section titled 'How to Calculate Equivalent Area'.

Non-structural or Regional Collaboration Project Area

For opportunistic non-structural project types, that are not a stormwater retrofit facility, report the area for the relevant project type, up to 25% of assigned acreage:

- The area purchased or otherwise conserved or restored.
- For line cleaning projects, this is the line miles cleaned.
- For street sweeping projects, enter the amount for curb miles or acres swept.

Specify the units used for any area. For street sweeping, one curb mile for an 8.25 ft wide sweep from the curb would cover an area equal to one acre. If you use curb miles as the unit, but your sweeper width is different than this, specify the sweeper width.

For non-structural SMAP projects, report 25% of assigned acreage if implementing SMAP: Land Management/Development Strategies and/or Focused, Enhanced, Custom SWMP actions.

Permittees may receive a maximum of 50% of their assigned acreage for implementing opportunistic and SMAP non-structural project types this permit term.

For regional collaboration, report 25% of assigned acreage when a regional collaborative project reaches a cross-jurisdictional agreement, or committed funding stage, but doesn't yet meet 'fully funded.' This may only be applied one time per permit term.

Tribal benefits

Identify Project types that intend to provide stormwater management benefits to tribal waters or resources.

Overburdened Communities

Identify Project types that intend to provide stormwater management benefits to overburdened communities including specifically Vulnerable Populations and Highly Impacted Communities.

Total Equivalent Acres

Provide the calculated value of the Equivalent Acres for each Project type. For Project types receiving a percentage of the assigned acres, provide the total acres based on the calculation.

If the project provides benefits for standard flow control and/or runoff treatment, and/or LID, calculate equivalent areas for each benefit. **The Equivalent Acres for LID, runoff treatment, and flow control can be totaled.** For example, a bioretention facility would get equivalent acres for LID, based on the LID performance standard, Runoff Treatment Equivalent Acres for the amount that infiltrates through the bioretention soil media, and Flow Control Equivalent Acres based on the amount that does not overflow.

Opportunistic non-structural projects in addition to 25% (acreage, and project type)

Report opportunistic non-structural project which exceeds the 25% limit. These projects will not receive credit but may still be reported.

Completed Stormwater Facility Retrofit Acreage in excess to be applied for next permit term

Stormwater facility retrofit projects which are completely implemented by the expiration date of this Permit that will exceed the area required for this Permit term may apply the excess as a credit to be used for the next Permit term (e.g. 2029-2034 Permit term), not to exceed 50% of the next Permit's requirement.

Stormwater facility retrofits planning and projections

Report the amount of estimated or projected equivalent acres managed by stormwater facility retrofits for the next Permit term (e.g. 2029-2032).

Comments

This section can also be used to note any other information you feel is relevant, that is not addressed in other columns.

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APPENDIX 13 – IDDE Reporting Data and Format

Permittees are required to submit the following information with the online annual report form, pursuant to Special Condition S9.A.

This is the complete list of information that all Permittees are required to report for each IDDE incident found, reported to, or investigated by the Permittee. Each Permittee may use either their own system or the WQWebIDDE form for recording this data.

The form is *required* for reporting, unless you are using your own tracking system.

If using your own tracking system, this information must be provided in an electronic format that follows the data schema provided at the end of this document and is easily transferred to a database. For annual reports due on March 31, 2025, a .xml submittal that follows the schema is required.

A complete report will include a separate entry (even if left blank) for every line below and must use the precise verbiage and spelling below. For all incidents where the answer to #6 is no, #7-12 are not required. All dates are in MM/DD/YYYY format.

1. Jurisdiction name and permit number
2. Date incident discovered or reported to you
3. Date of beginning your response
4. Date of end of your response
5. How was the incident discovered or reported to you? *(select **all** that apply)*
    - Pollution hotline (phone, web, app)
    - Direct report to your staff
    - Staff referral
    - Other agency referral
    - ERTS referral
    - Business inspection
    - Construction inspection
    - MS4 inspection or screening
    - Other *(Explanation required)*

6. Discharge to MS4? *(select **one**)*

- Yes – notified Ecology
- Yes – notified DOH and Ecology
- Yes – did not notify
- Yes – allowable or conditionally allowable
- No – none found
- No – cleaned up before reached MS4
- No – discharge to Underground Injection Control (UIC) well
- Unknown
- Other *(Explanation required)*

7. Incident Location

- Address/Intersection
- City
- Zip *(optional)*

And/Or

- Latitude
- Longitude

8. Pollutants Identified *(select **all** that apply)*

- Unconfirmed, unspecified, or not identified
- Fuel and/or vehicle related fluids
- Food-related oil/grease
- Sediment/soil
- Solid waste/trash
- Sewage/septage/pet waste/human waste
- Other wastewater
- Paint
- Firefighting foam
- Soap or cleaning chemicals
- Other *(Explanation required)*

9. Source or Cause *(select **all** that apply)*

- Unconfirmed, unspecified, or not identified
- Vehicle-related business
- Food-related business
- Landscape-related business
- Mobile business
- Construction activity
- Other commercial/industrial activity
- Vehicle collision
- Other accident/spill
- Intentional dumping
- Illicit connection
- Other *(Explanation required)*

10. Source tracing approach(es) used *(select **all** that apply)*

- Not applicable
- Observation (color/sheen/turbidity/floatables/odor)
- Map analysis
- Dye, smoke, or pressure testing
- Field indicator measurements
- Analytical laboratory indicators
- Other *(Explanation required)*

11. Correction/elimination methods used *(select **all** that apply)*

- Clean-up
- Education/technical assistance
- Add or modify operational source control BMP
- Add or modify structural source control BMP
- Add or modify treatment BMP
- Enforcement
- Referred to other agency or department
- Other *(Explanation required)*

12. Field notes, explanations, and/or other comments

IDDE XML Schema Document (IDDE.xsd)

```
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">

  <xs:annotation>

    <xs:documentation>

        The documentation for each element will start with the question as stated in
the online form, and implementation details will follow.

      </xs:documentation>

  </xs:annotation>

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  <xs:complexType name="IDDEEvents">

    <xs:annotation>

      <xs:documentation>

        A list of IDDEs.

      </xs:documentation>

      <xs:documentation>

        Ecology's IDDE processing can handle an empty list

      </xs:documentation>

    </xs:annotation>

    <xs:sequence>

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    </xs:sequence>

  </xs:complexType>


  <xs:complexType name="IDDEEvent">

    <xs:annotation>

      <xs:documentation>

        One particular IDDE event

      </xs:documentation>

      <xs:documentation>
```

```
        Everything in the IDDE form is in this type.

      </xs:documentation>

    </xs:annotation>

    <xs:all>

      <xs:element maxOccurs="1" minOccurs="1" name="Jurisdiction">

        <xs:annotation>

          <xs:documentation>

            1. Jurisdiction name and permit number

          </xs:documentation>

          <xs:documentation>

            Report the full 9 character Permit Number (ex: WAR043000), Jurisdiction
name is redundant and displayed for the sake of the user on the web.

          </xs:documentation>

        </xs:annotation>

        <xs:simpleType>

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            <xs:length value="9"/>

          </xs:restriction>

        </xs:simpleType>

      </xs:element>

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        <xs:annotation>

          <xs:documentation>

            No Question: Incident ID

          </xs:documentation>

          <xs:documentation>

            This is a unique ID code for all IDDEs on your permit, but not globally
unique.  The usual sequence counting from 1 works very well.

            WQWebIDDE uses the time and username to create this value (ex:
190702174507842WQWebPortal) when an IDDE is started.

            If omitted, IDDE processing can't identify IDDEs to update and will
simply insert all IDDEs as fresh records for reporting.
```

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          <xs:documentation>
            3. Date of beginning your response
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      <xs:element maxOccurs="1" minOccurs="0" nillable="true" name="DateResponseEnd"
type="SqlDate">
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          <xs:documentation>
            4. Date of end of your response
          </xs:documentation>
        </xs:annotation>
```

```
      </xs:element>

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          <xs:documentation>

            5. How was the incident discovered or reported to you?

          </xs:documentation>

          <xs:documentation>

            Select all that apply, explain if "Other"

          </xs:documentation>

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        <xs:annotation>

          <xs:documentation>

            6. Discharge to MS4?

          </xs:documentation>

          <xs:documentation>

            Select one, explain if "Other"

          </xs:documentation>

        </xs:annotation>

      </xs:element>

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type="Location">

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          <xs:documentation>

            7. Incident Location

          </xs:documentation>

          <xs:documentation>
```

```
            At least one form of location is required.  Entering both is allowed and
acceptable.  Enter a street address or nearest intersection in the Address element,
it is not going to be verified to be a mailing address.

          </xs:documentation>

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            8. Pollutants Identified

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          <xs:documentation>

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            9. Source or cause

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          <xs:documentation>

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```

```
            10. Source tracing approach(es) used

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          <xs:documentation>

            Select all that apply, explain if "Other"

          </xs:documentation>

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      </xs:element>

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          <xs:documentation>

            11. Correction/elimination methods used

          </xs:documentation>

          <xs:documentation>

            Select all that apply, explain if "Other"

          </xs:documentation>

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          <xs:documentation>

            12. Field notes, explanations, and/or other comments

          </xs:documentation>

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            Yes – notified DOH and Ecology
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```

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              </xs:documentation>
              <xs:documentation>
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APPENDIX 14 – Stormwater Management Action Planning for New Permittees

Stormwater Management Action Planning[1] (SMAP). Permittees shall conduct a similar process and consider the range of issues outlined in the *Stormwater Management Action Planning Guidance* (Ecology, 2024; Publication no. 24-10-027). Permittees may rely on another jurisdiction to meet all or part of SMAP requirements at a watershed-scale, provided a SMAP is completed for at least one priority catchment located within the Permittee's jurisdiction.

1. **Receiving Water Assessment**. Permittees shall document and assess existing information related to their local receiving waters and contributing area conditions to identify which receiving waters are most likely to benefit from stormwater management planning.

   By March 31, 2027, Permittees shall submit a watershed inventory and include a brief description of the relative conditions of the receiving waters and the contributing areas. The watershed inventory shall be submitted as a table with each receiving water name, its total watershed area, the percent of the total watershed area that is in the Permittee's jurisdiction, and the findings of the stormwater management influence assessment for each basin. Indicate which receiving waters will be included in the prioritization process. Include a map of the delineated basins with references to the watershed inventory table.

   a) Identify which basins are expected to have a relatively low Stormwater Management Influence for SMAP. See the guidance document for definition and description of this assessment. Basins having relatively low expected Stormwater Management Influence for SMAP do not need to be included in 2-3.

2. **Receiving Water Prioritization**. Informed by the assessment of receiving water conditions in 1), above, and other local and regional information, Permittees shall develop and implement a prioritization method and process to determine which receiving waters will receive the most benefit from implementation of stormwater facility retrofits, tailored implementation of SWMP actions, and other land/development management actions (different than the existing new and redevelopment requirements). The retrofits and actions shall be designed to:

   a) conserve, protect, or restore receiving waters through stormwater and land management strategies that act as water quality management tools,

   b) reduce pollutant loading, and

   c) address hydrologic impacts from existing development as well as planned for and expected future buildout conditions.

[1] New Permittees are exempt from S5.C.1.d. for this permit term.

No later than June 30, 2027, document the prioritized and ranked list of receiving waters.

d) The Permittee shall document the priority ranking process used to identify high priority receiving waters. The Permittee may reference existing local watershed management plan(s) as source(s) of information or rationale for the prioritization.

e) The ranking process shall include the identification of high priority catchment area(s) for focus of the Stormwater Management Action Plan (SMAP) in (3), below.

3. **Stormwater Management Action Plan (SMAP)**. No later than March 31, 2028, Permittees shall develop a SMAP for at least one high priority catchment area from (2), above, that identifies all of the following:

   a) A description of the stormwater facility retrofits needed for the area, including the BMP types and preferred locations. Include projects that address transportation-related runoff from high traffic areas.

   b) Land management/development strategies and/or actions identified for water quality management.

   c) Focused, enhanced, or customized implementation of stormwater management actions related to permit sections within S5, including:

      (1) IDDE field screening,
      (2) Prioritization of Source Control inspections,
      (3) O&M inspections or enhanced maintenance, or
      (4) Public Education and Outreach behavior change programs.
      (5) Identified actions shall support other specifically identified stormwater management strategies and actions for the basin overall, or for the catchment area.

   d) If applicable, identification of changes needed to local long-range plans, to address SMAP priorities.

   e) A proposed implementation schedule and budget sources for:

   f) Short-term actions (i.e., actions to be accomplished within six years), and

   g) Long-term actions (i.e., actions to be accomplished within seven to 20 years).

4. Actions in the SMAP that may benefit overburdened communities, including specifically Vulnerable Populations and Highly Impacted Communities.

5. A process and schedule to provide future assessment and feedback to improve the planning process and implementation of procedures or projects.

Appendix B

Hydrologic and Hydraulic Modeling Analysis

Brown AND Caldwell

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Seattle, WA 98101-2310

T: 206.624.0100

Technical Memorandum

Prepared for: Parametrix

Project Title: 2024 Comprehensive Storm Drainage Plan

Project No.: 158561

Technical Memorandum

Subject: Hydrologic and Hydraulic Modeling for Capital Improvement Projects

Date: November 19, 2024

To: Paul Fendt, PE

Alex Van Kirk, EIT

From: Margaret Ales, PE

Copy to: Madison Thompson, EIT

Prepared by: Margaret Ales, PE 

Reviewed by: Mike Milne

Limitations:

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Section 1: Introduction

As part of the City of Auburn (City) 2024 Comprehensive Storm Drainage Plan (Plan) update, Brown and Caldwell (BC) performed hydrologic and hydraulic (H&H) modeling analysis to evaluate existing drainage problems and capital solutions. BC performed the analysis with updated existing models and an extended meteorological time series.

The City initiated an extensive drainage system data inventory and H&H modeling effort to support the 2009 and 2015 Comprehensive Storm Drainage Plans (2009 Plan and 2015 Plan, respectively). After the 2009 and 2015 Plans, the City refined and developed new H&H models. As a result, 16 storm drainage system models have been created or refined for areas throughout the City. Each model is identified by the lettered subbasin drainage area(s) covered with the model extent. For example, the GHI model covers three subbasins: G, H, and I. Two of the 16 models (BCDF and GHI) were calibrated as part of the 2015 Plan and then updated after the 2015 Plan with new stormwater infrastructure, refined subbasin delineations, and refined calibration with monitored flow data.

The City reviewed the projects from the 2015 Plan and other more recent potential projects considered on behalf of this Plan. Of these, six potential projects were chosen for H&H modeling to evaluate whether they should be included as capital improvement projects (CIP) in the 2024 Plan.

Table B-1 summarizes the potential projects modeled as part of the 2024 Plan.

Table B-1. 2024 Plan Potential Project Modeling Summary

2024 Project ID [a]	Project Name	Subbasin Model Name	Project Description and Status
CP2116	R Street SE Widening - 22nd Street SE to 33rd Street SE	BCDF, AZ, and R	Stormwater capacity project evaluated as part of a comprehensive roadway improvement project. Currently at 60% design.
9	30th Street NE Area Flooding, Phase 2	GHI	Stormwater capacity capital improvement project (CIP) identified in the 2015 Plan (2015 Plan CIP ID is 4A). Minor piping improvements in 2018 may have reduced flooding problem.
-	30th Street NE Area Flooding, Phase 3	GHI	Stormwater capacity CIP previously identified in the 2015 Plan (2015 Plan CIP ID is 4B).
-	West Hills Drainage Improvements near S 314th Street & 54th Avenue S	No model	Relocate stormwater flows to public conveyance. CIP was previously identified in 2015 Drainage Plan (2015 Plan CIP ID is 5B).
11	Christa Ministries Facility Retrofit	GHI	New water quality improvement CIP identified as part of the 2024 Plan.
-	17th Street Pond Capacity	BCDF	New stormwater system capacity improvement project identified as part of the 2024 Plan.

[a] If the project was selected to carry forward as one of the capital improvement projects (CIP) within the 2024 Plan, it was given a numerical ID ranging from 1-16. Projects that were included within the City's capital facilities plan (CFP) follow the format of CPXXXX for their project IDs, where the Xs represent numeric placeholders. Line items with neither a CIP ID on behalf of the 2024 Plan, nor a CFP ID were evaluated as part of the modeling effort but were not chosen to carry forward as a 2024 CIP or within the CFP.

Section 2: Input Data and Model Updates

This section describes updates to the precipitation record and H&H models used to evaluate the potential projects listed in Table B-1.

2.1 Precipitation Record Extension

Auburn's H&H models use historical meteorological data to estimate stormwater flows and storage within the City's storm drainage system. The data consists of monthly evaporation and 15-minute precipitation depth. As part of the 2024 Plan, BC extended the 15-minute precipitation record to September 30, 2022, creating a 75-year precipitation record.

The Auburn precipitation record used for modeling is a composite from several rain gauges. The preferred rain gauge is located at Auburn City Hall and is maintained and operated by King County (King County 2022). Rainfall is used from other gauges when the City Hall gauged data is not available. Table B-2 summarizes the data sources for the composite precipitation record.

Table B-2. Auburn Composite Precipitation Record Summary

Source	Period	Notes
SeaTac Rainfall from WWHM2012	10/01/1948 00:00 to 11/30/2007 23:45	
Lakeland Hills	12/01/2007 00:00 to 12/06/2007 23:45	SeaTac 15-minute data not representative of Auburn hourly data.
SeaTac Rainfall from WWHM2012	12/07/2007 00:00 to 12/31/2009 23:45	
City of Auburn 15-minute rainfall	01/01/2010 00:00 to 12/31/2010 23:45	
City of Auburn aggregated 5-minute	01/01/2011 00:00 to 11/14/2012	
Lakeland Hills	11/14/2012 to 12/05/2012	City Hall rain gauge error (rain gauge top blew off).
City of Auburn aggregated 5-minute	12/05/2012 00:00 to 09/30/2022 23:45	

WWHM2012 = Western Washington Hydrology Model

2.2 Model Refinement

Auburn's H&H models have been updated and refined since the calibration efforts performed on behalf of the 2015 Plan. Updates include refining basin delineation and adding storm drainage features (conveyance and structures) from recently constructed projects. Four subbasin models were updated as part of the 2024 Plan or under a separate modeling contract, GHI, BCDF, AZ, and R. The model updates are described below. Figure B-1 shows the four subbasin models updated as part of the 2024 Plan relative to the City extent.

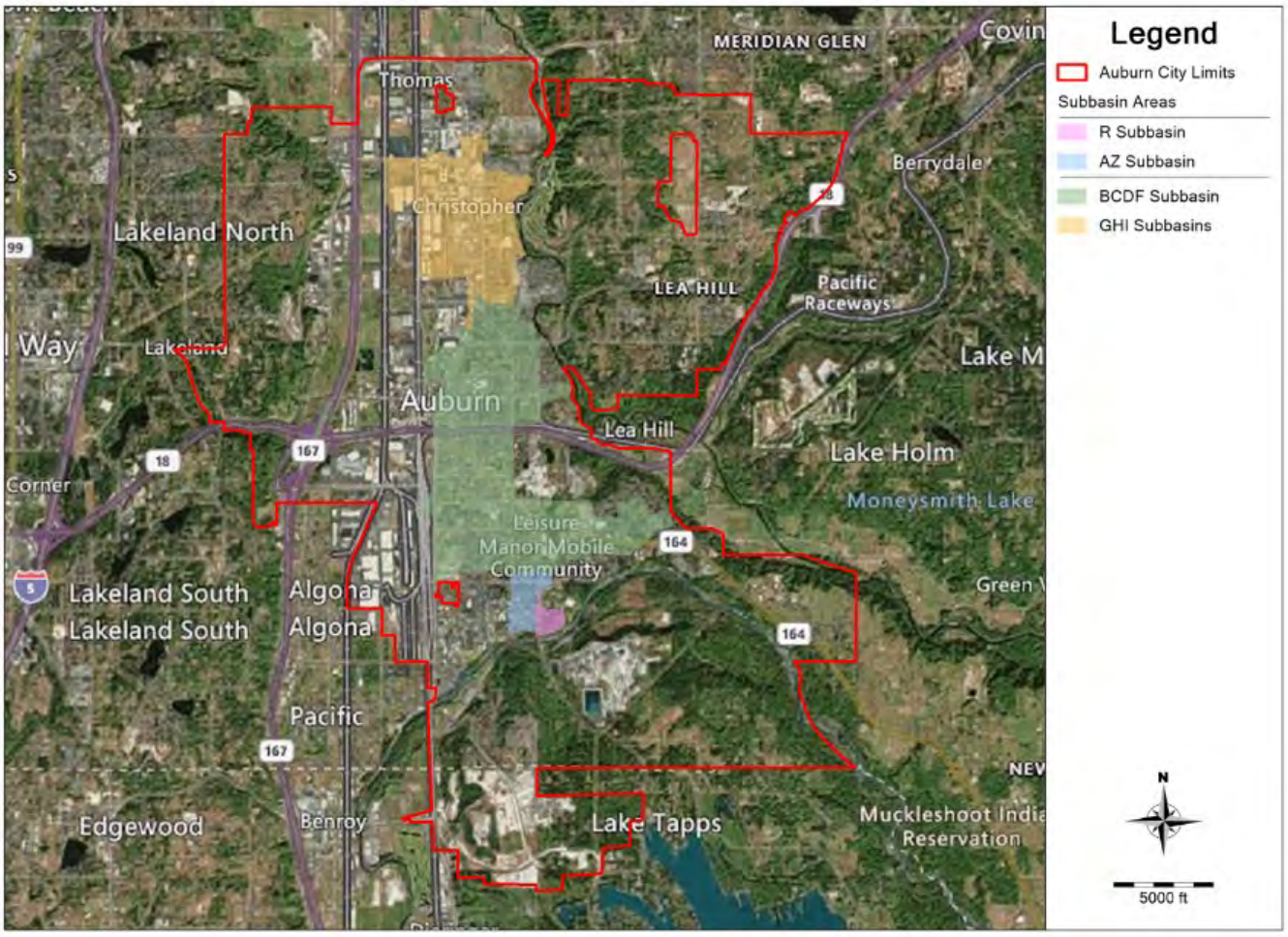


Figure B-1. Subbasin Models Updated on Behalf of Auburn's 2024 Comprehensive Storm Drainage Plan

2.2.1 GHI Subbasin Model

Since the 2015 Plan, BC has updated the calibrated GHI subbasin model with new stormwater projects at the City of Auburn Airport and used updated geographic information system (GIS) data to refine subbasin boundaries in the vicinity of the Brannan Park pump station.

Airport Area Updates. Model updates at the airport include those associated with CP1516 Runway 16-34 Extension and Change Order #2 and CP2118 North Airport Stormwater Improvements Phase 2. Key model updates from these projects included:

- Adding new impervious area, refining subbasin boundaries, and adding ChamberMaxx stormwater detention for the 16-34 runway extension.
- Isolating Pond I and the low elevation area (north hangar area) on airport property from the stormwater system in 30th Street NE so that high flows in the 30th Street NE system do not backwater to the pond and flood the low north hangar area.
- Making better use of storage in Pond I by reconfiguring connecting airport property stormwater pipes.
- Filling in Pond F and routing the Corporate Park Pump Station flows to Pond G.

Brannan Park Pump Station Area Updates. BC refined the GHI model in the vicinity of Brannan Park Pump Station. Upstream of the pump station near I Street NE and 32nd Place NE, new storm pipe was added that routes roadway runoff to the main trunk line in 30th Street NE. Downstream of the pump station, the model was updated from a simplified outfall to a force main connection to the outfall at Reddington wet biofiltration swale.

2.2.2 BCDF Subbasin Model

BC updated the calibrated BCDF model to reflect recent or imminent stormwater conveyance projects.

- **CP1726–2019 Local Street Reconstruction As-Builts** (M Street between 25th Street SE and 29th Street SE, and 28th Street SE between M Street SE and T Street SE). This project was part of a street improvement project that helped improve conveyance capacity. The project included new pipe alignments and changes to the drainage basin delineation adding 7 acres to the B subbasin from the adjacent AZ subbasin.
- **CP1614–2017 Local Street Reconstruction and Preservation As-Builts** (R Street from 28th Street SE to 25th Street SE, 28th Street SE from R Street SE to T Street SE and portions of T Street SE, U Street SE, 27th Street SE and 26th Street SE). This project was part of a street improvement project that helped improve conveyance capacity. The project resulted in a new pipe alignment and changes to the drainage basin delineation. In addition, approximately 1.9 acres of the CIP1614 project is routed to infiltration facilities. The effective impervious area of the model was reduced by the amount of area routed to infiltration pipes and facilities.
- **CP2125–D Street SE and 23rd Street SE Storm Improvements 90% Submittal**. This project, identified as Project 7 and Project 8 in the 2015 Plan, will improve system capacity by constructing new conveyance in D Street SE (Project 7) from 27th Street SE to 21st Street SE, in 21st Street SE near D Street SE and in 25th Street SE near D Street SE. Improvements in 23rd Street SE and K Street SE (Project 8) were included in the plan set but may not be included in the imminent bid set. However, Project 8 improvements were included in the model update to reflect ultimate post-project conditions. These include conveyance improvements in 23rd Street SE near F Street SE and in K Street SE between 23rd Street SE and 21st Street SE.

2.2.3 AZ Subbasin Model

BC updated the uncalibrated AZ model to reflect recent improvements associated with CP1726 and CP1614 projects described above.

2.2.4 R Subbasin Model

BC updated the uncalibrated R basin model conveyance, hydrologic parameters, and basin delineation to be current with other adjacent models (AZ subbasin model). The City has not used the R Basin for any existing or proposed condition evaluations since the subbasin model was developed as part of the 2009 Plan.

2.3 Flow Frequency and Design Storms

After the basin models were updated to reflect existing and imminent CIP conditions, a frequency analysis was completed for each model by performing a long-term simulation (from 1948 to 2022). The long-term flow timeseries were then used to determine the 2% and 4% exceedance storms (one-in-50-year and one-in-25-year flows, respectively) per subbasin model. These storms are used as design storms to evaluate the potential projects listed in Table B-1.

For the long-term simulations, the hydraulic networks of the models were modified so that there were no restrictions to flow and there was free discharge at outfalls. As a result, all simulated runoff could be conveyed without substantial system storage and attenuation.

The event peak flows from the simulations were selected in PCSWMM[1] using two event-based criteria: Minimum inter-event time (time between peak storms) of 12 hours and a flow threshold (varies by subbasin). The peak flows were ranked, and the flow frequencies were established with estimators derived from Cunnane plotting position formulae. The events associated with the 25-year peak flows were used to size storm drainage conveyance to meet the relevant level of service. The results of the flow frequency analysis for the GHI, BCDF, AZ, and R subbasin models are provided in Tables B-3, B-4, B-5, and B-6, respectively. Table B-7 lists the storms that generated the 100-, 50-, and 25-year flows for the subbasin models.

Flow frequencies are unique to each subbasin because of the different hydrologic and hydraulic characteristics of each subbasin. As a result, the storms associated with the return periods are different for each basin.

Table B-3. GHI Subbasin Frequency Analysis Summary

Peak flow rank	Event start date/time	Peak event flow (cubic feet per second) [a]	Return period (year)
1	10/20/2003 4:30	105.0	123.7
2	9/18/2021 15:25	88.6	46.4
3	11/6/2006 0:20	88.5	28.5
4	1/9/1990 4:35	87.4	20.6
5	11/18/2003 10:25	86.0	16.1
6	11/4/2006 15:15	84.4	13.3
7	11/24/1990 4:50	80.1	11.2
8	10/5/1981 23:20	76.4	9.8

[a] *Peak flow measured at inflow to Brannan Park pump station.*

Table B-4. BCDF Subbasin Frequency Analysis Summary

Peak flow rank	Event start date/time	Peak event flow (cubic feet per second) [a]	Return period (year)
1	10/20/2003 4:15	109.6	125.3
2	11/6/2006 0:20	94.5	47.0
3	1/9/1990 4:30	73.8	28.9
4	10/5/1981 23:15	61.3	20.9
5	11/4/1998 19:30	45.5	16.3
6	11/4/2006 16:05	44.6	13.4
7	11/18/2003 10:25	39.9	11.4
8	11/24/1990 4:45	39.5	9.9

[a] *Peak flow measured at inflow to 17th Street Pond.*

[1] PCSWMM is a GIS-based hydraulic and hydrologic modeling platform developed by Computational Hydraulics International (CHI). The software fully supports the Environmental Protection Agency (EPA) SWMM5 hydrology and hydraulics engine, thus providing comparable computation between EPA SWMM and PCSWMM models. Information about PCSWMM software can be found at https://www.pcswmm.com/.

Table B-5. AZ Subbasin Frequency Analysis Summary			
Peak flow rank	Event start date/time	Peak event flow (cubic feet per second) [a]	Return period (year)
1	9/18/2021 15:20	35.8	125.3
2	10/20/2003 4:25	33.1	47.0
3	9/7/2019 20:40	32.7	28.9
4	9/12/2004 1:20	32.3	20.9
5	11/4/1998 19:20	32.2	16.3
6	11/4/2006 15:15	31.15	13.4
7	1/9/1990 4:45	31.08	11.4
8	12/14/1979 21:05	31.07	9.9

a. Peak flow measured at inflow to 36th Street Pond at M Street.

Table B-6. R Subbasin Frequency Analysis Summary			
Peak flow rank	Event start date/time	Peak event flow (cubic feet per second) [a]	Return period (year)
1	9/18/2021 15:15	27.7	125.3
2	9/7/2019 20:35	26.3	47.0
3	10/20/2003 9:20	25.5	28.9
4	9/12/2004 1:15	25.0	20.9
5	12/14/1979 21:00	23.7	16.3
6	7/6/2018 18:30	23.1	13.4
7	11/4/2006 15:10	23.0	11.4
8	1/9/1990 5:00	22.8	9.9

a. Peak flow measured at outfall to White River at R Street and 37th Way SE.

Table B-7. Design Storms by Subbasin Summary							
	100-year		50-year		25-year		
Basin	Start Date	Peak Flow Duration (hour)	Start Date	Peak Flow Duration (hour)	Start Date	Peak Flow Duration (hour)	Flow Measurement Location
GHI	10/20/2003	32	9/18/2021	1	11/6/2006	38	Inflow to Brannan Park Pump Station
BCDF	10/20/2003	20	11/6/2006	17	1/9/1990	8	Inflow to 17th Street Pond
AZ	9/18/2021	1	10/20/2003	16	9/7/2019	1	Inflow to 36th Street Pond
R	9/18/2021	1	9/7/2019	1	10/20/2003	11	Outfall to White River at R Street

2.4 Potential Project Evaluations

Of the six projects considered for inclusion in the 2024 Plan (see Table B-1), two were evaluated with the updated subbasin models and considered viable projects. Another two were evaluated but considered not viable because the proposed project would provide little improvement to capacity or reduce conveyance capacity. The City initially decided to defer the remaining two projects to the next planning period, so BC did

not evaluate them. However, after reevaluation, the City decided to include one of these two projects, the 30th Street NE Area Flooding, Phase 2 project, as a CIP in the 2024 Plan.

Table B-8 lists the potential projects, associated model(s), and status.

Table B-8. 2024 Plan Potential Projects and Evaluation Status

2024 Project ID [a]	Project Name	Associated Model Name	Project Evaluation Status
CP2116	R Street SE Widening - 22nd Street SE to 33rd Street SE	BCDF, AZ, and R	Evaluated and included in 2024 Plan.
11	Christa Ministries Facility Retrofit	GHI	
-	30th Street NE Area Flooding, Phase 3	GHI	Evaluated and not included in 2024 Plan.
-	17th Street Pond Capacity	BCDF	
-	West Hills Drainage Improvements near S 314th Street & 54th Avenue S	No model	Not evaluated. Deferred to later planning period.
9	30th Street NE Area Flooding, Phase 2	GHI	Not evaluated but included in 2024 Plan.

[a] If the project was selected to carry forward as one of the capital improvement projects (CIP) within the 2024 Plan, it was given a numerical ID ranging from 1-16. Projects that were included within the City's capital facilities plan (CFP) follow the format of CPXXXX for their project IDs, where the Xs represent numeric placeholders. Line items with neither a CIP ID on behalf of the 2024 Plan, nor a CFP ID were evaluated as part of the modeling effort but were not chosen to carry forward as a 2024 CIP or within the CFP.

2.4.1 Included Projects

Two projects were evaluated with H&H models and determined to be viable projects for inclusion in the 2024 Plan.

2.4.1.1 CP2116–R Street SE Widening - 22nd Street SE to 33rd Street SE

The R Street SE Widening project CP2116 is currently in design and estimated to begin construction in 2025. The project will improve the R Street SE/29th Street SE intersection, add a new southbound lane from 22nd Street NE to 33rd Street NE, and provide new roadway surface from 22nd Street SE to the White River bridge. As part of the project, the City is improving underground utilities as needed, including storm drainage, sewer pipe, and water lines.

The project lies within three drainage subbasins (B, A, and R subbasins) and, as a result, is represented in three of the City's subbasin models (BCDF, AZ, and R). Figure B-2 shows the project extent and the modeled subbasin delineation.

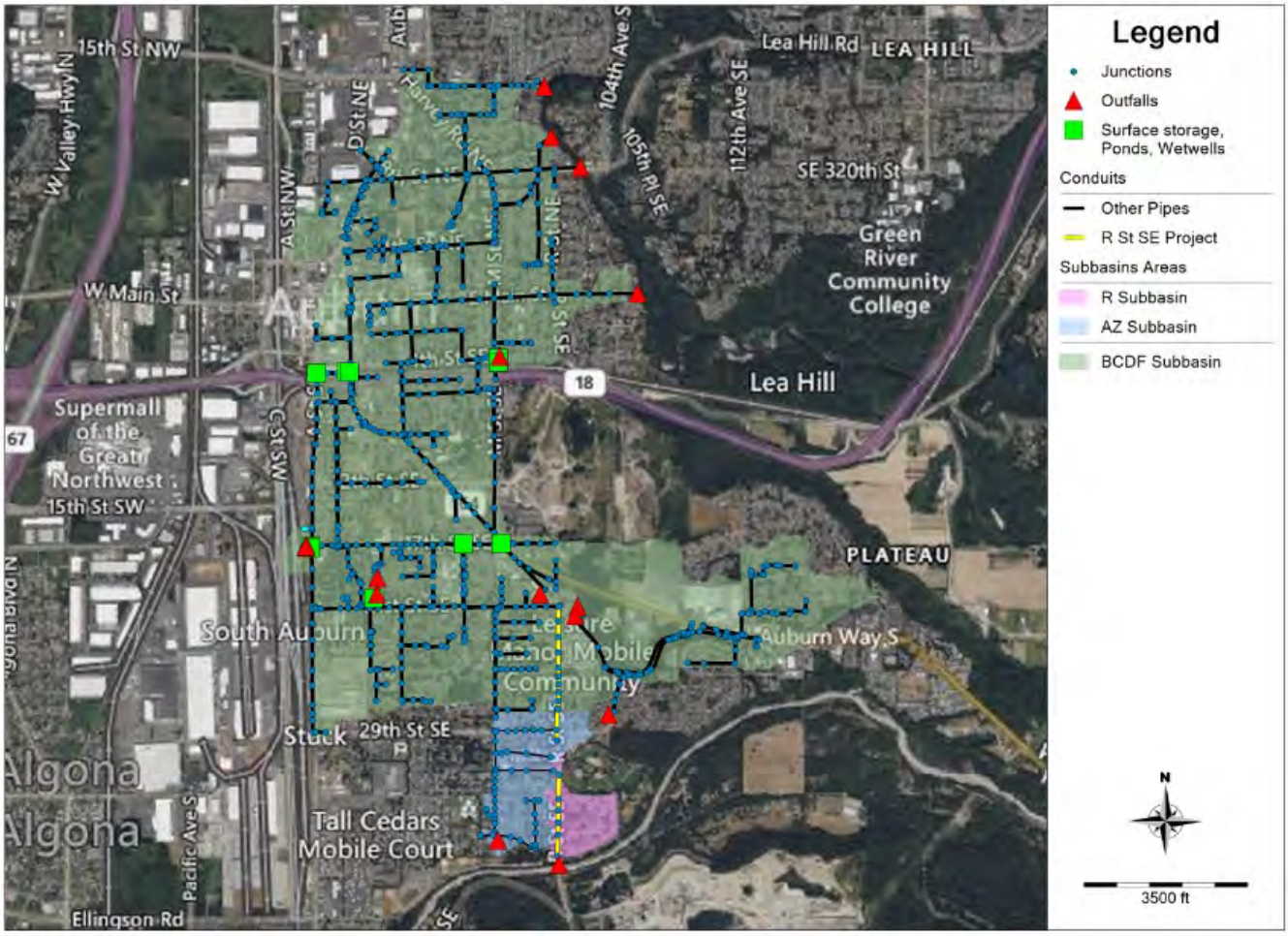


Figure B-2. R Street SE Widening Project Subbasins

BC evaluated the project at the 60% design phase with the 25-year storm flows developed for the BCDF, AZ, and R subbasin models. For all three model evaluations, the design storm simulation showed flooding within the project area resulting from downstream backwater. City staff recommended sizing the R Street SE project pipes assuming downstream impacts are alleviated as part of a future CIP. This evaluation resulted in increased pipe sizes for the R Street SE Project and the identification of the need for a future downstream CIP.

Figures B-3 through B-8 show the plan and profile for the 25-year design storm of the R Street SE Widening project and the future CIP needed to alleviate flooding in the project area from backwater. Table B-9 summarizes the recommended pipe sizes for the R Street SE Widening project and the future CIP.

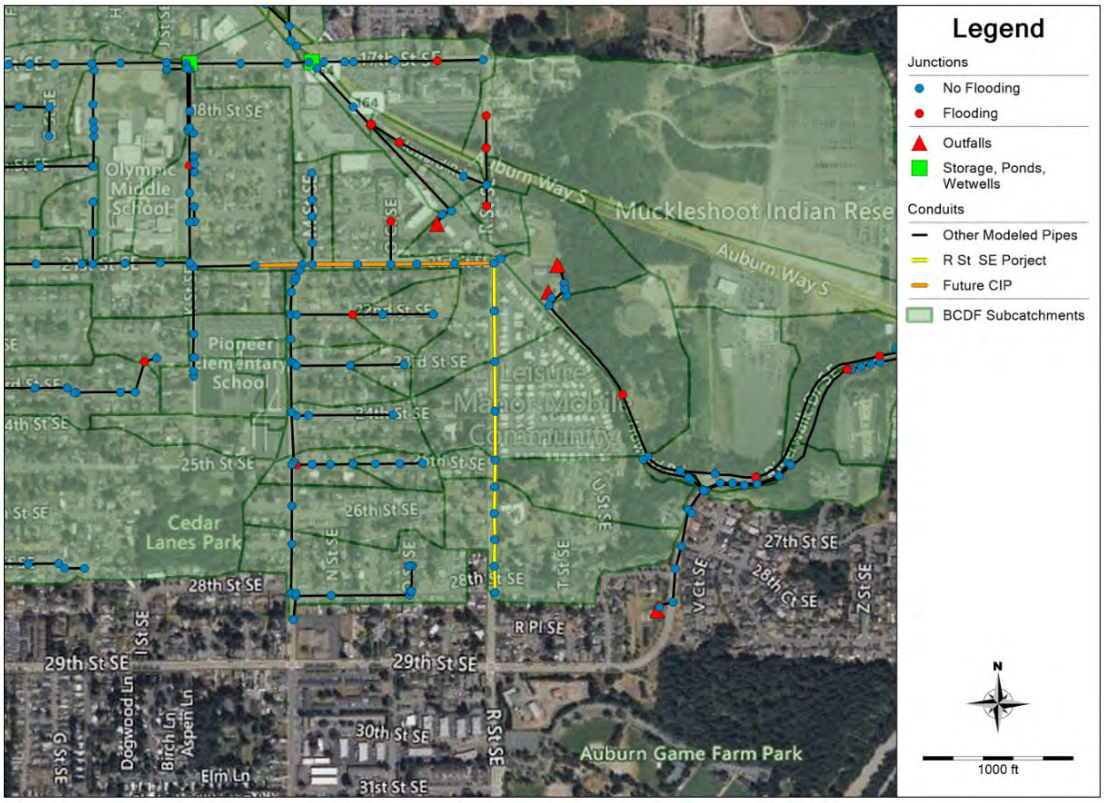


Figure B-3. Plan View of R Street SE Widening and Future CIP (BCDF Subbasin Model, 25-year storm flows [1/9/1990])

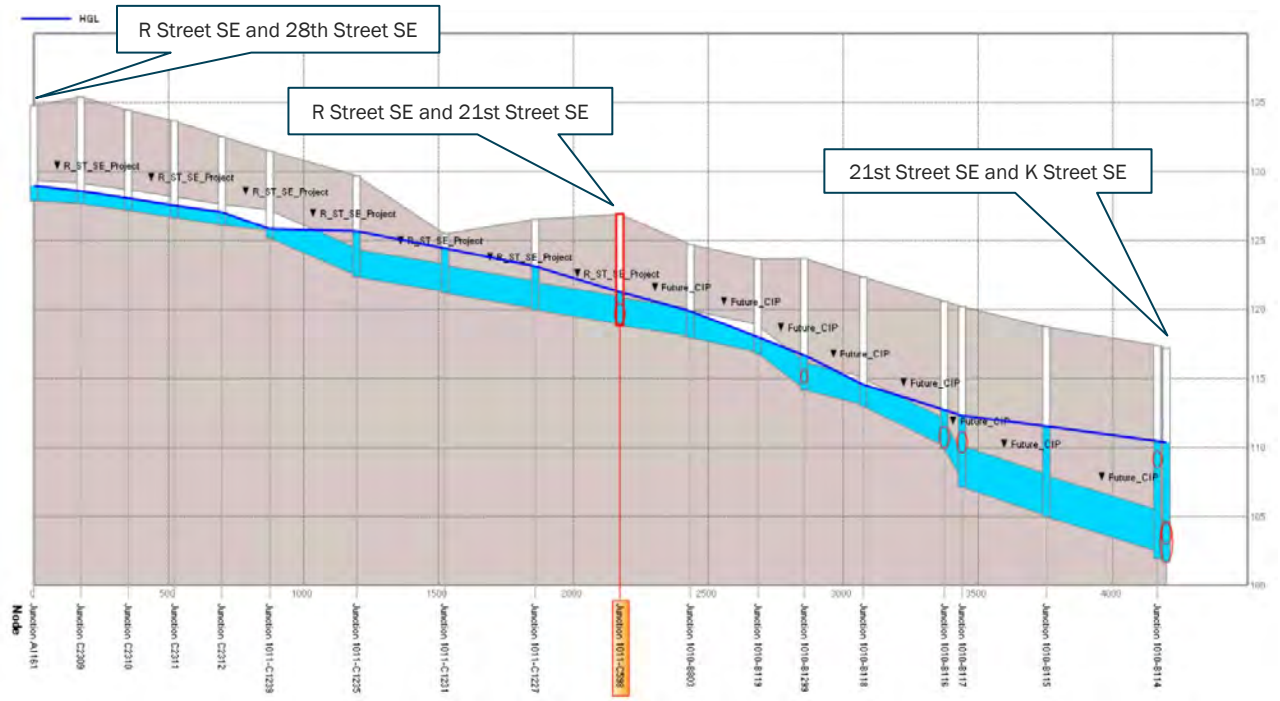


Figure B-4. Hydraulic Grade Line Profile View of R Street SE Widening and Future CIP (BCDF Subbasin Model, 25-year storm flows [1/9/1990])

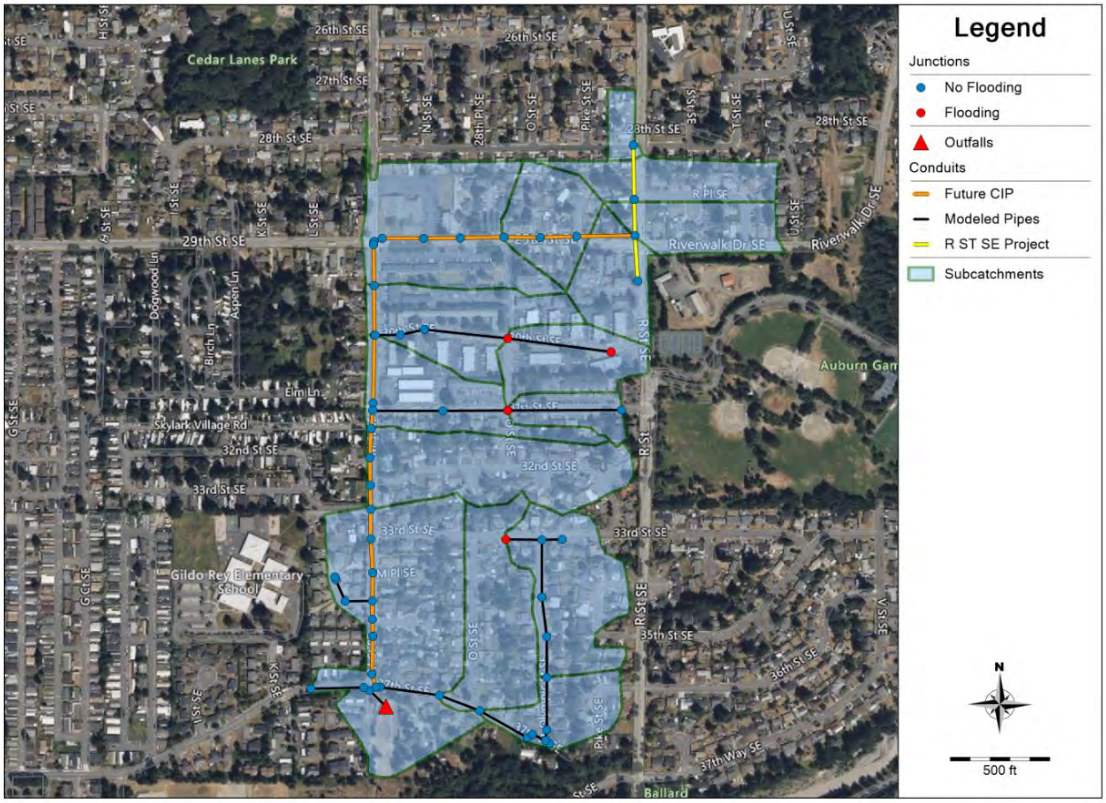


Figure B-5. Plan View of R Street SE Widening and Future CIP (AZ Subbasin Model, 25-year storm flows [9/7/2019])

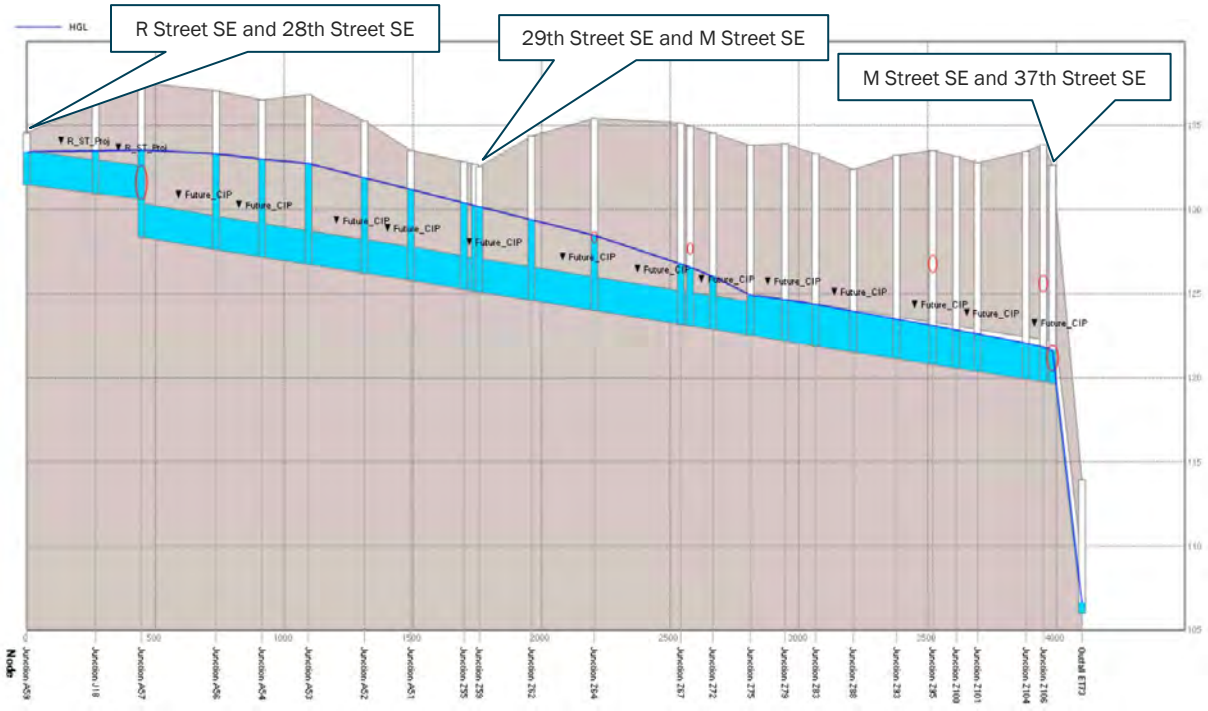


Figure B-6. Hydraulic Grade Line Profile View of R Street SE Widening and Future CIP (AZ Subbasin Model, 25-year storm flows [9/7/2019])

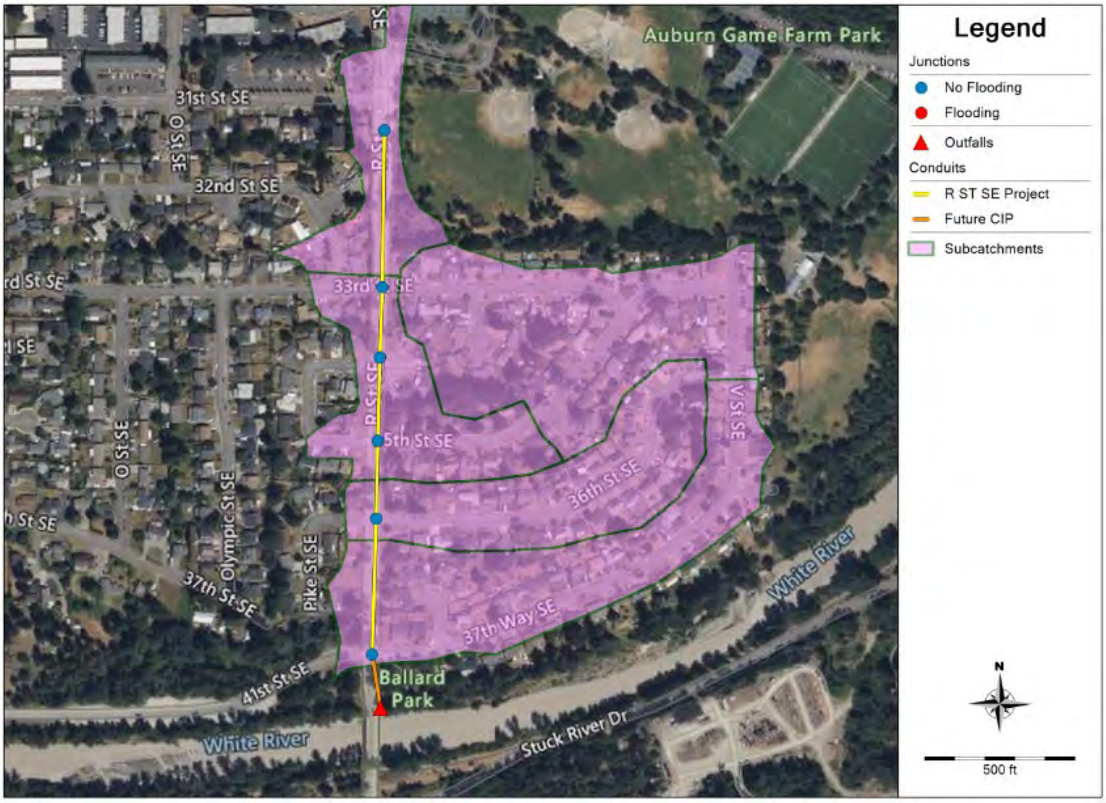


Figure B-7. Plan View of R Street SE Widening and Future CIP (R Subbasin Model, 25-year storm flows [10/20/2003])

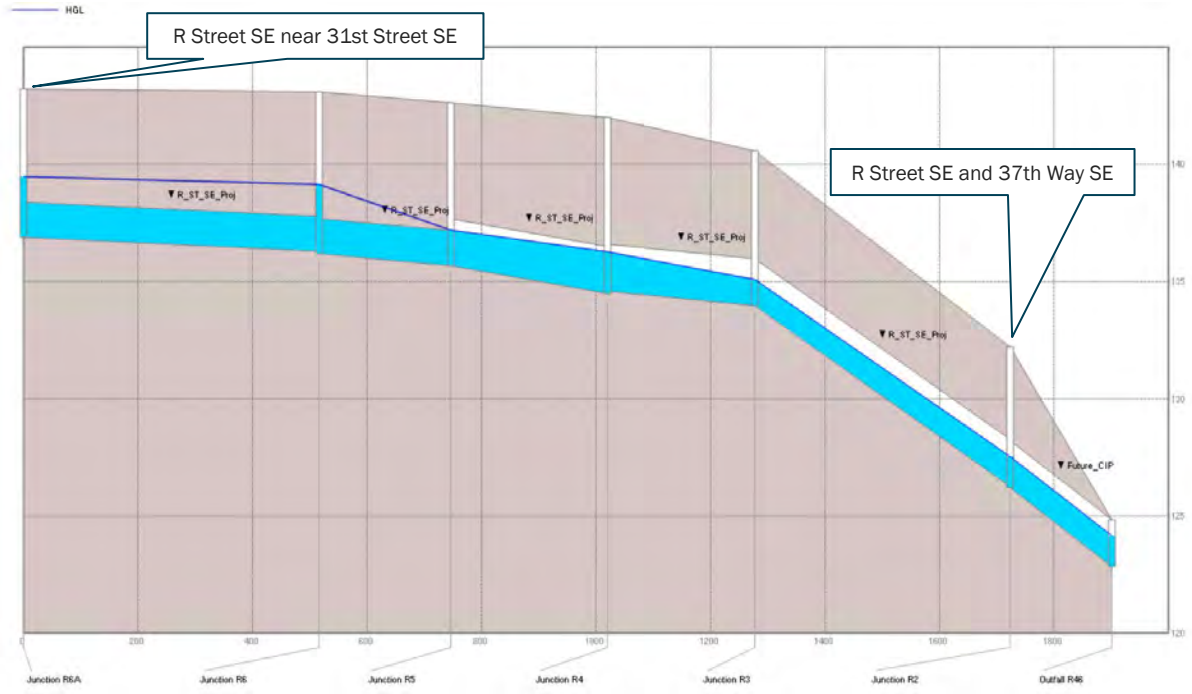


Figure B-8. Hydraulic Grade Line Profile View of R Street SE Widening and Future CIP (R Subbasin Model, 25-year storm flows [10/20/2003])

Table B-9. R Street SE Widening Project and Future CIP Recommendations

Street Location	Subbasin Model Name	25-year Design Storm Start Date	2024 CIP Recommendations	Future CIP Recommendations
R Street SE from 28th Street SE to 25th Street SE R Street SE from 25th Street SE to 22nd Street SE	BCDF	1/9/1990	Upgrade pipe from 12-inch diameter to 18-inch diameter in R Street SE from 28th Street SE to 25th Street SE Upgrade pipe from 18-inch diameter to 24-inch diameter in 1st Street SE	Upgrade pipe from 18-inch diameter to 24-inch diameter in 21st Street SE from R Street SE to M Street SE Upgrade pipe from 24-inch diameter to 36-inch diameter in 21st Street SE from M Street SE to K Street SE
R Street SE from 28th Street SE to 29th Street SE	AZ	9/7/2019	Upgrade pipe from 10-inch diameter to 24-inch diameter in R Street SE from 28th Street SE south to approximately 225 ft of 29th Street SE	Upgrade pipe from 10-inch diameter to 24-inch diameter in 29th Street SE from R Street SE to M Street SE Upgrade pipe from 18-inch diameter to 24-inch diameter in M Street SE from 29th Street SE to 32nd Street SE Upgrade pipe from 24-inch diameter to 30-inch diameter in M Street SE from 32nd Street SE to 37th Street SE
33rd Street SE to White River Outfall	R	10/20/2003	Upgrade pipe from 10-inch/12-inch diameter to 18-inch diameter in R Street SE from 31st Street SE to 34th Street SE Upgrade pipe from 12-inch diameter to 24-inch diameter in R Street SE from 34th Street SE to 37th Way SE	Upgrade pipe from 18-inch diameter to 24-inch diameter south of 37th Way SE to the White River outfall

2.4.1.2 CIP 11 - Christa Ministries Facility Retrofit

The Christa Ministries Facility Retrofit project is a retrofit of an existing swale resized to meet the water quality flow volume for flows discharging from the Brannan Park pump station. Currently, the swale is part of a wetland and detention pond system on a City-owned parcel.

Modeling efforts for the project consisted of estimating the water quality flow volume discharged from the Brannan Park pump station force main using the Continuous Simulation Method from the 2019 Stormwater Management Manual for Western Washington (2019 SWMMWW) (Ecology 2019). The 2019 SWMMWW describes the methodology as "Using an approved continuous runoff model, the water quality design volume shall be the simulated daily volume that represents the upper limit range of daily volumes that accounts for 91% of the entire runoff volume over a multi-decade period of record."

BC ran the existing conditions GHI model for the 1949 to 2022 period of record to generate daily flow volumes from the Brannan Park pump station. To determine the 91% flow volume, BC removed the days without flow from the daily record and then used the Excel function PERCENTRANK.EXC to determine the rank percentile for each day's flow volume (100 to 0). The Excel formula PERCENTILE.INC was then used to return the flow volume associated with the 91% rank. The resulting water quality flow volume is 375,448 cubic feet or 8.6 acre-feet.

2.4.2 Excluded Projects

Two potential projects were evaluated with H&H models and determined to be not viable because the proposed changes did not provide sufficient benefit or exacerbated simulated downstream flooding conditions during design storms.

2.4.2.1 30th Street NE Area Flooding, Phase 3 (2015 Plan CIP ID 4B)

The 30th Street NE Area Flooding, Phase 3 project was identified in the 2009 and 2015 Plans to reduce flooding along C Street NE between 30th Street NE and 37th Street NE in the GHI subbasin. The area experienced significant flooding during the December 3, 2007, storm and previous model results indicate the system's capacity may be limited by low pipe gradient and shallow inverts. The proposed project would collect stormwater from C Street NE in a new larger and higher gradient pipe and then pump flows to the 42-inch-diameter trunk line in 30th Street NE. The force main connection to the 30th Street NE pipe is also where the airport stormwater system connects to the 42-inch-diameter trunk line.

BC evaluated the impact of this project on the hydraulic grade line (HGL) in the 30th Street NE trunk with the updated GHI subbasin model (update described in Section 2.2) for the 25-year design storm (11/6/2006). The project raised the simulated HGL in the 30th Street NE trunkline by approximately 1 foot, which resulted in flooding at the airport property's lowest inlet rim (409-I51) near the north hangar. In addition, Figure B-9 shows the airport property flooding that resulted from the project. Figure B-10 compares the HGL in the 30th Street NE trunkline with and without this project.

Because of the simulated flooding during the design storm and the lack of reports of flooding on C Street NE since the December 2007 storm, the City opted to remove the 30th Street NE Area Flooding, Phase 3 project from consideration in the 2024 Plan.

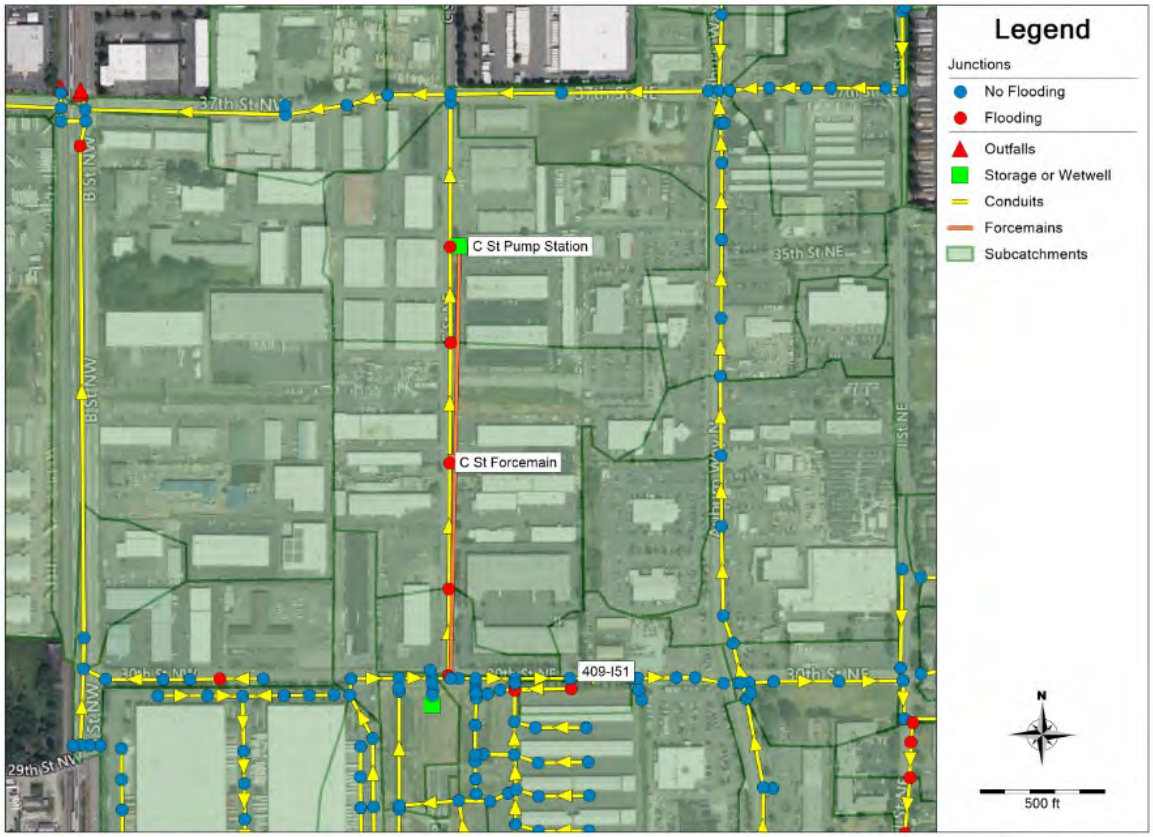


Figure B-9. Flooding impacts of 30th Street NE Area Flooding, Phase 3 Project at the Airport Property Low Area (catch basin 409-I51)

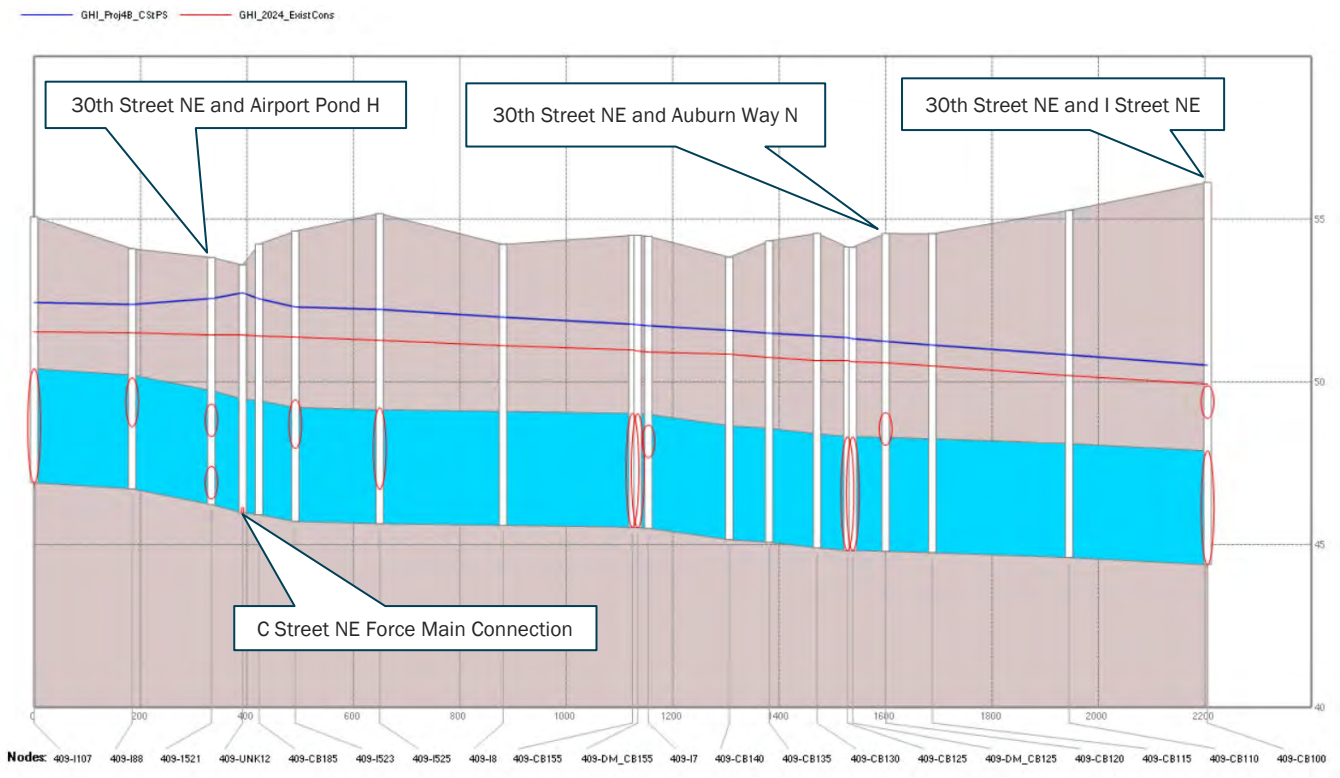


Figure B-10. Hydraulic Grade Line in 30th Street NE (from the Airport Property to I Street NE) Comparison of Existing Conditions and Proposed Conditions from the 30th Street NE Area Flooding, Phase 3 Project

2.4.2.2 17th Street Pond Improvements Project

The 17th Street Pond is one of several infiltration ponds in the BCDF subbasin. Currently, the control structure manhole for the 17th Street Pond is in the right-of-way (ROW) downstream of the pond outlet pipe. The standpipe portion of the control structure is dislodged, allowing stored water to discharge from the pond without control. Also, without the standpipe, model simulations show that downstream capacity limitations during large events cause water to back up in the system and into the ponds, allowing the pond to act as backwater storage. Prior to repairing the pond control, the City asked BC to review several scenarios to optimize the storage and operation of the 17th Street Pond to help reduce flooding in the downstream system, specifically at the low area near the intersection of Auburn Way S and the State Route (SR) 18 overpass. To help compare existing and proposed conditions, BC modeled several 17th Street Pond configurations:

1) Scenario 1: Outlet control as designed (control structure in ROW).
2) Scenario 2: Outlet control under current conditions (no control structure).
    a) Scenario 2a: Scenario 2 plus an increase in pond volume.
    b) Scenario 2b: Scenario 2 plus double the pond volume (as a sensitivity test only, does not represent space available to expand pond).
3) Scenario 3: Outlet control moved inside pond.
    a) Scenario 3a: Scenario 3 plus an increase in pond volume by replacing sloped sides with walls around the entire pond perimeter.

Figure B-11 shows the HGL in Auburn Way South at the SR 18 westbound offramp for the various scenarios. The HGL varies slightly between the scenarios. Figure B-12 shows the flooding rate and volume during the 25-year storm for the scenarios at the low area. The difference in the amount of flooding between the scenarios is minimal.

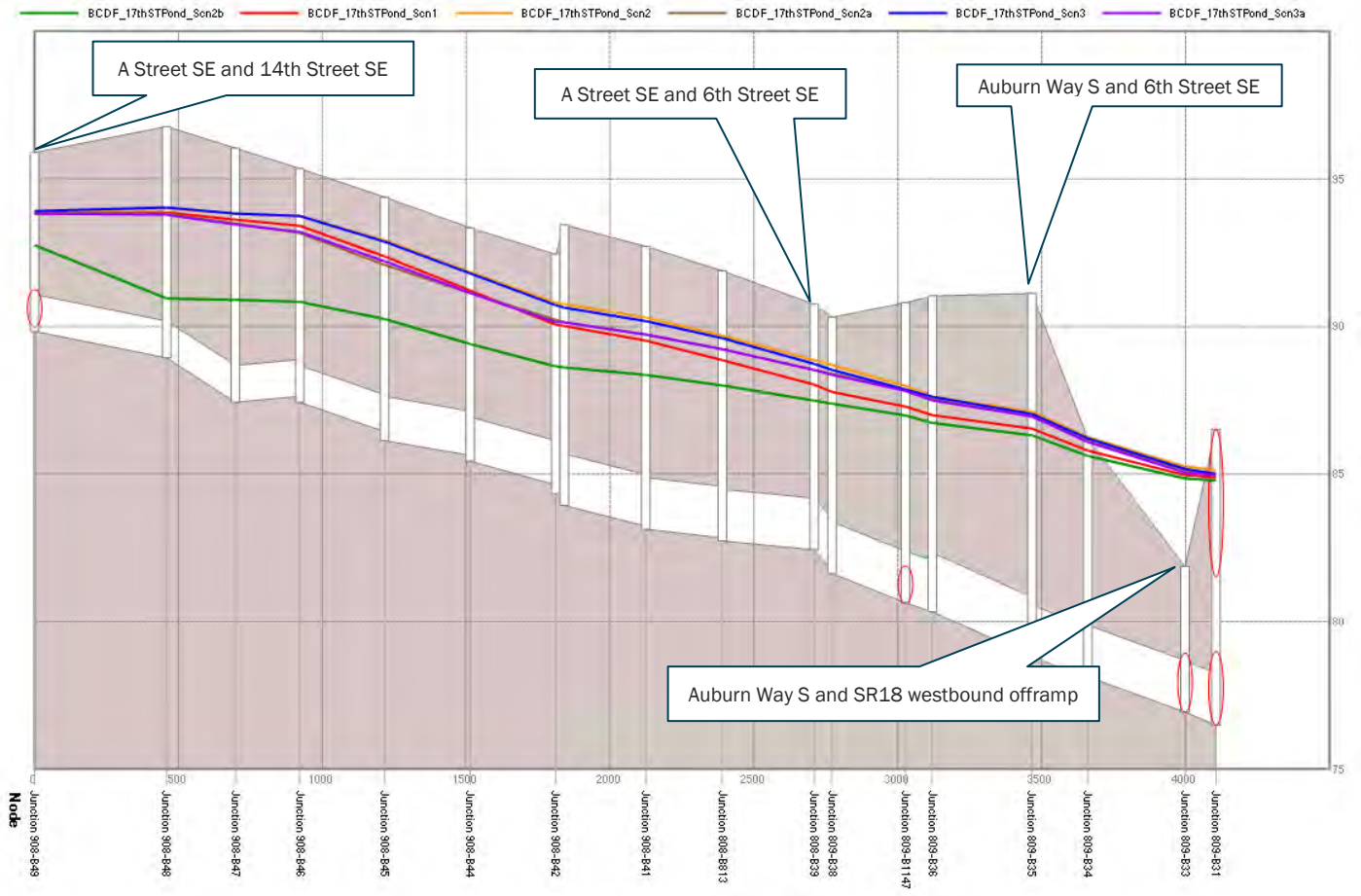


Figure B-11. Comparison of Hydraulic Grade Line in Vicinity of Auburn Way South and SR 18 Westbound Off-Ramp Intersection for Evaluation Scenarios

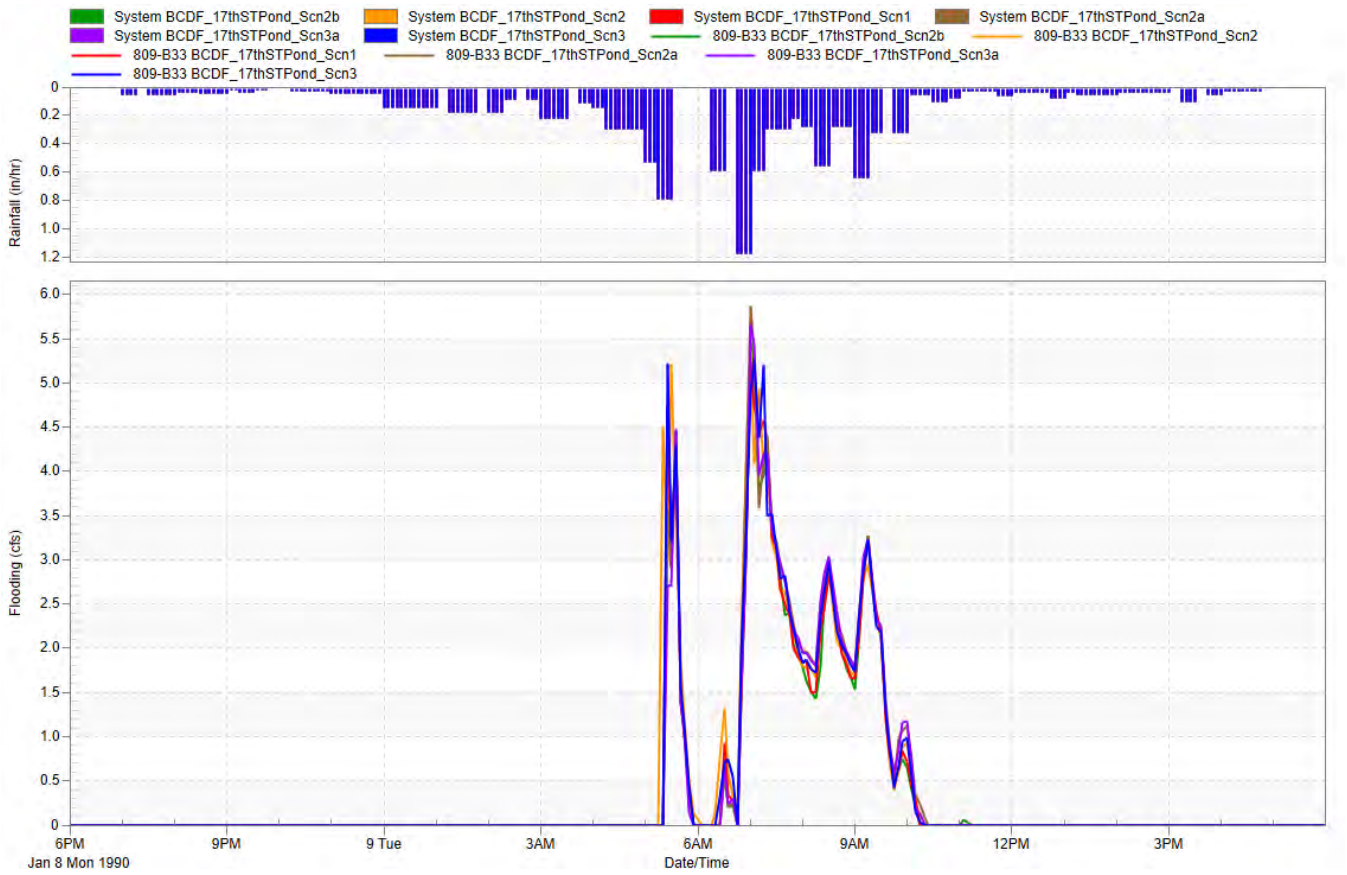


Figure B-12. Flooding at Low Inlet (809-B33) near Auburn Way South and SR 18 Westbound Offramp Intersection for Evaluation Scenarios

References

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Brown and Caldwell. 2015. City of Auburn Comprehensive Stormwater Drainage Plan. Prepared for the City of Auburn by Brown and Caldwell.

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Appendix C

Asset Management Evaluation

1. Condition Assessment and Data Gaps Analysis

1.1 Existing Conditions

The City uses Cartegraph, a computerized maintenance management system (CMMS), to manage its active asset inventory. Cartegraph may be used to develop work requests, document the time and cost of the work performed, keep track of resources available, and produce reports of various kinds related to asset management. The City uses a Cartegraph mobile app during field assessments, but any further updates/changes to the asset is done on the desktop in a geographic information system (GIS). The City assured that the information between GIS and Cartegraph is universal for active assets.

Figure C-1 shows the City's Cartegraph Asset dashboard. The type and count of stormwater assets within the City's asset inventory is listed on the lefthand side of the figure. Each stormwater asset has several attributes that may be tracked and documented alongside the feature. Some assets have an overall condition index (OCI) rating set up in Cartegraph. However, it is not universal to all stormwater assets, and the City expressed interest in reviewing and revising how the rating was generated.

City field staff noted the Cartegraph mobile app allows users a few options for scoring or making notes, but not all conditions can be accurately noted in the field. For example, one staff member noted that an aspect of a pipe was observed to be failing in the field, but since the failure condition wasn't explicitly asked for in the Cartegraph mobile app, the condition was rated as 100% (signifying an excellent condition). Staff must ensure the conditions are accurately conveyed and update them as necessary after returning from the field.

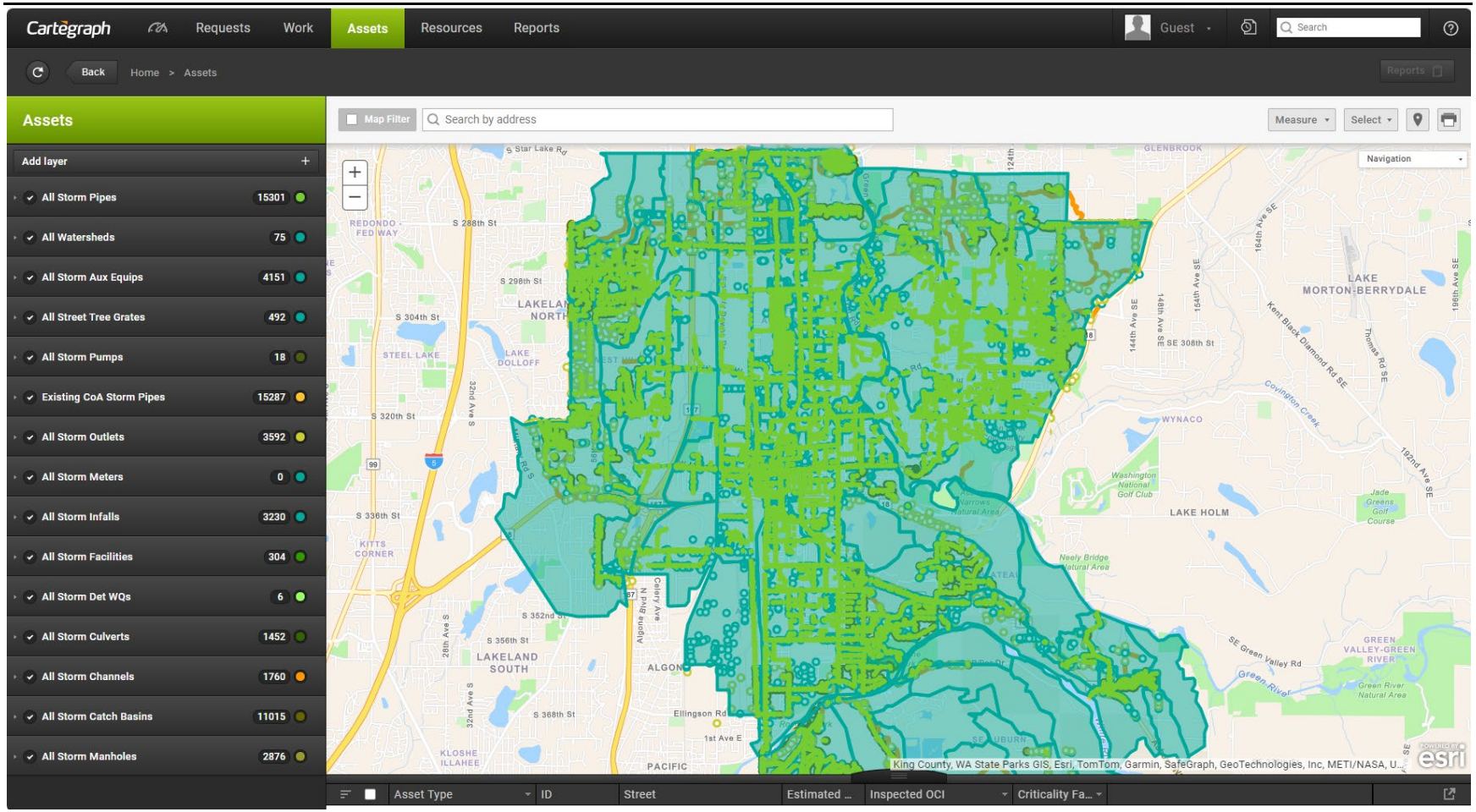


Figure C-1. City's Cartegraph Asset Dashboard and Stormwater Asset Inventory

Screenshot was taken June 4, 2024. Because most of the asset management review was performed more than 6 months prior to taking the screenshot, it is likely there may be some differences in total asset count shown in Figure C-1 and total counts reported elsewhere in this document.

1.2 Critical Attribute Data

One of the goals of this evaluation is to develop criteria for preparing a criticality and risk analysis for the City's stormwater assets. This involved preparing a method for scoring the likelihood of failure and criticality of failure of each type of asset. The likelihood of failure score reflects the expected asset condition based on specified attributes, and the criticality of failure score is demonstrative of the anticipated response should the asset fail.

Each stormwater asset was reviewed, and the criteria necessary for developing its scores was determined based on professional judgment and considered the data available. Some asset types were grouped together because they were anticipated to require similar levels of management/maintenance from the Storm Drainage Utility. Other asset types listed in Cartegraph, specifically fences, infalls, outlets, meters, and auxiliary equipment, were not grouped because they are linked to one of the greater asset types reviewed and should be assigned the same likelihood of failure and criticality of failure as the greater asset it is linked to (as work/inspection is anticipated to occur at the same time).

Another asset type listed in Cartegraph, Storm Channels (ditches), was not assigned criteria for criticality scores either because its condition is based on maintenance and will not be repaired or replaced (see the Ditch Maintenance and Operations Program).

Details regarding the critical attributes used in assigning the criticality scores are listed below. Scoring is discussed in the Criticality Review section.

- Age: Based on the installation date of the asset (current year minus installation year).
- Useful life: The expected amount of time an asset is expected to perform its function. Based on either the material (pipes, culverts, network structures) or type of asset (pumps, ponds). Useful life estimates are given in the Criticality Review section.
- Previous inspection data: The previously inspected condition of the asset.
- Proximity to critical facilities: Based on a GIS analysis where a buffer was placed around critical facilities within the City. Assets were assumed to have a higher criticality of failure if they were closer to a critical facility.
- Adjacency to critical roadways: Based on a GIS analysis where a buffer was placed around critical roadways within the City. Assets were assumed to have a higher criticality of failure if they were adjacent to a critical roadway.
- Adjacency to priority roadways: Based on a GIS analysis where a buffer was placed around priority roadways within the City. Assets were assumed to have a higher criticality of failure if they were adjacent to a priority roadway.

Table C-1 lists the recommended criteria to consider in calculating the likelihood of failure and criticality of failure scores for each category of stormwater asset.

Table C-1. Recommended Criteria for Calculating Criticality Scores of Stormwater Assets

Asset Name in Cartegraph	Asset Category	Likelihood of Failure Attributes	Criticality of Failure Attributes
Storm Pipes	Pipes	Age Useful life Previous inspection data	Proximity to critical facilities Adjacency to critical roadways Adjacency to priority roadways
Storm Culverts	Culverts	Age Useful life Previous inspection data	Proximity to critical facilities Adjacency to critical roadways Adjacency to priority roadways
Storm Pumps	Pumps	Installation date Useful life	Proximity to critical facilities Adjacency to critical roadways Adjacency to priority roadways
Street Tree Grates Storm Manholes Storm Catch Basins	Network structures	Age Useful life Previous inspection data	Proximity to critical facilities Adjacency to critical roadways Adjacency to priority roadways
Storm Facilities Storm Det WQs	Ponds	Installation date Type	Proximity to critical facilities Adjacency to critical roadways Adjacency to priority roadways

1.3 Data Gaps

After the critical attributes were identified for stormwater assets, a data gaps analysis was performed to see what needed to be addressed. This followed a previous effort led by the City to address data gaps in its stormwater asset inventory using a high precision antenna. As there were several stormwater assets, stormwater pipes and culverts were used as examples to demonstrate the completeness of the asset inventory.

Figure C-2 shows the distribution and availability of data for several attributes in the pipe dataset (namely, material, size, start elevation, and installation date). Figure C-3 shows the same for the culvert dataset (with the addition of end elevation). The figures demonstrate a fair amount of the attributes reviewed had <Null> entries. Most significantly, stormwater pipes are missing approximately 10% of their installation dates, while culverts are missing 75%.

Installation date was deemed to be a critical attribute for all of the stormwater assets in determining criticality scores. Lacking this attribute would then have the potential to prioritize an asset for work, even if it were expected to have been installed recently (and more likely to be in good condition), over an asset that is expected to have been installed 50 years ago. The goal of the criticality review is to simplify and provide reasoning for the prioritization of work, so it was deemed beneficial to perform a desktop GIS analysis to provide placeholder estimates for installation year. The stormwater pipe dataset was used for this process.

A copy of the stormwater pipes layer was made, and a new attribute column created for the estimated installation date. This was to make sure that the estimated installation dates entered could be distinguished from the installation dates in the dataset previously. Professional judgment was used to estimate installation dates by considering adjacent infrastructure, parcel build-out years, and historical imagery, as needed. Another attribute column was also created to provide notes as to why the estimated installation date was chosen for that feature. In this way, the remaining pipe dataset was assigned estimated installation dates and used to carry forward in the criticality review.

pipe (material)

Row Labels	Sum of Count
<Null>	338
ADS	27
CAST IRON	5
CLAY	15
CMP	1015
CONCRETE	3212
CPEP	1506
DUCTILE IRON	1360
HDPE	99
LCPE	12
PERFORATED	4
POLYETHYLENE	11
PVC	6683
RCP	710
RPVC	4
STEEL	1
Grand Total	**15002**

pipe (size)

Row Labels	Sum of Count
3	5
4	87
6	542
7	1
8	2314
10	234
12	8012
15	571
16	15
18	1441
20	1
21	121
22	3
24	722
26	2
27	12
28	2
29	3
30	288
36	293
42	116
48	66
49	1
54	4
57	2
60	4
64	1
71	2
72	9
77	2
78	2
81	2
87	4
95	3
96	5
108	3
117	1
120	4
142	1
<Null>	101
Grand Total	**15002**

SELEVATION	(Multiple Items)
pipes without start elevations	
Sum of Count	
3315	

INSTALLED	<Null>
pipes without install date	
Sum of Count	
1523	

Figure C-2. Stormwater Pipe Attribute Data Available in Cartegraph

Note: Attribute data were reviewed prior to capturing a screenshot of Cartegraph (Figure C-1), hence there may be some differences in asset count.

Culvert (material)

Row Labels	Sum of Count
<Null>	79
ADS	1
CAST IRON	2
CLAY	4
CMP	183
CONCRETE	714
CPEP	182
DUCTILE IRON	71
HDPE	4
PVC	97
RCP	33
RPVC	6
STEEL	1
UNKNOWN	2
Grand Total	**1379**

Culvert (size)

Row Labels	Sum of Count
4	2
6	9
8	54
9	2
10	21
12	864
14	1
15	23
18	134
20	5
21	1
24	86
27	1
28	3
29	1
30	12
32	1
33	2
36	39
42	3
48	19
49	1
54	8
60	5
66	2
72	3
76	1
77	1
84	4
96	4
120	2
144	1
180	1
240	1
660	1
<Null>	61
Grand Total	**1379**

Start Elevation	(Multiple Items)
Culverts without start elevations	
Sum of Count	
277	

Installed	<Null>
Culverts without install date	
Sum of Count	
1037	

End Elevation	(Multiple Items)
Culverts without end elevations	
Sum of Count	
285	

Figure C-3. Culvert Attribute Data Available in Cartegraph

Note: Attribute data were reviewed prior to capturing a screenshot of Cartegraph (Figure C-1), hence there may be some differences in asset count.

1.4 Recommendations

The findings from the condition assessment and data gaps analysis resulted in the following recommendations for the program:

- City field staff should be able to accurately report/enter asset conditions in the field. If there are features that are consistently being scored incorrectly due to issues with the Cartegraph app, this should be reviewed and amended to simplify the entry process from the field.
- The OCI rating should be reviewed and revised.
- The likelihood of failure and criticality of failure attributes from Table C-1 should be used as the criteria for criticality scoring.
- A similar GIS desktop analysis may be beneficial for other asset types with missing installation dates. Specifically, culverts are expected to benefit as they were missing 75% of their installation dates.

2. Criticality Review

2.1 Likelihood of Failure

To develop the likelihood of failure score, assumptions had to be made regarding the critical attributes listed in Table C-1.

2.1.1 Useful Life

The useful life estimates based on pipe material are given in Table C-2 below.

Table C-2. Useful Life Estimates for Pipe Material

Pipe Material (Cartegraph)	Description	Useful Life Estimate
<Null>	No material listed	50
ADS	Advanced drainage system (type of high density polyethylene pipe)	50
CAST IRON	Cast iron pipe	75
CLAY	Vitrified clay pipe	100
CMP[1]	Corrugated metal pipe	50
CONCRETE[1]	Concrete pipe	100
CPEP	Corrugated polyethylene pipe	50
DUCTILE IRON[1]	Ductile iron pipe	75
HDPE[1]	High density polyethylene pipe	100
LCPE	Line corrugated polyethylene pipe	50
PERFORATED	Perforated pipe	50
POLYETHYLENE	Polyethylene pipe	50
PVC[1]	Polyvinyl chloride pipe	100

Pipe Material (Cartegraph)	Description	Useful Life Estimate
RCP[1]	Reinforced concrete pipe	100
RPVC	Rigid polyvinyl chloride pipe	50
STEEL[1]	Ductile steel pipe	75

1 Useful life estimates were sourced from a similar process performed for the Multnomah County Drainage District. The remaining materials were not included in this process and were assigned a conservative estimate of 50 years as a placeholder value. This value may be updated by the City as they see fit.

Useful life estimates can be made in a similar way for culverts and network structures based on their material. These have not been prepared as a part of this assessment.

Useful life estimates for the ponds category from Table C-1 are given in Table C-3. The possible components for each type of facility was listed, and an estimate of useful life given using professional judgment. The most conservative useful life of one of the facility's components should be used to assign the useful life of the facility. These estimates were given as a basis for developing a likelihood of failure score for the ponds asset category. The useful life of pumps can be estimated in a similar manner as shown in Table C-3, but has not been estimated as a part of this assessment.

Table C-3. Useful Life Estimates for Ponds (Stormwater Facilities and Detention/Water Quality Treatment Facilities)

	Total[1]	Useful Life of Components Assumption (Years)[2]						
Facility Type	Useful Life Assumption (Years)	Control Structure Replacement	Mechanism Replacement	In-Place Soil Media	Media Box Replacement	Vault	Rebuild	Notes
<Null>	–	–	–	–	–	–	–	–
BAFFLE OIL/WATER SEPARATOR	20	–	20	–	–	50	–	–
BASIC BIOFILTRATION SWALE	N/A[3]	–	–	–	–	–	–	Maintenance based
BIORETENTION	25	–	–	25	–	–	–	Full media replacement
CARTRIDGE FILTER	20	–	–	–	20	50	–	–
CP OIL/WATER SEPARATOR	20	–	20	–	–	50	–	–
DETENTION POND	25	25	–	–	–	–	–	Assume 25 years for control structure
DETENTION TANK	25	25	–	–	–	50	–	Assume 25 years for control structure
DETENTION VAULT	25	25	–	–	–	50	–	Assume 25 years for control structure
FILTER STRIPS	25	–	–	25	–	–	–	Full media replacement
FLOOD STORAGE	25	25	–	–	–	–	–	Assume 25 years for control structure
HYDRODYNAMIC SEPARATOR	10	–	10	–	–	50	–	–
INFILTRATION	20	–	–	20	–	–	–	Full media replacement
INFILTRATION POND	20	–	–	20	–	–	–	Full media replacement
MODULAR WETLAND	20	–	–	–	20	–	–	–
PERMEABLE PAVEMENT	10	–	–	–	–	–	10	–
TREE BOX	20	–	–	–	20	–	–	–
WET BIOFILTRATION SWALE	N/A[3]	–	–	–	–	–	–	Maintenance based
WET POND	25	25	–	–	–	–	–	Assume 25 years for control structure
WET VAULT	25	25	–	–	–	50	–	Assume 25 years for control structure

1 Total useful life is based on the most conservative estimate listed for one of the facility's component parts.

2 Estimates were made using professional judgment regarding the useful life expectancy for the components of each facility. There is not a value listed for each facility for the possible components as they do not apply to each facility listed.

3 Facilities that do not have a useful life assumption are maintenance based and should be managed as part of routine maintenance rather than a repair and replacement program.

2.1.2 Remaining Useful Life

The remaining useful life is calculated using its age and its useful life, as shown below.

$$Remaining\ useful\ life = asset\ age - useful\ life$$

This is the basis for the likelihood of failure score for the stormwater assets.

2.1.3 Previous Inspection Data

The previous condition of the asset feature was used to make an adjustment to the likelihood of failure score, if it was available, since this would be the most reliable source of data regarding its condition.

Thus, the remaining useful life equation would be:

$$Remaining\ useful\ life = asset\ age - useful\ life + previous\ inspection\ data\ adjustment$$

Table C-4 shows the adjustment to the useful life based on the previous OCI assigned. These estimated adjustments were only considered for stormwater pipes and should be evaluated to see whether a similar adjustment can be made for network structures. This is not recommended for ponds and pumps.

Table C-4. Remaining Useful Life Adjustment for Pipes and Culverts Based on Previous Inspection Data

Overall Condition Index	Description	Useful Life Year Adjustment
0	Failed	0
20	Poor	10
40	Fair	20
60	Good	30
80	Excellent	40

2.1.4 Likelihood of Failure Score

Table C-5 shows how the likelihood of failure score was assigned based on remaining useful life. A score of 5 is the most likely to fail, while a score of 1 is the least likely to fail.

Table C-5. Likelihood of Failure Score

Score	Description	Useful Life Years Remaining with Updated Inspection Results
5	Structure is greater than 25 years beyond useful life and should be prioritized for inspection	-75
4	Structure is past end of useful life and must be inspected	-25
3	Structure is nearing end of useful life and should be inspected	0
2	Failure not expected for 25+ years	25
1	Unlikely failure in foreseeable future	75

2.2 Criticality of Failure Score

To develop the criticality of failure score, assumptions had to be made regarding the critical attributes listed in Table C-1. Each critical attribute metric was scored independently and then averaged to result in the criticality of failure score.

2.2.1 Proximity to Critical Facilities

A 1,000-foot buffer was placed around the critical facilities within the City of Auburn in GIS. If any asset was within 1,000 feet of a critical facility, then its failure was assumed to be most critical. The score for this assessment is shown in Table C-6 below.

Table C-6. Proximity to Critical Facilities Score

Distance from Critical Facility	Proximity to Critical Facilities Score
0–1000 feet	5
Greater than 1000 feet	1

This GIS analysis was only performed for stormwater pipes for this assessment but can be easily performed for other stormwater assets by applying the same GIS buffer.

2.2.2 Adjacency to Critical Roadways

The roadways considered as critical in this assessment are listed below.

- Emergency evacuation route.
- Snow plow route.
- King County Metro bus route.
- Sound Transit bus route.
- Pierce Transit bus route.

A buffer was placed around the critical roadways in the City in GIS. If any asset was within this buffer, it was deemed to be most critical of failure. The score for this assessment is shown in Table C-7 below.

Table C-7. Adjacency to Critical Roadways Score

Distance from Critical Roadway	Proximity to Critical Roadways Score
Within right-of-way buffer of critical roadway	5
Outside of critical roadway buffer	1

This GIS analysis was only performed for stormwater pipes for this assessment but can be easily performed for other stormwater assets by applying the same GIS buffer.

2.2.3 Proximity to Priority Roadways

A priority rank was assigned to the different functional classifications of roads within the City. A GIS analysis was performed where a buffer was placed around each street. Assets were then assigned a proximity to priority roadways score equal to the priority rank of the street right-of-way where it lay. The priority rank (and proximity to priority roadways score) based on street functional classification is shown in Table C-8 below.

Table C-8. Priority Rank based on Street Functional Classification

Street Functional Classification	Priority Rank
ALLEY	4
HIGHWAY	5
LOCAL	3
MINOR ARTERIAL	1
NON RESIDENTIAL COLLECTOR	2
PRINCIPAL ARTERIAL	1
RAMP	4
RESIDENTIAL COLLECTOR	2
RURAL COLLECTOR	4
#N/A	3
<Null>	3

This GIS analysis was only performed for stormwater pipes for this assessment but can be easily performed for other stormwater assets by applying the same GIS buffer.

2.2.4 Criticality of Failure Score

The criticality of failure score was calculated by taking the average of the proximity to critical facilities score, adjacency to critical roadways score, and adjacency to priority roadways score. The criticality of failure score is summarized in Table C-9 below.

Table C-9. Criticality of Failure Score

Criticality of Failure Score	Description
5	Structure has critical facilities <1000 ft away, is adjacent to a critical roadway, and adjacent to a higher priority roadway functional classification
4	
3	
2	
1	Structure is not adjacent to critical facilities, critical roadways, or higher priority roadways.

2.3 Results

The criticality of failure and likelihood of failure scores can be summed to create a combined score or used independently. A spreadsheet was created to score the stormwater pipes inventory using the methods described above. A screenshot is shown in Figure C-4 below of the first page of results. This spreadsheet may be used as an example for the other stormwater assets in creating a likelihood of failure and criticality of failure score.

Total Pipe Length that can be inspected per year:
Inf. of LU<0 & Pipe Length that can be inspected
-52,954.92

| | | |

2.4 Recommendations

The following actions are recommended after the criticality review:

- Estimate useful life for culverts, pumps, and network structures
- Consider whether previous inspection data should be used in adjusted useful life for network structures
- Perform GIS desktop analysis needed for the other stormwater assets in Table C-1 based on the methods described for the criticality of failure score.
- Enact the criticality of failure and likelihood of failure scores in Cartegraph for stormwater pipes, then follow suit with the stormwater assets listed in Table C-1.

3. Pipe Depreciation Analysis

The resulting failure scores allow for the City to rank different assets both on likelihood and criticality of failure. It is recommended to use this ranking strategy to develop an inspection program where inspections of different types of assets are prioritized based on their rank. The asset inspection program will serve to fill data gaps, update the likelihood of failure score based on field verification, and identify asset features requiring repair or replacement. After inspection data are input for an asset feature, the results of the inspection will supersede the use of estimated remaining useful life and installation date (where applicable) in calculating a likelihood of failure score. Using this system to prioritize maintenance allows resources to be used more efficiently and fills in data gaps resulting in a more robust asset inventory.

3.1 Inspection of Pipes, Culverts, and Network Structures

For the City's pipe system, the recommended program would prioritize inspection based on likelihood of failure and then criticality of failure. In this way, pipes with likelihood of failure scores greater than or equal to 4 (or a negative useful life estimate) will be inspected first. The next tier of inspections should address pipes with likelihood of failure scores equal to 3 and pipes with unknown installation dates. After pipes are inspected, they should be assigned a condition score, which will supersede the installation date and useful life expectancy in determining the likelihood of failure. The likelihood of failure for a pipe will increase over time, and this prioritization method will take this into account while integrating field inspection data. Table C-10 summarizes the length of pipe requiring inspection using this method.

Table C-10. Pipes Requiring Inspection Summary

	Feet	Miles	Relative to Existing City Total (%)	Notes
Total length of pipe in Cartegraph	2,439,196	461.97		This includes all jurisdictions and statuses.
Total length of pipe in City	1,292,737.73	244.84	100%	Jurisdiction = "CoA" and Status = "Existing"
Total pipe length requiring inspection	52,954.92	10.03	4.10%	Applies for any pipe whose Likelihood of Failure Score = 4 or 5 (Useful Life <0)

Since storm catch basins and storm manholes are related to pipes, it is recommended to inspect these at the same time as adjacent pipes. The same inspection prioritization method is recommended for culverts because the failure consequences are similar.

3.2 Inspection of Remaining Stormwater Assets

For storm pumps, it is recommended to closely evaluate their condition as their useful life nears the end (e.g., 5 or fewer years) and upgrade or replace them before probable failure. Stormwater control facilities should be routinely inspected and prioritized for inspection when critical feature data are unavailable.

4. Pipe Replacement Cost Projection

A brief review of costs were included in the asset management evaluation for consideration in setting the repair and replacement budget and resource planning goals for the 2024 Plan. A comprehensive cost estimate was prepared for both pipe replacement and the replacement of catch basins and manholes within the City. The assumptions and results of this analysis are noted below.

4.1 Method and Assumptions

The cost estimate for pipe replacement is meant to function as a generic cost estimate for the as opposed to being based off a particular project or area. The primary cost estimation calculations assume the replacement of 5,000 linear feet of pipe as well as the associated conveyance structures, such as manholes and catch basins. The estimate also includes work commonly associated with a pipe replacement project, including temporary erosion and sediment control (TESC); site prep, such as the removal of surface pavement and existing structures; the installation of the conveyance system structures, such as trenching and backfill; surface/pavement repair; and project costs, such as design contingency and permitting.

Additional assumptions and further explanation of cost breakdown for the cost of pipe replacement are as follows:

- General:
  - → All pipes and structures are assumed to be within the same/connecting system.
  - → Pipes and structures are under existing asphalt, cement concrete, or landscaping that would need to be replaced in kind.
  - → The City of Auburn GIS map was used to provide information about average pipe sizes, pipe lengths, types of catch basins, and land surface cover in the area that was used to make a general calculation of cost to replace 5,000 linear of pipe.
  - → The City of Auburn Engineering Design Standards (February 2024) as well as the Standard Details (February 2024) was used to inform typical design for the purpose of cost and quantity calculations.
- TESC and site prep: Site prep costs include the removal and cutting of surfaces that may be over the top of existing conveyance systems as well as Utility Conflict Resolution. Other costs for site prep, such as TESC, mobilization, and project temporary traffic control are calculated based on percentages commonly used in projects of a similar nature. Project temporary traffic control for the replacement of conveyance systems may vary depending on the

amount of work done in arterials or heavily trafficked areas. For this cost estimate, it was assumed that the work will need a medium amount of traffic control.

- Conveyance system and structural/asphalt repair: For the simplification of calculations, certain generalizations were made in calculating quantities and costs, such as the assumption that all pipes are the same size, material, and depth. See Figures C-5 through C-8 for assumptions.
- Project costs: Project costs percentages were based off the percentages used for the Stormwater Management Action Plan "One Sheets" completed for the City of Auburn in 2023. They include project costs for design contingency, permitting, design, City project management administration, and construction management.
- Unit costs: Unit costs were based off the assumption of 5,000 or 10,000 linear feet of pipe replacement and associated quantities for other conveyance system replacement appurtenances. Unit costs were estimated using the Washington State Department of Transportation Unit Bid Analysis tabs as well as other project cost estimates that have similar attributes to the general cost estimate of replacing conveyance system structures and pipes.

4.2 Results

Cost estimates were made to show the average cost of replacing 5,000 feet of pipe within the City of Auburn (Figure C-5), replacing 5,000 linear feet of pipe in downtown (Figure C-6), and 10,000 linear feet of pipe in rural areas (Figure C-7). A cost estimate was also made for replacing catch basins without replacing any adjacent pipes (Figure C-8).

Replace 5000 ft Storm Pipe Cost Breakdown 5000 LF

Key:		
Manual Input of Assumed Value	Calculated Value	Referencing Price Sheet

Assumptions		Reasoning
Pipes and structures are under existing asphalt, cement concrete, or landscaping which needs to be replaced in kind		
Use of 12" PVC piping - City prefers PVC SDR-35 or PS46		
Avg length of pipe between structures (not to exceed 400)	86 LF	Based off average taken from City of Auburn GIS map
Avg size of pipe (used for trenching/volume calculations)	14 in D	Based off average taken from City of Auburn GIS map
Avg length of Type I CBs (used for trenching/volume calculations)	24 in L	Based off average taken from City of Auburn GIS map
Avg size of Type II CBs (used for trenching/volume calculations)	54 in D	Based off average taken from City of Auburn GIS map
Percent of structures Type I CBs	80%	Based off average taken from City of Auburn GIS map
Percent of structures Type II CBs	20%	
Number of Type I CBs	47	
Number of Type II CBs	12	
Number of structures per specified length of system	59	
Total length of system	5148 ft	
Percent of system under street (asphalt)	30%	
Percent of system under sidewalk (cement conc.)	10%	
Percent of system under curb and gutter	60%	
Percent of system under landscaped/pervious area	0%	
Total area of surface restoration (trench width+1ft offset per Auburn s	30406 sf	
Total length of surface restoration	5150 LF	

SITE PREP AND TESC % COSTS

				Reasoning
Total Materials Cost		$2,442,900.00		
Mobilization	10%	$ 244,290.00	$ 244,290.00	Based off of City of Auburn SMAP OneSheet Examples
TESC	5%	$ 122,145.00	$ 122,145.00	Based off of City of Auburn SMAP OneSheet Examples
Project Temporary Traffic Control	10%	$ 244,290.00	$ 244,290.00	
May be 5-20% depending on amount of work done in arterials				
Cost			**$610,700.00**	**/ 5000 LF**

SITE PREP

	Quantities	Unit Costs		Total Cost
Utility Conflict Resolution (Medium)		$ 50,000.00	LS	$ 50,000.00
Choose from Small, Medium, or Large				
Removing Asphalt Conc. Pavement	1770	$ 75.00	SY	$ 132,800.00
Assumed for only percent of system under asphalt and partial area of Curb and Gutter				
Removing Cement Conc. Pavement	1094	$ 55.00	SY	$ 60,200.00
Assumed for only percent of system under sidewalk or concrete and partial area of Curb and Gutter				
Removing Cement Conc. Curb and Gutter	3090	$ 34.00	LF	$ 105,100.00
Assumed for only percent of system under curb and gutter				
Assumed to only account for 1.5 ft of width of surfacing, remaining area categorized as Asphalt and Pavement				
Clearing and Grubbing	0.0000	$ 10,300.00	ACRE	$ -
Assumed for only percent of system under pervious areas				
Cost				**$348,100.00** **/ 5000 LF**

CONVEYANCE SYSTEM

Structure Excavation Class A Incl. Haul	$ 47.00	CY	
Shoring or Extra Excavation Class B	$ 3.00	SF	
Crushed Surfacing Top Course	$ 41.00	TN	$ 75.85 /CY

	Unit Cost			Inside Pipe Diameter (in)	Avg Cover Depth (ft)	Outside Diameter (in)	Trench Width (ft)	Trench Depth (ft)	Structure Excavation (CY/LF)	Structure Excavation ($/LF)	Shoring ($/LF)	Backfill (CY/LF)	Backfill ($/LF)	Cumulative Cost (inl. Pipe ($/LF)	Total Cost
Schedule A Storm Sewer Pipe 12 IN. Diam.	5000	$ 71.00	LF	14	4	16.5	3.667	5.875	0.797839506	$37.50	$ 17.63	0.742843454	$ 56.34	$190.00	$ 950,000.00
Includes removal of existing pipe															
For simplification of calculations, 12 in pipe assumed for Unit Cost but trenching and excavation calculated from average pipe size															
Trench depth and width per typical pipe trench calculations and using City of Auburn Standard Detail T-01.6															

	Unit Cost			CB Inside Diam (in)	Wall Thickness (in)	Area Excavation (sf) =Area CB + 1 ft offsets	Base Thickness (in)	Average Depth Rim to sump (ft)	Structure Excavation (CY)	Structure Excavation ($/EA)	Backfill Cost ($/EA)	Crushed surface base needed (CY)	Crushed surface base needed ($/EA)	Cumulative Cost ($/EA)	Total Cost
CATCH BASIN TYPE 1	47	$ 2,600.00	EACH	N/A	N/A	21.750	4	4.667	4.833	$227.17	$ 257.16	0.402777778	$ 42.47	$3,130.00	$ 147,110.00
Includes removal of existing structure															
CATCH BASIN TYPE 2 48 IN. DIAM.	12	$ 5,300.00	EACH	54	6	44.179	6	6.000	12.272	$576.78	$ 544.70	0.818123087	$ 86.27	$6,510.00	$ 78,120.00

Figure C-5. Average Cost of Replacing 5,000 Feet of Stormwater Pipe in the City of Auburn

Includes removal of existing structure
For simplification of calculations, 48 in MH assumed for Unit Cost but excavation calculated from average MH size

CONNECTION TO DRAINAGE STRUCTURE	8	$ 3,500.00	EA	$ 28,000.00	
Assuming there is a connection to existing structures for 1/8 of the new CBs					
Cost				**$1,203,200.00**	**/ 5000 LF**

STRUCTURAL/ASPHALT REPAIR

		Unit Cost		Depth (IN)	Area (SF)	Volume (CF)	Volume (CY)	Ton multiplier (p	Tons	Total Cost
Crushed Surfacing Base Course	1519	$ 57.00	TN	8.75	30406.17	22171.17	821.15	1.85	1519.14	$ 86,590.72
Full Depth Asphalt Replaced										
Depth is determined by average required per City of Auburn for Asphalt Pavement Design										
Assumed same depth of CSBC under cement concrete pavement and Curb and Gutter is the same depth as under the asphalt pavement										
HMA CL 1/2 In PG 58H-22	697	$ 185.00	TN	6.92	15926.20	9179.69	339.99	2.05	697.0	$ 128,940.59
Full Depth Asphalt Replaced over open cut area										
Depth is determined by average required per City of Auburn for Asphalt Pavement Design										
CEMENT CONCRETE PAVEMENT	304	$ 1,340.00	CY	10.00	9844.97	8204.14	303.86			$ 407,168.42
Full depth cement concrete replaced over open cut area										
Depth per City of Auburn Standard Detail T-27.2										
CEMENT CONC. TRAFFIC CURB AND GUTTER	3090	$ 87.00	LF	$ 268,900.00						
Cost				**$891,600.00**						**/ 5000 LF**

SUBTOTAL COST	**$3,053,600.00 / 5000 LF**

PROJECT COSTS
Project costs % based off of City of Auburn SMAP OneSheet Examples

Design Contingency	50%	$ 1,526,800.00	$ 1,526,800.00
Contingency is multiplied into other % costs			
Permitting	5%	$ 229,020.00	$ 229,020.00
Design	25%	$ 1,145,100.00	$ 1,145,100.00
City Project Mgmt. Admin	5%	$ 229,020.00	$ 229,020.00
Construction Managements	25%	$ 1,145,100.00	$ 1,145,100.00
Cost			**$4,275,000.00** / 5000 LF

PROJECT TOTAL COST	**$7,328,600.00 / 5000 LF**
	$1,465.72 /LF

Figure C-5 (continued). Average Cost of Replacing 5,000 Feet of Stormwater Pipe in the City of Auburn

Replace 5000 ft Storm Pipe City Center Cost Breakdown 5000 LF

Key:		
Manual Input of Assumed Value	Calculated Value	Referencing Price Sheet

Assumptions			Reasoning
Pipes and structures are under existing asphalt, cement concrete, or landscaping which needs to be replaced in kind			
Use of 12" PVC piping - City prefers PVC SDR-35 or PS46			
Avg length of pipe between structures (not to exceed 400)	64	LF	Based off of stats from window of City of Auburn GIS Map of downtown area
Avg size of pipe (used for trenching/volume calculations)	14	in D	Based off of stats from window of City of Auburn GIS Map of downtown area
Avg length of Type I CBs (used for trenching/volume calculations)	24	in L	
Avg size of Type II CBs (used for trenching/volume calculations)	50	in D	Based off visual of looking at City of Auburn GIS map
Percent of structures Type I CBs	84%		Based off visual of looking at City of Auburn GIS map
Percent of structures Type II CBs	16%		
Number of Type I CBs	66		
Number of Type II CBs	13		
Number of structures per specified length of system	79		
Total length of system	5186.167	ft	
Percent of system under street (asphalt)	20%		Based off visual of looking at City of Auburn GIS map
Percent of system under sidewalk (cement conc.)	20%		Based off visual of looking at City of Auburn GIS map
Percent of system under curb and gutter	60%		Based off visual of looking at City of Auburn GIS map
Percent of system under landscaped/pervious area	0%		
Total area of surface restoration (trench width+1ft offset per Auburn s	30964	sf	
Total length of surface restoration	5188	LF	

SITE PREP AND TESC % COSTS

				Reasoning
Total Materials Cost		$2,629,600.00		
Mobilization	10%	$ 262,960.00	$ 262,960.00	Based off of City of Auburn SMAP OneSheet Examples
TESC	5%	$ 131,480.00	$ 131,480.00	Based off of City of Auburn SMAP OneSheet Examples
Project Temporary Traffic Control	15%	$ 394,440.00	$ 394,440.00	Based off of City of Auburn SMAP OneSheet Examples and assumption of higher traffic areas in city center of Auburn
May be 5-20% depending on amount of work done in arterials				
Cost			**$788,900.00**	**/ 5000 LF**

SITE PREP

	Quantities	Unit Costs		Total Cost
Utility Conflict Resolution (Medium)		$ 50,000.00	LS	$ 50,000.00
Choose from Small, Medium, or Large				
Removing Asphalt Conc. Pavement	1461	$ 75.00	SY	$ 109,600.00
Assumed for only percent of system under asphalt and partial area of Curb and Gutter				
Removing Cement Conc. Pavement	1461	$ 55.00	SY	$ 80,400.00
Assumed for only percent of system under sidewalk or concrete and partial area of Curb and Gutter				
Removing Cement Conc. Curb and Gutter	3113	$ 34.00	LF	$ 105,900.00
Assumed for only percent of system under curb and gutter				
Assumed to only account for 1.5 ft of width of surfacing, remaining area categorized as Asphalt and Pavement				
Clearing and Grubbing	0.0000	$ 10,300.00	ACRE	$ -
Assumed for only percent of system under pervious areas				
Cost				**$345,900.00** **/ 5000 LF**

CONVEYANCE SYSTEM

Structure Excavation Class A Incl. Haul	$ 47.00	CY	
Shoring or Extra Excavation Class B	$ 3.00	SF	
Crushed Surfacing Top Course	$ 41.00	TN	$ 75.85 /CY

		Unit Cost			Inside Pipe Diameter (in)	Avg Cover Depth (ft)	Outside Diameter (in)	Trench Width (ft)	Trench Depth (ft)	Structure Excavation (CY/LF)	Structure Excavation ($/LF)	Shoring ($/LF)	Backfill (CY/LF)	Backfill ($/LF)	Cumulative Cost (inl. Pipe ($/LF)	Total Cost
Schedule A Storm Sewer Pipe 12 IN. Diam.	5000	$ 71.00	LF		14	4	16.5	3.667	5.875	0.797839506	$37.50	$ 17.63	0.742843454	$ 56.34	$190.00	$ 950,000.00
Includes removal of existing pipe																
For simplification of calculations, 12 in pipe assumed for Unit Cost but trenching and excavation calculated from average pipe size																
Trench depth and width per typical pipe trench calculations and using City of Auburn Standard Detail T-01.6																

		Unit Cost		CB Inside Diam (in)	Wall Thickness (in)	Area Excavation (sf) =Area CB + 1 ft offsets	Base Thickness (in)	Average Depth Rim to sump (ft)	Structure Excavation (CY)	Structure Excavation ($/EA)	Backfill Cost ($/EA)	Crushed surface base needed (CY)	Crushed surface base needed ($/EA)	Cumulative Cost ($/EA)	Total Cost
CATCH BASIN TYPE 1	66	$ 2,600.00	EACH	N/A	N/A	21.750	4	4.667	4.833	$227.17	$ 257.16	0.402777778	$ 42.47	$3,130.00	$ 206,580.00
Includes removal of existing structure															
CATCH BASIN TYPE 2 48 IN. DIAM.	13	$ 5,300.00	EACH	50	6	40.339	6	6.000	11.205	$526.65	$ 463.80	0.74701708	$ 78.77	$6,370.00	$ 82,810.00

Figure C-6. Average Cost of Replacing 5,000 Feet of Stormwater Pipe in Downtown Auburn

Includes removal of existing structure
For simplification of calculations, 48 in MH assumed for Unit Cost but excavation calculated from average MH size

CONNECTION TO DRAINAGE STRUCTURE	10	$ 3,500.00	EA	$ 35,000.00	
Assuming there is a connection to existing structures for 1/8 of the new CBs					
Cost				**$1,274,400.00**	**/ 5000 LF**

STRUCTURAL/ASPHALT REPAIR

		Unit Cost		Depth (IN)	Area (SF)	Volume (CF)	Volume (CY)	Ton multiplier (p	Tons	Total Cost
Crushed Surfacing Base Course	1547	$ 57.00	TN	8.75	30964.11	22577.99	836.22	1.85	1547.01	$ 88,179.61
Full Depth Asphalt Replaced										
Depth is determined by average required per City of Auburn for Asphalt Pavement Design										
Assumed same depth of CSBC under cement concrete pavement and Curb and Gutter is the same depth as under the asphalt pavement										
HMA CL 1/2 In PG 58H-22	575	$ 185.00	TN	6.92	13147.38	7578.00	280.67	2.05	575.4	$ 106,442.87
Full Depth Asphalt Replaced over open cut area										
Depth is determined by average required per City of Auburn for Asphalt Pavement Design										
CEMENT CONCRETE PAVEMENT	406	$ 1,340.00	CY	10.00	13147.38	10956.15	405.78			$ 543,749.56
Full depth cement concrete replaced over open cut area										
Depth per City of Auburn Standard Detail T-27.2										
CEMENT CONC. TRAFFIC CURB AND GUTTER	3113	$ 87.00	LF	$ 270,900.00						
Cost				**$1,009,300.00**						**/ 5000 LF**

SUBTOTAL COST	**$3,418,500.00 / 5000 LF**

PROJECT COSTS
Project costs % based off of City of Auburn SMAP OneSheet Examples

Design Contingency	50%	$ 1,709,250.00	$ 1,709,250.00
Contingency is multiplied into other % costs			
Permitting	5%	$ 256,387.50	$ 256,387.50
Design	25%	$ 1,281,937.50	$ 1,281,937.50
City Project Mgmt. Admin	5%	$ 256,387.50	$ 256,387.50
Construction Managements	25%	$ 1,281,937.50	$ 1,281,937.50
Cost			**$4,785,900.00** / 5000 LF

PROJECT TOTAL COST	**$8,204,400.00 / 5000 LF**
	$1,640.88 /LF

Figure C-6 (continued). Average Cost of Replacing 5,000 Feet of Stormwater Pipe in Downtown Auburn

Replace 10,000 ft Storm Backroad Pipe Cost Breakdown 10,000 LF

Key:		
Manual Input of Assumed Value	Calculated Value	Referencing Price Sheet

Assumptions		Reasoning
Pipes and structures are under existing asphalt, cement concrete, or landscaping which needs to be replaced in kind		
Use of 12" PVC piping - City prefers PVC SDR-35 or PS46		
Avg length of pipe between structures (not to exceed 400)	114 LF	Based off of stats from window of City of Auburn GIS Map of downtown area
Avg size of pipe (used for trenching/volume calculations)	14 in D	Based off of stats from window of City of Auburn GIS Map of downtown area
Avg length of Type I CBs (used for trenching/volume calculations)	24 in L	
Avg size of Type II CBs (used for trenching/volume calculations)	48 in D	Based off visual of looking at City of Auburn GIS map
Percent of structures Type I CBs	60%	Based off visual of looking at City of Auburn GIS map
Percent of structures Type II CBs	40%	
Number of Type I CBs	53	
Number of Type II CBs	36	
Number of structures per specified length of system	89	
Total length of system	10250 ft	
Percent of system under street (asphalt)	10%	Based off visual of looking at City of Auburn GIS map
Percent of system under sidewalk (cement conc.)	20%	Based off visual of looking at City of Auburn GIS map
Percent of system under curb and gutter	40%	Based off visual of looking at City of Auburn GIS map
Percent of system under landscaped/pervious area	30%	
Total area of surface restoration (trench width+1ft offset per Auburn s	60006 sf	
Total length of surface restoration	10252 LF	

SITE PREP AND TESC % COSTS

				Reasoning
Total Materials Cost		$4,031,000.00		
Mobilization	10%	$ 403,100.00	$ 403,100.00	Based off of City of Auburn SMAP OneSheet Examples
TESC	5%	$ 201,550.00	$ 201,550.00	Based off of City of Auburn SMAP OneSheet Examples
Project Temporary Traffic Control	10%	$ 403,100.00	$ 403,100.00	Based off of City of Auburn SMAP OneSheet Examples and assumption of lower traffic areas in city center of Auburn
May be 5-20% depending on amount of work done in arterials				
Cost			**$1,007,800.00**	**/ 10000 LF**

SITE PREP

	Quantities	Unit Costs		Total Cost
Utility Conflict Resolution (Medium)		$ 50,000.00	LS	$ 50,000.00
Choose from Small, Medium, or Large				
Removing Asphalt Conc. Pavement	1658	$ 71.00	SY	$ 117,800.00
Assumed for only percent of system under asphalt and partial area of Curb and Gutter				
Removing Cement Conc. Pavement	2325	$ 52.00	SY	$ 121,000.00
Assumed for only percent of system under sidewalk or concrete and partial area of Curb and Gutter				
Removing Cement Conc. Curb and Gutter	4101	$ 32.00	LF	$ 131,300.00
Assumed for only percent of system under curb and gutter				
Assumed to only account for 1.5 ft of width of surfacing, remaining area categorized as Asphalt and Pavement				
Clearing and Grubbing	0.4133	$ 9,785.00	ACRE	$ 4,100.00
Assumed for only percent of system under pervious areas				
Cost				**$424,200.00** **/ 10000 LF**

CONVEYANCE SYSTEM

Structure Excavation Class A Incl. Haul	$ 45.00	CY	
Shoring or Extra Excavation Class B	$ 3.00	SF	
Crushed Surfacing Top Course	$ 39.00	TN	$ 72.15 /CY

		Unit Cost			Inside Pipe Diameter (in)	Avg Cover Depth (ft)	Outside Diameter (in)	Trench Width (ft)	Trench Depth (ft)	Structure Excavation (CY/LF)	Structure Excavation ($/LF)	Shoring ($/LF)	Backfill (CY/LF)	Backfill ($/LF)	Cumulative Cost (inl. Pipe ($/LF)	Total Cost
Schedule A Storm Sewer Pipe 12 IN. Diam.	10000	$ 68.00	LF		14	4	16.5	3.667	5.875	0.797839506	$35.90	$ 17.63	0.742843454	$ 53.60	$180.00	$ 1,800,000.00
Includes removal of existing pipe																
For simplification of calculations, 12 in pipe assumed for Unit Cost but trenching and excavation calculated from average pipe size																
Trench depth and width per typical pipe trench calculations and using City of Auburn Standard Detail T-01.6																

		Unit Cost		CB Inside Diam (in)	Wall Thickness (in)	Area Excavation (sf) =Area CB + 1 ft offsets	Base Thickness (in)	Average Depth Rim to sump (ft)	Structure Excavation (CY)	Structure Excavation ($/EA)	Backfill Cost ($/EA)	Crushed surface base needed (CY)	Crushed surface base needed ($/EA)	Cumulative Cost ($/EA)	Total Cost
CATCH BASIN TYPE 1	53	$ 2,470.00	EACH	N/A	N/A	21.750	4	4.667	4.833	$217.50	$ 244.62	0.402777778	$ 40.98	$2,980.00	$ 157,940.00
Includes removal of existing structure															
CATCH BASIN TYPE 2 48 IN. DIAM.	36	$ 5,035.00	EACH	48	6	38.485	6	6.000	10.690	$481.06	$ 404.01	0.712676111	$ 72.51	$6,000.00	$ 216,000.00

Figure C-7. Average Cost of Replacing 10,000 Feet of Stormwater Pipe in Rural Auburn

Includes removal of existing structure
For simplification of calculations, 48 in MH assumed for Unit Cost but excavation calculated from average MH size

CONNECTION TO DRAINAGE STRUCTURE	12	$ 3,325.00	EA	$ 39,900.00	
Assuming there is a connection to existing structures for 1/8 of the new CBs					
Cost				**$2,213,800.00**	**/ 10000 LF**

STRUCTURAL/ASPHALT REPAIR

		Unit Cost		Depth (IN)	Area (SF)	Volume (CF)	Volume (CY)	Ton multiplier (p	Tons	Total Cost
Crushed Surfacing Base Course	2099	$ 55.00	TN	8.75	42003.95	30627.88	1134.37	1.85	2098.58	$ 115,421.72
Full Depth Asphalt Replaced										
Depth is determined by average required per City of Auburn for Asphalt Pavement Design										
Assumed same depth of CSBC under cement concrete pavement and Curb and Gutter is the same depth as under the asphalt pavement										
HMA CL 1/2 In PG 58H-22	653	$ 176.00	TN	6.92	14926.09	8603.23	318.64	2.05	653.2	$ 114,964.69
Full Depth Asphalt Replaced over open cut area										
Depth is determined by average required per City of Auburn for Asphalt Pavement Design										
CEMENT CONCRETE PAVEMENT	646	$ 1,273.00	CY	10.00	20926.66	17438.88	645.88			$ 822,210.86
Full depth cement concrete replaced over open cut area										
Depth per City of Auburn Standard Detail T-27.2										
CEMENT CONC. TRAFFIC CURB AND GUTTER	4101	$ 83.00	LF	$ 340,400.00						
Cost				**$1,393,000.00**						**/ 10000 LF**

SUBTOTAL COST	**$5,038,800.00 / 10000 LF**

PROJECT COSTS
Project costs % based off of City of Auburn SMAP OneSheet Examples

Design Contingency	50%	$ 2,519,400.00	$ 2,519,400.00
Contingency is multiplied into other % costs			
Permitting	5%	$ 377,910.00	$ 377,910.00
Design	25%	$ 1,889,550.00	$ 1,889,550.00
City Project Mgmt. Admin	5%	$ 377,910.00	$ 377,910.00
Construction Managements	25%	$ 1,889,550.00	$ 1,889,550.00
Cost			**$7,054,300.00** **/ 10000 LF**

PROJECT TOTAL COST	**$12,093,100.00 / 10000 LF**
	$1,209.31 /LF

Figure C-7 (continued). Average Cost of Replacing 10,000 Feet of Stormwater Pipe in Rural Auburn

Replacing Catch Basin Cost Breakdowns

Key:		
Manual Input of Assumed Value	Calculated Value	Referencing Price Sheet

Structure Excavation Class A Incl. Haul	$	45.00	CY	
Shoring or Extra Excavation Class B	$	3.00	SF	
Gravel Backfill for Pipe Zone Bedding	$	60.00	CY	
Crushed Surfacing Base Course	$	55.00	TN	1.85 Ton Multiplier

	Unit Cost		CB Inside Diam (in)	Wall Thickness (in)	Area Excavation (sf) =Area CB + 1 ft offsets	Base Thickness (in)	Average Depth Rim to sump (ft)	Structure Excavation (CY)	Structure Excavation ($/EA)	Backfill Cost ($/EA)	Crushed surface base needed (CY)	Crushed surface base needed ($/EA)	Cumulative Cost ($/EA)	Total Cost
CATCH BASIN TYPE 1 Includes removal of existing structure	$ 2,470.00	EACH	N/A	N/A	21.750	4	4.667	4.833	$217.50	$ 203.43	0.402777778	$ 40.98	$2,940.00	**$2,940.00**
CATCH BASIN TYPE 2 48 IN. DIAM. Includes removal of existing structure	$ 5,035.00	EACH	48	6	38.485	6	6.000	10.690	$481.06	$ 335.98	0.712676111	$ 72.51	$5,930.00	**$5,930.00**
CATCH BASIN TYPE 2 60 IN. DIAM. Includes removal of existing structure	$ 8,075.00	EACH	60	6	50.265	6	6.000	13.963	$628.32	$ 532.33	0.930842268	$ 94.71	$9,340.00	**$9,340.00**

Figure C-8. Average Cost of Replacing Catch Basins in Rural Auburn

4.3 Discussion

The resulting cost opinion is intentionally conservative, approximately $1,500 per linear foot, to account for the wide range of generalizations and assumptions inherent in the process. Notably, the analysis indicated that pipe replacement in rural areas is expected to be less costly than in the City center. Additionally, replacing a larger quantity of pipe is only marginally more cost-effective.

As a prudent practice, it is recommended to diligently track the costs associated with installation, repair, and replacement of asset features on an annual basis. This data serve as valuable reference information for future asset replacement budget planning. As additional data are collected, cost opinions can be updated to enhance accuracy.

5. Pipe Depreciation Analysis

A life cycle analysis was performed for stormwater pipes to demonstrate the expected depreciation rate of each asset and provide background for the recommended maintenance frequency of the entire system. To do so, a spreadsheet was created to analyze the remaining useful life estimate for the City's pipe database over time. A screenshot of the first page of the spreadsheet is shown in Figure C-9. This shows the existing condition dataset of the stormwater pipes. In the spreadsheet, a cumulative total was calculated for the pipes whose remaining useful life score had gone negative. This represented the total linear feet of pipe "lost." As shown in Figure C-9, at the time of this assessment, approximately 53,000 feet of pipe is expected to be beyond its useful life.

An average rate of pipe loss was calculated by dividing each pipe's useful life from its length and then summing to find the total for the system. As shown in Figure C-9, the average rate of pipe value "lost" is approximately 15,700 feet per year.

To show the sensitivity of the results, a copy of the spreadsheet was created, and all useful life estimates were increased by 20 years. A screenshot of the first page is shown in Figure C-10. This scenario shows the total linear feet of pipe beyond its useful life to be approximately 14,500 feet, and the average rate of pipe loss per year to be approximately 12,500 feet.

Both scenarios were used to project the amount of pipe replacement needed over 10-, 20-, and 50-year replacement durations. The costs estimated in the previous section were used to provide estimates for these replacements for reference. Figure C-11 shows the results of this projection.

Cartegraph Exported Data	Metrics Updated for Use in Determining Inspection Requirement						Structures With Useful Life Indicating Need for Inspection				
							Count UL<0:			Avg pipe ft/year pipe value lost	Total Pipe Length w/ UL<0
							527.00	1,295,237.73		15,707.14	52,954.92
STRUCTURE *	Known Pipe Install Yr	Estimated Pipe Install Yr	Pipe Age	Material Data	Useful Life	Final Year of Life	Remaining Useful Life	Pipe Length	Cumulative Pipe Length	Pipe Length/Useful Life (ft per year of pipe value lost)	Pipe Length w/ Useful Life<0
406-M640_306-M641	0	1905	119	CPEP	50	1955	-69	39.56	39.56	0.79	39.56
406-M639_406-M640	0	1905	119	CMP	50	1955	-69	143.9	183.46	2.88	143.90
406-M638_406-M639	0	1905	119	CMP	50	1955	-69	102.48	285.94	2.05	102.48
406-M637_406-M638	0	1905	119	CPEP	50	1955	-69	101.8	387.74	2.04	101.80
406-M636_406-M637	0	1905	119	CPEP	50	1955	-69	81.57	469.31	1.63	81.57
306-M650_306-M652	0	1905	119	CMP	50	1955	-69	77.95	547.26	1.56	77.95
306-M649_306-M650	0	1905	119	CMP	50	1955	-69	115.61	662.87	2.31	115.61
306-M648_306-M649	0	1905	119	CMP	50	1955	-69	127.62	790.49	2.55	127.62
306-M647_306-M648	0	1905	119	CMP	50	1955	-69	124.02	914.51	2.48	124.02
306-M646_306-M647	0	1905	119	CMP	50	1955	-69	94.19	1008.70	1.88	94.19
306-M645_306-M646	0	1905	119	CMP	50	1955	-69	122.93	1131.63	2.46	122.93
306-M644_306-M645	0	1905	119	CMP	50	1955	-69	117.4	1249.03	2.35	117.40
306-M643_306-M644	0	1905	119	CMP	50	1955	-69	81.33	1330.36	1.63	81.33
306-M642_306-M643	0	1905	119	CPEP	50	1955	-69	117.54	1447.90	2.35	117.54
306-M641_306-M642	0	1905	119	CPEP	50	1955	-69	84.46	1532.36	1.69	84.46
709-B876_709-B3453	0	1912	112		50	1962	-62	50	1582.36	1.00	50.00
709-B1074_709-B3454	0	1912	112		50	1962	-62	50	1632.36	1.00	50.00
810-C845_810-C1691	0	1912	112	PVC	100	2012	-12	16.35	1648.71	0.16	16.35
810-C776_810-C114F	0	1912	112	CONCRETE	100	2012	-12	13.3	1662.01	0.13	13.30
810-C1691_810-C114F	0	1912	112	CONCRETE	100	2012	-12	16.67	1678.68	0.17	16.67
810-C114F_810-C114E	0	1912	112	CONCRETE	100	2012	-12	325.17	2003.85	3.25	325.17
810-C114E_810-C114C	0	1912	112	CONCRETE	100	2012	-12	594.46	2598.31	5.94	594.46
810-C114C_809-C114B	0	1912	112	CONCRETE	100	2012	-12	329.55	2927.86	3.30	329.55
809-C995_809-C114B	0	1912	112	CONCRETE	100	2012	-12	31.76	2959.62	0.32	31.76
809-C874_809-C114B	0	1912	112	CONCRETE	100	2012	-12	4.71	2964.33	0.05	4.71
809-C114B_809-C2961	0	1912	112	CONCRETE	100	2012	-12	312.26	3276.59	3.12	312.26
709-B827_709-B876	0	1912	112	CONCRETE	100	2012	-12	43.75999832	3320.35	0.44	43.76
709-B3014_709-B876	0	1912	112	CONCRETE	100	2012	-12	12.78889179	3333.14	0.13	12.79
709-B1002_709-B827	0	1912	112	CONCRETE	100	2012	-12	33.16999817	3366.31	0.33	33.17
909-B96A_909-B96	1951	1913	111	CONCRETE	100	2013	-11	39.04	3405.35	0.39	39.04
909-B1069_909-B96A	1951	1913	111	CONCRETE	100	2013	-11	36.65	3442.00	0.37	36.65
314-ZZ1633_314-ZZ1622	0	1918	106	CPEP	50	1968	-56	10.57	3452.57	0.21	10.57
314-ZZ1622_314-ZZ1620	0	1918	106	CPEP	50	1968	-56	112.19	3564.76	2.24	112.19
314-ZZ1619_314-ZZ1618	0	1918	106	CPEP	50	1968	-56	46.92	3611.68	0.94	46.92
314-ZZ1620_314-ZZ1619	0	1918	106	DUCTILE IRON	75	1993	-31	41.01	3652.69	0.55	41.01
314-ZZ1618_314-ZZ1617	0	1918	106	DUCTILE IRON	75	1993	-31	200.35	3853.04	2.67	200.35
314-ZZ1617_314-ZZ1616	0	1918	106	DUCTILE IRON	75	1993	-31	13.05	3866.09	0.17	13.05
314-ZZ1616_314-ZZ1615	0	1918	106	DUCTILE IRON	75	1993	-31	42.42	3908.51	0.57	42.42
314-ZZ1615_314-ZZ917	0	1918	106	DUCTILE IRON	75	1993	-31	74.03	3982.54	0.99	74.03
910-C2737_910-C127A	0	0	104		50	1970	-54	403.74	4386.28	8.07	403.74
910-C2652_910-C2654	0	0	104		50	1970	-54	51.07	4437.35	1.02	51.07
910-C2643_910-C2643	0	0	104	CPEP	50	1970	-54	40	4477.348888	0.80	40.00

Figure C-9. Screenshot of Stormwater Pipe Depreciation Spreadsheet

												Total Pipe Length that can be inspected per year:
									51		24.90	
												Dif. of UL<0 & Pipe Length that can be inspected
												-14,550.84
Cartegraph Exported Data	Metrics Updated for Use in Determining Inspection Requirement							Structures With Useful Life Indicating Need for Inspection				
								Count UL<0:			Avg pipe ft/year pipe value lost	Total Pipe Length w/ UL<0
								527.00	1,295,237.73		12,448.63	14,550.84
STRUCTURE *	Known Pipe Install Yr	Estimated Pipe Install Yr	Pipe Age	Material Data	Useful Life	Adjusted Useful Life	Final Year of Life	Remaining Useful Life	Pipe Length	Cumulative Pipe Length	Pipe Length/Useful Life (ft per year of pipe value lost)	Pipe Length w/ UL<0
406-M640_306-M641	0	1905	119	CPEP	50	70	1975	-49	39.56	39.56	0.57	39.56
406-M639_406-M640	0	1905	119	CMP	50	70	1975	-49	143.9	183.46	2.06	143.90
406-M638_406-M639	0	1905	119	CMP	50	70	1975	-49	102.48	285.94	1.46	102.48
406-M637_406-M638	0	1905	119	CPEP	50	70	1975	-49	101.8	387.74	1.45	101.80
406-M636_406-M637	0	1905	119	CPEP	50	70	1975	-49	81.57	469.31	1.17	81.57
306-M650_306-M652	0	1905	119	CMP	50	70	1975	-49	77.95	547.26	1.11	77.95
306-M649_306-M650	0	1905	119	CMP	50	70	1975	-49	115.61	662.87	1.65	115.61
306-M648_306-M649	0	1905	119	CMP	50	70	1975	-49	127.62	790.49	1.82	127.62
306-M647_306-M648	0	1905	119	CMP	50	70	1975	-49	124.02	914.51	1.77	124.02
306-M646_306-M647	0	1905	119	CMP	50	70	1975	-49	94.19	1008.7	1.35	94.19
306-M645_306-M646	0	1905	119	CMP	50	70	1975	-49	122.93	1131.63	1.76	122.93
306-M644_306-M645	0	1905	119	CMP	50	70	1975	-49	117.4	1249.03	1.68	117.40
306-M643_306-M644	0	1905	119	CMP	50	70	1975	-49	81.33	1330.36	1.16	81.33
306-M642_306-M643	0	1905	119	CPEP	50	70	1975	-49	117.54	1447.9	1.68	117.54
306-M641_306-M642	0	1905	119	CPEP	50	70	1975	-49	84.46	1532.36	1.21	84.46
709-B876_709-B3453	0	1912	112		50	70	1982	-42	50	1582.36	0.71	50.00
709-B1074_709-B3454	0	1912	112		50	70	1982	-42	50	1632.36	0.71	50.00
810-C845_810-C1691	0	1912	112	PVC	100	120	2032	8	16.35	1648.71	0.14	0.00
810-C776_810-C114F	0	1912	112	CONCRETE	100	120	2032	8	13.3	1662.01	0.11	0.00
810-C1691_810-C114F	0	1912	112	CONCRETE	100	120	2032	8	16.67	1678.68	0.14	0.00
810-C114F_810-C114E	0	1912	112	CONCRETE	100	120	2032	8	325.17	2003.85	2.71	0.00
810-C114E_810-C114C	0	1912	112	CONCRETE	100	120	2032	8	594.46	2598.31	4.95	0.00
810-C114C_809-C114B	0	1912	112	CONCRETE	100	120	2032	8	329.55	2927.86	2.75	0.00
809-C995_809-C114B	0	1912	112	CONCRETE	100	120	2032	8	31.76	2959.62	0.26	0.00
809-C874_809-C114B	0	1912	112	CONCRETE	100	120	2032	8	4.71	2964.33	0.04	0.00
809-C114B_809-C2961	0	1912	112	CONCRETE	100	120	2032	8	312.26	3276.59	2.60	0.00
709-B827_709-B876	0	1912	112	CONCRETE	100	120	2032	8	43.75999832	3320.349998	0.36	0.00
709-B3014_709-B876	0	1912	112	CONCRETE	100	120	2032	8	12.78889179	3333.13889	0.11	0.00
709-B1002_709-B827	0	1912	112	CONCRETE	100	120	2032	8	33.16999817	3366.308888	0.28	0.00
909-B96A_909-B96	1951	1913	111	CONCRETE	100	120	2033	9	39.04	3405.348888	0.33	0.00
909-B1069_909-B96A	1951	1913	111	CONCRETE	100	120	2033	9	36.65	3441.998888	0.31	0.00
314-ZZ1633_314-ZZ1622	0	1918	106	CPEP	50	70	1988	-36	10.57	3452.568888	0.15	10.57
314-ZZ1622_314-ZZ1620	0	1918	106	CPEP	50	70	1988	-36	112.19	3564.758888	1.60	112.19
314-ZZ1619_314-ZZ1618	0	1918	106	CPEP	50	70	1988	-36	46.92	3611.678888	0.67	46.92
314-ZZ1620_314-ZZ1619	0	1918	106	DUCTILE IRON	75	95	2013	-11	41.01	3652.688888	0.43	41.01
314-ZZ1618_314-ZZ1617	0	1918	106	DUCTILE IRON	75	95	2013	-11	200.35	3853.038888	2.11	200.35
314-ZZ1617_314-ZZ1616	0	1918	106	DUCTILE IRON	75	95	2013	-11	13.05	3866.088888	0.14	13.05

Figure C-10. Screenshot of Stormwater Pipe Depreciation Spreadsheet Adding 20 Years to Useful Life

Base Scenario					
Rate of Pipe Loss	=	15,700	ft pipe lost/yr (function of useful life/material & pipe age)		Preliminary Cost Opinion Est. / Year
Starting Pool of Dead Pipe					
For year	=	2022	year to source pool of dead pipe data		
Length of pipe needing replacement for entered year	=	52,000	ft starting pool of dead pipe needing replacement		
10 Replacement Duration	=	10	years duration to catch up on dead pipe		
Rate of Pipe Replacement Needed	=	20,900	ft pipe needing replacement/year	$	31,350,000
25 Replacement Duration	=	25	years duration to catch up on dead pipe		
Rate of Pipe Replacement Needed	=	17,780	ft pipe needing replacement/year	$	26,670,000
50 Replacement Duration	=	50	years duration to catch up on dead pipe		
Rate of Pipe Replacement Needed	=	16,740	ft pipe needing replacement/year	$	25,110,000
Adding +20 years to useful life					
Rate of Pipe Loss	=	12,500	ft pipe lost/yr (function of useful life/material & pipe age)		
Starting Pool of Dead Pipe					
For year	=	2022	year to source pool of dead pipe data		
Length of pipe needing replacement for entered year	=	15,000	ft starting pool of dead pipe needing replacement		
10 Replacement Duration	=	10	years duration to catch up on dead pipe		
Rate of Pipe Replacement Needed	=	14,000	ft pipe needing replacement/year	$	21,000,000
25 Replacement Duration	=	25	years duration to catch up on dead pipe		
Rate of Pipe Replacement Needed	=	13,100	ft pipe needing replacement/year	$	19,650,000
50 Replacement Duration	=	50	years duration to catch up on dead pipe		
Rate of Pipe Replacement Needed	=	12,800	ft pipe needing replacement/year	$	19,200,000

Figure C-11. Cost Projection Results for 10-,20-, and 50-Year Pipe Replacement Durations

5.1 Discussion

The depreciation analysis was performed to provide a point of comparison on which to base the City's resource planning recommendations. Though the costs of pipe replacement are conservative, the anticipated cost of the various replacement durations was considered too great for the asset repair and replacement program. Thus, the escalated budget for repair and replacement from previous years was used as the basis for the asset repair and replacement program for the 2024 Plan. However, the results from this analysis can be used to inform the budget for future plans should it be of interest to expand the scope of the repair and replacement program. A similar depreciation analysis could be done for culverts.

6. Future Work & Maintenance

This asset management assessment provides a starting point from which the City can base its asset management program. The following actions will be needed to implement the discussed variables into the City's program.

- Review issues with scoring in the Cartegraph app. Ensure that any features being scored incorrectly are reviewed and amended to simplify the entry process from the field.
- The OCI rating should be reviewed and revised as needed.
- Enact the criticality of failure and likelihood of failure scores in Cartegraph for stormwater pipes and use these to prioritize inspections for pipes and adjacent network structures.
- The criticality of failure metrics should be periodically run in GIS and updated in Cartegraph for criticality of failure score.

Future actions that should be considered to expand upon the work described in this assessment are listed below.

- A GIS desktop analysis to fill in estimated installation dates should be considered for other asset types (specifically, culverts are expected to benefit, as they were missing 75% of their installation dates.
- Perform a GIS desktop analysis needed for the other stormwater assets in Table C-1 based on the methods described for the criticality of failure score.
- Estimate useful life for culverts, pumps, and network structures.
- Consider whether previous inspection data should be used in adjusted useful life for network structures.
- Enact the criticality of failure and likelihood of failure scores in Cartegraph for the remaining stormwater assets. Then follow suit with the stormwater assets listed in Table C-1.

Appendix D

Noted Changes to the NPDES MS4 Permit

Changes in Regulation

This table has been prepared to document the changes of note between the previous NPDES MS4 permit from 2019, the draft NPDES MS4 permit prepared in 2024, and the final NPDES MS4 permit released in 2024. The Plan was initially prepared using the draft NPDES MS4 permit prepared in 2024 as guidance and updated accordingly once the final NPDES MS4 permit was released. New language that has been added between versions of the NPDES MS4 permit is shown in red in the table below. Important dates have been highlighted in yellow.

Section	2019 NPDES MS4 Permit Language	Draft 2024 NPDES MS4 Permit Language	Final 2024 NPDES MS4 Permit Language	Changes (From 2019 to 2024 Draft)	Changes (From 2024 Draft to 2024 Final)	Topic
S2.B. Non-Stormwater Discharges	**S2.B.** This permit authorizes discharges of non-stormwater flows to surface waters and to groundwaters of the State from MS4s owned or operated by each Permittee covered under this Permit, in the geographic area covered pursuant to S1.A, only under one or more of the following conditions:				*No changes, included as context for changes to S2.B.2 and S2.B.3,*	Discharges Containing Per- and Polyfluoroalkyl Substances (PFAS)
S2.B.2. Non-Stormwater Discharges	**S2.B.2.** The discharge is from emergency firefighting activities.	**S2.B.2.** The discharge is from emergency firefighting activities and does not involve PFAS-containing aqueous film-forming foams (AFFFs). After the emergency has ceased, non-stormwater discharges (e.g., discharges associated with cleanup) to the MS4 are prohibited. Determination of cessation of the emergency is at the discretion of the emergency on-scene coordinator.	**S2.B.2.** The discharge is from emergency firefighting activities. See Special Conditions S5.C.5, S6.D.3 to address non-stormwater discharges (e.g., discharges associated with cleanup after the emergency).	Added language regarding emergency firefighting activities that do not involve PFAS.	Removed language regarding emergency firefighting activities that do not involve PFAS and redirected the reader to Special Conditions S5.C.5 and S6.D.3 to address non-stormwater discharges.	PFASs Discharges Containing PFAS
S2.B.3. Non-Stormwater Discharges	**S2.B.3.** The discharge is from another illicit or non-stormwater discharge that is managed by the Permittee as provided in Special Condition S5.C.5 or S6.D.3.	**S2.B.3.** The discharge is from emergency firefighting activities and involves PFAS-containing AFFFs, the following conditions apply: **S2.B.3.a.** No later than December 31, 2026, the Permittee shall coordinate with firefighting agencies/departments that	**S2.B.3.** The discharge is from another illicit or non-stormwater discharge that is managed by the Permittee as provided in Special Condition S5.C.5 or S6.D.3.	Added language regarding emergency firefighting activities that involve PFAS.	Removed language regarding emergency firefighting activities that involve PFAS and redirected the reader to Special Conditions S5.C.5 and S6.D.3 to address non-stormwater discharges.	Discharges Containing PFAS

Section	2019 NPDES MS4 Permit Language	Draft 2024 NPDES MS4 Permit Language	Final 2024 NPDES MS4 Permit Language	Changes (From 2019 to 2024 Draft)	Changes (From 2024 Draft to 2024 Final)	Topic
		serve the areas that drain to the MS4 to develop a PFAS management plan which will implement measures to minimize discharges of PFAS via the MS4 during emergency firefighting activities. The Permittee is not expected to deploy control measures during an emergency. The Permittee is not expected to deploy control measures during an emergency. The Permittee shall implement the PFAS management plan to minimize discharges of PFAS via the MS4 during post-emergency activities, including immediate clean-up in all situations where AFFFs have been used, diversions, and other measures that prevent discharges via the MS4. **S2.B.3.b.** No later than December 31, 2027, the Permittee shall implement specific protocols for minimizing the resuspension, conveyance, and discharge of PFAS already in the MS4, both during normal operations and during all maintenance.				
S2.E. Indian Country	**S2.E.** This Permit does not authorize discharges of stormwater to waters within Indian Country as defined in 18 U.S.C. §1151, or to waters subject to water quality standards of Indian Tribes, including portions of the Puyallup River and other waters on trust or restricted lands within the 1873 Survey Area of the Puyallup Tribe of Indians Reservation, except where authority has been specifically delegated to Ecology by the U.S. Environmental Protection Agency. The exclusion of such discharges from this Permit does not waive any	**S2.E.** This Permit does not authorize discharges of stormwater to waters within Indian Country as defined in 18 U.S.C. §1151, or to waters subject to water quality standards of Indian Tribes, including portions of the Puyallup River and other waters on trust or restricted lands within the 1873 Survey Area of the Puyallup Tribe of Indians Reservation, except where	**S2.E.** This Permit does not authorize discharges of stormwater to waters within Indian Country as defined in 18 U.S.C. §1151, or to waters subject to water quality standards of Indian Tribes, including portions of the Puyallup River and other waters on trust or restricted lands within the 1873 Survey Area of the Puyallup Tribe of Indians Reservation, except where authority has been specifically	Added language specifying what is included in “Indian Country.”	No change from draft.	Discharges to Indian Country

Section	2019 NPDES MS4 Permit Language	Draft 2024 NPDES MS4 Permit Language	Final 2024 NPDES MS4 Permit Language	Changes (From 2019 to 2024 Draft)	Changes (From 2024 Draft to 2024 Final)	Topic
	rights the State may have with respect to the regulation of the discharges.	authority has been specifically delegated to Ecology by the U.S. Environmental Protection Agency. The exclusion of such discharges from this Permit does not waive any rights the State may have with respect to the regulation of the discharges. Indian Country includes: **S2.E.1.** All land within any Indian Reservation notwithstanding the issuance of any patent, and including rights-of-way running through the reservation. This includes all federal, tribal, and Indian and non-Indian privately owned land within the reservation. **S2.E.2.** All off-reservation Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same. **S2.E.3.** All off-reservation federal trust lands held for Native American Tribes. Puyallup Exception: Following the "Puyallup Tribes of Indians Land Settlement Act of 1989," 25 USC §1773; the permit does apply to land within the Puyallup Reservation except for discharges to surface water on land held in trust by the federal government.	delegated to Ecology by the U.S. Environmental Protection Agency. The exclusion of such discharges from this Permit does not waive any rights the State may have with respect to the regulation of the discharges. Indian Country includes: **S2.E.1.** All land within any Indian Reservation notwithstanding the issuance of any patent, and including rights-of-way running through the reservation. This includes all federal, tribal, and Indian and non-Indian privately owned land within the reservation. **S2.E.2.** All off-reservation Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same. **S2.E.3.** All off-reservation federal trust lands held for Native American Tribes. Puyallup Exception: Following the "Puyallup Tribes of Indians Land Settlement Act of 1989," 25 USC §1773; the permit does apply to land within the Puyallup Reservation except for discharges to surface water on land held in trust by the federal government.			
S.5.A.3 Stormwater Management	**S5.A.3.** The SWMP shall include an ongoing program for gathering, tracking, maintaining, and using information to evaluate SWMP development,	**S5.A.3.** The SWMP shall include an ongoing program for gathering, tracking, maintaining, and using	**S5.A.3.** The SWMP shall include an ongoing program for gathering, tracking, maintaining, and using	Added language to track the cost of implementing the SWMP in the annual report.	Added language to track the source of funding for implementing the SWMP in the annual report.	Annual Report Update

Section	2019 NPDES MS4 Permit Language	Draft 2024 NPDES MS4 Permit Language	Final 2024 NPDES MS4 Permit Language	Changes (From 2019 to 2024 Draft)	Changes (From 2024 Draft to 2024 Final)	Topic
Program for Cities, Towns, and Counties – Stormwater Management Program General Requirements	implementation, permit compliance and to set priorities. **S5.A.3.a**. Each Permittee shall track the cost or estimated cost of development and implementation of each component of the SWMP. This information shall be provided to ~~Ecology upon request.~~	information to evaluate SWMP development, implementation, permit compliance and to set priorities. **S5.A.3.a.** Each Permittee shall track the cost or estimated cost of development and implementation of each component of the SWMP. This information shall be provided with the Annual Report due no later than March 31, 2027. Permittees shall provide annual average costs (or estimates) to implement the SWMP and TMDL requirements.	information to evaluate SWMP development, implementation, permit compliance and to set priorities. **S5.A.3.a.** Each Permittee shall track the cost or estimated cost of development and implementation of each component of the SWMP and sources of funding. This information shall be provided with the Annual Report due no later than March 31, 2027. Permittees shall provide annual average costs (or estimates) to implement the SWMP and TMDL requirements.			
S5.C.1.b.i. Stormwater Management Program Components – Stormwater Planning	**S5.C.1. Stormwater Planning** Each Permittee shall implement a Stormwater Planning program to inform and assist in the development of policies and strategies as water quality management tools to protect receiving waters. The minimum performance measures are: *(Language for S5.C.1.a has not been included)* **S5.C.1.b. Coordination with long-range plan updates.** **S5.C.1.b.i.** Each Permittee shall describe how stormwater management needs and protection/ improvement of receiving water health are (or are not) informing planning update processes and influencing policies and implementation strategies in their jurisdiction. The report shall describe the water quality and watershed protection policies, strategies, codes, and other measures intended to protect and improve local receiving water health through planning, ~~or taking into account~~ stormwater management needs or limitations.	**S5.C.1. Stormwater Planning** Each Permittee shall implement a Stormwater Planning program to inform and assist in the development of policies and strategies as water quality management tools to protect receiving waters. The minimum performance measures are: *(Language for S5.C.1.a has not been included)* **S5.C.1.b. Coordination with long-range plan updates.** **S5.C.1.b.i.** Each Permittee shall describe how stormwater management needs and protection/ improvement of receiving water health are (or are not) informing the long-range or comprehensive planning update processes and influencing policies and implementation strategies in their jurisdiction in the Annual Report due March 31, 2027.	**S5.C.1. Stormwater Planning** Each Permittee shall implement a Stormwater Planning program to inform and assist in the development of policies and strategies as water quality management tools to protect receiving waters. The minimum performance measures are: *(Language for S5.C.1.a has not been included)* **S5.C.1.b. Coordination with long-range plan updates.** **S5.C.1.b.i.** Each Permittee shall describe how stormwater management needs and protection/ improvement of receiving water health are (or are not) informing the long-range or comprehensive planning update processes and influencing policies and implementation strategies in their jurisdiction in the Annual Report due March 31, 2027. The report shall describe the water quality and watershed protection	Added language to include how stormwater management is influencing long-range planning in the annual report.	No change from draft.	Annual Report Update

Section	2019 NPDES MS4 Permit Language	Draft 2024 NPDES MS4 Permit Language	Final 2024 NPDES MS4 Permit Language	Changes (From 2019 to 2024 Draft)	Changes (From 2024 Draft to 2024 Final)	Topic
		The report shall describe the water quality and watershed protection policies, strategies, codes, and other measures intended to protect and improve local receiving water health through planning, considering ~~stormwater~~ management needs or limitations.	policies, strategies, codes, and other measures intended to protect and improve local receiving water health through planning, considering ~~stormwater~~ management needs or limitations.			
S5.C.1.c.iii. Stormwater Management Program Components – Low Impact Development (LID) code-related requirements	*No language in previous NPDES MS4 permit from 2019.*	**S5.C.1.c.iii.** No later than December 31, 2028, Permittees shall adopt and implement tree canopy goals and policies to support stormwater management and water quality improvements in receiving waters.	**S5.C.1.c.iii.** No later than December 31, 2028, Permittees shall adopt and implement tree canopy goals and policies to support stormwater management. Permittees shall consider how existing or future tree canopy can support stormwater management and water quality improvements in receiving waters. Establish a long-term (e.g. 5, 10 year or longer) goal of canopy, existing or future projection, to be used for stormwater management that is appropriate to the jurisdiction. Specific considerations for canopy for stormwater management on Permittee-owned or operated lands shall include (but are not limited to): **S5.C.1.c.iii. (a)** Maintaining or increasing canopy in overburdened communities. **S5.C.1.c.iii. (b)** Maintaining existing mature canopy. **S5.C.1.c.iii. (c)** Document considerations, reasoning, and rationale for goals and policies.	New language added to adopt and implement tree canopy goals and policies.	Additional detail added.	Tree Canopy Goals and Policies
S5.C.1.d. Stormwater	**S5.C.1.d. Stormwater Management Action Planning (SMAP).**	**S5.C.1.d. Stormwater Management Action Planning (SMAP).**	**S5.C.1.d. Stormwater Management Action Planning (SMAP).**	Changed language to indicate a new SMAP will be required.	Added language to indicate that additional actions for an	SMAP

Section	2019 NPDES MS4 Permit Language	Draft 2024 NPDES MS4 Permit Language	Final 2024 NPDES MS4 Permit Language	Changes (From 2019 to 2024 Draft)	Changes (From 2024 Draft to 2024 Final)	Topic
Management Action Planning (SMAP)	Permittees shall conduct a similar process and consider the range of issues outlined in the Stormwater Management Action Planning Guidance (Ecology, 2019; Publication no. 19-10-010). ~~Permittees may rely on another jurisdiction to meet all or part of SMAP requirements at a watershed scale, provided a SMAP is completed)~~ for ~~at least~~ one priority catchment ~~located within the Permittee's jurisdiction~~.	Permittees shall conduct a similar process and consider the range of issues outlined in the Stormwater Management Action Planning Guidance (Ecology, 2019; Publication no. 19-10-010) for one new priority catchment.	Permittees shall conduct a similar process and consider the range of issues outlined in the Stormwater Management Action Planning Guidance (Ecology, 2024; Publication no. 24-10-027) for one new priority catchment or additional actions for an existing SMAP. A purpose of the SMAP is to support implementation in the Stormwater Management for Existing Development (SMED) Program with identification of strategic investments through the identification of projects and actions.		existing SMAP will be sufficient for meeting the requirement.	
S5.C.1.d.iii. Stormwater Management Action Planning (SMAP)	**S5.C.1.d. Stormwater Management Action Planning (SMAP).** *S5.C.1.d.i and S5.C.1.d.ii. have not been included in this table. Additionally, S5.C.1.d.iii.(b) through S5.C.1.d.(g) were unchanged and have not been included in this table.* **S5.C.1.d.iii. ~~Stormwater Management Action Plan (SMAP).~~** No later than ~~March~~ 31, ~~2023~~, Permittees shall ~~develop~~ a SMAP for at least one ~~new~~ high priority catchment area ~~from (ii), above~~, that identifies all of the following: **S5.C.1.d.~~iii~~(a)** A description of the stormwater facility retrofits needed for the area, including the BMP types and preferred locations.	**S5.C.1.d. Stormwater Management Action Planning (SMAP).** *S5.C.1.d.i and S5.C.1.d.ii. from the original permit were stricken and the text below was updated to S5.C.1.d.i.* **S5.C.1.d.i.** No later than December 31, 2026, Permittees shall complete a SMAP for at least one new high priority catchment area, or additional actions for an existing SMAP, that identifies all of the following: **S5.C.1.d.i.(a)** A description of the stormwater facility retrofits needed for the area, including the BMP types and preferred locations. Include projects that address transportation-related runoff, such as projects that address tire wear runoff.	**S5.C.1.d. Stormwater Management Action Planning (SMAP).** **S5.C.1.d.i. Stormwater Management Action Plan (SMAP).** No later than March 31, 2027, Permittees shall complete and submit SMAP for at least one new high priority catchment area, or additional actions for an existing SMAP, that identifies all of the following: **S5.C.1.d.i.(a)** A description of the stormwater facility retrofits needed for the area, including the BMP types and preferred locations. Include projects that address transportation-related runoff from high traffic areas.	Receiving water assessment and prioritization language was removed. The date for the new or updated SMAP was updated. Transportation-related runoff project language was added.	The date for the new or updated SMAP was delayed. The language regarding transportation-related runoff projects was amended.	SMAP
S5.C.2.a.i.(b) Public Education and Outreach- General awareness	**S5.C.2.a.i.(b) ~~Target~~ audiences:** Engineers contractors, developers, or land use planners. Subject areas:	**S5.C.2.a.i.(b) Priority audiences:** Engineers contractors, developers, property	**S5.C.2.a.i.(b) Priority audiences:** Engineers contractors, developers, property owners/managers, or land use planners. Subject areas:	Updated audiences and added public education for source control BMPs for building materials.	No change from draft.	Public Education Changes

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	• Technical standards for stormwater site and erosion control plans. • LID principles and LID BMPs. • Stormwater treatment and flow control BMPs/facilities.	owners/managers, or land use planners. Subject areas: • Technical standards for stormwater site and erosion control plans; • LID principles and LID BMPs; • Stormwater treatment and flow control BMPs/facilities; or • Source control BMPs for building materials to reduce pollution to stormwater, including but not limited to stormwater pollution from PCB-containing materials.	• Technical standards for stormwater site and erosion control plans; • LID principles and LID BMPs; • Stormwater treatment and flow control BMPs/facilities; or • Source control BMPs for building materials to reduce pollution to stormwater, including but not limited to stormwater pollution from PCB-containing materials.			
S5.C.2.a.iii. Public Education and Outreach-Stewardship	**S5.C.2.a.iii. Stewardship.** Each Permittee shall provide and advertise stewardship opportunities ~~and/or partner with existing organizations (including non-permittees)~~ to encourage residents to participate in activities or events planned and organized within the community, such as: stream teams, storm drain marking, volunteer monitoring, ~~riparian plantings, and education activities.~~	**S5.C.2.a.iii. Stewardship.** Each Permittee shall partner or promote (or both) stewardship opportunities to encourage residents or businesses to participate in activities or events planned and organized within the community, such as: stream teams, storm drain marking, volunteer monitoring, and riparian plantings. Permittees may partner or promote (both) stewardship opportunities created or organized by existing organizations (including non-permittees).	**S5.C.2.a.iii. Stewardship.** Each Permittee shall provide, partner with, or promote stewardship opportunities to encourage residents or businesses to participate in activities or events planned and organized within the community, such as: stream teams, storm drain marking, volunteer monitoring, riparian plantings, and education activities watershed habitat improvement. Permittees may partner or promote (or both) stewardship opportunities created or organized by existing organizations (including non-permittees).	Stewardship opportunities were updated.	Watershed habitat improvement was added to stewardship opportunities.	Public Education Changes
S5.C.4.b. MS4 Mapping and Documentation	**S5.C.4.b. New Mapping:** Each Permittee shall: **S5.C.4.b.(i)** No later than ~~January 1, 2020, begin to collect size and material for~~ all known MS4 outfalls ~~during normal course of business (e.g., during field screening inspection, or maintenance) and update records.~~ **S5.C.4.b.(ii)** ~~No later than August 1, 2023, complete mapping of all know connections from the MS4 to a privately owned stormwater system.~~	**S5.C.4.b. New Mapping:** Each Permittee shall: **S5.C.4.b.(i)** No later than March 31, 2026, Permittees shall submit locations of all known MS4 outfalls according to the standard templates and format provided in the Annual Report. This reporting shall include the size and material of the outfalls.	**S5.C.4.b. New Mapping:** Each Permittee shall: **S5.C.4.b.(i)** No later than March 31, 2026, submit locations of all known MS4 outfalls according to the standard templates and format provided in the Annual Report. ~~This reporting shall~~ Include the size and material of the outfalls, where known. **S5.C.4.b.(ii)**	Added mapping requirements for outfalls, tree canopy, and acreage of managed stormwater area.	Updated dates for mapping of tree canopy and acreage of managed stormwater area. Added mapping requirement for overburdened communities.	Required Mapping Updates

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		S5.C.4.b.(ii) No later than December 31, 2027, develop a methodology to map and assess acreage of MS4 tributary basins to outfall or discharge points that have stormwater treatment and flow control BMPs/facilities owned or operated by the Permittee. Submit with the Annual Report a map and breakdown of acres managed or unmanaged by stormwater treatment and flow control BMPs/facilities. **S5.C.4.b.(iii)** No later than December 31, 2028 begin mapping of Permittee-owned or operated properties with tree canopy based on available, existing data.	No later than December 31, 2026, using available, existing data, map tree canopy to support stormwater management on Permittee-owned or operated properties. Permittees shall develop and follow a methodology to intentionally identify canopy for stormwater management purposes, which may be updated annually or as needed. **S5.C.4.b.(iii)** No later than March 31, 2028, implement a methodology to map and assess acreage of MS4 tributary basins to outfalls with a 24-inch nominal diameter or larger, or an equivalent cross-sectional area for non-pipe systems that have stormwater treatment and flow control BMPs/facilities owned or operated by the Permittee. Submit with the March 31, 2028 Annual Report a map(s) (.pdf) and table (.xlsx) with a breakdown of the MS4 tributary basins quantifying estimated acres managed or unmanaged by stormwater treatment and flow control BMPs/facilities owned or operated by the Permittee. **S5.C.4.b.(iv)** No later than December 31, 2028, using available, existing data map overburdened communities in relation to stormwater treatment and flow control BMPs/facilities, outfalls, discharge points, and tree canopy on Permittee-owned or operated properties.			
S5.C.5.c.ii.(e)	**S5.C.5.c.ii. Conditionally allowable discharges.** *S5.C.5.c.ii.(a) through (d) have not been included in this table.*	**S5.C.5.c.ii. Conditionally allowable discharges.** *S5.C.5.c.ii.(a) through (d) have not been included in this table.* **S5.C.5.c.ii.(e)**	**S5.C.5.c.ii. Conditionally allowable discharges.** *S5.C.5.c.ii.(a) through (d) have not been included in this table.* **S5.C.5.c.ii.(e)**	Added requirements regarding runoff from PCB-containing building materials.	Made minimal updates to language.	Runoff from Polychlorinated Biphenyls (PCB)-Containing

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		Routine external building washdown that does not use detergents for buildings built or renovated before 1950 and after 1980. The Permittee shall reduce these discharges through, at minimum, public education activities or water conservation efforts, or both. To avoid washing pollutants into the MS4 Permittees shall minimize the amount of wash water used. Commercial, industrial, and multi-story residential structures constructed or remodeled between the years 1950 and 1980 (i.e. those most likely to have PCB containing building materials), shall be assessed for PCB-containing materials consistent with How to find and address PCBs in building materials (Ecology, 2024, Publication No. 22-04-024) prior to routine building washdown. Structures confirmed or suspected to have PCB-containing materials shall not discharge washdown to the MS4. Single-family residential buildings are exempt from PCB assessment. Structures built or renovated between 1950-1980 and determined to be without PCB- containing materials may conduct routine building washdown (without detergents) as described above.	Routine external building washdown that does not use detergents for buildings built or renovated before 1950 and after 1980. These discharges shall be reduced through, at minimum, public education activities and water conservation efforts. Commercial, industrial, and multi-story residential structures constructed or remodeled between the years 1950 and 1980 (i.e. those most likely to have PCB containing building materials), shall be assessed for PCB-containing materials consistent with How to find and address PCBs in building materials (Ecology, 2024, Publication No. 22-04-024) prior to routine building washdown to the MS4. Structures confirmed or suspected to have PCB-containing materials shall not discharge washdown to the MS4. Single-family residential buildings are exempt from PCB assessment prior to building washdown, for the purposes of this section. Structures built or renovated between 1950-1980 and determined to be without PCB-containing materials may conduct routine building washdown (without detergents) as described above.			Building Materials
S5.C.5.e.ii. Procedures for the post-emergency clean-up of firefighting activities	*Language added in final permit is new.*	*Language added in final permit is new.*	**S5.C.5.e.ii. Procedures for the post-emergency clean-up of firefighting activities** **S5.C.5.e.ii.(a)** No later than December 31, 2026, the Permittee shall coordinate with	Section was not included in draft.	Added dates for requirements related to discharges from firefighting activities.	Discharges Containing PFAS

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			firefighting agencies/departments that serve the areas that discharge to the MS4 to be notified when PFAS-containing AFFFs are used during emergency firefighting activities. **S5.C.5.e.ii.(b)** No later than January 1, 2027, Permittee shall update and implement procedures to minimized discharges to the MS4 during post-emergency clean-up and disposal activities including, but not limited to, the immediate clean-up in all situations where PFAS-containing AFFFs have been used, diversions, and other measures that prevent discharges to the MS4. The Permittee is not expected to deploy control measures during an emergency.			
S5.C.7.b. Stormwater Management for Existing Development	*New section added.*	**S5.C.7. Stormwater Management for Existing Development** Each Permittee shall implement a Program to control or reduce stormwater discharges to waters of the State from areas of existing development. The Program shall aim to focus on strategic stormwater investments over longer planning timeframes. Minimum performance measures: **S5.C.7.a.** Permittees shall implement stormwater facility retrofits, or tailored SWMP actions that meet the criteria described in Appendix 12, using one or a combination of the following: **S5.C.7.a.i.**	**S5.C.7. Stormwater Management for Existing Development** Each Permittee shall implement a Program to control or reduce stormwater discharges to waters of the State from areas of existing development. The Program shall aim to focus on strategic stormwater investments over longer planning timeframes. Minimum performance measures: **S5.C.7.a.** Permittees shall implement stormwater facility retrofits, or tailored SWMP actions that meet the criteria described in Appendix 12, using one or a combination of the following: **S5.C.7.a.i.** Strategic stormwater investments identified in Stormwater Management Action Plan(s)	New section.	Added language regarding overburdened communities. Increased minimum acreage to 0.5.	Stormwater Management for Existing Development

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		Strategic stormwater investments identified in Stormwater Management Action Plan(s) (SMAPs, S5.C.1.d.), or similar stormwater planning process; and/or **S5.C.7.a.ii.** Opportunistic stormwater investments identified by leveraging projects outside of SMAP areas to improve stormwater management and infrastructure. **S5.C.7.b.** No later than March 31, 2028, Permittees shall fully fund, start construction, or completely implement project(s) that meet the assigned equivalent acreage and submit documentation with the Annual Report as described in Appendix 12. **S5.C.7.b.i.** Projects that started construction on or after January 1, 2023, may be included towards achieving the acres required. **S5.C.7.b.ii.** Permittees may contribute to meeting an overall regional goal to satisfy this permit requirement as described in S5.C.7.c. **S5.C.7.b.iii.** Permittees that completely implement stormwater facility retrofit projects by the expiration date of this Permit that will exceed the area required for this Permit term may apply the excess as a	(SMAPs, S5.C.1.d.), or similar stormwater planning process; and/or **S5.C.7.a.ii.** Opportunistic stormwater investments identified by leveraging projects outside of SMAP areas to improve stormwater management and infrastructure. **S5.C.7.b.** With each Annual Report, each Permittee shall provide a list of planned individual projects scheduled for funding or implementation during this Permit term for the purpose of meeting the assigned equivalent acreage in Appendix 12. This list shall include at a minimum the information and use the formatting specified in Appendix 12 (.xlsx file format). **S5.C.7.c.** No later than March 31, 2028, Permittees shall fully fund, start construction, or completely implement project(s) that meet the assigned equivalent acreage and submit documentation with the Annual Report as described in Appendix 12. **S5.C.7.c.i.** Projects that started construction on or after January 1, 2023, may be included towards achieving the acres required. **S5.C.7.c.ii.** Permittees may contribute to meeting an overall regional goal to satisfy this permit requirement as described in S5.C.7.d. **S5.C.7.c.iii.** Permittees that completely implement stormwater facility retrofit projects by the expiration			

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		credit to be used for the next Permit term (e.g. 2029-2034 Permit term), not to exceed 50% of the next Permit's requirement. **S5.C.7.c.** Permittees may collaborate to meet a regional goal. **S5.C.7.c.i** Each Permittee is required to manage at least 0.3 acres within their own jurisdiction but may receive acreage credit for contributing to meet an overall regional goal outside their defined MS4 Permit coverage area. For Permittees assigned 0.3 acres, participation and in-kind services to regional collaboration projects may count as the contribution for this permit term if there is a regional agreement on the strategy. **S5.C.7.c.ii.** Permittees may contribute to a regional goal, that is the sum of Phase II partners assigned acreage from Appendix 12. Projects may be implemented outside of permit coverage areas to meet their individual requirement as part of a regional goal where benefits to receiving waters within the permit coverage are identified and anticipated. **S5.C.7.d.** Permittees shall develop a method and report the amount of estimated or projected equivalent acres managed by stormwater facility retrofits and SMAP project costs for the	date of this Permit that will exceed the area required for this Permit term may apply the excess as a credit to be used for the next Permit term (e.g. 2029-2034 Permit term), not to exceed 50% of the next Permit's requirement. **S5.C.7.d.** Permittees may collaborate to meet a regional goal. **S5.C.7.d.i** Each Permittee is required to manage at least 0.5 acres within their own jurisdiction but may receive acreage credit for contributing to meet an overall regional goal outside their defined MS4 Permit coverage area. For Permittees assigned 0.5 acres, participation and in-kind services to regional collaboration projects may count as the contribution for this permit term if there is a regional agreement on the strategy. **S5.C.7.d.ii.** Permittees may contribute to a regional goal, that is the sum of Phase II partners assigned acreage from Appendix 12. Projects may be implemented outside of permit coverage areas to meet their individual requirement as part of a regional goal where benefits to receiving waters within the permit coverage are identified and anticipated. **S5.C.7.e.** Permittees shall develop a method and report the amount of estimated or projected equivalent acres managed by stormwater facility retrofits and SMAP project costs for the 2029 permit term.			

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		2029 permit term. This report shall be submitted to Ecology no later than March 31, 2028.	This report shall be submitted to Ecology no later than March 31, 2028.			
S5.C.9.e. Operations and Maintenance	*New language added.*	**S5.C.9.e.** No later than July 1, 2027, develop and implement a municipal street sweeping program to target high priority areas and times during the year that would reasonably be expected to result in the maximum water quality benefits to receiving waters. The following program elements shall be included: **S5.C.9.e.i.** Apply street sweeping program to publicly owned roads in MS4 drainage areas that discharge to outfalls, Within those areas, sweep the following high priority areas, where applicable: **S5.C.9.e.i.(a)** High traffic roads, such as arterials; **S5.C.9.e.i.(b)** Accessible curb and gutter streets – permittees may need to implement parking restrictions or other effective methods to optimize pollutant removal; **S5.C.9.e.i.(c)** Areas with significant tire wear, e.g. roundabouts, high traffic intersections, municipal-operated parking lots; **S5.C.9.e.i.(d)** Areas with significant tree canopy with seasonal leaf litter drop; **S5.C.9.e.i.(a)**	**S5.C.9.e.** No later than July 1, 2027, develop and implement a municipal street sweeping program to target high priority areas and times during the year that would reasonably be expected to result in the maximum water quality benefits to receiving waters. The following program elements shall be included: **S5.C.9.e.i.** Priority areas: Apply street sweeping program to curbed municipal streets that discharge to outfalls and meet any of the following criteria: **S5.C.9.e.i.(a)** High traffic streets, such as arterials or collectors; **S5.C.9.e.i.(b)** Streets that serve commercial or industrial land use areas **S5.C.9.e.ii.** Program timing: Sweep priority areas at least once between July and September each year and at least two additional times a year as determined by the Permittee to provide additional water quality benefits. For calendar year 2027, only one sweeping event is required between July and December. **S5.C.9.e.ii.(a)** Compliance during this Permit term shall be determined by records of a sweeping program designed to sweep all priority areas identified and sweeping at	Added requirements for street sweeping.	Cut back on what defines a priority sweeping area, added more specific requests for reporting, and moved up annual reporting by one year.	Street Sweeping

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		Municipal roads that serve commercial or industrial land use areas; and **S5.C.9.e.i.(b)** MS4 basins that discharge to surface receiving waters that support salmonids. **S5.C.9.e.ii.** Sweep high priority areas at least once between July and September each year and two additional times a year as determined by the Permittee to provide additional water quality benefits. For calendar year 2027, only one sweeping event is required. **S5.C.9.e.ii.(a)** Permittees may document reasoning for alternative sweeping timing and frequency based on local conditions (e.g., climate) and estimated pollutant deposition quantities. Documentation shall also be based on actual maintenance experience and be certified in accordance with G19 – Certification and Signature. **S5.C.9.e.ii.(b)** If a Permittees' existing overall street sweeping program provides equivalent or greater street sweeping frequency relative to the requirements above, the Permittee may continue to implement its existing street sweeping program. Documentation shall be certified in accordance with G19 – Certification and Signature. **S5.C.9.e.iii.**	least 90% of priority areas each sweeping event. **S5.C.9.e.ii.(b)** Permittee may document reasoning for alternative sweeping timing and frequency based on local conditions (e.g., climate) and estimate pollution deposition quantities. Documentation shall also be based on actual maintenance experience and be certified in accordance with G19 – Certification and Signature. **S5.C.9.e.iii.** Annually sweep at least 90% of high priority areas within the MS4 drainage areas, **S5.C.9.e.iv.** Follow equipment design performance specifications to ensure that street sweeping equipment is operated at the proper design speed with appropriate verification, and that it is properly maintained. **S5.C.9.e.v.** Permittee shall dispose of street sweeper waste material in accordance with Appendix 6-Street Waste Disposal. **S5.C.9.e.vi.** Document the road type and level of traffic served (e.g., AADT or estimated # of vehicles served) of roads swept, frequency, type of sweeper, lane miles, a map of the areas and land uses swept, and approximation of street waste removed. Begin reporting with the Annual Report March 31, 2029. **S5.C.9.e.v. Reporting** No later than March 31, 2028, submit with the Annual Report the			

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		Annually sweep at least 90% of high priority areas within the MS4 drainage areas, **S5.C.9.e.iv.** Follow equipment design performance specifications to ensure that street sweeping equipment is operated at the proper design speed with appropriate verification, and that it is properly maintained. **S5.C.9.e.v.** Permittee shall dispose of street sweeper waste material in accordance with Appendix 6-Street Waste Disposal. **S5.C.9.e.vi.** Document the road type and level of traffic served (e.g., AADT or estimated # of vehicles served) of roads swept, frequency, type of sweeper, lane miles, a map of the areas and land uses swept, and approximation of street waste removed. Begin reporting with the Annual Report March 31, 2029.	following information about the priority areas: **S5.C.9.e.ii.(a)** Priority areas swept identified on a map (i.e., streets that are considered high traffic [estimated number of vehicles served/or arterials or collectors], and streets serving commercial or industrial land use). **S5.C.9.e.ii.(b)** Sweeping date(s). **S5.C.9.e.ii.(c)** Sweeping frequency. **S5.C.9.e.ii.(d)** Type of sweeper. **S5.C.9.e.ii.(e)** Total curb miles of priority areas and curb miles swept. **S5.C.9.e.ii.(f)** Approximation of street waste solids removed for each sweeping event (indicate unit of measurement and wet or dry weight, where available).			

Other changes to note:

The dates for the behavior change campaign development, implementation, and evaluation were changed (see S5.C.2.a.ii).

The Permittee's updated ordinance for allowable and conditionally allowable discharges (including those from emergency firefighting activities) must be revised no later than July 1, 2027 (see S5.C.5.c).

Appendix E

Ditch Maintenance and Operations Program - Development and Recommended Actions

DATE:	June 6, 2024
TO:	Tim Carlaw, PE
FROM:	Paul Fendt, PE
SUBJECT:	Ditch Maintenance and Operations Program
CC:	Michael Murray, PE
	Alex Van Kirk, EIT
PROJECT NUMBER:	553-1931-052
PROJECT NAME:	Comprehensive Storm Drainage Plan Update

Overview and Introduction

This memorandum documents the proposed ditch maintenance and operations (M&O) program of the Stormwater Programs Task for the Comprehensive Storm Drainage Plan (Plan) for the City. This effort has been implemented to improve the M&O of the City's ditch inventory to control stormwater runoff and improve the quality of downstream receiving waters. The analysis considers the existing ditch M&O program and determines if additional controls and resources are required to meet needs and address potential liabilities. This technical memorandum discusses the City's ditch inventory, existing ditch M&O program, an outline for the proposed ditch M&O program, and future recommendations for consideration.

Ditch Inventory Evaluation

The evaluation of the City's existing ditch M&O program began with an assessment of its asset inventory. The City's ditch inventory is mapped under the "Channels" layer in the City's computerized maintenance management system, Cartegraph. At the time of investigation, there were 1,698 features within the Channels layer. Figure E-1 at the end of this memorandum demonstrates the extent of the channel inventory within Cartegraph.

The evaluation of the inventory included reviewing the available attribute and location data for the Channels layer features. The feature attribute review revealed an incomplete dataset with several attributes having little to no data inputs. While the data may be incomplete for the entire inventory, the following attribute fields were available for input and were either beneficial during evaluation or are anticipated to be of use in the program once data is made available.

- Owner: The jurisdiction responsible for M&O of the feature.
- Installed: The date the feature was constructed.
- Channel type: Labels the feature as a ditch or a stream.
- Channel shape: Identifies the feature as having a parabolic, v-bottom, or trapezoidal shape.
- Bottom width: The width of the bottom face of the feature.
- Bottom material: Identifies the feature as having a concrete, grass, plastic, riprap, or soil bottom.
- Slope: The longitudinal slope of the feature from inlet to outlet.
- Length: The length of the feature from inlet to outlet.
- Easement: A yes/no field that indicates whether the feature is within an easement.

Having feature data for these attributes would help with determining maintenance needs and options for water quality retrofits, making an educated guess for the useful life of component parts, and identifying the parties responsible for feature M&O. It is recommended to update features with these attributes upon implementing the ditch M&O program.

Channel features were further evaluated to determine whether they should be considered ditches and, consequently, whether they should be included in the City's ditch M&O program. A copy of the Channels layer was created to classify features accordingly. Attachment E1 describes the process used in classifying layer features and demonstrates the different categories created within the copied layer. The result of this process was a copy of the Channels layer broken into four categories based on expectations from the City's M&O program. These categories are summarized below.

- Roadside conveyance: Ditches within road right-of-way that are assumed to be capturing road runoff. This is the most common form of ditch.
- Facility-related: Ditches within close proximity to stormwater facilities that solely convey stormwater to and from the stormwater facilities.
- Collection (other): The remaining City-owned channel features that are expected to be maintained by the Storm Drainage Utility. This excludes any surface water linework (streams, rivers, etc.), ditches owned by other jurisdictions (including private ownership), and ditches maintained by other divisions within the City (for example, ditches within the median of the airport).
- N/A: All features not included in the preceding categories and not maintained by the City's Storm Drainage Utility.

The tasks proposed on behalf of each of these categories are discussed in a later section of this memorandum.

Existing Ditch Maintenance and Operation Program

The City was consulted regarding the existing M&O program for their ditch inventory. Maintenance activities include regrading and removal of sediment; nuisance vegetation; and isolated obstructions such as trash, trees, and accumulated debris. Because vegetation is important for erosion control, removal of beneficial vegetation is minimized.

Maintenance of the City's ditch inventory is time intensive. Six M&O staff are required for a single ditch maintenance crew to operate the City-owned excavator, control traffic, and manually regrade or remove obstructions. While the City aims to implement a ditch maintenance program, the City's ditch inventory is only maintained on an as-needed basis.

Proposed Ditch Maintenance and Operation Program

The components of the program are listed and discussed below.

Incorporation of Ditch Classifications

Depending on the type of ditch, there may be a specific inspection regime and go-to maintenance activities. It is recommended that the City incorporate the earlier-listed classifications as feature attributes in their Channels layer in Cartegraph.

As detailed in Attachment E1, all channels classified as streams were shown to overlap with surface water linework in the geographic information system (GIS) and assumed to be streams. No streams are included in the ditch M&O program; however, complaints and observations, such as erosion around structures, may be addressed and included in customer service. For the purpose of this technical memorandum, none of the stream features will be discussed further.

Inspection and Routine Maintenance

All ditches will need to be inspected regularly to determine whether further maintenance or construction is required. Routine maintenance will occur during inspection and will include smaller-scale tasks, such as picking up trash, clearing out shopping carts, addressing spot complaints, and mowing. A full inspection will involve evaluating the system for any structural or vegetation issues and documenting the results to determine whether a work order is needed. Ditches identified in a work order should result in a follow up within 15 days.

Roadside ditches are expected to require constant maintenance. The collection ditches will require additional routine maintenance, such as annual mowing and sediment removal. Facility-related ditches are recommended to be maintained and inspected with the facilities they are related to. A checklist for the full inspection and routine maintenance task, along with any additional tasks required for certain types of ditches, should be developed as a follow-up to this memorandum.

Overall System Management

A general management system will be needed to ensure features are mapped, add new ditches to the City inventory, investigate encroachments, develop capital items, coordinate complaint response, make recommendations for water quality retrofits, promote general environmentally friendly practices, and facilitate the generation of work orders. These items are covered in more detail below.

Mapping Update

In addition to updating the Channels layer with the attribute classifications described earlier, the mapped features will need to be evaluated for accuracy after field inspection and confirm they are classified correctly. Similarly, attributes and linework for the feature should be reviewed and modified after field work.

It is recommended that in addition to the attributes listed in the Ditch Inventory Evaluation section, the following attributes be defined and verified for each feature as work orders are developed.

- Inverts (as available).
- Average bottom and top width.
- Permitted encroachments (utility structures, driveways, etc.).
- Ownership and easements.

Some of the attributes may be field verified during inspection, while others may involve desktop research.

Adding New Ditches

There should be a protocol in place where any ditches observed in the field should be noted and then verified of their existence in the City's ditch inventory. This will aim to pick up on any unmapped ditches within the City to ensure features are maintained and operated appropriately. Newly added ditches will require ownership and responsibility research and subsequent easements or purchase.

Encroachment Investigation

Any encroachments observed in the ditch features while in the field must be documented. Examples of encroachments include utility boxes, utility poles, driveway locations, and driveway pipes. These items will need to be investigated and handled appropriately.

Capital Development

The results of the feature inspection may warrant minor capital repairs or replacement. The projects should be added as a program to the Storm Drainage Utility's capital improvement plan. Items noted during inspection that may require capital repair or replacement include sedimentation, erosion, and system/structural failures.

Responding to Complaints

The program does not deal with private ditches. However, if a complaint is received, the City may need to respond. The City may either notify the owner of the complaint and insist they handle it appropriately, or the City may handle the complaint and then bill the owner for the work.

Water Quality Retrofits

As part of the program, the City's ditches should be evaluated for potential water quality retrofits, focusing on roadside ditches. Retrofits would implement strategies to provide treatment for the various pollutants found in road runoff (6PPD-quinone, road maintenance chemicals, heavy metals, eroded soil, etc.). Determining potential retrofits to consider and deciding how a ditch is chosen for retrofit should be determined as a follow-up to this memorandum.

General Environmentally Friendly Practices

It is recommended to follow general environmentally friendly practices when performing ditch maintenance. A few of these practices have been listed below and can be researched further in Volume IV of the Pierce County Stormwater and Site Development Manual.

- Encourage vegetation by not mowing too low.
- Avoid using chemicals where possible.
- Perform regular inspections.
- Conduct vegetative maintenance in the late spring or early fall.

Work Order Development

The following items will need to be addressed and managed in incorporating the proposed ditch M&O program.

- How does inspection turn into a work order?
- How often should ditches be inspected?
- What are the thresholds for action?

Recommendations

It is recommended to implement the proposed ditch maintenance program as detailed above. Further work to develop the inspection checklists, decide on how to implement water quality retrofits, and address the work order development items is necessary as a follow-up to this memorandum. It is recommended to reflect upon the program after 5 years to assess whether any adjustments would be beneficial to the program.

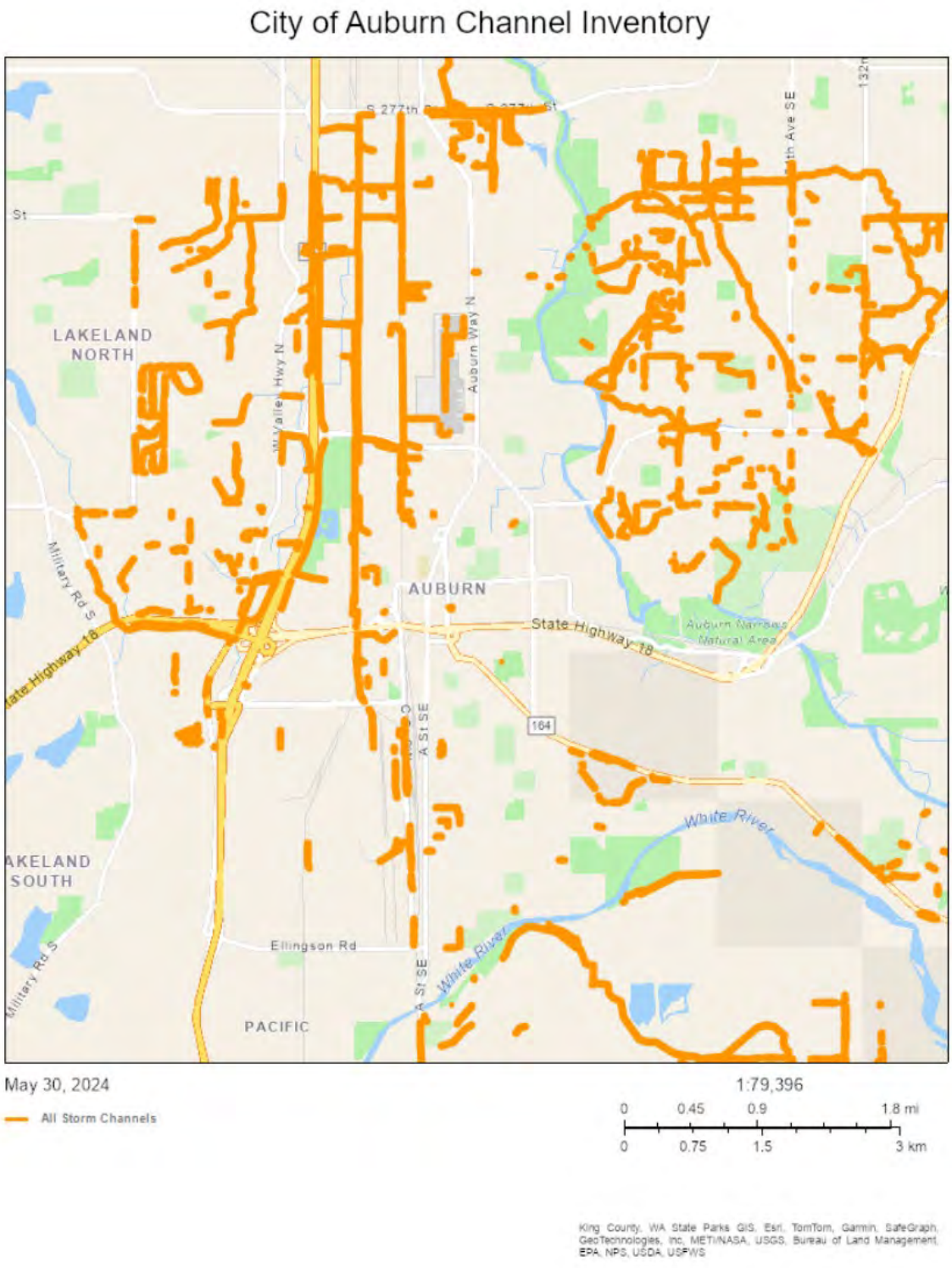


Figure E-1. Extent of Channels Layer in Cartegraph

Attachment E1

Channel Classification

Attachment E1

Channel Classification

The Channel layer was exported from the City's Cartegraph inventory and was used as the basis for the data review. At the time of export, there were 1,698 features with a total of more than 440,000 feet in summed length.

After reviewing the channel inventory, it was determined that a categorization of the channels by type would be beneficial in developing the required inspection criteria, frequency, and maintenance needs. Two attribute columns were added to the Channel layer, named "Source_Drainage" and "Source_Drainage_Note" to ease this process. Features were assigned a common category in the "Source_Drainage" attribute column, and any notes or reasoning for the assignment were justified in the "Source_Drainage_Note" attribute column. The process for classification of the channel inventory (and filling out the Source_Drainage attribute column) is detailed in the following sections.

The characteristics evaluated for classification along with a description of the process for each are listed below.

Ownership

The channels were first broken down using the feature's Owner attribute. The process for this breakdown is listed below.

- Any ditches marked as Owner = "COA"[1] or "0" or blanks were assumed to be City owned and broken down further.
- Any ditches marked as Owner = "Private" were marked as "Private – Ditch."
- Any ditches marked as Owner = "WSDOT" were marked as "WSDOT – Ditch."
- Any ditches marked as any owner not previously identified were marked as "Other Jurisdiction – Ditch."

Surface Water

The Channels layer was overlaid in GIS with linework from surface water and stream network layers. Any features from the Channels layer that overlapped with the surface water and stream network linework were marked as "Streams." These features would not be considered in the ditch maintenance and operations program.

If any features appeared to be visually similar to streams in GIS but did not overlap with any surface water linework, they were marked as "COA – Channelized Streams." An example of this instance is shown in Figure E1-1 below.

[1] Where COA is an abbreviation for City of Auburn.

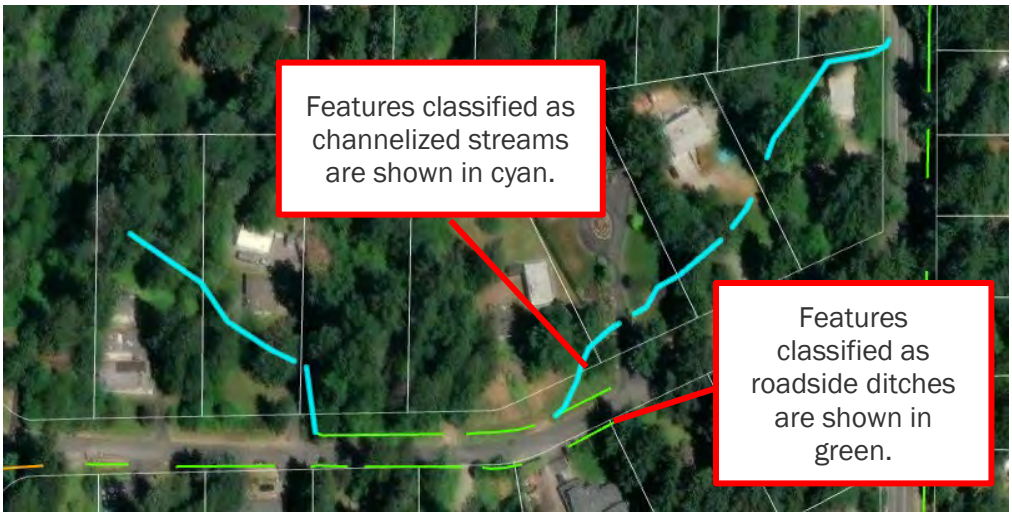


Figure E1-1. COA – Channelized Streams and Roadside Ditches Example

Roadside Ditch

A buffer was applied around roadways in GIS to capture any of the channel features within right-of-way. Any ditches within this buffer were marked as "COA – Roadside Ditch." These features are assumed to be capturing road runoff and are anticipated to be the most common form of a ditch. Examples of these features are shown in green in Figure E1-1.

Stormwater Facility

In a similar fashion to roadside ditches, a buffer was applied around the City's existing stormwater facilities. Any channels that lay within this buffer were visually evaluated to confirm that they seemed to be associated with a stormwater facility. Channel features that were confirmed to be associated with a stormwater facility were marked as "COA – Facility." Maintenance for ditches associated with an existing facility are anticipated to follow a schedule dictated by maintenance of the overall facility. An example of this feature type is shown below in Figure E1-2.

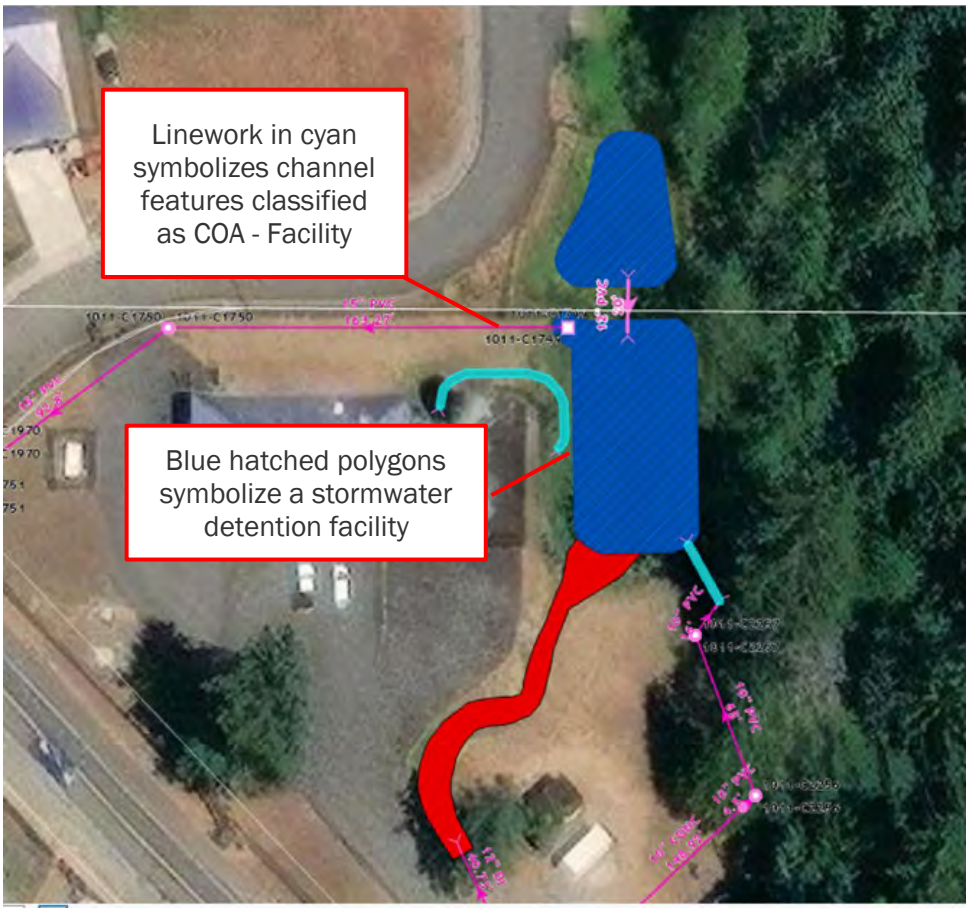


Figure E1-2. COA – Facility Features Example

Airport Median

There were three channel features shown in the airport median that were classified separately. These features were marked as "COA – Other." These are likely not ditches and would follow a different maintenance schedule than what is recommended elsewhere. Maintenance would be dictated by airport requirements. The three channel features of this type are shown below in Figure E1-3.



Figure E1-4. COA – Other Features

Public Ditches

The remaining channel features that were City owned and not surface water, not receiving roadside drainage, not associated with a stormwater facility, and not within the airport median were classified as “COA – Public.” These features will require different inspection and maintenance techniques than the roadside ditches because access may be more challenging and captured runoff is anticipated to be sourced from more than roadways. An example of a channel feature classified as “COA – Public” is shown below in Figure E1-4.



Figure E1-4. COA – Public Feature Example

Results

After classifying the Channels layer as detailed above, the resulting breakdown of features in each category is demonstrated below in Table E1-1.

Table E1-1. Channel Classification Breakdown

Owner[1]	Classification[2]	Length[3] (feet)	Length (miles)	Percent of City-Owned Channels	Percent of Total Channels
Various	Stream	84,000	16	-	19%
WSDOT	WSDOT - Ditch	29,000	5	-	6%
Other Jurisdictions	Other Juris - Ditch	9,000	2	-	2%
Private	Private - Ditch	101,000	19	-	23%
COA	COA - Channelized Stream	14,000	3	6%	3%
COA	COA - Roadside Ditch	176,000	33	79%	39%
COA	COA - Facility	5,000	~1	2%	1%
COA	COA - Other	3,000	~1	1%	1%
COA	COA - Public	26,000	5	12%	6%
-	**COA Total**	**224,000**	**42**	**100%**	**50%**
-	**Total**	**447,000**	**85**	-	**100%**

1 Owner corresponds to the data for the feature attribute of the same name. COA = City of Auburn; WSDOT = Washington Department of Transportation. "Other Jurisdictions" includes any other ownership not included in COA, WSDOT, or Private. Other jurisdictions listed as owners of channel features include City of Algona, City of Kent, King County, and the Muckleshoot Indian Tribe.

2 Classification also refers to the "Source_Drainage" attribute column developed for this evaluation.

3 Length has been rounded up to the nearest thousand. The columns to the right have all been calculated based on this rounded number.

Work Implications

The review of the channel inventory layer was conducted as part of a larger effort to develop a drainage ditch maintenance program for the City. Breaking down the layer into the classifications identified in Table 1 allow for resources to be evaluated appropriately. While the channel classifications aid in giving additional context for the features within the Channel layer, some of the classifications are expected to require the same work items and maintenance frequencies, while others are not maintained by the storm drainage utility and will not be included within the ditch maintenance program. To simplify drainage ditch M&O needs, features can be split into broader categories based on expected work. Table E1-2 shows the groupings for ditch M&O work as they relate to the COA channel classifications.

Table E1-2. COA Drainage Ditch M&O Categories Relative to Channel Classifications

COA Drainage Ditch M&O Category	Channel Classification	Length (feet)	Length (miles)
Roadside Conveyance	COA - Roadside Ditch	176,000	33
Facility-Related	COA - Facility	5,000	~1
Collection (Other)[1]	COA - Channelized Stream	40,000	8
	COA - Public		
Total Maintained by Storm Drainage Utility		221,000	42
N/A[2]	COA - Other	226,000	43

COA = City of Auburn; M&O = maintenance and operation

1 This grouping combines all other COA ditches maintained by the storm drainage utility collecting stormwater. For the purposes of this preliminary ditch maintenance program, these ditches are expected to have the same maintenance needs and frequency of work.

2 N/A includes all features in the channel classifications layer not sorted into one of the other three M&O categories, and not included in the City's ditch maintenance program. COA-Other is included in this category as it is not expected to be maintained by the storm drainage utility. It is expected to have different maintenance expectations dictated by the airport. If this is proven otherwise, it should be sorted into one of the other M&O categories based on expected level of need.

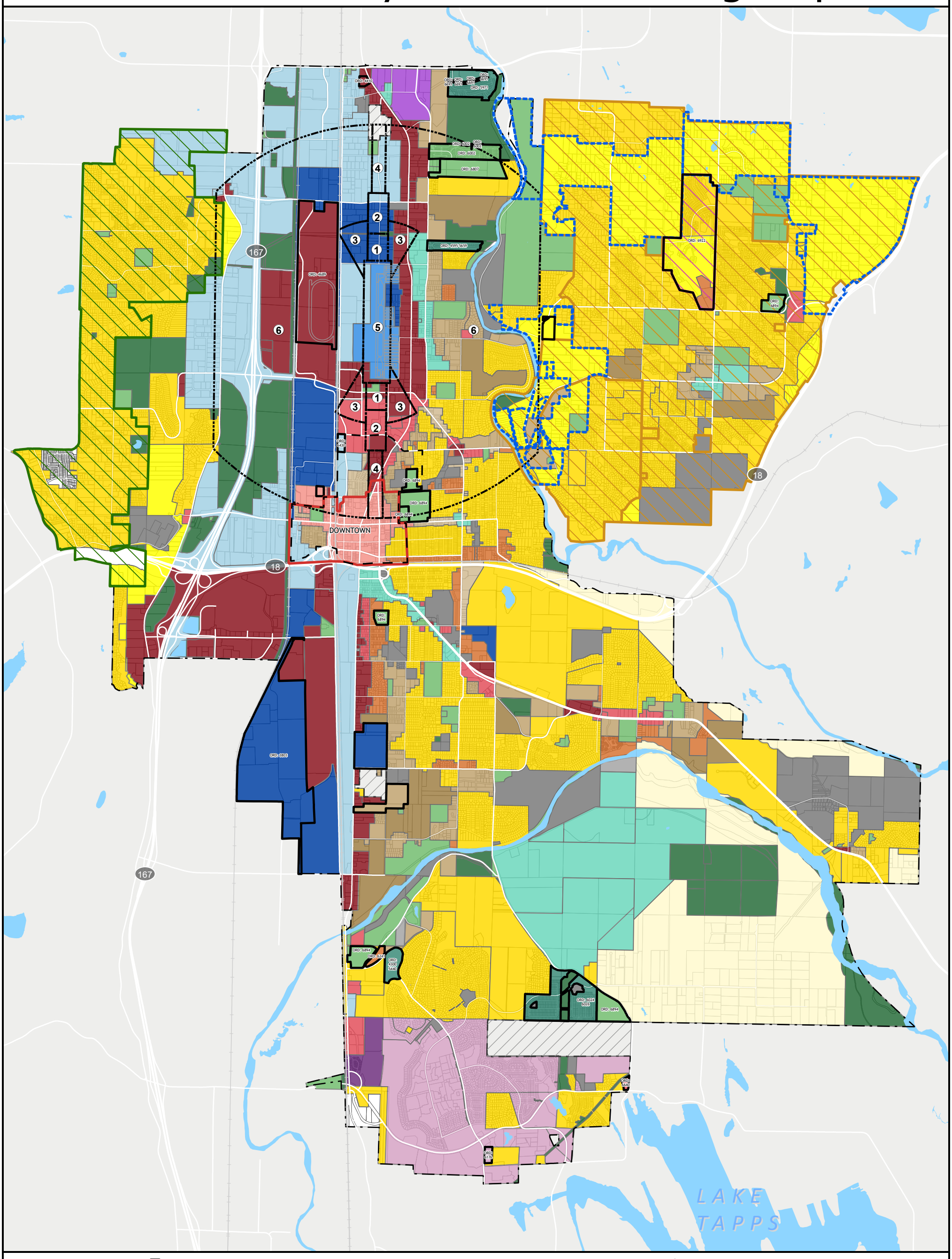
Facility-related ditches will largely be maintained alongside the facilities they correspond with. This may require a first step in associating facility-related features with the respective facility they serve in Cartegraph to ensure that these features are not missed. After this exercise, facility maintenance may include maintenance of any associated ditches (depending on recommended maintenance frequency, facilities may be maintained several times per year, while facility-related ditches may not need as many visits). While these features are still included within the ditch maintenance program, the frequency and scheduling of work is dependent on timing for associated facilities. Though, the work associated with ditch inspection and maintenance will be dictated by the ditch inspection program.

In terms of M&O tasks, features classified as COA-Channelized Stream are expected to have the same inspection and maintenance requirements as those in COA-Public, so these will be treated the same in terms of recommended M&O actions.

Appendix F

SEPA Compliance Documentation

Draft 2024 City of Auburn Zoning Map



Zoning

- DOWNTOWN URBAN CENTER
- C-AG - AUBURN GATEWAY
- C-1 LIGHT COMMERCIAL
- C-2 HEAVY COMMERCIAL
- I - INSTITUTIONAL
- M-1 LIGHT INDUSTRIAL
- M-2 HEAVY INDUSTRIAL
- LF - Airport Landing Field
- OS - OPEN SPACE
- P-1 PUBLIC USE
- PLANNED UNIT DEVELOPMENT DISTRICT
- R1 RESIDENTIAL 1 DU/ACRE
- R2 - Residential Low
- R3 - Residential Moderate
- R4 - Residential High
- Lakeland Hills PUD
- R-MHC RESIDENTIAL MANUFACTURED/MOBILE HOME COMMUNITY
- R-NM NEIGHBORHOOD MIXED-USE
- RC RESIDENTIAL CONSERVANCY
- RF - Residential-Flex
- TERRACE VIEW DISTRICT
- UNCLASSIFIED USE DISTRICT

- Special Zoning Ordinances & Resolution
- Downtown Urban Center
- Expanded Downtown Urban Center
- Potential Annexation Areas
- Urban Separators Overlay
- Lea Hill Overlay (Ordinance: 5346 & 6121)
- Bridges Overlay (Ordinance: 6922)
- West Hill Overlay (Ordinance: 6122)

Airport Overlays

- Runway Overlay Zone 1
- Inner Safety Zone 2
- Inner Turning Zone 3
- Outer Safety Zone 4
- Sideline Safety Zone 5
- Airport Operations Zone 6

0 0.25 0.5 0.75 1
MILES

Printed On: 11/18/2024
Map ID: 1016

Information shown is for general reference purposes only and does not necessarily represent exact geographic or cartographic data as mapped. The City of Auburn makes no warranty as to its accuracy.

Submitted by Linda C. Redman March 2024

Comprehensive plan

Environmental Impacts -

- Include care for species
- Each neighborhood could have goals + markers (steps to reach goals) + incentives related to
  - increased healthy eating choices
  - increased health markers
  - increased mental well-being
  - decreased overall emissions
  - increased species health

(Thus there needs to be a collectn of current stats to be able to compare apples to apples & note degree of progress toward goals,

+

There needs to be incentives - One incentive is to post the goals and progress (& hoped for progress)

- There needs to be the concept of checkerboard Development demonstrated in the city and ability planned for expansion in the forested & non-developed land around the city & state.
  - checkerboard Development is where humans live or develop like the middle acre of a 6-acre parcel. This allows space for species including trees, Requiring this 1:5 ratio in cities can help the O_2/CO_2 balance as well.

Even Industrial developments can be required to have a 1:5 ratio of developmen
even if it is 1 hectacre to 5 undeveloped
hectacres around them – with trees. OR
the business or housing development can be required to
sponsor saving this amount of S. Am. Rainfor
(They can develop + oversee a community
of human species protectors there to offset
their inability to do this here.) they can
work w/ S. Am Rainforest non-profits
to ~~fulfill~~ fulfill this requirement or
do their own thing. It should be approved
by 3rd party agencies unknown
to them.

Also get Brave Browser app for
ones cell phone and put in
https://oxygenlevels.org – it should
take you to Scripps Institute
Site. (It looks like an alarming
downward trend. I got an answer
about "how are methane, CO_2 +
O_2 levels" from chatGPT – ~~A~~ something like this
+ CO_2 are ~~do~~ above normal (or
desired) levels, and oxygen levels
are the same." Machines don't
like oxygen, as it makes them rust

Submitted by Linda C. Redman

Comprehensive Plan Input

Planning for ecological, peaceful neighborhoods.

- If the radio frequency the city has can be made to just cover the city area, & if people can know that, this may help to broadcast just to Auburn residents (& some nearby neighbors of Auburn residents.

- There might also be some neighborhood radio signals.

- Then everyone will need a radio.

- Also a bulletin board at neighborhood stores and a neighborhood grocery store of CHEAP, ORGANIC produce, cheap organic staple supplies, including alternative non-dairy milks, non-GMO butter alternatives like Earth Balance soy-free butter, non-chlorinated kitchen & bathroom + office paper products (also from recycled paper or other ecological materials)

- and also a place to have soup, smoothies or celery-apple juice →

with tables + chairs for neighbors to talk. — it can be under a large vinyl tent with clear vinyl windows (like the King County tents for checking if people had the SARS CoV2 virus) — and there could be ceiling heat lamps in cold months.

These could also be places to vote at & have neighbors oversee & validate acceptable elections.

For more ideas see slide show presentation (the one with sound & the one w/o sound - mostly for the initial image.) "Sco-Jhev - A Word and a Plan for a Healthy City." its on YouTube "Eco Peace Vision" Channel.

One more thing —
I want to suggest people in the planning and zoning department guard against bribes as these things have been offered in other cities I've heard. If people can believe in God & want to please

TOYER STRATEGIC ADVISORS, INC.
10519 20th ST SE, SUITE 3
LAKE STEVENS, WA 98258
toyerstrategic.com

April 2, 2024

Planning Commissioners
City of Auburn
25 W Main Street
Auburn, WA 98001

ZONING CHANGES & COMPREHENSIVE PLAN COMMENTS

Dear Commissioners:

Our firm represents Schneider Homes, the owner of parcels 0921059127, 0921059038, and 0921059170 in the Lea Hill area of Auburn. The owner fully supports the proposed redesignation of the site to Neighborhood Residential 3 and the proposed new R-4 zoning district. With adoption of these proposed changes, the city will help encourage greater diversity of housing options.

In additional to these proposed map amendments, we respectfully submit the following comments on the draft Land Use & Housing Elements:

- Consider specifying in the draft elements that CPTED (as cited in the policies four times) is the acronym for Crime Prevention Through Environmental Design. It is currently not defined.
- Within the Mixed Use land use designation consider providing context in the policies that the city's intent is to allow vertical or horizontal mixed use. For example, amend LU-405 to read:

  LU-405 Mixed-Use Districts should ~~create~~ support cohesive, diverse, neighborhood mixed-use centers that allow vertical and horizontal flexibility, as well as flexibility in uses ~~that~~ to provide for local housing, shopping, and employment options that also allows each center to foster its own identify.

- Regarding Figure 3 on page HE-19, we strongly support the expansion of the Multi Family Tax Exemption (MFTE) program to multifamily areas outside of downtown. This is a proven incentive to encourage more multifamily housing.

Thank you for your time and consideration. Should you have any questions, please do not hesitate to reach out to me at 425-322-5226 or david@toyerstrategic.com.

Sincerely,

David Toyer
President

CC: Josh Steiner, Senior Planner, City of Auburn

To: City of Auburn Planning Commission

From: Trish Borden and Lee Valenta

Re: Amendments to the Comprehensive Plan Land Use Section

Date: April 16, 2024

Thank you for the opportunity to make comments regarding future amendments to the Comprehensive Plan. We are unable to make these comments in person today so are submitting them electronically.

We would like the Comprehensive Plan to continue to value open space and the preservation and enhancement of the natural environment. This is even more important today as Auburn continues to grow more densely with smaller lots and multifamily housing.

There are several places in the current Land Use section that address this. The current policies related to Open Space (LU 120- LU 126) should be retained or lean stronger towards preservation and enhancement. With the current pressure to increase housing stock by 12,000 or more units, it is essential to protect the natural environment.

LU 145 Mount Rainier Vista. This policy recognizes the importance of this area to the protection of Coal Creek Springs. It should also recognize the value of Bowman Creek. This is a historic creek which flows from Lake Tapps (before Puget Power Project) down to the Stuck River. It continues to support a variety of wildlife in the area including a herd of more than 30 elk and a variety of birds. Residents have identified more than 60 bird species in 2023.

Attachments:
Bowman Creek Historic Map 1897



Bowman Creek Neighborhood Resident Elk Herd;







April 16, 2024

VIA EMAIL

City of Auburn Planning Commission

City of Auburn

Attn: Josh Steiner

25 W Main Street

Auburn, WA 98001

Email: jsteiner@auburnwa.gov

Re: Land Use and Housing Element – Auburn Comprehensive Plan Update

Dear Planning Commission:

I am writing to express my support for the proposed Comprehensive Plan Amendment to change the Future Land Use Map designation of my property at 2336 I Street (parcel no. 512540-0420) from Multiple-Family to Neighborhood Residential Three.

The current R-20 designation, which allows only low-density single-family development, is no longer appropriate for this property given its proximity to major transportation corridors, employment centers, and commercial amenities along Auburn Way. Updating the land use designation to R-4 Residential High Density will enable more efficient and sustainable use of this underutilized site by allowing for a greater variety of housing types at increased densities in the future.

While I understand that this proposed amendment would only change the land use designation at this time and not the zoning itself, which will be addressed at a later date during the land use code update, it is a critical first step towards unlocking the potential of this property to help meet Auburn's growing housing needs. The Neighborhood Residential Three designation aligns with the city's goals of accommodating projected population growth, providing diverse housing options, and promoting affordability.

I strongly support the proposed expansion of the Multifamily Tax Exemption (MFTE) program to include multifamily areas beyond the downtown core, as illustrated in Figure 3 on page HE-19 of the Housing Element. The MFTE program has a proven track record of incentivizing the construction of new

multifamily housing, and extending its geographic scope will help to encourage much-needed residential development across a wider area of the city.

In conclusion, I strongly encourage the Planning Commission to recommend to City Council this Future Land Use Map amendment as part of the Comprehensive Plan Update. This action will put the city on a path towards more sustainable and equitable growth while enabling the productive redevelopment of underutilized properties like my own.

Thank you for your consideration of my comments.

Very truly yours,



Simon Uppal

Josh Steiner

From: Sears, Tricia (DNR) <Tricia.Sears@dnr.wa.gov>
Sent: Thursday, April 11, 2024 12:26 PM
To: Josh Steiner
Cc: Sears, Tricia (DNR); Holman, Carol (COM)
Subject: City of Auburn Comprehensive Plan updates: WGS comments

CAUTION: The following message originated from outside the City of Auburn. Be careful opening links and attachments

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4/11/24

Hello Josh,

In keeping with the interagency correspondence principles, I am providing you with comments on the proposed changes to Auburn's Comprehensive Plan updates (Commerce ID# 2024-S-6992).

I looked at the proposal and focused on areas related to WGS work. Of note, but not limited to, I look for language around the geologically hazardous areas, mineral resource lands, climate change, and natural hazards mitigation plans.

Specifically in this proposal, I reviewed the Land Use Element, the Climate Element, the memo dated 2/28/24, and the Critical Areas Checklist.

In the memo dated 2/28/24, on page 2 under b) it states, "In accordance with ACC 16.10.070(C) the city requires all reports and studies required of the applicant for critical area reports shall be prepared by a qualified consultant…" In reviewing the provisions of ACC 16.10.070(C), the definition of qualified consultant could be made more clear and stronger, particularly related to geologically hazardous areas. Here's an excerpt from the existing: "Qualified consultant," for purposes of these regulations, shall mean a person who has attained a degree from an accredited college or university in the subject matter necessary to evaluate the critical area in question (e.g., biology, ecology, or horticulture/arboriculture for wetlands, streams, wildlife habitat, and geology and/or civil engineering for geologic hazards, and hydrogeologist for aquifer recharge areas), and/or who is professionally trained and/or certified or licensed by the state of Washington to practice in the scientific disciplines necessary to identify, evaluate, manage, and mitigate impacts to the critical area in question…" Suggest describing the requirements for geologically hazardous area as a specific call out similar to those for the critical aquifer recharge areas. E.g. A qualified consultant for geologically hazardous areas must be a currently licensed Washington State geologist or civil engineer specializing in geologic hazards.

In the City of Auburn Climate Element, it's great to see the hazard mitigation plan is mentioned four times. No specific changes here, but I suggest you continue to find ways to integrate your climate plan and natural hazard mitigation plan.

Recognizing the limitations of the current proposals, I want to mention that it would be great for you to consider these in future work, be it in your comprehensive plan, development code, and SMP updates, and in your work in general:

- Consider adding a reference to WAC 365-190-120 geologically hazardous areas for definitions.

- Consider adding a reference to the WGS Geologic Information Portal. If you have not checked our interactive database, the WGS Geologic Information Portal, lately, you may wish to do so. Geologic Information Portal | WA - DNR
- If you have not checked out our Geologic Planning page, you may wish to do so. Geologic Planning | WA - DNR

Thank you for considering our comments. If you have any questions or need additional information, please contact me. For your convenience, if there are no concerns or follow-up discussion, you may consider these comments to be final as of the 60-day comment deadline of 6/9/24.

Cheerio,
Tricia

Tricia R. Sears (she/her/hers)
Geologic Planning Liaison
Washington Geological Survey (WGS)
Washington Department of Natural Resources (DNR)
Cell: 360-628-2867 | Email: tricia.sears@dnr.wa.gov

Josh Steiner

From: Linda Redman <lincredman@gmail.com>
Sent: Tuesday, April 30, 2024 1:46 PM
To: Josh Steiner
Subject: Input for Comp Plan - Parks, Ecology

CAUTION: The following message originated from outside the City of Auburn. Be careful opening links and attachments

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Dear Josh, Senior Planner

Here is a video showing methane is 30 % of greenhouse gasses.

https://youtu.be/nZixelKjiTg?si=I1E-ibyAao0PQzh

In a talk by Bill McKibben at a church at Princeton this month, he said we had surpassed the 1.5 Celsius increase in global heating that was a goal to NOT surpass.

So we have to work much harder and faster to reduce greenhouse gasses & absorb them with more trees, bushes and kelp — as I see it.

And try hard to keep trees up and sponsor drought-tolerant trees to get planted in parts of the world that will tolerate them. (Like maybe around the Rio Grande, Indus River, and the Euphrates, Tigris, and Jordan Rivers)

Incinerating trash that is in dumps or landfills is an important way to stop methane leaks.

Even though our trash is not in our city limits I think we could help make sure it is getting incinerated - in a clean way. It can also heat floors for some housing in the winter months.

Here is an example of that:

(Short video) “waste to energy”
https://youtu.be/O9pwV3JoqwA?feature=shared

12 minute video - one waste incineration in Japan heats a recreation center, & we see they & one in Norway captures CO2. Also we see residents can mark their names on their trash to more easily find who isn’t sorting it correctly.

We also can learn the burning of new trash is not a good incentive to get people to produce less or to recycle better.
https://youtu.be/sAu3LVktMwE?si=lMnHlWcI07mtbChc

—-
I think the City of Auburn could offer the State Parks that we would like to look into the cost of capturing & converting the methane leak
at that location Flaming Geyser Park.

Maybe we could capture & convert methane and maybe also make a museum / and or maybe a heated non-chlorinated swimming pool like the one at the Federal Way Community Center, and or sauna, & maybe semi-covered center with fire place & heated adobe floor

I understand methane is WAY worse than CO2 — like it creates a domino effect of heat trapping, I have read it could be 100 times worse that CO2 for problems.

—-
This is a 4m30s video of clean incineration of trash in Amsterdam

https://youtu.be/DROZUstnsnw?si=-3NGV7vkd_uaufpq

If new buildings could have small versions of these, maybe heating bills and trash hauling bills & pollution could be reduced.

-Linda

To: City of Auburn Planning Commission

From: Trish Borden and Lee Valenta

Re: Amendments to the Comprehensive Plan Open Space and Trails Section

Date: May 4, 2024

Thank you for the opportunity to comment on future amendments to the Comprehensive Plan. We have lived on 53rd St SE in Auburn for 47 years, part of an area that we will refer to as the **Bowman Creek Plateau**. We also submitted comments at a previous meeting pertaining to specific Land Use policies (LU 120 - LU 126). **We believe the existing policies in the Comp Plan regarding Open Space and Trails are excellent and wish to point out specific sections that are especially applicable to Southeast Auburn and the Bowman Creek Plateau.**

"The GMA also requires us to 'identify open space corridors within and between urban growth area. They shall include lands useful for recreation, wildlife habitat, trails, and connection of critical areas" RCW 36.70A. 160)".

The Bowman Creek Plateau is such a corridor.

"*In addition to benefitting people, open space is valuable to wildlife and to maintaining environmental quality. The preservation of green spaces and natural areas are important to protecting the quality of life for Auburn residents within a highly urbanized area."*

There is a resident herd of elk on the plateau. Open space on the Bowman Creek Plateau provides a corridor for them as well, where they shelter in the wooded area, graze in the grassy area, and drink from Bowman Creek.

"Open space can preserve natural areas and environmental features with significant educational, scientific, wildlife habitat, historic, and/or scenic values such as views of major visual resources such as Mount Rainier, riparian corridors, and vistas along scenic routes."

Both Kersey Way and 53rd St SE were historic wagon and foot routes to the five lakes that now comprise Lake Tapps. Both routes followed the path along the riparian corridor of Bowman Creek. One can imagine through the trees being able to glimpse Mt Rainier in the distance beyond the lakes. Hence the current reference to the plateau as "Mt. Rainier Vista'.

"Open Space can offer health and safety benefits such as flood control, protection for water supply, cleansing of air, and separation from hazards such as landslides."

The open space on the Plateau protects Coal Springs and also separates potential future housing below from the steep slope to the north of the power line.

The goals and objectives of the Open Space Policy are likewise pertinent to the Bowman Creek Plateau, including the potential for trails.

Goal 1, regarding acquiring open space. Objective 1.2 challenges the City of Auburn to 'pursue acquisition and conservation of critical open space lands.'

There is an opportunity to do so on the Bowman Creek Plateau while this unique area exists. Later will be too late.

Goal 2, regarding developing an interconnecting network of open space land allowing movement of people and wildlife.

The comprehensive plan map shows a potential trail connector from Stuck River Road (and the two Game Farm Parks) east, following the river south, and then upward to the Plateau. We remember a horse trail route there. An alternative trail could be designed more directly to the plateau on the eastern part of the mine property. This should be considered. In addition, there could be a trail from the Plateau between the mine property and along the east side of Bowman Creek. This trail would protect users from traffic on Kersey Way and connect to the White River Trail.

Objective 2.1 Develop a system of trail corridors to link major parks and open spaces, residential neighborhoods, and other activity centers such as schools, employment centers, and community centers.

The Comprehensive Plan Survey reports that walking for pleasure is the most popular outdoor activity in the city. The survey ranked walking/running for pleasure and visiting nature areas first and second place for activities. It is essential that planning for these activities happen before development supersedes these unique natural opportunities.

Objective 2.2 Explore the use of utility and transportation corridors to expand the trail system.

The Powerline that separates the current mine property from the Bowman Creek Plateau could be used for this purpose.

We would like the Comprehensive Plan to continue to value open space and the preservation and enhancement of the natural environment. This is even more important today as Auburn continues to grow more densely with smaller lots and multifamily housing.

Attachments:

Bowman Creek Historic Map 1897



Bowman Creek Neighborhood Resident Elk Herd;





Birds of Bowman Creek :61 identified



Josh Steiner

From: Linda Redman <lincredman@gmail.com>
Sent: Monday, April 29, 2024 6:32 PM
To: Josh Steiner
Cc: Larry Brown; Nancy Backus; Yolanda Trout; Cheryl Rakes; Clinton Taylor; Hanan Amer; Kate Baldwin; ttaylor@auburnea.gov
Subject: Re: Comprehensive Plan - Land Use & Housing Elements

CAUTION: **The following message originated from outside the City of Auburn. Be careful opening links and attachments**

Dear Josh Seiner, Senior Planner,

Thanks for you and your hard work to follow the Washington State laws for dense housing to protect green space from sprawl and aim to dramatically reduce greenhouse gasses.

Even though the Planning Commission approved your current plans for land use and housing I want to encourage these considerations:

Each neighborhood of approximately 1000 - 5000 people, move to be PEDESTRIAN & biking villages

—to develop to be like it's own (beautifully landscaped) college / college town.

—this the jobs in each neighborhood village look like this: (there can be a checklist of skills that residents can gain - model after how Japan is very self-reliant and people work on craftsmanship and can take on apprentices)

—have interest groups, apprentice-type volunteers, paying jobs, research, productions, projects, and activities in these fields:

* visual, acoustic arts / creative and journalistic writing, comedy arts, creative thinking

* physical, speech, occupational, music therapies, caring philosophies like Kineliners (to encourage building strengths)

* education of children, teens, adults, elders & aiding development of talents, skills, incorporating elders to read, tell stories to children

* assisting youth, adults, elders, physical and mentally challenged to be healthy, strong, productive & socially engaged

* family center / boys & girls club / youth center - nature walks, species identification, restoration of native species

* psychology, encouragement-uplifting activity leaders, brain SPECHT scan & counseling (can be a mobile clinic), designing & hosting positive cultural & family activities

* peace-oriented religions, philosophies

* astronomy, magnetic shield, resonant shield information gathering & sharing

* gardening, grocery store with healthy products, good food in restaurants, people only order food within one's neighborhood zone (& delivered by foot or bicycle)

* landscape arts, building and grounds maintenance, making culverts so native species of arthropods can go under roads every 25 feet.

* computers, technology, communication systems, repair technicians - this department overseen by peacekeepers

* library, safe-keeping of books, info (like in a vault in case of fire, asteroid shower, etc.)

* science labs, excellent medical clinic, excellent dental clinic, excellent wholistic clinic with excellent chiropractic, excellent acupuncture, excellent homeopathic, excellent homeopathic providers and assistants

* naturalist museum, collectors (if flora & fauna are dying or dead),

* veterinarian, assistants, wild animal rehab

* protective arts, security, also for the area from asteroid or meteor showers, storms, police assistance, conflict resolution, justice, law, history, political science, the Bible & history of judging and laws

* conservation encouragers - to encourage residents in the village neighborhood to walk more, buy locally, post conservation goals & celebrate successes, sponsoring & extending kelp beds on coast, & assisting "sustainable square" Checkerboard Development in South American Rainforest & around Washington & the planet.

* natural material builders, like Cobb-style (adobe with 2 foot long roof overhangs for protection). The goal is to create very affordable homes for families with children that are ground level, in backyards of existing homes, so children can easily play outside for optimum development. And so parents have less financial stress & can spend more time with their children - ideally in neighborhood jobs of their interests.

—

—have green belts & landscape architecture professionally to work to make different neighborhoods look like distinct villages, and aesthetic to walk in.

—-
The focus isn't on making money, but success with health & greenhouse reduction of whole neighborhood, and sharing in neighborhood successes.

Josh Steiner

From: Linda Redman <lincredman@gmail.com>
Sent: Tuesday, April 30, 2024 1:46 PM
To: Josh Steiner
Subject: Input for Comp Plan - Parks, Ecology

CAUTION: The following message originated from outside the City of Auburn. Be careful opening links and attachments

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Dear Josh, Senior Planner

Here is a video showing methane is 30 % of greenhouse gasses.

https://youtu.be/nZixelKjiTg?si=I1E-ibyAao0PQzh

In a talk by Bill McKibben at a church at Princeton this month, he said we had surpassed the 1.5 Celsius increase in global heating that was a goal to NOT surpass.

So we have to work much harder and faster to reduce greenhouse gasses & absorb them with more trees, bushes and kelp — as I see it.

And try hard to keep trees up and sponsor drought-tolerant trees to get planted in parts of the world that will tolerate them. (Like maybe around the Rio Grande, Indus River, and the Euphrates, Tigris, and Jordan Rivers)

Incinerating trash that is in dumps or landfills is an important way to stop methane leaks.

Even though our trash is not in our city limits I think we could help make sure it is getting incinerated - in a clean way. It can also heat floors for some housing in the winter months.

Here is an example of that:

(Short video) “waste to energy”
https://youtu.be/O9pwV3JoqwA?feature=shared

12 minute video - one waste incineration in Japan heats a recreation center, & we see they & one in Norway captures CO2. Also we see residents can mark their names on their trash to more easily find who isn’t sorting it correctly.

We also can learn the burning of new trash is not a good incentive to get people to produce less or to recycle better.
https://youtu.be/sAu3LVktMwE?si=lMnHlWcI07mtbChc

—-
I think the City of Auburn could offer the State Parks that we would like to look into the cost of capturing & converting the methane leak
at that location Flaming Geyser Park.

Maybe we could capture & convert methane and maybe also make a museum / and or maybe a heated non-chlorinated swimming pool like the one at the Federal Way Community Center, and or sauna, & maybe semi-covered center with fire place & heated adobe floor

I understand methane is WAY worse than CO2 — like it creates a domino effect of heat trapping, I have read it could be 100 times worse that CO2 for problems.

—-
This is a 4m30s video of clean incineration of trash in Amsterdam

https://youtu.be/DROZUstnsnw?si=-3NGV7vkd_uaufpq

If new buildings could have small versions of these, maybe heating bills and trash hauling bills & pollution could be reduced.

-Linda

Josh Steiner

From: Linda Redman <lincredman@gmail.com>
Sent: Tuesday, April 30, 2024 5:34 PM
To: Josh Steiner
Subject: For Comprehensive Plan - Ecology & Parks / CO2 Reduction

CAUTION: The following message originated from outside the City of Auburn. Be careful opening links and attachments

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Hi Dear Josh, Senior Planner,

The suggestion of purchasing & assisting Christian residents in the South American Rainforest to live on the land in the middle acre of a 6 acre parcel - or some 1:5 ratio settlement situation,

For the purpose of protecting the trees & species from destruction, and for the purpose of sequestering CO2, and

For the purpose of helping reduce greenhouse gases that the City of Auburn, Washington State, and U.S.A. leaders have committed to, and

For the purpose of helping compensate for the greenhouse gasses that Auburn, Washington residents have contributed to the planet over our lives in the past hundred years especially.

The proposal is to sponsor a groups of people local to the region that are sincere believers in Father God, the Holy Spirit, and Jesus and appear serious to care for God's creation.

Such a group may have some help from God as they pray for protection for the designated unit(s) of land.

The proposal is to support them withas they work to develop jobs in the parcel of land to show this is a viable pattern of living.

I am proposing a group of Christian believers because the idea was relayed to me by a listener of "God" - which I understand was called by Paul in the Bible as "Father God."

The person who relayed this to me is a Christian. I believe the idea should have the most success if the on site group(s) there are Christian's.

An acre is about the size of a football field. I think 50 people could live comfortable in such a space if they can also oversee the surrounding 5 acres.

Some jobs I believe could be developed are jobs to guide naturalists & scientists, permaculture, gardening, growing pretty jungle plants to sell in cities, housing naturalists, researchers, ecotourists, receiving donations for a museum of area species, a store to sell food and homemade crafts and clothing, running schools elementary through university level, understanding indigenous cultures, knowledge of plants, ways, having an integrative medical clinic - so they get advice from Bastyr Center for Natural Medicine - (Seattle, they may agree to do remote calls).

In a major city next to the Amazon River therefore a major flooding several months ago and there may still be many displaced people.

There is also a non-profit group in the U.S. & Ecuador community called the Pachamama Alliance - (https://news.pachamama.org/25-years-of-pachamama-alliance-a-conversation-with-the-co-founders)
This group of English speakers may be open to coordinating a similar project with indigenous people in the Ecuador Rainforest - even if they are not Christian. It may still work — the group appears to be authentically trying to help the indigenous people to get the Rainforest protected.

From Linda



2024 COMPRHENSIVE PLAN

Agency Comments

Puget Sound Regional Council

1201 Third Avenue, Suite 500, Seattle, WA 98101-3055 | psrc.org | 206-464-7090

May 21, 2024

Josh Steiner, Senior Planner
City of Auburn
25 W Main Street
Auburn, WA 98001

Subject: PSRC Comments on City of Auburn Draft Comprehensive Plan

Dear Mr. Steiner,

Thank you for providing an opportunity for the Puget Sound Regional Council (PSRC) to review the City of Auburn draft comprehensive plan. We appreciate that the city has invested a substantial amount of time and effort in developing the draft plan and appreciate the chance to review it while in draft form. This timely collaboration provides an opportunity to review plan elements for the 2024 comprehensive plan and prepares the city well for certification by PSRC once the full plan has been adopted.

We suggest the city consider the following comments as further work is completed for the comprehensive plan update to align with VISION 2050 and the Growth Management Act. Overall, we found few things to comment on. Importantly, though, we encourage the city to work towards a final draft that documents the city's existing tools, as well as barriers, to address affordable housing and enhanced discussion on racially disparate impacts.

We reviewed the draft plan using the PSRC Plan Review Consistency Tool. Key sections of the consistency tool are listed below on the left along with relevant comments on the draft plan on the right:

Transportation

Plan Review Consistency Tool	PSRC Comment on Draft Auburn Plan
Provide travel demand forecasts and identify state and local system projects, programs, and management necessary to meet current and future demands and to improve safety and human health (RCW 36.70A.070, MPP-T-4-5)	The city should ensure that all the city's projects in the Regional Transportation Plan are included in the project list. The Community Profiles dashboard provides a full list of projects for the city.
	The city states that it uses the "preferred 2044 growth model" for the transportation element. The city should clarify the growth numbers used in this model and consistency with the rest of the comprehensive plan.
Ensure mobility choices for people with special needs (MPP-T-10)	The plan should include policy and analysis of transportation planning for people with mobility and accessibility needs. The city will need to incorporate its ADA transition plan in the comprehensive plan by 2029 per HB 1181.
Include mapped inventories for each element of the transportation system, including roadways, transit, cycling, walking, freight, airports, and ferries (RCW 36.70A.070, RCW 36.70A.108, MPP-T-7, T-15-17)	The city should include all transit routes and facilities in the mapped inventory, including the Sounder train. The city should also include the airport in mapped facilities.

Housing

Plan Review Consistency Tool	PSRC Comment on Draft Auburn Plan
Address affordable housing needs by developing a housing needs assessment and evaluating the effectiveness of existing housing policies, and documenting strategies to achieve housing targets and affordability goals. This includes documenting programs and actions needed to achieve housing availability including gaps in local funding, barriers such as development regulations, and other limitations (H-Action-4)	The city should clarify the affordable housing need consistent with King and Pierce counties. A table could be used to show total housing need and the policy on meeting Auburn's share of affordable housing should be updated to be consistent with current CPPs. Existing housing stock by AMI should also be included in the plan for the King County portion of the city.
	The plan should document the city's existing housing tools and incentives and discuss regulatory and financial barriers to affordable housing. Commerce's Adequate Provision checklist can help document this work.
Increase housing supply and densities to meet the region's current and projected needs at all income levels consistent with the Regional Growth Strategy (MPP-H-1)	The draft plan indicates the city currently lacks sufficient capacity for its housing targets. The plan seeks to increase capacity to remedy this gap – following through to provide sufficient capacity for housing will be important in finalizing the plan update. The city should clarify the capacity for housing to meet various income levels, specifically, looking at capacity by county, housing serving 0-30% AMI and capacity for emergency housing units.

Plan Review Consistency Tool	PSRC Comment on Draft Auburn Plan
	Currently, the plan shows ADUs as covering 0-30% AMI and language around "developable acres" could be clarified.
Identify and begin to undo local policies and regulations that result in racially disparate impacts, displacement, and exclusion in housing, including zoning that may have a discriminatory effect and areas of disinvestment and infrastructure availability	The city should include additional data and information on local policies and regulations that result in racially disparate impacts and strategies to address this. Commerce's Racially Disparate Impact Guidance provides additional information on how to do this and UW's mapping provides a resource on racially restrictive covenants in Auburn.
Use inclusionary and incentive zoning to provide more affordable housing when creating additional housing capacity (H-Action-5)	The city should consider pointing to where inclusionary and incentive zoning are used and increase focus on affordability to support the creation of more affordable units.
Identify potential physical, economic, and cultural displacement of low-income households and marginalized populations and work with communities to develop anti-displacement strategies when planning for growth (MPP-H-12, H-Action-6)	The city uses displacement risk mapping tools from both Commerce and PSRC in different areas of the plan. While using both tools may be helpful, clarifying why they are each used or using only one tool could clarify displacement risk and the city's approach to mitigation.

Land Use

Plan Review Consistency Tool	PSRC Comment on Draft Auburn Plan
Demonstrate sufficient zoned development capacity to accommodate targets (RCW 36.70A.115)	PSRC recommends the city discuss capacity within each county to demonstrate consistency with countywide growth targets.
Include growth targets for designated regional growth centers and manufacturing/industrial centers (MPP-RGS-2)	Growth targets for population and housing should be included in the process of updating the Auburn Downtown Plan consistent with regional center guidelines. If timing is appropriate, these targets should be incorporated into the comprehensive plan as well.

Other Elements

Plan Review Consistency Tool	PSRC Comment on Draft Auburn Plan
Prioritize services and access to opportunity for people of color, people with low incomes, and historically underserved communities to ensure all people can attain the resources and opportunities to improve quality of life and address past inequities (MPP-RC-2)	PSRC looks forward to reviewing the Core Plan and further language on incorporating advancing equity in the city of Auburn.
Support programs to ensure that all residents, regardless of race, social, or economic status, have clean air, clean water, and other elements of a healthy environment and prioritize the reduction	The city could include policies to avoid and mitigate environmental impacts to vulnerable population and include information such as maps and demographic data.

Plan Review Consistency Tool	PSRC Comment on Draft Auburn Plan
of impacts to vulnerable populations that have been disproportionately affected (MPP-En-3-4, En-7-8, En-21)	
Identify open space, trail, and park resources and needs, and develop programs for protecting and enhancing these areas (MPP-En-11-12, En-15, En-Action-4)	Consistent with VISION 2050 and national best practices, PSRC recommends including a policy and parks level-of-service to provide parks within a 10-minute walk of all residents. This will set the foundation for adding or expanding parks to create equitable access. PSRC uses the Trust for Public Land's ParkServe mapping tool to identify park gaps. ParkServe shows that 69% of Auburn's residents live within a 10-minute walk of a park.
Address impacts to vulnerable populations and areas that have been or will be disproportionately affected by climate change (MPP-CC-6, CC-8, CC-Action-3, CC-Action-4)	The city could include additional analysis demonstrating the connection between vulnerable populations and climate change, in addition to the policy included.
Identify and address the impacts of climate change and natural hazards on the region to increase resilience (MPP-CC-7-10, CC-Action-4)	The city could identify and analyze hazards related to climate change, including mapping of these hazards. The Puget Sound Hazards Map is a resource for this.
Preserve historic, visual, and cultural resources and consider potential impacts to culturally significant sites and tribal treaty fishing, hunting, and gathering grounds (MPP-DP-5-7)	The city should describe and include policies on tribal treaty rights. PSRC's Coordination with Tribes resource provides more information on this topic.

PSRC has resources available to assist the city in addressing these comments and inform development of the draft plan. We have provided links to online documents in this letter, and additional resources related to the plan review process can also be found at https://www.psrc.org/planning-2050/vision/vision-2050-planning-resources.

We appreciate all the work the city is doing and the opportunity to review and provide comments. We are happy to continue working with you as the draft progresses through the adoption process. If you have any questions or need additional information, please contact me at 206-464-6171 or mmoore@psrc.org.

Sincerely,



Maggie Moore, Growth Management
Puget Sound Regional Council

cc: Review Team, Growth Management Services, Department of Commerce

STATE OF WASHINGTON
DEPARTMENT OF COMMERCE
1011 Plum Street SE • PO Box 42525 • Olympia, Washington 98504-2525 • 360-725-4000
www.commerce.wa.gov

June 10, 2024

City Council
City of Auburn
c/o Josh Steiner
Senior Planner

Sent via electronic mail: JSteiner@auburnwa.gov

Re: Draft Comment Letter for Submittal ID 2024-S-6992A – City of Auburn Draft 2024 Comprehensive Plan Periodic Update

Dear City Council:

Thank you for the opportunity to comment on the City of Auburn's draft 2024 comprehensive plan periodic update and appendices. Growth Management Services received the proposed amendments on April 11, 2024 and processed them with material identification number 2024-S-6992A.

Your submission represents a great deal of work and substantial progress towards the 2024 periodic update of your comprehensive plan due December 31, 2024. We appreciate your effort to incorporate environment stewardship policies in your draft utilities element, which include water quality and resource protection, as well as the inclusion of names and contact information for private utility providers and special purpose districts. We applaud the extensive work done to draft the 2024 Comprehensive Transportation Plan which appears to address each requirement as noted in the Periodic Update Checklist for Fully-Planning Cities – well done!

As part of our review, we referenced the draft elements and associated draft appendices submitted on April 11, 2024. We have focused our review on the following comprehensive plan elements, and offer respective comments and/or suggestions as follows:

1. Land Use

    a. There are multiple references to Appendix A throughout the draft land use element and, while not required, it would be helpful if those references specify which chapter(s), and/or section(s) provide analyses noted.

    b. While there are references to the protection of groundwater and public water sources in the Open Space Designation and Residential Conservancy Designation,

the draft land use element does not appear to include specific policy for protection of the quality and quantity of groundwater used for public water supplies. RCW 36.70A.070(1) expressly states, "The land use element shall provide for protection of the quality and quantity of groundwater used for public water supplies". Commerce recommends strengthening the draft land use element by adding such provisions, as required by the Growth Management Act (GMA), and which are consistent with water protection policies provided in the draft utilities element.

2. Housing

   a. While the draft housing element (HE) appears to include policies demonstrating consideration of Accessory Dwelling Units (ADUs), we encourage Auburn to review sections related to ADUs in Housing Element Book 2 (ADU narrative guidance, pages 68-69 and ADU capacity, Step 1.6, pages 27-28) to adjust capacity calculations in HE Table 1 (Residential Capacity by Zone). Generally, ADUs do not serve households below 50% Area Median Income (AMI). Commerce recommends jurisdictions assume ADU rents are on par with apartment rents unless there is better data available at the local/place level.

   b. RCW 36.70A.070(2)(c) requires housing elements to identify sufficient capacity of land for housing, including emergency housing. Auburn's draft HE does not appear to include emergency housing in its land capacity analysis. Please include emergency housing in the land capacity analysis and the findings in the Housing Element. We also recommend addressing/clarifying the following:

      i. In Policy H-19 what constitutes "appropriately designed" manufactured housing?

      ii. In which zones does Policy H-20 allow manufactured housing parks, transitional housing, supportive housing, and multiplex housing?

      iii. Please consider including STEP housing (i.e. emergency shelters, transitional housing, emergency housing, and permanent supportive housing) in Policy LU-37.

   c. Commerce recommends including a list of barriers to affordable housing needs, including barriers to emergency housing and permanent supportive housing (Housing Element Book 2**:** see page 50 and Appendix B). On draft HE pg. 11 there is a short discussion related to addressing identified barriers; please expand on this statement. Commerce recommends including a list of barriers (e.g. gaps in local funding, development regulations) and specific actions needed to remove these barriers. Consider factors that may negatively impact production for each

type of housing allowed in your community. See also Chapter 4, Adequate Provisions in Housing Element Book 2.

d. RCW 36.70A.070(2)(e) requires housing elements to identify local policies and regulations that result in racially disparate impacts, displacement, and exclusion in housing. While there is a statement in the draft Housing Needs & Characteristics Assessment Update on page 40 indicating where racially disparate impacts are anticipated, Commerce recommends expanding analysis of specific policies and regulations that have resulted in the identified racially disparate impacts and how policies were reviewed **(**Housing Element Book 3: see pages 33-36; this specific evaluation framework is not required).

3. Capital Facilities

The draft Capital Facilities Element (CFE) indicates the Capital Facilities Plan (CFP) is "a key component of and adopted with [the comprehensive] plan" (pg. 3). The draft 2023-2028 CFP was included as supporting documentation to the CFE as part of submittal 2024-S-6992A. The checklist for fully-planning cities notes the 2024-2029 CFP is scheduled to be complete during summer 2024. Commerce looks forward to Auburn's submittal of the draft 2024-2029 CFP for review.

While Auburn continues to work on their draft 2024-2029 CFP, Commerce offers the following suggestions for your consideration:

- Counties and cities should create an inventory of existing capital facilities showing locations and capacities, including the extent to which existing facilities have capacity available for future growth. WAC 365-196-415(2)(a)(i).

- The forecast of future need should be based on projected population and adopted levels of service (LOS) over the planning period (i.e. 2024-2044). Additionally, the capital facilities element should identify all capital facilities that are planned to be provided within the planning period, including general location and capacity. WAC 365-196-415(2)(b).

- Infrastructure investments should consider equity and plan for any potential displacement impacts.

4. Utilities

The draft utilities element does not appear to include the general location, proposed location, and capacity of all existing and proposed utilities, including telecommunications, as required by RCW 36.70A.070(4)(a) and WAC 365-196-420. Commerce recommends including this information in the final draft of the utilities element.

As friendly reminder, copies of adopted plans must be submitted to Commerce within ten (10) days after final adoption (RCW 36.70A.106(2)).

Thank you again for the opportunity to comment and we appreciate the hard work these proposed amendments represent. If you have any questions about this letter and/or wish to request technical assistance, please feel free to contact me at Carol.Holman@commerce.wa.gov or 360-725-2706.

Sincerely,



Carol Holman, MUP
Western Regional Manager
Growth Management Services

cc: David Andersen, AICP, Managing Director, Growth Management Services
Valerie Smith, AICP, Deputy Managing Director, Growth Management Services
Ben Serr, AICP, Eastern Regional Manager, Growth Management Services
Anne Fritzel, AICP, Housing Section Manager, Growth Management Services

Memo

To:	King County Affordable Housing Committee Members
From:	Isaac Horwith, Affordable Housing Planning Program Manager
cc:	Housing Interjurisdictional Team
Date:	July 16, 2024
Re:	AHC Review of Bellevue, Auburn, Bothell, Issaquah, Federal Way, and Covington's Draft Comprehensive Plans

Purpose of July 23 AHC Meeting

At the July 23 Affordable Housing Committee (AHC) meeting, AHC staff will share program updates followed by a briefing on findings from their review of the housing-related components of the cities of Bellevue, Auburn, Bothell, Issaquah, Federal Way, and Covington's draft comprehensive plans and submission materials. AHC members will consider and possibly approve letters commenting on the alignment of each city's draft comprehensive plan with the goals and policies of the King County Countywide Planning Policies (CPP) Housing Chapter.

To prepare for the meeting, AHC members should prioritize review of this memo and the draft comment letters for each city (see Exhibits 2 through 7) and prepare any questions or comments for discussion.

Background

The CPPs that establish the Housing-focused Draft Comprehensive Plan Review Program (plan review program) were adopted by King County Council and ratified by King County cities in 2023.[1] The AHC conducts this review on behalf of the Growth Management Planning Council (GMPC). The AHC's review of draft comprehensive plans is guided by GMPC-adopted plan review standards used to evaluate meaningful alignment between jurisdictional comprehensive plans and CPP Housing Chapter policies.[2]

Since June of 2023, the AHC has approved comment letters for Algona, Burien, King County, Maple Valley, and Redmond's draft plans, with 35 jurisdictions remaining.

Bellevue, Seattle, Auburn, Bothell, Issaquah, Federal Way, and Covington submitted their materials for AHC review on March 8, April 9, April 10, April 19, May 16, May 24, and May 30, 2024, respectively. AHC staff conducted their review of each city's draft comprehensive plan and related

[1] Countywide Planning Policy H-26 directs the GMPC or its designee to conduct a housing-focused review of all King County jurisdiction's draft periodic comprehensive plan updates for alignment with the Housing Chapter goals and policies prior to plan adoption and provide comments. [link]
[2] See Attachment B: Housing-Focused Comprehensive Plan Review Standards in GMPC Motion 23-1. [link]

submission materials, guided by the adopted plan review standards, and drafted comment letters for AHC consideration and potential approval.

The draft comment letters identify strong areas of alignment with the CPP Housing Chapter and recommend actions necessary to be consistent with the CPPs. AHC staff presented to and received feedback on the draft comment letters from the AHC Chair, King County Councilmember Claudia Balducci, and Vice Chair, Futurewise Executive Director Alex Brennan. AHC staff shared the draft letters with Bellevue, Seattle, Auburn, Bothell, Issaquah, Federal Way, and Covington staff in advance of the July 23, 2024 AHC meeting. Seattle asked for additional time to review the draft letter and to defer action to the September 5, 2024 AHC meeting.

Exhibit 1 to this staff report provides links to each jurisdiction's submission materials and an overview of each jurisdiction's housing needs, key facts, and the recommended actions each city needs to take to align with the goals and policies of the CPP Housing Chapter detailed in each draft comment letter. The draft comment letters for AHC consideration and potential approval are attached as Exhibits 2 through 7 of this staff report. AHC staff recommend these comment letters for AHC approval at the July 23, 2024 AHC meeting.

Once approved, the AHC Chair will sign the letters and AHC staff will email the letters to Bellevue, Auburn, Bothell, Issaquah, Federal Way, and Covington staff. AHC staff will then post the approved letters on the AHC webpage.

After adoption of their plans, Bellevue, Auburn, Bothell, Issaquah, Federal Way, and Covington may send updated implementation strategies to AHC staff. The AHC will measure and report on jurisdictional progress to plan for and accommodate their housing need annually following adoption of their comprehensive plan. The GMPC or its designee will review the information collected through annual monitoring and reporting and conduct a mid-cycle check-in and adjustment five years after plan adoption.

Program Update

AHC staff have continued reaching out to and meeting with jurisdiction staff to:

- ensure jurisdictions are aware of the program;
- learn about the status of jurisdiction's draft plans;
- assist jurisdiction staff as they prepare to submit to the program; and
- begin the review process for jurisdictions that have submitted to the program.

In addition to the comment letters prepared for the July 23, 2024 AHC meeting, AHC staff have received submissions from and are currently reviewing and preparing comment letters for the cities of Seattle, Black Diamond, Enumclaw, Kenmore, Kirkland, Medina, and Sammamish. AHC staff tentatively expect to prepare comment letters for AHC consideration and potential approval for these submissions at the September 5, 2024 AHC meeting.

Isaac Horwith, Senior Housing Planner and manager of the plan review program, is taking parental leave beginning in August 2024. Carson Hartmann has been selected to serve in a special duty assignment to manage the plan review program through the remainder of 2024.

Proposal for Timing Issues and Jurisdictions that May Not Submit to the Plan Review Program

On average, the AHC takes two to three months to review a submission and approve a comment letter for a jurisdiction. Jurisdictions receiving a comment letter in the fall of 2024 may not find it

feasible to incorporate AHC feedback into their comprehensive plans before the state-mandated adoption deadline of December 31, 2024. This could result in jurisdictions having to decide whether to adopt their plan without incorporating AHC feedback or delaying comprehensive plan adoption until 2025. Additionally, as of July 15, 2024, AHC staff have not received confirmation from several small jurisdictions that they intend to submit to the plan review program.

AHC staff discussed these timing and submission issues and received feedback on a draft proposal from the AHC's Housing Interjurisdictional Team on June 20, 2024 and the GMPC's Interjurisdictional Team on July 12, 2024.

AHC staff propose the following protocol for submissions going forward:

1. AHC staff will strive to keep the review period as close to two months as possible.
2. AHC letters issued in October through December will acknowledge the challenge in incorporating feedback before the state-mandate adoption deadline of December 31, 2024.
3. AHC staff will encourage jurisdictions to amend plans in 2025 to incorporate AHC feedback if they do not do so in 2024.

If a jurisdiction has explicitly stated they intend not to submit to the program, or have not submitted by the November 7, 2024 AHC meeting, AHC staff propose preparing a letter for approval at the December 5, 2024 AHC meeting stating:

1. The AHC cannot conduct a review of the jurisdiction's draft plan because they have not submitted to the plan review program.
2. The jurisdiction's plan is not in alignment with the CPP Housing Chapter until they have submitted to the plan review program and incorporated the AHC's feedback.
3. The AHC recommends the jurisdiction submit to the plan review program and incorporate AHC feedback in 2025.

AHC staff welcome input from AHC members on this proposed approach at the July 23, 2024 AHC meeting, but a decision by the AHC is not required until later in 2024. AHC staff intend to present this proposed approach at the July 24, 2024 GMPC meeting and will share any guidance from AHC members staff verbally to the GMPC.

Exhibit 1: Links to Submission Materials and Jurisdiction Overviews

AHC members can use the following hyperlinks to access the submitted materials that informed the comment letters prepared for the July 23, 2024 AHC meeting. The materials below and the staff briefings at the July 23, 2024 AHC meeting are organized in the order in which they submitted to the program.

Bellevue

- Draft Housing Narrative
- Draft Housing Policies
- Draft Land Use Policies
- Final Environmental Impact Statement Chapter 5: Population and Employment
- Draft Environmental Impact Statement Appendix B: Land Use Patterns and Urban Form
- Final Environmental Impact Statement Appendix L: Bellevue Housing Economic Policy Analysis: Phase I
- Final Environmental Impact Statement Appendix Q: Bellevue Emergency Housing Land Capacity Analysis
- Final Environmental Impact Statement Appendix R: Bellevue Affordable Housing Capacity Analysis, Technical Report
- 2022 Housing Needs Assessment
- 2024 Housing Needs Assessment Supplement
- Racially Disparate Impacts Analysis
- CPP Completeness Checklist
- Draft Implementation Strategies Workbook

Auburn

- Draft Housing Element
- Draft Land Use Element
- Draft Housing Needs Assessment
- Draft Public Participation Plan
- CPP Completeness Checklist
- Implementation Strategies Workbook

Bothell

- Draft Housing Element
- Draft Land Use Element
- Draft Engagement Summary
- Draft Housing Technical Appendix
- Telling Bothell's Full Story Draft March 2024
- CPP Completeness Checklist
- Implementation Strategies Workbook

Issaquah

- Draft Housing Element
- Draft Land Use Element
- Draft Housing Inventory and Analysis
- Draft Racially Disparate Impact Analysis
- CPP Completeness Checklist
- Implementation Strategies Workbook

Federal Way

- Draft Housing Chapter
- Draft Land Use Map
- Draft Centers Chapter
- Draft Adequate Provisions Checklist
- CPP Completeness Checklist
- Implementation Strategies Workbook

Covington

- Draft Housing Element
- Draft Land Use Element
- Draft Foundation Element
- Draft Future Land Use Map
- Draft Housing Element Technical Appendix
- CPP Completeness Checklist
- Implementation Strategies Workbook

Jurisdictional Overviews

This section provides an overview of each jurisdiction, their housing needs, and a summary of the recommended actions each city needs to take to align with the goals and policies of the CPP Housing Chapter detailed in each draft comment letter (see Exhibits 2 through 7). Reported data comes from each jurisdiction's draft comprehensive plan, except for the following:

- jurisdiction's median household income;[3]
- King County's median household income;[4]
- jurisdiction's and King County's population;[5]
- King County's percentage of residents of color;[6] and
- housing needs.[7]

The cities of Auburn and Bothell are partly in King County, with portions also in Pierce and Snohomish counties respectively. The population and housing need numbers identified below only represent the King County portions of these jurisdictions.

[3] Census QuickFacts. Population estimates, 2018-2022. [link]
[4] Census QuickFacts. Population estimates, 2018-2022. [link]
[5] OFM 1-year estimates 2023.
[6] ACS 1-year estimates 2022.
[7] King County (Last Ratified 2023 November 30). 2021 King County Countywide Planning Policies, Housing Chapter. [link]

Exhibit 3: Draft Comment Letter for the City of Auburn

July 23, 2024

Mr. Josh Steiner, Senior Planner
City of Auburn
25 W Main St,
Auburn, WA 98001

Dear Mr. Steiner,

Thank you for submitting the City of Auburn's draft comprehensive plan to the Affordable Housing Committee's (AHC) Housing-focused Draft Comprehensive Plan Review Program for review on April 10, 2024. On behalf of the AHC, I am sending you this summary of our review and recommendations.

Background.

The AHC is a subcommittee of the Growth Management Planning Council (GMPC), consisting of representatives of King County and its cities, housing providers, area employers, and others. By direction of the GMPC, the AHC now conducts a housing-focused review of all King County jurisdictions' draft periodic comprehensive plan updates, assessing the draft plans for alignment with the King County Countywide Planning Policies (CPP) Housing Chapter goals and policies prior to plan adoption.

As you know, our county is experiencing a deep and persistent housing shortage. In 2021 the State of Washington adopted House Bill 1220, which amended the Growth Management Act, requiring local governments to plan for and accommodate housing that is affordable to all income levels, including emergency housing. In response to this state mandate and local interest in improving the effectiveness of local housing plans and policies, the AHC led a two-year process to amend the King County CPPs.

The result was a significant update to the CPP Housing Chapter, which was recommended by the GMPC, adopted by the King County Council, and ratified by the cities in 2023. The goals of both the statute and this implementation work are to encourage cities and King County to work together to provide a full range of affordable, accessible, healthy, and safe housing choices to every resident in King County.

This review is guided by Housing-Focused Comprehensive Plan Review Standards, as adopted by GMPC Motion 23-2. In summary, the AHC review seeks to determine whether each jurisdiction's draft plan and submission materials:

1. address all CPP Housing Chapter policies;
2. articulate implementation strategies for relevant CPP Housing Chapter Policies; and
3. lay out meaningful policies that, taken together, support the jurisdiction's ability to equitably meet housing needs.

AHC members appreciate Auburn being among the first jurisdictions to submit to the program in 2024. This program is still relatively new and evolving, and your engagement helps the AHC understand how jurisdictions are seeking to address their housing needs while aligning with the recent changes at the state, regional, and county levels.

The AHC acknowledges the substantial amount of time and effort that went into Auburn's draft comprehensive plan. During review, the AHC noted that many of Auburn's plans, policies, analyses, and implementation strategies align well with CPP Housing Chapter policies. In particular,

1. Auburn's draft proposes substantially increasing Auburn's development capacity from 7,504 units under existing zoning to 46,070. Most of this increase comes from allowing middle housing and expanding their Regional Growth Center and Downtown Center to accommodate greater densities of housing. This strategy will help accommodate households with incomes greater than 80 percent area median income (AMI), which represent over 70 percent of Auburn's overall housing need in King County.
2. Auburn's "Goal 6: Implementation and Monitoring" represents a strong commitment to partner with a broad set of organizations to meeting countywide housing needs. The AHC also recognizes and appreciates that Auburn serves as the administering agency of South King Housing and Homelessness Partners, which promotes subregional collaboration to increase housing stability and produce and preserve quality affordable housing in South King County.

Below, the AHC includes recommendations necessary for Auburn to align with the CPP Housing Chapter policies.

Recommendations to Align with the CPP Housing Chapter

The AHC recommends Auburn take the following actions to align its draft comprehensive plan with CPP Housing Chapter goals and policies.

1. Plan for and accommodate Auburn's allocated housing needs (CPP H-1)

Relevant Countywide Planning Policies

CPP H-1 requires Auburn plan for and accommodate at total of 12,000 net new housing units affordable to households at different income levels, including 812 permanent supportive housing units. and 2,293 new emergency housing beds.

Auburn's Proposal and AHC Findings

Auburn's draft Housing element narrative discusses Auburn's permanent supportive and emergency housing needs, identifying a "severe shortage of emergency housing beds" and a need to supply an additional 115 beds per year to meet the need by 2044 (page HE-11). Auburn's submission also includes policies that will likely support development of these housing types. However, the AHC does not see a policy that explicitly states Auburn's intent to plan for and accommodate permanent supportive housing and emergency housing types.

Auburn's draft Housing element's land capacity analysis uses the housing needs allocated in CPP H-1, indicating Auburn intends to provide sufficient residential capacity for its allocated housing needs. Auburn's proposed policy H-32 also commits Auburn to work in partnership with King and Pierce County and other cities to address countywide housing needs for all income levels, and "act as a County leader in the exploration and implementation of new funding mechanisms and strategies to develop housing affordable at 30 percent [area median income] AMI and below." The AHC commends Auburn for the commitment to partnership and acting as a leader to meet housing needs for households with incomes at or below 30 percent AMI. However, demonstrating sufficient residential capacity and addressing countywide housing needs does not clearly demonstrate that Auburn intends to plan for and accommodate its allocated housing needs.

> **Recommendation 1:** To align with CPP H-1, Auburn should adopt a policy stating their intent to plan for and accommodate its allocated share of countywide future housing needs for moderate-, low-, very low-, and extremely low-income households as well as emergency housing and permanent supportive housing.

2. Complete the housing inventory and analysis (CPP H-3)

Relevant Countywide Planning Policies

CPP H-3 directs jurisdictions to conduct a housing inventory and analysis to help identify and address the greatest needs as well as summarize the findings in the Housing Element.

Auburn's Proposal and AHC Findings

While Auburn's submission includes many data points and substantive analysis, the AHC could not find specific information required by H-3(d), (e), (g), (i), and (k). This includes:

d) percentage and geographic distribution of residential land zoned for moderate- and high-density housing and accessory dwelling units in the jurisdiction;
e) number of income-restricted units and, where feasible, total number of units, within a half-mile walkshed of high-capacity or frequent transit service where applicable and regional and countywide centers;
g) age by race/ethnicity;
i) housing development capacity within a half-mile walkshed of high-capacity or frequent transit service, if applicable; and
k) summary of existing and proposed partnerships and strategies, including dedicated resources, for meeting housing needs, particularly for populations disparately impacted.

This additional analysis should inform additional comprehensive plan policy responses and strategies. For example, analysis responsive to CPP H-3(k) could help inform the analysis of gaps and barriers in existing policies and strategies, as required by CPP H-4.

> **Recommendation 2:** Auburn should include all inventory and analysis components as required by H-3 in the comprehensive plan and summarize the findings in the Housing Element. This additional analysis should inform additional comprehensive plan policy responses and strategies.

3. List and evaluate existing housing policies, strategies, and gaps and plan to address them (CPPs H-3(k), H-4, H-12, and H-20)

Relevant Countywide Planning Policies

CPP H-3(k) requires all jurisdictions to include in their inventory and analysis a summary of existing and proposed partnerships and strategies, including dedicated resources, for meeting housing needs, particularly for populations disparately impacted. CPP H-4 requires jurisdictions to evaluate the effectiveness of existing housing policies and strategies to meet the jurisdiction's housing needs and eliminating racial and other disparities in access to housing and neighborhoods of choice. CPP H-12 requires jurisdictions to adopt and implement policies that improve the effectiveness of existing housing policies and strategies and address gaps in partnerships, policies, and dedicated resources to meet the jurisdiction's housing needs. CPP H-20 requires jurisdictions to adopt and implement policies that address gaps in partnerships, policies, and dedicated resources to eliminate racial and other disparities in access to housing and neighborhoods of choice.

Auburn's Proposal and AHC Findings

Auburn's Housing Element Goal 6 proposes multiple policies to continue and pursue partnerships with many different organizations. The AHC commends these efforts and believes Auburn will continue to collaborate with diverse partners, in alignment with CPP H-6. However, the AHC did not find a summary of existing partnerships and strategies or an evaluation of the effectiveness of policies and strategies, as required by CPPs H-3(k) and H-4. While Auburn's proposed policies may address gaps in partnerships, policies, or dedicated resources, the AHC cannot determine if Auburn is aligned with CPPs H-12 and H-20 without this analysis.

> **Recommendation 3:** To align with CPPs H-3(k), H-4, H-12, and H-20, Auburn should list existing partnerships and strategies and identify gaps in existing partnerships, policies, and dedicated resources for meeting housing needs and eliminating disparities. Please see the Washington State Department of Commerce's "Adequate Provisions Checklists" as a guide for how Auburn could conduct this analysis. Auburn should use this analysis to address those gaps and improve effectiveness of existing policies and strategies.

4. Document racially exclusive and discriminatory land use and housing practices and adopt intentional, targeted actions to repair harm (CPPs H-5 and H-9)

Relevant Countywide Planning Policies

CPP H-5 requires jurisdictions to document the local history and impact of racially exclusive and discriminatory land use and housing practices and explain the extent to which that history is still reflected in current development patterns, housing conditions, tenure, and access to opportunity. CPP H-9 requires jurisdictions to adopt intentional, targeted actions that repair harms to Black, Indigenous, and People of Color (BIPOC) households from identified past and current racially exclusive and discriminatory land use and housing practices.

Auburn's Proposal and AHC Findings

The Racially Disparate Impact analysis in Auburn's draft Housing element identifies racial disparities in housing cost burden and displacement risk among its residents (Housing Element page HE-7). While these disparities are critical to understanding Auburn's housing needs, Auburn's submission does not document the history of racially exclusive and discriminatory land use and housing

practices in Auburn, as required by CPP H-5. For example, many properties in Auburn had or have racially restrictive covenants.[2]

Auburn's proposed land use map represents a major step toward eliminating exclusionary zoning. Auburn's draft plan also includes many policies that will likely benefit BIPOC households, including anti-displacement measures and inclusive engagement practices that are closely aligned with the strategies the CPP Housing Chapter Technical Appendix suggests for CPP H-9. However, without the analysis required by CPP H-5, the AHC cannot determine if these actions are a "targeted" approach to repairing harm from the racially exclusive and discriminatory land use and housing practices. Additionally, while Auburn's proposed policy LU-12 does explicitly mention historically marginalized communities, it only "encourages" inclusive engagement strategies to prevent negative impacts.

> **Recommendation 4:** To align with CPP H-5, Auburn should document the history of racially exclusive and discriminatory land use and housing practices within their jurisdiction and explain the extent to which the history is still reflected in current development patterns, housing conditions, tenure, and access to opportunity. See "Resources for Documenting the Local History of Racially Exclusive and Discriminatory Land Use and Housing Practices" document for assistance.[2]
>
> To align with CPP H-9, Auburn should adopt or clarify how proposed actions are targeted to repair harms identified in their Racially Disparate Impacts analysis.

5. Clarify community engagement findings (CPP H-8)

Relevant Countywide Planning Policies

CPP H-8 requires all jurisdictions to collaborate with and prioritize the solutions articulated by populations most disproportionately impacted by housing cost burden in developing, implementing, and monitoring strategies that achieve the goals of this chapter.

Auburn's Proposal and AHC Findings

Auburn's draft Housing element includes policy H-41, which very closely matches the language of CPP H-8. Auburn's Public Participation Plan also outlines numerous engagement strategies used to reach different populations and community-based organizations in an inclusive manner and provides findings from their community engagement process. However, the findings section does not identify specific input or themes from populations most disproportionately impacted by housing cost burden. Without this information, the AHC cannot determine if Auburn is prioritizing the needs identified by these communities.

> **Recommendation 5:** To align with CPP H-8, Auburn should disaggregate input from community engagement and clarify how the plan prioritizes the needs of populations disproportionately impacted by housing cost burden.

[2] The University of Washington. (2020). *Racial Restrictive Covenants*. The Seattle Civil Rights & Labor History Project. [link]

[3] King County Affordable Housing Committee. (2024) *Resources for Documenting the Local History of Racially Exclusive and Discriminatory Land Use and Housing Practices*. [link]

6. Adjust affordability assumptions for accessory dwelling units (CPP H-11)

Relevant Countywide Planning Policies

CPP H-11 requires jurisdictions identify sufficient capacity of land for housing including housing for low-, very low-, and extremely low-income households.

Auburn's Proposal and AHC Findings

Auburn's draft plan proposes significantly increasing where accessory dwelling units (ADUs) are allowed, in alignment with recent state legislation. The AHC appreciates Auburn's steps to allow more ADUs as a method of increasing housing diversity and options within traditionally single-family areas. However, Auburn's initial submission to the AHC assumed ADUs would be affordable to households with incomes at or below 30 percent AMI.[4] Auburn staff sent updated materials that assumed ADUs would be affordable to households at or above 60 percent of AMI after a discussion with AHC staff.[5] However, the AHC does not consider ADUs as a meaningful strategy to address housing needs below 80 percent of AMI in King County communities, which have relatively higher housing costs compared to the rest of the state.

Recommendation 6: To align with CPP H-11, Auburn should update their land capacity analysis to either:

- assume ADUs provide capacity for households above 80 percent of AMI, in alignment with Exhibit 13 in the Department of Commerce's land capacity analysis guidance,[2]
- provide evidence in a detailed market analysis that ADUs are affordable to low-income households, or
- propose subsidies or development incentives that set a reasonable expectation that ADUs would be affordable to low-income households.

This update should inform and be consistent throughout Auburn's Housing Needs & Characteristics Assessment and Housing and Land Use elements.

Conclusion and AHC Resources

Thank you again for your submission to the Committee's housing-focused comprehensive plan review program. AHC members valued the opportunity to review Auburn's submission. Auburn's participation in the plan review program is instrumental in the broader work of the Committee to empower local jurisdictions to address the affordable housing crisis in King County.

AHC staff are happy to assist Auburn in addressing these recommendations. For immediate resources and guidance on aligning with the CPP Housing Chapter, refer to the:

- Engrossed 2021 King County CPPs;
- AHC Housing-focused Draft Comprehensive Plan Review Program Guide; and
- King County Resources for Documenting the Local History of Racially Exclusive and Discriminatory Land Use and Housing Practices.

[4] Auburn Housing Needs & Characteristics Assessment Draft April 9, 2024. Figures 53 and 56.
[5] Auburn Housing Element Draft May 31, 2024. Table 1.
[6] Department of Commerce (2023, August). *Guidance for Updating Your Housing Element.* Chapter 3: Land Capacity Analysis. Page 33. [link]

If you have questions or need additional information regarding aligning with the CPP Housing Chapter, please contact lead staff for the AHC plan review program, Isaac Horwith, at AHCplanreview@kingcounty.gov or at 206-477-7813.

Sincerely,

Claudia Balducci
Affordable Housing Committee Chair
King County Councilmember, District 6

CC Dow Constantine
Growth Management Planning Council Chair
King County Executive

Laura Hodgson
Washington State Department of Commerce, Senior Planner

Plan Review Team
King County Affordable Housing Committee

Plan Review Team
Puget Sound Regional Council

State of Washington
Department of Fish and Wildlife, Region 4
Region 4 information: 16018 Mill Creek Blvd, Mill Creek, WA 98012 | phone: (425)-775-1311

May 17, 2024

Josh Steiner, AICP Senior Planner
25 W Main St
Auburn, WA 98001
Jsteiner@auburnwa.gov

RE: WDFW Comments Regarding Auburn's Draft Comprehensive Plan

Dear Mr. Steiner,

On behalf of the Washington Department of Fish and Wildlife (WDFW), thank you for the opportunity to formally comment on Auburn's draft Comprehensive Plan as part of the current periodic update. Within the State of Washington's land use decision-making framework, WDFW's role is that of technical advisor with respect to the habitat needs of fish and wildlife and the likely implications of various land use decisions on those resources over time. We provide these comments and recommendations in keeping with our legislative mandate to preserve, protect, and perpetuate fish and wildlife and their habitats for the benefit of future generations – a mission we can only accomplish in partnership with local jurisdictions. Specific comments are provided in the following table.

Table 1. Recommended changes to draft Comprehensive Plan language.

Item	Policy Number	Policy Language (with WDFW suggestions in red)	WDFW Comment
Land Use Draft Element			
1	General Comment	General Comment	This element seems to primarily read as a summary of municipal code. It's crucial to consider the citizens of Auburn, who may not have familiarity with legal definitions or the need to know specific zoning requirements. Furthermore, because every land use designation criterion is included in this section, many of the subsequent comments are relevant across all sections. For a recent example of a document framed for a citizen audience, see how the city of Stanwood is

			formulating their draft Comprehensive Plan and Land Use Element, starting on page 30.
2	LU-2 Page LUE-11	As denser development continues to occur; standards should be developed to maximize density while preserving and connecting open space and critical areas for recreational and habitat corridor linkage purposes.	It's crucial to plan not just for open spaces, but also for their connection and integration to offer various benefits, such as recreational trails and habitat corridors. For guidance on incorporating wildlife habitat features into public spaces, refer to WDFW's Habitat at Home resource and our biodiversity management guidance for developing areas. Furthermore, Auburn's municipal code stipulates that in cluster subdivisions or short subdivisions, at least 50% of the parcel must be common open space, which can include critical areas and buffers. We propose extending this requirement to all new development types. Additionally, check out King County's Public Benefit Rating System (PBRS) as well. This initiative encourages private landowners to voluntarily conserve resources on their property. Currently, over 1,450 landowners across the county are participating, conserving 14,200 acres.
3	LU-16 Page LUE-13	As the market and utility availability enable denser development to occur, standards should be developed to maximize density while preserving open space and critical areas.	We appreciate the inclusion of this policy. See resources above.
4	LU-23 Page LUE-14	Encourage the development of a variety of housing typologies to suit the needs of various potential residents while also encouraging techniques such as Low Impact Development (LID) standards.	We recommend requiring Low Impact Development (LID) standards for all developments, especially near waterways. As noted in the 2021 Update to the WRIA 9 Salmon Habitat Plan, Auburn encompasses many high-priority (tier 1) project areas. This underscores Auburn's unique geographic location and distinctive obligation to preserve, rehabilitate, and re-establish salmon habitat. Especially in an urban setting such as Auburn, LID can provide far-reaching support in attaining these goals. Additionally, utilizing LID techniques can help Auburn address Federal Policy Priorities, such as, "address impacts of the tire dust chemical 6PPD-quinone on salmon survival is needed to ensure long-term viability of salmon in urbanized watersheds." Resources for LID include King County's Regional Stormwater Action Goals (which includes Planning Stormwater Parks), the Sustainable Development

			Code website and the VISION 2050 Planning Resources Guidance on Integrating Stormwater Solutions into Comprehensive Plans.
5	LU-24 Page LUE-14	Density bonuses outside of the Urban Separator Overlay should be approved based on innovations in transportation, stormwater management, and public amenities proposed for the development or adjacent neighborhoods associated with the request....	We suggest additional amenities for consideration include vegetation retention, green building techniques, and other action items to address climate-related hazards. For instance, "cool" roofs, which are coated with light colors or reflective pigments, effectively deflect the sun's heat, resulting in cooler buildings and surrounding areas. This approach is regarded as a cost-effective and immediately beneficial strategy for mitigating the heat island effect. See how the **city of Boston** is identifying priority blocks that could yield the greatest benefits to residents in pursuit of this "cool" roof goal.
6	Mixed Use Designation Suggested **Policy** Page LUE-18	Promote innovative and environmentally sensitive development practices in siting, design, materials selection, construction, and maintenance to balance environmental protection and achievable density. This could be achieved, in part, by the City developing and maintaining a fund to build green infrastructure, such as projects that help capture, filter, store, and reuse stormwater runoff.	We recommend the incorporation of this policy across all land use designations. It is imperative to strategize for the establishment of resilient and sustainable communities. The Georgetown Climate Center's Green Infrastructure Toolkit provides funding models and approaches from U.S. municipalities, including Los Angeles County's Safe Clean Water Program and Boulder, Colorado's Greenways Program.
7	LU-68 Page LUE-23	Explore opportunities to increase the amount of connected public green space in downtown that provide spaces for wildlife habitat, recreation and activation.	See previous comments. Also, some additional resources in achieving this goal include the Trust for Public Lands, the NRPA Safe Routes to Parks Action Framework (which provides professionals with a "how-to" guide to implement Safe Routes to Parks strategies), and the Sustainable Development Code website.
8	LU-70 Page LUE-23	Parking lots must be located and designed in a manner that softens their appearance from adjacent public roads and strives to mitigate negative environmental impacts. This is accomplished through landscaping, pedestrian	We suggest LID be required for impervious area creation with flows that lead directly into waterways (see comments to LU-23). Additionally, Auburn has significant impervious surface coverage currently. Any addition should be highly regulated. Does Auburn have an impervious area database, cataloging increases throughout the city overtime and tracking cumulative impacts?

		spaces, and the location of buildings on the property. Where practicable (but required in areas that drain directly into waterways), low-impact development techniques and landscaping should be used to promote on site stormwater infiltration and shading of hard surfaces. Minimum and maximum parking ratios must be established for each type of permitted use.	Pervious surfaces allow for groundwater recharge, flooding mitigation, and other climate-resiliency benefits. Increasing impervious surface amounts negatively impacts urban flooding, heat island effect, and more. As per Auburn's Hazard Mitigation Plan, the steep topography and impervious surface amounts exacerbate flooding and landslides in the area. We suggest impervious cumulative impacts be assessed when increases are proposed in any capacity.
9	LU-122 Page LUE-31	Increase distribution and connection of open space and increase access to open space amenities throughout Auburn.	See comments to LU-2 above.
10	LU-123 Page LUE-31	Enhance restoration, preservation and protection of natural resources and critical areas to maintain ecosystem services and values, as well as habitat functions.	The importance of ecosystem monetary value cannot be overstated. Protecting and restoring natural assets and the services they provide is often more cost-effective than engineered solutions. For example, restored wetlands and floodplains can prevent flooding and reduce the need for other types of flood-control infrastructure. Implementation of this policy could include comparing lifetime cost-effectiveness of nature-based versus engineered options for climate response to help identify cost-effective adaptation options. This can help build capacity and support for the adoption of response strategies that help protect and restore ecosystem function and services at risk from climate change. For resources, see FEMA's guide *Building Community Resilience with Nature-based Solutions*, as well as software to track these resources from Natural Capital Project. Additionally, see Kitsap County's approach to this through their Kitsap Natural Resource Asset Management Project.
11	LU-137 Page LUE-34	Reasonable use provisions will be included within the critical area regulations that ensure a balance between property owner ~~is not denied~~ use of a preexisting parcel, lot or tract	We suggest the incorporation of no net loss standards as required by state law (WAC 365-196-830).

		and no net loss of ecological values and functions.	
12	General Comment	General comment.	At the end of this section, there are many maps (or the stated intent to create maps) for 'Designated Areas,' 'Adopted Areas,' and so on. We recommend dedicating a map for critical areas (WAC 365-190-080). WDFW's Priority Habitats and Species (PHS) Program provides relevant information on important fish, wildlife, and habitat resources in Washington. The Washington Wildlife Habitat Connectivity Working Group is also a great repository for resources.
Housing Draft Element			
13	H-3, a-d Suggested **Policy** Page HE-13	Promote safe and connected neighborhoods. e. Shape regulations for park and open space requirements to promote healthy and climate-resilient communities for all development projects.	Open spaces, as noted in LU-2 and additional comments above, can act as climate-resilient assets that allow communities space to gather, recreate, filter stormwater, provide shade trees to offset heat island effects, and more. All development within highly impervious areas should strive for open space retention and creation.
14	H-21 Page HE-15	Adopt incentives, strategies, actions and regulations to create and sustain neighborhoods that provide equitable access to parks and open space, safe pedestrian and bicycle networks, clean air, soil and water, healthy foods, high-quality education, affordable and high-quality transit options and jobs.	We appreciate this policy inclusion. Please see comments in relation to LU-68, LU-23, and others for additional resources that may aid in achieving this goal.
15	H-25 Suggested **Policy** Page HE-15	Organize, educate and assist property managers and owners in the creation and preservation of safe neighborhoods... e. Encourage property owners to apply for a Habitat at Home certification plaque from WDFW	We suggest the encouragement of homeowner and landlord involvement in WDFW's Habitat at Home program, with the intent to incentivize community involvement and recognition of wildlife habitat creation in small (and large) spaces. Neighbors may recognize an adjacent property with a Habitat at Home sign and be compelled to participate.
16	H-26, part d. Page HE-16	Help identify professional volunteers at educational or professional associations to	We appreciate this policy inclusion. Please see comments in relation to LU-68, LU-23, and others for

		plan redesign or architectural upgrades of the properties.	additional resources that may aid in achieving this goal.
Capital Facilities Draft Element			
17	Goals # 5 - Essential Public Facilities Suggested **Policy** Page CFE-6	Consider future climate conditions during siting and design of essential public services, capital facilities, and community assets, including changes to temperature, rainfall, and flooding patterns, so they function as intended over their planned life cycle. Avoid siting these facilities where they are vulnerable to climate-exacerbated hazards, and begin planning for relocation of facilities if necessary.	Protecting essential public facilities and the services they provide from climate impacts helps ensure community resilience. It is vital to site these facilities outside of areas that will be impacted by climate-related stressors for the entire operational lifespan of the facility. We suggest updating zoning to allow essential or hazardous uses only in low-risk areas and assess risk when new facilities are proposed.
18	Goals # 5 - Essential Public Facilities Suggested **Policy** Page CFE-6	Promote green building/green development of all public facilities.	We suggest working towards sustainable development code that decreases public facility utility use and cost while simultaneously increasing the capacity for climate resiliency. The Sustainable Development Code website is a great resource in outlining how to remove code barriers, create incentives, and fill regulatory gaps in pursuit of this goal. Additionally, it is mandatory that schools are built to meet green building standards, and with the help of *Washington Sustainable Schools Protocol: Criteria for High-Performance Schools,* additional public or private infrastructure can be modeled after this example. See the LEED rating system for further resources aimed at all building types.
19	Goals # 5 - Essential Public Facilities Suggested **Policy** Page CFE-6	Work with local, county, and state agencies to plan and prioritize public and private culvert upgrades to ensure fish passage barrier removal, adequate projected stormwater passage, and continued climate-related adaptations to handle water passage into the future throughout the City of Auburn.	It is important to plan and prioritize culvert upgrades to ensure not only fish passage benefits, but adequate projected stormwater passage. We suggest this element (and future amendments to the City of Auburn's Capital Improvement Plan) include this goal and incorporate a prioritization list, especially in areas where terrestrial species connectivity can be restored simultaneously (i.e., replacing culverts with wider bridges). See WDFW's "Incorporating Climate Change into the Design of Water Crossing Structures: Final Project Report," as well as WSDOT's "Wildlife Habitat

			Connectivity Consideration in Fish Barrier Removal Projects." Combining stormwater maintenance (or any maintenance) with multi-benefit goals (such as climate change resiliency and salmon recovery) opens up these projects for diverse funding opportunities (such as the Department of Commerce Salmon Recovery through Local Planning Grant, due June 3rd).
20	Goals # 5 - Essential Public Facilities Suggested **Policy** Page CFE-6	Develop and maintain a fund to build green infrastructure projects that help capture, filter, store, and reuse stormwater runoff.	See comments for Suggested **Policy** Page LUE-18 above.
21	Goals # 5 - Essential Public Facilities Suggested **Policy** Page CFE-6	Identify and quantify the ecosystem services benefits of natural systems and include these natural capital assets in cost-benefit assessments for community and development planning.	See comments for LU-123 above, which includes resources such as FEMA's guide *Building Community Resilience with Nature-based Solutions*, as well as software to track these resources from Natural Capital Project. Additionally, see Kitsap County's approach to this through their Kitsap Natural Resource Asset Management Project.
Utilities Draft Element			
22	UE-5 Page UE-3	The City will maintain an asset database to be used in prioritizing asset maintenance and repair and replacement activities. The database includes asset age and material information, and will be validated and updated through inspections, records review, and other available information.	We recommend this asset database incorporate ecosystem services, as stated above in LU-123 and Goal 5 page CFE-6.
23	Goal 5 – Planning Suggested **Policy**	Work with energy utilities to improve the safety and reliability of infrastructure vulnerable to climate change.	Energy utilities' infrastructure, such as transmission lines and gas plants, have been seen to start wildfires and are also impacted by wildfires, extreme heat, and other climate-exacerbated hazards. Working through the state's Utilities and Transportation Commission, local Auburn should review and comment on their

	Page UE-9		local power provider's plans for responding to the risks of wildfires and other hazards. Recommendations might include removing tree limbs near power lines or burying lines, establishing redundancies, and creating small-scale energy generation systems.
24	Goal 5 – Planning Suggested **Policy** Page UE-9	Require new subdivisions to bury electricity transmission lines and associated infrastructure to reduce damage from storms and wildfire ignition risks.	This policy could be implemented via development code changes that require developers of new subdivisions to bury place power lines and associated infrastructure underground. See this FEMA case study regarding the benefits of burying power lines.
25	Goal 6 – Environmental Stewardship Suggested **Policy** Page UE-11	Protect and sustain functioning riparian habitats in order to capitalize on water quality, retention, and recharge benefits these areas provide.	In the *Stormwater Management Action Plan for the Olson Creek Catchment Area – Auburn, Washington*, page 12 calls for the short-term management action, "Review stream buffer requirements for Olson Creek, and consider updating protections." We suggest incorporating Riparian Management Zones (RMZs) to help achieve this goal. RMZs should be designated and protected as a critical area and replace outdated 'stream buffer' terminology. These areas "are disproportionately important, relative to area, for aquatic species (e.g., salmon) and terrestrial wildlife," as stated in WDFW's Riparian Ecosystems, Volume 2: Management Recommendations and supported by WDFW's BAS. This BAS also highlights key ecosystem service benefits RMZs provide. Please see WDFW's checklist to compare Auburn's current critical area ordinance to agency priorities.
26	UE- 86 Page UE-18	UE-86 The City shall seek to manage stormwater runoff within the public Right Of Way (ROW): • to provide access to and functionality of critical services. • to preserve mobility on major transportation routes (i.e., arterial roads) and residential roads. • to protect real property structures (e.g., residences and businesses.)	See comments for LU-23 Page LUE-14 above.

		• to offset negative water quality impacts that cause harm to people and wildlife, including impacts of the tire dust chemical 6PPD-quinone on salmon survival	
27	UE-100 Page UE-20	The City shall require that developers take into consideration all cumulative impacts downstream and upstream of the project site, as well as construct off-site storm drainage improvements needed to serve new development and do so prior to or simultaneously with such development.	If cumulative impacts to water flow are not considered, landowners downstream might experience higher rates of flooding if impervious surface area is increased upstream, areas that once received water may receive less, resulting in less ground water recharge that may impact aquifer recharge and well head protection areas, and more.
28	UE-101 Page UE-20	The City shall continue to prioritize asset management as a business practice and use it to schedule preventative maintenance, predict lifecycle costs, and perform replacement work before actual failures. This includes identifying high-value stream segments for restoration in order to re-establish ecosystem services.	See LU-123 and Goal 5 page CFE-6 above. In the *Stormwater Management Action Plan for the Olson Creek Catchment Area – Auburn, Washington*, page 12 states the importance of identifying high-value stream segments. We suggest incorporating this stated "long-term action" here.
29	UE-112 Page 21	The City shall evaluate the feasibility of improving the water quality of its existing discharges into river systems.	WDFW urges the City of Auburn to implement mandatory LID techniques adjacent to waterways or in areas where flow directly inputs into waterways (see resources related to LU-23 and LU-70 above). Auburn plays a critical role in the success of salmon recovery for WRIA 9. As noted in the WRIA 9 *Salmon Habitat Plan 2021*, there are close to a dozen **highly rated** projects within Auburn that are critical for the future success of salmon in this area. We suggest Auburn align policies and goals with this Plan and utilize example policies starting on page 68.
30	UE-150 Page UE-27	Assign industry standard design lives for sewage assets. The actual physical assessment will be compared to the theoretical design life to	We suggest including climate-related flooding concerns within this element, creating a prioritization list for systems at risk, for the health and safety of residents and the environment.

		determine the optimal economic life. Seek to repair or replace system assets before they exceed their economic life. The number of high-criticality assets beyond their economic life will be minimized. This should also include the creation of a prioritization list for relocation of systems within the floodplain that are susceptible to increased flooding, taking into consideration future climate-projected conditions.	
31	U-12 Page UE-35	The City shall consider the environmental impacts of proposed utility facilities as a part of its environmental review process. When requested by the City, the utility provider shall furnish documentation of current research results and/or provide additional information related to determination of the potential environmental impacts, how these impacts will be avoided or mitigated if impacts are shown to be unavoidable, if any, from the proposed facilities.	We suggest the use of mitigation sequencing (WAC 197-11-768) in this policy, which first states to "avoid." Avoidance is key, as mitigation for impacts can be costly, hard to maintain, and often do not meet no net loss standards (WAC 365-196-830).
Transportation Draft Element (Comprehensive Transportation Plan)			
32	General Comment	General Comment	We suggest Auburn incorporate the interdisciplinary aspects of habitat connectivity within this Transportation Plan, such as incorporating WSDOT's "Wildlife Habitat Connectivity Consideration in Fish Barrier Removal Projects." We suggest stating the intent of channeling traffic onto primary roads to reduce the dispersion of noise and barrier effects, and perforating road corridors with underpasses and overpasses to reduce road barriers and habitat fragmentation. Fencing can also be used to guide wildlife to these passes. Please see WDFW's Landscape Planning for Washington's Wildlife for

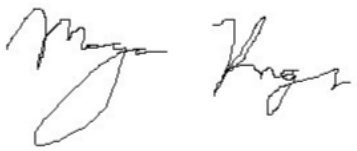
			further resources, especially “Chapter 6: Implementation through Comprehensive Plans, Development Regulations, and Incentive Programs,” page 6-1.
Parks Draft Element			
33	Goal 3: Establish a system of high-quality parks that are not only well-maintained but also aesthetically pleasing. Suggested **Policy** Page UE-3	Review parks and grounds maintenance procedures and adopt written Best Management Practices that protect salmon and salmon habitat.	This suggestion is an example policy, taken directly from the WRIA 9 Salmon Habitat Plan (page 3-17).
34	PR-25 Page UE-4	Promote urban forestry: Continue to work towards Tree City USA goals for improved urban forestry design and tree preservation. Require protection of significant trees and limit unnecessary disturbance of vegetation during all phases of development and require mitigation as needed, including replacement for trees removed during development.	We suggest Auburn develop a formal tree canopy management plan in order to track current conditions and benchmark progress towards tree canopy goals. This plan should also measure how well the City’s tree-related ordinances are functioning in retaining trees on the landscape. It may not be enough to rely on ordinances if there is not a system in place to track cumulative impacts over time. This goal is especially important as the number one identified anticipated climate hazard for Auburn is rising temperature and extreme heat. Some examples of Tree Management Plans include the City of Tacoma, the City of Snoqualmie, the City of Redmond, and the City of Renton. The Puget Sound Urban Tree Canopy and Stormwater Management Handbook provides additional guidance.
35	PR-25 Suggested **Policy** Page UE-4	When removing hazard trees, consideration for snag creation or leaving the removed downed tree in-place will be given.	WDFW recommends specifically encouraging the creation of snags as opposed to complete removal of hazard trees. Snags provide crucial habitat and is often missing from urban tree stand compositions (see further info on our website). Similarly, decaying logs are also important ecosystem attributes that tend to be missing in urban forest environments.

36	PR-28 Page UE-5	Preserve Natural Buffers: Maintain, establish, and protect a system of connected forested corridors and buffers to provide a natural separation between urban land uses and natural areas, provide for recreational trail opportunities, wildlife habitat corridor linkages, and maintain ecosystem services.	Please see previous comments for resources. Natural buffers intersect a variety of Comprehensive Plan goals.
37	PR-33 UE-5	Plan for Mitigation: Develop a monitoring and maintenance plan when mitigation is required and avoidance is infeasible, ensuring successful establishment and long-term sustainability that results in no net loss of ecological values or functions.	We suggest the use of mitigation sequencing (WAC 197-11-768) in this policy, which first states to "avoid." Avoidance is key, as mitigation for impacts can be costly, hard to maintain, and often do not meet no net loss standards (WAC 365-196-830).
		Climate Draft Element	
38	Goal 5 Actions Suggested **Policy** Page CE-14	Identify and implement strategies to increase the resilience of riparian environments from increased heat concerns and other climate hazards, while also protecting ecological functions, allowing water dependent uses, and providing public access. Establish regulations that require the location of new lots and structure outside of hazards areas. Address appropriate efforts to protect ecological values and functions, accommodate recreational opportunities, and retreat or redevelop flood-prone structures in floodplain and riparian areas.	We recommend consideration for climate-related hazards when planning for riparian access into the future. For assessing future conditions, see Climate Mapping for a Resilient Washington.
39	C-32 *** Page CE-16	Identify opportunities to retrofit undersized stormwater infrastructure and	See previous comments.

		areas with uncontrolled runoff to improve flow control and water quality, with a priority on locations providing the most benefit, are identified to be most vulnerable to extreme precipitation climate impacts, are identified for wildlife habitat corridor linkage or fish barrier removal purposes, and are communities that have been historically under-resourced.	
40	C-71 ** Page CE-25	Require open space set-asides (such as parks) that are sited and planned for connectivity to other open spaces, parks, and trails for new development when appropriate.	What standards are these required open spaces being held to? Do these standards match public need? Is there a plan to connect these fragmented plots of open space between developments?

Thank you for taking time to consider our recommendations for your draft Comprehensive Plan to better reflect the best available science for fish and wildlife habitat and ecosystems. We value the relationship we have with your jurisdiction and the opportunity to work collaboratively with you throughout this periodic update cycle. If you have any questions or need our technical assistance or resources at any time during this process, please don't hesitate to contact me.

Sincerely,



Morgan Krueger
Regional Land Use Planner, WDFW Region 4
425-537-1354
Morgan.krueger@dfw.wa.gov

CC:
Kara Whittaker, Land Use Conservation and Policy Section Manager (Kara.Whittaker@dfw.wa.gov)
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Julian Douglas, Habitat Biologist (Julian.Douglas@dfw.wa.gov)
Carol Holman, WA Dept. of Commerce (carol.holman@commerce.wa.gov)

Washington State Department of Transportation

Management of Mobility Division
2901 3rd Avenue, Suite 500
Seattle, WA 98121-3014
206-464-1211 / FAX: 206-464-1189
TTY: 1-800-833-6388
www.wsdot.wa.gov

June 19, 2024

25 W Main Street
Auburn, WA 98001

Dear Mr. Sweeting,

The Washington State Department of Transportation (WSDOT) appreciates the opportunity to review and comment on the City of Auburn's draft Comprehensive Plan and accompanying draft Environmental Impact Statement (EIS). Please find our comments on these planning efforts below.

Draft EIS Alternatives

WSDOT is pleased to see the city evaluate growth alternatives that help to increase supply and diversity of housing choices, reduce displacement, and create more communities that allow people to walk, bike or roll to meet their everyday needs. We are particularly supportive of the strategies outlined in Alternative 2 because they concentrate growth in areas most easily served by transit. This alternative best supports the city's role in the Puget Sound Regional Council's Regional Growth Strategy in VISION 2050. Local consistency with regionally adopted plans will help the central Puget Sound meet the long-range goals laid in VISION 2050 and the Regional Transportation Plan.

WSDOT is also glad to see the draft plan acknowledges the implementation efforts that will need to accompany the new growth strategy in Alternative 2. Changes to zoning and development standards will need to be made on properties located on streets with current or planning frequent transit routes – another critical component to support local and regional transit investments and increase the use of these travel options. We also appreciate the city's consideration of potential impacts to state facilities, active transportation, transit and freight. We look forward to further coordination with the City, King County, Pierce County, transit operators and other involved stakeholders as we work together to make smart transportation and land use connections.

Transportation Element and Comprehensive Transportation Plan

WSDOT applauds the City of Auburn's attention to the Bike, Pedestrian and Transit modes. In 2022, the Washington State Legislature passed Senate Bill 5974, the Move Ahead Washington package. The bill directs WSDOT to incorporate the principles of Complete Streets in most state transportation projects. More information, including staff contacts, can be found on WSDOT's Complete Streets webpage. As WSDOT projects on state routes in Auburn advance into the design phase, we look forward to working with the city on our shared goal of a complete active transportation network across city and state facilities.

With these Complete Streets responsibilities in mind, WSDOT's Northwest Region Traffic Office offered the following comments on the projects in the draft Transportation Element.

- *SR 164 is not identified as a future bike route in the Comprehensive Plan but will be subject to WSDOT's Complete Streets requirement. We suggest adding it to the plan, to begin looking at a potential future cross section so that smaller projects on this road can be forward compatible. This will be an important bike facility for users traveling to/from the southeast end of SR 164, since there are not alternate bike routes. It looks like the city's Level of Traffic Stress (LTS) requirements meet WSDOT*

requirements, in that the bike lane would need to be a separated facility (unless the speed limit is brought down to 30, then they differ). Nevertheless, having an identified cross section would be helpful.

- *For the Auburn Way S/M St SE/17th St SE intersection improvements project:*
  - *Any WSDOT work in this section of SR 164 will be subject to Complete Streets and will be required to include bike and pedestrian facilities that meet WSDOT LTS requirements. If the curb line is moving, it should be placed with a Complete Streets cross section in mind so that it is forward compatible.*
  - *The proposed layout does may not meet WSDOT's requirements for closed crossings (Design Manual 1510.09(2)(c)) and may have to be reassessed with this project. WSDOT's current standards are to keep all crossings open unless there are no origins or destinations to support a crossing, or there is a safety concern. This would most likely result in an open crossing on the east leg of the signalized intersection, as keeping it closed requires out-of-direction travel for pedestrians coming from 17th St and heading to the Walgreens lot.*
- *For the SR 18/164 interchange project:*
  - *Previous Complete Streets comments apply to this project as well, especially since this project is changing the curb line.*
  - *Keeping the south pedestrian crossing closed at the SR 18 EB ramp terminal intersection may not meet WSDOT's closed crossing requirements. It may need to be made open and accessible.*

WSDOT Northwest Region Traffic and Complete Streets are eager to further discuss these projects, and any other WSDOT work in City of Auburn, to advance our shared goal of a complete active transportation network across city and state facilities.

WSDOT Planning Resources

WSDOT's comprehensive planning resources for local agencies can be found on our Land Use and Transportation Guidance page. This includes a wealth of information on how WSDOT reviews local agency plans, our land use and transportation goals, best practices in building transportation efficient communities, and pertinent concurrency and SEPA guidance.

WSDOT's Community Planning Portal may be particularly helpful for local jurisdictions. The portal includes data on the state transportation system often needed to complete the transportation element inventory required by the Growth Management Act. In addition to the data included in the portal, local planners can add their own data to ArcGIS Online and create custom reports.

Further Engagement & Coordination

WSDOT appreciates being included in City of Auburn's planning process. Please reach out if you would like to discuss opportunities for ongoing engagement and coordination, as well as technical assistance available during your work updating your plans.

Thank you again for the opportunity to review the Auburn Comprehensive Plan. We look forward to our continuing productive partnership.

Sincerely,

Jeff Storrar, WSDOT Management of Mobility Policy Manager

CC: Matthew Kenna, WSDOT Management of Mobility
April Delchamps, WSDOT Management of Mobility Corridor Planning Manager
Zack Howard, WSDOT Management of Mobility Complete Streets
Jennifer Nyerick, WSDOT Northwest Region Traffic
Cecile Malik, WSDOT Urban Mobility and Access

DRAFT

Alexandria Teague

From: Alexandria Teague
Sent: Friday, November 15, 2024 11:32 AM
To: Alexandria Teague
Subject: FW: Auburn Planview Submittal # 2024-S-7447

From: Guida, Eric (COM) <eric.guida@commerce.wa.gov>
Sent: Monday, November 11, 2024 4:38 PM
To: Planning <planning@auburnwa.gov>
Subject: Auburn Planview Submittal # 2024-S-7447

CAUTION: The following message originated from outside the City of Auburn. Be careful opening links and attachments

Hello Alexandria,

Here are some middle housing-related comments on Auburn's Planview submission #2024-S-7447.

1. Note that the 1/4 mile distance for middle housing unit density as it relates to a "Major Transit Stop" and off-street parking requirements is "walking distance". ACC 18.02.067(D)(1)(a) references "within one-quarter mile of a "major transit stop". Other places in the amendments there is reference to walking distance. So there is not a consistent application of the use "walking distance". The city should make these consistent references throughout the document and then also determine how it intends to measure walking distance to provide predictability and certainty to the public and property owners.

2. **18.25.020 Applicability.**

   18.25.020 (B)(4) has an exception to the applicability section related to middle housing that states,

   "B. *Exceptions.* This chapter may be applied to development or redevelopment, except for the following below:
   1. …
   2. …
   3. …
   4. Middle Housing allowances shall not be used to justify alteration of a regulated critical area per Chapter 16.10 ACC."

   The placement of this sentence (18.25.020 B.4) in this subsection not clear. Is the intent that alterations of critical areas are not allowed for middle housing? Or is it that middle housing cannot be used for justification of a critical area alteration? Also, what is it about critical areas alteration criteria that would require that middle housing be treated differently than a single family detached dwelling?

For critical areas and exceptions, the RCW 36.70A.635(8) states,

> "(8) The provisions of this section do not apply to:
> (a) Portions of a lot, parcel, or tract designated with critical areas designated under RCW **36.70A.170** or their buffers as required by RCW **36.70A.170**, except for critical aquifer recharge areas where a single-family detached house is an allowed use provided that any requirements to maintain aquifer recharge are met;"

The language in 18.25.020 (B)(4) is not clear as to its intention or meaning, especially as it relates to RCW 36.70A.635(8)(a).

3. ACC 18.25.070 Accessory Dwelling Units.

There are several components of this section that require revision. First an ADU is not listed as a middle housing type in the definition of middle housing (RCW 36.70a.030(26)). Second, it is not clear what standard will be used when stating ADU's must be "an accessory to a principal middle housing unit". Accessory dwelling units, for example, must be allowed to be at least 1,000 square feet in gross floor area regardless of the size of the principal building. Finally the reference to "ADUs cannot be used to supplement the number of dwelling units allowed under this section." is unclear. What is meant by "cannot be used to supplement"?

A. An ADU is listed as a type of Middle Housing; each ADU that is proposed will be considered a dwelling unit when calculating the number of units allowed on a lot or as part of a development proposal.
B. ADUs must be an accessory to a principal middle housing unit.
C. ADUs cannot be used to supplement the number of dwelling units allowed under this section.
D. ADUs are subject to the standards contained in Chapter 18.32 ACC.

4. ACC Chapter 18.25 introduces design standards for middle housing. Design review for middle housing is acceptable, however middle housing design review is subject to administrative design review if design standards for middle housing differ from those for single family homes (RCW 36.70A.030(3)). It is not clear what the administrative design review development permit process is for the planning director or designee to review and then approve or deny a design review proposal. It is suggested that you cross reference that administrative design review process in this chapter.

Please reach out if you would like to discuss.

Best,

Eric

Eric Guida, Senior Planner
Department of Commerce, Growth Management Services
Email: eric.guida@commerce.wa.gov
Direct: 360.725.3044

CITY OF AUBURN WASHINGTON

AGENDA BILL APPROVAL FORM

Agenda Subject:
Resolution No. 5801 (Gaub)
A Resolution authorizing the Mayor to execute and administer an agreement accepting Grants from the Washington State Transportation Improvement Board for the Auburn Way South Widening and Regional Growth Center Improvement Projects

Meeting Date:
December 16, 2024

(RECOMMENDED ACTION: Move to adopt Resolution No. 5801.)

Department:
Public Works

Attachments:
Resolution No. 5801, Project Vicinity Map

Budget Impact:

Administrative Recommendation:
City Council to adopt Resolution No. 5801.

Background for Motion:
This Resolution authorizes the Mayor to enter into agreements to accept and utilize Transportation Improvement Board Grant Funds in the amount of $504,000 for the 49th Street NE access to Transit Project which will widen 49th Street NE and provide a non-motorized connection between recent multifamily development and the proposed I Line Rapid Ride Station.

Background Summary:
Resolution No. 5801 authorizes the Mayor to enter into agreements to accept and utilize Transportation Improvement Board Grant Funds in the amount of $504,000 for the 49th Street NE Access to Transit Project. Design and property acquisition is currently underway and the project is scheduled to be in construction in 2025.

The project will widen the roadway between Auburn Way N and D Street NE to create a three-lane cross section with one general purpose travel lanes in each direction, and a two-way center left-turn lane/left-turn lane. Additionally, curb and gutter, a 10-foot separate trail along the north side of the road, a 10-foot sidewalk along the south side of the road, illumination, and storm water improvements are proposed.

Resolution No. 5801 authorizes the Mayor to accept $504,000 in State grant funds for the project.

Councilmember: Tracy Taylor

Staff: Ingrid Gaub

RESOLUTION NO. 5801

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, AUTHORIZING THE MAYOR TO EXECUTE AND ADMINISTER AN AGREEMENT ACCEPTING GRANTS FROM THE WASHINGTON STATE TRANSPORTATION IMPROVEMENT BOARD FOR THE AUBURN WAY SOUTH WIDENING AND REGIONAL GROWTH CENTER IMPROVEMENT PROJECTS

WHEREAS, the City desires to improve the safety, capacity, and efficiency of its street network; and

WHEREAS, the City street construction project known as the "49th Street Access to Transit" project is included in the City's adopted Transportation Improvement Program (Project #R-8); and

WHEREAS, to help fund this Project, the City has applied for and been awarded a competitive Washington State Transportation Improvement Board ("TIB") Grant in the amount of $504,000; and

WHEREAS, the TIB grants require the City to provide matching funds to fully fund the Projects; and

WHEREAS, the required matching City funds are available in the approved City budget; and

WHEREAS, it is in the best interest of the City to use grant monies to help finance the City street improvements.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, RESOLVES as follows:

Section 1. The Mayor is authorized to execute and administer the grant agreement with the Washington State Transportation Improvement Board for the 49th Street NE Access to Transit Project.

Section 2. The Mayor is authorized to negotiate, enter, and administer agreements to spend the grant funds for the Projects, and to implement other administrative procedures necessary to carry out the directives of this legislation.

Section 3. That this Resolution shall take effect and be in full force on passage and signatures.

Dated and Signed this _____ day of _____, 2024.

CITY OF AUBURN

_____
NANCY BACKUS, MAYOR

ATTEST:

_____
Shawn Campbell, MMC, City Clerk

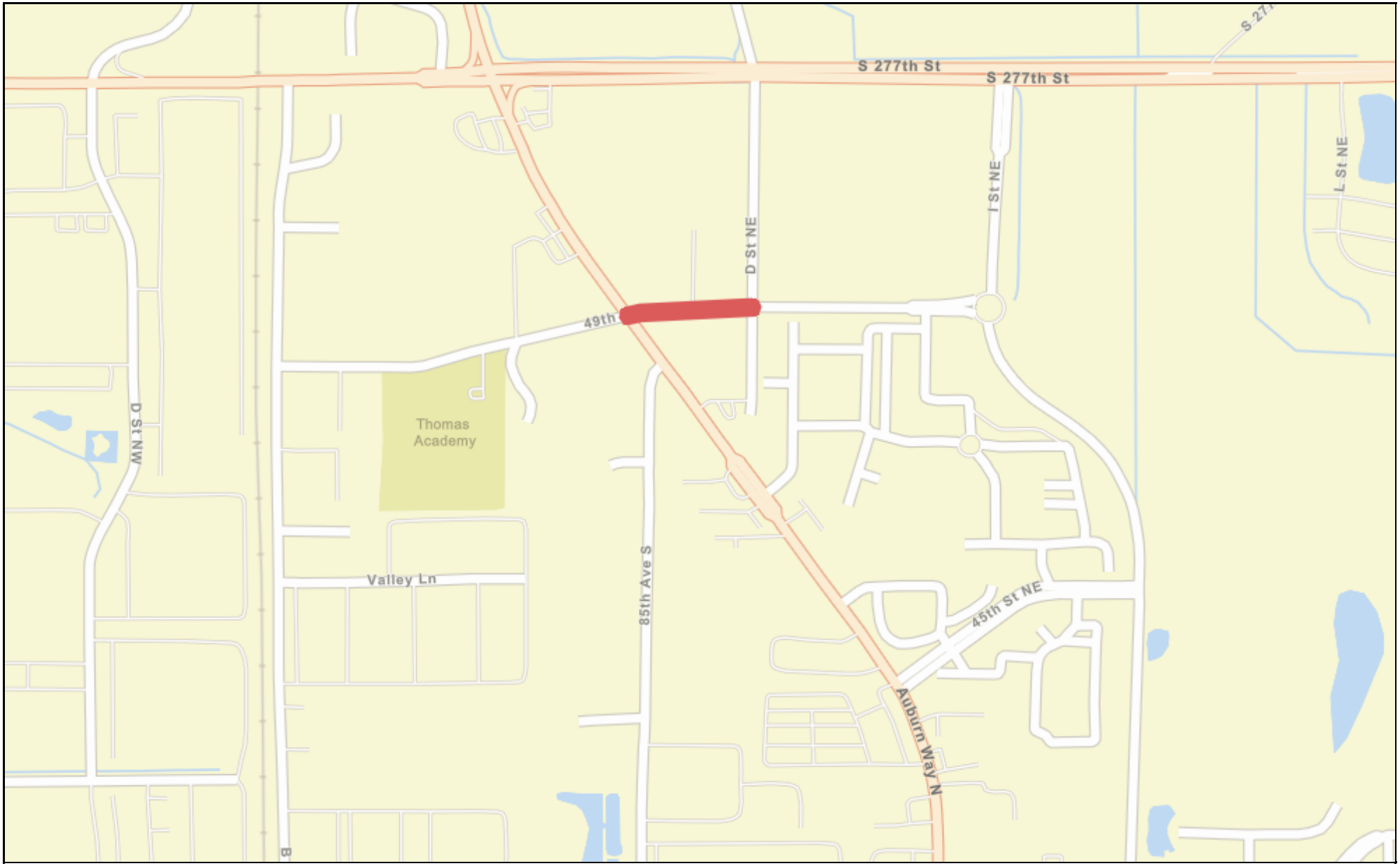
APPROVED AS TO FORM:

_____
Jason Whalen, City Attorney

49th Street NE Access to Transit

Printed On: 7/10/2024

Map created by City of Auburn eGIS



0 500 1000 ft

WGS84 Web Mercator (Auxiliary Sphere)

1: 9028

Information shown is for general reference purposes only and does not necessarily represent exact geographic or cartographic data as mapped. The City of Auburn makes no warranty as to its accuracy.

CITY OF AUBURN WASHINGTON

AGENDA BILL APPROVAL FORM

Agenda Subject:
Selection of Deputy Mayor (Council)

Meeting Date:
December 16, 2024

Department:
City Council

Attachments:
None

Budget Impact:

Administrative Recommendation:

Background for Motion:

Background Summary:

SECTION 12 - DEPUTY MAYOR

12.1 Annually or more often as deemed appropriate, the members of the City Council, by majority vote, shall designate one of their members as Deputy Mayor for a one- year time period, except as provided in Section 12.1, Paragraphs G and H. Elections will be held no later than the last Council meeting of the year.

A. Any member of the City Council who will have served on the Council for one year at the beginning for that Councilmember's terms as Deputy Mayor and has attained their Certificate of Municipal Leadership from AWC, may be nominated for the position of Deputy Mayor by having that Councilmember's name placed in nomination by a Councilmember. The nomination of a councilmember for the position of Deputy Mayor does not require a second, and a councilmember may nominate him or herself.

1. Nominations for the position of Deputy Mayor shall be made by members of the City Council on the dates of election for the Deputy Mayor position.

2. In connection with the selection of Deputy Mayor, Councilmembers are expected to approach the election in an open, transparent, and respectful manner, avoiding anything that jeopardizes harmony among Councilmembers.

B. The Councilmember receiving a majority of the votes cast by the members of the City Council shall be elected Deputy Mayor. A Councilmember may vote for themself.

C. The names of all nominees for the position of Deputy Mayor shall be included in the vote.

D. If no single Councilmember received a majority of the votes cast, a second vote/ballot between

the two nominees who received the largest number of votes will be held.

E. The Deputy Mayor shall serve at the pleasure of the Council.

F. In the event of a prolonged absence or unavailability of the Deputy Mayor, the Council shall vote on which Councilmember shall serve as the Interim Deputy Mayor. The Interim Deputy Mayor shall be the Councilmember who receives a majority vote. That Councilmember shall then serve as Interim Deputy Mayor until the return of the regular Deputy Mayor, or until the subsequent Deputy Mayor is designated by majority vote. The Interim Deputy Mayor shall have all the rights, duties, and authority of the Deputy Mayor under these rules

G. If the designated Deputy Mayor is unable to serve the full term of the position of Deputy Mayor, the Council shall elect the next Deputy Mayor in accordance with Section 12 to serve the remainder of the term. If the appointment is declined the process shall continue until a Deputy Mayor is designated.

H. In the event that the Councilmember selected as Deputy Mayor or Interim Deputy Mayor is unable to perform the duties of the position of Deputy Mayor, or fails to act in accordance with the City Council Rules of Procedure, the City Council may, by a majority vote of the full City Council, remove the Deputy Mayor or Interim Deputy Mayor from this position, in which case, the Council shall elect the next Deputy Mayor or Interim Deputy Mayor in accordance with Section 12 to serve the remainder of the term.

I. Routine Elections will be held no later than the last Council meeting of the year for determining the Deputy Mayor for the subsequent year.

Councilmember: **Staff:**